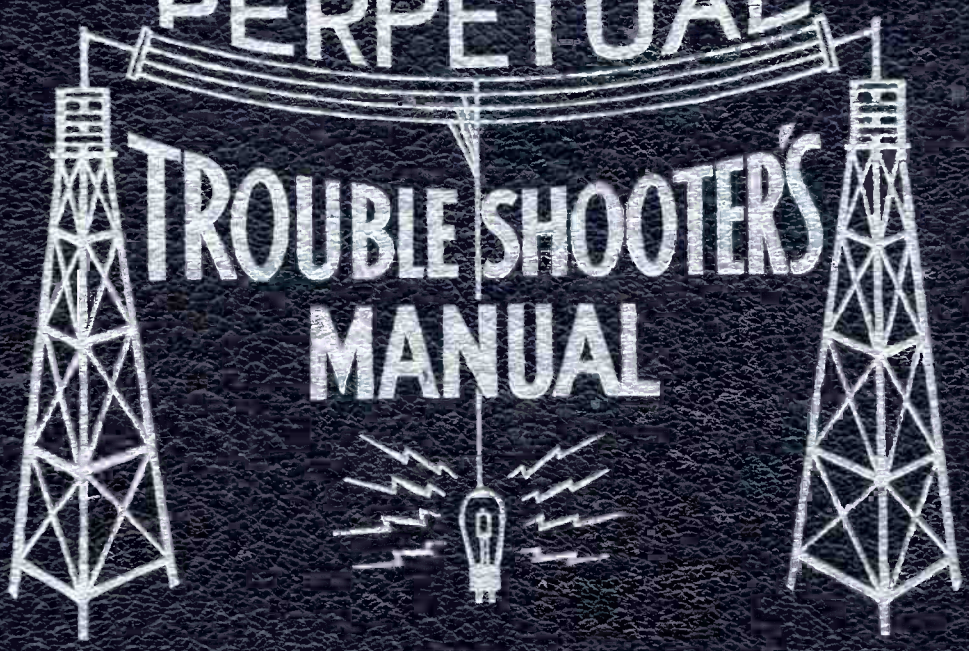
VOLUME I

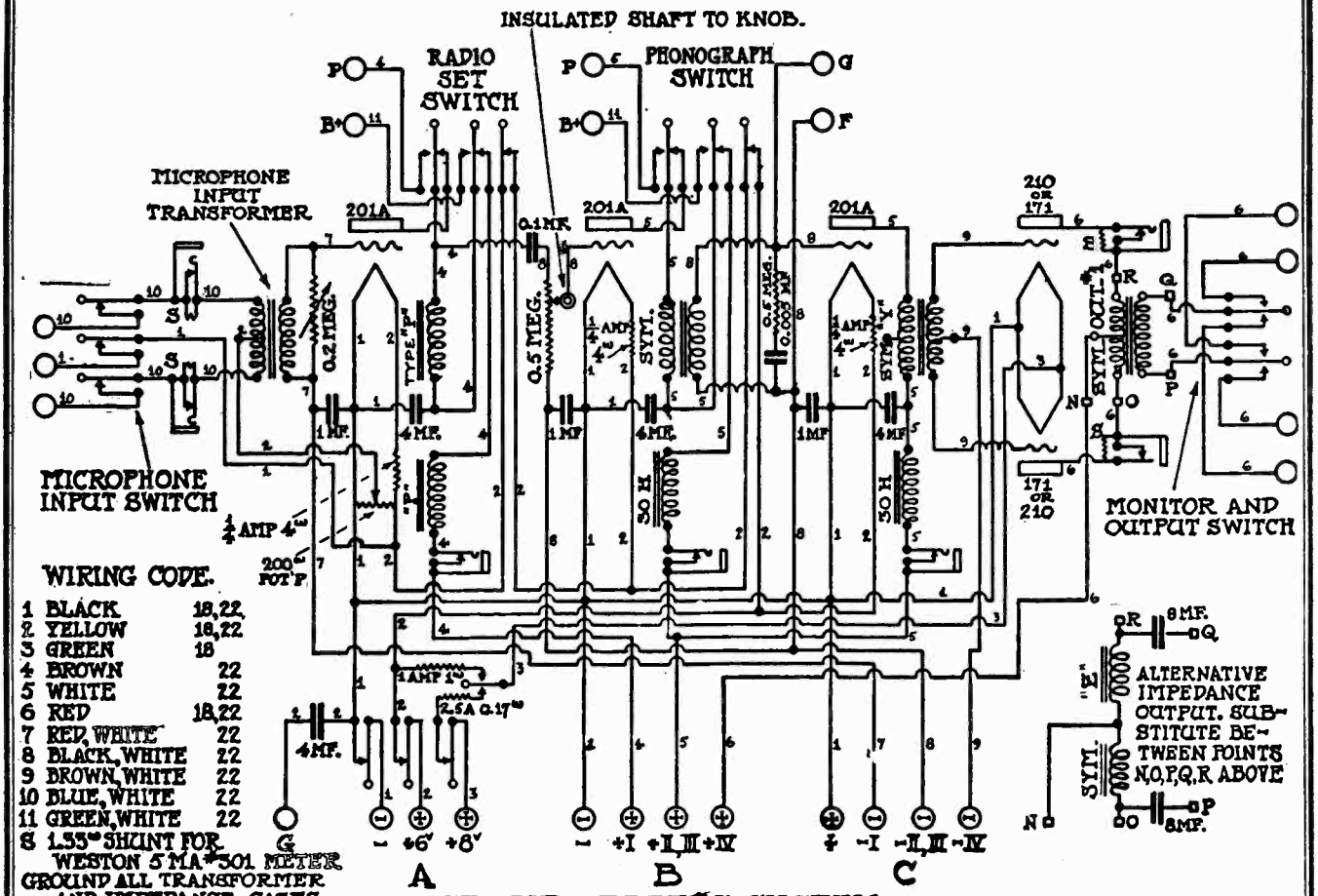
PERPETUAL TROUBLE SHOOTER'S MANUAL



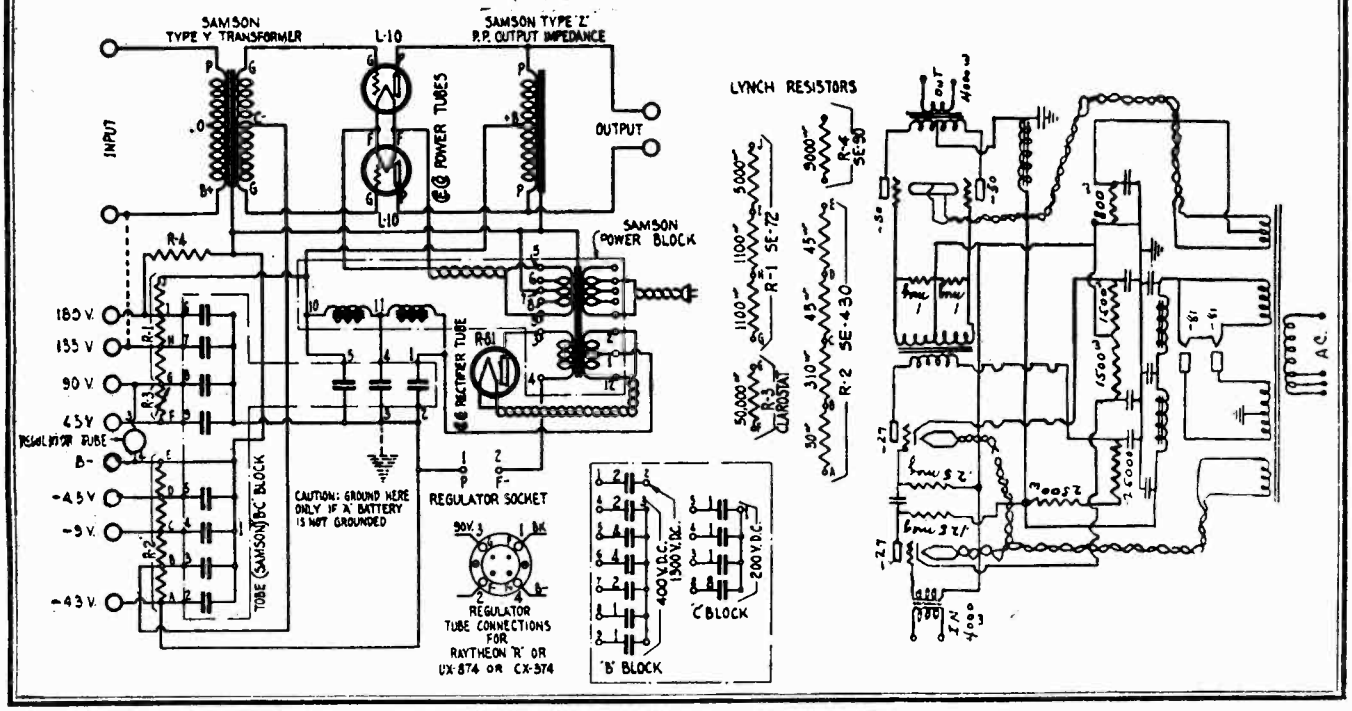
JOHN F. RIDER

MODEL S-100
MODEL PAM-19
MODEL Amplifier

SAMSON ELECTRIC CO.

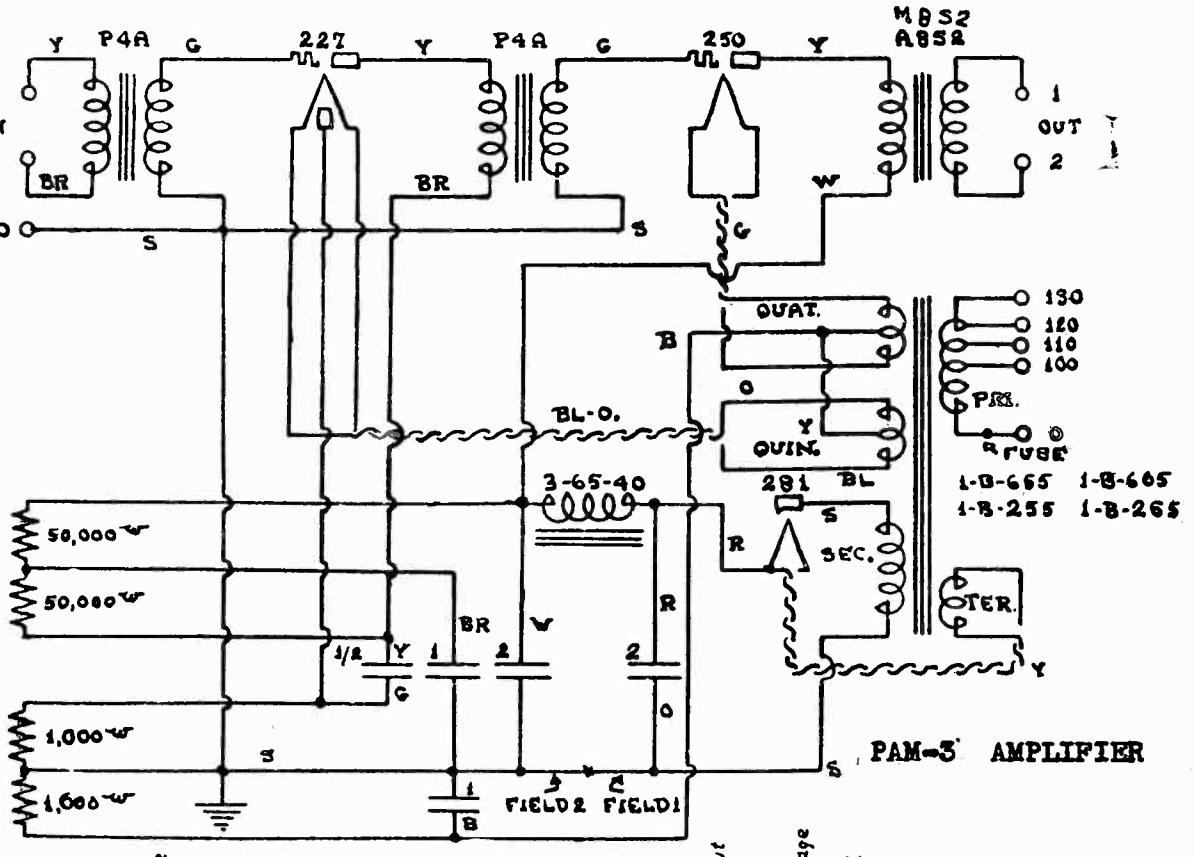


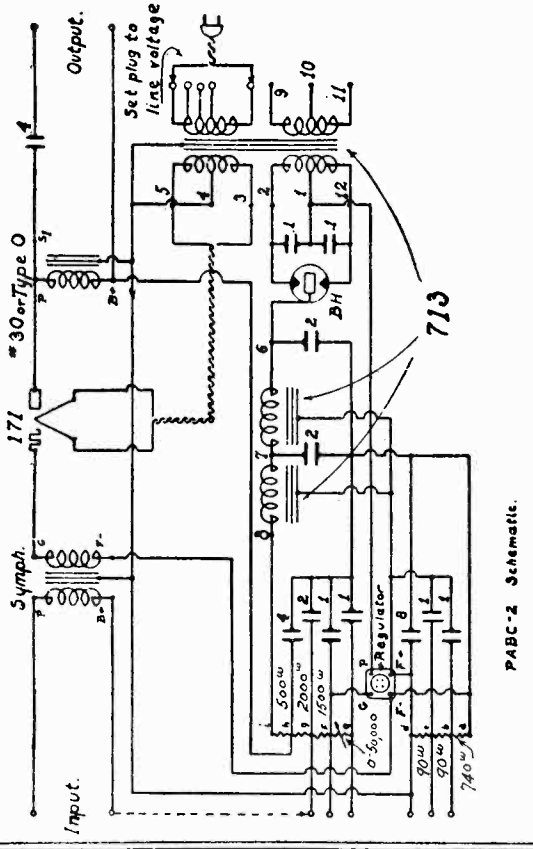
GROUP ADDRESS SYSTEM
SAMSON S-100 AMPLIFIER

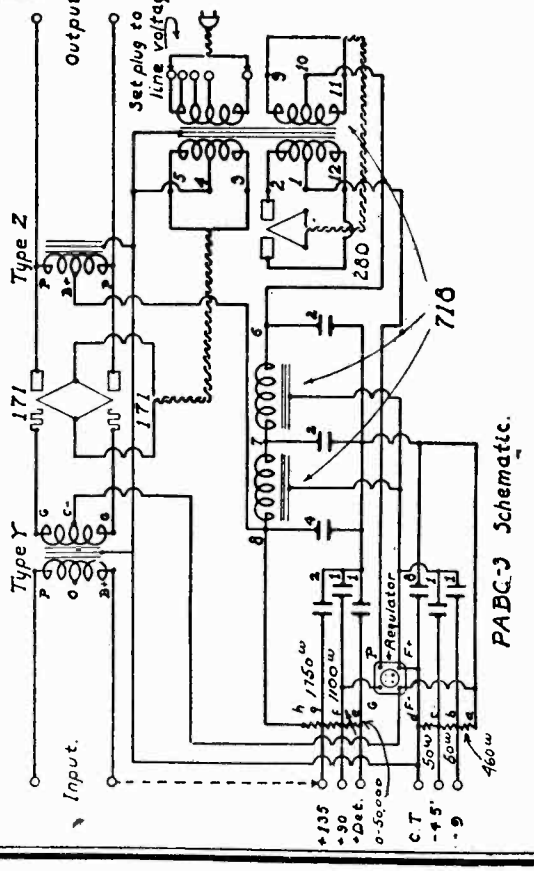


MODEL PABC-2
MODEL PABC-3
MODEL PAM-3

SAMSON ELECTRIC CO.

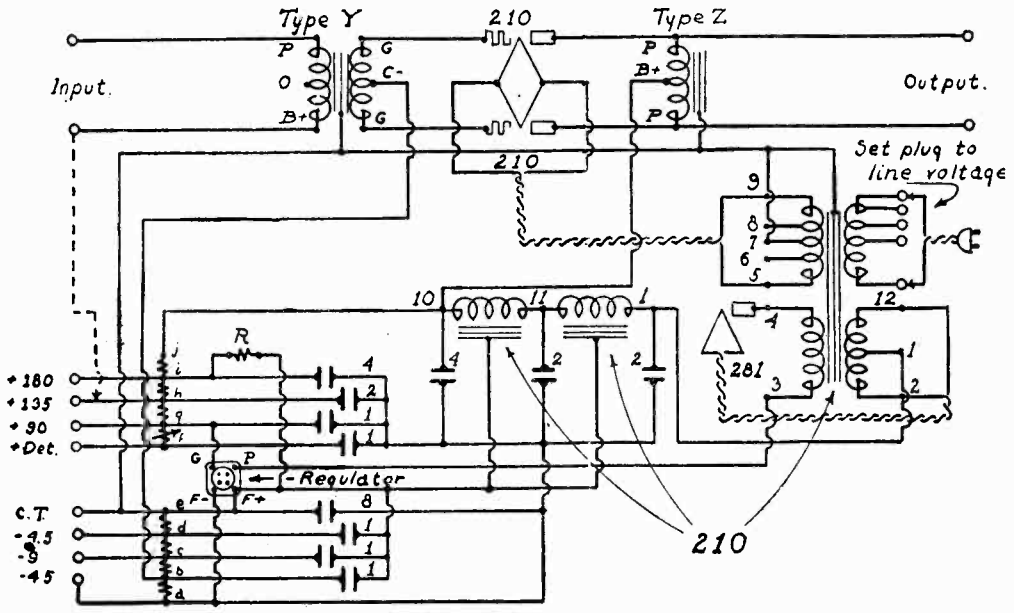




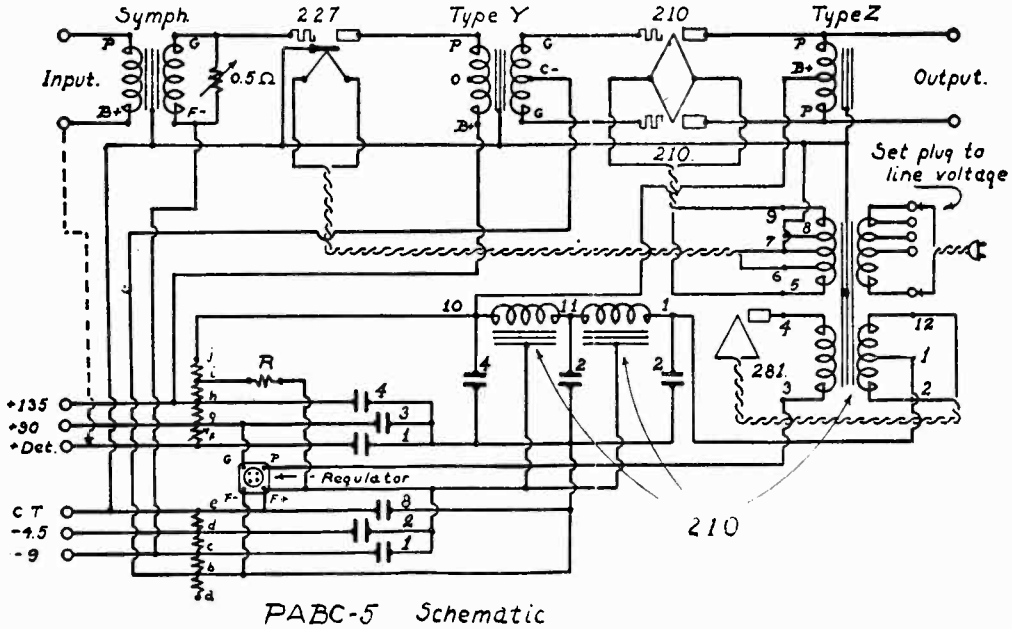


MODEL PABC-4
MODEL PABC-5

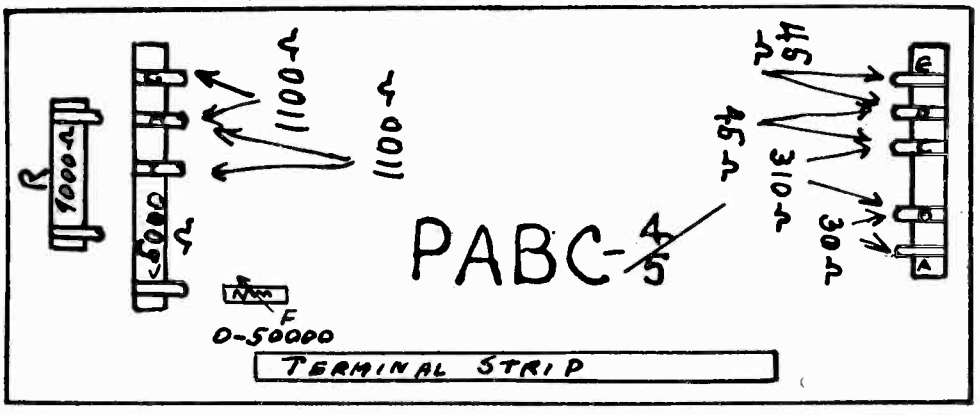
SAMSON ELECTRIC CO.



PABC-4 Schematic.



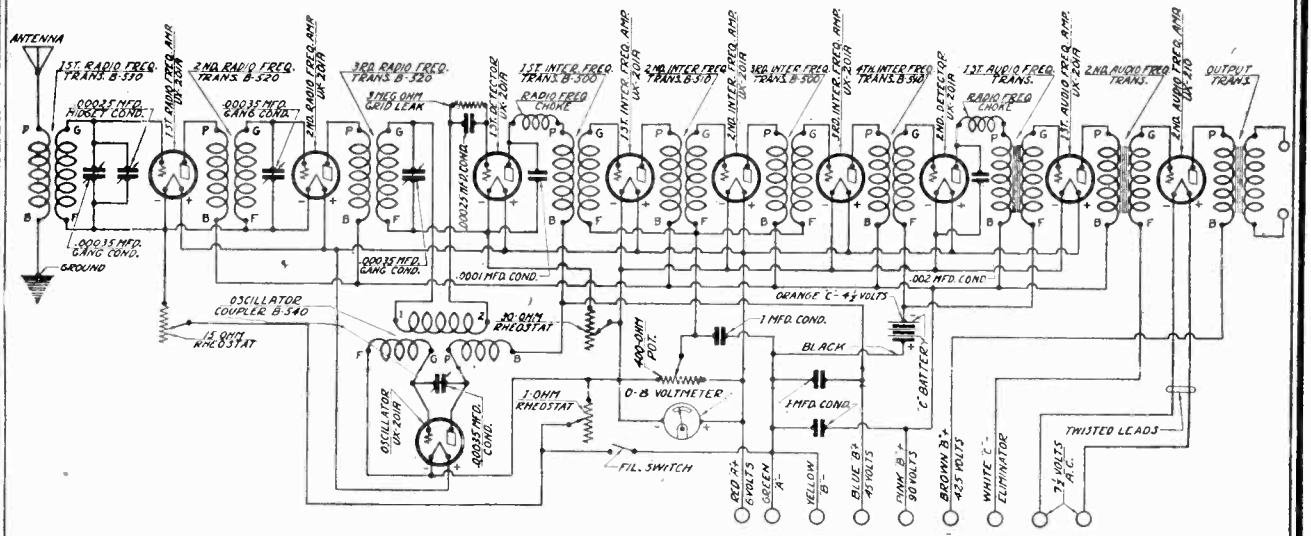
PABC-5 Schematic

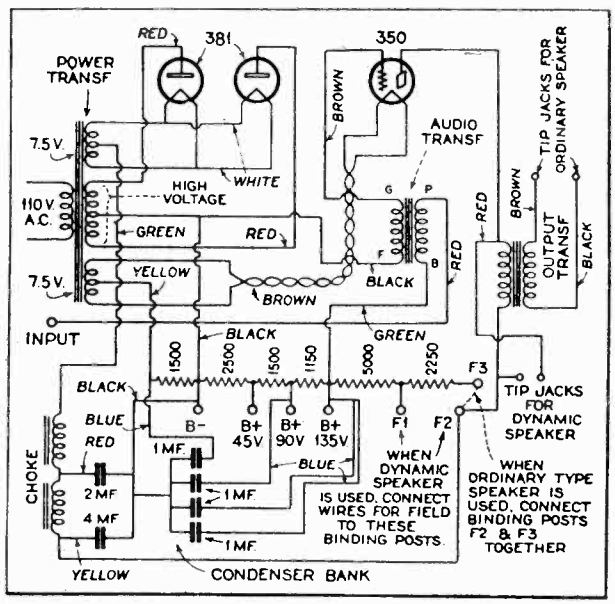


SCOTT TRANSFORMER CO.

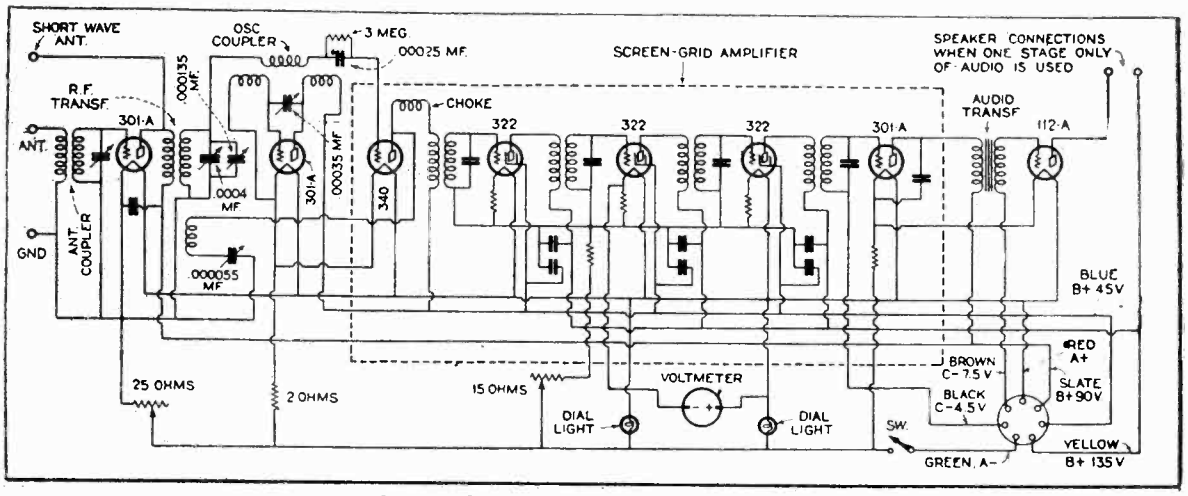
MODEL "World Record" 10
MODEL Shield Grid "9"

Model World Record 10





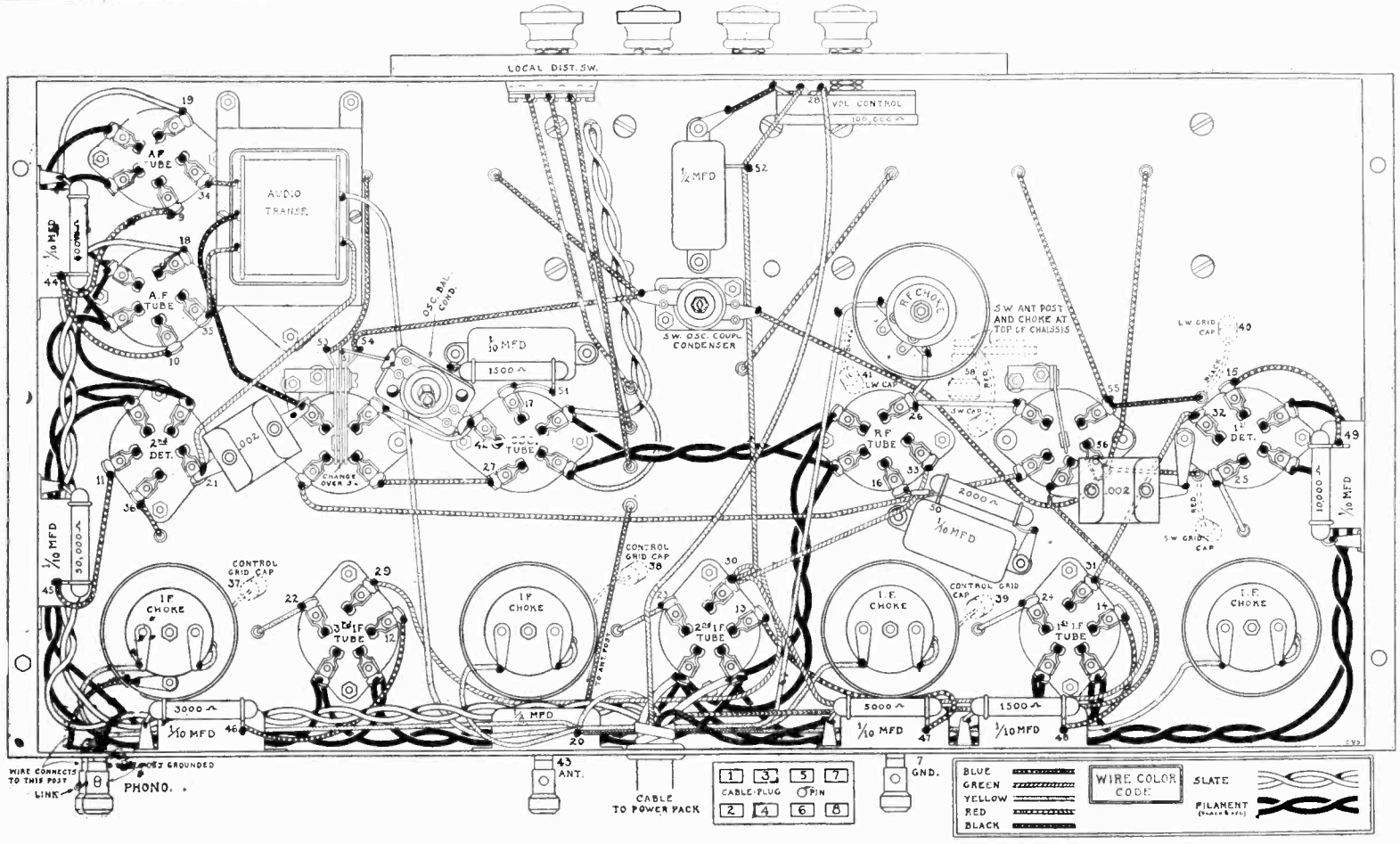
Model Shield Grid 9 Power Pack



Model Shield Grid 9 Receiver Schematic

MODEL "All Wave" Super
Receiver Chassis

SCOTT TRANSFORMER CO.



HOW TO DISTINGUISH OSCILLATOR FROM R. F. COIL

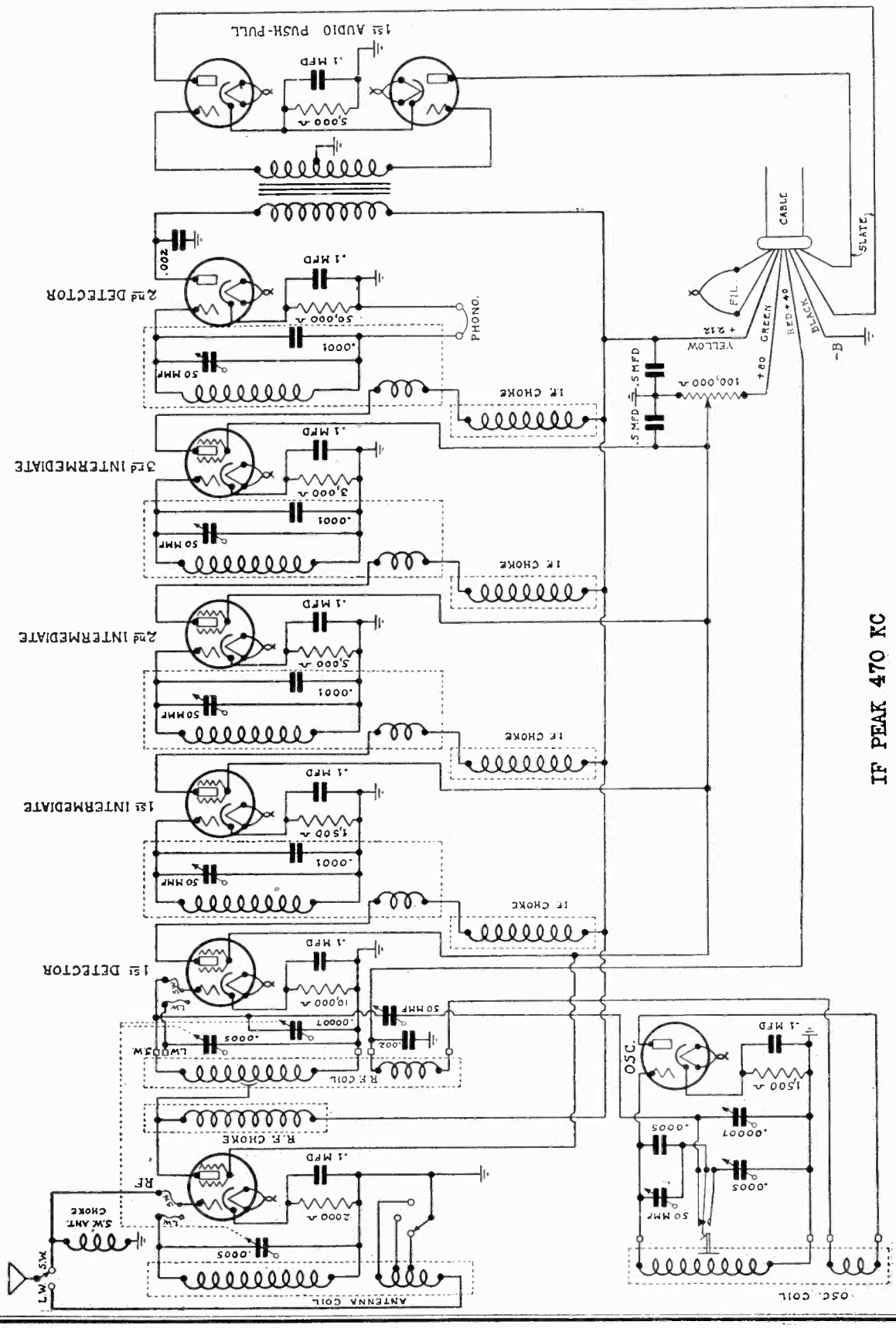
	Oscillator Coil	R. F. Coil
15-21 Meters	Two Enamel Wire Windings	One Enamel Wire Winding
21-27 Meters	Two Enamel Wire Windings	One Enamel Wire Winding
27-38 Meters	Two Enamel Wire Windings	One Enamel Wire Winding
38-84 Meters	Two Enamel Wire Windings	One Enamel, One Silk Winding
84-184 Meters	Two Enamel 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

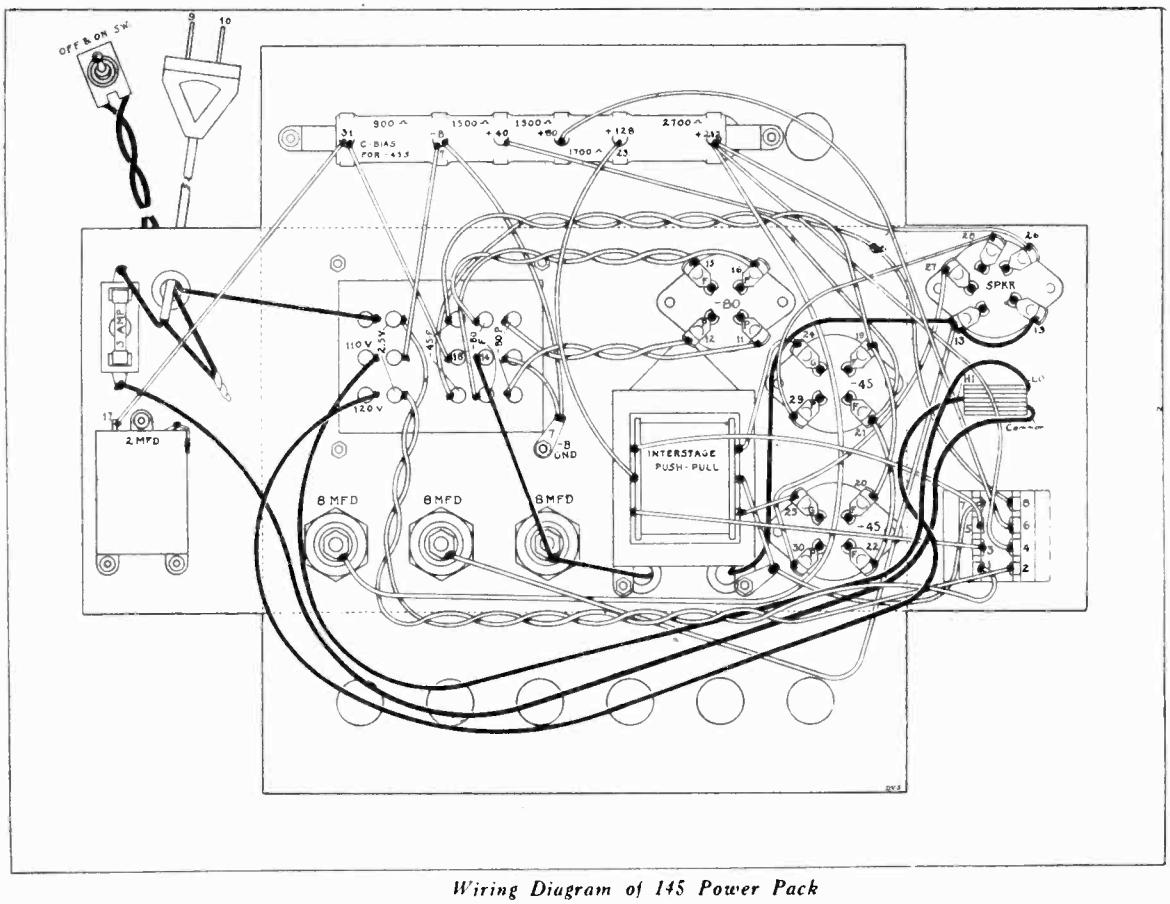
SCOTT TRANSFORMER CO.

MODEL "All Wave" Super Receiver Schematic

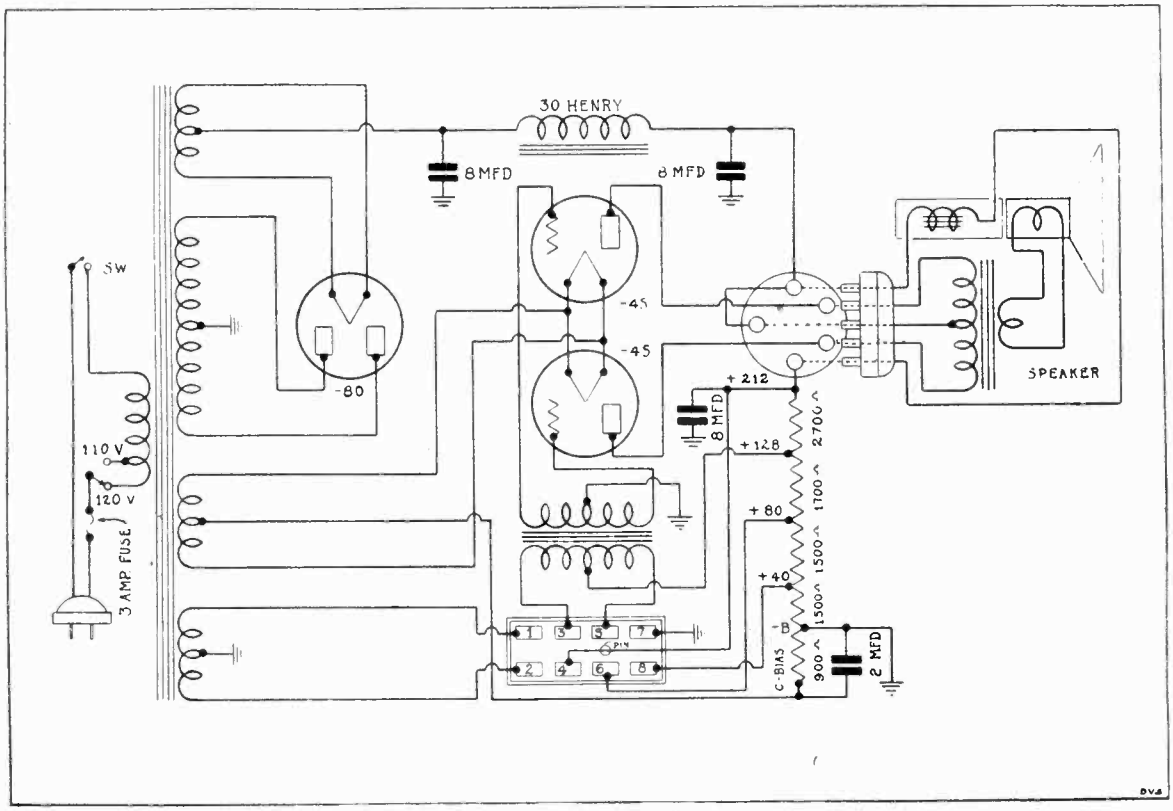


SCOTT TRANSFORMER CO.

MODEL "All Wave" Super
145 Power Pack
Schematic- Chassis



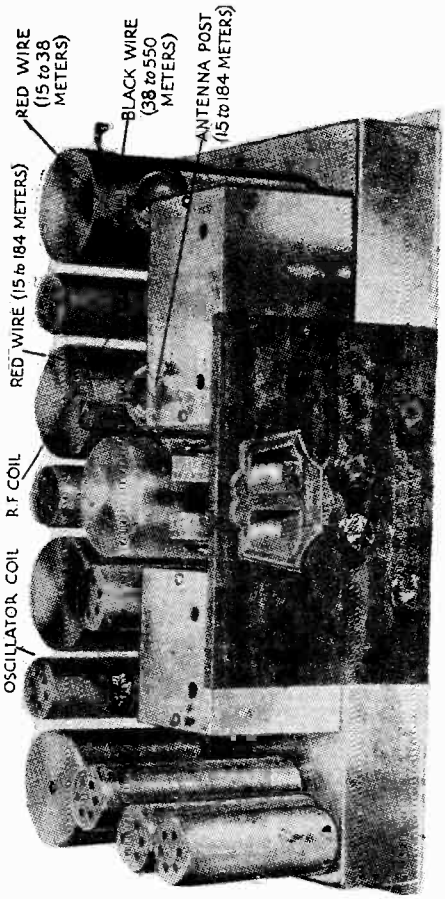
Wiring Diagram of 145 Power Pack



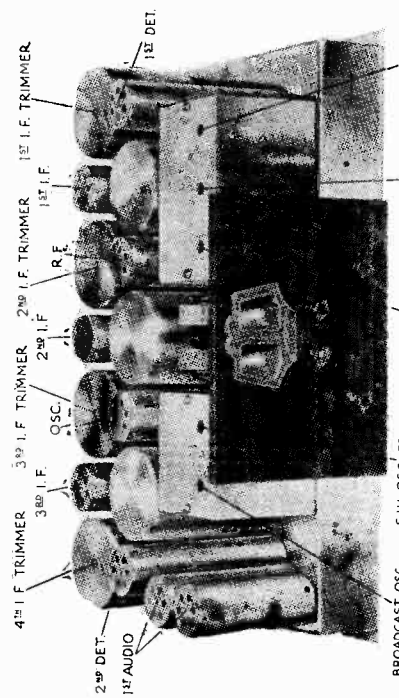
Schematic Diagram of 145 Power Pack

SCOTT TRANSFORMER CO.

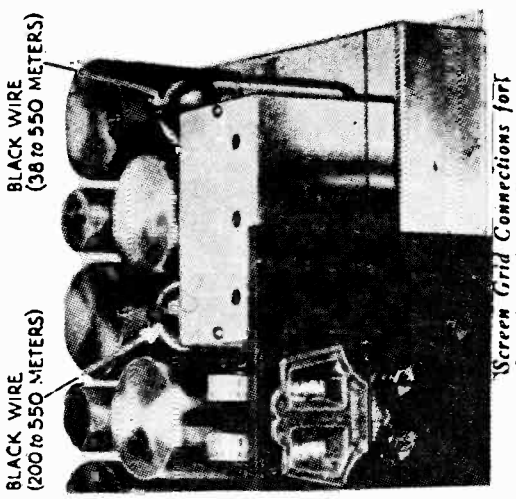
MODEL "All Wave" Super 150 Power Pack Trimmer Locations Control Box



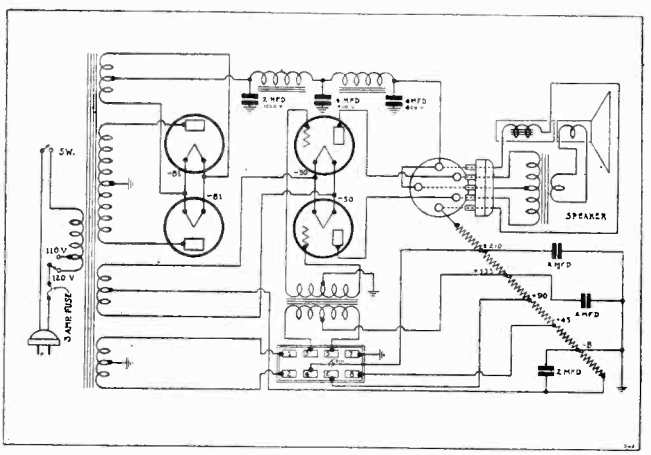
View of Screen Grid Cap Connections for Short Wave Reception



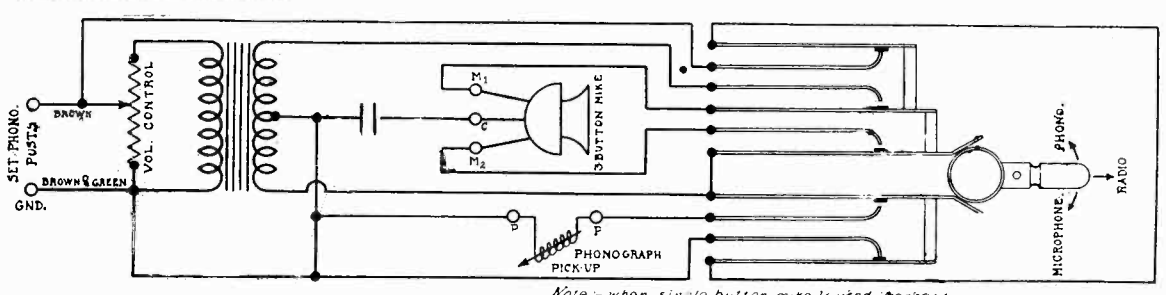
Location of Tubes and Trimmer Condensers



Screen Grid Connections for Broadcast Reception



Schematic Diagram for 150 Power Pack



Note:- when single button mike is used, connect between M_1 and C. M_2 is not used

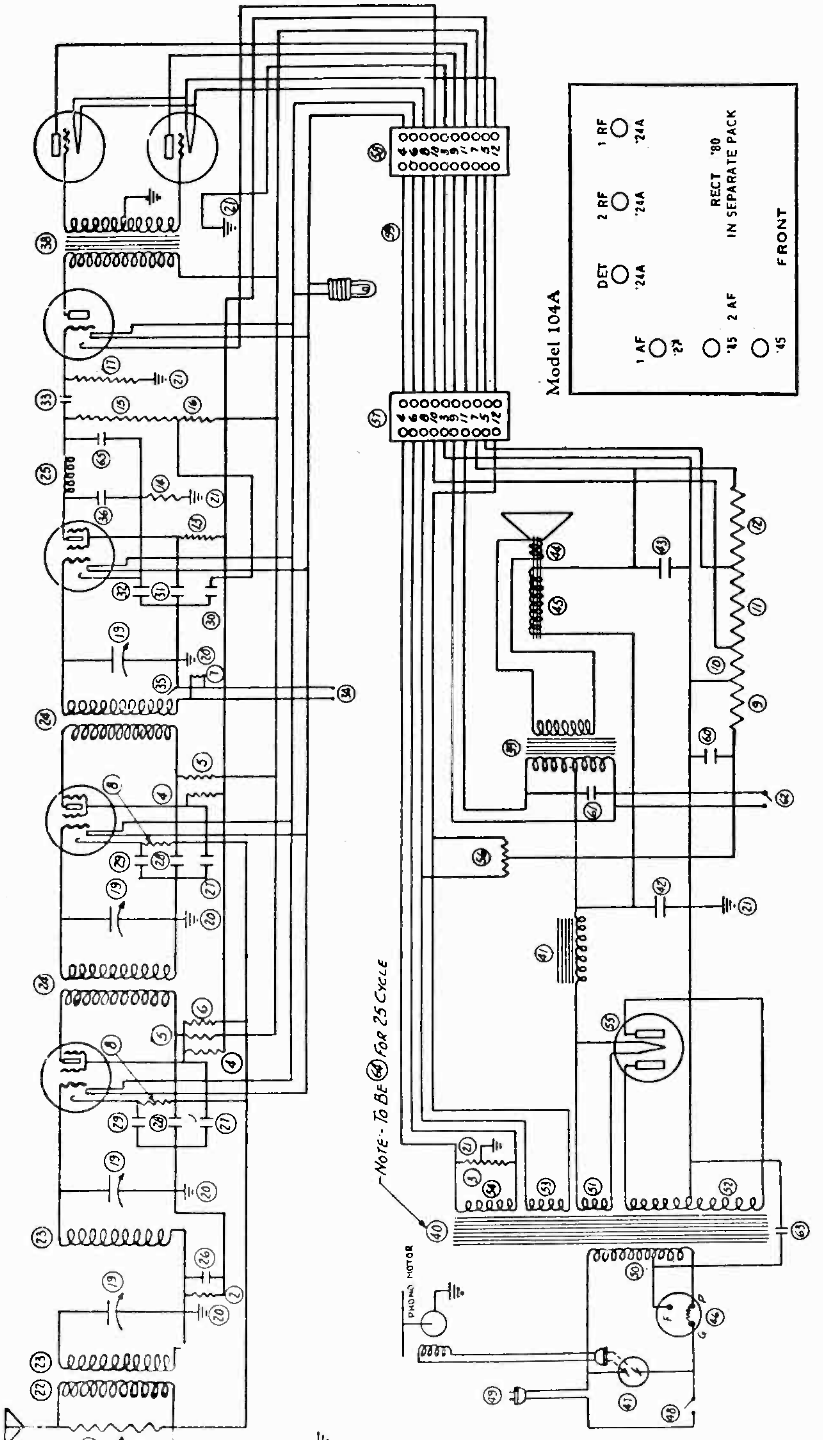
Schematic Diagram of Scott Control Box

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	10 M	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	125	.55
11	SCREEN RESISTANCE	1850	46	805	3.6
12	FIELD LOAD RESISTANCE	2100	46	93	4.3
13	SCREEN BLEEDER RESISTANCE	15MM	.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

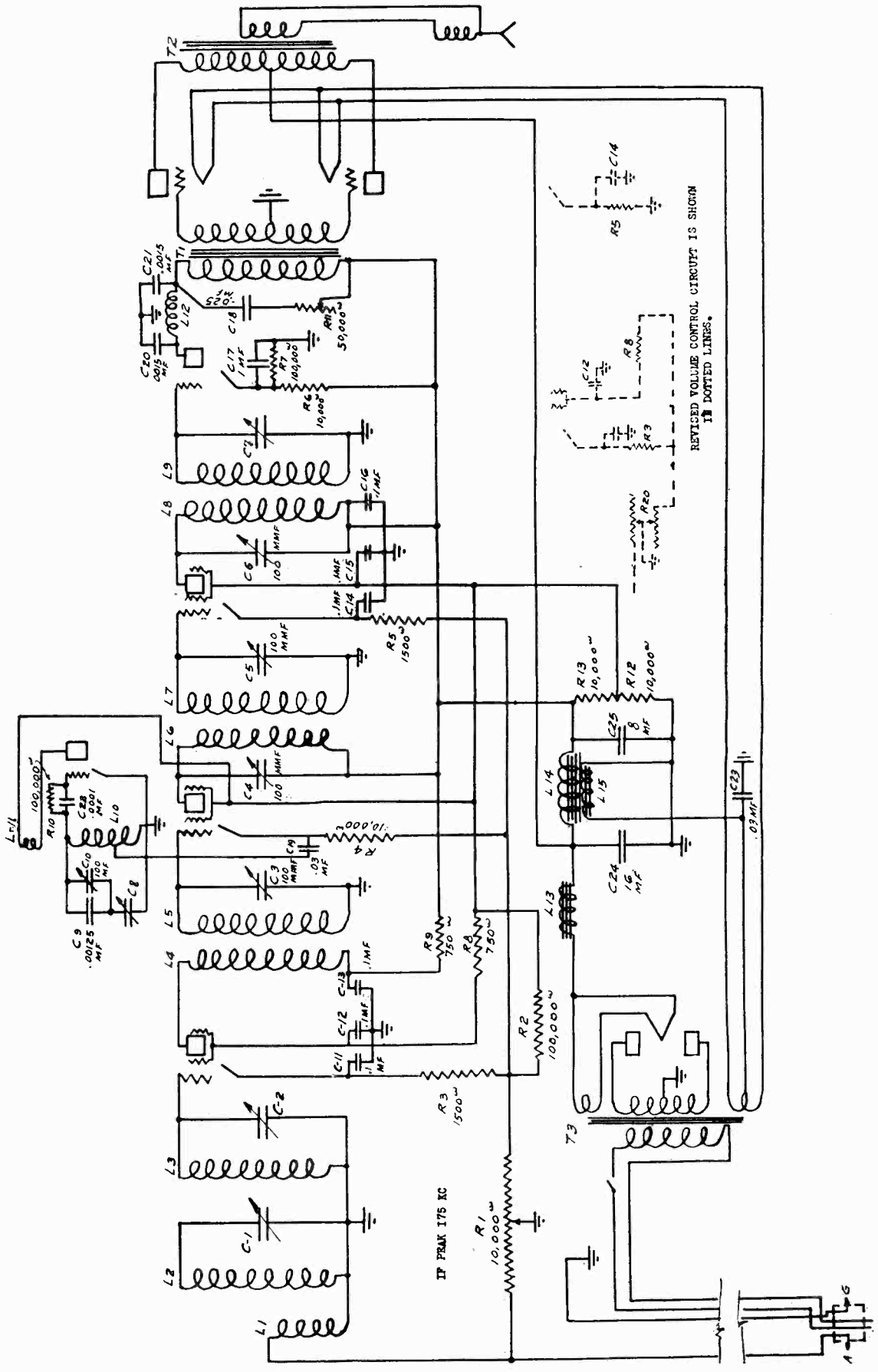
NO	DESCRIPTION
18	SET EXTERNAL GROUND
20	ROTOR BRUSH GROUND
21	CHASSIS GROUND
19	TUNING CONDENSER
22	PRIMARY COIL 690 m h's
23	BAND PASS INDUCTANCES
24	R.F TRANSFORMERS
25	R F CHOKE 8 m.h
26	COUPLING CONDENSER .025mfd.
27	SCREEN FILTER COND. 1mfd. 200
28	PLATE FILTER COND 1mfd - 300 V
29	CATHODE BY-PASS COND 1mfd 200V
30	DETECTOR FILTER COND .5mfd 300 V
31	SCREEN FILTER COND .25mfd · 200 V.
32	CATHODE BY-PASS 1.mfd · 200 V.
33	COUPLING COND .005mfd - MICA
34	PICKUP JACK

NO	DESCRIPTION
35	PHONOGRAPH SWITCH
36	DETECTOR R.F. BY PASS .0001mf MICA
37	245 BIAS BYPASS COND .025mf. 200
38	INPUT PUSH PULL TRANS.
39	OUTPUT PUSHPULL TRANS.
40	POWER TRANSFORMER
41	POWER CHOKE 200 ~
42	15 MFD ELECTROLYTIC CONDENSER
43	5 MFD. ELECTROLYTIC CONDENSER
44	VOICE COIL
45	FIELD 2000 ~ ±5%
46	BALLAST LAMP SOCKET
47	PHONO MOTOR OUTLET
48	LINE SWITCH
49	PLUG AND 8' CORD (BELDEN)
50	POWER PRIMARY .82 amp @ 115V
51	280 FIL 2 amp. 5V.

NO	DESCRIPTION
52	HIGH VOLTAGE WINDING
53	245 FILAMENT WINDING
54	224 FILAMENT WINDING
55	RECTIFIER TUBE TYPE 280
56	CENTER TAP 245 FILAMENT
57	JONES PLUG AND RECEPTICAL
58	CABLE TERMINAL STRIP
59	18½ CABLE 10 CONDUCTOR
60	.025 PAPER CONDENSER 300 V.
61	1mfd. PAPER COND. 1000 V
62	TONE CONTROL SWITCH
63	.005 BY PASS COND.
64	POWER TRANS 4296-A FOR 25 CYCLE
65	DETECTOR R.F. BYPASS .0001mfd.

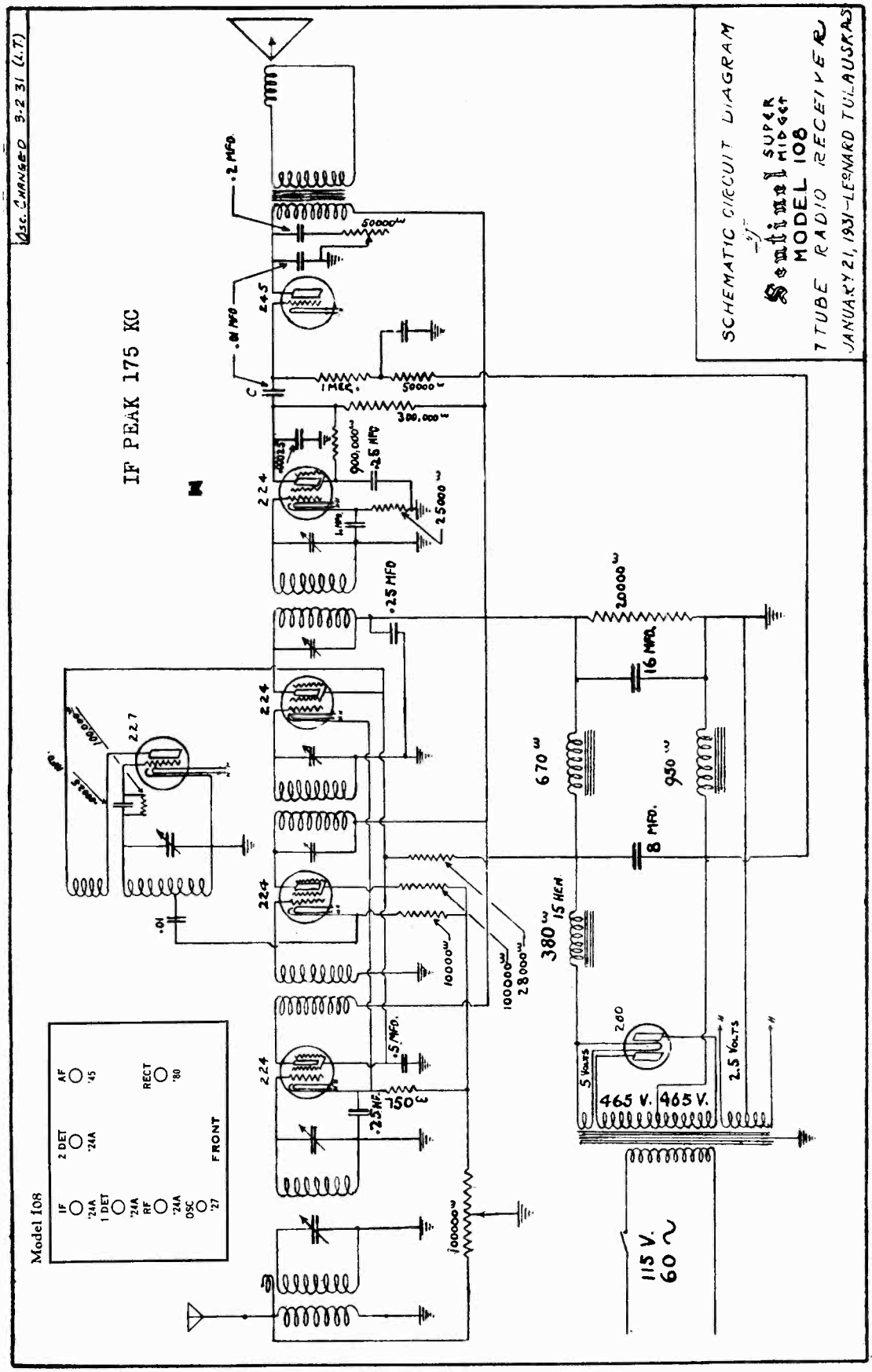
MODEL 106-B
With Changes

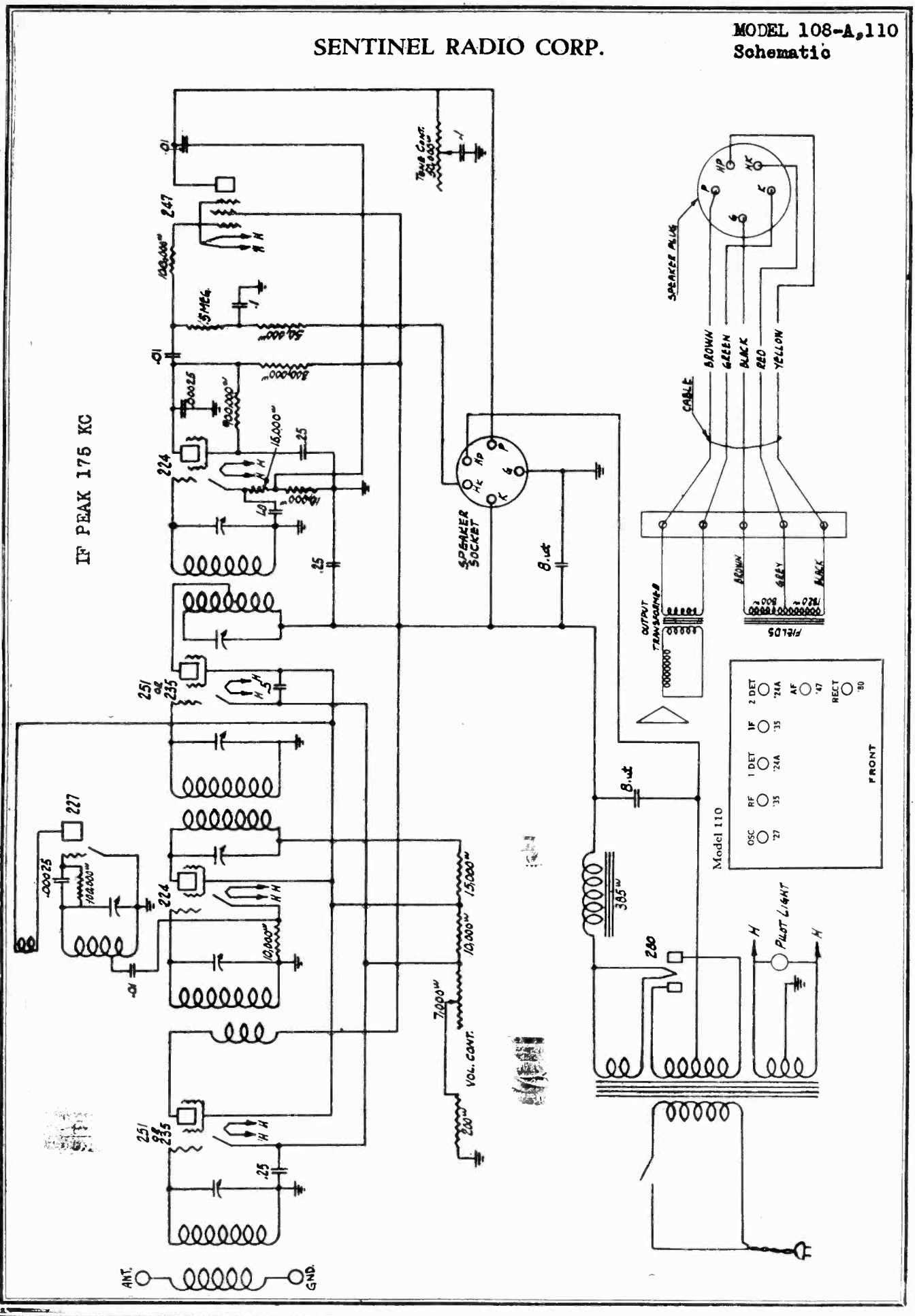
SENTINEL RADIO CORP.



MODEL 108

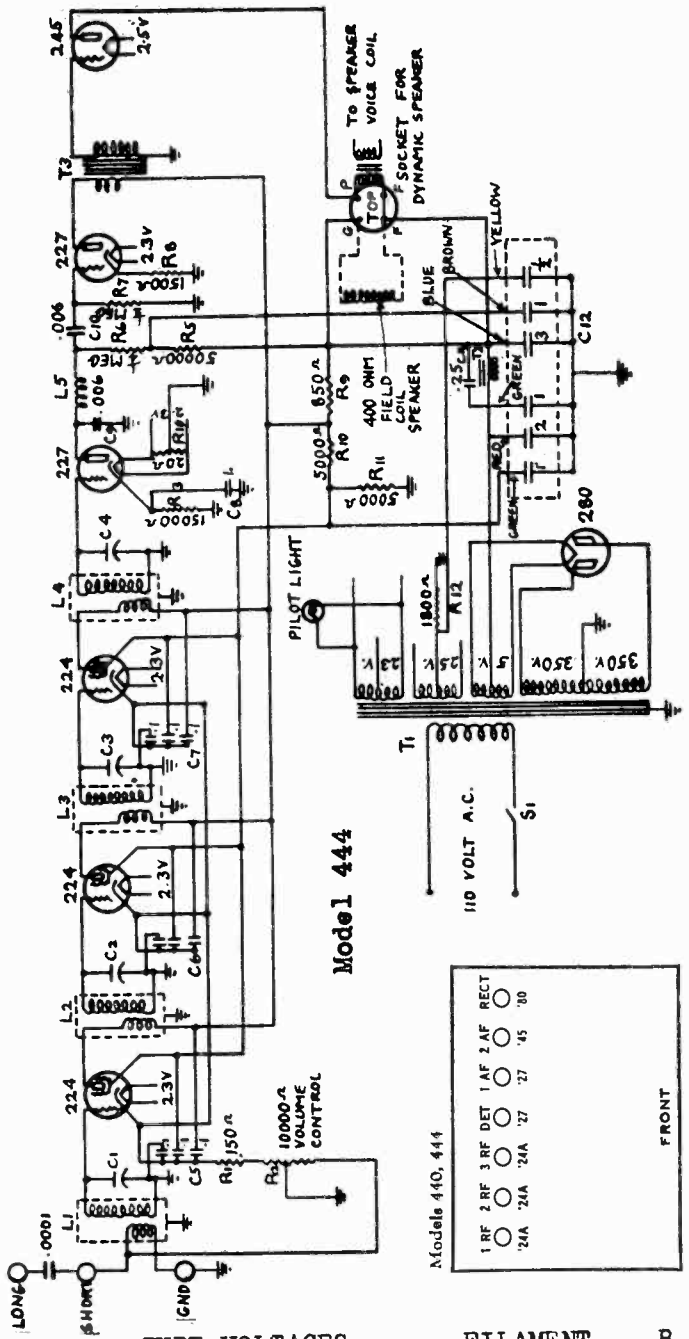
SENTINEL RADIO CORP.





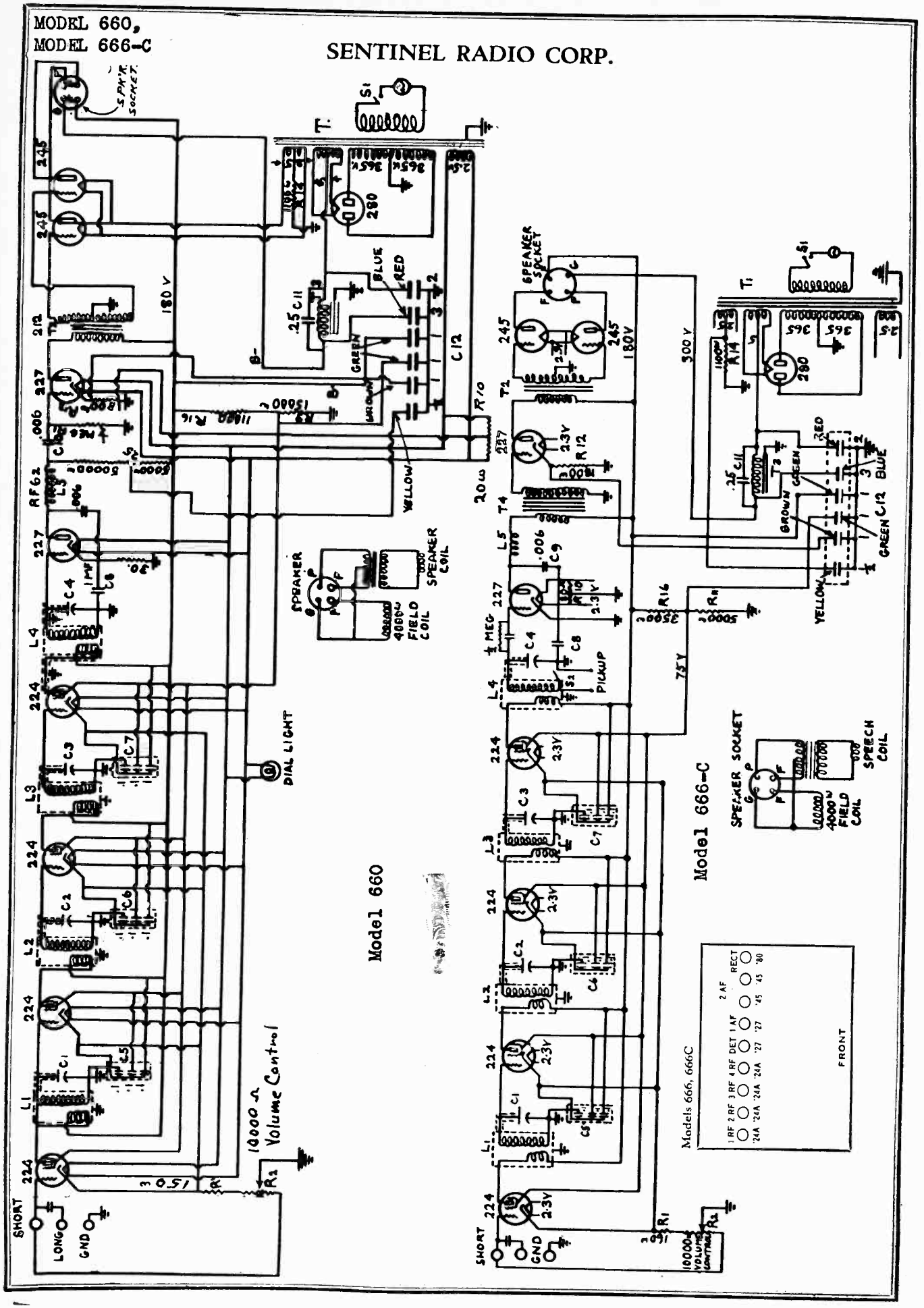
MODEL 440
MODEL 444

SENTINEL RADIO CORP.



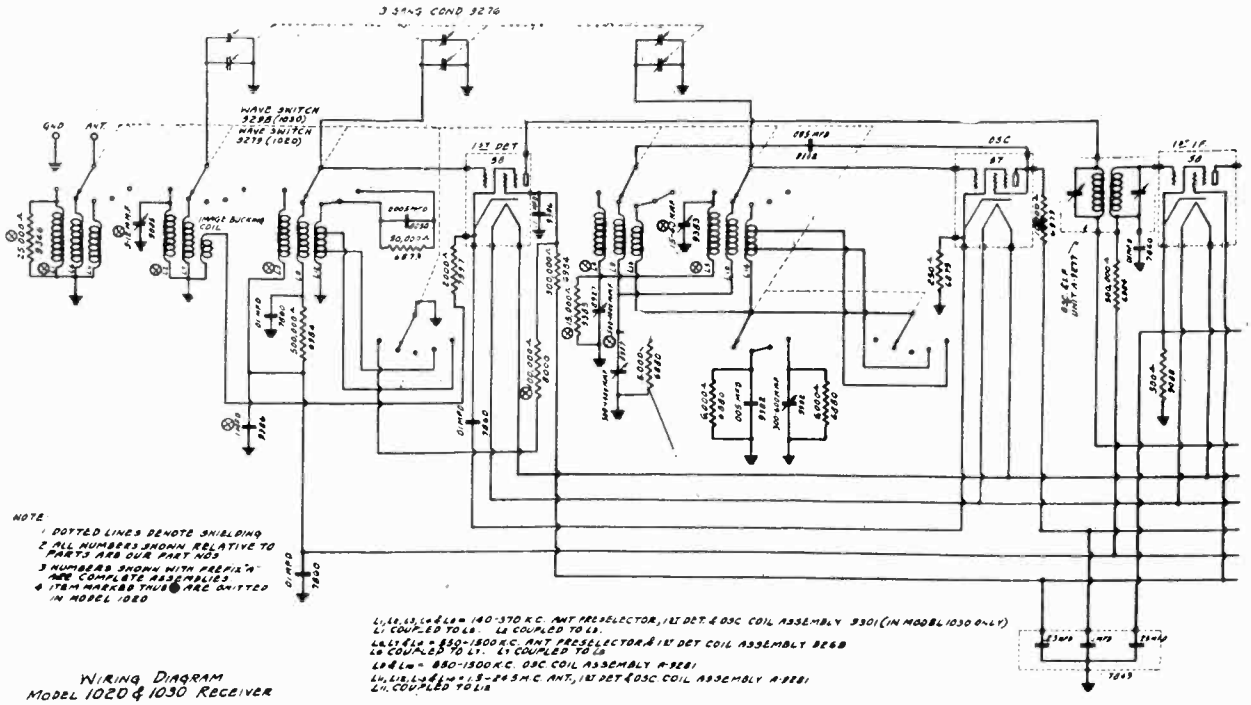
TUBE VOLTAGES Type of Tube	Position of Tube	FILAMENT VOLTS	B VOLTS	C VOLTS	NORMAL PLATE M.A.	SCREEN VOLTS
224	1st RF	2.35	155	2	3.5	75
224	2nd RF	2.35	155	2	3.5	75
224	3rd RF	2.35	155	2	3.5	75
227	Detector	2.35	110	18	.2	
227	1st Audio	2.35	122	8	10.5	
245	Output	2.4	245	50	27	
280	Rectifier	4.75		*55		

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

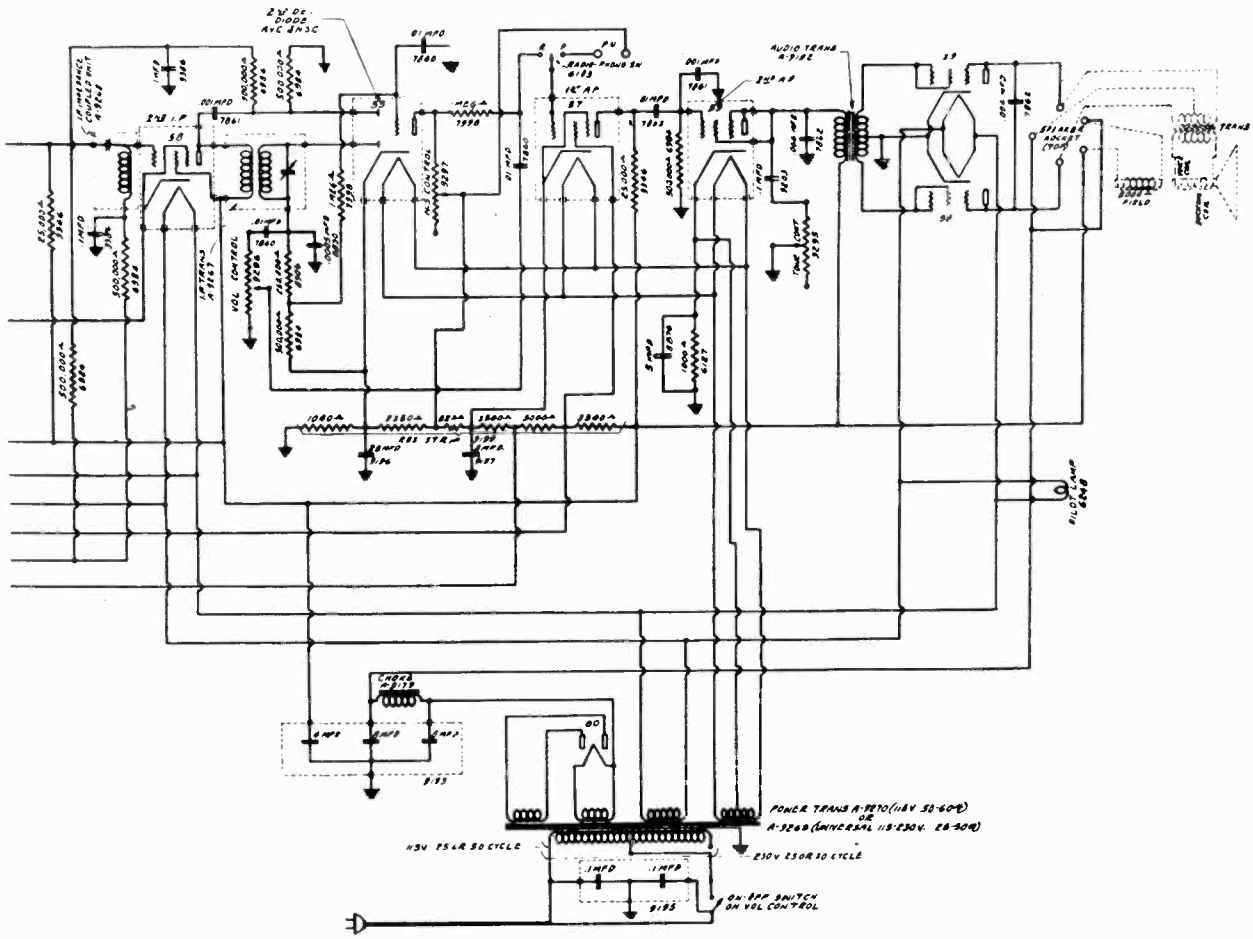


MODEL 1020, 1030

SENTINEL RADIO CORP.

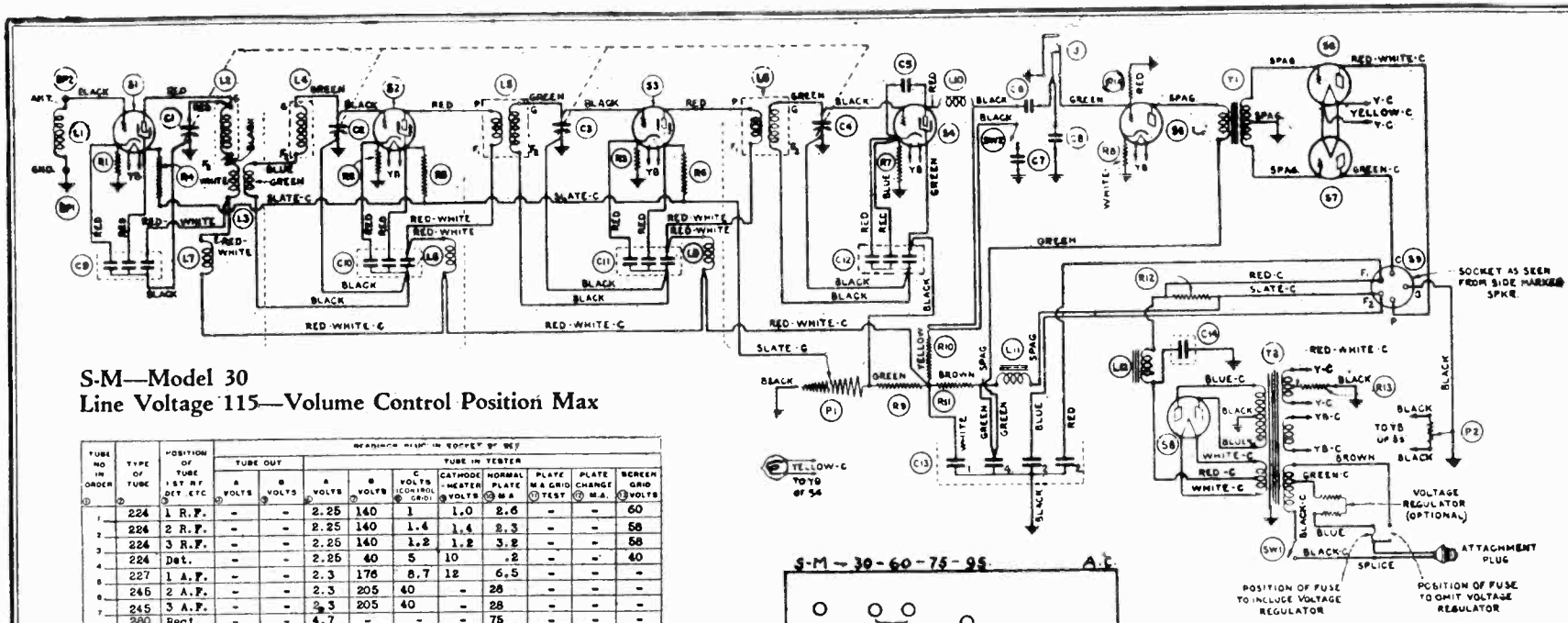


WIRING DIAGRAM
Model 1020 & 1030 Receiver



SILVER - MARSHALL, INC.

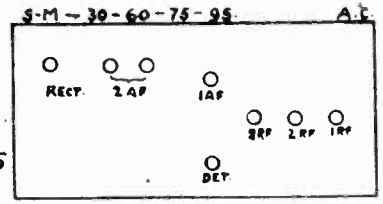
MODEL 30
Schematic, Voltage
MODEL 440

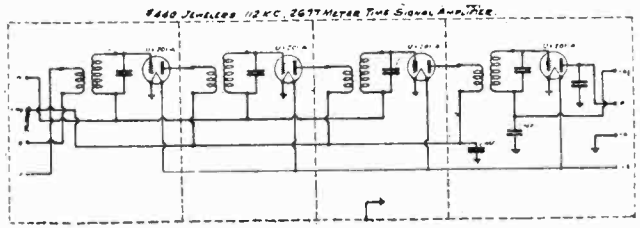


S-M—Model 30
Line Voltage 115—Volume Control Position Max

TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST RF DET ETC	READINGS MADE IN SOCKET OF REF TUBE OUT		TUBE IN TESTER							
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS (CONTROL GRID)	CATHODE TO HEATER VOLTS	NORMAL PLATE M A	PLATE M A GRID TEST	PLATE CHANGE M A	SCREEN GRID VOLTS
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 = .00038 MFD COND
C5-C8 = 150 MMFD. COND
C6 = .0078 MFD. COND
C7 = .005 MFD. COND.
C9-C10-C11-C12 = .01-.01-.01-.01 MFD COND
C13 = 1-4-1-1 MFD — C14 = 2 MFD CONDS

J = JACK

L1-L7-L6-L9-L10 = #275 CHOKE
L2-L4 = #122 COILS
L3 = # 3001 COUPLING COIL
L5-L6 = #121 COILS
L11 = # 339 CHOKE
L12 = # 339 CHOKE

P1 = 10000 Ω POT TAPERED
P2 = 20 Ω POT

R1-R2-R3 = 400 Ω
R4-R5-R6 = 3000 Ω
R7 = 60000 Ω
R8 = 2000 Ω
R9 = 10 000 Ω
R10 = 300,000 Ω
R11 = 3600 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. SW TCH
SW2 = OVERTONE SWITCH

T1 = #270 AUDIO TRANS.
T2 = #337 U PWR-TRANS.

NOTE 2 - WHITE LEAD OF C13 REMOVED FROM S5 TO T2. ONE RED LEAD OF C12 REMOVED FROM S4 TO S5.

NOTE 3 - RED LEAD OF C13 REMOVED FROM F. OF S9 TO L12. L12 INSERTED IN THE RED LEAD OF T2. C14 ADDED BETWEEN L12 AND R13 AND GROUND

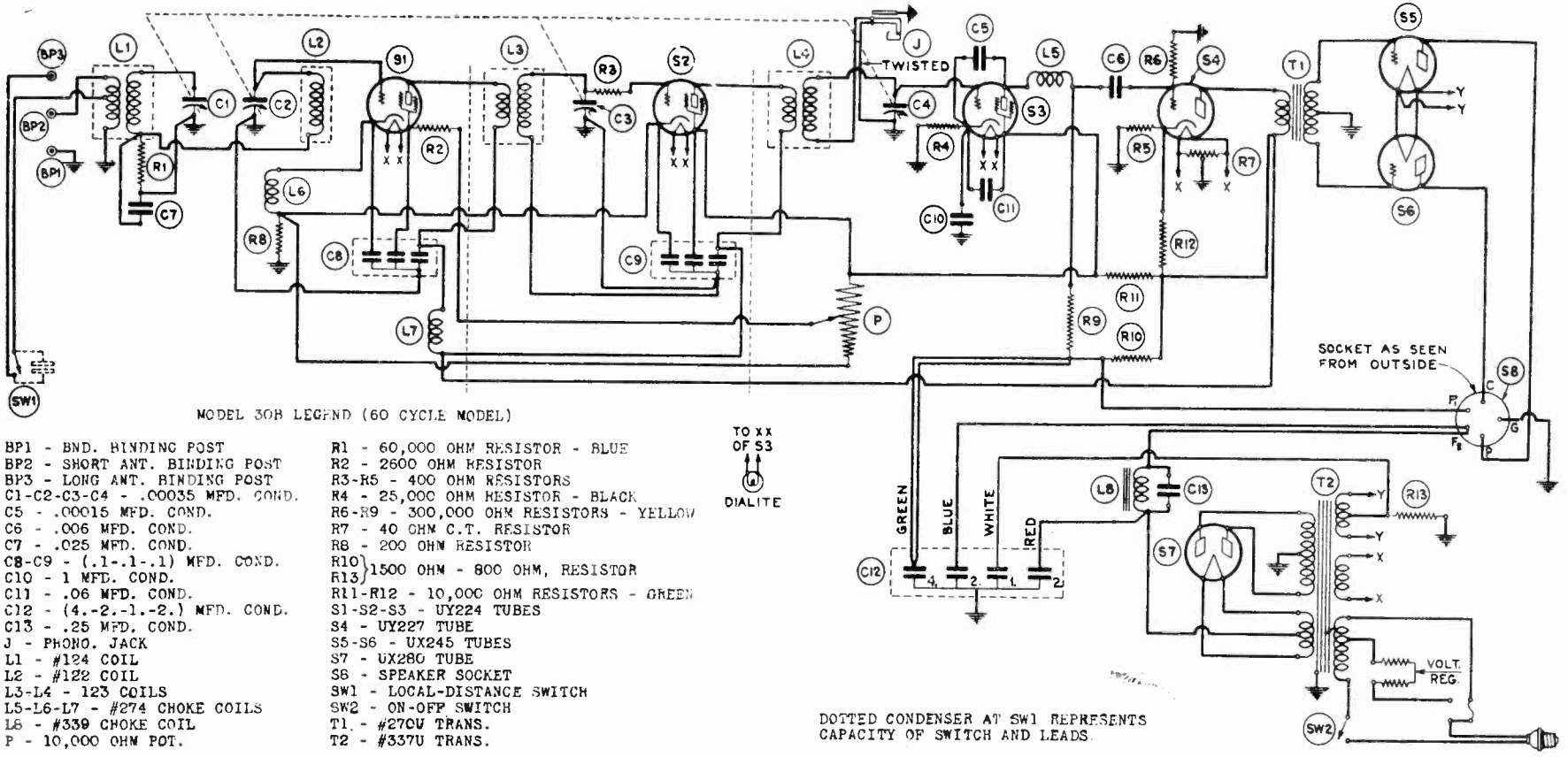
NOTE 4 - RED LEAD OF C12 CONNECTED TO S5 RETURNED TO S4

NOTE 5 - RED LEAD OF C13 REMOVED FROM L12 TO F. OF S9. C14 REMOVED TO OPPOSITE SIDE OF L12.

SCHEMATIC WIRING DIAGRAM			
PART NO		ASSEMBLY NO	
MATL		SCHEMATIC NO 30	
SKETCH BY	K.L.	SCALE	
DRAWN BY	M.K.	DATE	5-23-39
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.

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.

LEGEND FOR 25 CYCLE MODEL
SAME AS 60 CYCLE MODEL EXCEPT

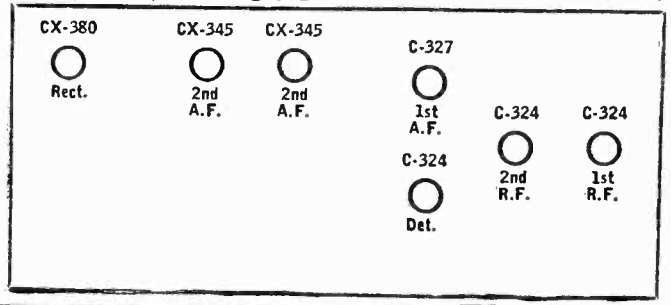
C11 - .04 MFD. COND.
C13 - 2. MFD. COND.
T2 - #337-25U TRANS.

ADD 1. MFD. CONDENSER ACROSS TERMINALS OF R12

SILVER-MARSHALL—No. 30B-60B-75B-90B
Line Voltage 115—Volume Control Position Max

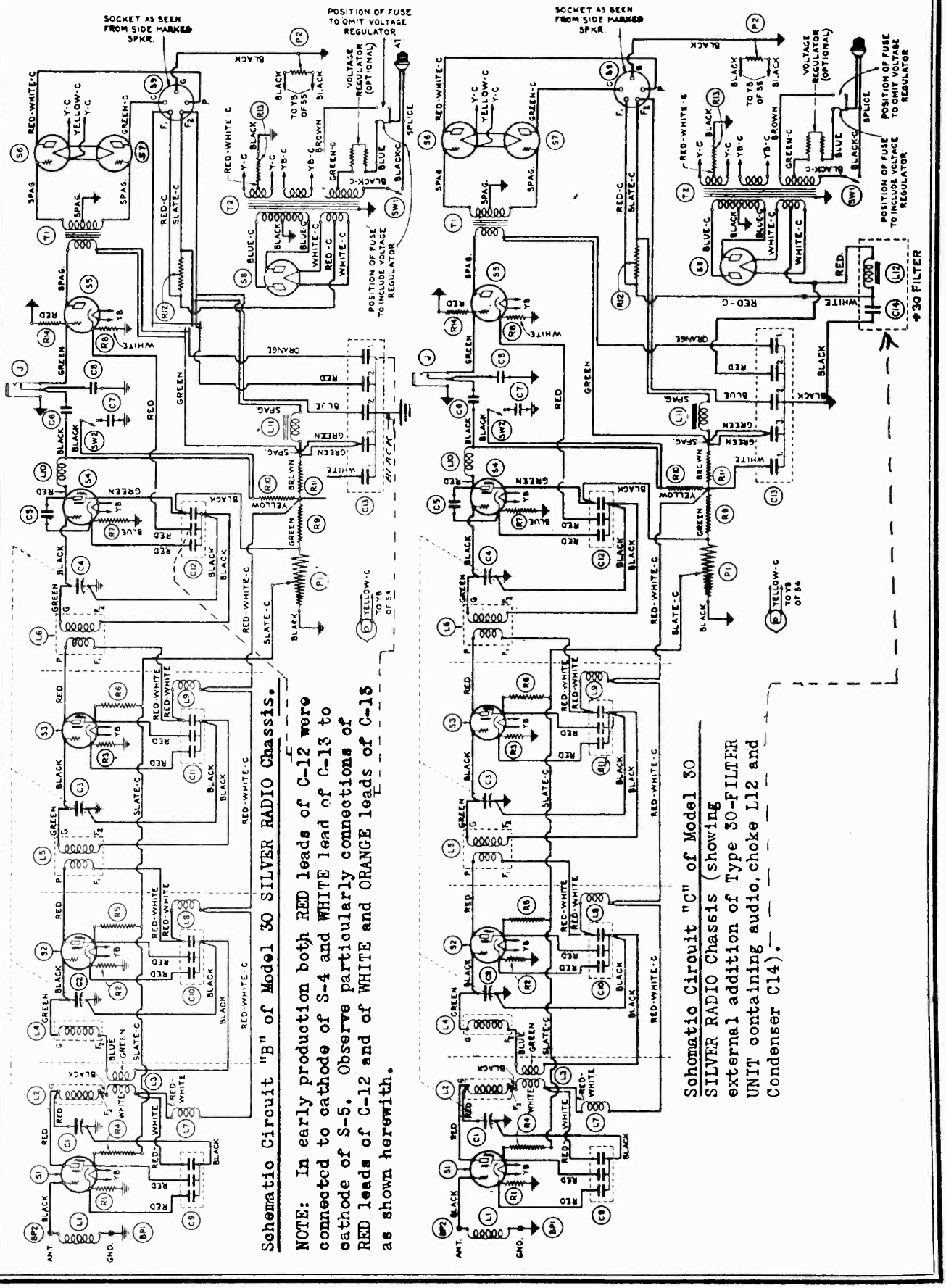
TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST. R.F. DET. ETC	READINGS, PLUG IN SOCKET OF SET									
			TUBE OUT		TUBE IN TESTER							
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS (CONTROL GRID)	CATHODE TO HEATER VOLTS	NORMAL PLATE M A.	PLATE M A GRID TEST	PLATE CHANGE M A.	SCREEN GRID VOLTS
1	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



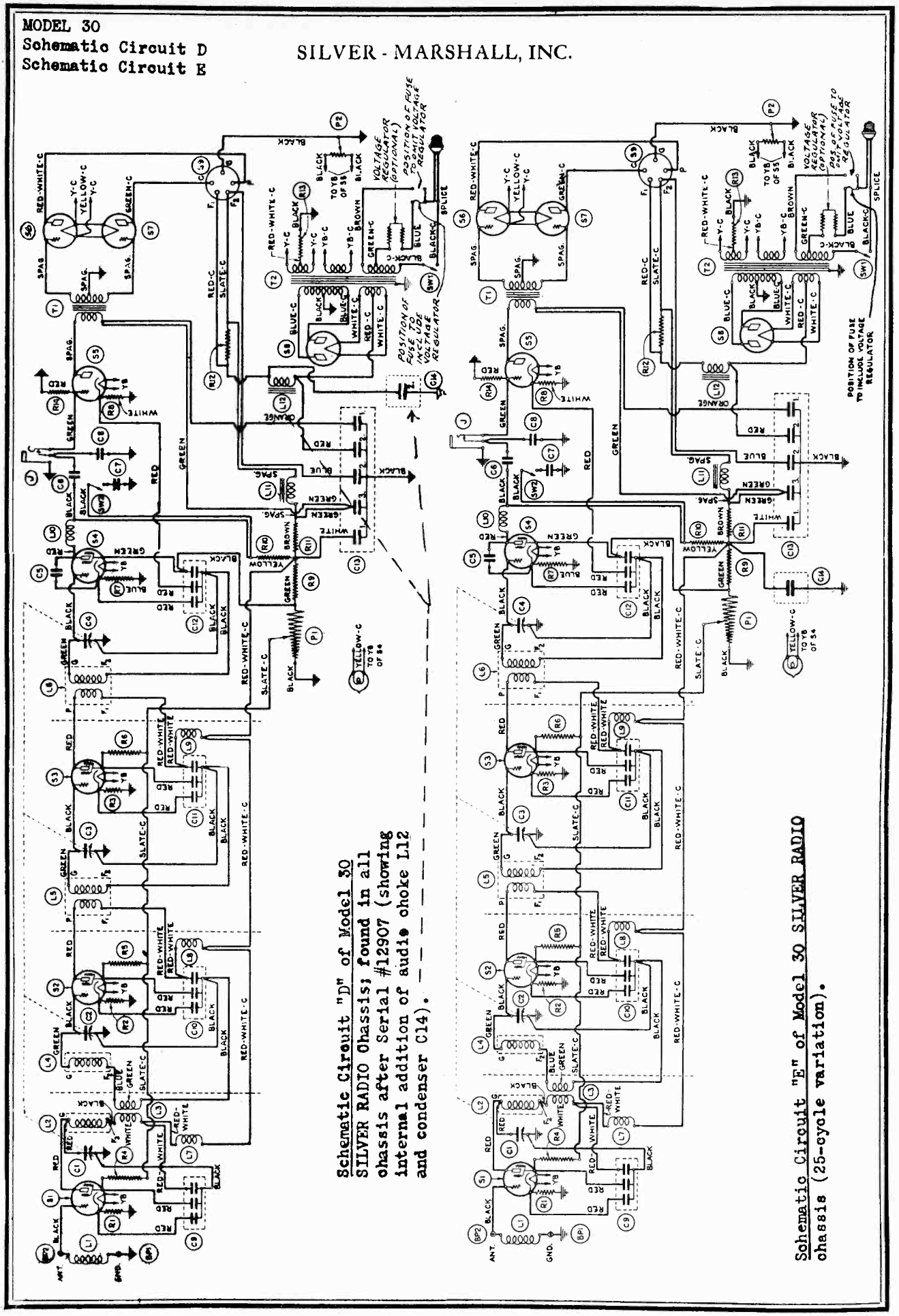
Schematic Circuit "B" of Model 30 SILVER RADIO Chassis.

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).

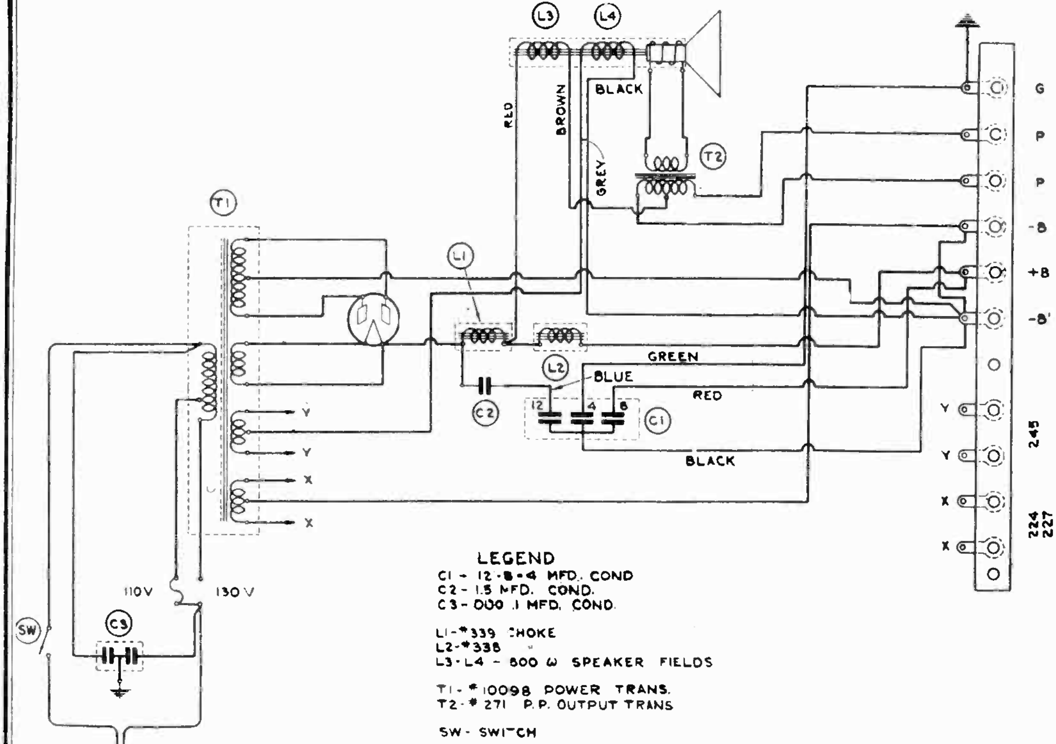
MODEL 30
Schematic Circuit D
Schematic Circuit E

SILVER - MARSHALL, INC.



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

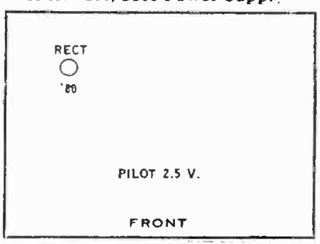
110 V - 25 OR 40 ~ A.C.

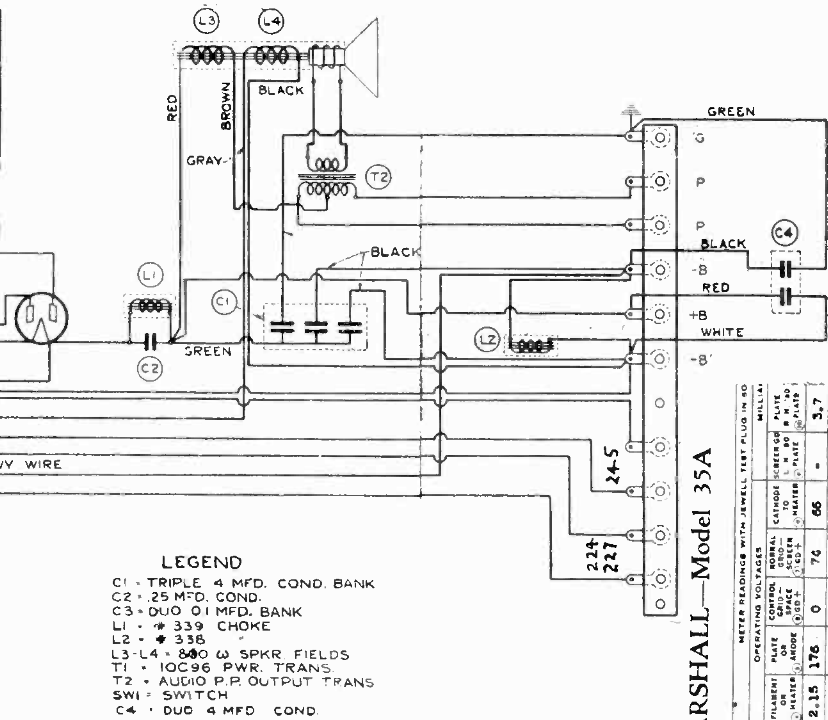
Schematic Diagram of 33-A Power Supply (25 cycle) for SILVER MARSHALL Radio for 34A and 35A receivers

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 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 90 PLATE (9)	PLATE B H 90 PLATE (10)	TUBE TEST (11)	PLATE CURRENT CHANGE (12)
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 .01 MFD. BANK
L1 - # 339 CHOKE
L2 - # 338 "
L3-L4 - 800 ω SPKR FIELDS
T1 - 10C96 PWR. TRANS.
T2 - AUDIO P.P. OUTPUT TRANS
SW1 - SWITCH
C4 - DUO 4 MFD COND.

LINE 50 TO 60 ~ A C

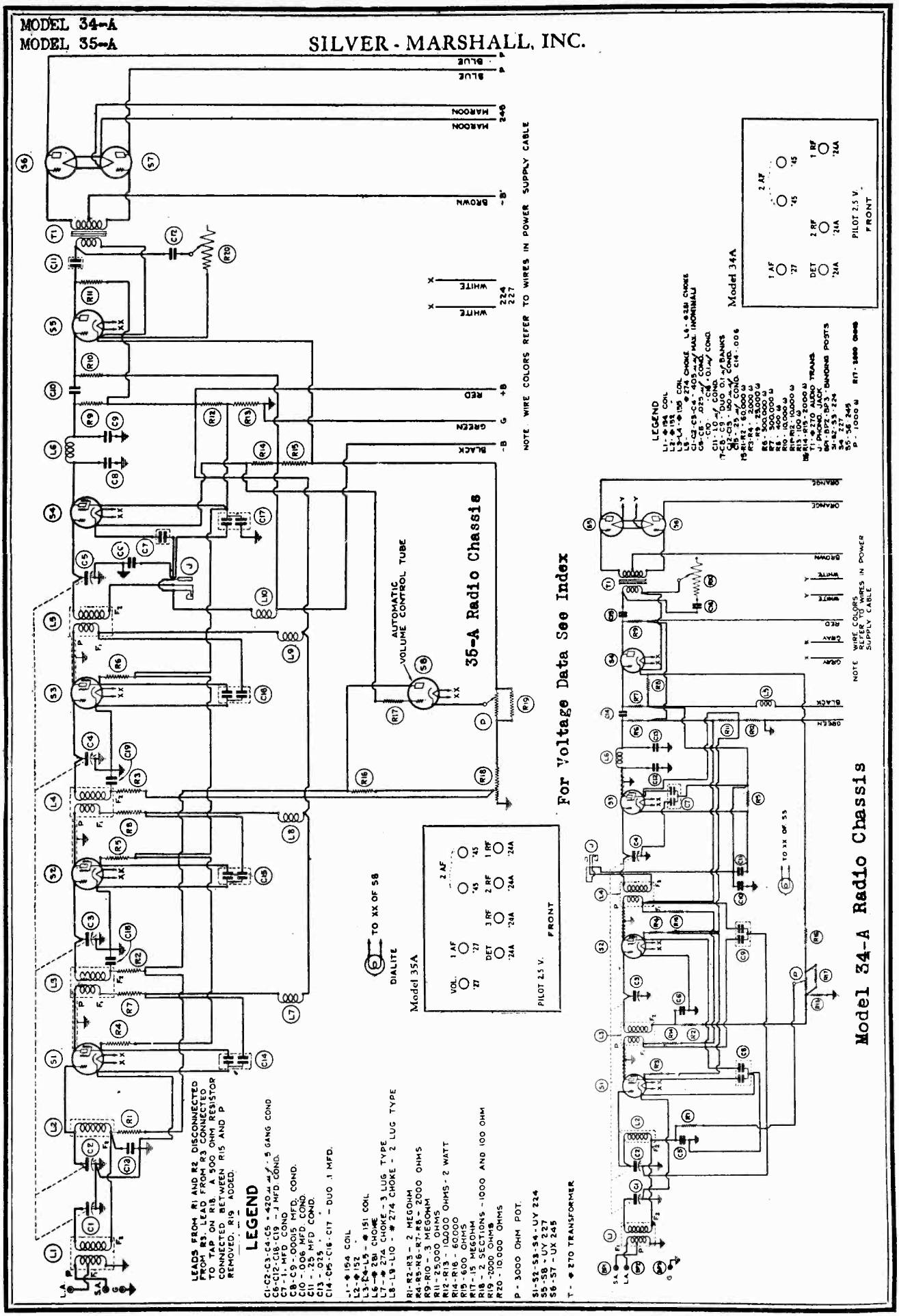
Schematic Diagram of 33-A Power Supply (60 cycle) for SILVER MARSHALL Radio for 34A and 35A receivers.

SILVER-MARSHALL—Model 35A

TUBE NO IN ORDER TESTED (1)	TYPE OF TUBE (2)	POSITION OF TUBE IN SET (3)	METER READINGS WITH JEWELL TEST PLUG IN SO — OPERATING VOLTAGES: FILAMENT OR HEATER (4)	PLATE OR ANODE (5)	CONTROL GRID-SPACE (6) GD+	NORMAL GRID-SCREEN (7) GD+	CATHODE TO HEATER (8)	MILLIA: SCREEN GD L H 90 PLATE (9)	PLATE B H 90 PLATE (10)
1	224	1 R. F.	2.15	176	0	74	66	-	3.7
2	224	2 R.F.	2.15	176	0	73	66	-	5.5
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

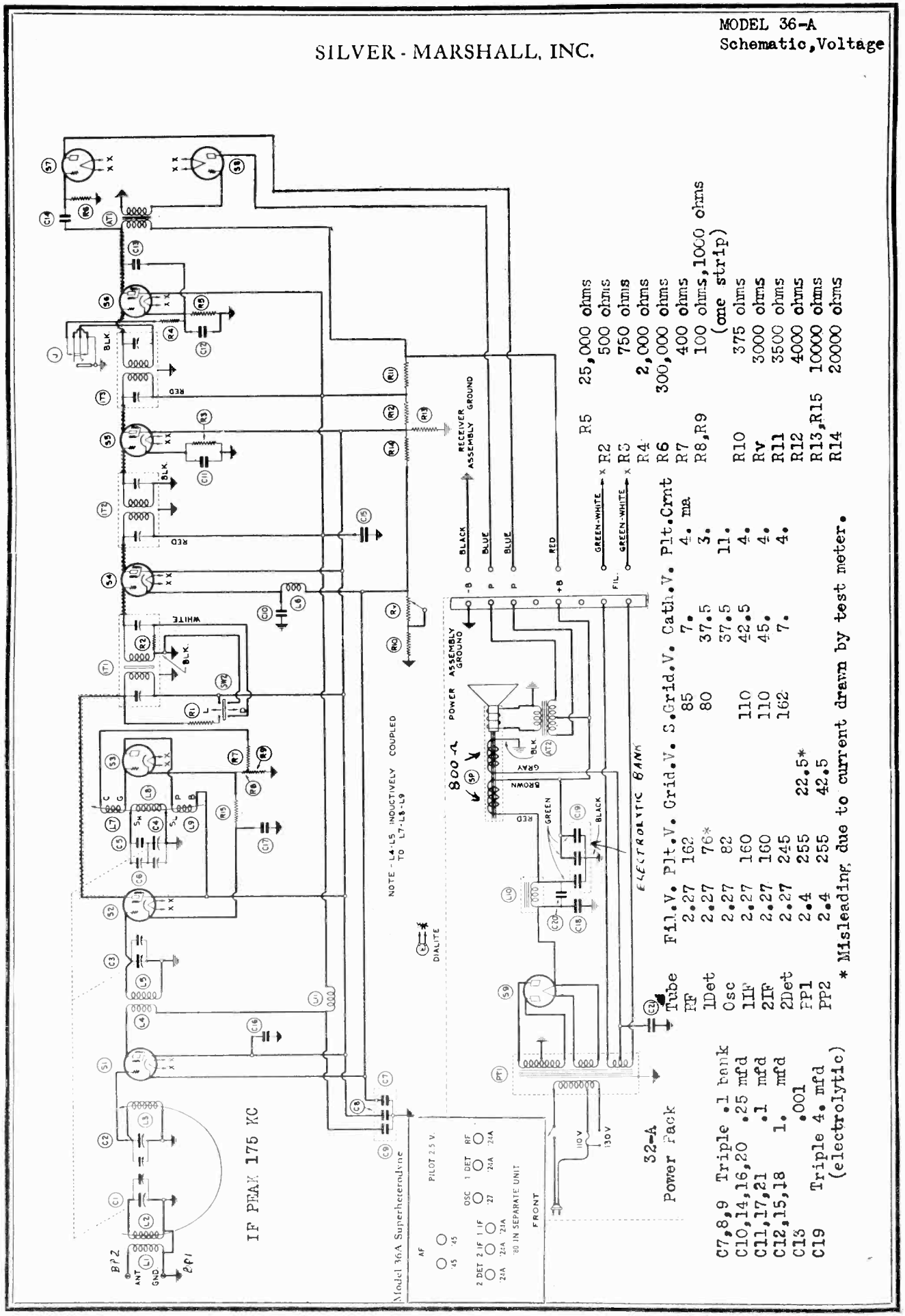
MODEL 34-A
MODEL 35-A

SILVER - MARSHALL, INC.



MODEL 36-A
Schematic, Voltage

SILVER - MARSHALL, INC.



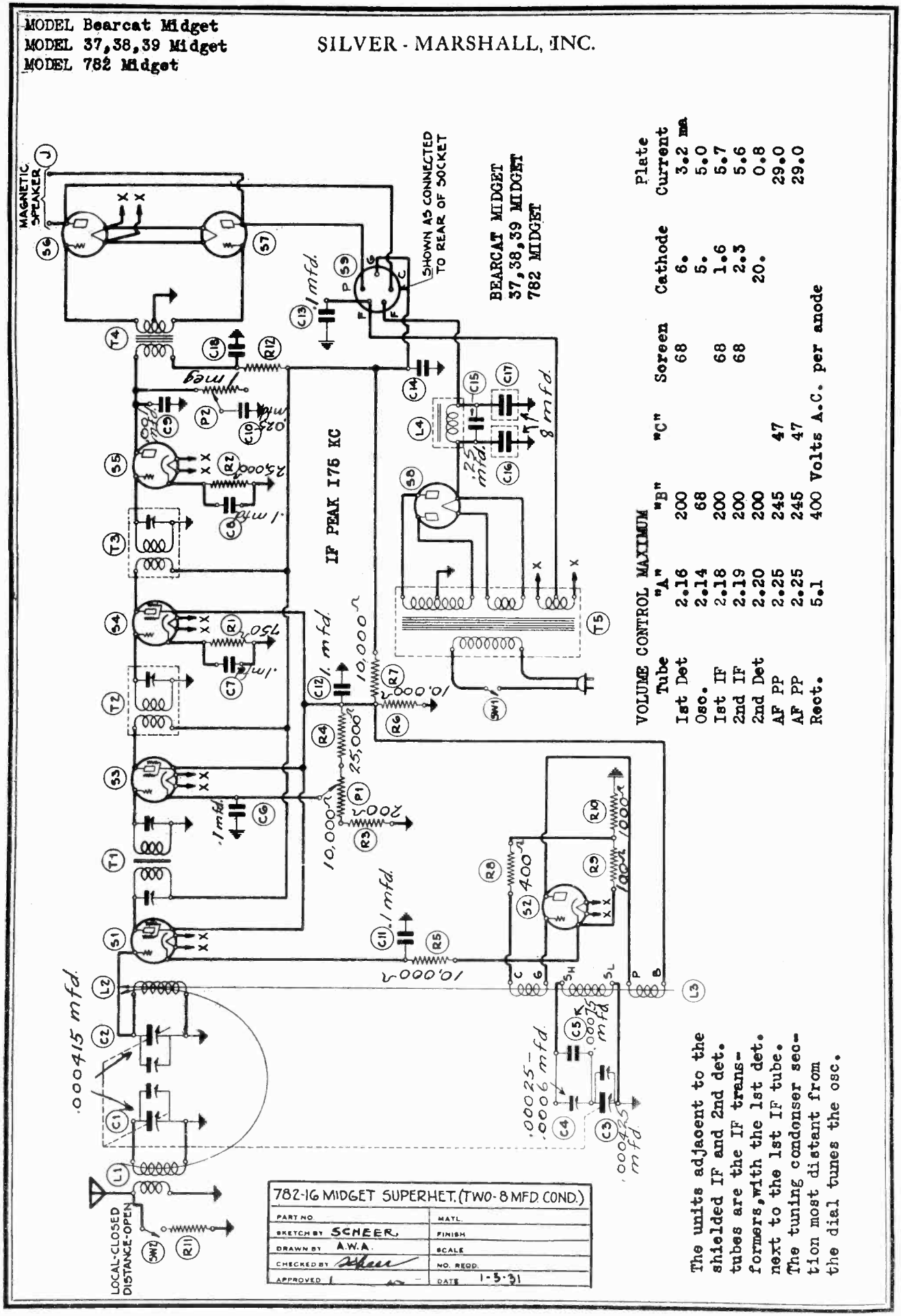
Tube	Fil.V.	Plt.V.	Grid.V.	S.Grid.V.	Cath.V.	Plt.Cmt
RF	2.27	162		85	7.	4. ma
1Det	2.27	76*		80	37.5	3.
Osc	2.27	82			37.5	11.
1IF	2.27	160		110	42.5	4.
2IF	2.27	160		110	45.	4.
2Det	2.27	245		162	7.	4.
PP1	2.4	255	22.5*			
PP2	2.4	255	42.5			

* Misleading due to current drawn by test meter.

C7,8,9	Triple .1 bank	R5	25,000 ohms
C10,14,16,20	.25 mfd	R2	500 ohms
C11,17,21	.1 mfd	R3	750 ohms
C12,15,18	1. mfd	R4	2,000 ohms
C13	.001	R6	300,000 ohms
C19	Triple 4. mfd (electrolytic)	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.



VOLUME CONTROL MAXIMUM

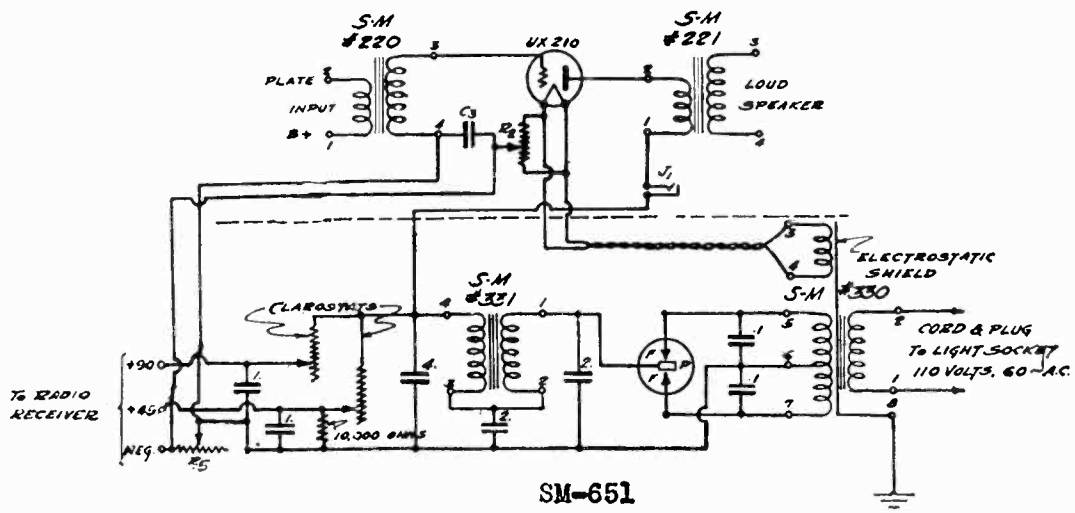
Tube	"A"	"B"	"C"	Screen	Cathode	Plate Current
1st Det	2.16	200		68	6.	3.2 ma
Osc.	2.14	68			5.	5.0
1st IF	2.18	200		68	1.6	5.7
2nd IF	2.19	200		68	2.3	5.6
2nd Det	2.20	200			20.	0.8
AF PP	2.25	245	47			29.0
AF PP	2.25	245	47			29.0
Rect.	5.1	400 Volts A.C. per anode				

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.

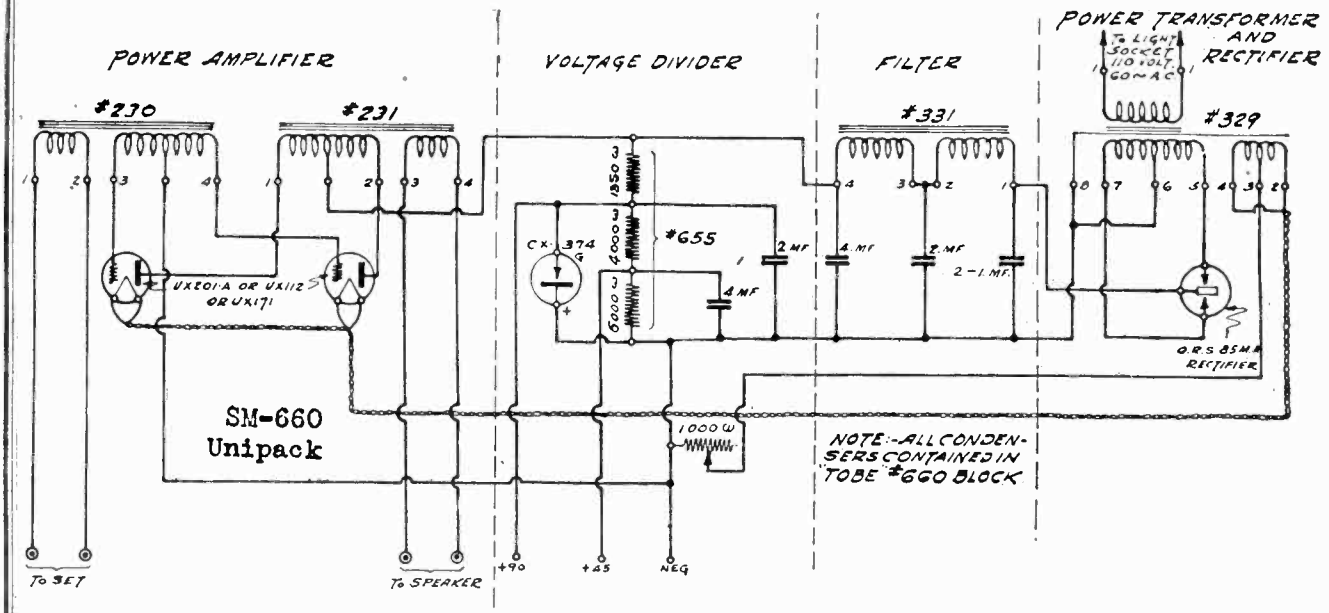
782-16 MIDGET SUPERHET. (TWO-8 MFD. COND.)	
PART NO.	MATL.
SKETCH BY SCHEER	FINISH
DRAWN BY A.W.A.	SCALE
CHECKED BY	NO. REQD.
APPROVED	DATE 1-3-31

MODEL 651
MODEL 660 Unipack
MODEL 660-B

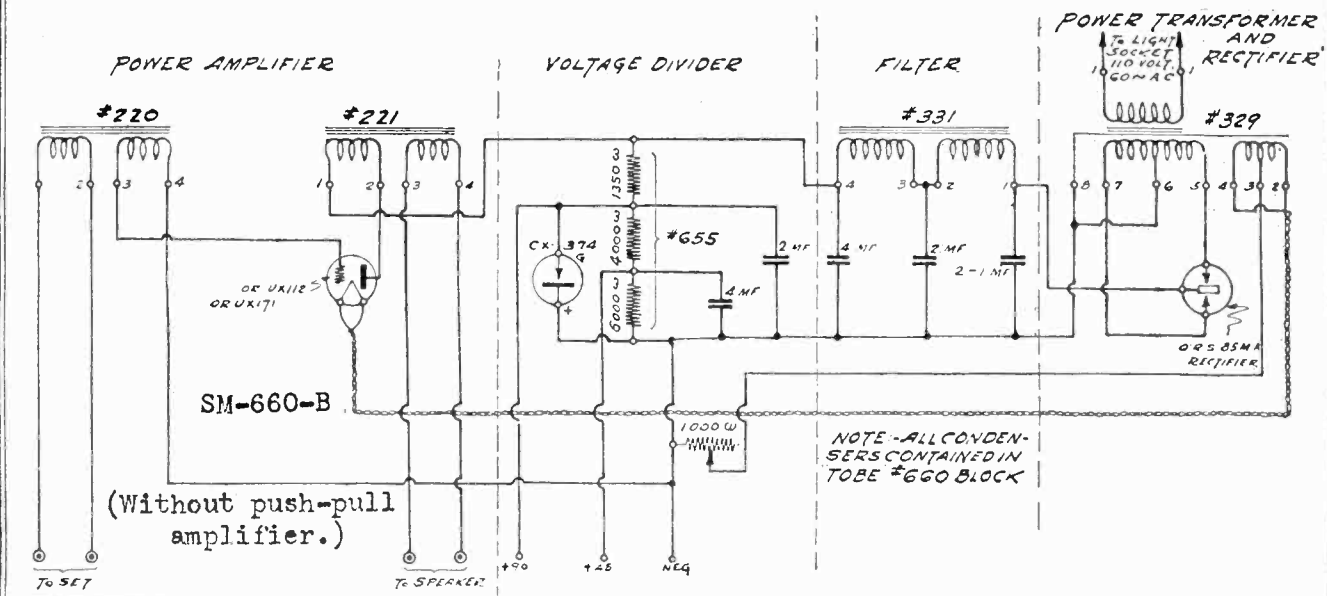
SILVER - MARSHALL, INC.



SM-651



SM-660
Unipack

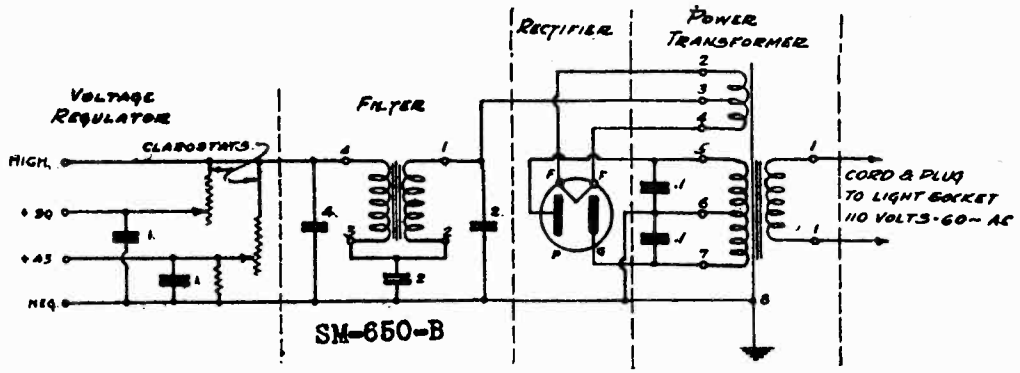


SM-660-B

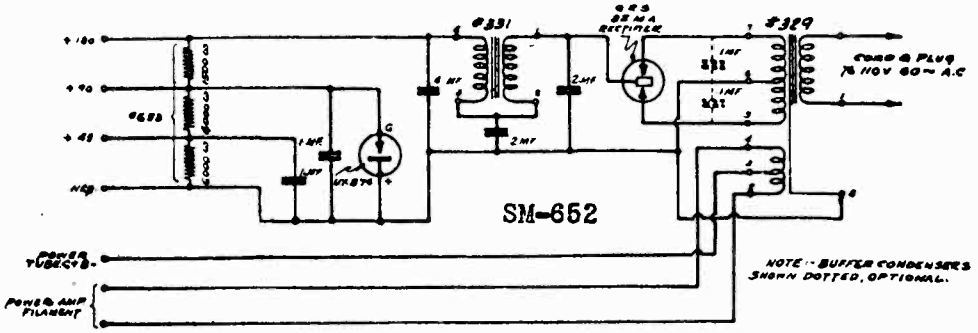
(Without push-pull amplifier.)

MODEL 650-B
MODEL 652
MODEL 669

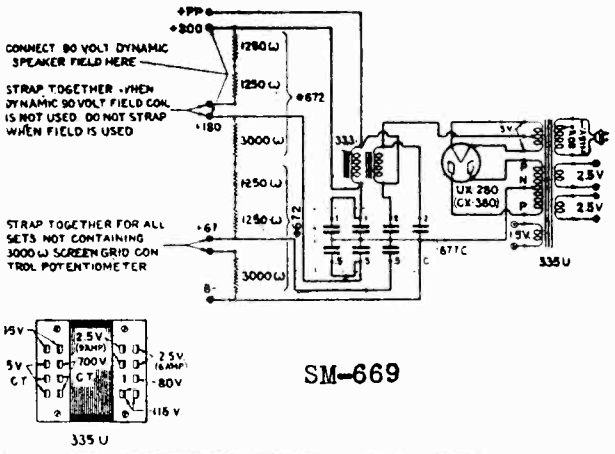
SILVER - MARSHALL, INC.



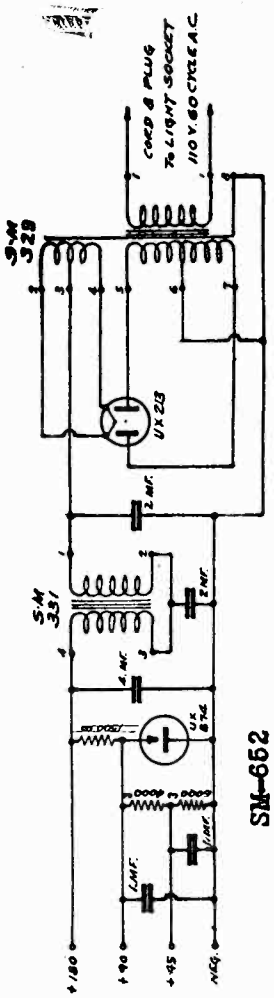
SM-650-B



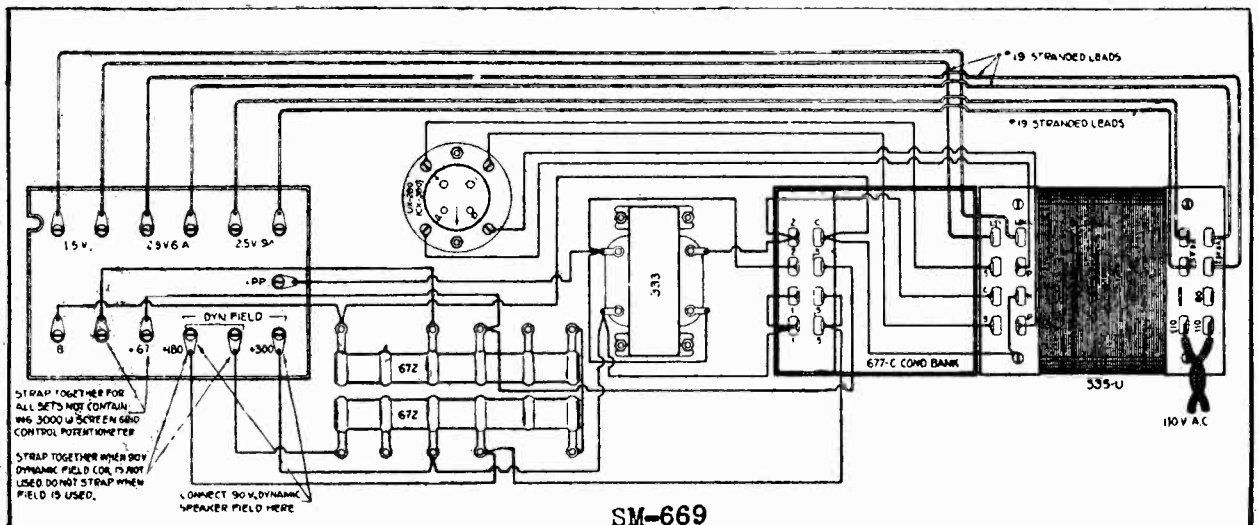
SM-652



SM-669



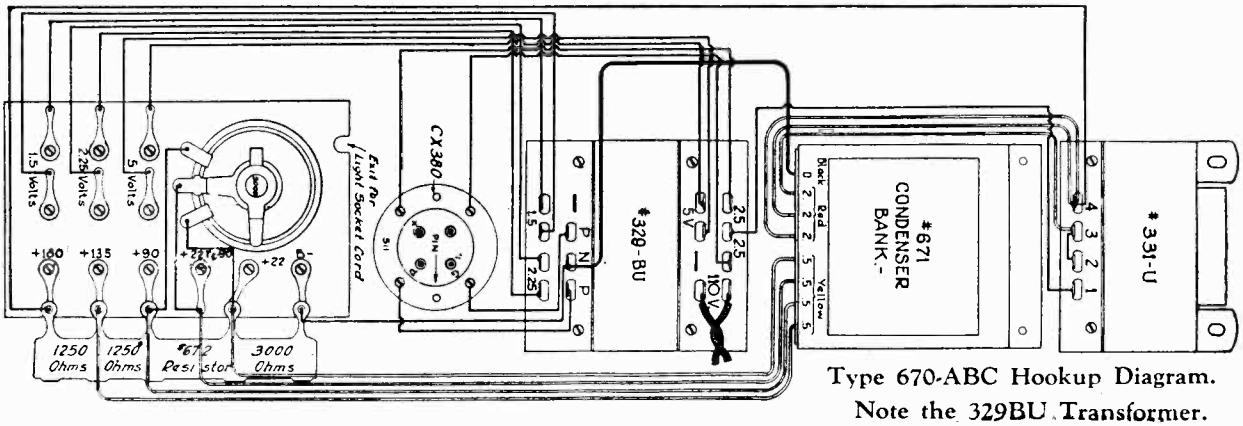
SM-652



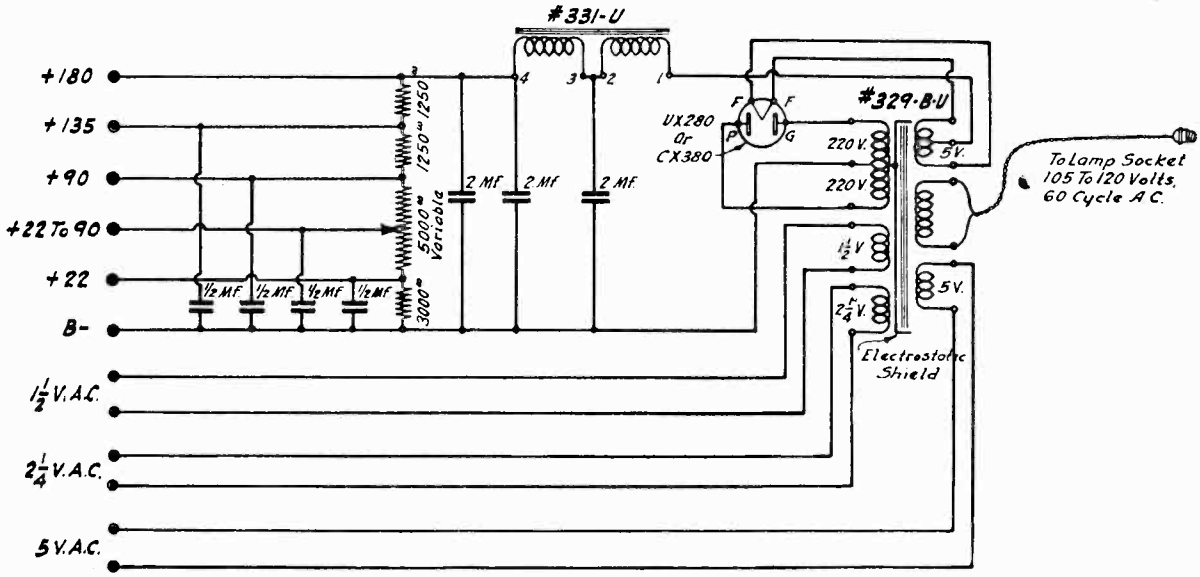
SM-669

SILVER - MARSHALL, INC.

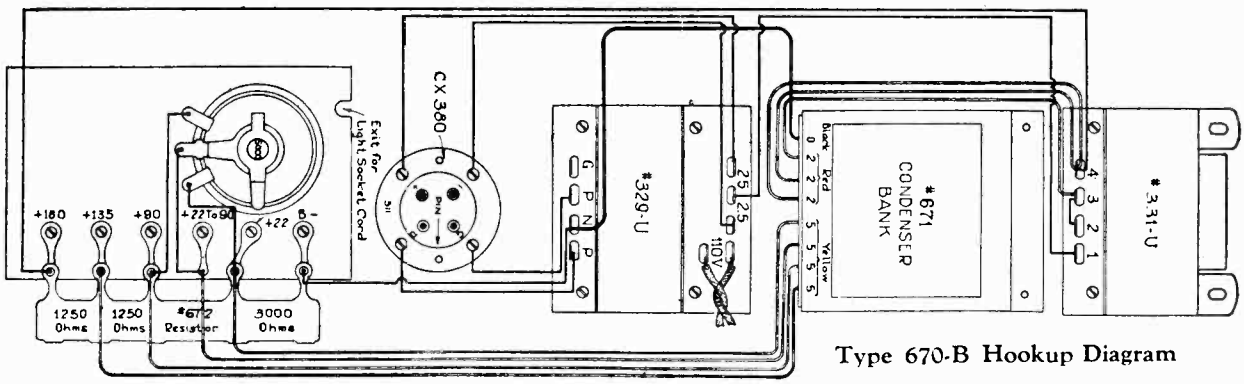
MODEL 670-ABC
MODEL 670-B
Schematic, Chassis



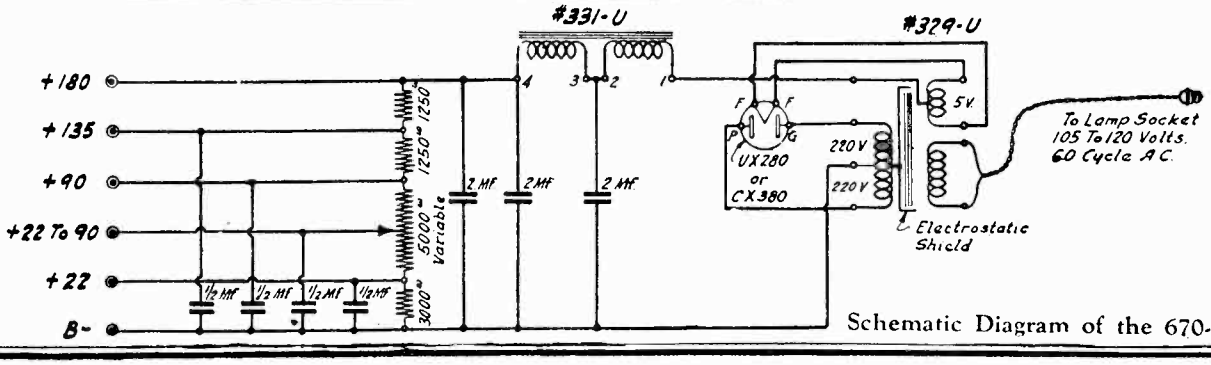
Type 670-ABC Hookup Diagram.
Note the 329BU Transformer.



Schematic Diagram of the 670-ABC



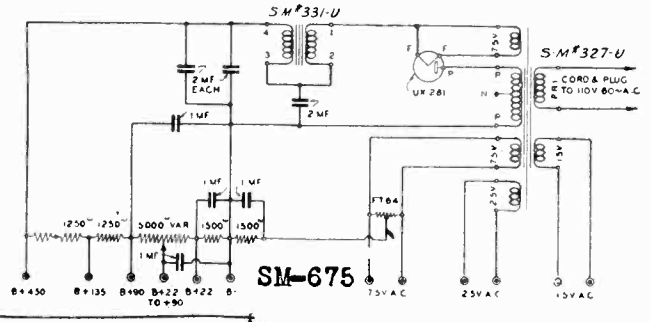
Type 670-B Hookup Diagram

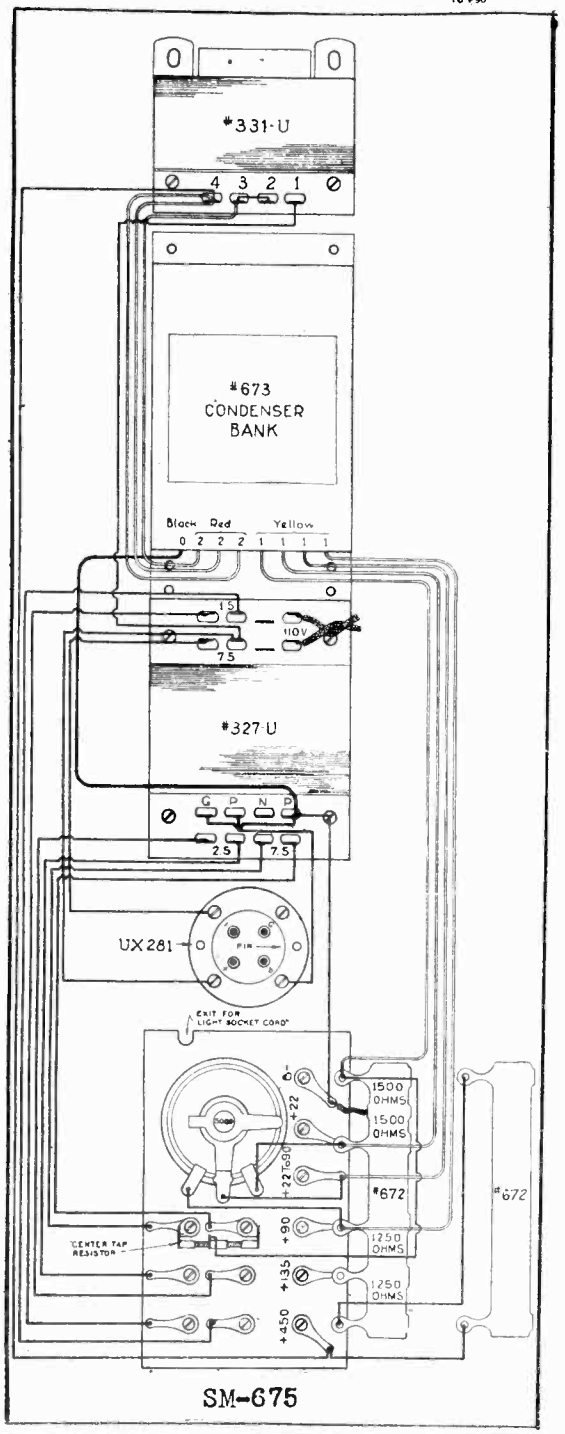


Schematic Diagram of the 670-B

MODEL 675
Schematic
Chassis, Voltage

SILVER - MARSHALL, INC.



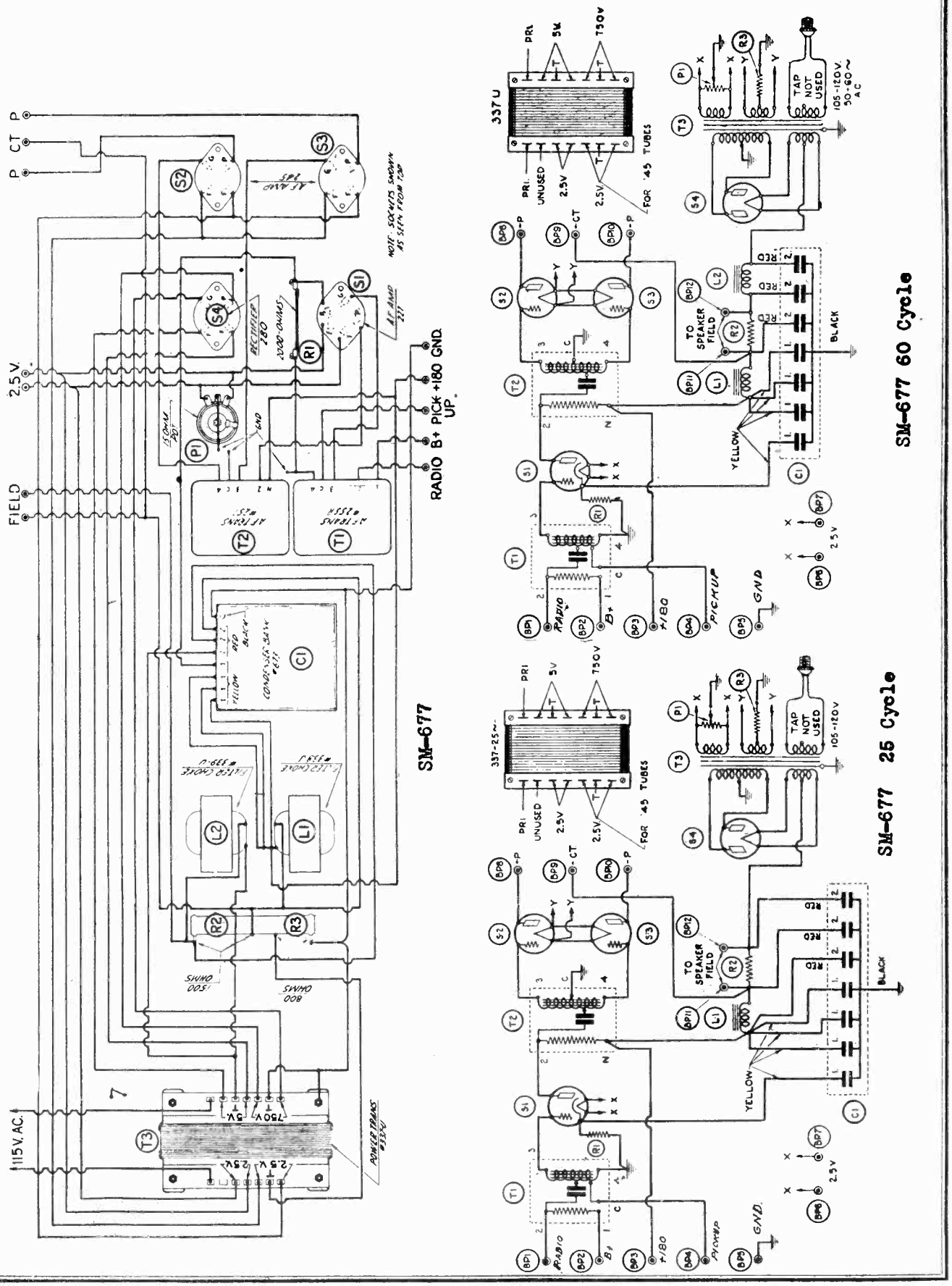


Type No.	Code Word	Secondary		Rectifier Tube	Filament Windings						Tubes (or Equivalent) Will Operate	Size, Inches			Shpg. Wt., Lbs.	List Price
		Total Volts	M. A.		First		Second		Third			High	Wide	Long		
					Volts	Amperes	Volts	Amperes	Volts	Amperes						
328BU	Transall	1100	150	2—'81	7½	2.5	2½	2	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	4⅞	4⅞	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	4⅞	3⅛	3⅜	5	10.00
285	Transmor	338	40	1—'26	2½	3½	...	...	...	...	2—'27 or '24	3¼	2⅝	2⅜	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.

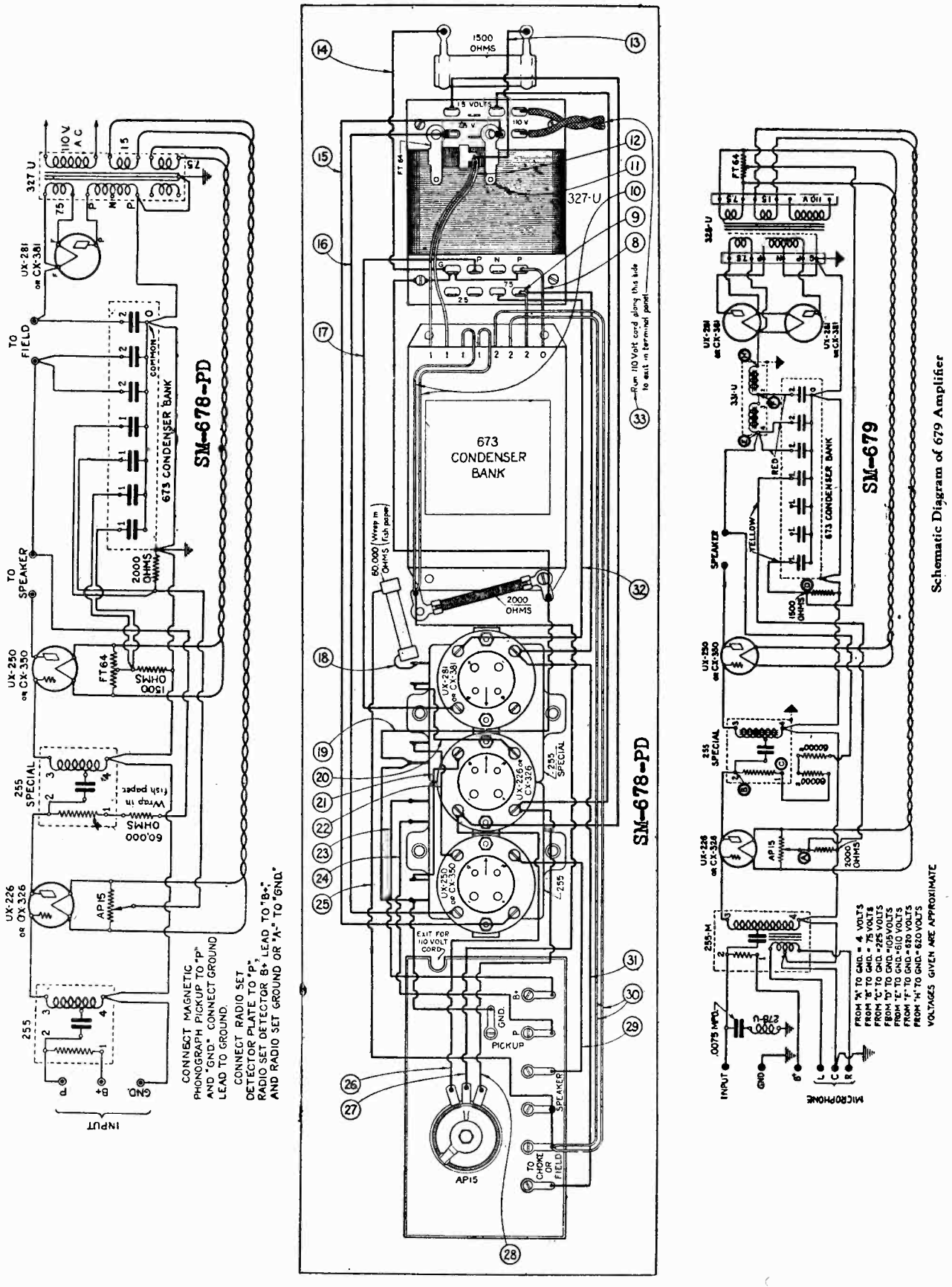
MODEL 677
25 and 60 cycles
Schematic, Chassis

SILVER - MARSHALL, INC.



SILVER - MARSHALL, INC.

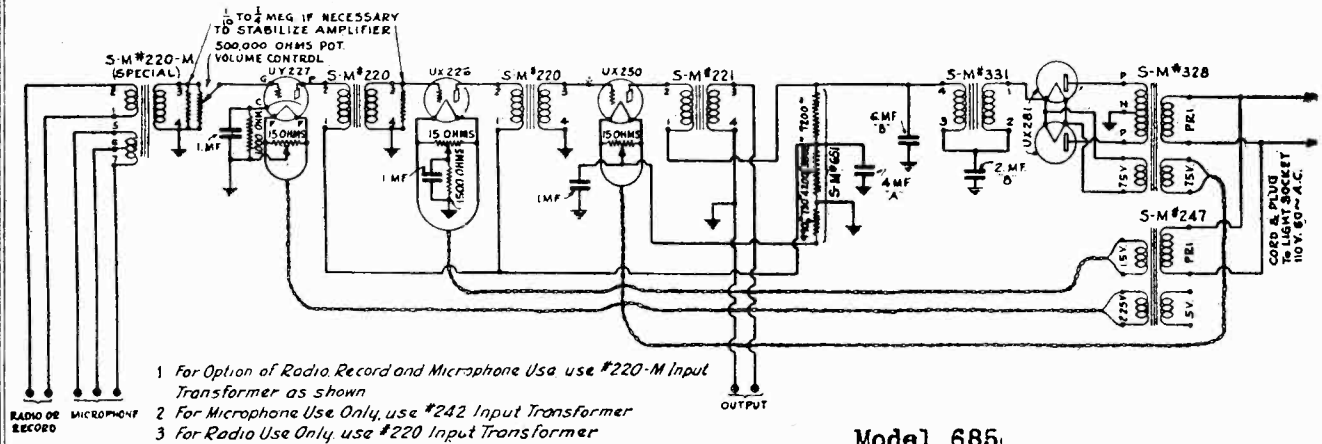
MODEL 678-PD
Schematic, Chassis
MODEL 679



Schematic Diagram of 679 Amplifier

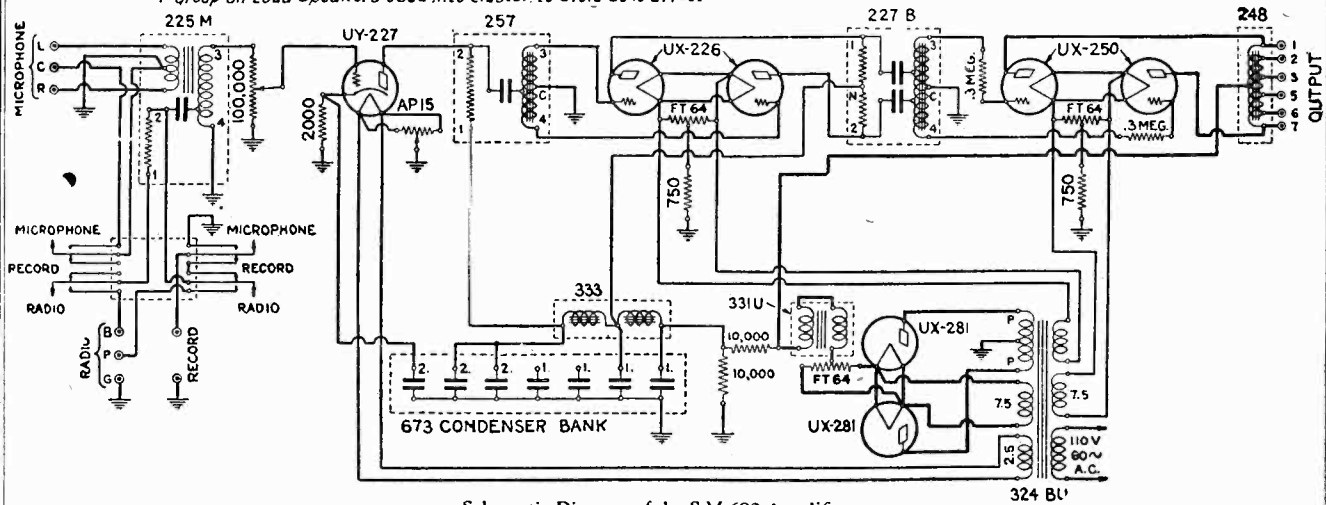
SILVER - MARSHALL, INC.

MODEL 685
MODEL 690
MODEL 692

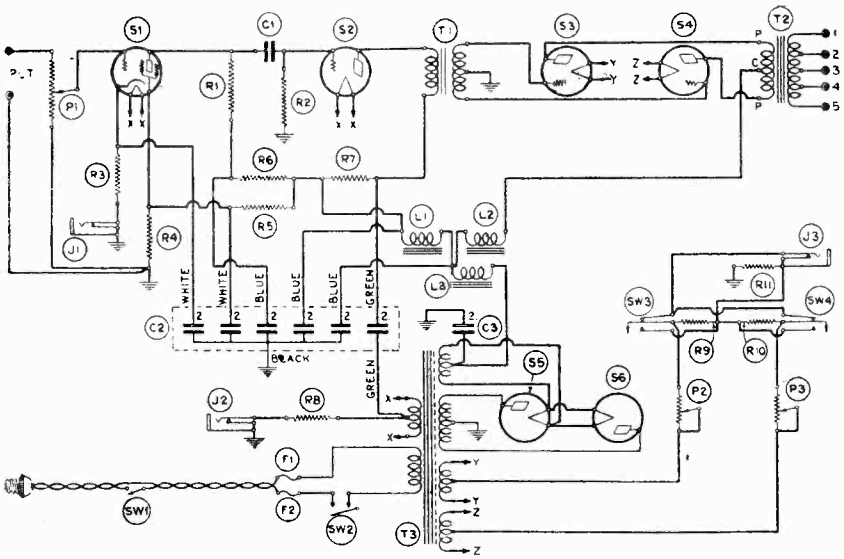


1 For Option of Radio, Record and Microphone Use use #220-M Input Transformer as shown
2 For Microphone Use Only, use #242 Input Transformer
3 For Radio Use Only, use #220 Input Transformer
4 For Record-Pickup Use Only, Omit Input Transformer and Connect Record-Pickup in place of Input Transformer Secondary 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 4½ 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



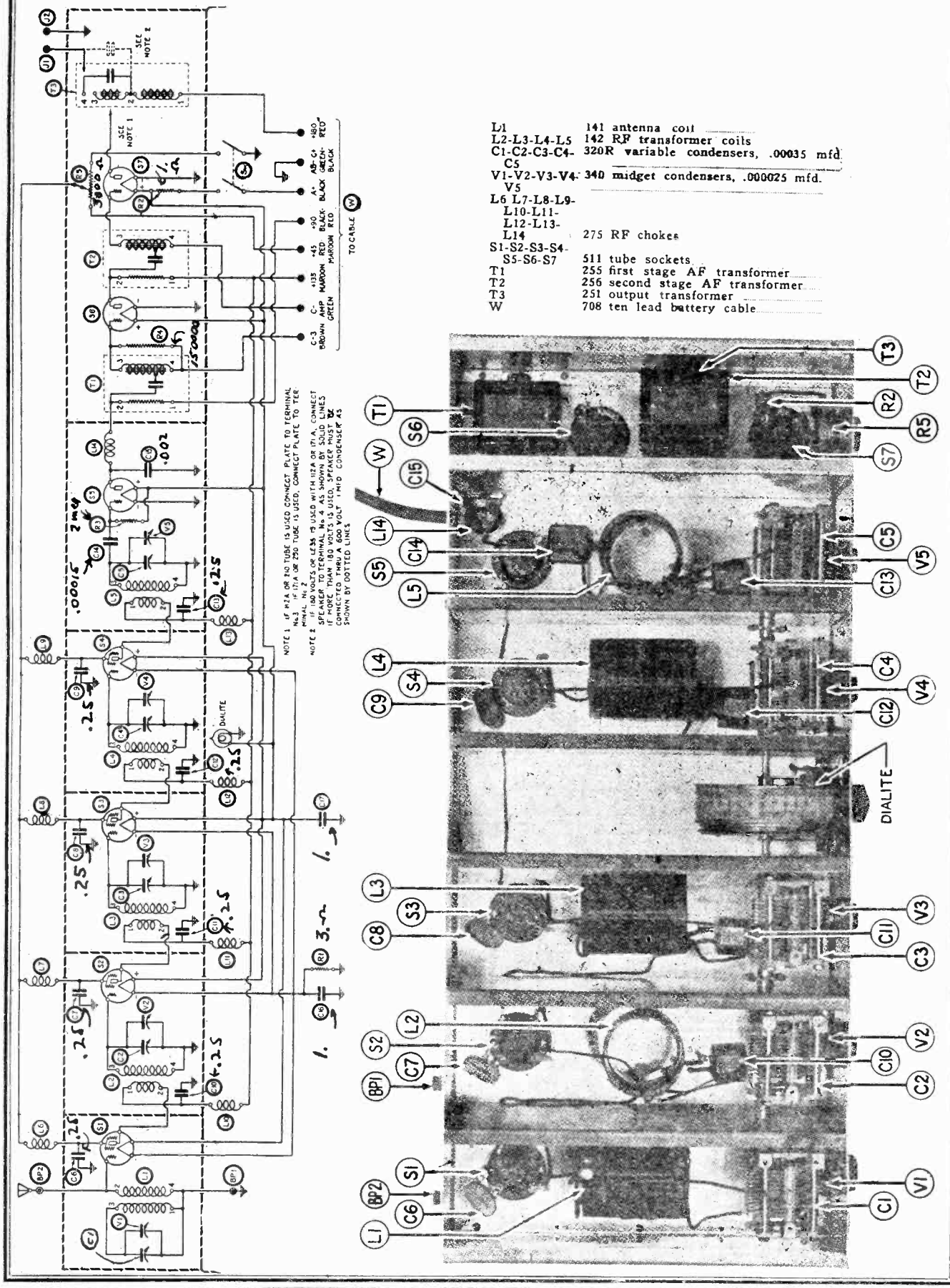
Model 692

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

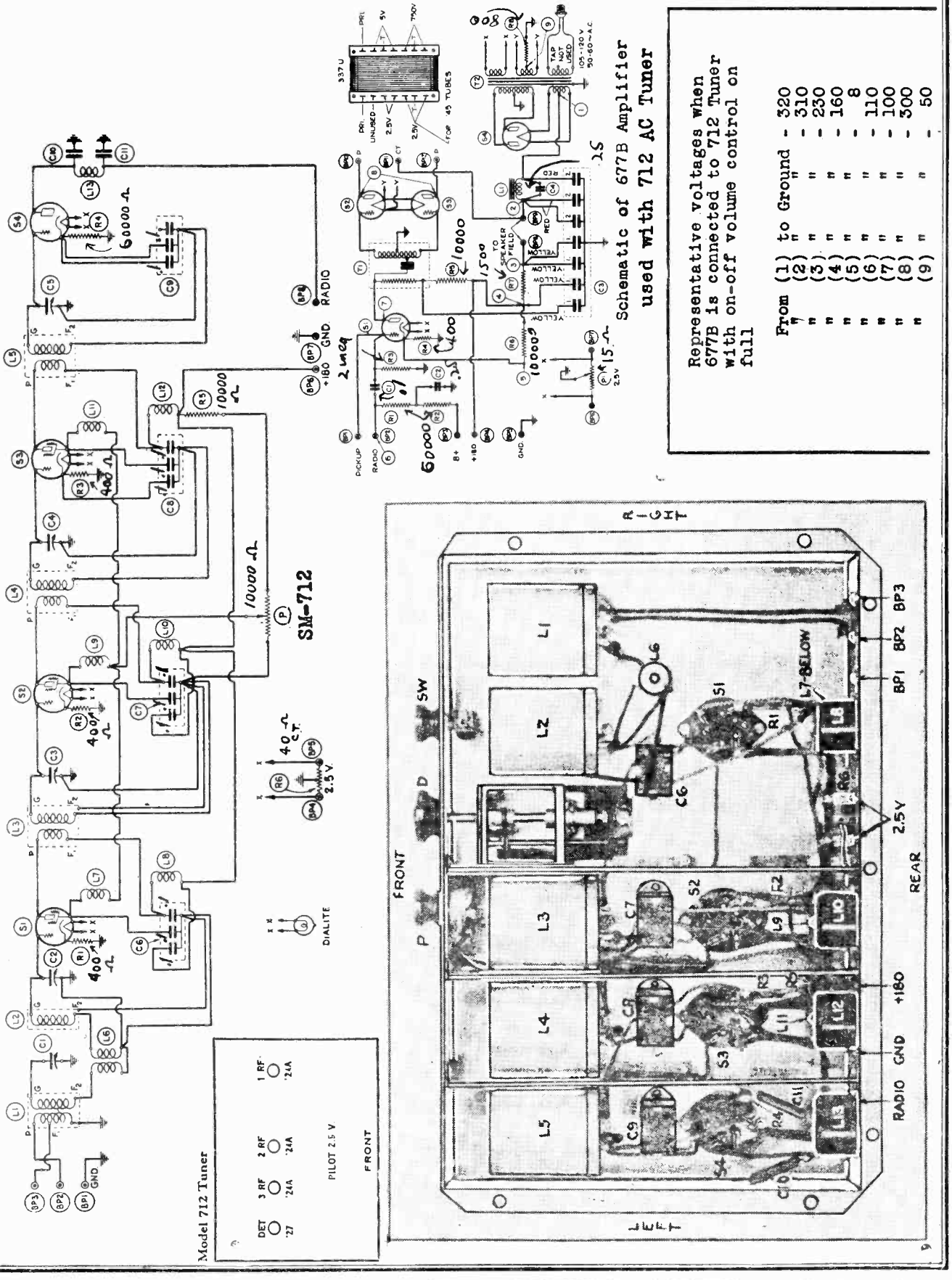
SILVER - MARSHALL, INC.

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



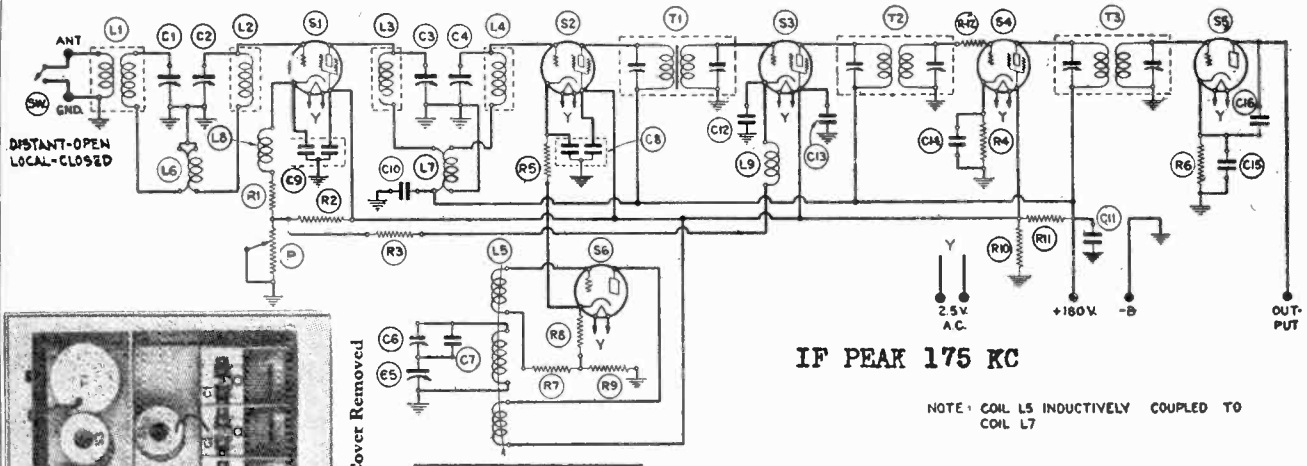
SILVER - MARSHALL, INC.

MODEL 712
Schematic
Chassis
MODEL 677-B



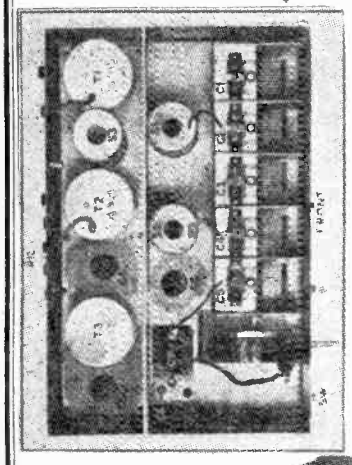
MODEL 714
Schematic
Chassis, Voltage

SILVER - MARSHALL, INC.

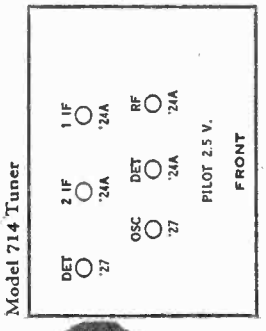


IF PEAK 175 KC

NOTE: COIL L5 INDUCTIVELY COUPLED TO COIL L7



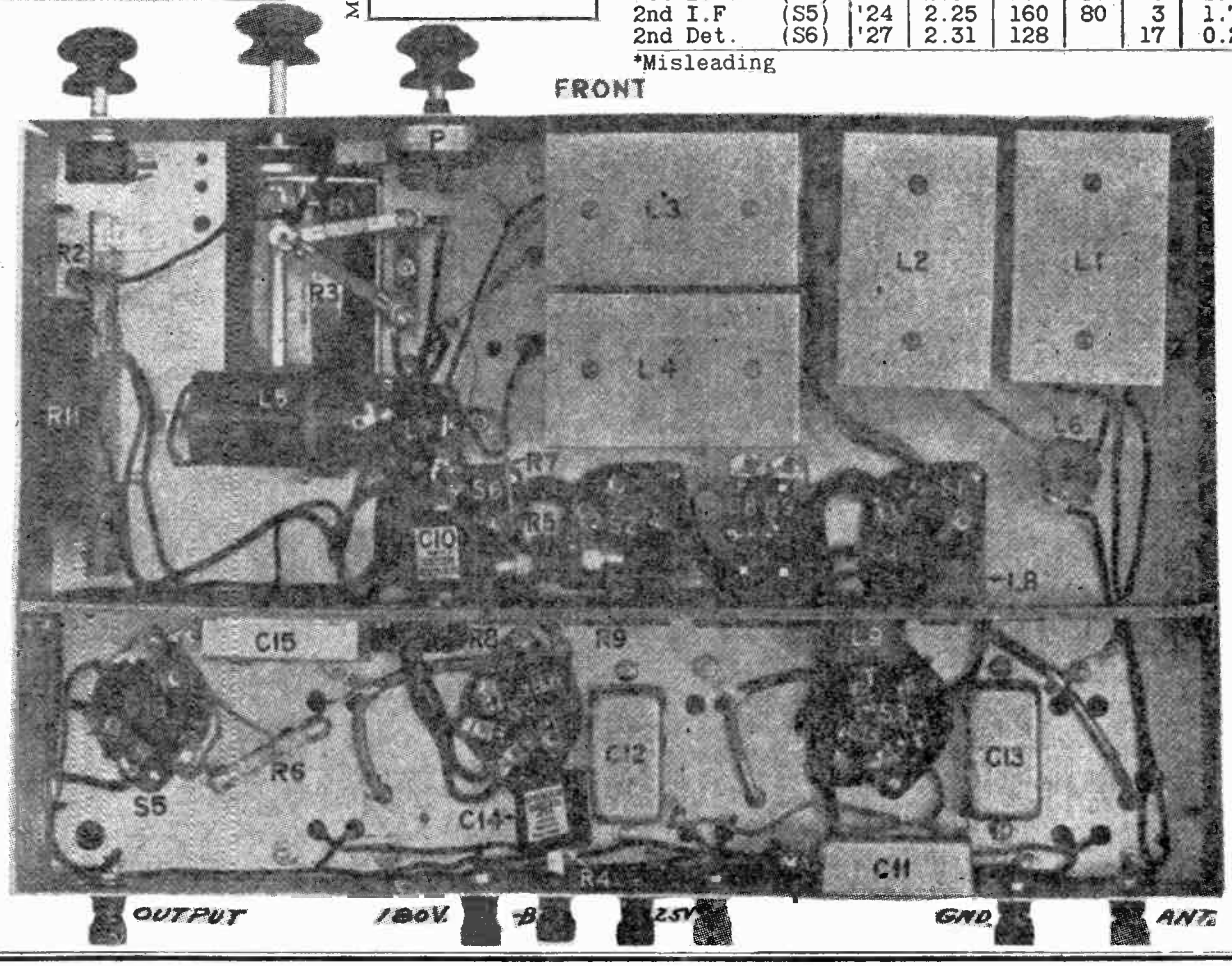
Top View of Tuner with Cover Removed



VOLTAGES WITH VOLUME CONTROL AT MAXIMUM

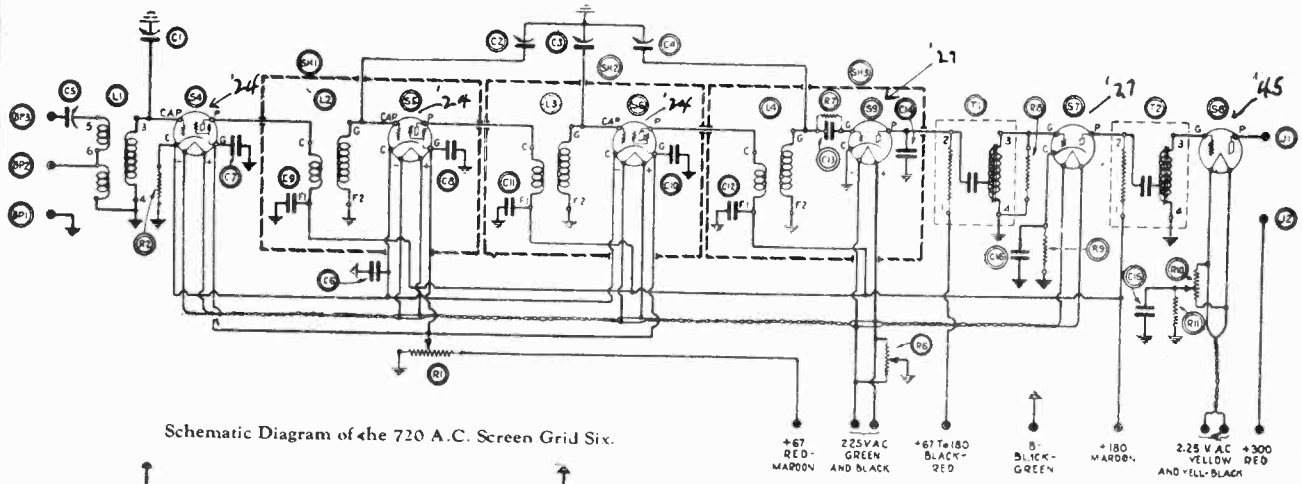
Tube Number		Type of Tube	"A" Volts	"B" Volts	Screen Volts	"C" Volts	Normal Plate Current MA
R.F	(S1)	'24	2.30	160	80	5	3.0
1st Det.	(S2)	'24	2.27	160	80	7	Note*
Oscillator	(S3)	'27	2.25	80		7	5.9
1st I.F.	(S4)	'24	2.31	160	80	5	1.4
2nd I.F	(S5)	'24	2.25	160	80	3	1.7
2nd Det.	(S6)	'27	2.31	128		17	0.2

*Misleading

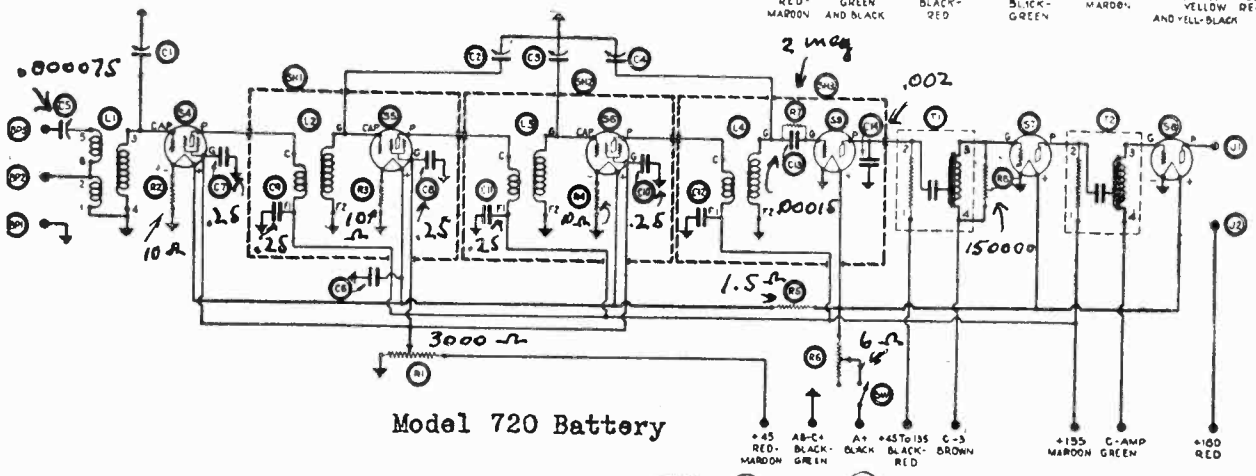


MODEL 720 AC
MODEL 720 Battery
Schematic, Chassis

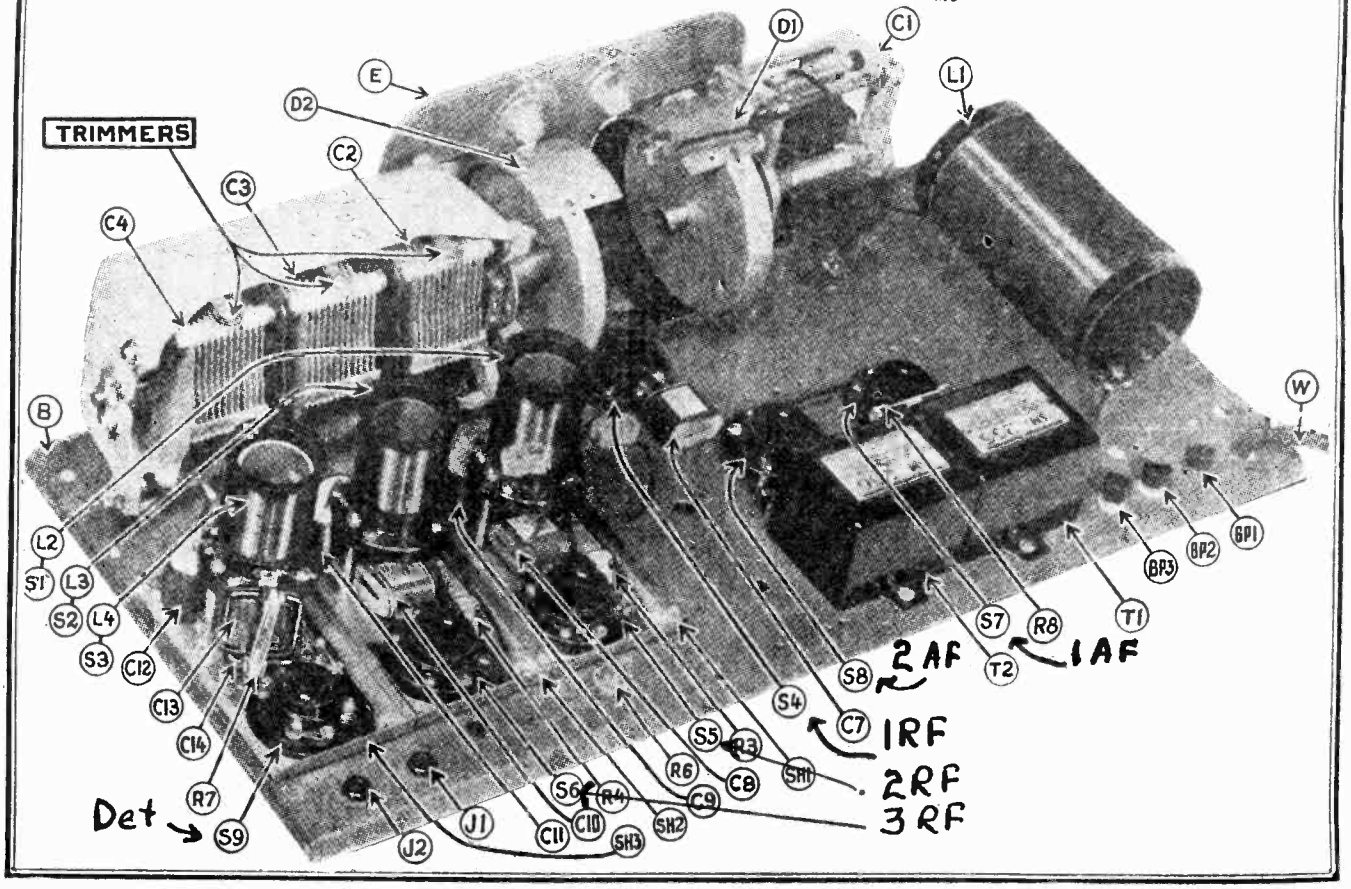
SILVER - MARSHALL, INC.



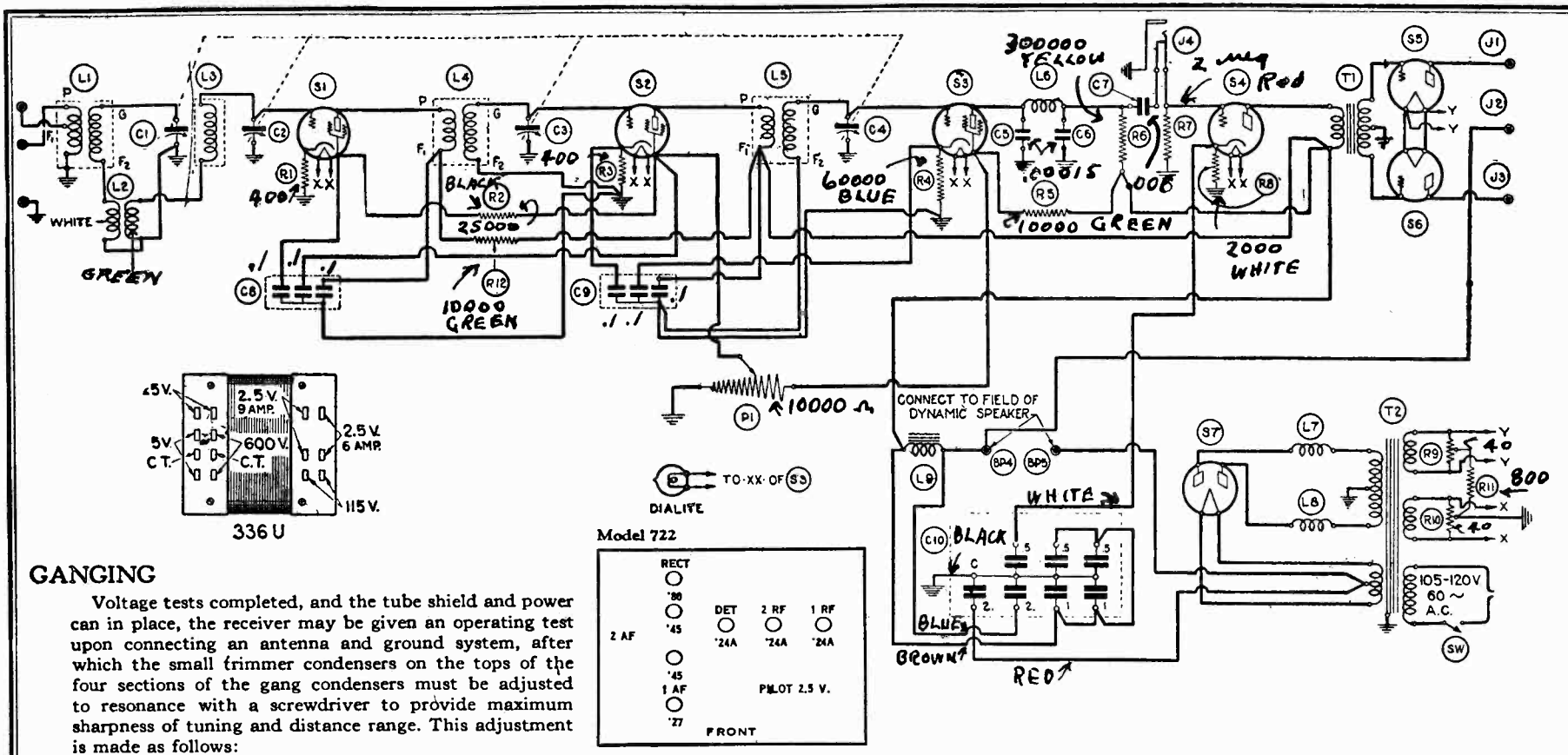
Schematic Diagram of the 720 A.C. Screen Grid Six.



Model 720 Battery



1RF
2RF
3RF



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:

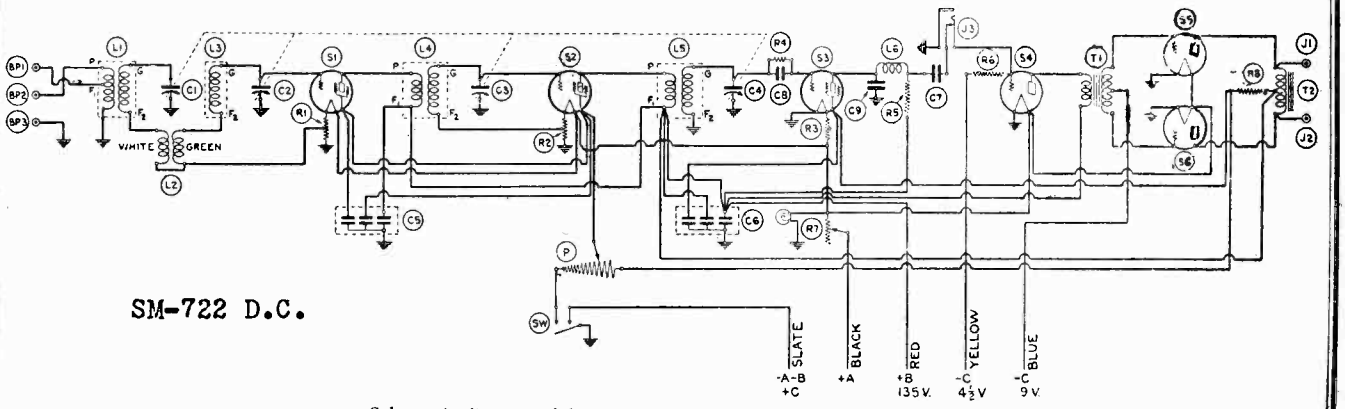
1. Unscrew trimmer condensers **C2, C3, C4** two full turns. The three holes in the cover of the tube shield SH should be directly over the trimmer screws.
2. Connect small antenna to binding post BP1 (or artificially shorten a long one in order to produce a rather weak signal when volume control is 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

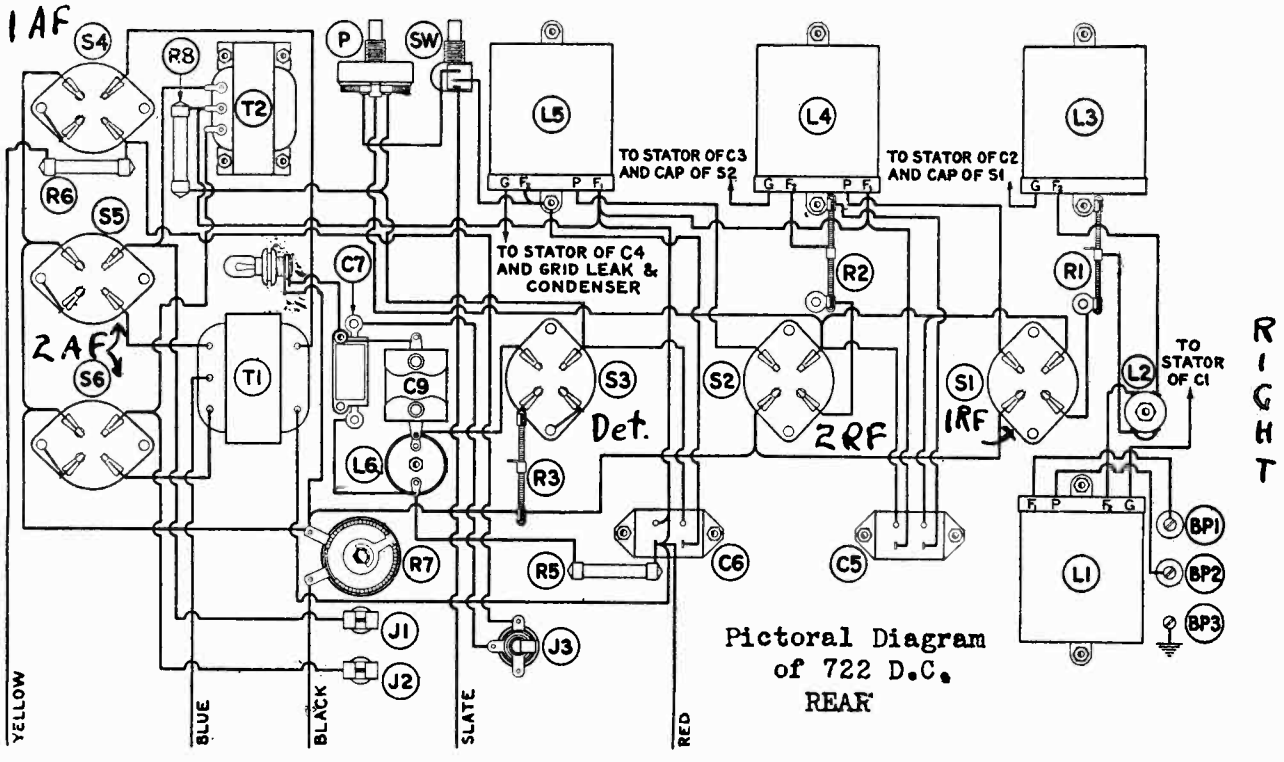
With rectifier tube only in socket; Voltage across F lugs of tubes S1 to S6 should be 2.45 volts. Across outside lug of P1 and across R5 should be 130 to 150 volts. Chassis -B to arm of P1 (fully right) should be 60 to 70 volts. Chassis to right rear of T1 should be 130,142,155 volts. Chassis to left 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.



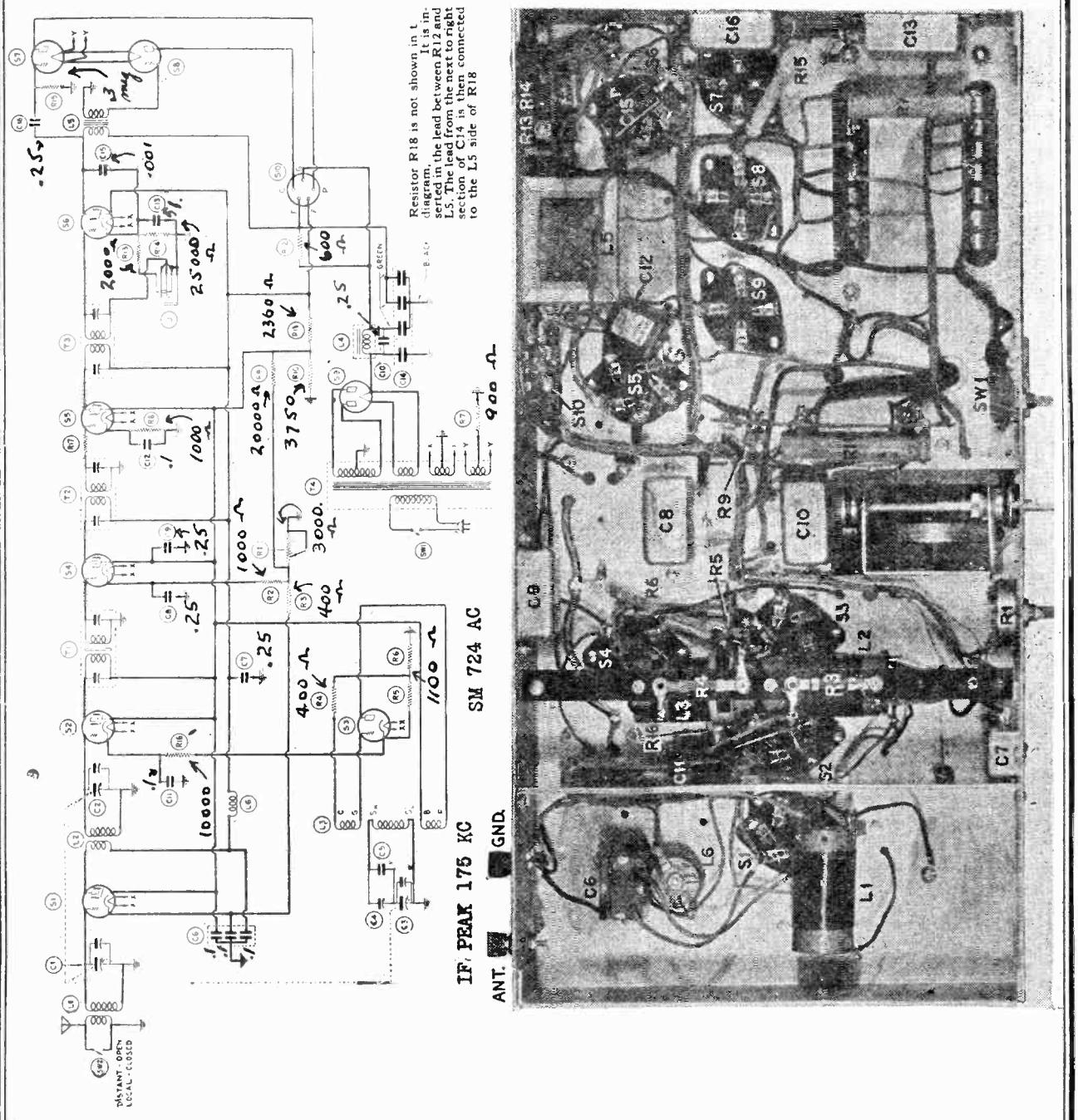
Schematic diagram of the 722DC, showing all parts keyed



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)
R4,6	2 megohm (one watt) Red		Orange
R5	60000 ohm(one watt) Blue		

SILVER - MARSHALL, INC.

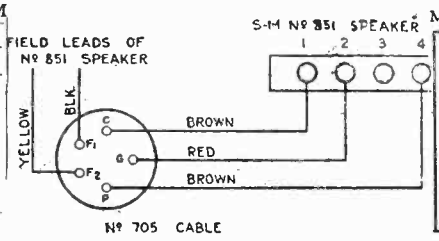
MODEL 724 AC
Schematic, Chassis
Voltage Data

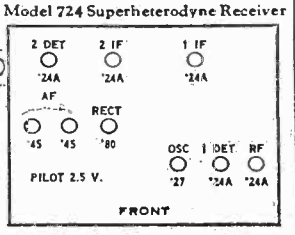


*VOLTAGES WITH VOLUME CONTROL AT MAXIMUM

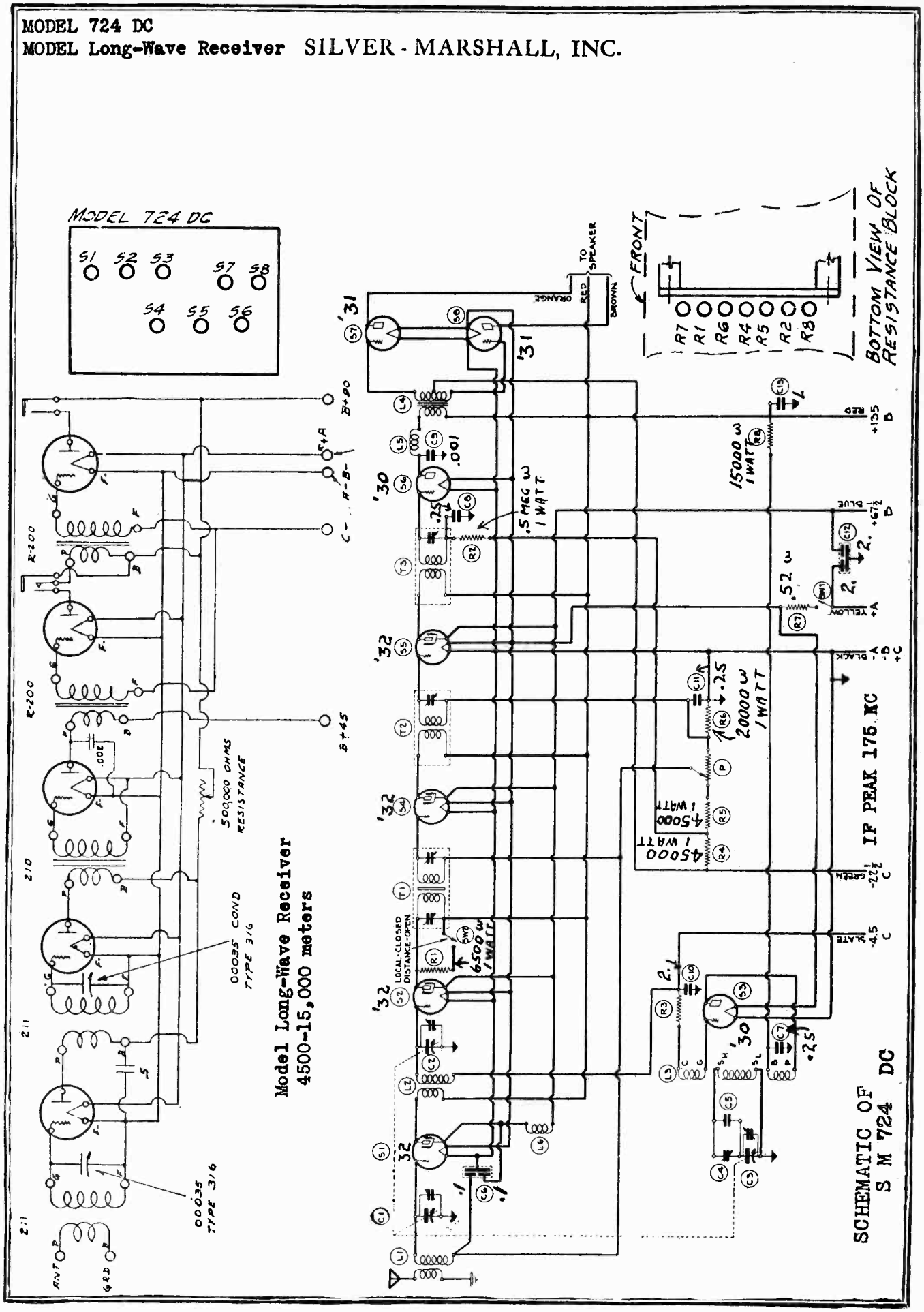
Tube Number		Type of Tube	"A" Volts	"B" Volts	Screen Volts	"C" Volts	Normal Plate Current MA
R.F.	(S1)	'24	2.15	168	84	1.3	2.5
1st Det.	(S2)	'24	2.16	75	84	9.5	.4
Oscillator	(S3)	'27	2.20	78	...	6.5	6.0
1st I. F.	(S4)	'24	2.17	165	82	2.8	1.8
2nd I.F.	(S5)	'24	2.22	164	83	3.0	2.5
2nd Det.	(S6)	'24	2.19	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.



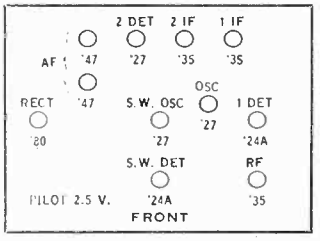
SILVER - MARSHALL, INC.

MODEL 726
Schematic
Voltage, Data

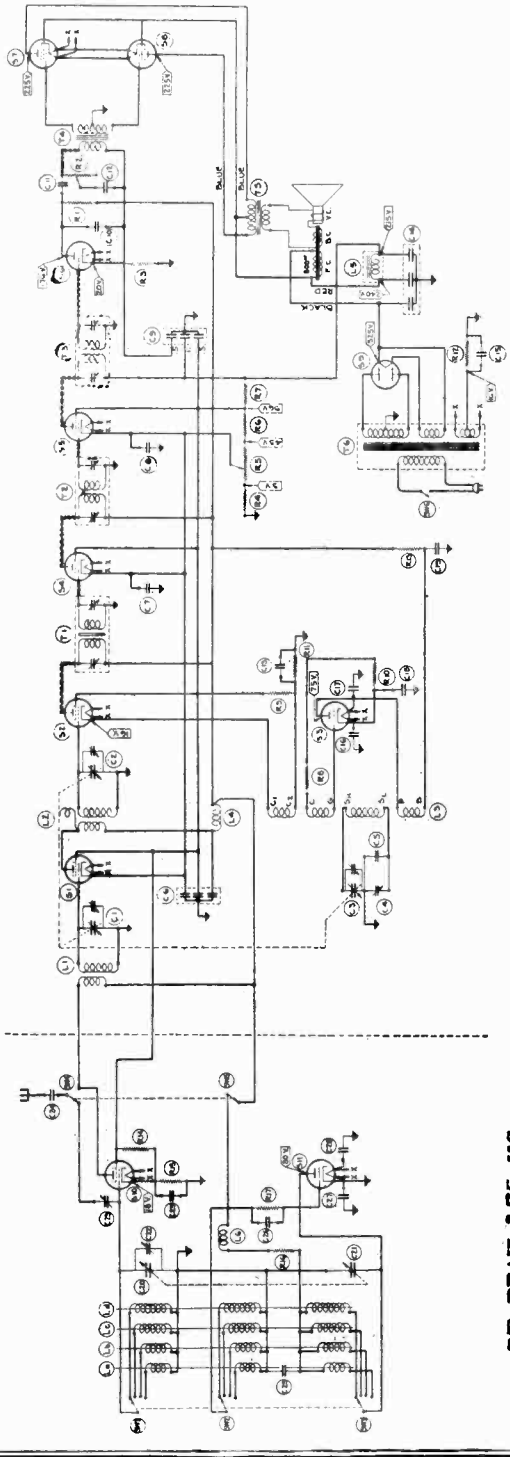
REPLACEMENT PARTS LIST FOR 726 SW & 726 SHORT WAVE-BROADCAST RECEIVERS

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.

IP PEAK 175 KC

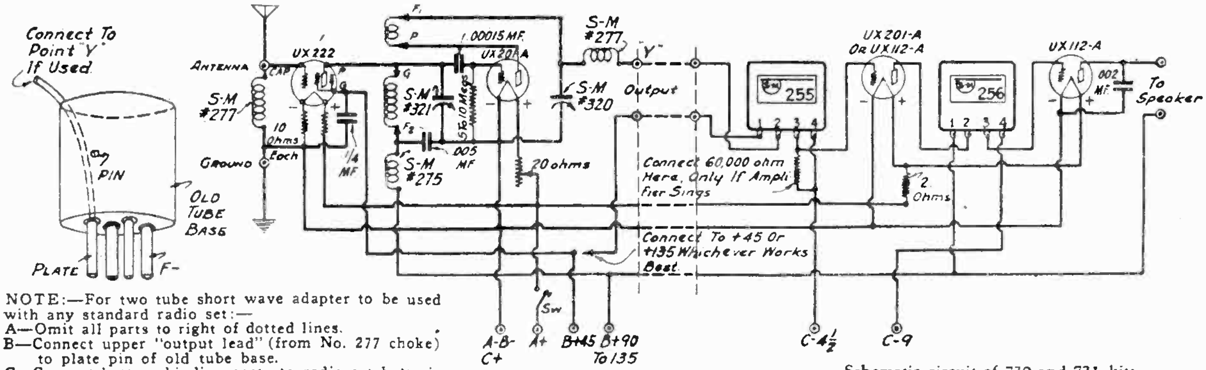
VOLTAGES WITH VOLUME CONTROL AT MAXIMUM

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.

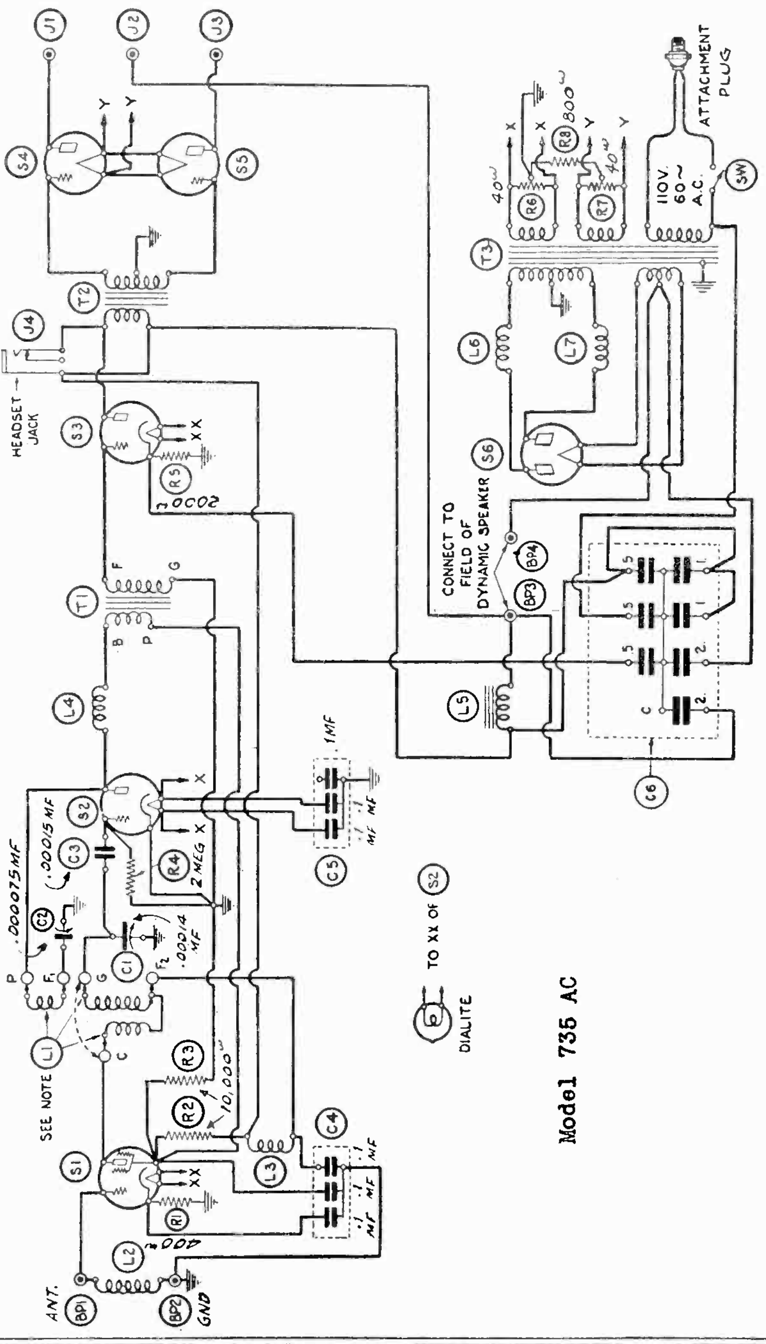
SILVER - MARSHALL, INC.

MODEL 730, 731
MODEL 735 AC
MODEL 735 DC

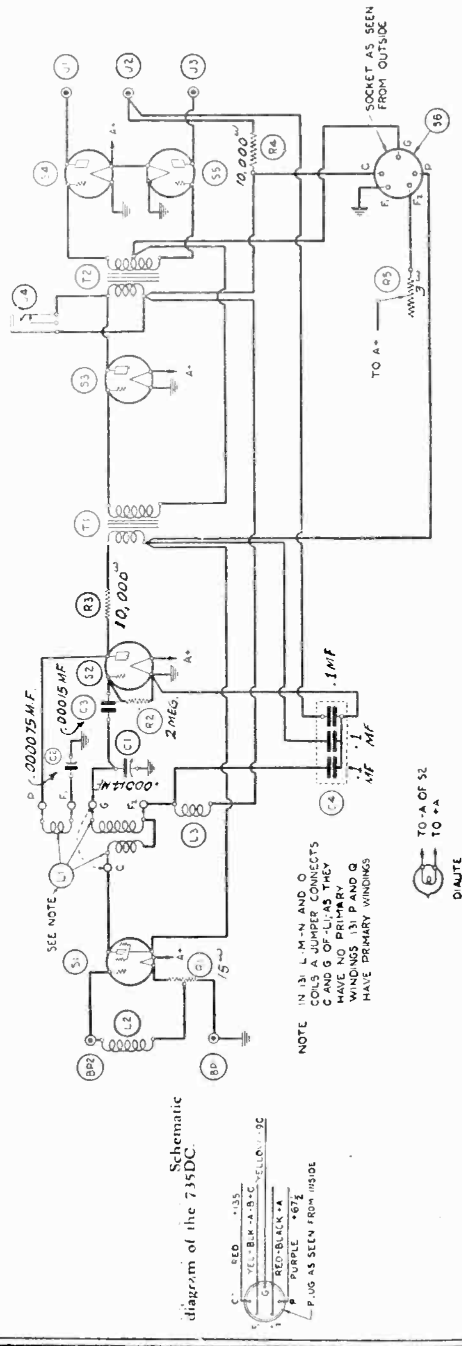


NOTE:—For two tube short wave adapter to be used with any standard radio set:—
A—Omit all parts to right of dotted lines.
B—Connect upper "output lead" (from No. 277 choke) to plate pin of old tube base.
C—Connect battery binding posts to radio set batteries.
D—Insert old tube base adapter in detector 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.

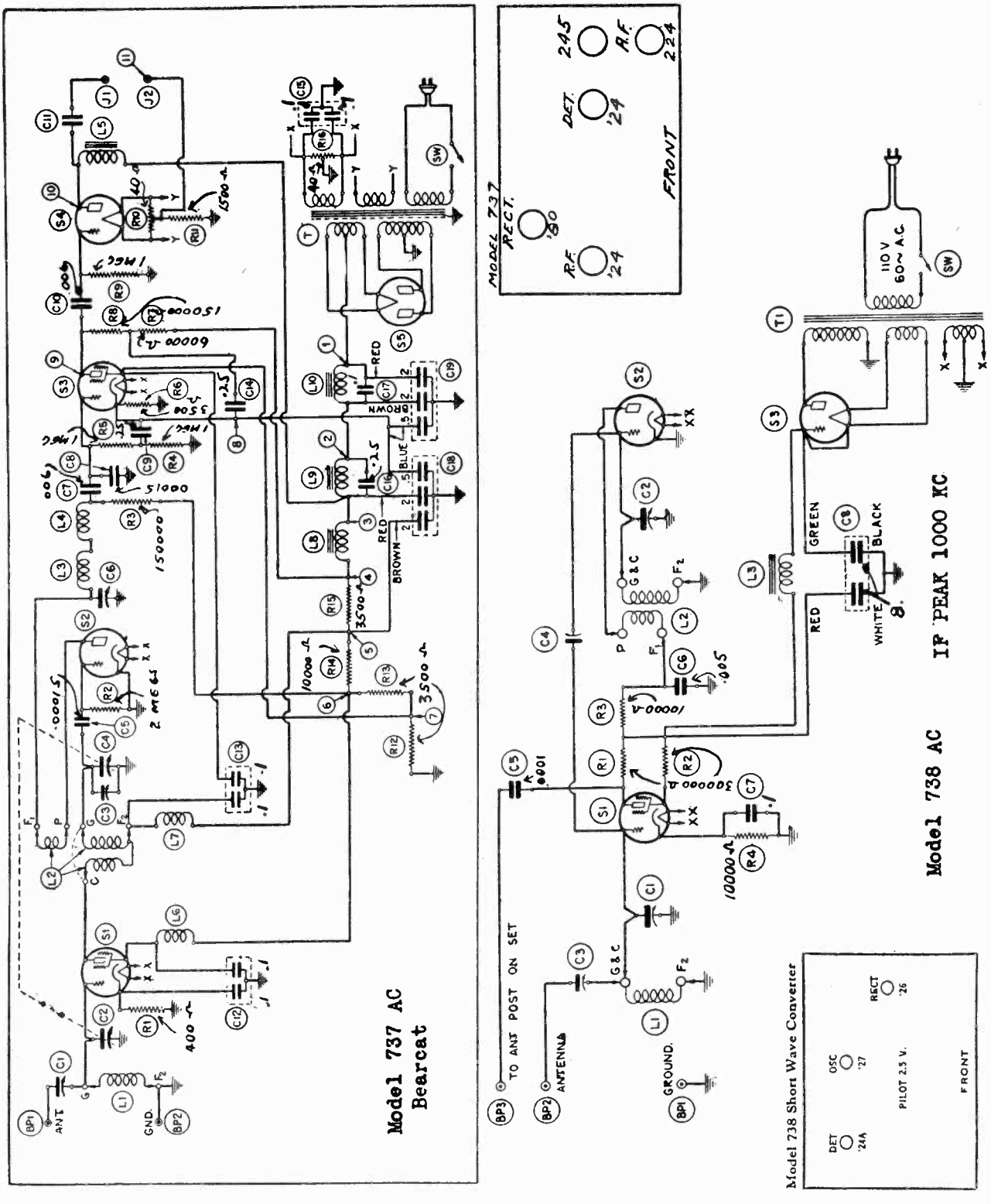


Model 735 AC



Schematic diagram of the 735DC.

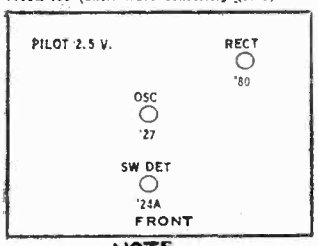
MODEL 737 AC Bearcat
MODEL 738 AC SW Converter SILVER - MARSHALL, INC.



SILVER - MARSHALL, INC.

MODEL 739
SW Superhet Converter

Model 739 (Short Wave Converter) (1931)

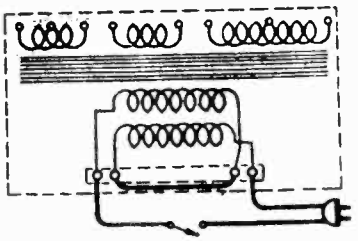


IF PEAK 650 KC

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.

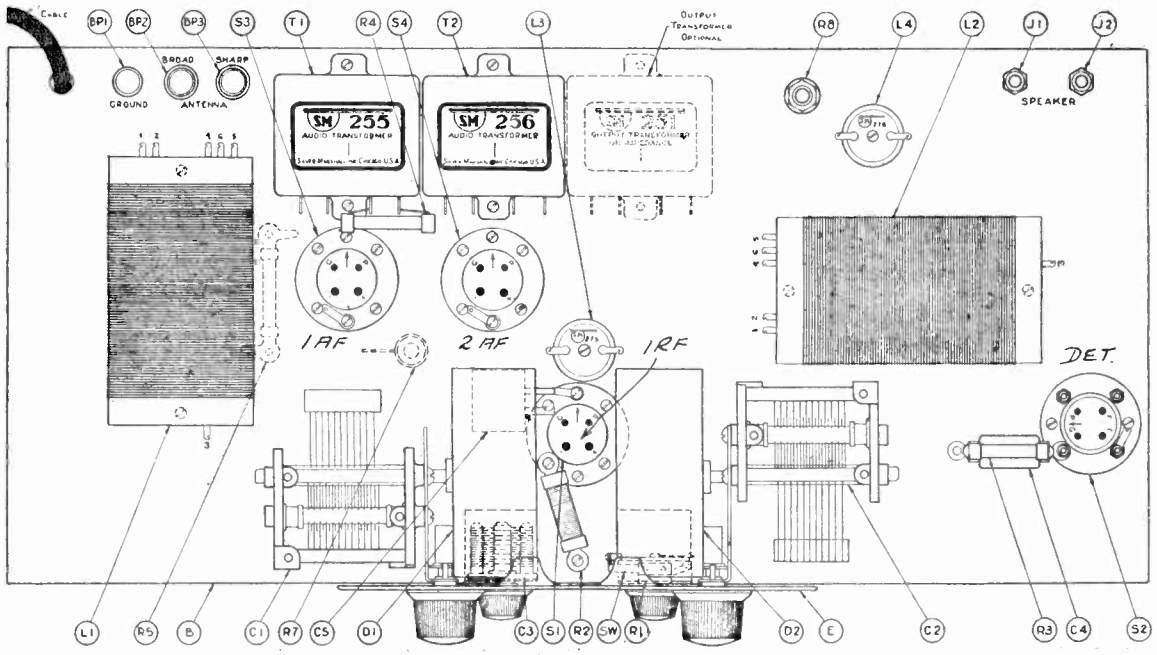
C6,C11,C12	3	Polymet .006 condenser
C5,C10	2	Polymet .0001 "
C9	1	Sprague .1 mfd. condenser
R5	1	Durham 10,000 ohm resistor
R2	1	Durham 60,000 ohm resistor
R1	1	Durham 6500 ohm resistor
R3	1	Durham 6000 ohm resistor 2 watt.
R4	1	Durham 3500 ohm resistor, 2 watt.



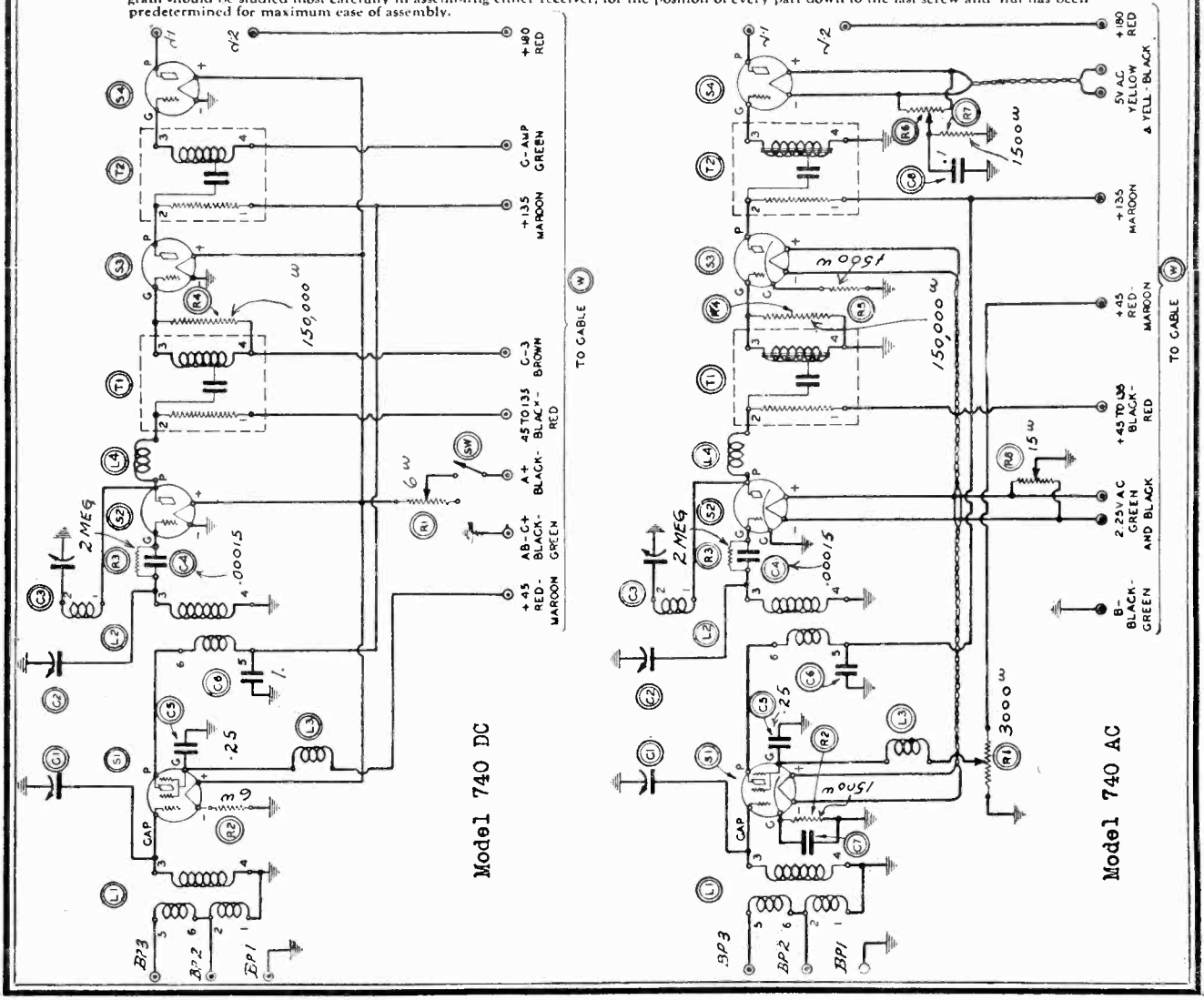
CONNECTIONS FOR 200-240 V. AC. 25 & 60 CYCLE

MODEL 740 DC
MODEL 740 AC
Schematic, Chassis

SILVER - MARSHALL, INC.

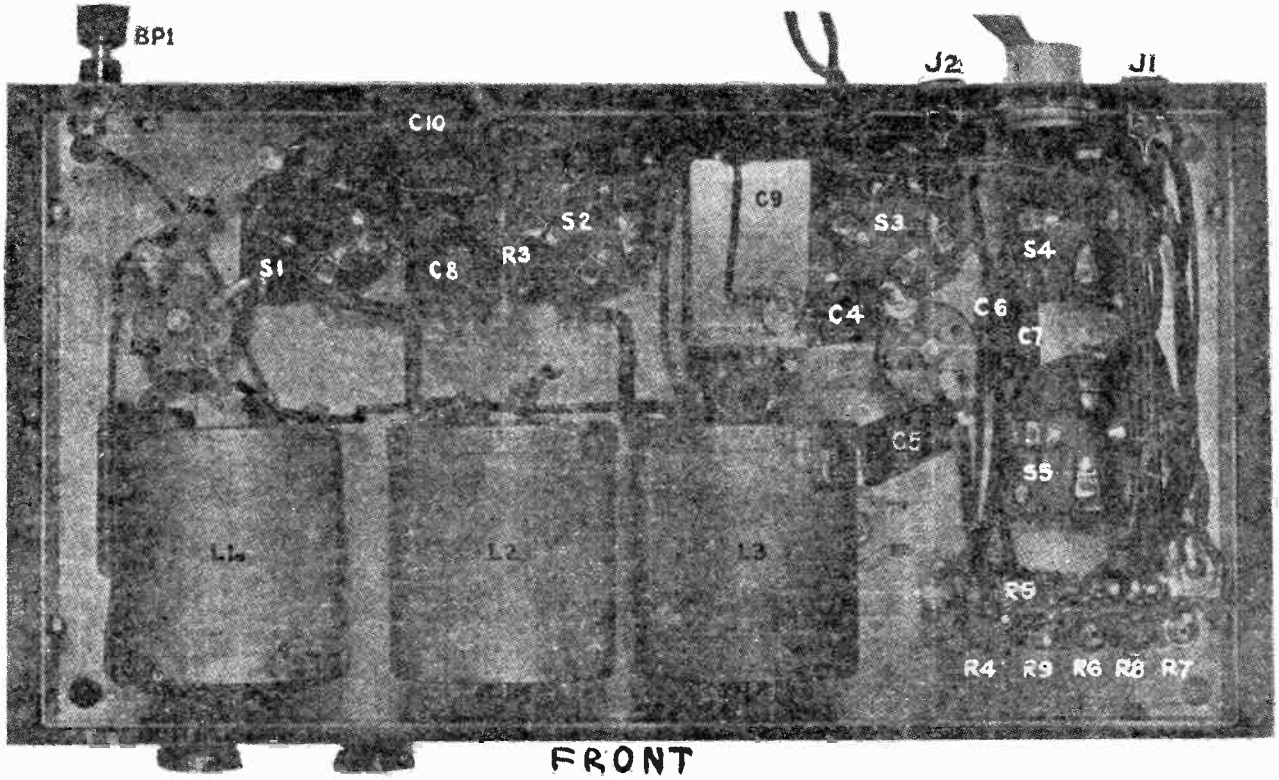


This layout drawing for the 740 (D. C. tube) Receiver shows the exact positions of all parts, positions of different mounting lugs, and just where screw heads or mounting nuts fall. Additional parts for the 740 AC (A. C. tube) Receiver are shown in dotted lines. This diagram should be studied most carefully 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.

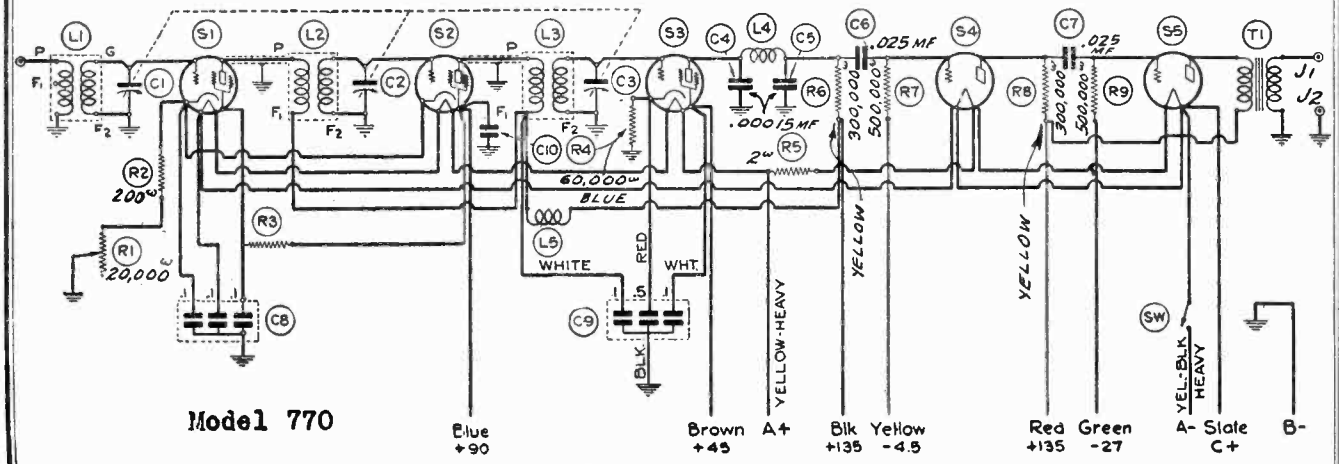


SILVER - MARSHALL, INC.

MODEL 770 Auto
Schematic, Chassis

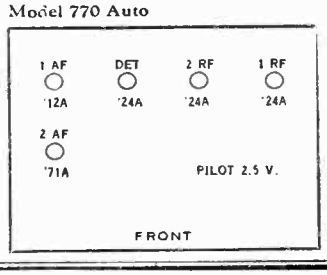


Bottom view of 770 chassis showing location of coils, resistors, and other material which will be of value in replacing parts.



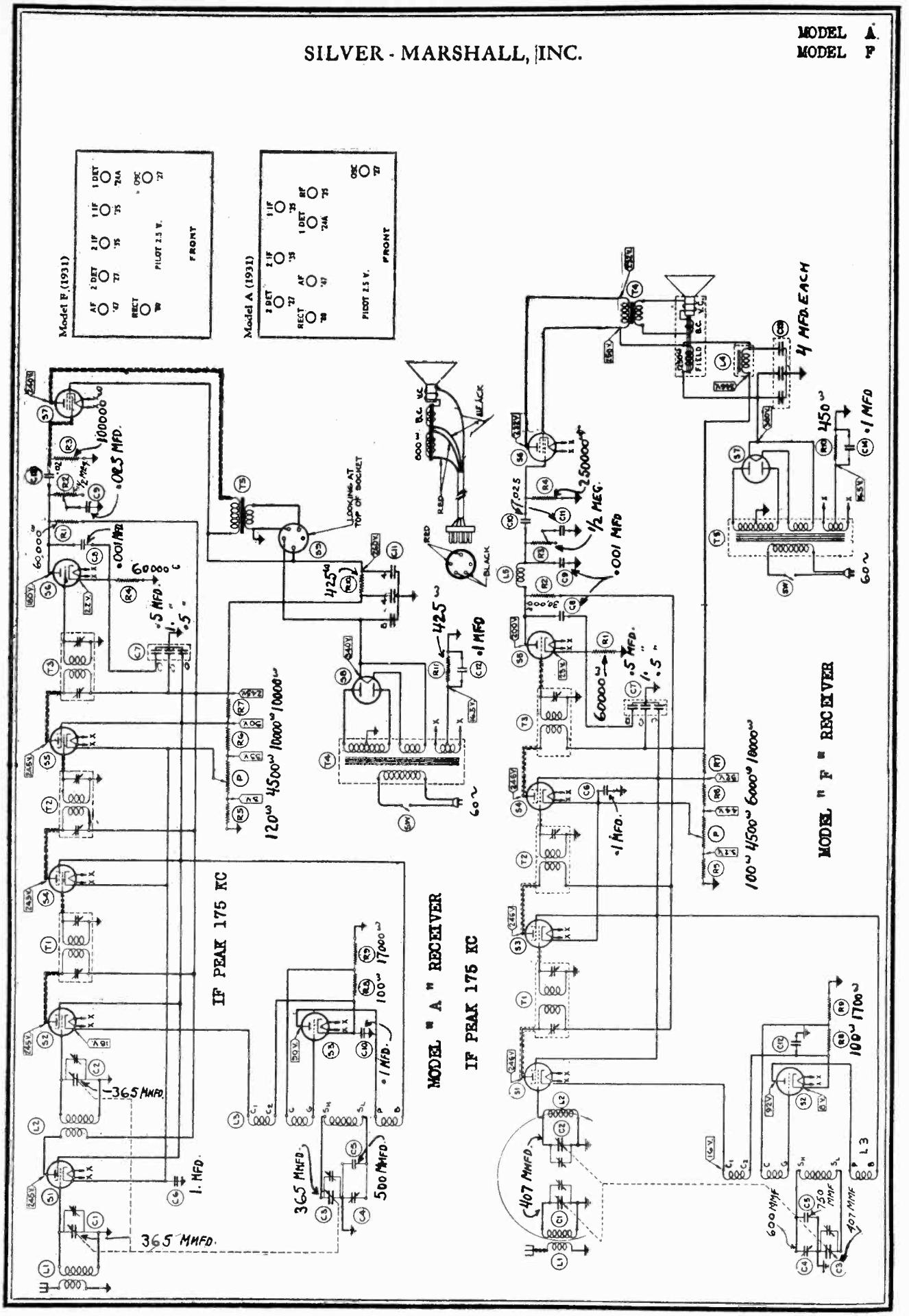
Schematic diagram of 770 Auto-Set.

Model 770 Auto



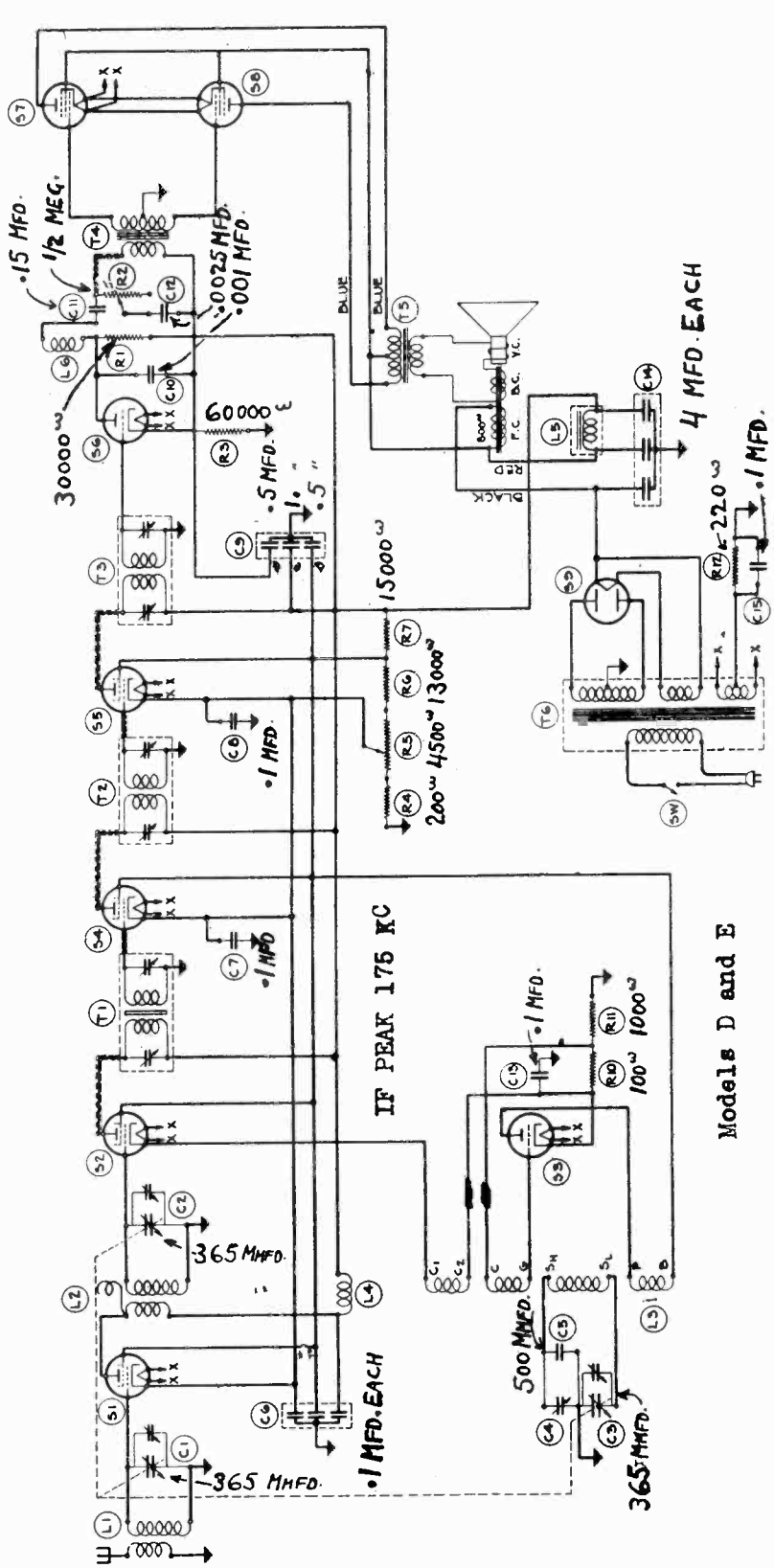
SILVER - MARSHALL, INC.

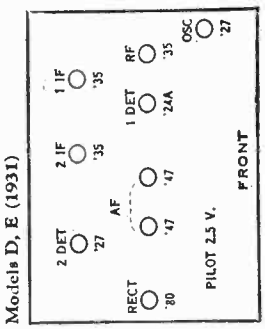
MODEL A
MODEL F



SILVER - MARSHALL, INC.

MODELS D,E
Schematic,Voltage

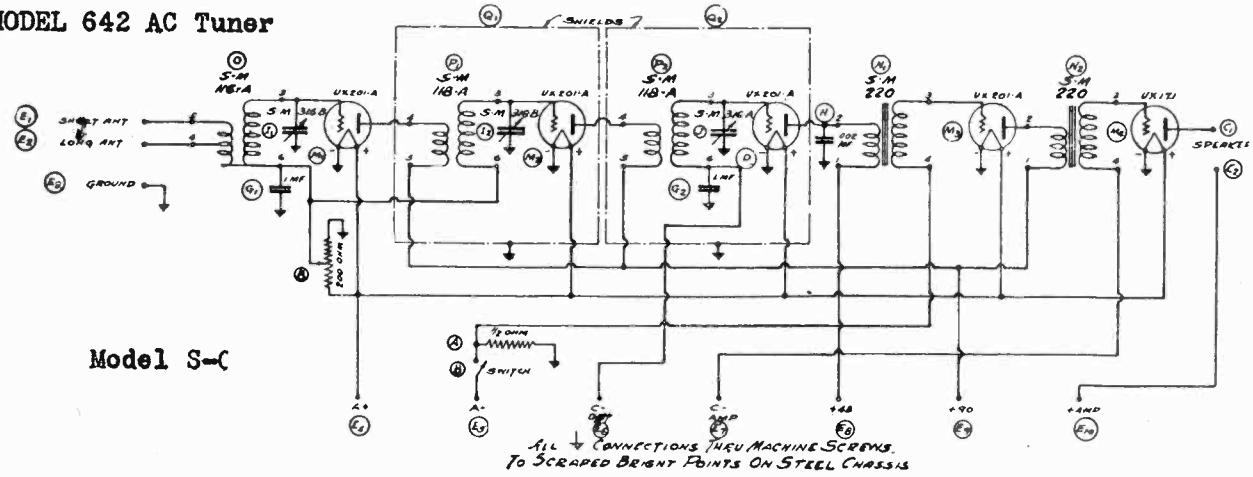




Tube No.	Type	A Volts	B Volts	Screen	C Volts
1st R.F.	551	2.3	225	80	3.2
1st Det.	224	2.3	226	80	12.
Osc.	227	2.3	80		6.2
1st I.F.	551	2.3	225	80	3.2
2nd I.F.	551	2.3	225	80	3.2
2nd Det.	227	2.3	220		20.
Pentodes	247	2.3	220	235	16.5
Rectifier	'280	5.0			

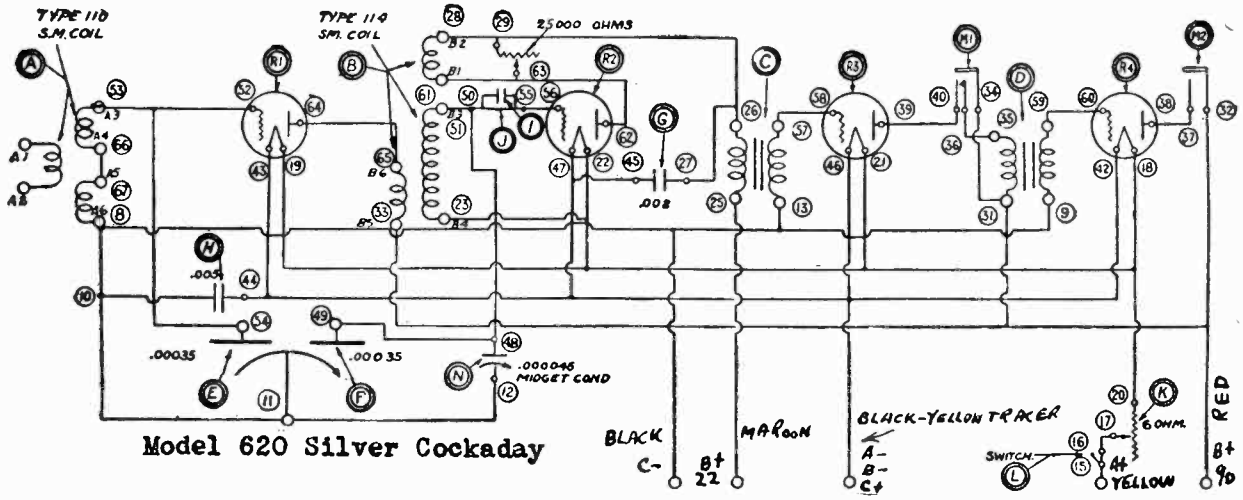
MODEL S-C II
MODEL 620 S-C
MODEL 635 Kit
MODEL 642 AC Tuner

SILVER - MARSHALL, INC.

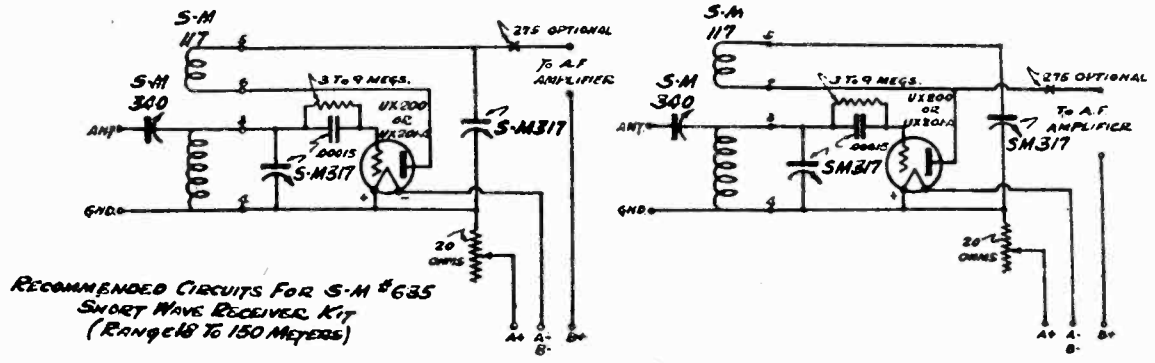


Model S-C

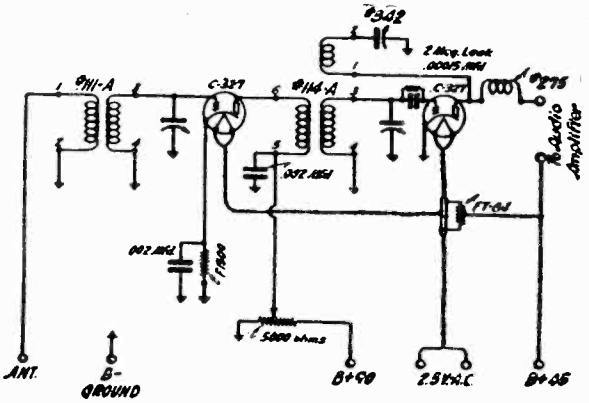
All + Connections Thru Machine Screws.
To Scraped Bright Points On Steel Chassis



Model 620 Silver Cockaday



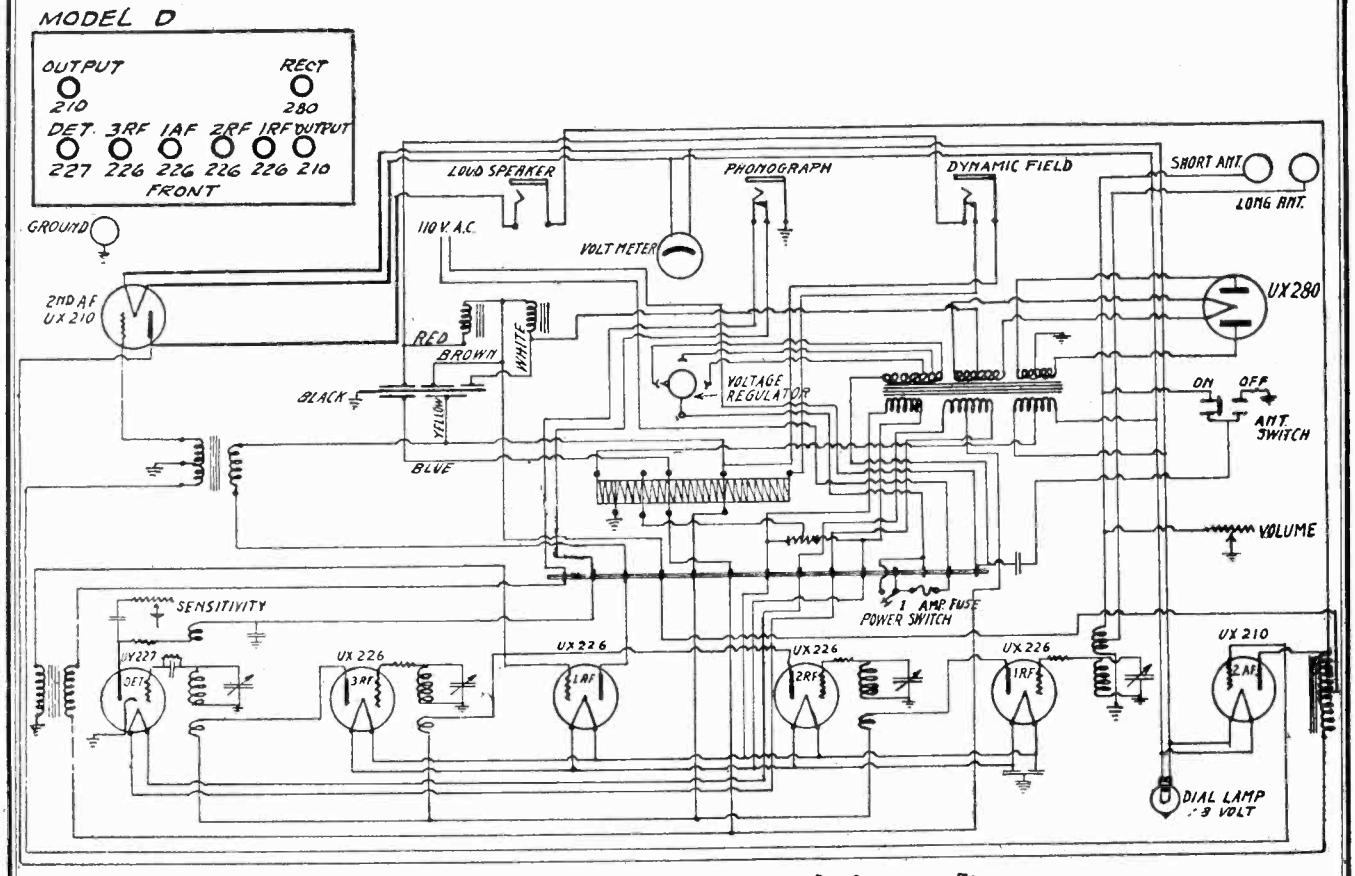
Recommended Circuits For S-M #635
Short Wave Receiver Kit
(Ranges 18 To 150 Meters)



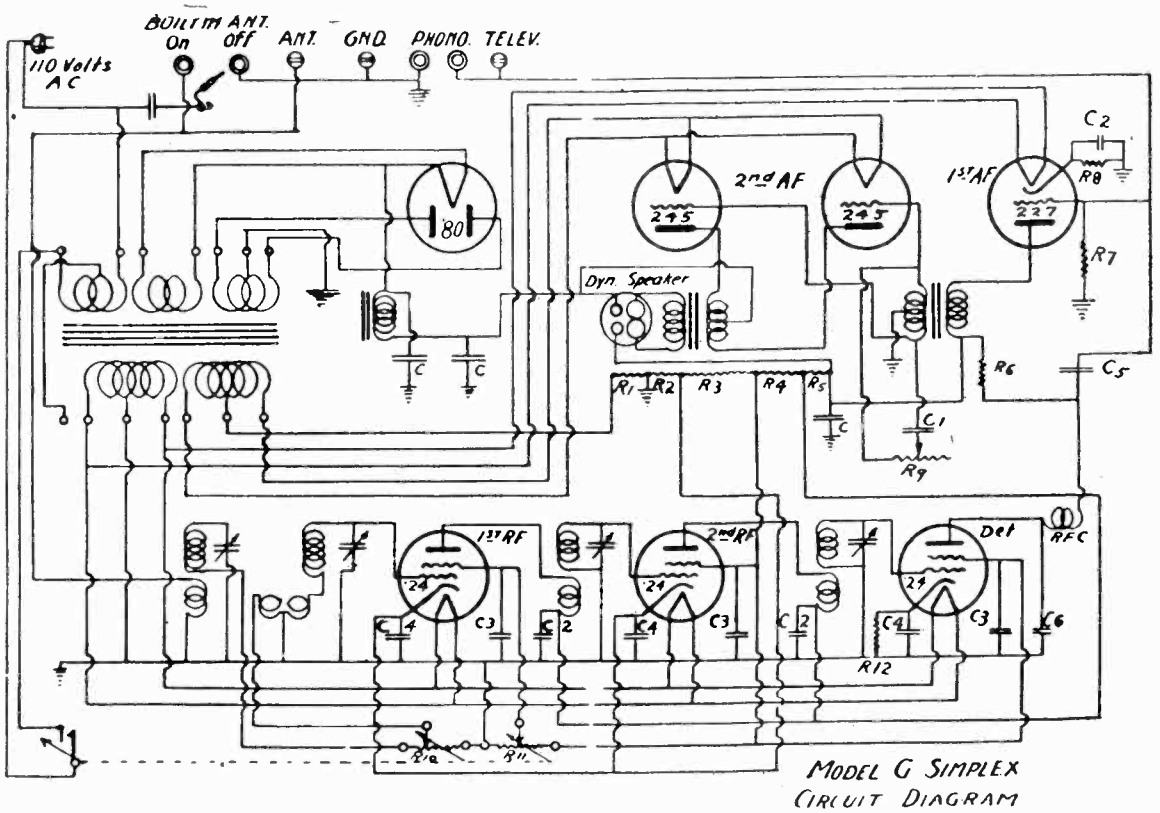
Schematic diagram of 642AC Universal All Wave Tuner

MODEL D Schematic
MODEL G Schematic

SIMPLEX RADIO CO.



CIRCUIT DIAGRAM, MODEL D, SIMPLEX ELECTRIC.

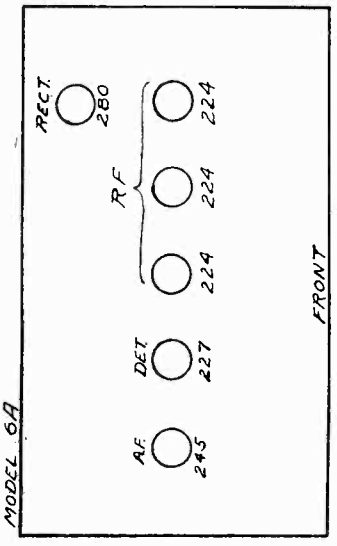


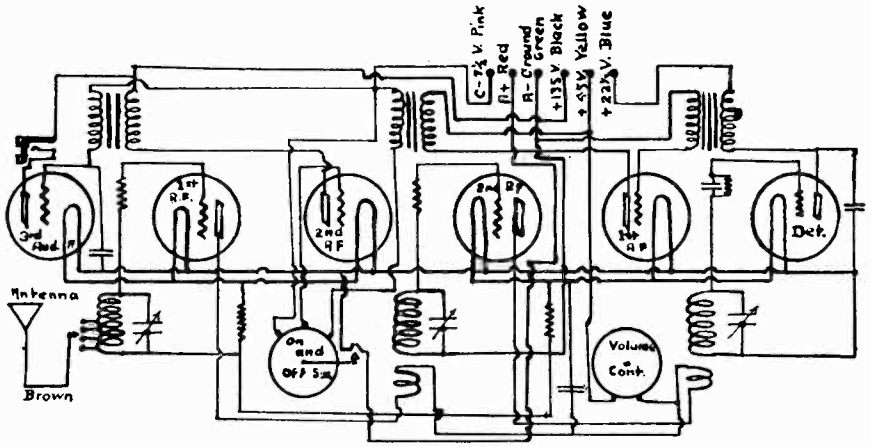
MODEL G SIMPLEX
CIRCUIT DIAGRAM

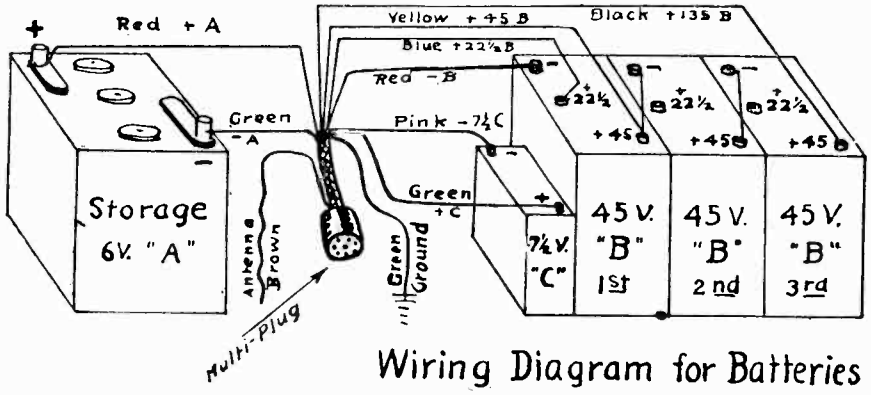
MODEL 6A
MODEL F

SIMPLEX RADIO CO.

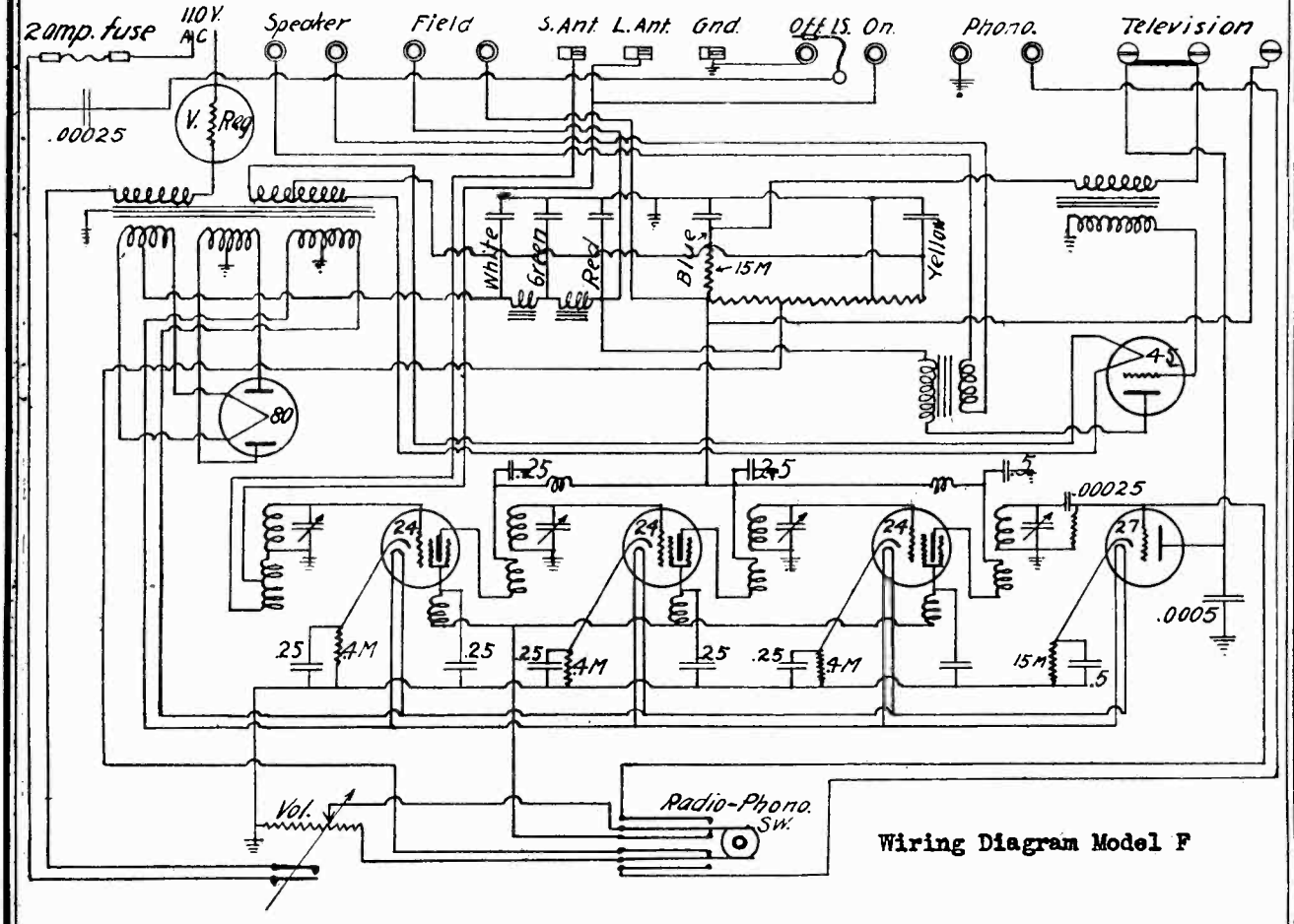
Wiring Diagram Model 6A







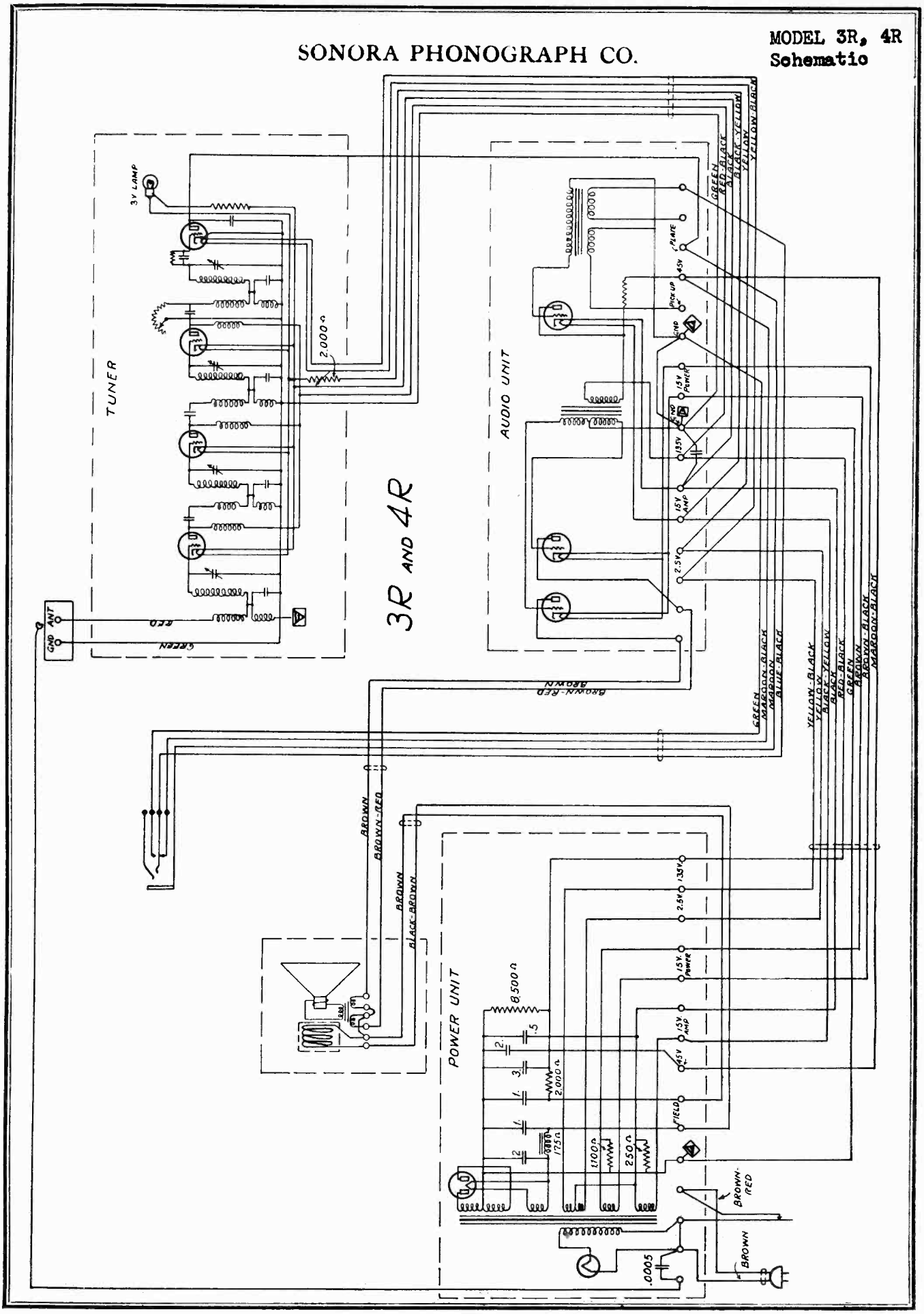
Wiring Diagram for Batteries



Wiring Diagram Model F

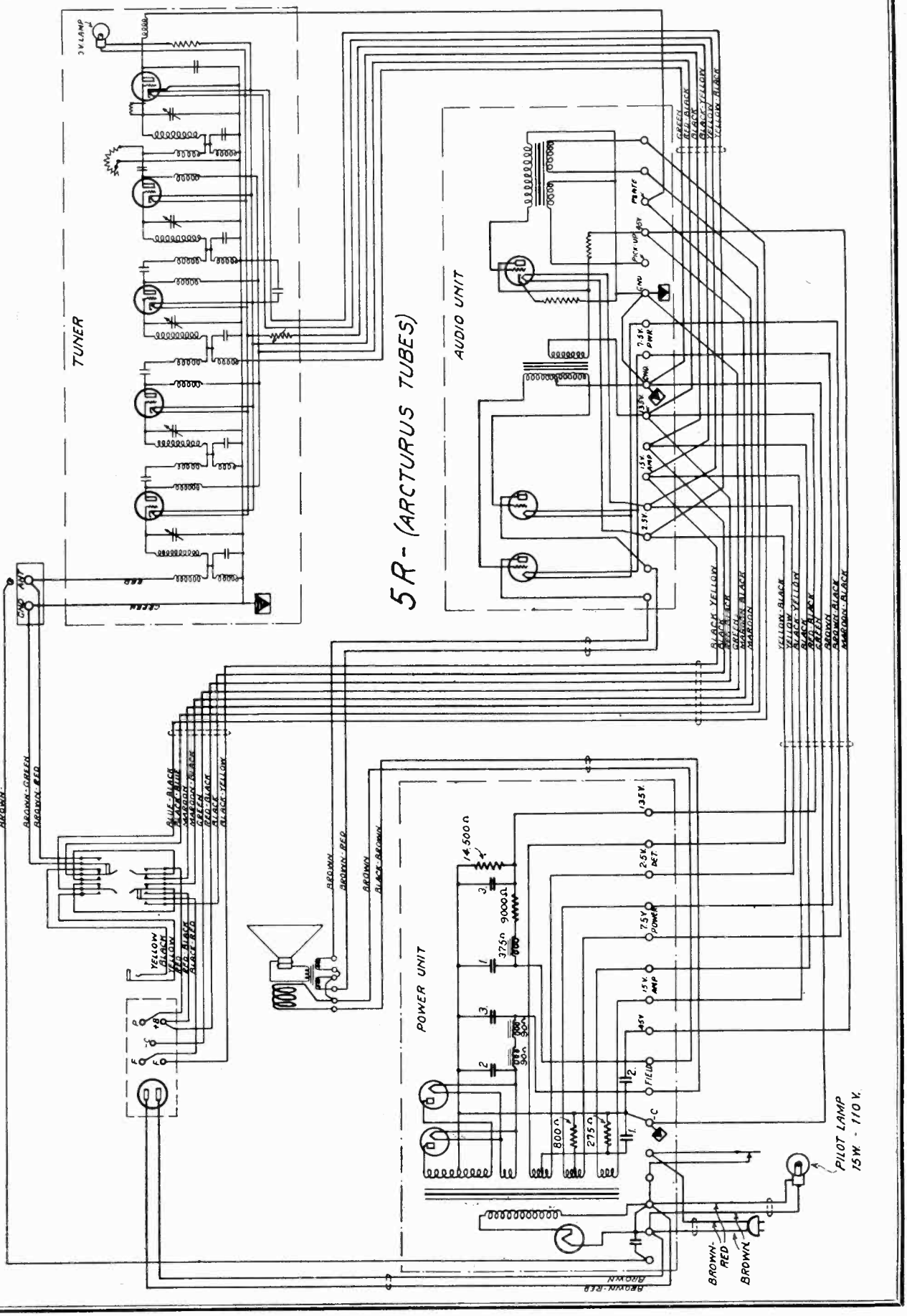
SONORA PHONOGRAPH CO.

MODEL 3R, 4R
Schematic



MODEL 5R
Schematic

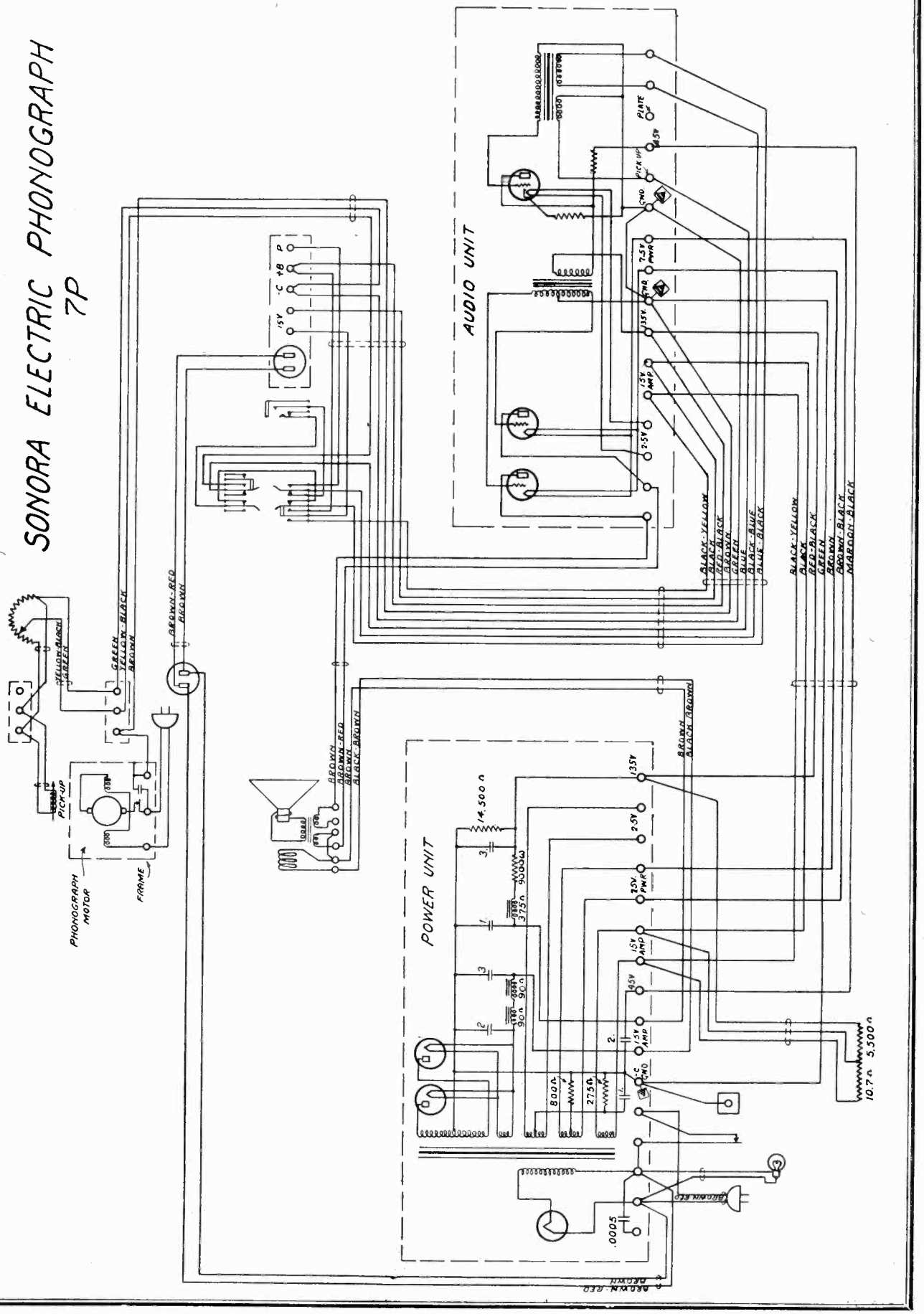
SONORA PHONOGRAPH CO.



MODEL 7P
Schematic

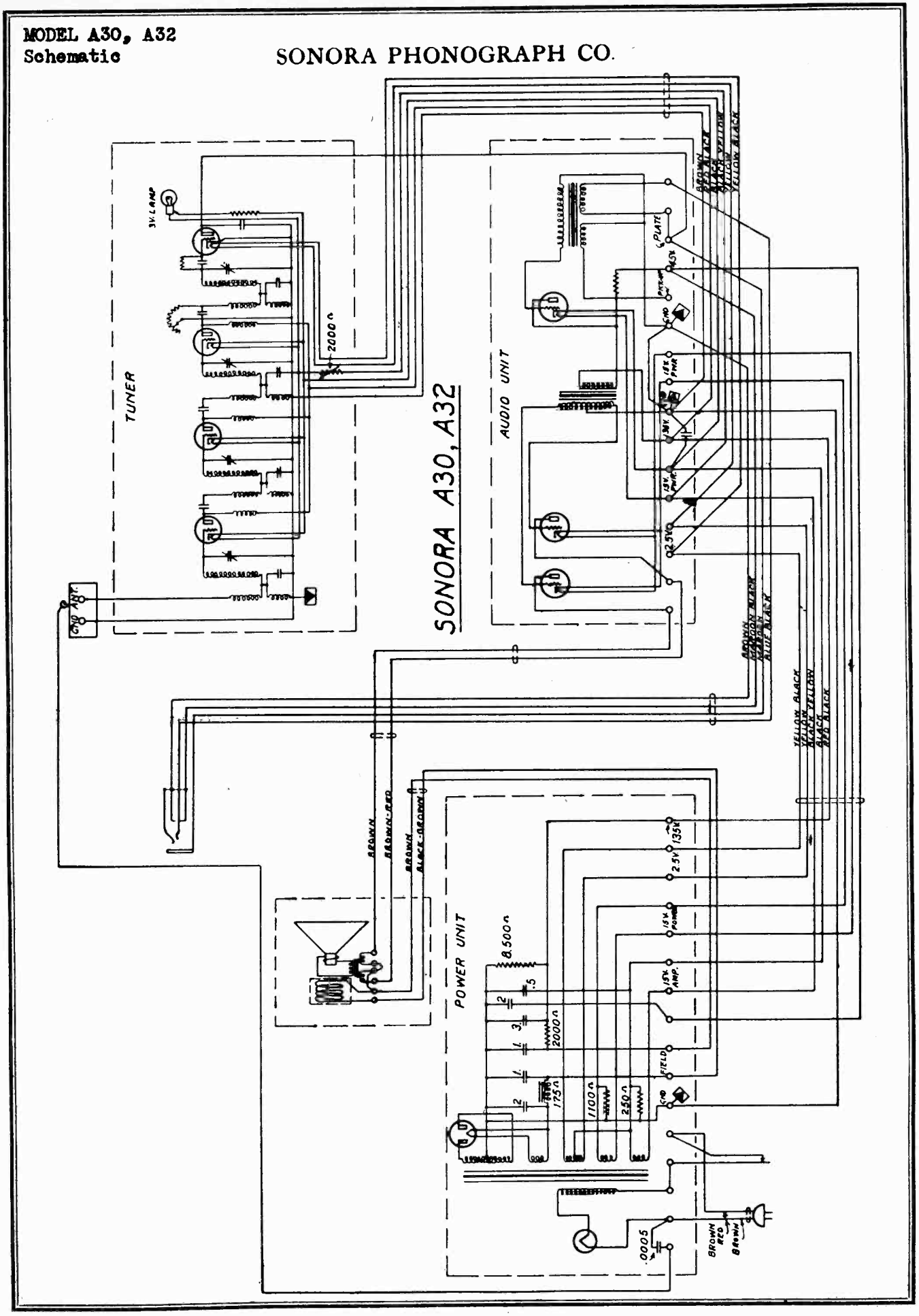
SONORA PHONOGRAPH CO.

SONORA ELECTRIC PHONOGRAPH 7P



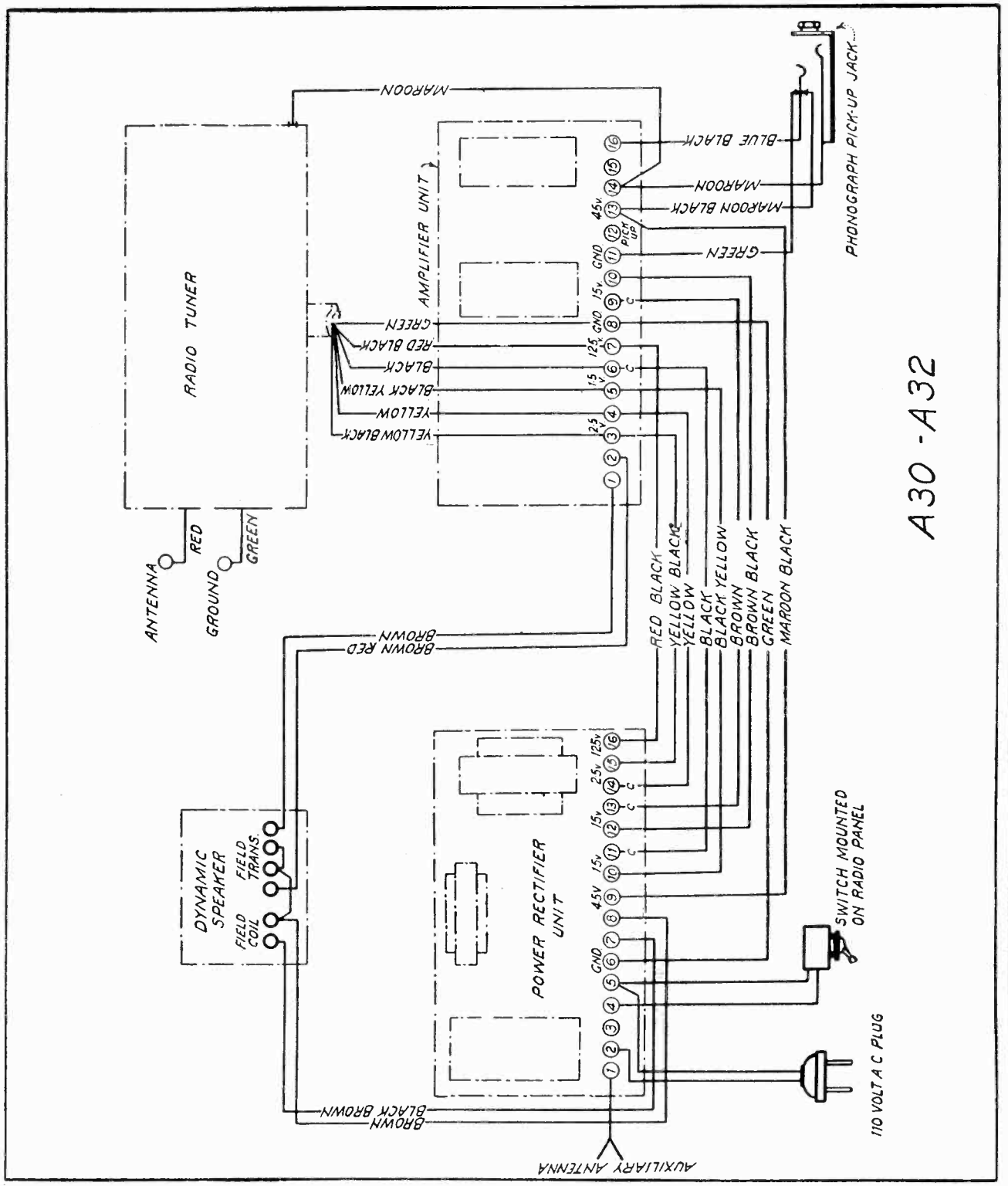
MODEL A30, A32
Schematic

SONORA PHONOGRAPH CO.



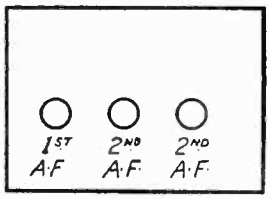
SONORA PHONOGRAPH CO.

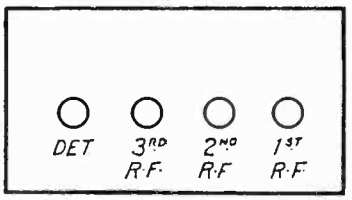
MODEL A30, A32
Wiring Diagram



30, 32, 40

(A.C.)

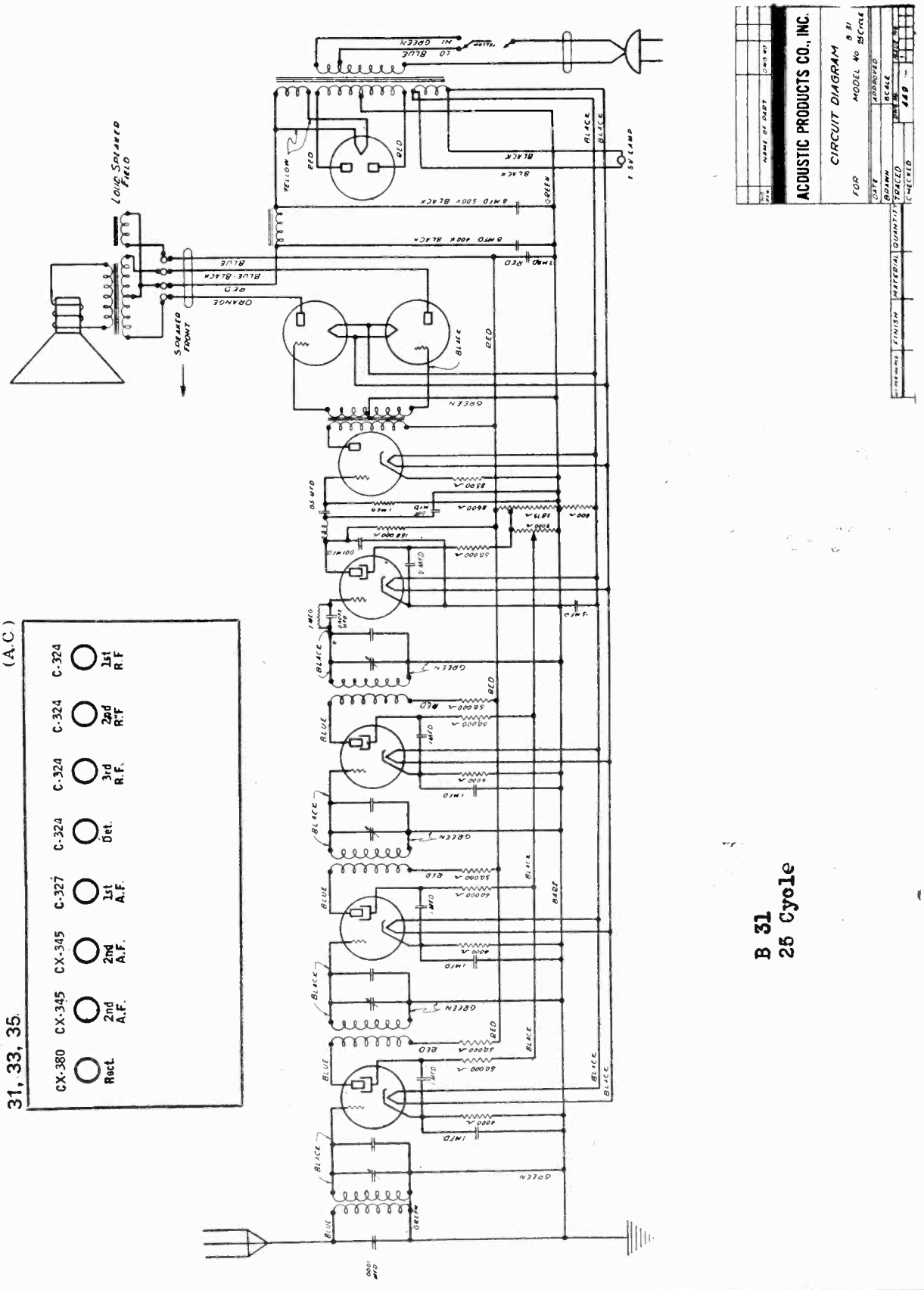




TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST R.F. DET. ETC.	READINGS, PLUG IN SOCKET OF SET								
			TUBE OUT		TUBE IN TESTER						
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE M.A. CHANGE
1	RA-1	1st. R.F.	15.0	136	14.0	130	6	-	6.6	12.0	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	2nd A.F. Push	15.0	200	14.0	180	40	-	18.0	22.0	4.0
7	SO-1	2nd A.F. Pull	15.0	200	14.0	180	40	-	18.0	22.0	4.0

MODEL B31 25 Cycle
Schematic

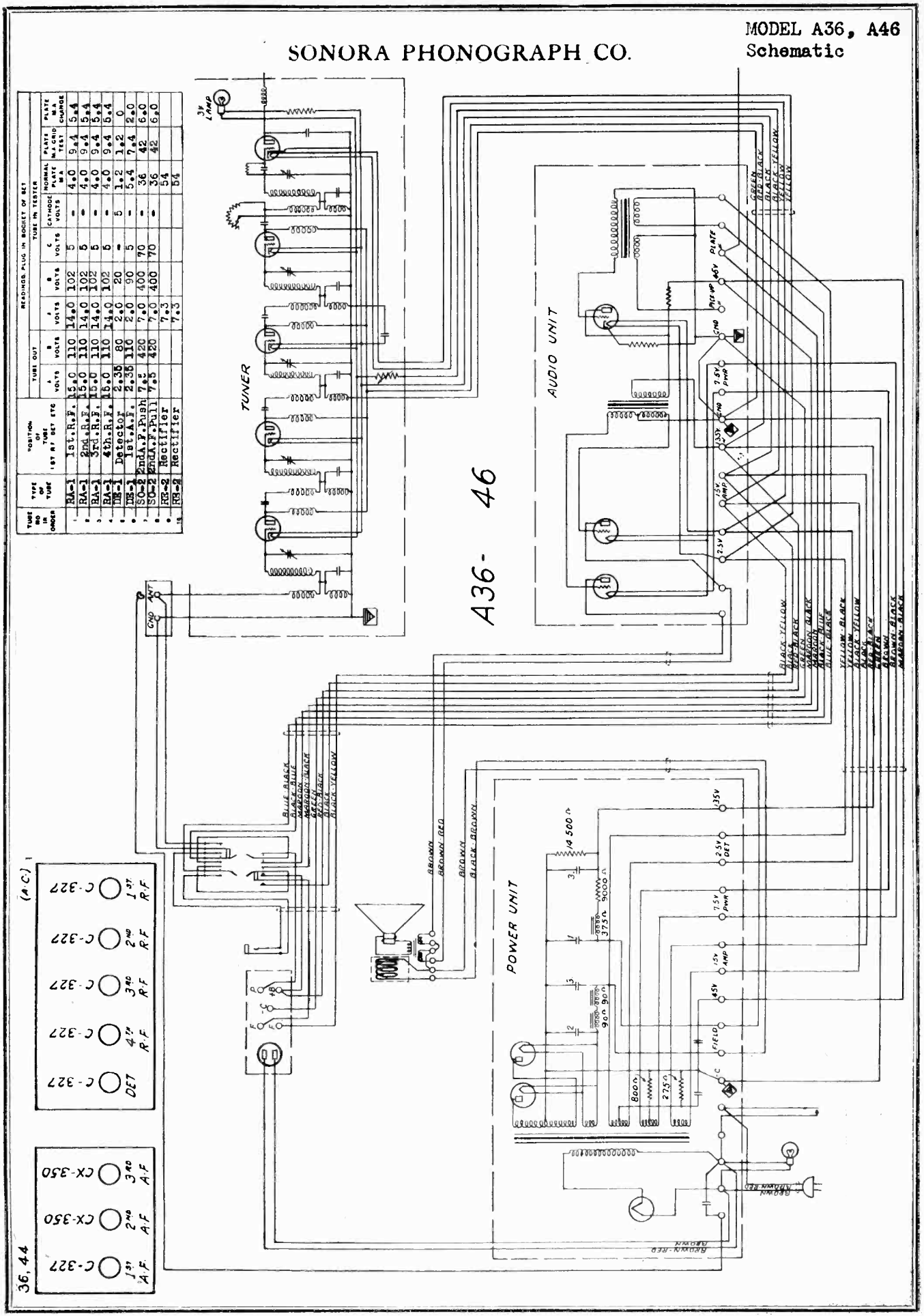
SONORA PHONOGRAPH CO.



SONORA PHONOGRAPH CO.

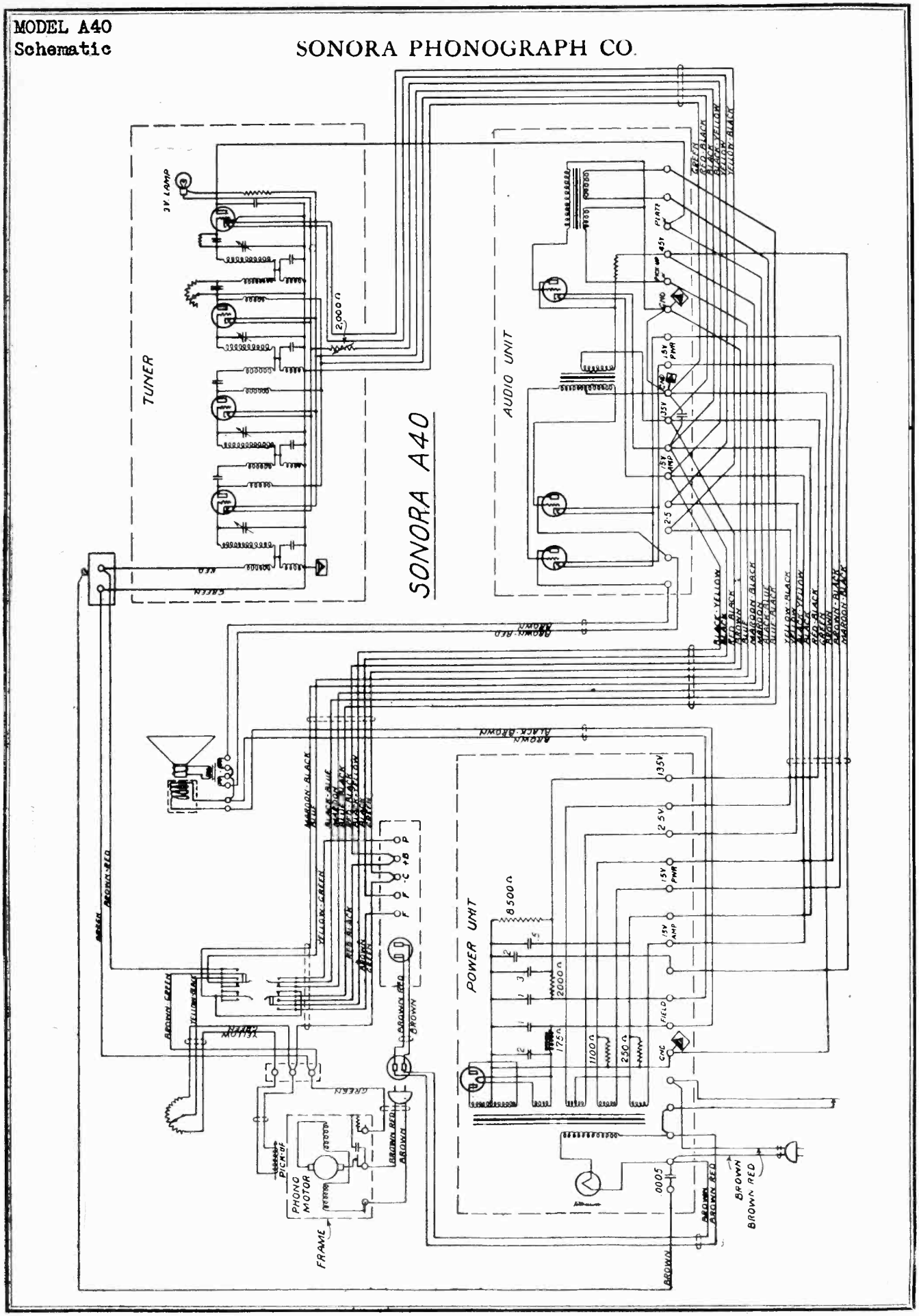
MODEL A36, A46
Schematic

TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST R.F. DET ETC	TUBE OUT		READINGS PLUG IN SOCKET OF SET				TUBE IN TESTER			
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID M.A. 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	DB-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	2nd.A.F.Push	7.5	420	7.0	400	70	-	36	42	6.0
8	SO-2	2nd.A.F.Pull	7.5	420	7.0	400	70	-	36	42	6.0
9	RS-2	Rectifier			7.3				54		
10	RS-2	Rectifier			7.3				54		



MODEL A40
Schematic

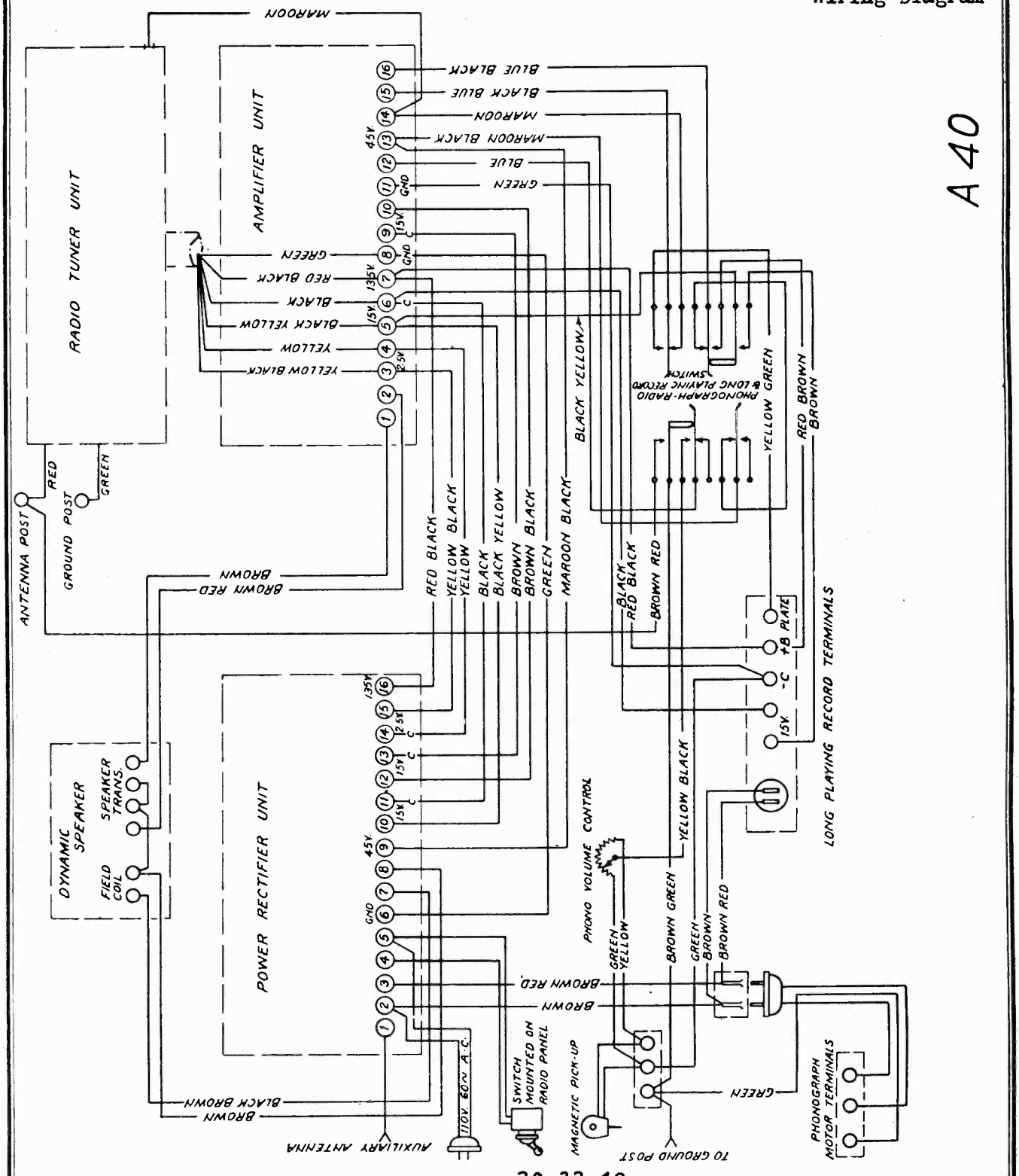
SONORA PHONOGRAPH CO.



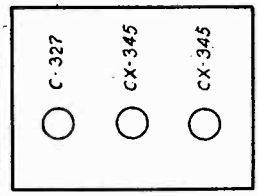
SONORA PHONOGRAPH CO.

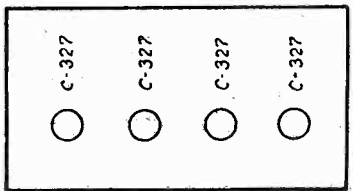
MODEL A40
Wiring Diagram

A40



30, 32, 40



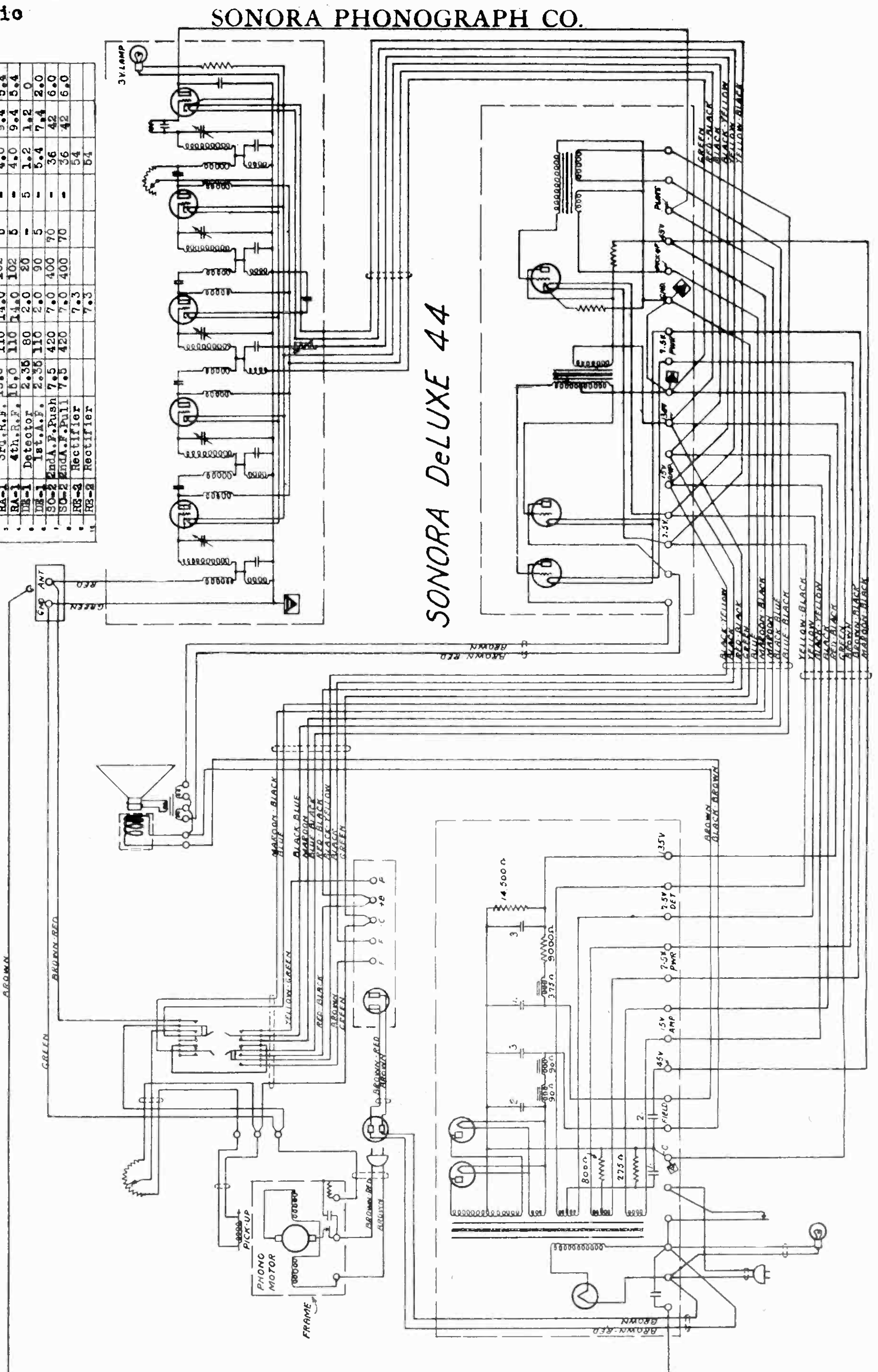


CX-380 USED IN SEPARATE POWER UNIT

TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST. R.F. DET. ETC.	READINGS. PLUG IN SOCKET OF SET								
			TUBE OUT		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	8	-	6.6	12.0	5.4
6	SO-1	2nd A.F. Push	15.0	200	14.0	180	40	-	18.0	22.0	4.0
7	SO-1	2nd A.F. Pull	15.0	200	14.0	180	40	-	18.0	22.0	4.0

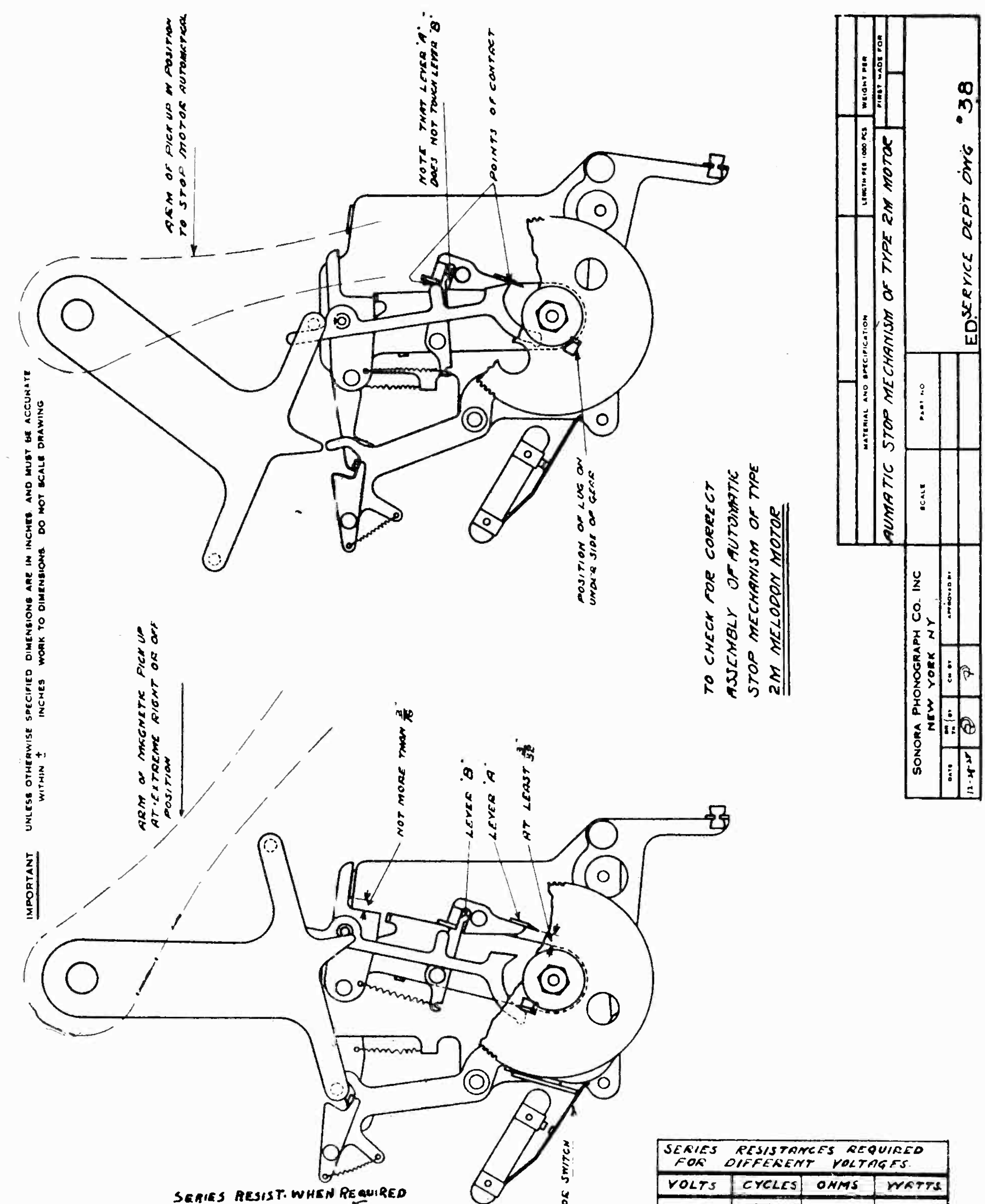
MODEL De Luxe 44
Schematic

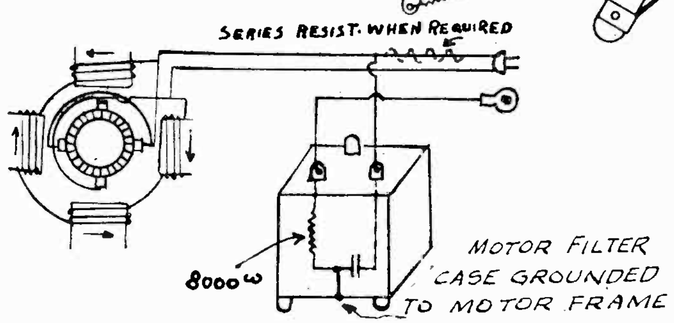
Tube No. in order	Type of tube	Position of tube 1st R.F. Det. etc.	Tube out: A volts	Tube out: B volts	Readings, plug in socket of set, tube in tester: A volts	B volts	C volts	Cathode volts	Normal plate M.A.	Plate M.A. grid test	Plate M.A. change
1	RA-1	1st.R.F.	15.0	110	14.0	102	5	-	4.0	9.4	5.4
2	RA-1	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.	16.0	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	RB-2	Rectifier			7.3				54		
10	RB-2	Rectifier			7.3				54		



SONORA PHONOGRAPH CO.

MODEL 2M
Automatic Stop

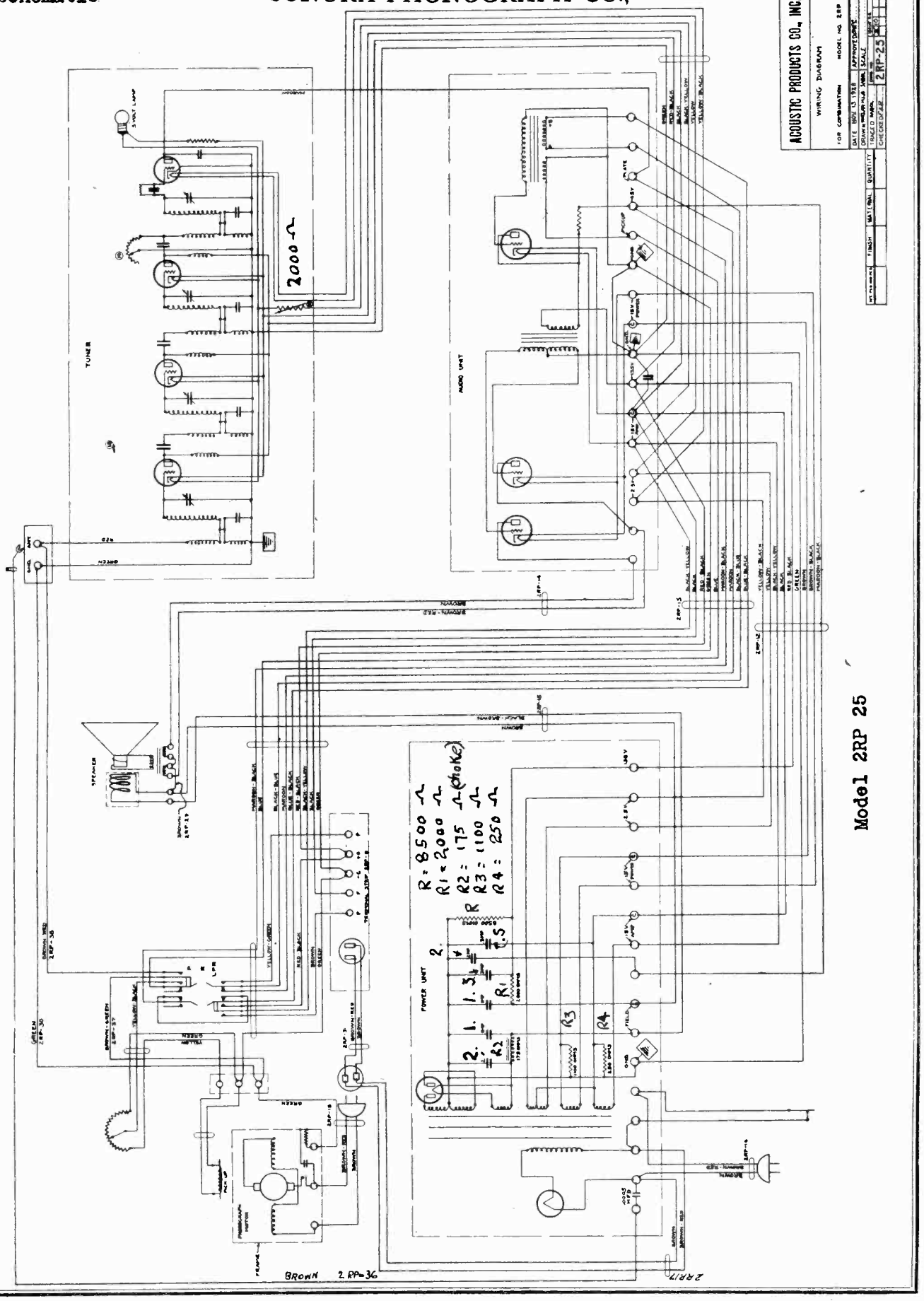




SERIES RESISTANCES REQUIRED FOR DIFFERENT VOLTAGES			
VOLTS	CYCLES	OHMS	WATTS
110	60	NONE	
110	50	25	100
110	40	60	100
110	25	110	100
110	DC.	165	100
220	60	210	200
220	25	330	200
32	DC.	NONE	

MODEL 2RP 25 Cycle
Schematic

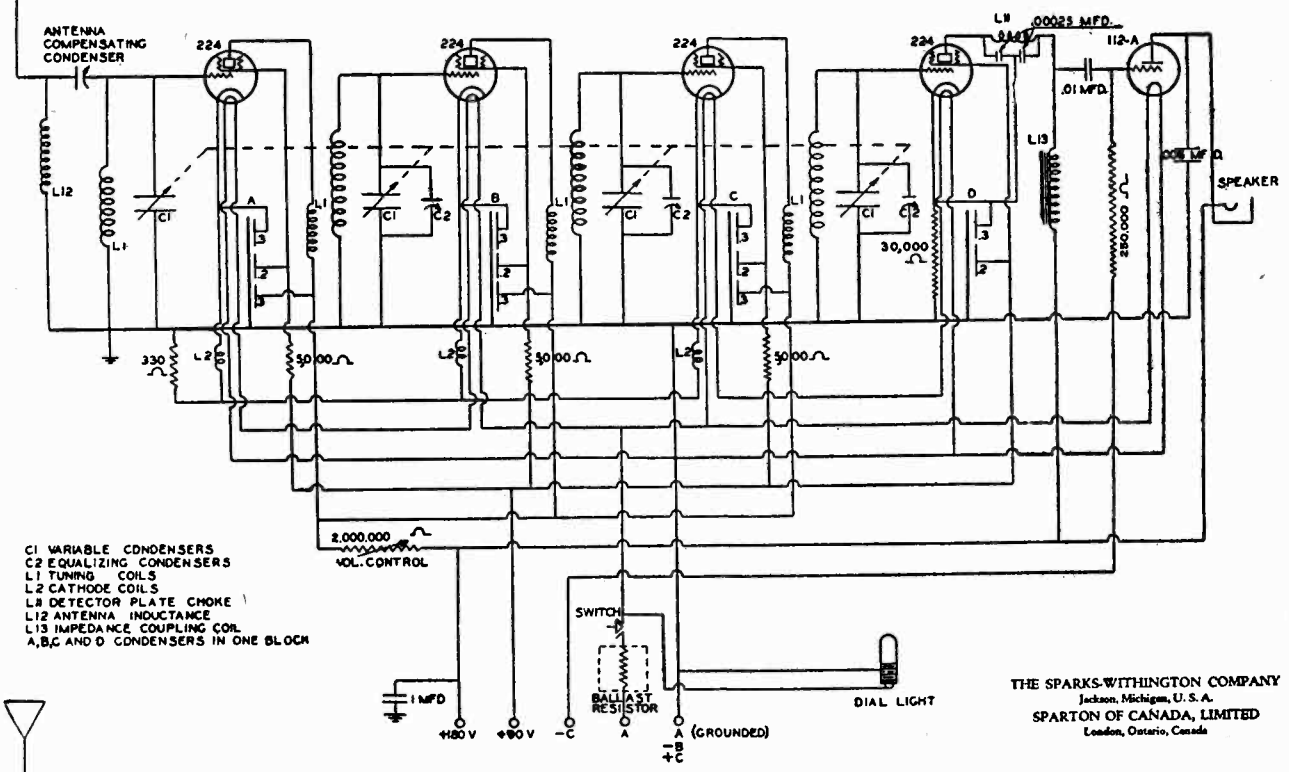
SONORA PHONOGRAPH CO.,



MODEL AR-19
MODEL AR-50
Schematic

SPARKS WITHINGTON CO.

MODEL A.R.-19

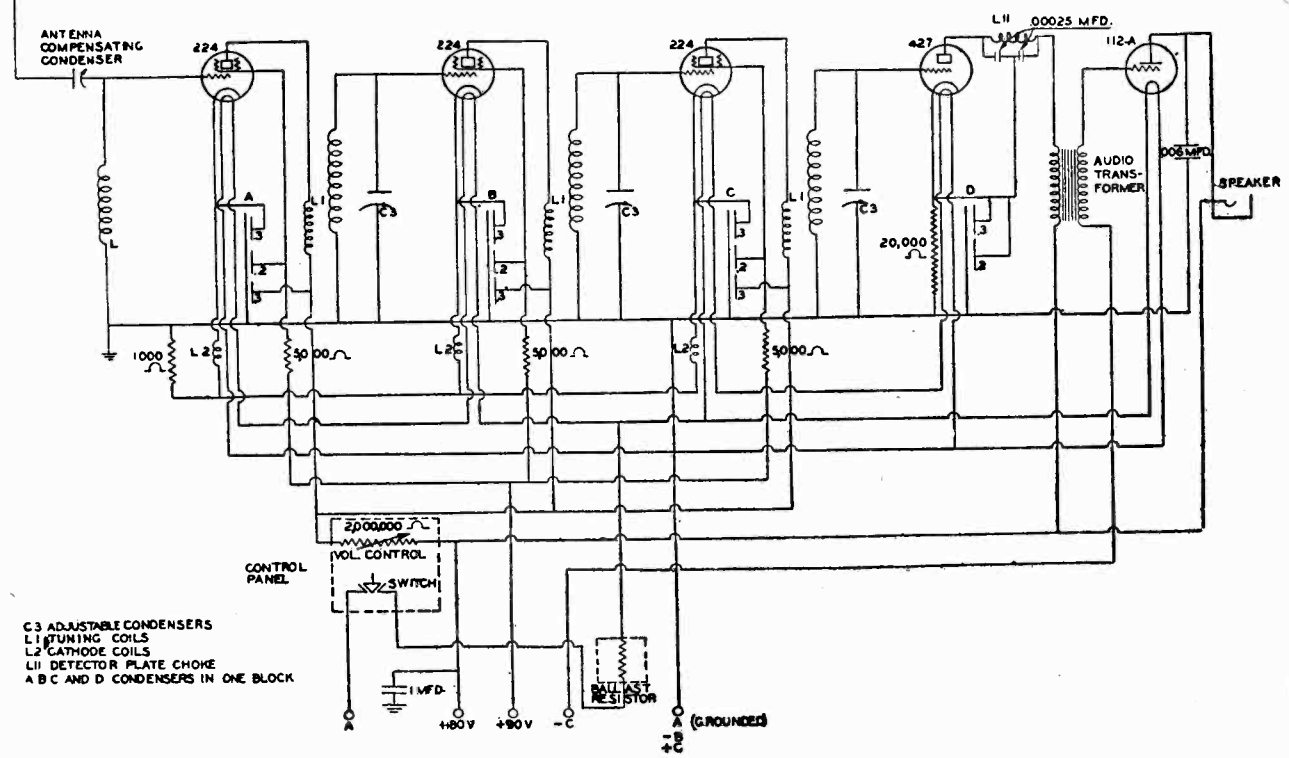


C1 VARIABLE CONDENSERS
C2 EQUALIZING CONDENSERS
L1 TUNING COILS
L2 CATHODE COILS
L11 DETECTOR PLATE CHOKE
L12 ANTENNA INDUCTANCE
L13 IMPEDANCE COUPLING COIL
A,B,C AND D CONDENSERS IN ONE BLOCK

THE SPARKS-WITHINGTON COMPANY
Jackson, Michigan, U. S. A.
SPARTON OF CANADA, LIMITED
London, Ontario, Canada

MODEL AR-50

POLICE AUTOMOBILE RADIO



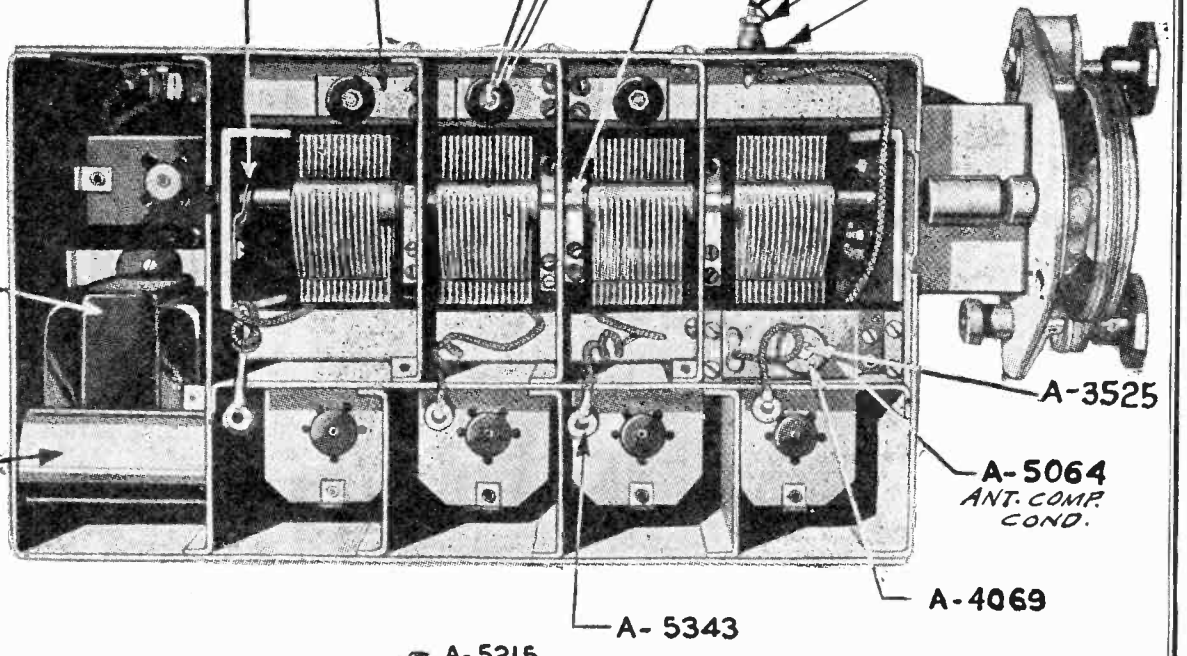
C3 ADJUSTABLE CONDENSERS
L1 TUNING COILS
L2 CATHODE COILS
L11 DETECTOR PLATE CHOKE
A B C AND D CONDENSERS IN ONE BLOCK

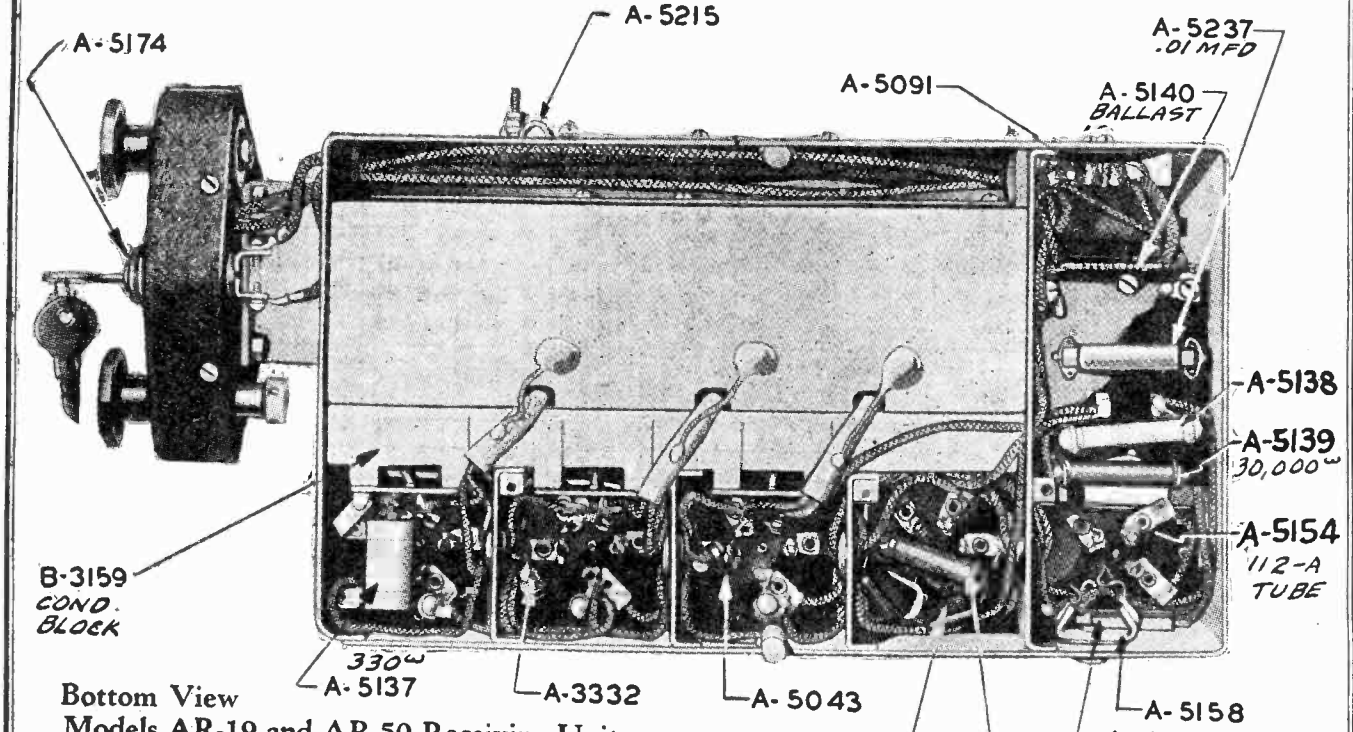
MODEL AR-19
MODEL AR-50
Chassis

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.





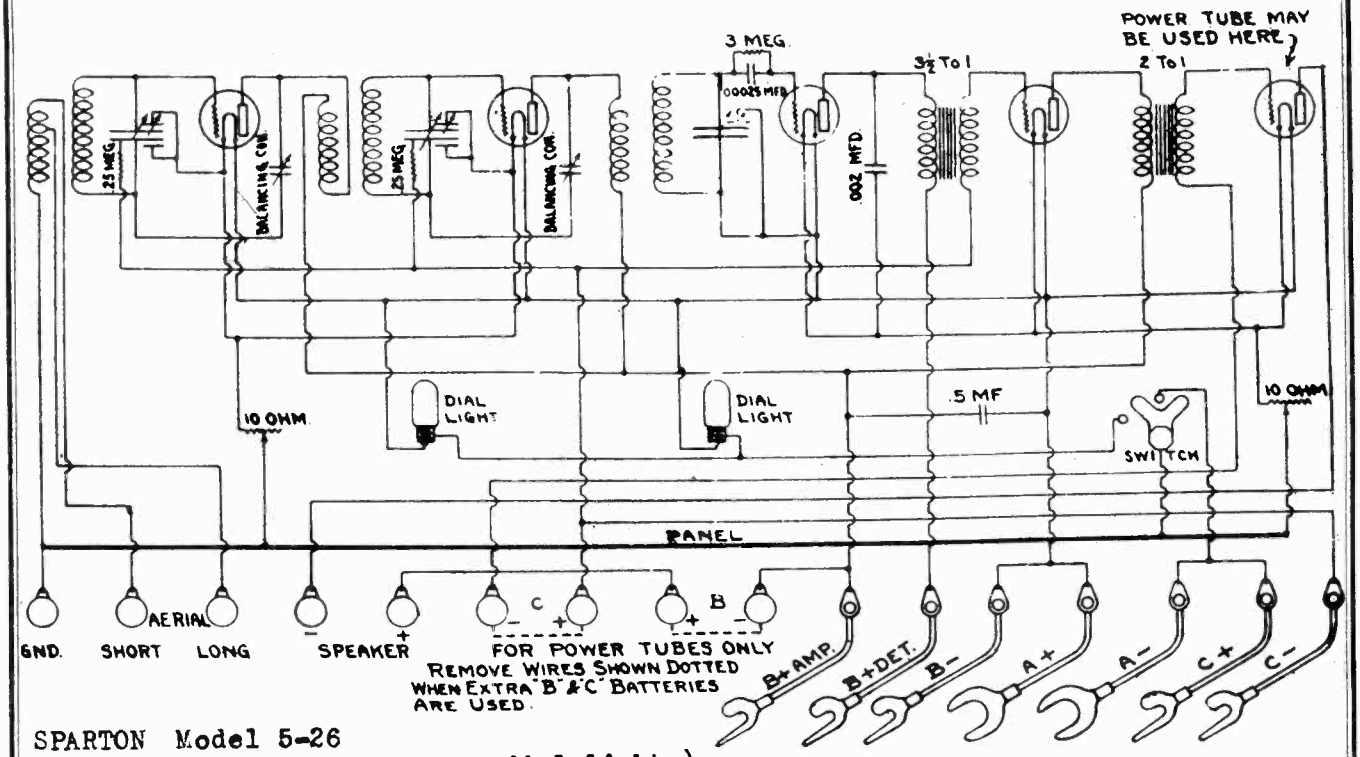
Bottom View Models AR-19 and AR-50 Receiving Units

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.

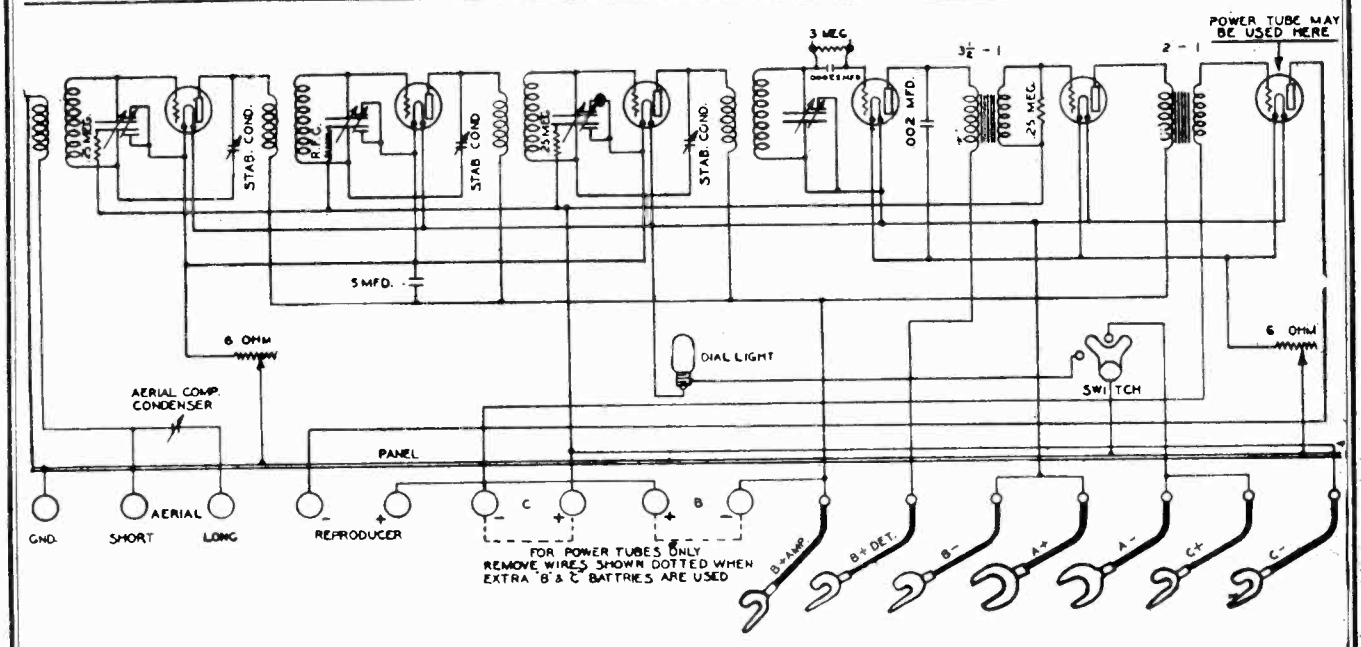
PART #A6217 FOR SPARK PLUG=.01 MFD
PART #A6238 FOR GENERATOR=.01 MFD

SPARKS WITHINGTON CO.

MODEL 5-15
MODEL 5-26
MODEL 6-15
MODEL 6-26

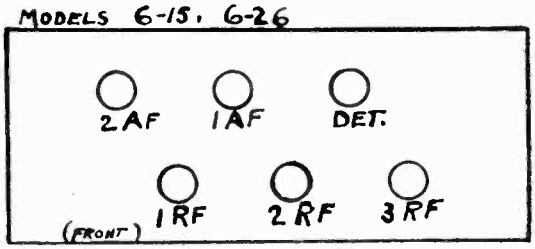


SPARTON Model 5-26
(Model 5-15 same except for dial light.)



SPARTON MODEL 6-26
MODEL 6-15 SAME EXCEPT FOR
DIAL LIGHT & A.F. RHEOSTAT

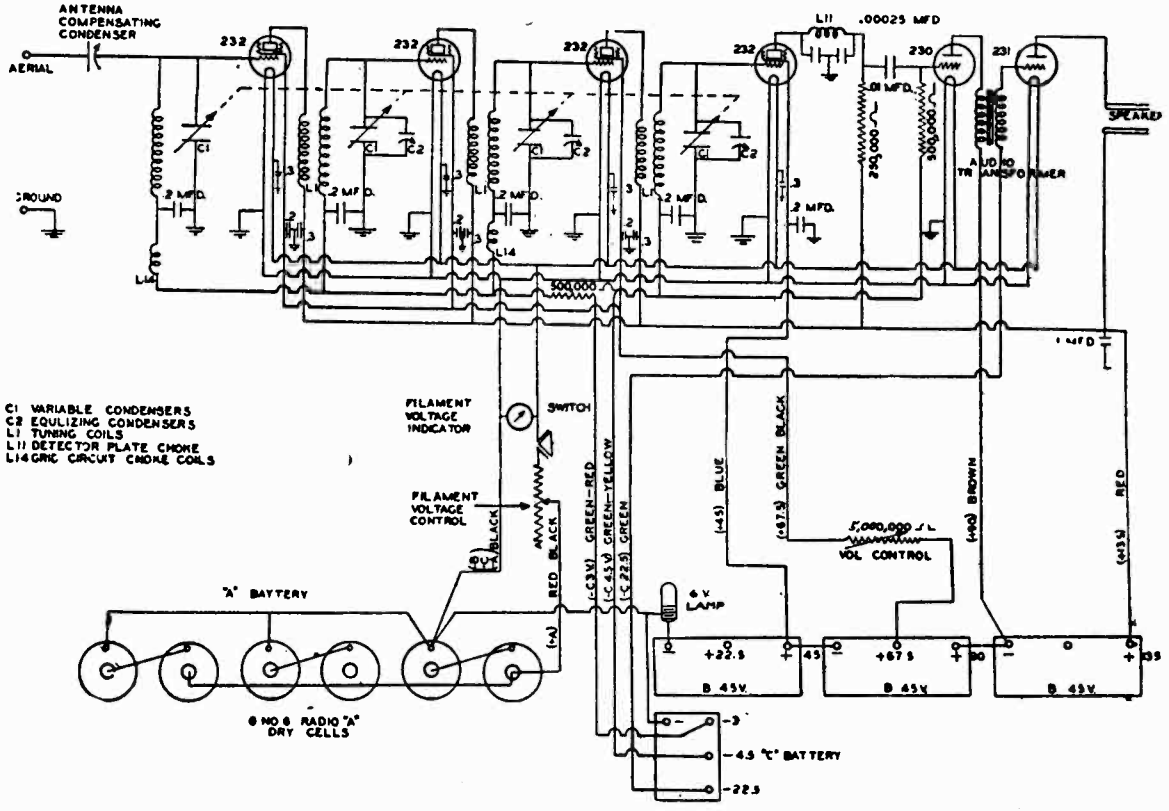
MODELS 6-15, 6-26



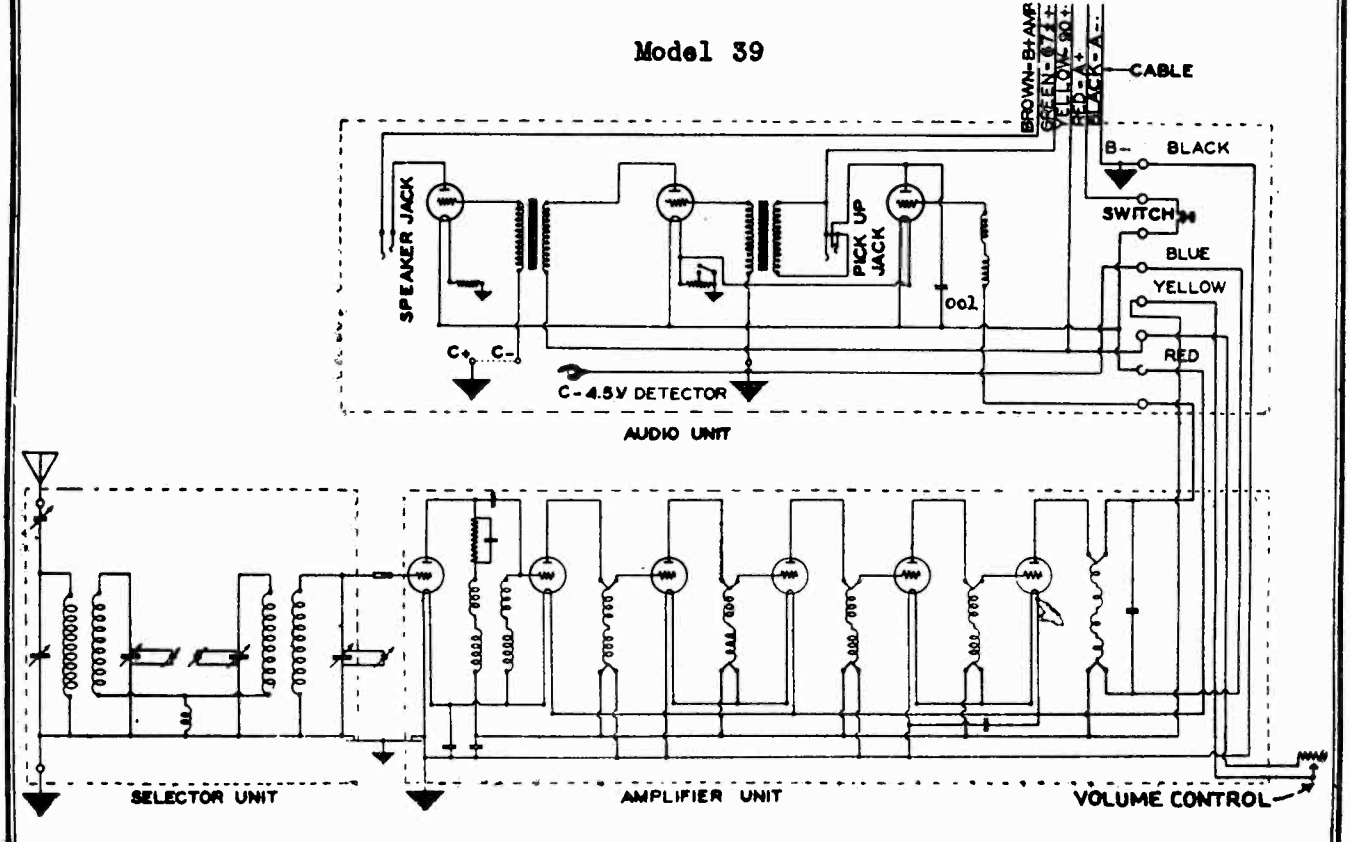
MODEL 31,32
MODEL 39
Schematic

SPARKS WITHINGTON CO.

Model 31,32

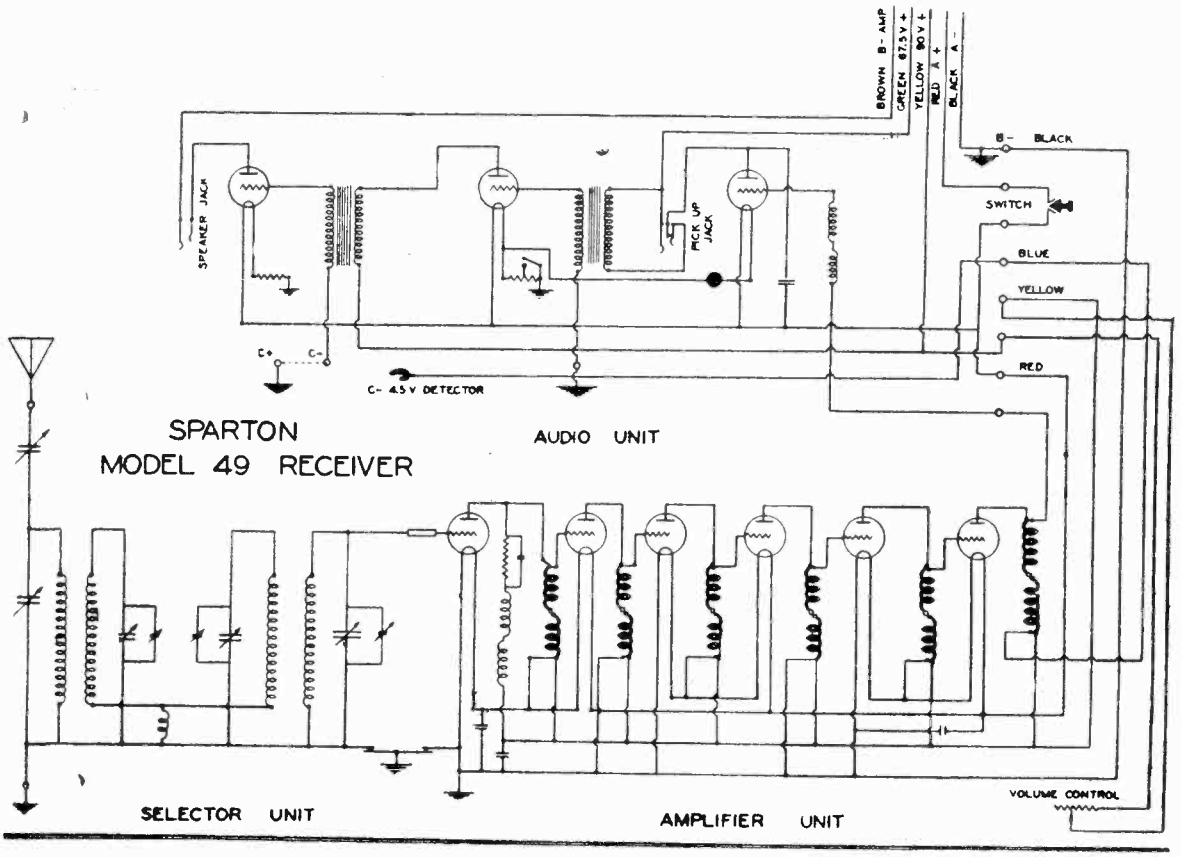


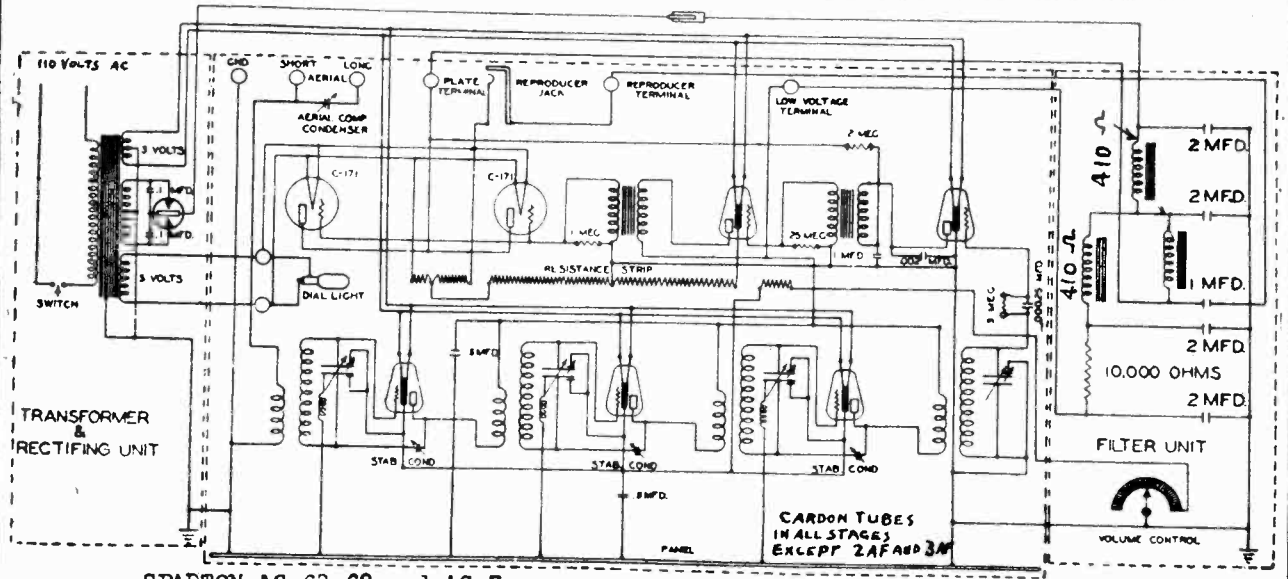
Model 39



SPARKS WITHINGTON CO.

MODEL 49
MODEL AC-7, 62, 63
Schematic, Voltage



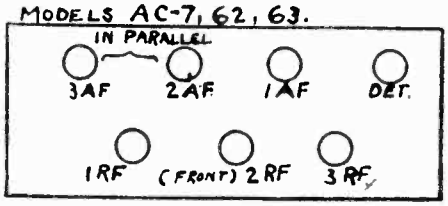


SPARTON AC 62,62 and AC 7.

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

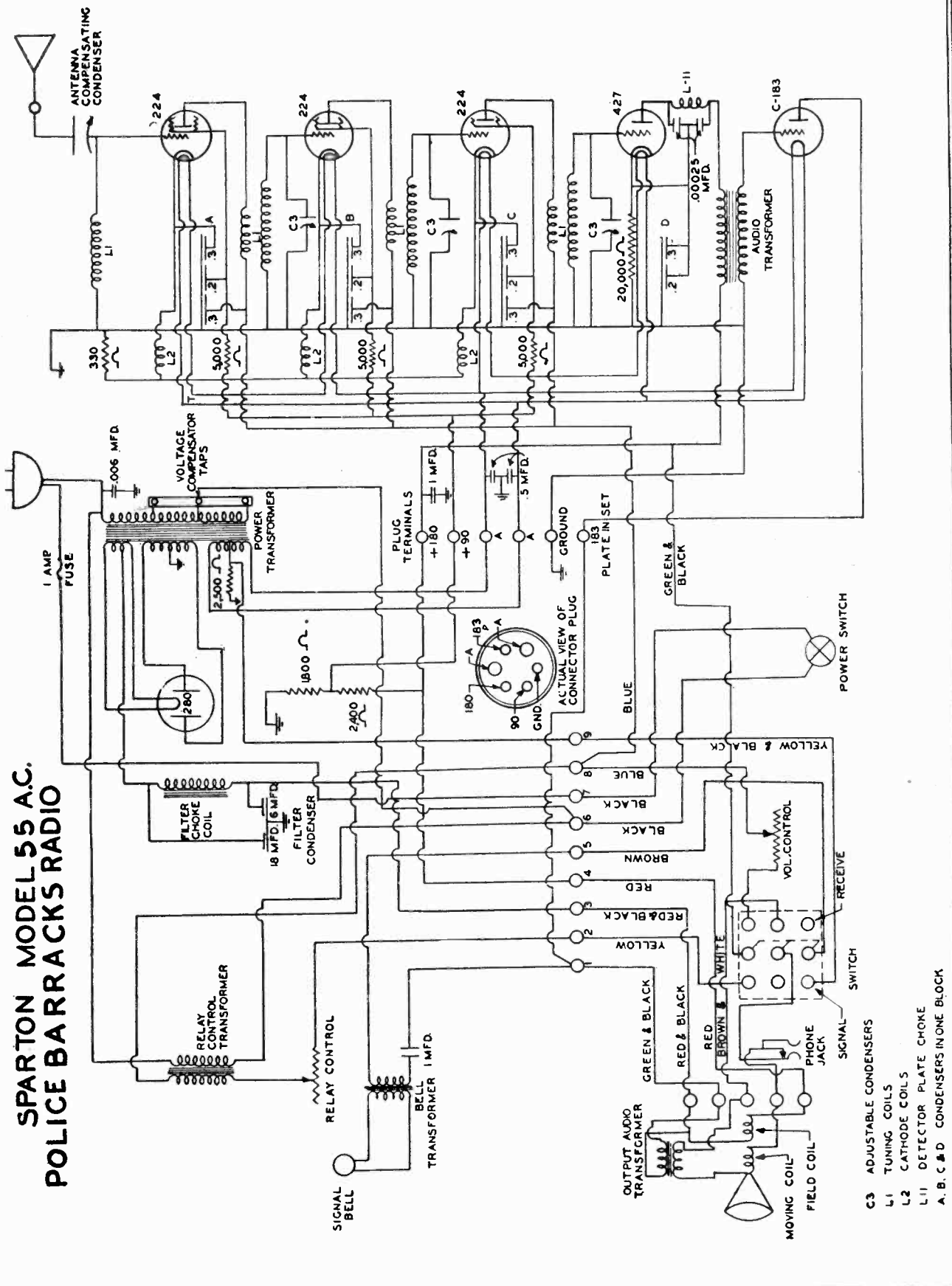
SPARTON AC-62-63&AC-7 RECEIVER

MODELS AC-7, 62, 63.



MODEL 55
Police Desk
Schematic

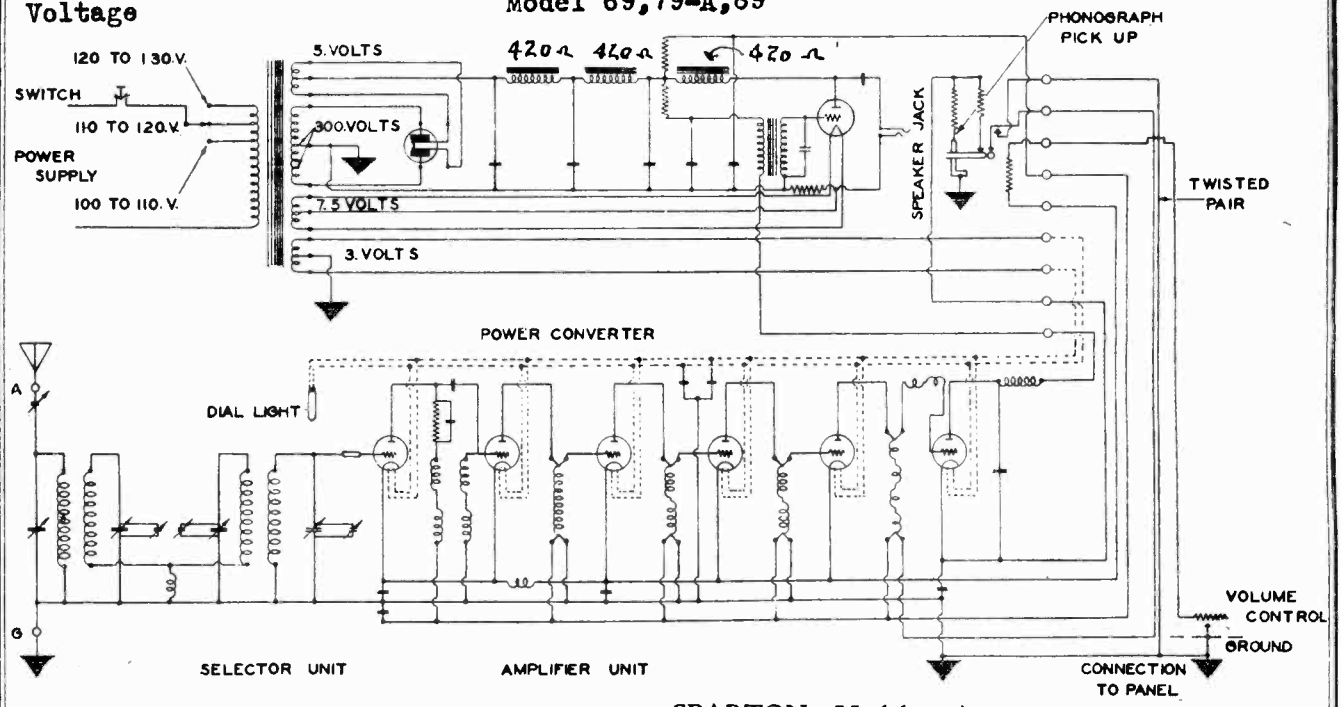
SPARKS WITHINGTON CO.
SPARTON OF CANADA LTD.



MODEL 69,79-A,89
Schematic
MODEL 89-A
Schematic
Voltage

SPARKS WITHINGTON CO.

Model 69,79-A,89

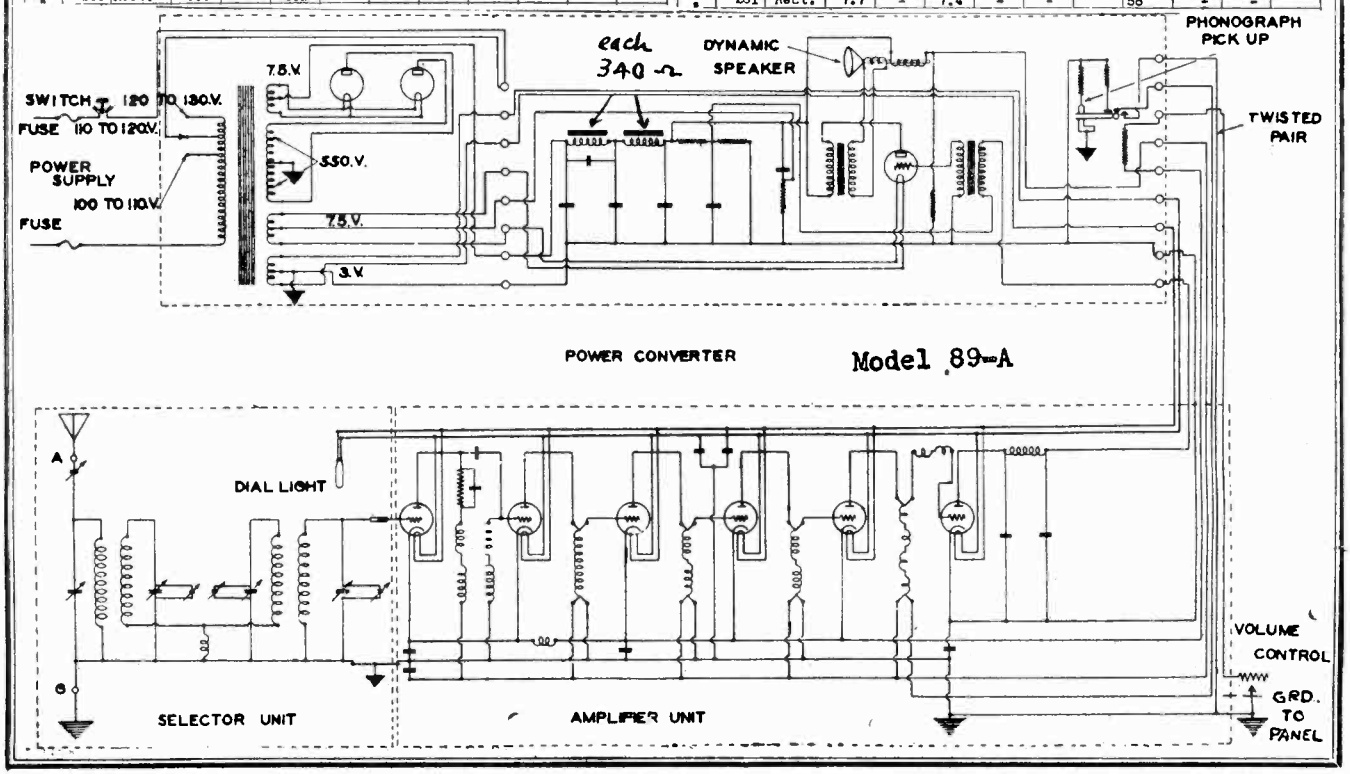


SPARTON—Model 79-A-89 - 69
Line Voltage 120—Volume Control Full

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 (CONTROL GRID)	CATHODE - HEATER VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE CHANGE M.A.	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		23	29	4	
8	280	Rect.	5.5	-	5.1	-	-		23	-	-	

SPARTON—Model 89-A
Line Voltage 120—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 (CONTROL GRID)	CATHODE - HEATER VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE CHANGE M.A.	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	-	-	
8	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

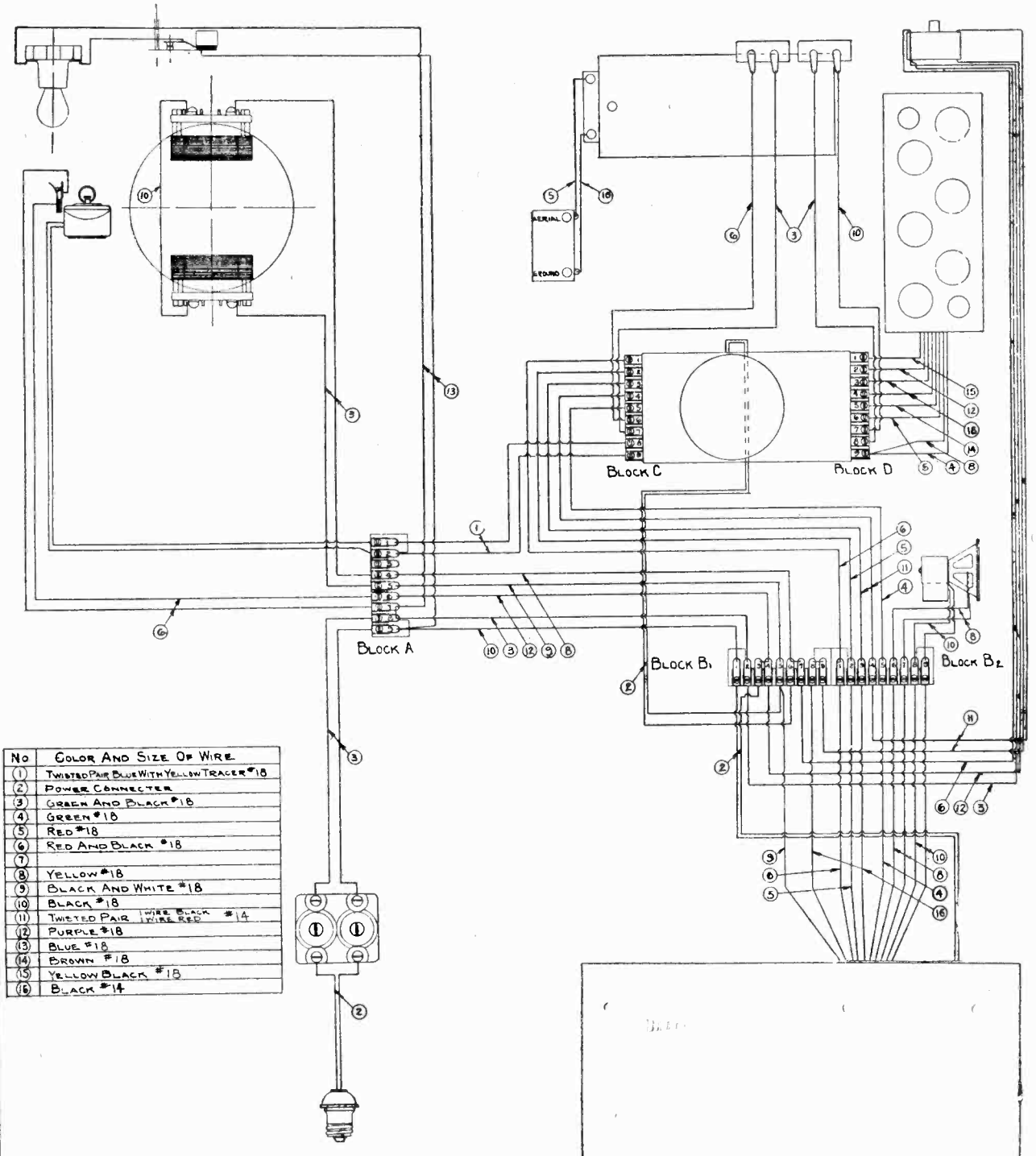
Part No.	Ohms	Watts	Body	Tip	Dot Stripe
B-4114-18	25,000	.5	Red	Green	Orange
A-5139	30,000	1	Orange	Black	
B-4114-19	30,000	.5	Orange	Black	Orange
B-4114-22	40,000	.5	Yellow	Black	Orange
A-3423	50,000	3	Gray		Red
A-3423	50,000	3	Green	Black	Orange
B-4114-12	50,000	.5	Green	Black	Orange
B-4114-15	60,000	.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 (Wire Black Wire Red) #14
12	Purple #18
13	Blue #18
14	Brown #18
15	Yellow Black #18
16	Black #14

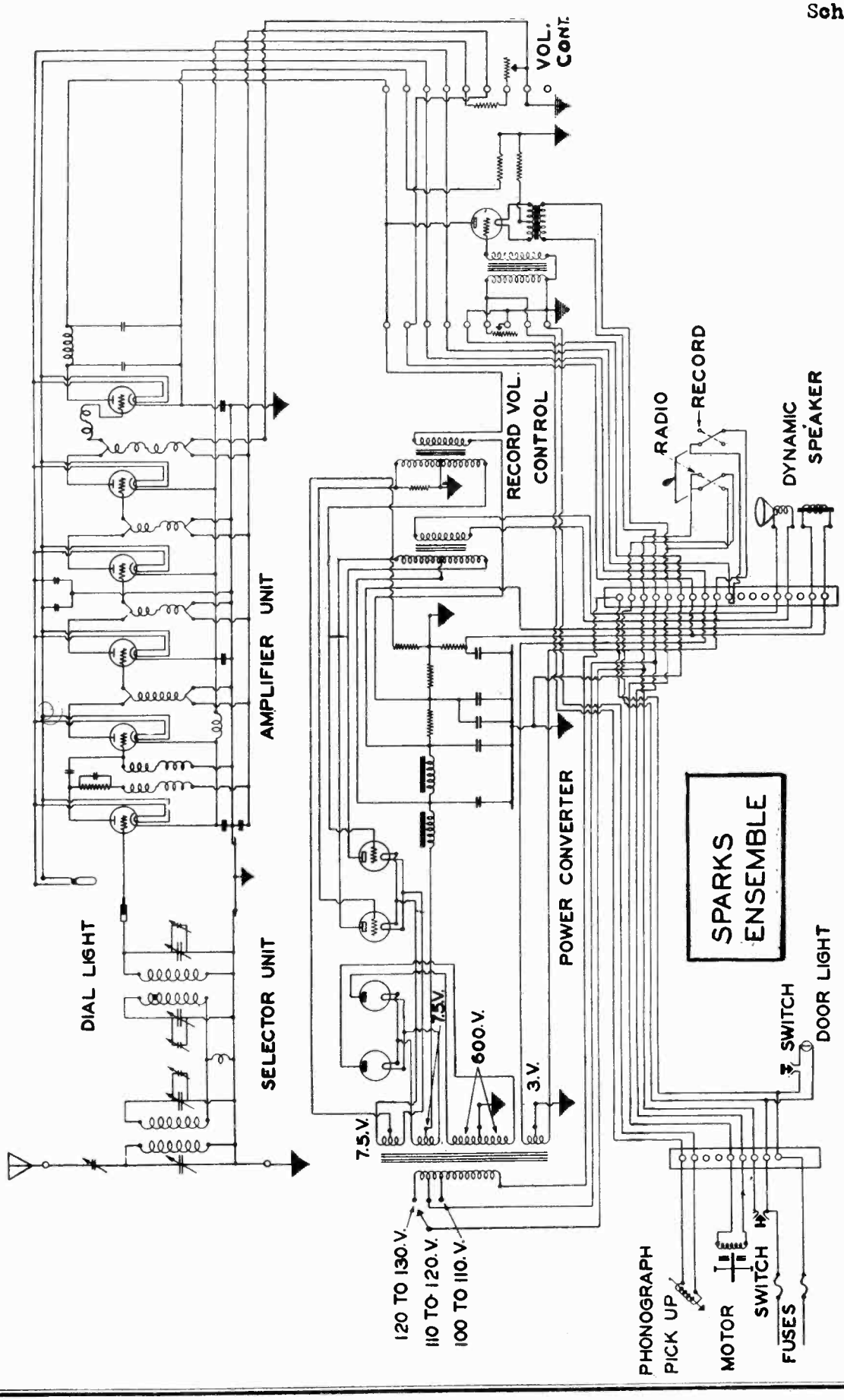
Wiring Diagram - Sparks Ensemble

The Phonocraft Corporation

Approved By: [signature]

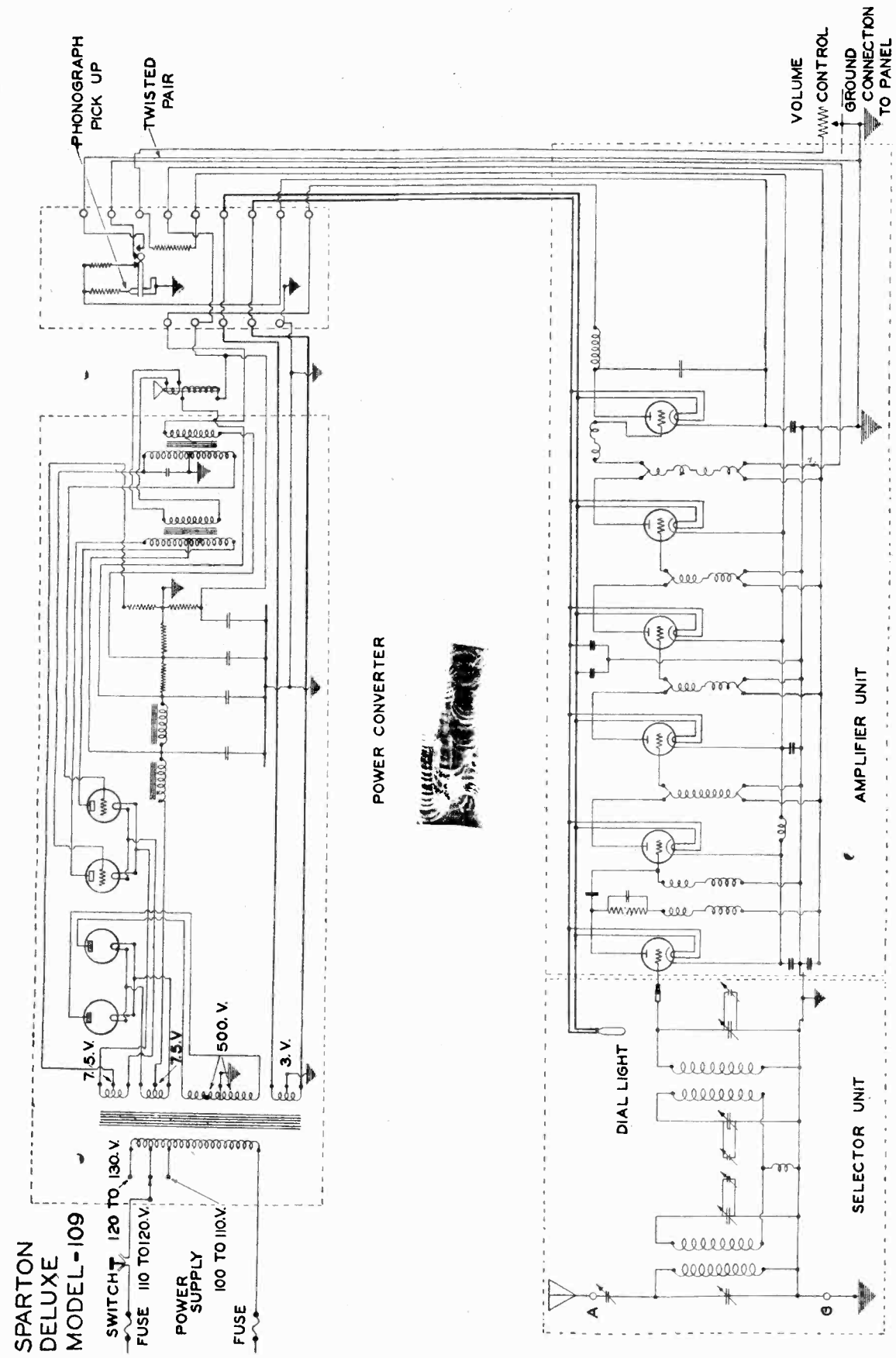
SPARKS WITHINGTON CO.

MODEL 99
Ensemble
Schematic



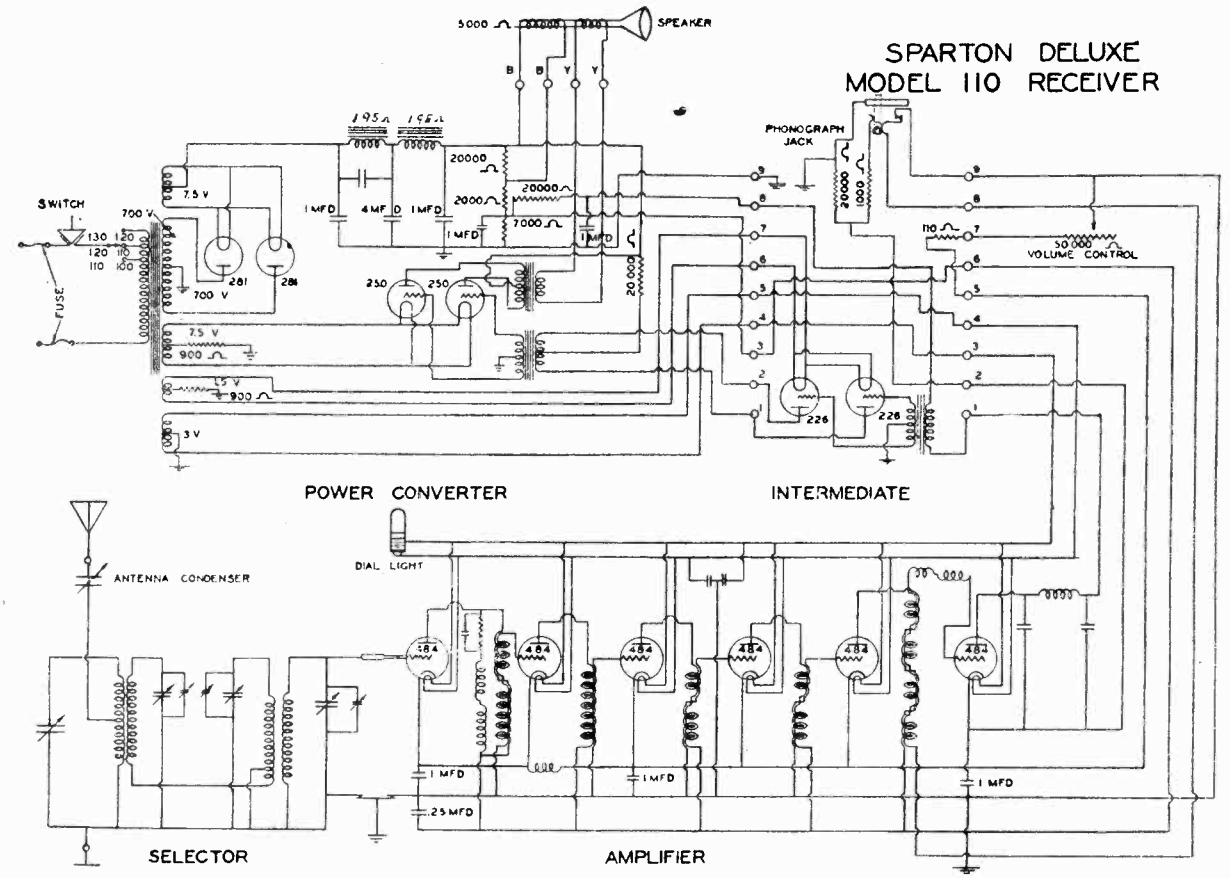
SPARKS WITHINGTON CO.

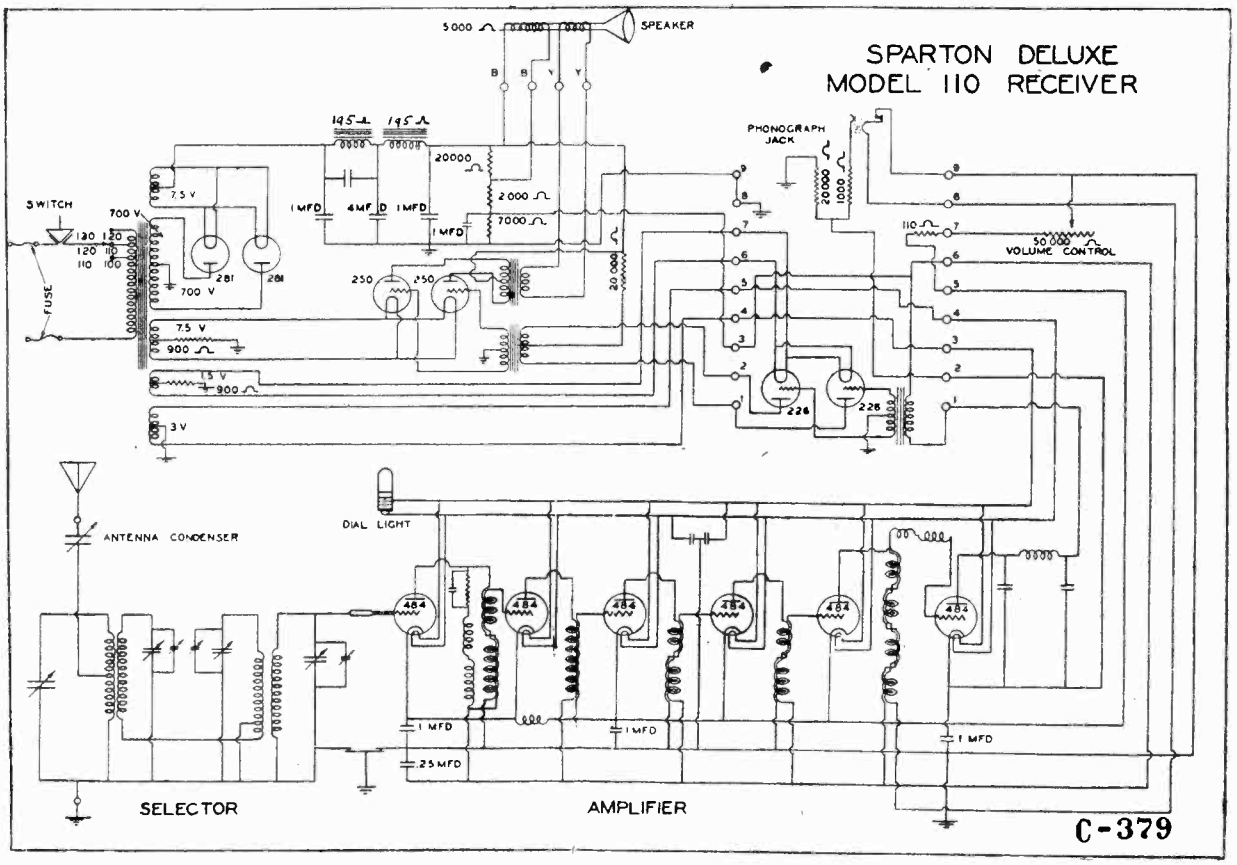
MODEL 109 DeLuxe
Schematic



SPARKS WITHINGTON CO.

MODEL 110,111 AC
Two Types
Schematics





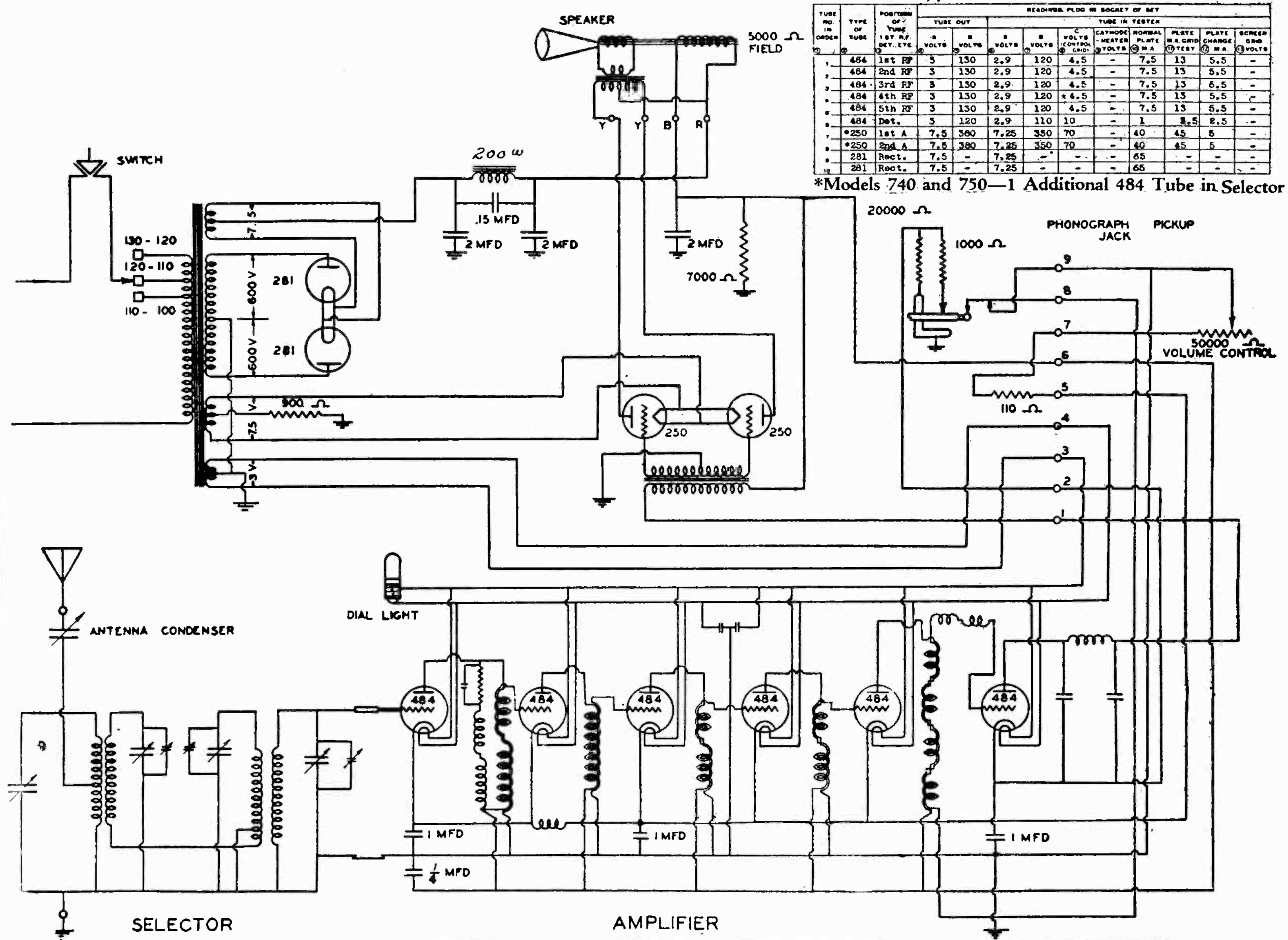
SPARKS WITHINGTON CO.

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)	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	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	360	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



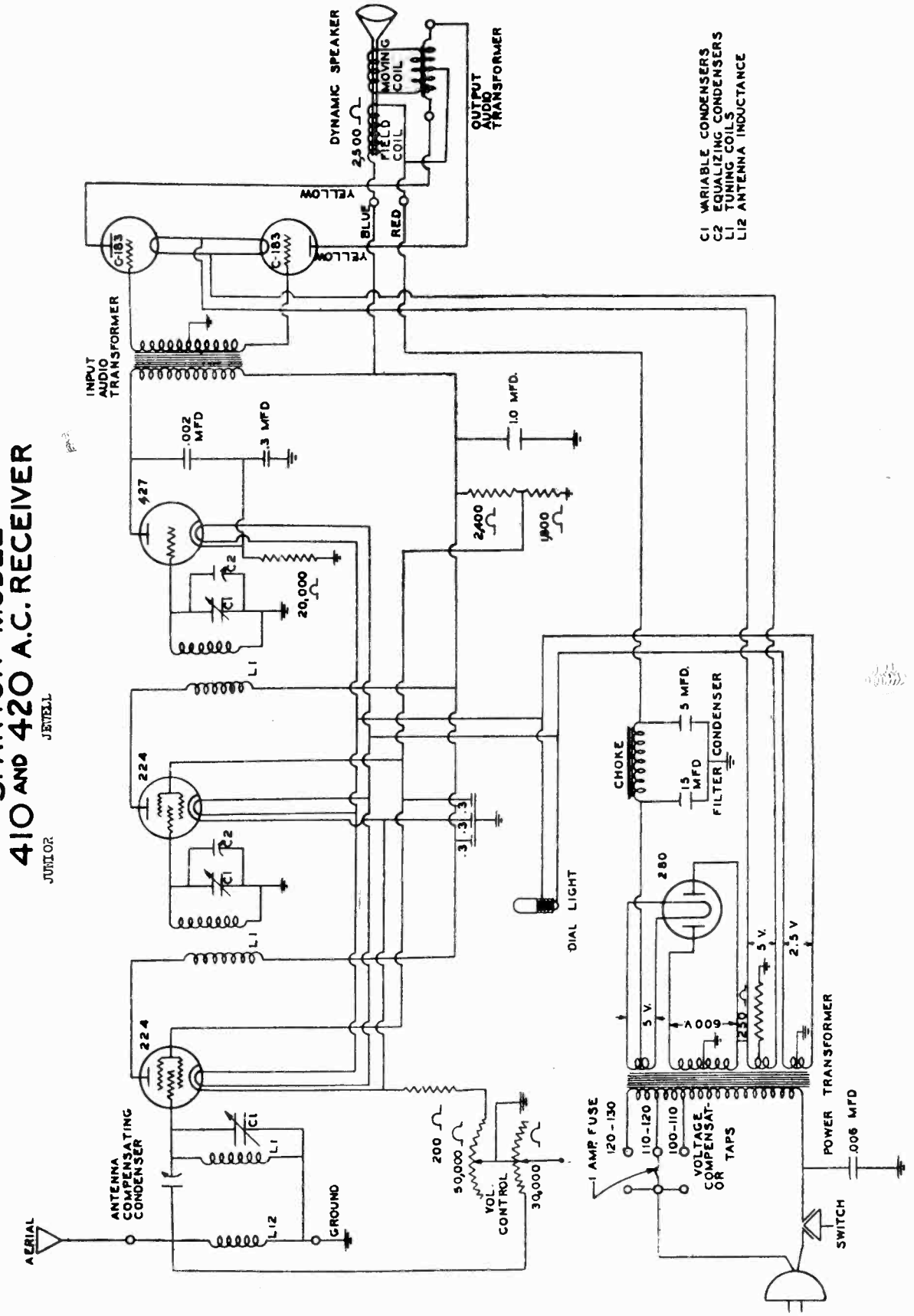
SPARKS WITHINGTON CO.

MODEL 420 AC
Schematic

SPARTON MODEL 410 AND 420 A.C. RECEIVER

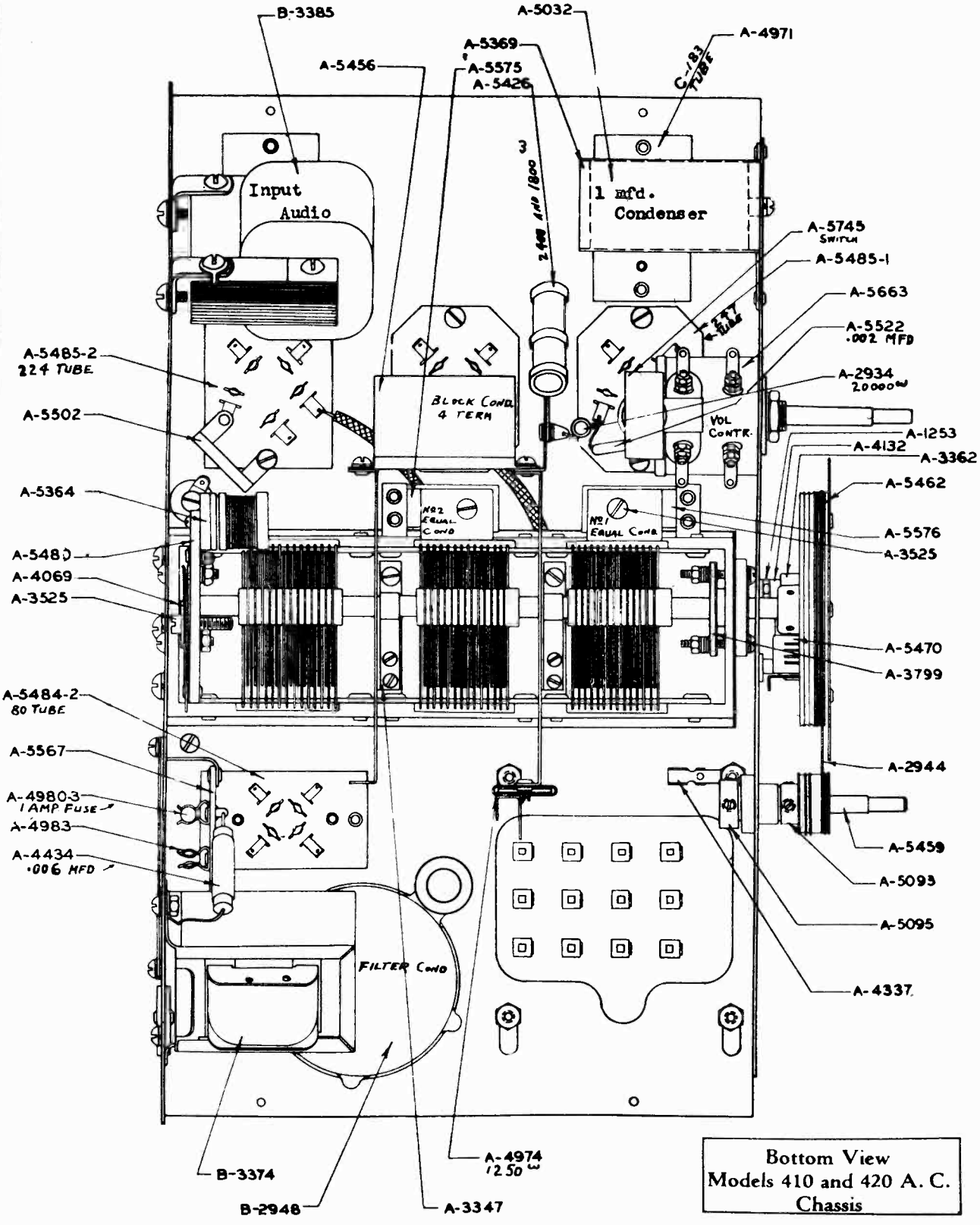
JEWELL

JUNIOR



MODEL 420 AC
Chassis

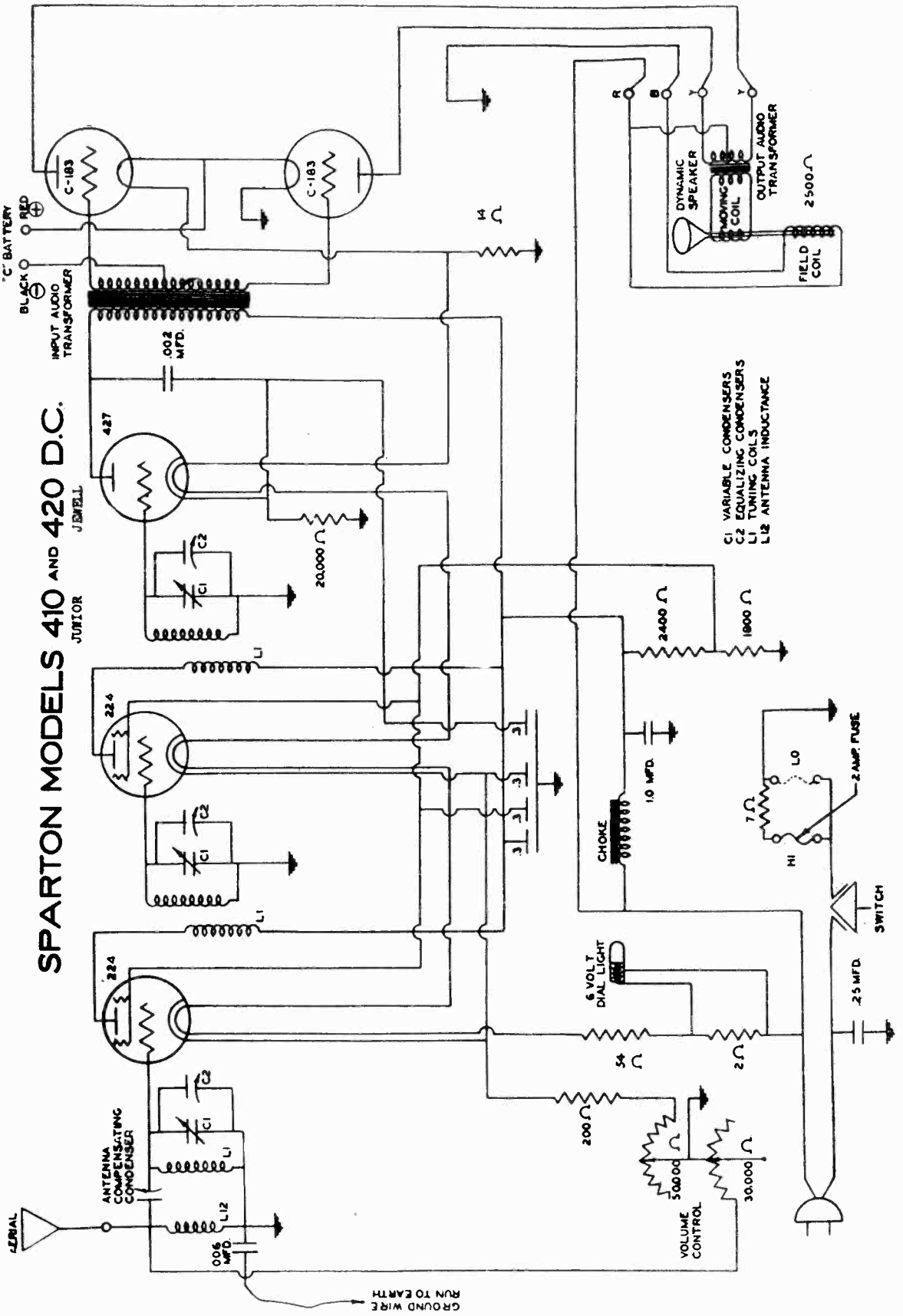
SPARKS WITHINGTON CO.



Bottom View
Models 410 and 420 A. C.
Chassis

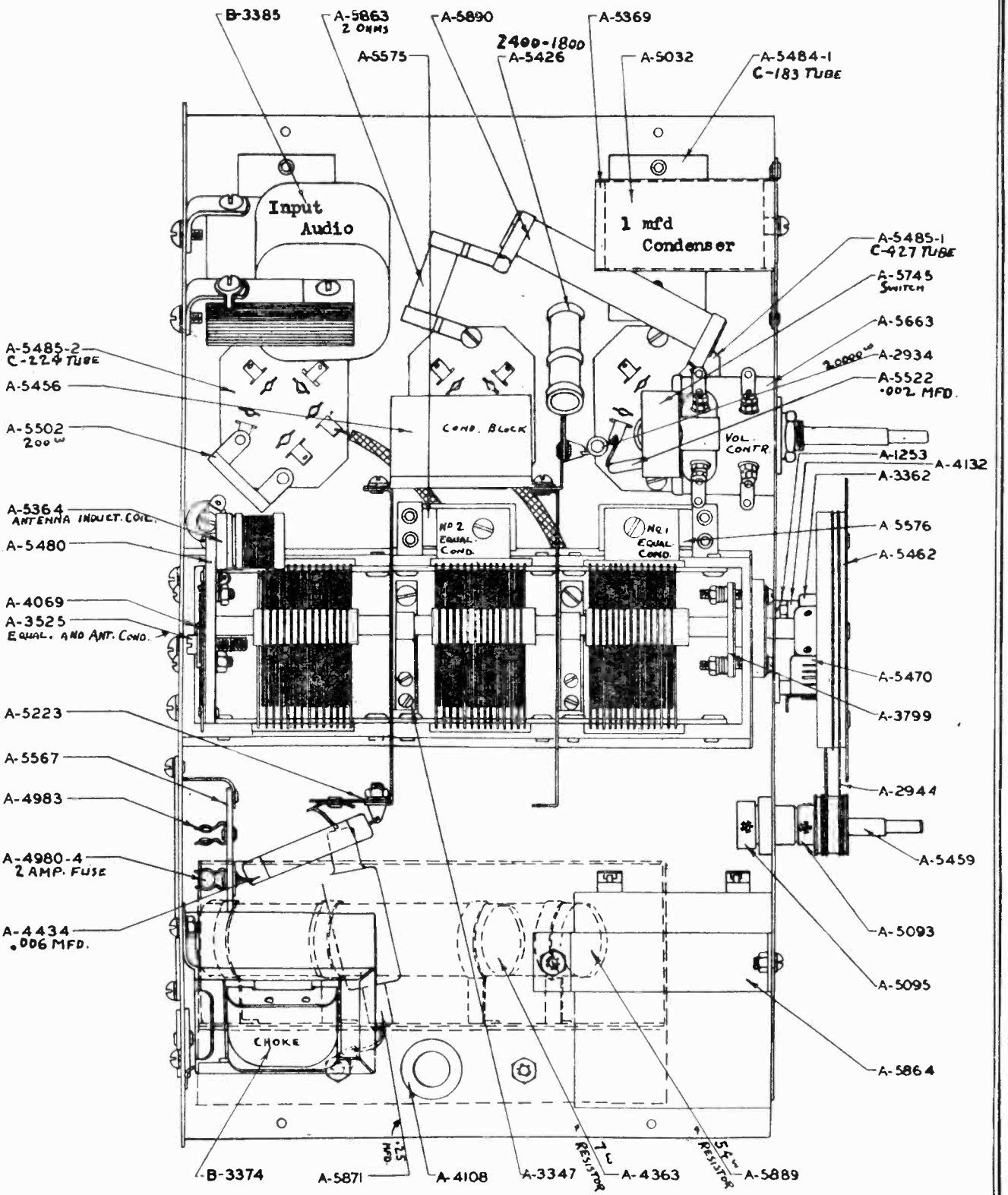
SPARKS WITHINGTON CO.

MODEL 420 DC
Schematic



MODEL 420 DC
Chassis

SPARKS WITHINGTON CO.



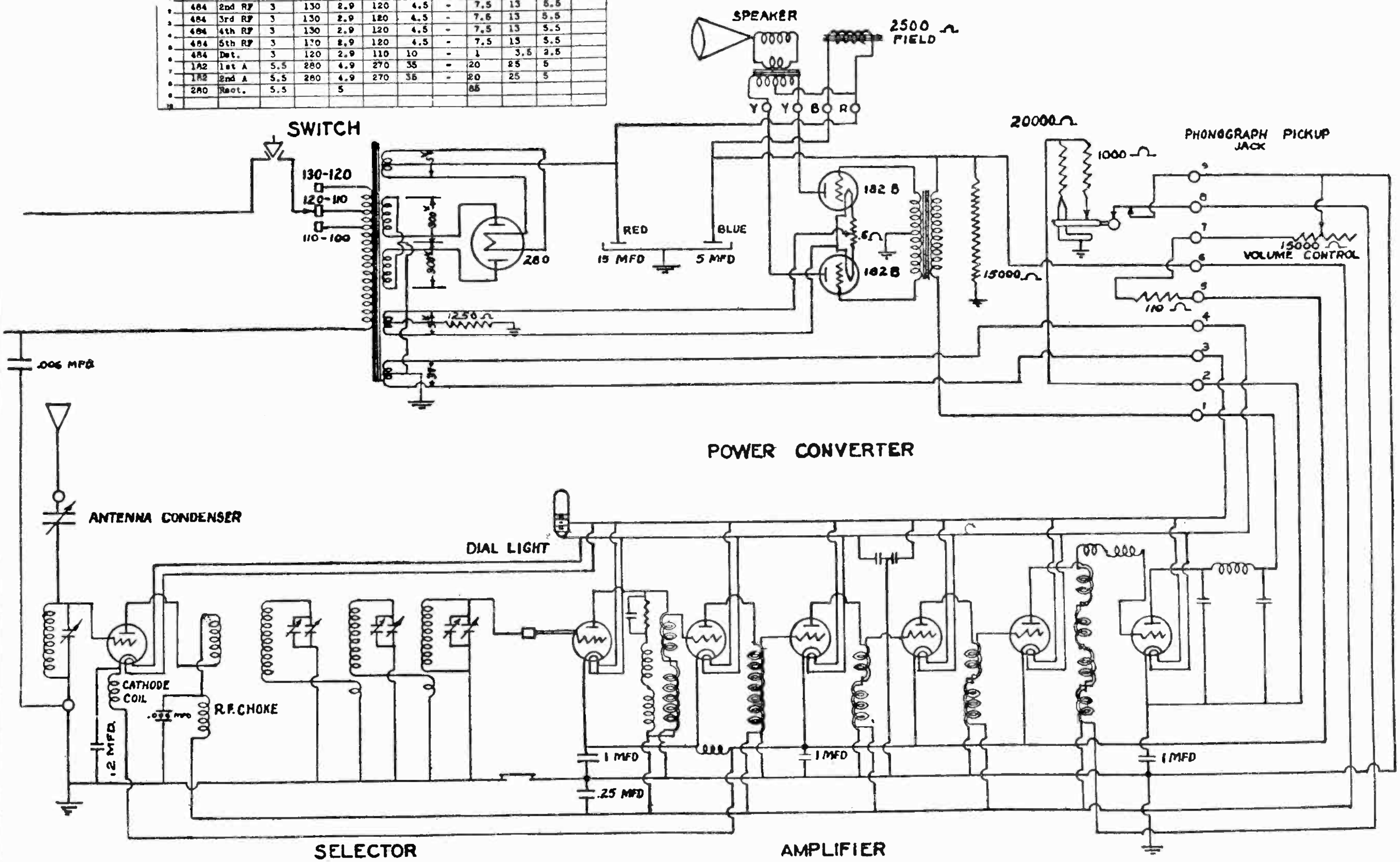
Bottom View—Model 410 and 420 D. C. Chassis

SPARKS WITHINGTON CO.

MODEL 589 AC

SPARTON—Model -589-
Line Voltage 120—Set on 120-130 Volt Tap—Volume Control Position Max

			Readings Plug in Socket of Set									
			Tube Out		Tube in Tester							
Tube No. in Order (1)	Type of Tube (2)	Position of Tube 1st RF Det Etc (3)	S Volts (4)	B Volts (5)	A Volts (6)	B Volts (7)	C Volts (Control Grid) (8)	Cathode-Heater Volts (9)	Normal Plate (10) MA	Plate MA Grid (11) Test	Plate Change (12) MA	Screen Grid (13) 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												



MODEL 600,610,620,
737 AC.
737 Below # 6502

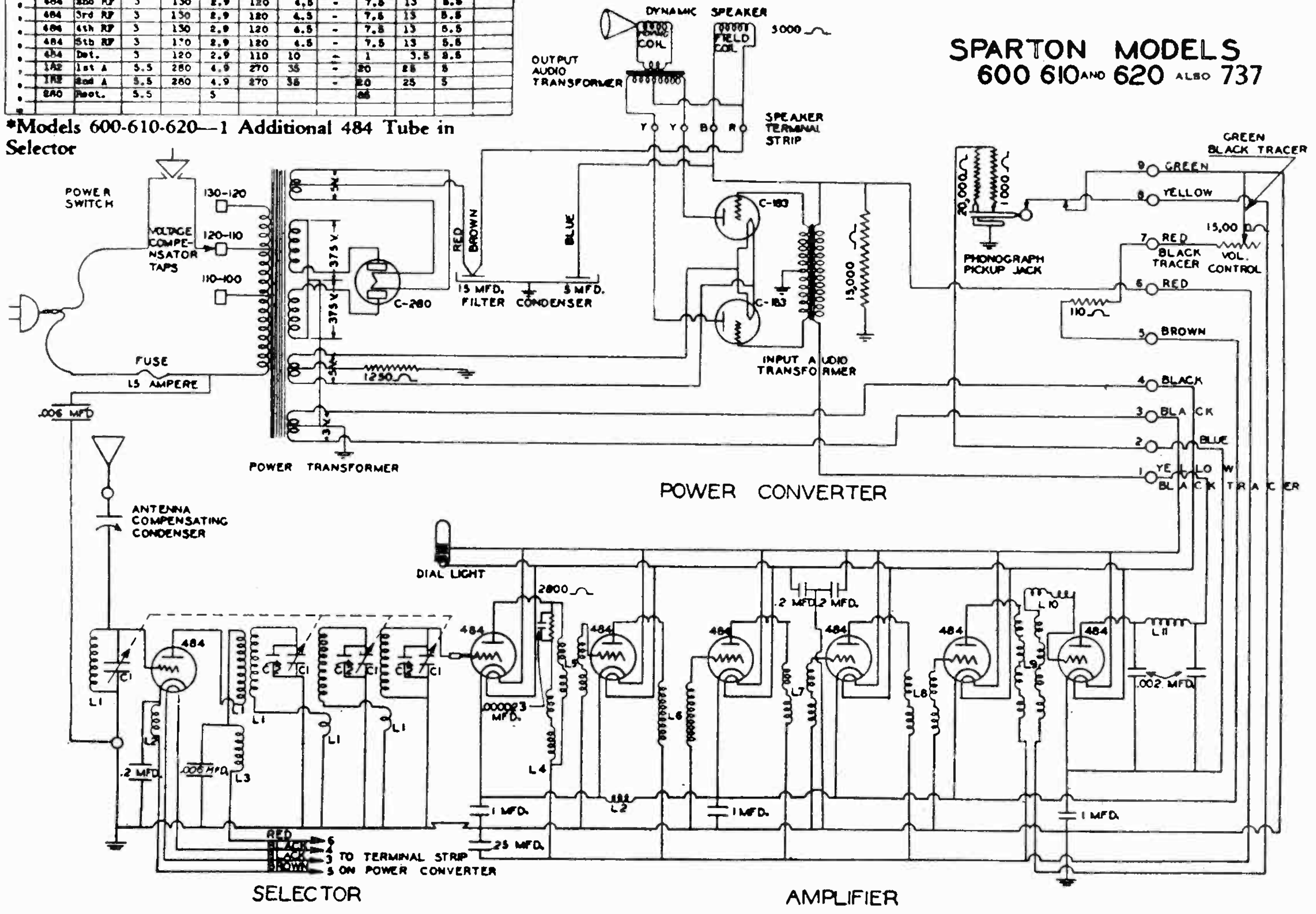
SPARKS WITHINGTON CO.

SPARTON—Model 610-620*
Line Voltage 120—Set on 120-130 Volt Tap—Volume Control Position Max

Tube No. in Order	Type of Tube	Position of Tube (R.F., Det., etc.)	Tube Out: A Volts	Tube Out: B Volts	Tube in Tested: A Volts	Tube in Tested: 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	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	170	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				66			
10												

*Models 600-610-620—1 Additional 484 Tube in Selector

SPARTON MODELS 600 610 AND 620 ALSO 737



C1 VARIABLE CONDENSERS
C2 EQUALIZING CONDENSERS
L1 TUNING COILS
L2 CATHODE COIL

L3 R.F. CHOKE COIL
L4 FIRST PLATE COIL
L5 COUPLING COIL

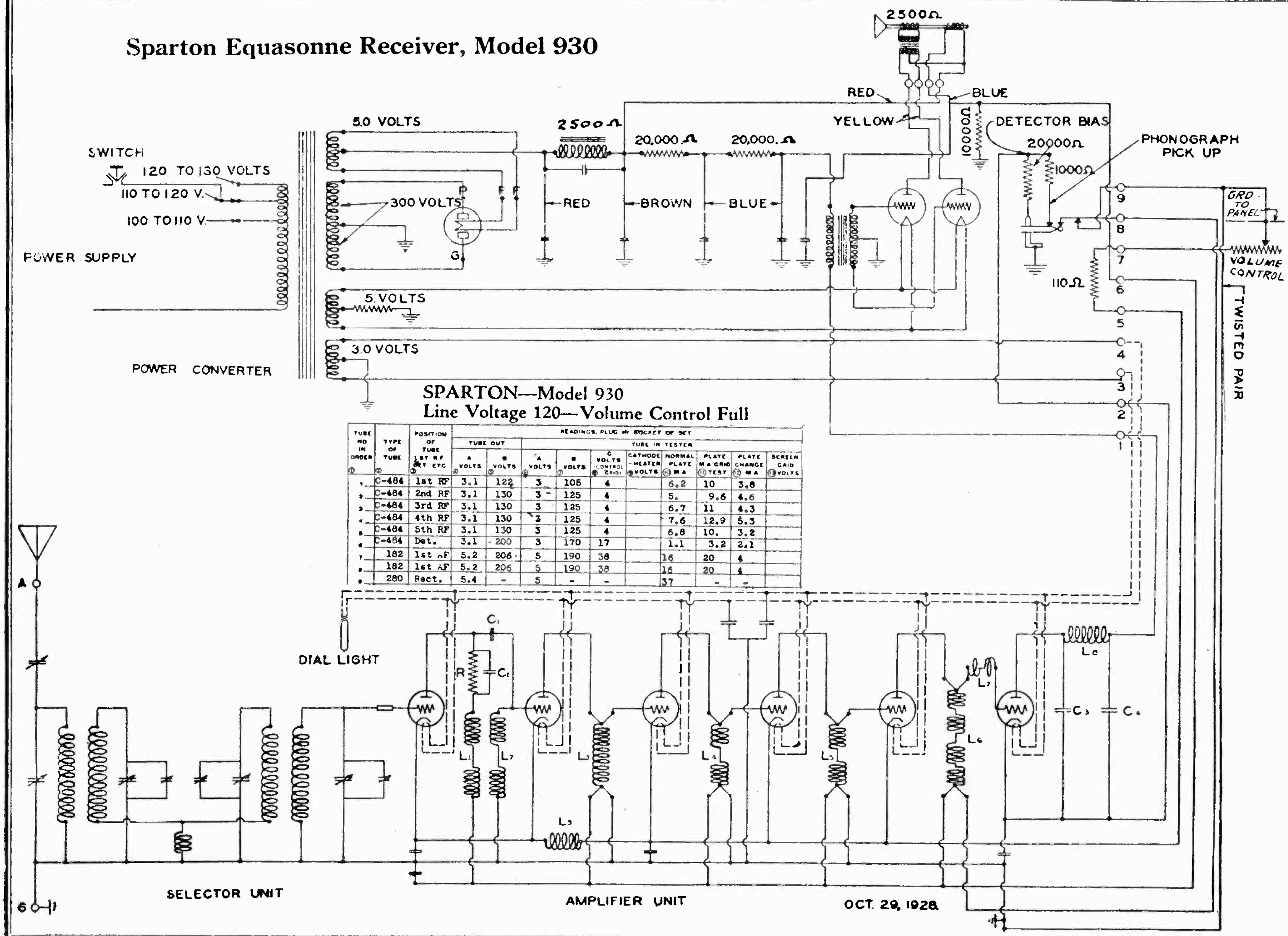
L6 FIRST R.F. TRANSFORMER
L7 SECOND R.F. TRANSFORMER
L8 THIRD R.F. TRANSFORMER

L9 FOURTH R.F. TRANSFORMER
L10 GRID COIL
L11 DETECTOR PLATE CHOKE

MODEL 930 AC

Sparton Equasonne Receiver, Model 930

SPARKS WITHINGTON CO.



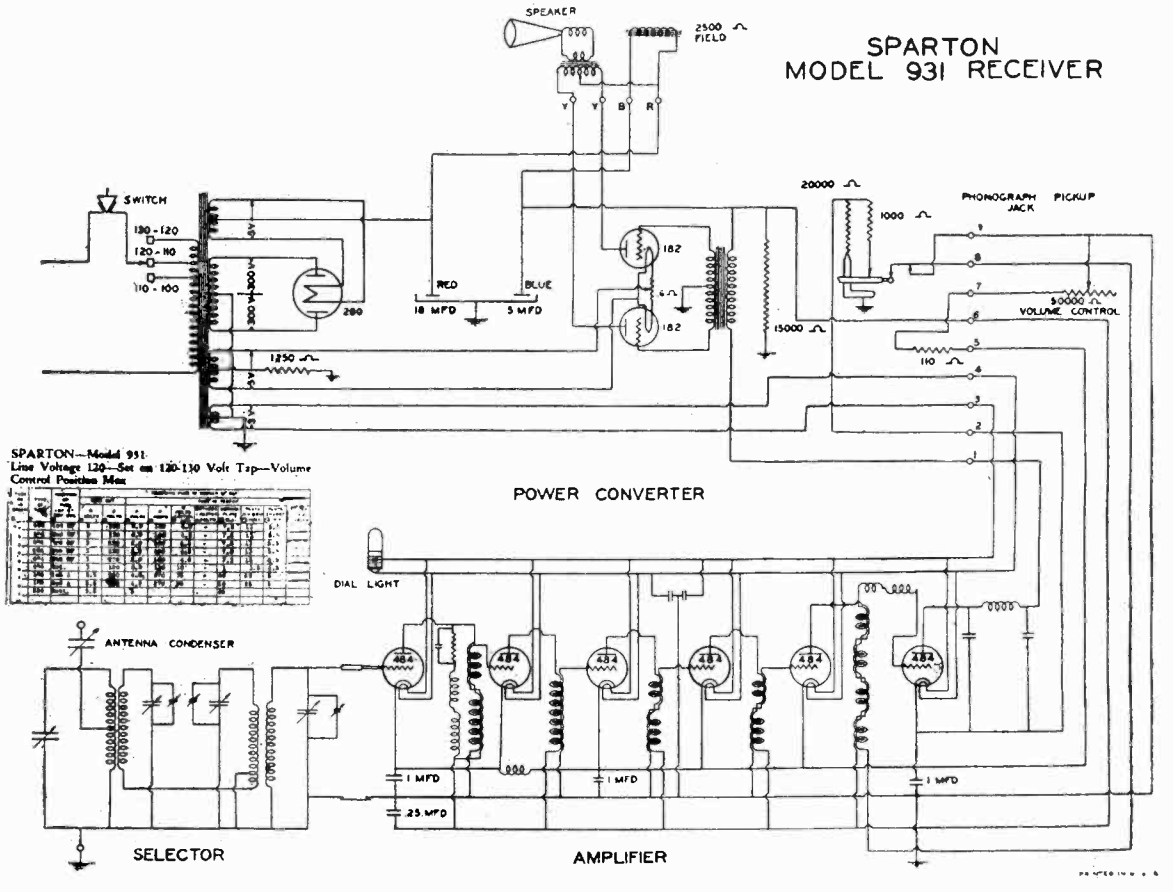
SPARTON—Model 930
Line Voltage 120—Volume Control Full

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)	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	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	-	-	

SPARKS WITHINGTON CO.

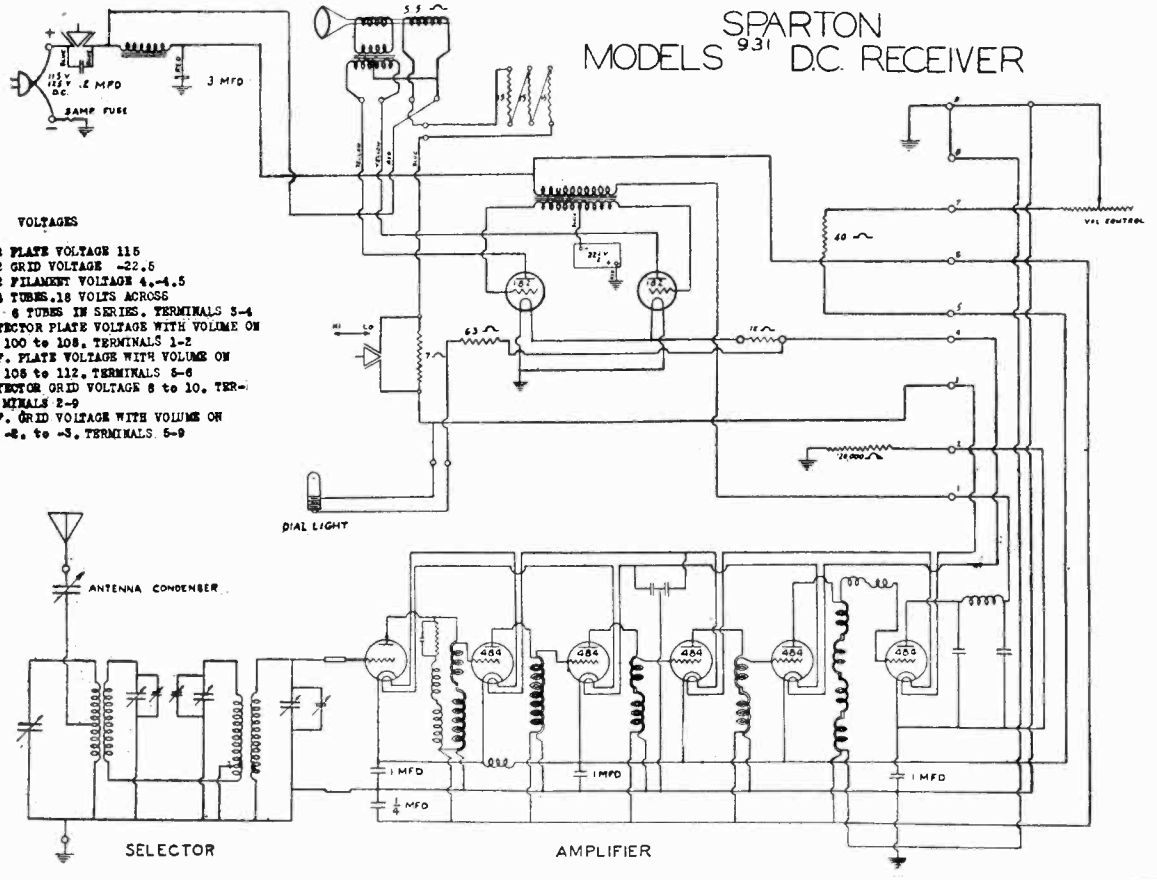
MODEL 931 AC
MODEL 931 DC

SPARTON MODEL 931 RECEIVER



SPARTON—Model 931
Line Voltage 120—Set on 120-130 Volt Tap—Volume Control Position Max

SPARTON MODELS 931 D.C. RECEIVER

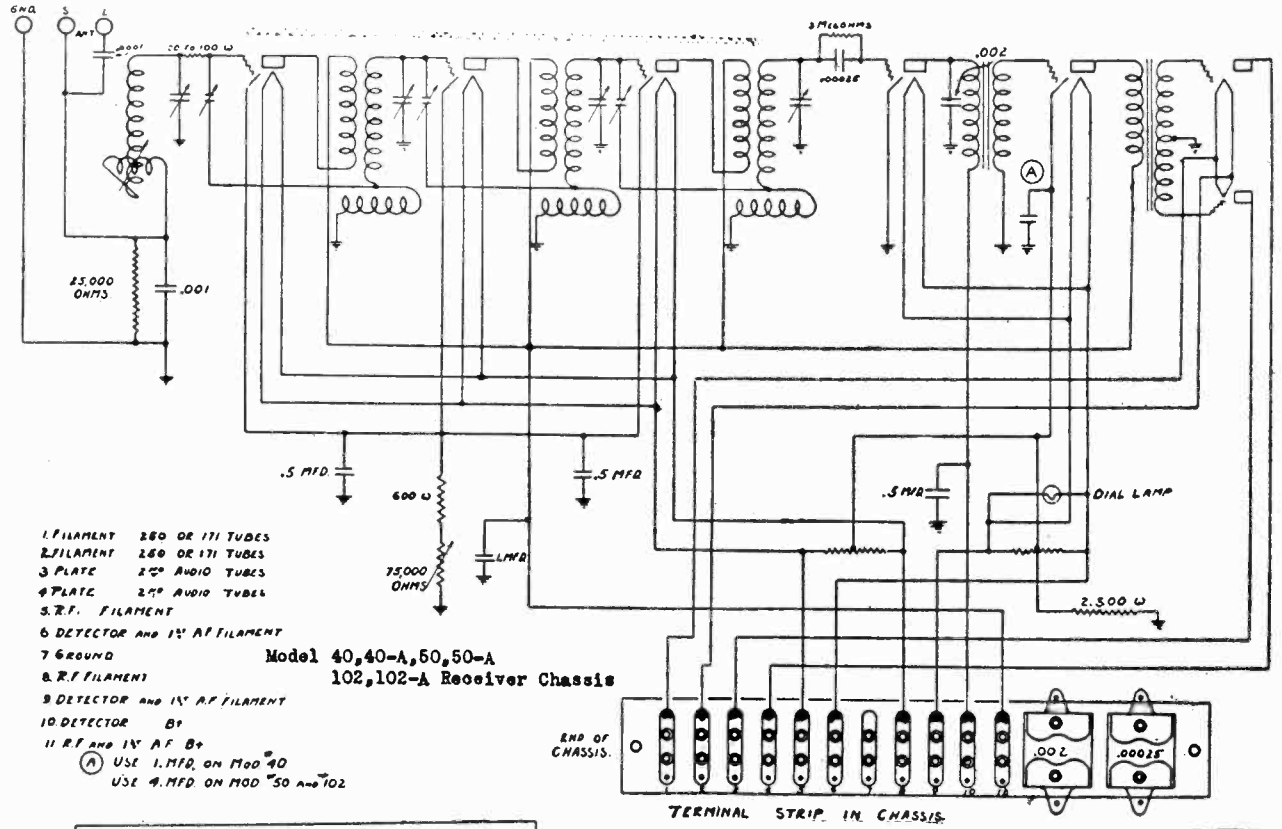


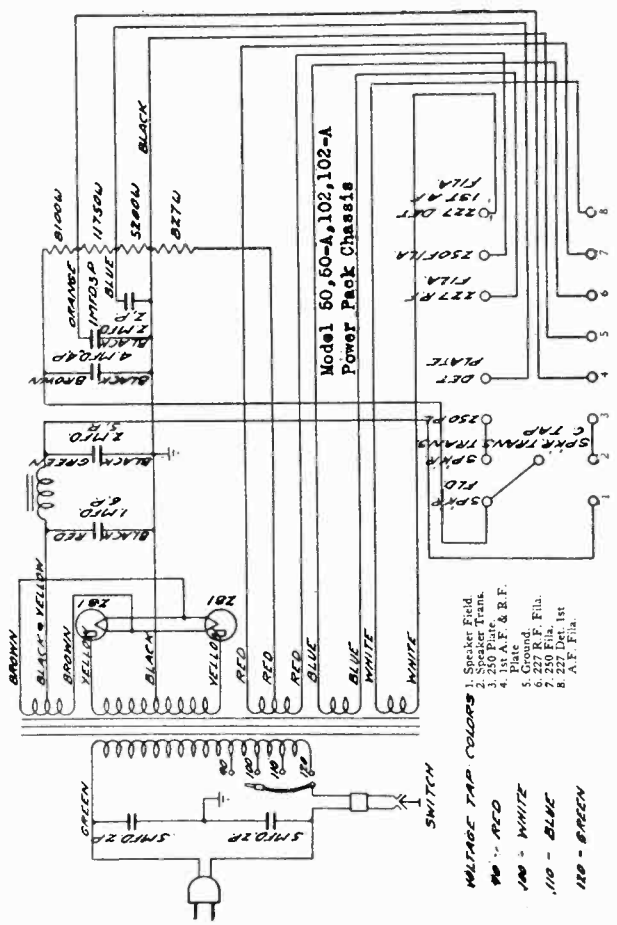
VOLTAGES

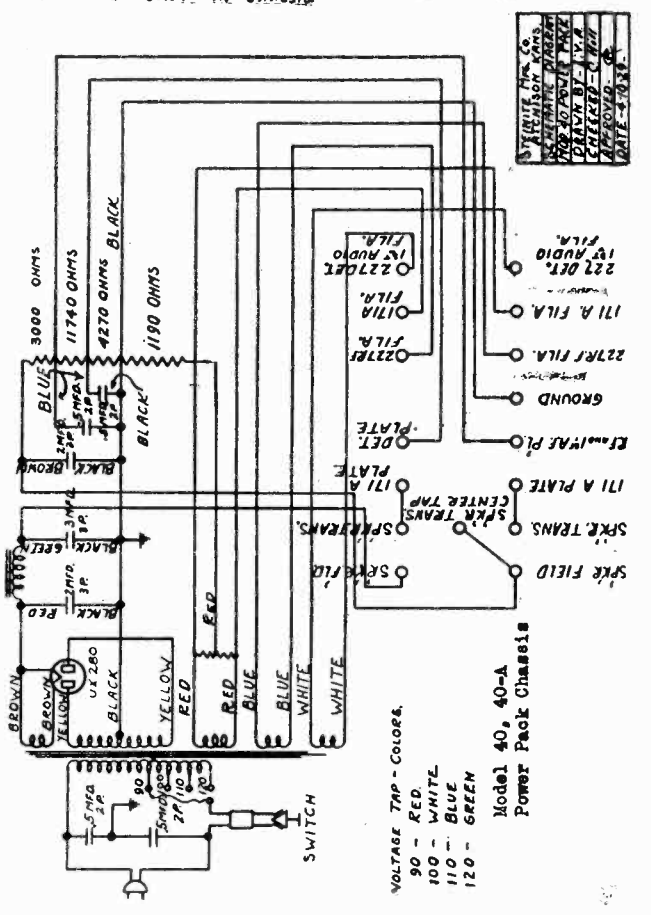
182 PLATE VOLTAGE 115
182 GRID VOLTAGE -22.5
182 FILAMENT VOLTAGE 4.-4.5
484 TUBES.18 VOLTS ACROSS
6 TUBES IN SERIES. TERMINALS 3-4
DETECTOR PLATE VOLTAGE WITH VOLUME ON
100 to 108. TERMINALS 1-2
R.F. PLATE VOLTAGE WITH VOLUME ON
108 to 112. TERMINALS 5-6
DETECTOR GRID VOLTAGE 8 to 10. TERMINALS 2-9
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

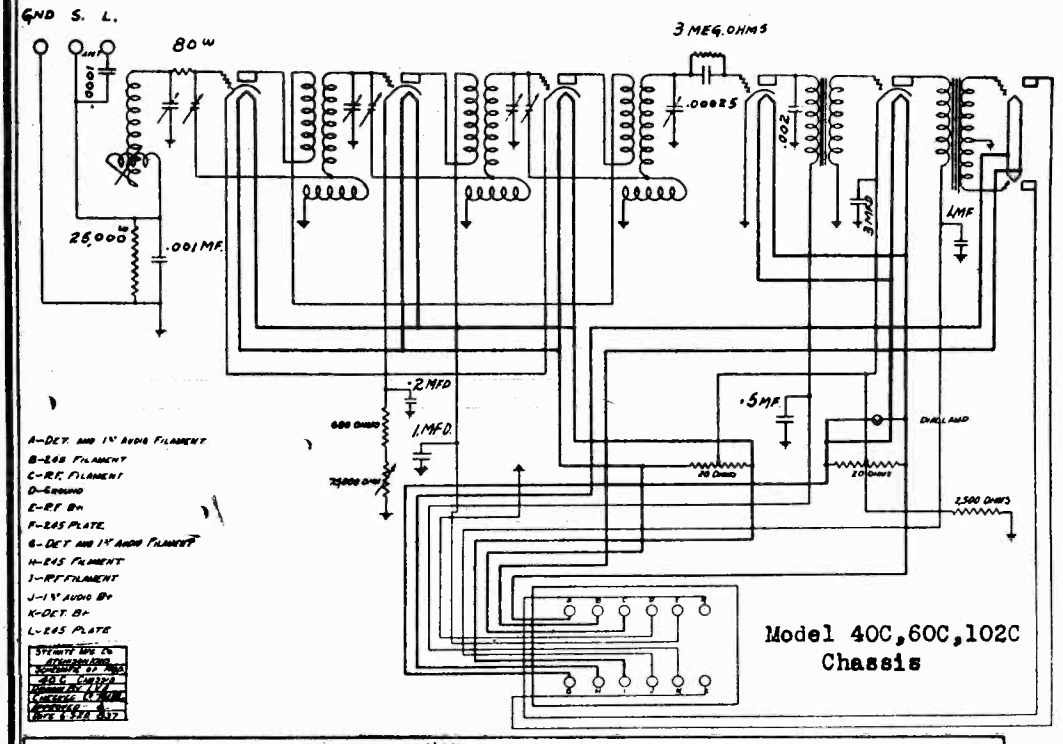


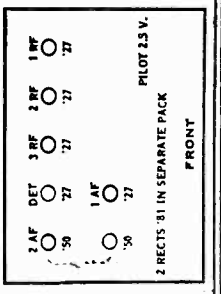


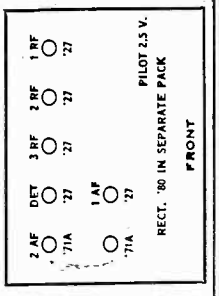


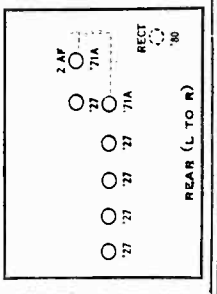
MODEL 40C,60C,102C
MODEL 40,45,40A,45A,50A,102
Voltage-Socket

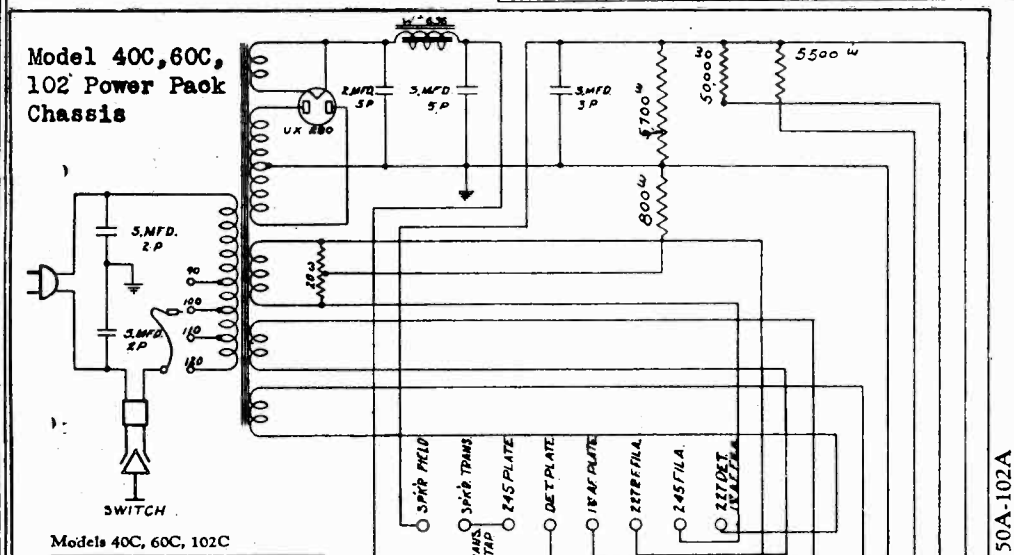
STEINITE RADIO CO.



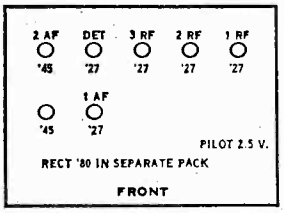








Models 40C, 60C, 102C



STEINITE—Models 50A-102A
Line Voltage 110—Set on 110 Volt Tap—Volume Control Position Max

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 CONTROL GRID	TUBE IN TESTER CATHODE-HEATER VOLTS	TUBE IN TESTER NORMAL PLATE M.A.	TUBE IN TESTER PLATE M.A. GRID VOLTS TEST	TUBE IN TESTER PLATE CHANGE M.A.	TUBE IN TESTER SCREEN GRID VOLTS
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	36	2.3	25	-	-	2.5	2.6	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	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 CONTROL GRID	TUBE IN TESTER CATHODE-HEATER VOLTS	TUBE IN TESTER NORMAL PLATE M.A.	TUBE IN TESTER PLATE M.A. GRID VOLTS TEST	TUBE IN TESTER PLATE CHANGE M.A.	TUBE IN TESTER SCREEN GRID VOLTS
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	36	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	-	-	-						

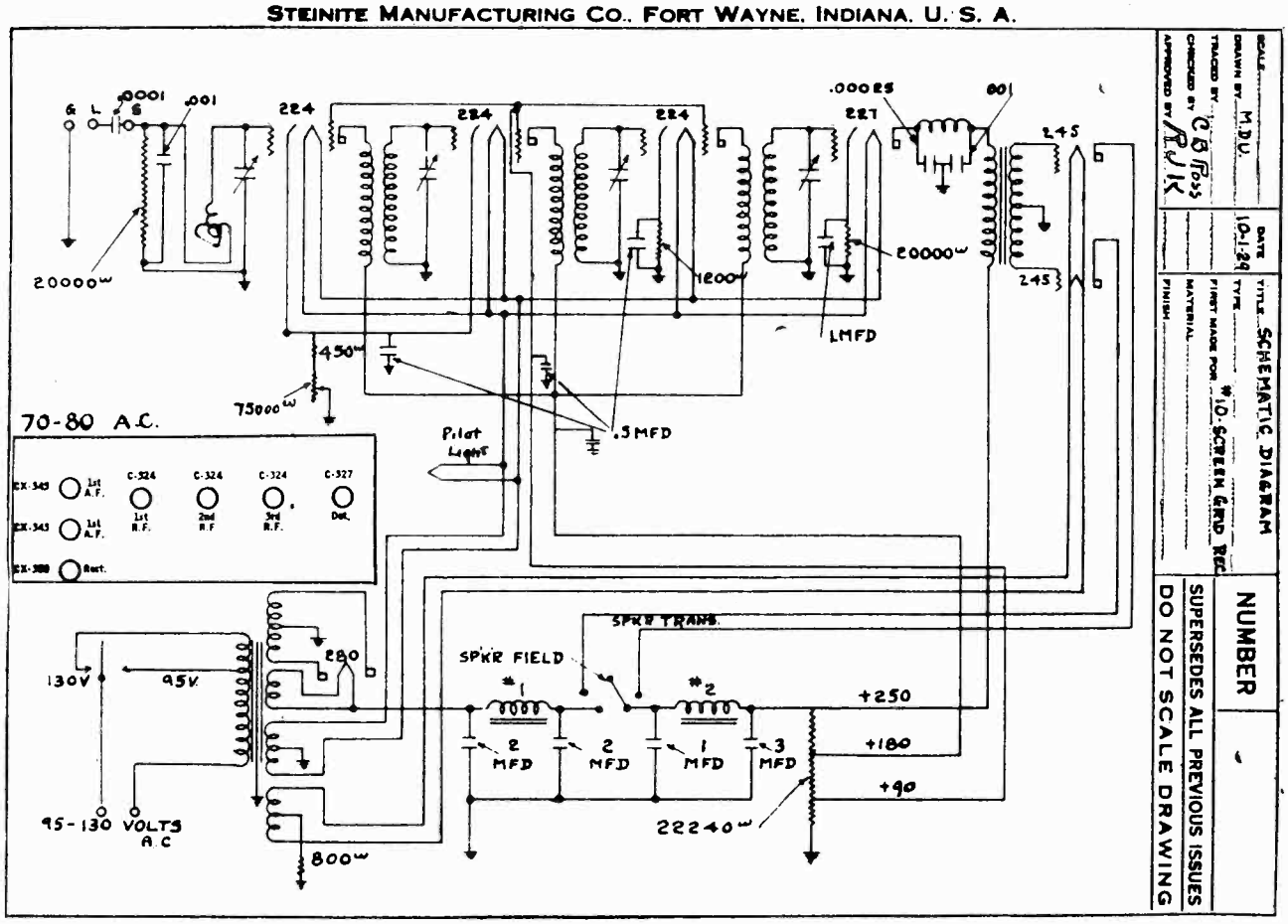
STEINITE—Models 50A-102A
Line Voltage 110—Set on 110 Volt Tap—Volume Control Position Max

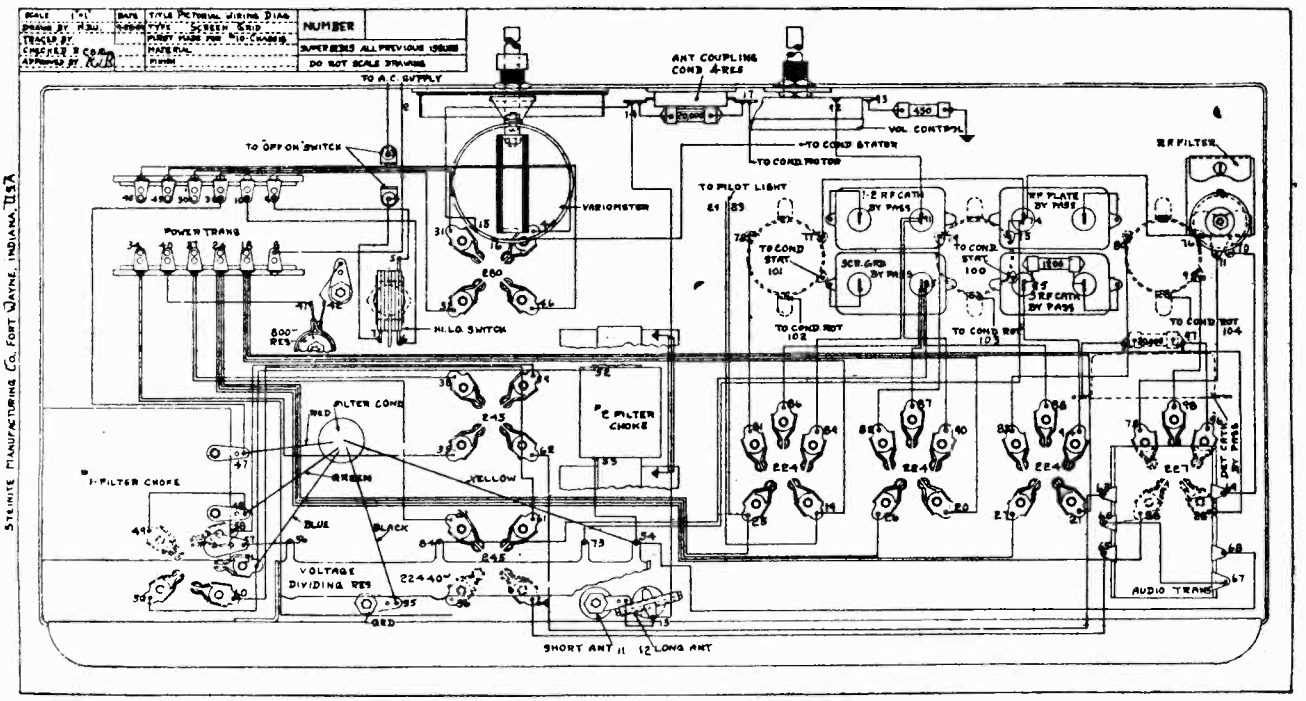
TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST R.F. DET. ETC.	READINGS PLUG IN SOCKET OF SET: TUBE OUT A VOLTS	TUBE OUT B VOLTS	TUBE IN TESTER A VOLTS	TUBE IN TESTER B VOLTS	TUBE IN TESTER C VOLTS CONTROL GRID	TUBE IN TESTER CATHODE-HEATER VOLTS	TUBE IN TESTER NORMAL PLATE M.A.	TUBE IN TESTER PLATE M.A. GRID VOLTS TEST	TUBE IN TESTER PLATE CHANGE M.A.	TUBE IN TESTER SCREEN GRID VOLTS
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	38	-	-	2.6	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			

MODEL 70,80,95
Schematic-Layout
(Chassis #10)

STEINITE RADIO CO.

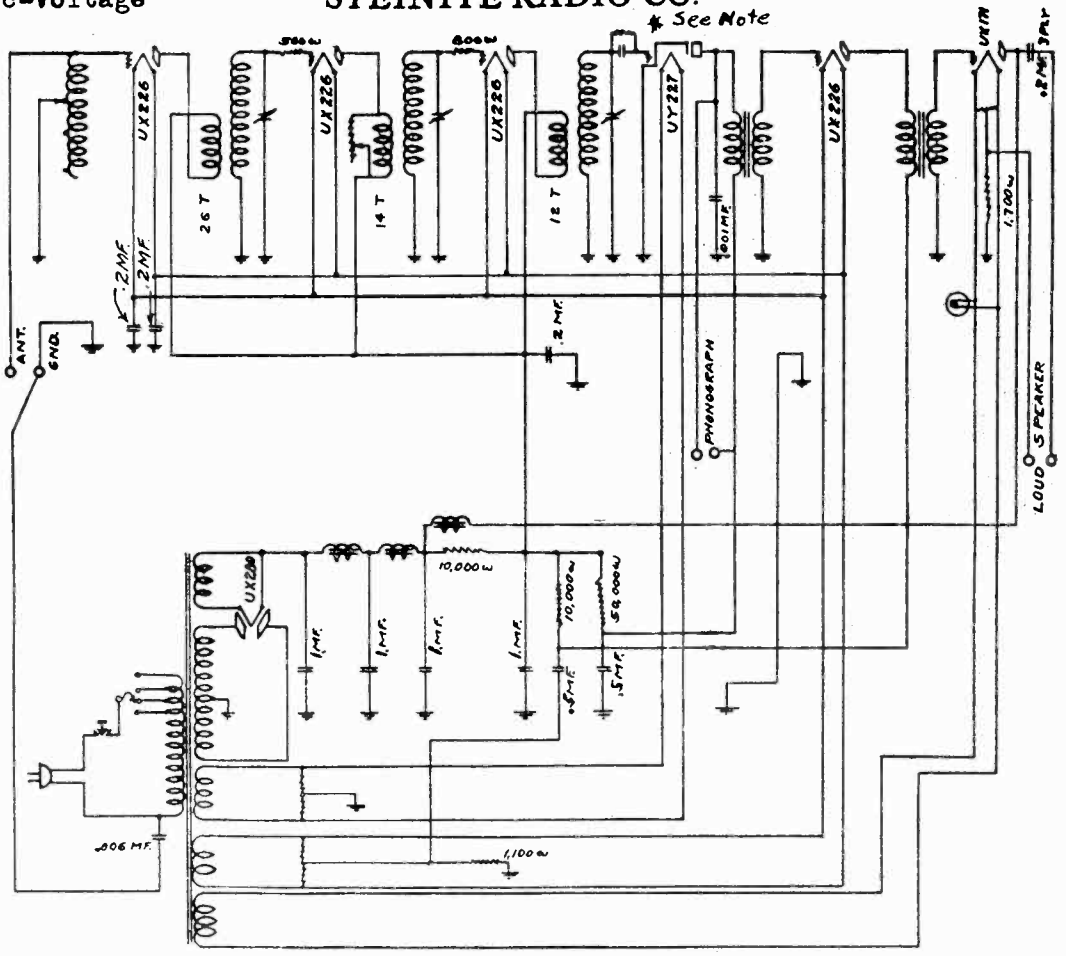
STEINITE MANUFACTURING CO., FORT WAYNE, INDIANA, U. S. A.





MODEL 261,262,263,264,265
Schematic-Voltage
Socket

STEINITE RADIO CO.

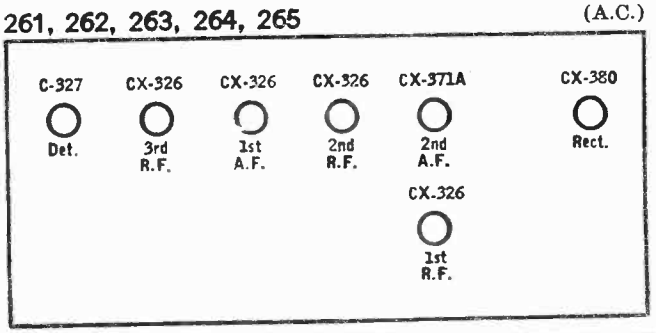


* A small capacity is connected between detector grid and the filament in the form of a piral pair of twisted wires.
**Two bindings posts supplying 110V AC are included on all model 261 sets made since September 20,1938. These are provided for supplying current to dynamic speakers, permitting complete control of the AC supply to both the set and speaker through the toggle switch

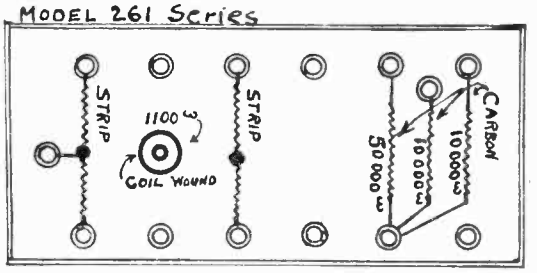
STEINITE---Models 261-262
Line Voltage 112—110 Volt Tap

TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1 ST. 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	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.)



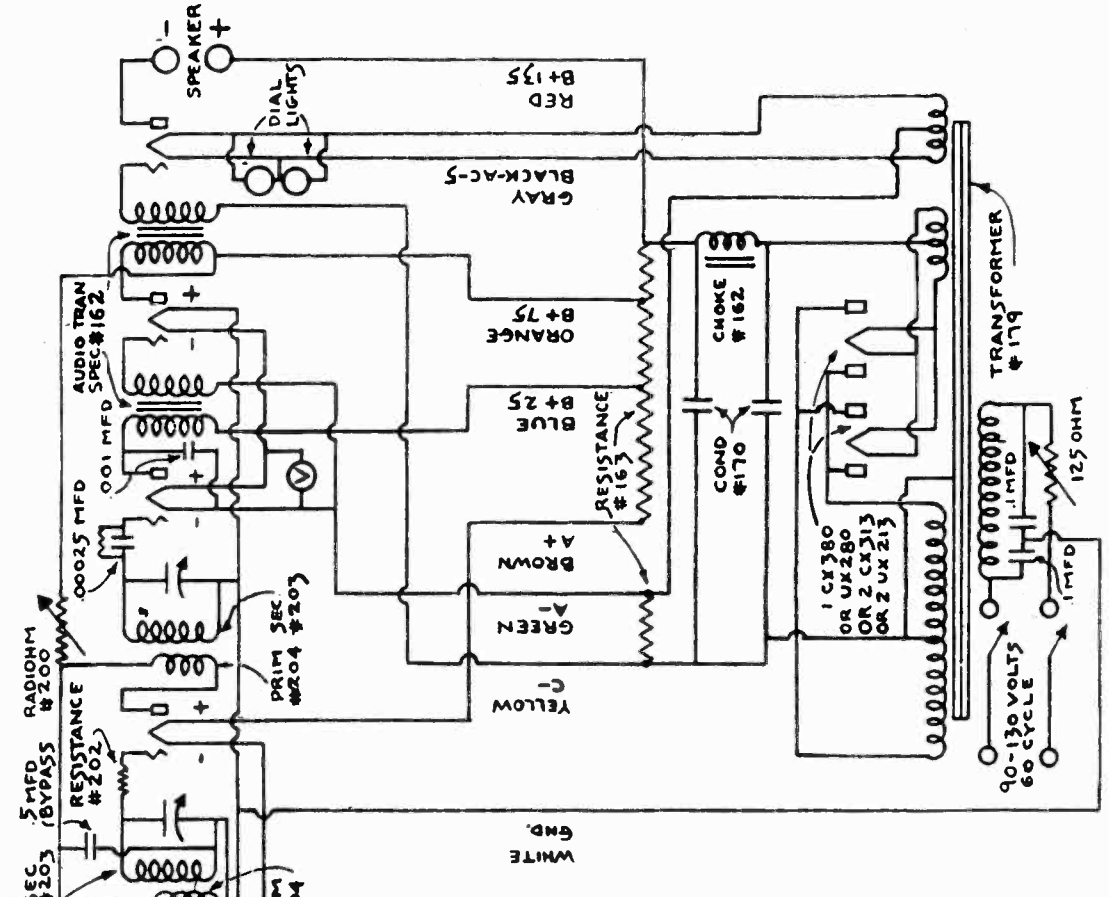
MODEL 261 Series



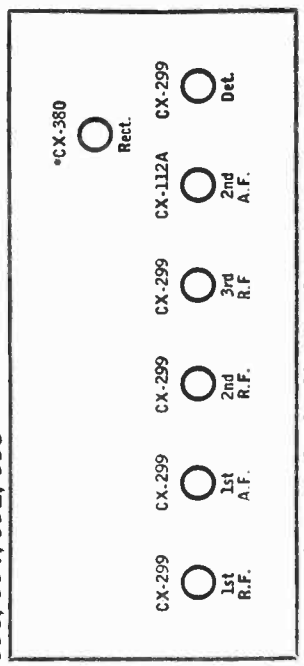
POWER PACK TERMINAL STRIP.

STEINITE RADIO CO.

MODEL 990,991,992,993
Schematic, Socket, Voltage



990, 991, 992, 993 (A.C.)



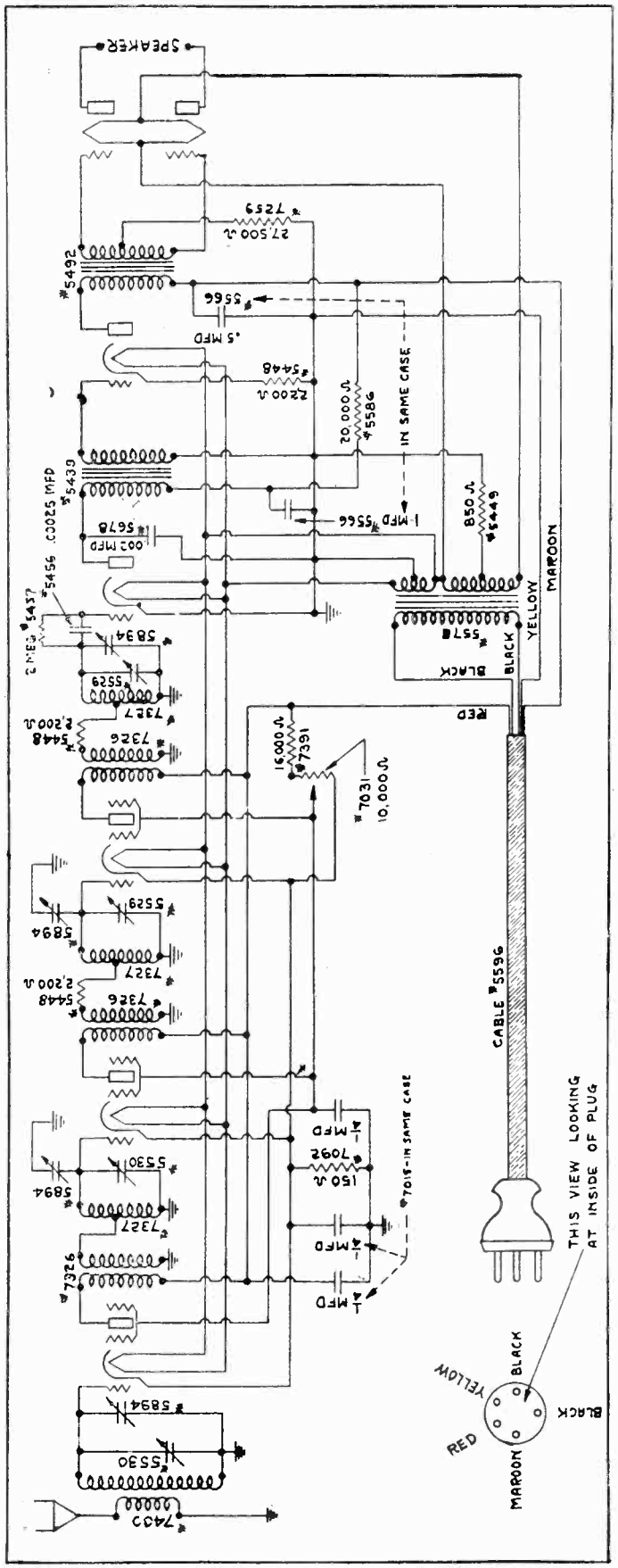
Some models use 2—CX-381 rectifiers.

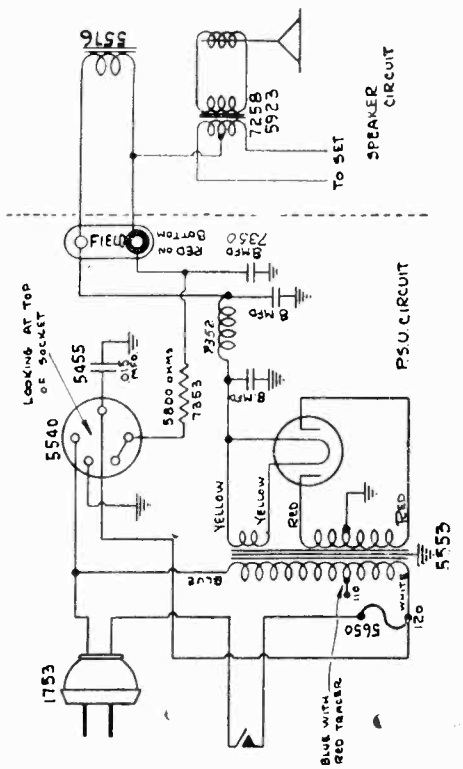
STEINITE—Models 990-991-992-993
Line Voltage 112—Volume Control Full

TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE LOOKING AT SET FROM BACK	TUBE OUT		READINGS PLUG IN SOCKET OF SET							
			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. CATHODE
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.



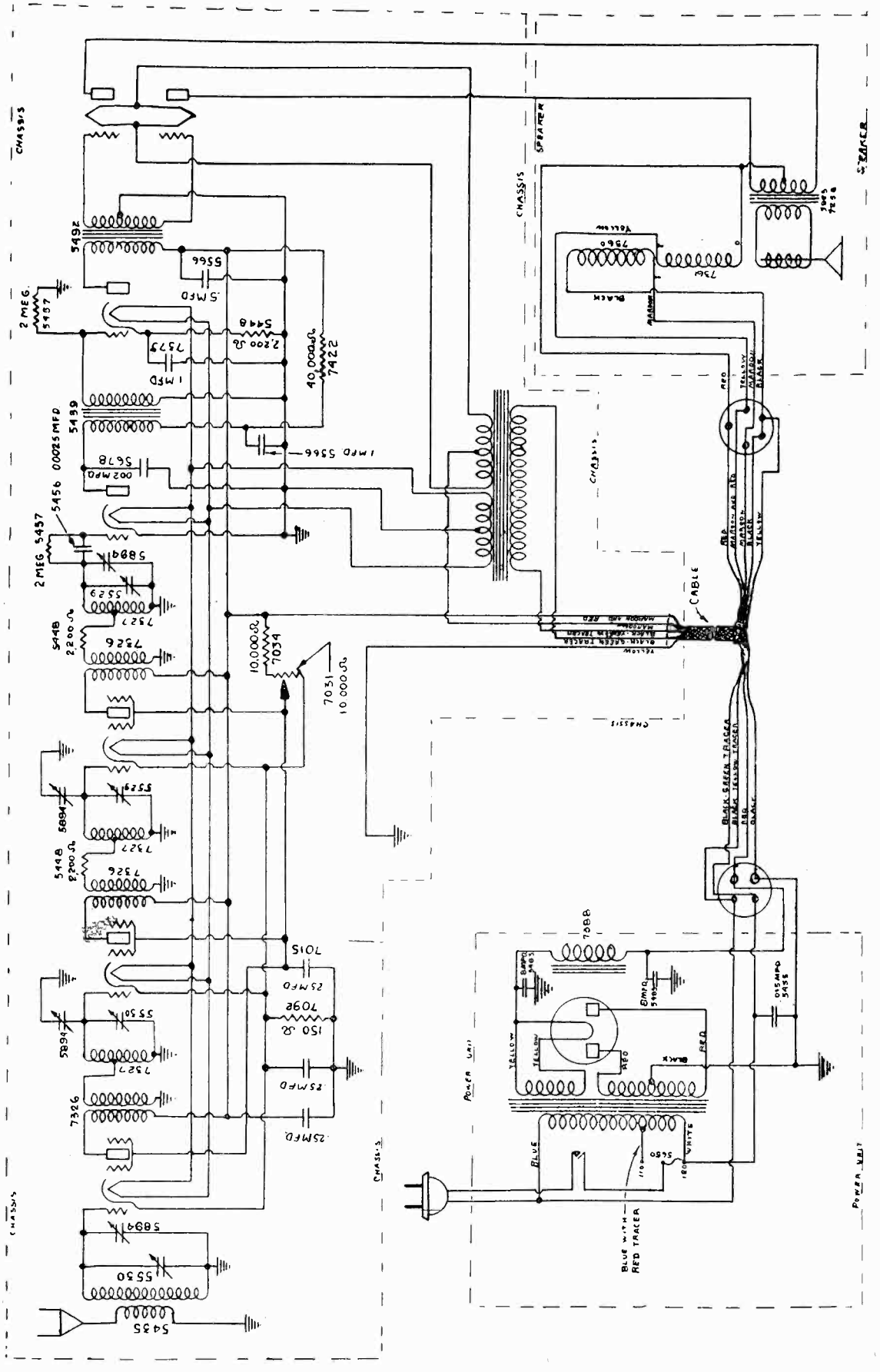


Power Unit and Speaker

MODEL 4
Schematic

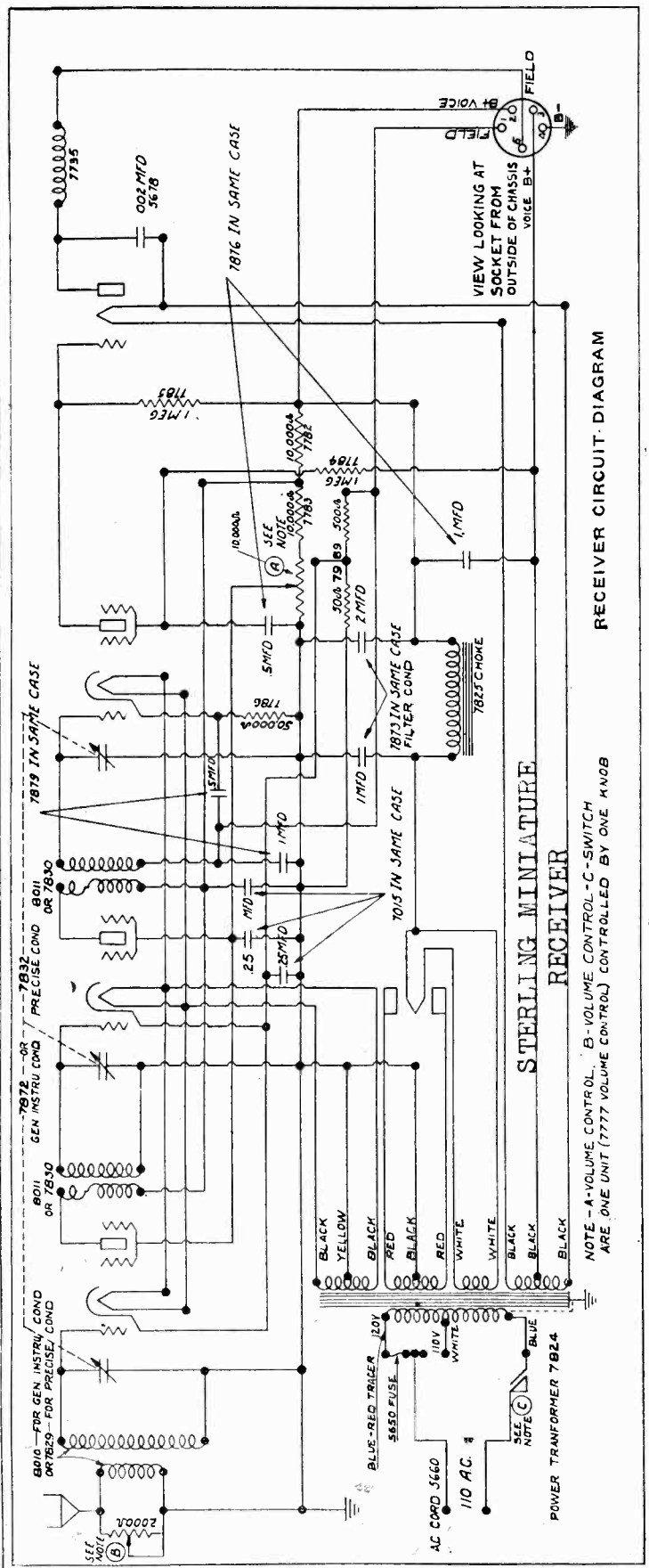
STERLING MFG. CO.

Complete Schematic Diagram of the No. 4 Circuit



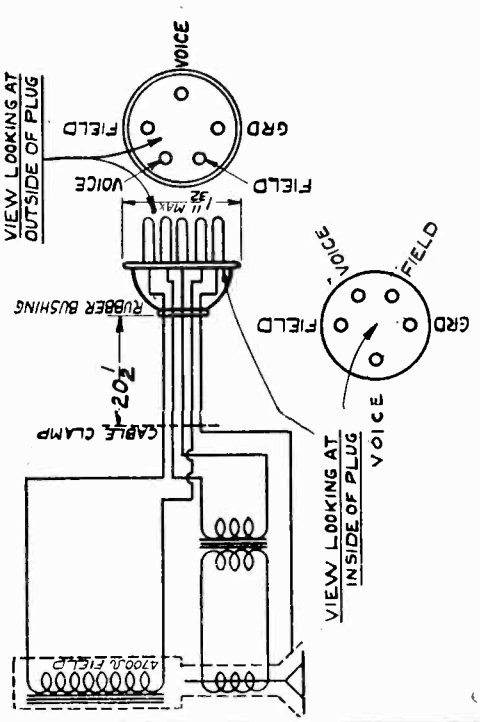
STERLING MFG. CO.

MODEL Miniature
Schematic, Voltage



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.

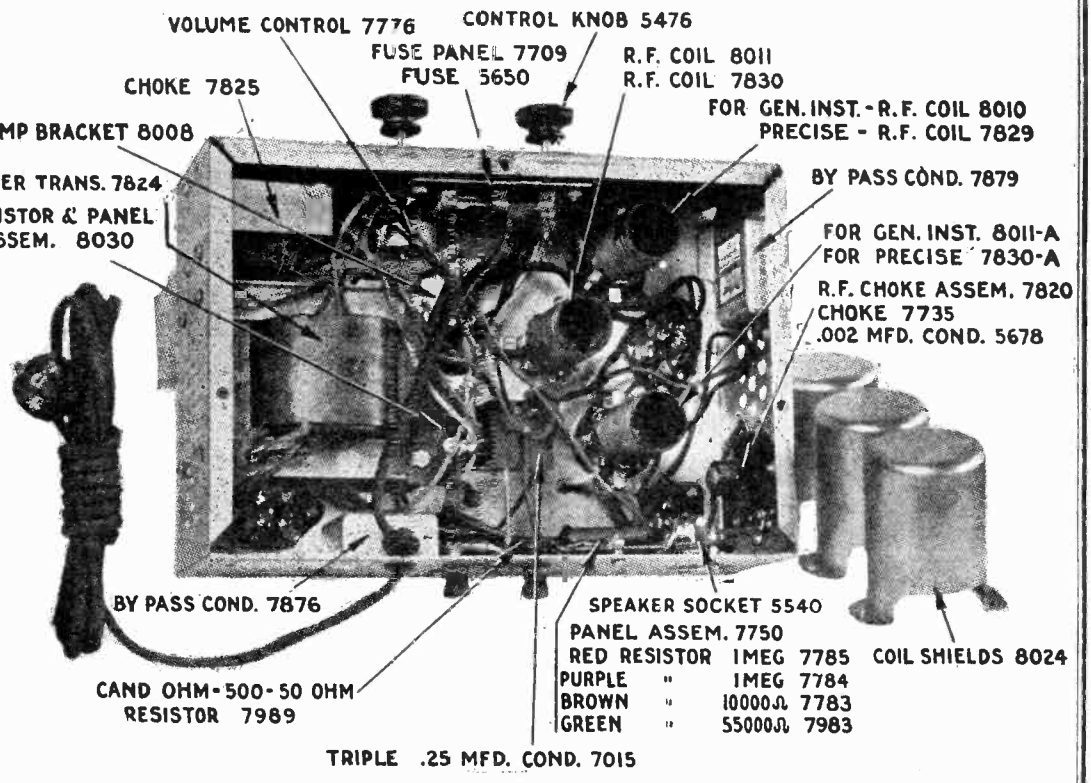


DYNAMIC SPEAKER CIRCUIT DIAGRAM

MODEL Miniature
Chassis Views

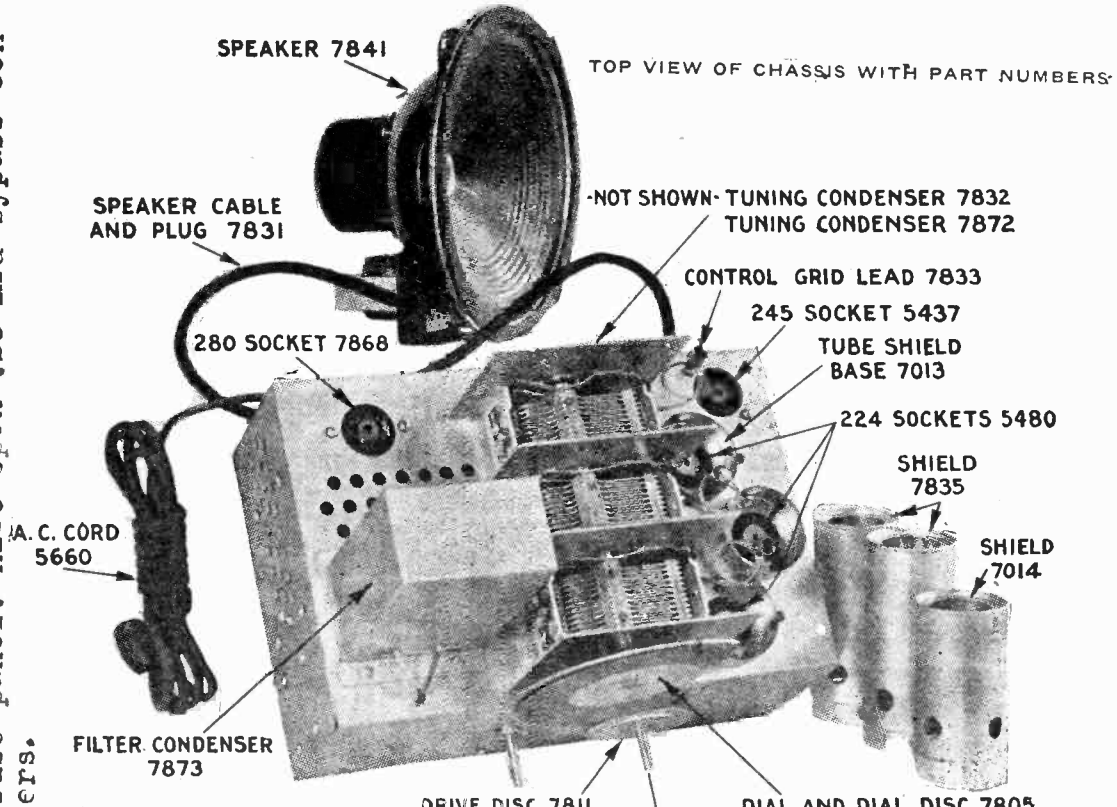
STERLING MFG. CO.

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

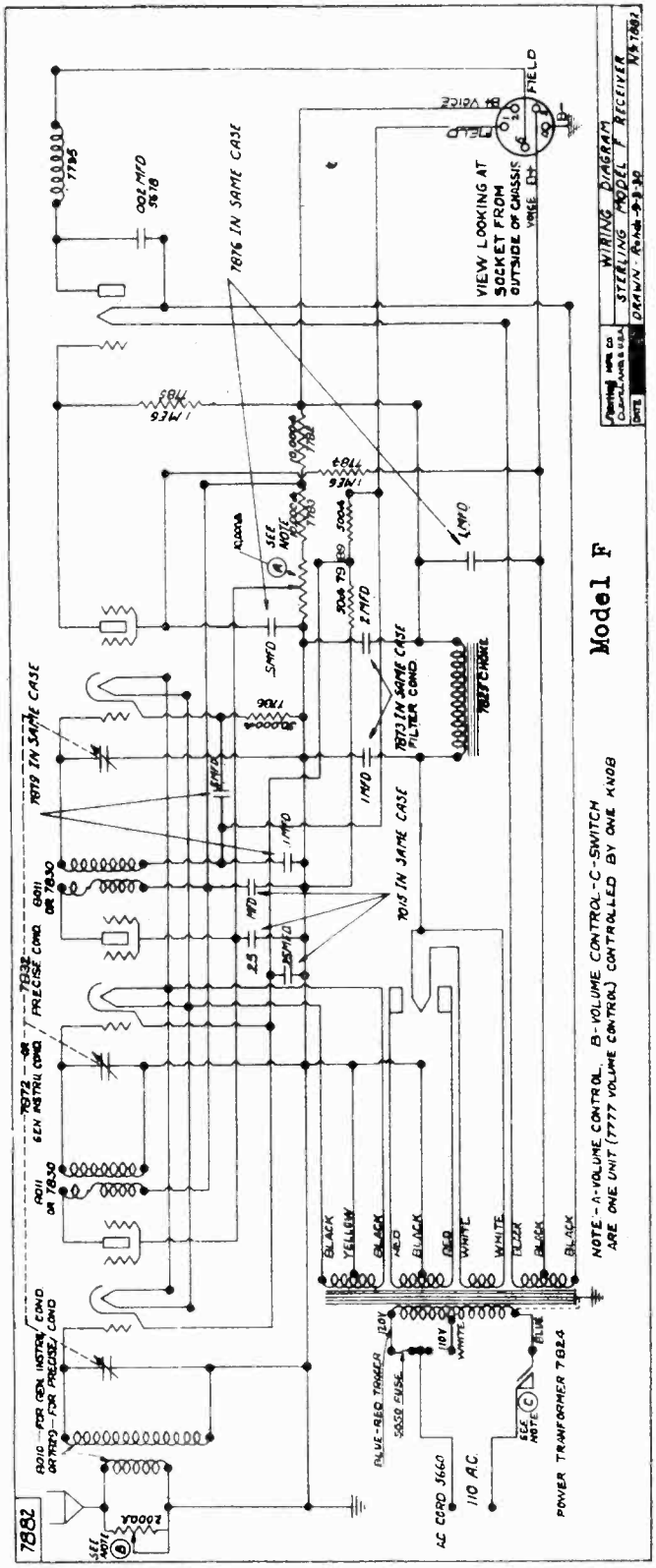
In the event :-
of excessive regeneration difficulties, check the position of the grid wires. If too close together, this trouble is liable to occur. Check the .015 mfd condenser on the center of the fuse panel. Also open .25 mfd bypass condensers.

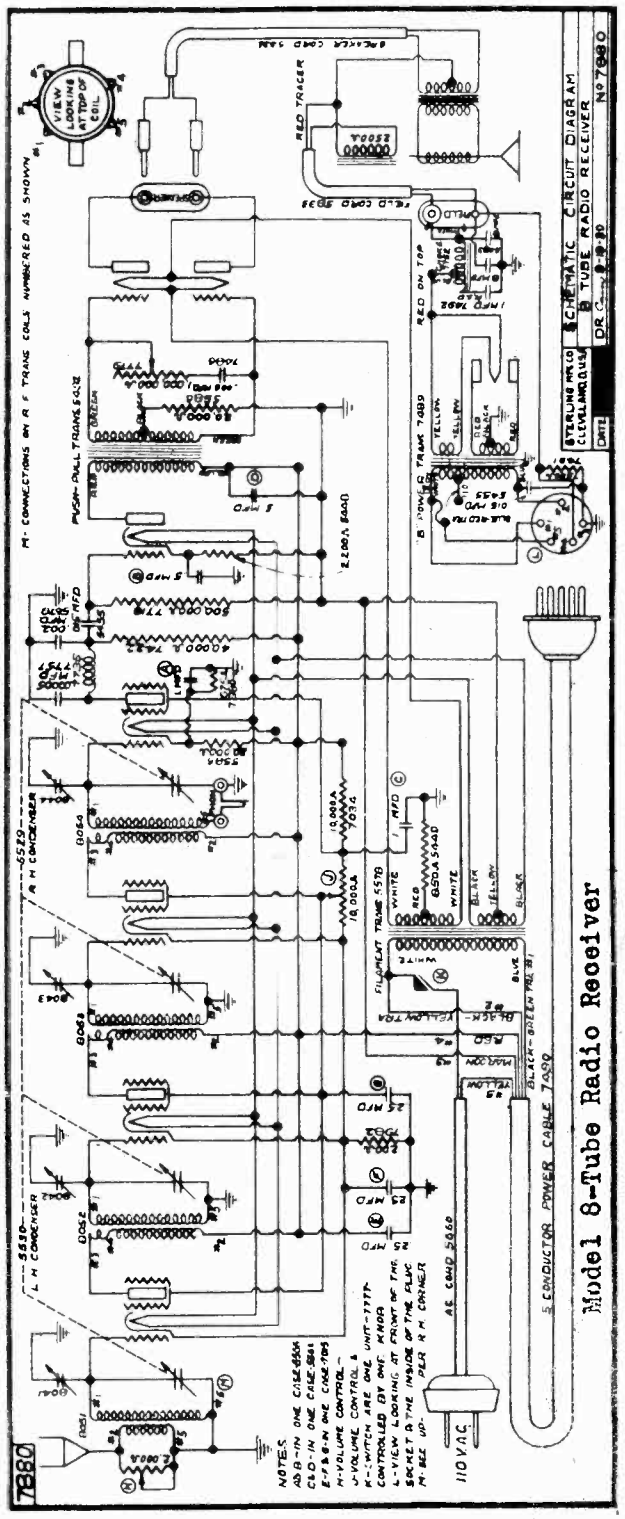


TOP VIEW OF CHASSIS WITH PART NUMBERS

MODEL F
MODEL 8-Tube Receiver

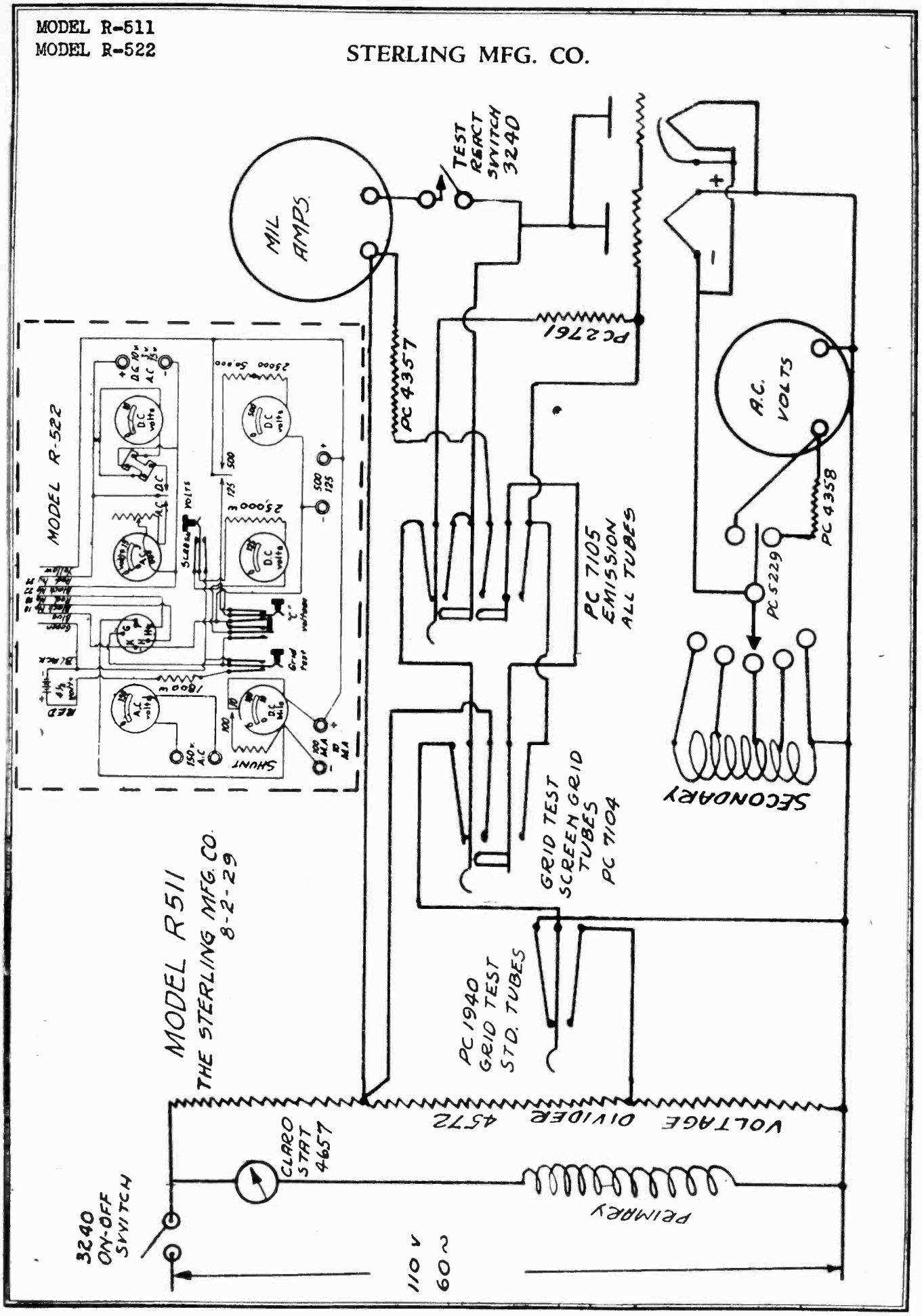
STERLING MFG. CO.





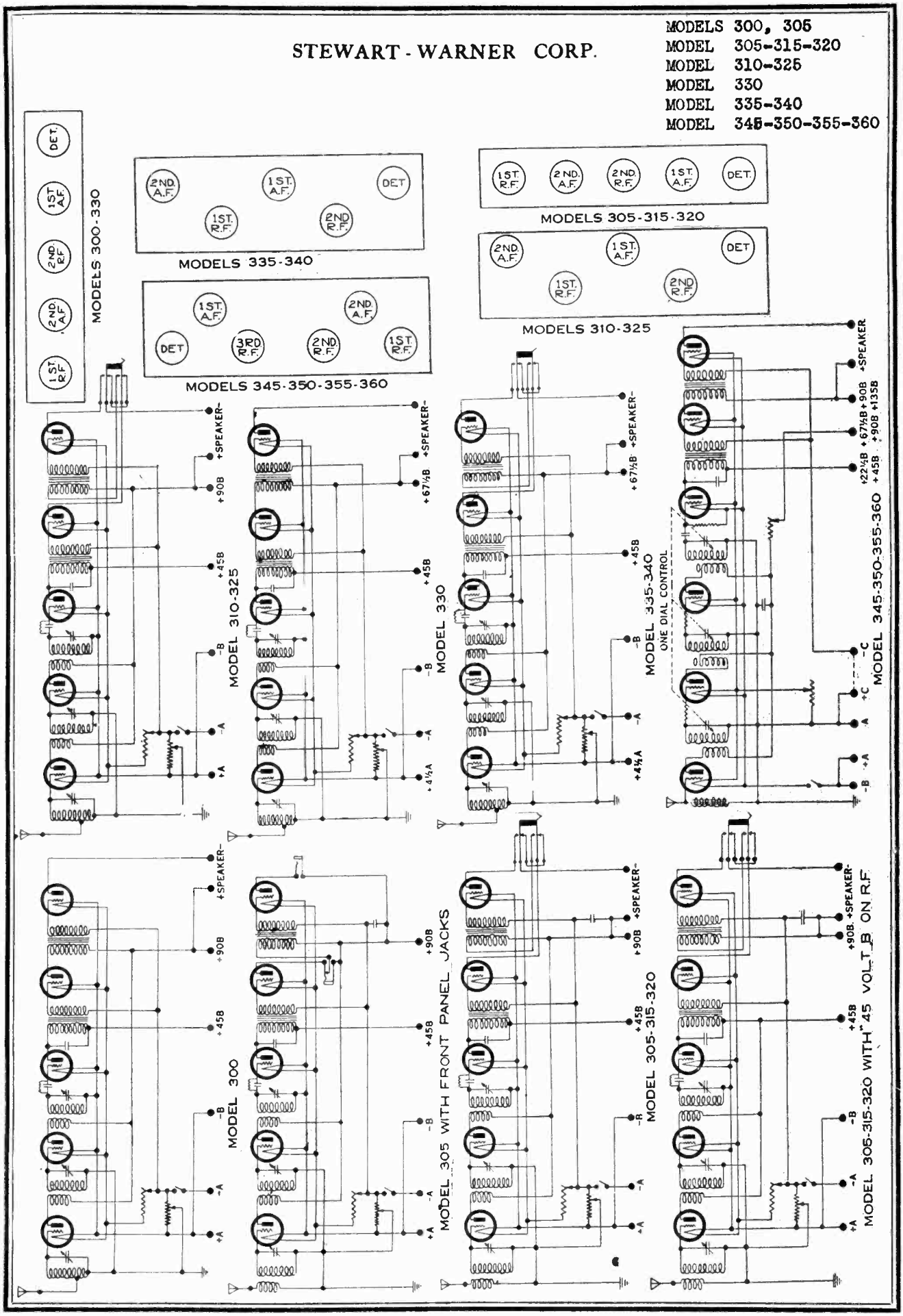
MODEL R-511
MODEL R-522

STERLING MFG. CO.



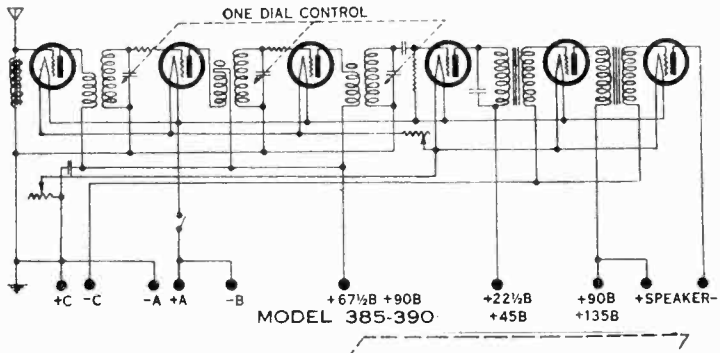
STEWART - WARNER CORP.

MODELS 300, 305
MODEL 305-315-320
MODEL 310-325
MODEL 330
MODEL 335-340
MODEL 345-350-355-360

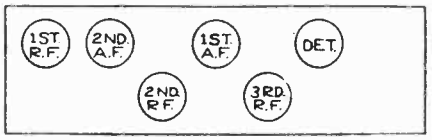


MODEL 385-390
MODEL 500,520,525
MODEL 530,535
MODEL 530,535.715,720

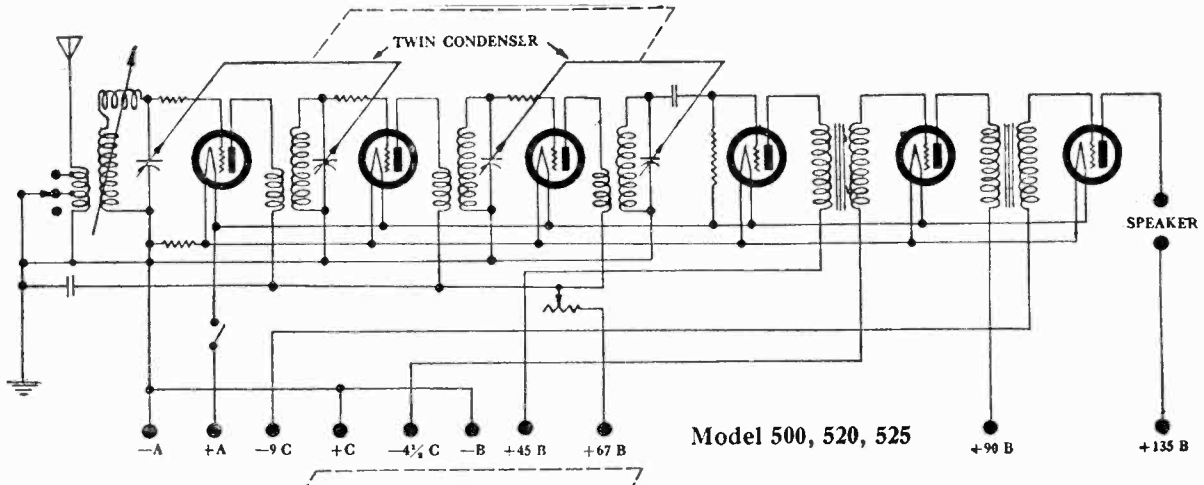
STEWART-WARNER CORP.



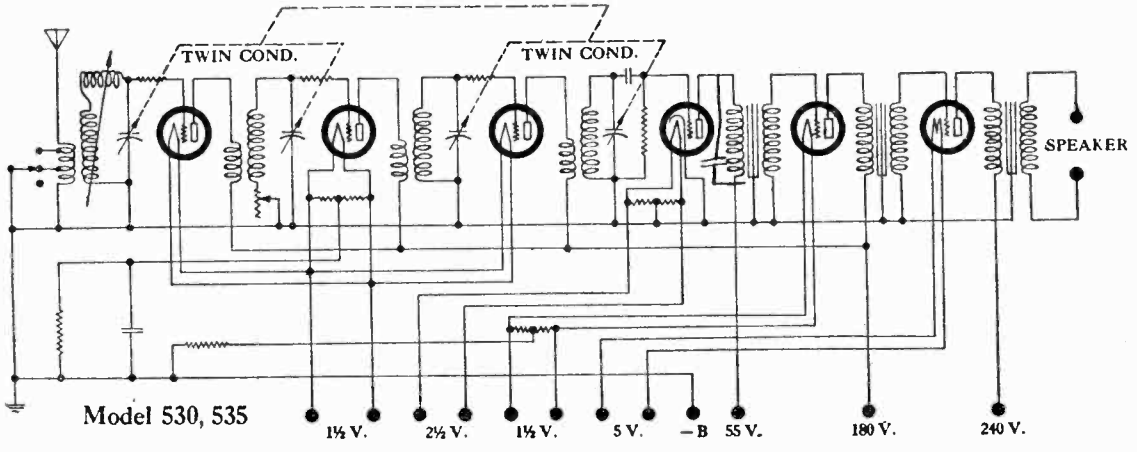
MODEL 385-390



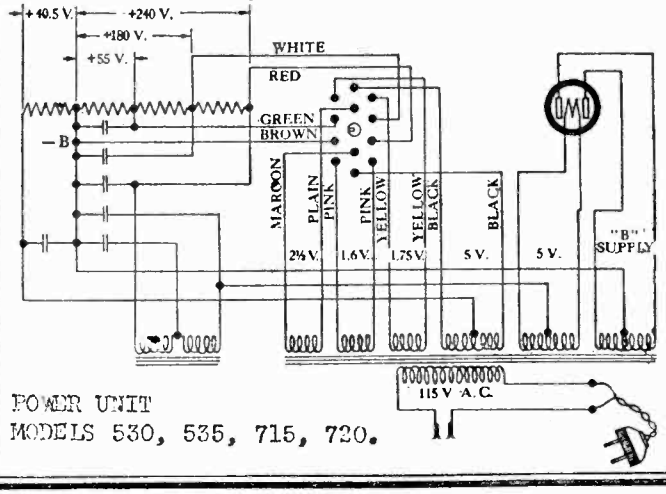
MODELS 385-390



Model 500, 520, 525

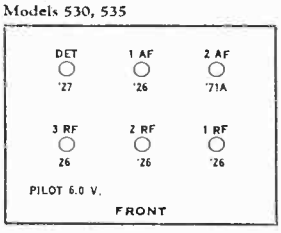


Model 530, 535

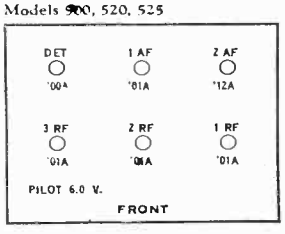


POWER UNIT
MODELS 530, 535, 715, 720.

Models 530, 535

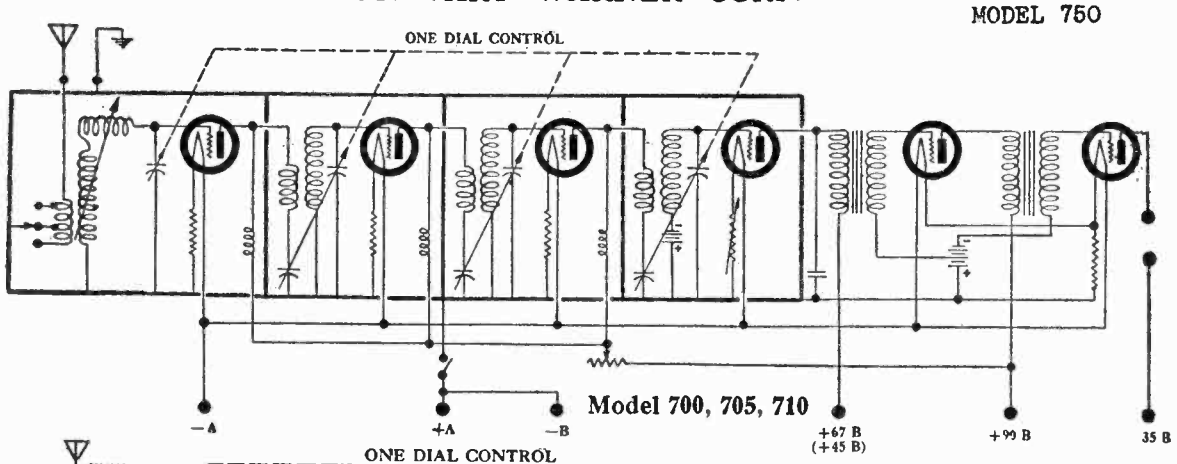


Models 500, 520, 525

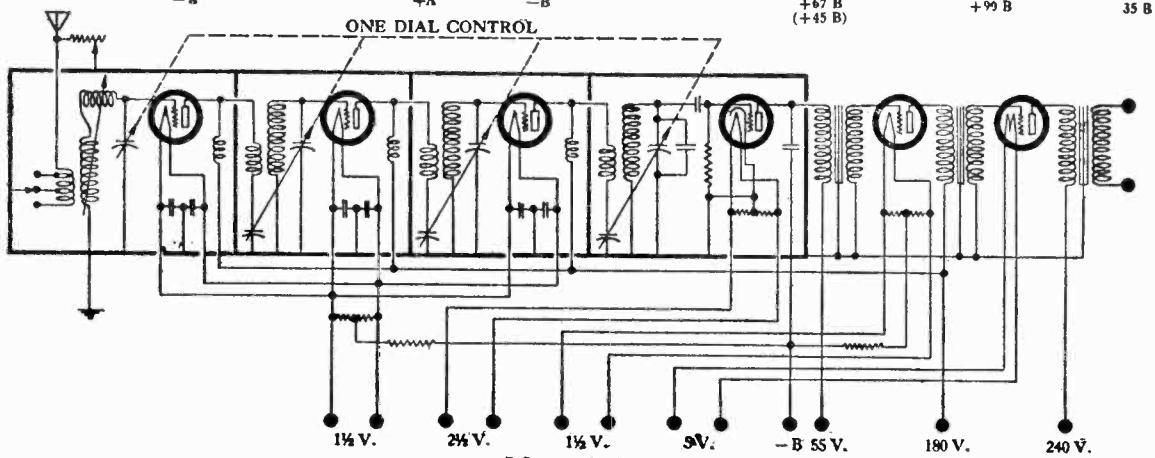


MODEL 700,705,710
MODEL 715,720
MODEL 750

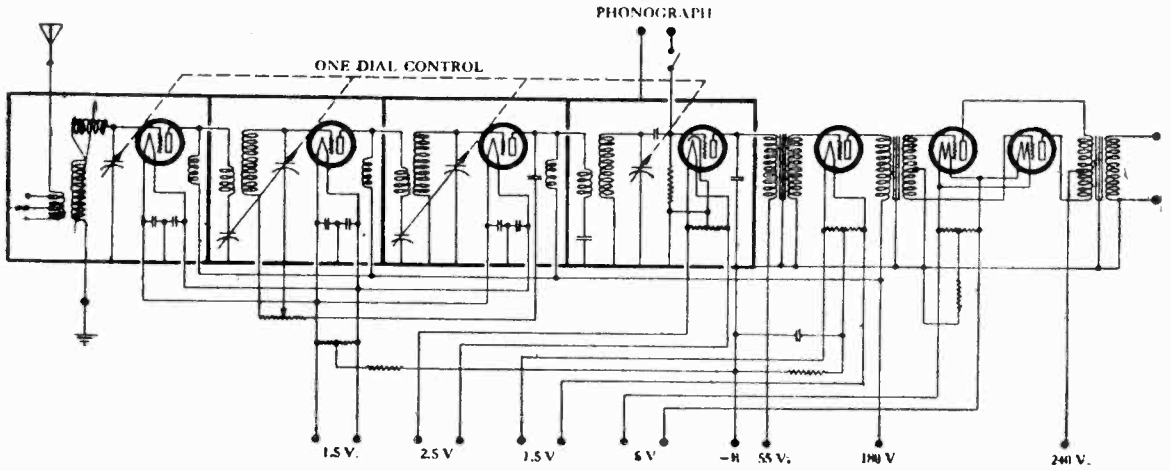
STEWART - WARNER CORP.



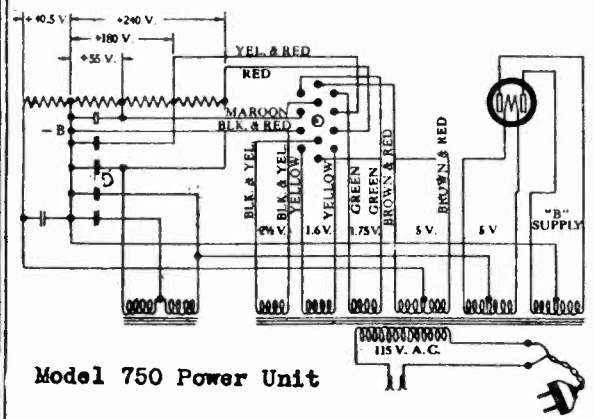
Model 700, 705, 710



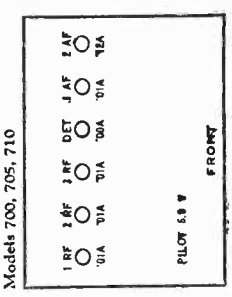
Model 715, 720

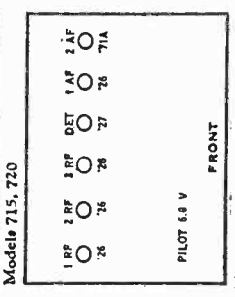


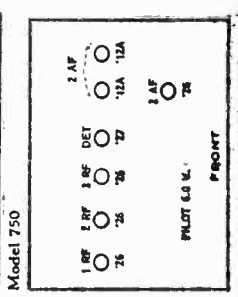
Model 750



Model 750 Power Unit

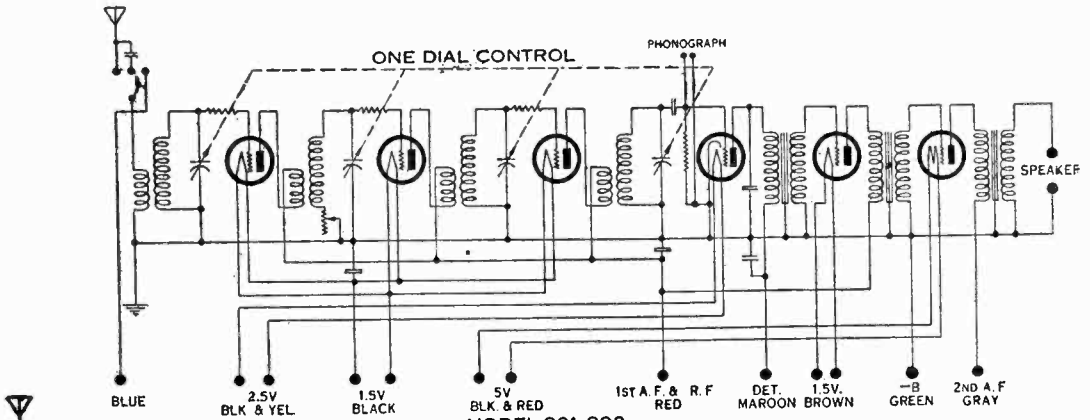




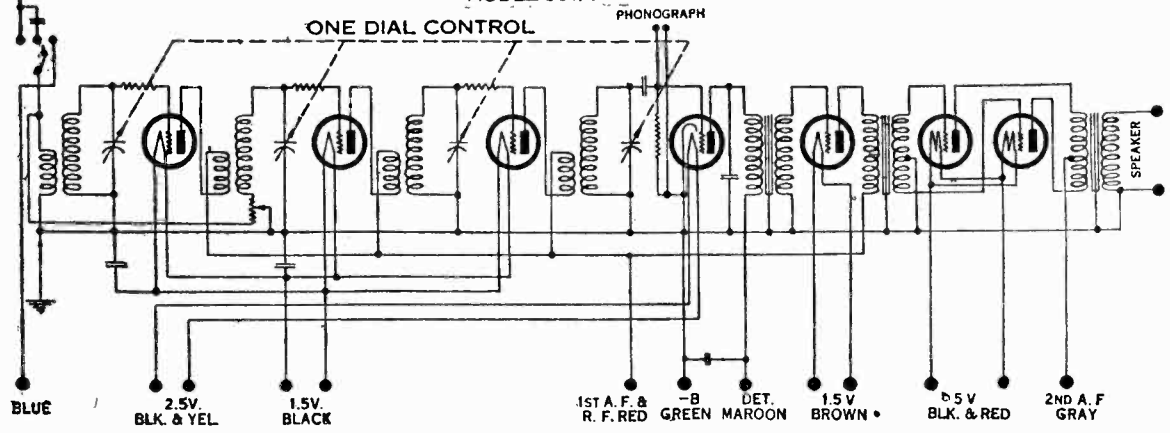


STEWART - WARNER CORP.

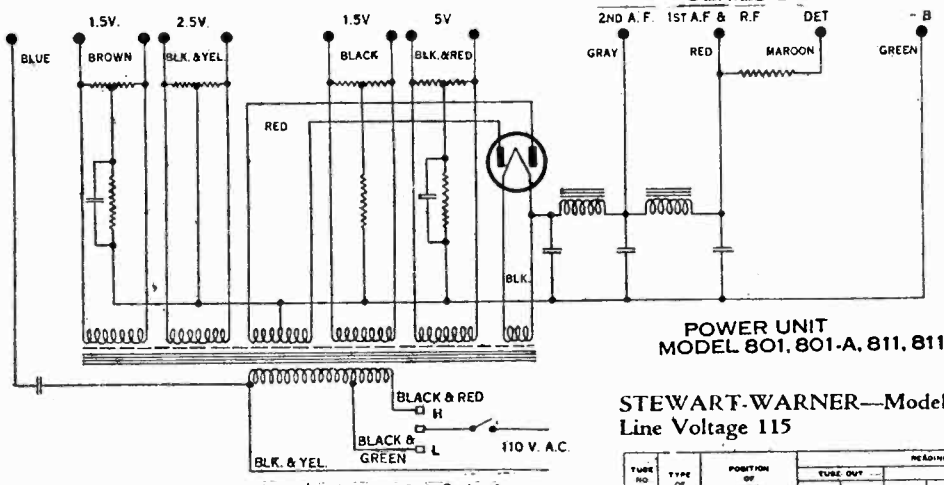
MODEL 801, 802
MODEL 801, 801-A, 811, 811-A (Series B)
MODEL PU 801, 801-A, 811, 811-A
Schematic, Voltage



MODEL 801, 802

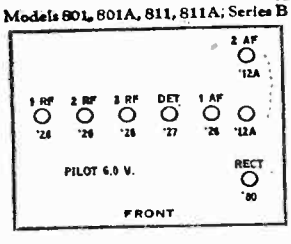


MODEL 801, 801-A, 811, 811-A SERIES B

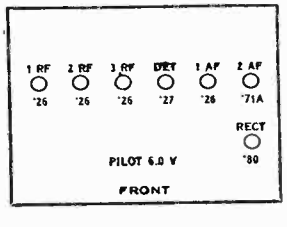


POWER UNIT
MODEL 801, 801-A, 811, 811-A

Models 801, 801A, 811, 811A; Series B



Models 801, 811, Series A



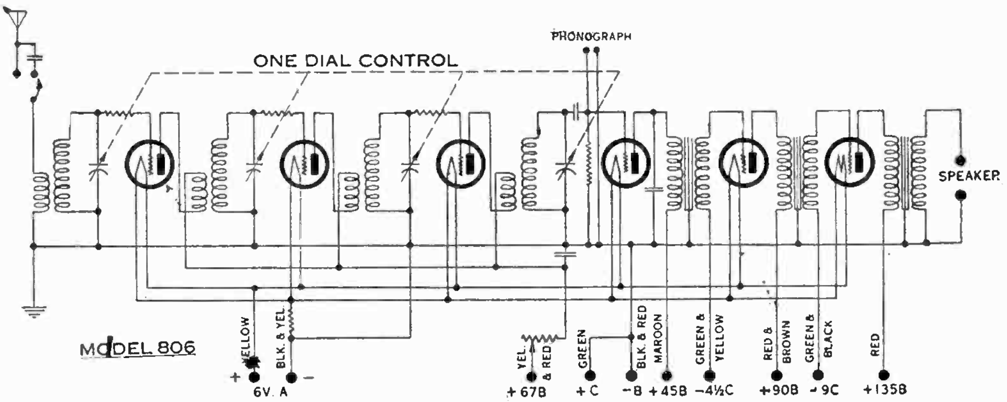
STEWART-WARNER—Model 801 SERIES B
Line Voltage 115 801A-811-811A

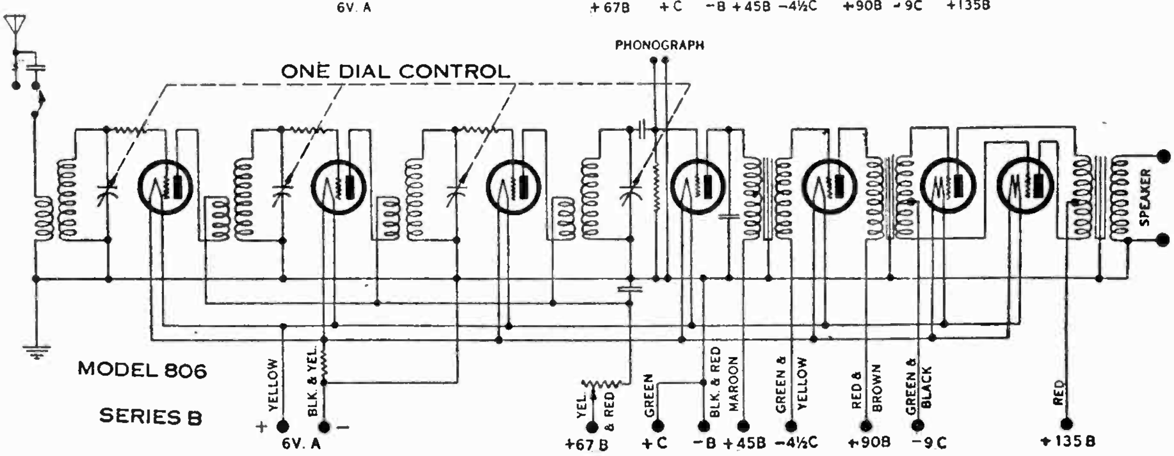
TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE (1ST. R.F., DET., ETC.	READINGS, PLUG IN SOCKET OF SET							
			TUBE OUT		TUBE IN TESTER					
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE M.A. CHANGE
1	226	1R.F.	1.46	157	1.33	155	14.8	-	2.9	9.7	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	156	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	6.7		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.

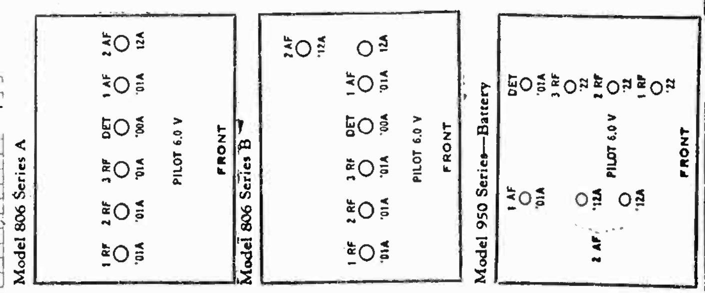
MODEL 806 (Series A)
MODEL 806 (Series B)
MODEL 950 Series (Battery)
Schematic, Voltage

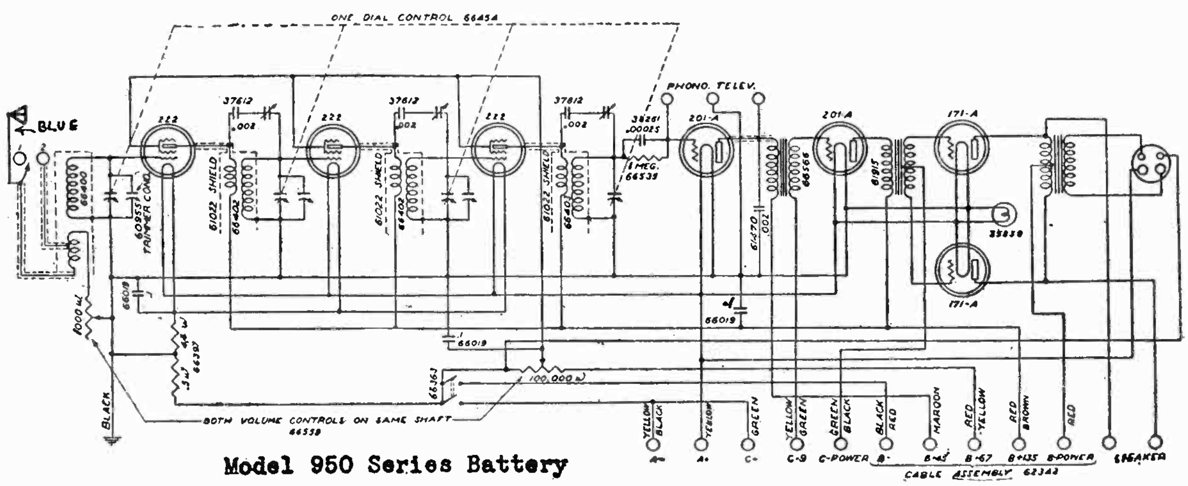




STEWART-WARNER—Model 950 A.C
Line Voltage 115—Volume Control Position Max

Tube No. in Order	Type of Tube	Position of Tube 1st RF 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 MA	Plate MA Grid Test	Plate Change MA	Screen Grid Volts
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												

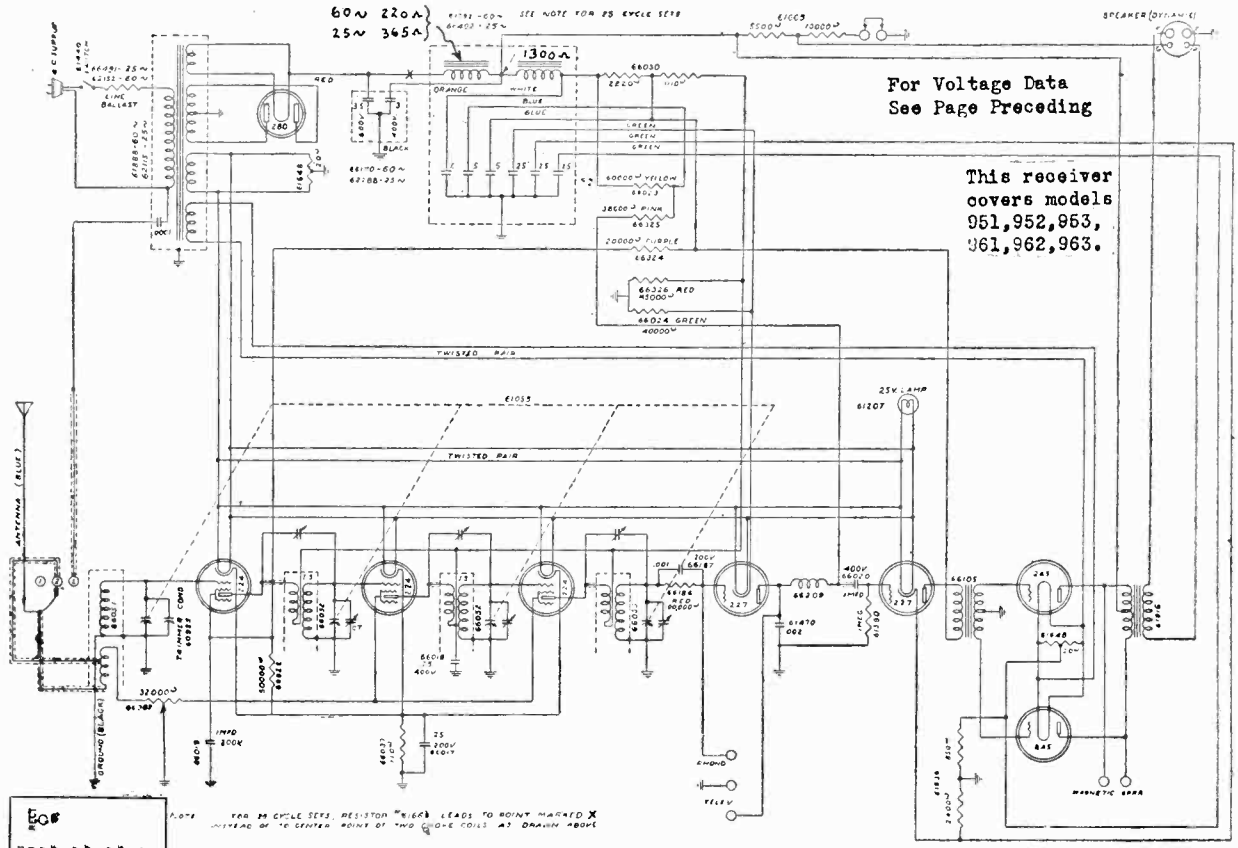




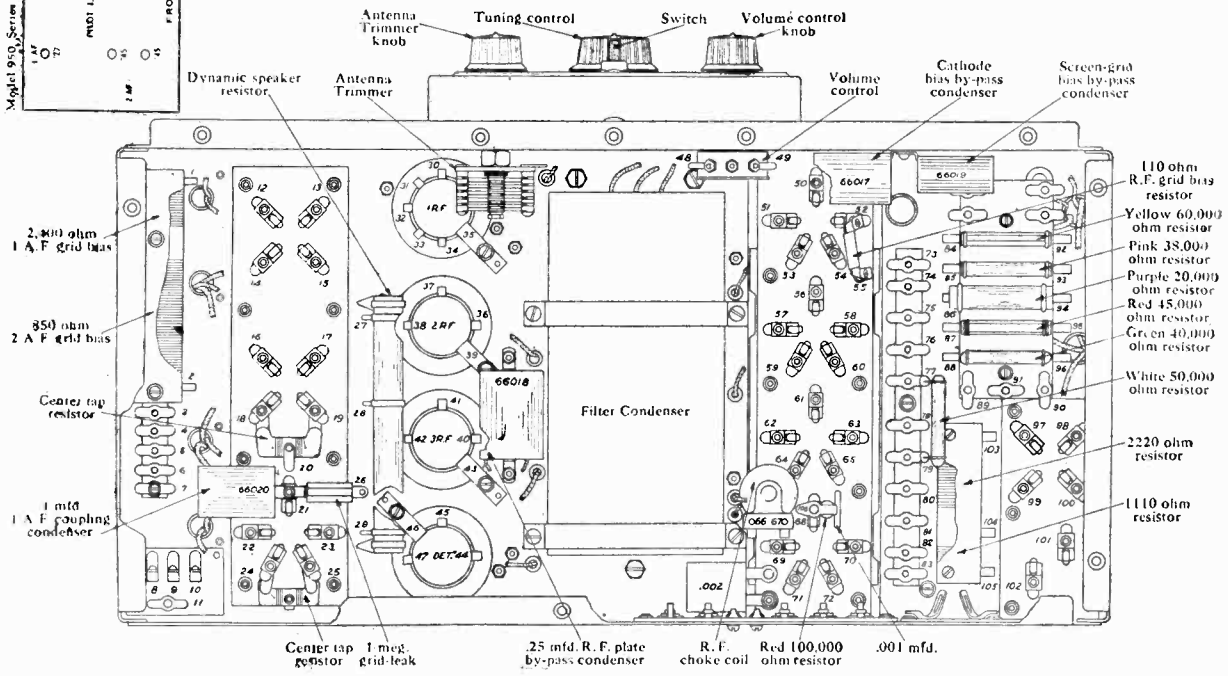
Model 950 Series Battery

MODEL 950 Series (AC)
Schematic, Chassis

STEWART-WARNER CORP.



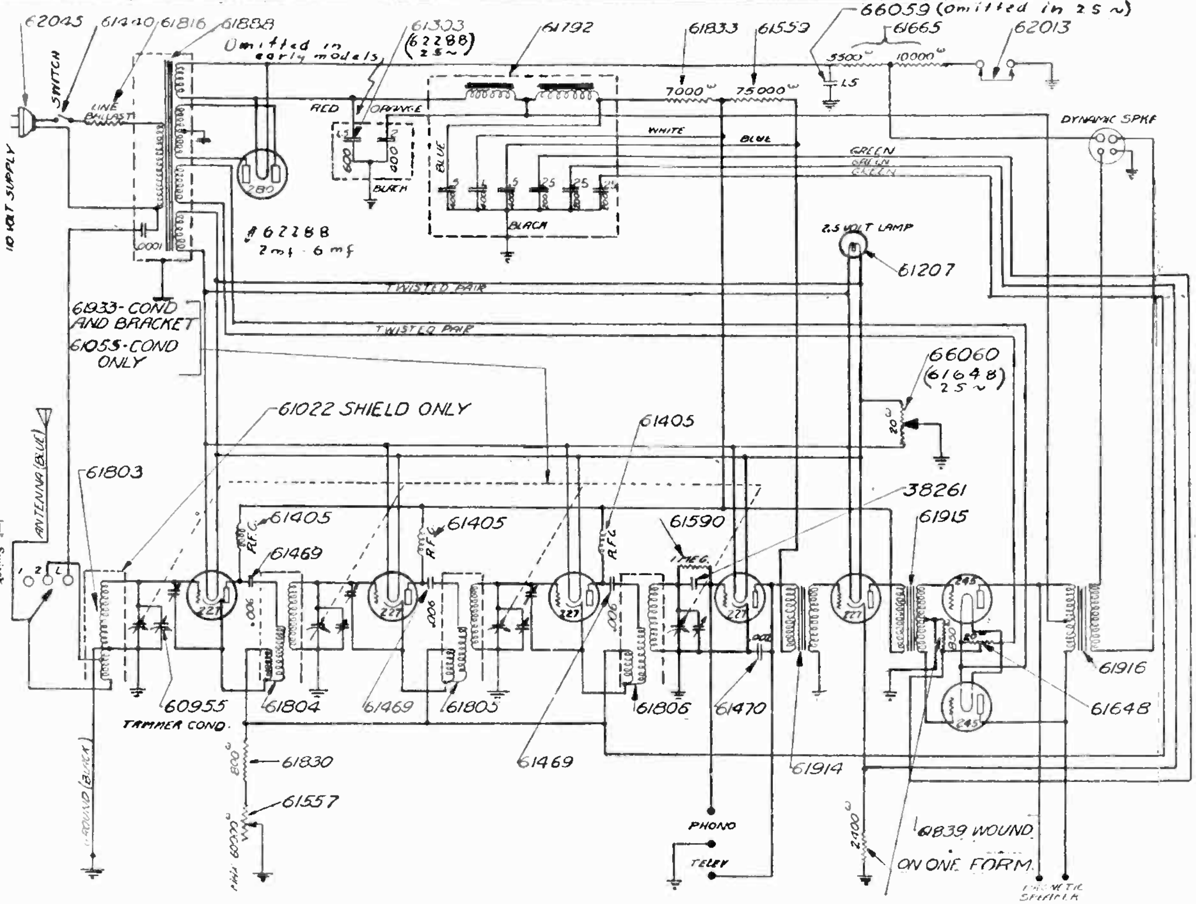
Circuit Diagram for Stewart-Warner 950 Series A. C. Receivers



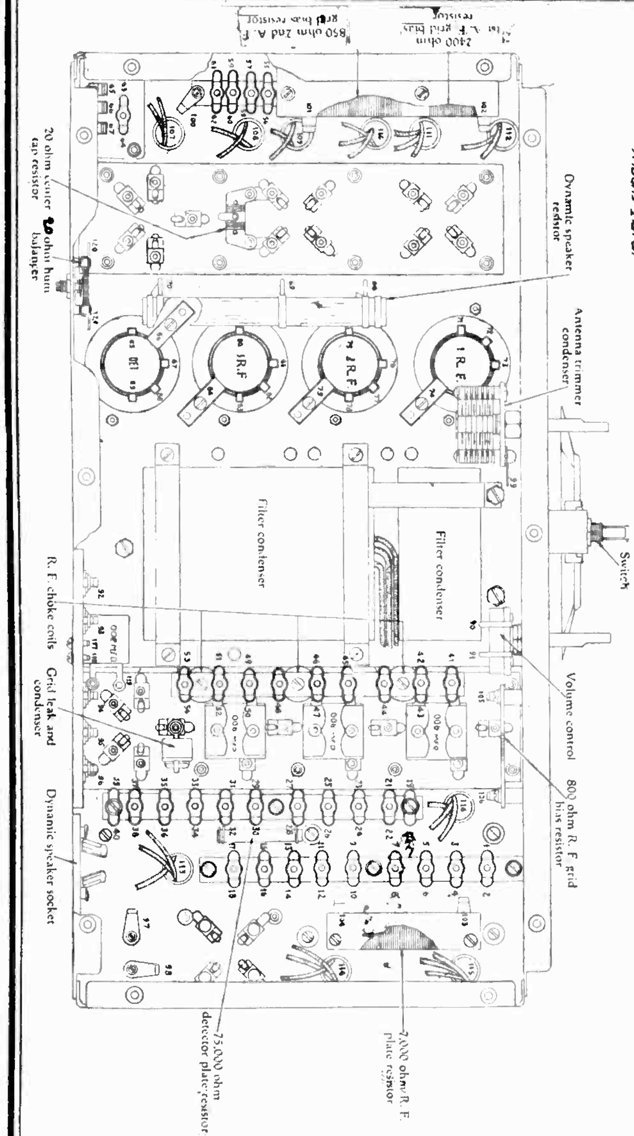
Bottom View of Set

STEWART-WARNER CORP.

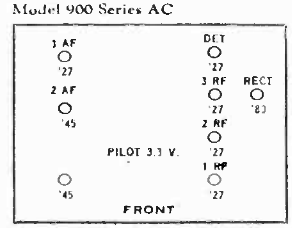
MODEL 901,902,903
911,912,913
Schematic,Chassis



901, 902, 903, 911, 912, 913



Model 900 Series AC

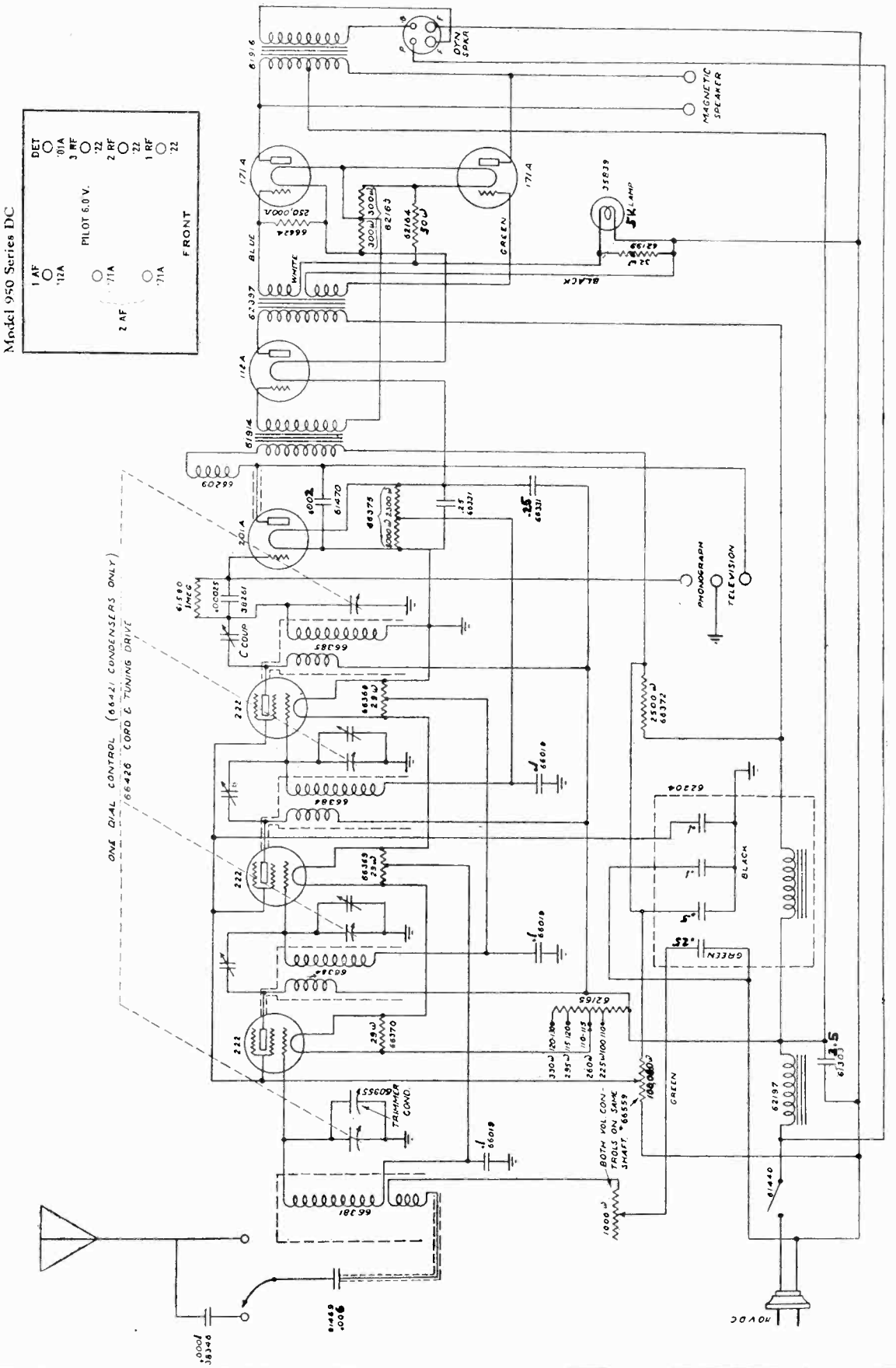


STEWART-WARNER—Series 900 A.C.
Line Voltage 115—Volume Control Position Max

Tube No. in Order ①	Type of Tube ②	Position of Tube 1st RF Det. Etc. ③	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 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	6
8	280	Rect.			4.7	-	-	-	90	-	-

MODEL 950 Series DC

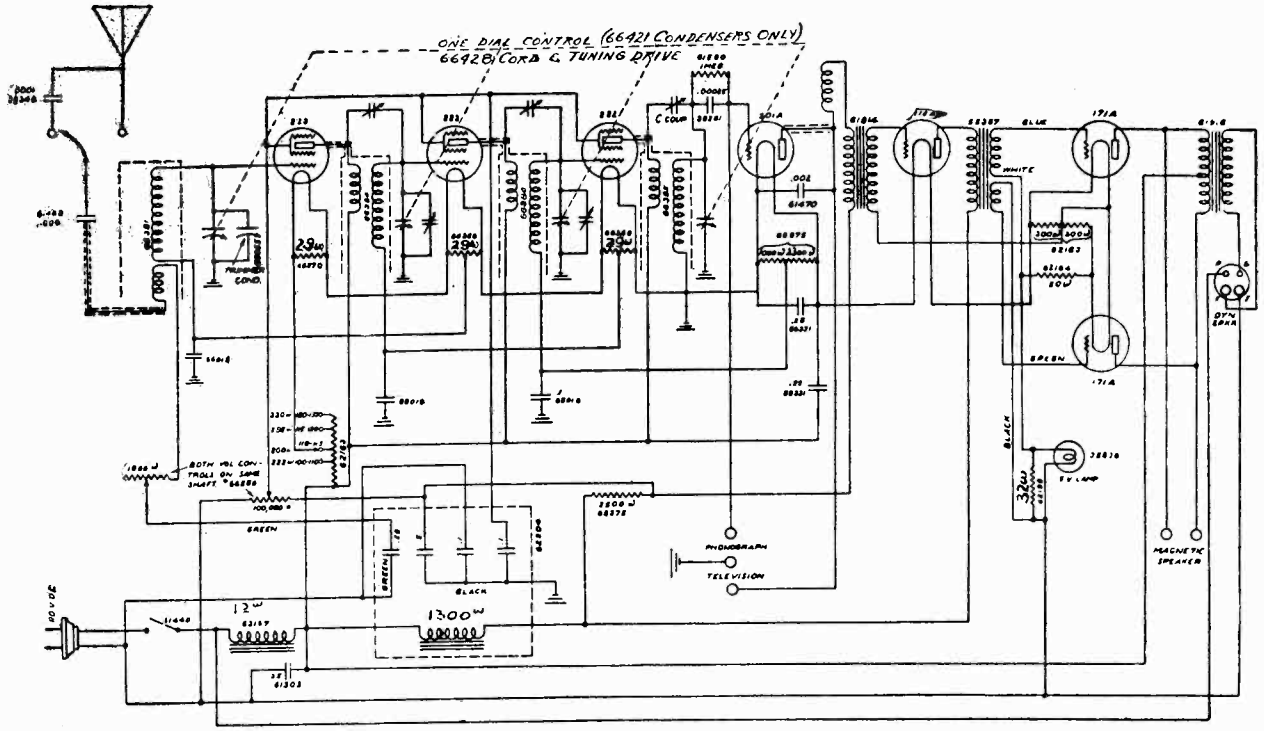
STEWART - WARNER CORP.



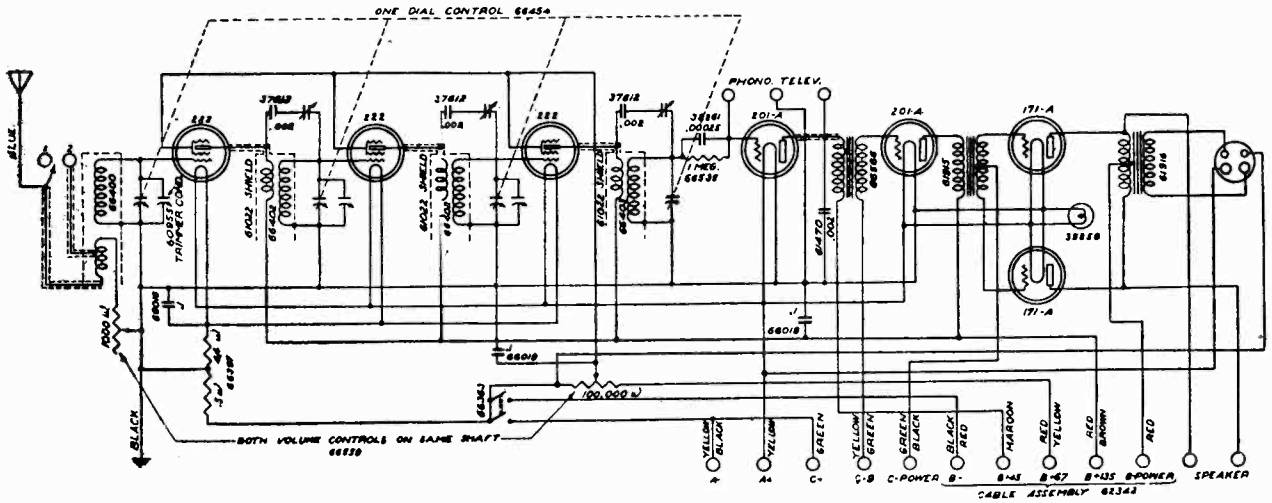
Circuit Diagram of Stewart-Warner 950 Series D. C. Receiver

STEWART-WARNER CORP.

MODEL 971,972,973 DC
MODEL 980 Battery



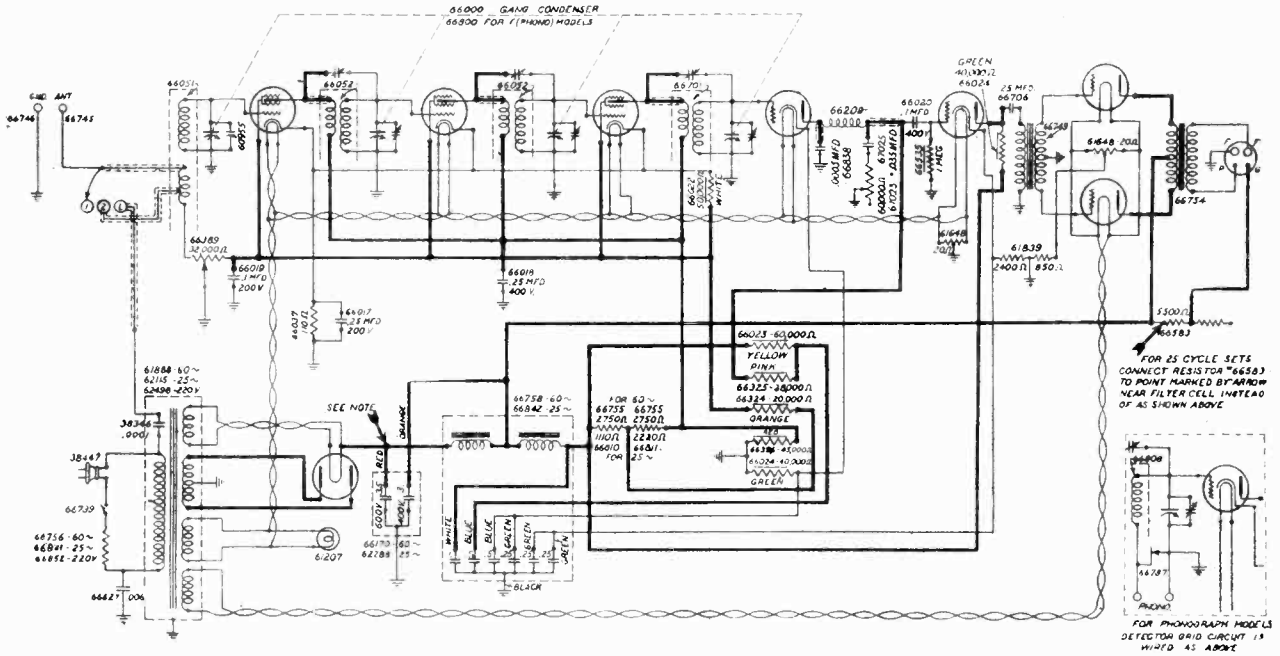
CIRCUIT DIAGRAM FOR STEWART WARNER SERIES 970 D.C RADIO RECEIVERS



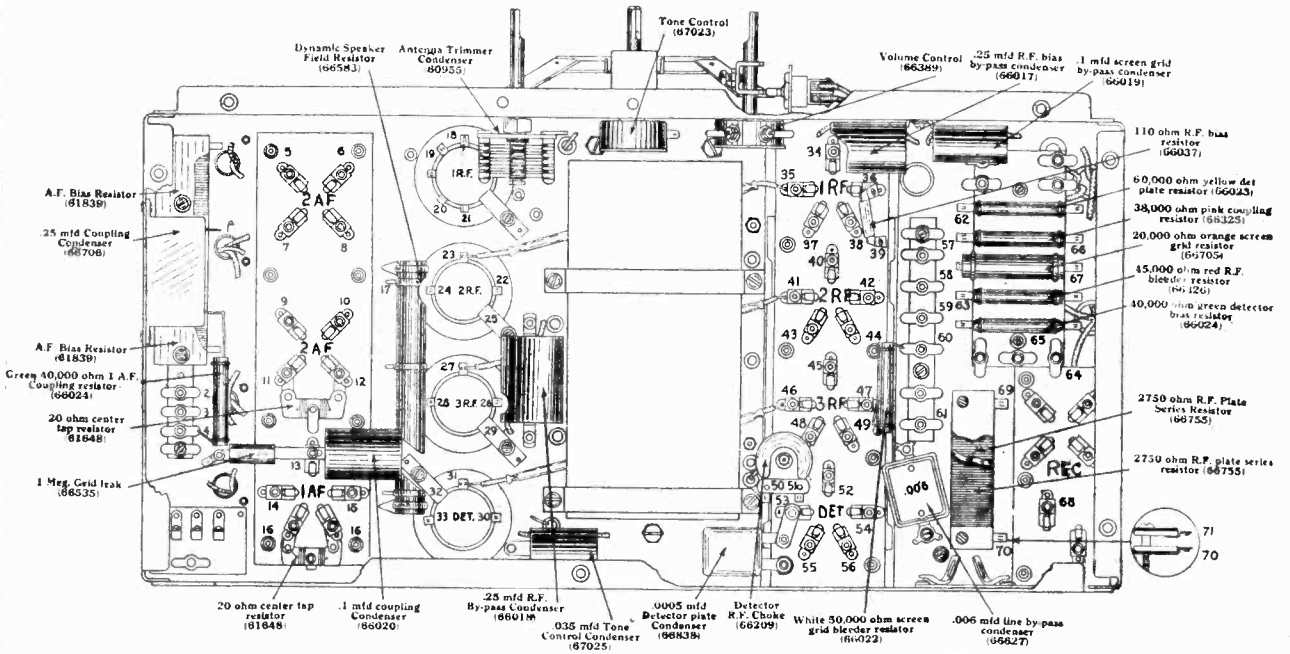
CIRCUIT DIAGRAM FOR STEWART WARNER 980 SERIES BATTERY RECEIVERS

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	136	2.2	86.5	4.9	
227	Det	2.2	165	1.5	-	.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

STEWART - WARNER CORP

MODEL R-100-A
Continuity Tests

RECEIVER CONTINUITY TESTS

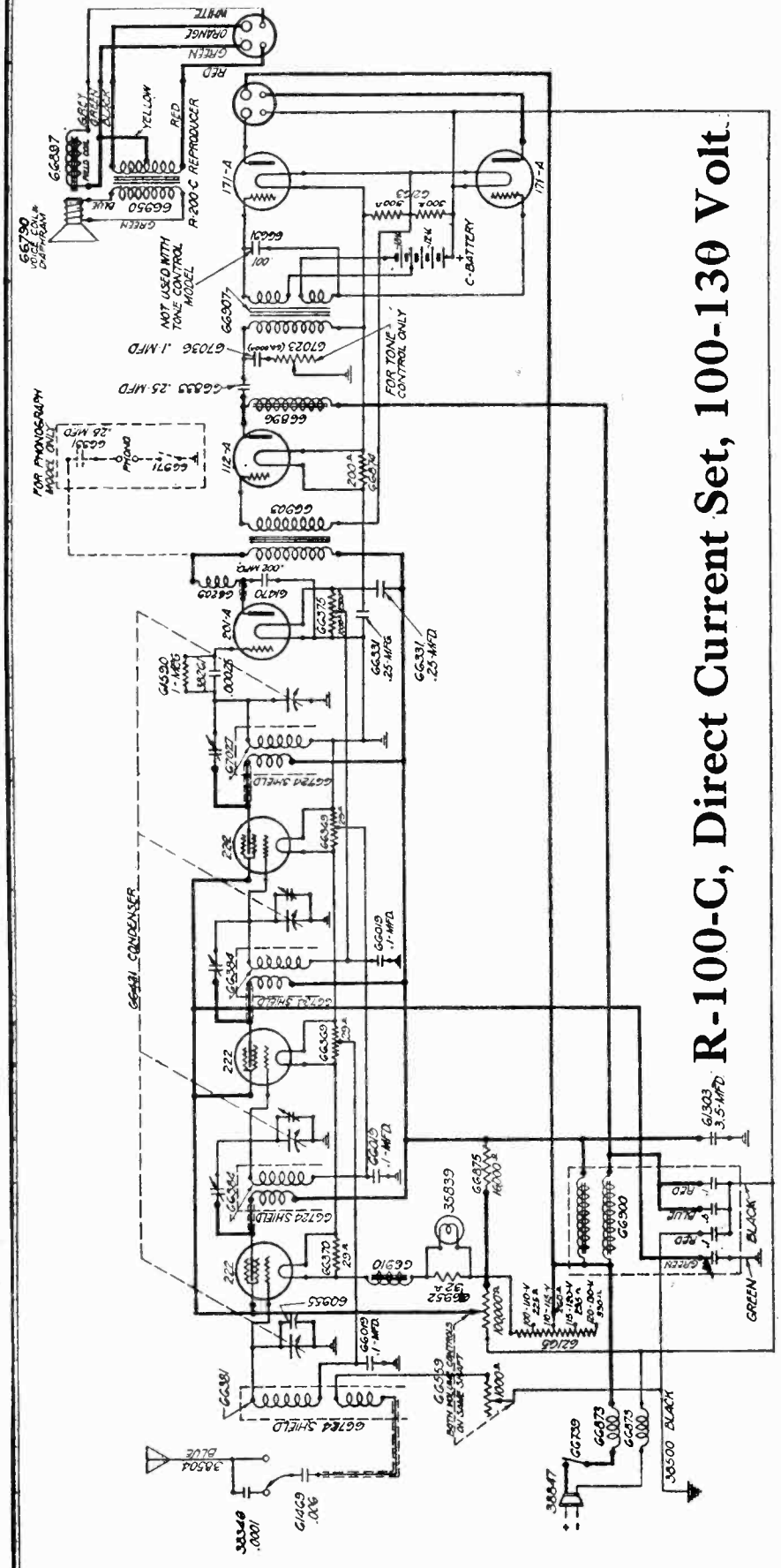
USE HIGH RESISTANCE VOLTMETER. TUBES AND SPEAKER MUST BE IN PLACE BUT SET DISCONNECTED AT SOCKET

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

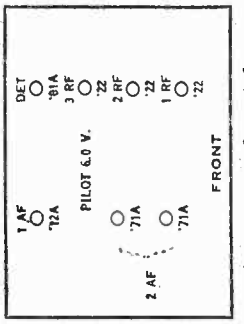
*The value obtained here is not the true resistance because of parallel resistance networks in the set. To obtain true resistance values, one side of the resistor must be unsoldered and then checked when out of the circuit.

MODEL R-100-C (DC)
Schematic, Voltage

STEWART - WARNER CORP.



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.**

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

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 resistor 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*

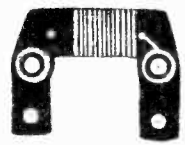
Model	Part No.	Description
900-1-2-3	61816 66547	Brown. Machine Screw mounting. Brown. Two threaded contact pins for mounting.
910-1-2-3	66412	Brown. Plug in type.
940-1-2-3	62151	Brown. Plug in type.
950-1-2-3	62152	Brown. Plug in type.
960-1-2-3	66491	Brown. Plug in type.
990-1-2-3	66514	Brown. Plug 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.

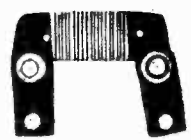
WIRE-WOUND RESISTORS

SHOWN APPROXIMATELY HALF SIZE

38918
1000 ohms. Grid resistor. Used in 800 Series receivers.

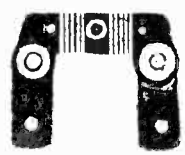


66370
29 ohms. 1 R. F. filament shunt. Used in 950 and R-100 Series D. C.

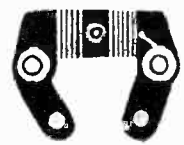


66037
110 ohms. R. F. bias. Used in 950 and R-100 Series A. C.

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.

37552
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.

60297
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.

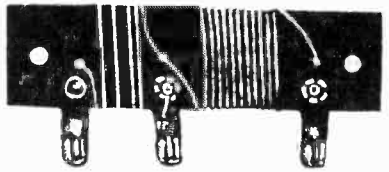
39588
1700 ohms. R. F. grid bias. Used in Model 750 only.

62199
32 ohms. Pilot light shunt. (2 A. F. grid bias.) Used in 950 D. C.

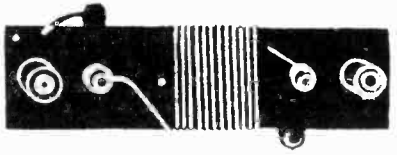
WIRE-WOUND RESISTORS

SHOWN APPROXIMATELY HALF SIZE

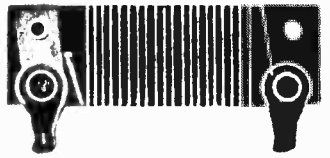
66030
2220 ohms and 1110 ohms. B supply resistor. Used in 900 and 950 Series A. C. receivers.



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.

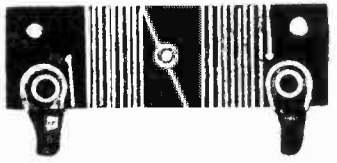
35733
1000 ohms. Grid resistor. Used in 1st R. F. of 500 Series A. C. and all R. F. of 500 Series battery.

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.

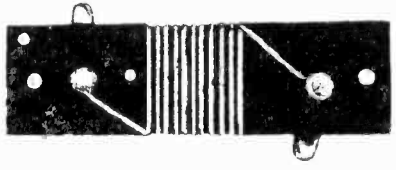
37763
1000 ohms. 2nd and 3rd R. F. grid resistor Used in 500 Series A. C.



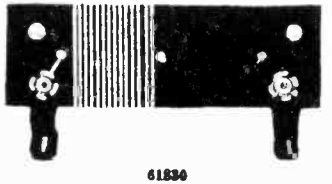
37629
20 ohms. Center tap. Used in 700 Series A. C. receivers.

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.



61834
800 ohms R. F. grid bias. Used in 900 Series A. C.

STEWART-WARNER AUDIO-TRANSFORMER DATA

Model of Receiver	Circuit in Which Used	Transformer Finish	Approximate Turns Ratio	*Approximate Resistance Primary	*Approximate Resistance Secondary	**Color Code of Wires Primary	**Color Code of Wires Secondary	Part Number	Price	Substitute Transformers
300 340 310 345 325 350 330 355 335 360	Both Audio Stages	Brown	3 to 1	800 ohms	3900 ohms	Soldering Lugs Used		38657	$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	2100 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	Output {1. White with Brown Tracer 2. White with Green Tracer}	60086	6.00	39977
801 Series A 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.

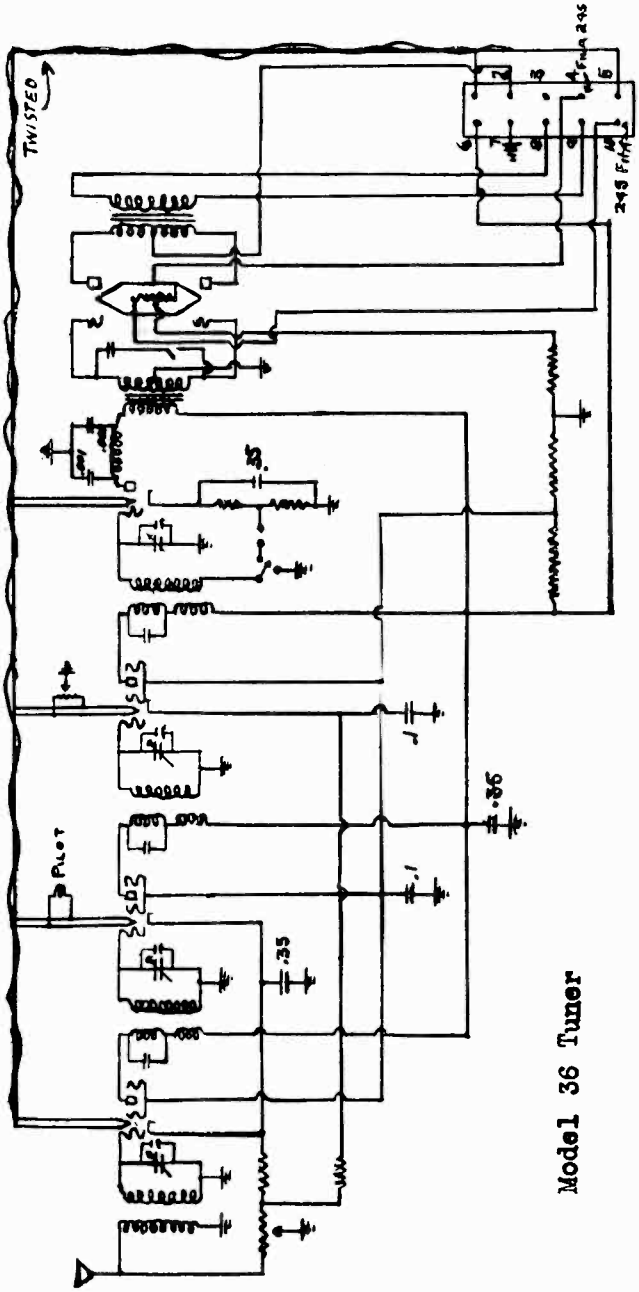
STEWART-WARNER AUDIO-TRANSFORMER DATA

Model of Receiver	Circuit in Which Used	Transformer Finish	Approximate Turns Ratio	*Approximate Resistance Primary	*Approximate Resistance Secondary	**Color Code of Wires Primary	**Color Code of Wires Secondary	Part Number	Price	Substitute Transformers
801 Series 806 811 B	First Audio	Silver	3 to 1	2100 ohms	8000 ohms	Plate—White B+ —Red	Grid —Green Ground Or C— —Blue	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 Or C— —White	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	Output {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	

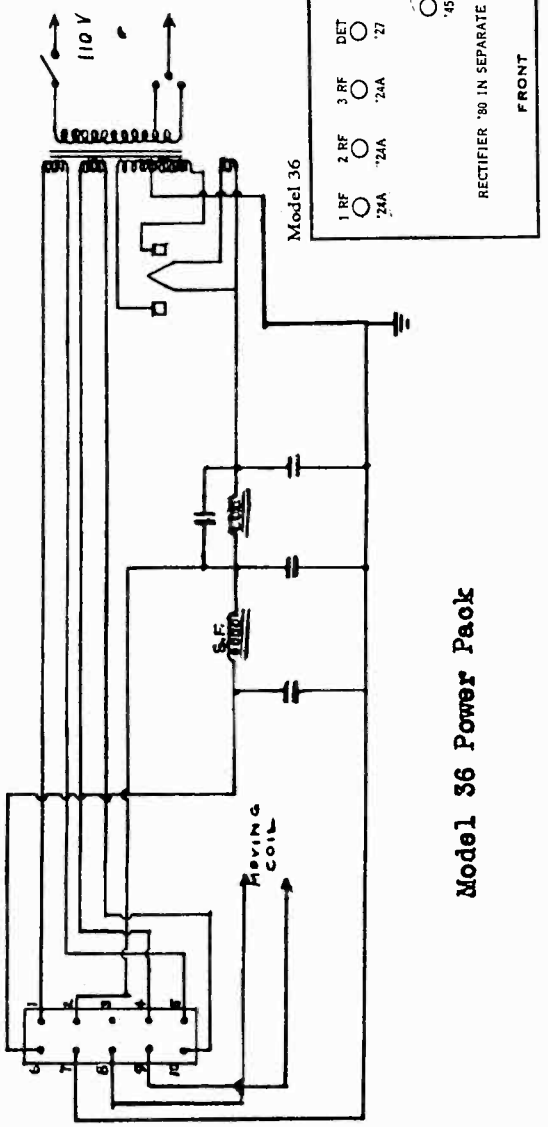
*Resistance values given here are only approximate. They will vary widely with date of manufacture and material used. Where two resistance values are given they apply to both halves of a winding. The outer winding always has the higher resistance.
**The color code given applies only to the cotton insulation of the terminal wire and not to the color of the spaghetti or cambric tubing around the wire.

MODEL 36

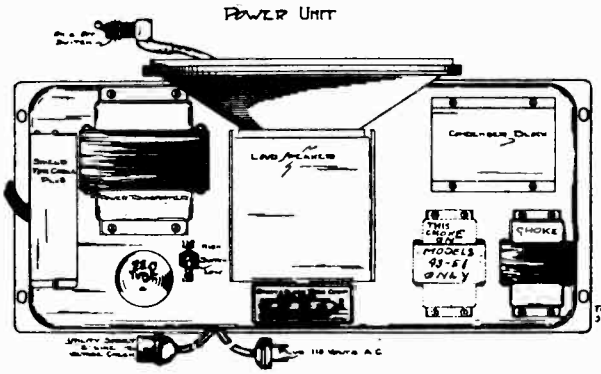
STORY & CLARK RADIO CORP.

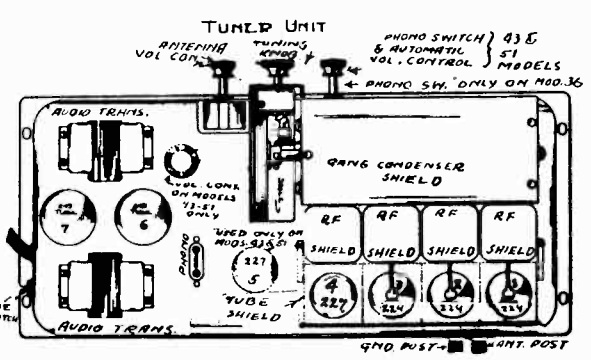


Model 36 Tuner



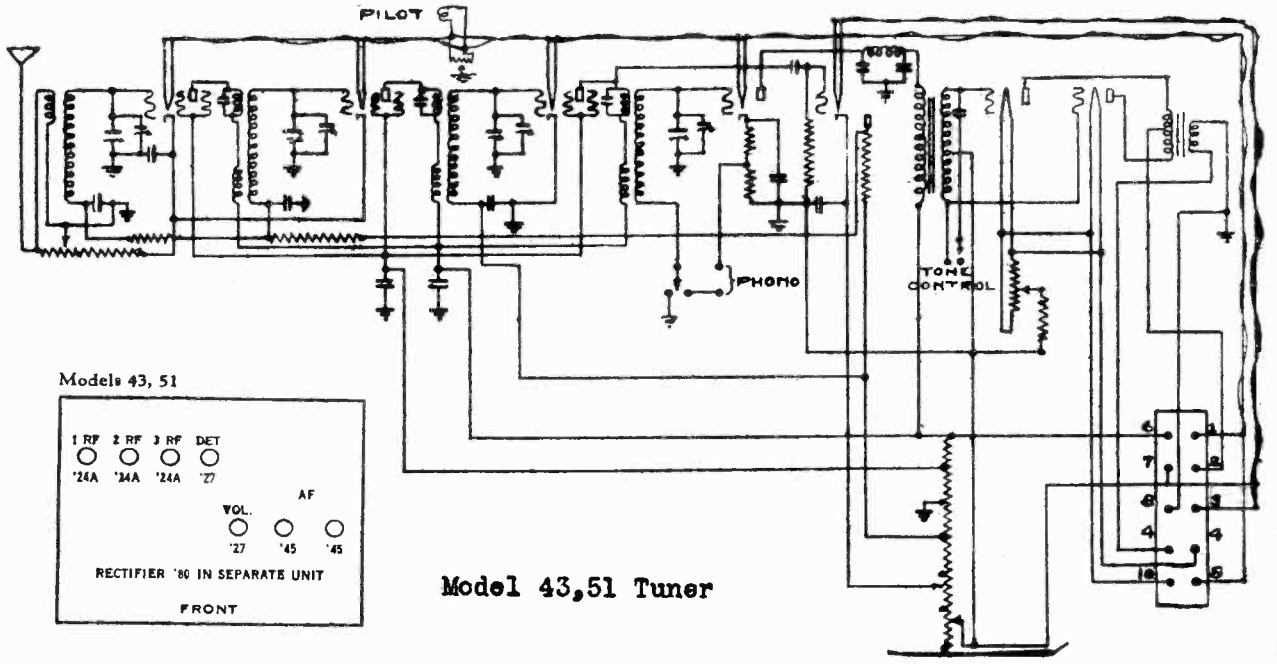
Model 36 Power Pack





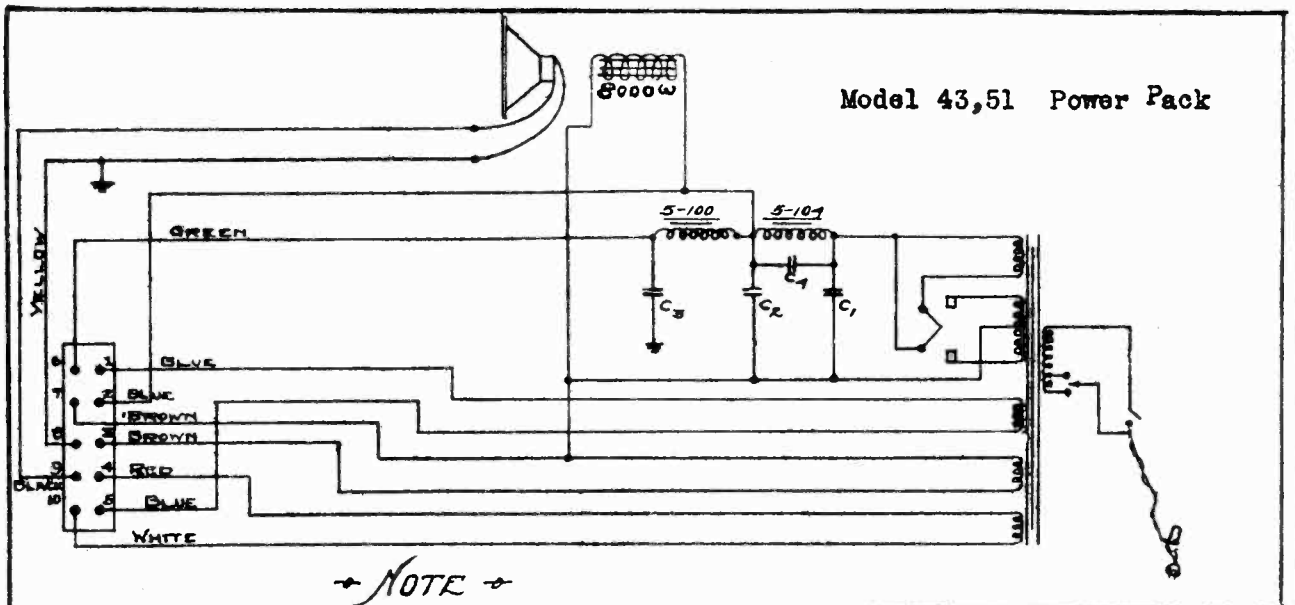
MODELS 43,51

STORY & CLARK RADIO CORP.



Models 43, 51

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.

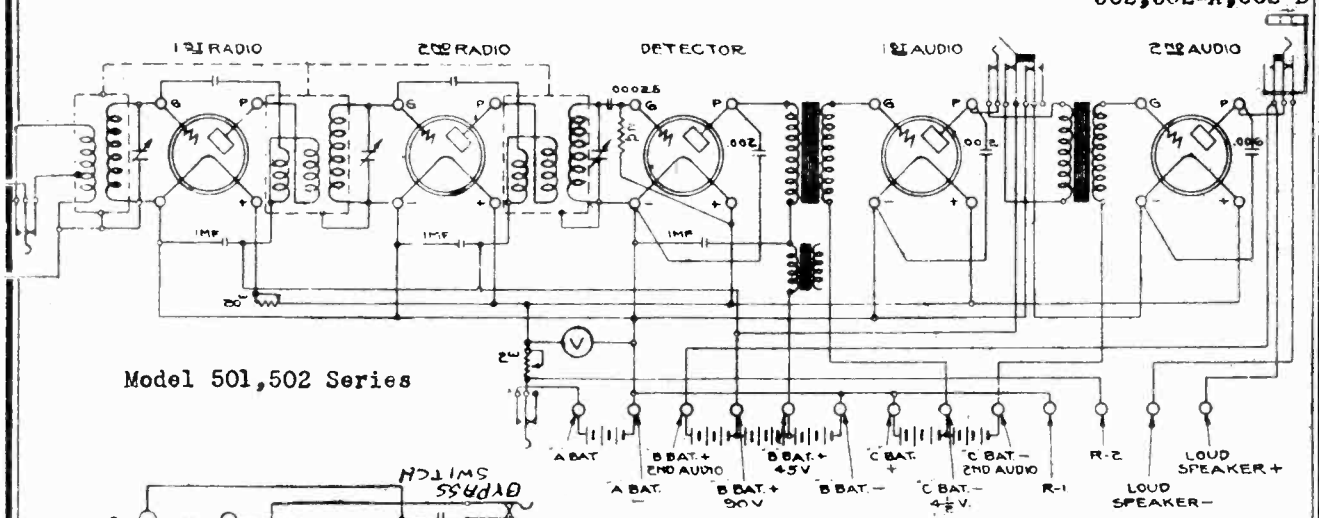
FOR 25 CYCLE SUPPLY, LOW POTENTIAL SIDE OF C_3 RETURNS TO -B, AS C_2 & C_1. ALSO CONDENSER C_4 HAS A TOTAL CAPACITY OF .5 MF

STORY & CLARK RADIO CORP.
173 N. MICHIGAN AVE.
CHICAGO, U.S.A.

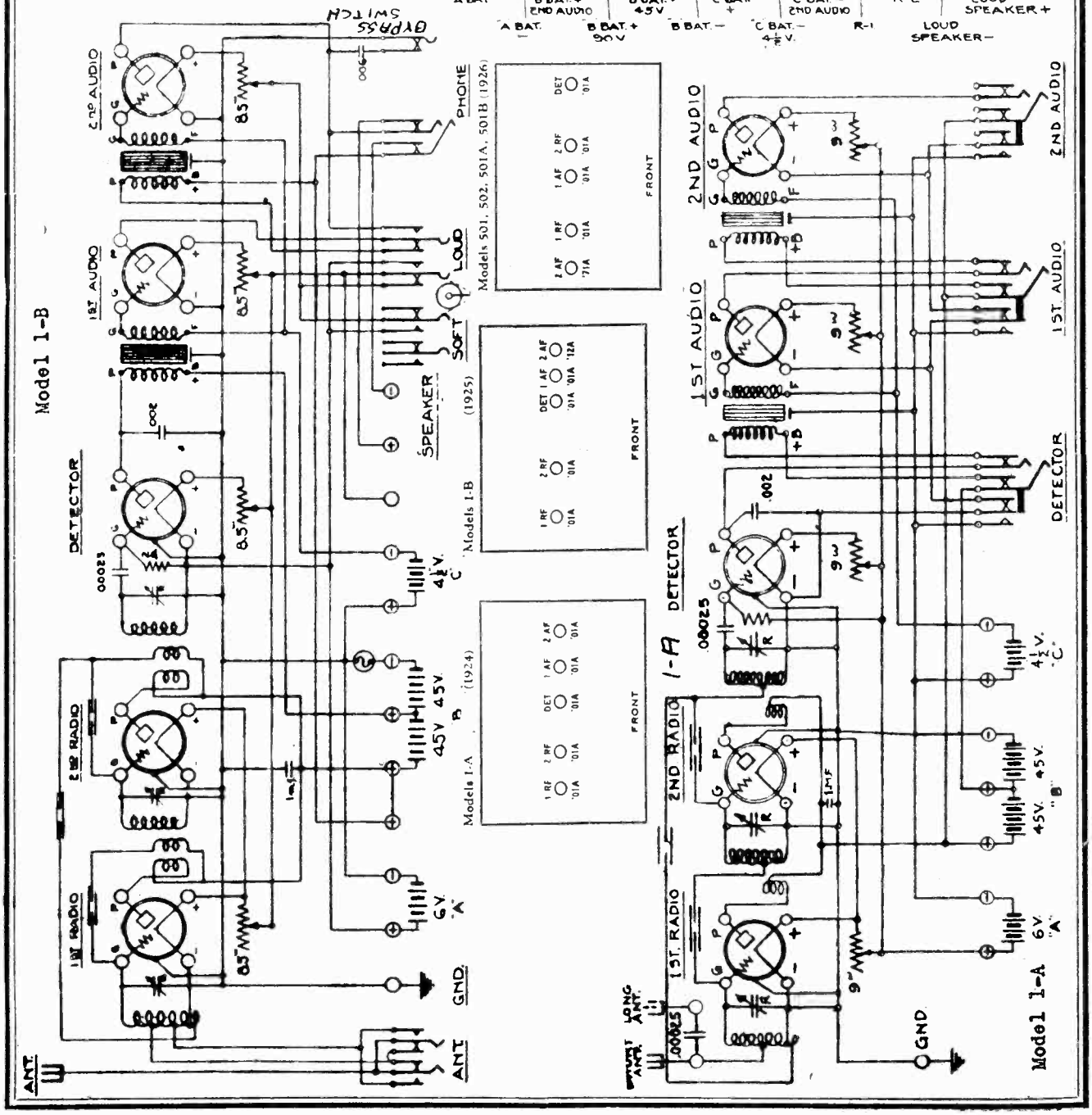
DATE	6-13-30
DRAWN	2988
CHECKED	
APPROVED	

STROMBERG - CARLSON TEL. MFG. CO.

MODEL 1-A
MODEL 1-B
MODEL 501, 501-A, 501-B
502, 502-A, 502-B

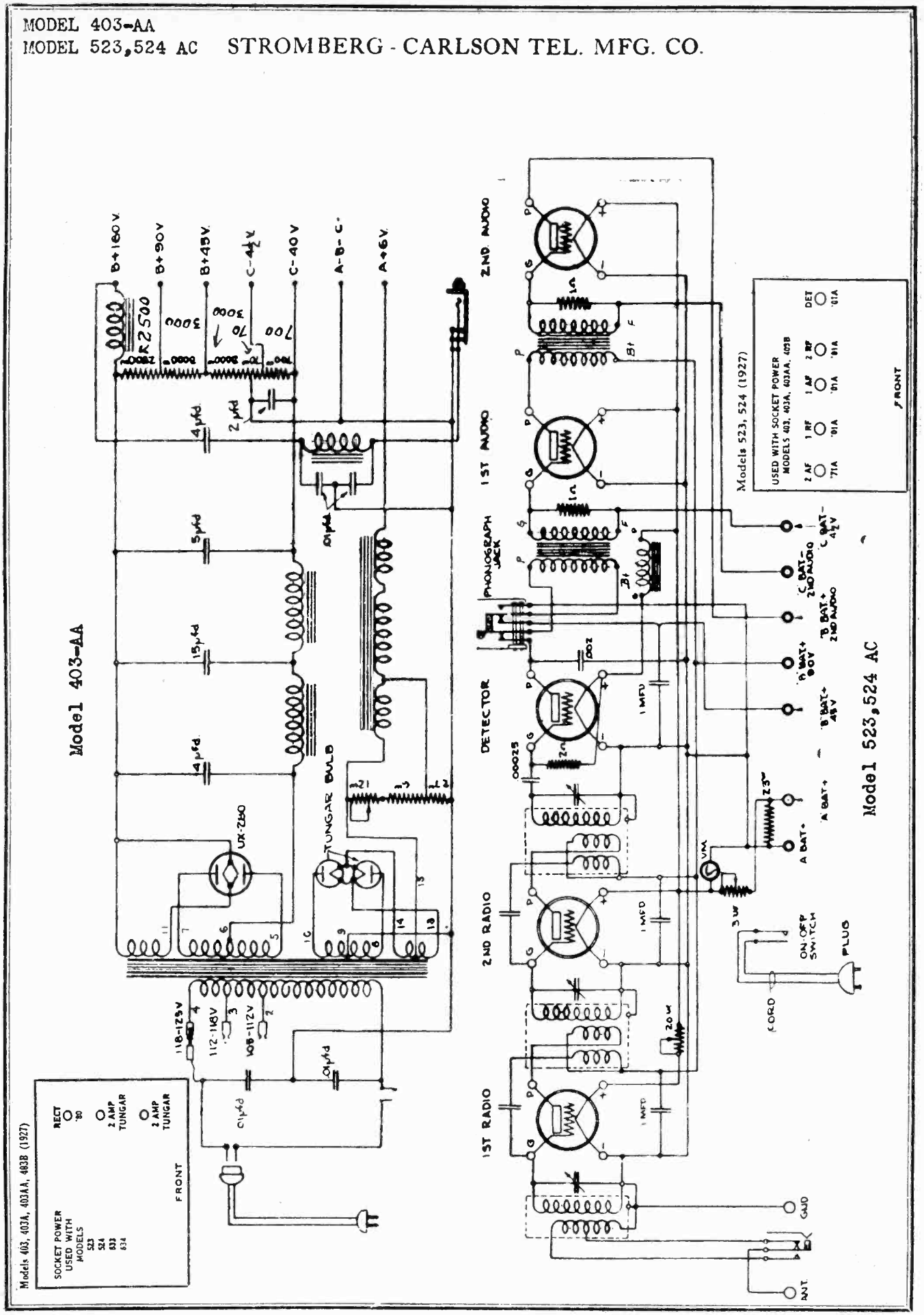


Model 501, 502 Series



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

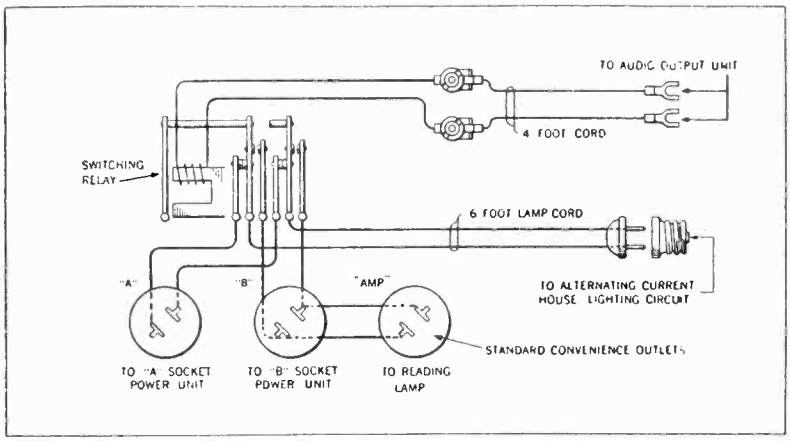
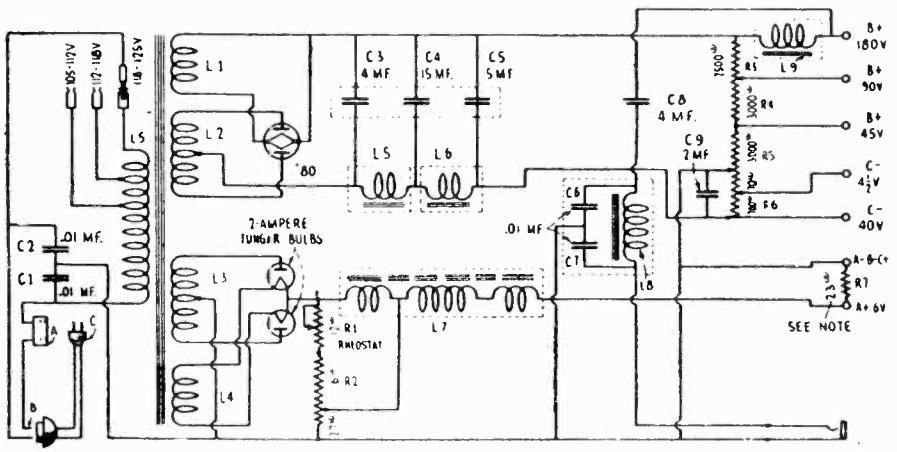
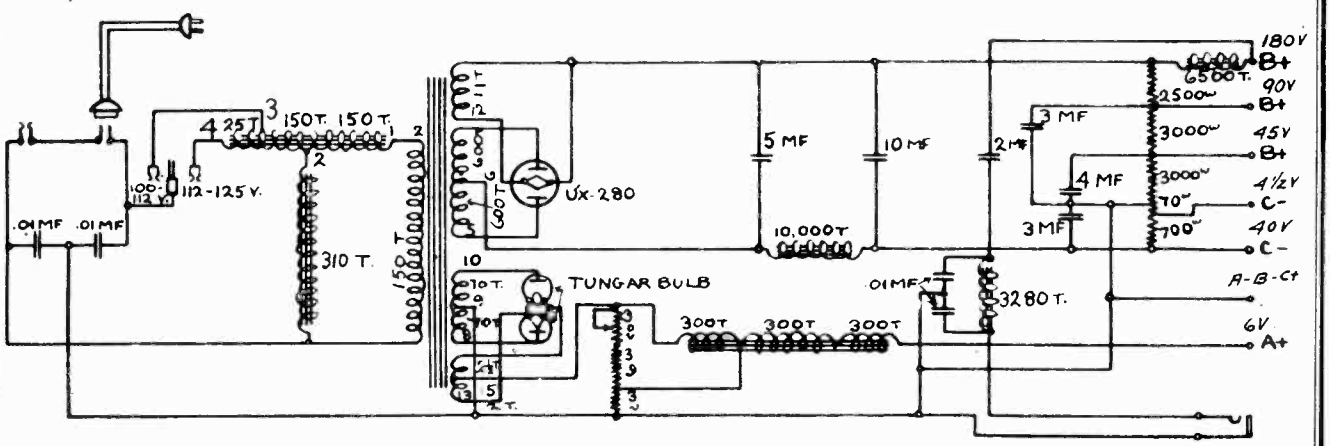


Diagram of Connections in No. 301-A Power Switching Relay



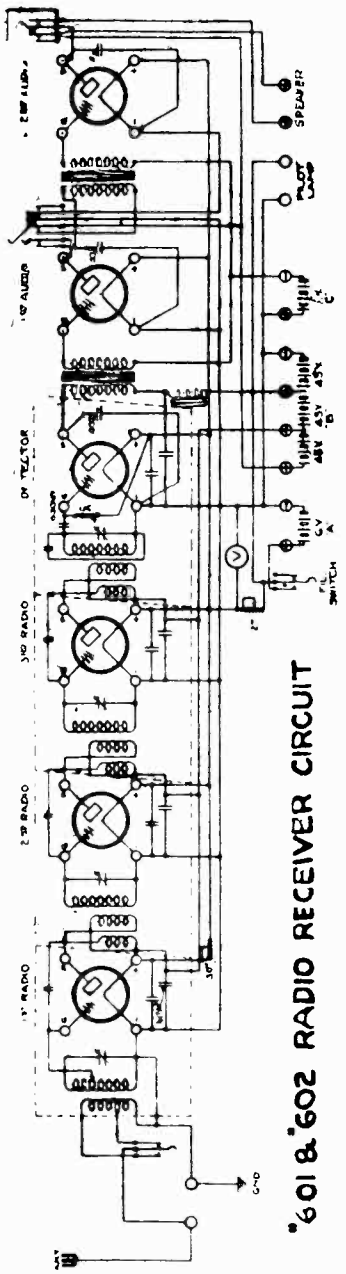
Model 403,403-A



Model 403-B

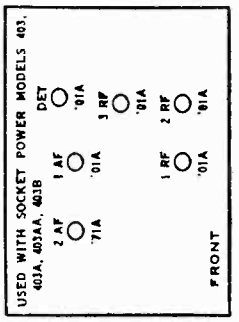
MODEL 601,602
MODEL 633,634

STROMBERG - CARLSON TEL. MFG. CO.

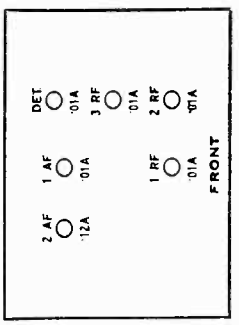


*601 & *602 RADIO RECEIVER CIRCUIT

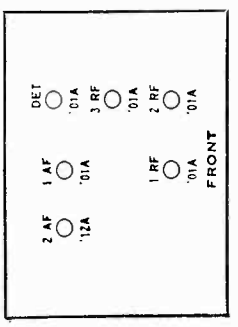
Models 633, 634 (1927)

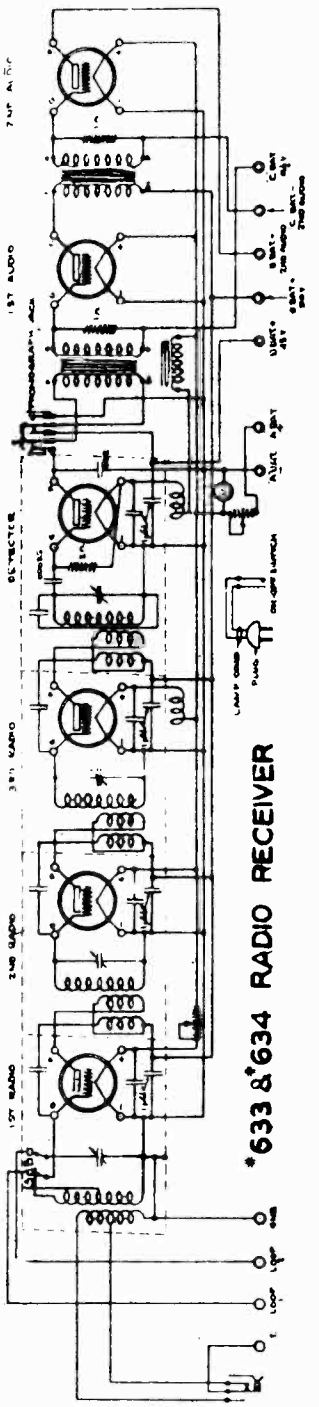


Models 602A, 602B (1925-26)



Models 601, 601A, 601B (1925-26)





*633 & *634 RADIO RECEIVER

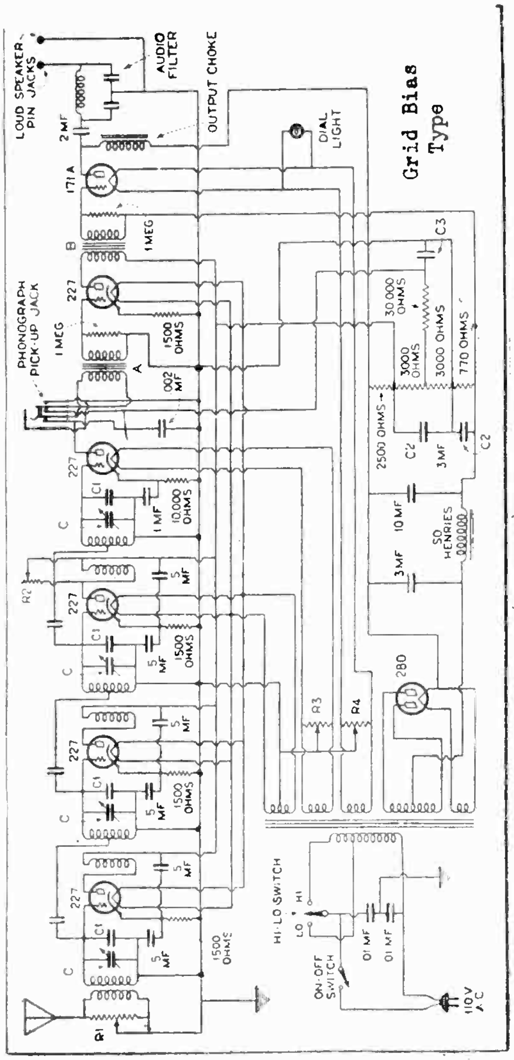
MODEL 635,636 AC
Two Types

STROMBERG - CARLSON TEL. MFG. CO.

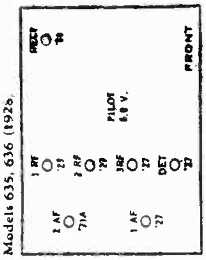
The difference between the two types is to be found in the detector circuit. In one of the types, type 1, the detector tube secures its bias via a cathode resistor. In the other type, the detector circuit is equipped with a grid leak and condenser.

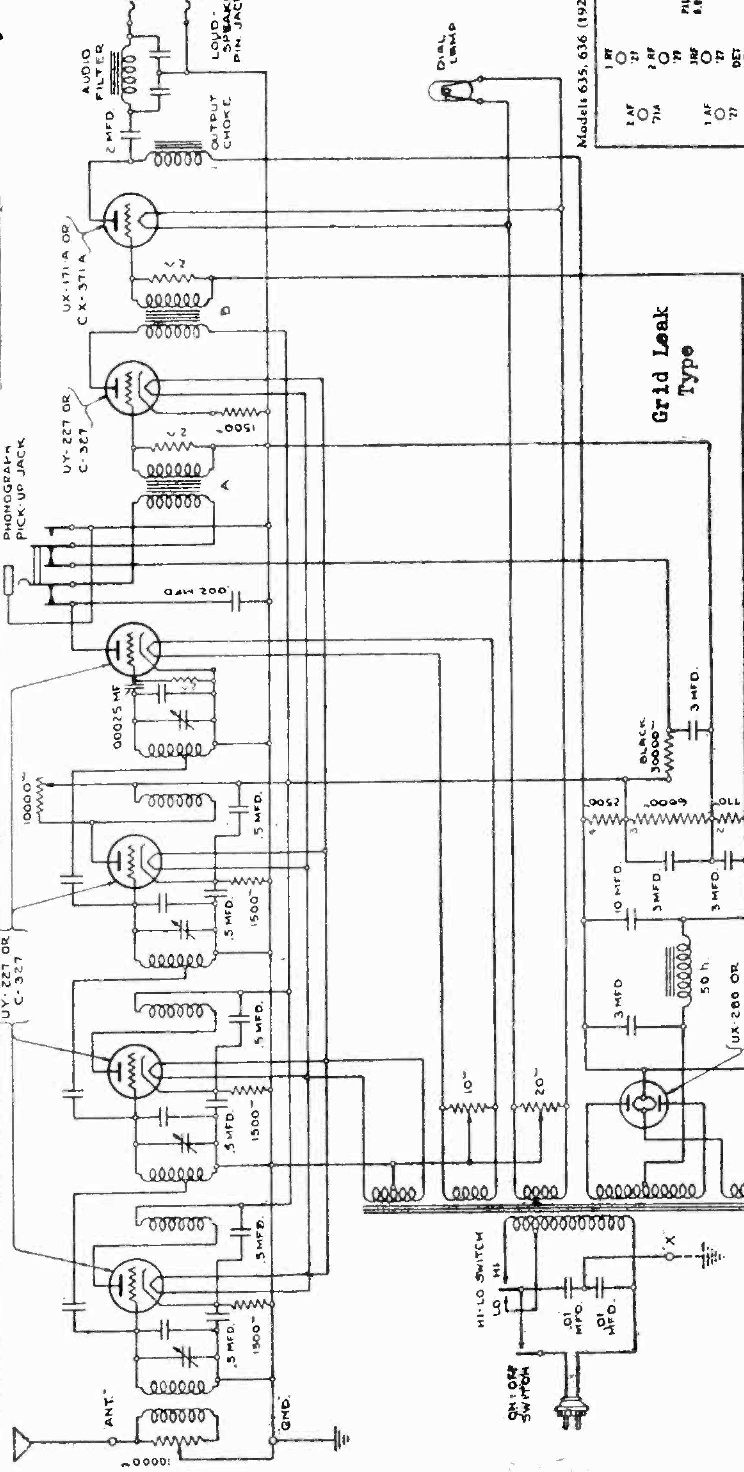
STROMBERG-CARLSON—Models 635-636
Line Voltage 115—High Volt Tap—Volume Control Full

Tube No. in Order	Type of Tube	Position of Tube 1st 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
	227	1st.R.F.	2.35	102	2.25	92	5.0	-	3.5	6.8	3.3
	227	2nd.R.F.	2.35	102	2.25	92	5.0	-	3.5	6.3	3.3
	227	3rd.R.F.	2.35	102	2.25	92	5.0	-	3.5	6.8	3.3
	227	Detector	2.35	90	2.20	32	-	-	2.0	2.1	0.1
	227	1st.A.F.	2.35	100	2.25	84	4.0	-	3.2	6.3	3.1
	171	2nd.A.F.	4.73	219	4.70	164	34.5	-	16.0	20.0	4.0
	280	Rectifier	4.90	-	4.65	-	-	-	19.5	-	-



Grid Bias Type

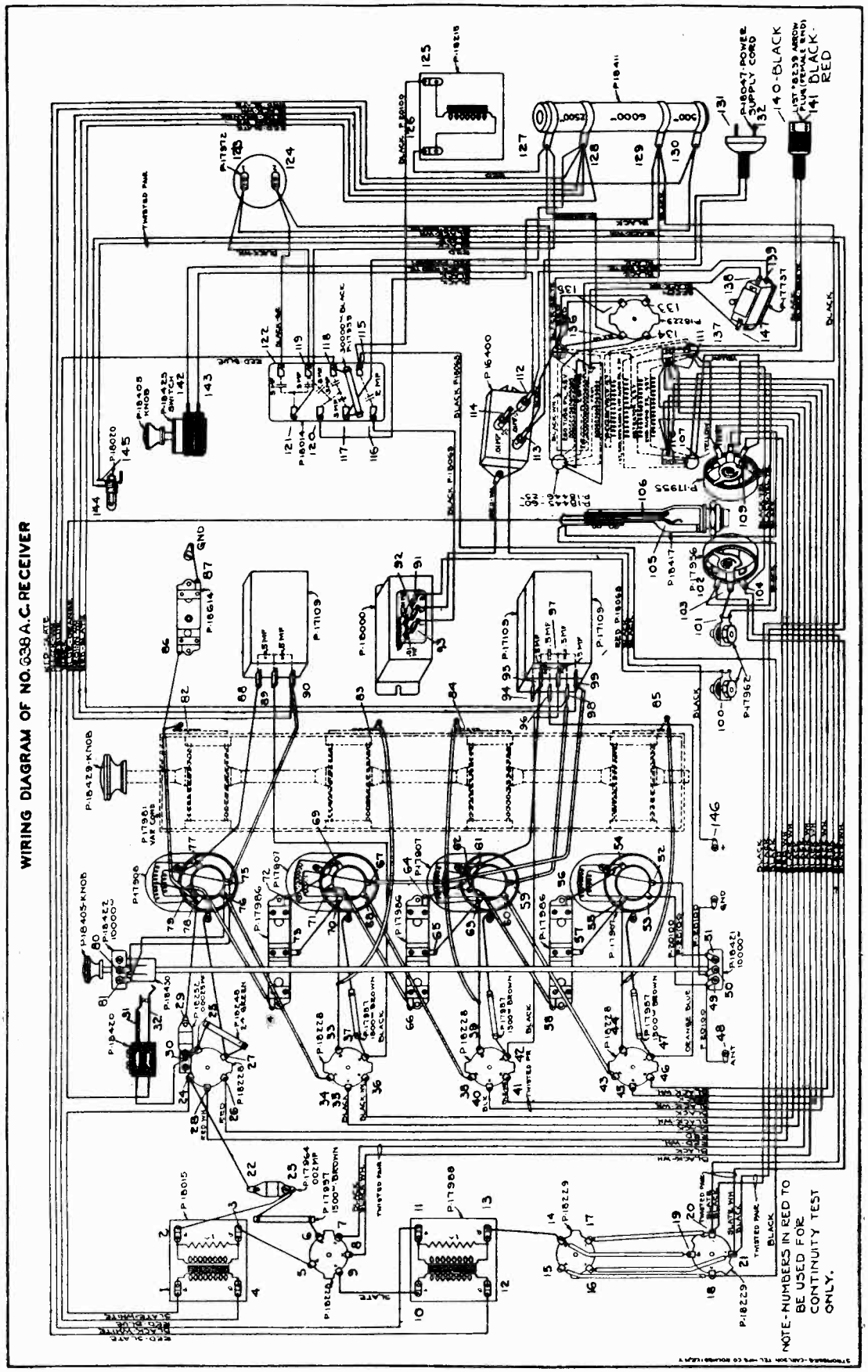




NOS. 635 AND 636 RADIO RECEIVERS

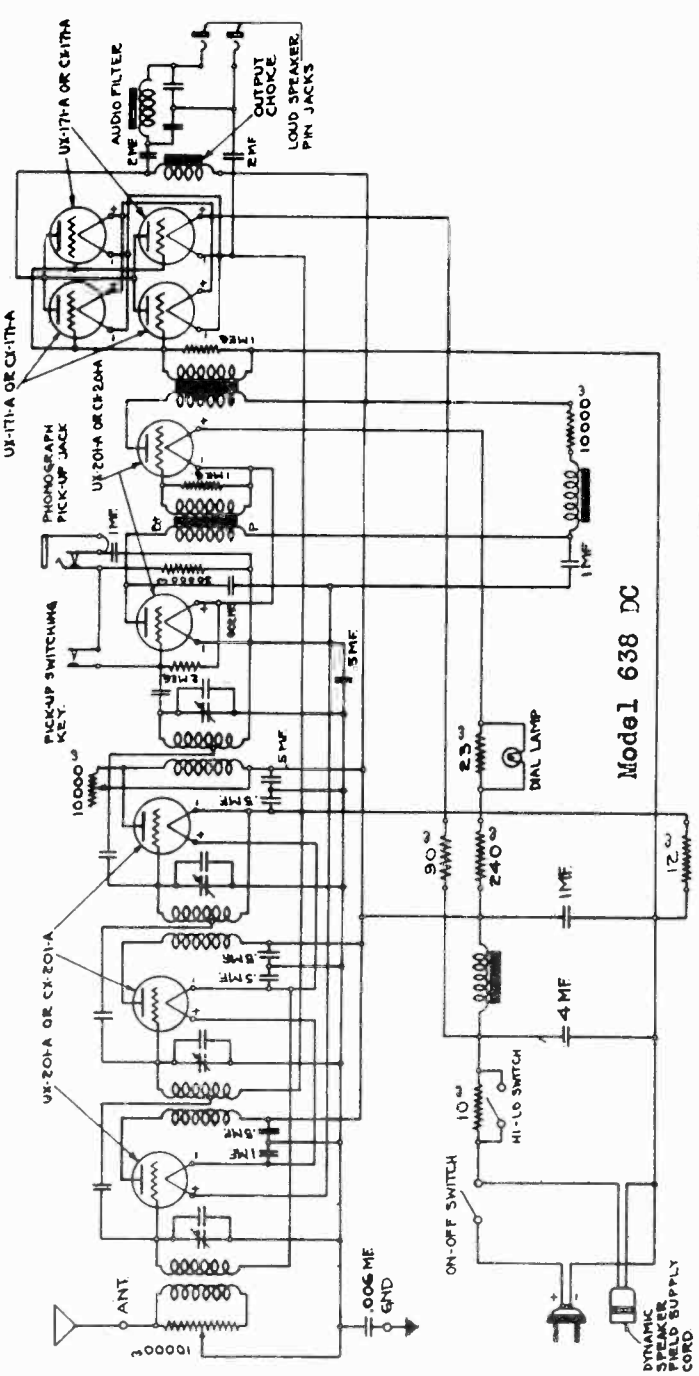
MODEL 638 AC
Chassis Wiring

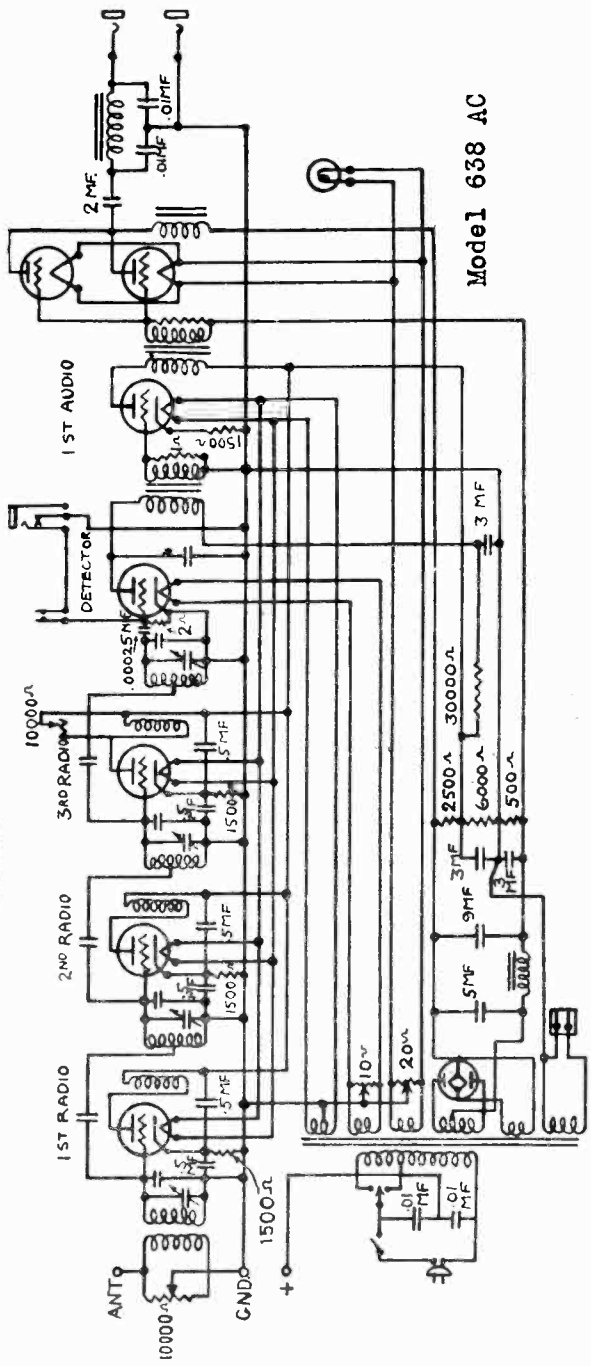
STROMBERG - CARLSON TEL. MFG. CO



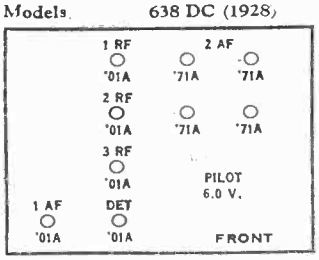
STROMBERG - CARLSON TEL. MFG. CO.

MODEL 638 AC
MODEL 638 DC

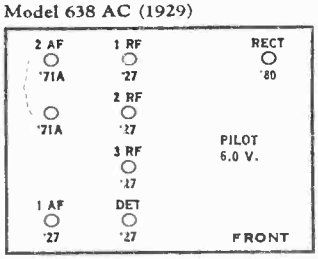




Models 638 DC (1928)



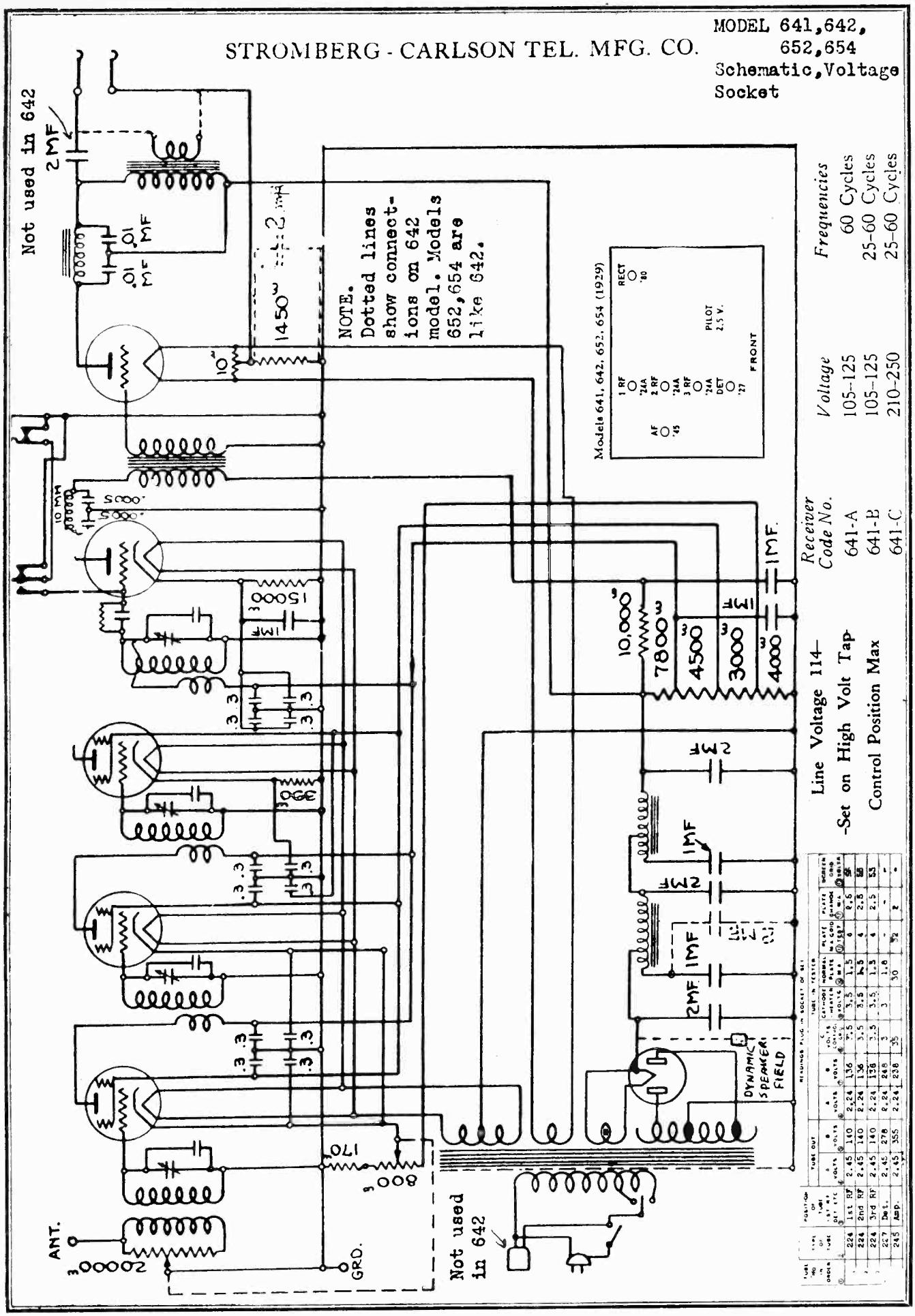
Model 638 AC (1929)



Model 638 Line 117 V. Vol. Maximum

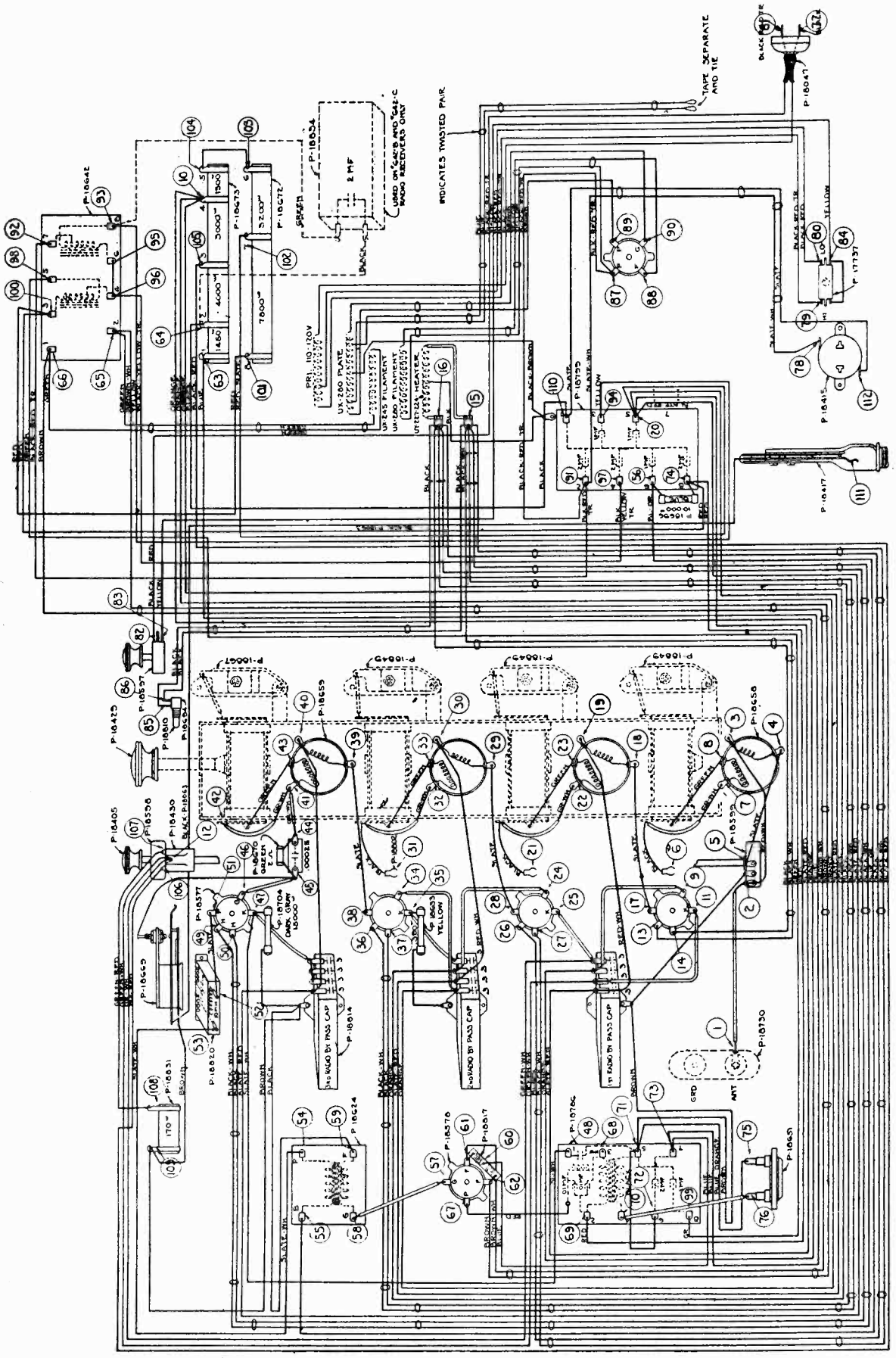
Tube Type	Stage	Fil Volts	Plate Volts	Grid Volts	Plate Ma.
'27	1 RF	2.1	90	4.	2.5
'27	2 RF	2.1	90	4.	2.8
'27	3 RF	2.1	90	4.	3.5
'27	Det.	2.	35	-	2.
'27	1 AF	2.	80	4.	3.5
'71A	2 AF	4.4	155	30.	22.
'71A	2 AF	4.4	155	30.	22.
'80	Rec.	4.4	---	-	37.*

* Per Anode



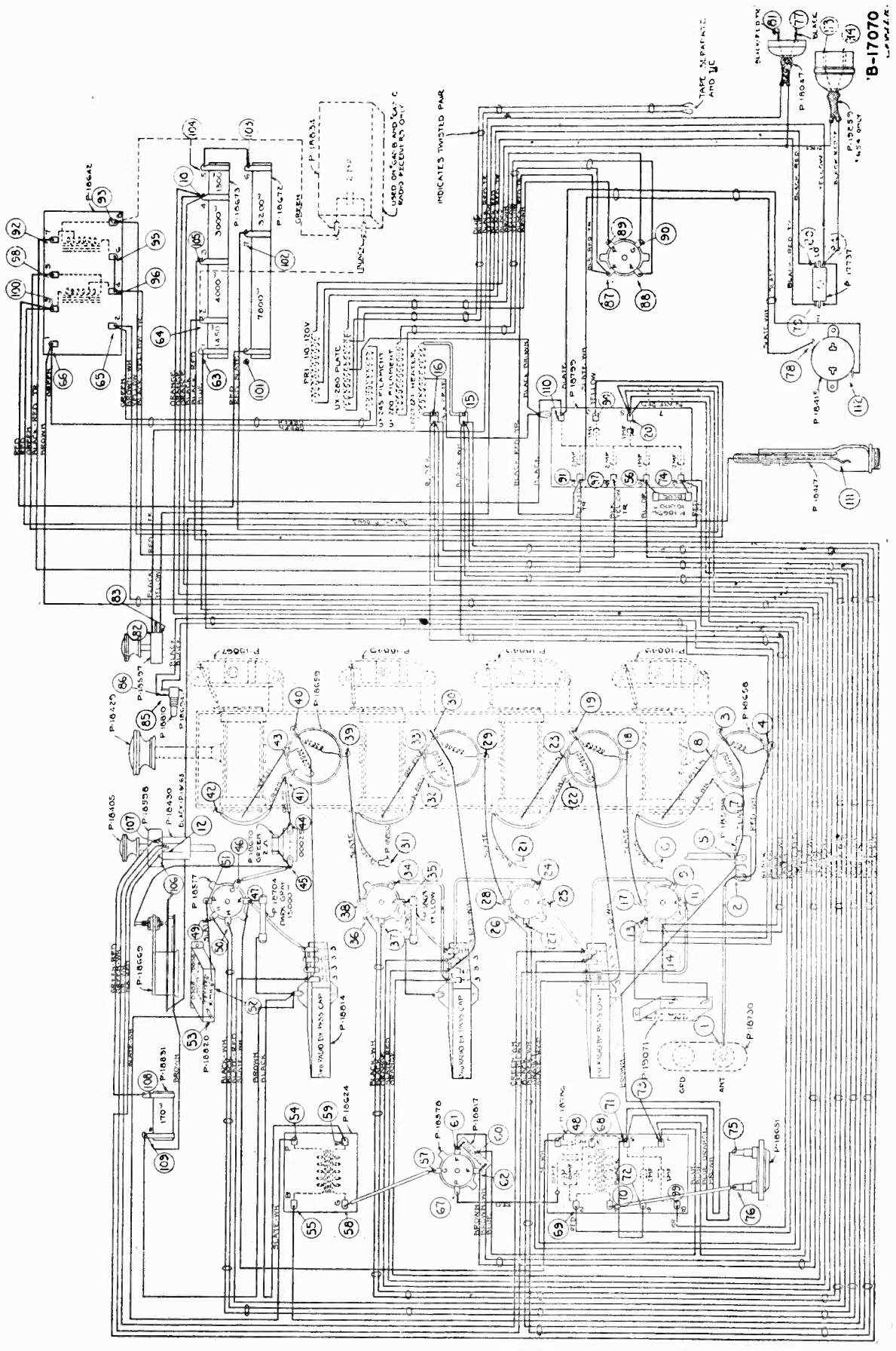
STROMBERG - CARLSON TEL. MFG. CO.

MODEL 642
Chassis Wiring



MODEL 652,654
Chassis Wiring

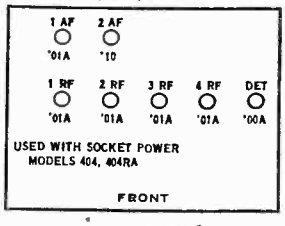
STROMBERG - CARLSON TEL. MFG. CO.



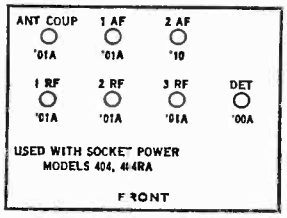
STROMBERG - CARLSON TEL. MFG. CO.

MODEL 734
MODEL 744
MODEL 404 RA

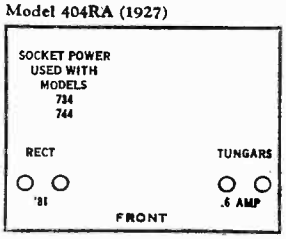
Model 744 (1927)

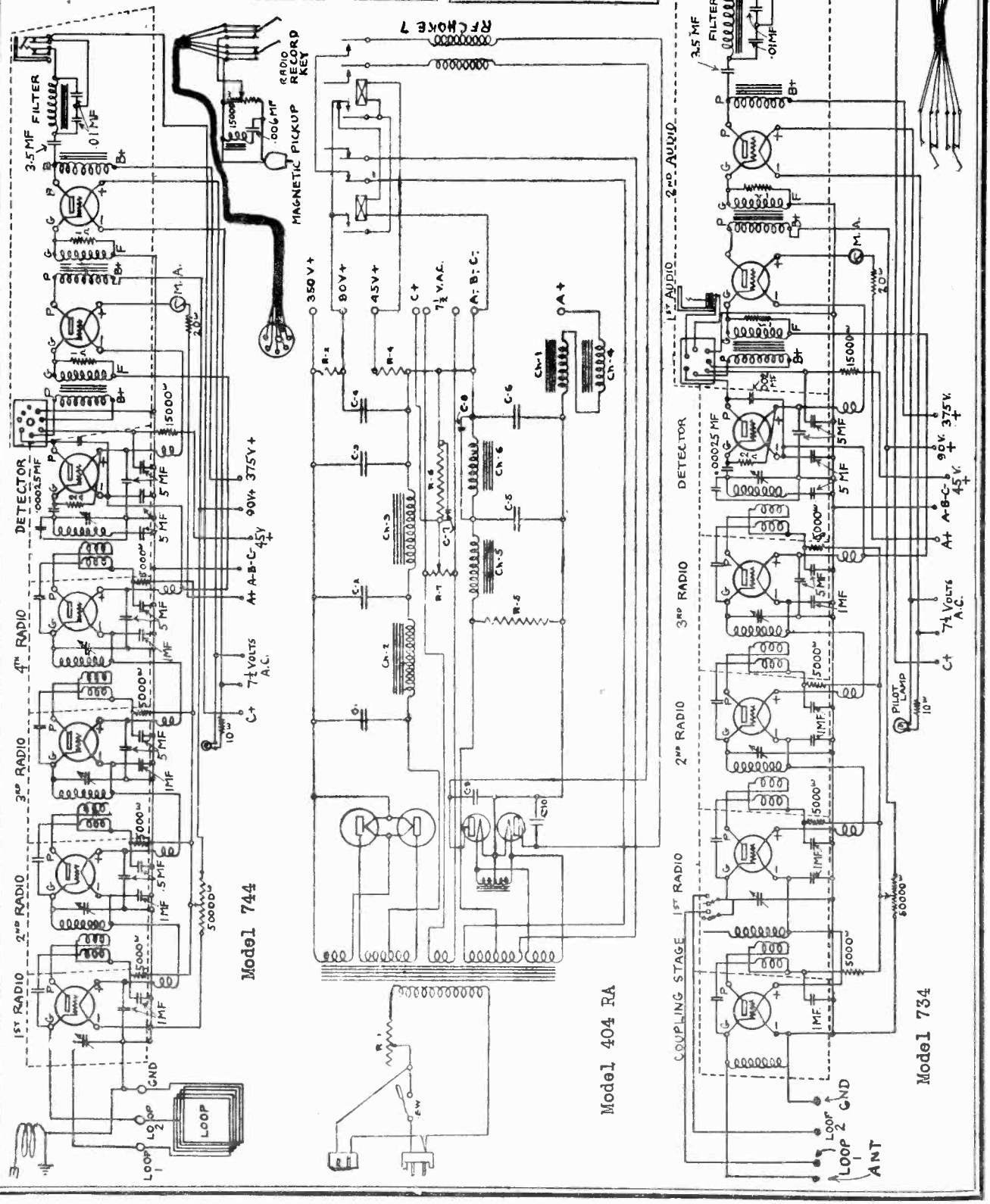


Model 734 (1927)



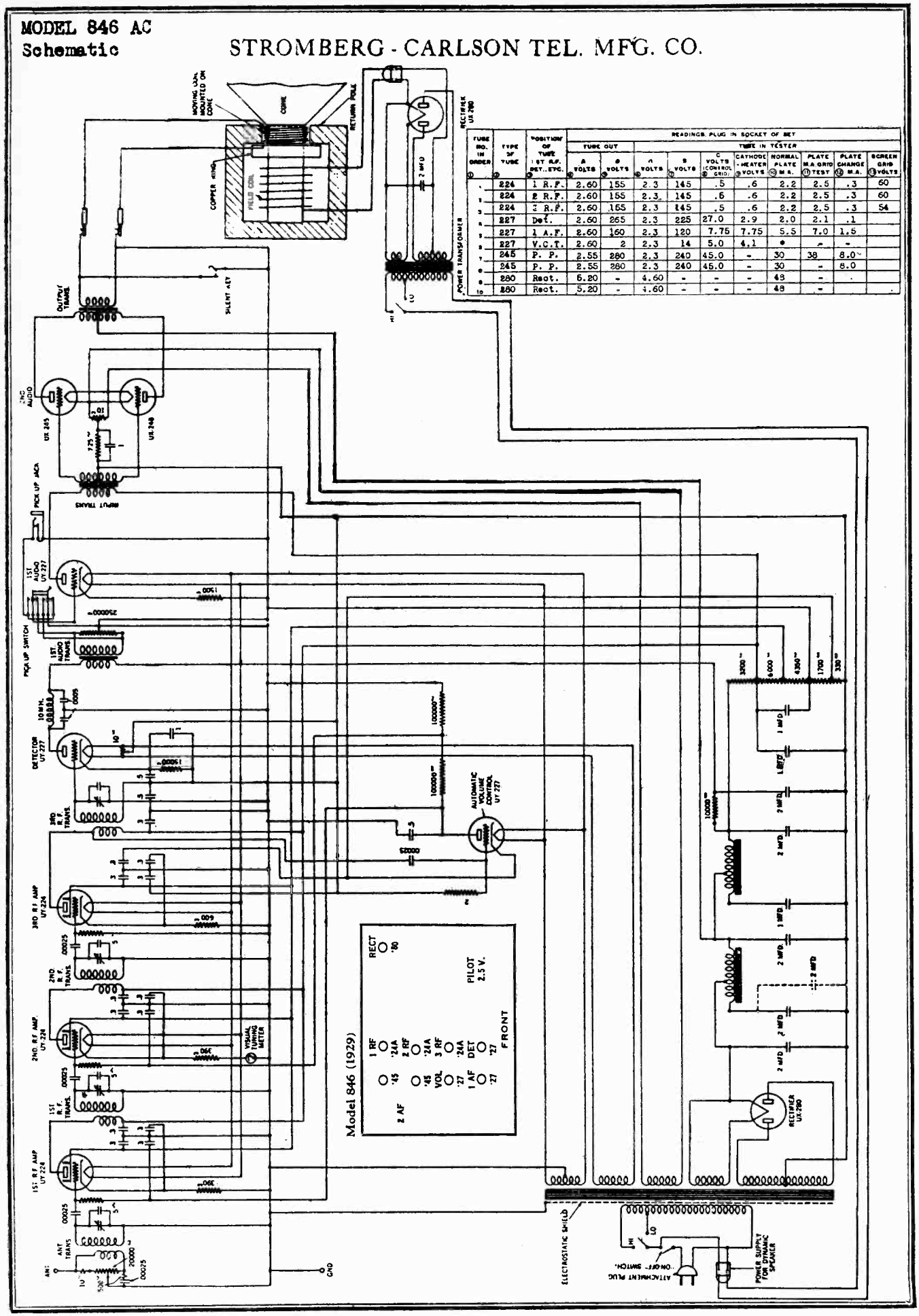
Model 404RA (1927)





MODEL 846 AC
Schematic

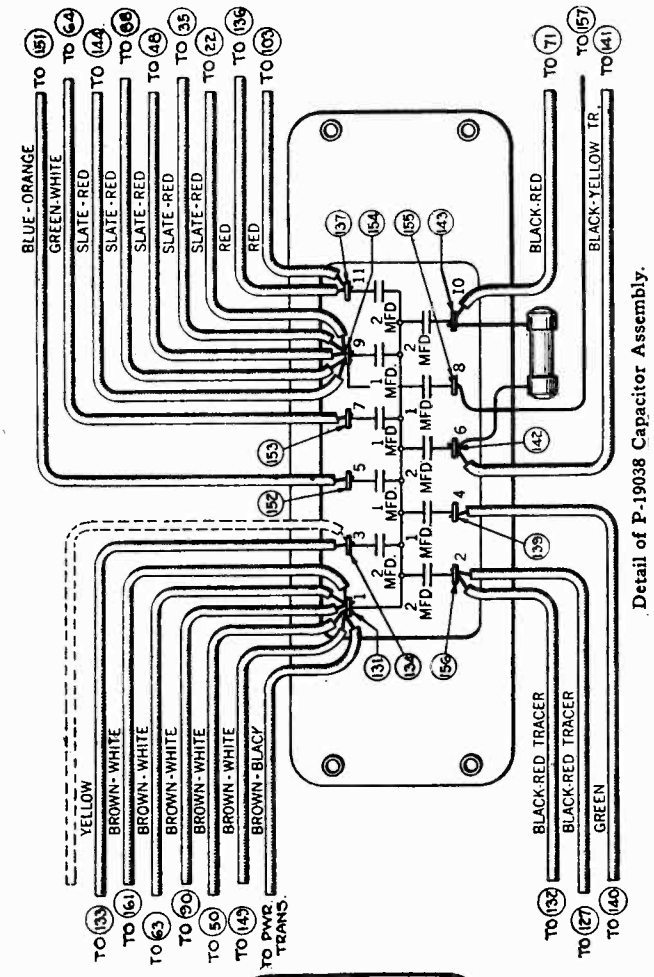
STROMBERG - CARLSON TEL. MFG. CO.



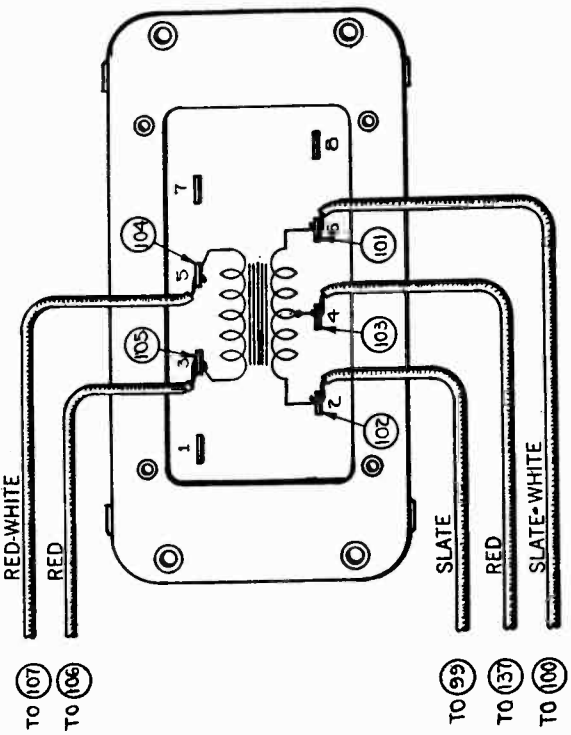
TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF TUBE (1ST R.F. DET., ETC.)	READINGS PLUG IN SOCKET OF SET								
			TUBE OUT		TUBE IN TESTER						
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS (CONTROL GRID)	CATHODE - HEATER VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE CHANGE M.A.	SCREEN GRID VOLTS
1	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	.6	.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

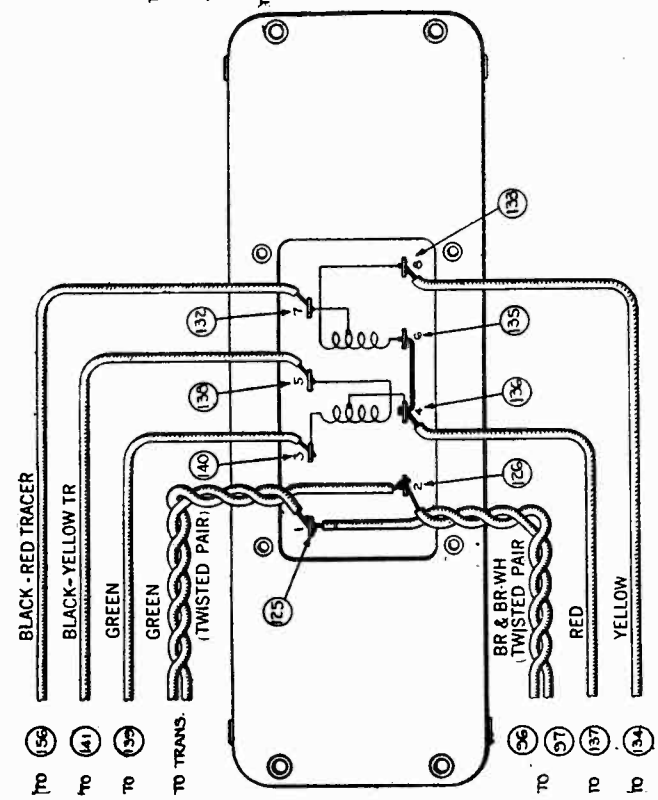
STROMBERG - CARLSON TEL. MFG. CO.



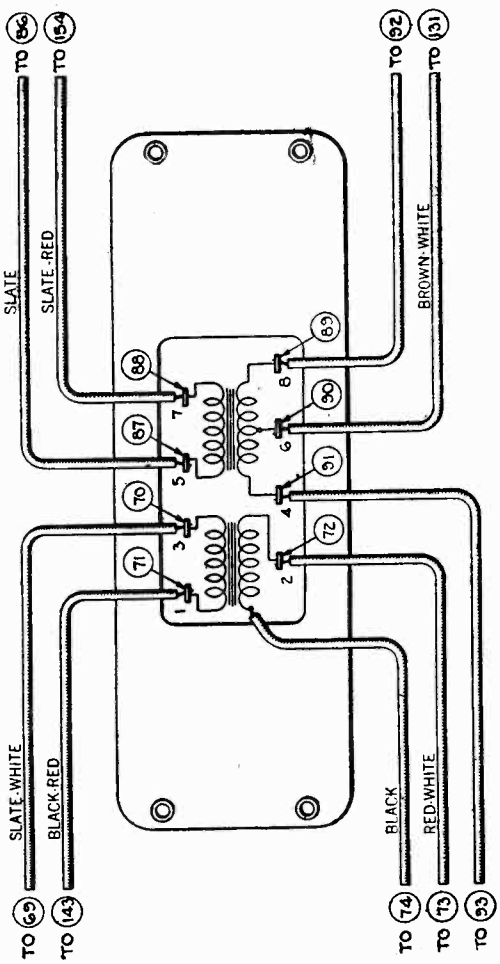
Detail of P-19038 Capacitor Assembly.



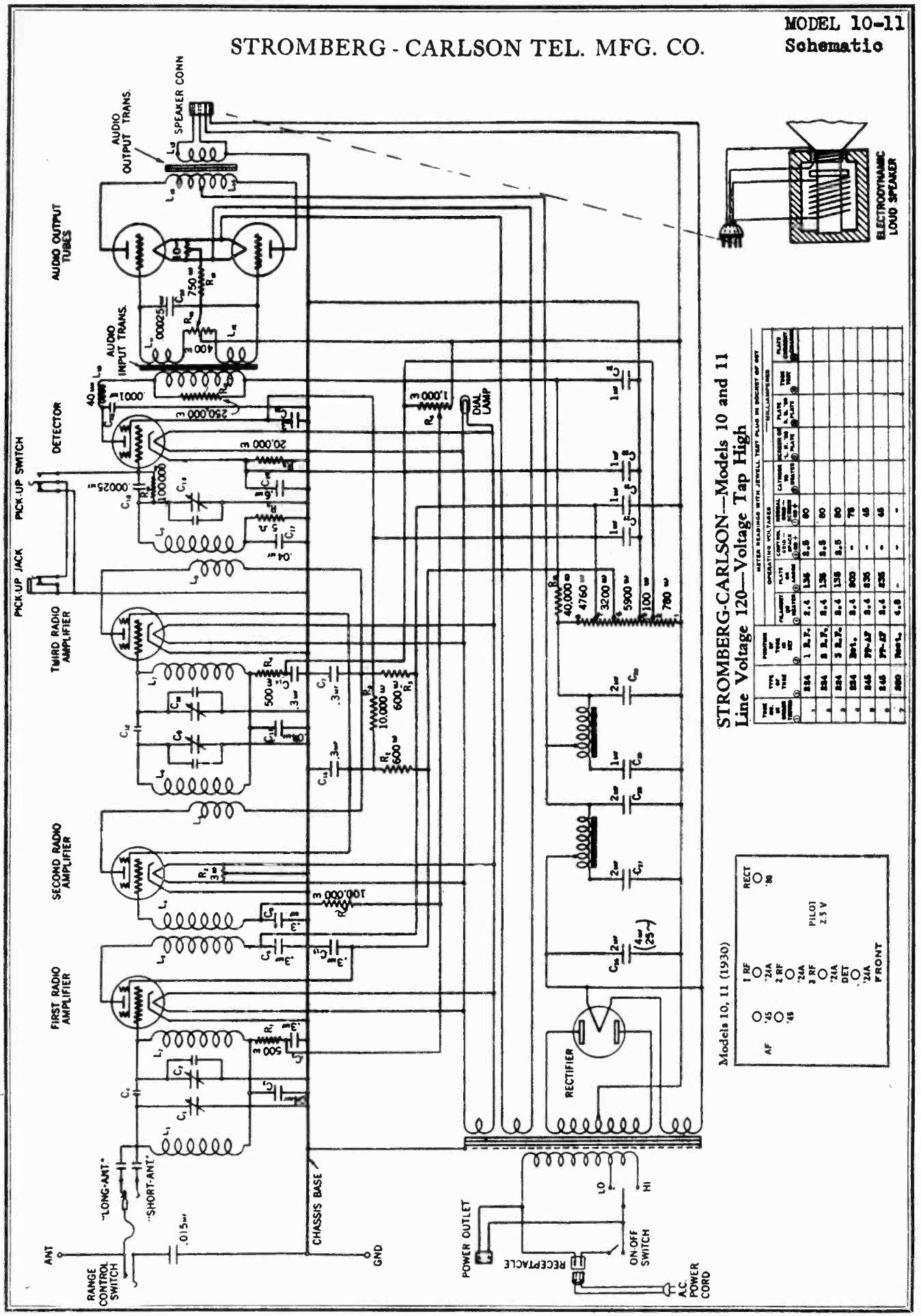
Detail of P-18781 Output Transformer.



Detail of P-18200 Filter Inductor Assembly.

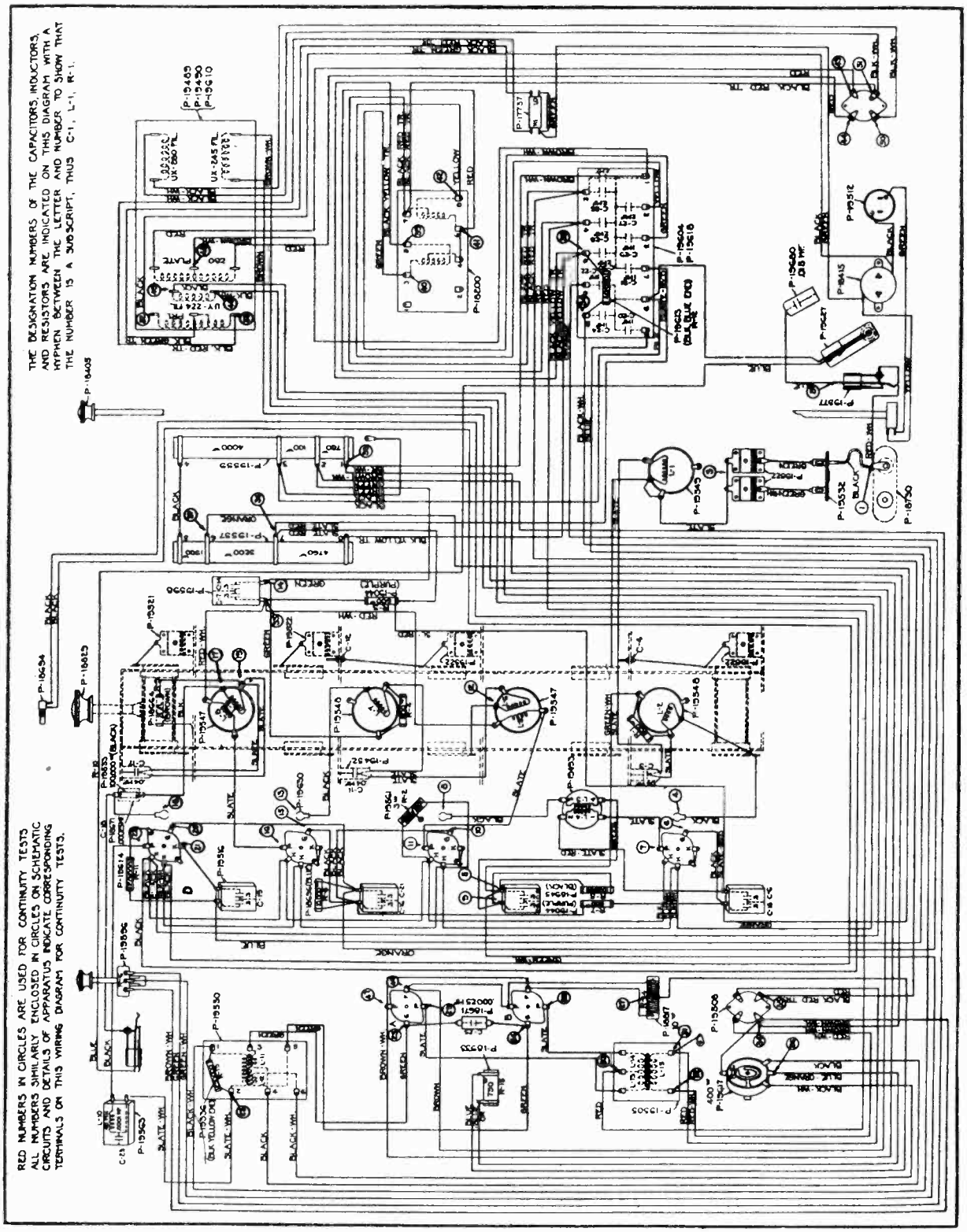


Detail of P-18780 Audio Transformers Assembly.



STROMBERG - CARLSON TEL. MFG. CO.

MODEL 10-11
Chassis Wiring



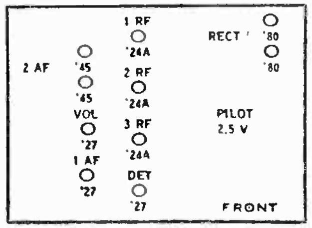
MODEL 12-14
Schematic, Pickup

STROMBERG - CARLSON TEL. MFG. CO.

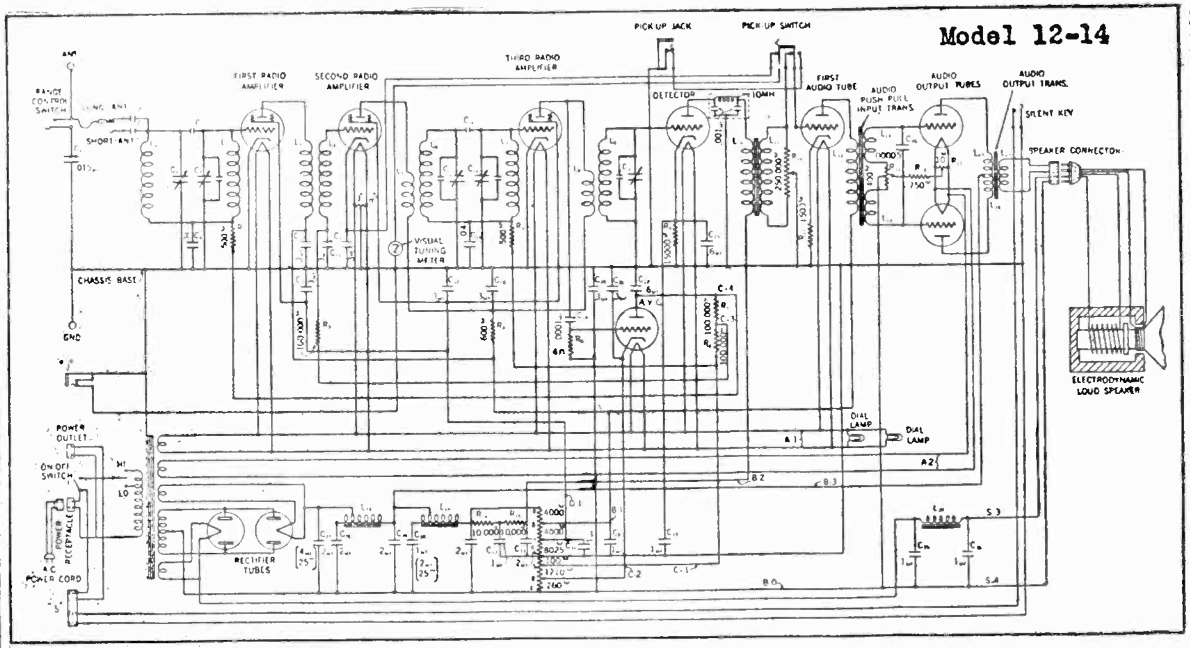
STROMBERG-CARLSON—Models 12 and 14
Line Voltage 120—Voltage Tap High

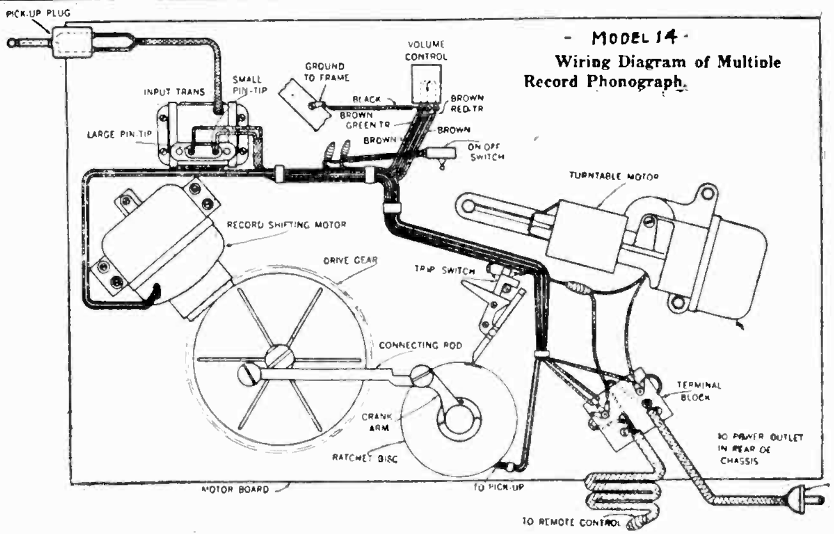
Tube No. in Order Tested (1)	Type of Tube (2)	Position of Tube in Set (3)	Meter Readings with Jewell Test Plug in Socket of Set — Operating Voltages: Filament or Heater (4)	Plate or Anode (5)	Control Grid—Space (6) 60+	Normal Grid—Screen (60+)	Cathode to Heater	Milliamperes: Screen 60 L M 80 Plate	Plate R H 80 Plate	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	-	85						
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)

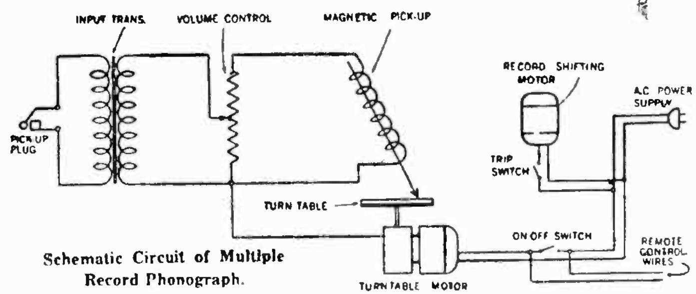


Model 12-14





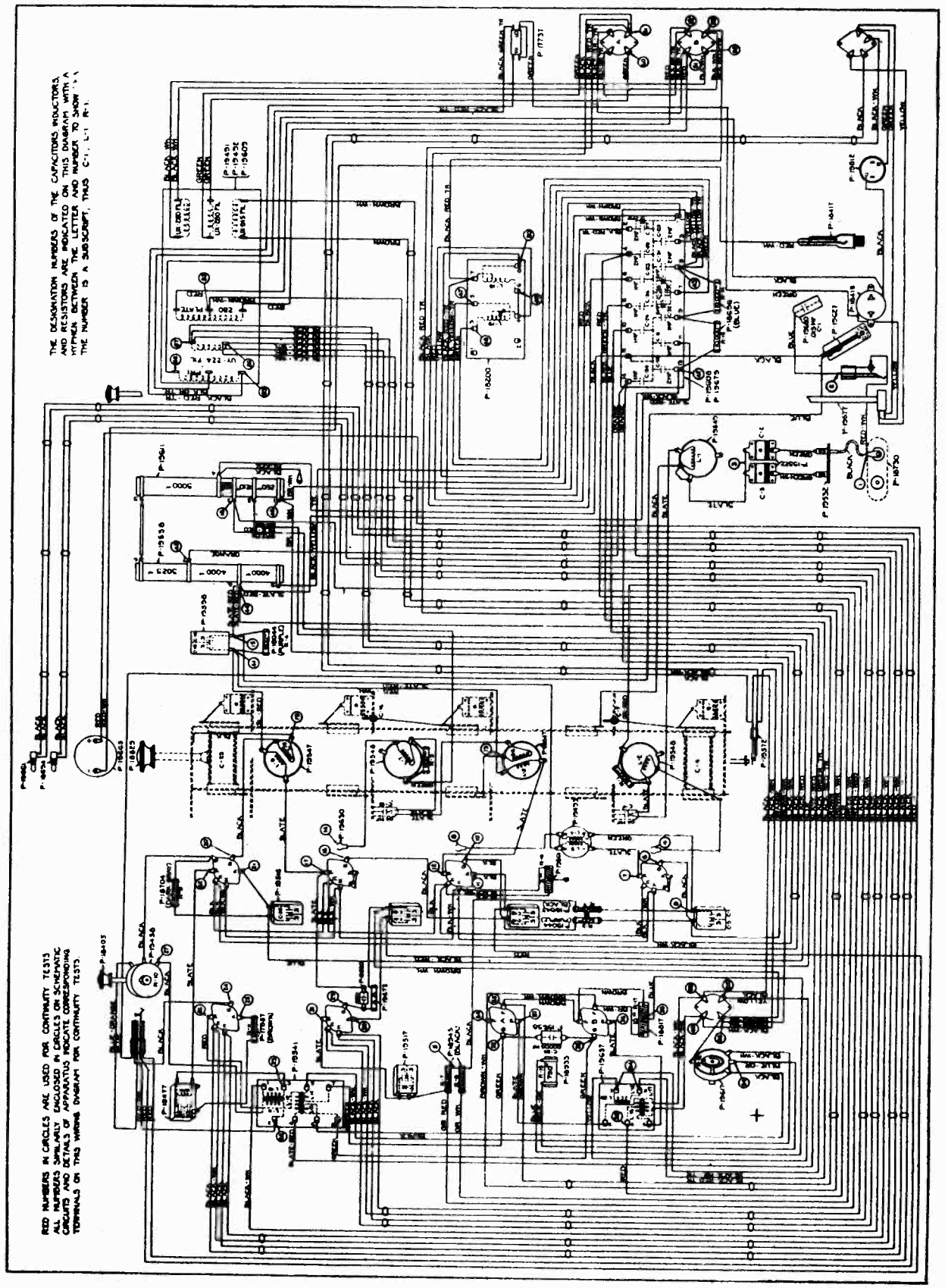
- MODEL 14 -
Wiring Diagram of Multiple Record Phonograph.



Schematic Circuit of Multiple Record Phonograph.

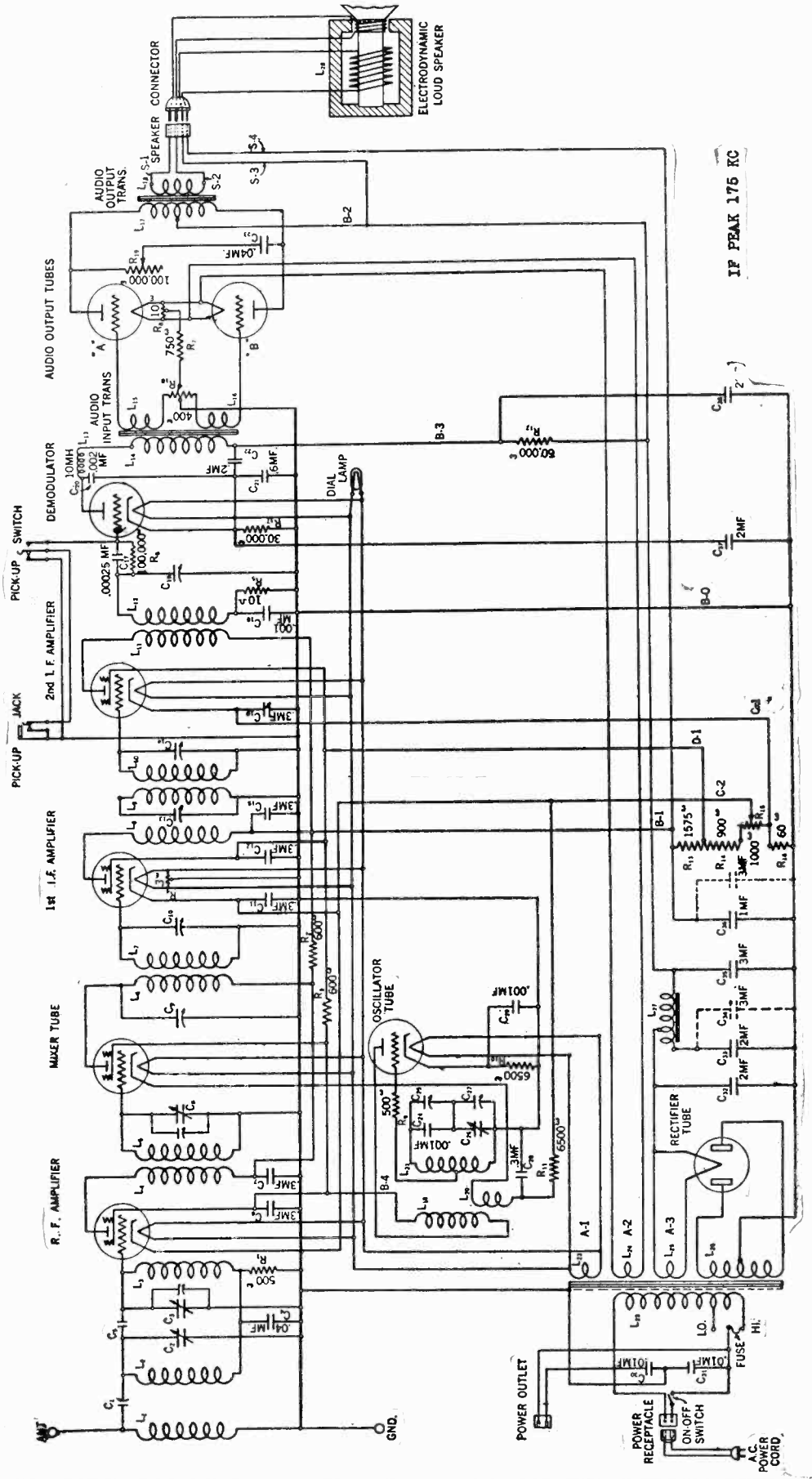
STROMBERG - CARLSON TEL. MFG. CO.

MODEL 12-14
Chassis Wiring



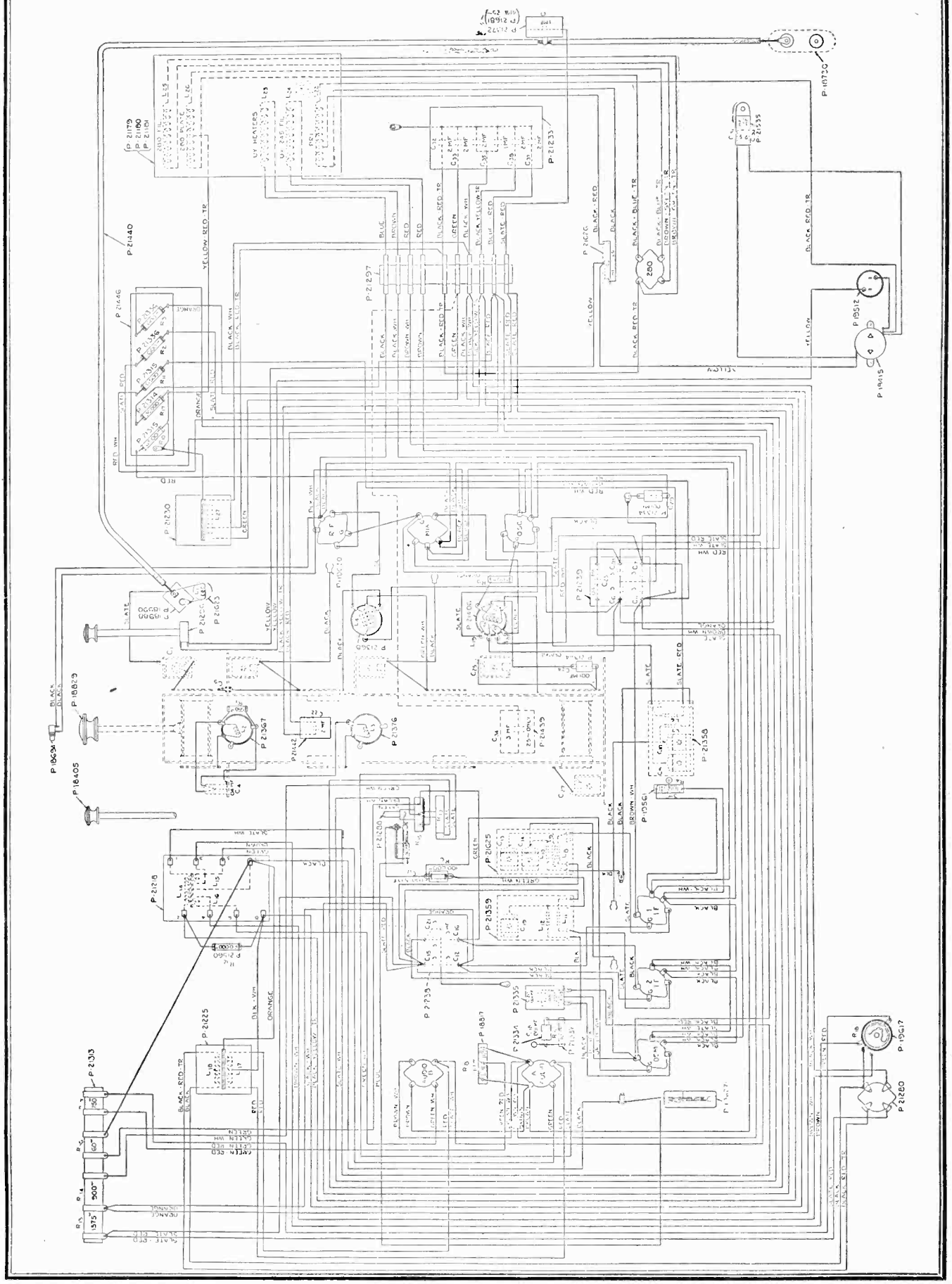
MODEL 19,20 AC
Schematic

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

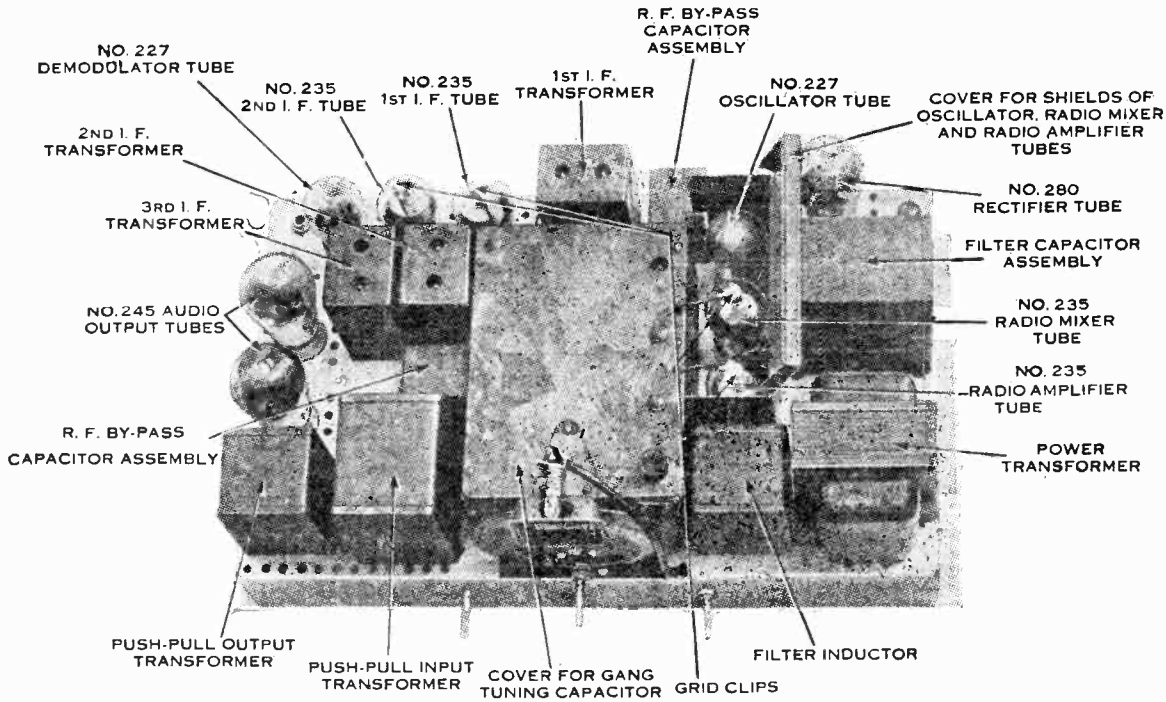
(Be sure to make these readings with the Meter and Scale indicated, otherwise the results will not agree with those tabulated. Alternating voltages are indicated by italics)

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_8(-)	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_{16}	10-15
Grid Voltage Demodulator	D.C.	0-250	Across 30,000 ohm Resistor R_{17}	30-35
Grid Voltage Audio Tubes	D.C.	0-250	Between Grids of Audio Tubes (-) to Mid Tap 10 ohm Resistor R_8 (+)	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_7 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	20
Speaker Field Voltage	D.C.	0-250	Across Small Pins of Speaker Connector Socket	150-170
Plate Voltage A.C. Pure Anode No. 280 Rectifier	A.C.	See Remarks	Between P Terminals No. 280 Rectifier Socket and Chassis Base	325-350*

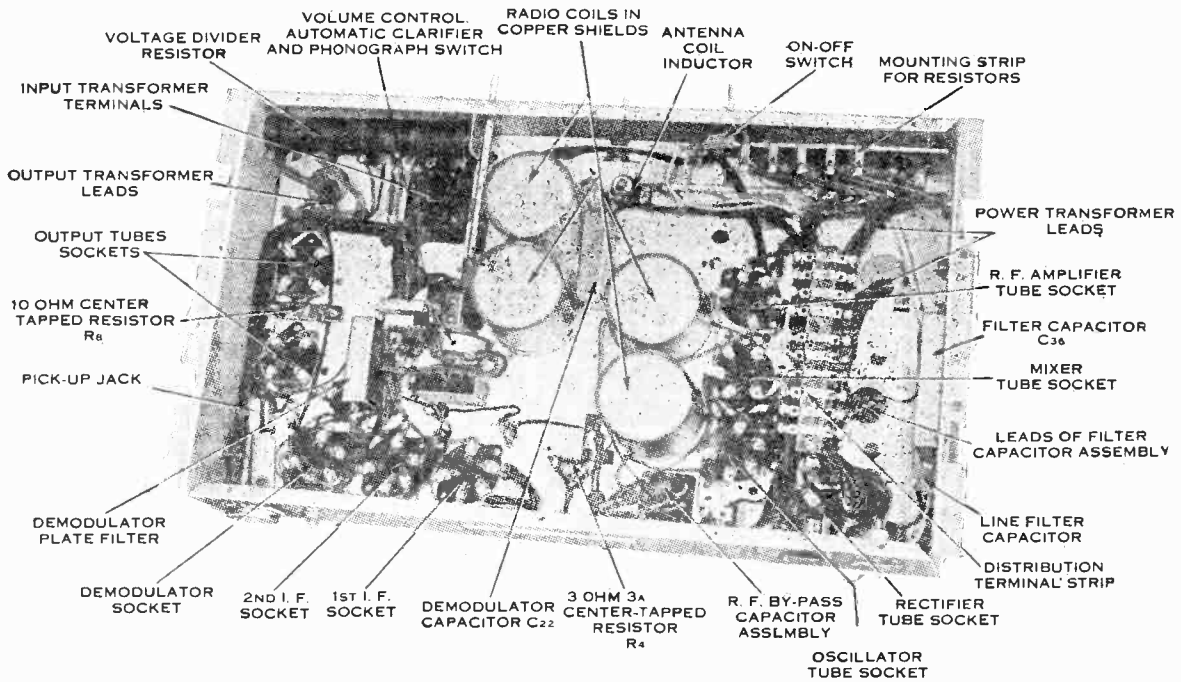
*These voltage vary with dial setting and position of volume control.
Cannot be measured on Weston Model 528 Meter unless multiplier is used.

STROMBERG - CARLSON TEL. MFG. CO.

MODEL 19,20 AC
Chassis Views



Top View of Chassis with Tubes in Place and Shields Removed.

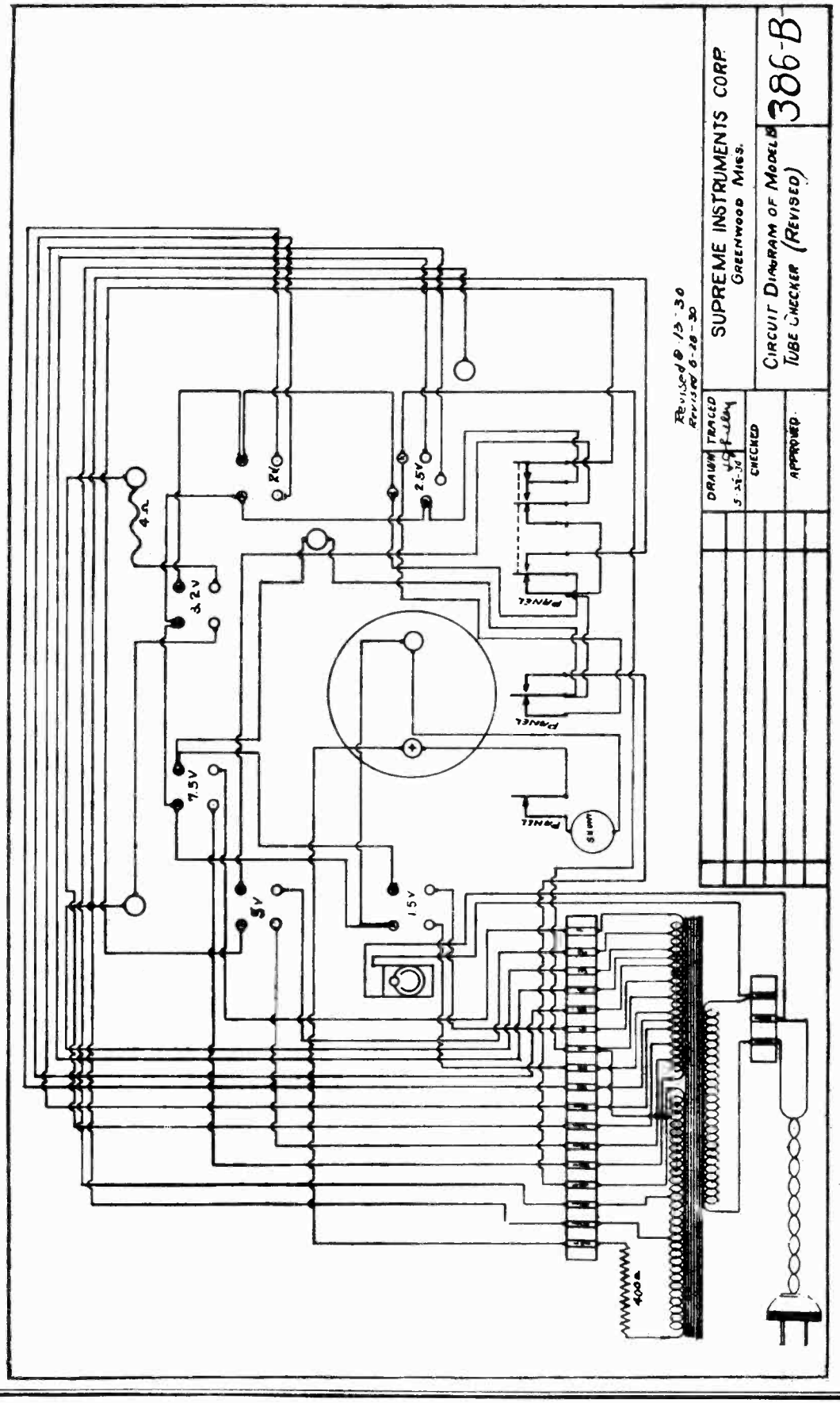


Bottom View of Chassis with Cover Removed.

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.

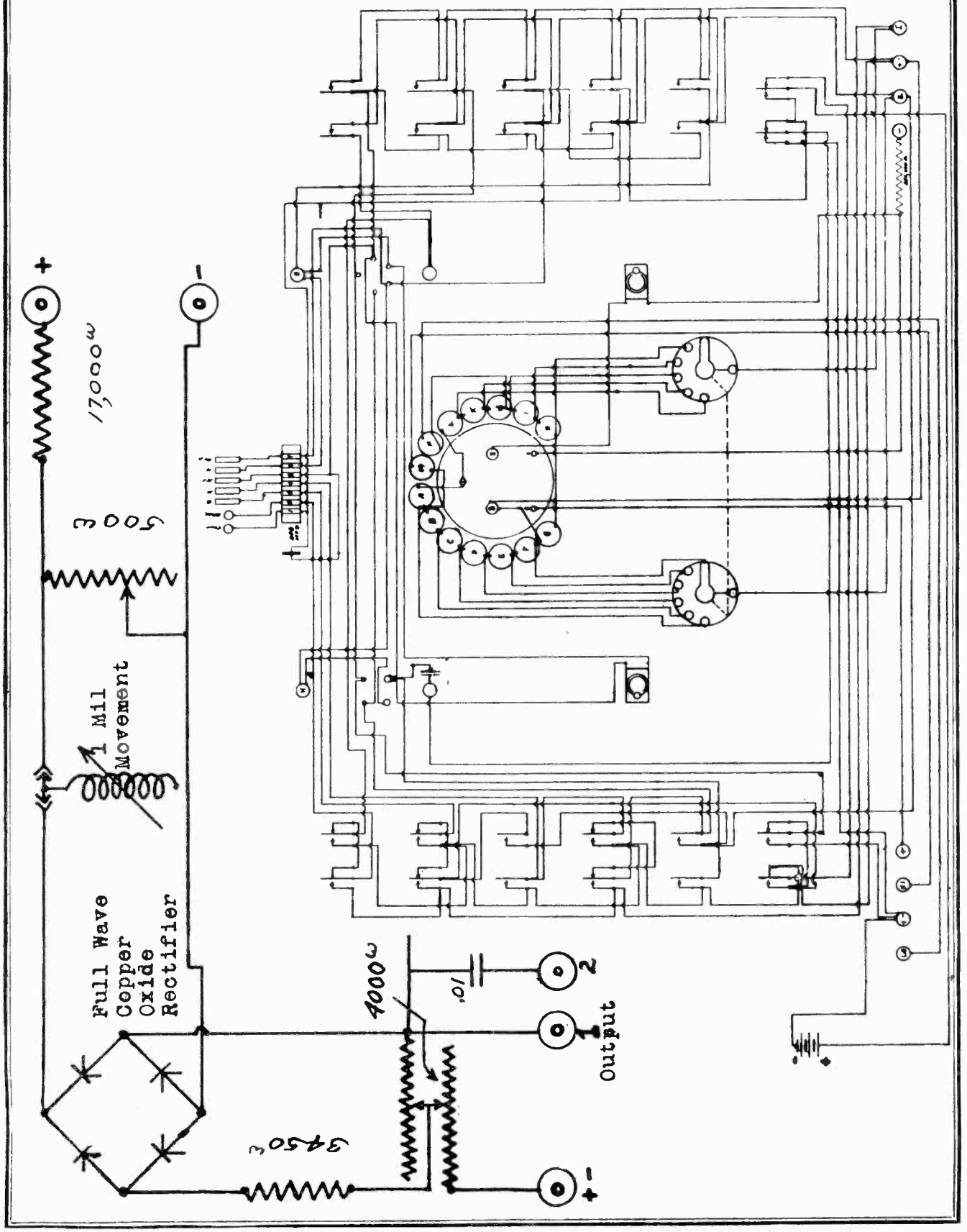
SUPREME INSTRUMENTS CORP.

MODEL 19
Revised
Tube Checker



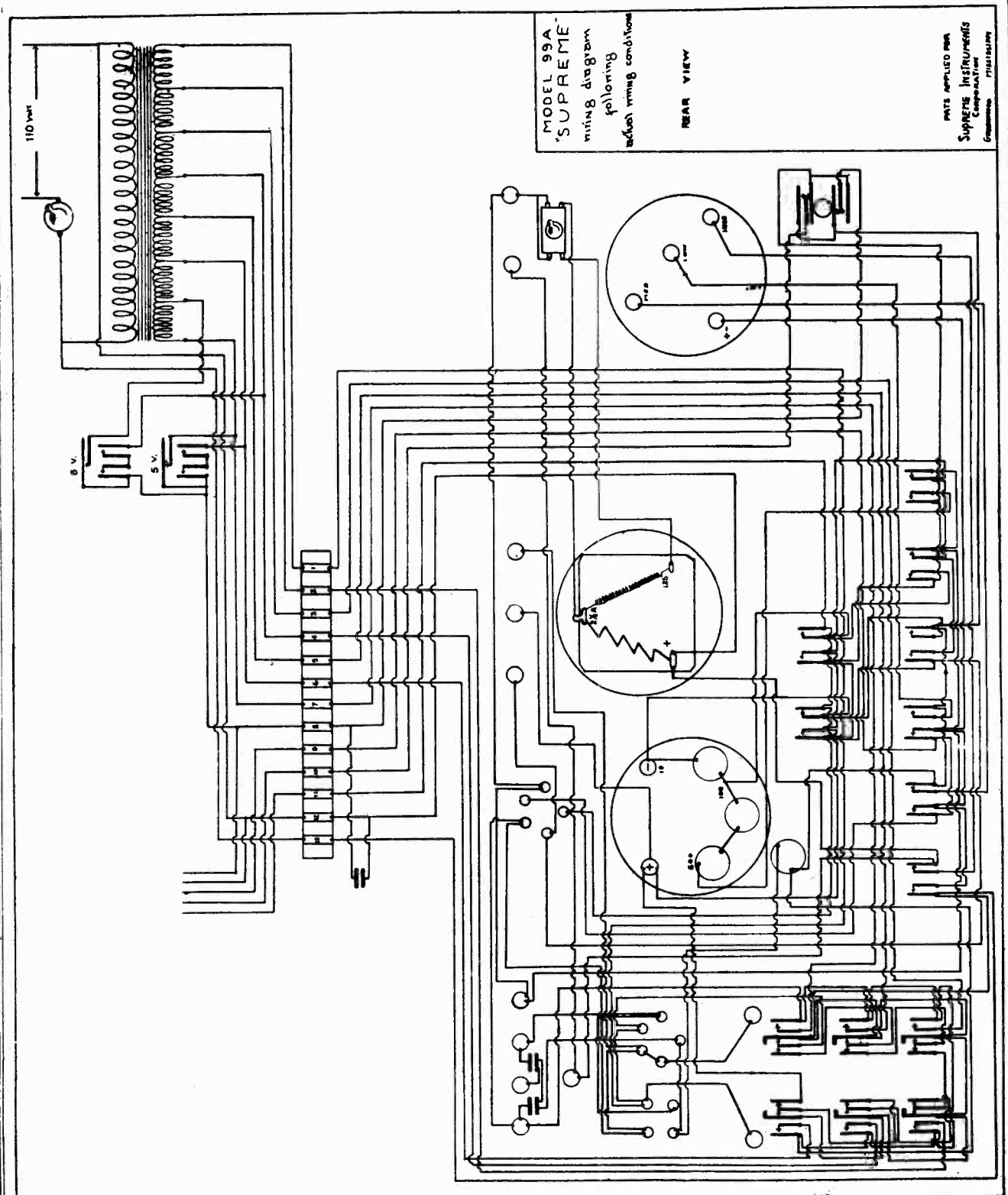
MODEL 90 Analyzer
MODEL Output Meter

SUPREME INSTRUMENTS CORP.



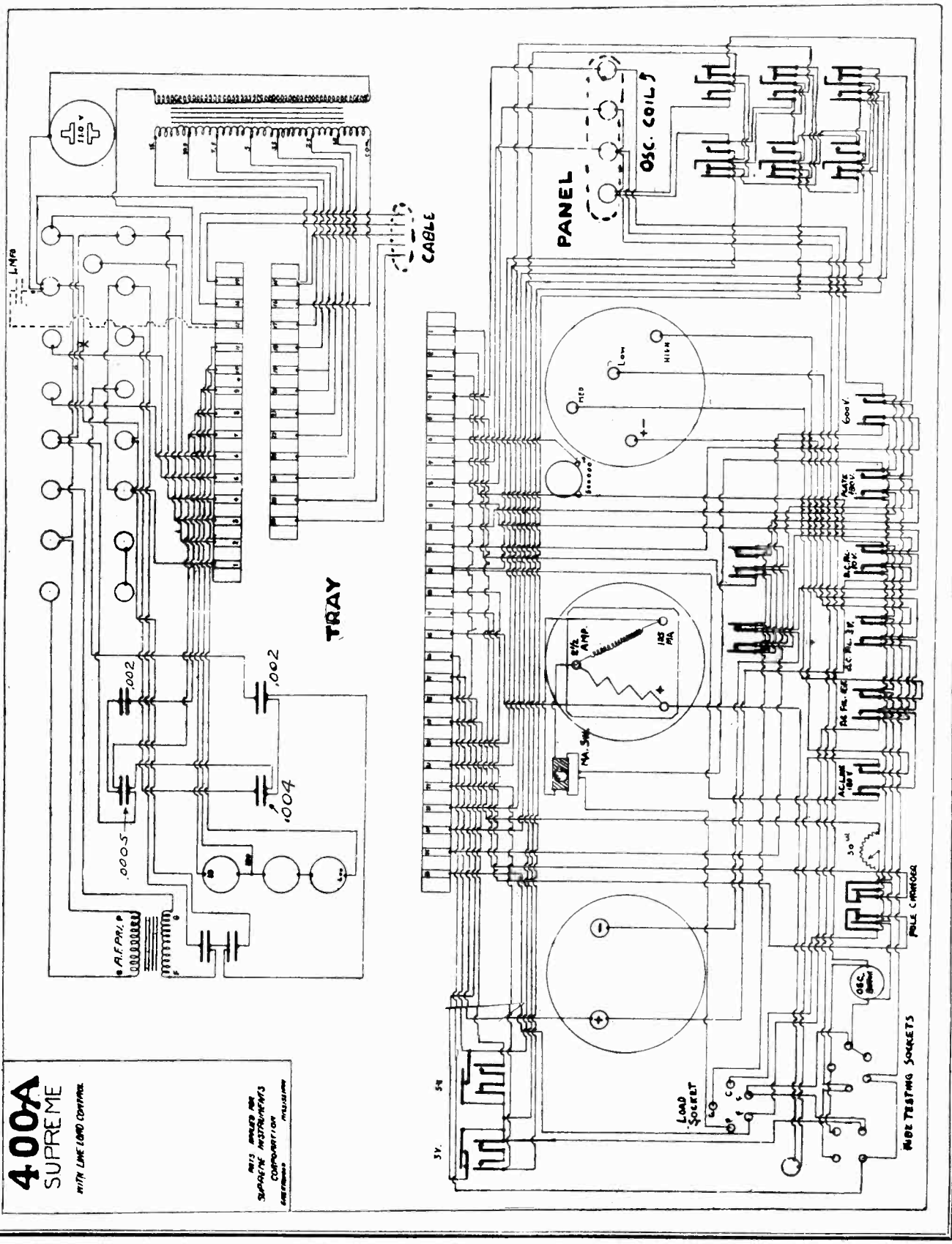
MODEL 99-A Analyzer

SUPREME INSTRUMENTS CORP.



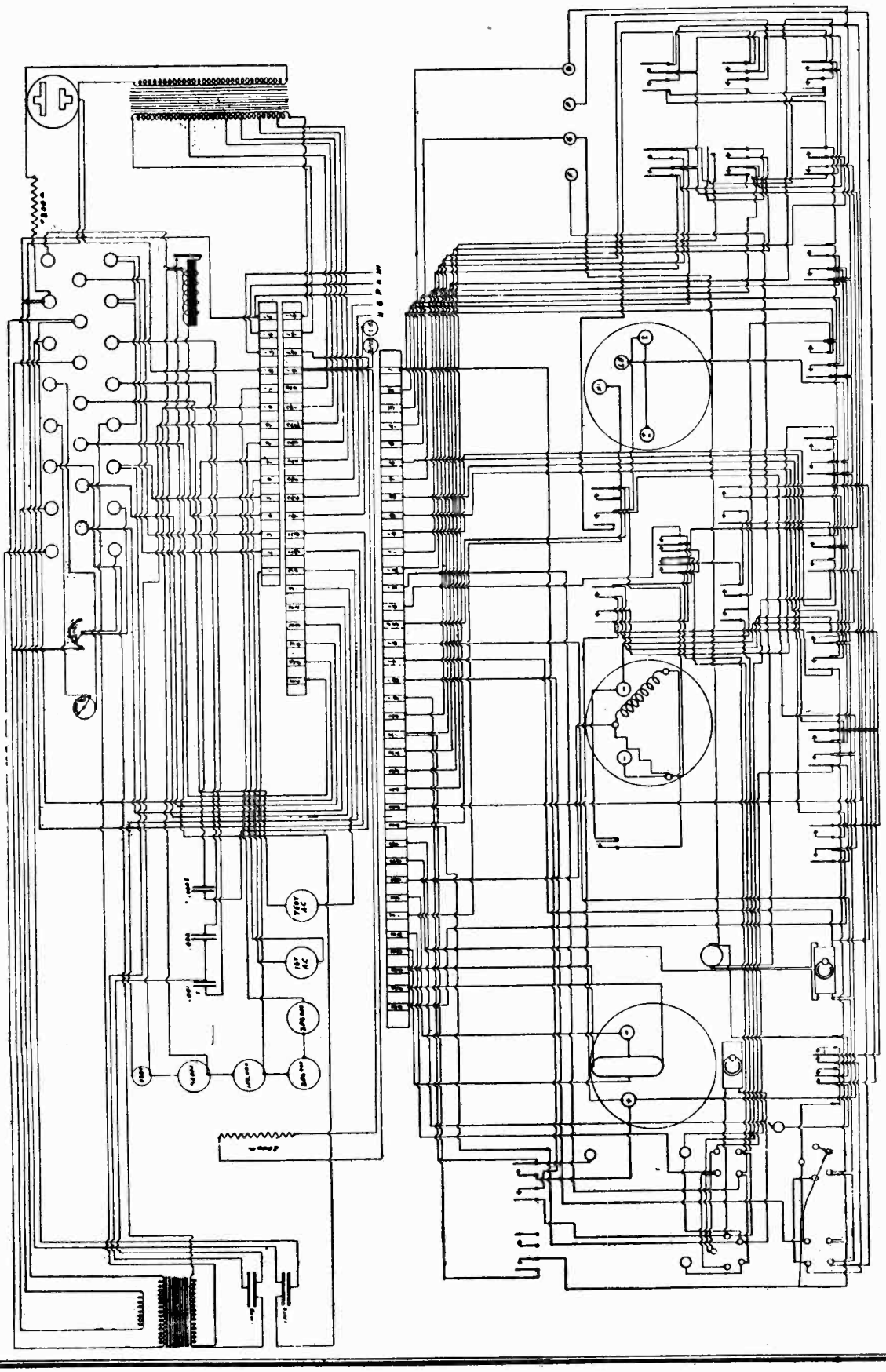
MODEL 400-A
Diagnometer

SUPREME INSTRUMENTS CORP.



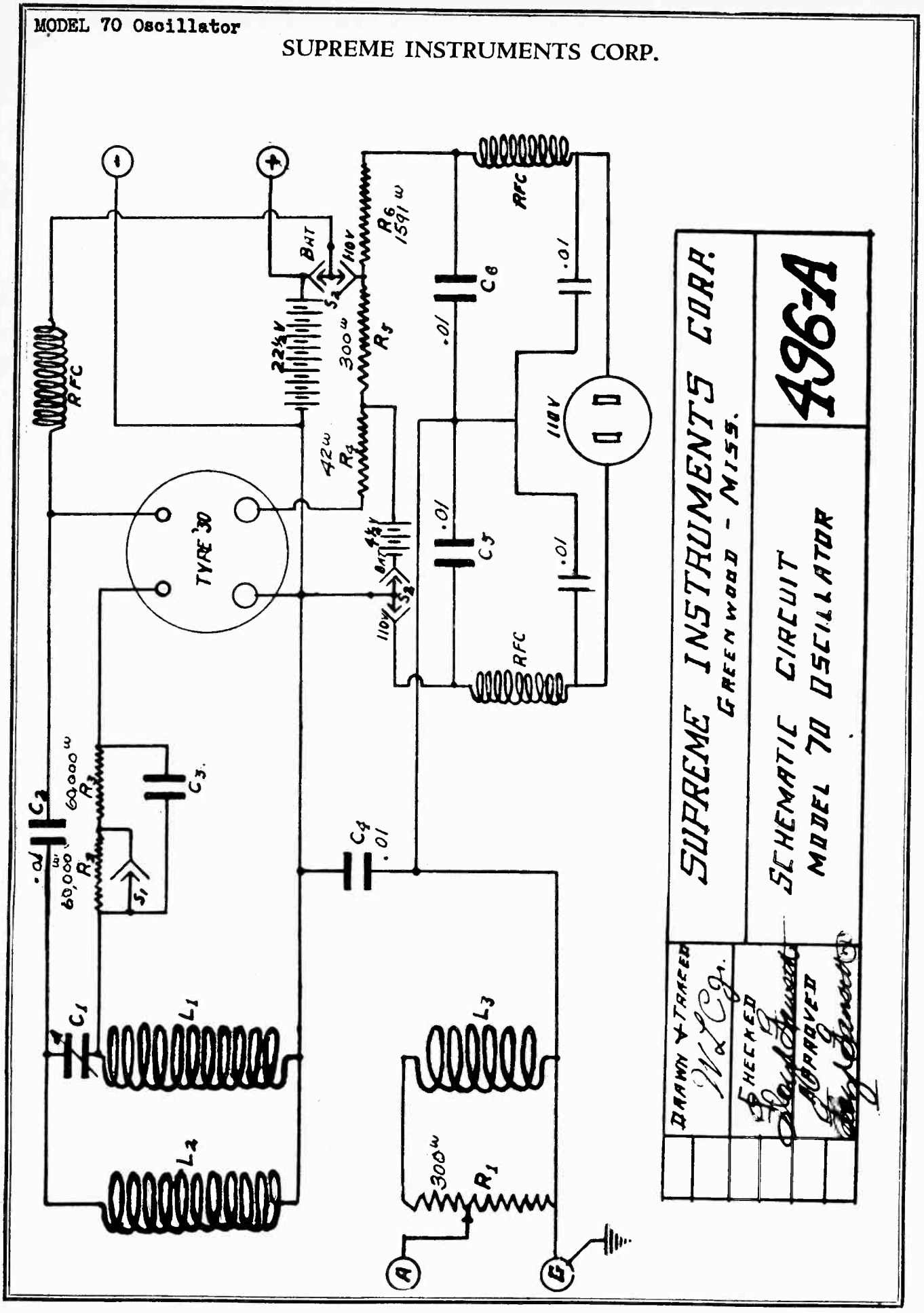
SUPREME INSTRUMENTS CORP.

MODEL 400-B
#4 Series
Diagnometer



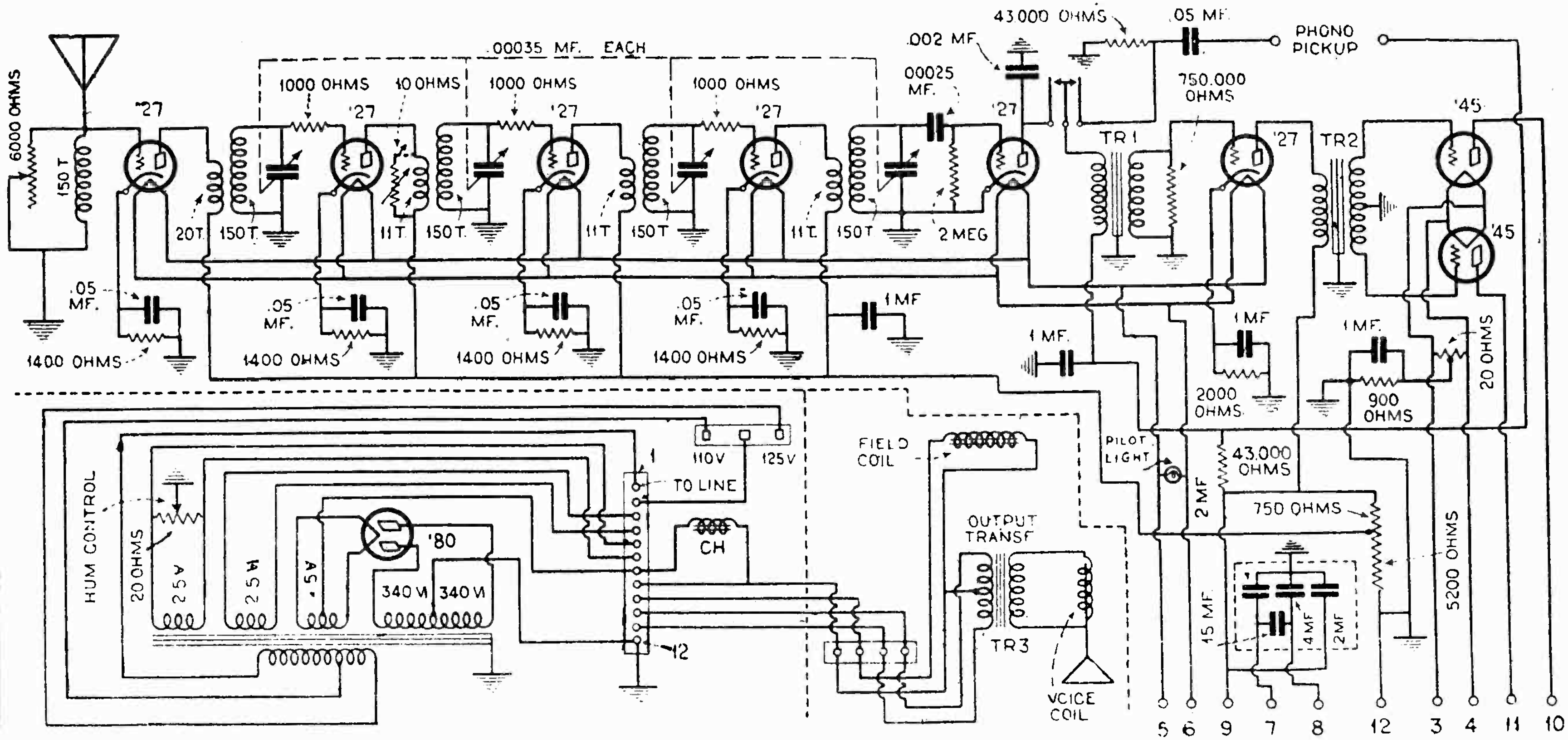
MODEL 70 Oscillator

SUPREME INSTRUMENTS CORP.



TEMPLE CORPORATION

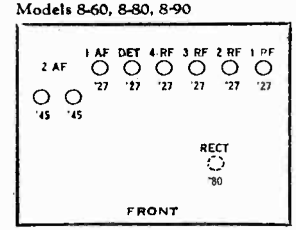
MODEL 8-60,8-80,8-90



TEMPLE—Models 860-880-890
Line Voltage 112—Volume Control Position Max

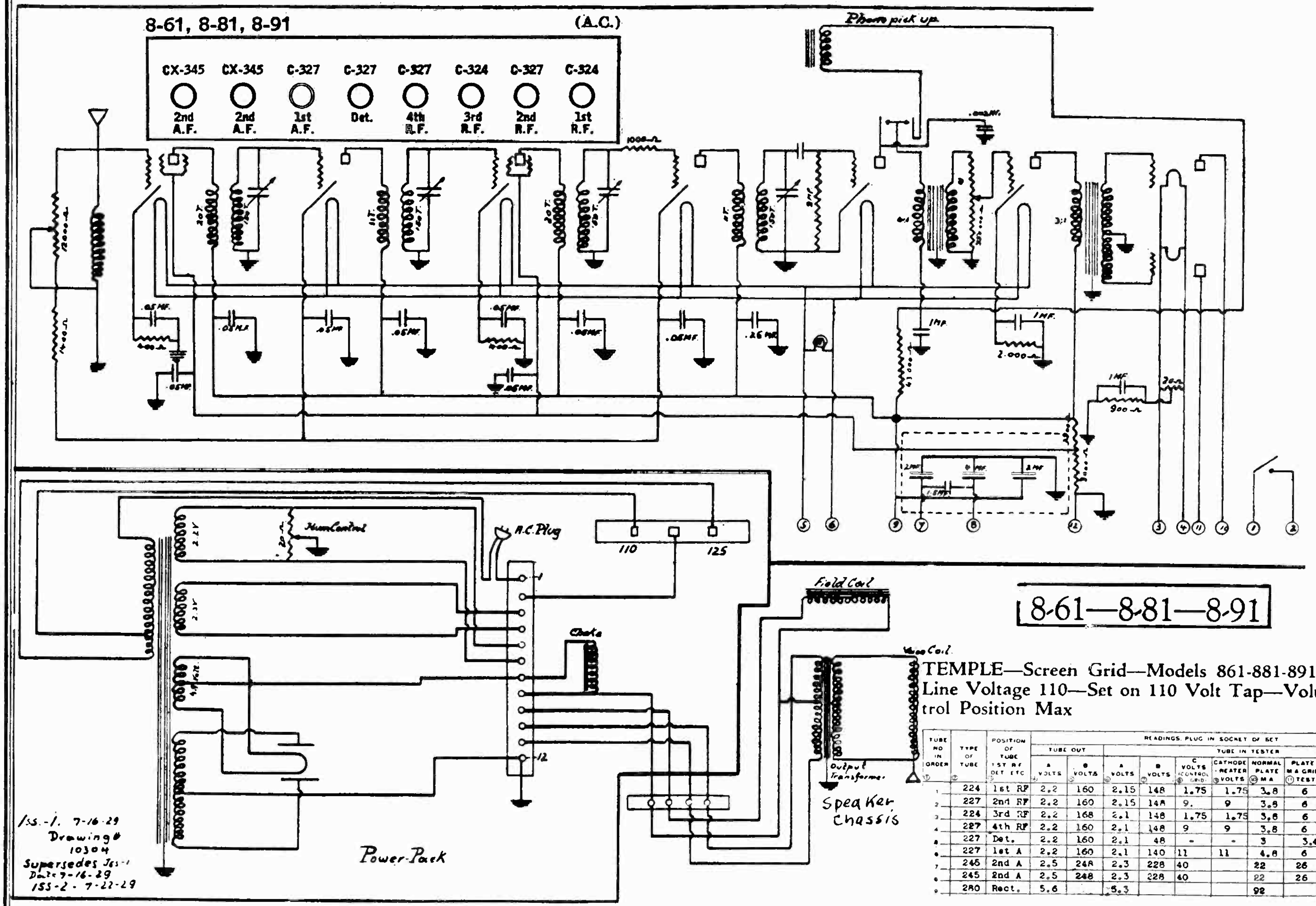
Tube No. in Order (1)	Type of Tube (2)	Position of Tube 1st RF Det etc (3)	Tube Out: A Volts (7)	Tube Out: B Volts (8)	Tube in Tester: A Volts	Tube in Tester: B Volts	C Volts Control Grid	Cathode-Heater Volts	Normal Plate (10) MA	Plate MA Grid (11) Test	Plate Change (12) MA	Screen Grid (13) Volts
1	227	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

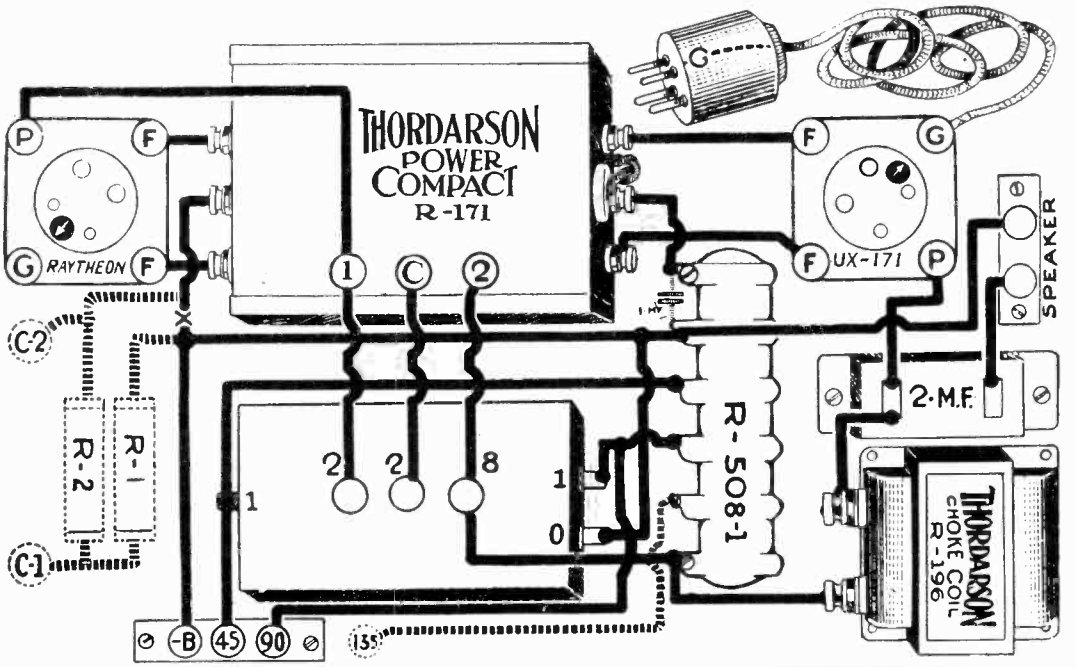
TEMPLE—Screen Grid—Models 861-881-891
Line Voltage 110—Set on 110 Volt Tap—Volume Control Position Max

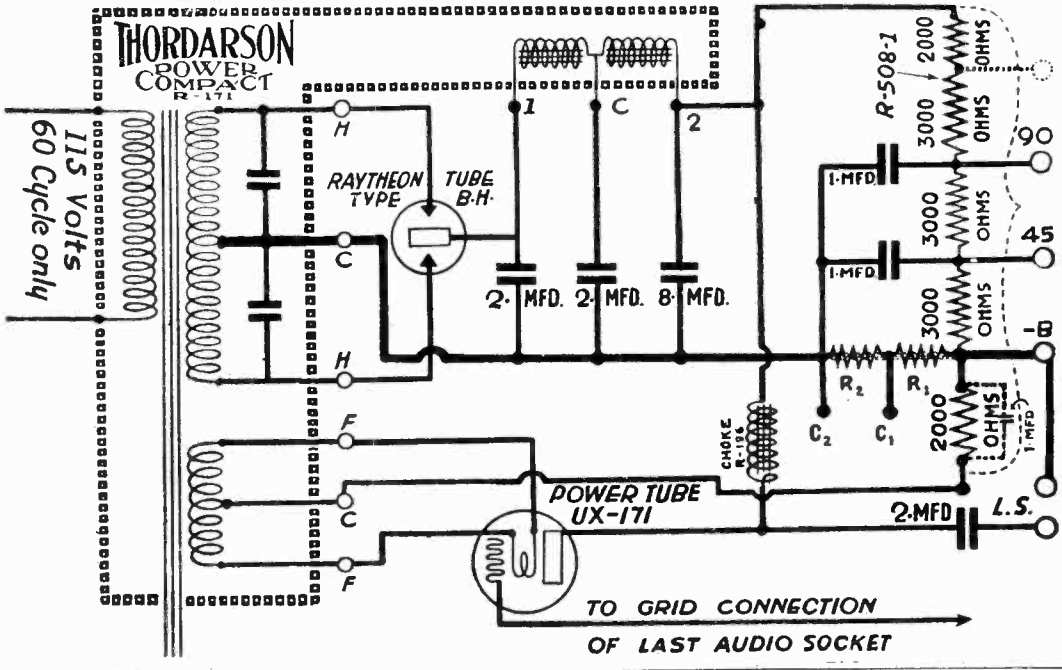
Tube No. in Order (1)	Type of Tube (2)	Position of Tube 1st RF Det. etc. (3)	Tube Out: A Volts (4)	Tube Out: B Volts (5)	Tube in Tester: A Volts (6)	Tube in Tester: B Volts (7)	C Volts (Control Grid) (8)	Cathode-Heater Volts (9)	Normal Plate M A (10)	Plate M A Grid Test (11)	Plate Change M A (12)	Screen Grid Volts (13)
1	224	1st RF	2.2	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			

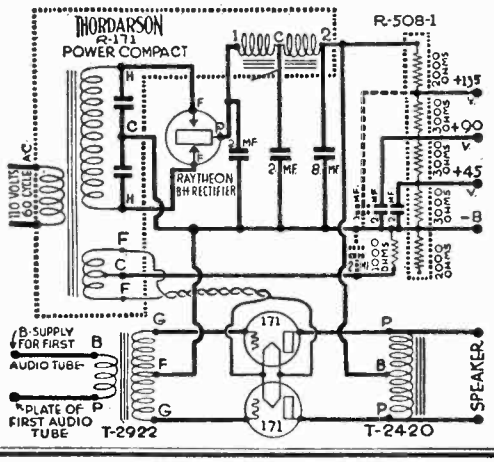
(Readings: plug in socket of set.)

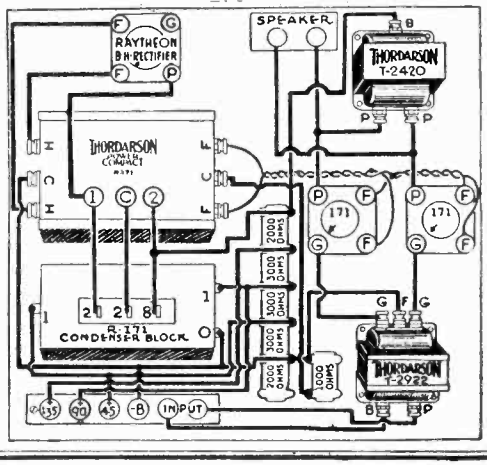
MODEL R-171
MODEL PP-171

THORDARSON ELECTRIC MFG. CO.



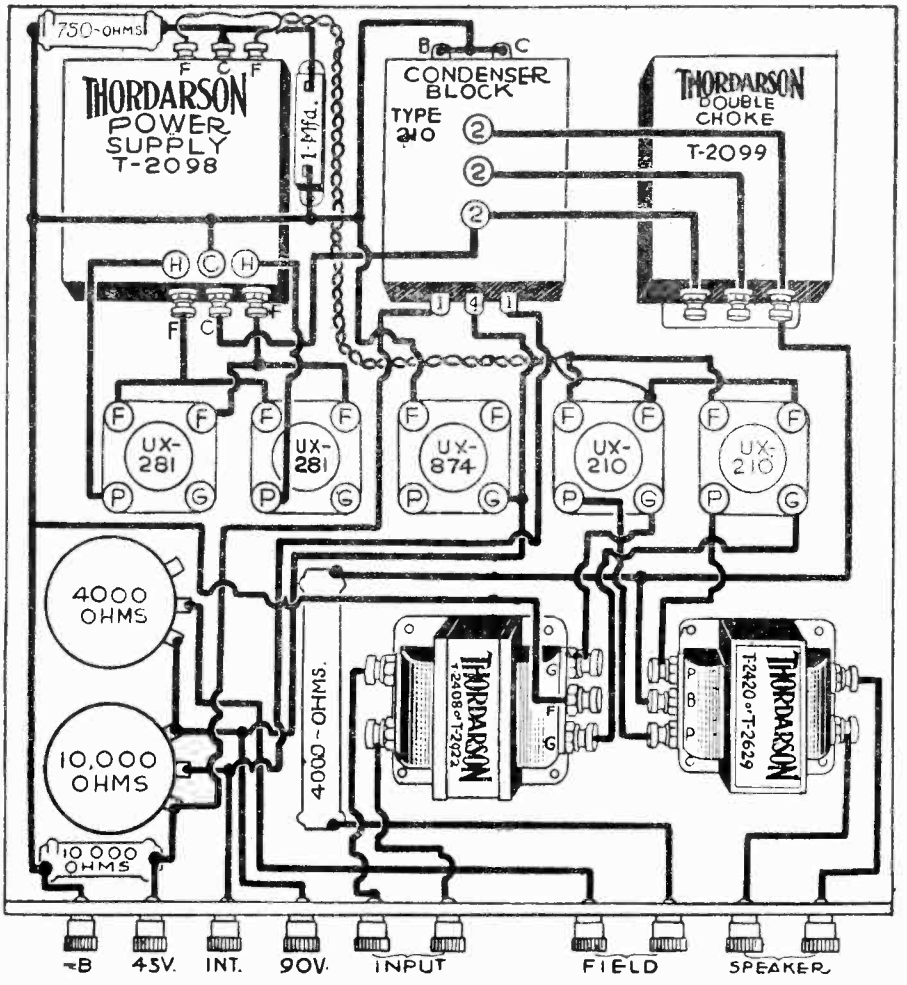


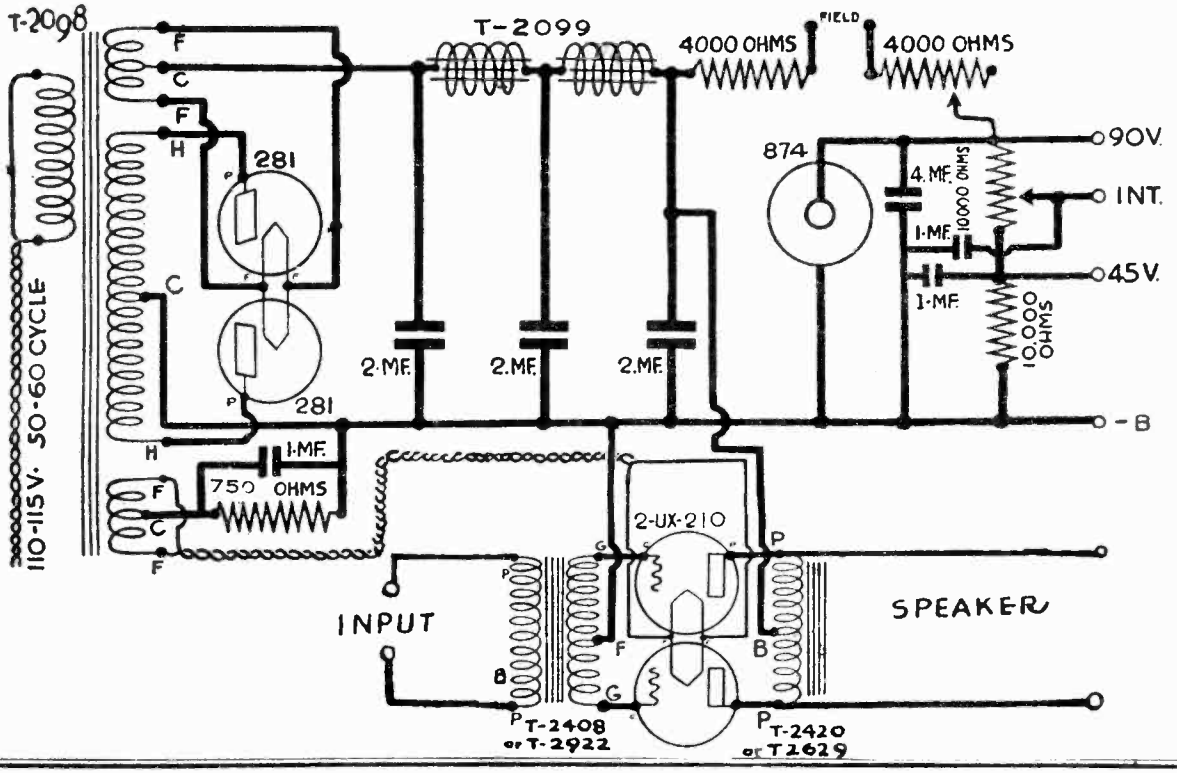




MODEL 210
Power Amplifier

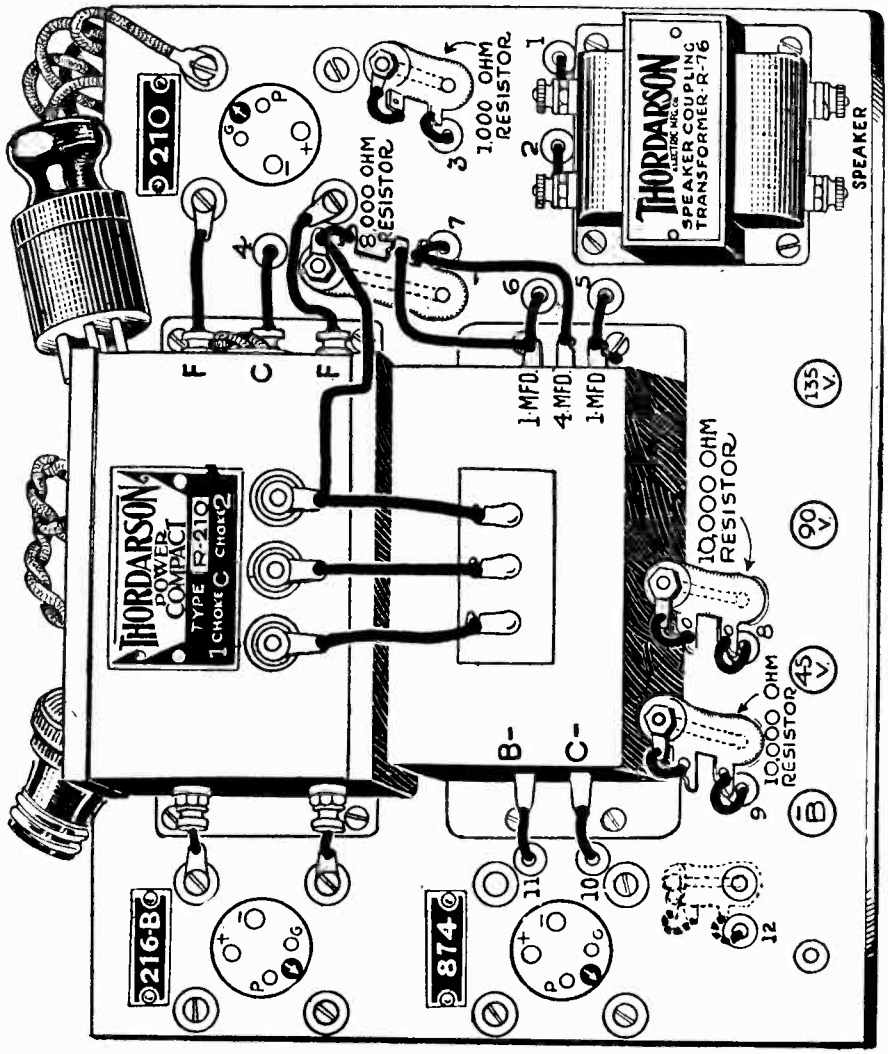
THORDARSON ELECTRIC MFG. CO.

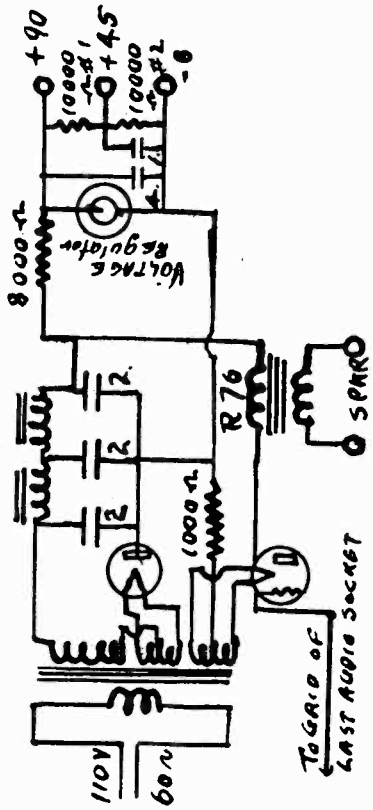


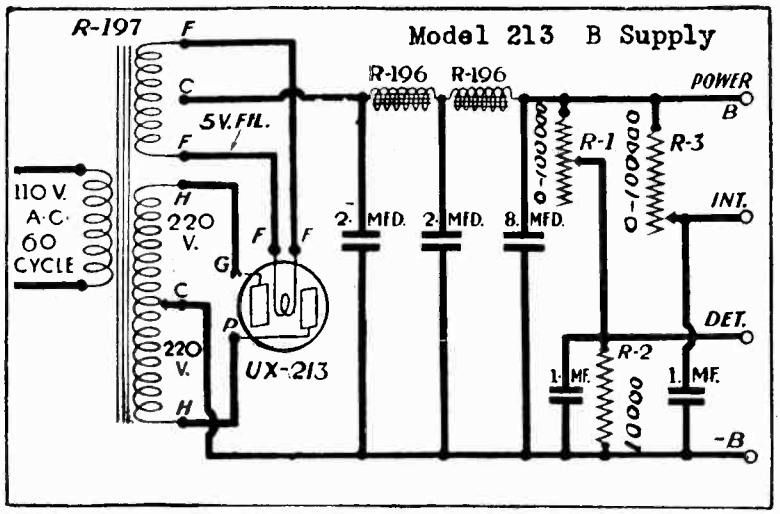


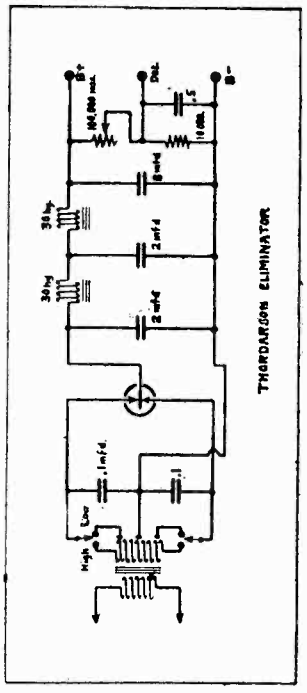
THORDARSON ELECTRIC MFG. CO.

MODEL R-210
MODEL 213
MODEL Eliminator



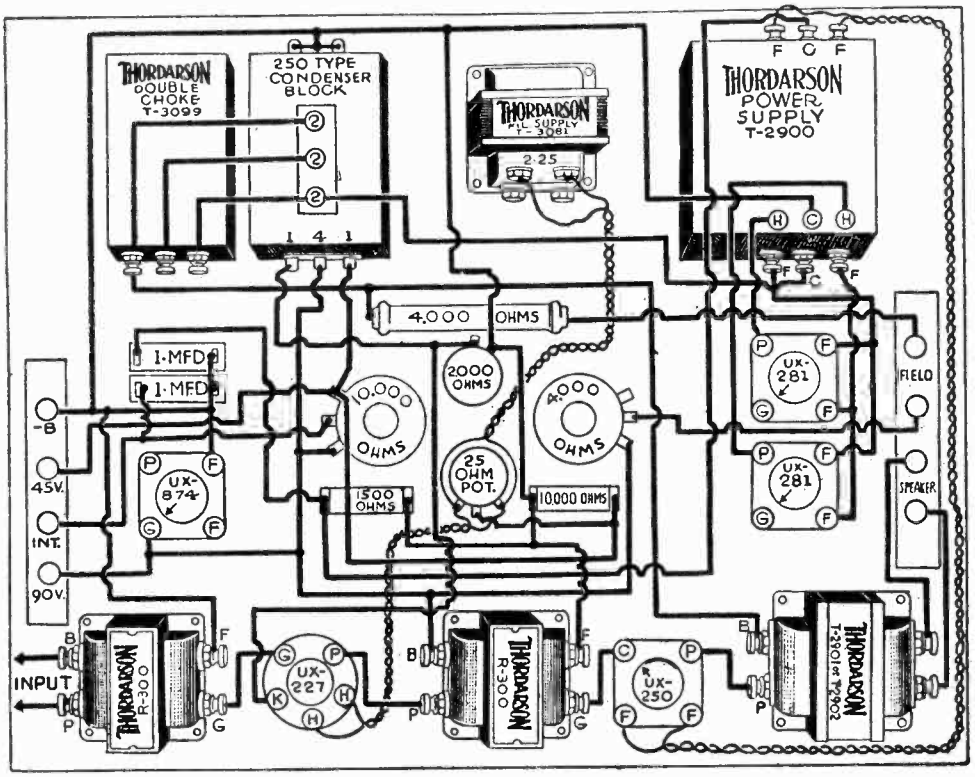


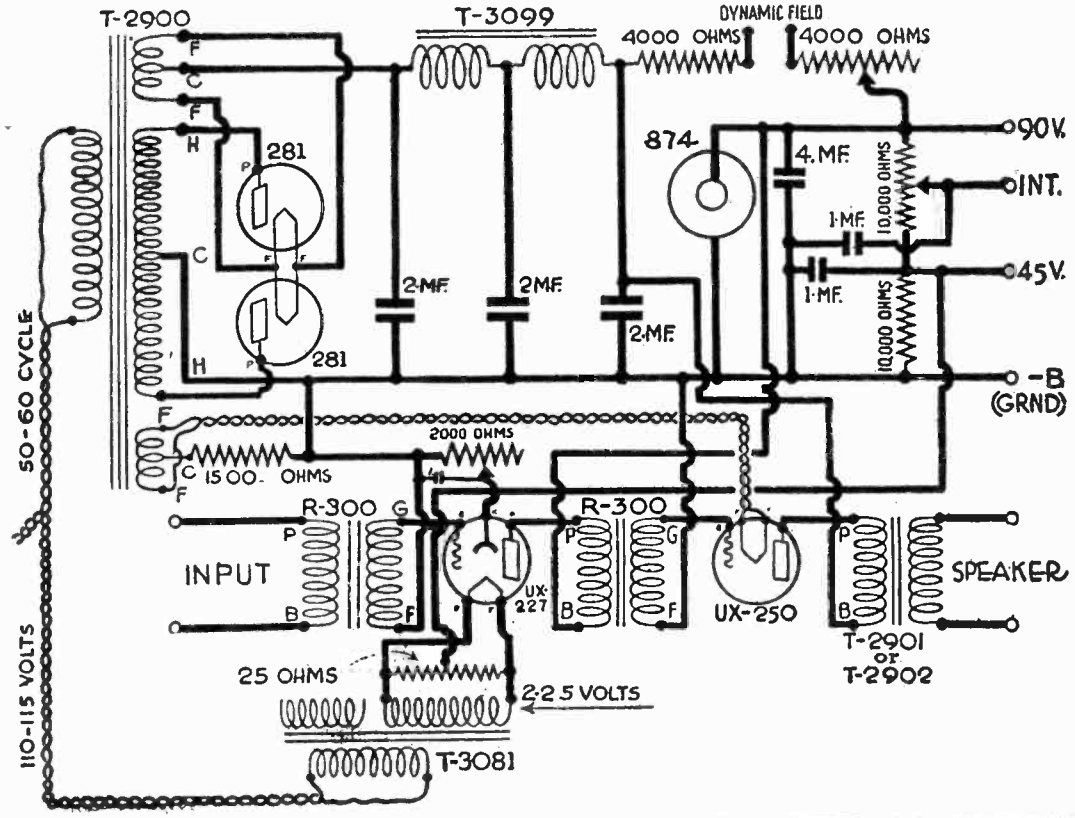




MODEL 250
Power Amplifier

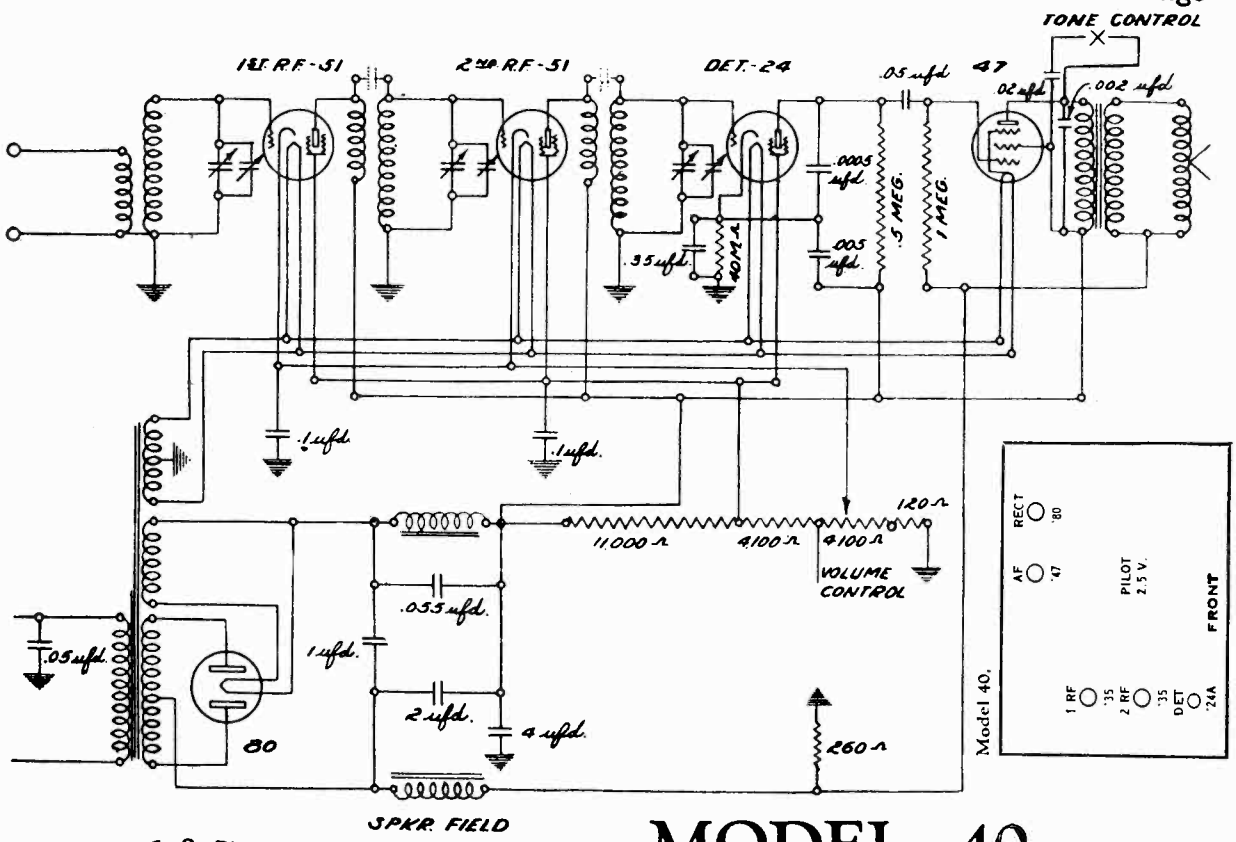
THORDARSON ELECTRIC MFG. CO.





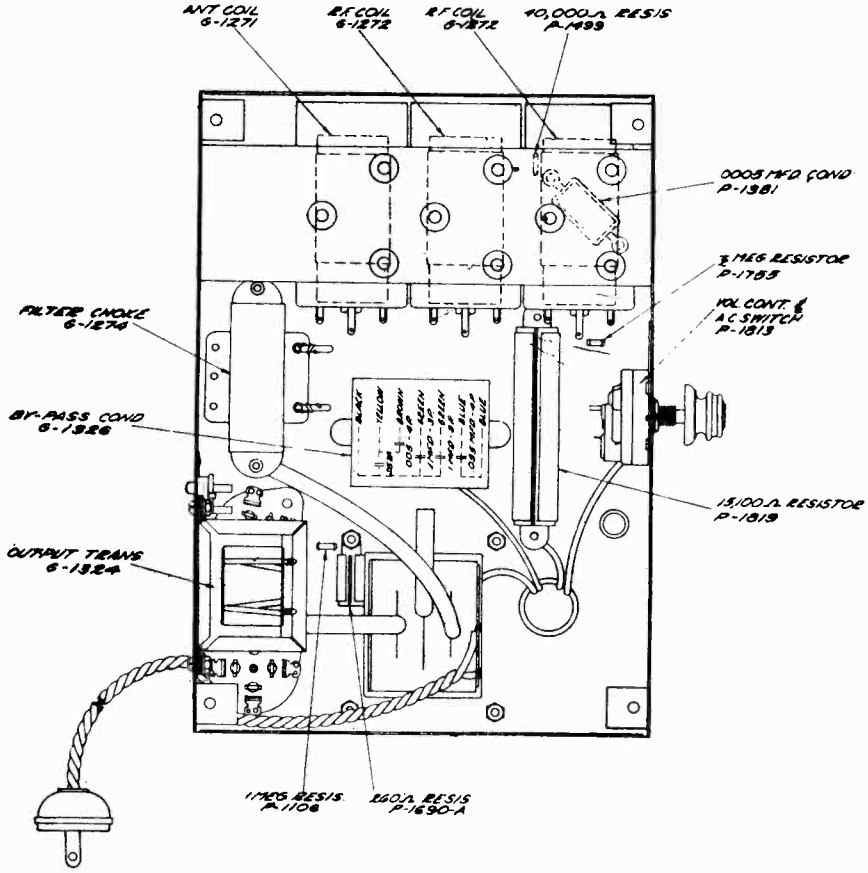
TRANSFORMER CORP. OF AMERICA

MODEL 40
Schematic
Voltage



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

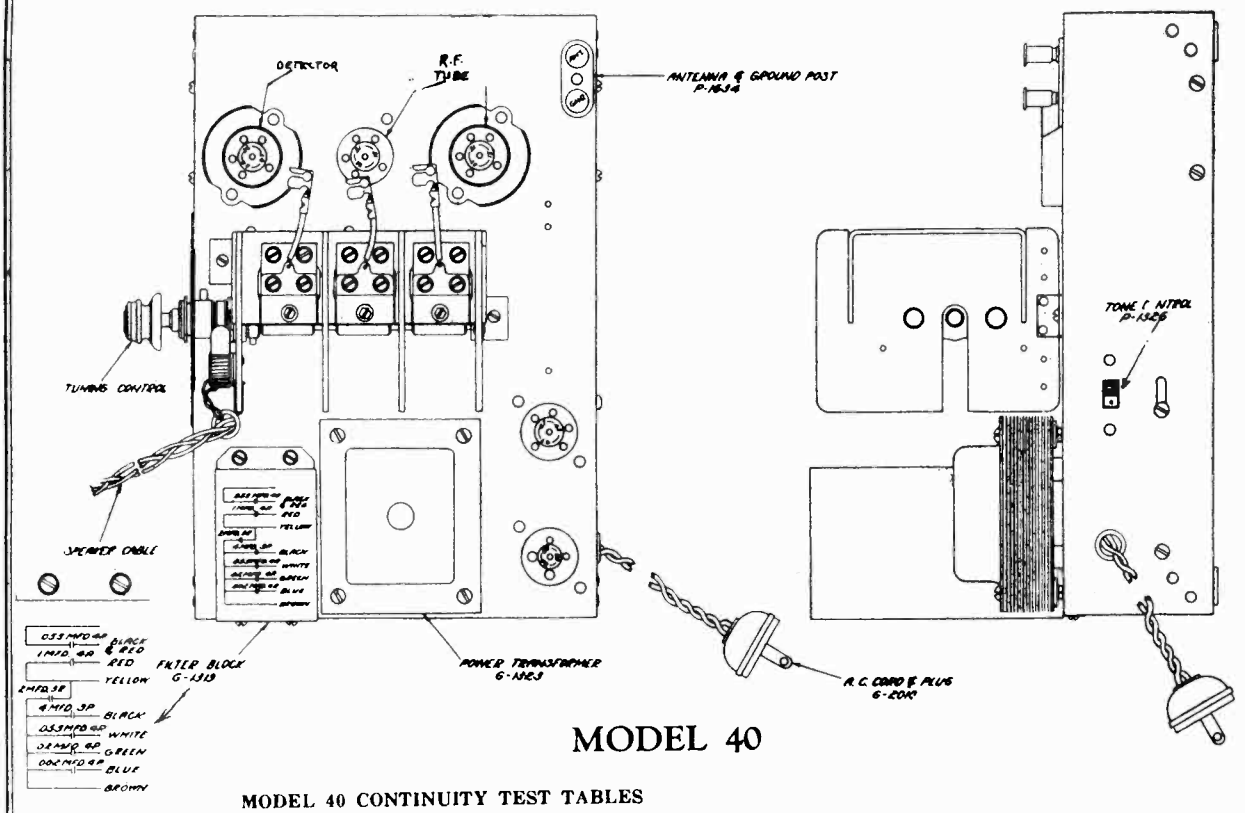
*Reading dependent upon resistance of meter.

†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

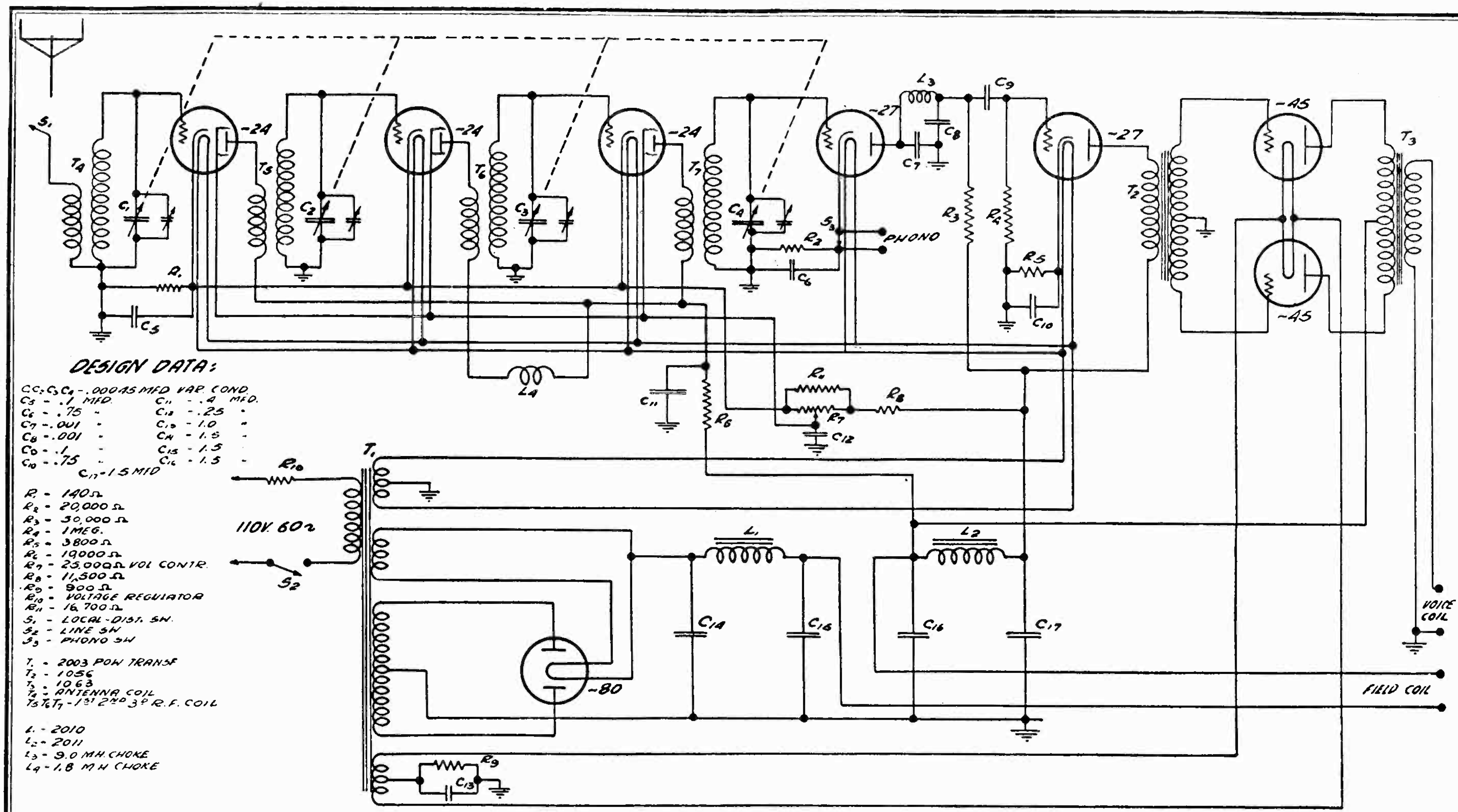
(Using 10-volt range meter 1,000 ohms per volt and 6-volt battery)

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	Voice Coil 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

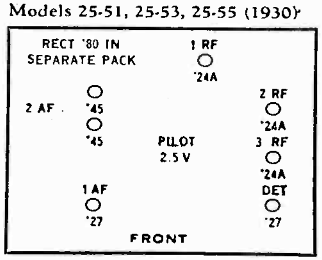
*Color code: read body color first, tip second and dot last.

TRANSFORMER CORP. OF AMERICA

MODEL AC 51,53,55
Sohematic
Voltage



Models 25-51, 25-53, 25-55 (1930)



CLARION—Models 51, 53, 55.
Line Voltage 125—Volume Control Full On

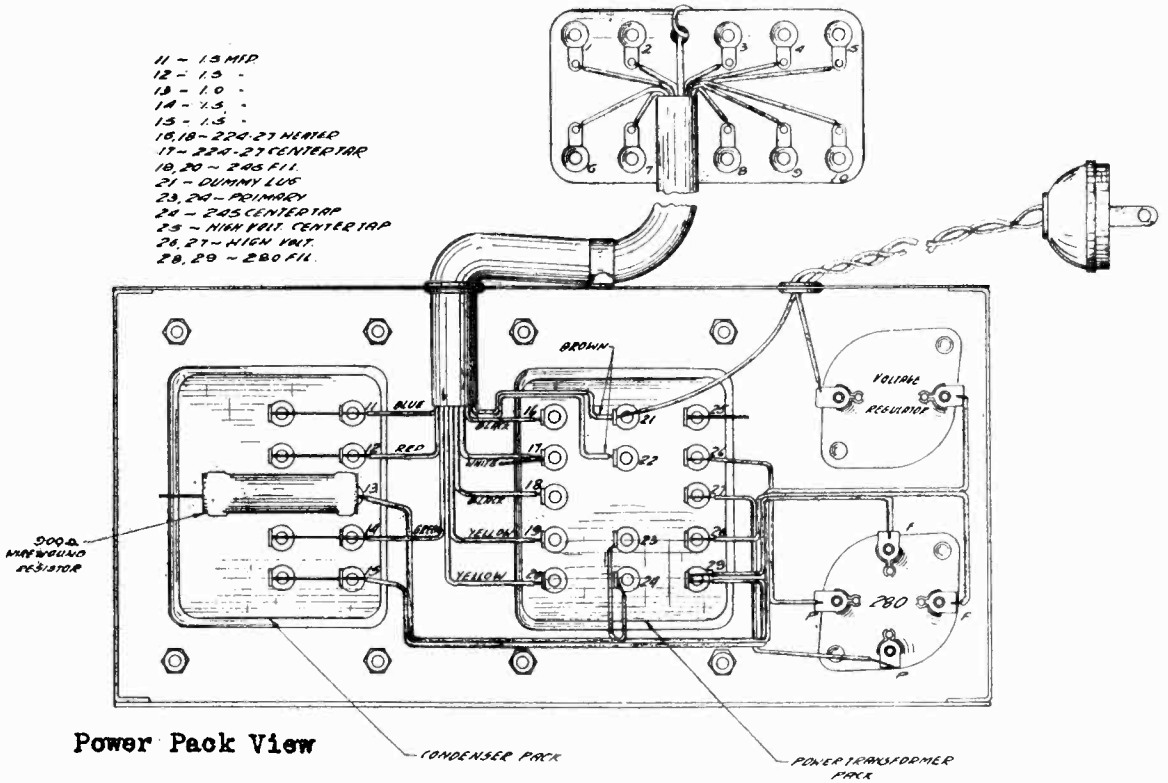
Tube No. in Order Tested (1)	Type of Tube (2)	Position of Tube in Set (3)	Meter Readings with Jewell Test Plug in Socket of Set — Operating Voltages: Filament or Heater (4)	Plate or Anode (5)	Control Grid—Space (6) GD+	Normal Grid—Screen (7) GD+	Cathode to Heater (8)	Milliamperes: Screen GD L H 80 Plate (9)	Plate R H 80 Plate (10)	Tube Test (11)	Plate Current (12) Change
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	13.6	-	.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

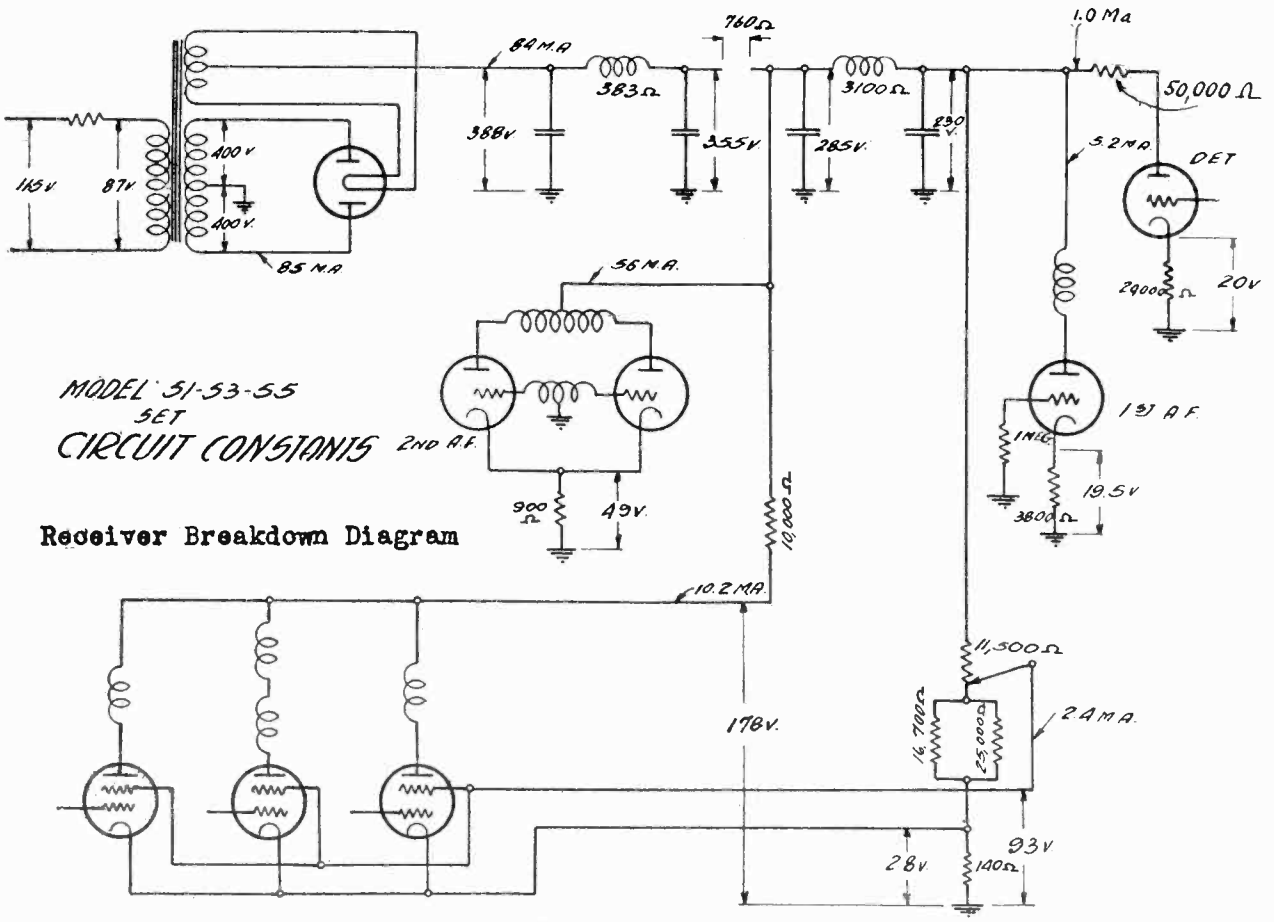
Tube No. in Order Tested (1)	Type of Tube (2)	Position of Tube in Set (3)	Meter Readings with Jewell Test Plug in Socket of Set — Operating Voltages: Filament or Heater (4)	Plate or Anode (5)	Control Grid—Space (6) GD+	Normal Grid—Screen (7) GD+	Cathode to Heater (8)	Milliamperes: Screen GD L H 80 Plate (9)	Plate R H 80 Plate (10)	Tube Test (11)	Plate Current (12) Change
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



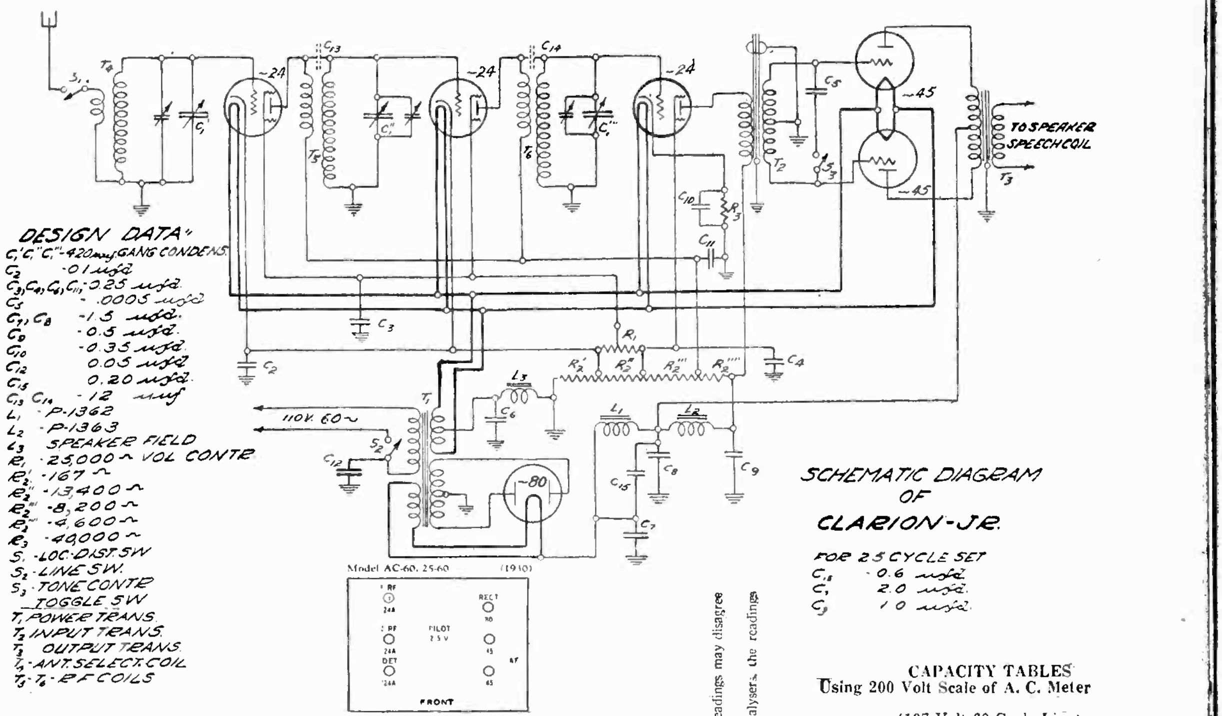
Power Pack View



Receiver Breakdown Diagram

TRANSFORMER CORP. OF AMERICA

MODEL AC-60, 25-60
Schematic
Voltage Data



SCHEMATIC DIAGRAM OF CLARION-JR.

FOR 25 CYCLE SET
C8 - 0.6 mfd.
C7 - 2.0 mfd.
C9 - 1.0 mfd.

Since resistance tolerances in the set are plus or minus 10% and tubes may vary 10 to 30% 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.

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	41	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	32	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							

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

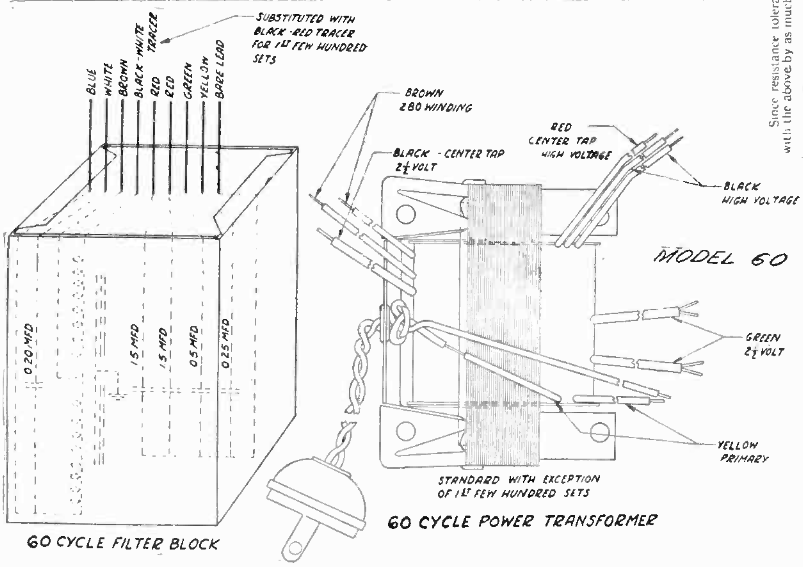
C-15	0 6	85 0		G-1132
C-7	2 0	103 0		G-1132
C-8	1 5	102 0		G-1132
C-9	1 0	97 0		G-1132
C-6	0 25	44 0		G-1132

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		226
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



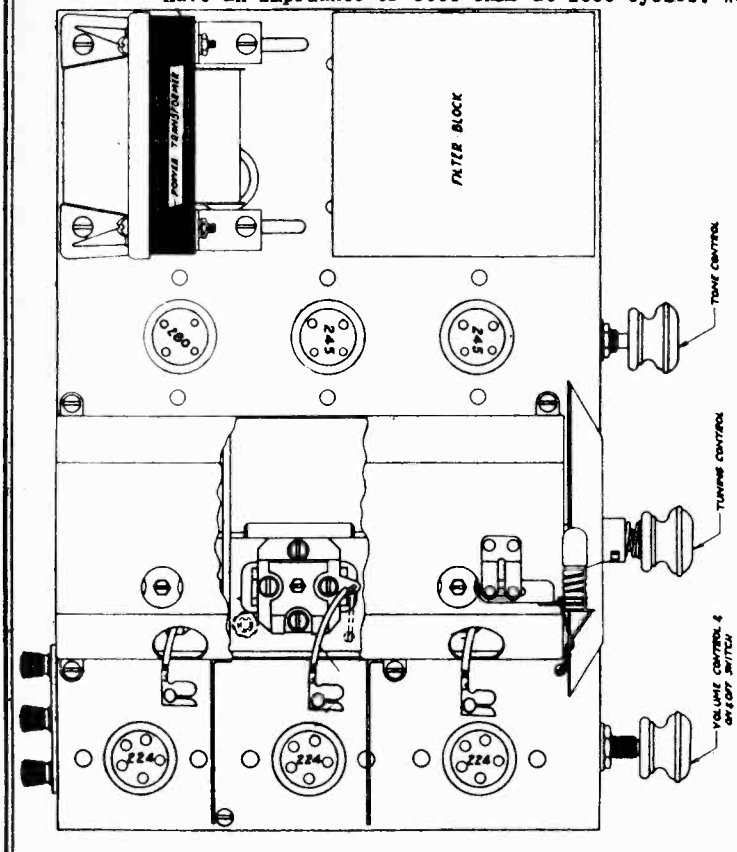
60 CYCLE FILTER BLOCK

60 CYCLE POWER TRANSFORMER

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.

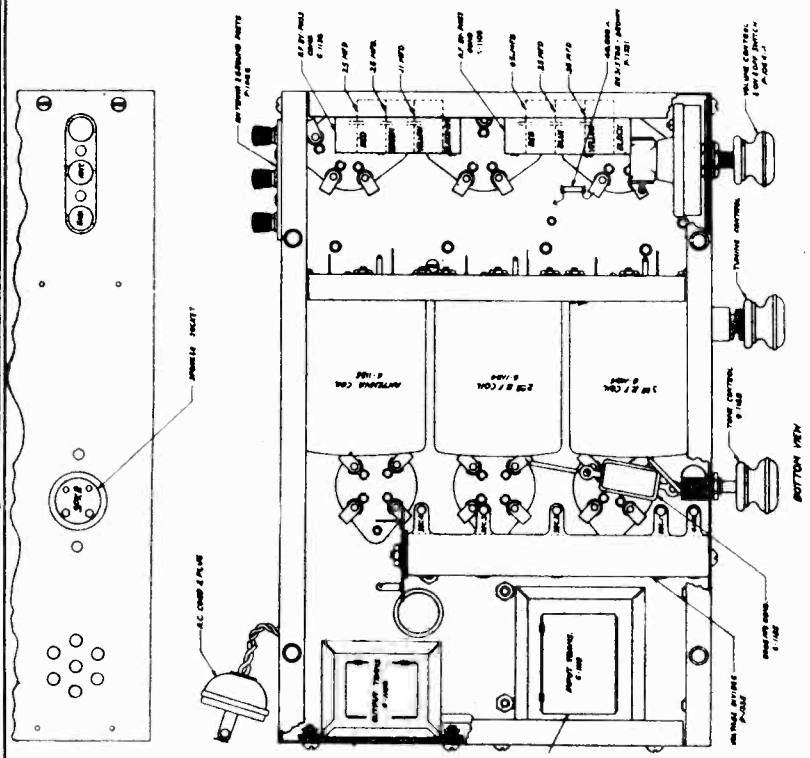


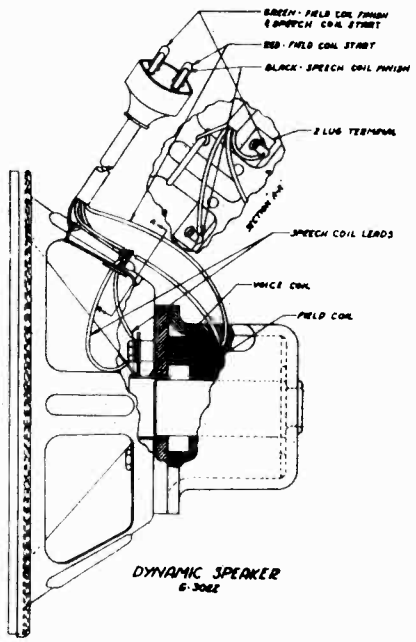
Model A. C. 60 receivers are designed for operation on 105 to 125 volt 50 to 60 cycle alternating current. The models 25-60 are to be operated on 105 to 125 volts 25 to 40 cycle alternating current only.

CONTINUITY TEST TABLES

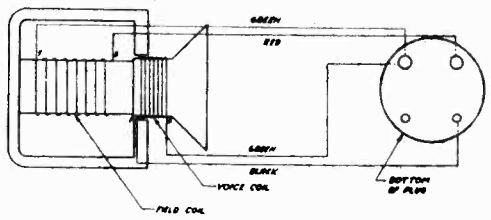
Using 6 Volt Battery with 0-10 Voltmeter (1000 Ohms Per Volt)

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





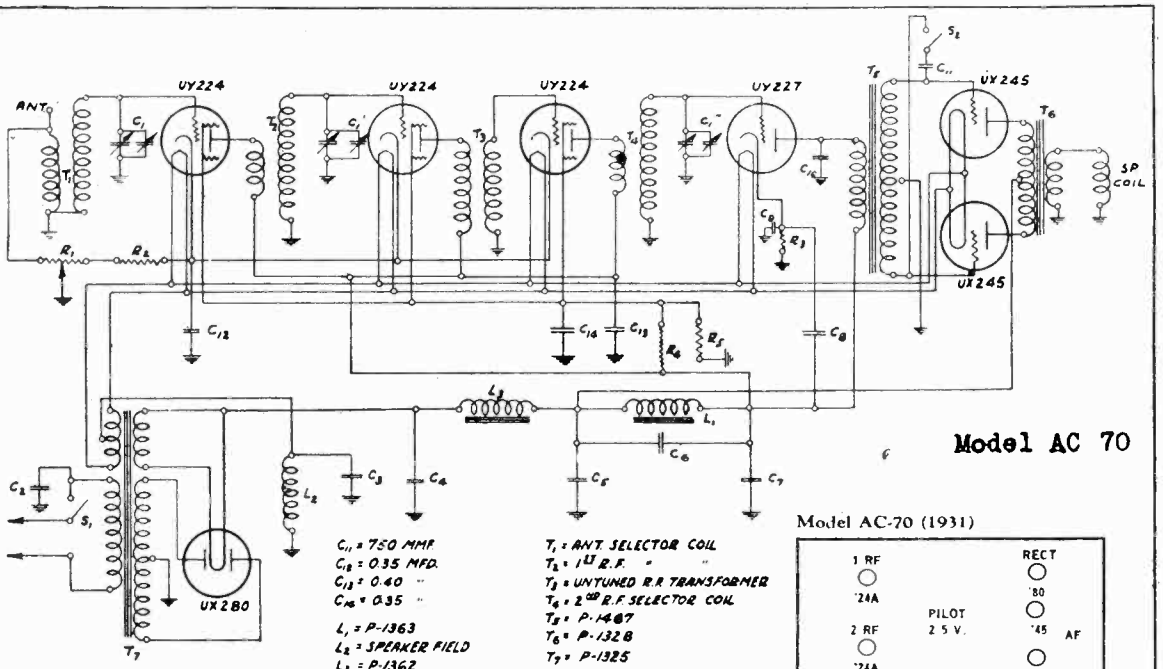
DYNAMIC SPEAKER
6-3082



CIRCUIT OF DYNAMIC REPRODUCER

TRANSFORMER CORP. OF AMERICA

MODEL 61 AC
MODEL 70 AC



C_{11} = 750 MMF.
C_9 = 0.35 MFD.
C_{12} = 0.40 "
C_{10} = 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.R TRANSFORMER
T_4 = 2ND R.F. SELECTOR COIL
T_5 = P-1467
T_6 = P-1328
T_7 = P-1325

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

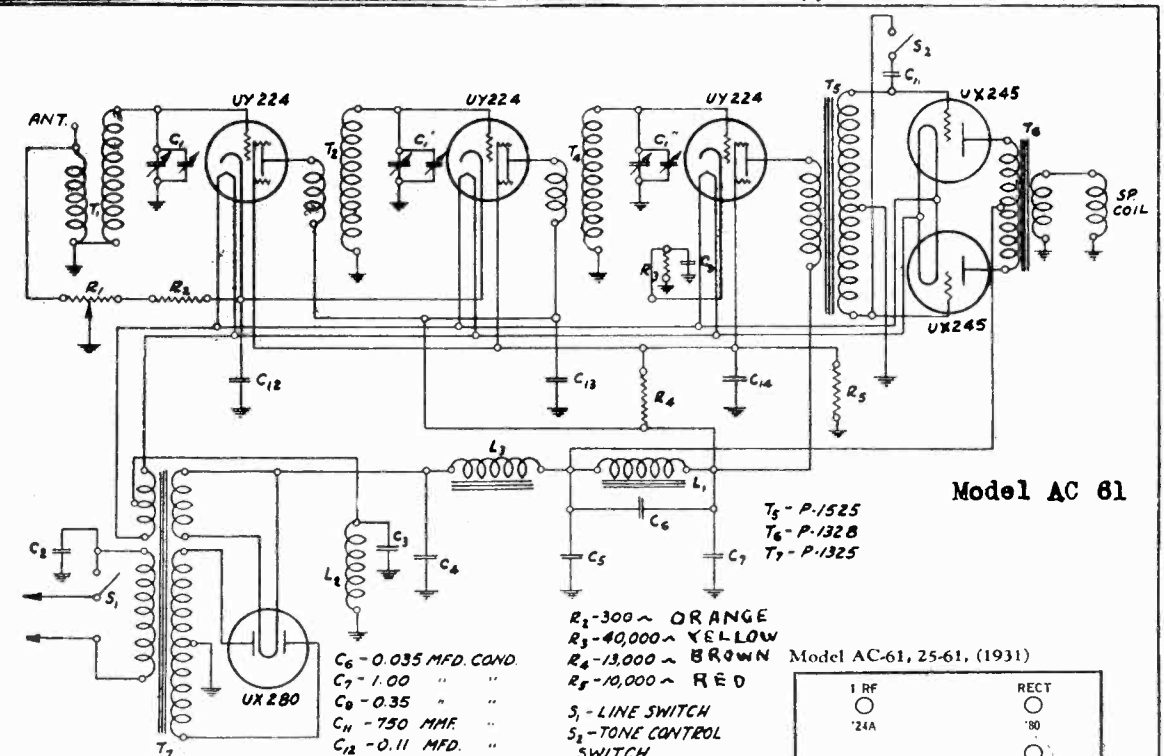
S_1 = LINE SWITCH
S_2 = TONE CONT. SWITCH

Model AC-70 (1931)

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

DRAWN BY: [illegible] CHECKED: [illegible] APPROVED: WBC DATE: 1-13-31



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 " "

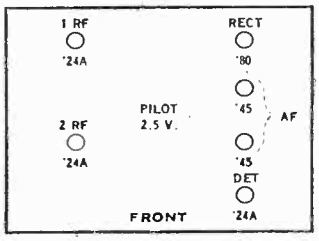
L_1 - P-1363
L_2 - SPEAKER FIELD
L_3 - P-1362

R_1 - VOL. CONT. 12,000 ~
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
T_5 - P-1525
T_6 - P-1328
T_7 - P-1325

Model AC-61, 25-61, (1931)



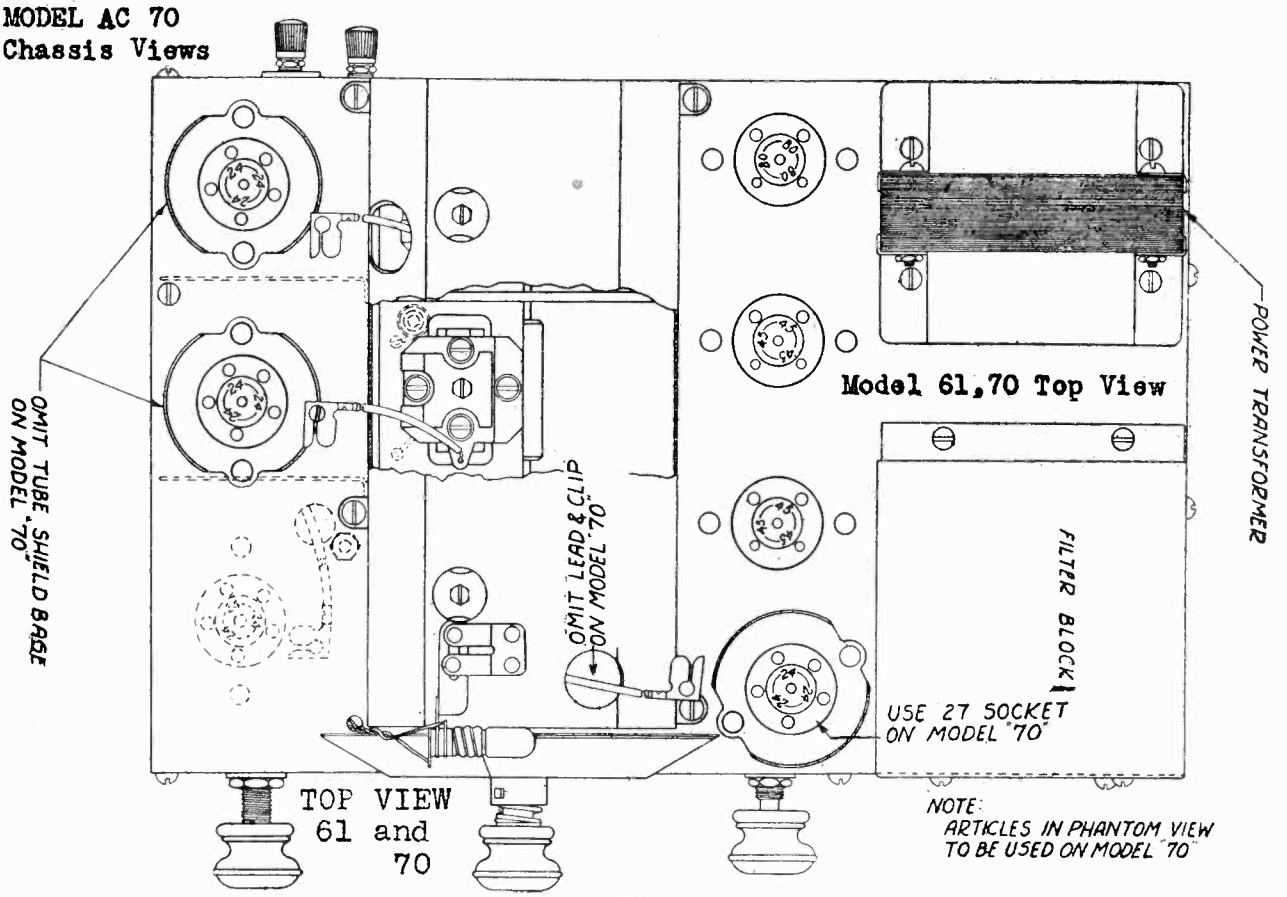
DESIGN DATA:

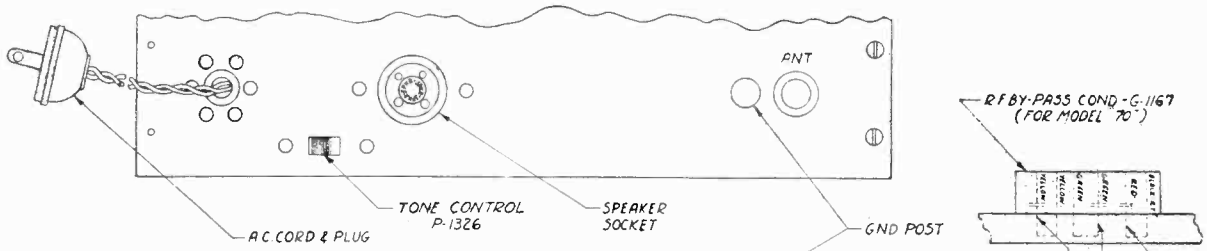
C_1, C_1', C_1'' - 410 MMF. 3 GANG VARIABLE CONDENSER
C_2 - 0.05 MFD. COND.
C_3 - 0.35 " "
C_4 - 1.50 " "
C_5 - 1.50 " "

DRAWN BY: [illegible] CHECKED: APPROVED: WBC DATE: 1-14-31

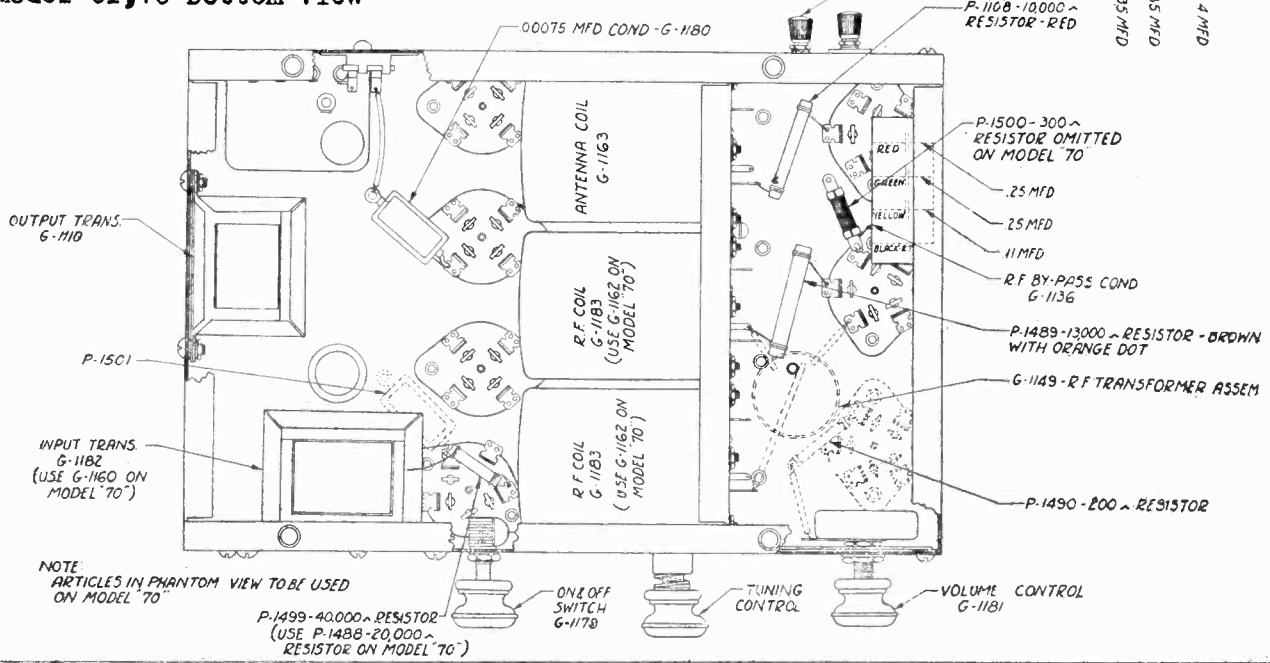
MODEL AC 61
Chassis Views
MODEL AC 70
Chassis Views

TRANSFORMER CORP. OF AMERICA





Model 61,70 Bottom View



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 1	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. 280 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

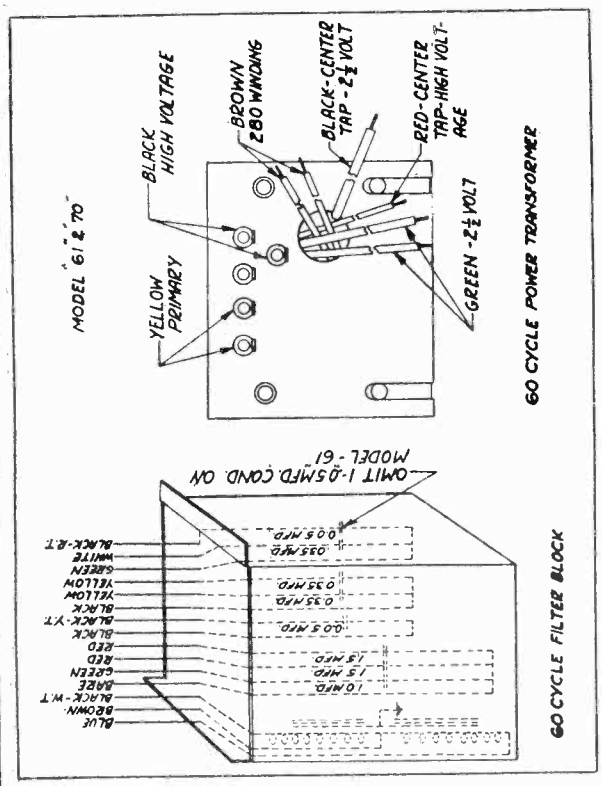
Using 200 Volt Scale of A. C. Meter Included in Weston No. 565 Analyser

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



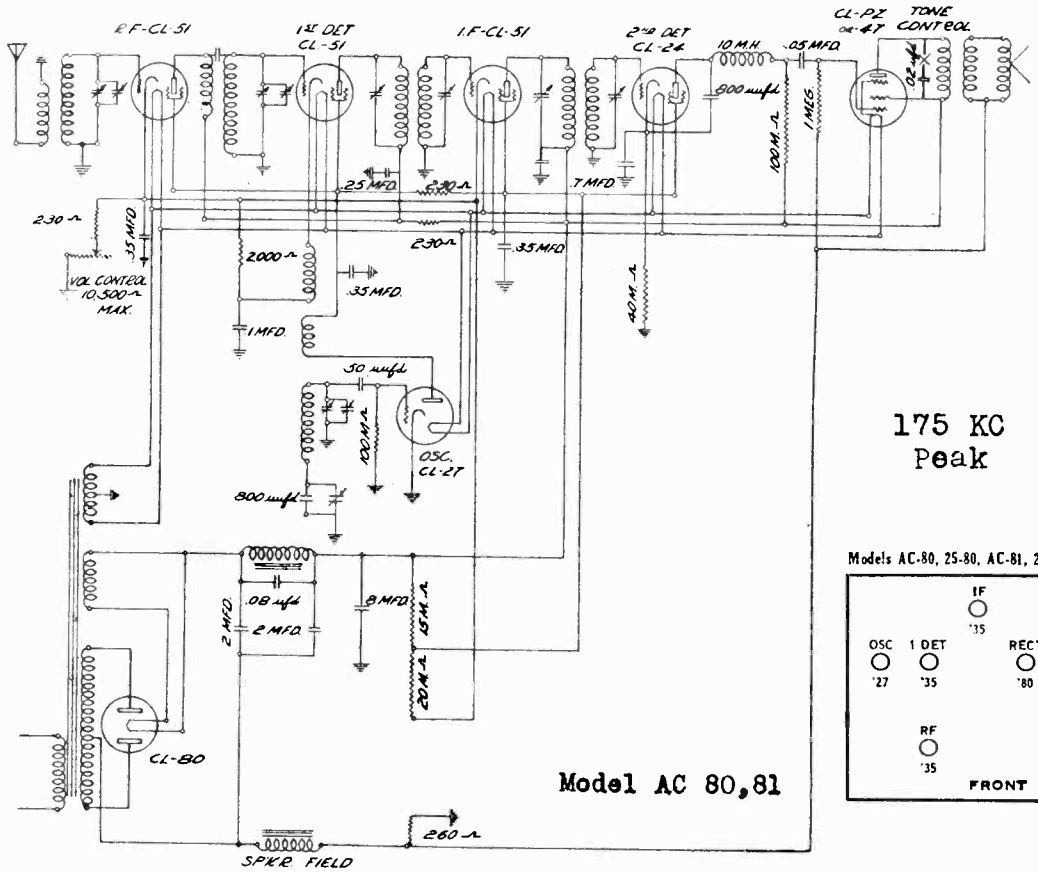
CONTINUITY TEST TABLES
Models 61 and 70

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	1 7-4 9	1 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.

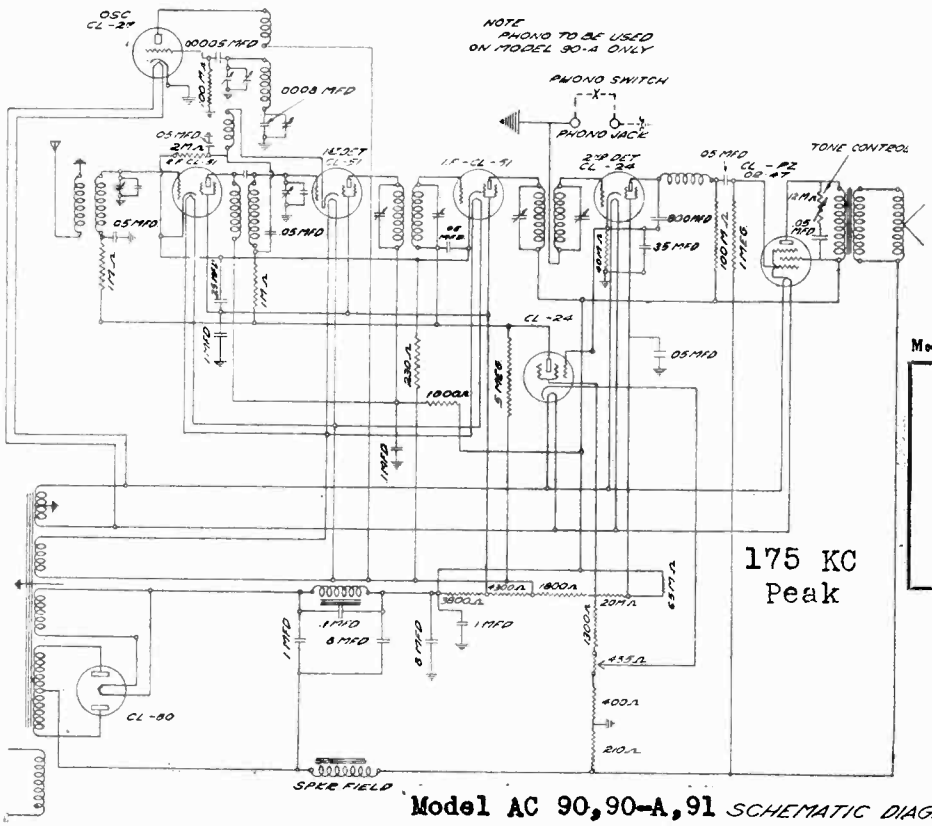
TRANSFORMER CORP. OF AMERICA

Schematic



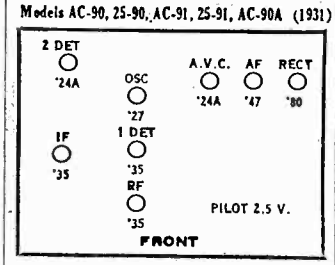
175 KC
Peak

Models AC-80, 25-80, AC-81, 25-81 (1931)



175 KC
Peak

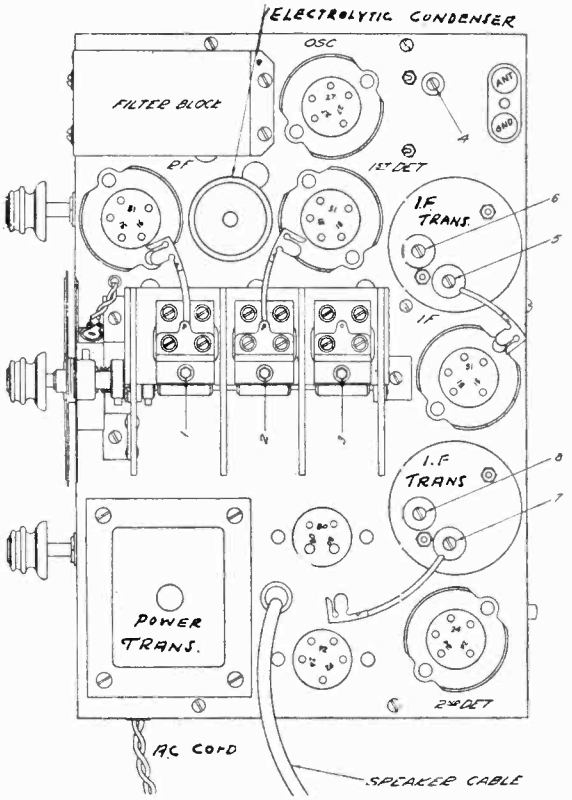
Models AC-90, 25-90, AC-91, 25-91, AC-90A (1931)

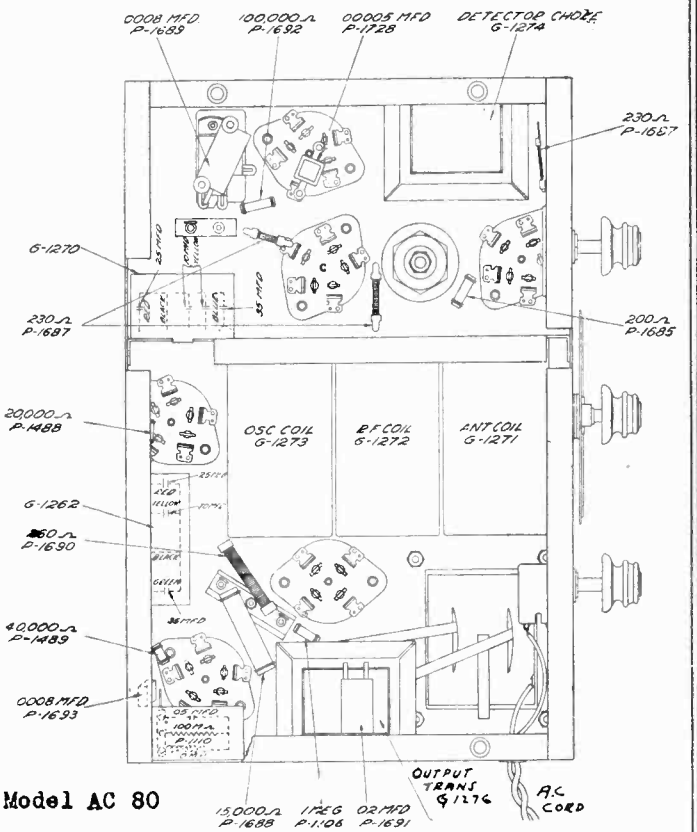


Model AC 90,90-A,91 SCHEMATIC DIAGRAM

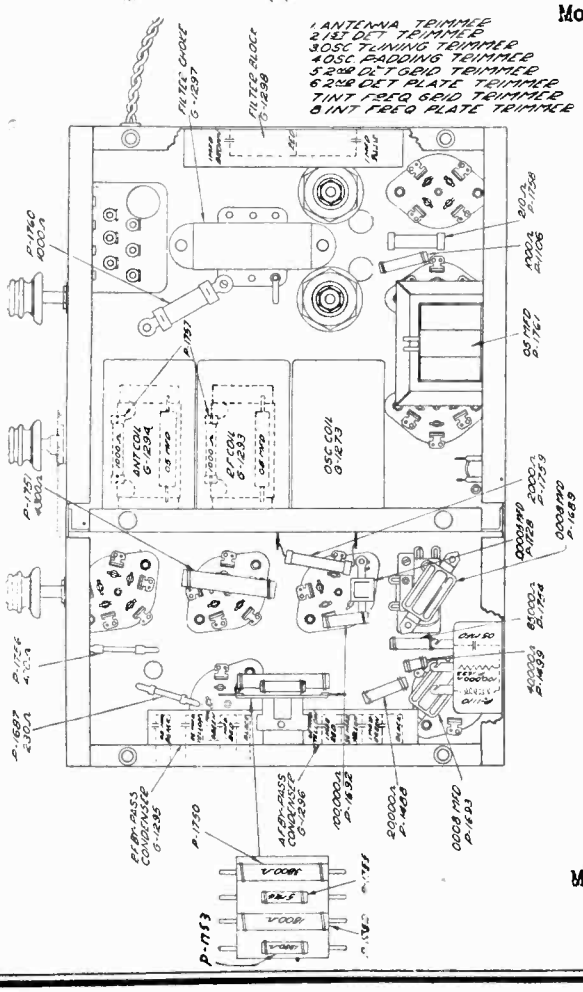
TRANSFORMER CORP. OF AMERICA

MODEL AC 80,81,90, 90-A,91
Chassis Views



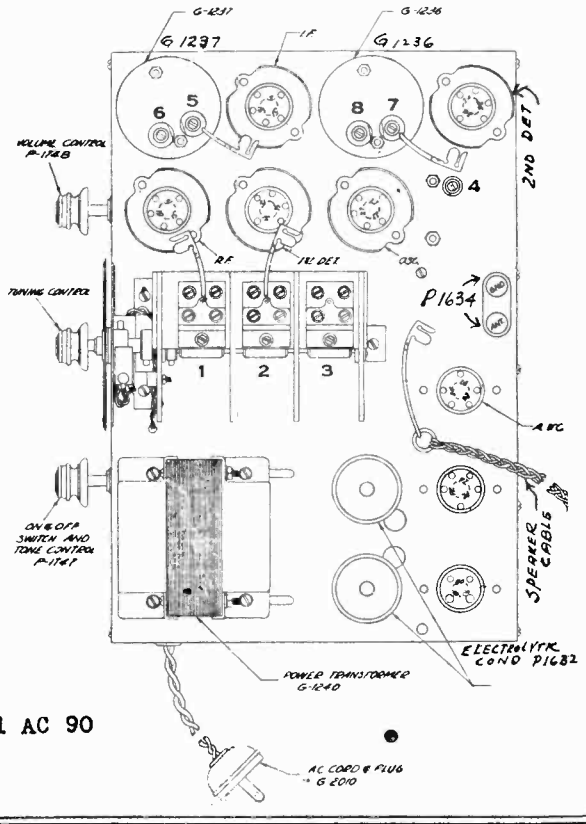


Model AC 80



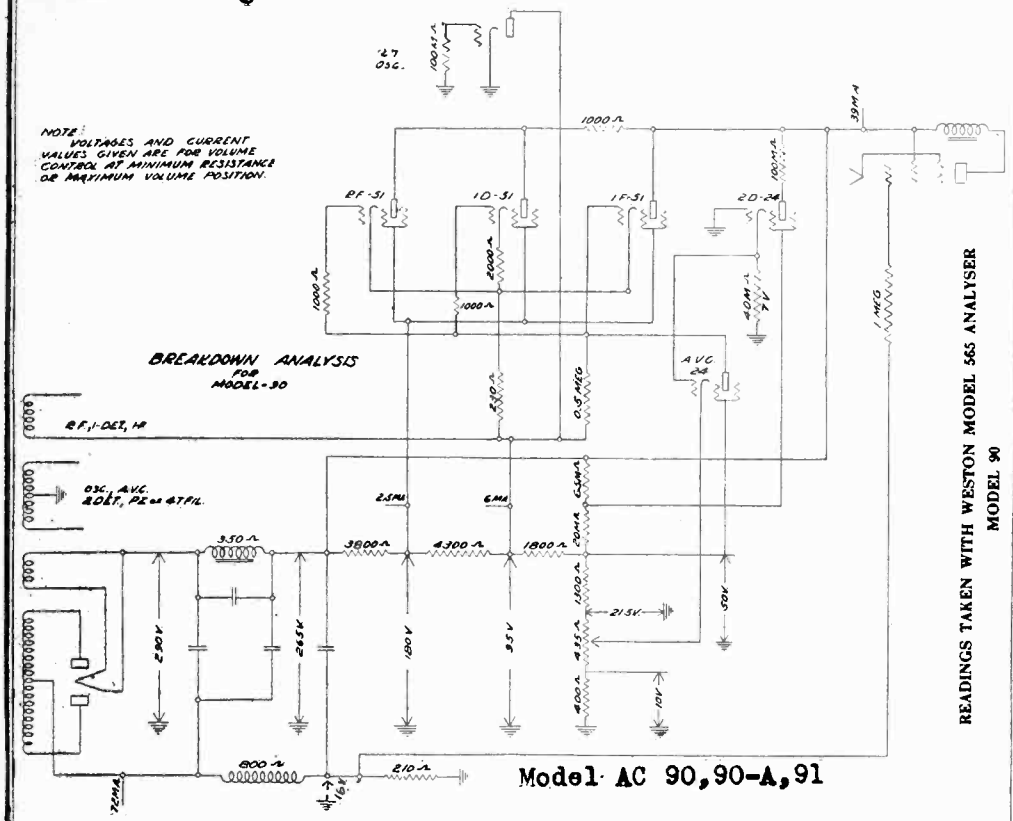
Model AC 90

NOTE
FOR MODEL 90-A USE G-1237 IN PLACE OF G-1236, WHICH INCLUDES P-1706 SWITCH. ALSO USE P-1749 IN PLACE OF P-1747.



MODEL AC 80,81,80, 90-A,91 Voltage Breakdown Diagrams

TRANSFORMER CORP. OF AMERICA



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	1 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-P2	2 2	260	16 5		36	260
8	Rect	CL-80	4 6	350			72	

Volume control position Full. Line Voltage 115-60 cycle.

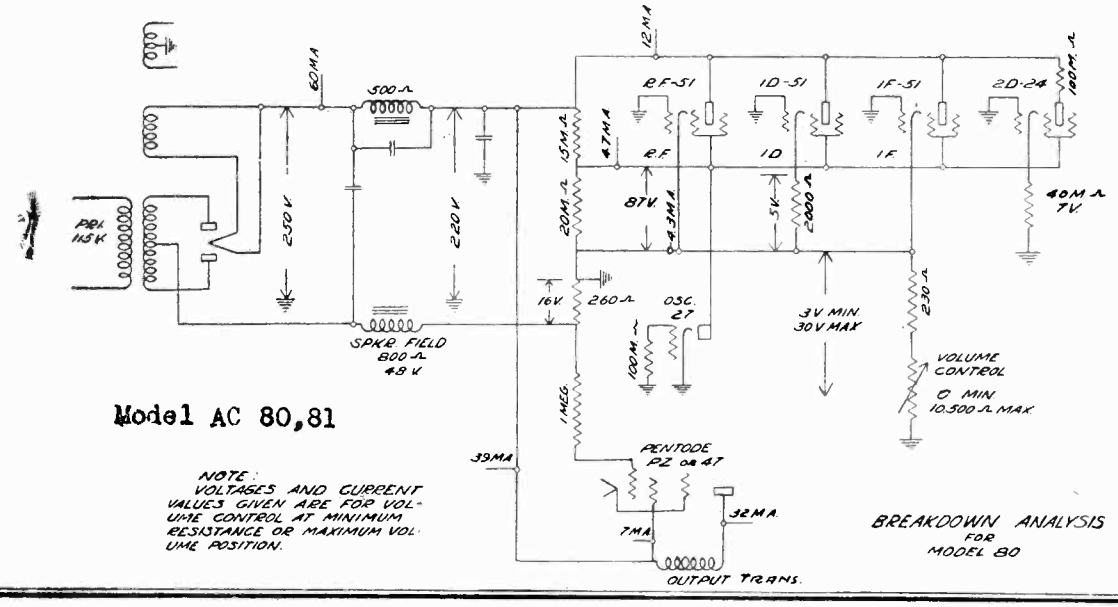
NOTE Filaments and cathodes of R.F., I.F., and first detector are 95 volts positive with respect to ground on the model 90

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.

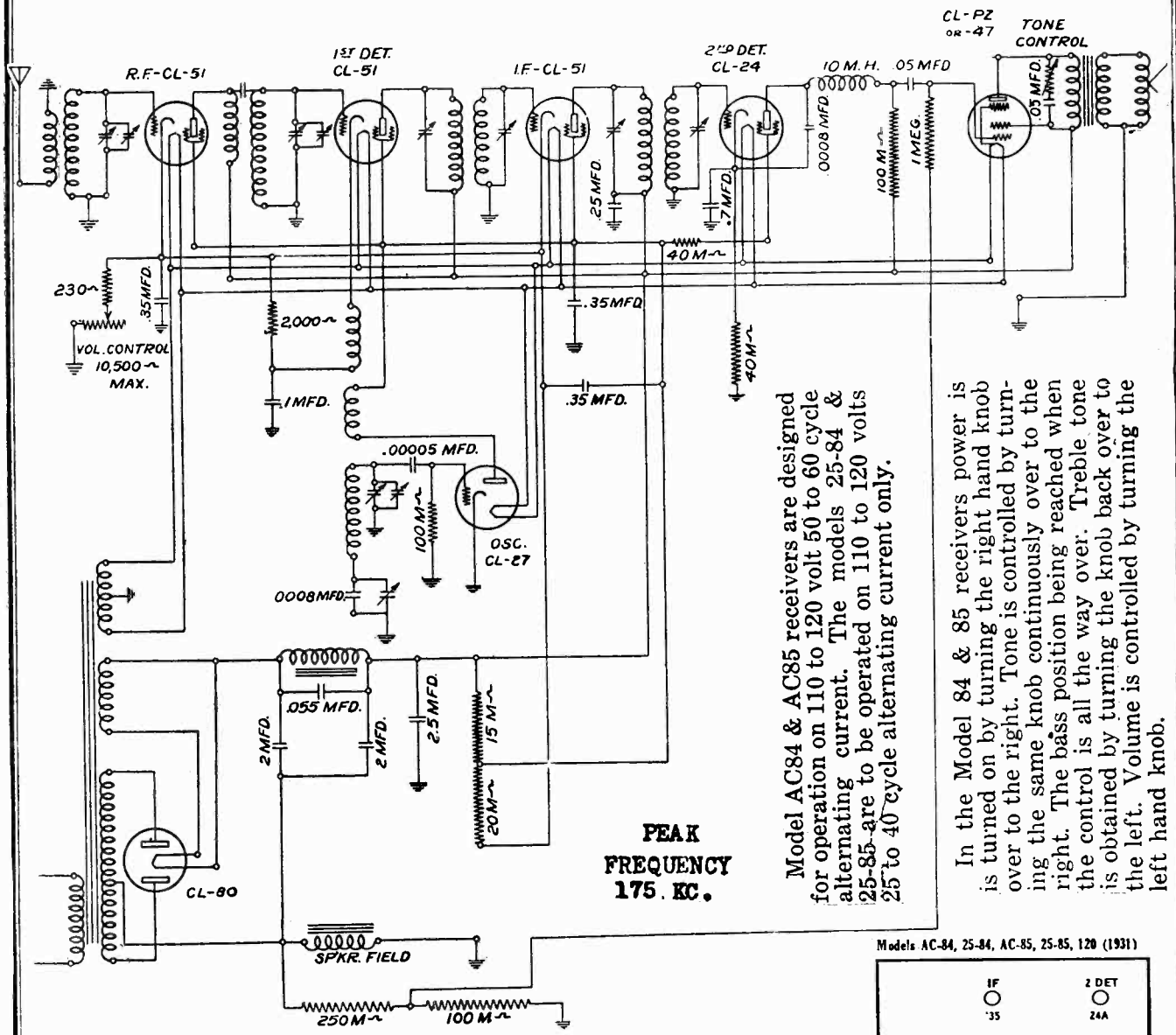


NOTE: VOLTAGES AND CURRENT VALUES GIVEN ARE FOR VOLUME CONTROL AT MINIMUM RESISTANCE OR MAXIMUM VOLUME POSITION.

BREAKDOWN ANALYSIS FOR MODEL 80

TRANSFORMER CORP. OF AMERICA

MODEL AC84,85
Schematic
Voltage

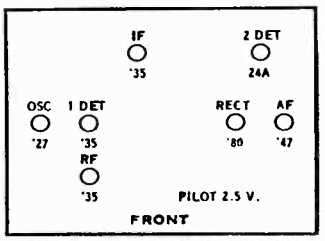


PEAK FREQUENCY 175. KC.

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

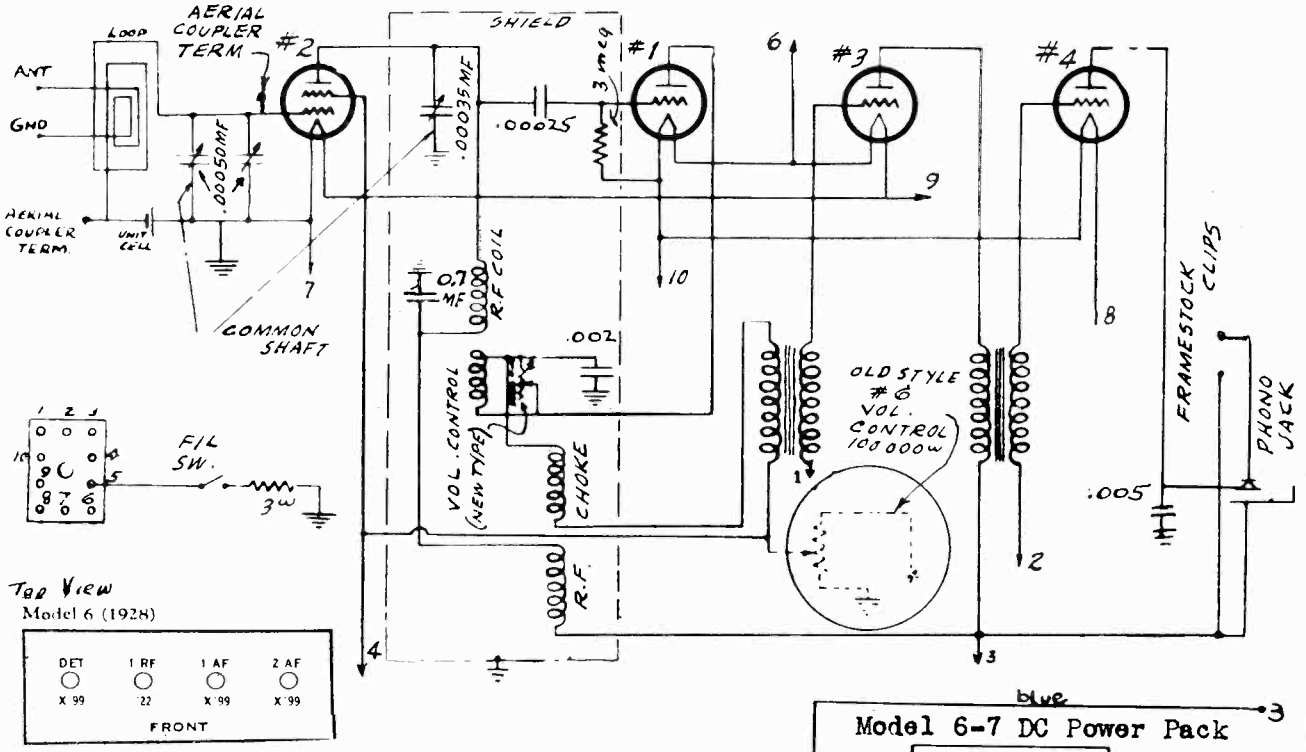
No.	Stage	Type Tube	A Volts	B Volts	Cont. Grid Volts	Cath. Volts	Ip Norm.	SG Volts
1	r. f.	51	2.1	255	3.5	3.5	3.5	.78
2	1st Det.	51	2.1	240	10.	10.	2	108
3	Osc.	27	2.1	135	0	0	6.	0
4	I. F.	51	2.1	250	3.5	3.5	3.5	77
5	2nd det.	24	2.2	190	6.0	6.0	1.2	68
6	Output	47	2.2	228	14.	0	25	255
7	Rect.	80	4.4		0	0		0

Volume control position **Full** Line Voltage **115**

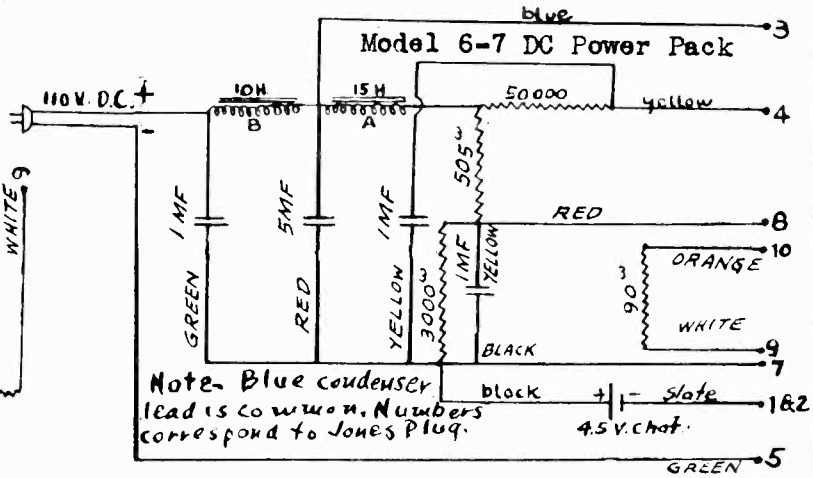
Note: Since resistance tolerances in the sets are plus or minus 10%, and tubes may vary over 20%, your readings may disagree with the above by plus or minus 30%.

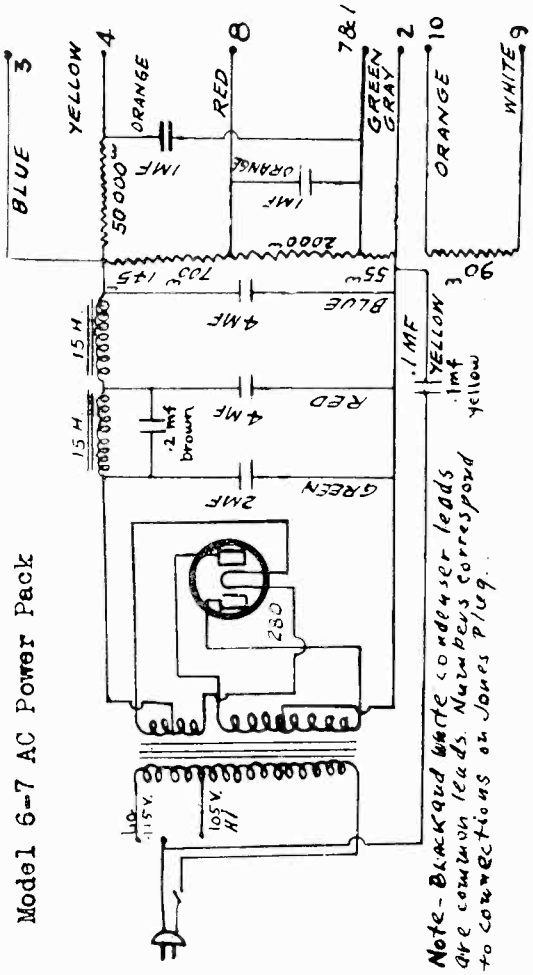
MODEL 6,7

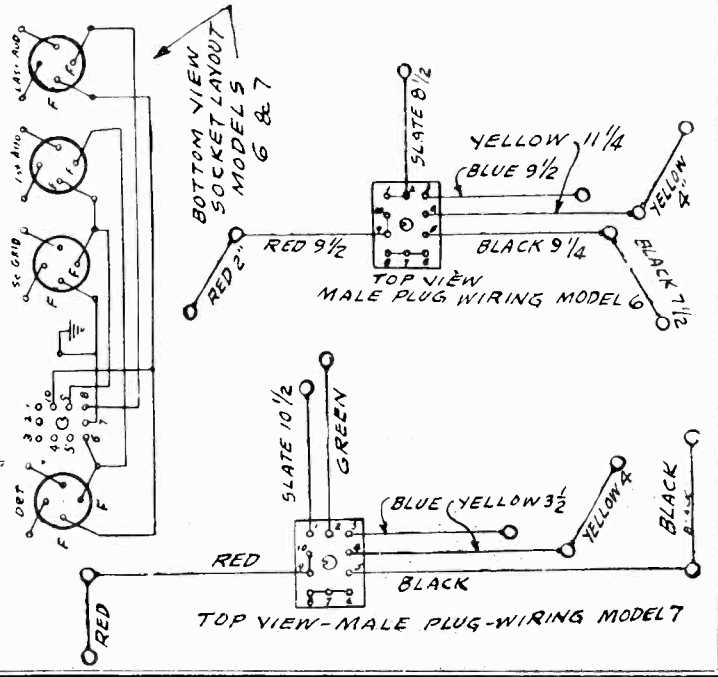
TRAV-LER RADIO & TELEVISION CORP.



Model 6 - 7 Receiver Chassis

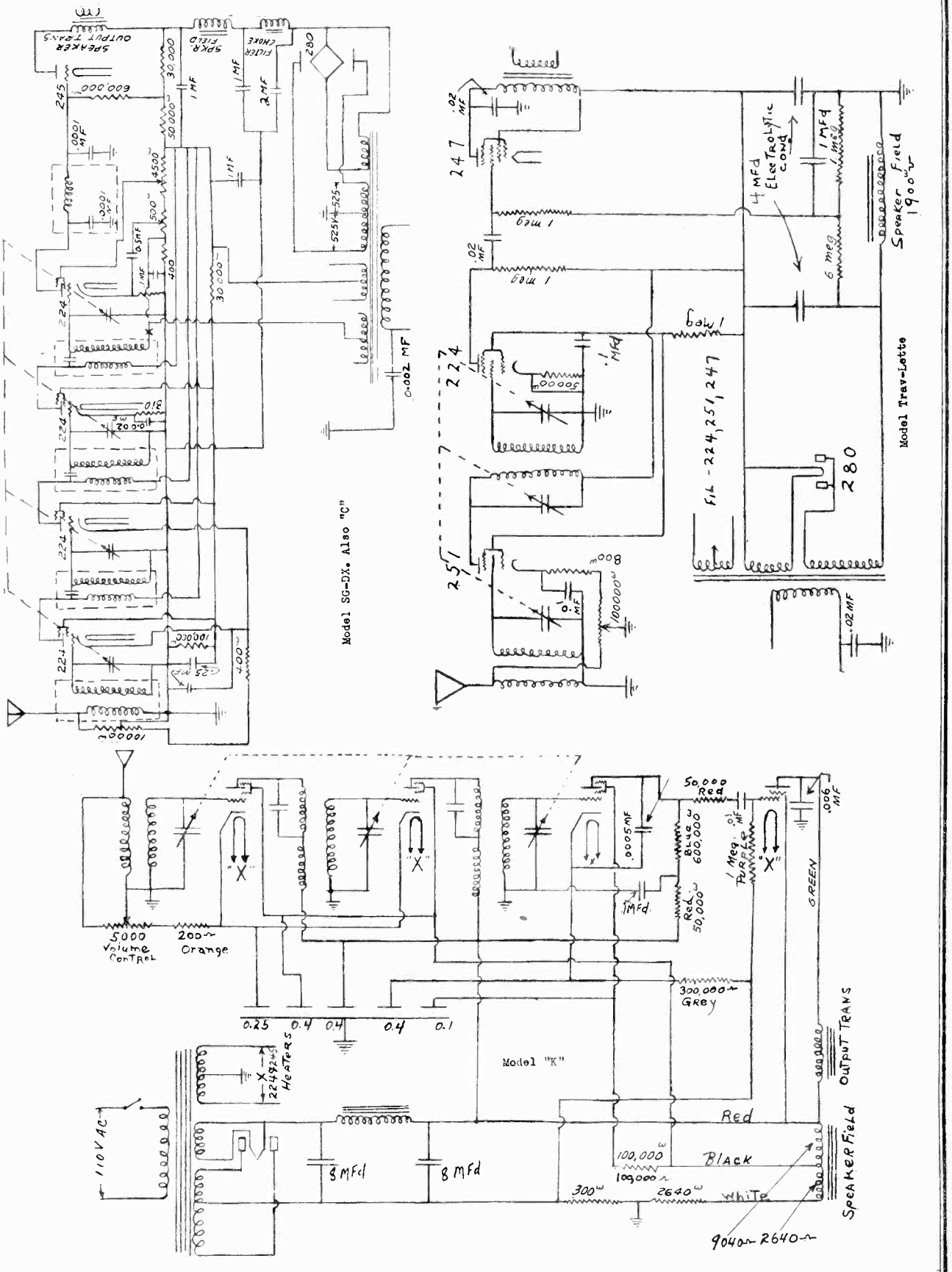




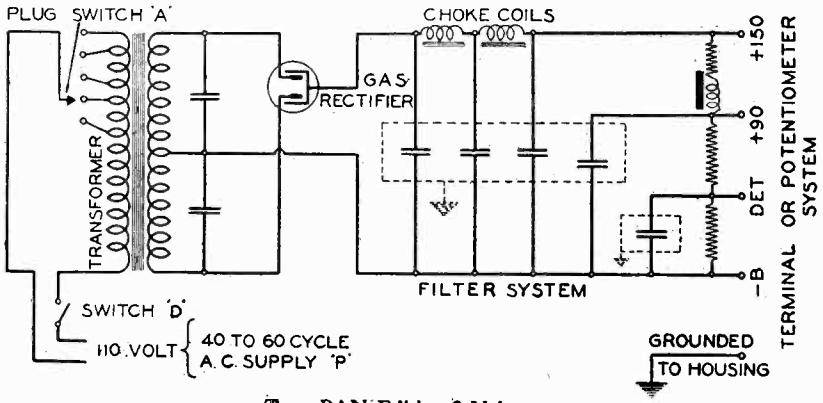


MODEL SG-DX
MODEL "C"
MODEL "K"
MODEL **Trav-Lette**

TRAV-LER RADIO & TELEVISION CORP.

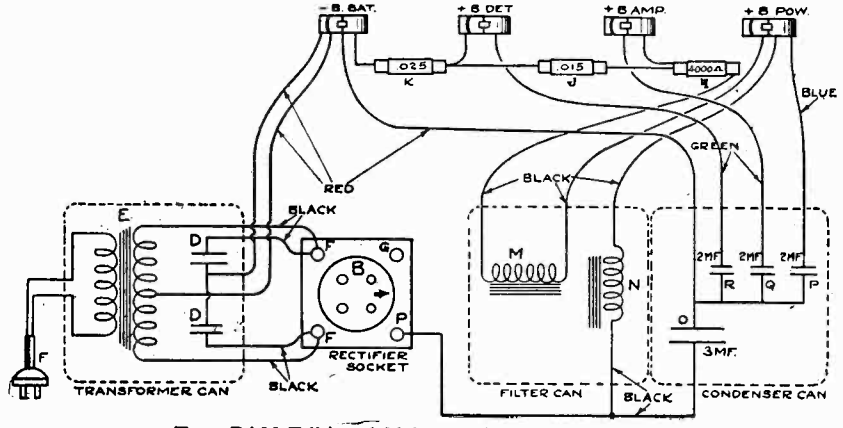


"B" POWER UNITS

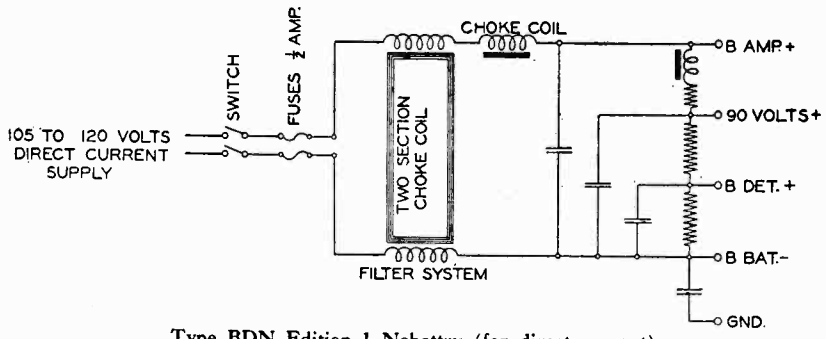


Type BAN Edition 2 Nobattry

"B" POWER UNITS

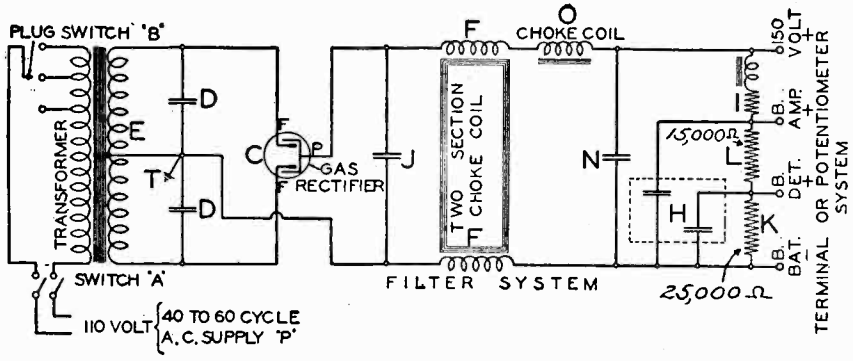


Type BAN Edition 6 Nobattry—Models 504 and 506

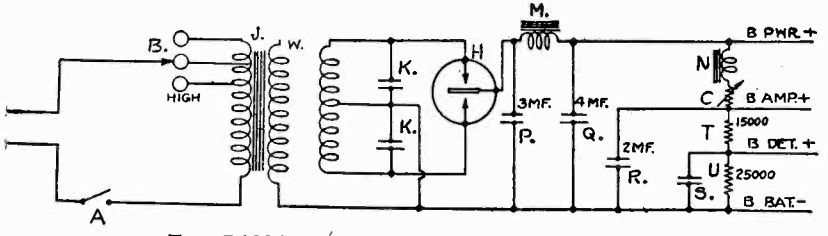


Type BDN Edition 1 Nobattry (for direct current)
Type BDN Edition 2 Nobattry (for 220 volts DC)

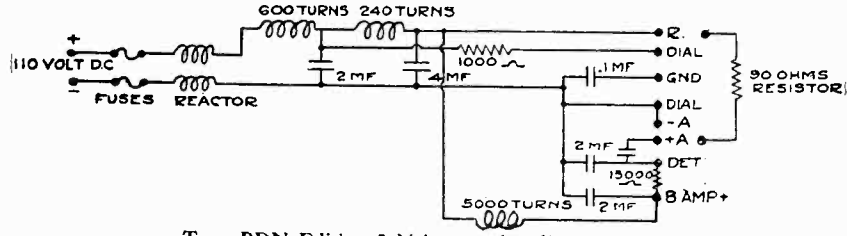
NOTE: A series resistance is connected between the switch and the fuse in the 220-volt unit. The Nobattrys are otherwise identical.



Type BAN Edition 3 Nobattry
Type BAN Edition 4 Nobattry (for 25 cycles)
Type BAN Edition 4 Model 505 Nobattry



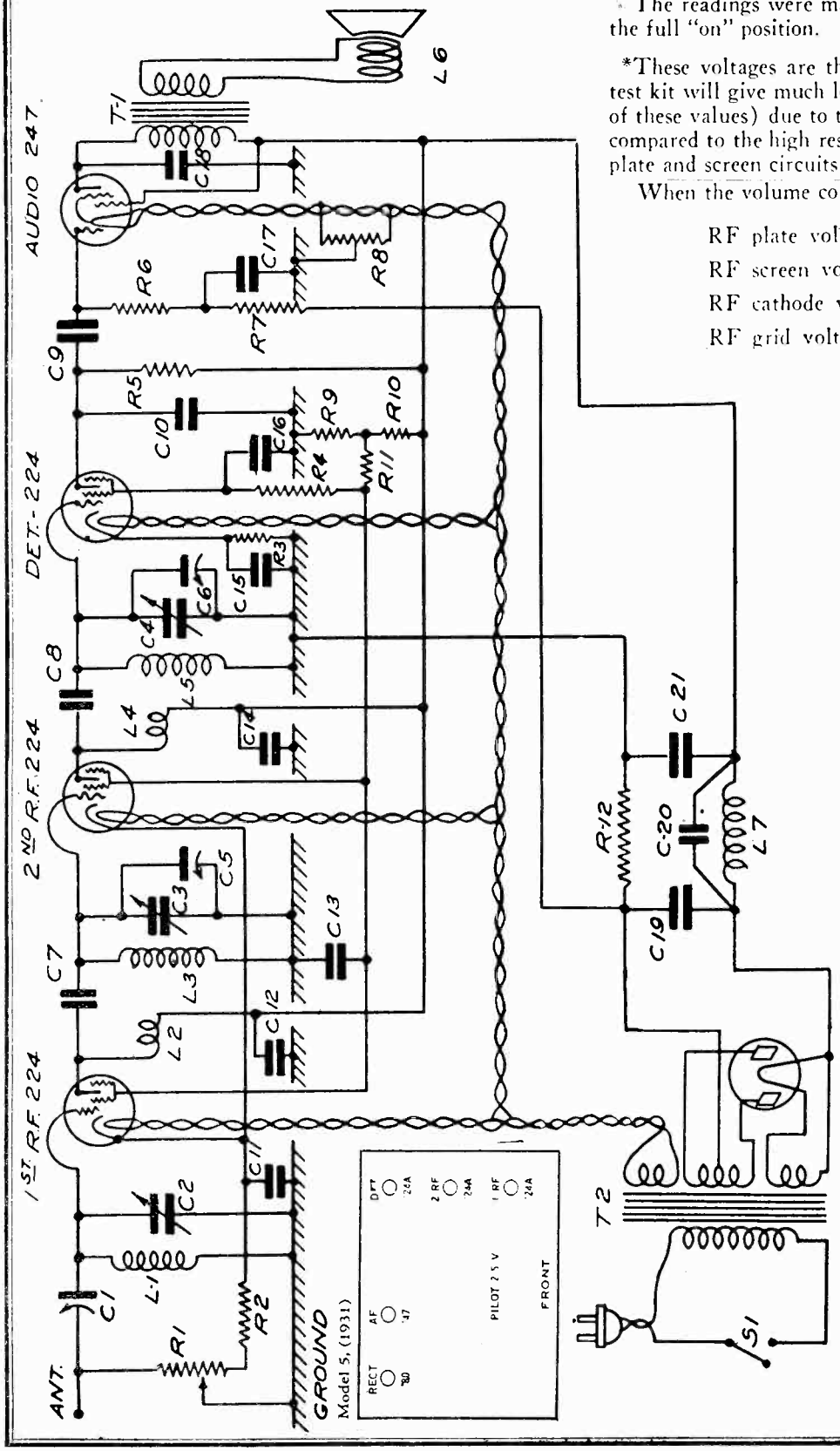
Type BAN Edition 5 Nobattry—Models 501, 502, 503



Type BDN Edition 3 Nobattry (for direct current)

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, L 3—Secondary } of RF Coil
L 4—Primary, 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.

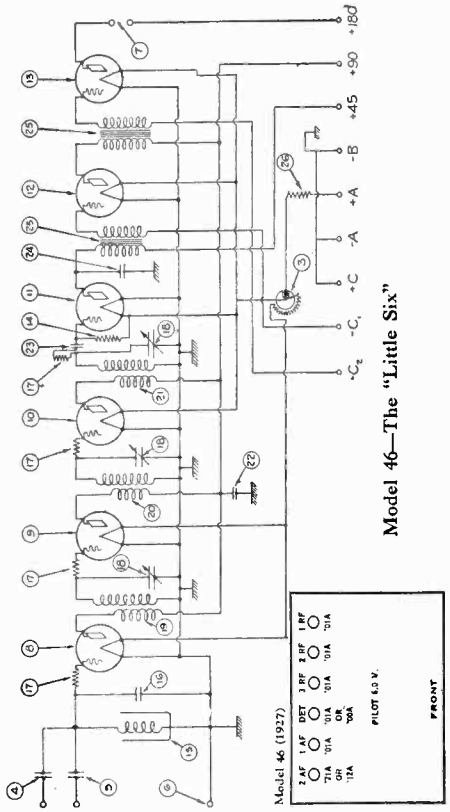
Some types of the 247 Pentode operate normally with a blue glow. This action does not, therefore, denote that the tube is defective due to gas.

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.

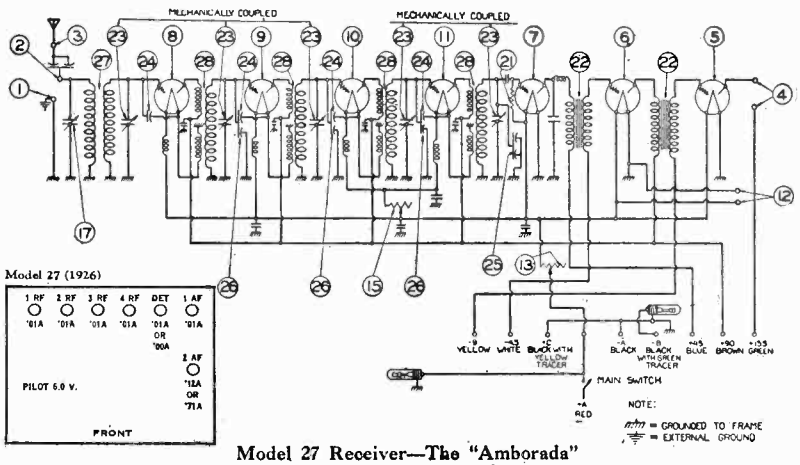
Make sure that the lead from the top of each 224 tube to the variable condenser follows closely along the metal partition between the tubes. Oscillation may occur if this lead lies too close to the tube itself.

MODEL 16
MODEL 27
MODEL 35
MODEL 46

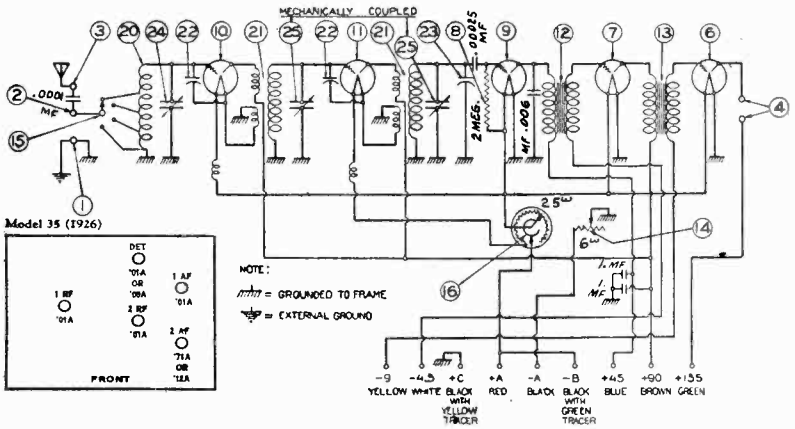
UNITED AMERICAN BOSCH CORP.



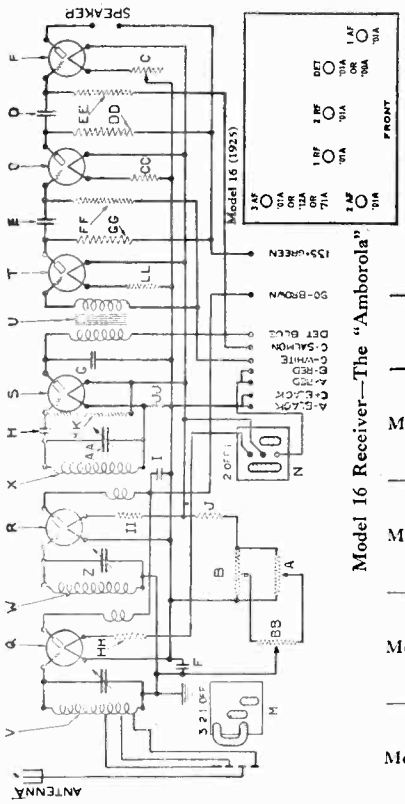
Model 46—The "Little Six"



Model 27 Receiver—The "Amborada"



Model 35—"Cruiser"
"Royal Cruiser"
"Imperial Cruiser"



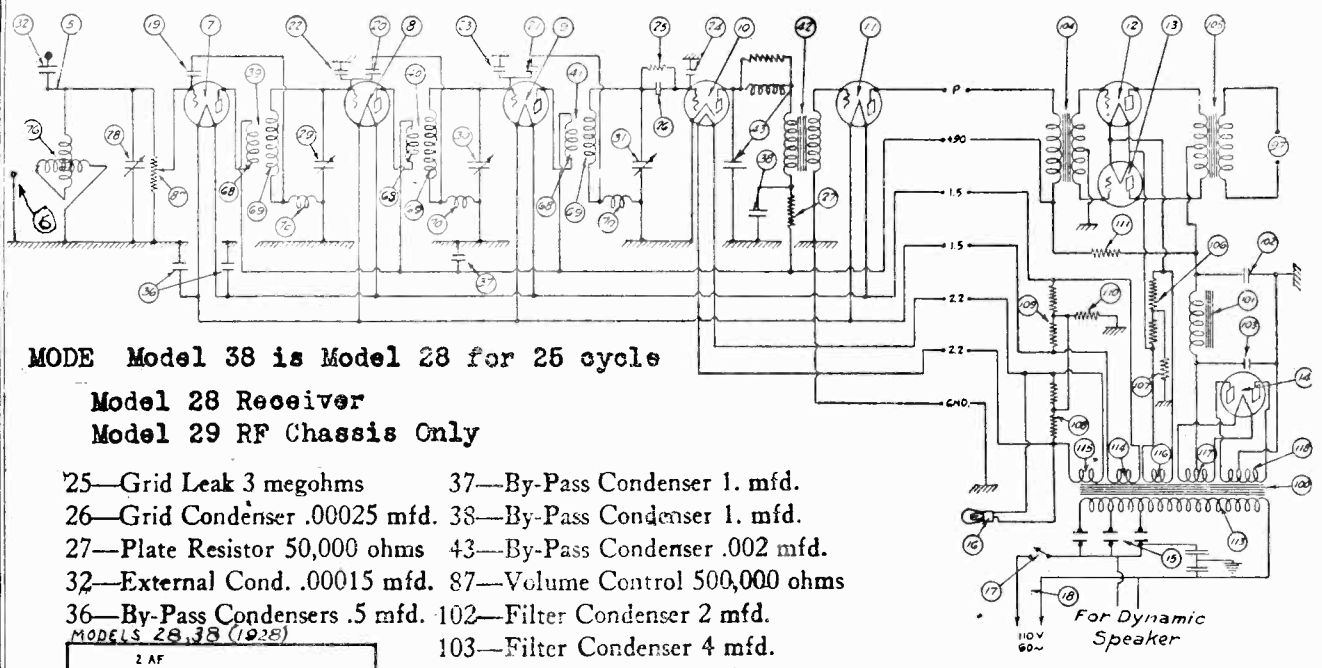
Model 16 Receiver—The "Amborola"

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	—

UNITED AMERICAN BOSCH CORP.

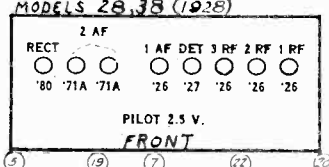
MODEL 28 AC
Two Types
MODEL 29 AC
RF Chasses

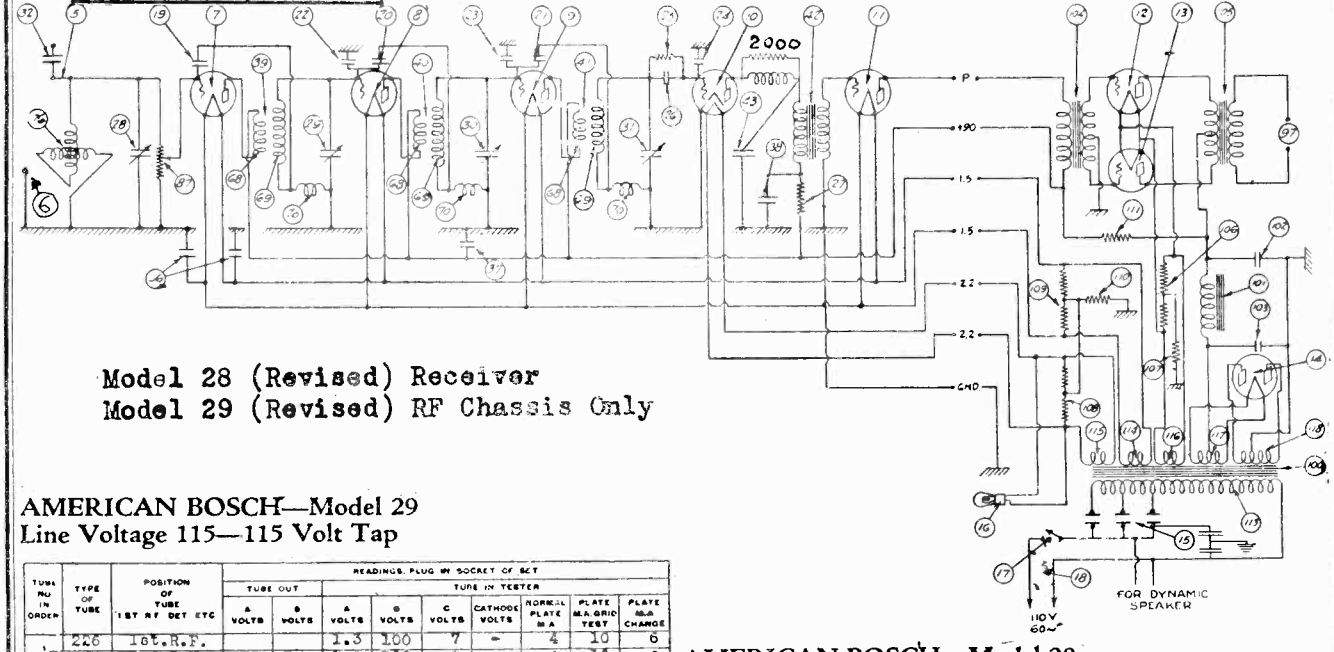


MODE Model 38 is Model 28 for 25 cycle

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





Model 28 (Revised) Receiver
Model 29 (Revised) RF Chassis Only

AMERICAN BOSCH—Model 29
Line Voltage 115—115 Volt Tap

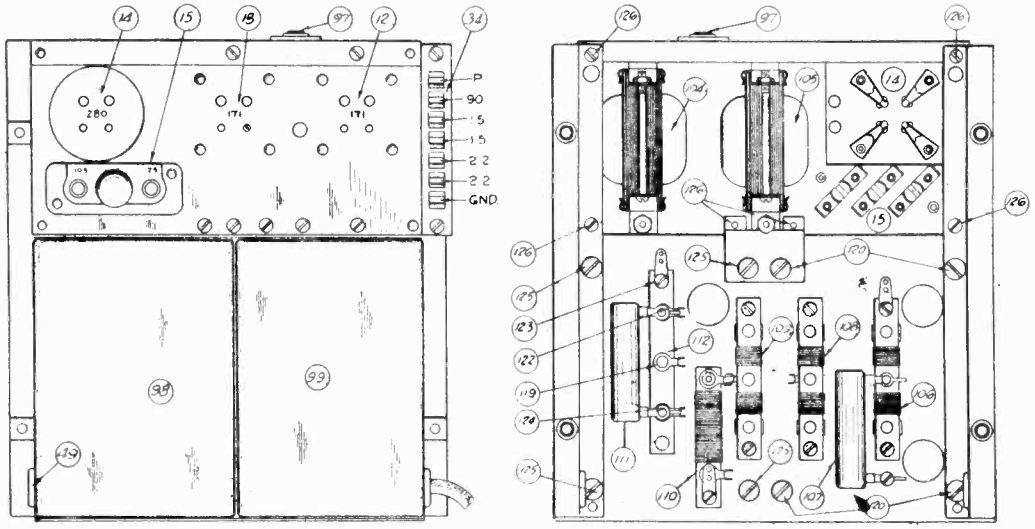
TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST R.F. DET. ETC.	READINGS PLUG IN SOCKET OF SET								
			TUBE OUT		TUBE IN TESTER						
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M A	PLATE M.A. GRID TEST	PLATE M.A CHANGE
1	226	1st.R.F.			1.3	100	7	-	4	10	6
2	226	2nd.R.F.			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	-	-	-	23	-	-
9											
10											

AMERICAN BOSCH—Model 28
Line Voltage 115—115 Volt Tap

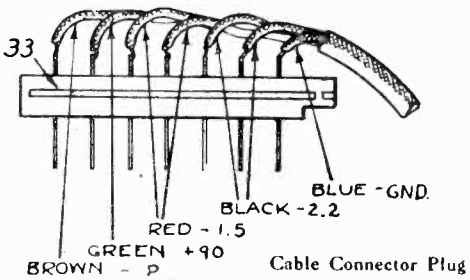
TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST R.F. DET. ETC.	READINGS PLUG IN SOCKET OF SET								
			TUBE OUT		TUBE IN TESTER						
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE M.A CHANGE
1	226	1st.R.F.			1.3	100	7	-	4	10	6
2	226	2nd.R.F.			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."

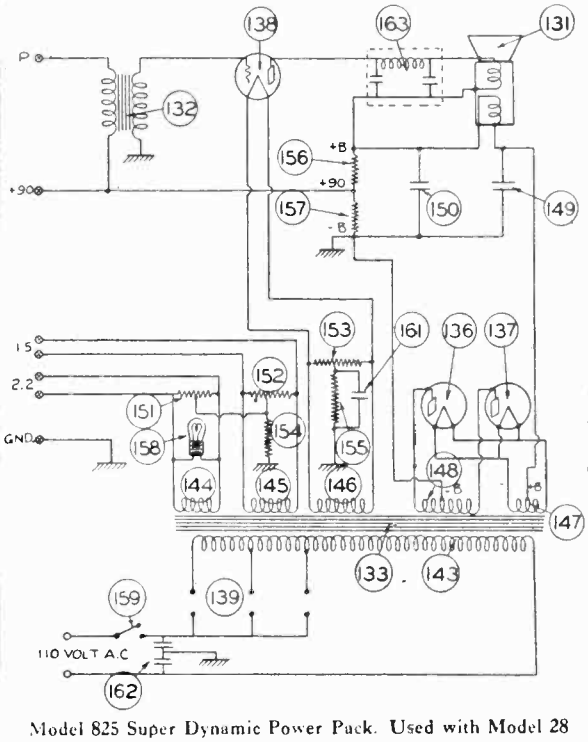
Red Lead: This lead comes from filter condenser "102" and connects to terminal "122."

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.

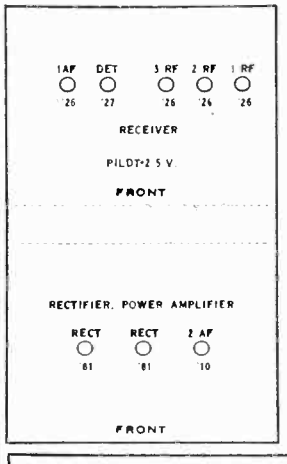
UNITED AMERICAN BOSCH CORP.

MODEL 29 AC, 825
Power Pack
Chassis - Schematic

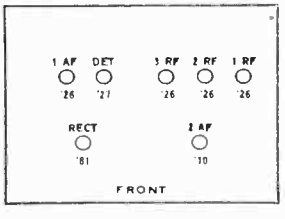


Model 825 Super Dynamic Power Pack. Used with Model 28 Chassis only to form Model 29 Receiver.

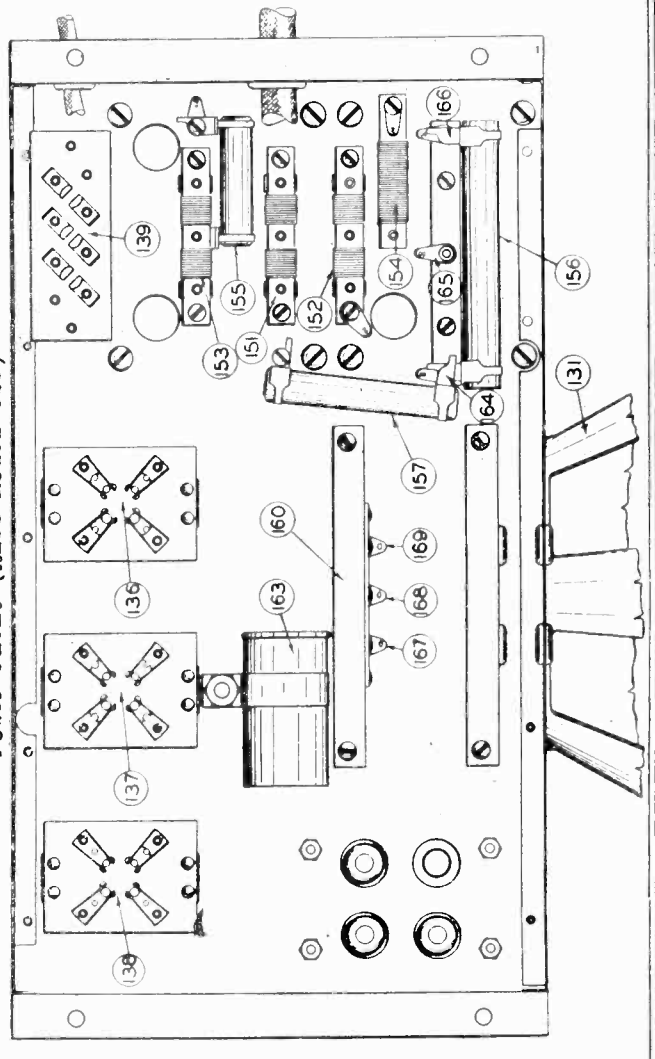
Model 29B, (1928)



Model 29B (25 Cycle) (1928)



Bottom View of Model 29 Dynamic Power Pack. (Also Model 825)



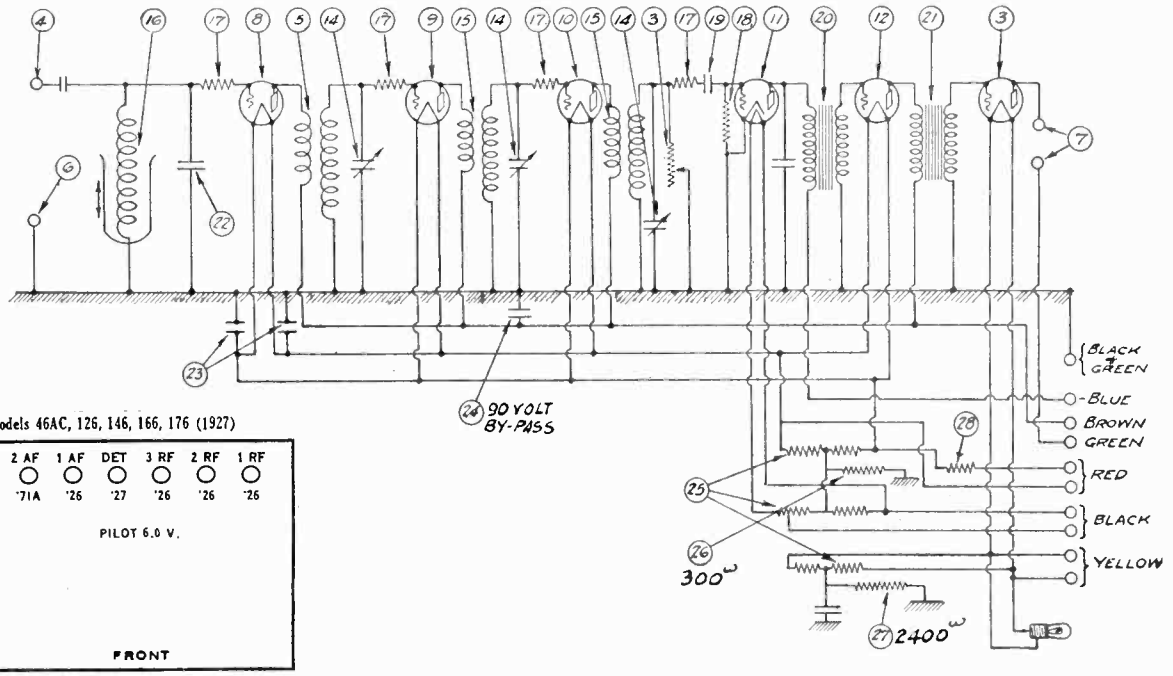
MODEL 825 POWER PACK

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	—

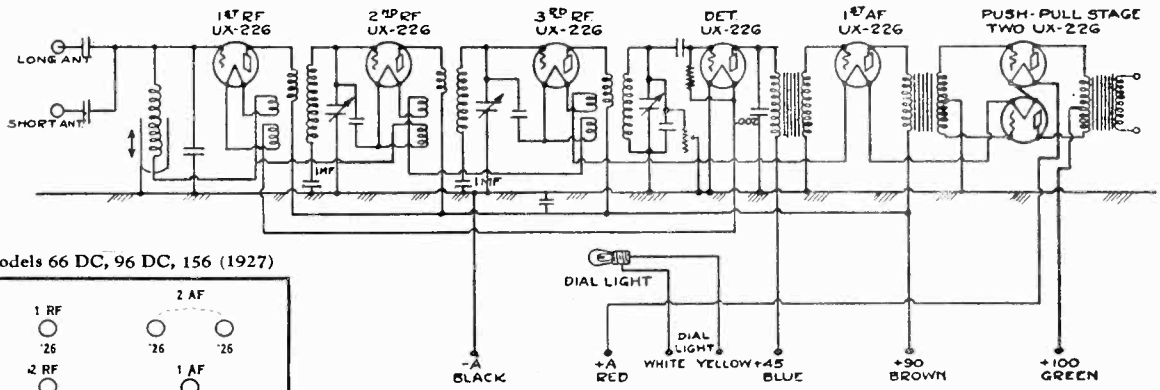
MODEL AC 46,126,146,
166,176
MODEL DC 96,156

UNITED AMERICAN BOSCH CORP.

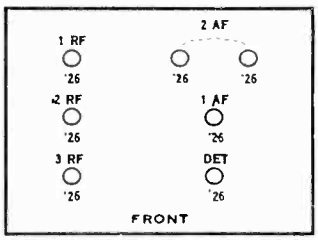


Models 46AC, 126, 146, 166, 176 (1927)

Models 126, 146, 166, 176, 46AC (AC operation)



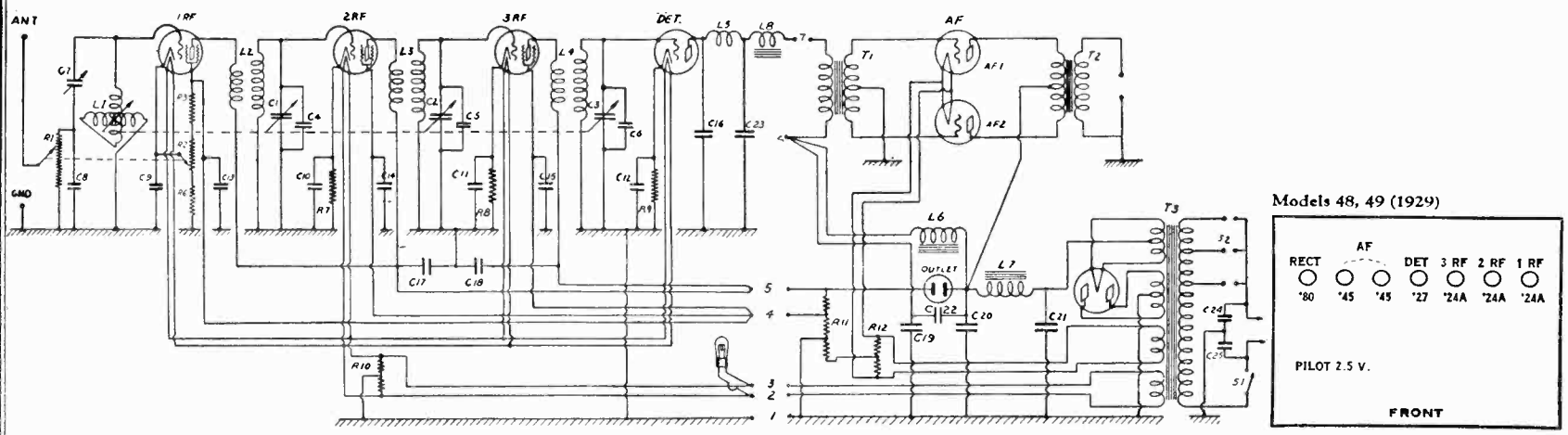
Models 66 DC, 96 DC, 156 (1927)



Model 96DC 110 Volt "Cruiser"

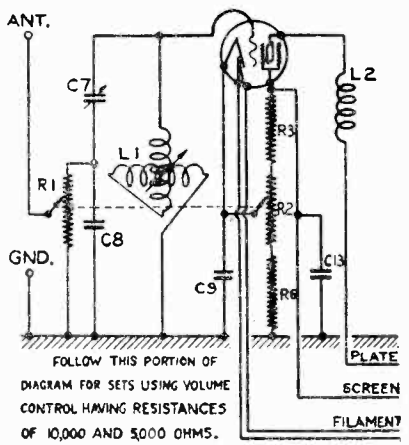
Model 156 Receiver "Cruiser"

Receiver	Circuit	Radio Frequency Stage				Det. Stage	Audio Stages		
		1	2	3	4		1	2	3
								Push Pull Stage	
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	—



Models 48, 49 (1929)

Model 48 Receiver (Model 49 for 25 Cycle Operation)



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	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 (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	-	-	2.4	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	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 (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	-	-	2.4	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.

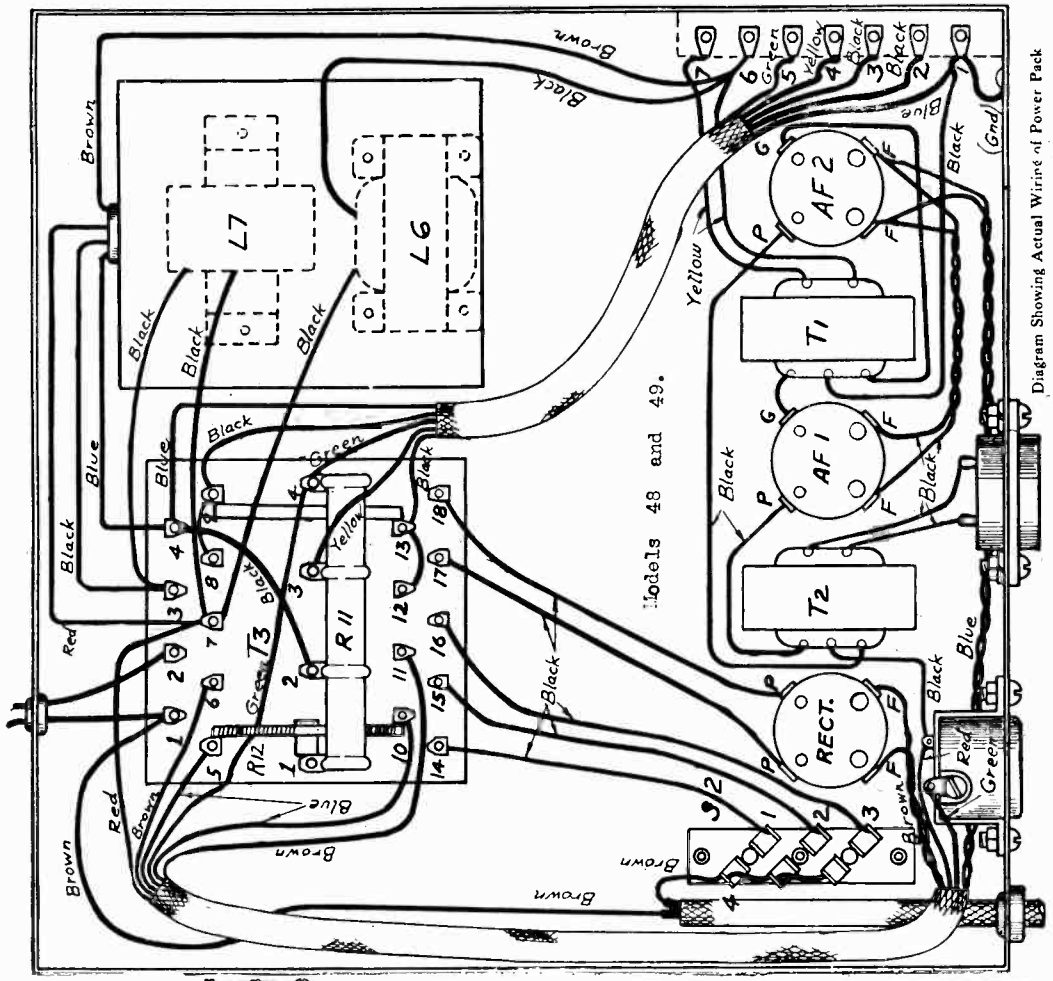


Diagram Showing Actual Wiring of Power Pack

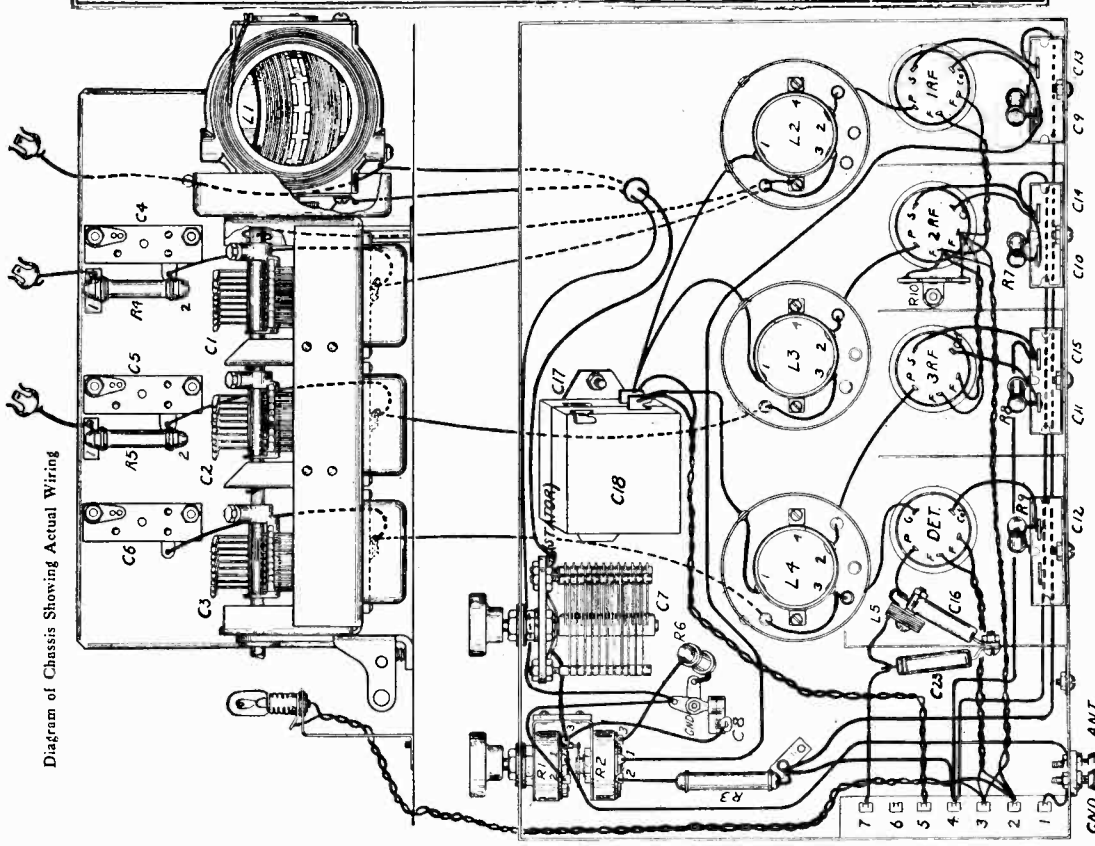
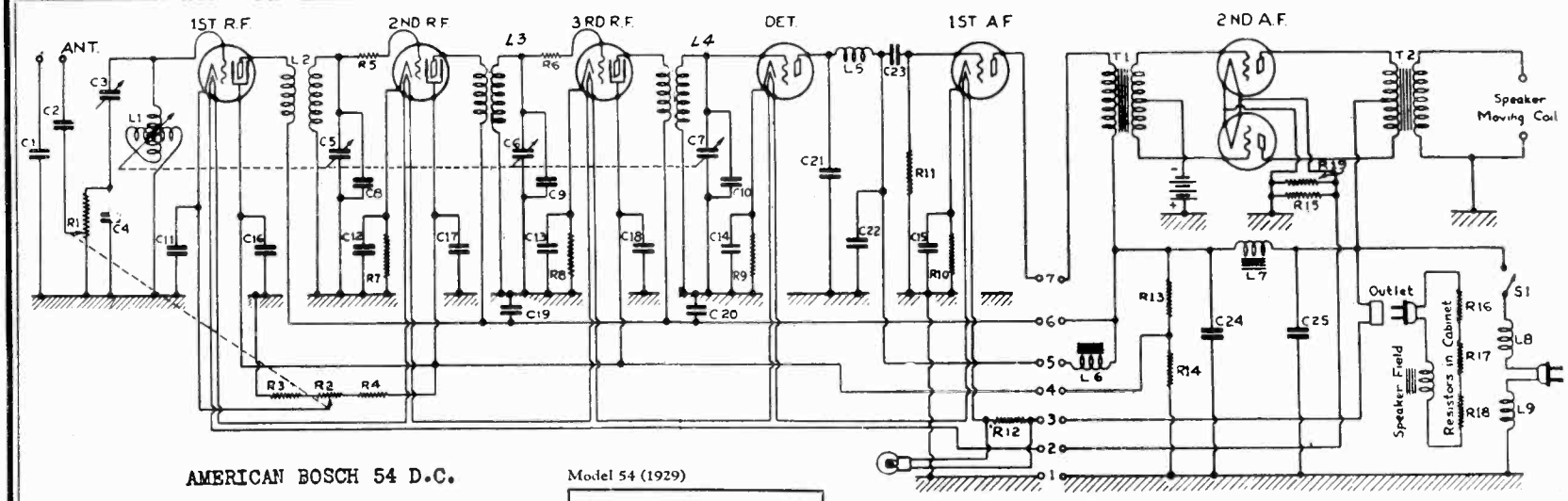


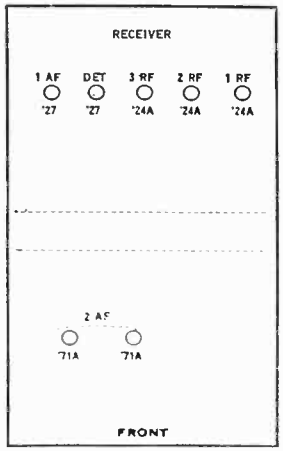
Diagram of Chassis Showing Actual Wiring

Note: This diagram applies to sets having dual volume control of 10,000 and 5,000 ohms.



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.
C 22—Detector plate by-pass condenser .001 mfd
C 23—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

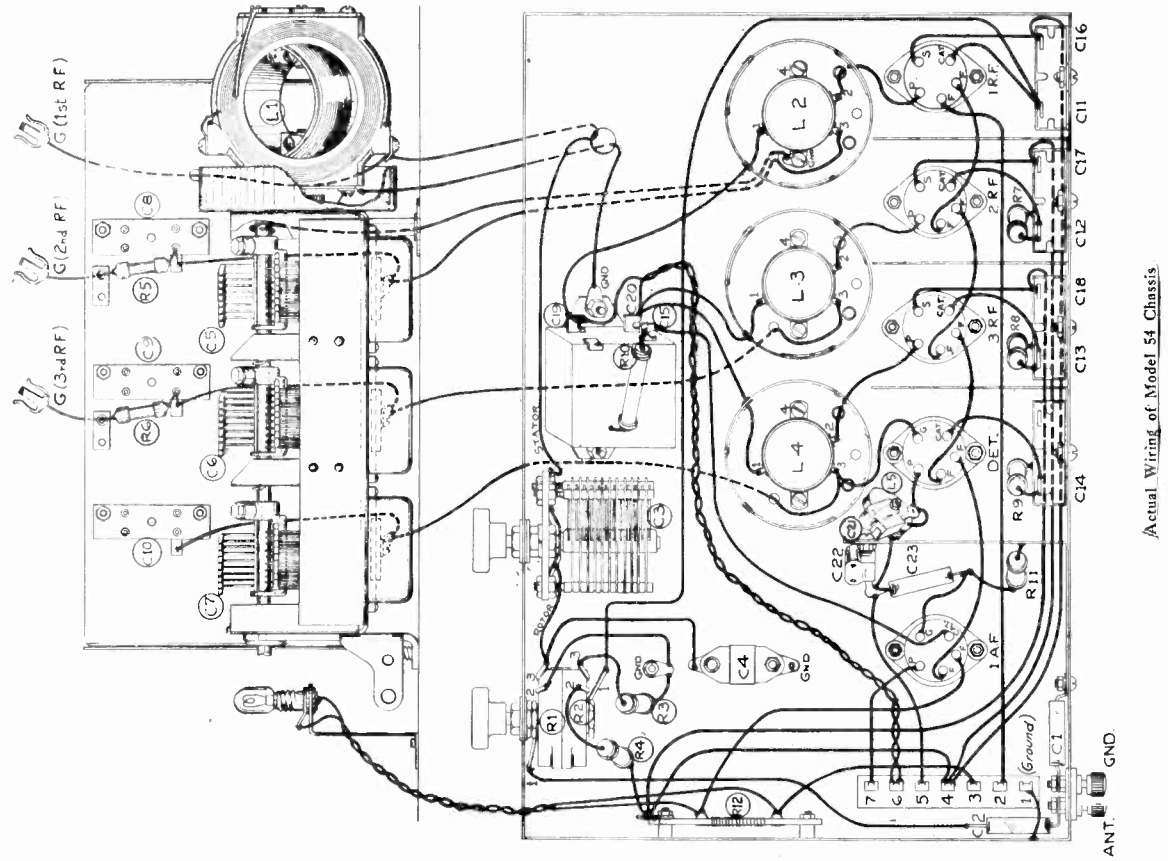
C 1—Ground condenser .005
C 2—Antenna condenser .001
C 3—Trimming condenser
C 4—Antenna condenser .00025 mfd.
C 5—2nd R. F. tuning condenser
C 6—3rd R. F. Tuning condenser
C 7—Detector tuning condenser
C 8—2nd R. F. alignment condenser
C 9—3rd R. F. alignment condenser
C10—Detector alignment condenser
C11—1st R. F. cathode by-pass condenser .5 mfd

*Variable

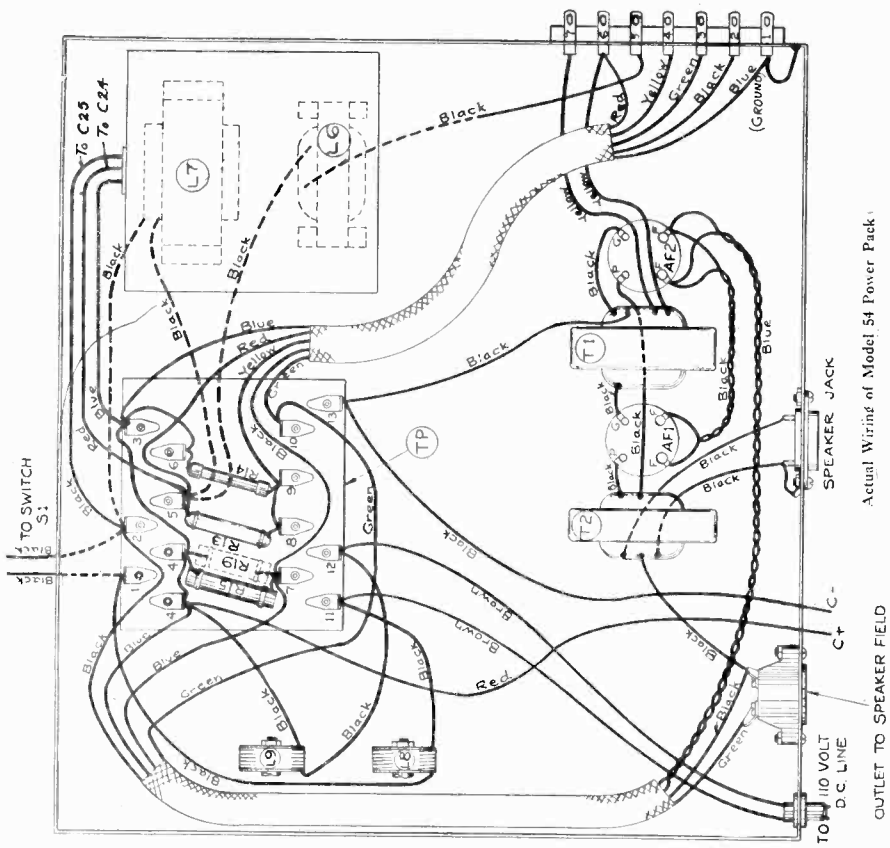
TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST R.F. DET. ETC	READINGS PLUG IN SOCKET OF SET — TUBE OUT A VOLTS	TUBE OUT B VOLTS	TUBE IN TESTER A VOLTS	TUBE IN TESTER B VOLTS	TUBE IN TESTER C VOLTS CONTROL GRID	TUBE IN TESTER CATHODE (HEATER) VOLTS	TUBE IN TESTER NORMAL PLATE M.A.	TUBE IN TESTER PLATE M.A. GRID TEST	TUBE IN TESTER PLATE CHANGE M.A.	TUBE IN TESTER SCREEN GRID VOLTS
1	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	-	13	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

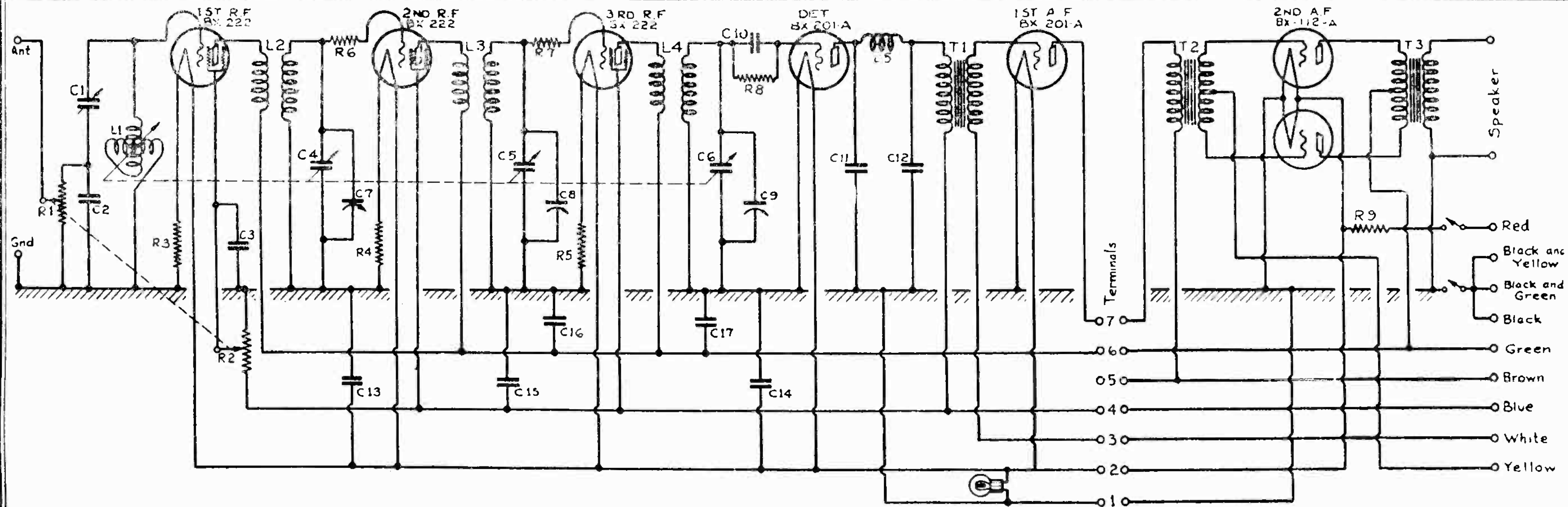
Note: Do not attempt to switch the receiver "on" until all tubes are in place, and aerial and ground are connected.

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.

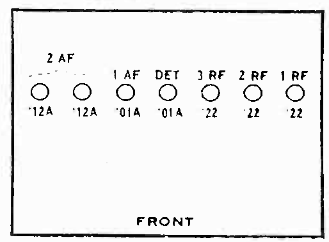
MODEL 56 Battery
Schematic
Parts List

UNITED AMERICAN BOSCH CORP.



C1.	Trimming Condenser	C13.	Filament By-pass Condenser .5 mf.	R7.	3rd RF Grid Resistor 250 ohms
C2.	Antenna Condenser .00025 mf.	C14.	Filament By-pass Condenser .5 mf.	R8.	Grid Leak 2 meg.
C3.	Screen By-pass Condenser .5 mf.	C15.	Screen By-pass Condenser .5 mf.	R9.	Main Filament Resistor .55 ohms
C4.	2nd RF Tuning Condenser	C16.	Plate By-pass Condenser .5 mf.		
C5.	3rd RF Tuning Condenser	C17.	Plate By-pass Condenser .5 mf.	T1.	1st Audio Transformer
C6.	Detector Tuning Condenser			T2.	2nd Audio Input Transformer
C7.	2nd RF Alignment Condenser	R1.	Volume Control (Antenna) 10,000 ohms	T3.	2nd Audio Output Transformer
C8.	3rd RF Alignment Condenser	R2.	Volume Control (Screen) 50,000 ohms		
C9.	Detector Alignment Condenser	R3.	Filament Resistor 12.8 ohms	L1.	Variometer
C10.	Grid Condenser .00025 mf.	R4.	Filament Resistor 12.8 ohms	L2.	2nd RF Coil
C11.	Detector By-pass Condenser .001 mf.	R5.	Filament Resistor 12.8 ohms	L3.	3rd RF Coil
C12.	Detector By-pass Condenser .001 mf.	R6.	2nd RF Grid Resistor 250 ohms	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.

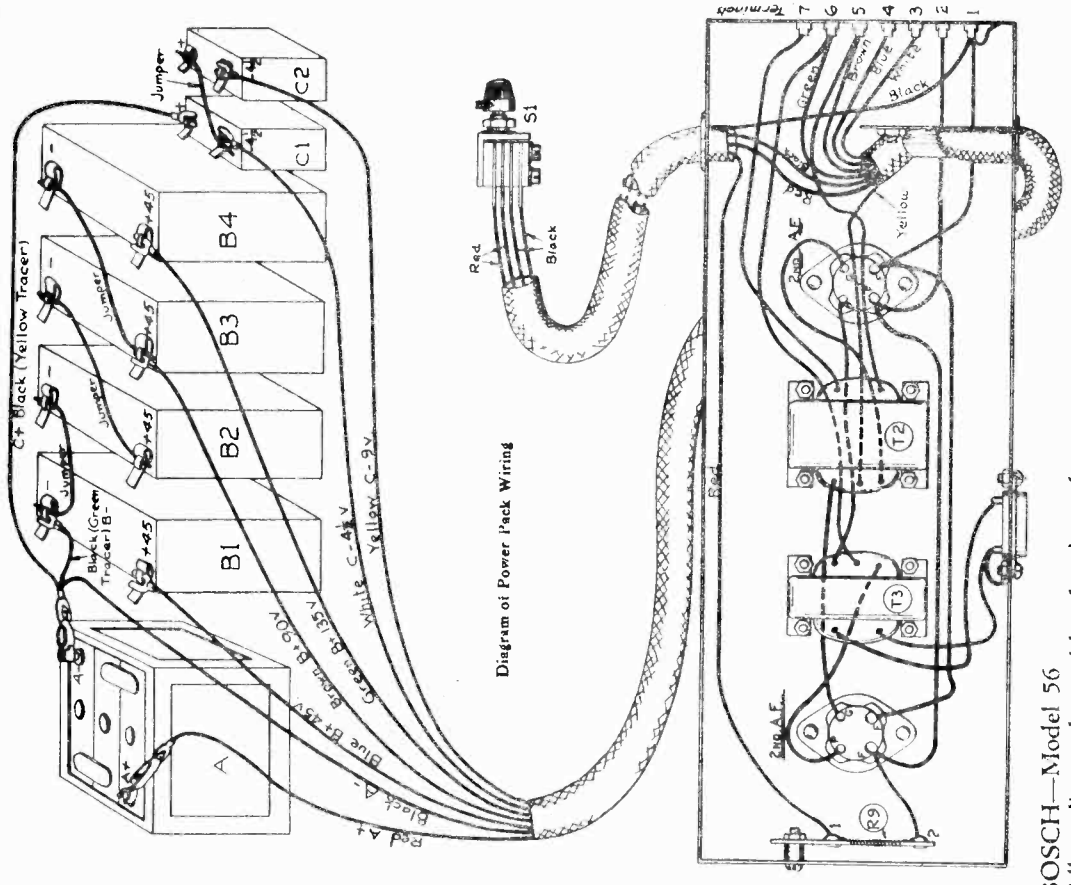
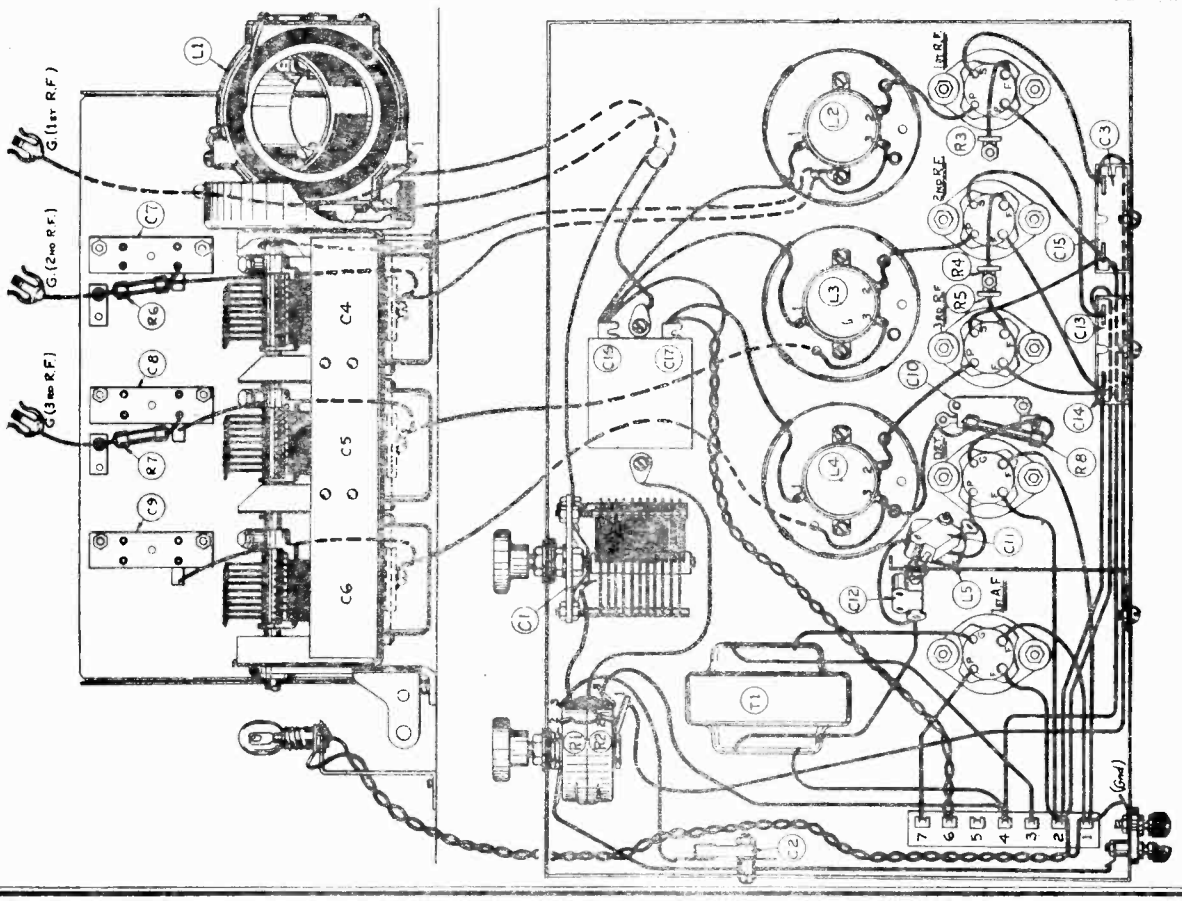


Diagram of Power Pack Wiring

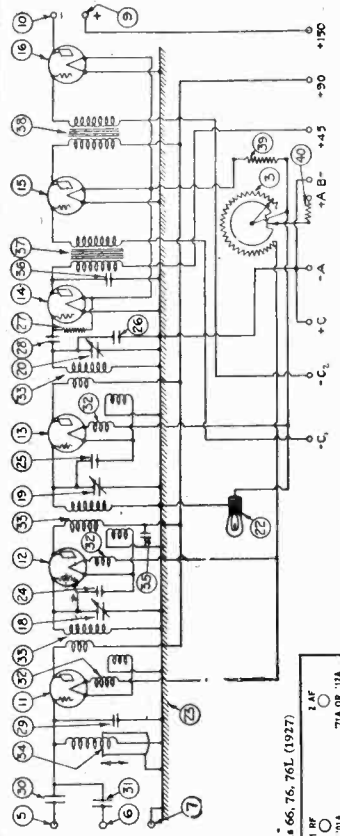
BOSCH—Model 56
All readings taken with tubes in sockets

TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE IN SET	READINGS PLUG IN SOCKET IN SET — TUBE IN TESTER — FILAMENT VOLTS	PLATE VOLTS	SCREEN VOLTS	CATHODE RESISTOR OHMS	NORMAL PLATE MA.	PLATE MA GRID VOLTS TEST	PLATE CHANGE MA.	SCREEN GRID VOLTS
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	-	-

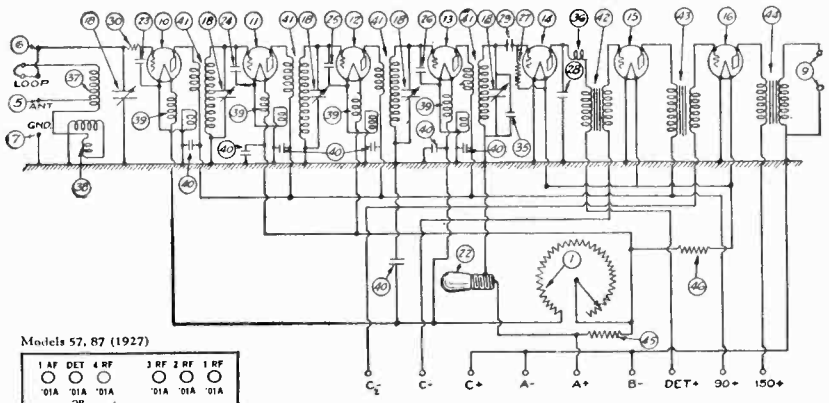


UNITED AMERICAN BOSCH CORP.

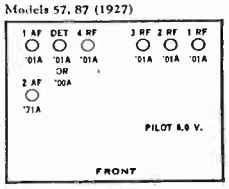
MODEL 57,87
MODEL 66,76,76-L
MODEL 66AC,96,116
136. AC
MODEL 107 AC



Models 66, 76, and 76L Receivers—The "Cruiser"

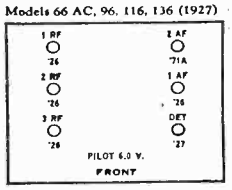


Models 57, 87 (1927)

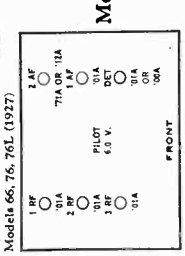


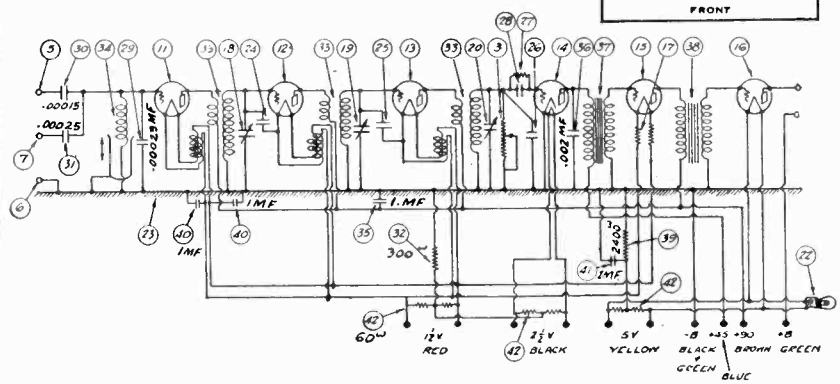
Models 57 and 87 Receivers

Models 66 AC, 96, 116, 136 (1927)



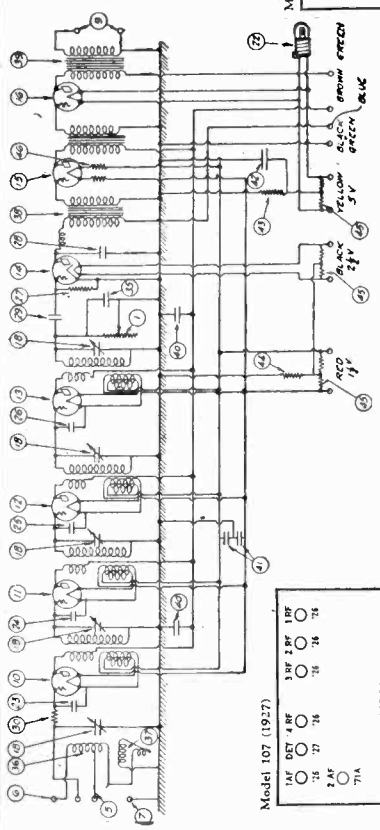
Models 66, 76, 76L (1927)





Models 66AC, 96, 116, 136 Receivers (for AC operation)
"CRUISER"

Model 107 Receiver (for AC operation)



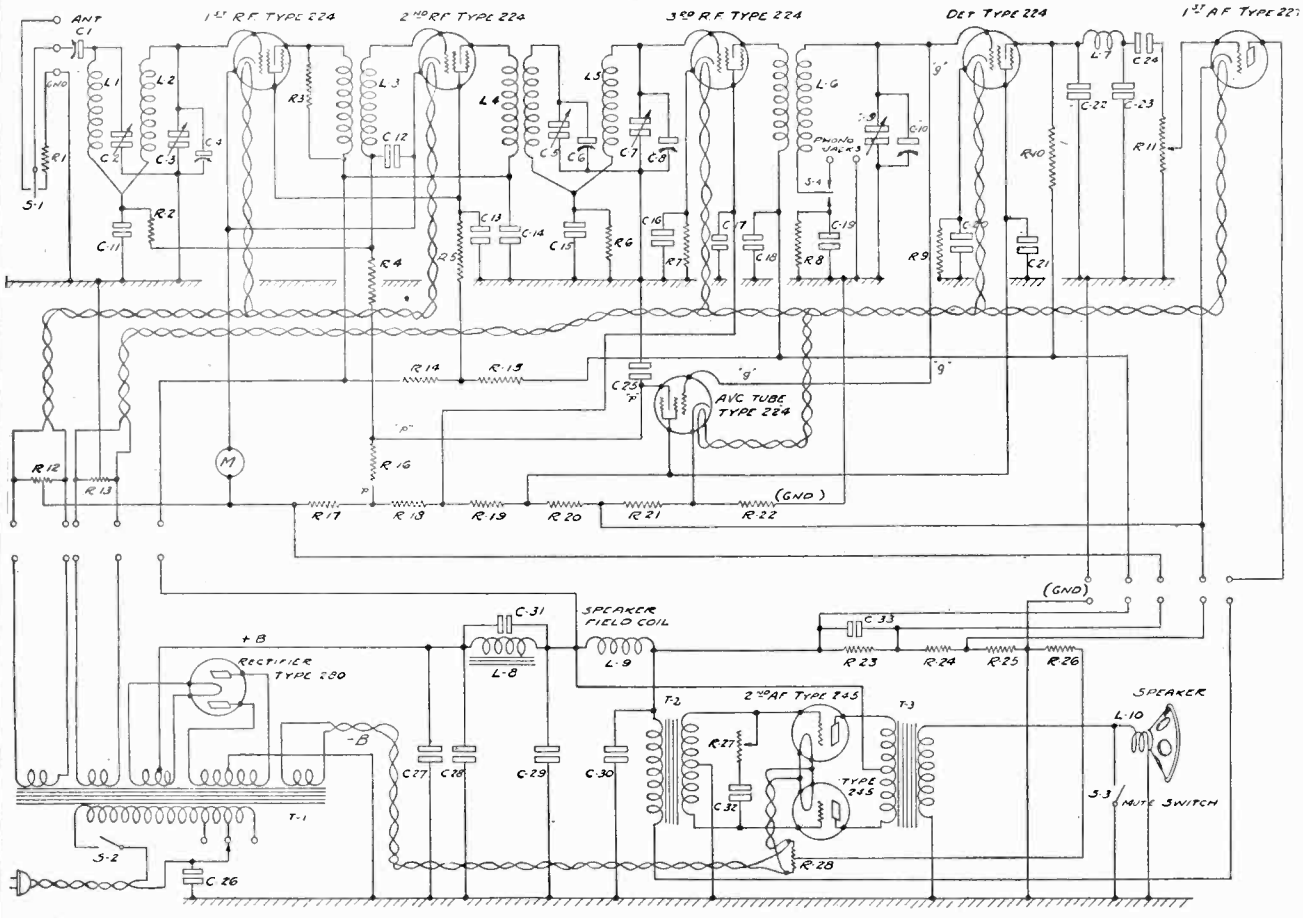
Model 107 (1927)

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

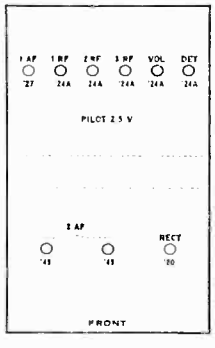
UNITED AMERICAN BOSCH CORP.



Schematic Diagram of Model 60 Receiver.

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.

Models 60, 61, 60D, 60E (1930)

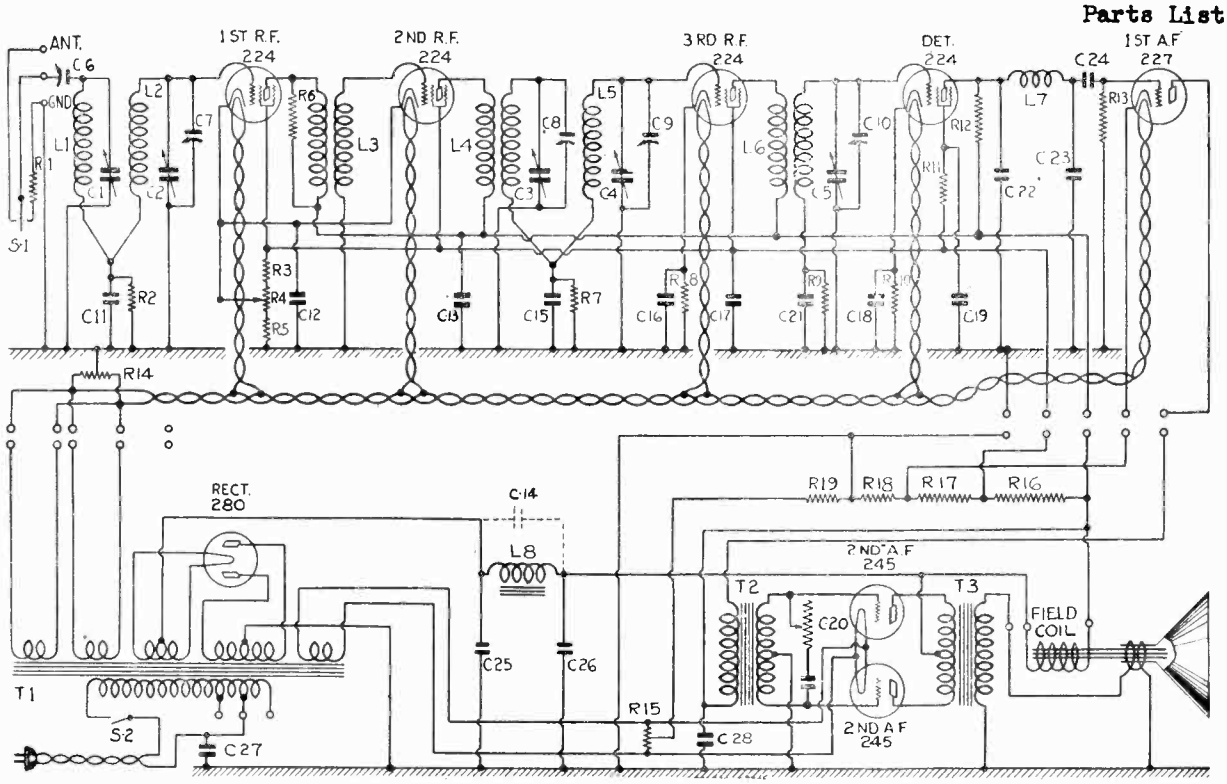


C14—1st and 2nd RF Plate Condenser .25 mfd.
C15—3rd RF Coupling Condenser .04 mfd.
C16—3rd RF Cathode Condenser .5 mfd.
C17—3rd RF Screen Condenser .5 mfd.
C18—3rd RF Plate Condenser .5 mfd.
C19—Detector Grid Return Condenser .04 mfd.
C20—Detector Cathode Condenser 1. mfd.
C21—Detector Screen Condenser .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)

1 AF	1 RF	2 RF	3 RF	DET
'27	'24A	'24A	'24A	'24A

PILOT 2.5 V.

2 AF		RECT
'45	'45	'80

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						MILL
			FILAMENT OR HEATER (4)	PLATE OR ANODE (5)	CONTROL GRID—SPACE (6) GD-F	NORMAL GRID—SCREEN (7) GD-G	CATHODE TO HEATER (8)	SCREEN GD L. H. SD PLATE (9)	PLATE R. H. TO 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

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

C 1 -1st 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.

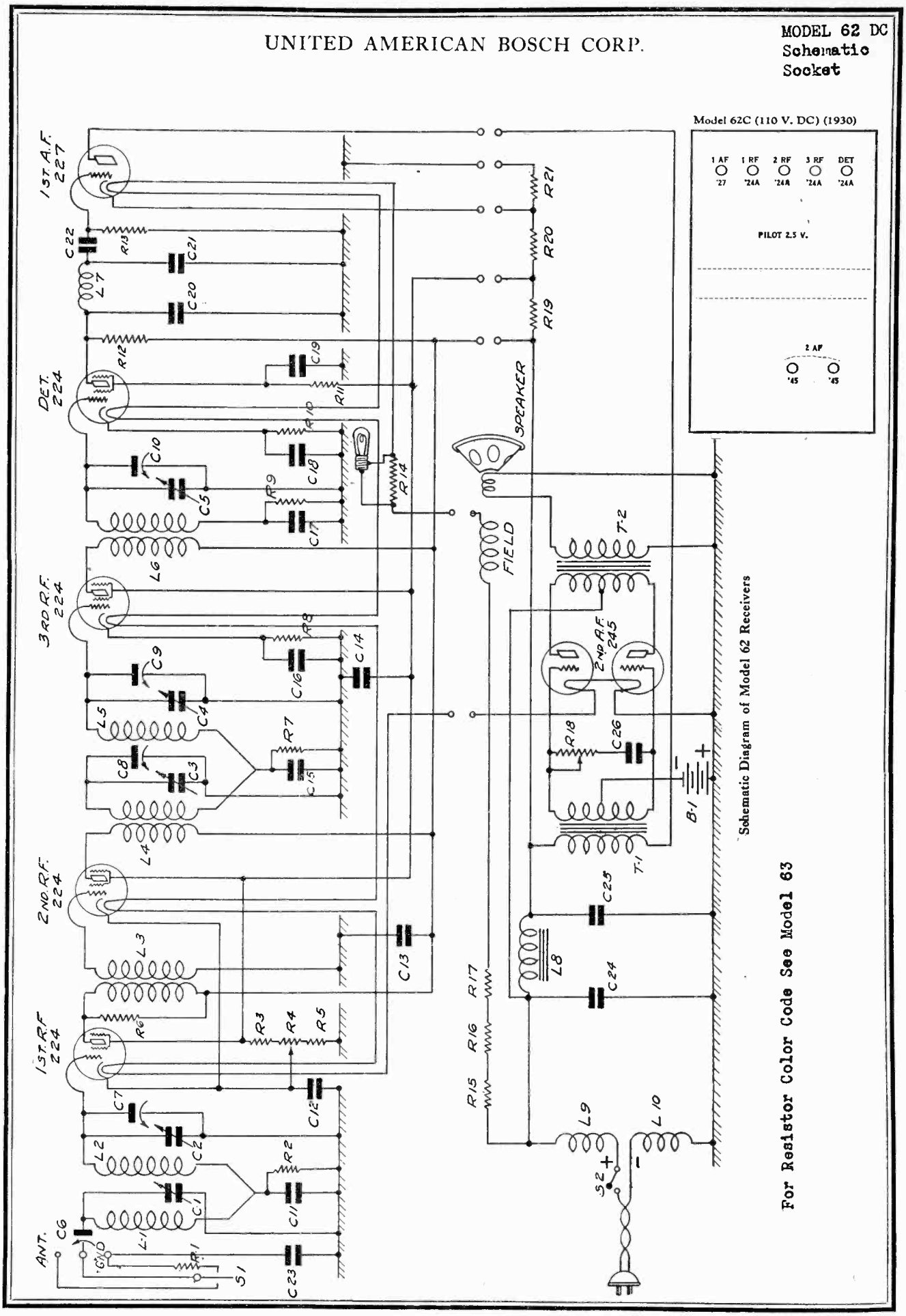
L 1 -1st RF Coil
L 2 -1st RF Coil
L 3 -Untuned Transformer
L 4 -3rd RF Coil
L 5 -3rd RF Coil
L 6 -Detector Coil
L 7 -Detector Plate Choke
L 8 -Filter Choke
L 9 -Filter Choke
L10 -Filter Choke

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

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:

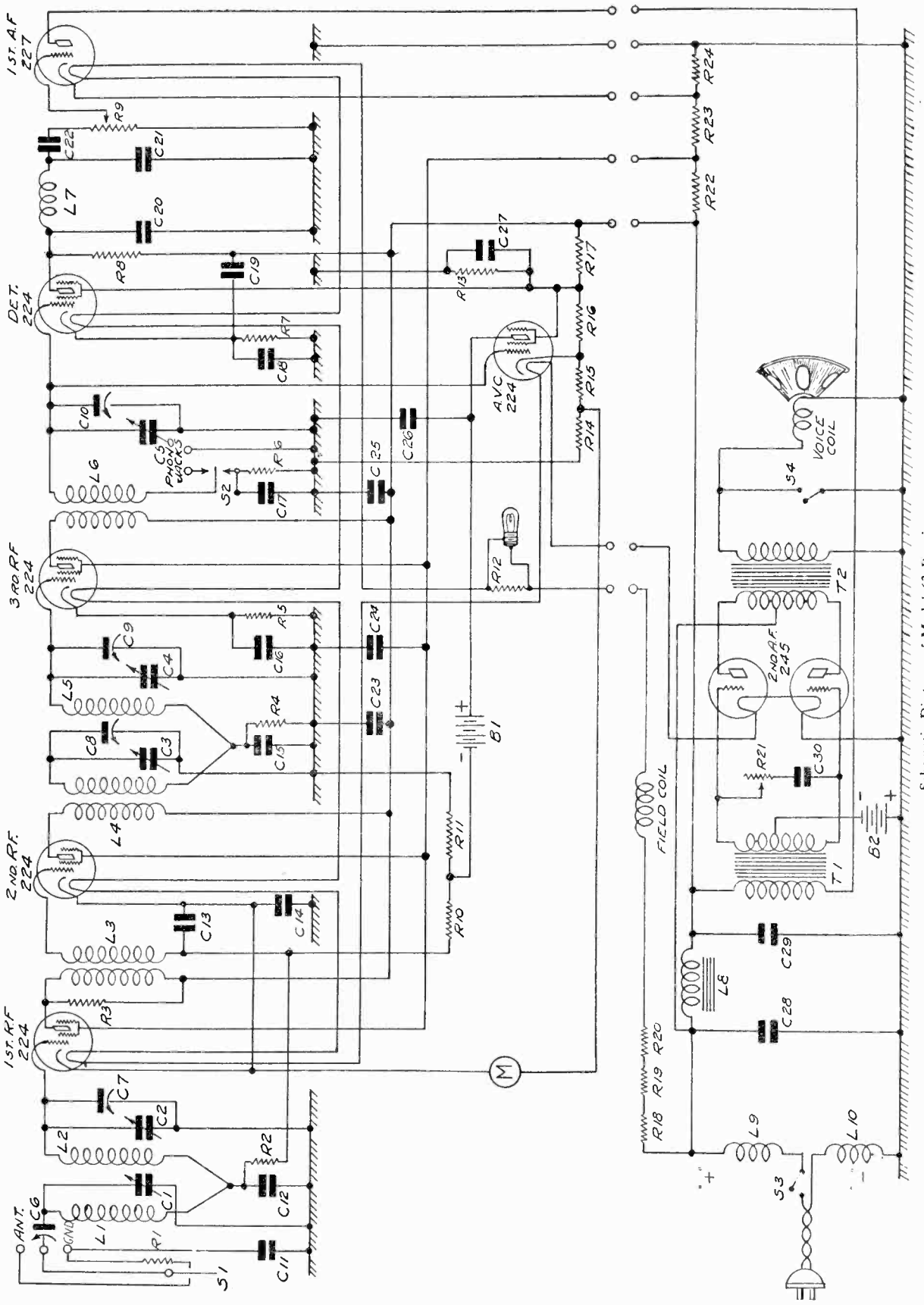
150 ohms — Red-black
250 ohms — White
500 ohms — Yellow
600 ohms — Blue-black
900 ohms — Black-brown
1,000 ohms — White-red
2,000 ohms — Brown-yellow
2,500 ohms — White-brown
5,000 ohms — Black-yellow
10,000 ohms — Blue-yellow
18,000 ohms — White-gray
20,000 ohms — Green-yellow
25,000 ohms — Blue
50,000 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

NOMENCLATURE

Resistors

R1	Volume Control 10,000 ohms
R2	2750 ohms)
R3	250 ohms) Tapped unit
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

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.
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.

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

As volume is decreased,
- 1st and 2nd RF: Grid voltage increases. Screen voltage increases. Plate current decreases. Plate voltage increases.

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.

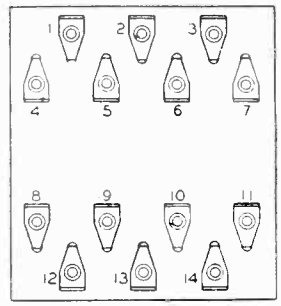


Fig. 4
Terminal Plate of Main Power Transformer T3

If the transformer is perfect the following readings will be obtained:

Primary Winding
1500 ohms (See T1, pages 5 and 6)

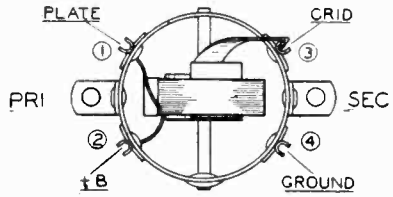
Secondary Winding
(each half) 4000 ohms

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

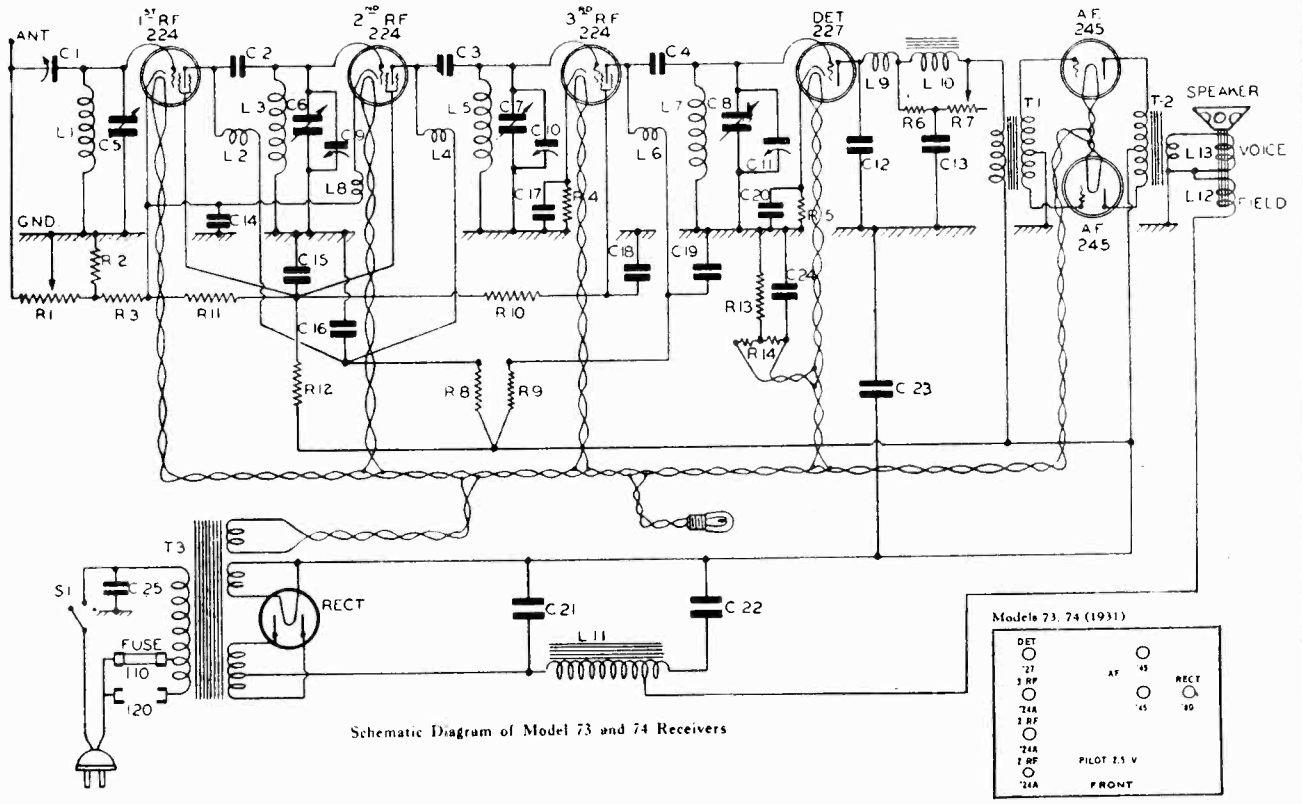
Secondary Winding
full reading



Top View of Coil

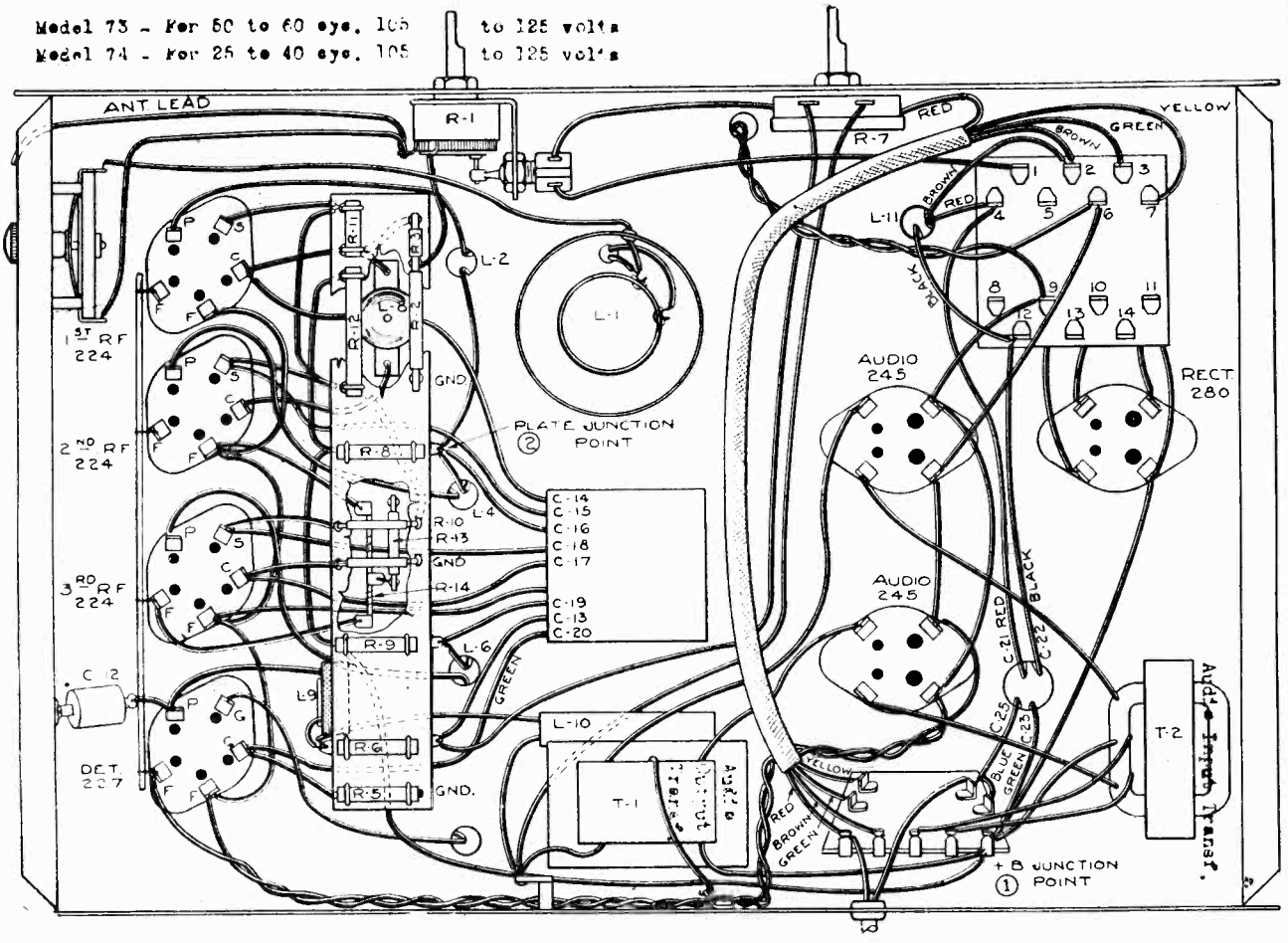
UNITED AMERICAN BOSCH CORP.

MODEL 73,74
Schematic
Chassis



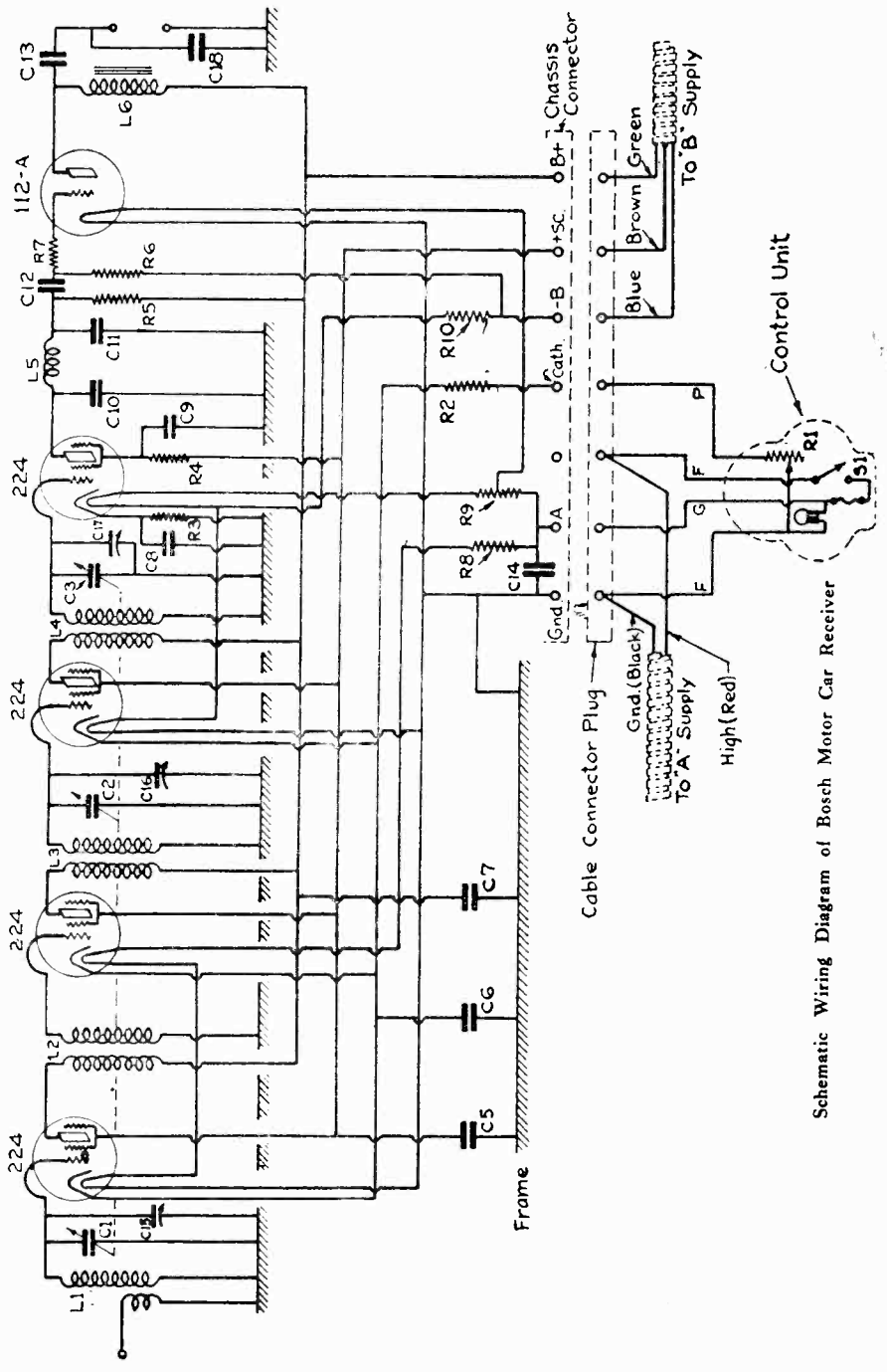
Schematic Diagram of Model 73 and 74 Receivers

Model 73 - For 50 to 60 cyc. 105 to 125 volts
Model 74 - For 25 to 40 cyc. 105 to 125 volts



UNITED AMERICAN BOSCH CORP.

MODEL 80
SCHEMATIC
VOLTAGE



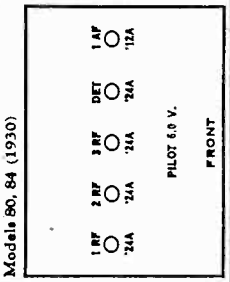
Schematic Wiring Diagram of Bosch Motor Car Receiver

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

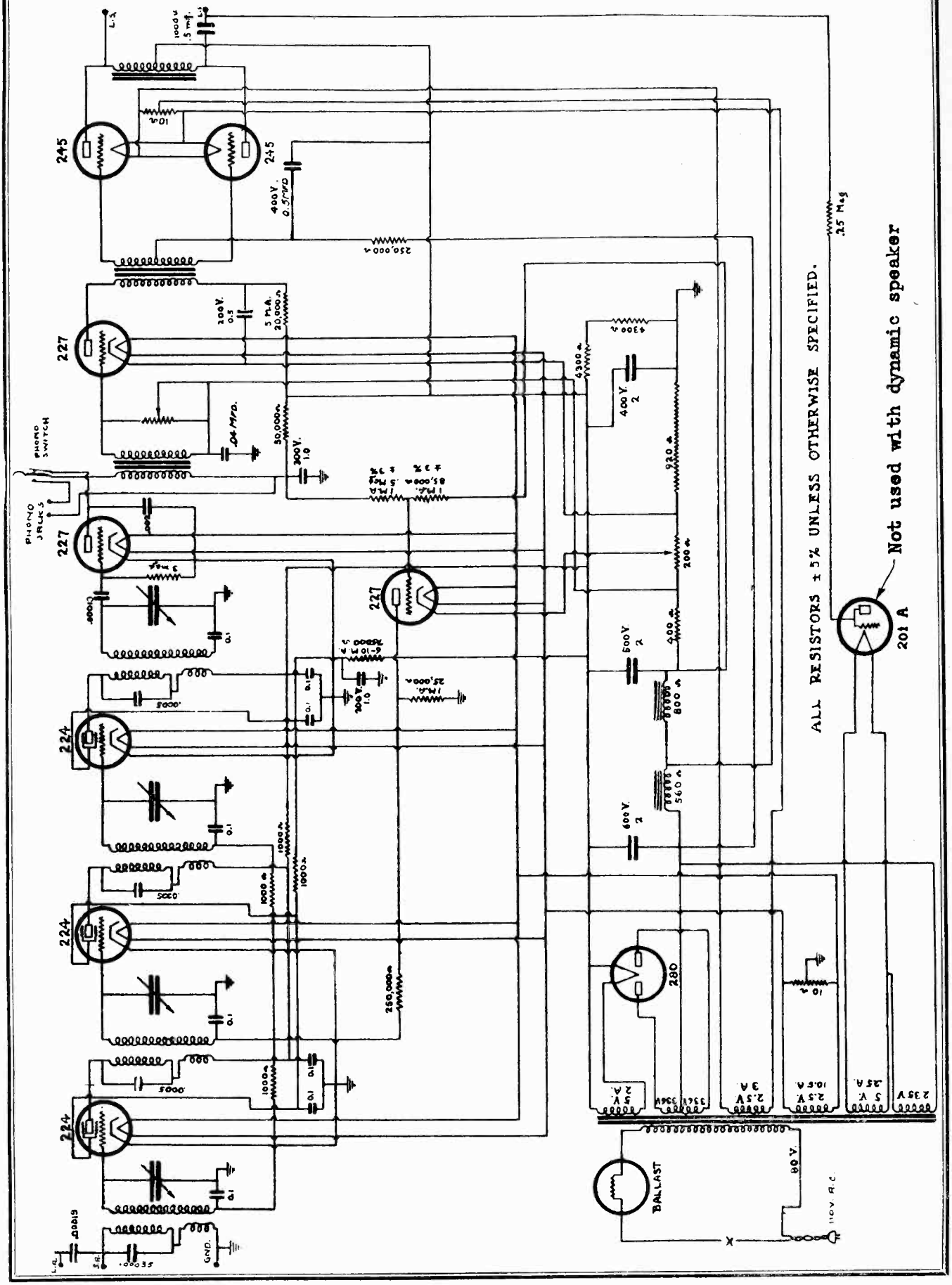
STAGE	TUBE	FIL.	PLATE	SCREEN	GRID	PLATE M.A. *Normal*	PLATE M.A. *Test*
1st RF	224	2.0	170	75	3.5	3.0	5.00
2nd RF	224	2.0	170	75	3.5	3.0	5.00
3rd RF	224	2.0	170	75	3.5	3.0	5.00
Det.	224	2.0	50	15	1.0		
Audio	112-A	4.8	165		0.1	6.5	9

Models 80, 84 (1930)



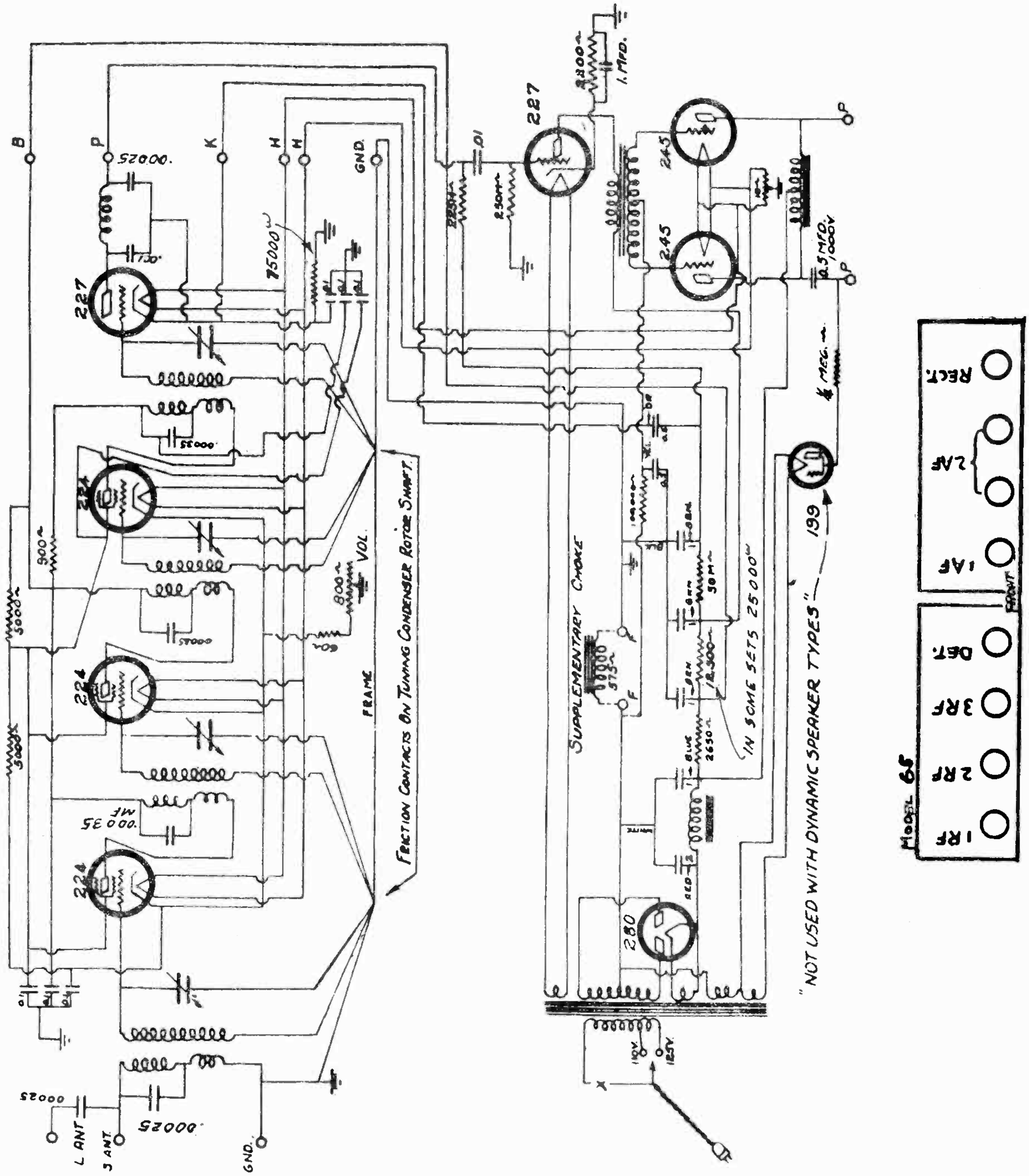
MODEL 20 Series

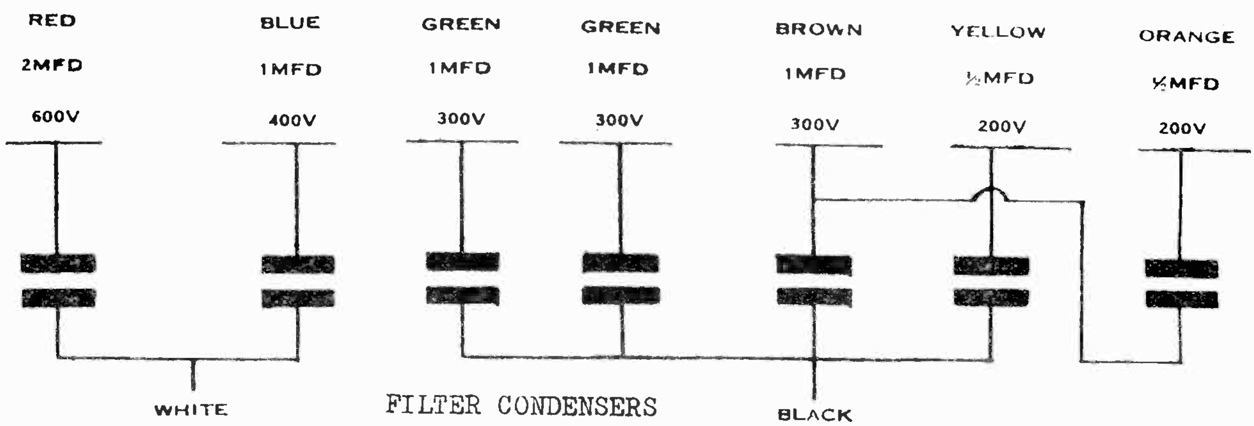
UNITED REPRODUCERS CORP.



UNITED REPRODUCERS CORP

MODEL 65
Schematic

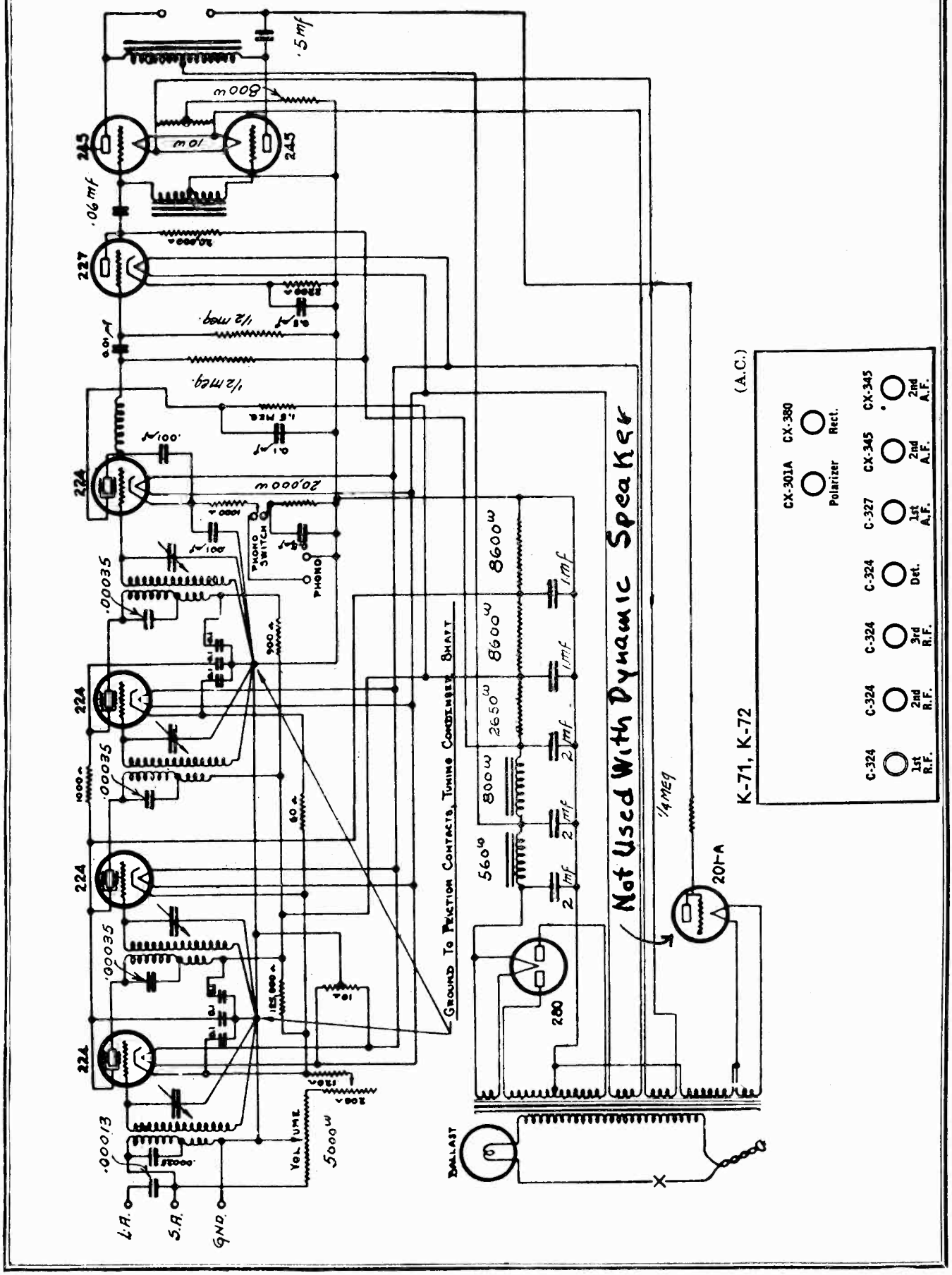




FILTER CONDENSERS

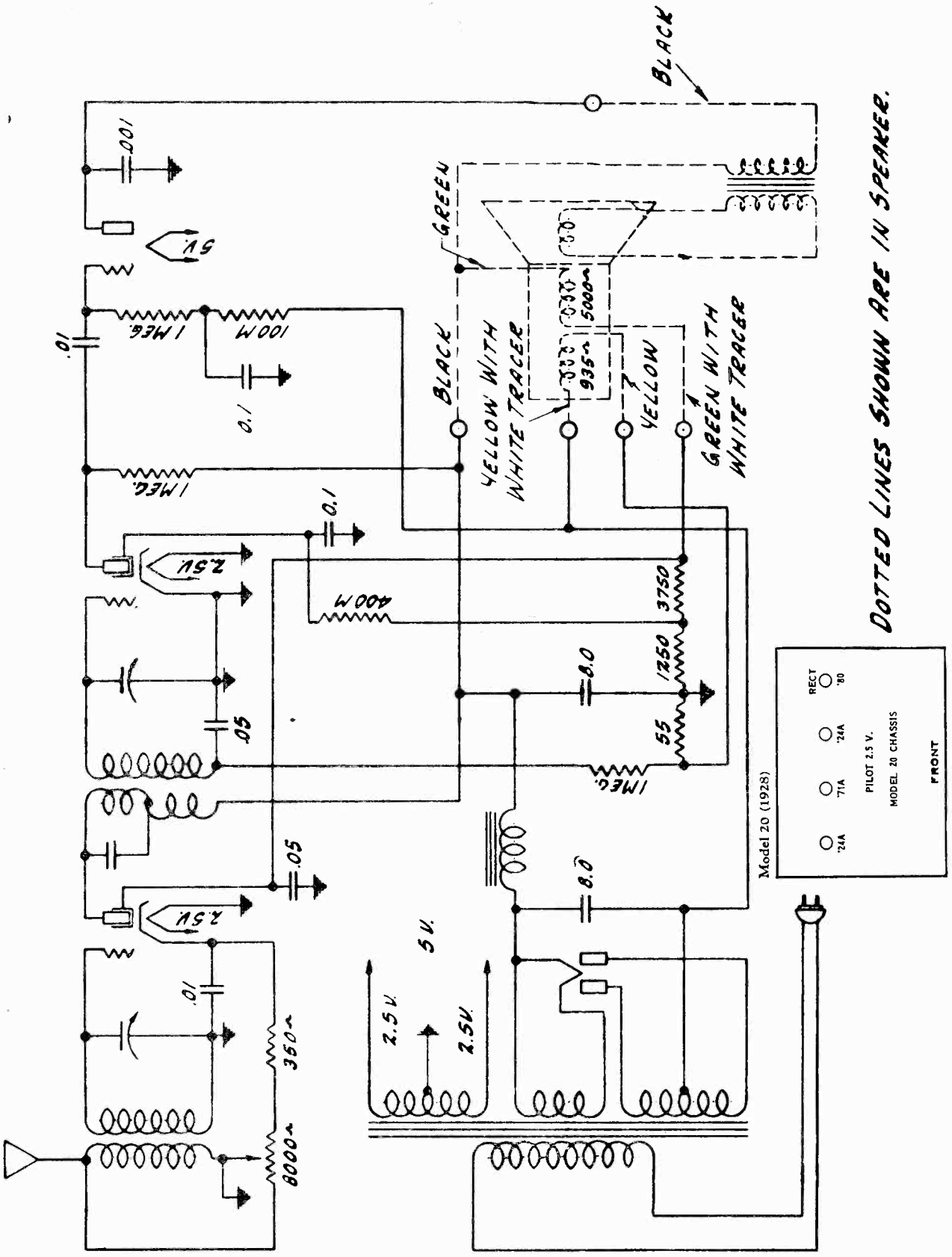
MODEL 70 Series
(71,72)

UNITED REPRODUCERS CORP.



MODEL 20
Schematic

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 volumeter 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.

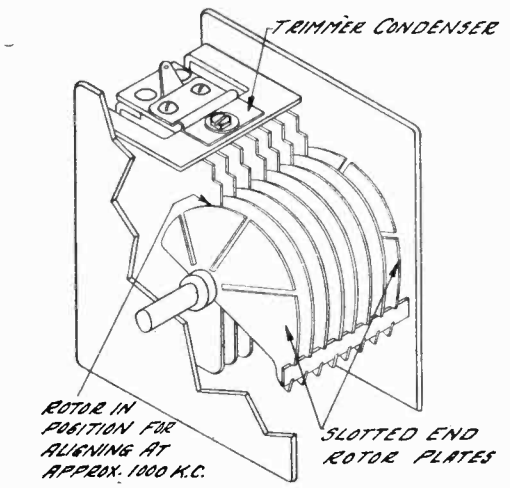
An important point to remember in adjusting the trimmer condenser is that the screws should not be turned completely down. If they are screwed in too tightly the capacity of the trimmer condenser which is added to the capacity of the tuning condenser will be so high that the receiver cannot be tuned to a high frequency signal.

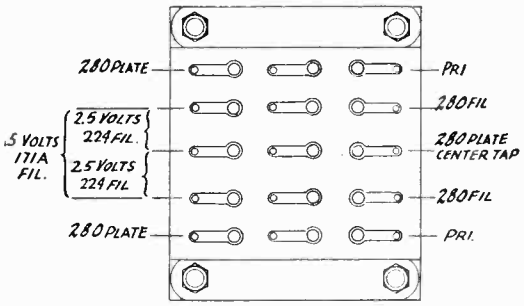
After the trimmer condensers have been adjusted at 1,400 K.C., they should not be changed in any way when aligning the tuning condensers at different frequencies as explained below.

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

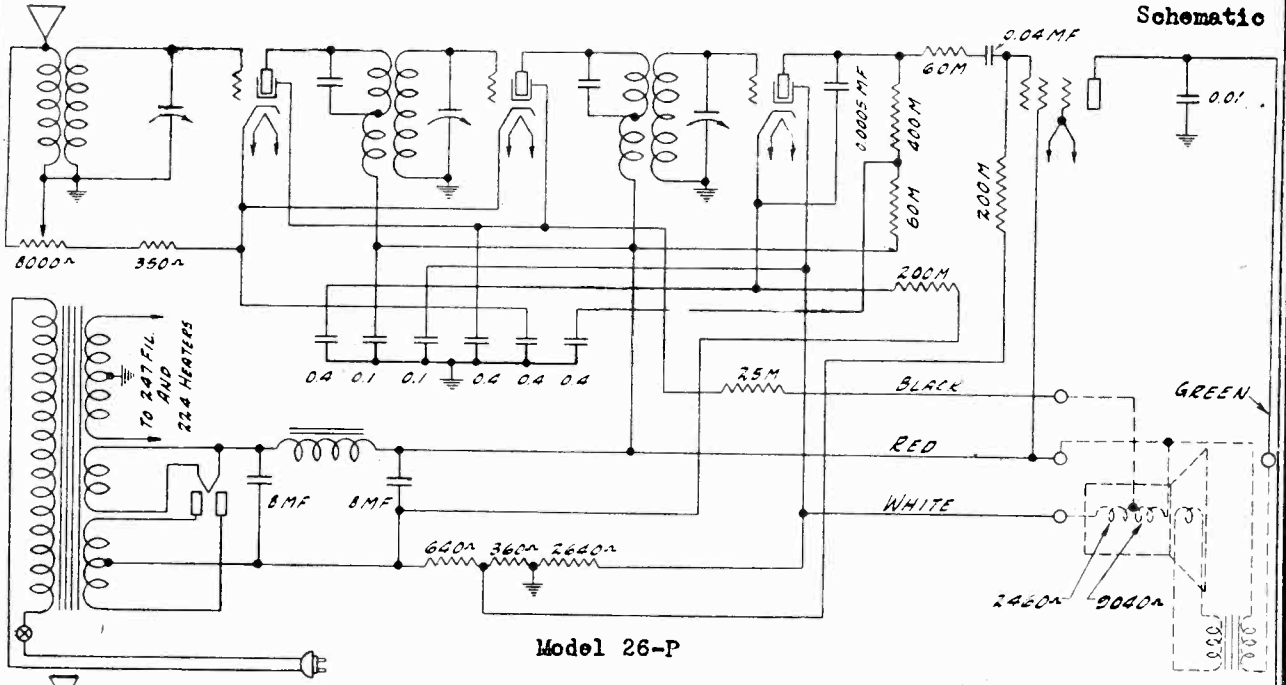
Electrodynamic Speaker

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.

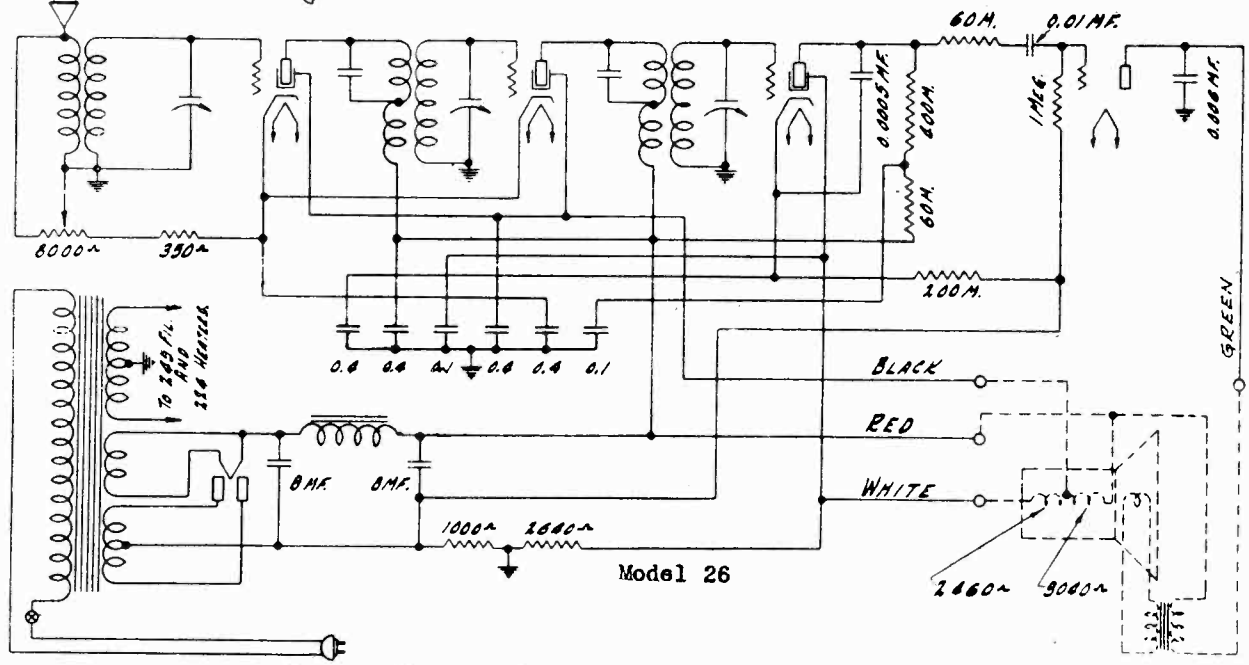
Care should be taken in servicing the No. 20 receiver not to reverse the leads to one of the field sections as the fields will then "buck" and low signal strength will result. The field winding also acts as a filter choke.

U. S. RADIO & TELEVISION CORP.

MODEL 26
Schematic
MODEL 26-P
Schematic



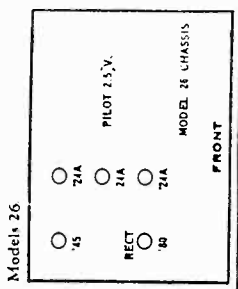
Model 26-P



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.

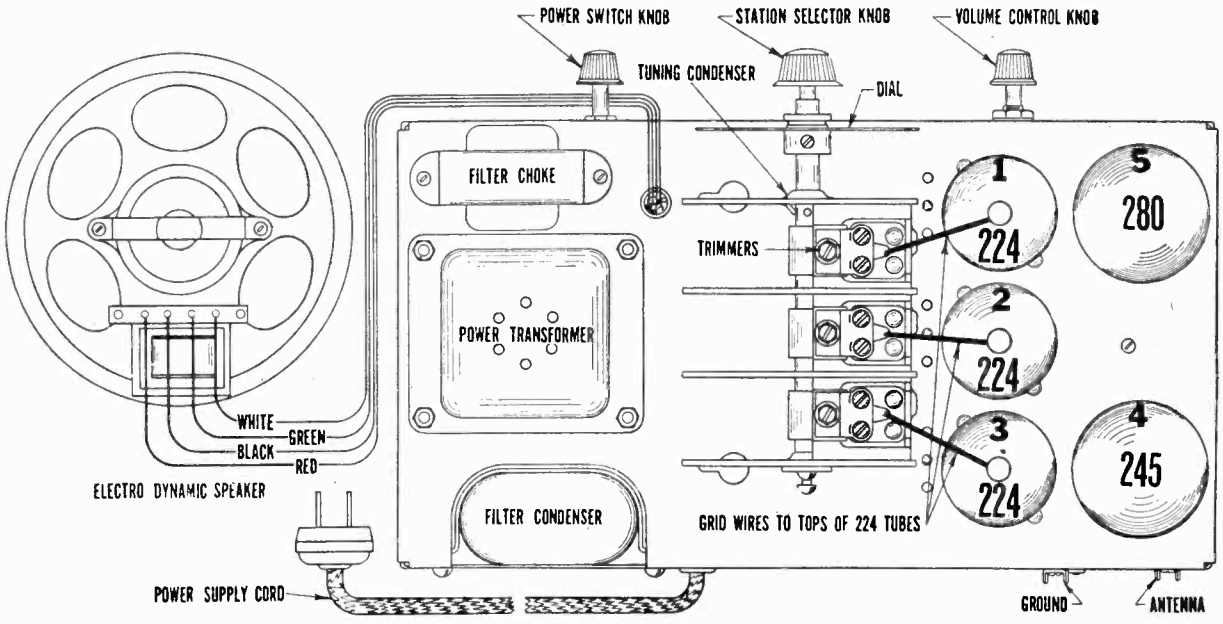


224	1st RF	2.2	250	2.	55."	2.1	
224	2nd RF	2.2	250	2.	55."	2.1	
224	Det.	2.2	130	2.8	40."	.25	Model 26-P
247	Audio	2.3	238	18.**	250	27.	
280	Rect.	4.65				28. *	

** 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

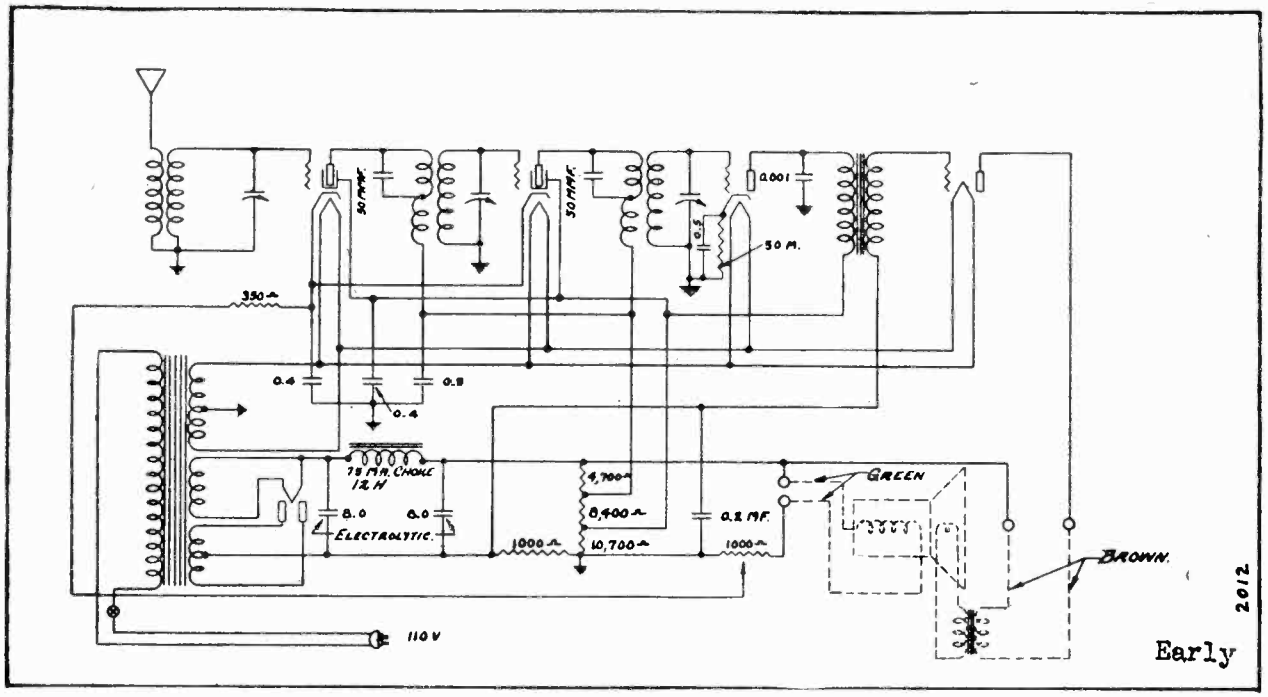
Making Pentode Current and Voltage Readings

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

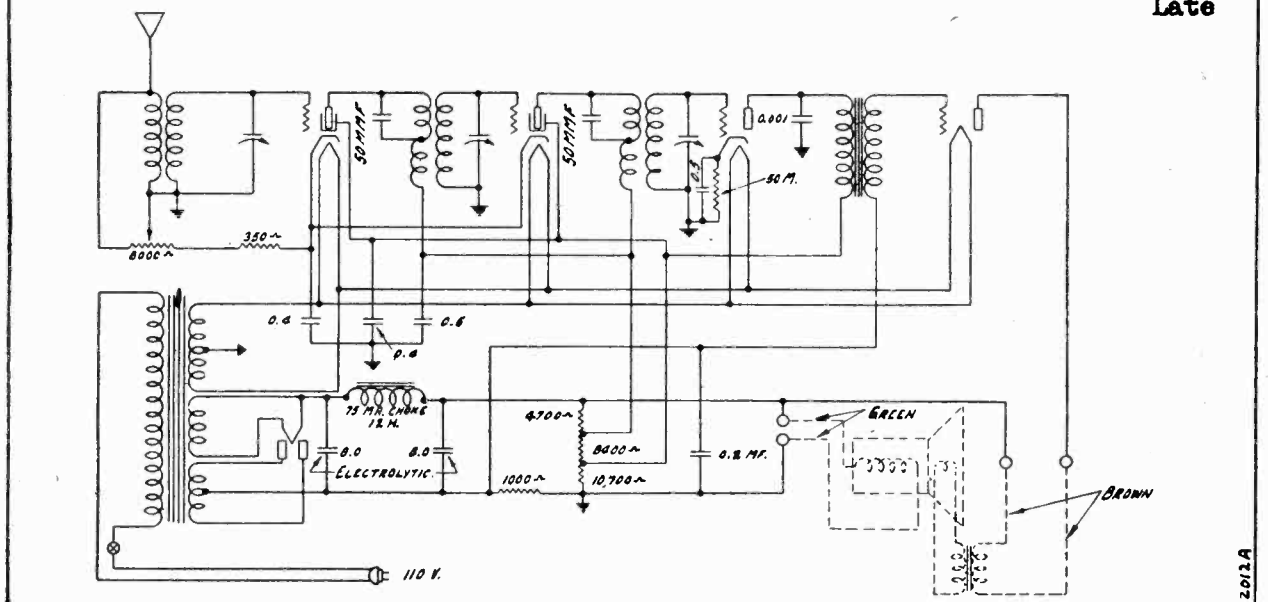
CAUTION:—Never operate the Pentode tube under any circumstances without plate voltage. This condition may arise if one of the speaker leads is disconnected opening the line to the primary of the output transformer. Without plate voltage the screen grid will become white hot due to the excessive current 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.

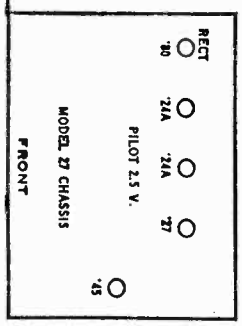
U. S. RADIO & TELEVISION CORP.

MODEL 27 (Early)
Schematic
MODEL 27 (Late)
Schematic



Late





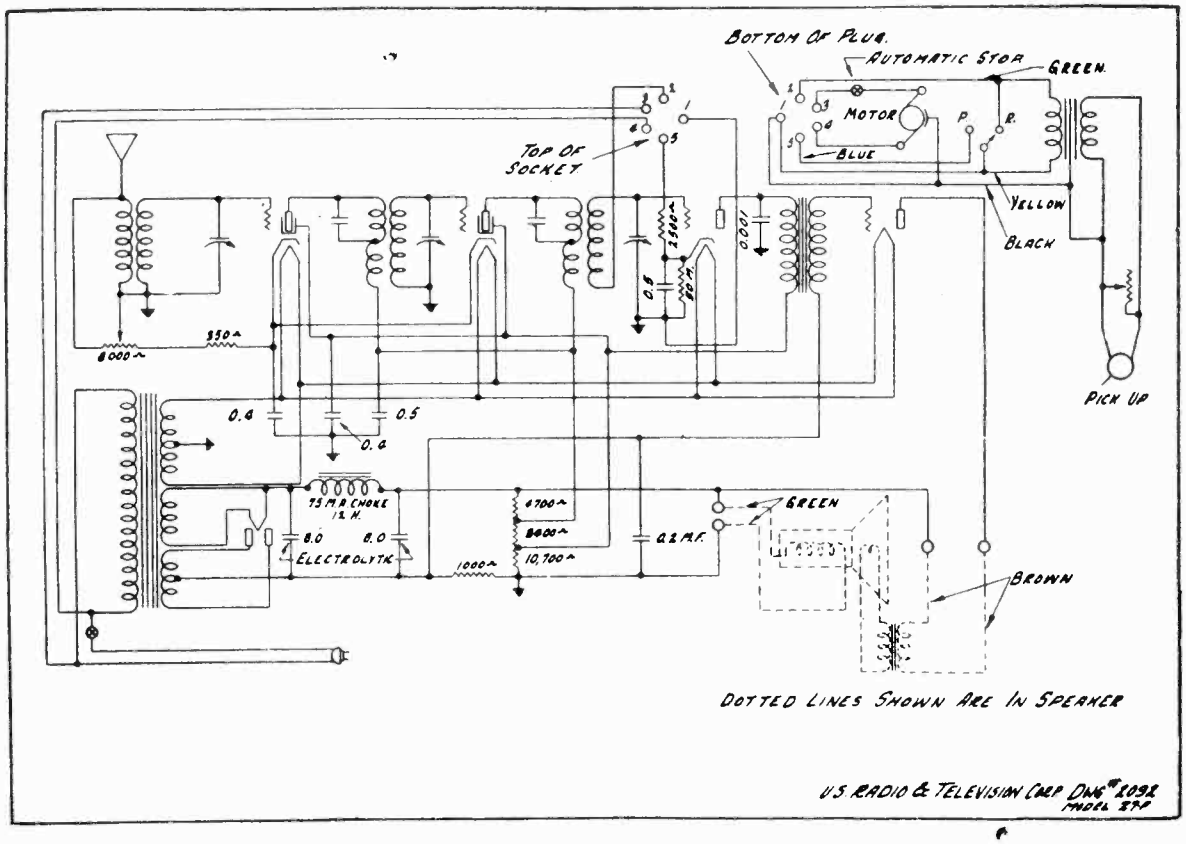
Model Apex 27 Series (1929)

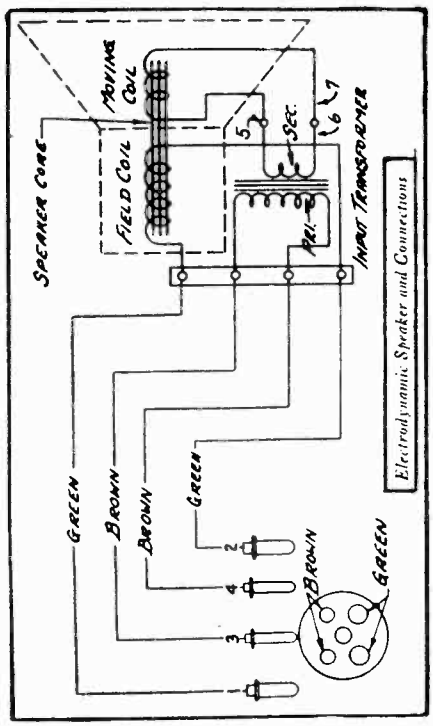
VOLTAGES AT SOCKETS — VOLUME CONTROL AT MAXIMUM — LINE VOLTAGE, 115 — PLUG IN SOCKET OF RECEIVER — TUBE IN TEST SET

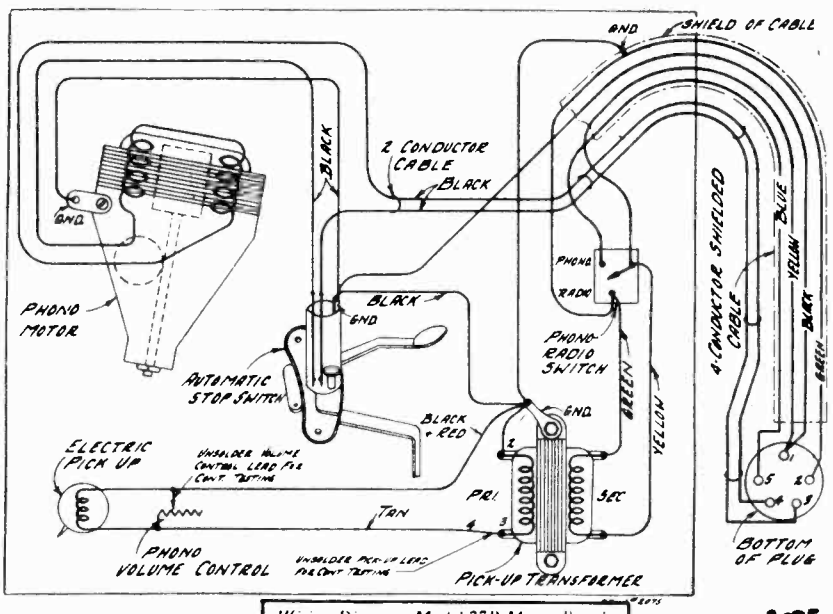
Type of Tube	*Position of Tube*	*Function*	*"A" Volts*	*"B" Volts*	*Control Grid "C" Volts*	*Screen Volts*	*Screen Current MA*	*Cathode Volts*	*Plate MA*	*Grid Test MA*
224	1	1st Radio	2.25	160	2.5	80	.6	2.5	3.	5.1
224	2	2nd Radio	2.25	160	2.5	80	.6	2.5	.3.	5.1
227	3	Detector	2.25	70	8.5			8.5	.1	.2
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.



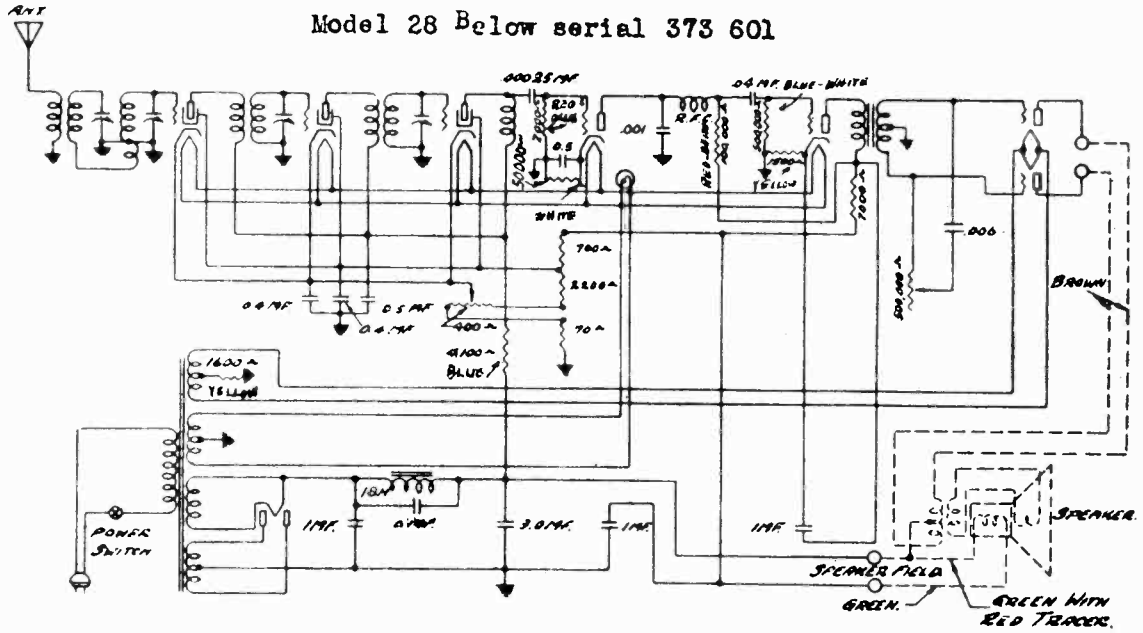




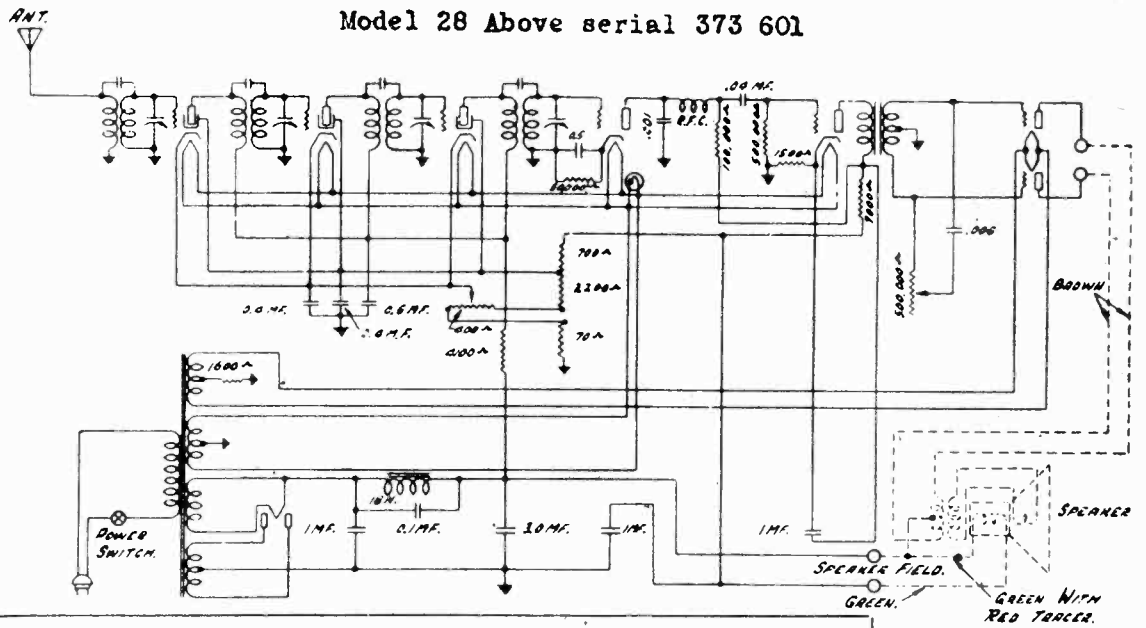
U. S. RADIO & TELEVISION CORP.

MODEL 28 (Early)
MODEL 28 (Late)
Schematics
Voltage

Model 28 Below serial 373 601



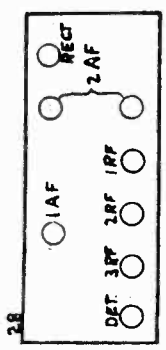
Model 28 Above serial 373 601



DOTTED LINES SHOWN ARE IN SPEAKER.

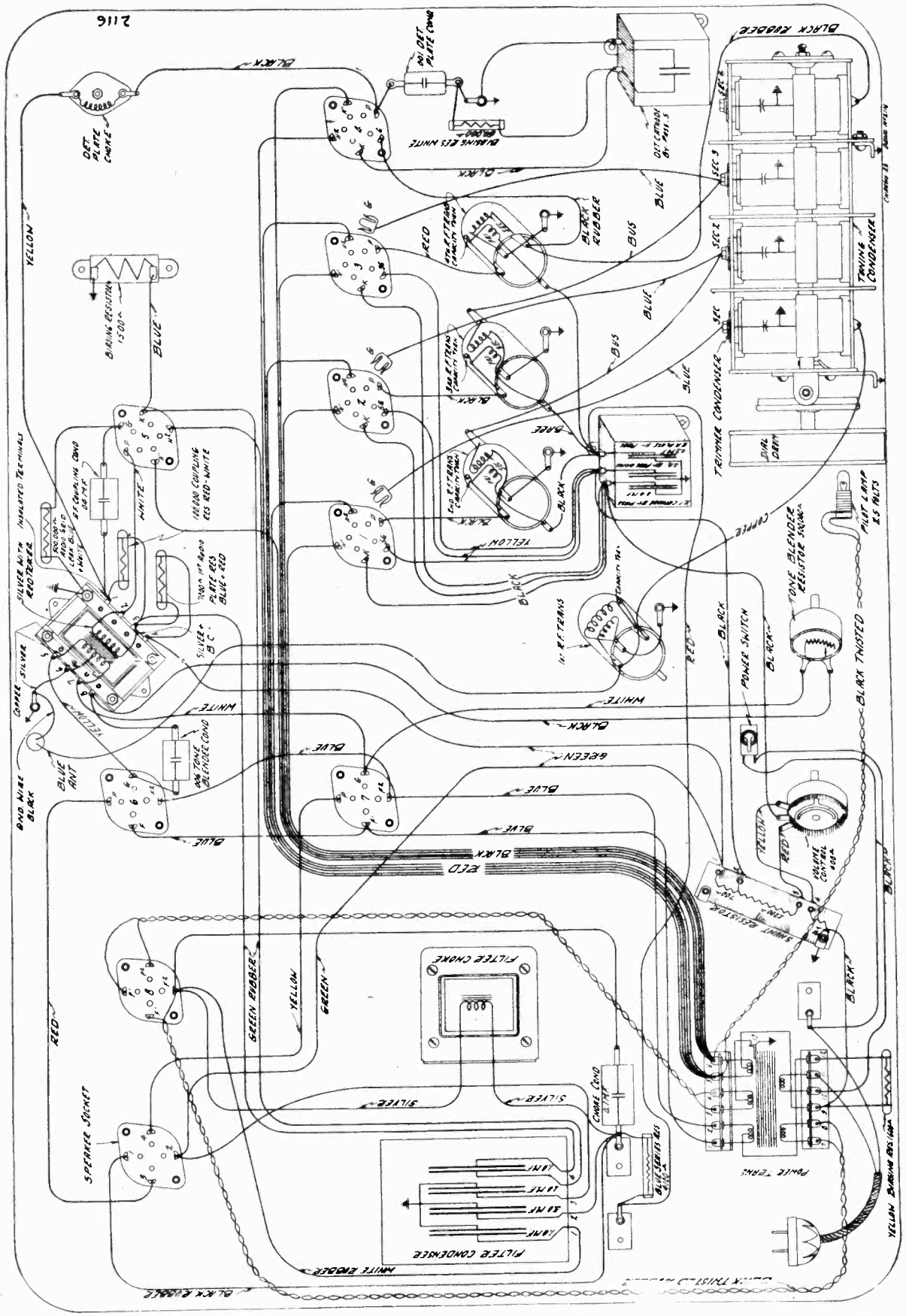
VOLTAGES AT SOCKETS — VOLUME CONTROL AT MAXIMUM — LINE VOLTAGE, 115 — PLUG IN SOCKET OF RECEIVER — TUBE IN TEST SET

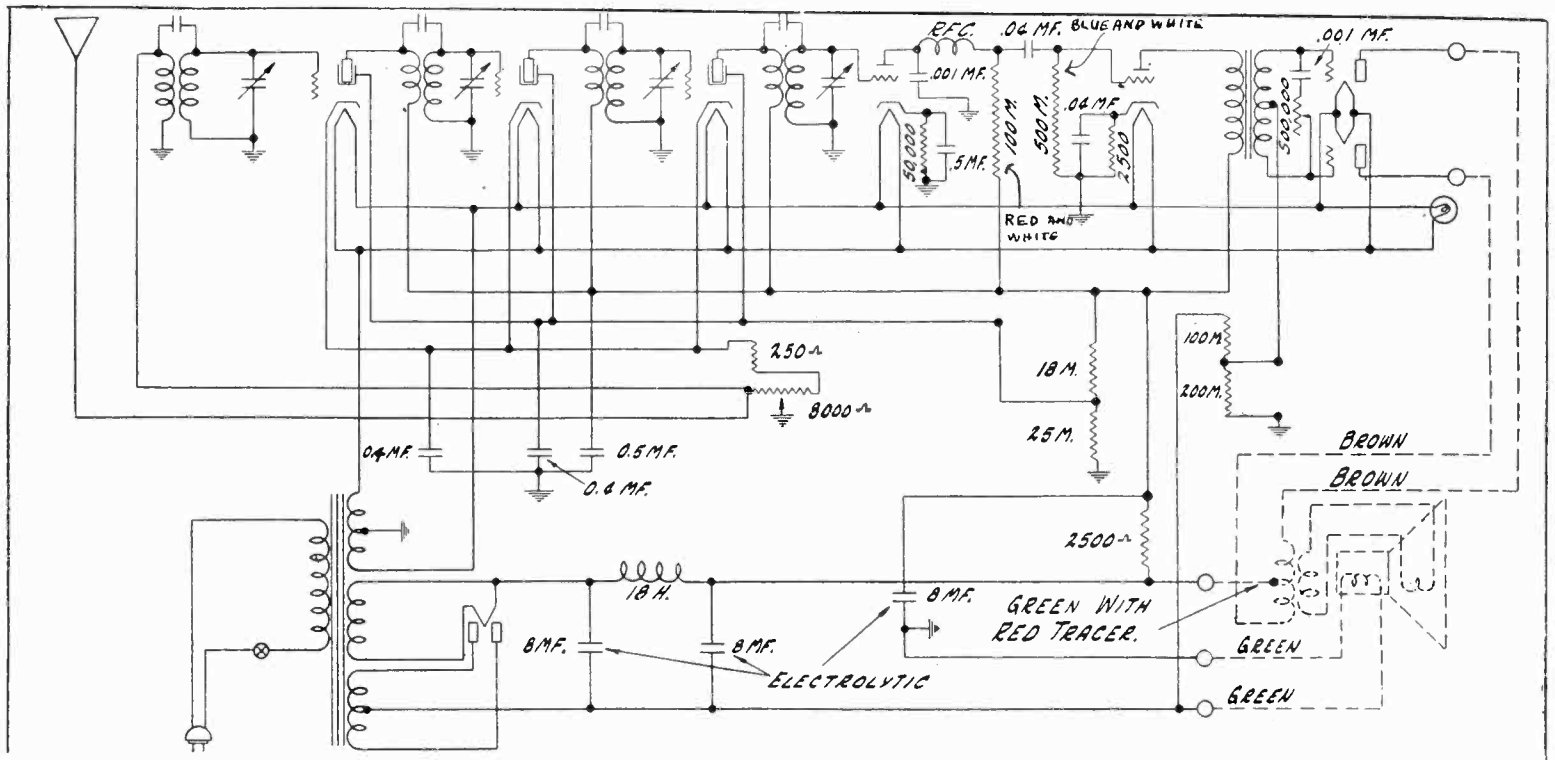
Type of Tube	Position of Tube	Function	"A" Volts	"B" Volts	Control Grid "C" Volts	Screen Volts	Screen Current MA	Cathode Volts	Plate MA	Grid Test MA
224	1	1st Radio	2.25	180	3.0	90	.6	3.0	3.4	5.8
224	2	2nd Radio	2.25	180	3.0	90	.6	3.0	3.4	5.8
224	3	3rd Radio	2.25	180	3.0	90	.6	3.0	3.4	5.8
227	4	Detector	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.



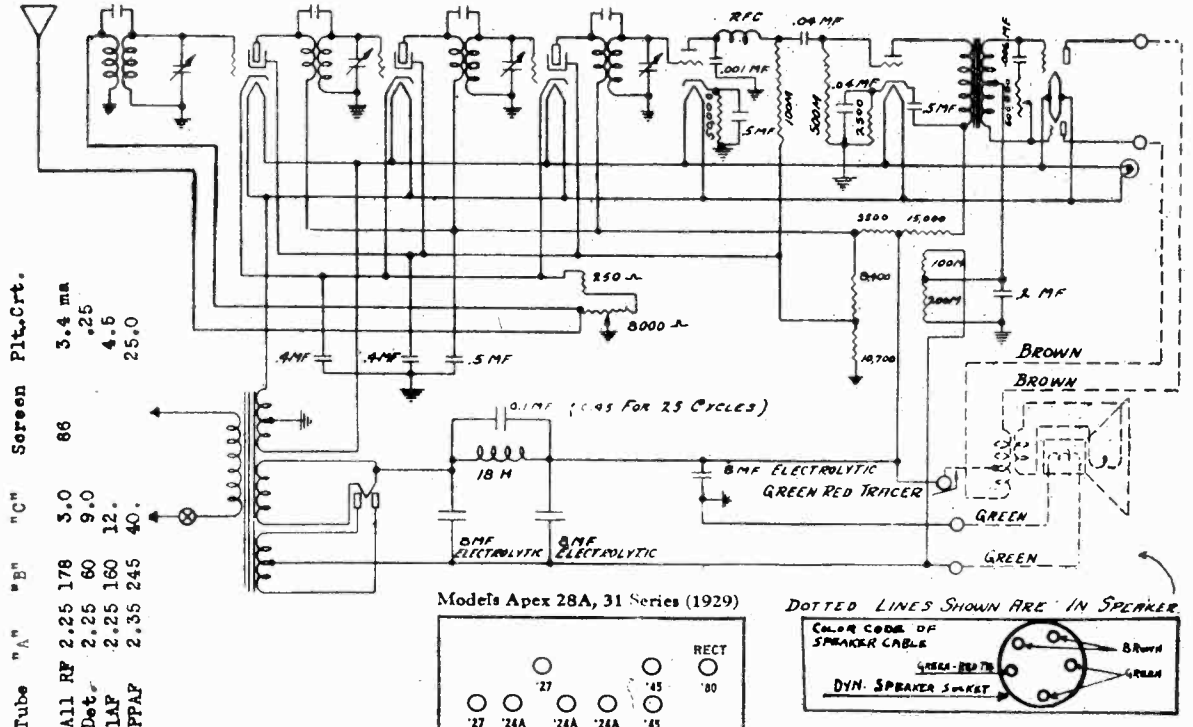


No. 29 CHASSIS—VOLTAGES AT SOCKETS—VOLUME CONTROL AT MAXIMUM LINE VOLTAGE. 115—PLUG IN SOCKET OF RECEIVER—TUBE IN TEST SET

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	

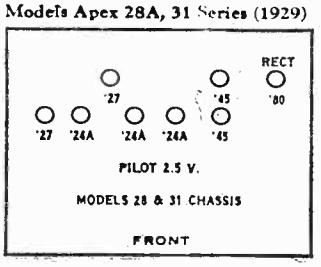
U. S. RADIO & TELEVISION CORP.

MODEL Apex 31
MODEL 31-R

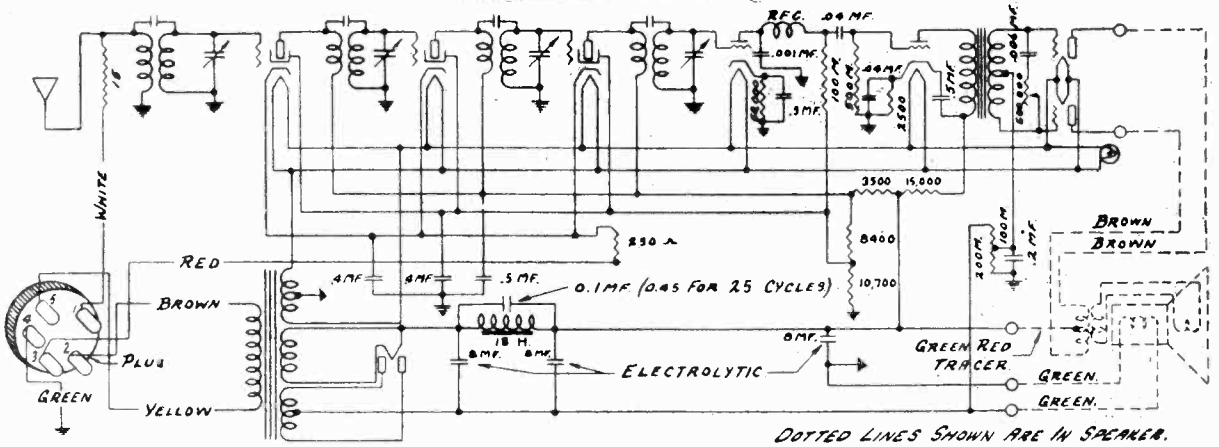


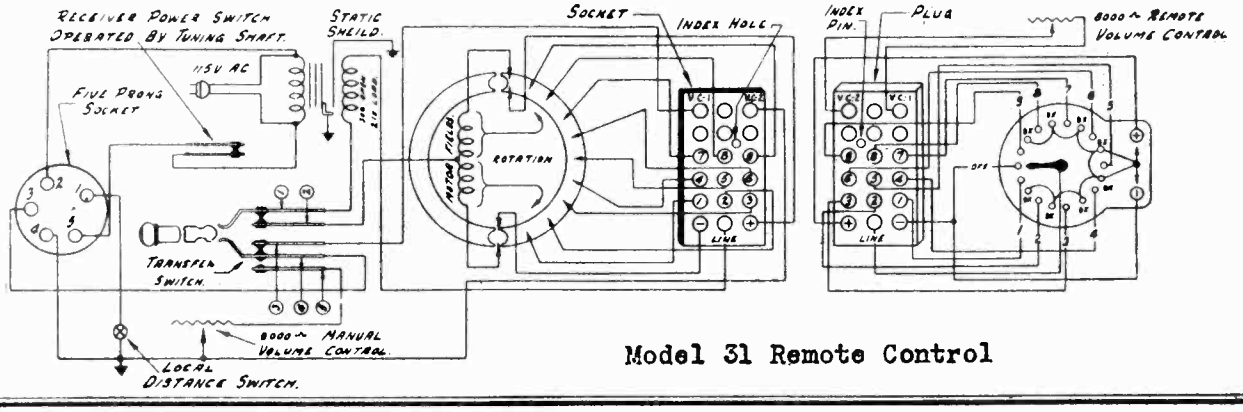
Tube	"A"	"B"	"C"	Screen	Plt.Crt.
All RF	2.25	178	3.0	86	3.4 ma
Det.	2.25	60	9.0		.25
1AF	2.25	160	12.		4.6
PPAF	2.35	245	40.		25.0

Models Apex 28A, 31 Series (1929)



Model Apex 31

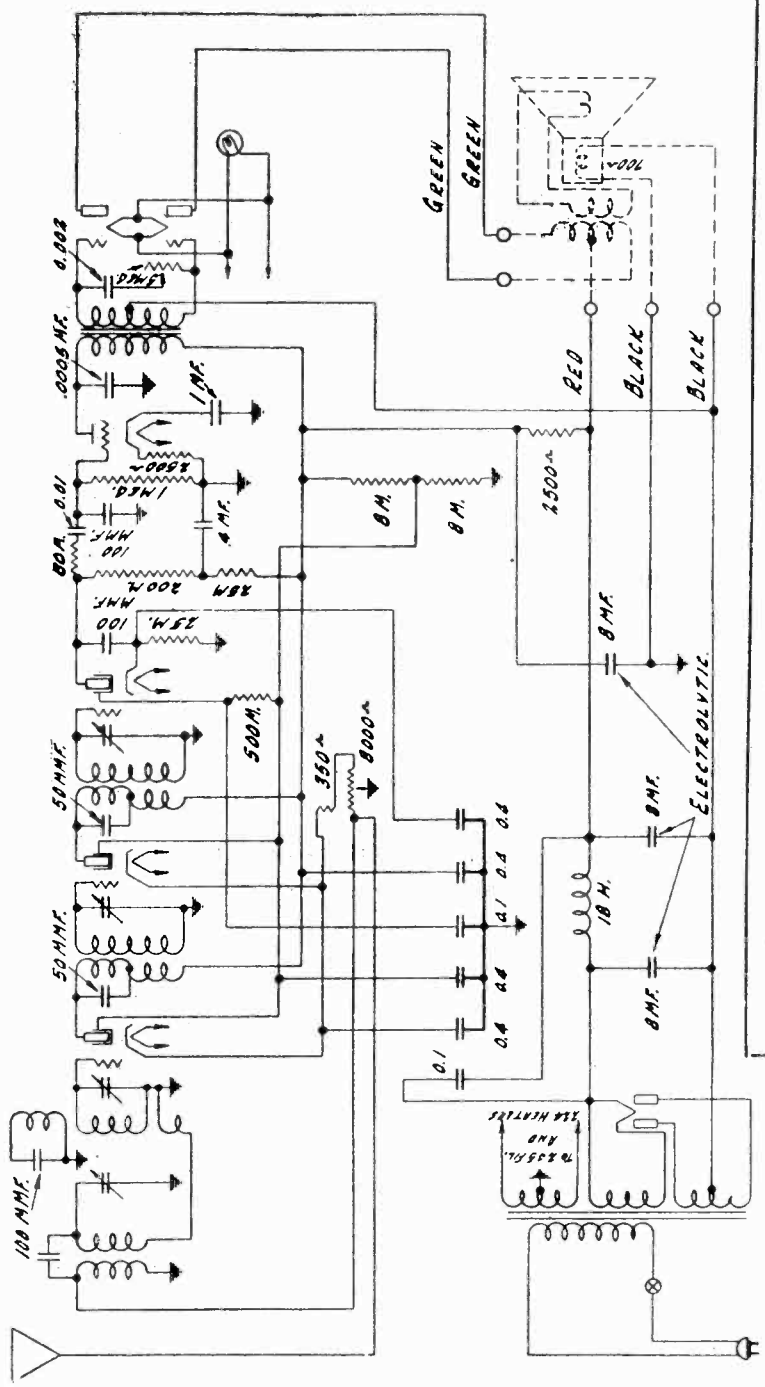




Model 31 Remote Control

MODEL 32 Series

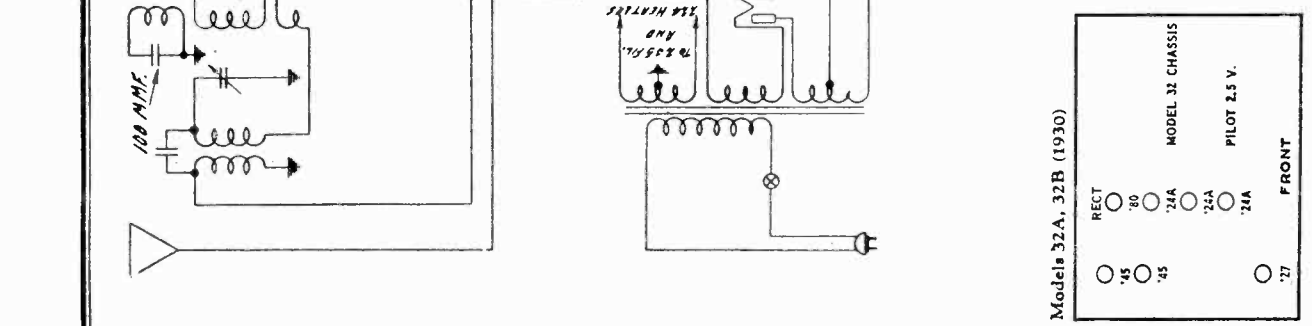
U. S. RADIO & TELEVISION CORP.



No. 32 CHASSIS—VOLTAGES AT SOCKETS—VOLUME CONTROL AT MAXIMUM LINE VOLTAGE, 115—PLUG IN SOCKET OF RECEIVER—TUBE IN TEXT SET

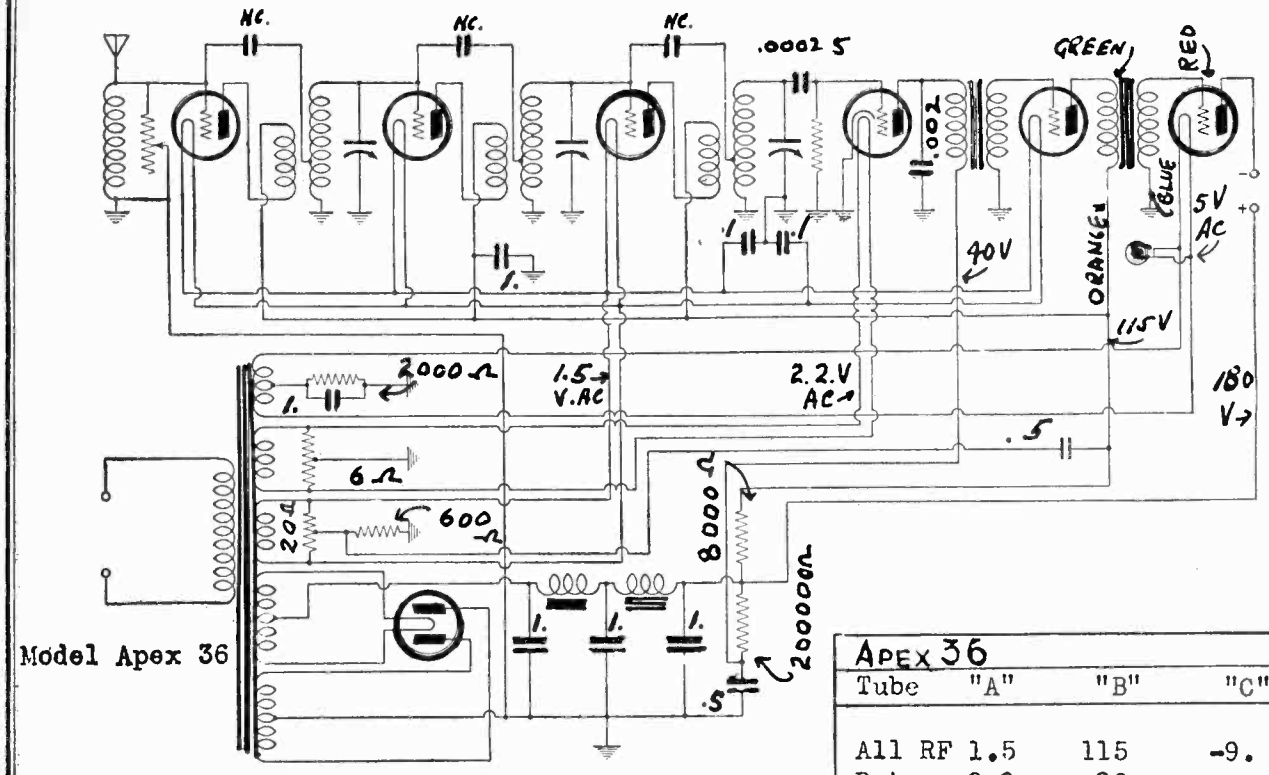
Type of Tube	Position of Tube	Function	"A" Volts	"B" Volts	Control Grid "C" Volts	Screen Volts	Screen Current MA	Cathode Volts	Plate MA	Grid Test MA
224	1	1st Radio	2.3	198	3.	68	.9	3.	3.5	6.
224	2	2nd Radio	2.3	193	3.	83	.9	3.	3.5	6.
224	3	Detector	2.3	150	6.	45	.1	6.	.25	.4
227	4	1st Audio	2.3	180	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	31.

Models 32A, 32B (1930)



MODEL Apex 36
MODEL Apex 37

U. S. RADIO & TELEVISION CORP.

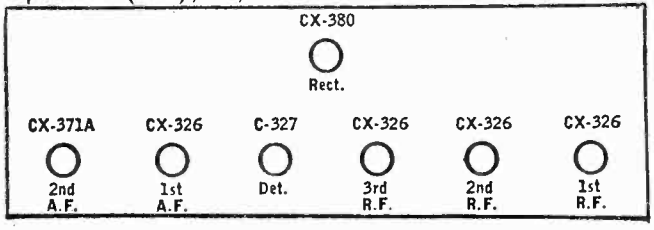


Model Apex 36

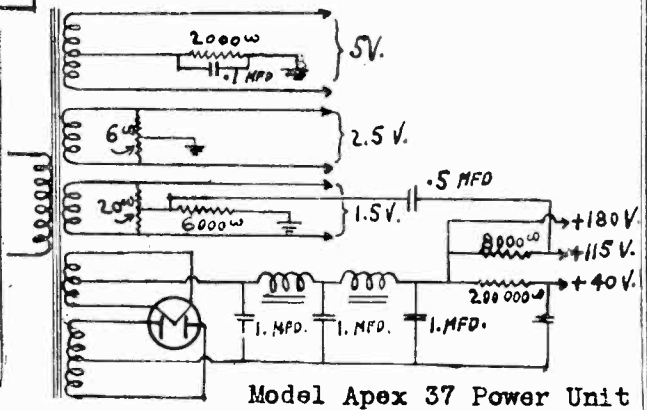
APEX 36			
Tube	"A"	"B"	"C"
All RF	1.5	115	-9.
Det	2.2	26	-
1AF	1.5	105	-9.
2AF	4.9	182	-37.
Rect	4.9		

Speaker terminals shorted
Line voltage 115 volts

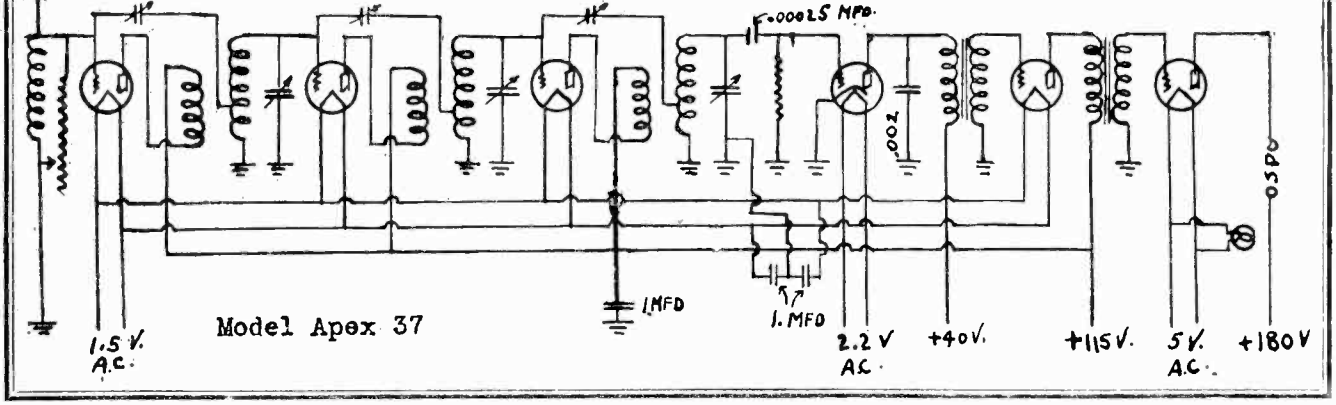
Apex 36 (AC), 50, 60 (A.C.)



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			



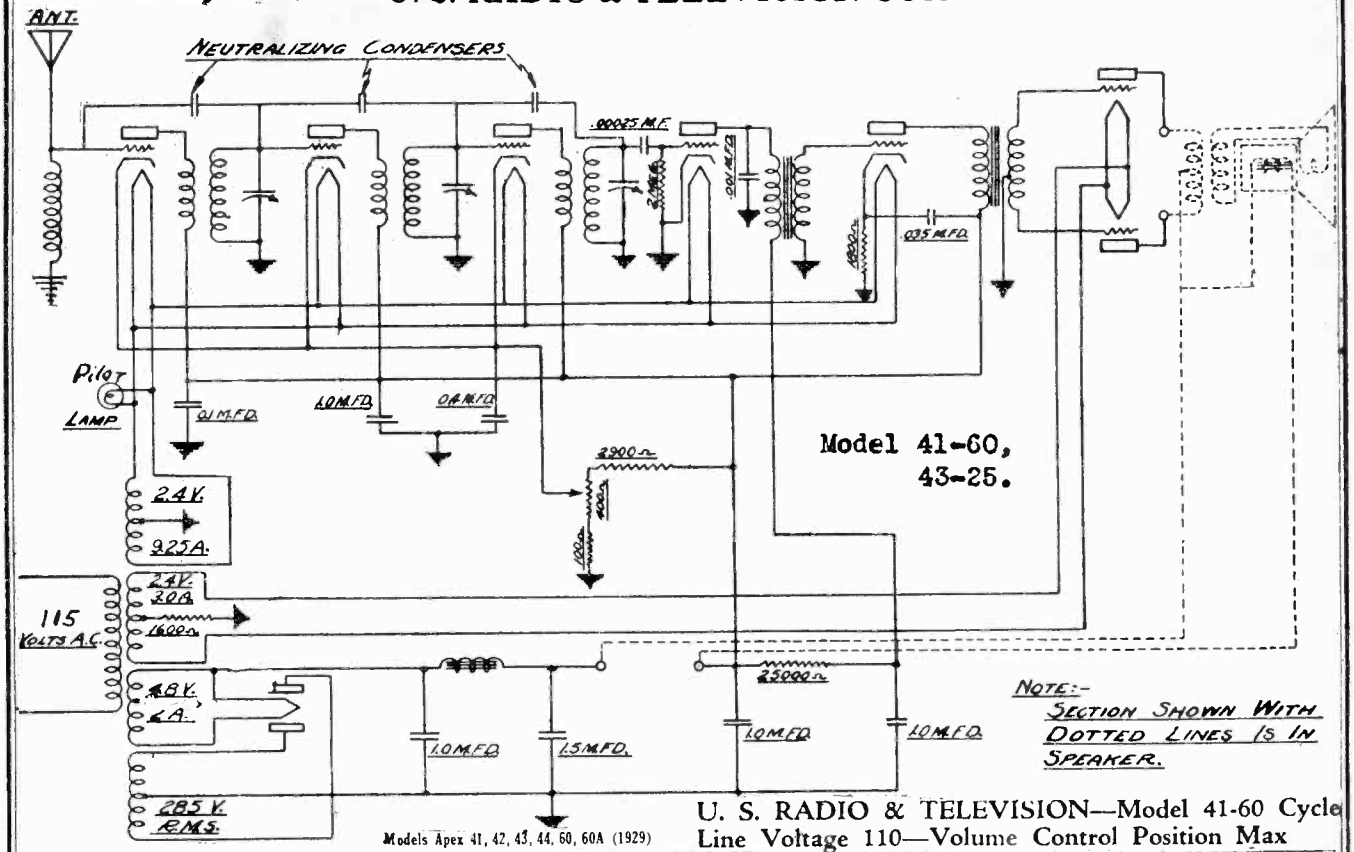
Model Apex 37 Power Unit



Model Apex 37

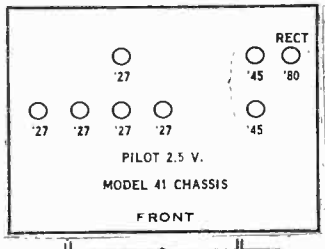
MODEL 41-60, 43-25
MODEL 42-60, 44-25

U. S. RADIO & TELEVISION CORP.

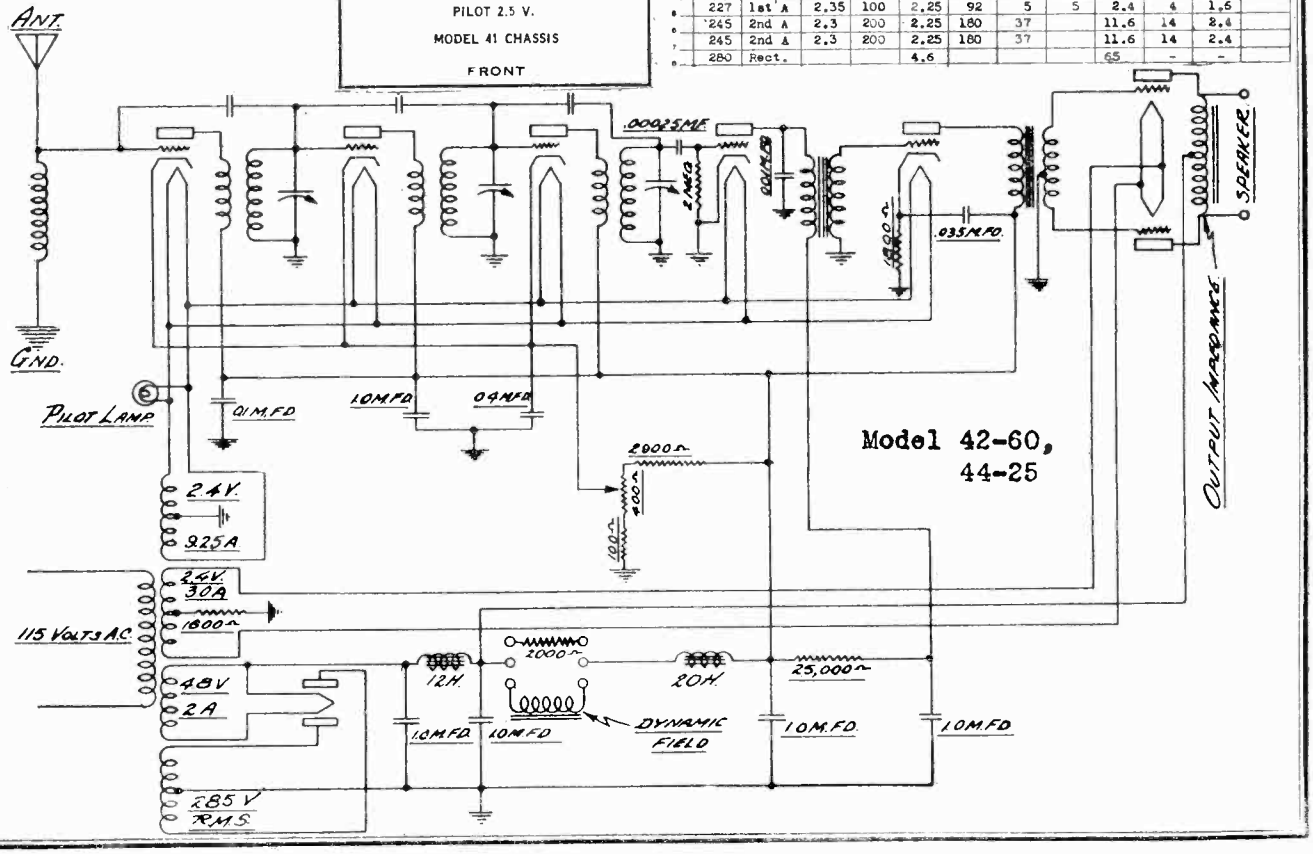


U. S. RADIO & TELEVISION—Model 41-60 Cycle
Line Voltage 110—Volume Control Position Max

Models Apex 41, 42, 43, 44, 60, 60A (1929)

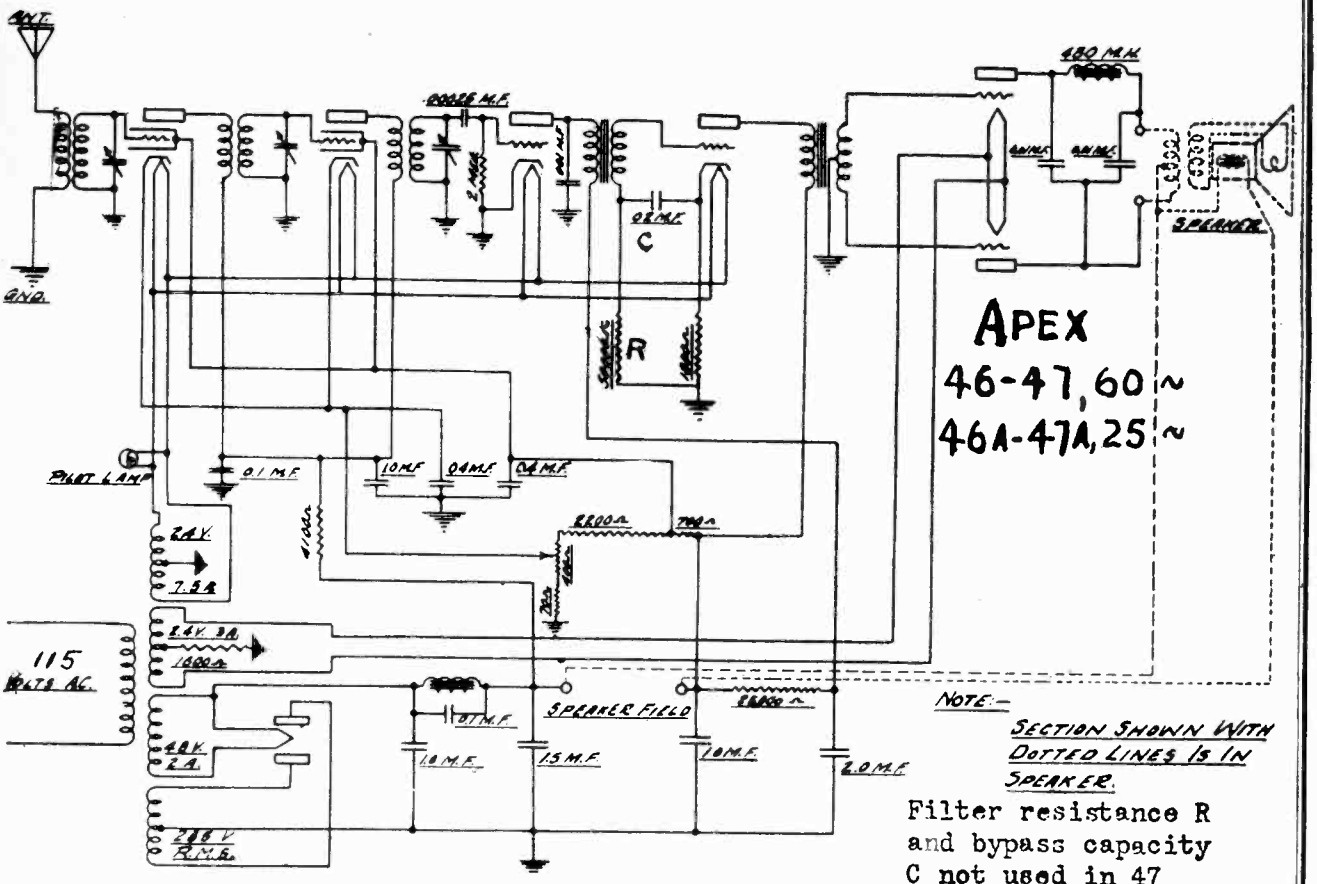


TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST RF DET ETC	READINGS, PLUG IN SOCKET OF SET — TUBE OUT A VOLTS	TUBE OUT B VOLTS	TUBE IN TESTER A VOLTS	TUBE IN TESTER B VOLTS	VOLTS CONTROL GRID	CATHODE HEATER VOLTS	NORMAL PLATE M A	PLATE M A GRID TEST	PLATE CHANGE M A	SCREEN GRID VOLTS
1	227	1st RF	2.3	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	6	4	4.6	9	4.6	
4	227	Det.	2.35	100	2.25	60	-	-	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.



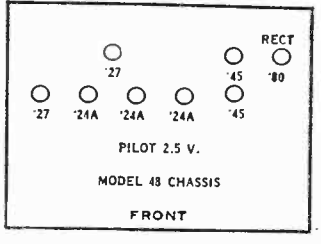
Filter resistance R and bypass capacity C not used in 47 and 47A

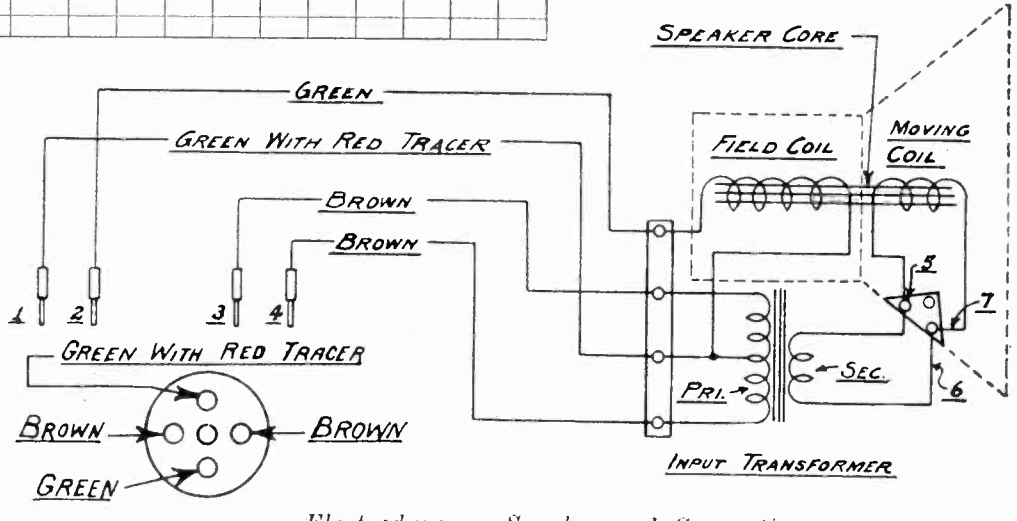
46 and 46-A

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 — (4) FILAMENT OR HEATER	(5) PLATE OR ANODE	(6) CONTROL GRID — SPACE GO +	(7) NORMAL GRID — SCREEN GO +	(8) CATHODE TO HEATER	MILLIAMPERES (9) SCREEN GO L. H. SO PLATE	(10) PLATE R. H. SO PLATE	(11) TUBE TEST	(12) PLATE CURRENT CHANGE
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	Det.	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	-	36	-	-	11.3		
6	245	2 A.F.	2.29	169	-	36	-	-	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)



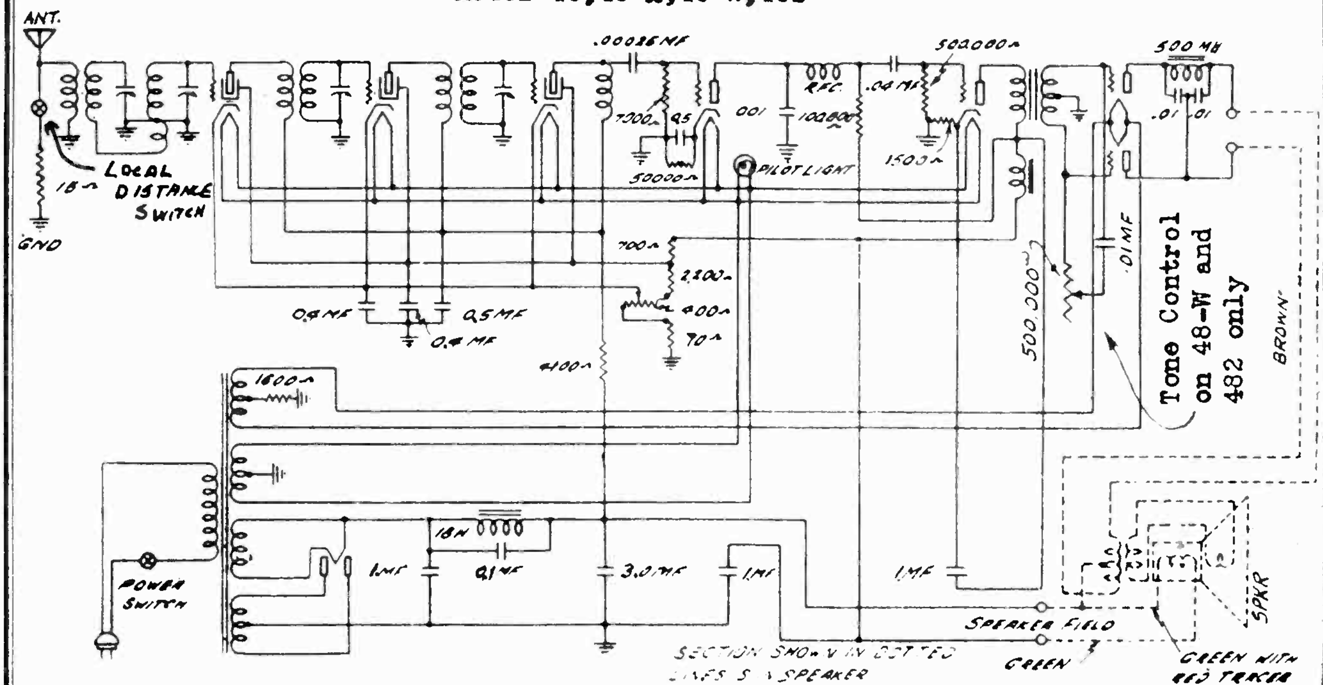


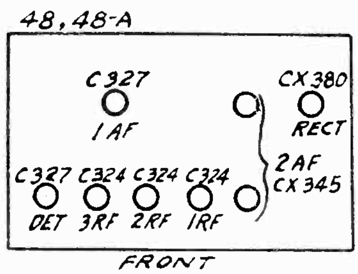
—Electrodynamic Speaker and Connections

MODEL 48, 48-A, 48-W, 482.

U. S. RADIO & TELEVISION CORP.

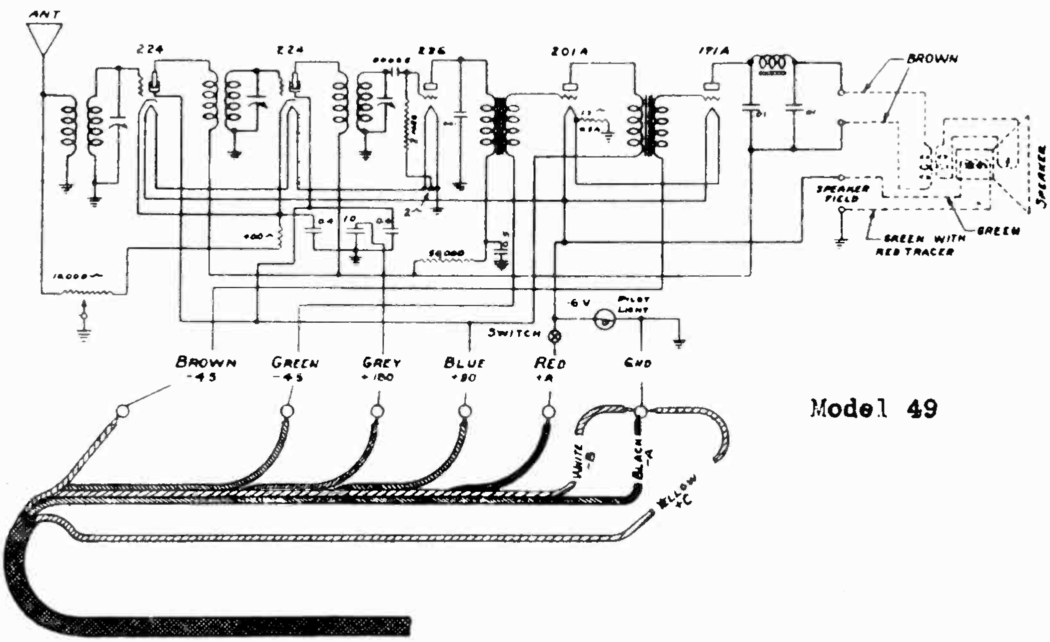
Model 48, 48-A, 48-W, 482





U. S. RADIO & TELEVISION—Models 48-48A
Line Voltage 115—Volume Control Maximum

Tube No. in Order Tested	Type of Tube	Position of Tube in Set	Filament or Heater	Plate or Anode	Control Grid—Space Grid	Normal Grid—Screen Grid	Cathode to Heater	Screen Grid ... Plate	Plate ... Plate	Tube Test	Plate Current Change
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	TUBE IN TESTER B VOLTS	TUBE IN TESTER G 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			4.00	-	-	-	24.0	-	-
9											
10											

Case 81B, 81C (A.C.)