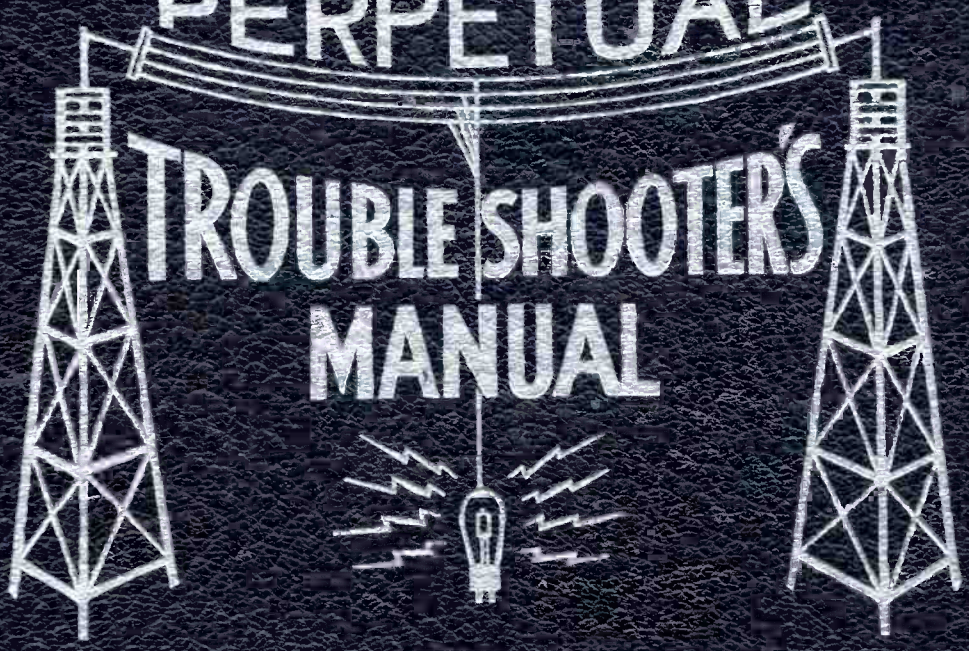
VOLUME I

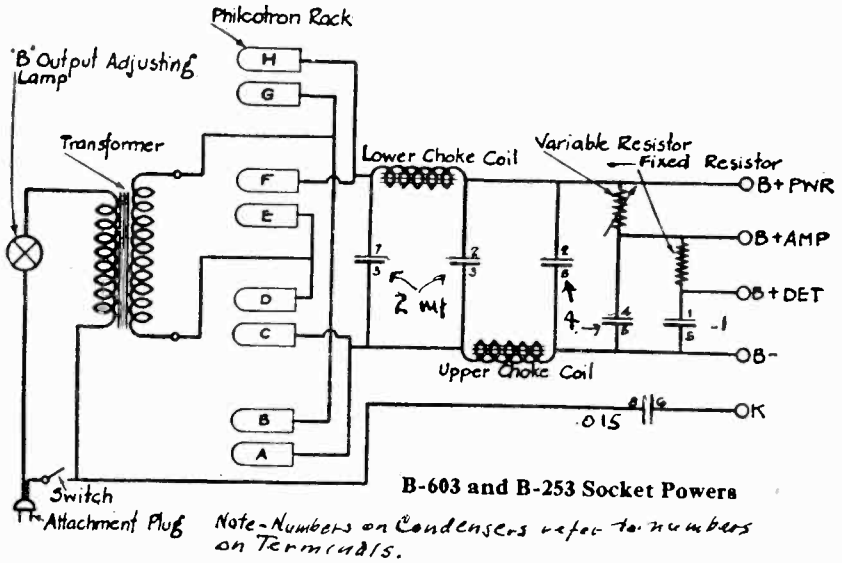
PERPETUAL TROUBLE SHOOTER'S MANUAL



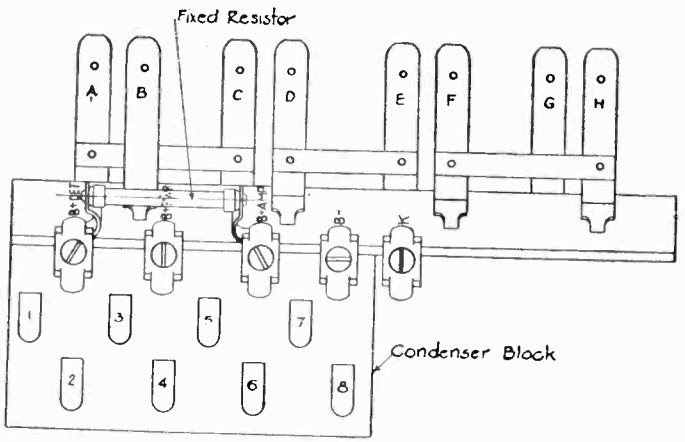
JOHN F. RIDER

PHILCO RADIO & TELEVISION CORP.

MODEL B-253
MODEL B-603
Power Units



B-603 and B-253 Socket Powers



Socket Power B, Type B-603

Supplies B power for sets having one to ten tubes—any standard type—including a power tube such as type UX-171, UX-112 or UX-120.

For use on 50- or 60-cycle, 105–125-volt alternating current.
Full-wave Philco electrolytic rectifier.

Average voltage at amplifier terminals:
B+ PWR 135–150 volts, depending on load.
B+ AMP 50–100 volts, adjustable.

Maximum continuous current rating: 50 milliamperes.
Average current consumption: 12 A.C. watts.
Overall dimensions: Length (front to back) 8⅝″; width 8⅛″; height 7⅞″.

Socket Power B, Type B-253

Same as type B-603 except with special transformer and extra large filter for use on 25-, 30- or 40-cycle current as well as on 50 or 60 cycles for exceptional sets which may require the 25-cycle super-filter.

MODEL 180 B
MODEL "B" Part of AB Unit

PHILCO RADIO & TELEVISION CORP.

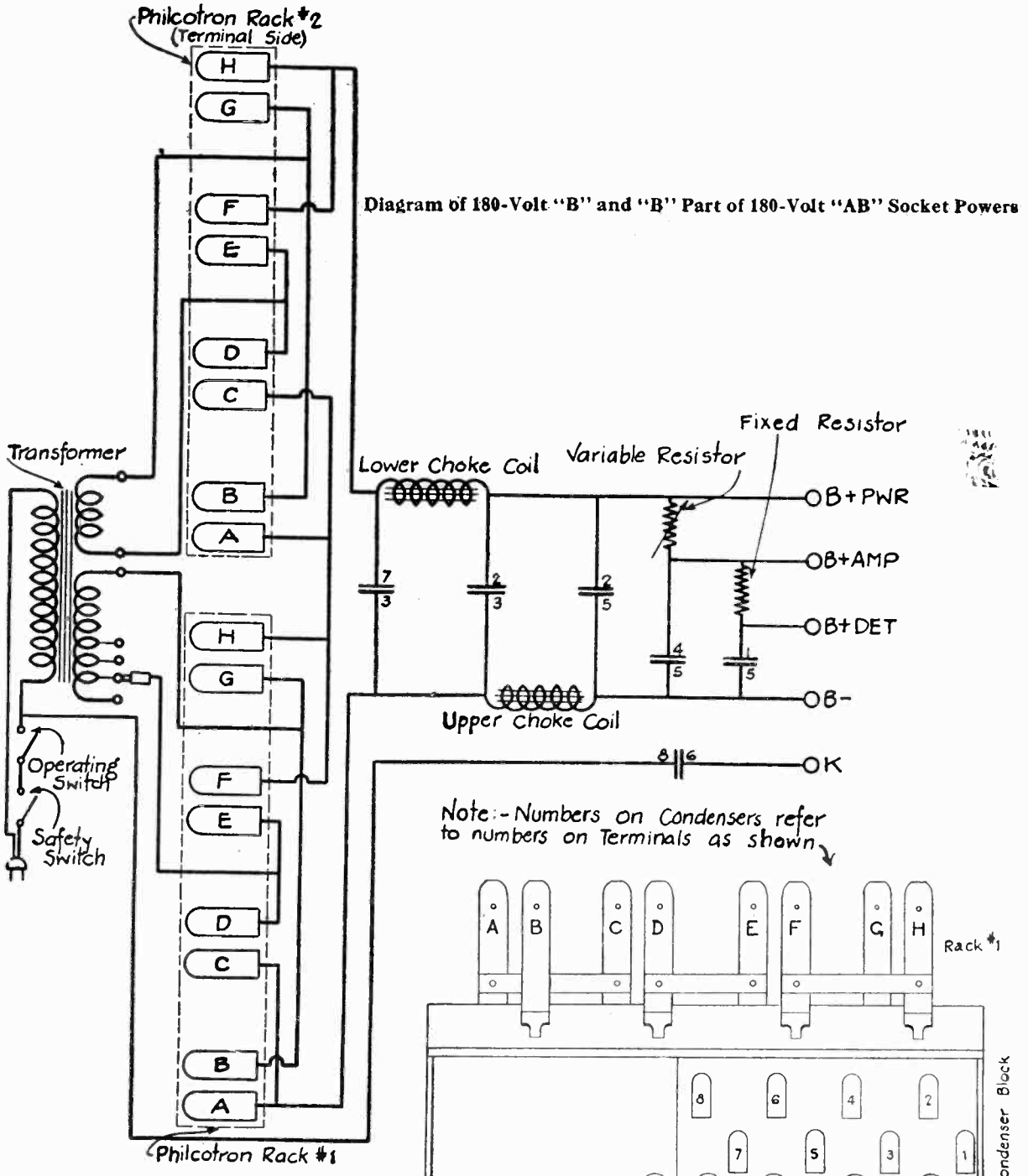
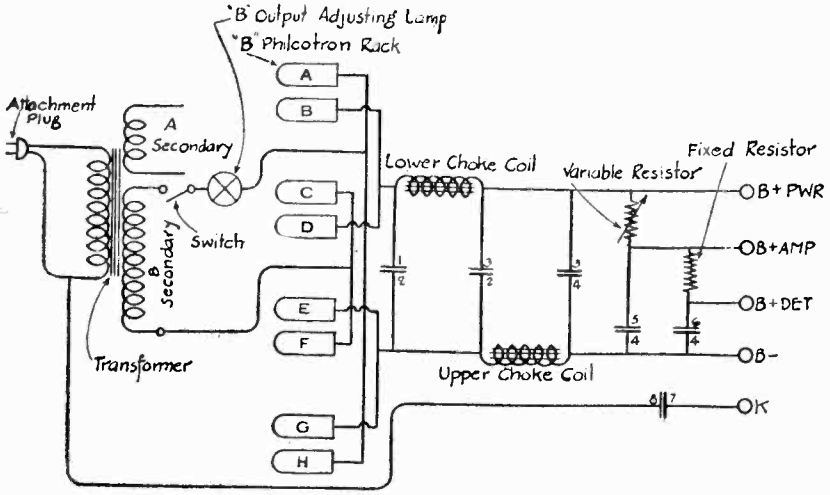


Diagram of 180-Volt "B" and "B" Part of 180-Volt "AB" Socket Powers

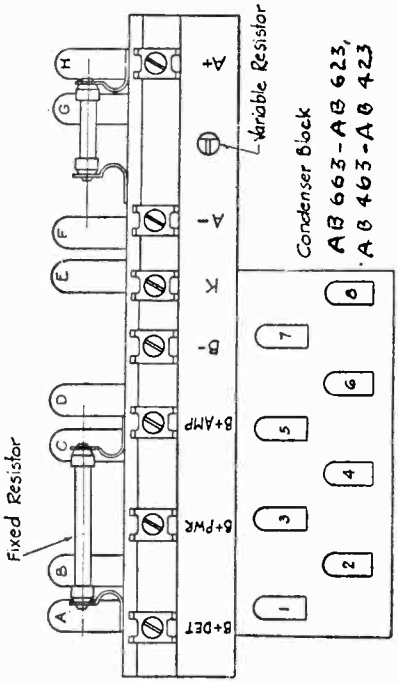
Philcotron Racks and Condenser Lugs Marked for Testing for 180-Volt "B" and "B" Part of 180-Volt "AB" Socket Powers

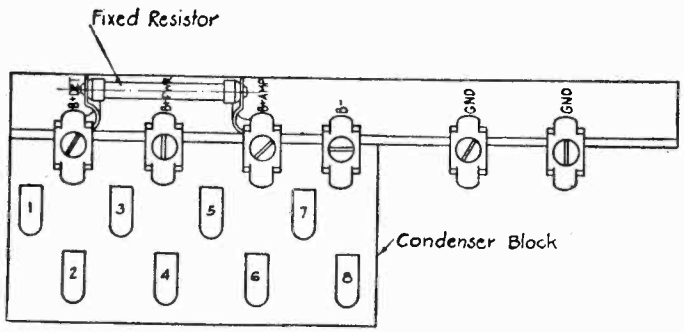
PHILCO RADIO & TELEVISION CORP.

MODEL AB-423, AB-463
AB-623, AB-663
Power Units

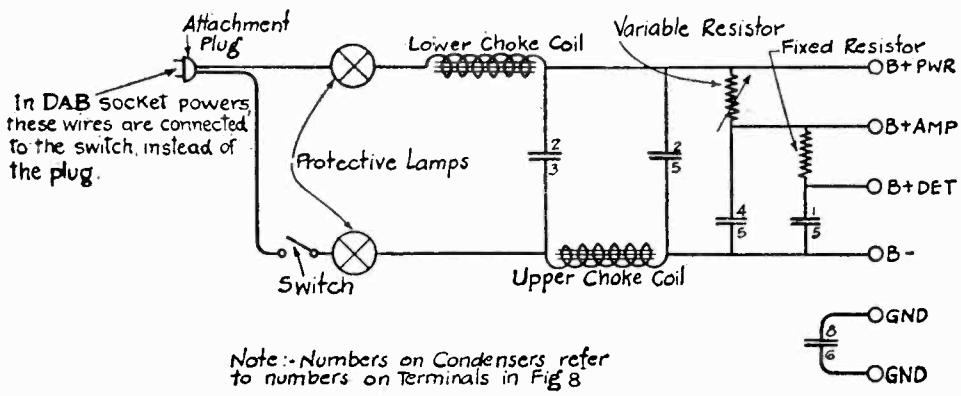


Schematic Wiring Diagram of Types AB-663, AB-623, AB-463, AB-423 Socket Powers





Terminal Strip and Condenser Block of "DB" and "DAB" Socket Powers



Wiring Diagram of "DB" and "B" Part of "DAB" Socket Powers

MODEL DB
MODEL AB-463,
AB-623,
AB-663
Specifications

PHILCO RADIO & TELEVISION CORP.

Socket Power B, Type DB

Similar to type B-603 for use on 105–125-volt *direct current.*
Supplies B power at detector and two amplifier voltages for sets having one to ten tubes of any standard type.

Maximum continuous current rating: 50 milliamperes.
Average current consumption: 3 D.C. watts.
Dimensions same as type B-603.

Socket Power AB, Type AB-663

Supplies A power at 6 volts and B power at detector and two amplifier voltages for receiving sets having from one to eight 5-volt storage battery tubes including a power tube such as type UX-171 or UX-112. For use on 50- or 60-cycle, 105–125-volt alternating current.

A battery: Philco type UD-86
A rectifier: Extra large, type AA Philcotron.

	LOW	MEDIUM	HIGH
A trickle charge rates, D.C. afmps.	.2	.4	.8
A current consumption, A.C. watts.	15	25	45

B rectifier: Full-wave Philco electrolytic
Average B voltage at amplifier terminals:
B+ PWR 135–150 volts, depending on load.
B+ AMP 50–100 volts, adjustable.

Maximum continuous B current rating: 50 milliamperes.
Average B current consumption: 12 A.C. watts.
Overall dimensions: Length (front to back) 12¾″; width 13⅝″; height 8½″.

Socket Power AB, Type AB-623

Same as type AB-663 except with special transformer and extra large B current filter for use on 25-, 30- or 40-cycle current as well as on 50 or 60 cycles for exceptional sets which may require the 25-cycle super-filter.

Socket Power AB, Type AB-463

Supplies A power at 4 volts and B power at detector and two amplifier voltages for sets having from one to ten 3-volt dry cell tubes, including Radiolas. For use on 50- or 60-cycle, 105–125-volt alternating current.

A battery: Philco Type UD-44
A rectifier: Large, type A Philcotron

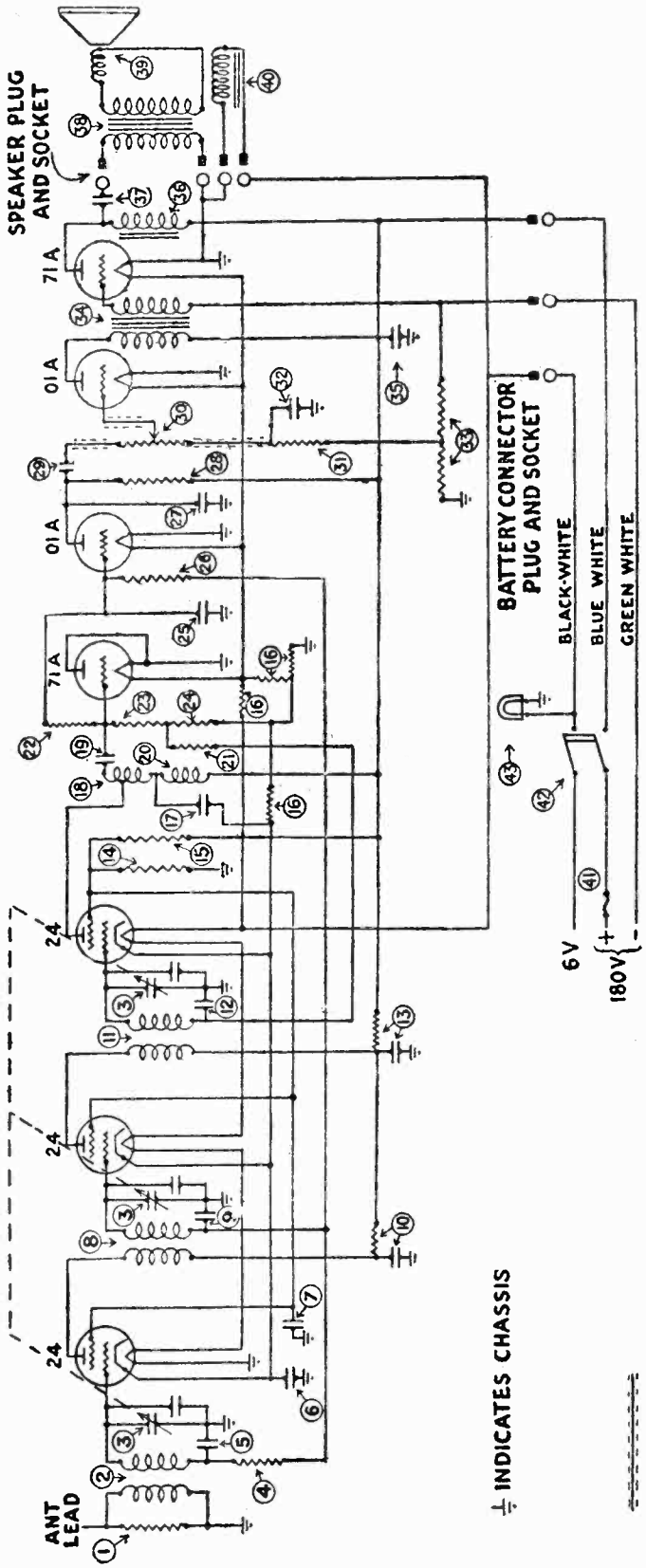
	LOW	MEDIUM	HIGH
A trickle charge rates, D.C. amps:	.075	.15	.30
A current consumption, A.C. watts:	9	12	18

B rectifier: Full-wave Philco electrolytic
Average B voltage at amplifier terminals
B+ PWR 135 volts.
B+ AMP 50–90 volts, adjustable.

Maximum continuous B current rating: 50 milliamperes.
Average B current consumption: 10 A.C. watts.
Overall dimensions: Length (front to back) 12¾″; width 13⅝″; height 8½″.

MODEL 3
Transitone
Schematic
Parts List

PHILCO RADIO & TELEVISION CORP.



COMPENSATING

Compensating condensers in all Philco Transitone Receivers are carefully adjusted at the factory, and ordinarily need not be readjusted.

If necessary to readjust, a good oscillator should be used. With the Receiver and oscillator set up for operation, and the volume control of the Receiver turned on full—adjust the oscillator signal to a frequency between 1000 and 1200 kilocycles, or 100 and 120 on the Receivers. Tune the Receiver sharply to the signal and then reduce the oscillator signal so that it is barely audible in the Speaker.

Using the special fibre wrench, adjust the third compensating condenser to that point at which the maximum signal is heard in the Speaker, then adjust the second and finally the first condenser in the same manner, always adjusting for that position which gives the maximum signal.

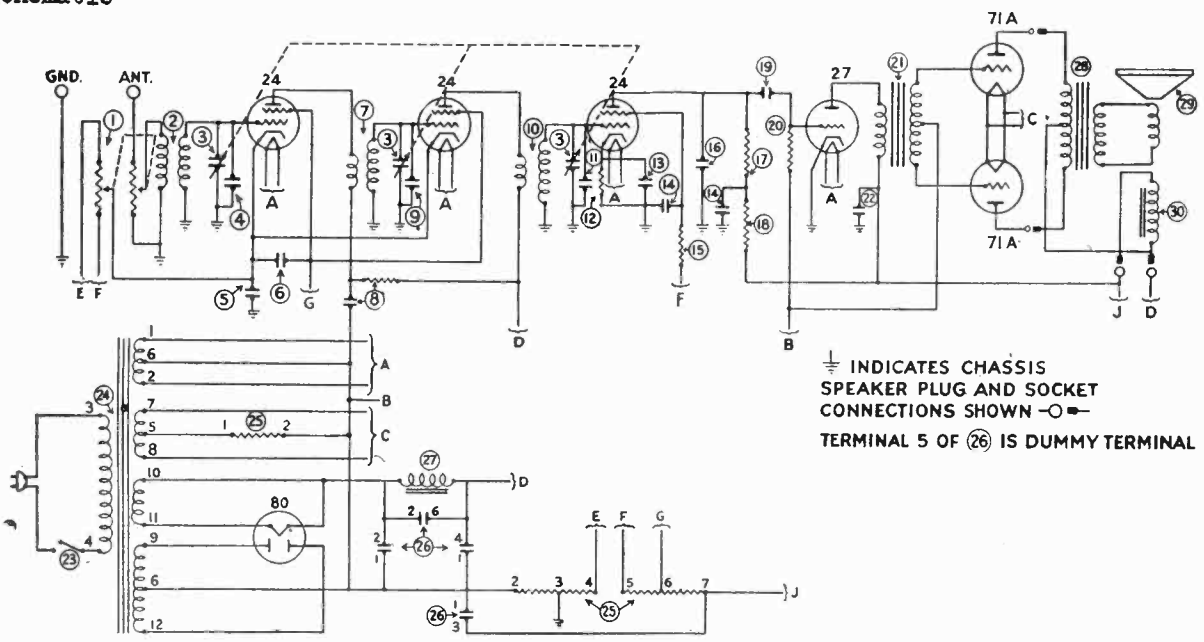
After the adjustments are completed tune the Receiver to several broadcast programs to make sure that the stations are tuned in at the proper place on the tuning scale.

㉕	Condenser (.00025 mfd)	3082
㉖	Resistor (1,000,000 ohms — 1 watt)	4414
㉗	Condenser (.00025 mfd)	3082
㉘	Resistor (100,000 ohms — ½ watt)	4411
㉙	Condenser (.015 mfd)	3793-D
㉚	Volume Control	4463
㉛	Resistor (250,000 ohms — ½ watt)	4410
㉜	Condenser (.25 mfd)	4487
㉝	Resistor (2-section)	4408
㉞	Audio Transformer	3241
㉟	Condenser (2.0 mfd)	4418
㊱	Audio Choke	4485
㊲	Output Condenser (1.0 mfd)	4420

⑬	Condenser and Resistor (.05 mfd with 250 ohms)	3615-C
⑭	Resistor (50,000 ohms—1 watt)	4237
⑯	Resistor (25,000 ohms—1 watt)	3656
⑮	Resistor (4-section)	4407
⑰	Condenser (.00025 mfd)	3082
⑱	Fourth R. F. Transformer	3775-B
⑲	Condenser (.00005 mfd)	3774
⑳	R. F. Choke	3256-A
㉑	Resistor (1,000,000 ohms—½ watt)	4409
㉒	Resistor (250,000 ohms — ½ watt)	4410
㉓	Resistor (100,000 ohms — ½ watt)	4411
㉔	Resistor (100,000 ohms — ½ watt)	4411

MODEL 20, 20-A
Chassis
Schematic

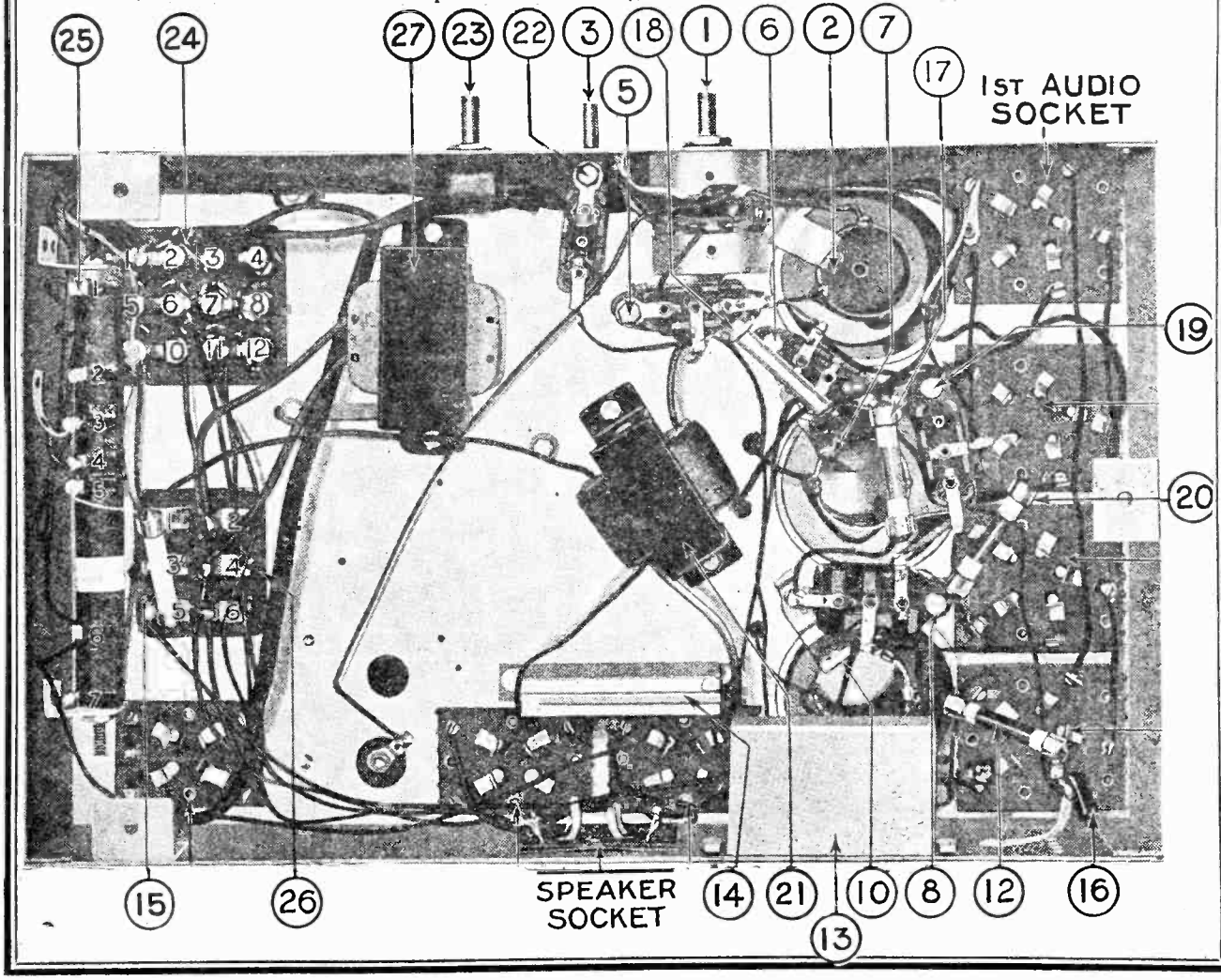
PHILCO RADIO & TELEVISION CORP.



⏚ INDICATES CHASSIS
SPEAKER PLUG AND SOCKET CONNECTIONS SHOWN —O—
TERMINAL 5 OF (26) IS DUMMY TERMINAL

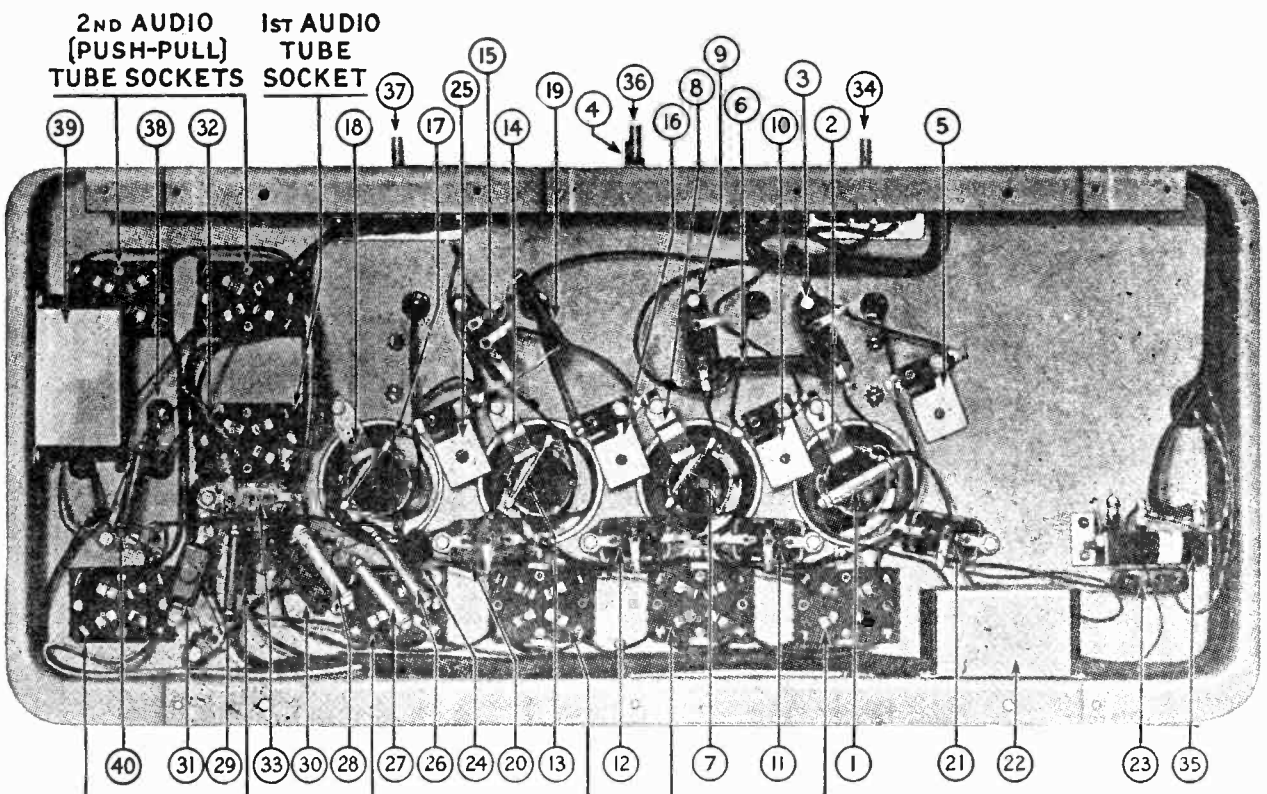
DIFFERENT CIRCUIT ARRANGEMENT FOR MODEL 20-A

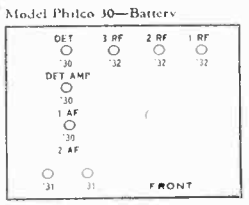
Model 20-A for use on 25-60 cycle lines is wired differently than the Model 20. The plate supply lead for the two 24 R. F. Tubes is taken from the low side of the Speaker field Coil. The lead "D" to the 24 tubes should be changed to "J" for the Model 20-A only. This will change the plate voltage from 250 volts to 115-125 volts. The plate current readings will also be lower than those given in the table.



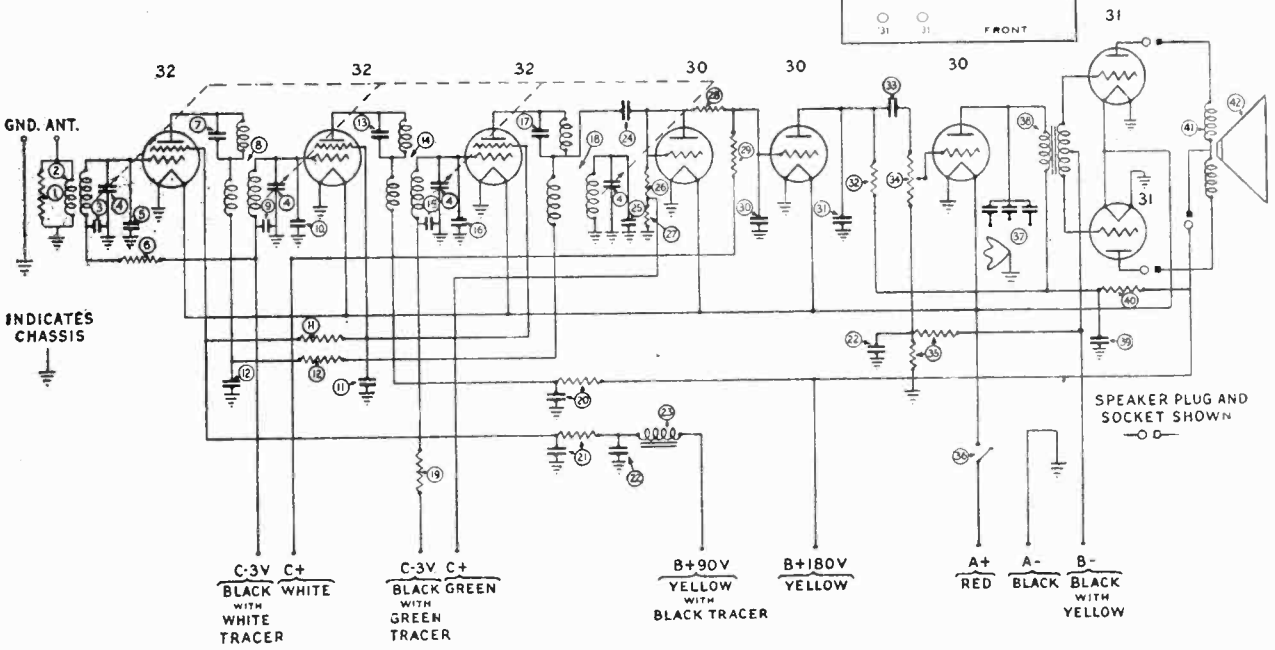
MODEL 30
Chassis
Schematic

PHILCO RADIO & TELEVISION CORP.



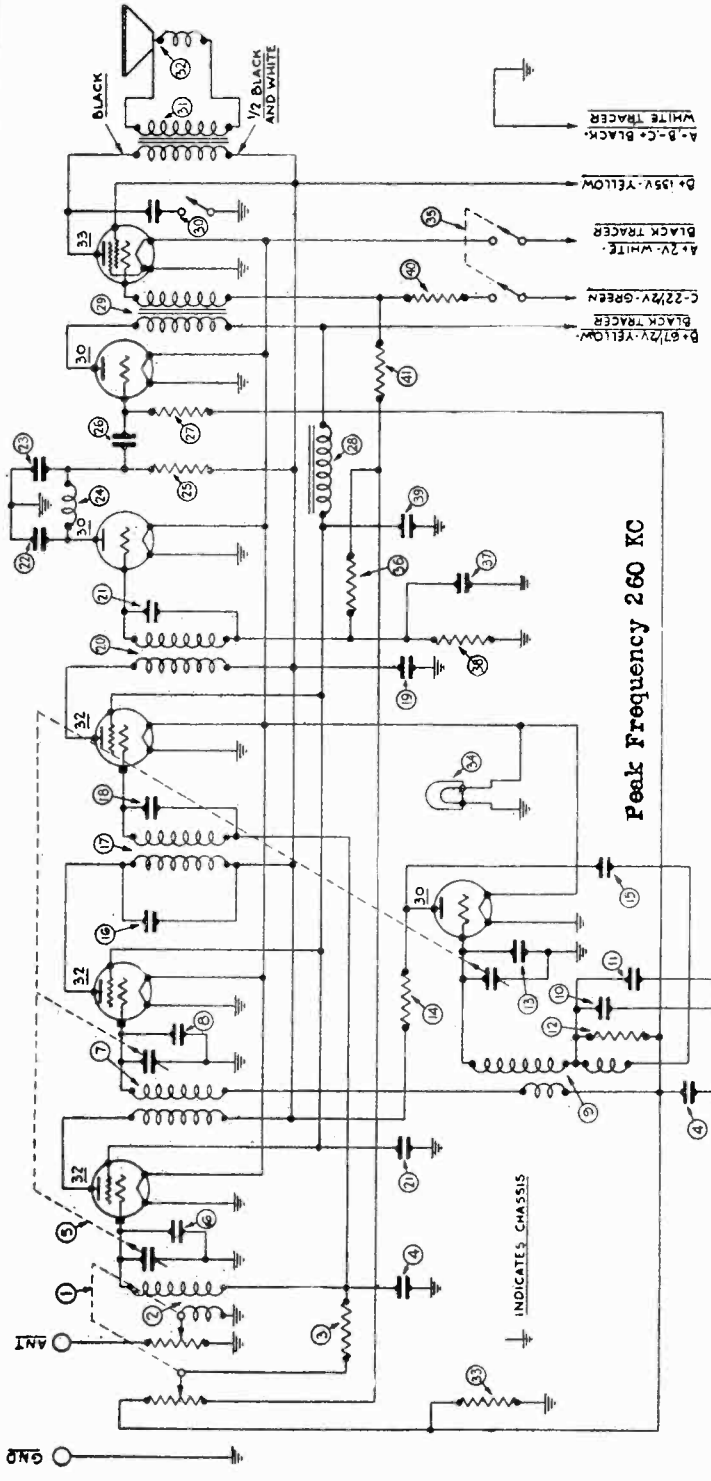


Model 30



PHILCO RADIO & TELEVISION CORP.

MODEL 35
Schematic
Voltage



Model 35-B is similar to Model 35 except that the pilot light is omitted. Furthermore, a resistor # 5792 is supplied with Model 35-B. The Model 35-B is intended for use with the Air-Cell battery.

Tube Socket Readings Taken with Set Tester.

Tube	Circuit	Filament Volts	Plate Volts	Grid Volts	Plate Current Milliamperes	Screen Grid Volts
32	R. F.	1.9	133	. . .	3.0	60
32	1st Det.	1.9	133	. . .	3.0	63
30	Osc.	1.9	60	. . .	1.5	. . .
32	I. F.	1.9	133	. . .	3.5	60
30	2nd Det.	1.9	55	2.5	.05	. . .
30	1st Audio	1.9	65	. . .	.05	. . .
33	Output	1.9*	125*	7*	12.*	135*

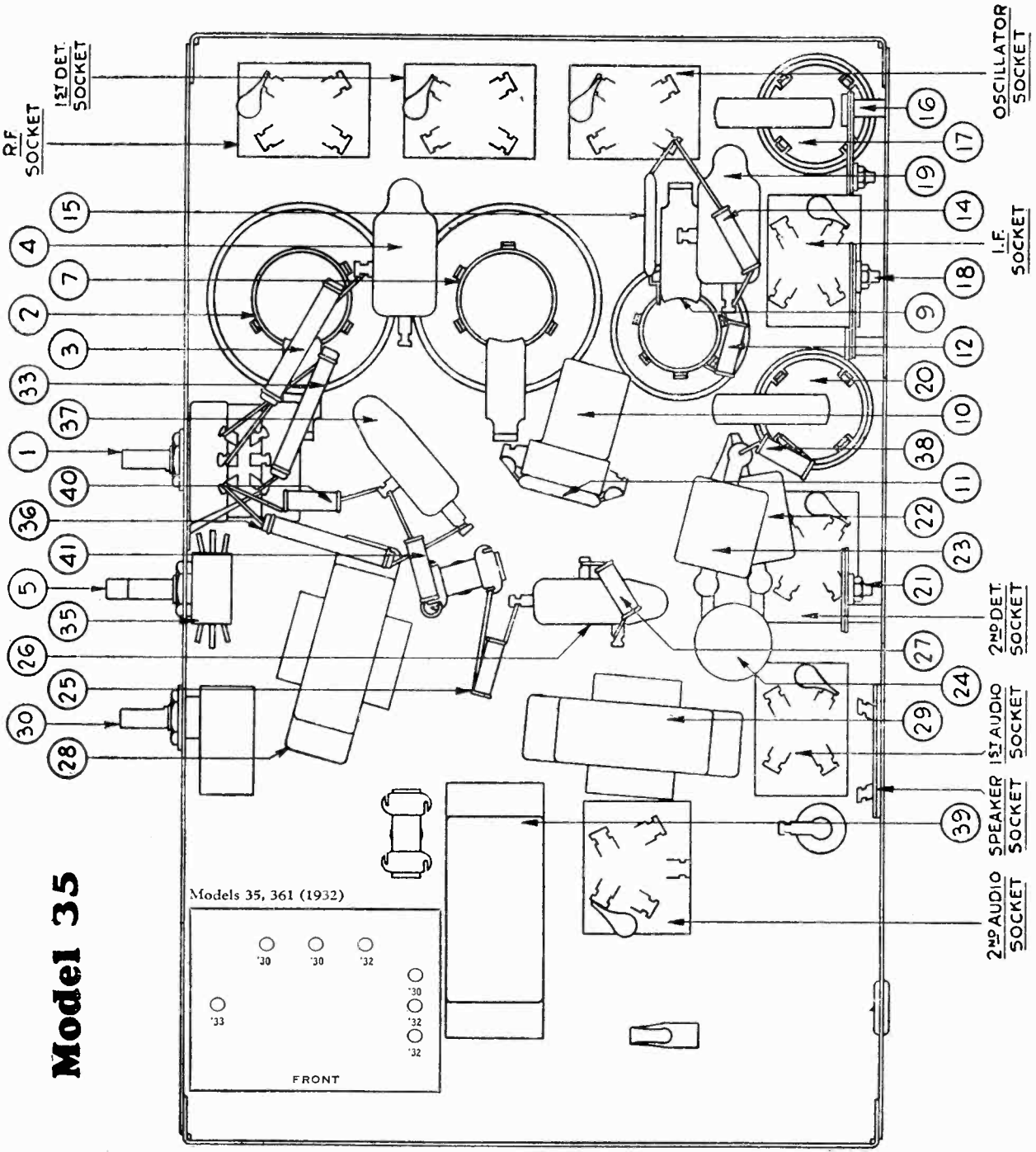
All readings taken with volume control at maximum, antenna disconnected, and ground connected.
*These readings must be taken from the under side of the chassis using test prods and leads unless the set checker is specially equipped for testing pentode tubes.

Always use high-resistance voltmeter, preferably 1000 ohms per volt, when checking voltages in the Receiver. For reading plate and screen voltages, use a 250- or 300-volt scale. Voltage readings taken with meters having less than 250,000 ohms resistance will be lower than voltages given in the

The Model 35 Receiver is designed for use with the latest 2-volt filament type tubes only.

MODEL 35
Chassis
Data

PHILCO RADIO & TELEVISION CORP.



Resistor Data

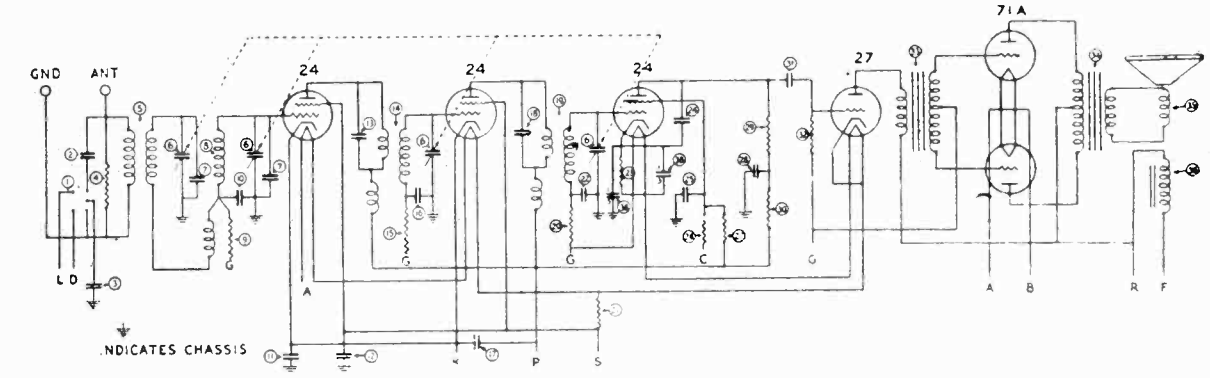
No. on Figs. 1 and 2	COLOR			Resistance Ohms
	Body	Tip	Dot	
③ ㉕	Red	Yellow	Yellow	240,000
⑫ ⑭	Green	Brown	Orange	51,000
㉗	Yellow	White	Yellow	490,000
㉔	Orange	Black	Red	3,000
㉖	Orange	Red	Orange	32,000
㉝	White	White	Orange	99,000
㊵	Green	Black	Red	5,000
㊶	Brown	Black	Orange	10,000

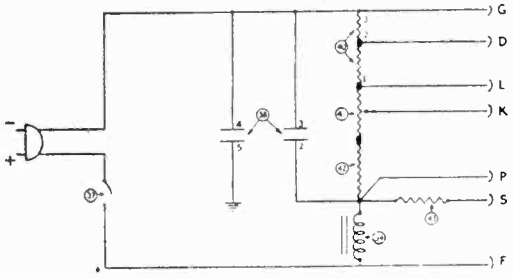
Condenser Data

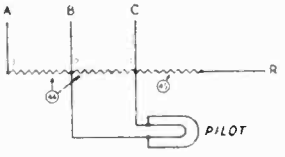
No. on Figs. 1 and 2	Capacity—MFD
④ ⑲ ㊲	.09
⑪	.000410
⑮	.000110
㉒ ㉓	.002
㉖	.01
㉙	2.

MODEL 40 DC

PHILCO RADIO & TELEVISION CORP.







NOTE Switch 1 Right-Hand Terminals are shorted in local position Left-Hand Terminals are shorted in distance position.
Resistor (45) is mounted at bottom of cabinet.

TUBE SOCKET READINGS

Line Voltage 115

Tube	Circuit	Filament	Plate	Screen Grid	Control Grid	Plate Mils
24	1 R. F.	2.1	100	75	.4	2.7
24	2 R. F.	2.1	100	75	.4	2.7
24	Detector	2.1	45	15	1.8	....
27	1 A. F.	2.4	87	..	.2	2.7
71-A	2 A. F.	5	85	..	13	15
71-A	2 A. F.	5	85	..	13	15

Readings must be taken with volume control on full and local distance switch in distance position.

Always use high-resistance voltmeter, preferably 1000 ohms per volt, when checking voltages in the Receiver. For reading plate and screen voltages, use a 250- or 300-volt scale. Voltage readings taken with meters having less than 250,000 ohms resistance will be lower than voltages given in the table.

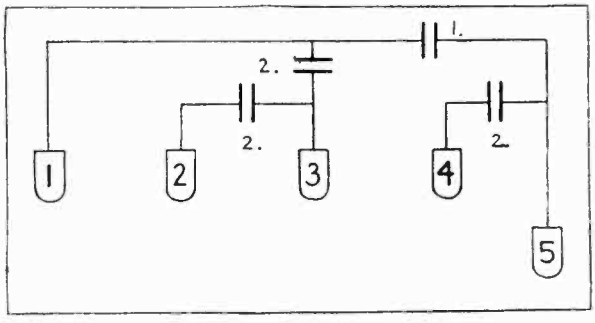
RESISTOR VALUES

No. on Fig. 2	Terminals	Ohms Resistance
(4) — (20) — (43)		5,000
(9) — (15)		33,000
(21) — (42)		25,000
(23) — (30)		100,000
(26)		13,000
(27)		70,000
(29) — (32)		500,000
(40)	1–2	800
	2–3	250
(44)	1–2	2
	2–3	4
(45)	(Note: 20-inch — External)	53

CONDENSER CAPACITIES

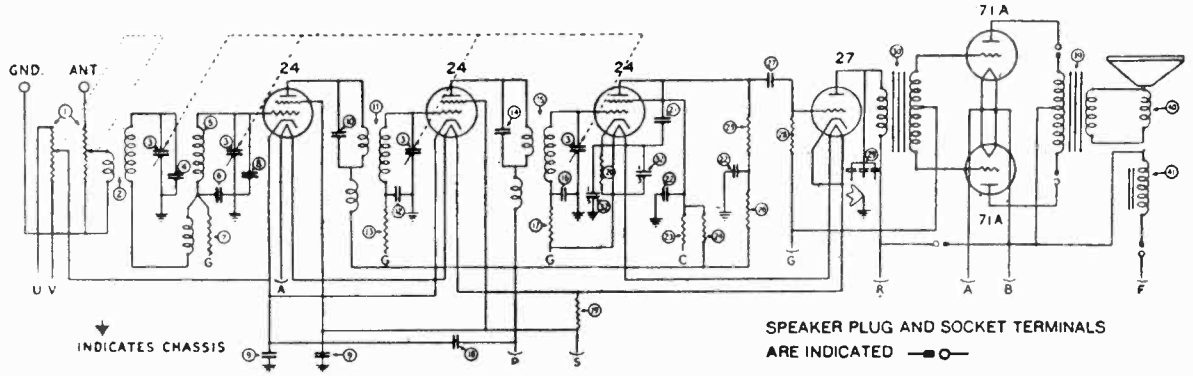
No. on Fig. 2	Capacity
(2)	.002
(3) — (31)	.01
(10) — (16) — (17) — (22)	.05
(11) — (12) — (25) — (28)	.25
(24)	.0005

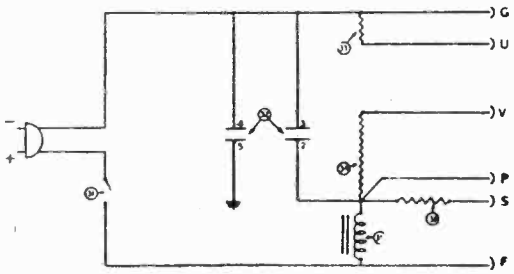
(38) Filter Condenser — Part No. 4067

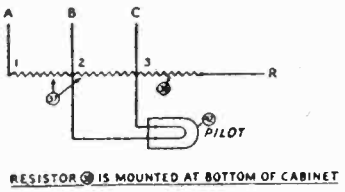


PHILCO RADIO & TELEVISION CORP.

MODEL 41 DC, 42 DC
Schematic
Voltage
Values







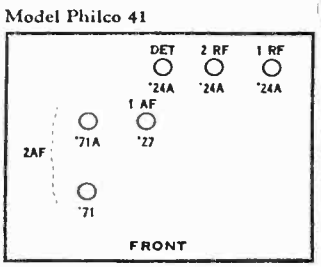


Table 1—TUBE SOCKET READINGS
Line Voltage 115

Tube	Circuit	Filament	Plate	Screen Grid	Control Grid	Plate Mils
24	1 R. F.	2.1	100	75	.4	2.7
24	2 R. F.	2.1	100	75	.4	2.7
24	Detector	2.1	45	15	1.8	...
27	1 A. F.	2.4	87	..	.2	2.7
71-A	2 A. F.	5	85	..	13	15
71-A	2 A. F.	5	85	..	13	15

Readings must be taken with volume control on full.

Always use high-resistance voltmeter, preferably 1000 ohms per volt, when checking voltages in the Receiver. For reading plate and screen voltages, use a 250- or 300-volt scale. Voltage readings taken with meters having less than 250,000 ohms resistance will be lower than voltages given in the table.

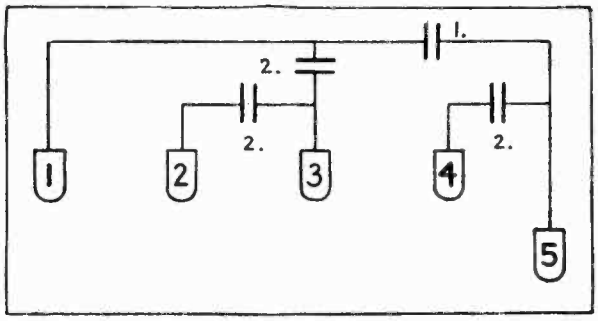
Table 2—RESISTOR VALUES

No. on Figs. 2 and 3	Terminals	Ohms Resistance
⑰ — ㊱		5,000
㉘		13,000
⑲ — ㉔		25,000
⑦ — ⑬		33,000
㉔		70,000
⑳ — ㉖		100,000
㉕ — ㉘		500,000
㉝		250
㊲	1-2	4
	2-3	2
㊳	(Note: 20-inch — External)	53

Table 3—CONDENSER CAPACITIES
(Other than Filter Condenser)

No. on Figs. 2 and 3	MFD. Capacity
㉗	.01
⑥ — ⑫ — ⑯ — ⑱	.05
⑨ — ㉒	.25
㉑	.0005

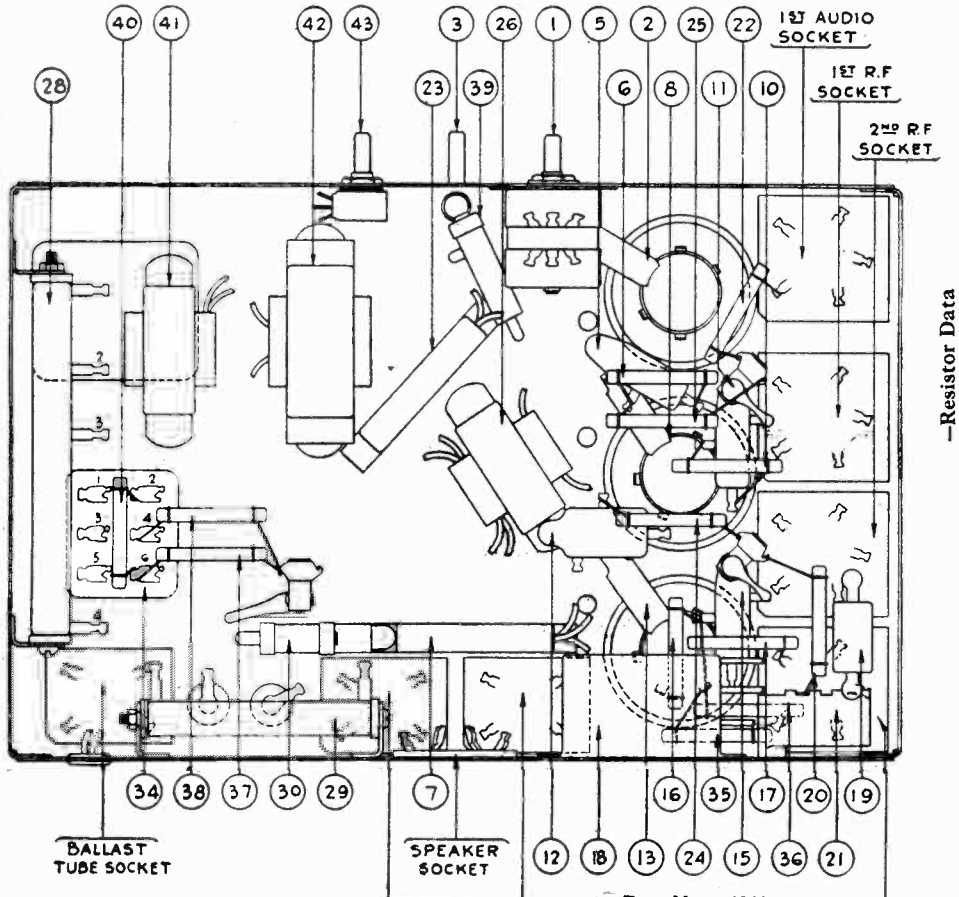
㉜ Filter Condenser — Part No. 4067



MODEL 46,46-E DC
Chassis
Resistor Data

PHILCO RADIO & TELEVISION CORP.

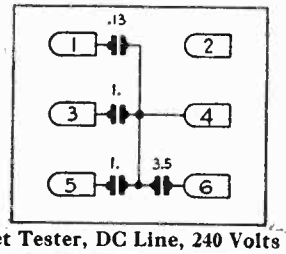
Models 46 and 46-E



Condenser Data
(Other than Filter Condenser)

No. on Figs. 2 and 3	Capacity MFD	
㉔	.0005	For
㉒	.01	Model 46-E DC
⑧—⑫—⑯	.05	
⑦	.05 and 250-ohm resistor	
⑩—㉑—⑱	.25 (two sections)	

Part No.—4860



Tube Socket Readings Taken with Set Tester, DC Line, 240 Volts

Tube Type	Tube Circuit	Filament Voltage	Plate Voltage	Grid Voltage	Screen Grid Voltage	Cathode Voltage (Measured with Prod)	Plate Milliamperes
14	1st R. F.	13.5	190	.4	80	3.5	5.5
14	2nd R. F.	13.5	190	.4	75	3.5	5.5
14	Detector	13.0	0	0	20	9.5	.3
17	1st Audio	12.5	60	0	...	3.0	2.5
71-A	Second Audio	5.5	180	53	...	...	12.0
71-A	Push-Pull	5.5	185	53	...	...	12.0
3	Ballast	128	...	....	..	...	....

All readings taken with antenna disconnected and ground on. Volume Control on full.

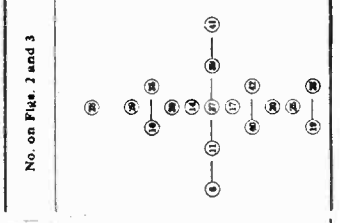
The majority of set testers are not equipped to measure a DC filament voltage as high as 14 volts. In this case the volt meter binding post prods will have to be used. This method must also be used in checking cathode voltages across resistances No. 17, No. 35, No. 28 and No. 29.

The field coil of the Speaker used with this Receiver is of low resistance. It is not the same as the field coil used with the AC Electric Receiver. If, by mistake, a speaker from an AC Electric Receiver is plugged into the DC Receiver no damage will result.

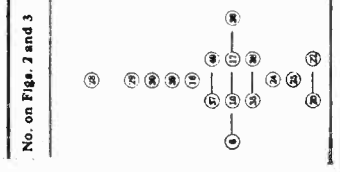
—Resistor Data

Resistor Data for Model 46-E

No. on Figs. 2 and 3	Terminal	Resistance	Color Body	Color Tip	Color Dot
⑩	2—3	10	Tubular		
⑭	1—2	14			
㉙	3—4	29			
⑳		200	Tubular		
㉑		210	Flat Wire Wound		
㉕		250	Flat Wire Wound		
㉘		5,000	Green	Black	Red
㉟		13,000	Orange	Red	Orange
㉝		33,000	Green	Brown	Orange
㉗		70,000		Jade Green	
㉞		100,000	White	White	Orange
㉒		250,000	Red	Yellow	Yellow
㉓		500,000	Yellow	White	Yellow



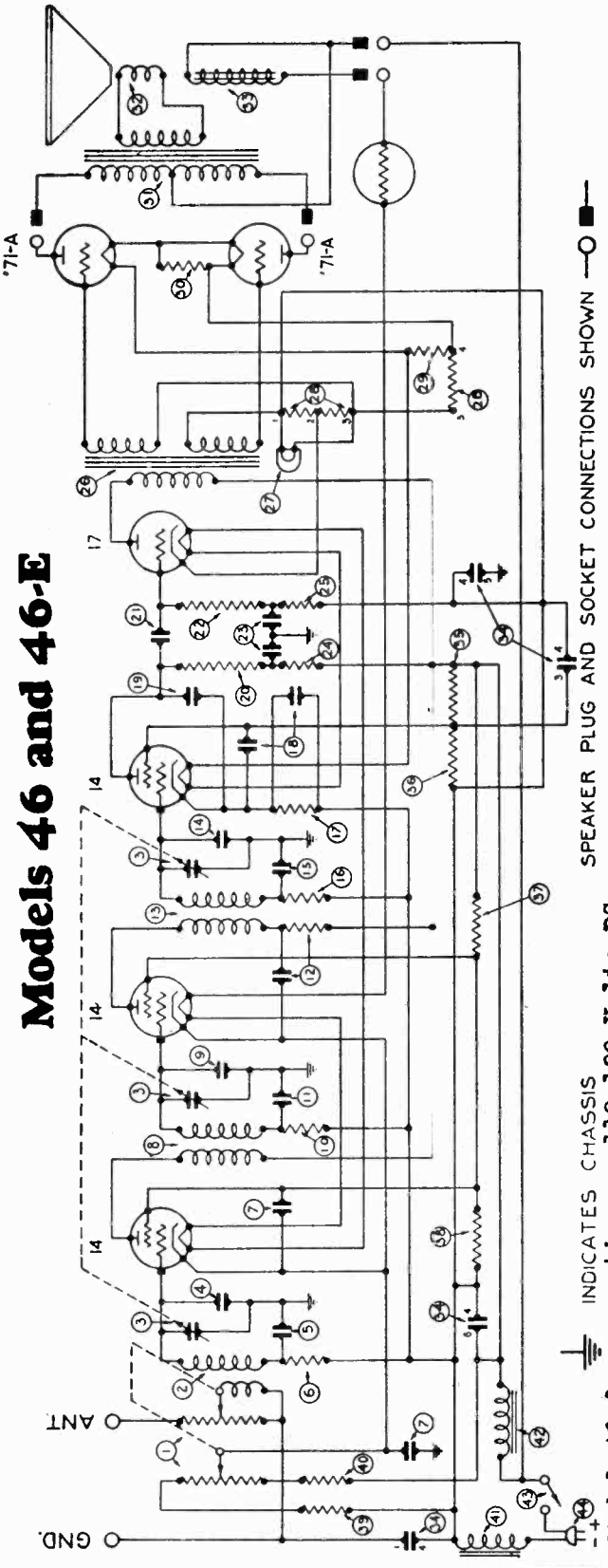
No. on Figs. 2 and 3	Terminal	Resistance	Color
⑩	2—3	10	Tubular
⑭	1—2	14	
㉙	3—4	29	
⑳		200	Tubular
㉑		210	Flat Wire Wound
㉕		250	Flat Wire Wound
㉘		5,000	Yellow
㉟		13,000	Belgium Blue
㉝		33,000	Belgium Blue—Yellow Tip
㉗		70,000	Jade Green
㉞		100,000	Silver Gray—Yellow Tip
㉒		250,000	White
㉓		500,000	Battle Gray



PHILCO RADIO & TELEVISION CORP.

MODEL 46, 46-E DC
Schematic
Voltage
Condenser

Models 46 and 46-E



Model 46 for operation on 110-120 Volts DC
Model 46-E for operation on 210-240 Volts DC.

Table 1—Tube Socket Readings Taken with Set Tester, DC Line, 115 Volts

Tube		Filament Voltage	Plate Voltage	Grid Voltage	Screen Grid Voltage	Cathode Voltage (Measured with Prod)	Plate Milliamperes
Type	Circuit						
14	1st R. F.	13.5	100	1.5	60	2.5	2
14	2nd R. F.	13.5	100	1.5	60	2.5	2
14	Detector	13.5	30	1.0	25	2.5	.1
17	1st Audio	13.5	100	.25	..	4.5	5
71-A	2d Audio	4.5	90	15.5	..	...	11.5
71-A	Push-Pull	4.5	90	15.5	..	...	11.5
2	Ballast	8	....	.....	..	...	....
3	Ballast	128	....	.....	..	...	....

All readings taken with antenna disconnected and ground on. Volume Control on full.

The majority of set testers are not equipped to measure a DC filament voltage as high as 14 volts. In this case the volt meter binding post prods will have to be used. This method will also have to be used in checking cathode voltages across resistances No. 17—No. 39 and No. 28 and No. 29.

The field coil of the Speaker used with this Receiver is of low resistance. It is not the same as the field coil used with the AC Electric Receiver. If, by mistake, a speaker from an AC Electric Receiver is plugged into the DC Receiver no damage will result.

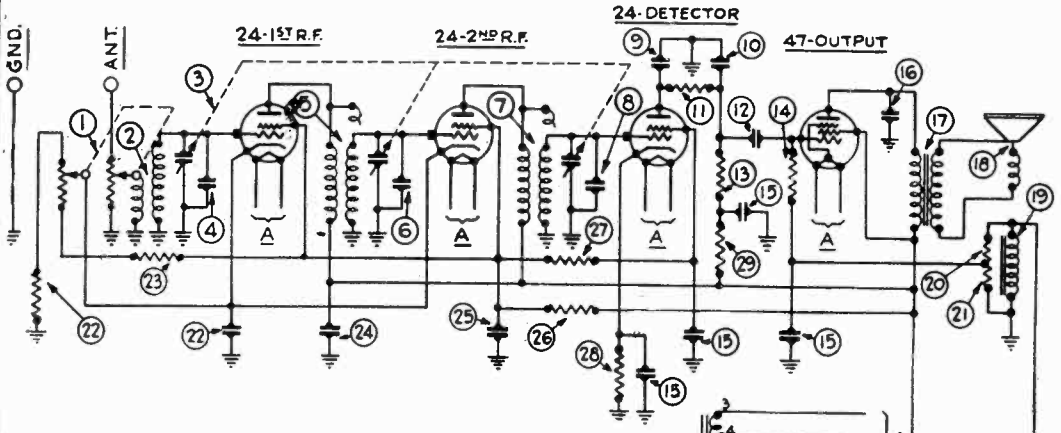
Table 2—Condenser Data
(Other than Filter Condenser)

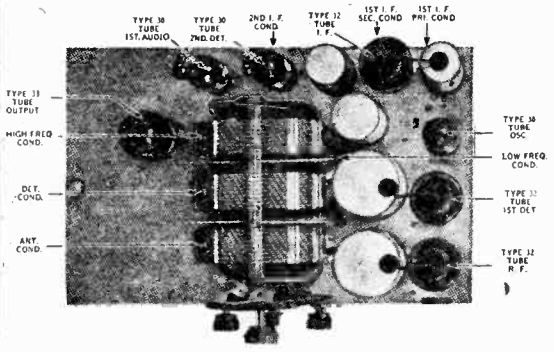
No. on Figs. 2 and 3	Capacity MFD
⑲	.0005
㉑	.01
⑤—⑪—⑮	.05
⑫	.05 and 250-ohm resistor
⑦	.25
⑱—㉓	.25 (two sections)

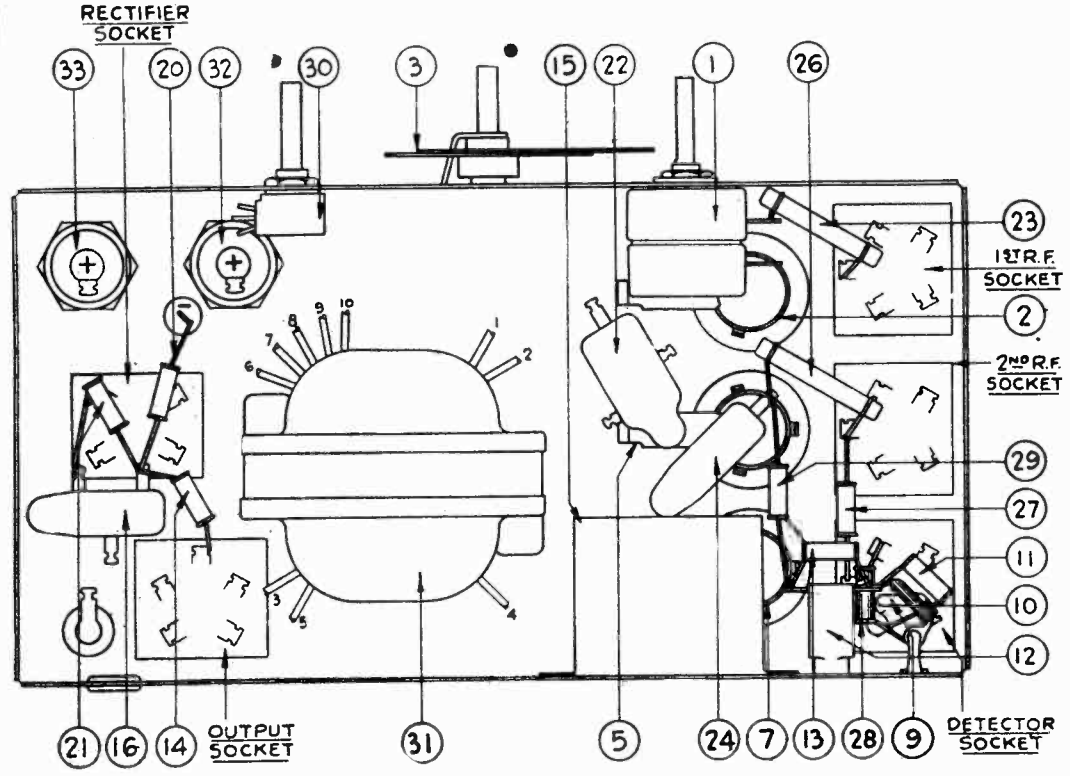
MODEL 50, 50-A
Schematic
Chassis

PHILCO RADIO & TELEVISION CORP.

PHILCO MODELS 50 AND 50-A







ADJUSTMENT OF MODELS 50 AND 50-A

With the volume control advanced to maximum, and using a weak oscillator signal, tune the receiver sharply to the oscillator note.

Adjust the third R. F. compensating condenser by means of the Philco fibre wrench, part 3164, for maximum output signal. If an output meter is being used, adjust for maxfmum reading.

Next adjust the second R. F. compensating condenser and finally the first. In each case, always adjust for maximum signal or reading.

Adjustment of the compensating condensers in the model 50 should be done with the aid of a good oscillator for the R. F. signal. The oscillator lead should be connected to the "ANT" terminal of the receiver. A good ground connection must be made from the receiver to the grounded side of the oscillator and to a water or radiator pipe.

Either the ear method or an output meter, connected across the speaker voice coil terminals can be used while adjusting.

When the Receiver is set up for operation, adjust the oscillator signal to a frequency which is approximately 1400 kilocycles.

PHILCO RADIO & TELEVISION CORP.

MODEL 50,50-A
Voltage
Resistor Data
Condenser Data

Models 50 and 50-A Receivers

Model 50 Receivers are for operation on 100-130 volt, 50-60 cycle AC lines
Model 50-A Receivers are for operation on 100-130 volt, 25-60 cycle AC lines

Table 1—Tube Socket Readings Taken with AC Set Tester AC Line—115 volts

Tube		Filament Volts	Plate Volts	Screen Grid Volts	Control Grid Volts	Cathode Volts	Plate Milli-amperes
Type	Circuit						
24	1st R.F.	2.4	245	90	2.5	3.0	4.5
24	2nd R.F.	2.4	250	90	2.5	3.0	5.5
24	Det.	2.4	100	42	8.0	8.0	0
47	Output	2.4	175*	190*	1.0*	...	2.7*
80	Rect.	5.0	...	...	...	...	30/

Note—Volume Control on full; Station Selector turned to Low Frequency End.
*These readings must be taken from the underside of the chassis, using test prods and leads unless the set checker is specially equipped for testing pentode tubes.

Table 2—Power Transformer Voltages

Terminals	A.C. Volts		Color
1-2	105 to 125	Primary	Black (Small Gauge)
3-5	2.5	Filament of 24 and 47	Black
6-7	5.	Filament of 80	Light Blue
8-10	700.	Plates of 80	Yellow
4	.....	Center Tap of 3-5	Black, Yellow Tracer
9	.....	Center Tap of 8-10	Yellow, Green Tracer

Table 3—Condenser Data

No. on Figs. 2 and 3	Capacity MFD	Container
⑨ ⑩	.00025	Yellow
⑫ ⑯	.01	Black Bakelite Container
㉕	.05	Black Bakelite Container
㉒	.05 and 150 Ohm resistor	Black Bakelite Container
⑱	.1, .15, .25, 2-.5 (50-60 cycles) .05, .15, .25, 2-.5 (25-40 cycles)	Metal Container
㉔	.05	
㉝	(50 to 60 cycles) 6. (25 to 40 cycles) 10.	Electrolytic Electrolytic
㉞	6.	Electrolytic

Table 4—Resistor Data

No. on Figs. 3 and 4	Power (Watts)	Resistance	Color		
			Body	Tip	Dot
㉒	...	150 and .05 Mfd.	Black Bakelite Container		
⑪	.5	10,000	Brown	Black	Orange
㉘	1.	15,000	Brown	Green	Orange
㉖	1.	25,000	Red	Green	Orange
㉘	.5	32,000	Orange	Red	Orange
㉗ ㉙	.5	99,000	White	White	Orange
㉑	.5	160,000	Brown	Blue	Yellow
⑬	.5	240,000	Red	Yellow	Yellow
⑭ ⑳	.5	490,000	Yellow	White	Yellow

Table 8
Tube Socket Readings

Type Tube	"A" Volts	"B" Volts	"B" Volts (Screen Grid)	"C" Volts (Control Grid)	MA Plate	Cathode
224	2.5	150	*.2 to 75	1.5	1.5	+1.5
227	2.5	250	....	28	†.8 to 3.5	+28
245	2.5	250	....	50	32	....
280	5.0	350-V. A.C.	....	....	55	....

*The voltage varies from 75 volts with the volume control turned for full volume to .2 volts with the control turned for minimum volume.

†When there is no signal being reproduced the detector plate current will be about .8 MA. Strong signals will cause a rise in current to 3.5 MA.

Table 9
Power Transformer Voltage (AC)

Terminals	A.C. Volts	Secondary
1– 2	700	A.C. Supply to Plates of Rectifier Tube
3		Center Tap of Rectifier Plate Secondary
4– 5	5.0	Rectifier Filament
6–10	2.5	Filament 245 Tubes
8		Center Tap of 245 Tube Secondary
7– 9	2.5	Heater 224 and 227 Tubes

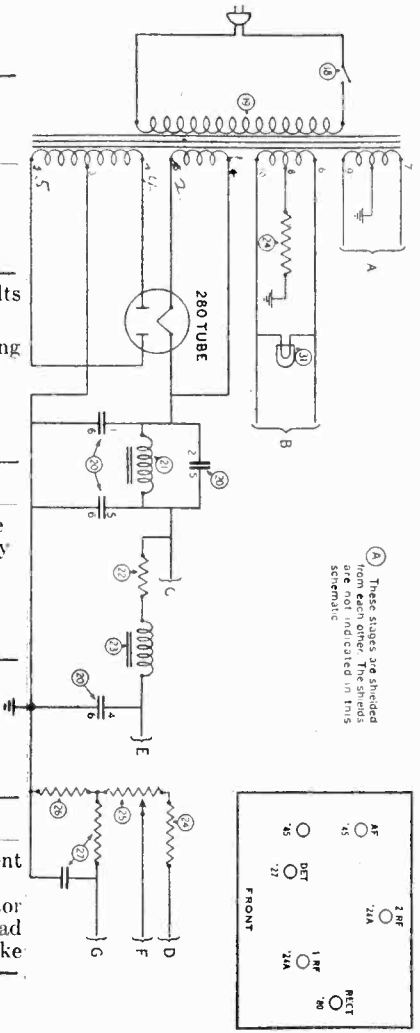
Green lead—Center Tap for Secondary 7–9
Current Consumption—125 V. A.C. 95 Watts

Table 10
D. C. Voltage Across Filter Condenser Block

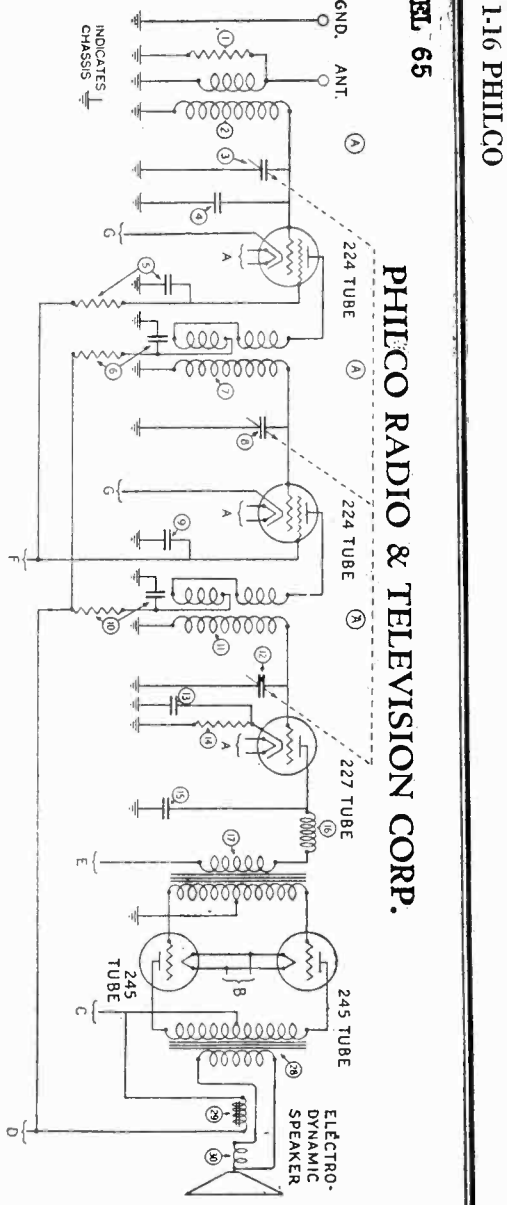
Terminals	D.C. Volts	Capacity	Circuit
1–6	325	2.0 Mfd.	First Filter Section, Ground to 280 Filament
2–5	20	.15 Mfd.	Parallel with First Choke Coil
3	....	.....	Blank Terminal for Detector Plate Resistor
4–6	280	1.0 Mfd.	Last Filter Section, Gnd. to Det. Plate Lead
5–6	305	2.0 Mfd.	2d Filter Section, Gnd. to End of First Choke

Table 11
Voltage Across Resistors

Resistor Number	Resistor Terminal	Voltage Drop	Circuit
㉔	1–2	45–50	Grid Bias for the 245 Tubes
	3–4	75–80	Reduces B Voltage for the Screen Grid
㉒	1–2	4–10	Detector Plate Voltage
⑭	1–2	28	Detector Grid Bias
Field Coil of Speaker		135–140	Supplies Field Energy of Dynamic Speaker



(A) These stages are shielded from each other. The shields are not indicated in this schematic



PHILCO RADIO & TELEVISION CORP.

PHILCO RADIO & TELEVISION CORP.

MODEL 70,70-A
Below B-22,000
Voltage
Schematic
MODEL 570
Grandfather Clock

Models 70, 70A, 70E, 270, 270A

MODEL 570 Grandfathers Clock contains the same radio equipment as Model 70

Power Transformer Voltages

Terminals	A.C. Volts		
1-2	105 to 125	Primary	Black (Small Gauge)
3-5	2.5	Filament of 47	Dark Green
6-8	2.5	Filament of 24	Black (Heavy Gauge)
9-10	5.	Filament of 80	Light Blue
11-13	700.	Plates of 80	Yellow
4	.....	Center Tap of 3-5	Black, Green Tracer
7	.....	Center Tap of 6-8	Black, Yellow Tracer
12	.....	Center Tap of 11-13	Yellow, Green Tracer

Tube Socket Readings Taken with AC Set Tester AC Line—115 volts

Tube Type	Tube Circuit	Filament Volts	Plate Volts	Screen Grid Volts	Control Grid Volts	Cathode Volts	Plate Milli-amperes
24	1st R. F.	2.25	250	85	3.	19.5	3.
24	1st Det.	2.25	250	87	5.5	21.5	.5
27	Osc.	2.25	85	...	2.	19.5	2.5
24	1st I. F.	2.25	250	87	3.	19.5	3.
24	2nd Det.	2.25	105	75	6.	22.	.1
47	Audio	2.25	245	255	1.	.....	.....
80	Rectifier	4.7	.....	.....	.....	.....	40/plate

Note—Volume Control Off; Station Selector turned to Low Frequency End.

If electrolyis occurs on the insulation of the wire between the filter choke and the electrolytic condenser, unsolder the wire and cover with spaghetti.

MODEL 70,70-A
Chassis- Data
MODEL 570
Grandfather Clock

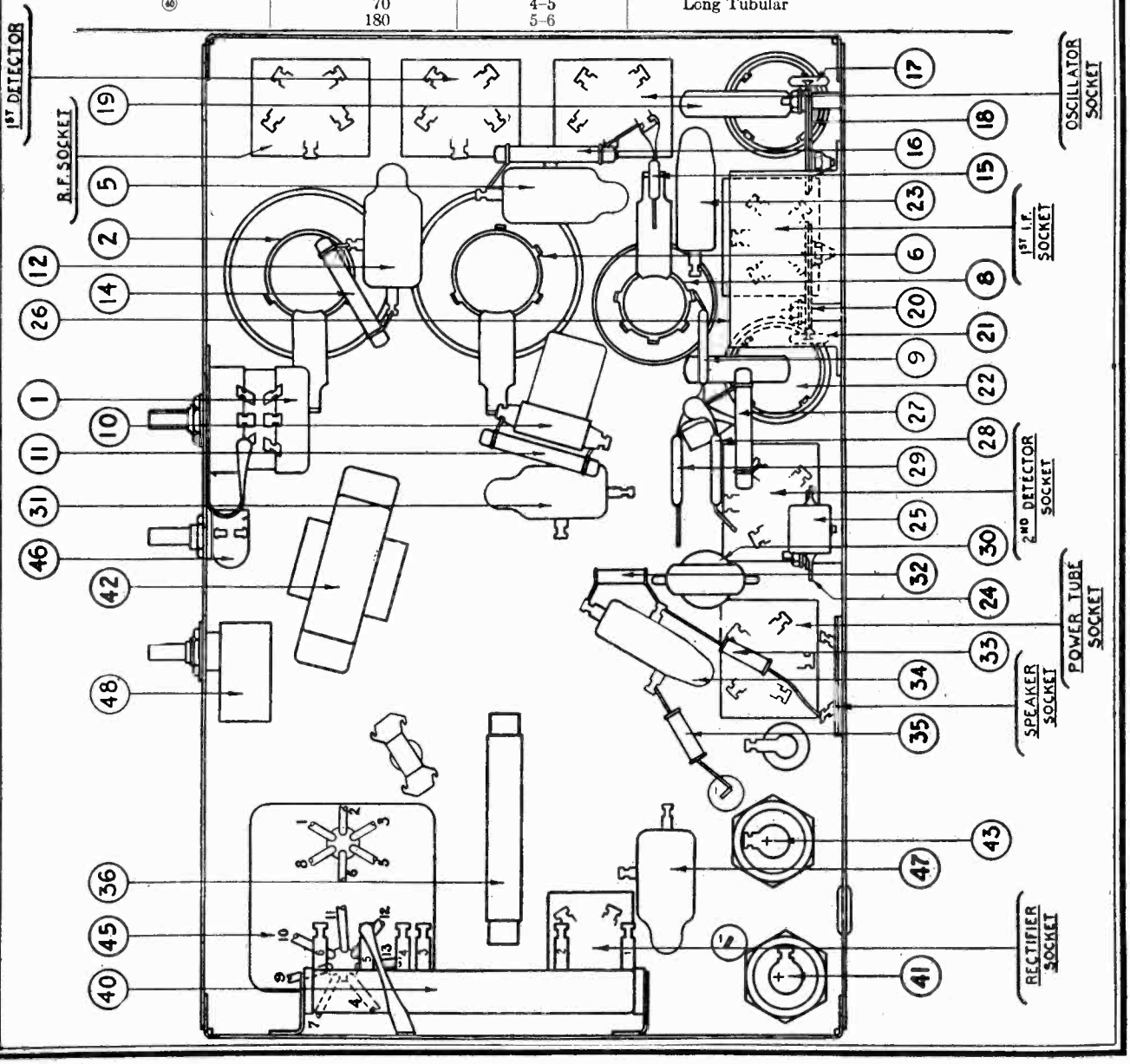
PHILCO RADIO & TELEVISION CORP.

Condenser Data

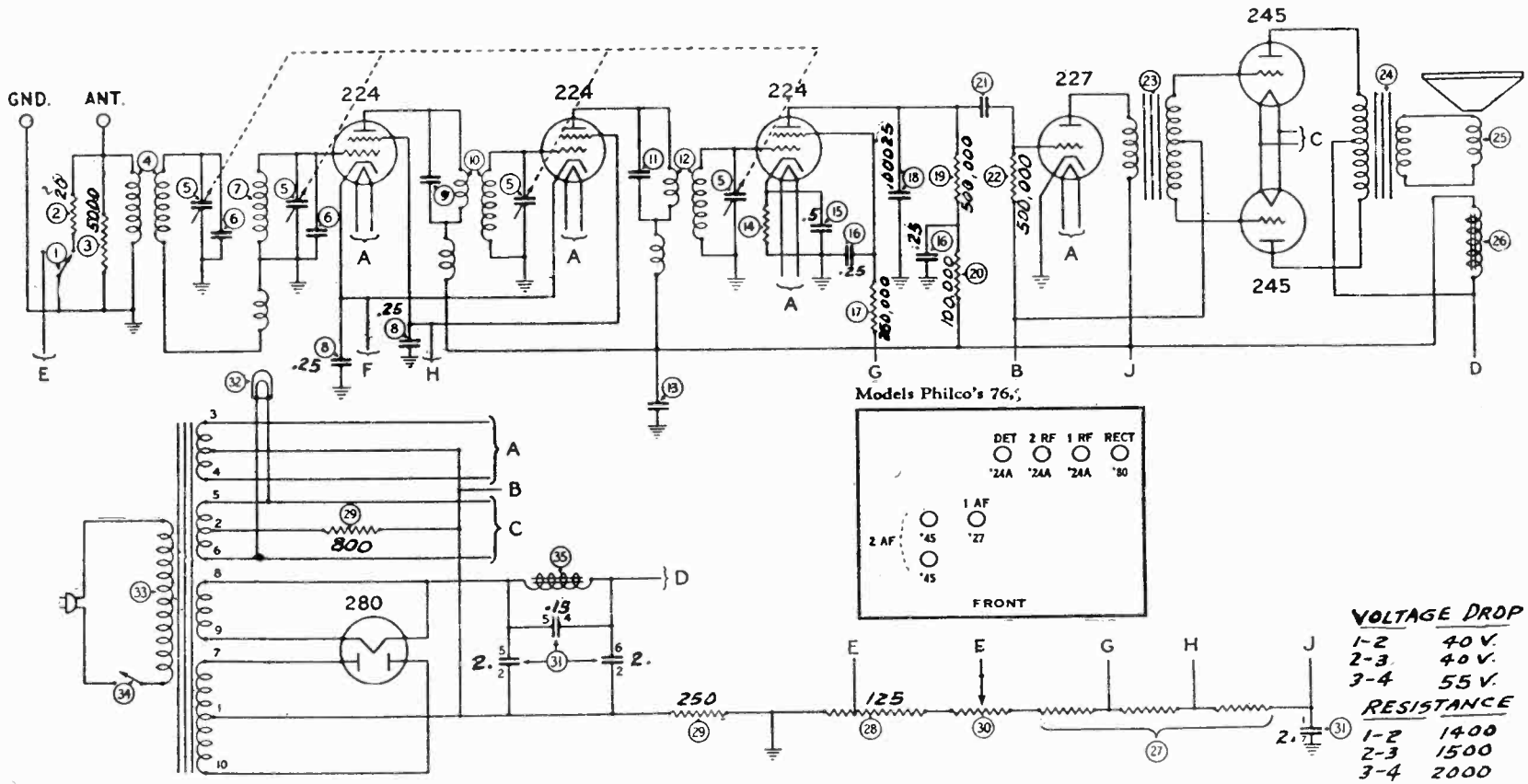
No. on Figs. 3 and 4	Capacity MFD	Color
(5)	.09	
(9)	.00041	Yellow Orange
(12)	.09	
(15) (17) (21)	.00011	Blue, Golden Yellow
(22)	.05	
(25)	.00005	Light Blue, White
(26)	.5	
(28)	.0005	Green
(29)	.00025	Yellow
(31)	.09 and 250 Ohm Resistor	
(34)	.01	
(36)	.25	
(41)	(25 to 40 cycles) 10.	
(41)	(50 to 60 cycles) 6.	
(43)	6.	

Resistor Data

No. on Figs. 3 and 4	Resistance	Terminal	Color Body	Color Tip	Color Dot
(11) (27)	50,000	...	Green	Brown	Orange
(14)	5,000	...	Green	Black	Red
(16)	13,000	...	Brown	Orange	Orange
(32) (35)	250,000	...	Red	Yellow	Yellow
(33)	100,000	...	White	White	Orange
	1,060	1-2			
	2,300	2-3			
(40)	70	4-5	Long Tubular		
	180	5-6			



Philco Model 76



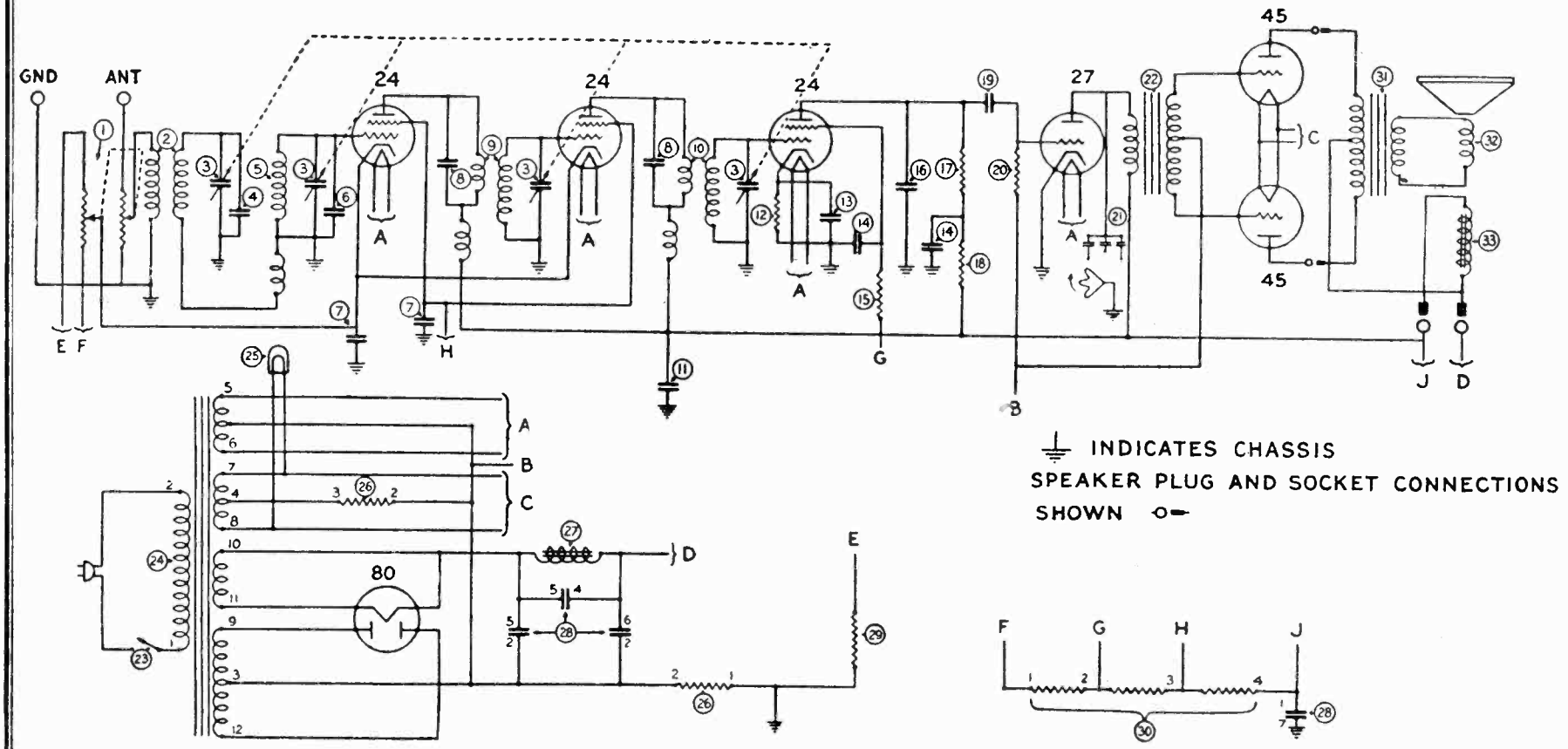
Power Transformer Voltages

Terminals	A.C. Volts	Secondary
1		Center Tap for 280 Plate
2		Center Tap for 245 Tubes
3– 4	2.67	Heaters of 224 and 227 Tubes
5– 6	2.68	Filaments of 245 Tubes
8– 9	5.00	Filament of 280 Tube
7–10	7.50	Plate of 280 Tube
Red Wire		Center Tap for 224 and 227 Tubes
Red Wire		Primary } Through panel together
Red Wire		Primary }

Model 76.

Vol.Contr.set to max. - Line Volts:115

Tube Type	Location	Fil. Volts	Plate Volts	S.G. Volts	Contr. Gr. Volts	Cathode Volts	Plate Ma.
'24	1 R.F.	2.3	145	90	3.	13.	3.5
'24	2 R.F.	2.3	145	90	3.	13.	3.5
'24	Det.	2.3	36	30	1.4	12.	0.
'27	1 A.F.	2.3	140		1.	10.	3.
'45	2 A.F.	2.2	230		46.		30
'45	2 A.F.	2.2	230		46.		30
'80	Rect.	4.5					50

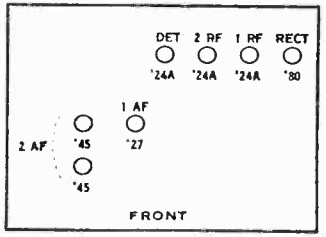


COMPENSATING

Always use an oscillator signal when adjusting compensating condensers. With the Receiver set up for operation, adjust the oscillator and Receiver so the signal is turned in between 120 and 140 on the tuning scale. Have the Receiver volume control turned on full. Adjust the oscillator so that the received signal is very weak. Using a fibre wrench turn down on the adjusting nut of the first compensating condenser until it is quite tight. This purposely throws the first stage out of balance while adjusting the second stage.

After tightening this first adjusting nut compensate the second condenser in the usual manner, that is, tune the Receiver very carefully to the oscillator signal and adjust the compensating condenser for the maximum signal. After this adjustment has been made, adjust the first compensating condenser in the same manner.

Models Philco's 76, 77, 77A

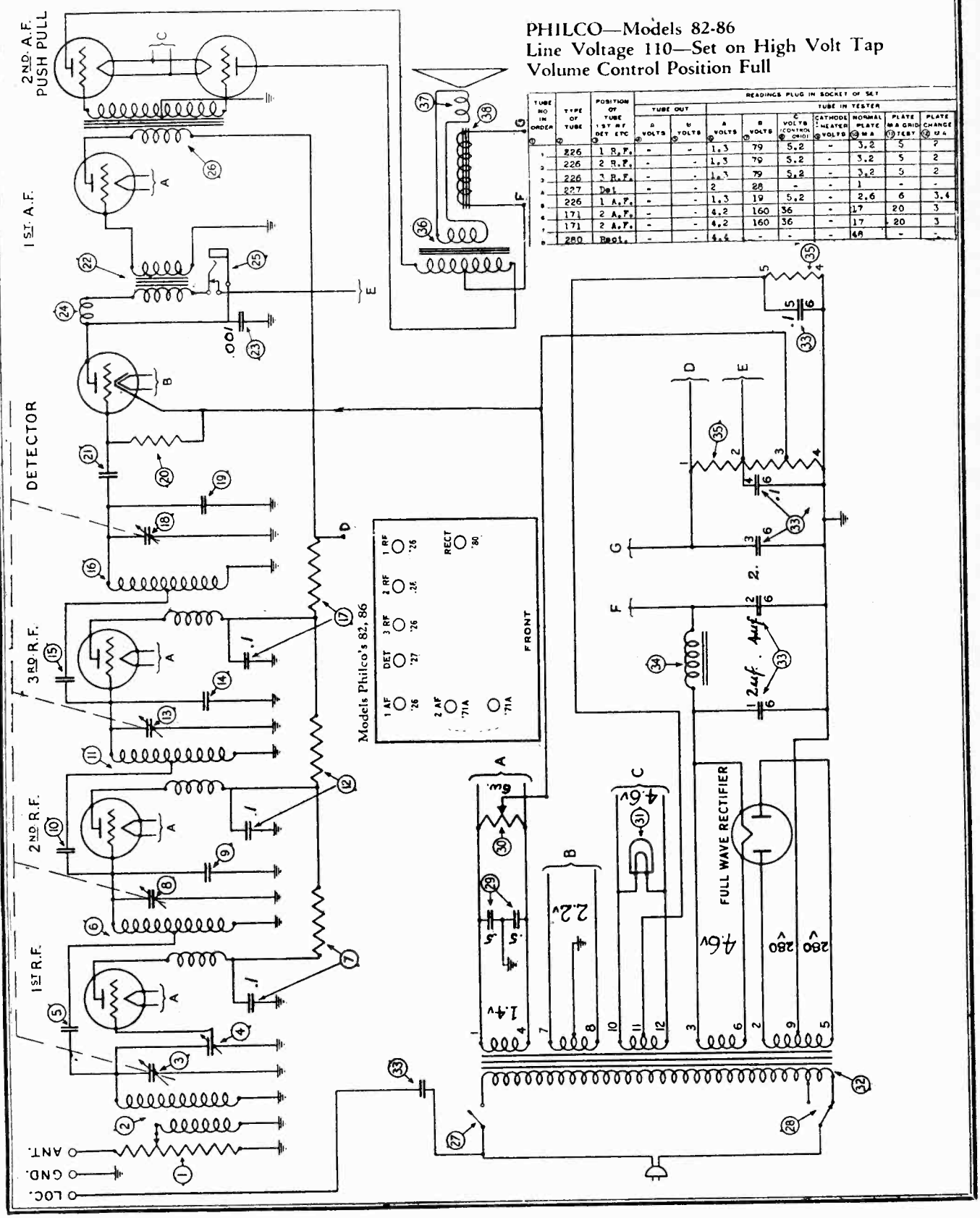


MODEL 82,86

PHILCO RADIO & TELEVISION CORP.

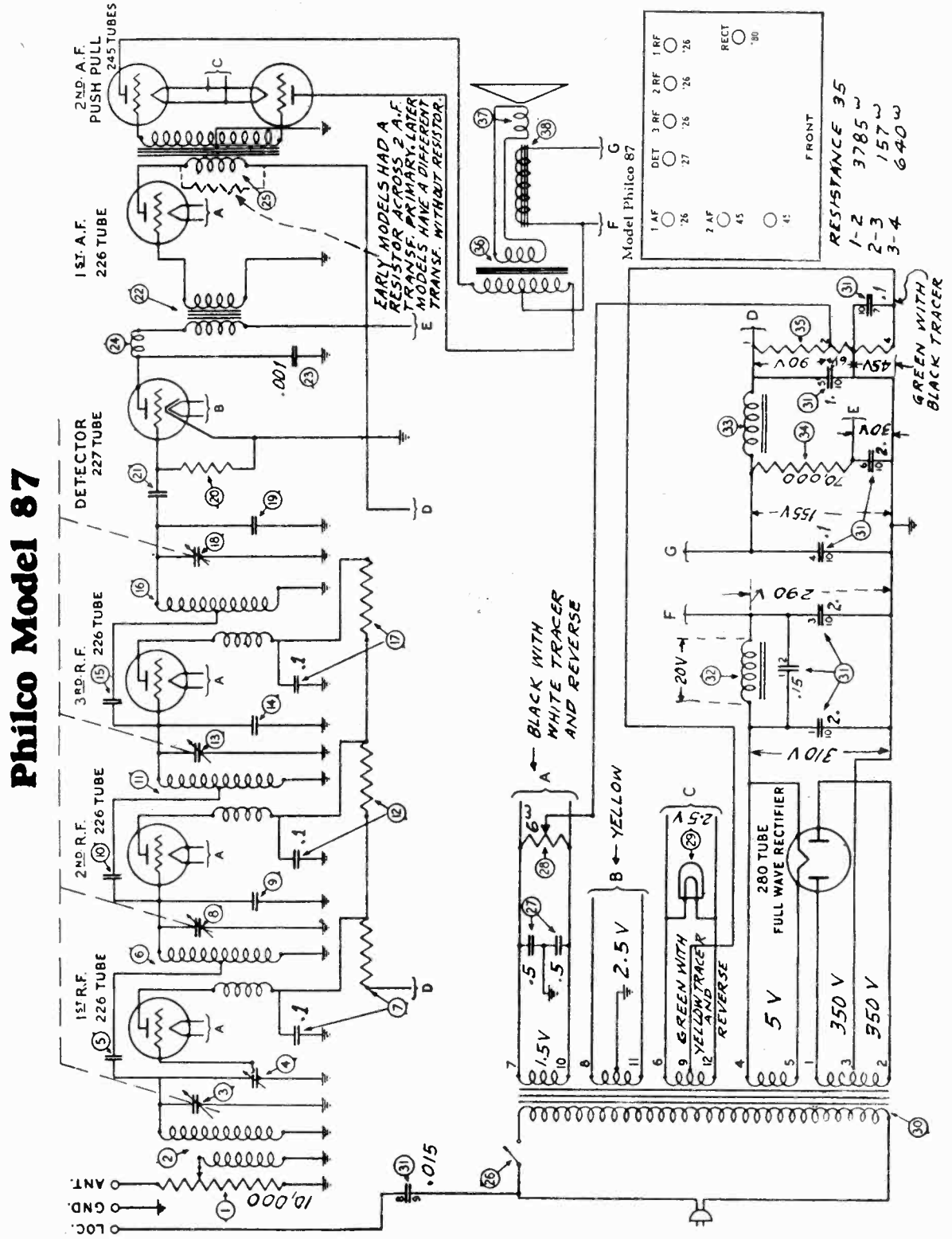
PHILCO—Models 82-86
Line Voltage 110—Set on High Volt Tap
Volume Control Position Full

TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1 ST RF DET ETC	READINGS PLUG IN SOCKET OF SET								
			TUBE OUT		TUBE IN TESTER						
			D VOLTS	U VOLTS	A VOLTS	B VOLTS	C VOLTS (CONTROL GRID)	CATHODE TO HEATER VOLTS	NORMAL PLATE MA	PLATE MA GRID 1 TEST	PLATE CHANGE 2 MA
1	226	1 R.F.	-	-	1.3	79	5.2	-	3.2	5	2
2	226	2 R.F.	-	-	1.3	79	5.2	-	3.2	5	2
3	226	3 R.F.	-	-	1.3	79	5.2	-	3.2	5	2
4	227	Det	-	-	2	28	-	-	1	-	-
5	226	1 A.F.	-	-	1.3	19	5.2	-	2.6	6	3.4
6	171	2 A.F.	-	-	4.2	160	36	-	17	20	3
7	171	2 A.F.	-	-	4.2	160	36	-	17	20	3
8	280	Rect.	-	-	4.6	-	-	-	48	-	-



PHILCO RADIO & TELEVISION CORP.

MODEL 87
Schematic
Socket



PHILCO RADIO & TELEVISION CORP.

MODEL 95

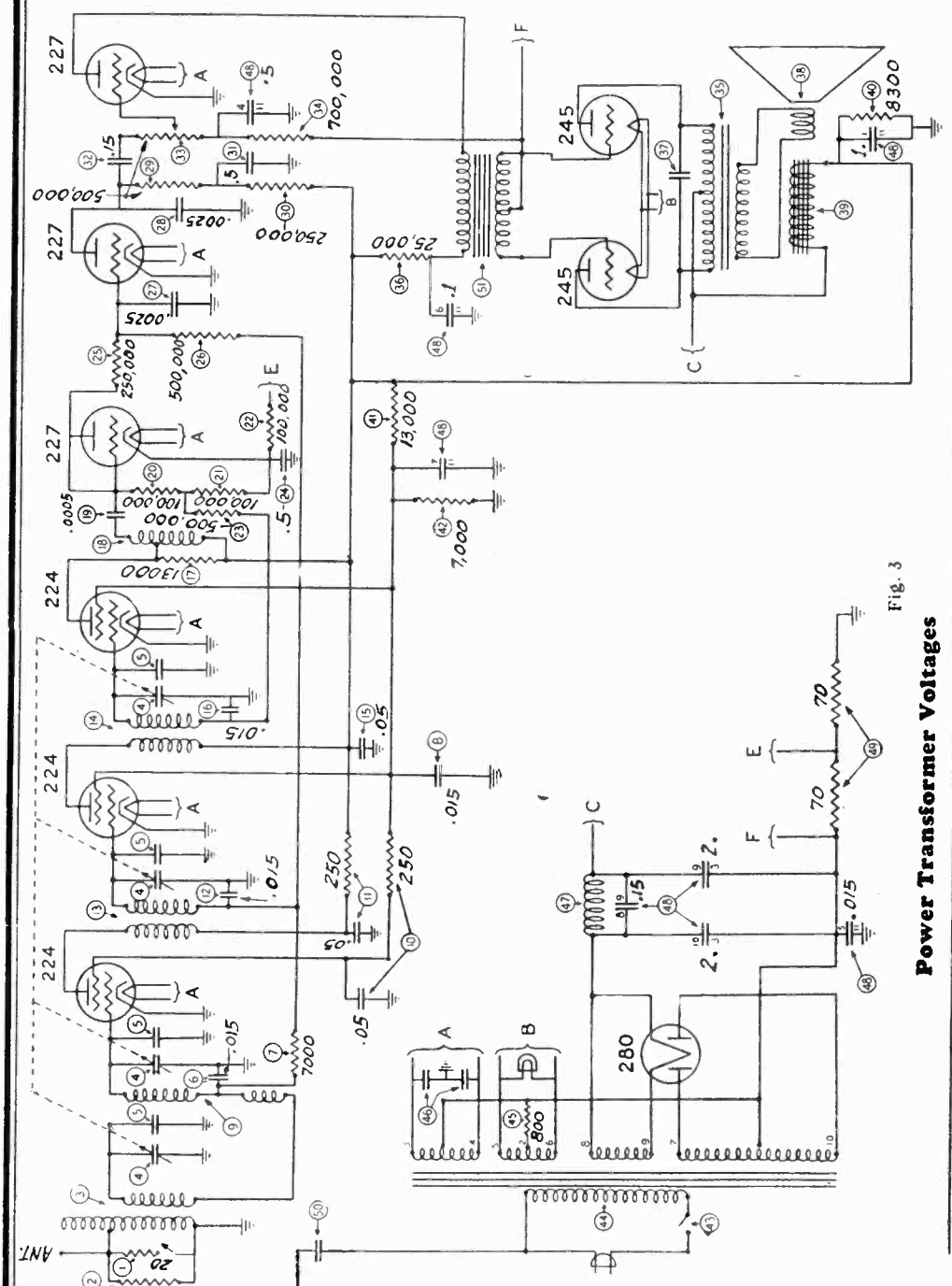
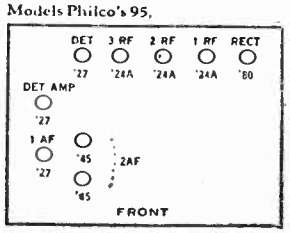


Fig. 3

Power Transformer Voltages

Terminals	A.C. Volts	Secondary
3 – 4	2.67	Heaters of 224 and 227 Tubes
5 – 6	2.68	Filaments of 245 Tubes
2		Center Tap for 245 Tubes
8 – 9	5.00	Filament of 280 Tube
7 – 10	7.50	Plate of 280 Tube
1		Center Tap for 280 Tube
Yellow Wire		Center Tap for 224 and 227 Tubes
Black Wire		Primary
Green Wire		Primary

Models Philco's 95.



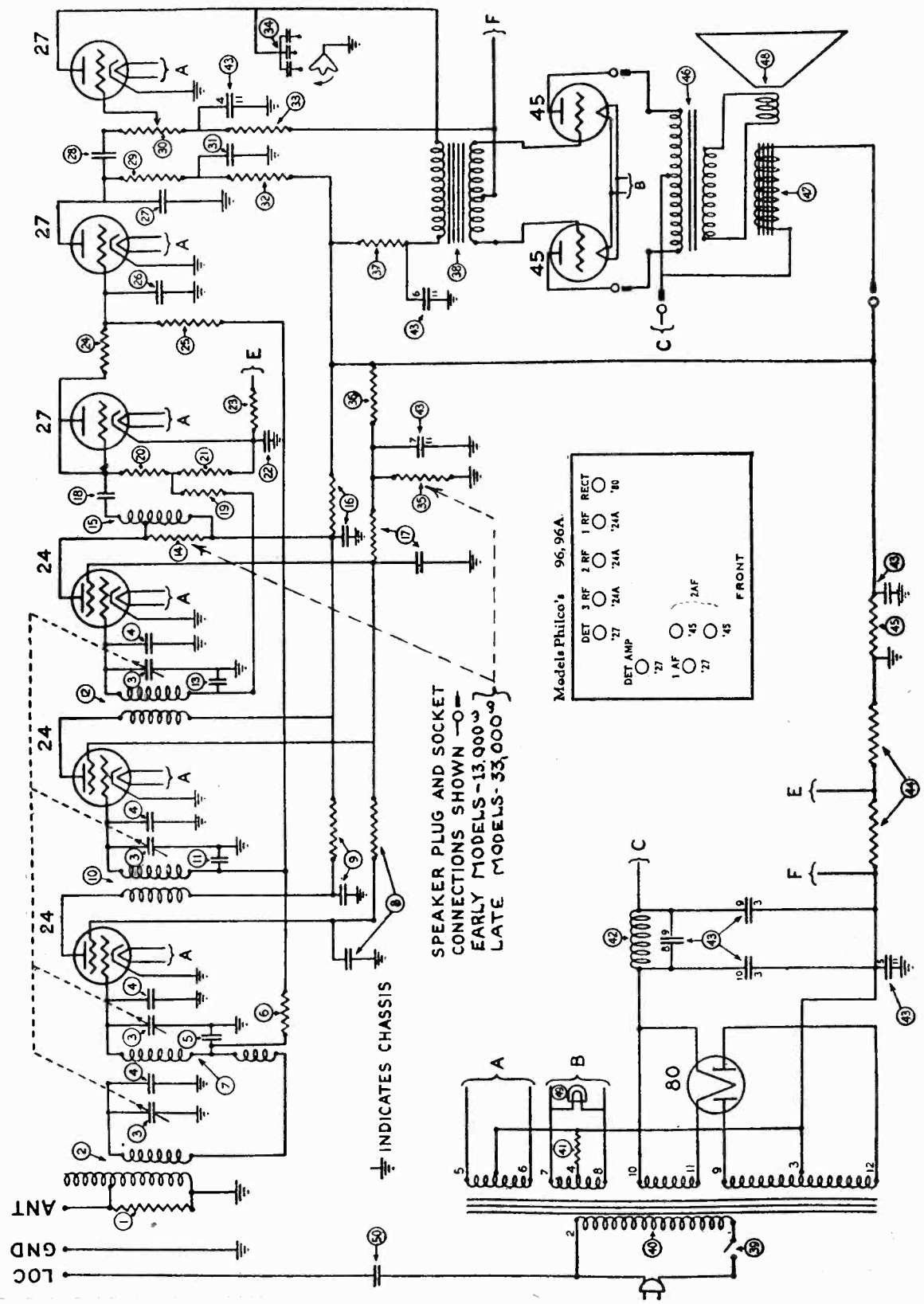
Voltages Read with A.C. Set Tester. A.C. Line 115 Volts.

Tube Type	Tube Circuit	Filament Volts	Plate Volts	Screen Grid Volts	Control Grid Volts	Cathode Volts	Plate Milli-Amperes
280	Rectifier	4.5					43/Plate
224	1st R. F.	2.15	155	95	0	5.3	4
224	2d R. F.	2.15	155	95	0	5.3	4
224	3d R. F.	2.15	155	95	0	5.3	4
227	Det.	2.15	0		-.5	.7	0
227	Det. Amp.	2.15	27		-.5	5.5	0
227	1st A. F.	2.15	85		-2.0*	5.5	2.5
245	2d A. F.	2.2	250		41		28
245	2d A. F.	2.2	250		41		28

*This is read with Volume Control off. With it on the reading will be .2 volt.

PHILCO RADIO & TELEVISION CORP.

MODEL 96,96-A
Schematic



PHILCO RADIO & TELEVISION CORP.

MODEL 112,112-A
Below 174,001
Voltage
Electrical Values

Models 112 and 112-A Receivers

Model 112 Receivers are for operation on 100-130 volt, 50-60 cycle AC lines
Model 112-A Receivers are for operation on 100-130 volt, 25-60 cycle AC lines

Table 1—Tube Socket Readings Taken with AC Set Tester AC Line—115 volts

Tube Type	Tube Circuit	Filament Volts	Plate Volts	Screen Grid Volts*	Control Grid Volts	Cathode Volts	Plate Milli-Amperes	Screen-Grid Milli-Amperes ‡
24	1st R. F.	2.1	190	60	.2	5	1.7	1.75
27	Osc.	2.1	45	..	.7	7	1.6	....
24	1st Det.	2.1	180	62	4.6	8	.5†	.15
24	1st I. F.	2.1	185	65	...	5	1.5	1.7
24	2nd I. F.	2.1	190	82	2.2	5	3	1.85
27	Det. Rect.	2.2	...	..	.4	.5	.....	....
27	Det. Amp.	2.2	35	..	.4	5	.20‡	....
27	1st A. F.	2.1	95	..	1.2	5	4.	....
45	2nd A. F.	2.2	255	..	50	...	32.5	....
45	2nd A. F.	2.2	255	..	50	...	32.5	....
80	Rect.	4.9	...	..	...	...	50/Plate	....

*Read with C 100 Scale.
†Read with 20 Mil. Scale.
‡Read with 2 Mil. Scale.

Note—Volume Control Off; Station Selector turned to Low Frequency End; Range Switch set in "Normal" Position.

Table 2—Power Transformer Voltages

Terminals	A.C. Volts	
1—2		Primary
3		Center Tap 80 Tube
4		Center Tap 45 Tubes
5—6	2.67	Heaters for 24 and 27 Tubes
7—8	2.68	Filaments for 45 Tubes
9—12	750.	Plates 80 Tube
10—11	5.0	Filament 80 Tube
Rubber Covered Lead		Center Tap for 24 and 27 Tubes

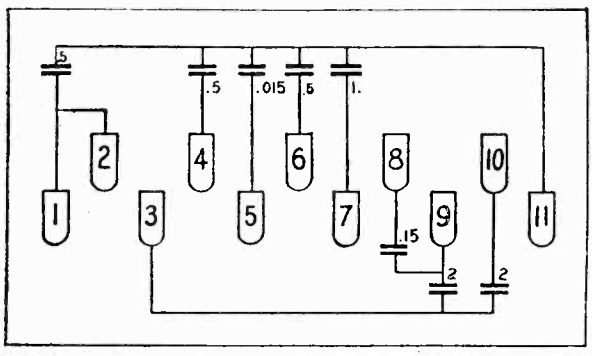
Table 3—Condenser Data
(Other Than Filter Condenser)

No. on Figs.	CAPACITY	COLOR
⑥	.05	Bakelite Container
⑩ ⑪	.05 and 250 Ohm Resistor	Bakelite Container
⑰	.25 (two sections)	Metal Container
⑲ ㉓ ㉗ ㉝ ㊳	.00011	Blue, Golden Yellow
㉑	.0007	White, Golden Yellow
㉘	.05	Bakelite Container
㉙	.05 and 250 Ohm Resistor	Bakelite Container
㉟	.00005	Light Blue, White
㊵	.5	Metal Container
㊷	.00025	Yellow
㊸	.015	Bakelite Container
㊺	.05	Bakelite Container
㊶	.015 (two sections)	Bakelite Container
㊼	.05	Bakelite Container

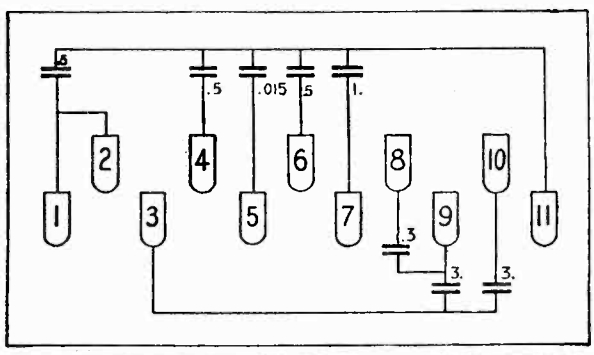
Table 4—Resistor Data

No. on Figs.	Power (Watts)	Resistance	COLOR Body	Tip	Dot
⑳	1.	1,000	Brown	—Black	—Red
①	.5	10,000	Brown	—Black	—Orange
⑱	1.	13,000	Brown	—Orange	—Orange
㉛ ㊷	1.	25,000	Red	—Green	—Orange
⑯ ㊴ ㊿	.5	50,000	Green	—Brown	—Orange
㊽ ㊹	1.	70,000	Violet	—Black	—Orange
⑧ ㊶ ㊻ ㊽	.5	100,000	White	—White	—White
㊻	1.	250,000	Red	—Yellow	—Yellow
㉞	.5	500,000	Yellow	—White	—Yellow
㊹	1.	500,000	Yellow	—White	—Yellow
㊽		70	Flat Wire Wound (two sections)		
㊾		800	Short Tubular		
㊼		10,000	Long Tubular		

Model 112 Condenser Block Part No. 3754

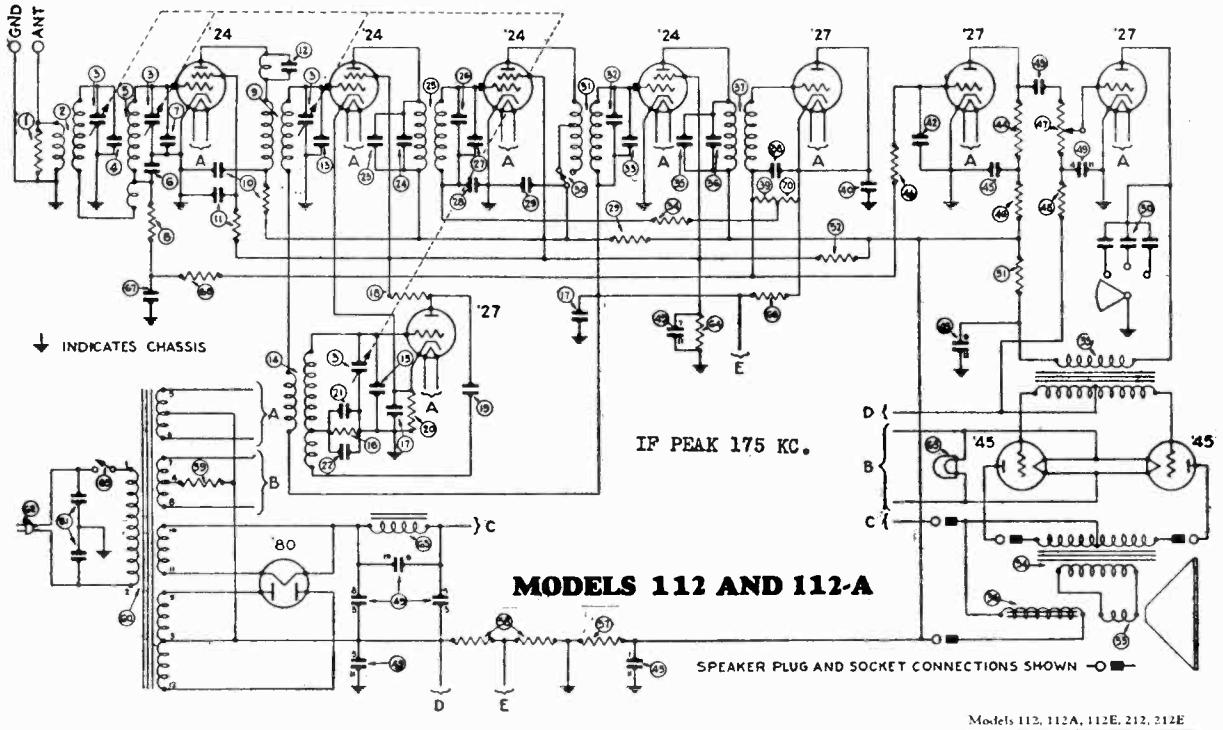


Model 112-A Condenser Block Part No. 3755



PHILCO RADIO & TELEVISION CORP.

MODEL 112,112-A
Below #174,001
MODEL 212,212-A
Schematics

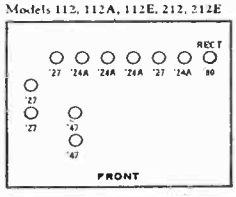


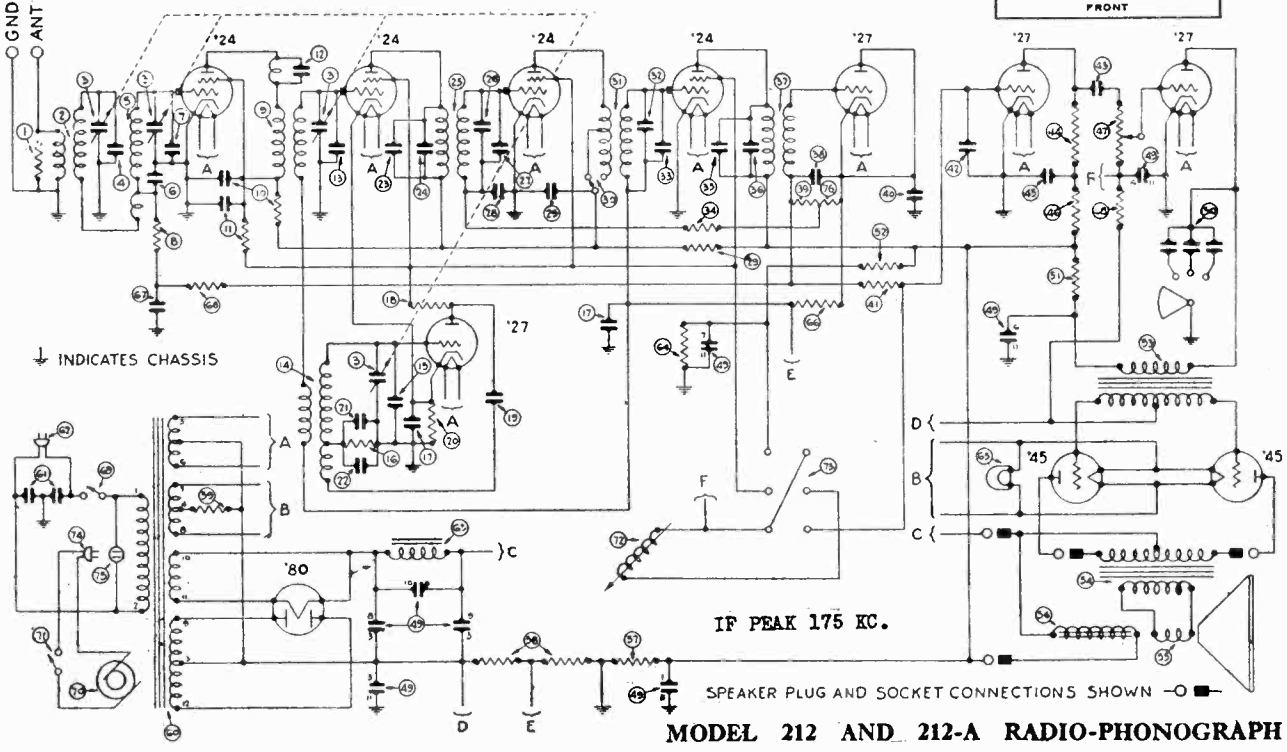
MODELS 112 AND 112-A

SPECIAL NOTE

Resistor (70) in models 112,112-A is (76) in models 212,212-A

For voltage data and other values applying to models 212,212-A, see data for models 112,112-A

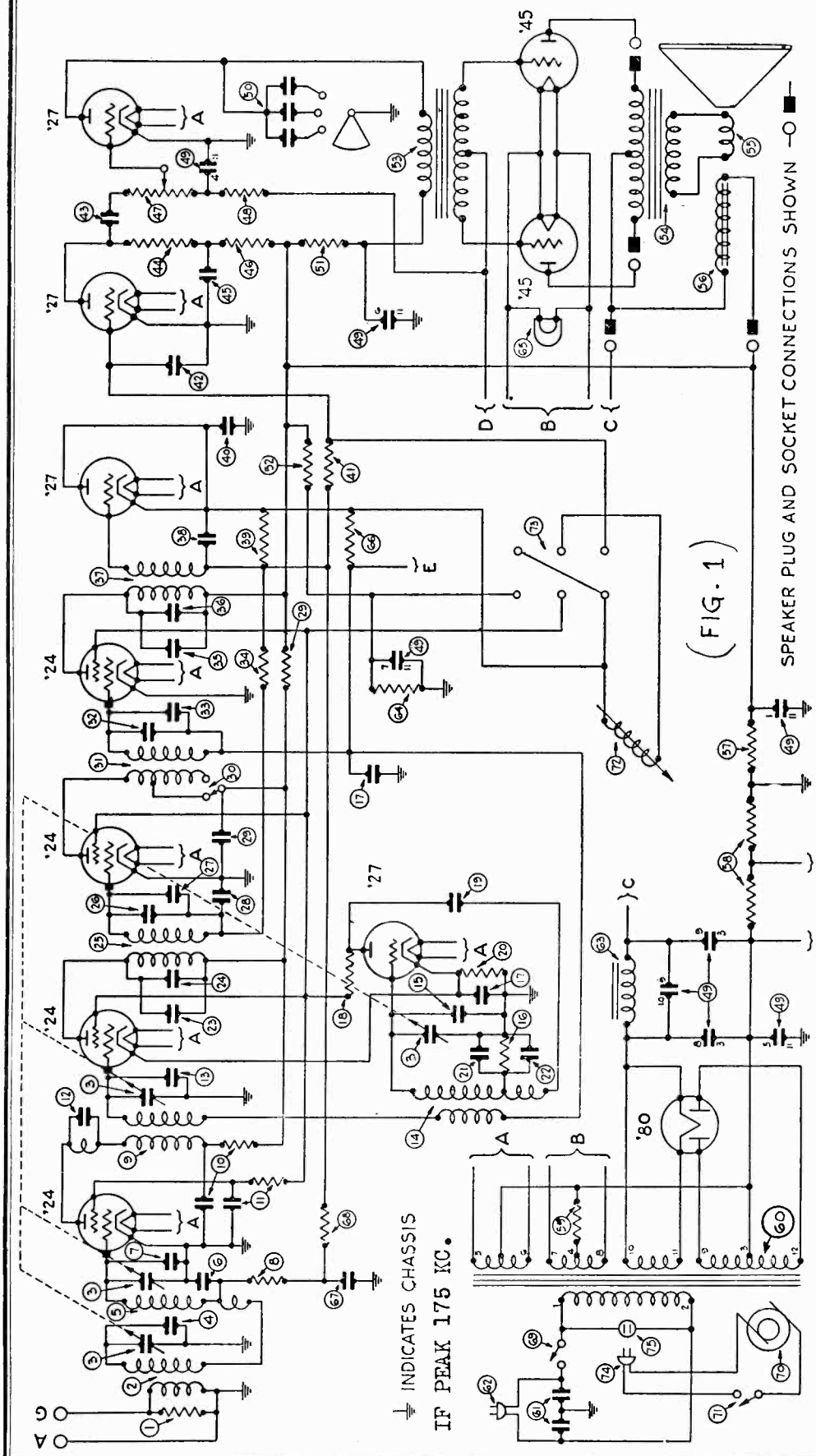




MODEL 212 AND 212-A RADIO-PHONOGRAPH

PHILCO RADIO & TELEVISION CORP.

MODEL 211,211-A



(FIG. 1)

NOTE:—Starting January 15th, the connection from the pick-up to the Detector Rectifier Cathode is changed so as to reach the connection between the volume control No. 47 and resistor No. 48. This change has been made by removing the green wire in the radio-phono switch cable from resistor No. 66, and lengthening it to reach the connection indicated at the volume control.

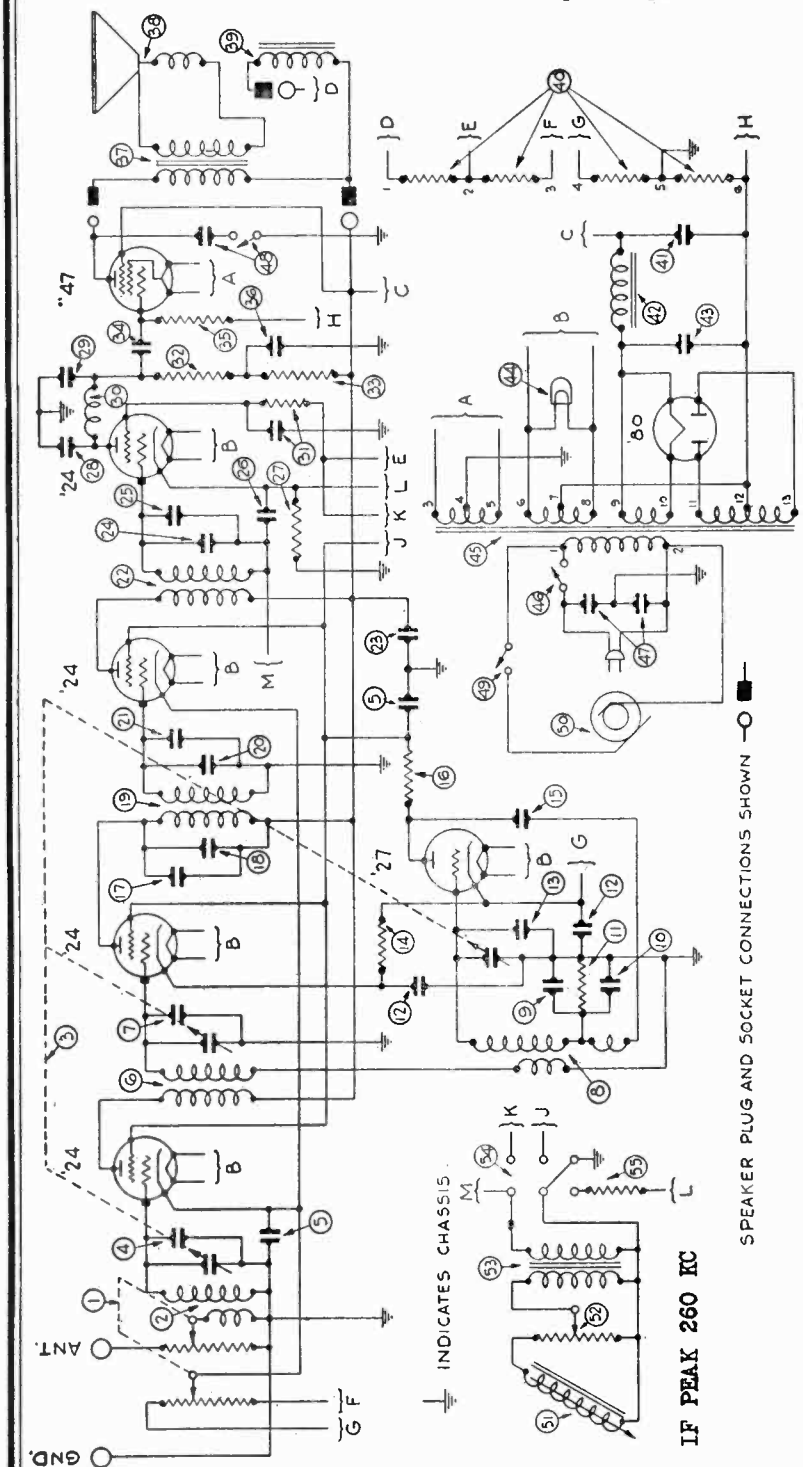
Voltage, resistor and condenser data furnished in connection with Models 111 and 111-A is applicable in every respect to Models 211 and 211-A.

PHILCO RADIO & TELEVISION CORP.

MODEL 270 AND 270-A RADIO-PHONOGRAPH

MODEL 70 IS FOR USE ON 50-60 CYCLE 105-125 VOLT AC LINES
MODEL 70-A IS FOR USE ON 25 CYCLE 105-125 VOLT AC LINES

The chassis of the 270 and 270-A are the same as the chassis for the 70 and 70-A except for the additional wiring to the radio-phono switch and the electric turntable and pick-up.



IF PEAK 260 KC

ADDITIONAL PARTS LIST - MODELS 270 AND 270-A

		Part No.
⑨ ⑩	Switch (for motor)	5168
⑩	Motor (50 to 60 cycle)	4543
	(25 cycle)	4561
⑤①	Pick-Up Head	5251
⑤②	Volume Control	5117
⑤③	Pick-Up Coupling Transformer	5167
⑤④	Phono-Radio Switch	5170
⑤⑤	Resistor (33000 ohms)	3525
	Turntable	4547
	Cord Connector Plug	4091
	Cord Connector Socket	4124
	Needle Cup	4101
	Needle Box	4102

In case of audio howl and the shipping screws have been properly loosened, the condition can usually be eliminated by placing a metal tube shield over the detector tube

Do not attempt repair work on the turntable motor. Should this part become defective, replace with another motor and return it to the factory.

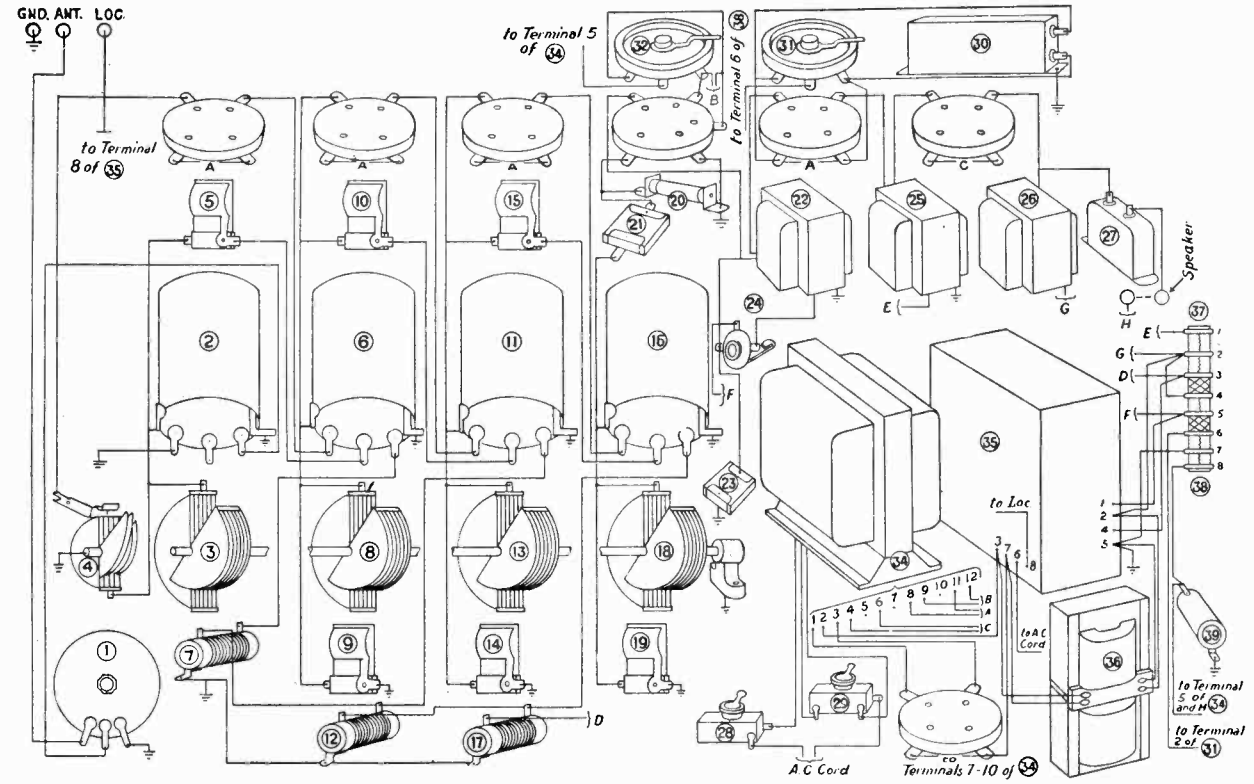
The pick-up should be handled in the same way. If it doesn't operate properly, - remove the mounting bolt which holds the pick-up head to the tone arm, - replace with another and return it to the factory.

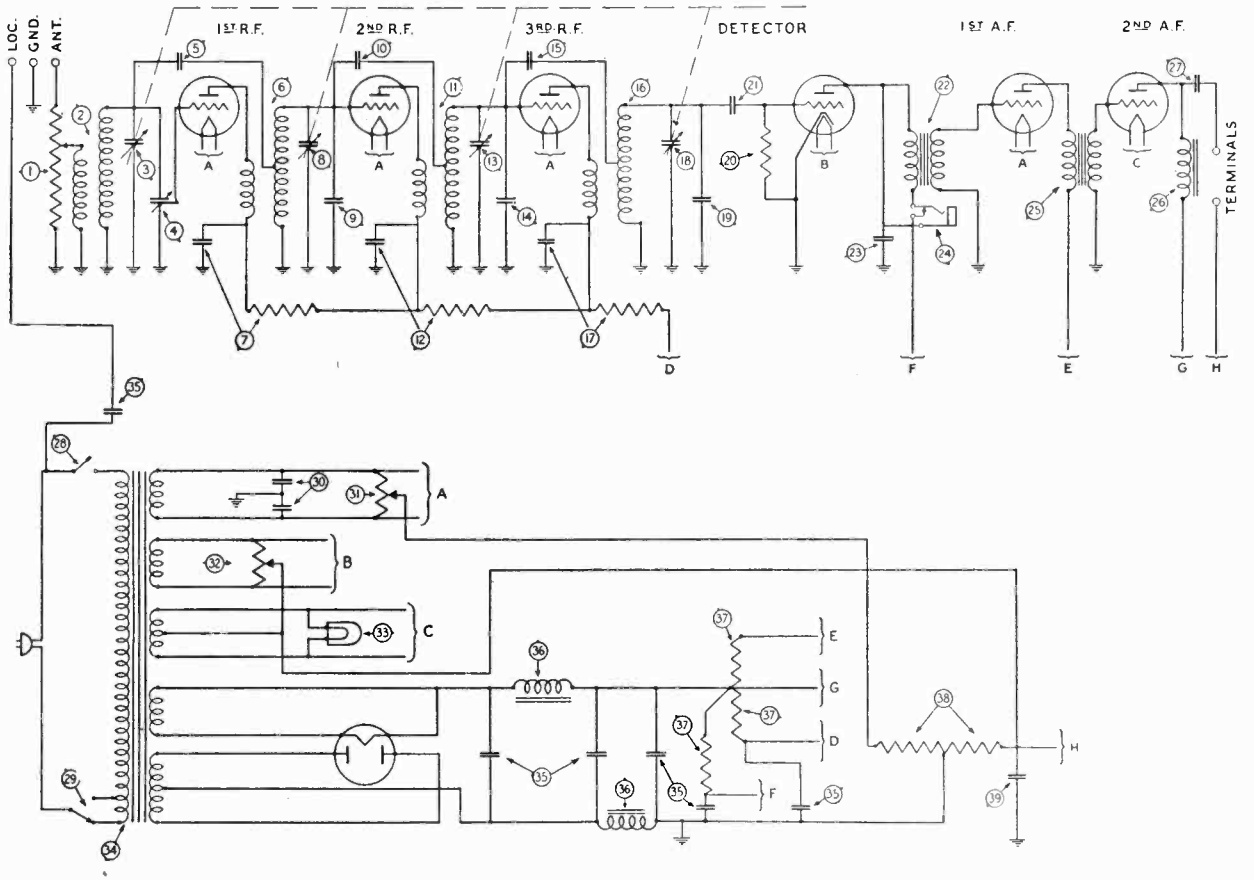
Grease the worm gear of the motor with a clear petroleum jelly or a commercially pure vaseline. In order to oil the bearings of the motor it is necessary to remove the turntable.

There is an oil cup located at the top of the motor board, in which a few drops of light machine oil may be added as needed.

PHILCO RADIO & TELEVISION CORP.

MODEL 500 Series
Schematic
Chassis





MODEL 296, 296-A

PHILCO RADIO & TELEVISION CORP.

Installation Hints on Model 296 Radio-Phonograph

Cardboard packing is placed between the motor disc and the field coils to protect the disc in shipping. Be sure that this packing is removed before placing in service.

There are three causes for complaints such as "distorted," "fuzzy" or "noisy" reproduction when playing records on the Model 296.

Usually the trouble is caused by the turntable motor board being in contact with the cabinet. It is absolutely necessary that the four bolts holding the motor board in place be loosened when the Model 296 is put into service. Pure gum washers are between the motor board and the cabinet, so that when the bolts are loosened the motor board is freely floating on the gum washers.

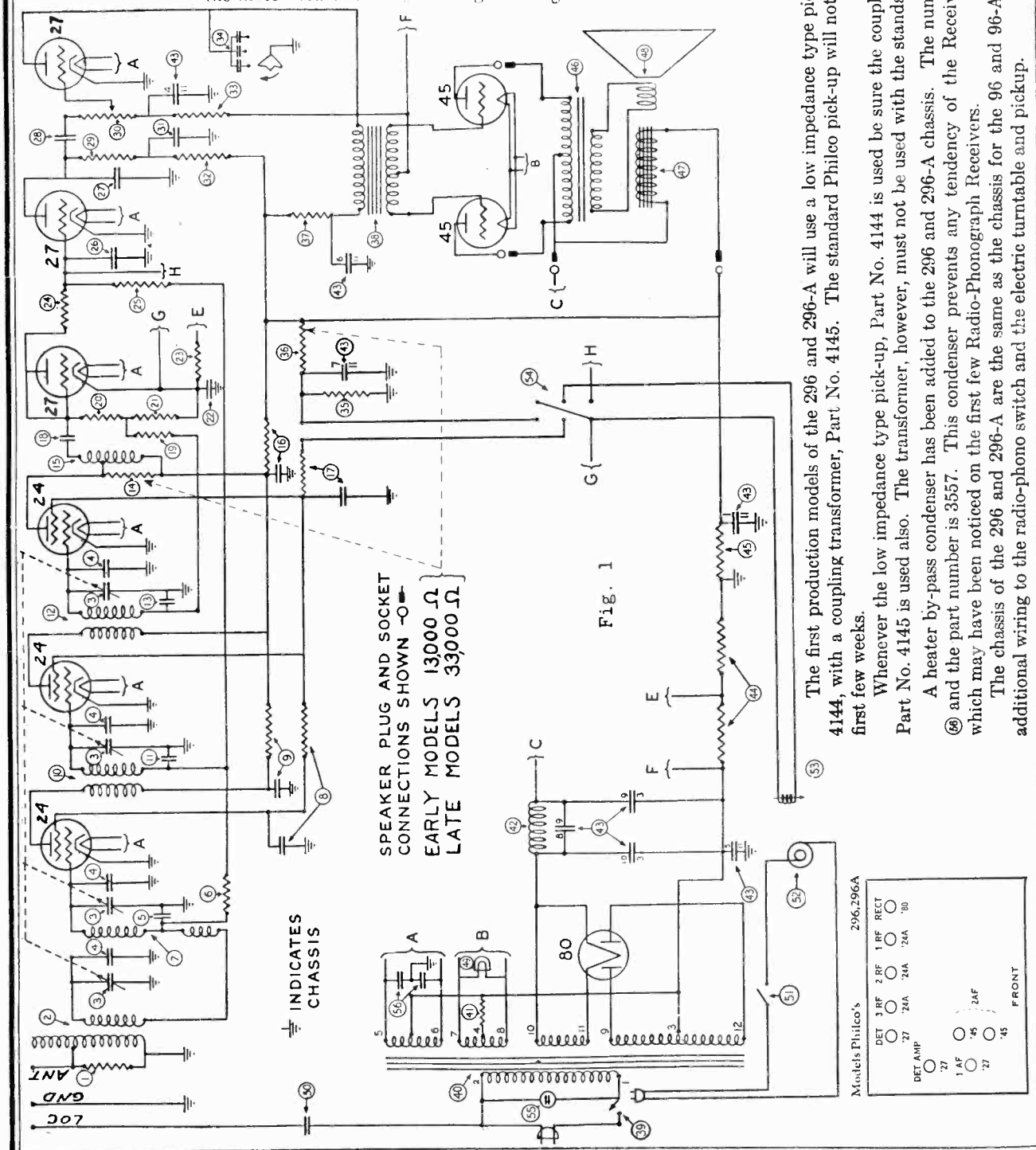


Fig. 1

The first production models of the 296 and 296-A will use a low impedance type pick-up, Part No. 4144, with a coupling transformer, Part No. 4145. The standard Philco pick-up will not be used for the first few weeks.

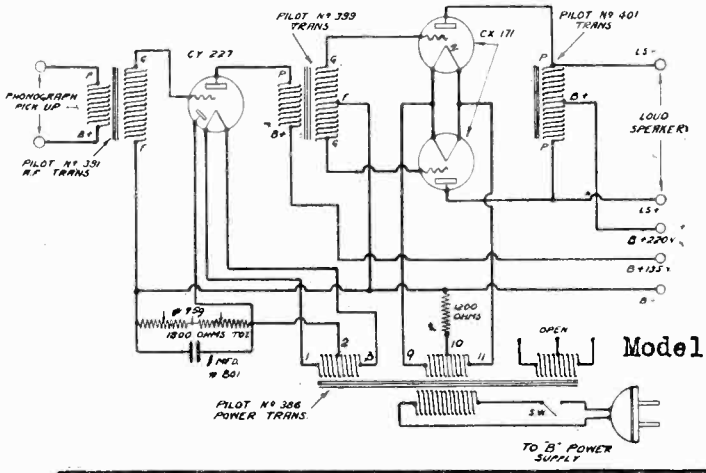
Whenever the low impedance type pick-up, Part No. 4144 is used be sure the coupling transformer Part No. 4145 is used also. The transformer, however, must not be used with the standard pick-up.

A heater by-pass condenser has been added to the 296 and 296-A chassis. The number in Fig. 1 is (56) and the part number is 3557. This condenser prevents any tendency of the Receiver to oscillate, which may have been noticed on the first few Radio-Phonograph Receivers.

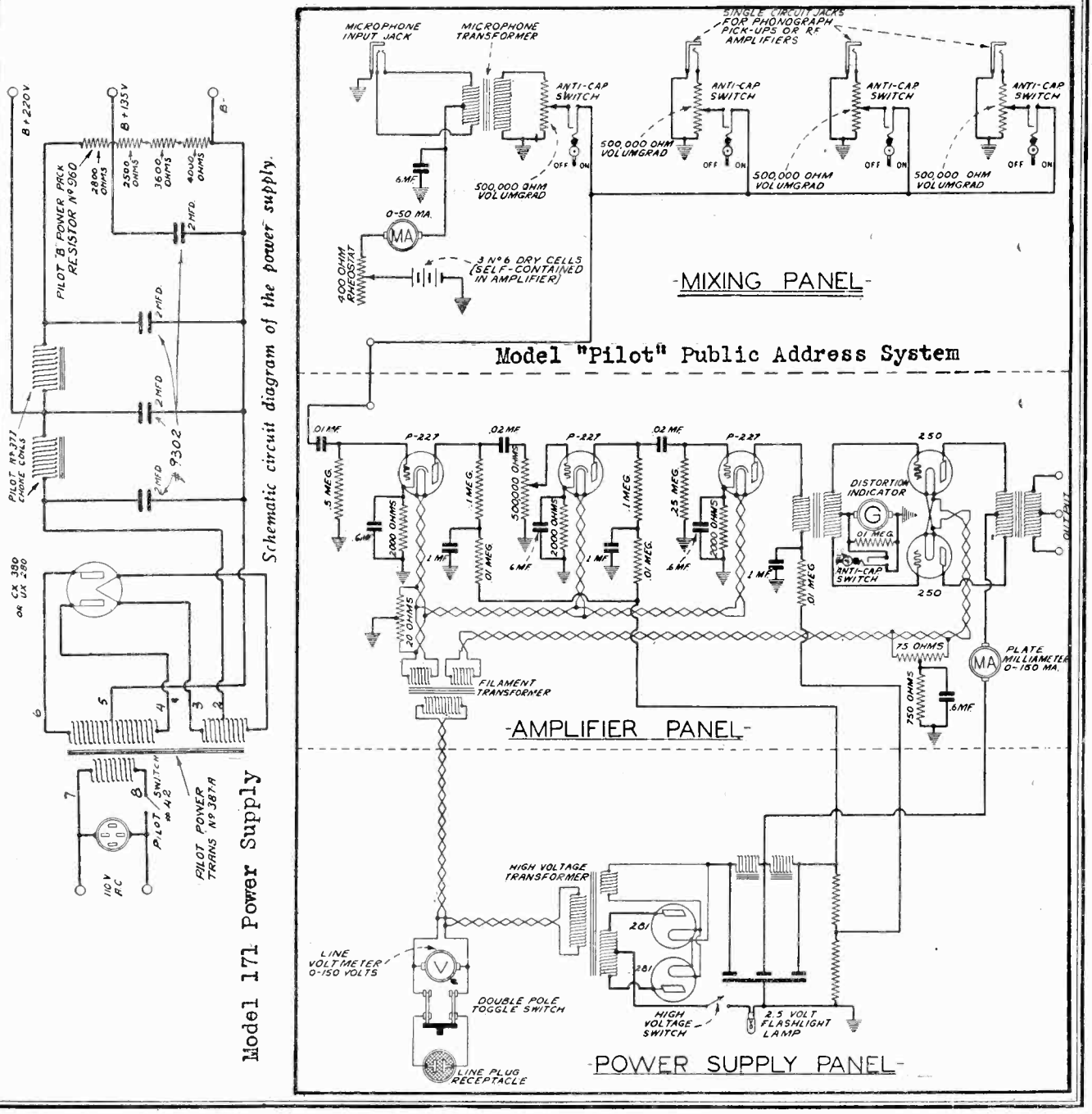
The chassis of the 296 and 296-A are the same as the chassis for the 96 and 96-A except for the additional wiring to the radio-phono switch and the electric turntable and pickup.

PILOT RADIO & TUBE CORP.

MODEL "171"
Power Amplifier
MODEL "Pilot"
Public Address
System



Model 171 Amplifier

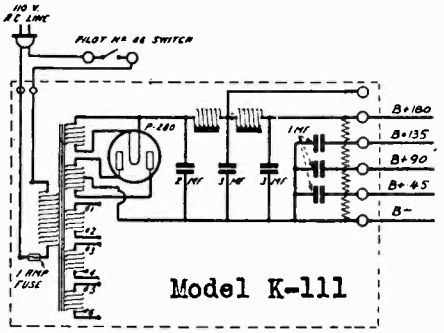


Schematic circuit diagram of the power supply.

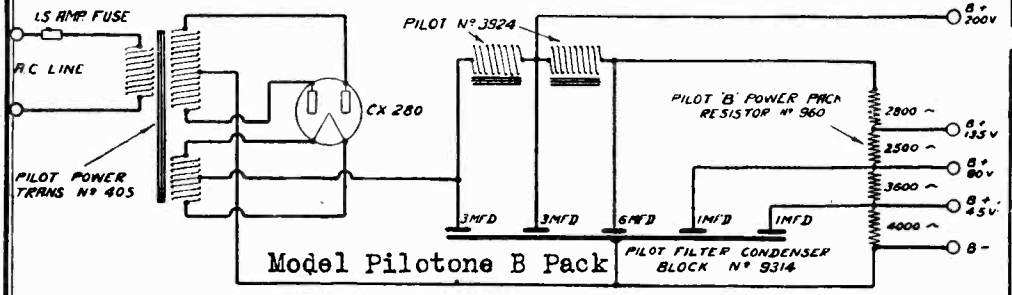
Model 171 Power Supply

MODEL K-111 ABC Pack
MODEL Pilotone B Pack
MODEL ABC Pack for SP5
MODEL Jumbo Power Pack
MODEL Jumbo ABC

PILOT RADIO & TUBE CORP.

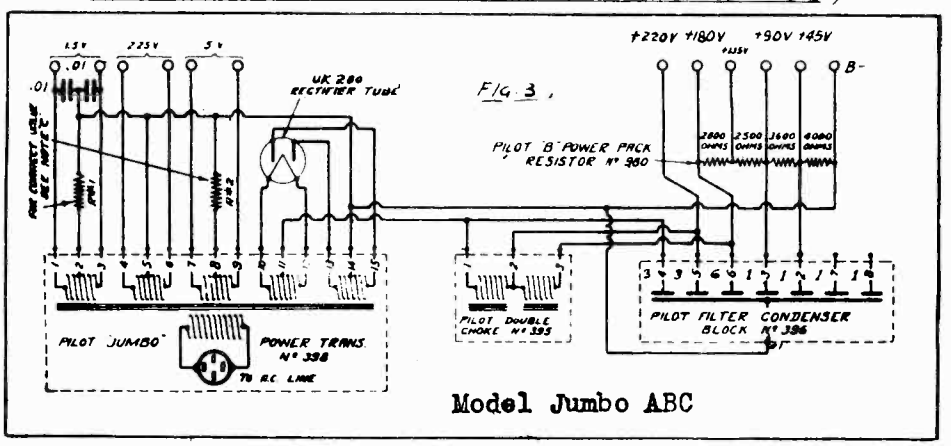


Model K-111



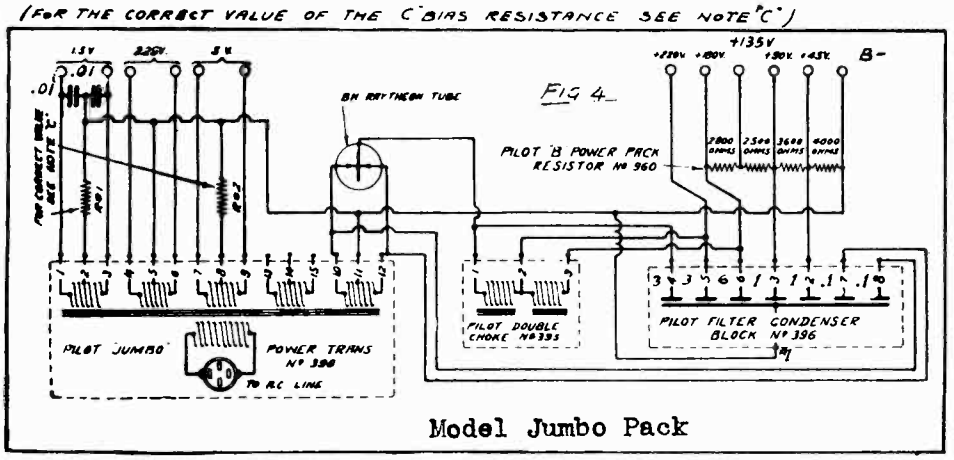
Model Pilotone B Pack

— SCHEMATIC DIAGRAM OF A PILOT "JUMBO" A B C ELIMINATOR USING THE UX 280 RECTIFIER TUBE FOR THE PLATE SUPPLY —
(FOR THE CORRECT VALUE OF THE 'C' BIAS RESISTANCE SEE NOTE C)

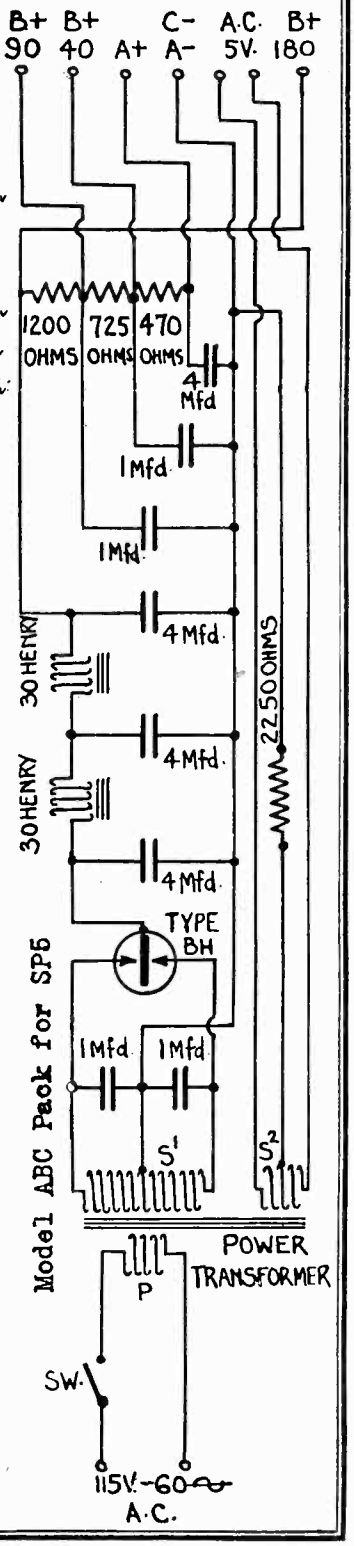


Model Jumbo ABC

— SCHEMATIC DIAGRAM OF A PILOT JUMBO A B C ELIMINATOR USING THE BH RAYTHEON GAS RECTIFIER TUBE FOR PLATE SUPPLY —
(FOR THE CORRECT VALUE OF THE 'C' BIAS RESISTANCE SEE NOTE 'C')



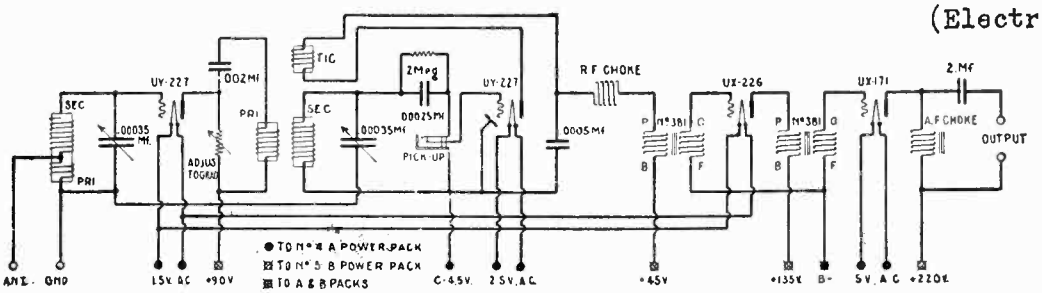
Model Jumbo Pack



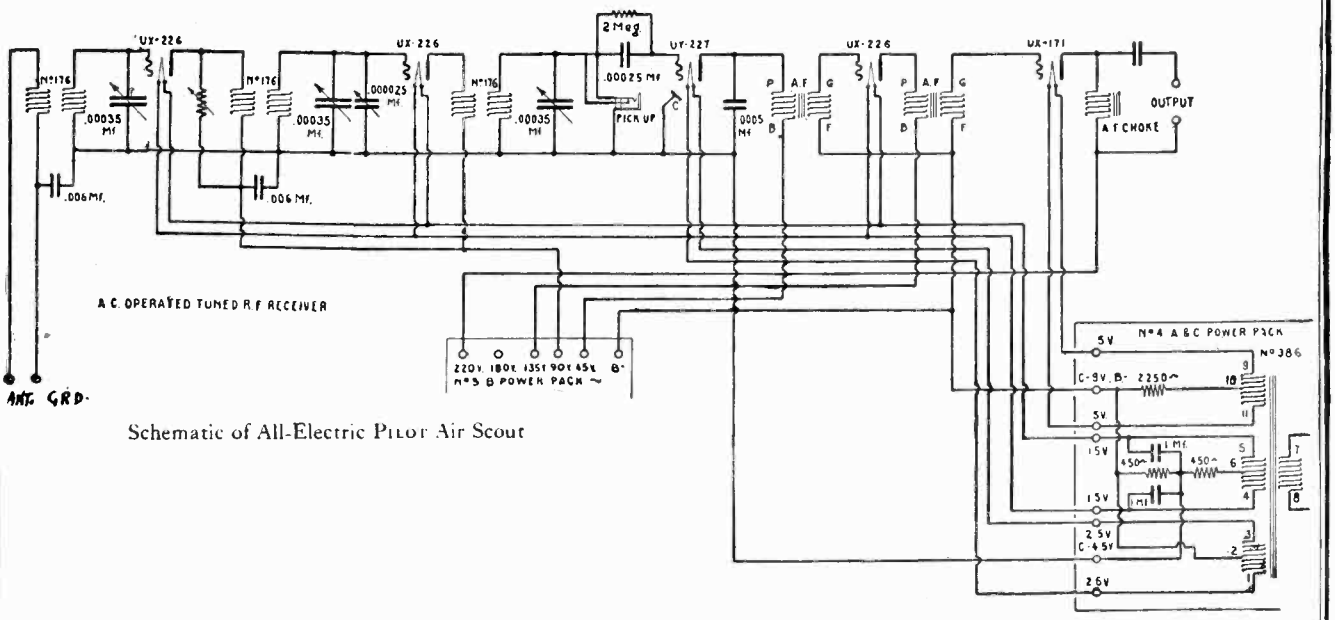
Model ABC Pack for SP5

PILOT RADIO & TUBE CORP.

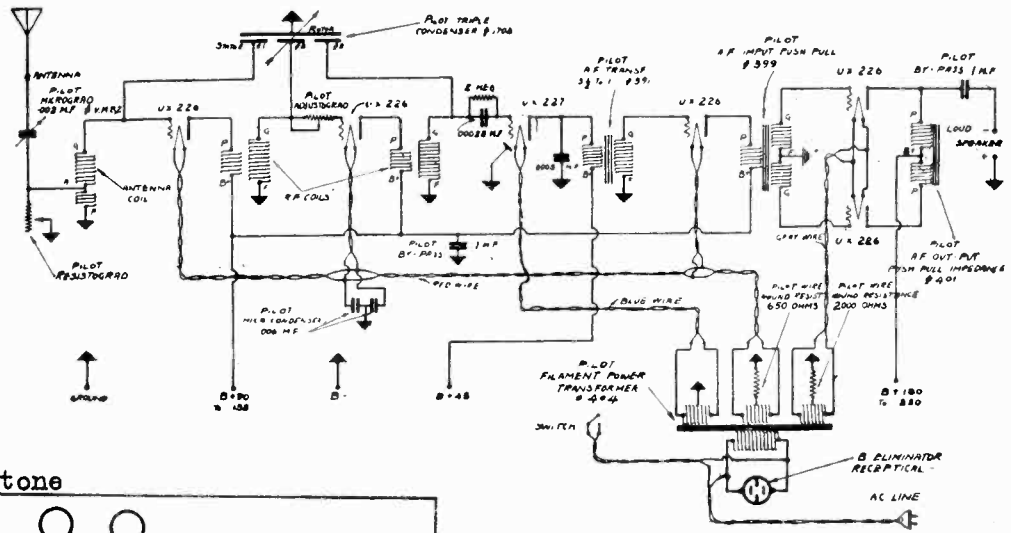
MODEL Air Hound
(All-Electric)
MODEL Air Scout
(All-Electric)
MODEL Pilotone
(Electric)



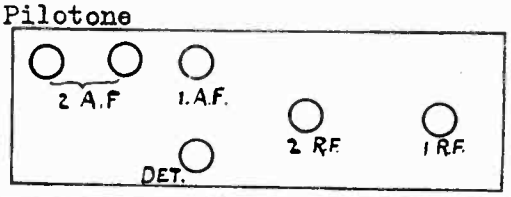
The Air Hound All-Electric Receiver, One Stage R.F., Detector, Two Stages A.F.



Schematic of All-Electric Pilot Air Scout



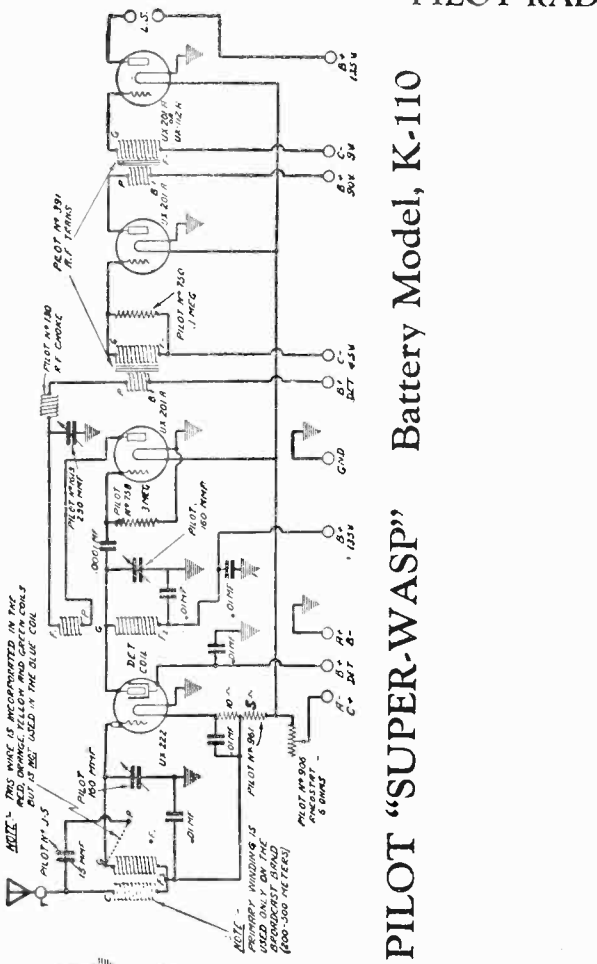
Pilotone Electric receiver



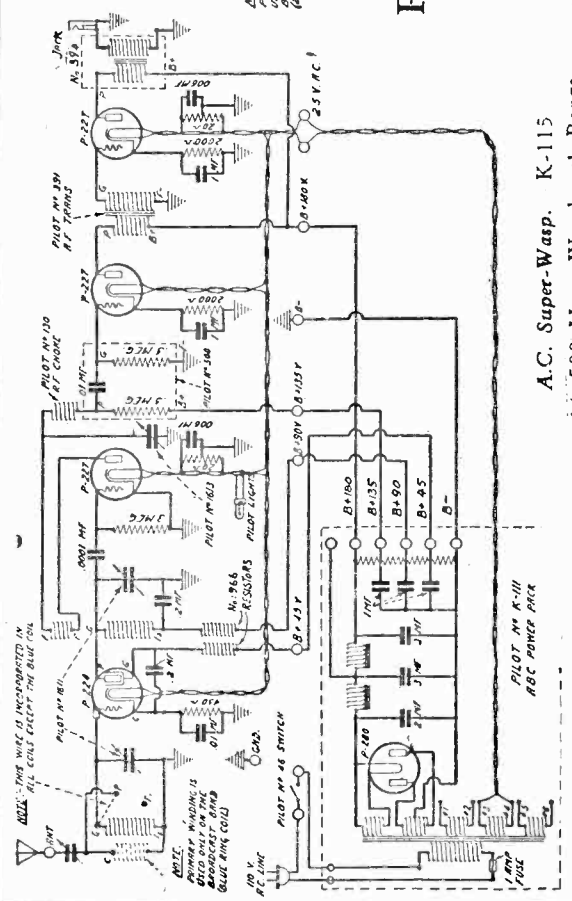
PILOT RADIO & TUBE CORP.

MODEL K-110
MODEL K-115
MODEL K-117

PILOT "SUPER-WASP" Battery Model, K-110

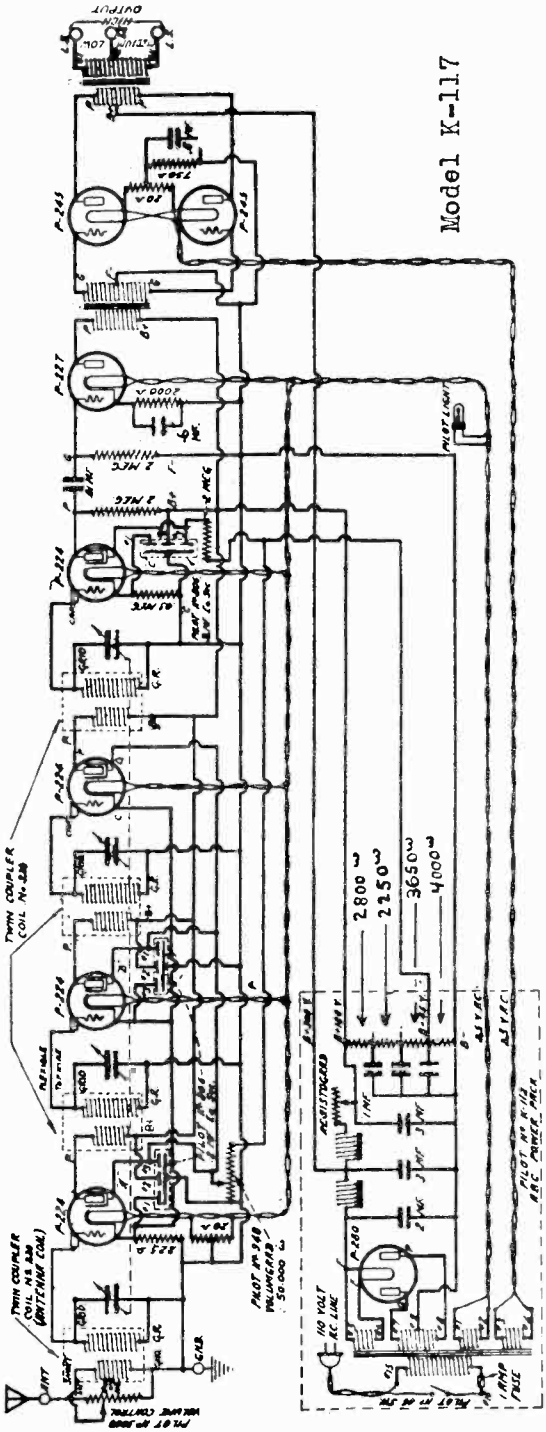


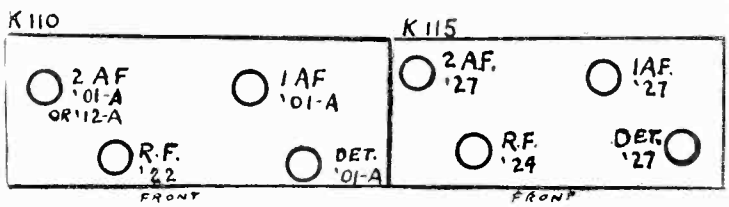
A.C. Super-Wasp. K-115
14-500 Meter Wavelength Range.



Model K-117

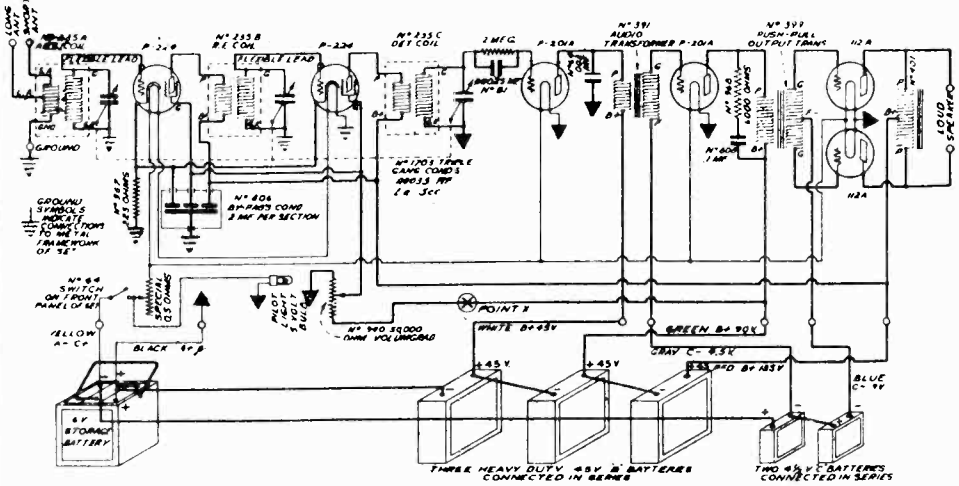
"Pilot Twin Screen-Grid 8"



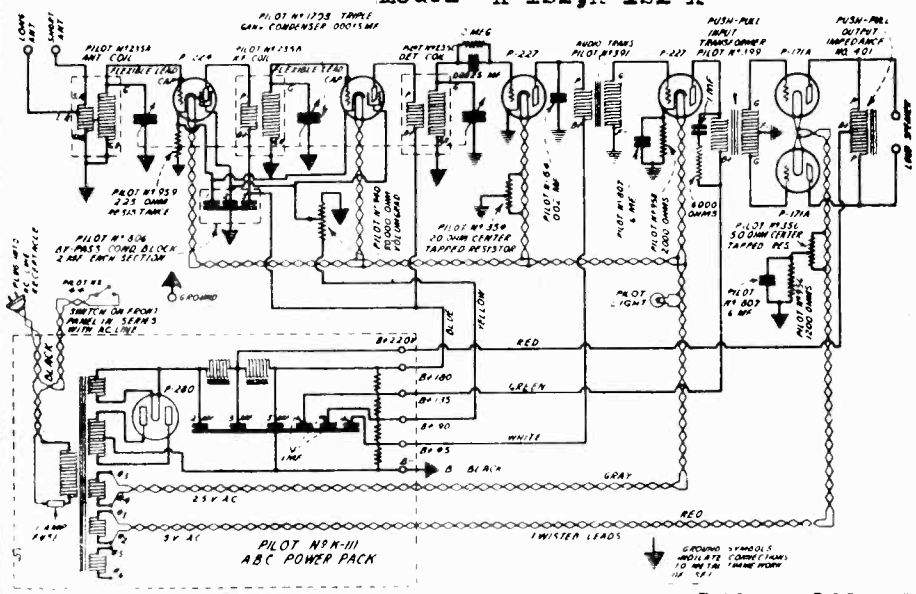


MODEL K-121,K-121X
MODEL PE-6 SG, K-122,
K-123,K-124
MODEL K-126,K-128

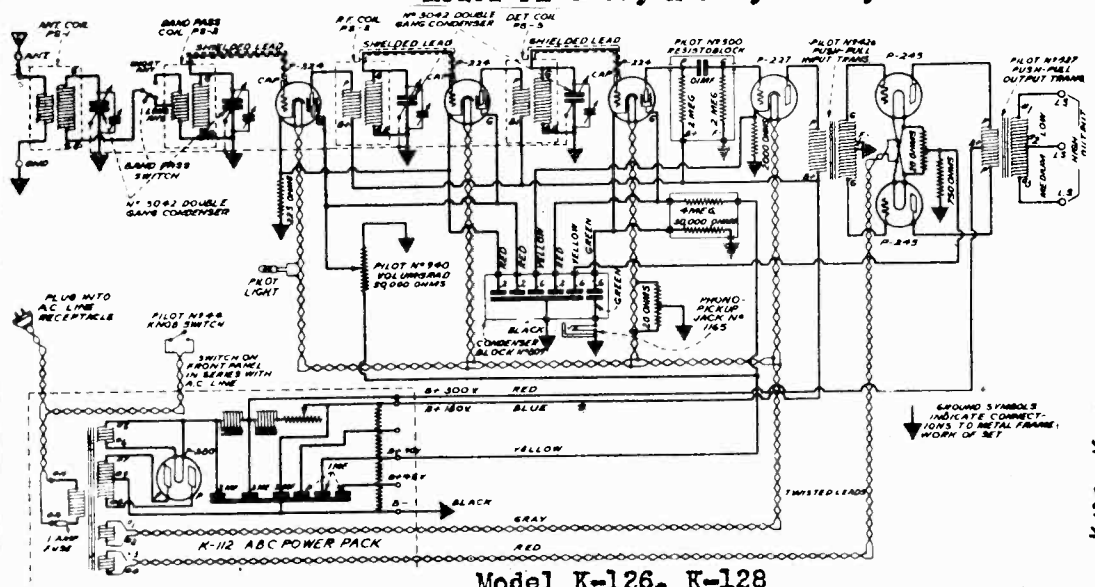
PILOT RADIO & TUBE CORP.



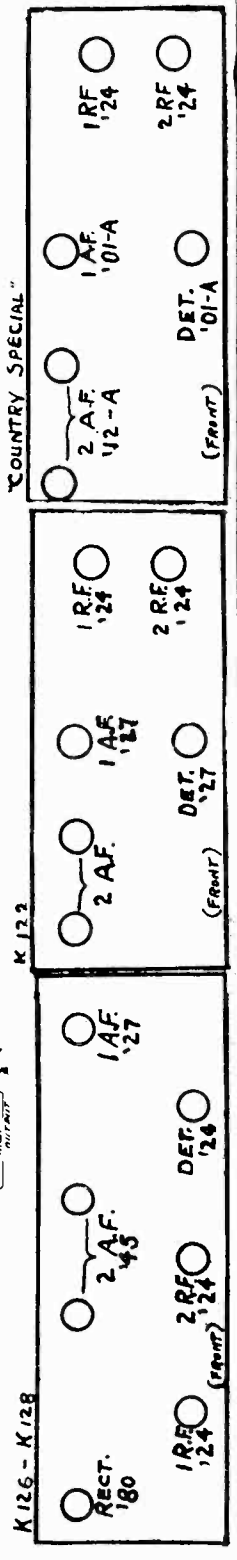
Model K-121,K-121 X



Model PE 6 SG, K-122, K-123, K-124

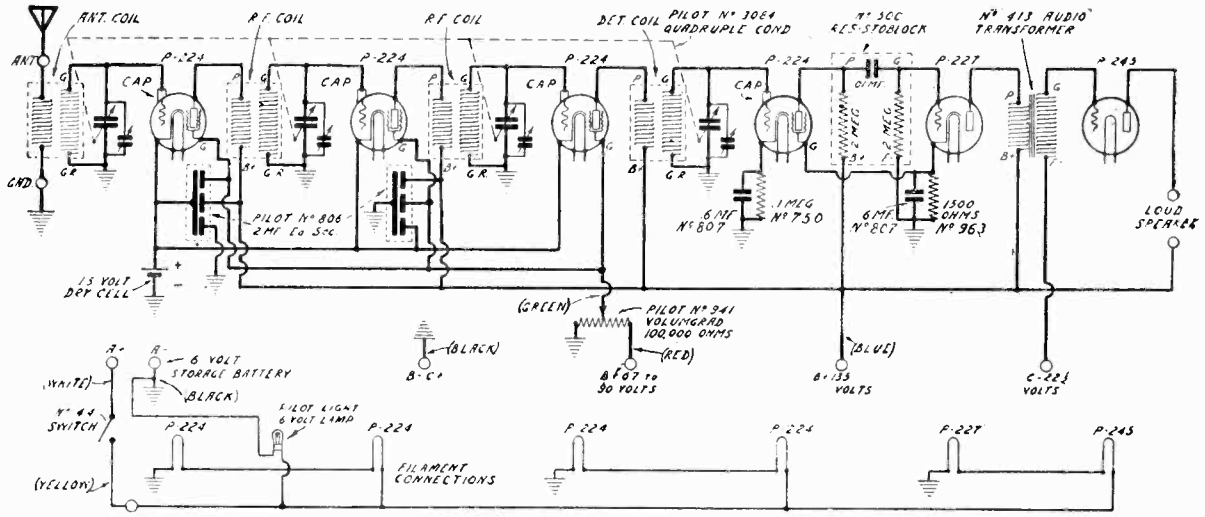


Model K-126, K-128

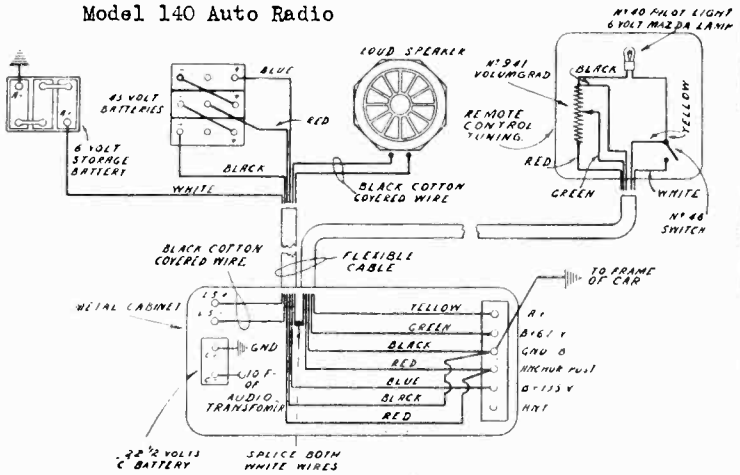


PILOT RADIO & TUBE CORP.

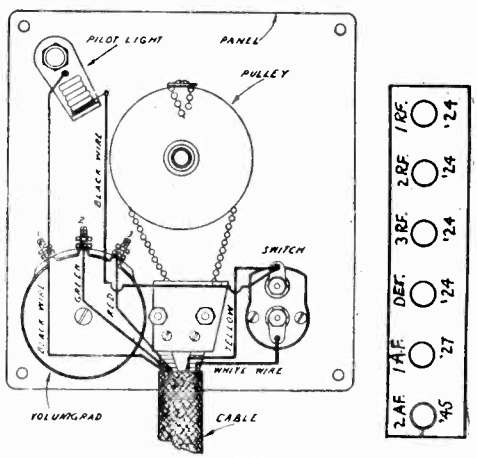
MODEL 140 Auto Radio
MODEL S.W.Converter



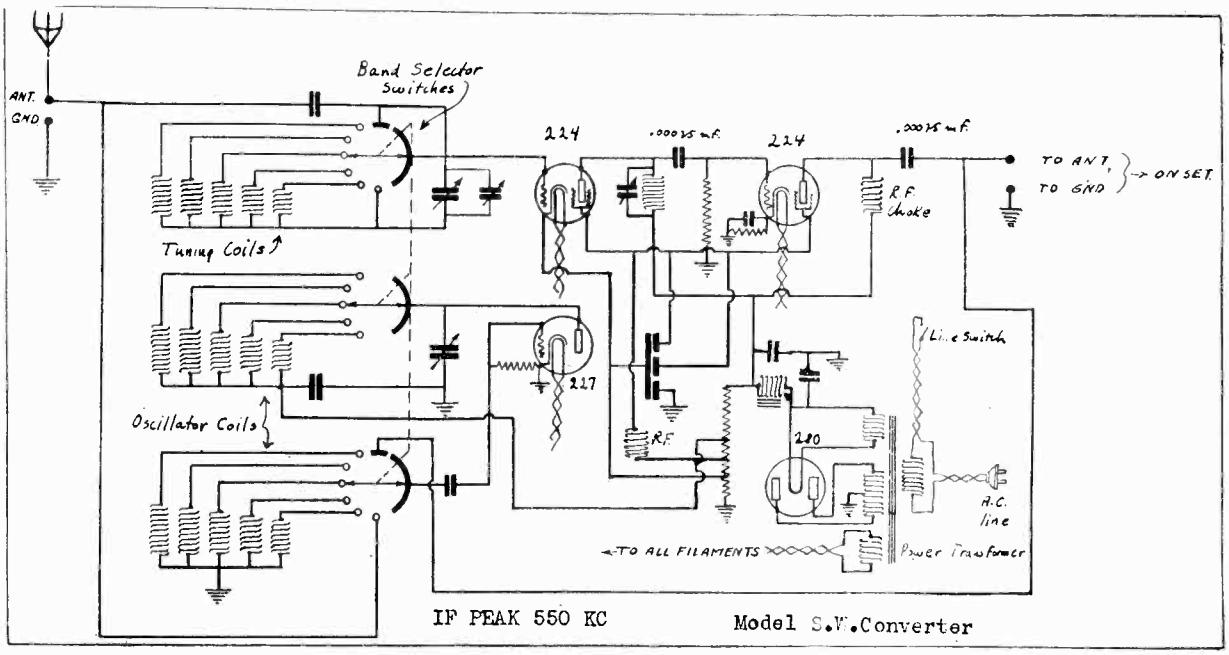
Model 140 Auto Radio



Complete diagram of connections of the "Auto Pilot," showing the receiver proper, the control panel, the loud speaker, and the "A" and "B" batteries.



The connections of the control devices in picture form.

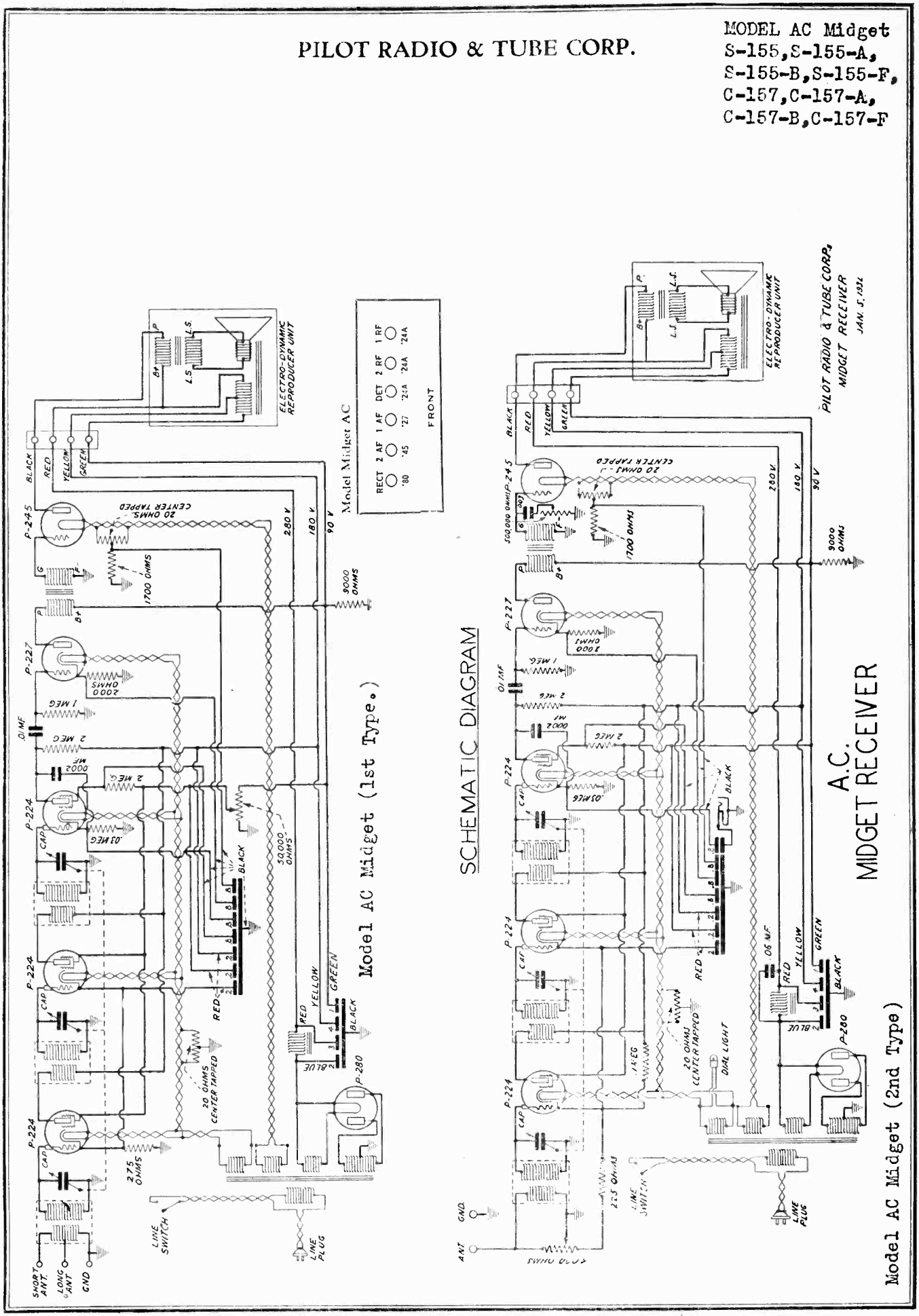


IF PEAK 550 KC

Model S.W.Converter

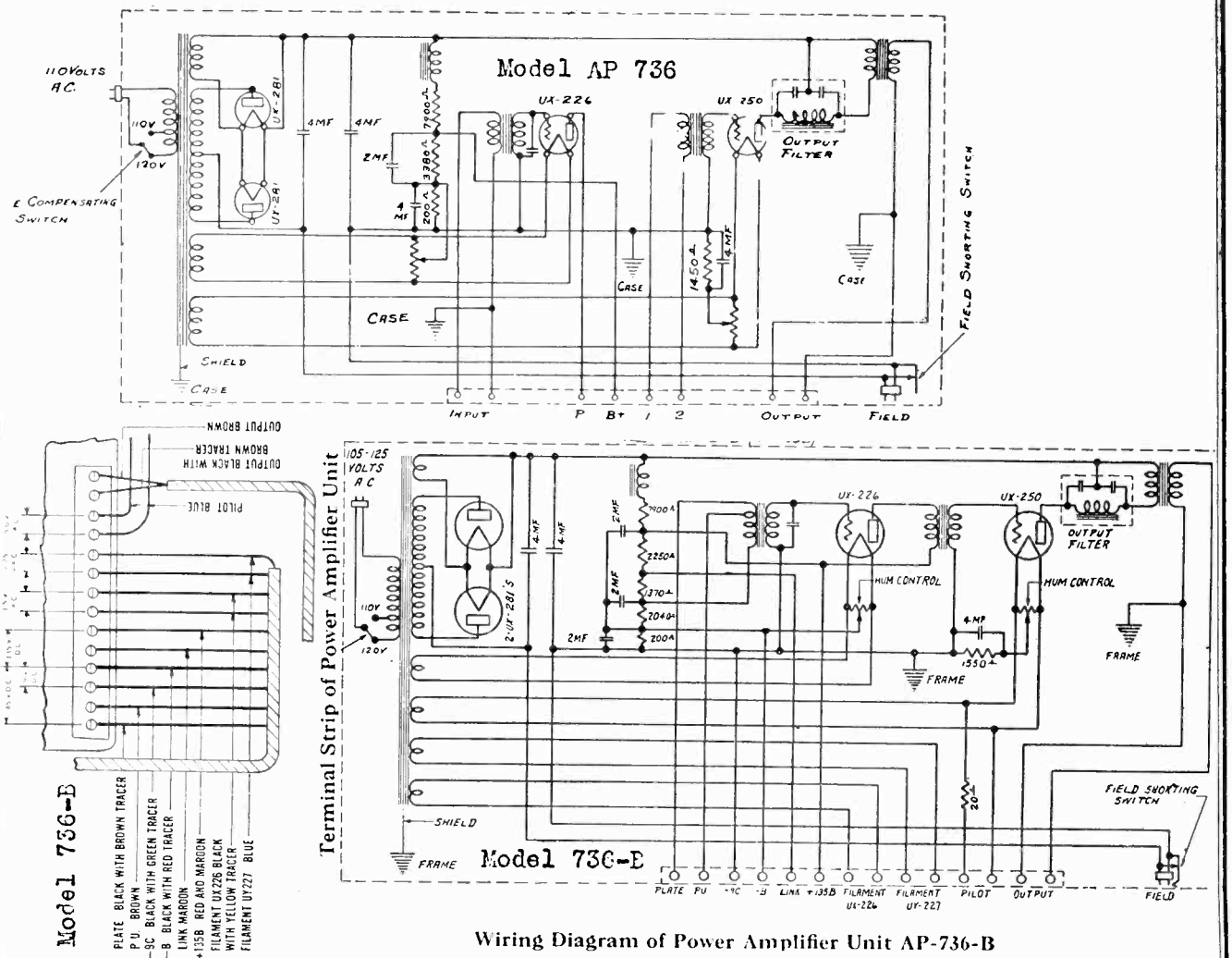
PILOT RADIO & TUBE CORP.

MODEL AC Midget
S-155, S-155-A,
S-155-B, S-155-F,
C-157, C-157-A,
C-157-B, C-157-F

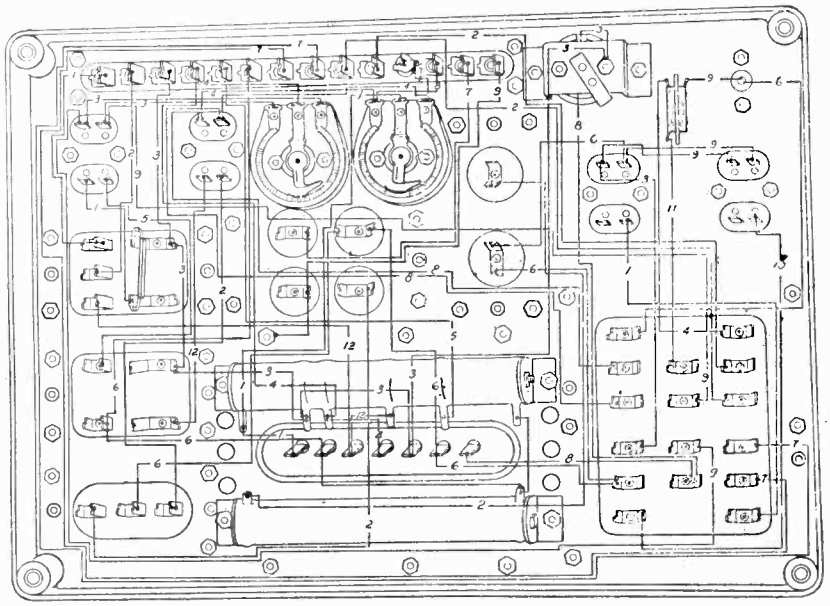


R. C. A. VICTOR CO., INC.

MODEL AP-736
MODEL AP-736-B



Wiring Diagram of Power Amplifier Unit AP-736-B



Color Code

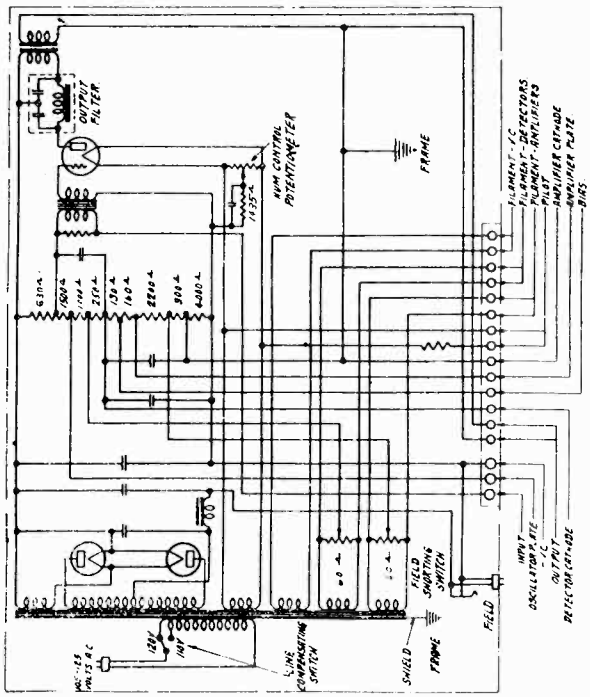
1. Brown
2. Blue
3. Yellow
4. Black with Red Tracer
5. Red and Maroon
6. Red
7. Black with Yellow Tracer
8. Green
9. Black
10. Light Brown
11. Red and Black
12. Maroon

Bottom of Power Amplifier Unit AP-736-B, showing wiring between terminals

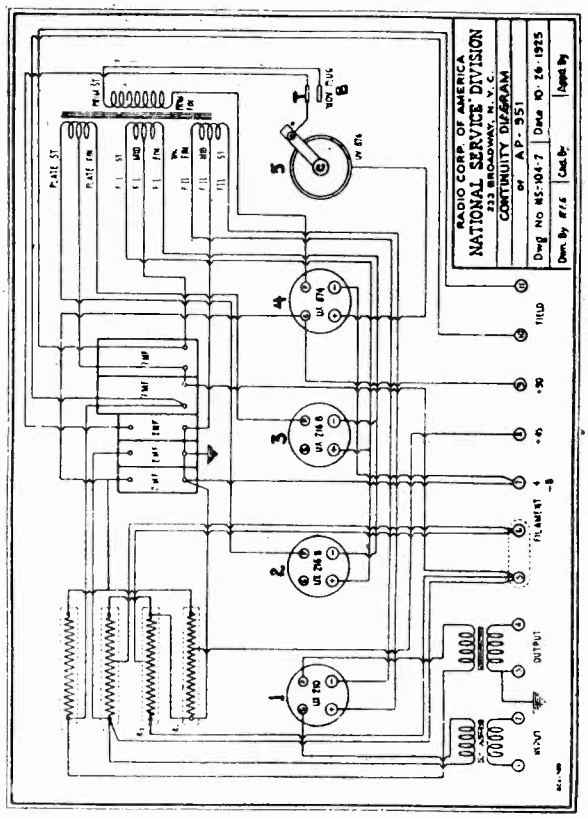
MODEL AP-777-C
MODEL AP-947
MODEL AP-951
MODEL AP-951-A, 974-A
AP-997-A

R. C. A. VICTOR CO., INC.

Model AP-777-C

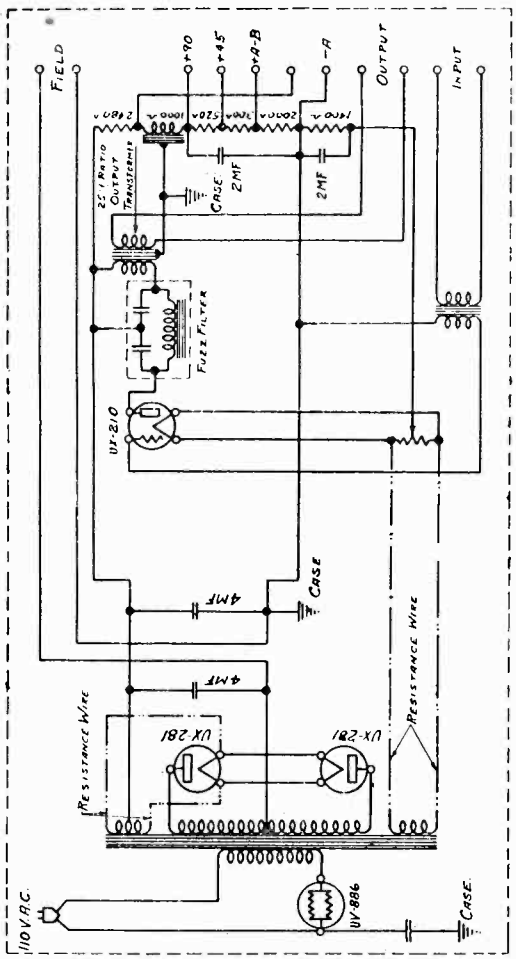


Model AP 951



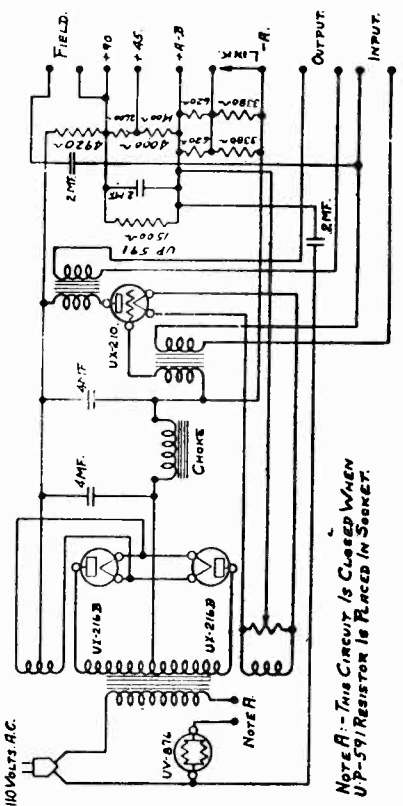
Wiring Diagram of Power Amplifier Units AP-974-A, 951-A and 997-A

Used on Victor 9-25, 9-55



Victor designation RPA 14
Used on 3-40, Borgia II, Hyperion

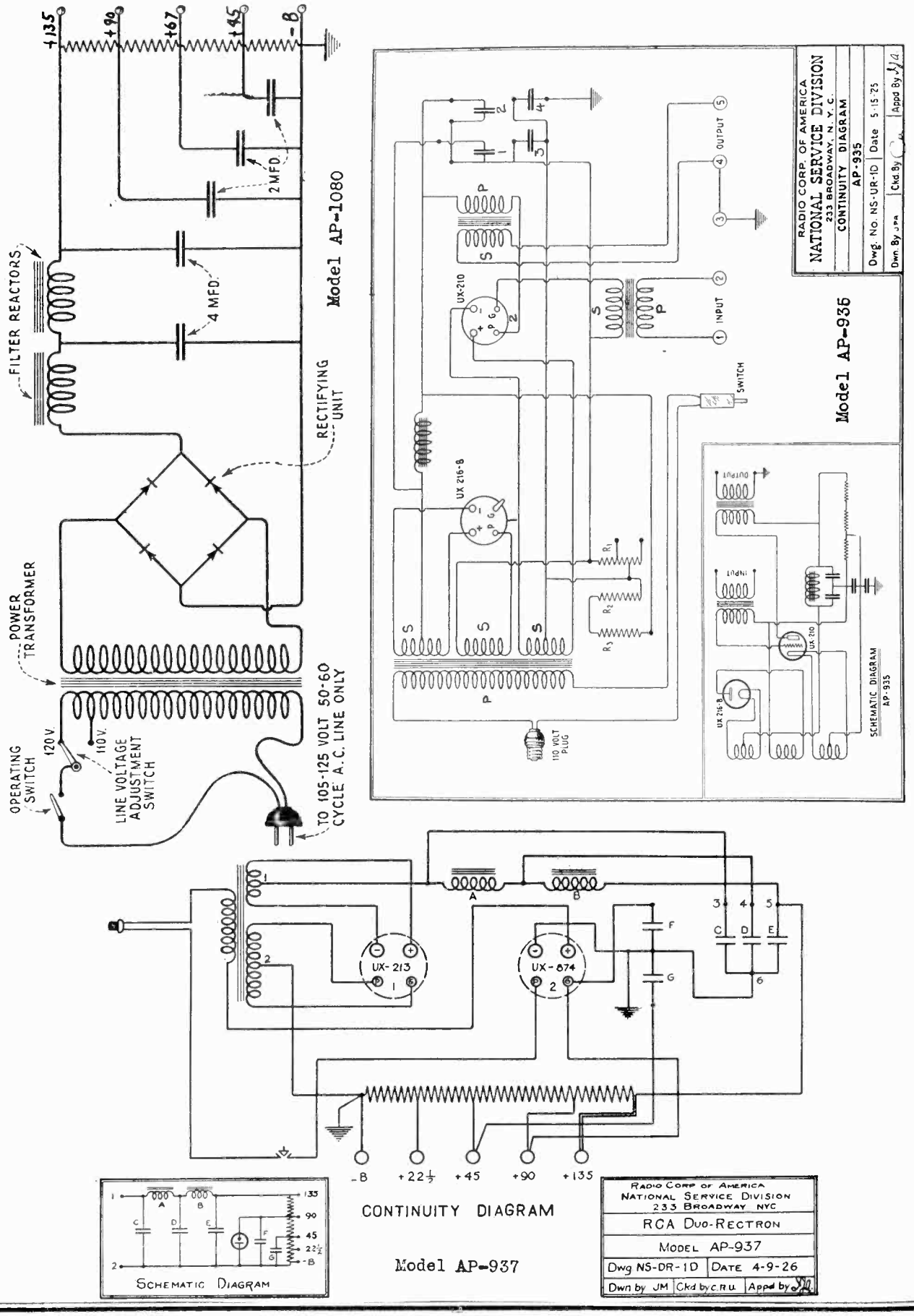
Model AP-947



NOTE A - THIS CIRCUIT IS CLOSED WHEN UP-591 RESISTOR IS PLACED IN SOCKET.

R. C. A. VICTOR CO., INC.

MODEL AP-937
MODEL AP-935
MODEL AP-1080

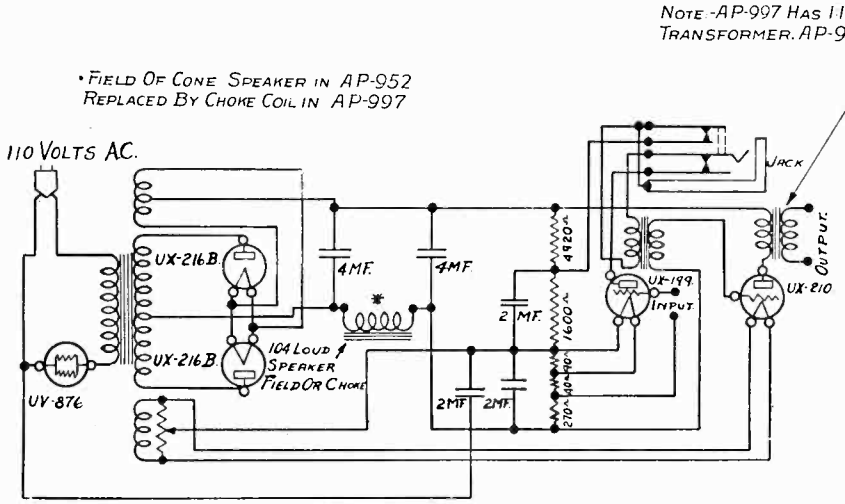


RADIO CORP. OF AMERICA
NATIONAL SERVICE DIVISION
233 BROADWAY, N. Y. C.
CONTINUITY DIAGRAM
AP-935
Dwg. No. NS-UR-1D | Date 5-15-25
Dwn By J.P.A. | Ckd By | Appd By

RADIO CORP OF AMERICA
NATIONAL SERVICE DIVISION
233 BROADWAY NYC
RCA DUO-RECTRON
MODEL AP-937
Dwg NS-DR-1D | DATE 4-9-26
Dwn by JM | Ckd by C.R.U. | Appd by

MODEL AP-995
MODEL AP-952
MODEL AP-997-C
MODEL 12-25 Tuscany
MODEL 8-60

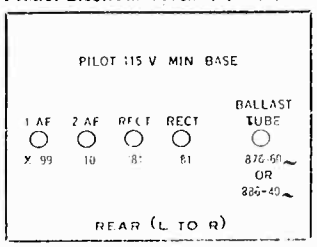
R. C. A. VICTOR CO., INC.



Wiring Diagram AP 952, and AP 997

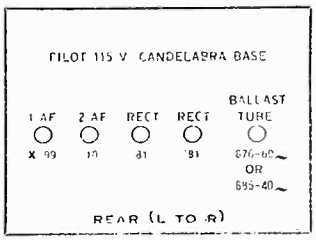
Victor designation RPA-5 Spec.
Used on 8-60.

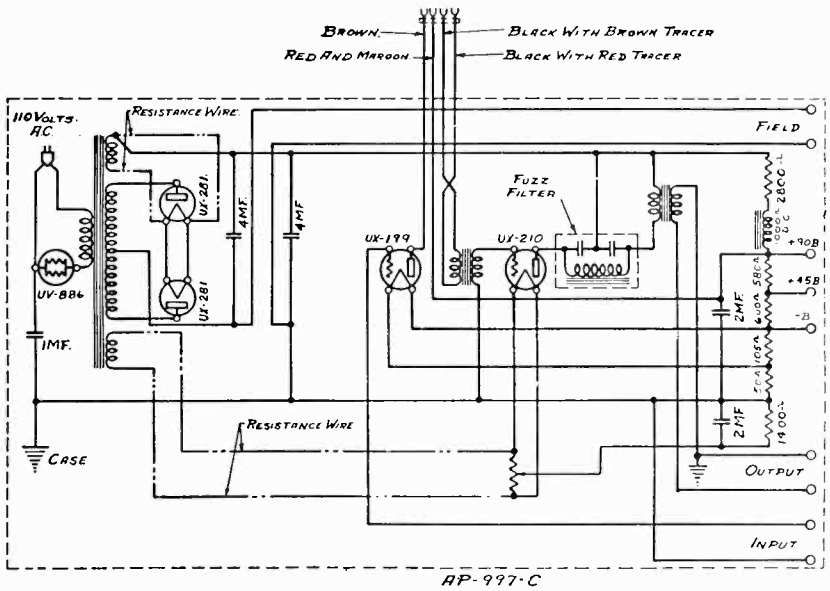
Model Electrola Tuscany (1926)



Victor designation RPA 5
Used on 12-25, Tuscany

Models Victors 8-60, 12-2, 12-25 (1926)





Wiring Diagram of Power-Amplifier Unit AP-997-C

Used on Victor 12-15.

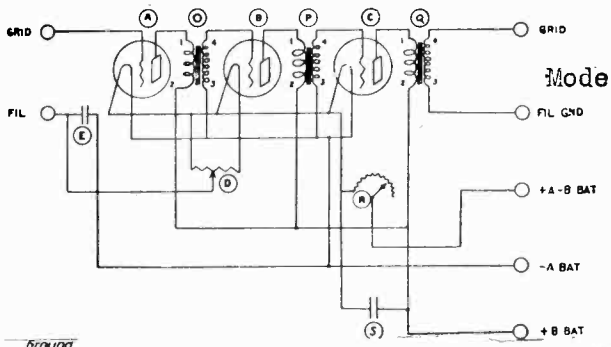
a. The AP-947-X differs from the AP-947 in that it has a 25 to 1 output transformer and no filter choke.
b. The AP-997-X differs from the AP-997 in this same manner.
c. The AP-952-Y differs from the AP-952 only in the substitution of a terminal strip for the input jack.
d. The AP-997-Y differs from the AP-997 in that it has a 25 to 1 output transformer, a fuzz filter, a terminal strip instead of a jack, and no filter choke.
e. The AP-947-A, AP-951-B, and AP-997-A differ from the AP-947 in that they require the UX-281 and UV-886 Radiotrons instead of the UX-216-B and UV-876; a 25 to 1 output transformer is used; the resistors are of different values; resistance wire is used in the UX-281 and UX-210 filament leads; and the filter choke instead of being connected in the filter circuit is used in the voltage drop circuit to stabilize the amplifier.
f. The AP-997-C differs from the AP-997 in the same respects as described in (e) above.

The list below for Victor power-amplifier units contained in new instruments since June 1, 1927 gives the RCA symbol number, the Victor part number, and the instrument on which each unit is used.

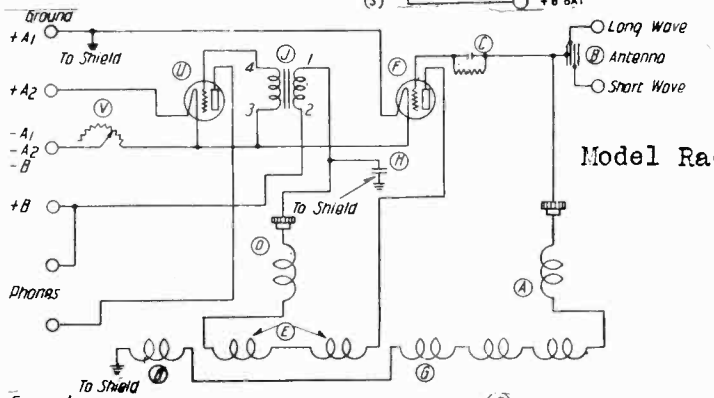
RCA SYMBOL	VICTOR PART NO.	USED ON
AP-947-X	20652	9-40*
AP-997-X	18575	10-51
AP-952-Y	18569	10-70
AP-997-Y		
AP-947-A	18891	9-25
AP-997-A	18574	9-55
-AP-951-B		
AP-997-C	20564	12-15

R. C. A. VICTOR CO., INC.

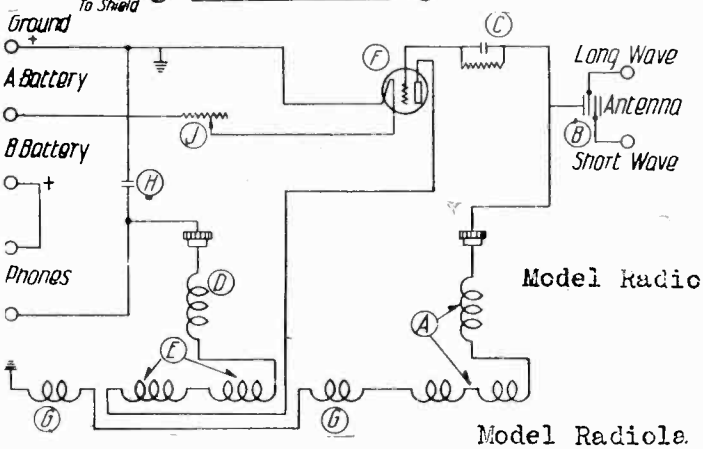
MODEL Radiola Grand
MODEL Radiola Senior
MODEL Radiola AR
MODEL Radiola RS



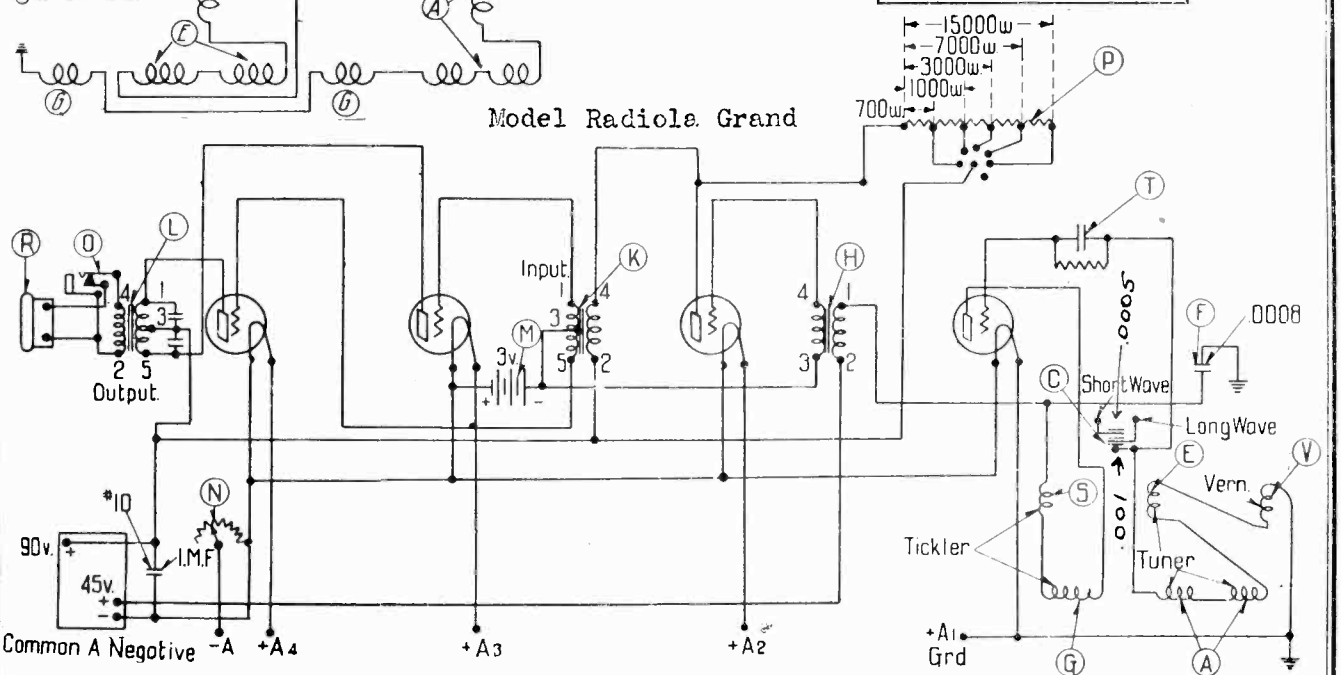
Model Radiola AR



Model Radiola RS

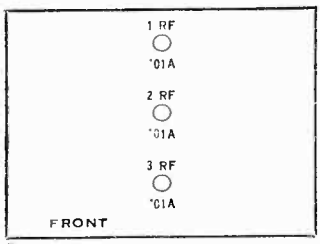


Model Radiola Senior

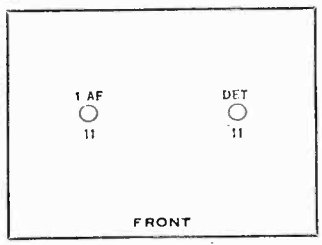


Model Radiola Grand

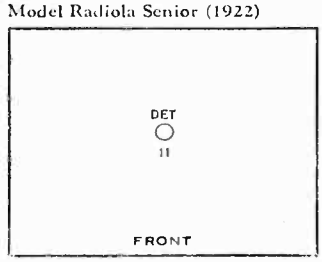
Model Radiola AR (1922)



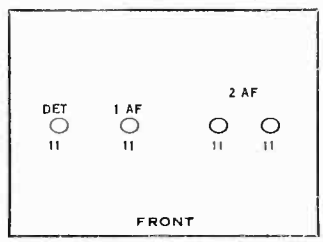
Model Radiola RS (1922)



Model Radiola Senior (1922)

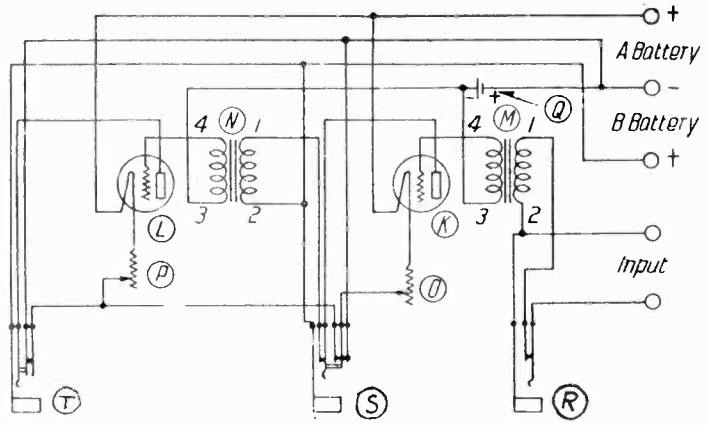


Model Radiola Grand (1922)

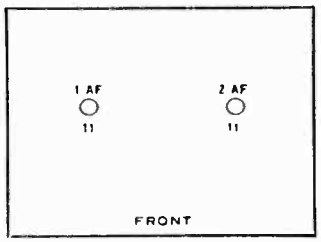


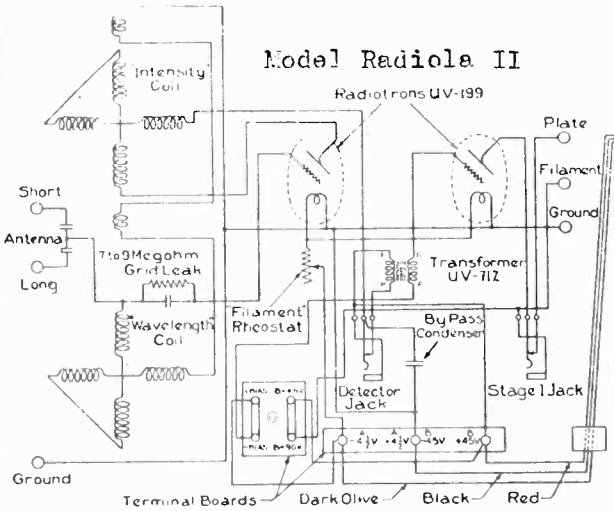
MODEL Radiola II
MODEL Radiola III
MODEL Radiola
Balanced Amp.
MODEL Radiola Sen. Amp.

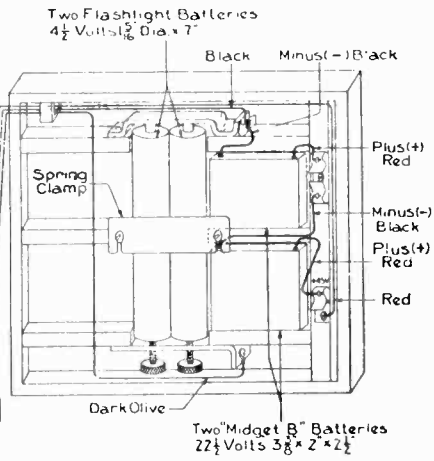
R. C. A. VICTOR CO., INC.

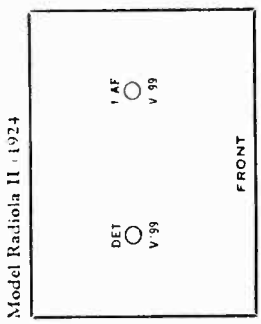


Model Senior Amp.

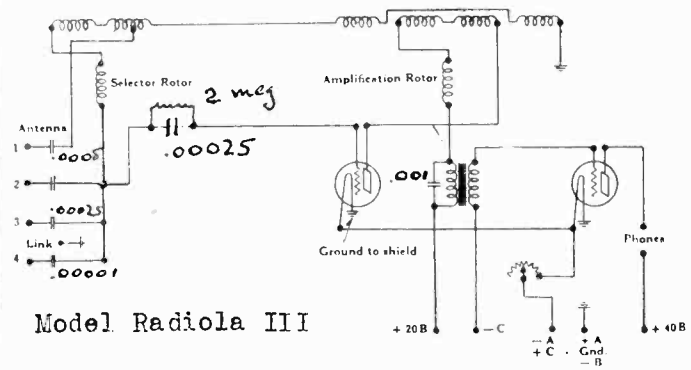


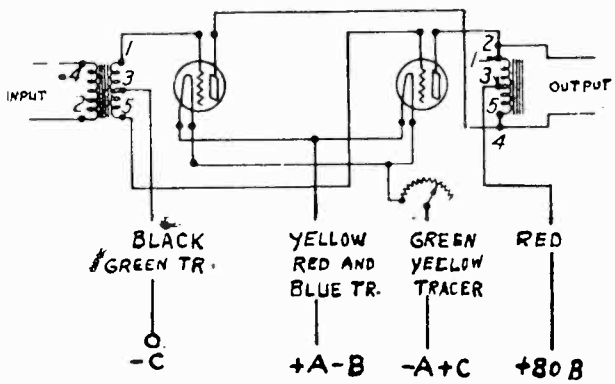


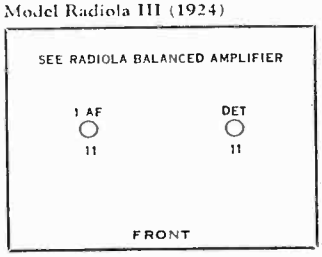


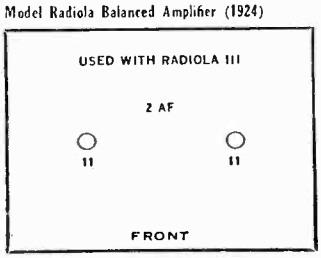


Model Balanced Amp.



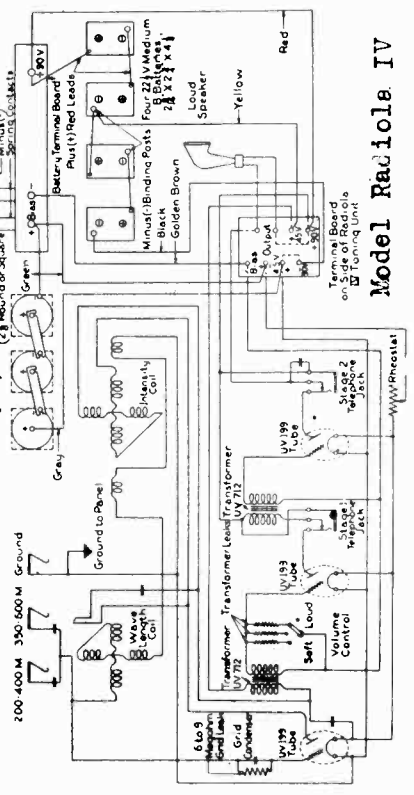


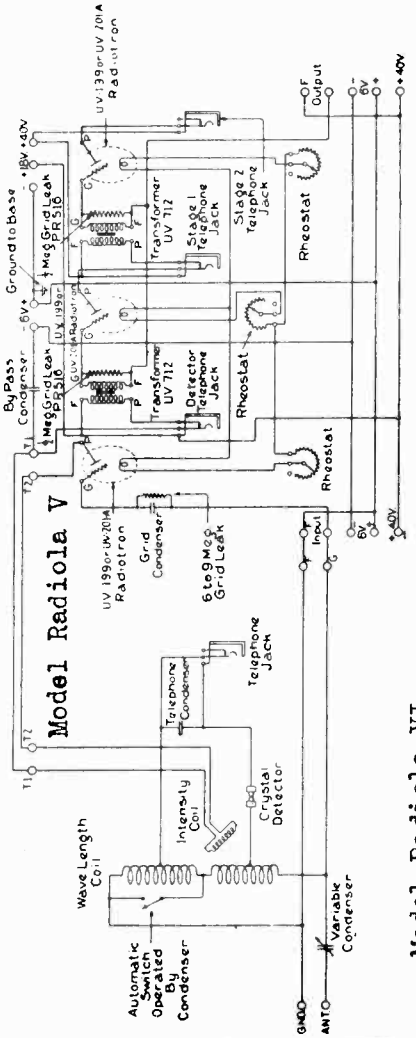


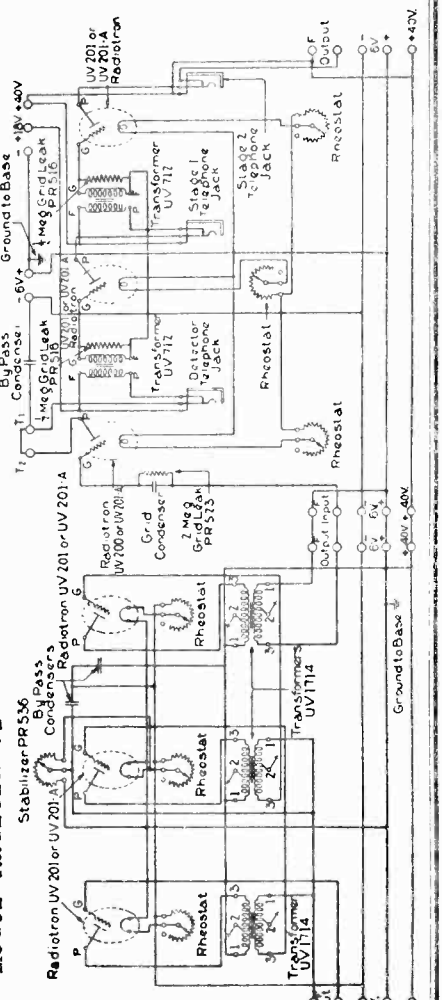


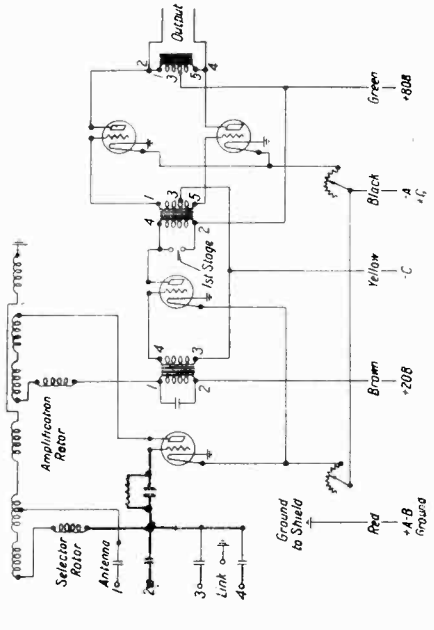
R. C. A. VICTOR CO., INC.

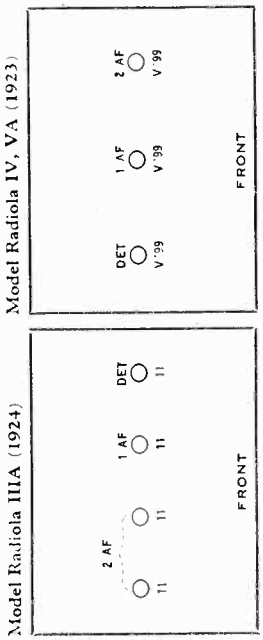
MODEL Radiola III-A
MODEL Radiola IV
MODEL Radiola V
MODEL Radiola VI

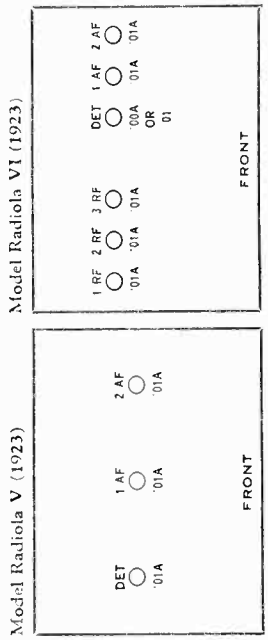






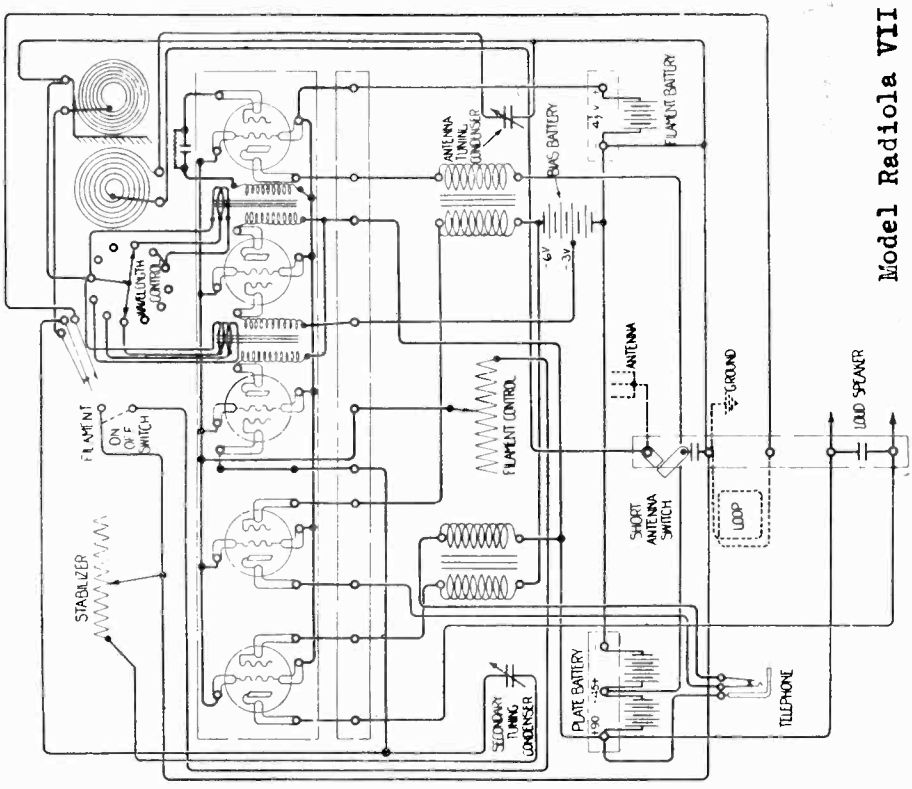






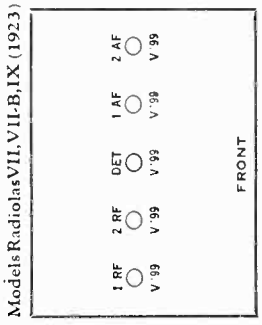
MODEL Radiola VII
MODEL Radiola VII-B
MODEL Radiola IX

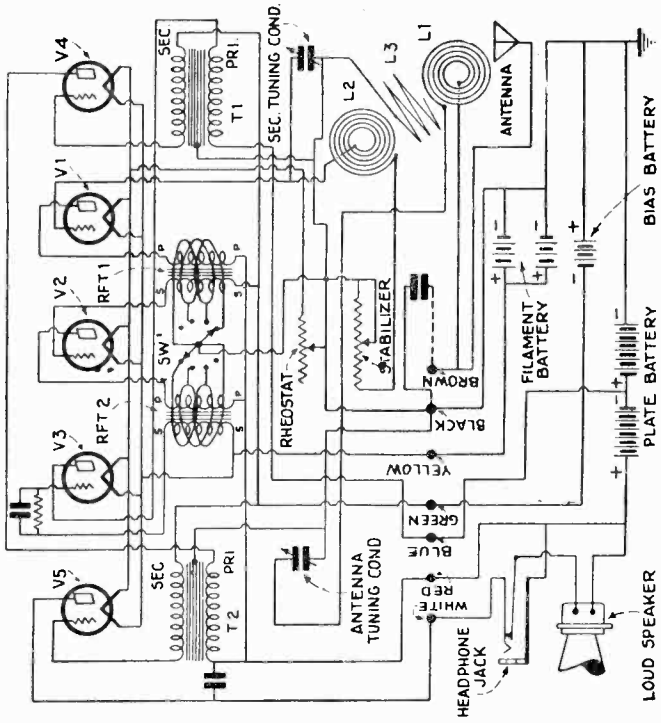
R. C. A. VICTOR CO., INC.



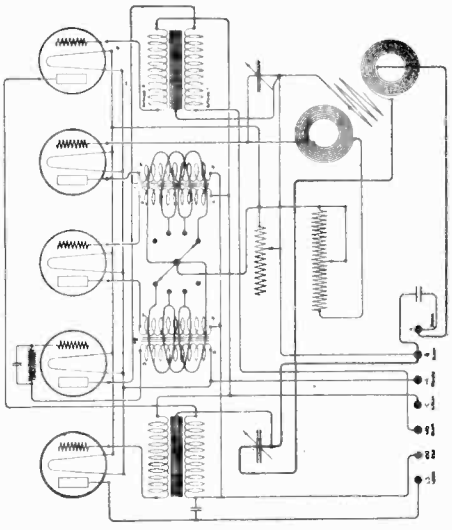
Model Radiola VII

Models Radiolas VII, VII-B, IX (1923)



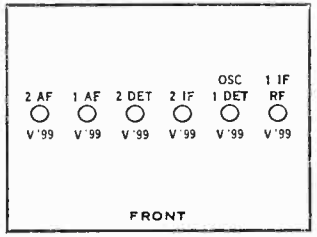


Model Radiola VII-B

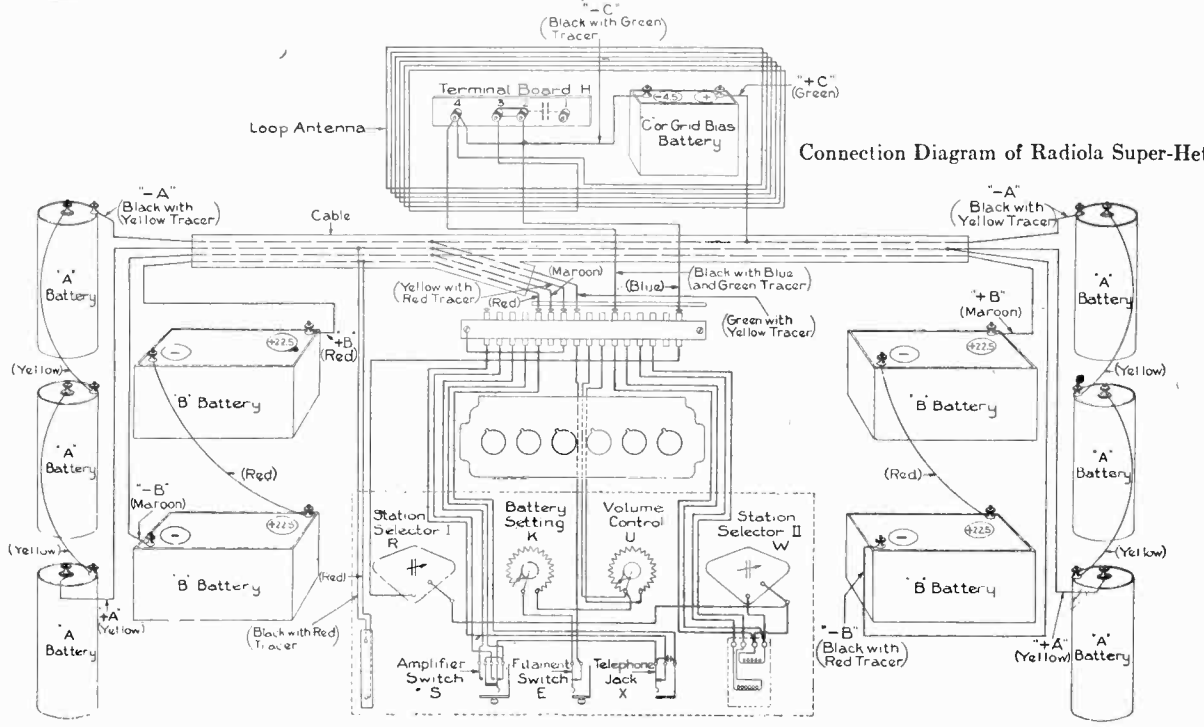


Model Radiola IX

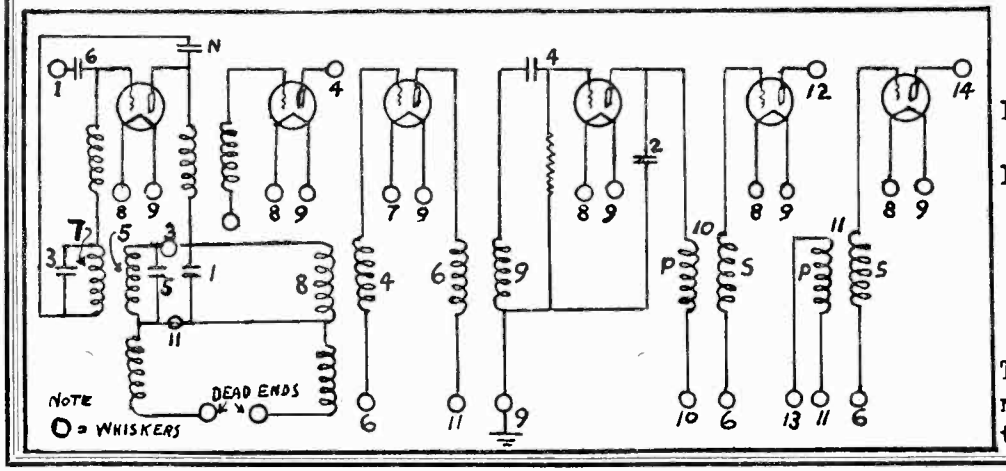
Model Radiola Super-VIII (1925)



Connection Diagram of Radiola Super-Heterodyne



Continuity Test Circuit Of Standard Six Tube Catacomb. Radiolas 24, Super-Heterodyne, Super-VIII.



Term No.	
From 6 to 9	Maximum 4.5 volts. Minimum 4 volts
9 to 10	Maximum 4.5 volts. Minimum 3 volts with all tubes lighted.
10 to 11	Maximum 45 volts. Minimum 34 volts.
11 to 12	Maximum 45 volts. Minimum 34 volts.
8 to 10	Maximum 3 volts when the volume control rheostat is at 100, and the battery setting rheostat is properly adjusted.

The numbers refer to terminals on the catacomb terminal board starting at the right when looking at the front of the panel.

MODEL R-5 AC
Parts List
Notes

R. C. A. VICTOR CO., INC.

RCA Victor Radiolette R-5

The RCA Victor Radiolette R-5 is a tuned circuit R.F. type radio receiver. Compact construction together with good sensitivity, selectivity and high output are features of this receiver.

The receiver uses four Radiotrons, two UY-224, one UX-280, and one RCA-247 Power Output Pentode. Referring to Figure 1 and tracing a signal through the various stages we find the following action taking place.

The antenna and ground are connected to each side of a 20,000 Ohm potentiometer. The moving contact of the potentiometer is connected to the primary of the first R.F. transformer through a .00013 MFD. condenser, the other side of the transformer being connected to ground. The action of the potentiometer, reducing the voltage applied to the grid of the first R.F. tube, constitutes that of a volume control. The secondary of the R.F. transformer is connected to the grid circuit of the R.F. Radiotron UY-224, which is tuned by one unit of the gang condenser. The plate circuit of this tube works into the primary coil of the 2nd R.F. transformer.

The detector is of the regenerative, grid bias type and its output is coupled by means of resistance coupling to the output Radiotron RCA-247. The regenerative feature of the detector is unusual in that it uses two regeneration coils. One of these resonates at a low frequency and improves the sensitivity at that end, while the other has but few turns and brings up the sensitivity at the high frequency end.

The output stage uses the RCA-247 Output Pentode which gives a high undistorted output—2.5 watts—together with a high gain in the stage

The grid bias for this tube is obtained by using a portion of the drop across the reproducer field. Due to the fact that the plate current of the RCA-247 represents the greatest portion of the total plate current, using the drop across the field acts as a semi-self biasing arrangement.

Plate and grid supply to all tubes is supplied through the use of Radiotron UX-280. The filter is of the "brute force" type. The reproducer unit field coil functions as the reactor. One electrolytic 10 MFD. capacitor and one paper 2 MFD. capacitor act as filter capacitors.

LINE-UP CAPACITOR ADJUSTMENTS

Two adjustable capacitors are provided for aligning the two tuned circuits at the high frequency end of the scale. The following procedure may be used for making any readjustments that may be necessary.

A. Procure an Oscillator giving a modulated signal at exactly 1400 K.C. Also procure a special socket wrench such as RCA Victor Stock No. 3007.

B. An output indicator is necessary. This may be a current squared thermogalvanometer connected to the secondary of the output transformer in place of the cone coil or other types of output indicators.

C. Turn the station selector until the knob reads exactly 0. Then remove the chassis from the cabinet being careful not to disturb the setting of the dial. The gang condenser rotor plates should be fully meshed with the stator plates. If not, then the dial drum must be adjusted until such a condition exists. Replace the chassis in the cabinet.

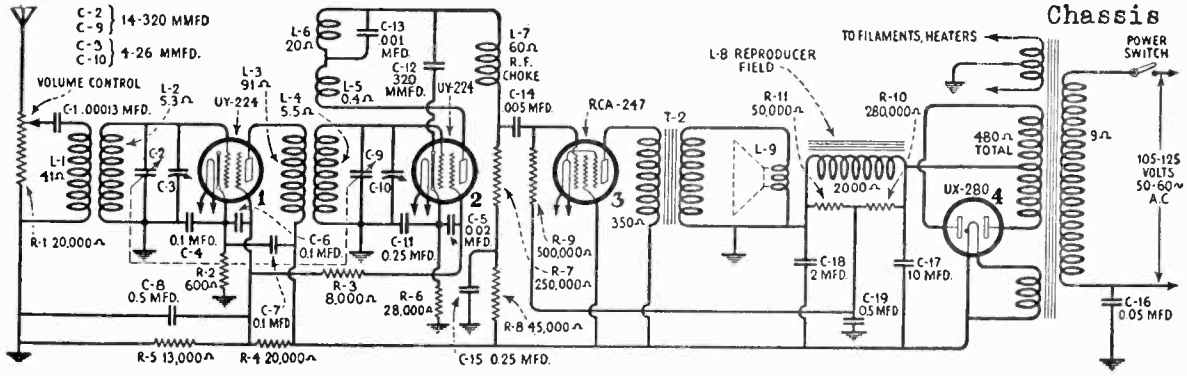
D. Place the oscillator in operation at exactly 1400 K.C. and couple its output to the antenna lead. Set the dial scale at 85 and place the Radiolette in operation. Place a soft pad on the bench and turn the instrument on its side. Now with the special wrench, adjust each line-up capacitor until maximum output is obtained in the output meter. Be careful to adjust the volume control or oscillator output so that an excessive reading is not obtained. Go over each adjustment a second time to compensate for any interlocking of adjustments.

REPLACEMENT PARTS

Part No.	DESCRIPTION	List Price
2549	Resistor—250,000 Ohms—Carbon type—Package of 5	$3.00
2747	Cap—Control grid contactor cap—Package of 5	.50
2954	Capacitor—By-pass capacitor pack containing three 0.1 Mfd. capacitors	.75
2955	Transformer—First R.F. transformer complete with mounting washer and nut	1.50
2956	Transformer—Second R.F. transformer complete with mounting washer and nut	2.00
2957	Capacitor—10 Mfd. electrolytic type—Complete with terminal, insulating washer, mounting nut and lock washer	3.00
2958	Switch—Operating switch complete with mounting washers and nut	.60
2959	Volume control—20,000 Ohm Volume control complete with mounting washers and nut	1.50
2960	Dial—Dial scale complete with set screws—Package of 2	.50
2961	Coil—Detector plate R.F. choke coil	.50
2962	Capacitor—0.005 Mfd. audio coupling capacitor	.75
2963	Resistor—8000 Ohms—Carbon type—Package of 5	2.50
2964	Resistor—13000 Ohms—Carbon type—Package of 5	2.50
2965	Resistor—600 Ohms—Carbon type—Package of 5	2.50
2966	Resistor—28,000 Ohms—Carbon type—Package of 5	2.50
2967	Resistor—45,000 Ohms—Carbon type—Package of 5	2.50
2969	Resistor—50,000 Ohms—Carbon type—Package of 5	2.50
2970	Resistor—500,000 Ohms—Carbon type—Package of 5	2.50
2971	Resistor—280,000 Ohms—Carbon type—Package of 5	2.50
2972	Shield—Radiotron shield complete with mounting screw, washer and nut	.50
2975	Rivet—Eyelet rivet for mounting cone—Package of 100	.50
2976	Knob—Volume control or operating switch knob—Package of 5	1.50
2977	Knob—Station selector knob—Package of 5	2.50
2978	Screw—assembly—Loudspeaker mounting screw assembly comprising four screws, four washers, four lock washers, eight nuts and four eyelets	.60
2981	Capacitor—320 Mmfd. detector plate R.F. by-pass capacitor	.50
3006	Capacitor—.001 Mfd.—Used across low frequency tickler coil	$0.50
3007	Wrench—Special wrench for R.F. line-up condenser adjustments	1.00
5817	Resistor—20,000 Ohms—Carbon type	.90
7054	Cord—Power cord complete with male connector plug	1.00
7229	Socket—Five prong Radiotron socket complete with insulating shield—3 used—Package of 2	.50
7230	Socket—Four prong Radiotron socket complete with insulating shield—1 used—Package of 2	.50
7231	Capacitor—Filter and by-pass capacitor pack—Comprising one 0.05 mfd., two 0.5 mfd., two 0.25 mfd. and one 2.0 mfd. condensers	2.50
7232	Capacitor—2 gang variable tuning capacitor	5.00
7234	Transformer—Output transformer—With fibre terminal board	1.50
7236	Cone—Reproducer cone complete with voice coil and paper ring	1.50
8669	Transformer—Power transformer—105-125 volt, 50-60 cycle—Complete with mounting washers and nuts	6.00
8670	Transformer—Power transformer—105-125 volt, 25-40 cycle—Complete with mounting washers and nuts	9.00
8671	Transformer—Power transformer—220 volts, 50-60 cycles—Complete with mounting washers and nuts	8.00
10434	Resistor—Mid-tapped filament resistor—Used on early models only	.50
	SPECIAL PARTS SUPPLIED ON ORDER ONLY (Not to be stocked)	
2979	Board—Baffle board complete with grille cloth	.75
2980	Escutcheon—Station selector escutcheon complete with mounting screws	.75
7233	Board—Resistor mounting board—Less all resistors, capacitors and coils	1.00
7235	Coil—Field coil complete with bracket and cone ring	2.00
9321	Cabinet—Cabinet complete—Less all equipment	7.25
9339	Chassis—Receiver chassis complete—Less reproducer unit, knobs and Radiotrons	27.50
9340	Reproducer unit—Reproducer unit complete	4.75

R. C. A. VICTOR CO., INC.

MODEL R-5 AC
Schematic
Voltage
Chassis



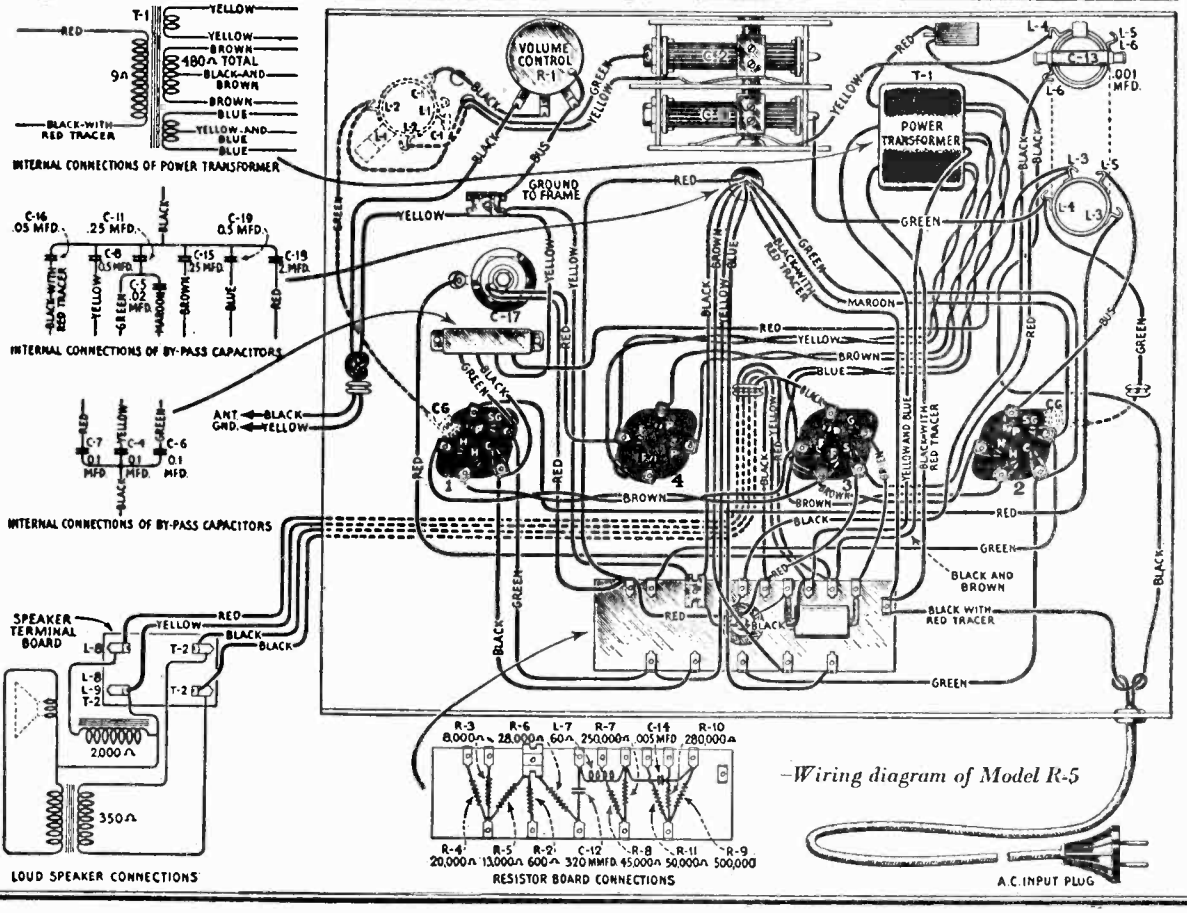
–Schematic Circuit Diagram of Model R-5

SOCKET VOLTAGE READINGS

110-VOLT LINE

These are readings obtained with the usual Set Analyzers and are not true readings of the voltages at which the Radiotrons operate.

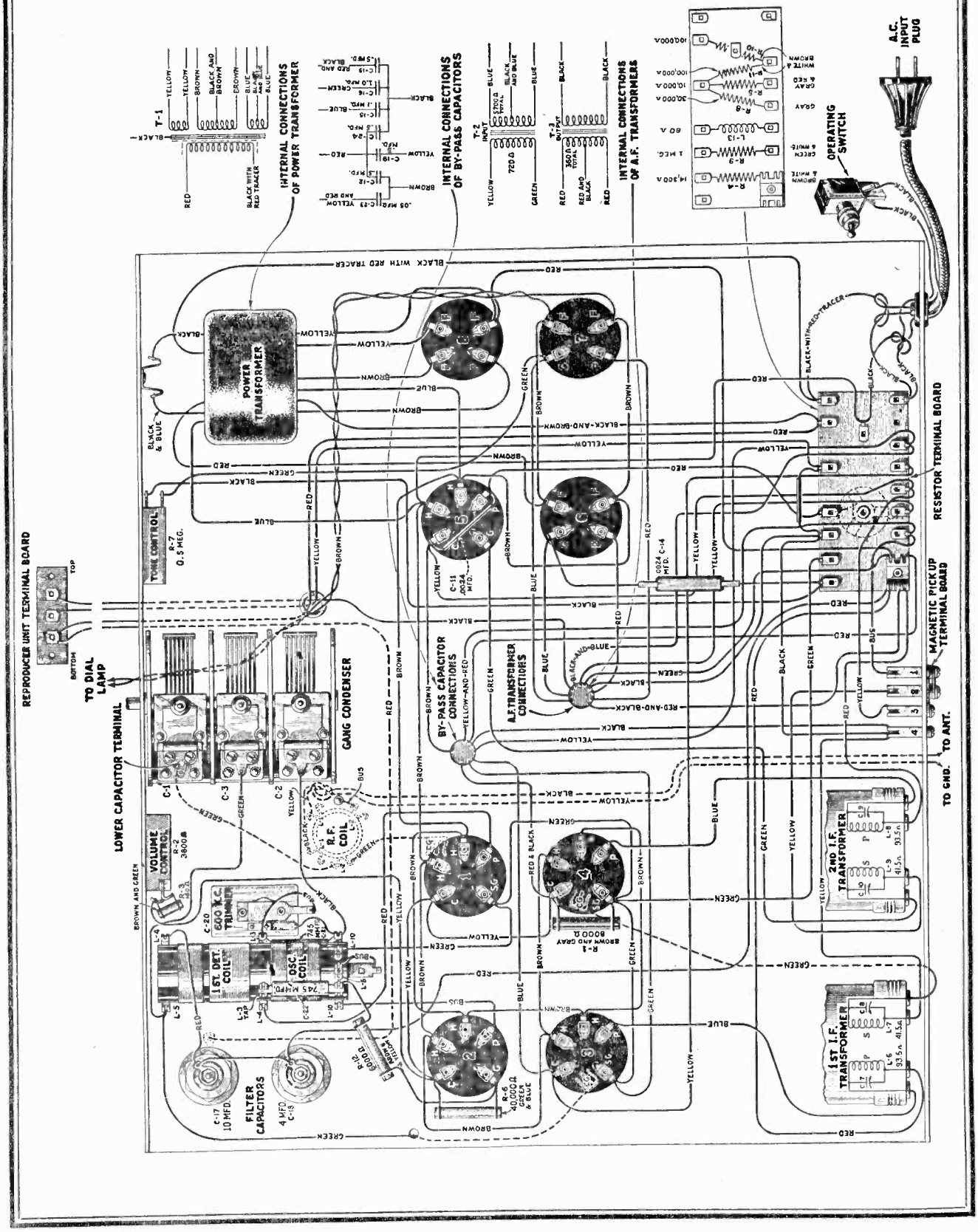
Radiotron No.	Heater to Cathode Volts	Cathode or Filament to Control Grid Volts	Cathode or Filament to Screen Grid Volts	Cathode or Filament to Plate Volts	Plate Current M. A.	Heater Volts
1	3.0	3.0	85	225	4.0	2.2
2	7.0	7.0	65	100	0.25	2.2
3	——	2.0	225	215	30.0	2.2



–Wiring diagram of Model R-5

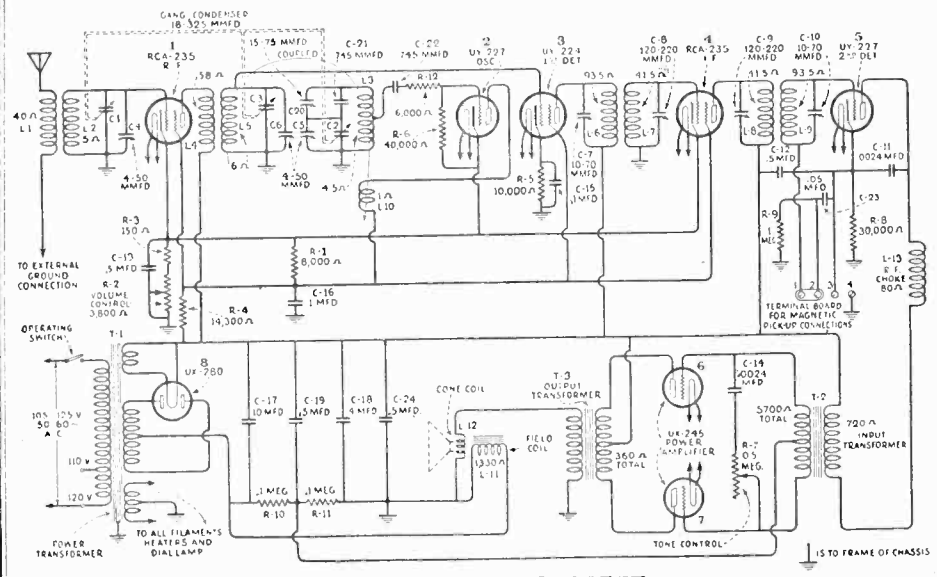
MODEL R-7,R-9 AC
Superette
Chassis

R. C. A. VICTOR CO., INC.

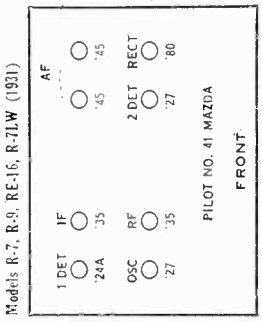


MODEL R-7,R-9 AC
Superette
Schematic

R. C. A. VICTOR CO., INC.



RADIOLA SUPERETTE



IF PEAK 175 KC

SERVICE NOTES ***

The can at the extreme center rear of the top of the chassis is AF transformer assembly. Directly in front of it is the RF bypass capacitor pack. The can at the left front facing the chassis is the 10 mfd electrolytic condenser. Directly to the rear of this can is the 4 mfd electrolytic condenser. To the right of this can, towards the center of the chassis is the RF transformer.

The 600 KC trimming condenser is accessible by means of a screw adjustment located on top of the chassis, to the right of the electrolytic condenser cans, between the cans and the RF transformer.

The 1400 KC line-up condensers are accessible through three holes in the bottom of the cabinet. With the cabinet tilted away from the operator and the rear of the chassis to the right of the operator, the extreme left hand hole is for the RF condensers, the middle hole for the detector condenser and the extreme right hand hole is for the oscillator condenser.

The IF transformer tuning condensers are accessible from the rear of the chassis. The two holes near the magnetic pickup terminal board are for the 2nd IF transformer. With the cabinet on its side, the upper hole is for the Primary circuit and the lower hole is for the Secondary circuit. The lower pair of holes, near the edge of the chassis are for the 1st IF transformer. The upper hole is for the Secondary circuit adjustment and the lower hole is for the Primary circuit adjustment.

The tone control can is opened by pressing with a pin or sharp instrument through the hole in the side of the can.

For 110 volt operation interchange the black and red lead with the folded over and tapped end, with the black with red-tracer lead connected to one of the terminals. When the change has been made tape up the black-red lead.

Volume Control Maximum

Tube	Cathode-Heater	Cathode-Grid	Cathode-Screen	Cathode-Plate	Plate Current	Fil.
RF	2.5	2.5	65	225	4.C ma	2.4
Osc.	2.5	0.		55	5.0	2.4
1Det	5.C	5.0	60	215	0.5	2.4
IF	2.5	2.5	65	225	4.0	2.4
2Det	60.	*10.		200	0.5	2.4
AF		*20.		215	20.	2.4
AF		*20.		215	20.	2.4

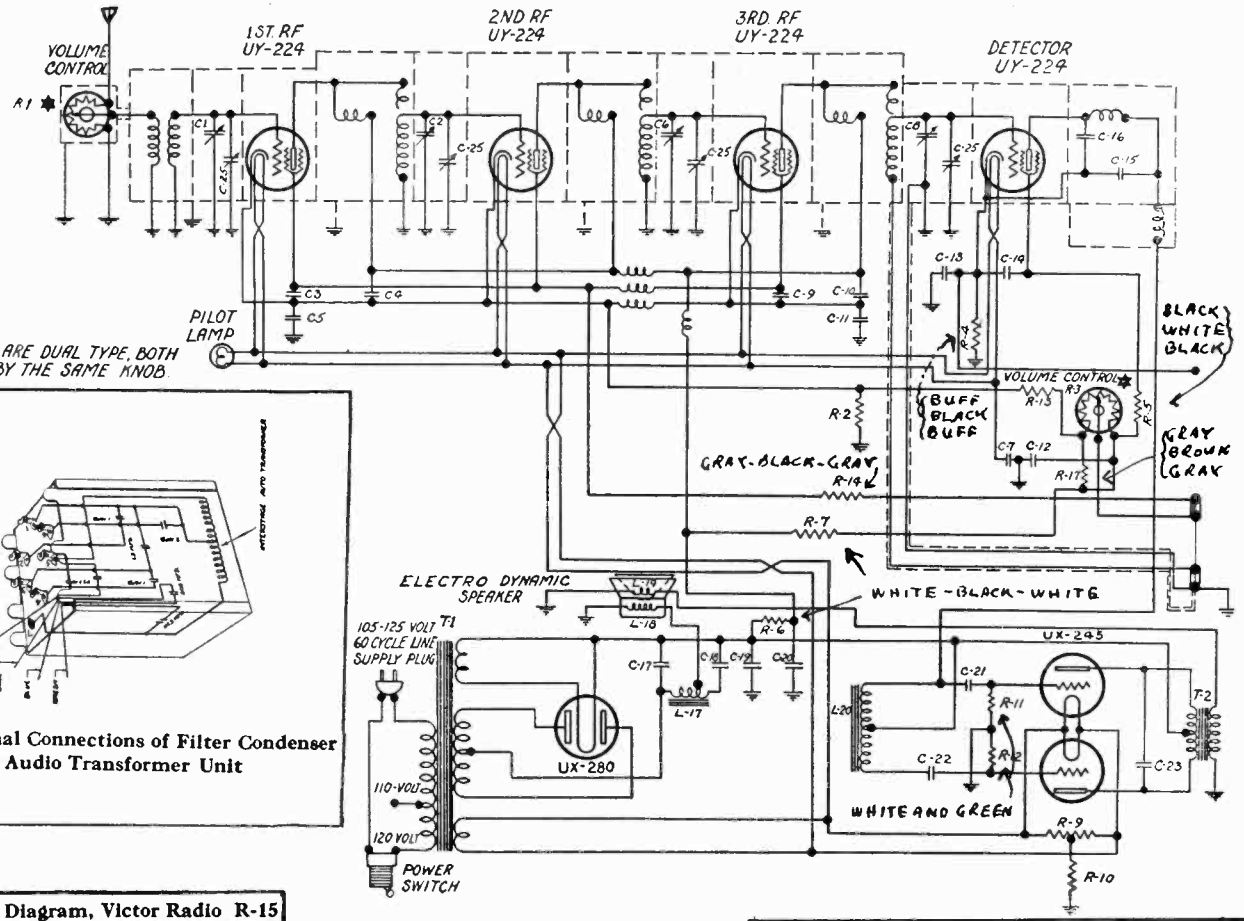
* Not true reading because of resistance in circuit.

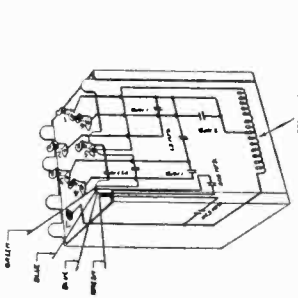
C-1 TUNING CONDENSER
C-2 TUNING CONDENSER
C-3 0.1 MFD. CONDENSER
C-4 0.1 MFD. CONDENSER
C-5 0.1 MFD. CONDENSER
C-6 TUNING CONDENSER
C-7 0.1 MFD. CONDENSER
C-8 TUNING CONDENSER
C-9 0.1 MFD. CONDENSER
C-10 0.1 MFD. CONDENSER
C-11 0.1 MFD. CONDENSER
C-12 0.1 MFD. CONDENSER
C-13 .75 MFD. CONDENSER
C-14 .25 MFD. CONDENSER
C-15 320 MMF. CONDENSER
C-16 320 MMF. CONDENSER
C-17 0.1 MFD. CONDENSER
C-18 2.0 MFD. CONDENSER
C-19 1.5 MFD. CONDENSER
C-20 1.0 MFD. CONDENSER
C-21 .025 MFD. CONDENSER
C-22 .025 MFD. CONDENSER
C-23 .005 MFD. CONDENSER
C-25 5 TO 15 MMF. ADJ. COND.

R-1 VAR. RESISTOR 50,000 Ω
R-2 120 Ω RESISTOR
R-3 VAR. RESISTOR 50000 Ω
R-4 17,000 Ω RESISTOR
R-5 200,000 Ω RESISTOR
R-6 3,200 Ω RESISTOR
R-7 3,200 Ω RESISTOR
R-9 55 Ω RESISTOR
R-10 715 Ω RESISTOR
R-11 930,000 RESISTOR
R-12 930,000 RESISTOR
R-13 830 Ω RESISTOR
R-14 16,000 Ω RESISTOR
R-17 12,000 Ω RESISTOR

T-1 POWER TRANSFORMER
T-2 OUTPUT TRANSFORMER

L-17 FILTER REACTOR
L-18 SPEAKER FIELD
L-19 SPEAKER VOICE COIL
L-20 INTERSTAGE TRANSFORMER

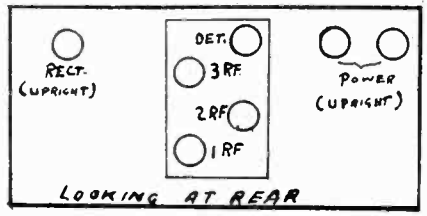


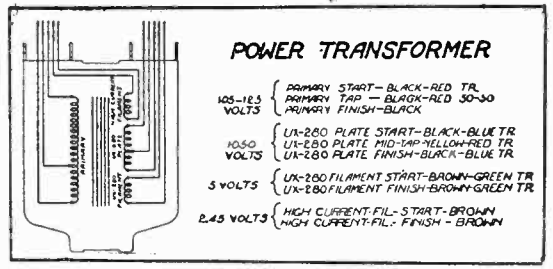


Internal Connections of Filter Condenser and Audio Transformer Unit

Schematic Wiring Diagram, Victor Radio R-15

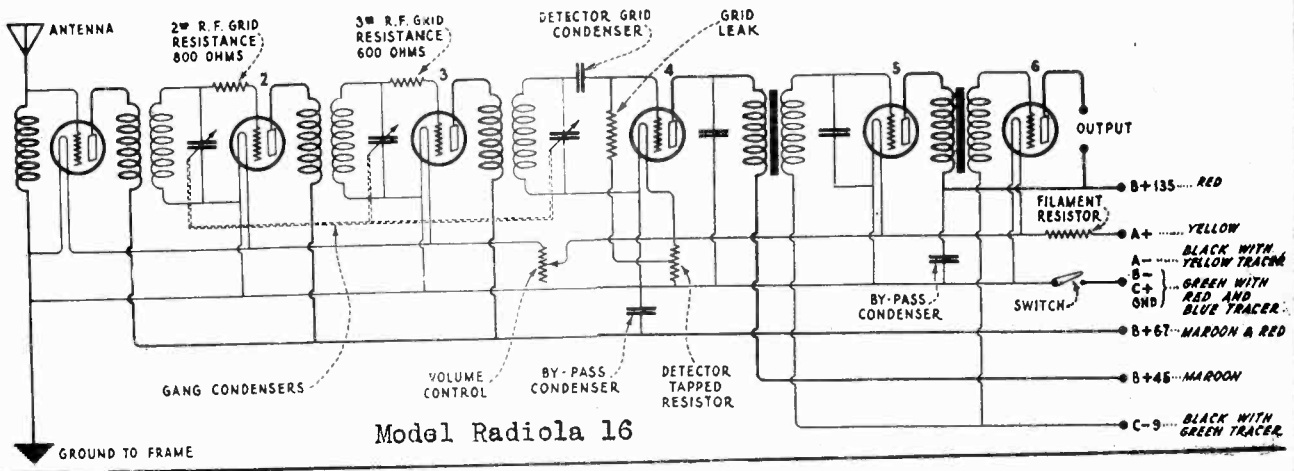
Tube	Fil.V.	Plt.V.	Grd.V. S	Grd.V.	Plt.Crnt.
1RF	2.1	153	2.7	78.	2.9 ma
2RF	2.1	154	2.7	77.	3.4
3RF	2.1	152	2.8	75.	3.1
Det	2.1	215	4.6	34.	0.4
PPAF	2.05	190	4.5		25.
Rect	4.1	Plate current each Plt.			36.



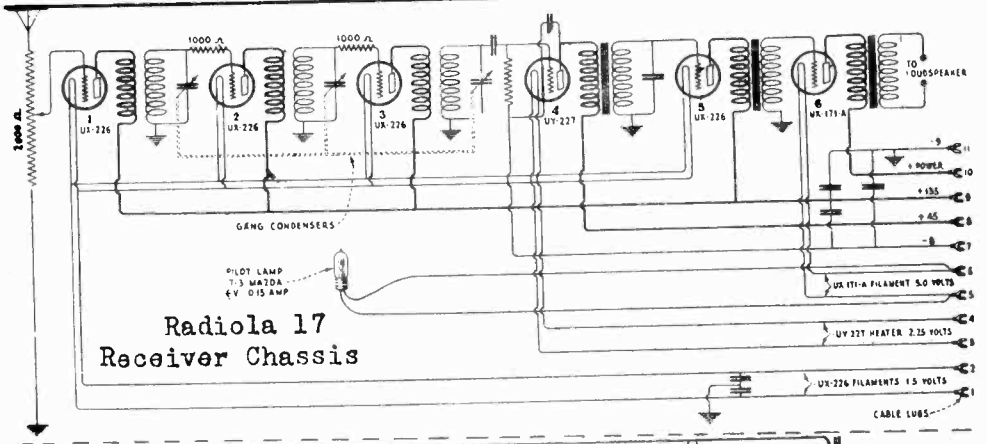


R. C. A. VICTOR CO., INC.

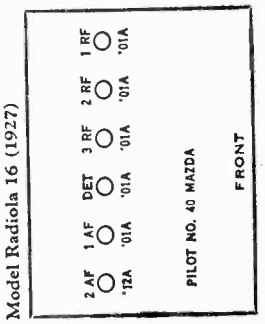
MODEL Radiola 16
MODEL Radiola 17

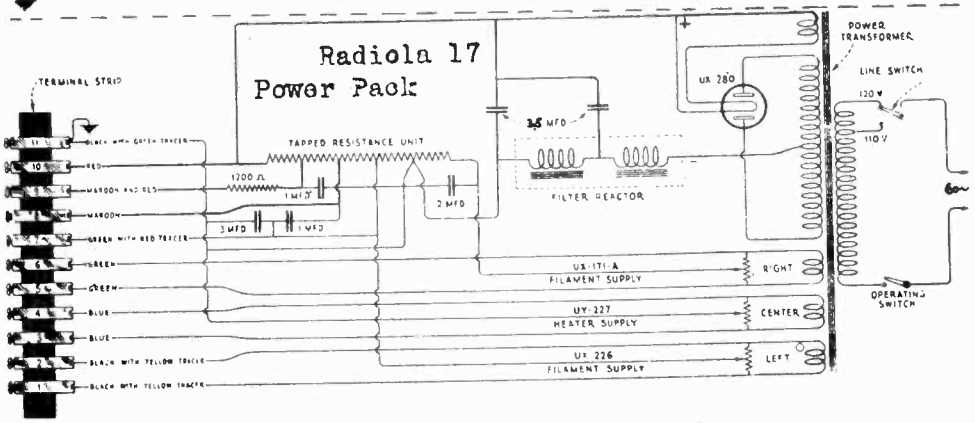


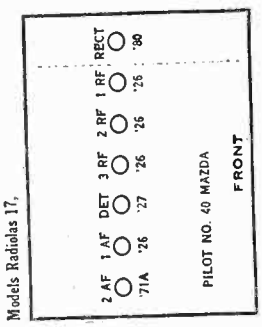
Model Radiola 16



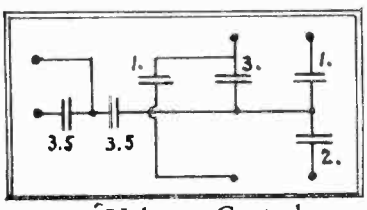
Radiola 17
Receiver Chassis





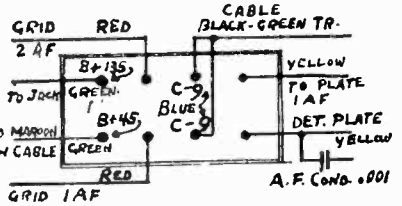


Internal Connections
of filter condenser
Radiola 17 Pack



RADIOLA—Models 17
Line Voltage 112—120 Volt Tap—Volume Control
Full

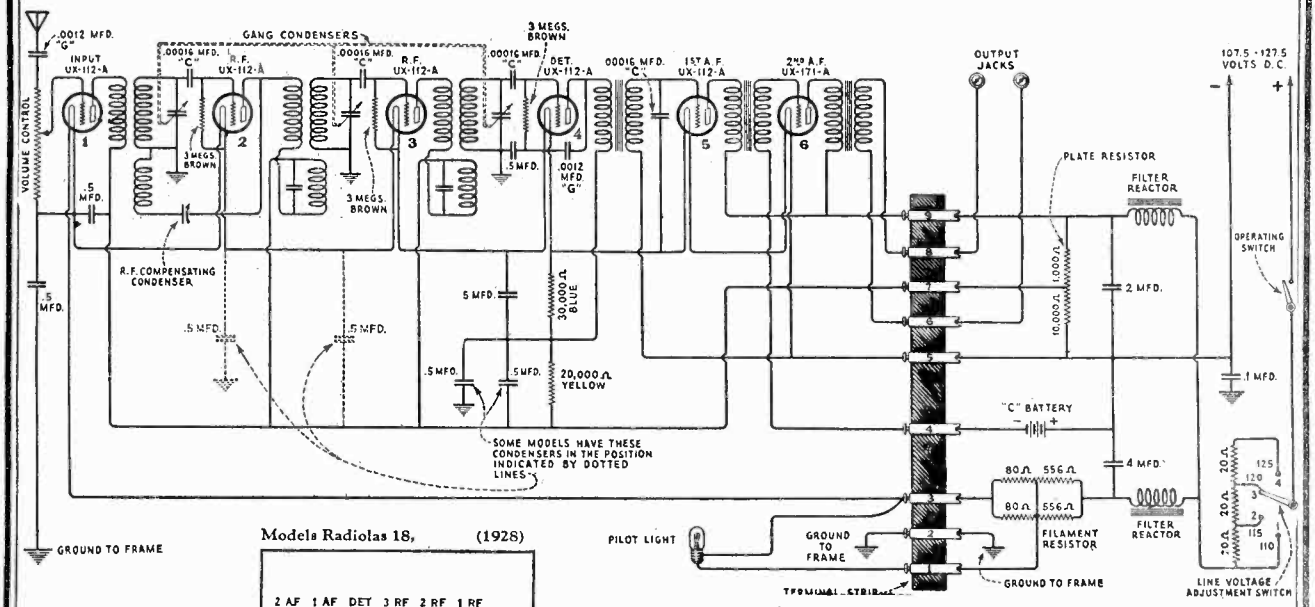
TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE (1st R.F. 2nd R.F. DET. ETC.)	READINGS PLUG IN SOCKET OF SET: TUBE OUT A VOLTS	TUBE OUT B VOLTS	TUBE IN TESTER A VOLTS	TUBE IN TESTER B VOLTS	TUBE IN TESTER C VOLTS	TUBE IN TESTER CATHODE VOLTS	TUBE IN TESTER NORMAL PLATE MA.	TUBE IN TESTER PLATE MA. GRID TEST	TUBE IN TESTER PLATE MA. CHANGE
1	226	1st. R.F.	1.4	125	1.3	122	8	-	4.5	8.5	4.0
2	226	2nd. R.F.	1.4	125	1.3	122	8	-	4.5	8.5	4.0
3	226	3rd. R.F.	1.4	125	1.3	122	8	-	4.5	8.5	4.0
4	227	Detector	2.4	125	2.2	62	0	-	3.0	3.1	.1
5	226	1st. A.F.	1.4	125	1.3	120	8	-	4.0	7.8	3.8
6	171A	2nd. A.F.	4.9	200	4.7	132	30	-	16.0	18.0	2.0
7	280	Rectifier	-	-	4.8	-	-	-	20.0	-	-



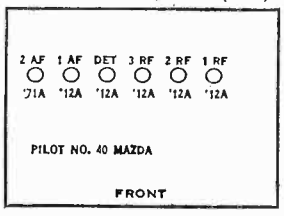
Connections to A.F. Transf
RADIOLA 16

MODEL Radiola 18 DC
MODEL Radiola 18 AC

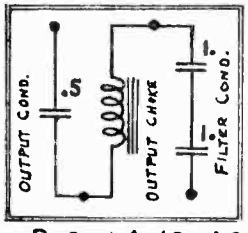
R. C. A. VICTOR CO., INC.



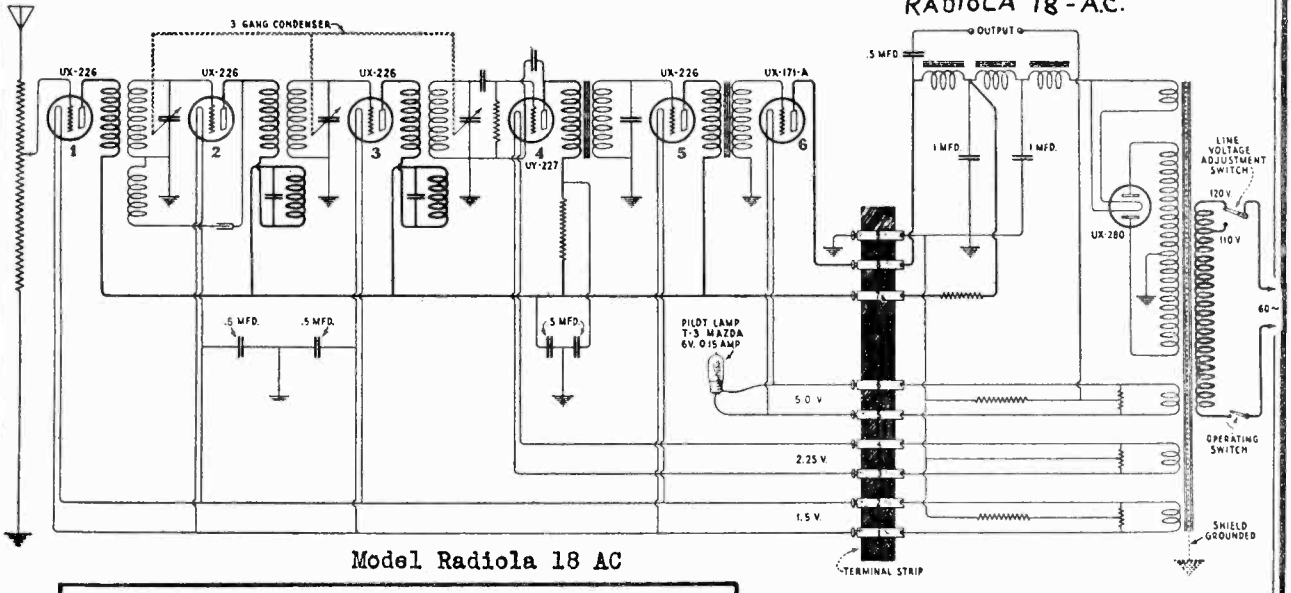
Models Radiolas 18, (1928)



Model Radiola 18 DC



RADIOLA 18-A.C.

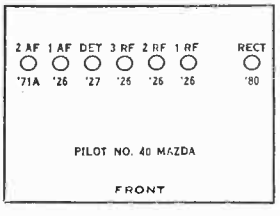


Model Radiola 18 AC

Model 18 D.C.

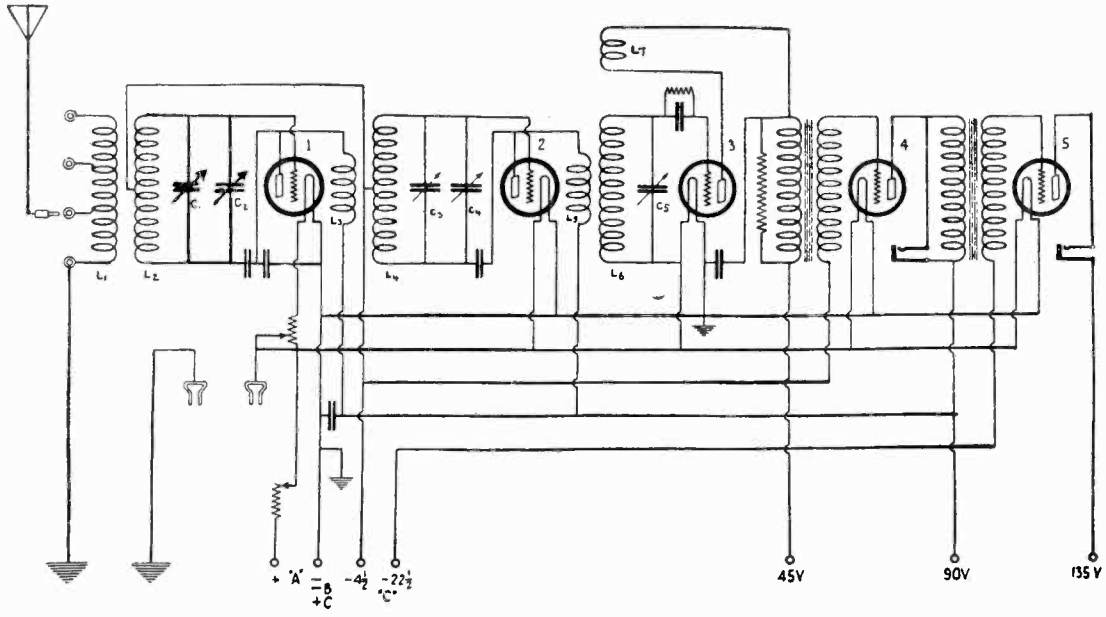
Tube No.	Fil. to Grid Volts	Fil. to Plate Volts	Plate Ma.	Fil. Volts
1	5	45	4.5	4.7
2	4	50	6.	4.8
3	4	55	5.5	5.
4	4	21	1.	5.1
5	10	90	3.5	5.2
6	22.5	90	10.	5.3

Models Victors R18,

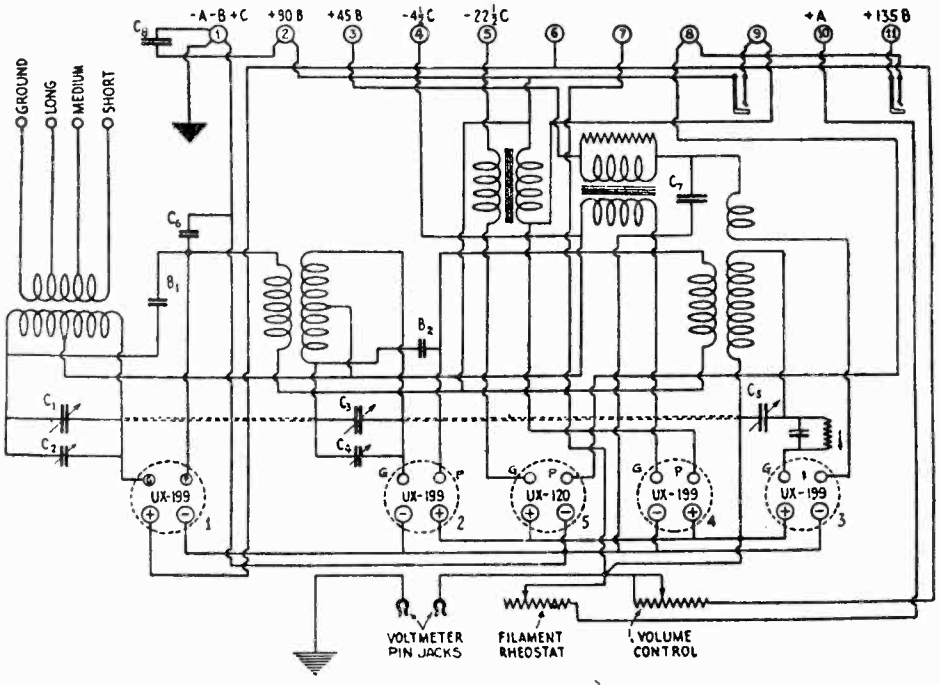


MODEL Radiola 20

R. C. A. VICTOR CO., INC.

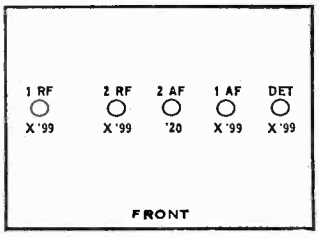


Radiola 20.



Continuity Diagram of the Radiola 20

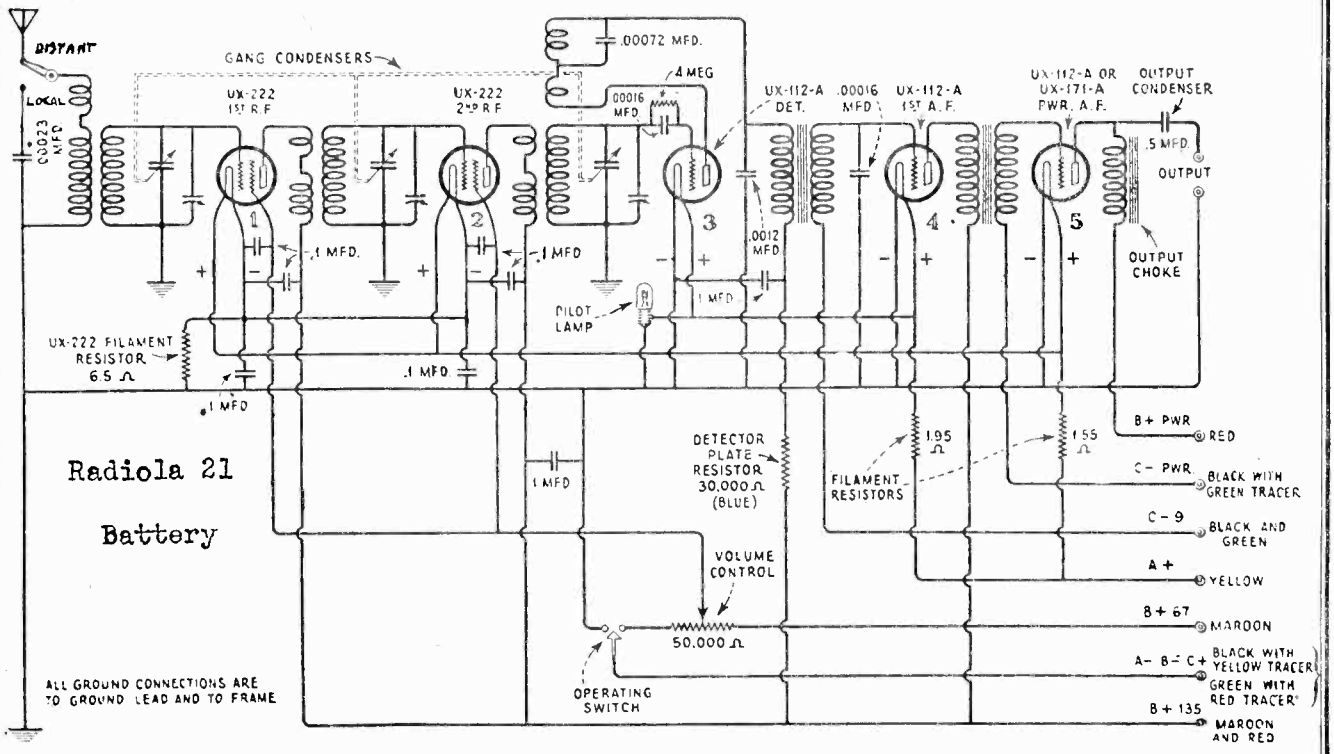
Model Radiola 20 (1925)



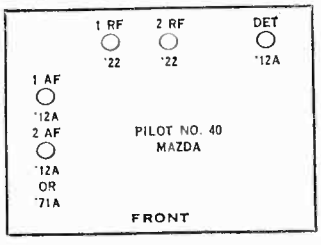
B plus 135	Red
B plus 90	Maroon and Red
B plus 45	Maroon
A- B- C plus	Green and Yellow-Red Tracer
-4.5	Black and Green
-22.5	Black with Green Tracer
A plus	Yellow

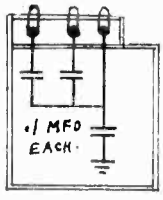
R. C. A. VICTOR CO., INC.

MODEL Radiola 21, 22

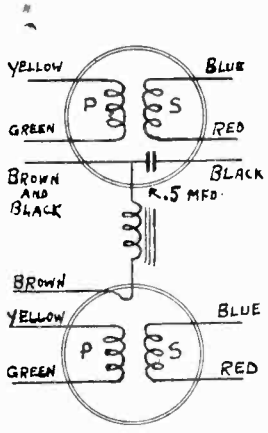


Models Radiolas 21, 22 (1929)





RF Bypass Unit



Internal connections of A-F coupling unit.

RADIOLA—Models 21 and 22

Volume Control at Minimum

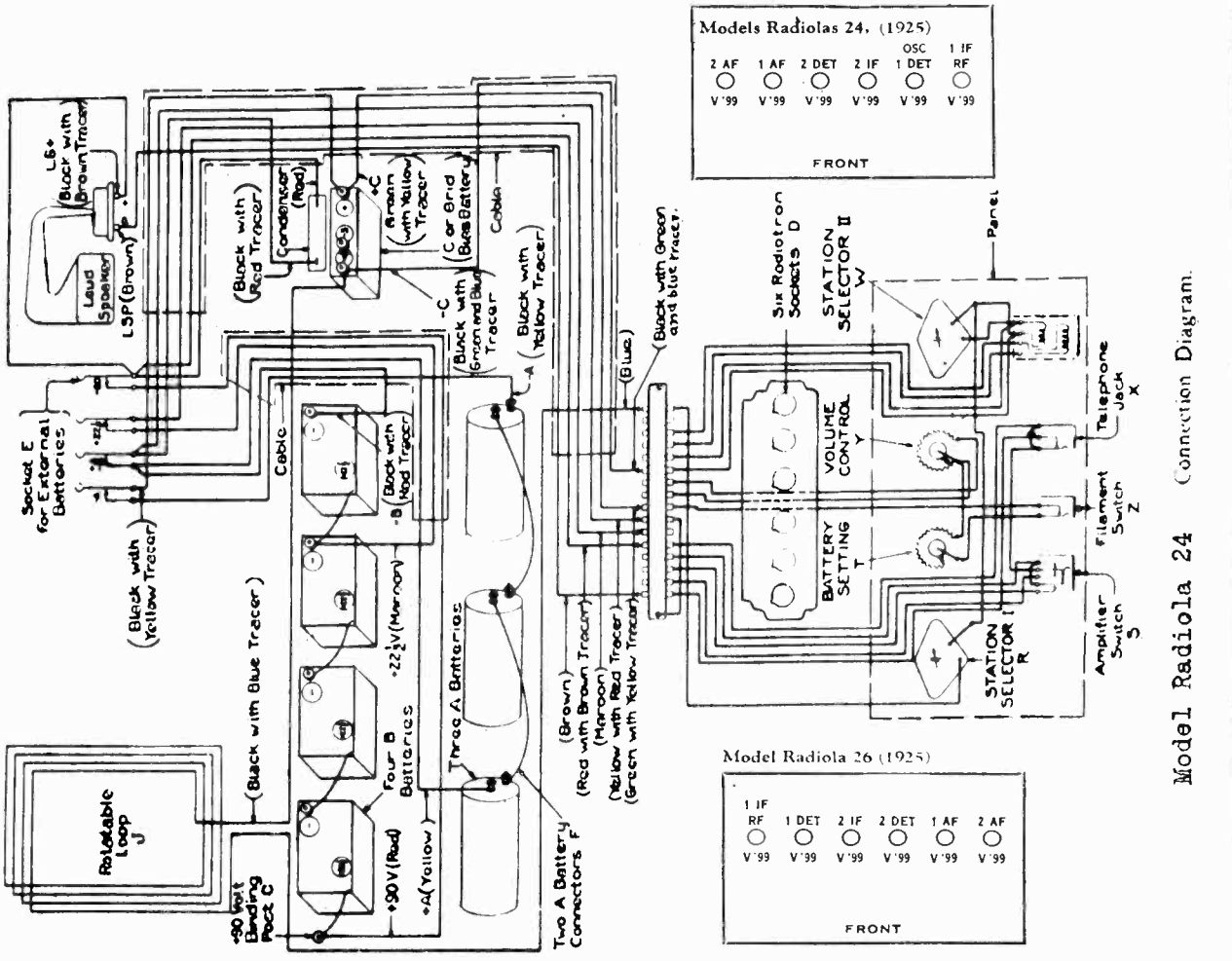
TUBE NO. IN ORDER TESTED	TYPE OF TUBE	POSITION OF TUBE IN SET	METER READINGS WITH JEWELL TEST PLUG IN SOCKET OF SET — OPERATING VOLTAGES					MILLIAMPERES			
			FILAMENT OR HEATER	PLATE OR ANODE	CONTROL GRID—SPACE (GD A-)	NORMAL GRID—SCREEN (GD B+)	CATHODE TO HEATER	SCREEN GD L.H. GD PLATE	PLATE R.H. GD PLATE	TUBE TEST	PLATE CURRENT CHANGE
1	222	1 R.F.	3.2	135	1.6	0	-	-	0		
2	222	2 R.F.	3.2	135	1.6	0	-	-	0		
3	112A	Det.	5.0	45	-	-	-	-	3.5		
4	112A	1 A.F.	5.0	125	-	9	-	-	6.5		
5	171A	PWR	5.0	130	-	27	-	-	15		
6											
7											

Volume Control at Maximum

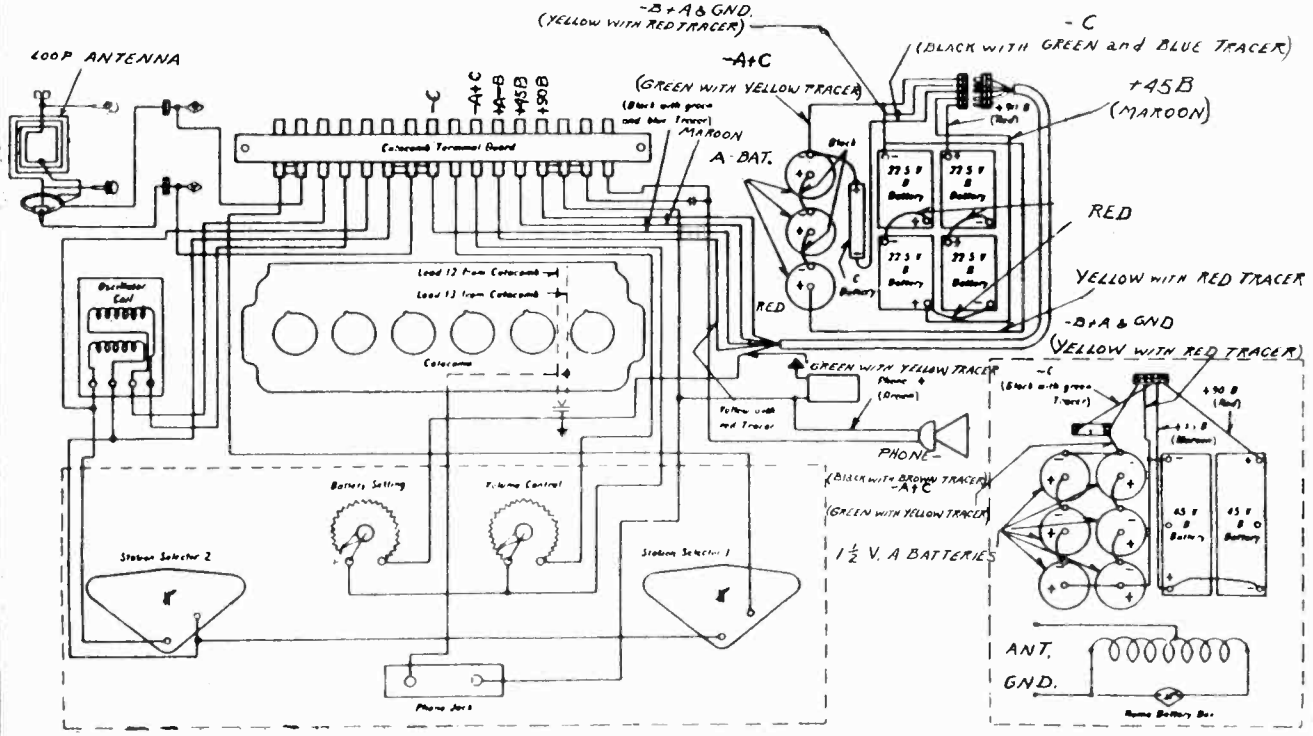
TUBE NO. IN ORDER TESTED	TYPE OF TUBE	POSITION OF TUBE IN SET	METER READINGS WITH JEWELL TEST PLUG IN SOCKET OF SET — OPERATING VOLTAGES					MILLIAMPERES			
			FILAMENT OR HEATER	PLATE OR ANODE	CONTROL GRID—SPACE (GD A-)	NORMAL GRID—SCREEN (GD B+)	CATHODE TO HEATER	SCREEN GD L.H. GD PLATE	PLATE R.H. GD PLATE	TUBE TEST	PLATE CURRENT CHANGE
1	222	1 R.F.	3.2	135	1.6	67	-	-	5.0		
2	222	2 R.F.	3.2	135	1.6	67	-	-	5.0		
3	112A	Det.	5.0	45	-	-	-	-	3.5		
4	112A	1 A.F.	5.0	125	-	9	-	-	6.5		
5	171A	PWR	5.0	130	-	27	-	-	15		
6											
7											

R. C. A. VICTOR CO., INC.

MODEL Radiola 24
MODEL Radiola 26



Model Radiola 24 Connection Diagram.

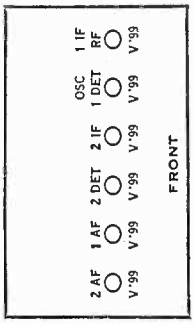


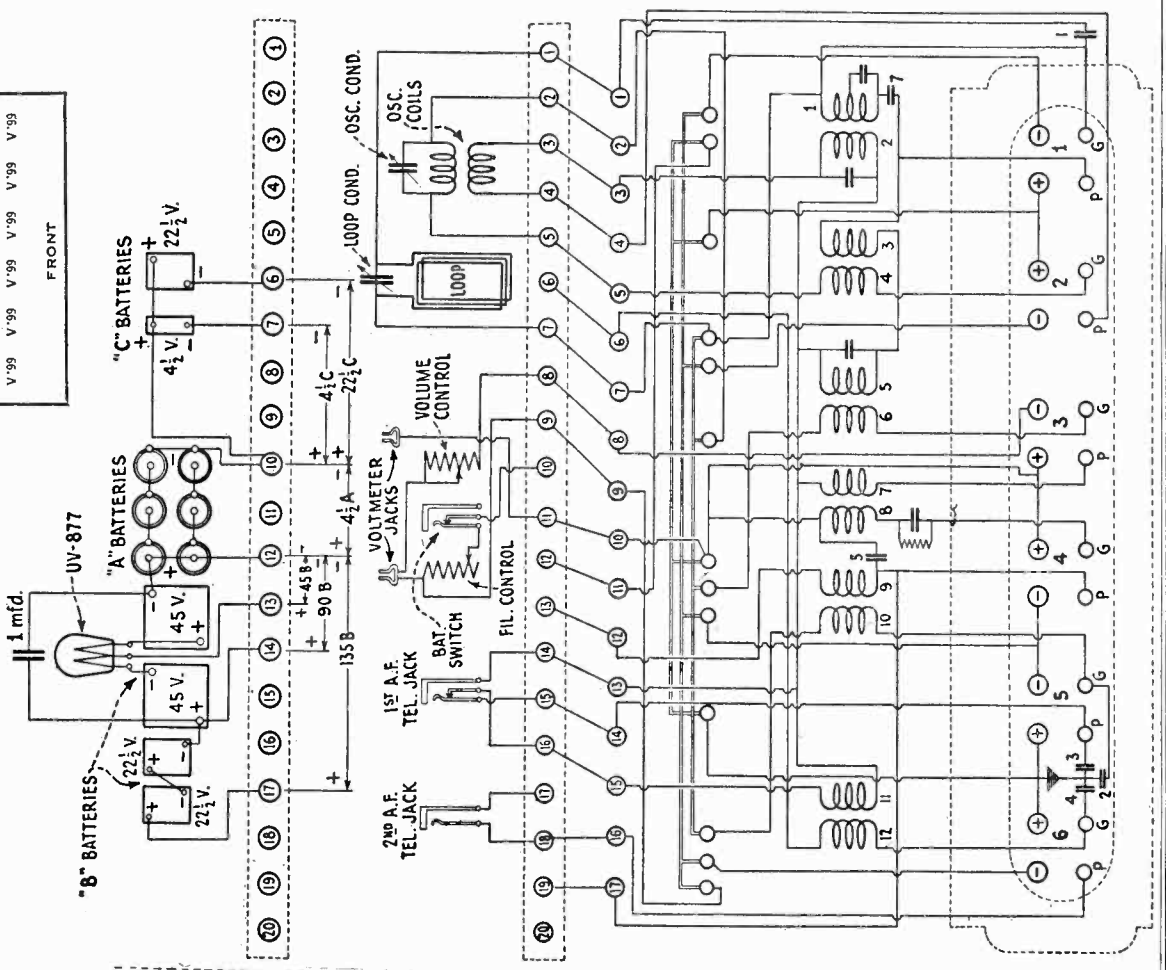
Model Radiola 26 Connection diagram

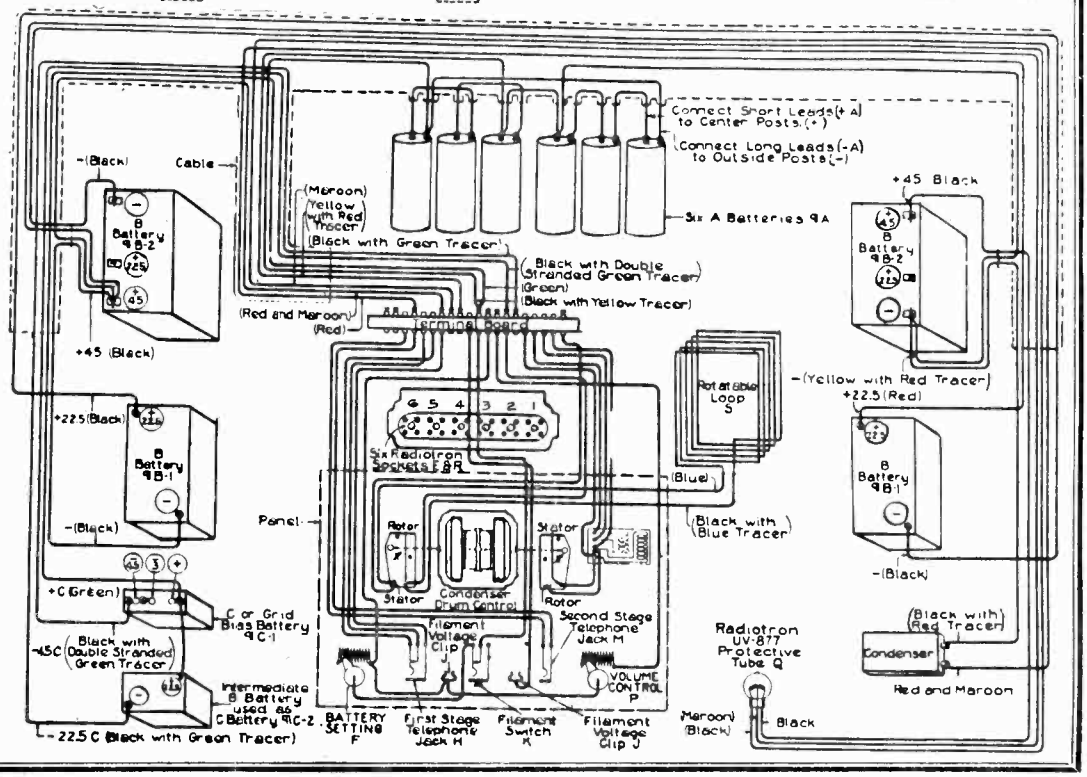
MODEL Radiola 25

R. C. A. VICTOR CO., INC.

Models Radiolas 24, 25 (1925)





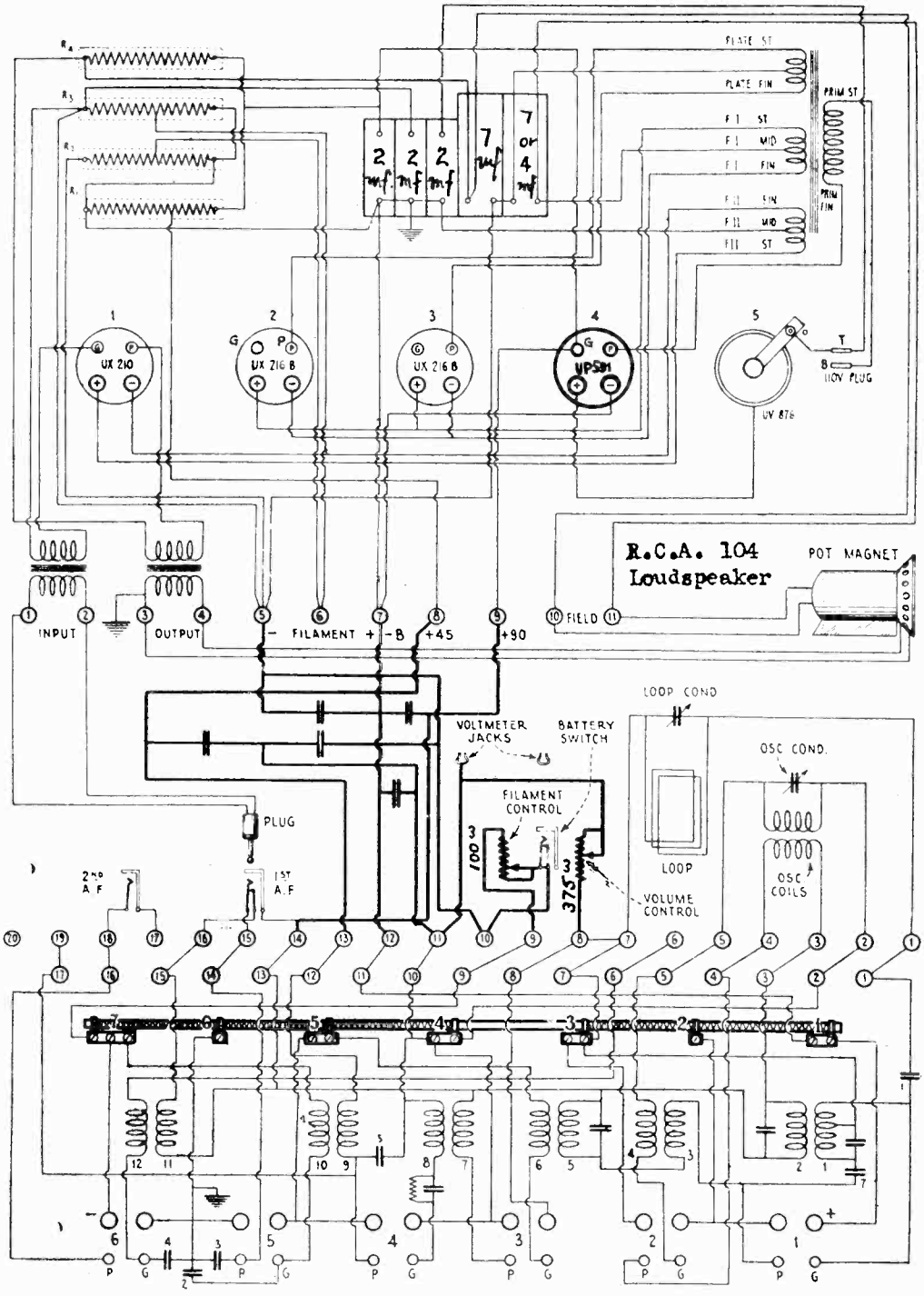


VOLTAGE READINGS TAKEN AT CATACOMB TERMINAL STRIP

VOLTS	+ TERMINAL	- TERMINAL
135B	17	12
90B	14	12
45B	13	12
22½C	20	6
4½C	20	7
4½A	12	10

R. C. A. VICTOR CO., INC.

MODEL Radiola 25
With 104 Power Pack



VOLTAGE READINGS OF RADIOLA 25

Between terminals		
10 and 12	31 volts with tubes lighted	
12 " 13	21.5 " normal	
13 " 14	41 volts normal	

RADIOLA 25 A.C. RESISTANCES

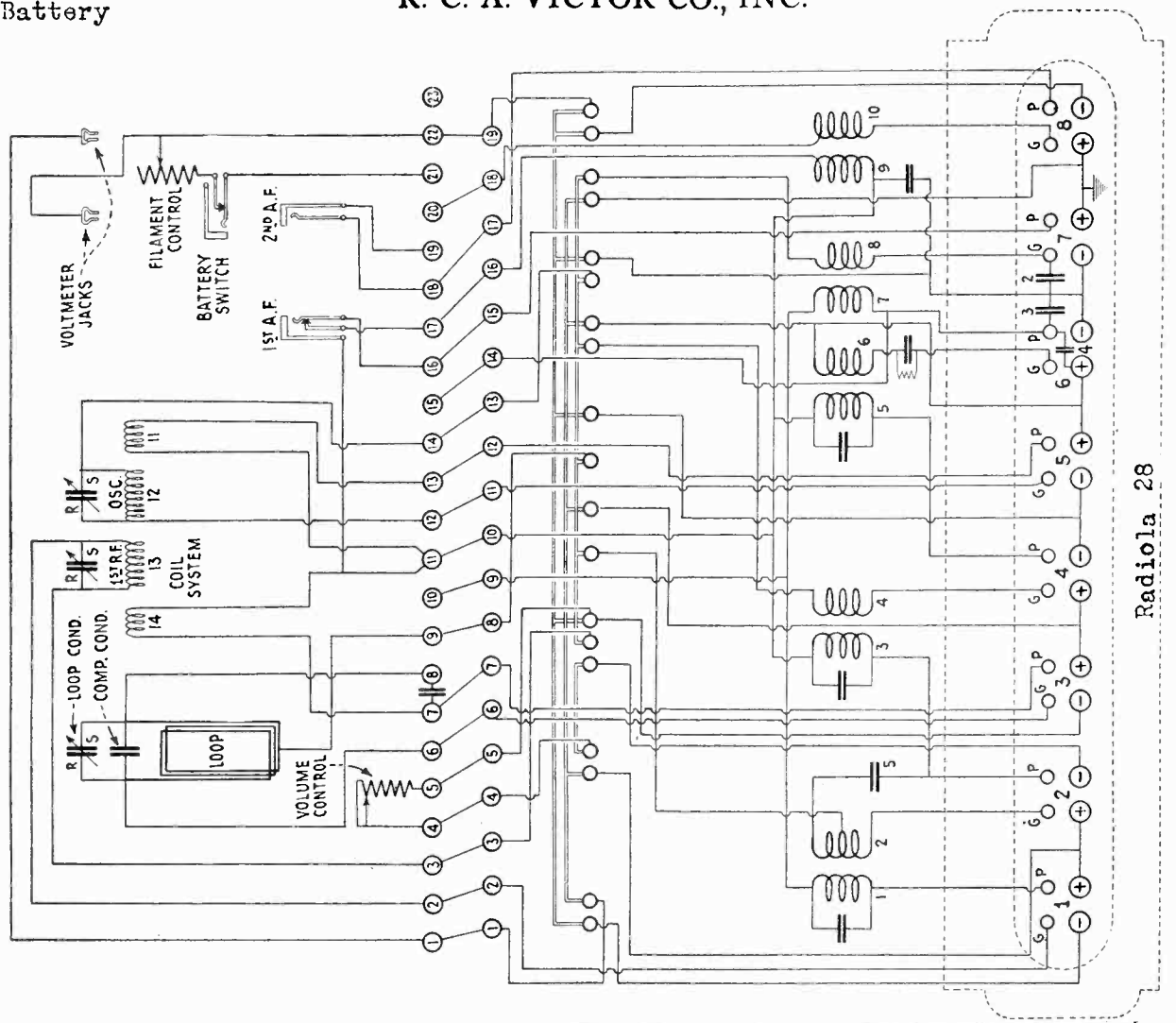
Terminals	Lower limit	Normal	Upper limit
1 and 2	218.5 V.	230 V.	241.5 V.
2 and 3	192 "	201 "	208 "
3 and 4	open	open	open
4 and 5	151.9 "	155 "	158.1 "
5 and 6	143 "	150 "	153 "
6 and 7	44.75 "	50 "	55.25 "

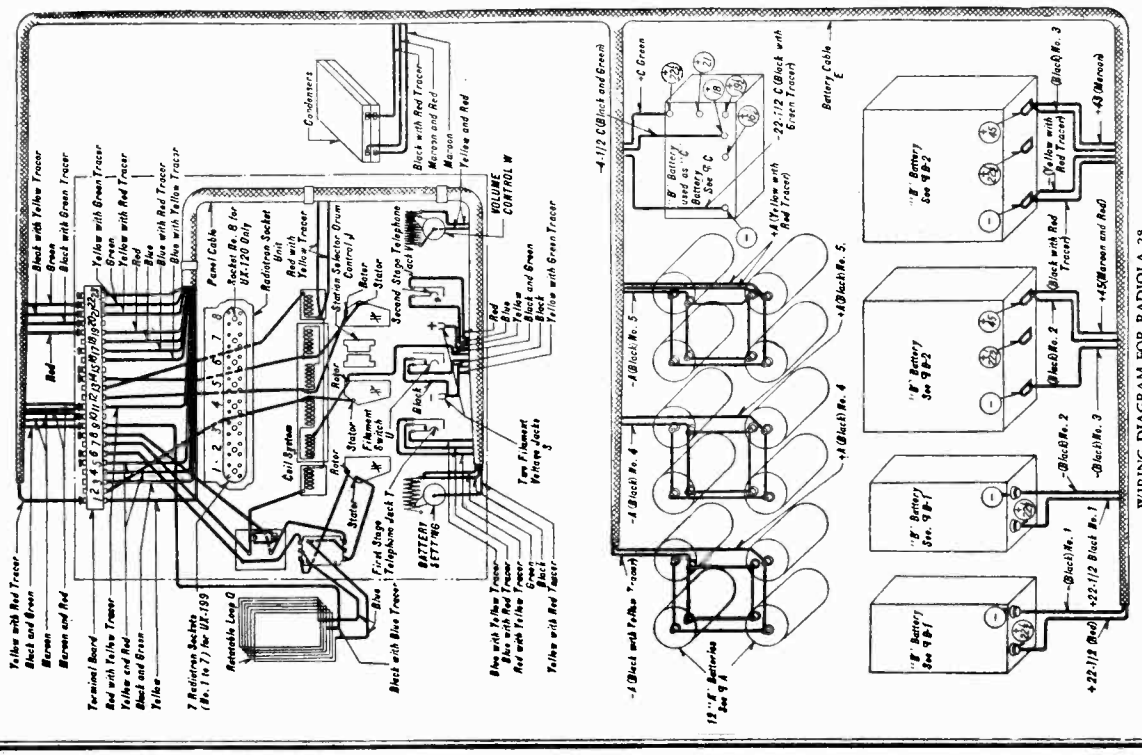
RADIOLA 25
A.C. OPERATED
With
Model 104 Loudspeaker
and Model UP-971 A.C.
Package.

(A.C.Package Changes
Shown In Heavy Lines.)

MODEL Radiola 28
Battery

R. C. A. VICTOR CO., INC.





WIRING DIAGRAM FOR RADIOLA 28

In this wiring diagram, two or more leads of a like color contained in the same cable may be distinguished by the numeral following the color designation at each end of a given lead.

R. C. A. VICTOR CO., INC.

MODEL Radiola 28 AC
With 104 Power Supply

Schematic Wiring Diagram of Radiola 28 (A.C. Operated)

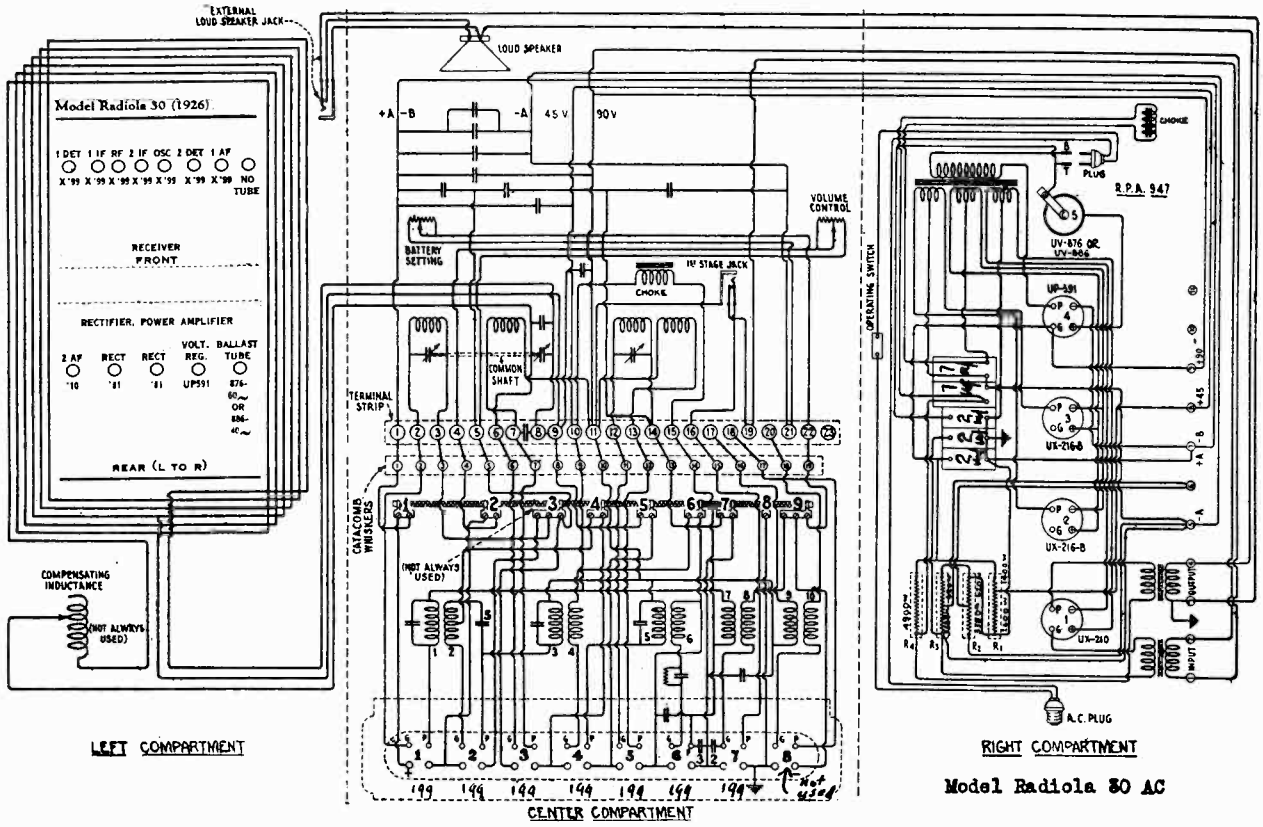
RADIOLA 28 - A.C. OPERATED
RADIOLA 28 - A.C. OPERATED With Model 104 Loudspeaker
And Model UP-972 A.C. Package.
(A.C. Package Changes Shown In Heavy Lines.)

Model Radiola 28 AC (1926)

USED WITH RADIOLA 104 LOUDSPEAKER	RADIOLA 104 LOUDSPEAKER	
	2 AF	RECT
1 DET 1 IF RF 2 IF OSC 2 DET 1 AF		
X99 X99 X99 X99 X99 X99 X99 NO TUBE		
RECEIVER		
FRONT	REAR (L TO R)	

MODEL Radiola 30 AC
With 104 Power Pack

R. C. A. VICTOR CO., INC.

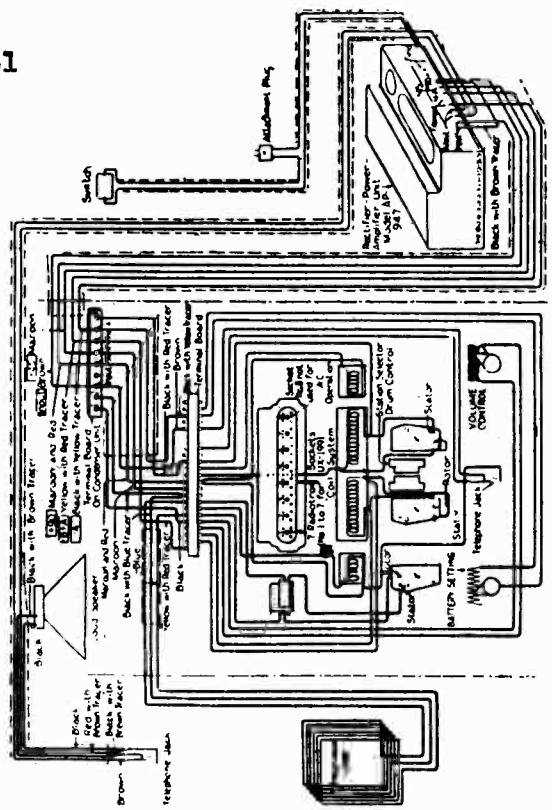


RESISTANCES AT RESISTANCE STRIP
with 375 ohm volume control

Terminals	Low	Normal	High
1 and 2	185	190	195
2 and 3	350	400	450
3 and 4	158	163	168
4 and 5	150	155	160
5 and 6	125	130	135
6 and 7	116	120	124
7 and 8	111	115	119
8 and 9	45	50	55

RESISTANCES AT RESISTANCE STRIP
with 250 Volume Control

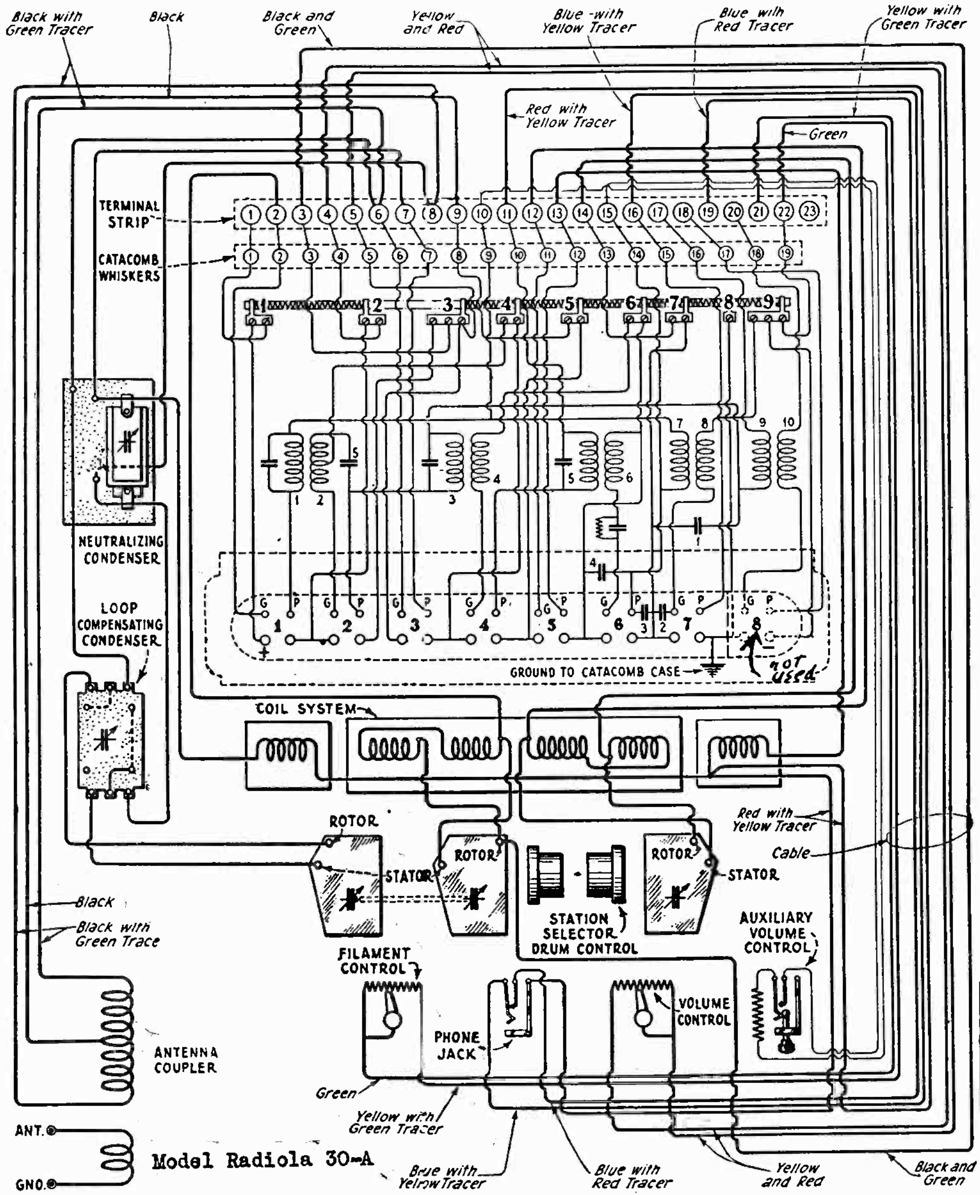
Terminals	Low	Normal	High
1 and 2	260	271	282
2 and 3	open	open	open
3 and 4	230	236.5	243
4 and 5	191	197	203
5 and 6	176	183.5	191
6 and 7	146	154.5	163
7 and 8	137	145.5	154
8 and 9	45	50.	55



Schematic Wiring Diagram of Radiola 30.

R. C. A. VICTOR CO., INC.

MODEL Radiola 30-A
MODEL Radiola 30-A AC Power Pack

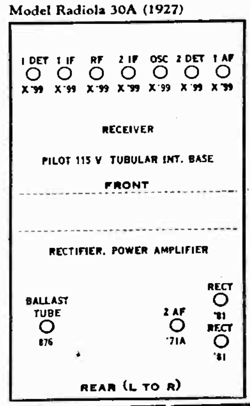


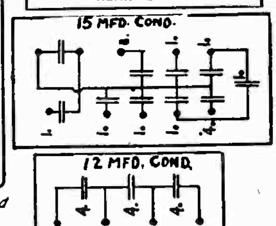
Model Radiola 30-A

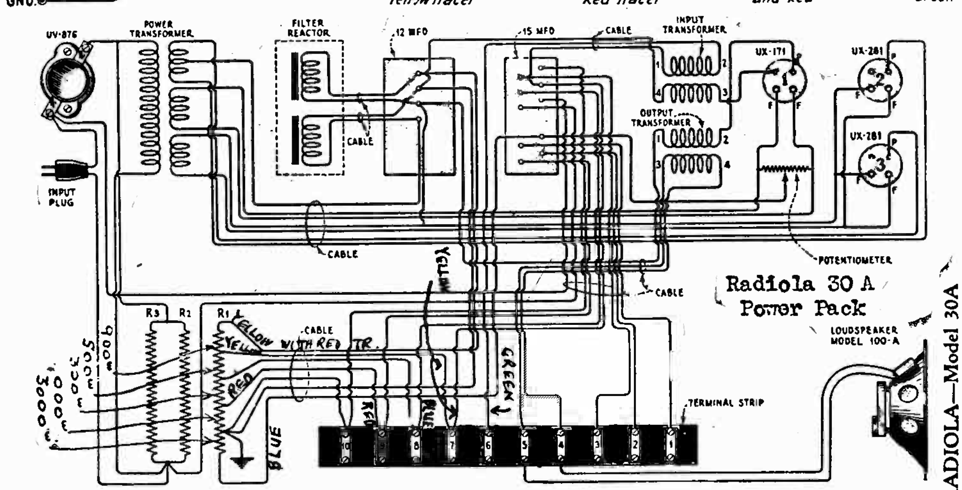
RESISTANCES AT RESISTANCE TERMINALS

Terminals	Low	Normal	High
1 and 2	260	271	282
2 and 3	open	open	open
3 and 4	230	236.5	243
4 and 5	191	197	203
5 and 6	176	183.5	191
6 and 7	146	154.5	163
7 and 8	137	145.5	154
8 and 9	45	50	55

Model Radiola 30A (1927)







Radiola 30 A Power Pack

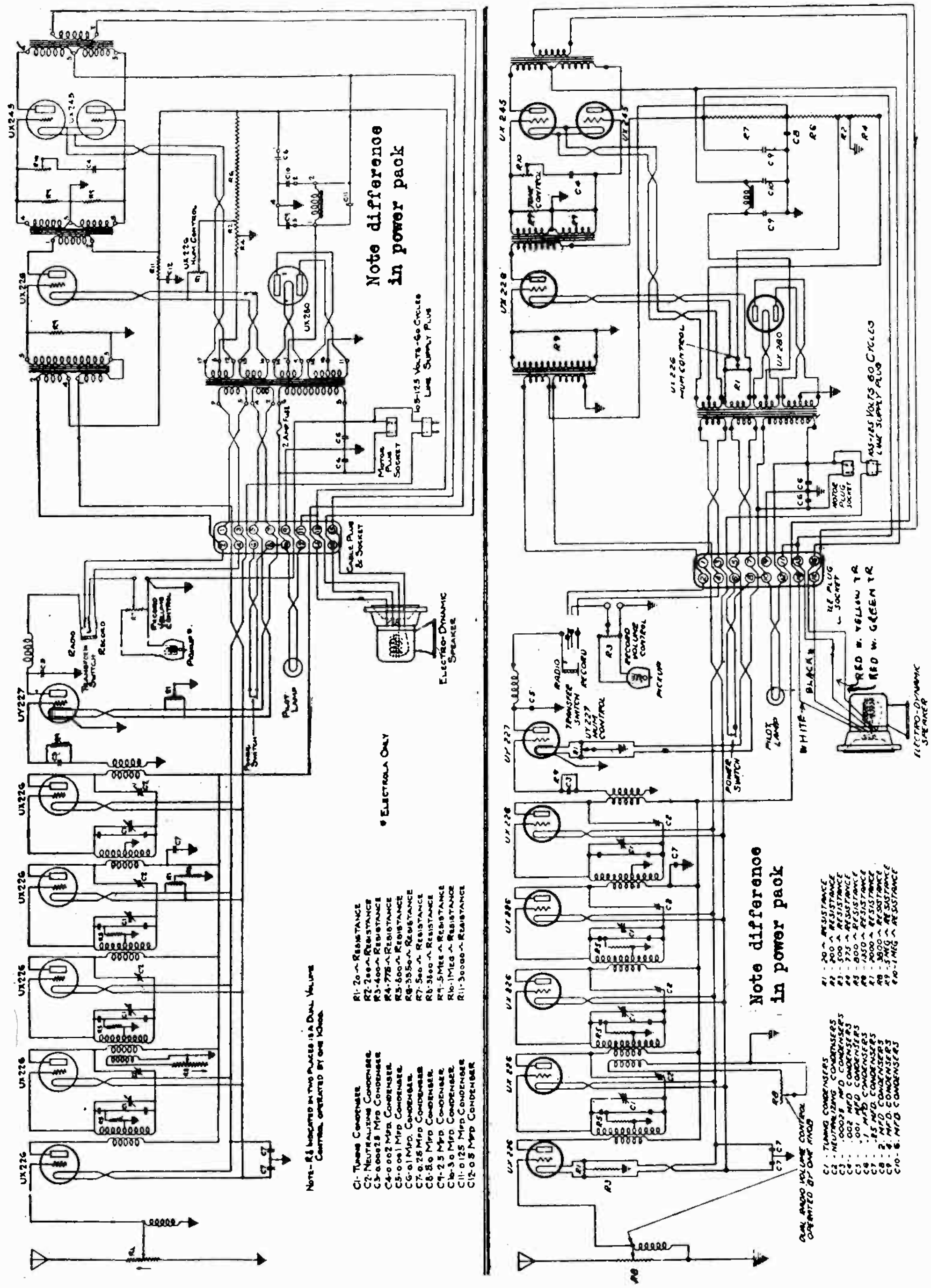
RADIOLA—Model 30A

Note: For "A" volt tests adjust controls on panel so that reading on first tube tested is that shown. This gives an average condition of operation and a margin of safety in all tests.

Tube No. in Order	Type of Tube	Function of Tube 1st AF, Det, etc.	Readings plug in socket of set: Tube out: A Volts	Tube out: B Volts	Tube in tester: A Volts	B Volts	C Volts	Cathode Volts	Normal Plate M.A.	Plate M.A. Grid Test	Plate M.A. Change
1	199	1st. DET.	6.5	47	3.2	26	7		-	-	-
2	199	1st. I.F.	6.7	73	2.9	72	7		2	3	1
3	199	Tuned F.P.		76	3.4	74	7		2	3	1
4	199	2nd. I.F.		80	2.9	64	7		2	3	1
5	199	Oscillator		80	3.0	79	7		2.6	4.2	1.6
6	199	2nd. DET.		38	2.9	38	2		1.4	0	0
7	199	1st. A.F.		8.6	2.9	64	7		2.4	3.6	1.2
8	171	Power Amp.		-	6.5	210	43		16	24	8
9	281	Rectifier		-	7	-	-		45	-	-
10	281	Rectifier		-	7	-	-		45	-	-

MODEL Victor R-32, RE-45 and R-52

R. C. A. VICTOR CO., INC.

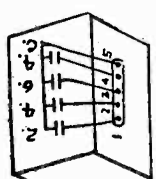


CABLE TERMINAL VOLTAGES

Between 1 and 3	1.7 volts AC.
5 and 7	2.35 volts AC.
2 and 9	39. volts DC.
9 and 11	105. volts DC.
13 and 15	185. volts DC.

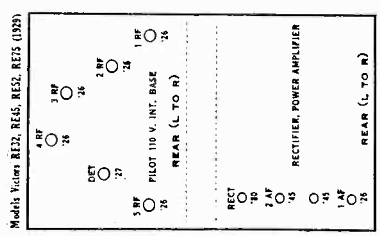
MULTI-PLUG TERMINALS

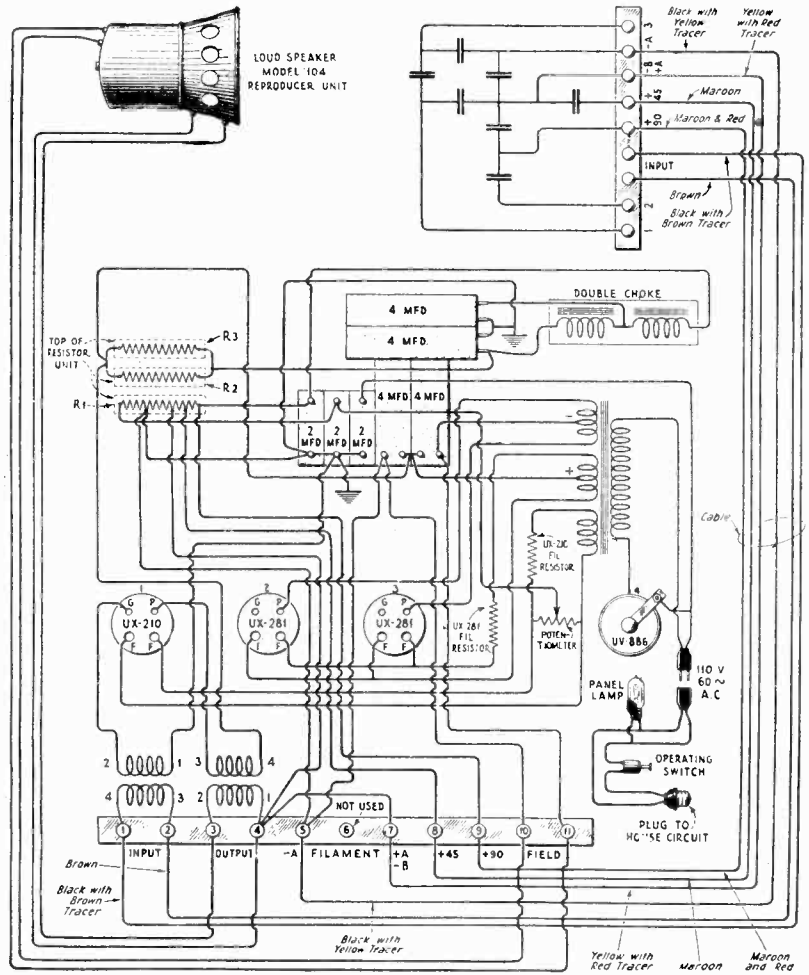
#1. Brown-white tracer for 226 filament. #2. Blue for transfer switch.
#3. Brown-white tracer for 226 filament. #4. White for transfer switch.
#5. Brown-blue tracer for 227 filament. #6. Black-red tracer for power switch.
#7. Brown-blue tracer for 227 filament. #8. Black-red tracer for power switch.
#9. Braided copper shield to ground. #10. Brown-red tracer for pilot light.
#11. Red-yellow tracer -B of 226. #12. Brown-red tracer for pilot light.
#13. Red-yellow tracer for field. #14. White for voice coil. #15. Red-green tracer for speaker field. #16. Black for voice coil.



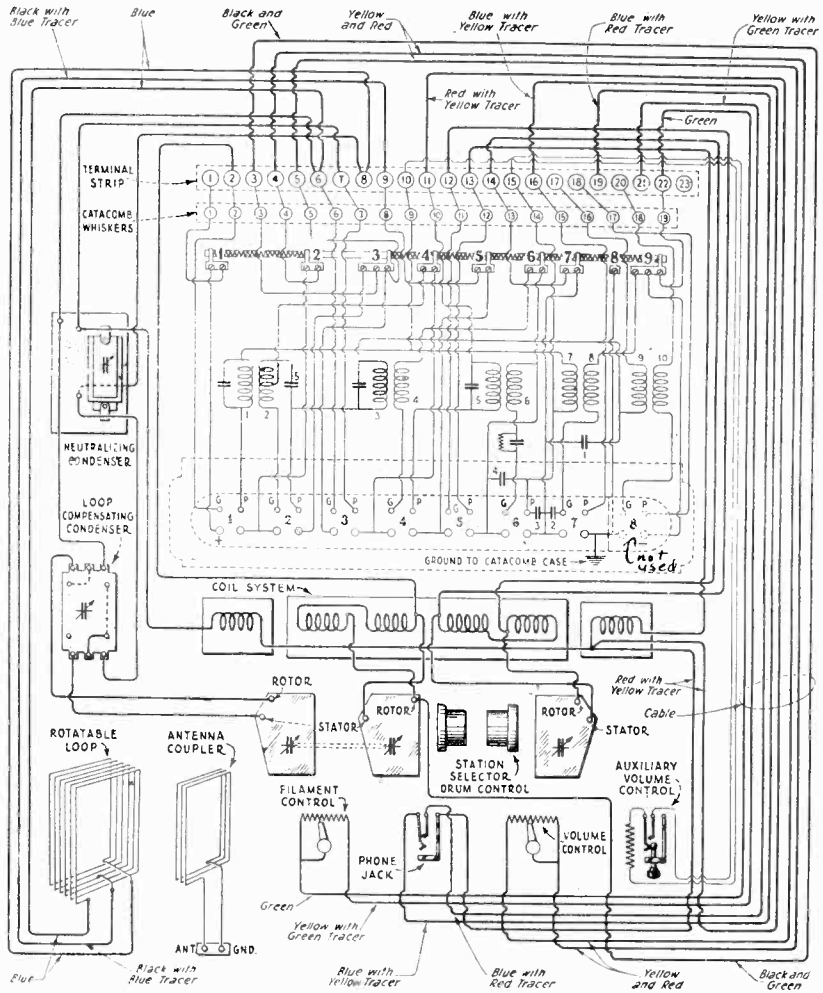
VICTOR—Model R-32
Line Voltage 115—Volume Control Position Max
*Antenna Coupling Stage

Tube No. in Order	Type of Tube	Position of Tube (1st RF, Det, etc.)	Tube Out: A Volts	Tube Out: B Volts	Tube in Tester: A Volts	B Volts	C Volts Control Grid	Cathode-Heater Volts	Normal Plate MA	Plate MA Grid Test	Plate Change MA	Screen Grid Volts
1	226	1st RF	1.5	112	1.4	112	8	-	2.8	6.5	3.8	-
2	226	*	1.5	112	1.4	112	8	-	2.8	6.6	3.8	-
3	226	2nd RF	1.5	112	1.4	112	8	-	2.8	6.6	3.8	-
4	226	3rd RF	1.5	112	1.4	112	8	-	2.8	6.6	3.8	-
5	226	4th RF	1.5	112	1.4	112	8	-	2.8	6.6	3.8	-
6	227	Det.	2.45	52	2.3	44	2	-	1.2	1.2	-	-
7	226	1st A	1.5	112	1.4	100	6	-	3.4	6.2	2.8	-
8	245	2nd A	2.4	260	2.3	240	45	-	28	32	6	-
9	245	2nd A	2.4	260	2.3	240	45	-	28	32	6	-
10	280	Rect.	5	-	4.4	-	-	-	72	-		-





Model Radiola 32 AC
Power Pack



Model Radiola 32

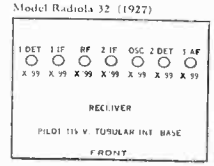
DC Resistance of Resistor Strip

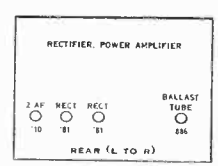
Between Terminals	1 and 2	271 ohms
	2 and 3	open
	3 and 4	236.5
	4 and 5	197
	5 and 6	183.5
	6 and 7	154.5
	7 and 8	145.5
	8 and 9	50

RADIOLA—Model 32

Readings are approximately the same as on model 30A except a 210 power tube is used in last A.F. stage and 2—281 rectifier tubes are used. These three tubes operate on a filament voltage of 7. The plate voltage of the 210 tube is 425 volts, normal milliamperes 22, grid test 42, indicating a change of 20 M.A. The output of rectifier tubes is approximately 60 M.A. each.

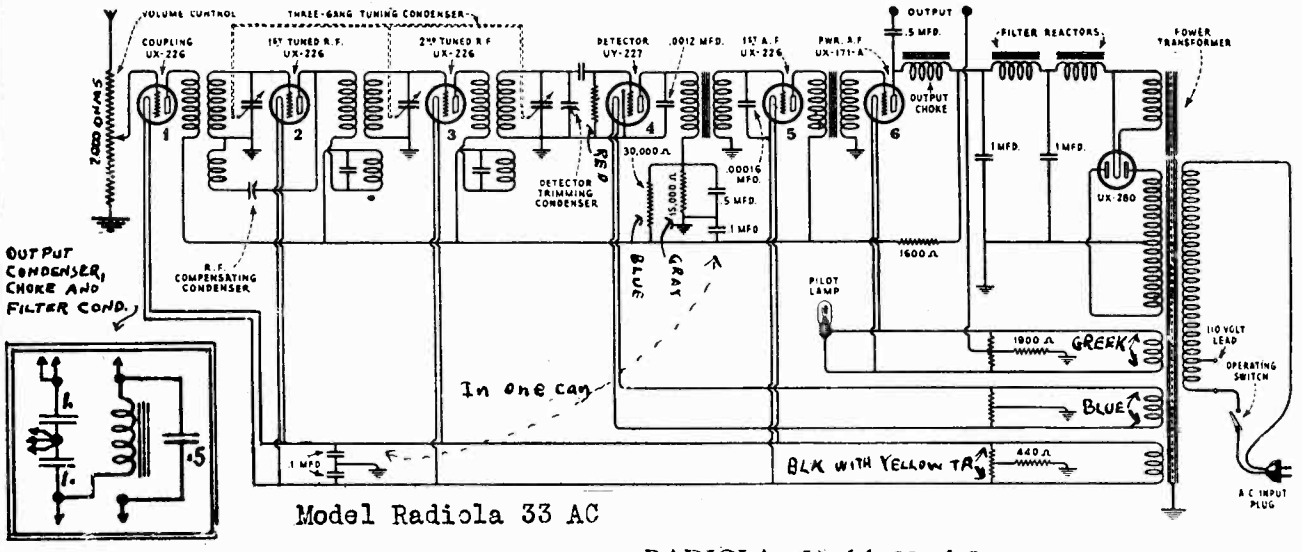
Model Radiola 32 (1927)





MODEL Radiola 33 AC
MODEL Radiola 33 DC

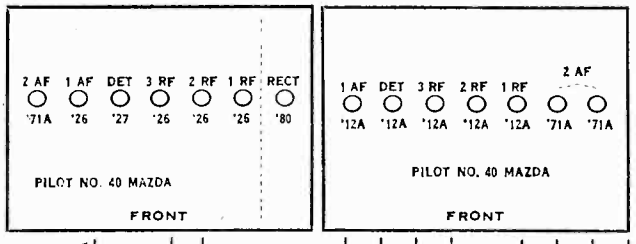
R. C. A. VICTOR CO., INC.



Model Radiola 33 AC

Output condenser, choke and filter condenser.

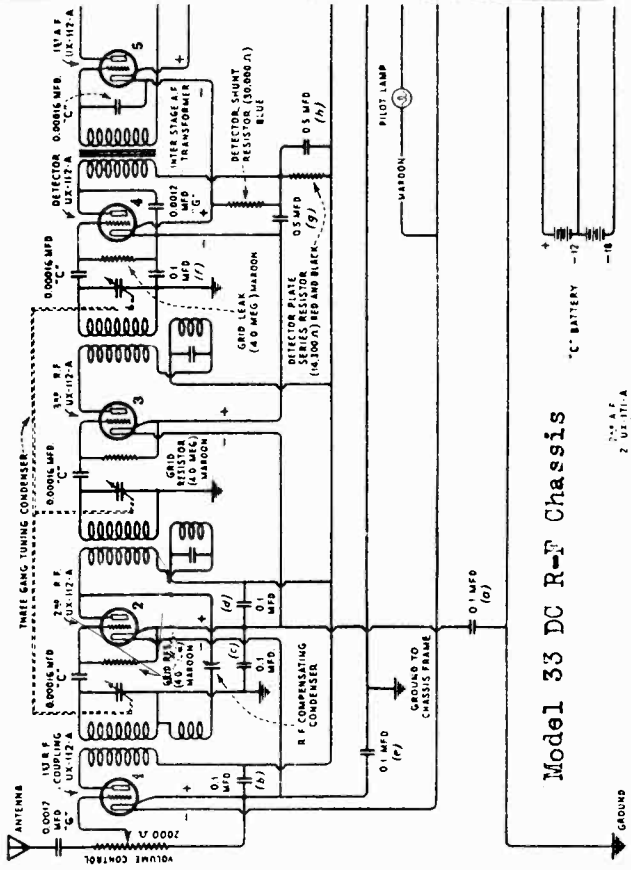
Models Radiolas 33. (1927) Model Radiola 33 DC (1929)

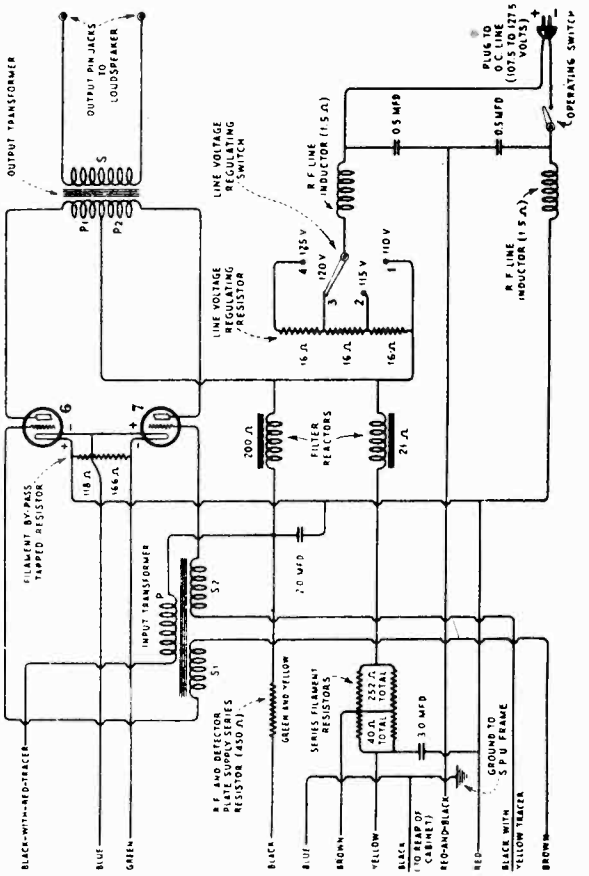


RADIOLA—Model 33 A.C.

Line Voltage 112—120 Volt Tap—Volume Control Full

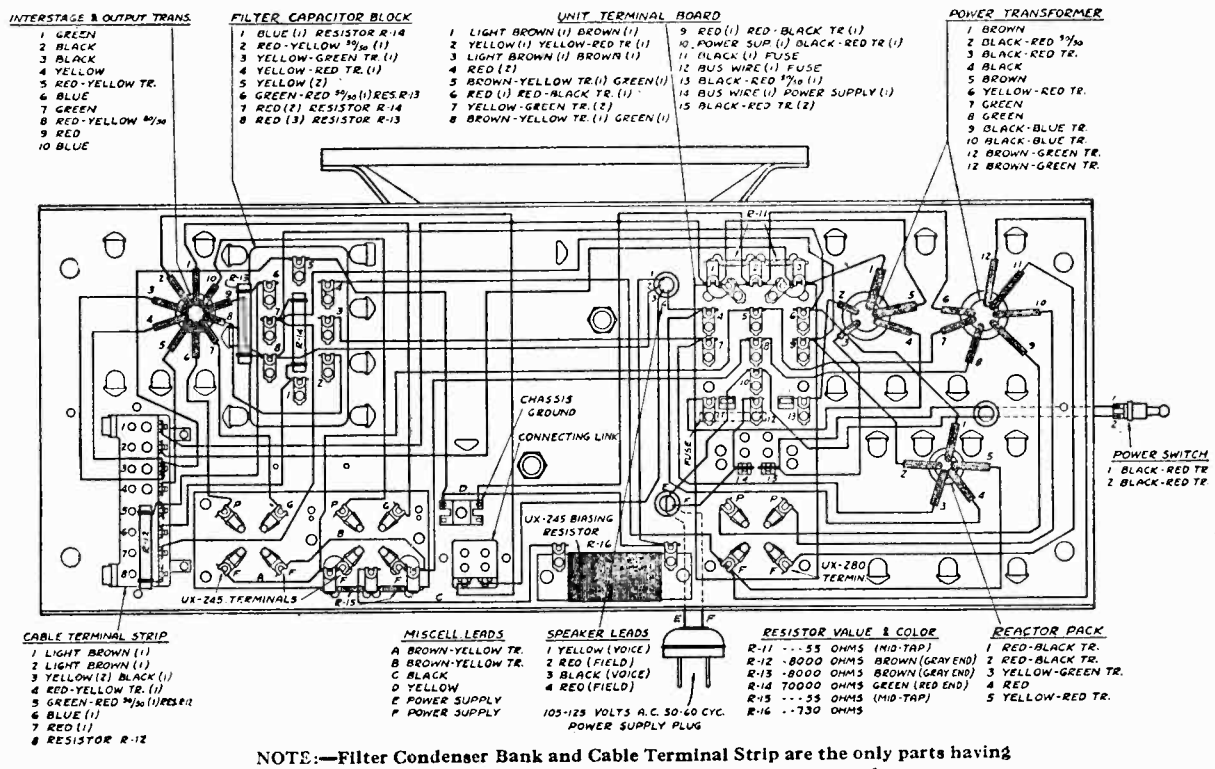
TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE (BY R.F. DET. ETC.)	READINGS PLUG IN SOCKET OF SET								
			TUBE OUT		TUBE IN TESTER						
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE M.A. CHANGE
1	226	1st. R.F.	1.4	125	1.3	122	8	-	4.5	8.5	4.0
2	226	2nd. R.F.	1.4	125	1.3	122	8	-	4.5	8.5	4.0
3	226	3rd. R.F.	1.4	125	1.3	122	8	-	4.5	8.5	4.0
4	227	Detector	2.4	125	2.2	22	0	-	3.0	3.1	.1
5	226	1st. A.F.	1.4	125	1.3	120	8	-	4.0	7.8	3.8
6	171A	2nd. A.F.	4.9	200	4.7	132	30	-	16.0	18.0	2.0
7	280	Rectifier	-	-	4.8	-	-	-	20.0	-	-





R. C. A. VICTOR CO., INC.

MODEL Victor R-35, R-39, RE-57
A-F Chassis, Voltage

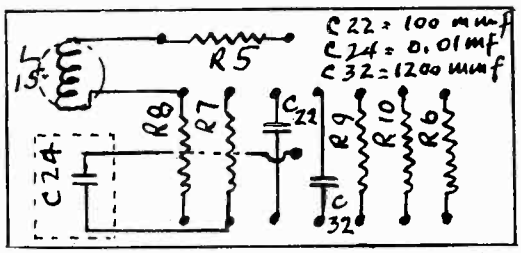


NOTE:—Filter Condenser Bank and Cable Terminal Strip are the only parts having numbers. All other numbers are given for reference only.

Bottom View of Amplifier-Speaker Unit, showing Wiring between Terminals.

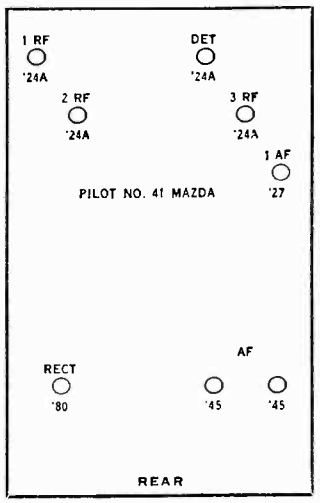
VICTOR—Model "Micro-Synchronous"
Line Voltage 112—Voltage Tap 120—Volume Control Full

TUBE NO IN ORDER TESTED	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 (1) GO +	SCREEN GRID — (2) GO +	CATHODE TO HEATER	SCREEN GO L. H. GO PLATE	PLATE R. H. GO PLATE	TUBE TEST	PLATE CURRENT CHANGE
1	224	1 R.F.	2.15	172	2.5	80	-	-	2.5	5	2.5
2	224	2 R.F.	2.15	172	2.5	80	-	-	2.5	5	2.5
3	224	3 R.F.	2.15	172	2.5	80	-	-	2.5	5	2.5
4	224	Det.	2.15	75*	-	2.5	8	-	-	-	-
5	227	1 A.F.	2.15	55	-	0	-	-	1.5	1.8	.3
6	245	PP-AF	2.25	165	-	36	-	-	19	22	3.0
7	245	PP-AF	2.25	165	-	36	-	-	19	22	3.0
8	280	-	4.8	-	-	-	-	36	36	-	-



Resistor board on radio chassis.

Models Victors R34, R35, R39, RE57, RE73 (1930)



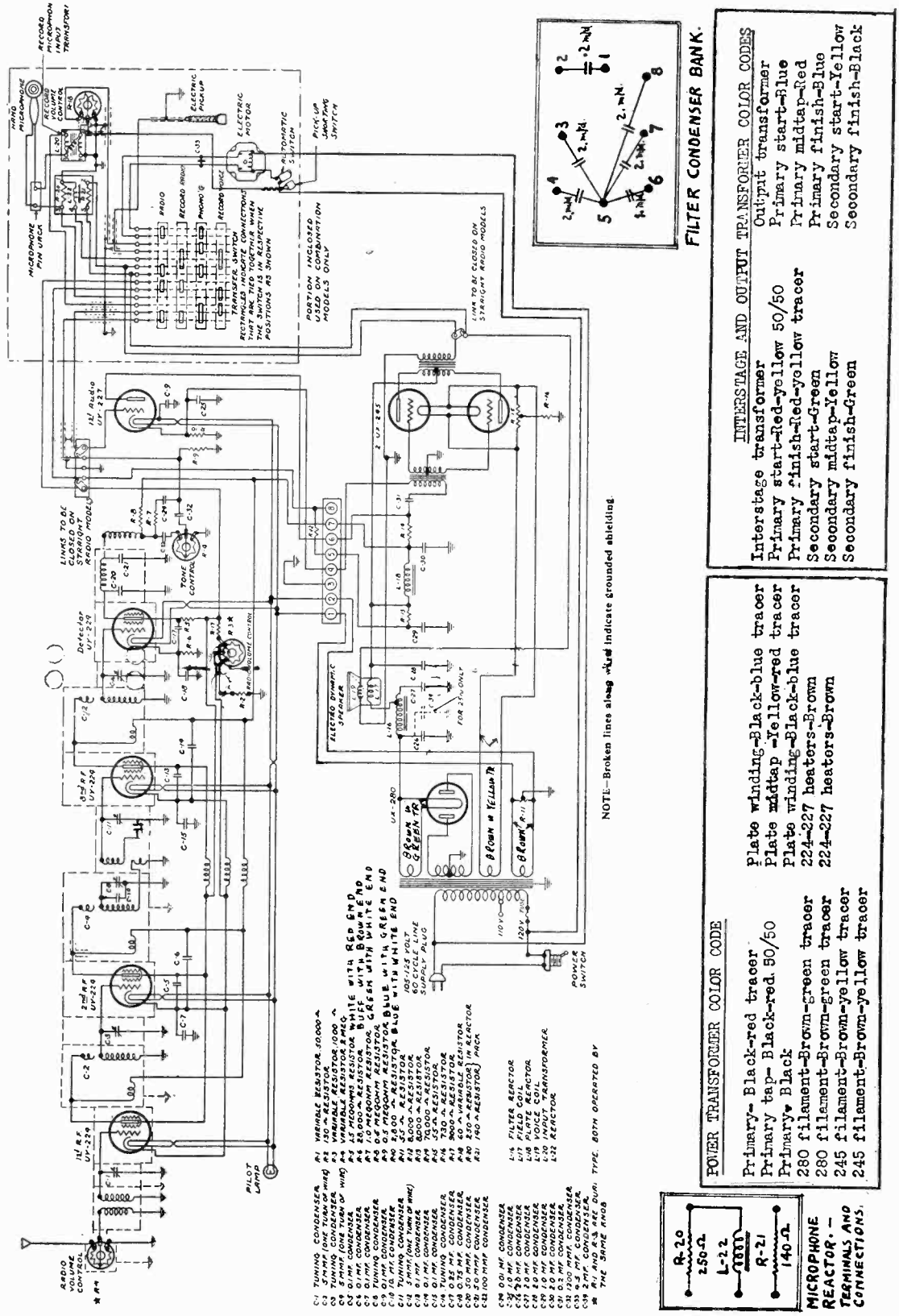
VOLTAGES ACROSS AMPLIFIER TERMINAL STRIP

Between 1 and 2	2.6	volts AC	
3 and 7	300.	volts DC	(The radio chassis
3 and 6	275.	volts DC	is disconnected
3 and 8	295.	volts DC	during these tests)

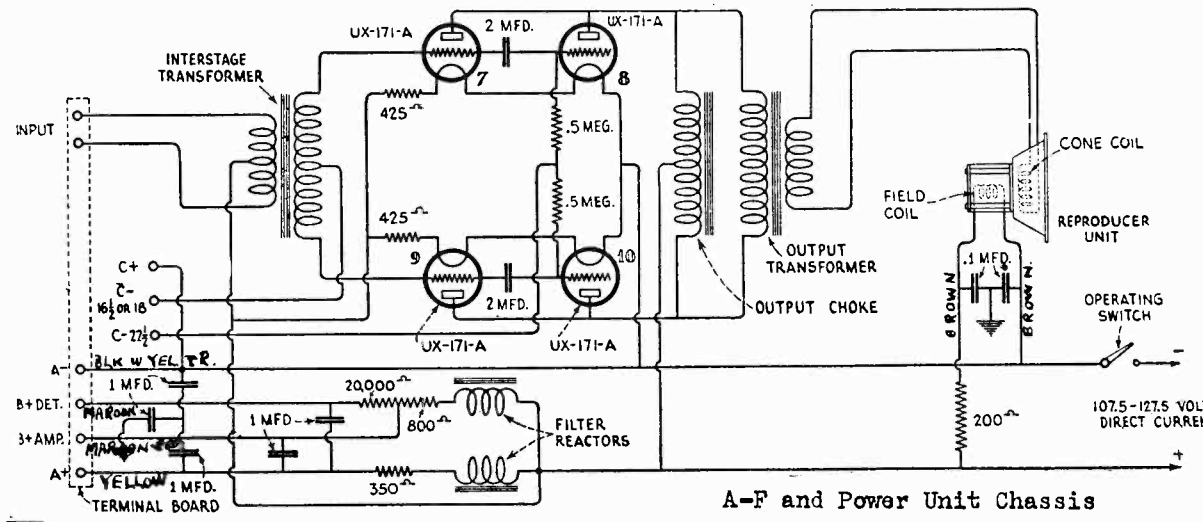
MODEL Victor R-35, R-39
RE-57

R. C. A. VICTOR CO., INC.

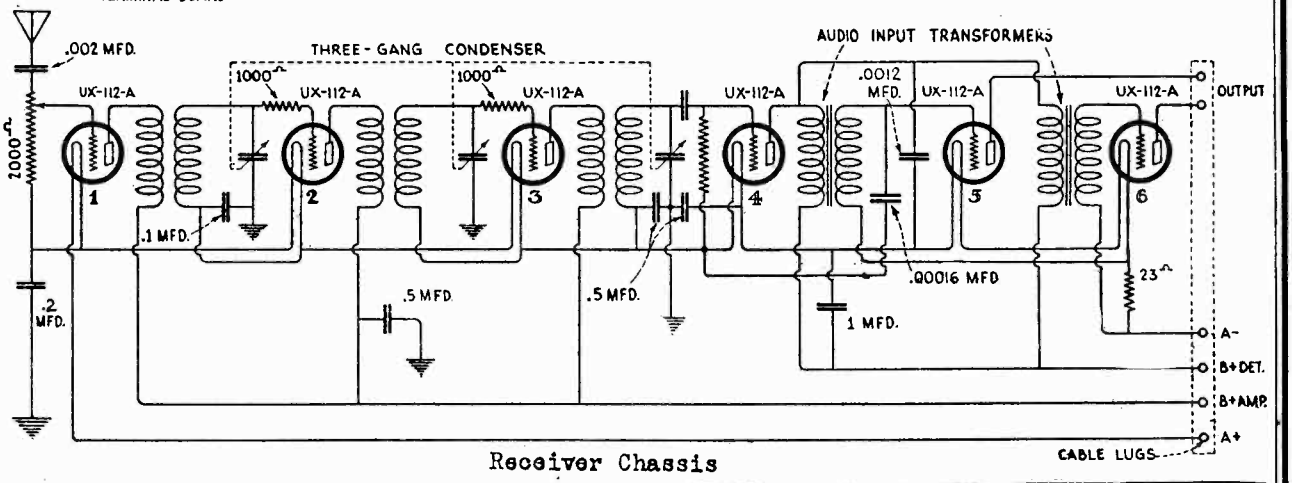
Schematic



R. C. A. VICTOR CO., INC. MODEL Radiola 41 DC



A-F and Power Unit Chassis

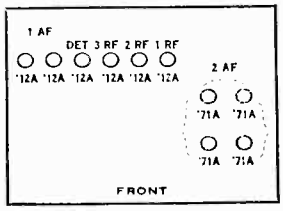


Receiver Chassis

VOLTAGES

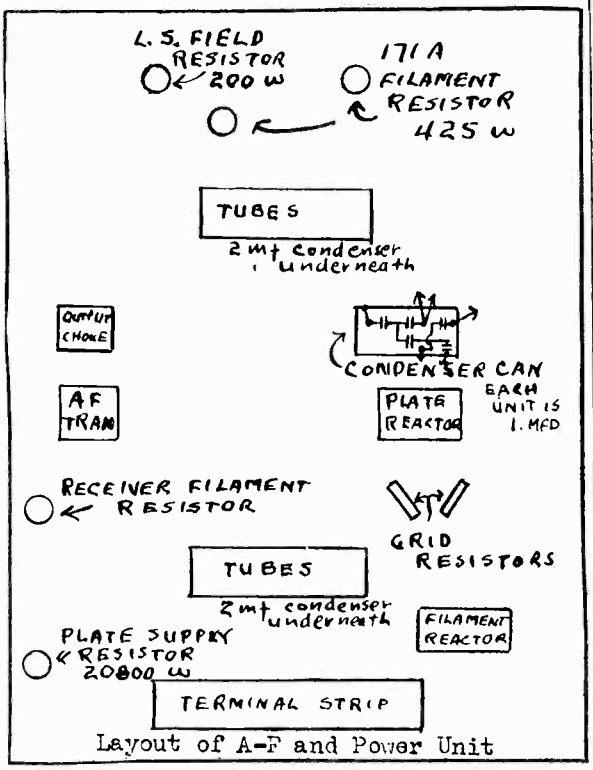
Tube	+Fil.-Grid	Fil.-Plt.	Pl.Crnt.	Fil. V
1	4.2	22	1.5 ma	4.3
2	4.1	26	2.0	4.4
3	4.2	31	2.4	4.5
4	4.0	15	1.0	4.6
5	10.	95	6.0	4.8
6	10.	100	7.0	5.0
9	27.	100	6.5	4.8
10	4.	95	6.5	5.0
7	27.	100	7.0	5.0
8	4.	95	6.5	5.0

Model Radiola 41 DC (1928)



TERMINAL VOLTAGES
120 Volt DC Line

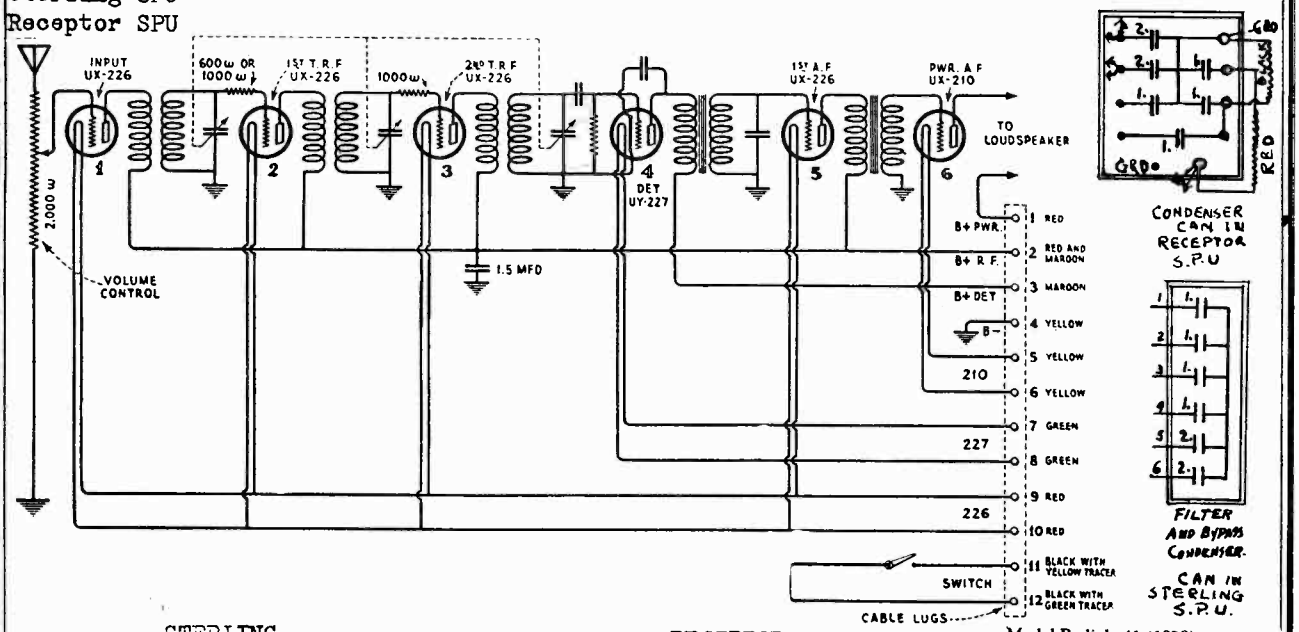
A-	to A+	35 volts
A+	to B+Det	5 volts
A+	to B+Amp	21 volts



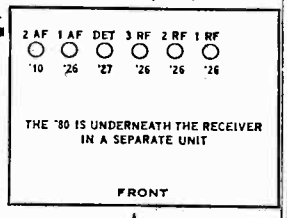
Layout of A-F and Power Unit

MODEL Radiola 41 AC
R-F Chassis
Sterling SPU
Receptor SPU

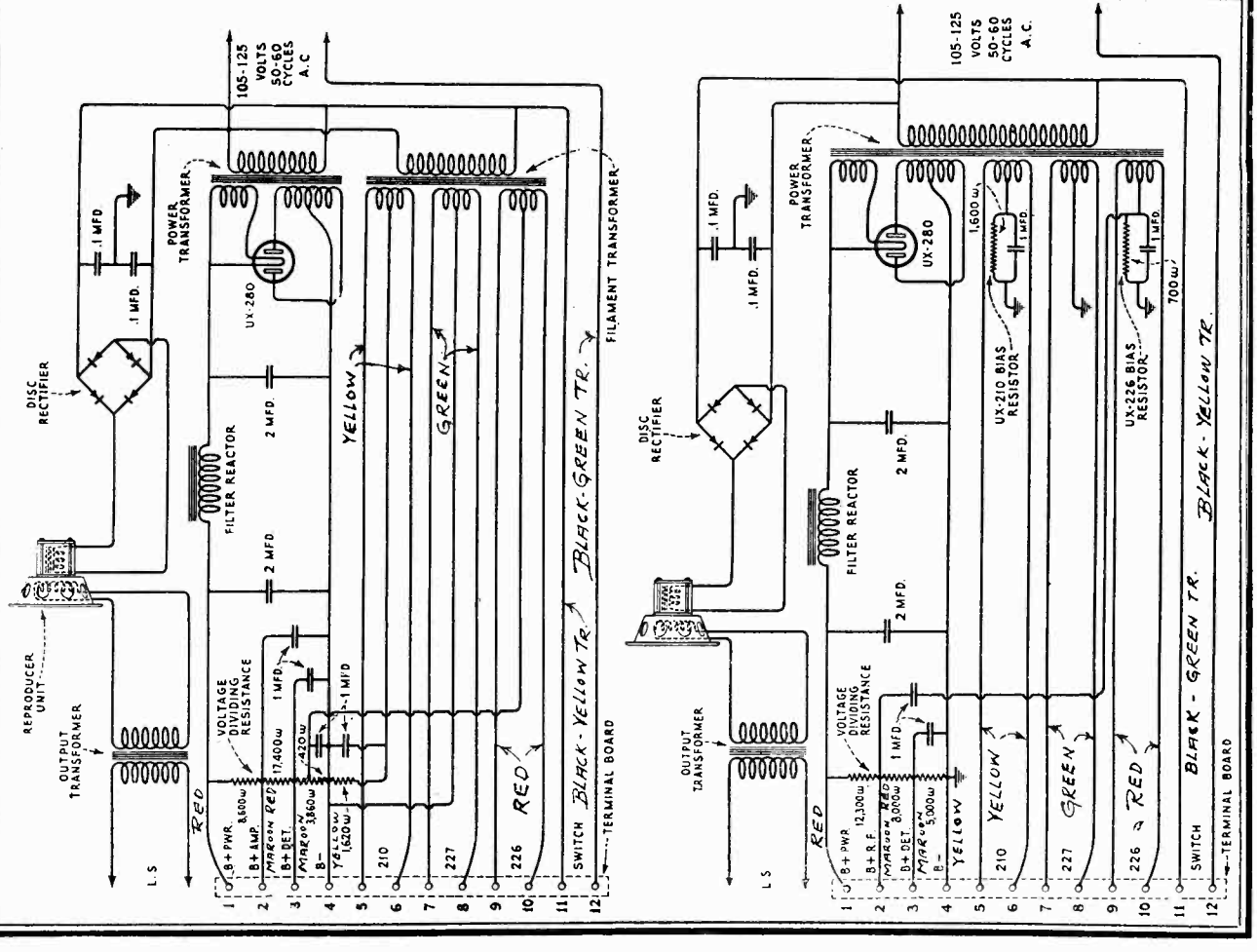
R. C. A. VICTOR CO., INC.



Model Radiola 41 (1928)

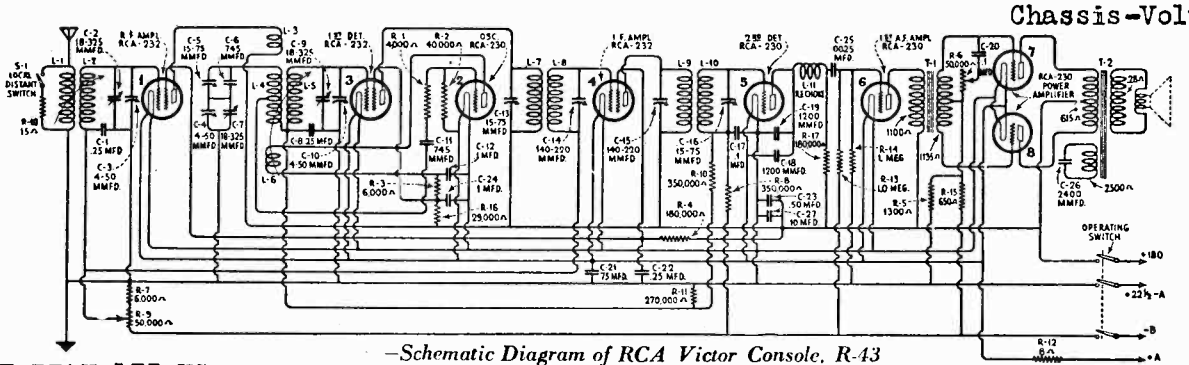


STERLING					RECEPTOR				
Tube	Grd.V.	Plt.V.	Plt.Crnt.	Fil.V.	Tube	Grd.V.	Plt.V.	Plt.Crnt.	Fil.V.
1	10	125	3.5 ma	1.5	1	7.	93	2.5 ma	1.5
2	10	125	3.5	1.5	2	7.	93	2.5	1.5
3	10	125	3.5	1.5	3	7.	93	2.5	1.5
4	-	25	2.0	2.5	4	-	33	2.0	2.5
5	10	125	3.5	1.5	5	7.	93	2.5	1.5
6	20	300	16.	7.5	6	22.	310	16.	7.5



R. C. A. VICTOR CO., INC.

MODEL R-43
Schematic
Chassis-Voltage



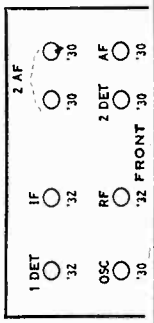
—Schematic Diagram of RCA Victor Console, R-43

IF PEAK 175 KC.

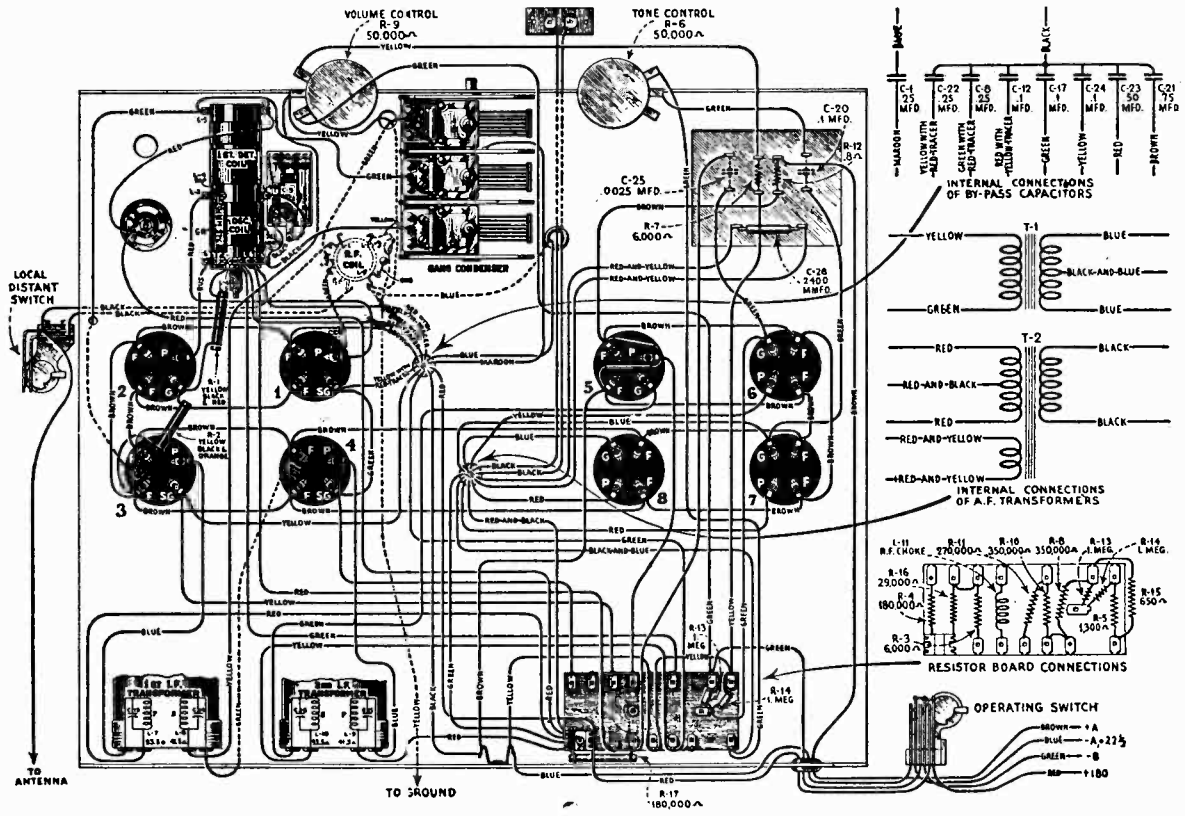
BATTERIES AT FULL VOLTAGE—NO SIGNAL BEING RECEIVED

These voltages are those obtained with one of the usual set analyzers. The values indicated, therefore, are not necessarily the voltages that actually appear at the Radiotron Sockets when the voltmeter is not connected.

Model R-43 (1931)



Tube No.	Filament to Control Grid Volts	Filament to Screen Grid Volts	Filament to Plate Volts	Plate Current M. A.	Filament Volts
VOLUME CONTROL AT MINIMUM					
1	22	55	155	0	2.0
2	—	—	50	3.0	2.0
3	0.5	65	150	0.5	2.0
4	22	55	155	0	2.0
5	5.0	—	90	0	2.0
6	2.0	—	150	2.5	2.0
7	15.0	—	1 0	0.5	2.0
8	15.0		150	0.5	2.0
VOLUME CONTROL AT MAXIMUM					
1	1.5	45	150	2.5	2.0
2	—	—	50	3.0	2.0
3	0.5	60	150	0.5	2.0
4	1.5	45	150	2.5	2.0
5	5.0	—	90	0	2.0
6	2.0	—	150	2.5	2.0
7	15.0	—	150	0.5	2.0
8	15.0	—	150	0.5	2.0

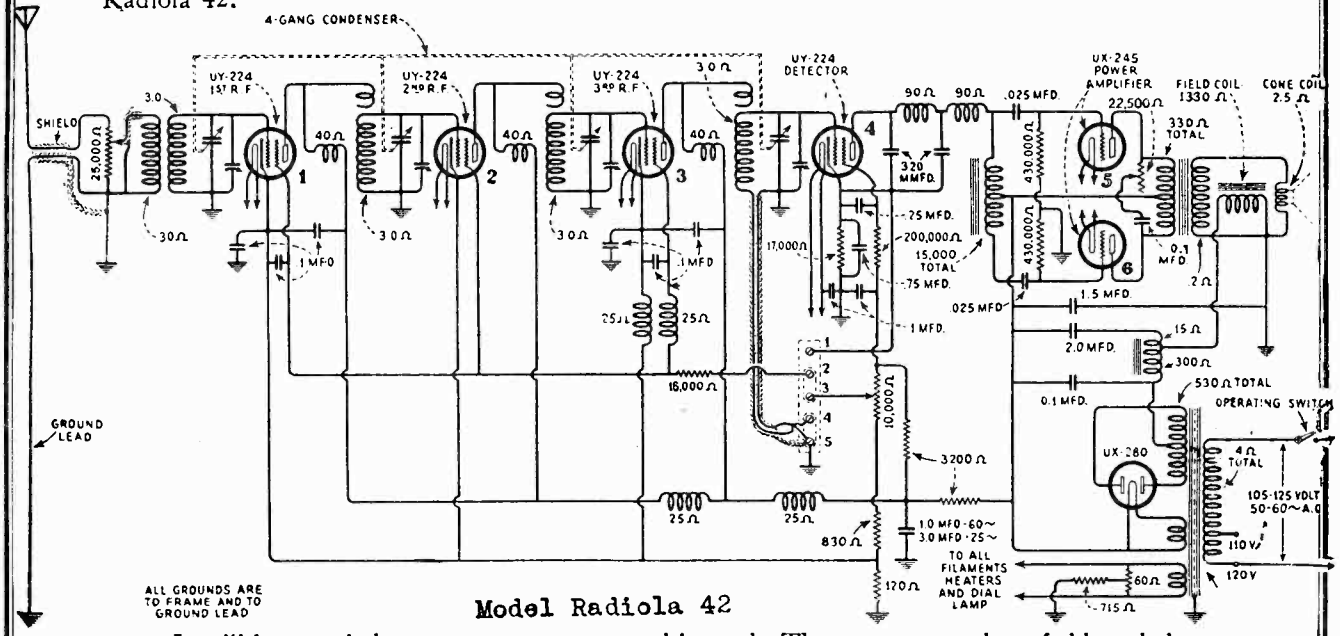


—Wiring Diagram of RCA Victor Console, R-43

Radiola 42 Schematic
Model R-43 Notes

R. C. A. - VICTOR CO., INC.

All the information contained in the Radiola 48 Service Notes will therefore apply to the Radiola 42.



It will be noted that a new volume control is used. The antenna section of this unit has a value of 25,000 ohms instead of 50,000 ohms as used in the Radiola 48. This volume control is also being used as a replacement in Radiola 48. The screen grid voltage section has a value of 10,000 ohms and the 12,000 ohm shunt resistor is not used. The 0.005 mfd. condenser across the plates of Radiotrons UX-245 has been omitted due to the connection of the tone control in the same position. When making replacements of the condenser and reactor unit it will be necessary to clip the two leads that are connected to the .005 mfd. condenser close to the container. The reason for this is that the replacement unit supplied is suitable for either the Radiola 42 or 48.

Model R-43 Service Notes

The RCA Victor Console, R-43 is an eight tube screen grid battery operated Super-Heterodyne radio receiver.

Three Radiotrons RCA-232 are used in the R.F., 1st detector and I.F. stages respectively. Five Radiotrons RCA-230 are used in the Oscillator, 2nd detector, 1st audio and push-pull power stage.

A reference to the RCA Victor Radiola Superette Service Notes will give the details of circuit operation up to and including the second detector. The audio circuits of the R-43 are however, considerably different from the R-7. A discussion of their function follows:

The first audio stage operates in the usual manner, its output being fed into the grid circuit of the push-pull stage. The output stage is of the push-pull type, in which the tubes are biased to substantially plate current cut-off. The arrangement is such that the output stage may deliver substantially four times the output that would be obtained with the same tubes operated in the usual circuit. This system is very economical due to there being but a small amount of residual plate current flowing in the output stage. Current is drawn only when a modulated signal is being received.

An extra winding, shunted by a capacitor, is placed on the output transformer. The purpose of this circuit is to provide a high frequency cut-off for the audio amplifier.

A tone control is provided, which consists of a 0.1 mfd. capacitor and a 50,000 Ohm variable resistor connected across one half of the secondary of the input transformer. This circuit functions to reduce the high frequency output as the resistance is decreased.

The permanent magnet dynamic loudspeaker used with this receiver is a new development and gives all the fine quality and life-like reproduction inherent in this type of reproducer.

The receiver is designed for use with the new Eveready Aircell "A" battery which provides a life in excess of 600 ampere hours. The receiver draws but .48 amperes, giving approximately 1200 hours life from a single filament battery.

The plate and grid supply for all Radiotrons is furnished from four heavy duty "B" batteries. Due to the low current drain—8 to 15 M.A.—excellent life is obtained from this source of current.

SERVICE DATA

A reference to the RCA Victor Superette, R-7 Service Notes will give complete details on R.F., oscillator and I.F. adjustments as well as the usual service information required with this type of receiver.

BATTERIES

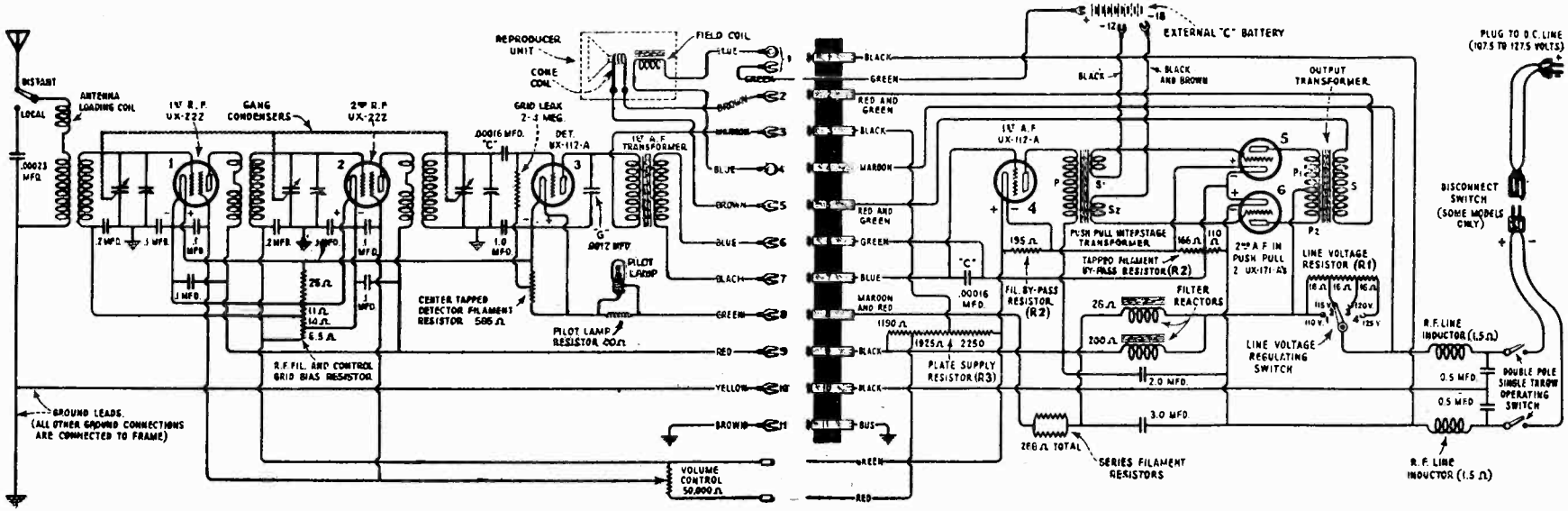
The Eveready Aircell "A" battery must be kept clean and the plates covered with water at all times. Operation at temperatures of 40 degrees Fahrenheit or lower is not recommended and if attempted will result in damage to the battery. Having the battery idle at this temperature does not in any way affect it. If it is essential that an installation be made where the receiver is to be operated at 40 degrees Fahrenheit or less, a single cell storage battery should be used. Due to the low current drain, excellent life from one charging will be obtained.

"B" batteries should be replaced when their output voltage has dropped 25% under load.

SPECIAL NOTE* Material within border very important information**

R. C. A. VICTOR CO., INC.

MODEL Radiola 46 DC
MODEL Radiola 44 AC
Terminal Voltage
MODEL Radiola 46 AC
Terminal Voltage



Model 46 AC Terminal Voltage

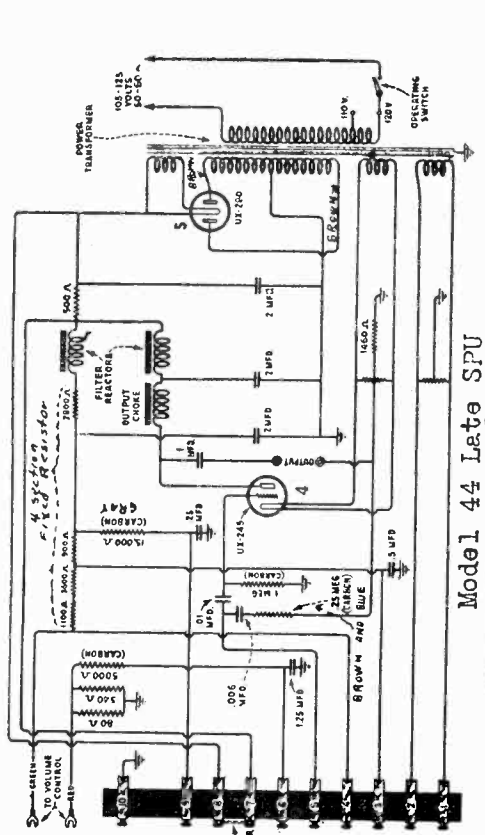
Terminals	Voltage Control at Min	Max
1 to 2	2.5 A.C.	2.5 A.C.
3 to Red VC lead	185. D.C.	170. D.C.
4 to 6	70. D.C.	65. D.C.
6 to 9	195. D.C.	180. D.C.
6 to 11	5. D.C.	5. D.C.
8 to 11	320. D.C.	320. D.C.
Red VC lead to 11	2.1 D.C.	2.1 D.C.
Arm of VC lead to Red VC lead	0.	70. D.C.

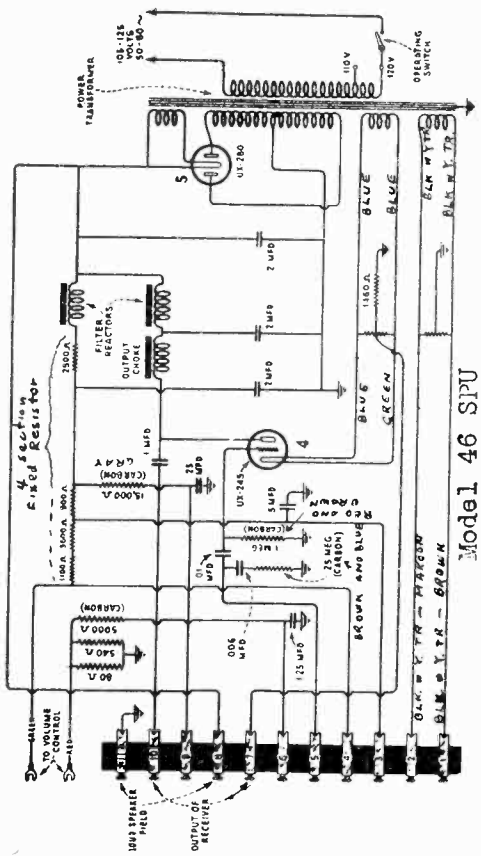
Model 44 AC Terminal Voltage

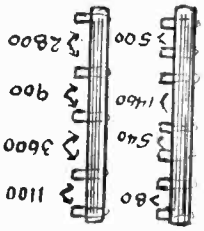
Terminals	Vol. Control at Min.	Max.
1 to 2	2.5 A.C.	2.5 A.C.
3 to Red VC lead	185. D.C.	170. D.C.
4 to 6	70. D.C.	60. D.C.
6 to 9	195 D.C.	180 D.C.
6 to 10	5. D.C.	5. D.C.
8 to 10	330 D.C.	330 D.C.
Red VC lead to 10	2.1 D.C.	2.1 D.C.
Arm of VC lead to Red VC lead	0.	70. D.C.

MODEL 44,46 RF Chassis
MODEL 44 Early SPU
MODEL 44 Late SPU
MODEL 46 SPU

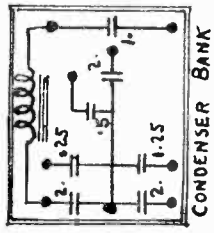
R. C. A. VICTOR CO., INC.

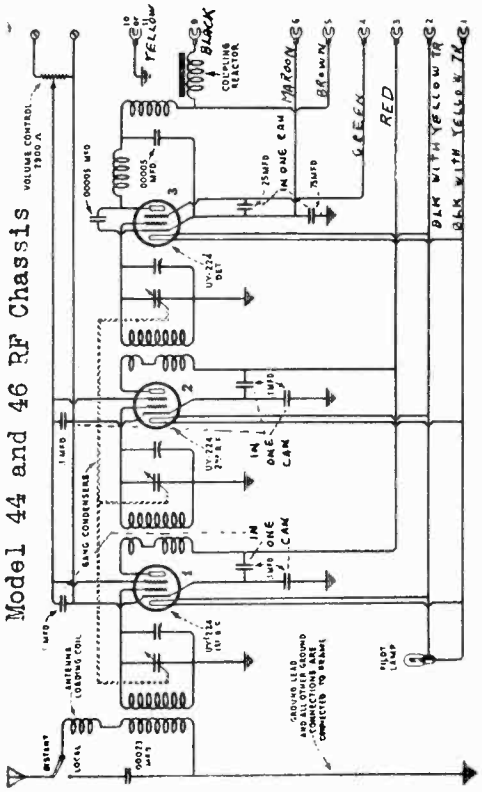


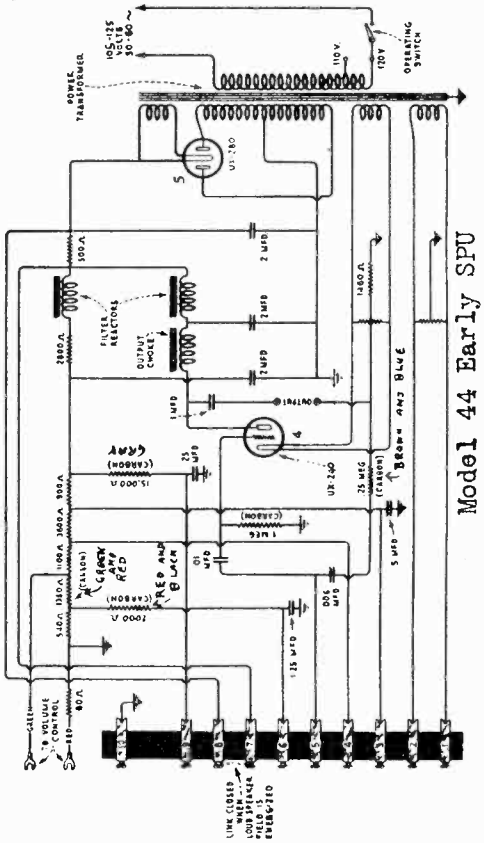




Resistance units in power pack.







Models Radiolas 44, 46, 47 (1929)

1 RF ○ 2 RF ○ DET ○ RECT ○ AF ○
2AA 24A 24A 80 45

PILOT NO 41 MAZDA

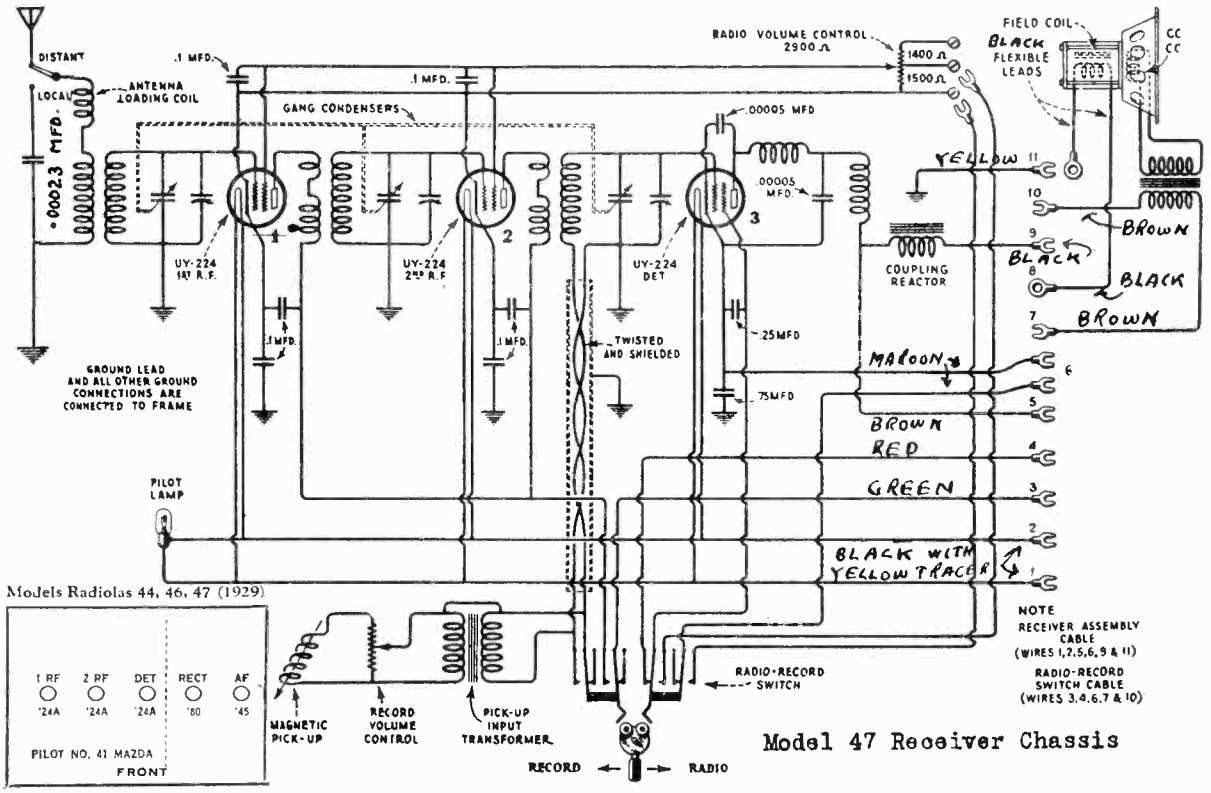
FRONT

RADIOLA—Models 44-46
Line Voltage 120—Set on 120 Volt Tap—Volume Control Position Max

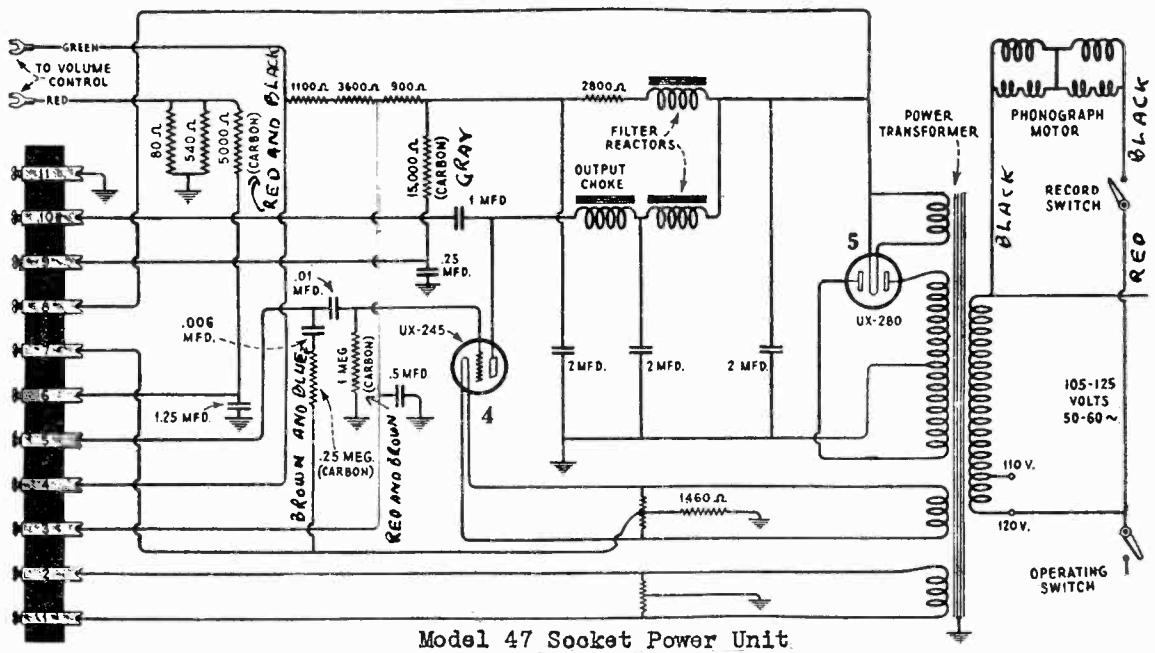
TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE IN SOCKET CKT	READINGS, PLUG IN SOCKET OF SET									
			TUBE OUT		TUBE IN TESTER							
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS (GRID)	CATHODE TO HEATER VOLTS	NORMAL PLATE MA	PLATE MA GRID CHANGE	PLATE VOLTS	SCREEN GRID VOLTS
1	224	1st RF	2.50	164	2.35	164	1.5	1.5	1.5	3.8	2.3	45.0
2	224	2nd RF	2.50	164	2.35	164	1.5	1.5	1.5	3.8	2.3	45.0
3	224	Det.	2.50	164	2.35	100	6.0	7.0	0.1	0.8	0.7	50.0
4	245	Audio	2.65	336	2.5	230	6.0	-	32.0	34.0	2.0	-
5	280	Rect.	5.2	-	5.0	260	-	-	50.0	-	-	-

MODEL Radiola 47

R. C. A. VICTOR CO., INC.



Model 47 Receiver Chassis

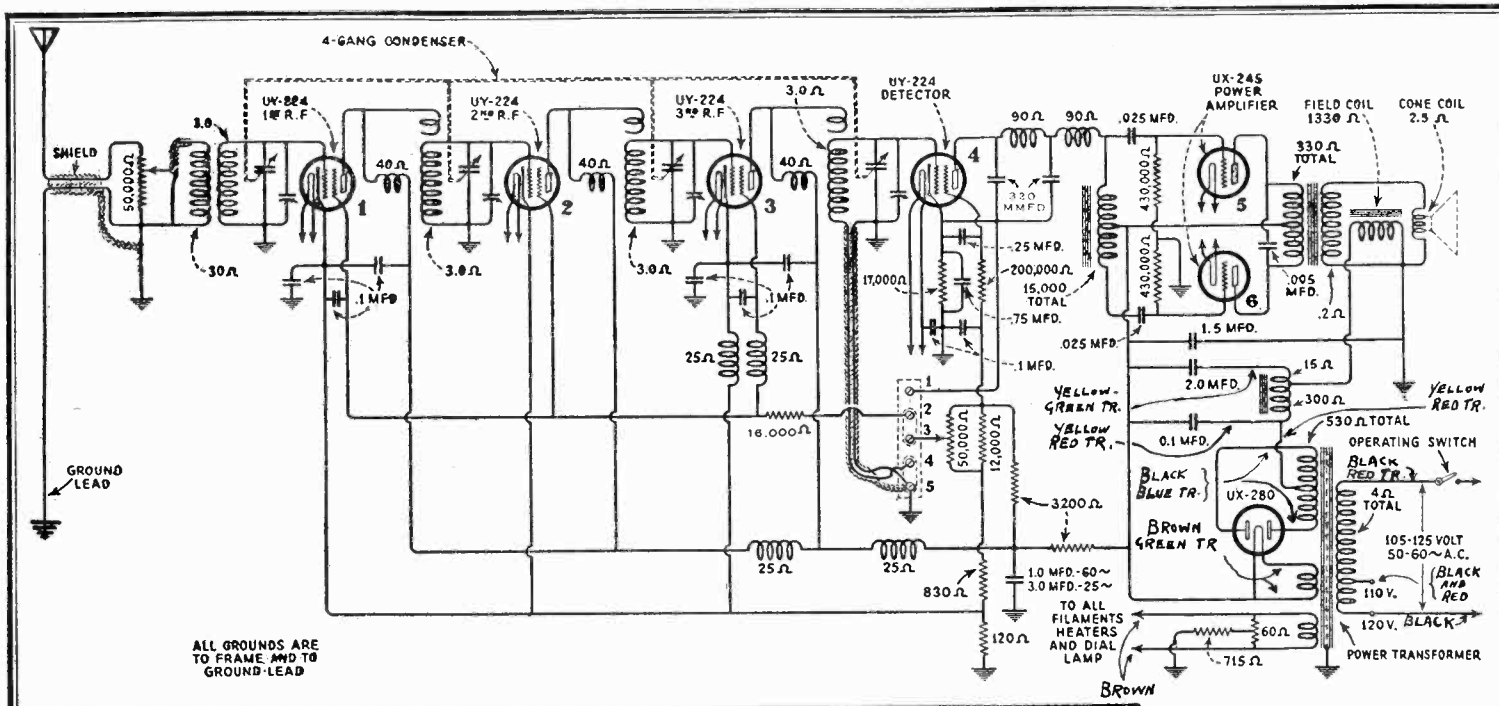


Model 47 Socket Power Unit

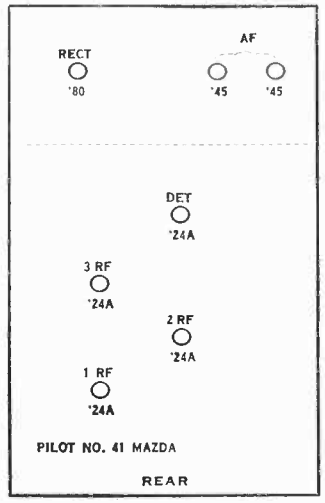
SOCKET VOLTAGES—RADIOLA 47

Volume Control at Minimum—Radio-Record Switch at "Radio"

Socket No.	Cathode to Heater Volts	Fil. to Control grid Volts	Cathode or fil. to plate Volts	Plate Current Millamperes	Filament or Heater Volts
1	2.1	—	190	0	2.35
2	2.1	—	185	0	2.35
3	18	—	120	3.0	2.35
4	—	6.0	225	29.0	2.35

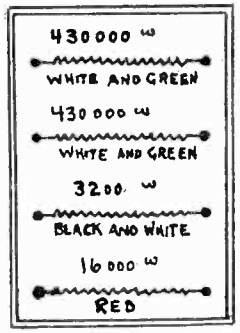


Models Radiolas 42, 48 (1930)

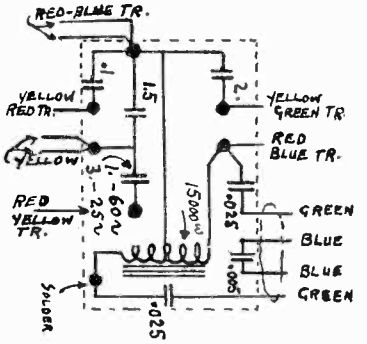


Sooket Voltages. (120 Volt Line.) VOL.CONTR. AT MAXIMUM.

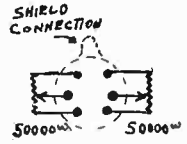
Tube No.	Cath.to Heater V. D.C.	Cath. or Fil. to Contr.Gr. Volts D.C.	Cath.to Screen Gr. Volts D.C.	Cath.or Fil. to Plate Volts D.C.	Plate Current Ma.	S.G. Current Ma.	Heater or Fil. Volts.
1	-40	-2.5	+85	160	3.	0.2	2.3
2	-36	-2.5	+85	155	3.5	0.15	2.3
3	-36	-2.5	+75	155	3.5	0.15	2.3
4	-28	-7.5	+55	225	0.5	0.1	2.3
5	---	-1.	---	200	25.	---	2.3
6	---	-1.	---	200	25.	---	2.3



Resistor Mounting Board Connections



Internal connections of Capacitor and Coupling Reactor Pack



Internal Connections of Volume Control

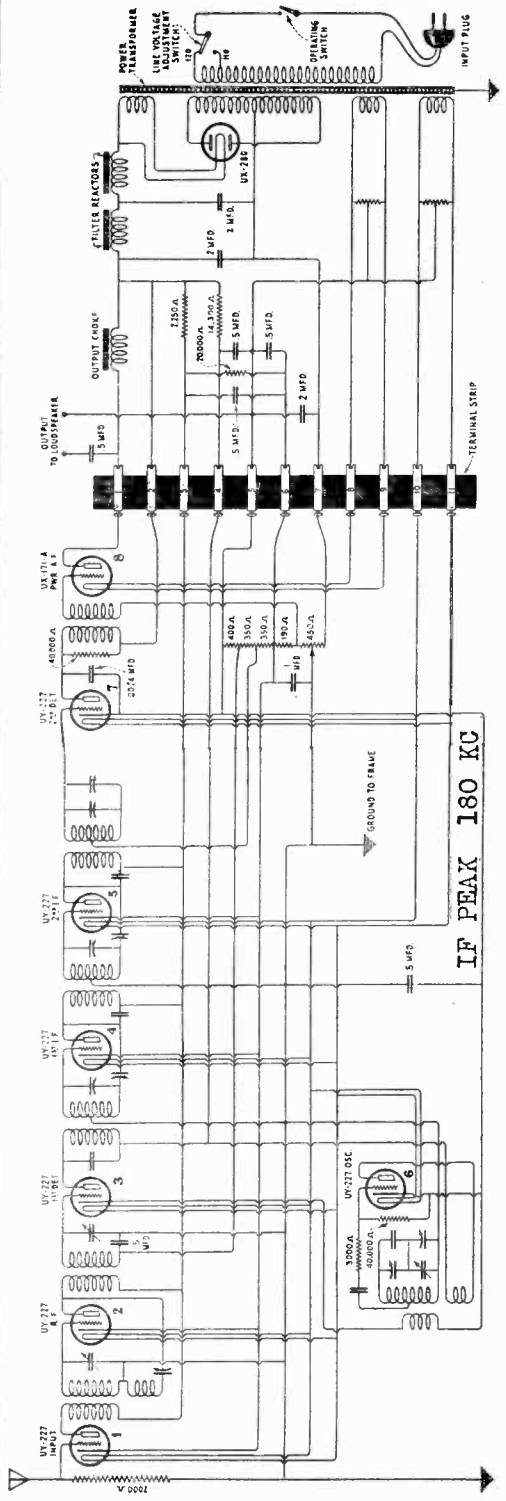
Bypass Condenser Units

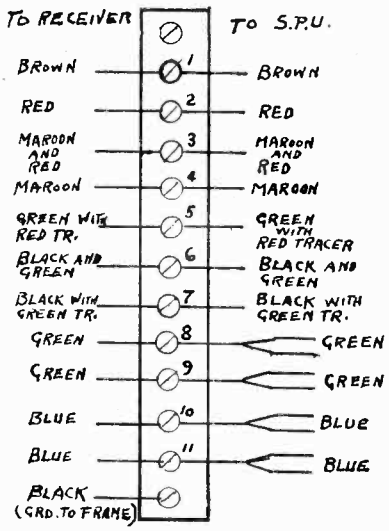
R. C. A. VICTOR CO., INC.

MODEL Radiola 60

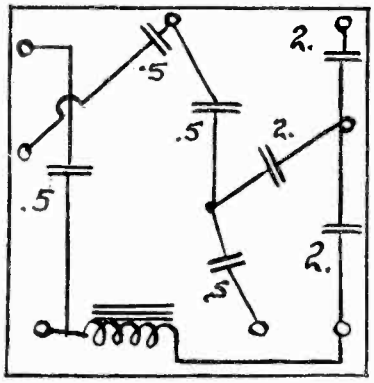
RADIOLA 50 is the same as the Radiola 17 with the exception that it makes use of a 100-A speaker and the receiver is mounted in a console cabinet.

Radiola 51 is the same as the Radiola 18. The Radiola 51 AC is the same as the Radiola 18 AC, except that it is mounted in a console cabinet. The Radiola 51 DC is the same as the Radiola 18 DC, except that it is mounted in a console cabinet.



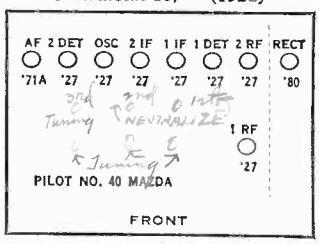


Terminal Strip



Filter, bypass condensers and output choke.

Models Radiolas 60, (1928)



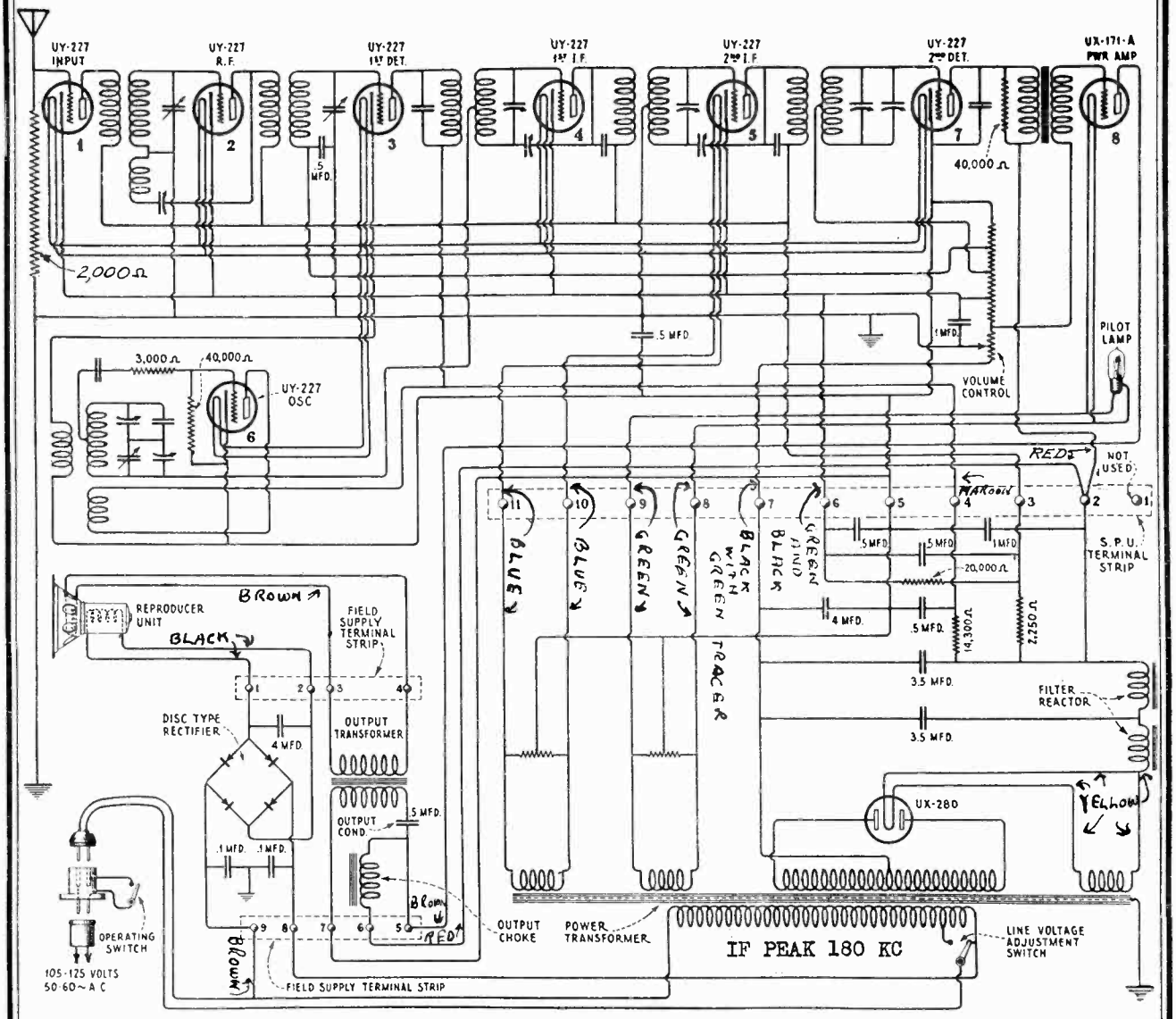
RADIOLA—Model 60

TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE (1ST R.F. DET. ETC)	READINGS PLUG IN SOCKET OF SET								
			TUBE OUT		TUBE IN TESTER						
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE M.A. CHANGE
1	227	Ant. Coup.	2.35	148	2.2	144	18.0	25	1.0	3.0	2.0
2	227	1st. R.F.	2.35	148	2.2	144	18.0	25	1.0	3.0	2.0
3	227	1st. Det.	2.35	84	2.2	70	9.0	0	1.0	3.0	2.0
4	227	1st. I.F.	2.35	148	2.2	144	18.0	25	1.0	4.0	3.0
5	227	2nd. I.F.	2.35	148	2.2	144	18.0	25	1.0	4.0	3.0
6	227	Oscillator	2.35	118	2.2	70	0.0	0	7.0	7.0	0.0
7	227	2nd. Det.	2.35	162	2.2	157	18.0	0	1.0	3.0	2.0
8	171A	1st. Audio.	5.00	178	4.8	157	31.5		15.0	17.0	2.0
9	280	Rectifier	5.00		4.8				19.0		
10											

Note: The above readings were taken with a line voltage of 117 volts. The volume control should be set centrally with the line vertical in order to get the above readings. The "C" voltage on tubes 1, 2, 4, and 5 will vary from 9 to 27 volts, depending on the position of this volume control, hence, these readings are taken at the middle point.

MODEL Radiola 62

R. C A. VICTOR CO., INC.



SOCKET VOLTAGES

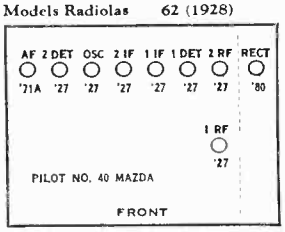
Tube	Fil. V.	Plt. V.	Grid V.	Pl. Crnt
Coupling	2.05	130	8.	3.5 ma
RF	2.05	130	8.	3.6
1 Det	2.05	80	8.	.5
1 IF	2.05	130	8.	3.
2 IF	2.05	130	8.	3.5
Oscil	2.05	75	-	5.
2 Det	2.05	150	15.	---
AF	4.4	180 c	39.	15.

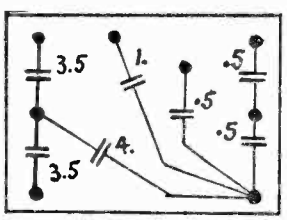
TERMINAL VOLTAGES

Between 2 and 7	210 volts DC
3 and 7	160 volts DC
4 and 7	110 volts DC
8 and 9	5 volts AC
10 and 11	2.5 volts AC

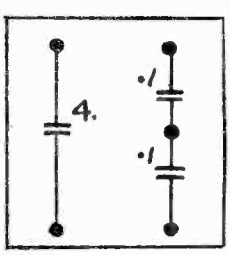
Output voltage of disc rectifier with field connected should be 100 volts.

Models Radiolas 62 (1928)

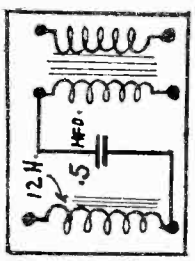




Filter and Bypass Condensers



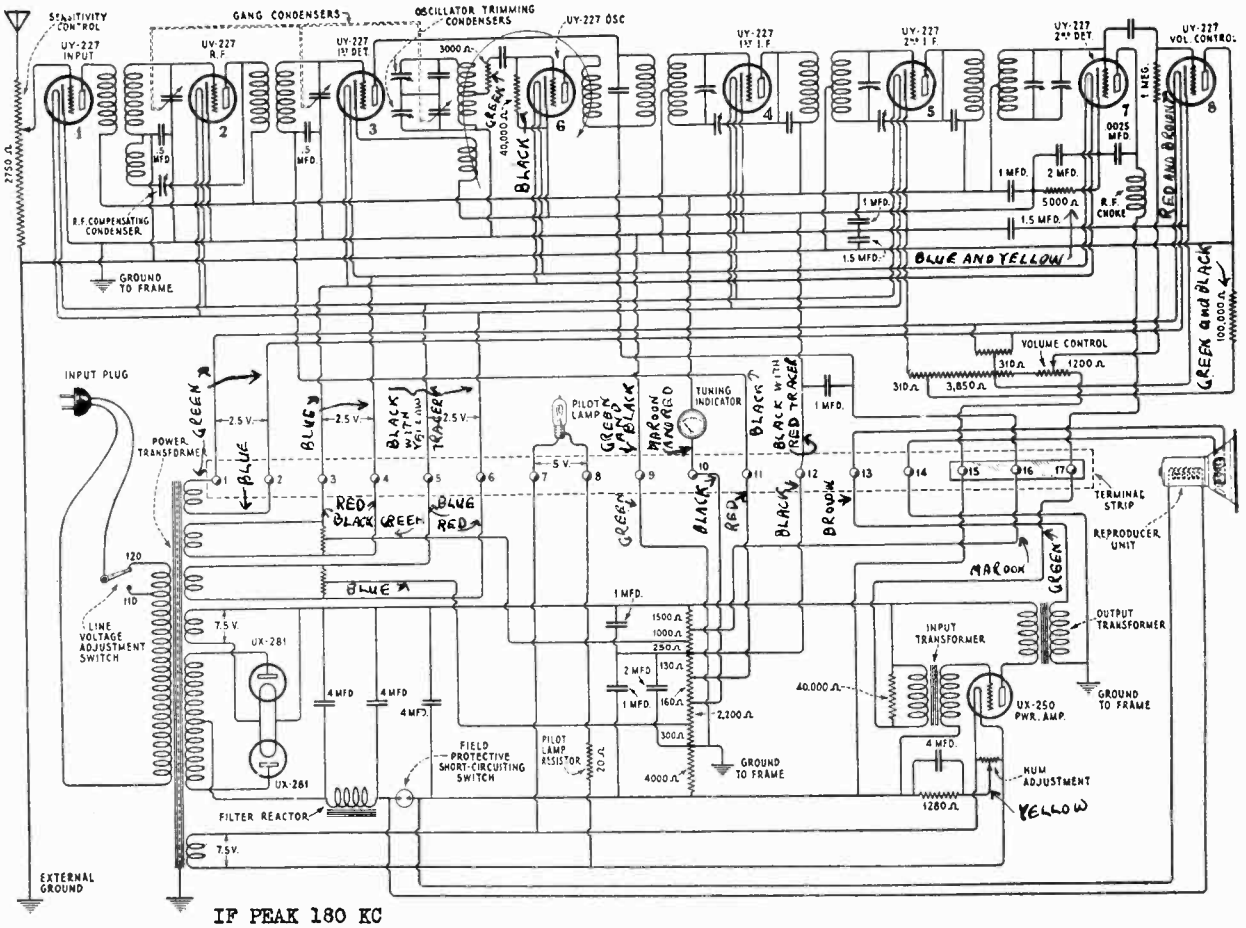
Condenser Bank for Field Supply



Coupling Unit

R. C. A. VICTOR CO., INC.

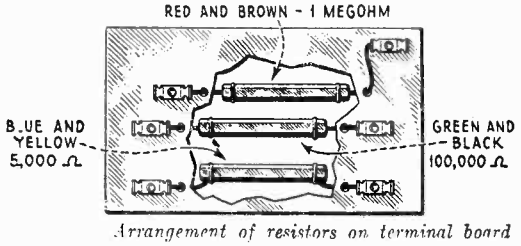
MODEL Radiola 64
Schematic
Voltage



IF PEAK 180 KC

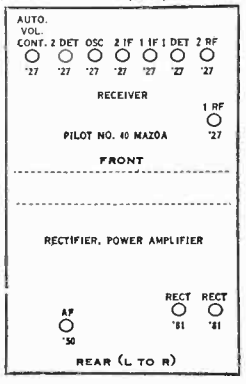
TERMINAL VOLTAGES

1 and 2	2.5 V. AC.
3 and 4	2.5 V. AC.
5 and 6	2.5 V. AC.
7 and 8 Light On	5.0 V. AC.
9 and 15	150. V. DC.
11 and 15	300. V. DC.
12 and 15	315. V. DC.
15 and 16	400. V. DC.
15 and 17	500. V. DC.



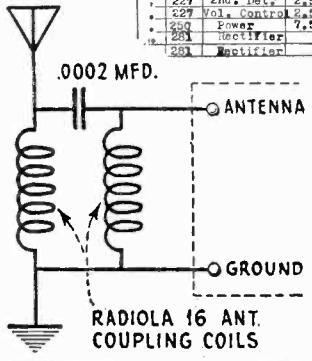
Arrangement of resistors on terminal board

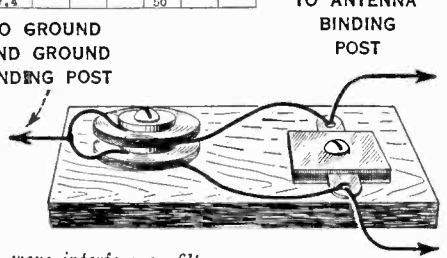
Model Radiola 64 (1928)



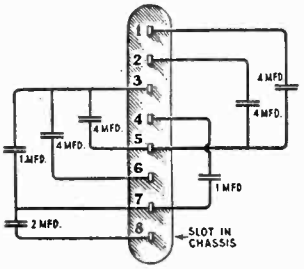
RADIOLA—Model 64
Line Voltage 112—Volume Control Full

TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF TUBE (1 BY, R.F., DET., ETC.)	READINGS, PLUG IN SOCKET OF SET, TUBE OUT		TUBE IN TESTER					
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE M.A. CHANGE
1	227	Ant.Coup.St.	2.5	128	2.4	124	25	13.5	3.4	7.8	4.4
2	227	Tuned R.F.	2.5	128	2.4	124	25	16.0	3.3	7.1	3.8
3	227	Tuned 1st Det.	2.5	80	2.4	75	25	16.0	.2	2.9	2.7
4	227	1st. I.F.	2.5	128	2.4	124	9	13.5	3.4	7.8	4.5
5	227	2nd. I.F.	2.5	128	2.4	124	9	13.5	3.4	7.8	4.5
6	227	Oscillator	2.5	80	2.4	75	25	13.5	7.0	7.6	.6
7	227	2nd. Det.	2.5	180	2.4	176	25	13.5	-	-	-
8	227	Vol. Control	2.5	80	2.4	75	4	-	-	-	-
9	250	Power	7.5	584	7.2	392	65	-	52	55	3.0
10	281	Rectifier			7.4				50		
	281	Rectifier			7.4				50		





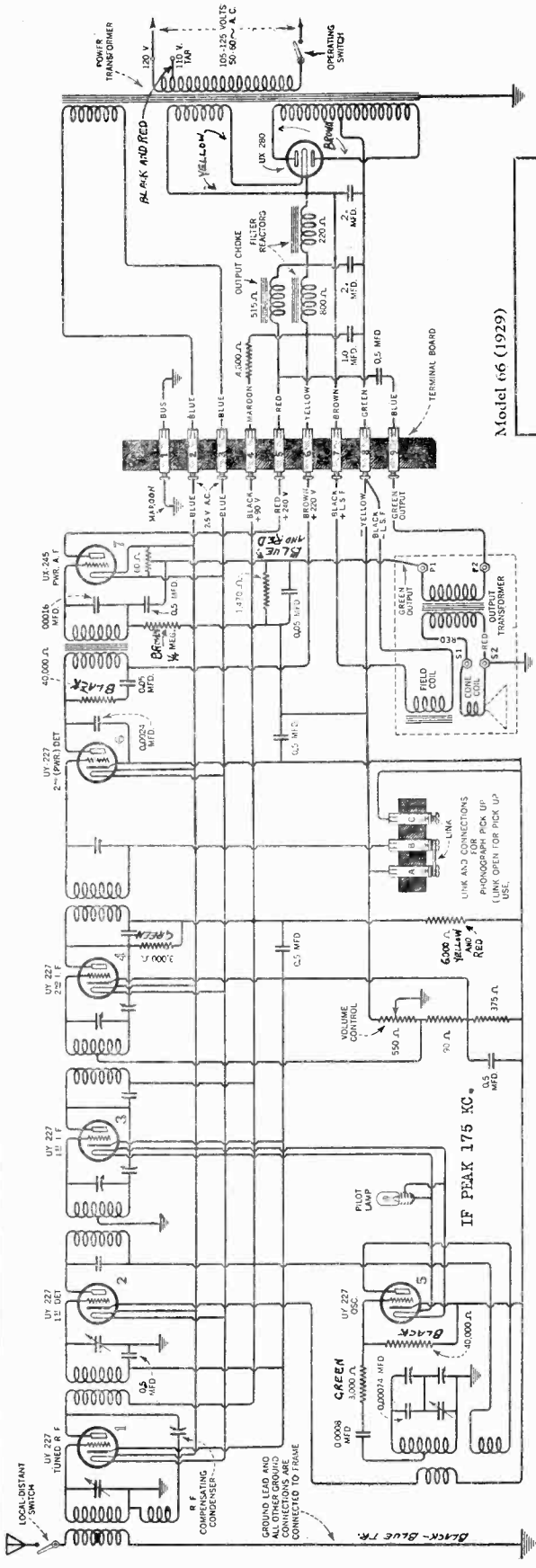
Long wave interference filter



Internal connections of filter condensers

R. C. A. VICTOR CO., INC.

MODEL Radiola 66



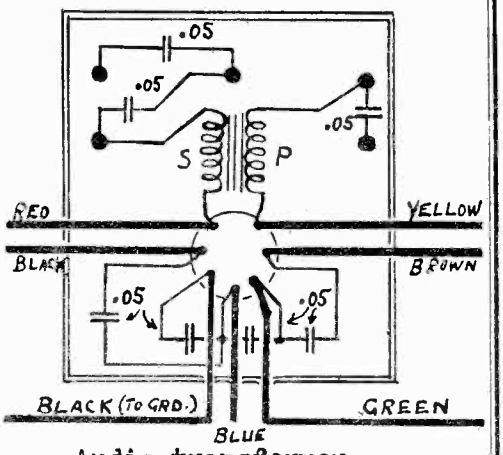
Model 66 (1929)

	AF	DET	OSC	IF	IF	DET	RF
	'45	'27	'27	'27	'27	'27	'27

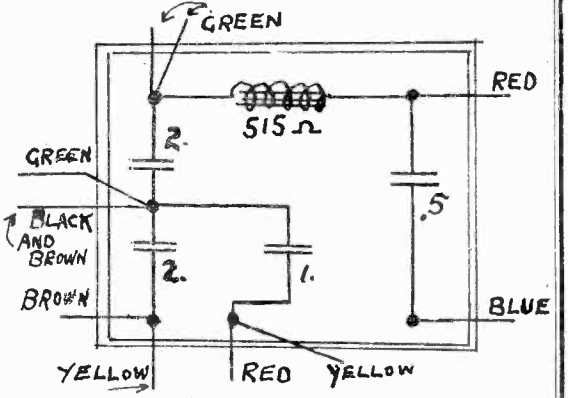
RECT '80 IN SEPARATE UNIT

PILOT NO. 41 MAZDA

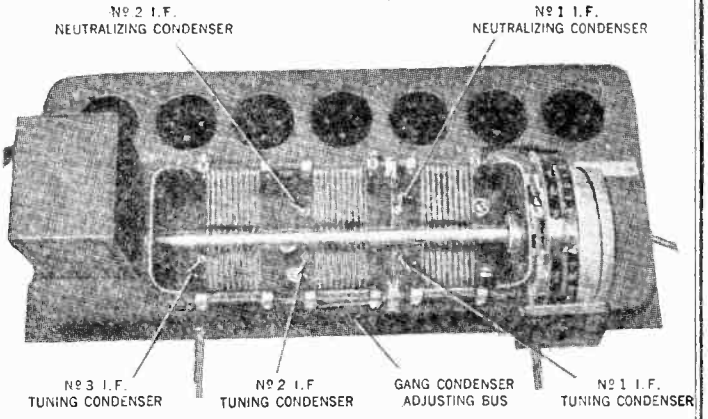
FRONT



Audio transformer and bypass condanser



Output choke, condenser and filter condenser.



Condenser adjusting screws for I.F. transformers

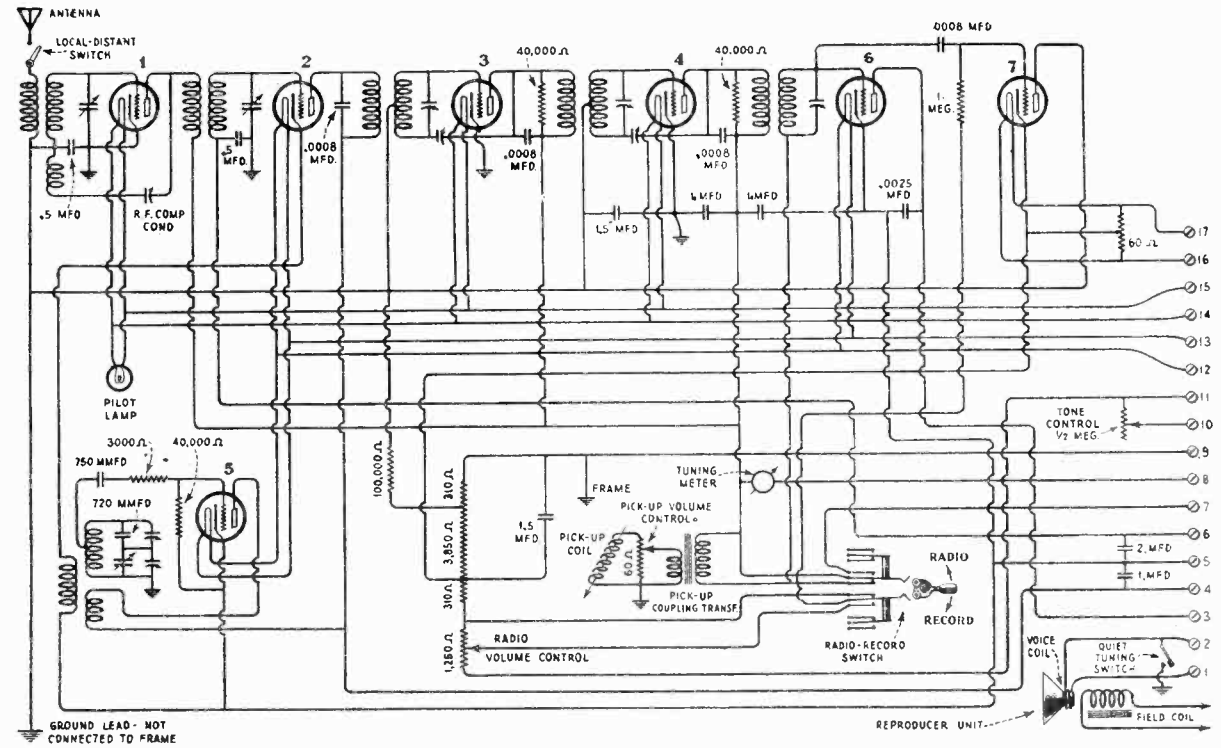
RADIOLA—Model 66

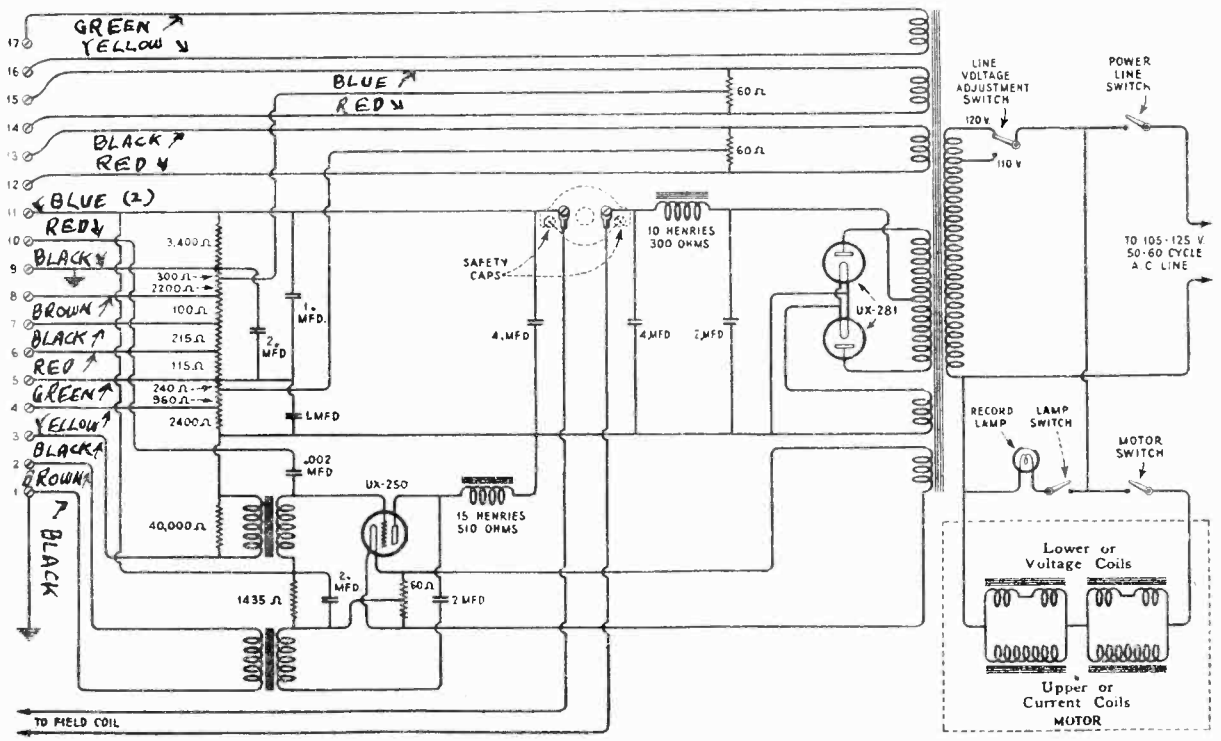
Line Voltage 120.0—Set on 120.0 Volt Tap—Volume Control Position Max

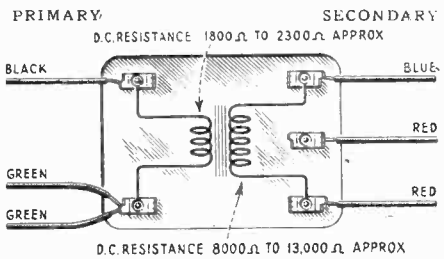
TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST R.F. DET. ETC.	READINGS PLUG IN SOCKET OF SET								
			TUBE OUT		TUBE IN TESTER						
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	VOLTS CONTROL GRID	CATHODE - HEATER VOLTS	NORMAL PLATE M A	PLATE M A GRID TEST	PLATE CHANGE M A	SCREEN GRID VOLTS
1	227	RF	2.65	83.0	2.4	80.0	3.0	24.0	4.5	8.6	4.1	-
2	227	1st Det.	2.65	83.0	2.4	72.0	7.0	17.0	2.0	3.5	1.5	-
3	227	1st IF	2.65	83.0	2.4	80.0	3.0	23.0	4.5	8.6	4.1	-
4	227	2nd IF	2.65	83.0	2.4	80.0	3.0	23.0	4.5	8.6	4.1	-
5	227	OSC.	2.65	83.0	2.4	66.0	0.0	16.0	6.4	6.8	.4	-
6	227	2nd Det	2.65	237.0	2.4	236.0	29.0	17.0	.1	1.0	.9	-
7	245	AF	2.65	237.0	2.4	224.0	17.0	-	32.0	34.0	2.0	-
8	280	Rect.	5.2	-	5.0	250	-	-	52.0	-	-	-

MODEL Radiola 67
Schematic

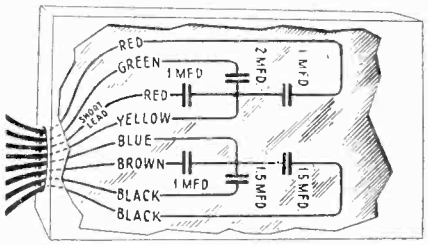
R. C. A. VICTOR CO., INC.



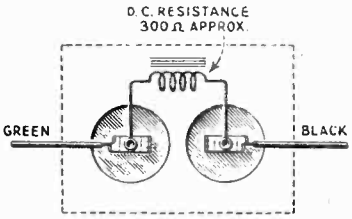




Internal connections of input transformer



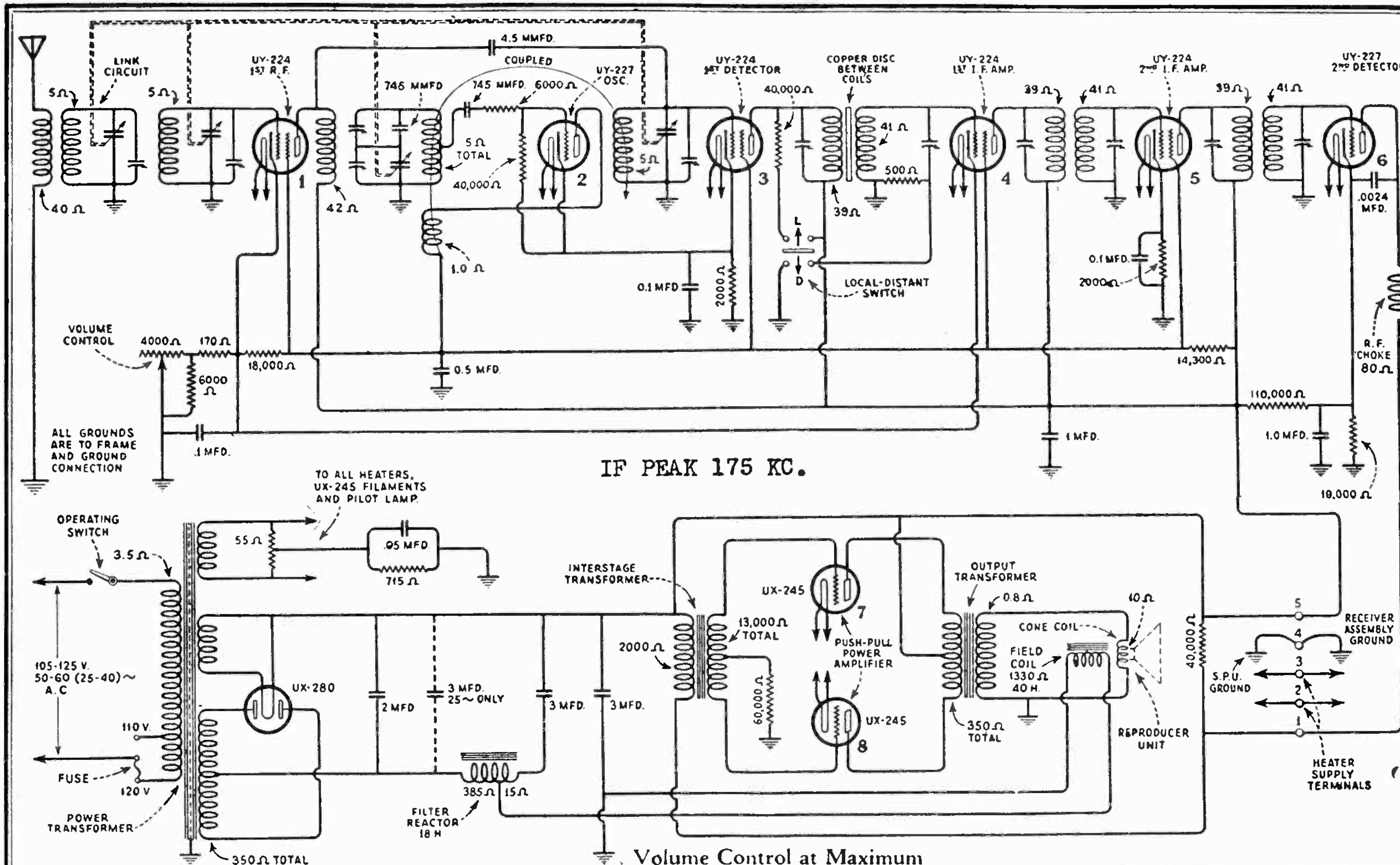
Internal connections of receiver by-pass condensers



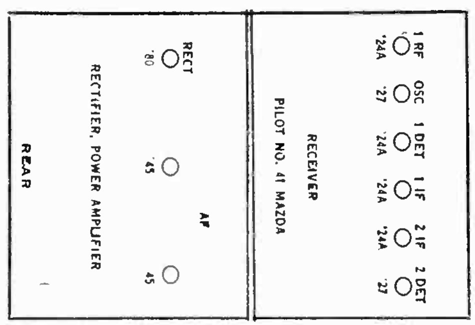
Internal connections of filter reactor

R. C. A. VICTOR CO., INC.

MODEL Radiola 80 Schematic Voltage



Models Radiolas 80,



Volume Control at Minimum

Tube No. in Order Tested	Type of Tube	Position of Tube in Set	Filament or Heater	Plate or Anode	Control Grid — Space GD +	Normal Grid — Screen GD +	Cathode to Heater	Screen GD L H 80 Plate	Plate P H 80 Plate	Tube Test	Plate Current Change	
1	224	1 R.F.	2.2	230	10	75	-25	0	0			
2	227	Osc.	2.2	65	-	-	-22	-	7.5			
3	224	1 Det.	2.2	240	10	82	-25	.1	0			
4	224	1 I.F.	2.2	230	10	75	-25	0	0			
5	224	2 I.F.	2.2	250	6	90	-32	1.0	2.2			
[illegible]	227	2 Det.	2.2	220	-	22	-12	-	.25			
7	245	PP-AF	2.2	210	-	20*	-	-	28.0			
[illegible]	245	PP-AF	2.2	210	-	20*	-	-	28.0			
[illegible]	280	Rect.	4.6	-	-	-	-	-	-			
10												

(Meter readings with Jewell test plug in socket of set: columns Filament through Cathode to Heater are Operating Voltages; Screen and Plate columns are Milli-Amperes.)

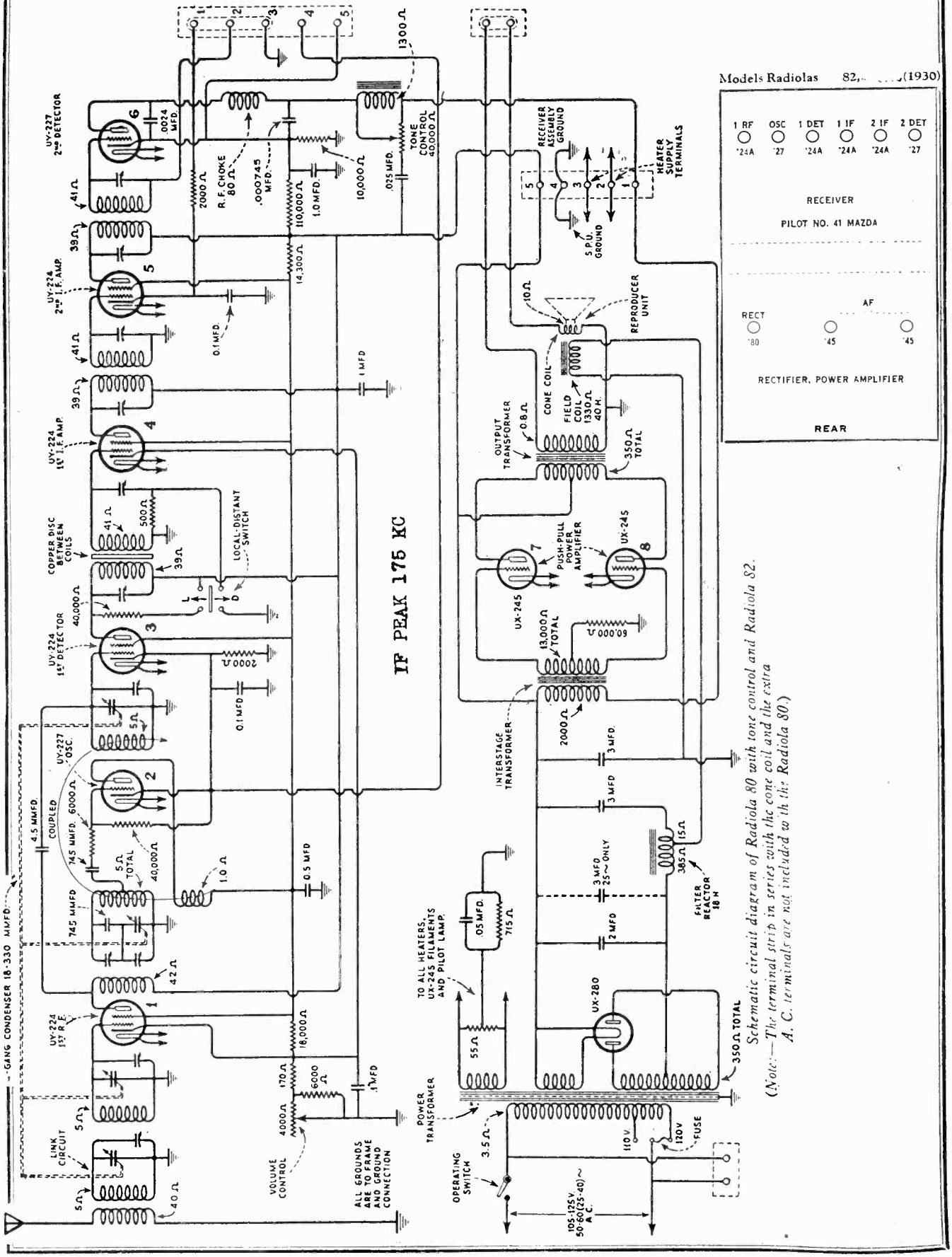
Volume Control at Maximum

*Not True Reading Due to Resistor in Circuit

Tube No. in Order Tested	Type of Tube	Position of Tube in Set	Filament or Heater	Plate or Anode	Control Grid — Space GD +	Normal Grid — Screen GD +	Cathode to Heater	Screen GD L H 80 Plate	Plate P H 80 Plate	Tube Test	Plate Current Change	
1	224	1 R.F.	2.2	240	2.2	80	-34	.5	3.2			
2	227	Osc.	2.2	60	-	-	-22	-	6.5			
[illegible]	224	1 Det.	2.2	230	9.5	72	-25	.1	.25			
[illegible]	224	1 I.F.	2.2	240	2.2	78	-34	.5	1.0			
[illegible]	224	2 I.F.	2.2	240	4.2	78	-31.5	.5	1.6			
[illegible]	227	2 Det.	2.2	212	-	22	-12	-	.25			
7	245	PP-AF	2.2	206	-	19*	-	-	25.0			
[illegible]	245	PP-AF	2.2	206	-	19*	-	-	25.0			
[illegible]	280	Rect.	4.6	-	-	-	-	-	-			
10												

R. C. A. VICTOR CO., INC.

MODEL Radiola 82
Schematic

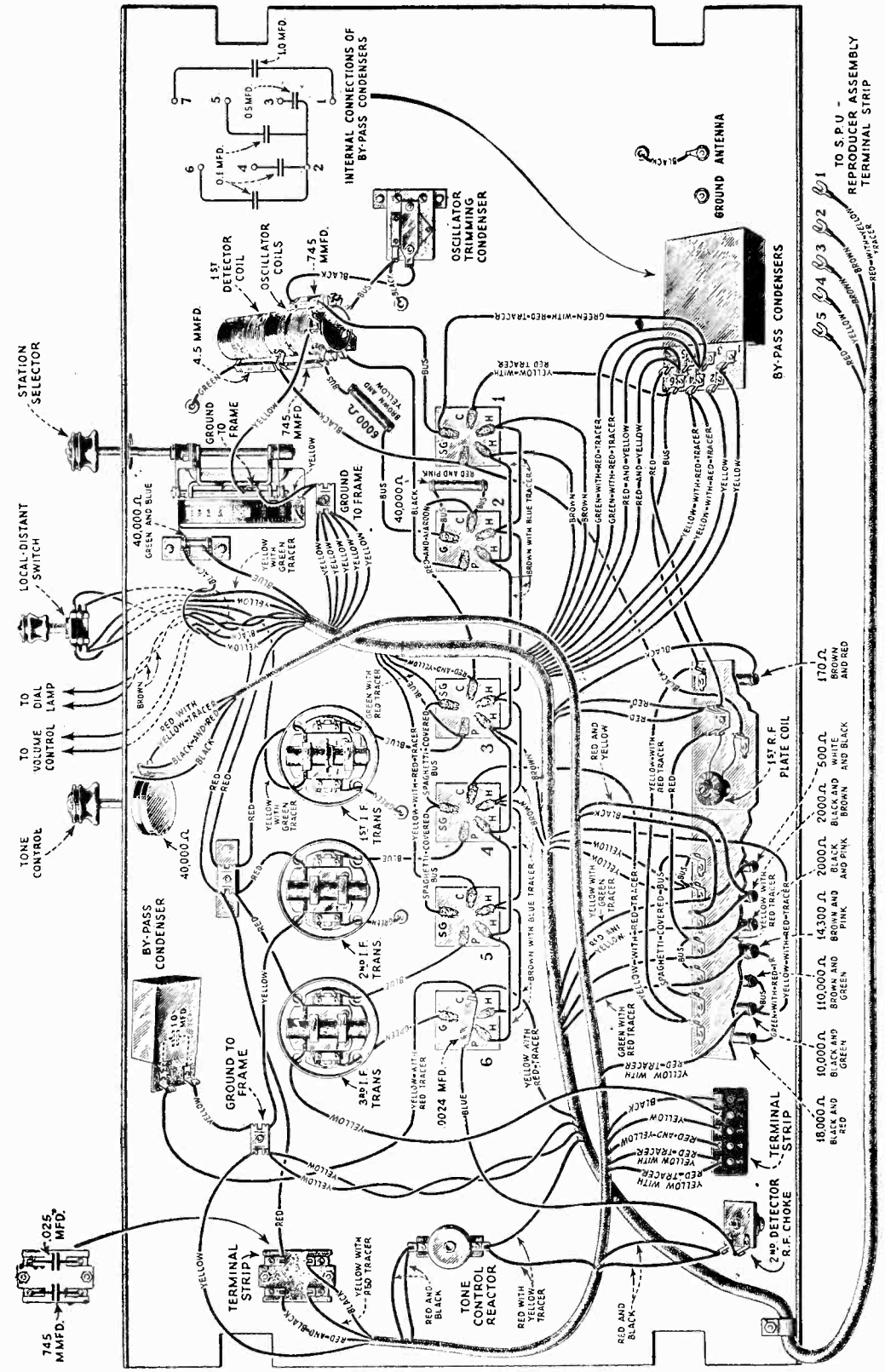


Schematic circuit diagram of Radiola 80 with tone control and Radiola 82.

(Note:—The terminal strip in series with the cone coil and the extra A. C. terminals are not included with the Radiola 80.)

MODELS Radiola 82 and 86
with Remote Control
Assembly Wiring

R. C. A. VICTOR CO., INC.

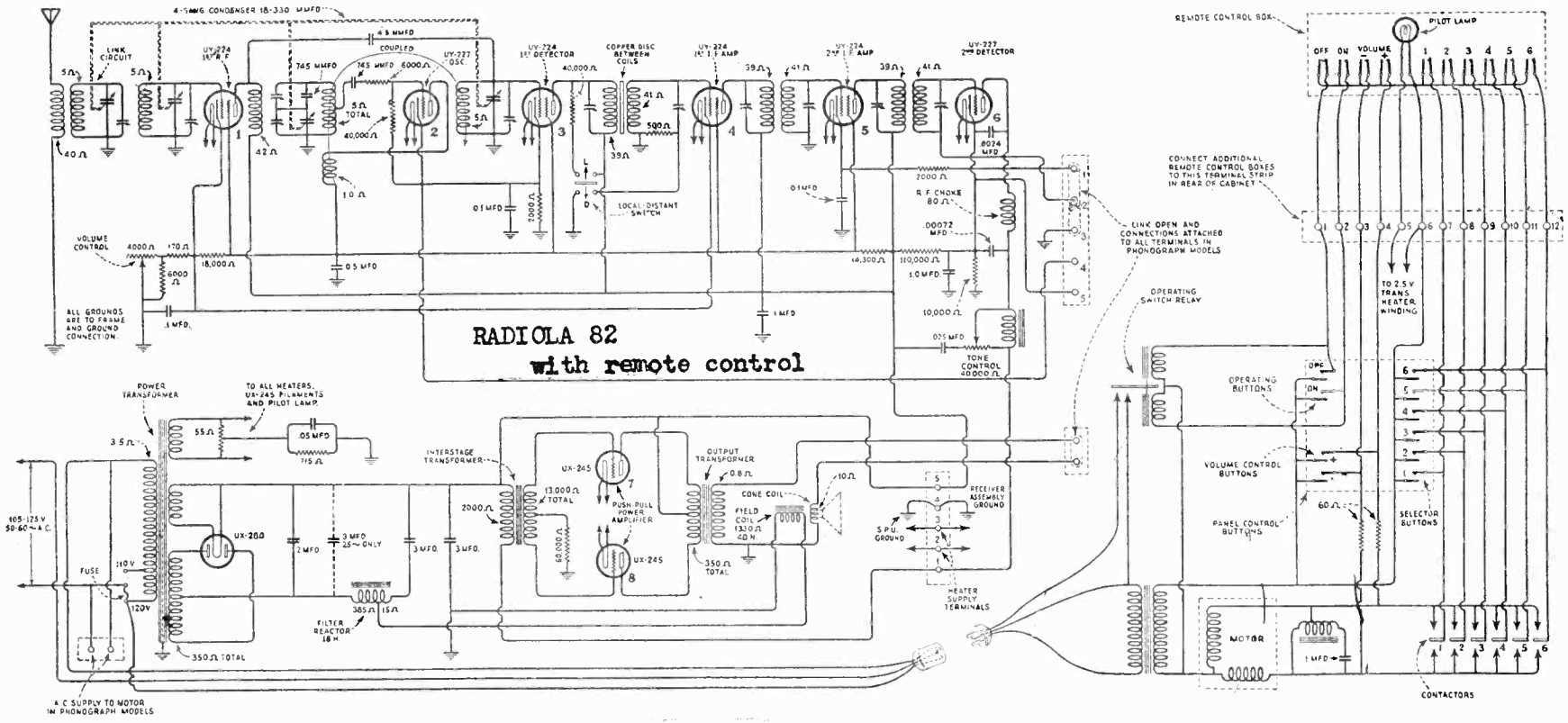


RECEIVER ASSEMBLY

RADIOLA 82 and 86 with Remote Control

R. C. A. VICTOR CO., INC.

MODEL Radiola 82
with Remote Control
Schematic



IF PEAK 175 KC

The cable to the remote control box supplied with the remote control models is twenty-five (25) feet in length. This is ample for most rooms as it is very rare that a person wishes to listen to a program at a greater distance from the loudspeaker.

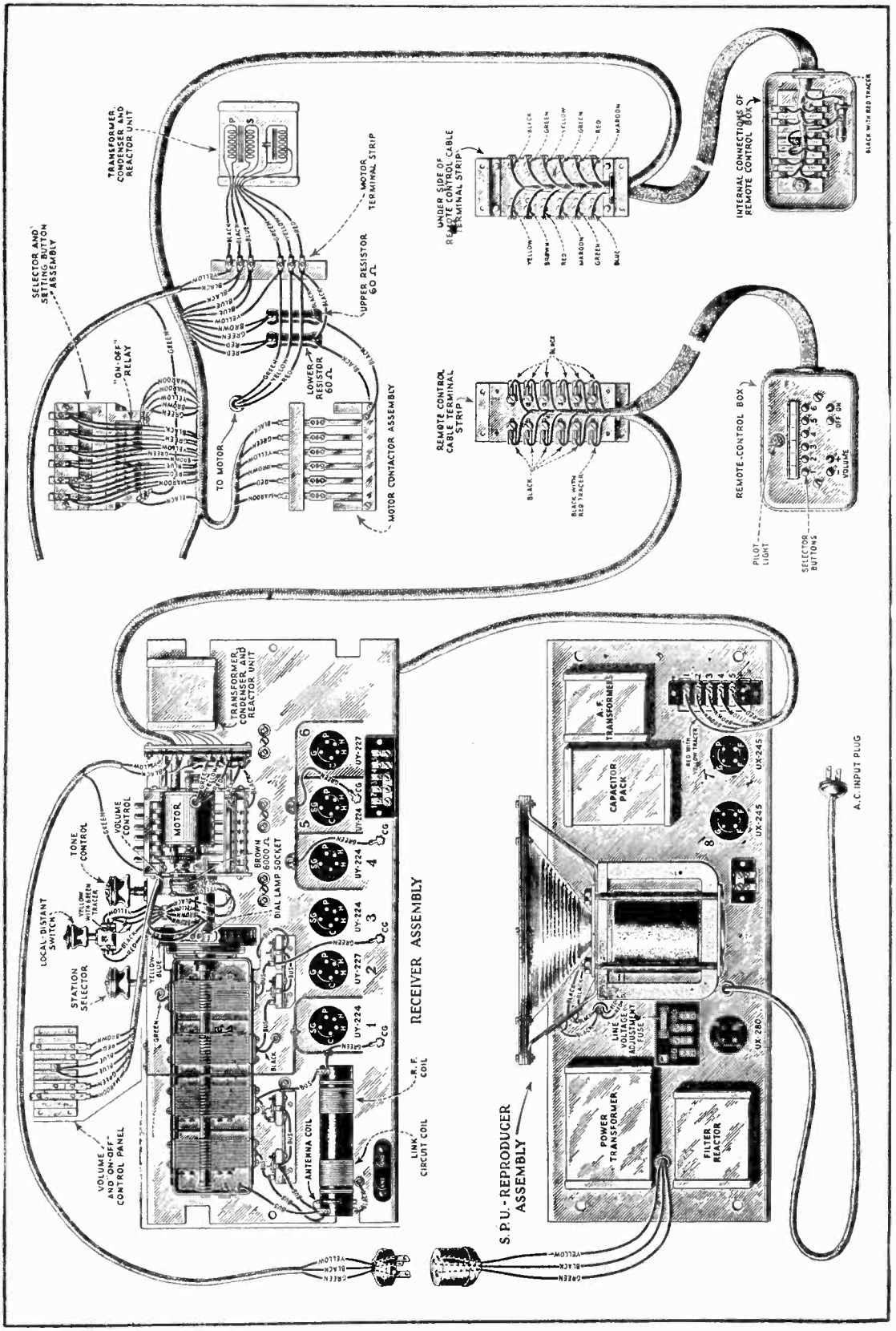
If, however, it is desired to place the remote control box at a greater distance from the set, any twelve conductor cable, the wires of which are No. 14 or larger in size, may be used to splice onto the regular cable and increase the total length up to seventy-five (75) feet. Figure 8 shows the method recommended for adding this additional cable.

The setting of the drums is made by the pins on the front panel. These are known as the "setting buttons." The selector button is pressed and the drum is moved by the motor until the corresponding contactor is midway between the contacts. The pin will now fall in the hole in the drum if pushed in by the finger. See Figure 7. Holding the pin firmly in the hole, the desired station is then accurately tuned in by means of the manual station selector knob. After tuning the pin is then released. As the point on the opposite side of the drum is where the diameter of the drum changes, the contactor is half way between the contacts. Pressing the selector buttons will therefore cause no movement of the motor. If another button is pressed and the drum moved, pressing the original button will always bring the drum back to the position for which it was set.

Referring to the schematic diagram, it will be noted that a common lead is used for the pilot lamp and the selector buttons in the remote control box. By doing this, when a selector button on the box is pressed, the current through the common lead is increased, likewise the voltage drop in the lead is increased. The result is that while the motor is running the pilot lamp becomes very dim. As soon as the motor stops, the lamp flashes bright, thus indicating that the motor has stopped and the station is tuned in. If the station is not then heard, it is necessary to press the + volume control button a little at a time until the desired output level is obtained.

MODELS Radiola 82 and 86
with Remote Control
Receiver Chassis

R. C. A. VICTOR CO., INC.

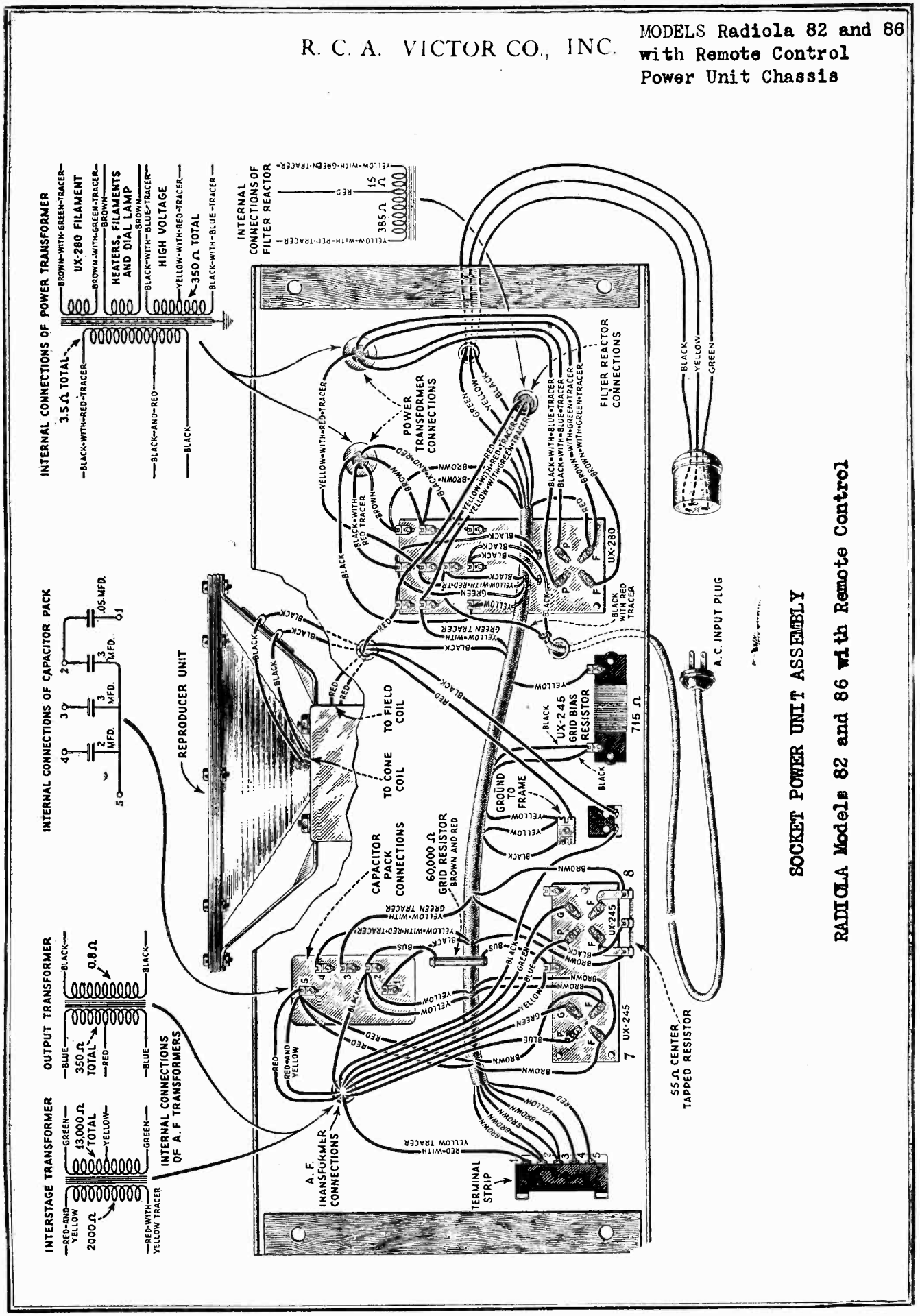


Assembly Wiring Diagram

Models Radiola 82 and 86 with Remote Control

R. C. A. VICTOR CO., INC.

MODELS Radiola 82 and 86
with Remote Control
Power Unit Chassis



SOCKET POWER UNIT ASSEMBLY

RADIOLA Models 82 and 86 with Remote Control

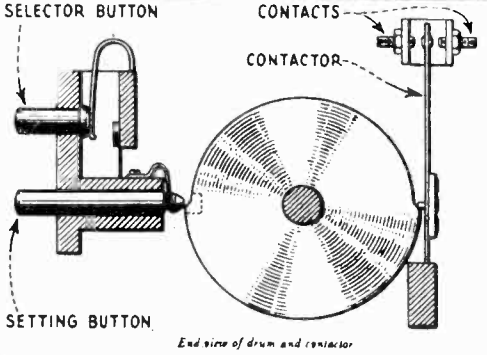
R. C. A. VICTOR CO., INC.

MODELS Radiola 82 and 86 with Remote Control
Remote Control Units

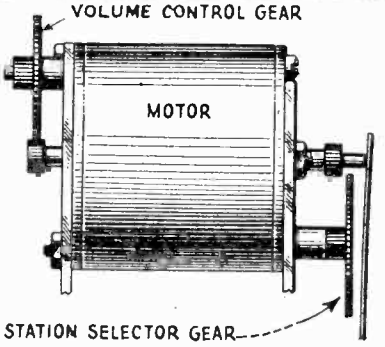
MOTOR CONTACTOR ADJUSTMENT CHART

Repeat Entire Procedure For All Contactors

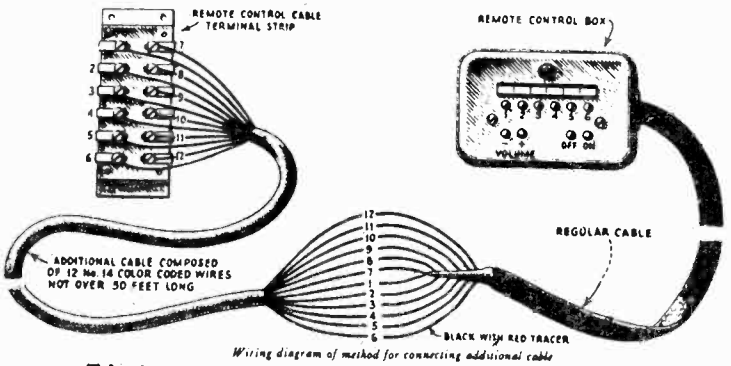
TURN STATION SELECTOR KNOB UNTIL CONTACTOR IS TO ONE SIDE 1	PUSH SELECTOR BUTTON ON PANEL UNTIL THE MOTOR STOPS AND CONTACTOR IS CENTERED 2	THEN PUSH SETTING BUTTON. IF CONTACTOR DOES NOT MOVE, ADJUSTMENT IS O.K. 3 DOES NOT MOVE WHEN SETTING BUTTON IS PRESSED	IF CONTACTOR MOVES IN THIS DIRECTION WHEN SETTING BUTTON IS PRESSED, ADJUST AS INDICATED. 4 TURN THIS SCREW CLOCKWISE A LITTLE AT A TIME UNTIL CONTACTOR DOES NOT MOVE WHEN SETTING BUTTON IS PRESSED. (TURN SELECTOR KNOB AND RETUNE WITH SELECTOR BUTTON AFTER EACH TRIAL ADJUSTMENT)	IF CONTACTOR MOVES IN OTHER DIRECTION, ADJUST AS INDICATED. 5 TURN THIS SCREW COUNTER CLOCKWISE A LITTLE AT A TIME UNTIL CONTACTOR DOES NOT MOVE WHEN SETTING BUTTON IS PRESSED. (TURN SELECTOR KNOB AND RETUNE WITH SELECTOR BUTTON AFTER EACH TRIAL ADJUSTMENT)
AFTER MAKING PRECEDING ADJUSTMENTS TURN STATION SELECTOR KNOB UNTIL CONTACTOR IS TO THIS SIDE 6	PUSH SELECTOR BUTTON ON PANEL UNTIL THE MOTOR STOPS AND CONTACTOR IS CENTERED 7	THEN PUSH SETTING BUTTON. IF CONTACTOR DOES NOT MOVE, ADJUSTMENT IS O.K. 8 DOES NOT MOVE WHEN SETTING BUTTON IS PRESSED.	IF CONTACTOR MOVES IN THIS DIRECTION WHEN SETTING BUTTON IS PRESSED, ADJUST AS INDICATED. 9 TURN THIS SCREW COUNTER CLOCKWISE A LITTLE AT A TIME UNTIL CONTACTOR DOES NOT MOVE WHEN SETTING BUTTON IS PRESSED. (TURN SELECTOR KNOB AND RETUNE WITH SELECTOR BUTTON AFTER EACH TRIAL ADJUSTMENT)	IF CONTACTOR MOVES IN THIS DIRECTION, ADJUST AS INDICATED. THEN REPEAT ALL ADJUSTMENTS ON ALL SIX CONTACTORS. 10 TURN THIS SCREW CLOCKWISE A LITTLE AT A TIME UNTIL CONTACTOR DOES NOT MOVE WHEN SETTING BUTTON IS PRESSED. (TURN SELECTOR KNOB AND RETUNE WITH SELECTOR BUTTON AFTER EACH TRIAL ADJUSTMENT)



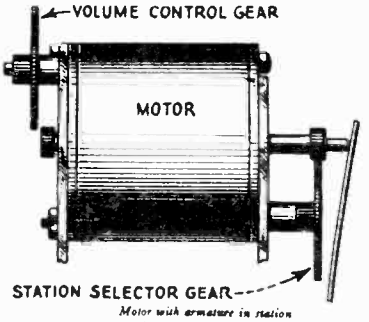
End view of drum and contactor



Motor with armature in volume control position



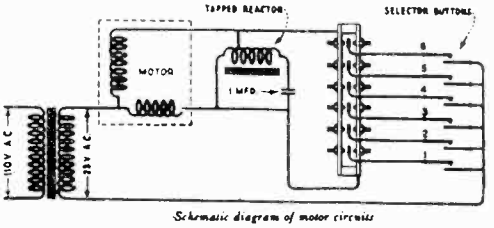
Wiring diagram of method for connecting additional cable



Motor with armature in station selector position

This is figure 8 illustrating the method of increasing the length of the cable.

For additional remote control data, see RAE-79 service data.



Schematic diagram of motor circuits

R. C. A. VICTOR CO., INC.

MODEL Radiola 86
Audio Circuit Diagrams

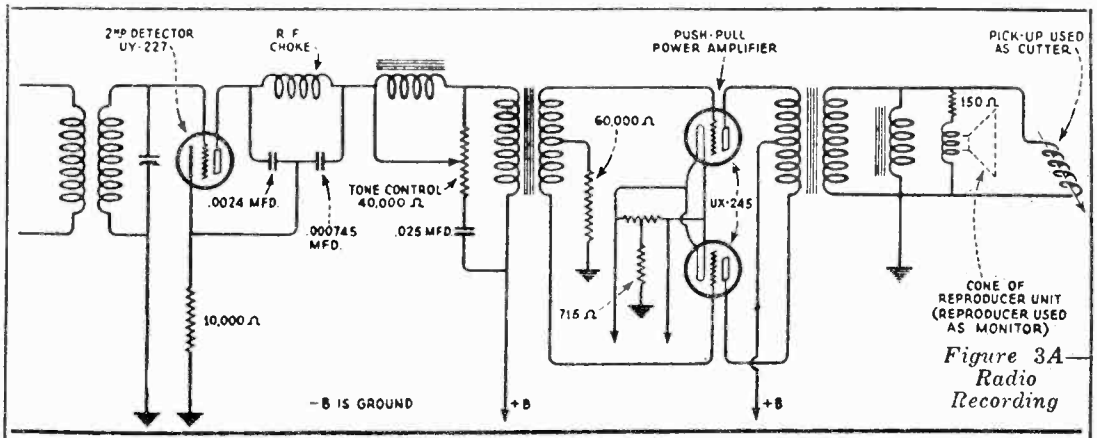


Figure 3A—Radio Recording

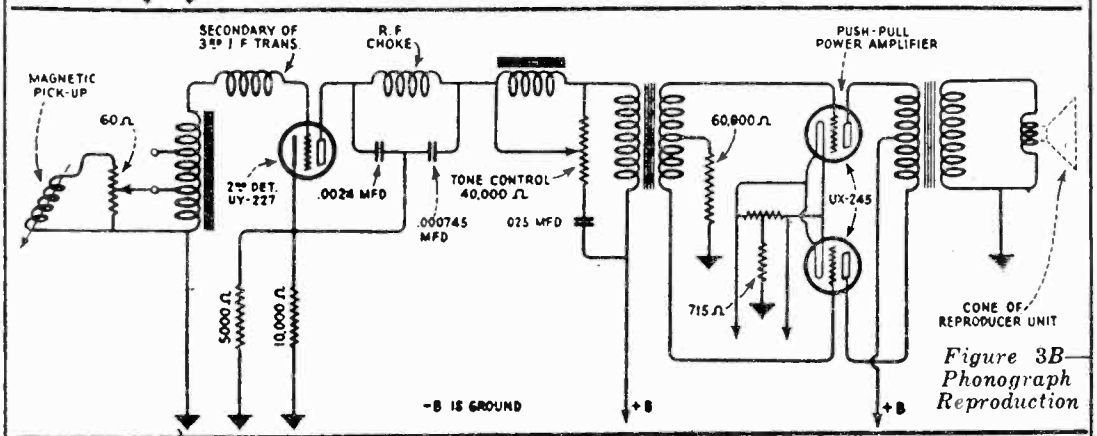


Figure 3B—Phonograph Reproduction

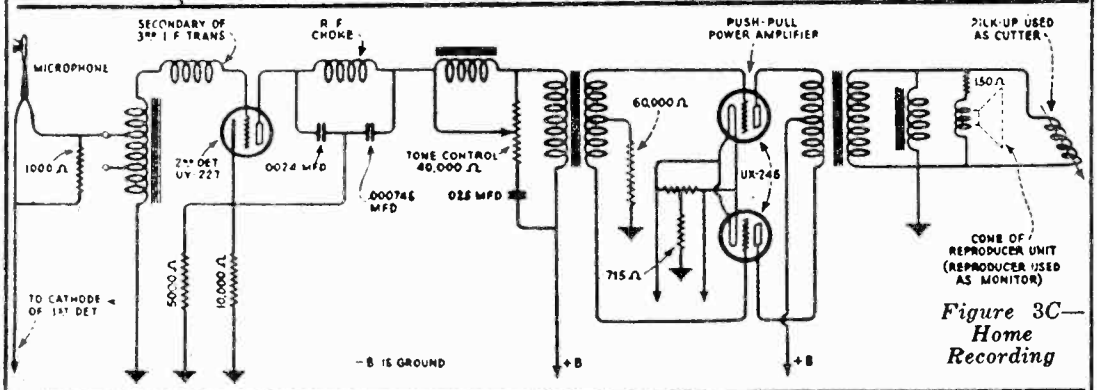


Figure 3C—Home Recording

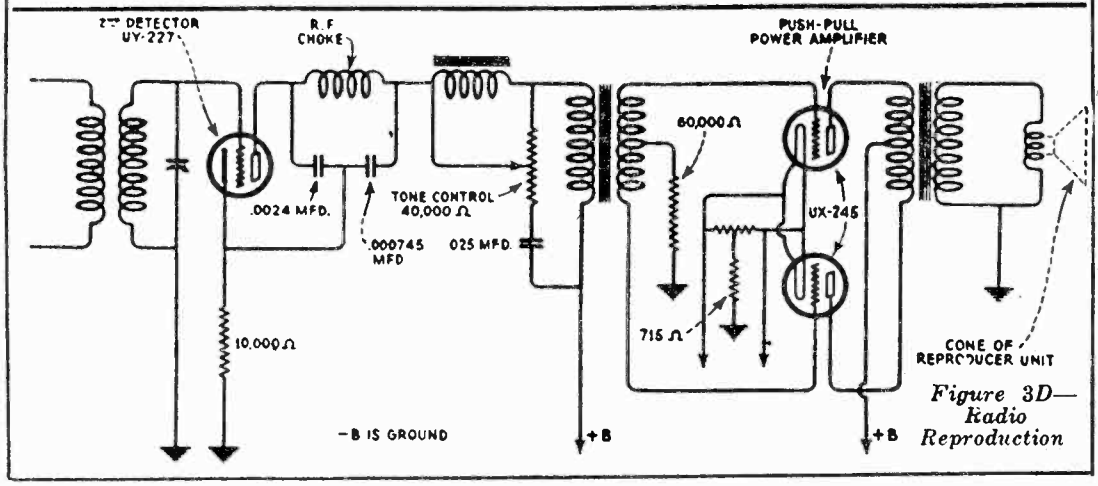
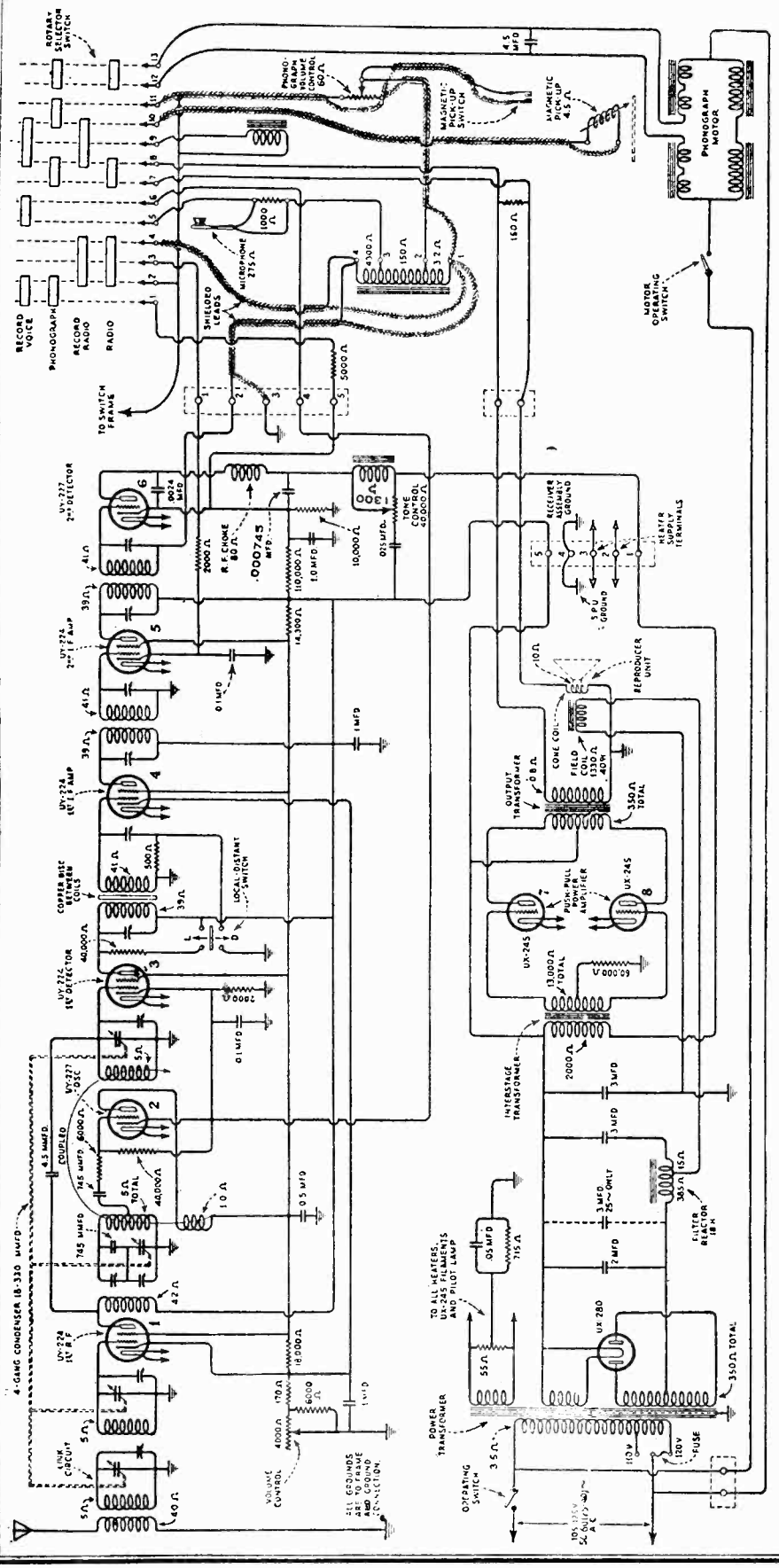
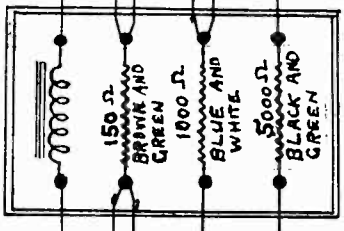


Figure 3D—Radio Reproduction

MODEL Radiola 86
Schematic

R. C. A. VICTOR CO., INC.





For chassis layouts see Model Radiola 82 and also Models 82-86 with remote control.

For socket layout see Model Radiola 82

For voltage data, see Model Radiola 82.

Power Consumption
Radio alone 120 watts
Combination 200 watts

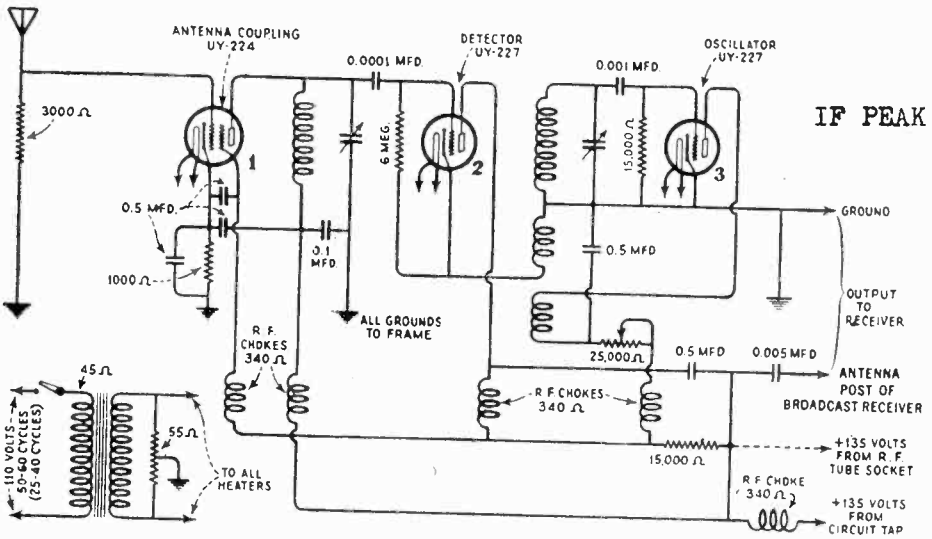
Rotary Switch Connections

#1	Yellow w. Red Tr.
#2	Yellow
#3	Black w. Green Tr.
#4	Yellow w. Green Tr.
#5	Yellow w. Black Tr.
#6	Red and Yellow
#7	Black
#8	Black w. Red Tr.
#9	Black w. Yellow Tr.
#10	Metal braid
#11	Black and Yellow
#12,#13	Black

Resistor and Reactor Unit

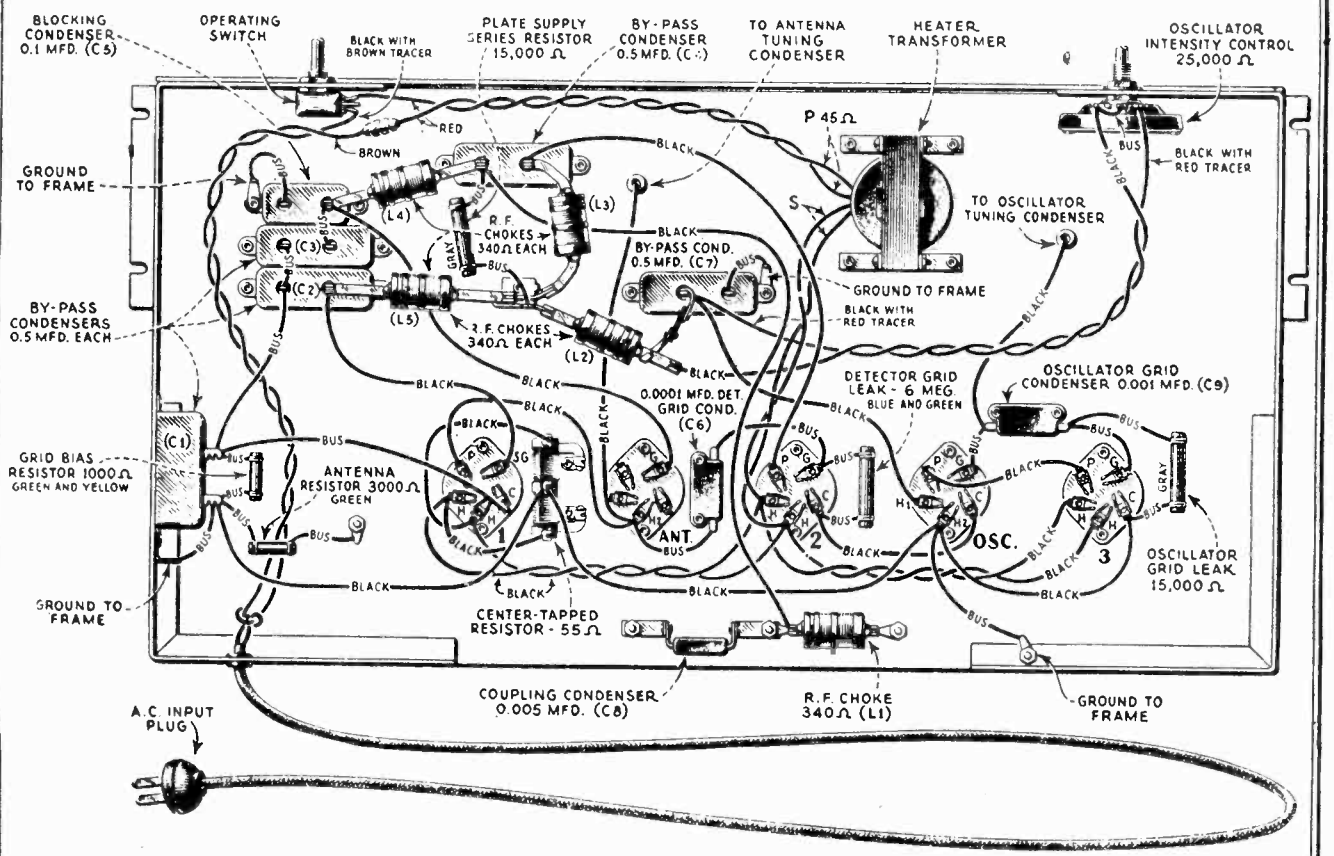
R. C. A. VICTOR CO., INC.

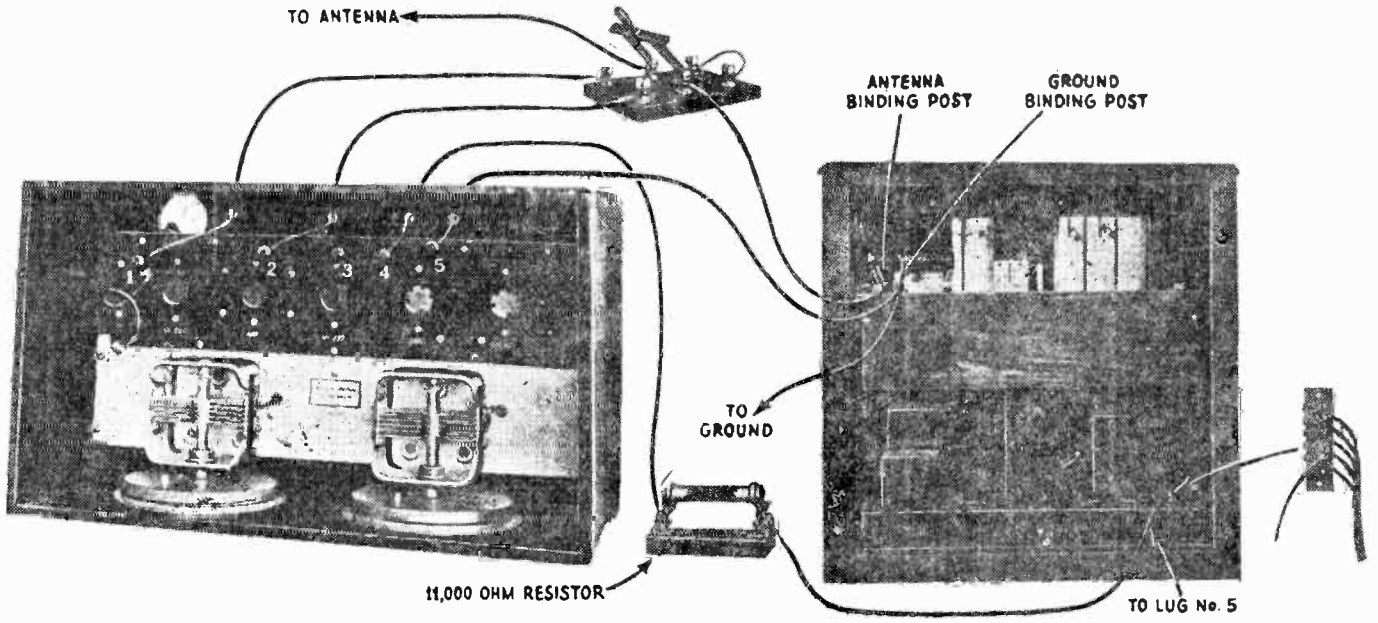
MODEL RCA Short Wave Adaptor (
Victor SW-10
Schematic- Chassis



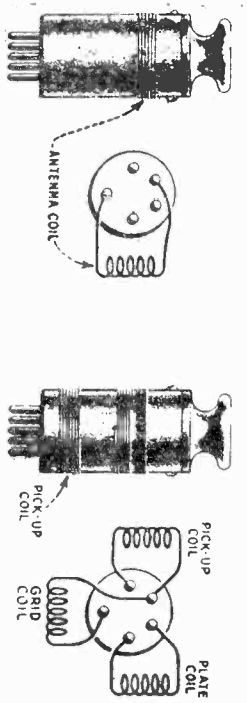
IF PEAK 1000 KC

RCA RADIOLA SHORT WAVE ADAPTOR





Connections of Short Wave Adaptor to Radiola 80



Internal connections of Plug-in Coils

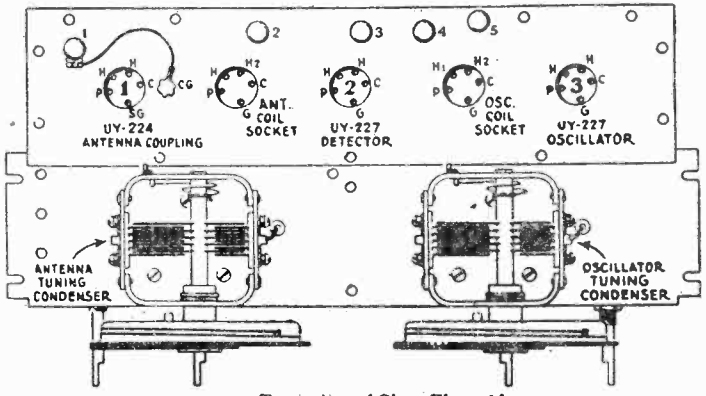
OSCILLATOR INTENSITY CONTROL AT MAXIMUM

Socket No.	Cathode to Heater Volts D. C.	Cathode to Control Grid Volts D. C.	Cathode to Screen Grid Volts D. C.	Cathode to Plate Volts D. C.	Heater Volts A. C.	Plate Current M.A. D.C.	Screen Grid Current M.A. D.C.
1	—1	—1	43	125	2.45	1.60	0.25
2	0	—1.3*	—	50	2.45	2.0	—
3	0	—0.4*	—	45	2.45	2.8	—

OSCILLATOR INTENSITY CONTROL AT MINIMUM

Socket No.	Cathode to Heater Volts D. C.	Cathode to Control Grid Volts D. C.	Cathode to Screen Grid Volts D. C.	Cathode to Plate Volts D. C.	Heater Volts A. C.	Plate Current M.A. D.C.	Screen Grid Current M.A. D.C.
1	—1.2	—1.2	54	127	2.45	1.25	0.28
2	0	0	—	56	2.45	3.0	—
3	0	—0.3*	—	23	2.45	1.7	—

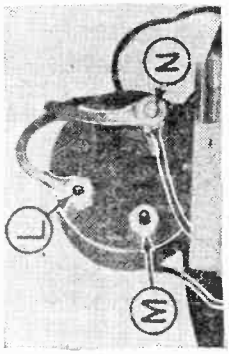
*Measured on 50 volt range. Is inaccurate because of voltmeter resistance in shunt with grid circuit resistance. Actual grid voltage is slightly higher than the readings.

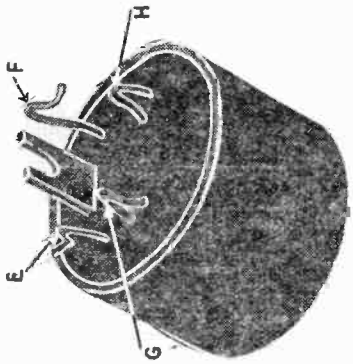


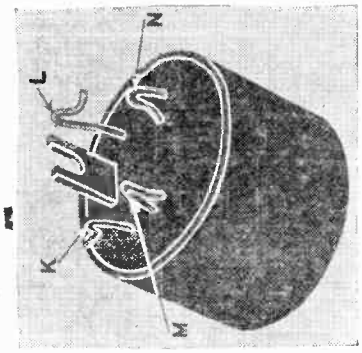
Test points of Short Wave Adaptor

R. C. A. VICTOR CO. INC.

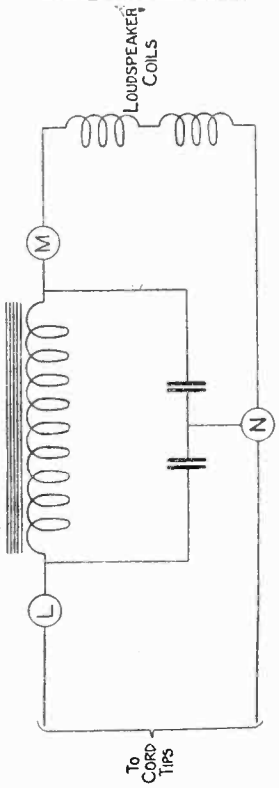
MODELS 100-A, 100-B, 103, 104-AC
Speakers



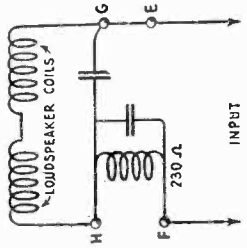




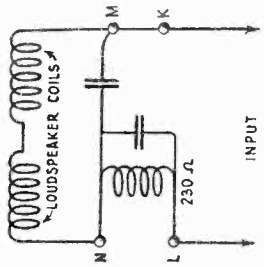
Schematic circuit diagram of RCA Loudspeaker Model 100A and photo of the filter unit

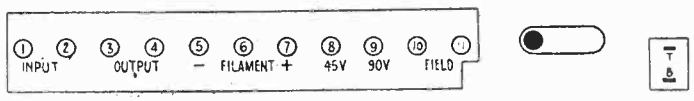


Schematic circuit of Loudspeaker 100B coils and filter and photo of filter unit



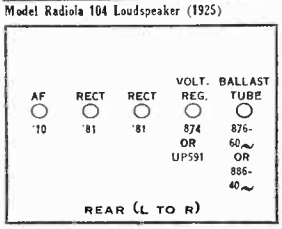
Schematic circuit of Loudspeaker 103 coils and filter and photo of filter unit

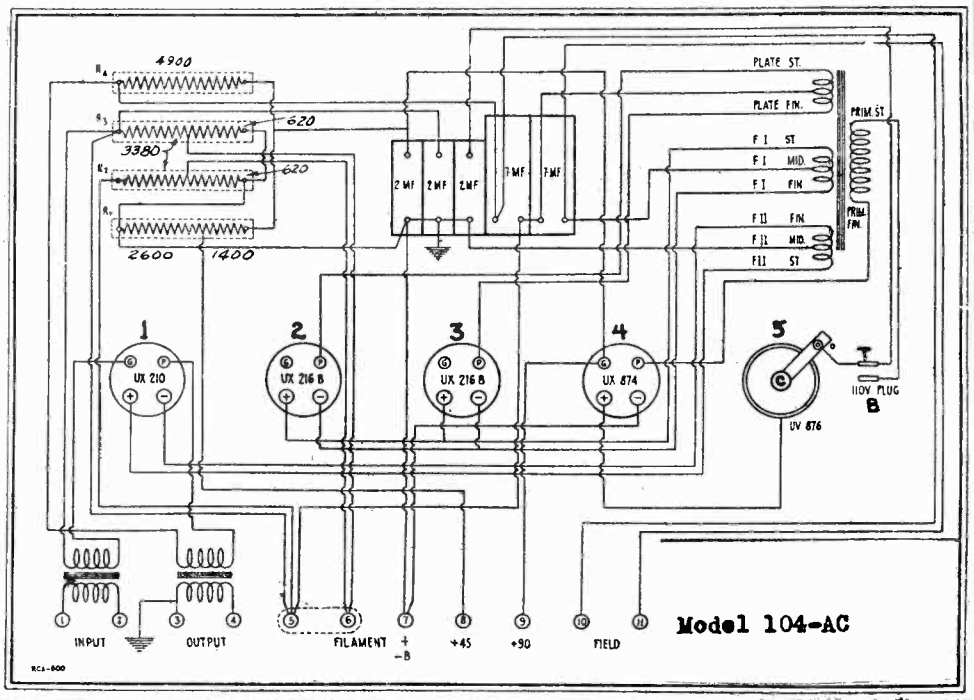




Terminal Layout

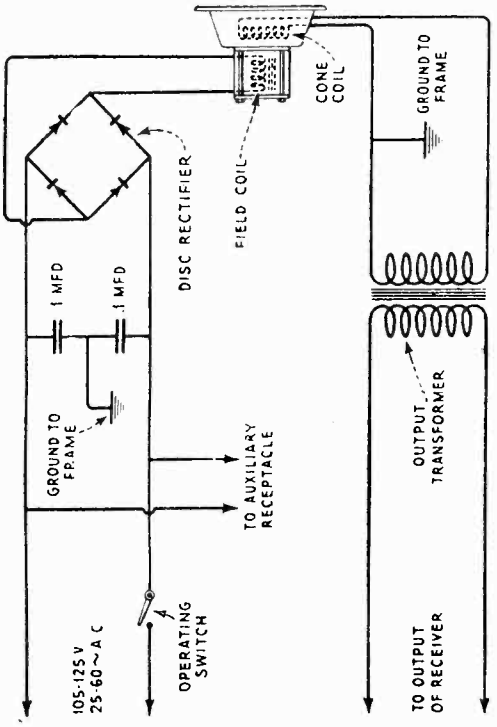
Model Radiola 104 Loudspeaker (1925)



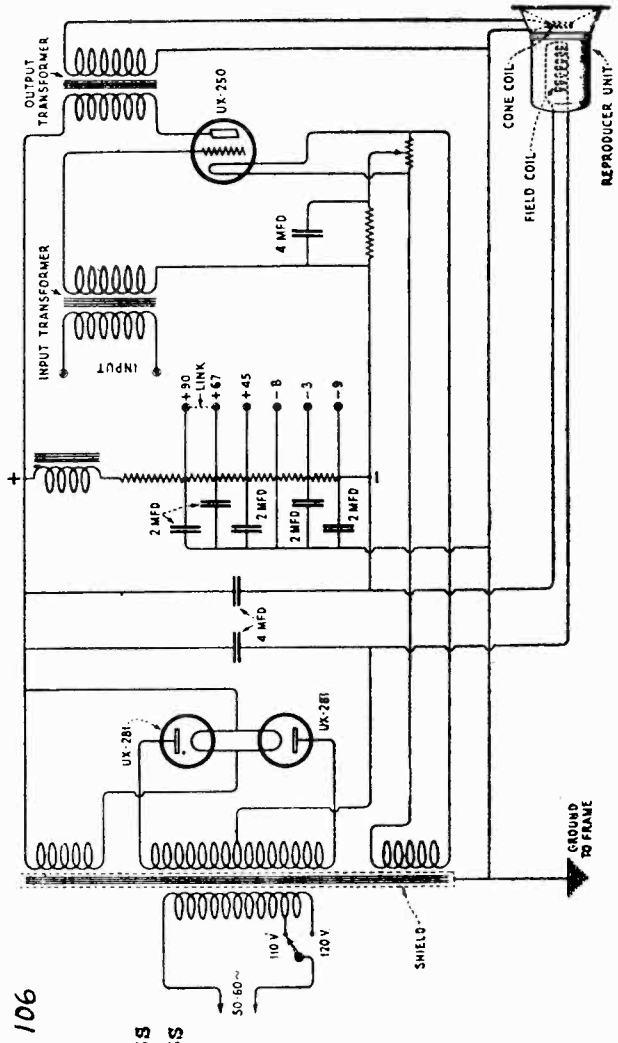


MODELS 105,106
Speakers

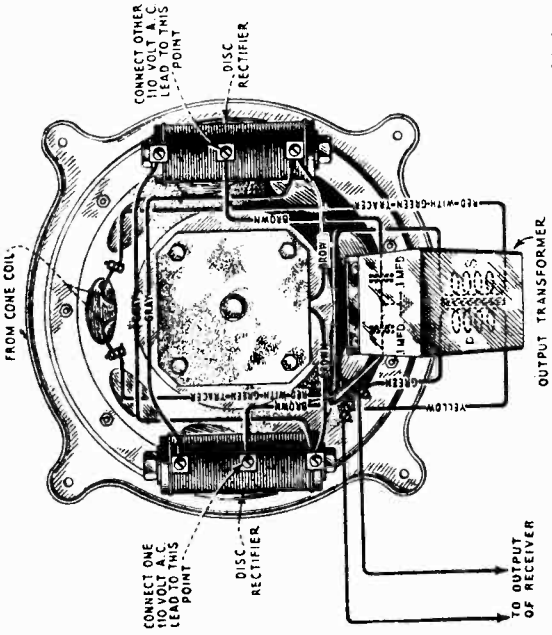
R. C. A. VICTOR CO., INC.



Schematic wiring diagram of Loudspeaker 106

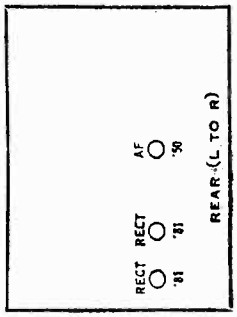


Schematic circuit diagram of RCA Loudspeaker 105.



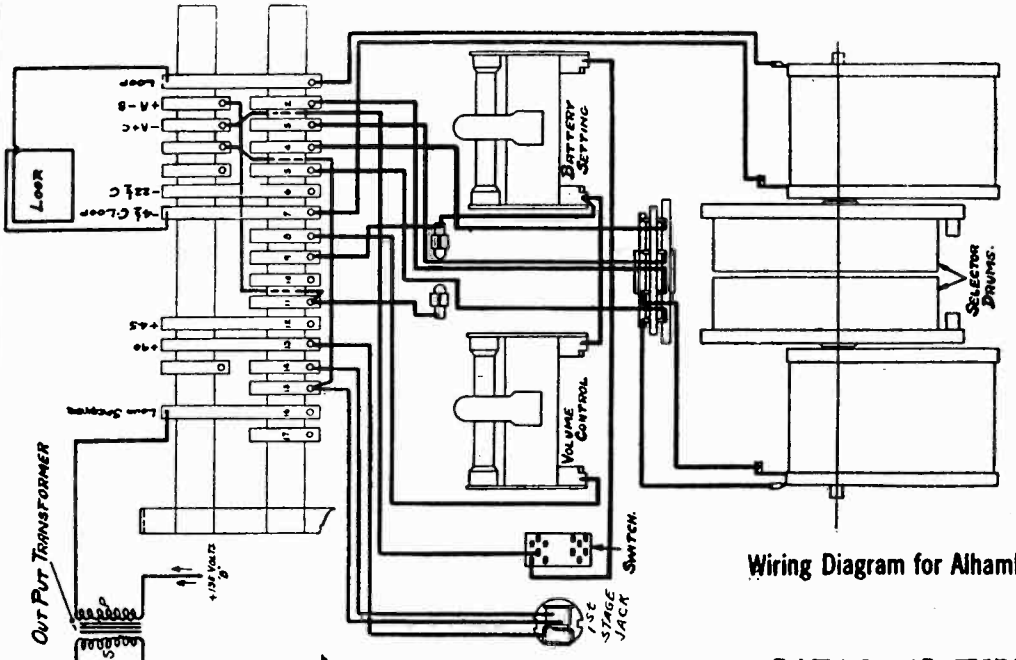
Wiring diagram of reproducer unit 106

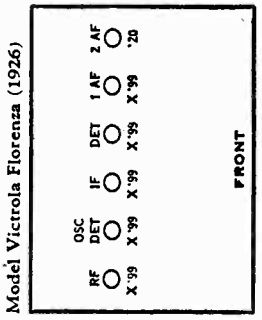
106 Speaker
Voltage across field coil.
With field connected 80 volts
With field disconnected 95 volts



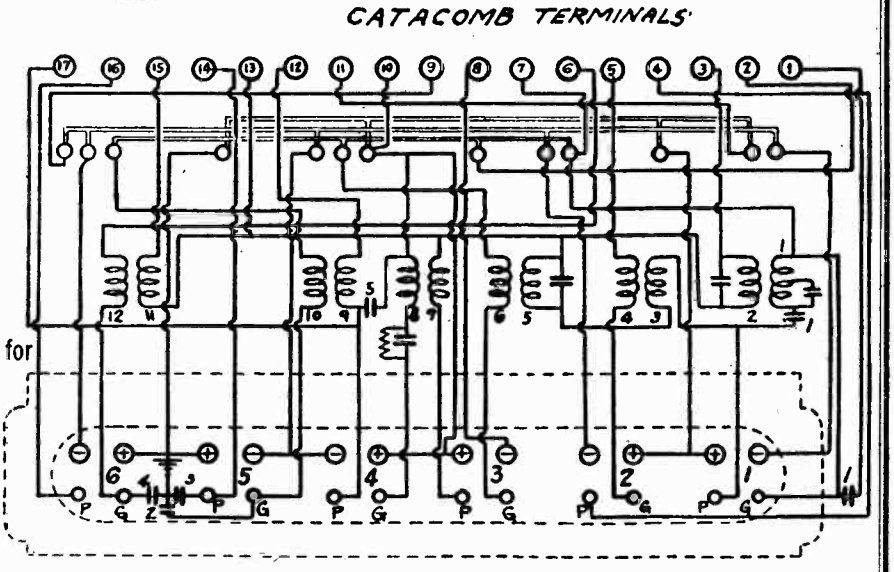
R. C. A. VICTOR CO., INC.

MODEL Victor Alhambra I (7-1)
MODEL Victor Alhambra II
MODEL Victor Florenza

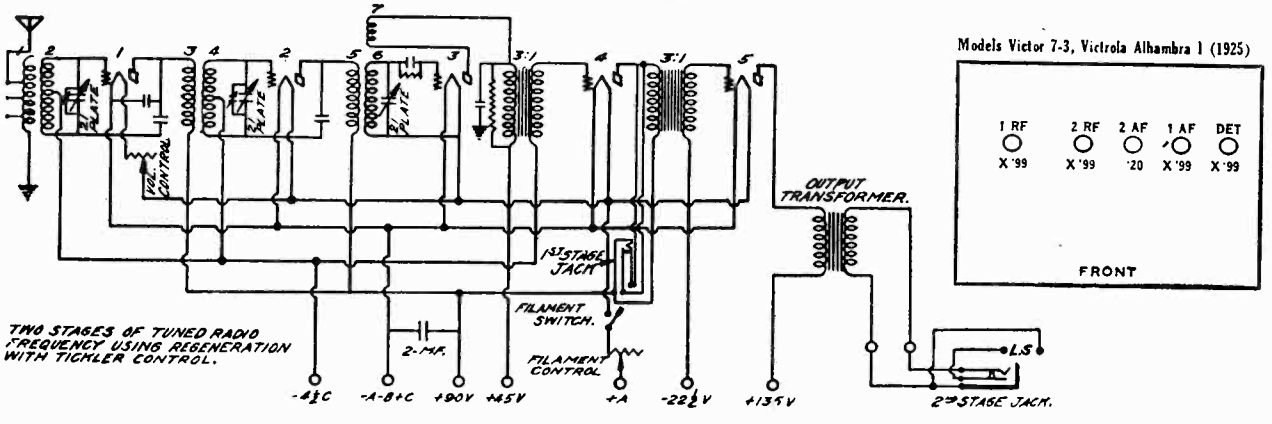




Wiring Diagram for Alhambra ,II and Florenza



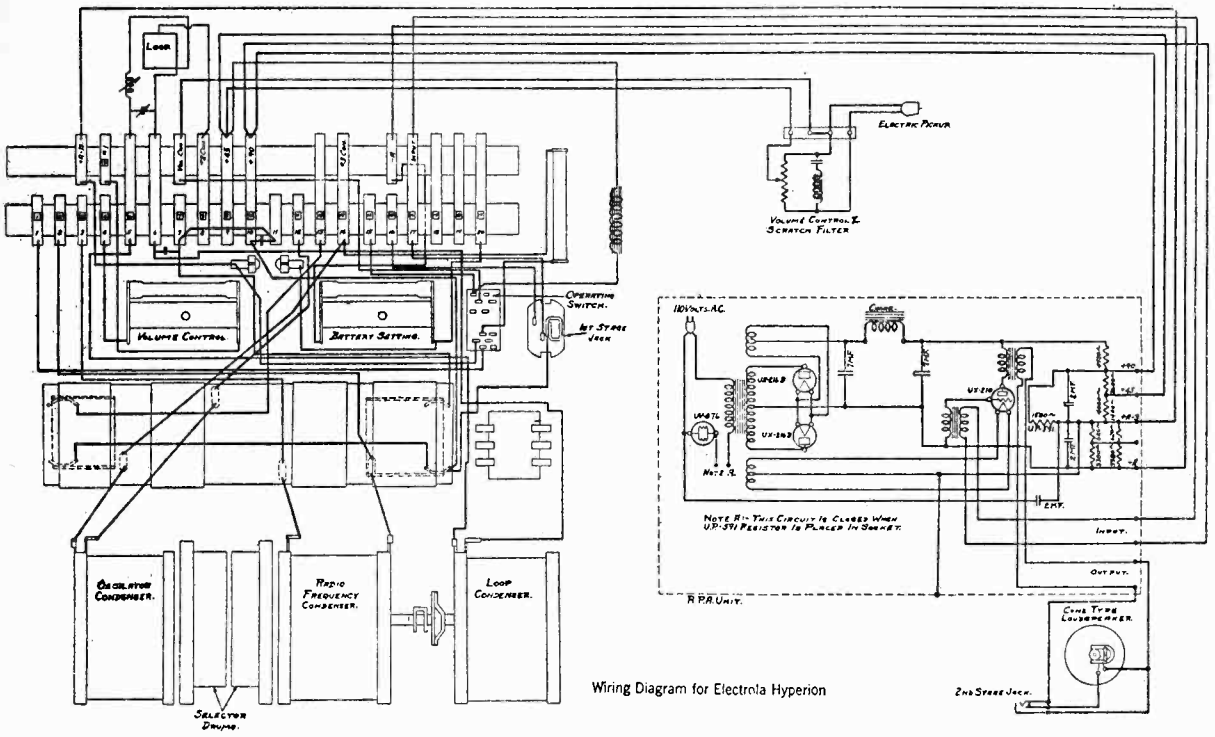
Radiola 25 Catacomb Continuity Diagram for Alhambra II (7-2) and Florenza (9-1)



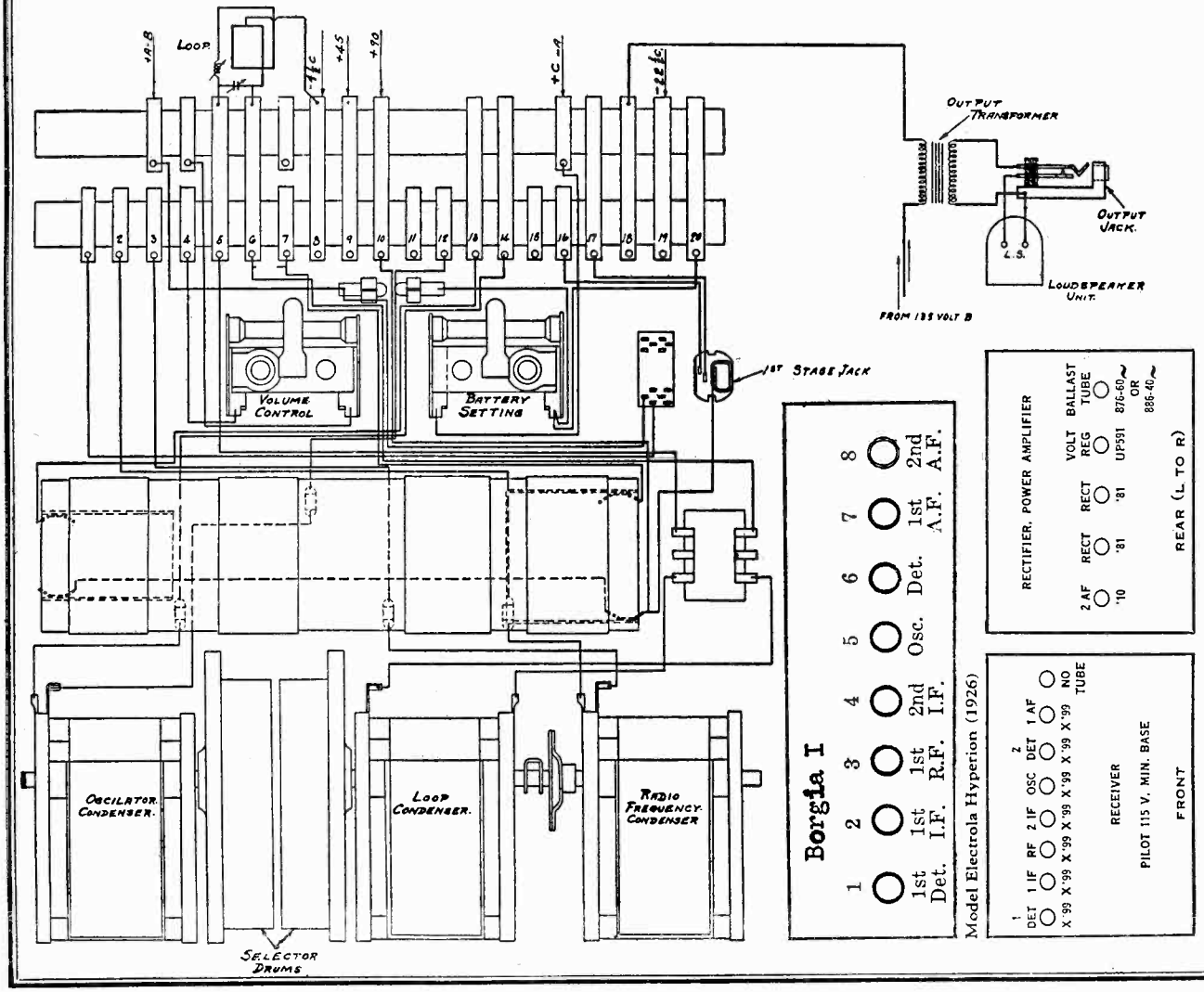
Wiring Diagram Alhambra I (7-1)

MODEL Victor Borgia I
MODEL Victor Hyperion
Electrola

R. C. A. VICTOR CO., INC.



Wiring Diagram for Electrola Hyperion



Borgia I

1 1st Det. 2 1st I.F. 3 1st R.F. 4 2nd I.F. 5 Osc. 6 Det. 7 1st A.F. 8 2nd A.F.

Model Electrola Hyperion (1926)

RECTIFIER, POWER AMPLIFIER

2 AF '10 | RECT '81 | RECT '81 | VOLT REG UP591 | BALLAST TUBE 876-60~ OR 886-40~

REAR (L TO R)

1 DET X'99 | 1 IF X'99 | RF X'99 | 2 IF X'99 | OSC X'99 | 2 DET X'99 | 1 AF X'99 | NO TUBE

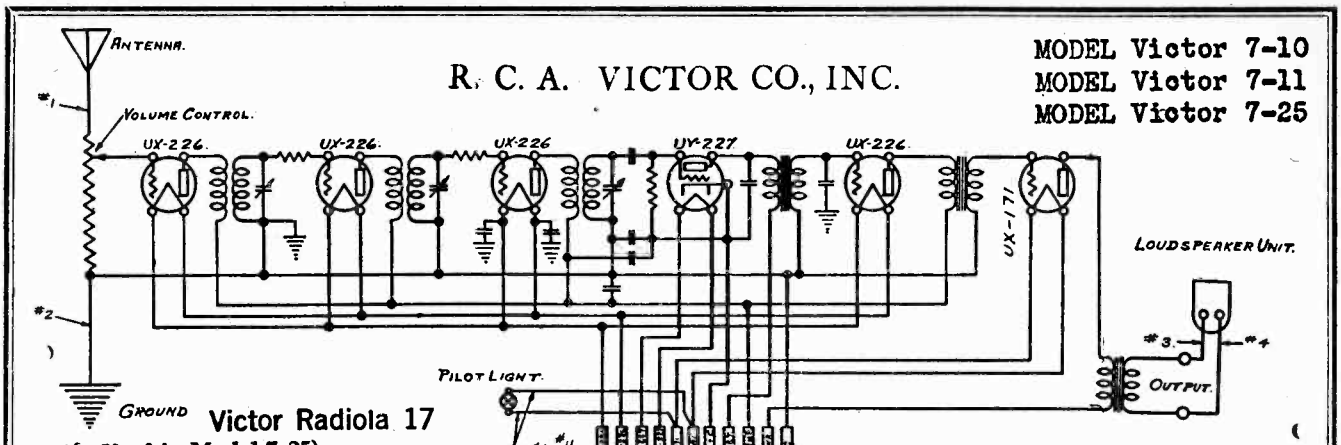
RECEIVER

PILOT 115 V. MIN. BASE

FRONT

R. C. A. VICTOR CO., INC.

MODEL Victor 7-10
MODEL Victor 7-11
MODEL Victor 7-25



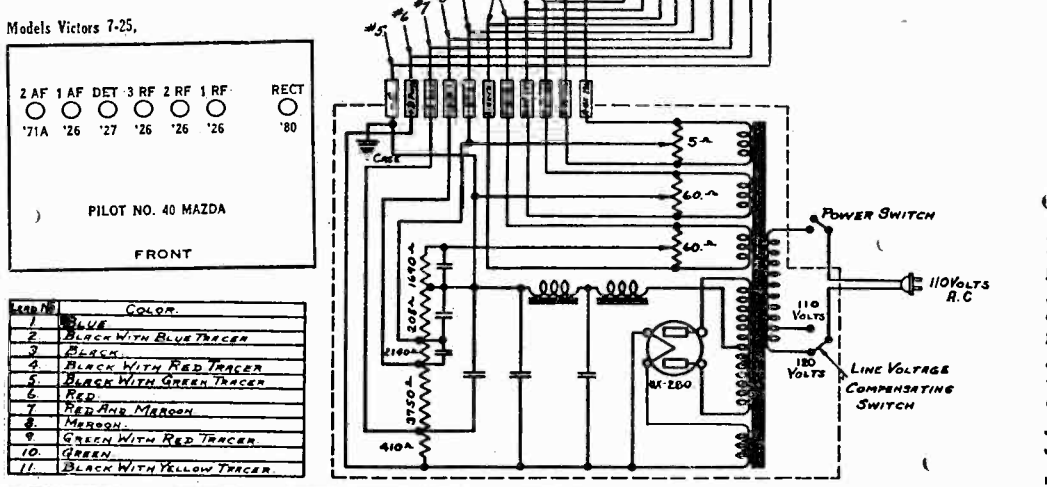
Victor Radiola 17
(As Used in Model 7-25)

Models Victors 7-25,

2 AF	1 AF	DET	3 RF	2 RF	1 RF	RECT
'71A	'26	'27	'26	'26	'26	'80

PILOT NO. 40 MAZDA

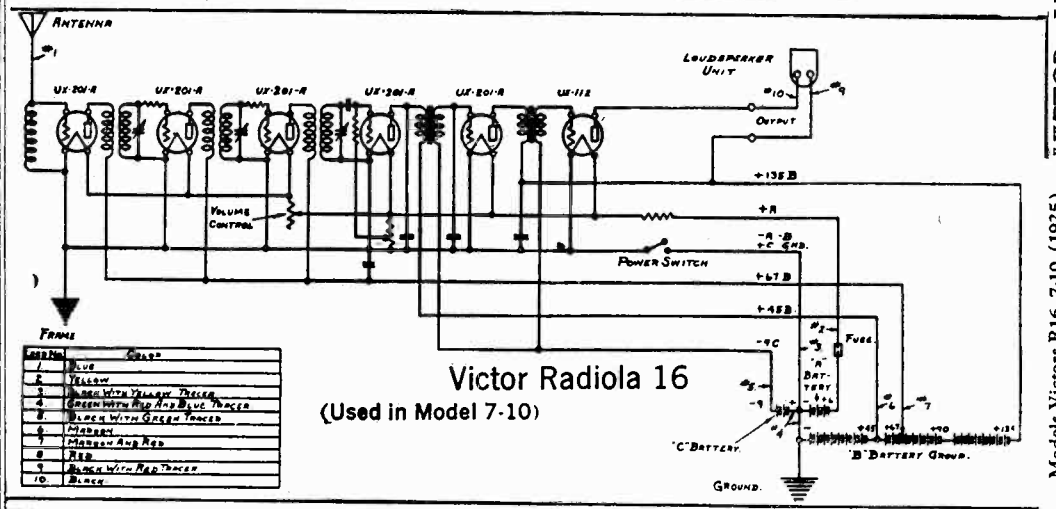
FRONT



Lead No.	Color.
1	Blue
2	Black With Blue Tracer
3	Black
4	Black With Red Tracer
5	Black With Green Tracer
6	Red
7	Red And Maroon
8	Maroon
9	Green With Red Tracer
10	Green
11	Black With Yellow Tracer

VICTOR—Models 9-16, 7-26, 7-11
Line Voltage 112—120 Volt Tap—Volume Control Full

Tube No. in Order	Type of Tube	Position of Tube 1st. R.F. Det. etc.	Tube Out A Volts	Tube Out B Volts	Readings, Plug in Socket or Out of Tube in Tester A Volts	B Volts	C Volts	Cathode Volts	Normal Plate M.A.	Plate M.A. Grid Test	Plate M.A. Change
1	226	1st. R.F.	1.4	125	1.3	122	8	-	4.5	8.5	4.0
2	226	2nd. R.F.	1.4	125	1.3	122	8	-	4.5	8.5	4.0
3	226	3rd. R.F.	1.4	125	1.3	122	8	-	4.5	8.5	4.0
4	227	Detector	2.4	125	2.2	22	0	-	3.0	3.2	.1
5	226	1st. A.F.	1.4	125	1.3	120	8	-	4.0	7.8	3.8
6	171A	2nd. A.F.	4.9	200	4.7	132	30	-	16.0	18.0	2.0
7	280	Rectifier	-	-	4.8	-	-	-	20.0	-	-



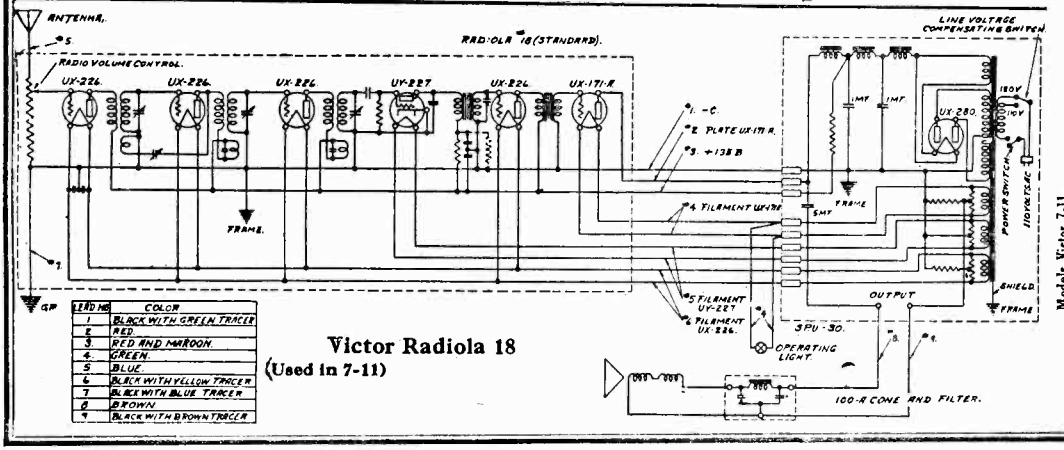
Lead No.	Color
1	Blue
2	Yellow
3	Black With Yellow Tracer
4	Green With Red And Blue Tracer
5	Black With Green Tracer
6	Maroon
7	Maroon And Red
8	Red
9	Black With Red Tracer
10	Black

Victor Radiola 16
(Used in Model 7-10)

Models Victors R16, 7-10 (1925)

2 AF	1 AF	DET	3 RF	2 RF	1 RF
'12A	'01A	'01A	'01A	'01A	'01A

FRONT



Lead No.	Color
1	Black With Green Tracer
2	Red
3	Red And Maroon
4	Green
5	Blue
6	Black With Yellow Tracer
7	Black With Blue Tracer
8	Brown
9	Black With Brown Tracer

Victor Radiola 18
(Used in 7-11)

Models Victor 7-11.

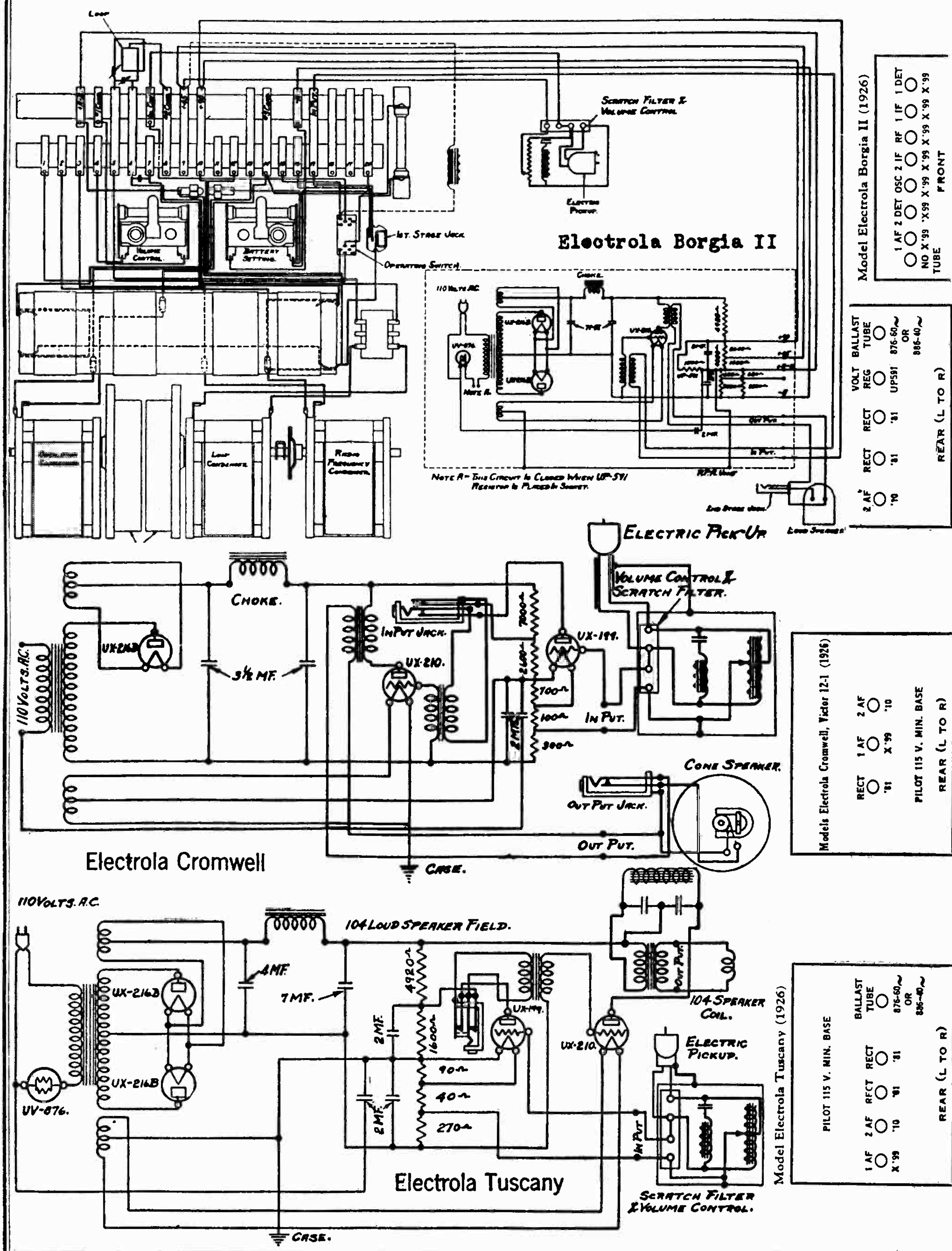
2 AF	1 AF	DET	3 RF	2 RF	1 RF	RECT
'71A	'26	'27	'26	'26	'26	'80

PILOT NO. 40 MAZDA

FRONT

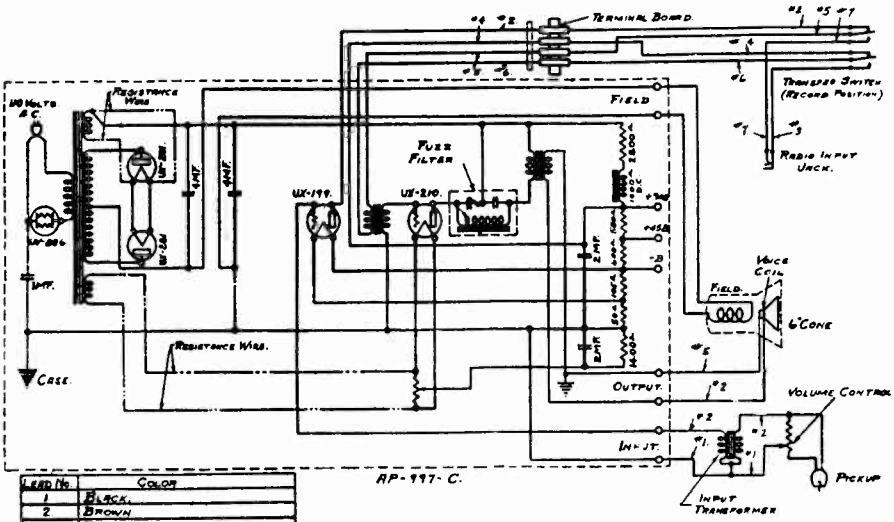
MODEL Victor Borgia II
MODEL Victor Tuscany
MODEL Victor Cromwell

R. C. A. VICTOR CO., INC.



R. C. A. VICTOR CO., INC.

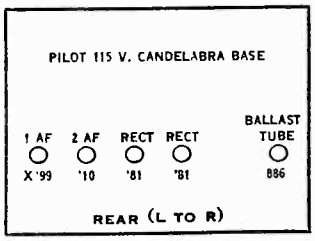
MODEL Victor 12-15
MODEL Victor 12-15-C
MODEL Victor E-35

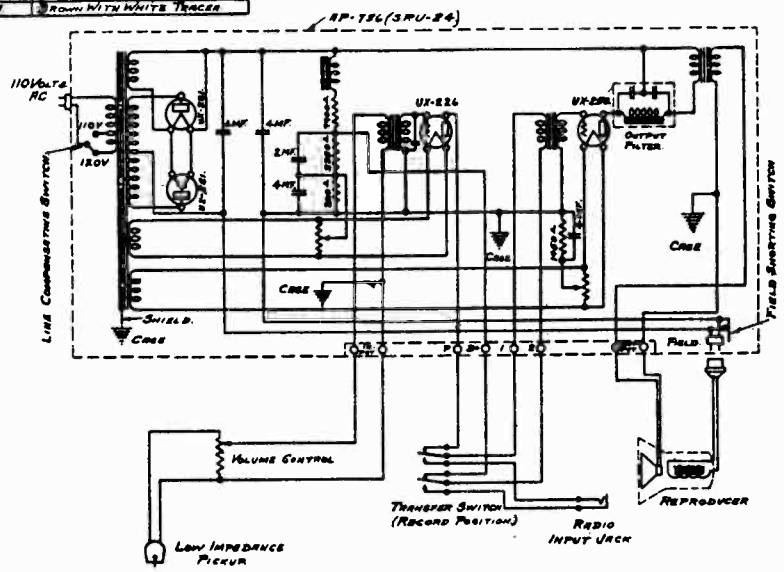


Lead No.	Color
1	Black.
2	Brown
3	Red
4	Red And Maroon
5	Black With Brown Tracer
6	Black With Red Tracer.
7	Brown With White Tracer

Wiring Diagram of 12-15

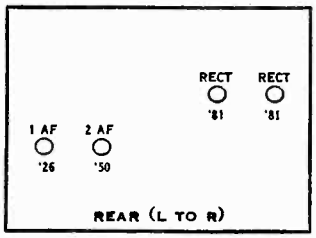
Models Victors 12-15 (1927)

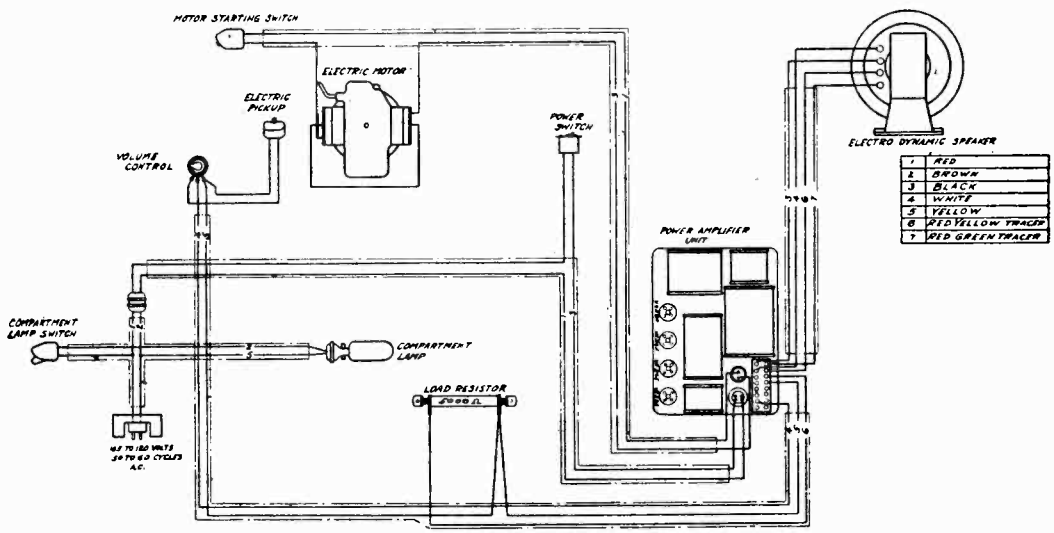




Wiring Diagram 12-15 above serial No. 2600

Model Victor 12-15C (1928)



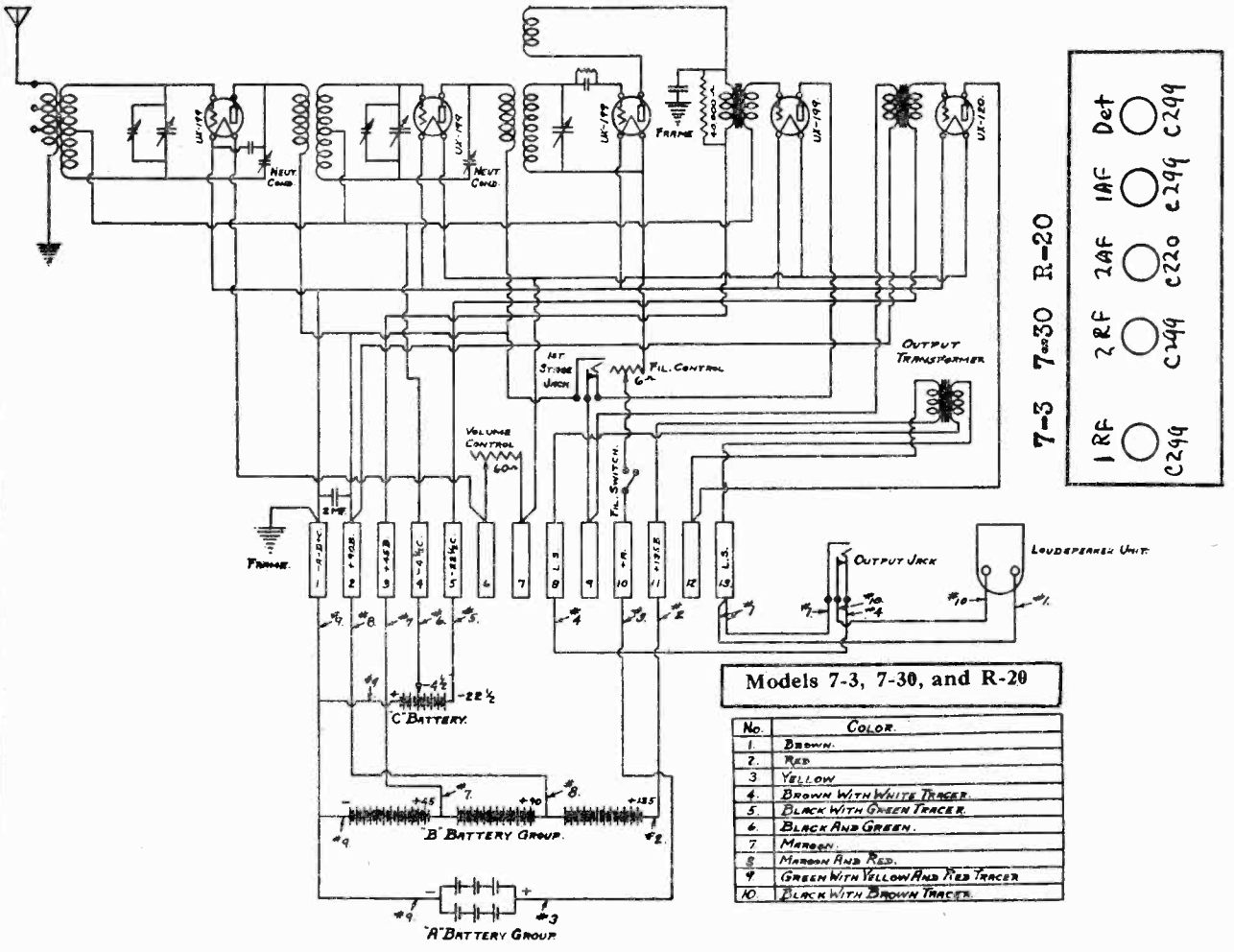


1	Red
2	Brown
3	Black
4	White
5	Yellow
6	Red Yellow Tracer
7	Red Green Tracer

Cable Wiring Electrola E-35

MODEL Victor 7-3,7-30,R-20
MODEL Victor 7-26

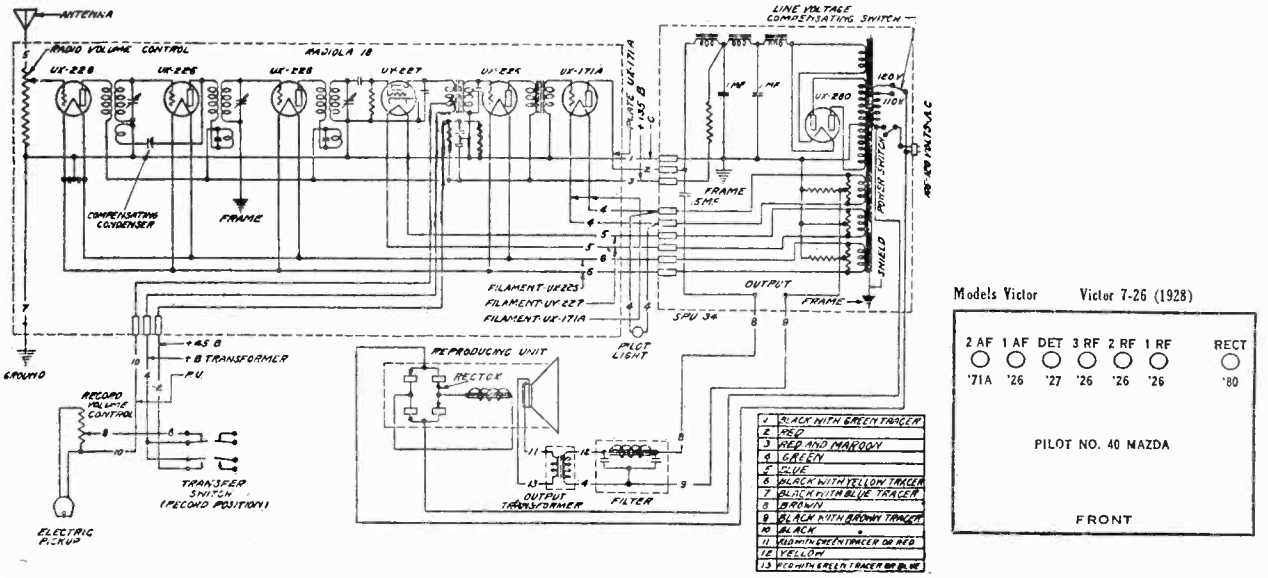
R. C. A. VICTOR CO., INC.



Models 7-3, 7-30, and R-20

No.	Color
1.	Brown.
2.	Red
3	Yellow
4.	Brown With White Tracer.
5.	Black With Green Tracer.
6.	Black And Green.
7	Maroon.
8	Maroon And Red.
9	Green With Yellow And Red Tracer
10.	Black With Brown Tracer.

For 7-26 voltage data, see index.



Models Victor — Victor 7-26 (1928)

2 AF	1 AF	DET	3 RF	2 RF	1 RF	RECT
'71A	'26	'27	'26	'26	'26	'80

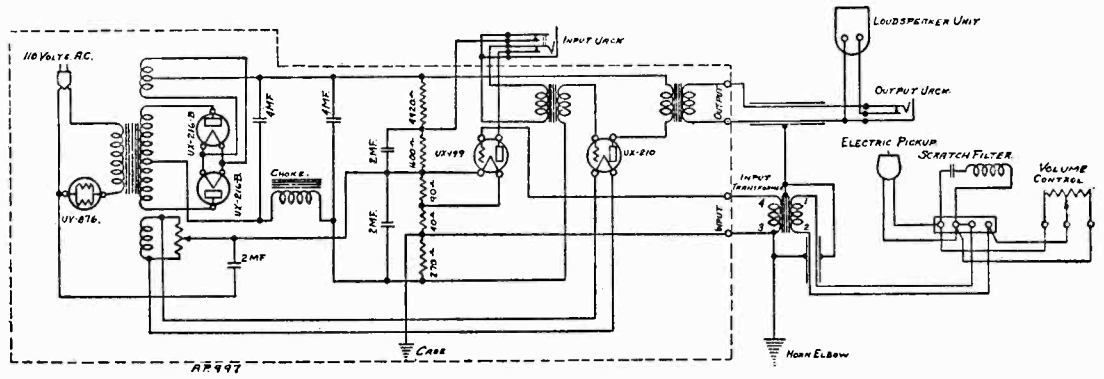
PILOT NO. 40 MAZDA

FRONT

Schematic Wiring Diagram Electrola Radiola 7-26 Above Serial No. 12000

R. C. A. VICTOR CO., INC.

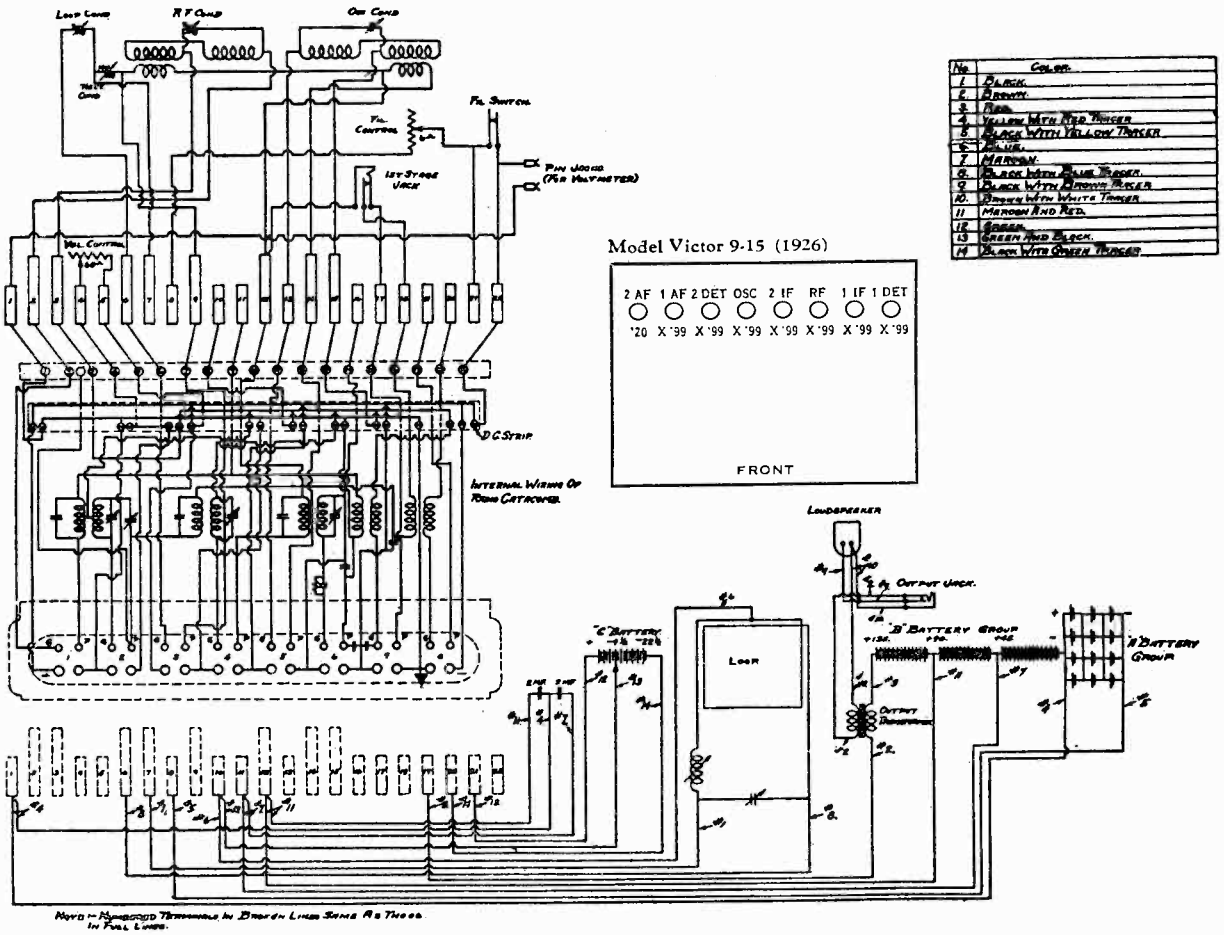
MODEL Victor 8-60
MODEL Victor 9-15



Wiring Diagram for Electrola 8-60

8-60 (A.C.)

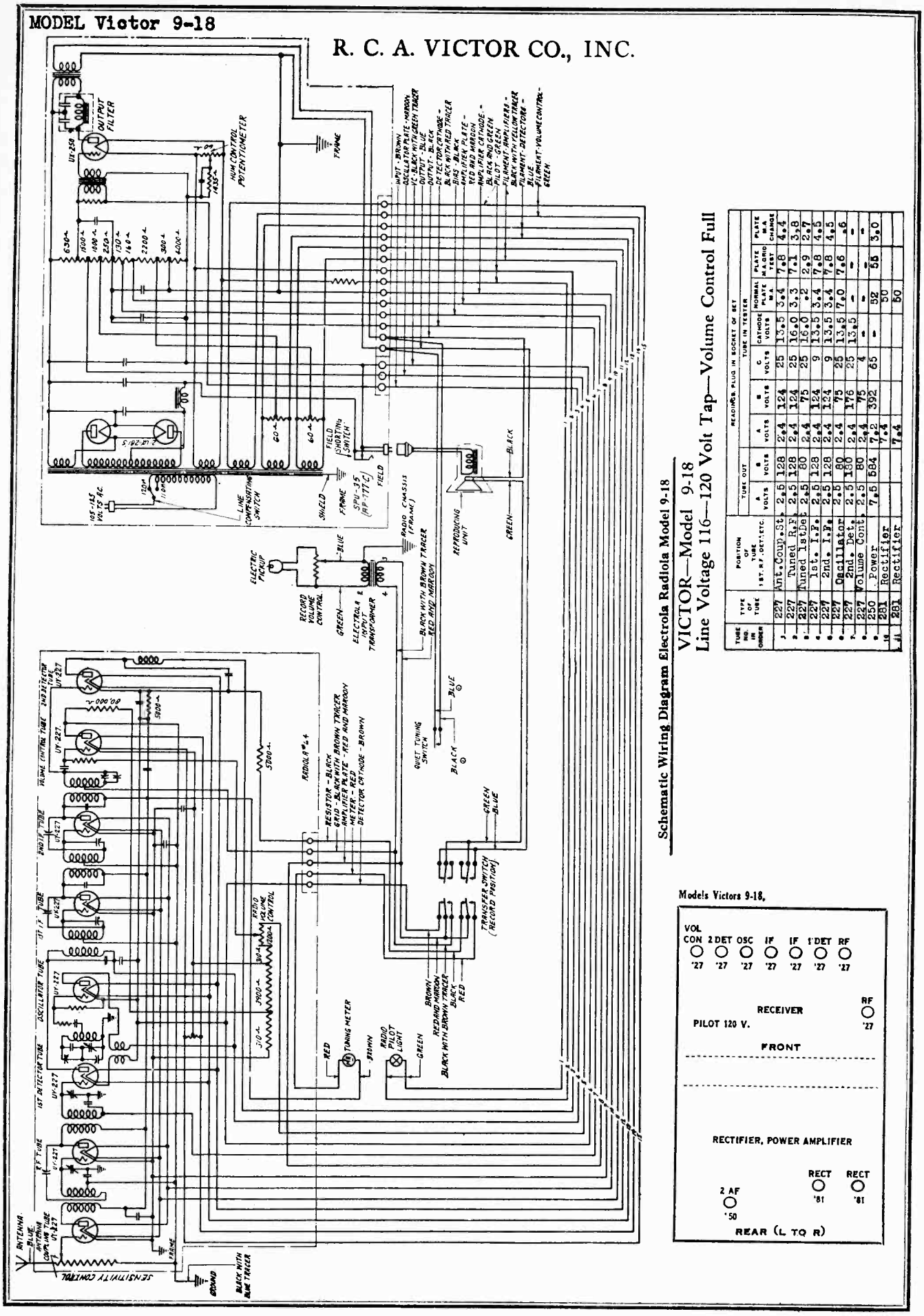
C-376	CX-381	CX-381	CX-310	CX-310
Ballast Tube	Rect.	Rect.	2nd A.F.	1st A.F.



Wiring Diagram for 9-15

MODEL Victor 9-18

R. C. A. VICTOR CO., INC.



Schematic Wiring Diagram Electrola Radiola Model 9-18

VICTOR—Model 9-18
Line Voltage 116—120 Volt Tap—Volume Control Full

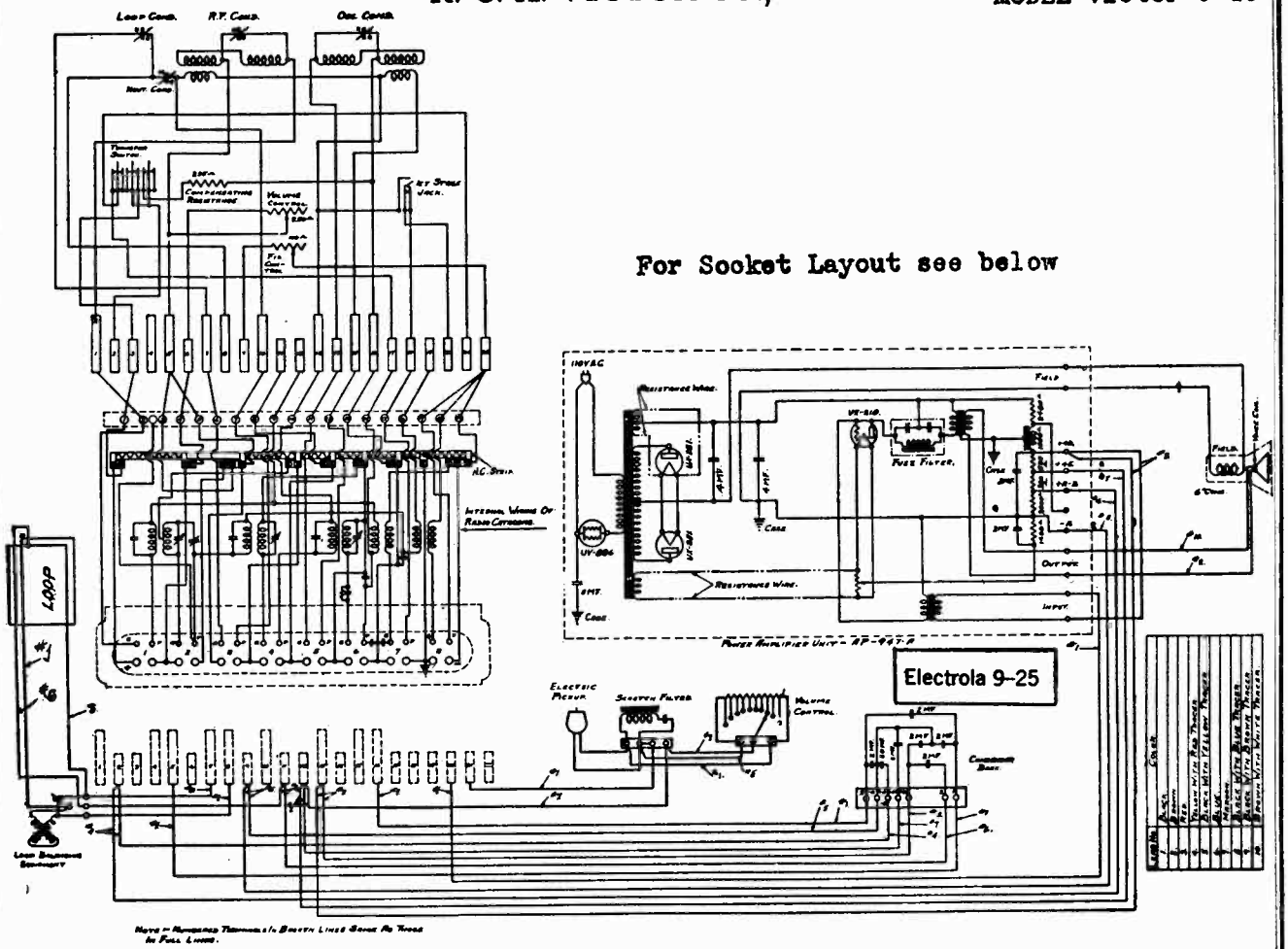
TUBE IND. NUMBER	TYPE OF TUBE	POSITION OF TUBE 1 ST. R.F., DET. ETC.	READINGS, PLUG IN SOCKET OF SET — TUBE OUT A VOLTS	TUBE OUT B VOLTS	TUBE IN TESTER A VOLTS	TUBE IN TESTER B VOLTS	TUBE IN TESTER C VOLTS	TUBE IN TESTER CATHODE VOLTS	TUBE IN TESTER NORMAL PLATE M.A.	PLATE M.A. READING AFTER TEST	PLATE M.A. CHANGE
1	227	Ant. Coup. St.	2.5	128	2.4	124	25	13.5	3.4	7.8	4.4
2	227	Tuned R.F.	2.5	128	2.4	124	25	16.0	3.3	7.1	3.8
3	227	Tuned 1st Det.	2.5	80	2.4	75	25	16.0	.2	2.9	2.7
4	227	1st. I.F.	2.5	128	2.4	124	9	13.5	3.4	7.8	4.5
5	227	2nd. I.F.	2.5	128	2.4	124	9	13.5	3.4	7.8	4.5
6	227	Oscillator	2.5	80	2.4	75	25	13.5	7.0	7.6	.6
7	227	2nd. Det.	2.5	180	2.4	176	25	13.5	-	-	-
8	227	Volume Cont.	2.5	80	2.4	75	4	13.5	-	-	-
9	250	Power	7.5	684	7.2	392	65	-	52	55	3.0
10	281	Rectifier			7.4				50		
11	281	Rectifier			7.4				50		

Models Victors 9-18,

R. C. A. VICTOR CO., INC.

MODEL Victor 9-25
MODEL Victor 9-40

For Socket Layout see below



Models Victors 9-25, 9-40,

	1 AF	2 DET	OSC	2 IF	RF	1 IF	1 DET
NO TUBE	X'99	X'99	X'99	X'99	X'99	X'99	X'99

RECEIVER

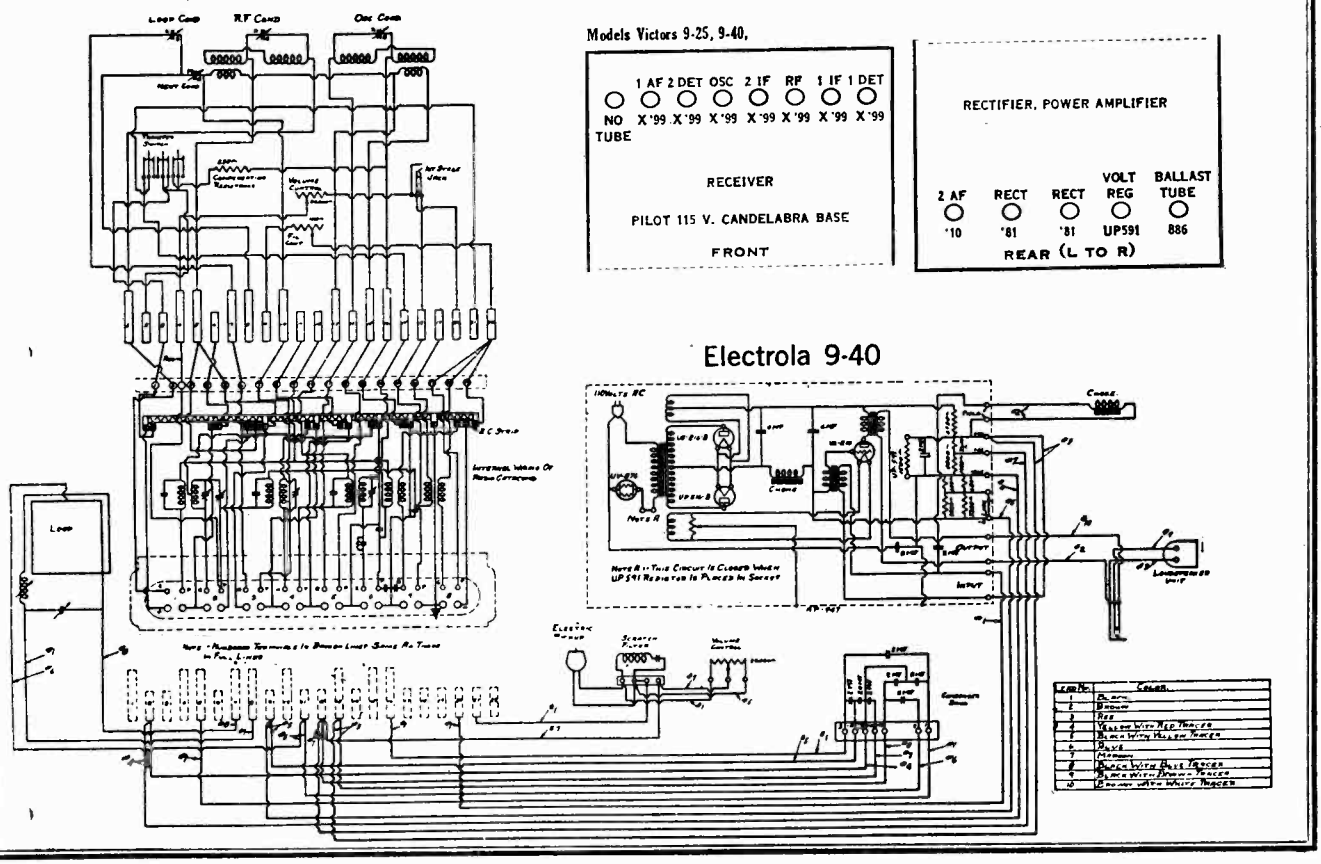
PILOT 115 V. CANDELABRA BASE

FRONT

RECTIFIER, POWER AMPLIFIER

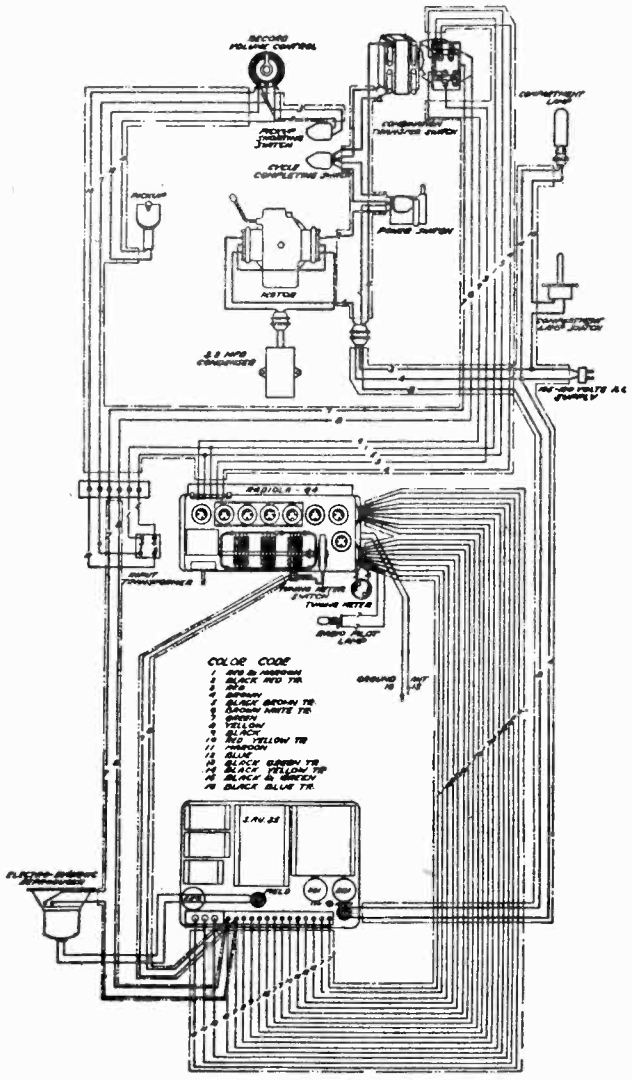
2 AF	RECT	RECT	VOLT REG	BALLAST TUBE
'10	'81	'81	UP591	886

REAR (L TO R)

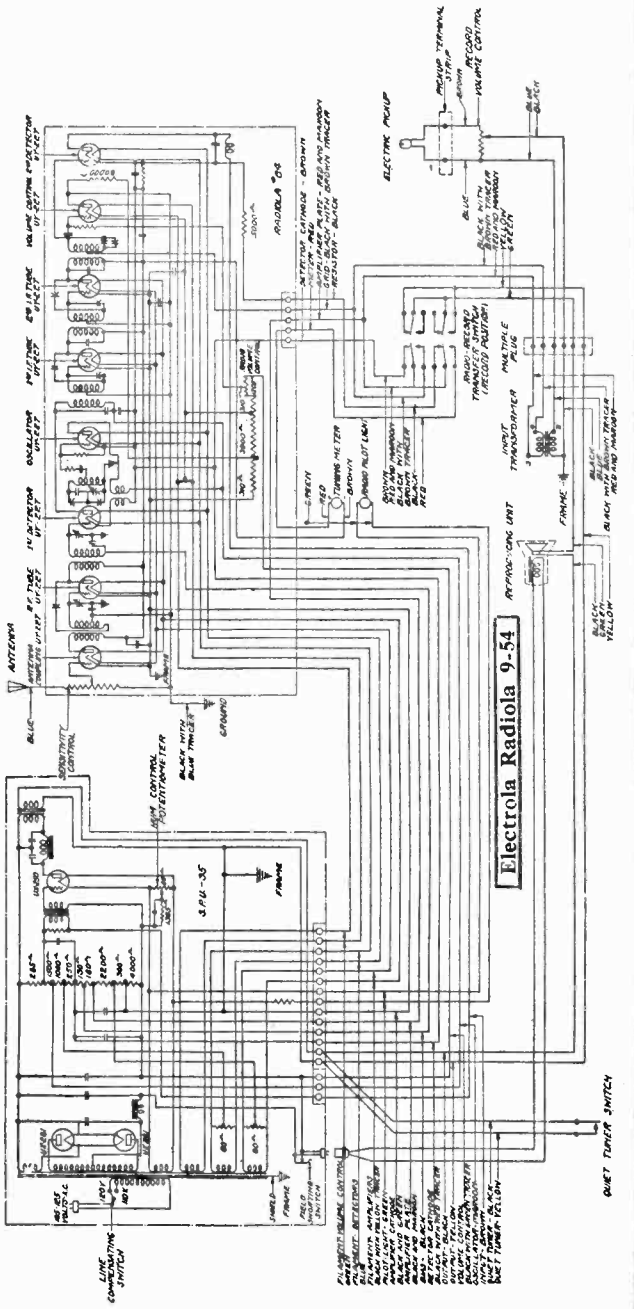


MODEL Victor 9-54

R. C. A. VICTOR CO., INC.

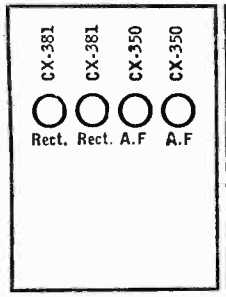


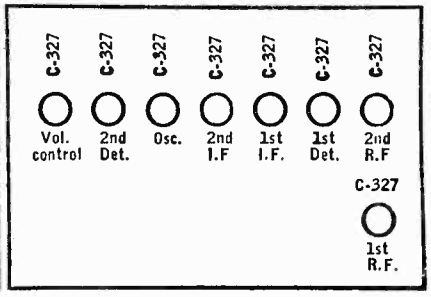
Cable Wiring Diagram Automatic Electrola Radiola 9-54 above Serial No. 6401



This receiver employs the Radiola 64 chassis. For special information relating to the receiver and power pack chassis, see Radiola 64.

9-54 (A.C.)





VICTOR—Model 9-54
Line Voltage 116—120 Volt Tap—Volume Control Full

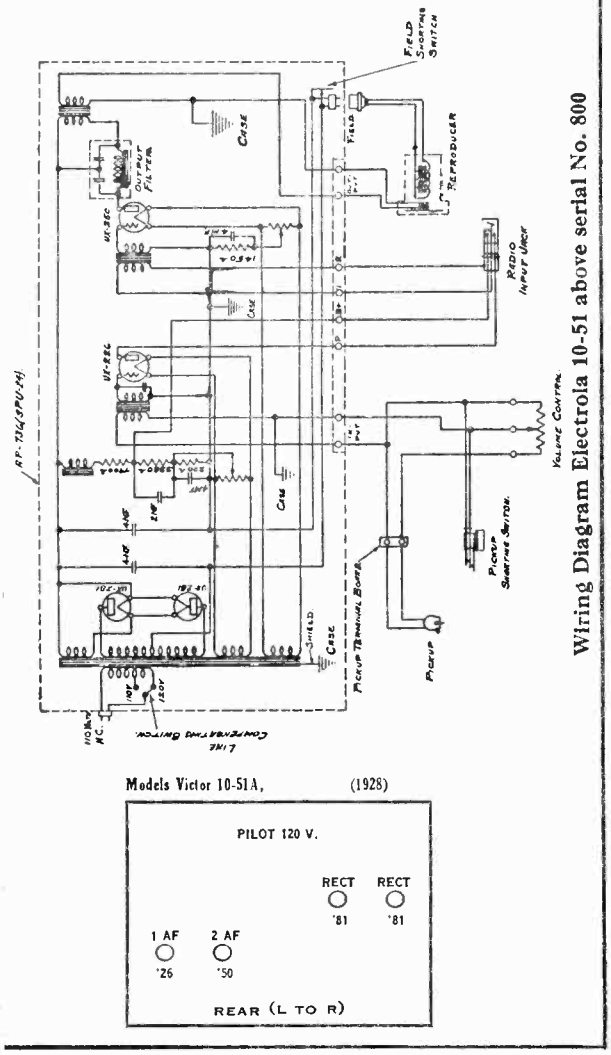
TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1 ST. R.F. DET. ETC.	READINGS, PLUG IN SOCKET OF SET								
			TUBE OUT		TUBE IN TESTER						
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE M.A. CHANGE
1	227	Ant. Coup. St.	2.5	128	2.4	124	25	13.5	3.4	7.8	4.4
2	227	Tuned R.F.	2.5	128	2.4	124	25	16.0	3.3	7.1	3.8
3	227	Tuned 1st Det.	2.5	80	2.4	75	25	16.0	.2	2.9	2.7
4	227	1st. I.F.	2.5	128	2.4	124	9	13.5	3.4	7.8	4.5
5	227	2nd. I.F.	2.5	128	2.4	124	9	13.5	3.4	7.8	4.5
6	227	Oscillator	2.5	80	2.4	75	25	13.5	7.0	7.6	.6
7	227	2nd. Det.	2.5	180	2.4	176	25	13.5	-	-	-
8	227	Volume Cont.	2.5	80	2.4	75	4	-	-	-	-
9	250	Power	7.5	584	7.2	392	65	-	52	55	3.0
10	281	Rectifier			7.4				50		
11	281	Rectifier			7.4				50		

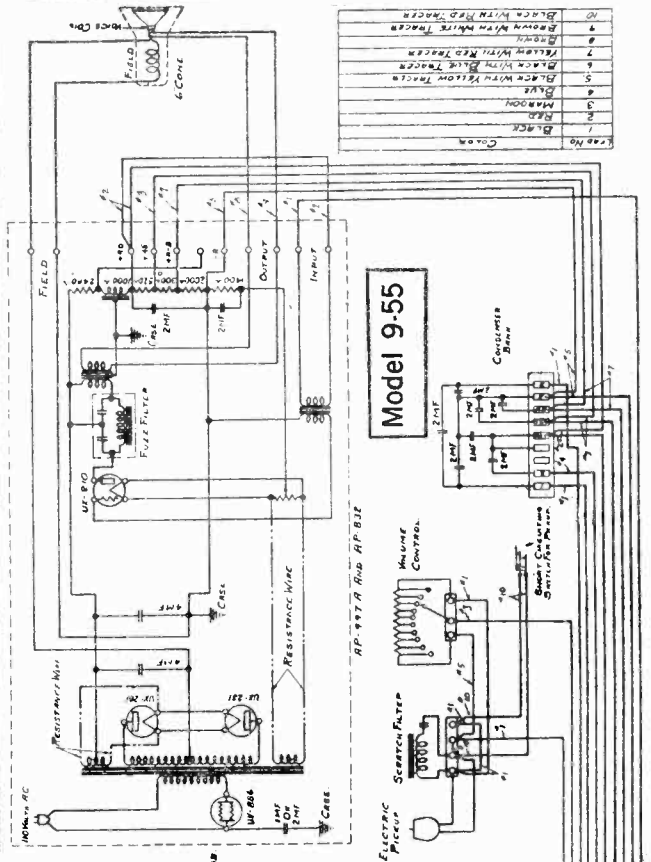
R. C. A. VICTOR CO., INC.

MODEL Victor 10-51A
MODEL Victor 9-55

Electrola 9-55 Receiver

CX-299	CX-299	CX-299	CX-299	CX-299	CX-299	CX-299	
1st Det.	1st I.F.	1st R.F.	2nd I.F.	Osc.	2nd Det.	1st A.F.	



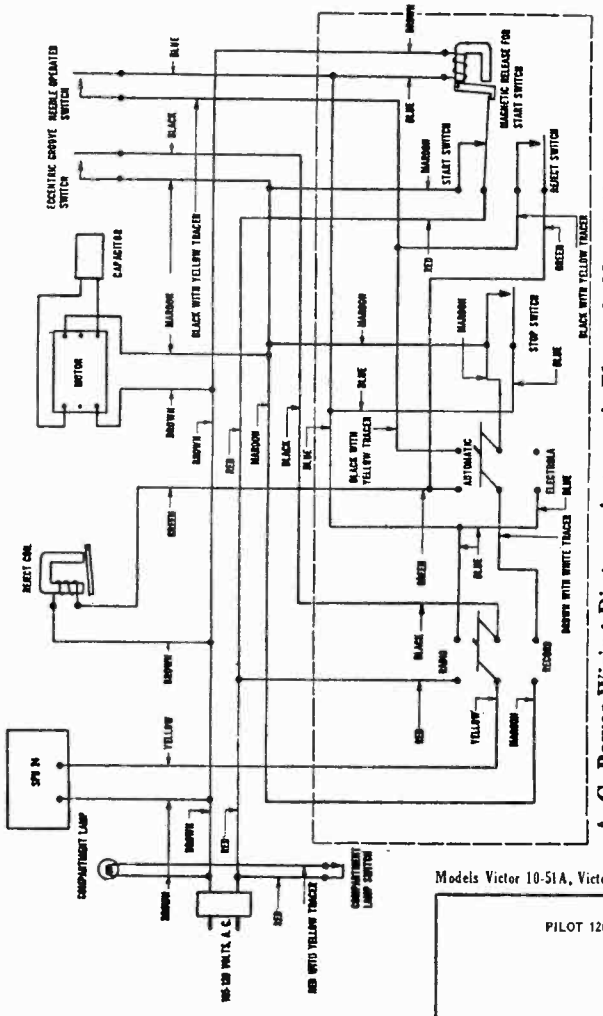


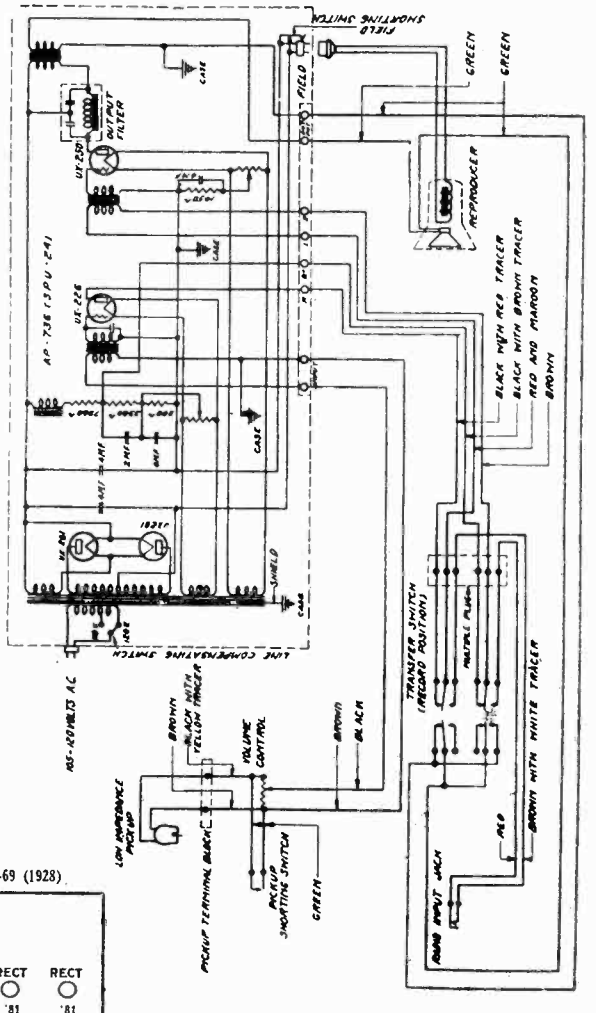
Electrola 9-55 Power Unit

BALLAST	VOLT. REG.	RECT.	RECT.	2 AF.
C-386		CX-381	CX-381	CX-310

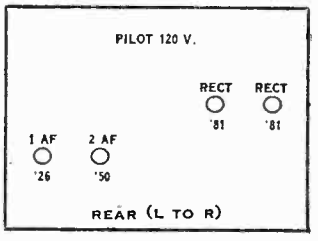
MODEL Victor 10-69

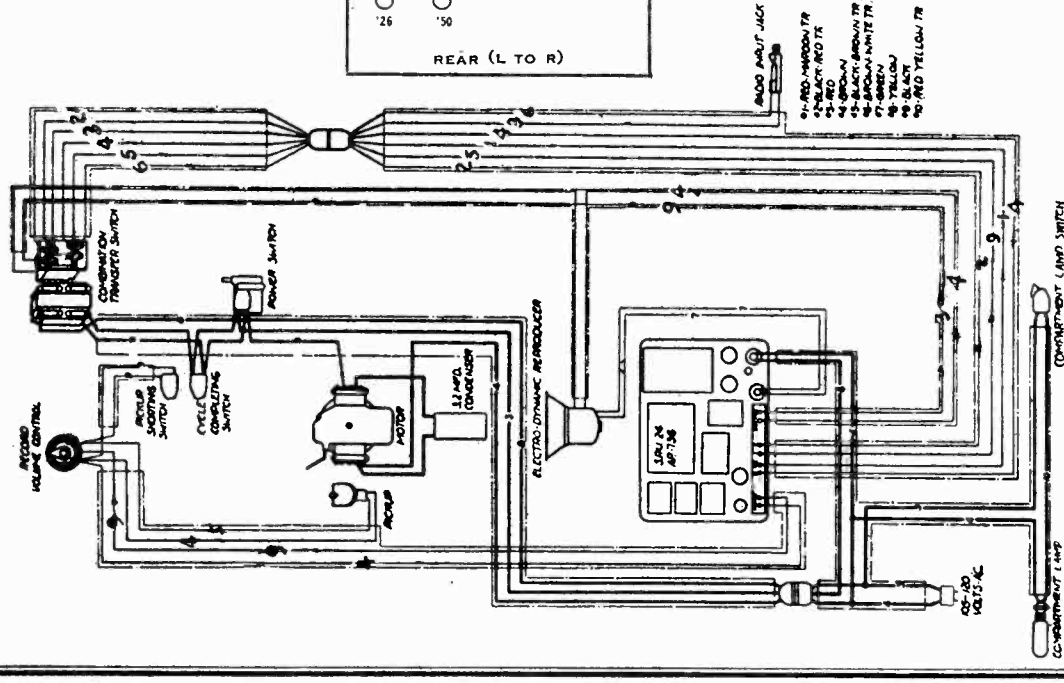
R. C. A. VICTOR CO., INC.





Models Victor 10-51A, Victor 10-69 (1928)





R. C. A. VICTOR CO., INC.

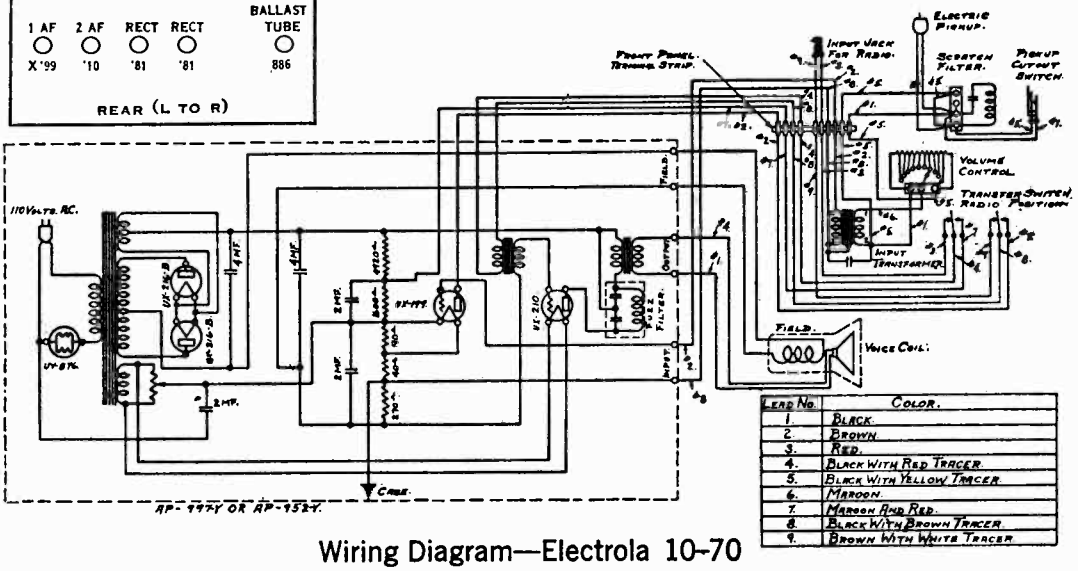
MODEL Victor 10-70
MODEL Victor 10-70-A
MODEL Victor 12-25

Models Victors 10-51, 10-70, 12-15 .(1927)

PILOT 115 V. CANDELABRA BASE

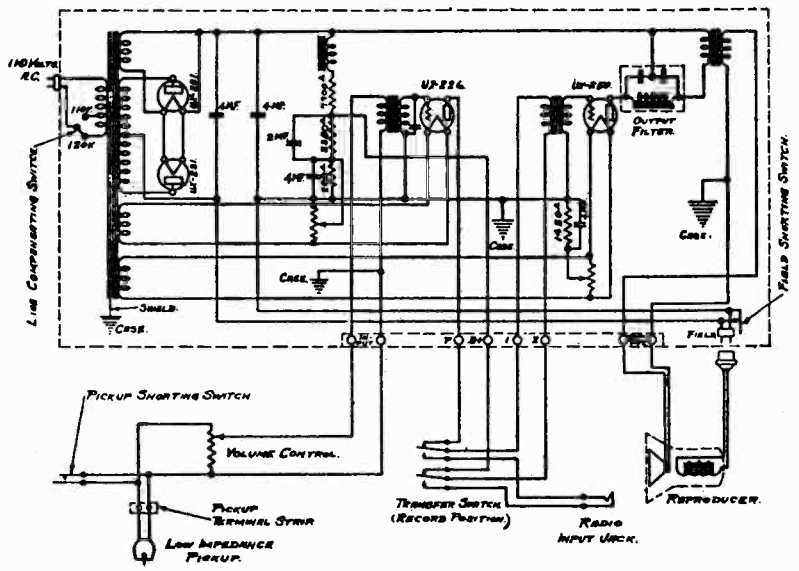
1 AF	2 AF	RECT	RECT	BALLAST TUBE
X'99	'10	'81	'81	886

REAR (L TO R)



Lead No.	Color.
1.	Black.
2.	Brown.
3.	Red.
4.	Black With Red Tracer.
5.	Black With Yellow Tracer.
6.	Maroon.
7.	Maroon And Red.
8.	Black With Brown Tracer.
9.	Brown With White Tracer.

Wiring Diagram—Electrola 10-70



Models Victors 10-70A. (1928)

1 AF	2 AF	RECT	RECT
'26	'10	'81	'81

REAR (L TO R)

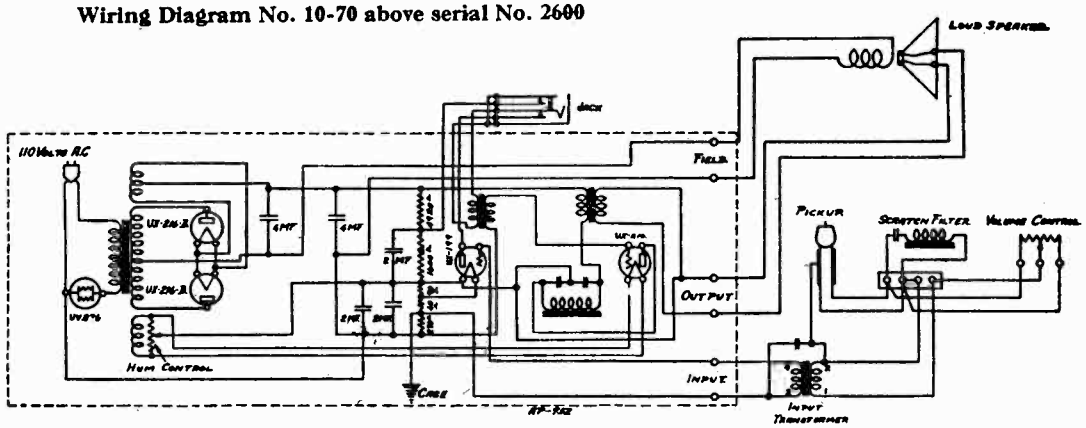
Models Victors 12-25 (1926)

PILOT 115 V. CANDELABRA BASE

1 AF	2 AF	RECT	RECT	BALLAST TUBE
X'99	'10	'81	'81	876-60~ OR 886-40~

REAR (L TO R)

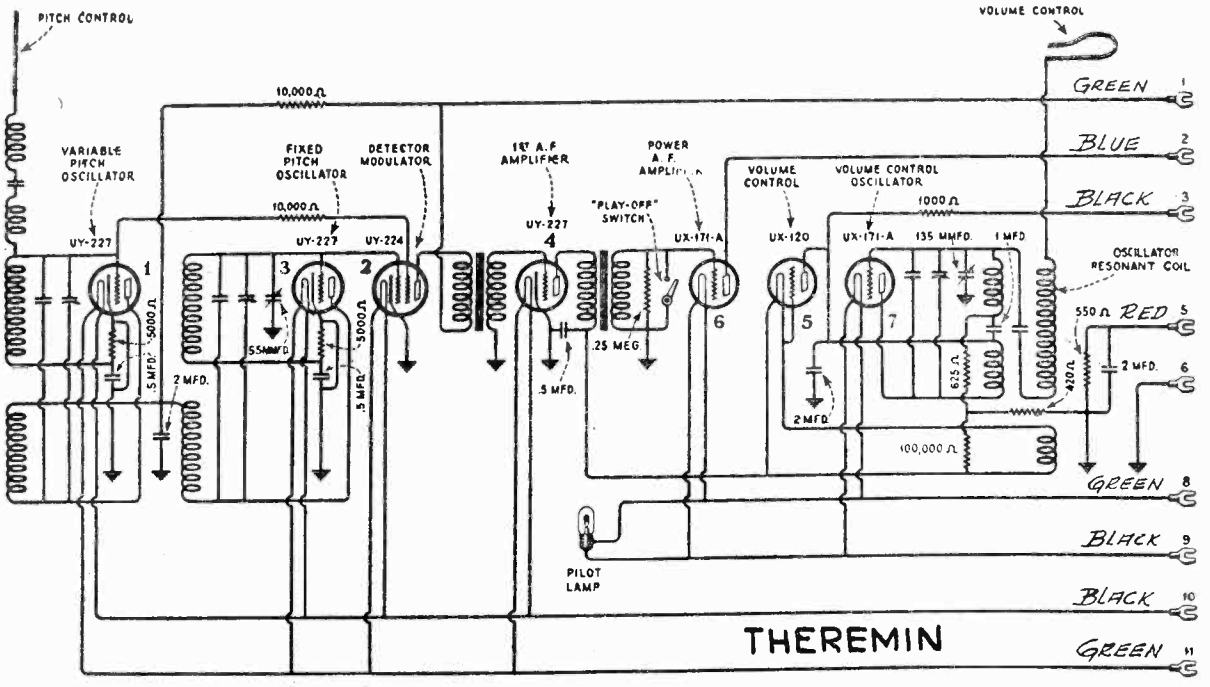
Wiring Diagram No. 10-70 above serial No. 2600

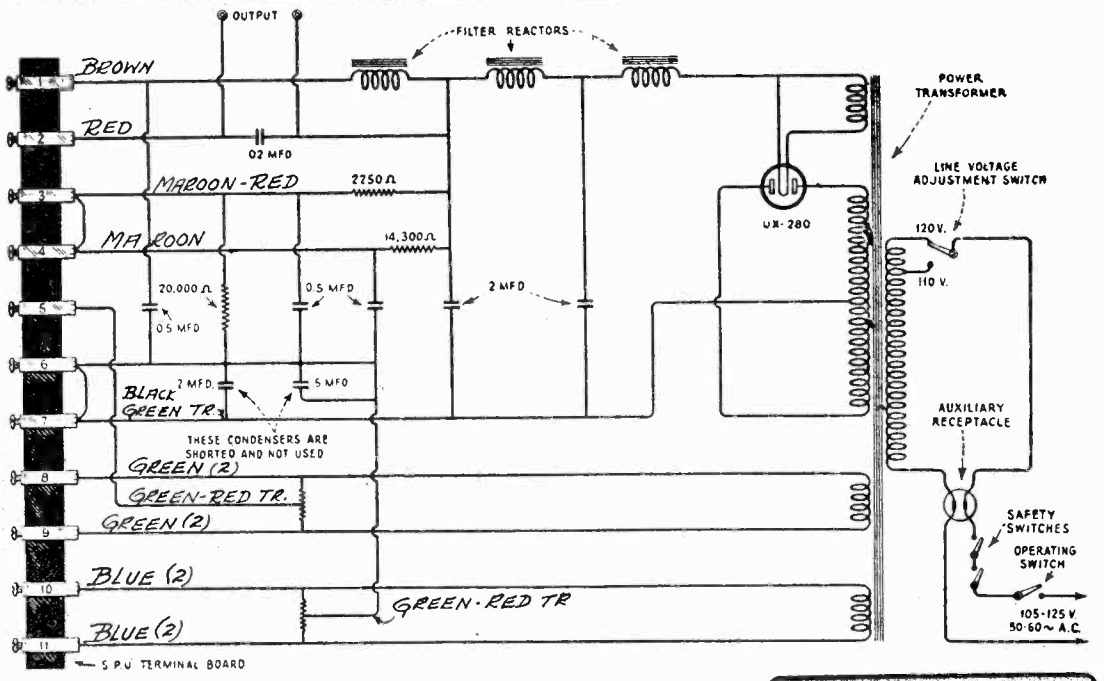


Electrola 12-25

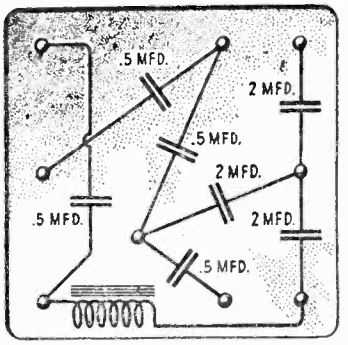
MODEL Theremin

R. C. A. VICTOR CO., INC.





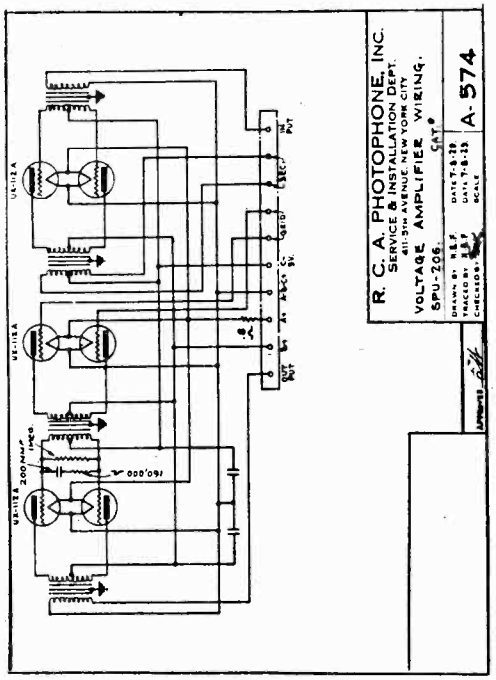
Terminals Nos.	Cable on Tubes Lighted Volts	Cable Off Volts
1 to 6 (D.C.)	190	260
2 to 6	190	260
3 to 6	140	230
5 to 6	29.0	0
8 to 9 (A.C.) rms	2.5	2.8
10 to 11 (A.C.) rms	4.7	5.0

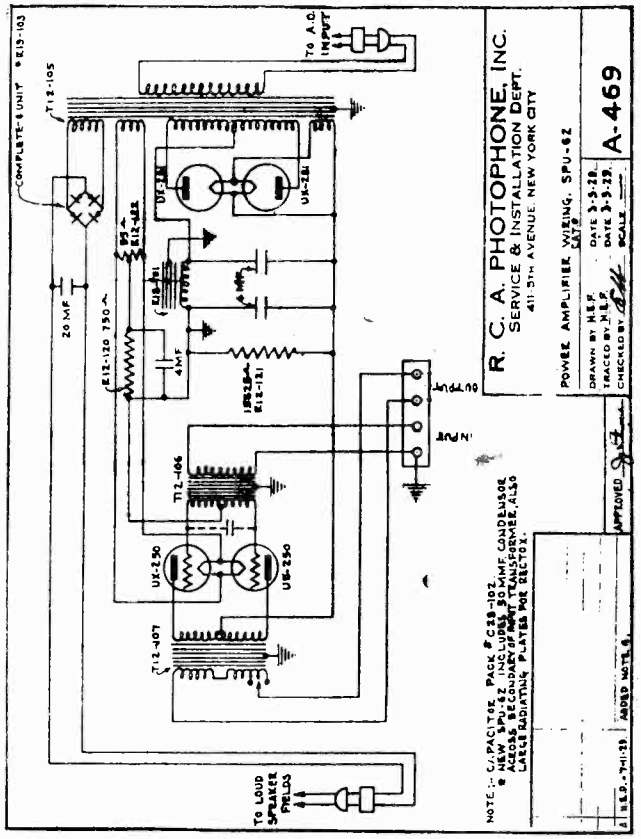


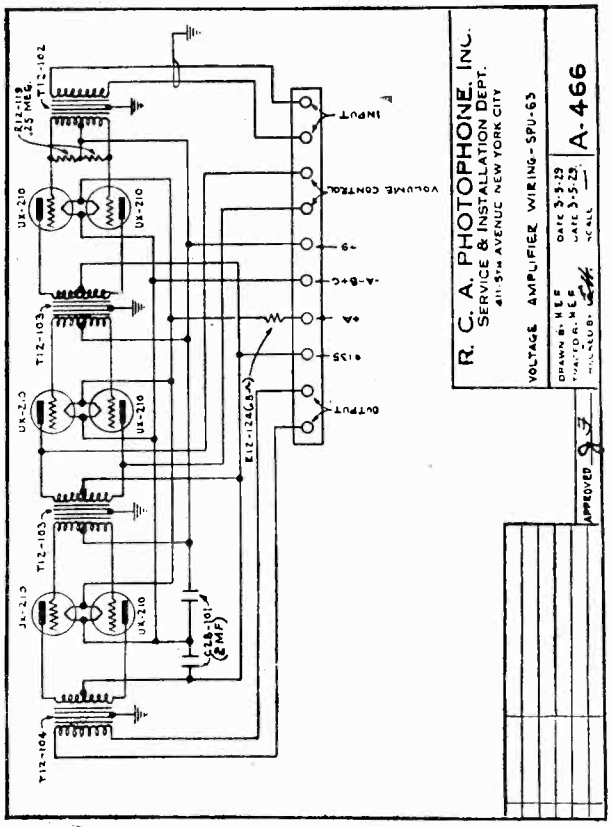
—Internal connections of filter and by-pass condensers, and filter reactor

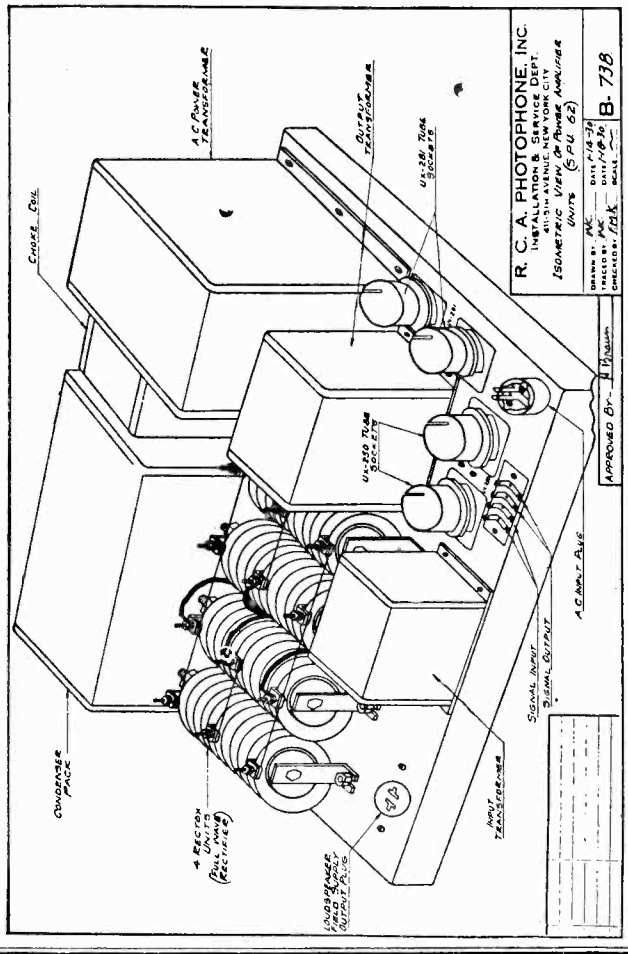
MODEL Photophone SPU 62
Schematic- Chassis
MODEL Photophone SPU 63
MODEL Photophone SPU 206

R. C. A. VICTOR CO., INC.



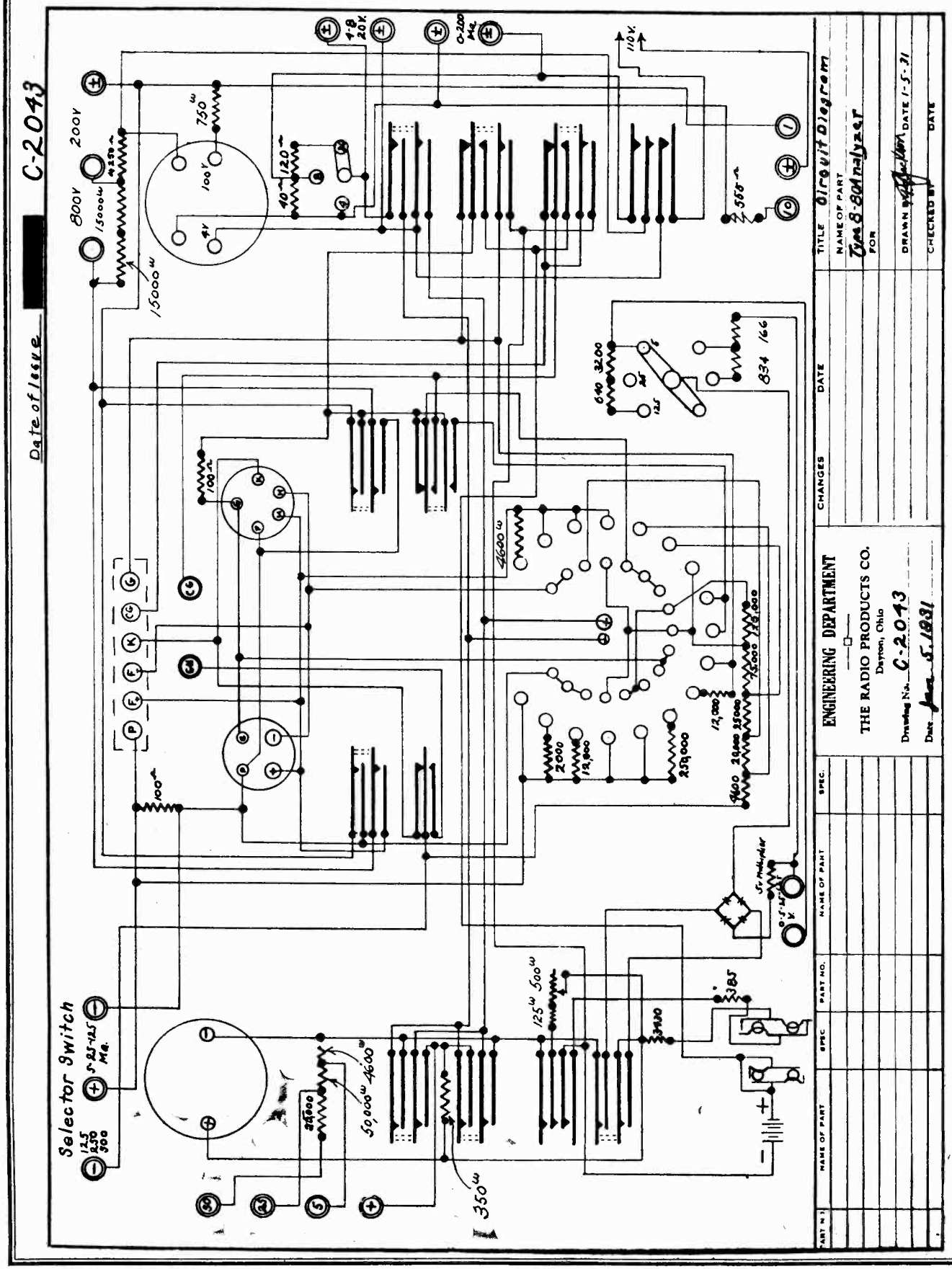






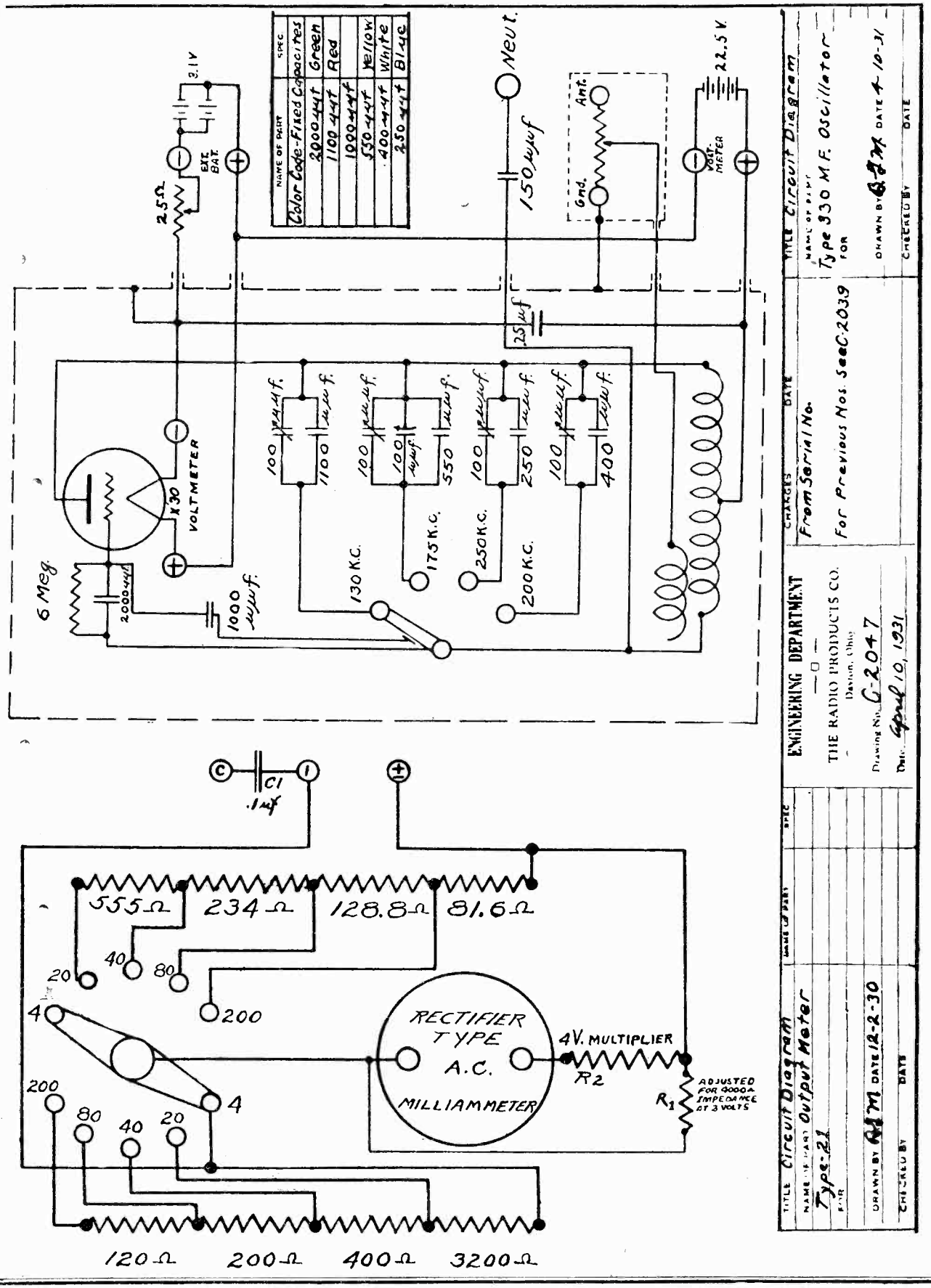
MODEL Dayrad 8-80

RADIO PRODUCTS CO.



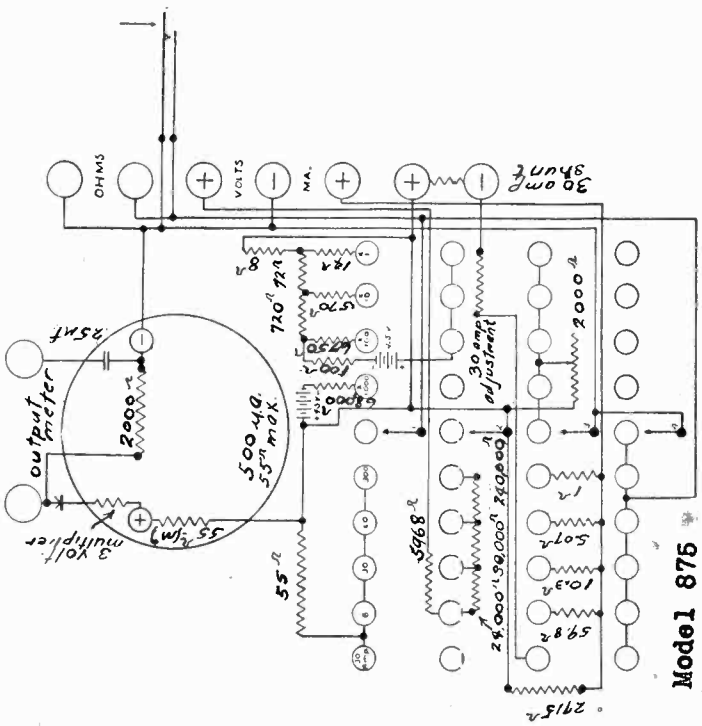
MODEL Dayrad 21
Output Meter
MODEL 330 mmf
Oscillator

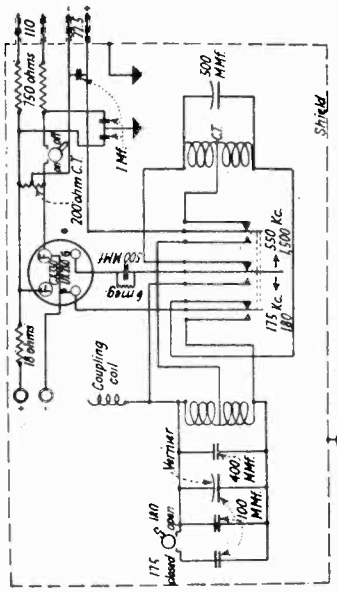
RADIO PRODUCTS CO.

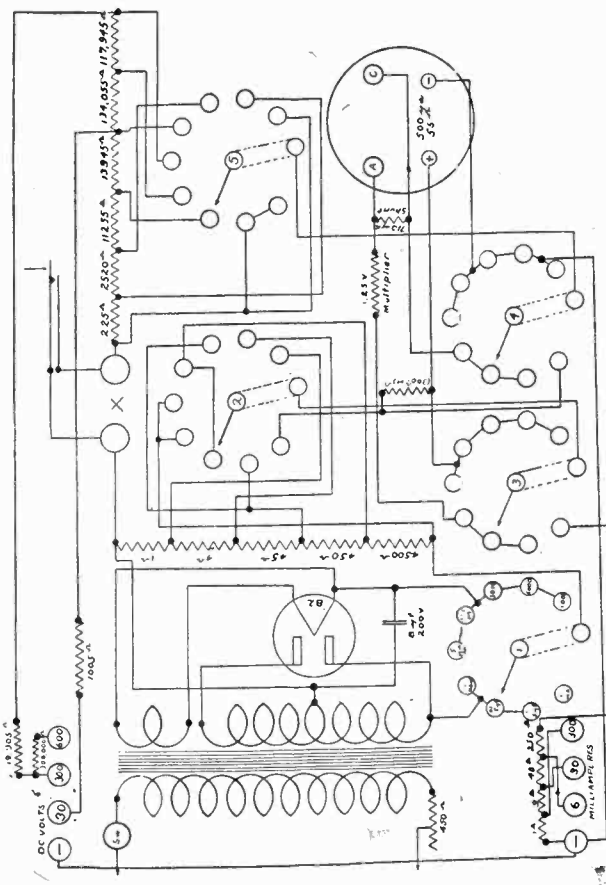


RADIO PRODUCTS CO.

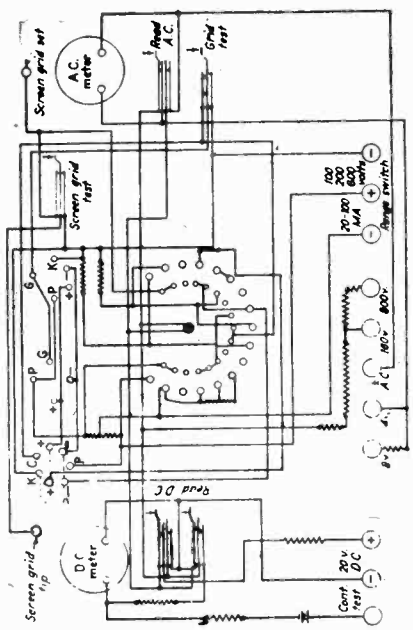
MODEL Dayrad 180
MODEL Dayrad HR
MODEL Dayrad 870
MODEL Dayrad 875







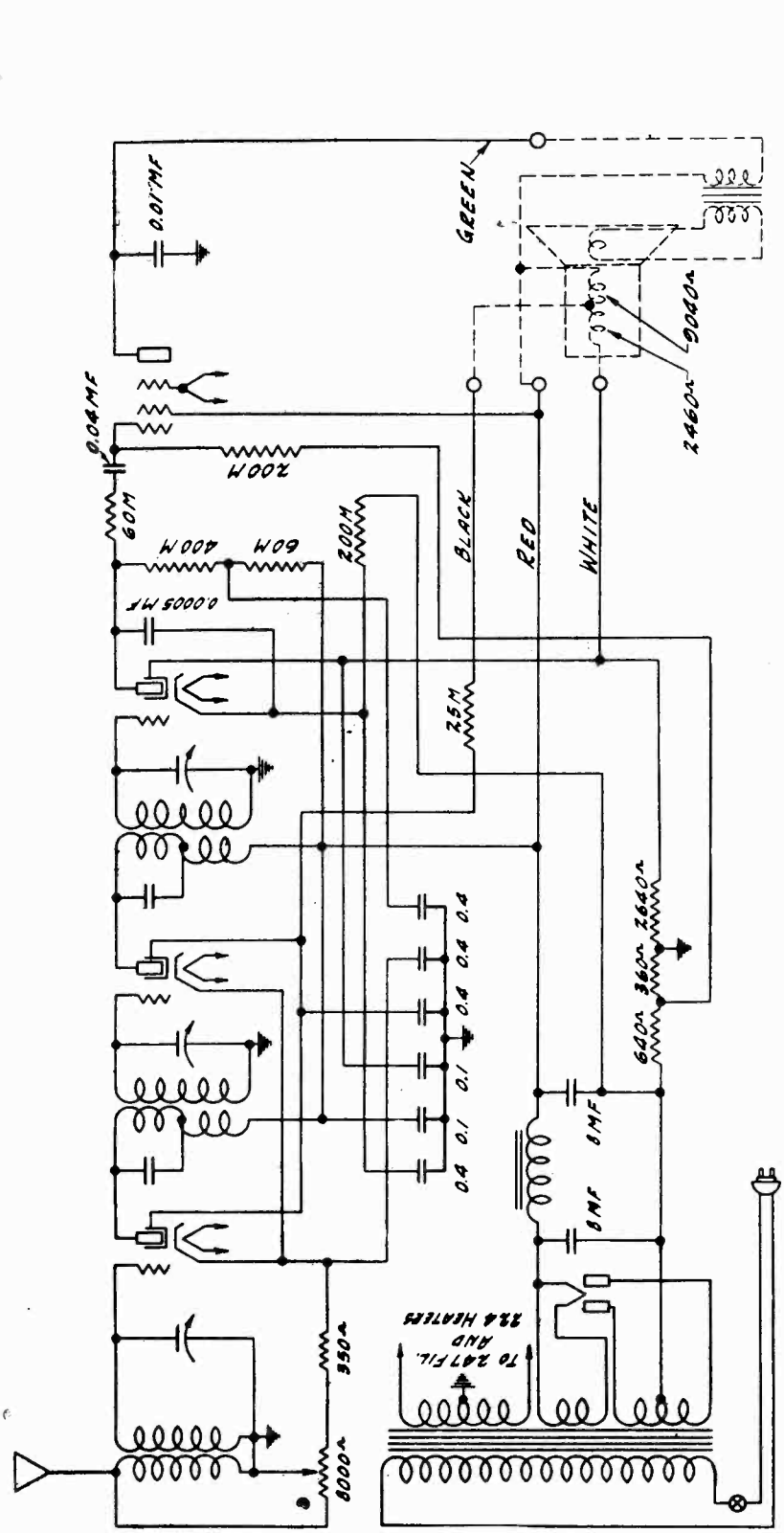
Schematic diagram of the Dayrad Type 870 Test Meter, which operates from the 110-volt, 60-cycle line. All values are given

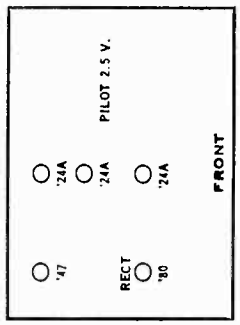


Dayrad HR

MODEL 74-R (2nd Type)

RADIOTROPE





Volume Control at maximum. Line Voltage 115

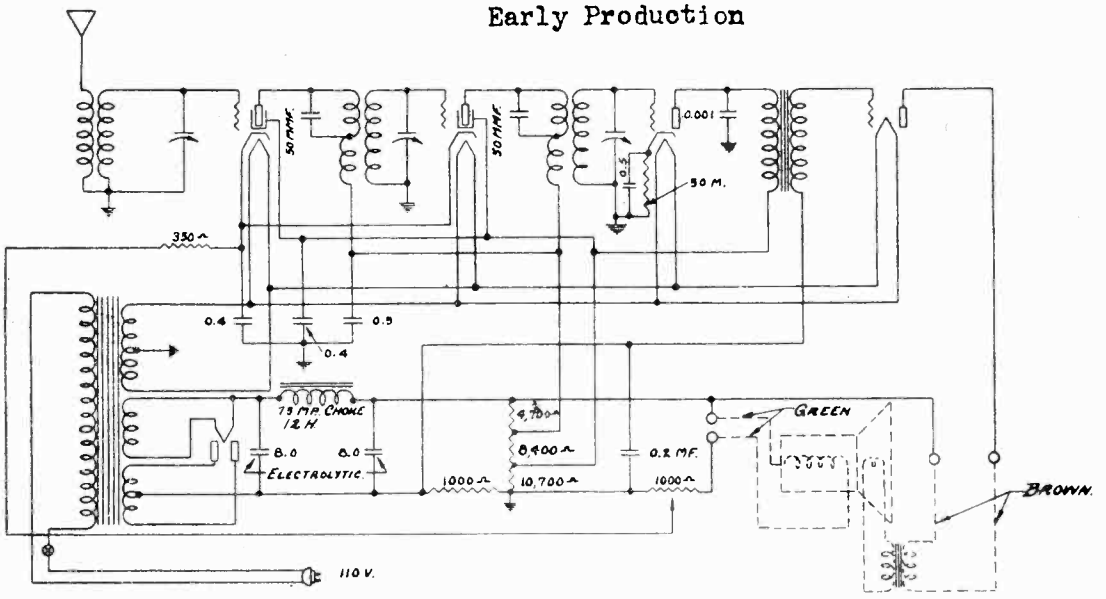
Tube	"A"	"B"	"C"	Screen	Cathode	Plt. Crn't	
1st RF	2.2	250	2.	55.*	2.	2.1 ma	
2nd RF	2.2	250	2.	55.*	2.	2.1	
Det	2.2	130	2.8	40.*	2.8	.25	
AF	2.3	238	18.**	250.		27.	
Rect	4.65					28 per anode	

* Reading with 250000 ohm meter. Reading will be less with lower meters
**This voltage read across 360 ohm section of shunt resistance.

MODEL 27-R

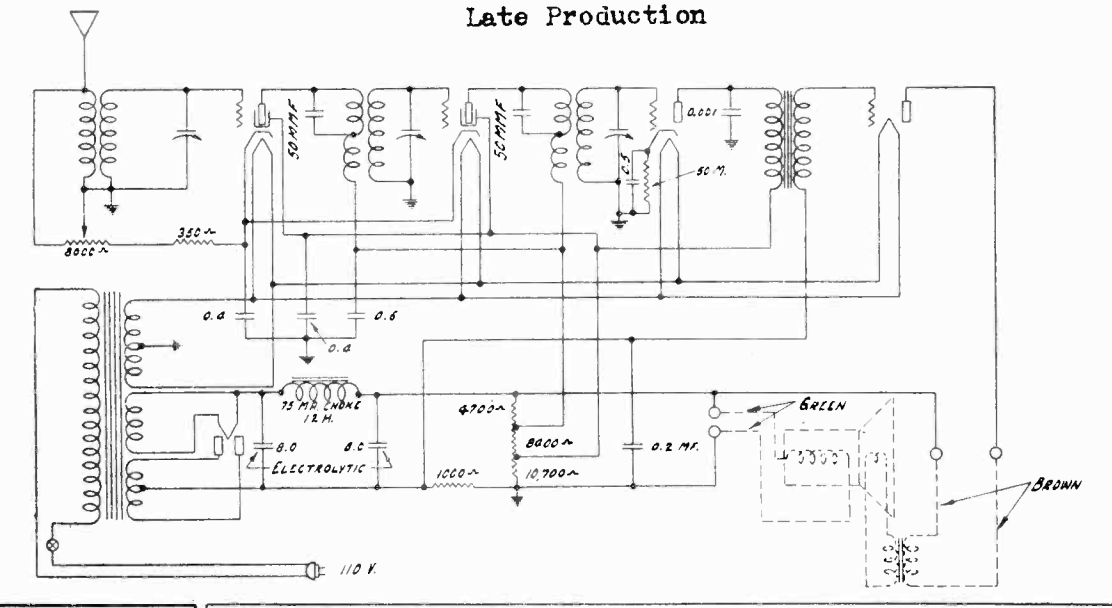
RADIOTROPE

Early Production

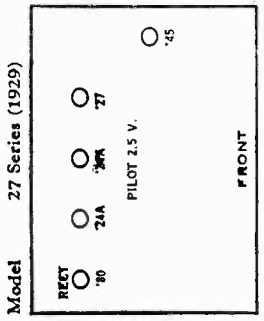


2012

Late Production

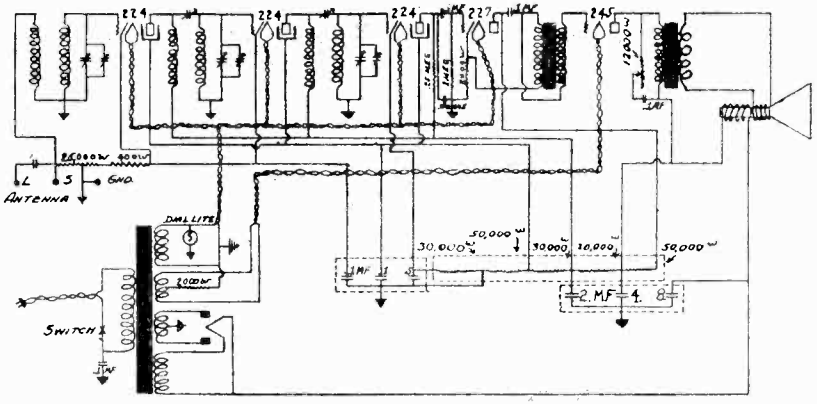


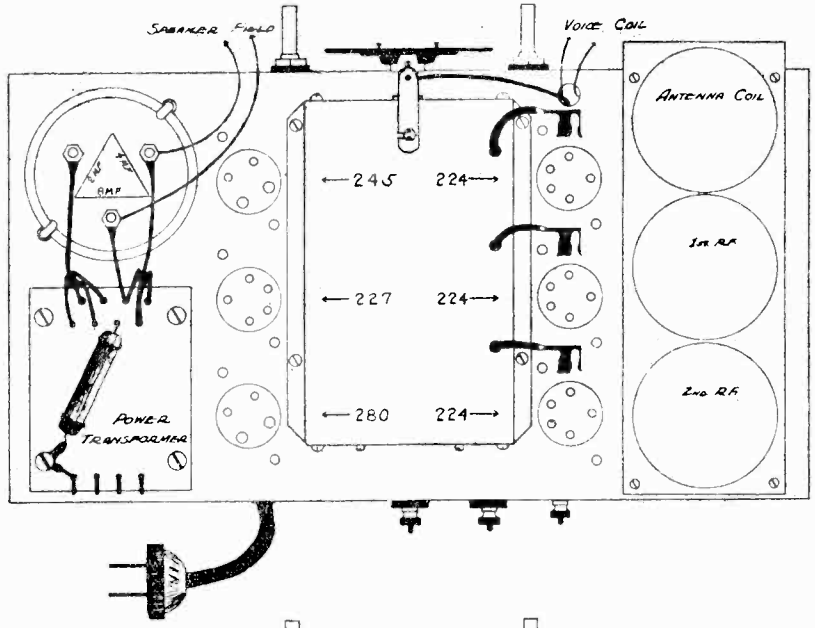
2012A

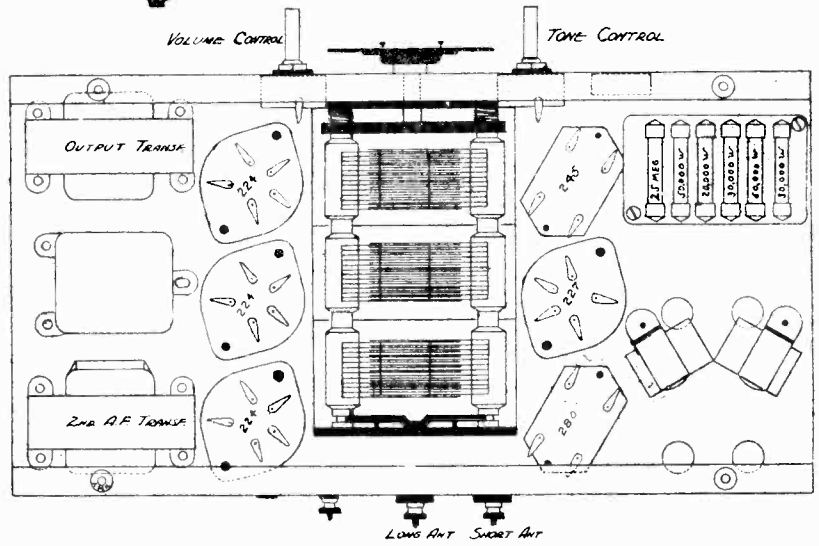


VOLTAGES AT SOCKETS — VOLUME CONTROL AT MAXIMUM — LINE VOLTAGE, 115 — PLUG IN SOCKET OF RECEIVER — TUBE IN TEST SET

Type of Tube	*Position of Tube*	*Function*	*"A" Volts*	*"B" Volts*	*Control Grid "C" Volts*	*Screen Volts*	*Screen Current MA*	*Cathode Volts*	*Plate MA*	*Grid Test MA*
224	1	1st Radio	2.25	160	2.5	80	.6	2.5	3.	5.1
224	2	2nd Radio	2.25	160	2.5	80	.6	2.5	3.	5.1
227	3	Detector	2.25	70	8.5			8.5	.1	.2
245	4	Audio	2.35	238	44.				19.	22.
280	5	Rectifier	4.8						26.5 per Plate	







WIRE COLOR CODE

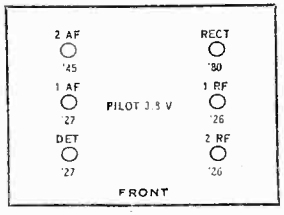
RED - FILAMENT RECTIFIER - KATHODE A.F. - PLATE R.F. - PLATE POWER TUBE - SPEAKER FIELD
BLUE - FILAMENT POWER TUBE - PLATE DETECTOR - +B R.F.
GREEN - KATHODE DETECTOR - GRID POWER TUBE
BROWN - FILAMENT R.F. TUBES AND DETECTOR
BLACK - FILAMENT 1st A.F. TUBE - DETECTOR KATHODE - SPEAKER VOICE COIL
YELLOW - SHIELD GRID - PLATE 1st A.F. - PLATE RECTIFIER

VOLTAGE TABLE

LINE 115 V. 60 CYCLES

TUBE	POSITION	FIL V	GRID V	PLATE V	SG VOLTS
224	1st R.F.	2.3	3-9	160-185	85-125
224	2nd R.F.	2.3	3-9	160-185	85-125
224	DET	2.3	48-8	75-115	85-125
227	1st A.F.	2.3	7	110	
245	POWER	2.4	47	235	
280	RECTIFIER	4.9		400	

Model 14 (1930)

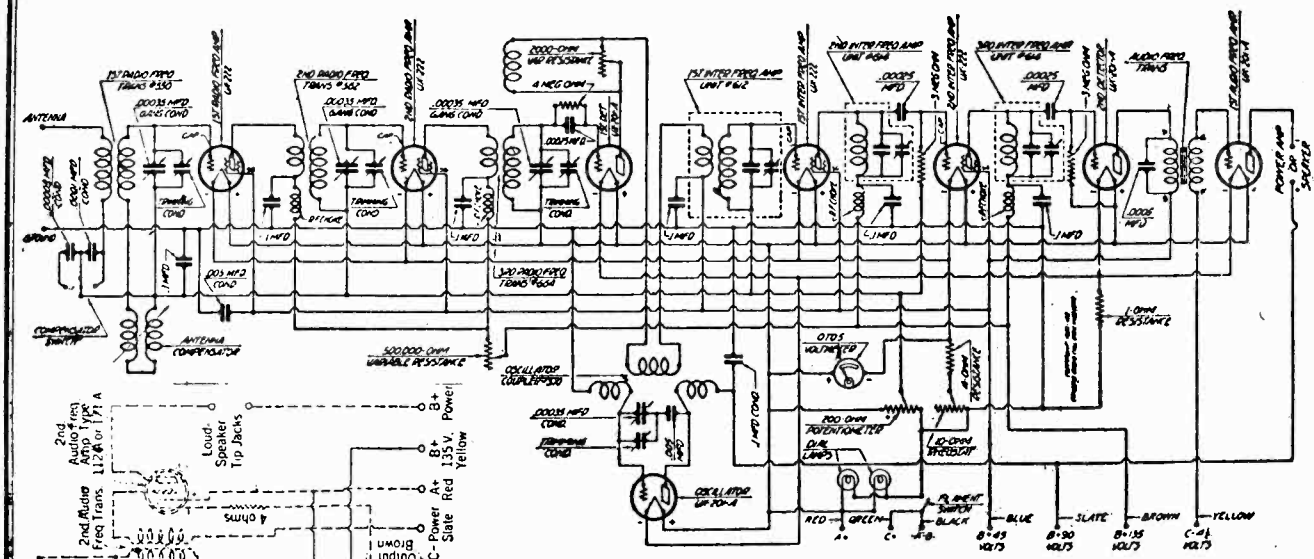


REMLER COMPANY, LTD.

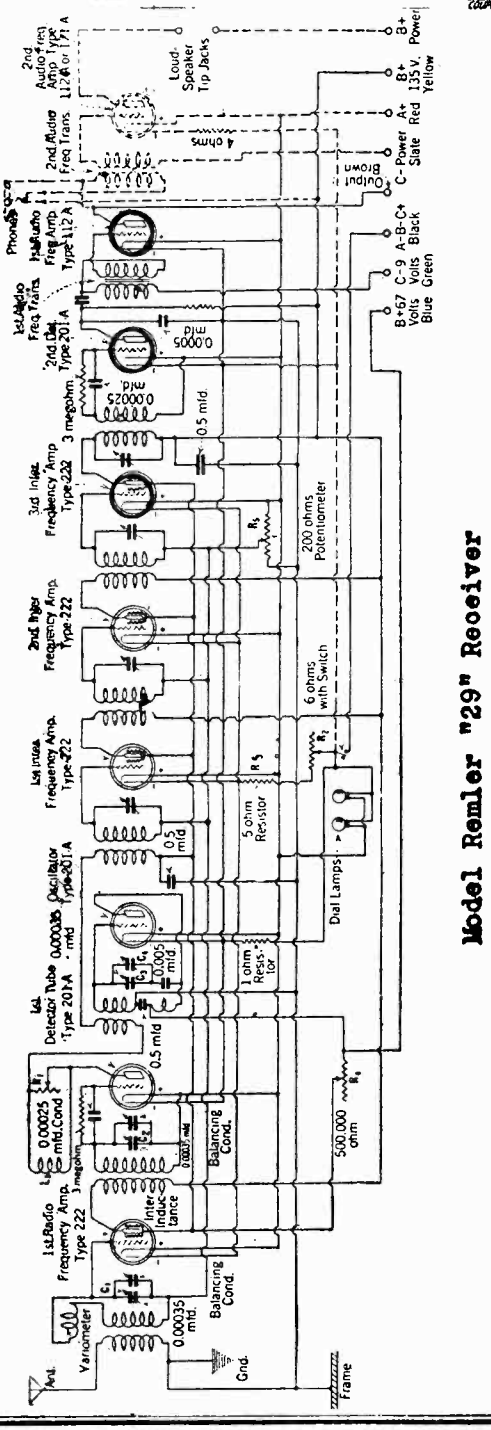
MODEL 14

REMLER COMPANY, LTD.

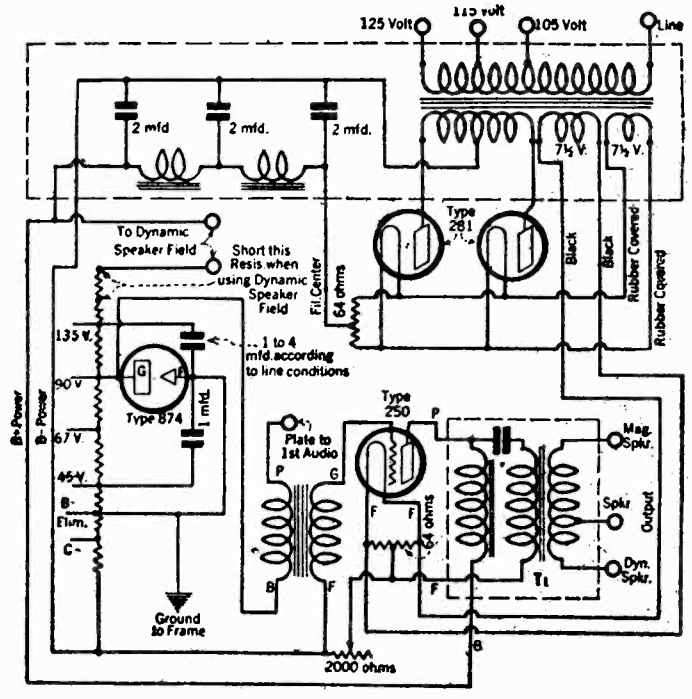
MODEL Best "115 KC"
MODEL Remler "29"



Model Best "115 KC"



Model Remler "29" Receiver



Model Remler "29" Power Pack