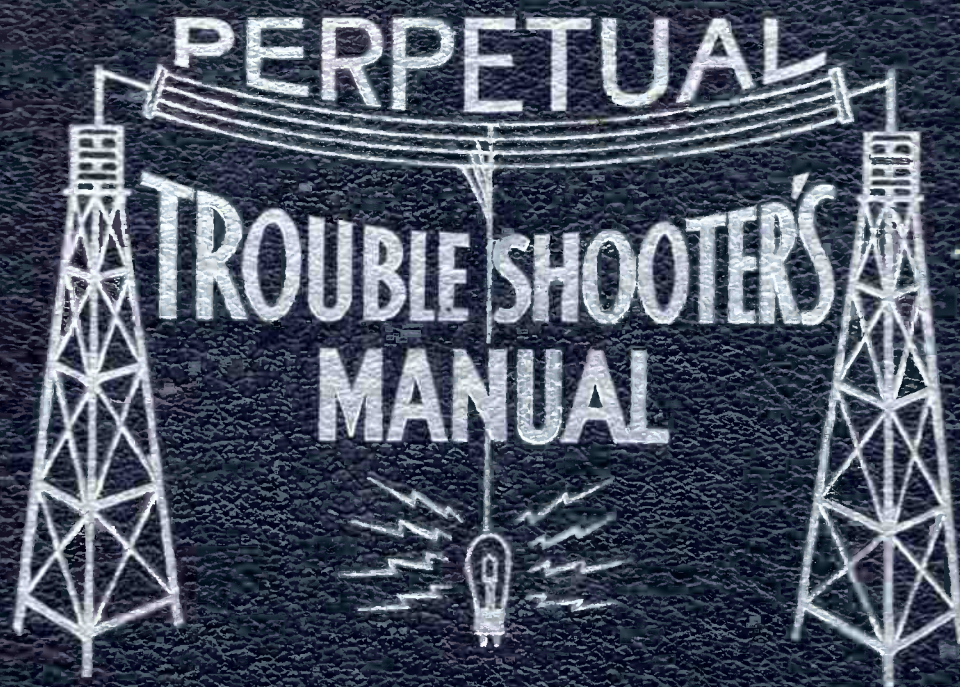


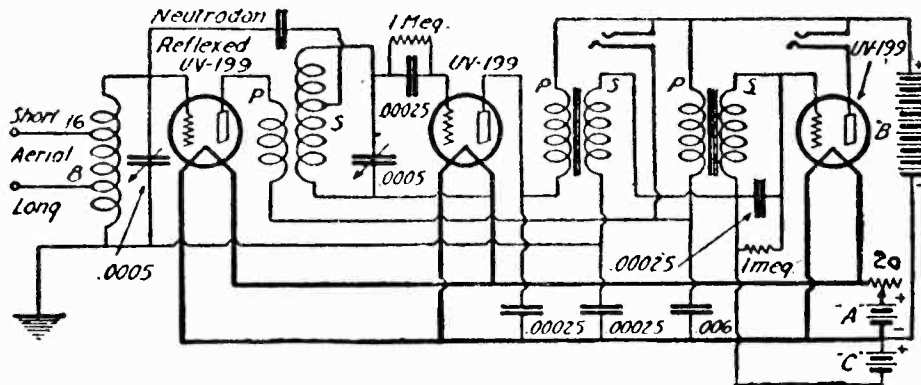
VOLUME II



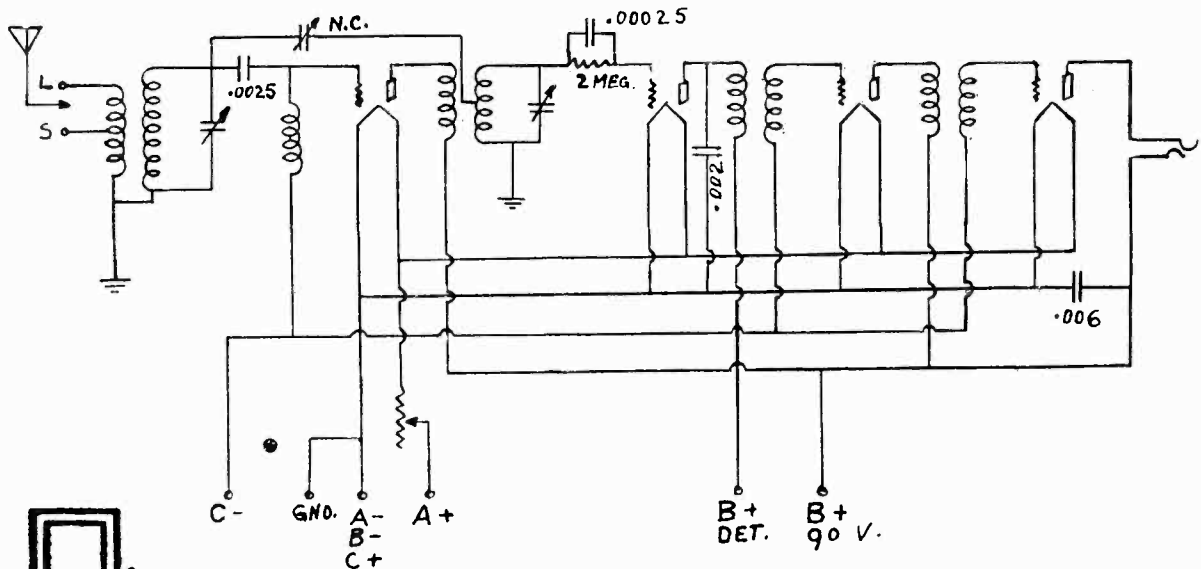
JOHN F. RIDER

WARE MANUFACTURING CORP.

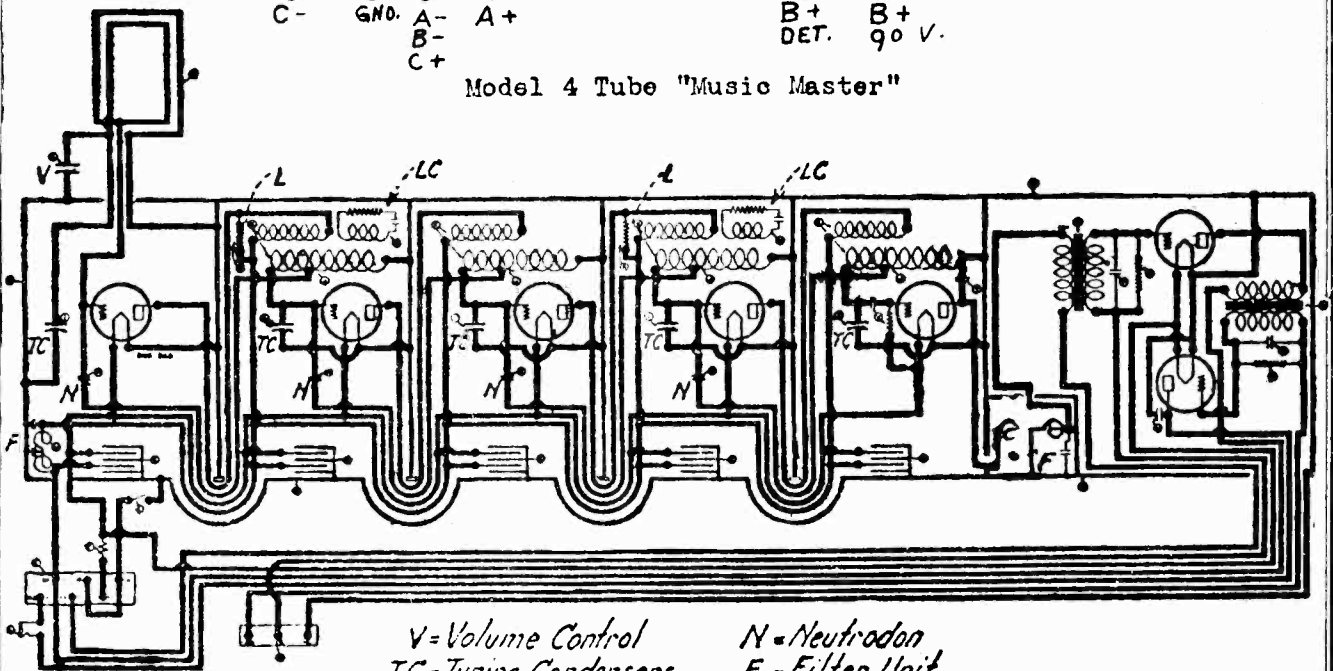
MODEL T
 MODEL 4 Tube
 MODEL 7 Tube



Model T



Model 4 Tube "Music Master"

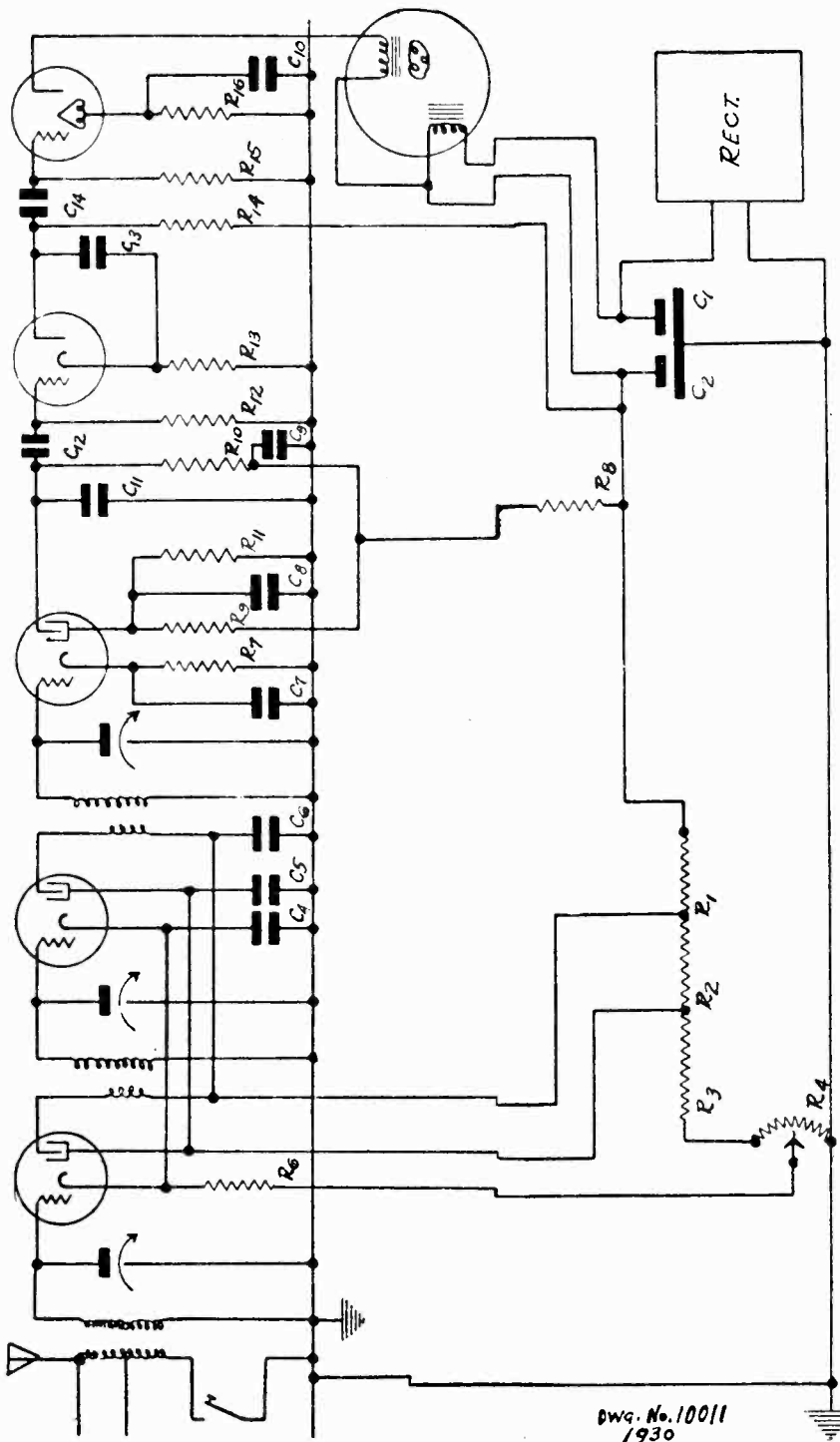


V = Volume Control N = Neutradon
 TC = Tuning Condensers F = Filter Unit
 LC = Lossy Coil L = Leak

Model 7 Tube Music Master

MODEL B-1, B-2 Bantam

WARE MANUFACTURING CORP.

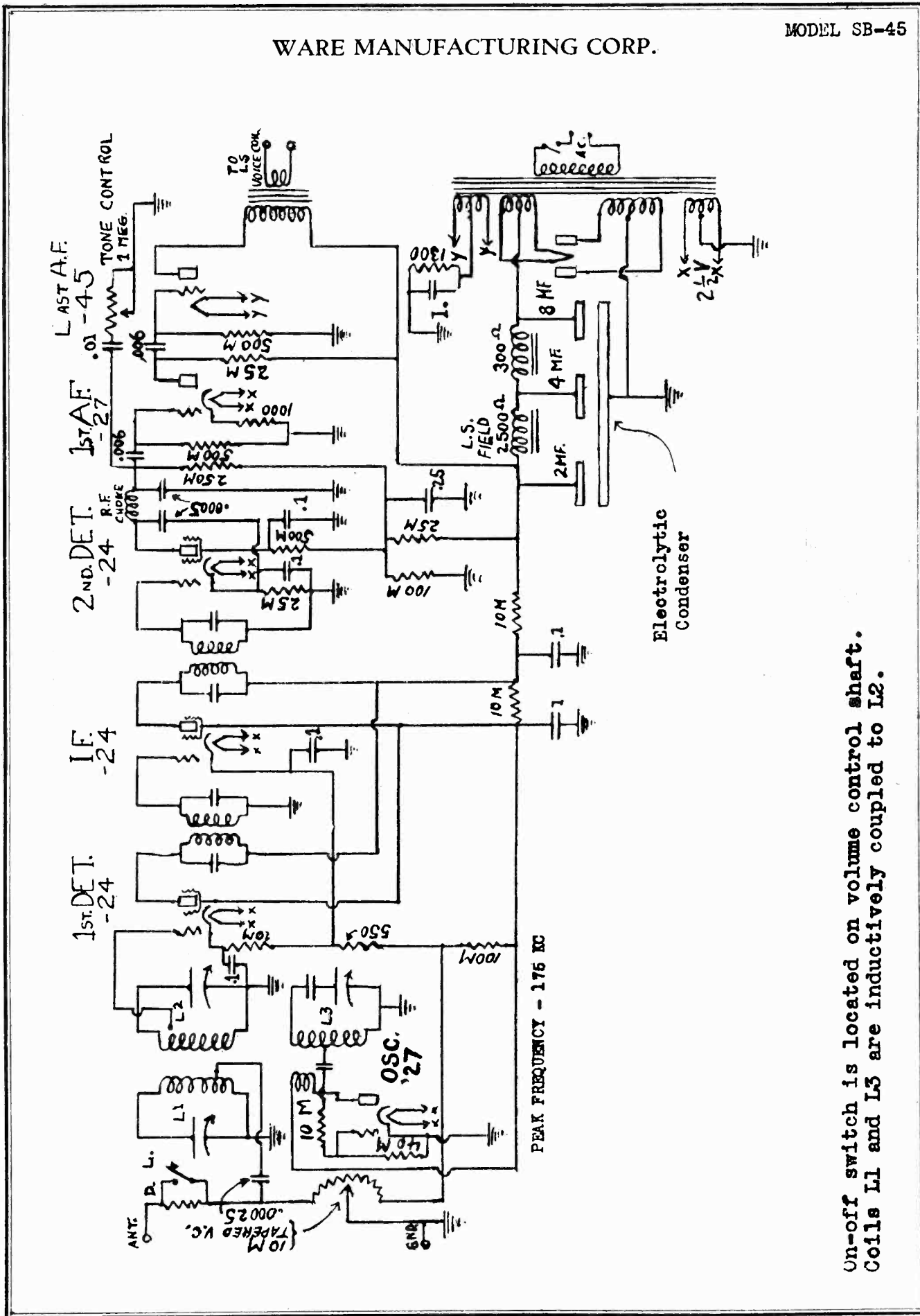


- C 1--14 Mfd. Electrolytic - First Filter Condenser
- C 2--2 " " " " - 2nd Filter Condenser
- C 3-- " " " " " " " " " "
- C 4--0.1 " " " " - R. F. Cathodes Bypass
- C 5--0.1 " " " " - R. F. Screens Bypass
- C 6--0.1 " " " " - R. F. Plates Bypass
- C 7--1.0 " " " " - Det. Cathode Bypass
- C 8--0.1 " " " " - Det. Screen Bypass
- C 9--0.25 " " " " - Det. Plate Bypass
- C 10--1.0 " " " " - Power Tube Bias Bypass
- C 11--.0005 Mfd. 350 V. Midget - Det. Plate to Gnd.
- C 12--.006 " " " " - Det-1st Audio Coupling
- C 13--.02 " " " " - 1st Audio Plate to K. Bypass
- C 14--.006 " " " " - 1st Audio-Pr. Tube Coupling
- Variable Condenser, 3 Sections \$47 M. Mfd. Each.

- R 1--7500 ohms 1 watt carbon - R. F. Voltage Divider
- R 2--10000 " " " " - R. F. " "
- R 3--7500 " " " " - R. F. " "
- R 4--1000 " " " " - Wire Wound Potentiometer-Volume Control
- R 5 " " " " - R. F. Bias
- R 6--280 " " " " - Det. Bias
- R 7--25000 " " " " - Det. B. Common to Pl. and S. G.
- R 8--25000 " " " " - Det. Screen Supply
- R 9--1/2 Meg. " " " " - Det. Plate Supply
- R 10--1/4 " " " " - Det. Screen Shunt
- R 11--75000 " " " " - Det. Screen Shunt
- R 12--1/2 Meg. " " " " - 1st Audio Grid to Ground
- R 13--1000 " " " " - 1st Audio Bias
- R 14--25000 " " " " - 1st Audio Plate Supply
- R 15--1/2 Meg. " " " " - P.T. Grid to Ground
- R 16--1500 " " " " - P. T. Bias

"BANTAM" CHASSIS TYPE B-1 AND B-2

WARE MANUFACTURING CORP.



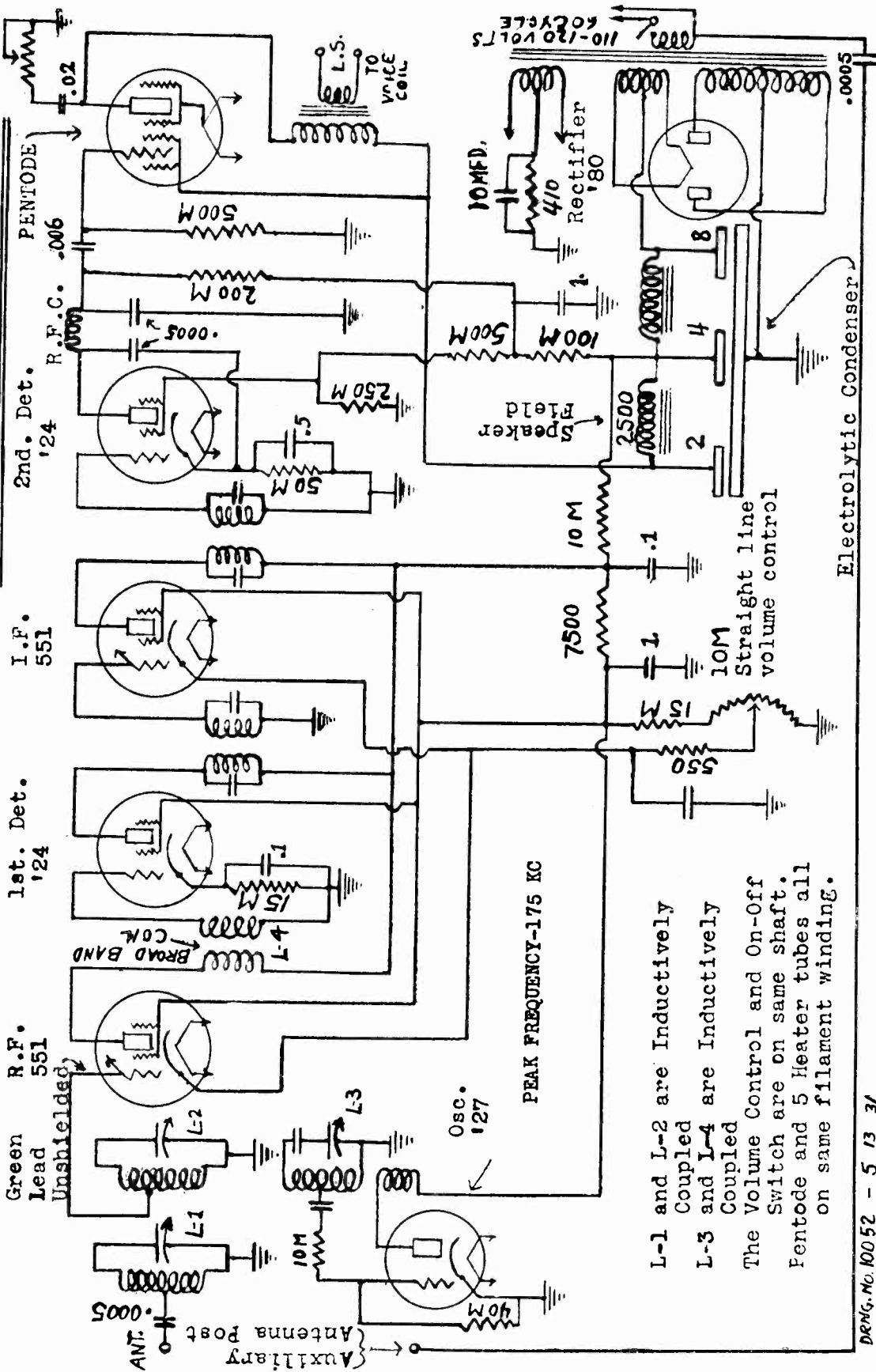
On-off switch is located on volume control shaft. Coils L1 and L3 are inductively coupled to L2.

MODEL SBA

WARE MANUFACTURING CORP.

TYPE S.B.A. SUPERHETERODYNE

This print covers serial numbers
2000 to 2799 inclusive, also 5500
to 5598 inclusive.



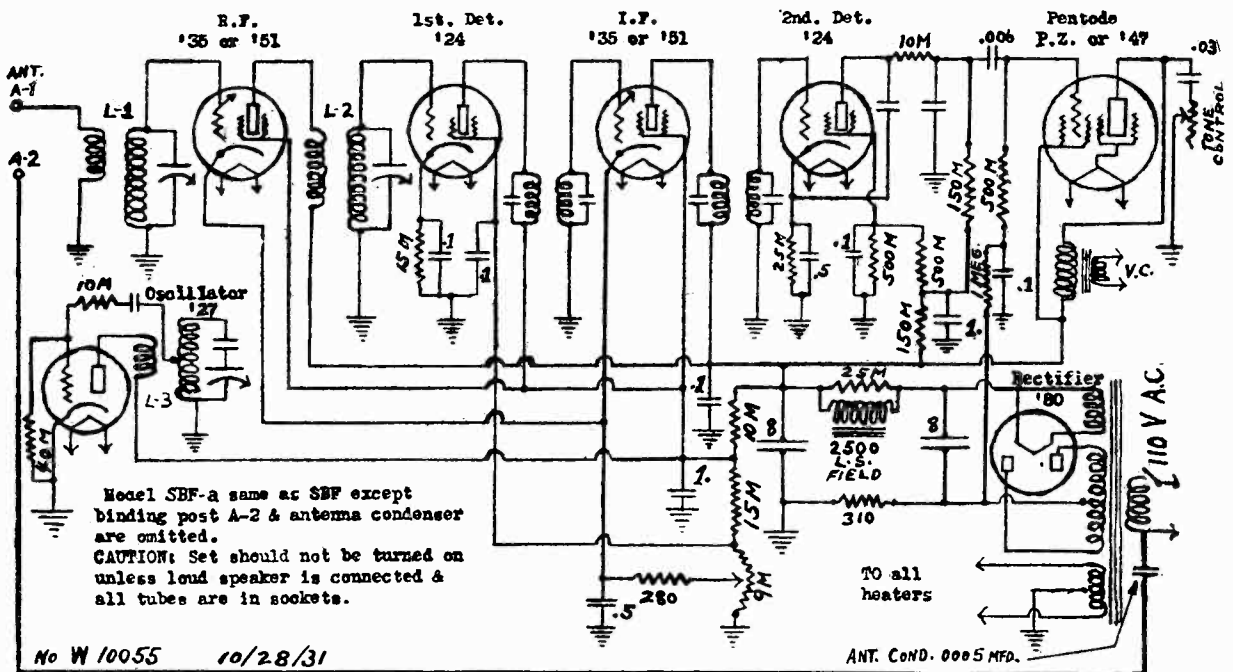
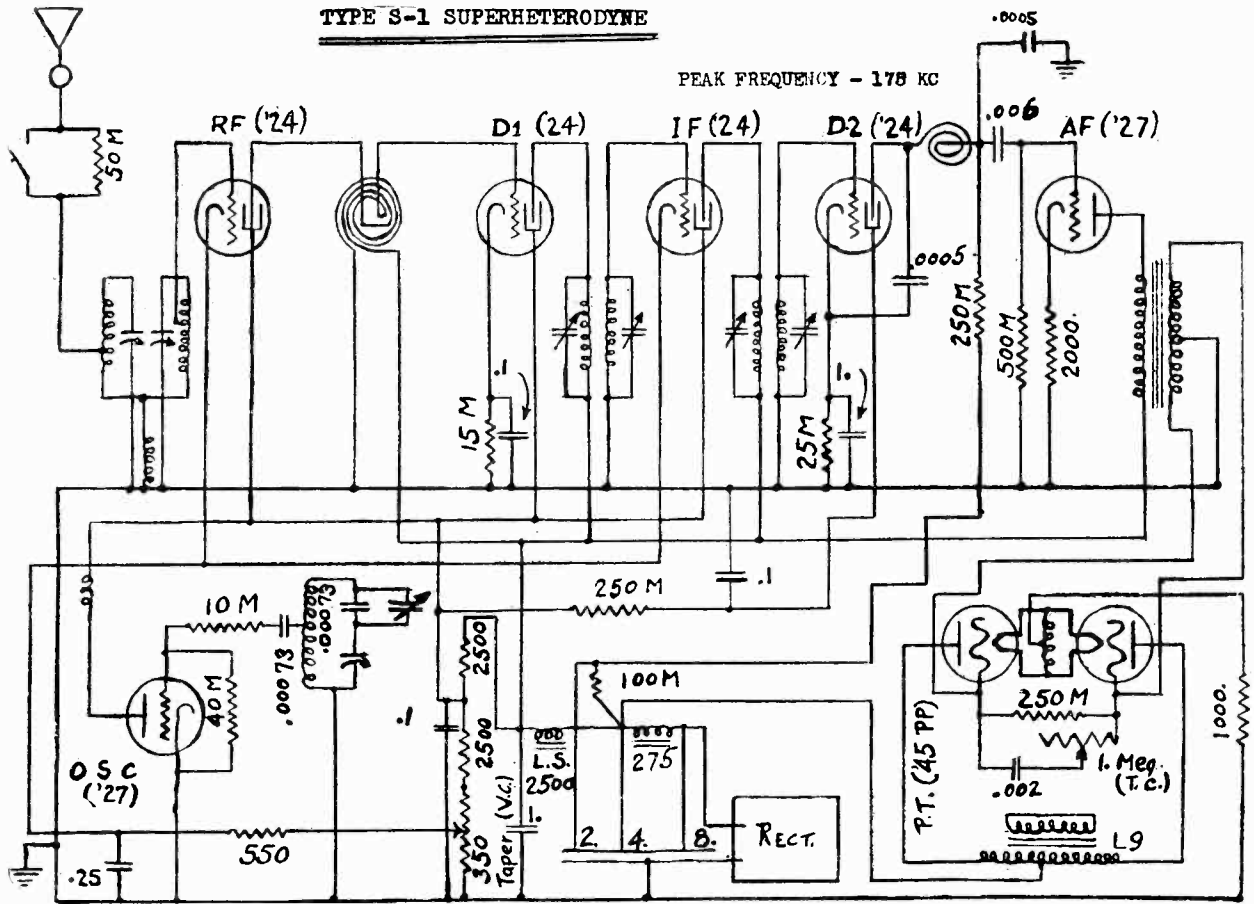
L-1 and L-2 are Inductively Coupled
L-3 and L-4 are Inductively Coupled
The Volume Control and On-Off Switch are on same shaft.
Pentode and 5 Heater tubes all on same filament winding.

DRNG. No. 10052 - 5 13 31

MODEL S-1
MODEL SBF

WARE MANUFACTURING CORP.

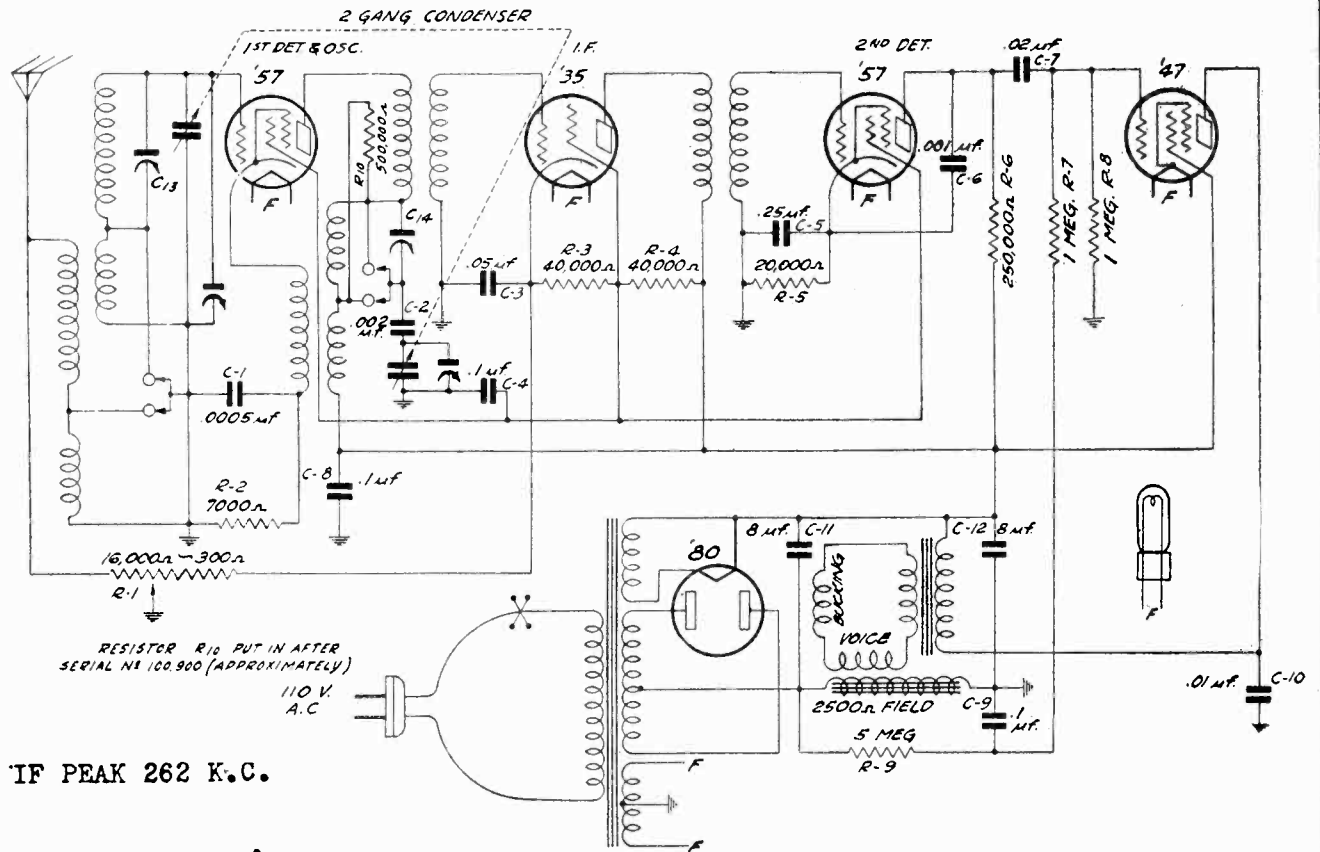
TYPE S-1 SUPERHETERODYNE



TYPE S.B.F. SUPERHETERODYNE.

WELLS - GARDNER & CO.

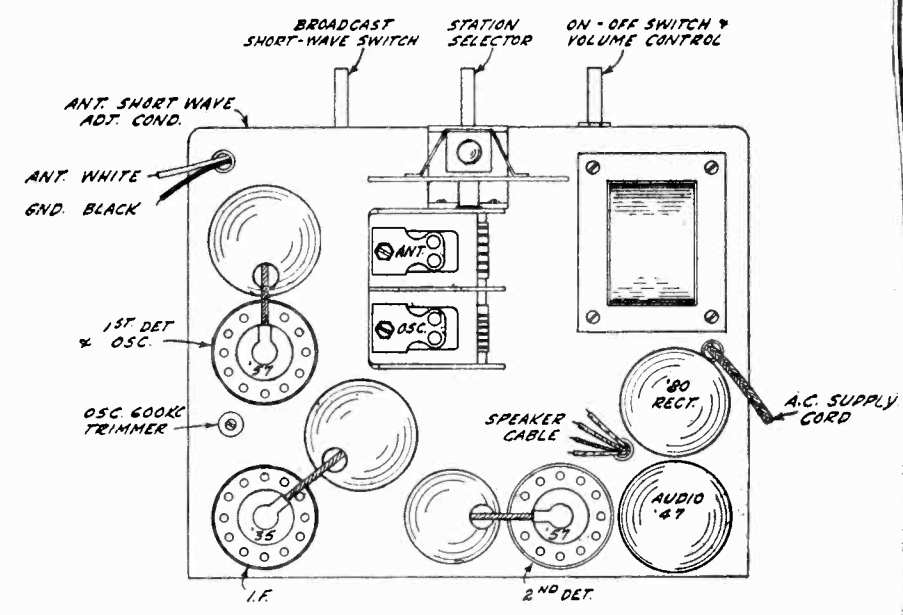
MODEL .052 Series
Schematic
Voltage



IF PEAK 262 K.C.

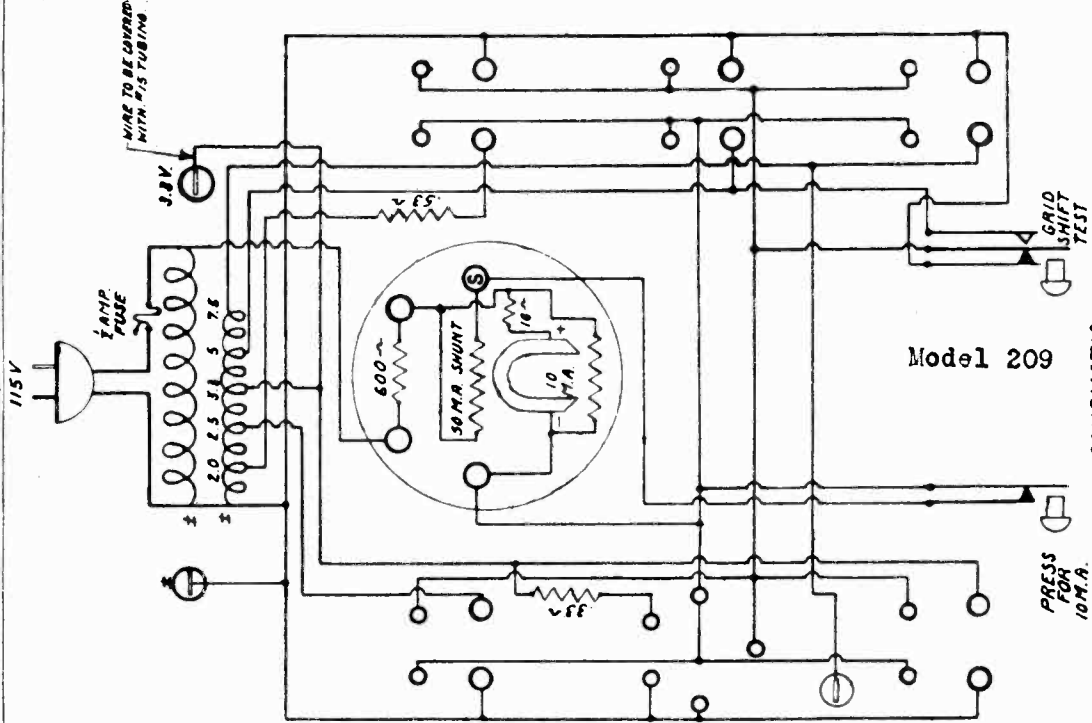
Tube	Fil.	Plate to Cathode	Screen to Cathode	Grid to Cathode	Plate Crnt.	
1st Det	2.15	225	90	4.	.5	
IF Amp	2.15	230	90	3.2*	6.2	
2nd Det	2.15	170	90	4.3	.2	
Audio	2.15	225	240	14.**	23.	
Rect.	4.75	620 volts AC from plate to plate				

* When read with cord and plug, ground the control grid.
** High resistance interferes with correct reading.



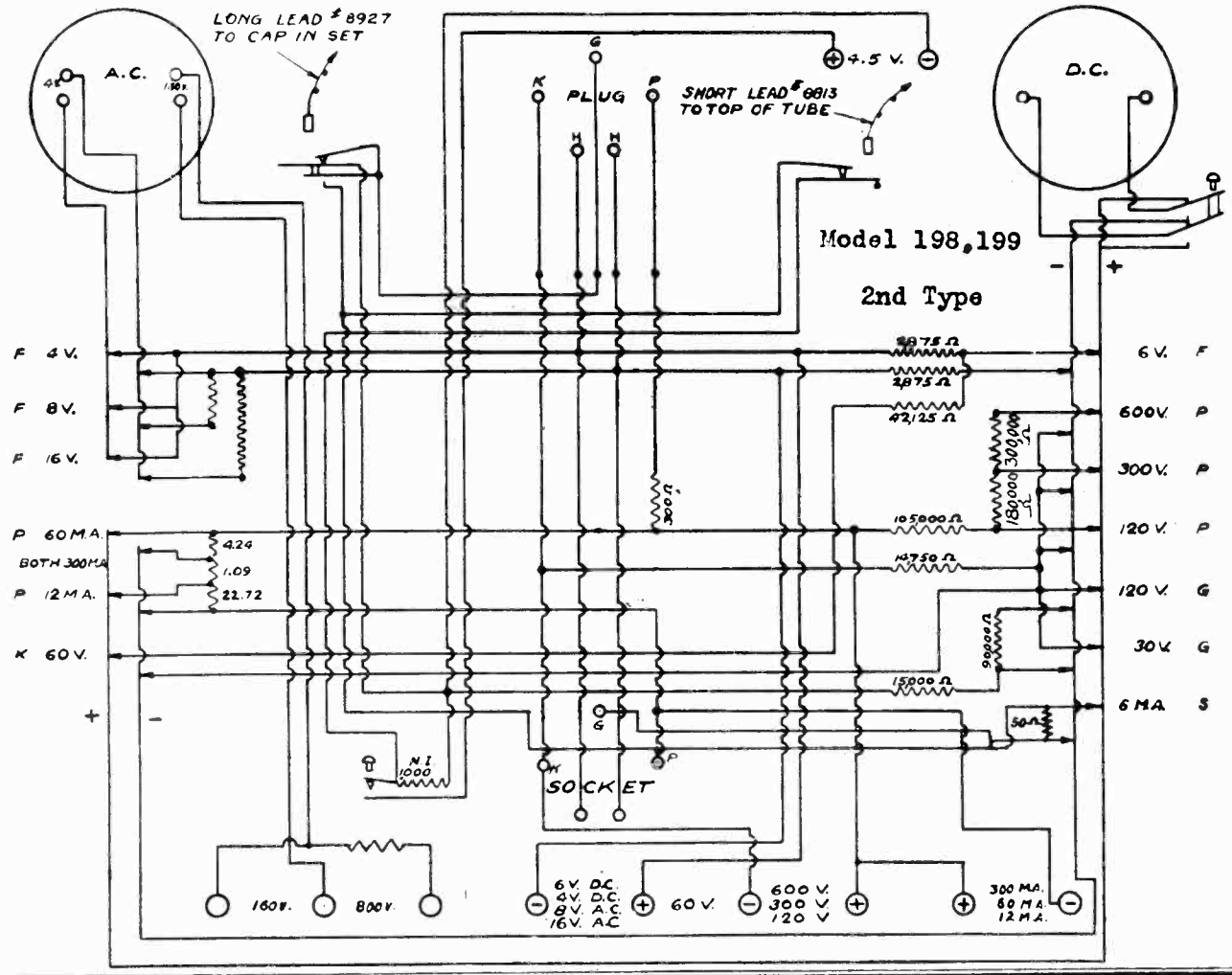
MODEL Jewell
198,199
2nd Type
MODEL Jewell 209

WESTON ELECTRICAL INSTRUM'T CORP.



SCHEMATIC
LOOKING AT BACK OF CASE

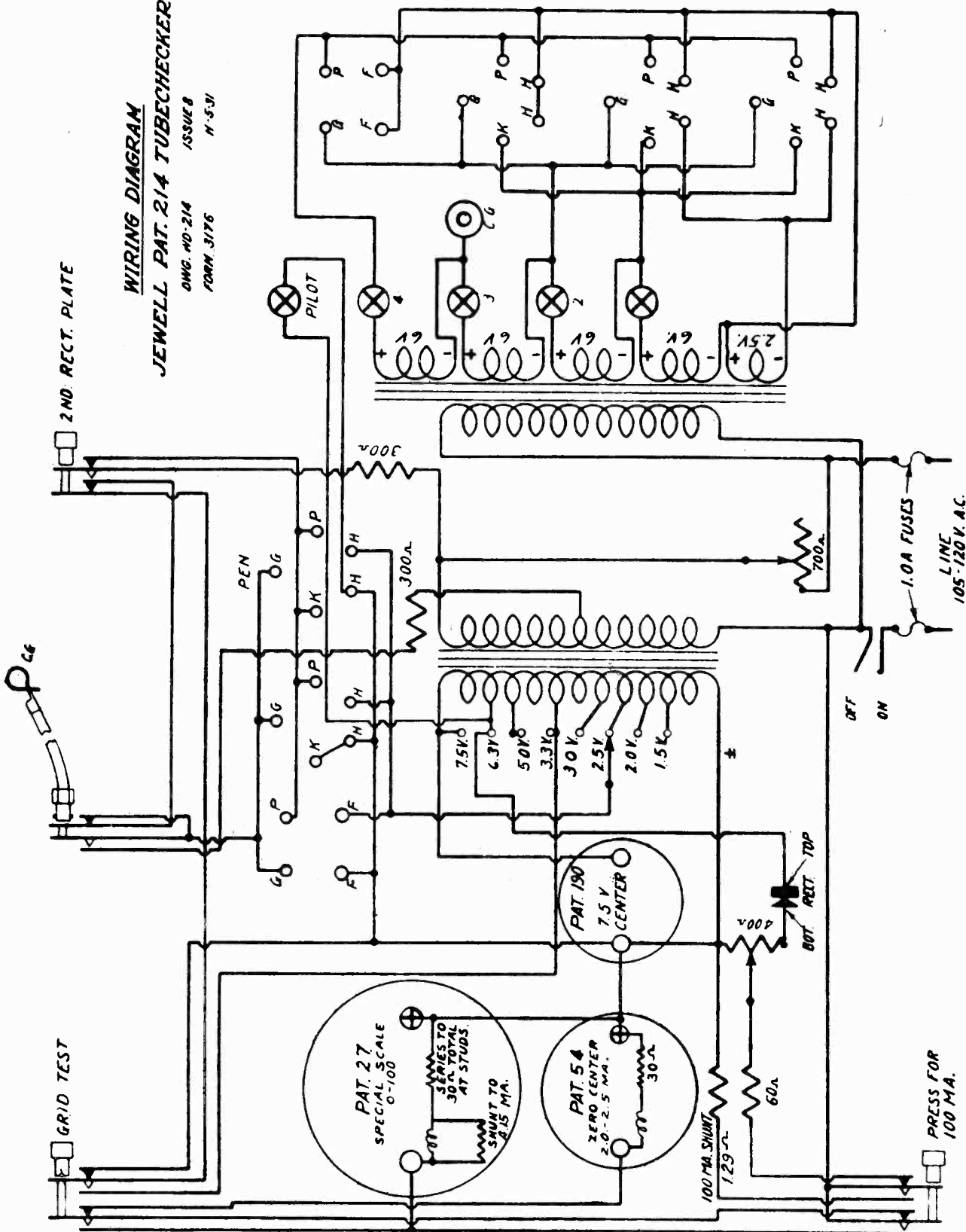
THIS DIAGRAM APPLIES TO ALL PAT. 209 WITH SERIAL NO. 6371 AND OVER FOR PAT. 209 WITH SERIAL NO. 4972 TO SERIAL NO. 6371 SEE W.D. 209 ISSUE 7 FOR PAT. 209 WITH SERIAL NO. UNDER 4972 SEE W.D. 209 ISSUE 5.



MODEL Jewell 214

WESTON ELECTRICAL INSTRUM'T CORP.

WIRING DIAGRAM
JEWELL PAT. 214 TUBE CHECKER
ENG. NO. 214 ISSUE 8
FORM 3176 N-531



GRID TEST

PAT. 27
SPECIAL SCALE
0-100
SERIES TO
30Ω TOTAL
AT STUDS
SHUNT TO
2.15 MA.

PAT. 54
ZERO CENTER
2.0-2.5 MA.
30Ω

PAT. 150
7.5 V
CENTER

PRESS FOR
100 MA.

800Ω
BOT. RECT. TOP

OFF
ON

1.0A FUSES
LINE
105-120 V. AC.

2 ND. RECT. PLATE

PILOT

19

19

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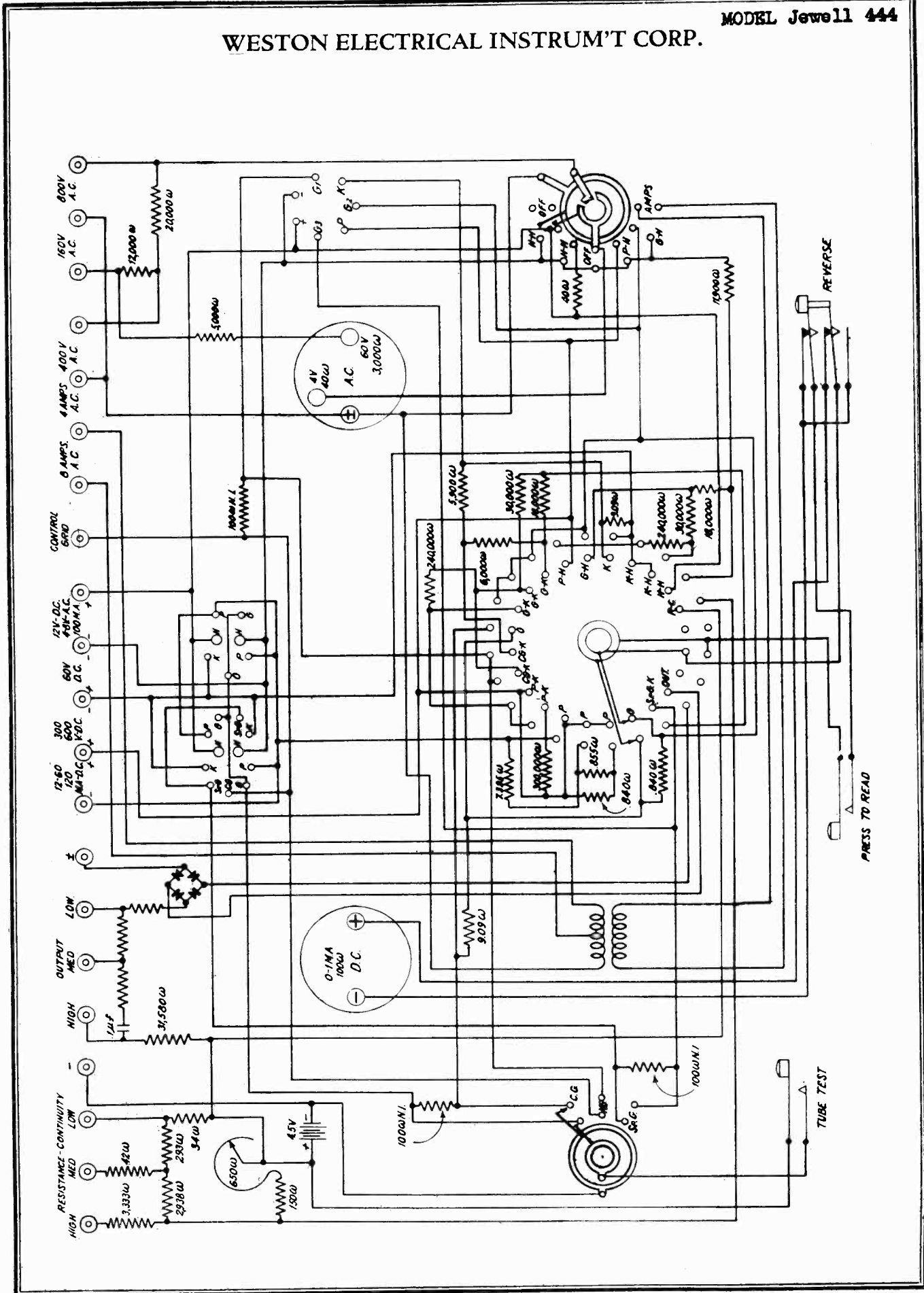
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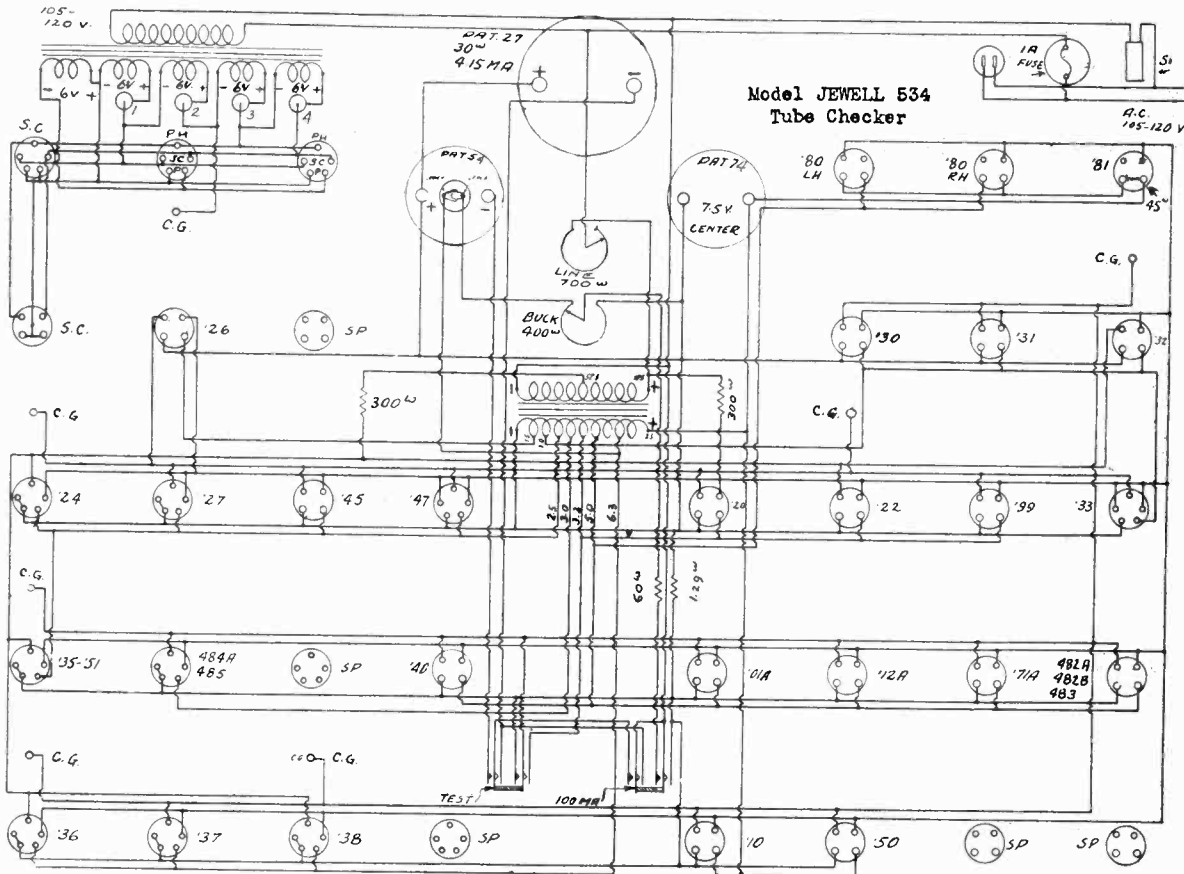
F

WESTON ELECTRICAL INSTRUM'T CORP.

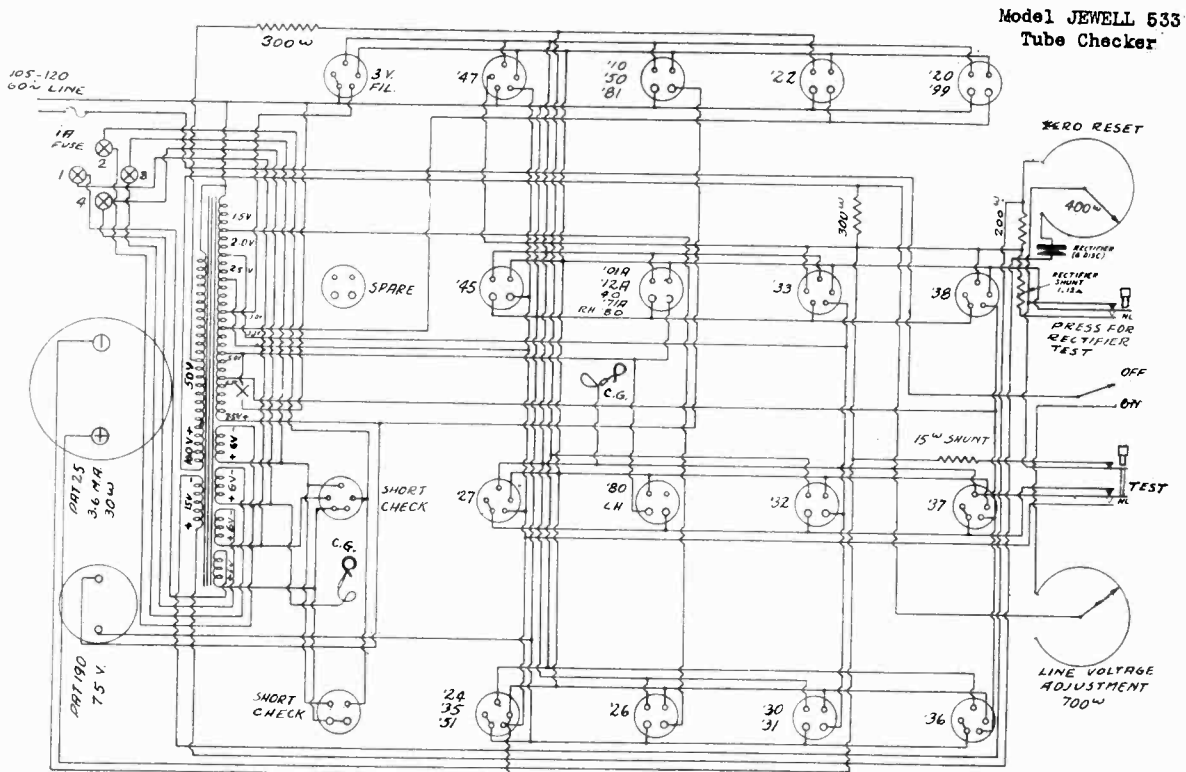


WESTON ELECTRICAL INSTRUM'T CORP.

MODEL Jewell
533
MODEL Jewell
534

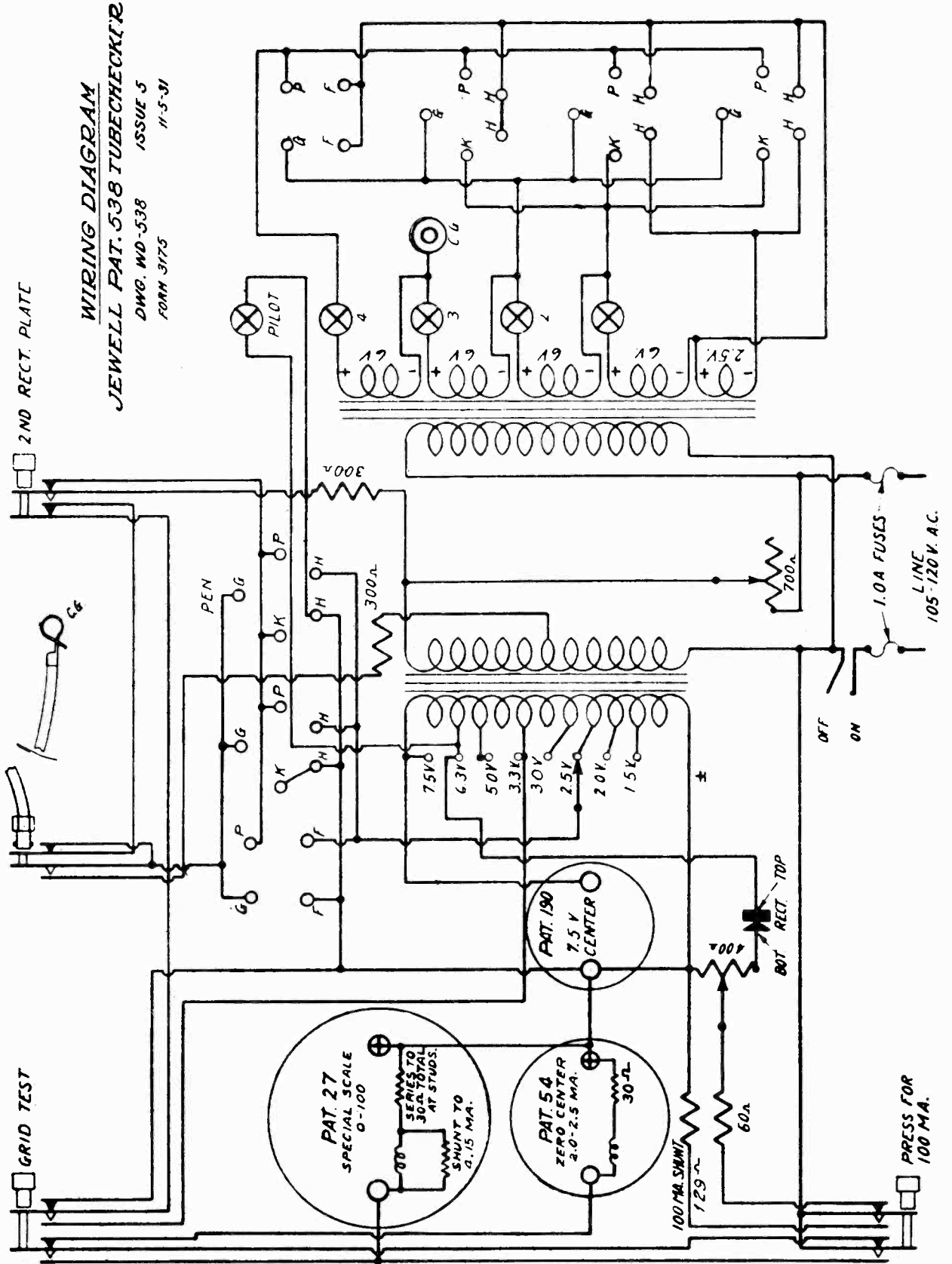


Model JEWELL 534
Tube Checker



Model JEWELL 533
Tube Checker

VIEWING TOP OF PANEL

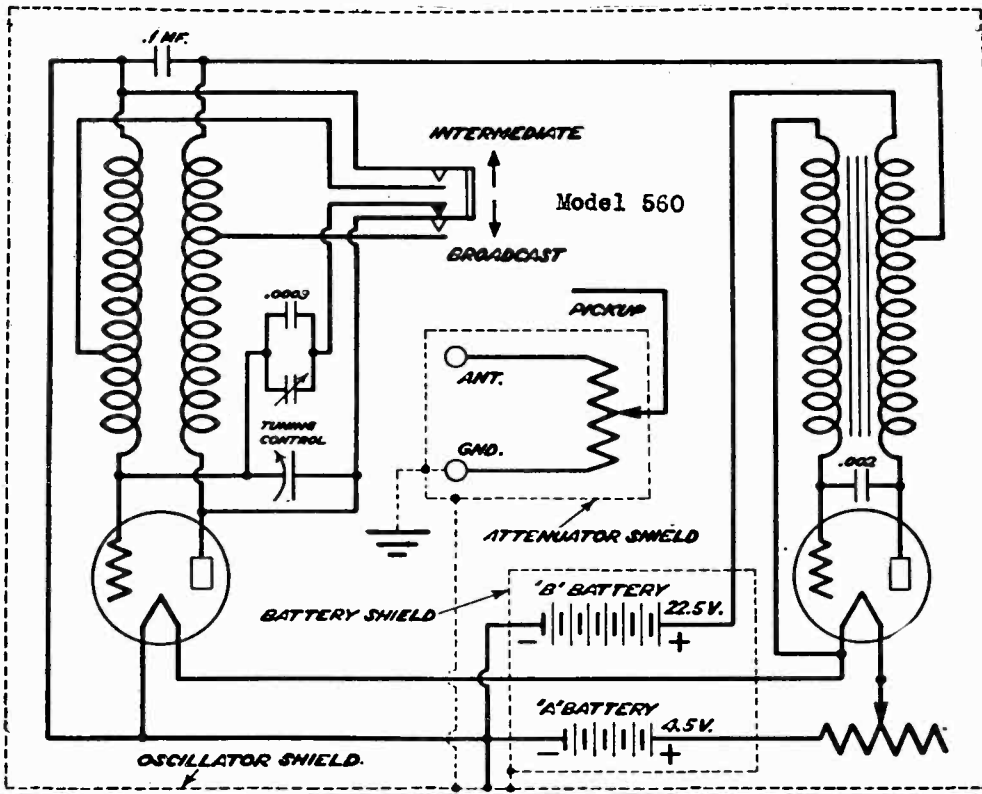
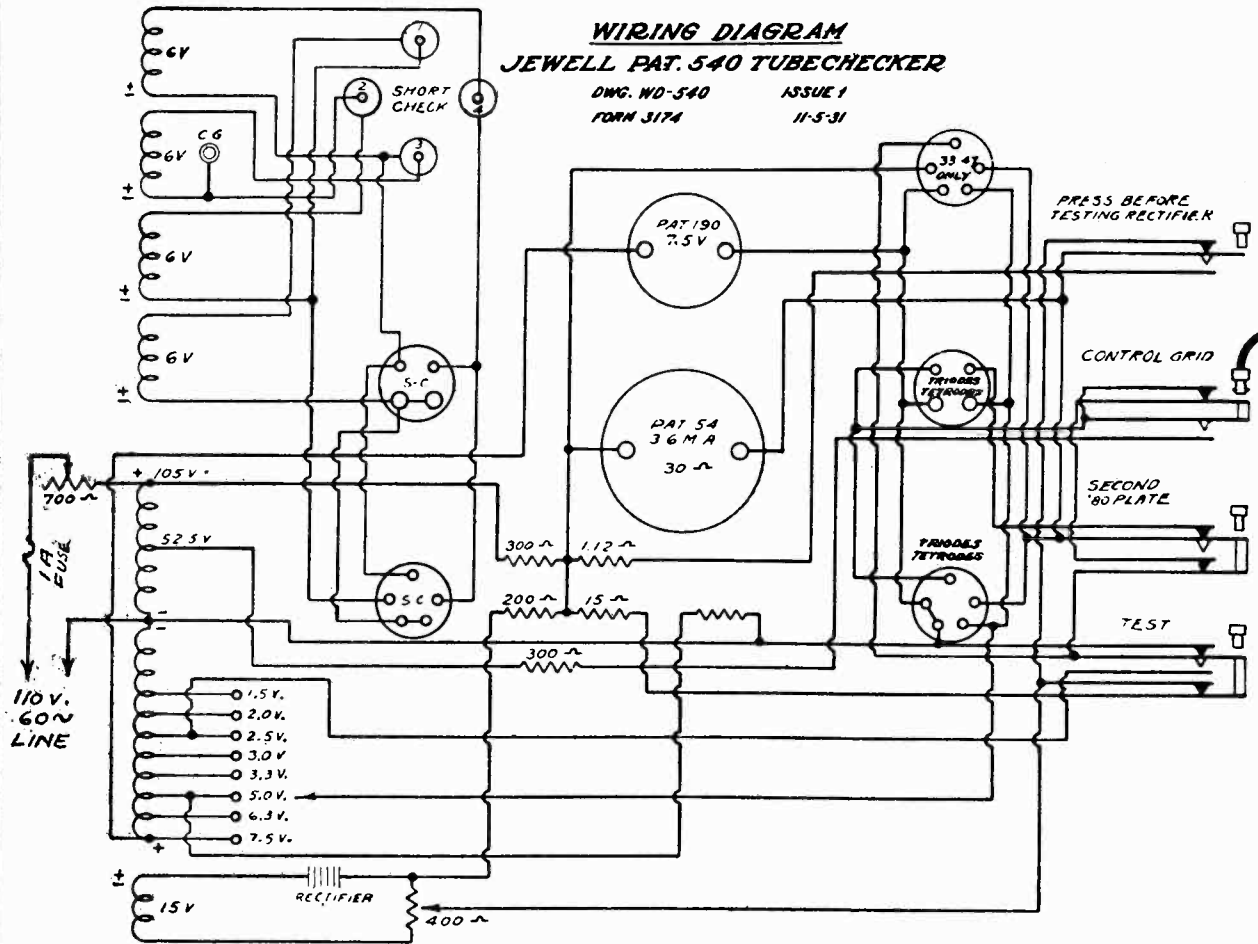


WESTON ELECTRICAL INSTRUM'T CORP.

MODEL Jewell
540
MODEL Jewell
560

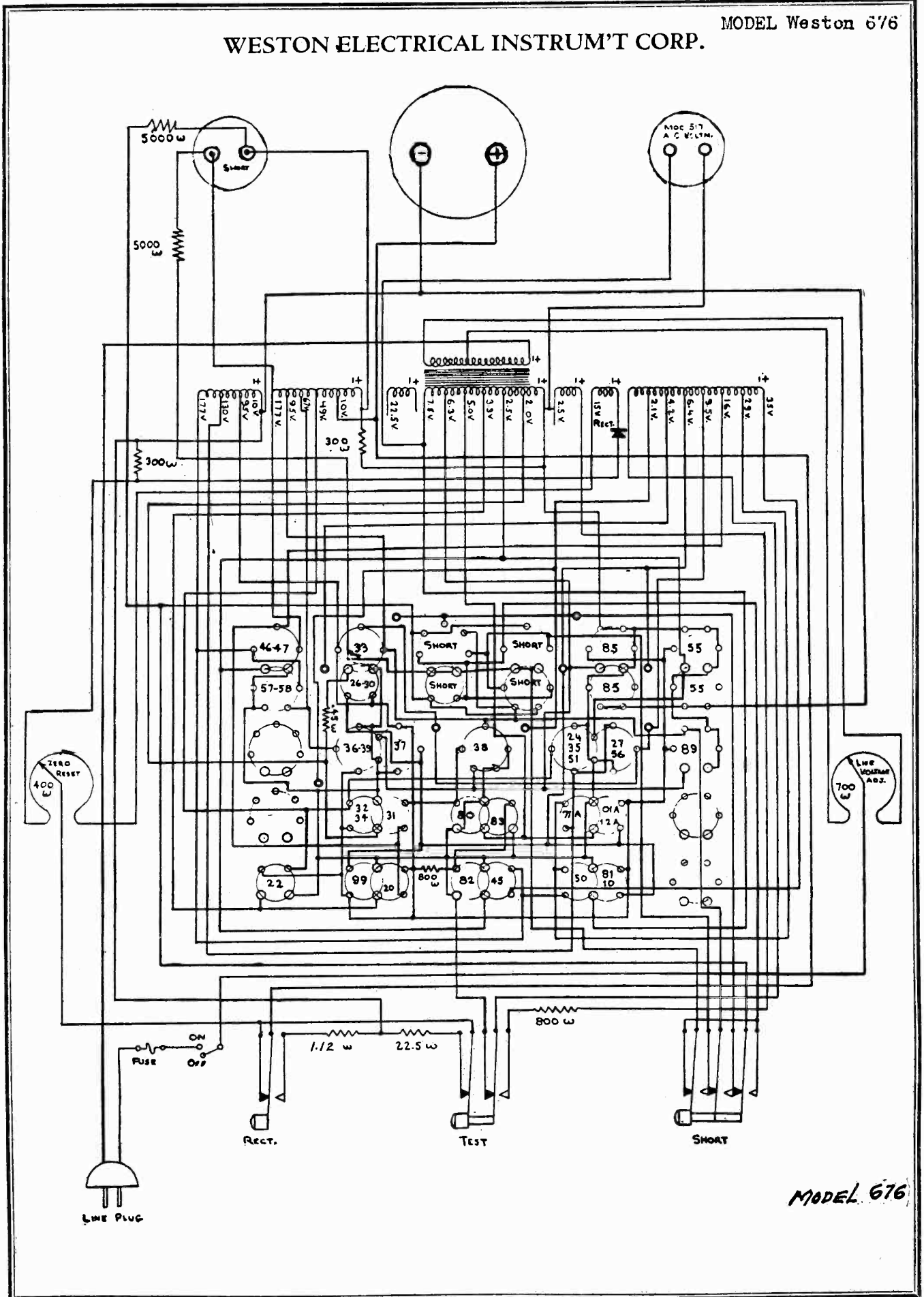
WIRING DIAGRAM
JEWELL PAT. 540 TUBE CHECKER

DWG. NO-540 ISSUE 1
FORM 3174 11-5-31



WESTON ELECTRICAL INSTRUM'T CORP.

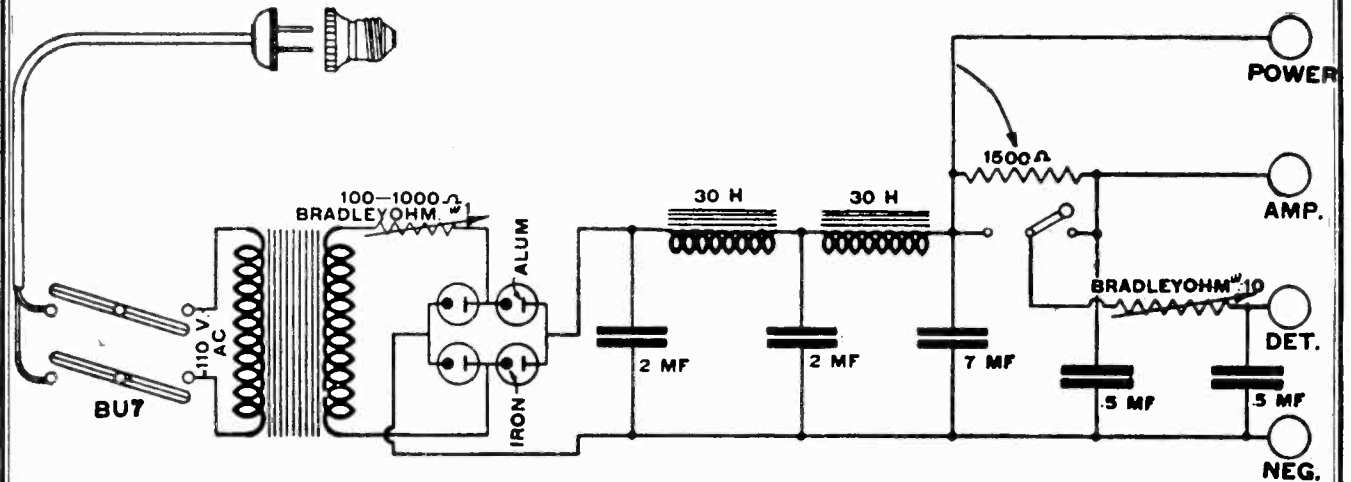
MODEL Weston 676



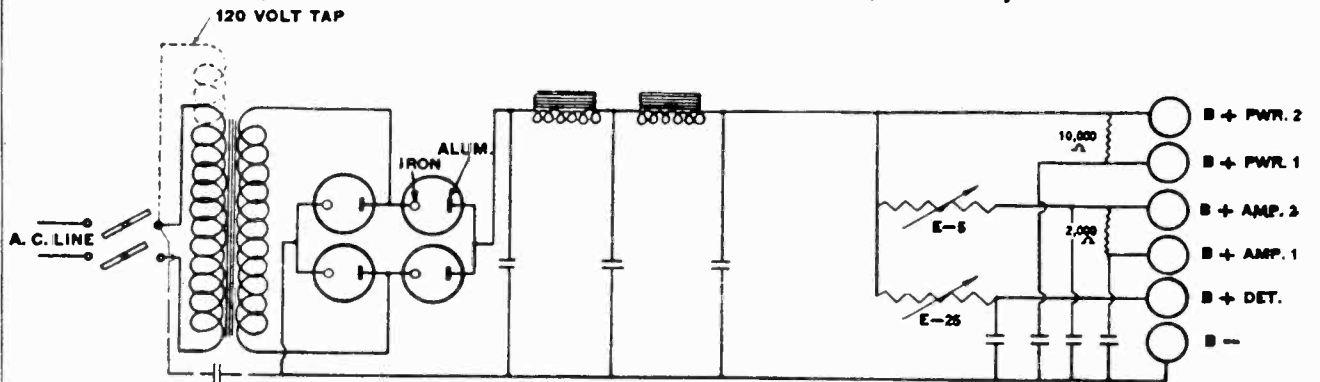
MODEL 676

WILLARD STORAGE BATTERY CO.

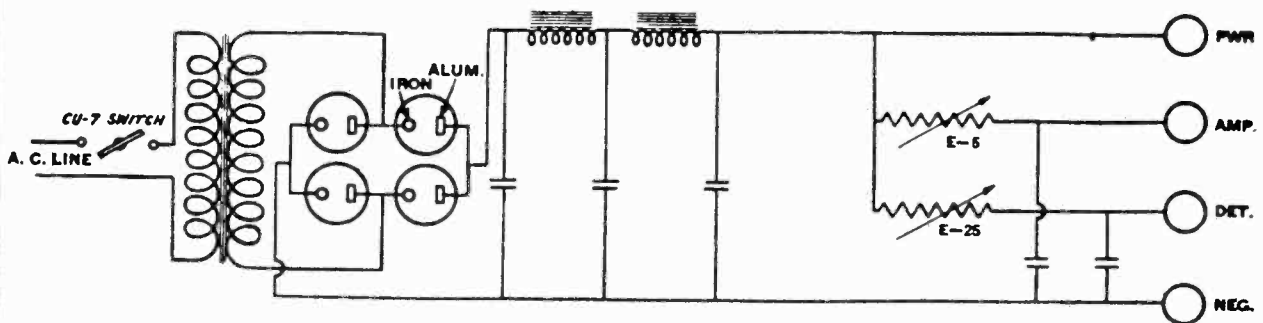
MODEL B Unit 3095
 MODEL B Unit 3310,
 4310
 MODEL B Unit 4095



Standard "B" Power Unit, Part No. 3095, 50-60 Cycle



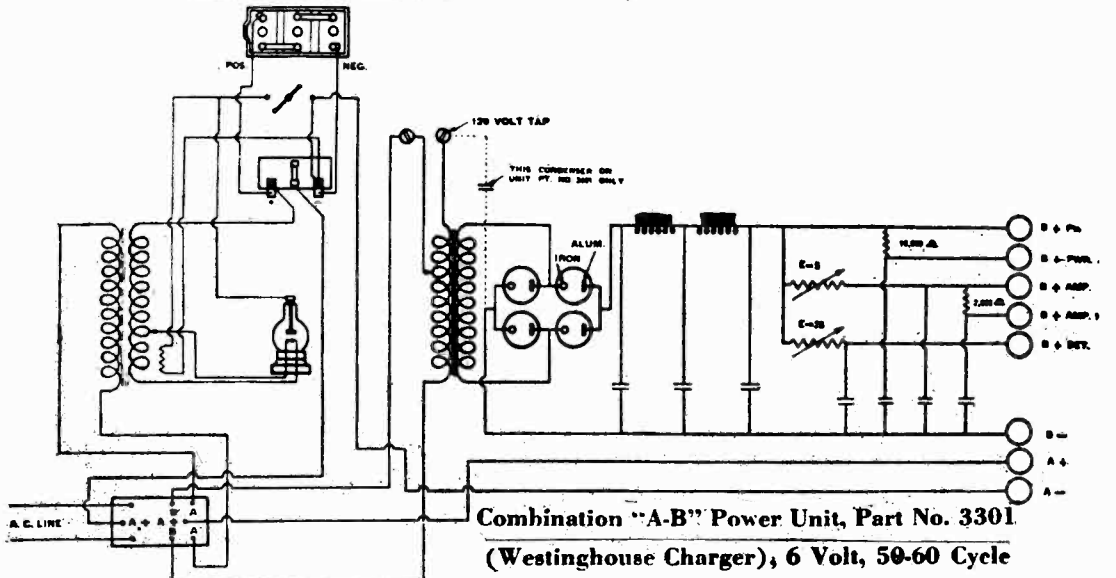
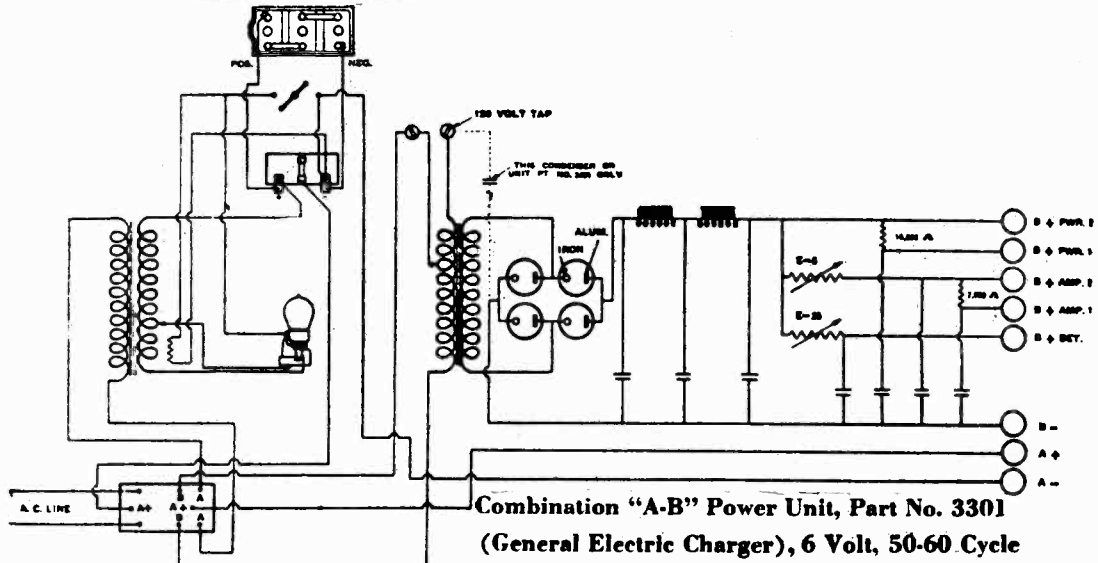
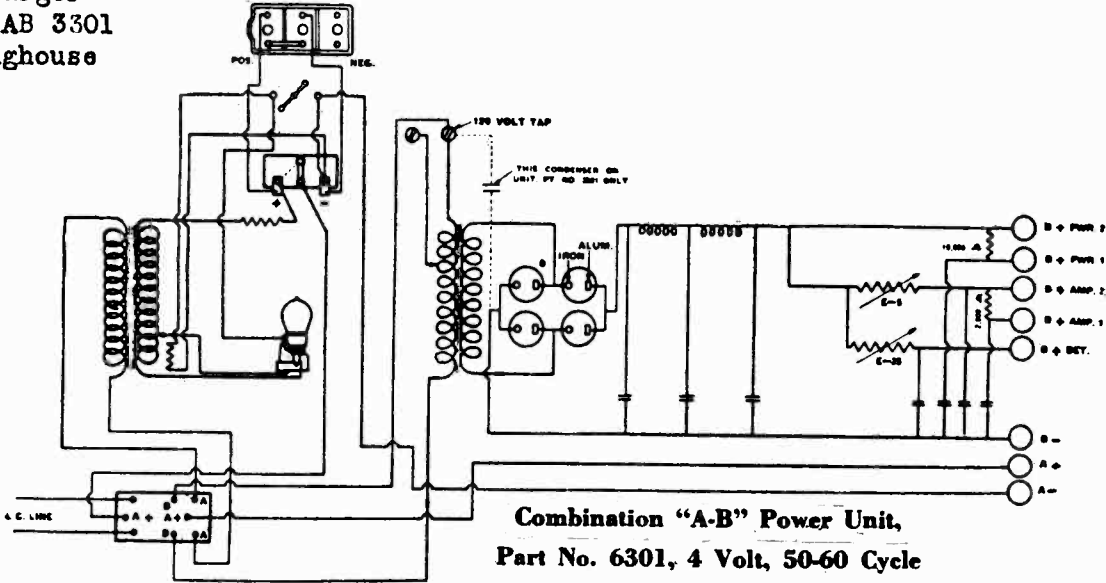
Super "B" Power Units, Part Nos. 3310 and 4310
 25-40 and 50-60 Cycle



Standard "B" Power Unit, Part No. 4095, 50-60 Cycle

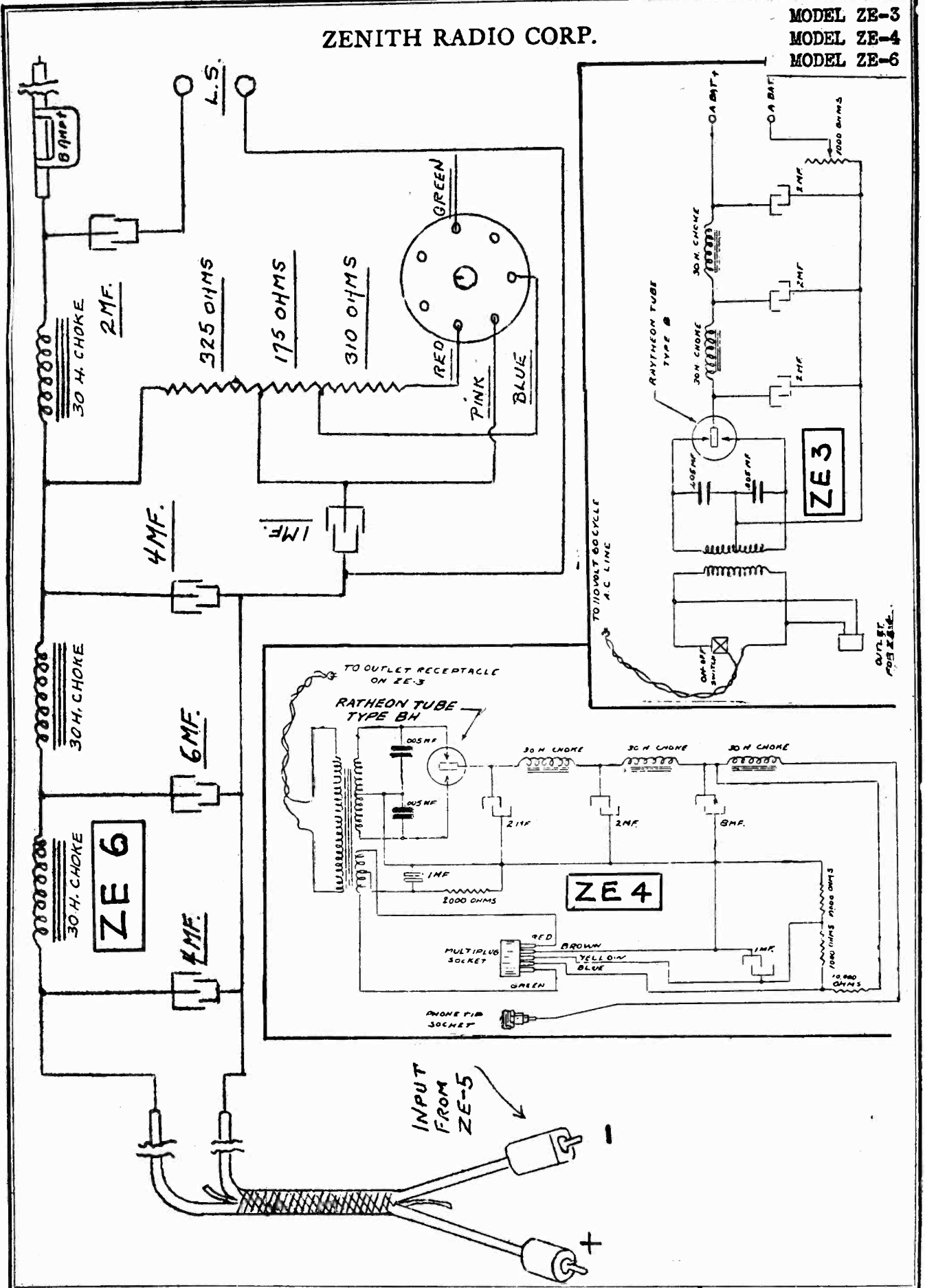
MODEL AB 6301
 MODEL AB 3301
 G.E. Charger
 MODEL AB 3301
 Westinghouse

WILLARD STORAGE BATTERY CO.



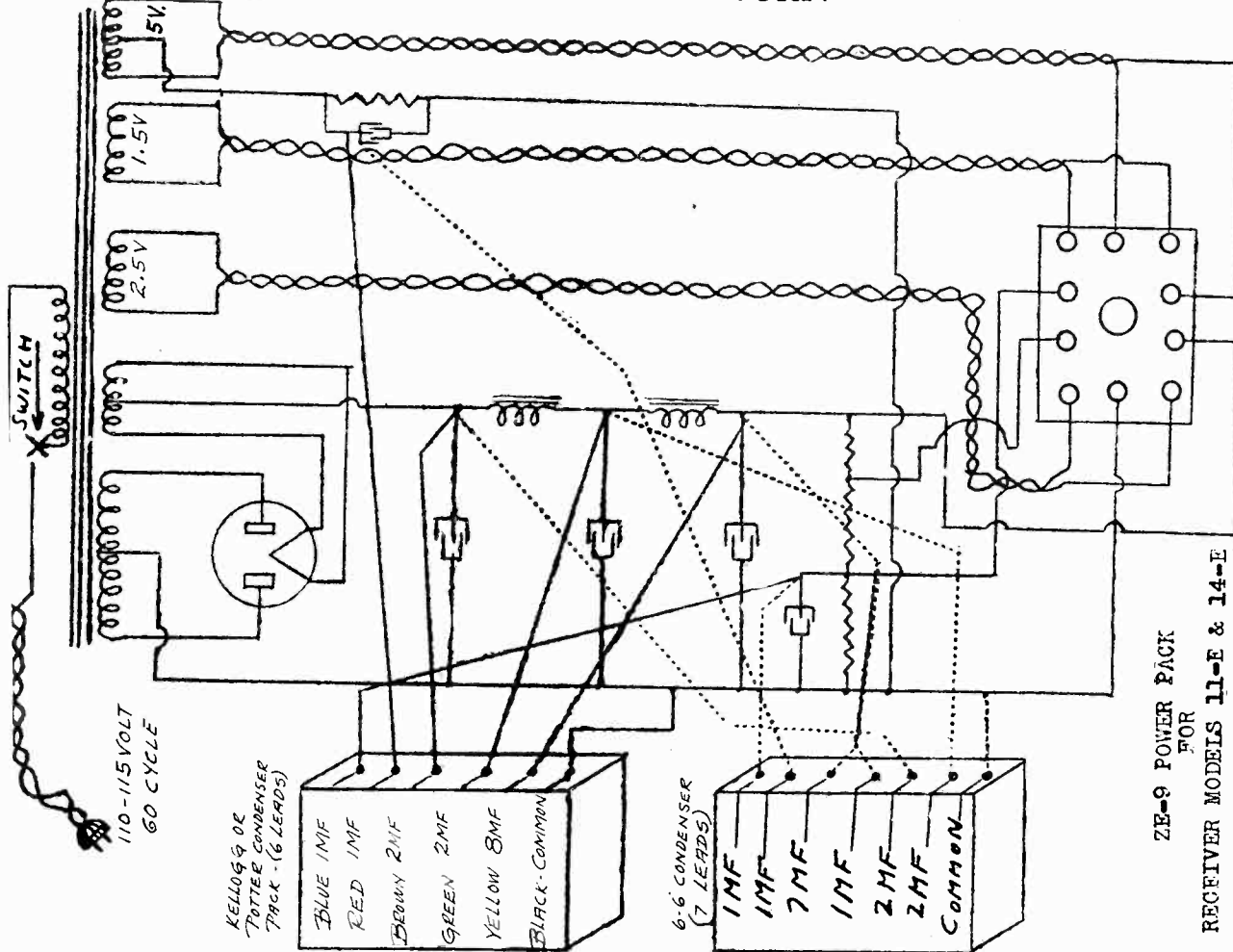
ZENITH RADIO CORP.

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

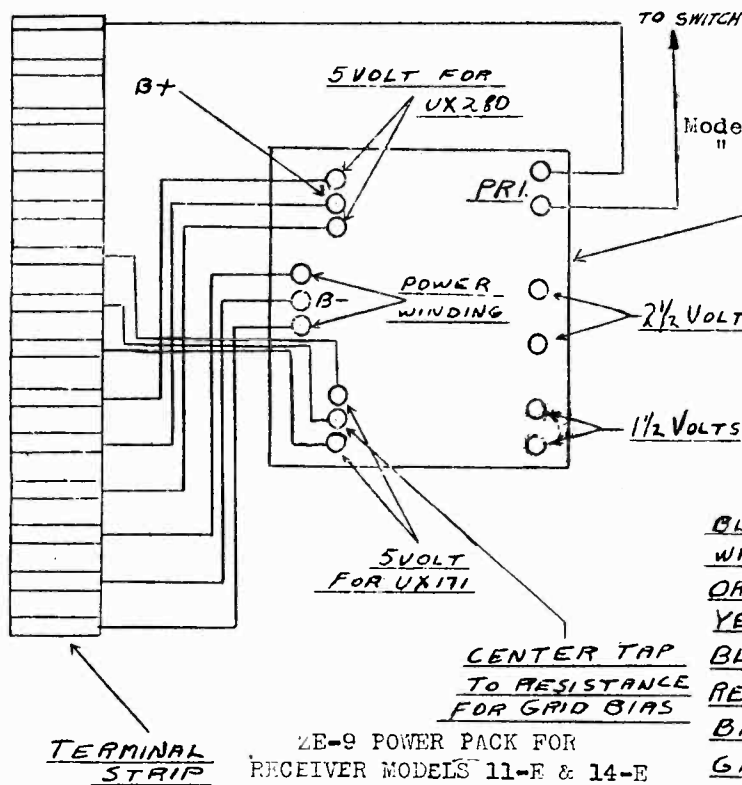


MODEL ZE-9
for Models 11-E, 14-E

ZENITH RADIO CORP.



ZE-9 POWER PACK
FOR
RECEIVER MODELS 11-E & 14-E



TRANSFORMER SCHEME FOR
ZENITH POWER UNIT ZE 9.

Model 11-E Serial Numbers 48657 To 51050
" 14-E " " 605420 " 607147

TRANSFORMER
IF TERMINAL STRIP ON
POWER UNIT HAS 18 CONTACTS
2 1/2 AND 1 1/2 VOLT LEADS ARE
ATTACHED TO STRIP.
OTHERWISE CONNECTED TO
MULTICABLE.

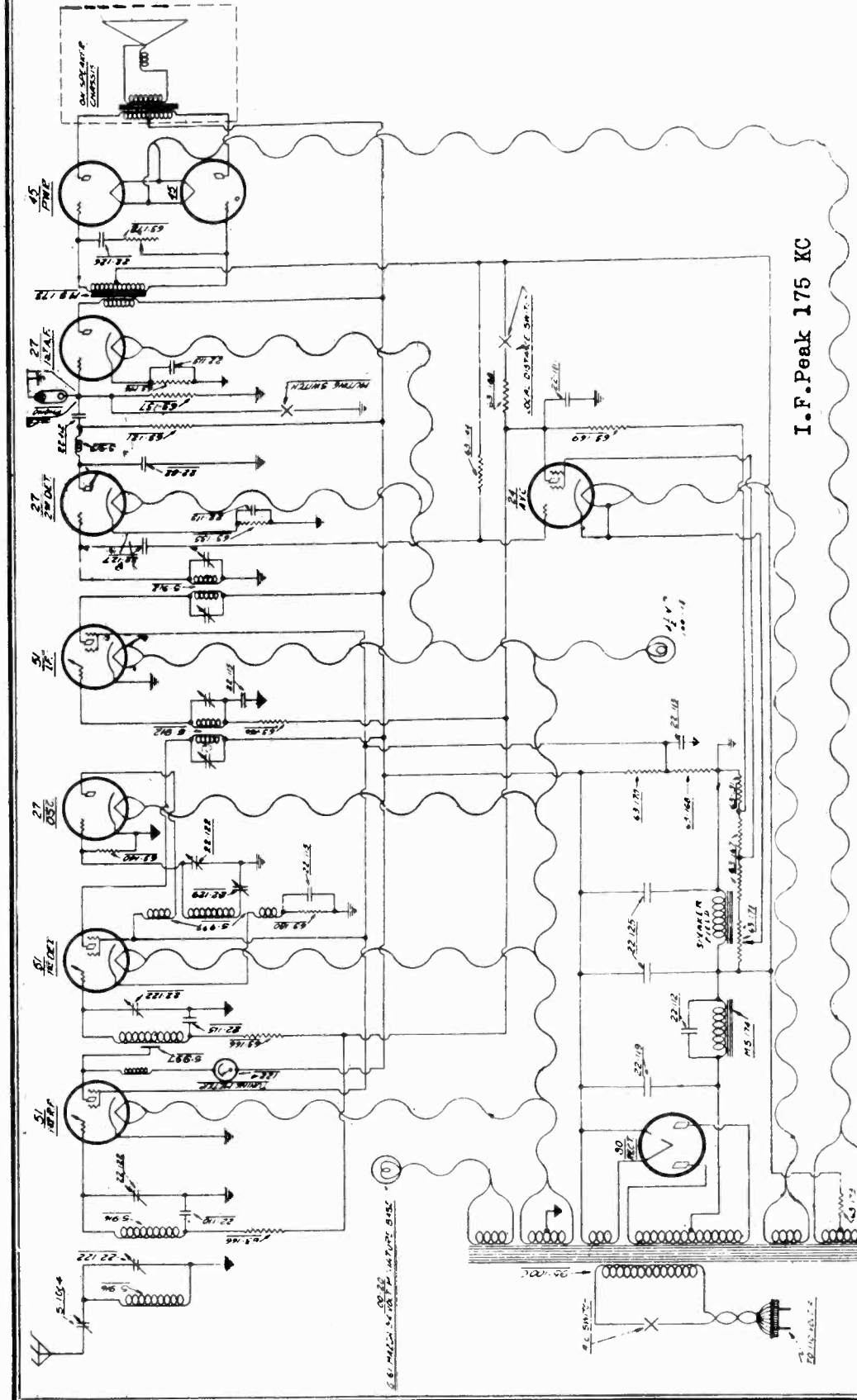
MULTICABLE CODE.

BLACK WITH RED MARKER	5 VOLTS
WHITE	5 "
ORANGE	2 1/2 "
YELLOW	1 1/2 "
BLACK	GND
RED	220 "
BROWN	100 "
GREEN	.45 "

ZE-9 POWER PACK FOR
RECEIVER MODELS 11-E & 14-E

ZENITH RADIO CORP.

MODEL 91,92
Schematic
Original Circuit



Models 91, 92, 912, 922 (1932)

2 AF	1	1	1
'45	2	1	1
RECT	OSC RF	DET	IF DET AF
'80	'27	'35	'35
	'27	'35	'27
			A.V.C.
			PILOT 2.5 V.
			24A

A Z-24 automatic volume control tube keeps the volume of the incoming signal constant by varying the grid bias voltage on the 1st R. F., 1st detector, and I. F. stages, in relation to the change of R. F. energy amplified before the 2nd detector. The three grid returns mentioned are coupled to the plate of the automatic volume control tube through three limiting resistors, while the 2nd detector grid couples to the volume control tube grid through a small fixed condenser. Any variation in signal strength on the 2nd detector grid is transferred to the automatic volume control tube which, proportionately varies the voltage drop across the volume control tube plate resistor which changes the bias of the three tubes mentioned.

The local distance switch simply shunts a resistor from plate to cathode of the automatic volume control tube when in the local position, thereby placing a constant bias on the three R. F. stages.

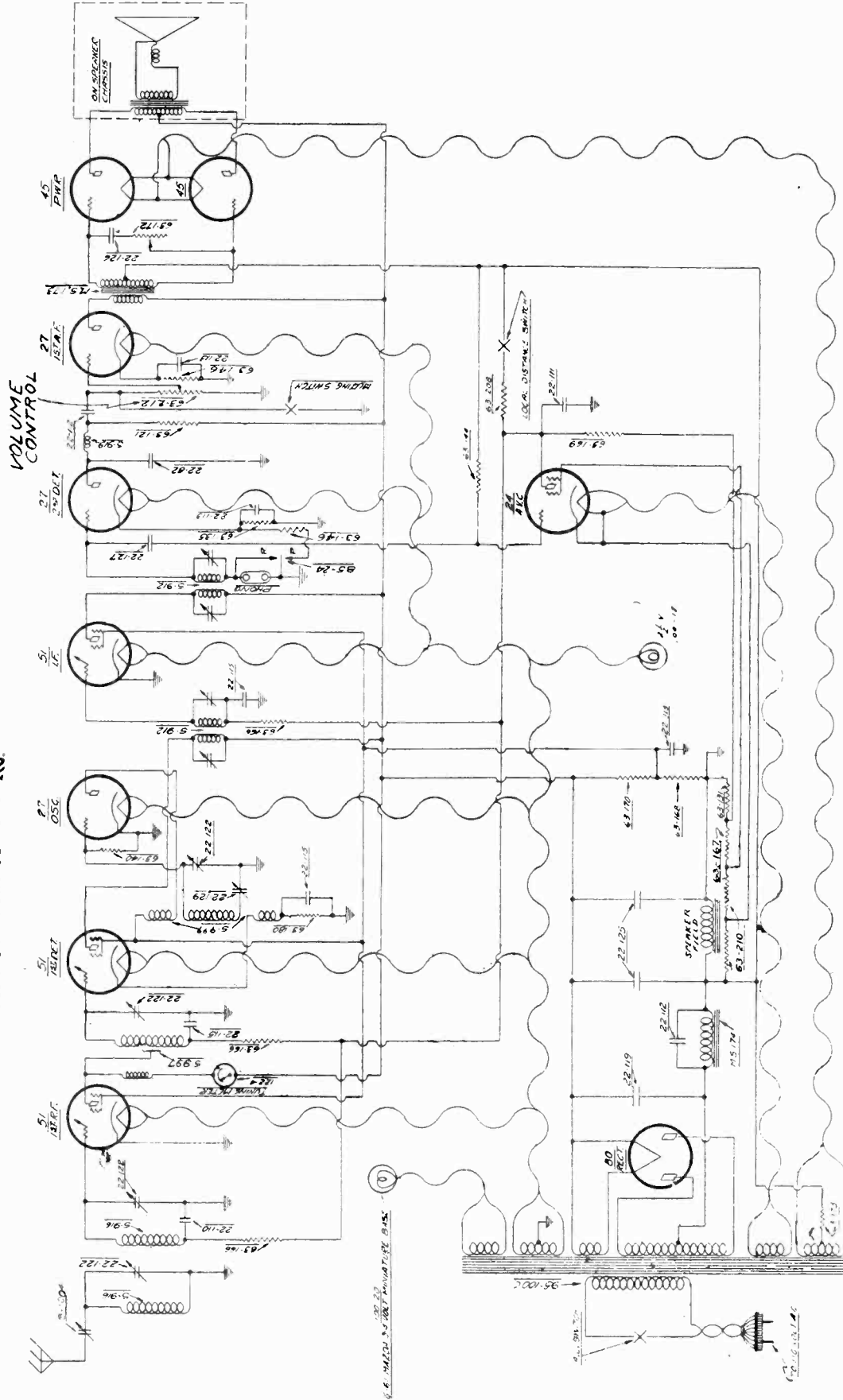
FRONT

© 1932 Zenith Radio Corp.

MODEL 91,92
Schematic #2

ZENITH RADIO CORP.

PEAK FREQUENCY 175 KC.



REVISED CIRCUIT - SCHEMATIC DIAGRAM # 2

ZENITH RADIO CORP.

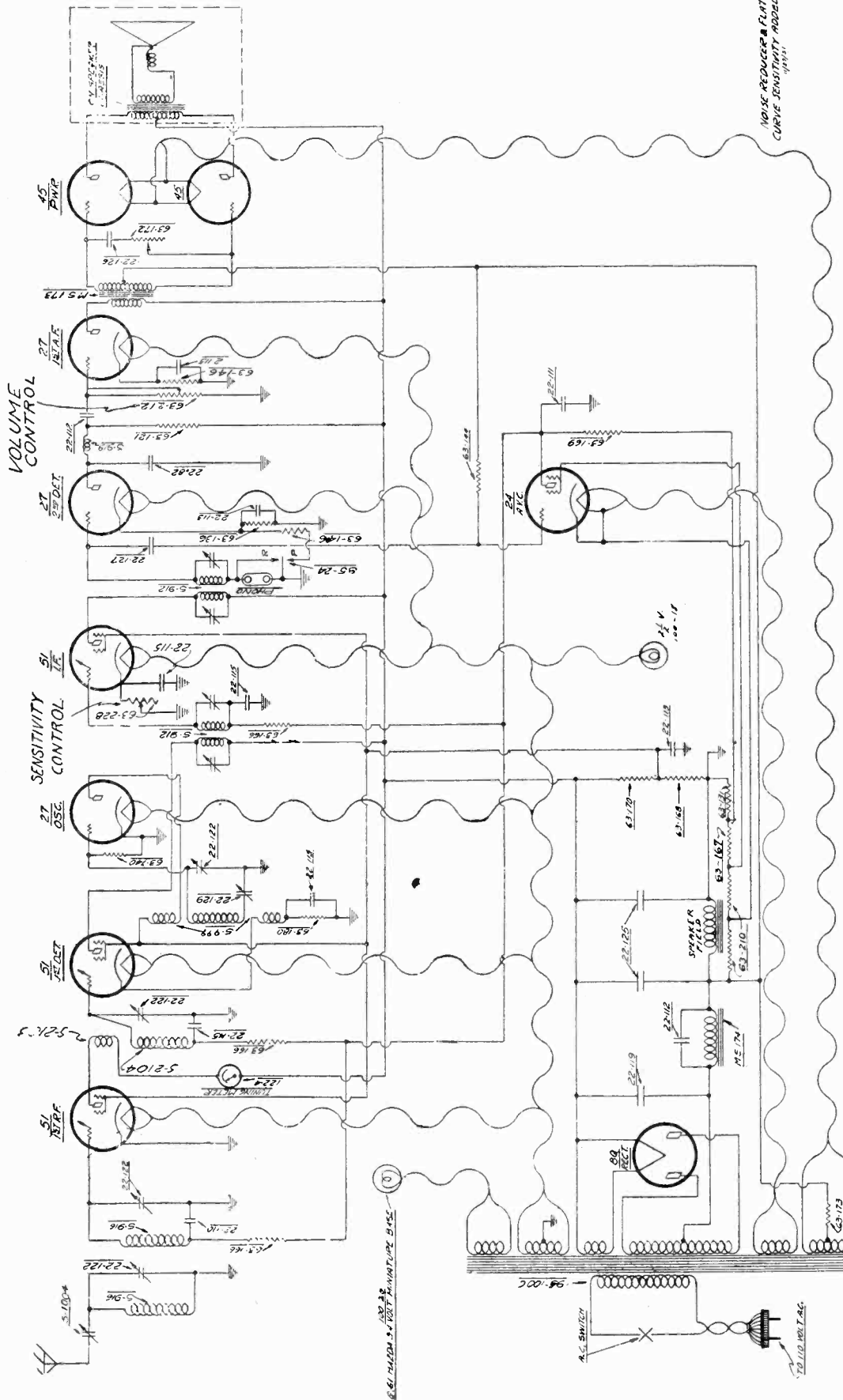
CHICAGO, ILL.
SERIAL 301 TO 399 SUPERMETRONE AMP 6183

MODEL 91 (2014) FOR SERIAL NUMBERS AFTER 373,334
MODEL 92 (2014) FOR SERIAL NUMBERS AFTER 301,394

ZENITH RADIO CORP.

MODEL 91,92
Schematic #3

PEAK FREQUENCY 176 KC



REVISED CIRCUIT - SCHEMATIC DIAGRAM # 3

ZENITH RADIO CORP.
CHICAGO, ILL.
MODEL 904 10 TUBE SUPERHETERODYNE. AMN 6/2/33

MODEL 91 (2014) FOR SERIAL NUMBERS AFTER 375,532
MODEL 92 (2014) FOR SERIAL NUMBERS AFTER 302,007

MODEL 91,92
Circuit Data

ZENITH RADIO CORP.

- * MODEL 91 (2014) SERIAL NUMBERS AFTER 373,334
* MODEL 92 (2014) SERIAL NUMBERS AFTER 301,394 (4B)

In all receivers, bearing serial numbers 373,334 on model 91 and 301,394 on model 92, or higher, the manual control has been removed from the A.V.C. cathode and placed in the grid circuit of the first A.F. stage. A tapped resistor takes the place of the original control. By use of this new system, the automatic volume control operates independently and at full efficiency, manual volume being controlled by varying the audio output.

Since the A.V.C. or R.F. circuit remains constant, the tuning meter will show maximum swing on the station at any manual control setting. Originally the meter action decreased as the volume was lowered.

The parts list shown previously, except for the substitutions given below, should be used when ordering replacement components.

PARTS CHANGE.

- | | | |
|---|------|---------|
| 1 Audio volume control, part # 63-212 | List | \$ 1.65 |
| 1 Center tapped resistor, part # 63-210 | List | \$ 0.50 |
- Deduct the 63-171 volume control.

-
- * MODEL 91 (2014) SERIAL NUMBERS AFTER 375,532
* MODEL 92 (2014) SERIAL NUMBERS AFTER 302,007 (4C)

All ten-tube Zenith Superheterodynes after the above serial numbers will incorporate a variable Sensitivity Control in place of the original Local-Distance switch. The diagram (*) indicates its position as being connected into the I.F. cathode. In addition to the control unit the first detector coil has been replaced by one having slightly different construction to provide equal sensitivity over the entire tuning range. It is not advisable to make this change in receivers subsequent to the above numbers, for the reason that each complete set of chassis coils must be inductively matched, otherwise the efficiency of the receiver will be seriously affected.

The following alteration makes the parts list directly applicable to the improved models:

DEDUCT

- | | |
|---------------------------------------|--|
| 1 Local-Distance switch, part # 85-31 | |
| 1 First detector coil, " # S-997 | |
| 1 Eight megohm resistor " # 63-224 | |
| 1 250,00 ohm resistor " # 63,135 | |

ADD

- | | |
|--------------------------------------|--|
| 1 Sensitivity Control, part # 63-228 | |
| 1 Det. coil assembly " # S-2104 | |
| 1 Bypass condenser, " # 22-115 | |
| 1 50,000 ohm resistor, " # 63-136 | |

ZENITH RADIO CORP.

MODEL 91,92
Balancing Notes

Balancing Chassis

Every Zenith Superheterodyne Receiver is carefully balanced on laboratory equipment before leaving the factory and should not require further attention in this respect. However, in the event that some part of the R. F. circuit has been changed, or the adjustments shifted by mishandling, the chassis may be rebalanced as follows:

If an oscillator is available more accurate results will be obtained. It should be accurately calibrated from 1500 to 550 kilocycles and should also have provision for generating a 175 kilocycle signal. In cases where an oscillator is not available a fairly good result may be had by listening to stations which operate as nearly as possible to the extreme ends of the dial. Although an output meter will give most accurate results, satisfactory adjustments can be made simply by listening to the speaker.

The chassis should be removed from the cabinet so that all adjustments are easily accessible. Next place the test oscillator in operation and connect it direct to the antenna and ground posts of the receiver. It should then be set to 1500 kilocycles and the receiver tuned to the same reading on the dial. If the oscillator is not accurate the stations will not be received on their proper calibration. If a station is used for this purpose, the dial pointer should first be set to the exact frequency of the station being received. Beginning with the variable condenser tuning section at the extreme left, which tunes the oscillator circuit, the trimmer should be regulated for maximum response, in either the loud speaker or output meter. It will be noticed that the second section does not employ a vernier adjustment. This stage is resonated by adjusting the antenna compensator knob as explained in the instruction card. The third, or 1st R. F. trimmer, is adjusted in the same manner as the oscillator. If at any time the volume reaches a very high level, so that it is not possible to determine slight changes, it should be reduced by means of the volume control knob so as to be barely audible. The fourth, or 1st detector section, is next in order and its trimmer should also be adjusted for resonance.

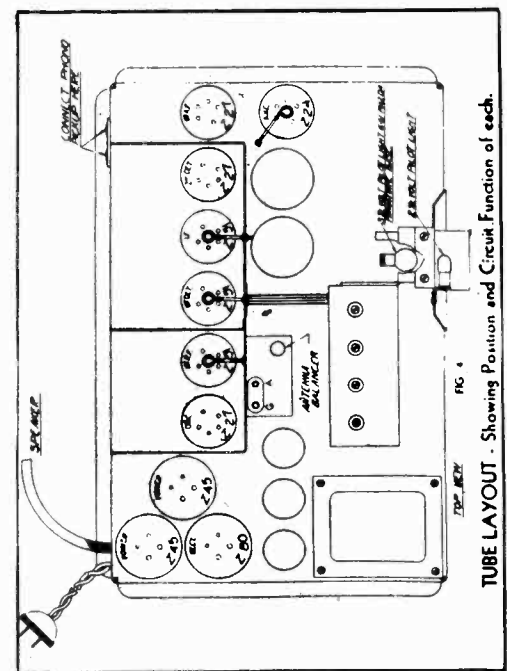
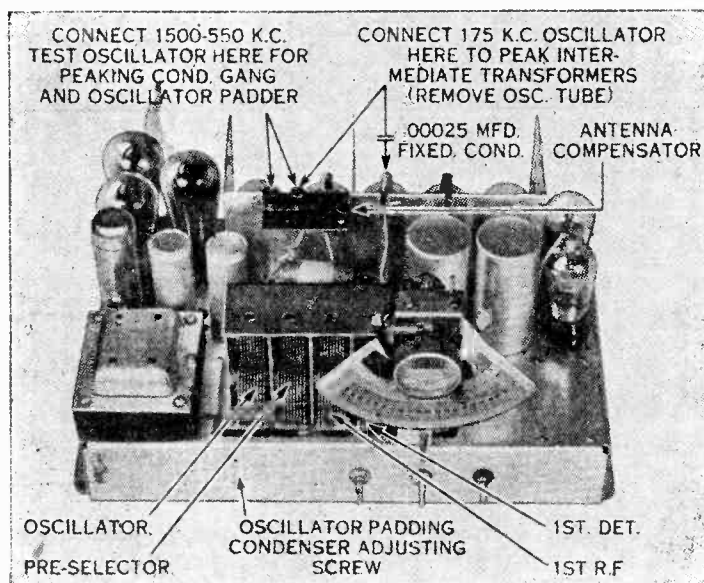


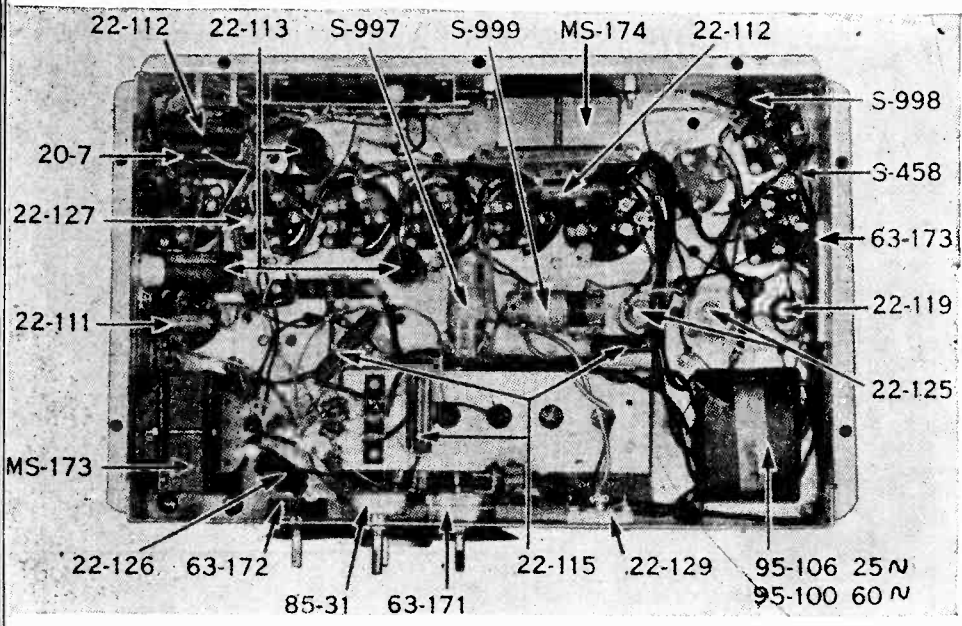
FIG. 1
TUBE LAYOUT - Showing Position and Circuit Function of each.

After the vernier adjustments have been completed the test oscillator should be set at 550 kilocycles and the dial of the receiver turned until the oscillator signal is tuned in. Now the oscillator padding condenser (see fig. 3) should be very carefully adjusted with a screw driver for maximum output of the receiver, while rocking the tuning condenser back and forth over the signal. This padding adjustment brings the oscillating circuit of the receiver in resonance with the remaining tuned circuits and, thereby, enables it to track accurately over the entire scale. The receiver will now operate at full efficiency and all stations will be received at their proper calibration. If this is not found to be entirely so, the entire balancing operation should be repeated.

The intermediate transformers used in the ten tube Superheterodyne have been accurately peaked at 175 kilocycles on a temperature controlled crystal oscillator before leaving the factory. It is not recommended that their adjustments be tampered with unless an oscillator is available which is very accurately calibrated at 175 kilocycles, or unless the serviceman is absolutely certain the trouble lies in their adjustment. However, if it is necessary to check the adjustments, the 175 K. C. test oscillator may be connected to the grid terminal of the 1st detector through a .00025 fixed condenser. The ground lead of the test oscillator is connected to the ground post of the receiver. The oscillator tube must be removed from the chassis while this operation is being performed. Four adjusting screws are provided under the chassis directly beneath the intermediate transformers, which tune the plate circuit of the 1st detector, grid and plate circuits of the I. F. stage, and grid circuit of the second detector. (See wiring diagram.) Beginning with the 2nd detector grid vernier, each adjusting screw should, in turn, be set for maximum signal output from the speaker or output meter. 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 in order to determine slight variations in volume.

**MODEL 91,92
Parts List**

ZENITH RADIO CORP.



Type	Pinions	Pin Vols.	Control Grid Vols.	Cathode Vols.	Plate Int. A.	S.C. Vols.
Z-11	1st R. F.	175	2	0	7	(R)
Z-12	1st Det.	175	3.1	4	3.1	W
Z-13	Osc.	70	0	0	8.1	"
Z-14	I. F.	200	4	0	2.1	11.5
Z-15	2nd Det.	115	0	9	1	"
Z-16	1st Aud.	145	0	13	6.1	0
Z-17	P. P.	275	14	0	10	0
Z-18	P. P.	275	14	0	10	0
Z-19	A. V. C.	31	4	0	0	14
Z-20	Rect.	4.8	0	0	7.6	0

Socket Voltages

Plate readings taken with a W/gram type 166 meter. Manual volume control in maximum position and antenna and ground disconnected. Line voltage 115.

CONDENSERS

22-82	.001	Mfd.	(2nd Det. Plate)	\$.30
22-110	.1	Mfd.	(R. F.)	.50
22-111	.03	Mfd.	(A.V.C. Plate)	.30
22-112	.1	Mfd.	(2 Used. See Footnote)	.35
22-113	.5	Mfd.	(3 Used. See Footnote)	.50
22-115	.1	Mfd.	(3 Used. See Footnote)	.30
22-119	6	Mfd.	(High Voltage Electrolytic)	1.50
22-122	Four Gang	Variable		7.00
22-125	8	Mfd.	(Low Voltage Electrolytic. 2 Used)	1.50
22-126	.006	Mfd.	(Tone Control)	.55
22-127	.000025	Mfd.	(A.V.C. Coupling)	.35
22-129		Oscillator, Padding		.75

RESISTORS

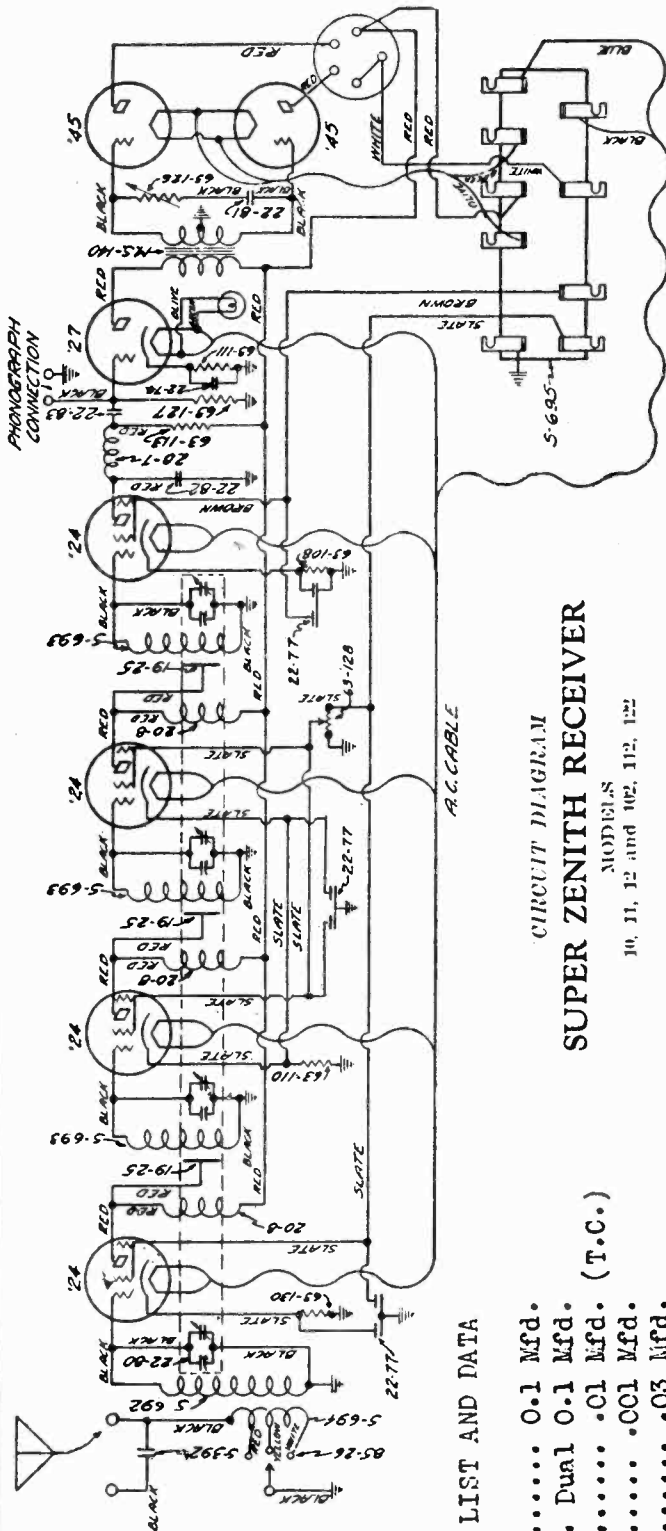
63-111	2M	Ohm	1 Watt	(1st A. F. Cathode)	\$.30
63-121	100M	Ohm	1 Watt	(2nd Det. Plate)	.30
63-131	400	Ohm	1/2 Watt	(A.V.C. Voltage Divider)	.30
63-135	25M	Ohm	1/2 Watt	(2nd Detector Cathode)	.30
63-137	250M	Ohm	1/2 Watt	(1st A. F. Grid)	.30
63-140	1 Meg.	Ohm	1/2 Watt	(Oscillator Grid)	.30
63-144	3 Meg.	Ohm	1/2 Watt	(A.V.C. Grid)	.30
63-146	2M	Ohm	1/2 Watt	(1st A. F. Cathode)	.30
63-166	1400	Ohm	1/4 Watt	(3 Used. See Footnote)	.30
63-167	8M	Ohm	1 Watt	(A.V.C. Divider)	.30
63-168	3600	Ohm	2 Watt	(Plate Voltage Divider)	.50
63-169	400M	Ohm	1/2 Watt	(A.V.C. Plate)	.30
63-170	2800	Ohm	2 Watt	(Plate Voltage Divider)	.50
63-171		Manual Volume Control and Switch Assembly		1.65	
63-172		Tone Control		1.00	
63-173	750	Ohm	Metal Mounting	(Power Tube Bias)	.40
63-180	1M	Ohm	1/2 Watt	(1st Detector Cathode)	.30
63-188	4 1/2 Meg.	Ohm	1/2 Watt	(A.V.C. Plate)	.30

Note: All resistors employed in this receiver are marked in accordance with R. M. A. standards. Color code charts may be obtained by writing direct to the Erie Resistor Corp., Erie, Pa.

S-912 Intermediate Transformer Complete (2 Used) (Specify with or without grid lead) \$2.50
 S-916 Antenna and 1st R. F. Coils .75
 S-997 1st Detector Complete 1.25
 S-999 Oscillator Coil Complete 1.25

Note: 22-112 Filter Choke By-pass and 1st Audio Coupling Condensers
 22-113 1st R. F., 1st Det. and I. F. Screen. 2nd Det. and A. F. Cathode.
 22-115 2nd Det. and I. F. Grid Return. 1st Det. Cathode.
 63-166 1st R. F., 1st Det. and I. F. Grid Return Resistor.

ZENITH RADIO CORP. MODEL 10,11,12,102,112,122 Schematic, Parts List.



PARTS LIST AND DATA

- 22-74..... 0.1 Mfd.
- 22-77..... Dual 0.1 Mfd.
- 22-81..... .01 Mfd. (T.C.)
- 22-82..... .001 Mfd.
- 22-83..... .03 Mfd.
- 63-108..... 50000 Ohms-green
- 63-110..... 400 Ohms-yellow
- 63-111..... 2000 Ohms-black
- 63-113..... 250000 Ohms-white
- 63-127..... 1 Meg.-brown
- 63-128..... 50000 Ohms (V.C.)
- 63-130..... 800 Ohms-bl-yel.

POWER UNITS

- MODELS 10, 11, 12
- 22-71..... 1.0 Mfd.
- 22-72..... 8.0 Mfd.(Elect)
- 63-114..... 10 Ohm (C.T.)
- 63-124..... 10450 Ohm V. Div.
- 95-83.... Power Transformer
- 95-84.... Power Transformer for models 102, 112, 122, 25 cycle sets.

CIRCUIT DIAGRAM SUPER ZENITH RECEIVER

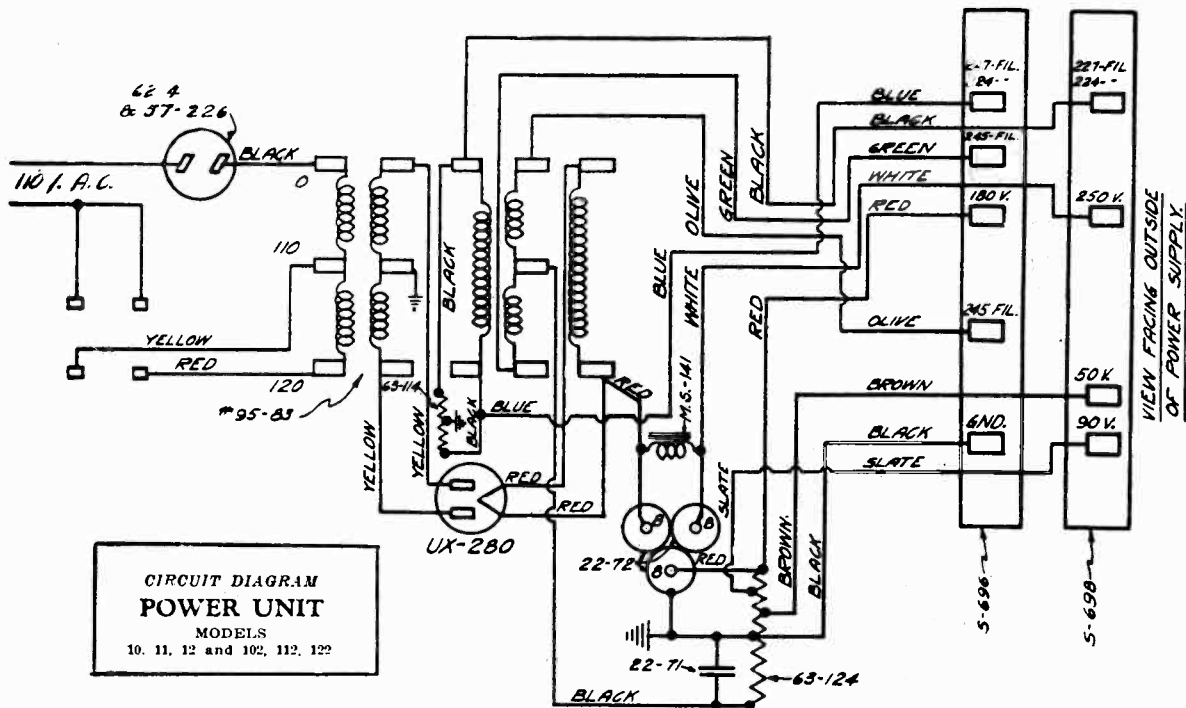
MODELS 10, 11, 12 and 102, 112, 122

VOLTAGE READINGS AT SOCKETS USING WESTON 547 ANALYZER
Line Voltage 115. Fuse in 120 Volt Clips. Vol. (cont. in box. Pos'n.

TYPE	POS. ION	FIL. VOLTS	PLATE VOLTS	GRID VOLTS	SCREEN VOLTS	NORMAL PLATE M.A.	GRID TEST M. A.
224	1st R.F.	2.3	185	3.25	90	4	7
224	2nd R.F.	2.3	185	3.4	90	4	7.5
224	3rd R.F.	2.3	185	3.3	90	4	7.5
224	Det.	2.3	90	3	30	.25	.75
227	1st A.F.	2.3	170	12	—	6	7
245	P.P.	2.3	245	50	—	28	37
245	P.P.	2.3	245	50	—	28	37

MODEL 10,11,12,102,112,122
Power Unit

ZENITH RADIO CORP.



A new development in the form of capacity coupling is used between the R. F. stages. Close examination will reveal the fact that it comprises a single band of bus-bar wire. This band is connected from the plate terminal of the preceding R. F. stage and coupled to the grid coil of the following R. F. stage. The position of this band is permanently adjusted at the factory and should never be altered or tampered with unless the available line voltage is extremely low.

The distance from the coupling band to the grid or top end of the R. F. coil entirely governs the stage coupling and efficiency of the set. If this band is too close to the grid end, excessive coupling will result, causing a decided lack of selectivity. If the band is placed too low, the result will be a lack of sensitivity. Midway between the coil winding is the exact and most efficient operating position. If it is found necessary to reset this band, insulating cement or other fastening substance should be applied to hold it in position, since loose vibration would cause frequency flutter.

The R. F. plate chokes are concealed beneath the R. F. coil base, between the base and sub-panel. These chokes have an inductance of 6.75 M. H. and can be distinguished from the detector plate choke by the fact that they have 150 less turns. If an occasion arises which necessitates removing an R. F. choke, the serviceman should make certain that the $\frac{1}{8}$ " spacing is maintained between the choke and the R. F. coil base. To neglect this important adjustment may cause erratic operation of the receiver.

Occasionally, and especially if the receiver has remained idle for a long length of time, it may have a tendency to oscillate. This is always due to poor contact between the wipers and rotor bearings of the variable condenser gang. It may be overcome by cleaning both parts with fine sandpaper or by revolving the dial several times to remove oxidization at that point.

BALANCING

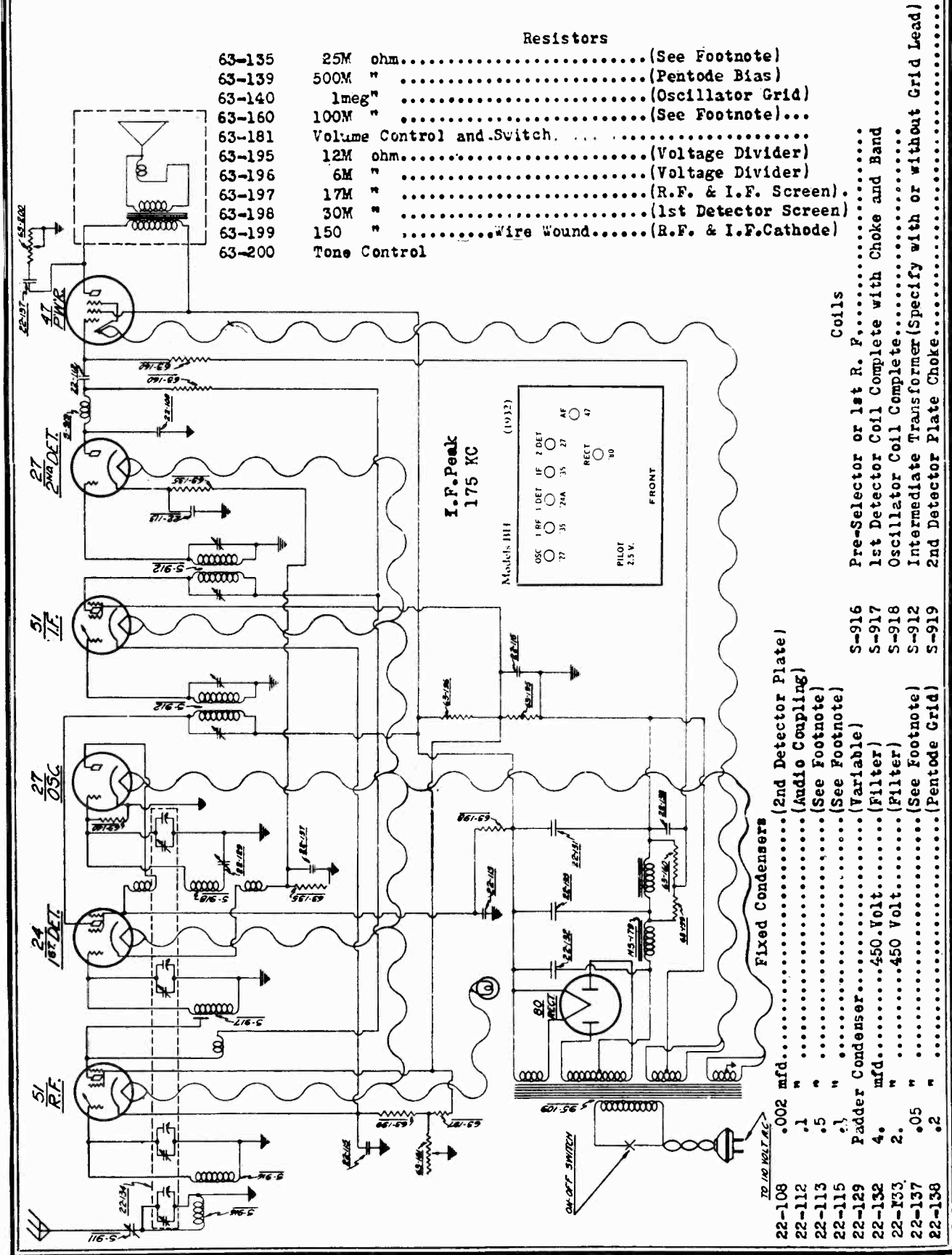
When resonating the variable condenser system for most efficient receiver performance, it will be noticed that an entirely new and fool-proof system of locking the verniers has been employed. The large locking nut may be loosened with a No. 6 Spintite wrench and the vernier screw turned with a small pointed screw driver.

Proper method of balancing is accomplished by setting the antenna input control first on the No. 1 position. A station of low wavelength should be tuned to resonance on the dial. Adjust each trimmer condenser to exact resonance or so that it is set to peak volume. After this has been done, the input control should be set to the No. 2 position and the antenna section trimmer readjusted.

Upon completion, make certain that the wavelength of the station chosen corresponds to the proper wavelength reading on the drum dial.

ZENITH RADIO CORP.

MODEL BH (2021)
Schematic
Parts List

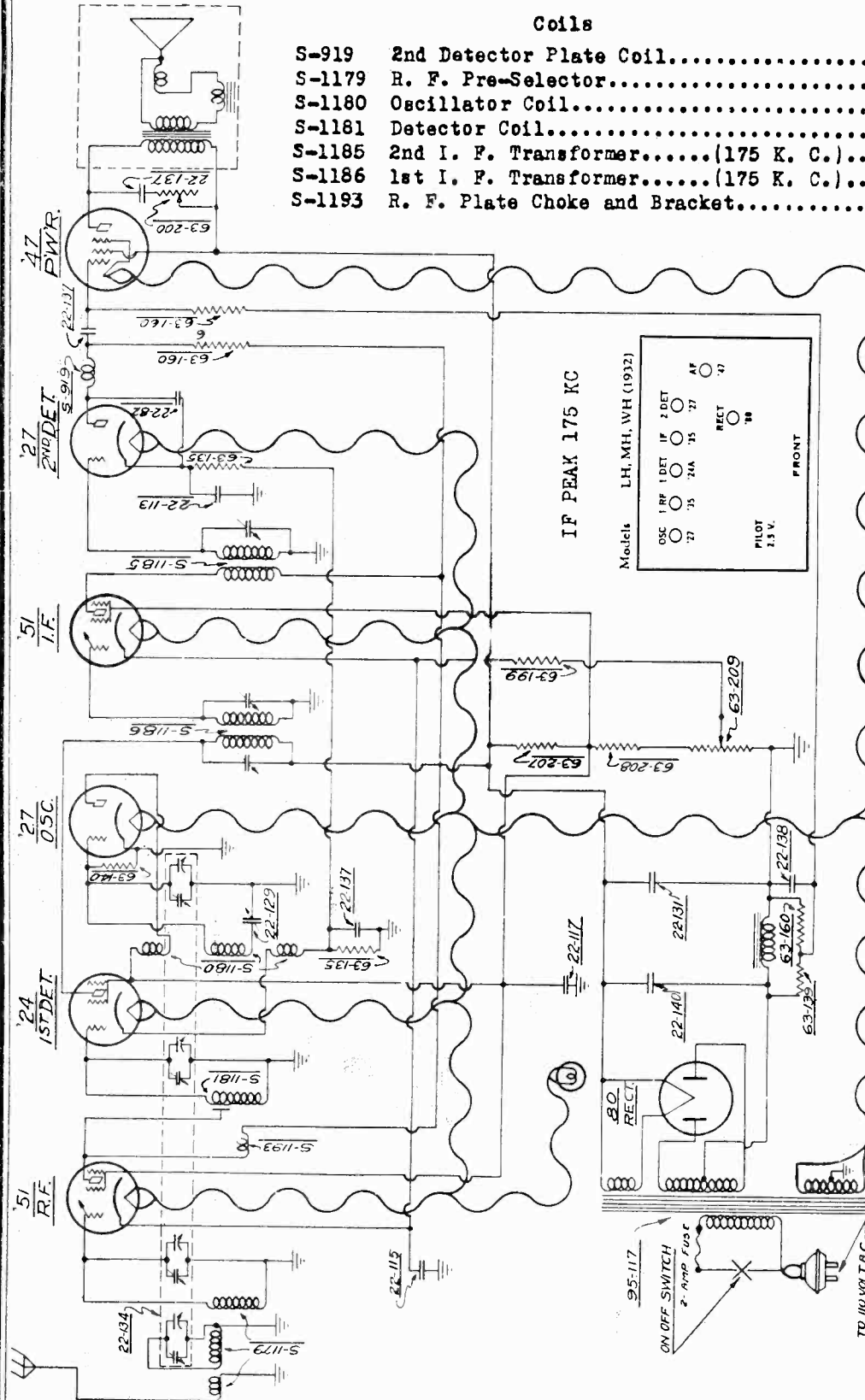


MODELS LH,WH,MH (2022)
7 Tube Superhet
Schematic

ZENITH RADIO CORP.

Coils

- S-919 2nd Detector Plate Coil.....
- S-1179 R. F. Pre-Selector.....
- S-1180 Oscillator Coil.....
- S-1181 Detector Coil.....
- S-1185 2nd I. F. Transformer.....(175 K. C.)...
- S-1186 1st I. F. Transformer.....(175 K. C.)...
- S-1193 R. F. Plate Choke and Bracket.....

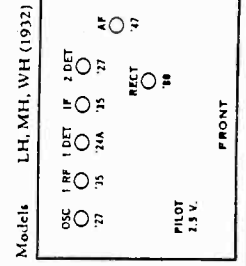


Fixed Condensers

- .001 mfd... (2nd Detector Plate).....
- .5 " " (2nd Detector Cathode).....
- .1 " " (R.F. & I.F. Cathode).....
- .5 " " (R.F. & 1st Detector Screen).....
- 6. mfd... (Power Filter).....
- .05 " " (3 used, see footnote).....
- .2 " " (Power Grid).....
- .8 " " (Power Filter).....

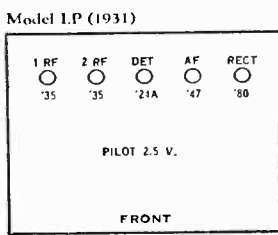
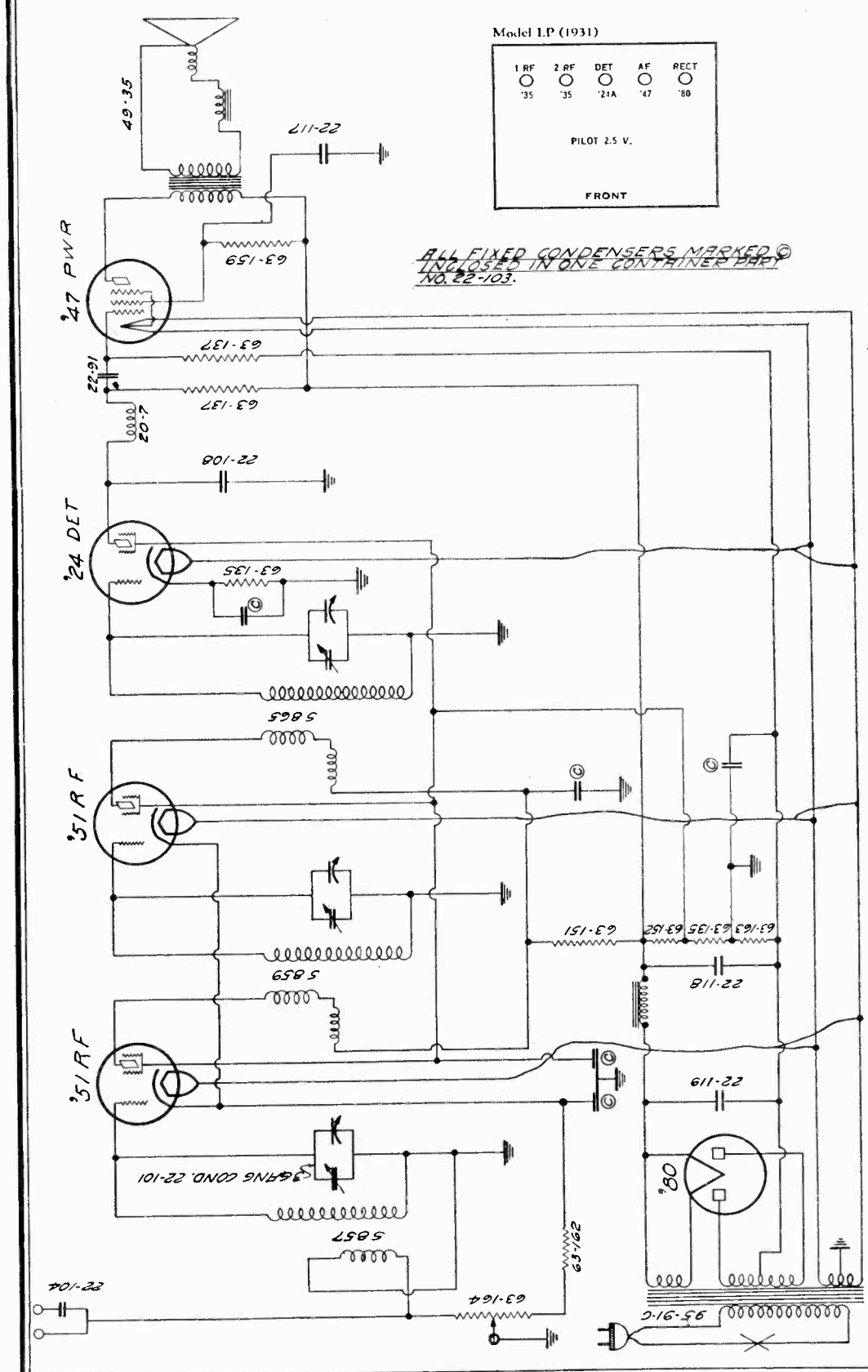
Resistors

- 63-135 25M ohm... (1st, 2nd Detector Cathode)...
- 63-139 500M " " (Power Grid).....
- 63-140 1meg " " (Oscillator Grid).....
- 63-160 100M " " (2nd Det. Plate & Power Grid)...
- 63-199 250 ohm... (R.F. & I.F. Cathode, Flexible)
- 63-207 10W ohm... (Voltage Divider, Wire Wound)...
- 63-208 12M " " (Voltage Divider).....



ZENITH RADIO CORP.

MODEL LP
Schematic
Parts List



ALL FIXED CONDENSERS MARKED
ENCLOSED IN ONE CONTAINER PART
NO. 22-103.

Fixed Condensers

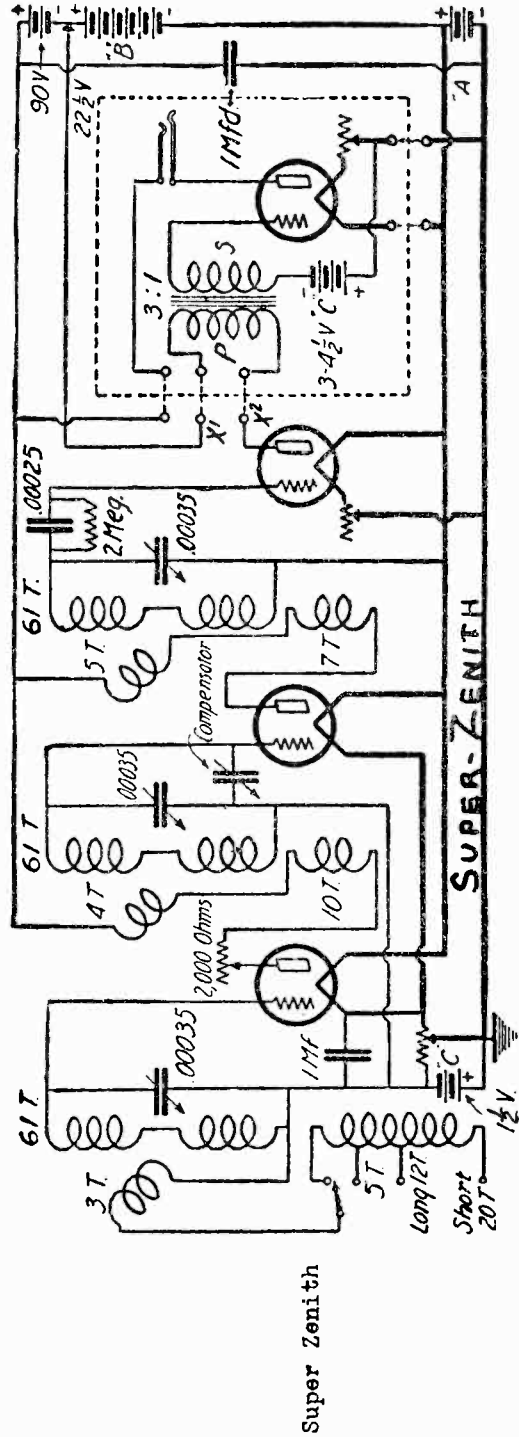
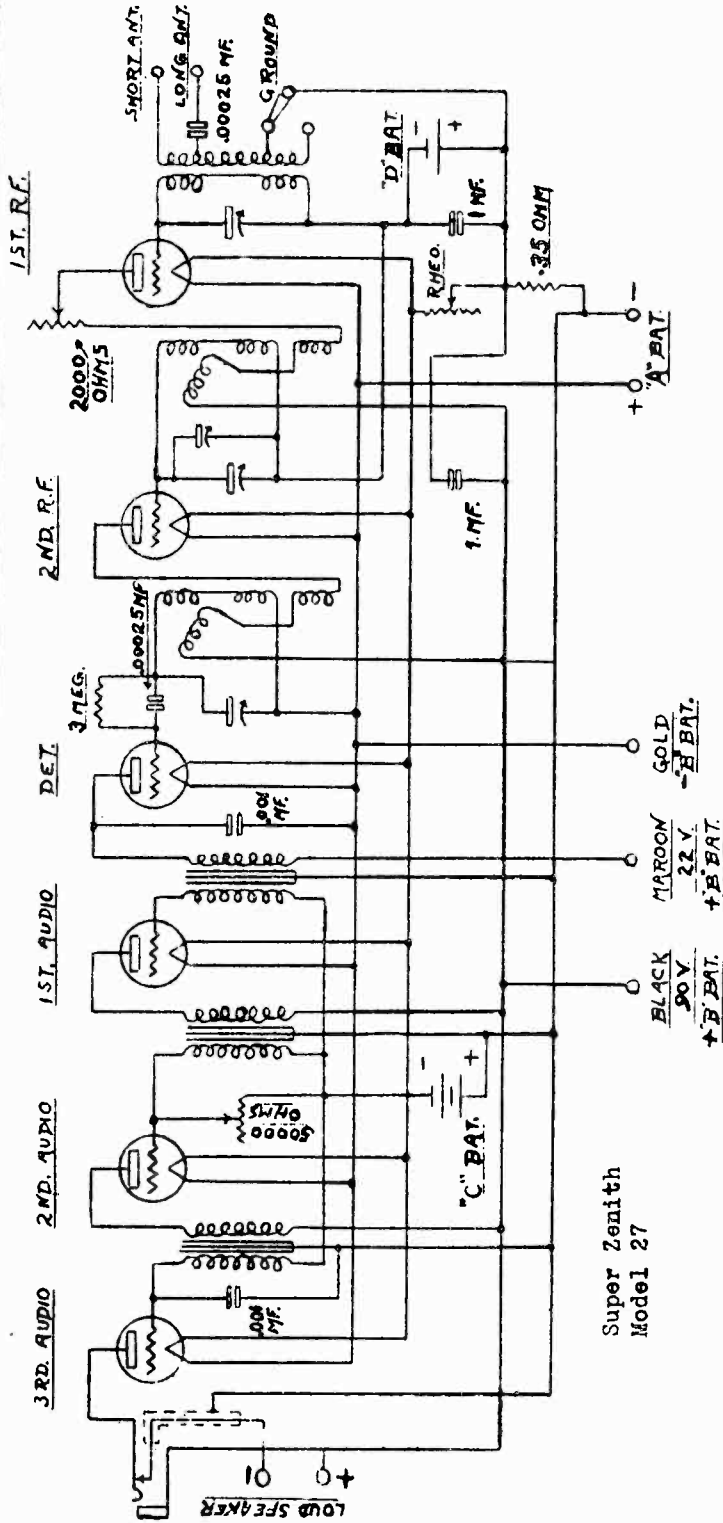
- .03 mfd. condenser
- Antenna series condenser
- Five section bypass condenser
- .002 mfd. condenser
- .5 " (bypass)
- 6 " (electrolytic low voltage)
- 6 " high

Resistors

- 63-135 25M ohm resistor (Red, Green end, Orange Dot)
- 63-137 250M " " " " " "
- 63-151 15M " " " " " "
- 63-152 43M " " " " " "
- 63-159 4M " " " " " "
- 63-162 100 " " " " " "
- 63-163 320 " " " " " "
- 22-91 S-392
- 22-103 Antenna series condenser
- 22-108 Five section bypass condenser
- 22-117 .002 mfd. condenser
- 22-118 .5 " (bypass)
- 22-119 6 " (electrolytic low voltage)
- 22-119 6 " high

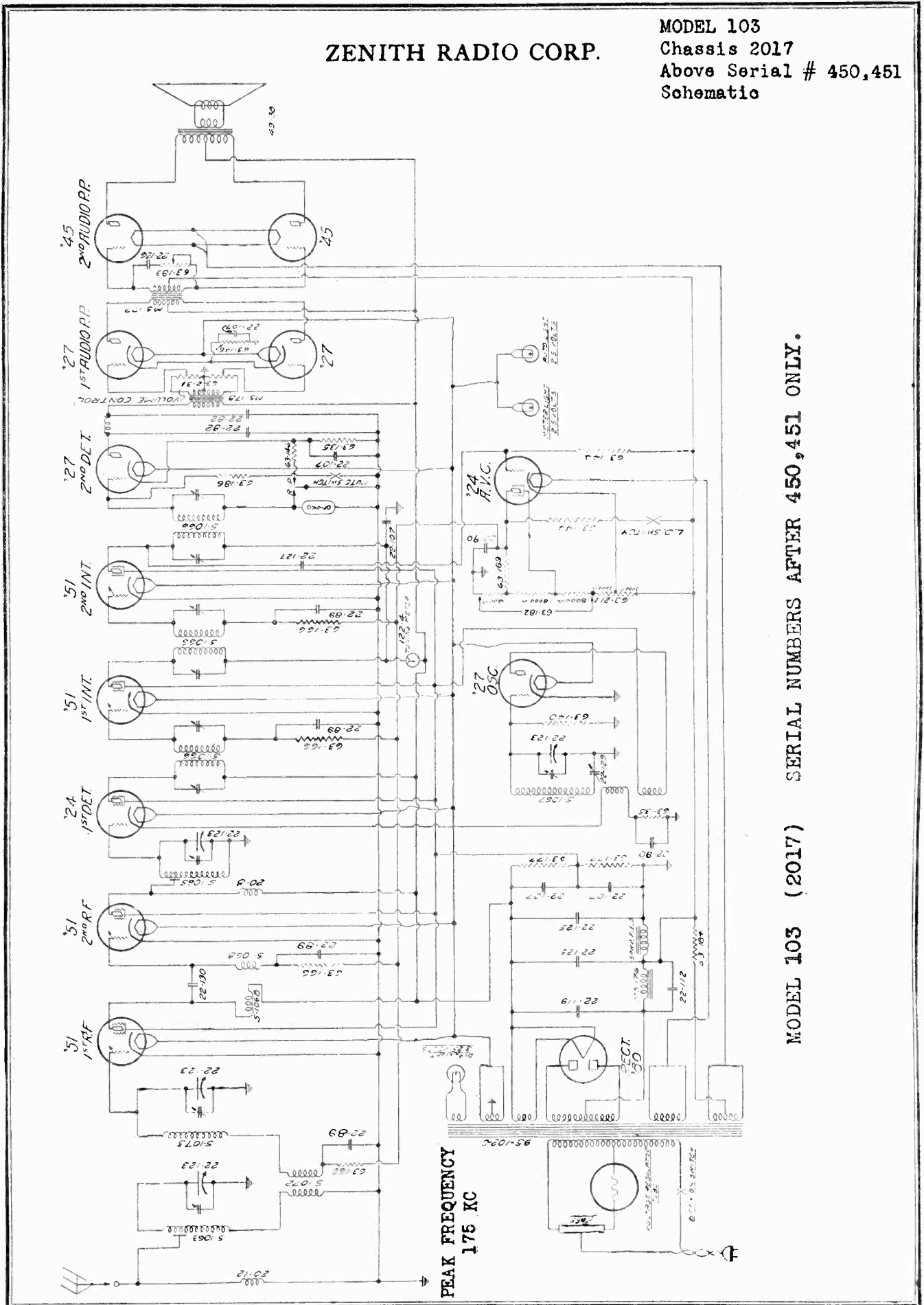
MODEL 27
 Super Zenith
 MODEL Super Zenith

ZENITH RADIO CORP.



ZENITH RADIO CORP.

MODEL 103
Chassis 2017
Above Serial # 450,451
Schematic



MODEL 103 (2017) SERIAL NUMBERS AFTER 450,451 ONLY.

PEAK FREQUENCY
175 KC

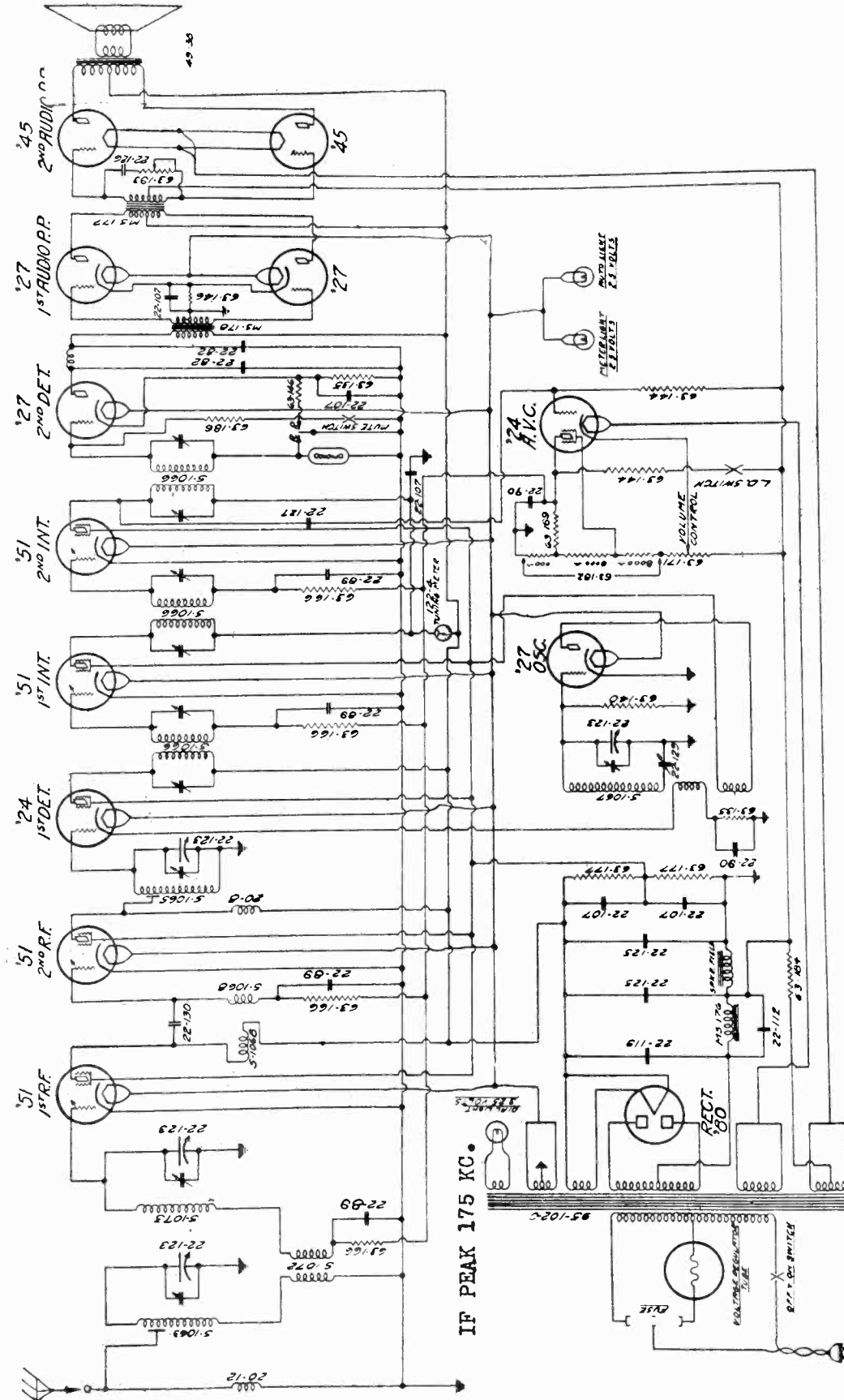
MODEL 103

Chassis 2017

Serials 450,001-450,450

Schematic Notes

ZENITH RADIO CORP.

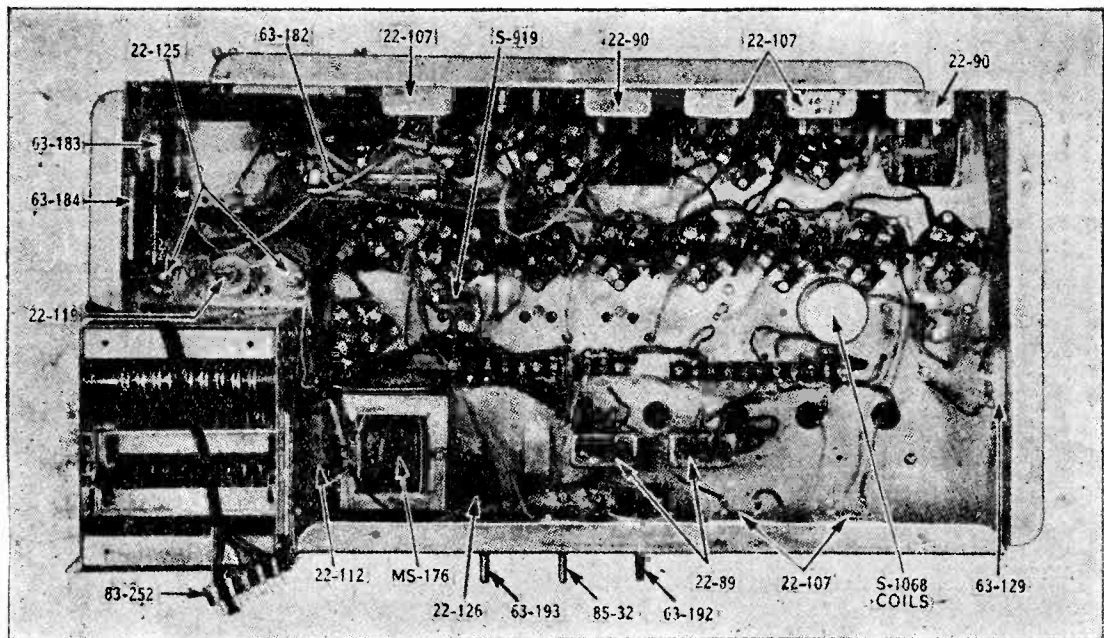


It should be noted that the line fuse provided in the rear of the chassis has two positions. The fuse should normally be used in the "Regulator Tube In" position. If the regulator tube becomes defective and a replacement is not immediately available, the fuse may be placed in the "Regulator Tube Out" clips. Do not leave the volume regulator tube out permanently since line fluctuation or high voltage may cause damage to the tubes or power transformer.

It should be noted that the phonograph pick-up switch and jacks are connected in the grid return circuit of the second detector, consequently a howl will be heard if the phono switch is thrown to the phono position without a phono pick-up having been attached. Be sure this action is taken into consideration when servicing the receiver or if there is a complaint of very weak reception accompanied by a very peculiar howl.

**MODEL 103 (2017) 14 TUBE SUPERHETERODYNE
SERIAL NUMBERS 450,001 TO 450,450**

ZENITH RADIO CORP.

MODEL 103
Chassis Layout
Parts List

MISCELLANEOUS

19-21	Grid Clip	.02
44-4	Phono Jack Base Assembly	.30
46-40	Tuning Knob	.25
46-55	Control Knob (3 used)	.20
49-36	Dynamic Speaker	25.00
52-25	Speaker Multicord	.45
57-308	Dial Escutcheon Plate	.80
57-309	Meter Escutcheon Plate	.35
73-8	Small Set Screw for Auto Coupling	.01
78-36	Z-51 Socket	.20
78-37	Z-27 Socket	.20
78-38	Z-24 Socket	.20
78-40	Z-80 Socket	.20
78-41	Z-45 Socket	.20
78-42	Amperite Socket	.15
83-252	Speaker Multicord Terminal Strip	.20
85-24	Phono Switch	.75
85-32	Local Distance and Mute Switch	1.00
93-147	Electrolytic Condenser Insulating Washer	.02
93-102	110 volt 60 cycle Power Transformer	8.00
95-116	110 volt 25 cycle Power Transformer	13.50
114-6	Large Set Screw for Auto Coupling	.05
130-2	2 amp Fuse	.10
143-11	Auto Coupling Collar	.85
S-1037	Auto Control Shaft Assembly	.90
MS-176	Power Choke	4.00
MS-177	Audio Transformer (Six Lead)	5.50
MS-178	Audio Transformer (Five Lead)	5.50

CONDENSERS

22-82	.001	Mfd. (2nd Detector Plate)	.30
22-89	.1	Mfd. (2 used, see footnote)	.85
22-90	.1	Mfd. (2 used, see footnote)	.53
22-107	.1	Mfd. (5 used, see footnote)	.85
22-112	.1	Mfd. (Choke Bypass)	.35
22-119	6.	Mfd. (Electrolytic)	2.50
22-123	Four Gang Variable		10.00
22-125	8.	Mfd. (Electrolytic)	1.50
22-126	.006	Mfd. (Tone Control)	.55
22-127	.000025	Mfd. (A. V. C. Coupling)	.35
22-129		Padder	.75
22-130	.0001	Mfd. (R. F. Coupling)	.20

Note: 22-89 1st, 2nd, R. F. and 1st, 2nd, I. F. Grids.

22-90 1st Detector Cathode and A. V. C. Plate.

22-107 2nd Detector Cathode, 1st A. F. Bias, I. F. Plate and Voltage Divider.

63-183. Specify—Porcelain or Metal Mounted Type.

COILS

20-8	2nd R. F. Plate Choke	.50
20-12	Antenna Choke	.50
S-919	2nd Detector Plate Choke and Bracket	.60
S-1063	Pre-Selector (Coll Only)	2.00
S-1073	1st R. F. (Coll Only)	.90
S-1005	1st Detector (Coll Only)	1.80
S-1060	I. F. Transformer (Specify with or without Grid Lead)	2.85
S-1067	Oscillator (Coll Only)	1.65
S-1068	2nd R. F. Untuned Transformer	2.00
S-1072	Coupling Coil	.90

RESISTORS

68-135	25M	Ohm. (1st, 2nd Detector Cathode)	.30
63-140	1 Meg	Ohm. (Oscillator Grid)	.30
63-146	2M	Ohm. (2nd Detector and A. F.)	.30
63-166	1400	Ohm. (R. F. and I. F. Grid Return)	.60
63-169	400M	Ohm. (A. V. C. Plate)	.30
63-182	16400	Ohm. (A. V. C. Divider, Metal Mtg.)	.75
63-183	6M	Ohm. (Voltage Divider, see footnote)	.65
63-184	750	Ohm. (Power Bias)	.30
63-186	5M	Ohm. (2nd Detector Grid)	.30
63-192		Volume Control and Switch Assembly	1.75
63-193		Tone Control	1.00
63-144	3 Meg	Ohm. (A. V. C. Grid)	.30

DIAL ASSEMBLY

S-1003	Dial Light Socket and Clip (less lamp)	* .60
S-1009	Tuning Shaft and Bracket Assembly	1.50
S-1010	Drum Gear and Cam	.85
S-1106	Dial Pointer and Reflector Plate	1.50
S-1110	Dial Strip and Bracket	.85
6-14	Pointer Arm Bearing	.20
15-12	Dial Light Clip	.35
76-110	Dial Elevator Shaft	.10
80-72	Pointer Arm Tension Spring	.04
94-119	Roller Bearings	.08
100-18	2½ volt Meter Lamp	.25
100-20	3¼ volt Dial Lamp	.60
122-4	Tuning Meter and Cord	2.25
148-3	Dial Elevator Arm	.35

IMPORTANT: GIVE SERIAL NUMBER OF RECEIVER ON ALL PARTS ORDERS.
ALL PRICES ARE SUBJECT TO REGULAR DISCOUNT AND CHANGE WITHOUT NOTICE.

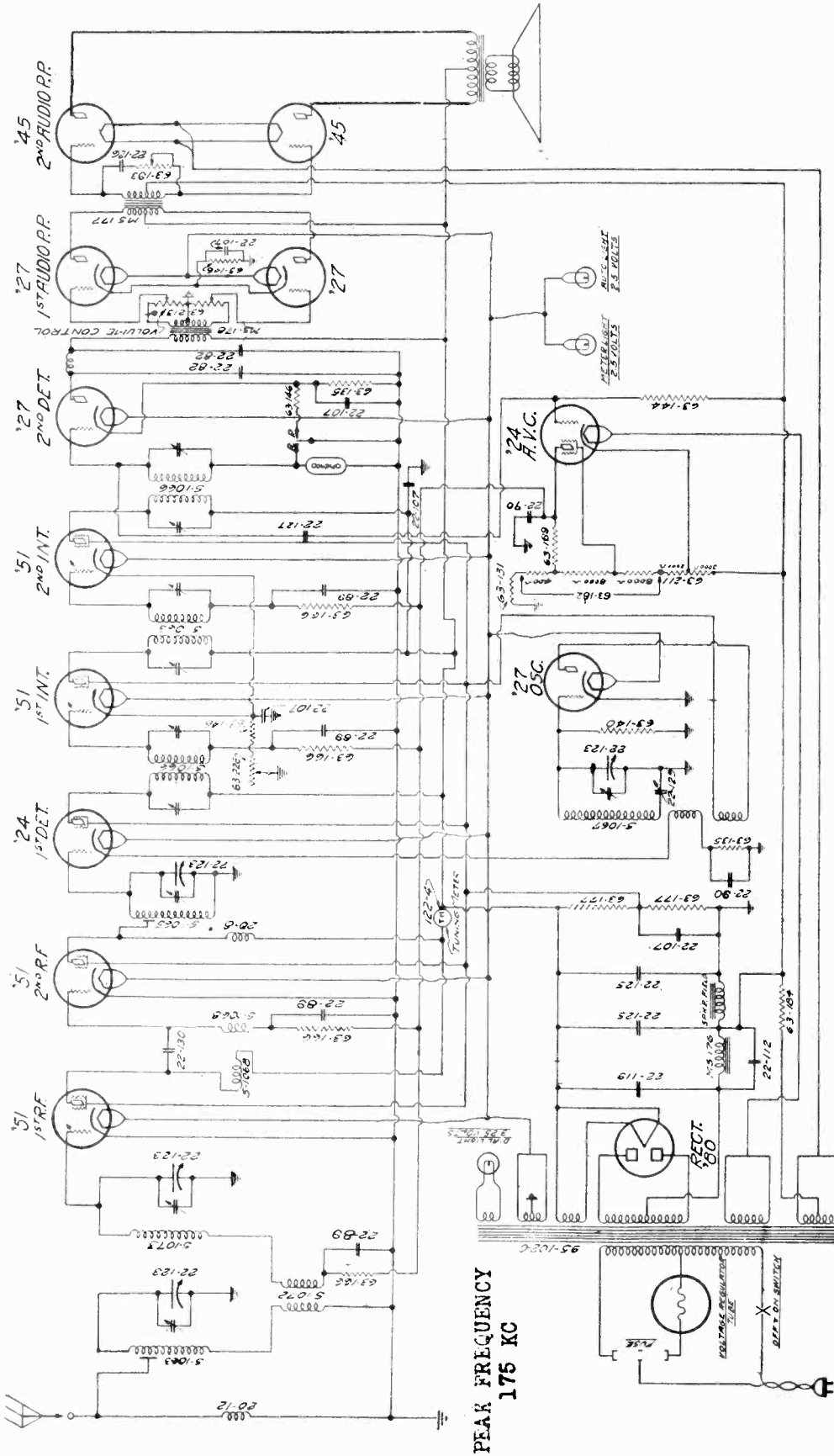
MODEL 103

Chassis 2017

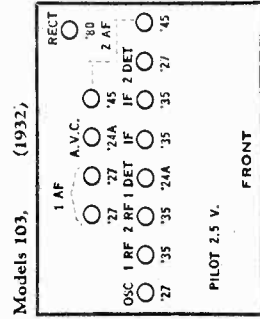
Above Serial # 451,260

Schematic

ZENITH RADIO CORP.



PEAK FREQUENCY
175 KC



Models 103, (1932),

MODEL 103 (2017) SERIAL NUMBERS AFTER 451,260

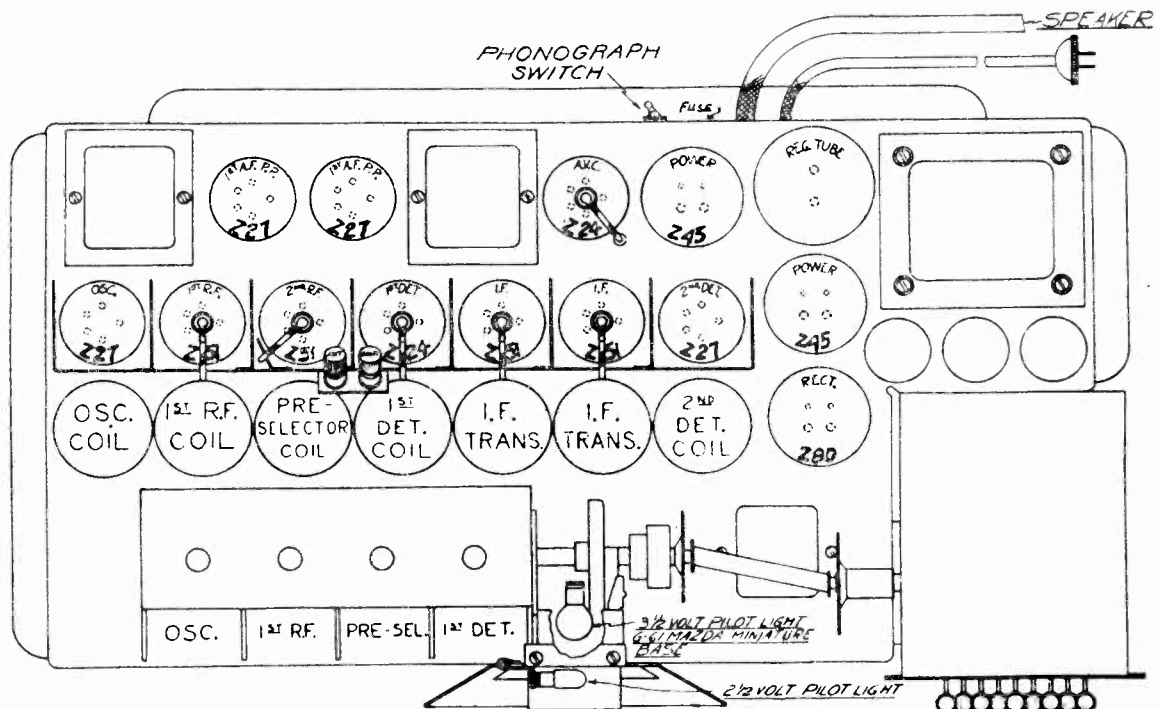
MODEL 103
Chassis Layout
Voltage

ZENITH RADIO CORP.

Socket Voltages

Type	Position	Fil. Volts	Plate Volts	Control Grid Volts	Cathode Volts	Plate M. A.	S. G. Volts
Z-51	1st. R. F.	2.2	185	- 9.	0.	2.5	80
Z-51	2nd. R. F.	2.2	200	- 3.9	0.	3.	84
Z-24	1st Det.	2.2	185	0.	+ 7.	.25	70
Z-27	Osc.	2.2	80	0.	0.	7.	0
Z-51	I. F.	2.2	185	- 4.	0.	3.	90
Z-51	I. F.	2.2	185	- 4.	0.	2.	90
Z-27	2nd. Det.	2.2	185	0.	+17.5	.5	0
Z-27	1st. P. P.	2.2	165	0.	+12.5	3.	0
Z-27	1st. P. P.	2.2	165	0.	+12.5	3.	0
Z-45	2nd. P. P.	2.3	240	-48.	0.	36.	0
Z-45	2nd. P. P.	2.3	240	-48.	0.	36.	0
Z-24	A. V. C.	2.3	30	- .4	0.	0.	45
Z-80	Rect.	5	350	0.	0.	70.	0
	Vol. Reg.	Con-	tin-	uity	test	only.	

Voltage readings taken with a Weston model 566 type 3 tester. Manual volume control in maximum position; and antenna and ground disconnected. Line voltage 112



TUBE LAYOUT - Showing Position and Circuit Function of each.

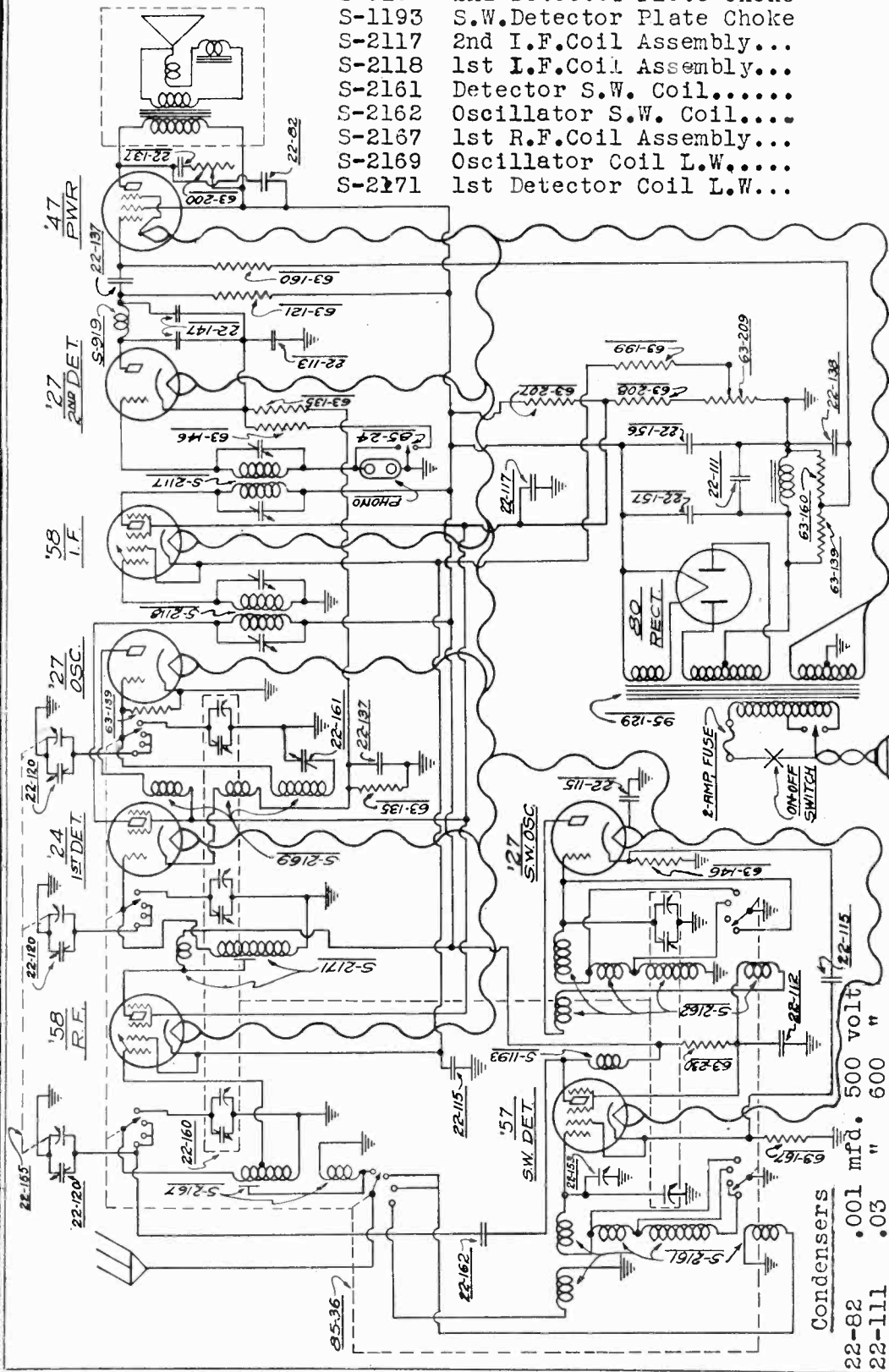
ZENITH RADIO CORP.

MODEL 250,260,272
 Chassis 2031
 Schematic

Coils - Chokes

- S-919 2nd Detector Plate Choke
- S-1193 S.W. Detector Plate Choke
- S-2117 2nd I.F. Coil Assembly...
- S-2118 1st I.F. Coil Assembly...
- S-2161 Detector S.W. Coil.....
- S-2162 Oscillator S.W. Coil.....
- S-2167 1st R.F. Coil Assembly...
- S-2169 Oscillator Coil L.W.....
- S-2171 1st Detector Coil L.W...

	WATT
500M OHM	" " "
2M	" " "
100M	" " "
3M	" " "
150	ohm 1 watt
10M	ohm "
12M	" "
15M	ohm "



63-139	Three Gang Variable Trimmer
63-146	6. mfd. Electrolytic
63-150	8. " Electrolytic
63-167	.0001 mfd. 600 volt
63-199	Resistors
63-207	100M ohm 1 watt
63-208	25M " 1/2 "
63-230	

22-155	Condensers
22-111	.001 mfd. 500 volt
22-112	.03 " " "
22-113	.1 " " "
22-115	.5 " " "
22-117	.1 " " "
22-137	.5 " " "
22-138	.05 " " "
22-147	.2 " " "
22-153	.0005 " " "
	Short Wave Variable Trimmer

ZENITH RADIO CORP.

MODELS 500, 501, 503, 514,
515, 516, 600, 604,
606, 610, 616, 618
Chassis 2037
Parts List

Resistors

63-121	100M ohm, 1 Watt	(2nd Detector Plate).....
63-135	25M " $\frac{1}{2}$ "	(2nd Detector Cathode).....
63-137	250M " $\frac{1}{2}$ "	(Oscillator & Power Grid)..
63-140	1 meg " $\frac{1}{2}$ "	(A.V.C. Screen).....
63-160	100M " $\frac{1}{2}$ "	(A.V.C. Plate).....
63-169	400M " $\frac{1}{2}$ "	(A.V.C. Grid).....
63-239	24M ohm 1 Watt	(Oscillator Plate).....
63-244	500 " $\frac{1}{4}$ "	(1st Detector Cathode).
63-251	Voltage Divider (six tap).....	
63-252	Voltage Divider (five tap).....	

Coils and Chokes

20-30	Antenna Coil.....
20-31	Oscillator Coil.....
20-35	Detector Coil.....
95-133	1st & 2nd I. F. Transformer.....

Condensers

22-112	.1 mfd 300 volt	(2nd Detector Screen & Power Grid).....
22-113	.5 " "(R.F. 1st Detector & I.F. Grid Return).....
*22-115	.1 " 200 volt	(Four used, see below).....
22-117	.5 " "(R.F. 1st Detector, & I.F. Screen).....
22-137	.05 " 400 volt	(Oscillator Plate).....
22-147	.0005 600 volt	(2nd Detector Plate & A.V.C. Screen).....
22-170	.1 mfd 400 volt	(R.F. & 1st Detector Plate, 2nd Detector Plate)..
22-171	.05 " 600 volt	(Tone Control).....
22-172	2. " 450 volt	(Filter).....
22-173	8. " 500 volt	(Filter).....

Socket Voltages

Tube Type	Position	Fil. Volt.	Plate Volt.	Cath. Volt.	Screen Volt.	Supp. Volt.	Plate Current
Z-58	R.F.	2.4	190	0	95	0	7.
Z-58	1st Det.	2.4	190	2.3	95	2.3	4.
Z-56	Osc.	2.4	100	0	-	-	4.
Z-58	I.F.	2.4	190	0	90	0	2.
Z-57	2nd Det.	2.4	90	-60	70	-60	.2
Z-57	A.V.C.	2.4	-10	-65	-2	-65	0
Z-59	Power	2.4	175	-70	165	-70	25
Z-80	Rect.	5.	*350	-	-	-	*36

Line 115 Volts

All Controls Maximum

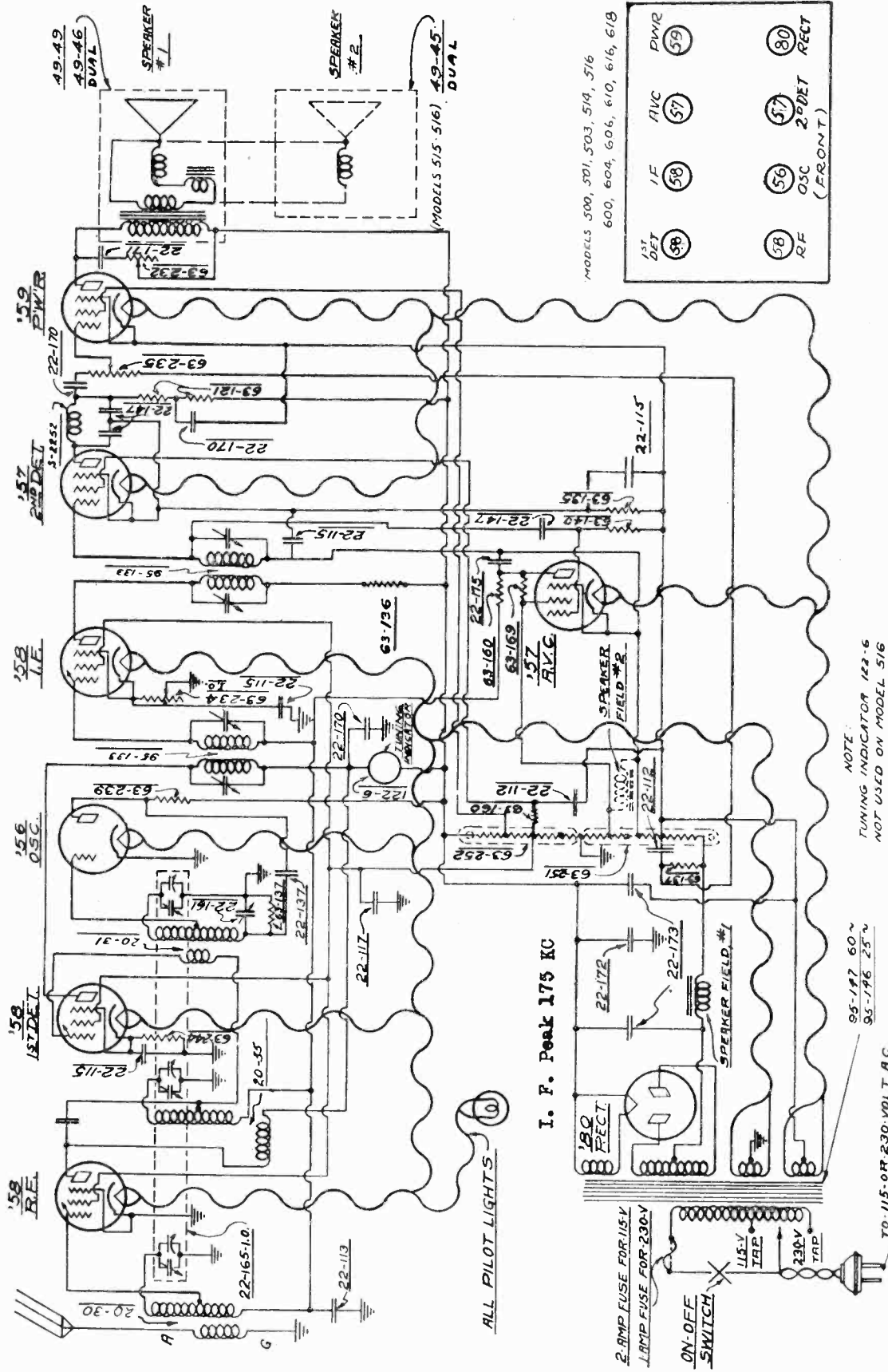
All readings, with exception of heaters, taken from socket connections to ground. Use 1,000 ohm per volt D. C. meter.)

BALANCE I.F. frequency at 175 K.C. Condenser gang at 1500 K.C. and oscillator padder at 600 K.C.

MODELS 500, 501, 503, 514,
515, 516, 600, 604,
606, 610, 616, 618

ZENITH RADIO CORP.

Chassis 2037
Schematic



49-49
49-46
DUAL
SPEAKER #1
SPEAKER #2
49-45
DUAL
MODELS 515-516

MODELS 500, 501, 503, 514, 516
600, 604, 606, 610, 616, 618

58	1 ST DET	59	PWR
58	IF	57	AFC
58	RF	56	OSC
		57	2 ND DET
		80	RECT

(FRONT)

NOTE:
TUNING INDICATOR 122-6
NOT USED ON MODEL 516

I. F. Peak 175 KC

95-197 60V
95-196 25V

T0-115-OR 230-VOLT AC

ALL PILOT LIGHTS

2-AMP FUSE FOR 115V
LAMP FUSE FOR 230V

ON-OFF SWITCH