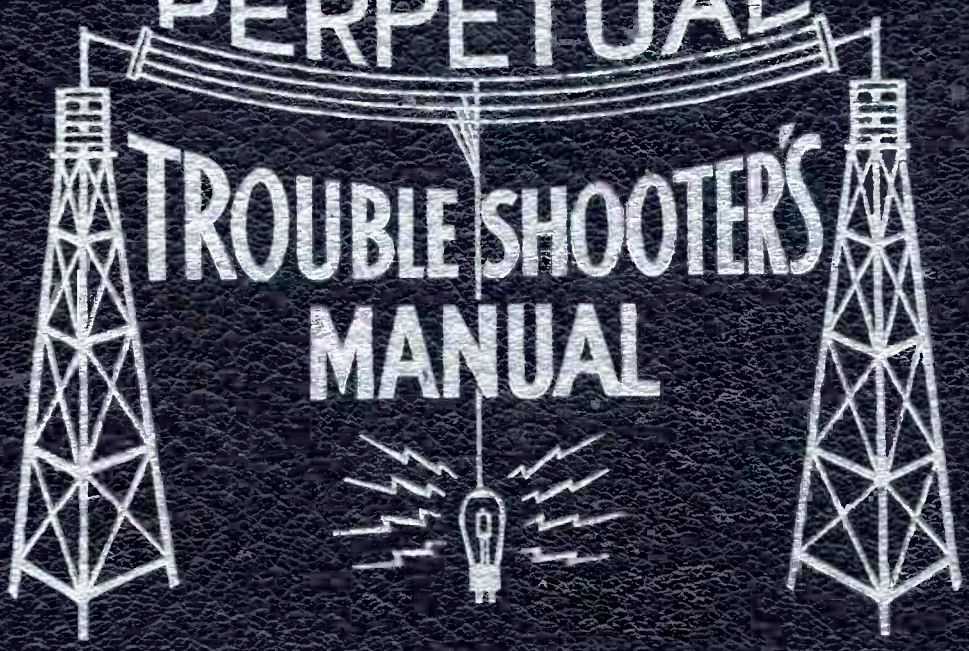
VOLUME I

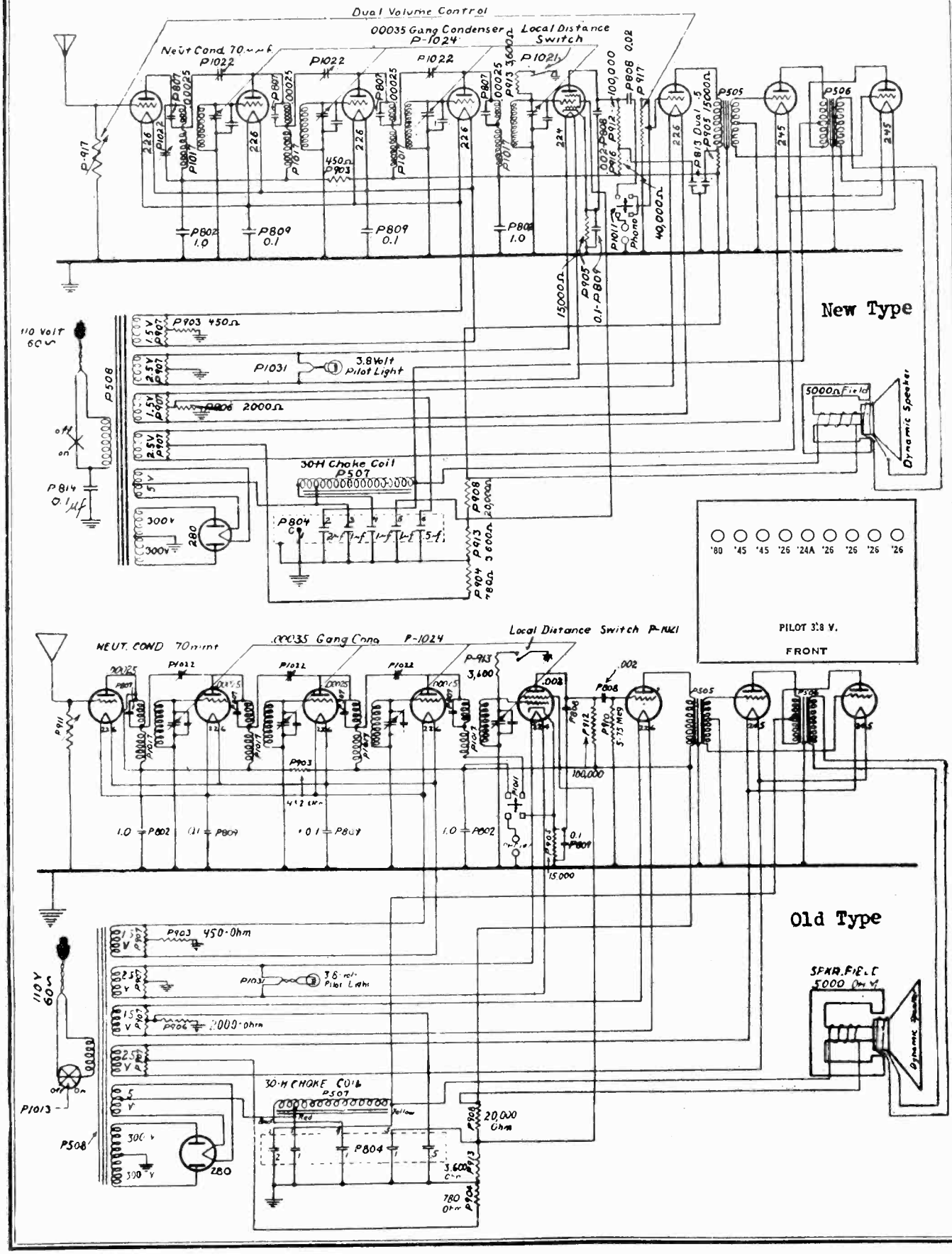
PERPETUAL TROUBLE SHOOTER'S MANUAL



JOHN F. RIDER

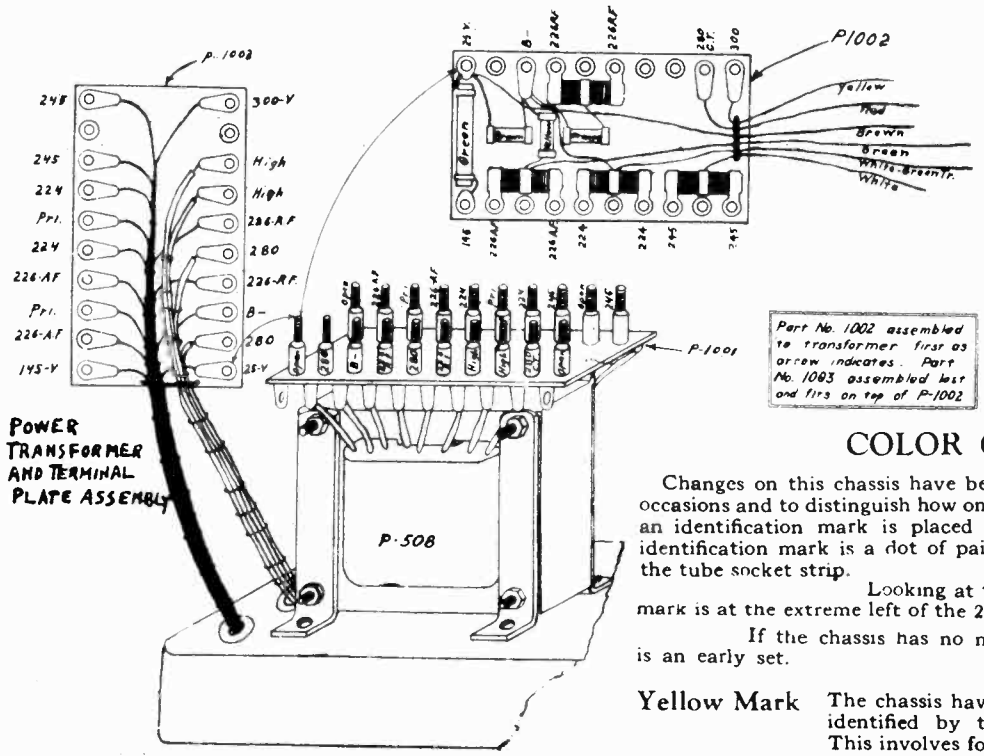
WELLS-GARDNER & CO.

MODEL C,CG
Schematic
1st & 2nd Types



MODEL C,CG
Voltage - Data
1st & 2nd Types

WELLS - GARDNER & CO.



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.)

CX-380	CX-345	CX-345	CX-326	C-324	CX-326	CX-326	CX-326	CX-326
Rect.	2nd A.F.	2nd A.F.	1st A.F.	Det.	4th R.F.	3rd R.F.	2nd R.F.	1st R.F.

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.

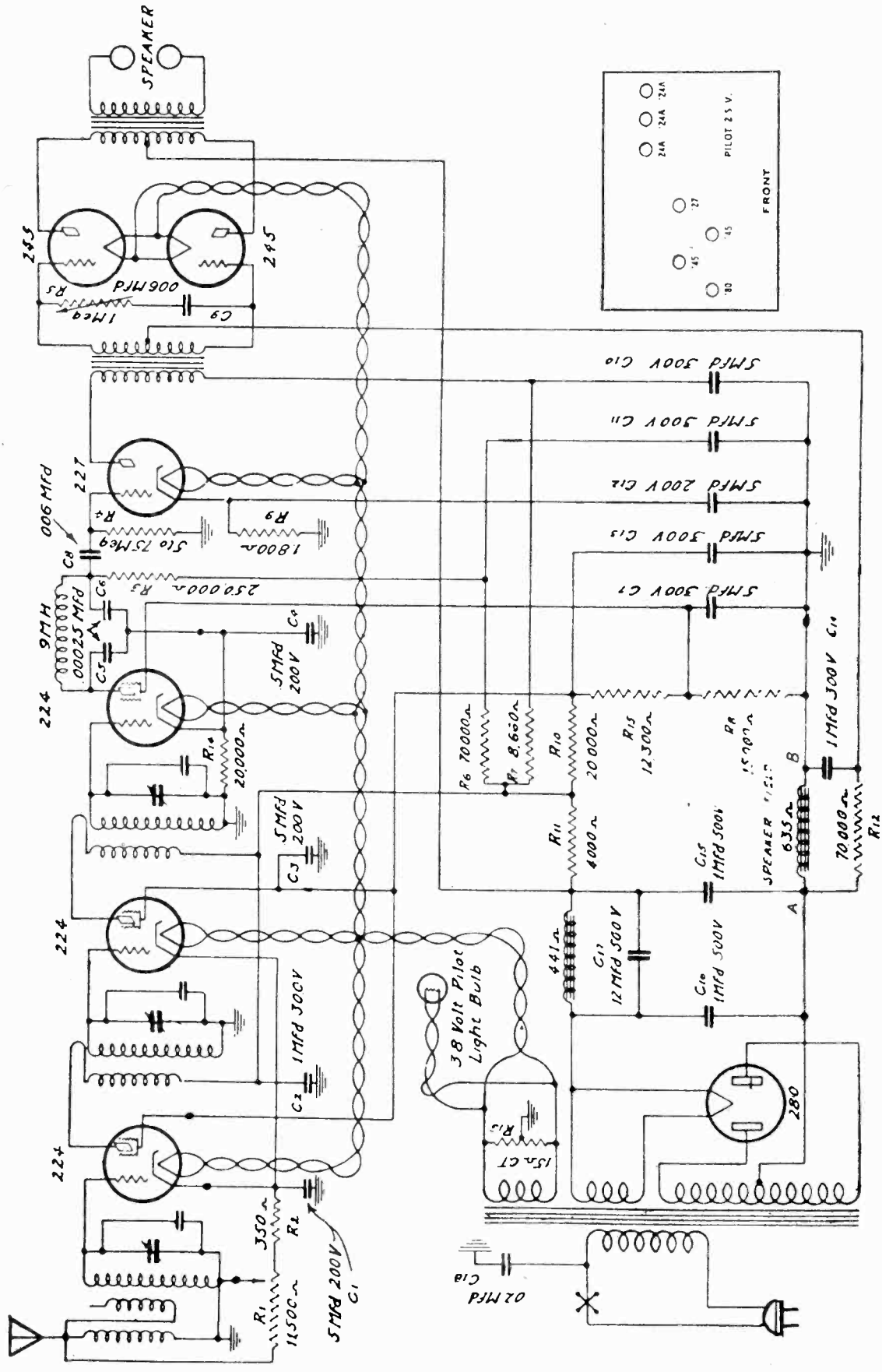
Red Mark (Serial Number 39,000-42,999) All chassis having a red mark on the rivet of the tube socket strip have all of the changes mentioned above and in addition, have a one-tenth microfarad condenser connected from ground to one side of the 110 volt line A peculiarity that may be experienced by the 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.

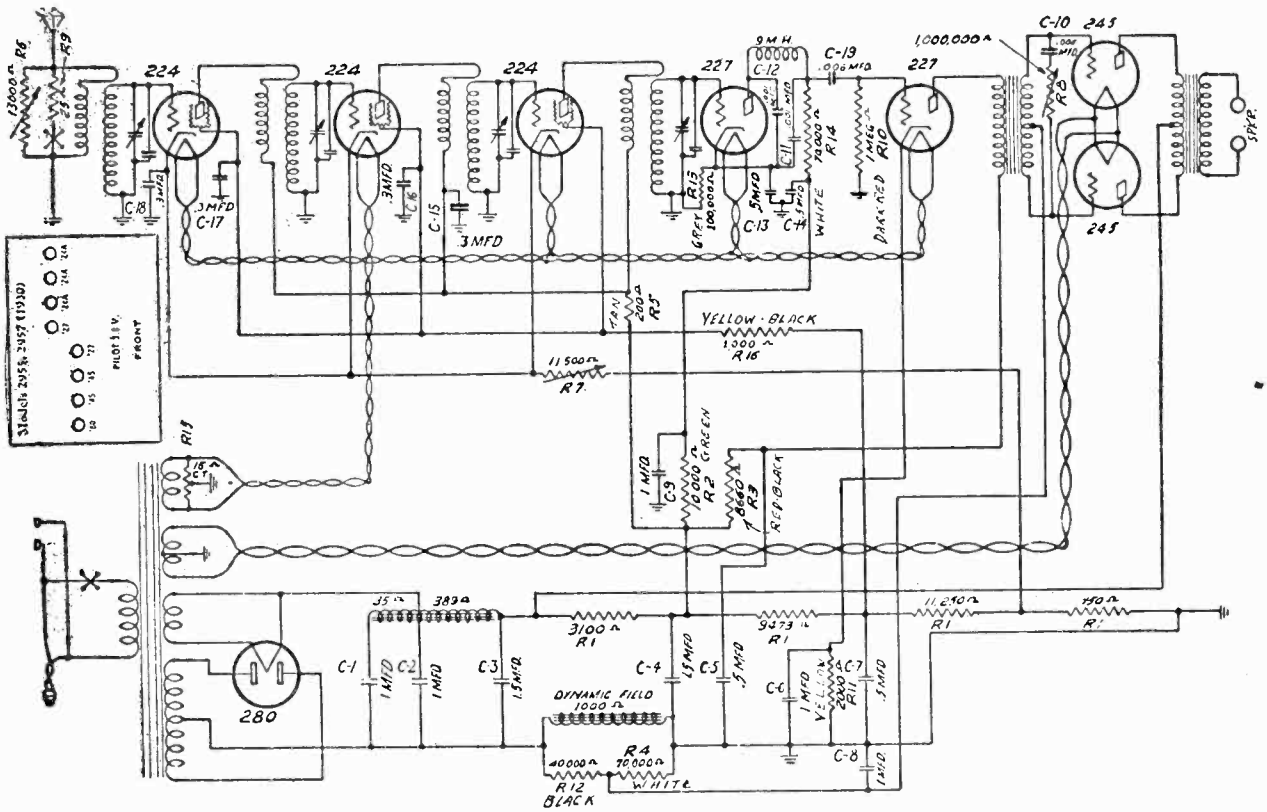
WELLS - GARDNER & CO.

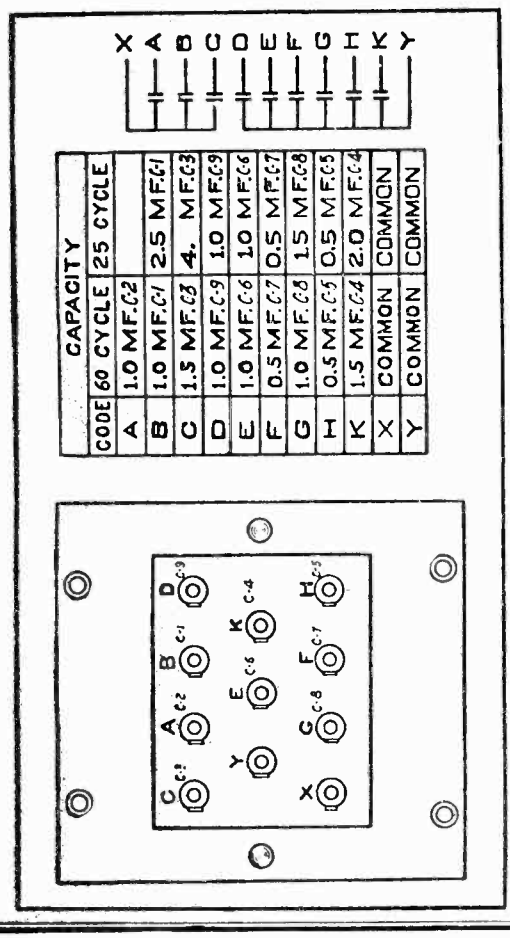
MODEL 72
Schematic



MODEL 80,82 AC
60 cycle
Schematic
Data

WELLS - GARDNER & CO.





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.

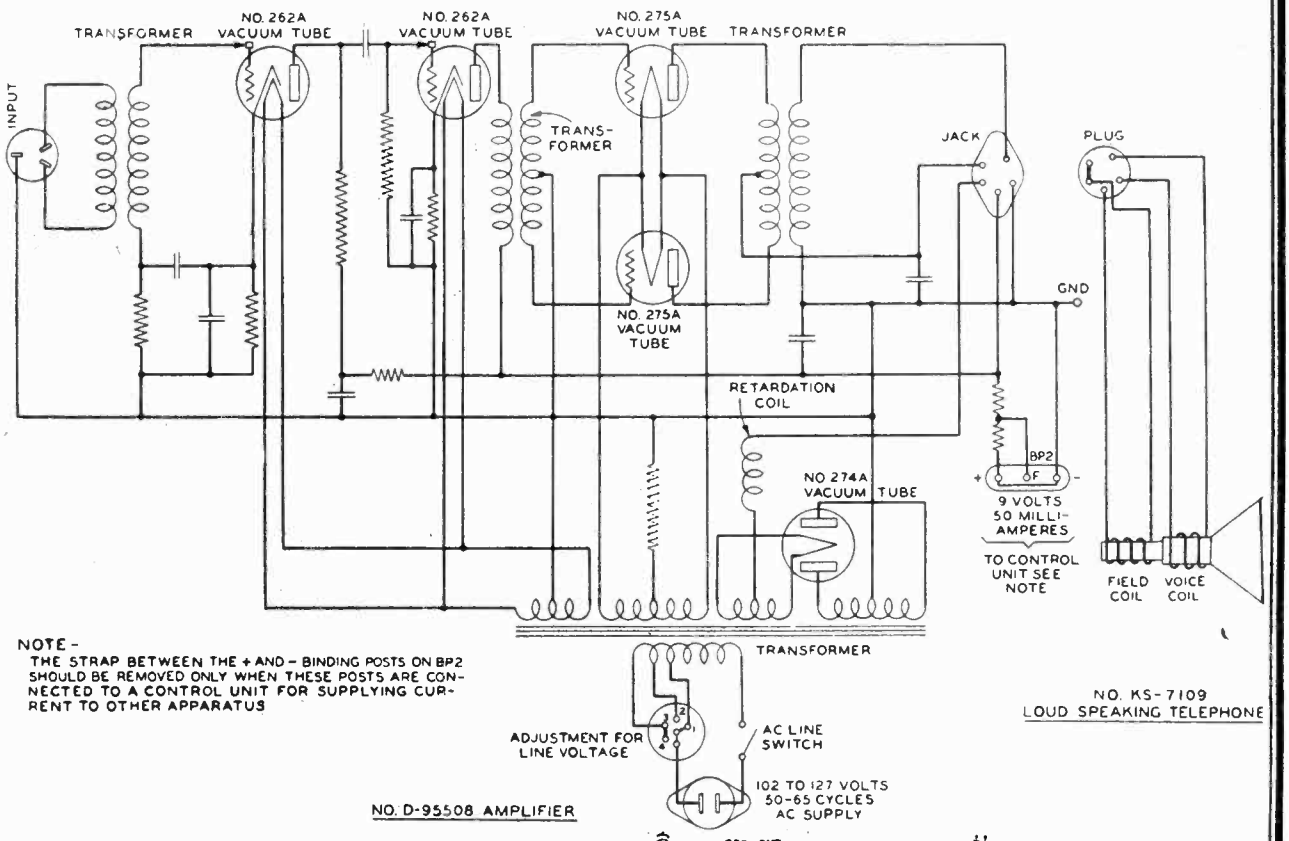
C11 and C12 are .001 mfd. moulded condensers, and are used in the detector plate circuit filter. C13 and C14 are the two units in the dual ½ mfd. by-pass condenser.

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.

MODEL D-95508
MODEL 8-B
MODEL 8-C

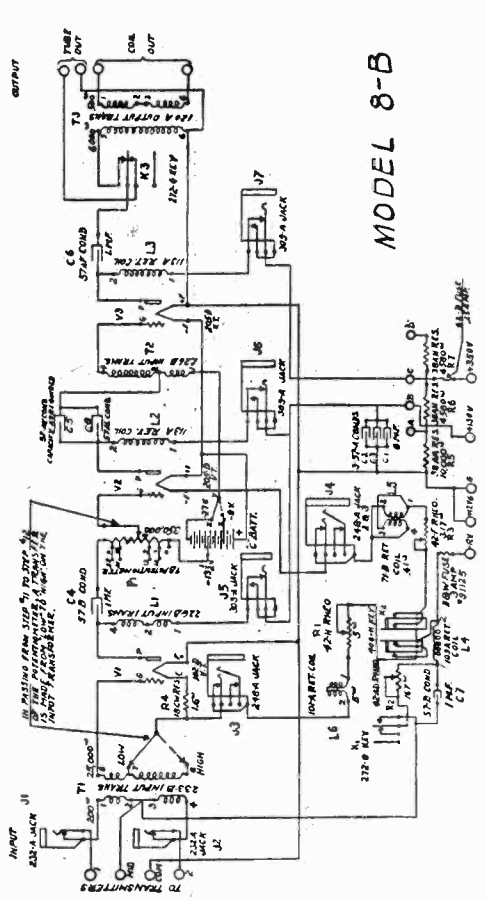
WESTERN ELECTRIC CO.

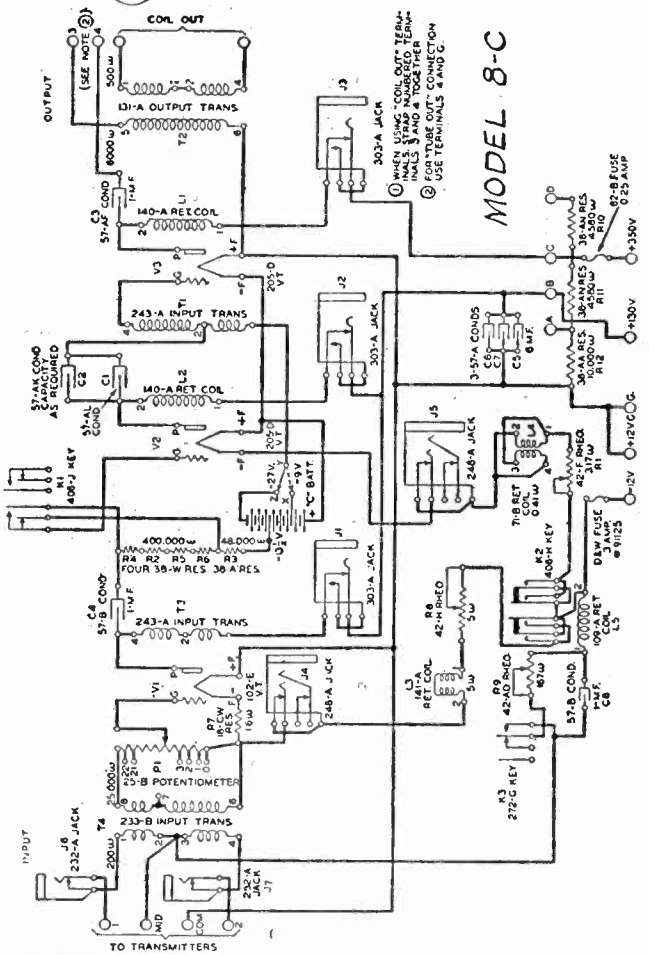


NOTE -
THE STRAP BETWEEN THE + AND - BINDING POSTS ON BP2 SHOULD BE REMOVED ONLY WHEN THESE POSTS ARE CONNECTED TO A CONTROL UNIT FOR SUPPLYING CURRENT TO OTHER APPARATUS

NO. KS-7109
LOUD SPEAKING TELEPHONE

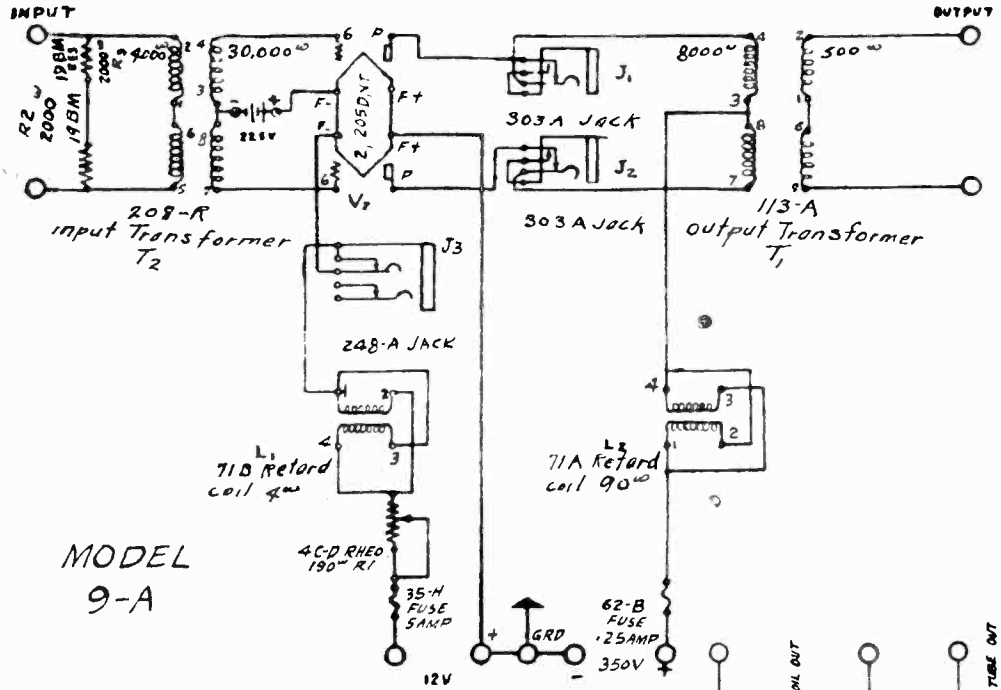
NO. D-95508 AMPLIFIER

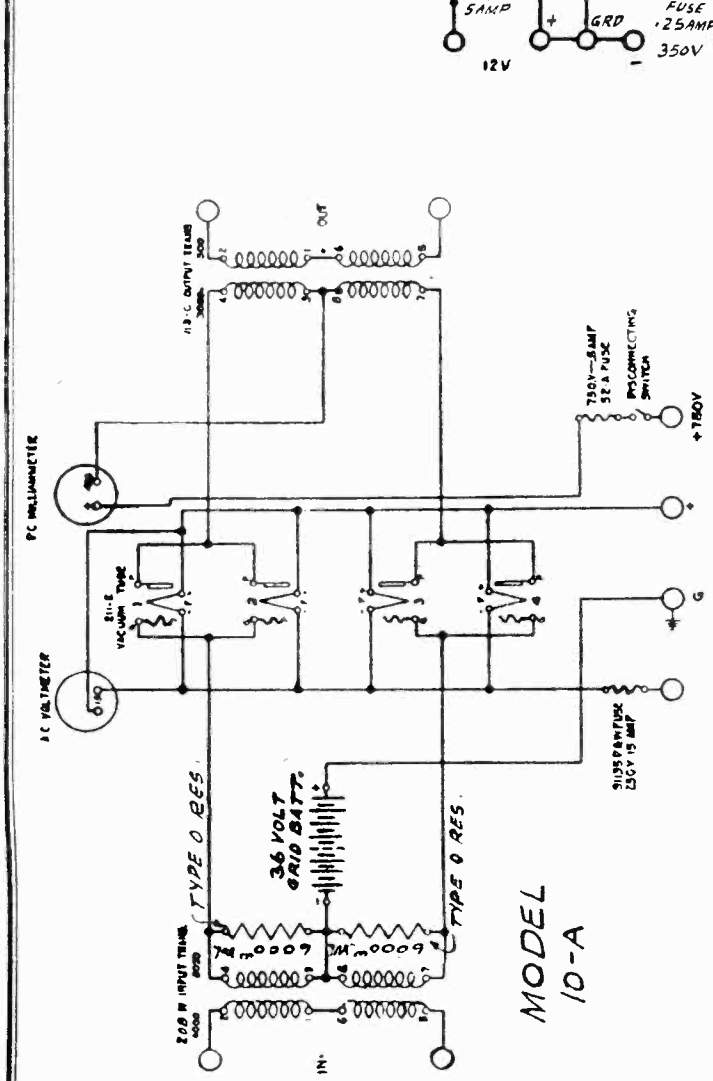


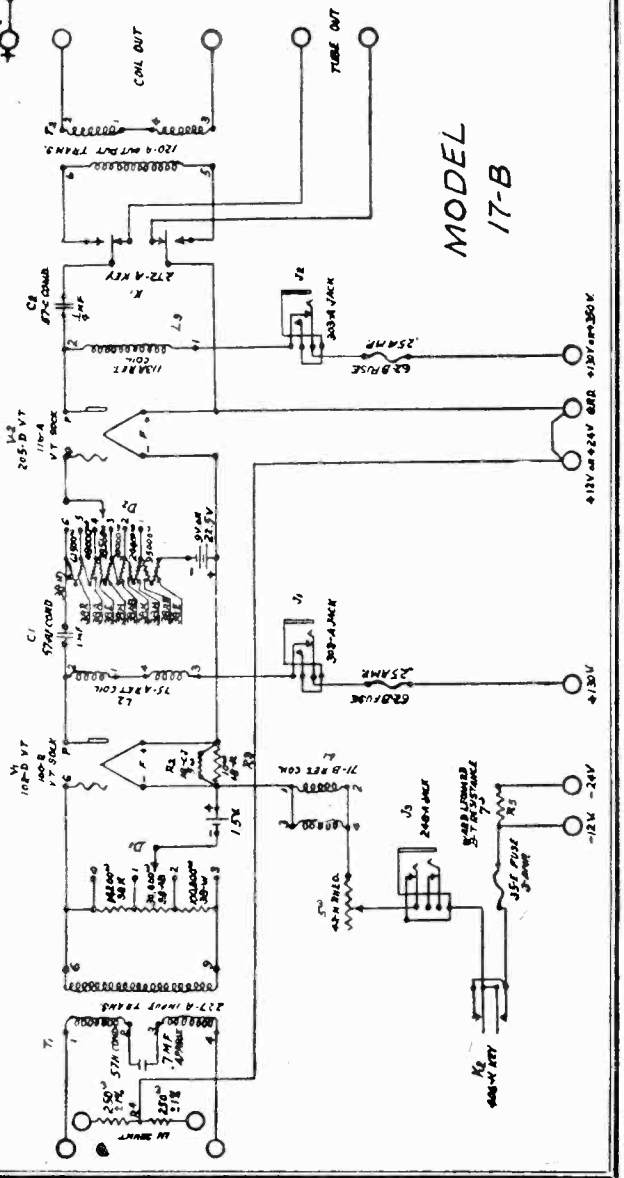


WESTERN ELECTRIC CO.

MODEL 9-A
MODEL 10-A
MODEL 17-B

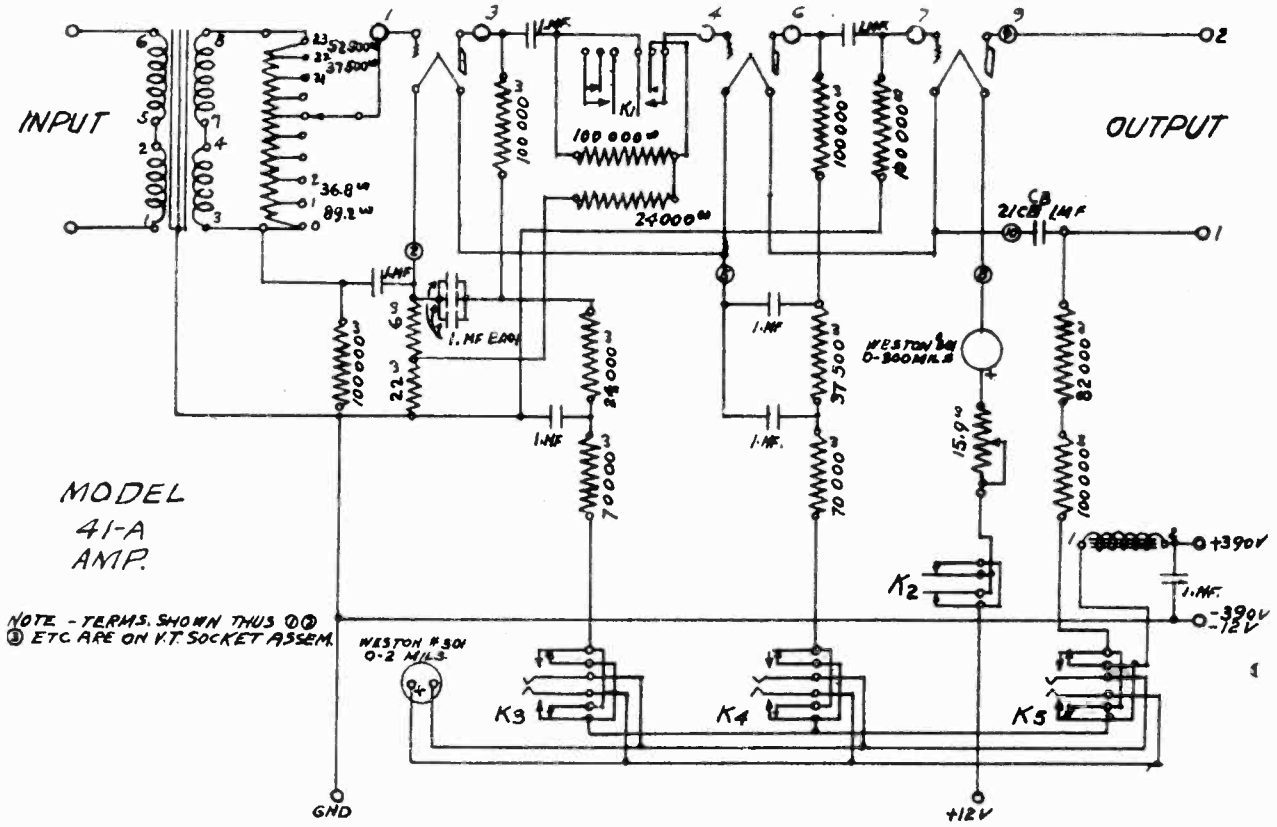


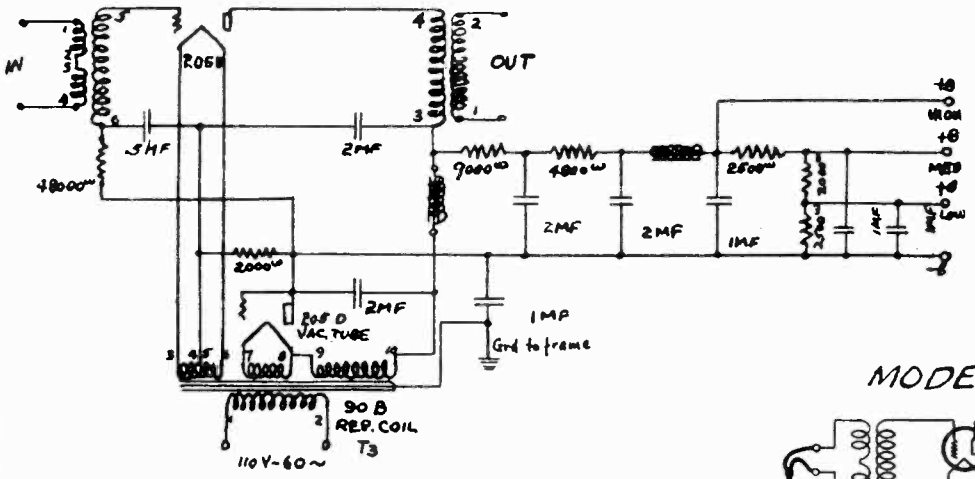




WESTERN ELECTRIC CO.

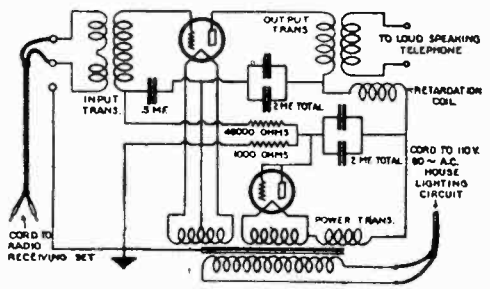
MODEL 41-A
MODEL 45-A
MODEL 25-B





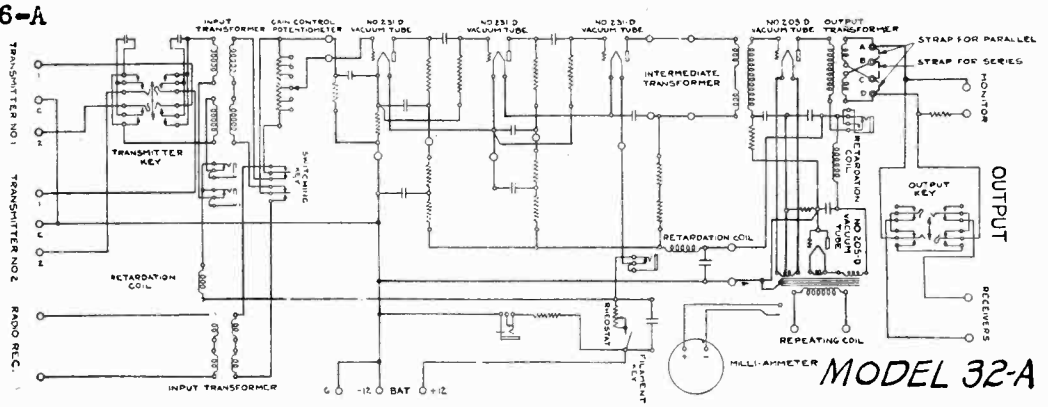
MODEL 45-A

MODEL 25-B

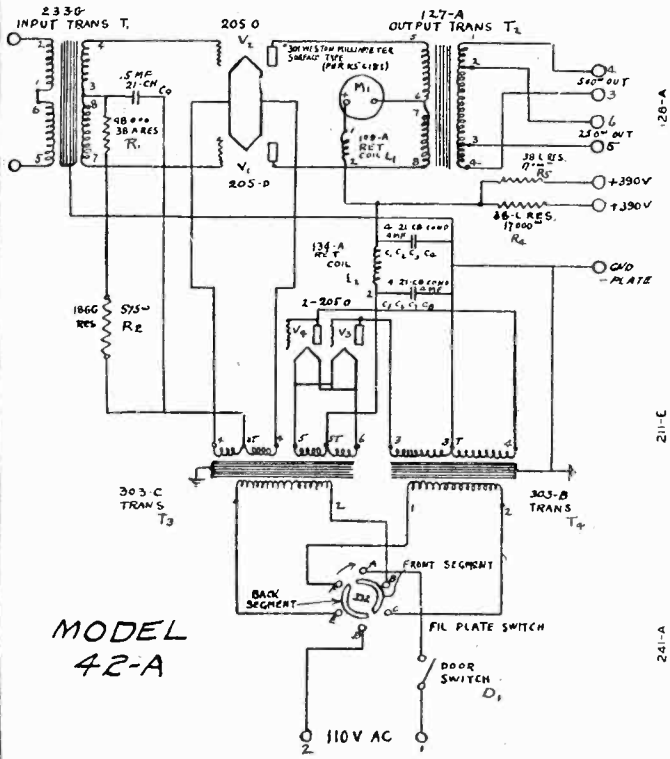


MODEL 32-A
MODEL 42-A
MODEL 43-A
MODEL 46-A

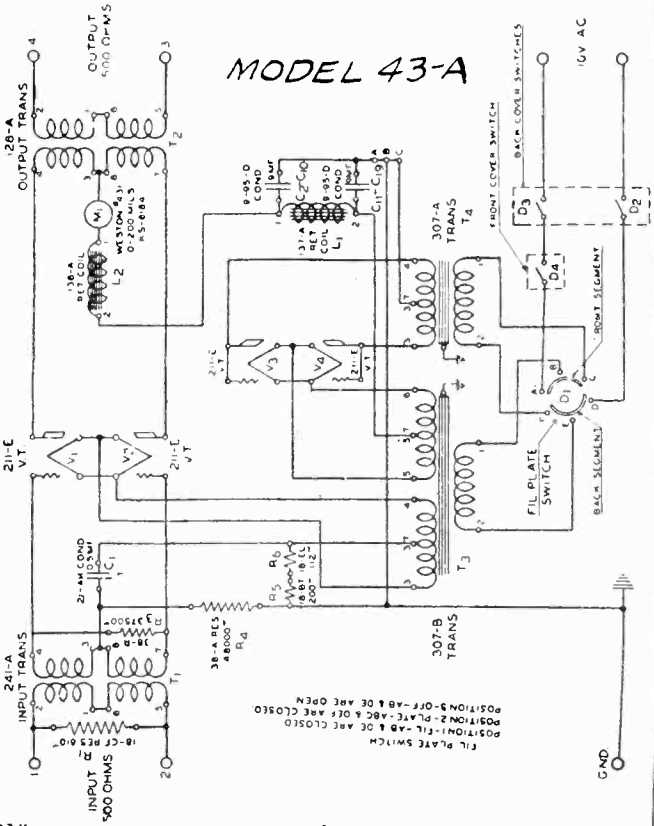
WESTERN ELECTRIC CO.

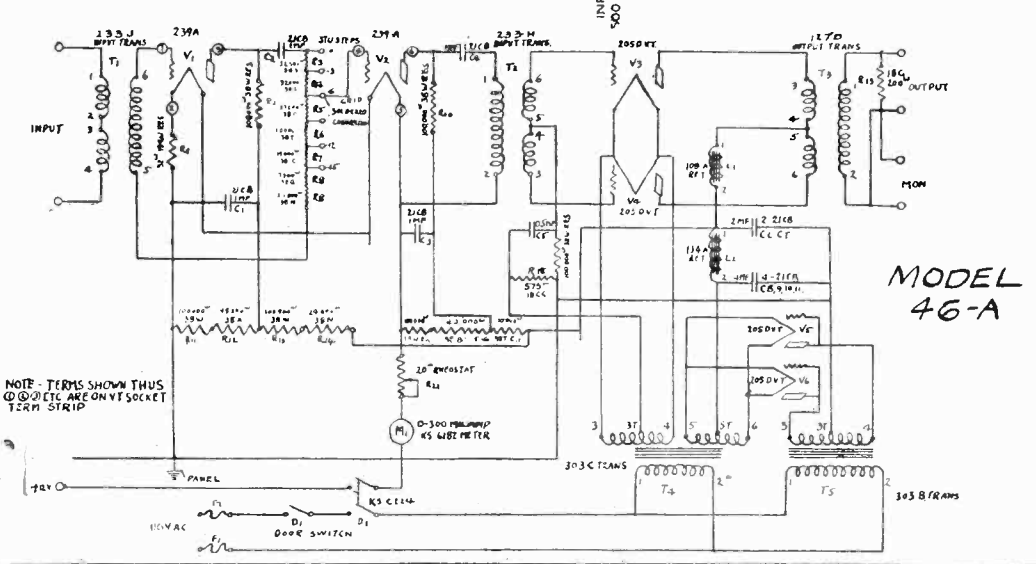


MODEL 32-A



MODEL 42-A

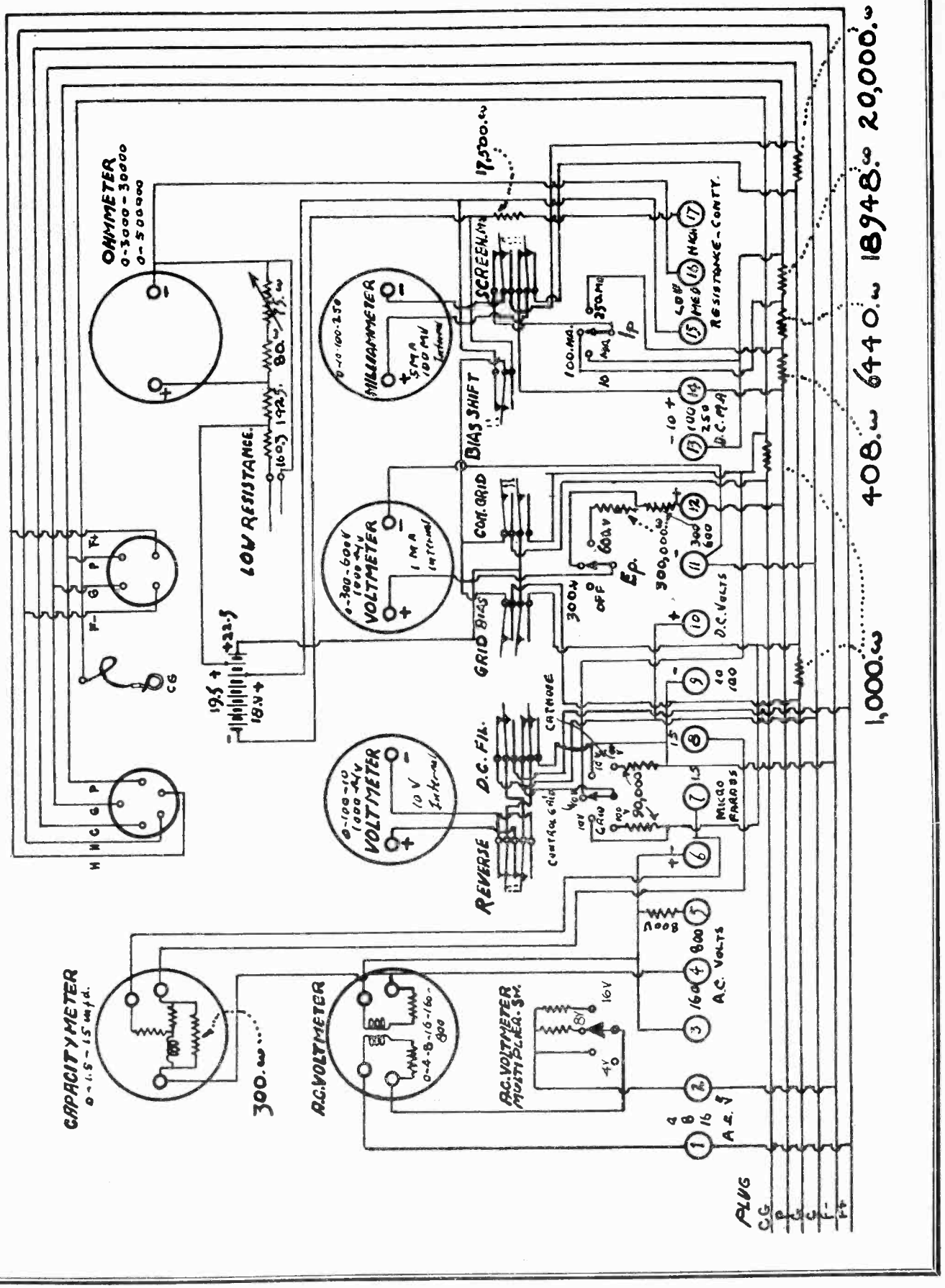




MODEL 46-A

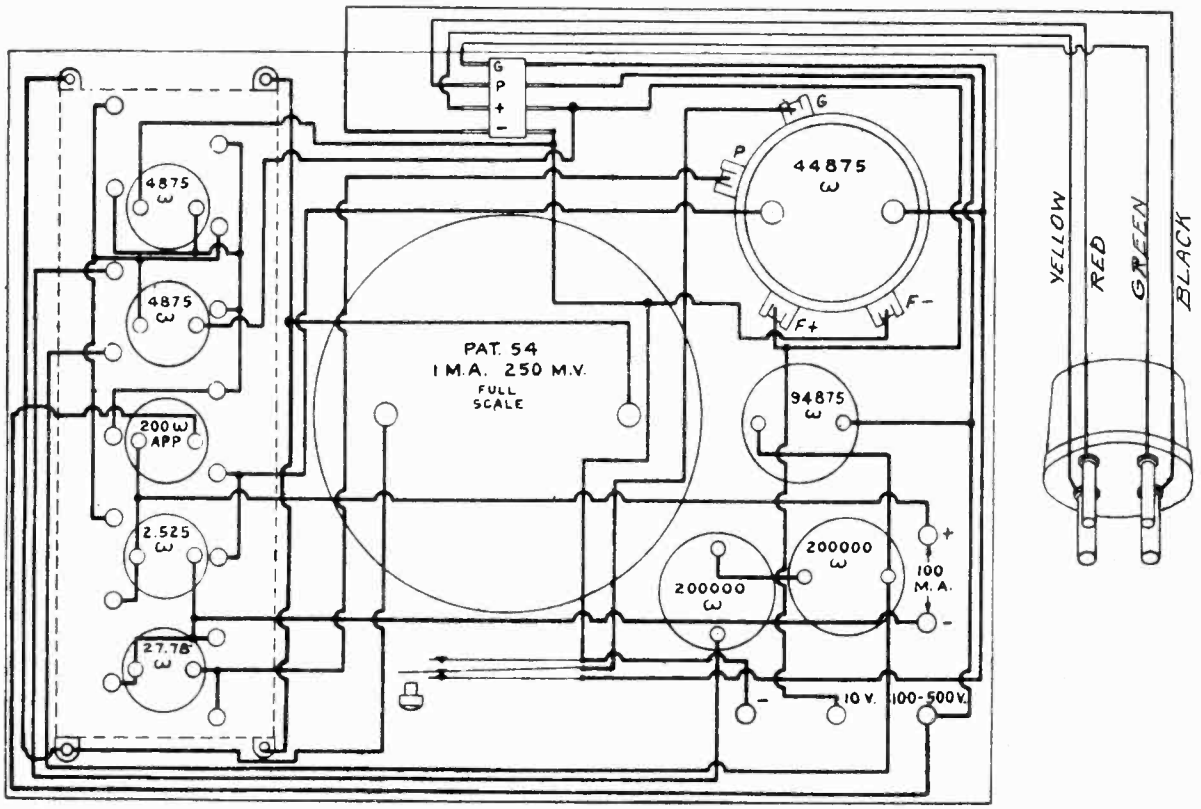
WESTON ELECTRICAL INSTRUM'T CORP.

MODEL Jewell
Test Panel

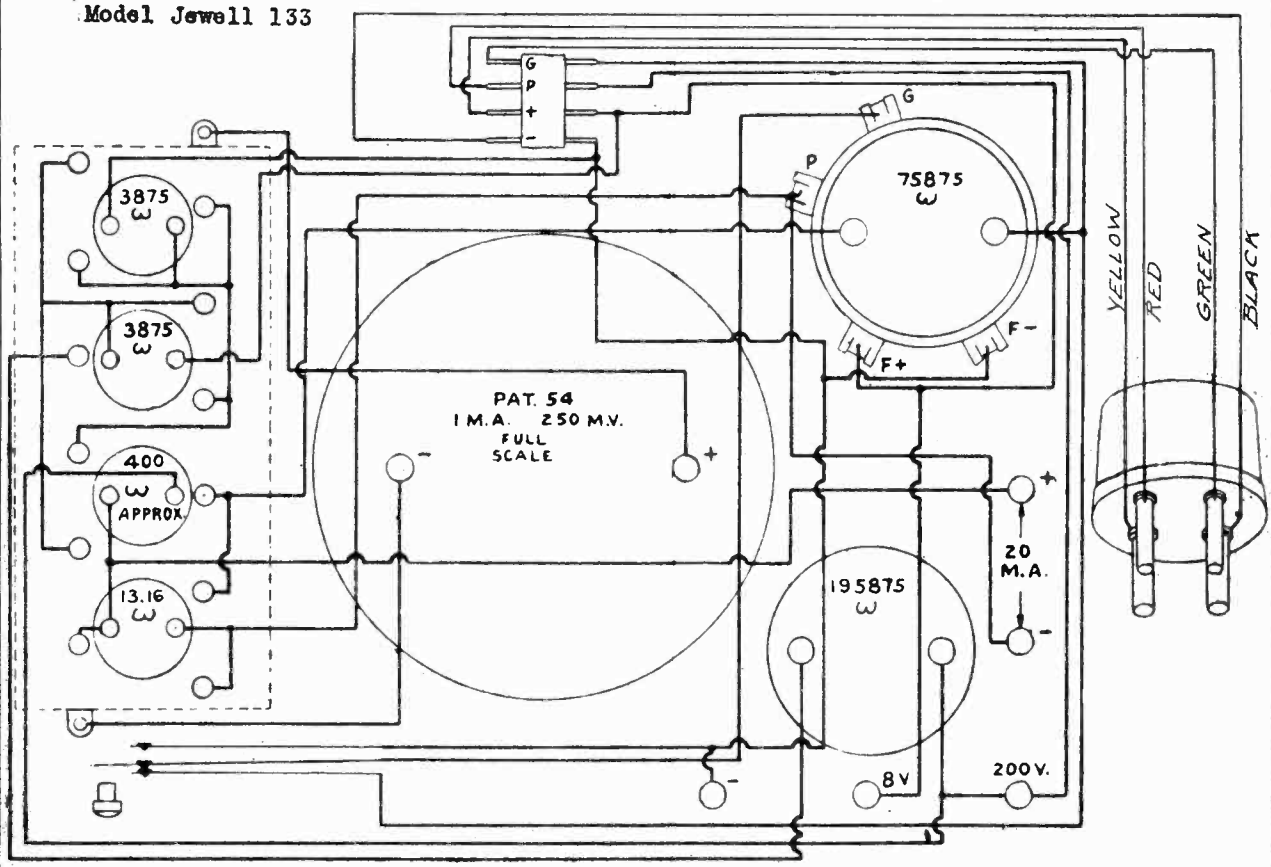


MODEL Jewell 133
MODEL Jewell 133-A

WESTON ELECTRICAL INSTRUM'T CORP.



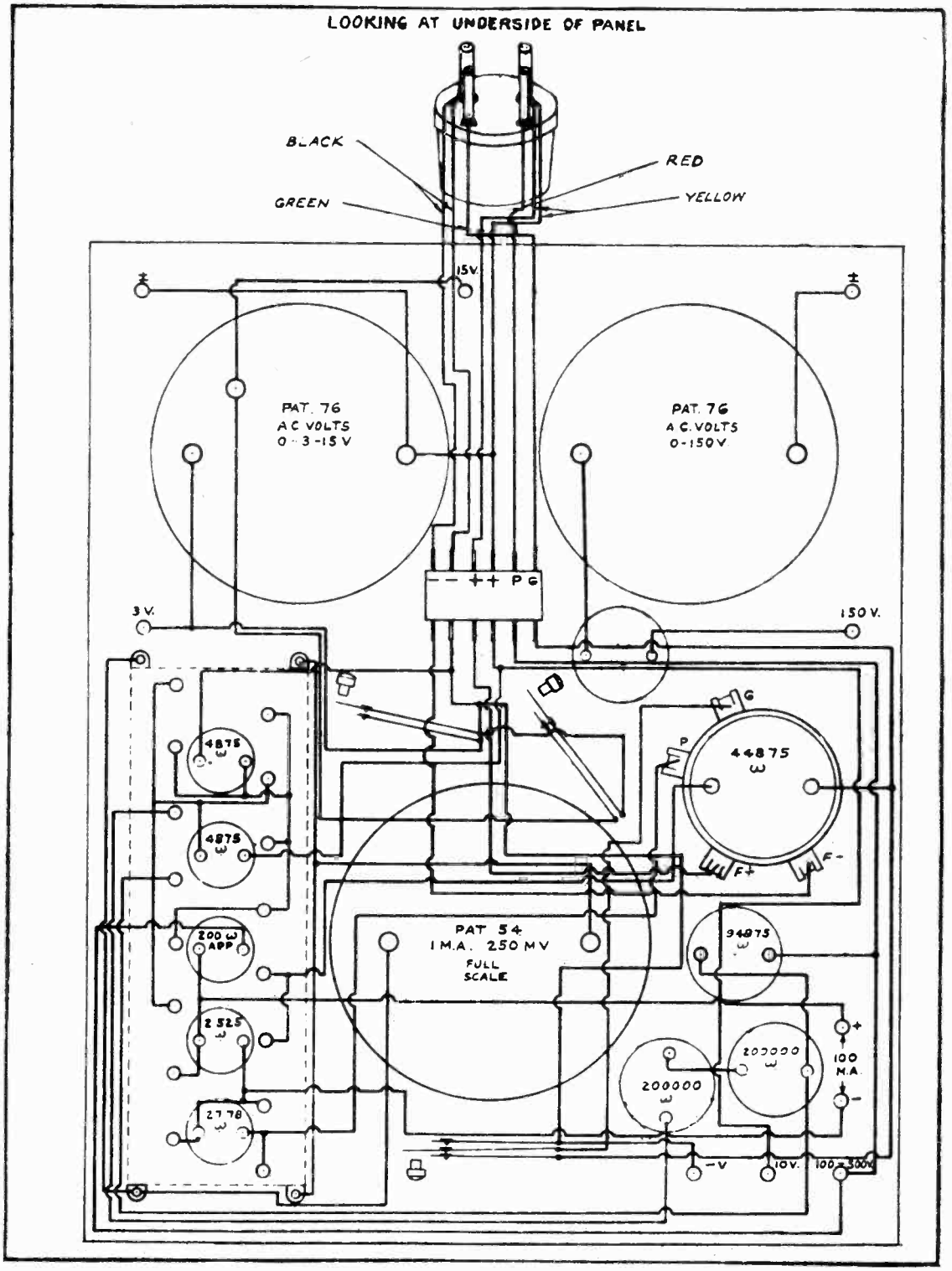
Model Jewell 133



Model Jewell 133-A

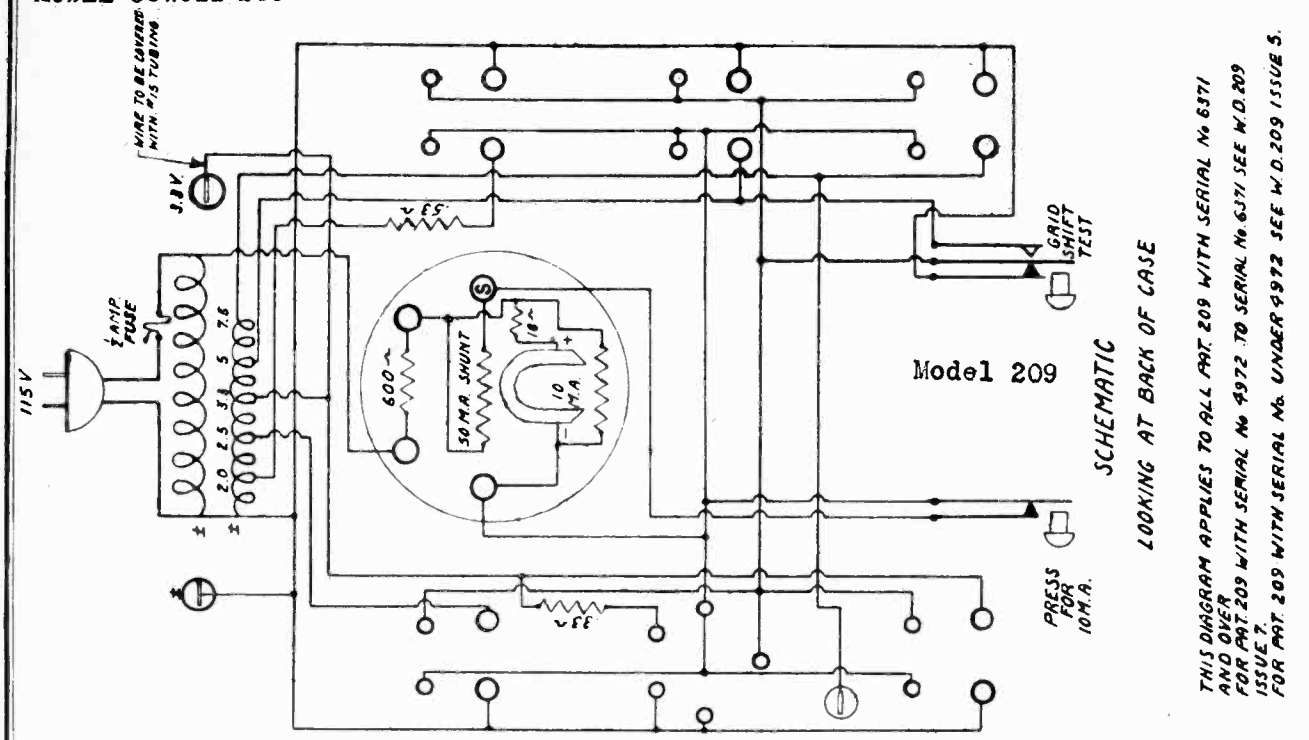
MODEL Jewell 137

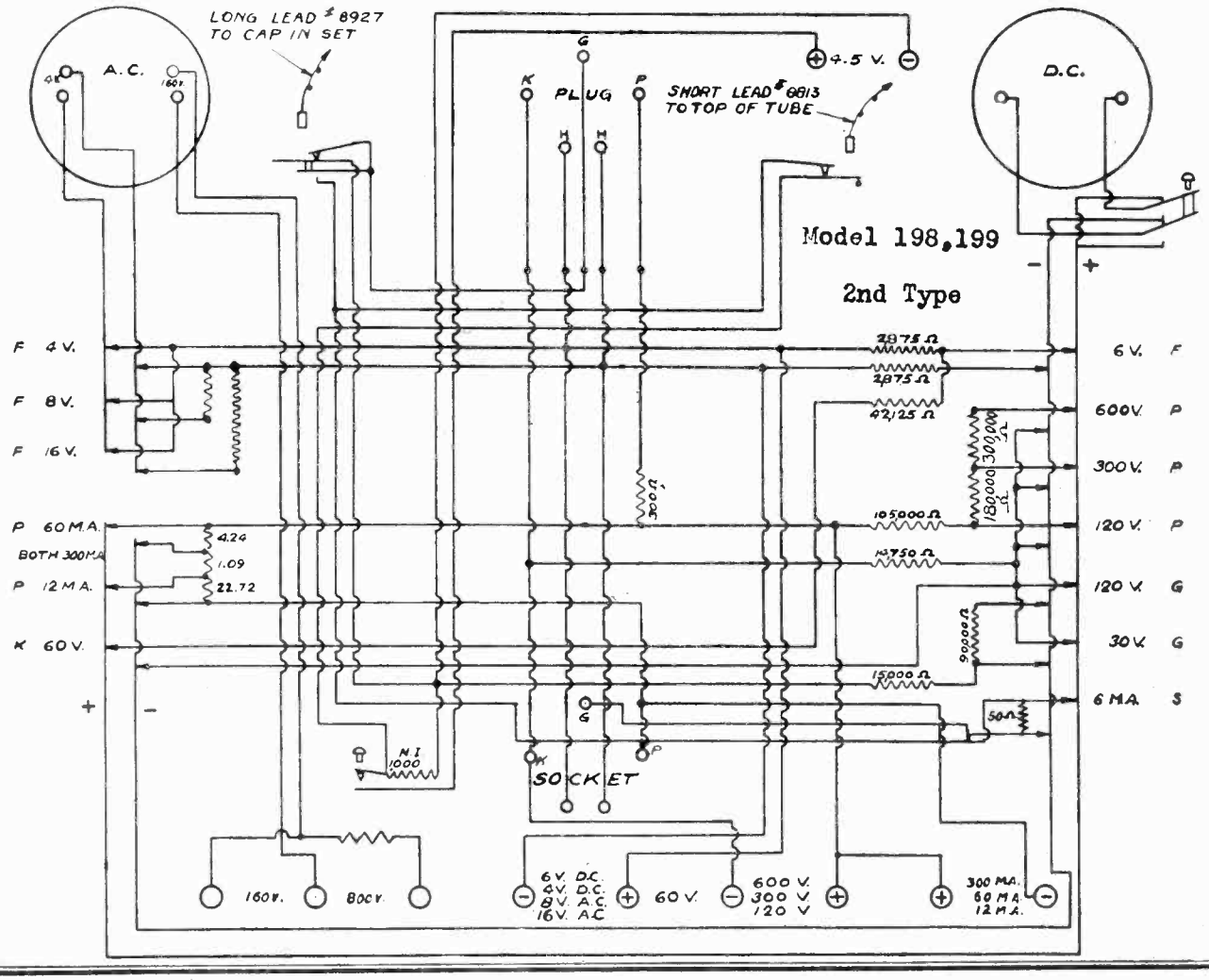
WESTON ELECTRICAL INSTRUM'T CORP.



MODEL Jewell
198,199
2nd Type
MODEL Jewell 209

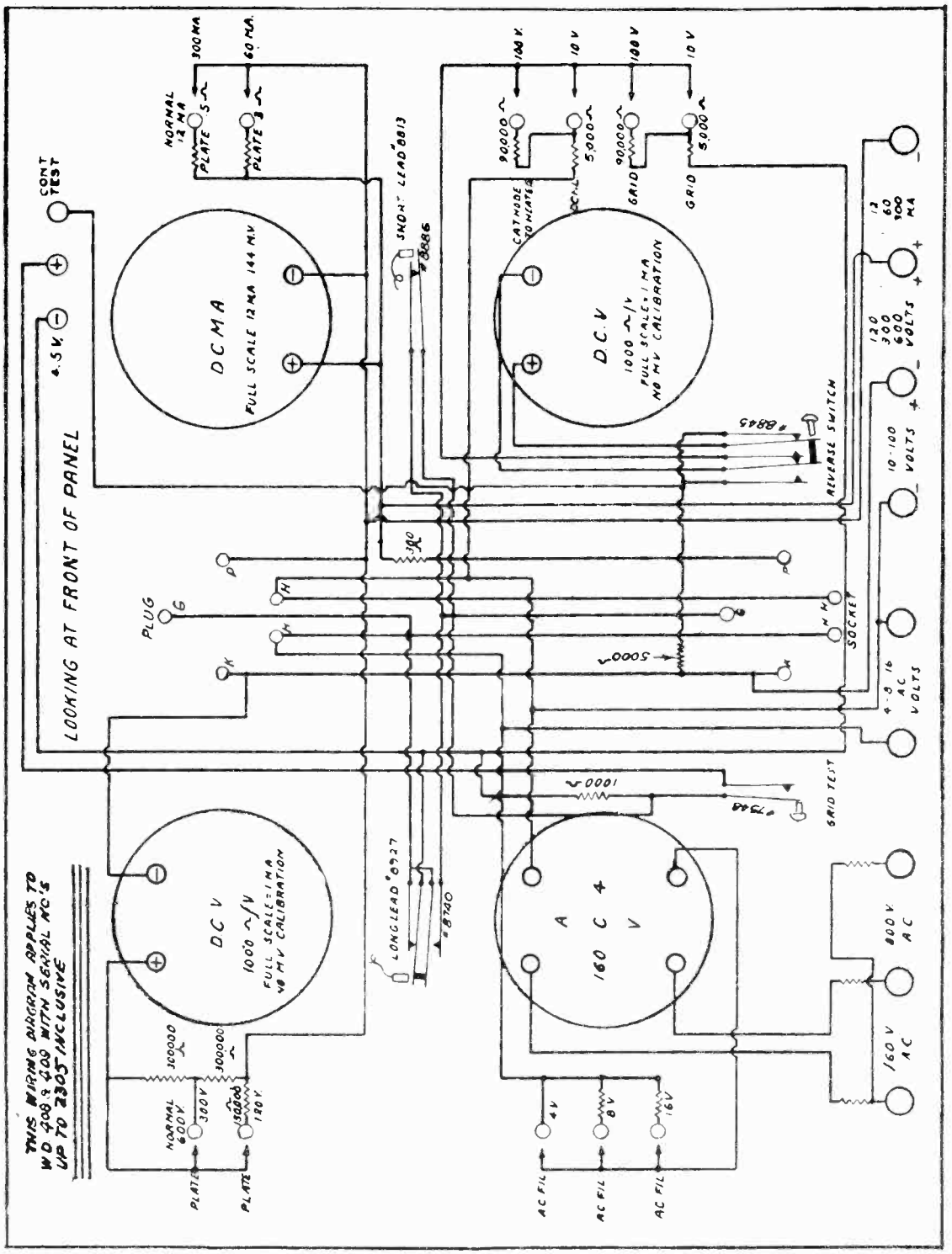
WESTON ELECTRICAL INSTRUM'T CORP.





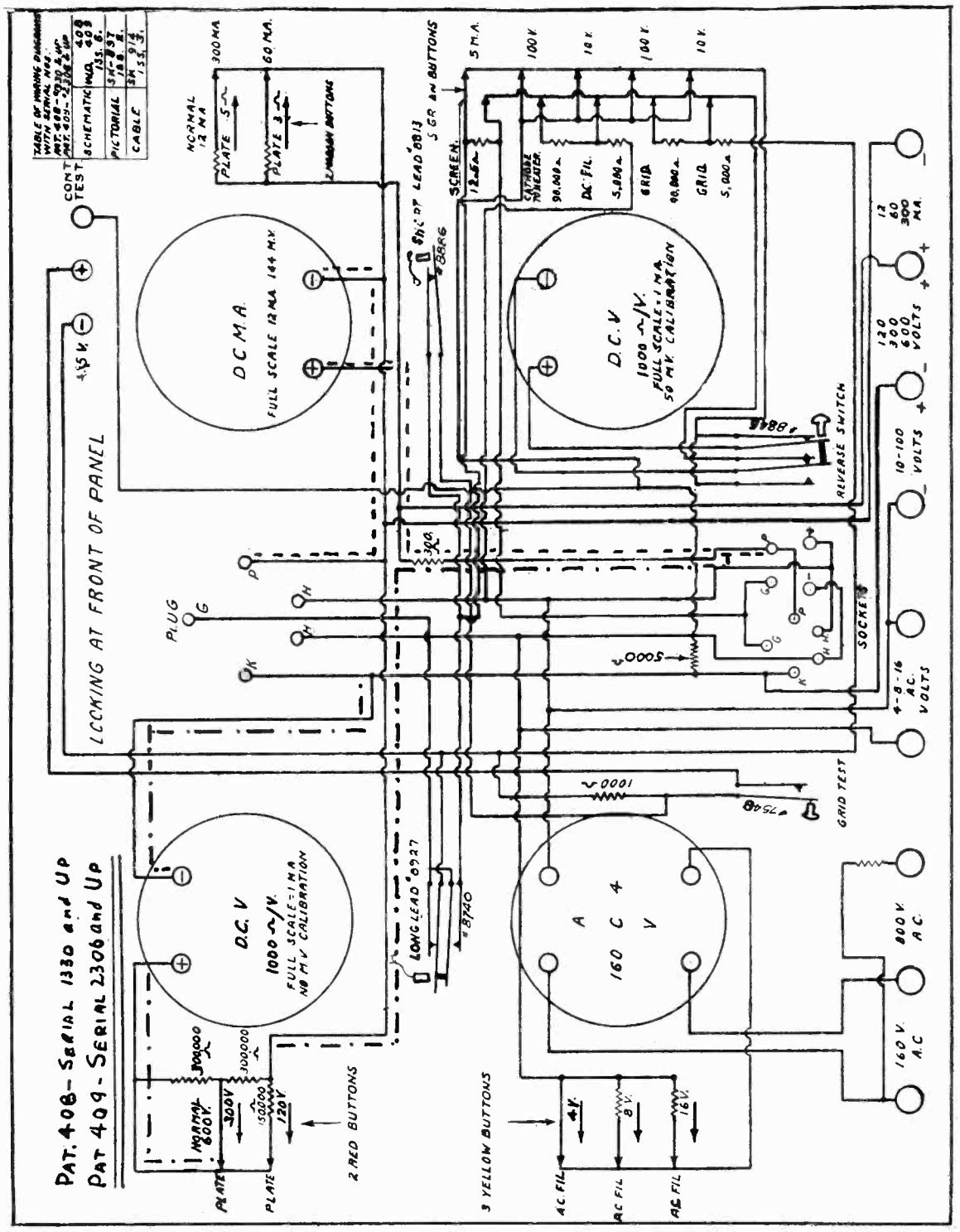
WESTON ELECTRICAL INSTRUM'T CORP.

MODEL Jewell
408, 409
1st Type



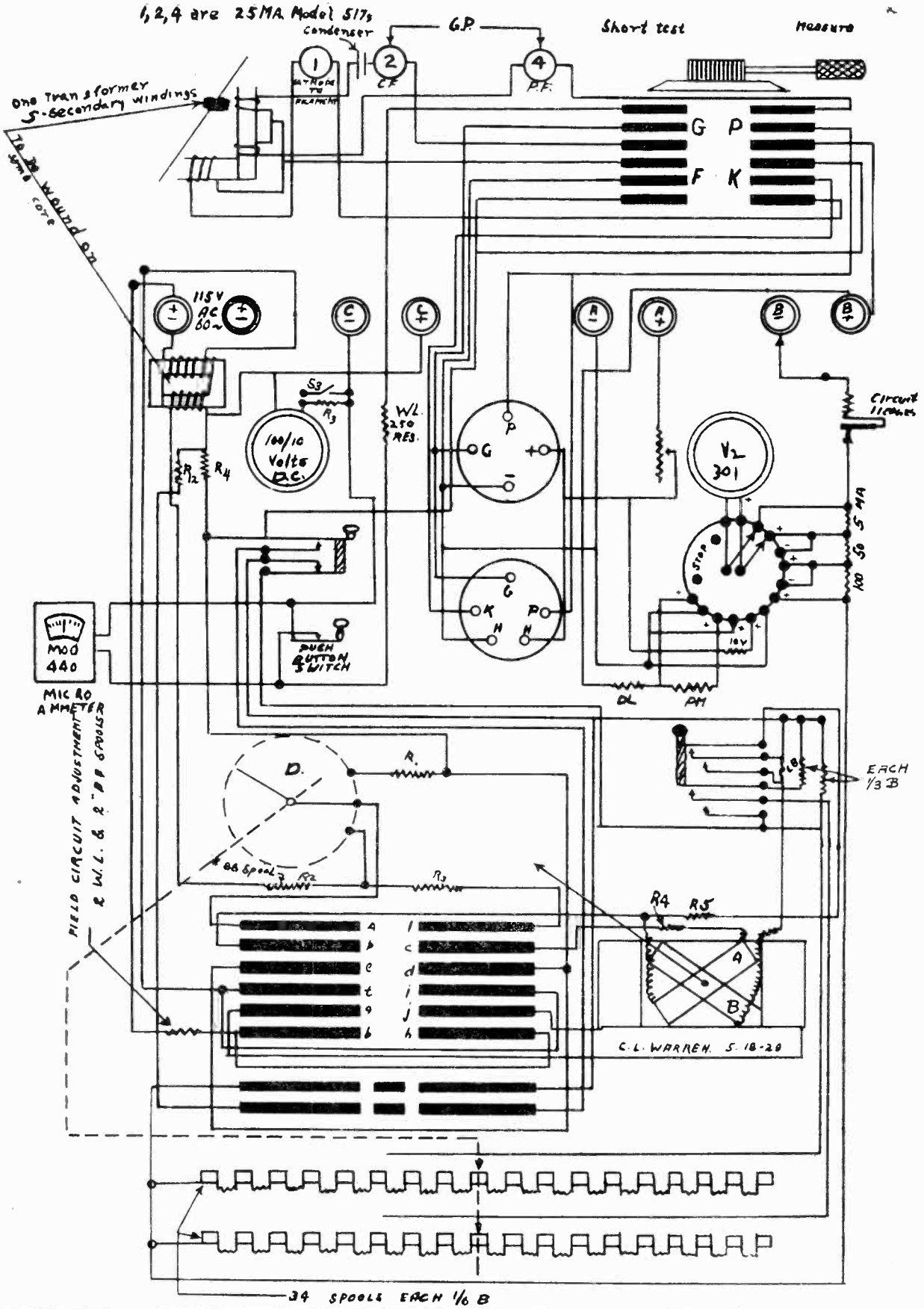
MODEL Jewell
408, 409
2nd Type

WESTON ELECTRICAL INSTRUM'T CORP.



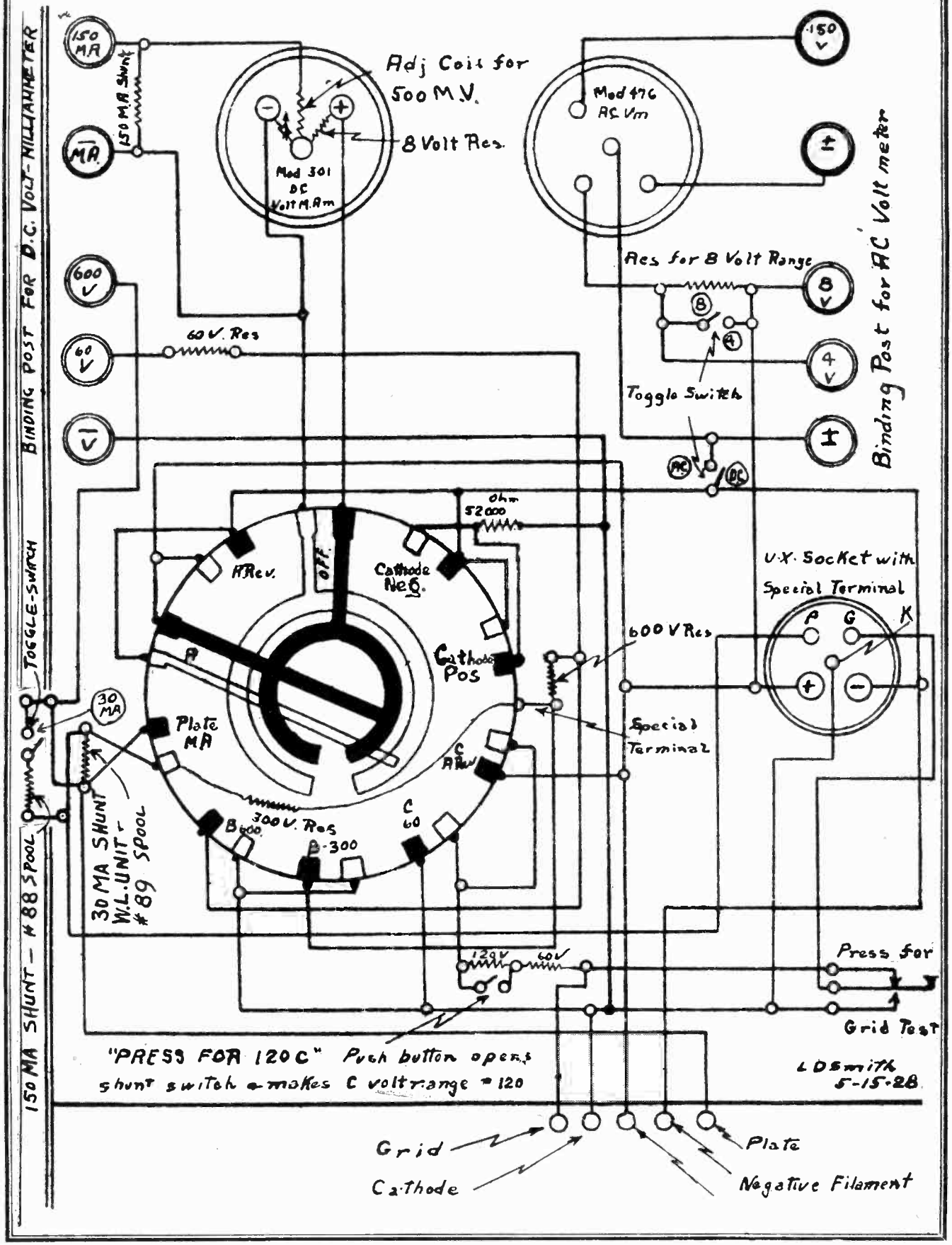
MODEL Weston.
526 Type 7

WESTON ELECTRICAL INSTRUM'T CORP.



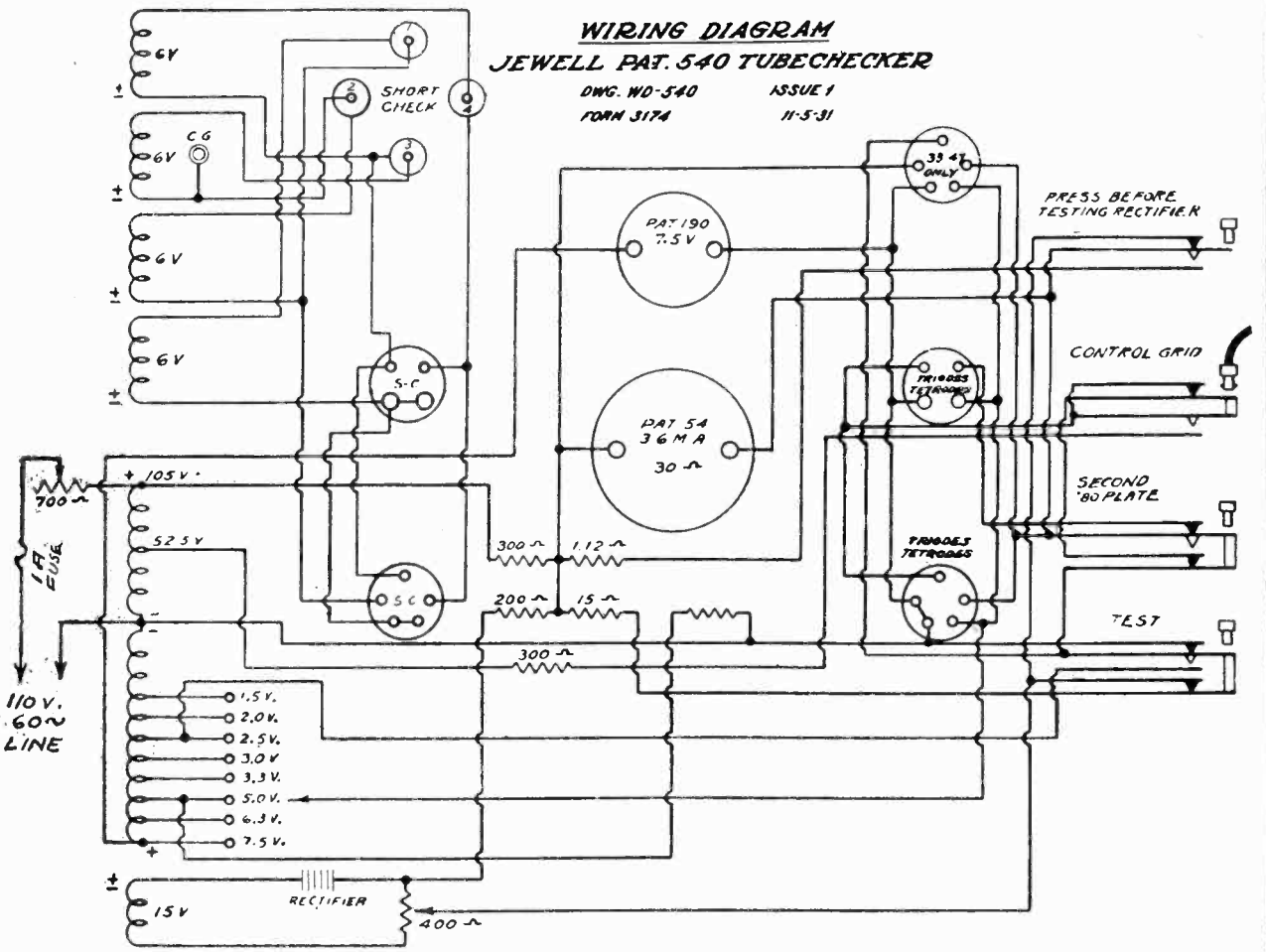
MODEL Weston
537

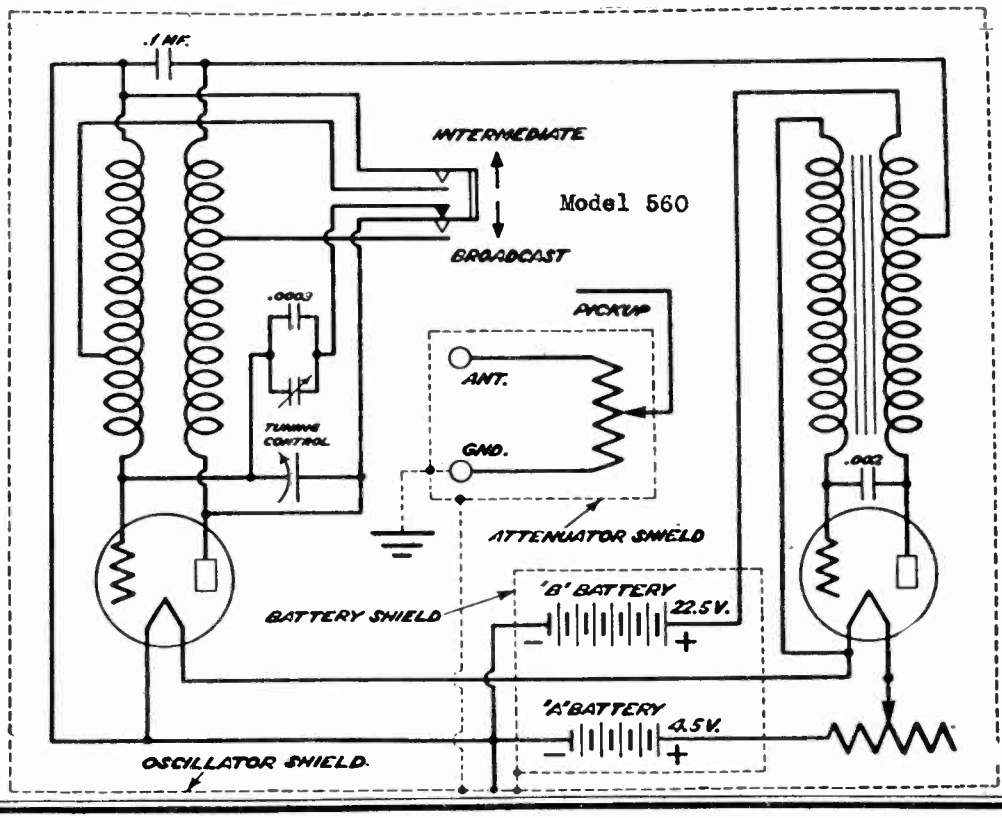
WESTON ELECTRICAL INSTRUM'T CORP.



WESTON ELECTRICAL INSTRUM'T CORP.

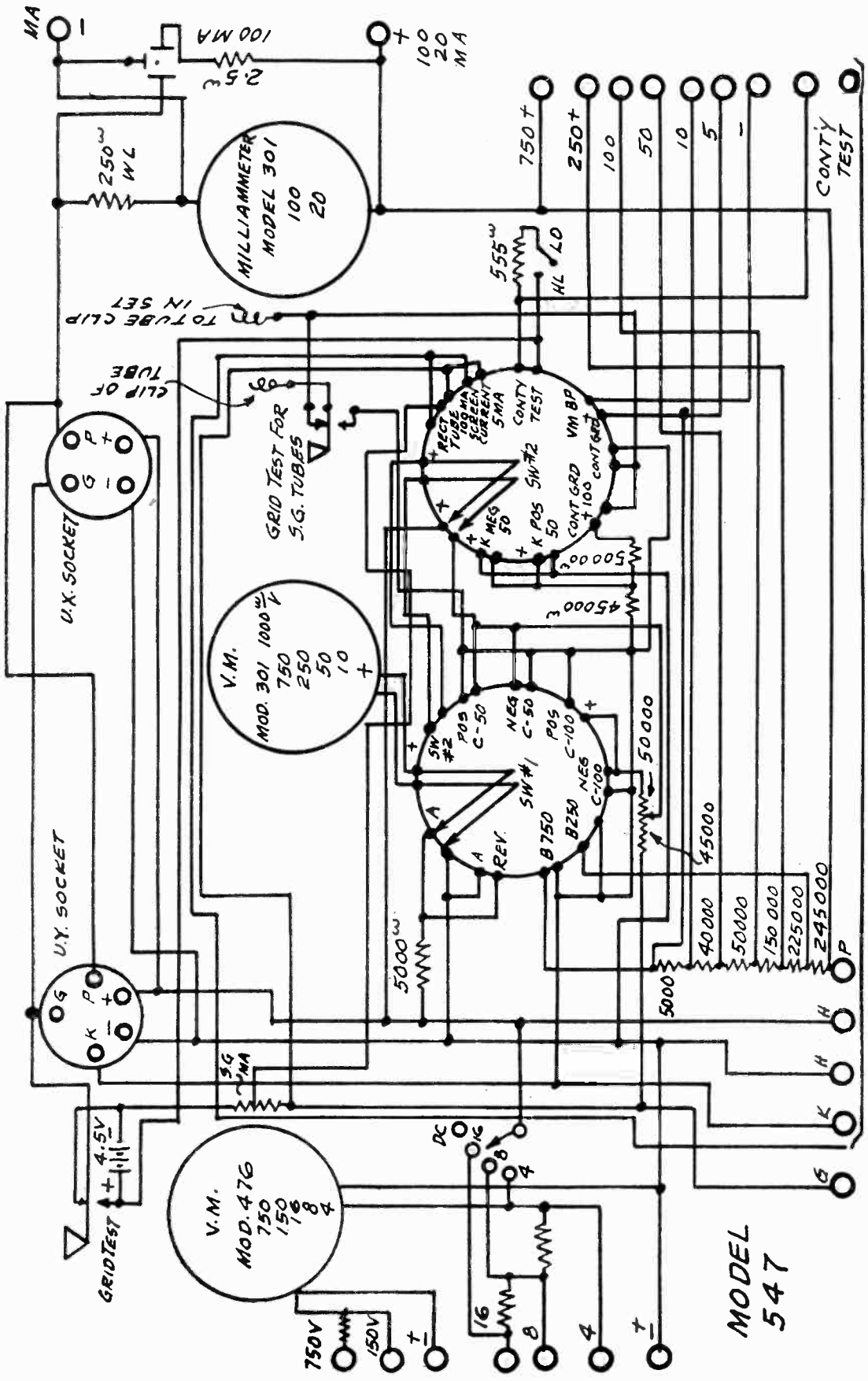
MODEL Jewell 540
MODEL Jewell 560



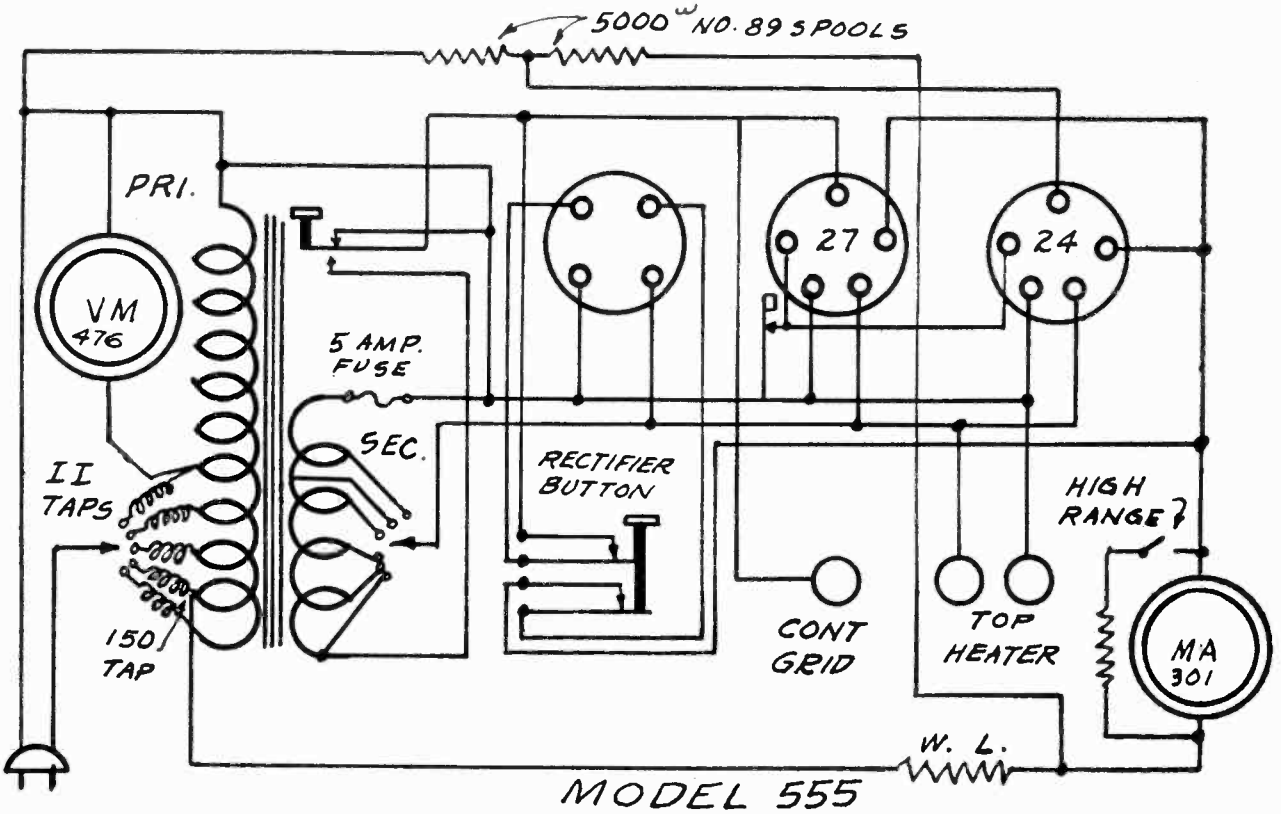


MODEL Weston
547

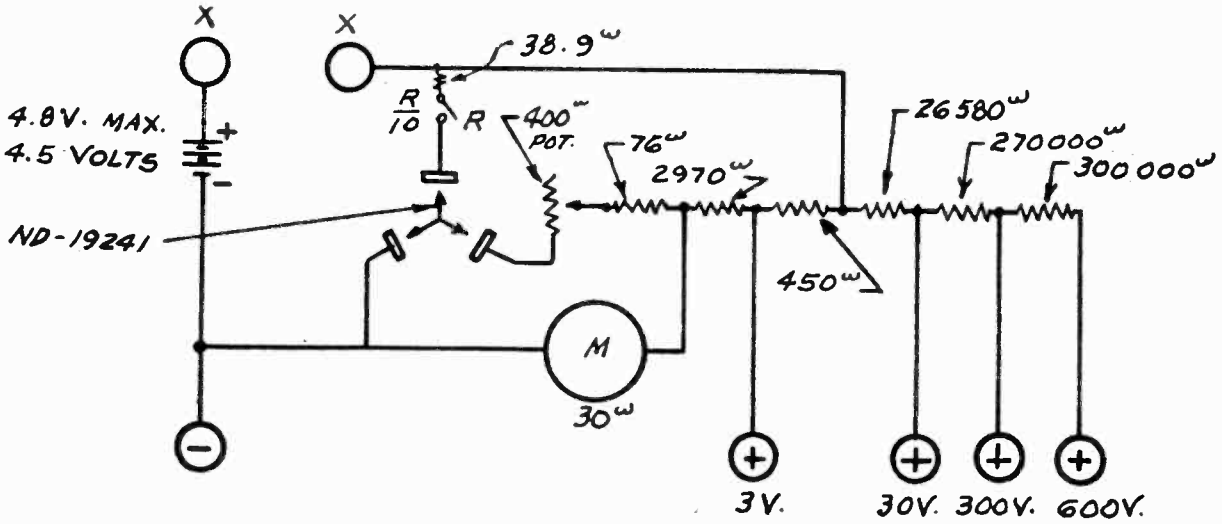
WESTON ELECTRICAL INSTRUM'T CORP.



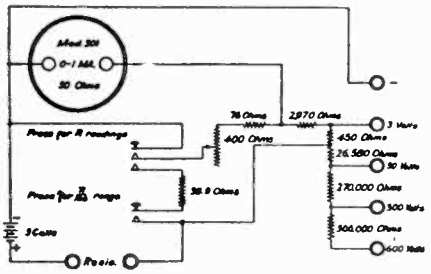
MODEL Weston 555
MODEL Weston 564 WESTON ELECTRICAL INSTRUM'T CORP.



MODEL 555



MODEL 564 OHMMETER & VOLTMETER

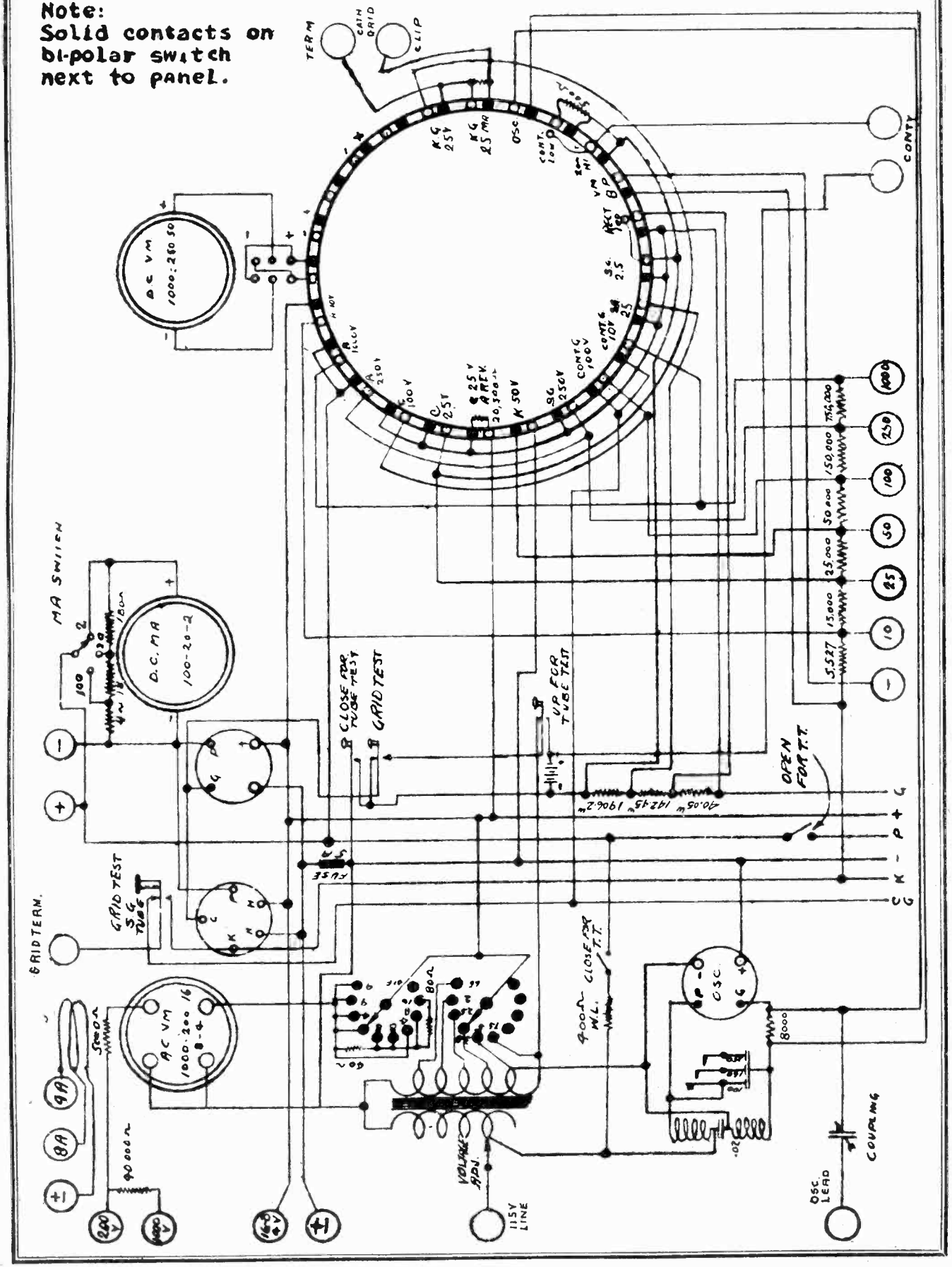


Schematic diagram of the Weston Model 564 Volt-Ohmmeter. Note the connections of the toggle switches in the center

MODEL Weston 565

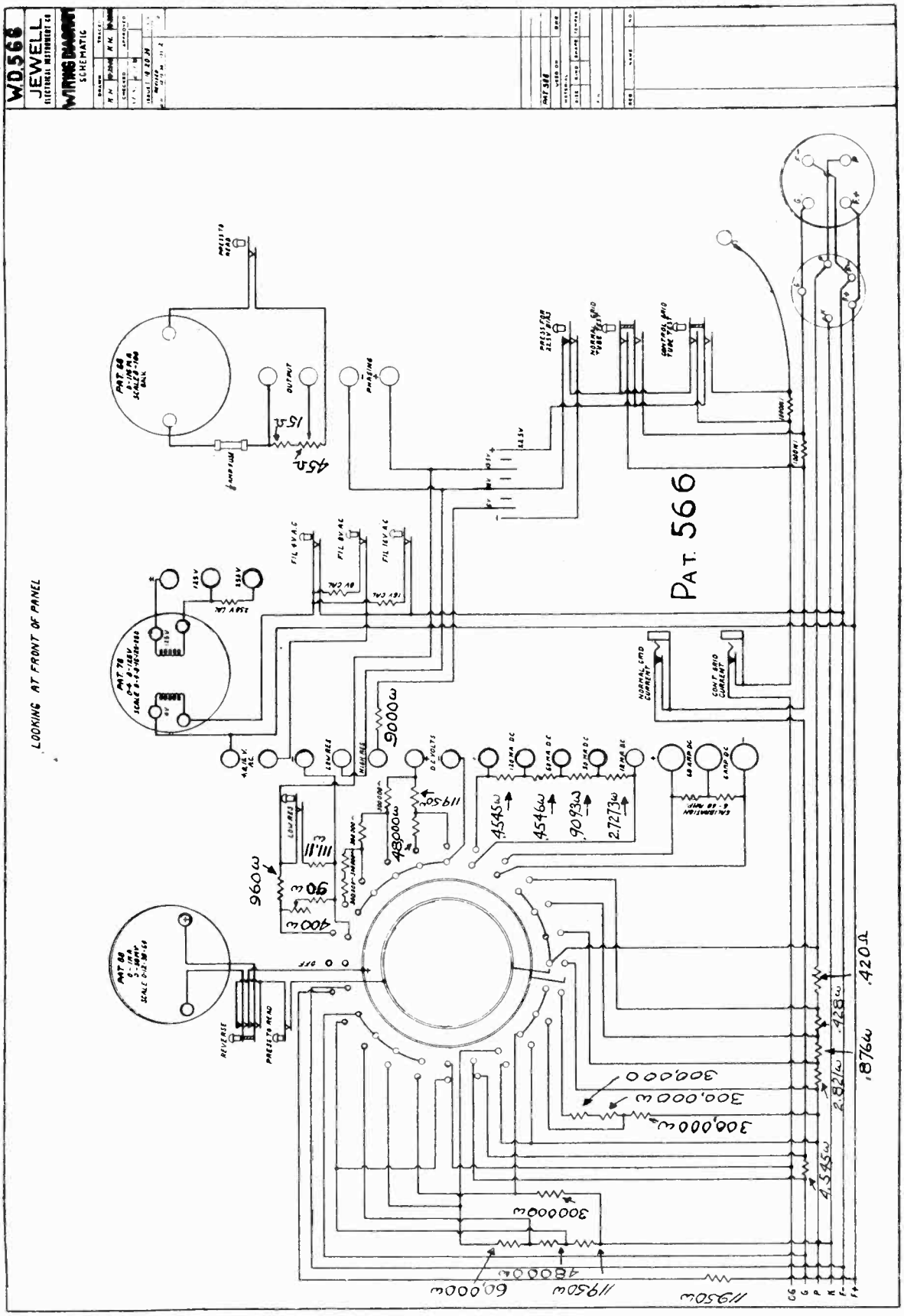
WESTON ELECTRICAL INSTRUM'T CORP.

Note:
Solid contacts on bi-polar switch next to panel.



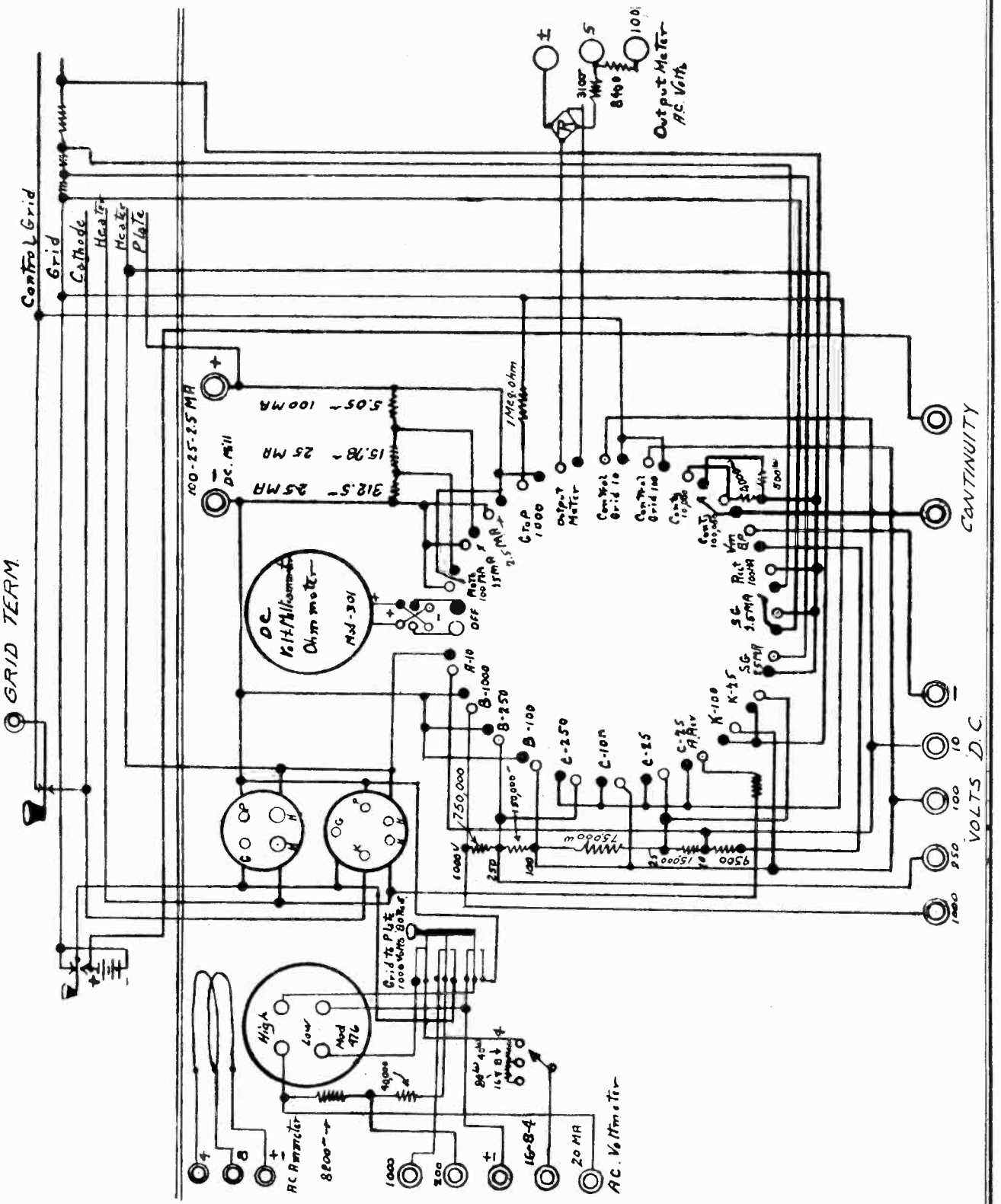
WESTON ELECTRICAL INSTRUM'T CORP.

MODEL Jewell
W D 566



MODEL Weston 566

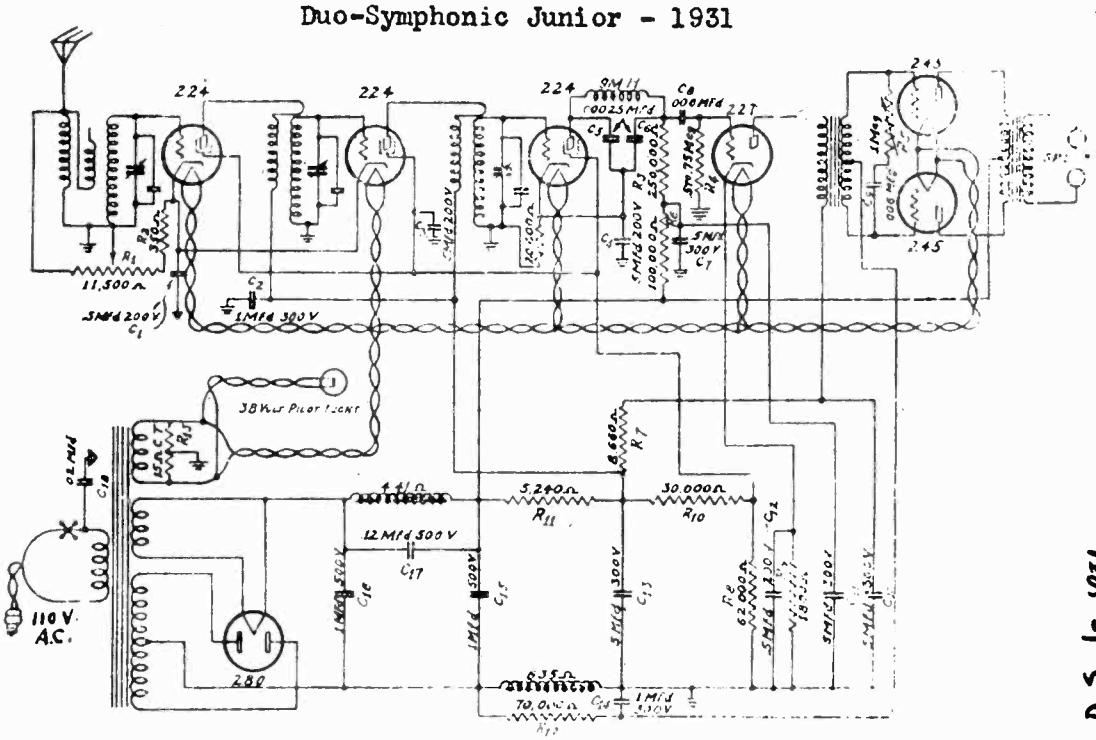
WESTON ELECTRICAL INSTRUM'T CORP.



WHOLESALE RADIO SERVICE CO., INC.

MODEL Duo-Symphonic Junior 1931
MODEL Great Duo-Symphonic

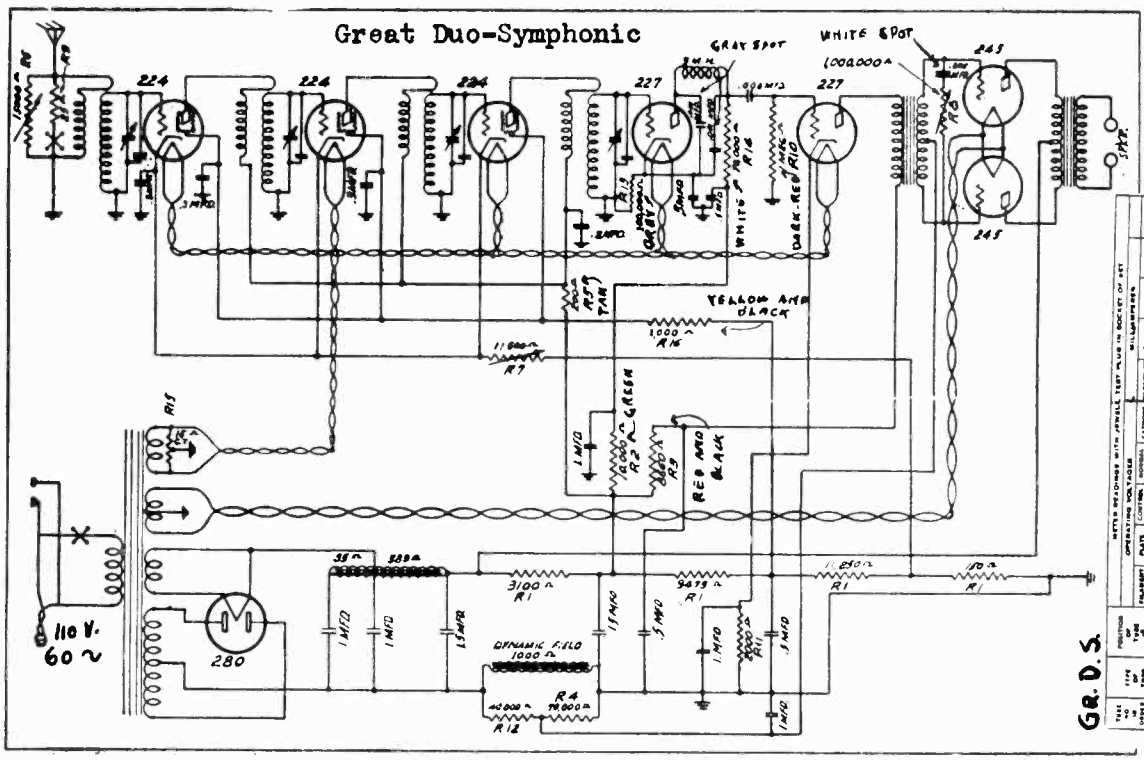
Duo-Symphonic Junior - 1931



Line Voltage 120. Vol. Cntrl Full

D.S. Jr 1931

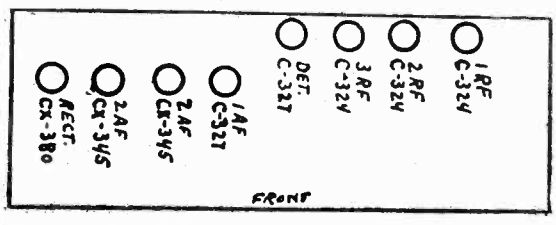
Great Duo-Symphonic



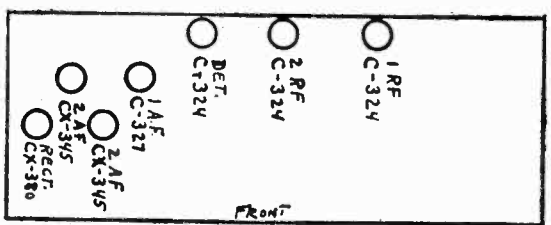
Line Voltage 117. Vol. Cntrl Full

GR.D.S.

Great Duo-Symphonic

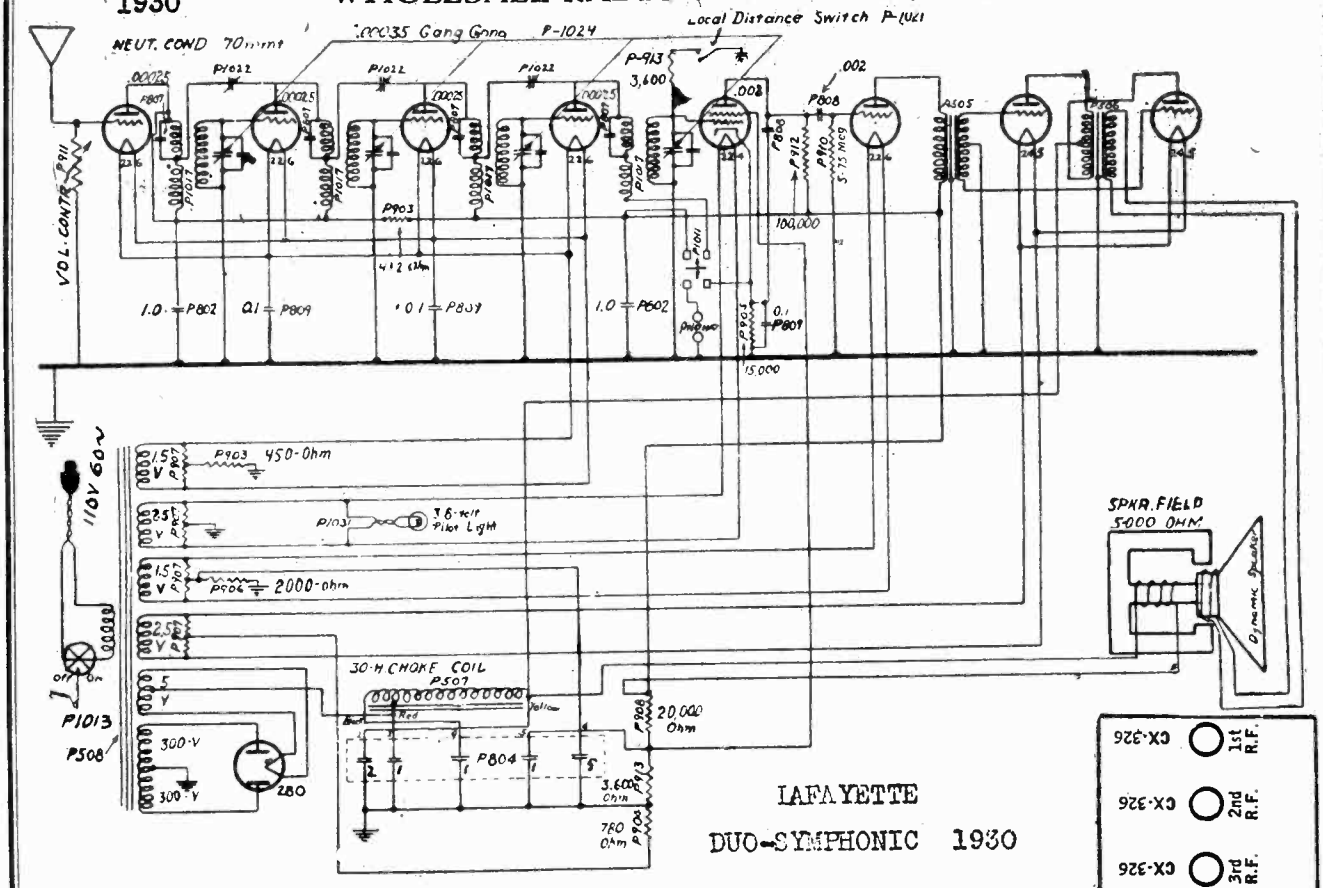


Duo-Symphonic Junior - 1931



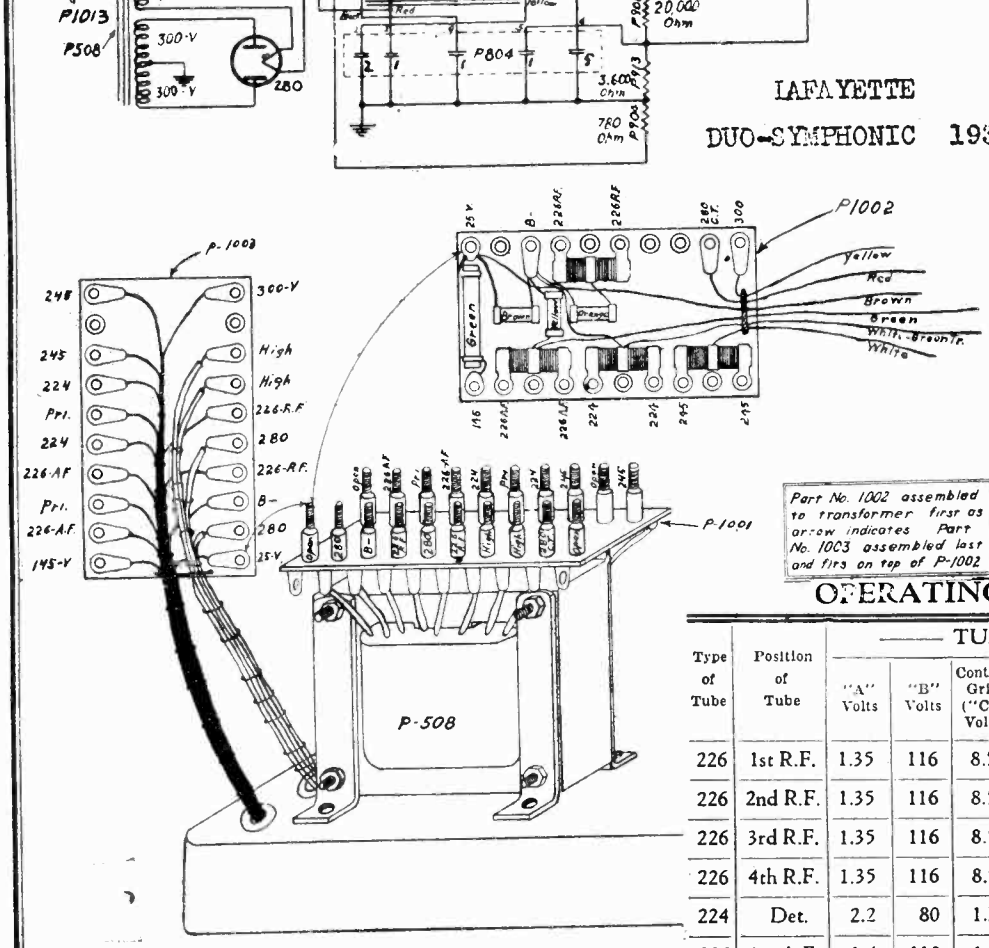
MODEL Duo-Symphonic 1930

WHOLESALE RADIO SERVICE CO., INC.

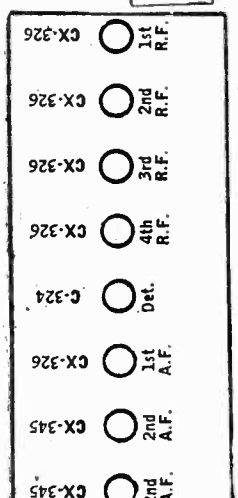


LAFAYETTE

DUO-SYMPHONIC 1930



Power Transformer and Terminal Plate Assembly.



Part No. 1002 assembled to transformer first as arrow indicates. Part No. 1003 assembled last and first on top of P-1002

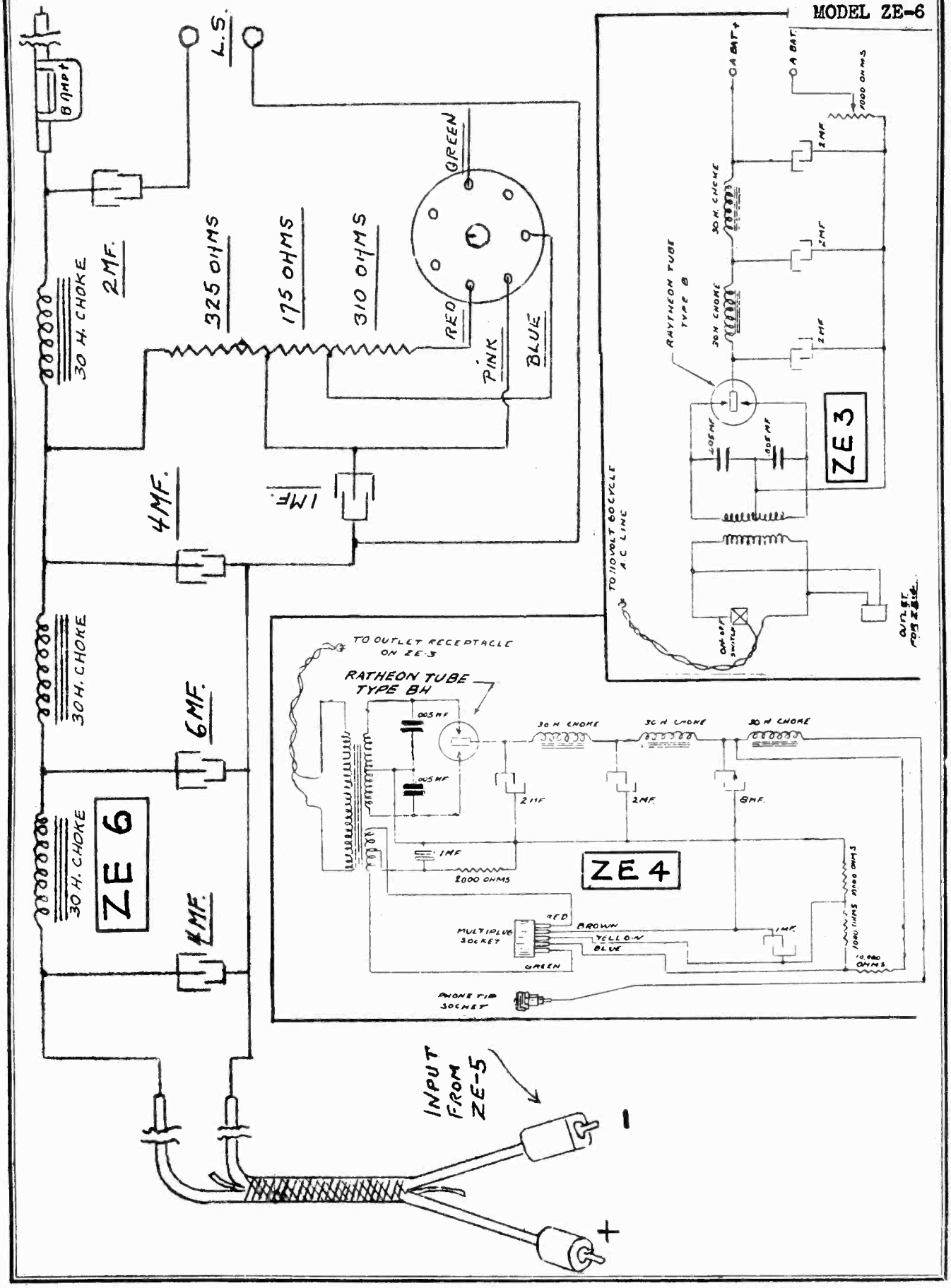
OPERATING VOLTAGES

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	LOW READING DUE TO RESISTANCE COUPLING			4.0	5.0
245	2nd A.F.	2.2	232	42				27	32
245	2nd A.F.	2.2	232	42				27	32
280	Rect.	4.6						84	

Line Voltage During Test—115 Volts.

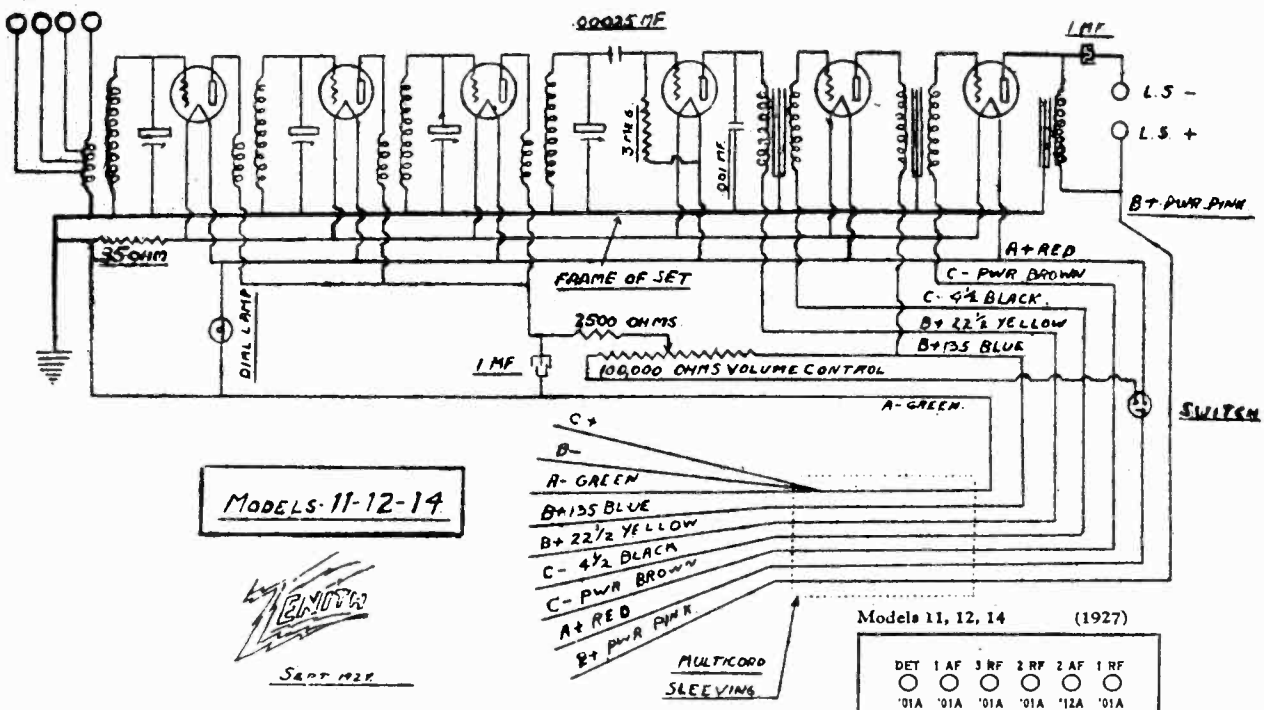
ZENITH RADIO CORP.

MODEL ZE-3
MODEL ZE-4
MODEL ZE-6



MODEL 11,12,14
1st Type
Receiver Schematic
MODEL 12
2nd Type
Receiver Schematic

ZENITH RADIO CORP.

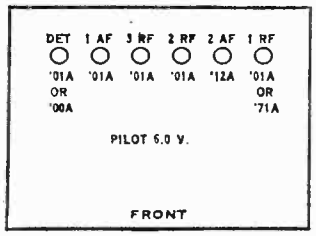


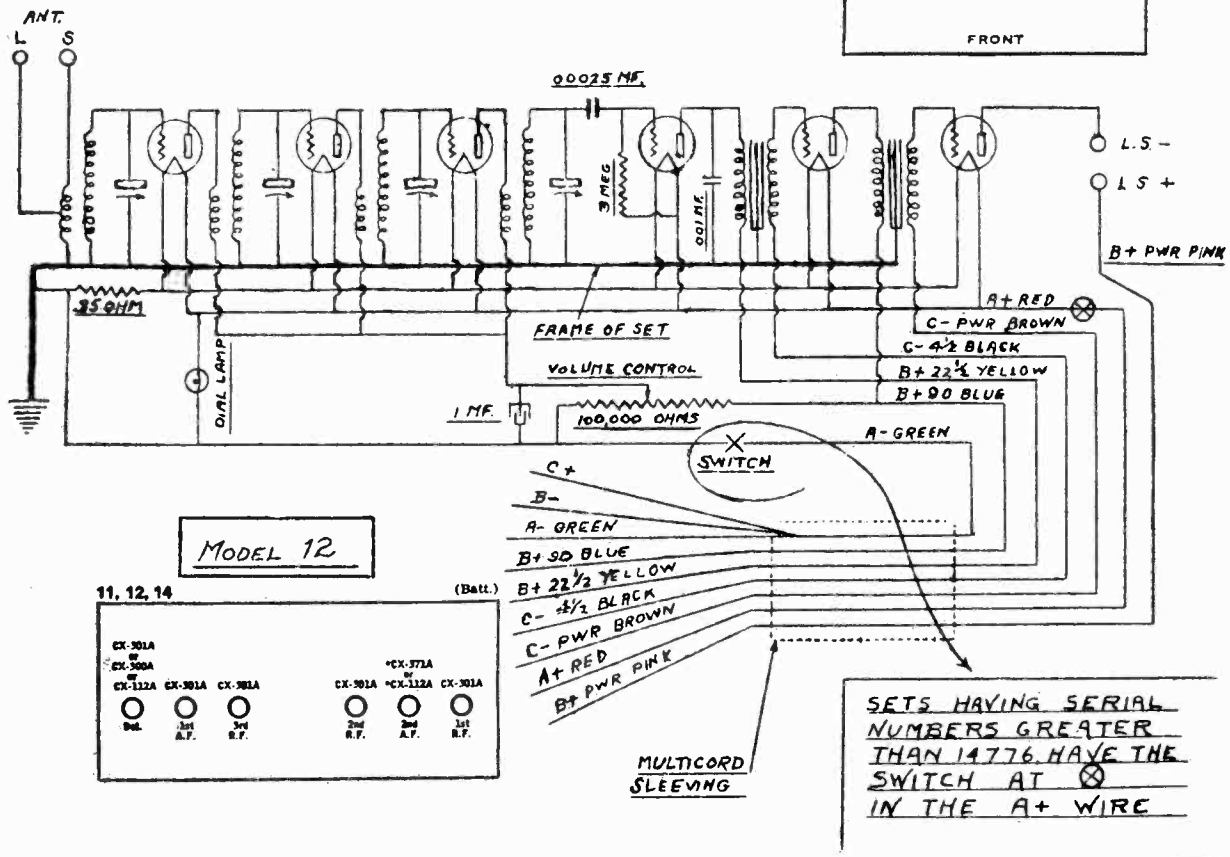
MODELS-11-12-14

ZENITH

SEPT 1927

Models 11, 12, 14 (1927)





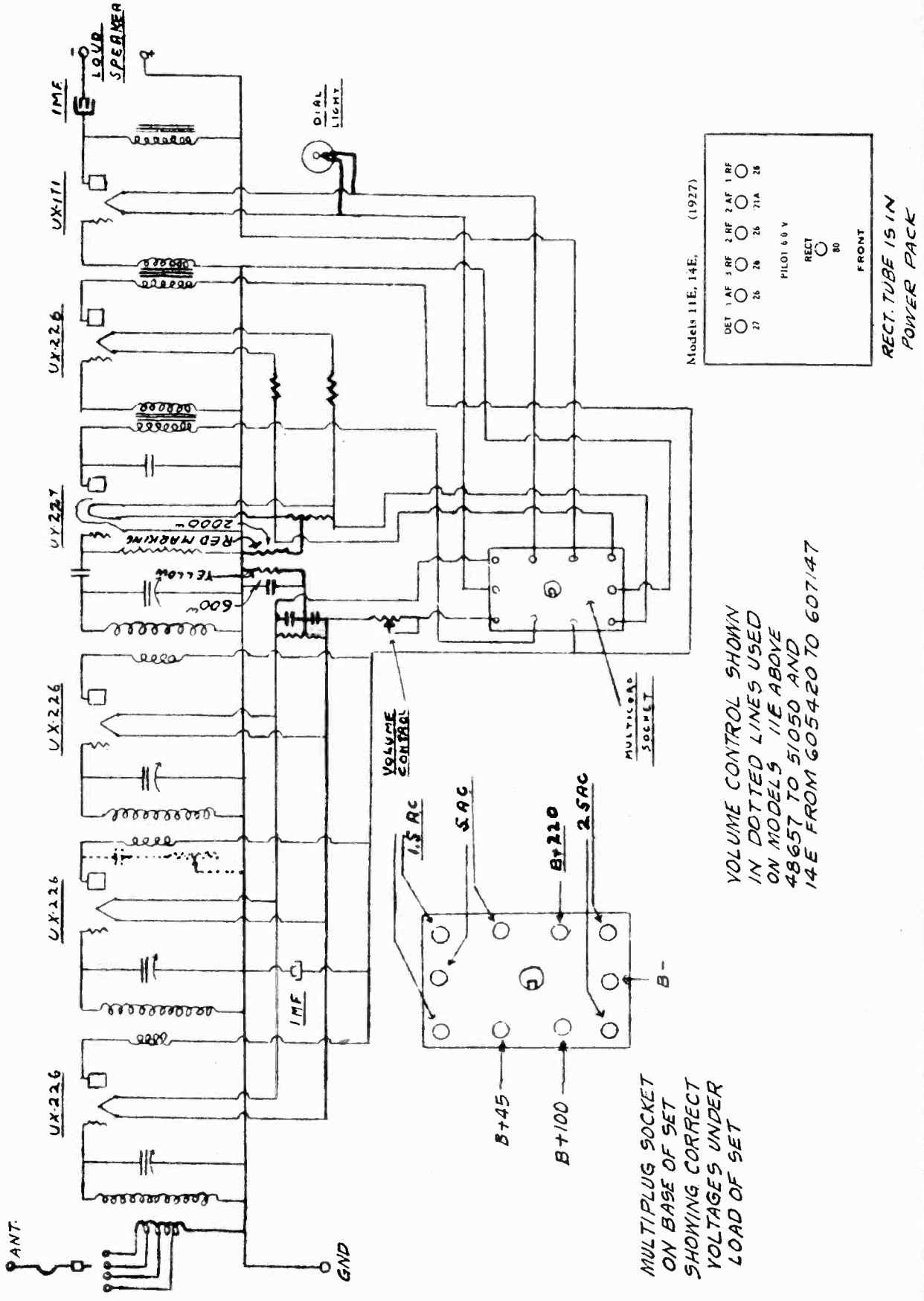
MODEL 12

11, 12, 14 (Batt.)

SETS HAVING SERIAL NUMBERS GREATER THAN 14776 HAVE THE SWITCH AT ⊗ IN THE A+ WIRE

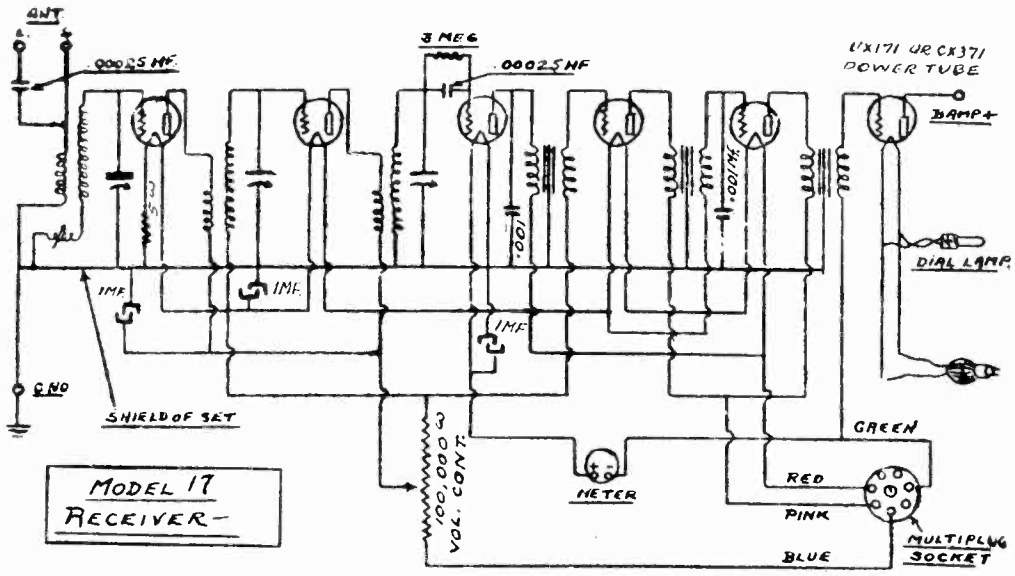
ZENITH RADIO CORP

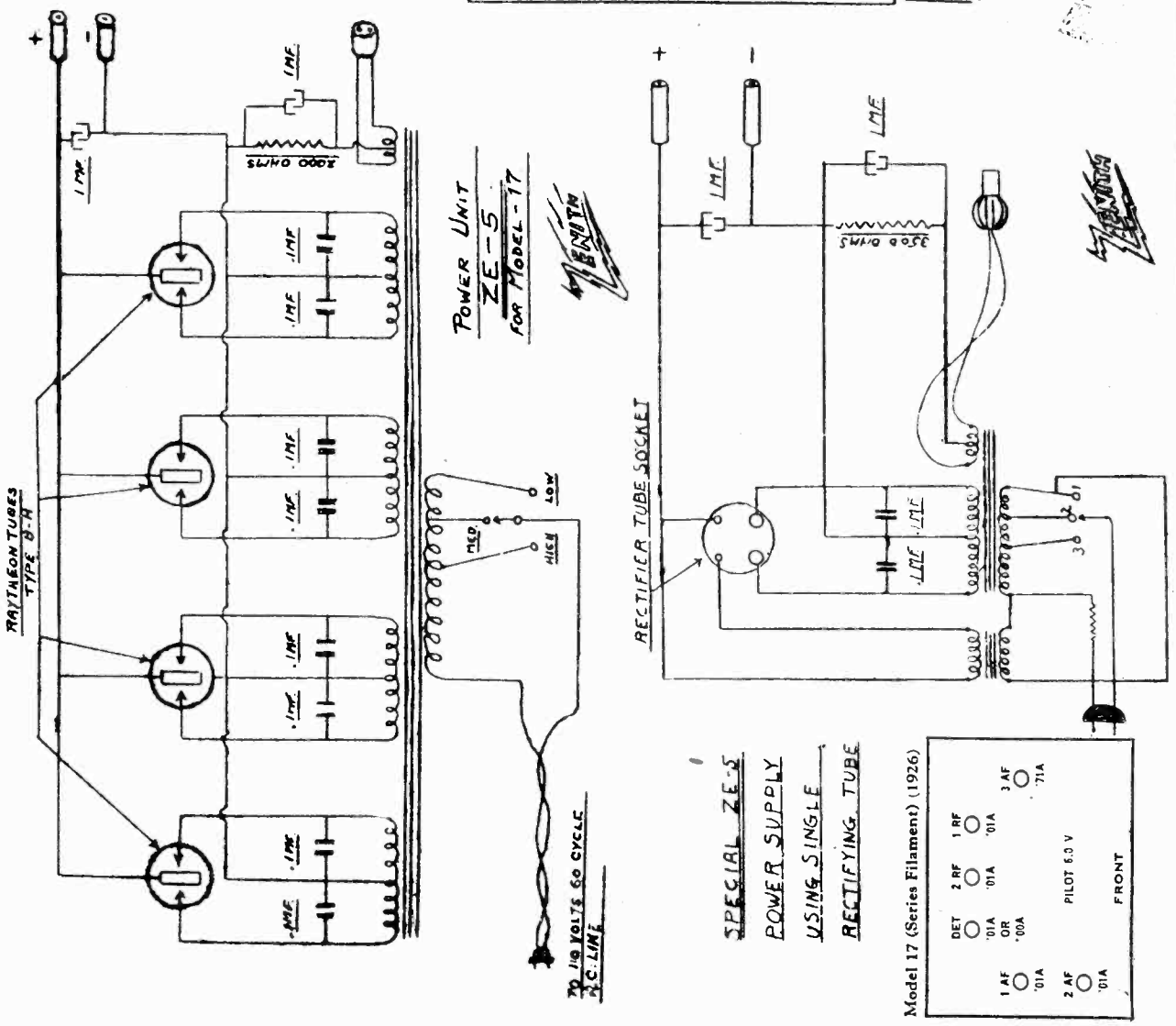
MODEL 11-E, 14-E
Receiver Schematic



MODEL 17 Schematic
MODEL ZE-5 Power Units

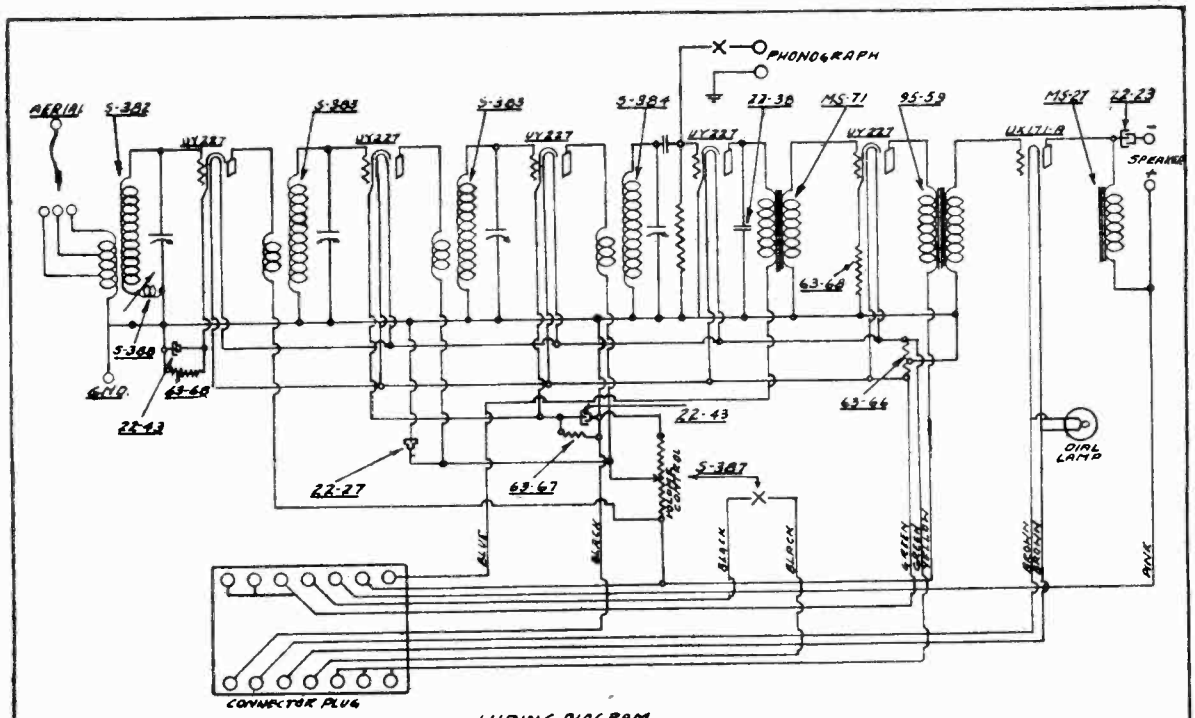
ZENITH RADIO CORP.



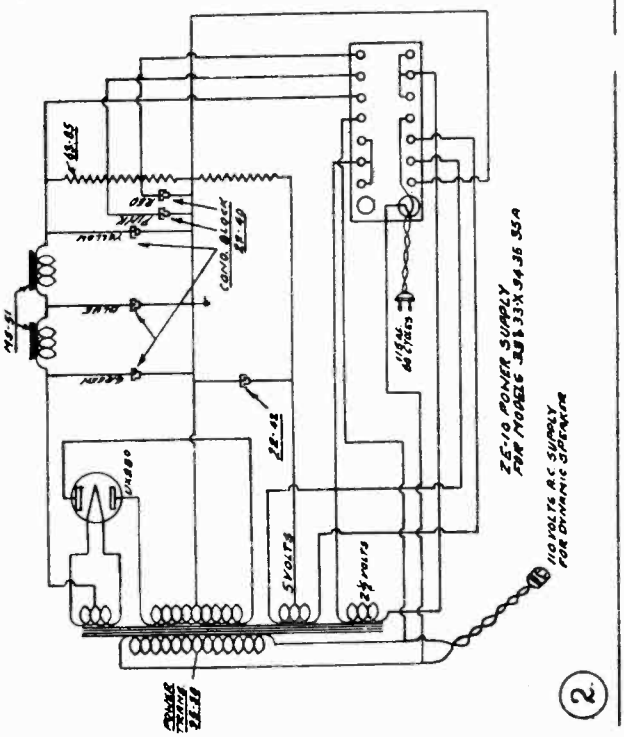


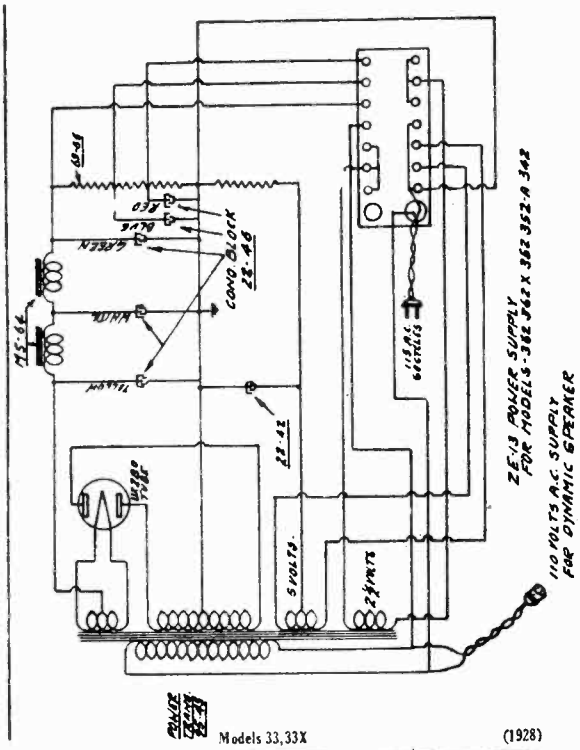
ZENITH RADIO CORP.

MODEL 33-X, 362-X
MODEL ZE-10
MODEL ZE-13



WIRING DIAGRAM
MODELS 33X362X
6 TUBE ELECTRIC SET

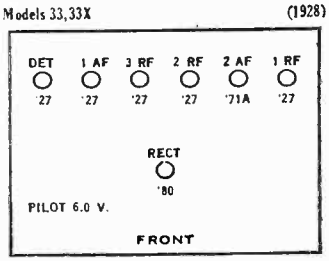




Models 33, 33X (1928)

ZENITH—Models 33X-362X
Line Voltage 115

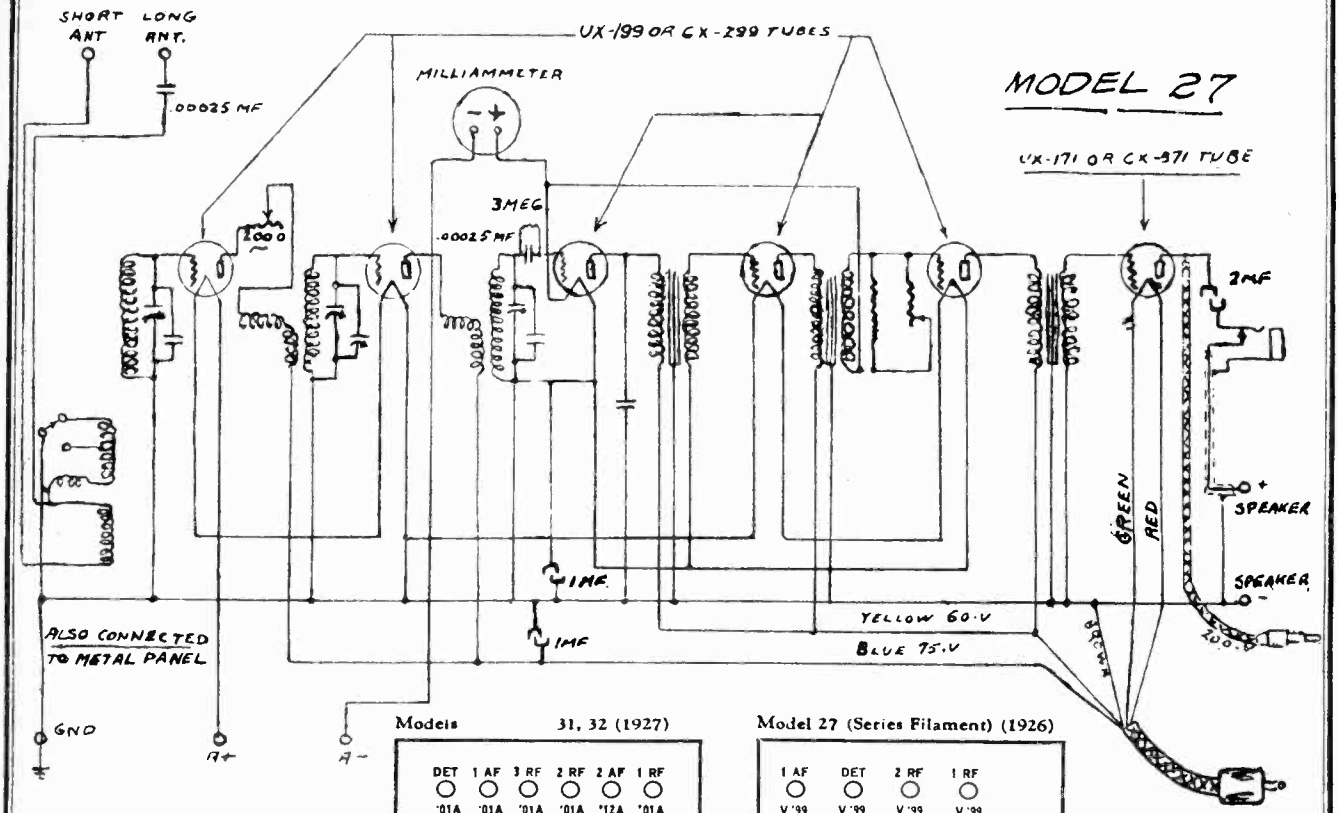
TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST RF DET ETC	READINGS TAKEN IN SOCKET OF SET								
			TUBE OUT		TUBE IN TESTER						
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE M.A. CHANGE
1	227	1st. R.F.			2.05	102	6	-	2.9	4.1	1.2
2	227	2nd. R.F.			2.05	102	5	-	3.8	6.8	3.0
3	227	3rd. R.F.			2.05	102	5	-	3.8	6.8	3.0
4	227	Detector			2.00	40	0	-	2.3	2.5	0.2
5	227	1st. A.F.			2.05	94	5	-	2.6	3.7	1.1
6	171A	2nd. A.F.			4.90	170	35	-	17.0	18.0	1.0
	280	Rectifier			4.00	-	-	-	20.0	-	-



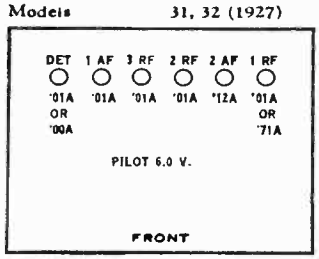
CX-380 used in separate power unit.

MODEL Super-Zenith 27
MODEL 31,32 Battery

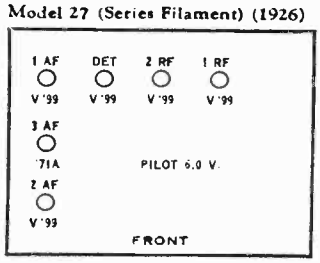
ZENITH RADIO CORP.

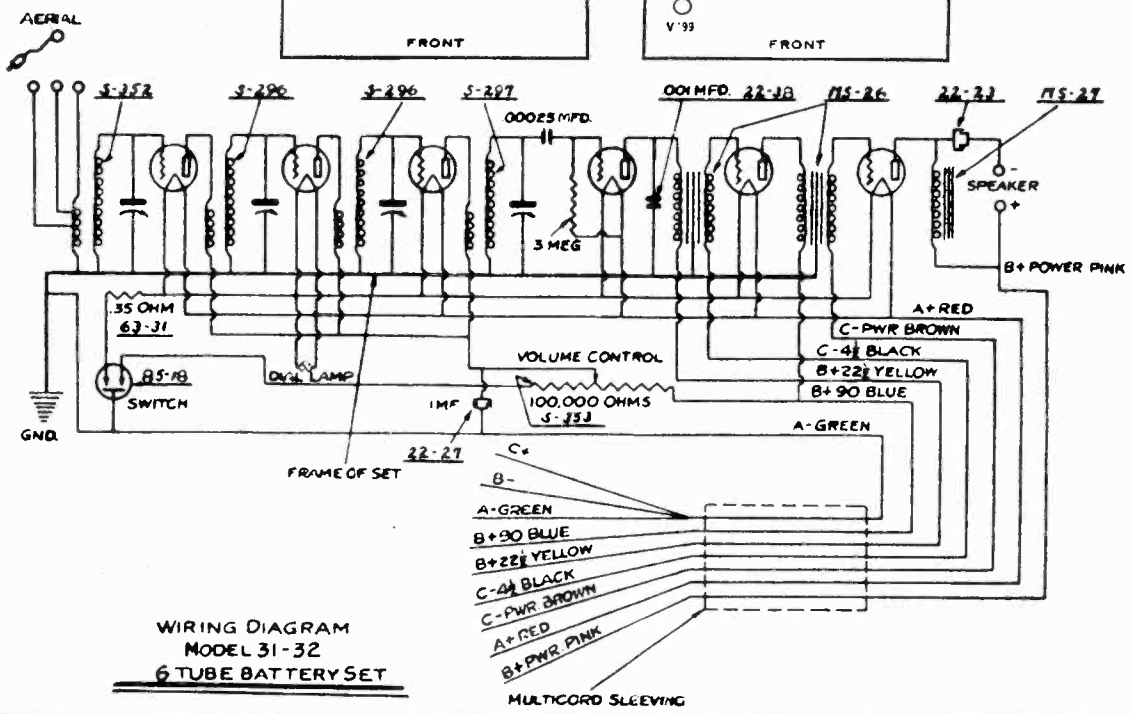


Models 31, 32 (1927)



Model 27 (Series Filament) (1926)

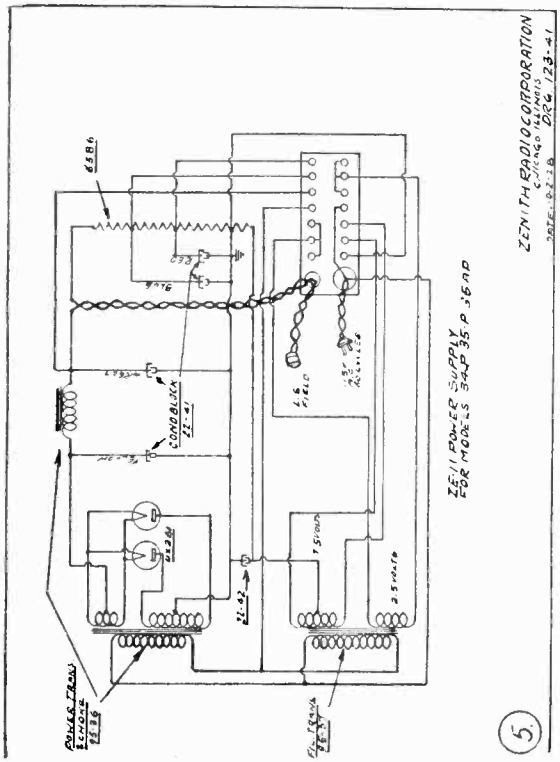


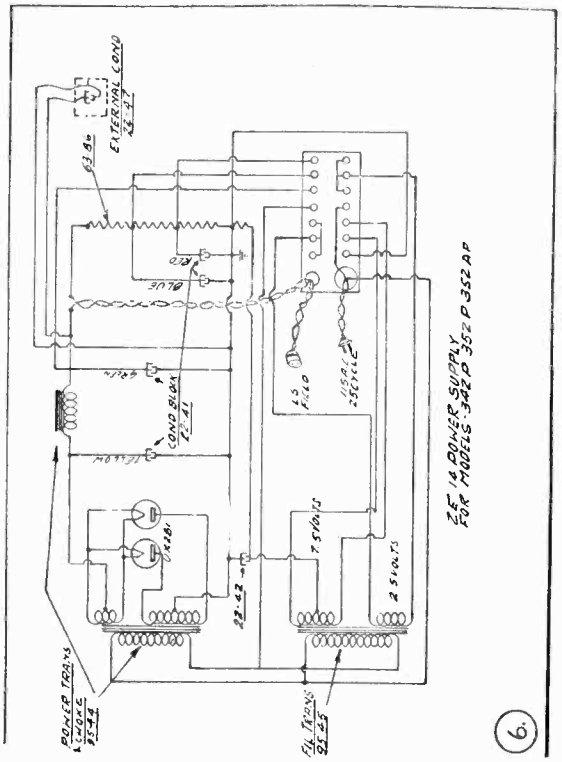


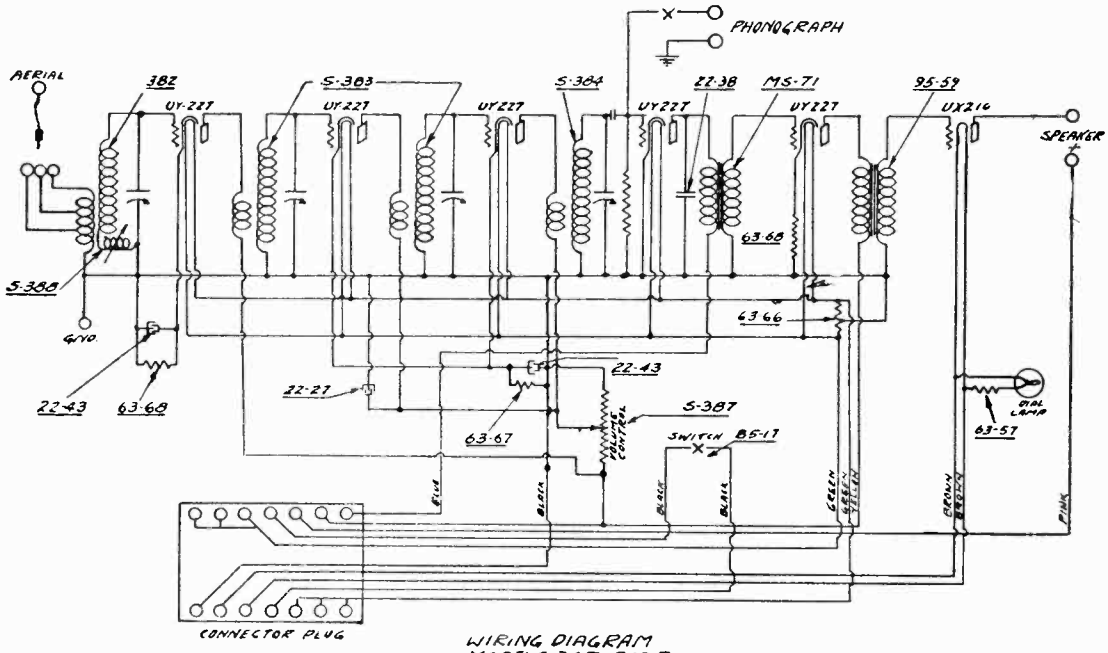
WIRING DIAGRAM
MODEL 31-32
6 TUBE BATTERY SET

ZENITH RADIO CORP.

MODEL 34-P, 342-P
MODEL ZE-11
MODEL ZE-14





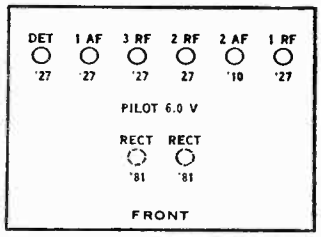


WIRING DIAGRAM
MODELS 34P-342P
6 TUBE ELECTRIC SET

ZENITH—Models 34P-342P
Line Voltage 115

TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST RF DET ETC	READINGS PLUG IN SOCKET OF SET								
			TUBE OUT		TUBE IN TESTER						
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE MA	PLATE MA GRID TEST	PLATE MA CHANGE
1	227	1st. R.F.			2.05	90	5.5	-	2.7	4	1.3
2	227	2nd. R.F.			2.05	92	5.0	-	3.5	6.5	3.0
3	227	3rd. R.F.			2.05	92	5.0	-	3.5	6.5	3.0
4	227	Detector			2.00	40	0.0	-	2.2	2.2	0.0
5	227	1st. A.F.			2.05	84	5.0	-	2.4	3.6	1.2
6	210	2nd. A.F.			7.40	400	34.0	-	23	25	2.0
7	281	Rectifier			7.25	-	-	-	42	-	-
8	281	Rectifier			7.25	-	-	-	42	-	-

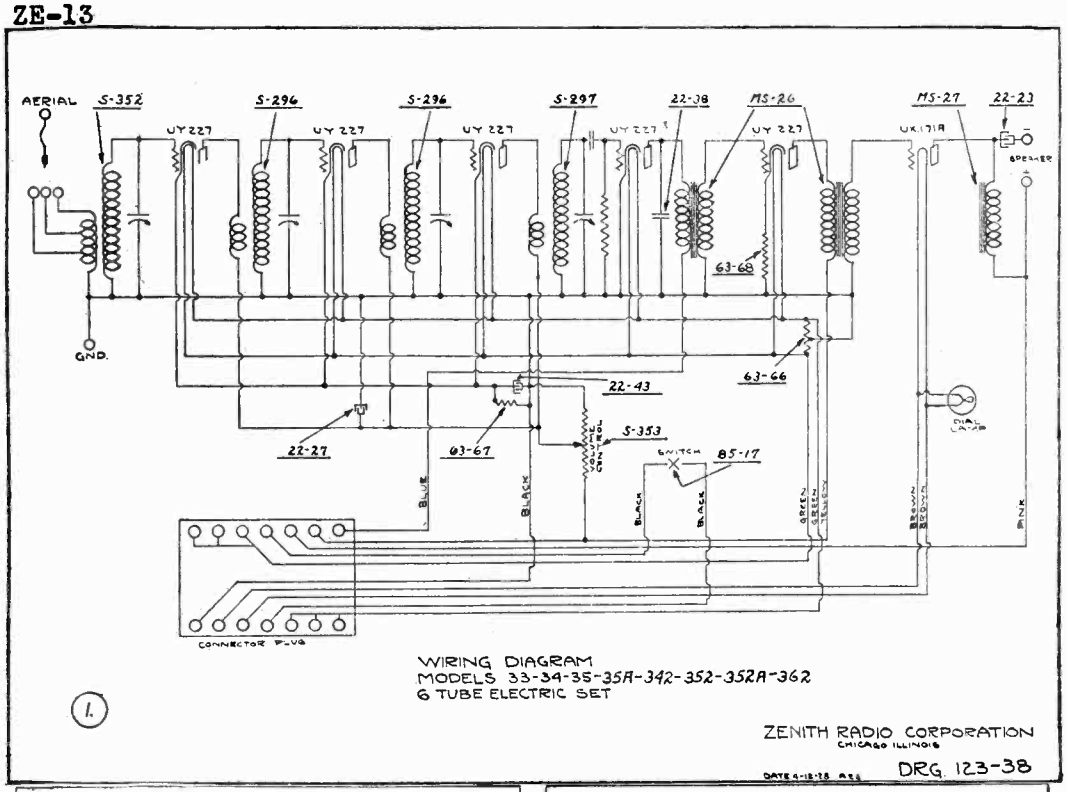
Models 341, 342P (1928)



2 CX-381's used in separate power units.

MODELS 33,34,35,35-A,342, 352,352-A,362
MODELS ZE-10
MODEL ZE-13

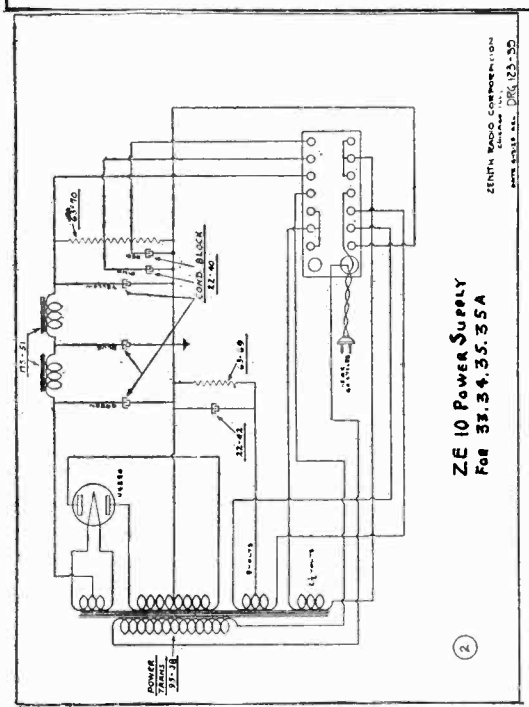
ZENITH RADIO CORP.



WIRING DIAGRAM
MODELS 33-34-35-35A-342-352-352A-362
6 TUBE ELECTRIC SET

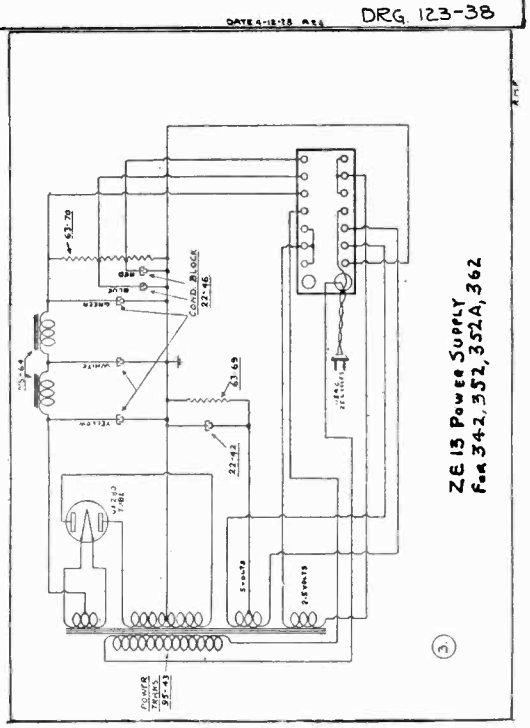
(1)

ZENITH RADIO CORPORATION
CHICAGO ILLINOIS
DRG. 123-38



ZE 10 Power Supply
For 33.34.35.35A

(2)



ZE 13 Power Supply
For 342, 352, 352A, 362

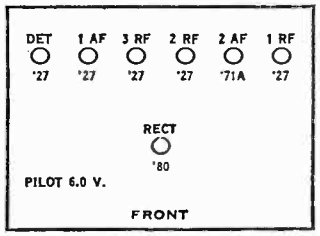
(3)

ZENITH—Models 33-34-35-35A-342-352-352A-362

Line Voltage 115—Volume Control Full for R. F. and Center for A. F. on All Models

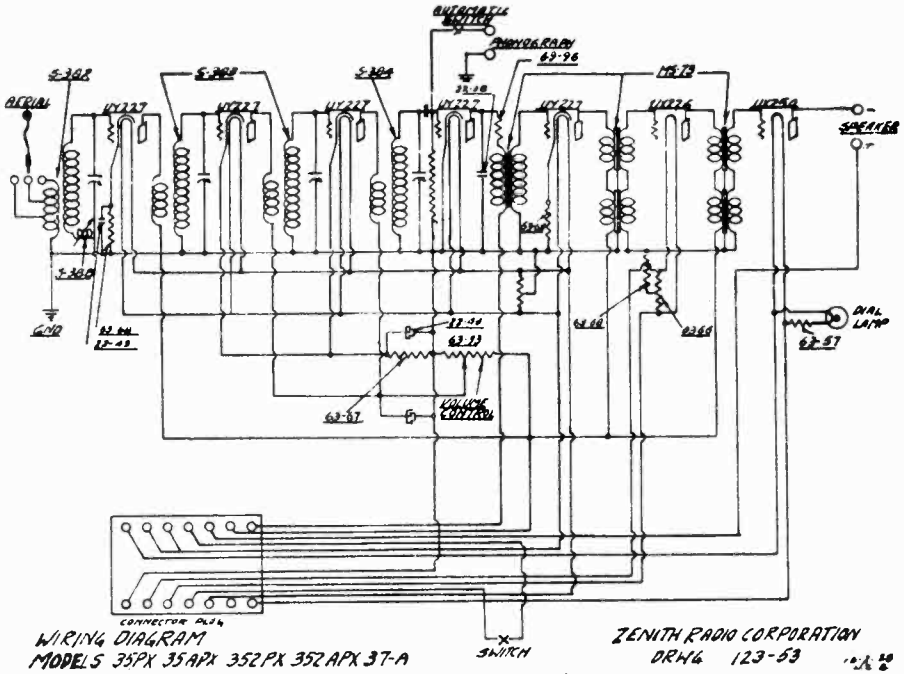
TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF TUBE (ST. R.F., DET., ETC.)	READINGS, PLUG IN SOCKET OF SET								
			TUBE OUT		TUBE IN TESTER						
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE M.A. CHANGE
1	227	1st. R.F.			2.0	110	6	-	3.2	6.2	3.0
2	227	2nd. R.F.			2.0	110	6	-	3.2	6.2	3.0
3	227	3rd. R.F.			2.0	110	6	-	3.2	6.2	3.0
4	227	Detector			2.0	45	0	-	3.2	3.4	.2
5	227	1st. A.F.			2.0	105	6	-	3.2	4.5	1.3
6	171A	2nd. A.F.			4.75	180	40	-	15.0	16.0	1.0
7	280	Rectifier			4.9	-	-	-	22.0	-	-

Models 34, 35, 35A, 342, 352, 352A, 362 (1928)



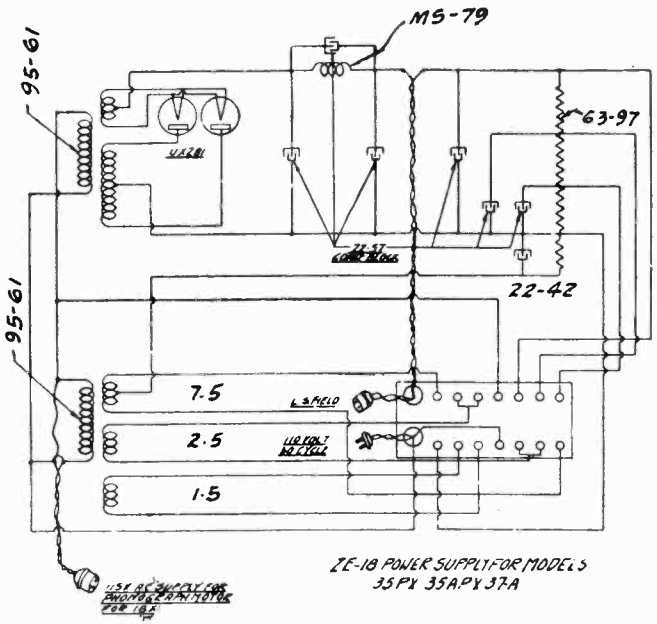
CX-380 used in separate power unit.

ZENITH RADIO CORP. MODELS 35-PX, 35-APX, 352-PX, 352-APX MODEL 37-A MODEL 2E-18

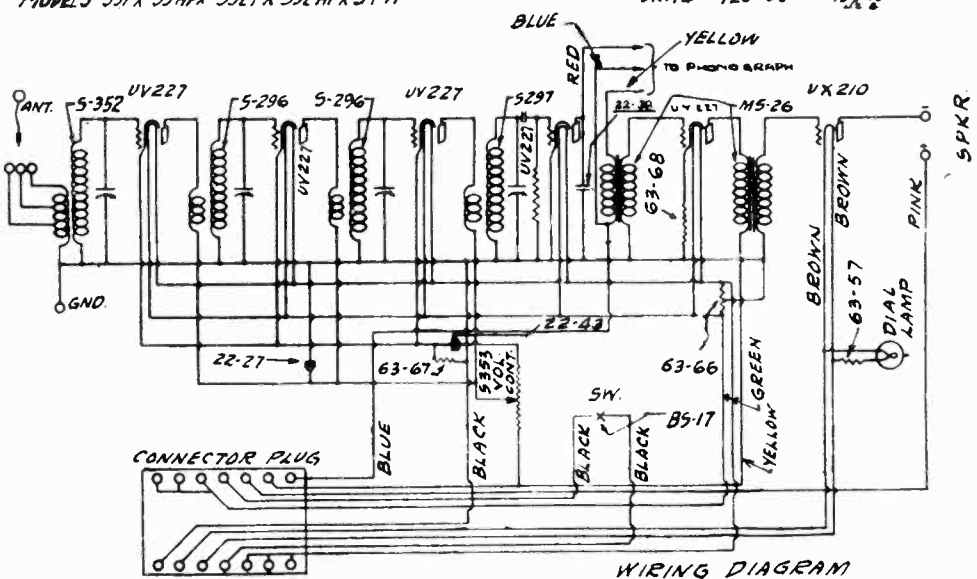


WIRING DIAGRAM
MODELS 35PX 35APX 352PX 352APX 37-A

ZENITH RADIO CORPORATION
DRWG 123-53

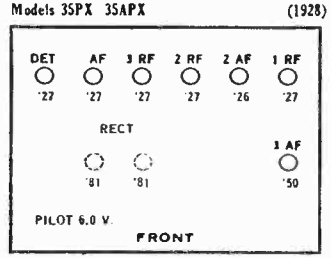


2E-18 POWER SUPPLY FOR MODELS
35PX 35APX 37A



WIRING DIAGRAM
MODEL 37A
6 TUBE ELECTRIC SET

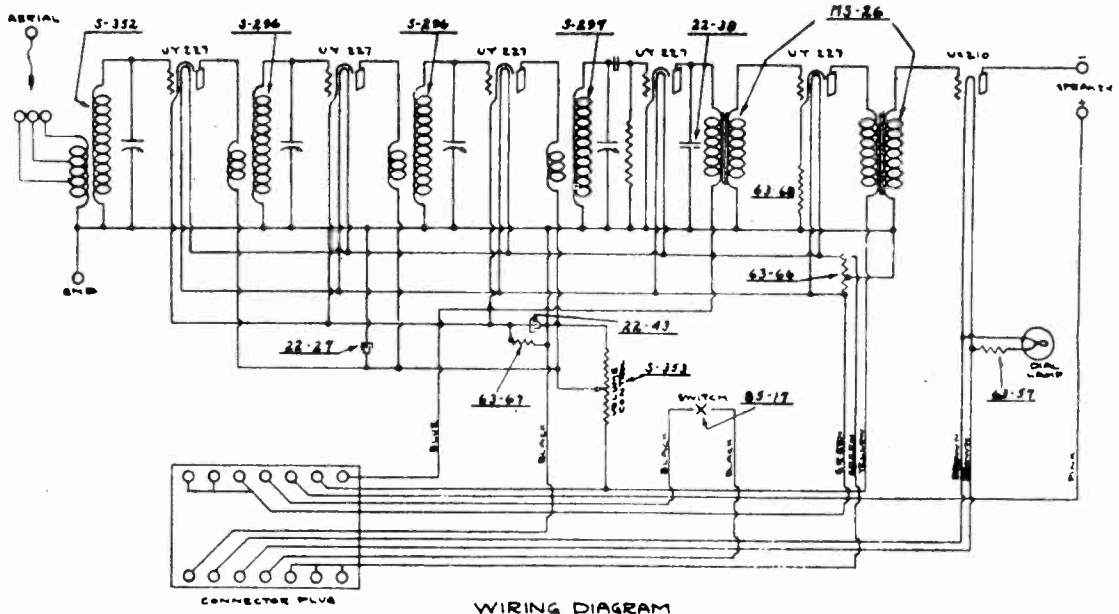
Models 35PX 35APX (1928)



ZENITH—Models 35PX-35APX-352PX-352APX-37A
Line Voltage 115

TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF TUBE (1ST R.F. DET. ETC.)	READINGS, PLUG IN SOCKET OF SET								
			TUBE OUT		TUBE IN TESTER						
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M A	PLATE M A GRID TEST	PLATE M A CHANGE
1	227	1st. R.F.			2.1	104	6	-	3.3	4.6	1.3
2	227	2nd. R.F.			2.1	104	5	-	4.6	7.6	3.0
3	227	3rd. R.F.			2.1	104	5	-	4.6	7.6	3.0
4	227	Detector			2.05	24	0	-	1.3	1.4	.1
5	227	1st. A.F.			2.1	85	6	-	2.7	3.6	.9
6	226	2nd. A.F.			1.4	85	5.5	-	2.8	3.8	1.0
7	250	3rd. A.F.			7.1	335	54	-	35.0	36	1.0
8	281	Rectifier			7.0	-	-	-	45.0	-	-
9	281	Rectifier			7.0	-	-	-	45.0	-	-
10											

MODEL 35-P,35-AP,352-P,352-AP
MODEL ZE-11 for 35-P,35-AP,37-A ZENITH RADIO CORP.
MODEL ZE-14 for 352-P,352-AP

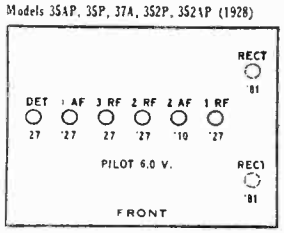


WIRING DIAGRAM
MODELS 35P-35AP-352P-352AP
6 TUBE ELECTRIC SET

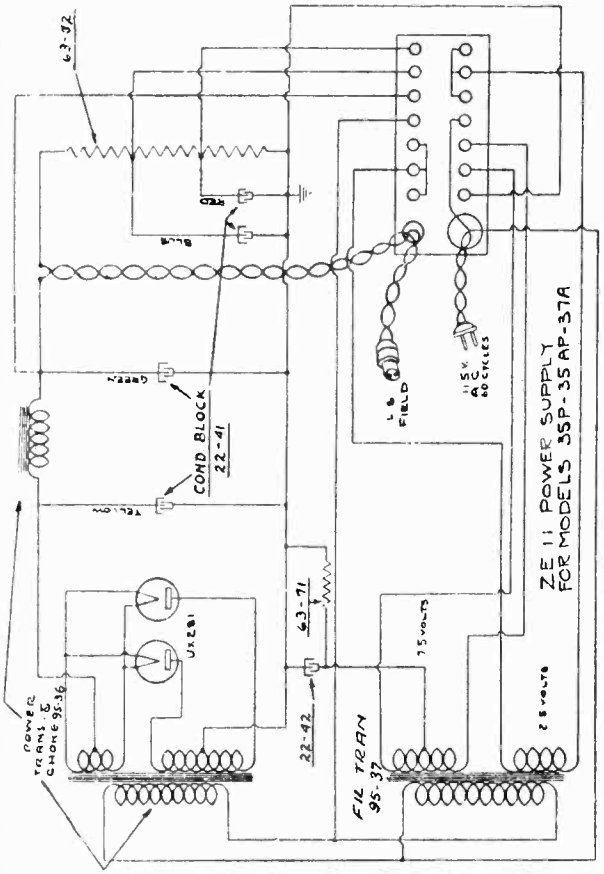
ZENITH—Models 35P-35AP-37A-352P-352AP
Line Voltage 115

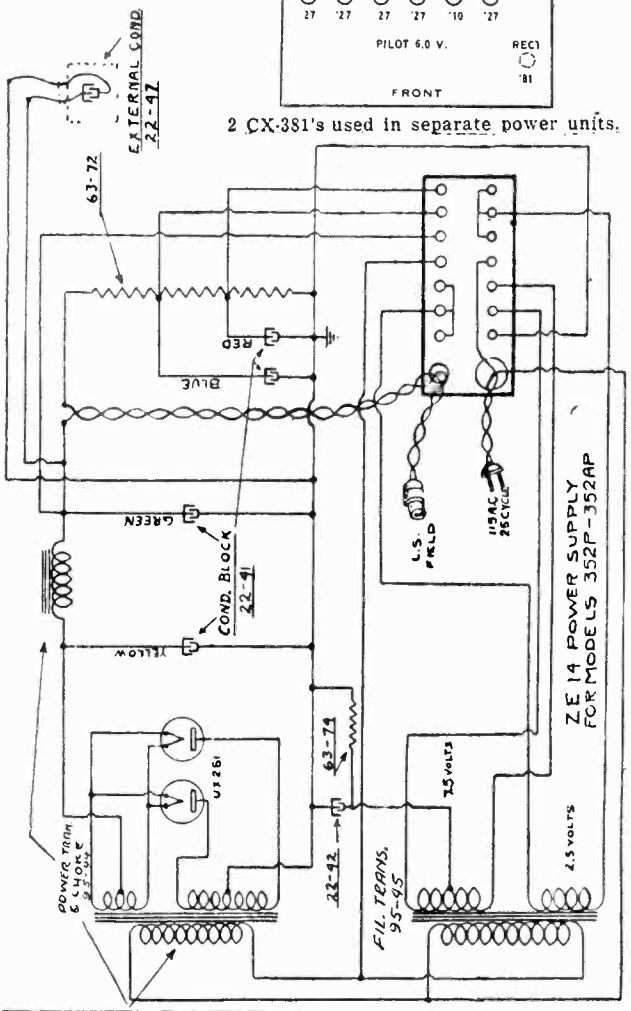
TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST RF DET ETC	READINGS PLUG IN SOCKET OF SET							
			TUBE OUT		TUBE IN TESTER					
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M A	PLATE M A GRID TEST	PLATE M A CHANGE
1	227	1st. R.F.			2.0	100	6	-	3.0	6.0	3.0
2	227	2nd. R.F.			2.0	100	6	-	3.0	6.0	3.0
3	227	3rd. R.F.			2.0	100	6	-	3.0	6.0	3.0
4	227	DETECTOR			2.0	42	0	-	3.0	3.2	0.2
5	227	1st. A.F.			2.0	100	6	-	3.0	4.0	1.0
6	210	2nd. A.F.			7.2	400	32	-	20.0	22.0	2.0
7	281				7.25	-	-	-	45.0	-	-
8	281				7.25	-	-	-	49.0	-	-

Models 35AP, 35P, 37A, 352P, 352AP (1928)



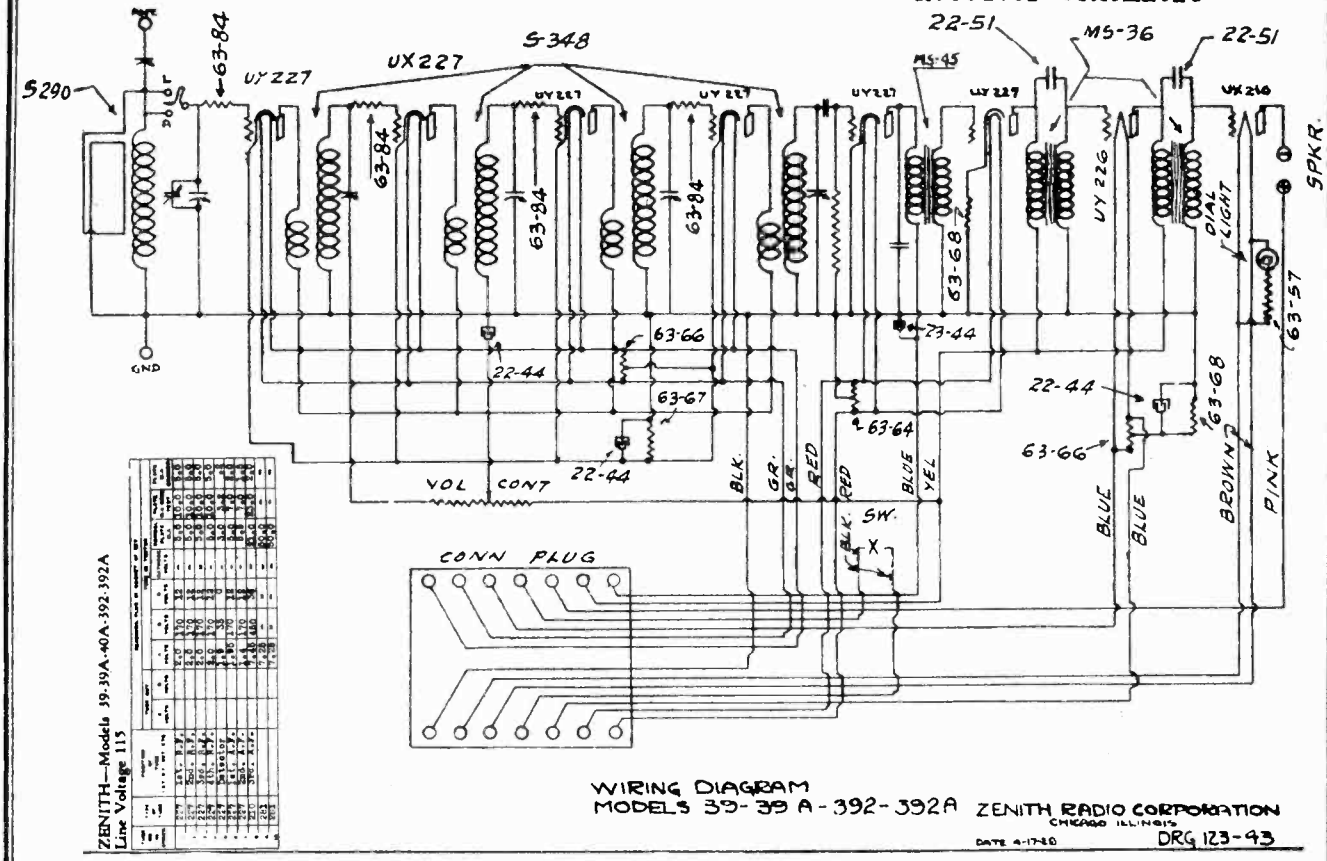
2 CX-381's used in separate power units.





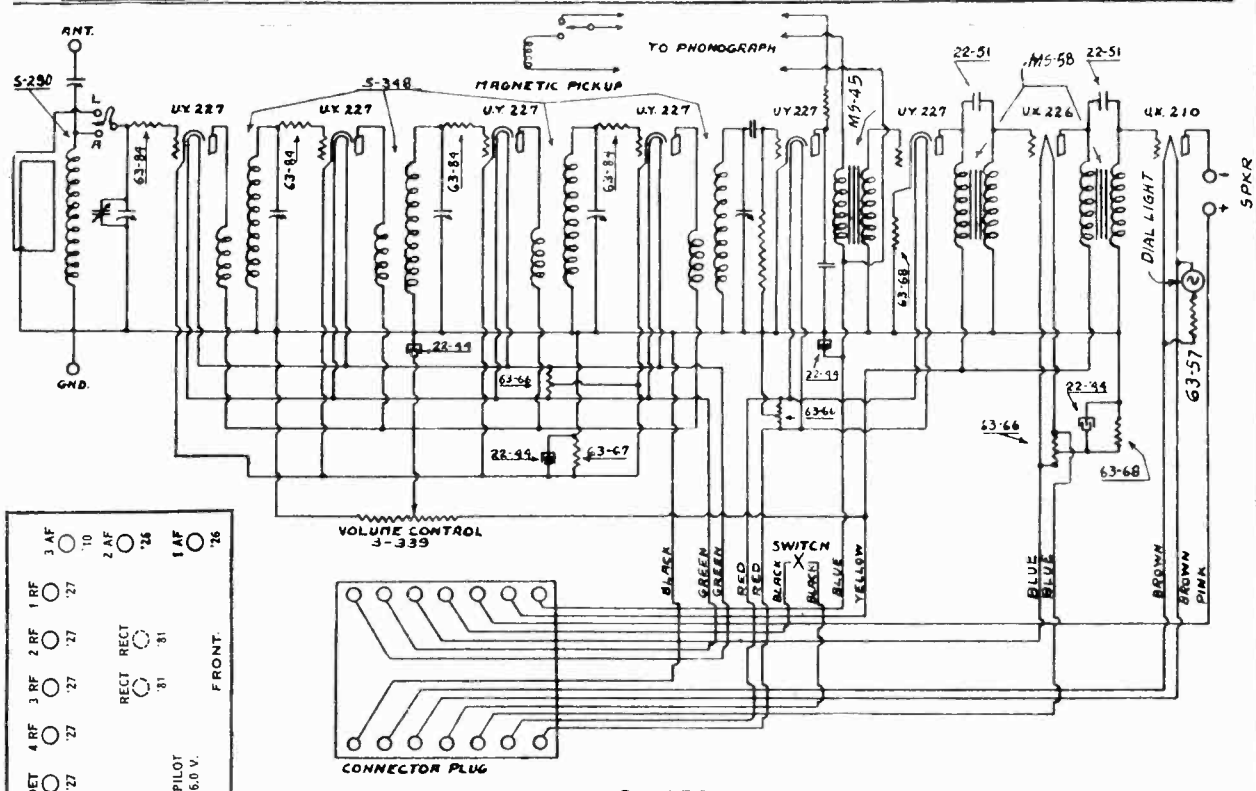
ZENITH RADIO CORP.

MODELS 39,39-A,392,392-A
Receiver Schematic
MODEL 40-A
Receiver Schematic



ZENITH—Models 39-39A-40A-392-392A
Line Voltage 115

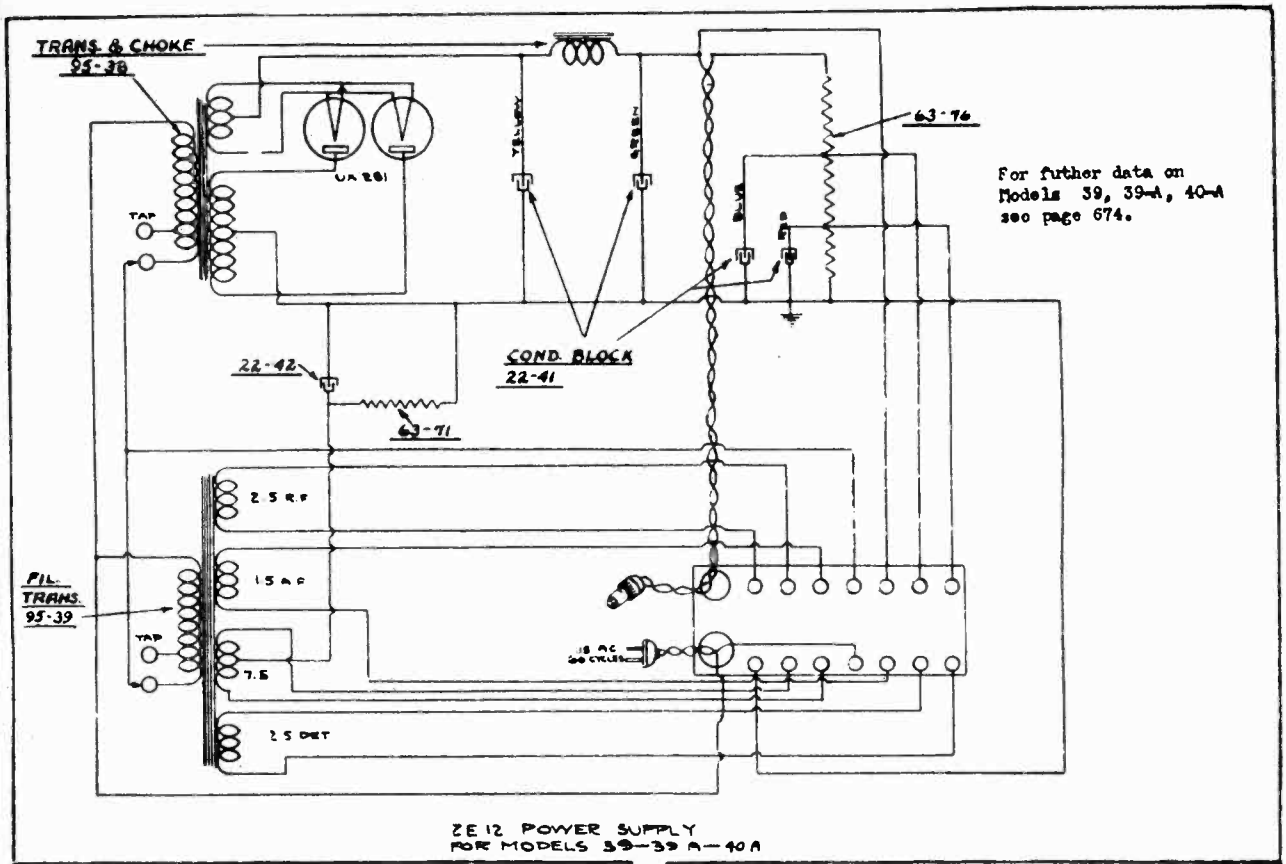
WIRING DIAGRAM
MODELS 39-39 A-392-392A ZENITH RADIO CORPORATION
CHICAGO ILLINOIS
DATE 4-17-28 DRG 123-93



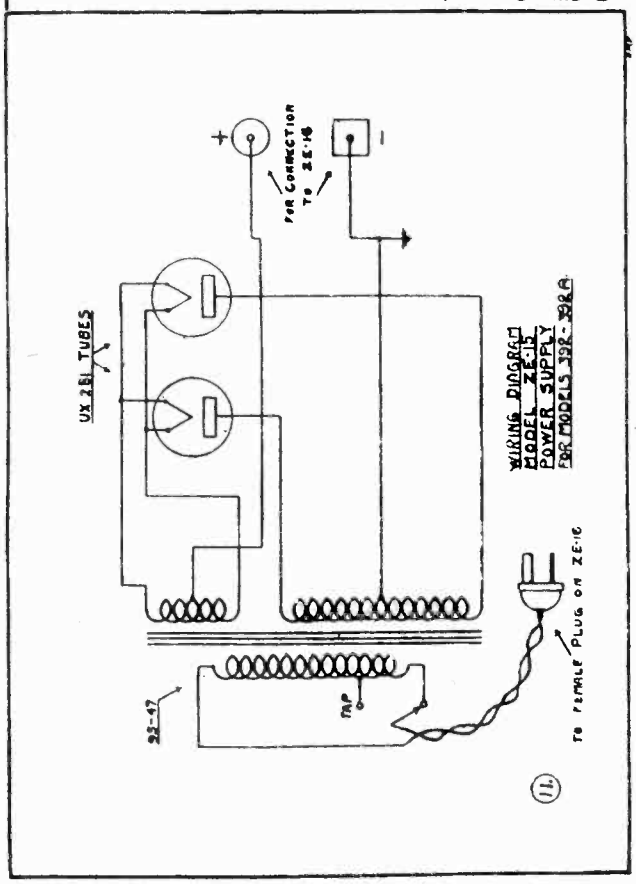
WIRING DIAGRAM
MODEL 40A

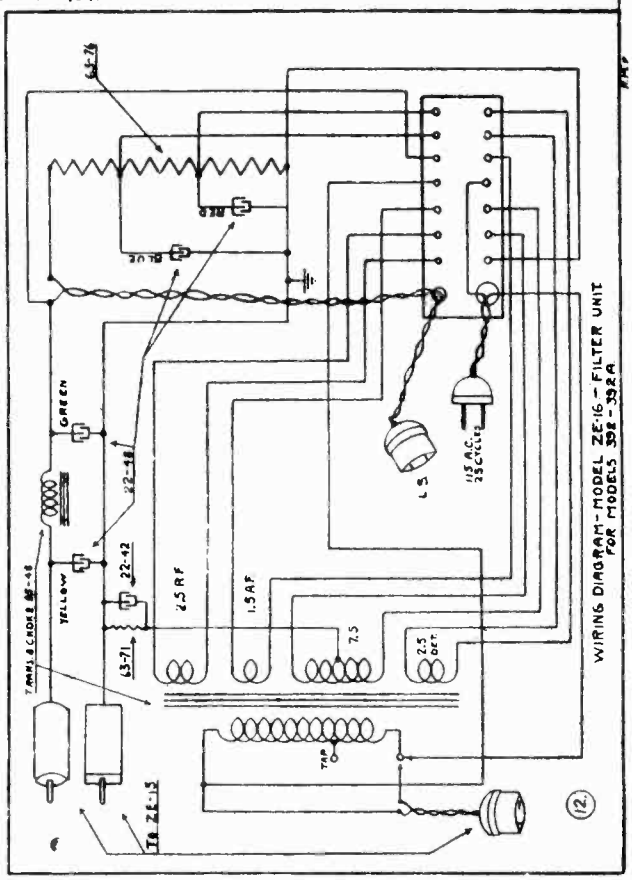
ZENITH RADIO CORPORATION
CHICAGO ILL.
4-27-28 DRG 123-51

MODEL ZE-12 for 39,39-A,40-A
MODEL ZE-15 for 392,392-A ZENITH RADIO CORP.
MODEL ZE-16 Filter for above



ZE 12 POWER SUPPLY
FOR MODELS 39-39 A-40 A

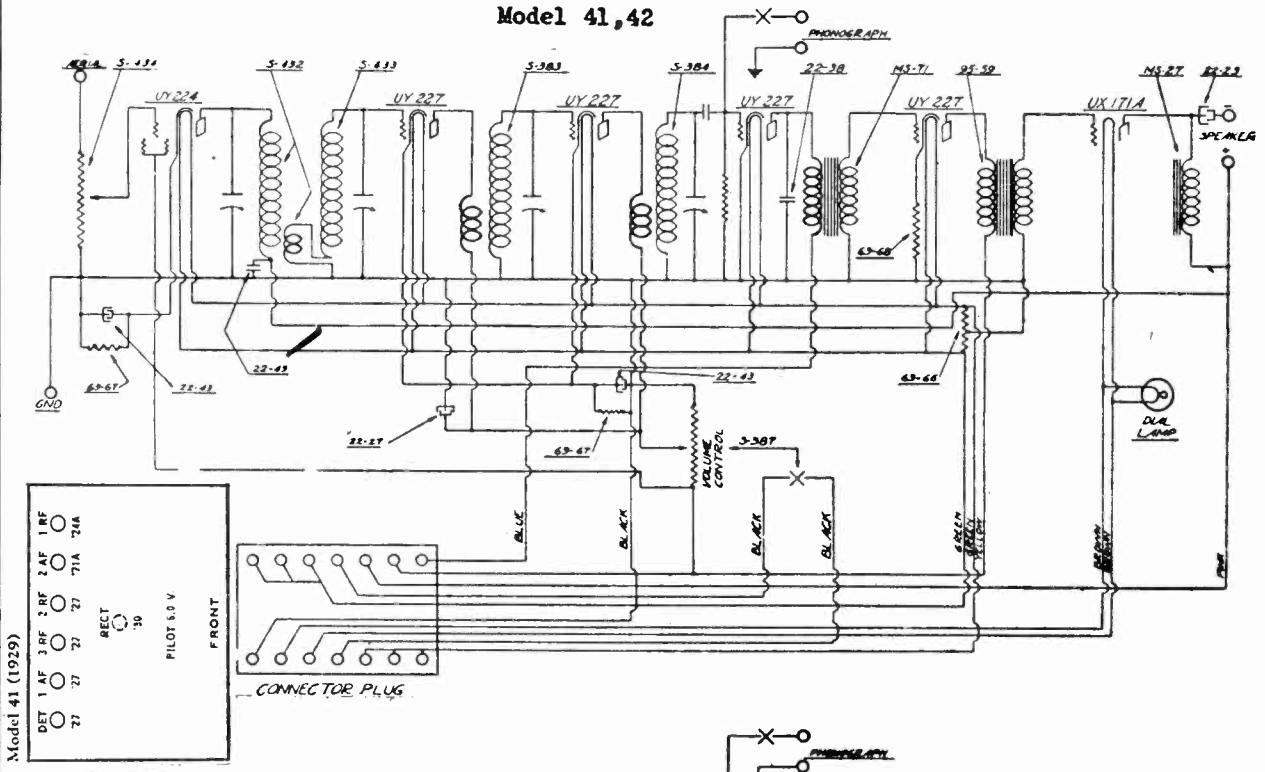




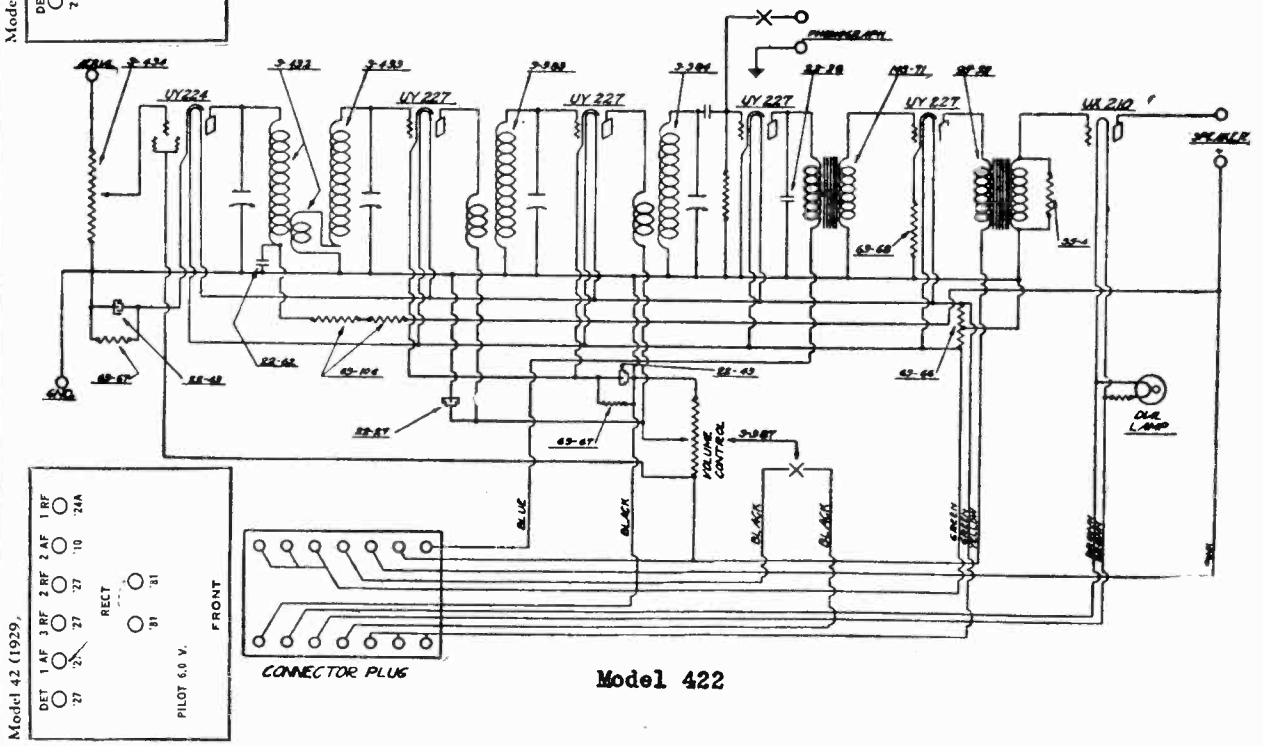
ZENITH RADIO CORP.

MODEL 41,42
MODEL 422

Model 41,42



Model 41 (1929)



Model 42 (1929)

Model 422

ZENITH—MODEL 42

Type Tube	Position of Tube	"A" Vts.	"B" Vts.	"C" Vts.	Plate MA.	Screen Grid	Cath. Volts
'24	1 R. F.	1.90	214	3	3.4	94	+2.2
'27	2 R. F.	1.90	80	4	3.5		+4
'27	3 R. F.	1.90	85	4	3.5		+4
'27	Det.	1.90	35		2.2		
'27	1 Aud.	1.90	78	4	2.5		+4
'10	2 Aud.	6.9	420	31	20		
'81	Rect.	6.9			45		
'81					45		

LV—115. Volume Control Max.

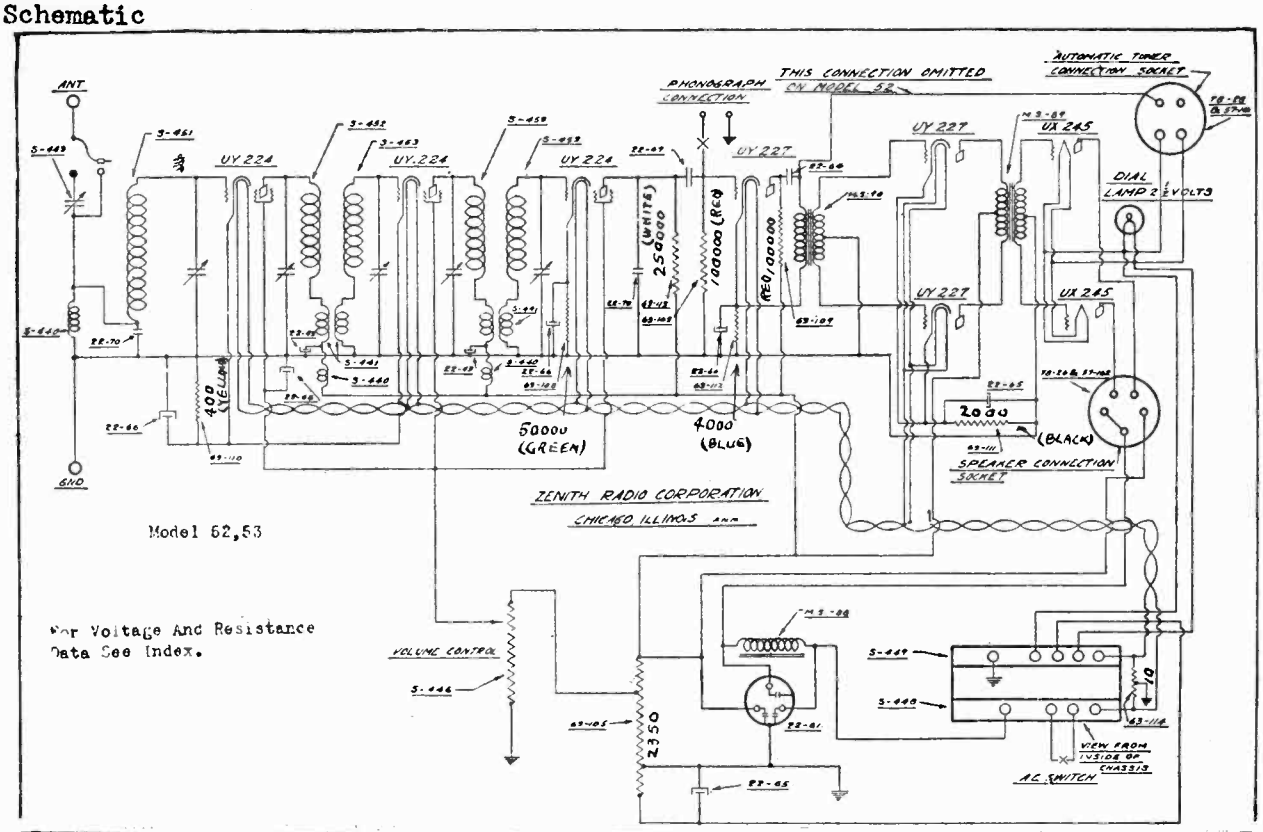
ZENITH—MODEL 41

Type Tube	Position of Tube	"A" Vts.	"B" Vts.	"C" Vts.	Plate MA.	Screen Grid	Cath. Volts
'24	1 R. F.	1.95	200	2	3	98	+2
'27	2 R. F.	2	95	4.5	4		+4.5
'27	3 R. F.	2	95	4.5	4		+4.5
'27	Det.	1.95	38		2.1		
'27	1 Aud.	2	89	4.5	3		+4.5
'71A	2 Aud.	4.2	145	29	14.5		
'80	Rect.	4.1			17.8		

LV—110. Volume Control Max.

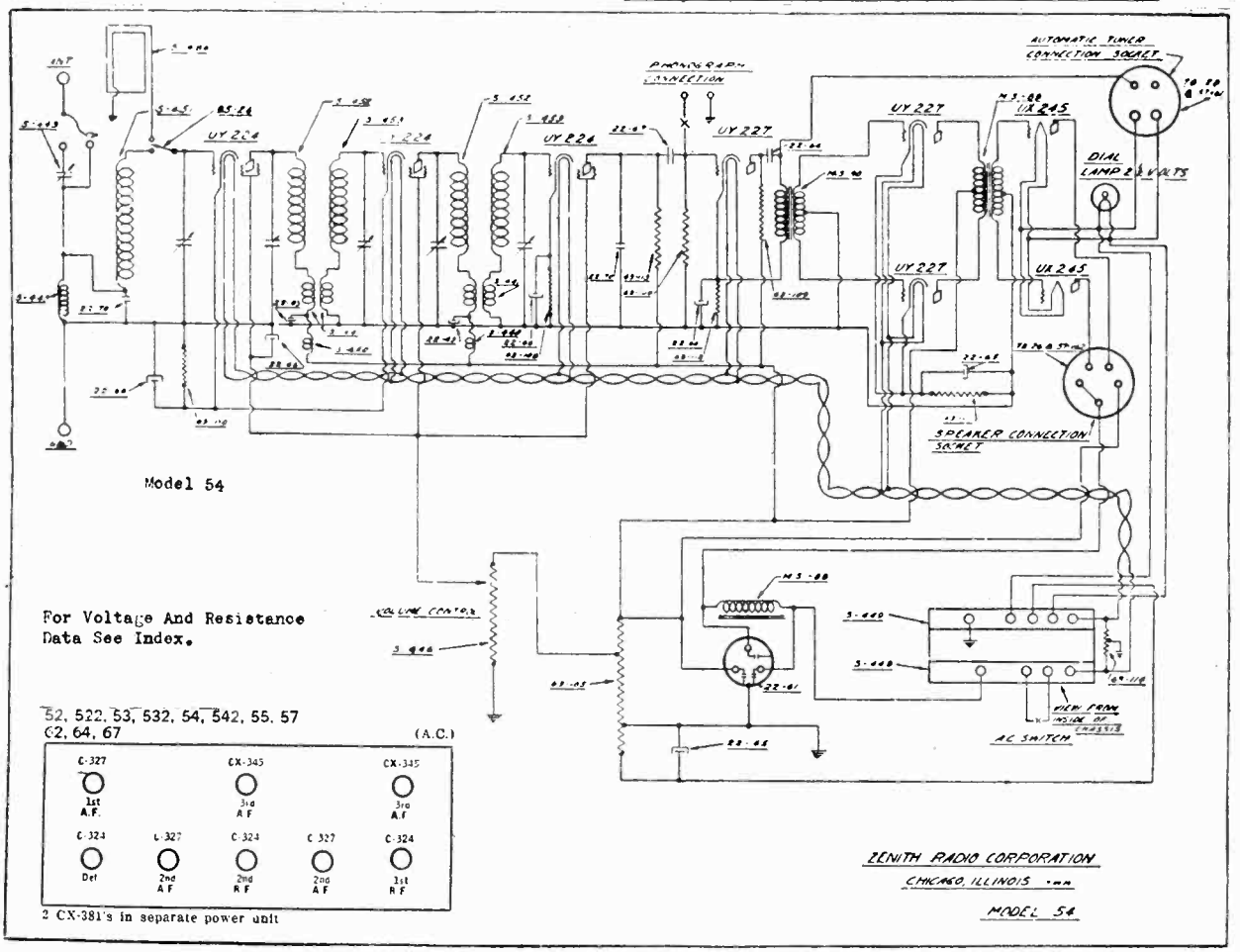
MODEL 52,53
MODEL 54
Schematic

ZENITH RADIO CORP.



Model 52,53

For Voltage And Resistance Data See Index.



Model 54

For Voltage And Resistance Data See Index.

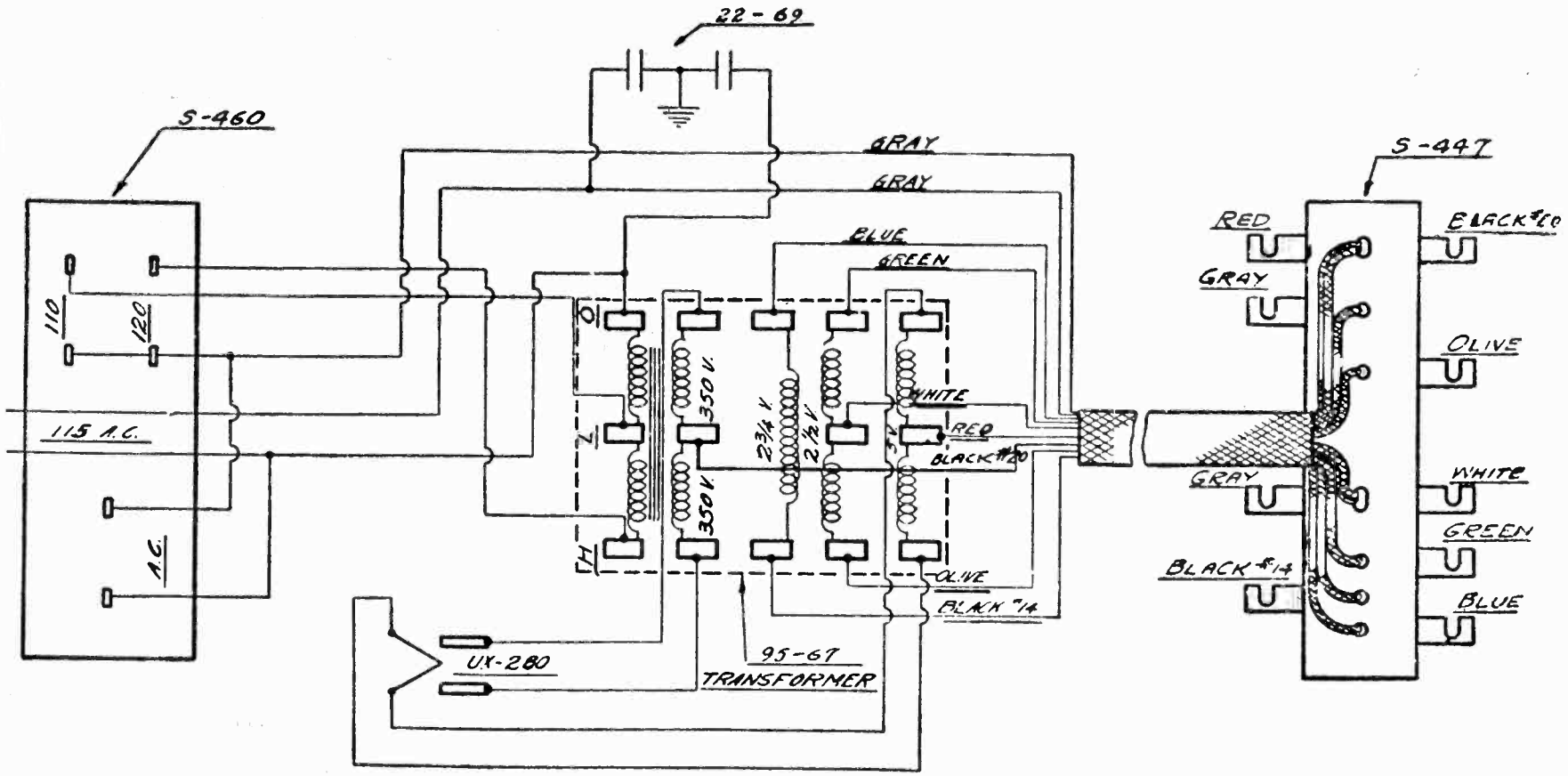
52, 522, 53, 532, 54, 542, 55, 57
62, 64, 67 (A.C.)

6-327 1st A.F.		CX-345 3rd A.F.		CX-345 3rd A.F.
6-324 Det	6-327 2nd A.F.	6-324 2nd R.F.	6-327 2nd A.F.	6-324 1st R.F.

2 CX-381's in separate power unit

ZENITH RADIO CORP.

MODEL 52,53,54,55
Voltage - Resistors
MODEL ZE-50
Power Unit



ZENITH—Models 52-53-54-55
Line Voltage 115—Set on 120 Volt Tap—Volume Control Position Full On
*The screen grid voltage on the detector tube is actually 50 volts but an electrostatic voltmeter would be needed to show true voltage.

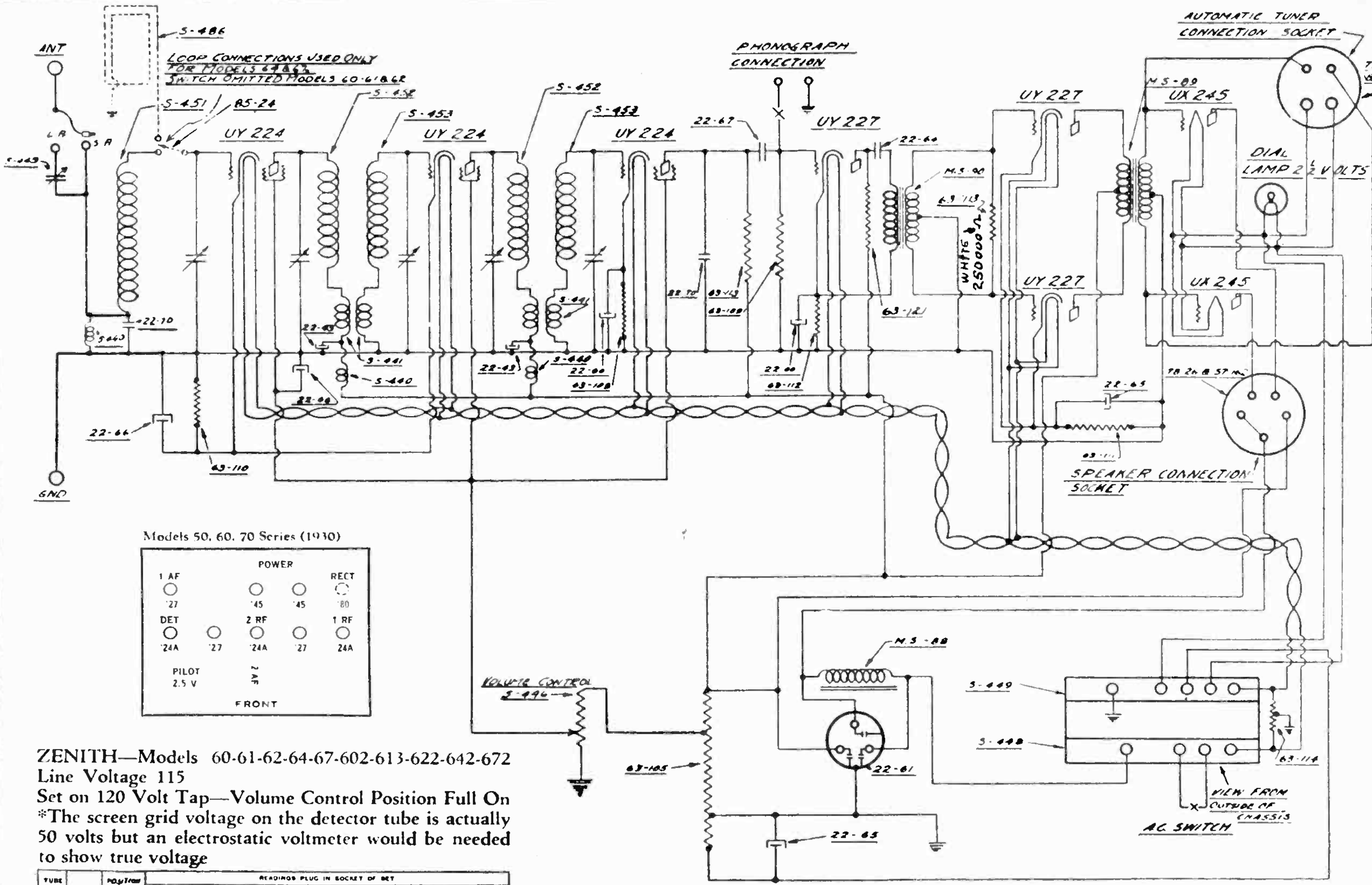
TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST RF DET ETC	READINGS PLUG IN SOCKET OF SET. TUBE OUT A VOLTS	TUBE OUT B VOLTS	TUBE IN TESTER A VOLTS	TUBE IN TESTER B VOLTS	TUBE IN TESTER C VOLTS (CONTROL GRID)	TUBE IN TESTER CATHODE HEATER VOLTS	TUBE IN TESTER NORMAL PLATE M A	TUBE IN TESTER PLATE M A GRID TEST	TUBE IN TESTER PLATE CHANGE M A	TUBE IN TESTER SCREEN GRID VOLTS
1	224	1st RF	-	-	2.4	175	1	2	1.6	2.8	-	50
2	224	2nd RF	-	-	2.4	175	1	2	1.6	4	-	50
3	224	Det.	-	-	2.4	90	5	5	0	0	-	*
4	227	1st AF	-	-	2.4	55	2	2	1	1.2	-	-
5	227	2nd AF	-	-	2.4	143	14	14	4.3	5.7	-	-
6	227	2nd AF	-	-	2.4	143	14	14	4.3	5.7	-	-
7	245	3rd AF	-	-	2.2	248	45	-	24	28	-	-
8	245	3rd AF	-	-	2.2	248	45	-	24	28	-	-
9	280	Rect.	-	-	4.7	-	-	-	100	-	-	-
10												

Color Code of Resistors in 50 Series

63-101	50000 ohms	Green	The voltage divider 63-105 has
63-109	100000 ohms	Red	a total resistance of 6000 ohms
63-110	400 ohms	Yellow	tapped at 850 ohms from one end
63-111	2000 ohms	Black	and 2800 ohms from the other
63-112	4000 ohms	Blue	end. The remaining section has
63-118	250000 ohms	White	a resistance of 2350 ohms.
63-121	100000 ohms	Pink	Mershon filter units are used.

MODEL 60,61,62,64,67,602,
613,622,642,672
Schematic - Voltage

ZENITH RADIO CORP.



ZENITH—Models 60-61-62-64-67-602-613-622-642-672
Line Voltage 115
Set on 120 Volt Tap—Volume Control Position Full On
*The screen grid voltage on the detector tube is actually 50 volts but an electrostatic voltmeter would be needed to show true voltage

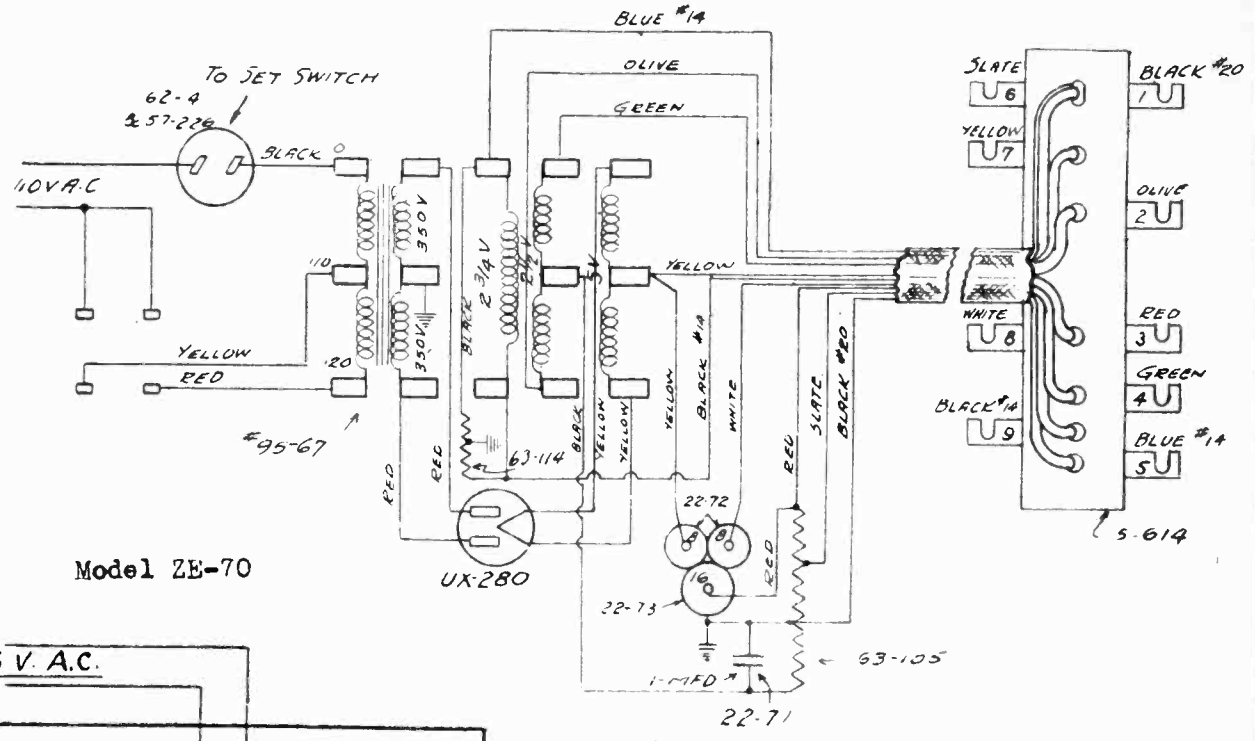
Tube No. in Order (1)	Type of Tube (2)	Position of Tube 1st RF Det., etc. (3)	Readings Plug in Socket of Set: Tube Out: A Volts (4)	B Volts (5)	Tube in Tester: A Volts (6)	B Volts (7)	C Volts (Control Grid) (8)	Cathode-Heater Volts (9)	Normal Plate M.A. (10)	Plate M.A. Grid Test (11)	Plate Change M.A. (12)	Screen Grid Volts (13)
1	224	1 R.F.	—	—	2.4	175	1	2	1.6	2.8	1.2	50
2	224	2 R.F.	—	—	2.4	175	1	2	1.6	4	2.4	50
3	224	Det.	—	—	2.4	90	5	5	0	0	0	*
4	227	1 A.F.	—	-	2.4	55	2	2	1	1.2	.2	-
5	227	2 A.F.	—	-	2.4	143	14	14	4.3	5.7	1.4	-
6	227	2 A.F.	—	-	2.4	143	14	14	4.3	5.7	1.4	-
7	245	3 A.F.	—	-	2.2	248	45	-	24	28	4	-
8	245	3 A.F.	—	-	2.2	248	45	-	24	28	4	-
9	280	Rect.	-	-	4.7	-	-	-	100	-	-	-
10	—	—	-	-	-	-	-	-	-	-	-	-

SINGLE VOLUME CONTROL
MODELS 60, 61, 62, 602, 612 AND 622 WITHOUT LOOP
MODELS 64, 67, 642 AND 672 WITH LOOP

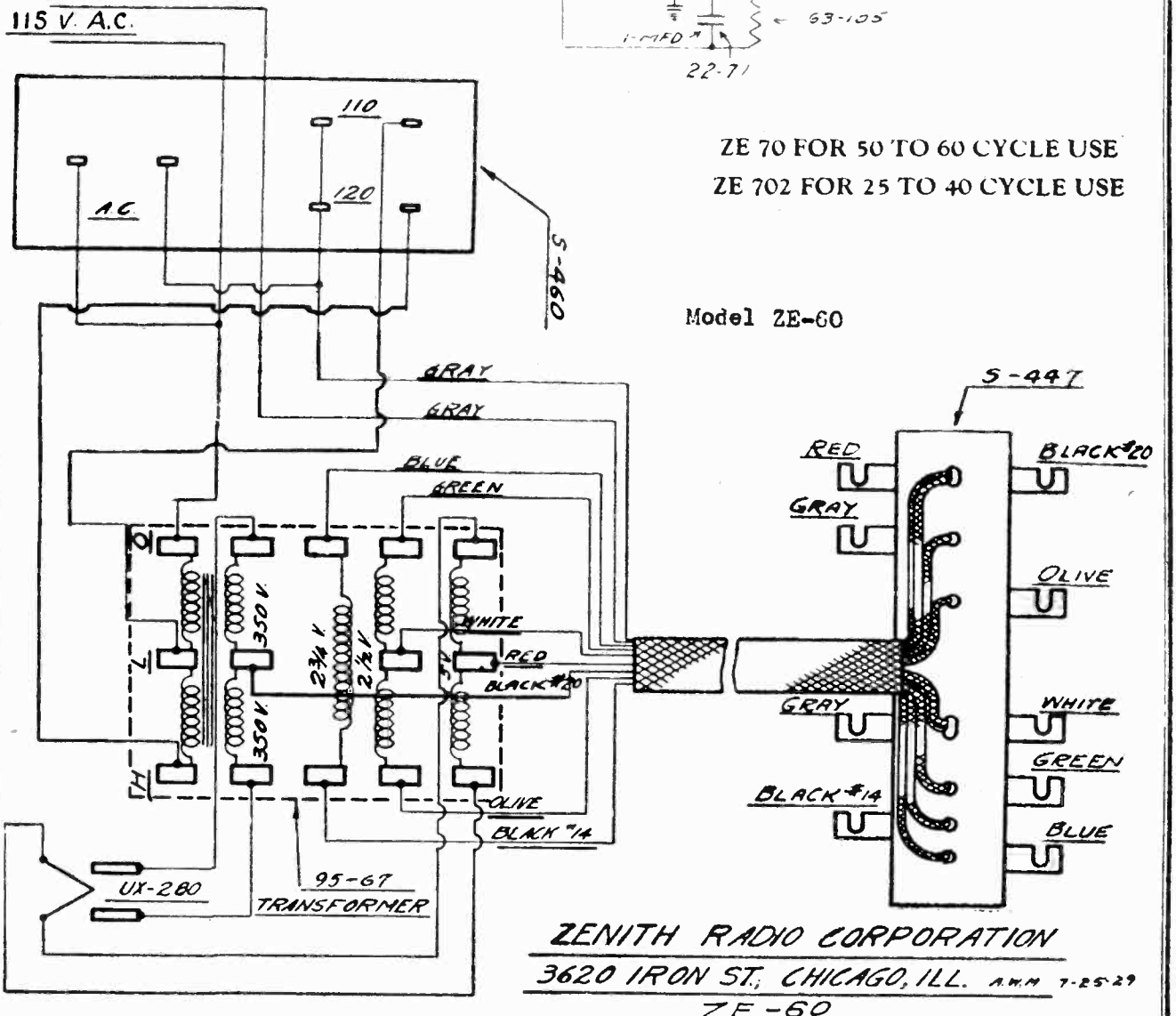
For wiring diagram of power supply ZE 60 used with the Series 60 receivers see index

ZENITH RADIO CORP.

MODEL ZE-60
MODEL ZE-70



Model ZE-70



ZE 70 FOR 50 TO 60 CYCLE USE
ZE 702 FOR 25 TO 40 CYCLE USE

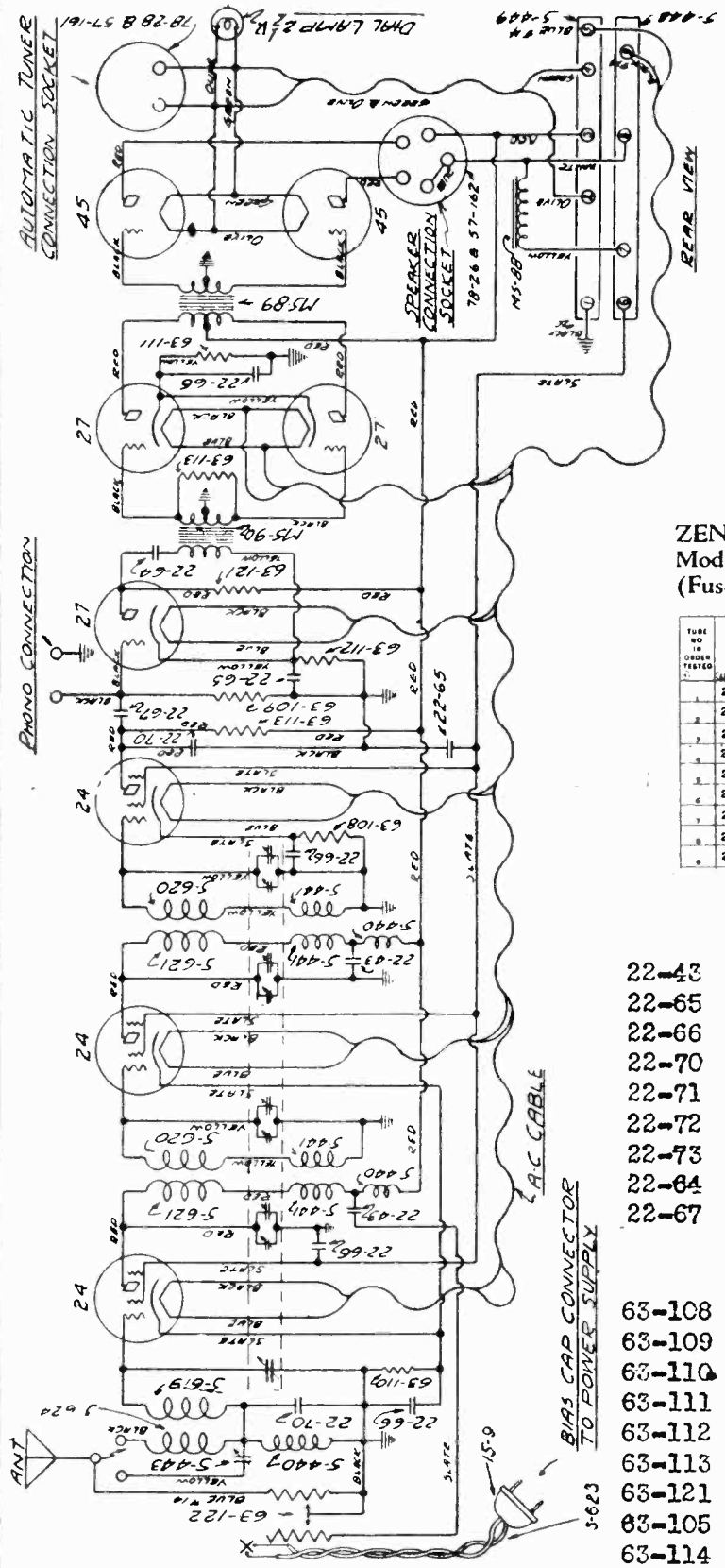
Model ZE-60

ZENITH RADIO CORPORATION
3620 IRON ST., CHICAGO, ILL. A.M.M. 7-25-29
ZE-60

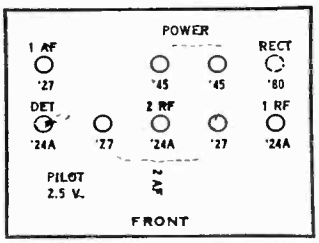
MODEL 71,72,73,77,712, 722,732,777

Schematic - Voltage
Electrical Values

ZENITH RADIO CORP.



Models 50, 60, 70 Series (1930)



For wiring diagram of the power pack ZE-70 and ZE-702 for series 70 receivers see Index

ZENITH—Models 71, 72, 73 and 77—60 Cycle
Models 712, 722, 732 and 777—25 Cycle
(Fuse in 110 Volt Clips—Line Volts 110)

TUBE NO IN ORDER TESTED	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 OR ANODE	CONTROL GRID — SPACE CHARGE GRID +	SCREEN GRID — NORMAL GRID +	CATHODE TO HEATER	SCREEN GRID L H SG PLATE	PLATE L H SG PLATE	TUBE TEST
	224	1 R.F.	2.5	185	2	55	2.5	-	2.5	
	224	2 R.F.	2.5	185	2	55	2.5	-	3.0	
	224	Det.	2.5	100	-	8	5	-	.1	
	227	1 A.F.	2.5	65	-	25	5	-	1.5	
	227	PP-2nd	2.5	160	-	13	13	-	3.4	
	227	PP-2nd	2.5	160	-	13	13	-	3.4	
	245	PP-PWR	2.3	260	-	52	-	-	38	
	245	PP-PWR	2.3	260	-	52	-	-	38	
	280	Rect.	5.0	-	-	-	-	-	-	

CONDENSER SPECIFICATIONS

22-43	.25 mf	(2)
22-65	1.	(double)
22-66	.2	(quadruple)
22-70	.001	(2)
22-71	1.	
22-72	8.	(2)
22-73	16.	
22-64	.03	
22-67	.15	

RESISTOR SPECIFICATIONS

63-108	50000 ohms	Green
63-109	100000 ohms	Red
63-110	400 ohms	Yellow
63-111	2000 ohms	Black
63-112	4000 ohms	Blue
63-113	250000 ohms	White
63-121	100000 ohms	Pink
63-105	voltage divider	
63-114	10 ohms	Center Tap

INSTALLATION OF TONE CONTROL ON MODEL 70 SERIES

Remove variable condenser shield. Unsolder lead from lower terminal on rocking stator and pull this lead through the base to under side of chassis.

Turn chassis up side down; remove the two machine screws from rear side of coil assembly base on the first R. F. coil can only

With chassis inverted, multicord terminal strip facing the operator, remove the one machine screw from right hand end of chassis which is screwed through the chassis frame and into the R. F. coil assembly base.

Unsolder the two remaining leads, coming from the first R. F. coil can; the one at the antenna choke terminal; the other at the S. A. tip jack; also the copper shielding on lead going through 1st R. F. coil can.

The R. F. coil assembly base may now be forced back about one-half inch and this will permit the 1st R. F. coil can and its base to be lifted upward from the chassis.

Measure off a point midway between the volume control shaft and the rocking stator shaft centers; and 15/16" from chassis bottom (base plate removed.)

Center punch and drill a .378" dia. hole to take the 500,000 ohm variable resistor tone control shaft, and mount so soldering terminals on same point toward, and are next to the volume control.

Be sure the Textolite Insulating Strip is attached to the back of the tone control unit to prevent the terminals from shorting out when the R. F. coil can is again installed.

Mount the .01 mfd. fixed condenser by soldering one of its terminals directly to one of the outside terminals of the six point audio transformer; be sure to get the secondary side, or grid of the 245 output tube.

This condenser will be self-supporting.

Wire from the remaining .01 fixed condenser terminal to any-one of the two terminals on the variable resistance tone control unit

Wire from the remaining terminal on this unit to the other side of the same secondary winding direct on six point audio transformer, or grid of the other 245 output tube.

Technically speaking this produces a series circuit consisting of a .01 mfd. fixed condenser and a 500,000 ohm variable resistor in shunt to the secondary circuit of the six point audio transformer, or from grid to grid of the 245 output tubes.

Run your two twisted leads through the slot in the R. F. coil assembly base, behind and to the right of the 1st R.F. socket (still viewing the chassis as before - inverted.)

Press the Textolite Insulating Strip on the back of the tone control unit into place and inspect to see that no terminals are shorted.

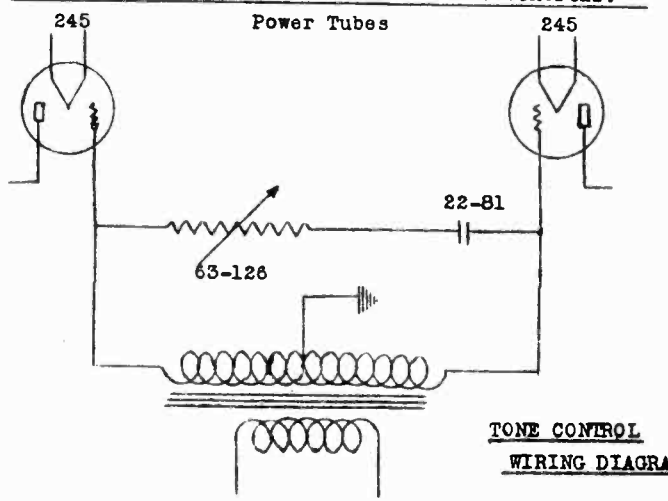
Replace the 1st R.F. coil can and base by first threading through the leads in the assembly base and work the coil can base into place.

Insert the two screws you removed from this point on the base Force the coil assembly base back into position, and insert the machi screw into same through chassis end.

Resolder all leads previously removed and put condenser shiel in place. Be sure to resolder the copper shielding on the lead from 1st R.F. coil can previously unsoldered.

Turning tone control knob clockwise produces the treble effec and counter-clockwise the bass.

A small tone control escutcheon plate will be included and should be mounted on the cabinet panel to read correctly, the cabinet panel having been drilled with a 5/8" hole 1 1/16" from base centrally located between the resonance and volume controls.



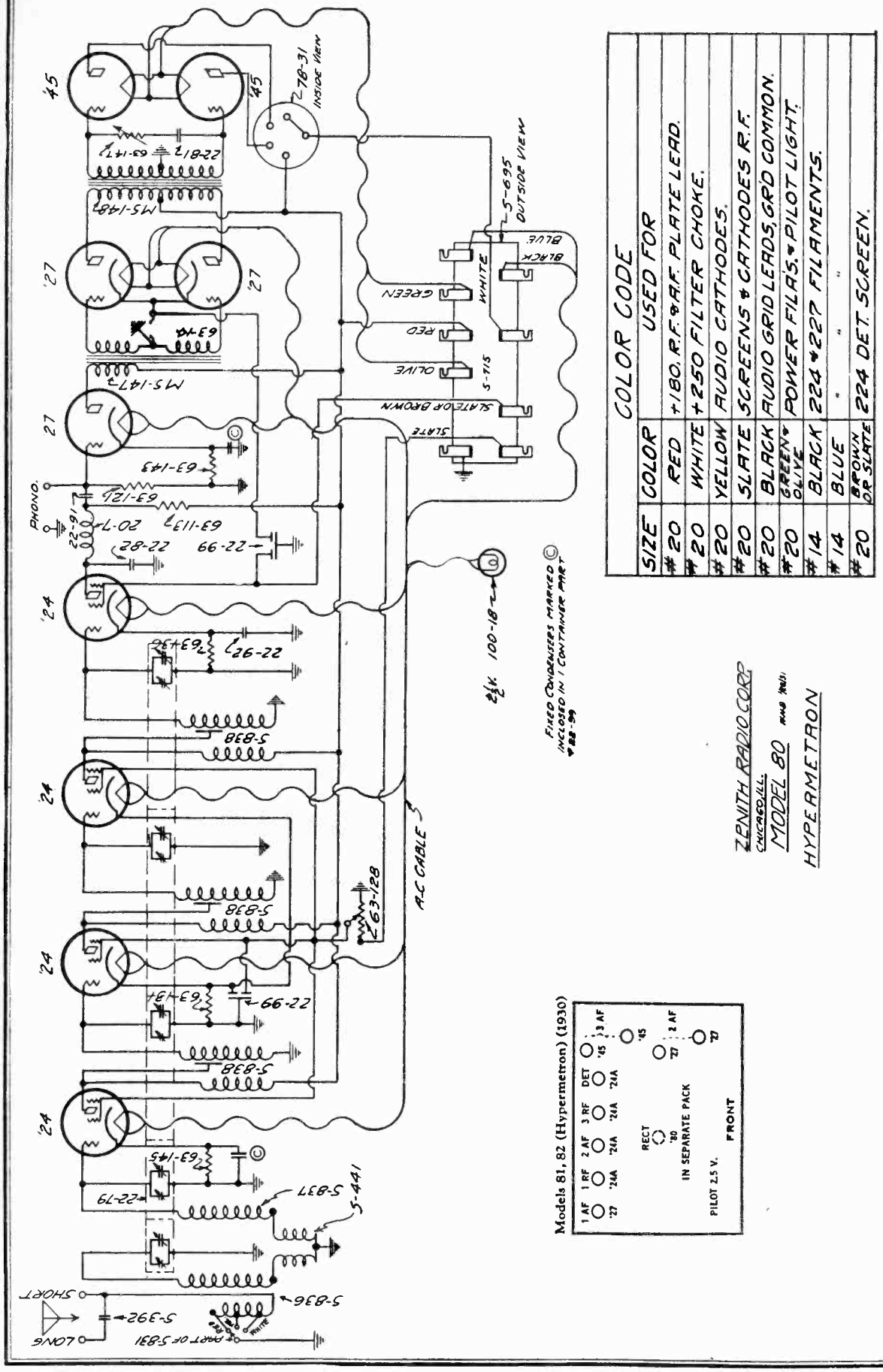
TONE CONTROL
WIRING DIAGRAM

ZENITH RADIO CORP.

MODEL 70
Tone Control
Installation

MODEL 80 Hypermetron
Schematic

ZENITH RADIO CORP.

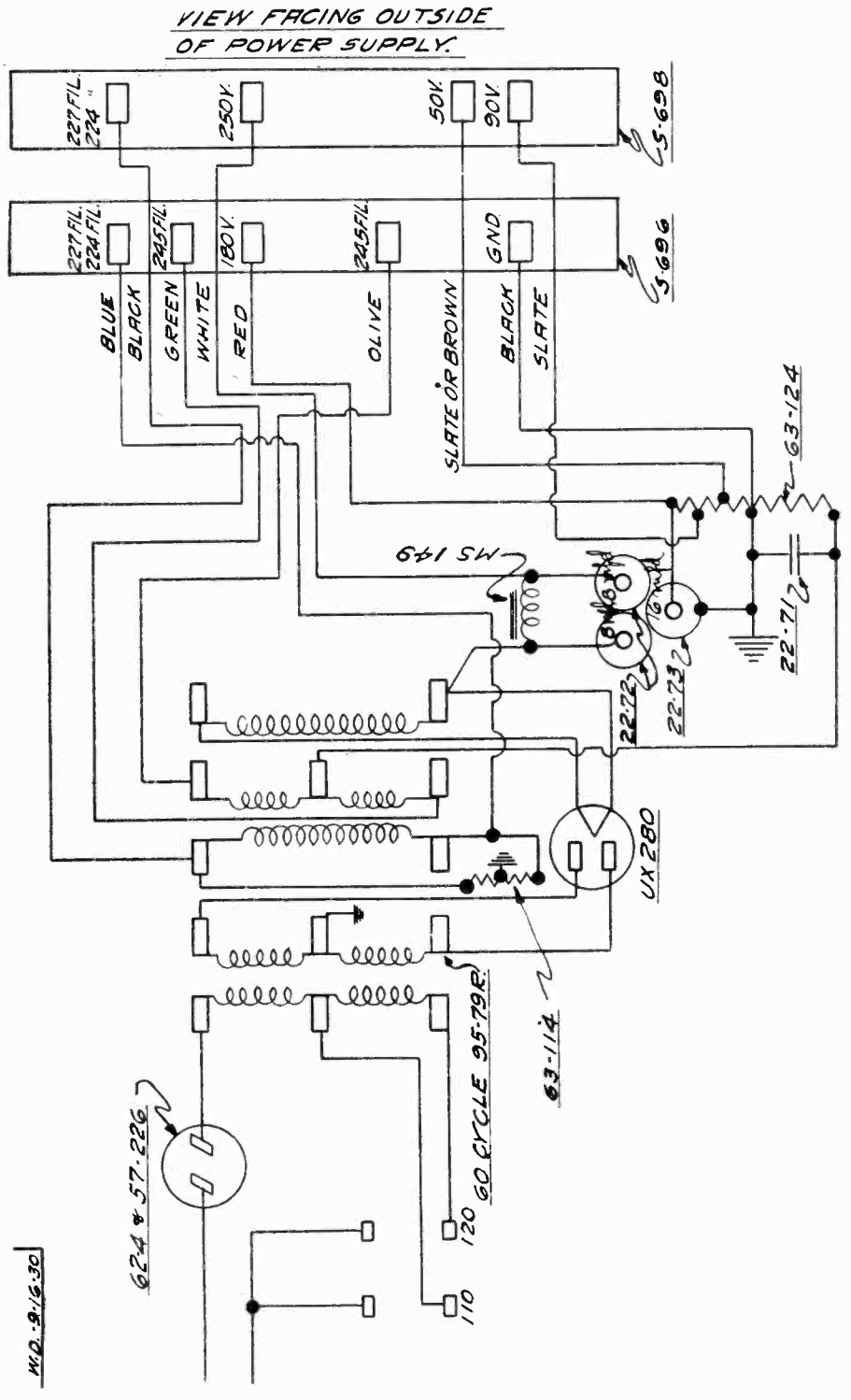


COLOR CODE		
SIZE	COLOR	USED FOR
#20	RED	+180, R.F. & A.F. PLATE LEAD.
#20	WHITE	+250 FILTER CHOKE.
#20	YELLOW	AUDIO CATHODES.
#20	SLATE	SCREENS & CATHODES R.F.
#20	BLACK	AUDIO GRID LEADS, GRD COMMON.
#20	GREEN & OLIVE	POWER FILAS. & PILOT LIGHT.
#14	BLACK	224 & 227 FILAMENTS.
#14	BLUE	" " "
#20	BROWN OR SLATE	224 DET. SCREEN.

MODELS 82, 89 (60 cycle) and 822, 892 (25 cycle) ZENITH HYPER METRON RECEIVERS.
Models **82** and **89** Zenith Receivers operate on 105 to 125 volts, 50 to 60 cycle alternating current. Models 822 and 892 operate on 105 to 125 volts, 25 to 40 cycle alternating current (A. C.) The power supply ZE80 is used on 50 to 60 cycle current. The power supply ZE**802** is used on 25 to 40 cycle current

ZENITH RADIO CORP.

MODEL ZE-80
Schematic
Parts List



POWER SUPPLY - ZE 80

22-71	1. mf Condenser.....(Power Bias).....	1.10
22-72	8. " " .....(Electrolytic).....	2.50
22-73	16. " " .....(Electrolytic).....	5.50
Note: 16 mf Condenser can be identified by Blue marking on anode		
63-114	10 Ohm Center Tap Resistor.....	.40
63-124	10,450 " Voltage Divider.....	1.60
57-226	Bias Plate.....	.04
57-242	Bias Socket & Guide Plate.....	.01

78-32	Four Prong Socket for Rectifier.....	.15
95-79	Power Transformer.....(60 Cycle).....	9.00
95-93	Power Transformer.....(25 Cycle).....	13.50
136-2	2 Amp Fuse.....	.10
S-696	Terminal Strip Assem.....(Five).....	.70
S-698	Terminal Strip Assem.....(Four).....	.70
S-700	Fuse Receptacle & A.C. Outlet Plate.....	.20
MS-149	Power Choke.....	3.50

MODEL 80 Hypermetron
Parts List

ZENITH RADIO CORP.

HYPERMETRON

Variable Condenser Assembly

22-79	Five Gang Variable Condenser	20.00
S-829	Dial Drum Assembly	1.50
26-21	Calibrated Dial Strip	.20
S-703	Dial Lamp Bracket	.45
100-18	2½ Volt Dial Lamp	.25
11-2	Dial Control Cable	.05
80-70	Dial Control Cable Tension Spring	.01

Fixed Condensers

22-81	Single .01 mf Condenser.....(Tone Control Cond.)	.85
22-82	Single .001 " " .....(Detector Plate)....	.30
22-91	Single .03 " " .....(Audio Coupling)....	.50
22-92	Single .5 " " .....(Det. Cathode Bypass	.75
22-99	Dual .1 " " .....(2nd RF & Det.Bypass	.75
S-392	Antenna Series Condenser	.10

Resistors

63-113	250M Ohm Resistor.....(Red,Green End,Yellow Dot)..	.35
63-121	100M " " .....(Pink).....	.35
63-131	400 " " .....(Yellow,Black End, Brown Dot	.35
63-136	50M " " .....(Green, Black End, Orange Do	.35
63-143	4M " " .....(Yellow, Black End, Red Dot)	.35
63-145	800 " " .....(Gray, Black End, Brown Dot)	.35
63-146	2000 " " .....(Red, Black End, Red Dot)...	.35

R.F.Coils

S-441	R. F. Coupling Coil	1.00
S-836	Preselector Coil.....(Coil Only).....	1.40
S-837	1st R. F. Coil.....(" ").....	1.00
S-838	2nd, 3rd R. F. & Det. Coils.....(" ").....	1.00
20-7	Detector Choke	.50
20-8	R. F. Choke	.50

Shields & Bases

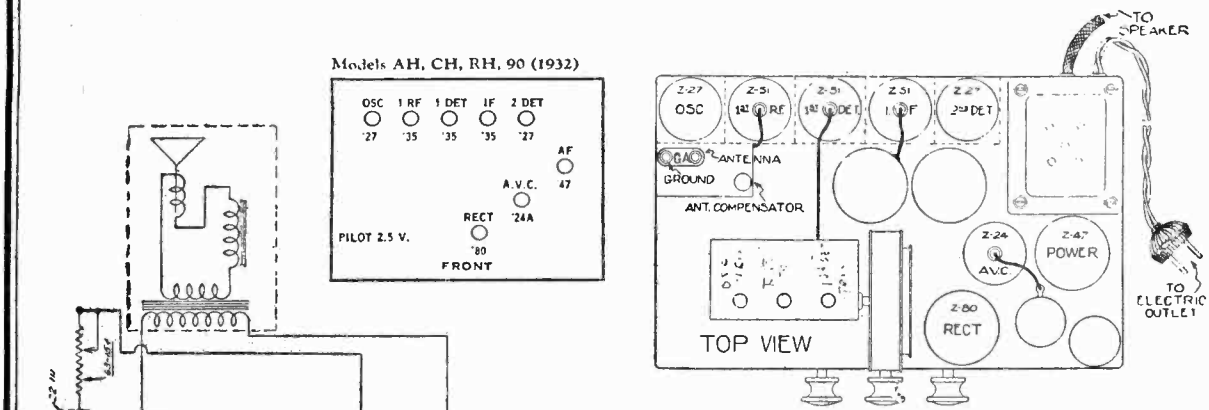
4-87	Tube Shield Can Base	.05
126-62	Coil " " "	.05
126-59	R. F. Coil Shield Can	.25
126-61	Tube Shield Can	.20
MS-153	Variable Condenser Shield	.75

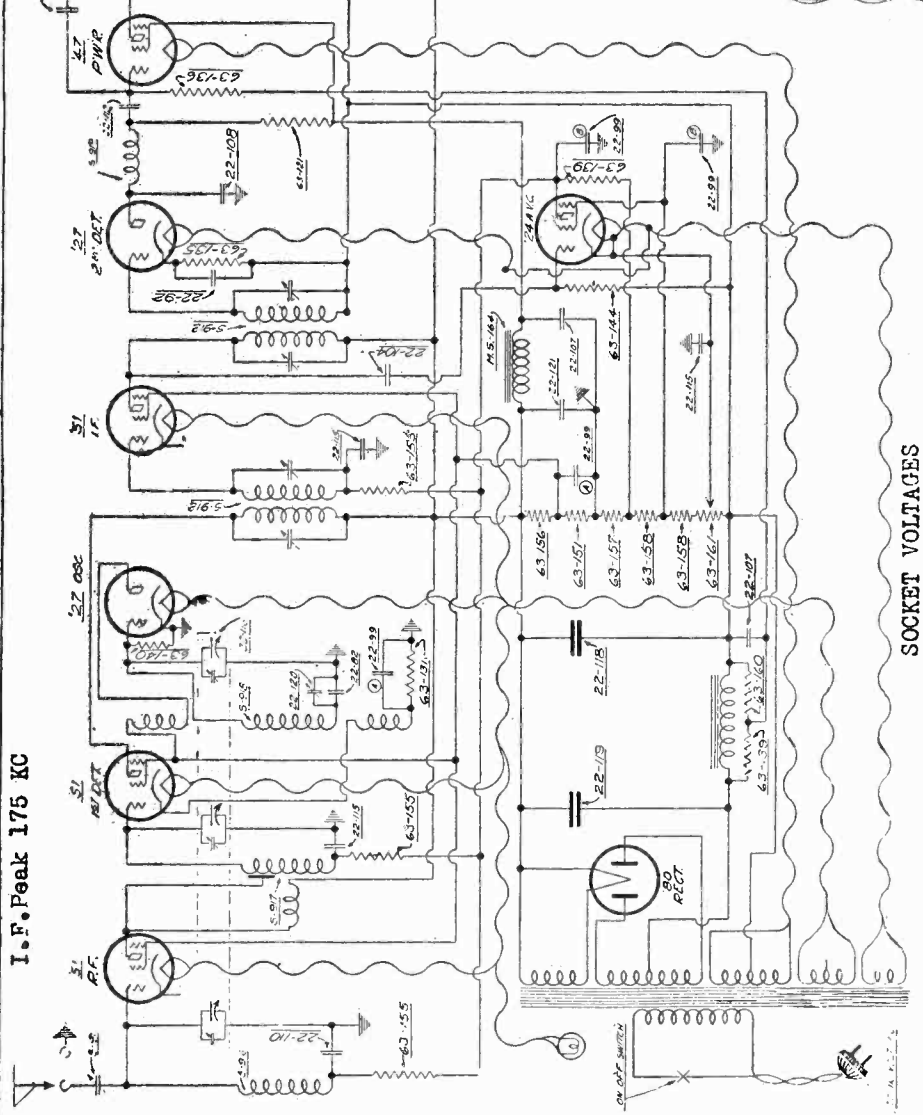
Miscellaneous

44-4	Phono Connector Base	.30
78-30	Five Prong Floating Socket	.20
78-31	Five Prong Stationary Socket	.20
78-32	Four Prong Stationary Socket	.20
57-161	UY Socket Guide Plate	.01
57-242	Four & Five Prong Socket Guide Plates	.03
63-128	Volume Control	1.50
63-147	Tone Control	1.25
85-26	Three Point Switch Base Less Shaft	.45
143-9	Three Point Switch Bushing with Contact Arm	.35
117-31	Three Point Switch Lever Arm	.01
S-695	Multicord & Terminal Plate Assembly	2.00
S-715	Multicord Terminal Plate Only	.50
52-23	Multicord only	1.25
MS-147	1st Stage Push Pull Transformer...(5 Lead)	5.50
MS-148	2nd Stage Push Pull Transformer...(6 Lead)	5.50

ZENITH RADIO CORP.

MODEL AH,CH,RH
Schematic
Voltage - Chassis





SOCKET VOLTAGES

Type	Position	Fil. Volts	Plate Volts	Control Grid Volts	Cathode Volts	Plate M. A.	S.G. Volts
Z51	R. F.	2.25	170	—.4	0	4.5	64
Z51	1st Det.	2.25	165	—1.5	1.5	3.	62
Z27	Osc.	2.1	55	0	0	4.5	0
Z51	I. F.	2.3	180	—5.6	0	.75	80
Z27	2nd Det.	2.15	160	—14.5	8.5	.80	0
Z47	Power	2.3	250	—15	0	28.	250
Z24	A. V. C.	2.1	8	—.5	0	0	40
Z80	Rect.	4.7	0	0	0	34. ca.	0

Voltage readings taken with a Weston type 566 tester. Manual volume control in maximum position and antenna and ground disconnected. Line voltage 112.

MODELS AH,CH,RH
Parts List
Servicing Data

ZENITH RADIO CORP.

I-F. ADJUSTMENT

The intermediate transformers employed between the 1st detector and I. F. tube and between the I. F. tube and 2nd detector have been accurately peaked to 175 kilocycles on a temperature controlled crystal oscillator before leaving the factory and unless the service man has an oscillator which is accurately calibrated at 175 kilocycles and feels that the intermediates are at fault, their adjustment should never be changed. However, in cases where it is necessary the test oscillator is first set to 175 kilocycles and coupled to the grid terminal of the first detector through a .00025 mf. fixed series condenser. The ground lead of the test oscillator is connected to the ground post of the receiver. (Indicated at point "A" in figure 2.) For this operation the oscillator tube of the receiver should be removed. Do not connect the test oscillator direct to grid of the first detector tube without the series condenser being in the grid lead, since by so doing, the bias resistor will be shorted out. Four adjusting screws are provided under the chassis (see figure 3). These verniers tune the plate circuit of the first detector, grid and plate circuits of the I. F. stage and grid circuit of the 2nd detector. (See wiring diagram.) Beginning at the second detector grid vernier, each adjusting screw is, in turn, set for maximum output. For best results the verniers should be gone over twice in the same rotation, always keeping the output from the test oscillator at the weakest possible strength.

BALANCING CHASSIS

Every Zenette Superheterodyne is carefully balanced on laboratory equipment before the set leaves the factory and should not require further attention. However, in the event that some part of the receiver has been changed or the adjustments shifted by mishandling it may be done as follows: Procure an oscillator which is calibrated to 1500 and 550 kilocycles. It is necessary that it be accurate, otherwise the receiver dial cannot be set properly. It will be best to remove the chassis from the cabinet for this operation in order to reach the oscillator padding condenser adjustment. (See figure 4.) The test oscillator should be coupled to the antenna and ground posts of the receiver by the two leads now being furnished by the manufacturers of commercial oscillators. Although very good results may be had simply by judging audibility from the speaker, a more accurate method is to employ an output meter attached to the speaker transformer.

Before balancing any Zenette Superheterodyne the tuning condenser gang should be turned to maximum mesh position, namely the 550 kilocycle end of the scale. When the condenser is turned as far as it will go in this direction the dial index light must point to a position one division or channel beyond the 550 kilocycle line on the dial. If this condition does not already exist the index bracket should be adjusted up or down as the case may be.

The test oscillator should first be set to exactly 1500 kilocycles and attached to the antenna and ground posts, after which the receiver dial is also set to the 1500 kilocycle marking. With the manual volume control set to maximum volume, the oscillator trimmer (see figure 3) is adjusted to give maximum response in the speaker or greatest deflection of the output meter, if one is used. This vernier is extremely sharp and, therefore, great care should be used in its adjustment. The first detector section is next (see figure 3). This is the right hand section from the front. Its trimmer must also be varied for maximum response.

It will be noted that the center section of the condenser gang does not have a vernier adjustment. This is provided by the antenna compensating condenser. This section will automatically resonate by adjusting the antenna compensator after the set is connected to the aerial which is to be permanently employed. It is done by tuning to a very weak station at between 1500 and 1300 kilocycles on the dial and turning the manual volume control to the position of maximum volume. The compensator knob varies the capacity of a small series condenser and should be turned for greatest signal strength by turning first to the right and then to the left and allowed to stay at a point of maximum volume.

After making the above adjustment at 1500 kilocycles it will be necessary to then set the test oscillator at 550 kilocycles. Tune the set to 550 kilocycles and rock the receiver dial back and forth over the test oscillator signal at the same time adjusting the oscillator padder condenser (see figure 4). An adjustment of the padder will be found which gives maximum output. When this has been done it is necessary to go back to 1500 kilocycles on both the test oscillator and the dial and readjust the oscillator vernier if necessary.

In case a test oscillator is not available the service man may use a weak station on the low frequency end and another station on the high frequency end with the manual volume control in the maximum position.

RESISTORS

No.	PART	DESCRIPTION
63-121	100M ohm	Detector Plate
63-131	400 ohm	1st Det. Cathode
63-135	25M ohm	
63-136	50M ohm	Power Tube Grid
63-139	500M ohm	A. V. C. Plate
63-140	1 meg. ohm	Osc. Grid
63-144	3 meg. ohm	A. V. C. Grid
63-151	15M ohm	Voltage Divider
63-155	1M ohm	R. F. 1st Det. I. F.
63-156	10M ohm	Voltage Divider
63-157	100 ohm	Voltage Divider
63-158	1700 ohm	Voltage Divider
63-160	100M ohm	Power Tube Bias

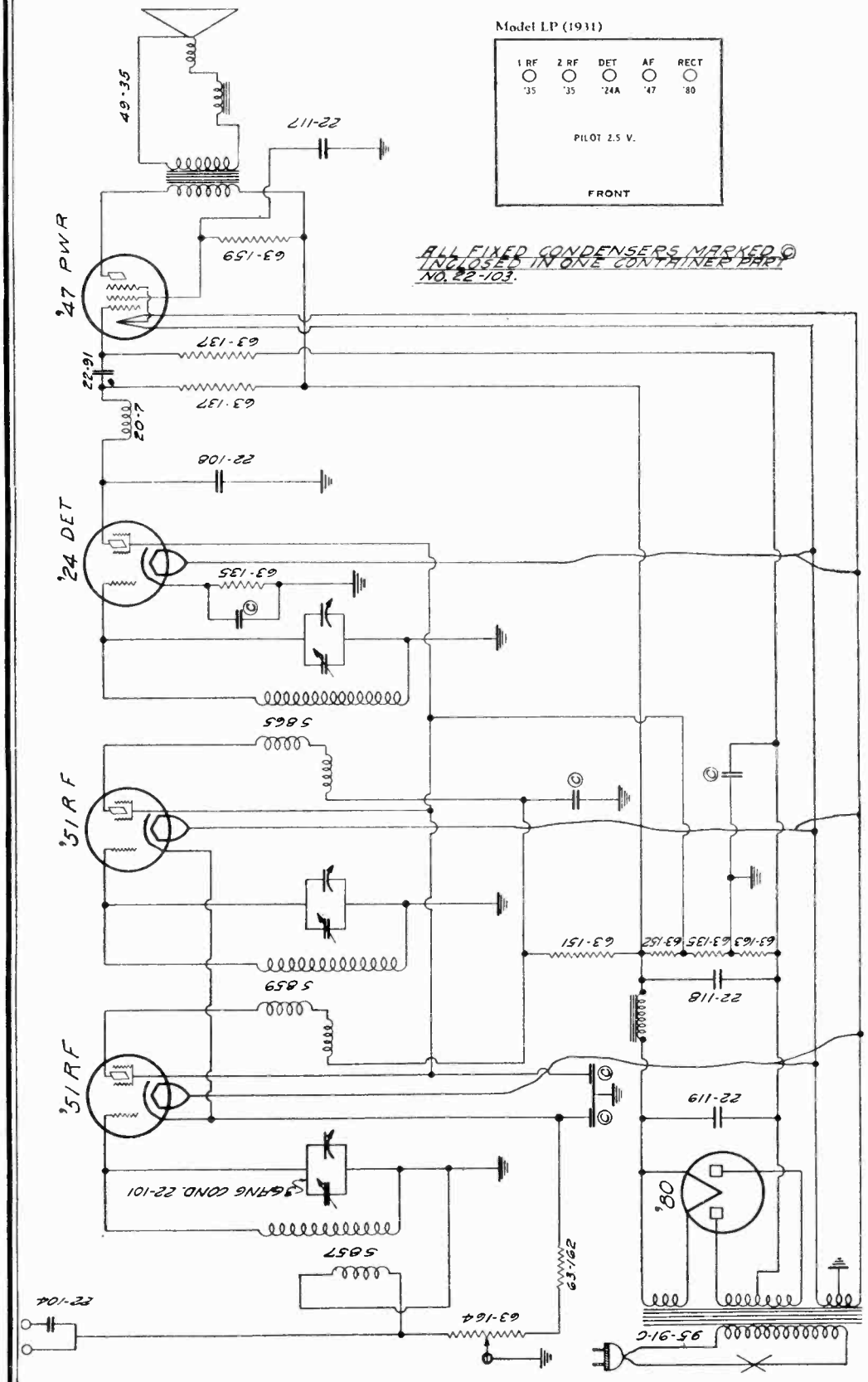
Brown, black end, yellow dot
Yellow, black end, brown dot.
Red, green end, orange dot.
Green, black end, orange dot.
Green, black end, yellow dot.
Brown, black end, green dot.
Orange, black end, green dot
Brown, green end, orange dot
Brown, black end, red dot.
Brown, black end, orange dot
Brown, black end, brown dot
Brown, purple end, red dot.
Brown, black end, yellow dot.

CONDENSERS

No.		PART
22- 82	.001 mf	
22- 92	.5 mf	
22- 99	.1 mf	(Dual)
22-104	.0001 mf	
22-107	.5 mf	
22-108	.001 mf	
22-110	.1 mf	
22-111	.03 mf	
22-112	.1 mf	
22-115	1 mf	Electrolytic 4 V.
22-118	6. mf	Electrolytic 40 V.
22-119	6. mf	
22-121	8. mf	

ZENITH RADIO CORP.

MODEL LP
Schematic
Parts List



Fixed Condensers

22-91	S-392	.03 mfd. condenser
22-103		Antenna series condenser
22-108		Five section bypass condenser
22-117		.002 mfd. condenser
22-118	6.	.5 " (bypass)
22-119	6.	" " (electrolytic low voltage)
		" " high ")

Resistors

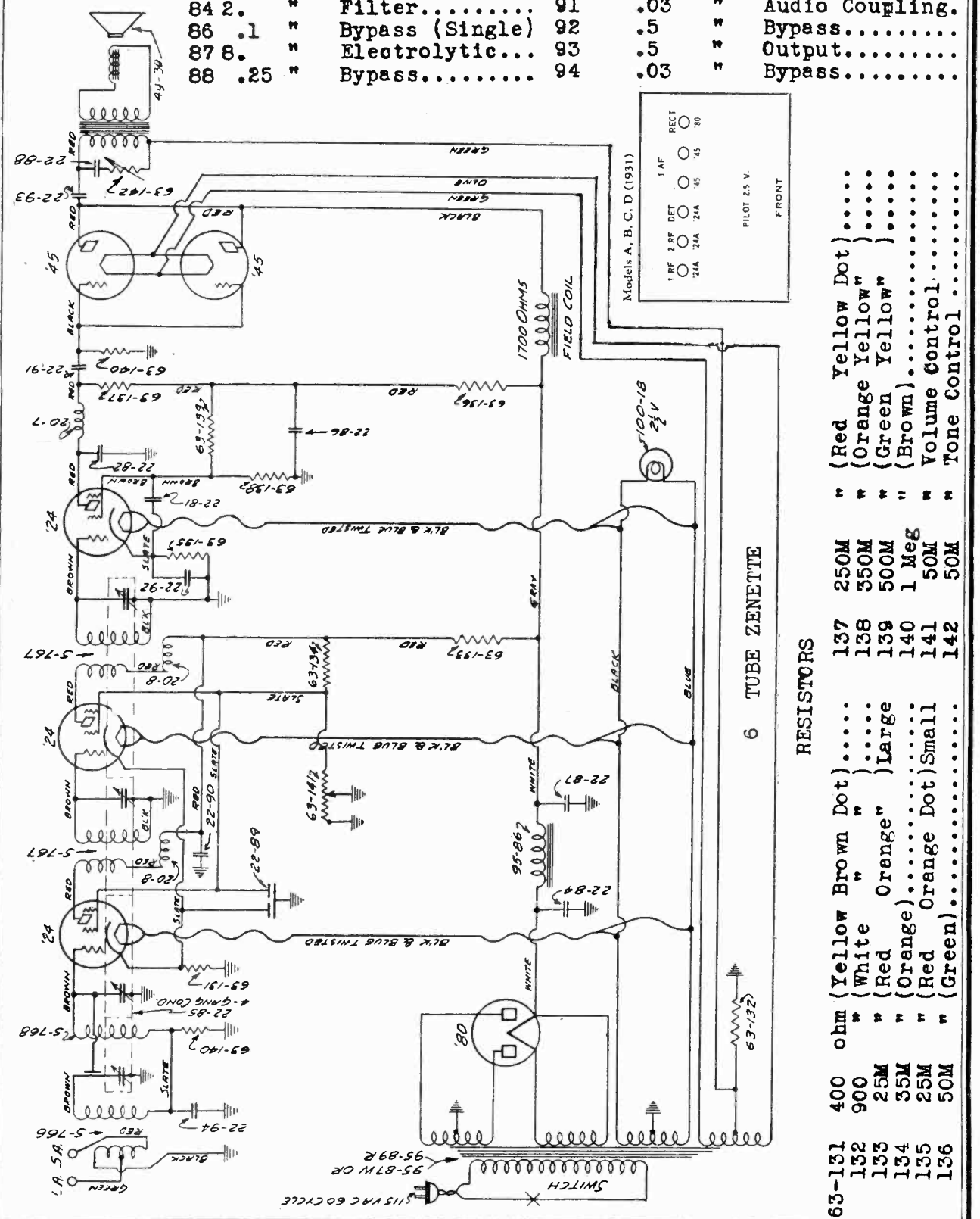
63-135	25M	ohm resistor (Red, Green end, Orange Dot)
63-137	250M	" " " " Yellow ")
63-151	15M	" " (Brown " " Orange ")
63-152	43M	" " (Yellow Orange " ")
63-159	4M	" " " Black end Red ")
63-162	100	" " (Flat wire wound black ")
63-163	320	" " " " Red ")

MODEL 6 Tube Zenette
Chassis A,B,C,D (2004)
Schematic, Parts List

ZENITH RADIO CORP.

CONDENSERS

22-81	.01 mf	Bypass.....	89	.1	"	"	Bypass (Double)
82	.001"	"	90	.1	"	"	Bypass (Single(
84	2. "	Filter.....	91	.03	"	"	Audio Coupling.
86	.1 "	Bypass (Single)	92	.5	"	"	Bypass.....
87	8. "	Electrolytic...	93	.5	"	"	Output.....
88	.25 "	Bypass.....	94	.03	"	"	Bypass.....



RESISTORS

63-131	400 ohm	(Yellow Brown Dot).....	137	250M	" (Red Yellow Dot).....
132	900 "	(White ").....	138	350M	" (Orange Yellow").....
133	25M "	(Red Orange")Large	139	500M	" (Green Yellow").....
134	35M "	(Orange).....	140	1 Meg	" (Brown).....
135	25M "	(Red Orange Dot)Small	141	50M	" Volume Control.....
136	50M "	(Green).....	142	50M	" Tone Control.....

ZENITH RADIO CORP.

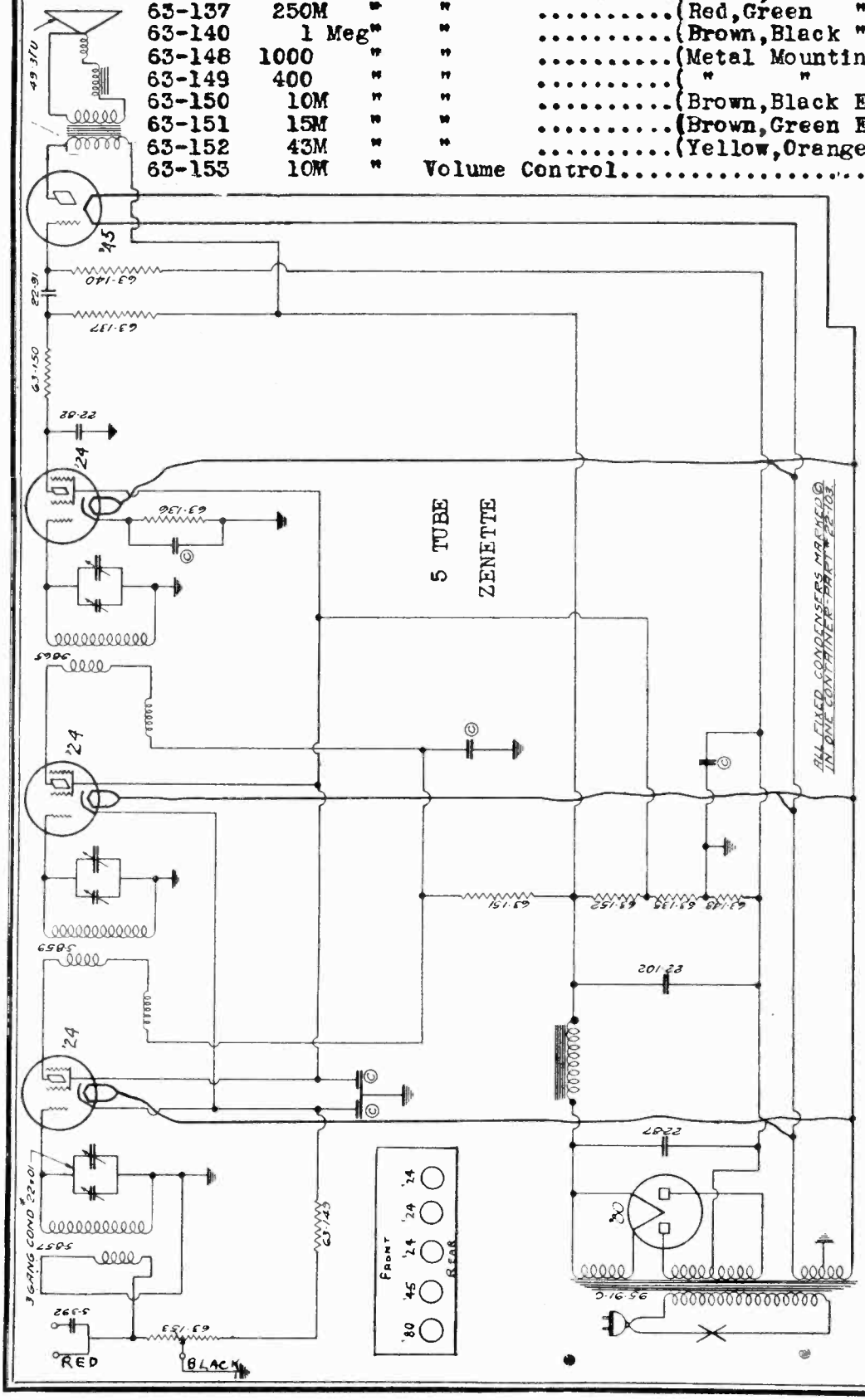
MODEL 5 Tube Zenette
Type 2009-C
Schematic

Resistors

63-135	25M	Ohm Resistor.....	(Red,Green End,Orange Dot).
63-136	50M	" "	(Green,Black " " ").
63-137	250M	" "	(Red,Green " Yellow ").
63-140	1 Meg	" "	(Brown,Black " Green ").
63-148	1000	" "	(Metal Mounting-Large).....
63-149	400	" "	(" " -Small).....
63-150	10M	" "	(Brown,Black End,Orange Dot
63-151	15M	" "	(Brown,Green End " ")
63-152	43M	" "	(Yellow,Orange End" ")
63-153	10M	" Volume Control.....	

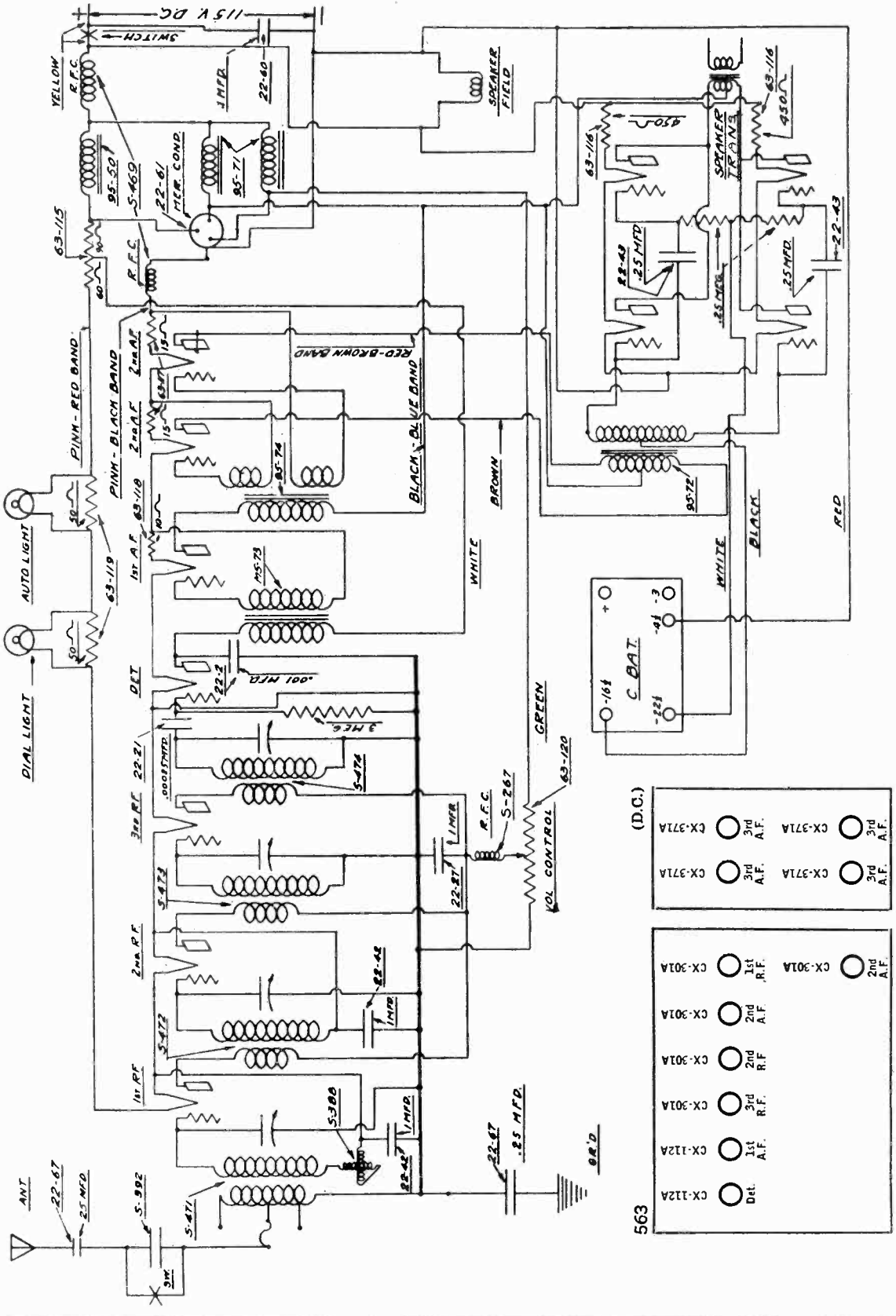
Fixed Condensers

22-82	.001	mf Condenser.....(Detector Plate).....	
22-87	8.	" " .....(Electrolytic High Voltage)	
22-102	8.	" " .....(Electrolytic Low Voltage).	
	Note: High voltage condenser identified by red dot on anode		
22-91	.03	mf Condenser.....(Audio Coupling).....	
22-100	.08	" " .....(Filter Condenser).....	
22-103	Five Section Bypass Condenser.....		
S-392	Antenna Series Condenser.....		



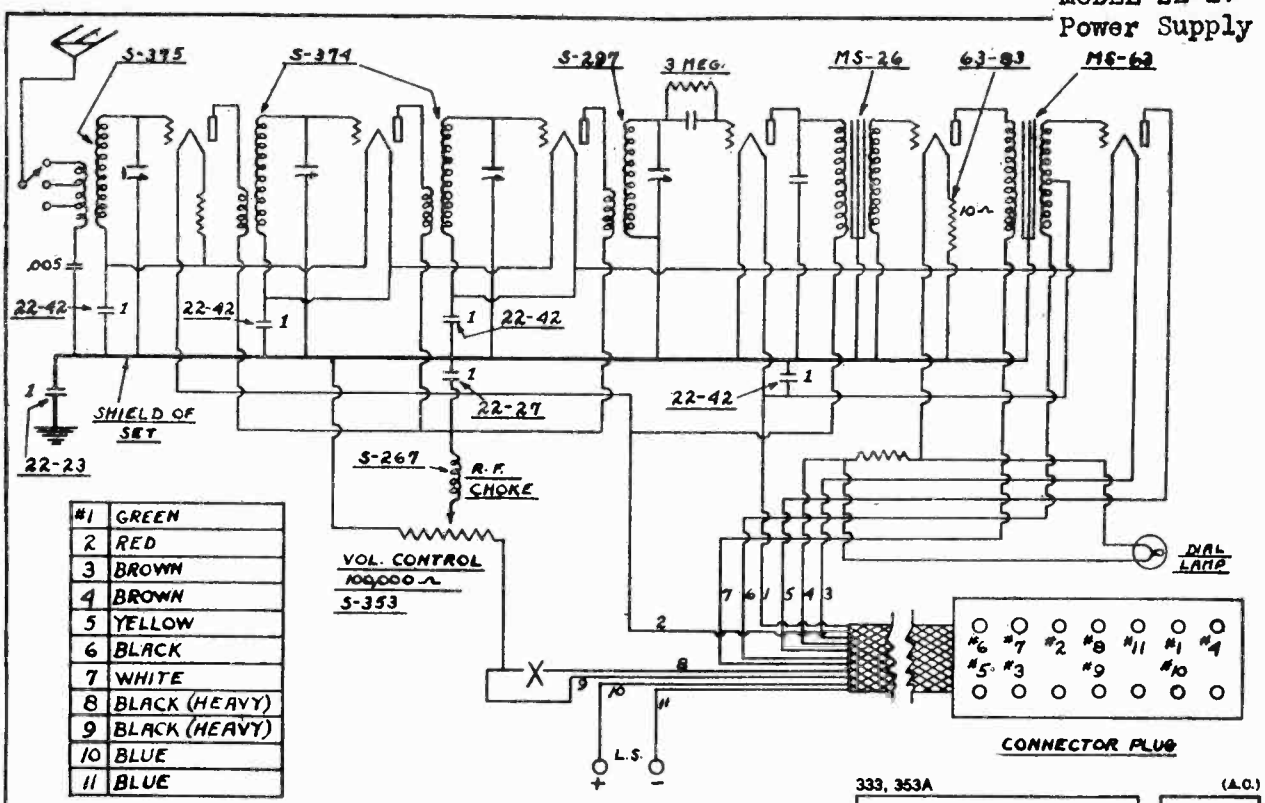
MODEL 563 DC
Schematic

ZENITH RADIO CORP.



ZENITH RADIO CORP.

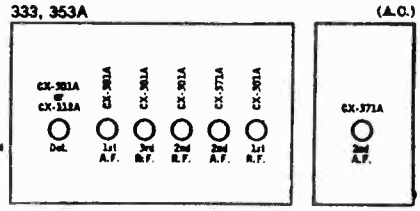
MODEL 333-353A
Schematic
MODEL ZE 17
Power Supply

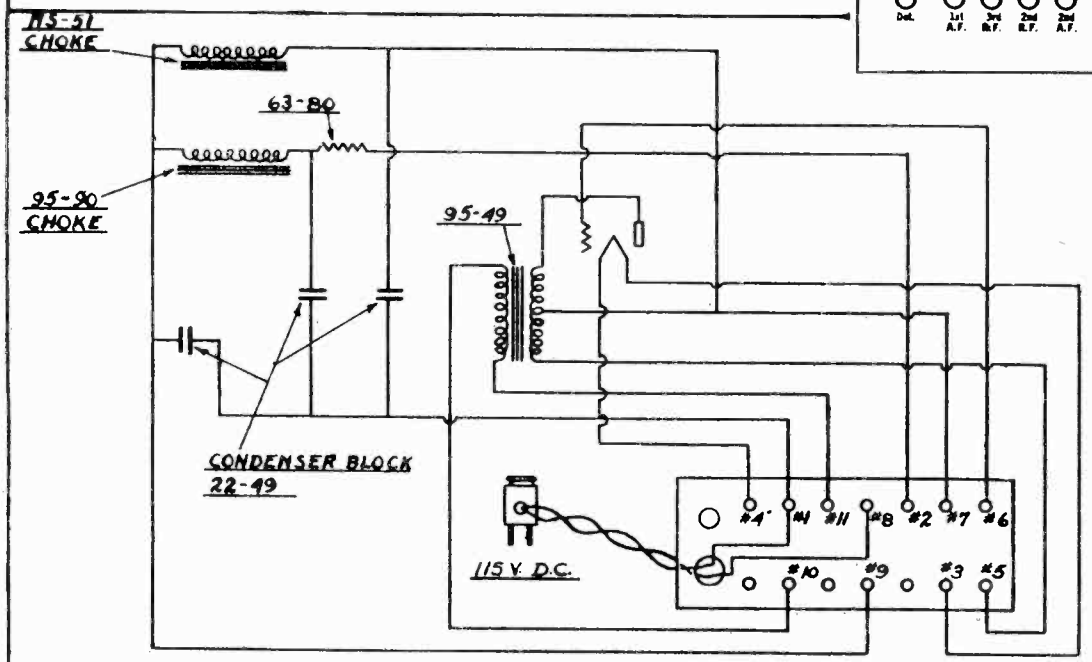


#1	GREEN
2	RED
3	BROWN
4	BROWN
5	YELLOW
6	BLACK
7	WHITE
8	BLACK (HEAVY)
9	BLACK (HEAVY)
10	BLUE
11	BLUE

WIRING DIAGRAM
MODEL 333-353A
6 TUBE D.C. SET.

13.





WIRING DIAGRAM
MODEL ZE 17
POWER SUPPLY FOR
MODELS 333-353A

ZENITH RADIO CORPORATION
CHICAGO ILL.

6-7-28 DRG. 123-48

MODEL 27
Super Zenith
MODEL Super Zenith

ZENITH RADIO CORP.