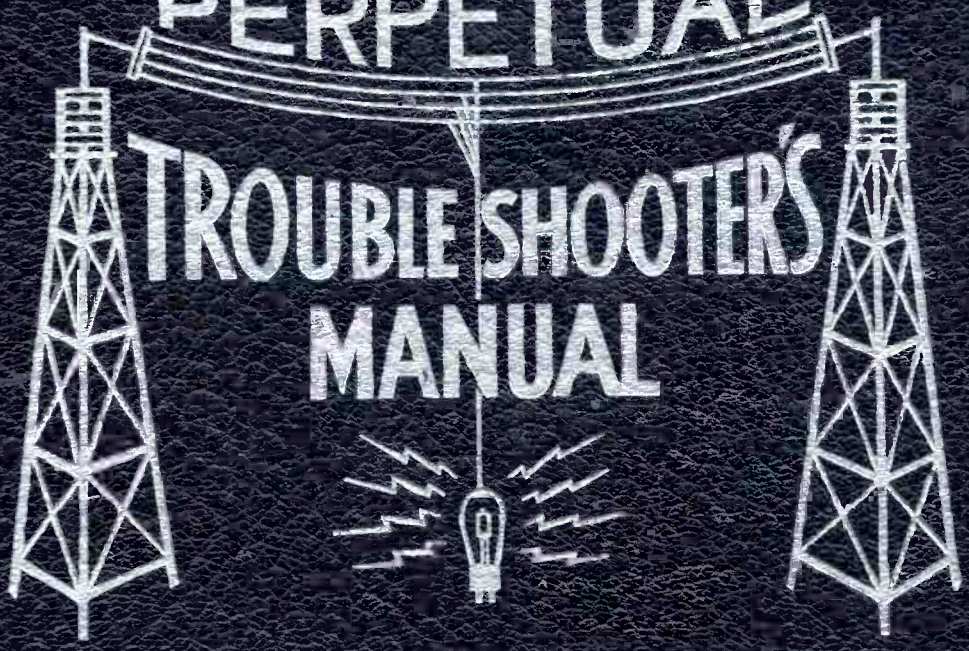
VOLUME I

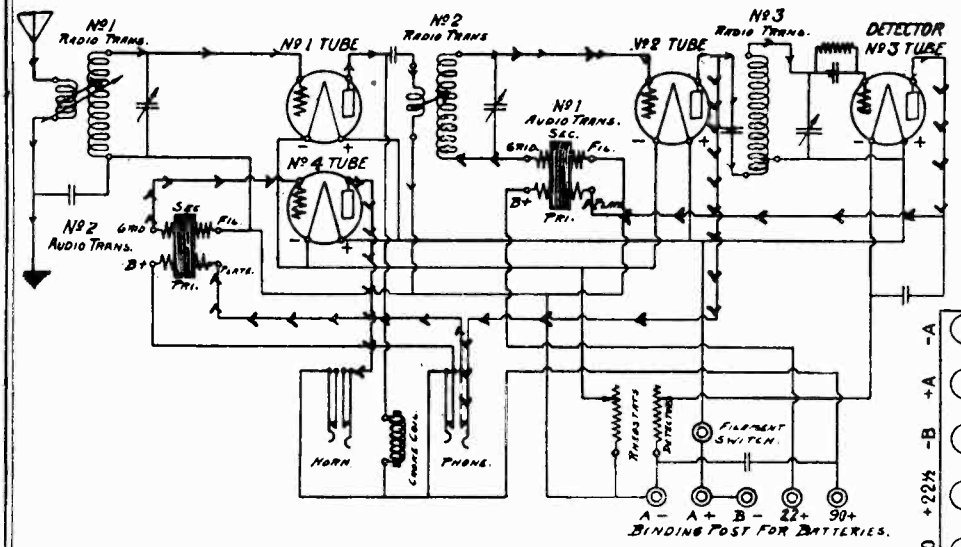
PERPETUAL TROUBLE SHOOTER'S MANUAL



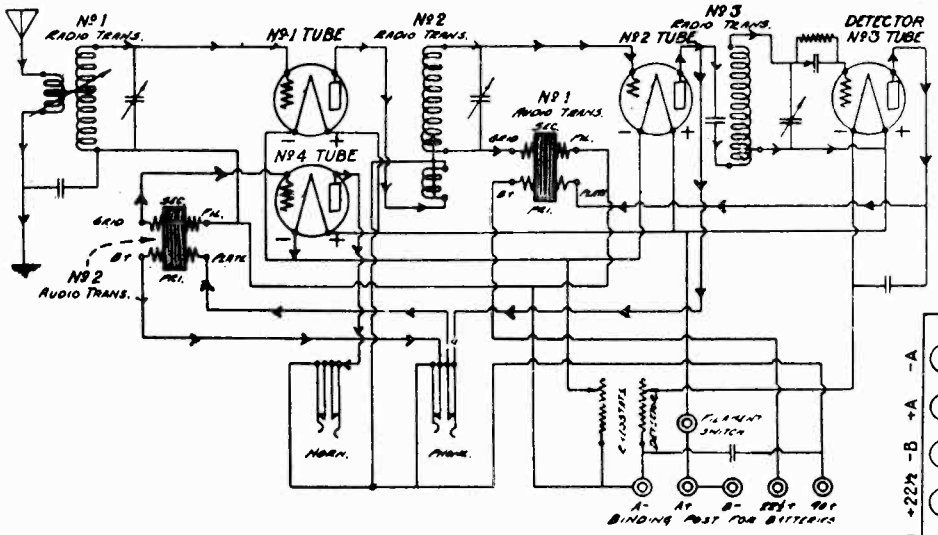
JOHN F. RIDER

GENERAL MOTORS RADIO CORP.

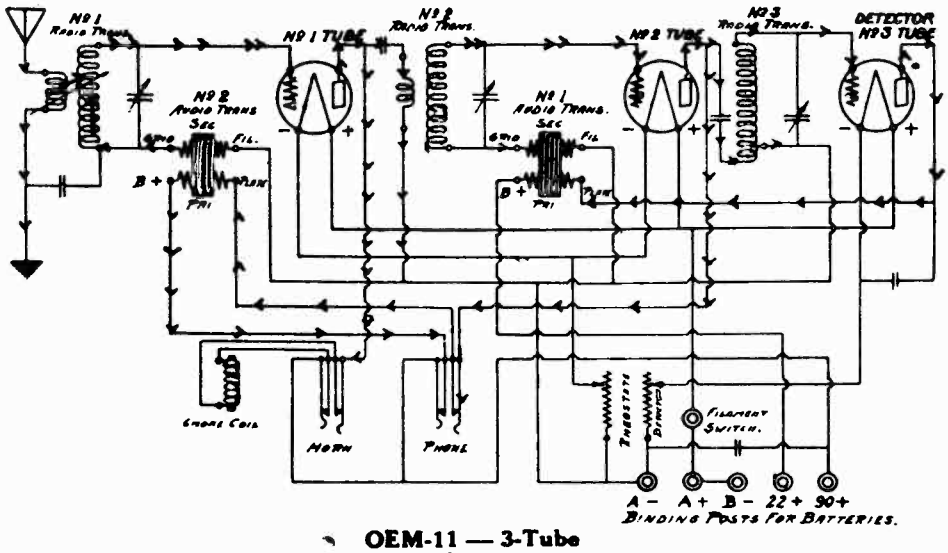
MODEL OEM-7 4 Tube
MODEL OEM-7 Super-Sel.
MODEL OEM-11 3 Tube



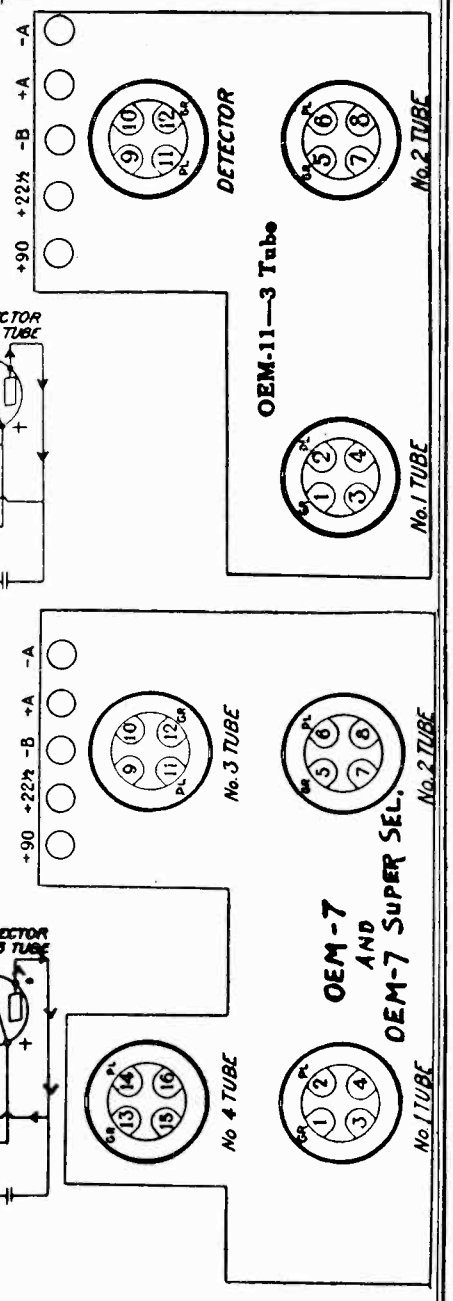
OEM-7 — 4-Tube



OEM-7 — Super-Selective

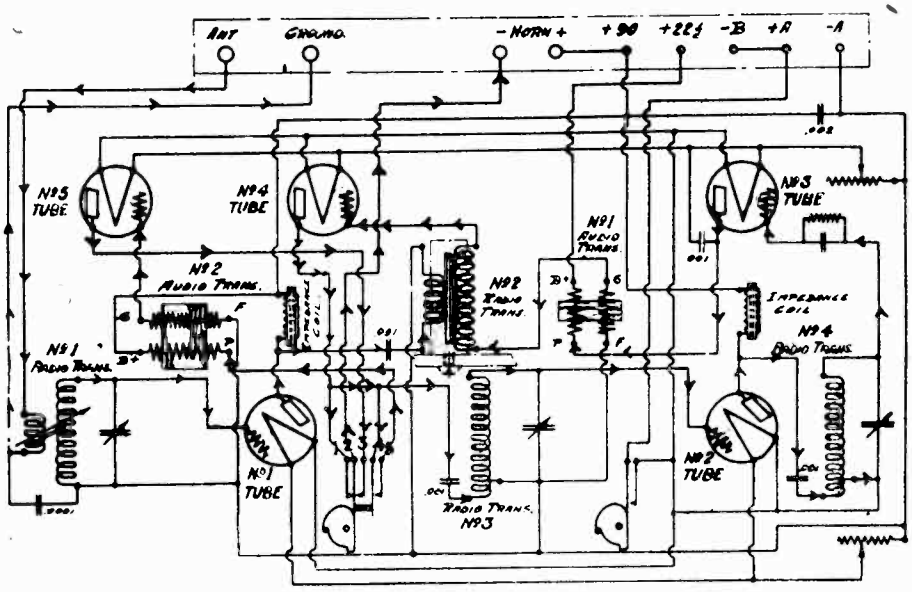


OEM-11 — 3-Tube



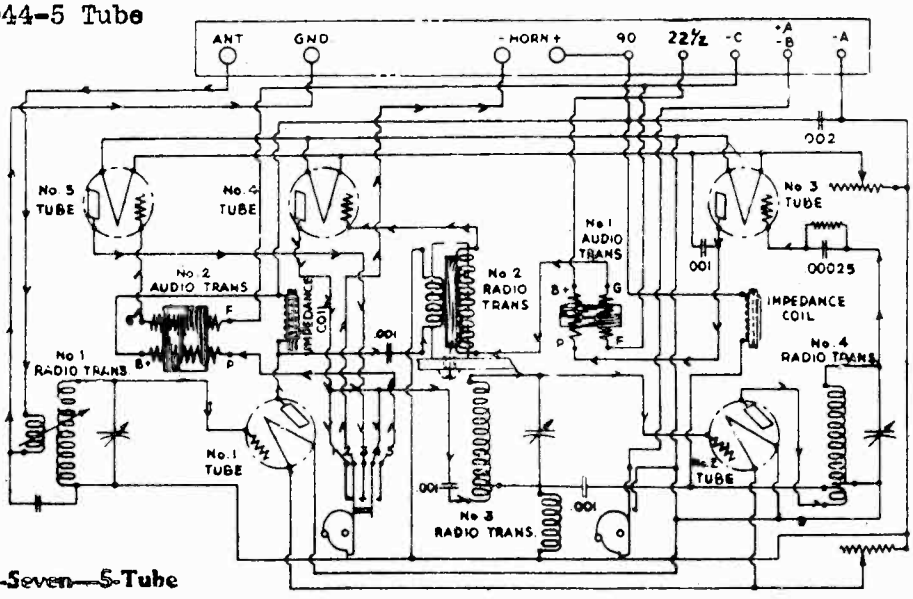
MODEL 5044-5 Tube
MODEL 527-5 Tube

GENERAL MOTORS RADIO CORP.

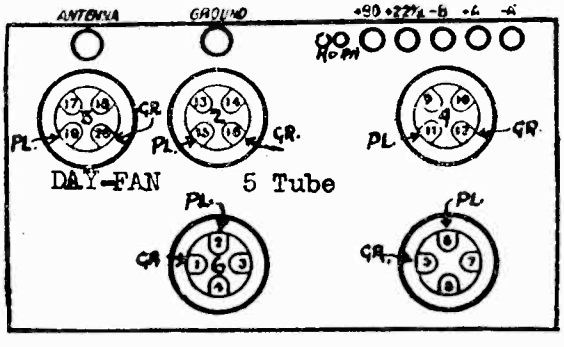


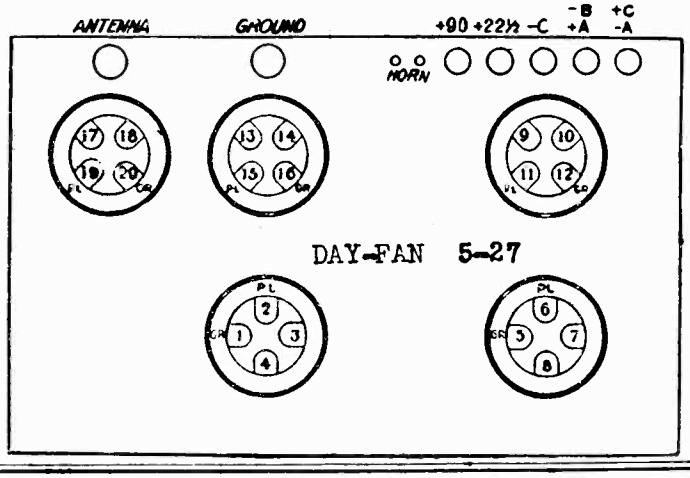
DAY-FAN FIVE

Model 5044-5 Tube



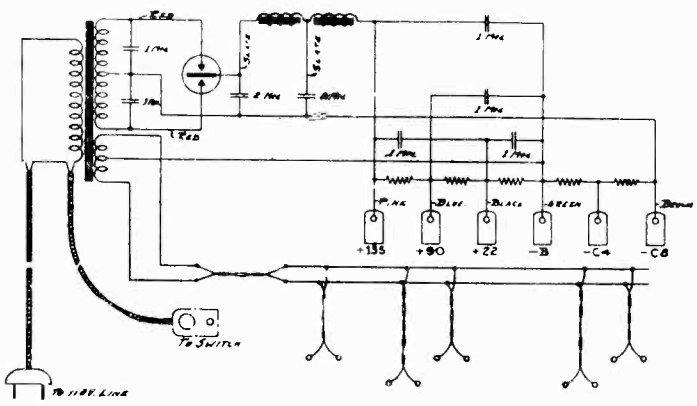
Day-Fan Five Twenty-Seven—5-Tube



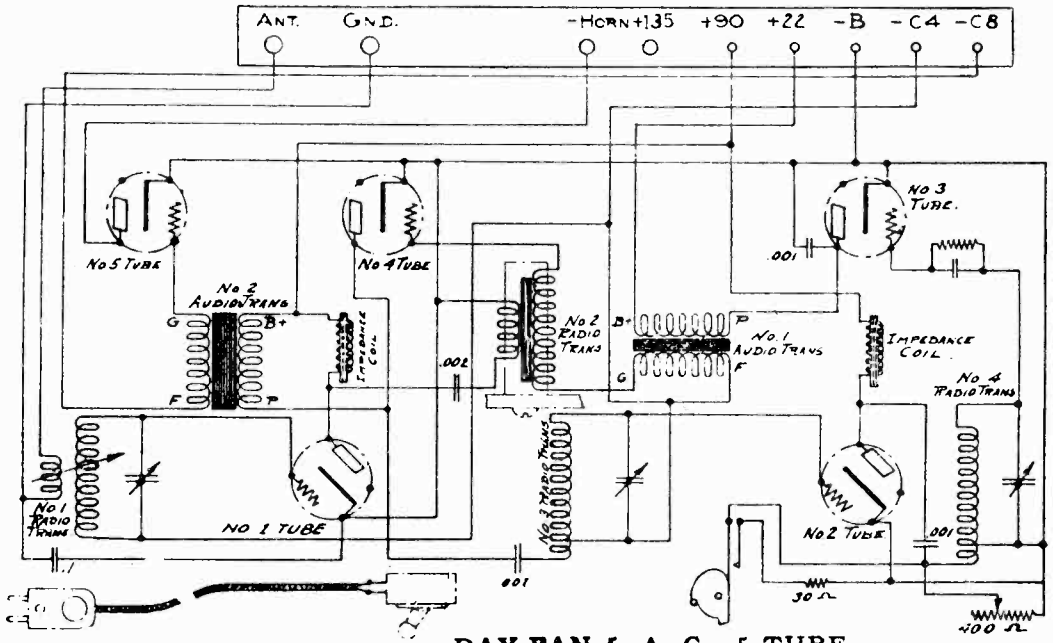


GENERAL MOTORS RADIO CORP.

MODEL Day-Fan 5-AC
MODEL Day-Fan 5
MODEL Day-Fan 5-AC SPU



POWER SUPPLY FOR 5 TUBE A. C. SET

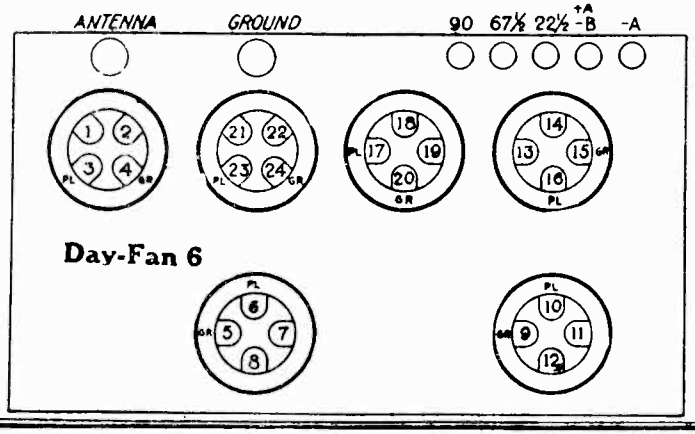


DAY-FAN 5 A. C.—5 TUBE

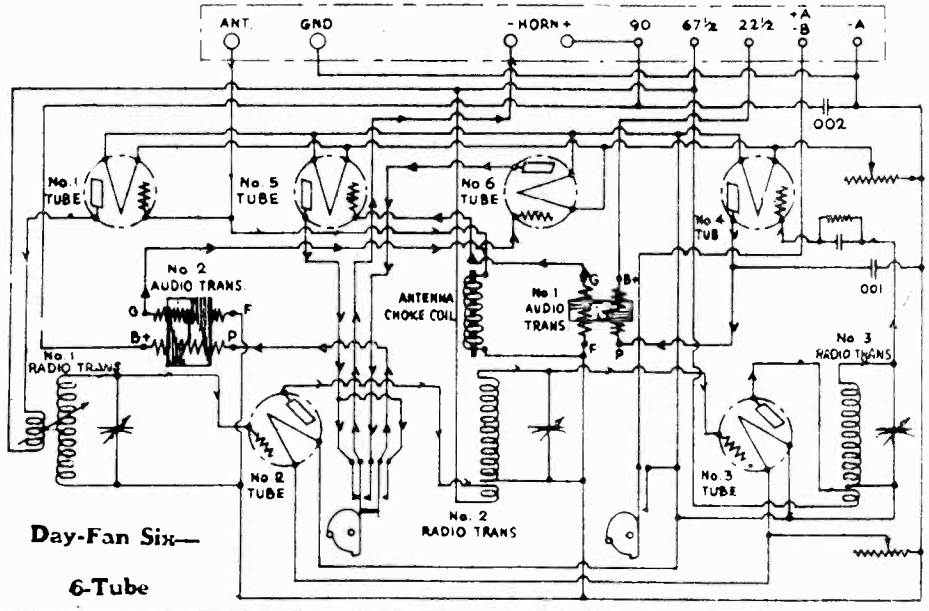
SUB-PANEL OF DAY-FAN 5 TUBE A. C.

CABLE COLOR CODE

Terminal	Wire Color	Power
Horn +	Red	135
No. 1	Maroon	90
No. 2	Red and Black	22
No. 3	Black	— B + C
No. 4	Yellow and Black	— C 4
No. 5	Yellow Solid	— C 8



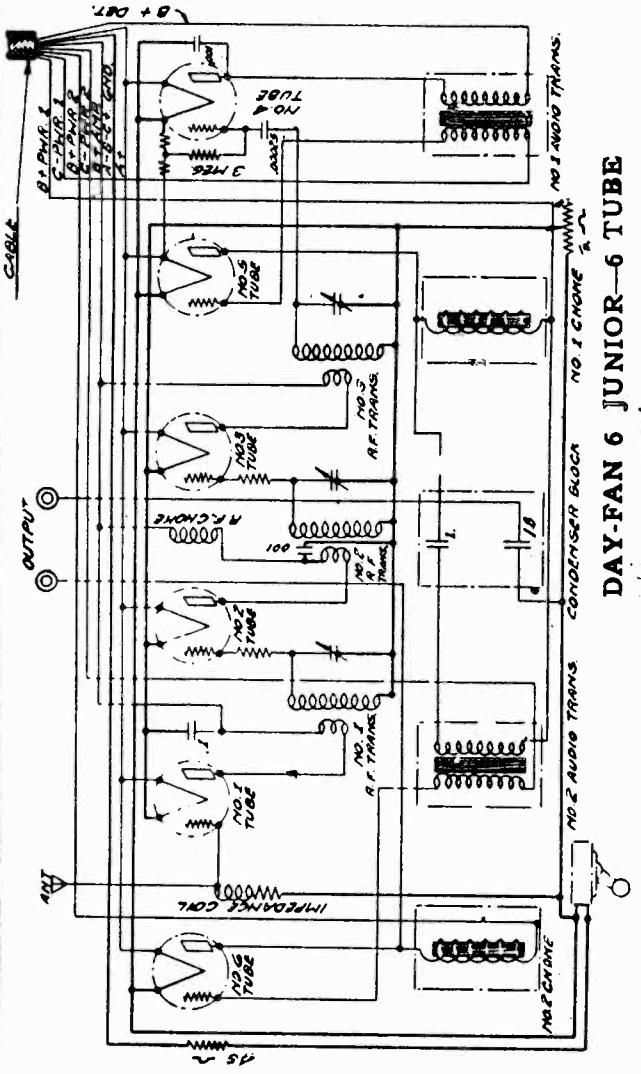
Day-Fan 6



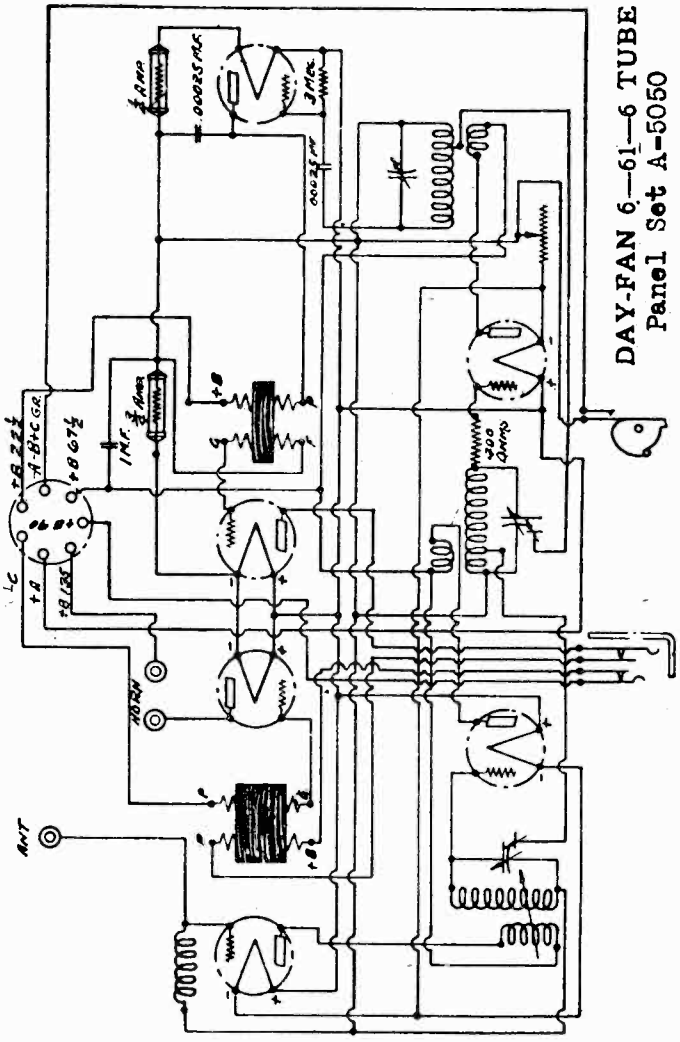
Day-Fan Six—

6-Tube

MODEL Day-Fan 6 Jr. • GENERAL MOTORS RADIO CORP.
MODEL Day-Fan 6-61
(5050)



DAY-FAN 6 JUNIOR—6 TUBE

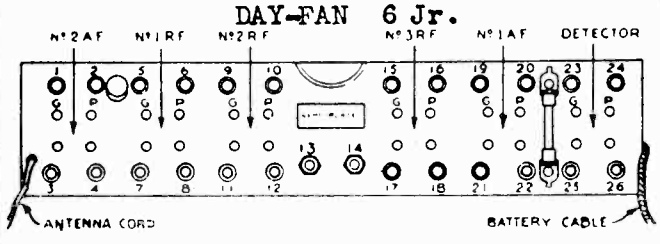


DAY-FAN 6—61—6 TUBE
Panel Set A-5050

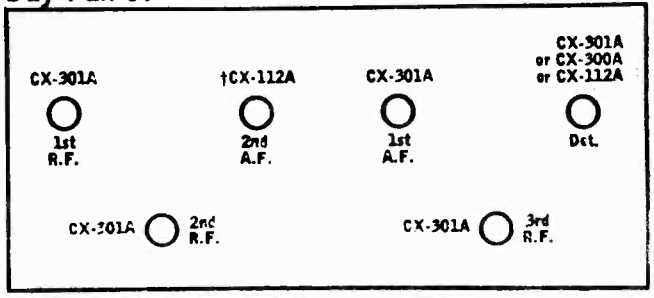
STANDARD, BATTERY CABLE CONNECTIONS

Color of Wire (DAY-FAN 6 Jr.)	N. E. M. A. Rating
Red	B + Pwr. 2.
Red and White	B + Pwr. 1.
Red and Maroon	B + Amp.
Maroon	B + Det.
Yellow	A +
Green with Red and Yellow tracers	B —, A —, C +.
Black and Green	C — Pwr. 1.
Black and White	C — Pwr. 2.

DAY-FAN 6 Jr.

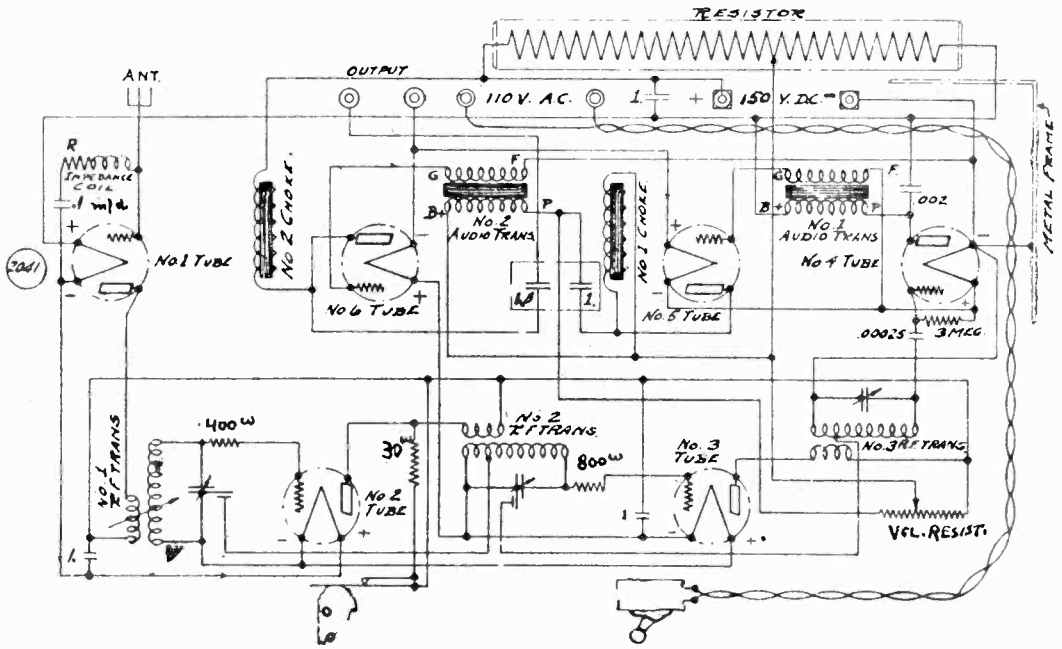


Day-Fan 61 (Batt.)

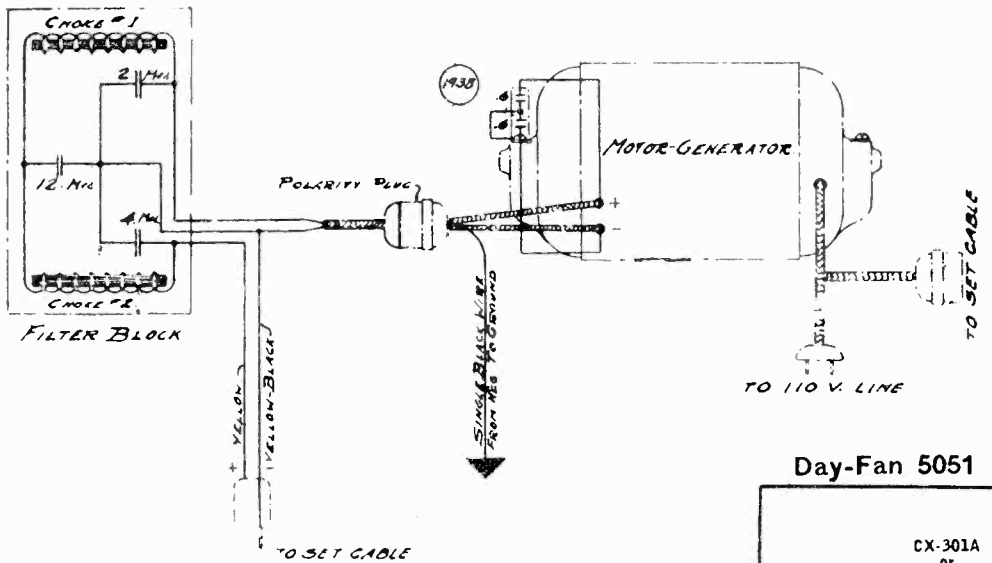


GENERAL MOTORS RADIO CORP.

MODEL Day-Fan 5051
(MG Set)
Motor-Generator

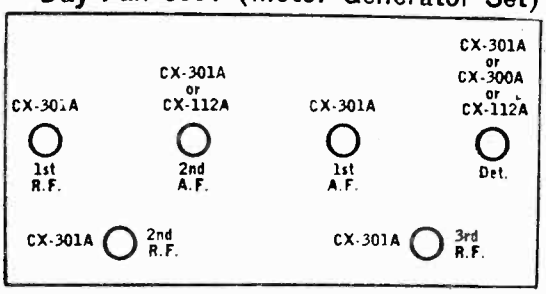


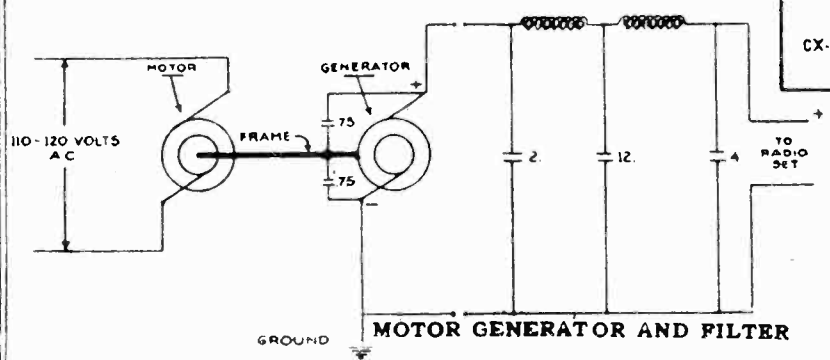
MOTOR GENERATOR SET—6 TUBE



MOTOR GENERATOR AND FILTER

Day-Fan 5051 (Motor Generator Set)

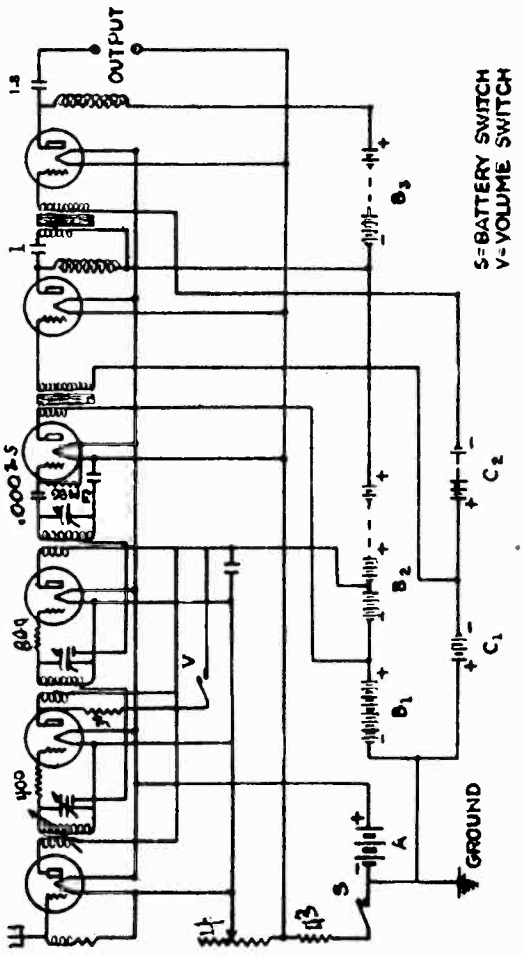




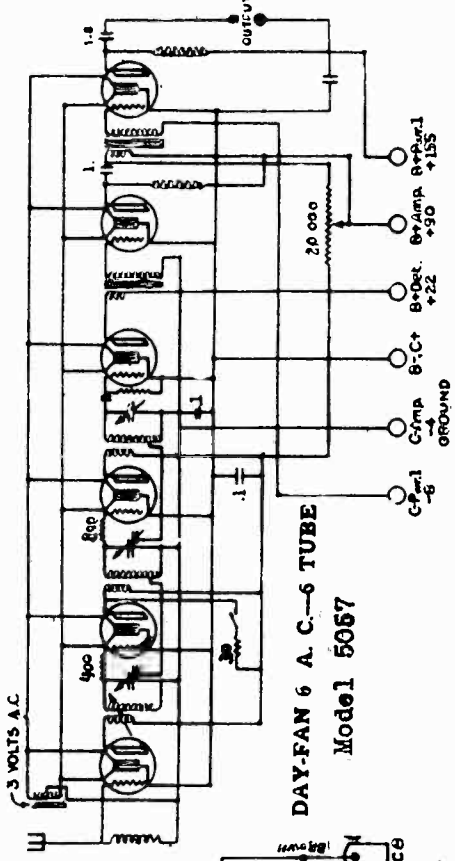
MOTOR GENERATOR AND FILTER

MODEL Day-Fan 5053
MODEL Day-Fan 5057
MODEL Day-Fan 5057SPU

GENERAL MOTORS RADIO CORP.



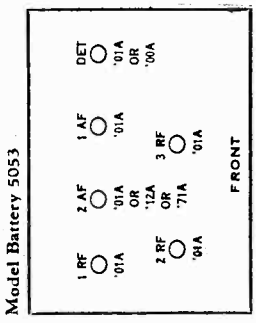
DAY-FAN 6 B—6 TUBE Model 5053

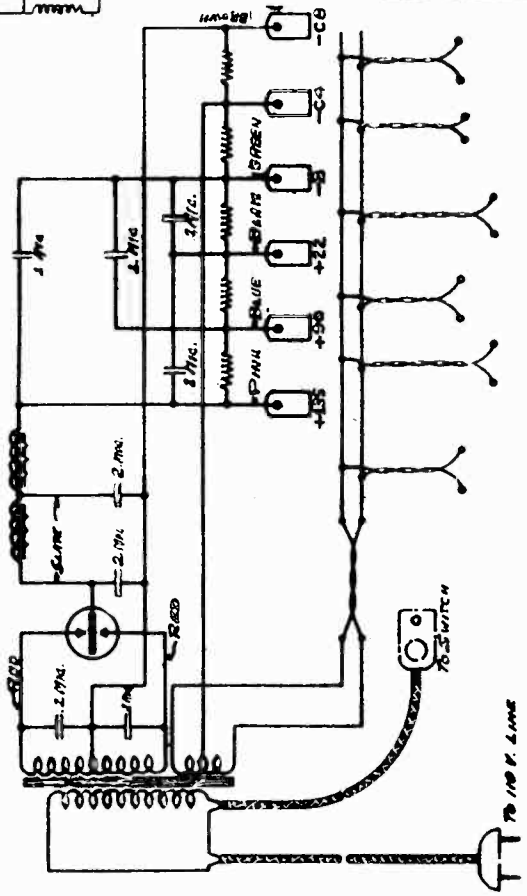


DAY-FAN 6 A. C.—6 TUBE
Model 5057

POWER CABLE COLOR CODE

Color of Wire	N. E. M. A. Rating
Red and White	B + Pwr. 1.
Red and Maroon	B + Amp.
Maroon	B + Det.
Green with Red and Yellow	B —, C +
Black and Green	C — Amp. and Ground
Black and White	C — Pwr. 1

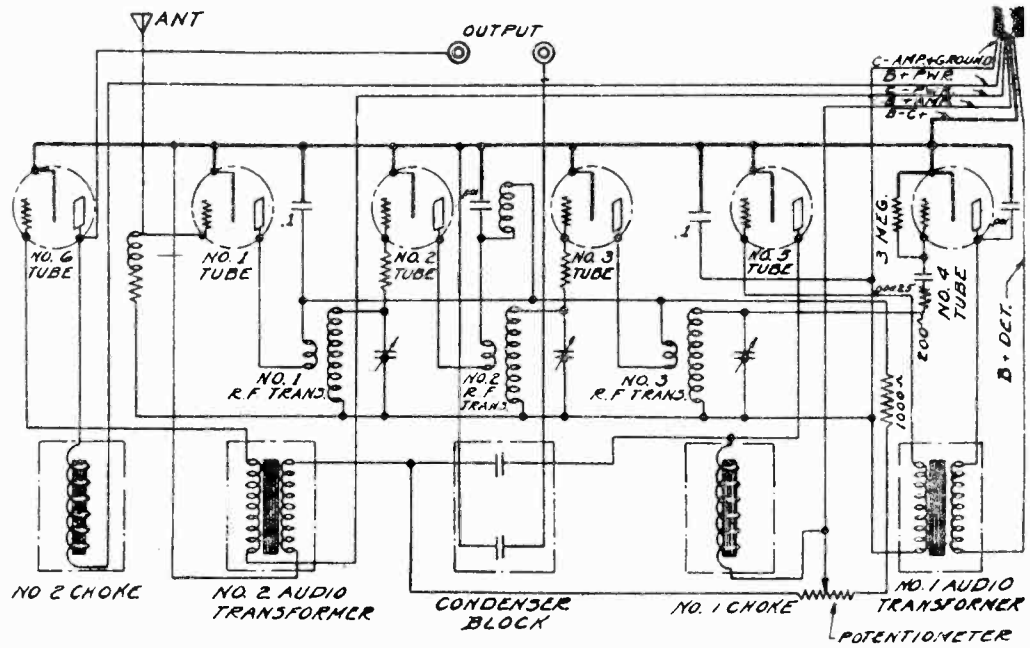




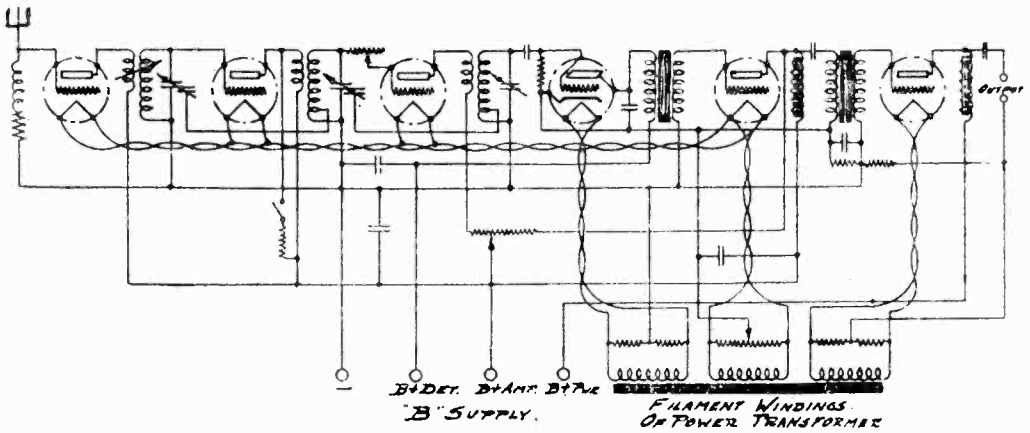
POWER SUPPLY FOR 6 TUBE A. C. SET
Model 5057

GENERAL MOTORS RADIO CORP.

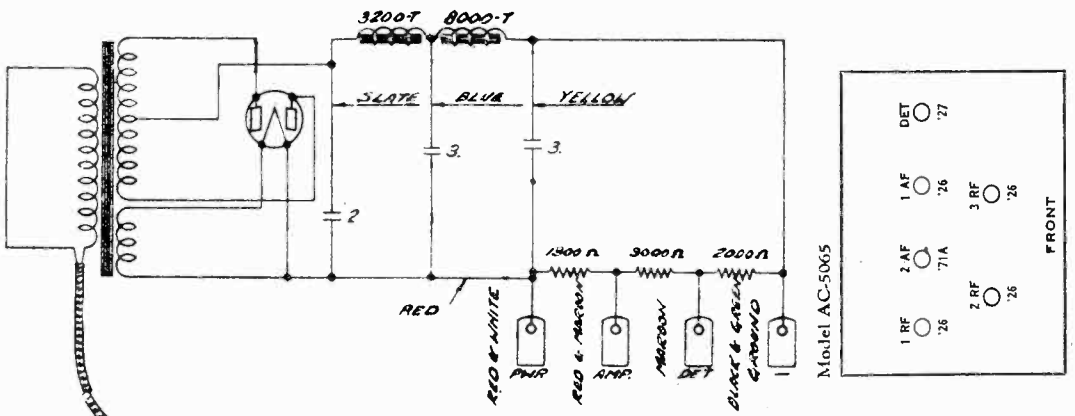
MODEL Day-Fan 5066
MODEL Day-Fan 5065
MODEL 5524, 5525,
SPU For 5065



DAY-FAN 6 JUNIOR A C POWER SET
Model 5066



DAY-FAN 6 A. C. (R. C. A. TUBE) POWER SET - Model 5065



Radio "B" Power Supply - Model Nos.5524 and 5525.
(For 6 tube (R.C.A.) A.C. Set.)

POWER CABLE COLOR CODE:
Model 5066

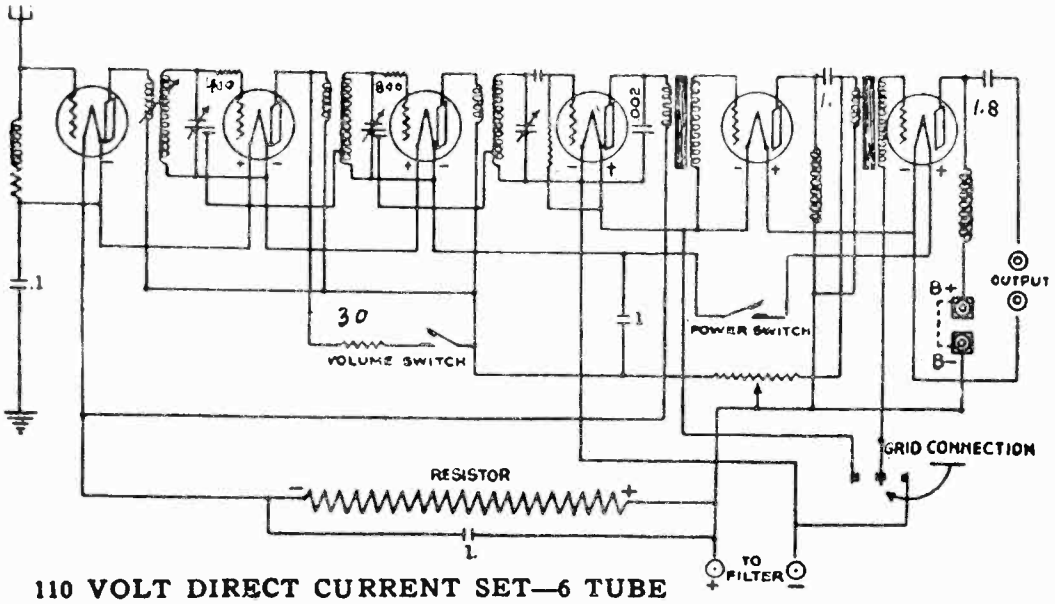
Color of Wire	N.E.M.A. Rating
Red and White	B + Power
Red and Maroon	B ++ Amp.
Maroon	B + Det.
Green with Red and Yellow Tracers	B — C+
Black and Green	C — Amp., and Gr.
Black and White	C — Power

POWER CABLE COLOR CODE:
Model 5065

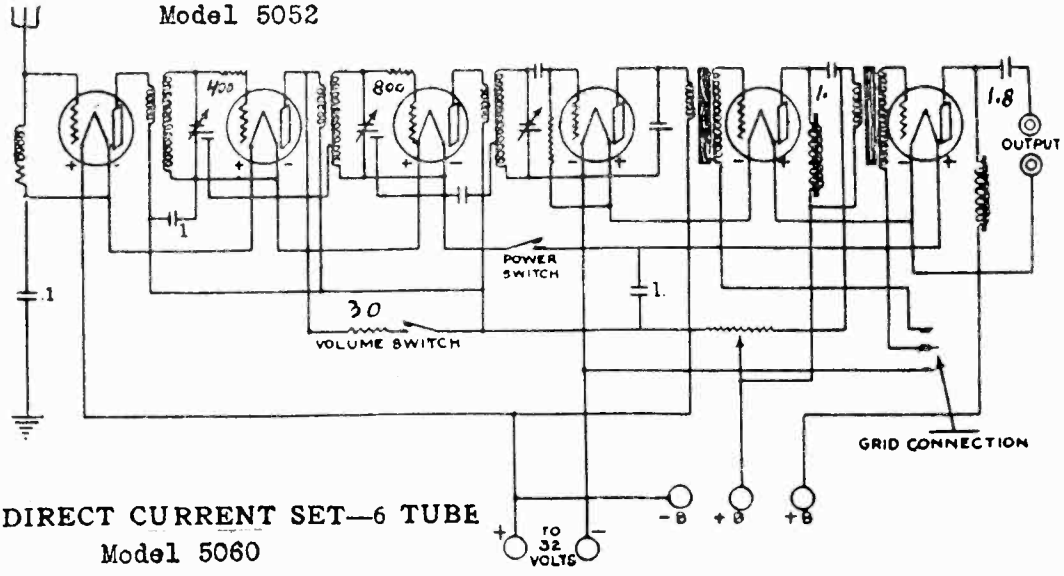
Color of Wire	N.E.M.A. Rating
Red and White	B + Power
Red and Maroon	B + Amp.
Maroon	B + Det.
Black with Green tracer	B — and Ground

MODEL Day-Fan 5052
MODEL Day-Fan 5060

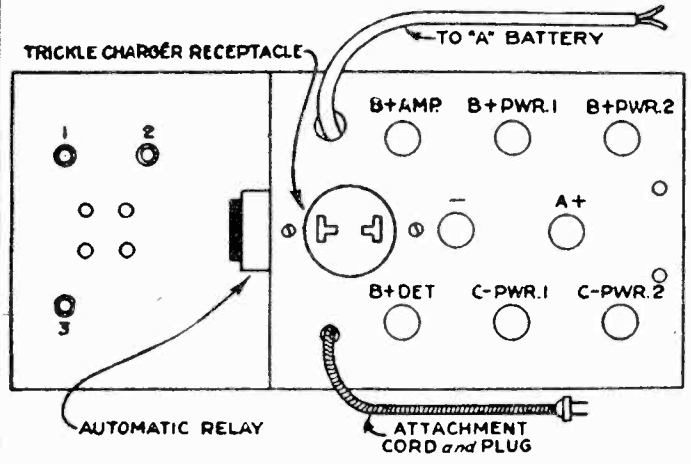
GENERAL MOTORS RADIO CORP.



110 VOLT DIRECT CURRENT SET—6 TUBE
Model 5052

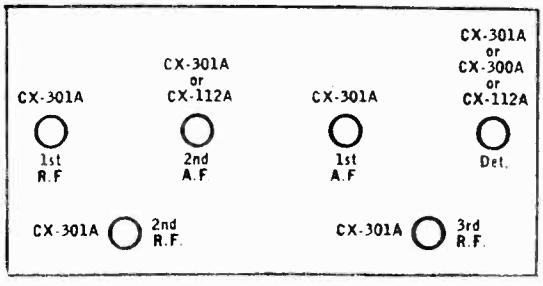


32 VOLT DIRECT CURRENT SET—6 TUBE
Model 5060



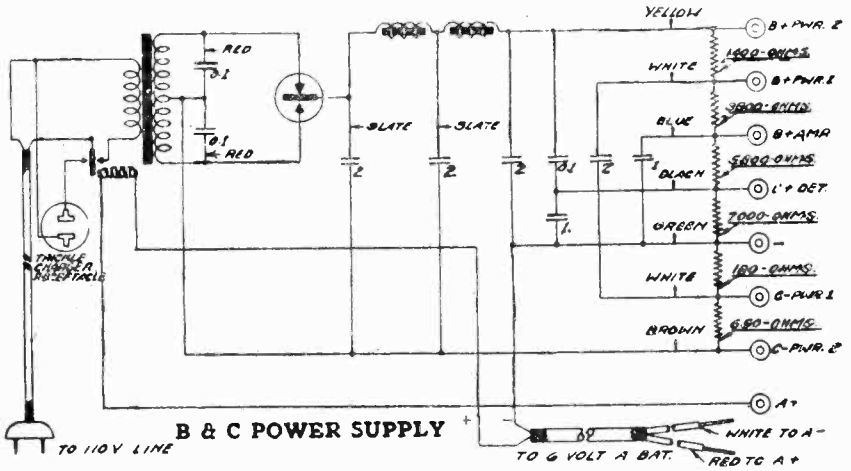
B & C POWER SUPPLY

Day-Fan 5060 (D.C. 32V. Set)
" " 5052 (D.C. 110V. Set)



GENERAL MOTORS RADIO CORP.

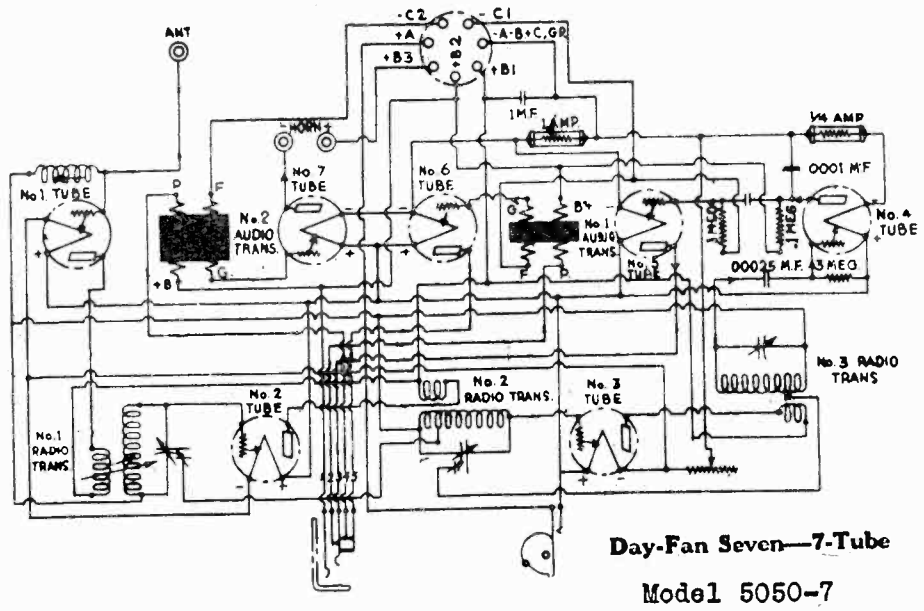
MODEL Day-Fan 5050-7
MODEL "B & C" SPU



B & C POWER SUPPLY

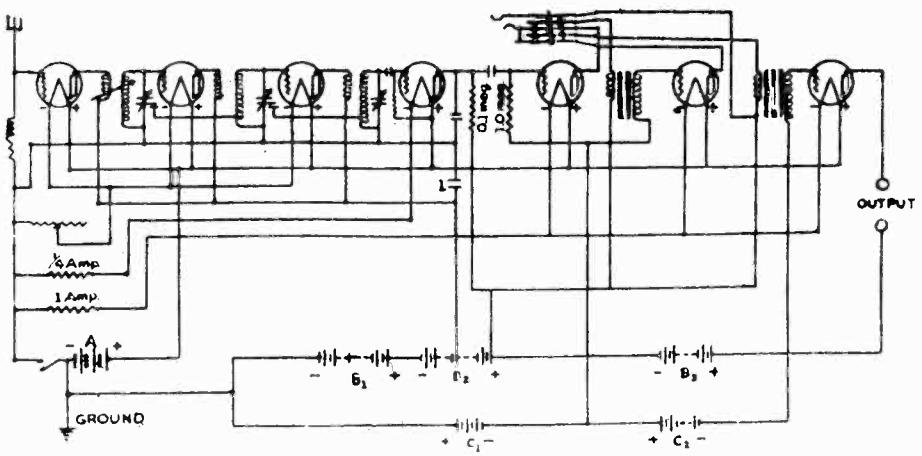
STANDARD BATTERY CONNECTIONS TO DAY-FAN 7 (5050)

Color of Cable Wire	Voltage
Pink	B + Power
Blue	B + 90
Yellow	B + 67½
Red	A + 6
Green	B —, A —, C +
Black	C — 4
Brown	C — Power



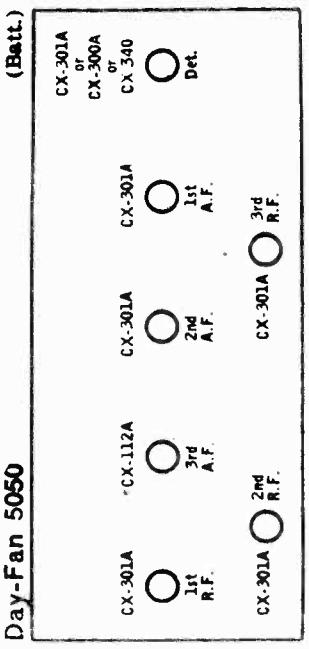
Day-Fan Seven—7-Tube

Model 5050-7



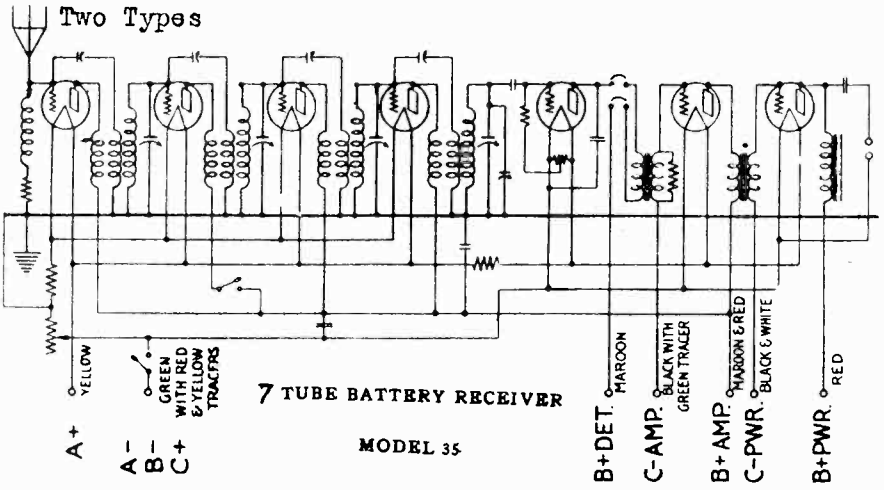
DAY-FAN 7—7 TUBE

Model 5050



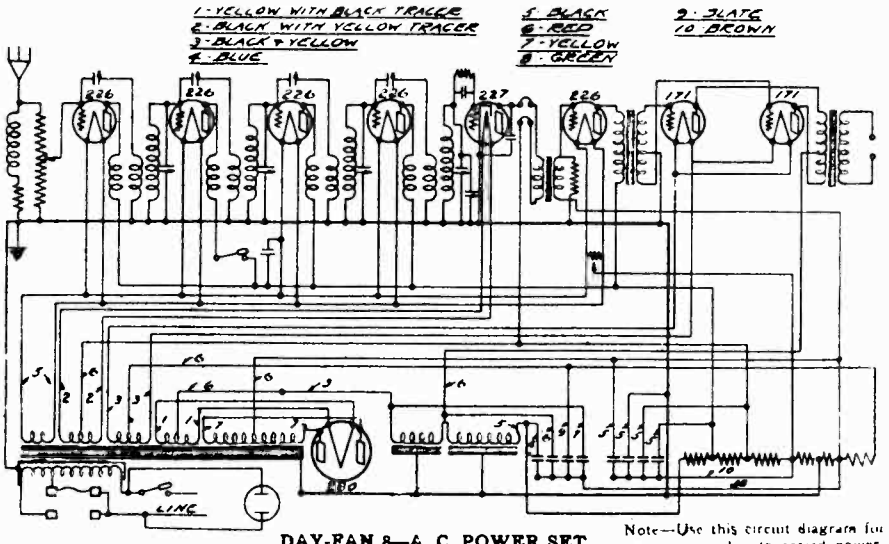
MODEL Day-Fan 35
MODEL Day-Fan 25, 26, 27, 28, 43, 48
Two Types

GENERAL MOTORS RADIO CORP.



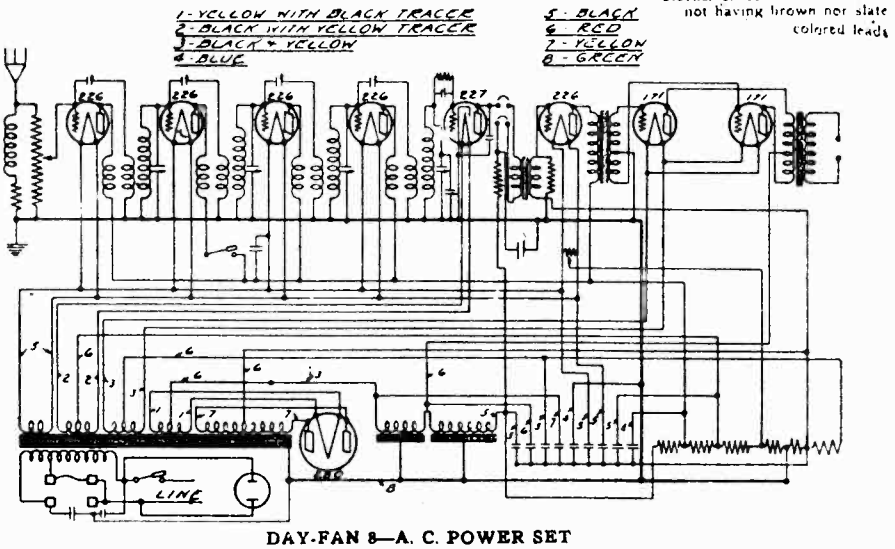
7 TUBE BATTERY RECEIVER

MODEL 35



DAY-FAN 8—A. C. POWER SET.

Note—Use this circuit diagram for receivers equipped with sealed power blocks, or condenser blocks not having brown nor slate colored leads.



DAY-FAN 8—A. C. POWER SET

Note—Use this circuit diagram for receivers equipped with sealed power blocks, or condenser blocks not having brown nor slate colored leads.

DAY-FAN—Models 25-26
Line Voltage 116—2nd A. F. Stage—2 Tubes Push Pull

TUBE NO IN SOCKET	TYPE OF TUBE	POSITION OF TUBE 1ST R.F. DET ETC	TUBE OUT A VOLTS	TUBE OUT B VOLTS	A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE CH. CHANGE
1	226	1st. R.F.	1.55	117	1.5	110	5.5	-	6.5	10.6	4.0
2	226	2nd. R.F.	1.55	117	1.5	110	5.6	-	6.5	10.5	4.0
3	226	3rd. R.F.	1.55	117	1.5	110	6.5	-	6.5	10.6	4.0
4	226	4th. R.F.	1.55	117	1.5	110	5.5	-	6.5	10.5	4.0
5	27	Detector	2.40	128	2.2	25	45	-	1.4	1.4	0.0
6	226	1st. A.F.	1.55	107	1.5	100	7.8	-	3.5	7.0	3.6
7	171A	2nd. A.F.	5.30	170	5.0	158	33	-	18.0	21.0	3.0
8	171A	2nd. A.F.	5.30	170	5.0	158	33	-	18.0	21.0	3.0

MODEL 35

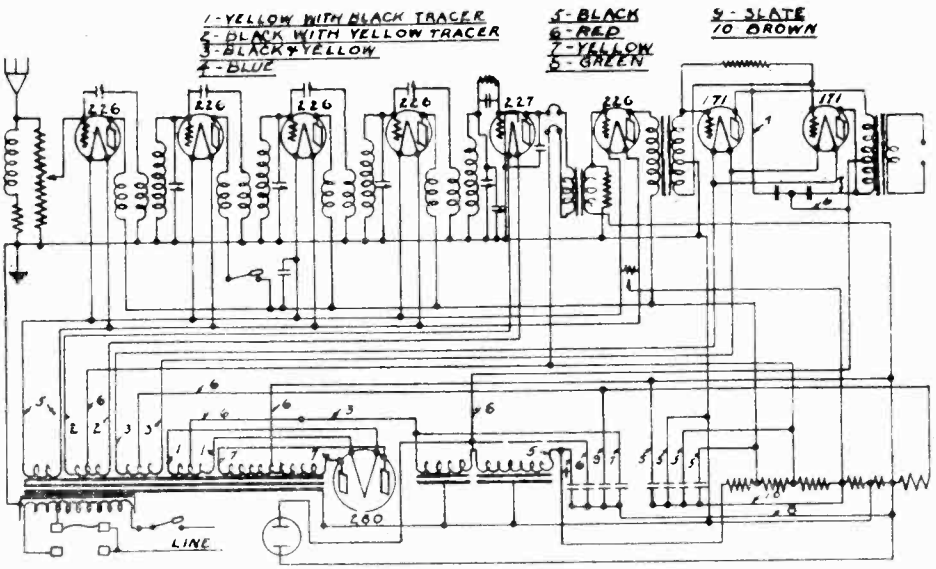
CX-301A	1st R.F.	
CX-301A	2nd R.F.	
CX-301A	3rd R.F.	
CX-301A	4th R.F.	
CX-301A or CX-300A or CX-112A	Det.	
CX-301A	1st A.F.	
*CX-371A or *CX-112A	2nd A.F.	

8-AC. MODELS 25, 26, 27, 28, 43, 48

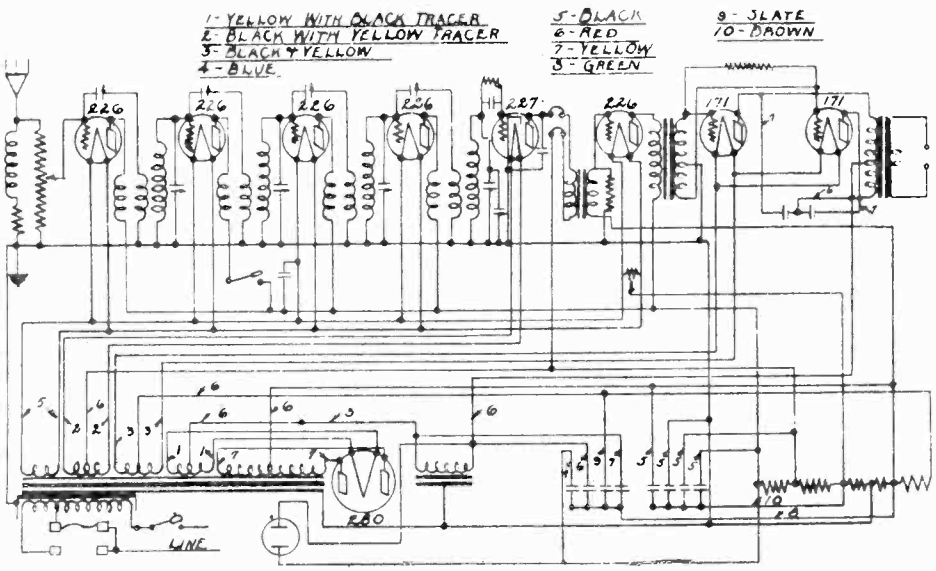
CX-380	Rect.
CX-326	1st R.F.
CX-326	2nd R.F.
CX-326	3rd R.F.
CX-326	4th R.F.
C-327	Det.
CX-326	1st A.F.
CX-371A	2nd A.F.
CX-371A	2nd A.F.
CX-371A	2nd A.F.

GENERAL MOTORS RADIO CORP.

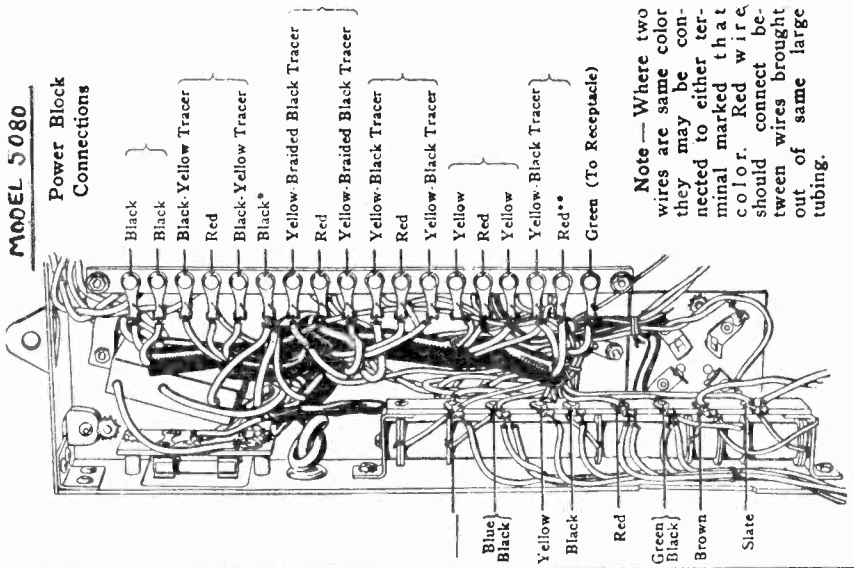
MODEL Day-Fan 5077
MODEL Day-Fan 5080



DAY-FAN 8-TUBE — MODEL 5077
(For Use with 200-Volt D. C. Dynamic Speaker)

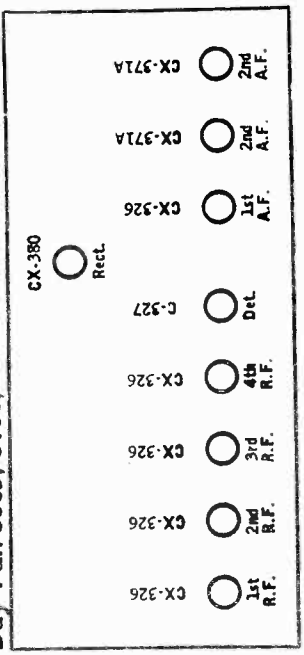


DAY-FAN 8-TUBE — MODEL 5080
(For Use with 110-Volt D. C. Dynamic Speaker)



Note — Where two wires are same color they may be connected to either terminal marked that color. Red wire should connect between wires brought out of same large tubing.

(A.C.) Day-Fan 5069, 5080,



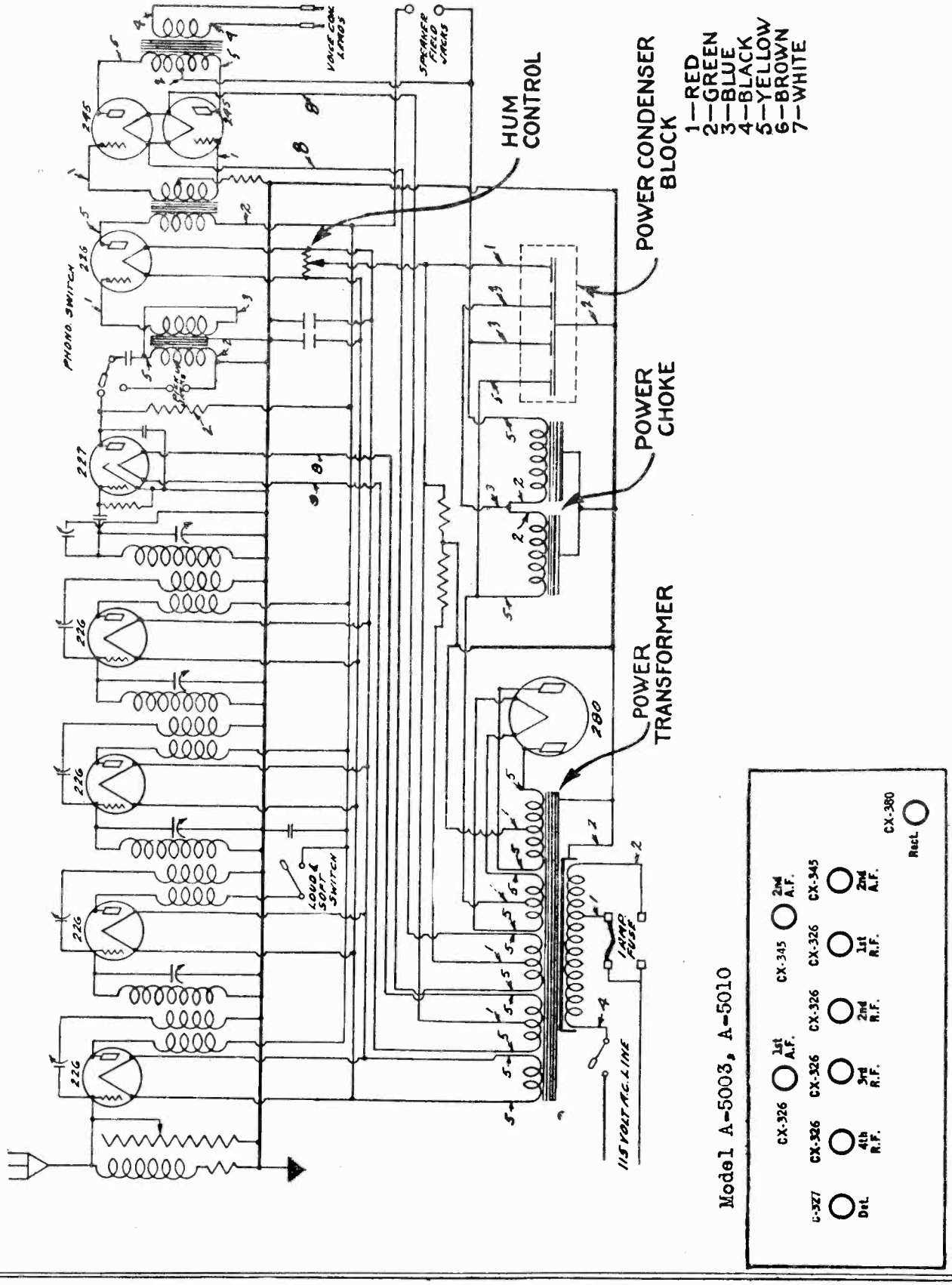
Tube	Fil. Volt.	Plate Volt.	Grid Volt.	Plate Current
RF1	1.3	150	9	4.5
RF2	1.3	150	9	4.5
RF3	1.3	150	9	4.5
RF4	1.3	150	9	4.5
Det	2.2	30	**	1.7
AB1	1.3	130	5	4.5
PP1	2.25	235	7 see note	27.5
PP2	2.25	235	7 see note	27.5

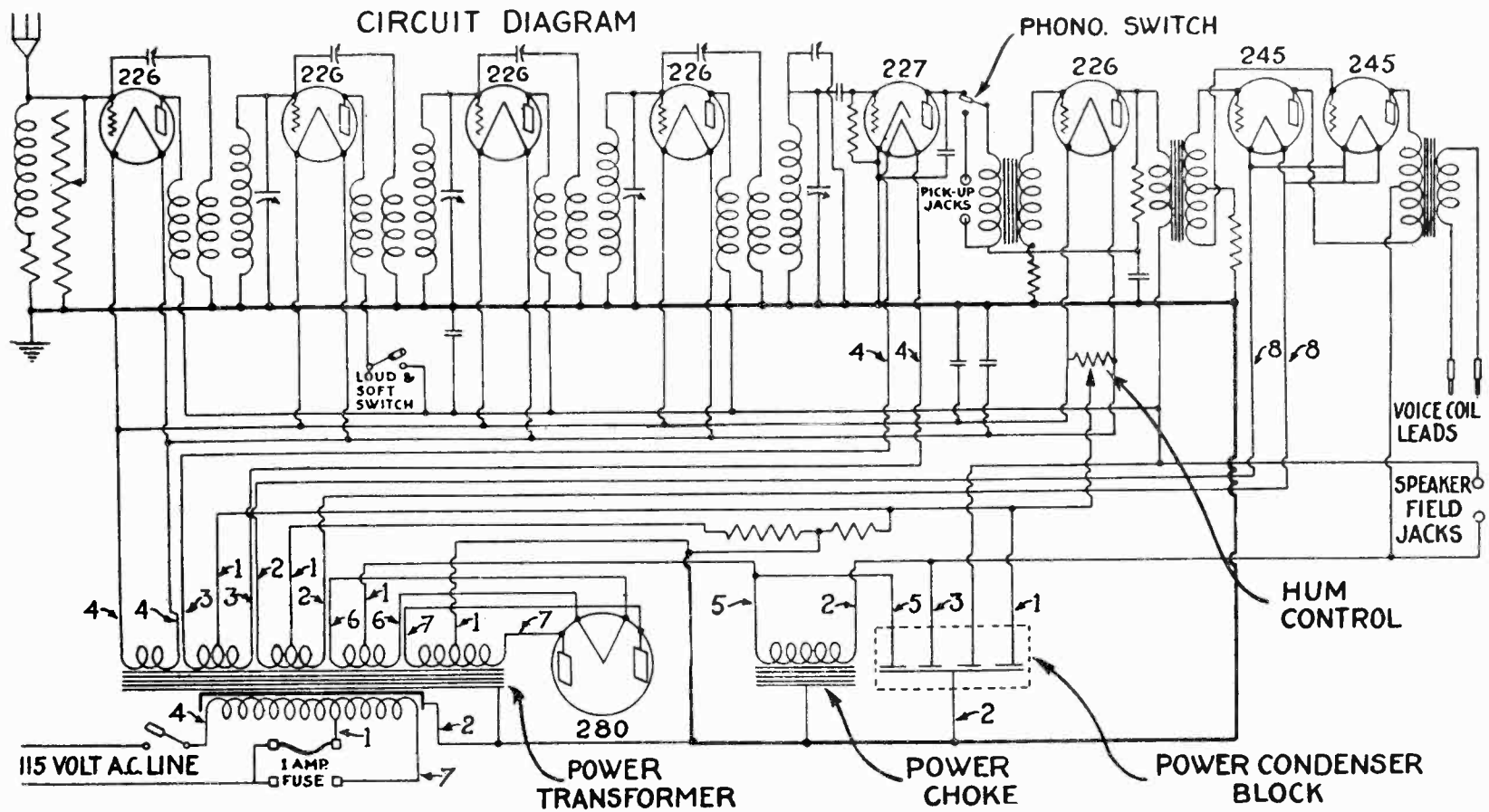
Low output tube bias due to resistance in grid circuit.

5077 - 5069

GENERAL MOTORS RADIO CORP.

MODEL Day-Fan A-5003
A-5010



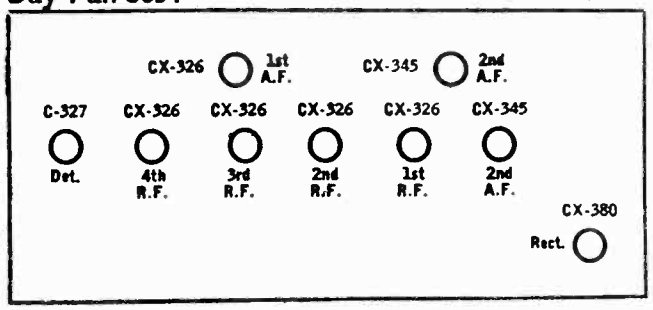


1—RED
2—GREEN
3—BLUE
4—BLACK
5—YELLOW
6—BROWN
7—WHITE

DAY-FAN—Model 5091
Line Voltage 120—Set on 120 Volt Tap—Volume Control Position Max
Note: "C" Bias Voltage Reading on Audio tubes is low due to the current draw of the set tester and high resistances in the set.

TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST RF 2ND RF 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	226	1st RF	1.5	140	1.4	138	10	-	5	9	4	-
2	226	2nd RF	1.5	140	1.4	138	10	-	5	9	4	-
3	226	3rd RF	1.5	140	1.4	138	10	-	5	9	4	-
4	226	4th RF	1.5	140	1.4	138	10	-	5	9	4	-
5	227	Det.	2.6	112	2.5	30	0	10	2	2	0	-
6	226	1st AF	1.5	127	1.4	117	6.5	-	4.5	6.5	3	-
7	245	PP	2.6	260	2.4	245	11.5	-	25	29	4.5	-
8	245	PP	2.6	260	2.4	245	11.5	-	25	29	4.5	-
9	280	Rect.	5.6		4.9				90			

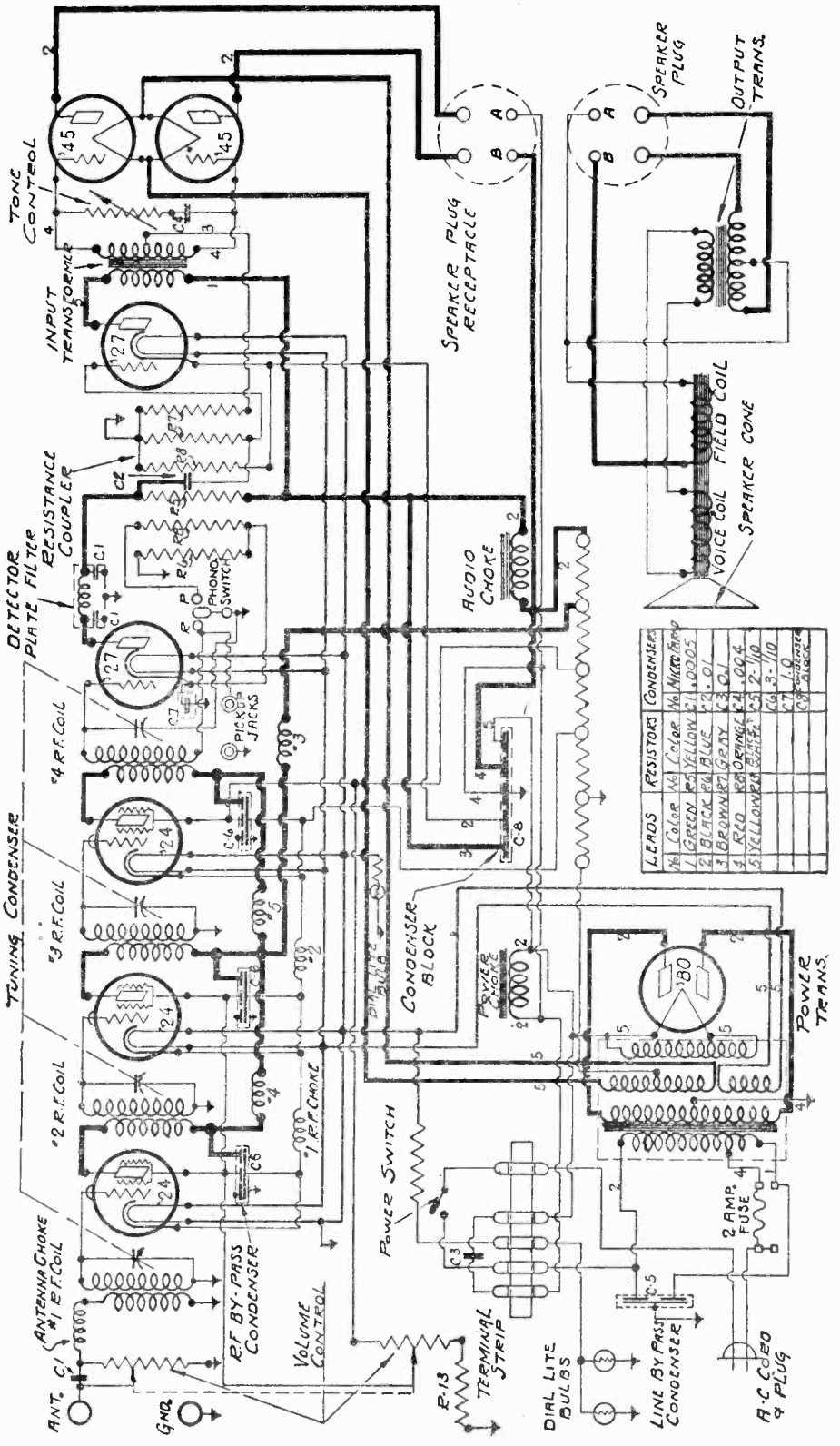
Day-Fan 5091 (A.C.)



DAY-FAN
CHASSIS MODEL 5091
1929 – 1930

MODEL 120,130,140
Below Serial
29100A-1700B

GENERAL MOTORS RADIO CORP



Circuit Diagram of Chassis with Serial Numbers Below 29100A and 1700B.

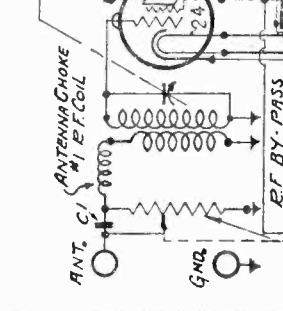
Models 120, 130 & 140

(Chassis Models "A" and "B")

METER READINGS WITH JEWELL TEST PLUG IN SOCKET OF SET

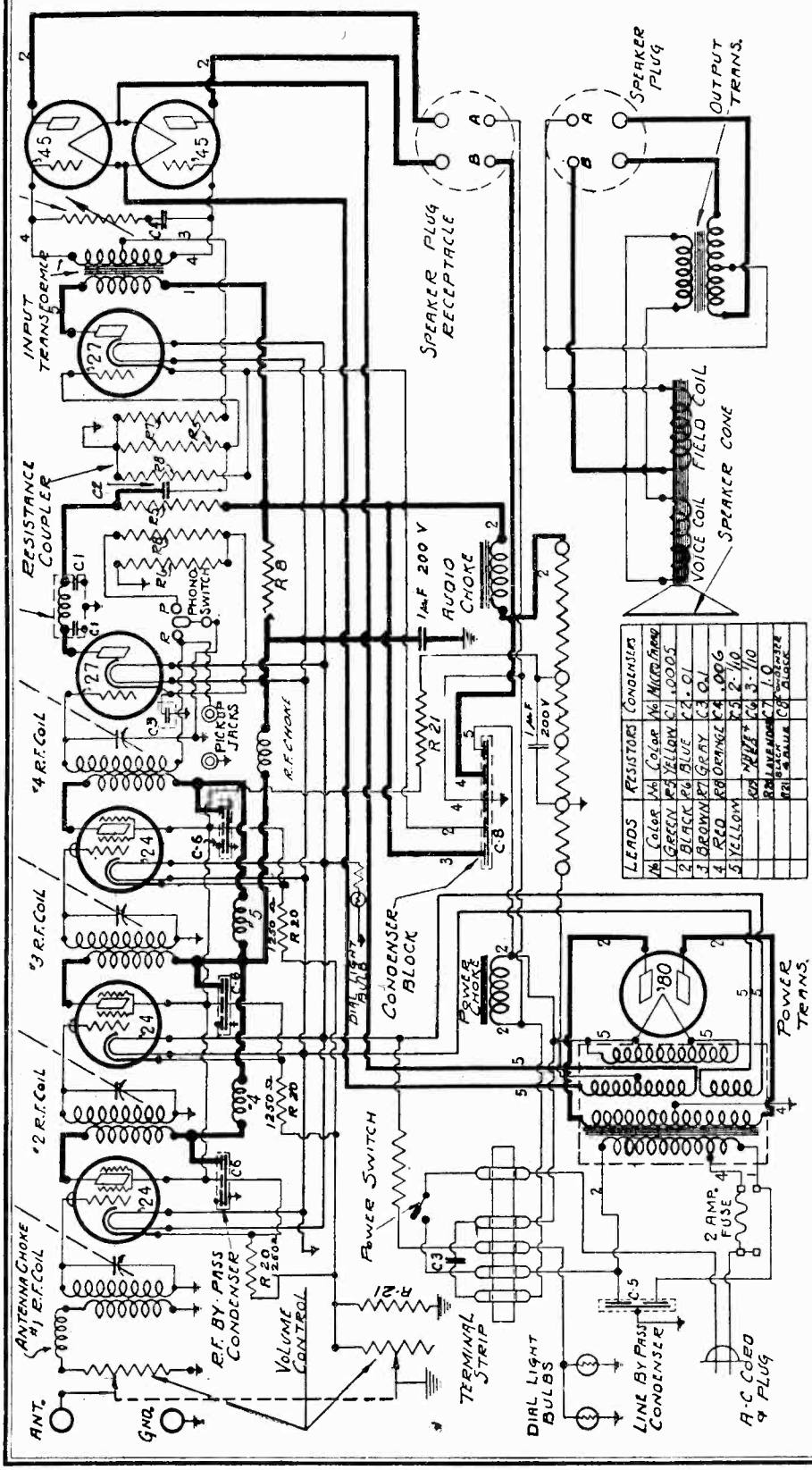
TUBE NO. IN ORDER TESTED	TYPE OF TUBE	POSITION OF TUBE IN SET	OPERATING VOLTAGES					MILLIAMPERES			
			FILAMENT (1) HEATER	PLATE (2) ANODE	CONTROL GRID (3)	SCREEN GRID (4)	CATHODE (5) HEATER	SCREEN GRID & PLATE (6)	PLATE (7) PLATE	TUBE TEST	PLATE CURRENT CHARGE
1	24	1 R.F.	2.2	140	-2	60	+2	-	1.5	2.5	1
2	24	2 R.F.	2.2	140	-2	-60	+2	-	1.5	2.5	1
3	24	3 R.F.	2.2	140	-2	60	+2	-	1.5	2.5	1
4	27	Det.	2.2	100	-	-15	+15	-	.5	2.5	2
5	27	1 A.F.	2.2	135	-	-2	+6	-	4.5	5.6	1.3
6	45	2 A.F.	2.3	235	-	-25	-	-	25	29	4
7	45	2 A.F.	2.3	235	-	-25	-	-	25	29	4
8	80	Rect.	4.5	-	-	-	-	45	45	-	-

Chassis Model A



MODEL 120,130,140
Between Serial
29100A-62100A
1700B-1946B

GENERAL MOTORS RADIO CORP.



Models 120, 130 & 140
(*Chassis Models "A" and "B"*)

LEADS	RESISTORS		CONDENSERS	
No.	Color	No.	Color	No.	Microfarads
1	GREEN	R5	YELLOW	C1	.0005
2	BLACK	R6	BLUE	C2	.01
3	BROWN	R7	GRAY	C3	.01
4	RED	R8	ORANGE	C4	.006
5	YELLOW	R9	VIOLET	C5	2-110
		R10	BRN-BLACK	C6	3-110
		R11	BRN-BLACK	C7	1.0
		R12	BRN-BLACK	C8	.1

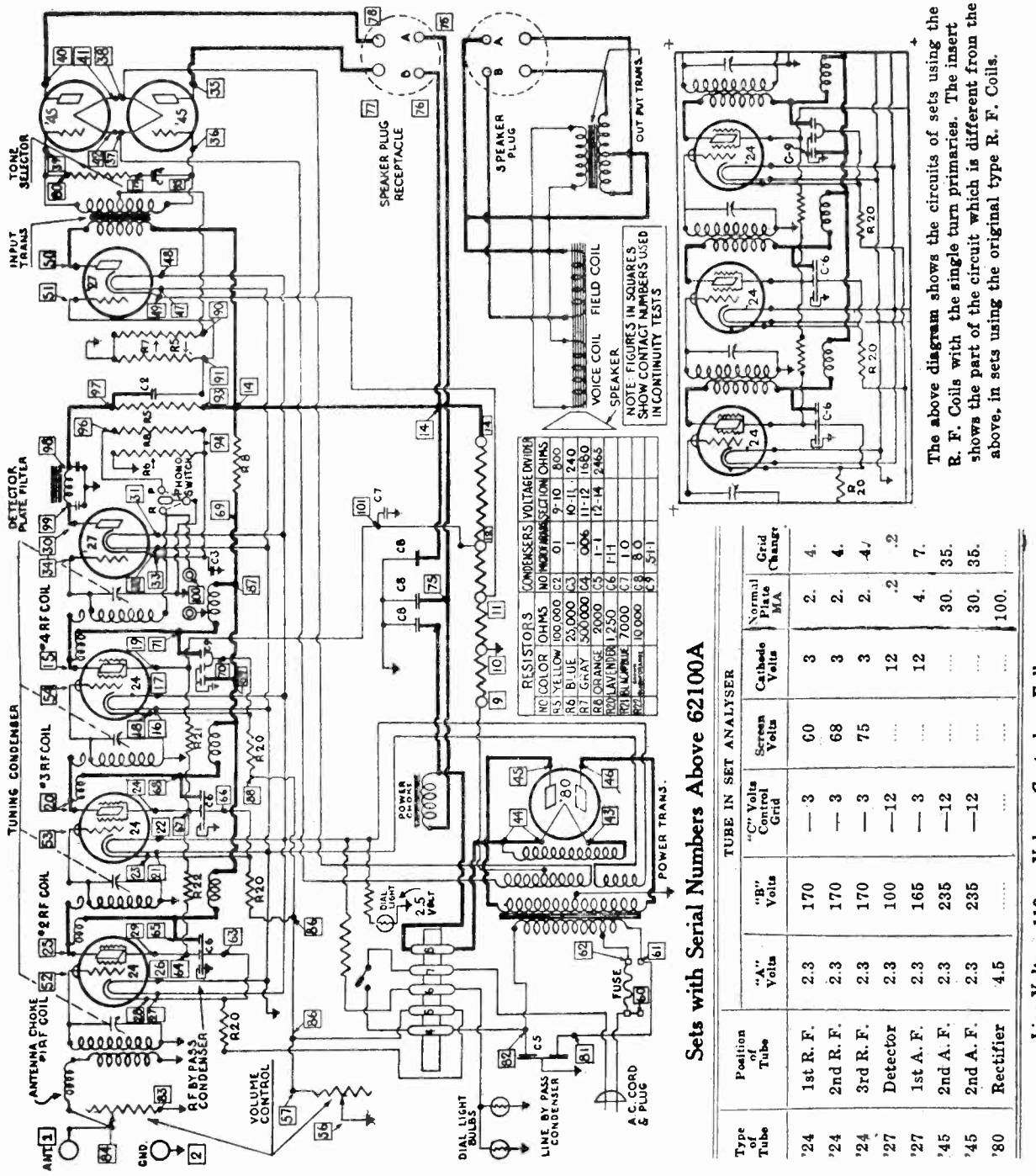
Circuit Diagram of Chassis with Serial Numbers Between 29100A and 62100A and 1700B and 1946B.

Tube	Fil. V.	Pl. V.	C.G. Volts	S.G. Volts	Cath. Volts	Pl. Cur. (MA)
RF-1	2.3	150	- 3	55	3	2.
RF-2	2.3	150	- 3	55	3	2.
RF-3	2.3	150	- 3	55	3	2.
Det.	2.3	100	- 8	..	10	.2
AF-1	2.3	140	- 3	..	10	4.
AF-2	2.3	220	-12	..	..	30.
AF-2	2.3	220	-12	..	..	30.
Rect	4.5	...	...	..	..	100.

Line Voltage - 110 Volume Control on Full

MODEL 120,130,140
Above Serial
62100A-1964B

GENERAL MOTORS RADIO CORP.



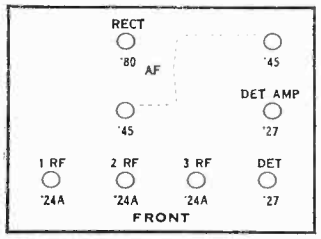
The above diagram shows the circuits of sets using the R. F. Coils with the single turn primaries. The insert shows the part of the circuit which is different from the above, in sets using the original type R. F. Coils.

Sets with Serial Numbers Above 62100A

Type of Tube	Position of Tube	TUBE IN SET ANALYSER "A" Volts	"B" Volts	"C" Volts Control Grid	Screen Volts	Cathode Volts	Normal Plate MA	Grid Change
'24	1st R. F.	2.3	170	— 3	60	3	2.	4.
'24	2nd R. F.	2.3	170	— 3	68	3	2.	4.
'24	3rd R. F.	2.3	170	— 3	75	3	2.	4.
'27	Detector	2.3	100	—12	....	12	.2	.2
'27	1st A. F.	2.3	165	— 3	....	12	4.	7.
'45	2nd A. F.	2.3	235	—12	....	....	30.	35.
'45	2nd A. F.	2.3	235	—12	....	....	30.	35.
'80	Rectifier	4.5	.....	....	....	....	100.	....

Line Voltage 110 Volume Control on Fall

Chassis Model A



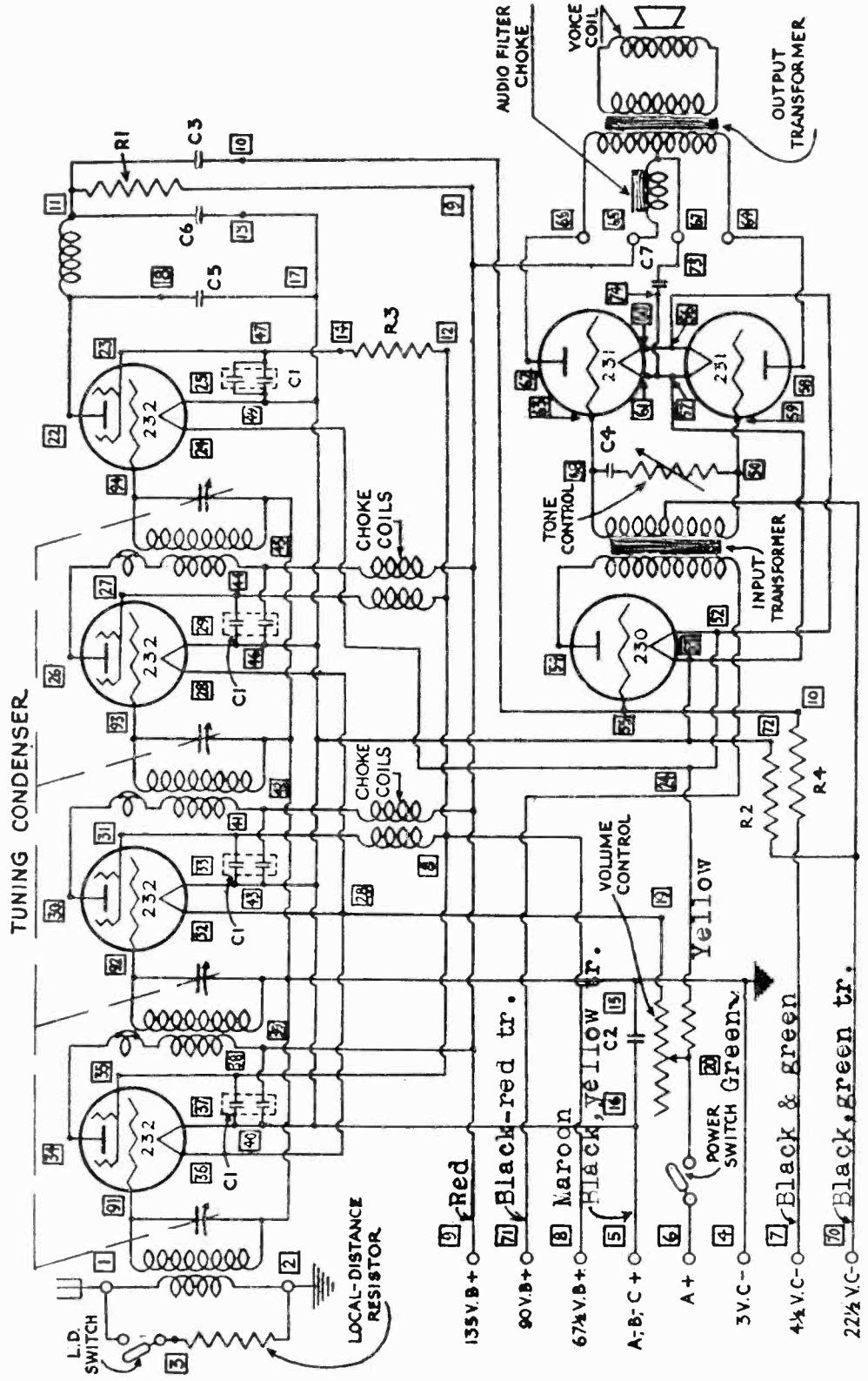
Models 120, 130 & 140

(Chassis Models "A" and "B")

Circuit Diagram of Chassis with Serial Numbers Above 62100A and 1964B.

GENERAL MOTORS RADIO CORP.

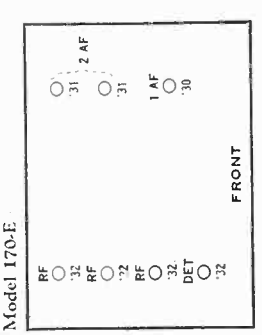
MODEL 170-(E)
Schematic



Tube	Fil	Plate	Screen	Plate Cnt.
1 RF	1.7	140	68	1.2 ma
2 RF	1.7	140	68	1.4
3 RF	1.7	140	68	1.5
Det	1.7	80	10	.2
1 AF	1.7	85	-	1.5
2 AF	1.7	135	-	7.

RESISTORS			
NO.	BODY	END	BAND	OHMS
R1	BROWN	BLACK	YELLOW	100,000
R2	RED	BLACK	YELLOW	200,000
R3	GREEN	BLACK	YELLOW	500,000
R4	RED	BLACK	GREEN	2,000,000

CONDENSERS	
NO	MICROFARADS
C1	.1-.1
C2	.5
C3	.01
C4	.002
C5	.0005
C6	.0001
C7	1.0



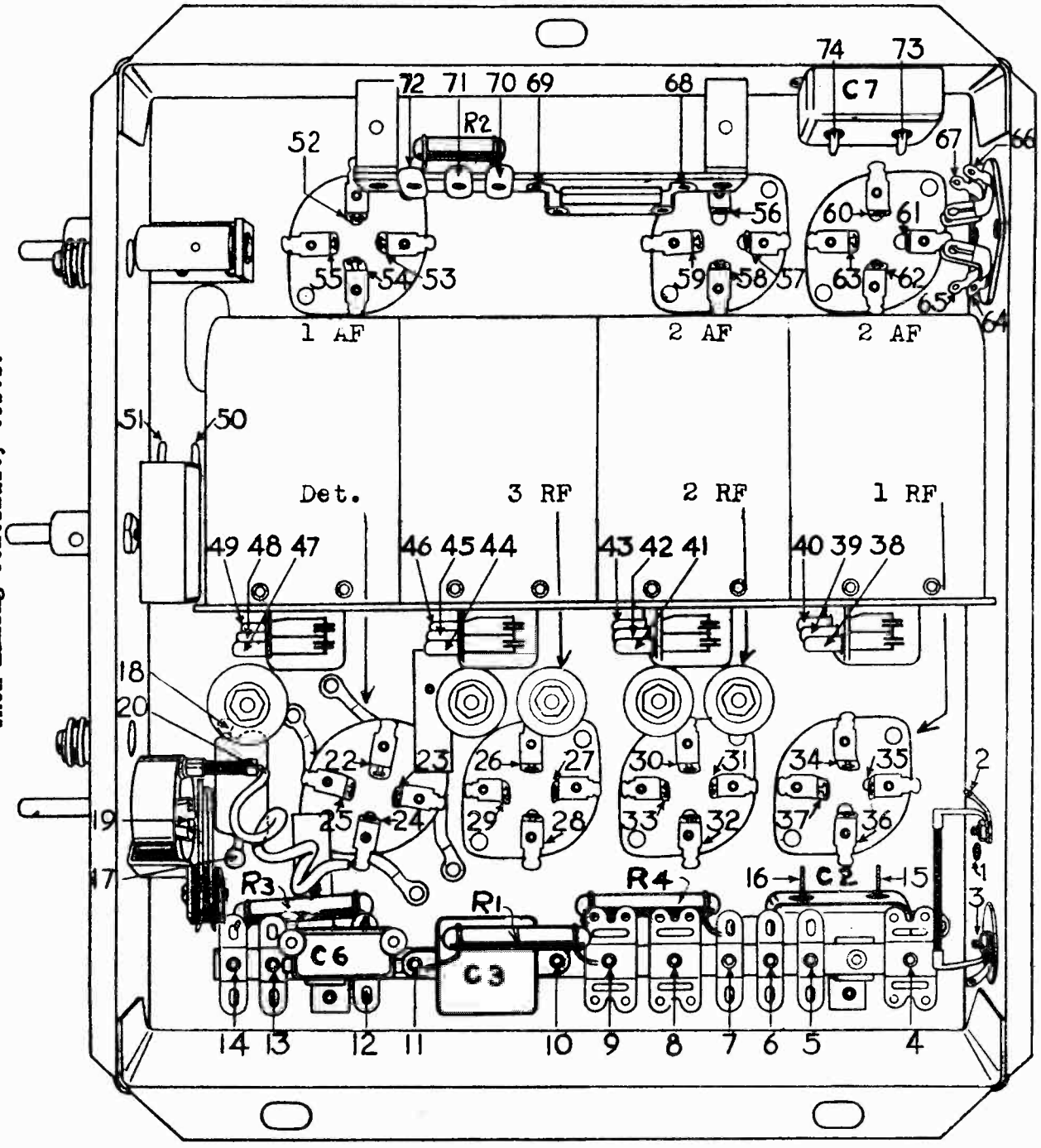
Model 170, Battery Powered Receiver

(Chassis Model E)

MODEL 170-(E)
Chassis

GENERAL MOTORS RADIO CORP.

Chart showing contact numbers used when making continuity tests.



NOTE: NOS. 91, 92, 93 & 94 ARE GRID CAPS OF 1 ST, 2ND & 3RD R.F. TUBES AND DETECTOR TUBE.

Model 170 Receiver
Chassis Model E
(PIONEER BATTERY POWERED RECEIVER)

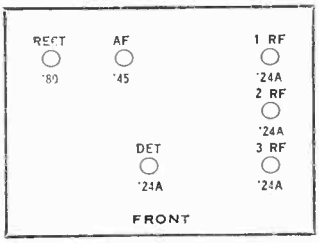
FILTER UNIT

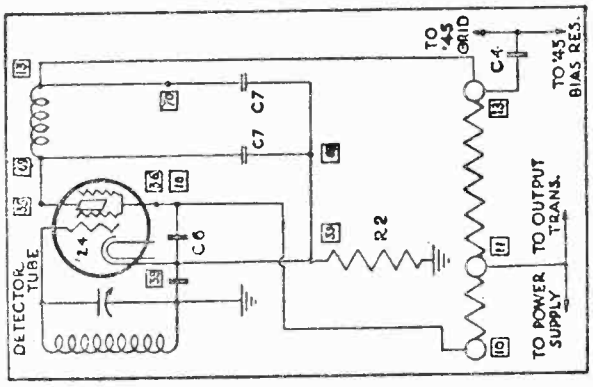
Filter Units, Part No. 1202735, have been supplied to the field with instructions for installation on Model "E" Chassis with Serial Nos. below 3205-E only. All receivers above 3205-E have the Filter Units incorporated in the chassis and speaker. These parts include the Audio Filter Choke which is mounted on the speaker and one 1 Mfd. condenser located in the Chassis. On sets with Serial Numbers below 3205-E, use No. 1951 Speaker. Sets with Serial Numbers above 3205-E use Speaker No. 1952.

GENERAL MOTORS RADIO CORP.

MODEL 110,180,190
Little General

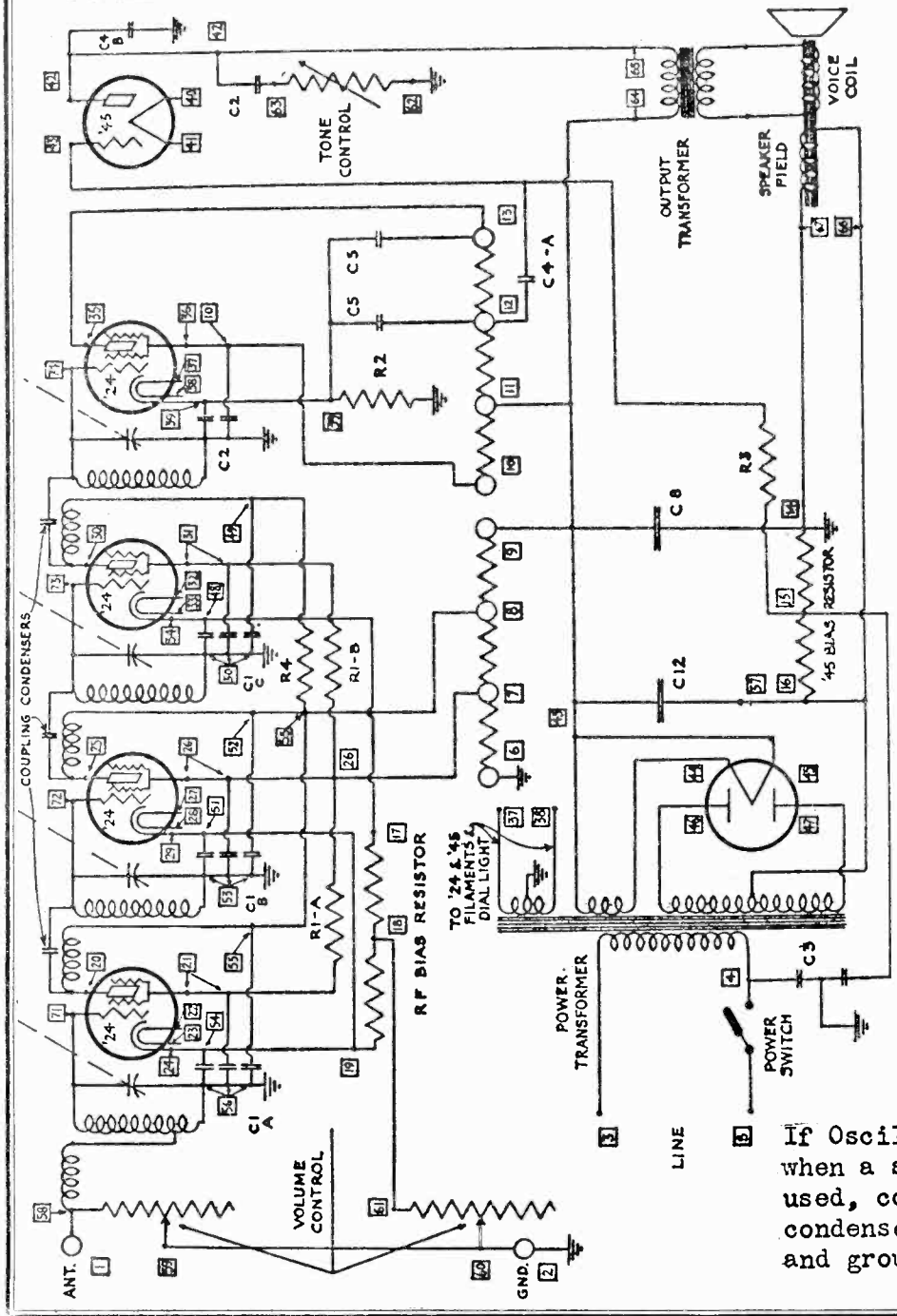
Models 110, 180, 190





The above insert shows a part of the Detector Circuit for Chassis with serial numbers above 23156 MA and 1611 M B —In the Chassis with Circuits as shown above, the Detector Plate Filter Circuit includes a choke coil in the Plate Circuit instead of one section of the Voltage Divider as in previous Chassis

NOTE: In Chassis with serial numbers above 23156 M A and 1611 M B, the Tone Control Condenser and the Line By-Pass Condenser are included in the same can, with capacities as shown for Condenser No. C 2.



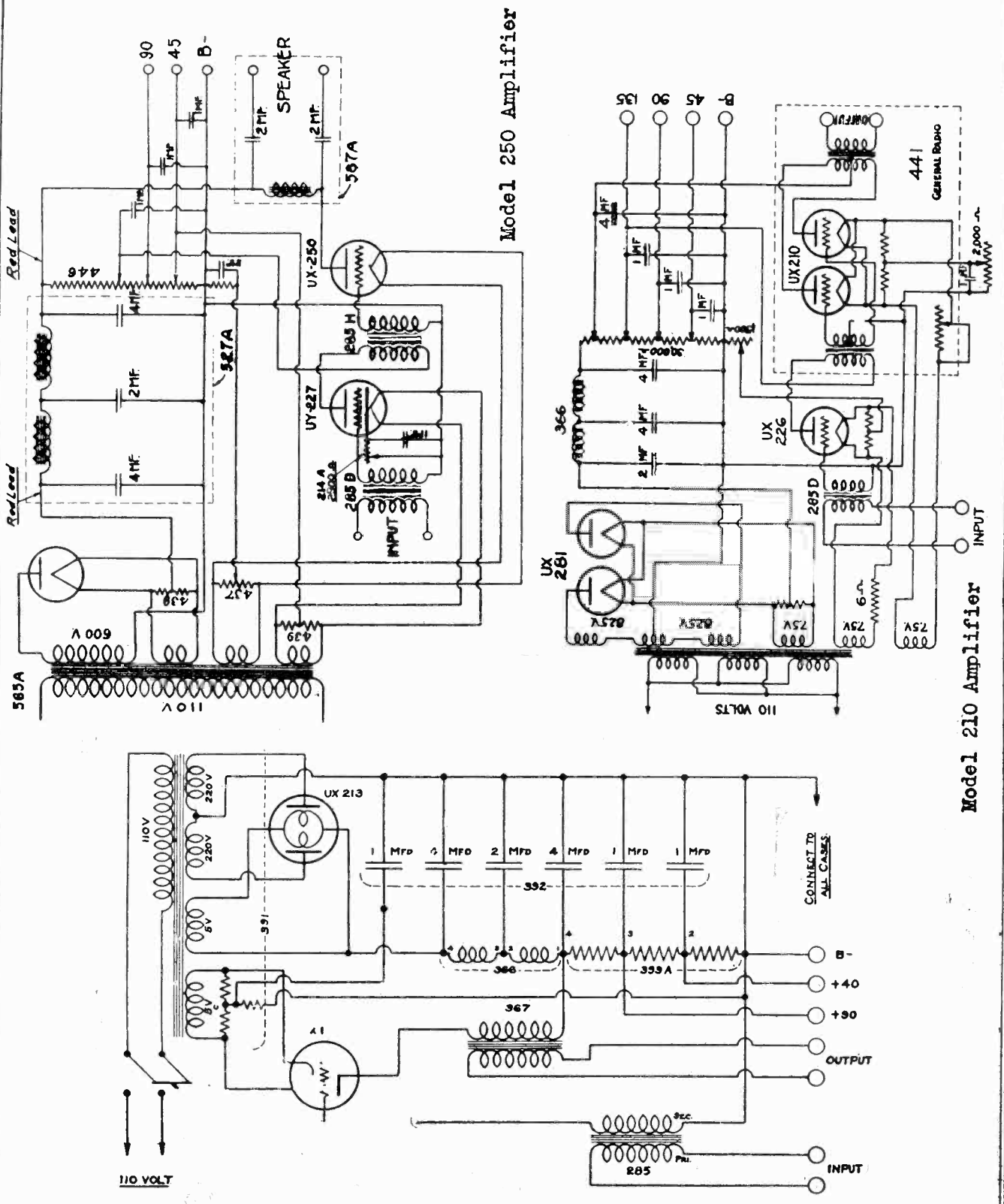
FIXED CONDENSERS		SINGLE FIXED RESISTORS				VOLTAGE DIVIDER		'45 BIAS RESISTOR	
NO.	CAPACITY	NO.	OHMS RESISTANCE	COLOR BODY	COLOR END	DOT	SECTION	RESISTANCE	SECTION	RESISTANCE
C-1	1-1-1 Mfd.	R 1	12,000	Brown	Green	Orange	6 - 7	25,000 Ohms	14 - 15	100,000
C-2	5-1-22 Mfd.	R 2	25,000	Red	Green	Orange	7 - 8	12,000 Ohms	15 - 16	150,000
C-3	5-1 Mfd.	R 3	500,000	Green	Black	Yellow	8 - 9	6,000 Ohms	15 - 16	150,000
C-4	.01 Mfd.	R 4	1,000	Insulated Resistor Wire			10 - 11	2 Megohms	R F BIAS RESISTOR	
C-5	.00025 Mfd.						11 - 12	250,000 Ohms	SECTION	RESISTANCE
C-6	.5-5 Mfd.						12 - 13	12,000 Ohms	17 - 18	1,000
C-7	.0001 Mfd.								On chassis with serial numbers above 23156 MA	18 - 19	500
C-8	8.0 Mfd.										
C-12	12.0 Mfd.						11 - 13	250,000 Ohms			

TUBE	TYPE	FIL.	PLATE	CON. GRID	S. GRID	CATHODE	NORMAL MA.	GRID CHANGE
'24	1RF	2.4	165	3.1	80	3	2.5	2.5
'24	2RF	2.4	165	3.1	92	3	2.5	2.5
'24	3RF	2.4	160	3.1	82	3	2.5	2.5
'24	DET	2.5	100	6.5	12	10	.2	.1
'45	1AF	2.4	225	3.0			20	40
'80	RECT	4.5	360				20	

If Oscillation persists when a small aerial is used, connect a .0001 mfd condenser across the aerial and ground posts.

GENERAL RADIO CO

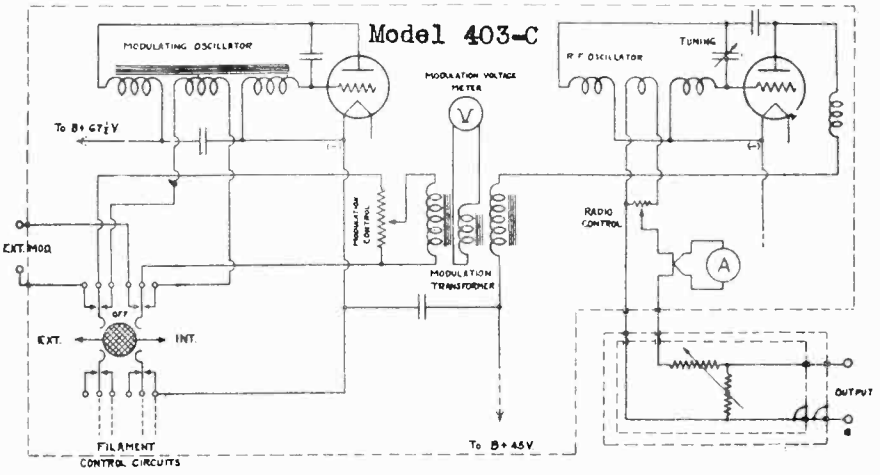
MODEL 250 Amplifier
MODEL 210 Amplifier
MODEL 390 Eliminator



Showing the schematic diagram of the Type 390 Rectron "B" Eliminator and Power Amplifier

MODEL 403-C
MODEL 361-B

GENERAL RADIO CO



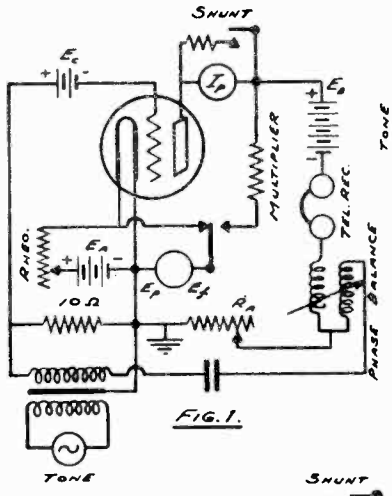


FIG. 1.

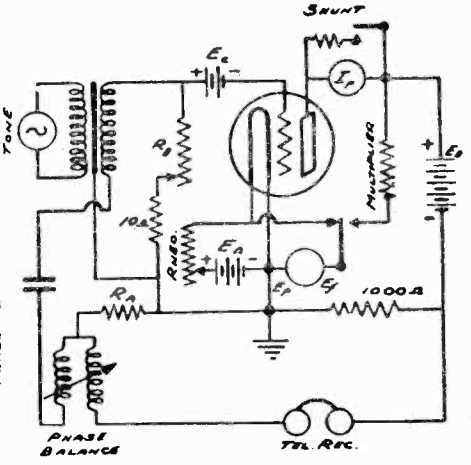


FIG. 2.

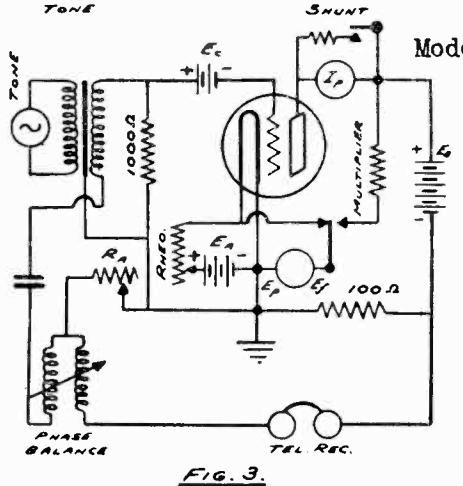


FIG. 3.

Model 361-B

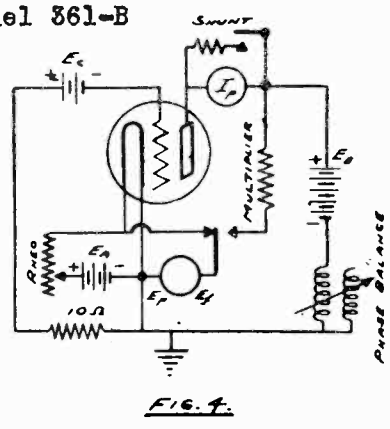


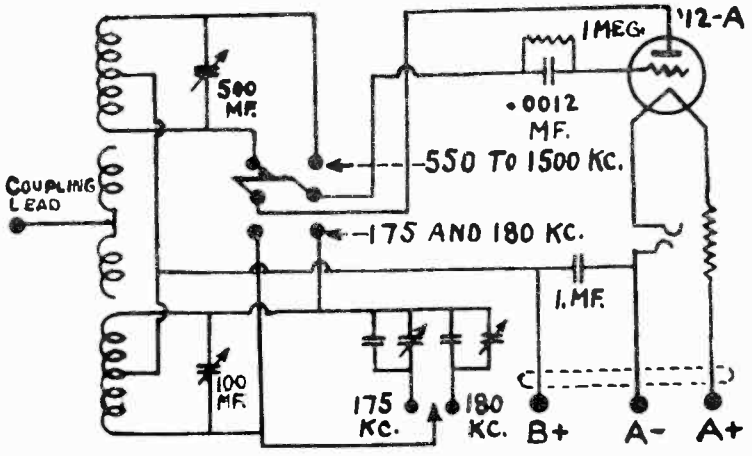
FIG. 4.

Figure 1 Amplification Constant.
Figure 2 Plate Resistance
Figure 3 Mutual Conductance
Figure 4 Static characteristics

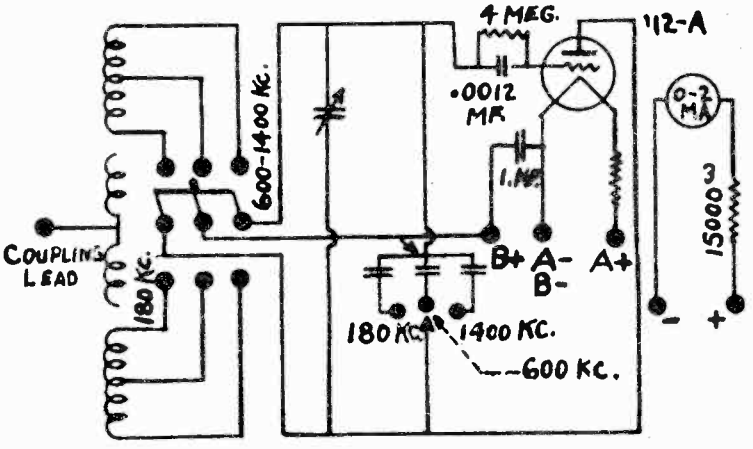
Special adaptors are available for conversion and application of the 361-B bridge to AC tubes.

GENERAL RADIO CO

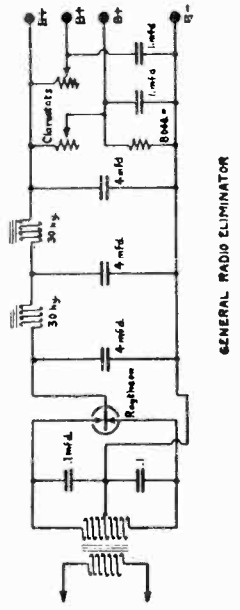
MODEL 360 Oscillator
MODEL 360-A Oscillator
MODEL 320 Oscillator

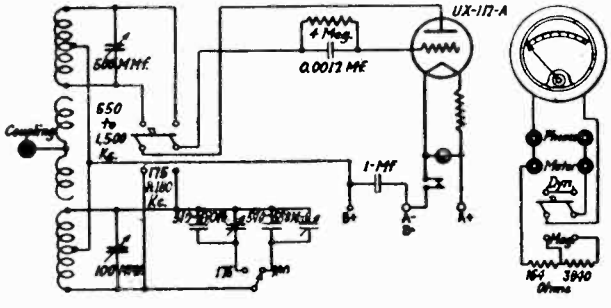


Model 360 Oscillator



Model 320 Oscillator

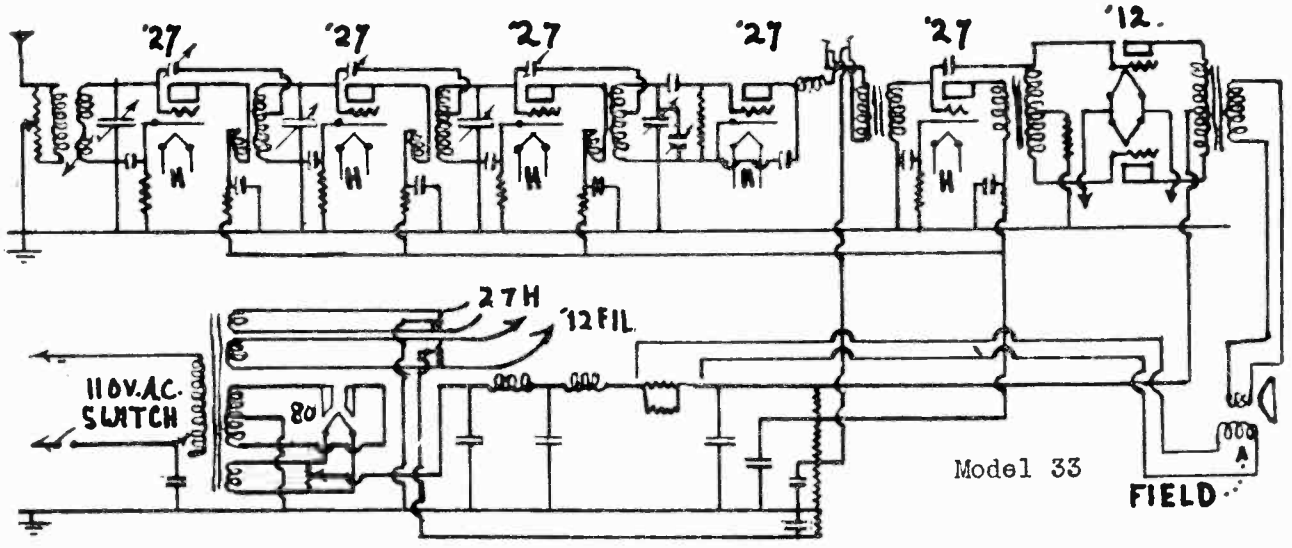




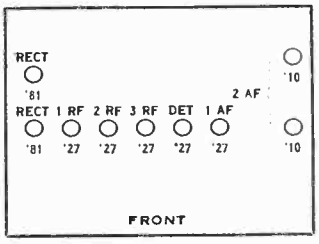
Model 360-A Oscillator

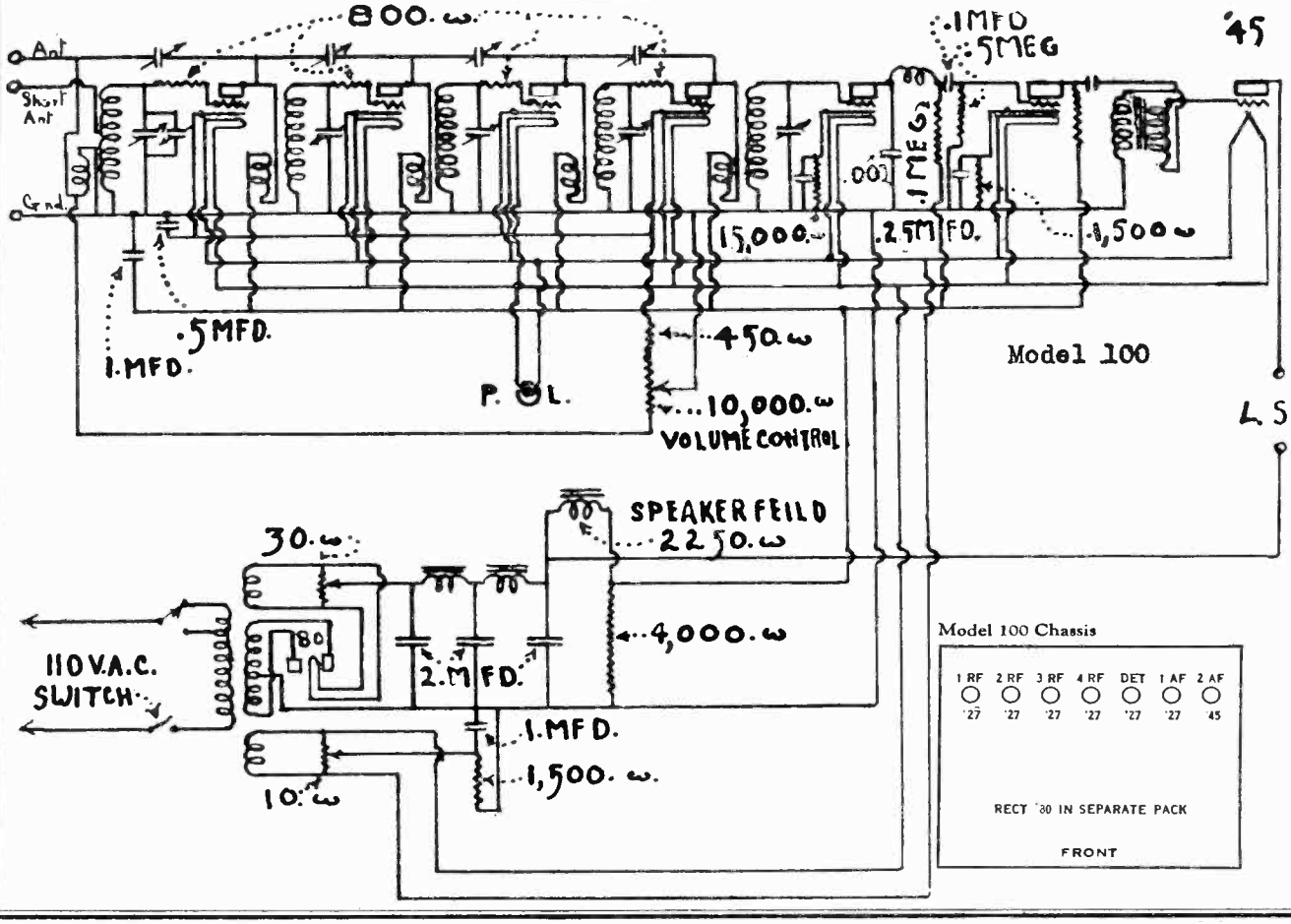
GILFILLAN BROS.

MODEL 33
MODEL 100



Models 33, 44, 77

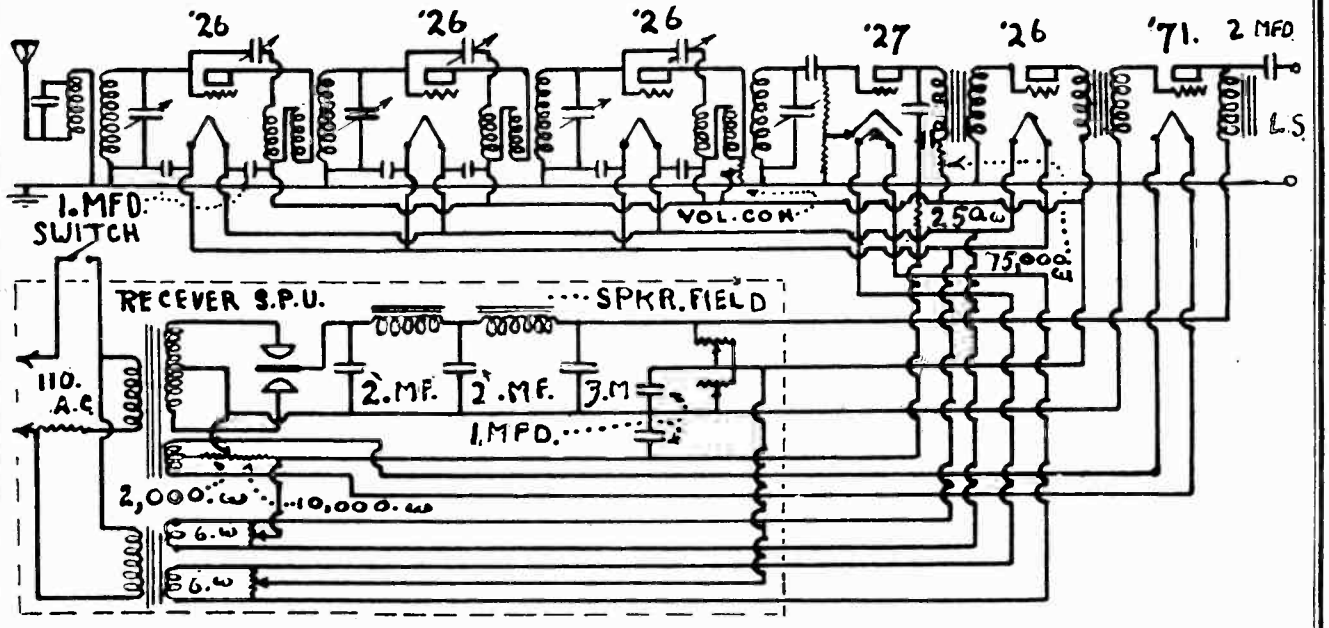




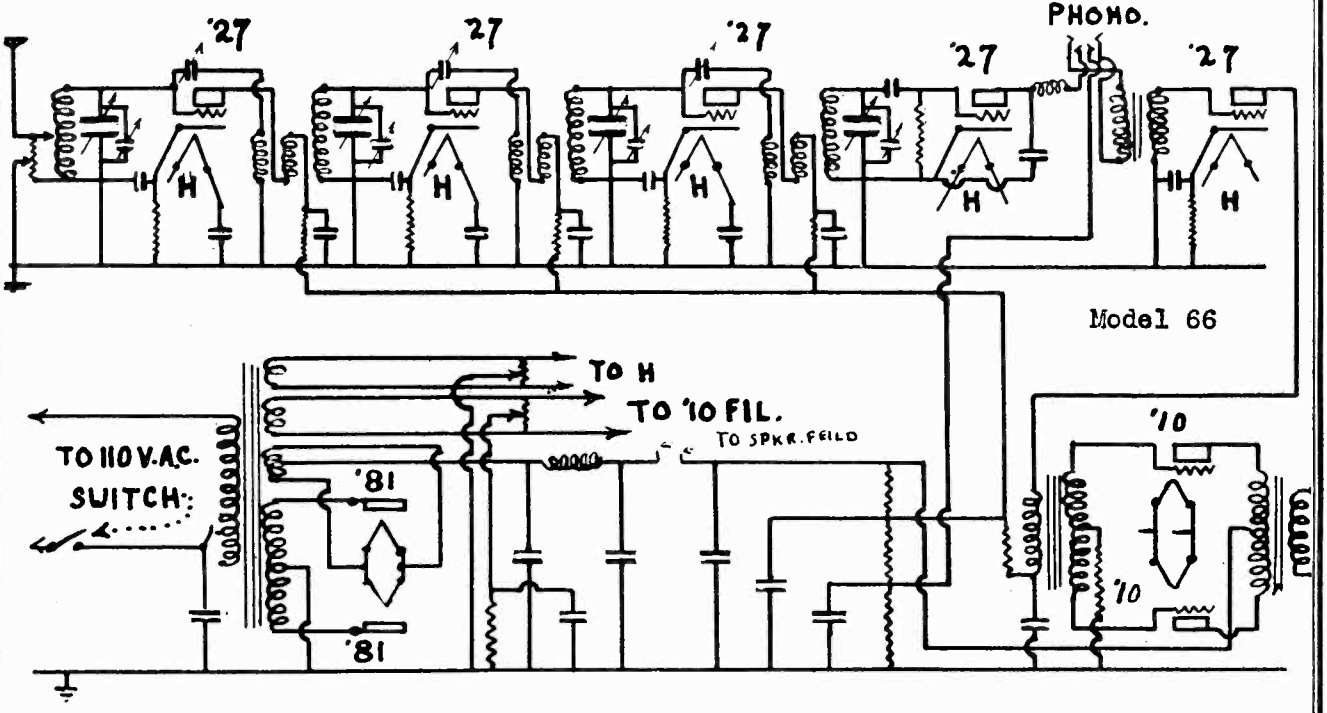
Model 100 Chassis

MODEL 60
MODEL 66

GILFILLAN BROS.

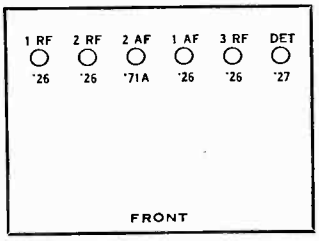


Model 60

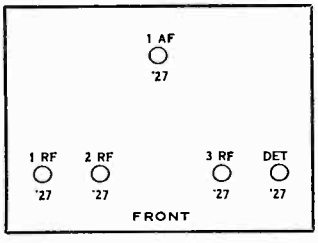


Model 66

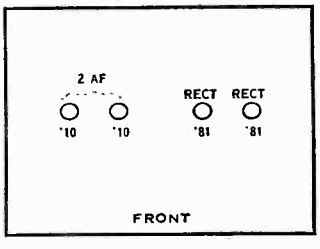
Models 55, 60, 65, 70



Model 66 Chassis

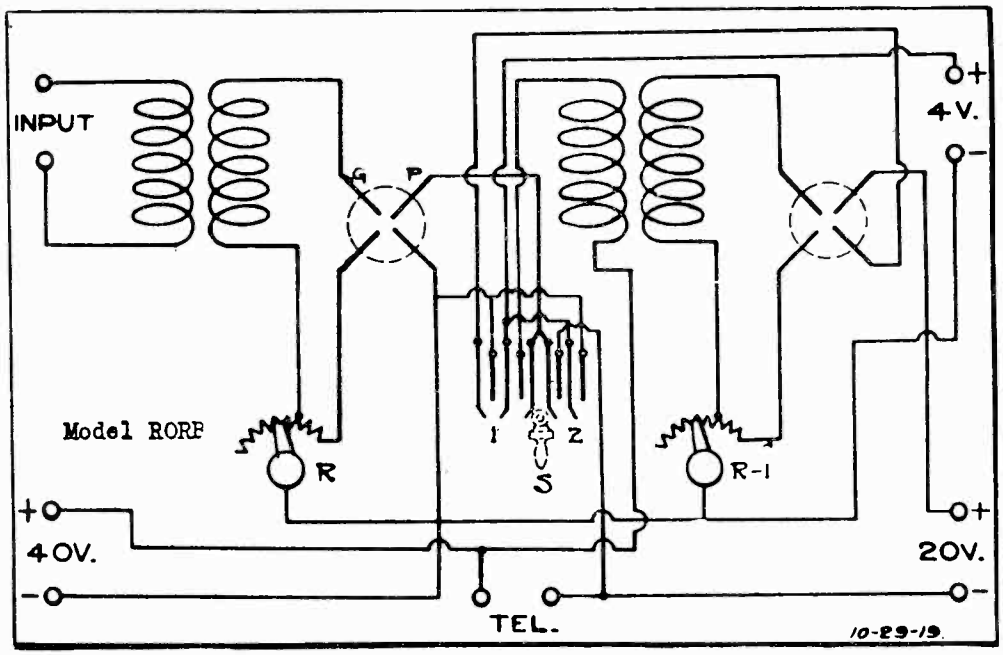


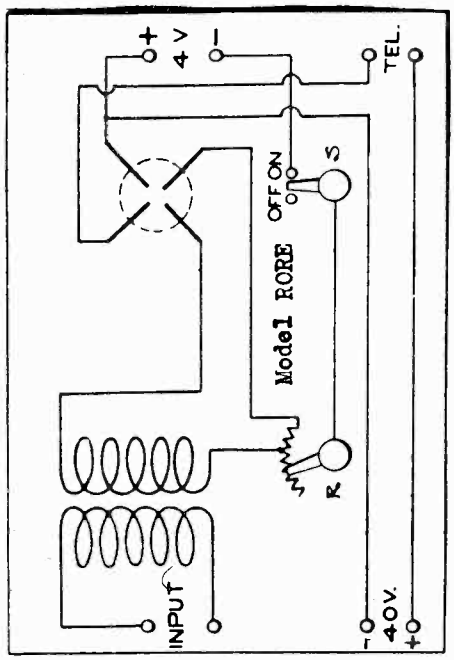
Model 66 Pack

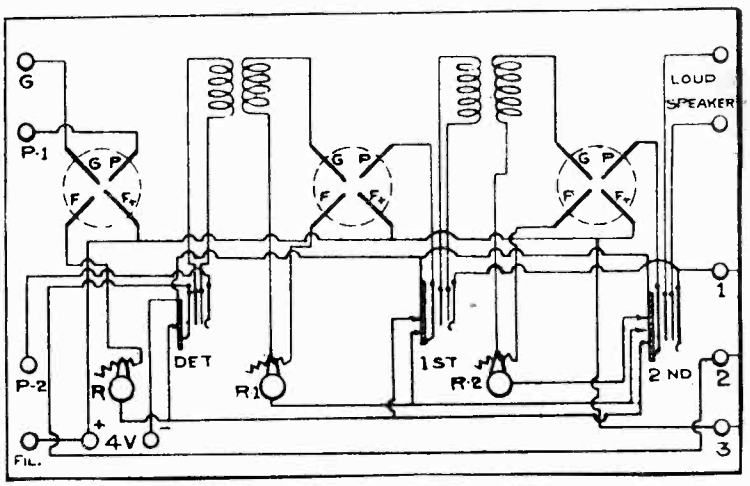


A. H. GREBE & CO.

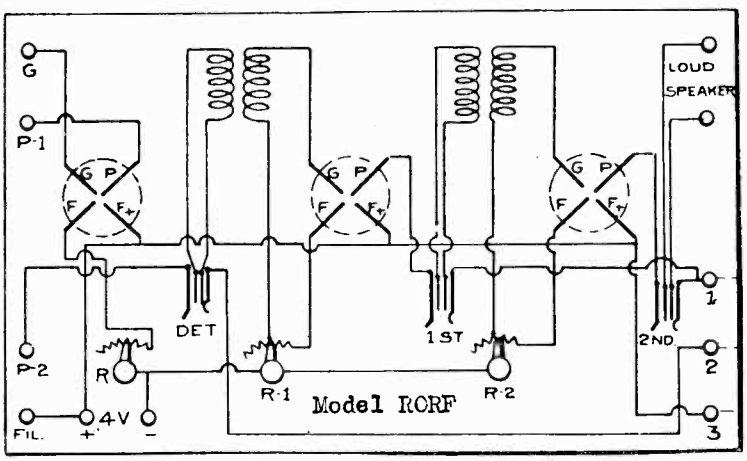
MODEL RORB
MODEL RORD
MODEL RORE
MODEL RORF







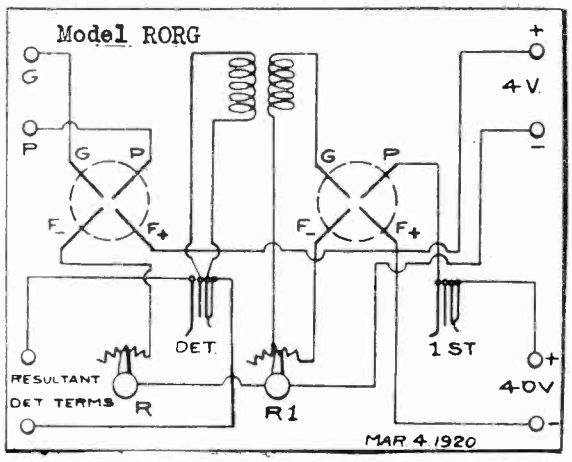
Model RORD

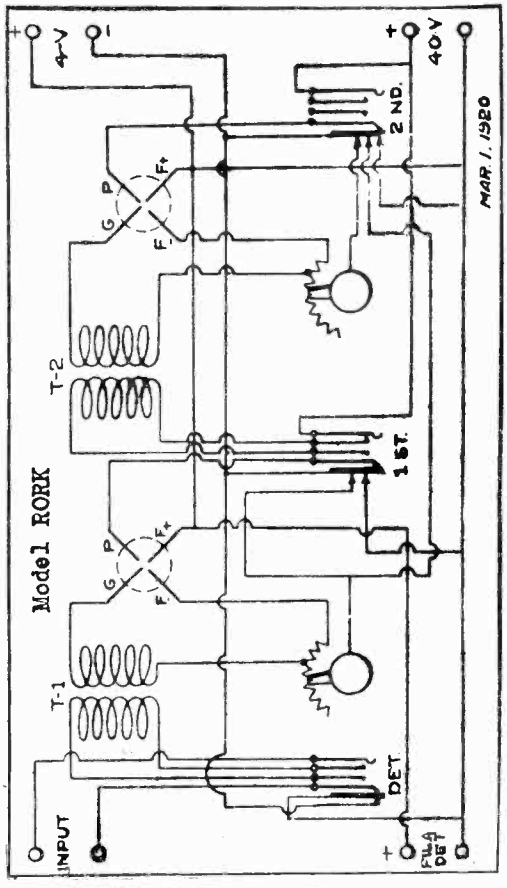


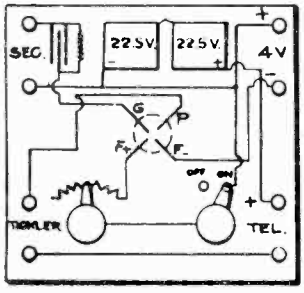
Model RORF

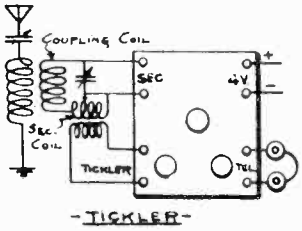
MODEL RORG
MODEL RORH
MODEL RORJ
MODEL RORK
MODEL RORL

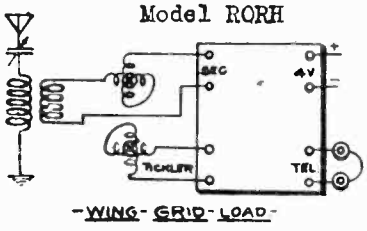
A. H. GREBE & CO.

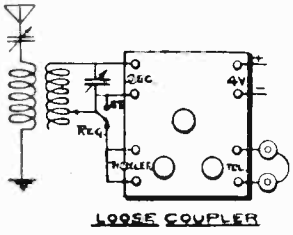




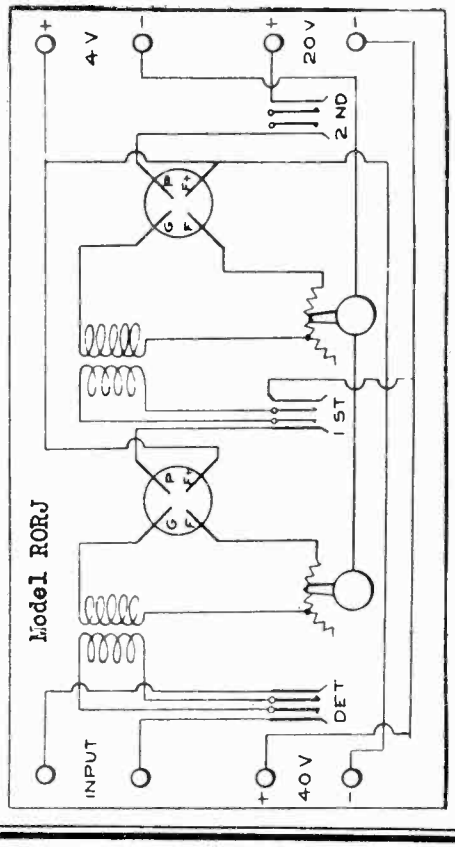


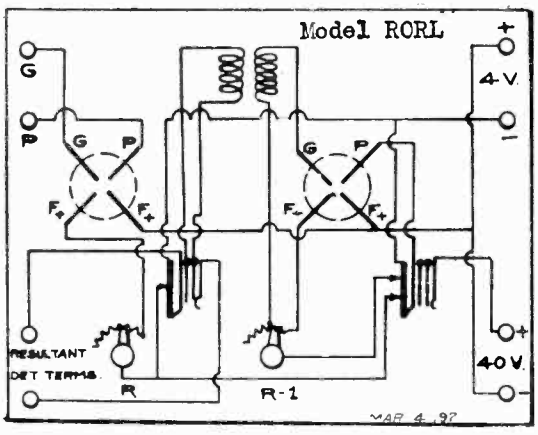






FEB 28 1920

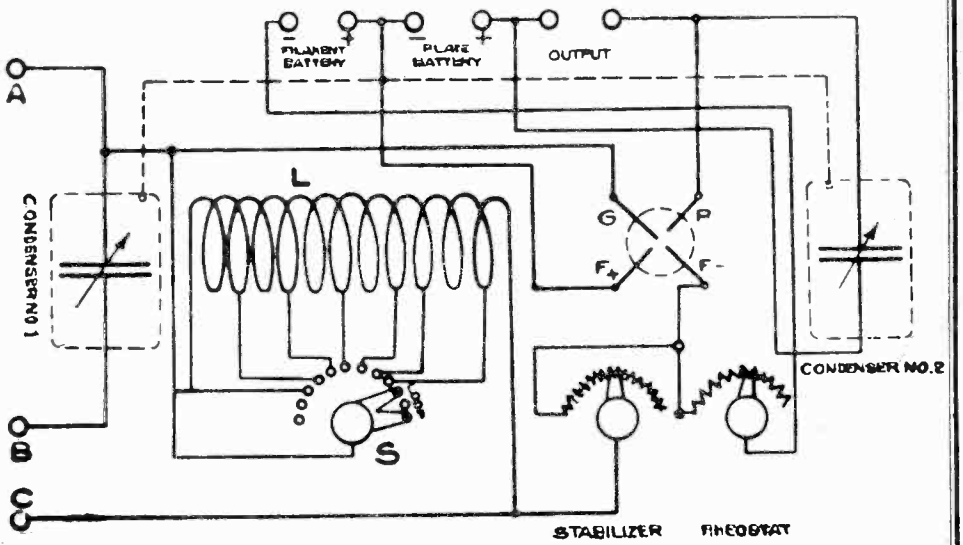




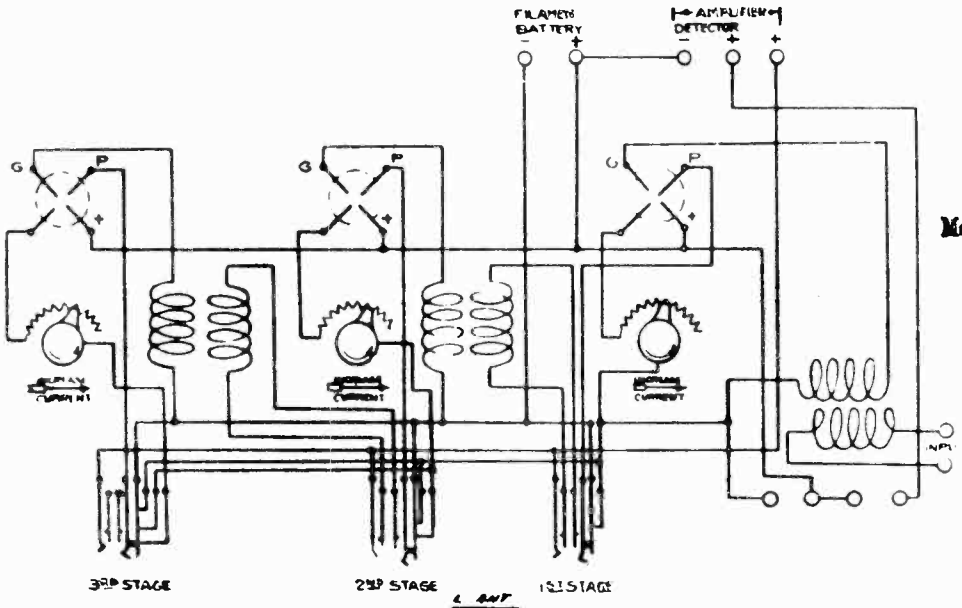
A. H. GREBE & CO.

MODEL RORN
MODEL RORO
MODEL RORQ

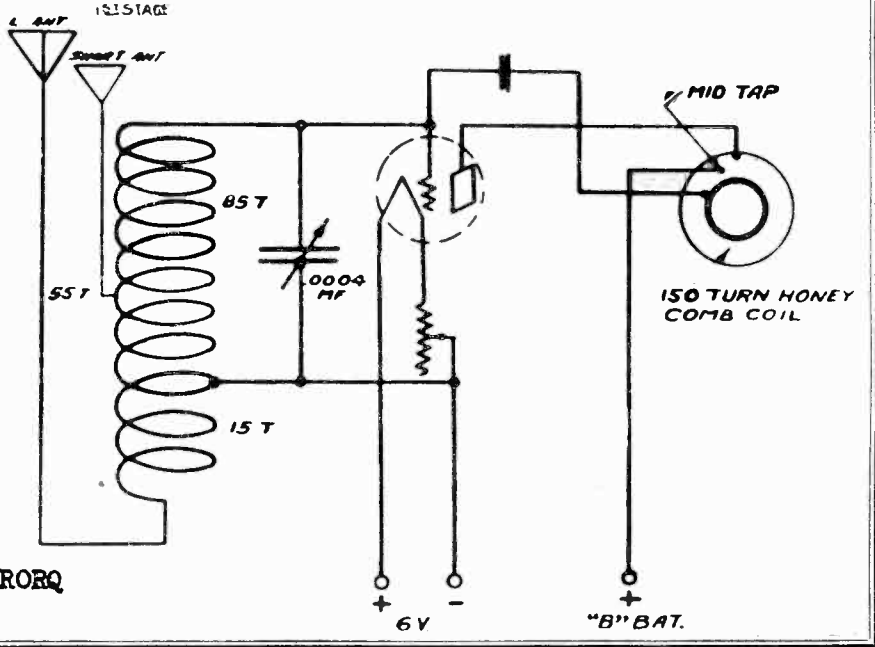
Model RORN



Model RORO

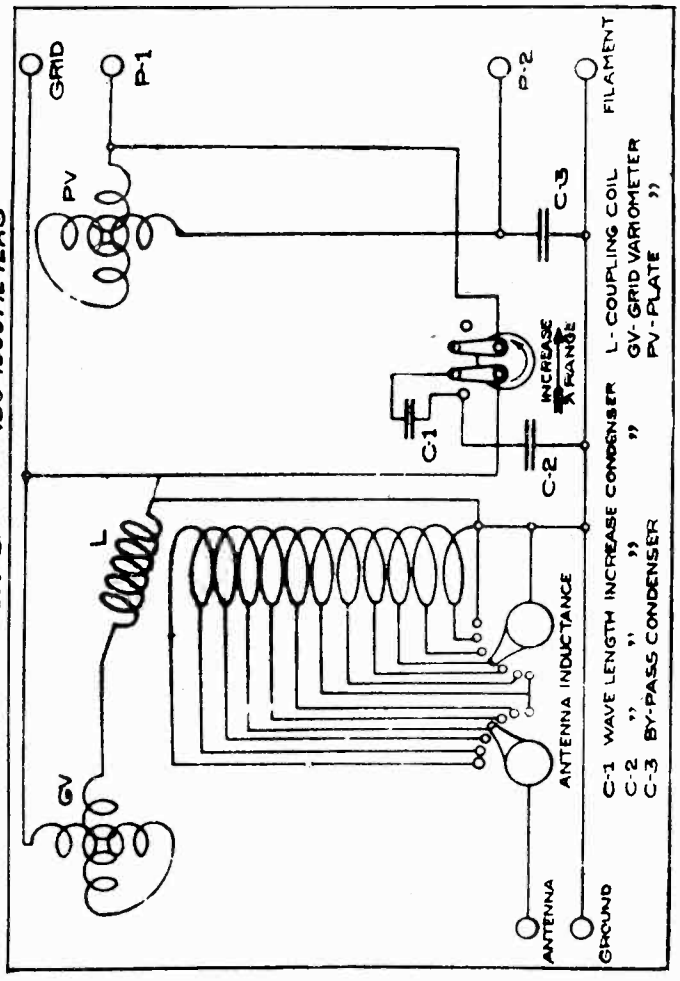


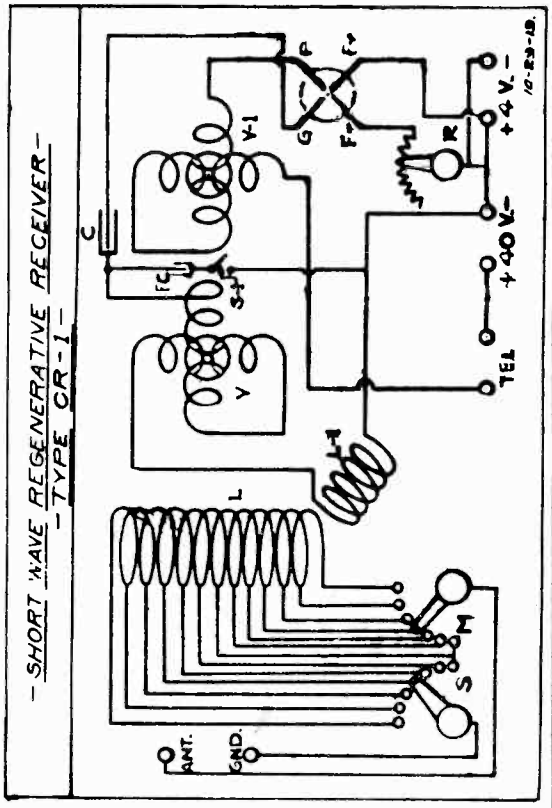
Model RORQ

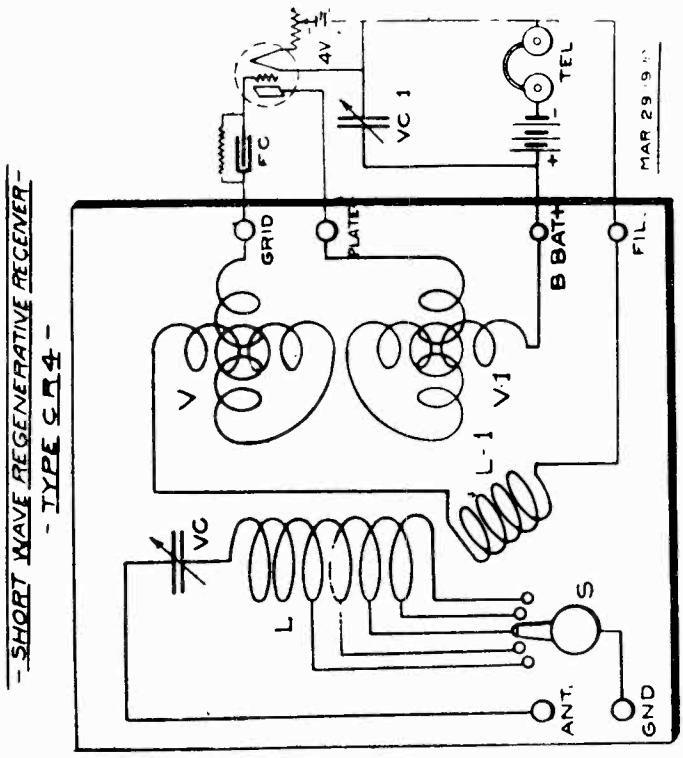


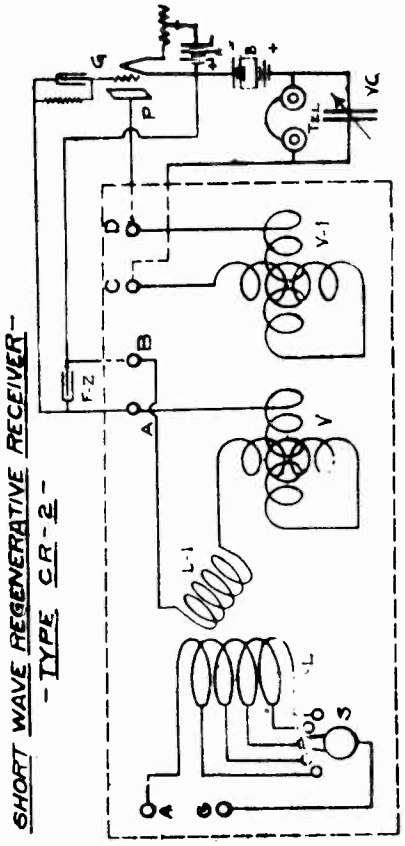
MODEL CR-1 MODEL CR-3
MODEL CR-2 MODEL CR-4

A. H. GREBE & CO.





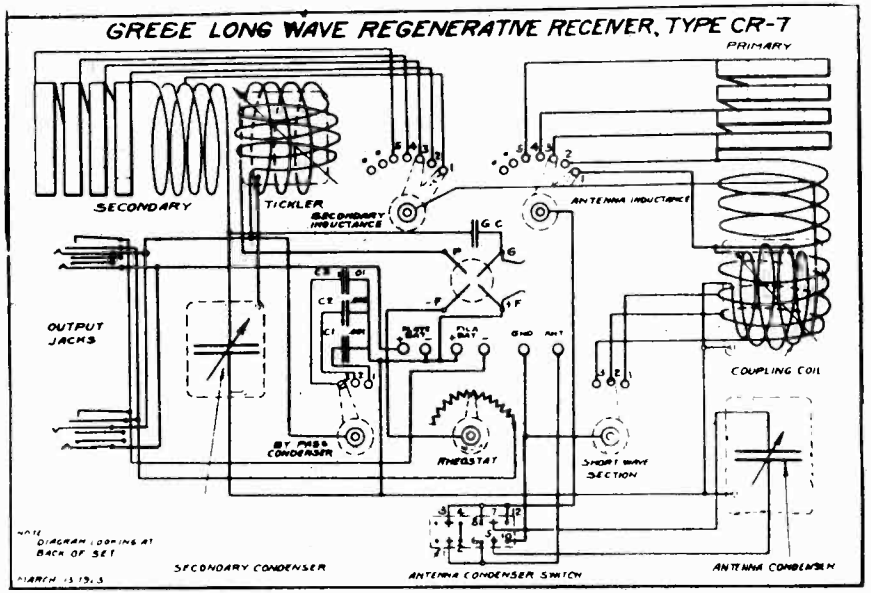




A. H. GREBE & CO.

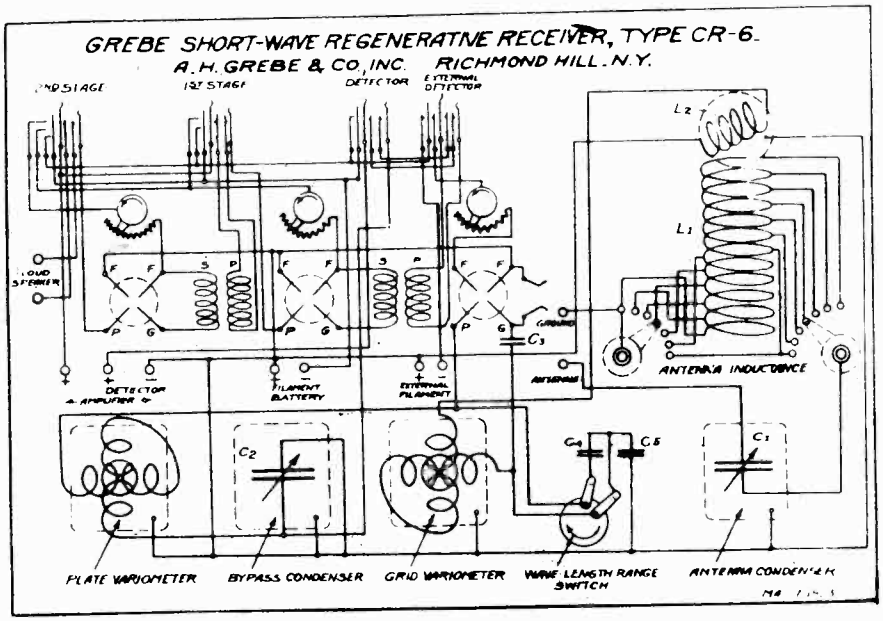
MODEL CR-5
MODEL CR-6
MODEL CR-7
MODEL CR-8

GREEBE LONG WAVE REGENERATIVE RECEIVER, TYPE CR-7

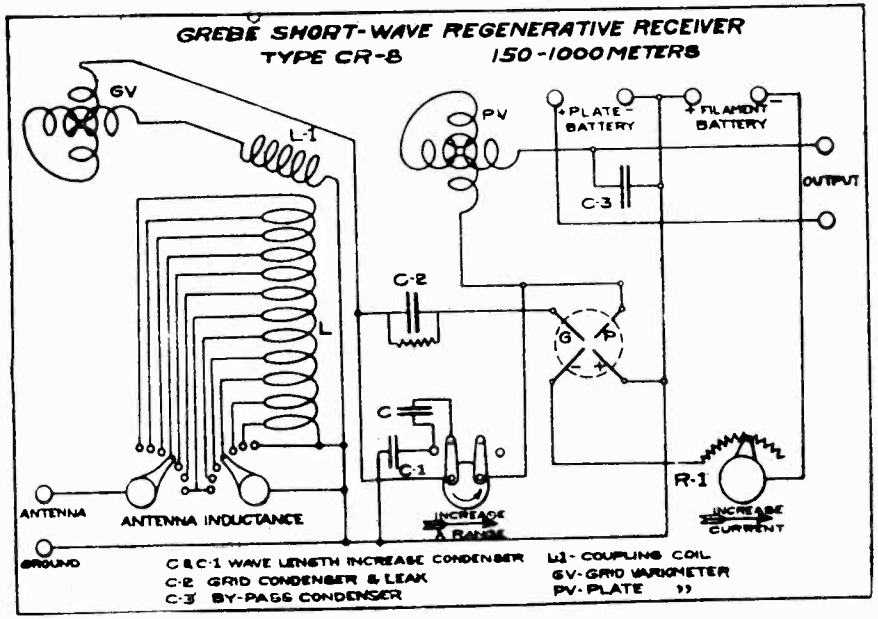


GREBE SHORT-WAVE REGENERATIVE RECEIVER, TYPE CR-6.

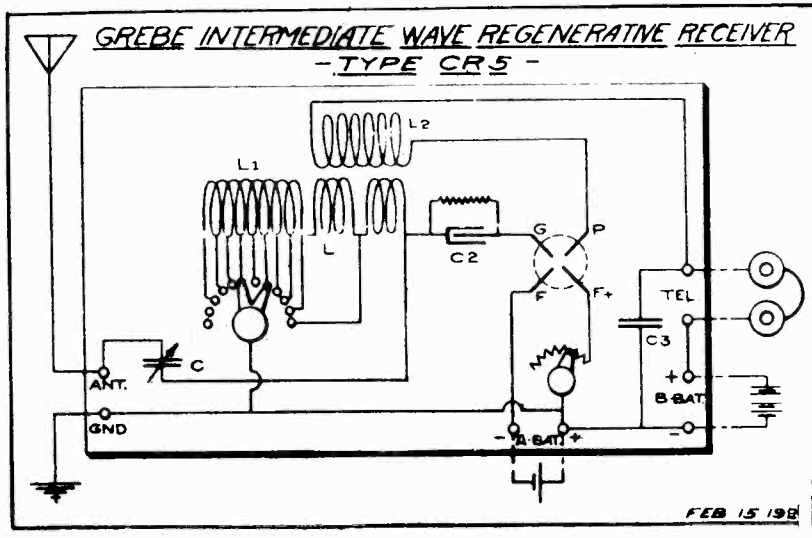
A. H. GREBE & CO. INC. RICHMOND HILL. N.Y.



GREBE SHORT-WAVE REGENERATIVE RECEIVER
TYPE CR-8 150-1000 METERS

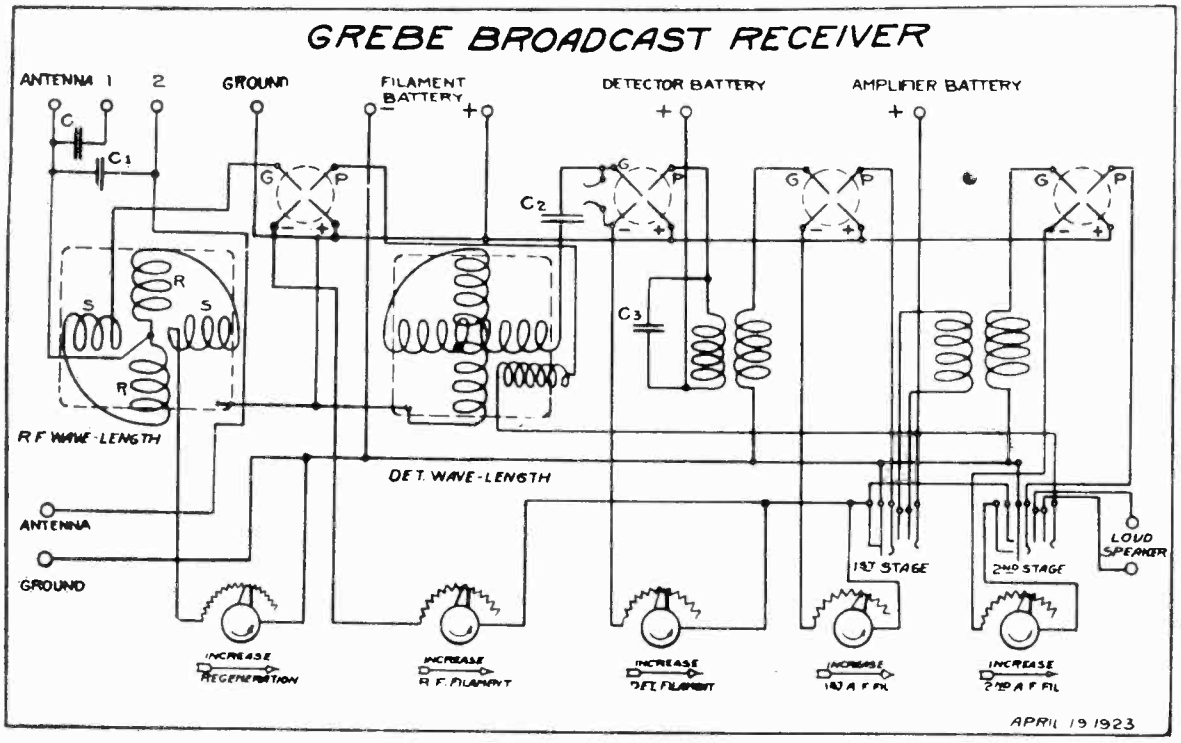


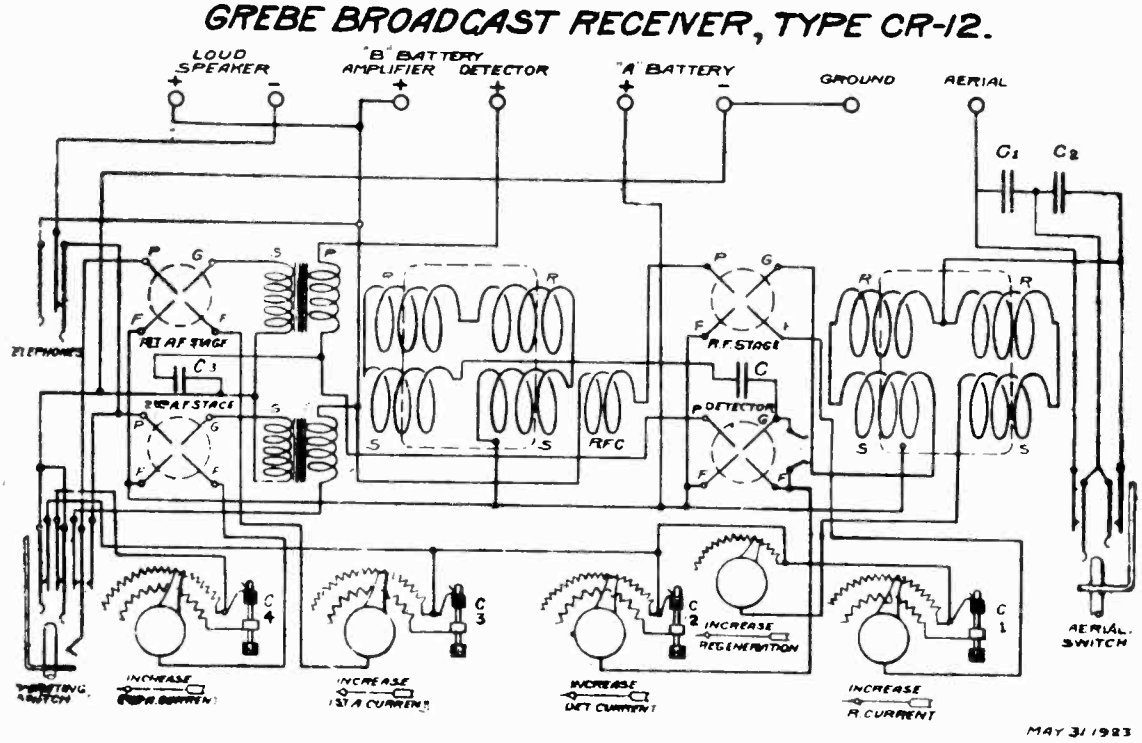
GREBE INTERMEDIATE WAVE REGENERATIVE RECEIVER
-TYPE CR-5-



MODEL Broadcast Receiver
MODEL CR-12

A. H. GREBE & CO.,



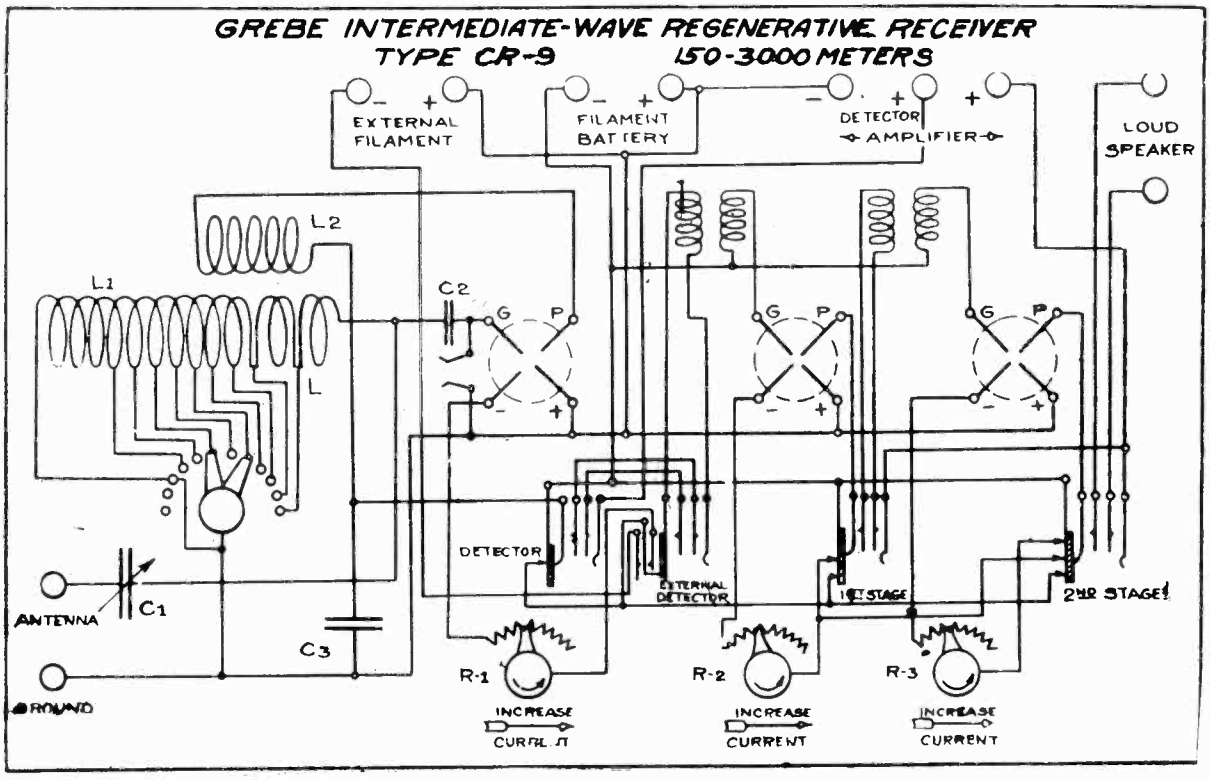


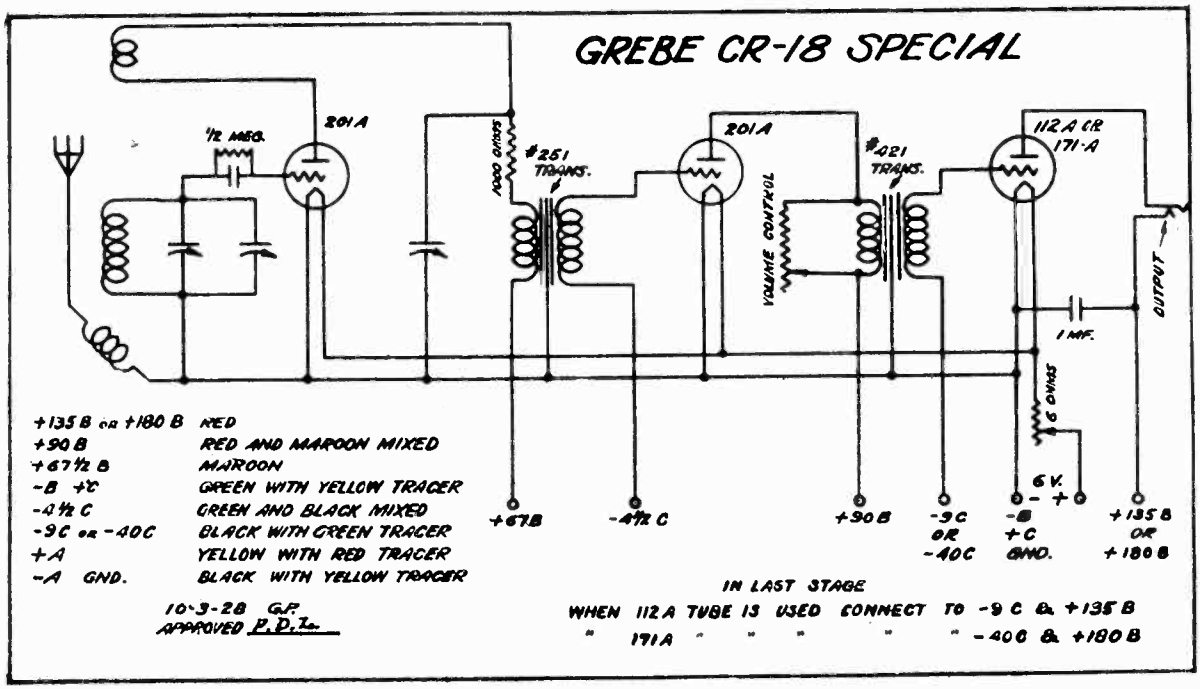
CR-12 (Batt.)

*CX-301A or *CX-299 ○ 1st R.F.		*CX-301A or *CX-299 ○ 1st A.F.	
*CX-301A or *CX-300A or *CX-299 ○ Det.		*CX-301A or CX-112A or *CX-299 ○ 2nd A.F.	

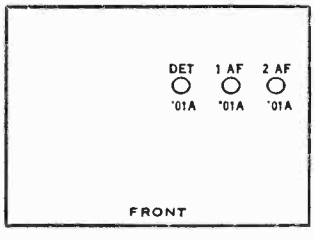
A. H. GREBE & CO.

MODEL CR-9
MODEL CR-18(Special)

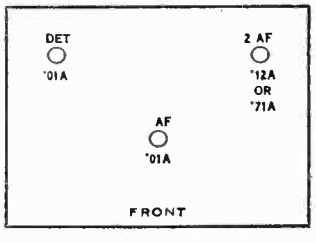




Model CR9

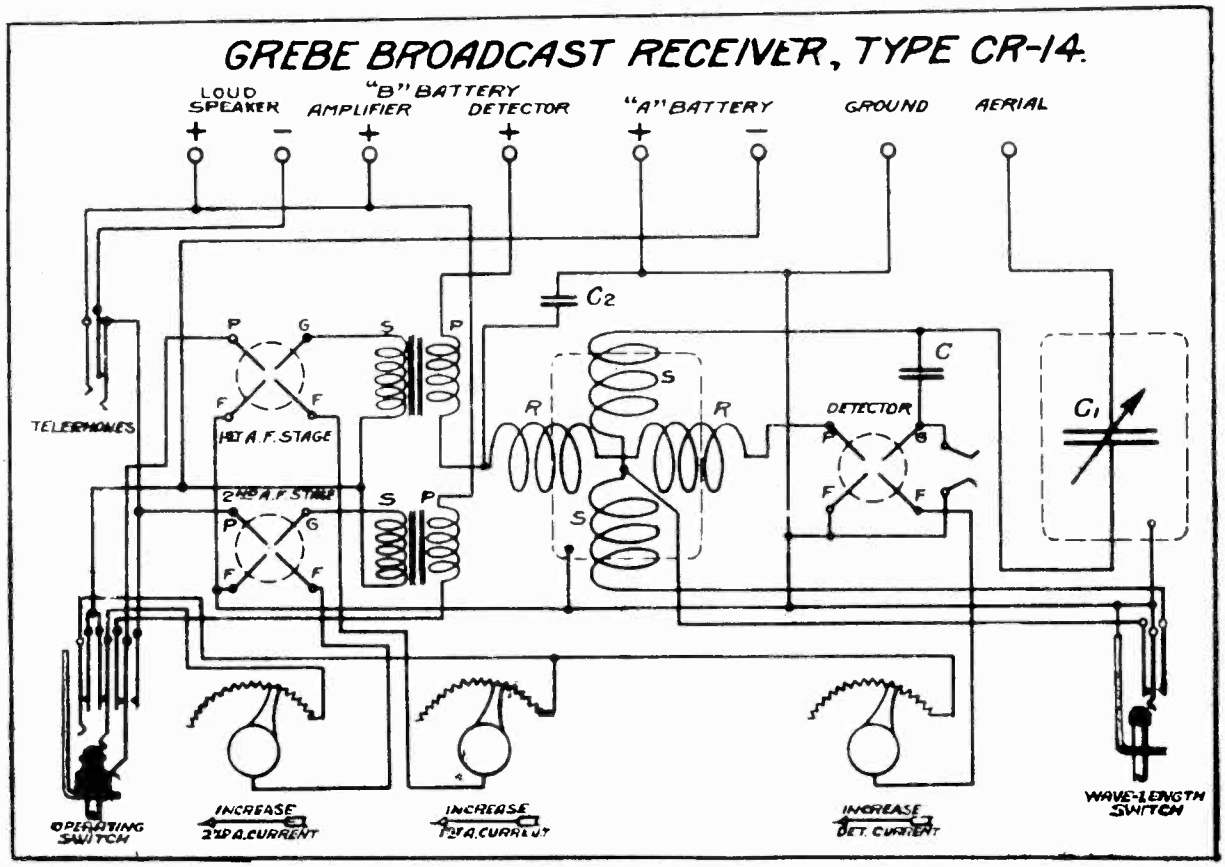


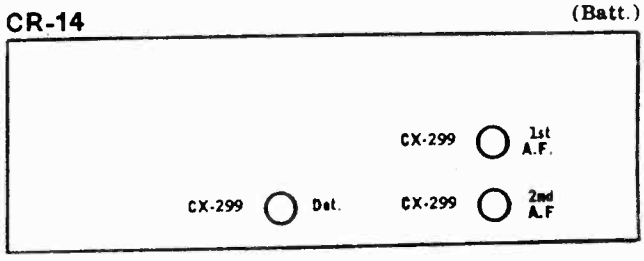
Model CR18 Special

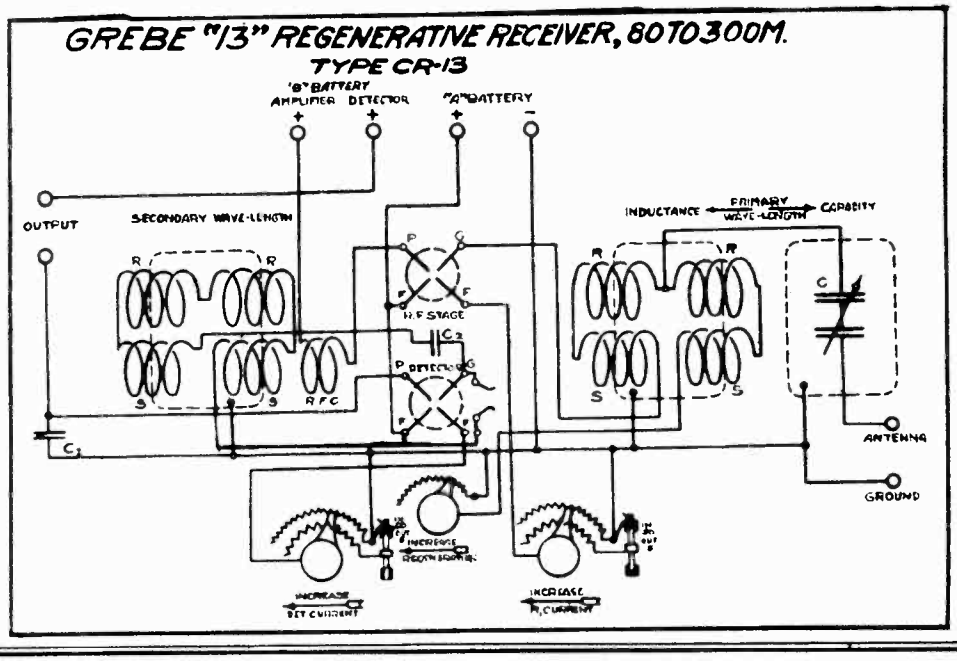


MODEL CR-13
MODEL CR-14

• A. H. GREBE & CO.,

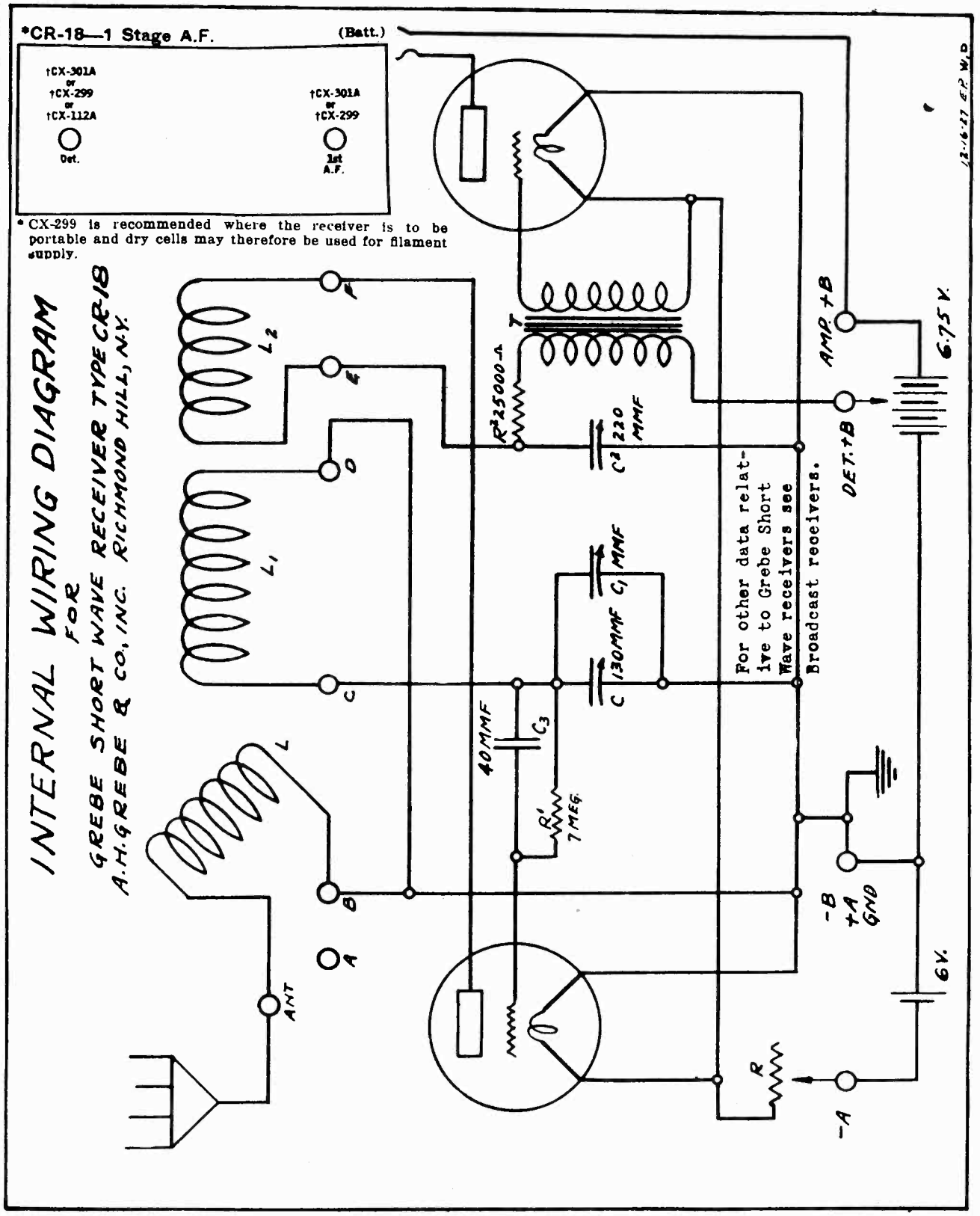






MODEL CR-18

A. H. GREBE & CO.

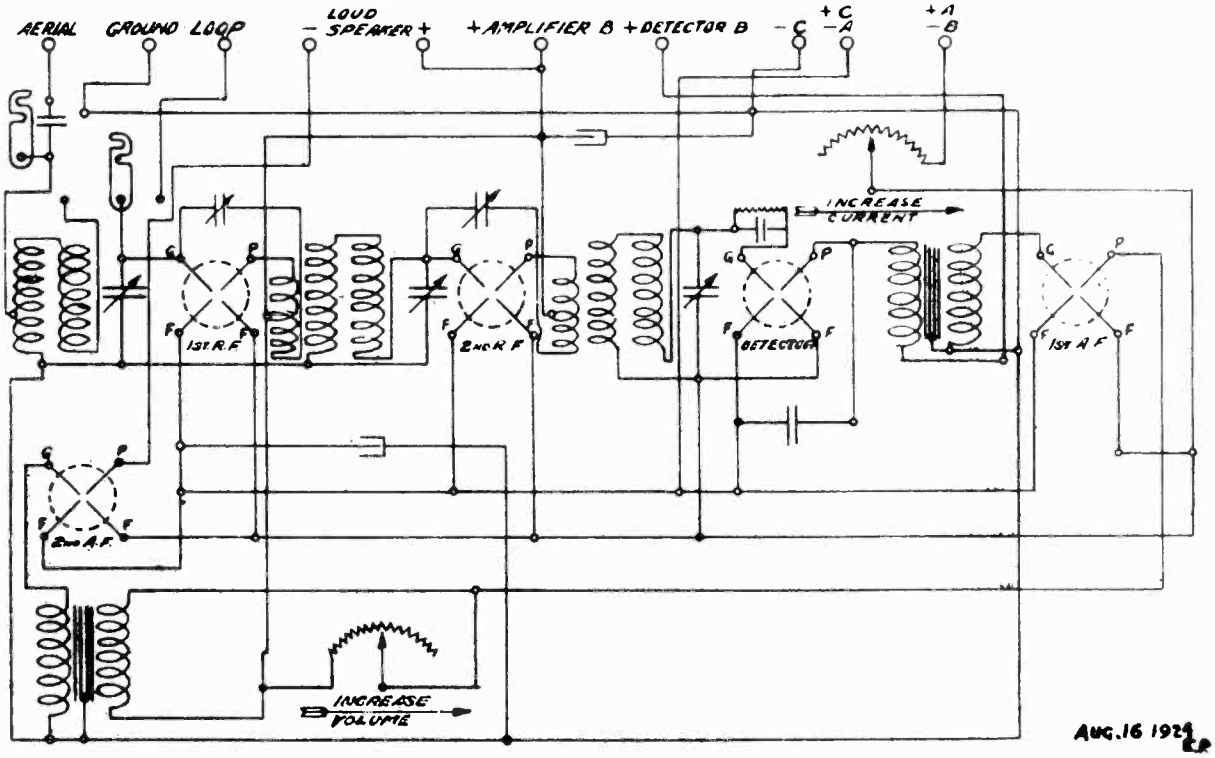


MODEL Synchrophase 5
With 671 Socket Power

A. H. GREBE & CO.,

GREBE SYNCHROPHASE RECEIVER

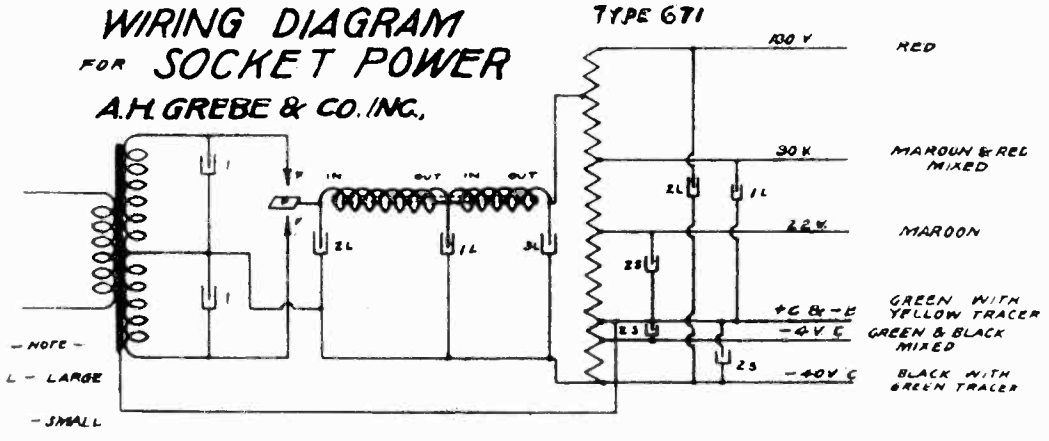
A. H. GREBE & CO., INC. RICHMOND HILL, N.Y.



WIRING DIAGRAM FOR SOCKET POWER

A.H. GREBE & CO. INC.,

TYPE 671



SYNCHROPHASE "5".

(Batt.)

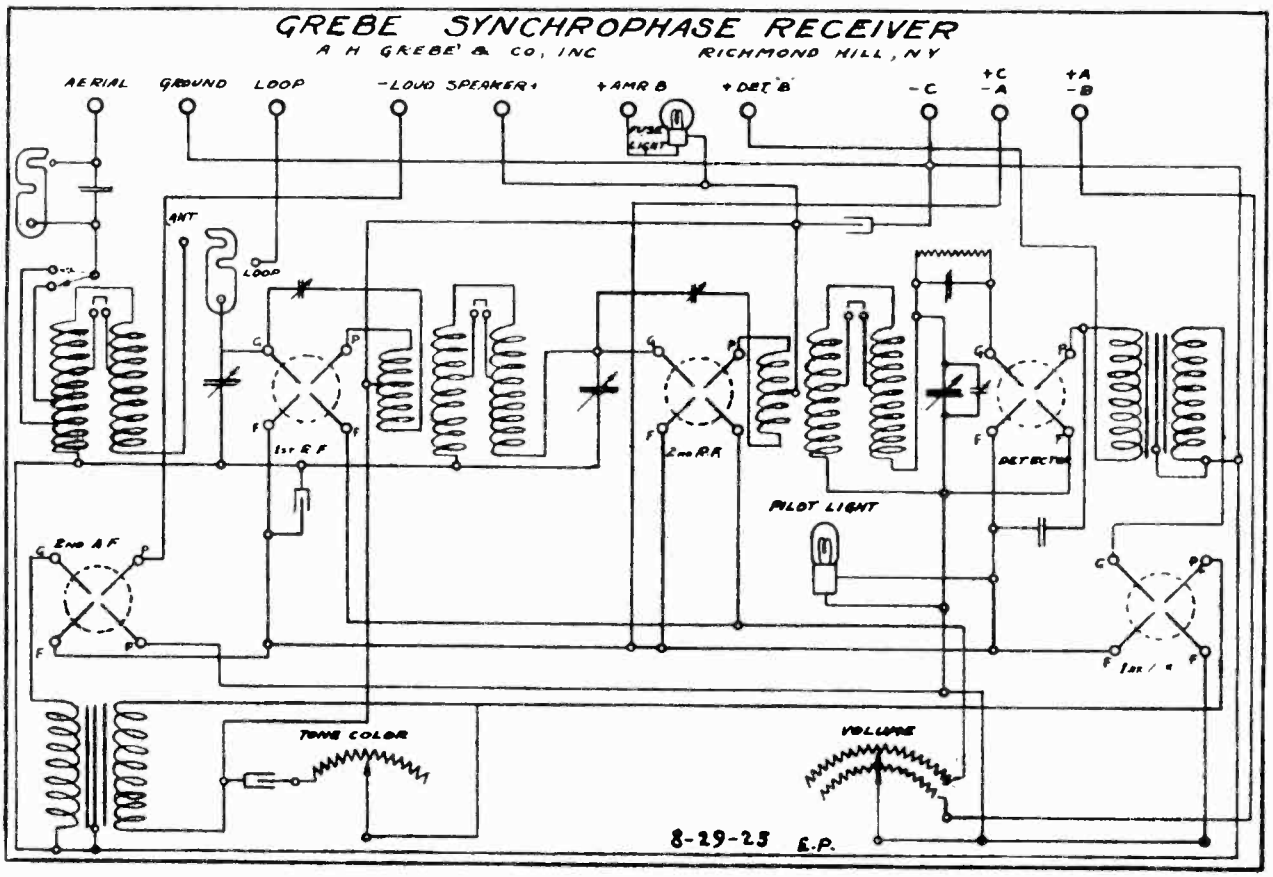
*CX-371A or *CX-112A	CX-301A	CX-301A	CX-301A or CX-300A or CX-112A	CX-301A
2nd A.F.	1st R.F.	2nd R.F.	Det.	1st A.F.

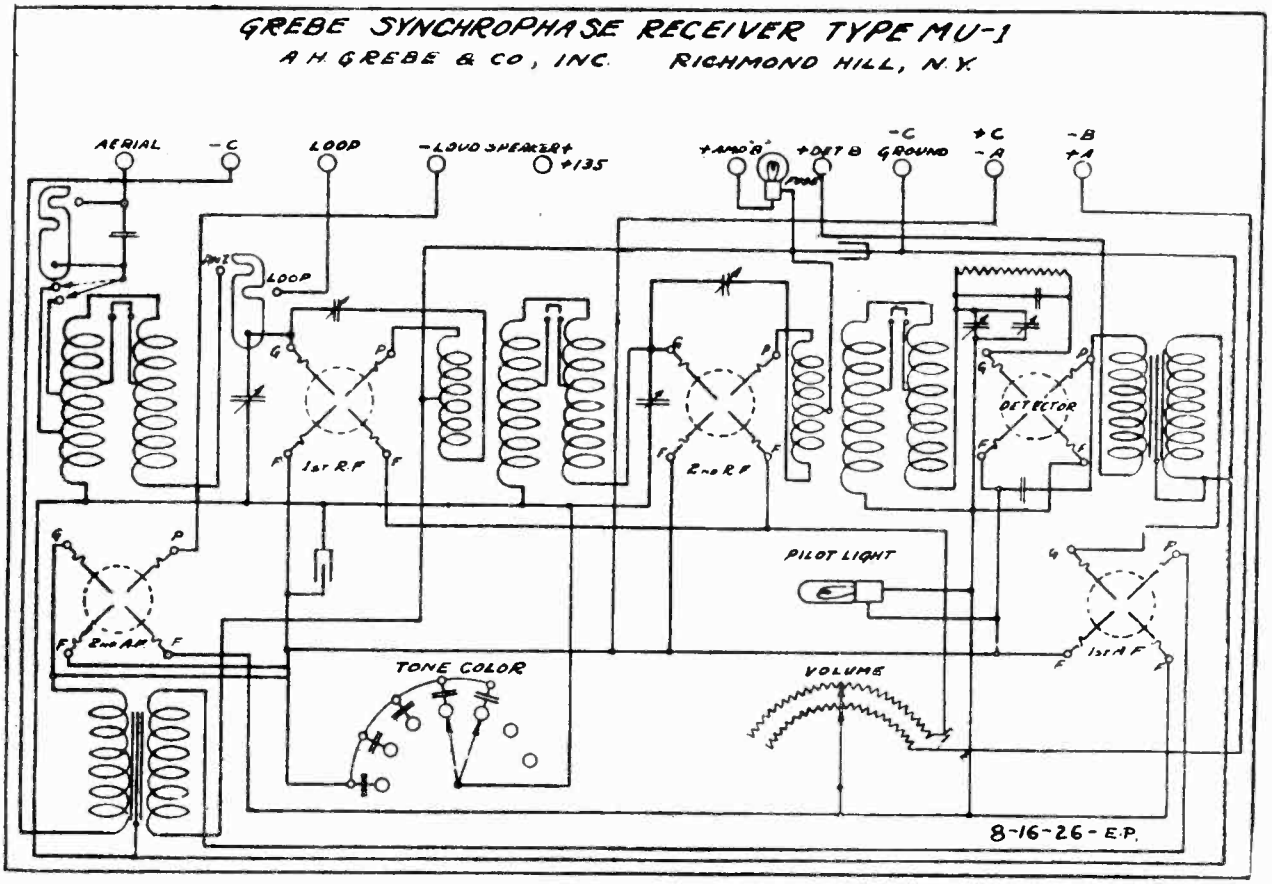
GREBE SYNCHROPHASE "5" with 671 Socket Power

TUBE SOCKET NO.	TYPE OF TUBE	POSITION OF TUBE (1 DET. 2 R.F. 3 DET. ETC.)	READINGS TAKEN IN SOCKET OF SET							
			TUBE OUT		TUBE IN VOLTS					
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE M.A. CHARGE
1	201A	1st R.F.	6	115	6	105	0		7.0	11.0	4.0
2	201A	2nd R.F.	6	115	6	105	0		7.0	11.0	4.0
3	201A	Detector	6	40	6	28	0		2.6	5.5	3.0
4	201A	1st A.F.	6	115	6	105	0		7.0	11.0	4.0
5	171A	2nd A.F.	6	200	6	180	40		20.0	26.0	6.0

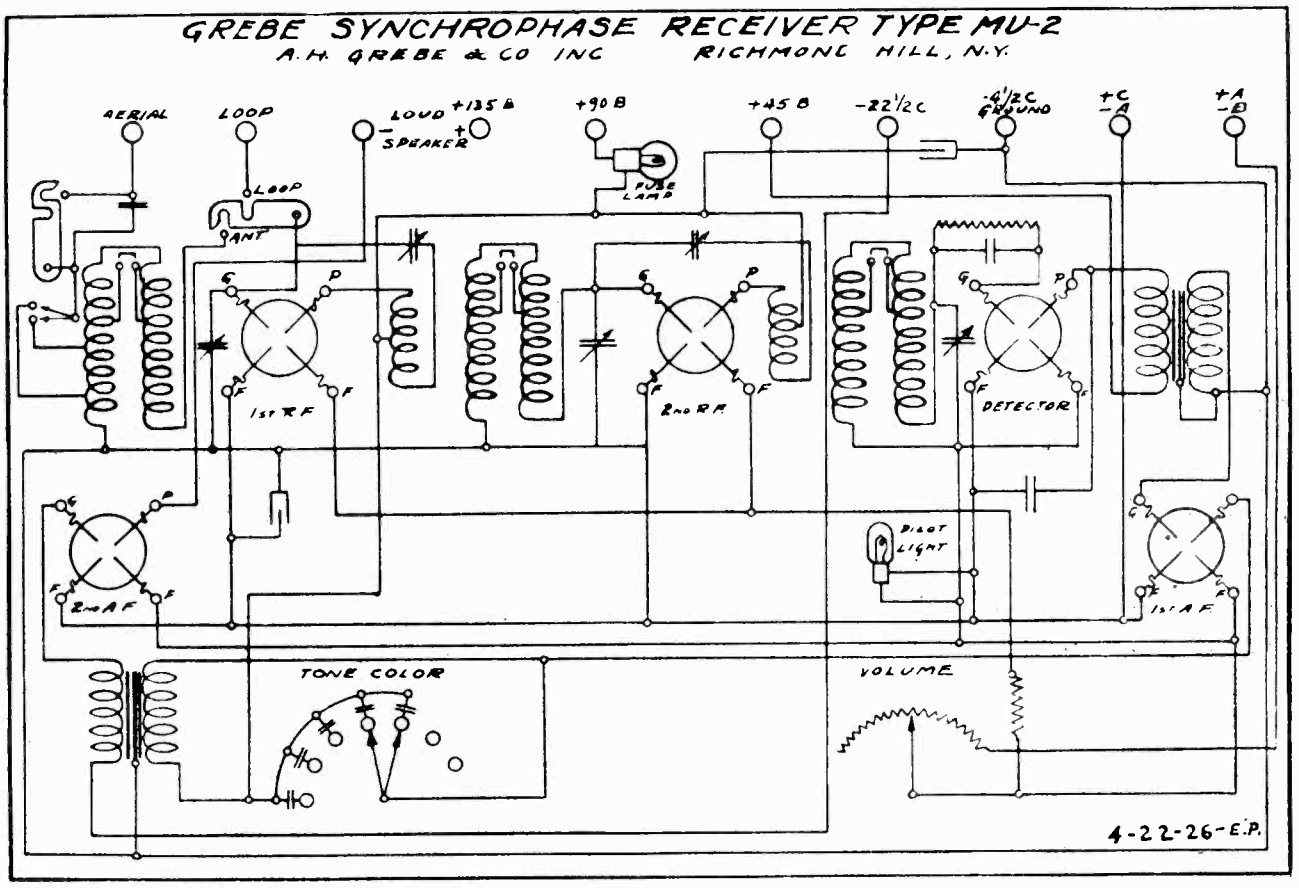
A. H. GREBE & CO., Inc.

MODEL Synchrophase 1925
MODEL Synchrophase MU-1

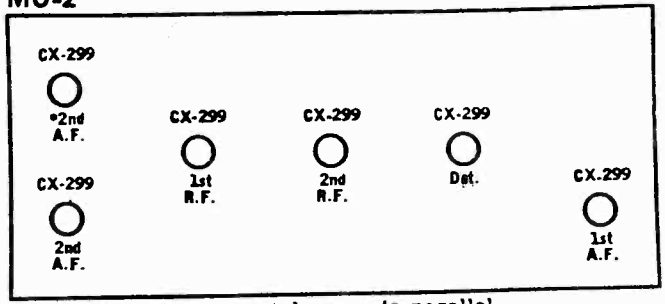




MODEL Synchrophase MU-2 A. H. GREBE & CO., Inc.



MU-2 (Batt.)



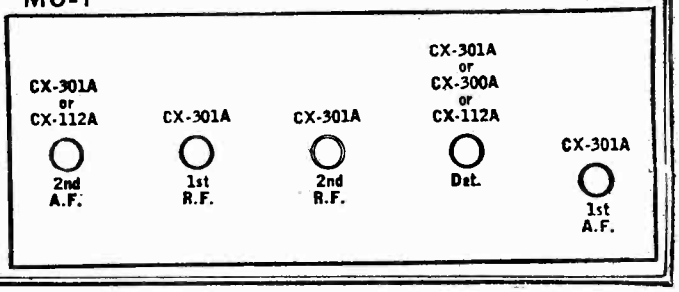
* 2nd Audio Frequency tubes are in parallel.

GREBE SYNCHROPHASE "5" or "MU-1"

Tube No. 5 Used in 1925 Models
Tube No. 6 Used in Early 1927 Models
Tube No. 7 Used in Late 1927 Models

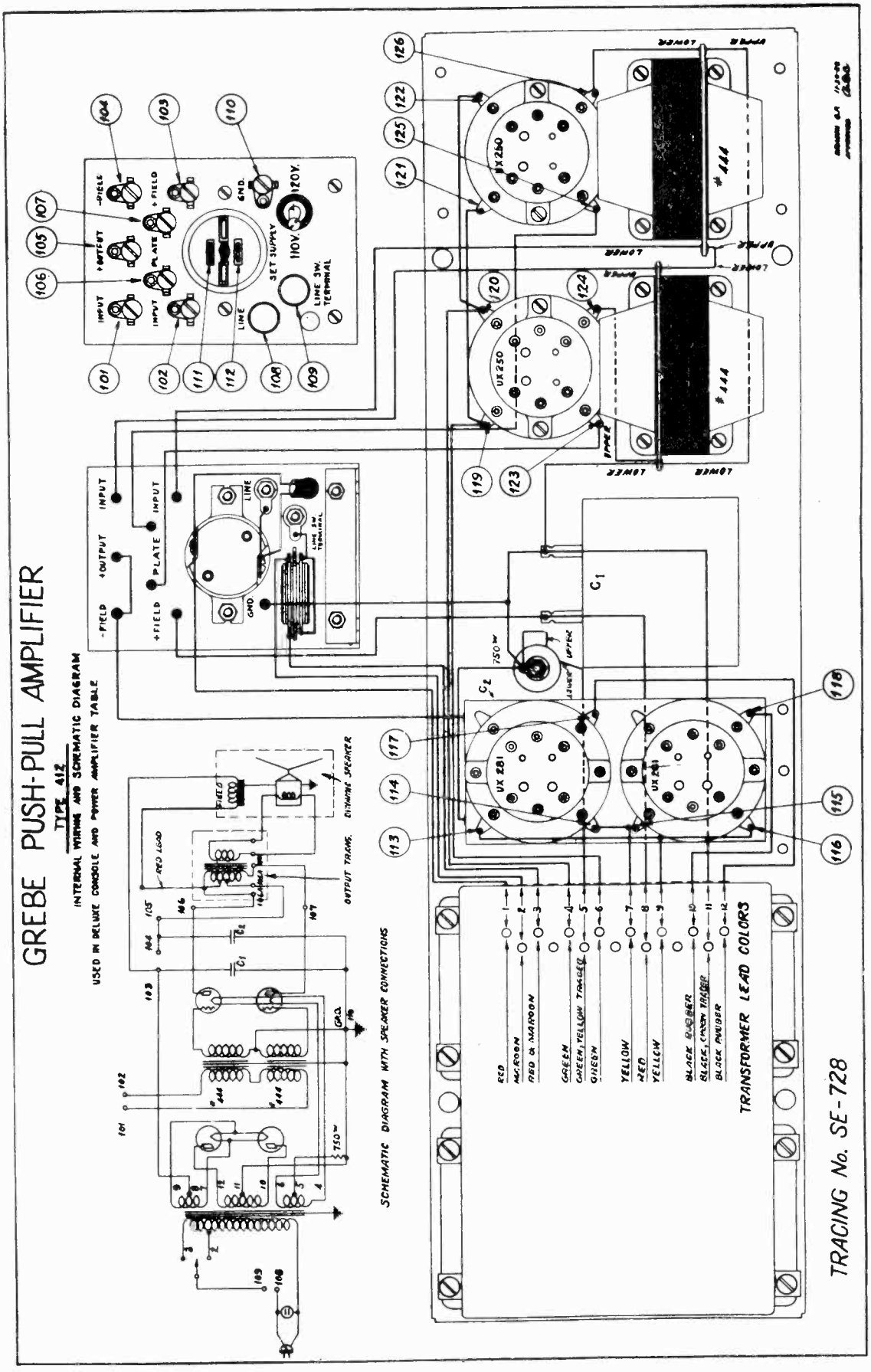
TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1 ST R.F. DET. ETC	READINGS PLUG IN SOCKET OF SET								
			TUBE OUT		TUBE IN TESTER						
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE M.A. CHANGE
1	201A	1st. R.F.	6	100	5	90	4.5		5.0	7.5	2.5
2	201A	2nd. R.F.	6	100	5	90	4.5		5.0	7.5	2.5
3	201A	Detector	6	25	5	90	5.0		2.0	5.5	3.5
4	201A	1st. A.F.	6	100	5	90	4.5		5.0	7.5	2.5
5	201A	2nd. A.F.	6	100	5	90	4.5		5.0	7.5	2.5
6	112	2nd. A.F.	6	150	5	135	9		9.0	13.5	4.5
7	171A	2nd. A.F.	6	200	5	180	40		20.0	26.0	6.0

MU-1 (Batt.)



A. H. GREBE & CO., Inc.

MODEL 412
Push-Pull Amplifier



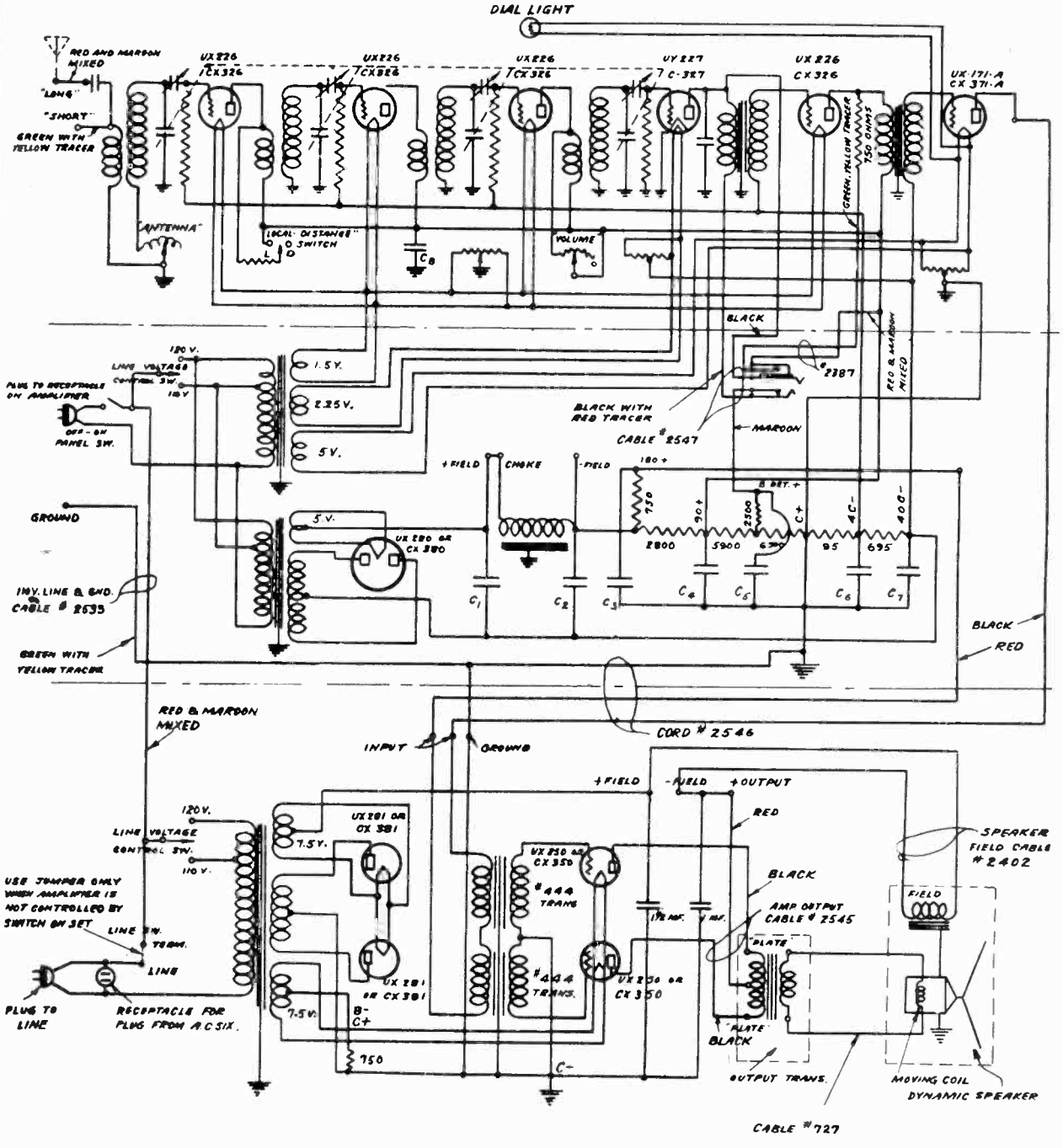
MODEL 428
DeLux Console

A. H. GREBE & CO.

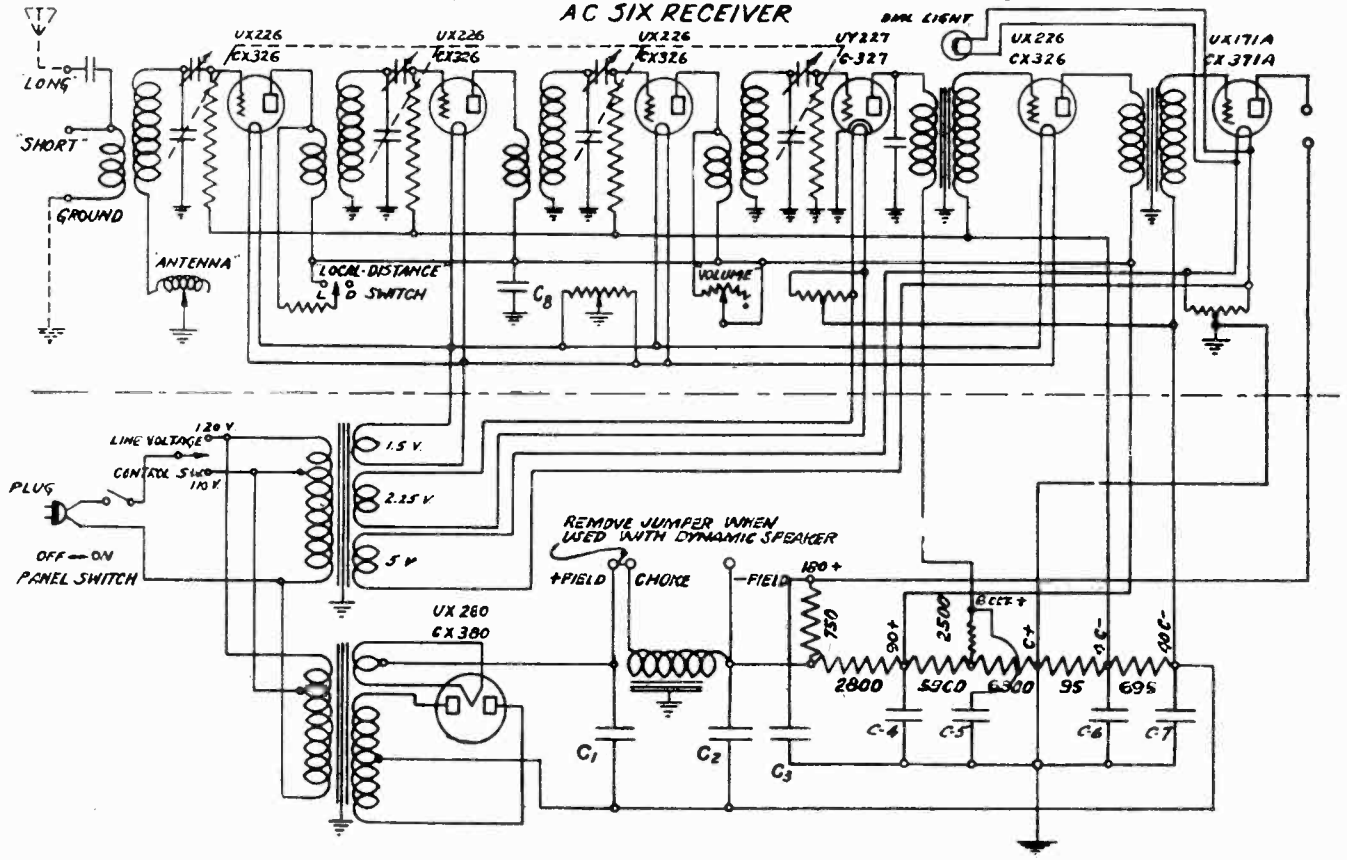
WIRING DIAGRAM FOR GREBE DELUXE CONSOLE TYPE 428

A.C. SIX RECEIVER, PUSH PULL AMPLIFIER TYPE 412
OUTPUT TRANS. TYPE 419 AND DYNAMIC SPEAKER TYPE 400

A. H. GREBE & CO., INC.
RICHMOND HILL, N.Y.



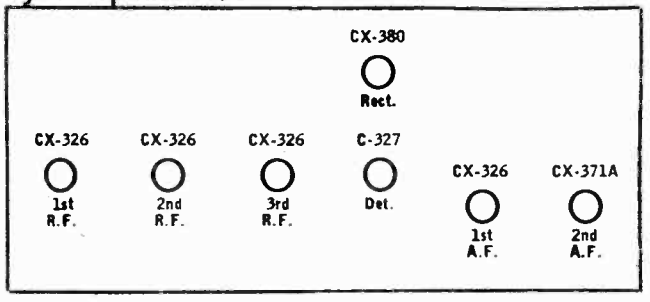
WIRING DIAGRAM FOR GREBE SYNCHROPHASE AC SIX RECEIVER



GREBE—Type A. C. 6
Line Voltage 120—Set on 120 Volt Tap

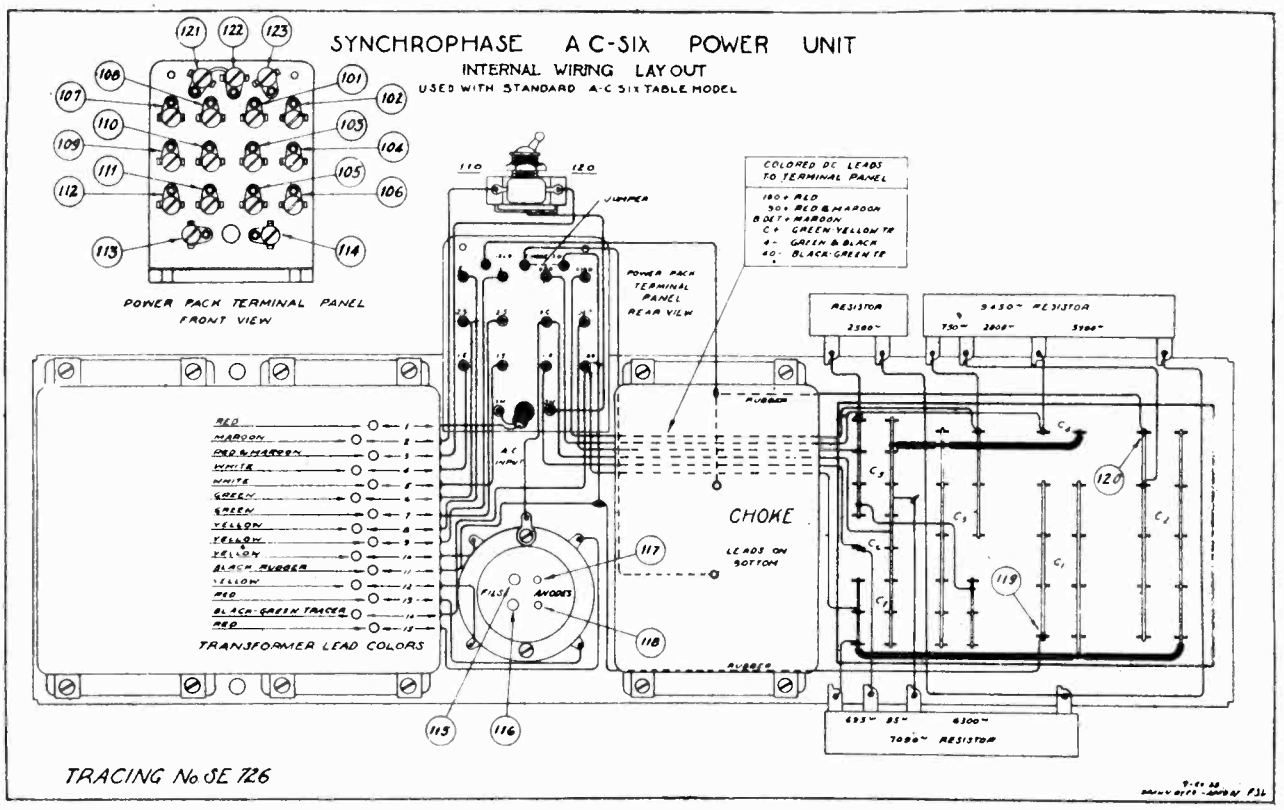
TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE IN SET RF, DET, ETC	READINGS PLUG IN SOCKET OF SET: TUBE OUT A VOLTS	TUBE OUT B VOLTS	TUBE IN TESTER A VOLTS	TUBE IN TESTER B VOLTS	TUBE IN TESTER C VOLTS (CONTROL GRID)	TUBE IN TESTER CATHODE HEATER VOLTS	TUBE IN TESTER NORMAL PLATE M A	TUBE IN TESTER PLATE M A GRID (1) TO BY	TUBE IN TESTER PLATE CHANGE M A	TUBE IN TESTER SCREEN GRID (2) VOLTS
1	236	1st RF	1.5	105	1.4	100	-	-	7.8	7.8	0	
2	236	2nd RF	1.5	105	1.4	100	-	-	7.8	7.8	0	
3	226	3rd RF	1.5	105	1.4	100	-	-	7.8	7.8	0	
4	227	Det.	2.5	50	2.2	45	-	-	2.5	2.5	0	
5	236	1st AF	1.5	100	1.4	100	4.5	R-40	3.8	6.0	4.2	
6	171A	2nd AF	5.5	280	5.2	195	40.0	-	30.0	25.0	5.0	
7	280	Rect.	5.5	-	5.2	-	-	-	40	-	-	
8												
9												
10												

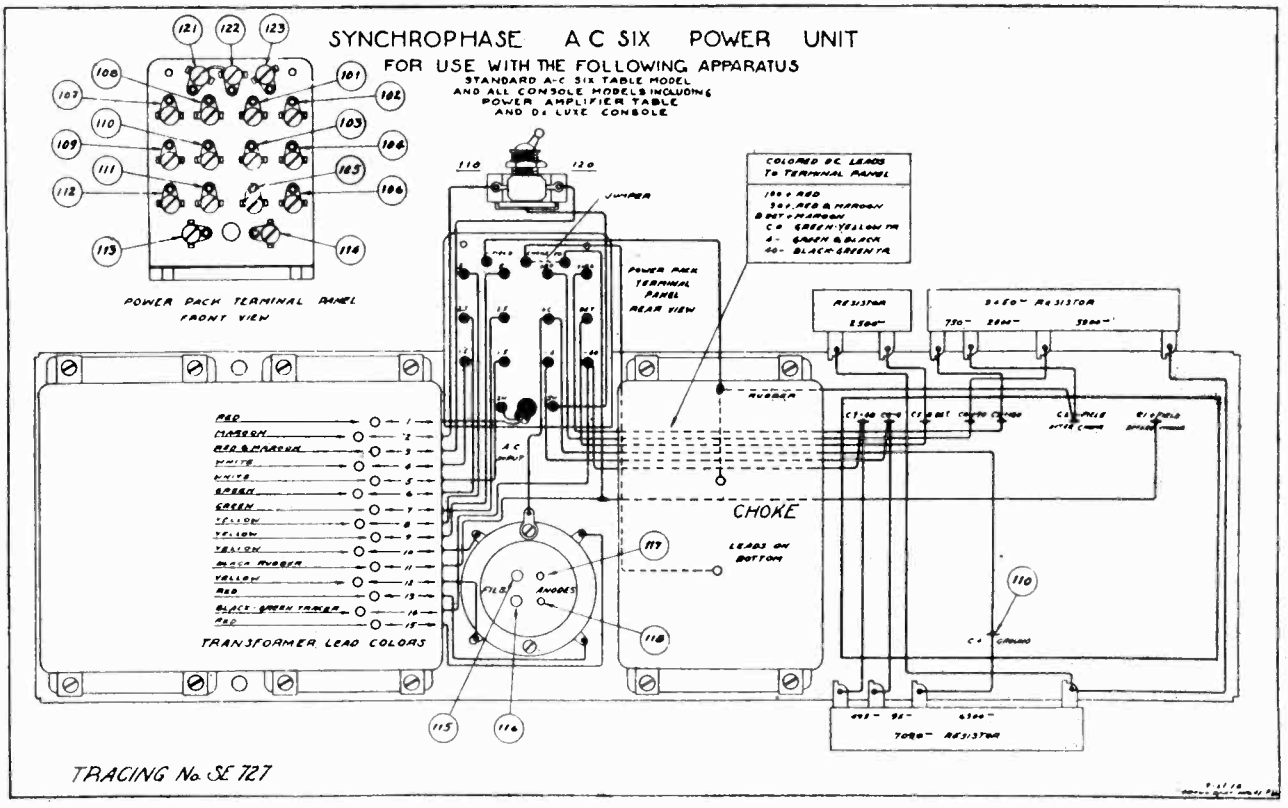
Synchrophase AC6 (A.C.)



MODEL Synchrophase AC-6
Power Unit
Chassis
Two Types

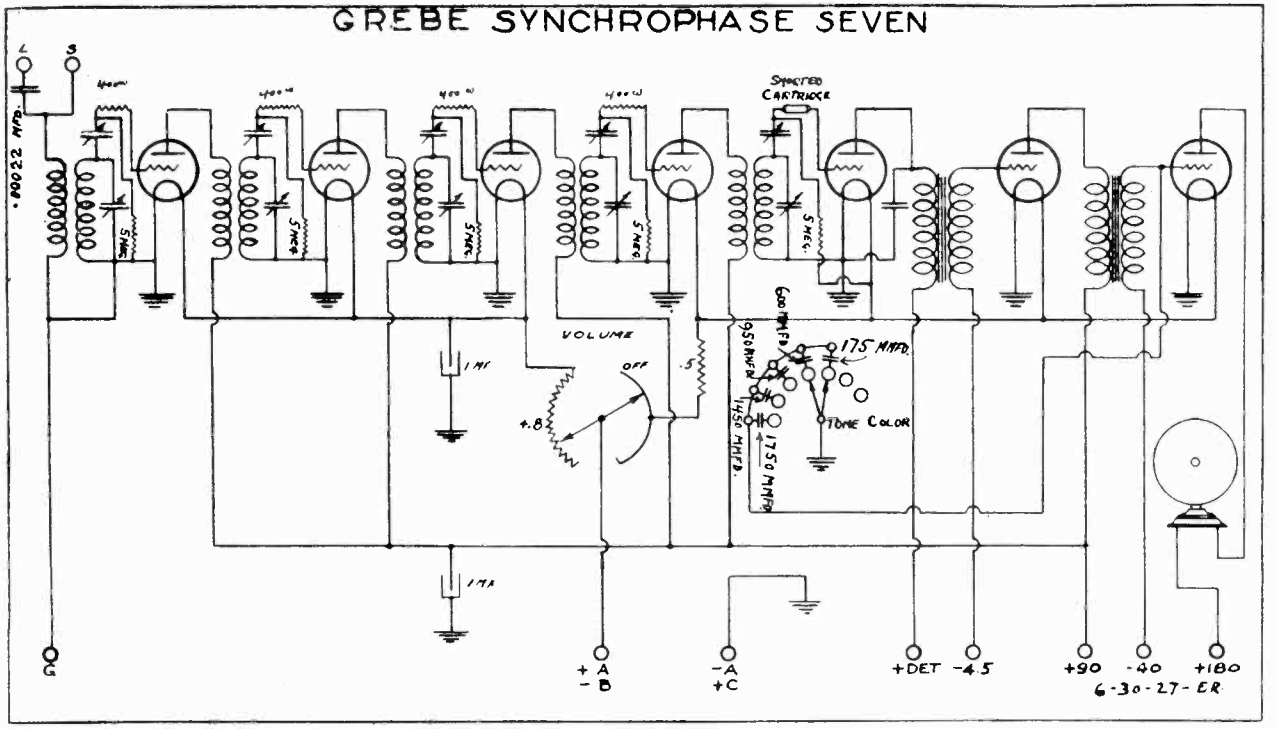
A. H. GREBE & CO., Inc.

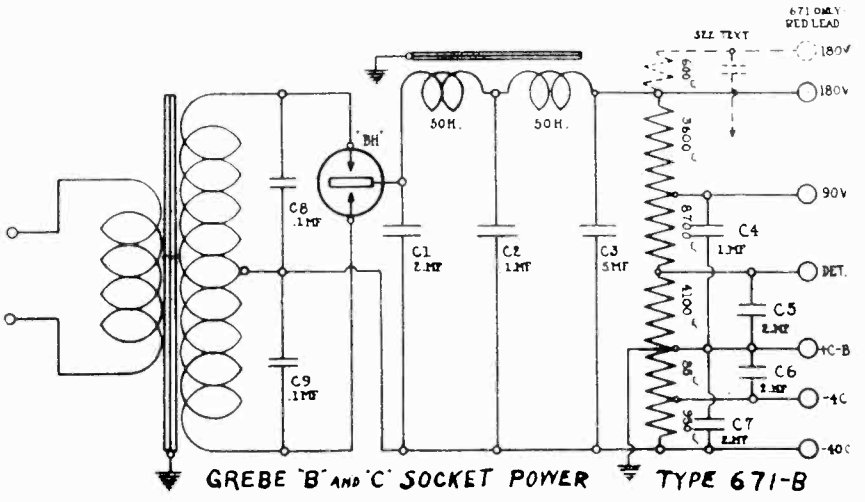




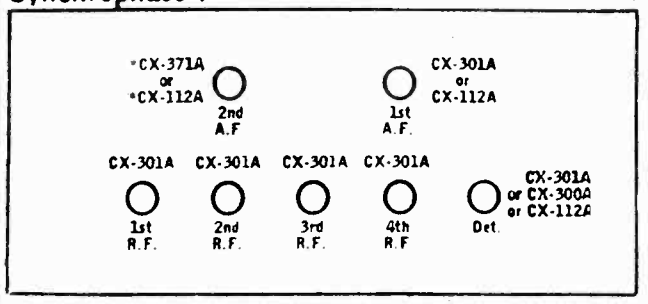
A. H. GREBE & CO.

MODEL Synchrophase 7
Battery Type
Socket Power Unit 671-B



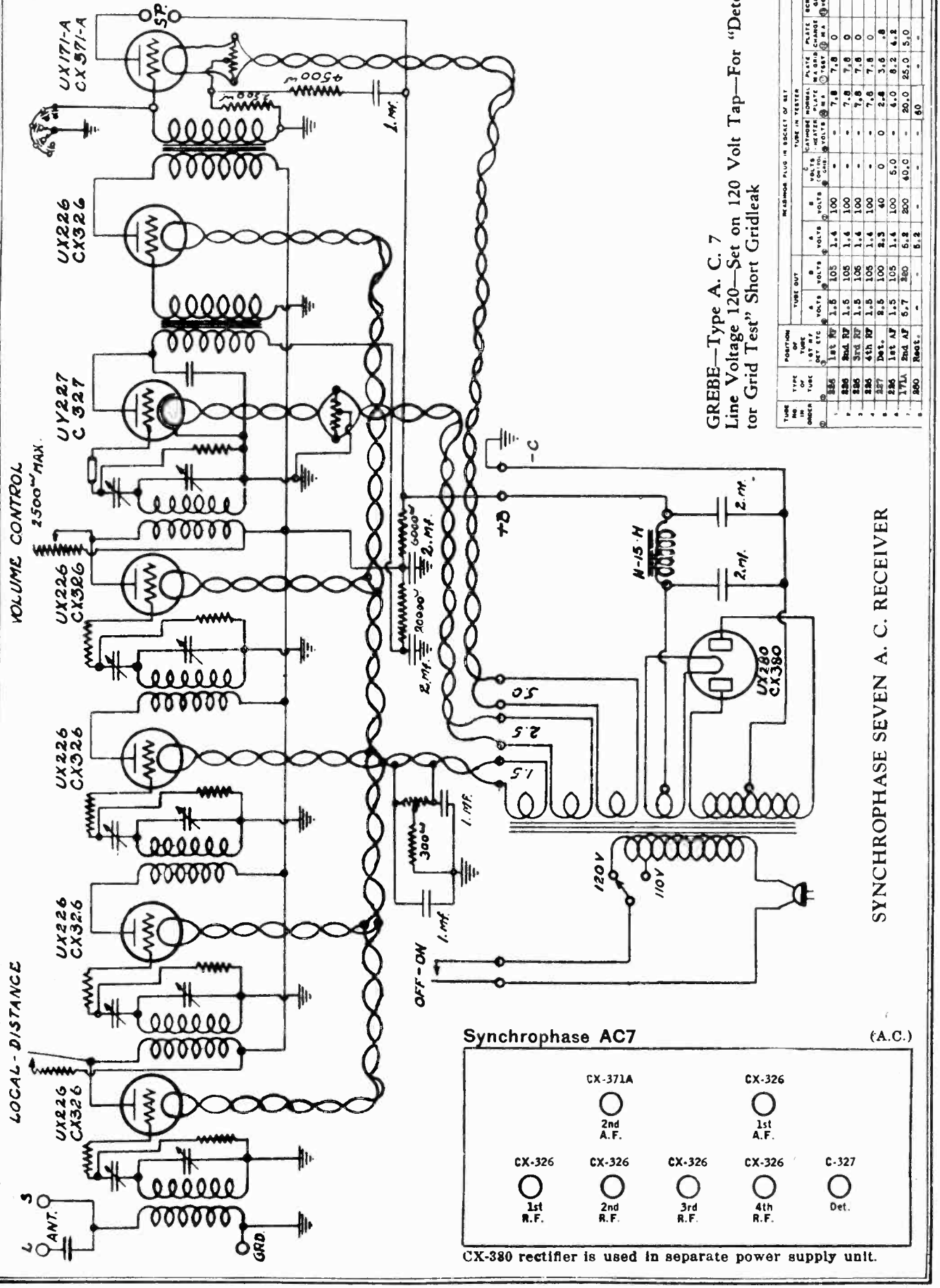


Synchrophase 7 (Batt.)



MODEL Synchrophase 7
Schematic

A. H. GREBE & CO.



GREBE—Type A. C. 7
Line Voltage 120—Set on 120 Volt Tap—For "Detector Grid Test" Short Gridleak

TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF TUBE (1st R.F. 2nd R.F. etc.)	TUBE OUT A VOLTS	TUBE OUT A VOLTS	A VOLTS	B VOLTS	C VOLTS (Grid)	CATHODE HEATER VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID CHARGE	PLATE M.A.	SCREEN GRID VOLTS
-	226	1st RF	1.5	105	1.4	100	-	-	7.8	7.8	0	
2	226	2nd RF	1.5	105	1.4	100	-	-	7.8	7.8	0	
3	226	3rd RF	1.5	105	1.4	100	-	-	7.8	7.8	0	
4	226	4th RF	1.5	105	1.4	100	-	-	7.8	7.8	0	
5	227	Det.	2.5	100	2.5	40	0	0	2.8	3.6	.8	
6	226	1st AF	1.5	105	1.4	100	5.0	-	4.0	8.2	4.2	
7	171A	2nd AF	6.7	280	6.2	200	40.0	-	20.0	25.0	5.0	
8	280	Rect.	-	-	5.2	-	-	-	60	-	-	

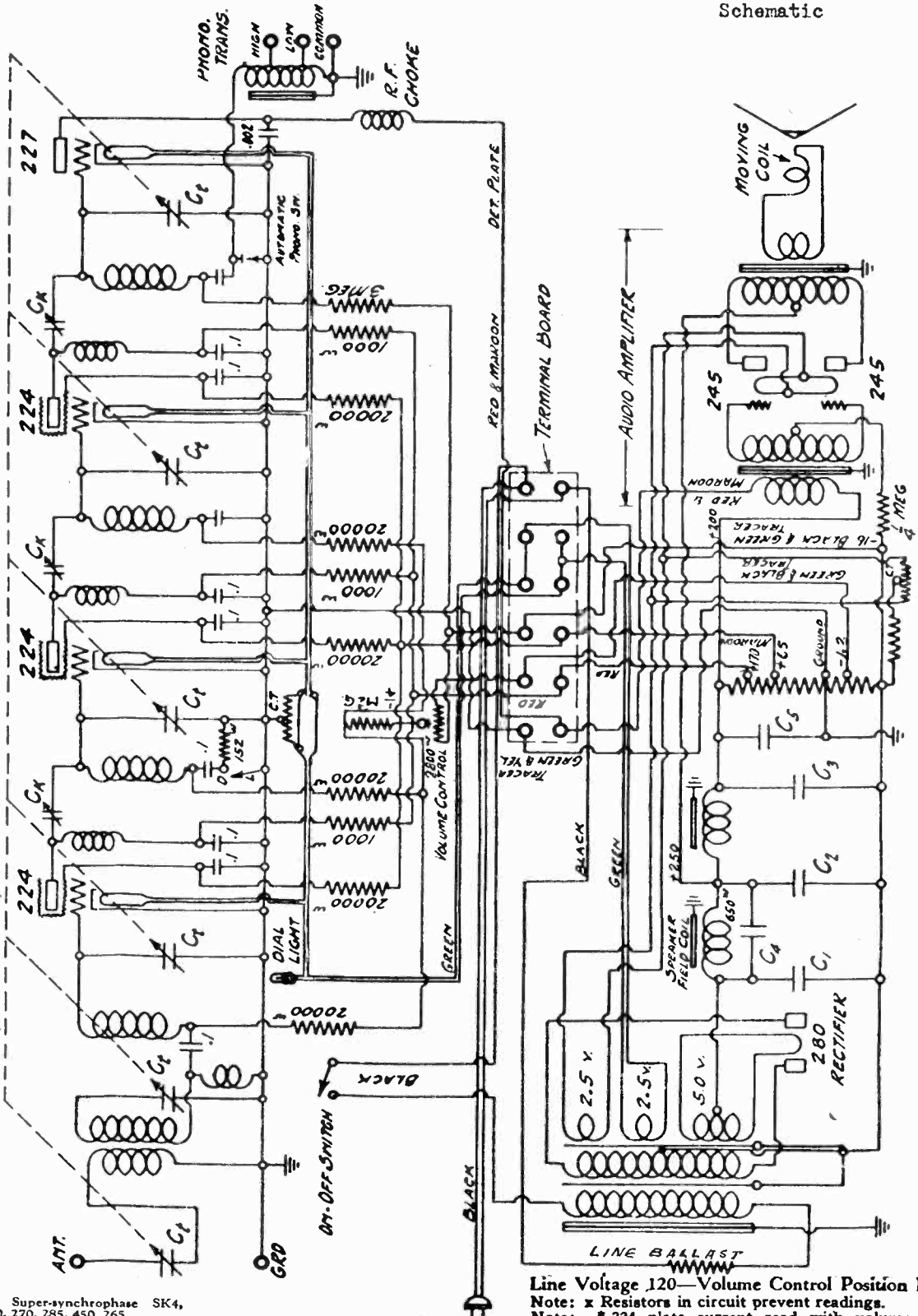
SYNCHROPHASE SEVEN A. C. RECEIVER

Synchrophase AC7 (A.C.)

CX-380 rectifier is used in separate power supply unit.

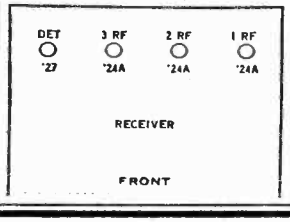
A. H. GREBE & CO.

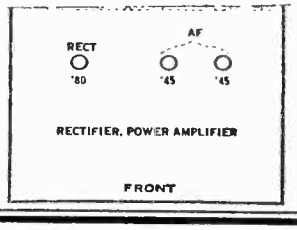
MODEL Synchrophase SK-4
Early Model
Schematic



GREBE SYNCHROPHASE SK-4 Early Model

Models Super-synchrophase SK4, 21950, 270, 285, 450, 265



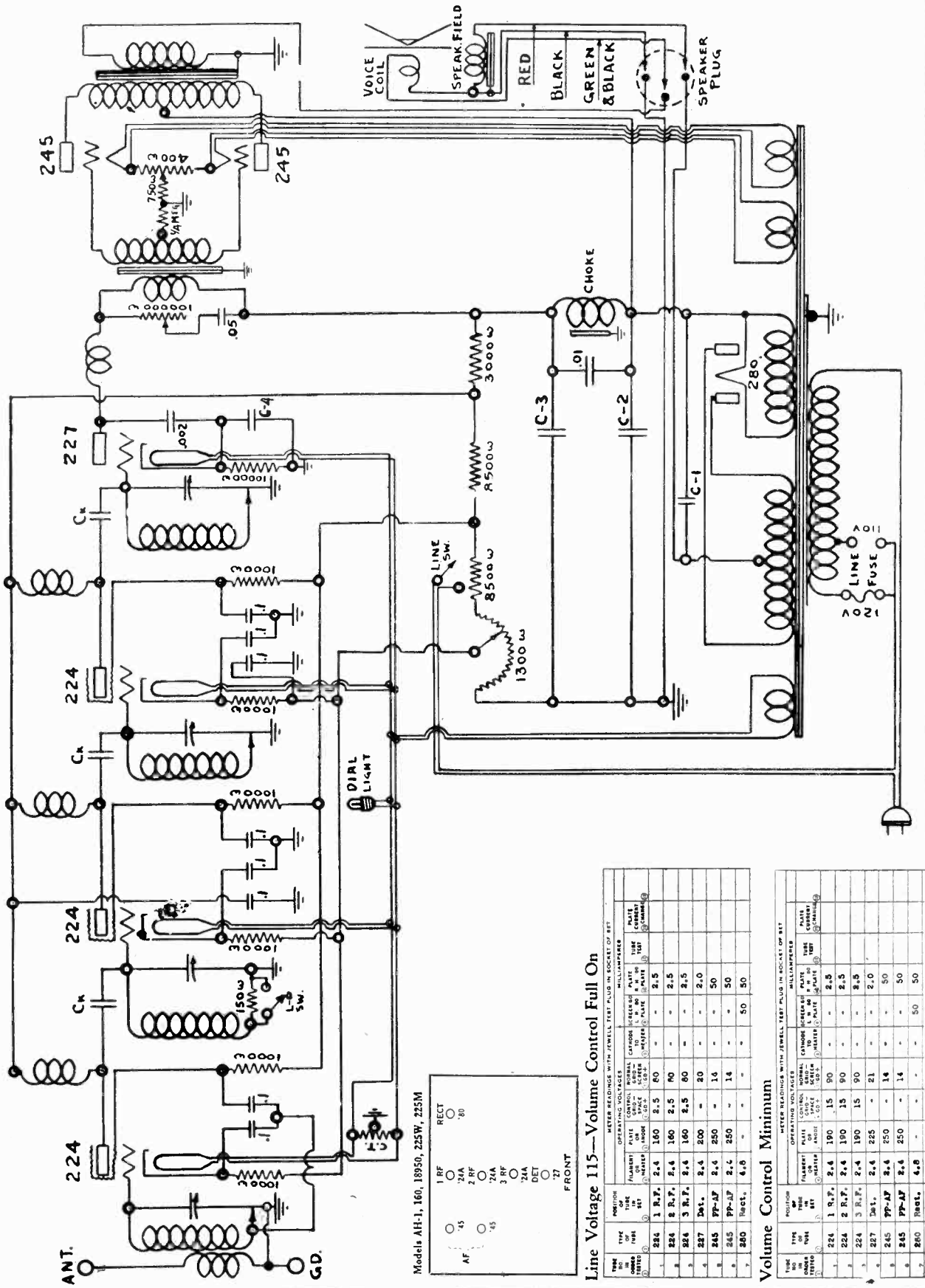


Line Voltage 120—Volume Control Position Min.*
Note: x Resistors in circuit prevent readings.
Note: -*-224 plate current read with volume control at maximum position.

TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF S. TUBE LIST BY DET. CYC.	READINGS PLUG IN SOCKET OF DET. TUBE OUT		TUBE IN TESTED					
			A VOLTS	B VOLTS	A VOLTS	A 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	2.7	195	2.35	188	14	-	0	2	2	57
2	224	2nd RF	2.7	195	2.35	188	14	-	0	2	2	57
3	224	3rd RF	2.7	195	2.35	188	14	-	0	2	2	57
4	227	Det.	2.7	195	2.35	210	x	-	.8	.8	0	-
5	245	1st AF	2.7	270	2.35	245	x	-	30	34	4	-
6	245	2nd AF	2.7	270	2.35	245	x	-	30	34	4	-
7	280	Rect.	7	-	5.2	-	x	-	90	*	-	-

MODEL AH-1
Schematic

A. H. GREBE & CO.



Line Voltage 115—Volume Control Full On

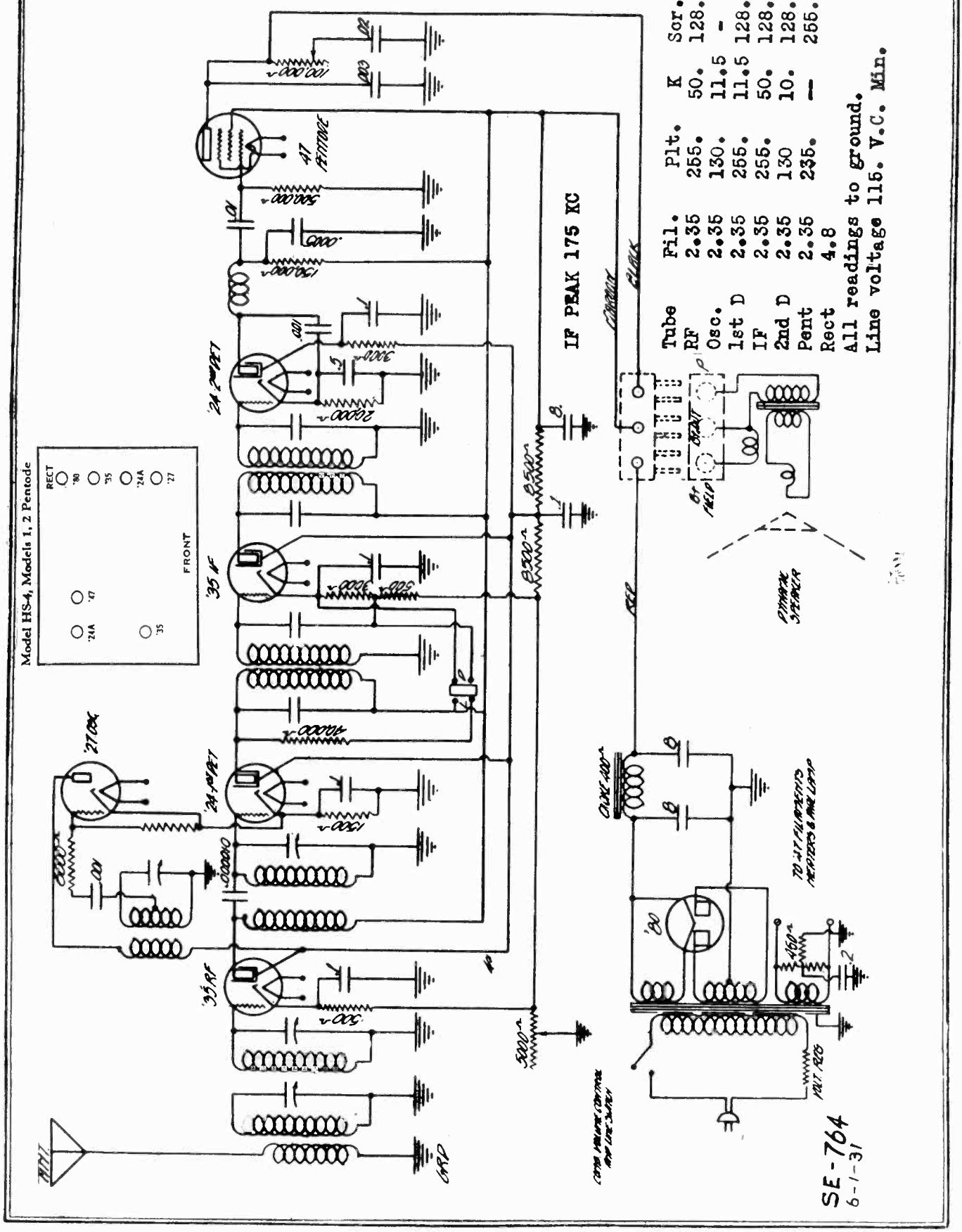
TUBE NO. (AS COUNTED FROM REAR)	TYPE OF TUBE	POSITION OF TUBE IN SET	METER READINGS WITH JEWELL TEST PLUG IN SOCKET OF SET								
			OPERATING VOLTAGES				MILLIAMPERES				
			FILAMENT OR HEATER	PLATE	CONTROL GRID (—) VOLTS (DC)	NORMAL SCREEN VOLTAGE (DC)	CATHODE TO HEATER	SCREEN (DC) 1 M. Ω TO PLATE	PLATE 1 M. Ω TO CATHODE	TUBE TEST	PLATE CURRENT (NO SIGNAL)
1	224	1 R.F.	2.4	160	2.5	60	-	-	2.5		
2	224	2 R.F.	2.4	160	2.5	80	-	-	2.5		
3	224	3 R.F.	2.4	160	2.5	80	-	-	2.5		
4	227	Det.	2.4	200	-	20	-	-	2.0		
5	245	PP-AF	2.4	250	-	16	-	-	50		
6	245	PP-AF	2.4	250	-	14	-	-	50		
7	280	Rect.	4.8	-	-	-	-	50	50		

Volume Control Minimum

TUBE NO. (AS COUNTED FROM REAR)	TYPE OF TUBE	POSITION OF TUBE IN SET	METER READINGS WITH JEWELL TEST PLUG IN SOCKET OF SET								
			OPERATING VOLTAGES				MILLIAMPERES				
			FILAMENT OR HEATER	PLATE	CONTROL GRID (—) VOLTS (DC)	NORMAL SCREEN VOLTAGE (DC)	CATHODE TO HEATER	SCREEN (DC) 1 M. Ω TO PLATE	PLATE 1 M. Ω TO CATHODE	TUBE TEST	PLATE CURRENT (NO SIGNAL)
1	224	1 R.F.	2.4	190	.15	90	-	-	2.5		
2	224	2 R.F.	2.4	190	.15	90	-	-	2.5		
3	224	3 R.F.	2.4	190	.15	90	-	-	2.5		
4	227	Det.	2.4	225	-	21	-	-	2.0		
5	245	PP-AF	2.4	250	-	14	-	-	50		
6	245	PP-AF	2.4	250	-	14	-	-	50		
7	280	Rect.	4.8	-	-	-	-	50	50		

A. H. GREBE & CO.

MODEL HS-4
1 Pentode

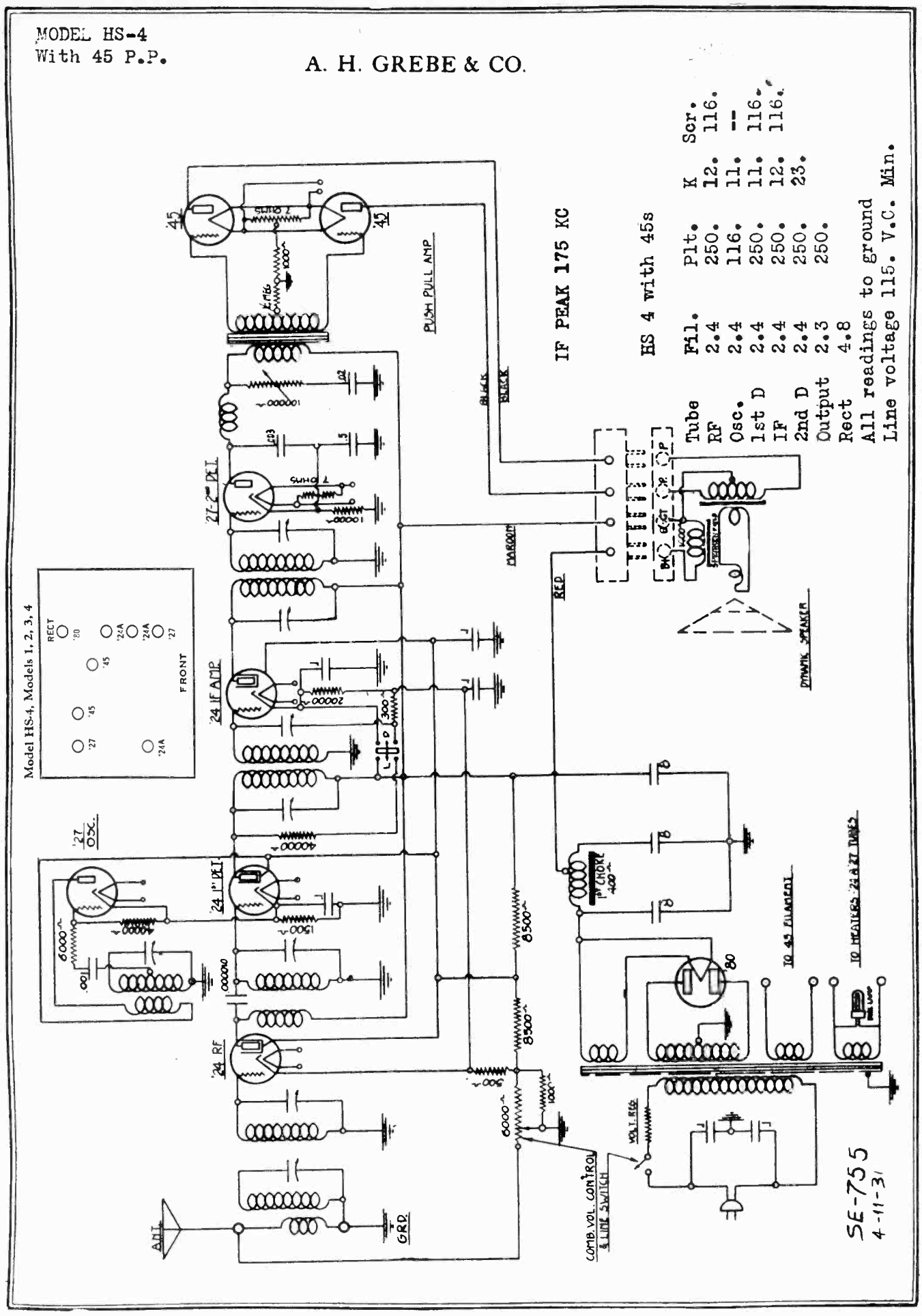


Tube	Fil.	Plt.	K	Sor.
RF	2.35	255.	50.	128.
Osc.	2.35	130.	11.5	-
1st D	2.35	255.	11.5	128.
IF	2.35	255.	50.	128.
2nd D	2.35	130	10.	128.
Pent	2.36	235.	—	255.
Rect	4.8			

All readings to ground.
Line voltage 115. V.C. Min.

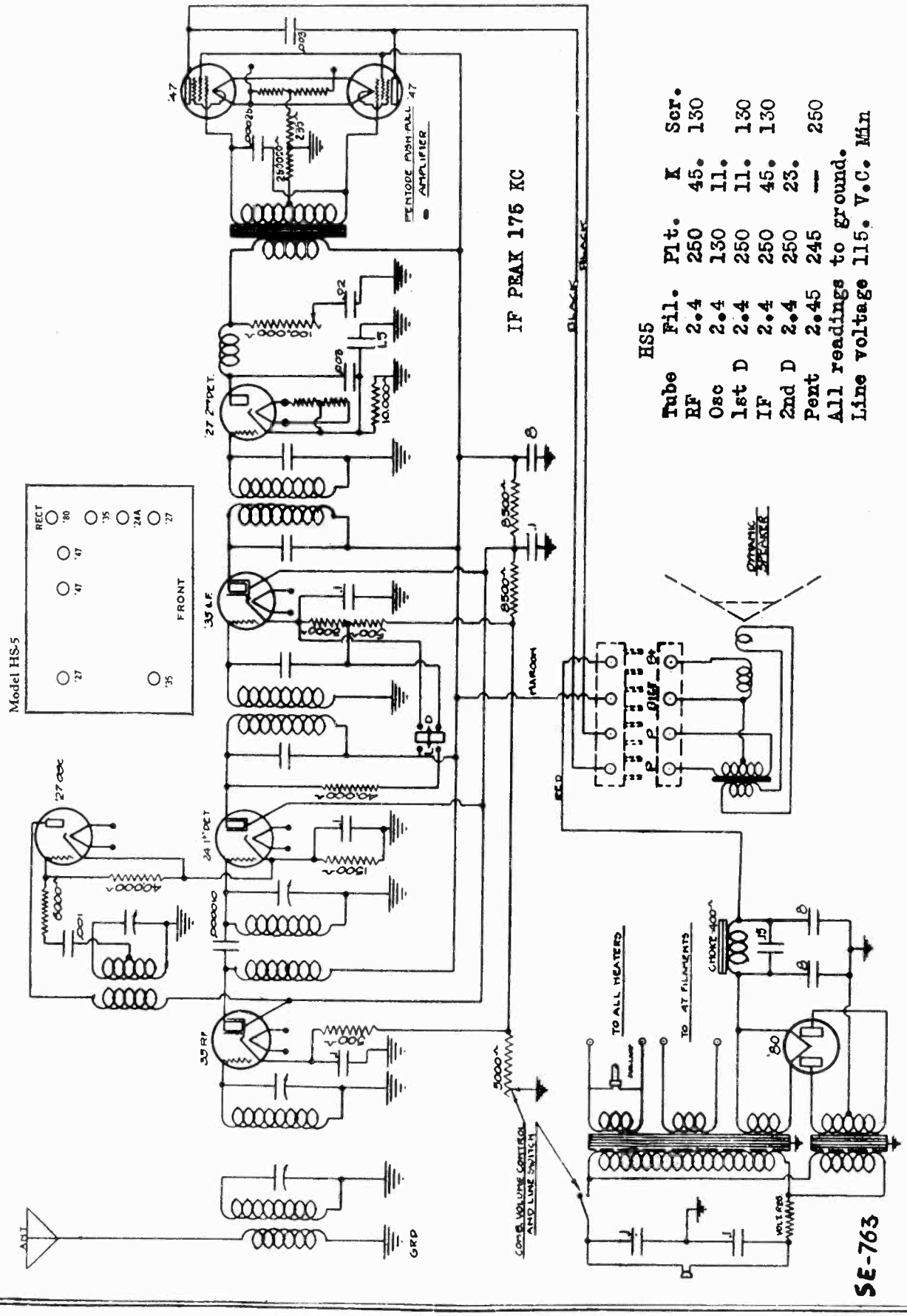
MODEL HS-4
With 45 P.P.

A. H. GREBE & CO.



MODEL HS-5

A. H. GREBE & CO.



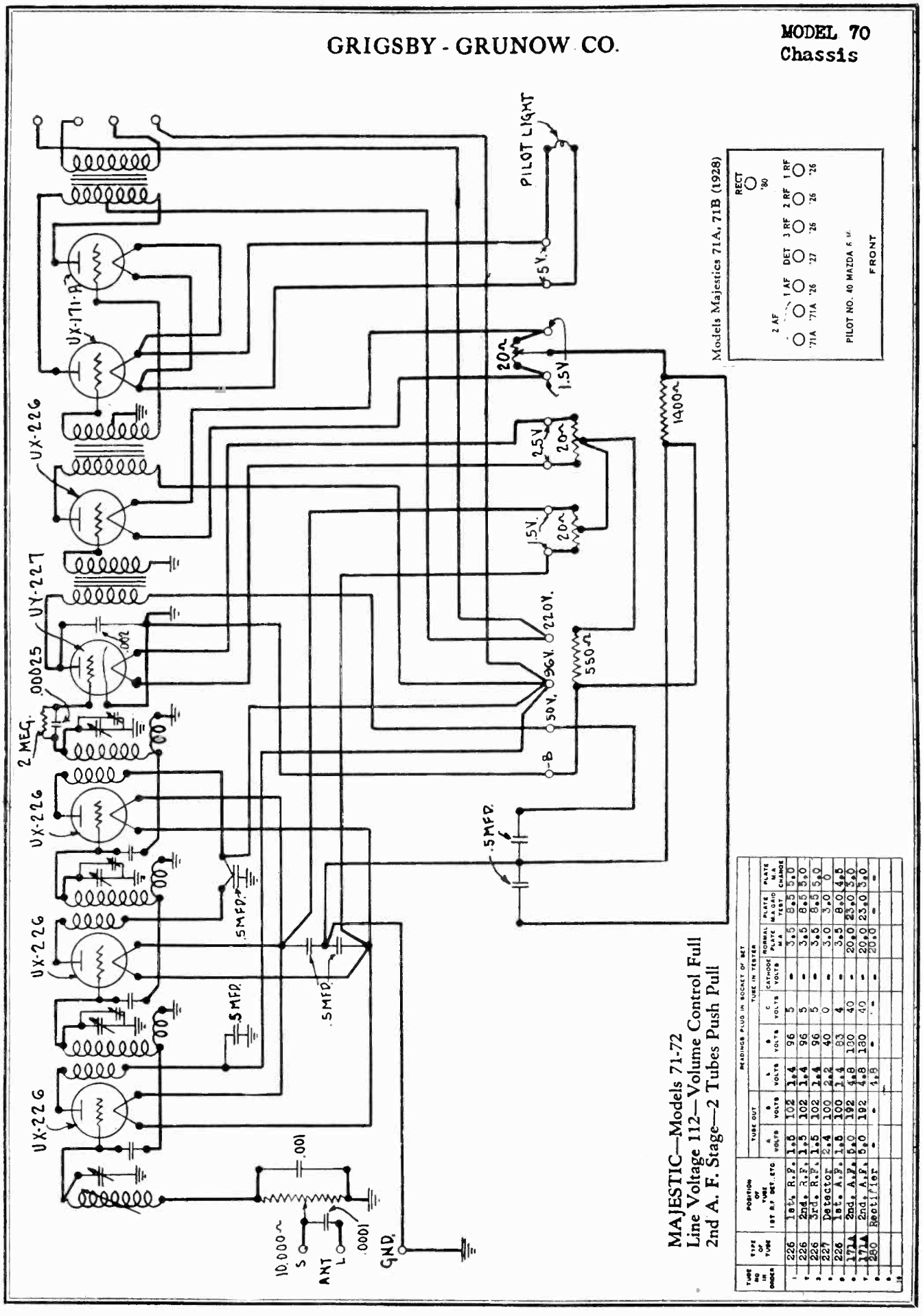
HS5

Tube	Fil.	Plt.	K	Scr.
RF	2.4	250	45.	130
Osc	2.4	130	11.	
1st D	2.4	250	11.	130
IF	2.4	250	45.	130
2nd D	2.4	250	23.	
Pent	2.45	245	—	250

All readings to ground.
Line voltage 115. V.C. Min

GRIGSBY - GRUNOW CO.

MODEL 70
Chassis



Models Majestics 71A, 71B (1928)

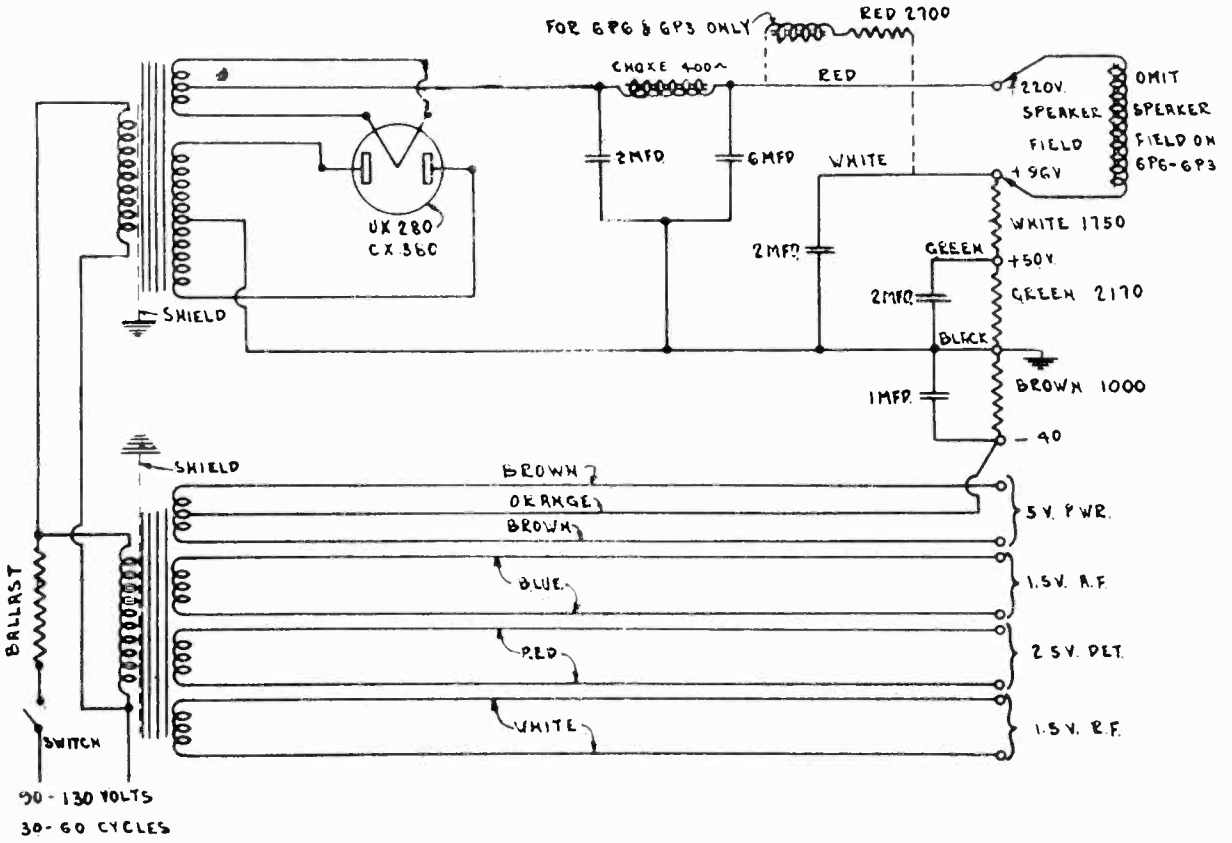
MAJESTIC—Models 71-72
Line Voltage 112—Volume Control Full
2nd A. F. Stage—2 Tubes Push Pull

TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1st R.F. DET. ETC	READINGS PLUG IN SOCKET OF SET										
			TUBE OUT		TUBE IN TESTER								
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE M.A. CHANGE
1	226	1st. R.F.	1.6	102	1.4	96	5	-	3.5	8.5	5.0
2	226	2nd. R.F.	1.5	102	1.4	96	5	-	3.5	8.5	5.0
3	226	3rd. R.F.	1.5	102	1.4	96	5	-	3.5	8.5	5.0
4	227	Detector	2.4	100	2.2	40	0	-	3.0	3.0	0
5	226	1st. A.F.	1.6	100	1.4	83	4	-	3.5	8.0	4.5
6	171A	2nd. A.F.	5.0	192	4.8	130	40	-	20.0	25.0	5.0
7	171A	2nd. A.F.	5.0	192	4.8	130	40	-	20.0	25.0	5.0
8	280	Rectifier	-	-	4.8	-	-	-	20.0	-	-
9											
10											

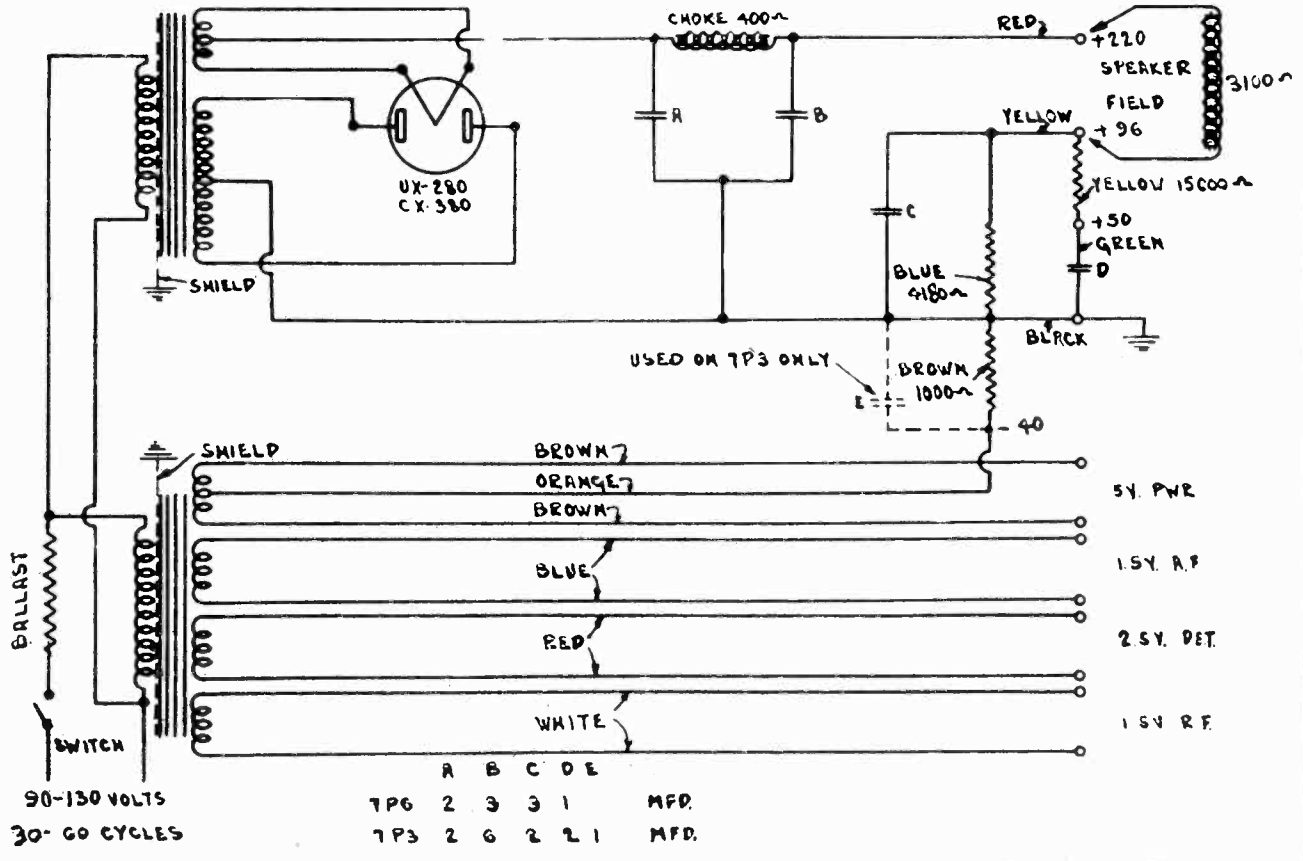
MODEL 7-P-6, 7-P-3
Two Types

GRIGSBY-GRUNOW CO.

SCHEMATIC DIAGRAM OF 7P6-7P3 POWER PACK (OLD WIRING)



SCHEMATIC DIAGRAM OF 7P6-7P3 POWER PACK

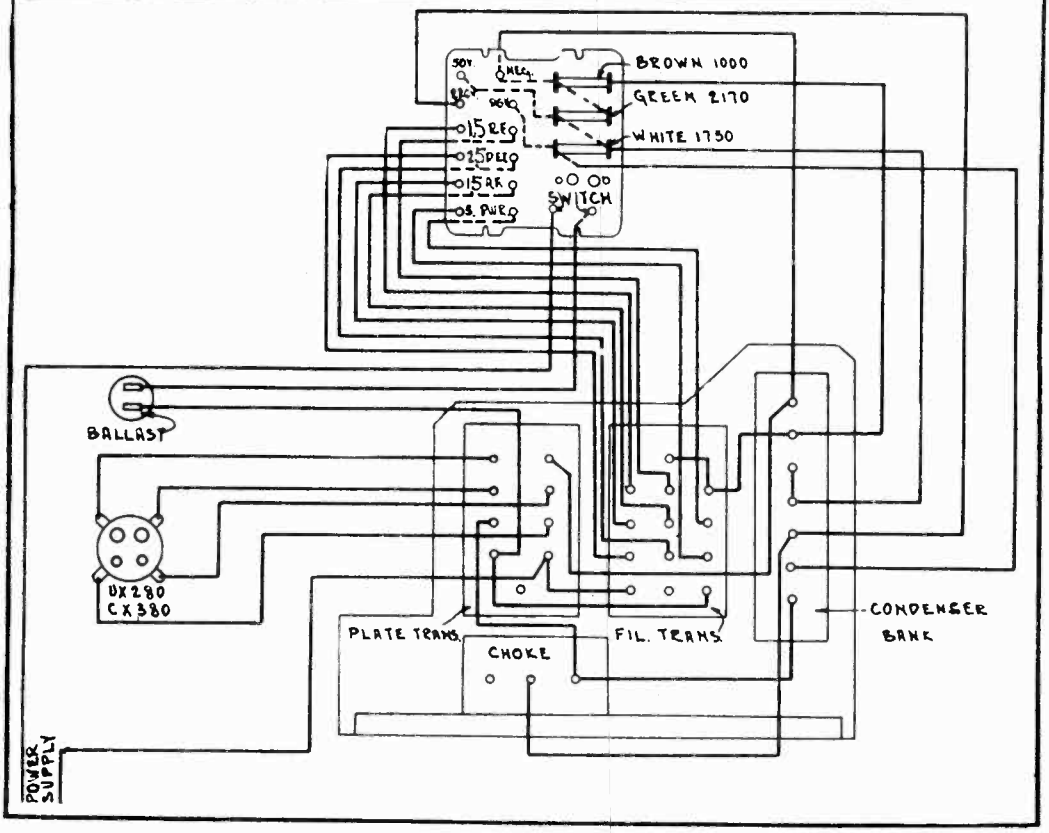


	A	B	C	D	E	
7P6	2	3	3	1		MFD.
7P3	2	6	2	2	1	MFD.

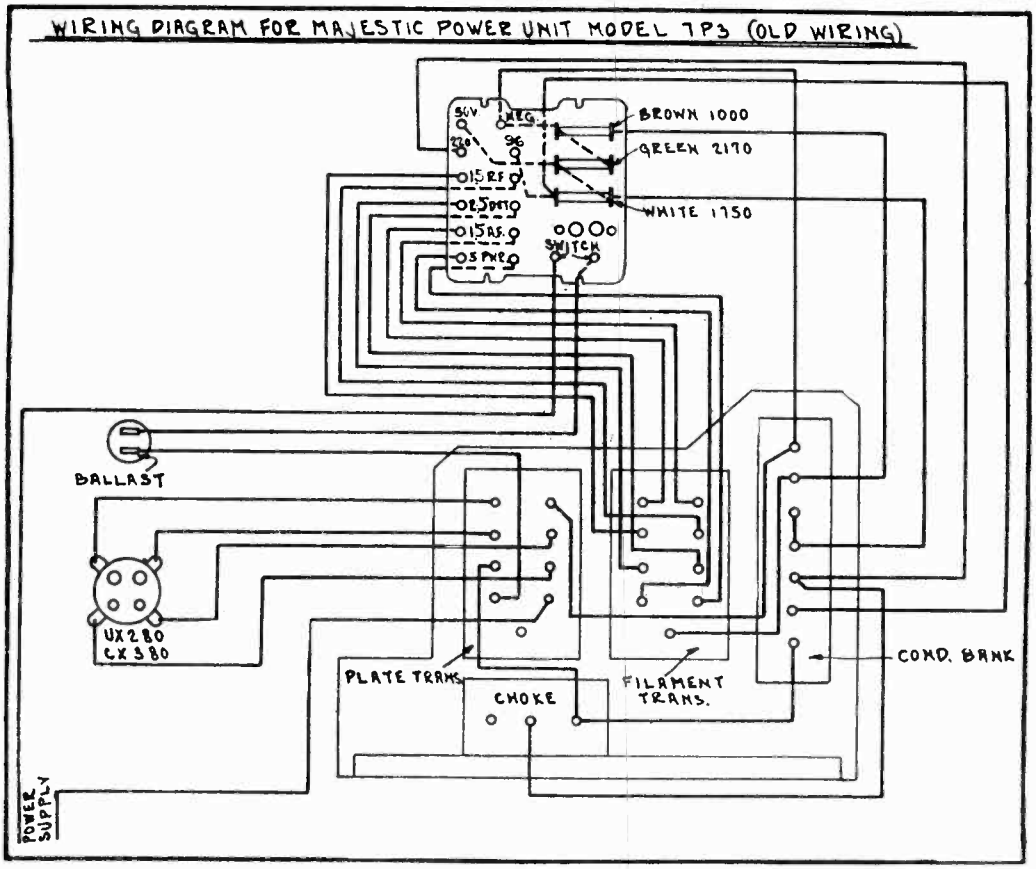
GRIGSBY - GRUNOW CO.

MODEL 7-P-6, 7-P-3
Wiring Diagram
Old Wiring

WIRING DIAGRAM FOR MAJESTIC POWER UNIT MODEL 7P6 (OLD WIRING)



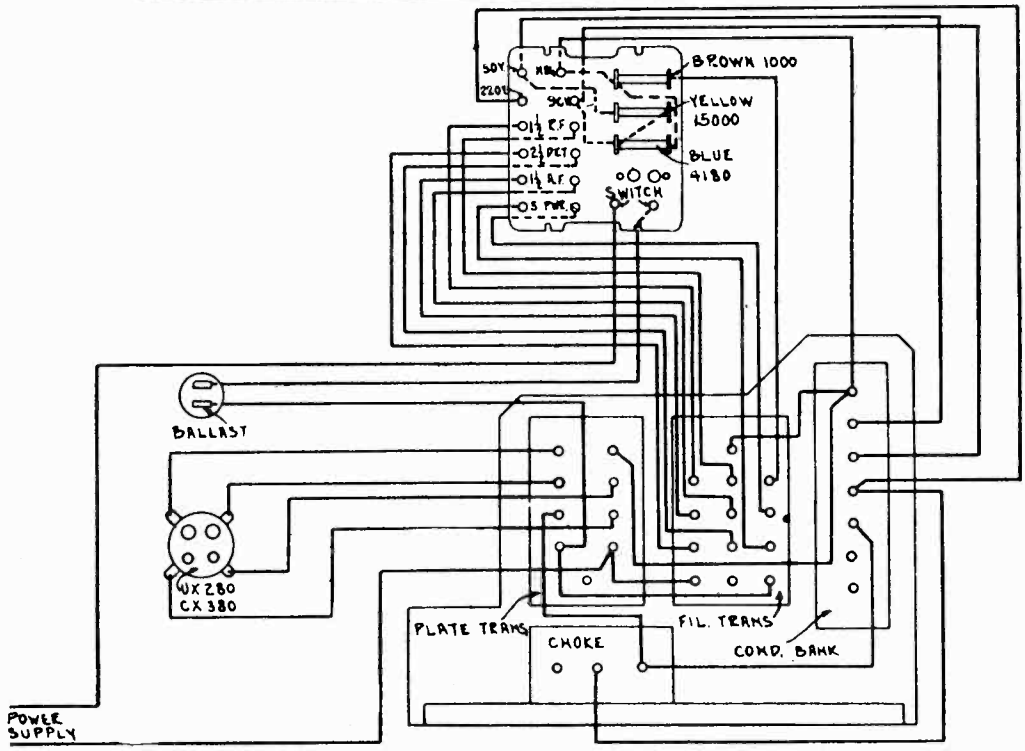
WIRING DIAGRAM FOR MAJESTIC POWER UNIT MODEL 7P3 (OLD WIRING)



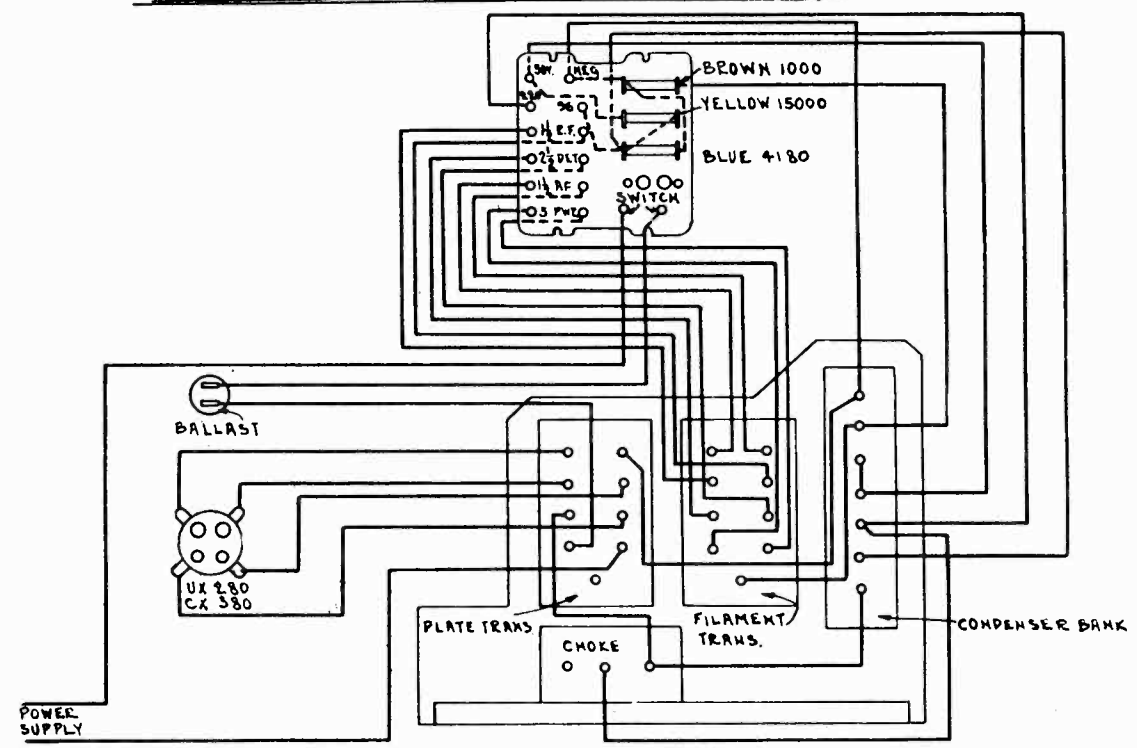
MODEL 7-P-6, 7-P-3
Wiring Diagram

GRIGSBY - GRUNOW CO.

WIRING DIAGRAM FOR MAJESTIC POWER UNIT MODEL 7P6

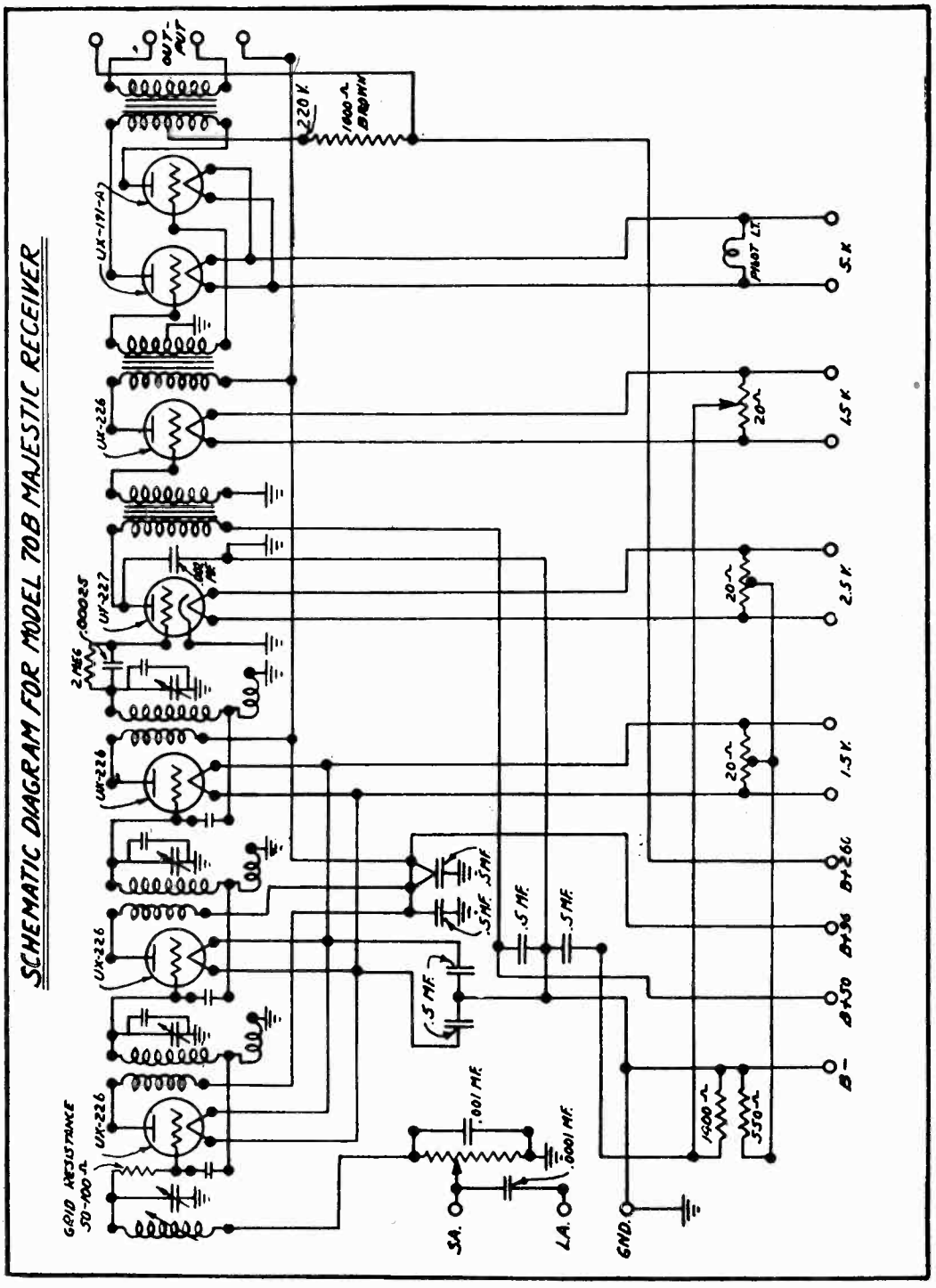


WIRING DIAGRAM FOR MAJESTIC POWER UNIT MODEL 7P3



GRIGSBY - GRUNOW CO.

MODEL 70-B



Line Voltage 112—Volume Control Full
2nd A. F. Stage—2 Tubes Push Pull

TUBE SO IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST A.F. DET. ETC	READINGS PLUG IN SOCKET OF SET: TUBE OUT A VOLTS	TUBE OUT B VOLTS	TUBE IN TESTER A VOLTS	TUBE IN TESTER B VOLTS	TUBE IN TESTER C VOLTS	TUBE IN TESTER CATHODE VOLTS	TUBE IN TESTER NORMAL PLATE M.A.	TUBE IN TESTER PLATE M.A. GRID TEST	TUBE IN TESTER PLATE M.A. CHANGE
.	226	1st. R.F.	1.5	102	1.4	96	5	-	3.5	8.5	5.0
.	226	2nd. R.F.	1.5	102	1.4	96	5	-	3.5	8.5	5.0
.	226	3rd. R.F.	1.5	102	1.4	96	5	-	3.5	8.5	5.0
.	227	Detector	2.4	100	2.2	40	0	-	3.0	3.0	0
.	226	1st. A.F.	1.5	100	1.4	83	4	-	3.5	8.0	4.5
.	171A	2nd. A.F.	6.0	192	4.8	180	40	-	20.0	25.0	5.0
.	171A	2nd. A.F.	6.0	192	4.8	180	40	-	20.0	23.0	3.0
.	280	Rectifier	-	-	4.8	-	-	-	20.0	-	-

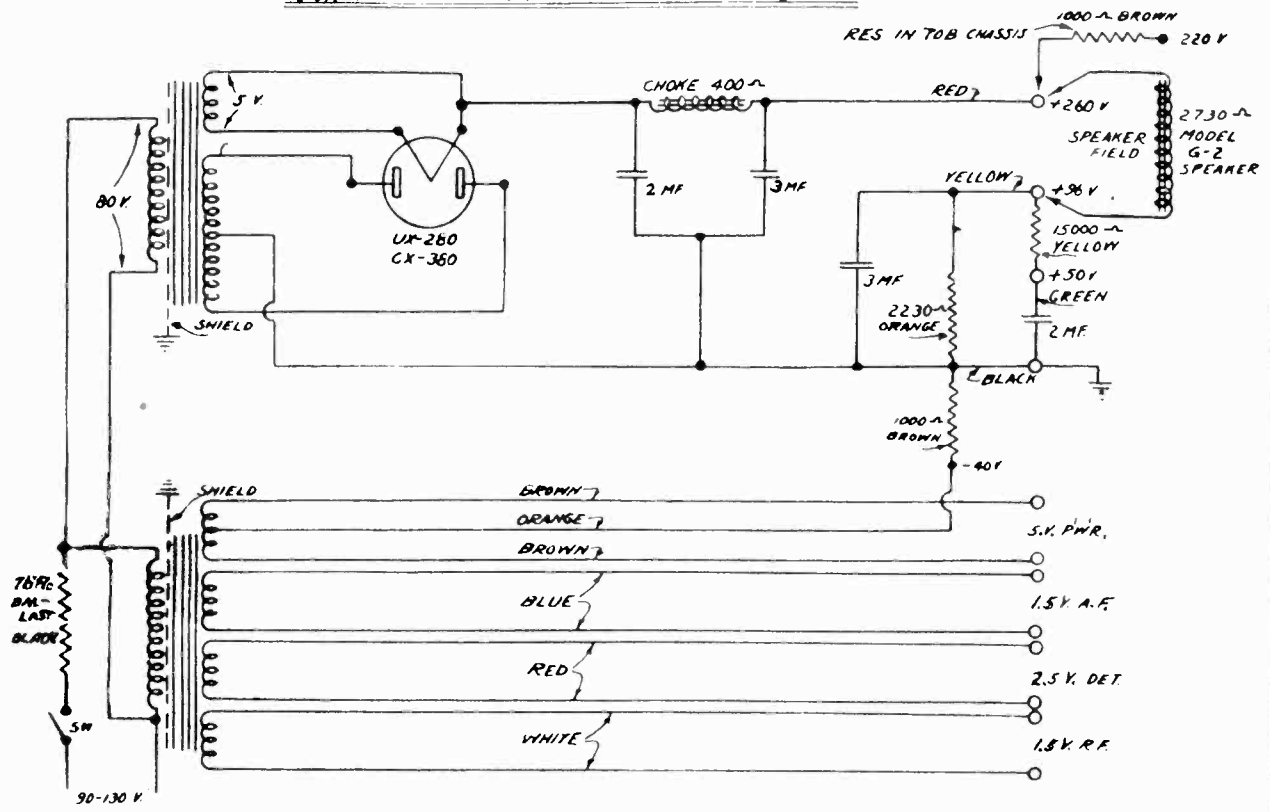
CX-371A	CX-371A	CX-326	C-327	CX-326	CX-326	CX-326
2nd A.F	2nd A.F.	1st A.F.	Det.	3rd R.F.	2nd R.F.	1st R.F.

Separate Power Unit uses CX-380.

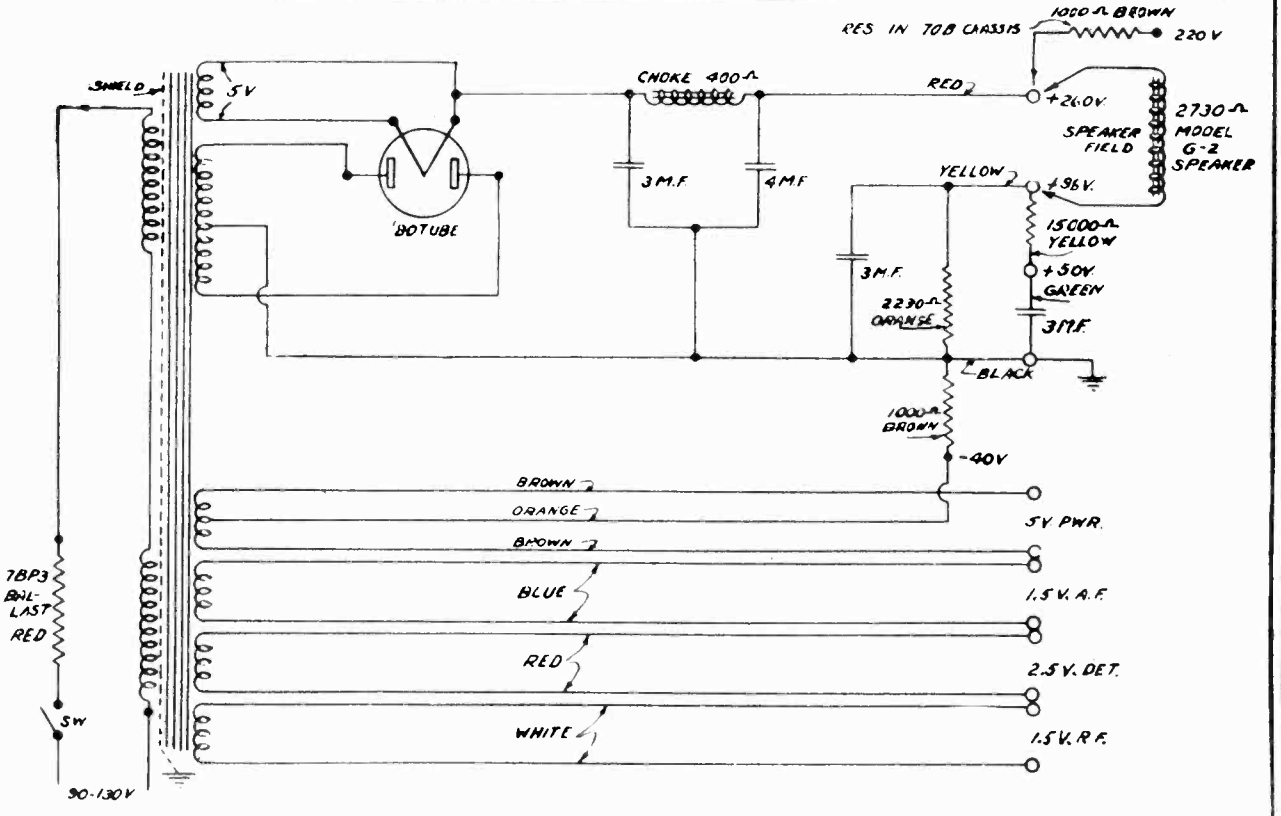
MODEL 7-BP-6, 7-BP-3
Schematic

GRIGSBY - GRUNOW CO.

SCHEMATIC DIAGRAM OF 7BP6 POWER UNIT



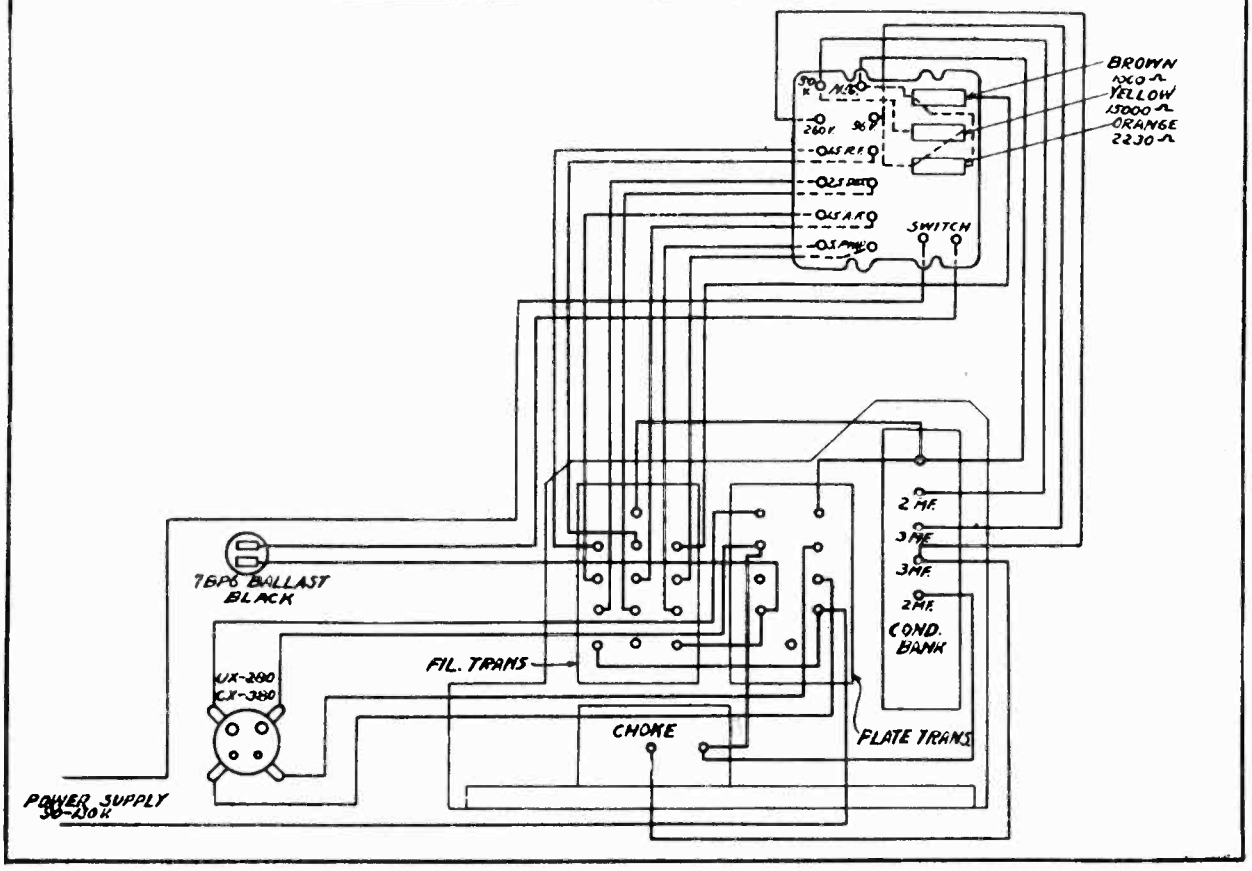
SCHEMATIC DIAGRAM OF 7BP3 POWER UNIT



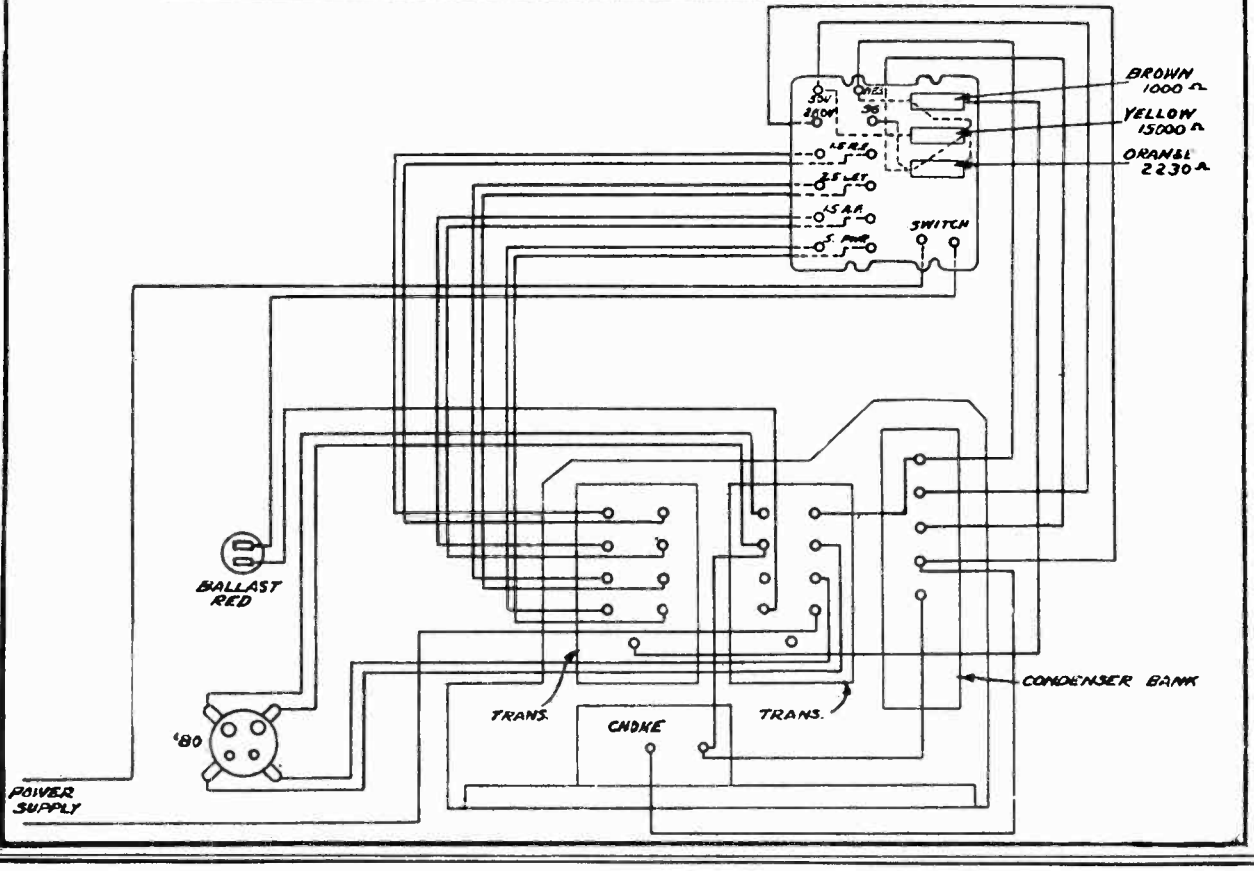
GRIGSBY - GRUNOW CO.

MODEL 7-BP-6, 7-BP-3
Wiring Diagram

WIRING DIAGRAM FOR MAJESTIC POWER UNIT - MODEL 7BP6



WIRING DIAGRAM FOR MAJESTIC POWER UNIT MODEL 7BP3



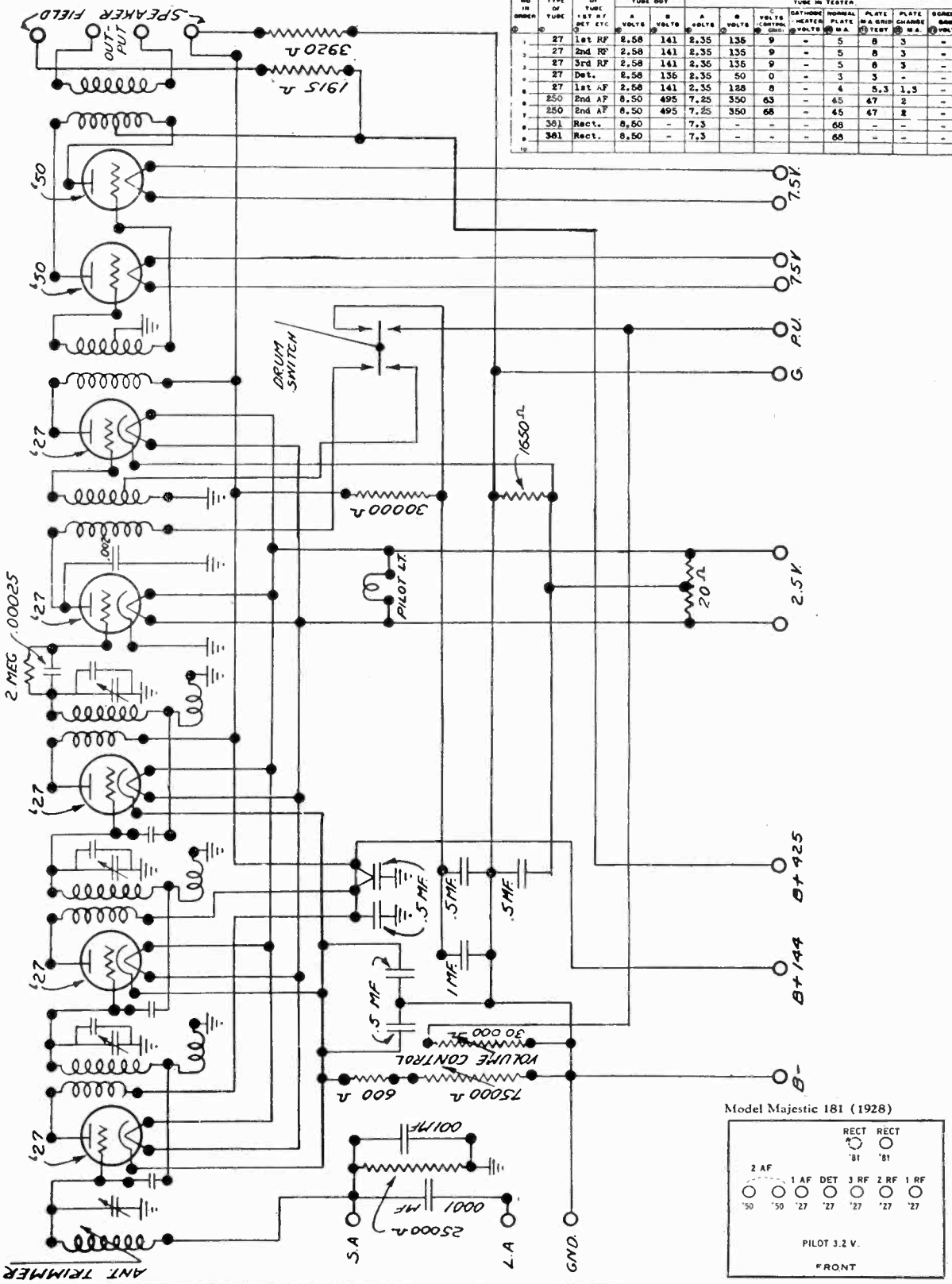
MODEL 180

GRIGSBY - GRUNOW CO.

MAJESTIC—Model 181
Line Voltage 112—Set on *Volt Tap—Volume Control Position Full On
***Voltage Regulator Is Used**

TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE IST 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 CHARGE M A	SCREEN GRID VOLTS
1	27	1st RF	2.58	141	2.35	135	9	-	5	8	3	-
2	27	2nd RF	2.58	141	2.35	135	9	-	5	8	3	-
3	27	3rd RF	2.58	141	2.35	135	9	-	5	8	3	-
4	27	Det.	2.58	135	2.35	50	0	-	3	3	-	-
5	27	1st AF	2.58	141	2.35	128	8	-	4	5.3	1.3	-
6	250	2nd AF	8.50	495	7.25	350	63	-	45	47	2	-
7	250	2nd AF	8.50	495	7.25	350	68	-	45	47	2	-
8	381	Rect.	8.50	-	7.3	-	-	-	68	-	-	-
9	381	Rect.	8.50	-	7.3	-	-	-	68	-	-	-
10												

SCHEMATIC DIAGRAM FOR MODEL 180 MAJESTIC RECEIVER

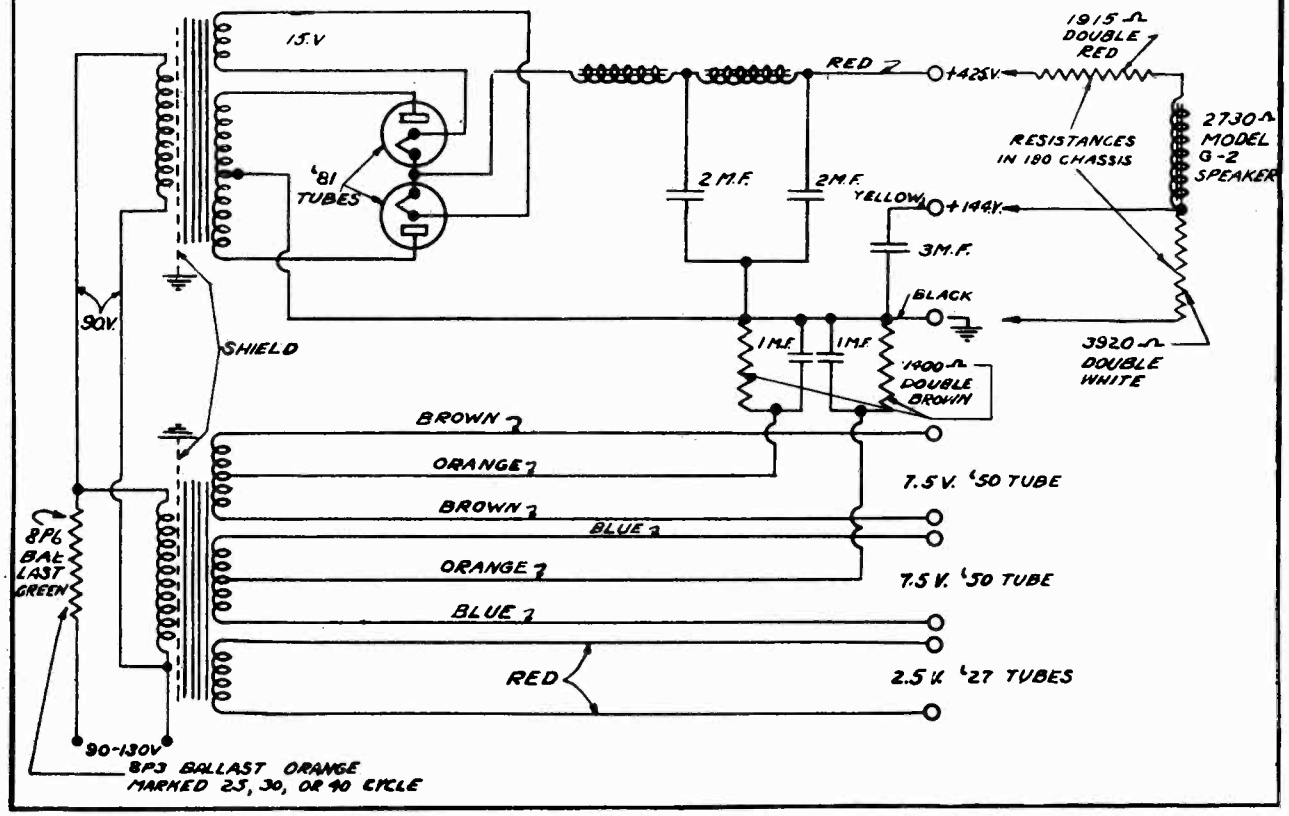


Model Majestic 181 (1928)

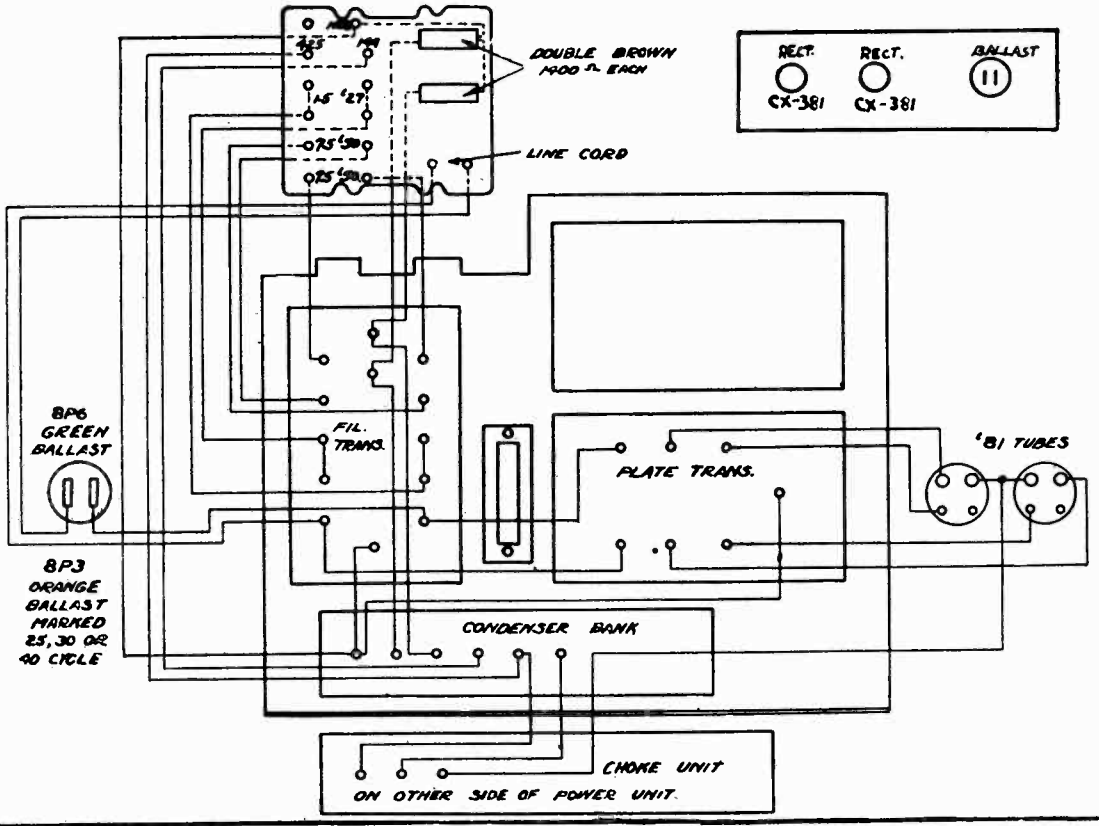
GRIGSBY - GRUNOW CO. MODEL 8-P-6, 8-P-3 Schematic, Wiring Diagram

SCHEMATIC DIAGRAM OF 8P6 & 8P3 POWER UNITS

(FOR MODEL 180 CHASSIS)



WIRING DIAGRAM FOR MAJESTIC POWER UNIT MODEL 8P6 & 8P3



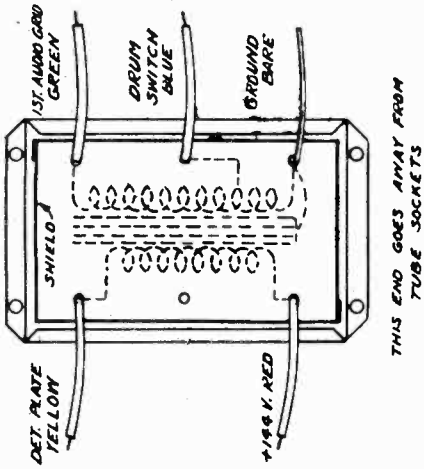
MODELS 70-B, 180
Data

GRIGSBY - GRUNOW CO.

FIRST STAGE AUDIO TRANS 6-38

FOR MODEL 180 CHASSIS

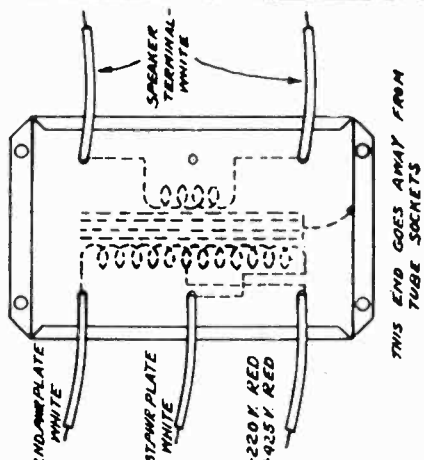
(VIEW LOOKING AT BOTTOM OF CAN)



PUSH PULL OUTPUT TRANS 6-4

FOR MODEL 70 B & 180 CHASSIS

(VIEW LOOKING AT BOTTOM OF CAN)

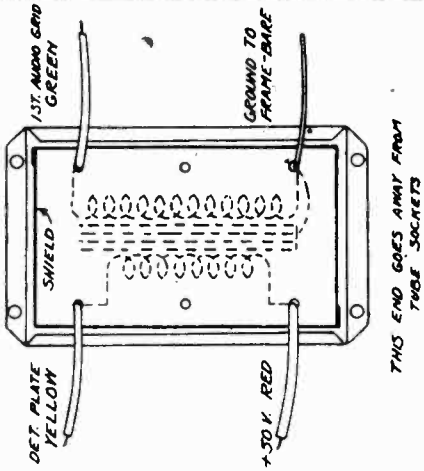


GRIGSBY GRUNOW CO
JAN-1929

FIRST STAGE AUDIO TRANS 6-38

FOR MODEL 70 B CHASSIS

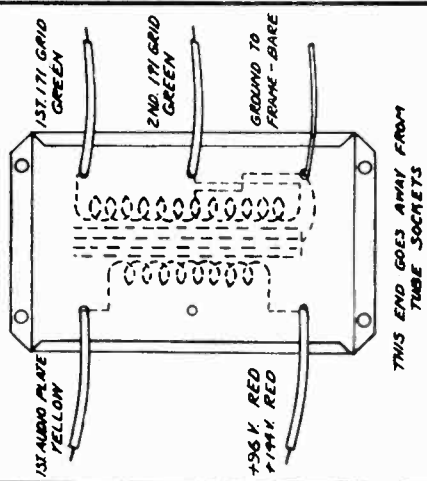
(VIEW LOOKING AT BOTTOM OF CAN)



PUSH PULL INPUT TRANS 6-3

FOR MODEL 70B & 180 CHASSIS

(VIEW LOOKING AT BOTTOM OF CAN)



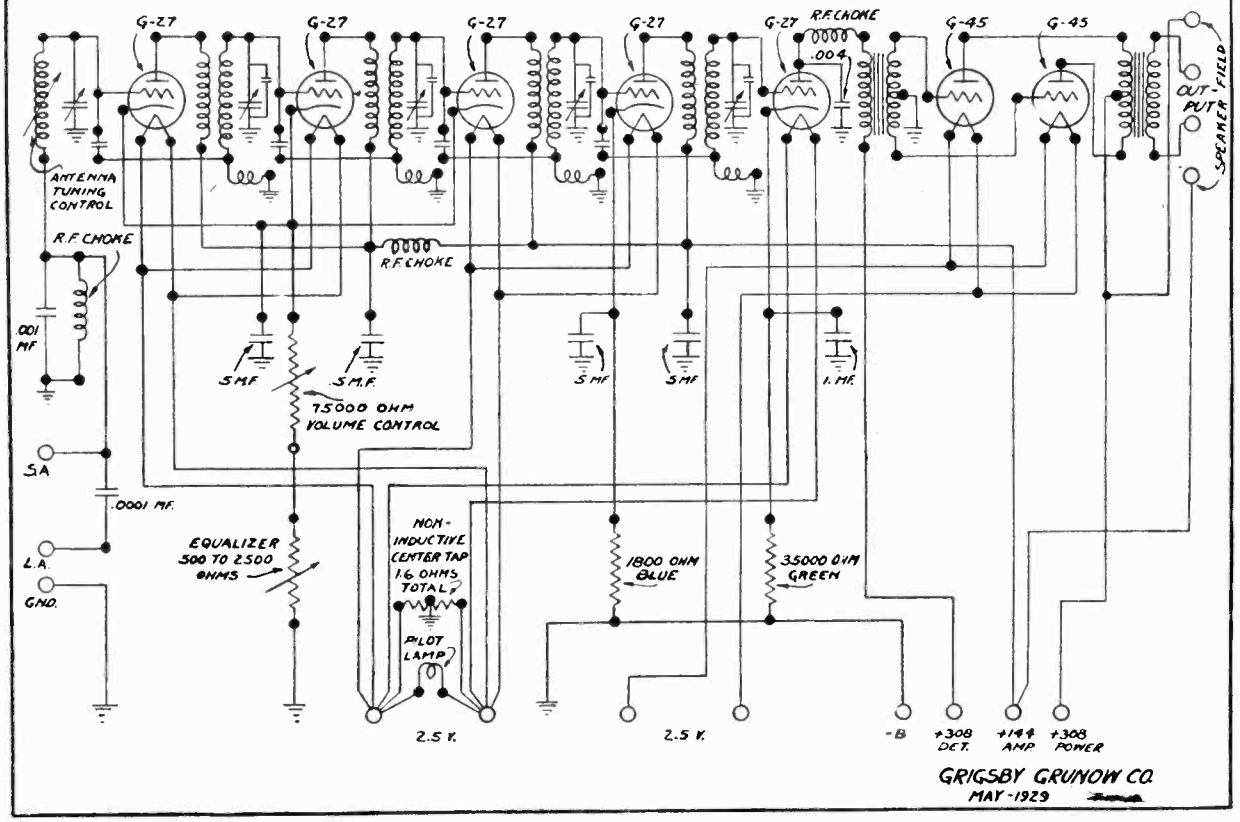
BALLAST SPECIFICATIONS FOR THE VARIOUS TYPES OF MAJESTIC ELECTRIC POWER UNITS

POWER UNIT TYPE	FREQUENCY CYCLES PER SECOND	BALLAST MARKING	BALLAST COLOR	LINE VOLTAGE	PRIMARY VOLTS	
7P6	60	B	BLACK	115	80	
7P3	25-30-40	B	BLACK	115	60	
7BP6	60	7BP6	BLACK	115	80	
7BP6	60	7BP6	BLUE	230	160	
7BP3	25	7BP3 25	RED	115	80	
7BP3	30	7BP3 30	RED	115	80	
7BP3	40	7BP3 40	RED	115	80	
8P6	60	8P6	GREEN	115	90	
8P6	60	8P6	YELLOW	230	180	
8P3	25	8P3 25	ORANGE	115	90	
8P3	30	8P3 30	ORANGE	115	90	
8P3	40	8P3 40	ORANGE	115	90	

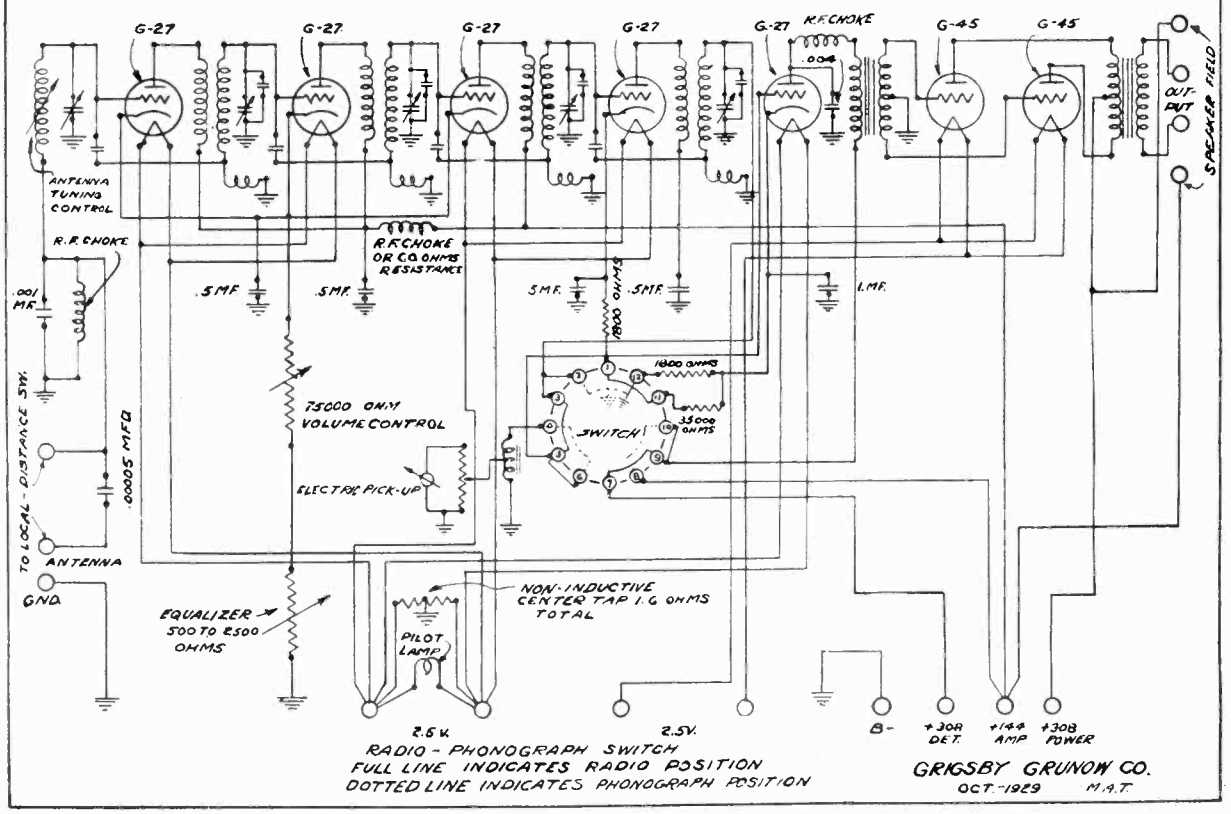
GRIGSBY - GRUNOW CO.

MODEL 90,100
Schematic

SCHEMATIC DIAGRAM FOR MODEL 90 MAJESTIC RECEIVER

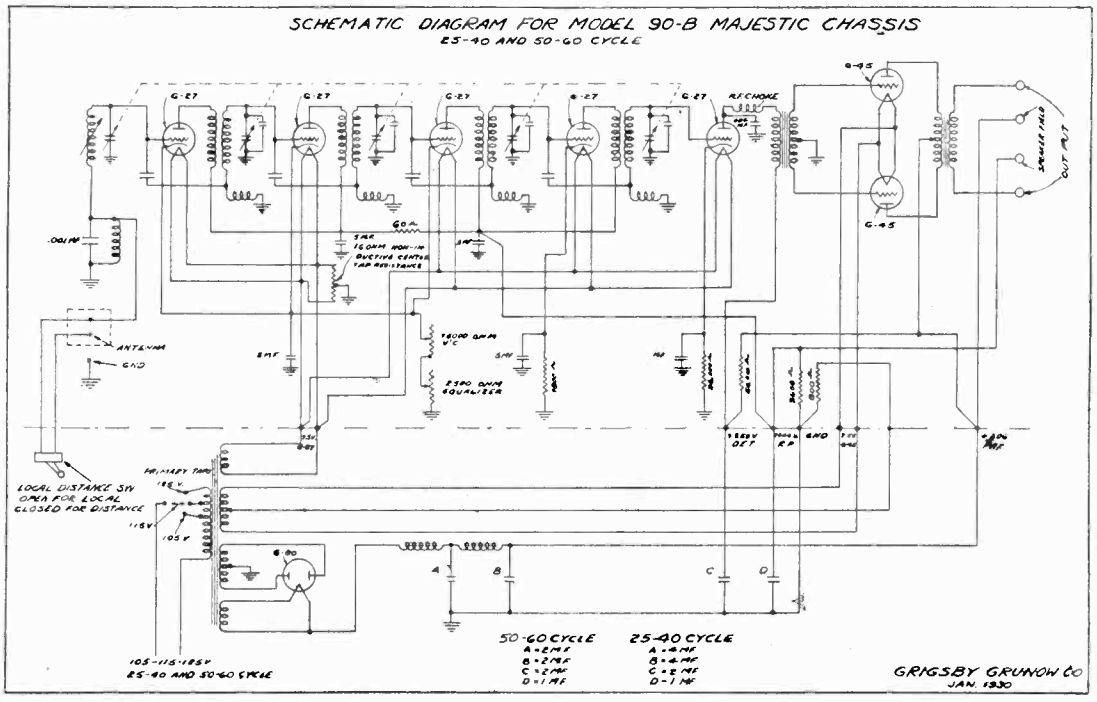


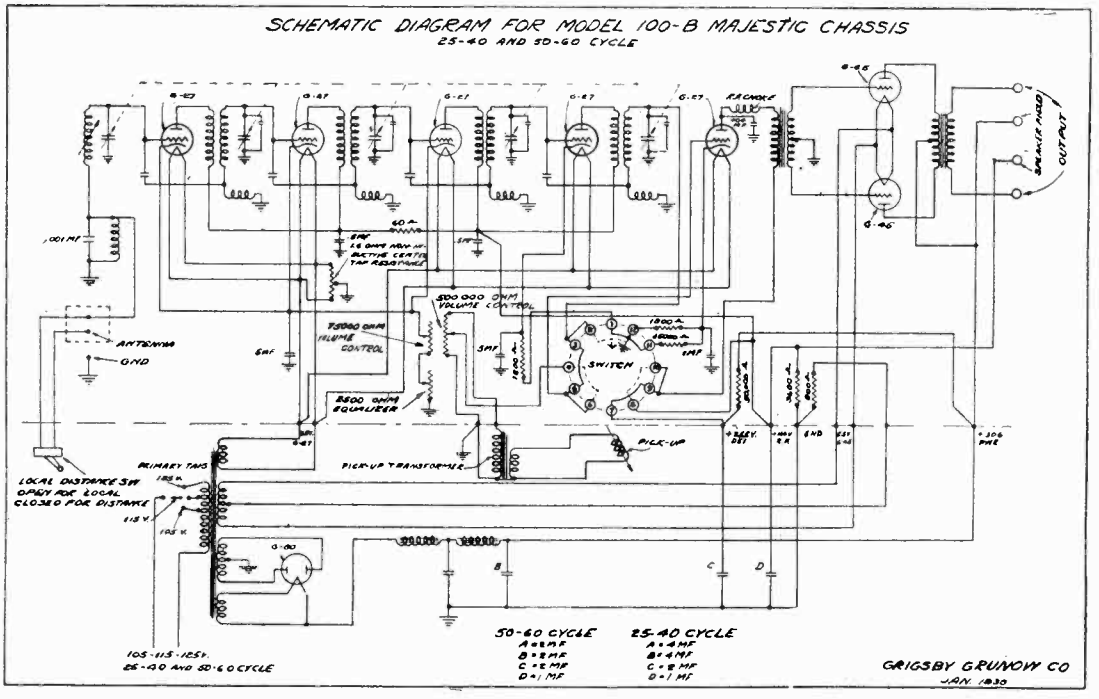
SCHEMATIC DIAGRAM FOR MODEL 100 MAJESTIC RECEIVER



MODEL 90-B
MODEL 100-B

GRIGSBY - GRUNOW CO.

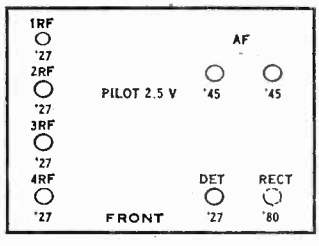




Line Voltage 112—Set on *Volt Tap—Volume Control Position Full On
***Voltage Regulator Is Used**

TUBE NO. IN ORDER ①	TYPE OF TUBE ②	POSITION OF TUBE 1ST R.F. DET. ETC. ③	READINGS, PLUG IN SOCKET OF SET									
			TUBE OUT		TUBE IN TESTER							
			A VOLTS ④	B VOLTS ⑤	A VOLTS ⑥	B VOLTS ⑦	C VOLTS (CONTROL GRID) ⑧	CATHODE - HEATER VOLTS ⑨	NORMAL PLATE M.A ⑩	PLATE M.A GRID TEST ⑪	PLATE CHANGE M.A ⑫	SCREEN GRID VOLTS ⑬
1	27	1st RF	2.58	148	2.35	130	8	8	5.5	7.8	2.3	-
2	27	2nd RF	2.58	148	2.35	130	8	8	5.5	7.8	2.3	-
3	27	3rd RF	2.58	148	2.35	130	8	8	5.5	7.8	2.3	-
4	27	4th RF	2.58	148	2.35	130	9	9	5	7.2	2.2	-
5	27	Det.	2.58	306	2.35	270	30	30	1	1	1	-
6	245	Power	2.65	275	2.45	250	50	-	32	37	5	-
7	245	Power	2.65	275	2.45	250	50	-	32	37	5	-
8	380	-	-	-	-	-	-	-	100	-	-	-

Models Majestics 90, 91, 92, 101 (1929)

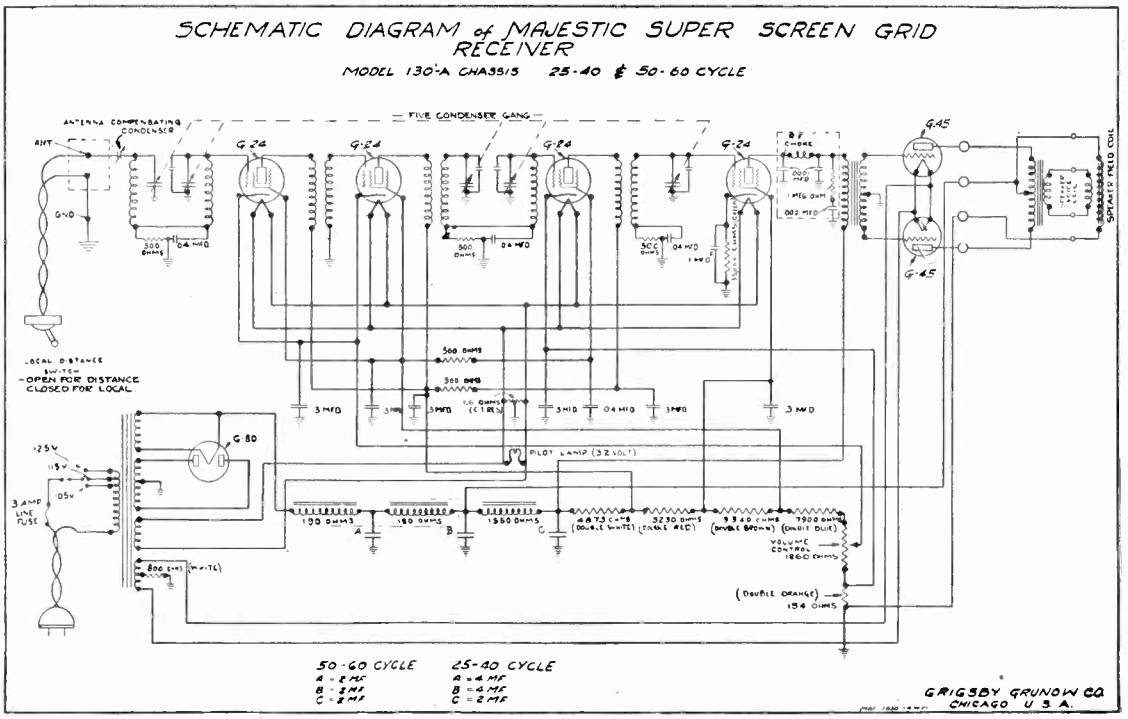


MODEL 130-A
MODEL 230-A

GRIGSBY - GRUNOW CO.

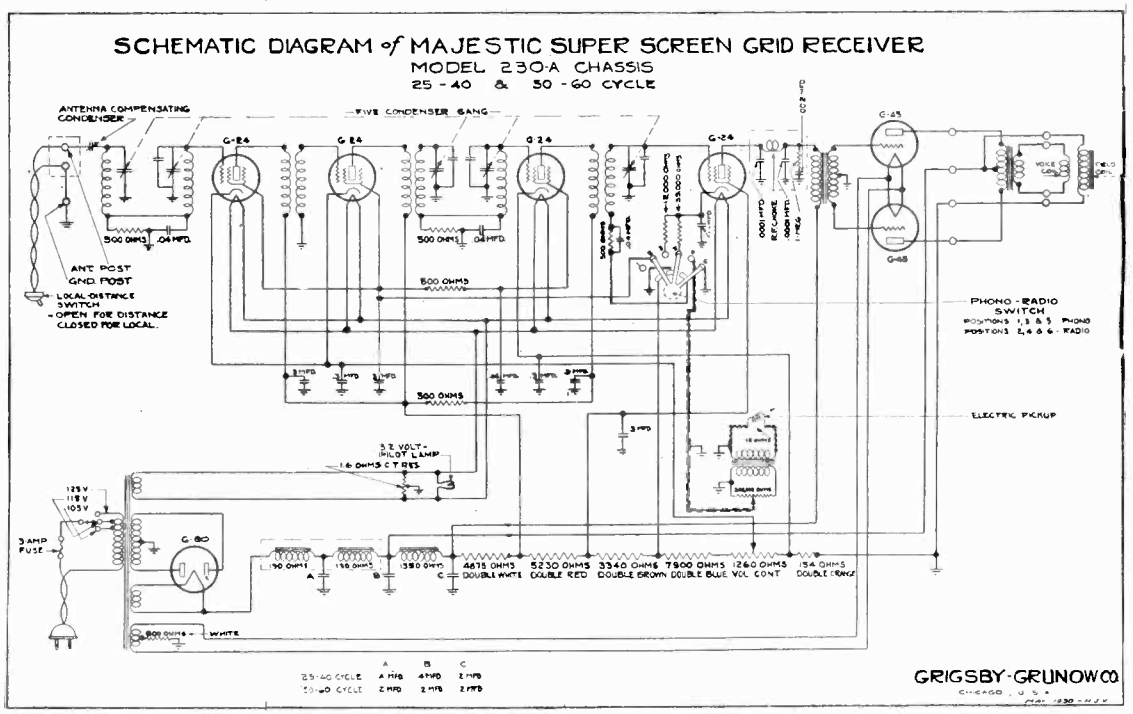
SCHEMATIC DIAGRAM of MAJESTIC SUPER SCREEN GRID RECEIVER

MODEL 130-A CHASSIS 25-40 & 50-60 CYCLE



SCHEMATIC DIAGRAM of MAJESTIC SUPER SCREEN GRID RECEIVER

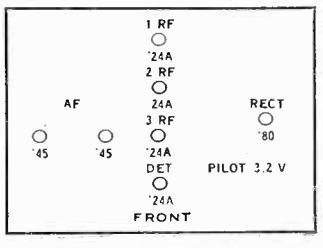
MODEL 230-A CHASSIS
25 - 40 & 50 - 60 CYCLE



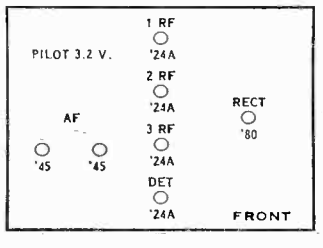
MAJESTIC—Models 130, 131, 132 and 233
Line Voltage 115—Voltage Tap 115
Volume Control Maximum

TUBE NO IN ORDER TESTED ①	TYPE OF TUBE ②	POSITION OF TUBE IN SET ③	METER READINGS WITH JEWELL TEST PLUG IN SOCKET OF SET								
			OPERATING VOLTAGES					MILLIAMPERES			
			FILAMENT OR HEATER ④	PLATE OR ANODE ⑤	CONTROL GRID — SPACE ⑥ 60 +	NORMAL GRID — SCREEN ⑦ 60 +	CATHODE TO HEATER ⑧	SCREEN ⑨ L R 90 PLATE	PLATE ⑩ R L 90 PLATE	TUBE TEST ⑪	PLATE CURRENT CHANGE ⑫
1	G-24	1 R.F.	2.35	180	3	90	3	-	3		
2	G-24	2 R.F.	2.35	180	3	90	3	-	3		
3	G-24	3 R.F.	2.35	180	3	90	3	-	3		
4	G-24	Det.	2.35	263	12	125	12	-	5		
5	G-45	PP-AF	2.45	250	-	50	-	-	38		
6	G-45	PP-AF	2.45	250	-	50	-	-	38		
7	G-80	Rect.	4.8	-	-	-	-	65	65		

Models 130A, 230A(1930)



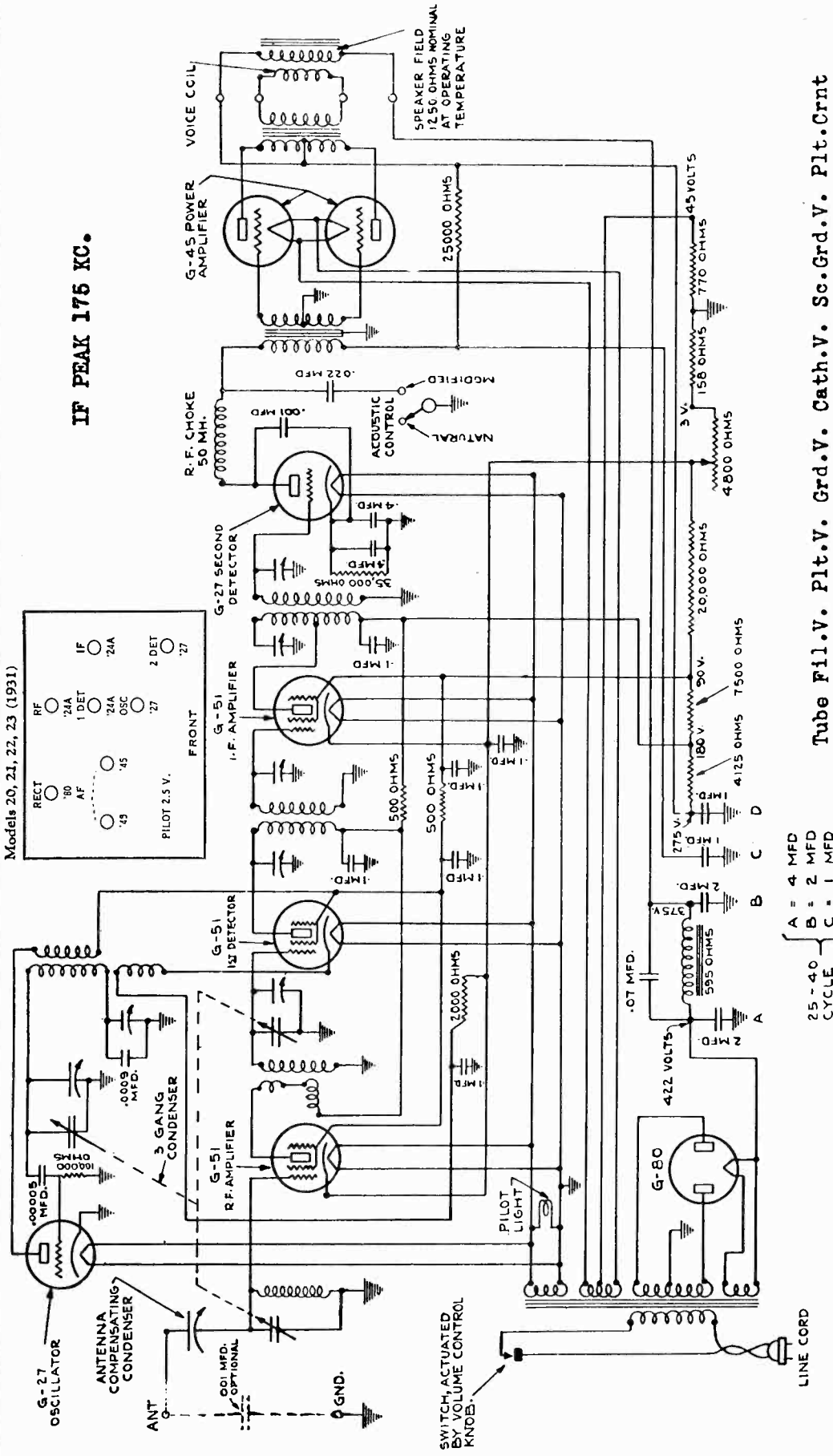
Models Majestics 130, 131, 132, 233 (1930)



MODEL 20,21,22,23

GRIGSBY - GRUNOW CO.

IF PEAK 176 KC.



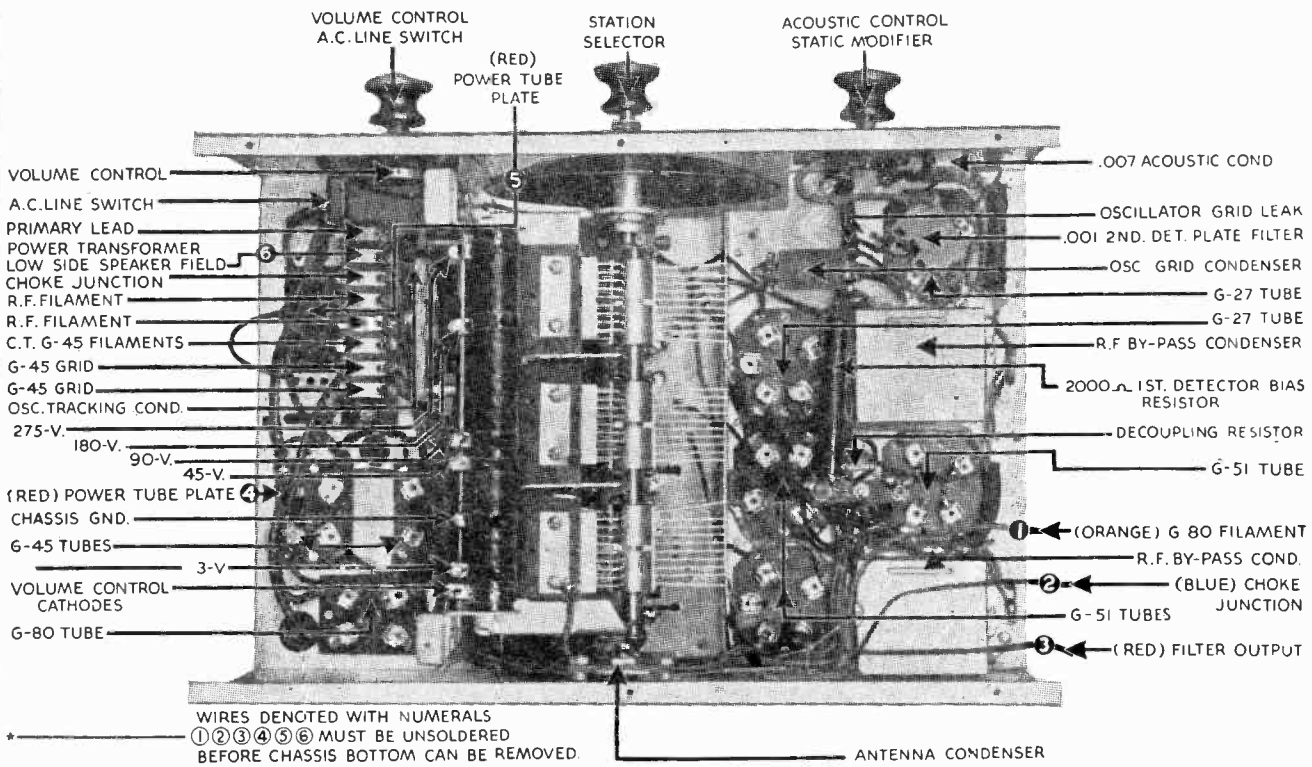
Tube	Fil.V.	Plt.V.	Grd.V.	Cath.V.	Sc.Grd.V.	Plt.Crnt
1RF	2.32	180.		3.	90.	5. ma
Osc.	2.32	90.		0.		4.
1Det.	2.32	180.		8.	90.	1.
1IF	2.32	180.		3.	90.	5.
2Det	2.32	255.		2 1		8.
PPAF	2.36	275.	45.			28.
PPAF	2.36	275.	45.			28.
Rec.	4.88	410.				80.

CONDENSER COLOR CODE

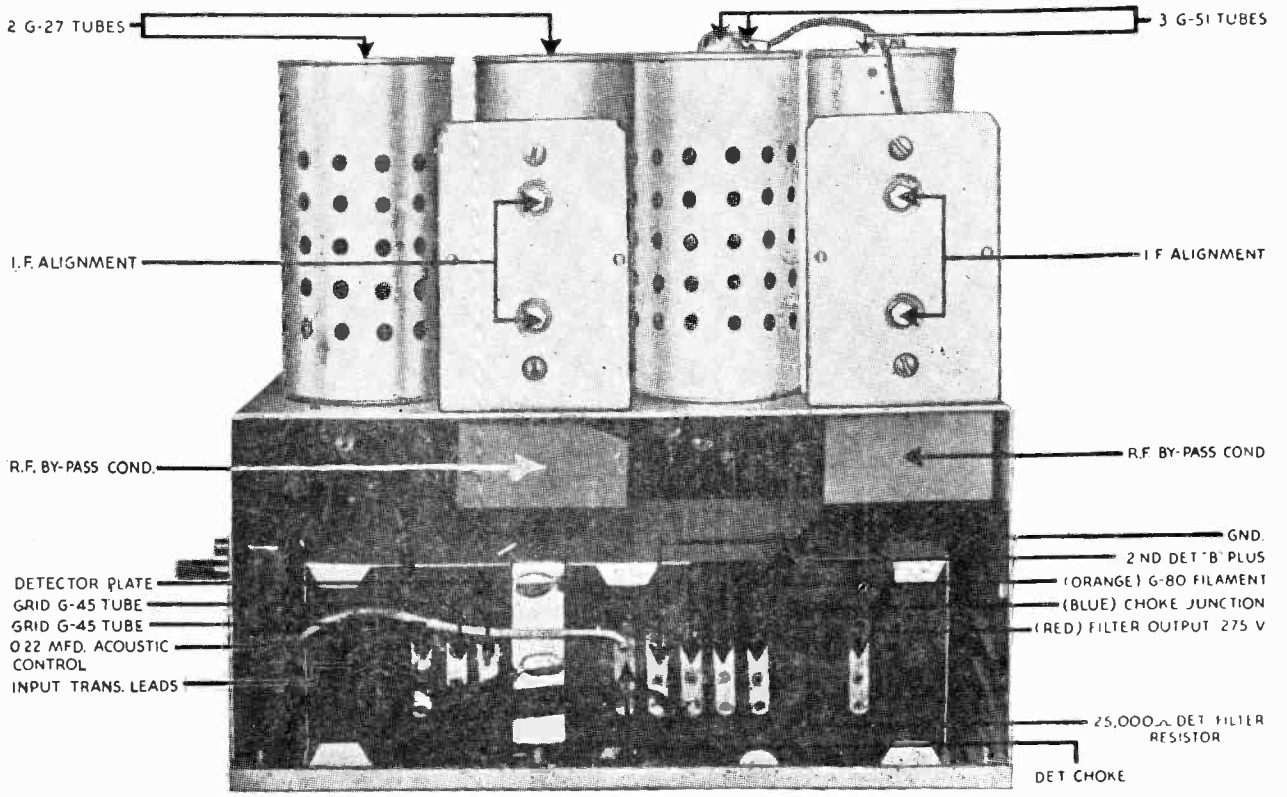
2 mfd condenser- Orange, stranded
2 mfd condenser- Blue, stranded
1 mfd condenser- Red, stranded
1 mfd condenser- Green stranded
Condenser common- Black stranded
.07 mfd condenser- White stranded

GRIGSBY - GRUNOW CO.

MODEL 20
Chassis



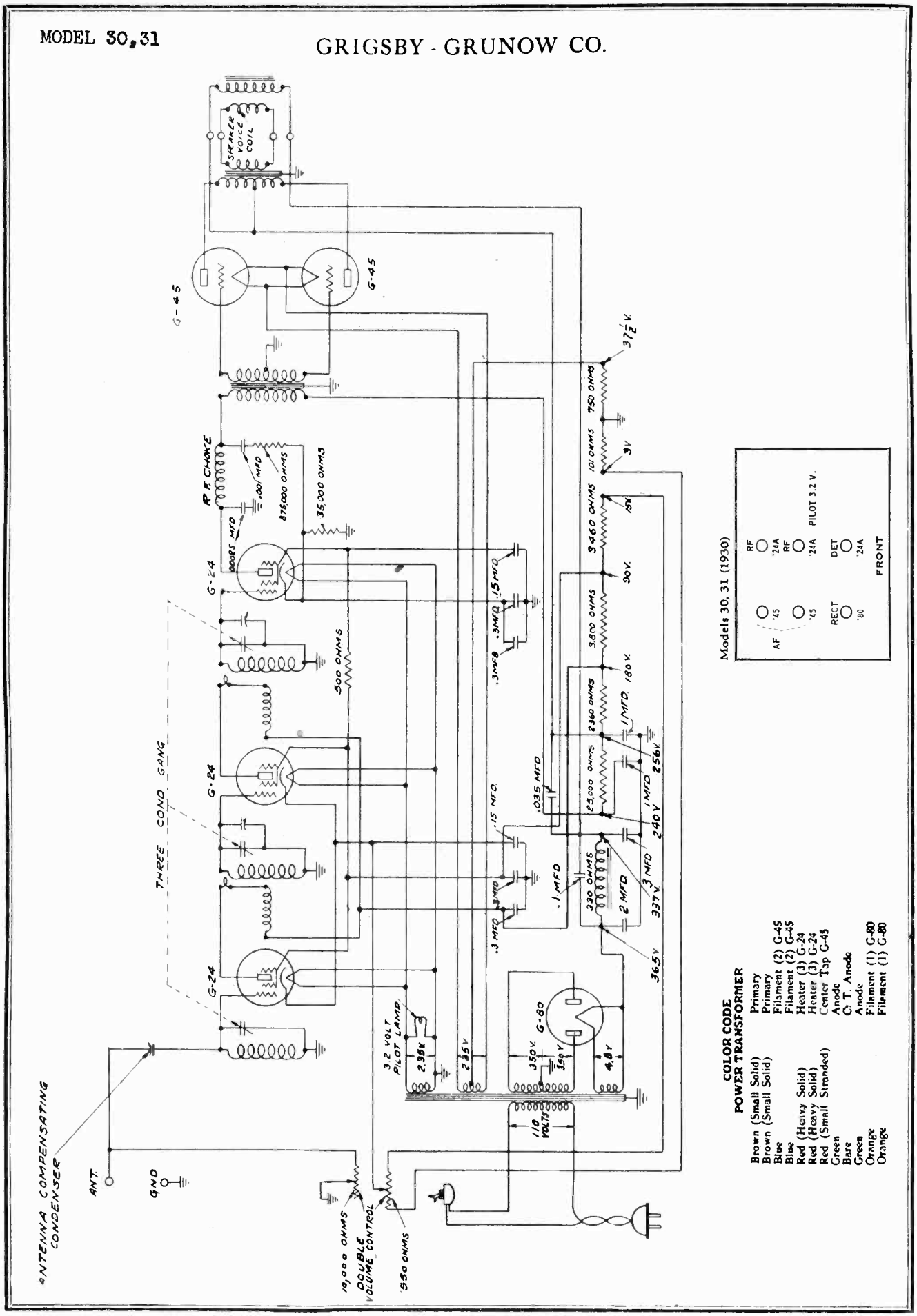
Bottom View of Model 20 Chassis



End View of Model 20 Chassis

MODEL 30, 31

GRIGSBY - GRUNOW CO.



Models 30, 31 (1930)

COLOR CODE
POWER TRANSFORMER

Brown (Small Solid)	Primary
Brown (Small Solid)	Primary
Blue	Filament (2) G-45
Blue	Filament (2) G-45
Red (Heavy Solid)	Heater (3) G-24
Red (Heavy Solid)	Heater (3) G-24
Red (Small Stranded)	Center Tap G-45
Green	Anode
Bare	C. T. Anode
Green	Anode
Orange	Filament (1) G-80
Orange	Filament (1) G-80

GRIGSBY - GRUNOW CO.

MODEL 30
Voltage-Data

FILTER UNIT

	From:	Condenser Connect to:
Orange	2 mfd. condenser	G-80 Socket (Filament)
Blue	3 mfd. condenser	Junction of Speaker Field and Choke
Green	1 mfd. condenser	Start of Primary of Input Transformer
Red	1 mfd. condenser	Free end of 2360 ohm resistor
Yellow	.035 mfd. condenser	Free end of 2360 ohm resistor
White	.10 mfd. condenser	Junction of Speaker Field and Choke
Black	condenser common	Ground

Choke

Orange	G-80 socket (Filament)
Blue	Junction of speaker field and choke

Caution

Under no condition, attempt to use a ground connection on the antenna binding posts. Be certain that the antenna and ground wires are on their respective posts. Under no circumstances should a gas pipe be used for a ground.

Model G-6 Dynamic Speaker

The Model G-6 Dynamic Speaker used on the Model 30 receiver is a highly efficient speaker. The field construction is of the improved "U" Type. The field coil is treated in an impregnating compound that keeps it weatherproof and allows air cooling. The field coil resistance is 1,000 ohms. The G-6 speaker uses a nine inch cone of waterproof lacquered buckram made by the same process as the Super-Colotura G-5 cone. The G-6 Dynamic Speaker has been designed to give a uniform response over the audio frequency range. The cone coil is the same as used on Model G-5 Speaker.

Speaker Cables

During the periods of production of the G-6 Speaker, different colored wires will be used for the field and voice coil leads, in the cable. So that the service man may easily check the circuits, we are listing below the three groups which will be used:

Standard Cable	Revamped Cable	Chassis Connections	Speaker Terminal Connections	
Blue	Red	Secondary of Output Transformer	White - Voice Coil Leads	
Blue	White		White	
Red	Yellow	Red	"B" Maximum on Multiple Resistor	Red	Field Coil Leads
Black	Green	Blue	Speaker Field and Choke Junction	Blue	

For example you may be called upon to check a Receiver and Speaker, and upon examination you find that the leads are two White wires, and a Red and a Blue wire. Reference to the group above will eliminate any trouble you might experience in determining whether the leads in question are voice coil or field coil leads.

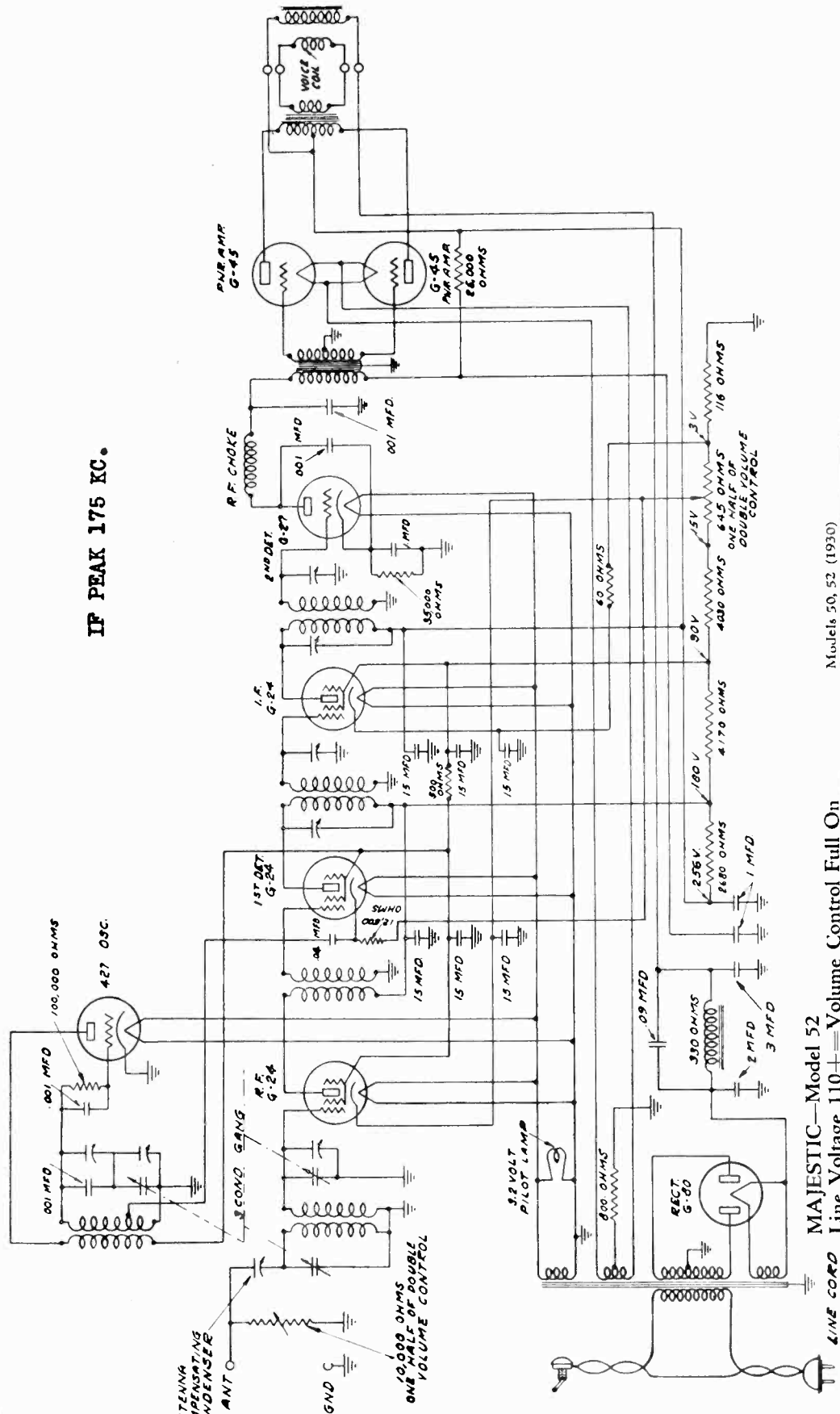
Table of Voltages

Stage	Tube	Fil. Volts	Plate Volts	Grid Volts	Cath. Volts	Normal Plate M. A.	Screen Volts
1st R. F.	G-24	2.35	180	3	3	3	90
2nd R. F.	G-24	2.35	180	3	3	3	90
Detector	G-24	2.35	225	10	10	.3	90
1st Pwr.	G-45	2.35	250	37.5		25	
2nd Pwr.	G-45	2.35	250	37.5		25	
Rect.	G-80	4.80	358			40	

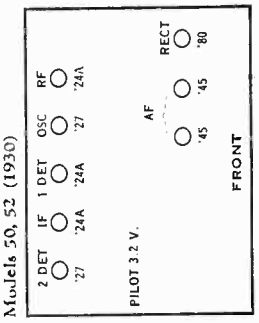
NOTE: All Plate, Screen Grid, Control Grid, and Cathode Voltages are measured from Ground (chassis) with a standard 1,000 ohm per volt, voltmeter.

MODEL 50,52

GRIGSBY - GRUNOW CO.



Models 50, 52 (1930)



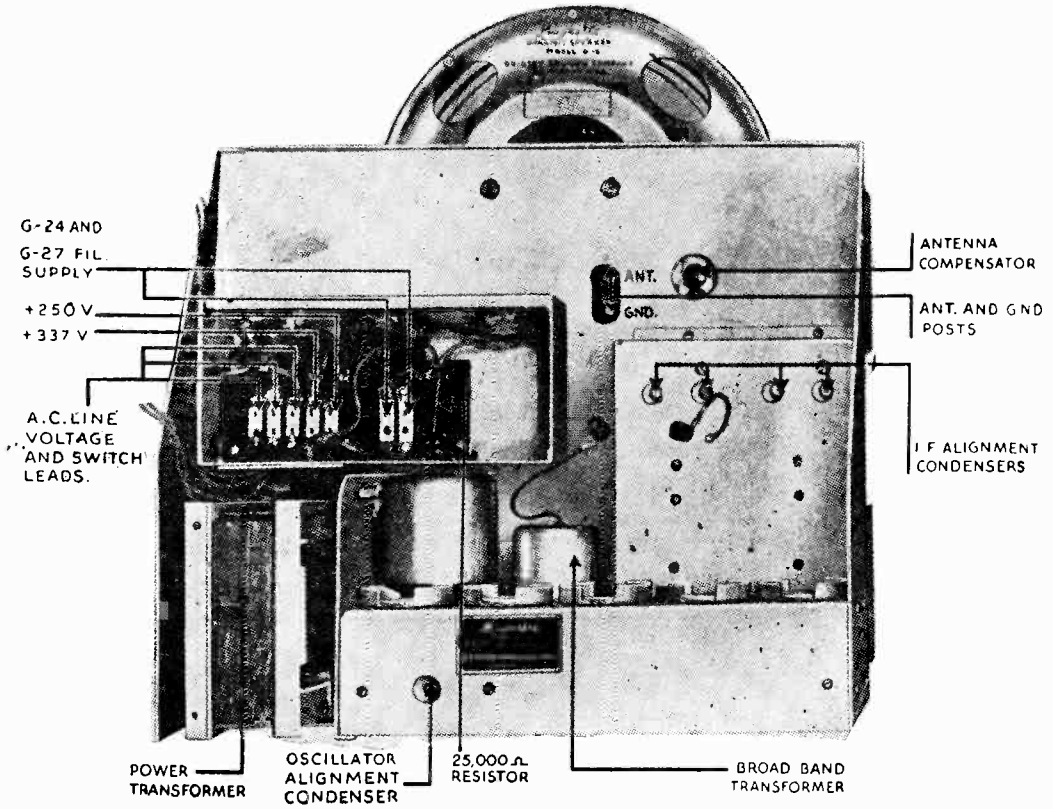
MAJESTIC—Model 52
Line Voltage 110+—=Volume Control Full On

METER READINGS WITH JEWELL TEST PLUG IN SOCKET OF SET

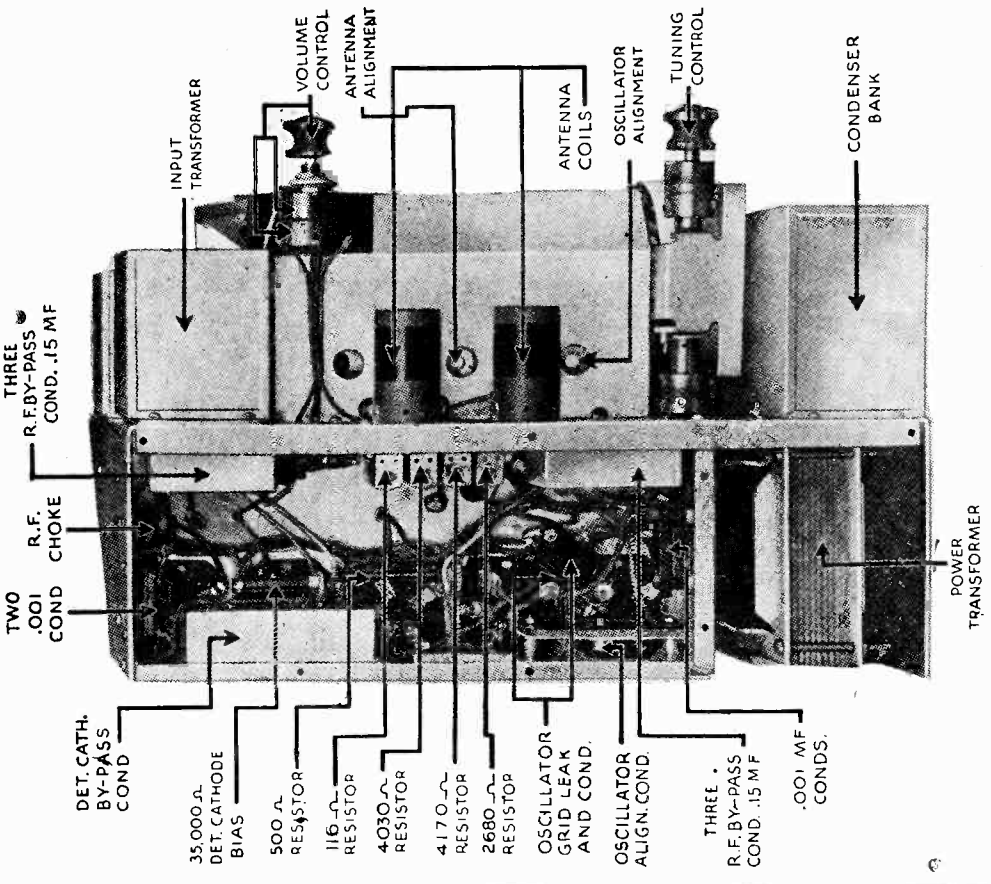
TUBE NO. IN ORDER USED	TYPE OF TUBE	POSITION OF TUBE IN SET	OPERATING VOLTAGES				MILLIAMPERES			
			FILAMENT OR HEATER	PLATE OR ANODE	CONTROL GRID — GRID BIAS	NORMAL GRID + GRID BIAS	CATHODE TO HEATER	SCREEN G6 R.M. 90 PLATE	PLATE R.M. 80 PLATE	TUBE TEST	PLATE CURRENT CHANGE
1	G 24	1 R.F.	2.35	180	3	90	-	.6	3	5.5	2.5
2	G 27	Osc.	2.35	90	-	-	0	-	7.5	7.8	.5
3	G 24	1 Det.	2.35	180	6.5	90	-	.1	.3	.5	.2
4	G 24	I.F.	2.35	255	4.0	90	-	2.35	7.0	8.8	1.2
5	G 27	2 Det.	2.35	225	-	22	22	-	.6	.8	.2
6	G 45	PP-AF	2.35	210	-	38	-	-	25.0	30.0	5.0
7	G 45	PP-AF	2.35	210	-	38	-	-	25.0	30.0	5.0
8	G 80	Rect.	4.9	-	-	-	-	45	45	-	-

GRIGSBY - GRUNOW CO.

MODEL 50
Chassis Views



Rear View of Model 50 Chassis, Showing Voltage Taps, Etc.

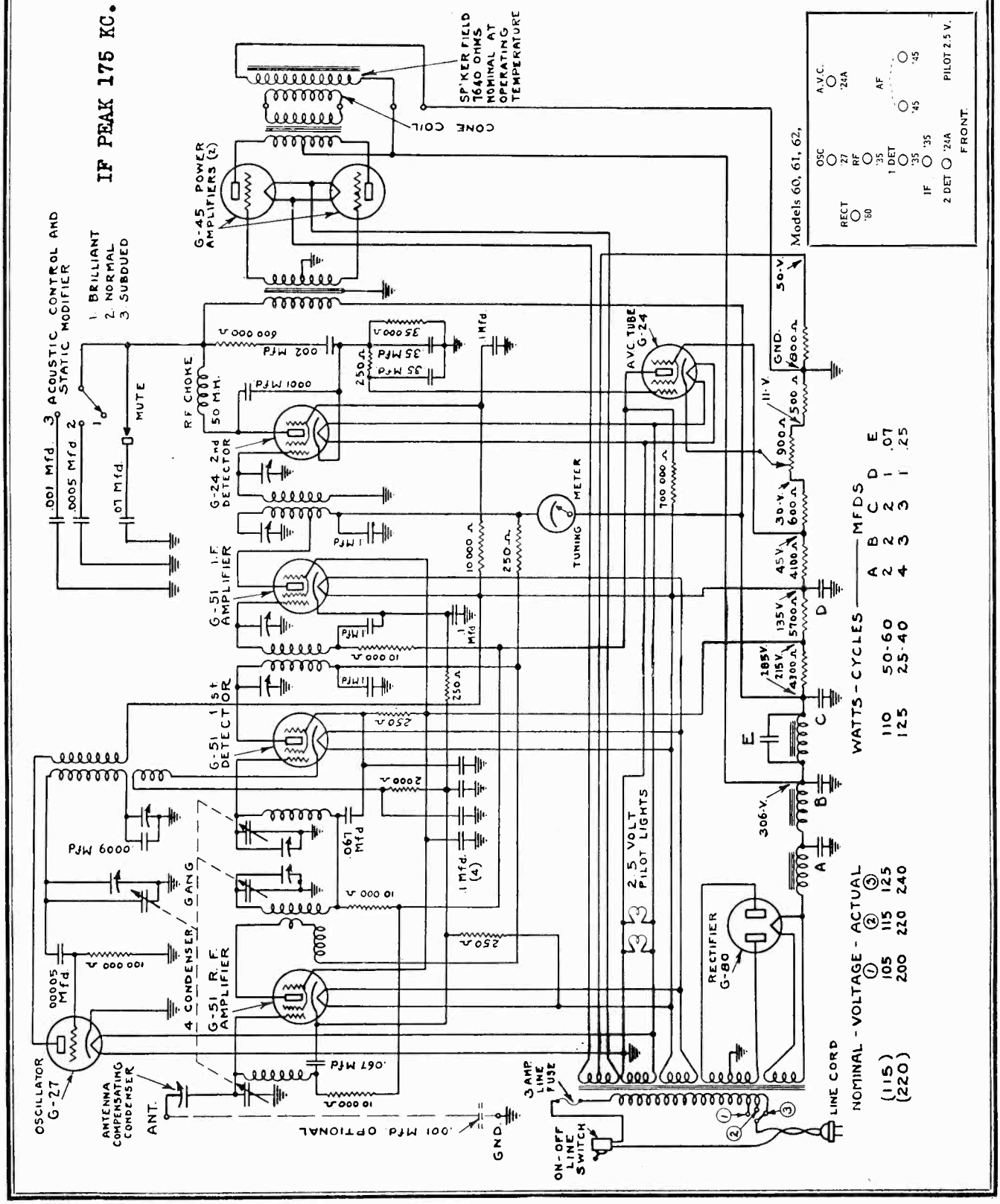


Bottom View of Model 50 Chassis

MODEL 60,61,62
Schematic

GRIGSBY - GRUNOW CO.

Additional data on pages following



GRIGSBY GRUNOW CO.

MODEL 60,61,62
MODEL 160,163
Data

OPERATING VOLTAGES FOR MODEL 60 and 160 CHASSIS OR 61,62,163 Receivers

		Fil.	Plate.	Screen.	Con.Grd.	Cathode	Plate Crnt.
1st RF	G-51	2.35	285	215		3	4.5 ma
Osc.	G-27	2.35	135				4.0
1st Det	G-51	2.35	285	215		8	4.5
IF Amp	G-51	2.35	285	215		3	4.5
2nd Det	G-24	2.35	275	135		12	.25
1st PA	G-45	2.4	300		50.		32.5
2nd PA	G-45	2.4	300		50		32.5
AVC	G-24	2.35	+	45		11	0.
Rect	G-80	4.88	490				90. Per anode

+ Readings of the automatic volume control tube plate terminal will be erratic because of the 700000 ohm resistance which is in series with the plate supply lead.

Note.. All plate, screen grid, control and cathode voltages are measured from Ground (chassis) with a standard 1000 ohms per volt meter. Voltage readings with volume control setting at maximum.

COLOR CODING DATA

Power Transformer. Start of winding of primary — Red
105 volts — Red and white
115 volts — Yellow
125 volts — Green

Filament 45 Blue. Centre tap 45 Red
Filament 80 Brown. Rectifier anodes Green. Centre tap anodes Bare
Heater 2nd Det.,AVC, and Osc. Red
Heater white (135 volts above ground)

Filter Unit.
2 mfd condenser Green. 2 mfd condenser Red. 2 mfd condenser Blue. 1 mfd condenser Yellow. .07 mfd condenser White. Condenser common Black.

Choke
Filter output Red. Detector choke low side Green. Junction ofchokes Blue.

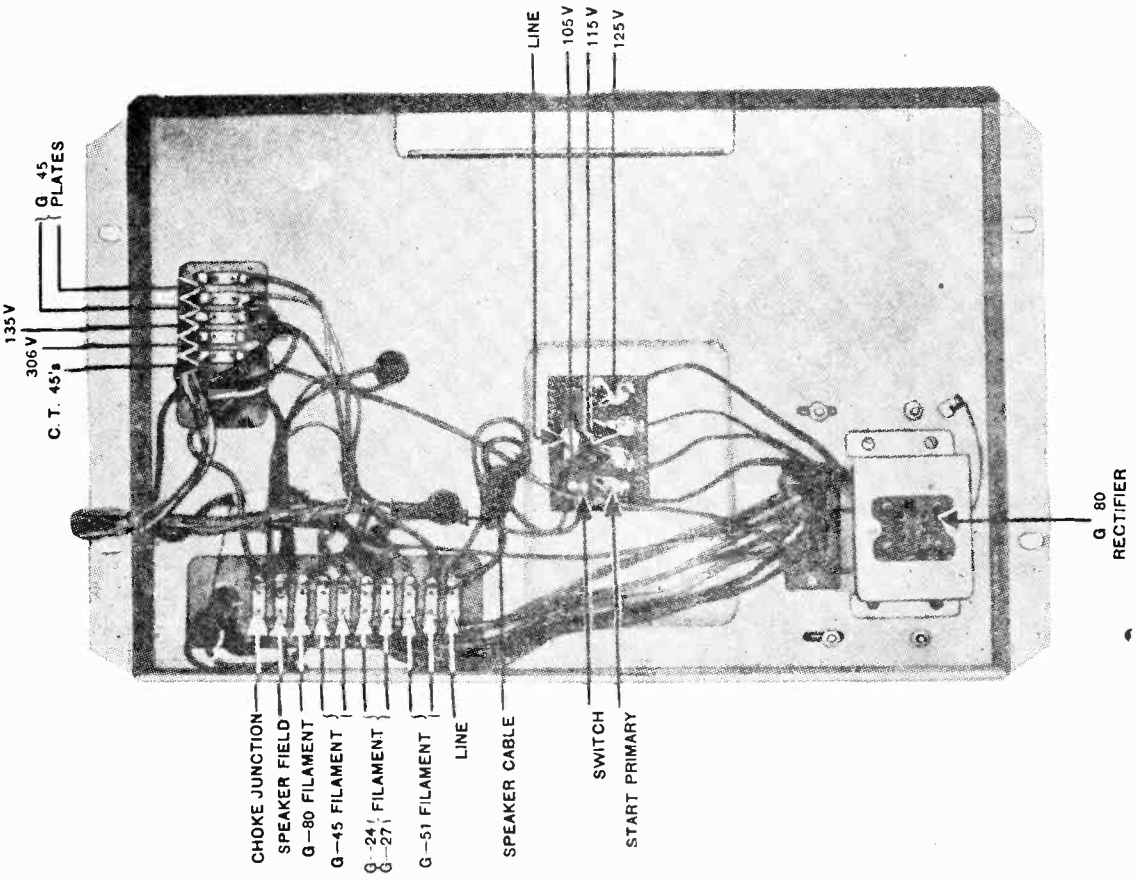
General
The antenna compensator control islocated adjacent to the antenna terminal. A 3 ampere fuse is used.

Resistances.
100000 ohm oscillator grid leak - Orange. 600000 ohm Acoustic control- Red. 700000 ohm AVC plate resistor - Yellow. 35000 ohm 2nd detector cathode bias- Grn 5700 ohm section of voltage divider- Blue. 10000 ohm 2nd detector screen decoupler- Orange. 250 ohm 1st detector screen, 1st detector plate, 2nd detector cathode,AVC grid, RF and 1st detector decoupler- Green. 250 ohm RF,1st detector, IF auto bias- Yellow.2000 ohm 1st detector auto bias-Blue.

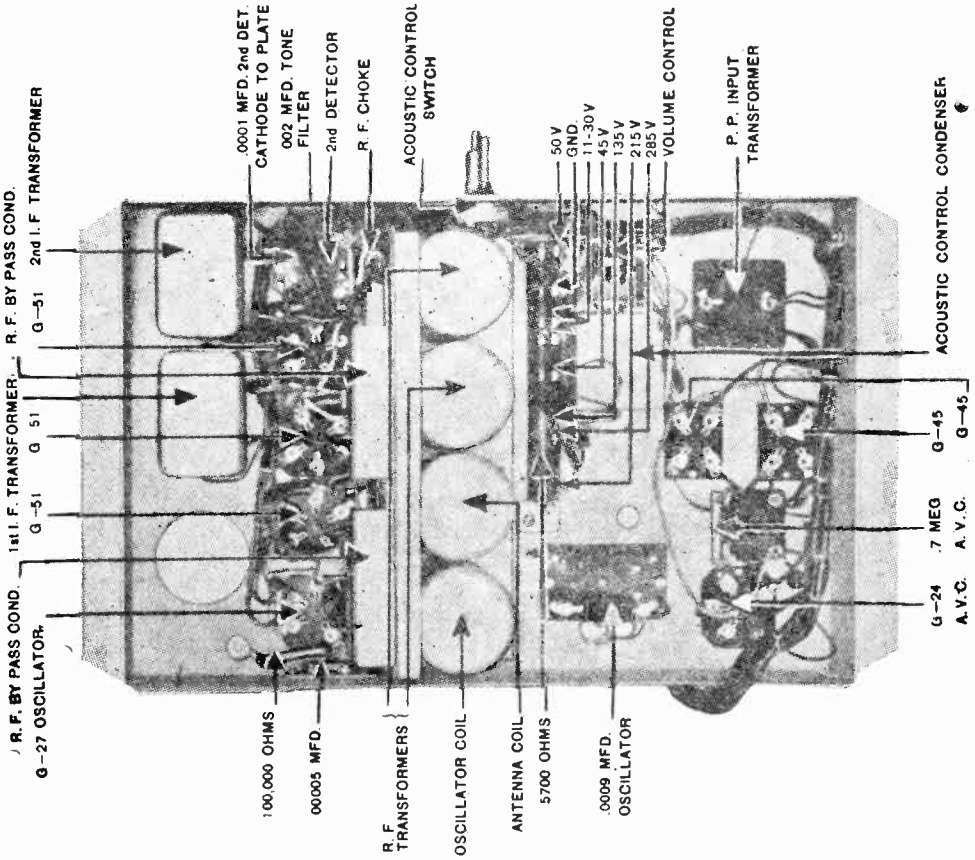
Model - 163
The radio circuit and performance of the model 163 is identical to that of the model 60 chassis. The front panel controls of the 163 combination are radio controls only, and are the same as that of the model 61 and 62 radio receivers. The second detector tube grid comprises the audio frequency input circuit, that is when the phono switch is in phono position. The second detector tube becomes and audio amplifier, the grid bias and input circuit being changed accordingly.

MODEL 60,61
Chassis Views

GRIGSBY - GRUNOW CO.



View Showing Power Supply Circuit Model 60 Chassis

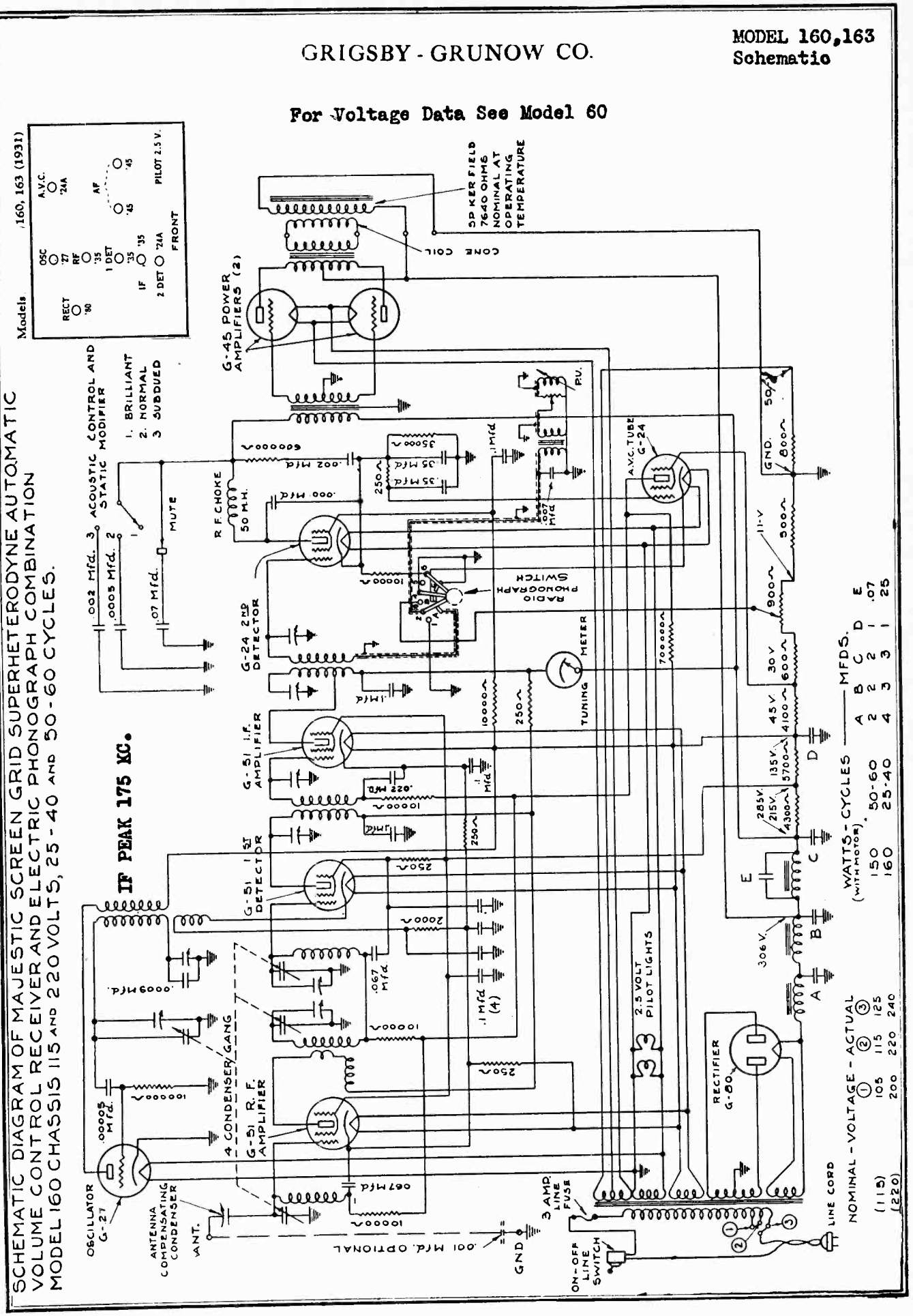


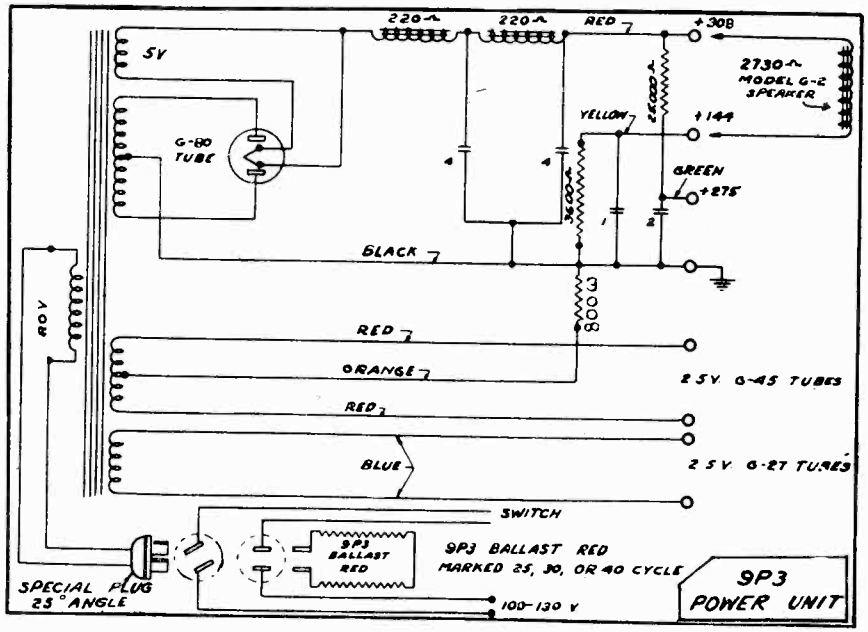
Interior View Model 60 Chassis

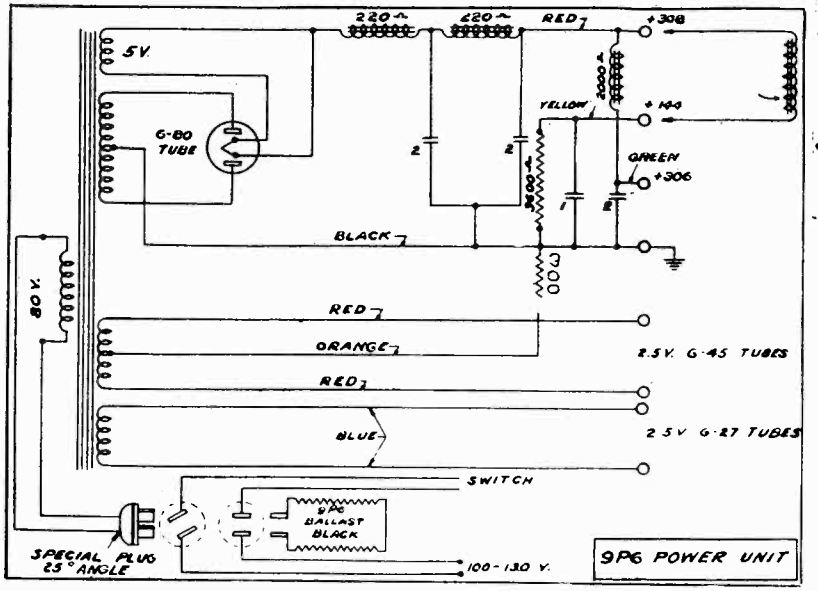
GRIGSBY - GRUNOW CO.

MODEL 160,163
Schematic

For Voltage Data See Model 60







Coding of 1928 and 1929 Models

1. Parts with like part number in different assemblies and models are interchangeable others are not.

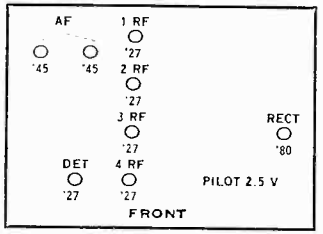
2. The following prefixes and model numbers are for 1928 apparatus assemblies:

GA	G1—Power Speaker for 7-A Chassis only
70-A	7-A—Chassis for 1928 No. 71 and No. 72 models only
60-A	6-A—Chassis for 1928 No. 61 and No. 62 models only
7P-6	Power Pack, 60 cycle for No. 7-A Chassis only
7P-3	Power Pack, 30 cycle for No. 7-A Chassis only
6P-6	Power Pack, 60 cycle for No. 6-A Chassis only
6P-3	Power Pack, 30 cycle for No. 6-A Chassis only

The following prefixes and model numbers are for 1929 apparatus assemblies.

GB	G2—Super Dynamic Speaker for 7-B Chassis and 180 Chassis
70B	7-B—Chassis for 1929 No. 71 and No. 72 models only
180	180—Chassis for 1929 No. 181 radio and phonograph combination
7-BP-6	Power Pack, 60 cycle for 7-B Chassis only
7-BP-3	Power Pack, 30 cycle for 7-B Chassis only
8-P-6	Power Pack, 60 cycle for 180 Chassis only
8-P-3	Power Pack, 25, 30, 40 cycle for 180 Chassis only

Models 90B, 91, 92, 93, 100B, 102, 103 (1930)

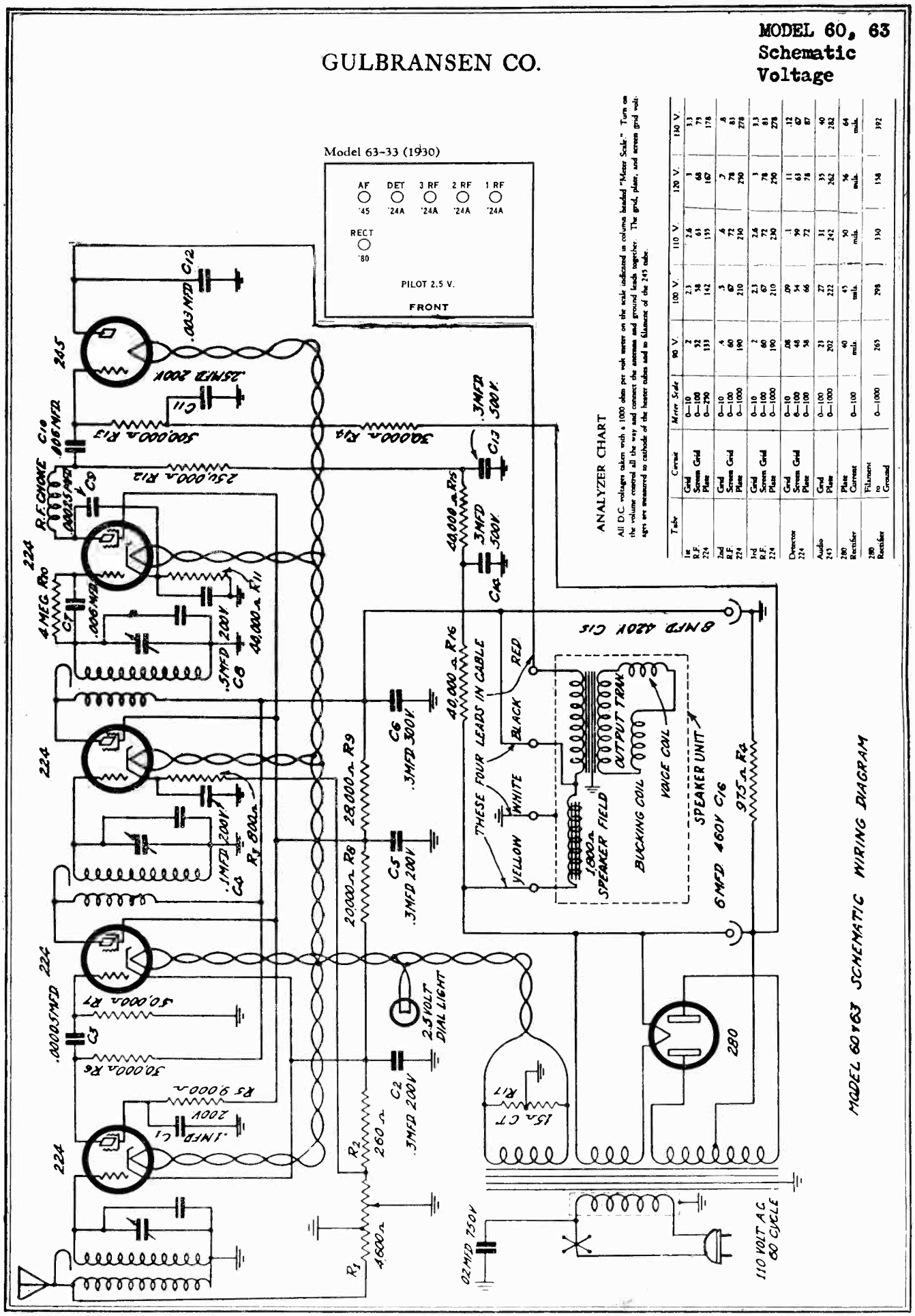


MAJESTIC—Model 91 and 92
Line Voltage 112—Set on *Volt Tap—Volume Control Position Full On
*Voltage Regulator Is Used

TUBE NO. IN ORDER	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	27	1st RF	2.58	148	2.35	130	8	8	5.5	7.8	2.3	-
2	27	2nd RF	2.58	148	2.35	130	8	8	5.5	7.8	2.3	-
3	27	3rd RF	2.58	148	2.35	130	8	8	5.5	7.8	2.3	-
4	27	4th RF	2.58	148	2.35	130	9	9	5	7.2	2.2	-
5	27	Det.	2.58	308	2.35	270	30	30	1	1	1	-
6	245	Power	2.65	275	2.45	250	50	-	32	37	5	-
7	245	Power	2.65	275	2.45	250	50	-	32	37	5	-
8	380	-	-	-	-	-	-	-	100	-	-	-
9												
10												

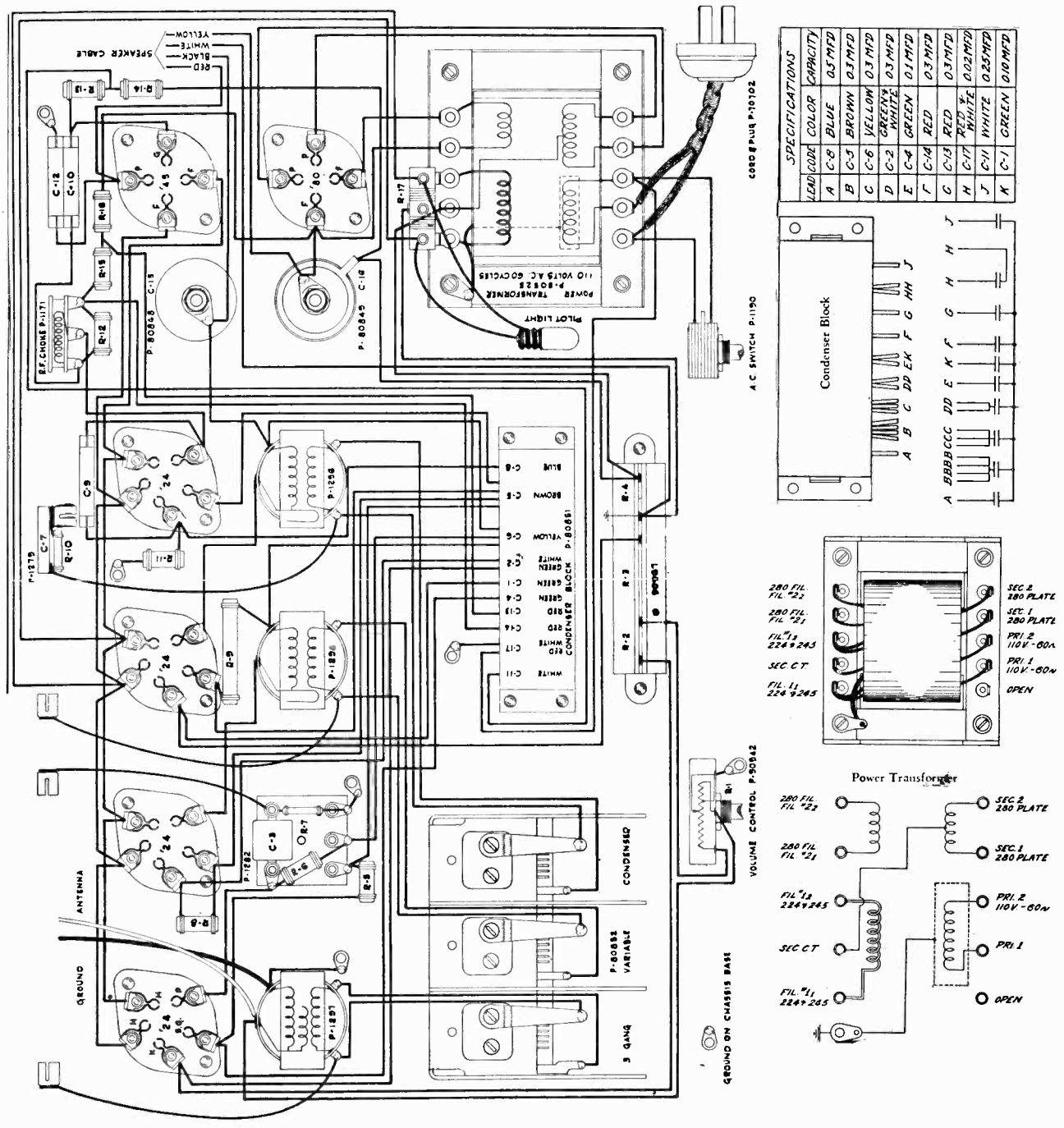
GULBRANSEN CO.

MODEL 60, 63
Schematic
Voltage



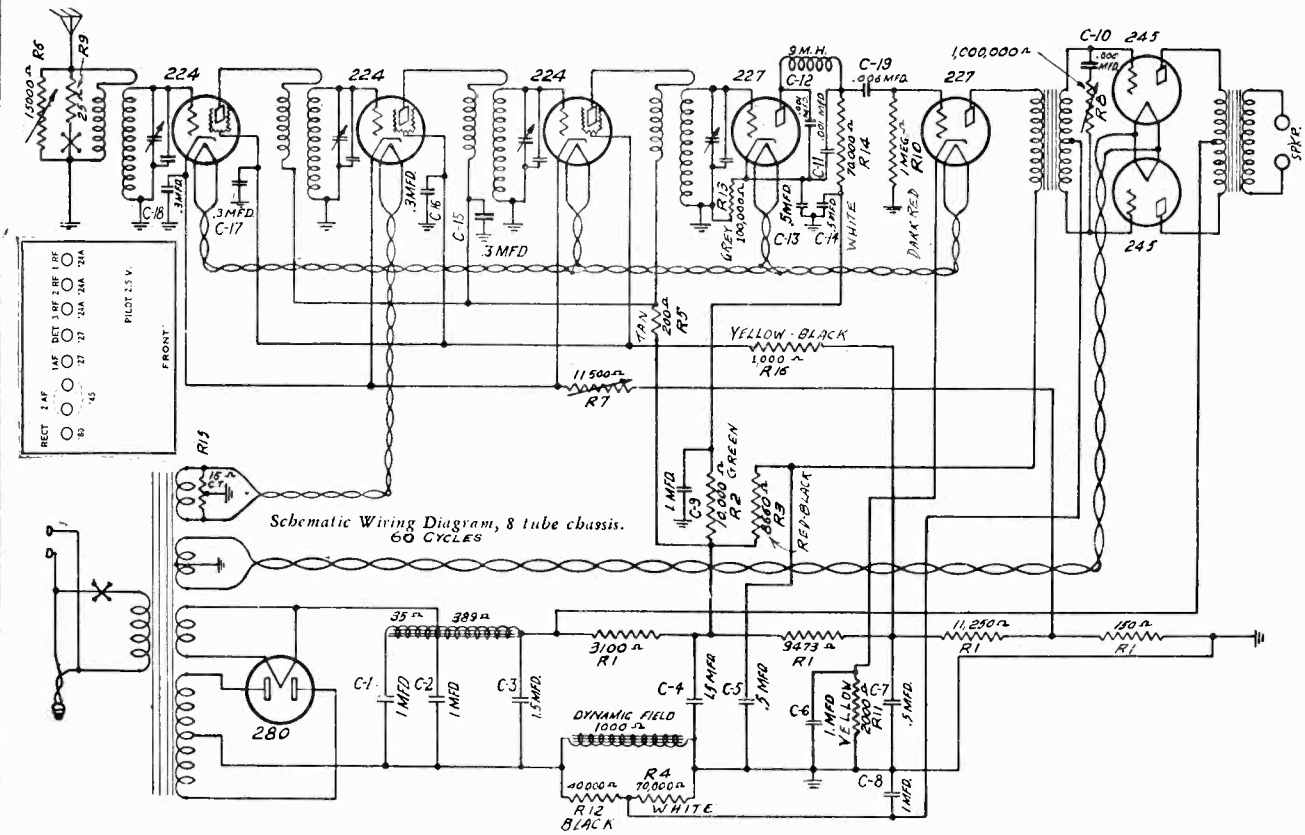
MODEL 60, 63
Chassis

GULBRANSEN CO.

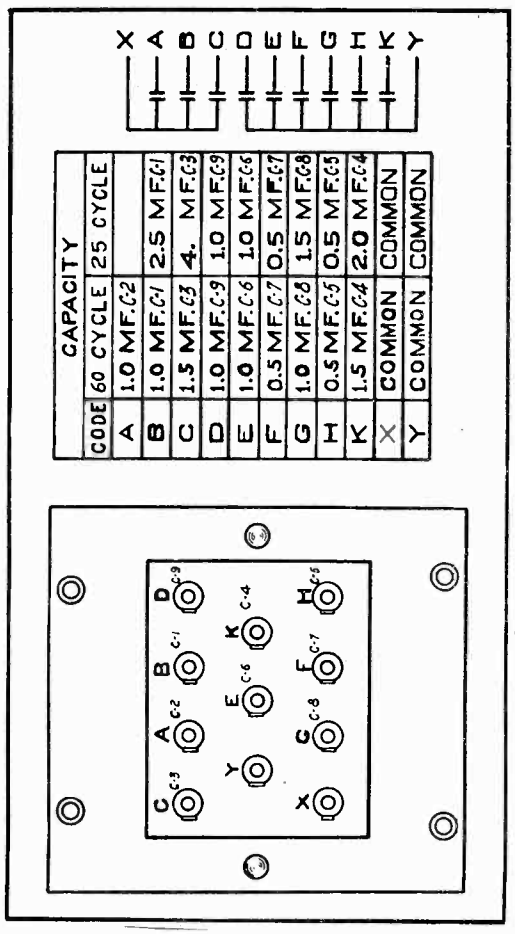


GULBRANSEN CO.

MODEL 160, 161
60 Cycles
Schematic-Data



Schematic Wiring Diagram, 8 tube chassis. 60 CYCLES



Filter Condenser (60 and 25 cycle receivers).

FIXED CONDENSERS

Condensers C1 to C9 inclusive are in the filter block. C1, C2, C3, C4, and C7 are in the main filter circuits. C5 bypasses R3, which is the 8,660 ohm resistor in the first audio plate circuit. C6 by-passes R11, the cathode bias resistor on the first audio stage. C8 by-passes the grid bias on the 245 tubes, (obtained through R4 and R12) and C9 bypasses the 10,000 ohm resistor R2 in the detector plate circuit.

C10 and C19 are located on the resistor-condenser terminal strip (See Fig. 4) and are both .006 mfd. moulded condensers. C10 is in the tone control circuit, while C19 is the coupling condenser in the resistance coupled amplifier.

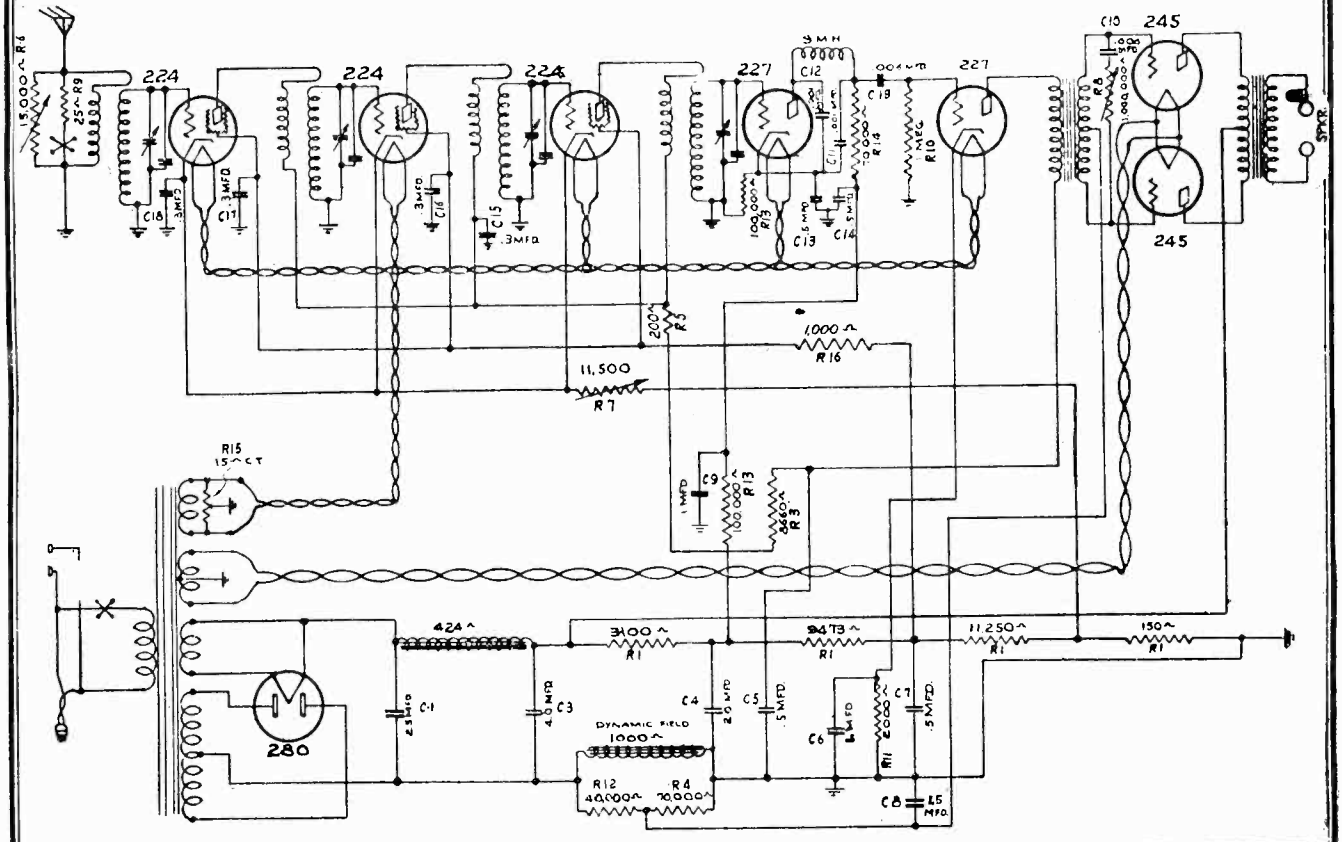
C11 and C12 are .001 mfd. moulded condensers, and are used in the detector plate circuit filter. C13 and C14 are the two units in the dual ½ mfd. by-pass condenser.

C15, C16 and C18 are located in the triple 3 mfd. condenser case. C17 is a single .3 mfd. condenser, and is mounted alongside of the triple .3 mfd. condenser case.

Code Fig. 1	*Stock No.*	*Capacity*
C1 to C9 inclusive	80818	9 Mfds. total. Filter block.
C10 and C19	80822	.006 Mfd. White paint spot.
C11 and C12	80821	.001 Mfd. Grey paint spot.
C13 and C14	80826	Dual .5 Mfd. Metal case.
C15, C16, C18	80817	Triple .3 Mfd. Metal case.
C17	80820	.3 Mfd. Metal case.

GULBRANSEN CO.

MODEL 160, 161
25 Cycles
Schematic
Voltage



Schematic Wiring Diagram, 25 Cycle Model.

The filter system of the 25-cycle chassis shown above is somewhat different than that in the 60-cycle chassis, and the detector plate circuit resistor has been changed from 10,000 ohms to 100,000 ohms.

All servicing data, with the exception of the tube voltages, is the same for both the 25 and 60-cycle chassis.

APPROXIMATE OPERATING VOLTAGES

A. C. LINE VOLTAGE—117. VOLUME CONTROL FULL ON

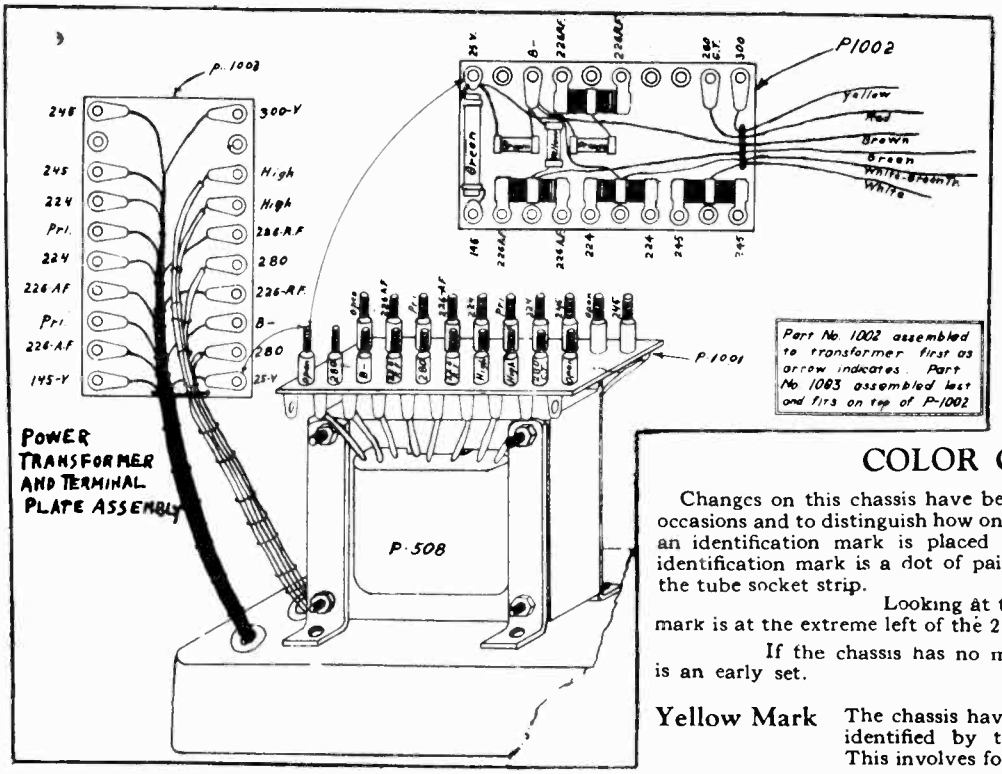
Tube	*Position*	*Filament*	*Plate*	*Screen*	*Grid**	*Cathode*
224	1st R.F.	2.3	178	90	— 3.0*	3.0
224	2nd R.F.	2.3	178	90	— 3.0*	3.0
224	3rd R.F.	2.3	178	90	— 3.0*	3.0
227	Detector	2.3	100		—10.5*	10.5
227	1st Audio	2.3	130			9.0
245	2nd Audio	2.4	250		51.0	
245	2nd Audio	2.4	250		51.0	
280	Rectifier	4.7				

*** Grid voltages on the 224 R.F. and 227 detector tubes are taken from grid to cathode and not from grid to ground. The grid voltage on the first audio tube is measured from cathode to ground.**

GULBRANSEN CO.

MODEL 200, 291, 292 295, 9950

Voltage Data



OPERATING VOLTAGES

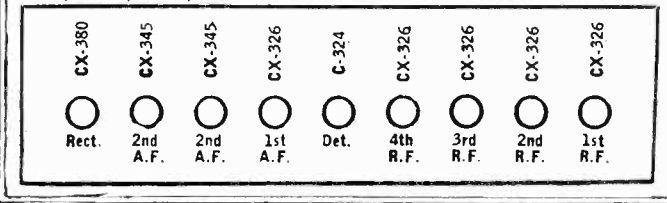
Type of Tube	Position of Tube	TUBE IN TEST SET "A" Volts	"B" Volts	Control Grid ("C") Volts	Screen Volts	Screen Current	Cathode Volts	Normal Ma.	Grid Test Ma.
226	1st R.F.	1.35	116	8.5				4.7	8.7
226	2nd R.F.	1.35	116	8.5				4.7	8.7
226	3rd R.F.	1.35	116	8.5				4.7	8.7
226	4th R.F.	1.35	116	8.5				4.7	8.7
224	Det.	2.2	80	1.3	15		—	—	—
226	1st A.F.	1.4	110	1.0 ← READING LOW DUE TO RESISTANCE COUPLING				4.0	5.0
245	2nd A.F.	2.2	232	42				27	32
245	2nd A.F.	2.2	232	42				27	32
280	Rect.	4.6						84	

Line Voltage During Test—115 Volts

REVISION OF OPERATING VOLTAGES

Type of Tube	Position of Tube	TUBE IN TEST SET "A" Volts	"B" Volts	Control Grid ("C") Volts	Screen Volts	Screen Current	Cathode Volts	Normal Ma.	Grid Test Ma.
224	Det.	2.2	75	1.3	15				
226	1st A.F.	1.4	77	1.0				4	5

200, 291, 292, 9950 (A.C.)



COLOR CODE

Changes on this chassis have been made on several different occasions and to distinguish how one chassis differs from another, an identification mark is placed on each one changed. This identification mark is a dot of paint found on the end rivet of the tube socket strip.

Looking at the chassis from the back the mark is at the extreme left of the 226 tube socket

If the chassis has no mark it is understood that it is an early set.

Yellow Mark The chassis having the first changes may be identified by the yellow indicating mark. This involves four changes.

1. A "dual volume control" in place of the single type. The new volume control is made in two sections, with five lugs. The section nearest the chassis, having two lugs, operates exactly the same as the single volume control. The section behind the first, having three lugs, is placed in the first audio circuit to reduce the audio amplification and operates in tandem with the antenna volume control.

2. An interchange of position of the two audio transformers The re-arrangement of the audio transformers has not altered their connections in the circuit.

3. An addition of a "dual half microfarad condenser" and two carbon resistors in the "B" circuit of the detector and first audio tubes. The 40,000 ohm black resistor with one section of the dual condenser is placed in the detector circuit (224) and the 15,000 ohm blue resistor with the other section of the dual condenser is placed in the first audio circuit (226). You will note that the yellow and blue leads in the cable connecting to the terminal strip have been interchanged.

4. A change in the location of the grounding of No. 1 lug on the condenser block. This lug is now grounded to the condenser case with a short piece of bare wire.

Red Mark (Serial Number 39,000-42,999) All chassis having a red mark on the rivet of the tube socket strip have all of the changes mentioned above and in addition, have a one-tenth microfarad condenser connected from ground to one side of the 110 volt line A peculiarity that may be experienced by the addition of this condenser is a loud hum on every station tuned in only when the antenna wire coming from the set is connected to ground. This can be eliminated by reversing the plug in the socket. Also be sure your antenna is not grounded, either by some other set being connected to your aerial or through any other means.

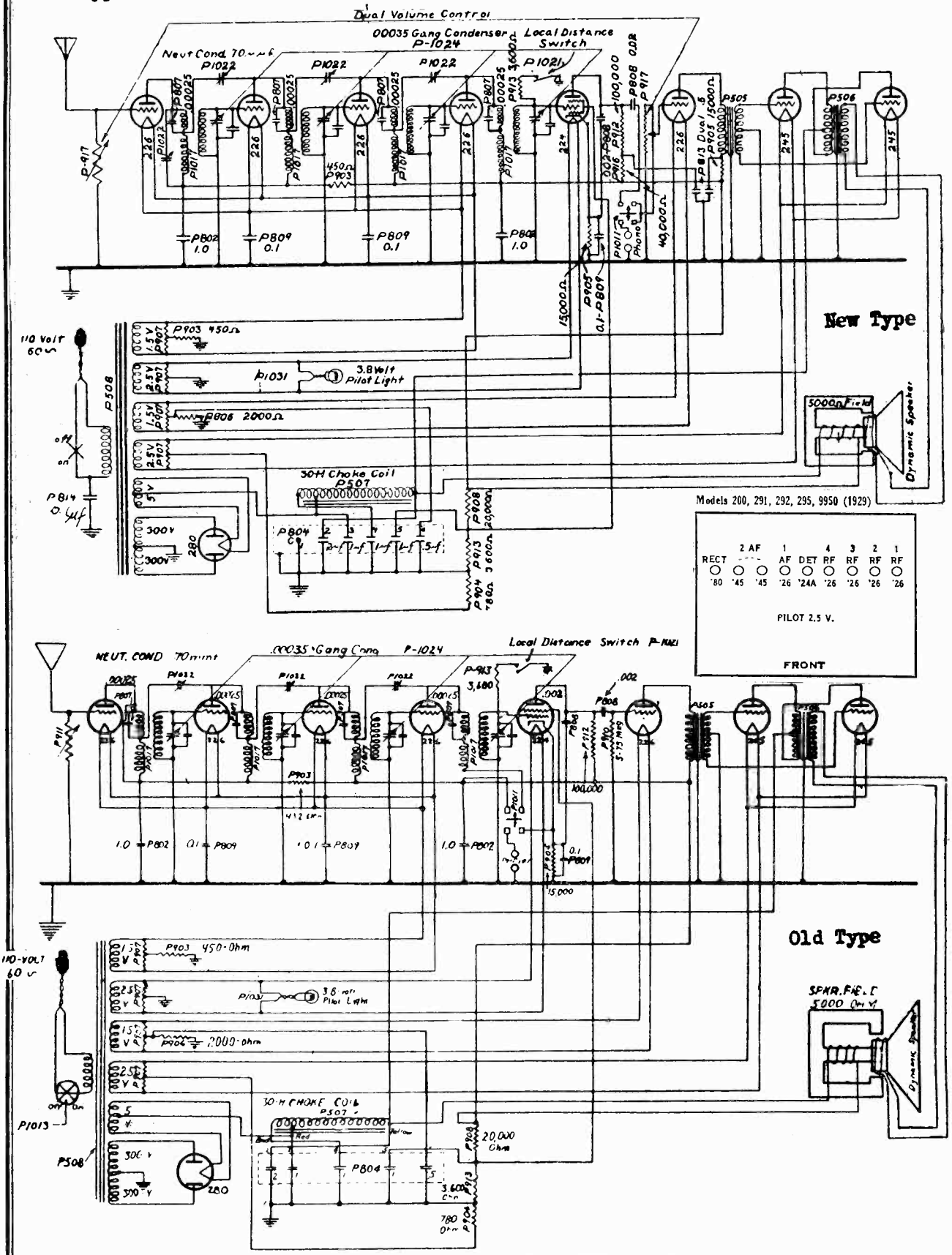
Green Mark (Serial Number 43,000 and up) All Chassis with a green mark on the rivet of the tube socket strip contain the above changes and in addition have a change in the "combination phonograph switch" circuit. This changed circuit makes use of only the audio system of the set for phonograph reproduction, whereas the original circuit included the detector tube

The Phonograph, Radio, On, and Off positions of the switch are the same as in the early sets. To obtain maximum volume and best tone quality a pick-up coupling transformer should be used to match the pick-up used.

MODEL 200,291,292,
295, 9950

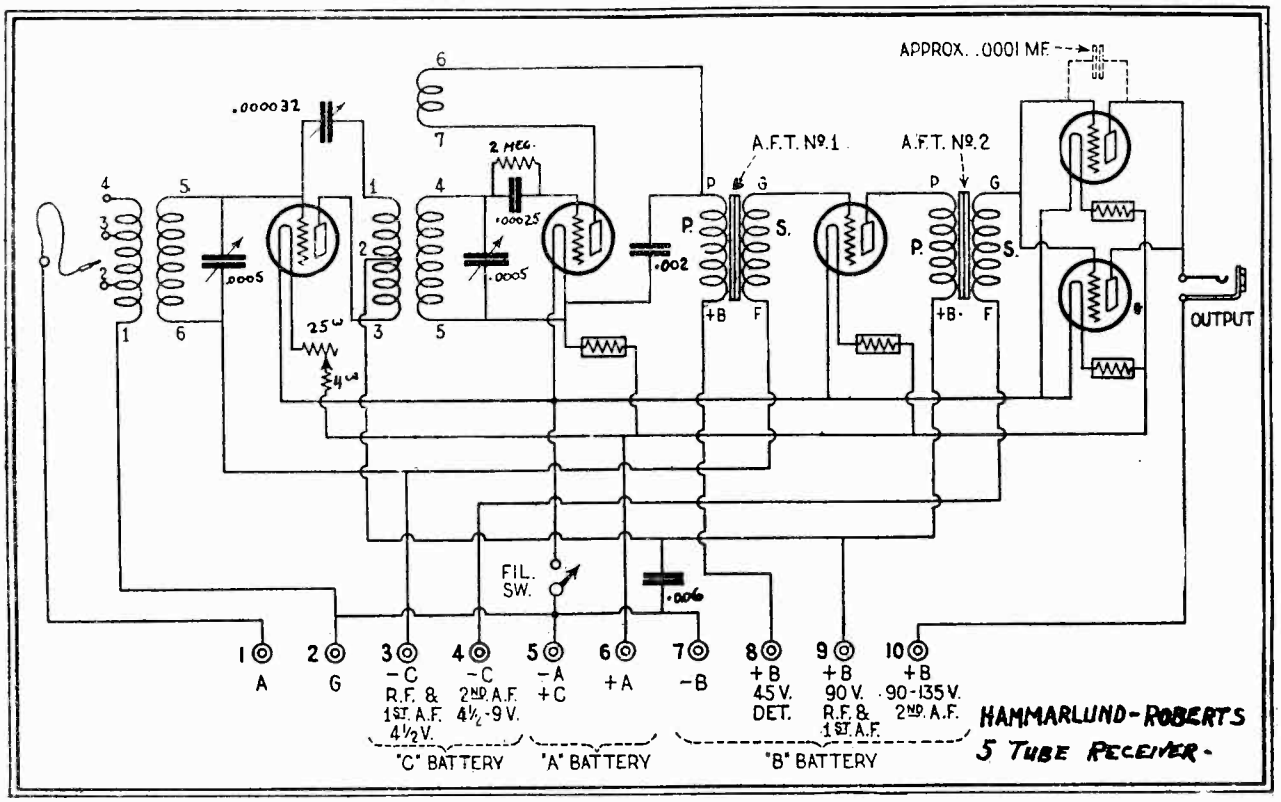
Schematic
Two Types

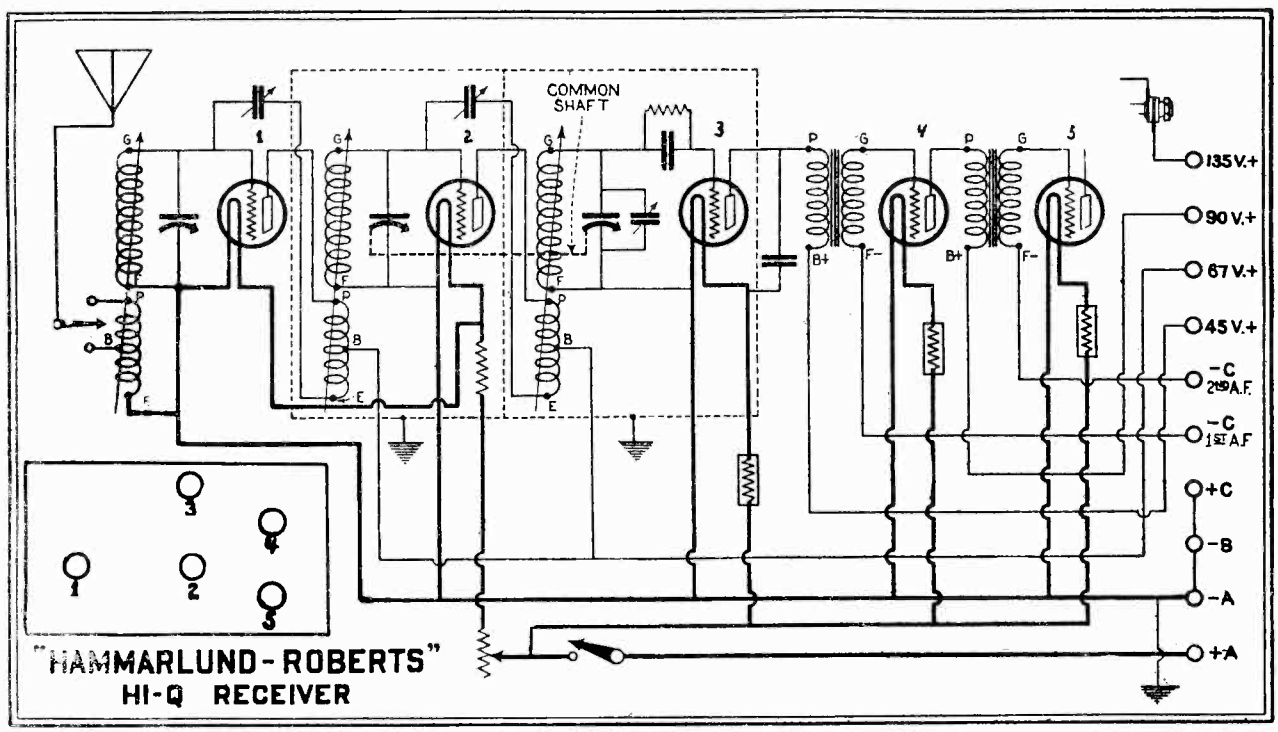
GULBRANSEN CO.



HAMMARLUND-ROBERTS, INC.

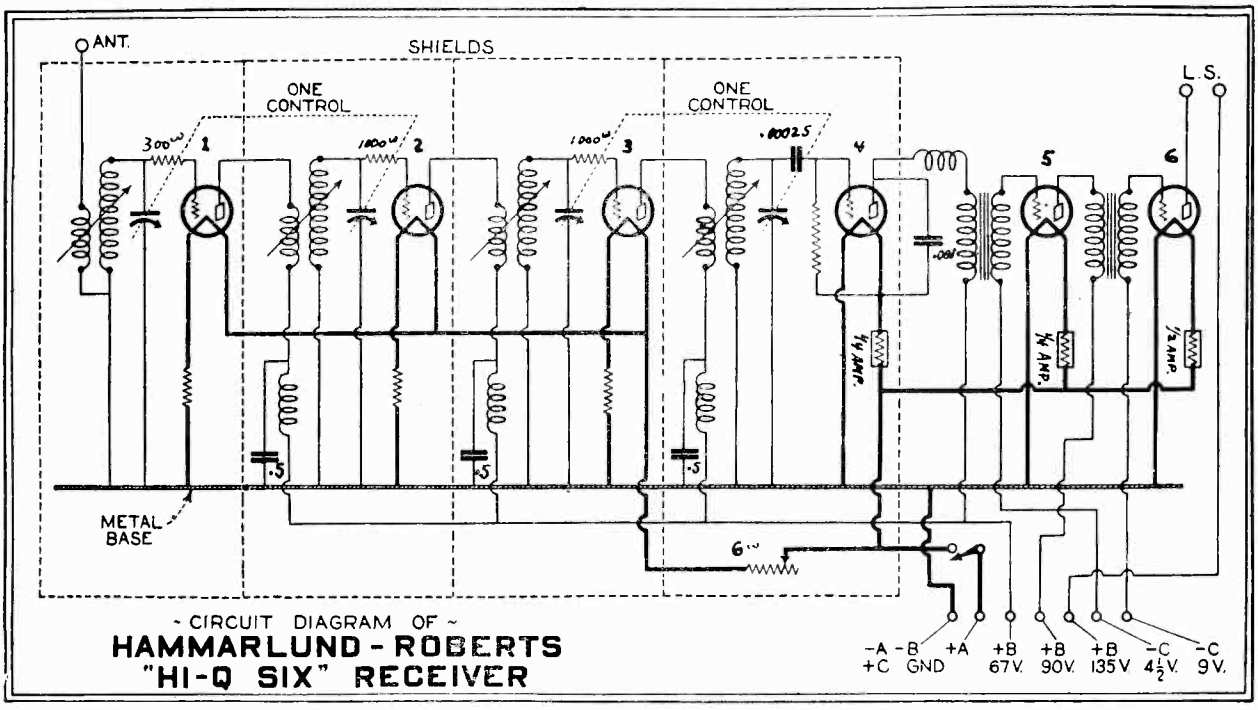
MODEL H-R 5 Tube
MODEL H-R "HI-Q"



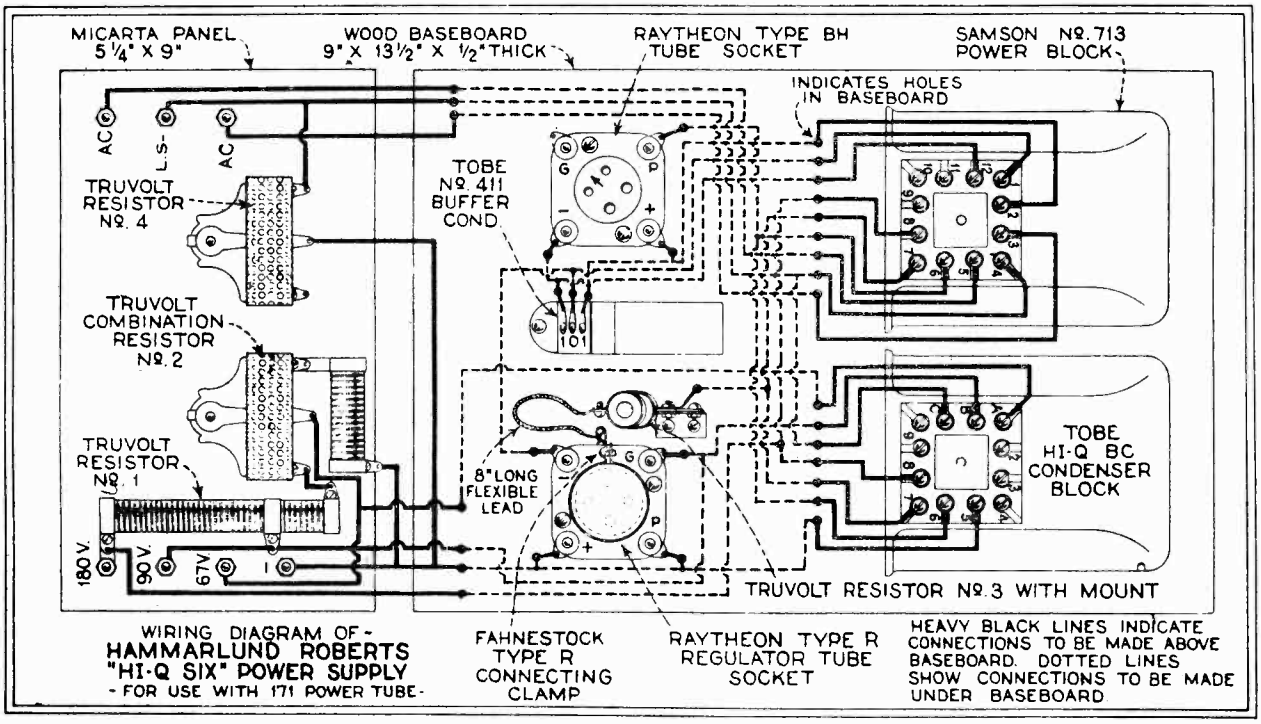


MODEL H-R "HI-Q" 6

HAMMARLUND-ROBERTS, INC.



~ CIRCUIT DIAGRAM OF ~
HAMMARLUND - ROBERTS "HI-Q SIX" RECEIVER



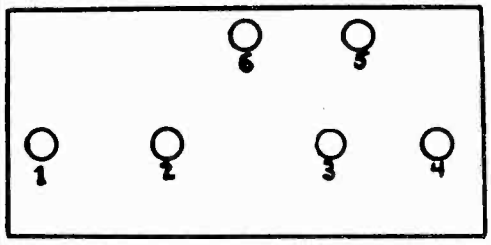
WIRING DIAGRAM OF ~
HAMMARLUND ROBERTS "HI-Q SIX" POWER SUPPLY
~ FOR USE WITH 171 POWER TUBE ~

FAHNESTOCK TYPE R CONNECTING CLAMP

RAYTHEON TYPE R REGULATOR TUBE SOCKET

HEAVY BLACK LINES INDICATE CONNECTIONS TO BE MADE ABOVE BASEBOARD. DOTTED LINES SHOW CONNECTIONS TO BE MADE UNDER BASEBOARD

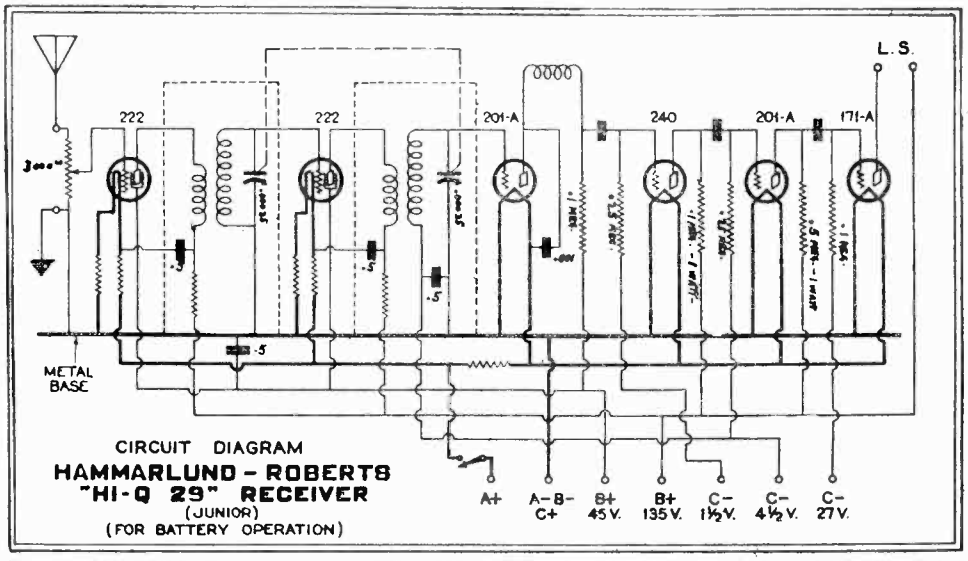
SOCKET LAYOUT



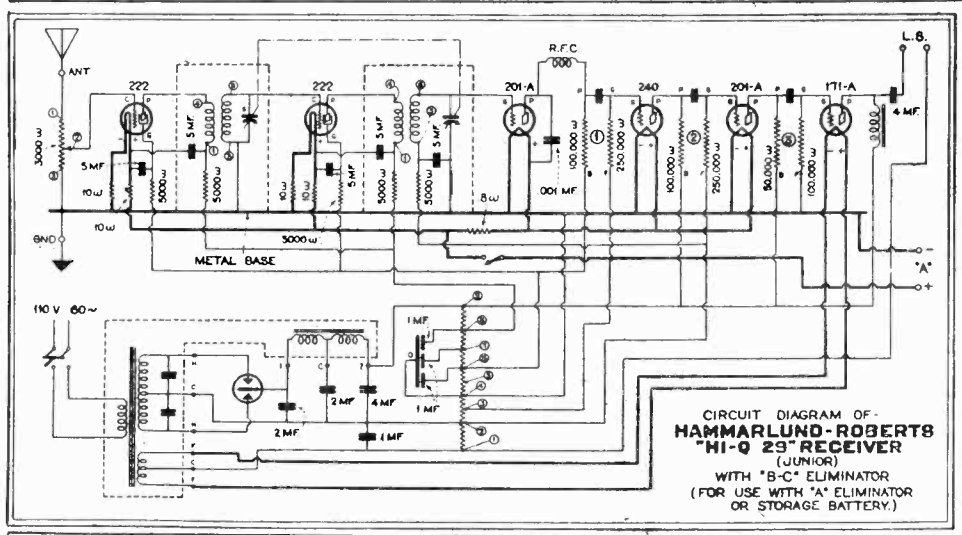
Battery Cable			Power Cable		
To	B+	135 Gray	To	B+	180 Gray
"	B+	90 Yellow	"	B+	90 Yellow
"	B+	67 Blue	"	B+	67 Blue
"	B-	C+ A- Black	"	B-	Black
"	C-	4.5 Green	"	C-	Green
"	C-	9. Brown	"	Fil. center tap	Brown
"	A+	Red			

HAMMARLUND-ROBERTS, INC.

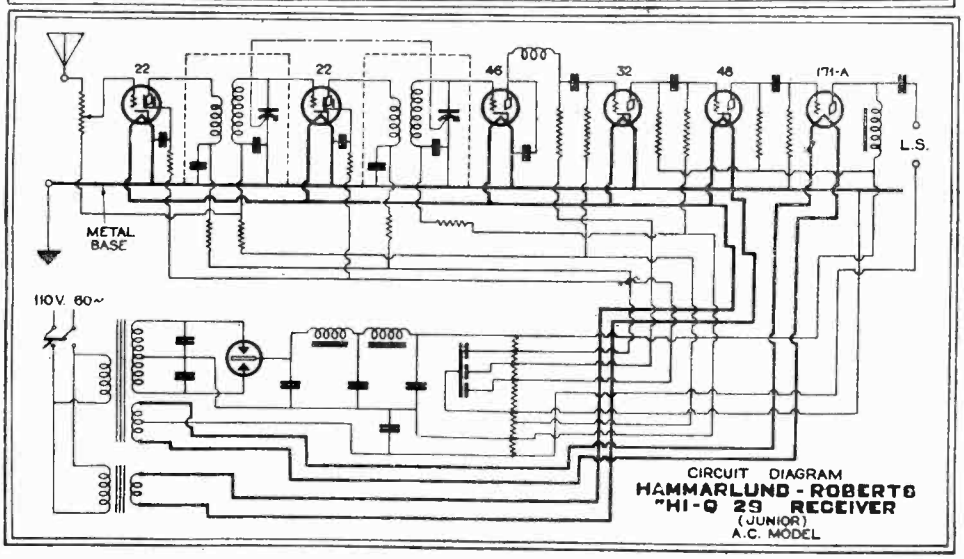
MODEL H-R "HI-Q" 29
Junior-Three Types



CIRCUIT DIAGRAM
HAMMARLUND - ROBERTS "HI-Q 29" RECEIVER
(JUNIOR)
(FOR BATTERY OPERATION)



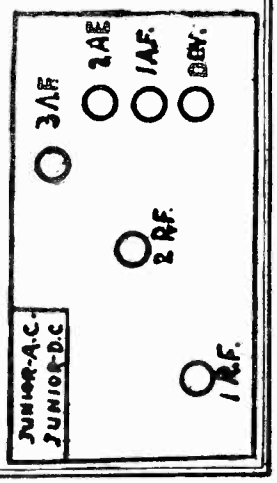
CIRCUIT DIAGRAM OF
HAMMARLUND-ROBERTS "HI-Q 29" RECEIVER
(JUNIOR)
WITH "B-C" ELIMINATOR
(FOR USE WITH "A" ELIMINATOR OR STORAGE BATTERY.)



CIRCUIT DIAGRAM
HAMMARLUND - ROBERTS "HI-Q 29 RECEIVER
(JUNIOR)
A.C. MODEL

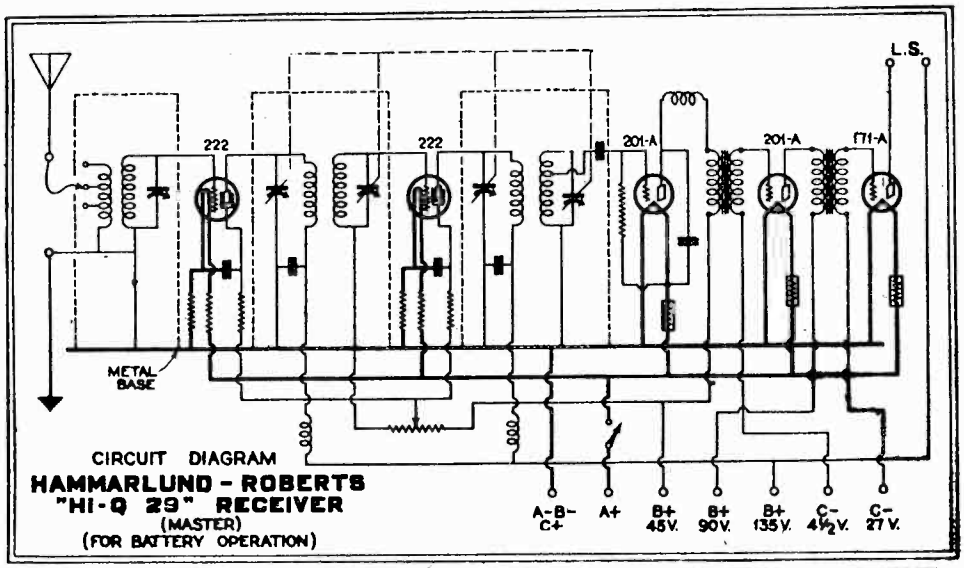
HI-Q 29 Jr. Battery cable.

To B + 135	- Gray	
" B + 45	- Blue	
" B -, A -, C +		Black
" C - 1.5		Yellow
" C - 4.5		Green
" C - 27.		Brown
" A +		Red



MODEL H-R "HI-Q" 29
Master-Three Types

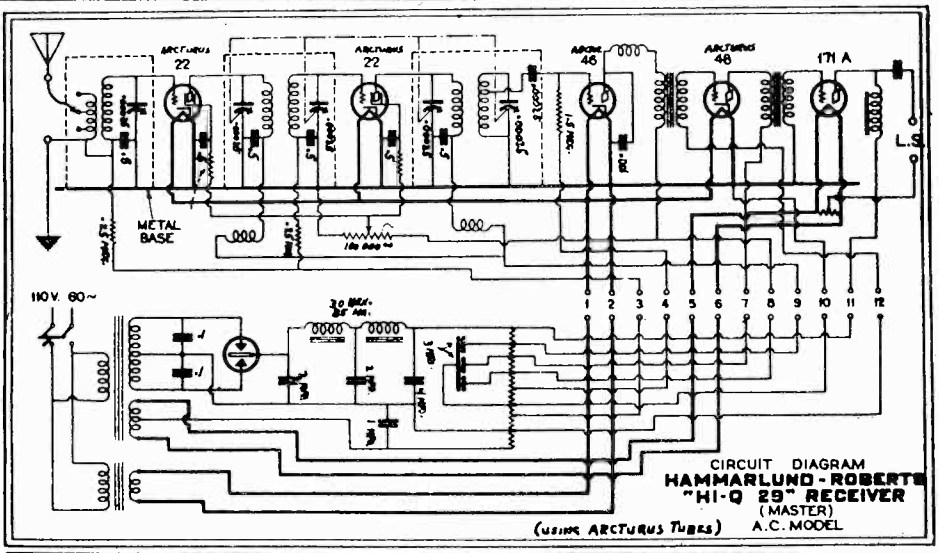
HAMMARLUND-ROBERTS, INC.



CIRCUIT DIAGRAM
HAMMARLUND - ROBERTS "HI-Q 29" RECEIVER
(MASTER)
(FOR BATTERY OPERATION)

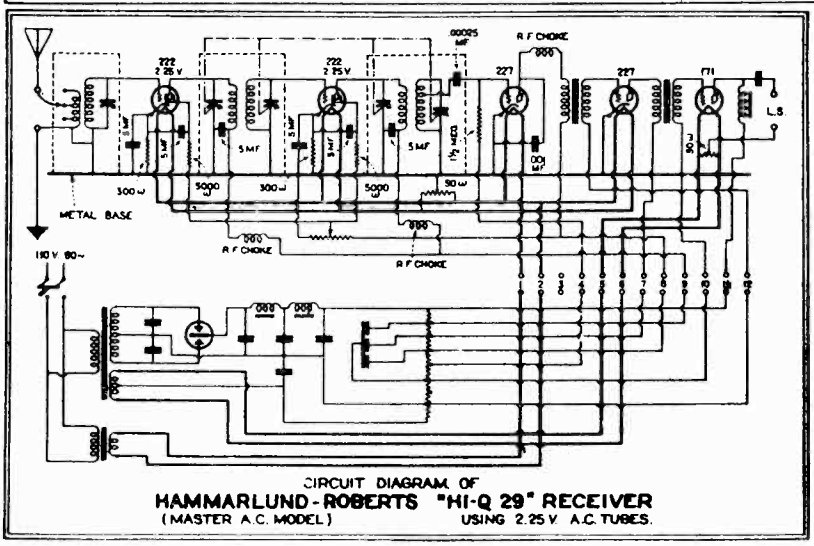
MASTER A.C. — POWER CABLE

1-RED } 15 V. A.C.
2-BLACK }
3-RED-GREEN TRACER. C-, 1 VOLT
4-BLACK-GREEN TRACER, C+4.5V.
5-RED-YELLOW TRACER } 5 V. A.C.
6-BLACK YELLOW TRACER }
7-YELLOW, B+ 90V.
8-BLUE, B+ 45 V.
9-SLATE, B+ 135 V
10-GREEN, B-C+
11-BROWN, B+ 180 V.
12-WHITE, C-4.5 V



CIRCUIT DIAGRAM
HAMMARLUND - ROBERTS "HI-Q 29" RECEIVER
(MASTER)
A.C. MODEL
(using ARCTURUS Tubes)

MASTER-A.C.
MASTER-D.C.
2 A.F.
1 A.F.
DET.
1 R.F.
2 R.F.

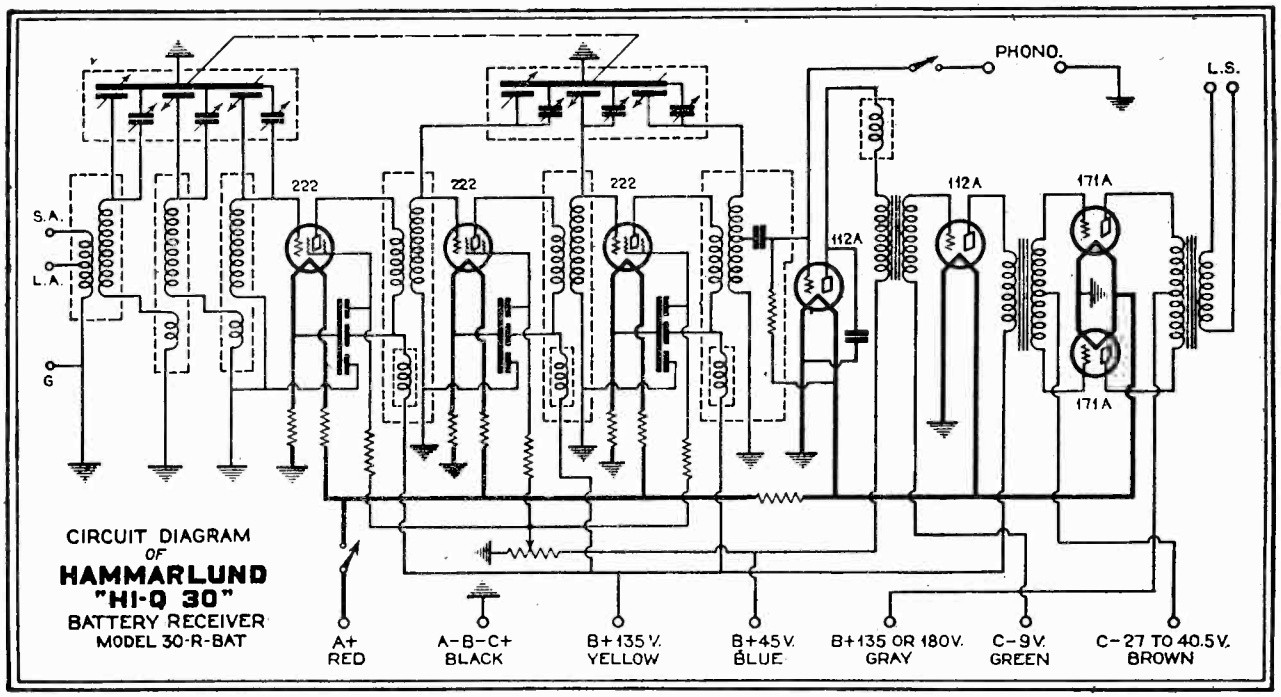


CIRCUIT DIAGRAM OF
HAMMARLUND - ROBERTS "HI-Q 29" RECEIVER
(MASTER A.C. MODEL) USING 2.25 V. A.C. TUBES.

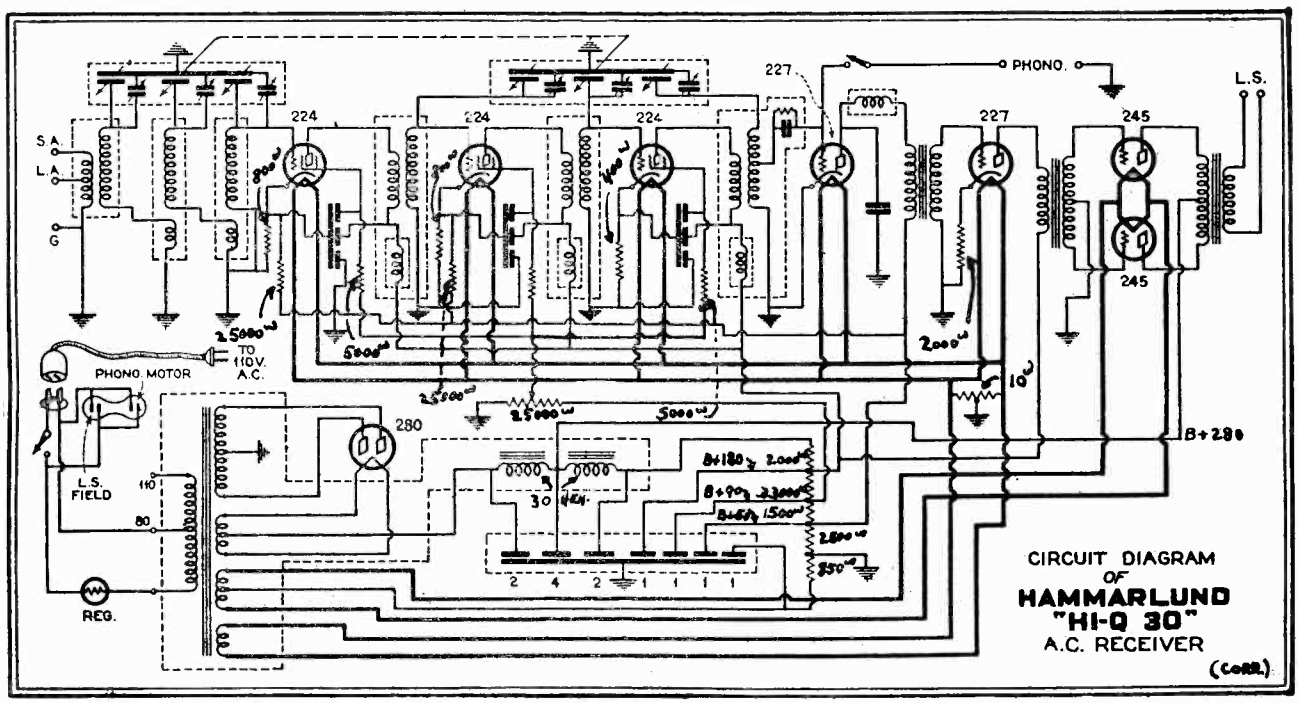
Master D.C. - Batt. cable.
To B+ 135 Gray
" B+ 90 Yellow
" B+ 45 Blue
" B-, C+, A-, Black
" C- 4.5 Green
" C- 27. Brown
" A+ Red

HAMMARLUND-ROBERTS, INC.

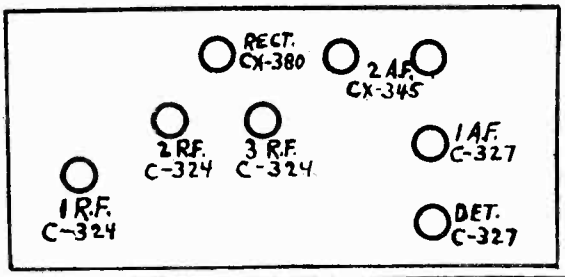
MODEL H-R "HI-Q" 30
A.C.-Battery



CIRCUIT DIAGRAM
OF
HAMMARLUND
"HI-Q 30"
BATTERY RECEIVER
MODEL 30-R-BAT

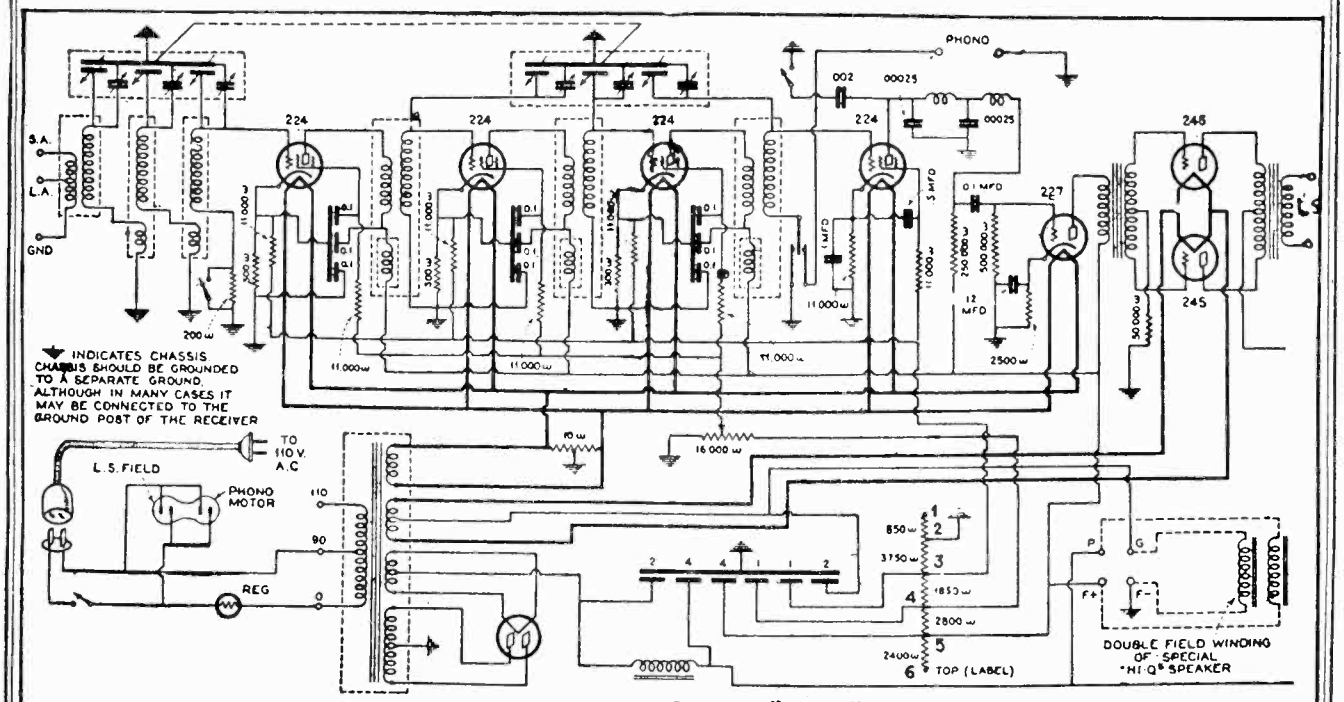


CIRCUIT DIAGRAM
OF
HAMMARLUND
"HI-Q 30"
A.C. RECEIVER
(cont.)

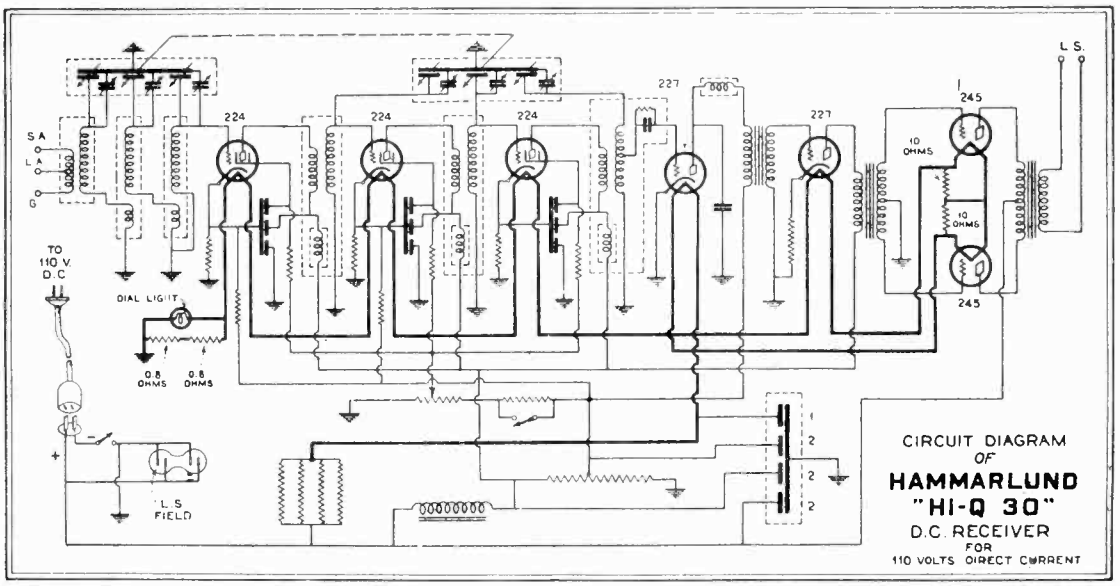


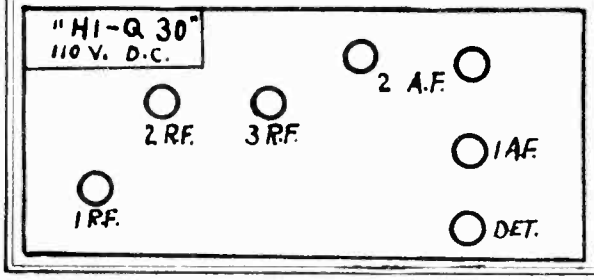
MODEL H-R "HI-Q"30
D.C.
MODEL H-R "HI-Q"31

HAMMARLUND-ROBERTS, INC.



Model H-R "HI-Q"31





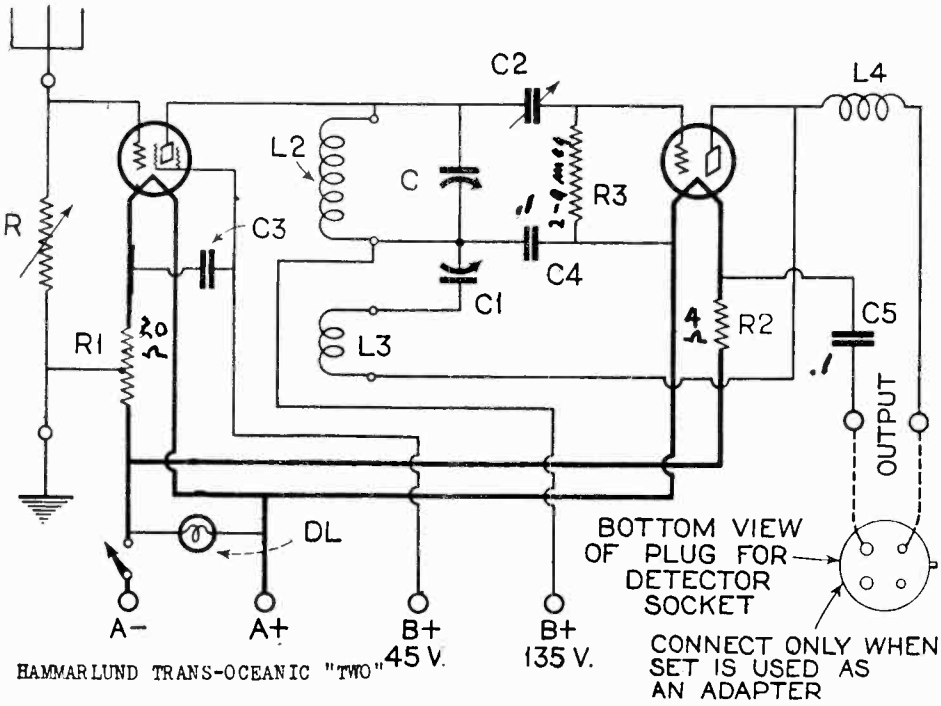
HI-Q 30 D.C.

Voltmeter readings from chassis to:

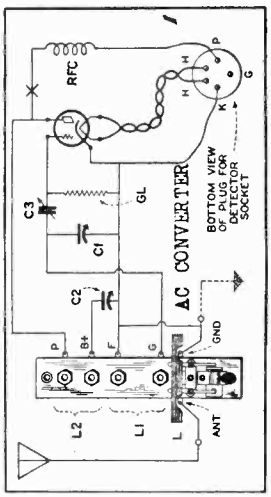
Top of voltage divider		- 110 V.
Middle tap		- 60 "
(P) term. of socket	# 1, 2, 3 and 5	- 100 "
(P) " " "	# 4	- 50 "
(P) " " "	# 6 and 7	- 110 "
(G) " " "	# 1, 2 and 3	- 20 "
(K) " " "	# 1, 2 and 3	- 1-2 "
(K) " " "	# 5	- 6 "

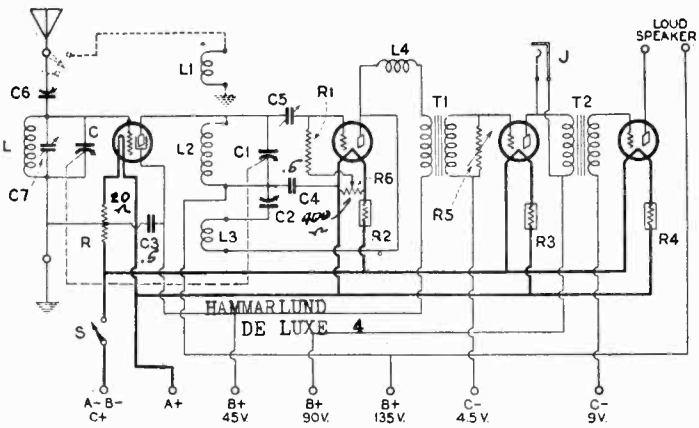
MODEL Hawk
MODEL DeLuxe
MODEL Z4 Commander
MODEL Trans-Oceanic Two
MODELS AC & DC Converters

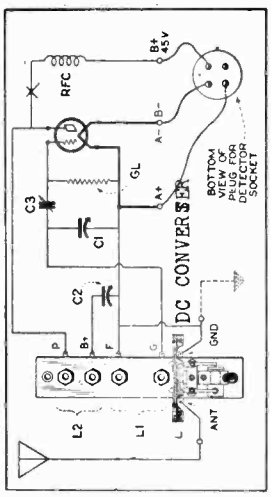
HAMMARLUND MFG. CO.



HAMMARLUND TRANS-OCEANIC "TWO"



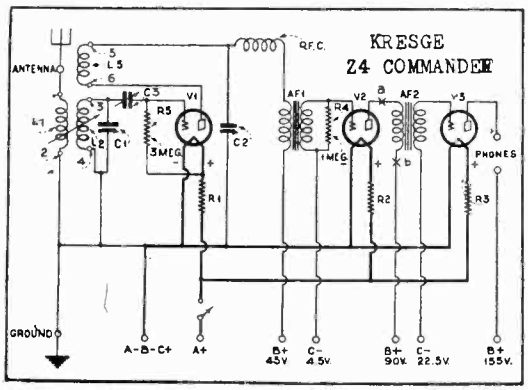


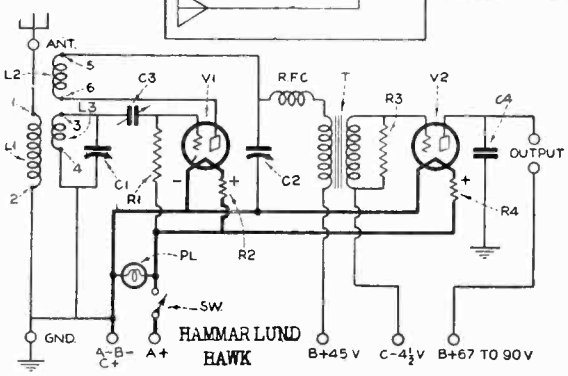


Coil Table

Wave Band (Meters)	Secondary Turns	Tickler Turns
14 to 24	3	3
22 to 40	7	5
36 to 65	15	6
60 to 110	24	12

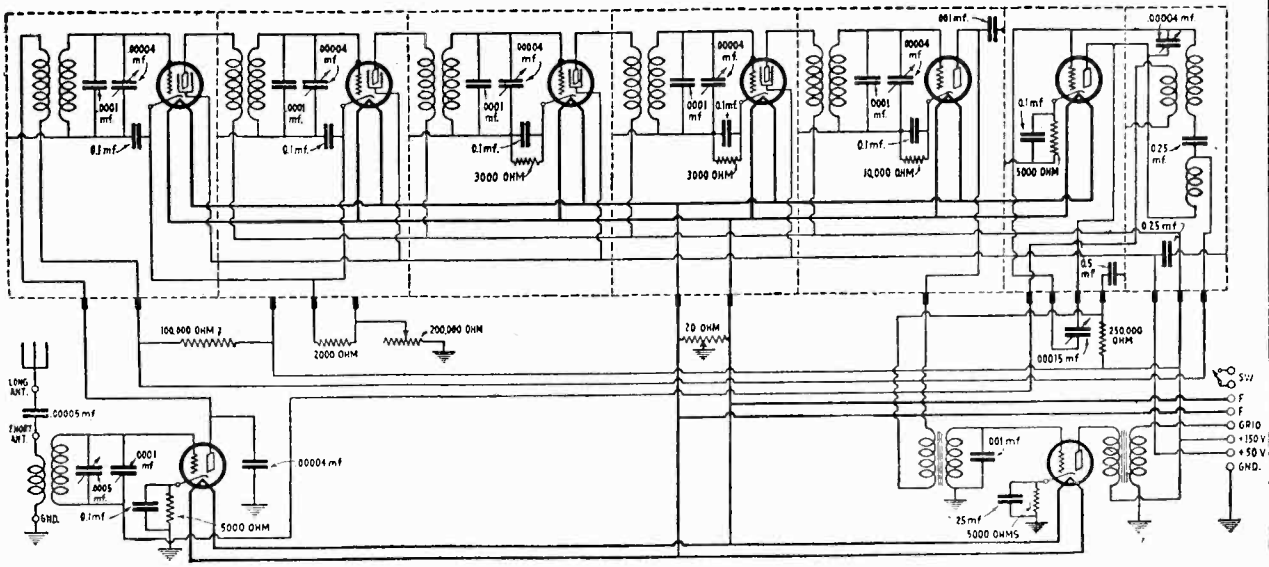
HAMMARLUND HAWK



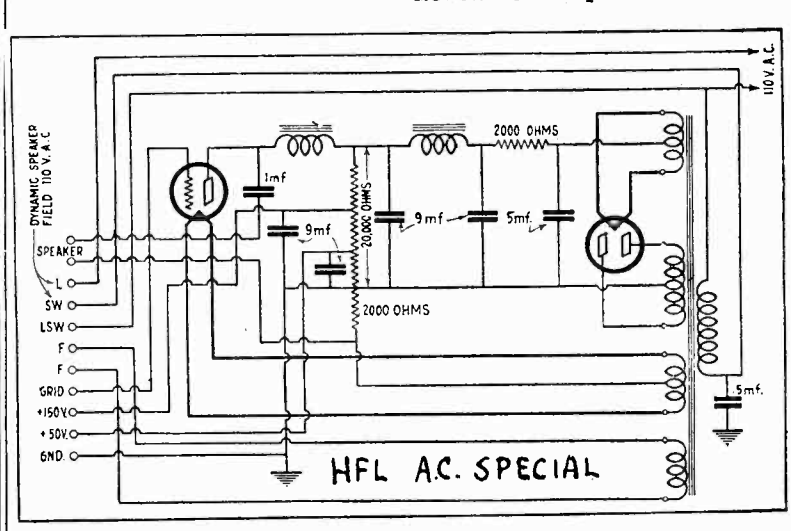


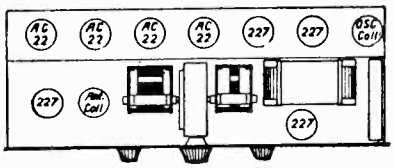
HIGH FREQUENCY LABORATORIES

MODEL A.C. Special
MODEL 9-in-Line

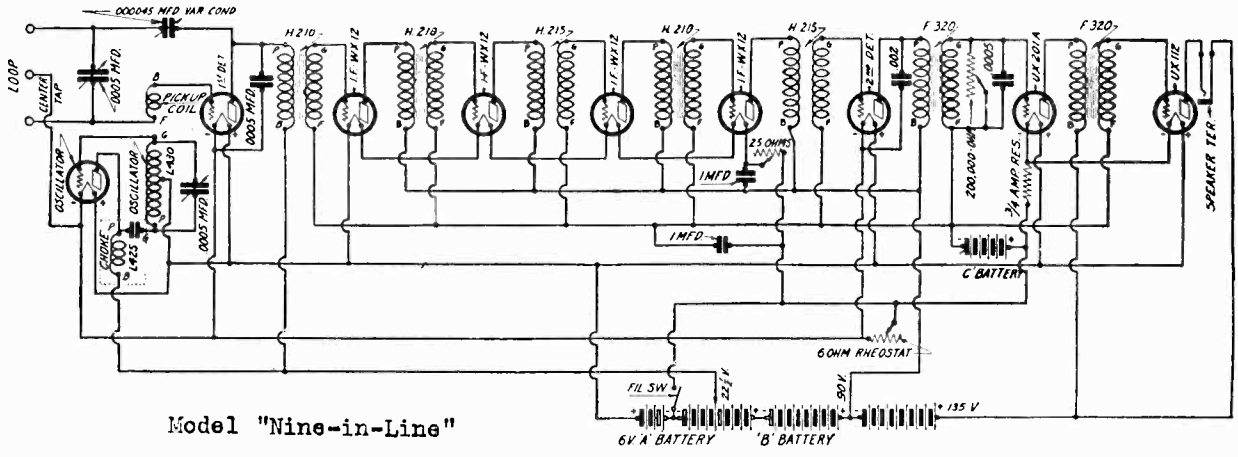


Model "A.C.Special"





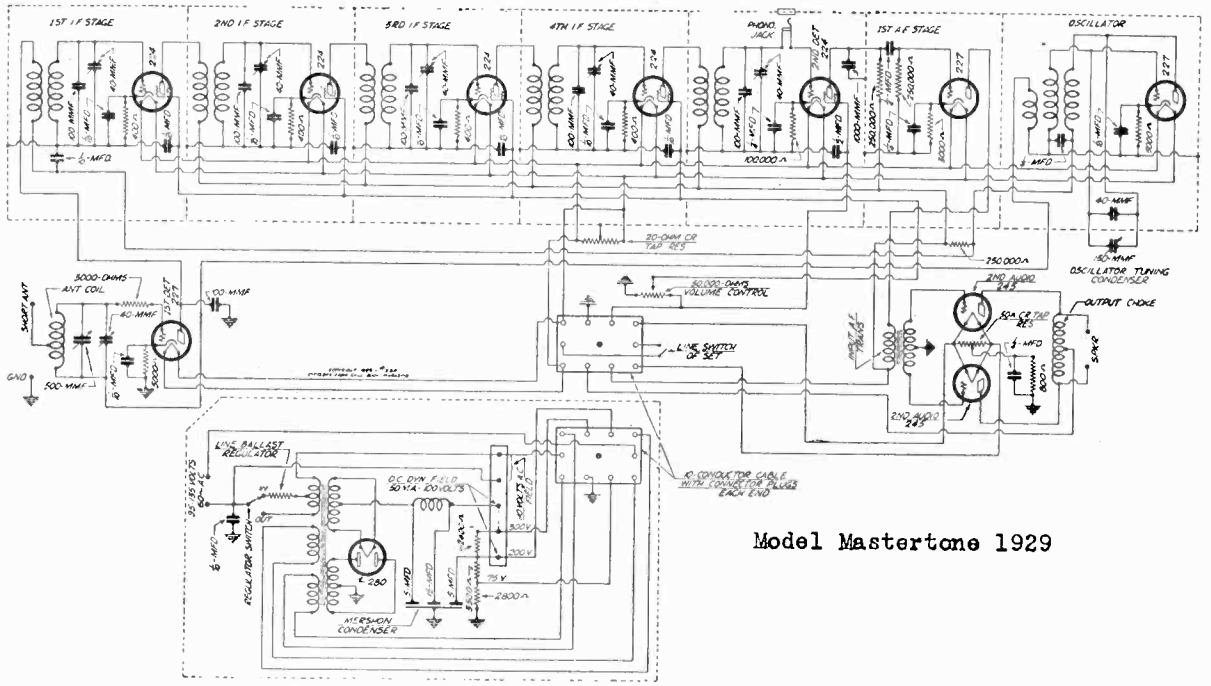
Tube layout showing position of respective tubes.



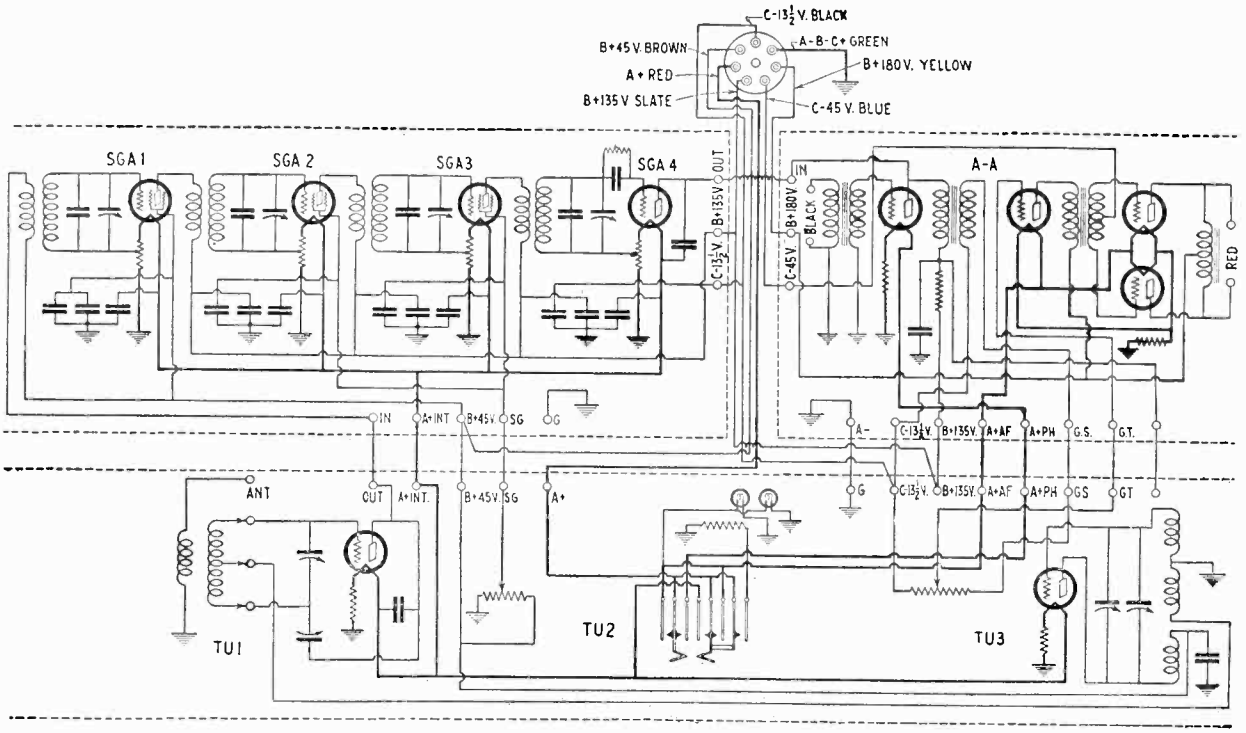
Model "Nine-in-Line"

MODEL Mastertone 1929
MODEL Isotone 10

HIGH FREQUENCY LABORATORIES



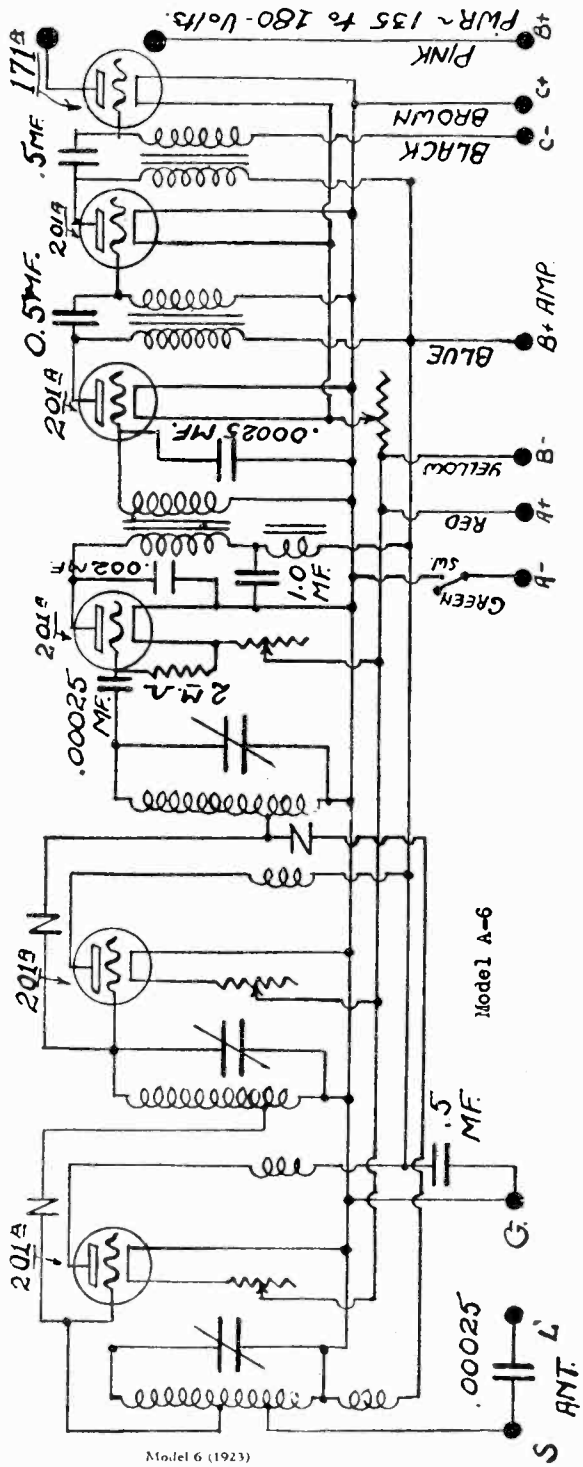
Model Mastertone 1929

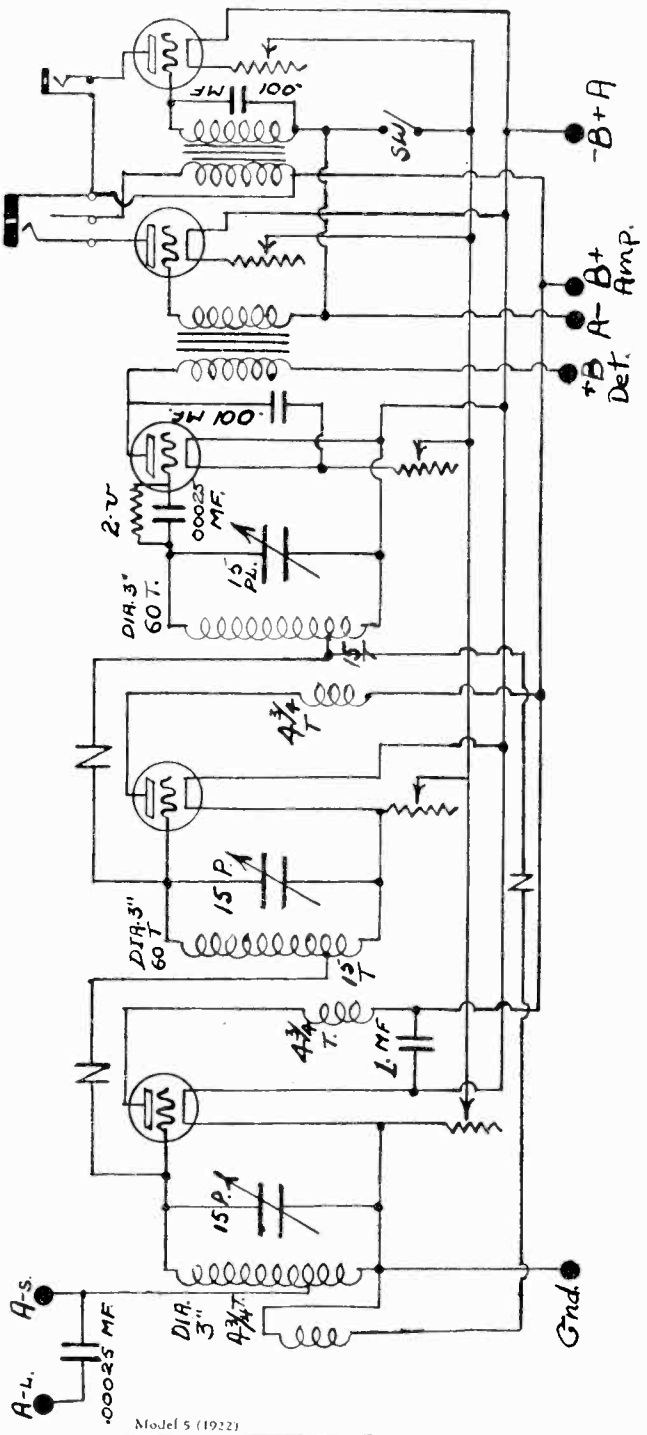


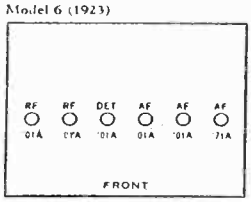
Model Isotone 10

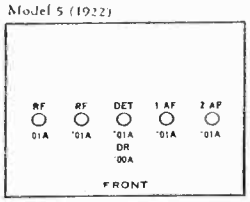
HOWARD RADIO CO.

MODEL A-5
MODEL A-6



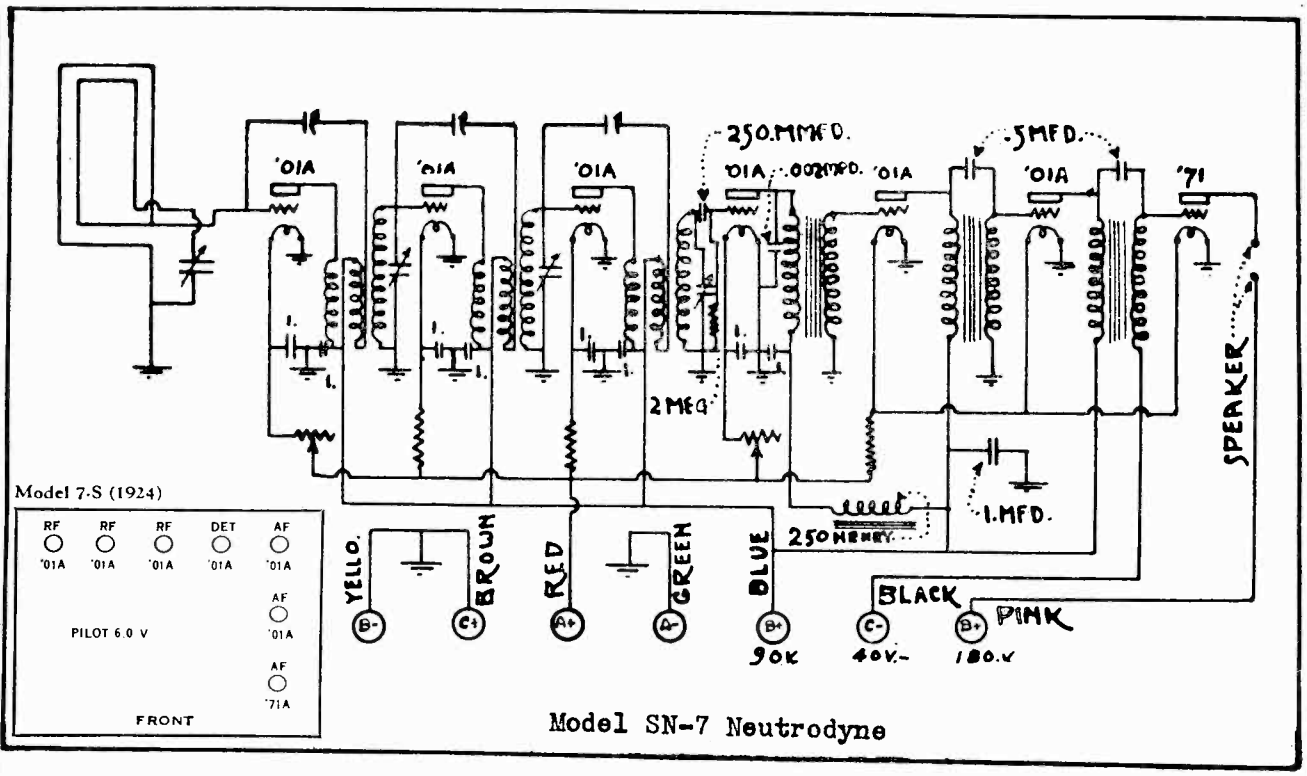




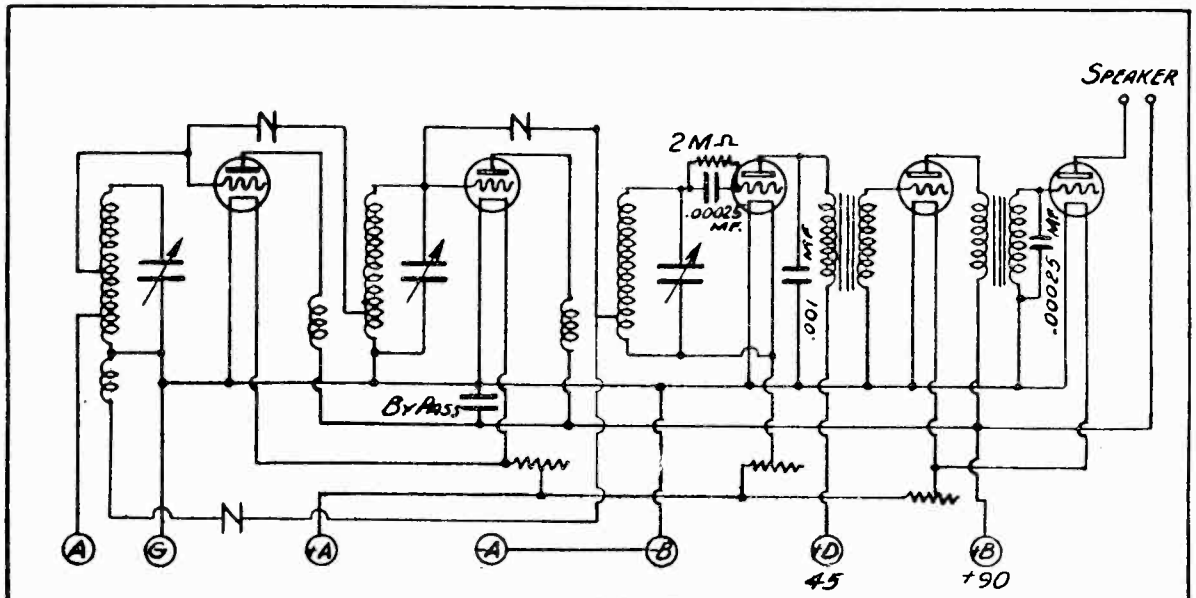


MODEL SN-7
MODEL K

HOWARD RADIO CO



Model SN-7 Neutrodyne

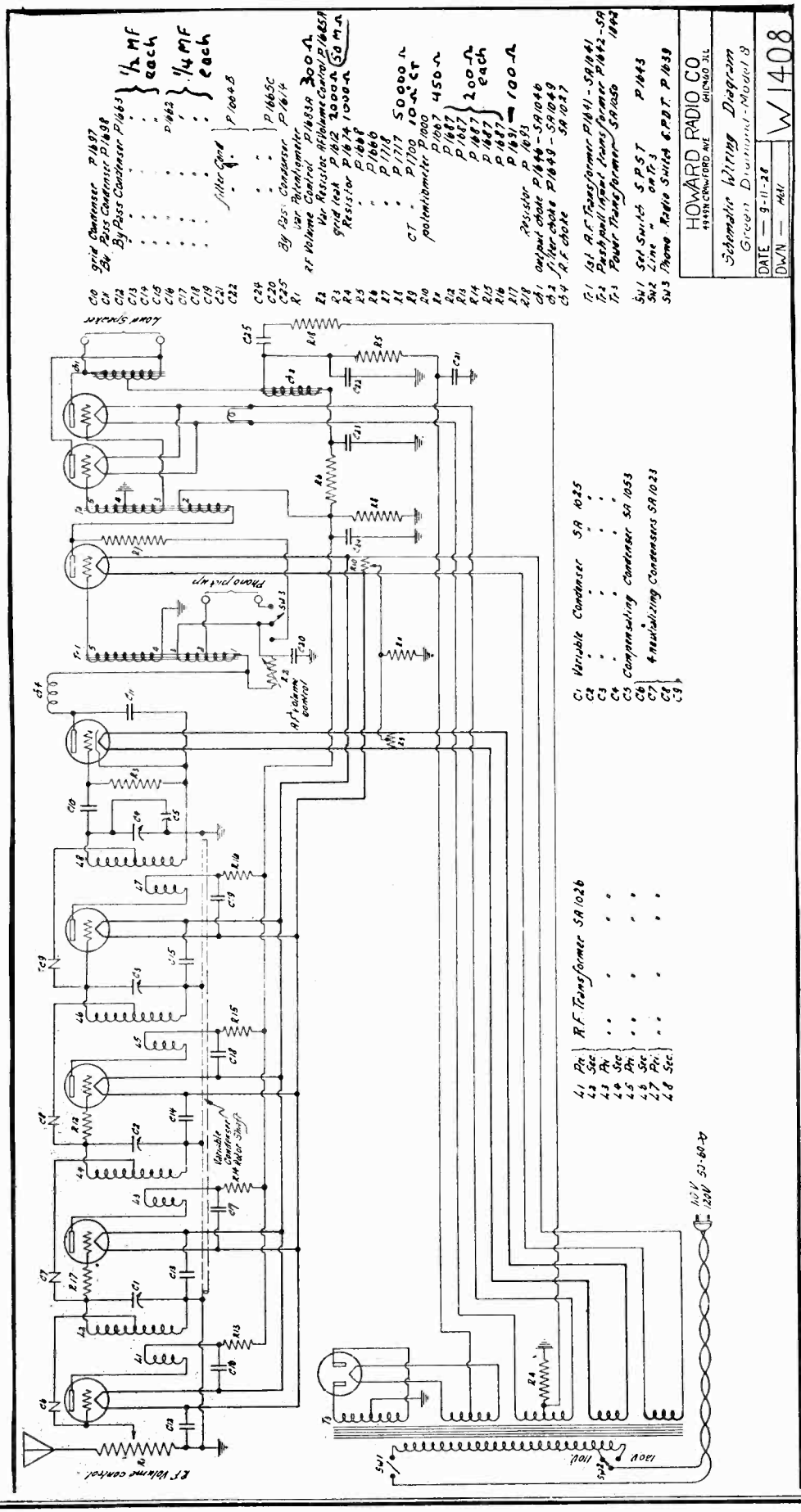


Model K

PAR No	HOWARD RADIO CO. SOUTH HAVEN MICHIGAN
DATE 10-1-25	SCHEMATIC DIAGRAM
REVISED	HOWARD RECEIVER MODEL K
MATERIAL	DRAWN BY WRH
FINISH	

HOWARD RADIO CO.

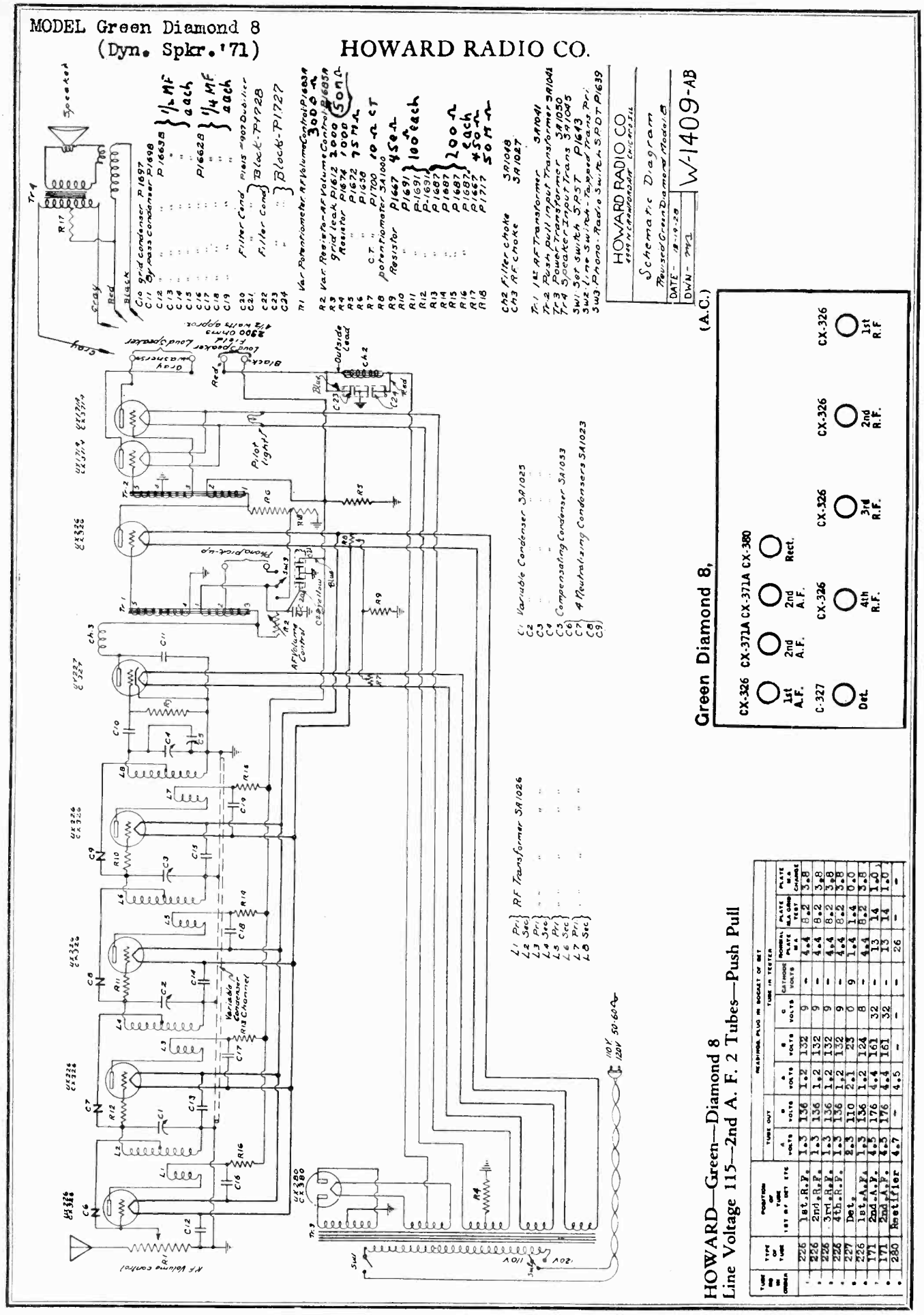
MODEL Green Diamond 8 (Magnetic Speaker)



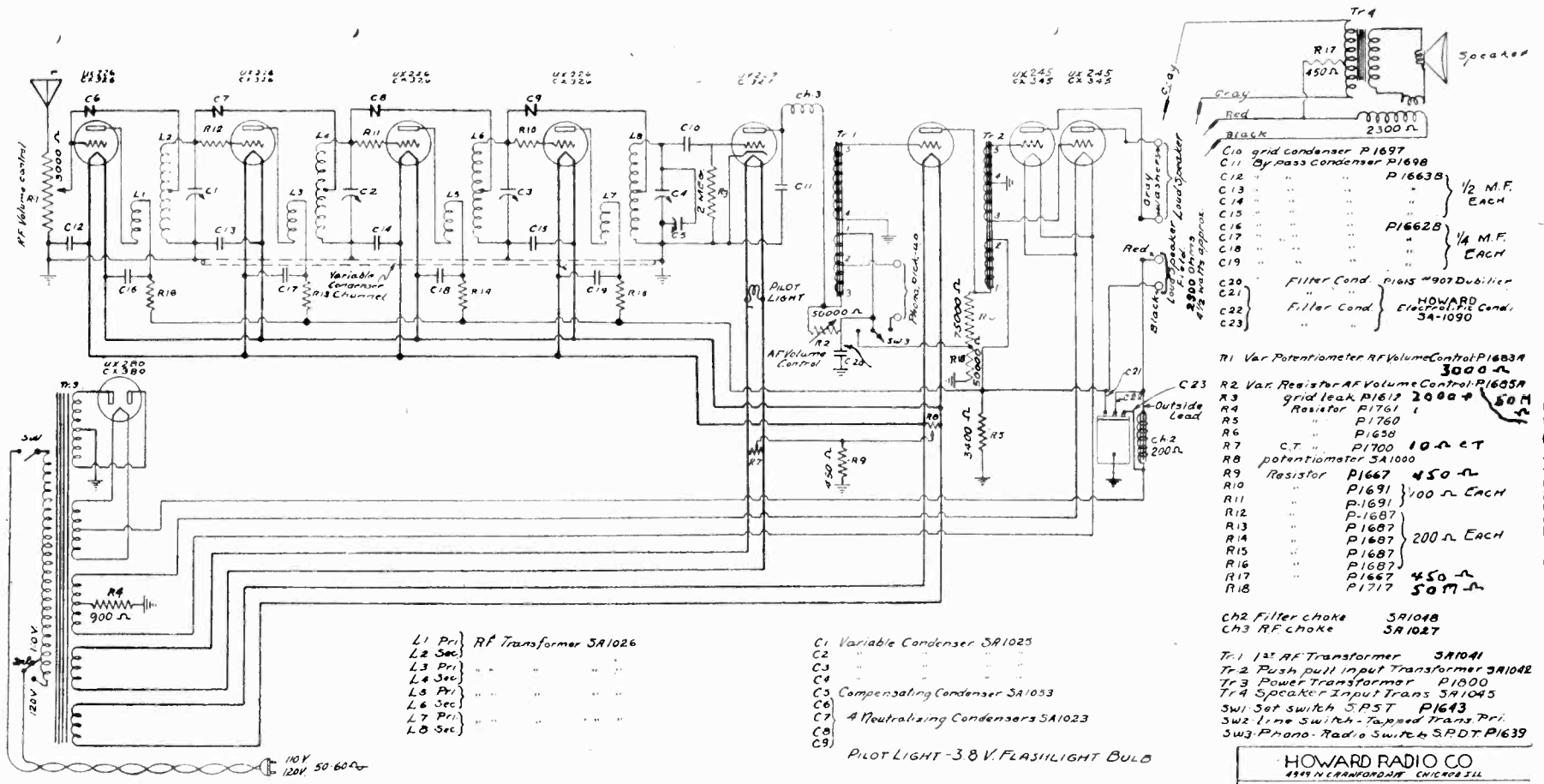
HOWARD—Green—Diamond 8
Line Voltage 115—2nd A. F. 2 Tubes—Push Pull

TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE	READINGS PLUG IN SOCKET OF SET									
			TUBE OUT		TUBE IN TESTER							
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE M.A. CHANGE
1	226	1st. A.F.	1.3	136	1.2	132	9	-	4.4	8.2	3.8
2	226	2nd. A.F.	1.3	136	1.2	132	9	-	4.4	8.2	3.8
3	226	3rd. R.F.	1.3	136	1.2	132	9	-	4.4	8.2	3.8
4	226	4th. R.F.	1.3	136	1.2	132	9	-	4.4	8.2	3.8
5	227	Det.	2.3	110	2.1	23	0	9	1.4	1.4	0.0
6	226	1st. A.F.	1.3	136	1.2	124	8	-	4.4	8.2	3.8
7	171	2nd. A.F.	4.5	176	4.4	161	32	-	13	14	1.0
8	171	2nd. A.F.	4.5	176	4.4	161	32	-	13	14	1.0
9	280	Rectifier	4.7	-	4.5	-	-	-	26	-	-

Green Diamond 8, (A.C.)



TUBE OR LAMP NO.	TYPE OF TUBE	POSITION OF TUBE	MAXIMUM PLUG IN SOCKET OF METER								
			TUBE OUT		TUBE IN TESTER						
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	POWERFUL PLATE M.A.	PLATE M.A. GRID CONNECTED TEST	PLATE M.A. CHANGE
1	226	1st. R.F.	1.5	136	1.2	132	9	-	4.4	8.2	3.8
2	226	2nd. R.F.	1.5	136	1.2	132	9	-	4.4	8.2	3.8
3	226	3rd. R.F.	1.5	136	1.2	132	9	-	4.4	8.2	3.8
4	226	4th. R.F.	1.5	136	1.2	132	9	-	4.4	8.2	3.8
5	227	Det.	2.5	110	2.1	25	0	9	1.4	1.4	0.0
6	226	1st. A.F.	1.5	136	1.2	124	8	-	4.4	8.2	3.8
7	171	2nd. A.F.	4.5	176	4.4	161	32	-	13	14	1.0
8	171	2nd. A.F.	4.5	176	4.4	161	32	-	13	14	1.0
9	280	Rectifier	4.7	-	4.5	-	-	-	26	-	-



L1 Pri } RF Transformer SA1026
L2 Sec }
L3 Pri } " " " "
L4 Sec }
L5 Pri } " " " "
L6 Sec }
L7 Pri } " " " "
L8 Sec }

C1 Variable Condenser SA1025
C2 " " "
C3 " " "
C4 " " "
C5 Compensating Condenser SA1053
C6 }
C7 } 4 Neutralizing Condensers SA1023
C8 }
C9 }

PILOT LIGHT - 3.8 V. FLASHLIGHT BULB

C10 grid condenser P1697
C11 By-Pass Condenser P1698
C12 " " " P1663B } ½ M.F. EACH
C13 " " " "
C14 " " " "
C15 " " " "
C16 " " " P1662B } ¼ M.F. EACH
C17 " " " "
C18 " " " "
C19 " " " "
C20 Filter Cond. P1615 and 907 Dubilier
C21 " " " "
C22 } Filter Cond. HOWARD Electrolytic Cond. SA-1090
C23 } " " " "

R1 Var. Potentiometer RF Volume Control P1683A 3000 Ω
R2 Var. Resistor AF Volume Control P1685A 50000 Ω
R3 grid leak P1612 2000 Ω
R4 Resistor P1761 900 Ω
R5 " P1760 3400 Ω
R6 " P1658 50000 Ω
R7 C.T. " P1700 10 Ω CT
R8 potentiometer SA1000 50000 Ω
R9 Resistor P1667 450 Ω
R10 " P1691 } 400 Ω EACH
R11 " P-1691 }
R12 " P-1687 } 200 Ω EACH
R13 " P1687 }
R14 " P1687 }
R15 " P1687 }
R16 " P1687 }
R17 " P1667 450 Ω
R18 " P1717 50 M Ω

Ch2 Filter choke SA1048
Ch3 RF choke SA1027

Tr1 1st AF Transformer SA1041
Tr2 Push pull input Transformer SA1042
Tr3 Power Transformer P1800
Tr4 Speaker Input Trans SA1045
SW1 Set switch S.P.S.T. P1643
SW2 Line Switch - Tapped Trans. Pri.
SW3 Phono - Radio Switch S.P.D.T. P1639

HOWARD RADIO CO
4949 N CRANFORD AVE. CHICAGO ILL.
Schematic Diagram TYPE E
Revised Green Diamond Model 8
DATE - 12-19-28
DWN - TH
W-1409-E

REVISED 7-9-29.

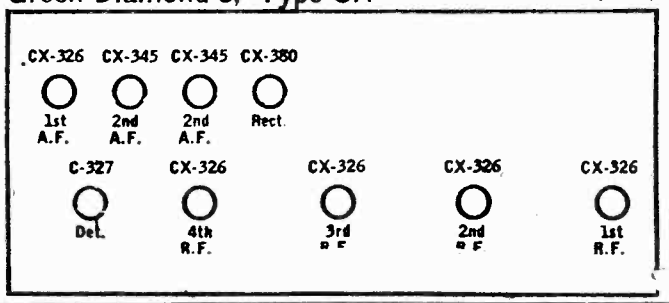
HOWARD RADIO CO

MODEL Green Diamond 8 (Dyn. Spkr. '45)

HOWARD—Model SH-245
Line Voltage 120—Set on High Volt Tap—Volume Control Position No Change

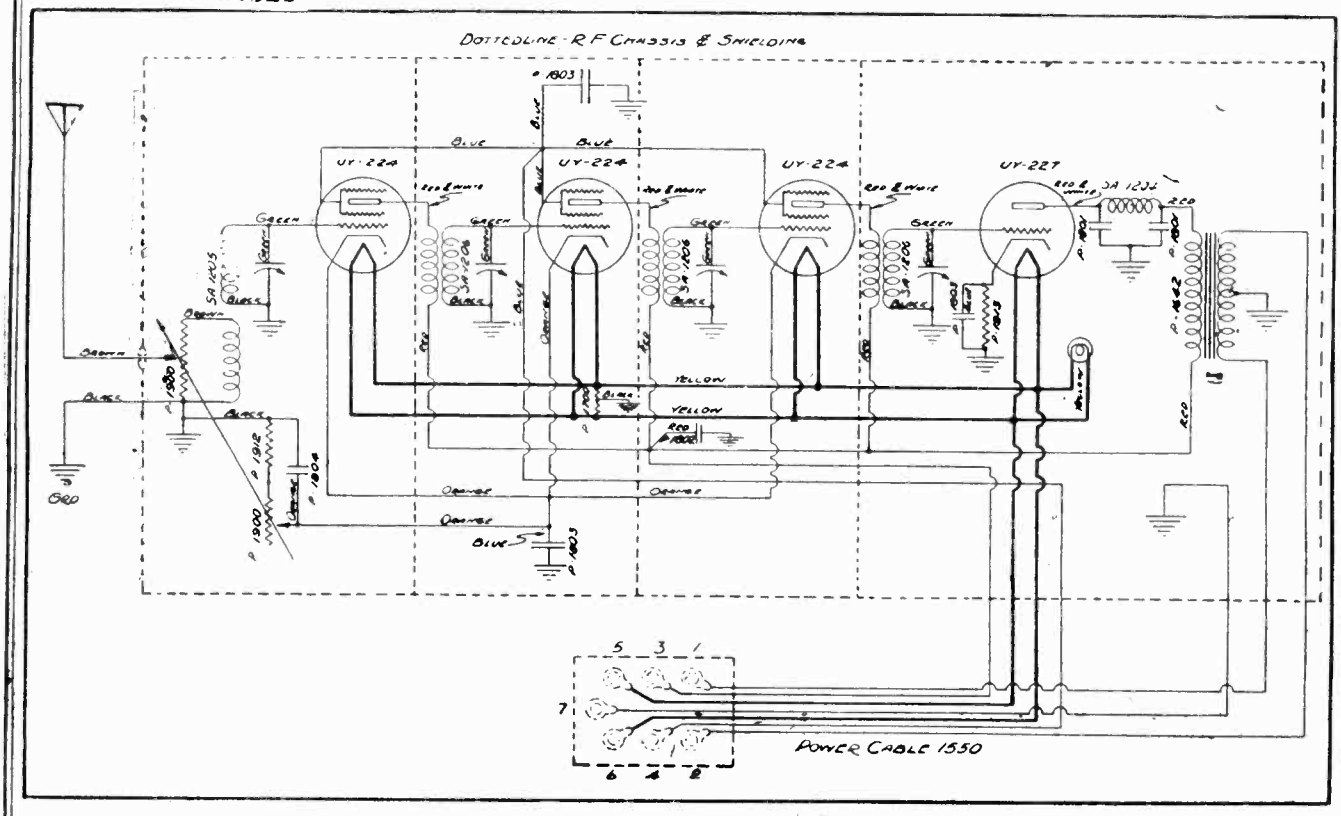
TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST AF DET OTC	READINGS PLUG IN SOCKET OF SET									
			TUBE OUT		TUBE IN TESTER							
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS CONTROL GRID	CATHODE METER VOLTS	NORMAL PLATE M A	PLATE M A GRID TEST	PLATE CHANGE M A	SCREEN GRID VOLTS
1	226	1st RF	1.4	120	1.35	116	8	-	4.5	7.5	3	-
2	226	2nd RF	1.4	120	1.35	116	8	-	4.5	7.5	3	-
3	226	3rd RF	1.35	120	1.3	116	8	-	4.5	7.5	3	-
4	226	4th RF	1.35	120	1.3	116	8	-	4.5	7.5	3	-
5	227	Det.	2.25	44	2.1	20	-	-	.8	-	-	-
6	226	1st A	1.35	120	1.3	116	8	-	2.2	5.4	3.2	-
7	245	2nd A	2.2	245	2.1	235	36	-	22	26	9	-
8	245	2nd A	2.2	245	2.1	235	36	-	22	26	4	-
9	280	Rect.	5	-	4.8	-	-	-	100	-	-	-

Green Diamond 8, Type SH (A.C.)

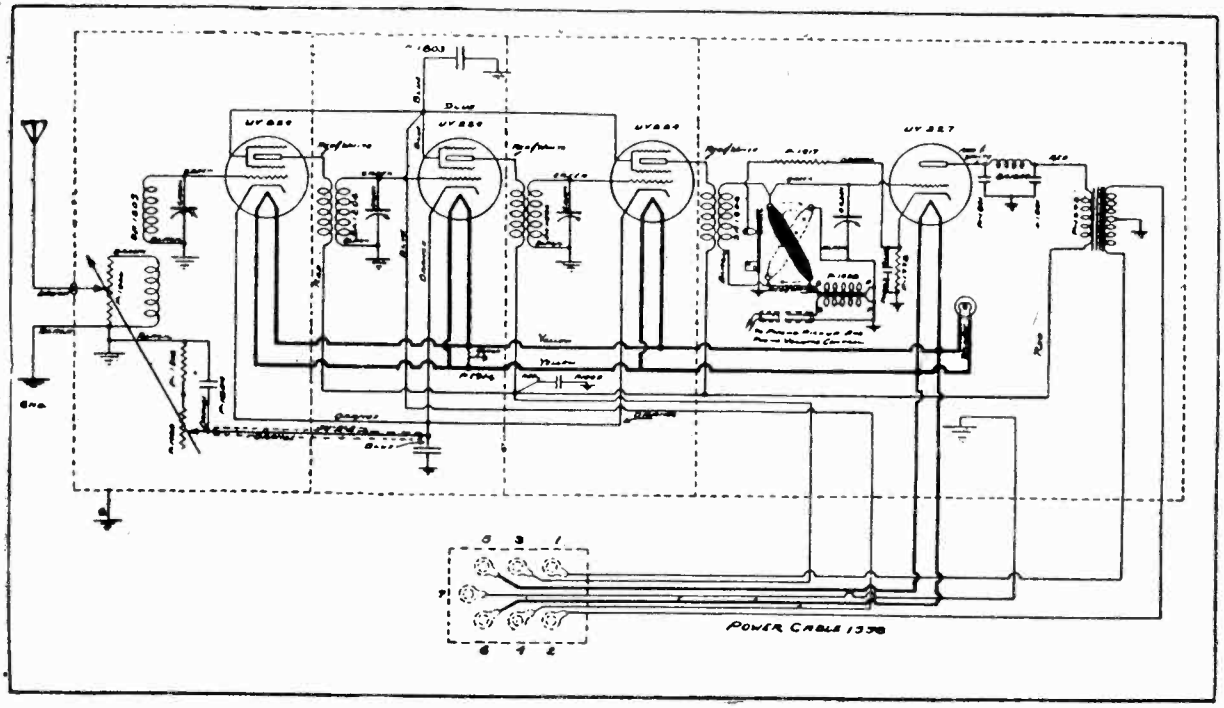


MODEL SG "A"
RF Chassis
MODEL SG "C"
RF Chassis

HOWARD RADIO CO.



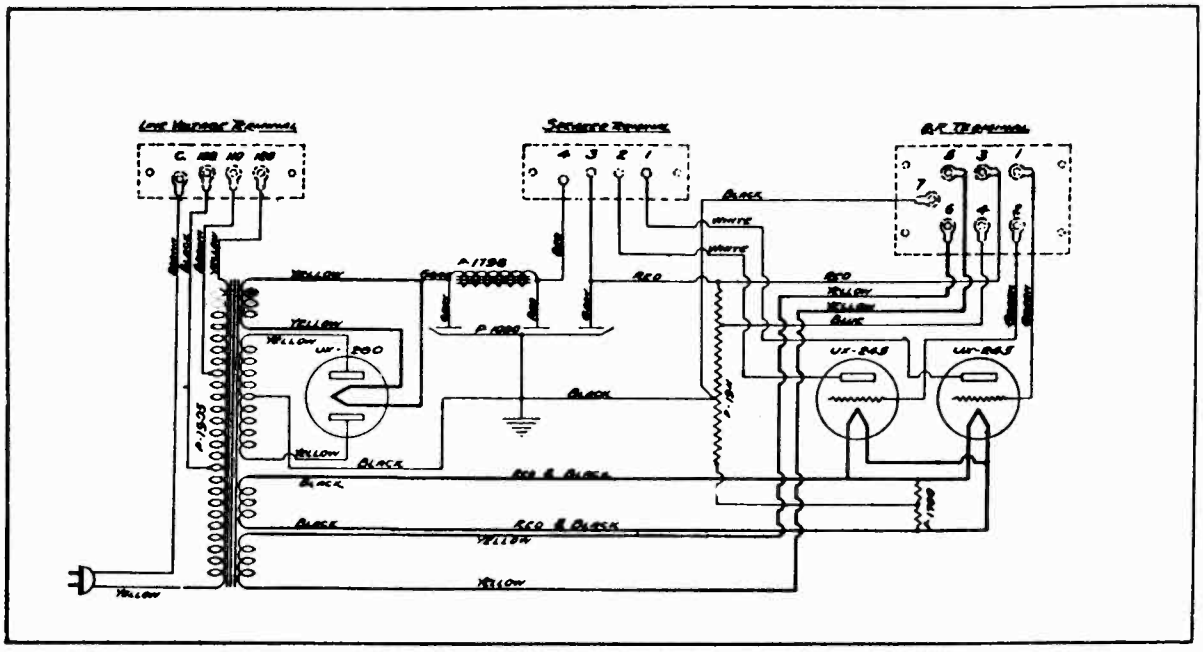
R.F. Chassis Model S.G."A"



R.F.Chassis Model S.G."C"

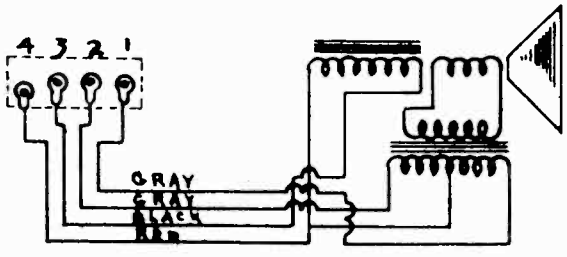
HOWARD RADIO CO

MODEL SG"A"
AF Chassis
MODEL SG"C"
AF Chassis
Voltage



Power Unit and A.F.Amplifier for HOWARD Models S.G."A" and S.G."C"

R.F.Chassis Term.	Plate.	
1	Gray	Audio Grid
2	Gray	Audio Grid
3	Red	B + 175 Volts
4	Blue	B + 70 "
5	Yellow	Fil. 2.25 "
6	Yellow	Fil. 2.25 "
7	Black	B - Ground

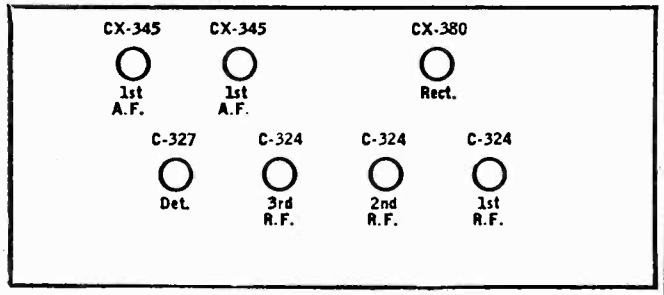


Dyn. Speaker
for models S.G."A" and S.G."C".

HOWARD RADIO—Model A—Screen Grid
Line Voltage 110—Set on 110 Volt Tap
Volume Control Position Max
*Detector Plate Voltage on Phone Combination

Tube No. in Order	Type of Tube	Position of Tube	Readings Plug in Socket of Set									
			Tube Out		Tube in Tester							
			A Volts	B Volts	A Volts	B Volts	C Volts (Control Chg.)	Cathode - Heater Volts	Normal Plate M A	Plate M A Grid Test	Plate Change M A.	Screen Grid Volts
1	224	1 R.F.	2.40	171	2.26	164	2.7	1.9	3.3	4.3	1.0	64
2	224	2 R.F.	2.40	171	2.26	164	2.7	1.9	3.3	4.3	1.0	64
3	224	3 R.F.	2.40	171	2.26	164	2.7	1.9	3.3	4.3	1.0	64
4	227	Det.	2.45	161	2.32	#150	15.1X	11.6	1.1	1.4	0.3	-
5	245	P. P.	2.33	272	2.21	251	47.0	-	26	30	4.0	-
6	245	P. P.	2.33	272	2.21	251	47.0	-	26	30	4.0	-
7	280	Rect.	5.56	-	4.65	-	-	-	54	-	-	-

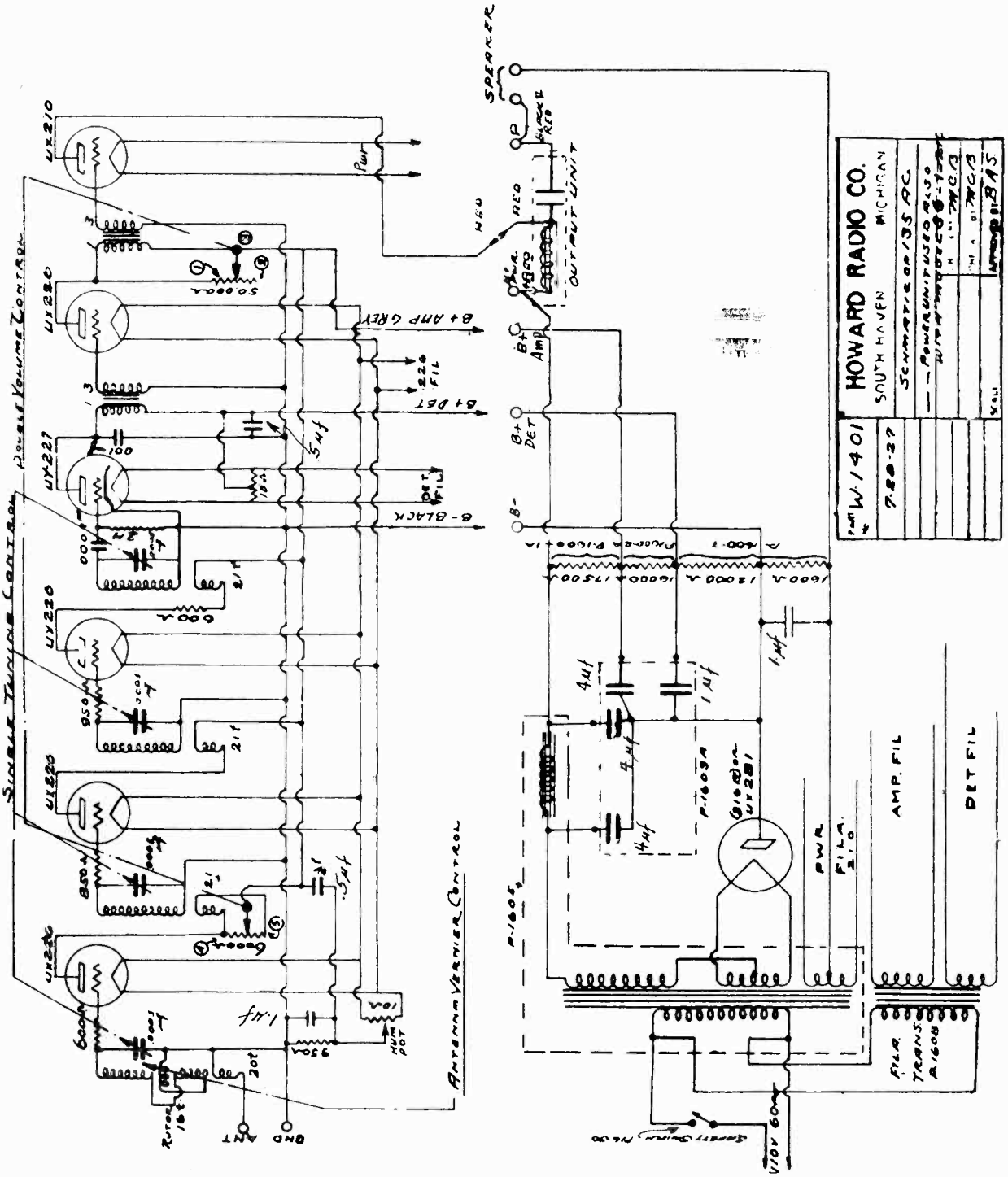
SG-A (A.C.)



X Detector coil shorted to give correct voltage when measuring detector

MODEL 395,445,470,495
(135-AC Chassis)

HOWARD RADIO CO.



Models 135, 395, 445, 470, (1927)