World Radio History

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TORONTO, CANADA

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Index of 1930-33 Series

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Index of 1933-34 Series

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Radio College of Canada Circuit Manual

Index of 1934-35 Series

CANADIAN GENERAL ELECTRIC

Chassis Model	Data Sheet No.
7-1BC, 7-1BT	V26
51-M	V20
56-M	V20
61-M	V20a
62-M	V20a
67-M	V20a
69-M	V20a
81-M	V26
86-M	V26
106-M	V28
125-M	V23

DE FOREST CROSLEY

Chassis Model	Data Sheet No.
Adventurer	31
Ambassador	29
Courier	31
Crusader	R23
Envoy	31
Explorer	30
Navigator	30
Princess Marina	31
Ranger de Luxe	31
Regal-Royal	30
Voyager	31
1411-12	30
1421	R18
1441-2	R18
1523-24	31
1621-22	31
1721-22	30
1751	R21
1921	29
5441	R19
5525-D	R23

Alignment Instructions for all models on Rogers Sheet—17 a-b

MAJESTIC

Chassis Model	Data Sheet No.
2421	R18
2441	R18
2511-2-3	R19
2621-22	R20
2751	R21
2821	R22
5525M	R23
5725M	R24

MARCONI

Chassis Model	Data Sheet No.
46-47	22
49-51	23
53	24
54	25
55	26
57	27
58-59	28
60-61, 60A-61A	29

MOHAWK

Chassis Model	Data Sheet No.
45	16
45B	16
47	15

NORTHERN ELECTRIC

Chassis Model	Data Sheet No.
53-54-55-57	13
61	14
62-62A, 63-63A	15
72-72A	16
102, 102A	17
103, 103A	17

PHILCO

Chassis Model	Data Sheet No.
316 (Code 125 and 126)	25
339	30
344	26
345	27
350	28
366	28
3118	29

PHONOLA

Chassis Model	Data Sheet No.
4B60	18
4B61	18
4B75	19
452	21
455	20
456	20, 21
465	22

ROGERS

Chassis Model	Data Sheet No.
918	17
4421-2	18
4441-2	18
4443 (King)	19
4511-2-3-4	19
4541-42	21
4621-2-3	20
4624	20
4751	21
4821-2	22
5525	23
5725-26	24

SPARTON

Chassis Model	Data Sheet No.
182	21
251-2	22
253-A-C	23
367	24
467-A-B-C	25, 25a
580	27
800	28
970-A-B	26

STEWART-WARNER

Chassis Model	Data Sheet No.
117	19
17[illegible]	18
17[illegible]	20
177	21
178	22
179	23
180	24
181R	25
182R	25
1171R	19
1811-1819	25
Daventry	23

STROMBERG-CARLSON

Chassis Model	Data Sheet No.
33A	13
60	11
68-69	12

VICTOR

Chassis Model	Data Sheet No.
118	20
123-M	20
126-B	21
128	20a
129	20a
135-B	26
141	27
143	26
211	20
222	21
223-B	21
224	20a
226	20a
235-B	26
243	26
262	28
281	23
321	22
340	27
381	24, 25

WESTINGHOUSE

Chassis Model	Data Sheet No.
54	20
64	20-21
64-B	21, V21
74-B	V26
84	19
104	20a
124	V23
155, A, X	V37, V38
165, A, X, Y	V20a
254, A, X	21, V20
534	20, 21
634	20
634-B	21, V21

World Radio History

Radio College of Canada Circuit Manual

Index of 1935-36 Series

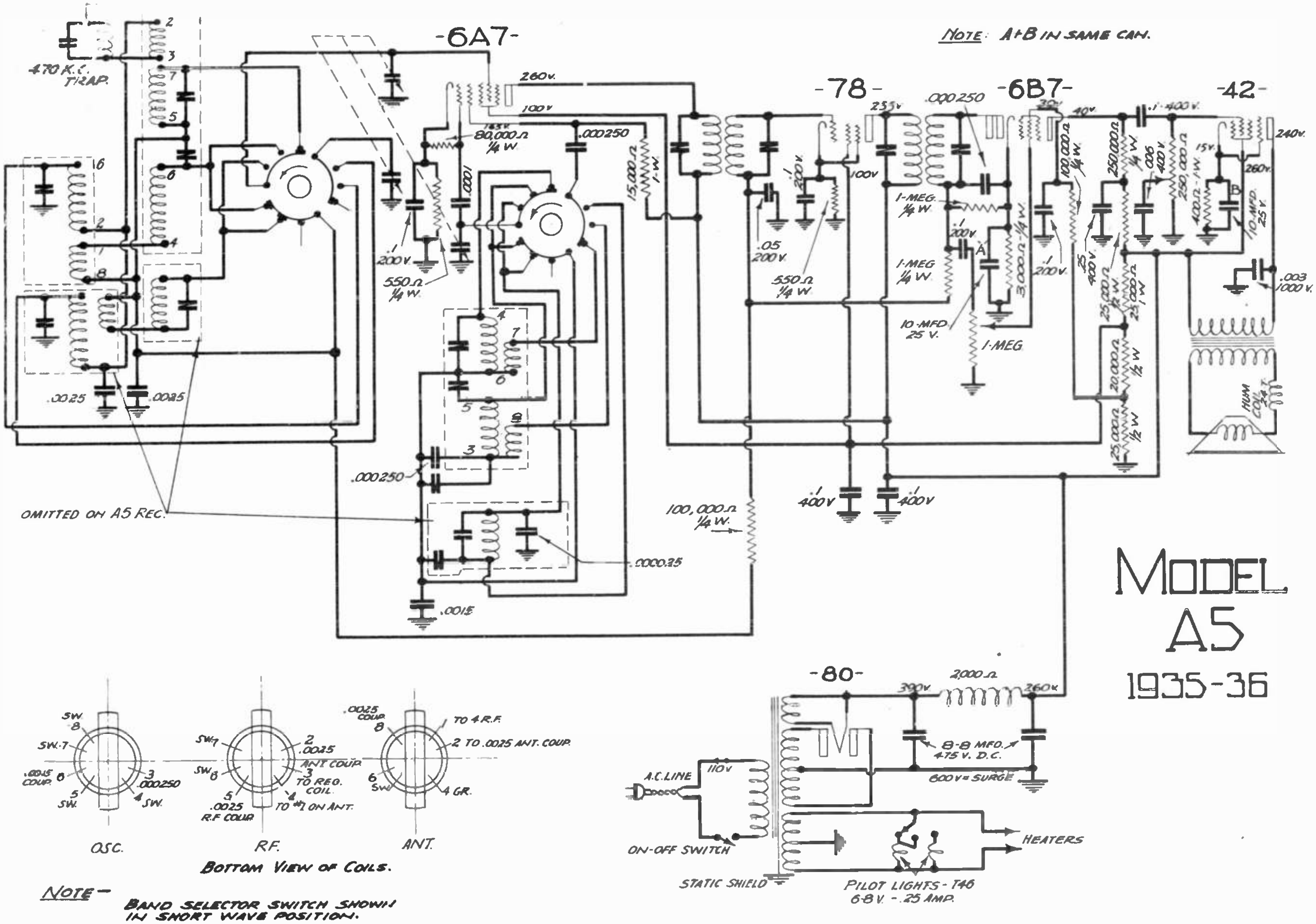
World Radio History

Radio College of Canada Circuit Manual

Index of 1936-37 Series

World Radio History

World Radio History



- I.F. = 470 KC. -

MODEL A5
1935-36

COURTESY - ANDREA-1

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DATA SHEET

DATA SHEET

ANDREA-2

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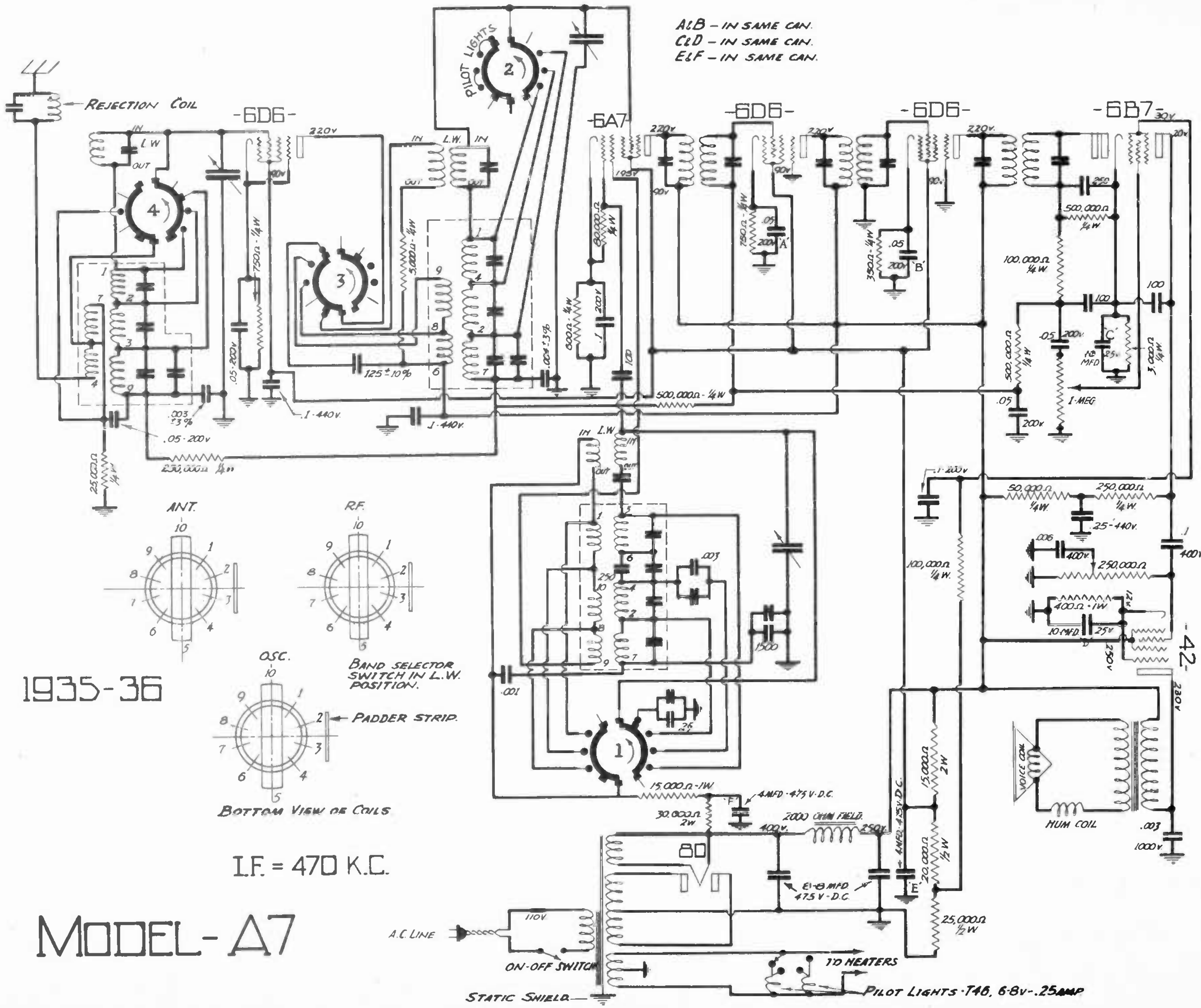


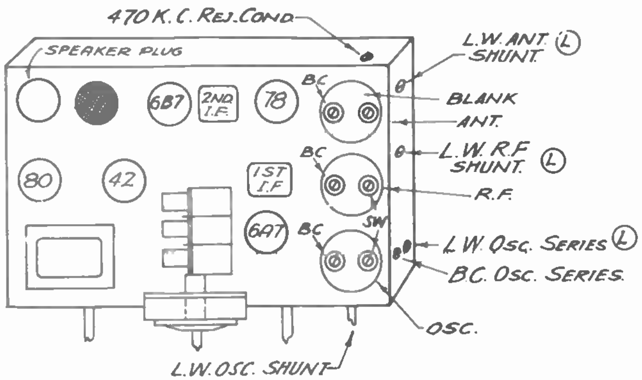
1935-36

I.F. = 470 K.C.

MODEL-A7

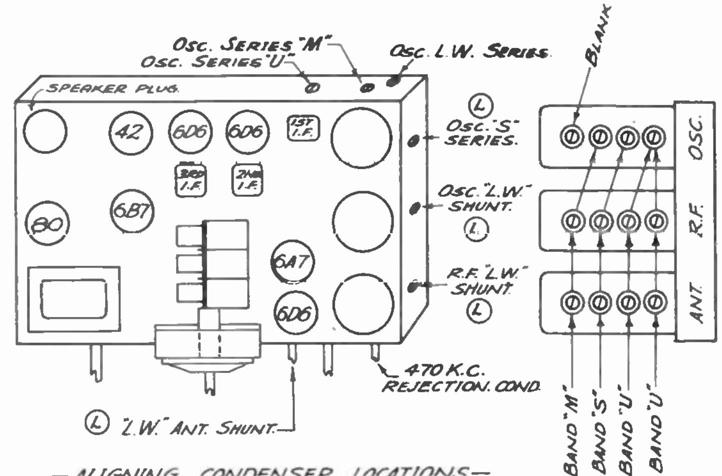
ALIGNMENT INSTRUCTIONS

I.F. = 470 K.C.



-ALIGNING CONDENSER LOCATIONS.-

"A5" - RECEIVER - (TRIMMERS MARKED "L" ARE OMITTED ON THIS CHASSIS)



-ALIGNING CONDENSER LOCATIONS-

"A7" RECEIVER - (TRIMMERS MARKED "L" ARE OMITTED ON THIS CHASSIS)

MODEL - A7

I.F. ADJUSTMENTS: Connect signal generator in series with .1 mfd. condenser to grid of 6A7 tube. Set generator to 470 K.C. Adjust trimmers on top of first, second and third I.F. transformers.

SHORT WAVE BAND "U": Rotate band selector switch fully to the right. Connect signal generator in series with 400 ohm resistor and attach to receiver antenna lead (RED); receiver ground wire connected to generator ground.

Set generator 20,000 K.C. and station selector knob to 20 m.c. Rotate station selector until signal is heard. Align antenna and R.F. shunt trimmers, constantly rotating the gang condenser throughout adjustments.

Change generator to 10,000 K.C. and rotate selector knob until signal is heard. Adjust oscillator series condenser, rotating the gang condenser during adjustment. Recheck at 20 m.c.

SHORT WAVE "S" BAND: Set generator at 8 m.c. and tune receiver to this point. Rotate wavelength selector switch to position marked "S". Align antenna and R.F. trimmer as for Band "U".

Set generator to 3.75 m.c. Rotate station selector knob until signal is heard. Adjust oscillator series condenser as for alignment in Band "U". Recheck at 8 magacycles.

MEDIUM BAND "M": Replace 400 ohm dummy antenna with .00025 mfd. condenser. Rotate station selector knob to 1400 K.C. Change selector switch to band "M". Reset generator to 470 K.C. Adjust attenuator for maximum output, then adjust 470 K.C. rejection condenser. Reset generator to 1400 K.C. Adjust antenna and R.F. shunt trimmers. Set generator and receiver at 600 K.C. then adjust medium band oscillator series trimmer. Recheck antenna and R.F. at 1400 K.C.

MODEL-A5

I.F. ADJUSTMENT: Connect signal generator in series with .1 mfd. condenser to grid of 6A7. Set generator to 470 K.C. signal, until a small output deflection on output voltmeter is obtained. Adjust trimmers on top of first and second I.F. transformers.

MEDIUM BAND "M": Set selector switch at "M" and rotate station selector until gang condenser is all in. Replace .1 mfd condenser with regular dummy antenna or 250 mmfd. condenser, set generator for 470 K.C. and connect to antenna lead (RED); ground lead BLACK, should be connected to ground on signal generator throughout all measurements.

Adjust attenuator on signal generator for maximum input, and adjust 470 K.C. rejection condenser for minimum deflection on output meter. With generator at 1400 K.C. rotate station selector knob until dial reached 214 meters, then adjust antenna and R.F. coil shunt trimmers.

Change generator to 600 K.C. and rotate station selector until dial reaches 500 meters. Adjust broadcast oscillator series trimmer (top-hole on chassis side), rotating station selector for maximum output. Recheck antenna and R.F. adjustments at 1400 K.C.

SHORT WAVE "S" BAND: Move selector switch to right. Replace dummy antenna by a single 400 ohm resistor connected to antenna lead. Set generator at 17000 K.C. and set station selector at 17 mc. Adjust short wave R.F. trimmer, rotating station selector knob slowly for each position of short wave R.F. trimmer adjustment, until maximum output is obtained.

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DATA SHEET

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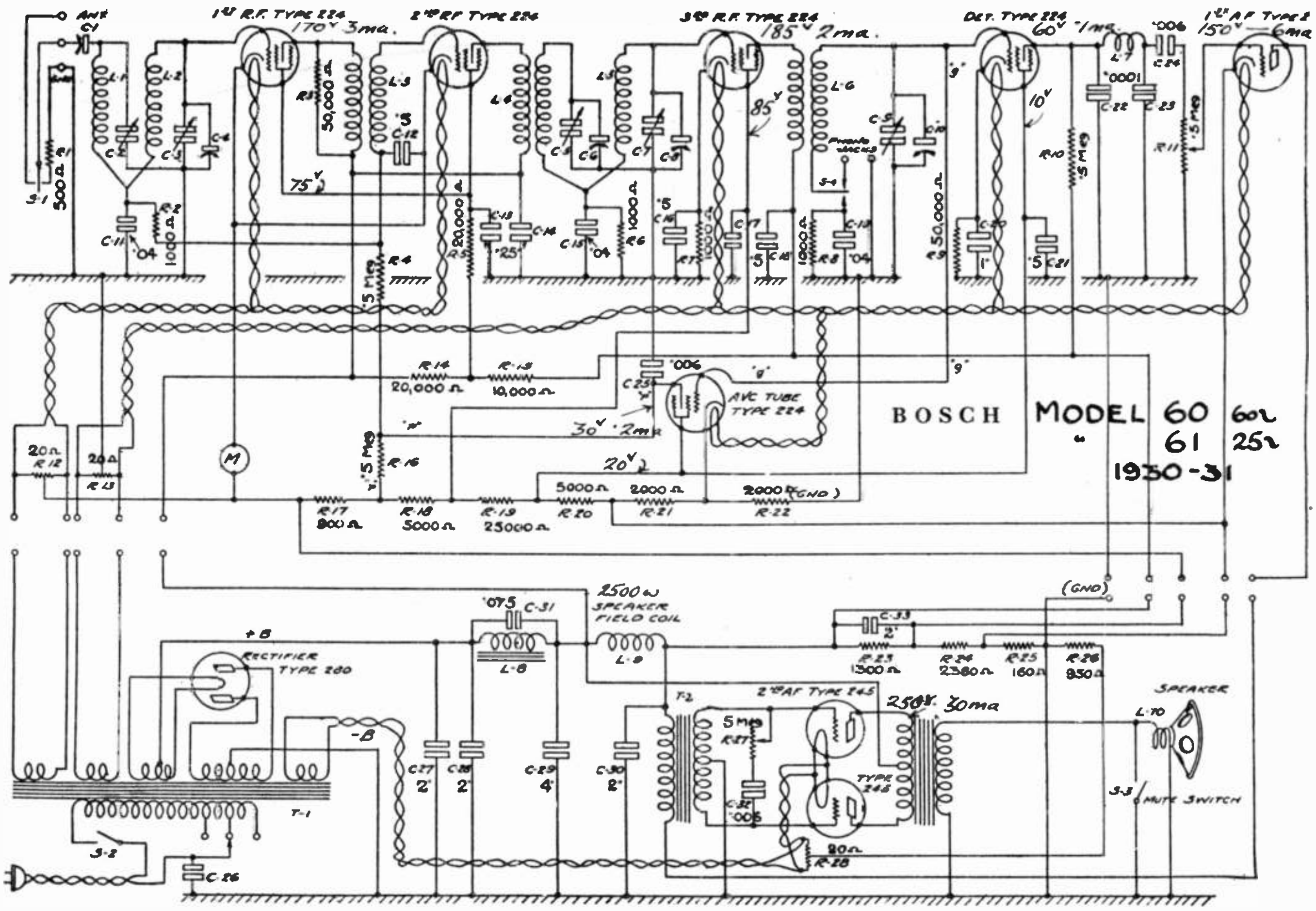
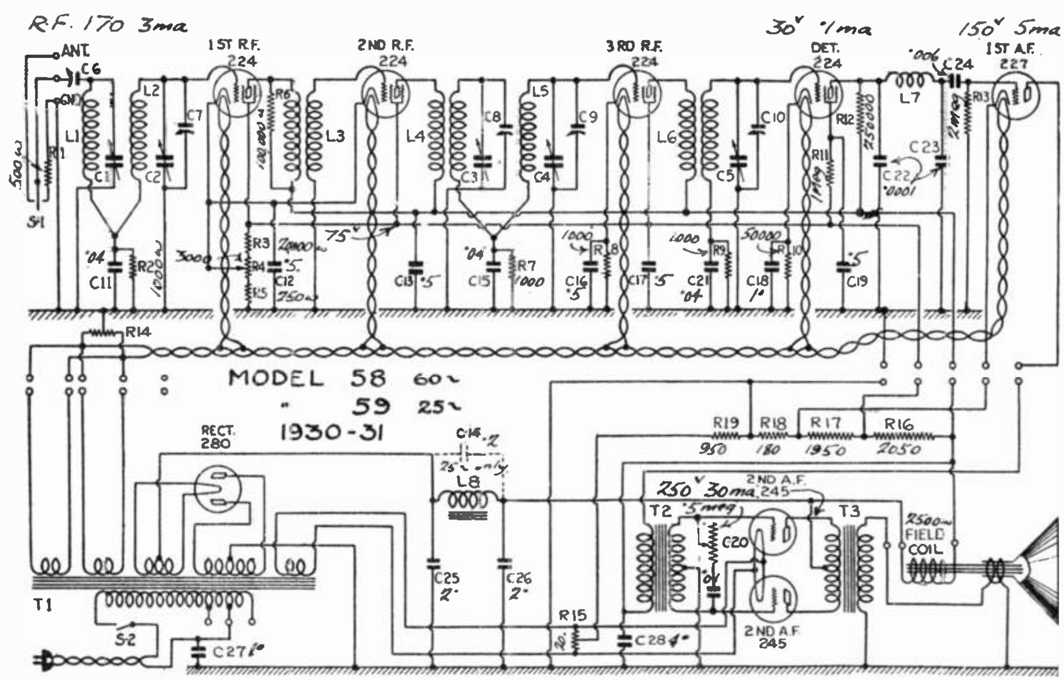


Models 60 - 61 1930-31

for 1930-31 Auto-Receiver See DeForest Data Sheet 8A.

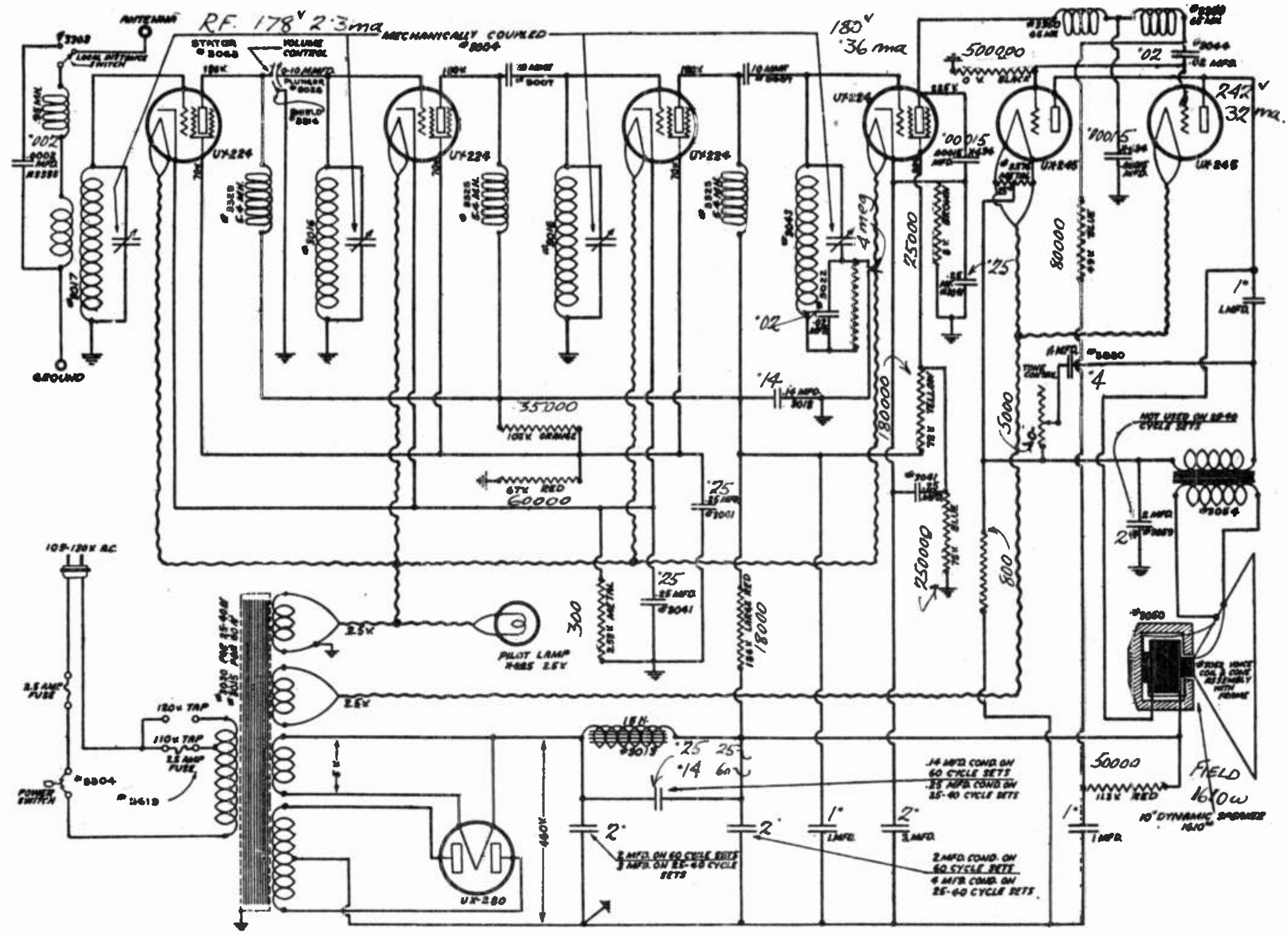


Models 58-59 1930-31.

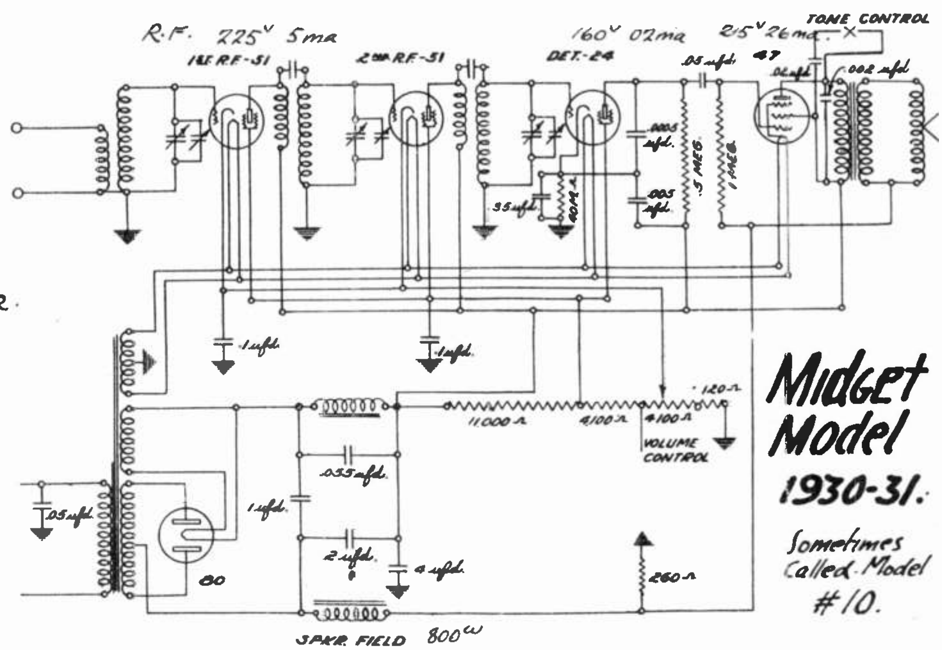
DATA SHEET

BOSCH-5

World Radio History



Models. 15-22 1930-31



Additional Data on Models 17-25 ('E')

Voltages on RF. IF. + 1 Det. Avr.
Plate 250V Screen 75V
Osc 35V
AVC. 22V
2 Det 200V

Models 12.16.23. ('D')

RF.	245V	5ma
1D	230V	·4ma
IF.	230V	1·25ma
2D	215V	·75ma
Osc	3[illegible]V	1·2ma
Pwr	280	25ma

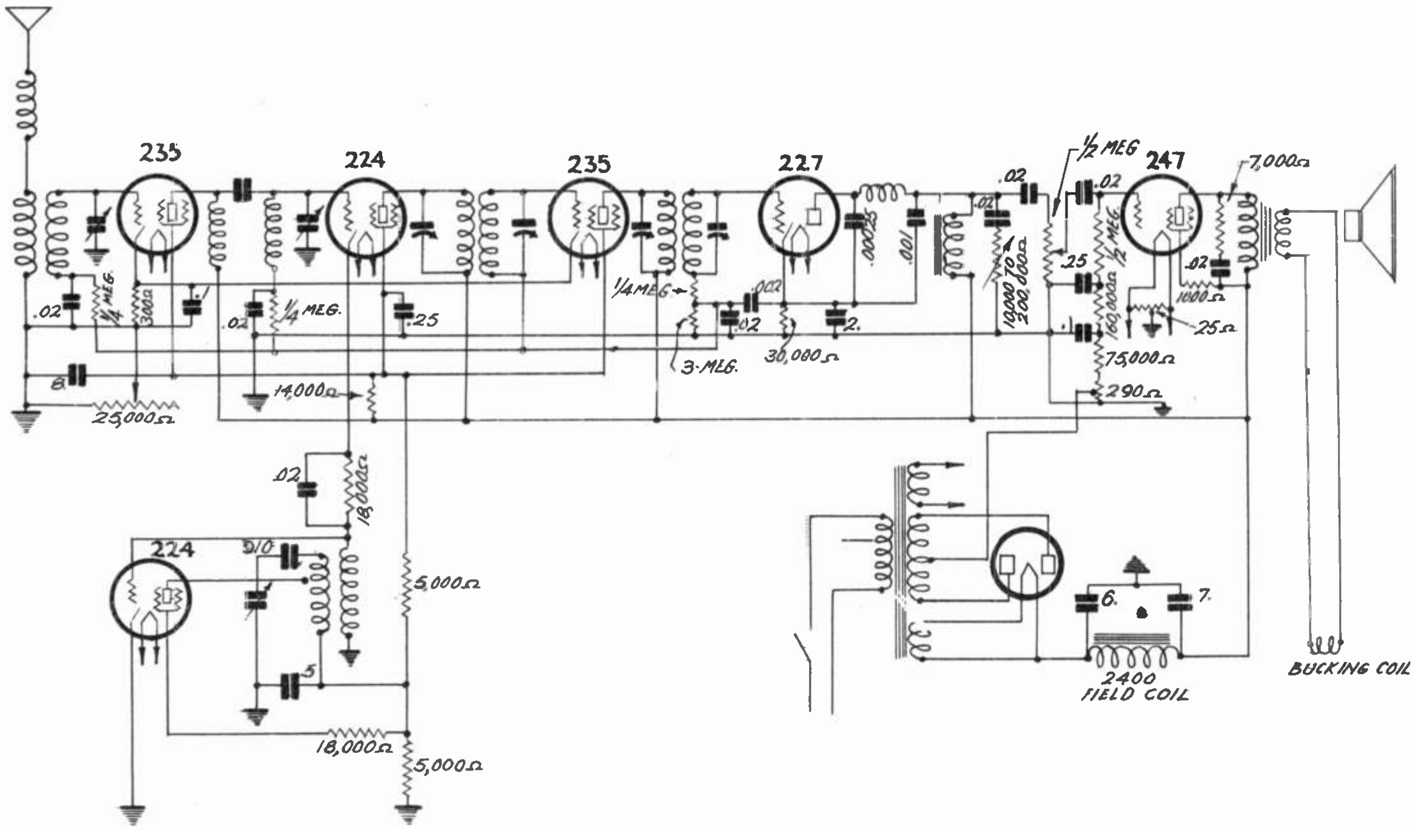
Midget Model 1930-31.

Sometimes Called Model #10.

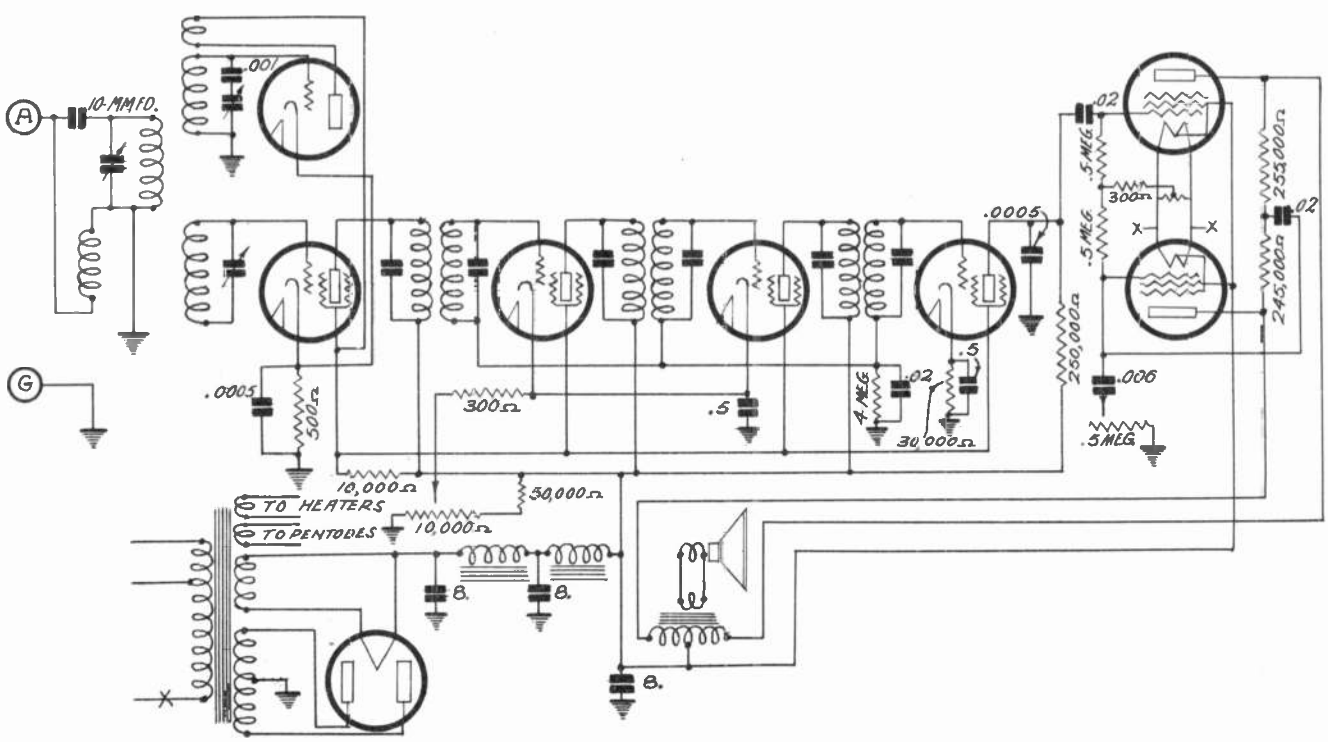
DATA SHEET

BRUNSWICK-5.

MODEL·D 1931-32 IF 175 KC



MODEL-B·H 1931-32 IF 175 KC



DATA SHEET

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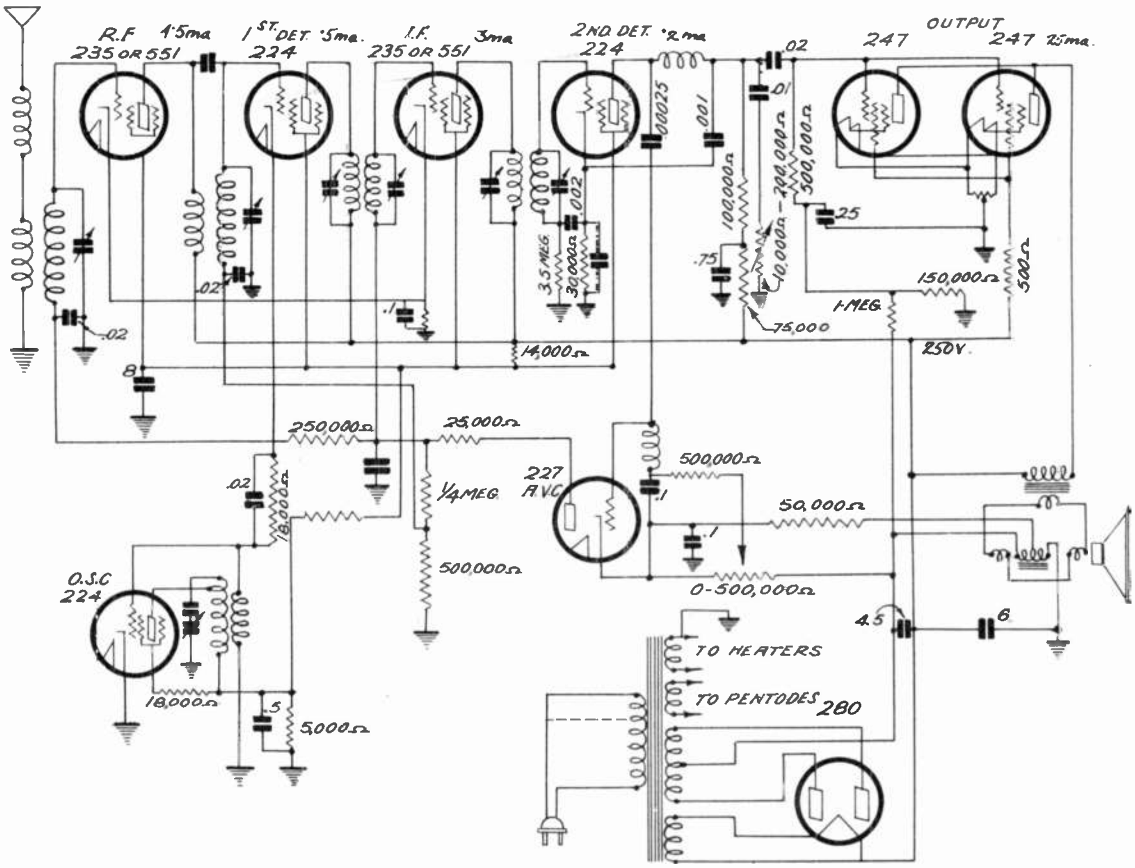
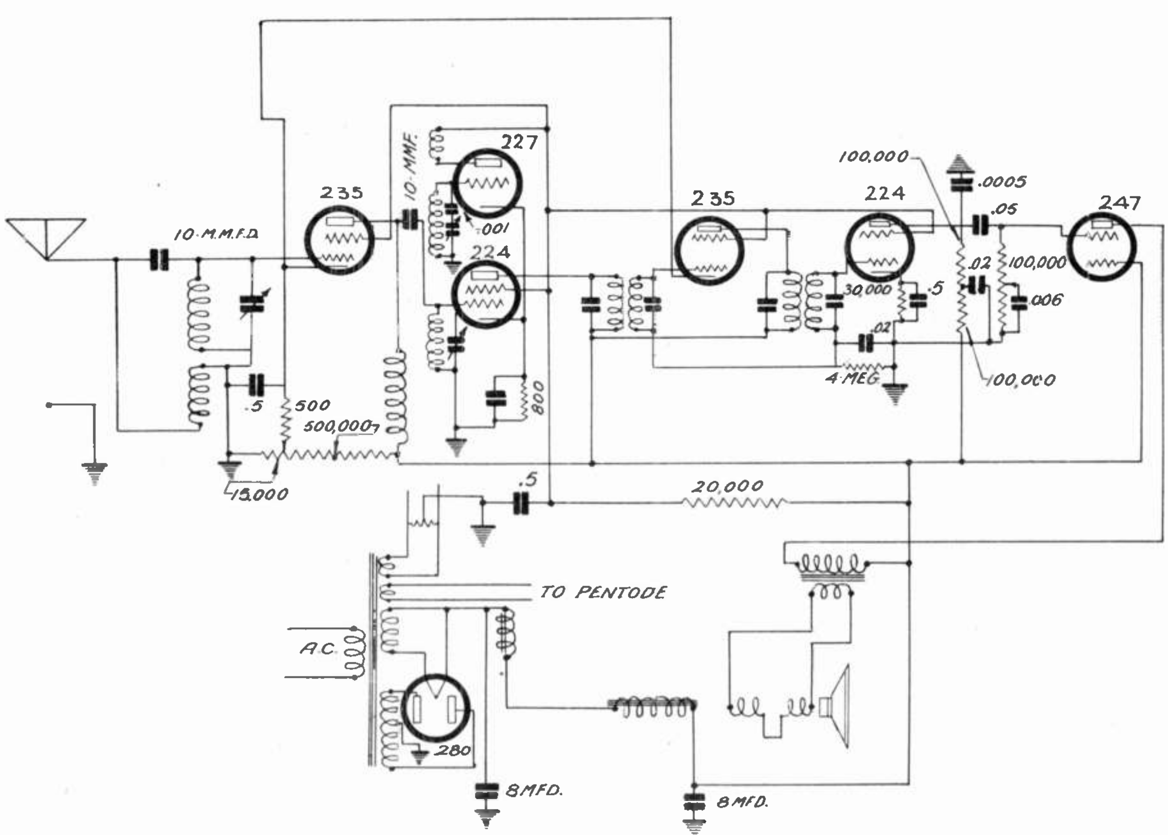
BRUNSWICK· 6

World Radio History

MODEL-E 1931-32 IF-175 KC



MODEL-11 1931-32 IF 175 KC



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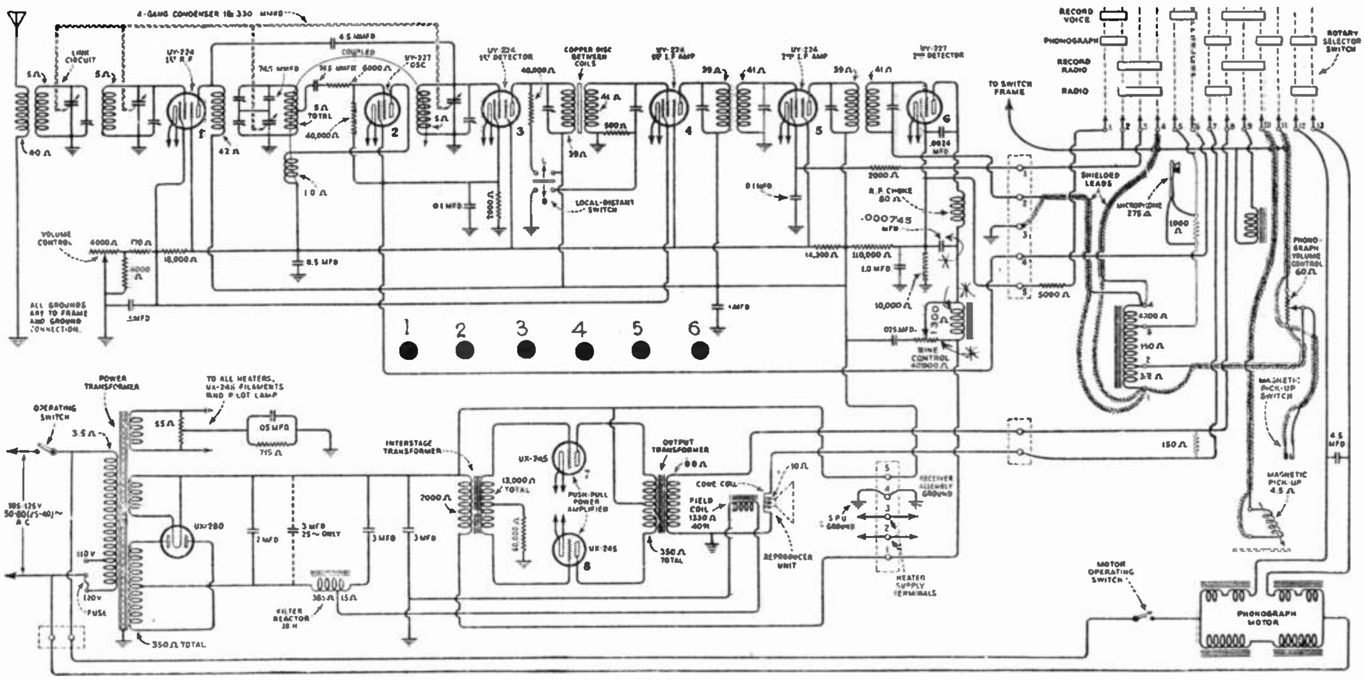
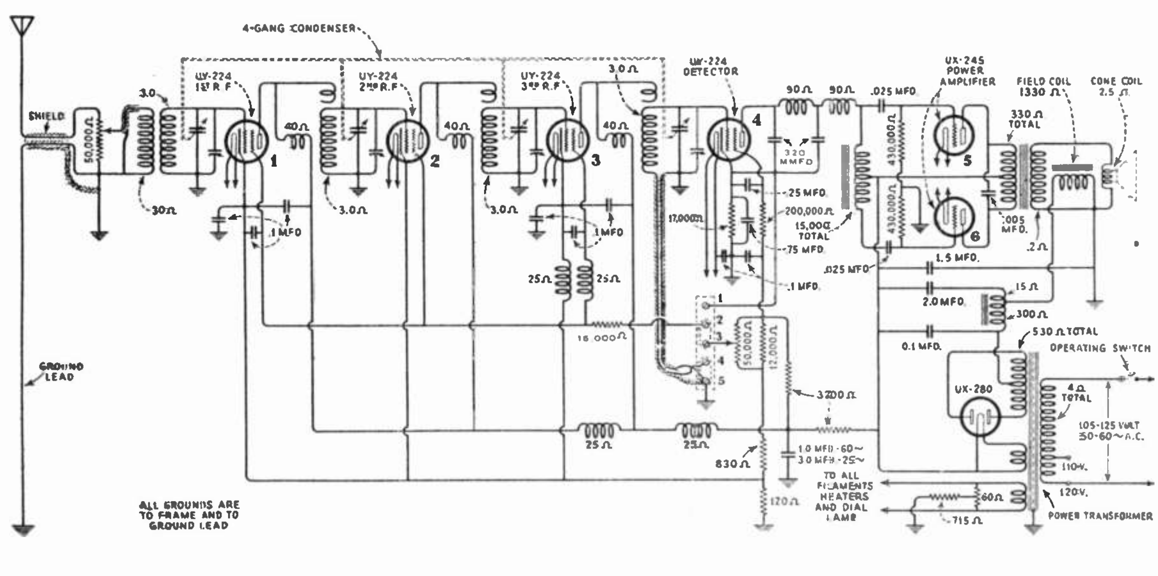
World Radio History

Model- H-71 (comb) T-51-T-31 (has items * omitted) 1931-32



Model- T-41 1930-31 (Similar to Victor-R 15)

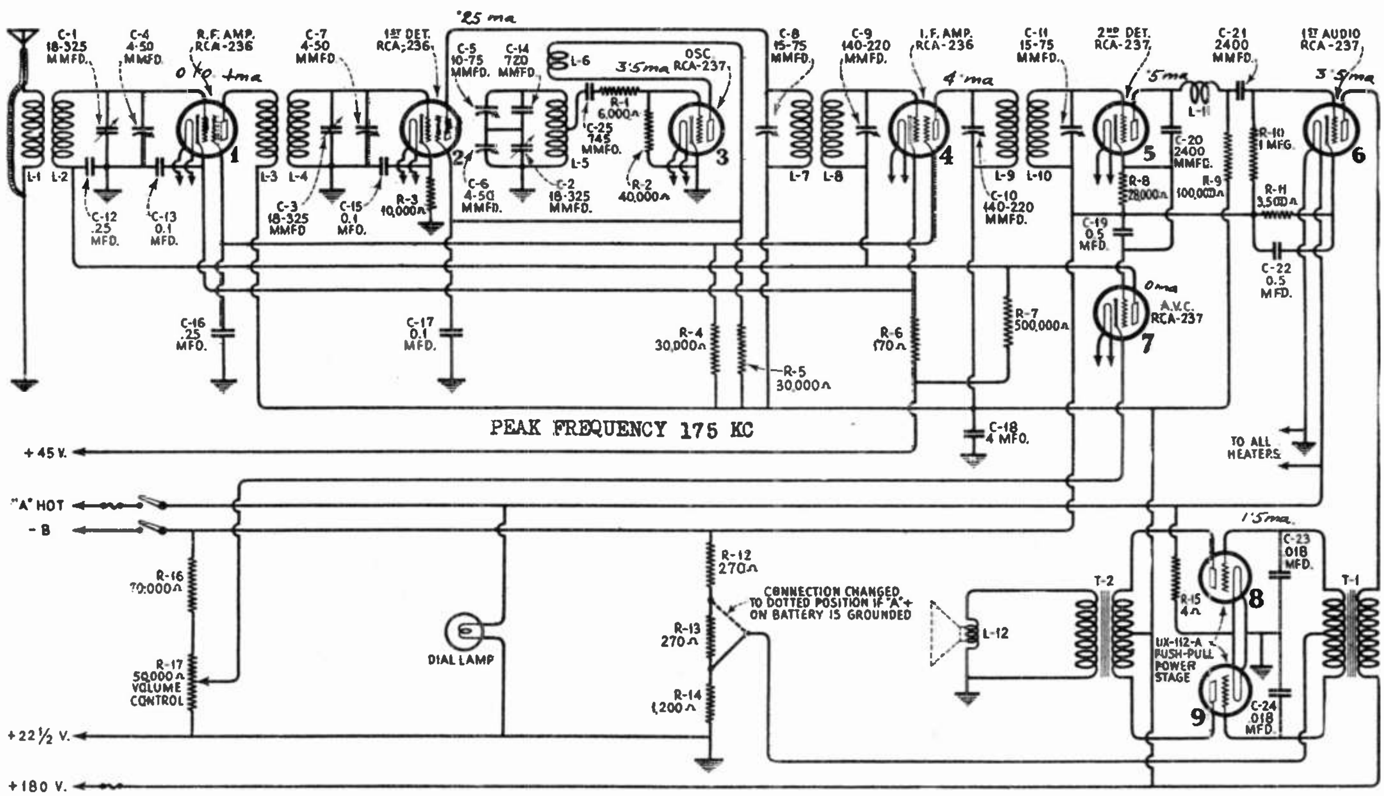


DATA SHEET PRINTED IN CANADA **C.G.E. RADIOLA-10**

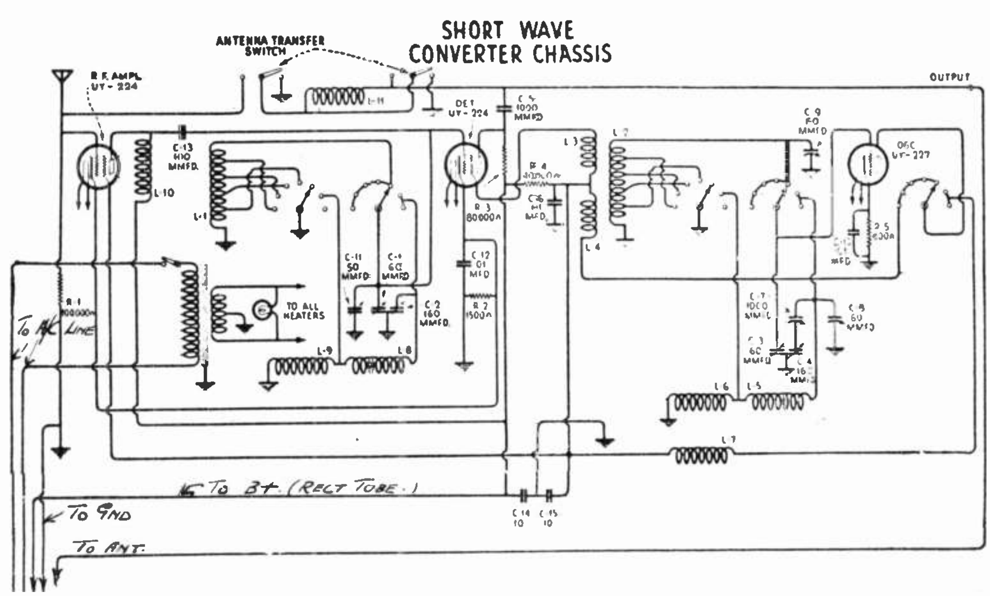
—Courtesy Canadian General Electric Co. Limited

World Radio History

Model-M-30 (Auto Receiver) 1932 IF. 175 Kc.



Models–
JZ. 30
JC. 835
1922-23
are SW converter shown in conjunction with Model-J-85 chassis.



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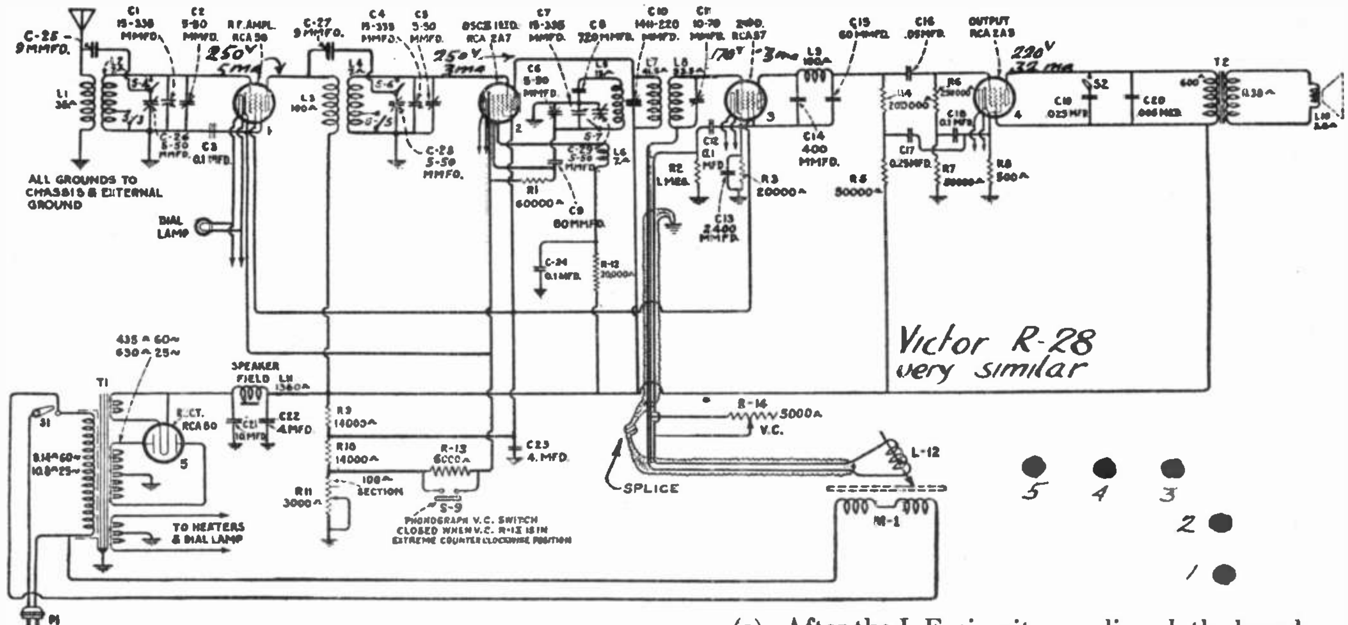
C.G.E.-11

—Courtesy Canadian General Electric Co. Limited

World Radio History

Models K-57 1933. M-55 1934 I.F 175. Kc.



(c) After the I. F. circuits are aligned, the broadcast band R. F. is adjusted at 1400 K. C. This is done with the Range Switch at the broadcast position.

(d) The high frequency band is adjusted at 2440 K. C. This is done in a similar manner to the R. F. adjustments except that the oscillator is set at 2440 K. C., the dial at 120 and the Range Switch in the high frequency position. The line-up capacitors on the selector switch are adjusted for maximum output at this frequency.

	Cathode to Control Grid, Volts	Cathode to Screen Grid, Volts	Cathode to Plate, Volts	Plate Current M. A.
1.	3.0	95	250	5.0
2.	3.0	95	250	3.0
3.	6.0	89	170	0.3
4.	18.0	235	220	32.0
5.	275 Volts PLATE TO PLATE—60 M. A. TOTAL			

Models K-64 1933 M-64-65 1934 I.F. 370 Kc.

for circuit see VICTOR - Mod. 122 - Data Sheet Victor - 17.

Line-Up Capacitor Adjustments

I. F. Tuning Adjustments—Two transformers comprising three tuned circuits (the secondary of the second transformer is untuned) are used in the intermediate amplifier. These are tuned to 370 K. C. and the adjustment screws are accessible as shown in Figure B. Proceed as follows:

(c) Adjust the primary of the second, and the secondary and primary of the first I. F. transformers until a maximum deflection is obtained. Keep the oscillator output at a low value so that only a slight deflection is obtained on the output meter at all times. Go over these adjustments a second time, as there is a slight interlocking of adjustments. This completes the I. F. adjustments.

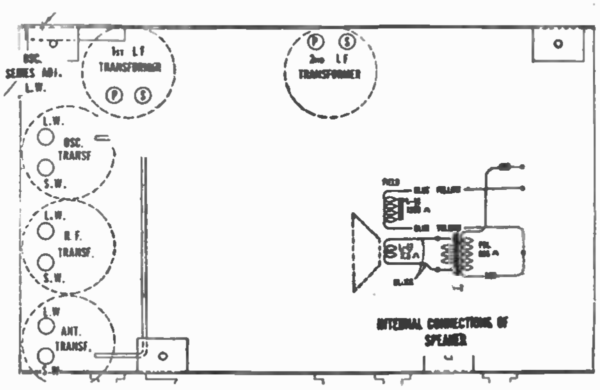
R. F. and Oscillator Adjustments—The R. F. line-up capacitors are located at the bottom of the coil assemblies instead of their usual position on the gang capacitor. They are all accessible from the bottom of the chassis except the 600 K. C. series capacitor, which is accessible from the rear of the chassis. Proceed as follows:

(a) Connect the output of the oscillator to the antenna and ground leads of the receiver. Check the position of the indicator pointer when the tuning capacitor plates are fully meshed. It should be coincident with the radial line adjacent to the dial reading of 54. Then set the Test Oscillator at 1400 K. C., the dial indicator at 140 and the oscillator output so that a slight deflection will be obtained in the output meter when the volume control is at its maximum.

(b) With the Range Switch at the "in" position, adjust the three trimmers under the three R. F. coils, designated as L.W. in Figure B, until a maximum deflection is obtained in the output meter. Then shift the Test Oscillator frequency to 600 K. C. The trimmer capacitor, accessible from the rear of the chassis, should now be adjusted for maximum output while rocking the main tuning capacitor back and forth through the signal. Then repeat the 1400 K. C. adjustment.

(c) Now place the Range Switch at the "out" position, shift the Test Oscillator to 15,000 K. C. and set the dial at 150. Adjust the three trimmer capacitors designated as SW in Figure B for maximum output, beginning with the oscillator trimmer. It will be noted that the trimmers will have two positions at which the signal will give maximum output. The position which uses the lower trimmer capacitance, obtained by turning the screw counter-clockwise, is the proper adjustment for the oscillator. The position that uses a maximum capacitance is correct for the detector and R. F.

The importance points to remember are the need for using the minimum oscillator output to obtain a deflection in the output meter with the volume control at its maximum position and the manner of obtaining the proper high frequency oscillator adjustment.



DATA SHEET

COURTESY CANADIAN GENERAL ELECTRIC CO. LTD. - 12

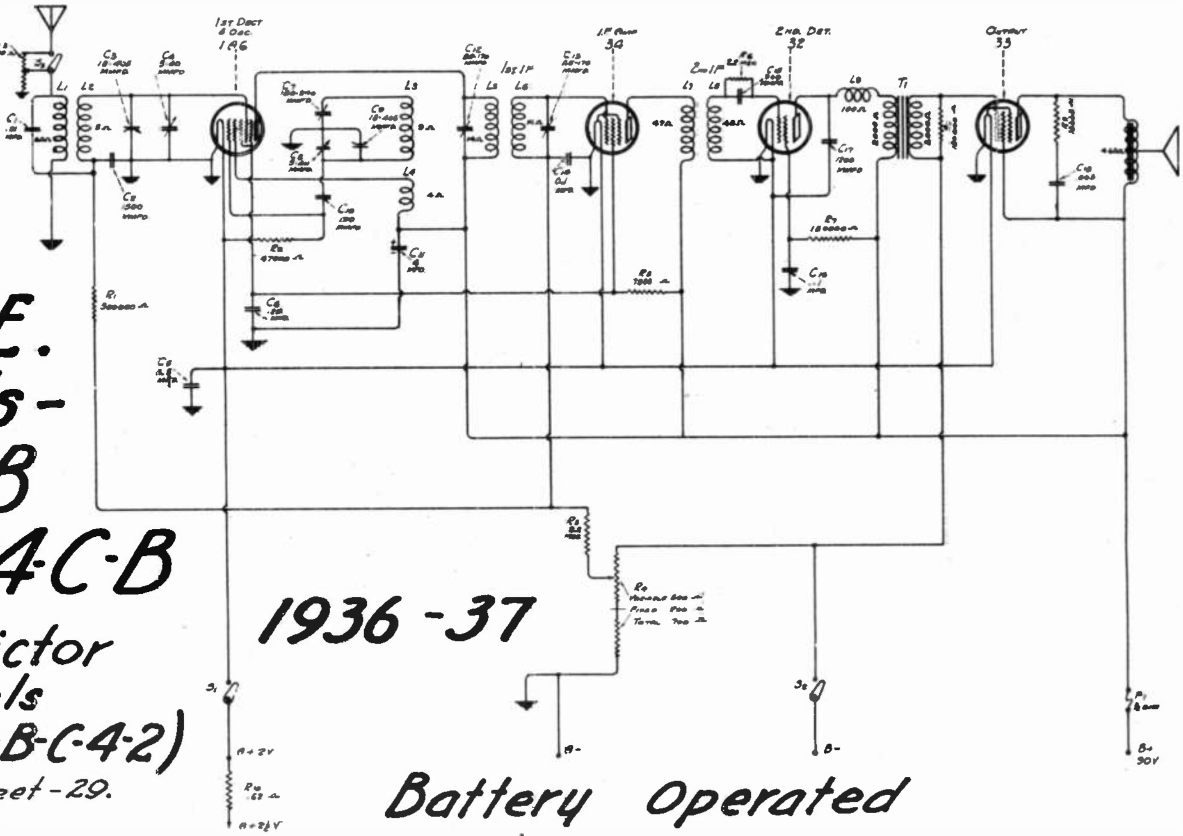
World Radio History

C.G.E. Models - E-4-B and E-4-C-B

(R.C.A. Victor Models B-T-4-2 — B-C-4-2)

See Victor Sheet - 29.

1936 - 37



Battery Operated

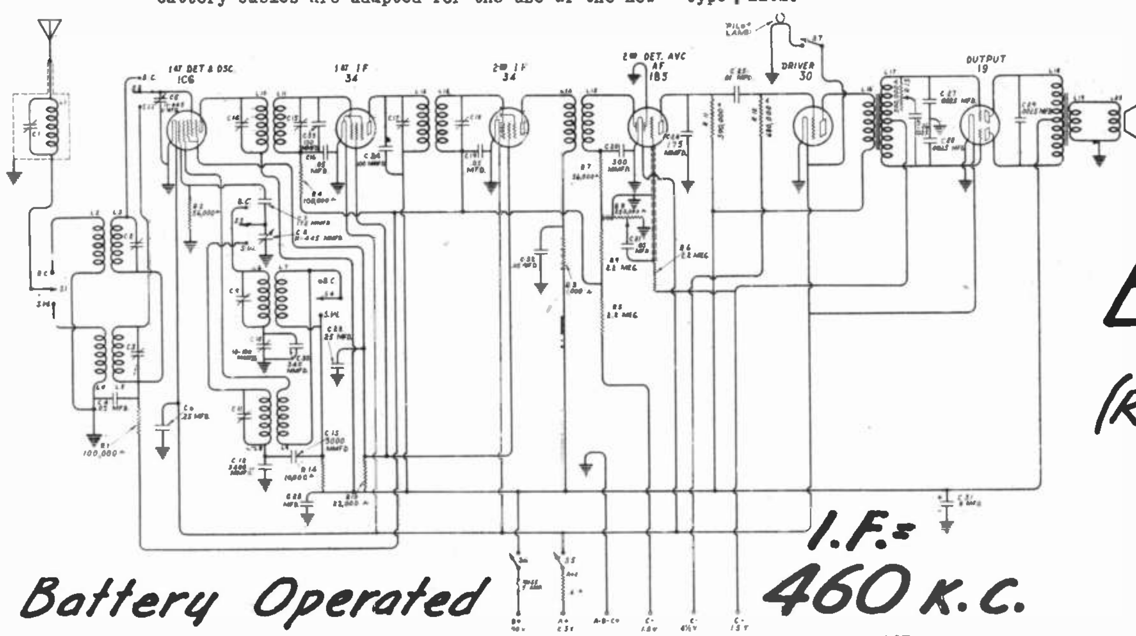
These instruments are similar to the Models A-4B and A-4CB except for several modifications. The major differences include:

Rearrangement of volume control circuit — A semi-airplane type dial is used with a 5 to 1 ratio between the tuning knob and condenser drive shaft, and the battery cables are adapted for the use of the new type plug-in "B" batteries.

The intermediate frequency remains at 460 k.c. The antenna and oscillator coils are to be aligned only at 1400 kc. Refer to the A-4B and A-4CB Service Notes for the description of electrical circuit and service data.

C.G.E. Models - E-6-B E-6-CB

(R.C.A. Victor Models - B-T-6-1 B-C-6-1)



I.F. = 460 K.C.

Battery Operated

These instruments are similar to the Models A-6B and A-6CB, except for several cir uit modifications. The major differences include: A more efficient oscillator circuit; The redesign of the 1st and 2nd I.F. transformers so as to obtain better fidelity of reproduction; The insertion of a filter in the 2nd I.F. plate circuit to reduce regeneration; The reduction of the screen grid voltages on the R.F. section of the circuit so as to increase sensitivity, and to obtain better A.V.C. action; The addition of a tone control and pilot light; The reduction of "B" battery current drain, and the adaption of the battery cables for use with the new type plug-in batteries.

Refer to the Service Notes for the Models A-6B and A-6CB to obtain the electrical specifications, description of electric circuit, and service data.

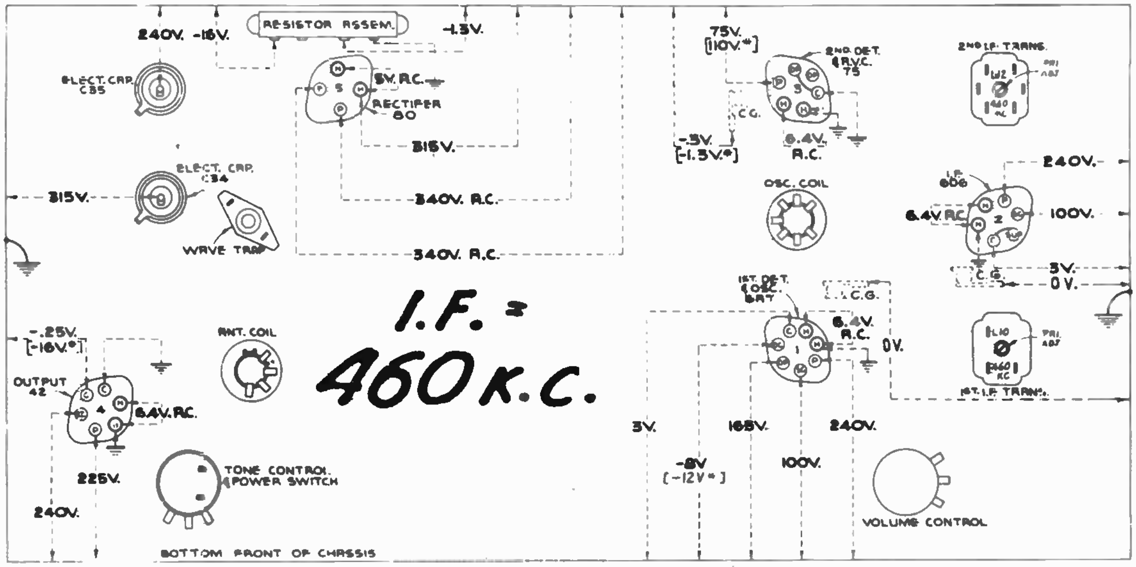
It is very important that only the special .060 ampere pilot lamp be used; otherwise, the "A" battery current drain will be excessive.

DATA SHEET

COURTESY - C.G.E. CO. LTD.

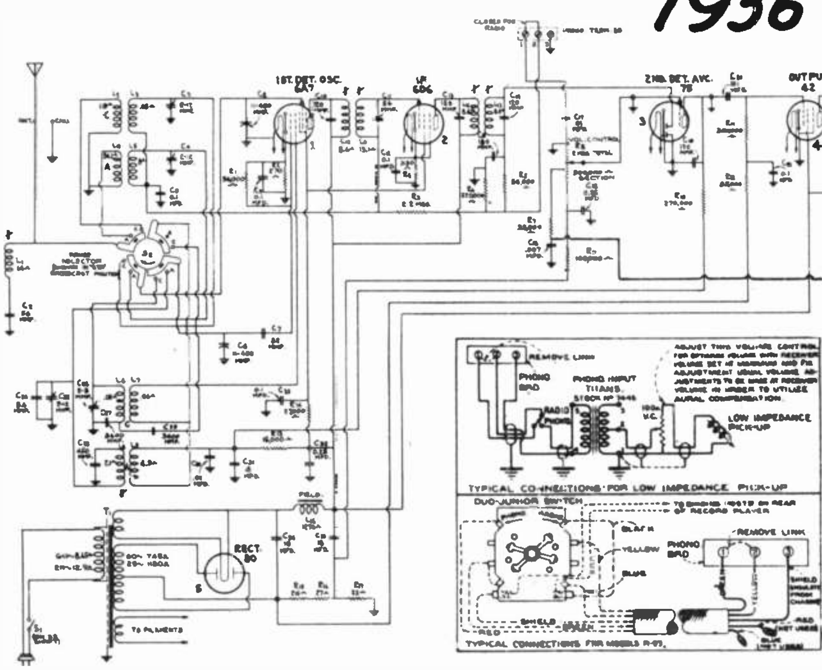
C.G.E.-13.

World Radio History



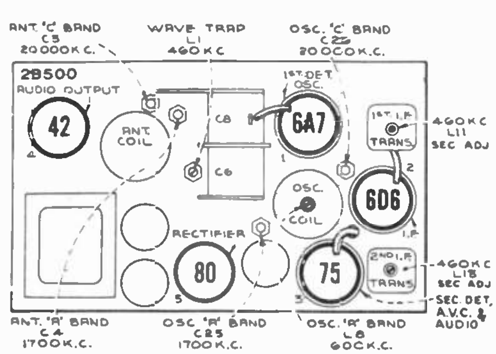
I.F. = 460 K.C.

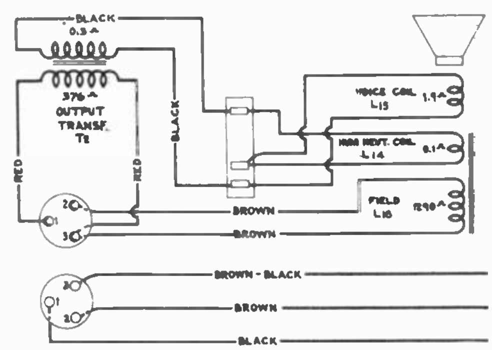
1936-37



C.G.E. Models- E-53x, E-56x.

(R.C.A. Victor 5-T-5, 5-K-2)





DATA SHEET

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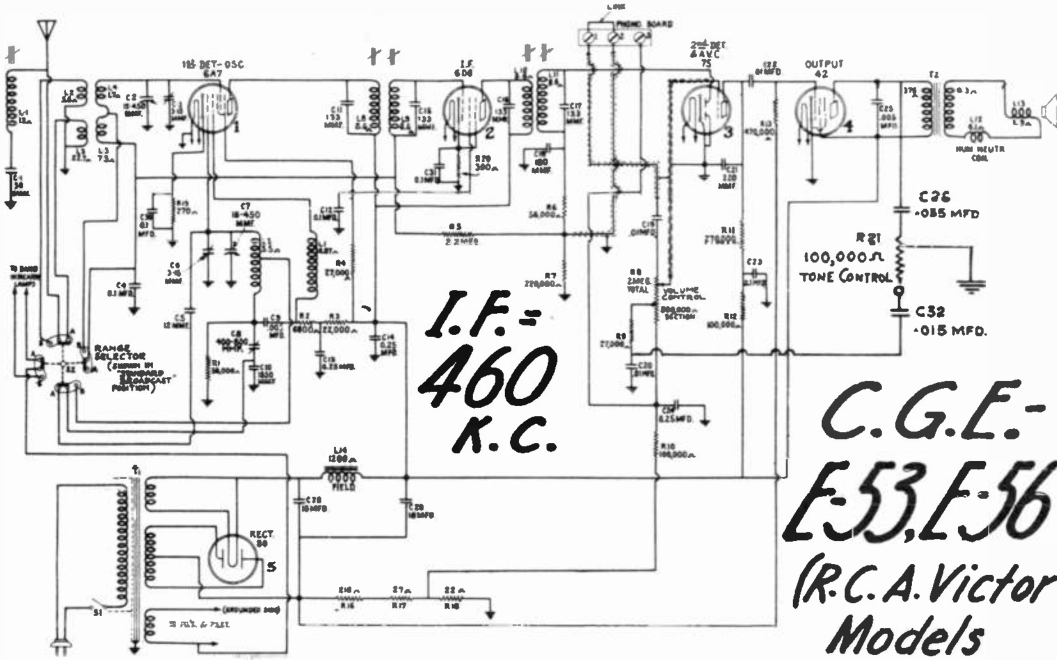
C.G.E.-14

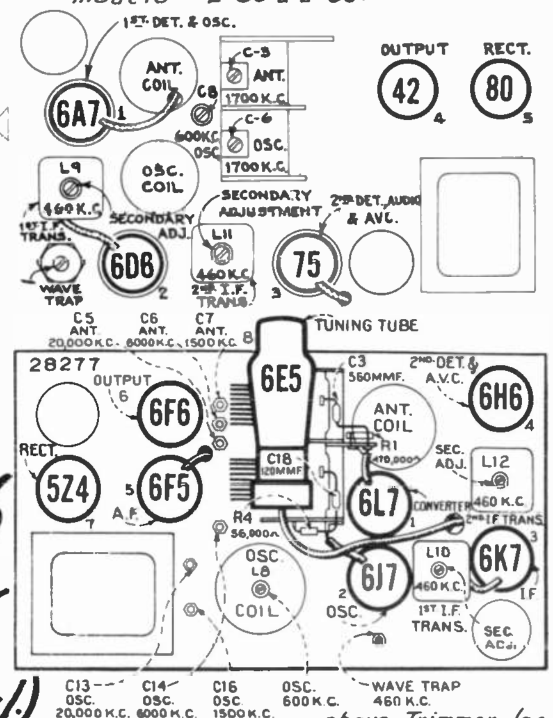
World Radio History

below: Trimmer locations, etc. for models - E-53 & E-56.



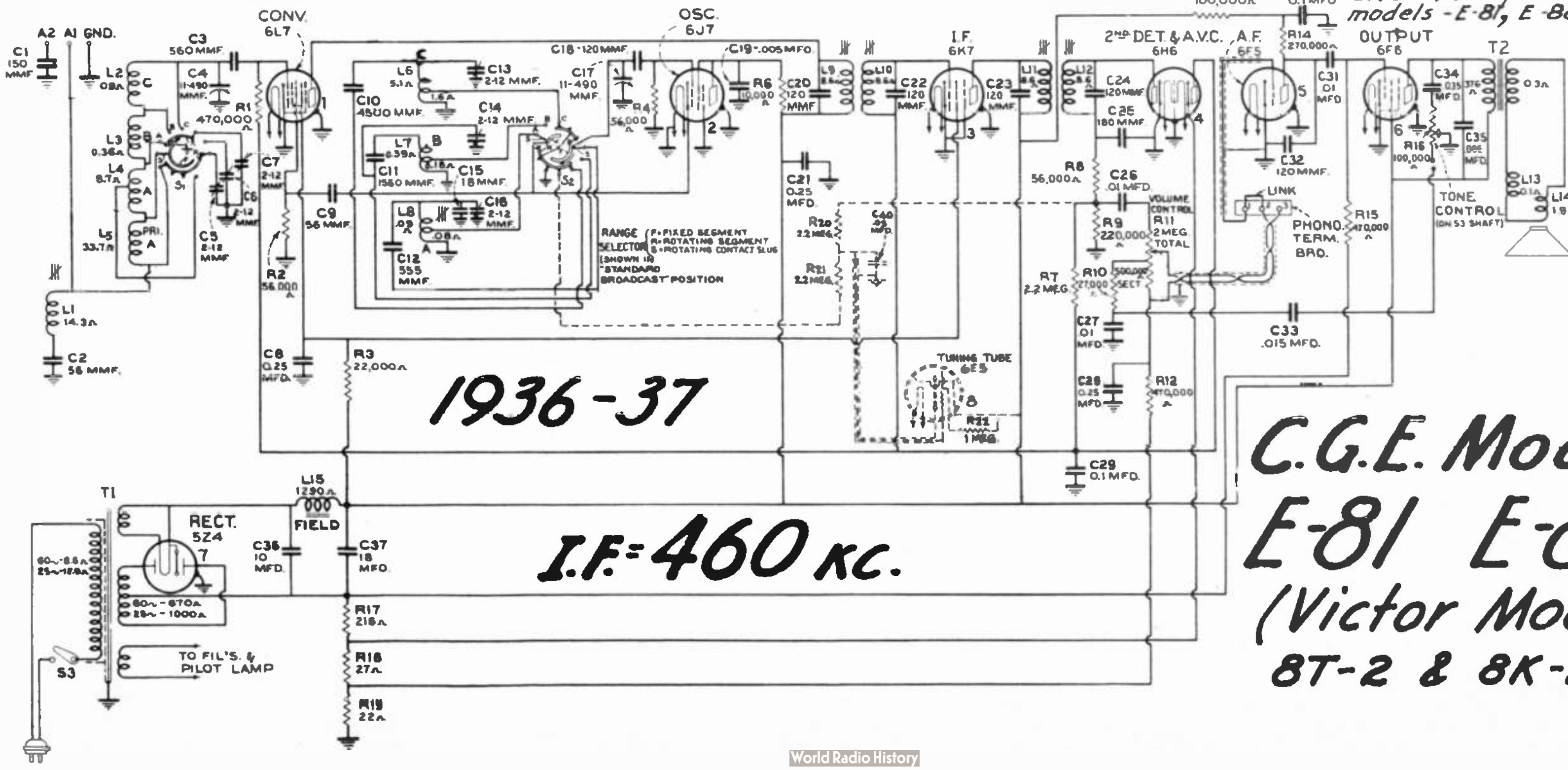
I.F. = 460 K.C.

C.G.E.- E-53, E-56 (R.C.A. Victor Models 5T-3, 5K-1.)



Socket layout and voltage information for both circuits on Data Sheet -15a.

above: Trimmer locations, etc. for models - E-81, E-86.



1936-37

I.F. = 460 KC.

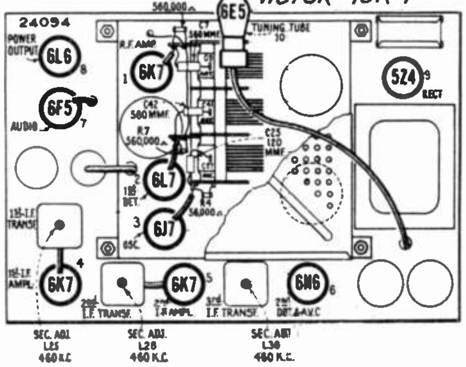
C.G.E. Models E-81 E-86 (Victor Models 8T-2 & 8K-1)

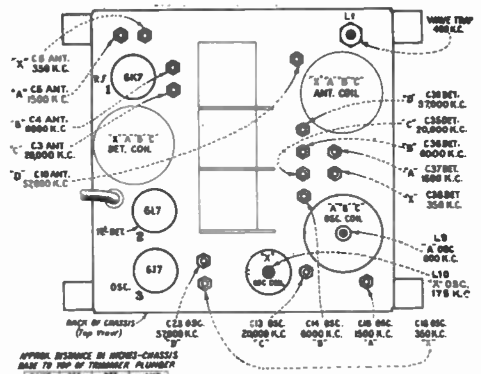
COURTESY - C.G.E. CO. LTD.

C.G.E.-15

DATA SHEET

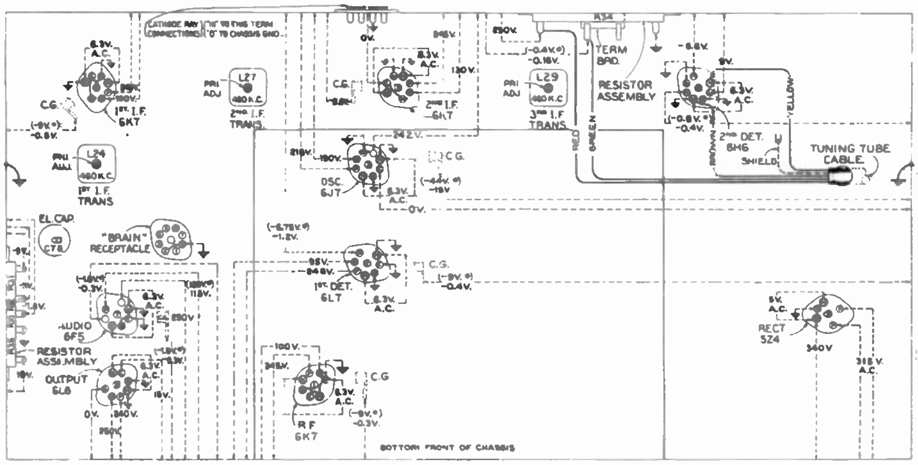
BELOW - TUBE LAYOUT, TRIMMERS, ETC. FOR MODELS - C.G.E. E-106 VICTOR 10K-1

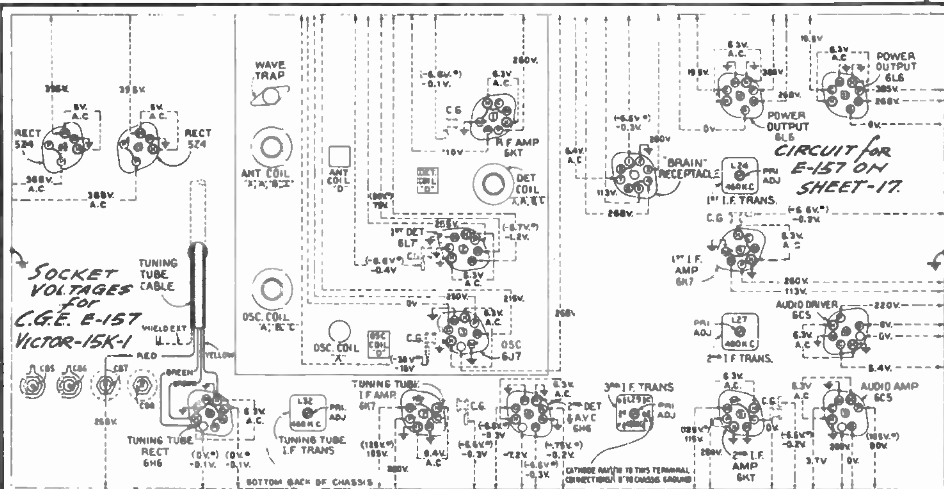




ABOVE: TRIMMER LOCATIONS FOR C.G.E. E106 (VICTOR 10K-1) } CIRCUIT ON SHEET 17.

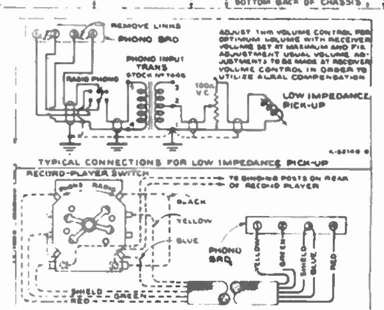
BELOW - SOCKET VOLTAGES, TRIMMER LOCATIONS for C.G.E. E106 (VICTOR-10K-1) } SCHEMATIC CIRCUIT ON SHEET-17.



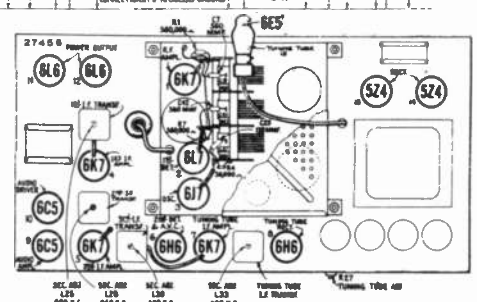


SOCKET VOLTAGES for C.G.E. E-157 VICTOR-15K-1

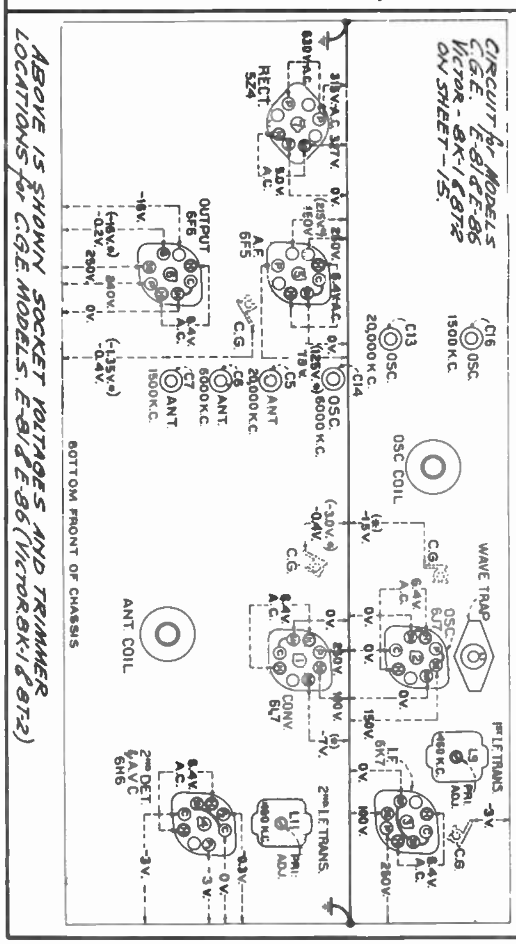
CIRCUIT for E-157 ON SHEET-17.



MODEL - E-157 (VICTOR 15K-1)

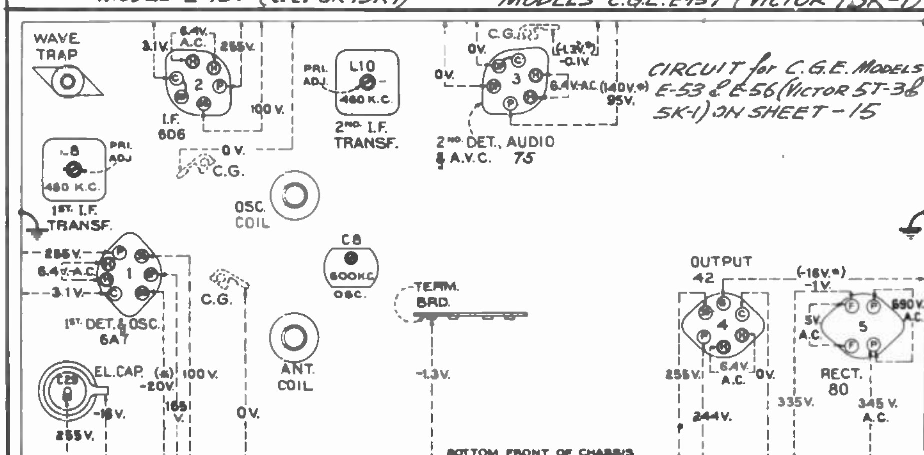


MODELS C.G.E. E-157 (VICTOR 15K-1)



CIRCUIT for MODELS C.G.E. E-81 & E-86 VICTOR - 8K-1 & 8T-2 ON SHEET-15.

ABOVE IS SHOWN SOCKET VOLTAGES AND TRIMMER LOCATIONS for C.G.E. MODELS. E-81 & E-86 (VICTOR 8K-1 & 8T-2)



CIRCUIT for C.G.E. MODELS E-53 & E-56 (VICTOR 5T-3 & 5K-1) ON SHEET - 15

SOCKET VOLTAGES, ETC. for C.G.E E-53 & E-56 (VICTOR MODELS 5T-3, 5K-1)

DATA SHEET

COURTESY - C.G.E.-15a CO. LTD.

World Radio History

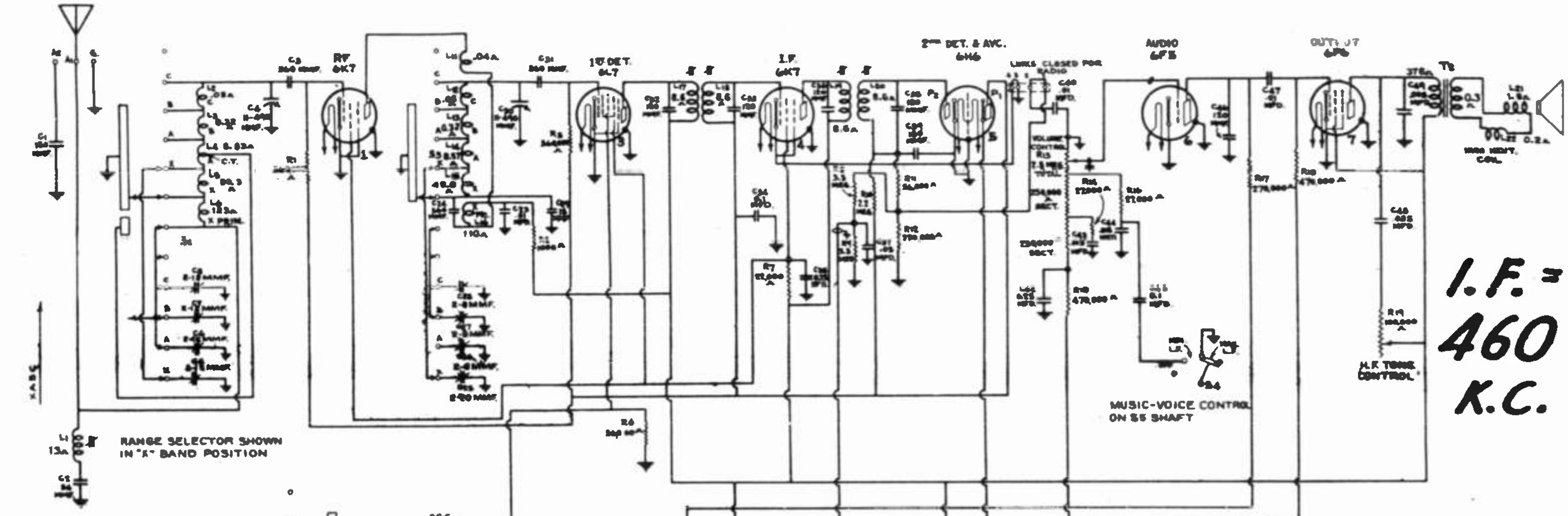
DATA SHEET

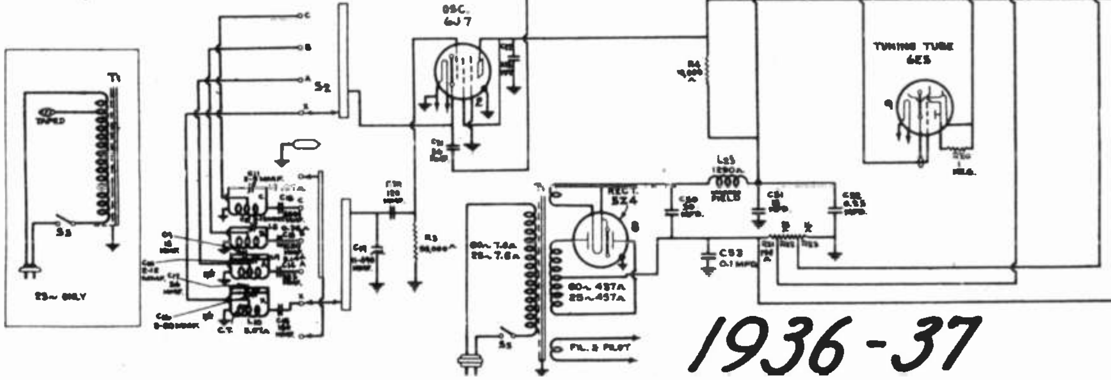
COURTESY – C.G.E.-16 CO. LTD.

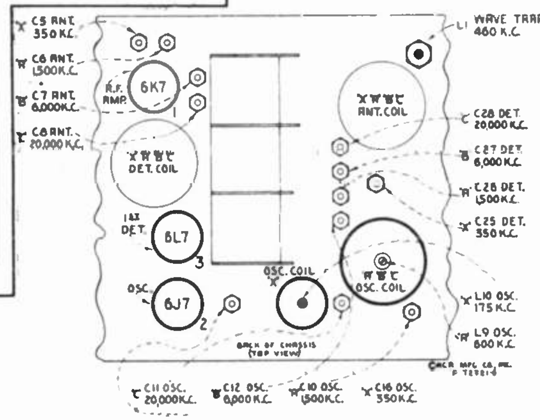
C.G.E. - E-98
(R.C.A. Victor Models 9T-1 and 9K-1.)

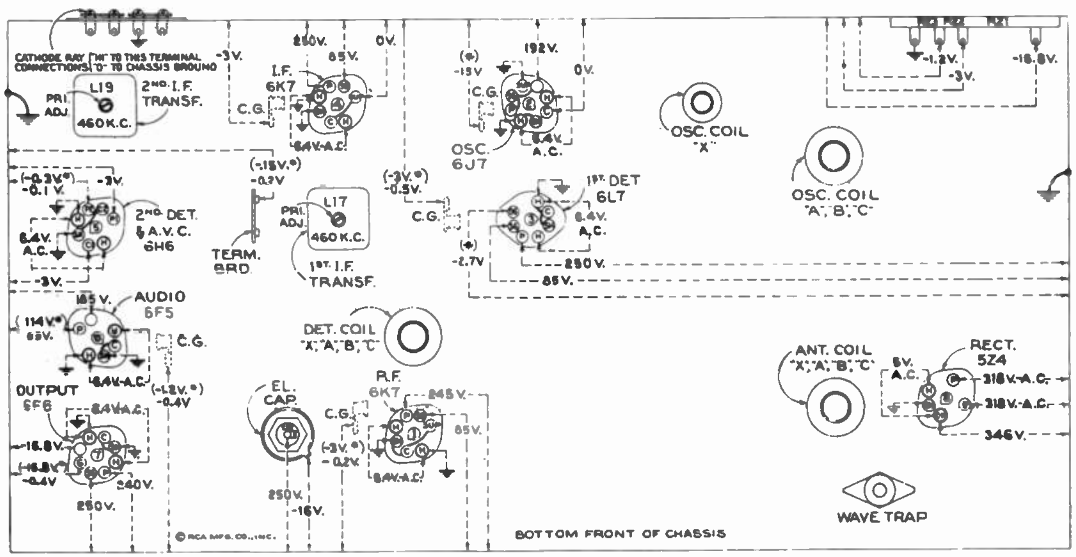
1936 - 37

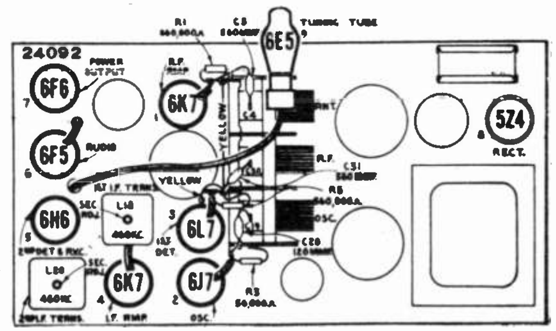
I.F. = 460 K.C.



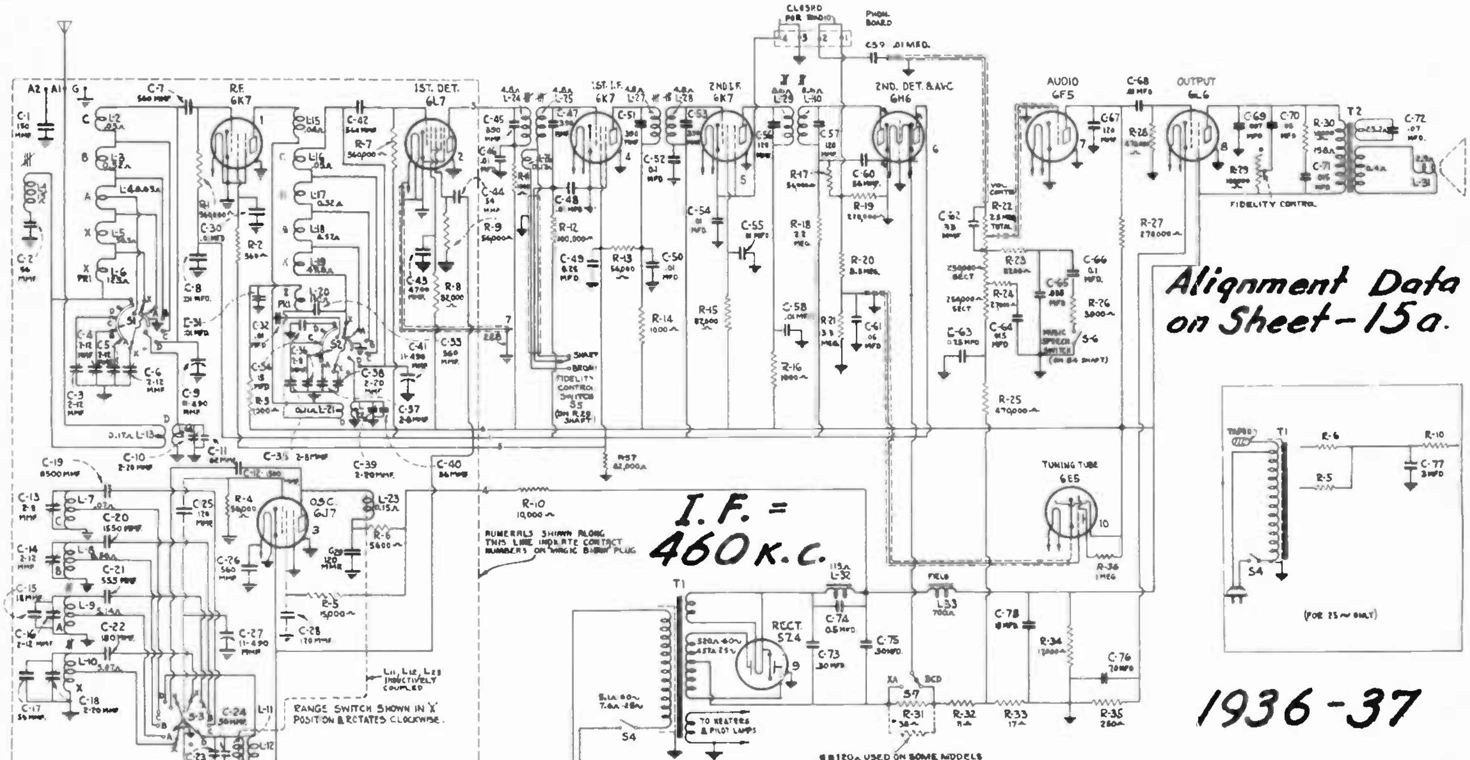








World Radio History

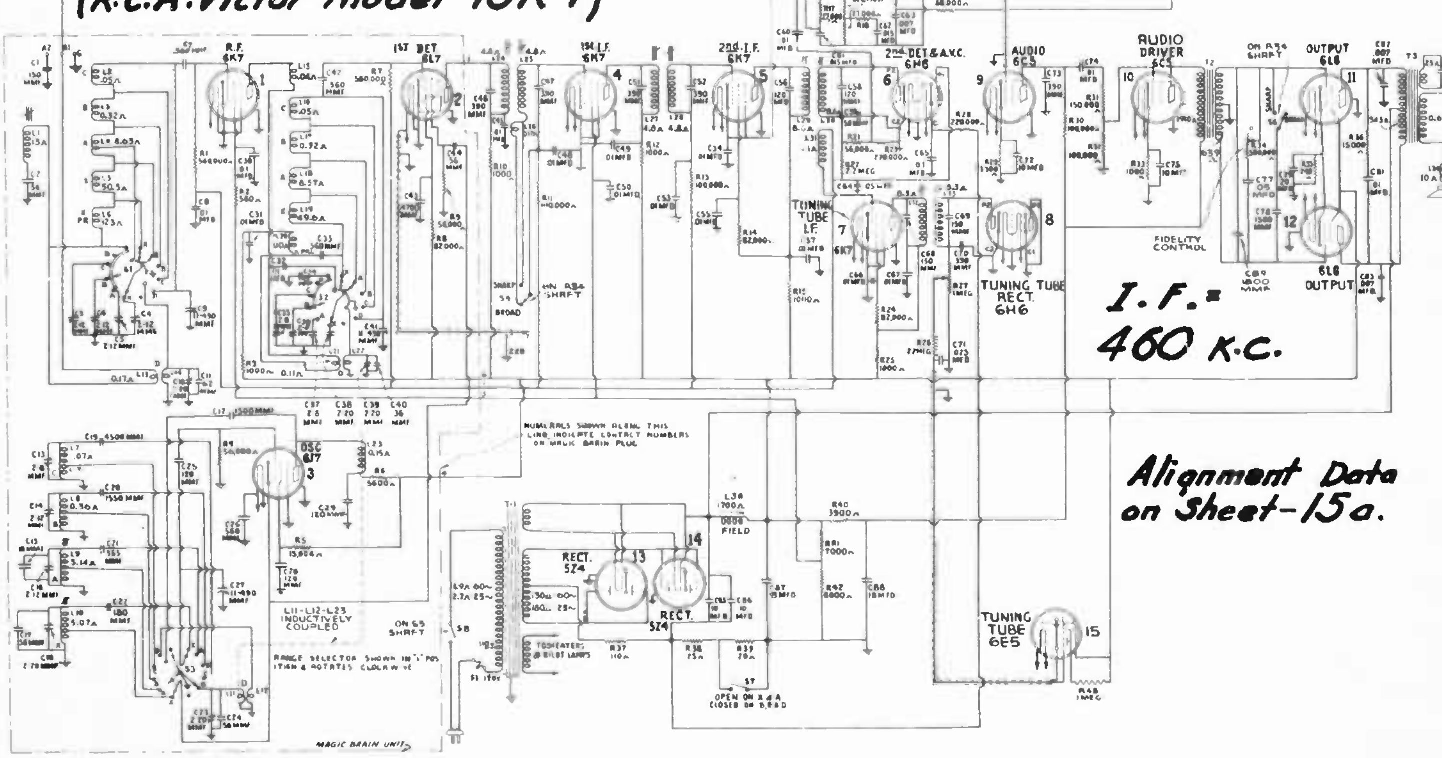


(* Resistor R31 may be 56 ohms on some models. Replace with Stock No. 12080)
(** 120-ohm resistor not required when replacing resistor R31 with Stock No. 12080)

ABOVE: C.G.E Model E-106
(R.C.A. Victor Model 10K-1)

BELOW: C.G.E. Model E-157
(R.C.A. Victor Model 15K-1)

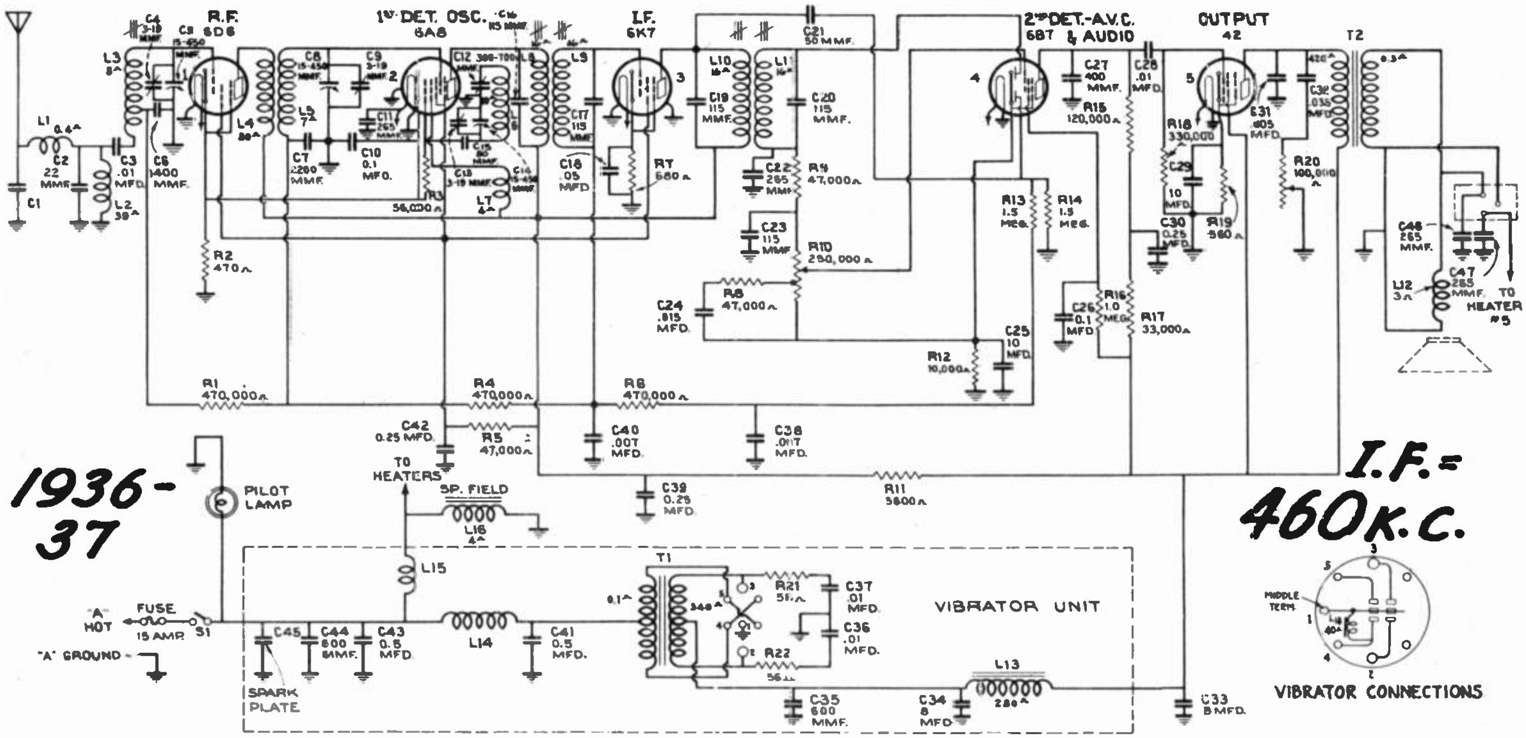
1936-37



DATA SHEET

COURTESY - C.G.E.-17 CO. LTD.

World Radio History



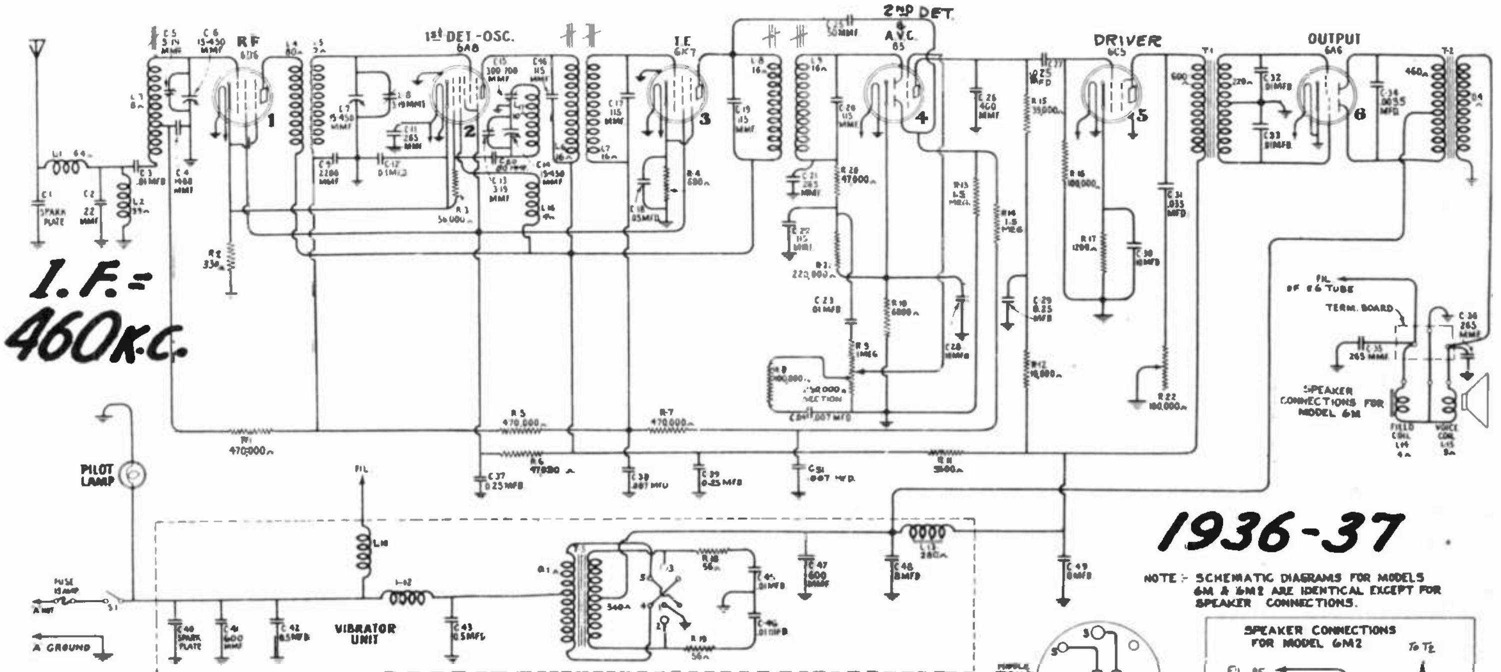
1936-37

I.F. = 460 K.C.

C.G.E.-N-51 Auto Receiver

(R.C.A. Victor Model 5M)

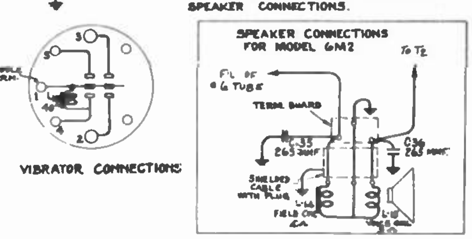
Alignment Data on Data Sheet -18a



I.F. = 460 K.C.

1936-37

NOTE:- SCHEMATIC DIAGRAMS FOR MODELS 6M & 6M2 ARE IDENTICAL EXCEPT FOR SPEAKER CONNECTIONS.



C.G.E.-6-M-2 Auto Receiver

(R.C.A. Victor Models 6-M and 6-M-2)

Alignment Data on Data Sheet -18a.

DATA SHEET

COURTESY - C.G.E. CO. LTD. 18

World Radio History

Alignment Data
C.G.E. Models N-51, 6M2 (Auto Receivers)
(R.C.A. Victor Models 5M, 6M, 6M2)
Circuits on Data Sheet - 18.

I-F Adjustments

(a) Connect the output of the test oscillator to the control grid cap of the i-f tube (Type-6K7) through a 0.25 mfd. capacitor and connect the ground of the oscillator to the receiver chassis. Adjust the frequency of the oscillator to 260 kc. Tune the receiver to a point where no interference is received from the heterodyne oscillator or local stations.

(b) Adjust the two screws (attached to molded cores) of the second i-f transformer, one on top and one on bottom, until maximum output is produced by the indicating device.

(c) Remove the oscillator from the i-f tube input and connect it between the control grid cap of the first detector tube (Type-6A8) and chassis-ground, using the 0.25 mfd. capacitor as previously. Allow its tuning to remain at 260 kc. Tune the receiver to avoid interference as in (a).

(d) Adjust the two screws of the first i-f transformer for maximum (peak) receiver output. The indication for this adjustment will be broad due to the "flat-top" characteristic of the i-f system. The two screws should, therefore, be very carefully adjusted so that the indicator remains fixed at maximum as the oscillator is shifted through a range 2 kc. above and below its normal setting of 260 kc. An irregular double-peaked indication is to be avoided.

R-F Adjustments

NOTE: Before making r-f adjustments, it may be advisable to replace the bottom cover to eliminate vibrator interference.

(a) Adjust the dial pointer on the remote control head by the following procedure. Rotate tuning knob to its extreme clockwise position irrespective of location of pointer on dial. Now turn the pointer adjusting screw in the center of the back of the control unit until the pointer is at the end calibration mark below the 55 on dial scale.

(b) Connect the output of the test oscillator to the antenna-ground terminals of the receiver with a 175 mmfd. capacitor in series with the antenna lead.

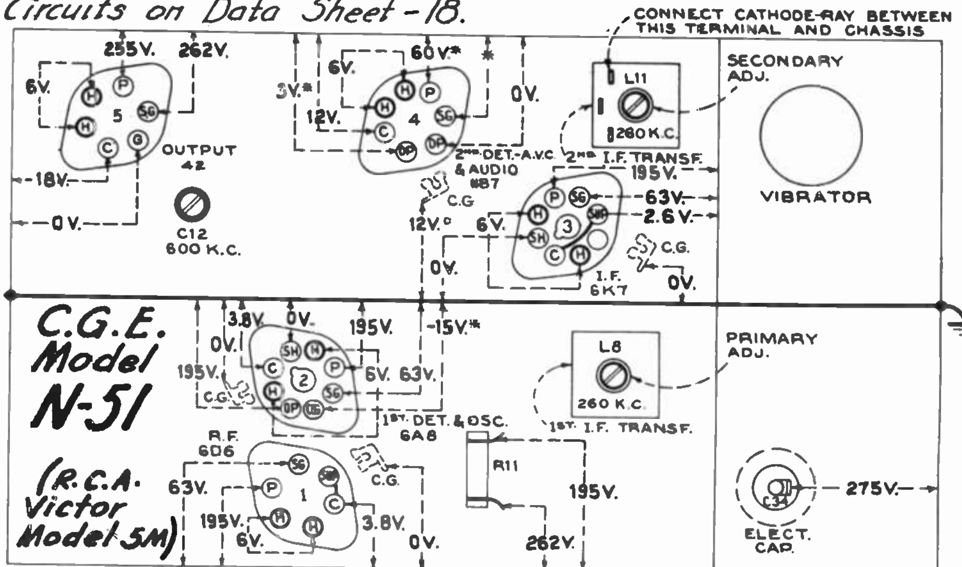
NOTE: For r-f alignment of receivers in which the tubular paper condenser C-3 (.01 mfd.) has been replaced by the small molded condenser 500 mmfd. (change easily identified by reference to Figure 2 and bottom of chassis), use a .001 mfd. capacitor instead of the 175 mmfd. capacitor in series with the antenna lead and test oscillator.

There should be a shunt capacitor of 50 or 60 mmfd. from the antenna lead at the receiver to ground. Tune the oscillator to 1,400 kc. Allow the output indicator to remain attached to the receiver output. C-9 and C-4 on N-51

(c) Tune the receiver so that the dial reading is 1,400 kc. Then adjust the oscillator, detector, and antenna coil trimmers, C-13,* C-8,° and C-5■ respectively, tuning each to the point producing maximum indicated receiver output.

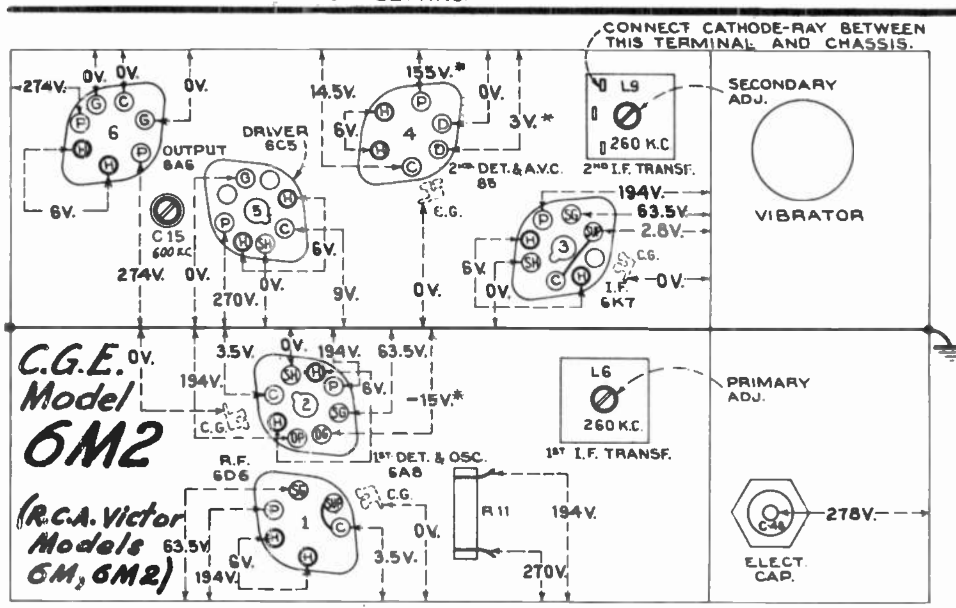
(d) Shift the oscillator frequency to 600 kc. and tune the receiver to pick up this signal, disregarding the dial reading at which it is best received. The oscillator series trimmer,* C-15, should then be adjusted, simultaneously rocking the receiver tuning control backward and forward through the signal until maximum (peak) receiver output results from the combined operations. The adjustment of C-13, °C-8 and C-5■ should be repeated as in (c) to correct for any change in its alignment due to the adjustment of C-15. C-12 on N-51

* C-12 on Model N-51
° C-9 " "
■ C-4 on Model N-51



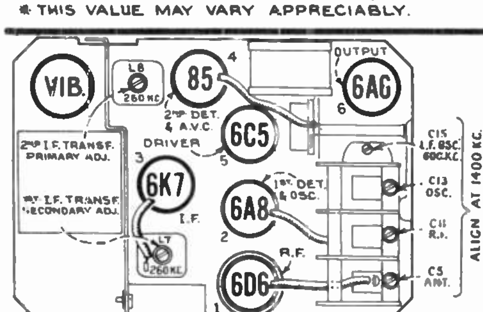
* THIS VALUE MAY VARY APPRECIABLY.
° VOLUME CONTROL AT MINIMUM SETTING.

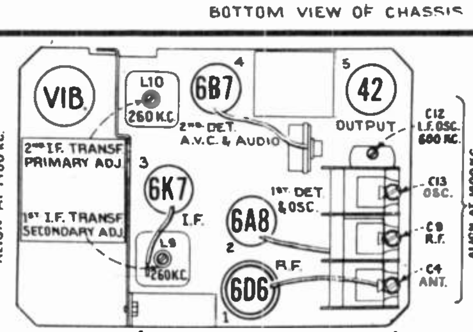
BOTTOM VIEW OF CHASSIS



* THIS VALUE MAY VARY APPRECIABLY.

BOTTOM VIEW OF CHASSIS





C.G.E. 6M2 (R.C.A. Victor 6M, 6M2) C.G.E. N-51 (R.C.A. Victor 5M)

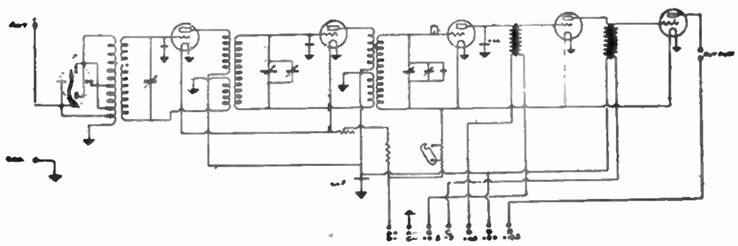
DATA SHEET

COURTESY — C.G.E.-18a CO. LTD.

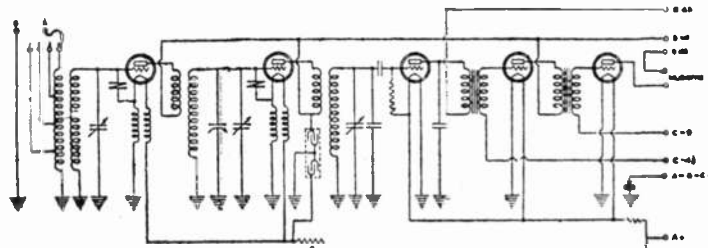
World Radio History

De Forest Crosley Color Code for Battery Operated Models

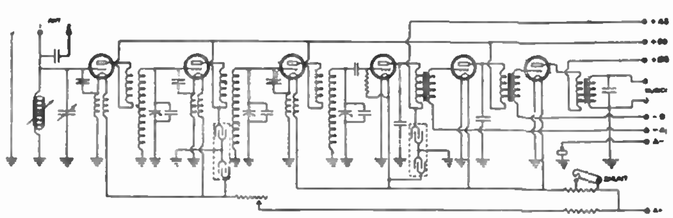
A+B—White	B90+—Red
A—C+—Black	B135+—Brown
B45+—Green	C4½—Yellow
	C9—Red and Black



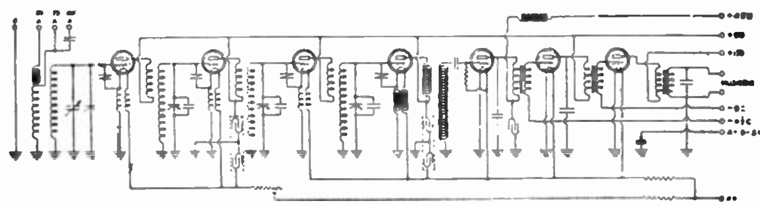
THE C5 COMPACT AND CONSOLE (1926-27)



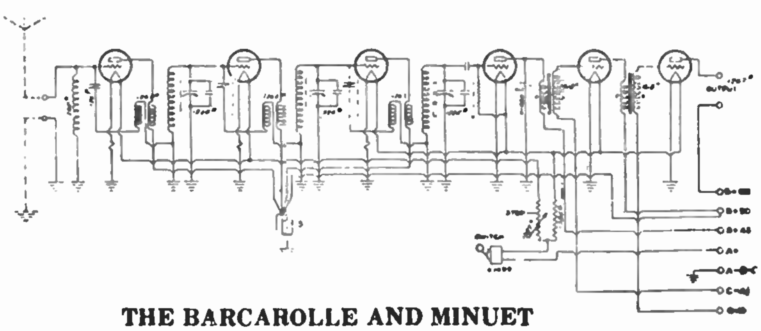
THE CONWAY AND HASTINGS (1927-28)



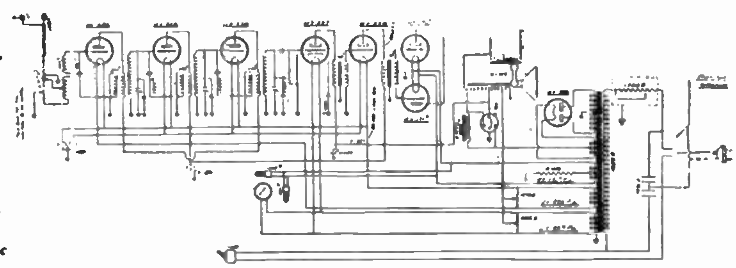
THE WARWICK AND WINDSOR (1927-28)



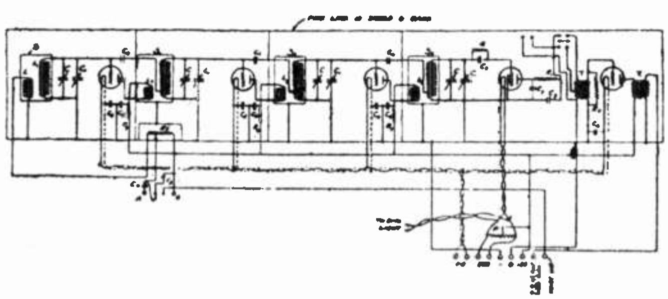
THE BALMORAL AND BERWICK (1927-28) Battery Operated



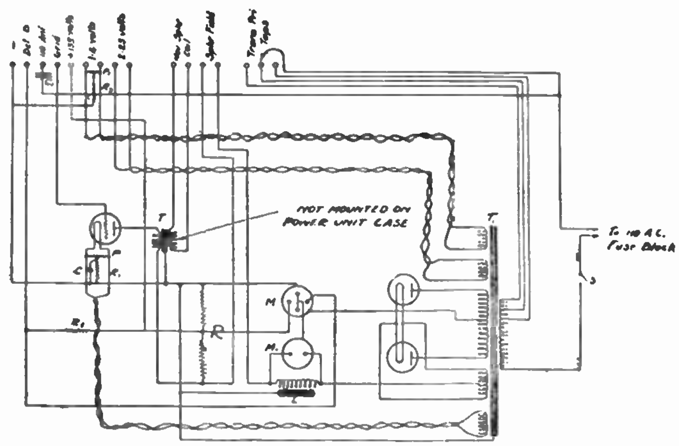
THE BARCAROLLE AND MINUET (Battery Type—1928-9)



THE NOCTURNE (AC 1928)



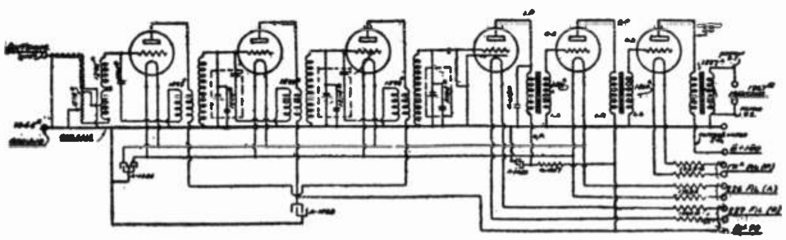
THE CONCERTO, SONATA AND OPERA MODELS (1928-29)



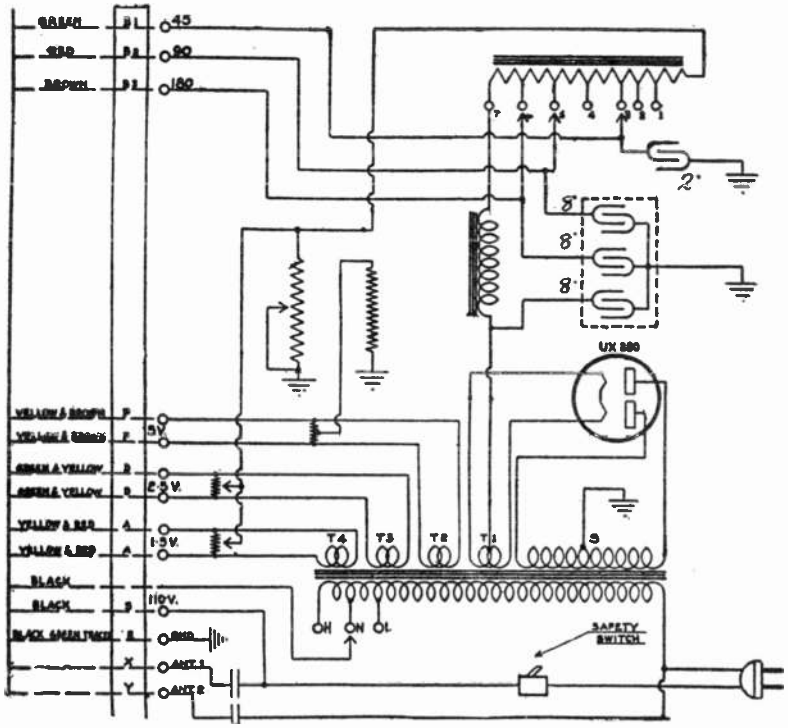
NOCTURNE (High Boy)
Same Chassis also used in DUET (Phono-Comb.)

—Courtesy De Forest Crosley Limited

CONSOLE



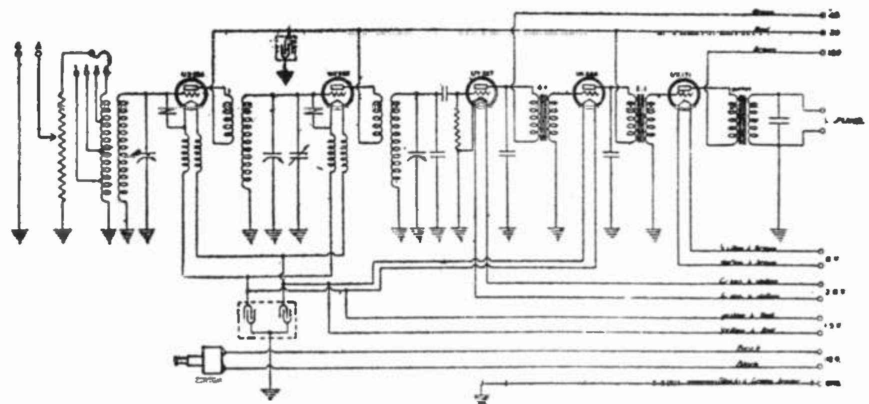
THE SYMPHONY CHASSIS
(First Series—Power Unit Separate) (1928-29)



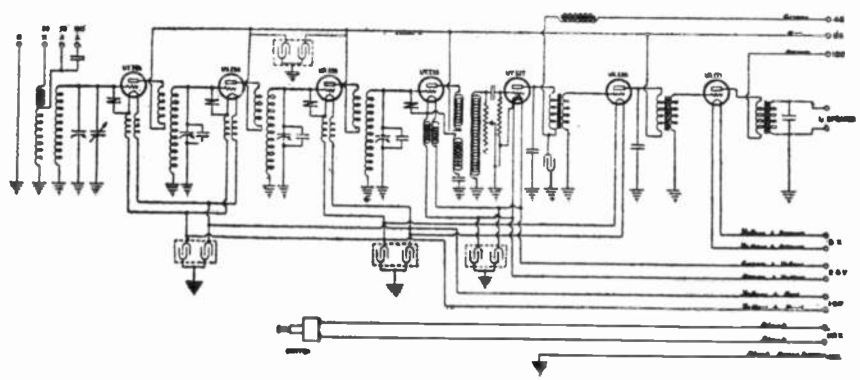
THE DE FOREST CROSLEY POWER UNIT FOR ELECTRIC HASTINGS, BERWICK AND FIRST SERIES SYMPHONY MODEL (1927-28)

Also see Data Sheet (No. 8)

CONSOLE



THE ELECTRIC HASTINGS
(1927-28)



THE ELECTRIC BERWICK CHASSIS
(1927-28)

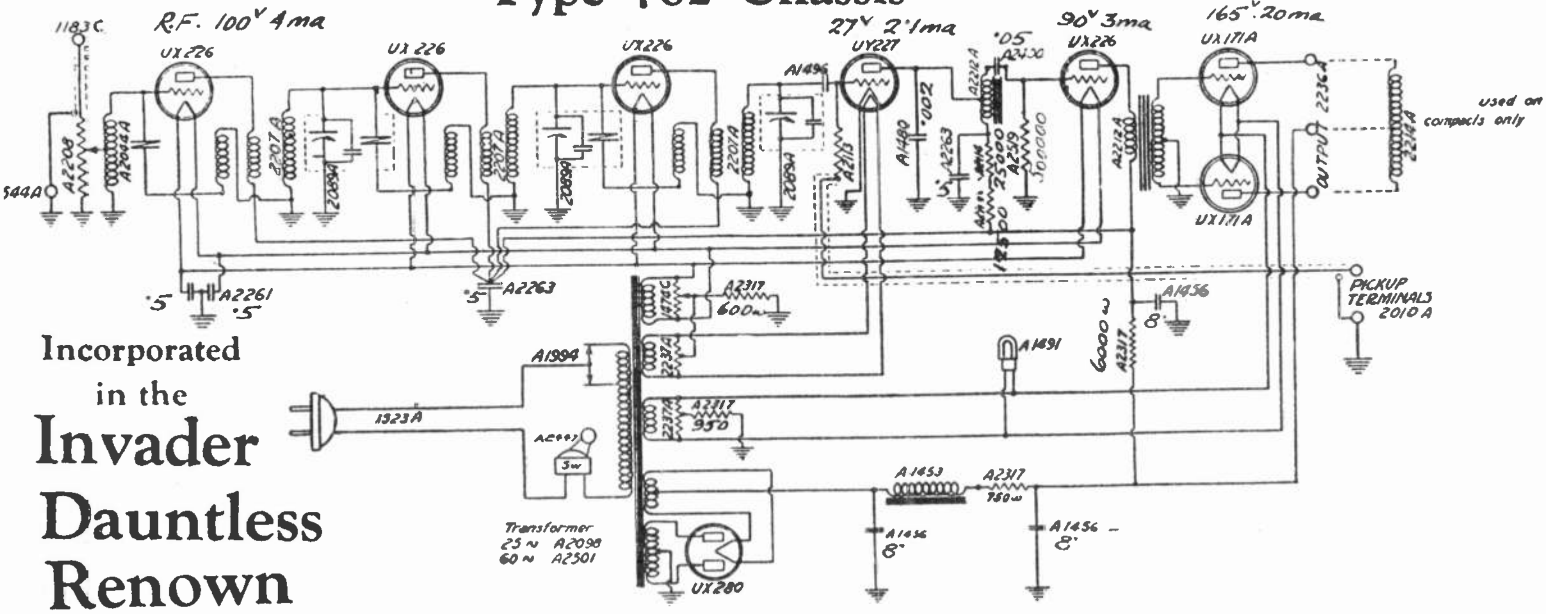
CONSOLE

—Courtesy De Forest Crosley Limited

Printed in Canada

World Radio History

Type 762 Chassis

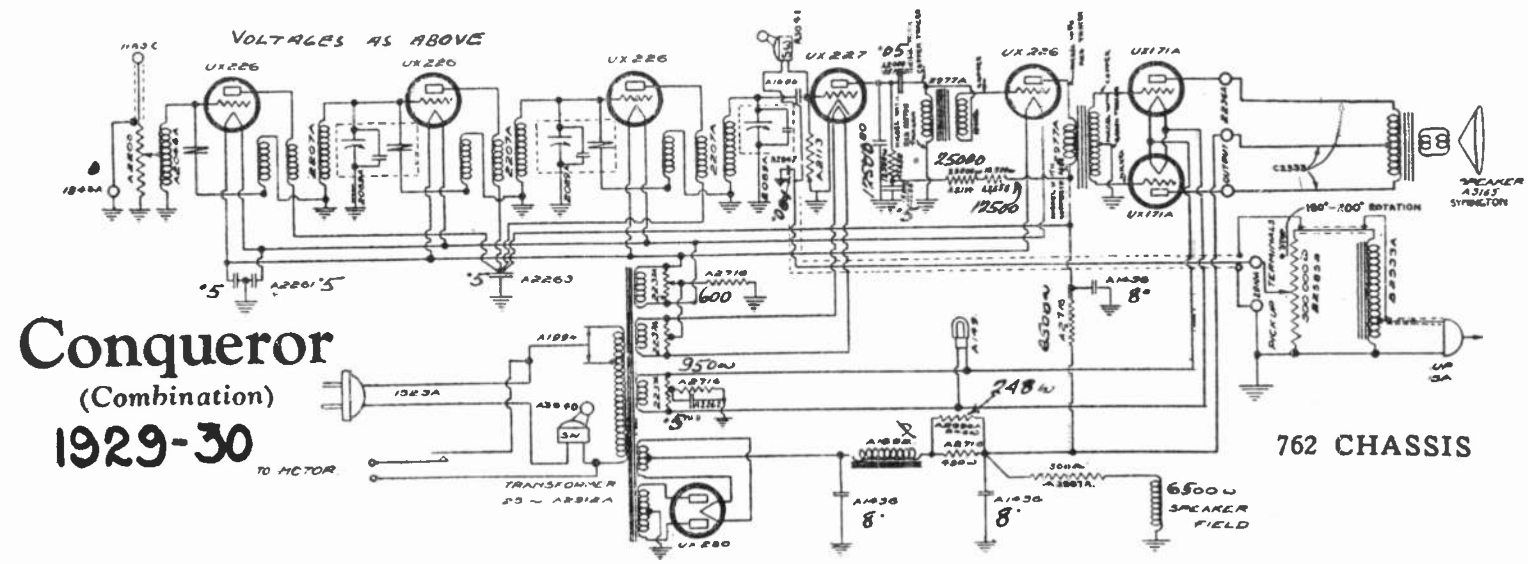


Incorporated in the

Invader

Dauntless

Renown

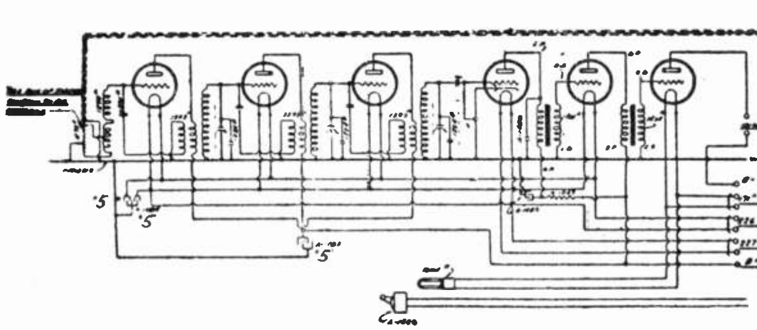


Conqueror

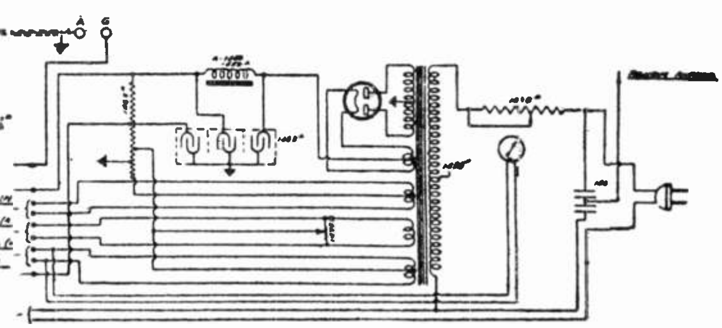
(Combination)

1929-30

762 CHASSIS



THE SYMPHONY (Second Series) AND THE ETUDE (AC. 1928)



POWER UNIT FOR ETUDE AND SECOND SYMPHONY SERIES (1928-29)

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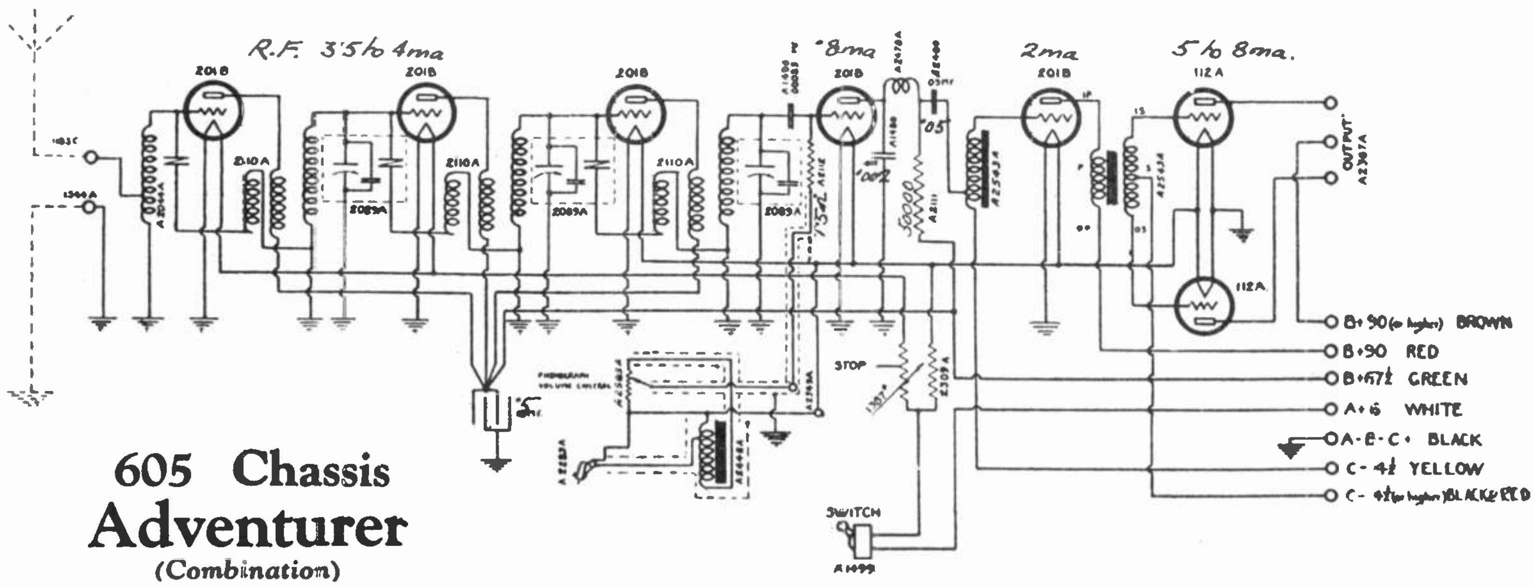
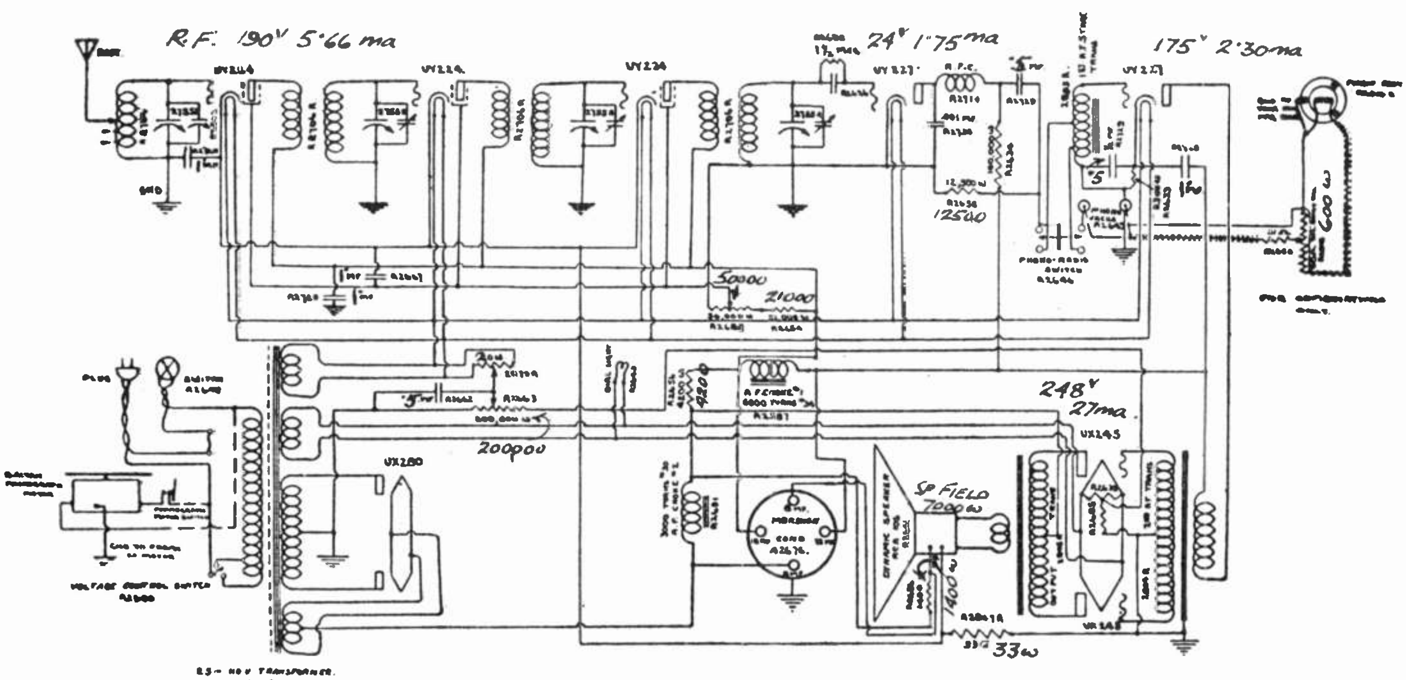
World Radio History



605 Chassis
Adventurer
(Combination)
also

Type 603 Incorporated in the Pioneer Voyageur - Explorer

SAME AS ABOVE BUT LESS DOTTED PORTION.



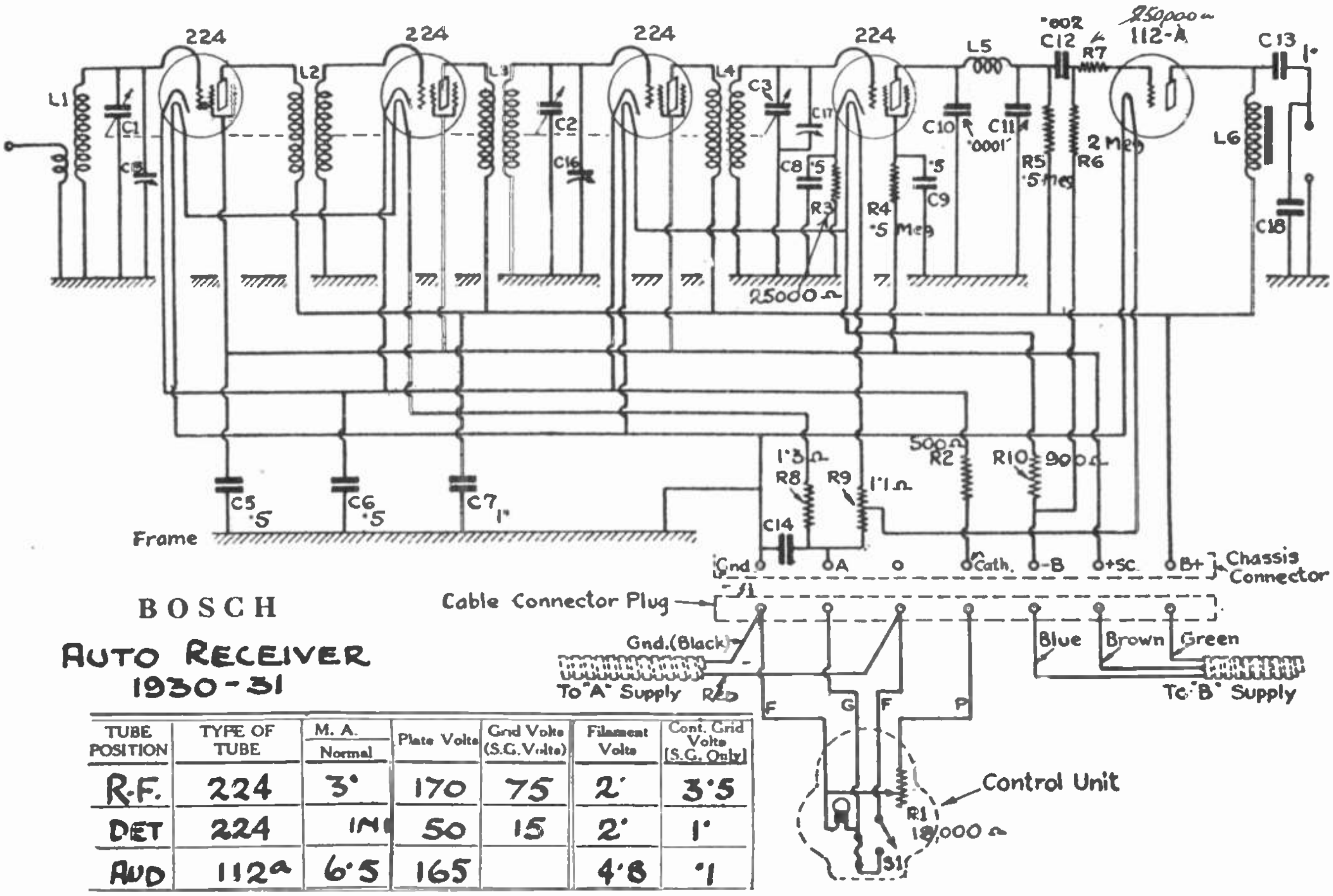
Type 766 Chassis Incorporated in the (1929-30) Royal York Tudor Stuart Norman - Lancaster

(Combination) (Combination)

Printed in Canada

—Courtesy De Forest Crosley Limited

World Radio History

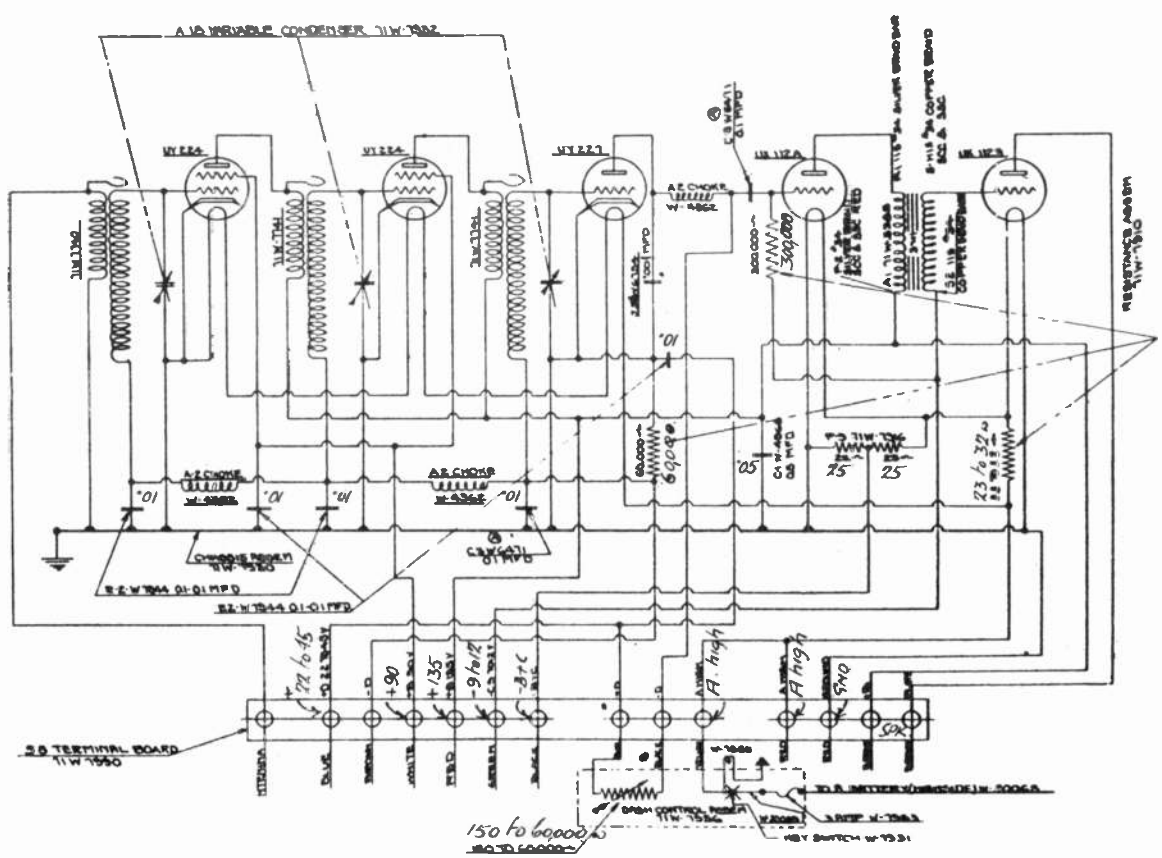


BOSCH

AUTO RECEIVER 1930-31

TUBE POSITION	TYPE OF TUBE	M. A. Normal	Plate Volts	Grid Volts (S.G. Volts)	Filament Volts	Cont. Grid Volts [S.G. Only]
R.F.	224	3·	170	75	2·	3·5
DET	224	1M	50	15	2·	1·
AUD	112a	6·5	165		4·8	·1

Battery Operated ROAMIO 1930.



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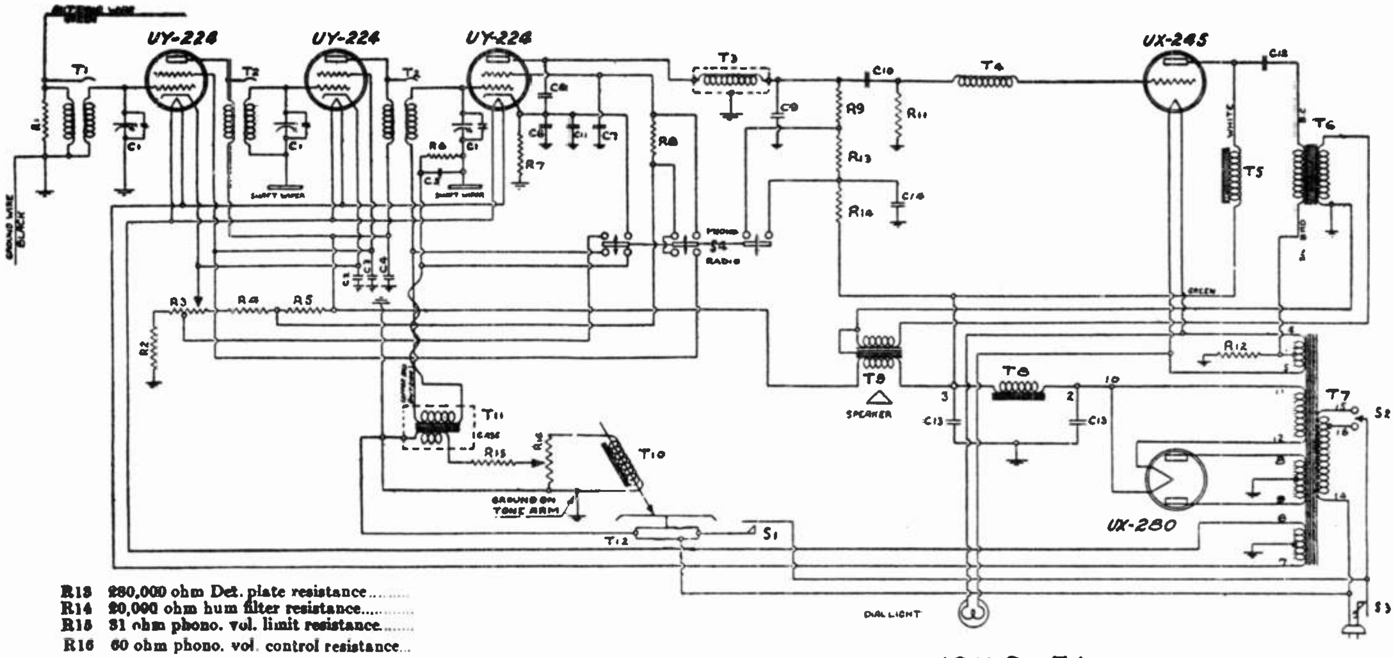
World Radio History



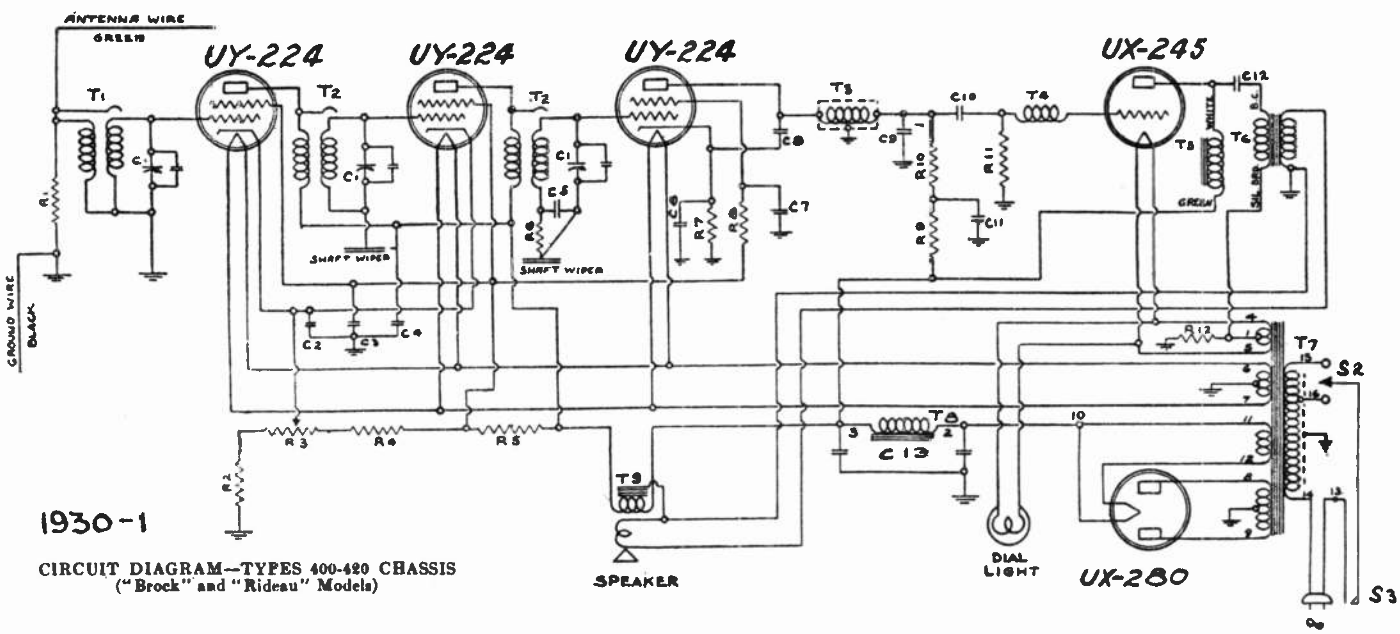
R13 280,000 ohm Det. plate resistance..........
R14 20,000 ohm hum filter resistance..........
R15 31 ohm phono. vol. limit resistance..........
R16 60 ohm phono. vol. control resistance...

CIRCUIT DIAGRAM—TYPE 420 CHASSIS
("Elgin" Model)

1930-31

LINE DRAW (at 120 volts)

25 cycle Power transformer (all tubes in position)	*79 watts
60 cycle Power transformer (all tubes in position)	*71 watts
25 cycle Phono motor (no load on turntable)	32 watts
60 cycle Phono motor (no load on turntable)	23 watts



1930-1

CIRCUIT DIAGRAM—TYPES 400-420 CHASSIS
("Brock" and "Rideau" Models)

Symbol	Description
C1	Tuning condenser gang..........
C2	.25 Mfd. cathode R.F. by-pass condenser
C3	.25 Mfd. screen R.F. by-pass condenser
C4	.30 Mfd. plate R.F. by-pass condenser
C5	.10 Mfd. Det. automatic bias by-pass condenser
C6	1.0 Mfd. R.F. cathode by-pass condenser
C7	.10 Mfd. R.F. screen by-pass condenser
C8	.0001 Mfd. R.F. plate by-pass condenser
C9	.0001 Mfd. R.F. plate by-pass condenser
C10	.02 Mfd. A.F. coupling condenser..........
C11	.10 Mfd. hum filter condenser
C12	1.0 Mfd. output coupling condenser
C13	8 Mfd. Mershon power filter condenser
R1	5,500 ohm antenna resistance..........
R2	75 ohm UY 224 bias resistance..........
R3	300 ohm vol. control (bias) resistance..........
R4	2,500 ohm voltage divider resistance
R5	3,050 ohm voltage divider resistance
R6	550,000 ohm Det. automatic bias resistance..........
R7	24,000 ohm cathode bias resistance..........
R8	250,000 ohm screen voltage reducing resistance..........
R9	100,000 ohm hum filter resistance..........
R10	300,000 ohm Det. plate resistance..........
R11	900,000 ohm A.F. grid leak resistance..........
R12	1,650 ohm UX 245 bias resistance..........

Type of Tube	Position of Tube	TUBE IN TEST SET "A" Volts	"B" Volts	Screen Volts	Control Grid ("C") Volts	Normal MA.
224	RF	2.23	196	90	3.1	2.4
224	DETC	2.23	100	20	*6	1.5-3
245	AF	2.25	250	—	50	25-45
280	RECT	4.7	325	A.C.		32-37

Position of Volume Control MAX

* Reading between cathode and chassis

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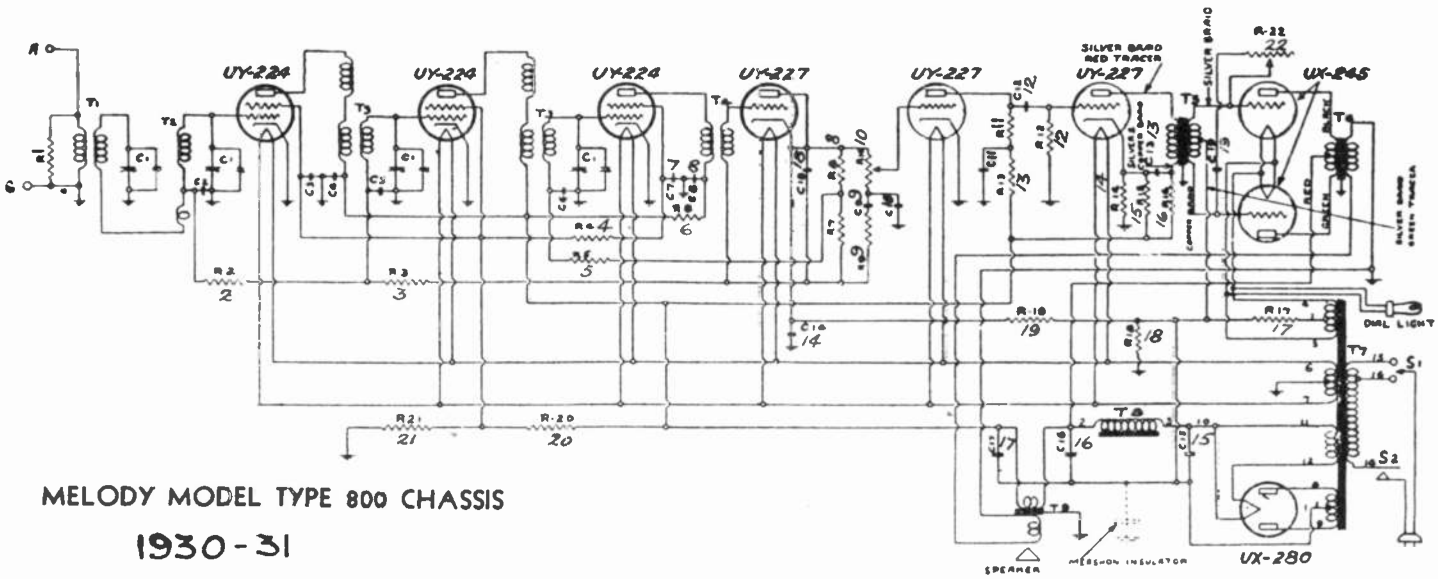
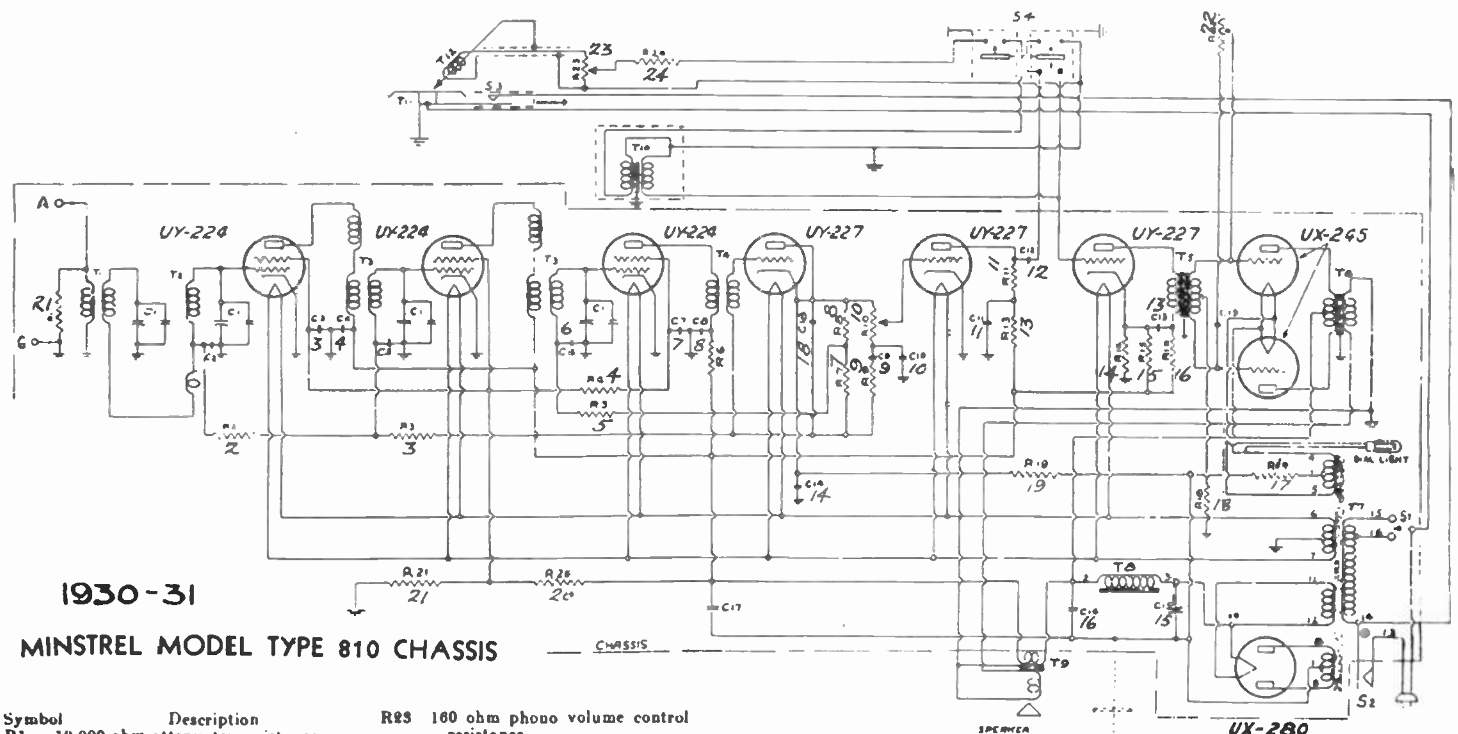
World Radio History



MELODY MODEL TYPE 800 CHASSIS

1930-31



1930-31

MINSTREL MODEL TYPE 810 CHASSIS

Symbol	Description
R1	10,000 ohm attenuator resistance
R2	100,000 ohm isolating resistance
R3	500,000 ohm isolating resistance
R4	1,000 ohm isolating resistance
R5	500,000 ohm isolating resistance
R6	1,000 ohm isolating resistance
R7	25,000 ohm voltage dividing resistance.
R8	25,000 ohm voltage dividing resistance
R9	250,000 ohm plate resistance.
R10	1,000,000 ohm level control resistance
R11	250,000 ohm plate resistance
R13	100,000 ohm isolating resistance
R14	400 ohm bias resistance
R15	20,000 ohm A.F. bias bleeder resistance.
R16	18,000 ohm isolating resistance
R17	835 ohm UX 245 bias resistance
R18	67 ohm R.F. bias (constant) resistance.
R19	250,000 ohm isolating resistance
R20	4,700 ohm voltage divider resistance.
R21	5,600 ohm bleeder resistance
R22	1,000,000 ohm tone control resistance
R23	160 ohm phono volume control resistance
R24	31 ohm phono volume limit resistance
C1	Tuning condenser (4 gang)
C2	.05 Mfd. by-pass condenser
C3	.1 Mfd. } R.F. by-pass condenser
C4	.1 Mfd. }
C5	.05 Mfd. by-pass condenser
C6	.05 Mfd. by-pass condenser
C7	.1 Mfd. } R.F. by-pass condenser
C8	.1 Mfd. }
C9	.005 Mfd. grid condenser
C10	.0001 Mfd. R.F. by-pass condenser
C11	.1 Mfd. by-pass condenser
C12	.1 Mfd. grid condenser
C13	.25 Mfd. by-pass condenser
C14	1.0 Mfd. R.F. by-pass condenser
C15	9 Mfd. }
C16	18 Mfd. } Mershon filter condenser
C17	9 Mfd. }
C18	.00025 Mfd. R.F. by-pass condenser
C19	.002 Mfd. tone control condenser

Type of Tube	Position of Tube	TUBE IN SET TESTER. "A" Volts	"B" Volts	Screen Volts	Screen Current	Control Grid ("C") Volts	Normal Ma.
224	RF	2·25	172	89	NOT MORE	3·0	3·4
227	DIODE DETC	2·23	—	—	THAN 1/3	—	—
227	DETC AMP	"	30	—	PLATE	— ♂	INDICATION
227	INT A.F.	"	98	—	CURRENT	6·8	3-4
245	P.P.	2·36	250	—	—	43-48	25-45
280	RECT.	50-55 MA EACH PLATE					

♂ Reading between cathode and chassis.

Power Trans. Line Draw at 120 Volts 25~ 100 watts 60~ 97 watts
Phono Motor (Blue Flier) " " " 15 " " 25 "

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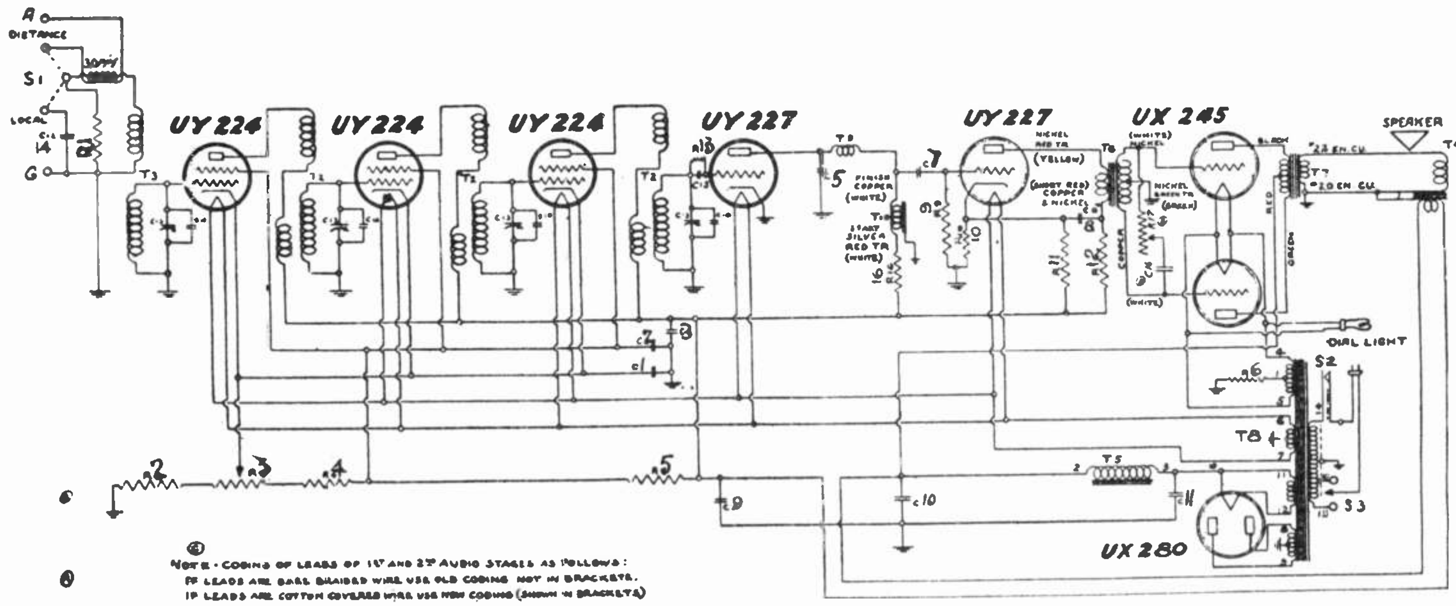
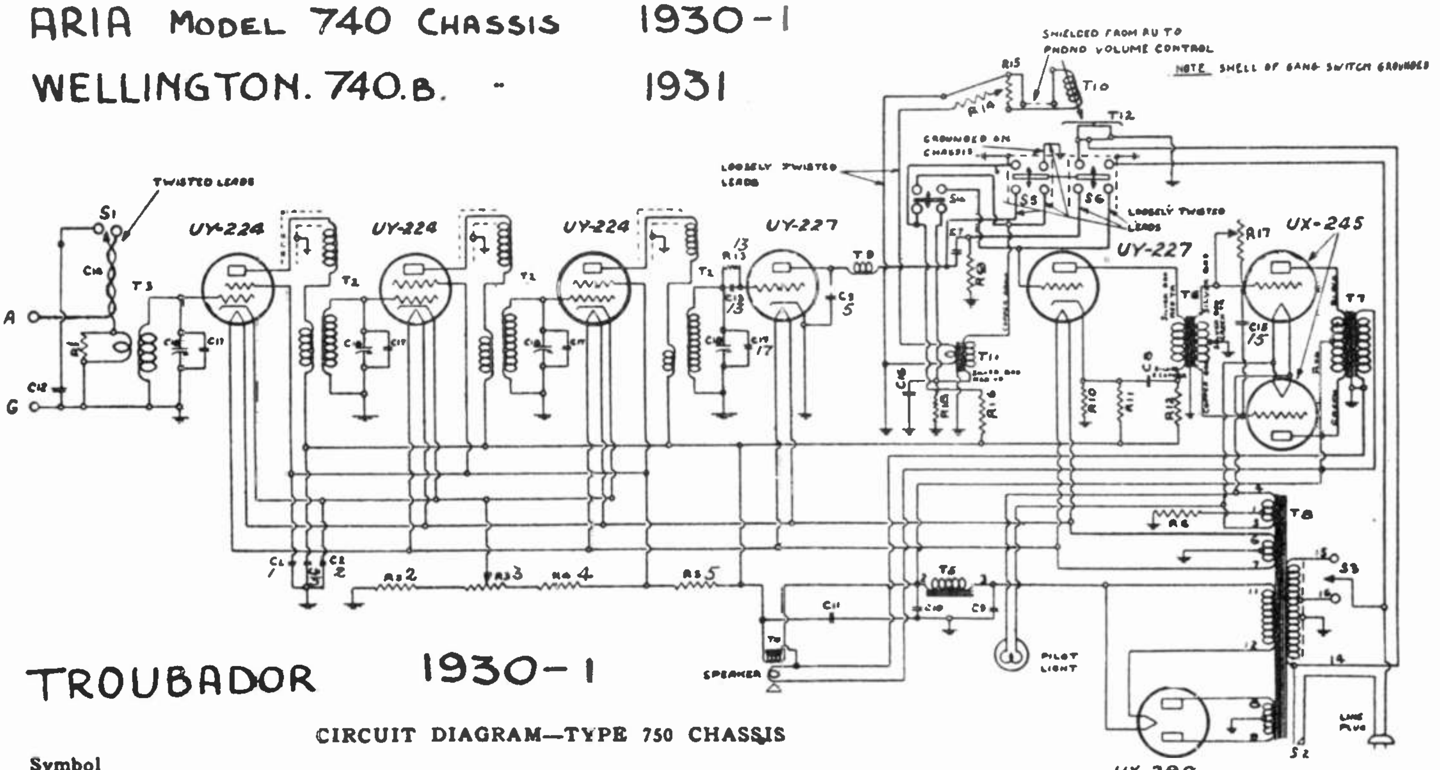
DATA SHEET. **DE FOREST CROSLEY—10.**

World Radio History



ARIA Model 740 Chassis 1930-1

WELLINGTON. 740.B. - 1931



TROUBADOR 1930-1

CIRCUIT DIAGRAM—TYPE 750 CHASSIS

Symbol

- C1 .25 Mfd. by-pass condenser } Block
- C2 .25 Mfd. by-pass condenser } Block
- C3 .30 Mfd. by-pass condenser } Block
- C5 .002 Mfd. by-pass condenser
- C7 .25 Mfd. by-pass condenser } Block (also C16)
- C8 .25 Mfd. by-pass condenser } Block (also C16)
- C9 8 Mfd. filter condenser } Mershon
- C10 8 Mfd. filter condenser } Mershon
- C11 8 Mfd. filter condenser } Mershon
- C12 .00025 Mfd. by-pass condenser
- C13 .0001 Mfd. grid condenser
- C14 .00003 Mfd. antenna condenser (Twisted wire)
- C15 .002 Mfd. by-pass condenser (Tone control)
- C16 .5 Mfd. by-pass condenser
- C17 Aligning condenser }
- C18 Gang condenser }
- R1 10,000 ohm Attenuator resistance
- R2 130 ohm Bleeder resistance
- R3 615 ohm voltage control resistance (Potentio)
- R4 7230 ohm voltage divider resistance
- R5 6,500 ohm voltage divider resistance
- R6 835 ohm 245 bias resistance
- R9 1 megohm grid leak resistance
- R10 400 ohm 227 bias resistance
- R11 20,000 ohm 227 bias bleeder resistance
- R12 20,000 ohm 1st audio filter resistance
- R13 1.25 megohm grid leak resistance
- R14 31 ohm limiting resistance
- R15 60 ohm phono volume control resistance (Potentio)
- R16 10,000 ohm det. plate resistance
- R17 1 megohm tone control resistance (Potentio) NOT IN MOD.
- R18 200,000 ohm loading resistance

Type of Tube	Position of Tube	TUBE IN 1 "A" Volts	"B" Volts	Screen Volts	Screen Current	Control Grid ("C") Volts	Normal MA.
224	RF	2·25	172	89	NOT MORE THAN 1/3 PLATE CURRENT	3-10	3-5
227	DETC	2·25	75			0	4-6
227	AF	2·25	98			6·8	4-6
245	P.P.	2·36	240			48	25-45
280	RECT	325 A.C.		45-50 MA.			

Power transformer: 25 cycle, watts 100 at 120 volts; 60 cycle, watts 87 at 120 volts

Motor (Green Flyer): 25 cycle, watts 32 at 120 volts; 60 cycle, watts 23 at 120 volts

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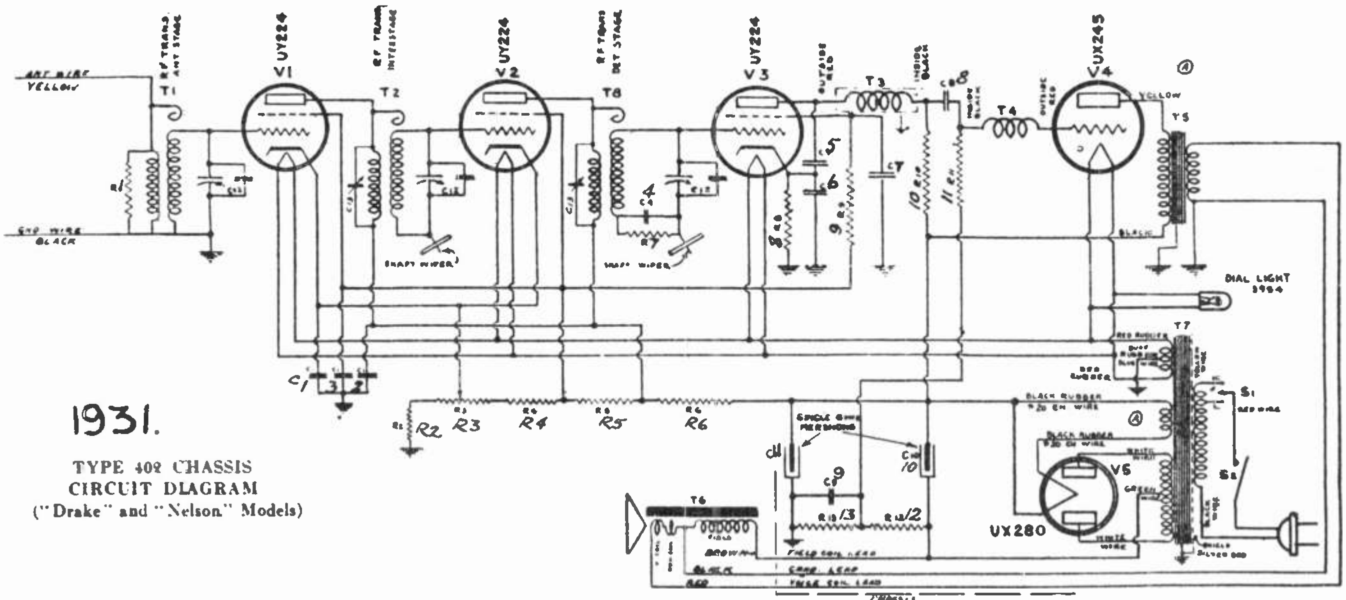
World Radio History



1931.

TYPE 402 CHASSIS
CIRCUIT DIAGRAM
("Drake" and "Nelson" Models)

Symbol		Symbol	
C1	.25 Mfd. cathod R.F. by-pass condenser	R1	5,500 ohm antenna resistance........
C2	.1 Mfd. screen R.F. by-pass condenser }	R2	120 ohm R.F. bias resistance . . .
C3	.1 Mfd. plate R.F. by-pass condenser.. }	R3	615 ohm (vol. cont.) bias resistance .
C4	.018 Mfd. Det. auto-bias by-pass condenser..........	R4	5,000 ohm voltage divider resistance.. }
C5	.0001 Mfd. Det. plate by-pass condenser..........	R5	5,140 ohm voltage divider resistance... }
C6	1 Mfd. Det. cathode bias by-pass condenser..........	R6	3,080 ohm voltage divider resistance.. }
C7	.1 Mfd. Det. screen by-pass condenser	R7	550,000 ohm Det. auto-bias resistance
C8	.02 Mfd. A. F. coupling condenser.....	R8	35,000 ohm Det. cathode bias resistance
C9	.05 Mfd. output bias by-pass condenser (	R9	250,000 ohm screen voltage drop resistance..........
C10	8 Mfd. Mershon filter condenser ..	R10	400,000 ohm Det. plate resistance..
C11	8 Mfd. Mershon filter condenser.....	R11	900,000 ohm A. F. grid leak resistance
C12	3 gang tuning condenser..........	R12	800,000 ohm resistance..........
C13	R.F. resonating condenser...	R13	1,000,000 ohm..........

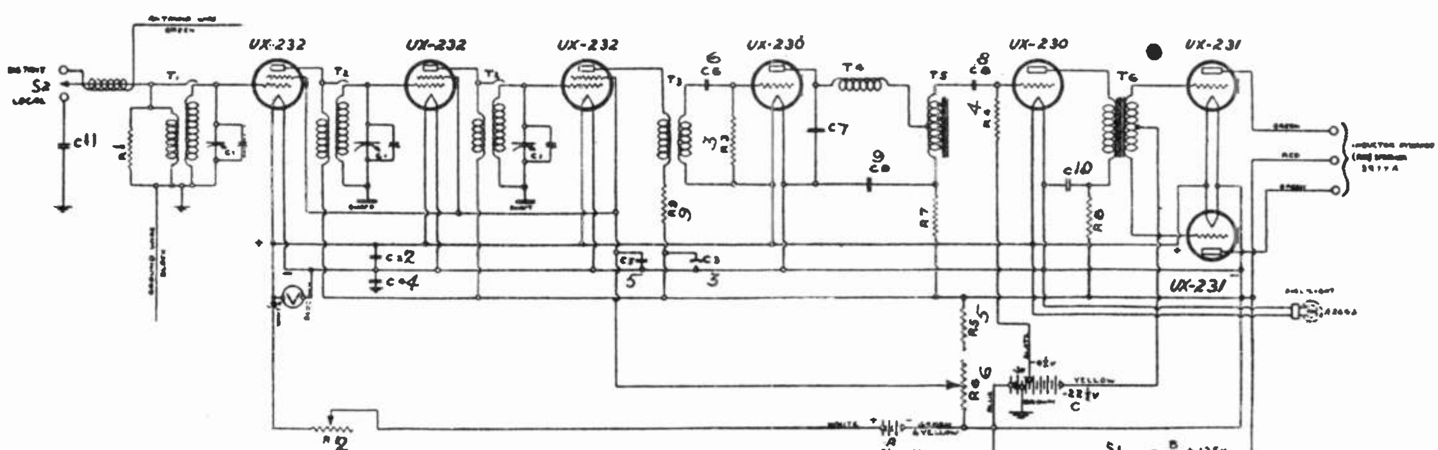
LINE DRAW (*at 120 volts*)

25 cycle power transformer (all tubes operative) (*) 60-70 watts
60 cycle power transformer (all tubes operative) (*) 52-62 watts

Type of Tube	Position of Tube	TUBE IN TEST SET "A" Volts	"B" Volts	Screen Volts	Control Grid ("C") Volts	Normal MA.
224	RF	2.21	180	90	3	3.5-4
224	DETC	2.22	150	25	6.5	.13-.18
245	AF.	2.21	250		*	25-40
280	RECT	325	A.C.			30-35 P.P.

Position of Volume Control MAX.

* Actually 50 volts. Cannot be measured Use plate mil-amps. as indication of correct voltage.



CIRCUIT DIAGRAM—TYPE 700 CHASSIS
("Serenata" Model)

1930-31

Symbol	Description	Part No.
C1	Tuning condenser (3 gang)..........	A3394B
C2	.5 Mfd. filament by-pass condenser...	A3972
C3	.5 Mfd. plate by-pass condenser......	A3972
C4	.5 Mfd. filament by-pass condenser...	A3972
C5	.5 Mfd. screen by-pass condenser.....	A3972
C6	.00025 Mfd. grid condenser..........	A3993
C7	.00025 Mfd. plate by-pass condenser ..	A3993
C8	.002 Mfd. grid condenser..........	A3992
C9	.25 Mfd. plate by-pass condenser..... }	
C10	.25 Mfd. plate by-pass condenser..... }	
C11	.00025 Mfd. antenna by-pass condenser	
R1	5,500 ohm Antenna resistance........	
R2	2 ohm filament resistance............	
R3	3 megohm grid leak resistance........	
R4	900,000 ohm grid leak resistance.....	
R5	25,000 ohm bleeder resistance.........	
R6	35,000 ohm volume control resistance.	
R7	45,000 ohm voltage divider resistance..	
R8	20,000 ohm voltage divider resistance..	
R9	5,500 ohm isolating resistance....	

Volume Control Full

Tube No.	Type of Tube	Position of Tube in Set	Operating Voltages: Filament or Heater	Plate or Anode	Control Grid	Screen Grid	Cathode to Heater	Milliamperes: Screen	Plate	Tube Test	Plate Current Change
	232	1 R.F.	1.9	135	3	61	-	.3	1.3		
	232	2 R.F.	1.9	135	3	61	-	.5	1.3		
	232	3 R.F.	1.9	135	3	61	-	.5	1.6		
	230	Det.	1.9	40	-	0	-	-	2		
	230	1 A.F.	1.9	90	-	4.5	-	-	2		
	231	PP-AF	1.9	120	-	22.5	-	-	8		
	231	PP-AF	1.9	120	-	22.5	-	-	8		

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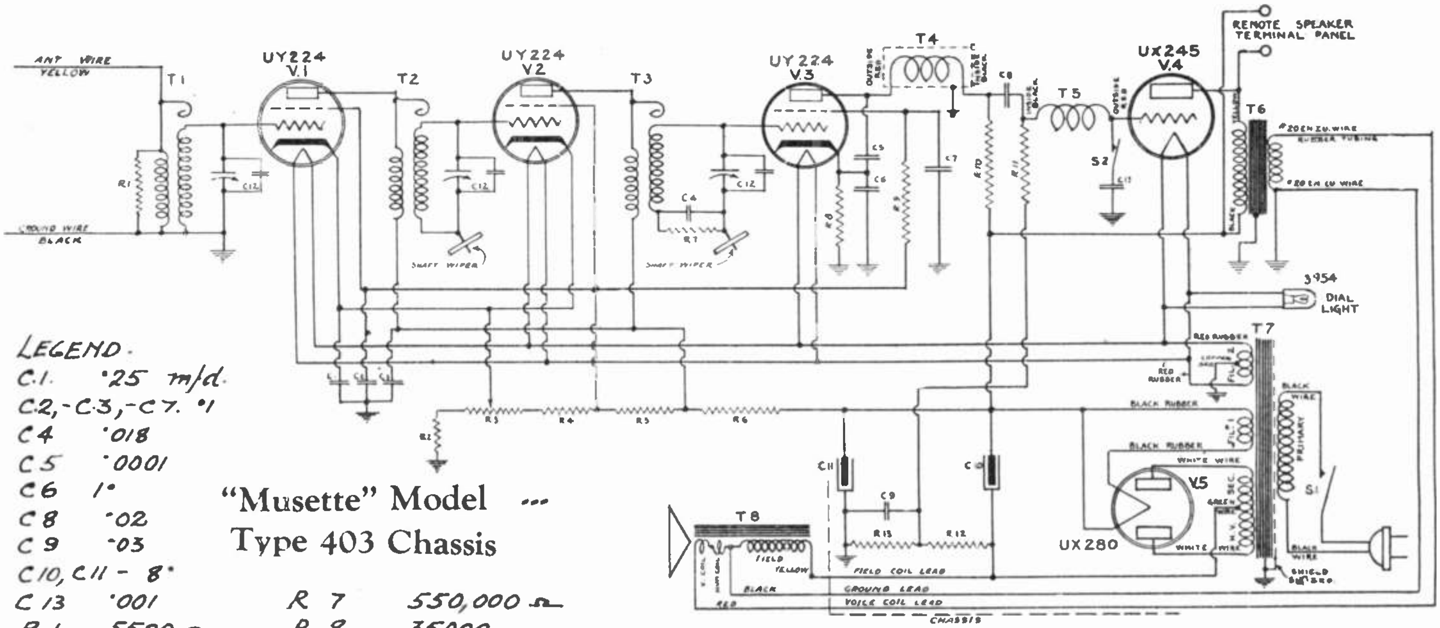


“Musette” Model --- Type 403 Chassis

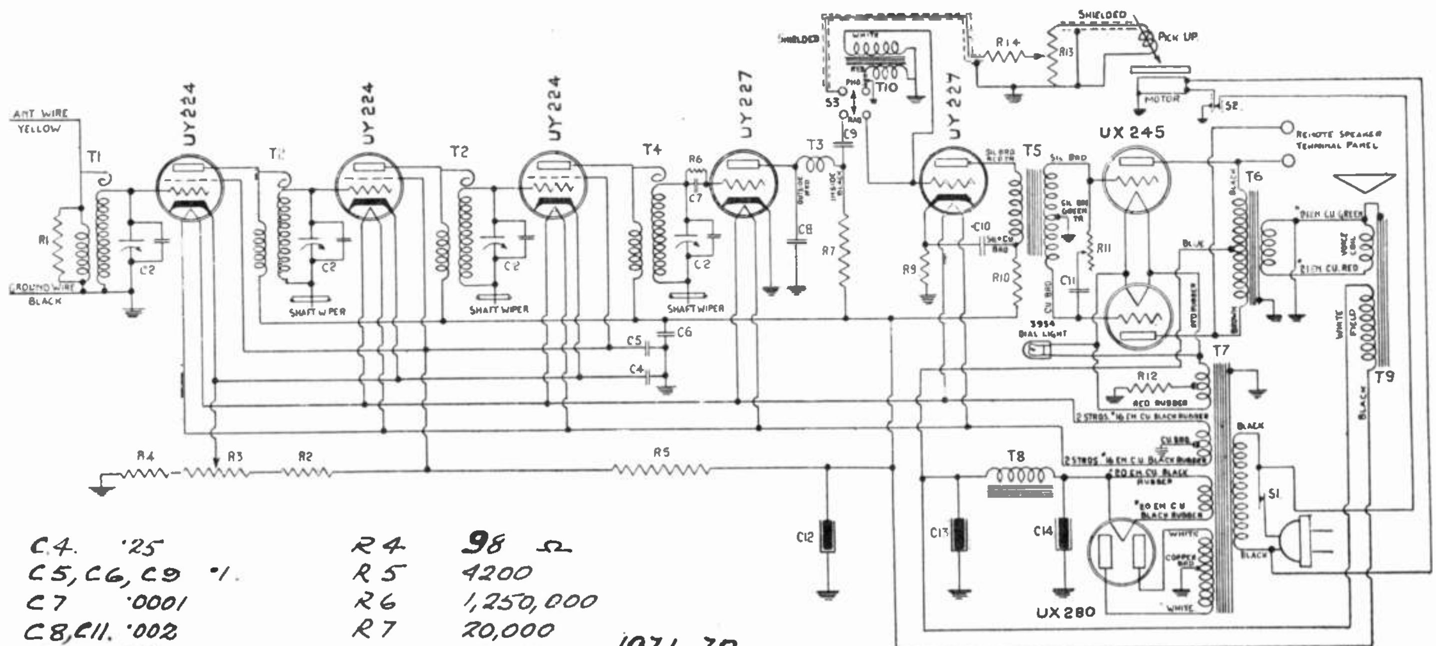
LEGEND.

C.1.	.25 mfd.	R 7	550,000 Ω
C.2, - C.3, - C.7.	.1	R 8	35,000
C 4	.018	R 9	250,000
C 5	.0001	R 10	400,000
C 6	1.	R 11	900,000
C 8	.02	R 12	800,000
C 9	.03	R 13	1 MEG
C 10, C 11 -	8.		
C 13	.001		
R 1	5500 Ω		
R 2	120		
R 3	615		
R 4	5000		
R 5	5140		
R.6	3080		

1931-32

POSITION.	PLATE VOLTS	GRID VOLTS	SCREEN V.	Ma.
RF	175-180	2.8	85-90	4-4.5
DET	45-50	.5	24-25	.25
PWR	245-250	1.5*		30-32.

* ACTUALLY 45



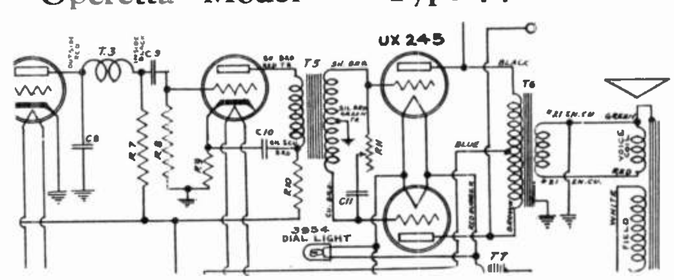
C.4.	.25	R 4	98 Ω
C 5, C 6, C 9	.1.	R 5	4200
C 7	.0001	R 6	1,250,000
C 8, C 11.	.002	R 7	20,000
C 10	.4	R 8	500,000
C 12, C 13, C 14.	8.	R 9	1250
R 1	7000 Ω	R 10	18000
R 2	4640	R 11	1.5 MEG
R 3	500	R 12	835

1931-32

“Operetta” Model --- Type 743 Chassis

POSITION	PLATE VOLTS	GRID VOLTS	SCREEN V	PLATE Ma.
RF	175-180	3-3.2Ø	90-95	4-4.5.
DET	60-62			5-6
1-AUD	90-95	.5 *		4-5
2-AUD	245-250	46-48		28-30

Ø VARIES WITH SETTING OF VOL. CONTROL
* ACTUALLY 5 VOLTS



“Rondo” Model --- Type 742 Chassis

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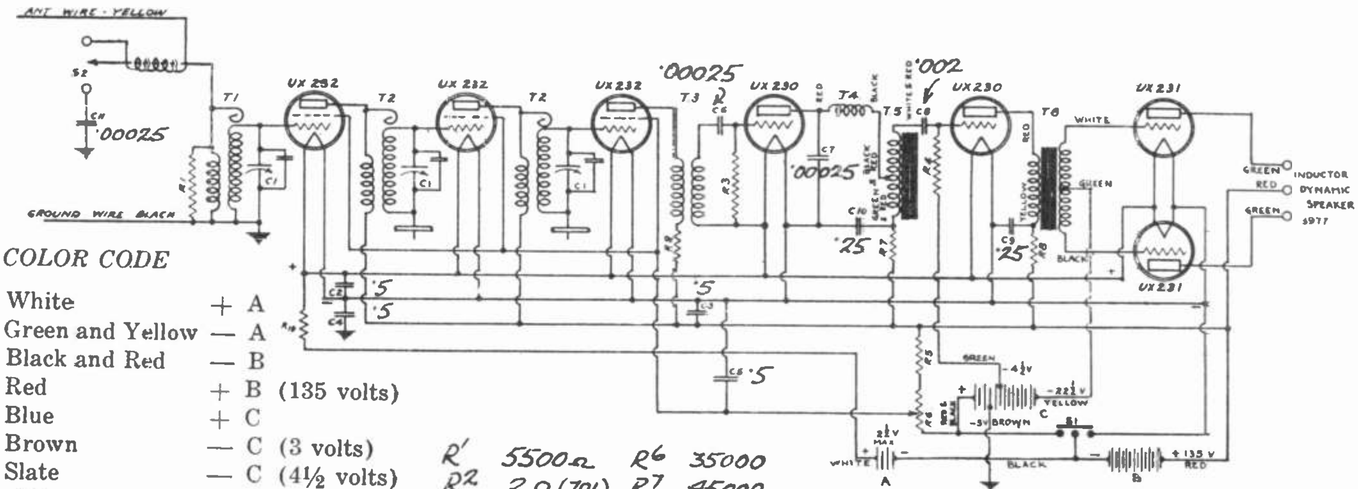


COLOR CODE

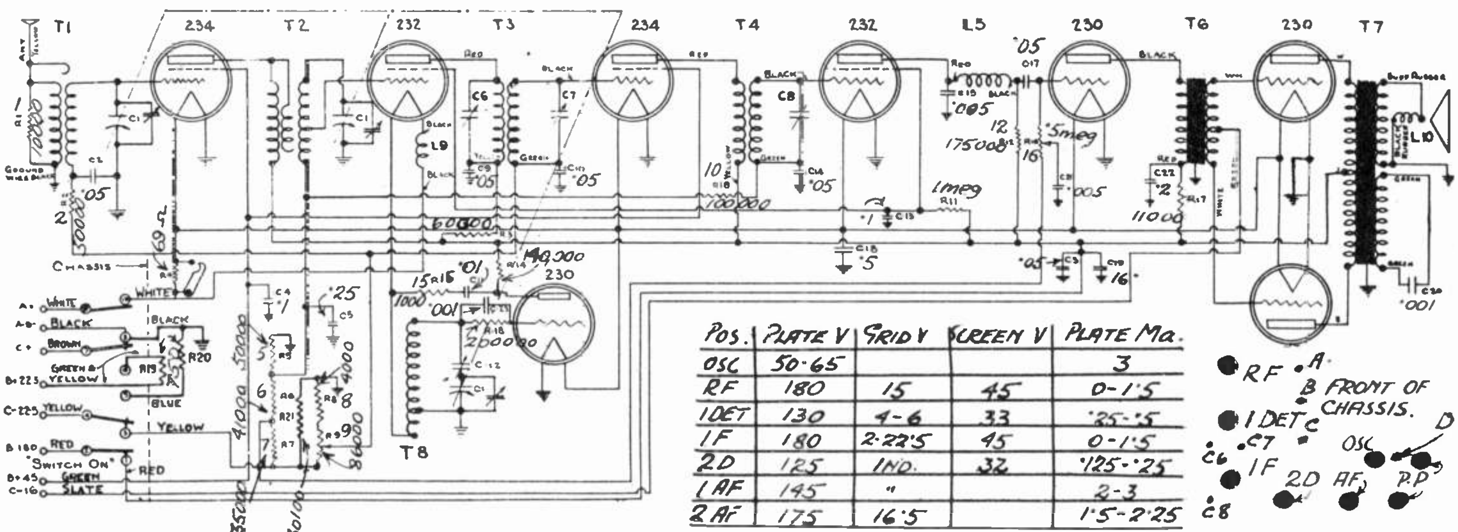
White	+ A	
Green and Yellow	— A	
Black and Red	— B	
Red	+ B	(135 volts)
Blue	+ C	
Brown	— C	(3 volts)
Slate	— C	(4½ volts)
Yellow	— C	(22½ volts)
Yellow	Antenna	
Black	Ground	

R' 5500Ω R6 35000
R2 2Ω(701) R7 45000
R3 3 MEG R8 22000
R4 900,000 R9 6100
R5 25000 R10 ·6 MODEL 702. REPLACED BY R2 IN 701.

1931-32.

"Harmony" Model --- Type 701 Chassis

"Overture" Model --- Type 702 Chassis



Pos.	Plate V	Grid V	Screen V	Plate Ma.
OSC	50-65			3
RF	180	15	45	0-1·5
1 DET	130	4-6	33	·25-·5
1F	180	2-22·5	45	0-1·5
2D	125	IND.	32	·125-·25
1 AF	145	"		2-3
2 AF	175	16·5		1·5-2·25

RF A B FRONT OF CHASSIS. D
1 DET C C7 OSC
C6 1F 2D AF P.P
C8

"Embassy" Model - Type 801

"Embassy Jr." Model Type 802

SAME CIRCUIT USED FOR 1932-33
MINERVA - 832
WESTINGHOUSE - 8BX32. I.F. 175 Kc.

Adjust service oscillator to 175 kilocycles (exactly) and place in operation.

Align adjusting screws C8, C7 and C6 in that order for maximum reading on output meter.*

Adjust both receiver and oscillator in tune at 1400 kilocycles.

Adjust oscillator trimming condenser indicated by symbol "C" This condenser peaks at a point when the adjusting screw is turned almost "full out."

Adjust aligning screws "B" and "A" in that order for maximum reading on output meter. "B" is the R. F. stage trimming or aligning condenser and "A" is a similar unit for adjusting the antenna stage.

Adjust service oscillator and receiver in tune at 600 kilocycles. Adjust the padding condenser "D" (C12) for maximum indication on output meter.* The tuning condenser (C1) should be varied slightly while peaking this padding condenser "D". If the gang condenser is left stationary a false peak will be obtained and the receiver will be weak at or near 550 kilocycles.

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DATA SHEET.

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705 and 707 Chassis "CAROL" and "MUSICALE"

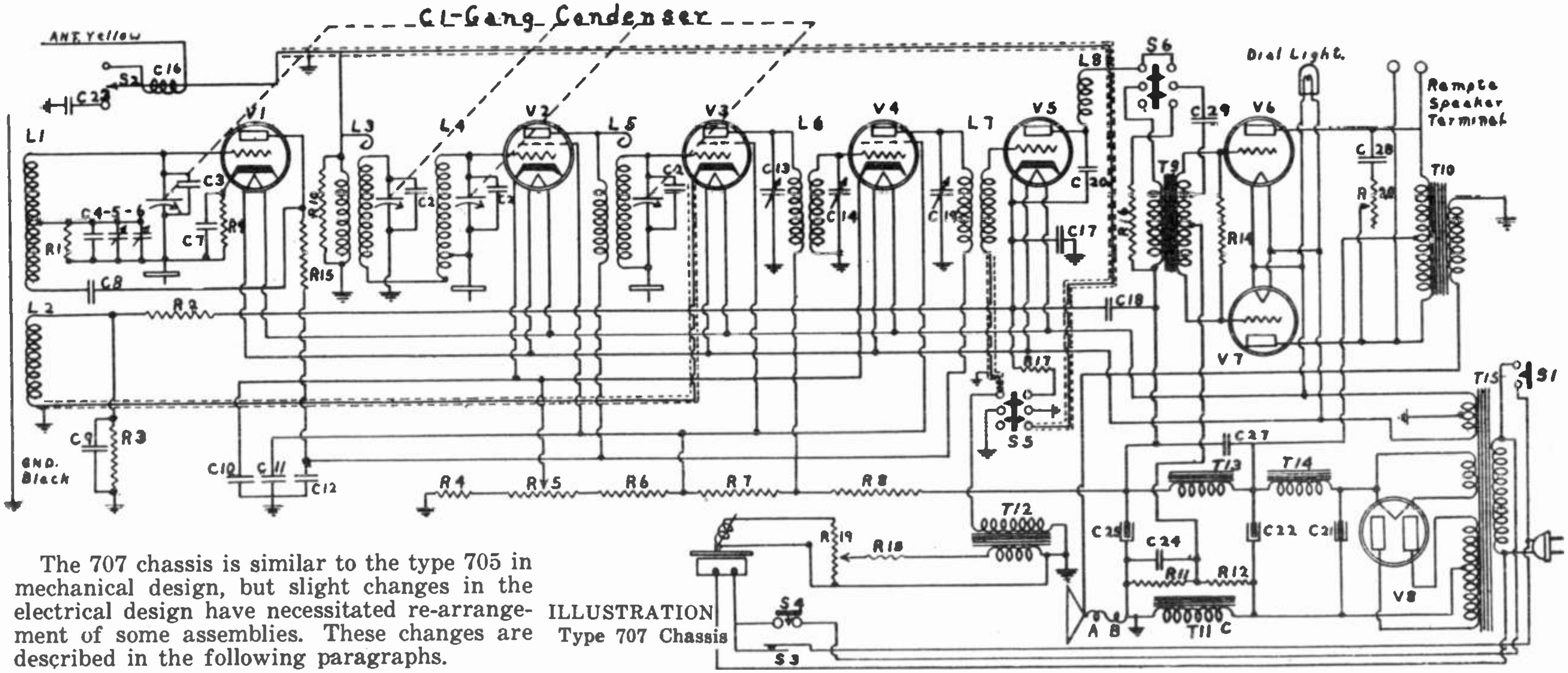


ILLUSTRATION Type 707 Chassis

The 707 chassis is similar to the type 705 in mechanical design, but slight changes in the electrical design have necessitated re-arrangement of some assemblies. These changes are described in the following paragraphs.

AUDIO SYSTEM Ganged switches S4, S5, and S6 serve to adapt the audio system for record reproduction. Due to the use of a grid resistance between the two 245 grids, it was found advisable to place the tone control in the plate circuit of these tubes instead of in the grid circuit as in the 705 chassis.

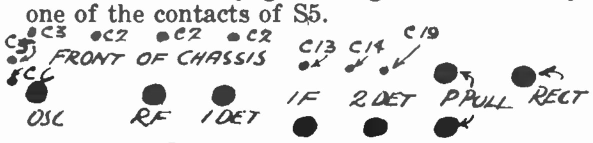
On phonograph operation, the pickup is connected into the grid circuit of the second detector tube V5 while the normal plate circuit of this tube through the primary of the audio transformer is opened. The secondary of this transformer now functions as an auto transformer.

Elimination of any amplification of R.F. signal is obtained by grounding the antenna by one of the contacts of S5.

On a few receivers of the first release the oscillator plate circuit is opened instead. A different type of gang switch is used in these receivers.

Additional filtering has also been provided by twin filter chokes T13 and T14 in addition to an added eight mfd. Mershon condenser C25.

The additional mershon condenser will be readily seen to be mounted between the oscillator and first R.F. tube sockets, while the additional filter choke is enclosed in the same assembly replacing the single choke on the 705 chassis.



POSITION	PLATE V	GRID V	SCREEN V	PLATE MA
OSC	105	7.5		2.2
RF	180	2.8	85	3.
1 DET	"	7	"	.9
IF	"	2.8	"	2.75
2 DET	200	21		1.25
PWR	250	20*		30

* ACTUALLY 50.

C4	.0005	R1	25000 Ω
C5-C6	.00038	R2	30000 "
C7, C9	.05	R3	6600 "
C8	.0001	R4	140 "
C10	.25	R5	725 "
C11, C12	.3	R6	6225 "
C15	.00025	R7	6500 "
C16	.00003	R8	2200 "
C17	1.	R9	5000 "
C18	.12	R10	7000 "
C20	.002	R11	1 MEG
C21, C22	8. ELECT.	R12	400,000 "
C23	.001	R13	6 MEG
C24	.5	R14	3.5 "
TYPE 707 ONLY		R15	30000
C25	8.	TYPE 707 ONLY	
C27	.5	R16	26000 Ω
C28	.12	R17	2000 "
C29	.1	R18	31 "
R19	80 Ω	R20	45000 "

1931-32

I.F. 175 Kc.

Alignment inst same as Mod. 905. Data Sheet. 16.

Courtesy De Forest Crosley Limited.

DE FOREST CROSLEY-15

World Radio History

"Prelude" Model - - Type 905 Chassis
"Belcanto" Model - - - Type 907 Chassis

1931-32

Warning: Do not install type 224 tubes in either 905 or 907 chassis.

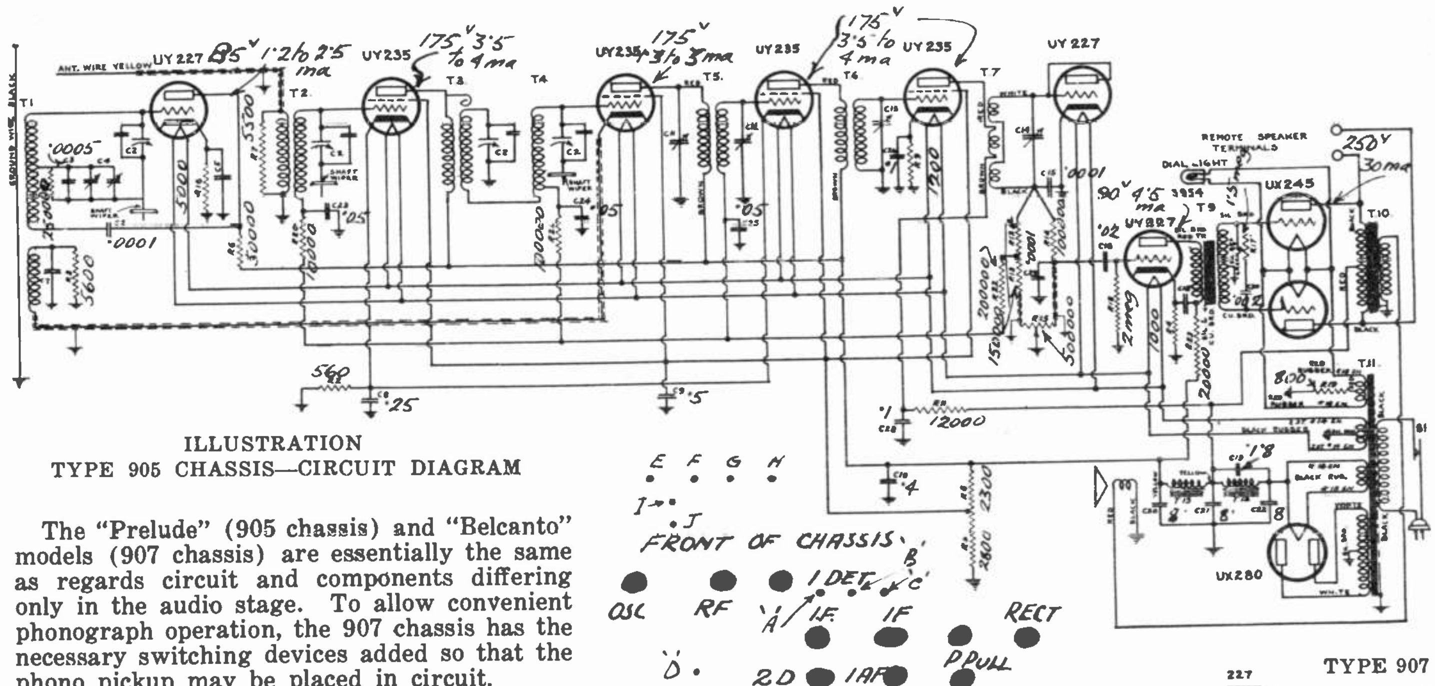


ILLUSTRATION
TYPE 905 CHASSIS—CIRCUIT DIAGRAM

The "Prelude" (905 chassis) and "Belcanto" models (907 chassis) are essentially the same as regards circuit and components differing only in the audio stage. To allow convenient phonograph operation, the 907 chassis has the necessary switching devices added so that the phono pickup may be placed in circuit.

Place chassis in operation with level control "full on." Turn on oscillator and adjust tuning accurately to *175 kilocycles.*

Adjust aligning screws "D", "C", "B" and "A", in that order, for maximum deflection on output indicator, reducing output of service oscillator as necessary to prevent output indicator from reaching full scale reading.

Keeping the oscillator output at a low level is necessary to prevent false aligning peaks that might occur should overload of any of the stages develop.

The aligning screws "A", "B" and "C" resonate the first and second I. F. transformers.

Aligning screw "D" (accessible from underside of chassis) resonates the third I. F. transformer secondary.

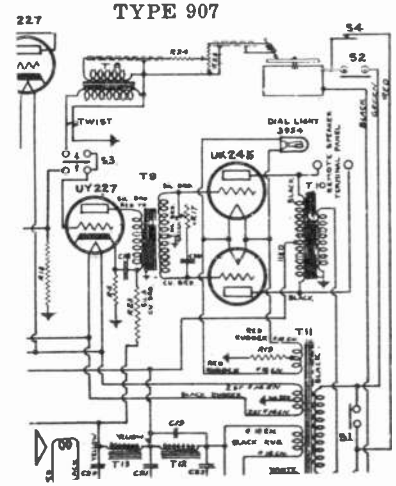
Disconnect service oscillator from control grid cap of mixer stage and replace grid clip.

Adjust service oscillator and receiver "in tune" at *1460 kilocycles.* Adjust screw "E" for maximum value on the output meter. Two resonance peaks will be noted in aligning this condenser. It should be aligned on the outside peak. (See Note 2). If the inside peak is used, the receiver will be found to be dead around the center of the dial and possibly weak at *600 kilocycles.*

Align "H", "G" and "F" respectively for maximum reading on the output meter. (See Note 1).

With service oscillator lead still connected to the receiver antenna adjust the oscillator to *600 kilocycles,* the receiver also tuned to this frequency. Adjust the padding condensers "I" and "J" by varying. The condenser gang should be moved while peaking the padding condensers. If the gang is left stationary a false peak will be obtained and the receiver will be weak at *600 kilocycles.* The padding condensers also have a double peak; always align on the outside one.

TYPE 907



Following alignment of "I" and "J" at *600 kilocycles* readjust service oscillator and receiver to tune at *1400 kilocycles* and again check condensers "E", "F", "G" and "H", compensating for any difference brought about in adjusting padding condensers "I" and "J".

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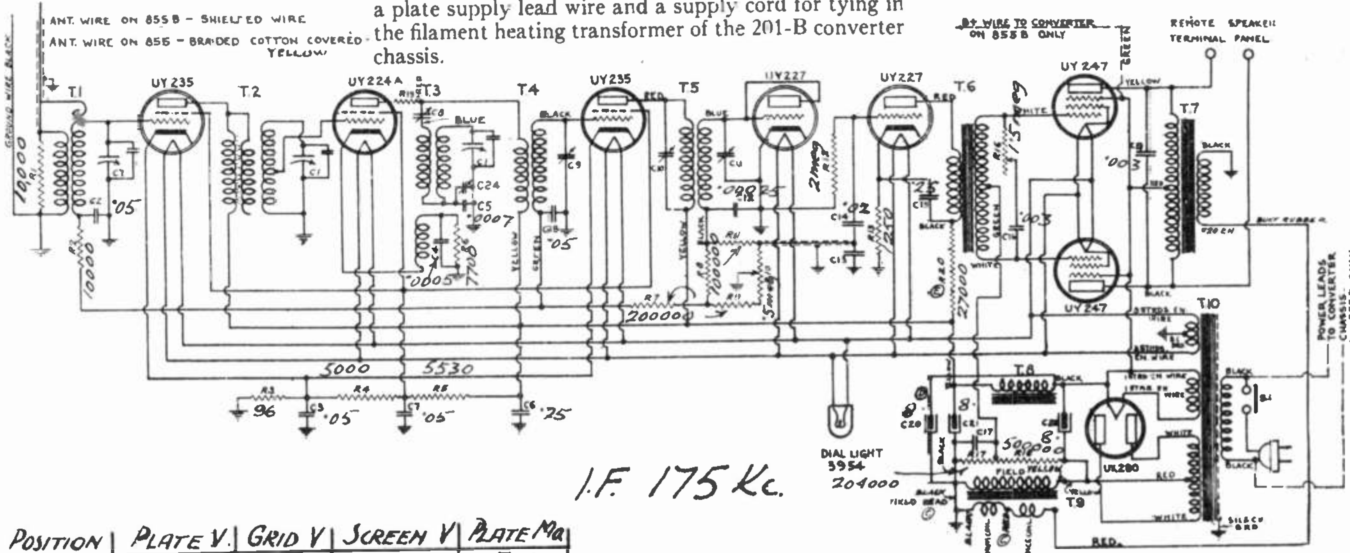
Very slight differences only are present in the 855-B chassis, consisting of a shielded antenna lead, terminating at a small panel on the bottom shield of the chassis, a plate supply lead wire and a supply cord for tying in the filament heating transformer of the 201-B converter chassis.

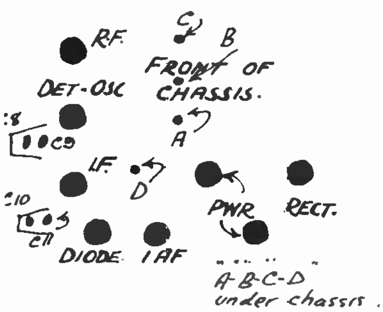


I.F. 175 Kc.

Position	Plate V.	Grid V	Screen V	Plate Ma
RF	190	3-4	83	5-6
Det-Osc	"	5-6	"	.5-.75
I.F.	"	3-4	"	3-5
2 Det	Not measureable			
1 AF	95	Ind		3-5
Pwr	215	"	237.	25-40

"HERALD" Model » » Type 855 Chassis
"DX-PLUS" Model » » Type 855-B Chassis

1932



Set receiver tuning at point near 550 kilocycles which is entirely free from interference or incoming signals.

Adjust service oscillator to 175 kilocycles (exactly) and place in operation.

Align adjusting screws C10, C11, C9 and C8 in that order for maximum reading on output meter.*

Transfer oscillator output lead to antenna wire of chassis.

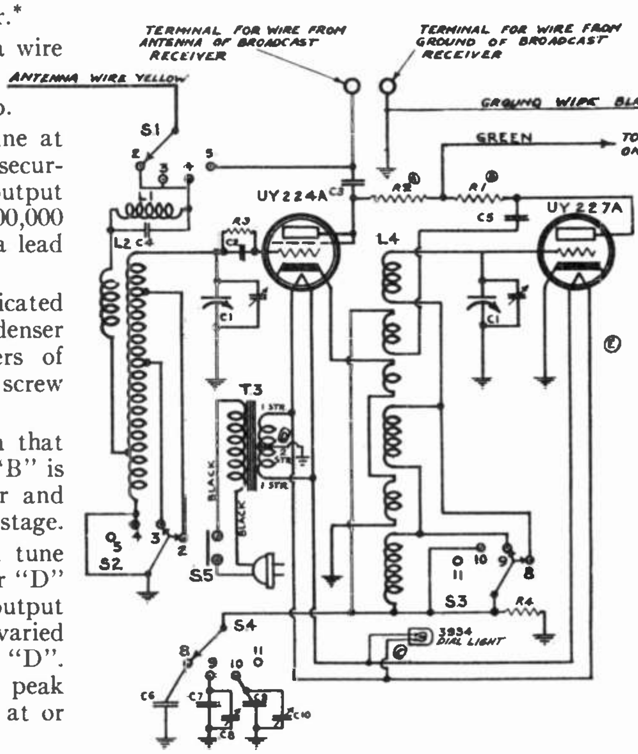
Reconnect grid clip to autodyne tube cap.

Adjust both receiver and oscillator in tune at 1,400 kilocycles. If difficulty is encountered in securing sufficient attenuation with service oscillator output control directly connected to antenna lead, a 100,000 ohm resistance connected in series with antenna lead will reduce the signal sufficiently.

Adjust autodyne trimming condenser indicated by symbol "A" in illustration 2. This condenser peaks at a point approximately three-quarters of minimum capacity setting (i.e., the adjusting screw turned almost "full out").

Align adjusting screws "B" and "C" in that order for maximum reading on output meter. "B" is the R.F. stage trimming or aligning condenser and "C" is a similiar unit for adjusting the antenna stage.

Adjust service oscillator and receiver in tune at 600 kilocycles. Adjust the padding condenser "D" for maximum indication on output meter.* The tuning condenser should be varied slightly while peaking this padding condenser "D". If the gang condenser is left stationary a false peak will be obtained and the receiver will be weak at or near 550 kilocycles.



C2 .0001 mfd.,
C3 .0001 mfd.,
C4 .0005 mfd.,
C5 .000125 mfd
C6 .0015 mfd.,
C7 .0006 mfd
C8 Variable,
C9 .0002 mfd
C10 Variable,
L1 1,000 kcs
L2 Antenna
L4 Oscillator
R1 20,000 ohm
R2 400,000 ohm
R3 2,000,000 ohm
R4 500,000 ohm

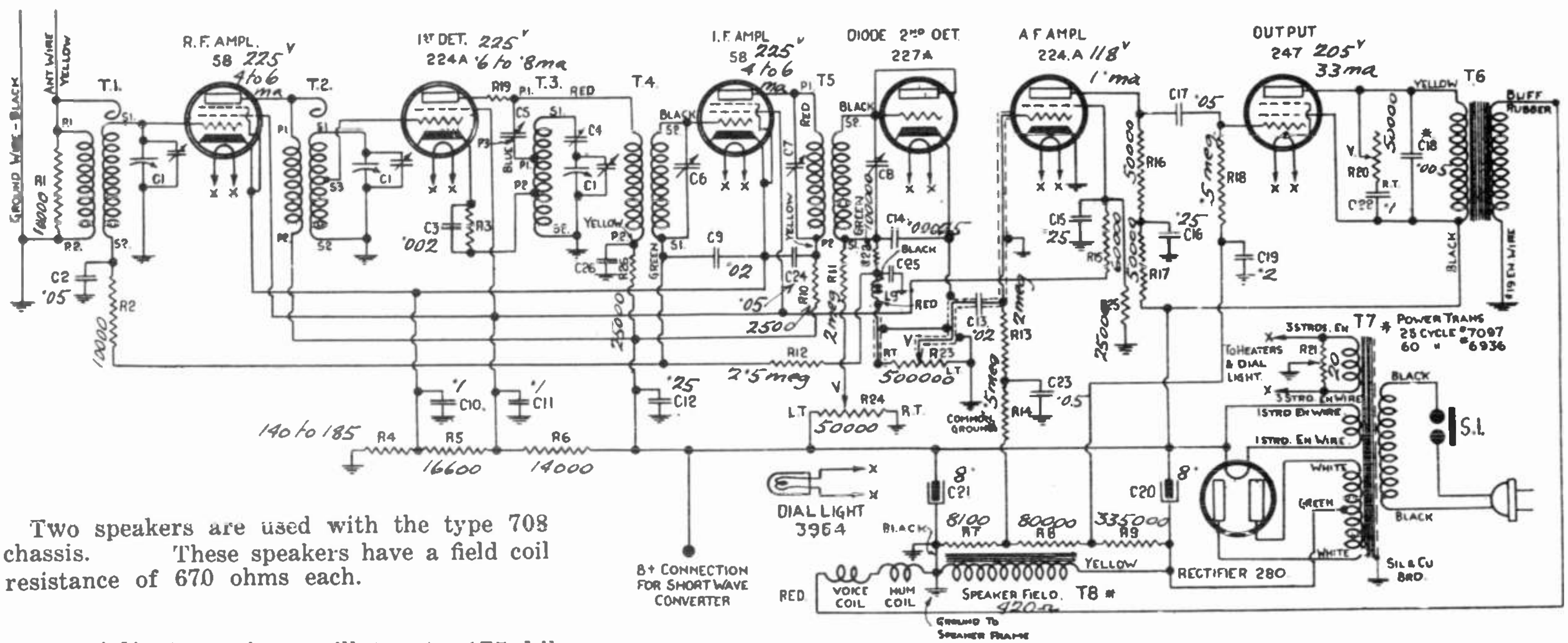
Model "201" Converter 1932

Printed in Canada.

DATA SHEET.

Courtesy De Forest Crosley Limited.

World Radio History



Two speakers are used with the type 708 chassis. These speakers have a field coil resistance of 670 ohms each.

Adjust service oscillator to 175 kilocycles (exactly) and place in operation.

Align adjusting screws C8, C7, C6 and C5 in that order for maximum reading on output meter.*

Transfer oscillator output lead to antenna wire of chassis.

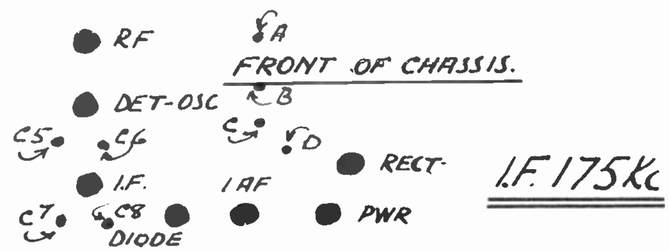
Reconnect grid clip to autodyne tube cap.

Adjust both receiver and oscillator in tune at 1400 kilocycles. If difficulty is encountered in securing sufficient attenuation with service oscillator output control directly connected to antenna lead, a 100,000 ohm resistance connected in series with antenna lead will reduce the signal sufficiently.

Adjust autodyne trimming condenser indicated by symbol "C"
This condenser peaks at a point approximately three-quarters of minimum capacity setting, (i.e., the adjusting screw turned almost "full out").

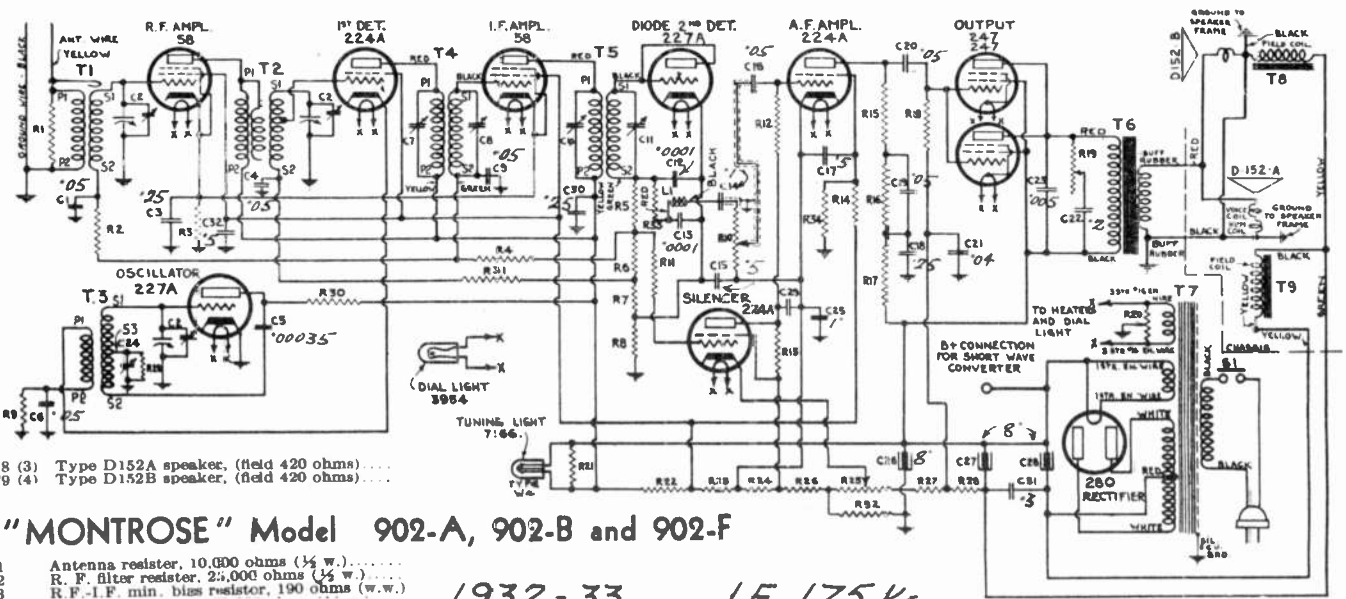
Align adjusting screws "B" and "A" in that order for maximum reading on output meter. "B" is the R.F. stage trimming or aligning condenser and "A" is a similar unit for adjusting the antenna stage.

"WINDSOR" Model » » Types 608A and 608B
"BERWICK" Model » » Types 608C-608D-608G
"CAVENDISH" Model » » Types 708A-708B-708F



(12) Adjust service oscillator and receiver in tune at 600 kilocycles. Adjust the padding condenser "D" for maximum indication on output meter.* The tuning condenser should be varied slightly while peaking this padding condenser "D". If the gang condenser is left stationary a false peak will be obtained and the receiver will be weak at or near 550 kilocycles.

Courtesy De Forest Crosley Limited.
World Radio History



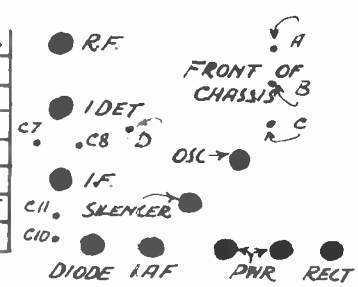
T8 (3) Type D152A speaker, (field 420 ohms)....
T9 (4) Type D152B speaker, (field 420 ohms)....

"MONTROSE" Model 902-A, 902-B and 902-F

R1 Antenna resister, 10,000 ohms (½ w.).......
R2 R. F. filter resister, 25,000 ohms (½ w.).....
R3 R.F.-I.F. min. bias resistor, 190 ohms (w.w.)
R4 I. F. filter resistor, 500,000 ohms (½ w.)....
R5 A. V. C. resistor, 100,000 ohms (½ w).......
R6 A. V. C. resistor, 300,000 ohms (½ w.)......
R7 A. V. C. resistor, 50,000 ohms (½ w.).......
R8 A. V. C. resistor, 100,000 ohms (½ w.)......
R9 Det. (first) bias resistor, 10,000 ohms (½ w.)
R10 Level control (potentio) resistor, 500,000 ohms (var. c.)..................
R11 Silencer filter resistor, 900,000 ohms (½ w.)..
R12 A. F. grid leak resistor, 1,000,000 ohms (½ w.)
R13 Silencer plate resistor, 1,000,000 ohms (½ w.)
R14 A. F. screen resistor, 50,000 ohms (½ w.)....
R15 A. F. plate resistor, 40,000 ohms (½ w.).....
R16 A. F. plate resistor, 35,000 ohms (½ w.).....
R17 A. F. filter resistor, 25,000 ohms (½ w.).....
R18 Output grid leak resistor, 250,000 ohms (½ w.)
R19 A. F. tone control (rheo.) resistor, 50,000 ohms (var. c.)...................
R20 Hum adjusting (potentio.) resistor, 20 ohms (var. w.)...................
R21 Voltage divider resistor, 3,440 ohms (1 w.)....
R22 Voltage divider resistor, 13,000 ohms (2 w.)...
R23 Voltage divider resistor, 11,000 ohms (1 w.)...
R24 (x) Voltage divider resistor, 340 ohms (w.w.).....
R25 Silencer control (potentio.) resistor, 35,000 ohms (var. c.)..................
R26 (x) Voltage divider resistor, 300 ohms (w.w.).....
R27 Output bias divider resistor, 83,000 ohms
R28 Output bias divider resistor, 180,000 ohm (½ w.)...................
R29 Osc. grid leak resistor, 100,000 ohms (½ w
R30 Osc. plate resistor, 60,000 ohms (1 w.)...
R31 Det. (first) filter resistor, 200,000 ohms (½
R32 (x) Voltage divider resistor, 340 ohms (w.w.).
R33 Det. (Diode) resistor, 100,000 ohms (½ w
R34 A. F. bleeder (screen) resistor, 100,000 ohms (1 w.)..................

1932-33   I.F. 175 Kc.

POSITION	PLATE V	GRID VOLTS	SCREEN V	PLATE MA.
RF.	222	2·5-3	95	4-6
I F	"	" "	"	"
I DET	"	4-6	"	·6-·8
2 ·	NOT MEASUREABLE.			
SIL.		·4-·5	5·5-7·5	
I AF	145	IND.	40-50	·75-·85
PWR.	220	"	245	22-30



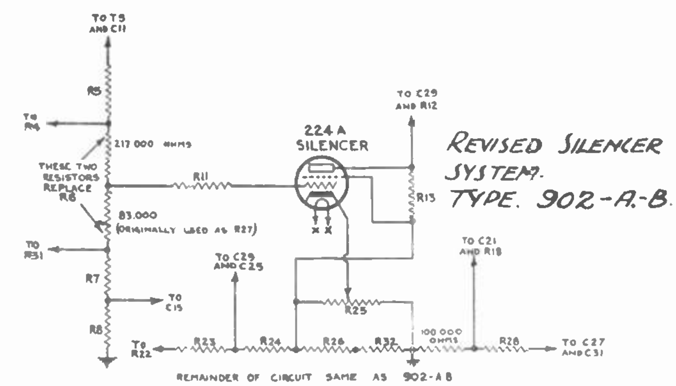
Align adjusting screws C11, C10, C8 and C7 in that order for maximum reading on output meter.*

Adjust both receiver and oscillator in tune at 1400 kilocycles. If difficulty is encountered in securing sufficient attenuation with service oscillator output control directly connected to antenna lead, a 100,000 ohm resistance connected in series with antenna lead will reduce the signal sufficiently.

Adjust oscillator trimming condenser indicated by symbol "C" . This condenser peaks at a point approximately three-quarters of minimum capacity setting, (i.e., the adjusting screw turned almost "full out").

Align adjusting screws "B" and "A" in that order for maximum increase on output meter. "B" is the R.F. stage trimming or aligning condenser and "A" is a similar unit for adjusting the antenna stage.

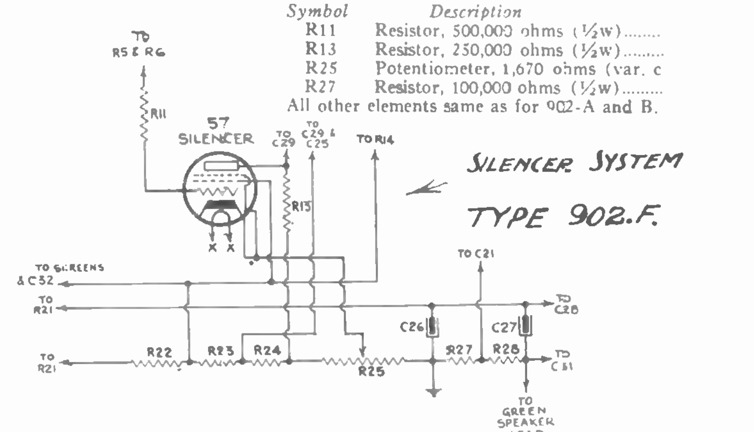
Adjust service oscillator and receiver in tune at 600 kilocycles. Adjust the padding condenser "D" for maximum indication on output



REVISED SILENCER SYSTEM. TYPE. 902-A.-B.

Symbol	Description
R11	Resistor, 500,000 ohms (½w)........
R13	Resistor, 250,000 ohms (½w).........
R25	Potentiometer, 1,670 ohms (var. c
R27	Resistor, 100,000 ohms (½w).........

All other elements same as for 902-A and B.

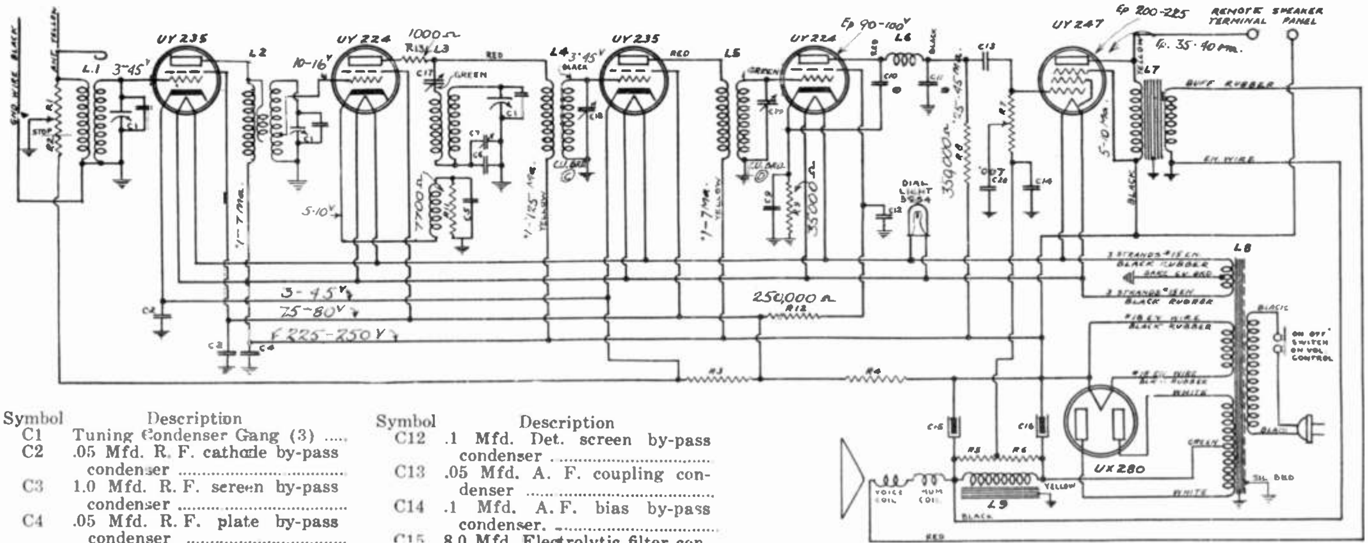


SILENCER SYSTEM TYPE 902.F.

Printed in Canada.

Courtesy De Forest Crosley Limited.

World Radio History



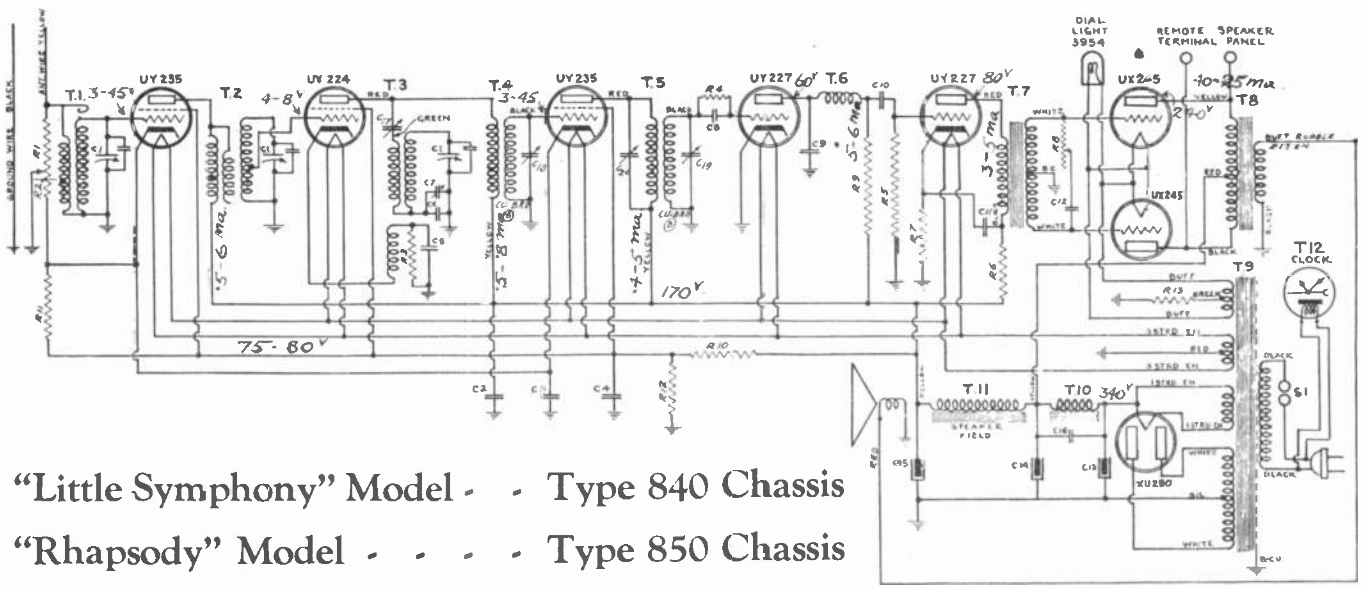
Symbol	Description
C1	Tuning Condenser Gang (3)
C2	.05 Mfd. R. F. cathode by-pass condenser
C3	1.0 Mfd. R. F. screen by-pass condenser
C4	.05 Mfd. R. F. plate by-pass condenser
C5	.0005 Mfd. Osc. cathode by-pass condenser
C6	.00065 Mfd. Osc. padding condenser
C7	Osc. var. padding condenser
C9	.75 Mfd. Det. cathode by-pass condenser
C10	.0005 Mfd. Det. plate by-pass condenser
C11	.0005 Mfd. Det. plate by-pass condenser
*C11	.00025 Mfd. Det. plate by-pass condenser

Symbol	Description
C12	.1 Mfd. Det. screen by-pass condenser
C13	.05 Mfd. A. F. coupling condenser
C14	.1 Mfd. A. F. bias by-pass condenser.
C15	8.0 Mfd. Electrolytic filter condenser
C16	8.0 Mfd. Electrolytic filter condenser
**R1	10,000 ohm Vol. cont. resistor
**R2	157 ohm Min. bias resistor
R3	21,600 ohm Voltage dividing resistor
R4	21,000 ohm Voltage dividing resistor
R5	158,000 ohm Voltage dividing resistor (bias)
R6	1,000,000 ohm Voltage dividing resistor (bias)
R7	400,000 ohm Tone cont. resistor

"Encore" Model - Type 500 Chassis

"Ballad" Model - Type 501 Chassis

I.F. 175 K.C. 1931-32



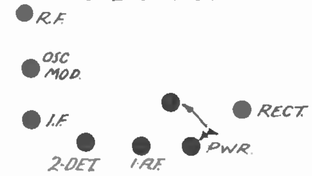
"Little Symphony" Model - - Type 840 Chassis

"Rhapsody" Model - - - - Type 850 Chassis

"Carillon" Model - - - - Type 853 Chassis

I.F. 175 K.C. 1931-32

FRONT OF CHASSIS TUBE LAYOUT



SYMBOL	DESCRIPTION	PART NO.
C1	Tuning Condenser Gang (3)	5410
C2	.25 Mfd. R.F. plate by-pass condenser	5919
C3	.05 Mfd. R.F. cathode by-pass condenser	5865
C4	.05 Mfd. R.F. screen by-pass condenser	5865
C5	.0005 Mfd. Osc. cathode by-pass condenser	5321
C6	.00065 Mfd. Osc. padding condenser	5368
C7	.0001 Mfd. Osc. var. padding condenser	5845
C8	.0001 Mfd. Det. grid condenser	5866
*C9	.0015 Mfd. Det. plate by-pass condenser	5835
C9	.01 Mfd. Det. plate by-pass condenser	5837
C10	.05 Mfd. A. F. coupling condenser	5836
C11	.25 Mfd. A. F. filter condenser	5868
C12	.002 Mfd. Tone control condenser	3992
C13	8.0 Mfd. Electrolytic filter condenser	4560
C14	8.0 Mfd. Electrolytic filter condenser	4560
C15	8.0 Mfd. Electrolytic filter condenser	5878
C16	.5 Mfd. filter condenser	5884
**R1	10,000 ohm Vol. Cont. resistor	6004
**R2	157 ohm. Min. bias resistor	6004
R3	7,700 ohm Osc. bias resistor	5854
R4	1,250,000 ohm Det. grid leak resistor	5840
R5	500,000 ohm A. F. grid leak resistor	5841
R6	18,000 ohm A. F. filter resistor	5861
R7	1,250 ohm A. F. bias resistor	5862
R8	1,500,000 ohm Tone Cont. resistor	5863
R9	20,000 ohm Det. plate resistor	5860
R10	4,700 ohm Voltage dividing resistor	5867
R11	15,500 ohm Voltage dividing resistor	5857
R12	8,100 ohm Bleeder resistor	5870
R13	800 ohm Output bias resistor	3572

COURTESY

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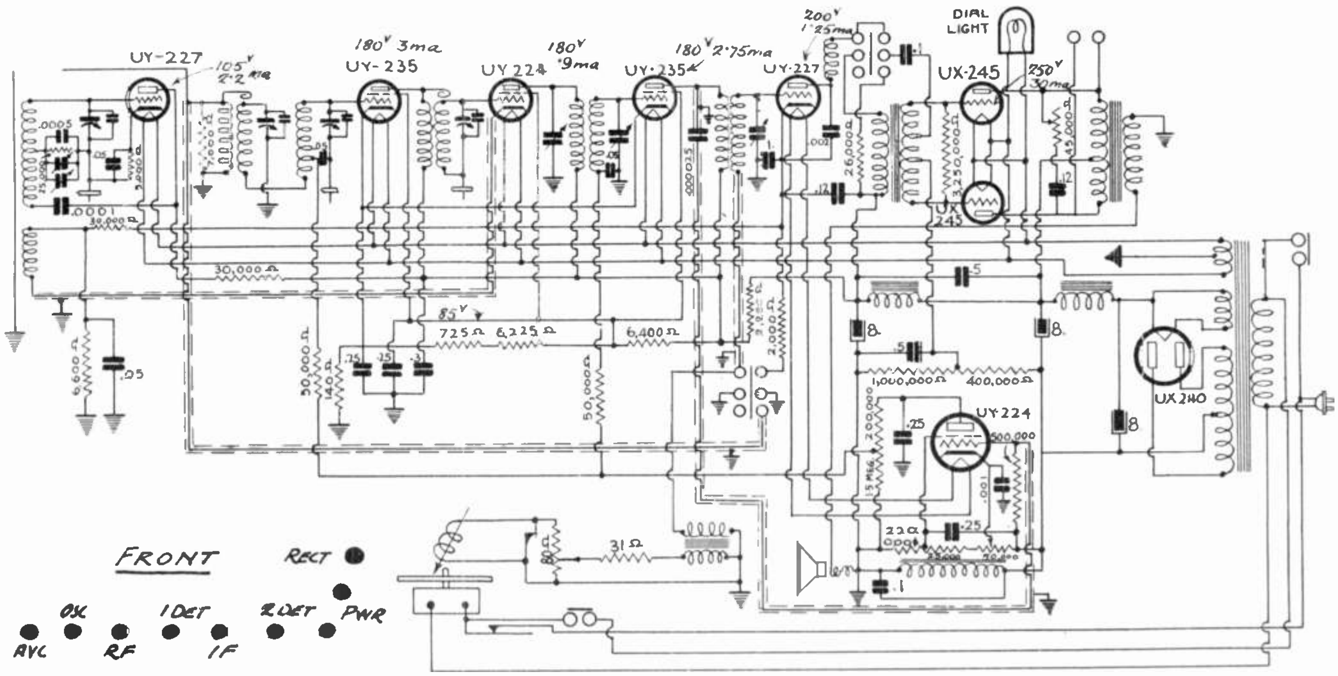
DE FOREST CROSLEY LTD.

World Radio History

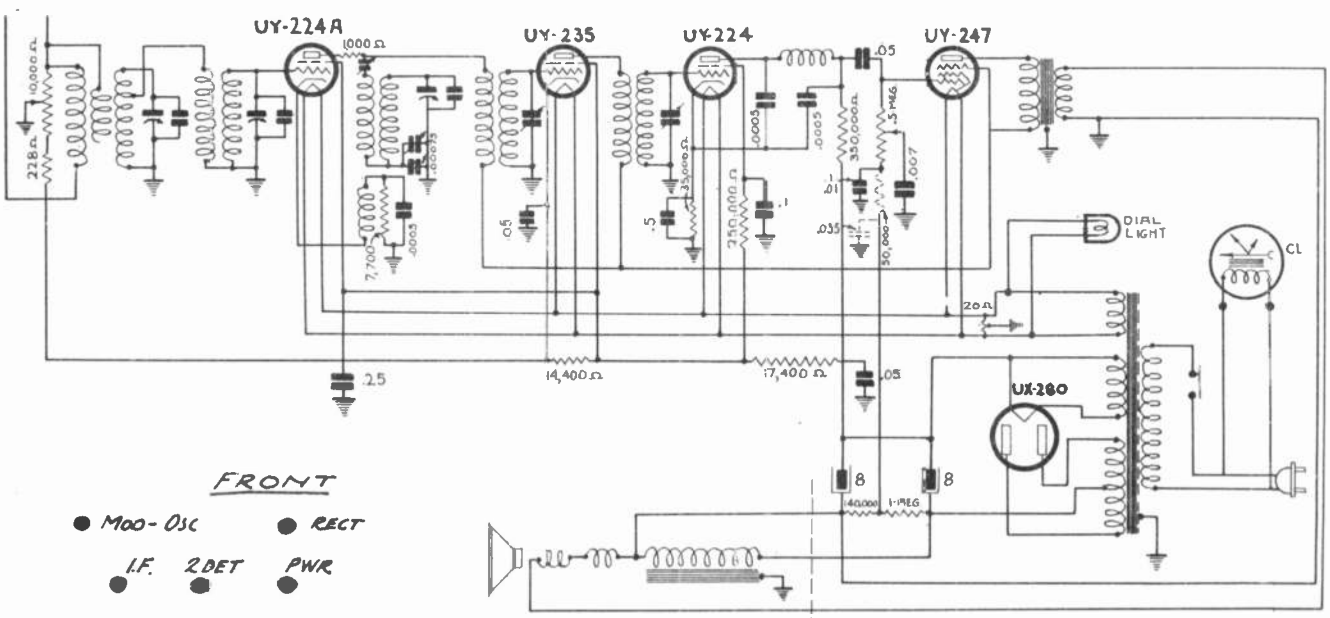
CAROLa. – MUSICALEa.

Models 705a - 707a 1931-32 I.F. 175. Kc.



CLIFTON - CANTERBURY - CHESTERFIELD WESTMINSTER - WESTMINSTER UNIVERSAL

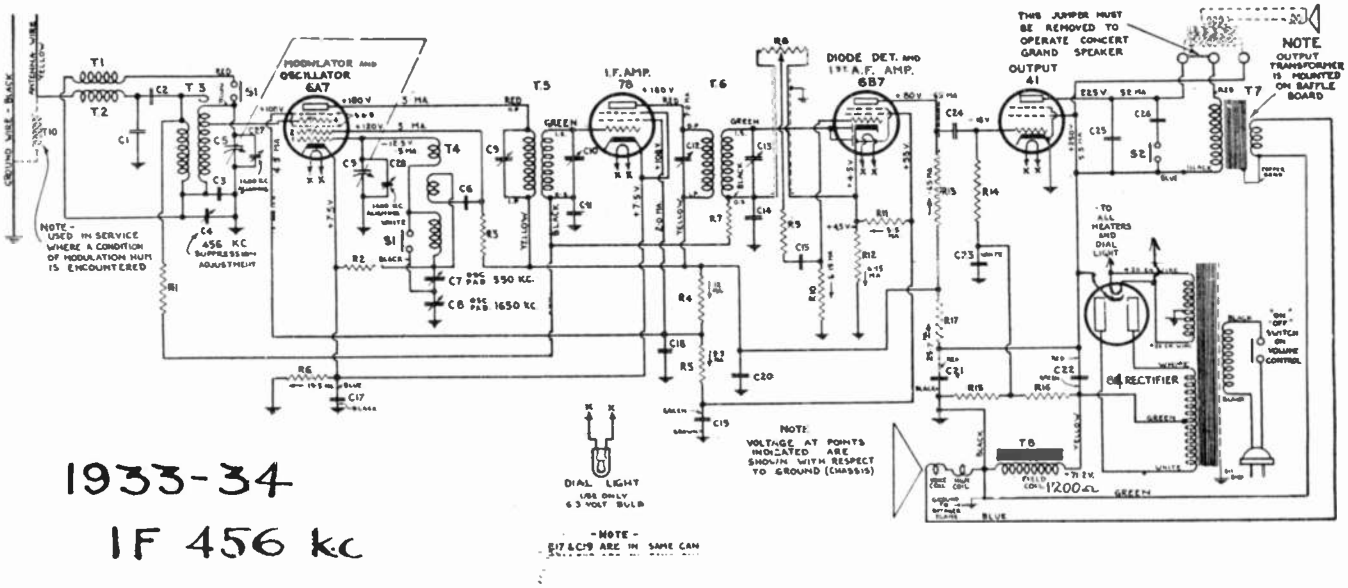
Models 405 a, b, c, d, e 1932 I F. 175. Kc.



World Radio History

Models 504 a.b.c. 504 f *similar but T1, T4, S1, S2, C26 omitted*

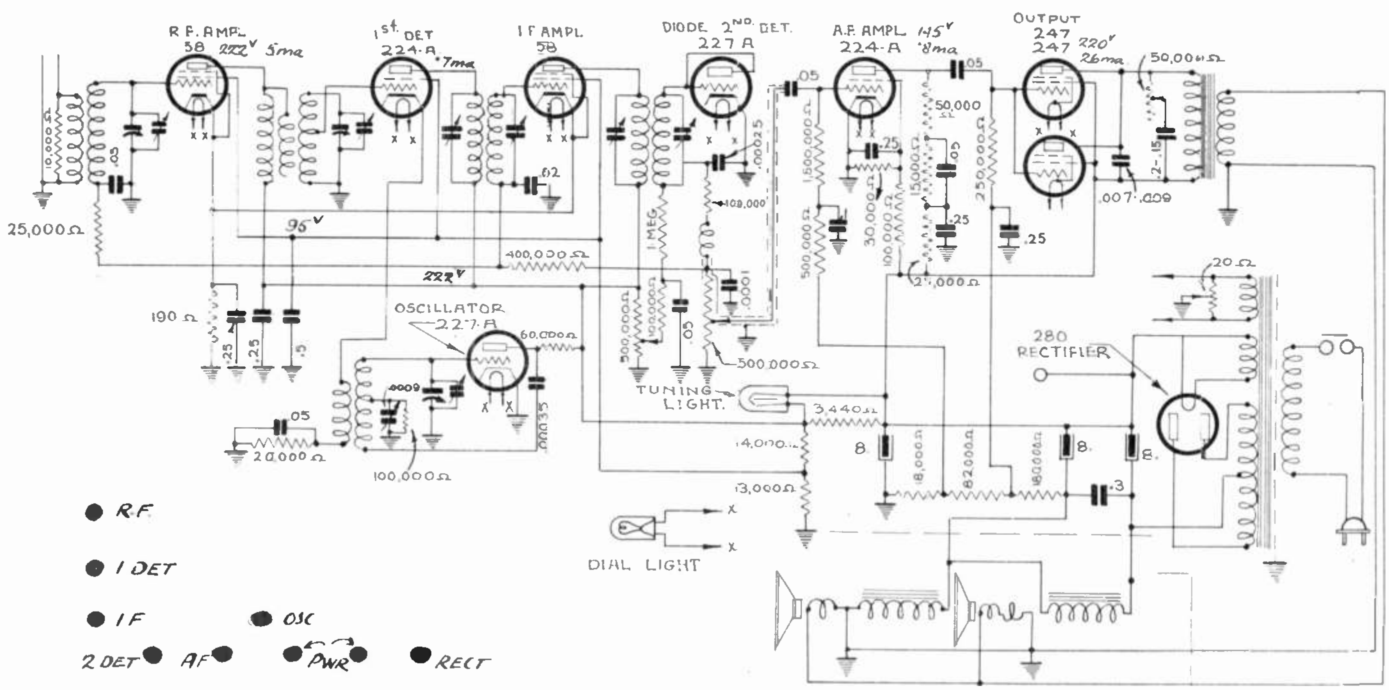
also see model 508



1933-34

IF 456 kc

Models 851 a.b - York - Mayfair - 1933



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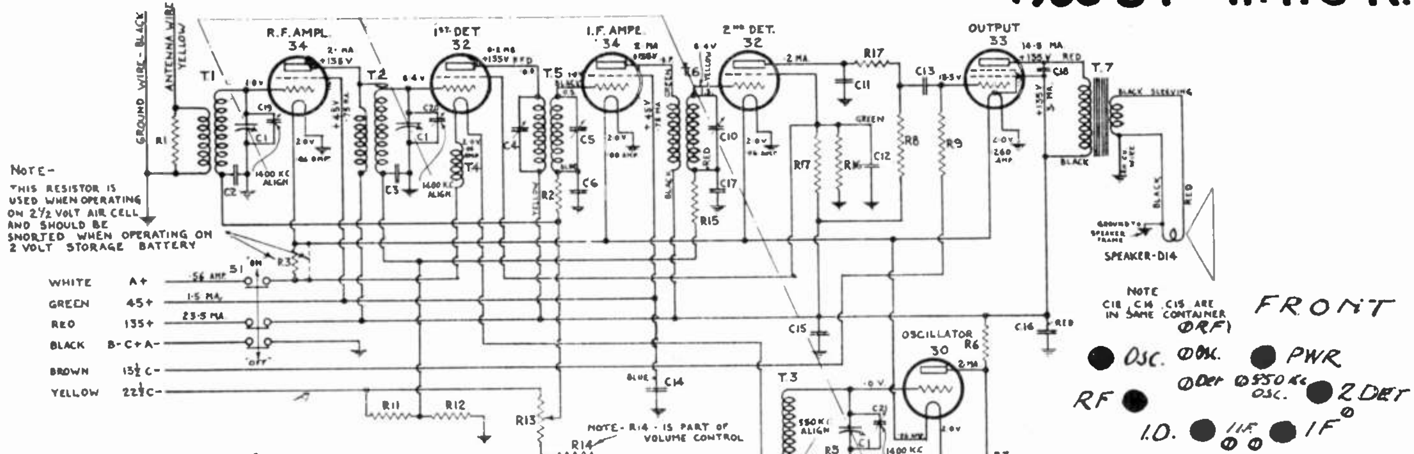
COURTESY DE FOREST CROSLEY LTD. 22

THE "NEW OVERTURE" AND "NEW HARMONY" MODELS — TYPE 503 CHASSIS

1933-34 IF. 175 K.C.



C^2 — .05 mfd.
C^3 — .05
C^6 — .05
C^7 — .01
C^{11} — .0005
C^{12} — .1
C^{14} — .1

C^{15} — .05
C^{13} — .05 mfd
C^{16} — 16
C^{17} — .05
C^{18} — .004

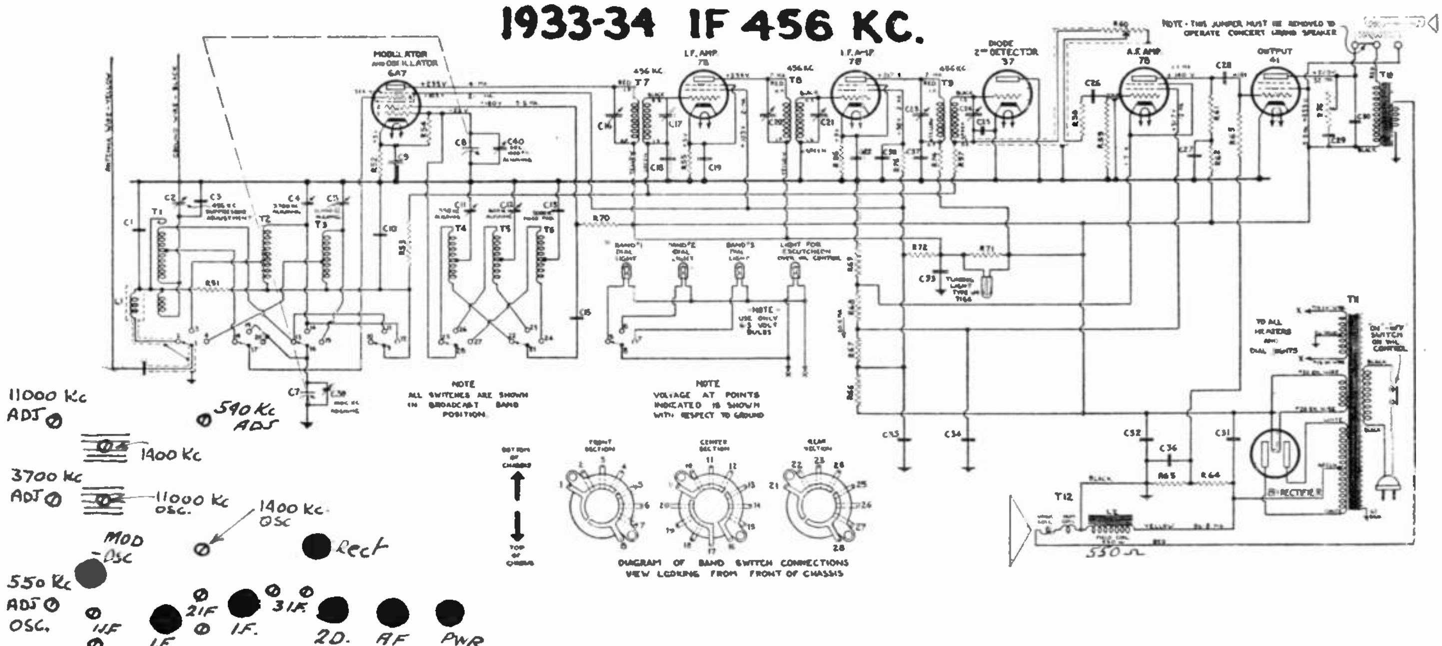
R^1 — 10,000
R^2 — 50,000
R^3 — .546

R^5 — 200,000
R^6 — 20,000
R^7 — 360,000
R^8 — 220,000
R^9 — 500,000

R^{11} — 26,650
R^{12} — 10,550
R^{13} — 21,500
R^{14} — 1,000 ohms
R^{15} — 5,000
R^{16} — 500,000
R^{17} — 10,000

THE "NEW SYMPHONY" MODEL — TYPE 505 CHASSIS

1933-34 IF 456 KC.



C^1 — .00025 mfd.
C^3 — .003
C^6 — .02
C^9 — .1
C^{10} — .02
C^{13} — .0[illegible]22
C^{15} — .00[illegible]4
C^{18} — .02
C^{19} — .1

C^{22} — .1
C^{25} — .0005
C^{26} — .02
*C^{27} — .5
*C^{27} — .25
C^{28} — .02
C^{29} — .1
C^{30} — .006
C^{31} — 8

C^{32} — 12 mfd.
C^{33} — .1
*C^{34} — 3
*C^{34} — .5
*C^{35} — .1
*C^{35} — .25
*C^{36} — .5
*C^{36} — .75
C^{37} — .05

C^{38} — .05
R^{51} — 5,000 ohms
R^{52} — 300
R^{53} — 50,000
R^{54} — 50,000
R^{55} — 300
R^{56} — 300
R^{57} — 1-meg.
R^{58} — 100,000

R^{59} — 1-meg
R^{60} — .5 meg.
R^{61} — 50,000
R^{62} — 50,000
R^{63} — 250,000
R^{64} — 190,000
R^{65} — 100,000
R^{66} — 13,000
R^{67} — 3,480

R^{68} — 1,460
R^{69} — 78
R^{70} — 20,000
R^{71} — 3,440
R^{72} — 9,000
R^{74} — 2,500
R^{75} — 2,500
R^{76} — 50,000

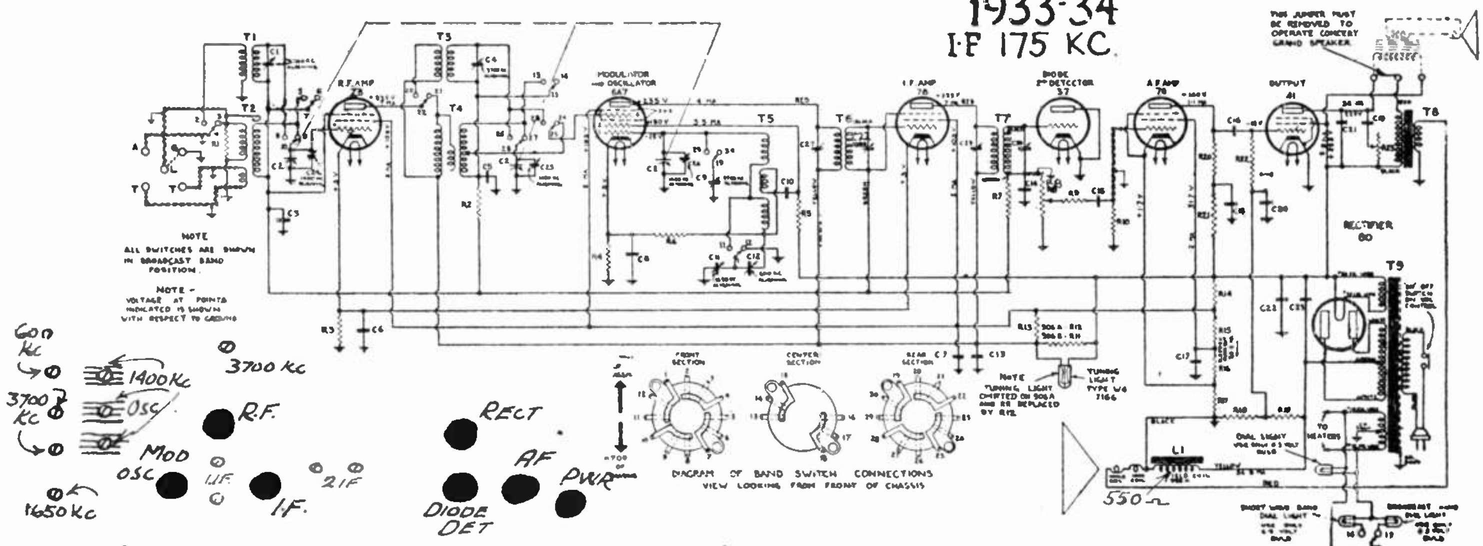
DATA SHEET

COURTESY DE FOREST CROSLEY LTD. 23

World Radio History

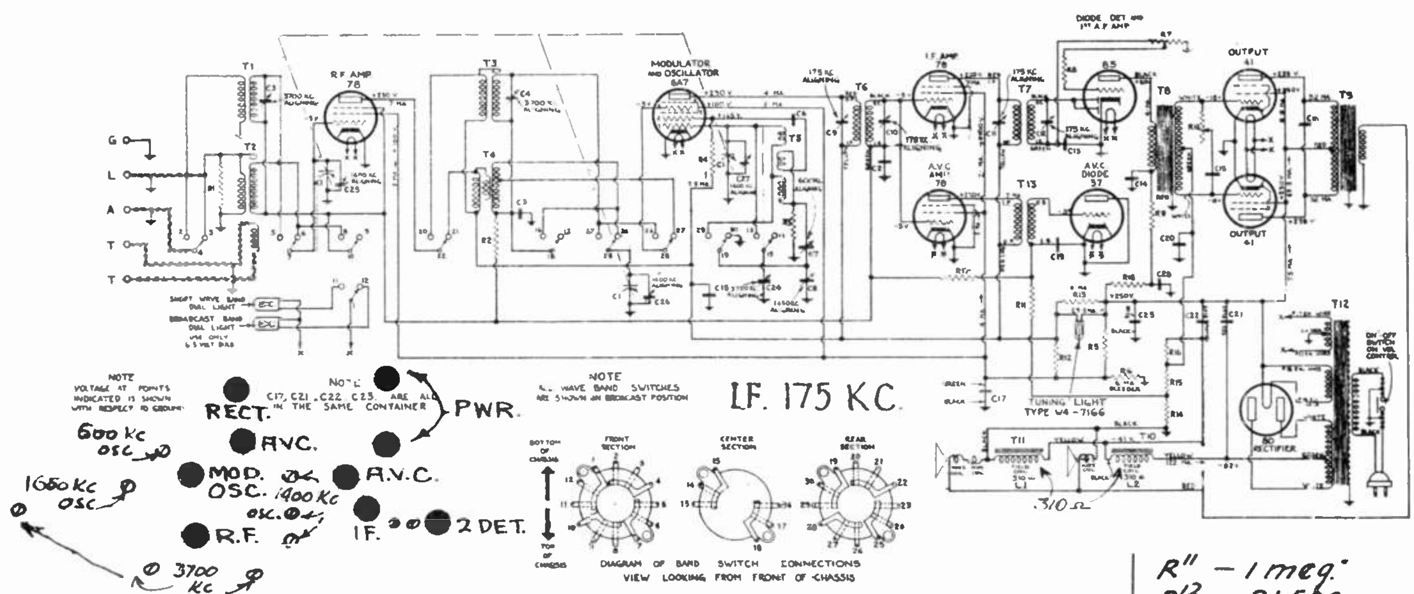
THE "NEW TUDOR" AND "NEW ARIA" MODELS — TYPE 506 CHASSIS

1933-34
I.F 175 KC.



C^3 — .05 mfd.	C^{17} — .3	R^1 — 10,000 ohms.	R^{11} — 3,440 Ω	R^{18} — 100,000 Ω
C^5 — .05	C^{18} — .5	R^2 — 25,000	R^{12} — 520 ohms	R^{19} — 190,000
C^6 — .3	C^{19} — .1	R^3 — 167	R^{13} — 9,000	R^{20} — 50,000
C^7 — .1	C^{20} — .5	R^4 — 316	R^{14} — 150,000	R^{21} — 50,000
C^8 — .05	C^{21} — .0047	R^5 — 20,000	R^{15} — 3,480	R^{22} — 250,000
C^{10} — .00075	C^{21} — .005	R^6 — 50,000	R^{16} — 1,460	R^{23} — 50,000
C^{13} — .1	C^{22} — 12	R^7 — 1 meg.	R^{17} — 78	
C^{14} — .0005	C^{23} — 8	R^8 — .5 meg.		
C^{15} — .02		R^9 — 100,000		
C^{16} — .02		R^{10} — 1 meg.		

THE "NEW MELODY" MODEL — TYPE 507 CHASSIS



1933-34

C^2 — .05 mfd.	C^{18} — .1 mfd.	R^1 — 10,000 ohms	R^4 — 20,000 Ω	R^{11} — 1 meg.
C^5 — .05	C^{19} — .02	R^2 — 50,000	R^5 — 19,000	R^{12} — 21,500 Ω
C^6 — .00075	*C^{20} — .3	R^3 — 50,000	R^6 — 16,600	R^{13} — 3,400
C^{13} — .0002	*C^{20} — .5		R^7 — 250,000	R^{14} — 15,000
C^{14} — .25	C^{21} — 8		R^8 — 100,000	R^{15} — 75,000
C^{15} — .003	C^{22} — 8		*R^9 — 50,000	R^{16} — 115,000
C^{16} — .0025	C^{23} — 8		R^{10} — 1.5 megs.	R^{17} — .5 meg.
C^{17} — 4	C^{28} — .25			R^{18} — 50,000

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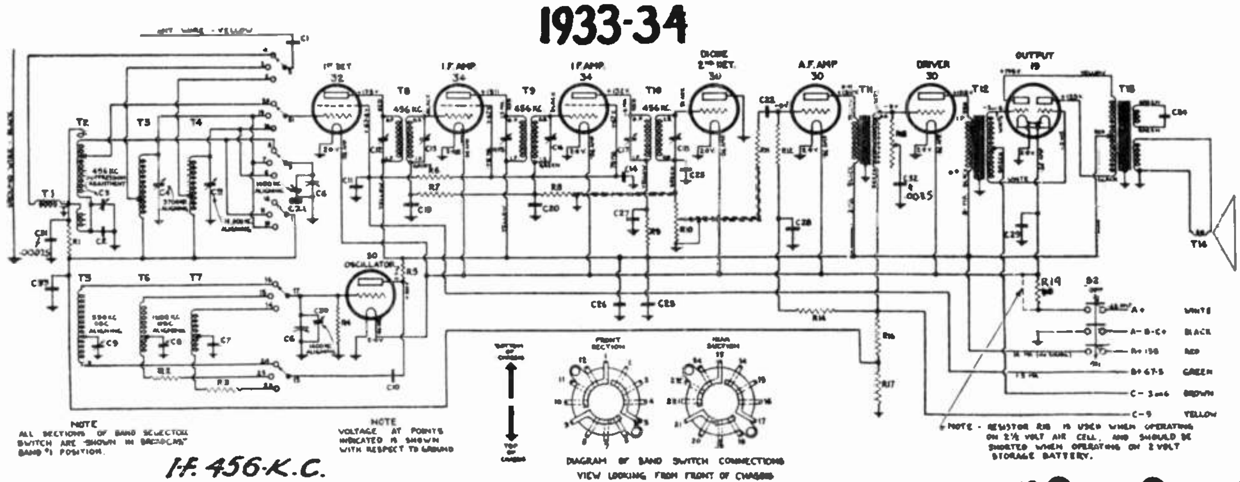
World Radio History

THE "NEW PRELUDE" MODEL — TYPE 511 CHASSIS

1933-34



I.F. 456-K.C.

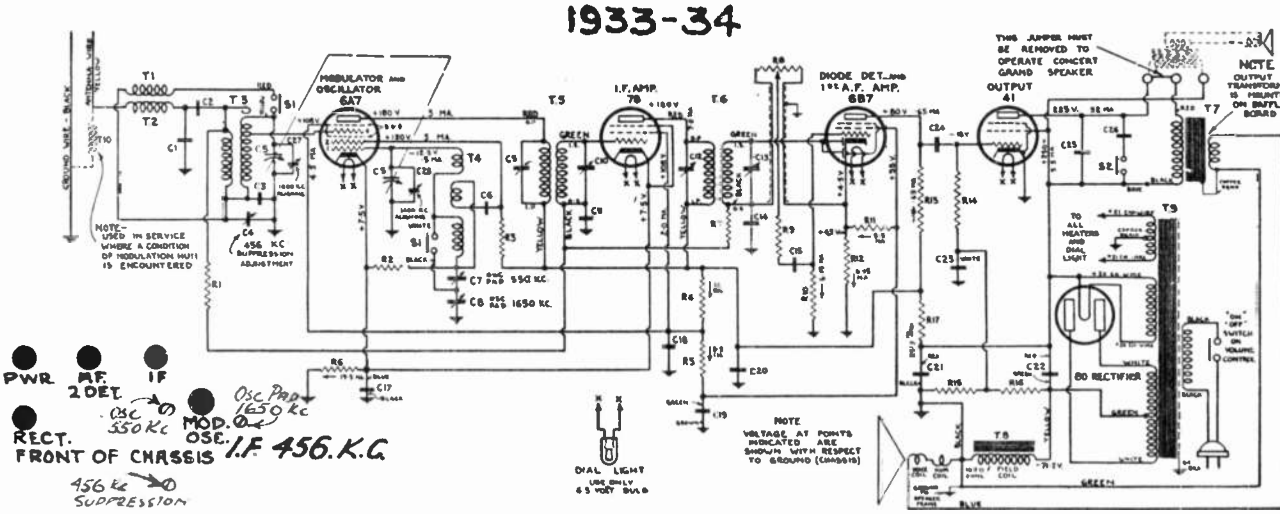
C1	.01	C26	16	R14	500,000	R15	.36 Ω
C2	.003	C24	.0015	R5	15,000	R16	1945
C7	.0052	C29	.5	R6	12,000	R17	3,055
C10	.0075	R1	4,000	R7	25,000	R18	2-10-6-megs.
C11	.2	R2	300	R8	1-meg.		
C14-22-25-27-28-33	.05	R3	60	R12	1-meg.		
C19-20	.02	R10	500,000	R9	2000		
C23	.00025	R4	500,000	R11	100,000		

IF. 2DET. IRF. IF DR. 1 DET. OSC. PWR. FRONT.

RF. 1100 Kc — OSC 1600 Kc — RF. 3700Kc — 1400Kc RF — 1400 Kc OSC — OSC 550 — 456 SUPPRESSION ADJ.

THE "NEW BROCK" MODEL — TYPE 508 CHASSIS

1933-34



PWR. RF. 2DET. IF — RECT. — OSC 550Kc — MOD. OSC. — Osc Pad 1650 kc

FRONT OF CHASSIS — I.F. 456.K.C. — 456 kc SUPPRESSION

C1	.00025 mfd.	C18	.1	R2	40,000 Ω	R11	9,100 Ω
C2	.02	C20	.1	R3	20,000	R12	730
C3	.0042	C21	12	R4	6,000	R13	150,000
C6	.0001	C22	8	R6	9,100	R14	250,000
C11	.05	C23	2	R6	385	R15	150,000
C14	.0005	C24	.05	R7	1-meg.	R16	.5-meg.
C15	.02	C25	.005	R8	.5-meg.	R17	2720
C17	.25	C26	.021	R9	100,000		
C19	.5	R1	5,000 Ω	R10	1-meg.		

1933-34

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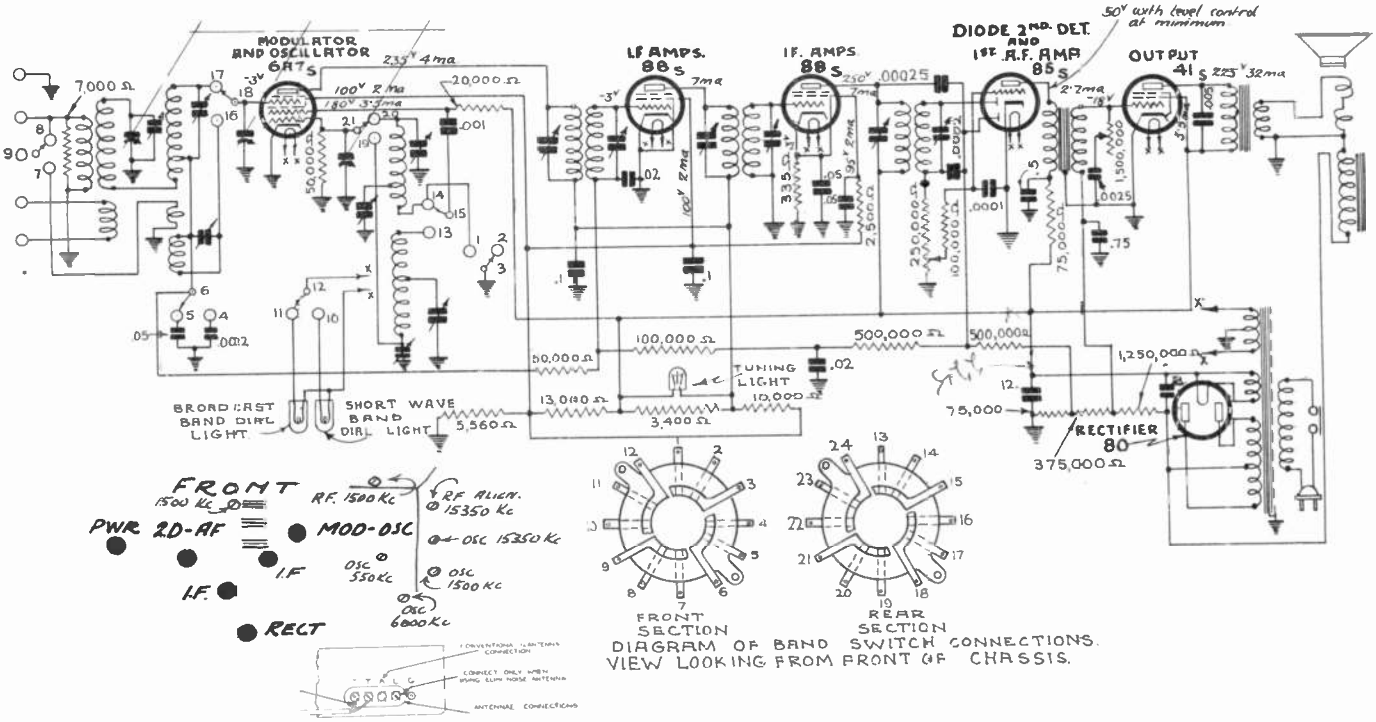
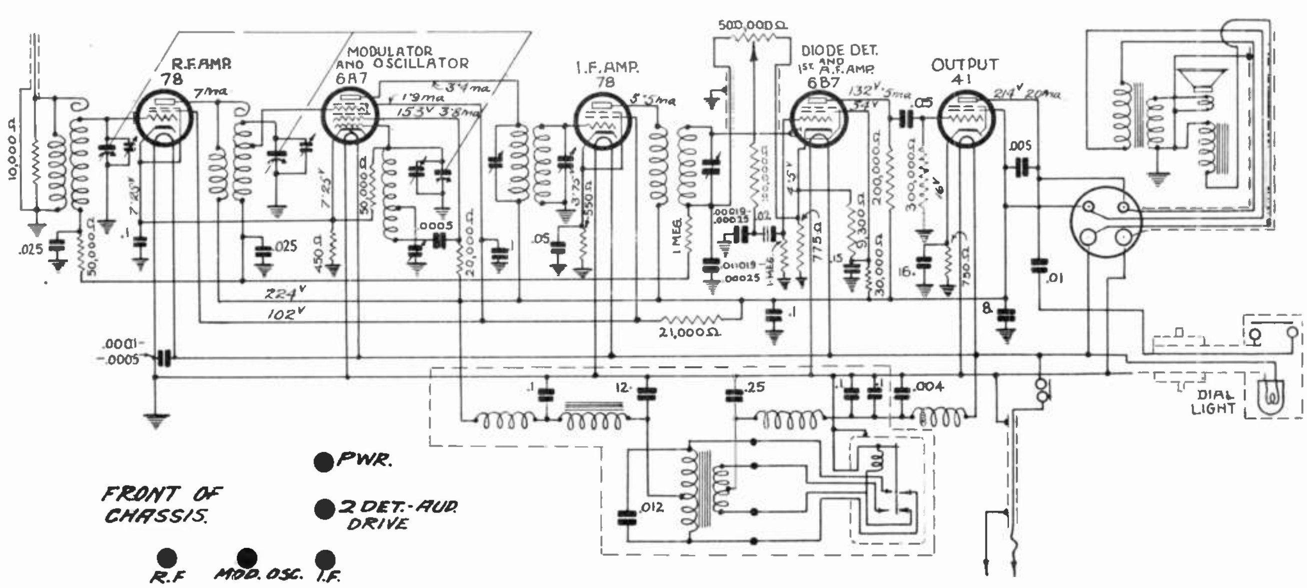
COURTESY DE FOREST CROSLEY 25 LTD.

World Radio History

THE "WORLD WIDE" Moderne Series.
Model -514 1934. I.F. 456. Kc.



ROAMIO AUTO RECEIVER ALSO GM. 134-134-b
Model. 510. 1933 IF 175 KC.

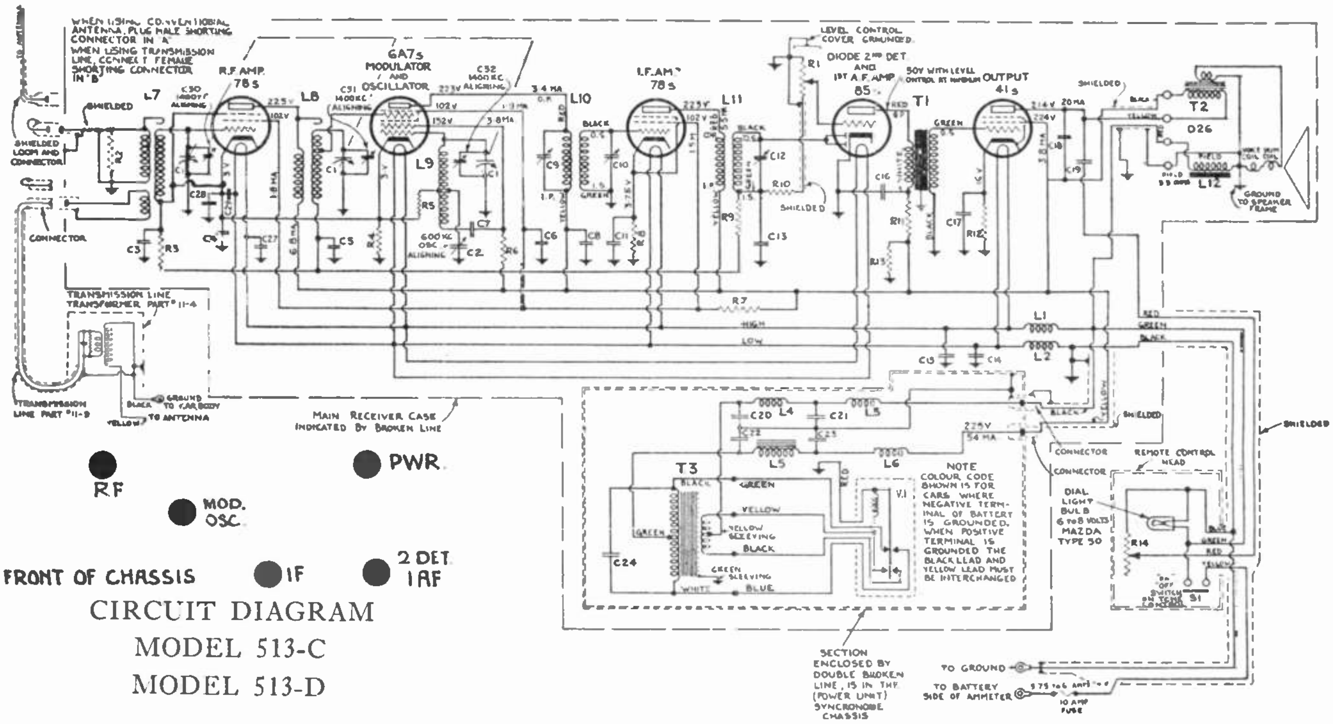


DATA SHEET

COURTESY
DE FOREST CROSLEY 26 LTD.

World Radio History

Models - 513-C-D - G.M. 135 1934 IF 175 KC



CIRCUIT DIAGRAM
MODEL 513-C
MODEL 513-D

LEGEND—

- C3 — .025 mfd.
- C4 — .1
- C5 — .025
- C6 — .1
- C7 — .001
- C8 — 8.
- C11 — .05
- C13 — .0005
- C14 — .0025
- C15 — .0025
- C16 — .5
- C17 — 16.
- C18 — .004
- C19 — .06
- C20 — .25
- C21 — .25
- C22 — 12.
- C23 — .1
- C24 — .012
- C27 — .0025
- C28 — .0025
- C29 — .0025

- R1 — 500,000 ohms.
- R2 — 10,000
- R3 — 25,000
- R4 — 165
- R5 — 50,000
- R6 — 20,000
- R7 — 21,000
- R8 — 335
- R9 — 750,000
- R10 — 100,000
- R11 — 50,000
- R12 — 750
- R13 — 50,000
- R14 — 50,000 — Model C only
- L12 — 5.5

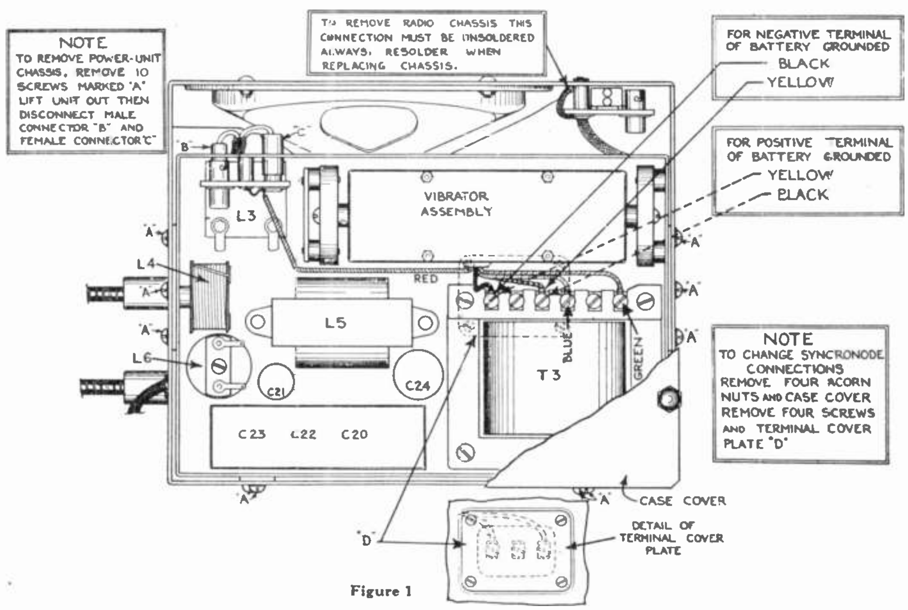


Figure 1

Synchronode Connections

A power supply or Synchronode unit is built into the case assembly. When delivered to you this power supply unit is arranged for use (without change) on cars in which the negative (—) terminal of the battery is grounded (connected to frame).

When a Super-Roamio is to be installed on a car having the positive (+) battery terminal grounded, a change must be made in the Synchronode connections. **The receiver will not operate with the Synchronode connections reversed and if operation is attempted under such conditions, damage to the mechanism will result.** Avoid this possibility by first changing the Synchronode connections if the radio is to be installed on a car having the positive (+) battery terminal grounded.

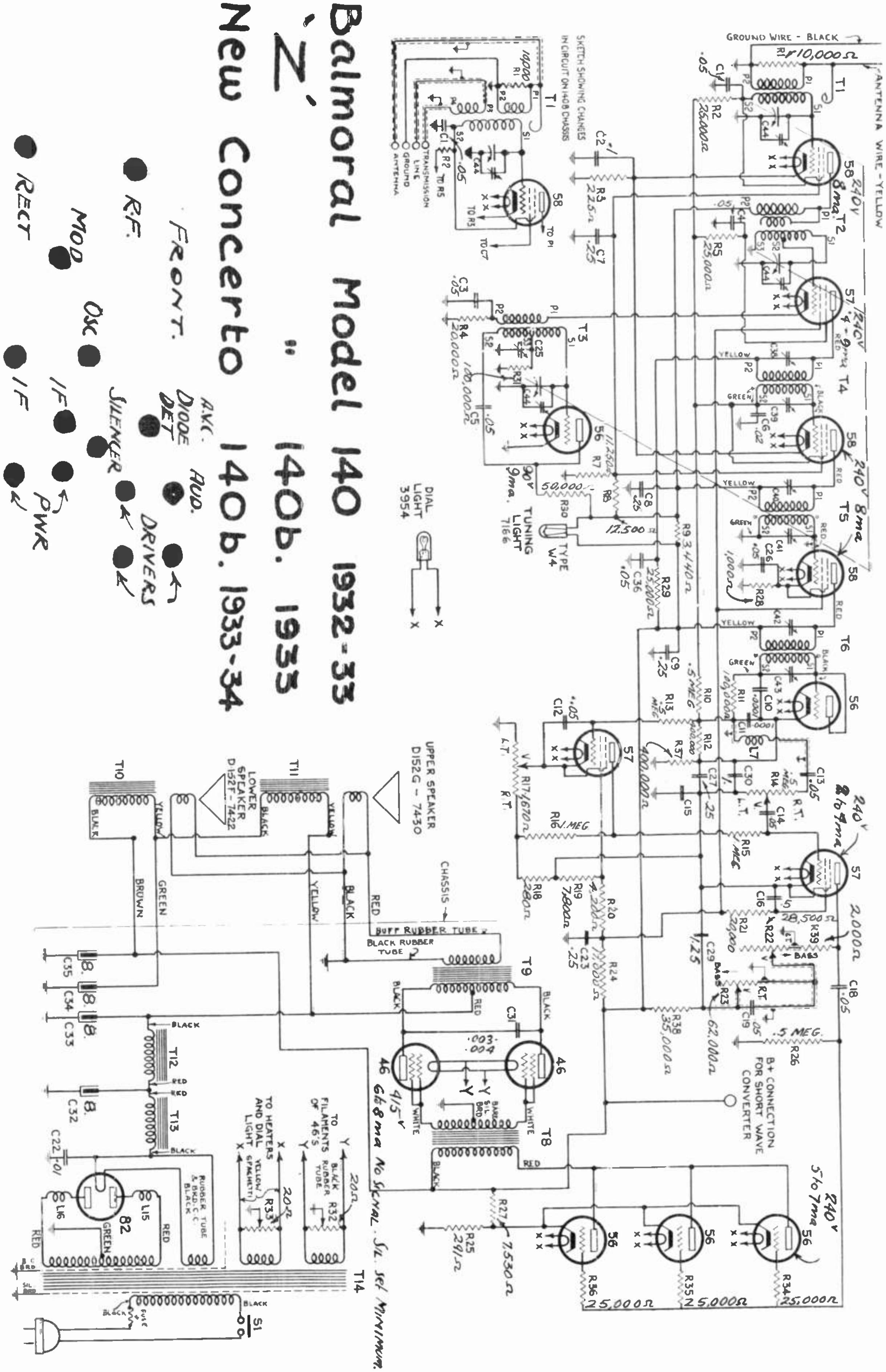
To change the Synchronode connections when installing in cars with positive (+) battery ground, proceed as follows. Refer to Figure 1.

1. Remove the four acorn nuts on the top case cover. Use a 3/8 in. spanner or nut wrench.
2. Remove the top case cover.
3. Remove the four small screws in the small terminal cover plate.
4. Lift the terminal cover plate "D" out of position.
5. Interchange the positions of the "black" and "yellow" lead wires. (See Figure 1).
6. Replace the terminal cover plate and **tighten the screws securely.**
7. Replace the top cover and tighten the acorn nuts securely. Always replace all lockwashe

DATA SHEET

COURTESY
DE FOREST CROSLEY 27 LTD.

World Radio History



DATA SHEET PRINTED IN CANADA **DeFOREST-CROSLEY-28**

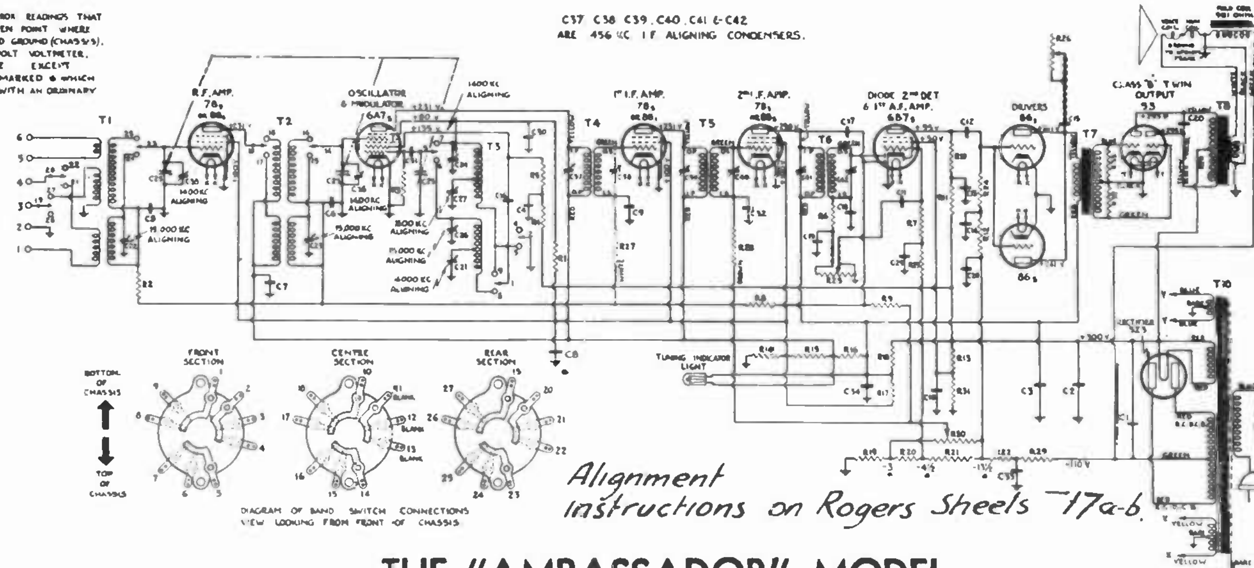
World Radio History

Model 1921 1934-35 I.F. 456 Kc.

VOLTAGES SHOWN ARE APPROX. READINGS THAT SHOULD BE OBTAINED BETWEEN POINT WHERE VOLTAGE IS INDICATED AND GROUND (CHASSIS), WITH A 1000 OHMS PER VOLT VOLTMETER, USING 500 VOLT RANGE EXCEPT VOLTAGES THAT ARE MARKED ● WHICH CANNOT BE MEASURED WITH AN ORDINARY VOLTMETER

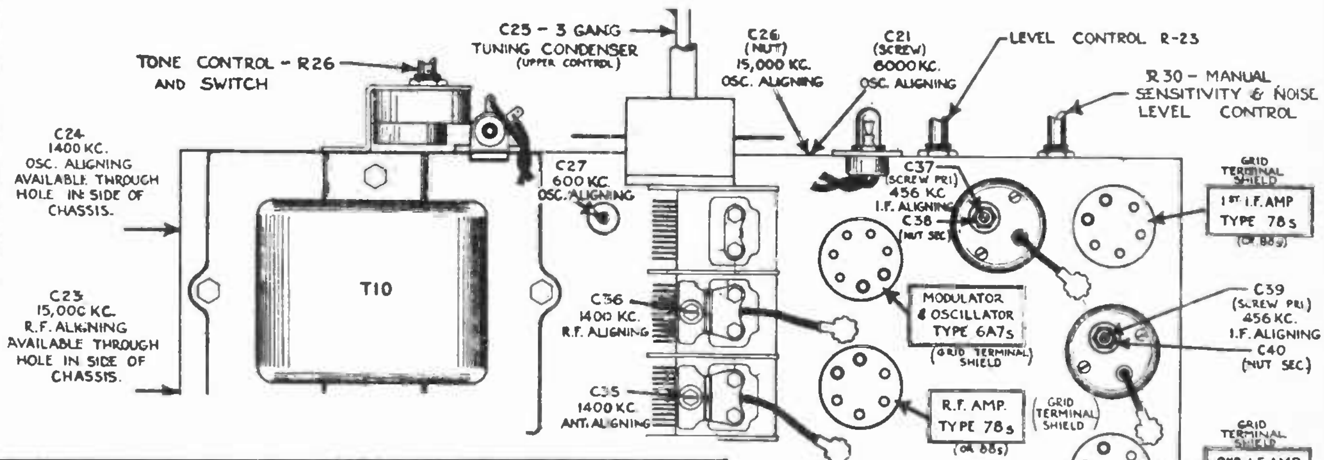
ITEM	CAPACITY
C1	8 MFD
C2	8
C4	8
C3	16
C5	.1
C6	.1
C7	.1
C8	.1
C9	.1
C10	.1
C11	.05
C12	.05
C13	.25
C14	.25
C15	.1
C16	.001
C17	.00015
C18	.0001
C19	.0001
C20	.0015
C21	6000 KC OSC ALIGN
C26	15000 KC OSC ALIGN
C22	15000 KC ANT ALIGN
C23	15000 KC RF ALIGN
C24	1400 KC OSC ALIGN
C25	3 GANG CONDENSER
C27	600 KC OSC ALIGN
C28	25 MFD
C29	25
C30	1
C31	.00005
C32	1
C33	5
C34	1
C35	1400 KC ANT ALIGN
C36	1400 KC RF ALIGN
C37	456 KC IF ALIGN
C38	456 KC IF ALIGN
C39	456 KC IF ALIGN
C40	456 KC IF ALIGN
C41	456 KC IF ALIGN
C42	456 KC IF ALIGN

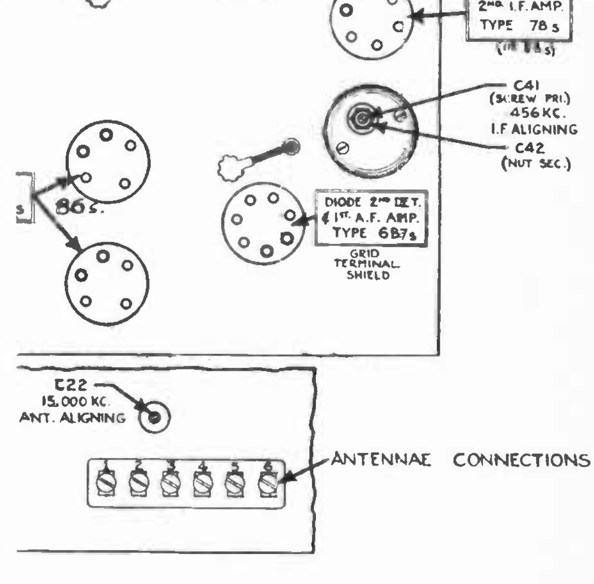
ITEM	RESISTANCE
R1	5000 OHMS
R2	10,000
R3	50,000
R4	20,000
R5	30,000
R6	100,000
R7	500,000
R8	500,000
R9	500,000
R10	150,000
R11	100,000
R12	500,000
R13	250,000
R14	4,000
R15	15,000
R16	2,400
R17	4,600
R18	300
R19	15,000
R20	15,000
R21	50,000
R22	250,000
R23	500,000
R24	250,000
R25	500,000
R26	50,000
R27	100,000
R28	100,000
R29	250,000
R30	105,000
R31	50,000
R32	5,000
R33	5,000



Alignment instructions on Rogers Sheets 17a-b.

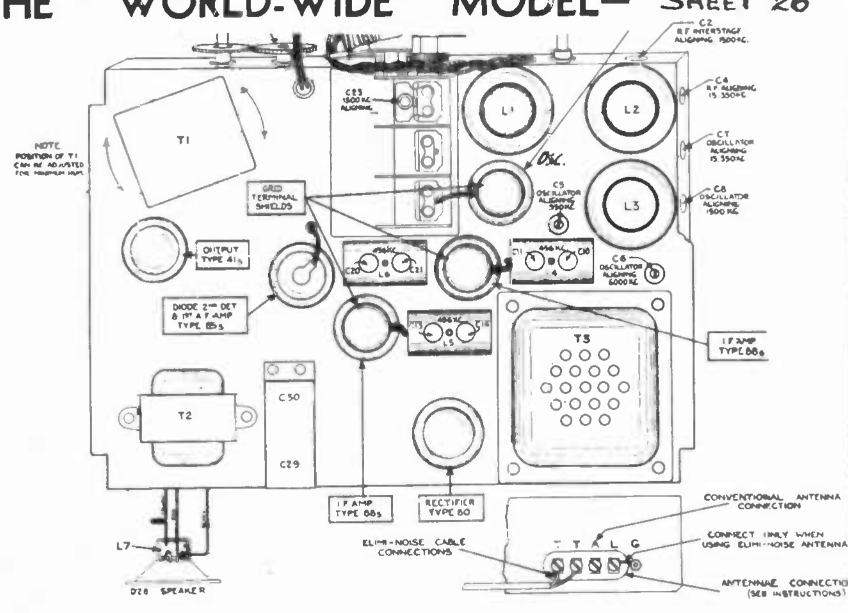
THE "AMBASSADOR" MODEL





THE "WORLD-WIDE" MODEL—

CIRCUIT ON SHEET 26



see Rogers Sheets 17a-b

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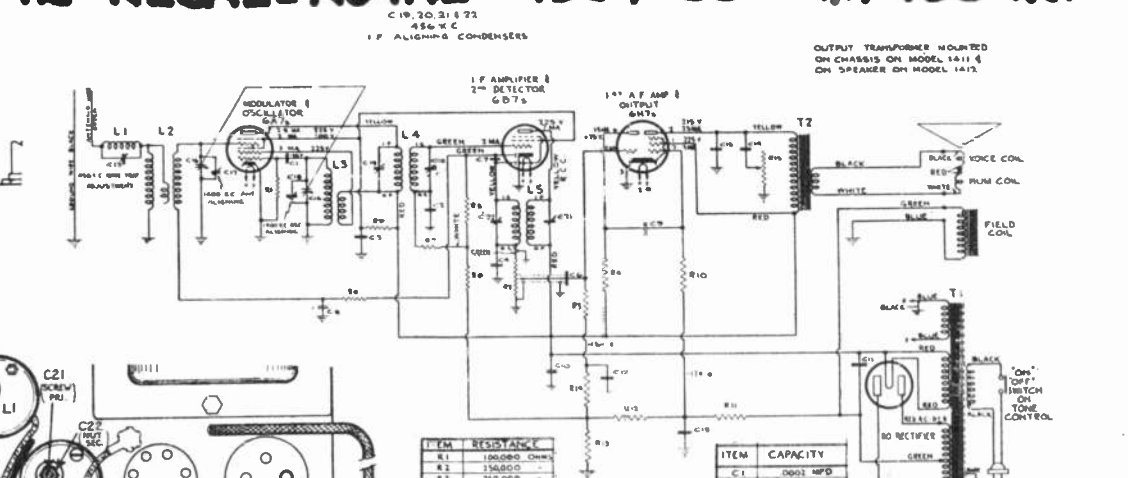
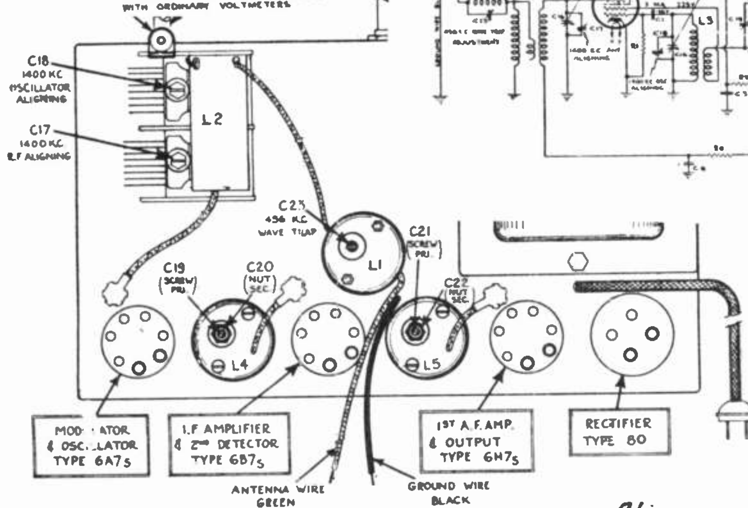
World Radio History

Models 1411-12 REGAL-ROYAL 1934-35 I.F. 456 Kc.

NOTE

VOLTAGES SHOWN ARE APPROX READINGS THAT SHOULD BE OBTAINED WITH A 1000 OHMS PER VOLT VOLTMETER, BETWEEN POINT WHERE VOLTAGE IS INDICATED AND GROUND (CHASSIS) EXCEPT VOLTAGES THAT ARE MARKED * WHICH ARE ACTUAL VOLTAGES AND CANNOT BE MEASURED WITH ORDINARY VOLTMETERS





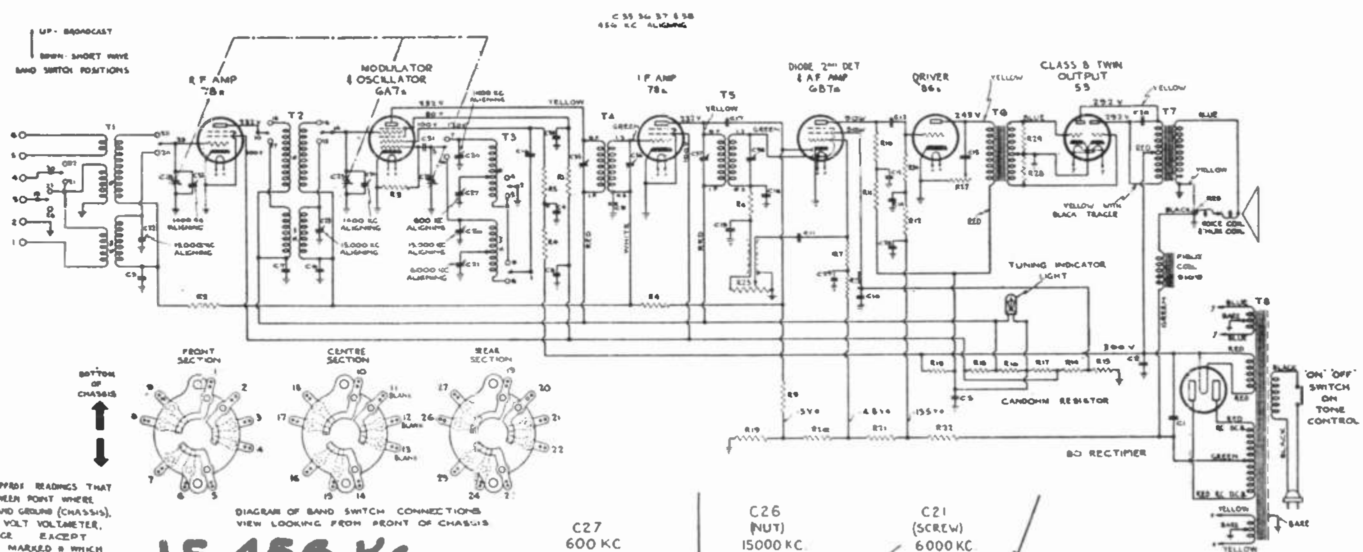
ITEM	RESISTANCE
R1	100,000 OHMS
R2	150,000 "
R1	250,000 "
R3	500,000 "
R4	500,000 "
R5	300,000 "
R6	200,000 "
R7	250,000 "
R8	500,000 "
R9	30,000 "
R10	1000,000 "
R11	1000,000 "
R12	180,000 "
R13	15,000 "
R14	100,000 "
R15	50,000 "

ITEM	CAPACITY
C1	.0002 MFD
C2	.05 "
C3	.1 "
C4	.0002 "
C6	.05 "
C7	.01 "
C8	.1 "
C9	.05 "
C10	8 "
C11	8 "
C12	1 "
C13	25 "
C14	.05 "
C15	.005 "

Alignment instructions on Rogers Sheets 17a-b.

Models 1721-1722 EXPLORER-NAVIGATOR 1934-35

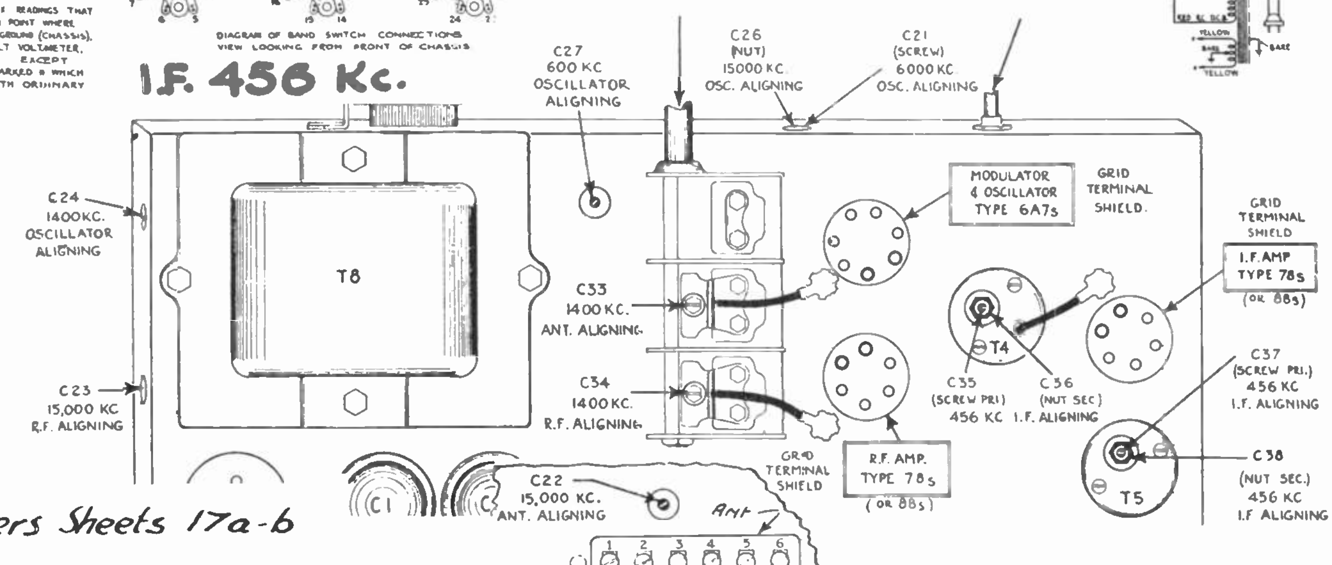
ITEM	CAPACITY
C1	8 MFD
C2	8 "
C4	8 "
C3	16 "
C5	.1 "
C6	.1 "
C7	.1 "
C8	.1 "
C9	.1 "
C10	.1 "
C11	.05 "
C12	.02 "
C13	.05 "
C14	.25 "
C15	.1 "
C16	.001 "
C17	.00025 "
C18	.0002 "
C19	.0001 "
C20	.004 "
C21	6000 KC OSC ALIGN
C26	15000 KC OSC ALIGN
C22	15,000 KC ANT ALIGN
C23	15,000 KC R.F. ALIGN
C24	1400 KC OSC ALIGN
C25	3 GANG CONDENSER
C27	600 KC OSC ALIGN
C28	25 MFD.
C29	25 "
C30	.1 "
C31	.00005 "
C33	1400 KC ANT ALIGN
C34	1400 KC R.F. "
C35	456 KC I.F. ALIGN
C36	456 KC I.F. ALIGN
C37	456 KC I.F. ALIGN
C38	456 KC I.F. ALIGN



VOLTAGES SHOWN ARE APPROX READINGS THAT SHOULD BE OBTAINED BETWEEN POINT WHERE VOLTAGE IS INDICATED AND GROUND (CHASSIS), WITH A 1000 OHMS PER VOLT VOLTMETER, USING 300 VOLT RANGE EXCEPT VOLTAGES THAT ARE MARKED * WHICH CANNOT BE MEASURED WITH ORDINARY VOLTMETER

I.F. 456 Kc.

ITEM	RESISTANCE
R1	5000 OHMS
R2	50,000 "
R3	50,000 "
R4	50,000 "
R5	20,000 "
R6	100,000 "
R7	500,000 "
R8	500,000 "
R9	500,000 "
R10	150,000 "
R11	50,000 "
R12	250,000 "
R13	3,700 "
R14	3,700 "
R15	13,000 "
R16	3,400 "
R17	20,000 "
R18	1,150 "
R19	15,000 "
R20	9,500 "
R21	45,000 "
R22	350,000 "
R23	500,000 "
R24	250,000 "
R25	500,000 "
R26	
R27	50,000 "
R28	5,000 "
R29	5,000 "



see Rogers Sheets 17a-b

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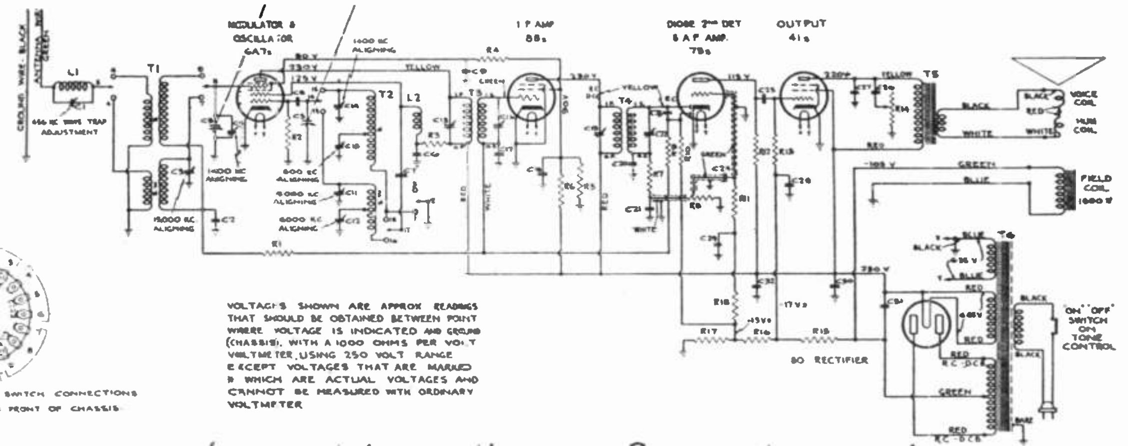
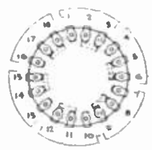
World Radio History

Models 1523-24 { Princess Marina / Envoy – Ranger De Luxe 1934-35

ITEM	CAPACITY
C1	456 KC WAVE TRAP
C2	.05 MFD
C3	15,000 KC ANT ALIGN
C4	1400 KC ANT ALIGN
C5	2 GANG CONDENSER
C6	8 MFD
C30	8 "
C7	.001 "
C8	.00005 "
C9	.1 "
C10	
C11	15,000 KC OSC ALIGN
C12	6,000 KC OSC ALIGN
C13	456 KC I F ALIGN
C14	1400 KC OSC ALIGN
C15	600 KC OSC ALIGN
C16	456 KC I F ALIGN
C17	.05 MFD
C18	.5 "
C19	456 KC I F ALIGN
C20	.0002 MFD
C21	.0001 "
C22	456 KC I F ALIGN
C23	.01 MFD
C24	.01
C25	.03
C26	.05
C27	.003
C28	.5
C29	.1
C31	8
C32	.1

ITEM	RESISTANCE
R1	100,000 OHMS
R2	50,000 "
R3	40,000 "
R4	5,000 "
R5	30,000 "
R6	20,000 "
R7	50,000 "
R8	750,000 "
R9	500,000 "
R10	300,000 "
R11	1000,000 "
R12	150,000 "
R13	500,000 "
R14	50,000 "
R15	1000,000 "
R16	180,000 "
R17	15,000 "
R18	250,000 "





I.F. 456 Kc. DIAGRAM OF BAND SWITCH CONNECTIONS VIEW LOOKING FROM FRONT OF CHASSIS

alignment instructions on Rogers Sheets 17a-b

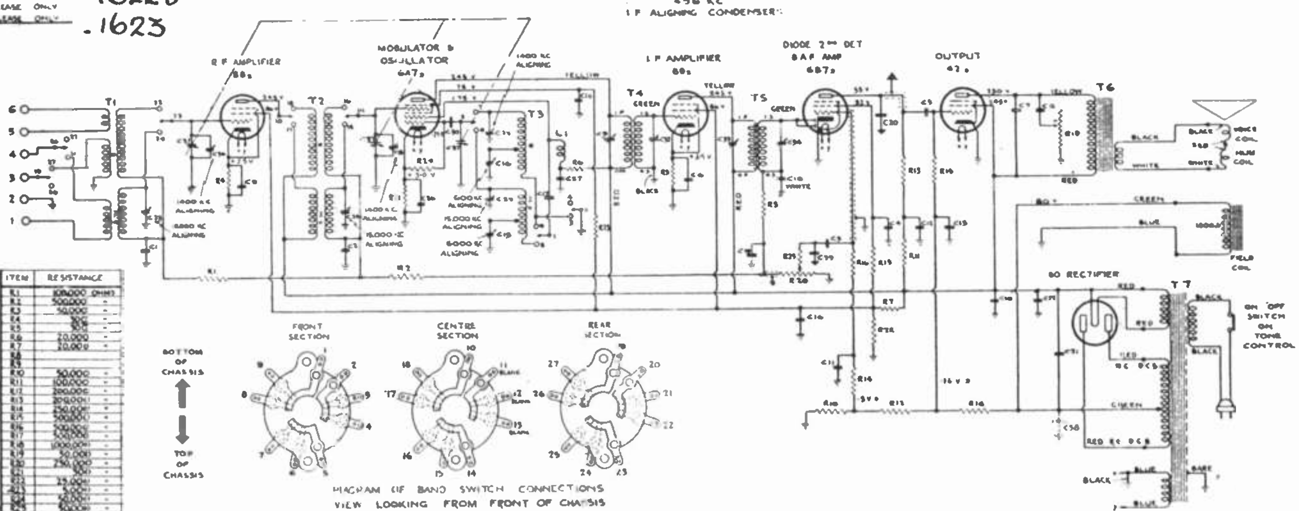
Models 1621-22 Courier – Voyager – Adventurer 1934-35

1622b
.1623

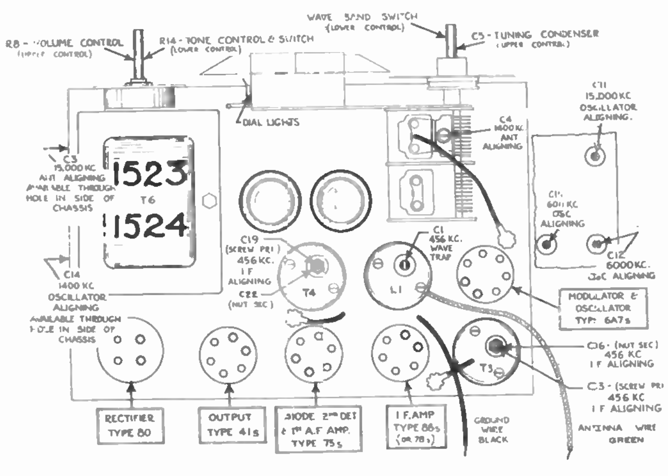
ITEMS MARKED ● ARE ON 1st RELEASE ONLY
ITEMS MARKED ◻ ARE ON 2nd RELEASE ONLY

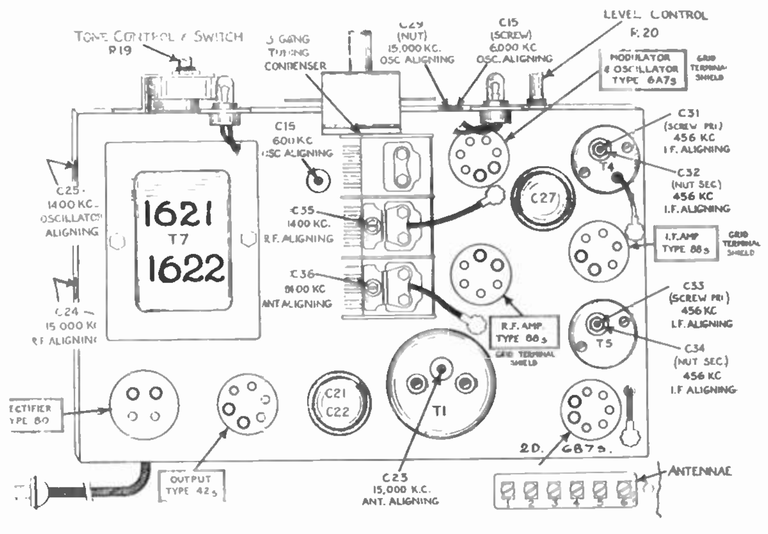
ITEM	CAPACITY
C1	.05 MFD.
C2	.05 "
C3	.05 "
C4	.1 "
C5	.05 "
C6	.05 "
C7	.005 "
C8	.05 "
C9	.1 "
C10	.1 "
C11	.1 "
C12	.1 "
C13	.5 "
C14	.1 "
C15	6000 KC OSC. ALIGN.
C29	15000 KC OSC. ALIGN.
C16	600 KC OSC. ALIGN.
C17	.001 MFD
C18	.0002 "
C19	.0001 "
C20	.0002 "
● C21	8 "
● C22	8 "
C23	6000 KC ANT. ALIGN.
C24	15000 KC R.F. ALIGN.
C25	1400 KC OSC. ALIGN.
C26	.1 MFD
● C27	8 "
C28	.1 "
C30	.00005 "
C31	456 KC I.F. ALIGNING
C32	456 KC I.F. ALIGNING
C33	456 KC I.F. ALIGNING
C34	456 KC I.F. ALIGNING
C35	1400 KC R.F. ALIGN.
C36	1400 KC ANT. ALIGN.
C37	3 GANG CONDENSER
● C38	.04 MFD.
● C39	.001 "
◻ C21	8 "
◻ C22	16 "
◻ C27	8 "

ITEM	RESISTANCE
R1	100,000 OHMS
R2	500,000 "
R3	50,000 "
R4	300 "
R5	300 "
R6	20,000 "
R7	20,000 "
R8	
R9	
R10	50,000 "
R11	100,000 "
R12	200,000 "
R13	200,000 "
R14	250,000 "
R15	500,000 "
R16	500,000 "
R17	500,000 "
R18	1000,000 "
R19	50,000 "
R20	250,000 "
R21	500 "
R22	25,000 "
R23	5,000 "
R24	50,000 "
◻ R25	5000 "



alignment instructions on Rogers Sheets 17a-b.





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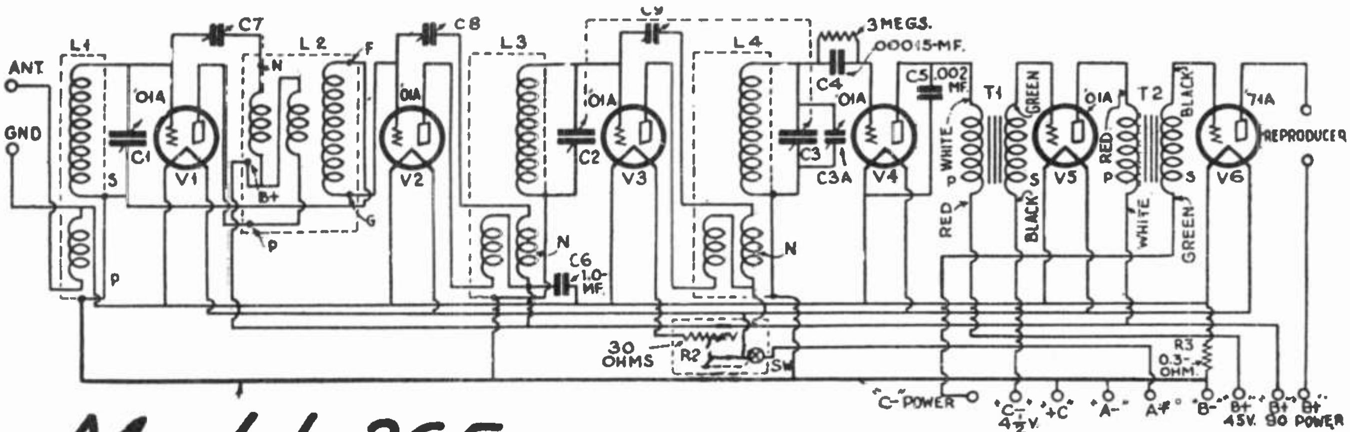
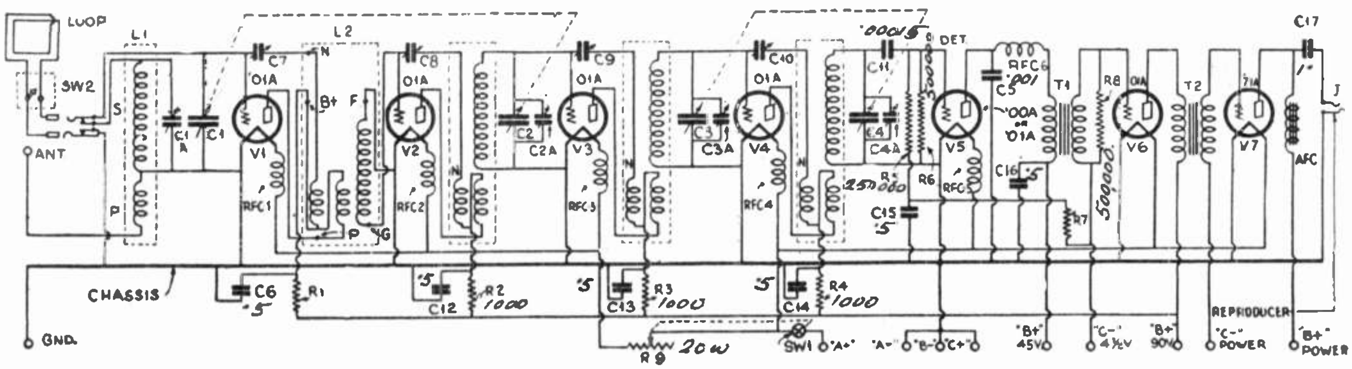
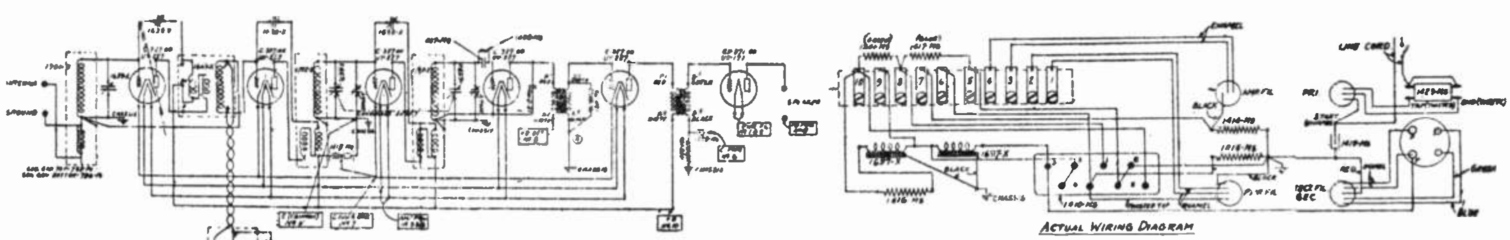
World Radio History



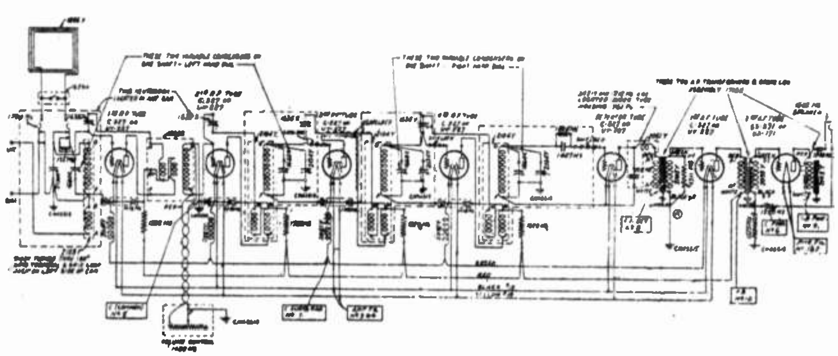
Model 265a

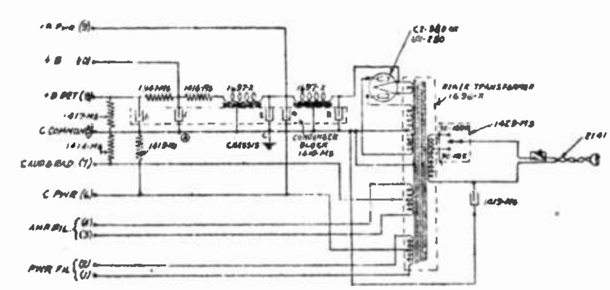


Model 475a Fada '7'



"Special" AC Receiver 265-UA or CA and RP-65-ÛA or CA 60 cycle
262 ← 25 cycle → 62





Schematic Wiring Diagram

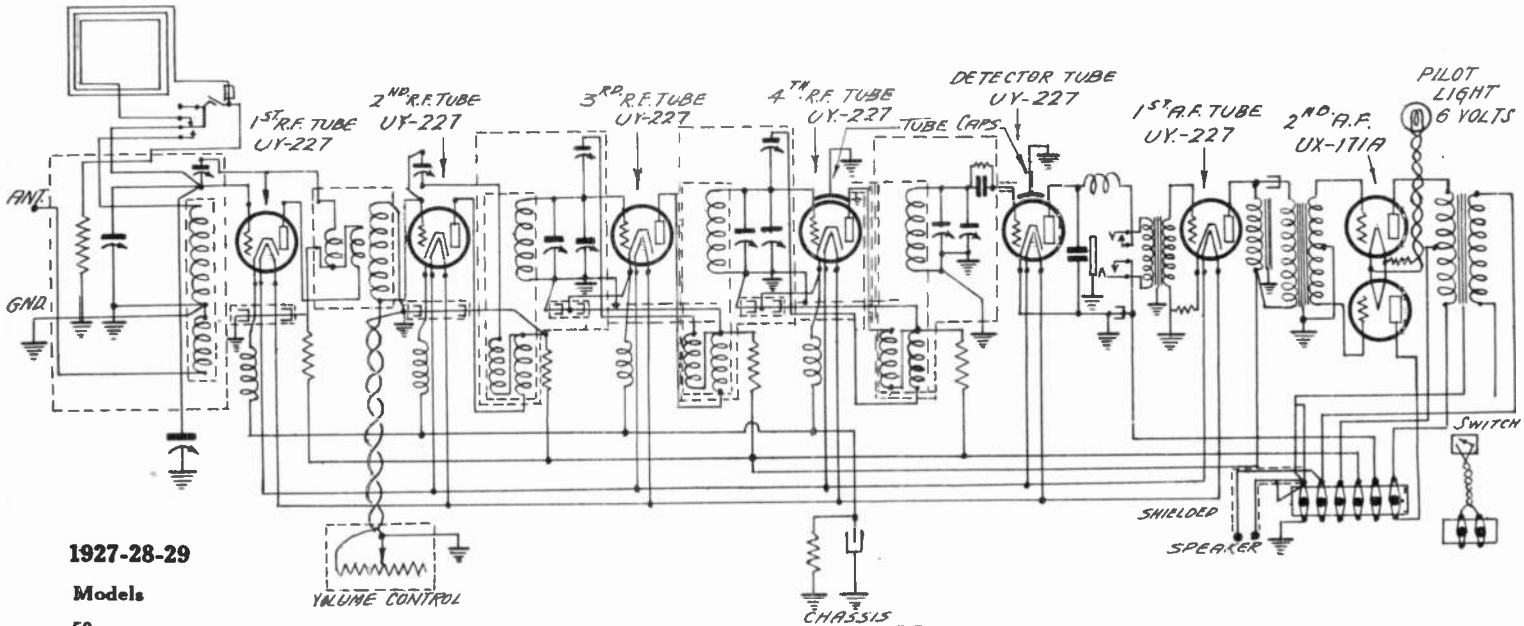
"7" AC Receiver 475-UA or CA and SF45/75-UA or CA 60 cycle
472-UA or CA and SF45/72-UA or CA 25

Unit, used with "Special" and "7" AC Receivers
Also for 265 - 262

Printed in Canada

—Courtesy Fada Radio Limited

World Radio History



1927-28-29

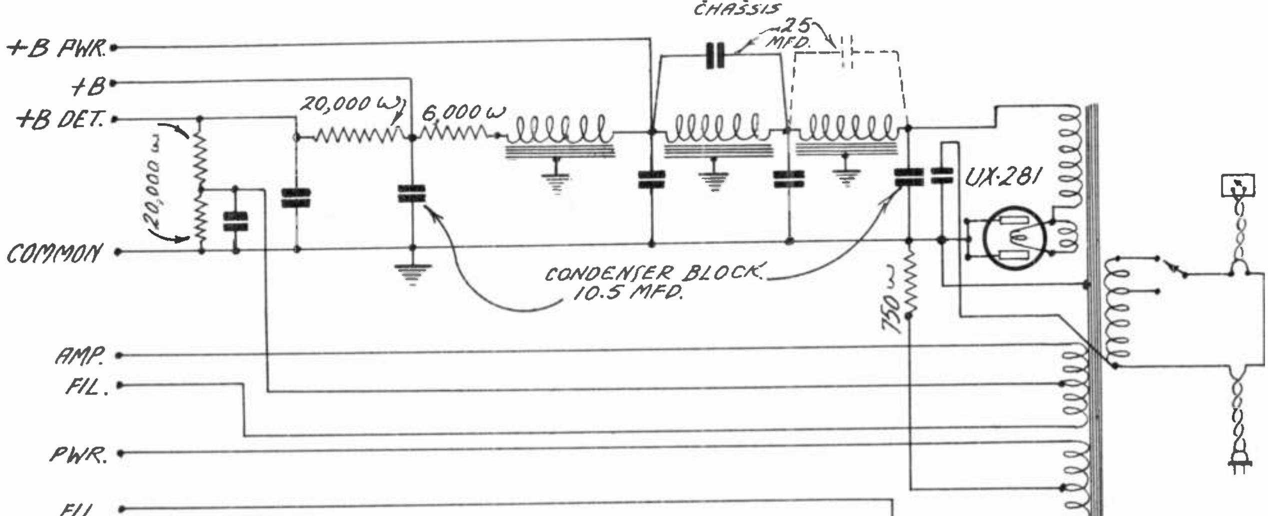
Models

50

70

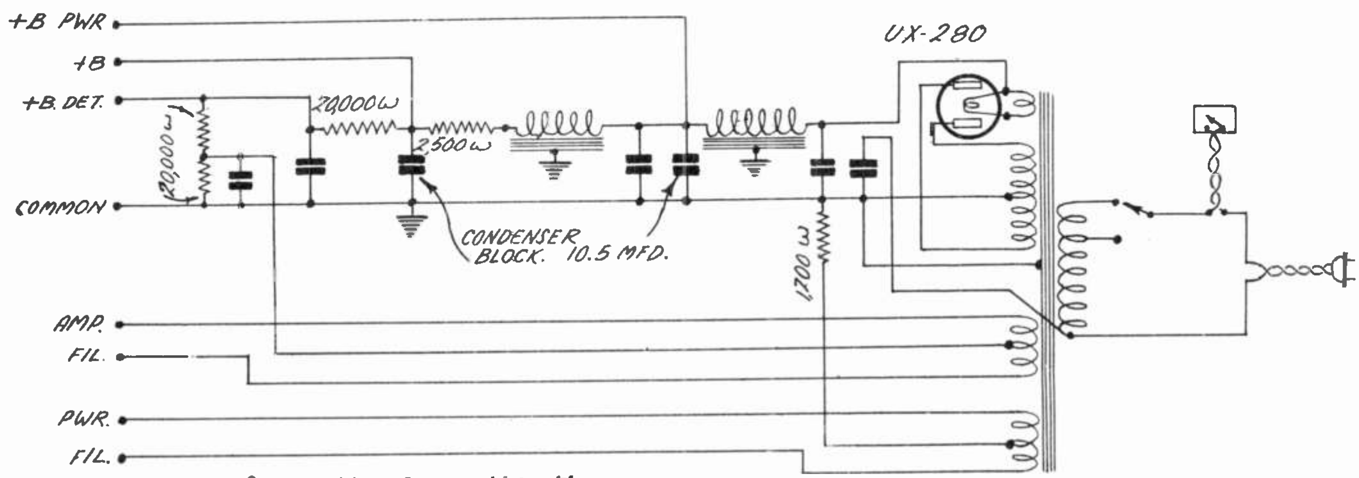
71

72



SCHEMATIC WIRING DIAGRAM OF "E-420" ELECTRIC UNIT

—For Fada 50, 70, 71 and 72 Receivers



SCHEMATIC WIRING DIAGRAM OF "E-180 & E-180-Z ELECTRIC UNIT

Electric Unit—For Fada 50 and 70 Receivers

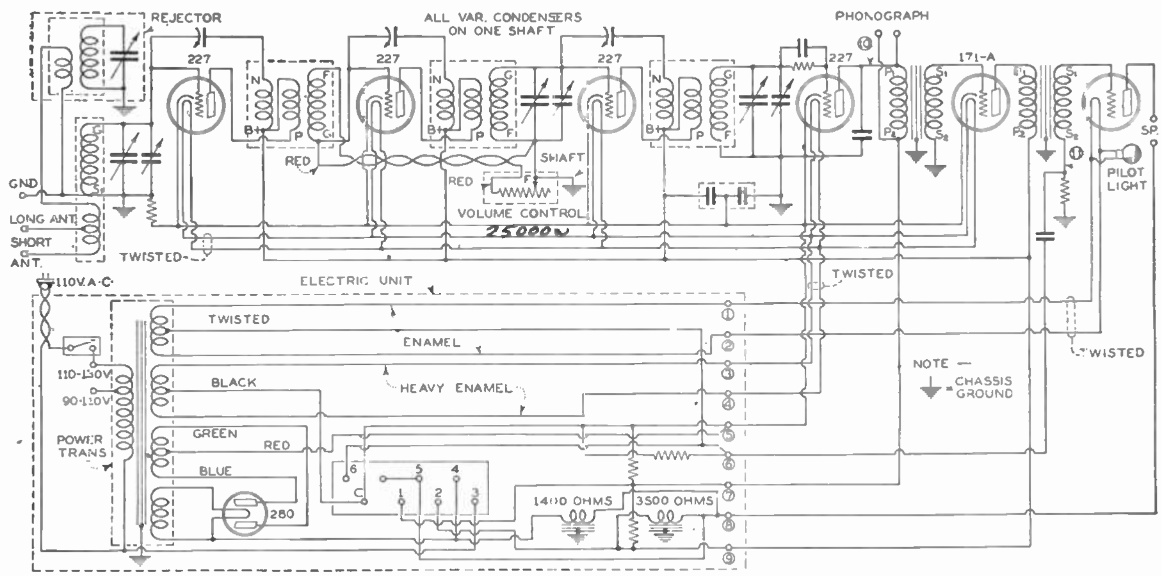
Printed in Canada

—Courtesy Fada Radio Limited

World Radio History

FADA MODELS 10, 11, 30, AND 31 RECEIVERS

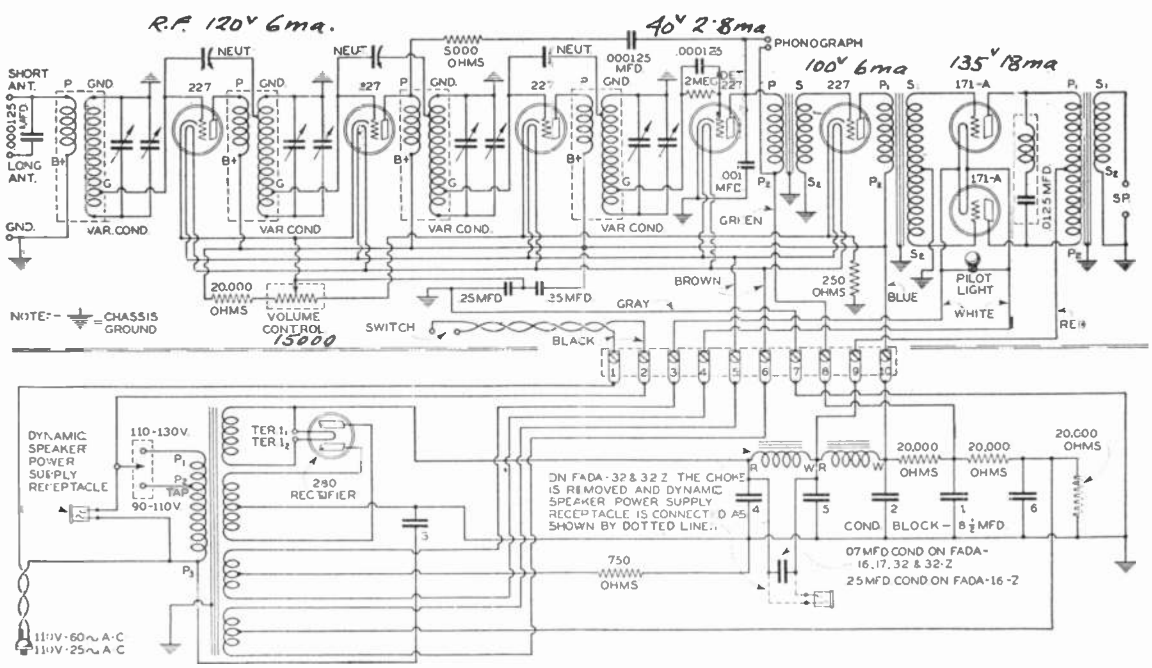
1928-29
Models
10 Metal Table
10Z Metal Table
11 Wood Table
11Z Wood Table
30, 31, 30Z, 31Z, Consoles



One of the unusual features about this Fada receiver is the use of a "rejector" circuit in the antenna stage. The primary of this rejector circuit is placed in series with the primary of the usual antenna transformer. The rejector circuit is not, however, tuned to the frequency of the desired signals but is tuned so as to eliminate undesired signals. Another unusual feature is the use of an untuned r.f. transformer between the first and second r.f. amplifier tubes, the transformer being of such characteristics as to equalize the r.f. gain.

Circuits courtesy 'Radio Broadcast'

1929
Models
16 Metal Table
16Z Metal Table
17 Wood Table
17Z Wood Table
32 Console
32Z Console



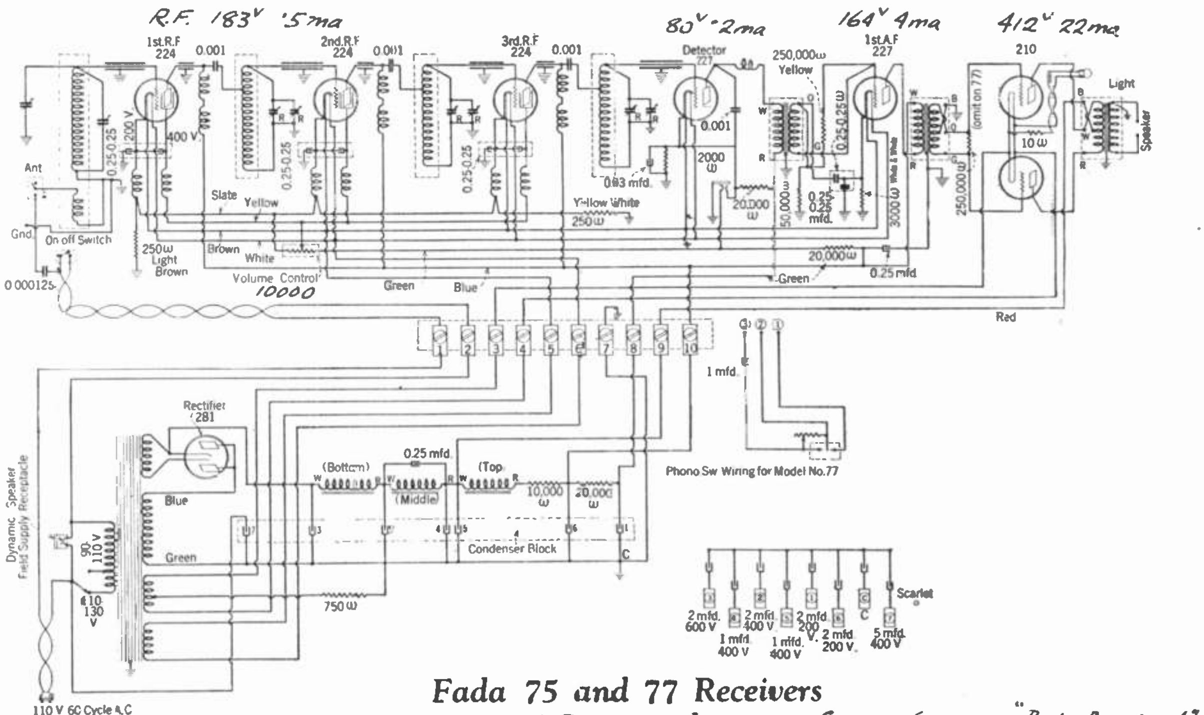
A three-stage tuned-radio-frequency amplifier is used in this set. It is interesting to note that the input circuits of the r.f. tubes are connected across only part of the tuned circuits. Neutralization is accomplished by connecting the neutralizing condenser from the grid of a tube to the secondary of the following r.f. transformer. The volume control is connected across the antenna-ground circuit.

Fada 16, 17 and 32 Receivers - 60 cycles
Fada 16-Z and 32-Z Receivers - 25 cycles

World Radio History

This receiver uses three screen-grid tubes in the r.f. stages followed by a plate-circuit detector and a two-stage transformer-coupled audio amplifier. Note the shielding around the grid and plate leads of the r.f. amplifier tubes and the use of r.f. choke coils in the cathode and screen-grid leads. The output tubes are two 210's in push pull.

1929-30
Models
75 Low Boy
77 Phono-Comb.
Also Model 55

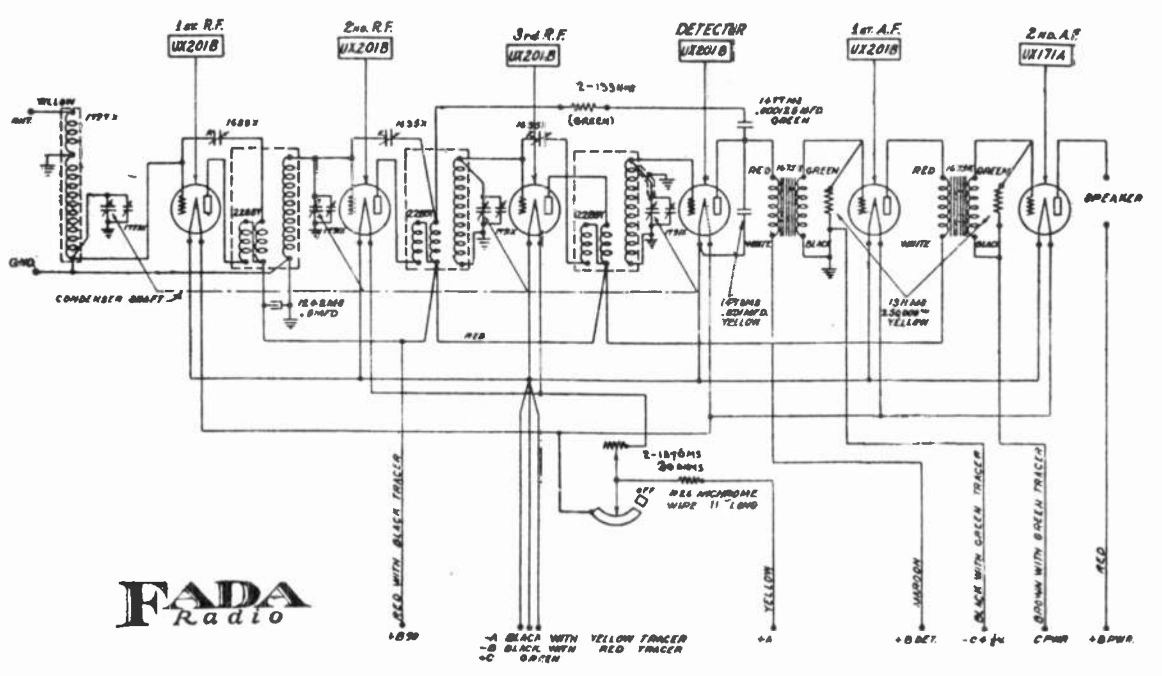


Fada 75 and 77 Receivers
AC 60 cycles

Circuit Courtesy "Radio Broadcast"

Also Model 55.

1929-30
Models
265S
Table
30/65S
Console



FADA 265S and 30/65S BATTERY RECEIVERS

1929-30.

Printed in Canada

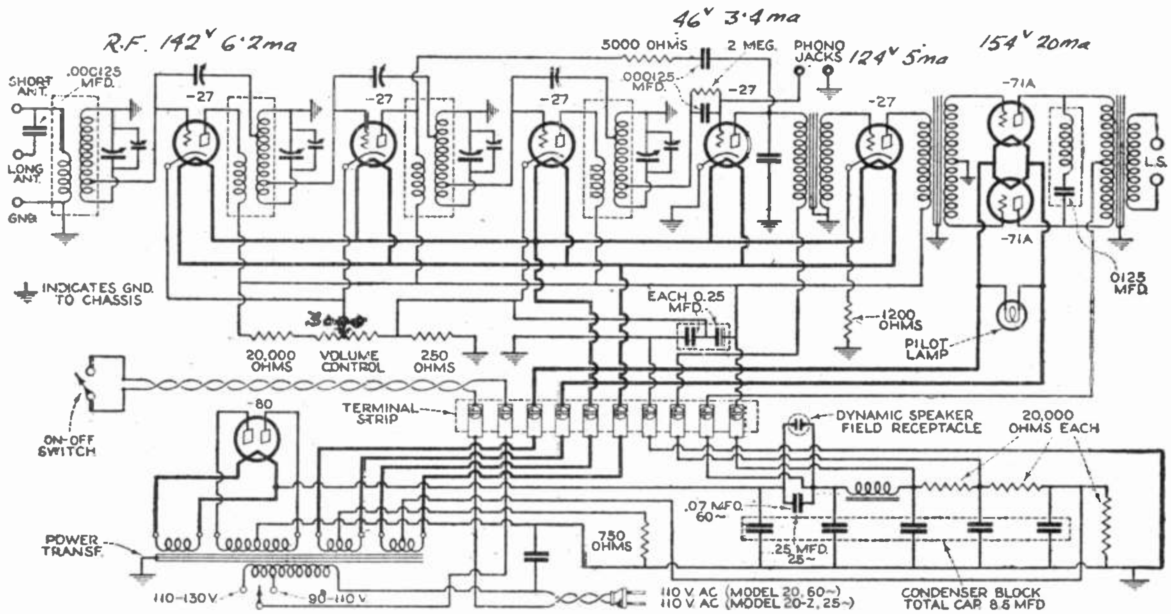
—Courtesy Fada Radio Limited

DATA SHEET

World Radio History

1929-30
Models
20, 20Z

Both
Table
Models



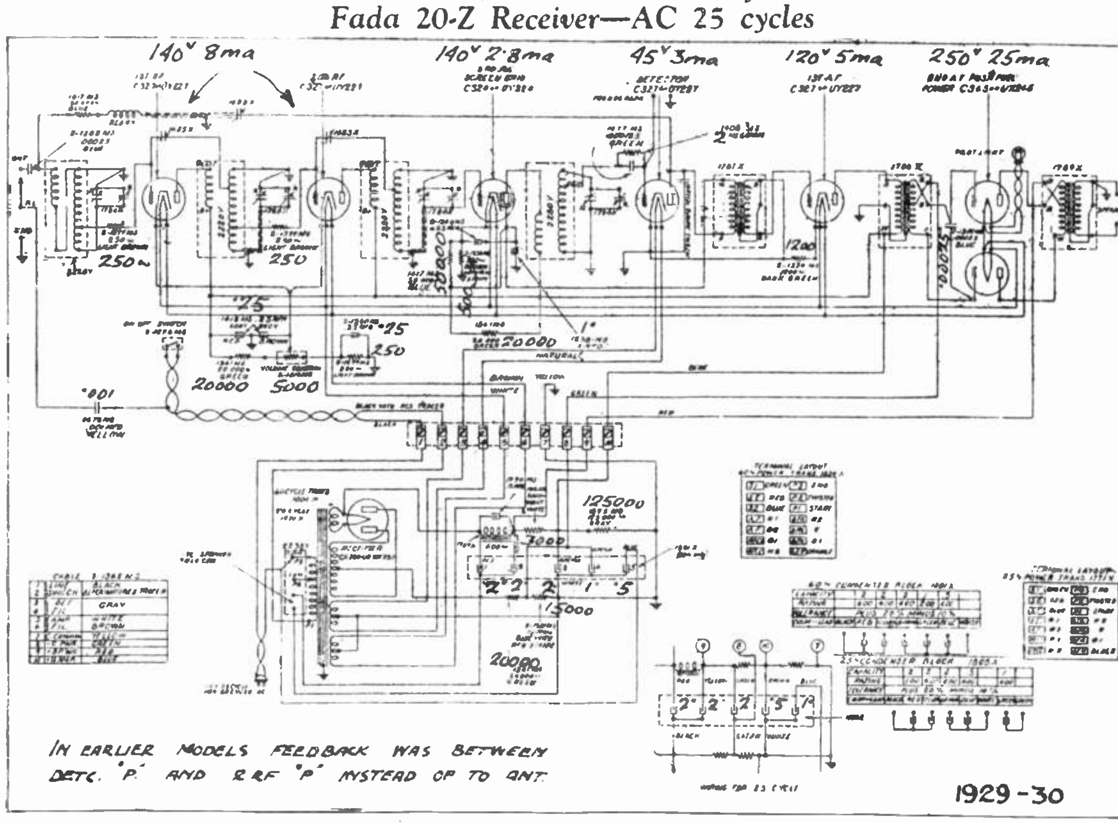
THE Fada 20 and 20-Z are alike except that in the 20-Z a power transformer is used that is satisfactory for 25-cycle lines. The receiver is of the neutrodyne type, utilizing five type -27 tubes in the three radio-frequency stages, detector, and first audio stage. Push-pull type -71A tubes are used in the output stage. An -80 tube is used as a rectifier. Provision is made to excite the field of the dynamic reproducer by utilizing it as a choke in the filter circuit.

An unusual feature of the receiver is found in the fact that a small amount of regeneration is introduced in the radio-frequency amplifier, which materially improved both sensitivity and selectivity. At no time can this regeneration become sufficient to cause annoying oscillation. Provision is made for phono pick-up.

Fada 20 Receiver—AC 60 cycles
Fada 20-Z Receiver—AC 25 cycles

1929-30
Models
25, 25Z

Both
Consoles



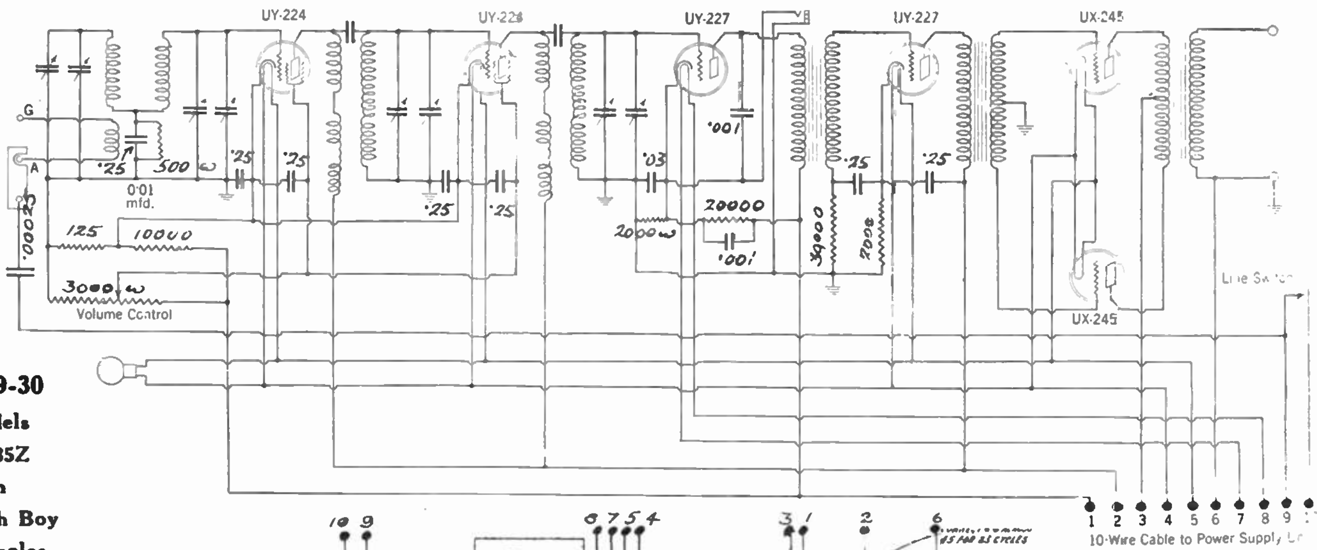
Fada 25 and 25-Z Receivers *used with* *M-250 and M-250-Z Electric Units*

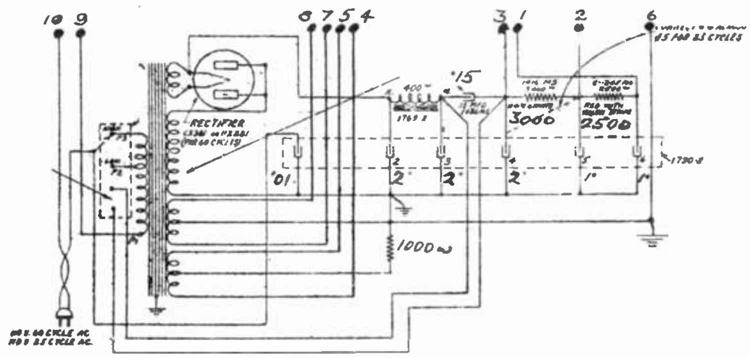
Printed in Canada

—Courtesy Fada Radio Limited

World Radio History

1929-30
Models
35, 35Z
Both
High Boy
Consoles

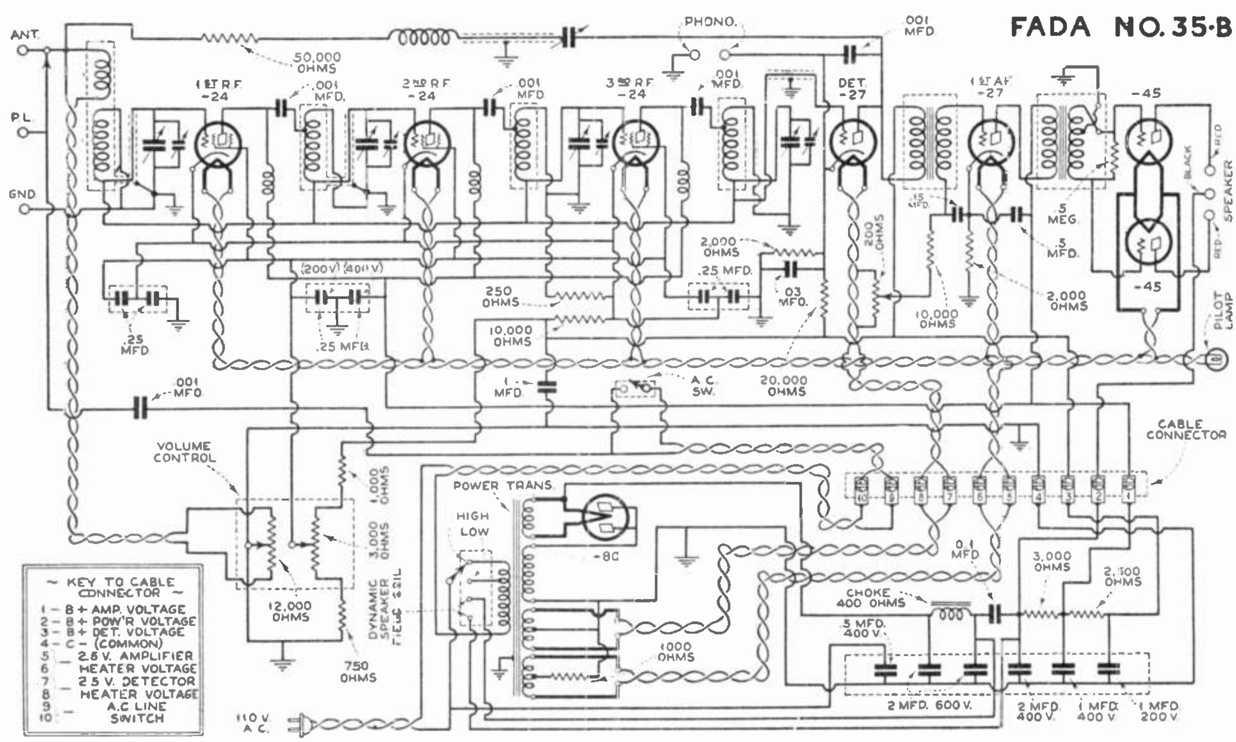




1929-30
Fada 35 60 cy
Fada 35-Z 25 cy

FADA NO. 35-B

1929-30
Model 35B
High Boy
Console
Circuit Courtesy 'Radio News'



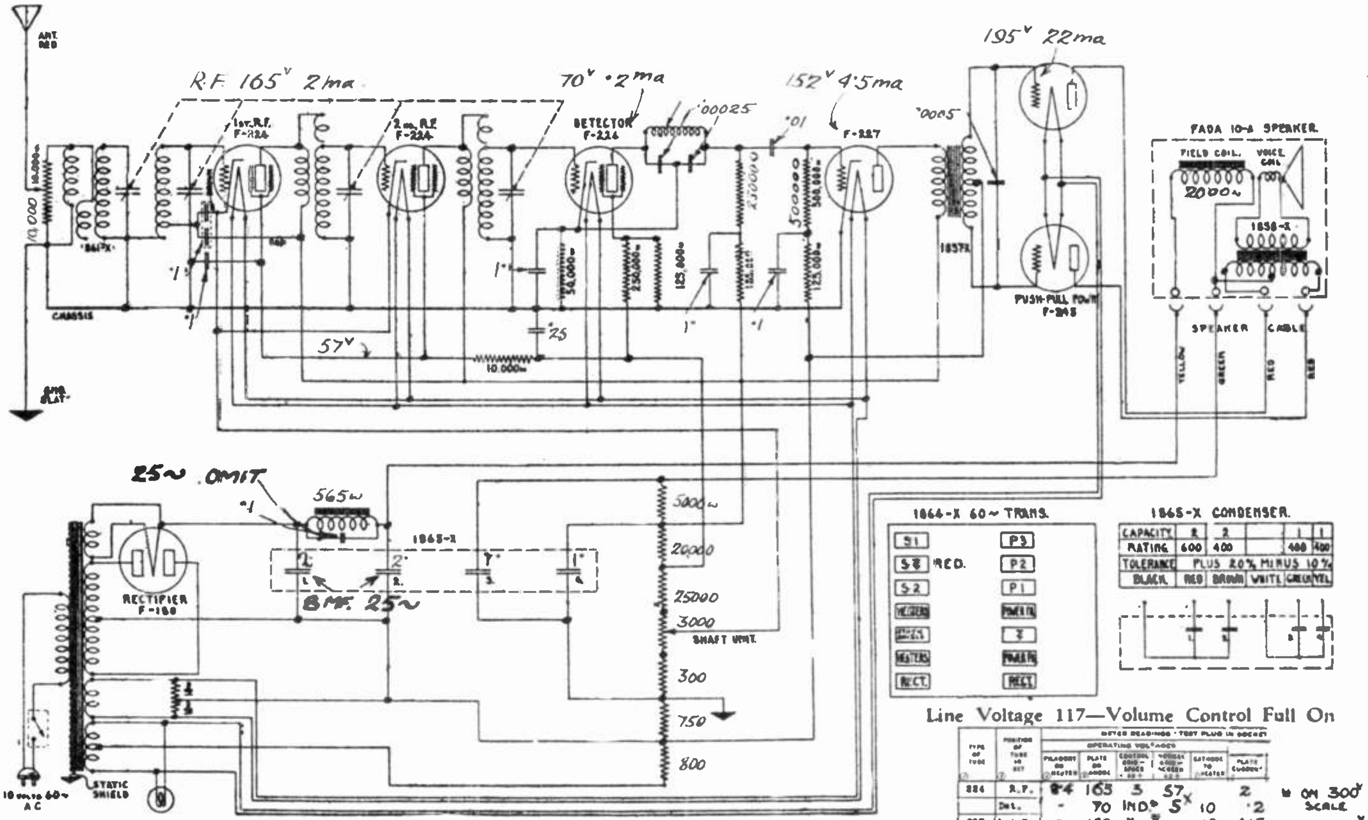
THE Fada No. 35-B receiver, a.c.-operated, embodies the following features:

1. Four tuned, stabilized circuits.
2. Power detection.
3. High quality two-stage audio channel, employing push-pull in the final stage.
4. Eight tubes, as follows: 3 –24's: 2 –27's: 2 –50's; 1 –80
5. Provision for phonograph pick-up attachment.

The receiver, composed of two units, namely, the tuner-amplifier and power supply, is a.c.-operated throughout. Complete circuit details of both units are shown above. Values of resistors, coupling condensers, etc., together with a chart for identifying the various voltage taps on the power unit, are also shown.

—Courtesy Fada Radio Limited

World Radio History



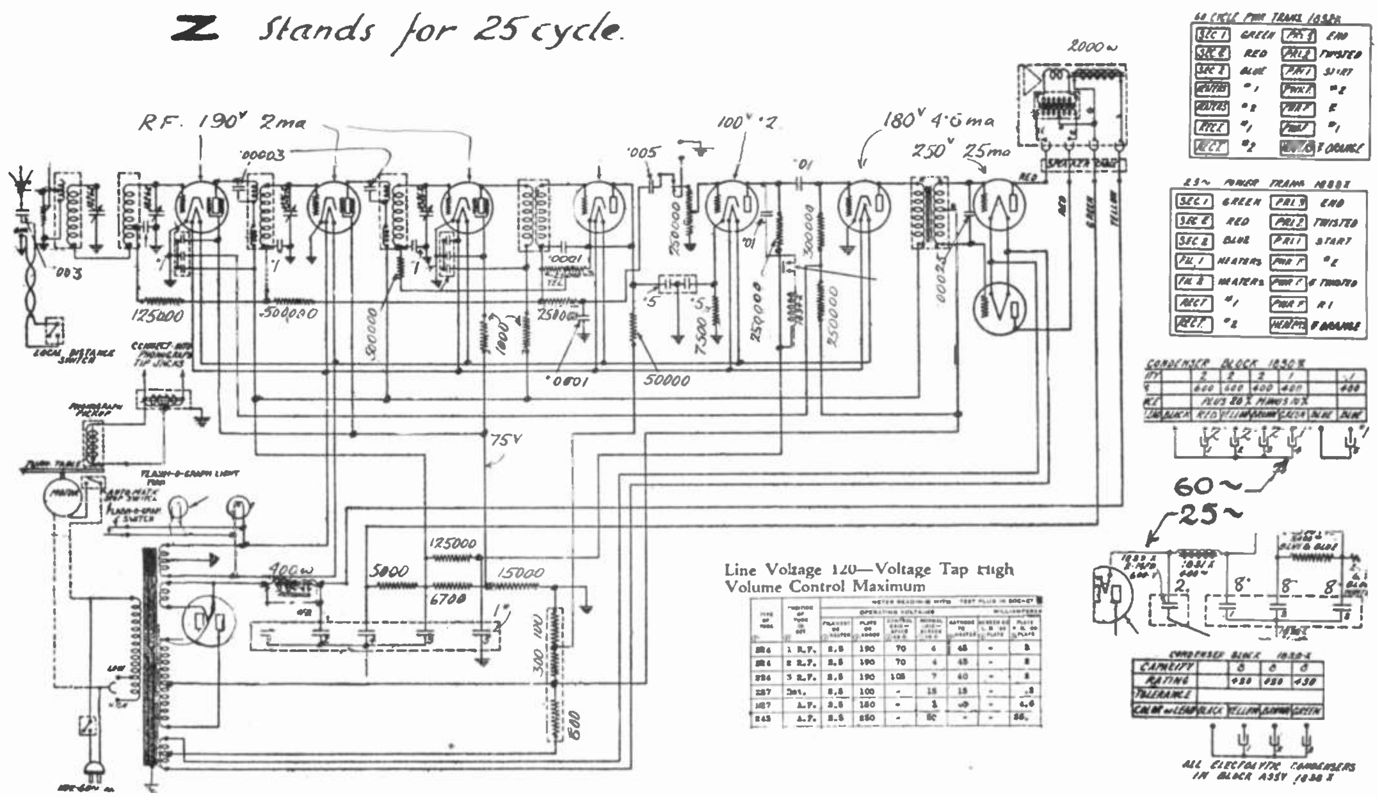
Line Voltage 117—Volume Control Full On

Type of Tube	Position of Tube in Set	Filament or Heater	Plate or Anode	Control Grid-Space	Screen Grid-Screen	Cathode to Heater	Plate Current
224	R.F.	2·4	165	3	57×		2
	Det.	-	70	IND*	5×	10	·2
227	1 A.F.	-	152	"		10	4·5
245	PP-AF	2·3	195	38			22

* on 300V scale
× on 30V scale

Models 43 - 43z. 1931

Z stands for 25 cycle.



Line Voltage 120—Voltage Tap High
Volume Control Maximum

Type of Tube	Position of Tube in Set	Filament or Heater	Plate or Anode	Control Grid-Space	Screen Grid-Screen	Cathode to Heater	[illegible]	Plate
224	1 R.F.	2.5	190	70	6	45	-	2
224	2 R.F.	2.5	190	70	4	45	-	2
224	3 R.F.	2.5	190	105	7	40	-	2
227	Det.	2.5	100	-	15	15	-	.2
227	A.F.	2.5	180	-	1	40	-	4.6
245	A.F.	2.5	250	-	50	-	-	26.

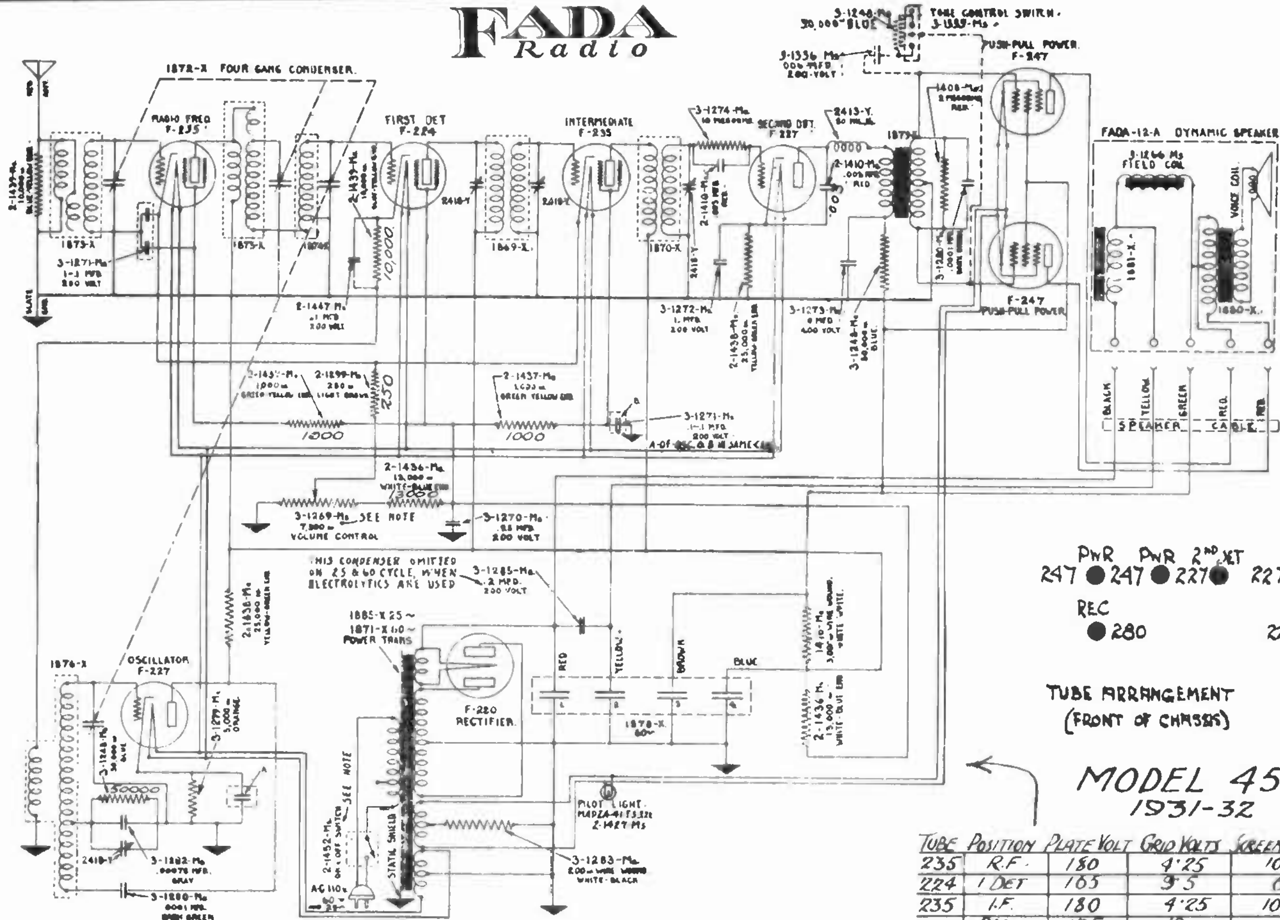
Models. 40c. 42. 44. 46. 47. 1930-31.

DATA SHEET FADA-10

Data Sheet 11 now omitted.

World Radio History

FADA Radio



PWR 247 ● PWR 247 ● 2ND DET 227 ● OSC 227 ● IF 235 ●

REC ● 280 1st DET 224 ●

RF ● 235

TUBE ARRANGEMENT (FRONT OF CHASSIS)

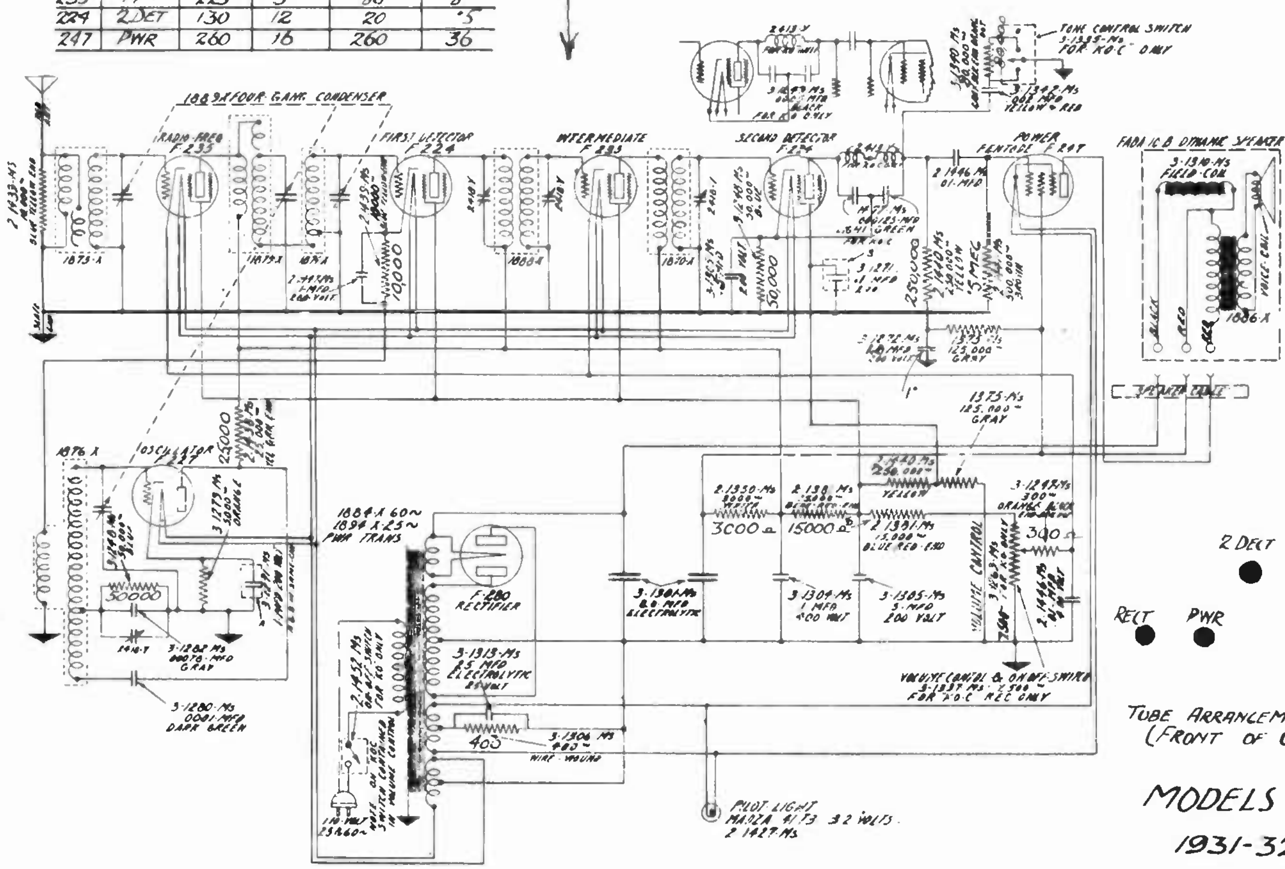
MODEL 45
1931-32

TUBE	POSITION	PLATE VOLT	GRID VOLTS	SCREEN VOLTS	PLATE Ma.
235	R.F.	180	4·25	100	8
224	1 DET	165	3·5	65	1
235	I.F.	180	4·25	100	8
227	OSC	125	10		2·25
227	2 DET	165	7		2
247	P.PULL	230	16	235	29

LINE VOLTAGE 118 VOLUME FULL ON.
I.F. 175 Kc.

TUBE	POSITION	PLATE V.	GRID VOLTS	SCREEN V	PLATE Ma.
235	R.F.	225	5	110	7·5
224	1 DET	215	14	82	1·2
227	OSC	180	10		3·5
235	I.F.	225	5	80	8
224	2 DET	130	12	20	·5
247	PWR	260	16	260	36

LINE 118V
VOL - FULL ON.
I.F. 175 Kc.



2 DET I.F. OSC

● ● ●

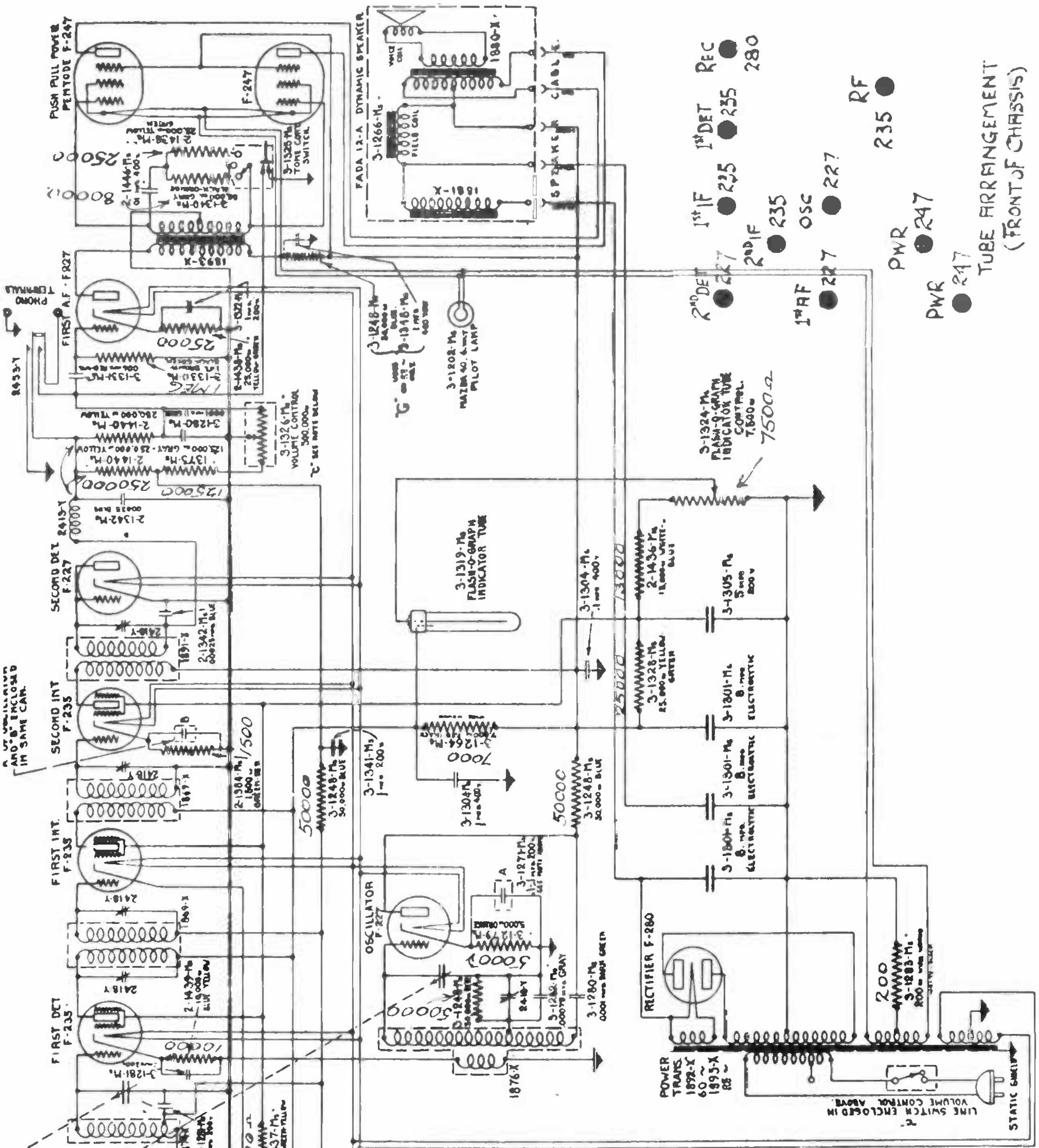
RECT PWR 1 DET

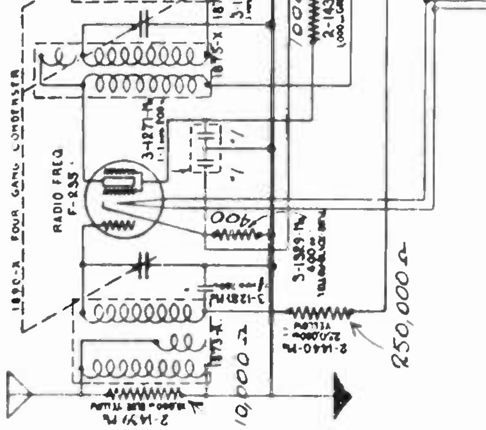
● ● ●

R.F. ●

TUBE ARRANGEMENT (FRONT OF CHASSIS)

MODELS CKO 51c - 53.
1931-32



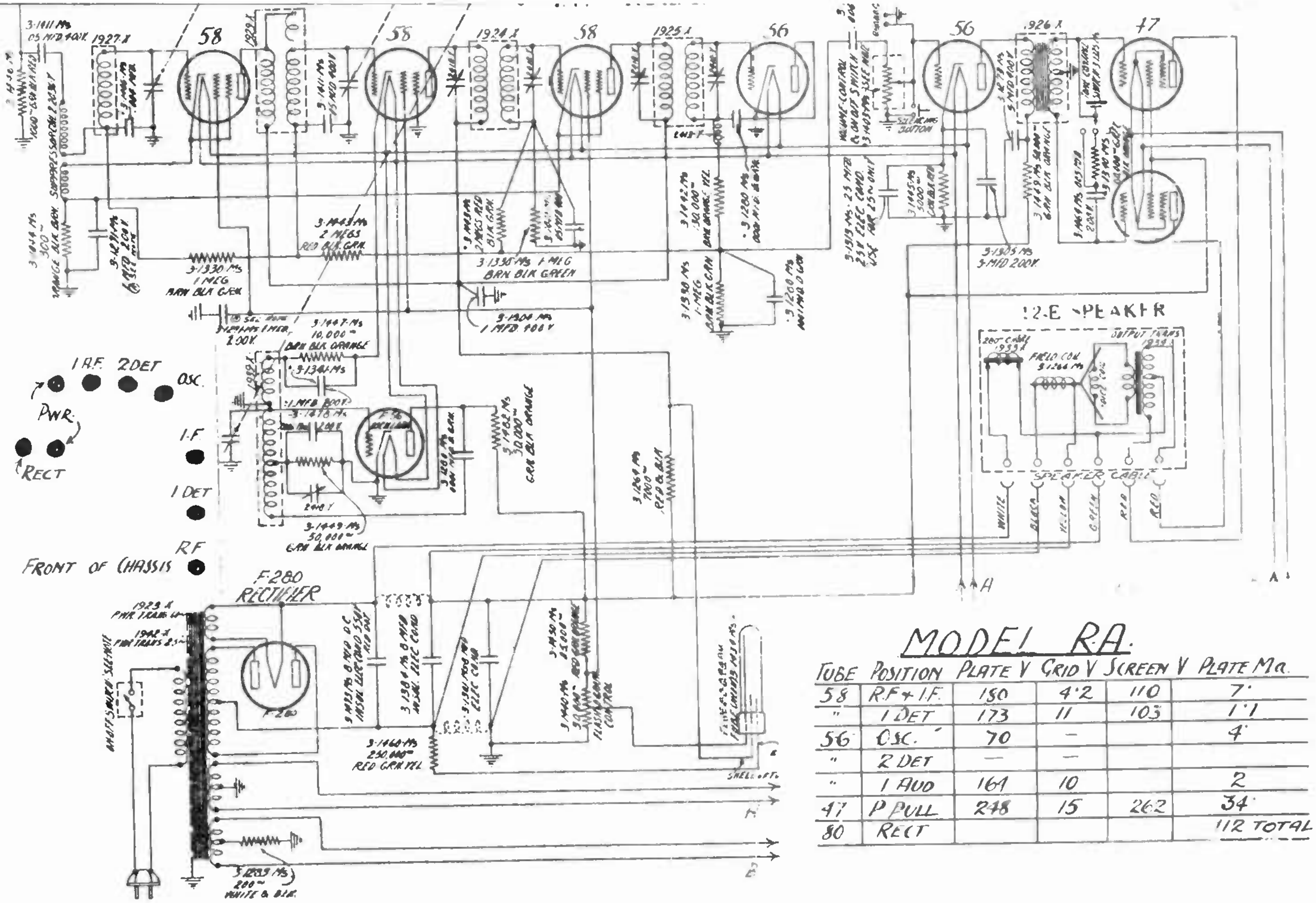


MODELS C 45 C-45Z 48 48Z 49 49Z

1931-32

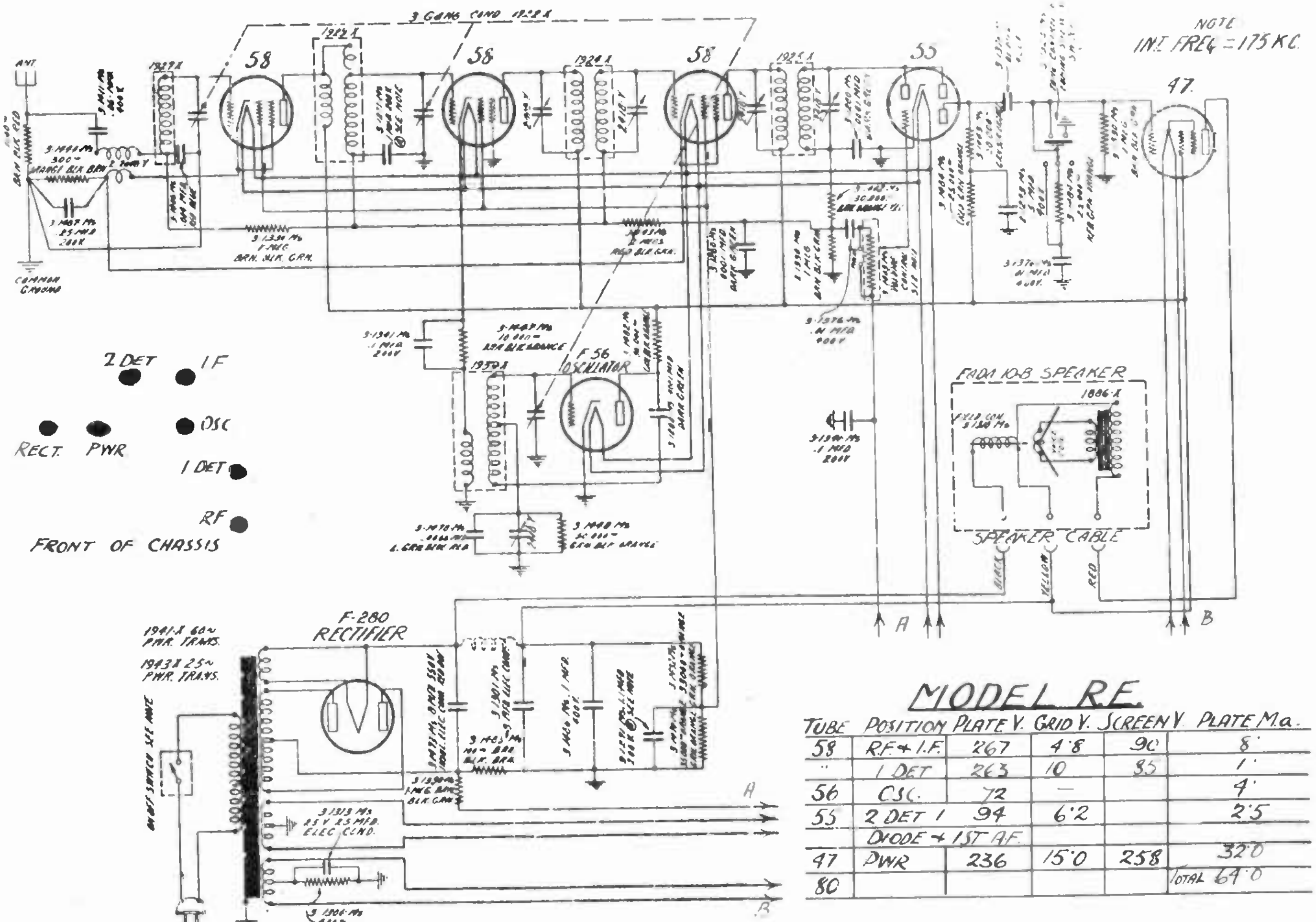
Tube	Position	Plate Volts	Grid Volts	Screen Volts	Plate Ma.
235	R.F	165	5	85	6.5
"	1 DET	150	9.5	60	1.5
"	1 I.F.	205	4	88	3.25
"	2 I.F.	250	5.5	85	5
227	2 DET	—	—	—	—
"	OSC.	135	5.5		2.5
"	1 AUD.	180	2.5		1
247	P. PULL	225	15	225	34

I.F. 175 Kc.



MODEL RA.

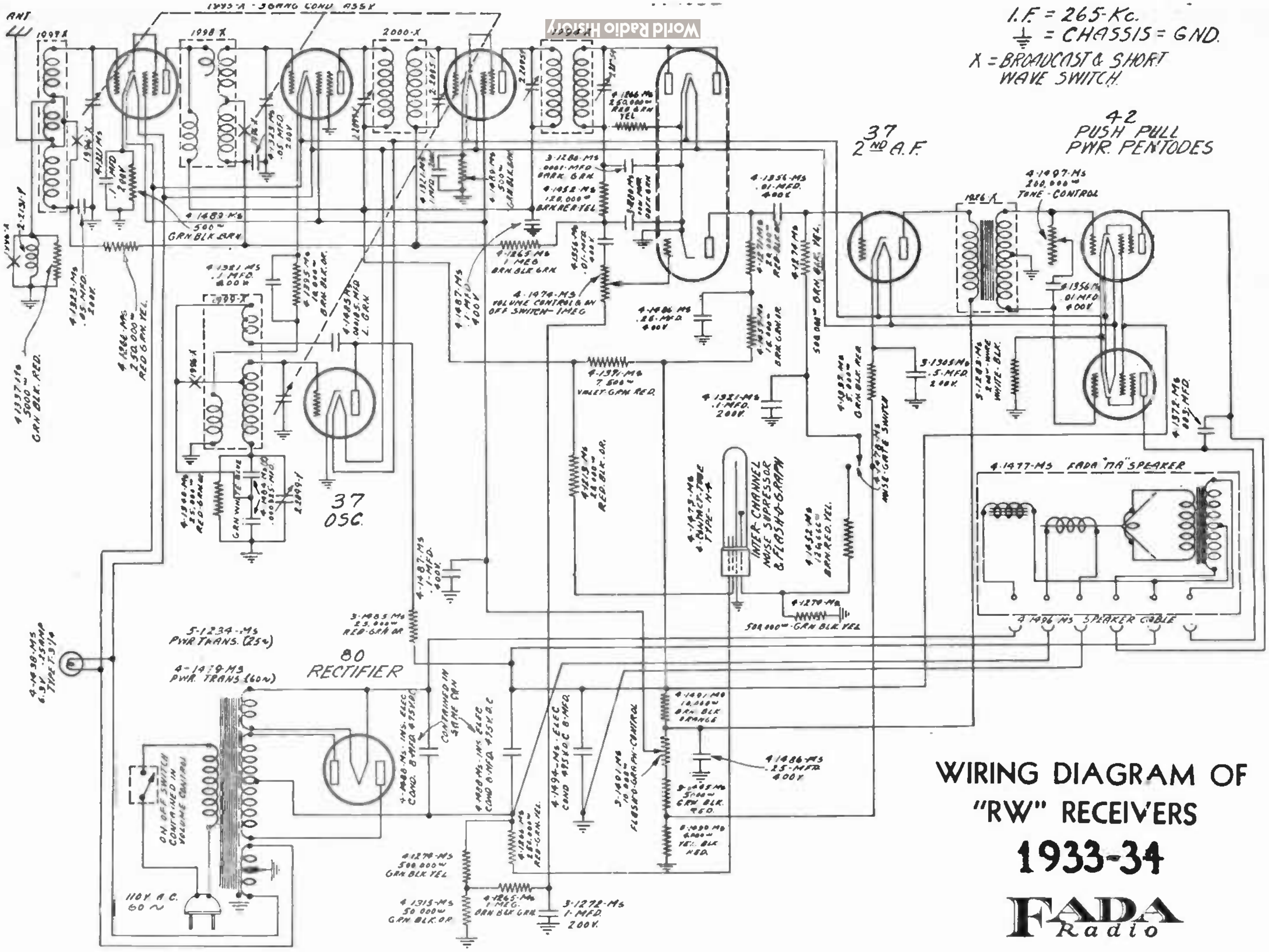
TUBE	POSITION	PLATE V	GRID V	SCREEN V	PLATE Ma.
58	R.F.+ I.F.	150	4·2	110	7·
"	1 DET	173	11	103	1·1
56	OSC.	70	—		4·
"	2 DET	—	—		
"	1 AUD	161	10		2
47	P PULL	248	15	262	34·
80	RECT				112 TOTAL



MODEL RE.

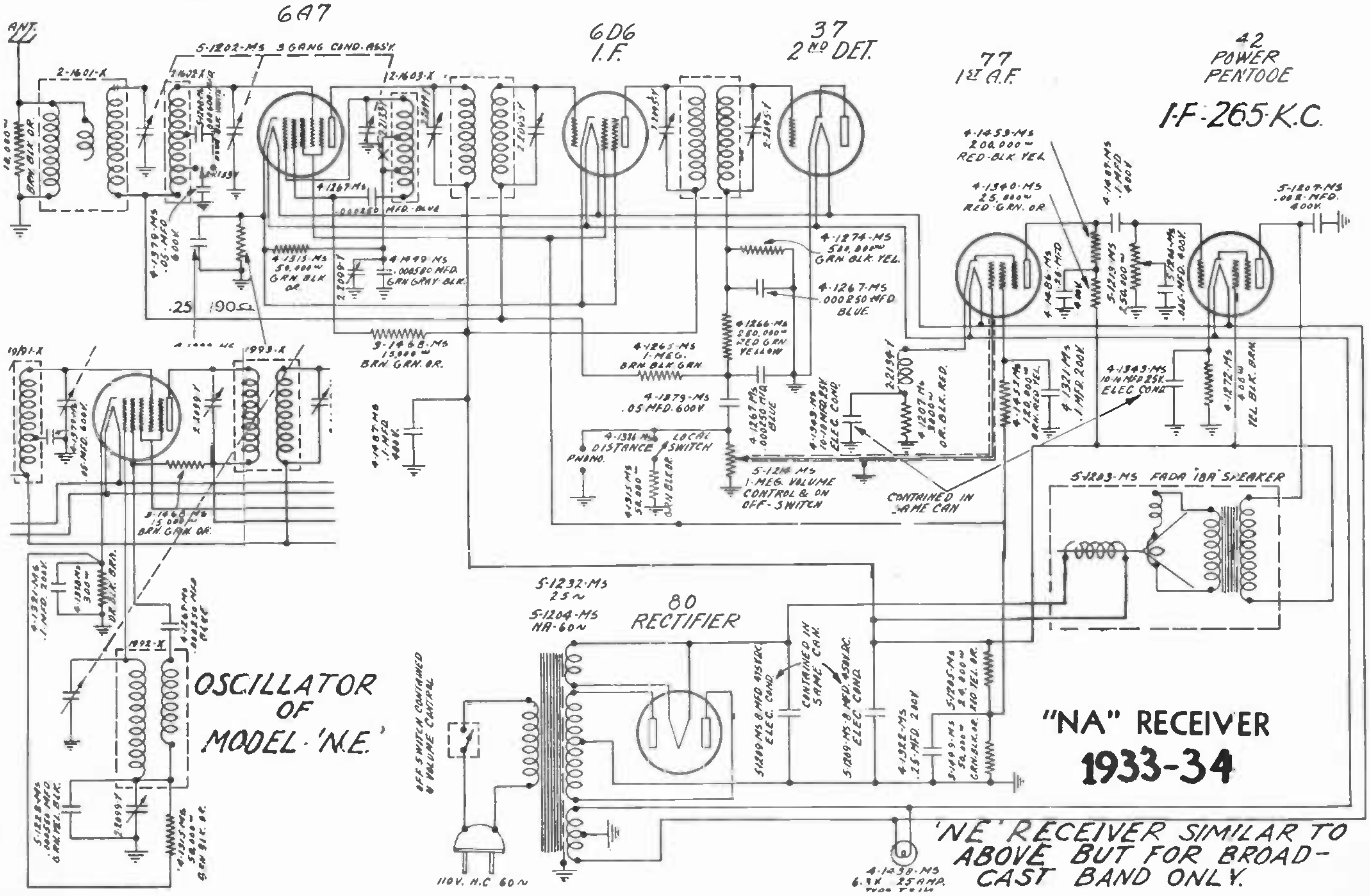
TUBE	POSITION	PLATE V.	GRID V.	SCREEN V.	PLATE Ma.
58	R.F.+ I.F.	267	4·8	90	8·
"	1 DET	263	10	85	1·
56	OSC.	72	—		4·
55	2 DET / DIODE + 1ST A.F.	94	6·2		2·5
47	PWR	236	15·0	258	32·0
80					TOTAL 64·0

—Courtesy Fada Radio Limited



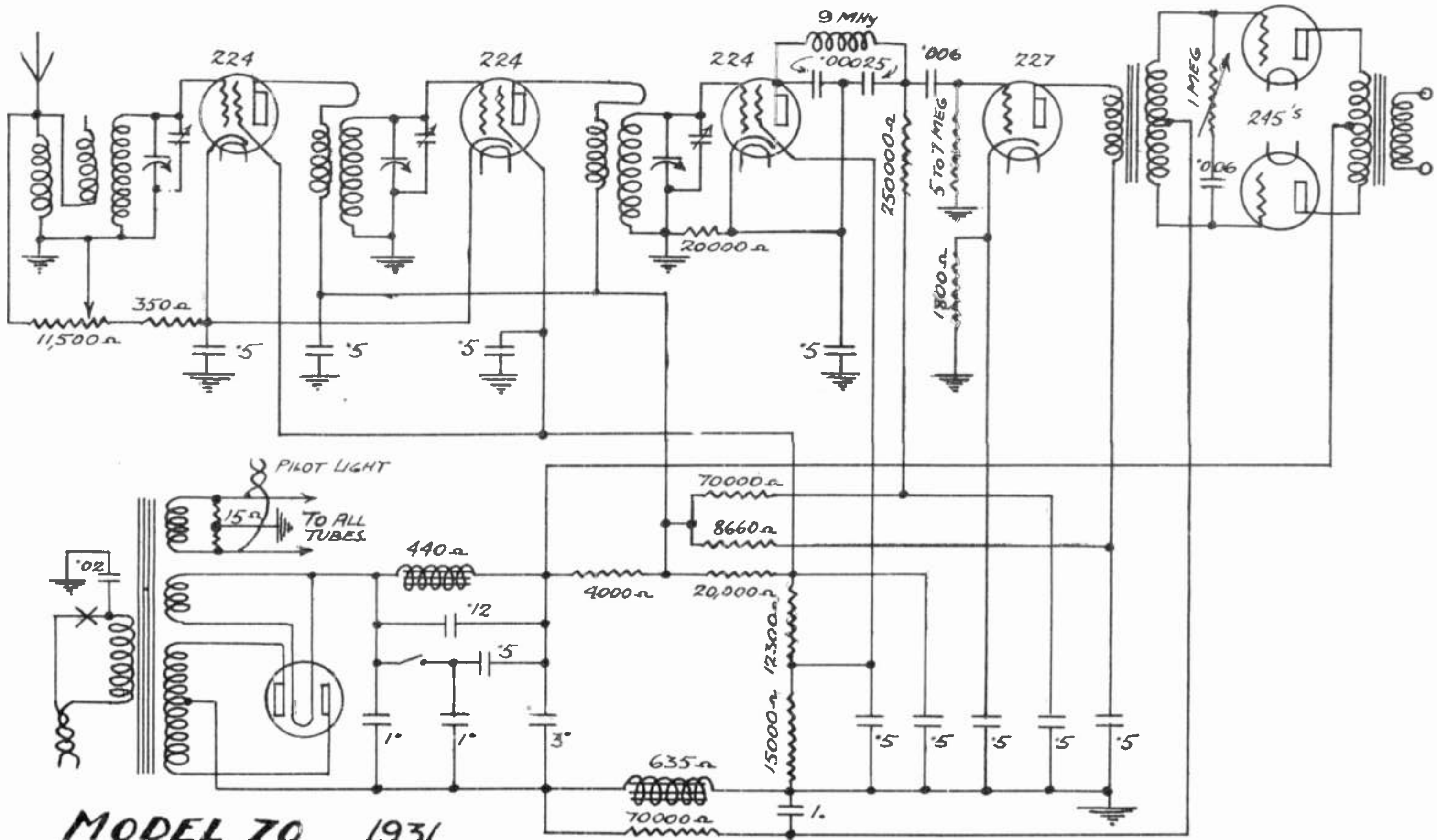
WIRING DIAGRAM OF "RW" RECEIVERS 1933-34

FADA Radio

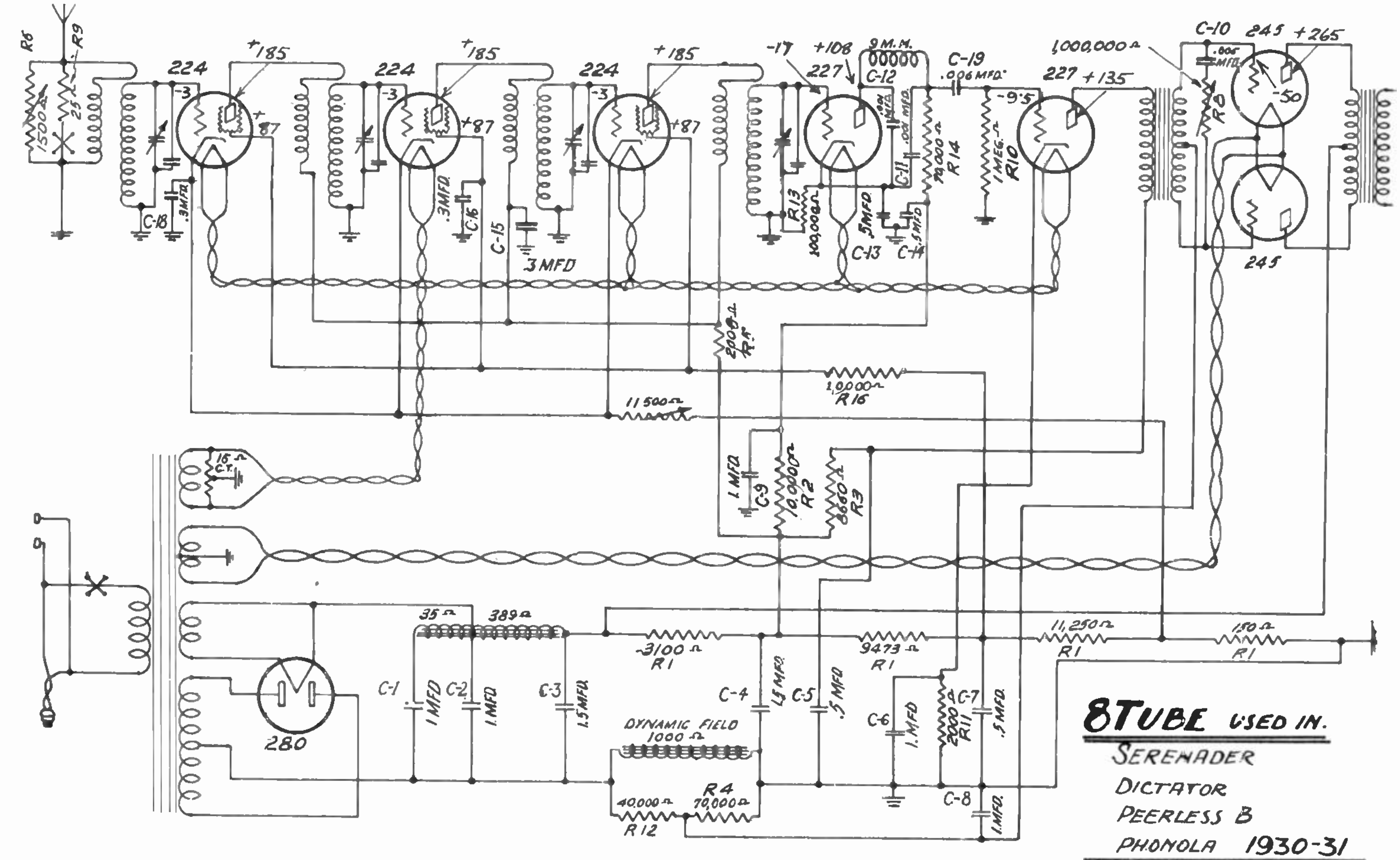


"NA" RECEIVER 1933-34

'NE' RECEIVER SIMILAR TO ABOVE BUT FOR BROAD-CAST BAND ONLY.



MODEL 70 1931



8 TUBE USED IN.

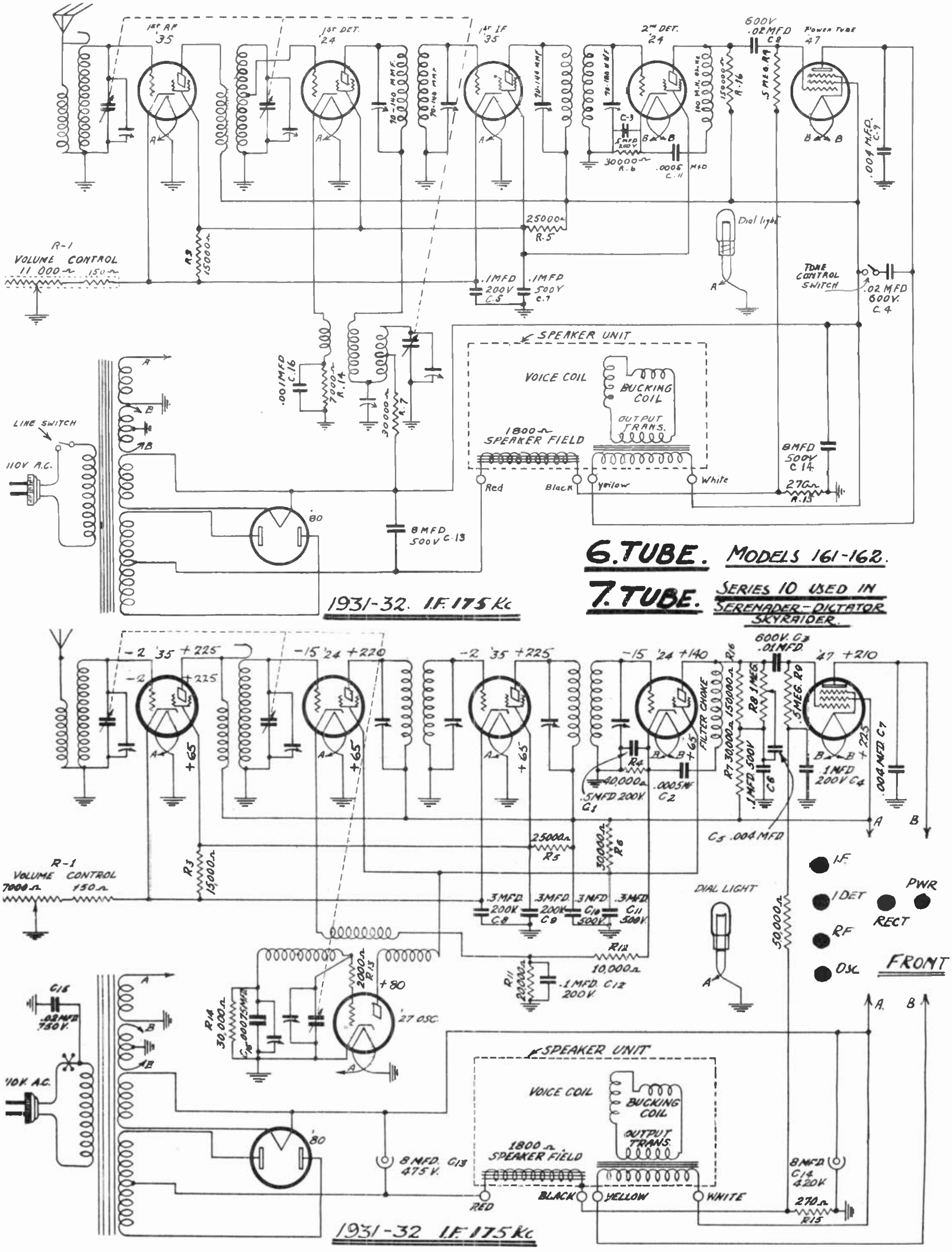
SERENADER

DICTATOR

PEERLESS B

PHONOLA 1930-31

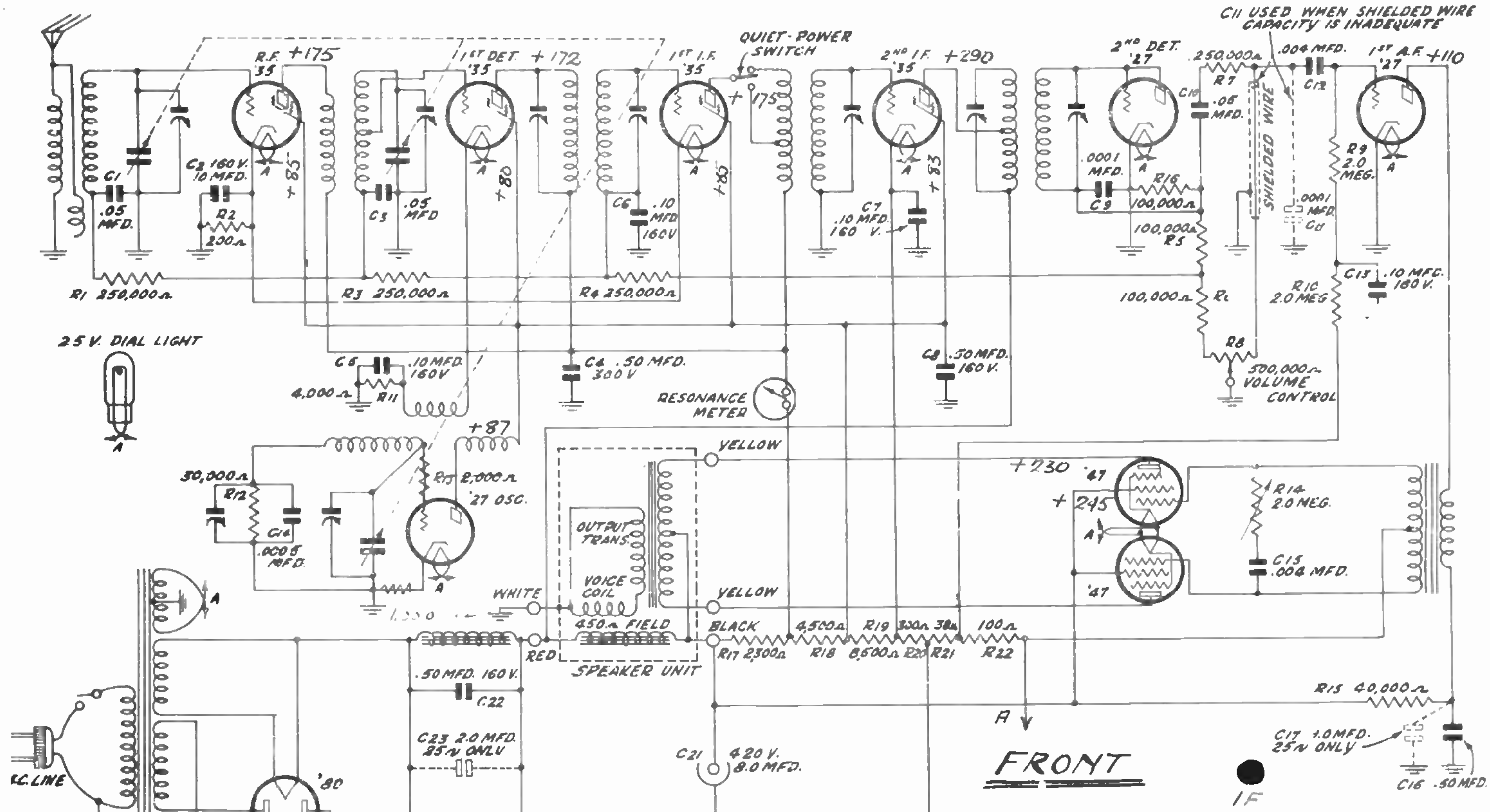
COURTESY GRIMES RADIO LTD.
Printed in Canada.

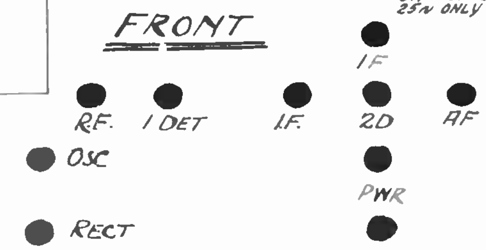


COURTESY GRIMES RADIO LTD
Printed in Canada.

DATA SHEET

GRIMES PHONOLA-3

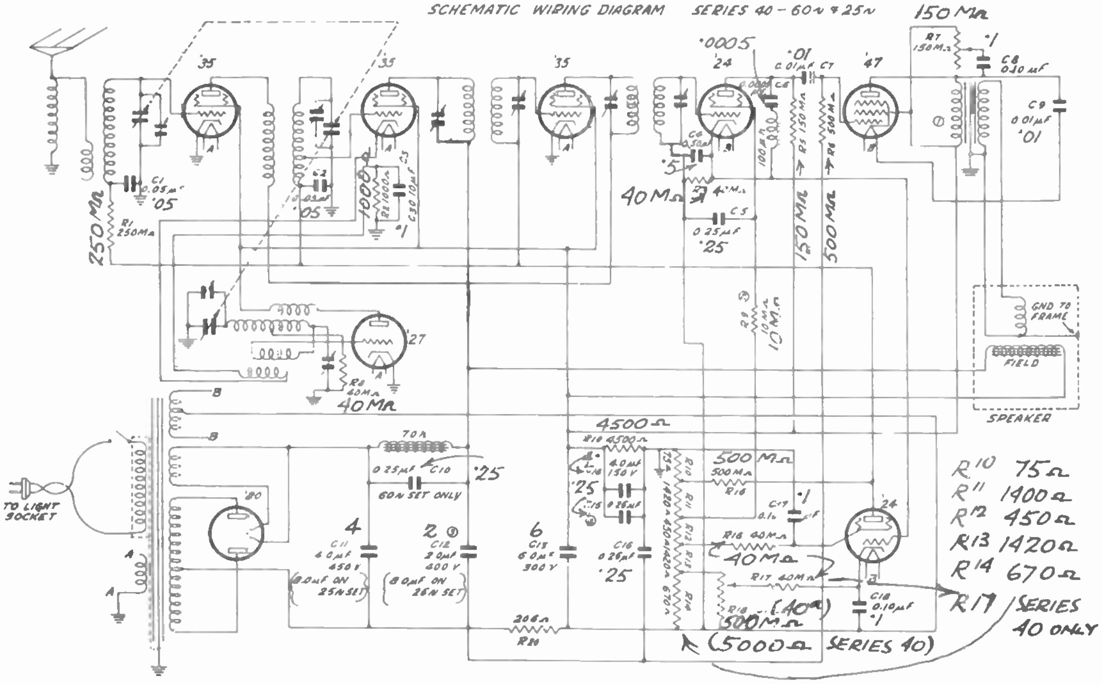




IF 175 Kc

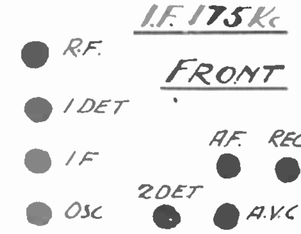
SERIES 20 1931-32 10 TUBE

SCHEMATIC WIRING DIAGRAM SERIES 40 – 60~ & 25~



Tube	Circuit	110 V.	120 V.
R. F. '35	Screen-Grid	85	92
	Plate	175	191
1st Det '35	Screen Grid	85	92
	Plate	175	191
I. F. '35	Screen-Grid	85	92
	Plate	175	191
Oscillator '27	Plate	85	92
2nd Det '24	Screen-Grid	80	87
	Plate	141	148
A. V. C. '24	Grid	17	18.5
	Screen-Grid	28	30
Audio '47	Accelerating-Grid	244	267
	Plate	210	230

I.F. 175 Kc



SERIES 40
40A
1932.

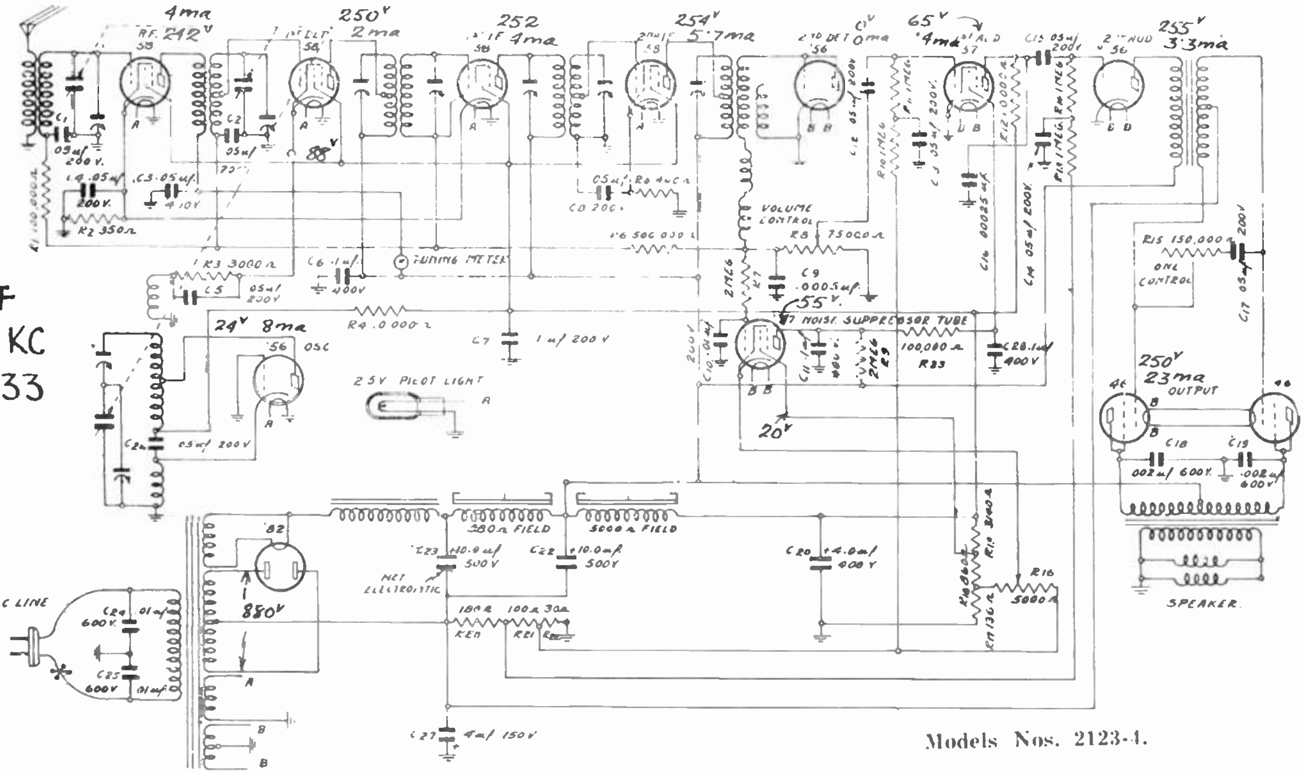
SERIES 40 AND 40A ALIKE EXCEPT FOR SLIGHT CHANGES IN A.V.C. CIRCUIT.

COURTESY GRIMES RADIO LTD
Printed in Canada.

World Radio History

Models-2123-4 Used in Phonola, Serenader, Dictator, Arcadia.

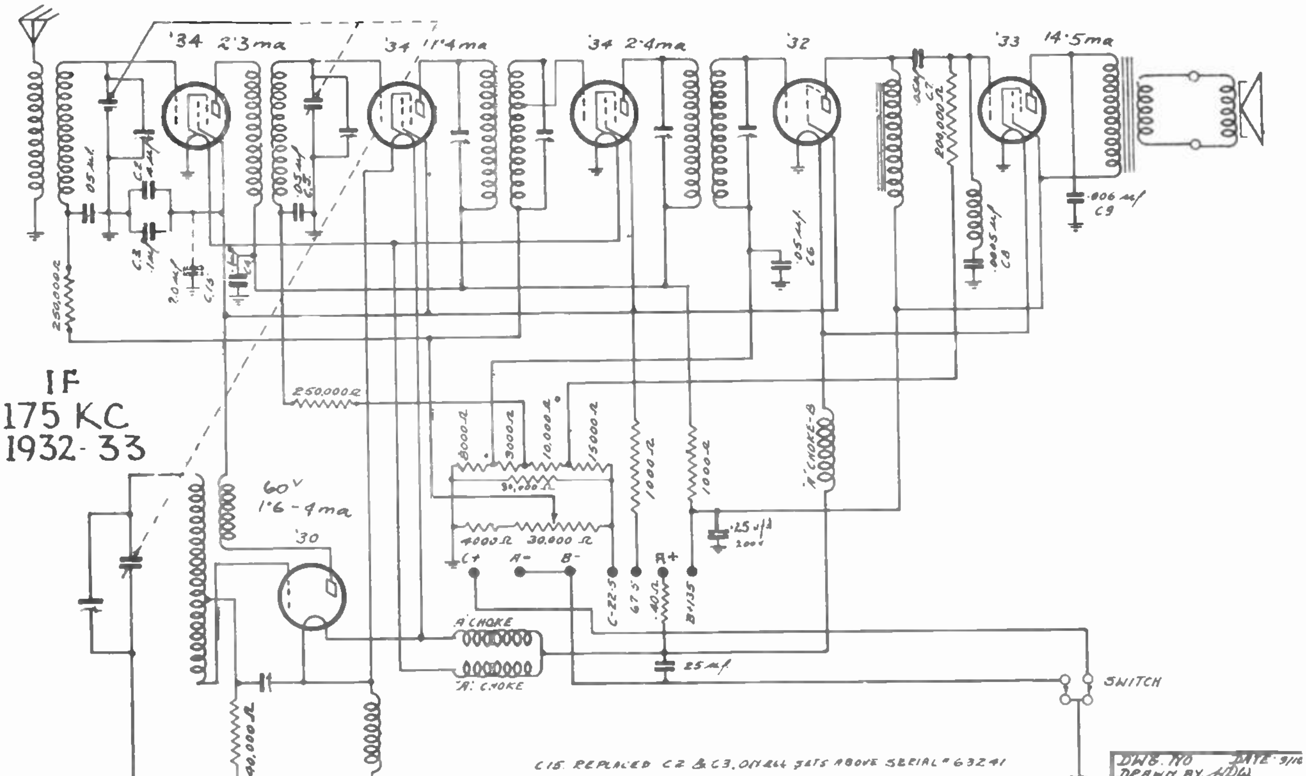
IF
175 KC
1932-33



Models Nos. 2123-4.

Models-2B63-4 Used in Phonola and Serenader

IF
175 KC
1932-33



C15 REPLACED C2 & C3, ON ALL SETS ABOVE SERIAL # 63241

-Models Nos. 2B63-4.

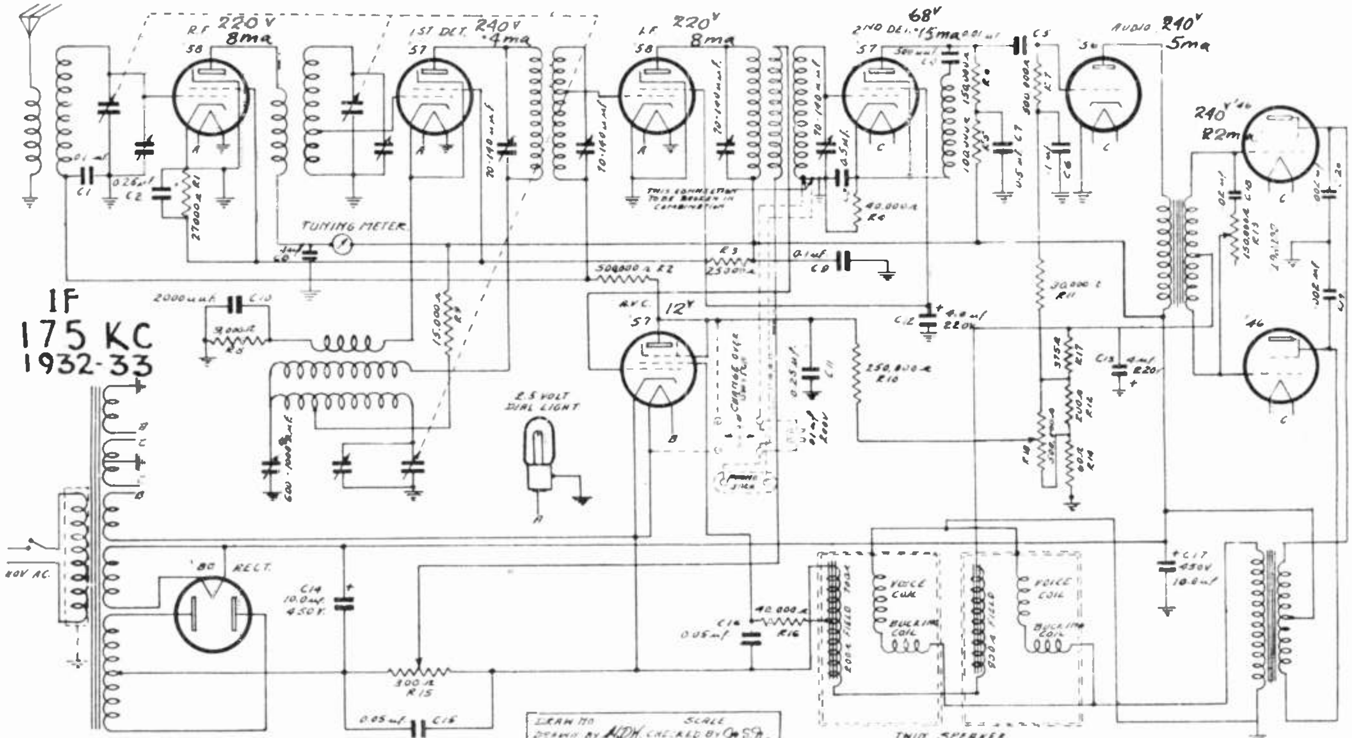
DWG. NO.
DRAWN BY
CHECKED BY
APPROVED BY

PRINTED IN CANADA

DATA SHEET PHONOLA-5

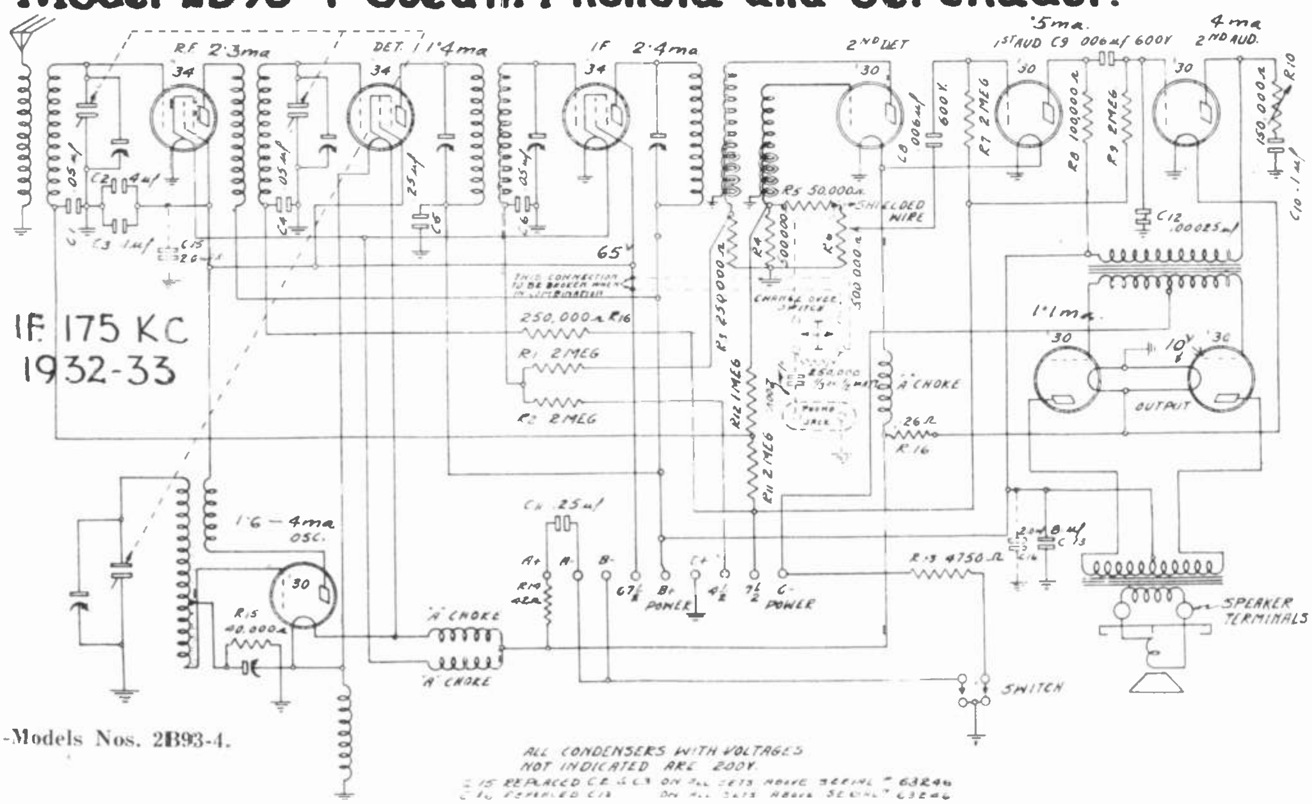
World Radio History

Model-293-4 Used in Phonola and Serenader

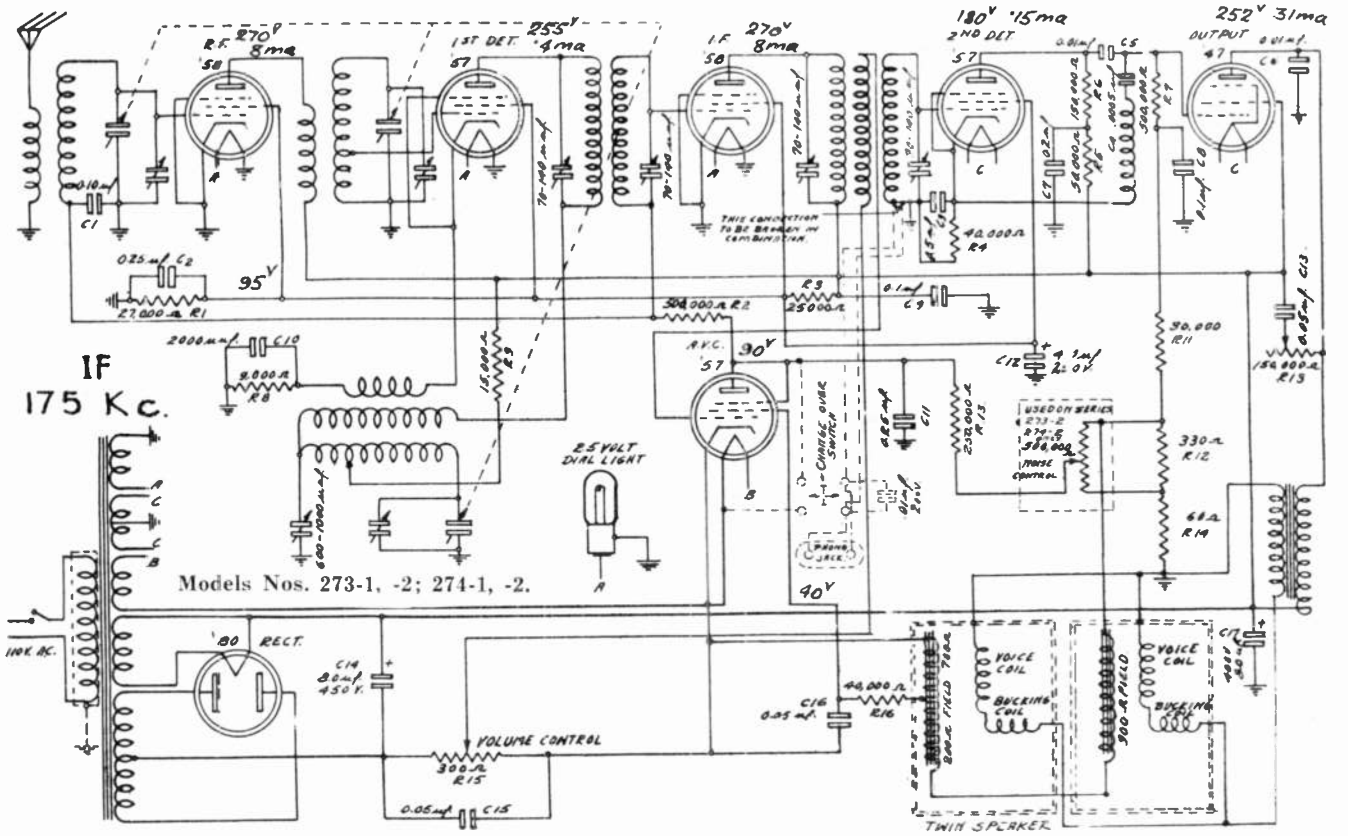


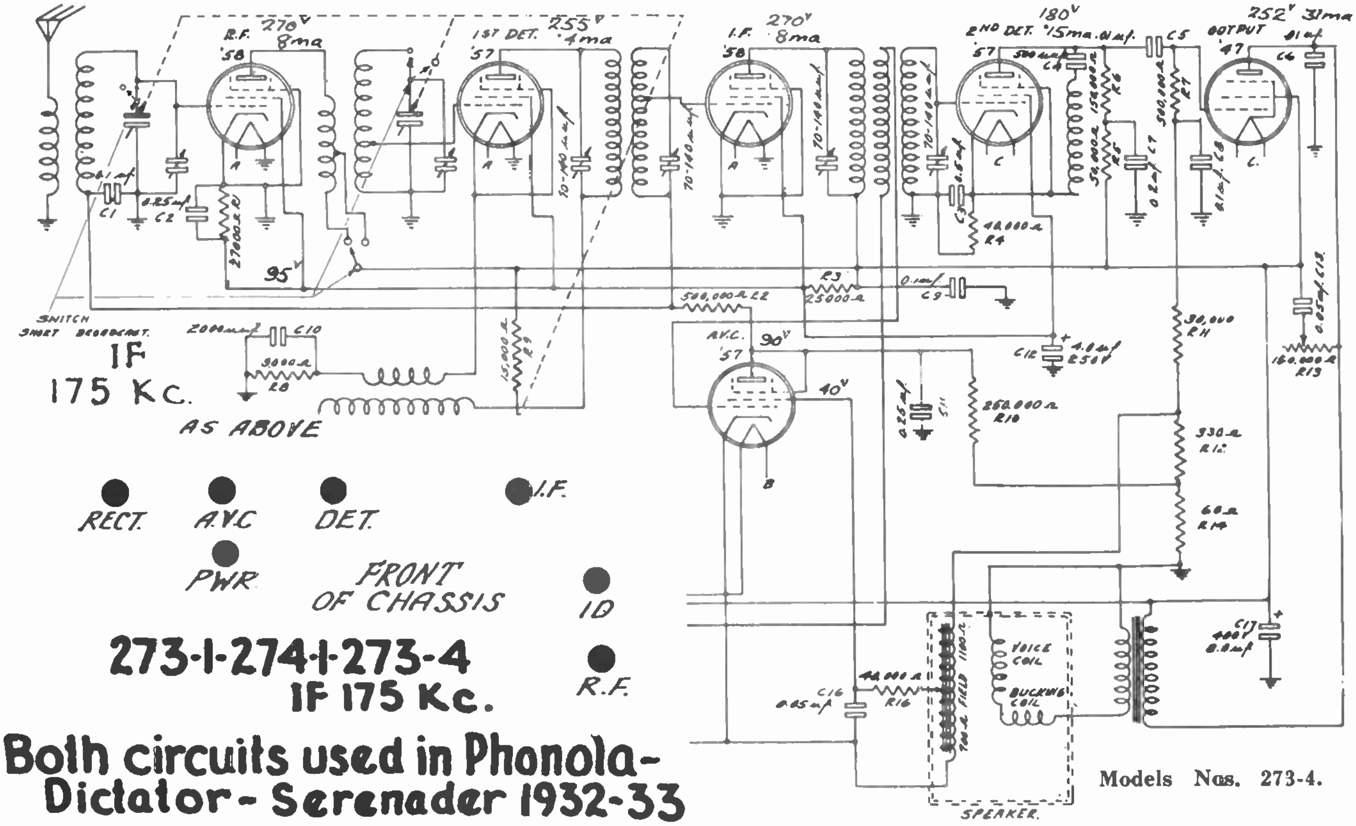
Models Nos. 293-1.

Model 2B93-4 Used in Phonola and Serenader.



-Models Nos. 2B93-4.





RECT. A.V.C DET. I.F.

PWR FRONT OF CHASSIS ID

R.F.

273-1-274-1-273-4
IF 175 Kc.

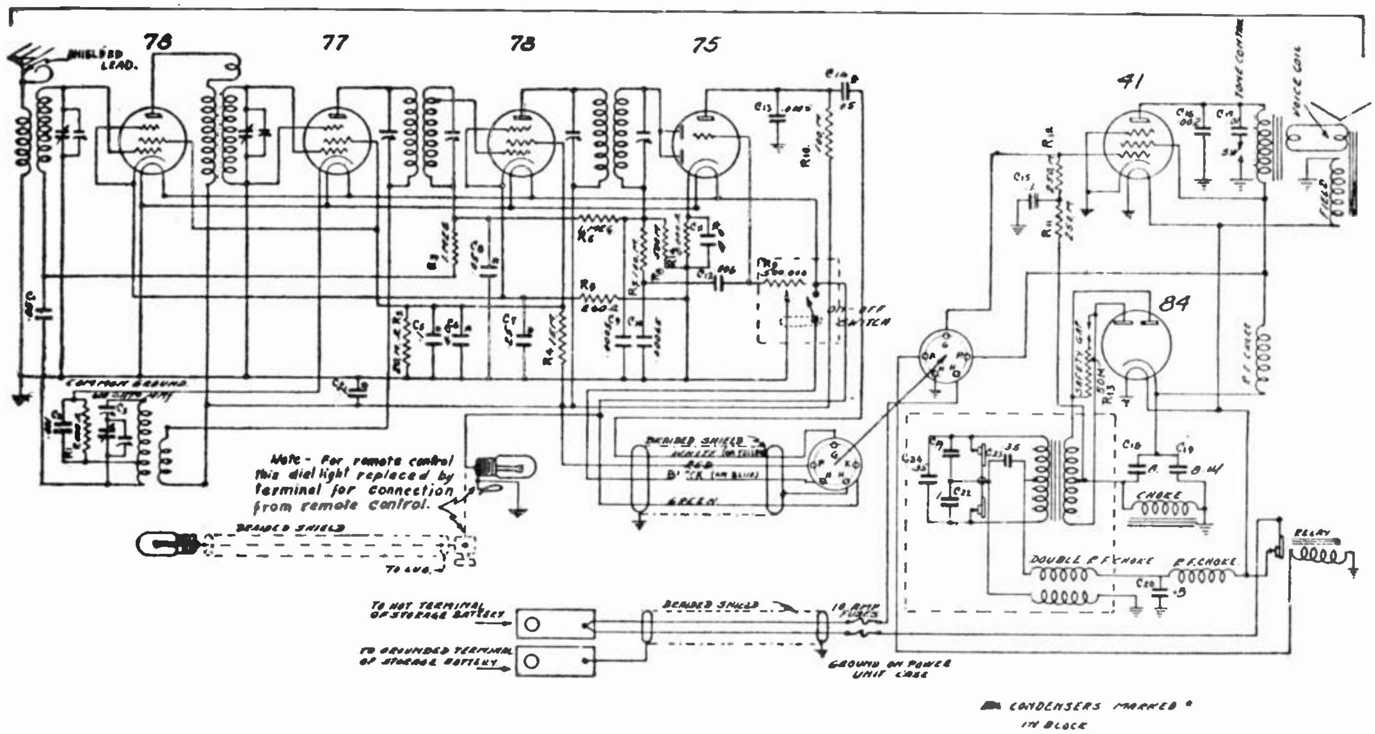
Both circuits used in Phonola-Dictator-Serenader 1932-33

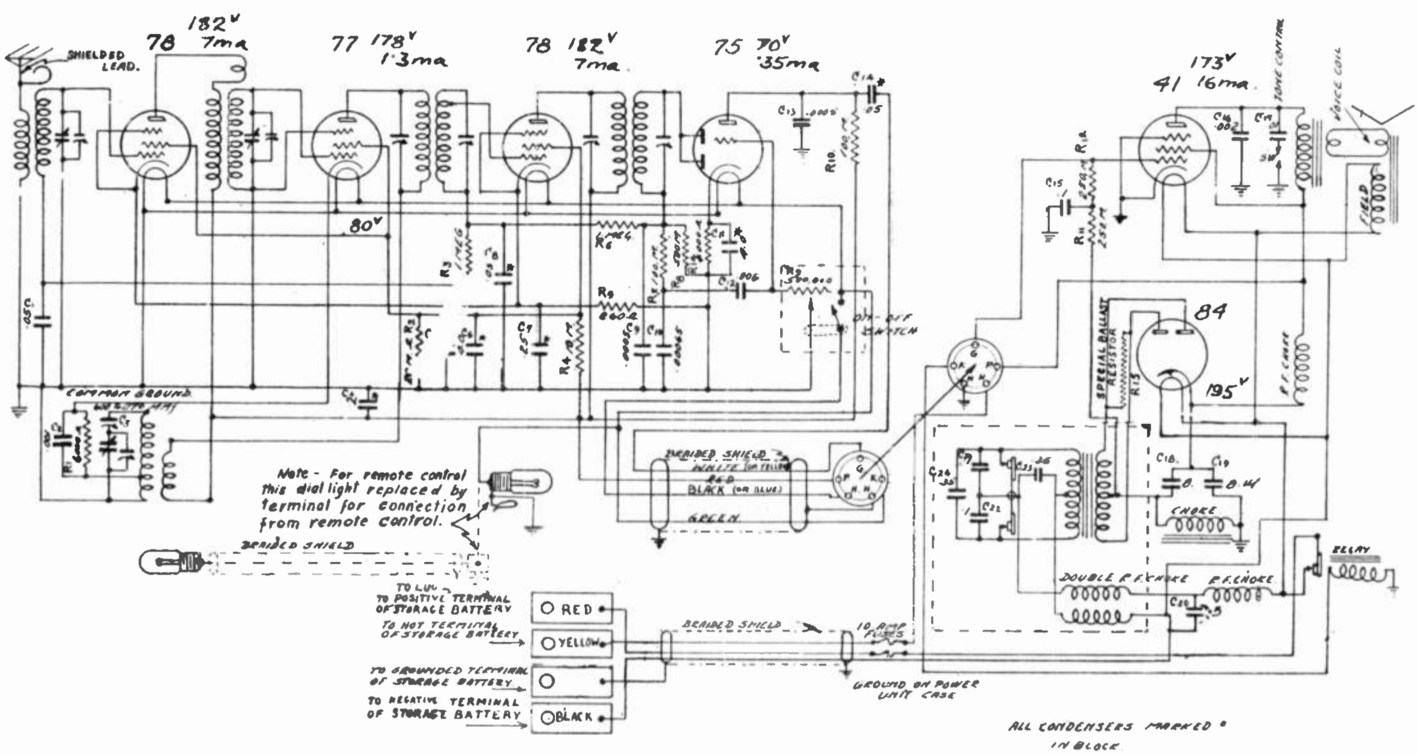
DATA SHEET

PRINTED IN CANADA

PHONOLA-7

Models 3A61 and 3A62 (Auto-Receivers) 1933-34 IF. 175 Kc.





–Schematic Circuit Diagram for Serial Numbers Above—63445.

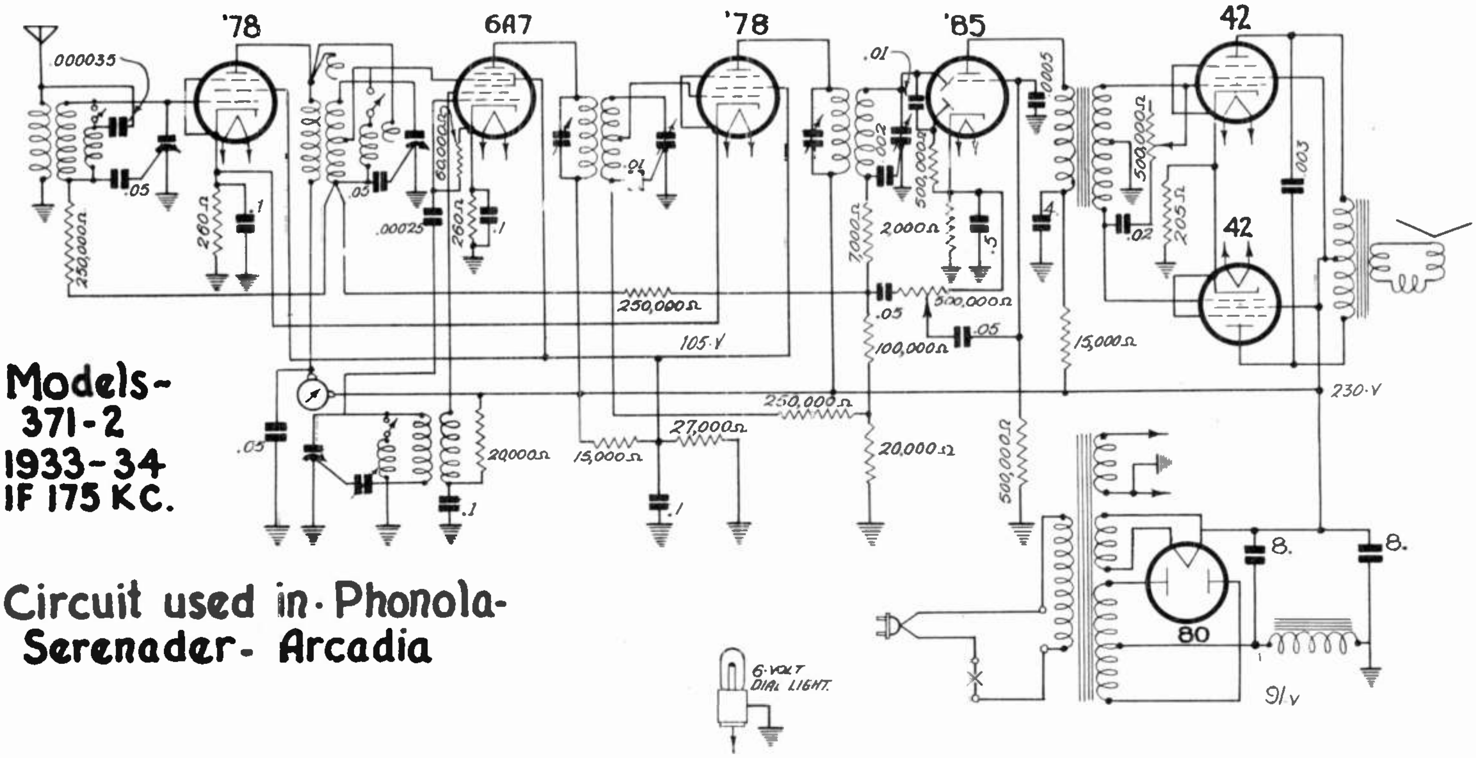
DATA SHEET

PRINTED IN CANADA

PHONOLA-8

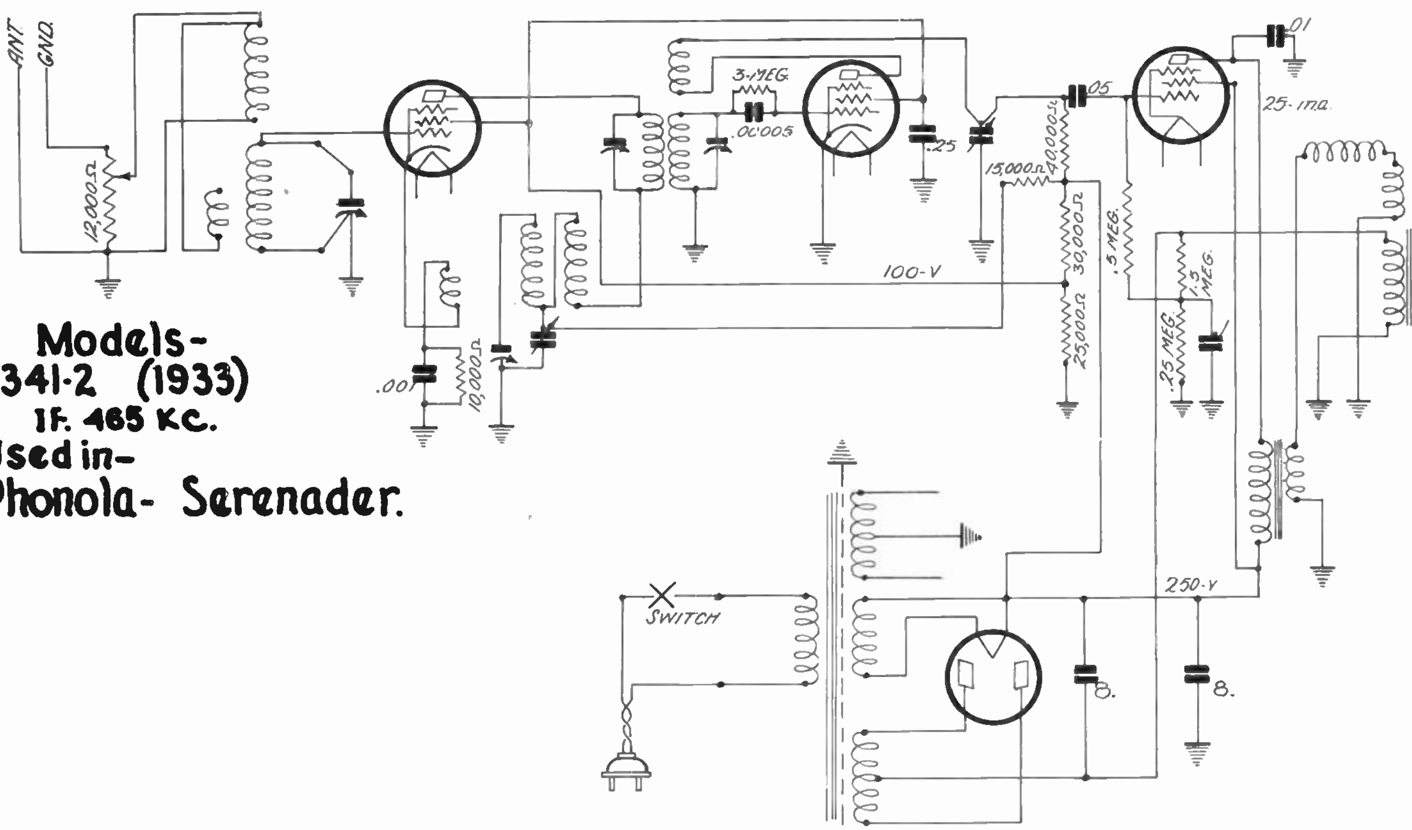
World Radio History

World Radio History



Models-
371-2
1933-34
IF 175 KC.

Circuit used in · Phonola-
Serenader- Arcadia

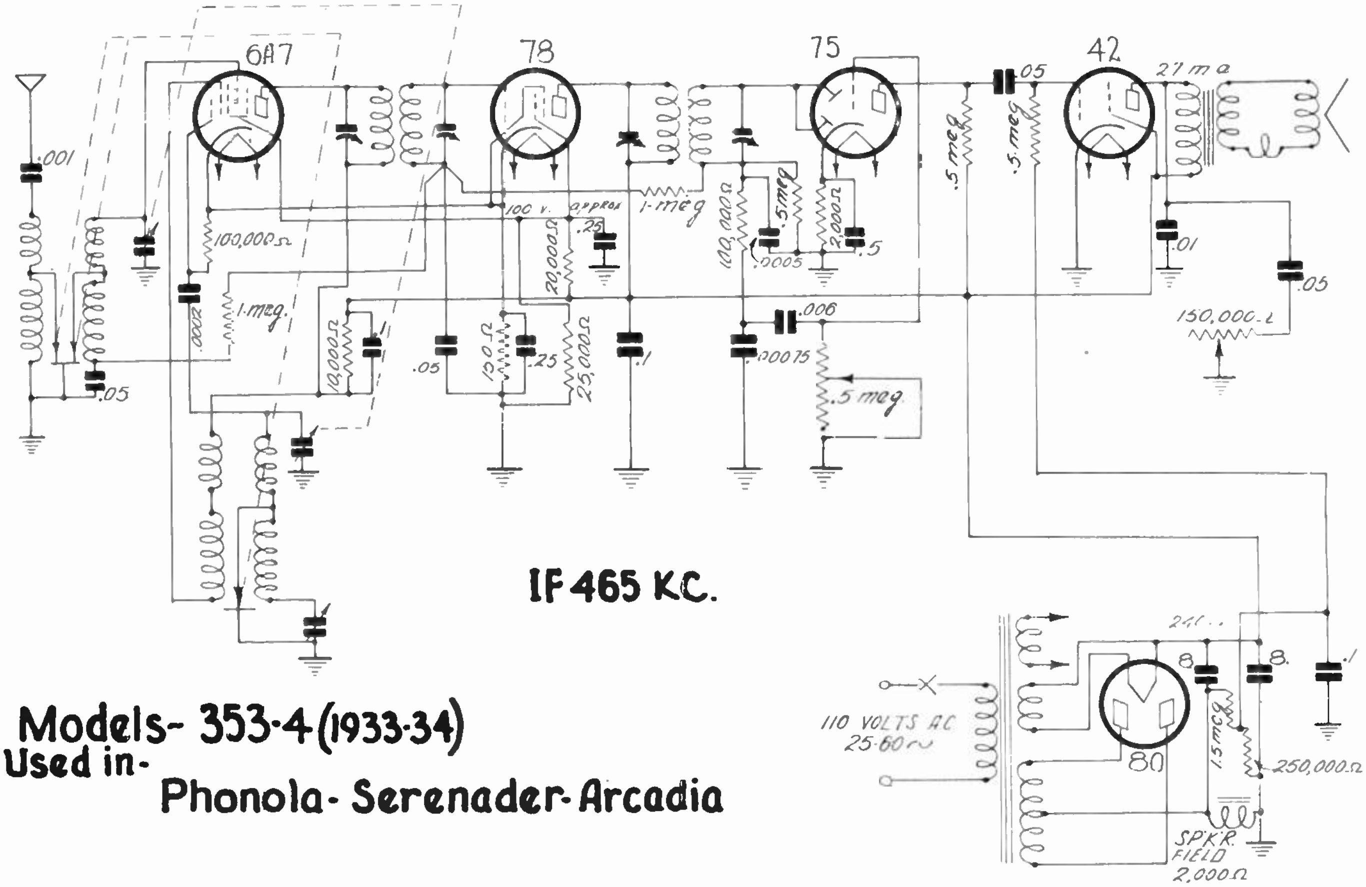


Models-
341-2 (1933)
IF. 465 KC.
Used in-
Phonola- Serenader.

DATA SHEET

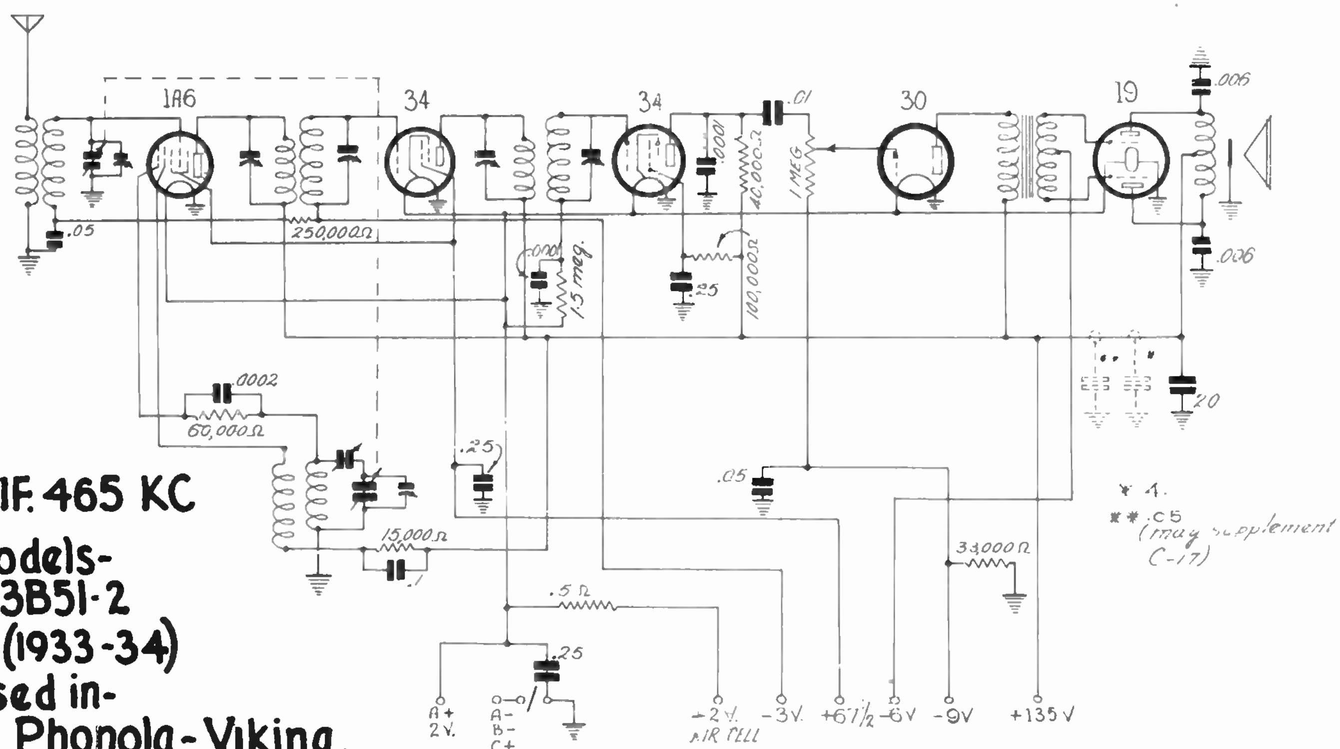
PHONOLA-9

PRINTED IN CANADA



IF 465 KC.

Models- 353-4 (1933-34)
Used in-
Phonola- Serenader- Arcadia



IF. 465 KC

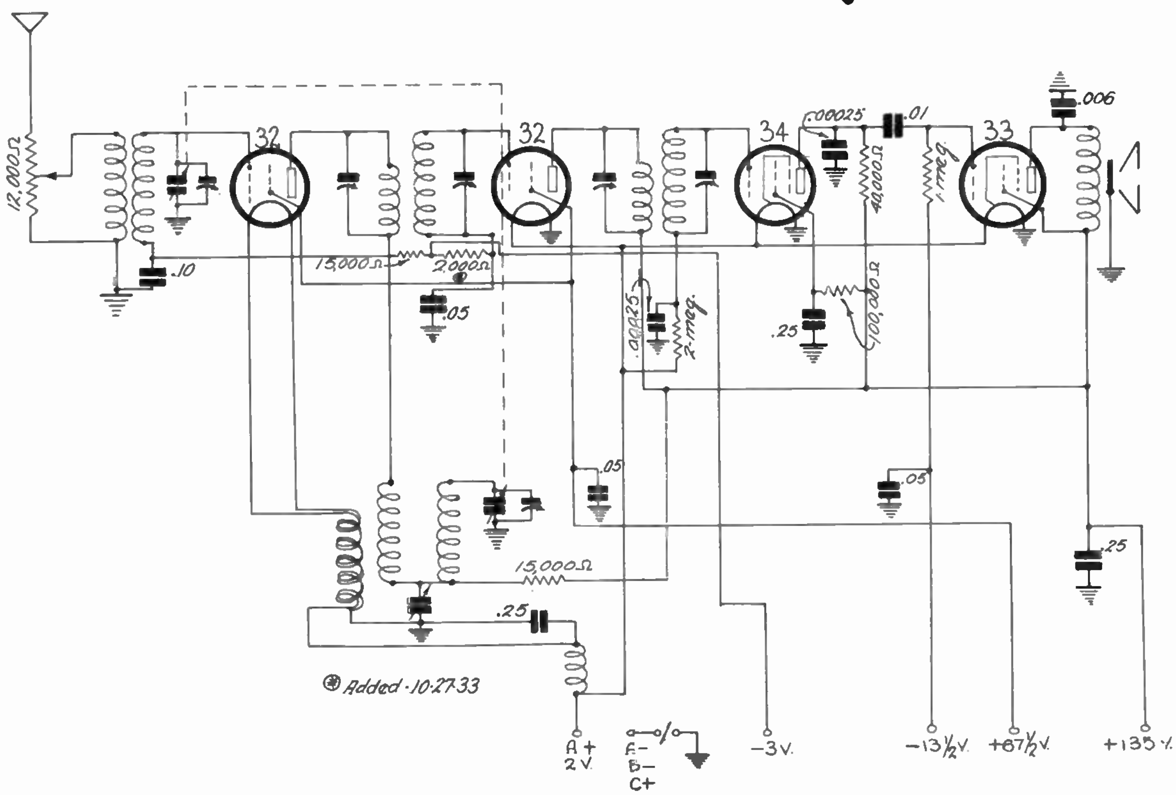
Models-
3B51-2
(1933-34)
Used in-
Phonola- Viking.

DATA SHEET

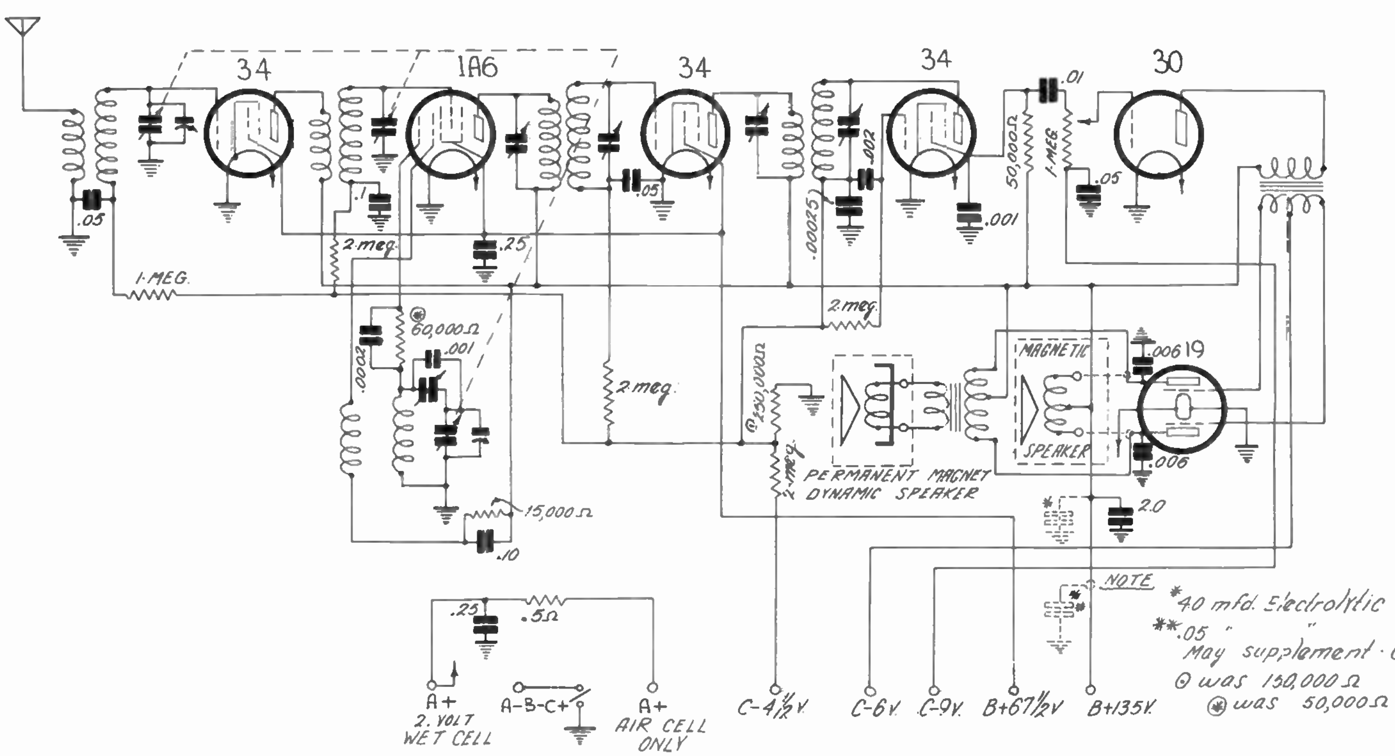
PRINTED IN CANADA

PHONOLA-10

Model-3B41-2 1933-34 I.F. 465 KC. Viking-Arcadia

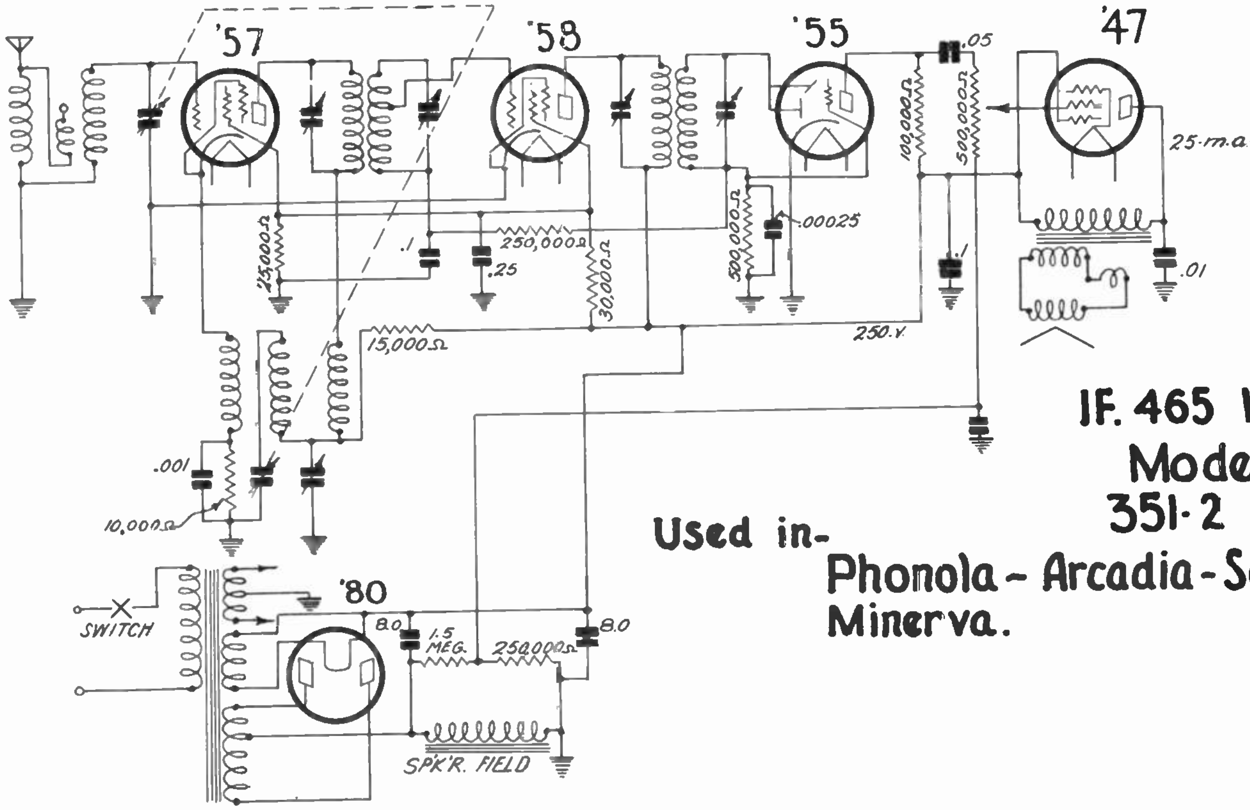


Model-3B64-5 1933-34 I.F. 175 KC Phonola-Serenader



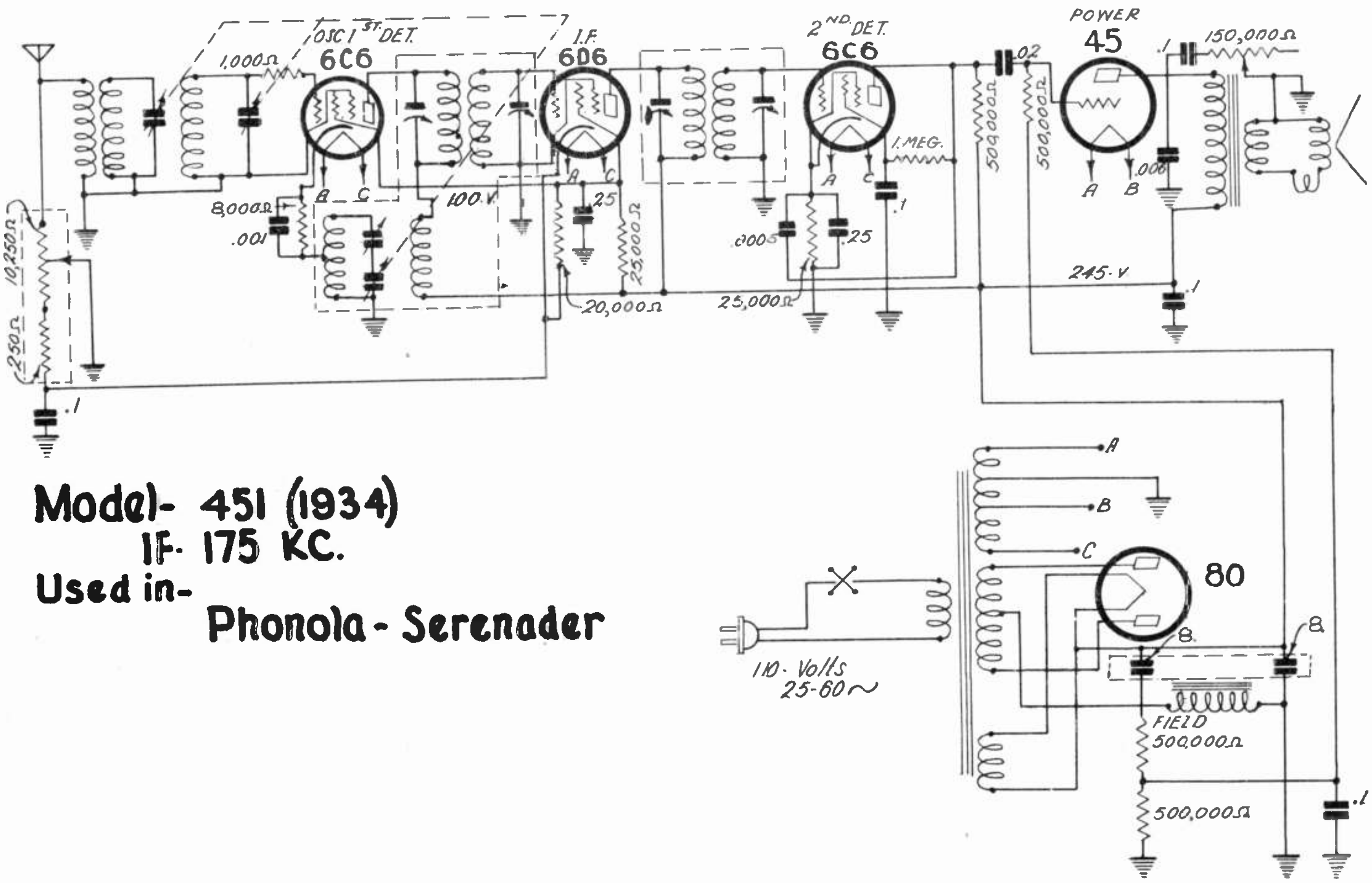
DATA SHEET PRINTED IN CANADA PHONOLA-11

World Radio History



IF. 465 KC.
Models- 351-2 1933

Used in- Phonola - Arcadia - Serenader Minerva.



Model- 451 (1934)
IF- 175 KC.

Used in- Phonola - Serenader

DATA SHEET

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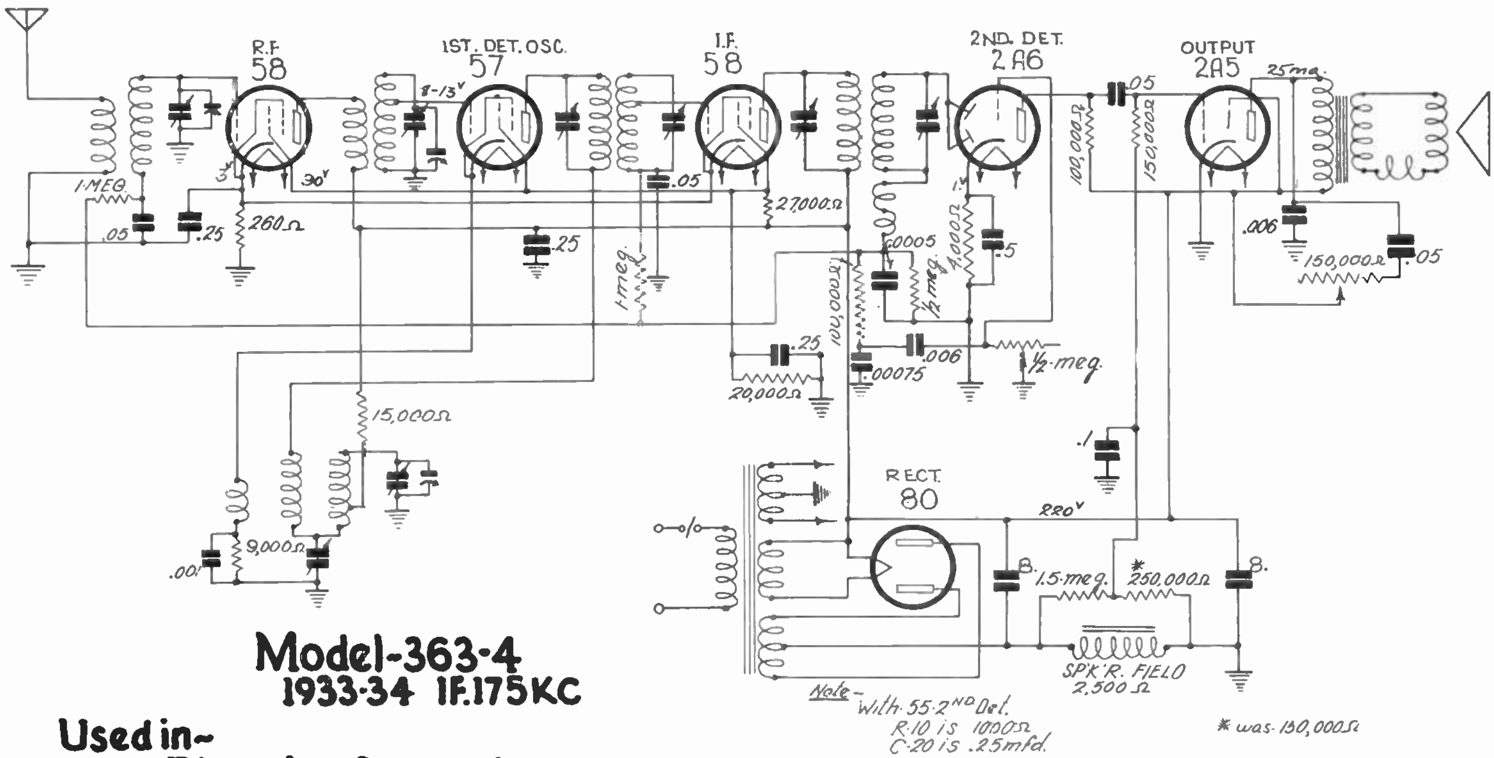
PHONOLA-12

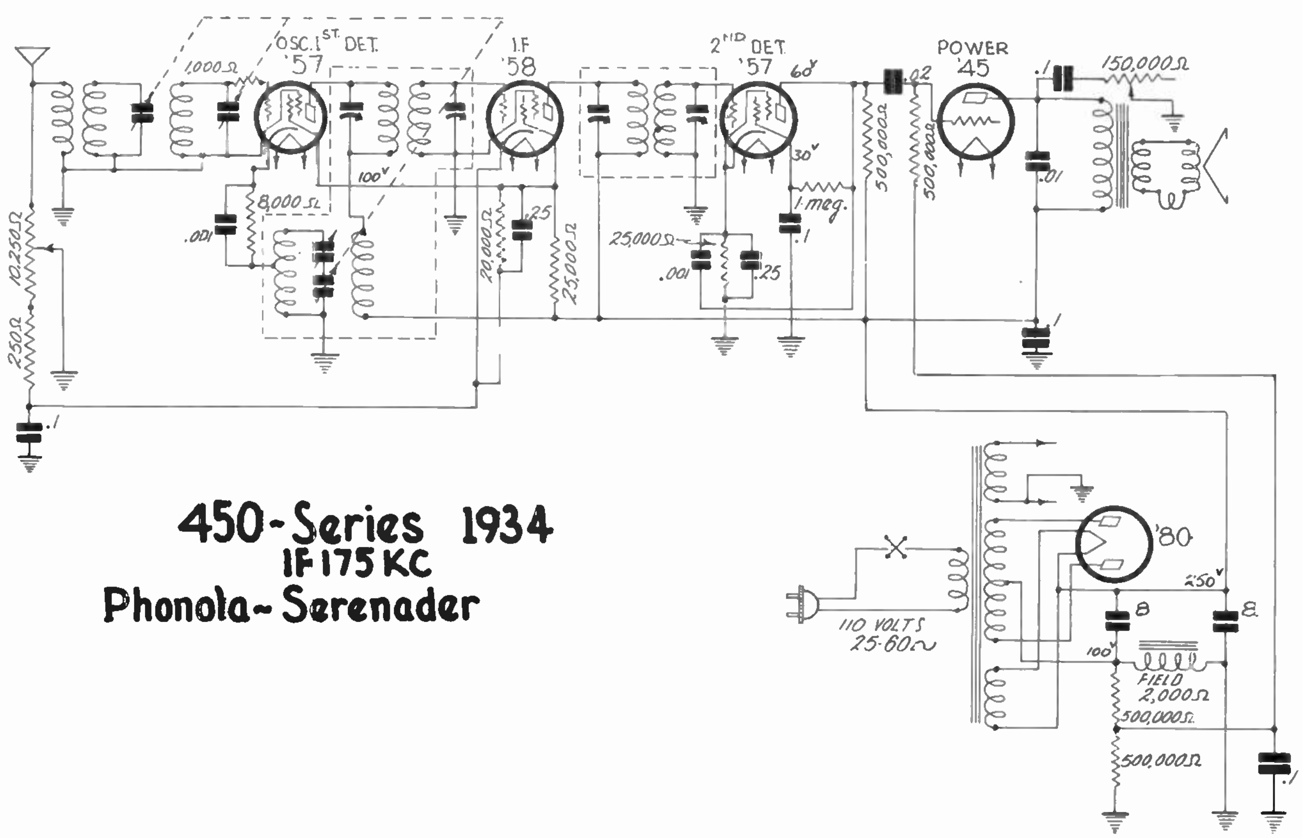
World Radio History

World Radio History



Model-363-4
1933-34 IF.175KC

Used in-
Phonola-Serenader-
Viking-Arcadia-Minerva

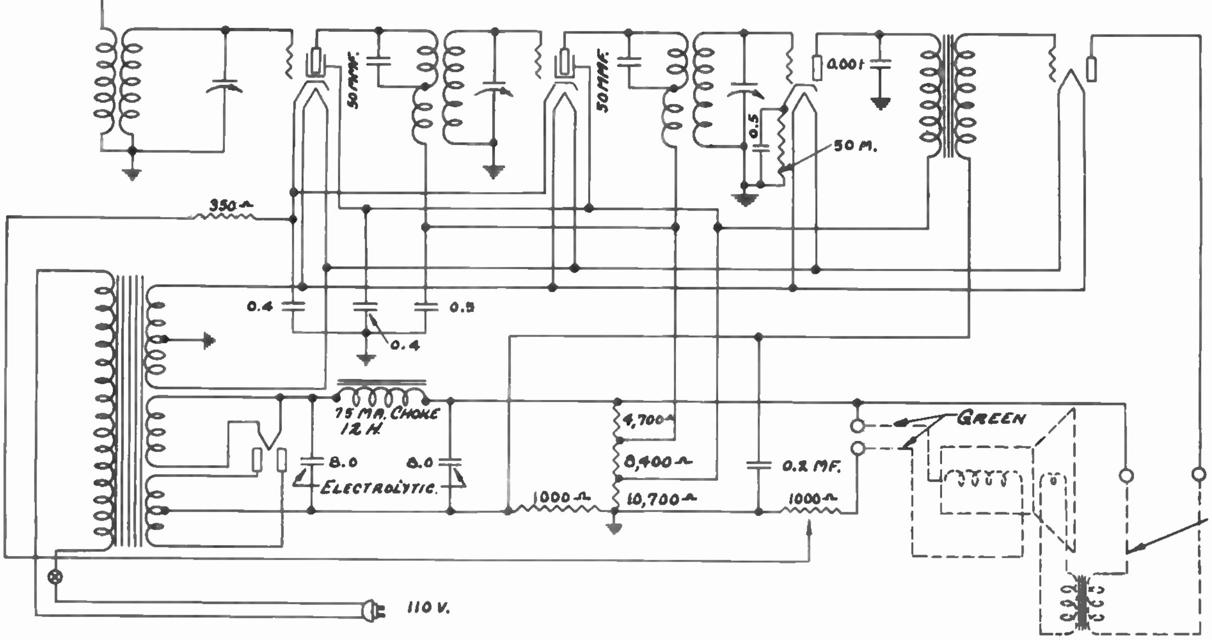


450-Series 1934
IF 175 KC
Phonola-Serenader

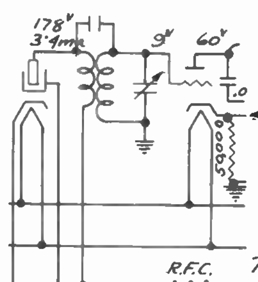
PRINTED IN CANADA

World Radio History

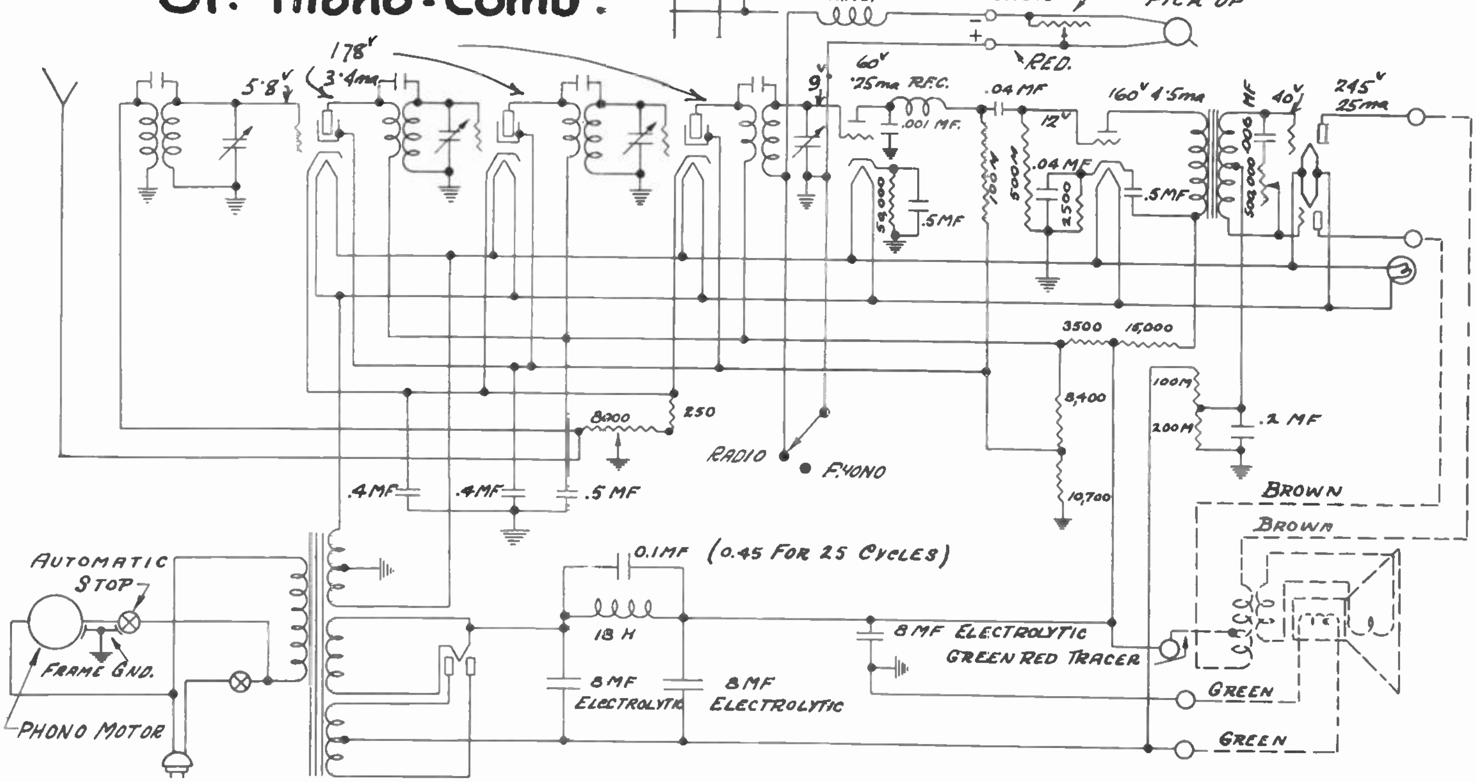
Model 27. Used in. Minerva-Serenader.



Used in Phonola-Serenader-Minerva. Model 31 and 31. Phono-Comb.

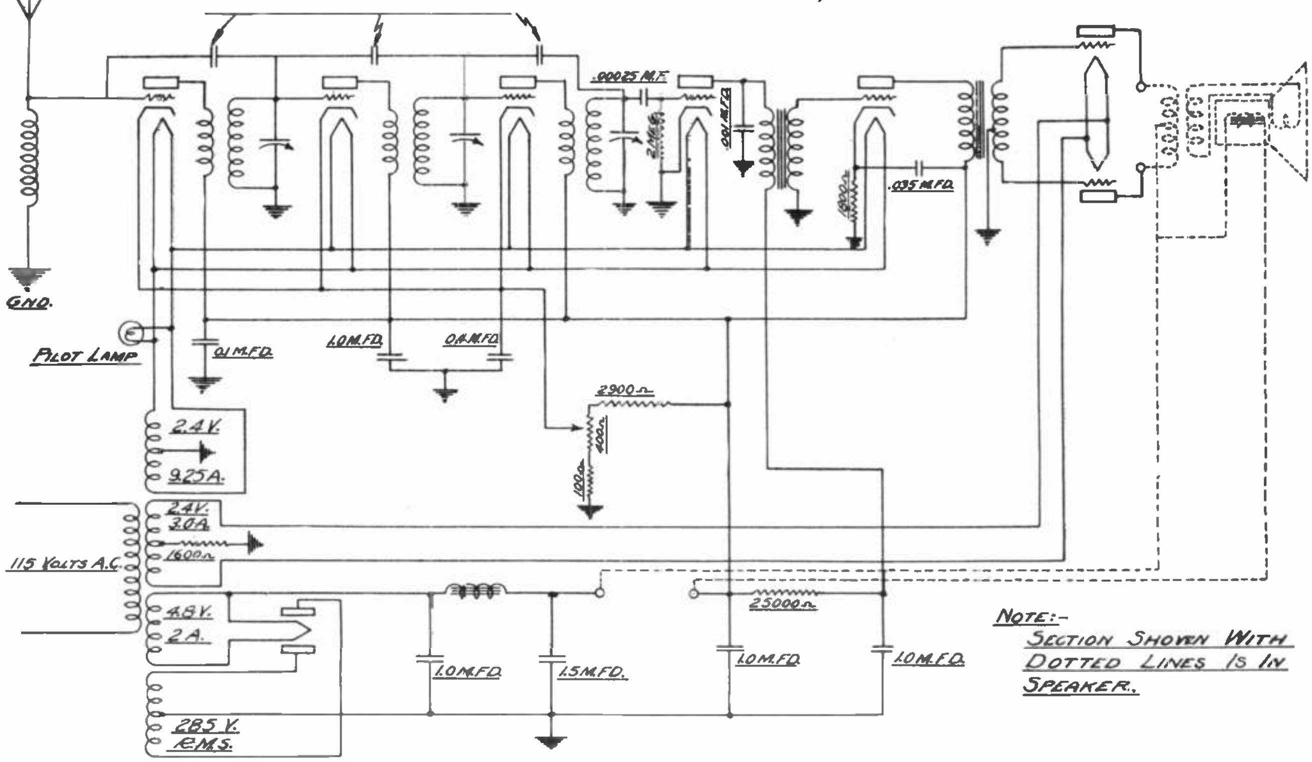


Detail of Detector circuit model 31.

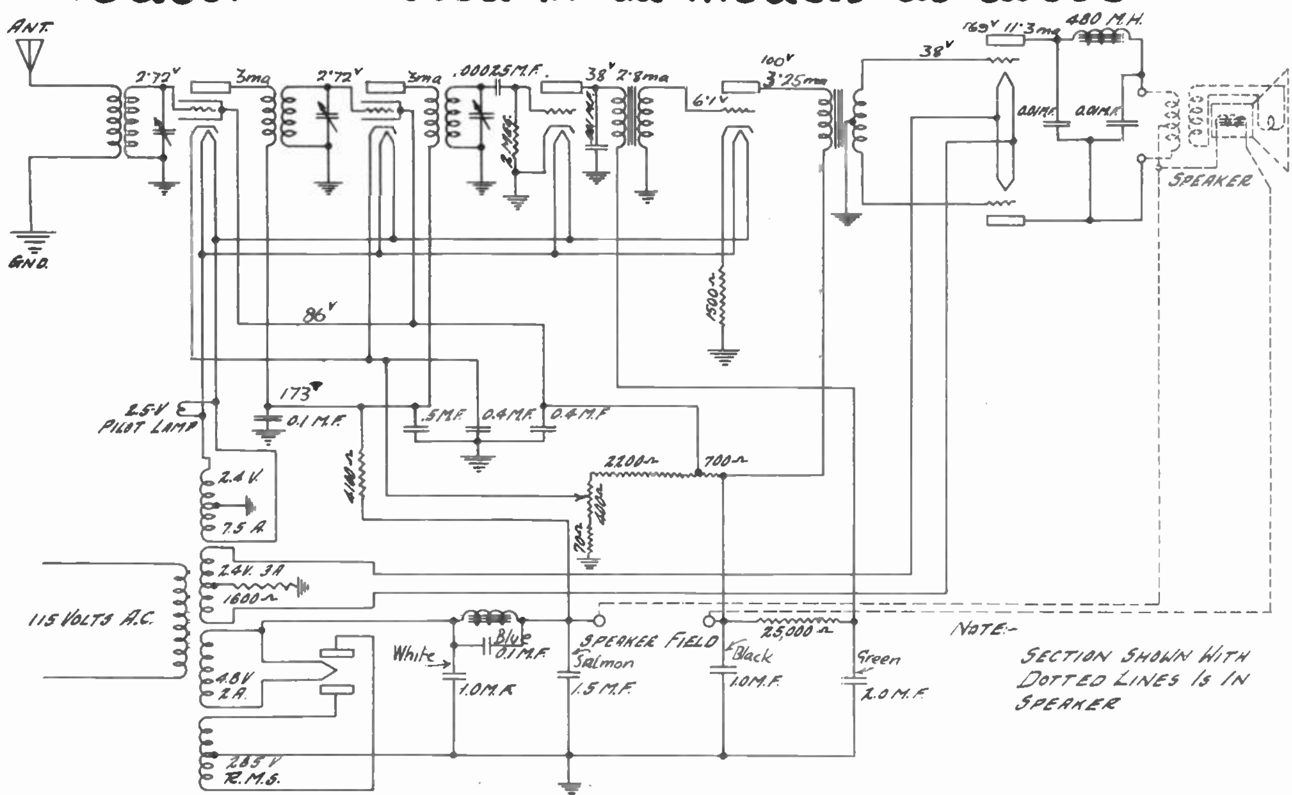


Model 41. — Models 42-43-44. Same but for volume control.

used in Phonola, Serenader, Minerva, Dictator



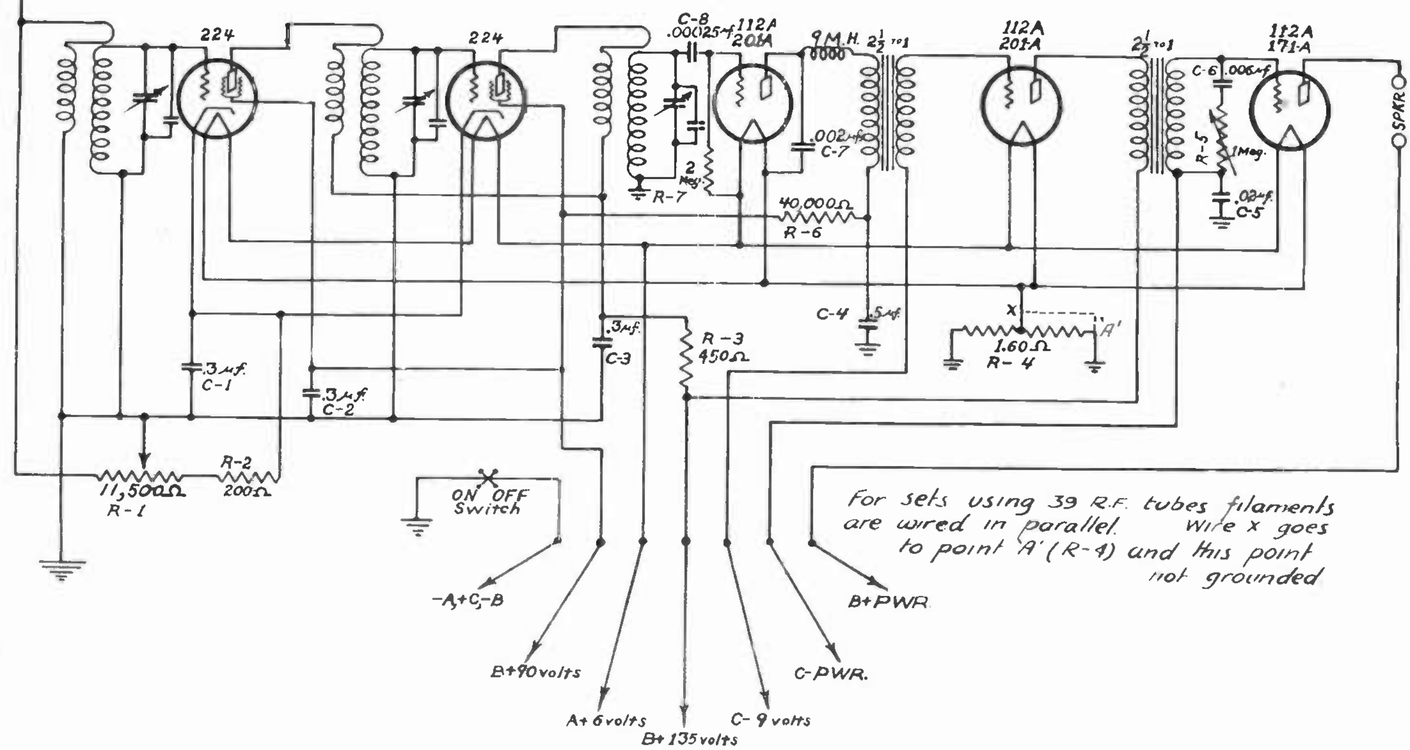
Model. 47. Used in all models as above.



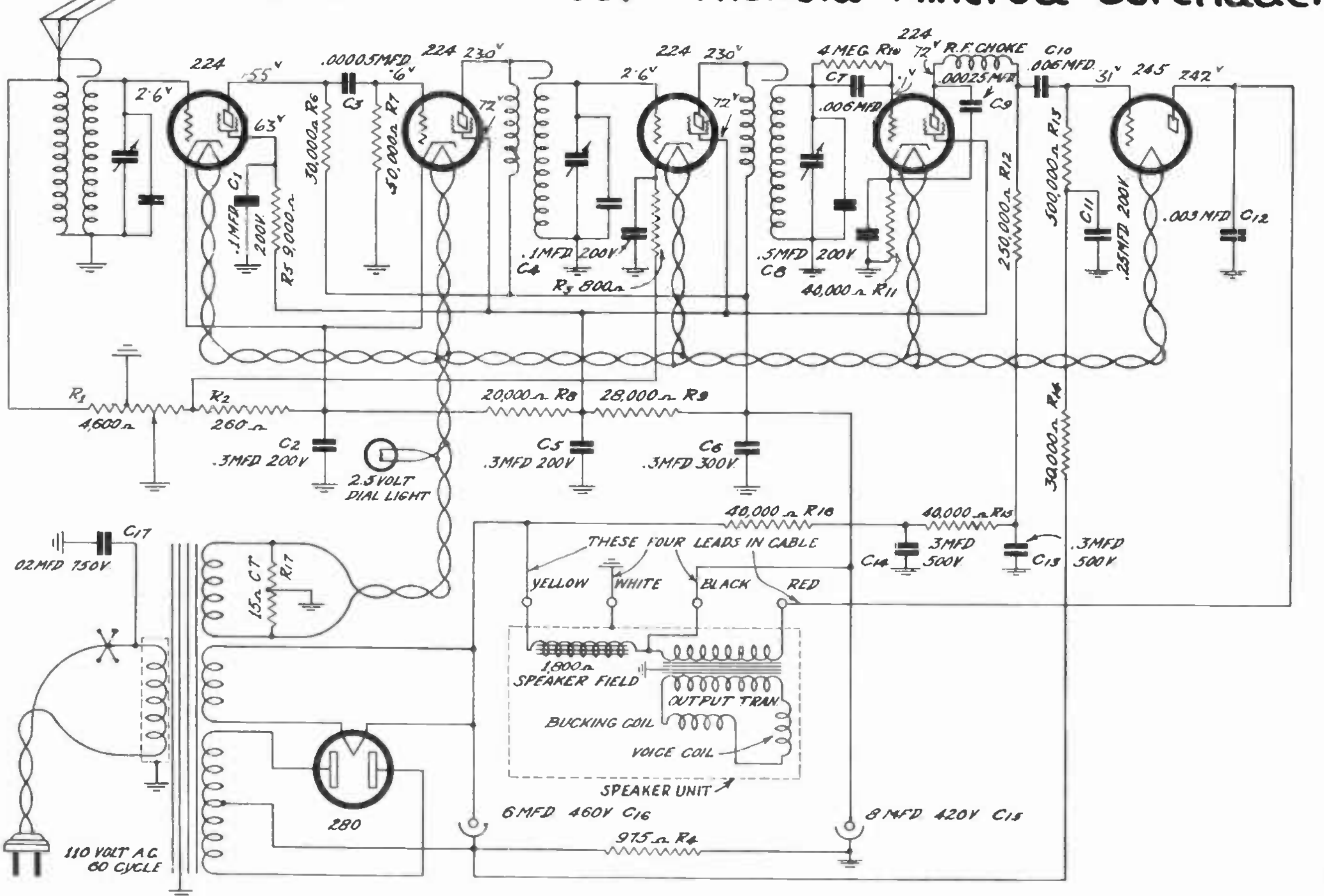
DATA SHEET

World Radio History

Model. 50. Minerva - Serenader - Peerless.



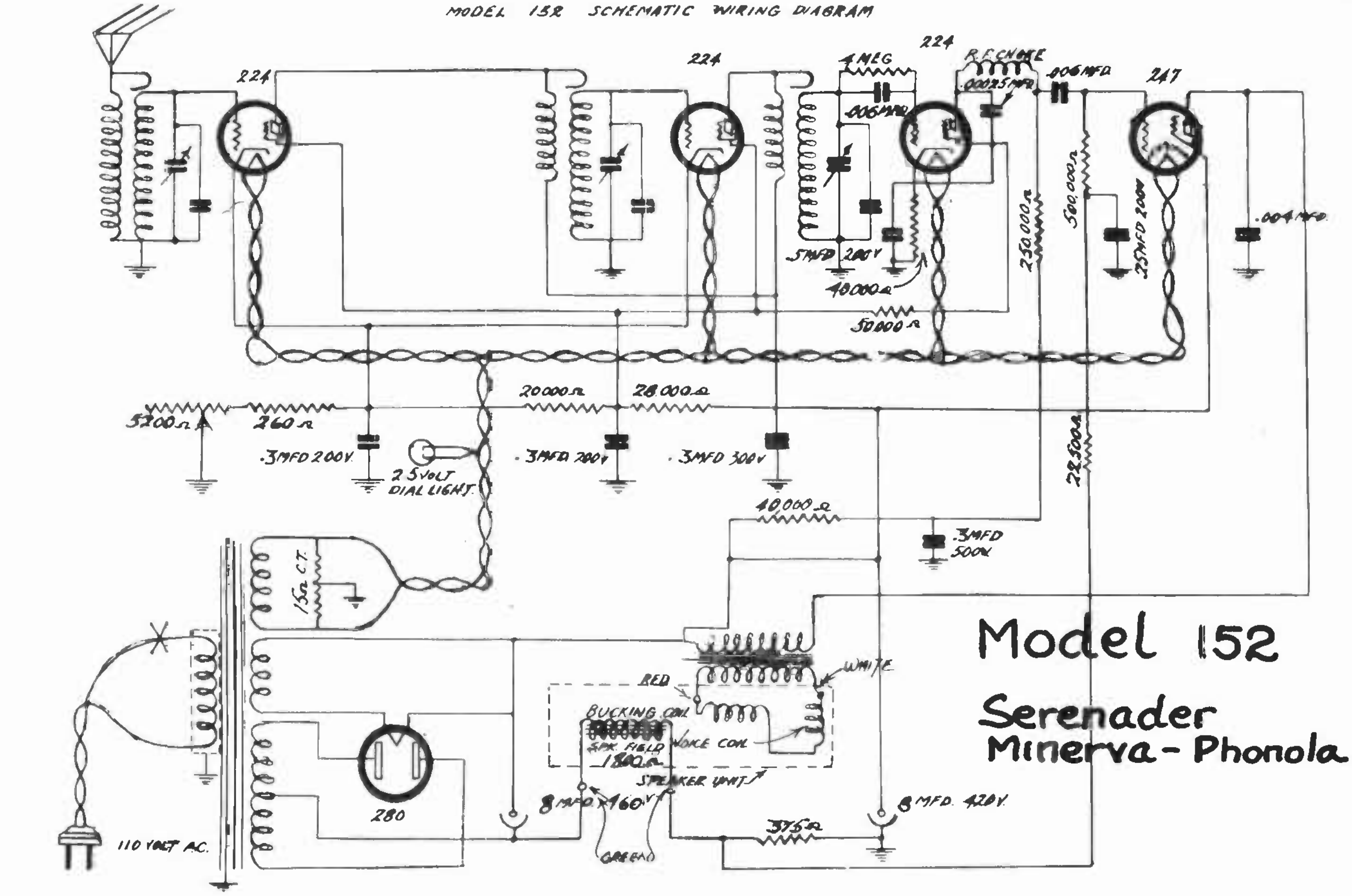
Models 60 - 63 - 120. Phonola - Minerva - Serenader



DATA SHEET *PHONOLA-16*

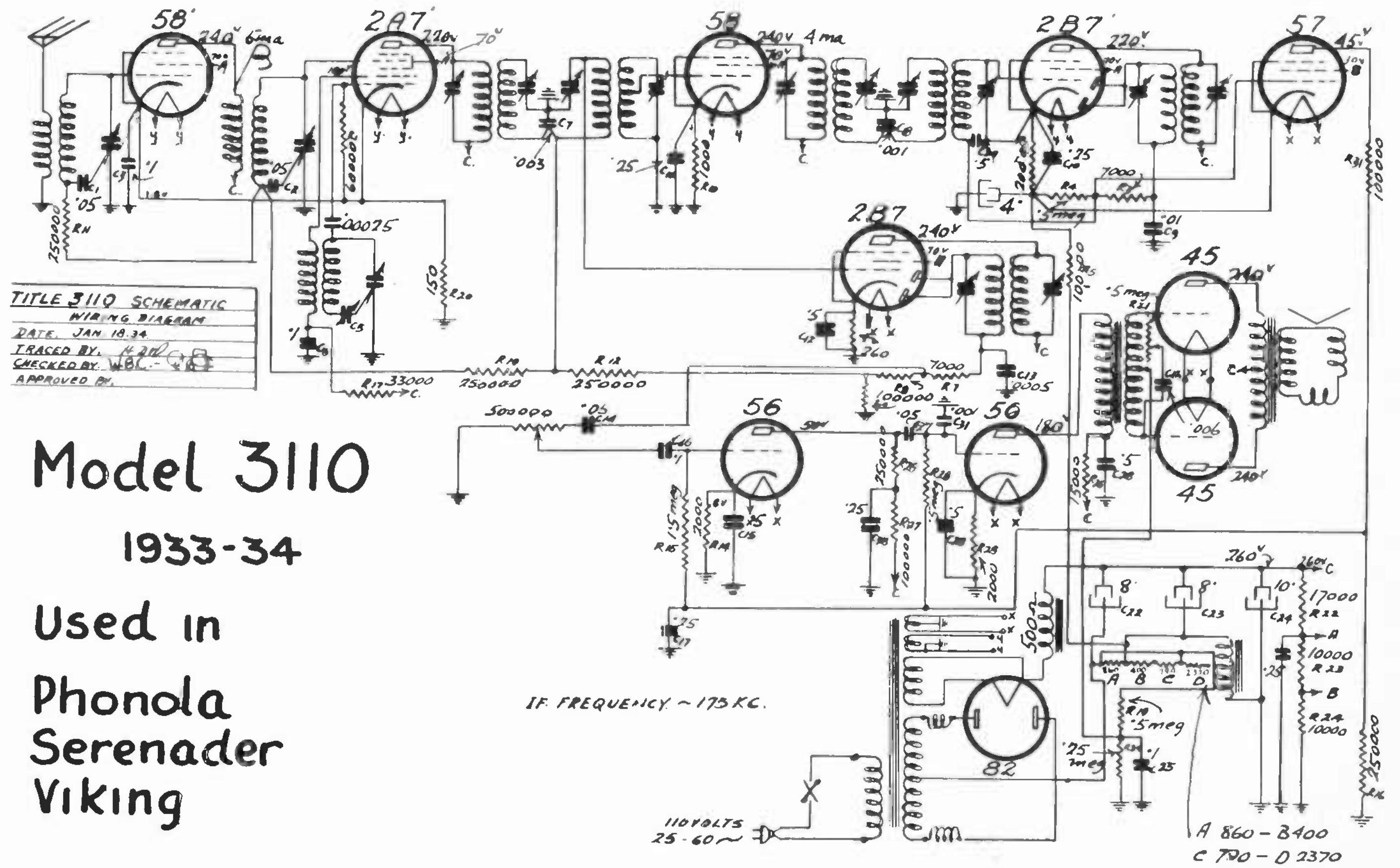
World Radio History

MODEL 152 SCHEMATIC WIRING DIAGRAM



Model 152

Serenader
Minerva - Phonola.



Model 3110

1933-34

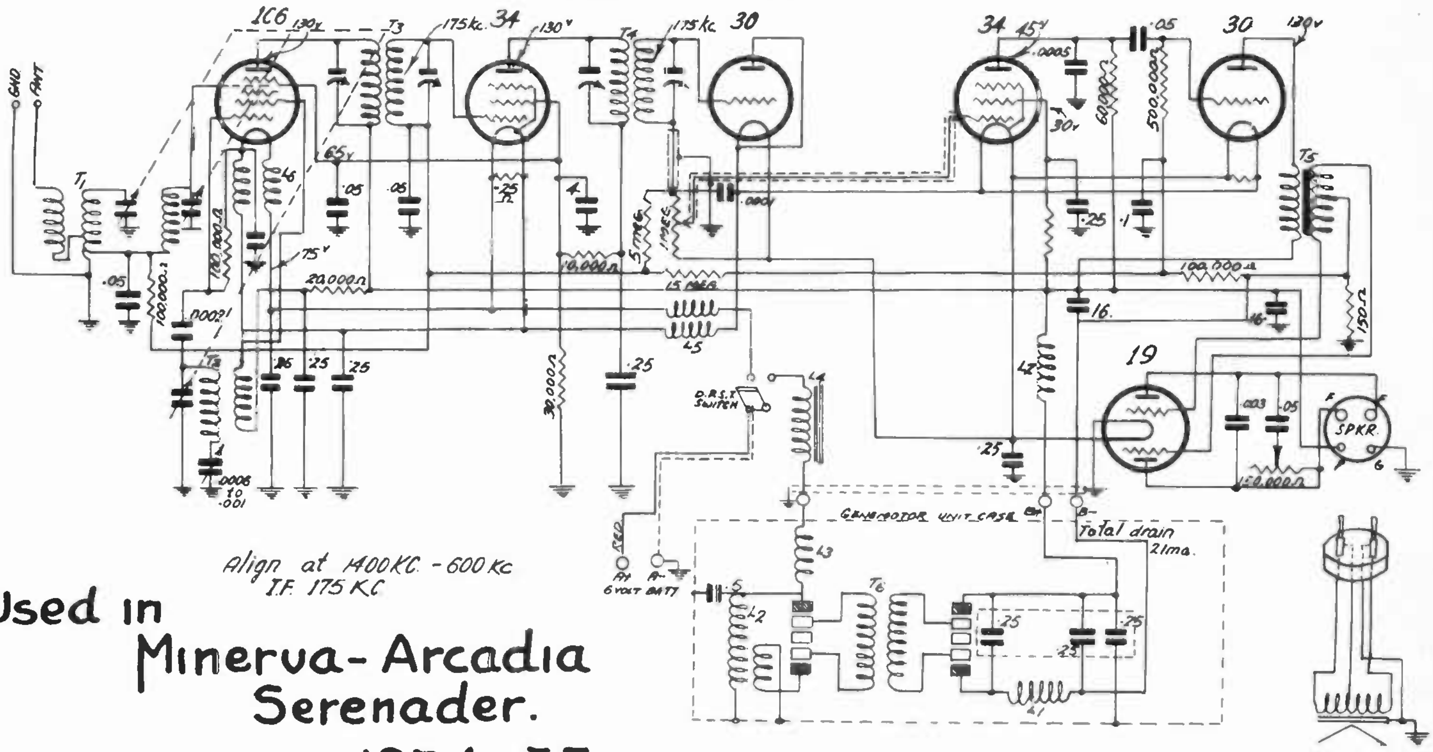
Used in

Phonola
Serenader
Viking

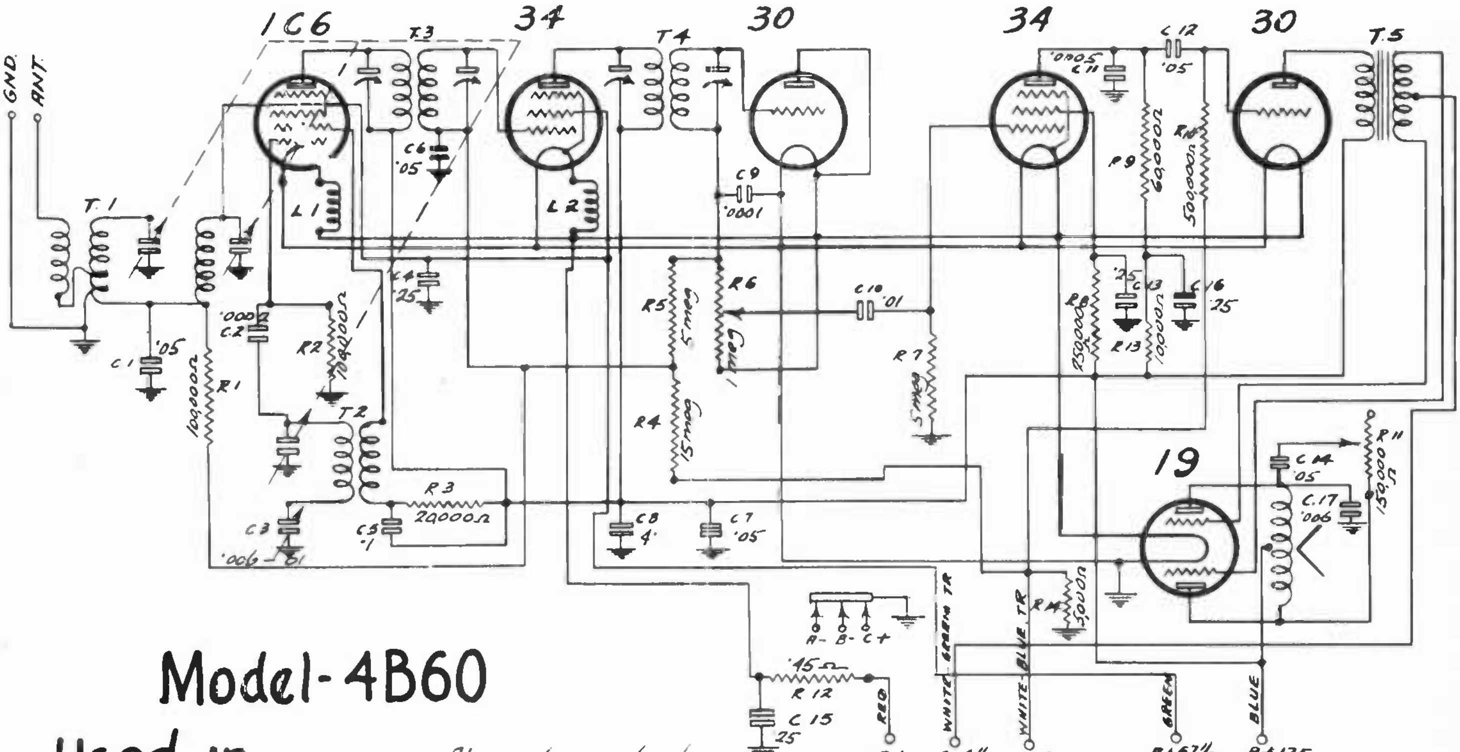
DATA SHEET

PHONOLA-17

Model- 4B61



Used in
Minerva- Arcadia
Serenader.
1934-35



Model- 4B60

Used in
Minerva
Arcadia
1934-35

Align at 1400-600kc
I.F. 175 kc

A - BLACK
B - BLACK-WHITE TR.
C + BLACK-GREEN TR.

I. F. FREQUENCY. 175 K.C.

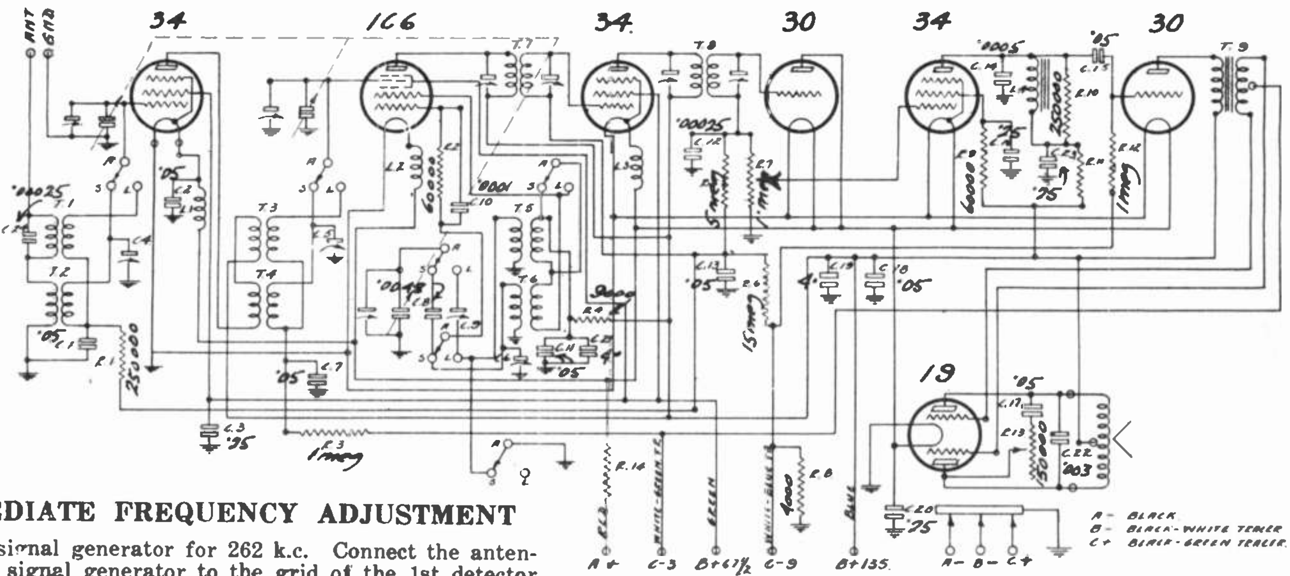
ISSUE	DATE	CHANGE
	7/11/34	R8 was 60,000 ω
	7/11/34	R9 was 30,000 ω

NAME: 6 TUBE BATTERY 4B60 SERIES.
DRAWING NO. -
DRAWN BY - P.L.B.
CHECKED BY -
APPROVED BY -
DATE - - JULY 12, 1934

DATA SHEET

PHONOLA-18

Model 4B75 used in Serenader Minerva Viking Phonola 1934-35



INTERMEDIATE FREQUENCY ADJUSTMENT

Set the signal generator for 262 k.c. Connect the antenna lead of the signal generator to the grid of the 1st detector through a .05 mfd. condenser. Turn the tuning condenser rotor until the plates are completely out. The ground lead from the signal generator goes to the ground lead of the receiver. The volume control should be at the maximum position. Reduce the signals so that A.V.C. action is not obtained.

Then adjust the four I.F. trimmer condensers until maximum output is obtained. The adjusting screws for the 1st. and 2nd trimmer condensers are reached from the top or rear of the chassis. The openings of these trimmer condensers are covered over by small cover plates which are held in position by nuts. Loosen these nuts until the cover plates can be swung around. **CAUTION—Use an insulated screw driver for adjusting trimmers to prevent short circuiting to ground.**

SHORT WAVE BAND ADJUSTMENT

CAUTION—After the broadcast band alignment as described above has been made, do not change the adjustment of any of the broadcast band trimmers.

In aligning the short wave band of the the receiver, it will be noted that the signal will be heard with the signal generator set at two points 524 k.c. apart. That is, if the receiver is tuned to 15,000 k.c. a signal will be heard when the signal generator is set at 15,000 k.c. and again at approximately 15,524 k.c. This is due to image reception or the fact that a 262 k.c. beat is obtained when the signal is 262 k.c. lower than the receiver oscillator and also when the signal is 262 k.c. higher than the receiver oscillator. Care should be taken to see that the receiver is tracked with the signal generator adjusted to the lower of the two frequencies at which a signal is heard, in order that the oscillator in the receiver will be 262 k.c. higher in frequency than the signal.

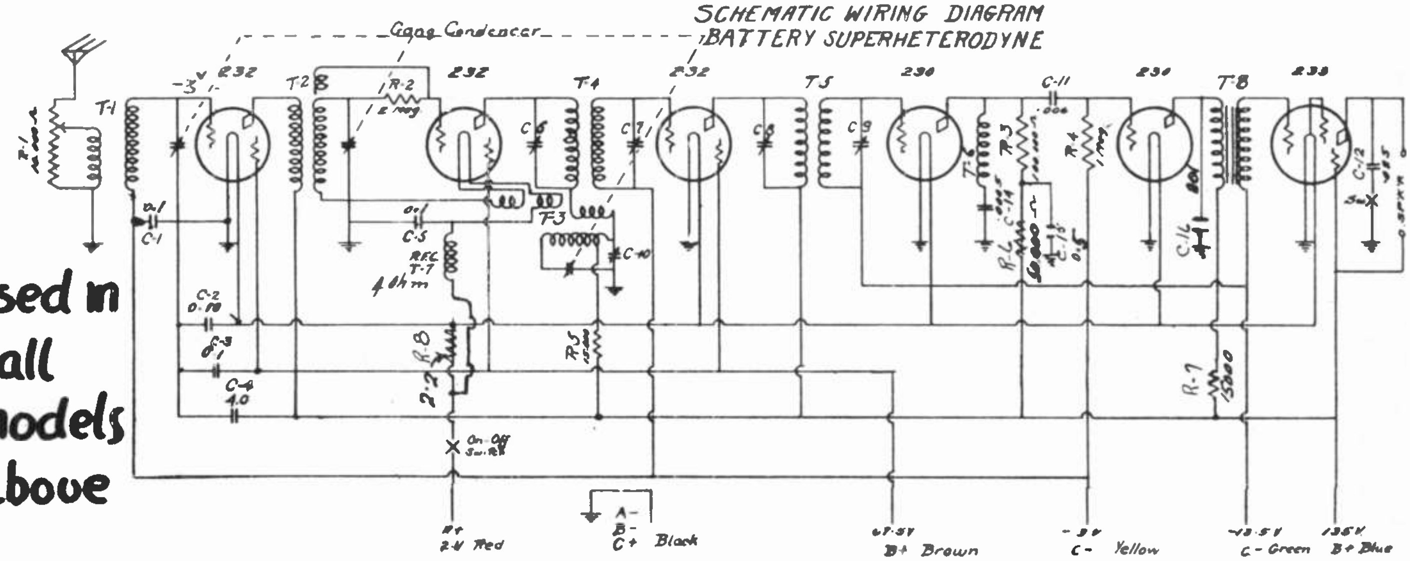
Turn the broadcast short wave switch to the short wave position. As explained above, the volume control should be at the maximum position and the signal should be reduced to prevent A.V.C. action.

Next, set the signal generator for 15,000 k.c. The short wave trimmers are accessible from the bottom or under side of the chassis. Turn the rotor until maximum output is obtained. 15,000 k.c. should locate just inside the 19 meter band area. This is indicated by a colored mark at the lower right hand side of the dial strip. After the signal is located, adjust the antenna trimmer, (first trimmer from the front of the receiver.) Now while moving the rotor slowly back and forth over the setting adjust the 1st detector or interstage trimmer (center trimmer) until highest output is obtained. If oscillation should occur at 15,000 k.c. or higher, increase slightly the oscillator trimmer capacity (trimmer farthest from the front of chassis). After any adjustment on the oscillator trimmer, re-adjust the antenna and interstage trimmers.

No adjustment is necessary at 6,000 k.c. However it is customary to check the alignment at this point.

Models 1B61-1B62. 1933- . IF 175 Kc.

SCHEMATIC WIRING DIAGRAM
BATTERY SUPERHETERODYNE

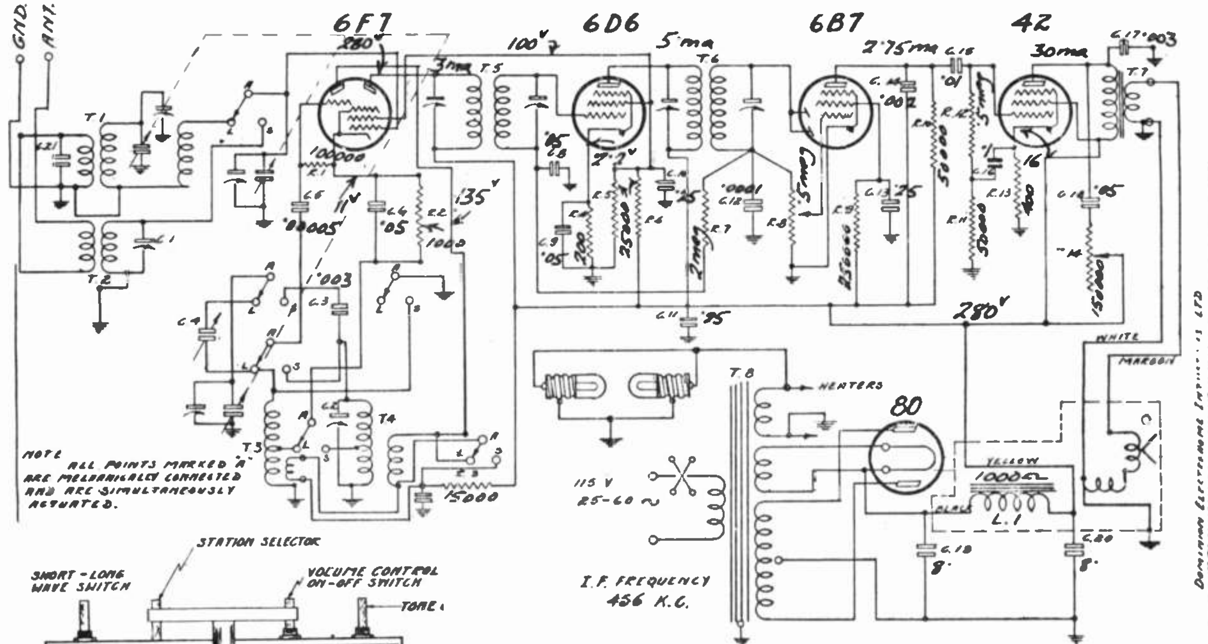


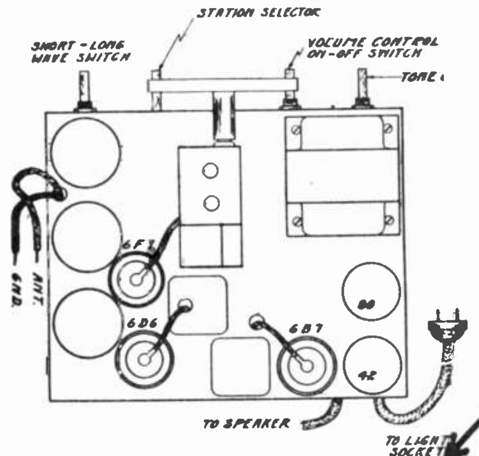
Used in all models above

DATA SHEET PHONOLA-19

World Radio History

Model-455 1934-35 used in Serenader-Phonola





all voltages measured to ground.

See Sheet. 21.

Above illustration is of No. 455 series. No. 456 lay-out is the same except that 6F7 tube is replaced by 6A7.

INTERMEDIATE FREQUENCY ADJUSTMENT

Set the signal generator for 456 k.c. Connect the antenna lead of the signal generator to the grid of the 1st detector through a .05 mfd. condenser. Turn the tuning condenser rotor until the plates are completely out. The ground lead from the signal generator goes to the ground lead of the receiver. The volume control should be at the maximum position. Reduce the signal so that A.V.C. action is not obtained.

Then adjust the four I.F. trimmer condensers until maximum output is obtained. The adjusting screws for the 1st and 2nd trimmer condensers are reached from the top or rear of the chassis. The openings of these trimmer condensers are covered over by small cover plates which are held in position by nuts. Loosen these nuts until the cover plates can be swung around. CAUTION—Use an insulated screw driver for adjusting trimmers to prevent short circuiting to ground.

BROADCAST BAND ADJUSTMENT

The broadcast short wave switch should be in the broadcast position. The antenna lead from the signal generator is in this instance connected to the antenna lead of the receiver. Reduce the signal so that A.V.C. action is not obtained.

Then set the signal generator for 1400 k.c. Turn the rotor until maximum output is obtained and set the pointer at the 1400 k.c. mark on the broadcast band scale. Then adjust the oscillator antenna and 1st detector broadcast trimmers until maximum output is obtained.

Next, set the signal generator for 600 k.c. and adjust the 600 k.c. trimmer. The adjusting screw is reached through a hole in the rear top of the chassis. Turn the tuning condenser rotor until maximum output is obtained. Then turn the rotor slowly back and forth over this setting at the same time adjusting the 600 k.c. trimmer screw until the highest output is obtained.

SHORT WAVE BAND ADJUSTMENT

In aligning the short wave band of the receiver, it will be noted that the signal will be heard with the signal generator set at two points 912 k.c. apart. That is, if the receiver is tuned to 15,000 k.c. a signal will be heard when the signal generator is set at 15,000 k.c. and again at approximately 15,912 k.c. This is due to image recepetion or the fact that a 456 k.c. is obtained when the signal is 456 k.c. lower than the receiver oscillator and also when the signal is 456 k.c. higher than the receiver oscillator. Care should be taken to see that the receiver is tracked with the signal generator adjusted to the lower of the two frequencies at which a signal is heard, in order that the oscillator in the receiver will be 456 k.c. higher in frequency than the signal.

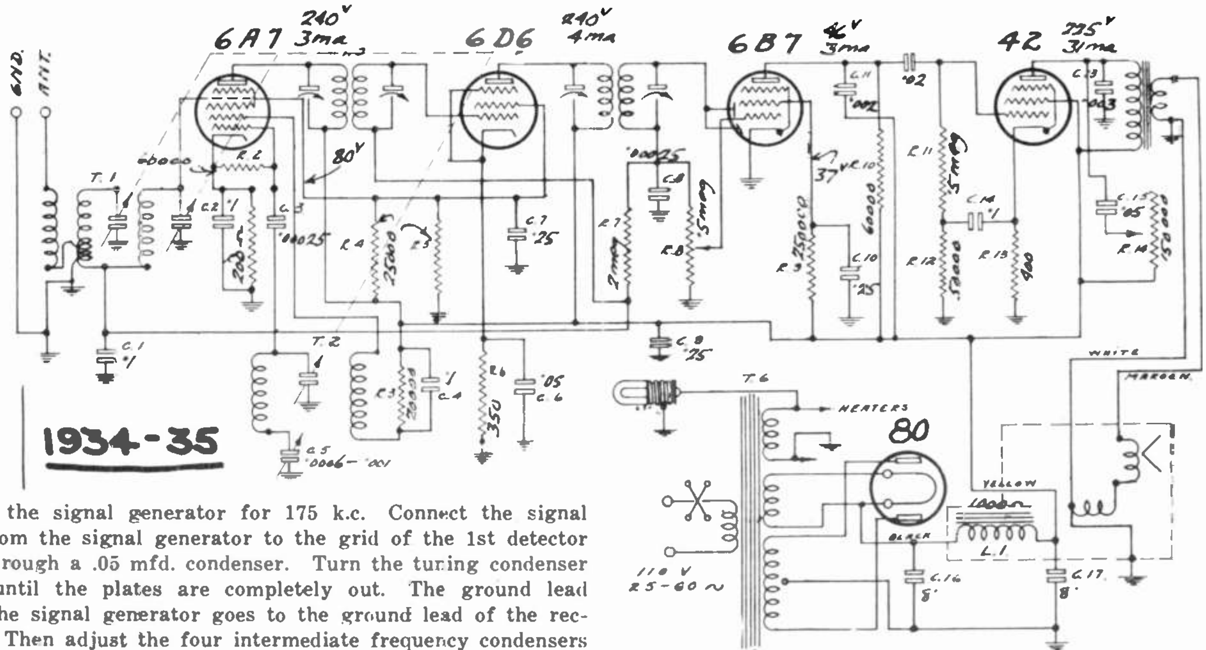
Turn the broadcast short wave switch to the short wave position. As explained above, the volume control should be at the maximum position and the signal should be reduced to prevent A.V.C. action.

Next, set the signal generator for 15,000 k.c. The short wave trimmers are accessible from the bottom or under side of the chassis. Turn the rotor until maximum output is obtained. 15,000 k.c. should locate just inside the 19 meter band area. This is indicated by a coloured mark at the lower right hand side of the dial strip. After the signal is located, adjust the antenna trimmer, (first trimmer from the front of the receiver), while moving the rotor slowly back and forth over the setting until the highest output. If oscillation should occur at 15,000 k.c. or higher, increase slightly the oscillator trimmer capacity (trimmer farthest from the front of chassis). After any adjustment on the oscillator trimmer, re-adjust the antenna trimmer.

No adjustment is necessary at 6,000 k.c. However it is adviscable to check the alignment at this point.

World Radio History

Model-452 used in Phonola-Serenader-Lindsay



1934-35

Set the signal generator for 175 k.c. Connect the signal lead from the signal generator to the grid of the 1st detector tube through a .05 mfd. condenser. Turn the tuning condenser rotor until the plates are completely out. The ground lead from the signal generator goes to the ground lead of the receiver. Then adjust the four intermediate frequency condensers for maximum output. The adjusting screws for these condensers are accessable from the rear of the chassis.

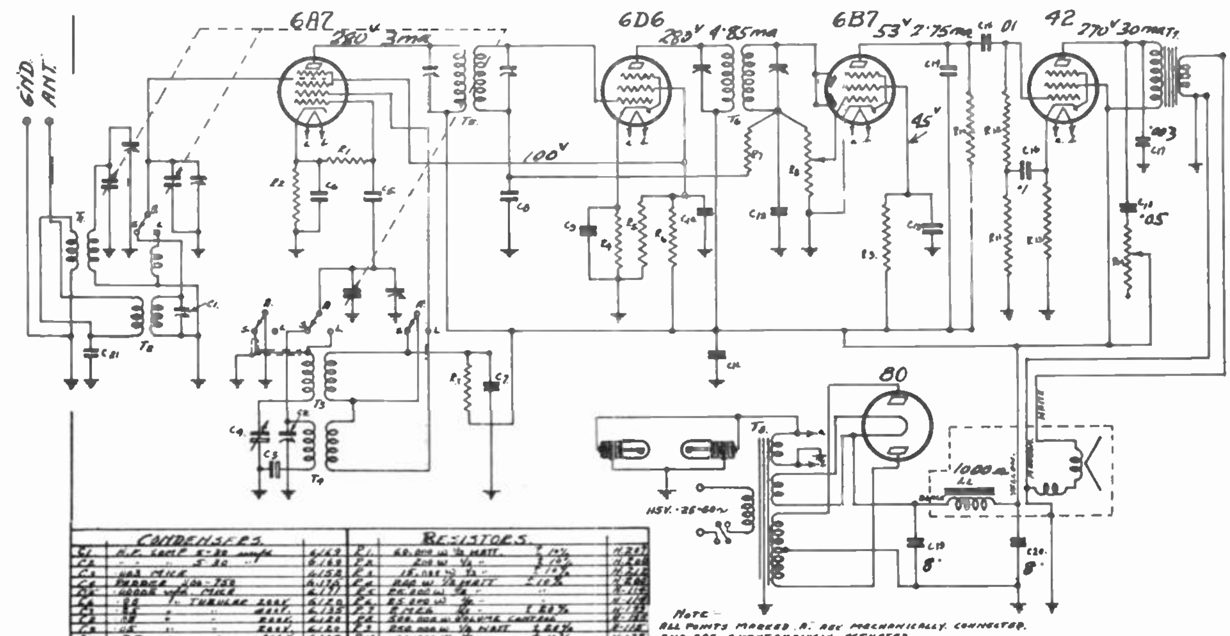
Next set the signal generator for a signal of exactly 1400 adjust the three trimmer condensers on the gang tuning condenser for maximum output, adjusting the oscillator trimmer first.

Next set the signal generator for a signal of 600 k.c. and adjust the oscillator 600 k.c. trimmer. The adjusting screw for this condenser is accessable from the rear right hand side of the chassis.

A non-metallic screwdriver is necessary for this adjustment. Turn the tuning condenser rotor until maximum output is obtained.

Then set the signal generator again for a signal of 1400 k.c. and check the adjustment of the tuning condenser trimmers at this frequency for maximum output.

Model-456 1934-35 used in Serenader-Phonola. also see Data Sheet 20.

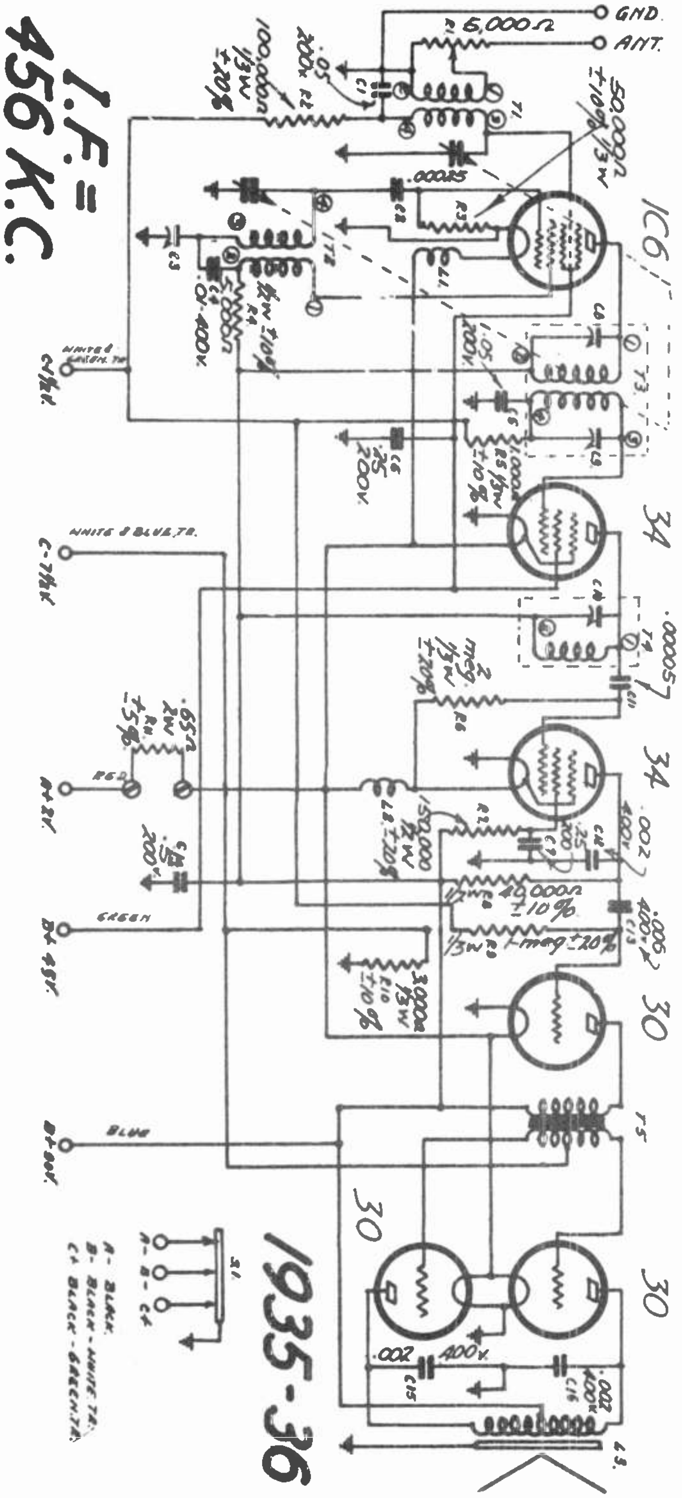


CONDENSERS.			RESISTORS.			
C1	H.F. Comp 5-30 mmfd	6/169	R1	60,000 w 1/2 watt ±10%	H-207
C2	" " 5-30 "	6/169	R2	200 w 1/2 " ±10%	[illegible]
C3	.002 mica	6/158	R3	15,000 w 1/2 " ±10%	[illegible]
C4	Padder 400-750	6/176	R4	800 w 1/2 watt ±10%	[illegible]
C5	.00025 mfd. mica	6/171	R5	25,000 w 1/2 "	[illegible]
C6	.05 " tubular 200v	6/120	R6	25,000 w 1/2 "	[illegible]
C7	.25 " " 400v	6/135	R7	2 meg 1/2 " ±20%	[illegible]
C8	.05 " " 200v	6/120	R8	500,000 w volume control	[illegible]
C9	.05 " " 200v	6/120	R9	250,000 w 1/2 watt ±20%	H-118
C10	.25 " " 200v	6/125	R10	60,000 w 1/2 " ±10%	H-128
C11	.25 " " 400v	6/126	R11	50,000 w 1/2 " ±20%	[illegible]
C12	.0001 " mica	6/126	R12	500,000 w 1/2 " ±20%	[illegible]
C13	.25 " tubular 400v	6/126	R13	400 w 1/2 " ±10%	[illegible]
C14	.002 " " 600v	6/173	R14	150,000 w tone control	H-136

DATA SHEET PHONOLA-21

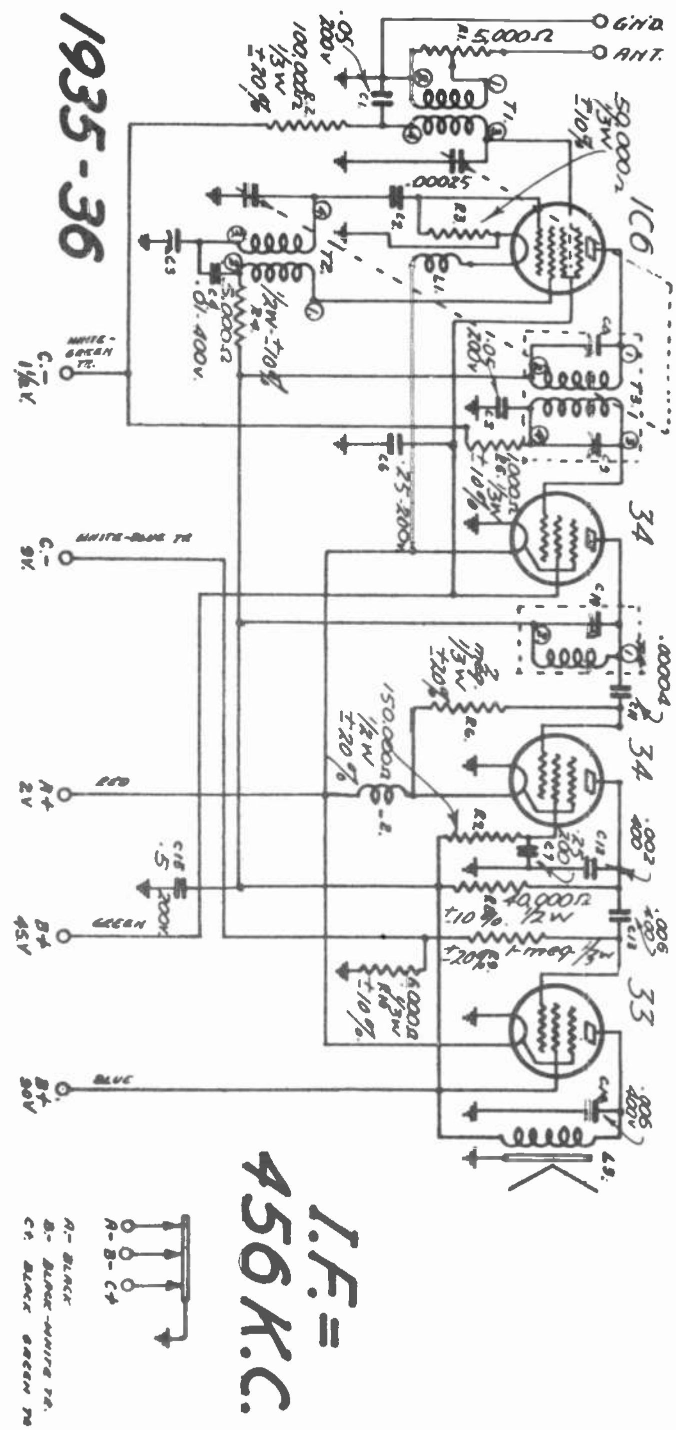
World Radio History

SERIES 5B60 - 5B60-A BATTERY- OPERATED



ALIGNMENT INSTRUCTIONS ETC. ON DATA SHEET PHONOLA-24

SERIES 5B40 - 5B40-1 BATTERY- OPERATED



DATA SHEET

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COURTESY-

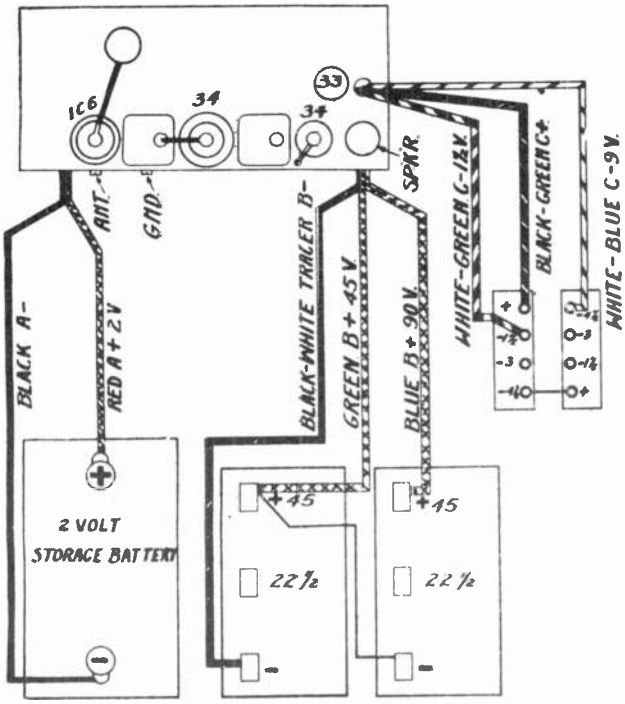
PHONOLA-23

DOM. ELECTROHOME INDUST.

World Radio History

SERIES. 5B40 - 5B40-1

ALIGNMENT INSTRUCTIONS.



CIRCUIT

The circuit consists of a single tuned antenna stage which couples directly into a type 1C6 tube, which functions as oscillator and first detector. The oscillating circuit is tuned by the second section of the gang condenser and is always resonant at a frequency of 456 kilocycles above the frequency to which the R.F. amplifier is tuned.

One stage of I.F. amplification is employed, using a type 34 tube. The primary and secondary circuit is provided with variable trimmers for adjustment at 456 k.c. A second I.F. unit of the impedence coupled type is provided, in which the primary inductance is tuned by means of a small trimmer condenser located inside the of I.F. shield.

A type 34 tube is employed as second detector or demodulator. Demodulation takes place in the grid circuit of this tube.

Resistance coupling is used between the second detector and the 33 Pentode audio power amplifier. The output of the 33 is coupled to a magnetic reproducer.

The volume control is in the antenna primary circuit and varying the position of the arm of the control varies the signal input voltage to the type 1C6 tube.

The small trimmers on the top of the gang are provided for the purpose of aligning the receiver at 1,500 k.c. and the padding condenser provided for tracking the oscillator at 600 k.c.

The receiver is of the extended band type, being calibrated from 538 to 1,850 k.c., which includes a police short wave and amateur band at the high frequency end.

The total "A" drain is 500 milliamperes, which is one-half ampere at two volts.

The average "B" drain of this receiver is 10 milamperes at 90 volts.

BATTERIES

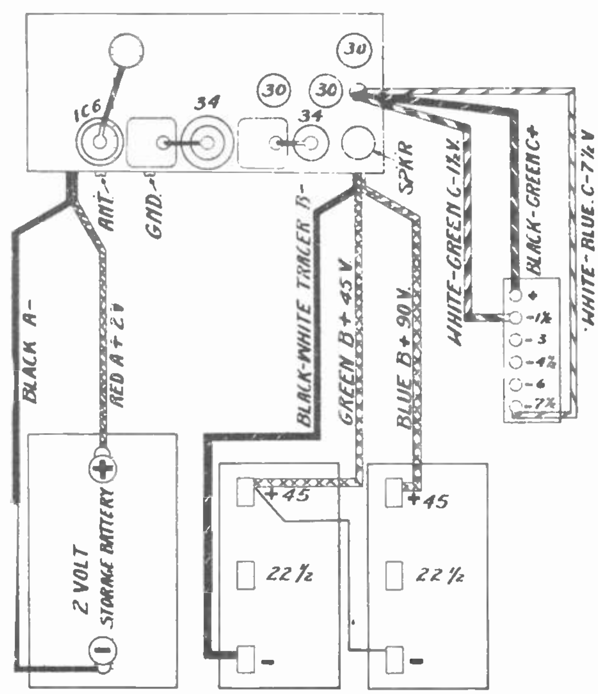
This receiver is designed for operation with a two-volt storage wet cell "A" battery; two 45-volt "B" batteries connected in series to supply the plate potential of 90 volts; and two "C" batteries of 4½ volts each, supplying the bias for the R.F. and A.F. amplifiers.

CONDENSER ALIGNMENT

Procedure of Aligning Set

Couple the output of a test signal generator to the grid of the 1C6 tube through a .05 paper condenser and set your generator at 456 k.c. with as low output as is possible, so that you may just hear it; then adjust the three trimmer adjustment screws located on the inside of the I.F. shields until maximum output is obtained from the set. Next, couple the signal generator to the antenna, setting the receiver dial at 1,500 k.c. and adjust the signal generator to exactly 1,500 k.c., adjusting the screws on the top of the gang for maximum output. Adjust the generator to 600 k.c. and turn the dial to 600 k.c. Slightly rock the gang forward and backward, at the same time adjusting the padder condenser, (which is marked C-3 on the diagram) until maximum sensitivity is secured. Now ajust the pointer to exactly 600 on the dial and return both generator and gang to 1,500 k.c., again re-adjusting the screws for maximum output. Your set should now be at maximum sensitivity and tracking correctly over the entire dial.

SERIES. 5B60 - 5B60-A



CIRCUIT

The circuit consists of a single tuned antenna stage which couples directly into a type 1C6 tube, which functions as oscillator and first detector. The oscillating circuit is tuned by the second section of the gang condenser and is always resonant at a frequency of 456 kilocycles above the frequency to which the R.F. amplifier is tuned.

One stage of I.F. amplification is employed, using a type 34 tube. The primary and secondary circuit is provided with variable trimmers for adjustment at 456 k.c. A second I.F. unit of the impedence coupled type is provided, in which the primary inductance is tuned by means of a small trimmer condenser located inside the of I.F. shield.

A type 34 tube is employed as second detector or demodulator. Demodulation takes place in the grid circuit of this tube.

Resistance coupling is used between the second detector and the type 30 first audio or driver stage. Following the 30 driver are two type 30 tubes transformer coupled in Class "B" amplification. The output of the two 30's is coupled to a magnetic reproducer.

The volume control is in the antenna primary circuit and varying the position of the arm of the control varies the signal input voltage to the type 1C6 tube.

The small trimmers on the top of the gang are provided for the purpose of aligning the receiver at 1,500 k.c. and the padding condenser provided for tracking the oscillator at 600 k.c.

The receiver is of the extended band type, being calibrated from 538 to 1,850 k.c., which includes a police short wave and amateur band at the high frequency end.

The total "A" drain is 500 milliamperes, which is one-half ampere at two volts.

The average "B" drain of this receiver is 13 milamperes at 90 volts.

BATTERIES

Battery requirements for this receiver are:—One 2-volt "A" battery, two 45-volt "B" batteries and 7½-volt "C" battery. The 5B60 (note license plate) models are designed for wet cell "A" storage battery operation only, the resistor R-11 being omitted, while on the 5B60-A models provision is made by means of a terminal strip on the top of the chassis near the 1C6 tube for operation with either a wet storage "A" battery of 2-volts or an Air Cell. When the 5B60-A model is to be used with a wet "A" storage battery of 2-volts a wire must be connected between the two screws on the air cell terminal strip which is mounted on the top of the chassis near the 1C6 tube, but this wire must not be connected between these two screws for use with an Air Cell.

CONDENSER ALIGNMENT

Procedure of Aligning Set

Couple the output of a test signal generator to the grid of the 1C6 tube through a .05 paper condenser and set your generator at 456 k.c. with as low output as is possible, so that you may just hear it; then adjust the three trimmer adjustment screws located on the inside of the I.F. shields until maximum output is obtained from the set. Next, couple the signal generator to the antenna, setting the receiver dial at 1,500 k.c. and adjust the signal generator to exactly 1,500 k.c., adjusting the screws on the top of the gang for maximum output. Adjust the generator to 600 k.c. and turn the dial to 600 k.c. Slightly rock the gang forward and backward, at the same time adjusting the padder condenser, (which is marked C-3 on the diagram) until maximum sensitivity is secured. Now ajust the pointer to exactly 600 on the dial and return both generator and gang to 1,500 k.c., again re-adjusting the screws for maximum output. Your set should now be at maximum sensitivity and tracking correctly over the entire dial.

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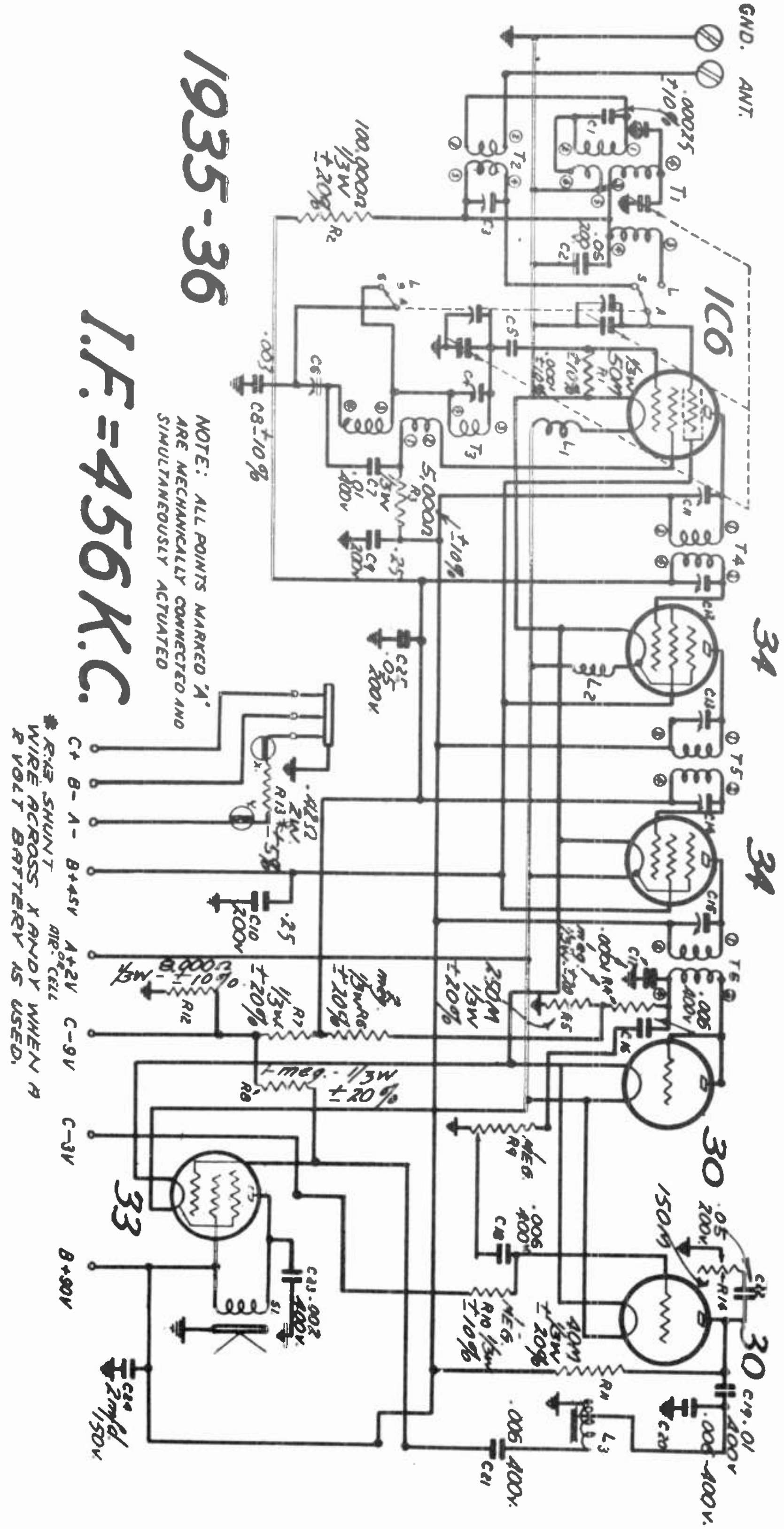
COURTESY- PHONOLA-24
DOM. ELECTROHOME INDUST.

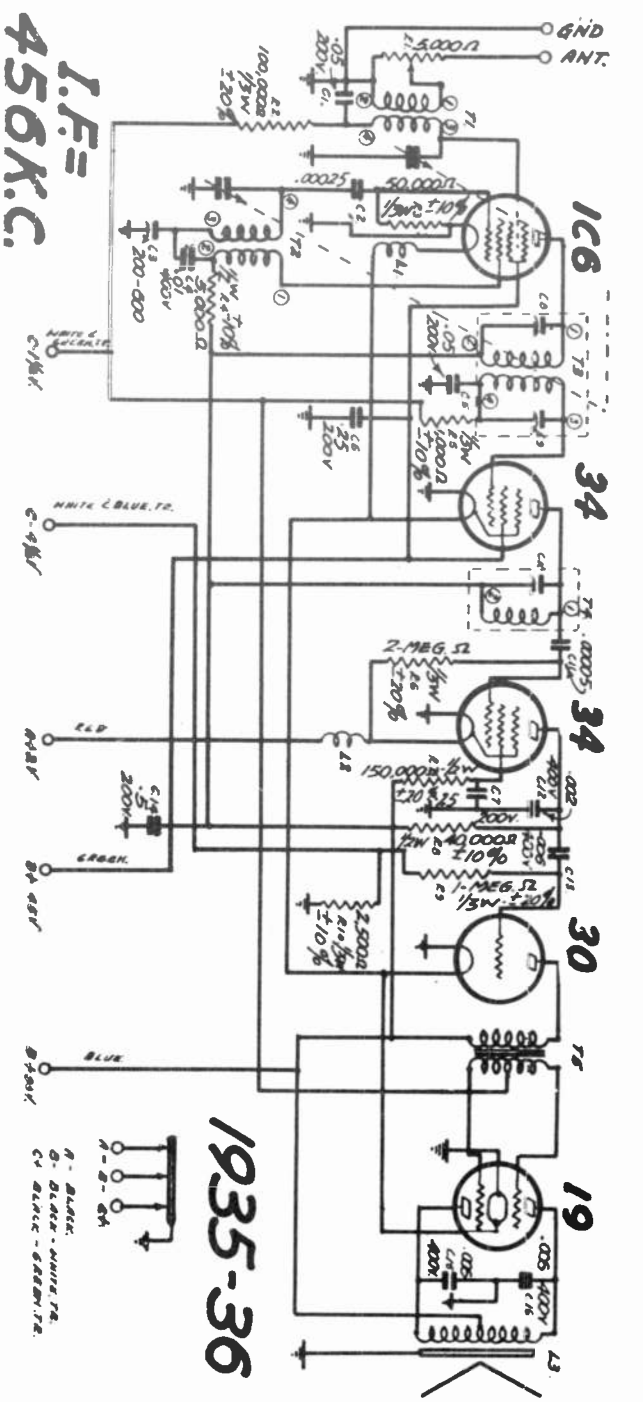
World Radio History

SERIES. 5B65
BATTERY-OPERATED

ALIGNMENT INSTRUCTIONS, LAYOUT, ETC. ON DATA SHEET PHONOLA.-27.



SERIES. 5B50
BATTERY-OPERATED.



DATA SHEET

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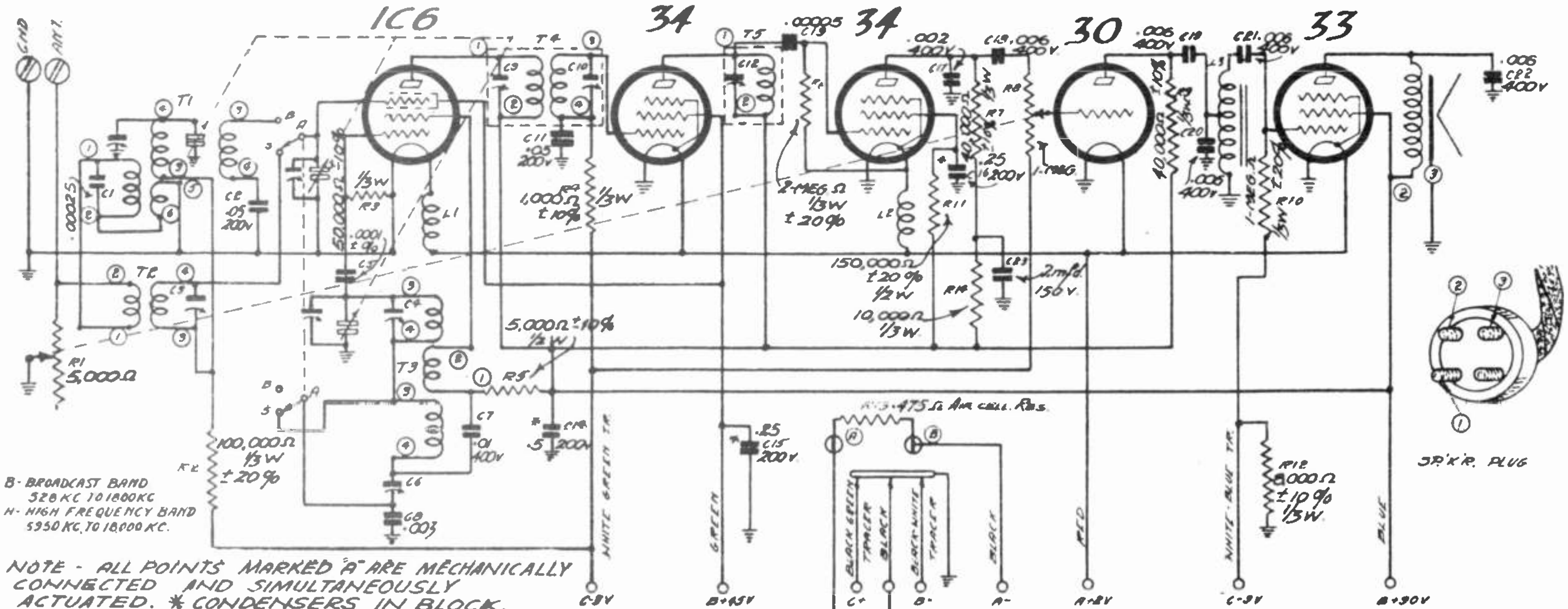
COURTESY-
PHONOLA-25
DOM. ELECTROHOME INDUST.

SERIES. 5B55 - 5B55-A BATTERY-OPERATED



I.F. = 456 K.C.

1935-36

COURTESY- **PHONOLA-26**
DOM. ELECTROHOME INDUSTR.

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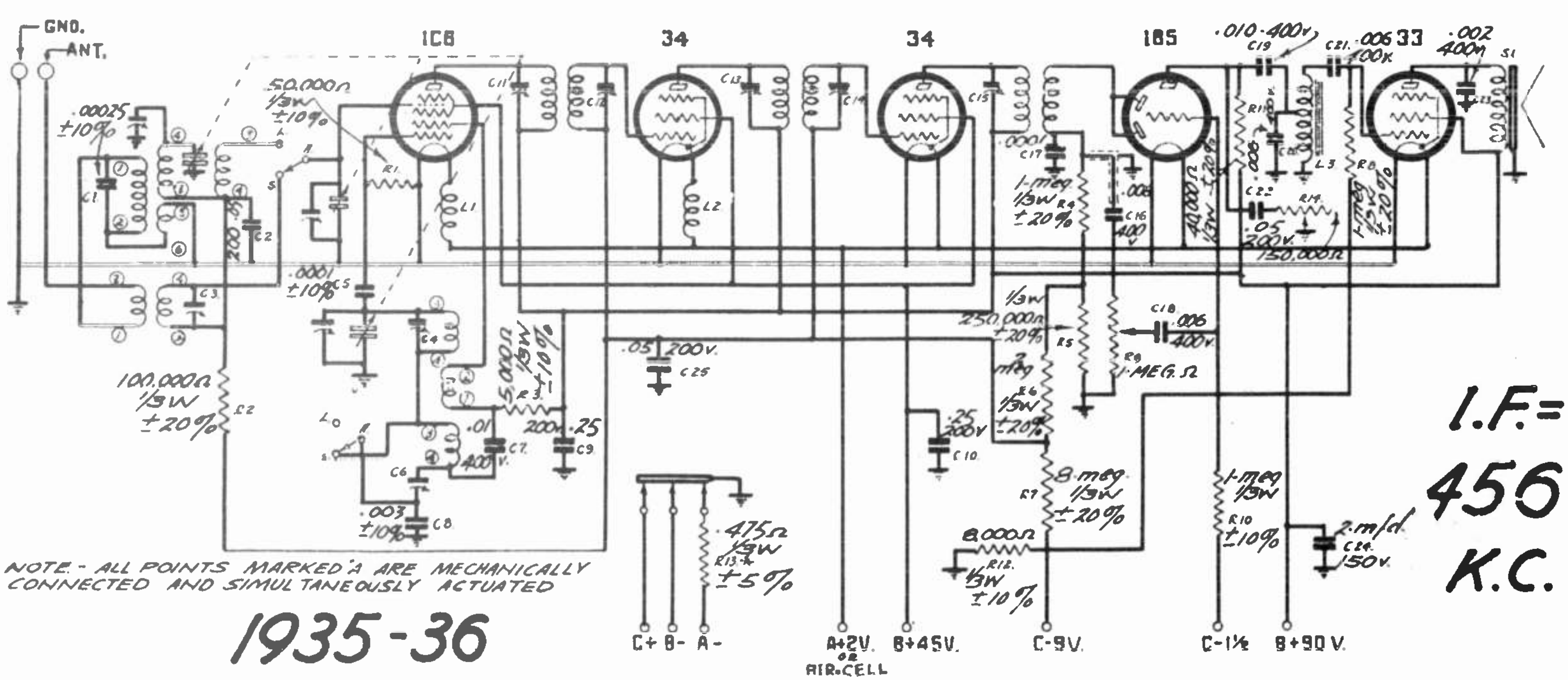
DATA SHEET

ALIGNMENT INSTRUCTIONS, LAYOUT, ETC. ON DATA SHEET-27.

SERIES. 5B56 BATTERY-OPERATED

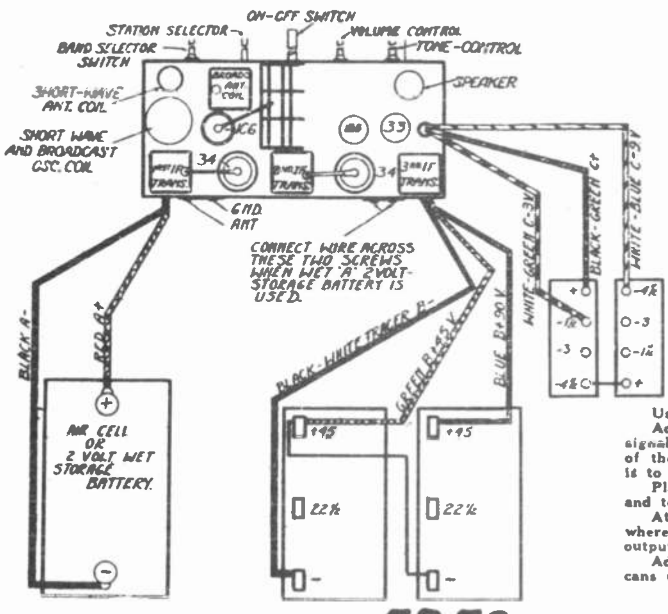


1935-36

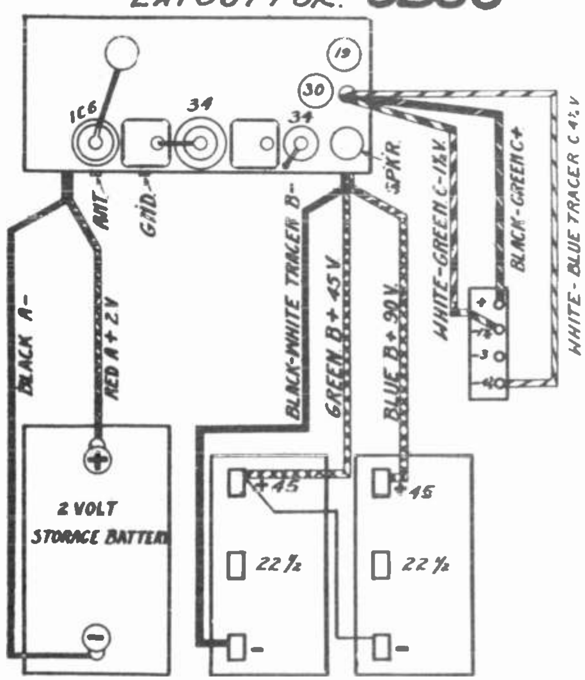
I.F. = 456 K.C.

World Radio History

ALIGNMENT INSTRUCTIONS, ETC., SERIES. 5B50-5B55-5B55A-5B56-5B65. SHORT-WAVE BAND OMITTED ON.-5B50.



LAYOUT FOR.-5B56



LAYOUT FOR.-5B50

I. F. ALIGNMENT

Use a non-metallic screw driver to make the adjustments. Adjust signal generator for 456 K.C. and apply output of signal generator through a .1 condenser to the control grid of the 1C6 tube. The ground lead of the signal generator is to be tied to the chassis base ground point.

Place the selector band switch on "B" band, and volume and tone control at maximum clockwise position.

Attenuate the signal from the signal generator to a point where it is audible and at about half scale deflection on the output meter.

Adjust the I.F. trimmers located at the top of the I.F. cans until maximum output is obtained.

"B" BAND ADJUSTMENT

The output of the signal generator is applied to the antenna post of the receiver through a .00025 condenser for adjustments of the Broadcast band.

Set the signal generator for 1500 K.C. Set the gang rotor and pointer at 1500 K.C. on the dial and adjust the oscillator trimmer (located on top of 3rd. section of the gang) for maximum output at this setting.

Adjust Preselector and antenna trimmers (located on top of the 1st two sections of the gang) for maximum output.

Now set the signal generator for 600 K.C. and turn the receiver gang until the pointer rests at 600 K.C. Slowly rock the gang back and forward across 600 K.C. and at the same time adjust the 600 K.C. padder to maximum output.

SHORT WAVE BAND

The output of the signal generator is now fed through a 400 ohm resistor to the Ant. post of the receiver.

Set the signal generator for 15000 K.C. The receiver selector switch is on the Short Wave position. Set the receiver pointer and gang on the 15000 K.C. point and adjust the Oscillator trimmer, located at the end of chassis, and accessible through a hole provided for the purpose, for maximum output. Then adjust the antenna S.W. trimmer, which is located near the "Osc." trimmer, for maximum output.

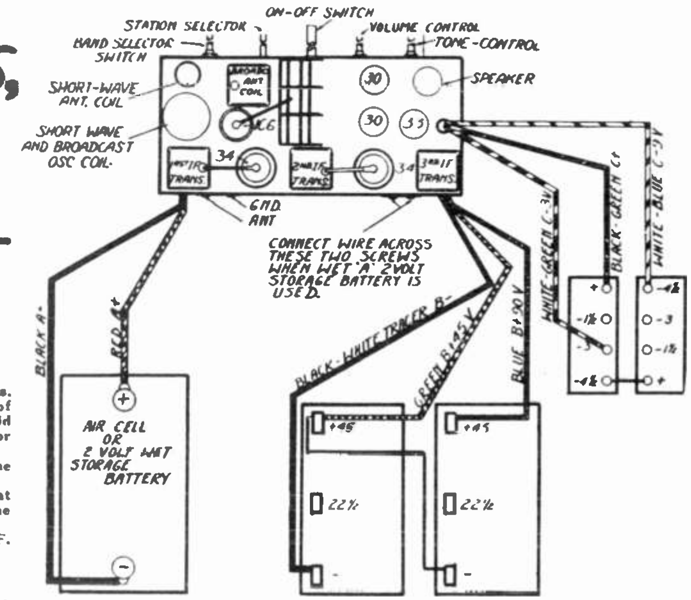
A fixed condenser is provided, which automaticlly tracks the oscillator at 6000 K.C. However, it is advisable to check the alignment at this point.

After oscillator trimmer has been adjusted, the gang condenser should be "rocked" back and forth across the signal while making the adjustments of the short wave R.F. compensating trimmers.

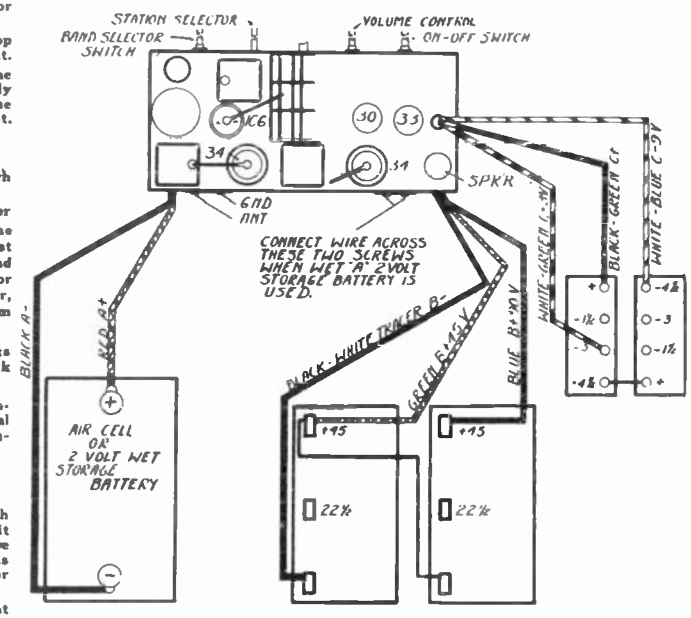
VOLTAGES AT SOCKETS

All voltage readings must be taken at the sockets with a 1000 ohm per volt. voltmeter, and by following the circuit wiring as indicated in the schematic, great care must be observed so as not to cause a short circuit between filaments and plate supply, as this would either burn out the tubes or else paralyze them so that they would be useless.

The "C" voltage is so small that it can only be read at the batteries themselves. Always replace the "C" batteries when new "B"'s are replaced.



LAYOUT FOR— 5B65



LAYOUT FOR.-5B55

DATA SHEET

COURTESY- PHONOLA-27

DOM. ELECTROHOME INDUST.

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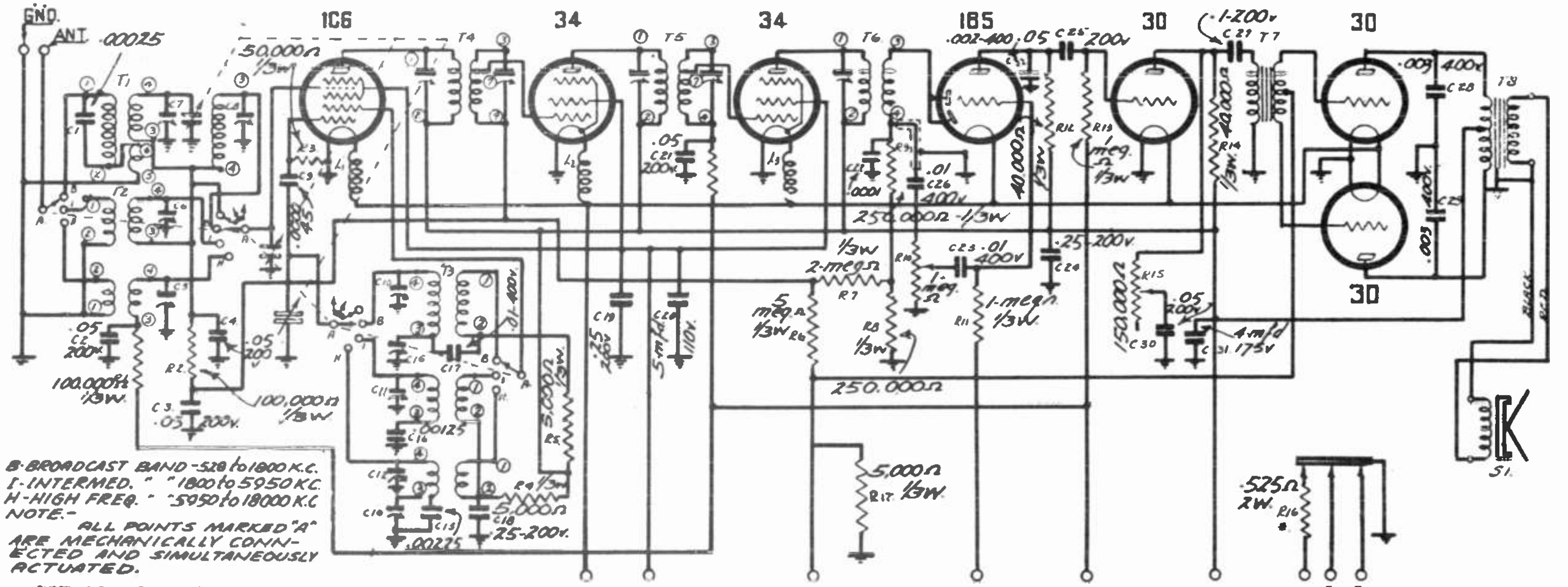
SERIES. 5B75 BATTERY-OPERATED

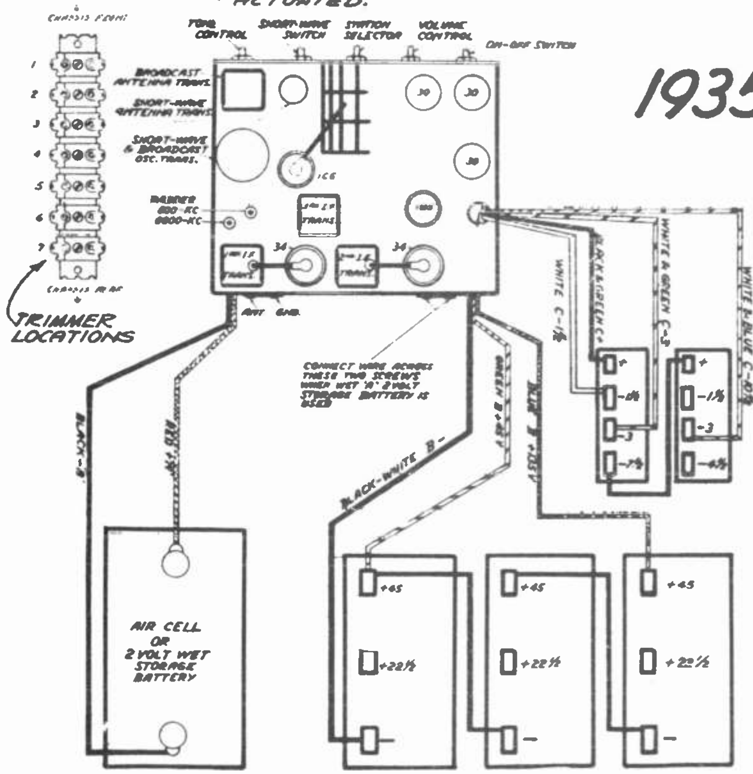
PHONOLA-28

COURTESY DOM. ELECTROHOME INDUSTR.



1935-36

I.F.=456 K.C.



I.F. ADJUSTMENT: Set signal generator at 456 K.C. Apply output through .1 condenser to control grid of 1C6. Ground lead of generator to be tied to chassis ground point. Selector band switch on "B" band. Volume and tone controls at maximum clockwise position. Adjust I.F. trimmers for maximum output.

"B" BAND ADJUSTMENT: Set generator and dial at 1500 K.C. Adjust oscillator trimmer #5 Adjust interstage and antenna trimmers #1+2. Set generator and receiver dial at 600 K.C. Slowly rock the gang back and forward across 600 K.C. and adjust 600 K.C. padder. Connect output of generator through a .00025 condenser to Ant. post of receiver.

"I" BAND ADJUSTMENT: Set generator for 5800 K.C. Connect output through a 400 ohm resistor to Ant. post of receiver. Turn selector switch to "I" band. Move gang until pointer rests at 5800 K.C. Adjust "I" band oscillator trimmers #6. Set generator and receiver dial at 5000 K.C. Adjust "I" band antenna trimmer #3. "I" band has a fixed padder for correct adjustment at 2000 K.C.

"H" BAND ADJUSTMENT: Leave all connections as for "I" band adjustment. Set generator for 18000 K.C. Place set selector switch on "H" band, #7 Set receiver gang and pointer on 18000 K.C. Adjust oscillator trimmer. Set generator for 15000 K.C. Turn rotor of gang until signal is heard on or close to point marked 15 on dial. Adjust H.F. antenna trimmer, #4 While adjusting this trimmer rock gang condenser back and forward across signal.

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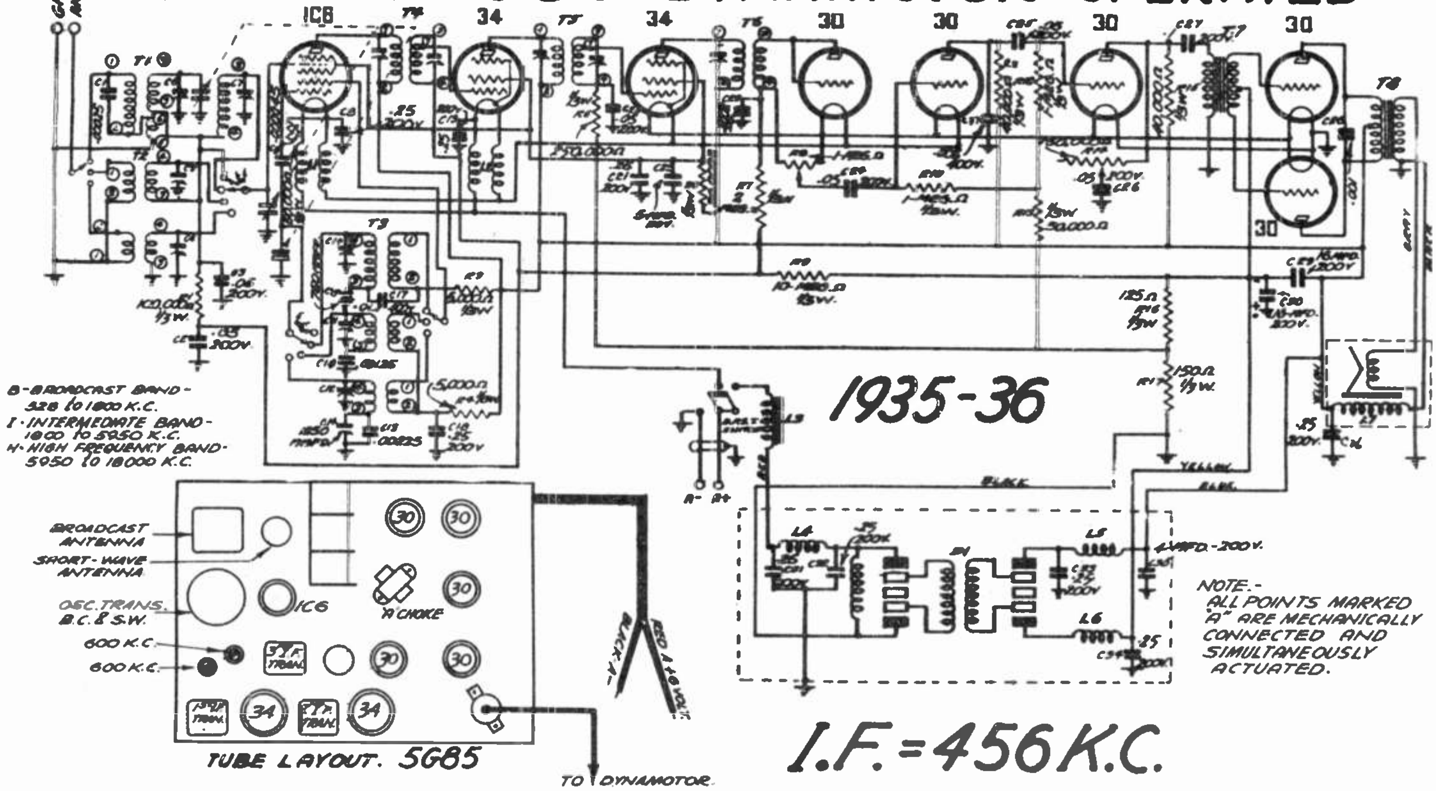
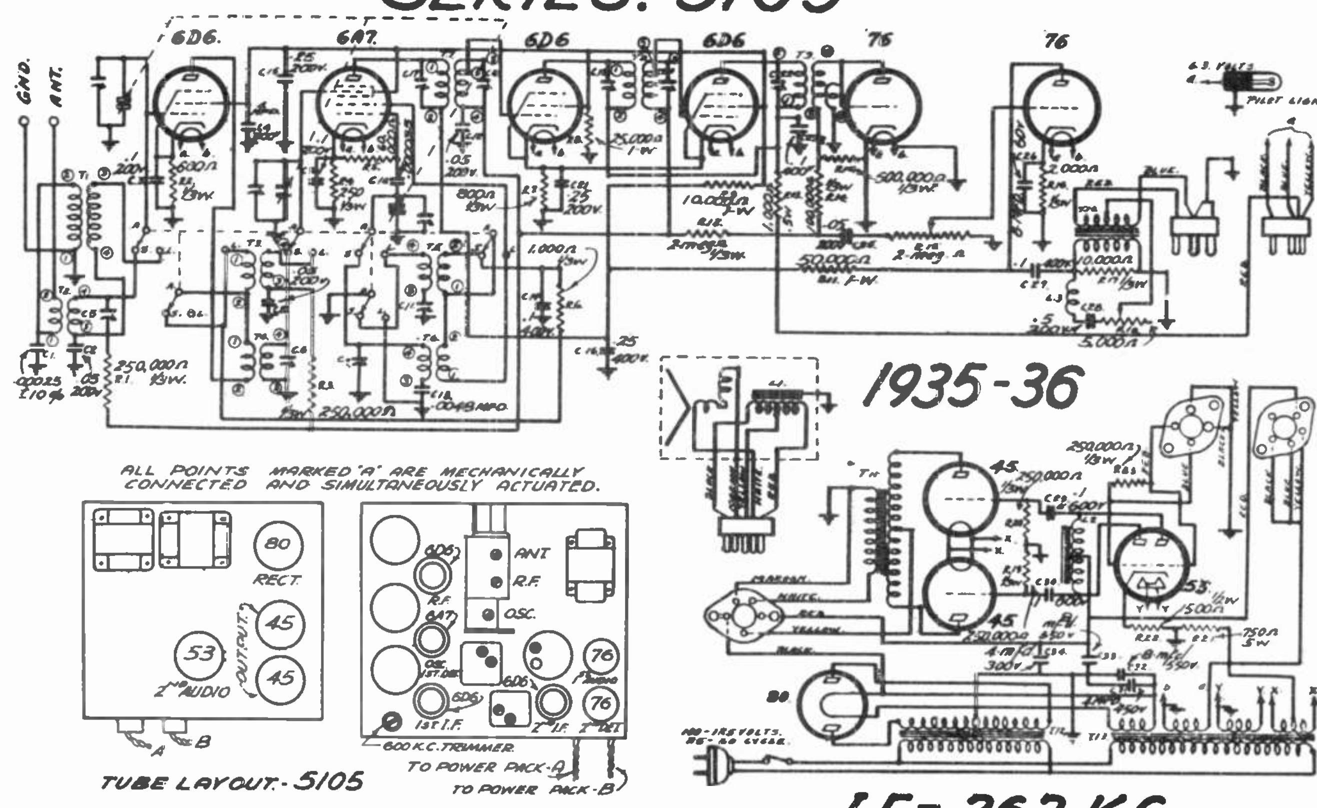
DATA SHEET

World Radio History

SERIES. 5G85 DYNAMOTOR OPERATED



SERIES. 5105



DATA SHEET

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COURTESY-
PHONOLA-29
DOM. ELECTROHOME INDUSTR.

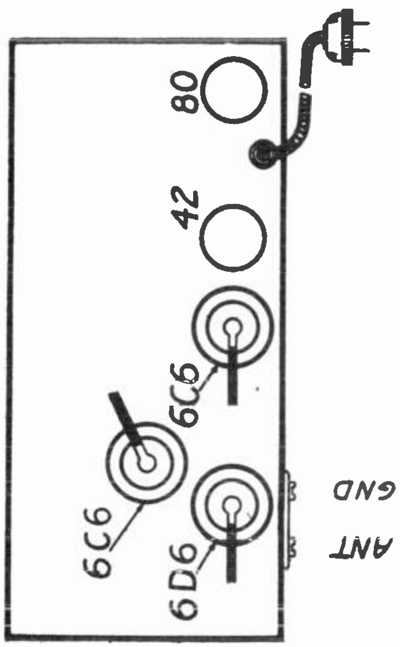
World Radio History

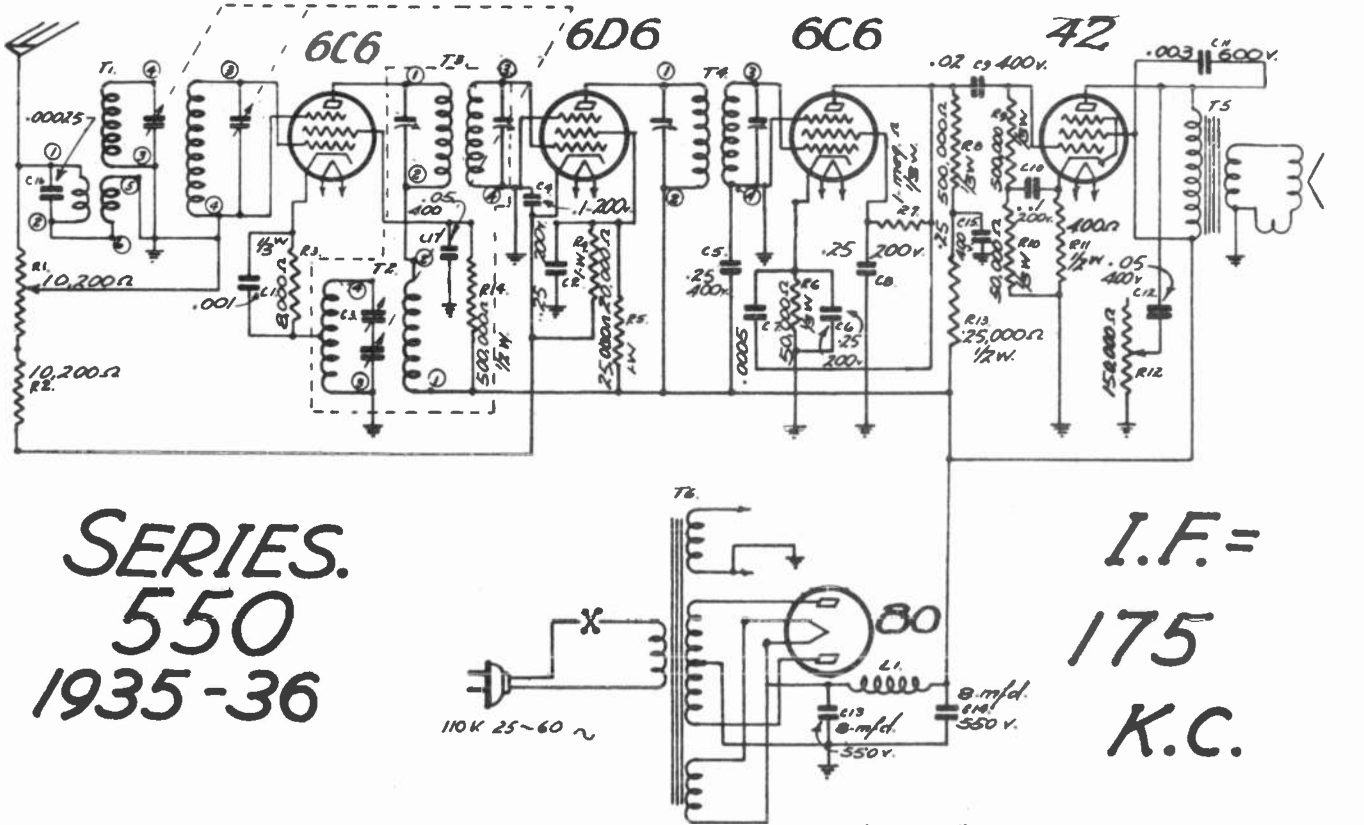
DATA SHEET

PHONOLA-30

COURTESY DOM. ELECTROHOME INDUSTR.

PRINTED IN CANADA





CONDENSER ALIGNMENT

Misalignment or mistracking of condensers generally manifests itself in broad tuning and lack of volume at portions of all of the broadcast band. The receivers are all properly aligned at the factory with precision instruments and realignment should not be attempted unless all other possible causes of the faulty operation have first been investigated and unless the service technician has the proper equipment. A signal generator that will provide an accurately calibrated signals over the broadcast band, and an output indicating meter are necessary. The procedure is as follows:—

Set the signal generator for 175 K.C. Always use the lowest possible signal input in order to secure sharp tuning. Connect the output lead of the signal generator to the grid of the 1st. detector tube through a .05 mfd. condenser. Turn the tuning condenser rotor until the plates are completely out. The ground lead from the signal generator goes to the ground lead of the receiver. Then adjust the four intermediate frequency condensers for maximum output. The adjusting screws for these condensers are accessible from the rear of the chassis.

Next set the signal generator for a signal of exactly 1400 K.C. The output lead of the signal generator is, in this instance, connected to the antenna lead of the receiver. Set the dial pointer on the 1400 K.C. mark on the dial scale and adjust the three trimmer condensers on the gang tuning condenser for maximum output, adjusting the oscillator trimmer first.

Next set the signal generator for a signal of 600 K.C. and adjust the oscillator 600 K.C. trimmer. The adjusting screw for this condenser is accessible from the rear right hand side of the chassis.

A non-metallic screw driver is necessary for this adjustment. Turn the tuning condenser rotor until maximum output is obtained. Then turn the rotor slowly back and forth over this setting, at the same time adjusting the 600 K.C. trimmer screw until the highest output is obtained.

Then set the signal generator again for a signal of 1400 K.C. and check the adjustment of the tuning condenser trimmers at this frequency for maximum output.

The output of the signal generator is applied to the antenna post of the receiver through a .00025 condenser for adjustments of the broadcast band.

DISTORTED PRODUCTION

Defective tubes are a very common cause of distortion. Try out a new set of tubes that have been tested O.K. or have been operating satisfactorily in another receiver.

Distortion may be due to the speaker being out of adjustment. Check the speaker and try out a new one if one is available. Another cause of distortion is high or low grid voltages. Check the voltages as given in the voltage chart for this receiver.

Incorrect tuning of the receiver is a very common cause of distorted reproduction. The signal should be carefully tuned to resonance for best reproduction.

SPEAKER

The color coding of the speaker leads is as follows:— Field start—Black. Field finish—Yellow. The voice coil leads are white and maroon. The maroon wire grounds one side of the voice coil and goes to the ground in chassis.

VOLTAGES AT SOCKETS

Voltages are taken from the prongs to chassis.

Line voltage 110 volts. Antenna shorted to ground. Volume control at maximum and the gang wide open.

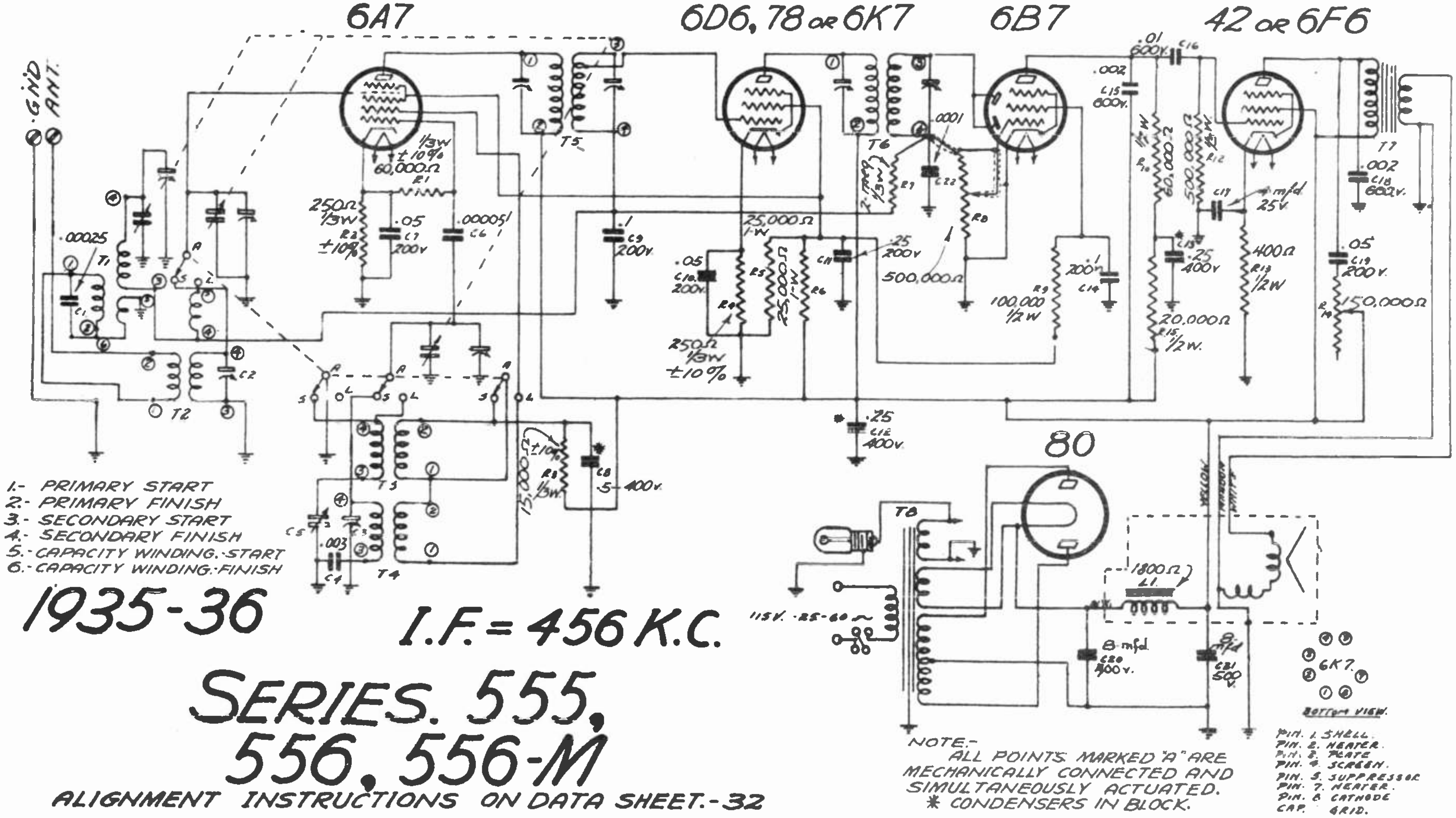
Type of Tube	Function	Across Filament	Plate	Screen	Cathode	Plate Current M.A.
6C6	1st. Detector & Oscillator	6.3	240	85	3.5	.4
6D6	1st. I.F.	6.3	240	85	3.5	7.6
6C6	2nd Detector	6.3	40	13	3.5	.116
42	Output	6.3	230	250	14.	35.
80	Rectifier	5.1				

World Radio History

DATA SHEET

COURTESY—
PHONOLA-31
DOM ELECTROHOME INDUST.

PRINTED IN CANADA

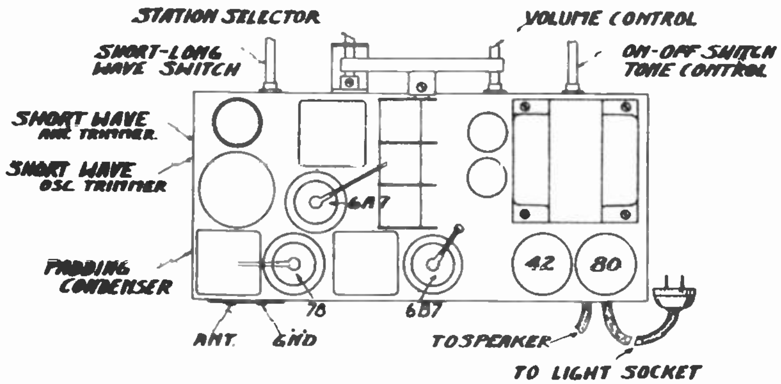


1935-36

I.F. = 456 K.C.

SERIES. 555, 556, 556-M

ALIGNMENT INSTRUCTIONS ON DATA SHEET.-32



VOLTAGES AT SOCKETS

Voltages are taken from the prongs to chassis.

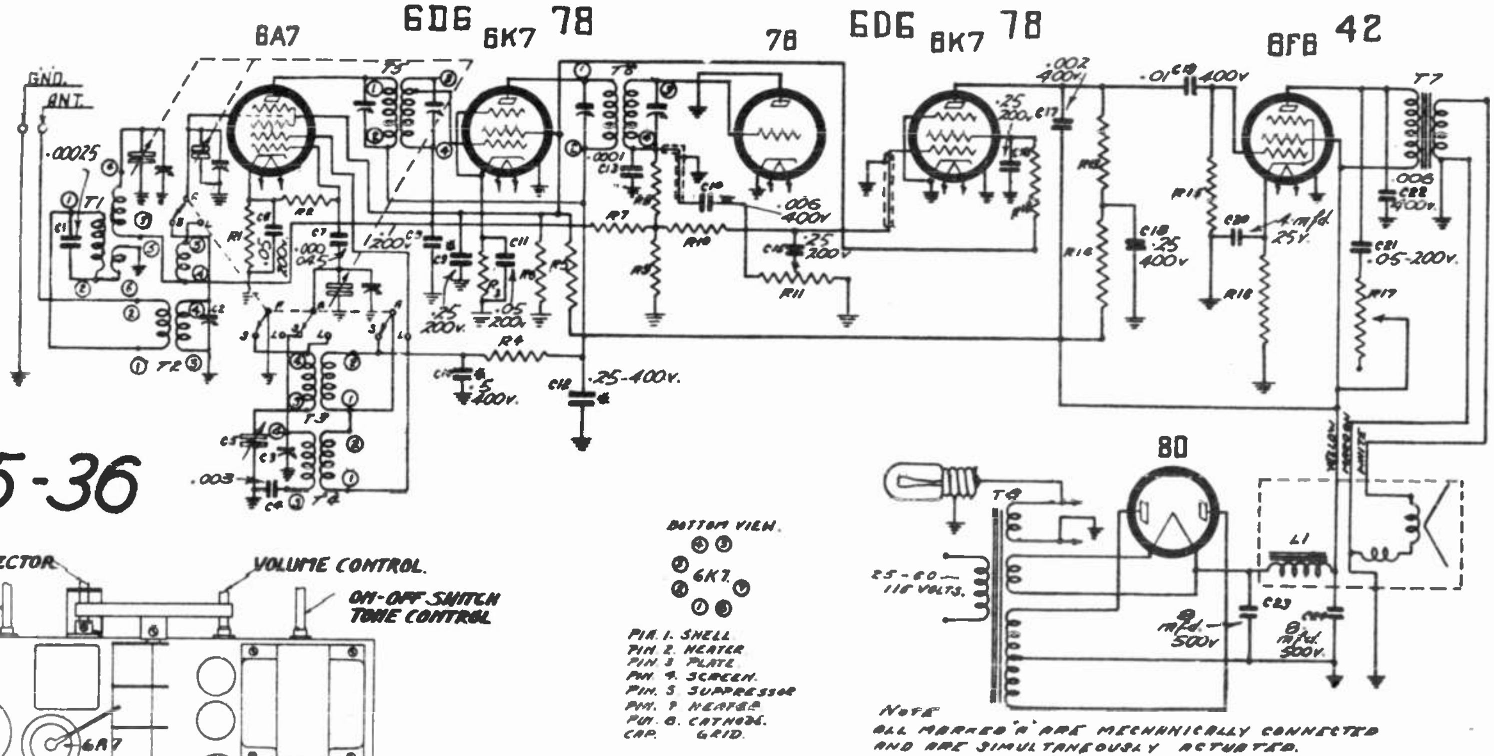
Line 115 Volts. — Antenna Shorted. — Volume Control at Maximum. Gang open.

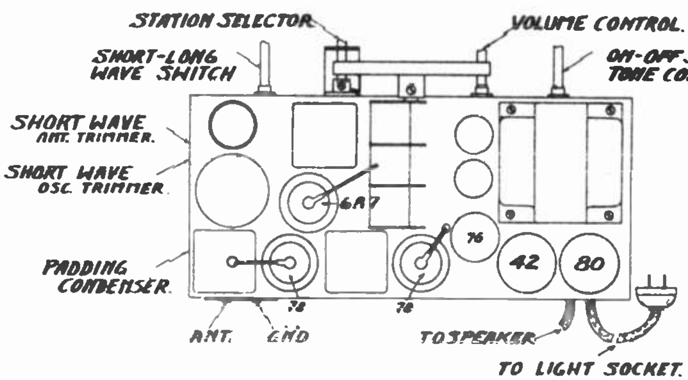
Type of Tube	Function	Filament	Plate	Screen	Cathode	Plate Current M.A.	Grid No. 1	Grid No. 2
6A7	1st. Detector & Oscillator	6.2	260	80	1.5	3.	.5	230
6D6-78 or 6K7	Oscillator I.F. Amp.	6.2	265	80	1.2	2.		
6B7	2nd. Detector AVC	6.2	105	28		2.		
42-6F6	Output	6.2	255	260	15	33.		
80	Rectifier	5						

World Radio History

I.F.= 456 K.C.

1935-36





SERIES. 565, 567, 567-M

VOLTAGES AT SOCKETS

Voltages are taken from the prongs to chassis.

Line 115 Volts. — Antenna Shorted — Volume Control at Maximum — Gang open.

Type of Tube	Function	Filament	Plate	Screen	Cathode	Plate Current M.A.	Grid No. 1	Grid No. 2
6A7	Osc. & 1st. Detector	6.2	255	80	2.	3.3	.9	200
6D6-78-6K7	I.F.	6.2	260	80	1.5	2.		
76	Diode 2nd. Detector	6.2	.4					
6D6-78-6K7	1st. Audio	6.2	45	16	.5	1.5		
42-6F6	Audio Output	6.2	250	255	15	34		
80	Rectifier	5						

ALIGNMENT INSTRUCTIONS FOR SERIES. 565, 567, 567-M THESE ALSO APPLY TO SERIES. 555, 556, 556-M.

I. F. ALIGNMENT

Use a non-metallic screw driver to make the adjustments.

Adjust signal generator for 456 K.C. and apply output of signal generator through a .1 condenser to the control grid of the 6A7 tube. The ground lead of the signal generator is to be tied to the chassis base ground point.

Place the selector band switch on "B" band, and volume control and tone control at maximum clockwise position.

Attenuate the signal from the signal generator to a point where it is audible and at about half scale deflection on the output meter.

Adjust the I.F. trimmers located at the top of the I.F. cans until maximum output is obtained.

"B" BAND ADJUSTMENT

The output of the signal generator is applied to the antenna post of the receiver through a .00025 condenser for adjustments of the broadcast band.

Set the signal generator for 1500 K.C. Set the gang rotor and pointer at 1500 K.C. on the dial and adjust the oscillator trimmer (located on top of 3rd. section of the gang) for maximum output at this setting.

Adjust pre-selector and antenna trimmers (located on top of the 1st two sections of the gang) for maximum output.

Now set the signal generator for 600 K.C. and turn the receiver gang until the pointer rests at 600 K.C. Slowly rock the gang back and forward across 600 K.C. and at the same time adjust the 600 K.C. padder to maximum output.

SHORT WAVE BAND

The output of the signal generator is now fed through a 400 ohm resistor to the Ant. post of the receiver.

Set the signal generator for 15000 K.C. The receiver selector switch is on the Short Wave position. Set the receiver pointer and gang on the 15000 K.C. point and adjust the Oscillator trimmer, located at the end of the chassis, and accessible through a hole provided for the purpose, for maximum output. Then adjust the antenna S.W. trimmer, which is located near the "Osc" trimmer, for maximum output.

A fixed condenser is provided, which automatically tracks the oscillator at 6000 K.C. However, it is advisable to check the alignment at this point.

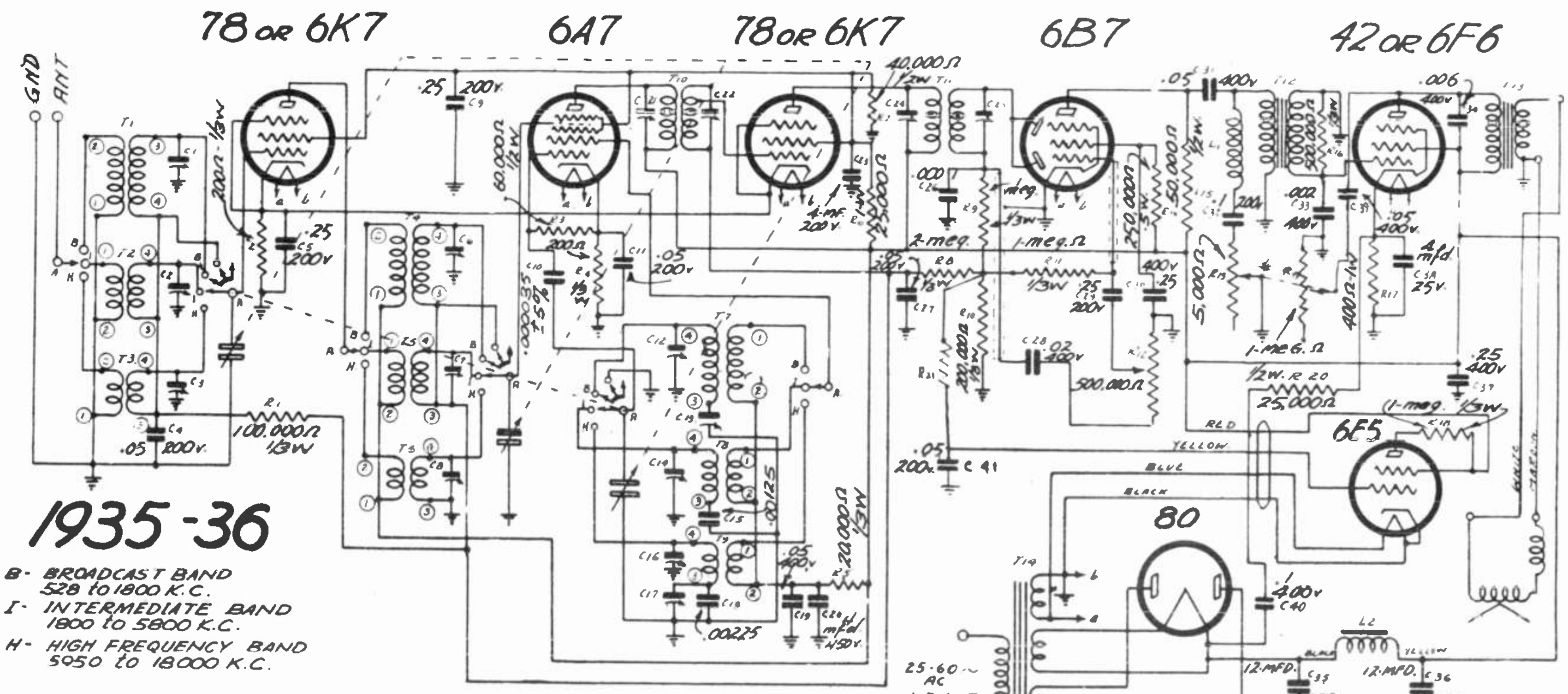
After oscillator trimmer has been adjusted, the gang condenser should be "rocked" back and forth across the signal while making the adjustments of the short wave R.F. compensating trimmers.

DATA SHEET

COURTESY- PHONOLA-32
DOM. ELECTROHOME INDUSTR

PRINTED IN CANADA

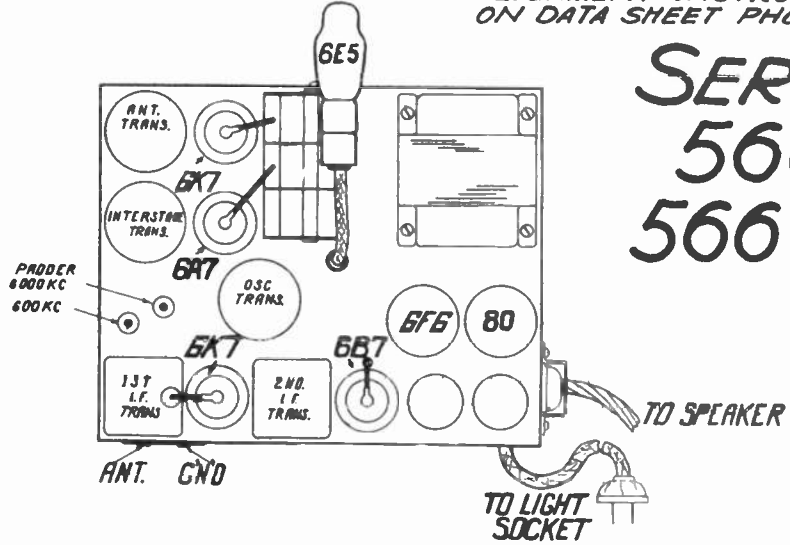
World Radio History



1935-36

B- BROADCAST BAND 528 to 1800 K.C.
I- INTERMEDIATE BAND 1800 to 5800 K.C.
H- HIGH FREQUENCY BAND 5950 to 18000 K.C.

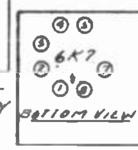
ALIGNMENT INSTRUCTIONS ON DATA SHEET PHONOLA-37.



SERIES. 566 566-M

I.F. = 456 K.C.

NOTE:- ALL POINTS MARKED "A" ARE MECHANICALLY CONNECTED AND SIMULTANEOUSLY ACTUATED.



PIN 1 SHELL
PIN 2 HEATER
PIN 3 PLATE
PIN 4 SCREEN
PIN 5 SUPPRESSOR
PIN 7 HEATER
PIN 8 CATHODE
CAP. GRID

VOLTAGES AT SOCKETS

Line — 115V Antenna & Ground Shorted Volume Full

Type of Tube	Function	Heater	Cathode to Gnd.	Screen to Gnd.	Plate to Gnd.	Plate I MA
78 or 6K7	R.F.	6.1	3.1	95	270	6.3
6A7	Osc.Mixer	6.1	2.0	95	P.270	2.7
					G.No.2-190	4.0
78 or 6K7	I.F.	6.1	3.1	95	270	6.3
6B7	2nd. Det. 1st. Audio	6.1	.0	50	80	3.6
42	Output	6.1	16.0	270	250	34.0
80	Rect.	4.9				

DATA SHEET

COURTESY- PHONOLA-33
DOM. ELECTROHOME INDUSTR.

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World Radio History

DATA SHEET

COURTESY—**PHONOLA-34**
DOM. ELECTROHOME INDUSTR.

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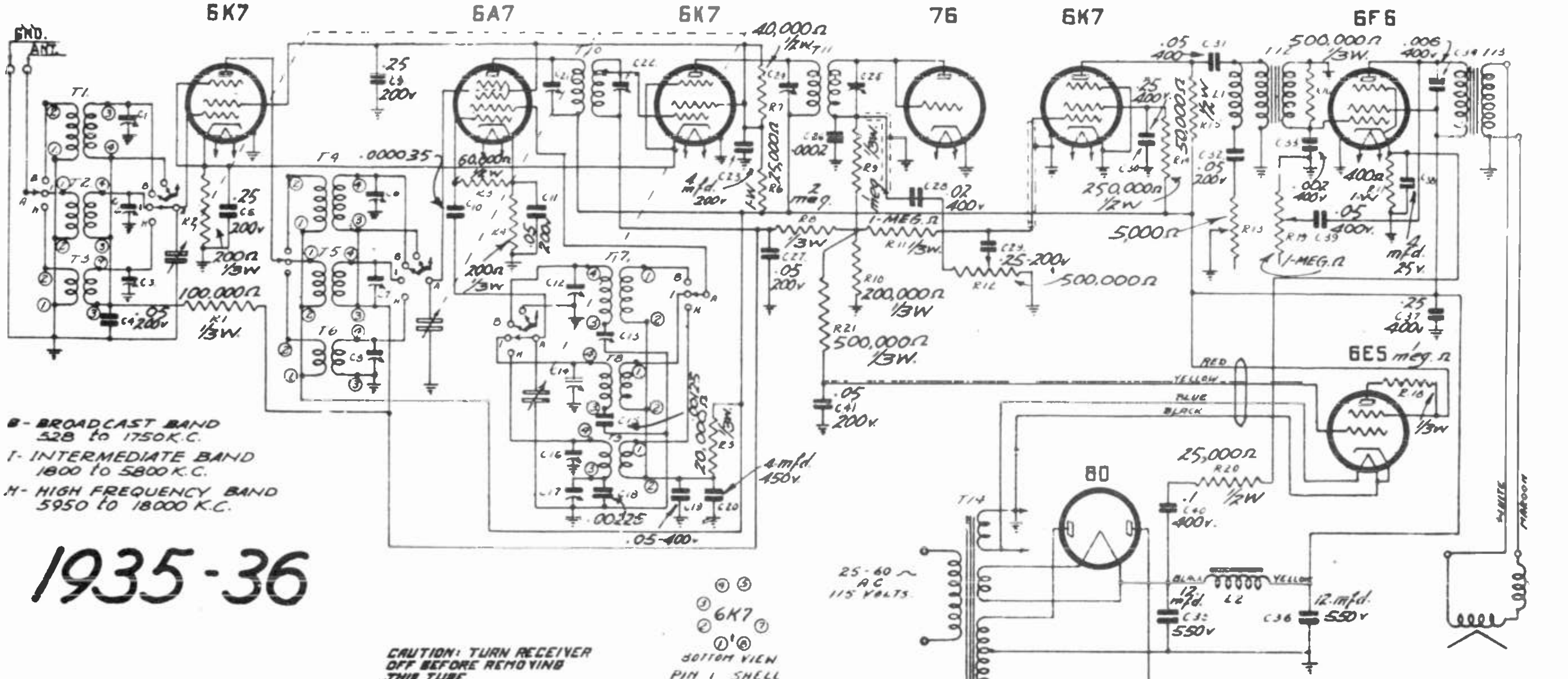


B - BROADCAST BAND 528 to 1750 K.C.

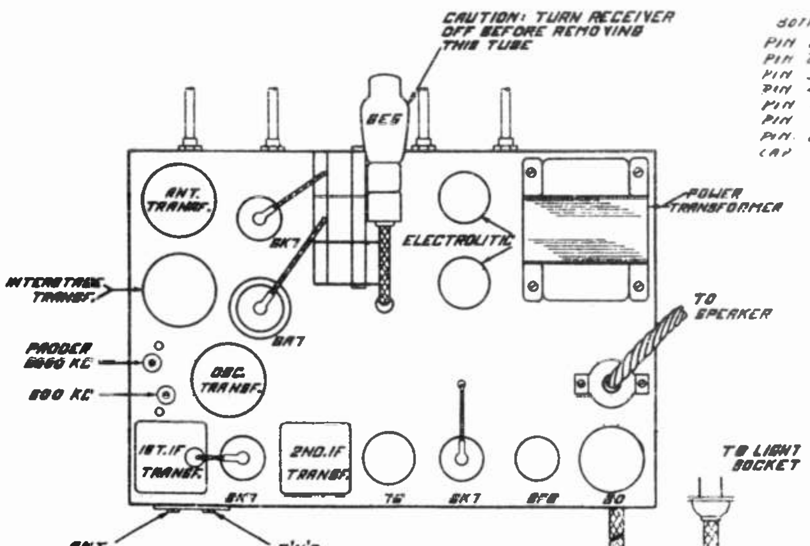
I - INTERMEDIATE BAND 1800 to 5800 K.C.

H - HIGH FREQUENCY BAND 5950 to 18000 K.C.

1935-36

6K7 BOTTOM VIEW

PIN 1 SHELL
PIN 2 HEATER
PIN 3 PLATE
PIN 4 SCREEN
PIN 5 SUPPRESSOR
PIN 7 HEATER
PIN 8 CATHODE
CAP GRID



NOTE:— ALL POINTS MARKED "A" ARE MECHANICALLY CONNECTED AND SIMULTANEOUSLY ACTUATED.

ALIGNMENT INSTRUCTIONS FOR ABOVE MODEL ON DATA SHEET PHONOLA.-37

SERIES. 575-M

I.F. = 456 K.C.

VOLTAGES AT SOCKETS

Line — 115V Antenna & Ground Shorted Volume Full

Type of Tube	Function	Heater	Cathode to Gnd.	Screen to Gnd.	Plate to Gnd.	Plate I MA
6K7	R.F.	6.1	3.1	95	265	6.3
6A7	Osc.Mixer	6.1	2.0	95	270 G.2-190	2.7 G.2-4.0
6K7	I.F.	6.1	3.1	95	265	6.3
76	2nd.Det.	6.1				
6K7	1st.Audio	6.1		50	80	4.0
6F6	Output	6.1	16.0	265	250	34.0
80	Rect.	4.9				

World Radio History

DATA SHEET PHONOLA-35

COURTESY- DOM. ELECTROHOME INDUSTR.

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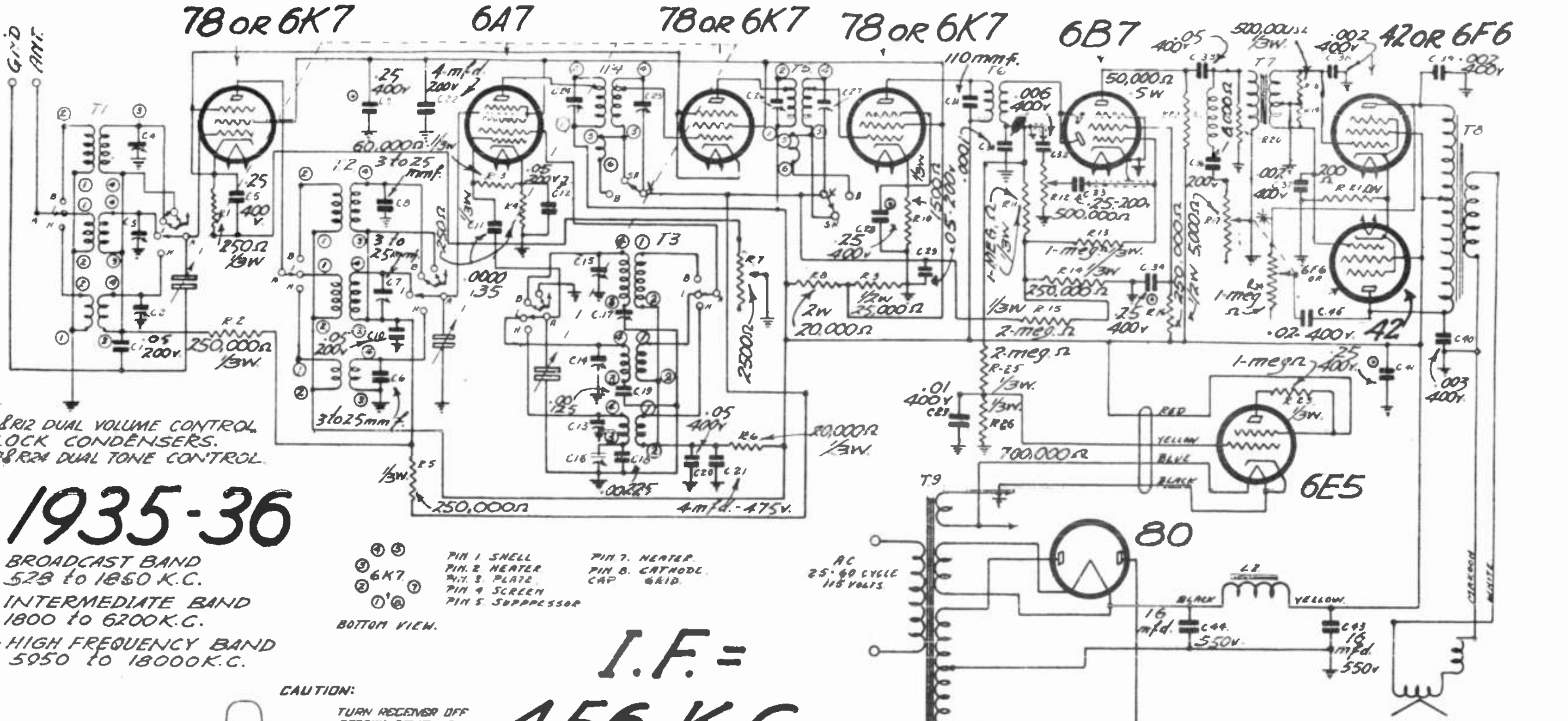


Δ R7 & R12 DUAL VOLUME CONTROL.
⊙ BLOCK CONDENSERS.
✱ R17 & R24 DUAL TONE CONTROL.

1935-36

B - BROADCAST BAND 528 to 1850 K.C.

I - INTERMEDIATE BAND 1800 to 6200 K.C.

H - HIGH FREQUENCY BAND 5950 to 18000 K.C.

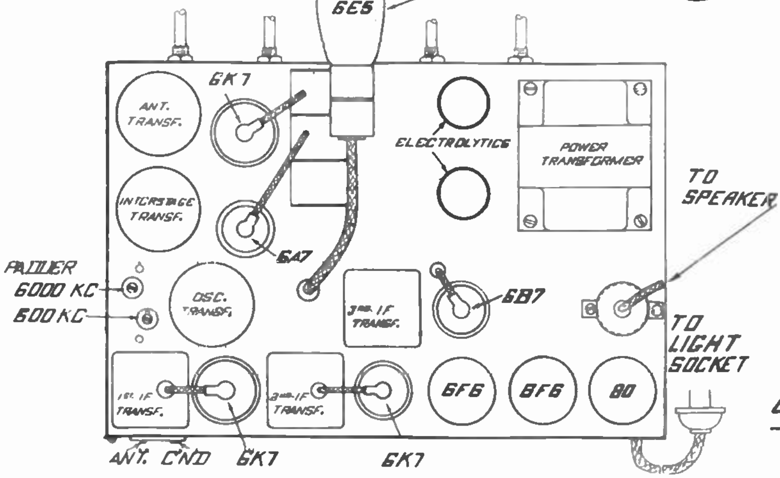
6K7 BOTTOM VIEW.

PIN 1 SHELL
PIN 2 HEATER
PIN 3 PLATE
PIN 4 SCREEN
PIN 5 SUPPRESSOR
PIN 7 HEATER
PIN 8 CATHODE
CAP GRID

I.F. = 456 K.C.

NOTE:-
ALL POINTS MARKED "A" ARE MECHANICALLY CONNECTED AND SIMULTANEOUSLY ACTUATED.

CAUTION:
TURN RECEIVER OFF BEFORE REMOVING THIS TUBE



SERIES 585 585-M

ALIGNMENT INSTRUCTIONS ON DATA SHEET PHONOLA-37.

VOLTAGES AT SOCKETS

Line — 115V Antenna & Ground Shorted Volume Full

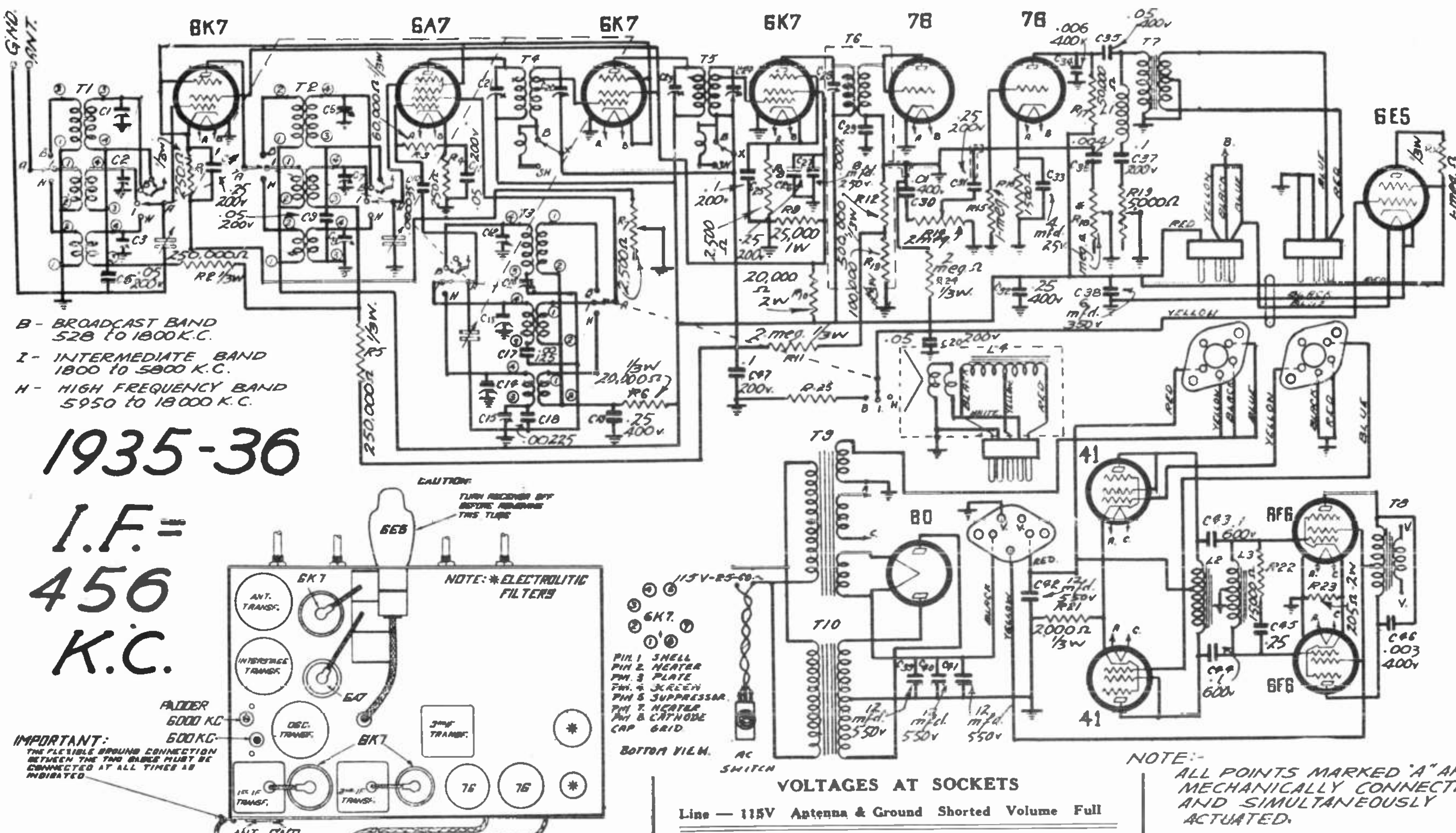
Type of Tube	Function	Heater	Cathode to Gnd.	Screen to Gnd.	Plate to Gnd.	Plate I MA
78 or 6K7	R.F.	6.1	3.0	77	248	4.3
6A7	Osc.Mixer	6.1	1.8	77	G.No.2-165 / 245	3.8 / 2.1
78 or 6K7	I.F.	6.1	3.0	77	245	4.3
78 or 6K7	I.F.	6.1	4.7	77	245	2.5
6B7	2nd. Det. & 1st Aud.	6.1	0	36	60	3.4
42 or 6F6	Output	6.1	15.0	250	235	29.
42 or 6F6	Output	6.1	15.0	250	235	29.
80	Rect.	4.9				Total I 78.4

World Radio History

DATA SHEET

COURTESY—
PHONOLA-36
DOM. ELECTROHOME INDUSTRIES

PRINTED IN CANADA



B - BROADCAST BAND 528 to 1800 K.C.

I - INTERMEDIATE BAND 1800 to 5800 K.C.

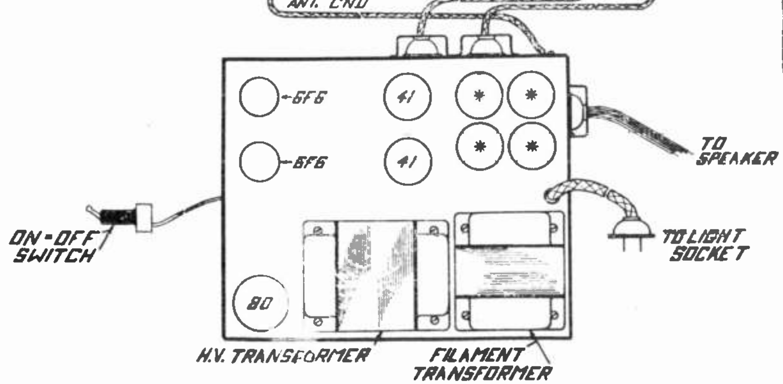
H - HIGH FREQUENCY BAND 5950 to 18000 K.C.

1935-36

I.F. = 456 K.C.

IMPORTANT: THE FLEXIBLE GROUND CONNECTION BETWEEN THE TWO BASES MUST BE CONNECTED AT ALL TIMES AS INDICATED

6K7.
PIN 1 SHELL
PIN 2 HEATER
PIN 3 PLATE
PIN 4 SCREEN
PIN 5 SUPPRESSOR
PIN 7 HEATER
PIN 8 CATHODE
CAP GRID
BOTTOM VIEW.



VOLTAGES AT SOCKETS

Line — 115V Antenna & Ground Shorted Volume Full

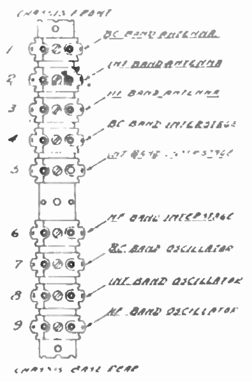
Type of Tube	Function	Heater	Cathode to Gnd.	Screen to Gnd.	Plate to Gnd.	Plate I MA
78 or 6K7	R.F.	6.1	2.5	66	200	4.0
6A7	Osc.Mixer	6.1	1.7	66	200	2.6
					G.No.2-150	4.1
78 or 6K7	I.F.	6.1	2.5	66	200	4.0
78 or 6K7	I.F.	6.1	4.3	66	200	2.6
76	2nd. Det.	6.1				
76	1st.Audio	6.1	3.5		75	2.8
41	2nd.Audio	6.1	14.0	200	200	10.
41	2nd.Audio	6.1	14.0	200	200	10.
42 or 6F6	Output	6.1	16.0	290	280	33.
42 or 6F6	Output	6.1	16.0	290	280	33.
80	Rect.	4.9				Total 106.1

NOTE:- ALL POINTS MARKED "A" ARE MECHANICALLY CONNECTED AND SIMULTANEOUSLY ACTUATED.

SERIES 5115-M

ALIGNMENT INSTRUCTIONS ON DATA SHEET PHONOLA-37

World Radio History



TRIMMER LAYOUT.

ALIGNMENT INSTRUCTIONS -for- SERIES

566-566-M .... DATA SHEET PHONOLA – 33
575-M ...... DATA SHEET PHONOLA – 34
585-585-M .... DATA SHEET PHONOLA – 35
5115-M ..... DATA SHEET PHONOLA – 36

ALIGNMENT AND CALIBRATION: Each all wave receiver is properly aligned at the factory with precision instruments; therefore, it is extremely important that all other possible causes of faulty operation be thoroughly investigated before attempting to realign the receiver. The service technician should be properly equipped with a signal generator that will provide accurately the following signals: 456 K.C., 1500 K.C., 600 K.C., 5000 K.C., 2000 K.C., 15,000 K.C., and 6000 K.C., also a dependable output meter.

I.F. ADJUSTMENT: Use a non-metallic screw driver to make the adjustments. NOTE:- On models 585, 585-M and 5115-M always have High Fidelity switch on the fine tuning position.) Adjust signal generator for 456 K.C. and apply output of signal generator through a .1 condenser to control grid of 6A7 tube. Ground lead of generator is to be tied to chassis base ground point. Place selector band switch on "B" band, and volume control at maximum clockwise position, also tone control. Attenuate the signal from generator to a point where it is audible and at about half scale deflection on output meter. Adjust I.F. trimmers located at top of I.F. cans until maximum output is obtained.

"B" BAND ADJUSTMENT: Set generator for 1500 K.C. Set gang rotor and pointer at 1500 K.C. on dial, and adjust oscillator trimmer. (No. 7 from front) (note trimmer sketch) Adjust interstage and antenna trimmers for maximum output, No. 1 and No. 4 respectively. Now set generator for 600 K.C. and turn receiver gang until pointer rests at 600 K.C. Slowly rock gang back and forward across 600 K.C. and at same time adjust 600 K.C. padder. Connect output lead of generator through a .00025 condenser to Ant.post of receiver.

"I" BAND ADJUSTMENT: Set generator for 5800 K.C. Connect output of generator through a 400 ohm resistor to Ant. post of receiver. Turn selector switch to "I" band. Move gang until pointer rests at 5800 K.C. Now adjust "I" band oscillator trimmer No. 8 to maximum output. Now set generator at 5000 K.C. and likewise condenser gang and pointer. Adjust "I" band interstage and Ant. trimmers Nos. 2 and 5. Do not touch trimmers on bands already adjusted. "I" band has a fixed padder for correct 2000 K.C. adjustment.

"H" BAND ADJUSTMENT: Set signal generator for 18000 K.C. The receiver selector switch is on the "H" band position and the 400 ohm resistor still remains in the output circuit of the signal generator. Signal is still being fed into the receiver on antenna post. Set receiver gang and pointer on 18000K.C. point and adjust oscillator trimmer No, 9 until maximum output is obtained. Now set generator for 1500 K.C. Turn rotor of gang until signal is heard. This should be either on or very close to point marked 15 on dial. Adjust H.F. interstage trimmer No.6 and the H.F. Ant. trimmer No. 3 for maximum output. While adjusting the above trimmers, move condenser gang slowly back and forward across signal until maximum output is obtained. Now set generator for 6000 K.C. Turn tuning condenser to point where signal is heard and adjust 6000K.C. padder for maximum output. After oscillator trimmer has been adjusted the gang condenser should be "rocked" back and forth across the signal while making adjustments of the short wave R.F. compensating trimmers.

CHANGE IN EARLY MODELS 566, 566-M and 575-M: Since the early models of these receivers R21 and C41 have been added in the 6E5 control grid circuit; C40 and R20 have also been added to the filter circuit.

CHANGE IN EARLY MODELS 585-585-M: In the early models of this receiver a single volume control was employed. The control R7 was added and C5 was increased to .25 mfd. The resistor R7 was 1500 ohms and the bias resistor for the 78 or 6K7 I.F. tube only. Resistors R25 and R26 were added and C23 changed to .01 mfd. in the 6E5 control grid circuit.

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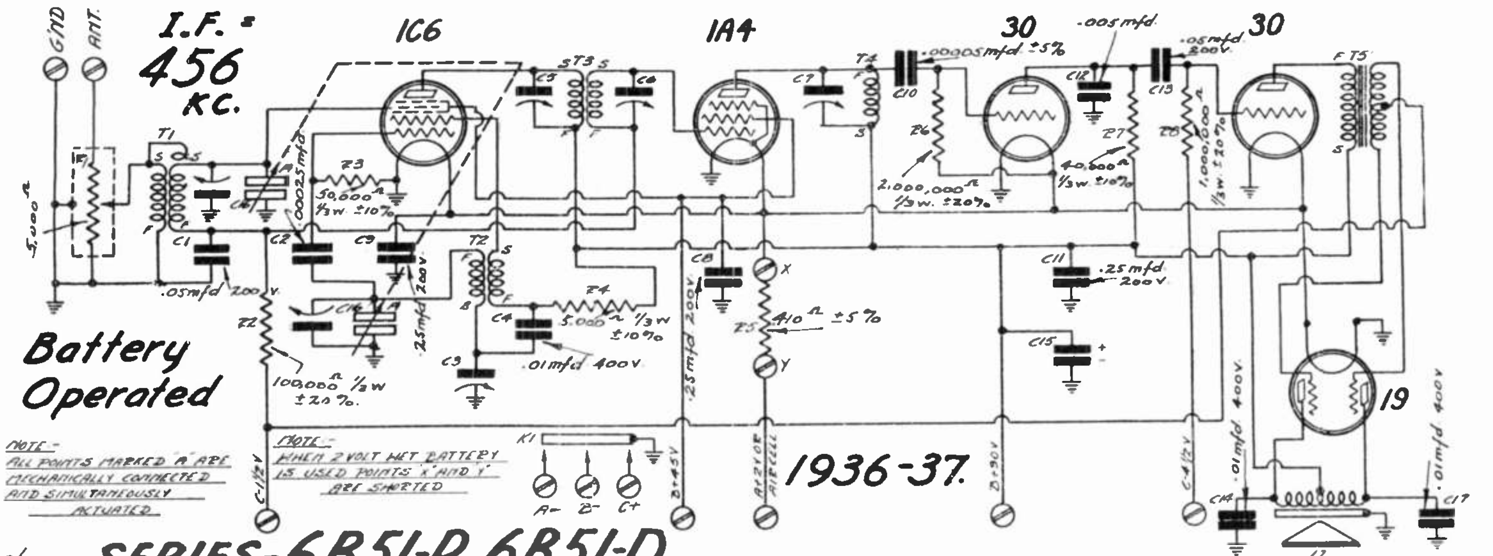
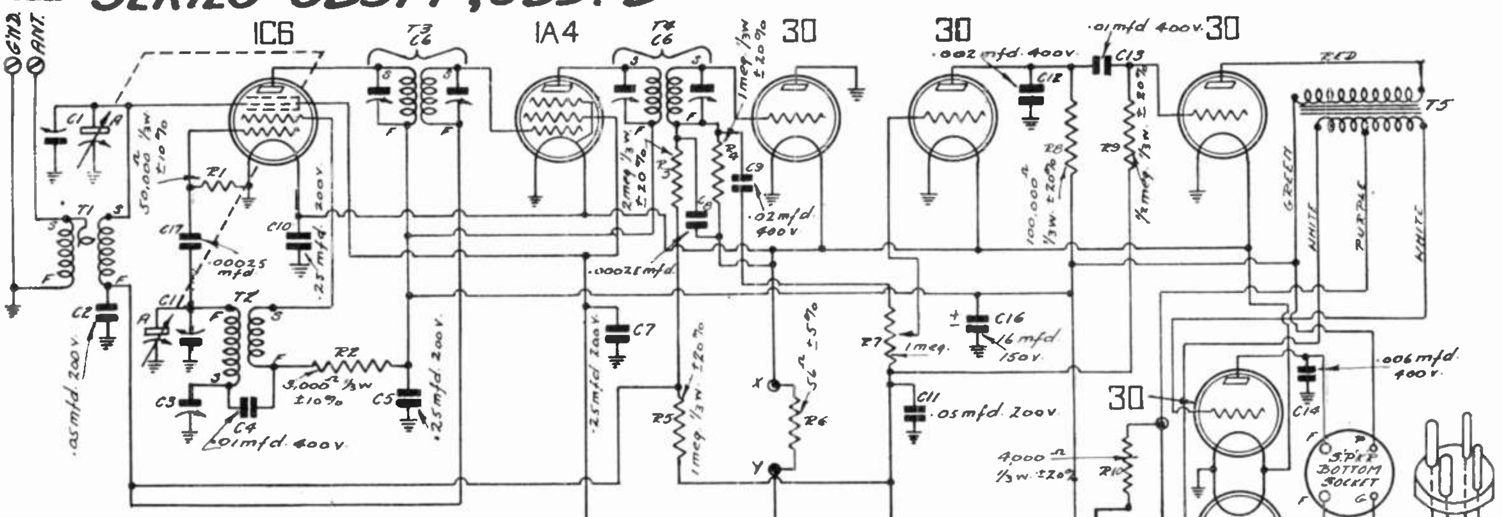
PHONOLA-37

World Radio History



above: SERIES-6B51-P, 6B51-D

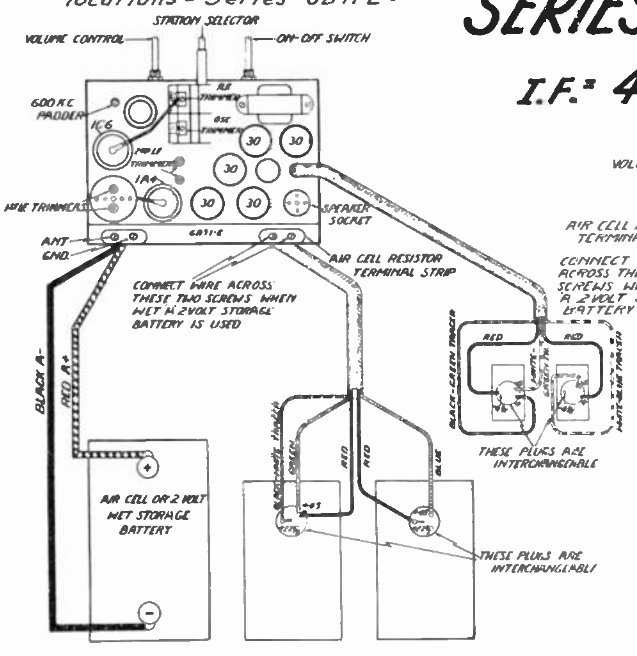


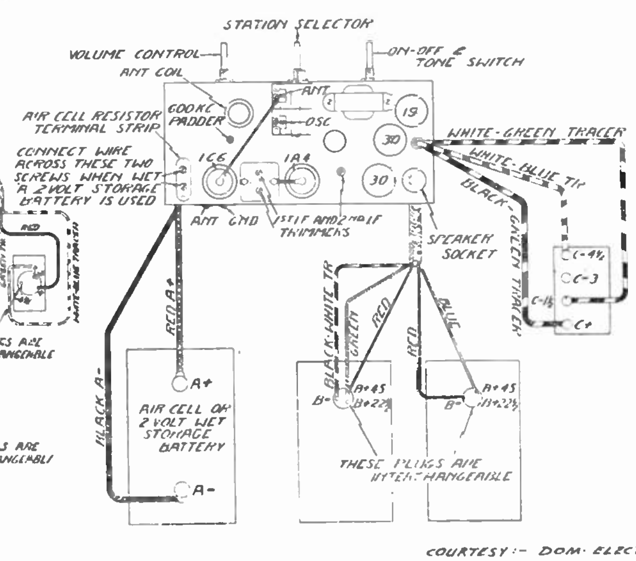
NOTE: POINTS MARKED "A" ARE MECHANICALLY CONNECTED AND SIMULTANEOUSLY ACTUATED.

Below: Chassis Layout and trimmer locations - Series 6B71-E.

SERIES-6B71-E.

I.F. = 456 KC.





left: Chassis layout and trimmer locations - Series 6B51-P, 6B51-D.

Battery Operated.

Alignment Data for both these models on Sheet-38a.

COURTESY:- DOM. ELECTROHOME IND. LTD.

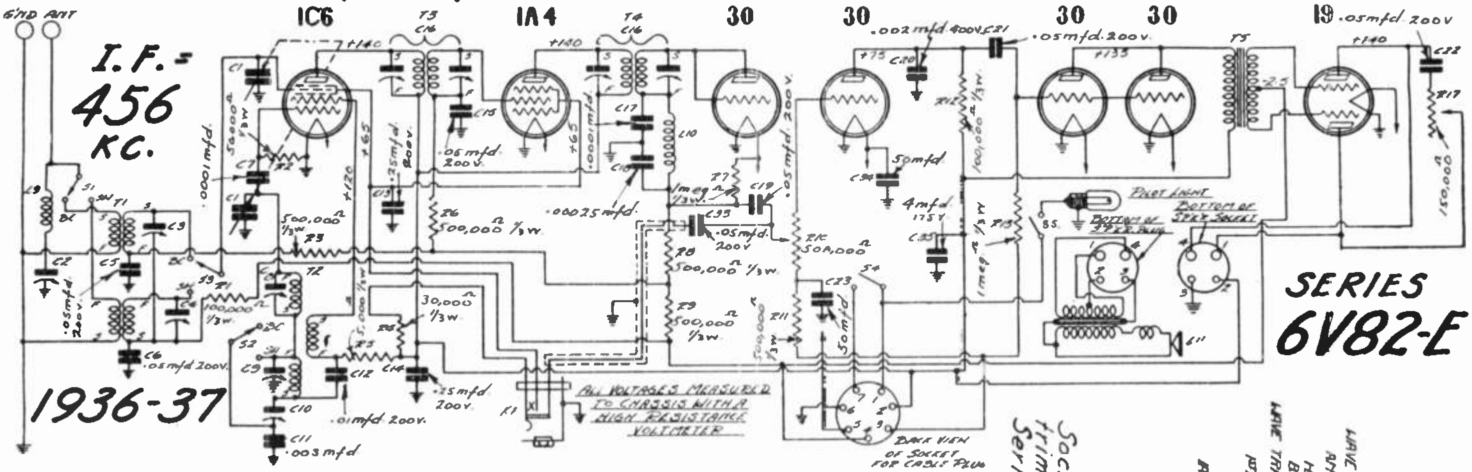
DATA SHEET

PHONOLA-38

World Radio History

Battery Operated Vibrator Type

I.F. = 456 KC.



SERIES 6V82-E

1936-37

Alignment Data Series 650 and 655

ALIGNMENT PROCEDURE

Should it become necessary to realign the receiver, proceed as follows:

Both volume and tone controls must be turned to the extreme right hand position (clockwise). The frequency range switch (Broadcast Short Wave Switch) must be turned to the left (counter clockwise). The tuning control is to be set in the maximum frequency position (rotor plates at a 180° angle to the stator plates).

I.F. ADJUSTMENT

Connect the signal generator, adjusted to 456 K.C., through a .1 mfd. condenser to the grid of the 6A7 tube. Attenuate the output of the signal generator to a suitable value and adjust the trimmer screws of the I.F. transformers for maximum output of the receiver as shown by an output meter connected from 42 plate to ground. Repeat the adjustment at least once, to verify results obtained.

SERIES TRAP ADJUSTMENT

Connect the signal generator (still adjusted to 456 K.C.) through a .00025 mfd. condenser to the antenna post of the receiver, adjust the receiver tuning control to the minimum frequency point (rotor plates fully covered by stator plates), increase the output of the signal generator to a suitable value and adjust the antenna trap series condenser for minimum output of the receiver.

BRDADCAST BAND

Set the tuning control to 1500 K.C. on the dial and adjust the signal generator (still connected to the antenna post through a .00025 mfd. condenser) to 1500 K.C.

Obtain maximum output by means of adjusting the Broadcast oscillator and Broadcast antenna trimmers. Rotate the tuning control to 600 K.C. Set the signal generator to the same frequency and adjust the Padding Condenser for maximum output, meanwhile rocking the gang slightly across the 600 K.C. point as indicated on the dial. Check again at 1500 K.C. to verify accuracy of adjustments.

below:-

Series 655 only

SHORT WAVE ADJUSTMENT

Replace the .00025 mfd. condenser in the signal generator lead with a 400 ohm resistor. Turn the Broadcast-Short Wave Switch to the right hand (clockwise) position. Set the tuning control and the signal generator to 15,000 K.C. Adjust the high frequency oscillator trimmer for maximum output of the receiver, taking care to select the higher of the two response points, that is, the one for which the trimmer screw is farthest out. To check this adjustment a signal will be found when the gang is rotated 456 K.C. away from the original gang setting at 15,000 K.C., and the checking frequency will be 14,544 K.C.

Then adjust the high frequency antenna trimmer, carefully rotating the receiver tuning control back and forth across the 15,000 K.C. point in order to allow for slight detuning of the oscillator by the antenna trimmer.

Alignment Data Series-6B71-E, 6B51-D.P.

I. F. ALIGNMENT

Set the signal generator to 456 K.C. and connect the output to the grid cap of the 1C6 tube through a .1 Mfd. condenser. The generator ground is connected to the chassis ground post or frame, which must be externally grounded. The receiver dial is set to its highest frequency (gang open) and the volume control turned full on.

The 1st and 2nd I. F. trimming condensers located as shown on the tube layout chart, are then adjusted by means of a non-metallic screw driver until maximum output is obtained. It is recommended that the chassis be placed on a non-metallic surface, otherwise the adjustment of C7 may be affected.

R. F. ALIGNMENT

1500 K.C. The signal generator is set to 1500 K.C. and connected to the antenna post of the receiver through a .00025 Mfd. condenser.

The generator ground lead and chassis frame must be connected and externally grounded.

With the receiver dial set at 1500 K.C. and volume full on, adjust the oscillator trimming condenser until a signal is heard.

Note: There may be two signals present, use the one obtained by minimum capacity setting of the trimming condenser and adjust it to its peak. The antenna trimming condenser is then adjusted for maximum output.

600 K. C. The signal generator and the receiver dial are then set to 600 K.C. The 600 K.C. padding condenser, located as shown on the tube layout chart, is adjusted for maximum output. While making this adjustment, rock the tuning control back and forth through the signal until maximum output results. Following this, it is advisable to repeat the procedure outlined for 1500 K.C., in order to compensate for any slight discrepancy caused by the adjustment of the series padding condenser.

below:-

Series 6V82-E only

I.F. & R.F. ALIGNMENT SAME AS FOR MODEL 6B71-E.

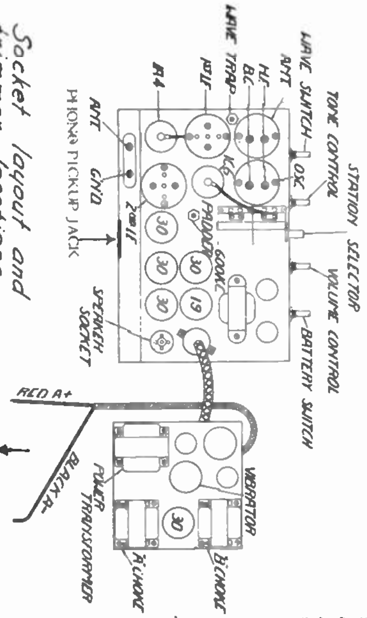
Short Wave Band 15 M.C. Set the signal generator to 15 M.C. and connect its output to the antenna post of the receiver through a 400 ohm resistor. The ground of the signal generator is connected to the chassis frame or ground post and must be externally grounded. Switch the receiver to short wave band, set the receiver dial to 15 M.C. and turn the volume control full on.

Adjust the short wave oscillator trimming condenser (shown on the tube layout chart) until a signal is heard. Note: There may be two signals present. Use the one obtained by the minimum capacity setting and adjust the trimming condenser to the peak of the signal. Then adjust the short wave antenna trimming condenser for maximum output. The short wave sensitivity is 30 microvolts at 15 M. C. and 75 microvolts at 6 M.C.

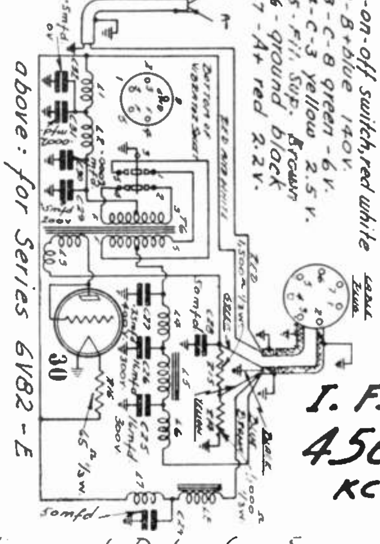
WAVE TRAP ADJUSTMENT

The foregoing alignment having been completed, adjust the signal generator to 456 K.C. and connect its output through a .00025 Mfd. condenser to the antenna post of the receiver. With the selector switch in the broadcast position and the gang closed (lowest frequency) adjust the wave trap to minimum output. It will probably be necessary to use several thousand microvolts to obtain a reading while making this adjustment.

Socket layout and trimmer locations - Series 6V82-E.



To 6 volt storage battery.



above: for Series 6V82-E

#1-on-off switch, red white
#2-B+ blue 140V.
#3-C-8 green -6V.
#4-C-3 yellow 2.5V.
#5-Fil. Sup. Brown
#6-ground black
#7-A+ red 2.2V.

I. F. = 456 KC.

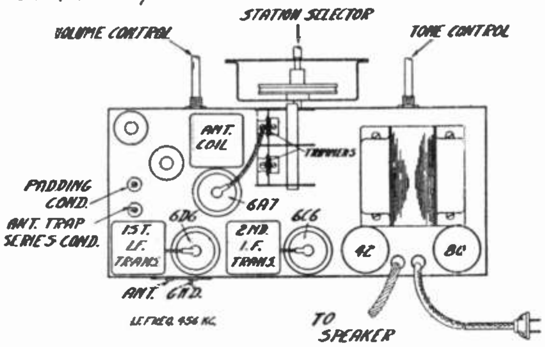
Alignment Data for Series - 6B51-D and P, 6B71-E, 6V82-E, 650 and 655

For Circuit Information see Data Sheets 38 and 39

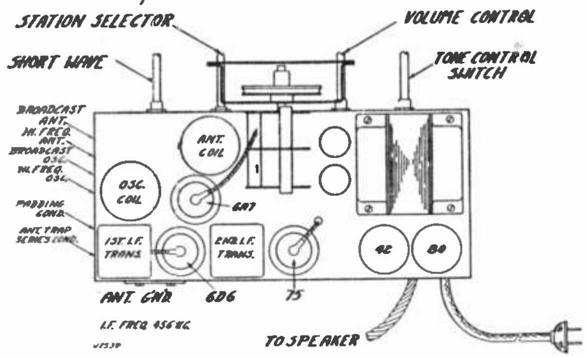
COURTESY:- DOM. ELECTROHOME IND. LTD.

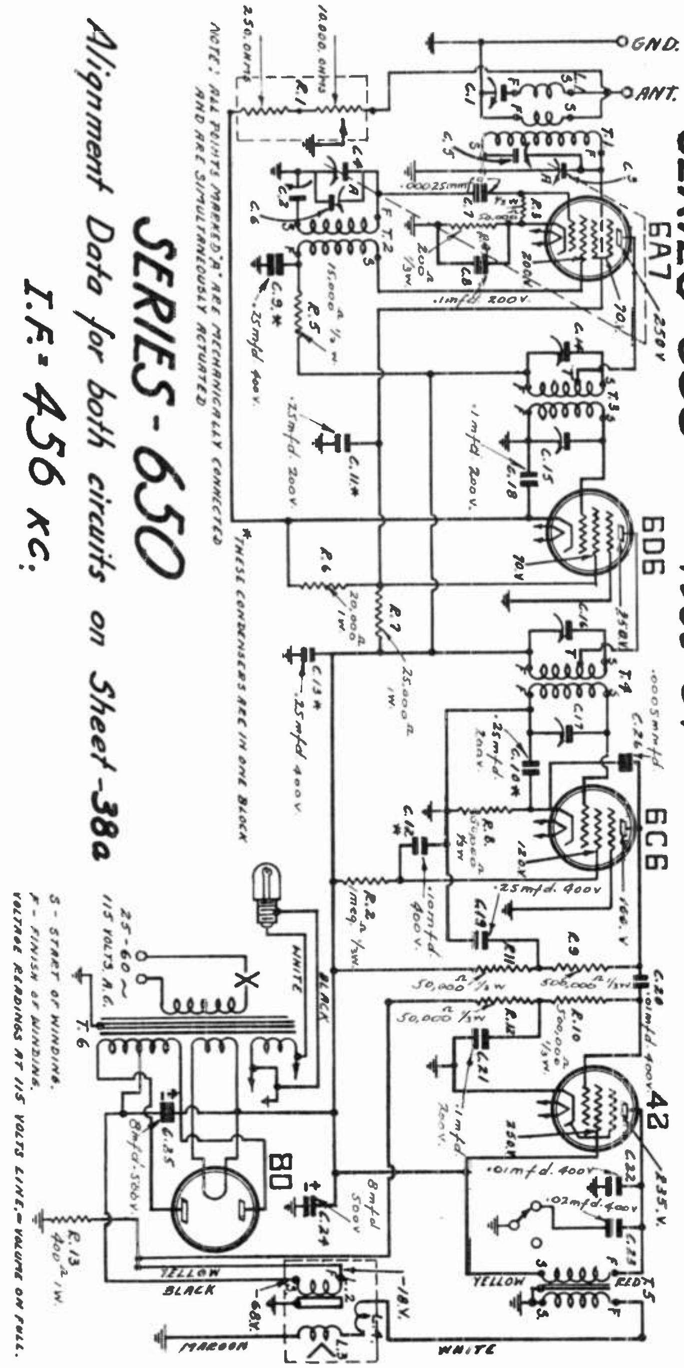
World Radio History

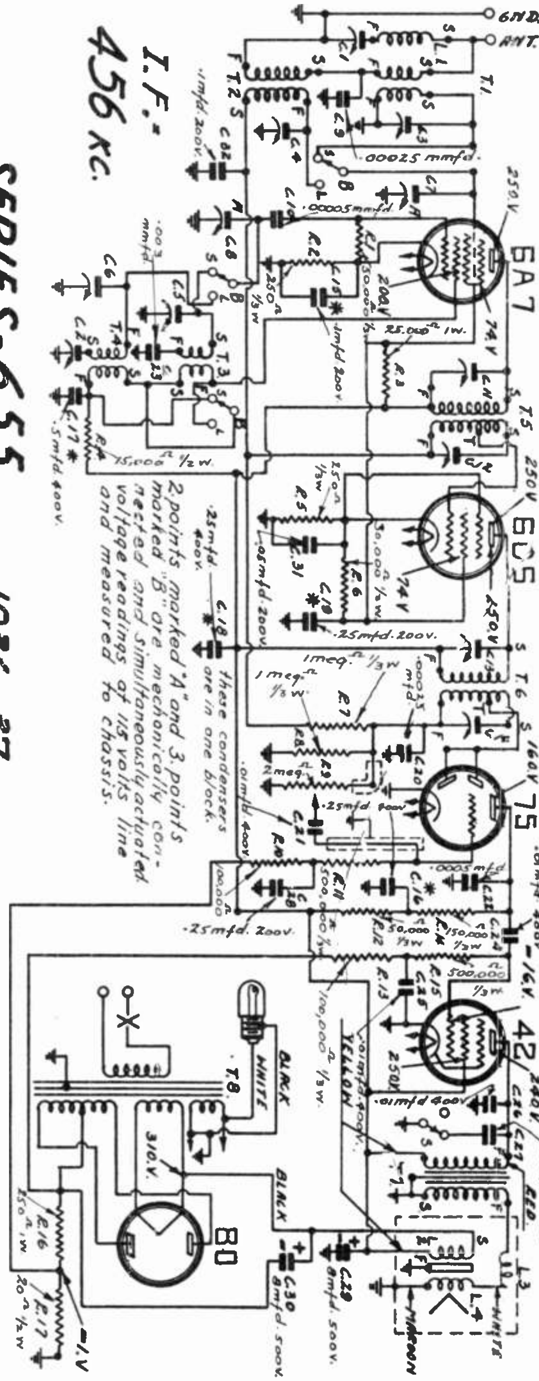
Socket layout - trimmers - Series 650.



Socket layout - trimmers - Series 655.



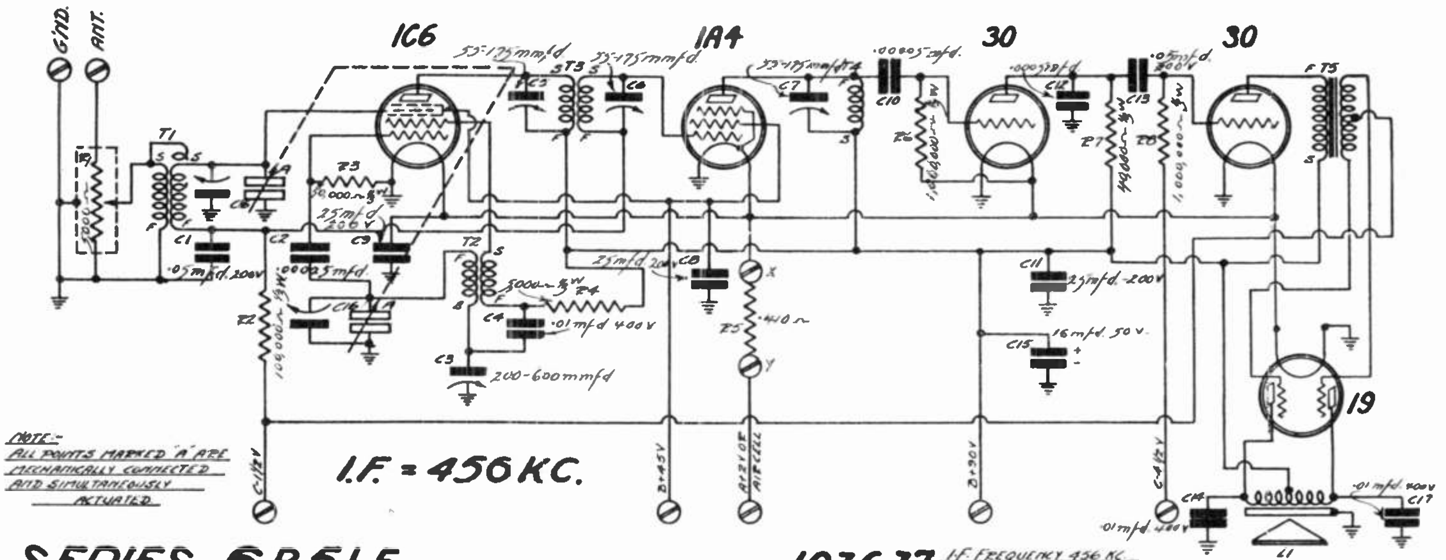




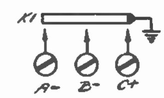
DATA SHEET

COURTESY - DOM. ELECTROHOME IND. LTD.

PHONOLA-39.



SERIES 6B51-E Battery Operated-1936-37



NOTE:- WHEN 2 VOLT WET BATTERY IS USED POINTS "X" AND "Y" ARE SHORTED

Alignment Instructions
Series-6B51E, 6B52-D-M; 6V92-D-P-S.
6V92-D-P-S Wave trap adjustment same as Series 6S25, Data Sheet-52.

I. F. ALIGNMENT

Set the signal generator to 456 K.C. and connect the output to the grid cap of the 1C6 tube through a .1 Mfd. condenser. The generator ground is connected to the chassis ground post or frame, which must be externally grounded. The receiver dial is set at maximum frequency (gang open), and the volume control turned full on.

The 1st and 2nd I. F. trimming condensers located as shown on the tube layout chart, are then adjusted by means of a non-metallic screw driver until maximum output is obtained.

Broadcast Band 1500 K.C. Set the signal generator to 1500 K.C. and connect its output lead to the antenna post of the receiver in series with a .00025 Mfd. condenser. The ground from the signal generator must be connected to the chassis ground post or frame and externally grounded (6V92-PDS 7, 6B52 models).

With the band selector switch in the broadcast position, the dial of the receiver set at 1500 K.C. and the volume control turned full on, adjust the broadcast oscillator trimming condenser (located as shown on the tube layout chart) until a signal is heard. Note: There may be two signals present, use the one obtained by the minimum capacity setting and adjust the trimming condenser to the peak of the signal. Then adjust the broadcast antenna trimming condenser for maximum output.

600 K.C. Set the receiver dial and the signal generator to 600 K.C. Adjust the 600 K.C. padding condenser for maximum output. While making this adjustment rock the tuning control back and forth through the signal until maximum output results.

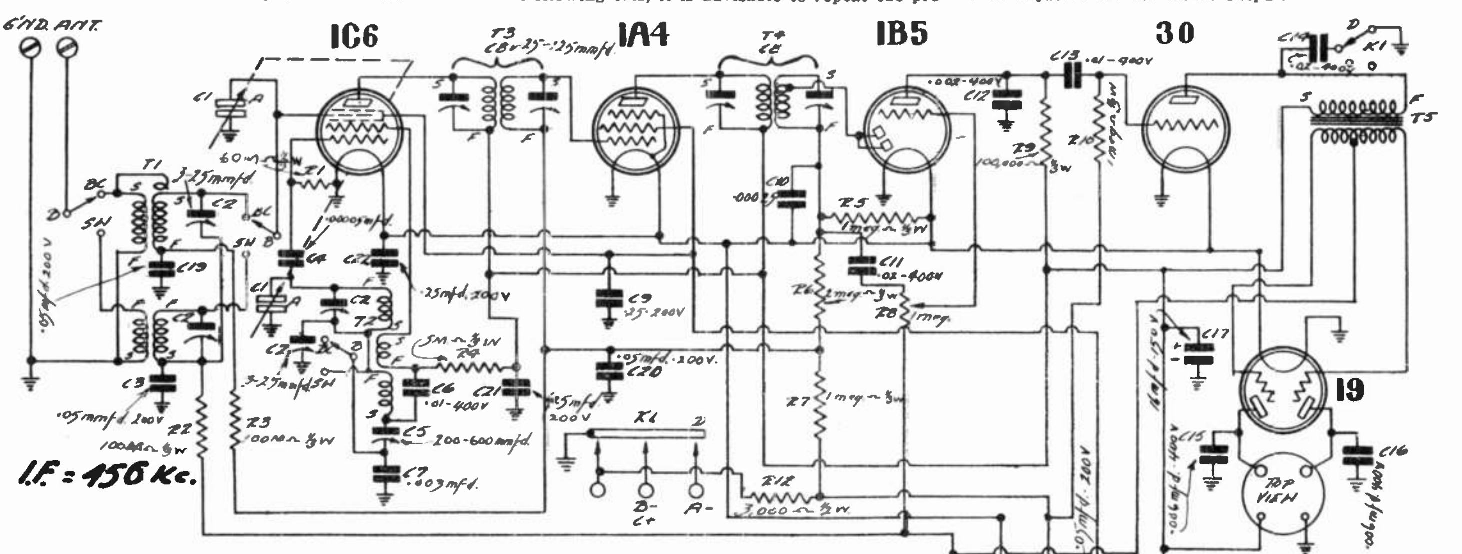
Following this, it is advisable to repeat the procedure outlined for 1500 K. C. to compensate for any slight discrepancy caused by the adjustment of the series padding condenser.

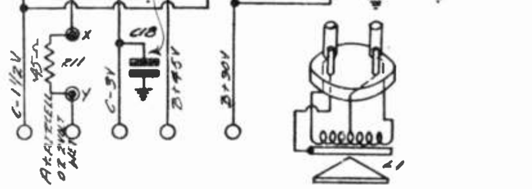
Series 6B52-D and 6B52-M only & 6V92-PDS

Short Wave Band 15 M.C. Set the signal generator to 15 M.C. and connect its output to the antenna post of the receiver through a 400 ohm resistor. The ground of the signal generator is connected to the chassis frame or ground post and must be externally grounded. Switch the receiver to short wave band, set the receiver dial to 15 M.C. and turn the volume control full on.

Adjust the short wave oscillator trimming condenser until a signal is heard.

Note: There may be two signals present, use the one obtained by minimum capacity setting of the trimming condenser and adjust it to its peak. The short wave antenna trimming condenser is then adjusted for maximum output.





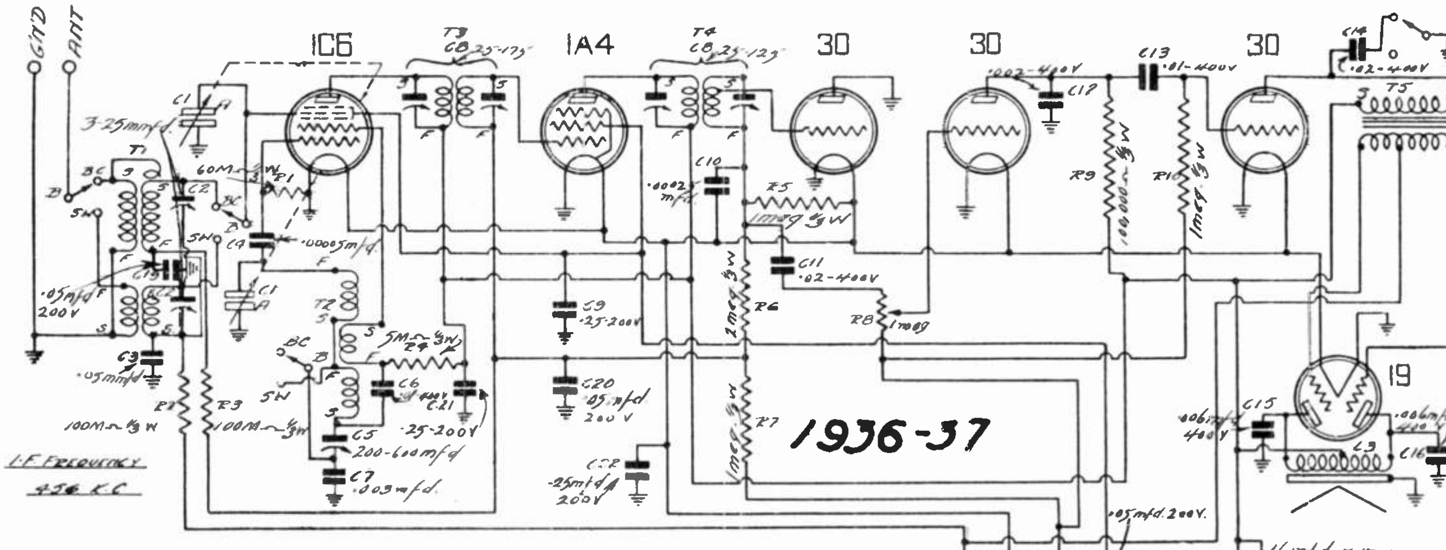
SERIES 6B52-D and 6B52-M
1936-37 Battery Operated

Chassis Layouts on Data Sheet-42

DATA SHEET

COURTESY
PHONOLA-40
DOM. ELECTROHOME INC. LTD.

World Radio History



SERIES 6B62-E Battery Operated

Alignment Data Series 6B62-E and 6B61-M. Chassis Layouts on Data Sheet-42

I. F. ALIGNMENT

Set the signal generator to 456 K.C. and connect the output to the grid cap of the 1C6 tube through a .1 Mfd. condenser. The generator ground is connected to the chassis ground post or frame, which must be externally grounded. The receiver dial is set at maximum frequency (gang open), and the volume control turned full on.

The 1st and 2nd I. F. trimming condensers located as shown on the tube layout chart, are then adjusted by means of a non-metallic screw driver until maximum output is obtained.

R. F. ALIGNMENT

1500 K.C. The signal generator is set to 1500 K.C. and connected to the antenna post of the receiver through a .00025 Mfd. condenser. The generator ground lead and chassis frame must be connected and externally grounded.

With the receiver dial set at 1500 K.C. and volume full on, adjust the oscillator trimming condenser until a signal is heard.

Note: There may be two signals present, use the one obtained by minimum capacity setting of the trimming condenser and adjust it to its peak. The antenna trimming condenser is then adjusted for maximum output.

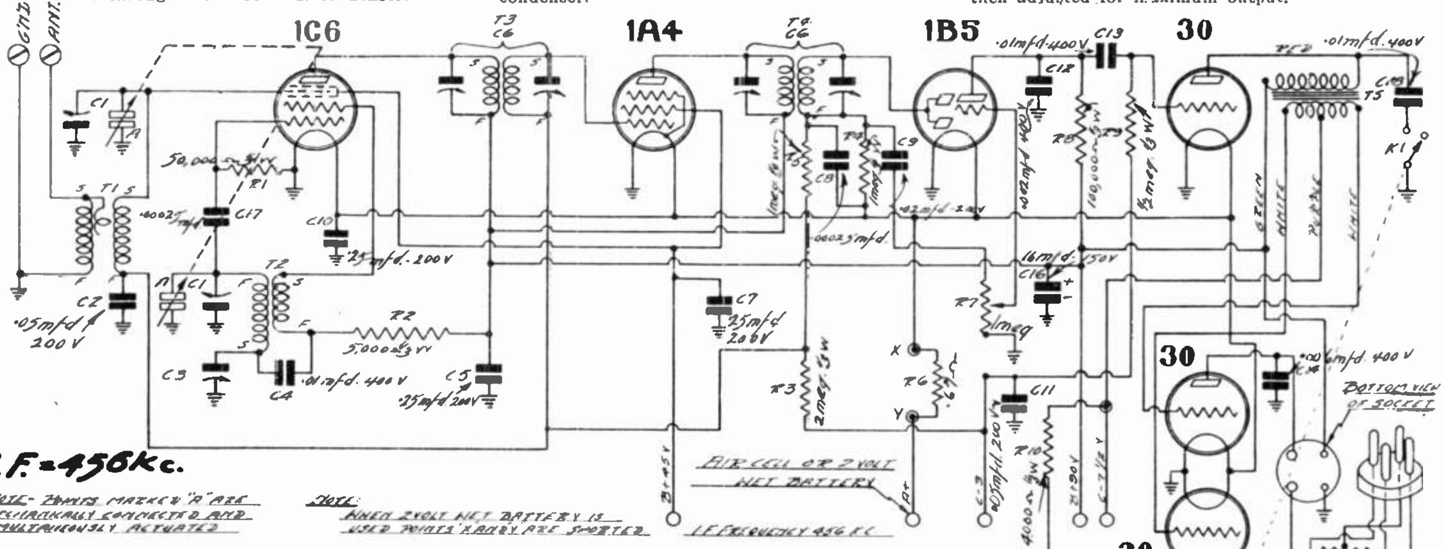
600 K. C. The signal generator and the receiver dial are then set to 600 K.C. The 600 K.C. padding condenser, located as shown on the tube layout chart is adjusted for maximum output. While making this adjustment, rock the tuning control back and forth through the signal until maximum output results. Following this, it is advisable to repeat the procedure outlined for 1500 K.C., in order to compensate for any slight discrepancy caused by the adjustment of the series padding condenser.

Short Wave Alignment—Series 6B62-E

Short Wave Band 15 M.C. Set the signal generator to 15 M.C. and connect its output to the antenna post of the receiver through a 400 ohm resistor. The ground of the signal generator is connected to the chassis frame or ground post and must be externally grounded. Switch the receiver to short wave band, set the receiver dial to 15 M.C. and turn the volume control full on.

Adjust the short wave oscillator trimming condenser until a signal is heard.

Note: There may be two signals present, use the one obtained by the minimum capacity setting of the trimming condenser and adjust it to its peak. The short wave antenna trimming condenser is then adjusted for maximum output.



SERIES 6B61-M Battery Operated

1936-37. I.F. 456 KC.

Alignment Data Above — Chassis Layouts, etc. on Data Sheet-42.

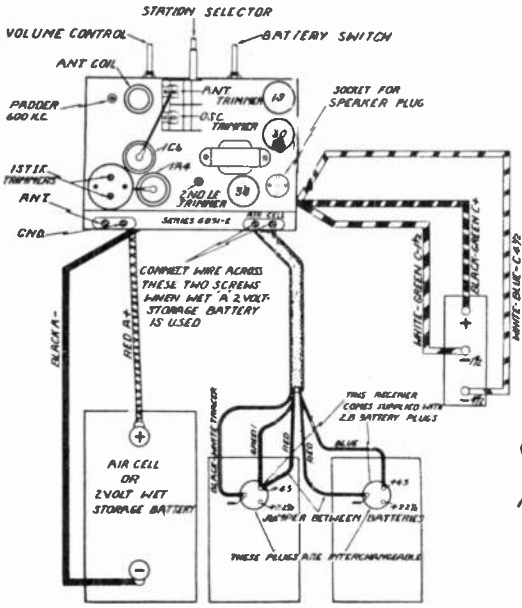
COURTESY

DATA SHEET PHONOLA-41

DOM. ELECTROHOME IND. LTD.

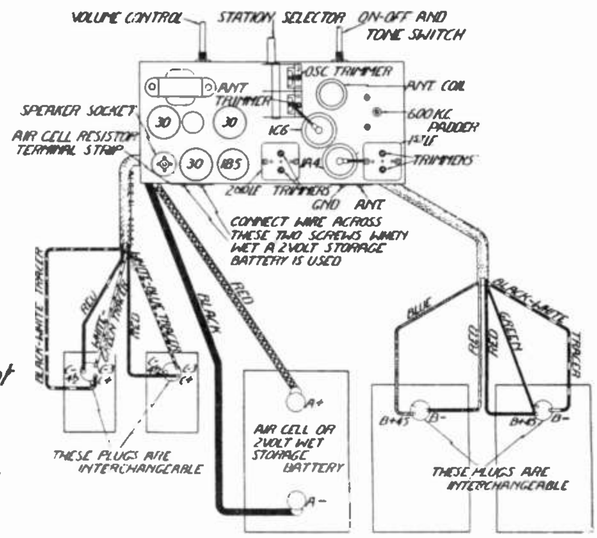
World Radio History

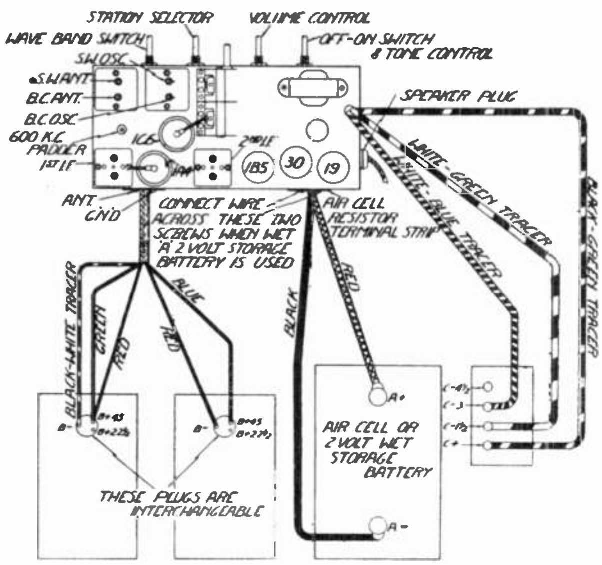
World Radio History



SERIES 6B51-E 6B61-M

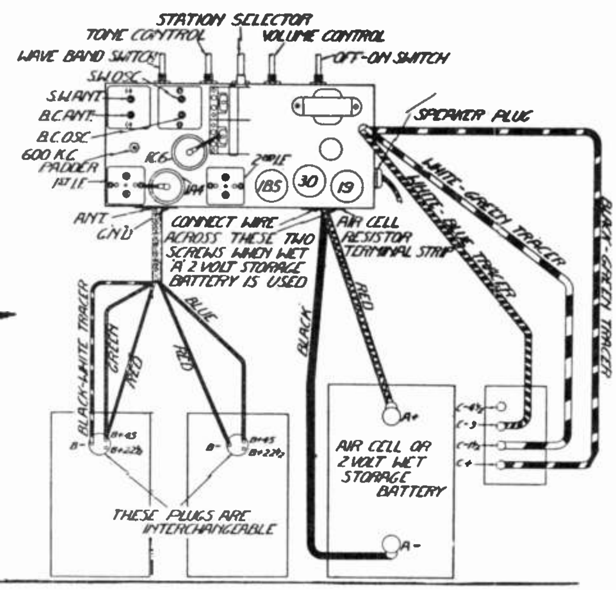
Circuits and Alignment Instructions on Data Sheets- 40 & 41

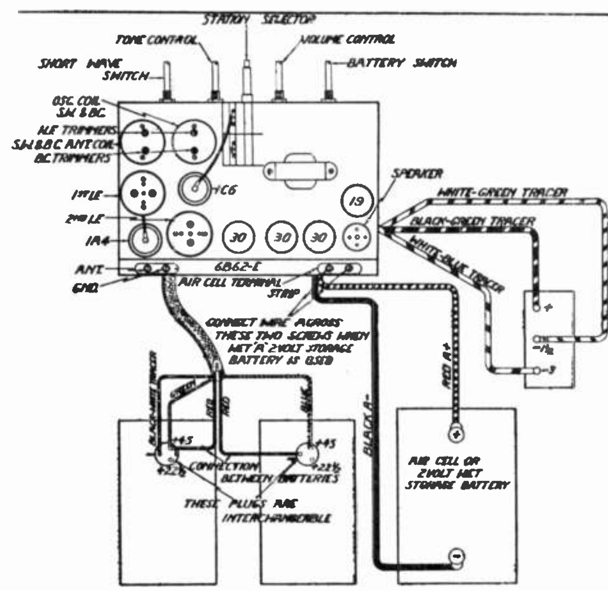




SERIES 6B52-M 6B52-D

Circuits and Alignment Instructions on Data Sheet:- 40.





SERIES 6B62-E

Circuits and Alignment Instructions on Data Sheet- 41

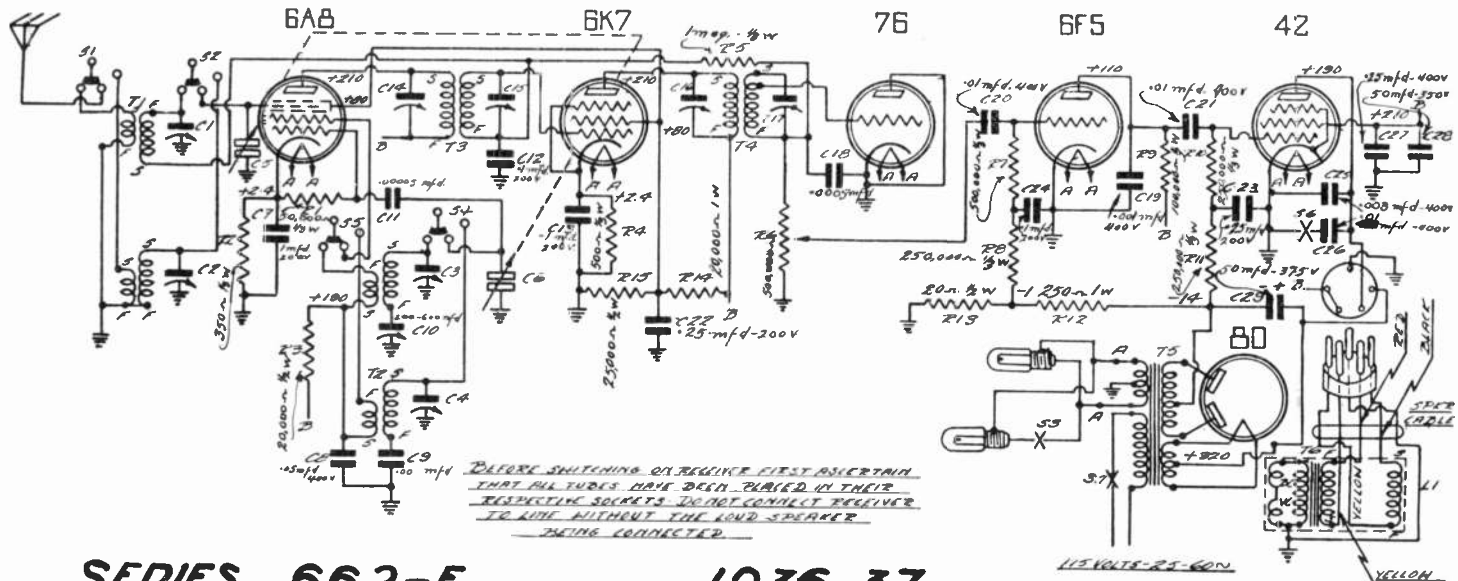
CHASSIS LAYOUTS

DATA SHEET

COURTESY-

PHONOLA-42

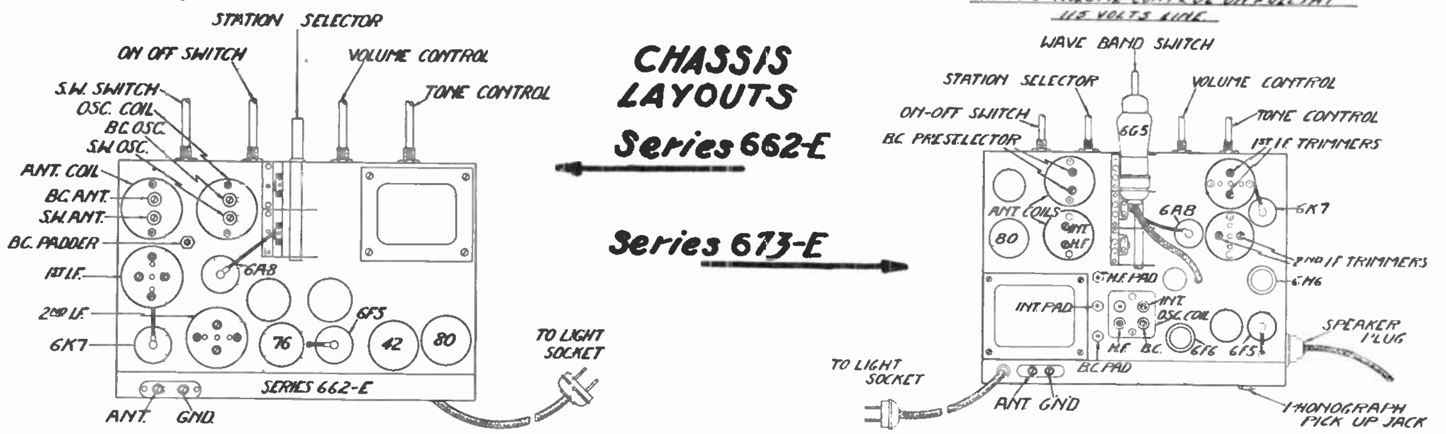
DOM. ELECTROHOME IND. LTD.

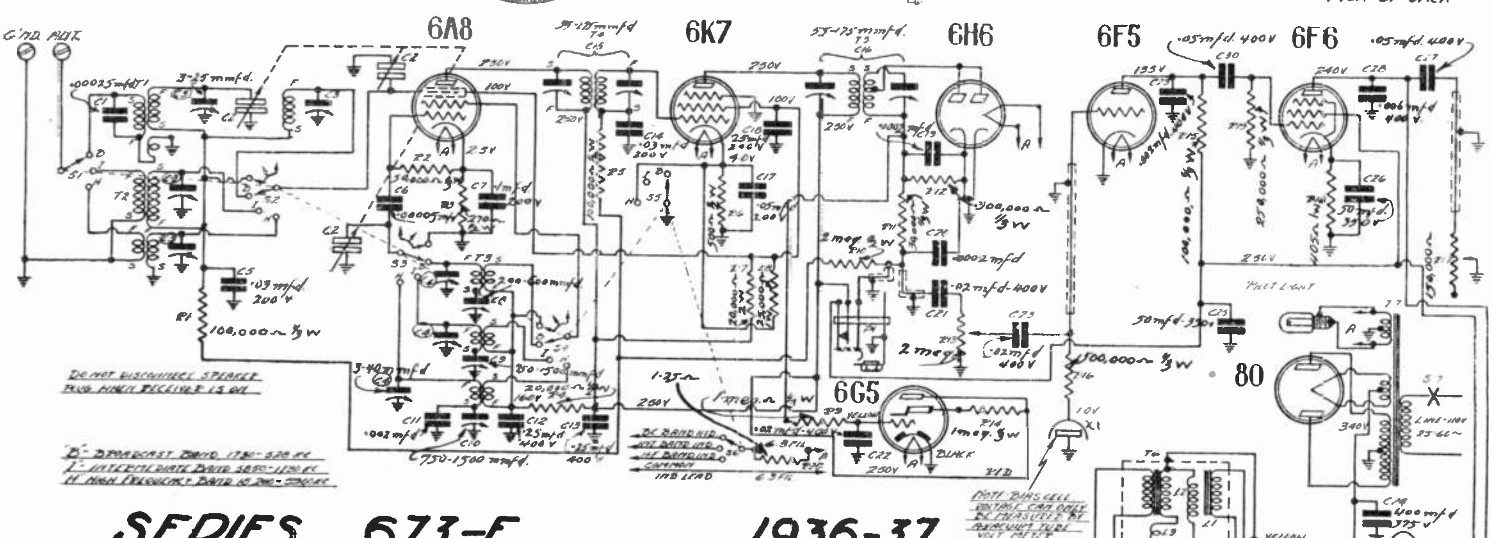


SERIES 662-E 1936-37

Alignment Data on Data Sheet-46

ALL VOLTAGE READINGS MEASURED TO CHASSIS (VOLUME CONTROL ON FULL) AT 115 VOLTS LINE





SERIES 673-E 1936-37

Alignment Data on Data Sheet-46

DATA SHEET

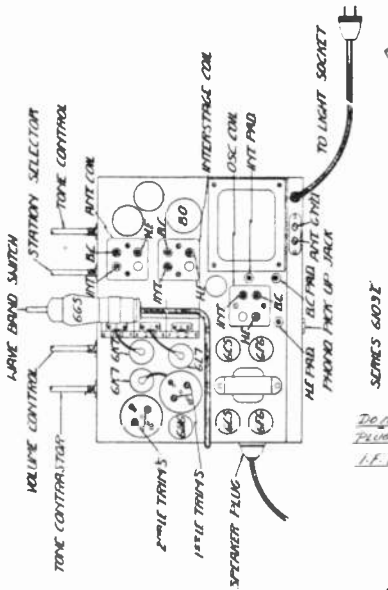
COURTESY

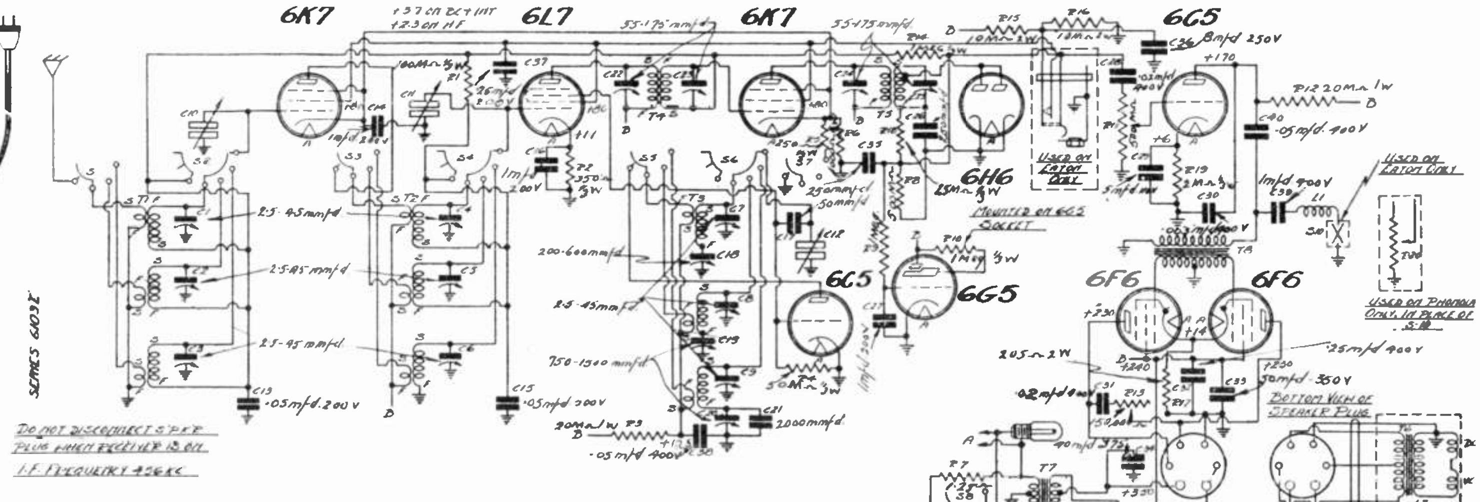
PHONOLA-43

DOM. ELECTROHOME IND. LTD

DATA SHEET

COURTESY PHONOLA-44 DOM. ELECTROHOMS IND. LTD.



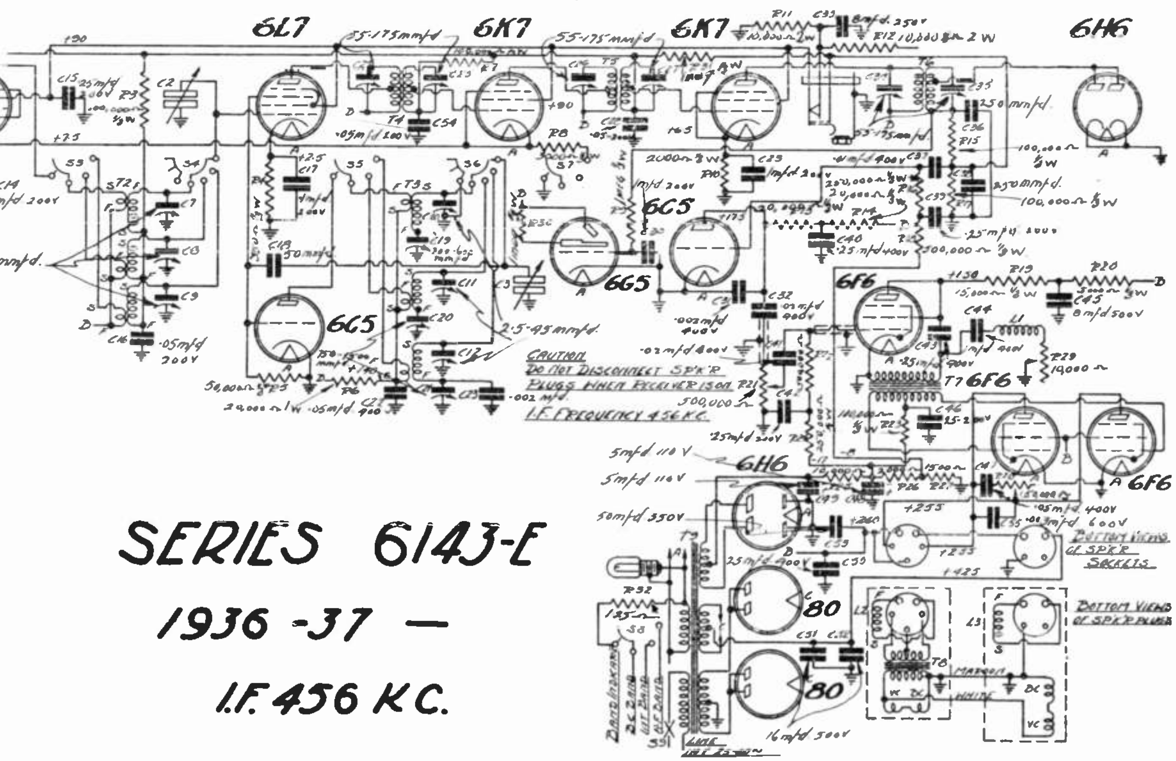


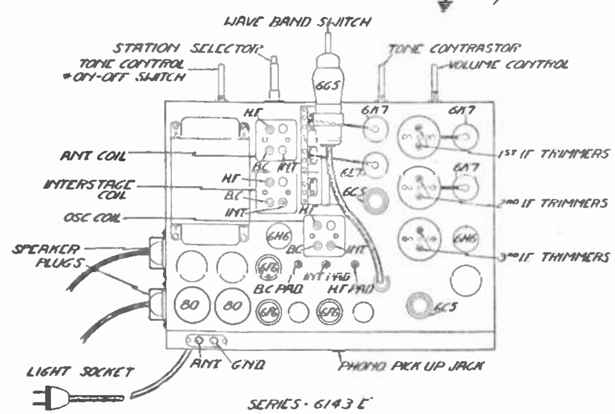
SERIES 6103-E-P

1936-37

I.F. = 456 KC.

Alignment Data on Data Sheet-46



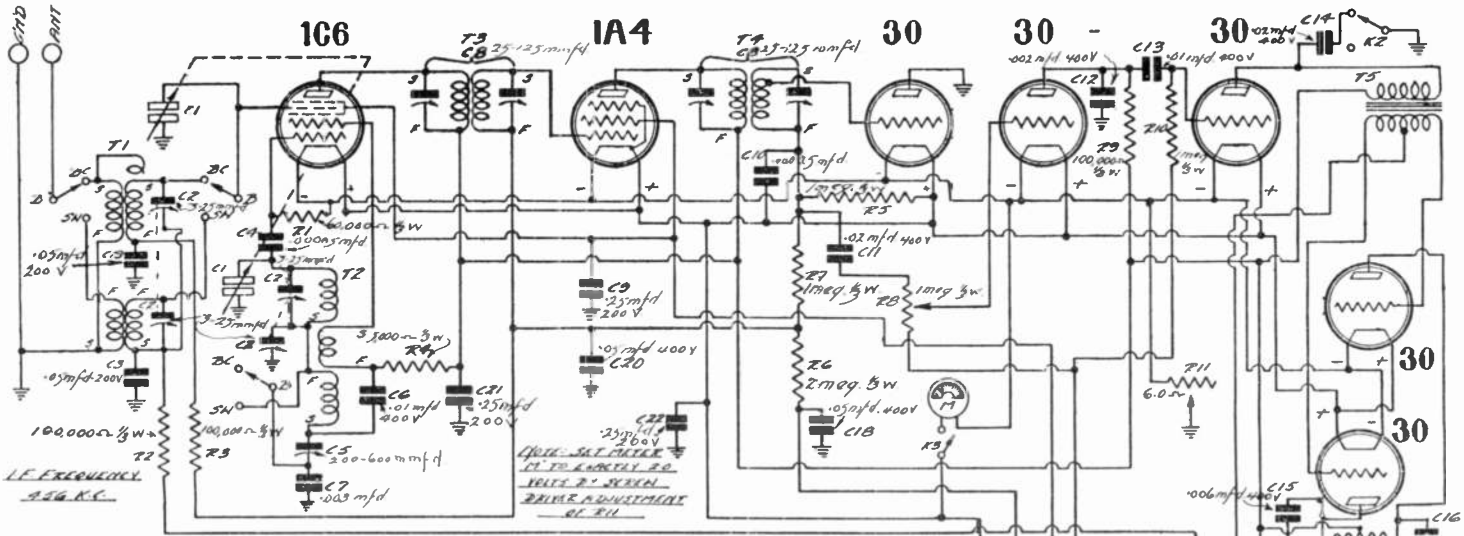


SERIES 6143-E

1936-37 —

I.F. 456 KC.

World Radio History



SERIES 6B72-S 1936-37

Battery Operated. Chassis Layouts on Data Sheet-46

I. F. ALIGNMENT

Set the signal generator to 456 K.C. and connect the output to the grid cap of the 1C6 tube through a .1 Mfd. condenser. The generator ground is connected to the chassis ground post or frame, which must be externally grounded. The receiver dial is set at maximum frequency (gang open), the selector switch turned to broadcast band position and the volume control turned full on.

The 1st and 2nd I. F. trimming condensers located as shown on the tube layout chart, are then adjusted by means of a non-metallic screw driver until maximum output is obtained.

Broadcast Band 1500 K.C. Set the signal generator to 1500 K.C. and connect its output lead to the antenna post of the receiver in series with a .00025 Mfd. condenser. The ground from the signal generator must be connected to the chassis ground post or frame and externally grounded.

With the hand selector switch in the broadcast position, the dial of the receiver set at 1500 K.C. and the volume control turned full on, adjust the broadcast oscillator trimming condenser (located as shown on the tube layout chart) until a signal is heard. Note: There may be two signals present, use the one obtained by the minimum capacity setting and adjust the trimming condenser to the peak of the signal. Then adjust the broadcast antenna trimming condenser for maximum output.

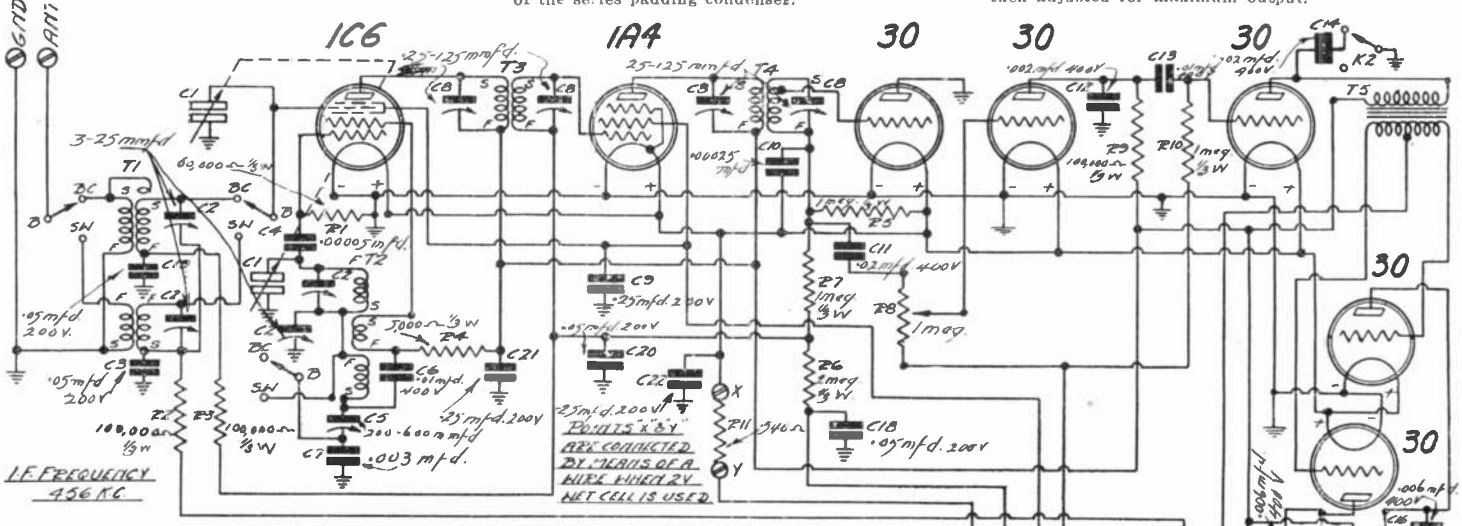
600 K.C. Set the receiver dial and the signal generator to 600 K.C. Adjust the 600 K.C. padding condenser for maximum output. While making this adjustment rock the tuning control back and forth through the signal until maximum output results.

Following this, it is advisable to repeat the procedure outlined for 1500 K. C. to compensate for any slight discrepancy caused by the adjustment of the series padding condenser.

Short Wave Band 15 M.C. Set the signal generator to 15 M.C. and connect its output to the antenna post of the receiver through a 400 ohm resistor. The ground of the signal generator is connected to the chassis frame or ground post and must be externally grounded. Switch the receiver to short wave band, set the receiver dial to 15 M.C. and turn the volume control full on.

Adjust the short wave oscillator trimming condenser until a signal is heard.

Note: There may be two signals present, use the one obtained by the minimum capacity setting of the trimming condenser and adjust it to its peak. The short wave antenna trimming condenser is then adjusted for maximum output.



SERIES 6B72-P 1936-37

Battery Operated

Alignment Instructions Above. - Chassis Layouts on Data Sheet-46

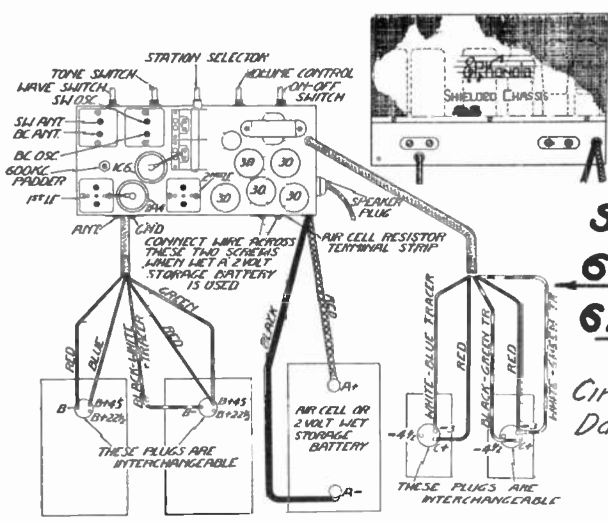
DATA SHEET

COURTESY

PHONOLA-45

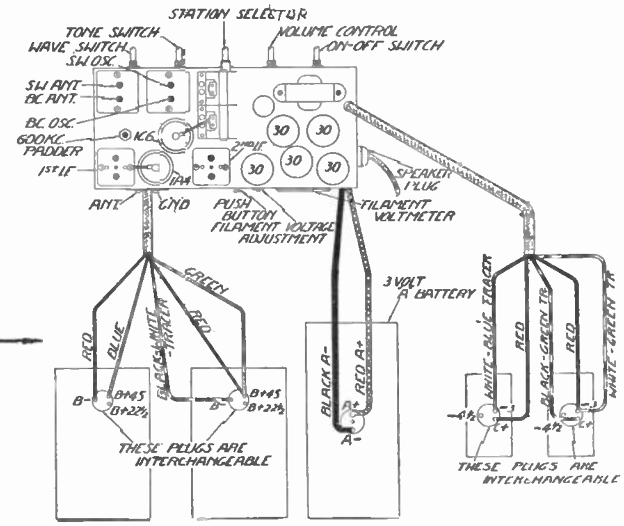
DOM. ELECTROHOME IND. LTD.

World Radio History



SERIES 6B72-P 6B72-S

Circuits on Data Sheet-45



ALIGNMENT DATA

SERIES-673-E, 6103-E-P, 6143-E

Circuits and Layouts on Data Sheets-43 & 44

I. F. ALIGNMENT

Set the signal generator to 456 K.C., and connect the output to the grid cap of the 6A8 tube through a .1 Mfd. condenser. The generator ground is connected to the chassis ground post or frame which must be externally grounded. The receiver dial is set to its highest frequency (gang open), the selector switch turned to the broadcast position, and the volume control turned full on.

The I. F. trimmers, located as shown on the tube layout chart, are then adjusted by means of a non-metallic screw driver until maximum output results.

R. F. ALIGNMENT

Broadcast Band

1500 K. C. Set the signal generator to 1500 K.C., and connect its output lead to the antenna post of the receiver in series with a .00025 Mfd. condenser. The ground from the signal generator must be connected to the chassis ground post or frame, and externally grounded.

With the band selector switch in the broadcast position, the dial of the receiver set at 1500 K.C. and the volume control turned full on, adjust the broadcast oscillator trimming condenser, located as shown on the tube layout chart, until a signal is heard. Note: There may be two signals present, use the one obtained by the minimum capacity setting of the trimming condenser and adjust it to its peak. Then adjust the interstage and antenna trimming condensers to maximum output.

600 K.C. Set the receiver dial and the signal generator to 600 K.C . Adjust the 600 K.C. padding condenser for maximum output. While making this adjustment rock the tuning control back and forth through the signal until maximum output results.

Following this, it is advisable to repeat the procedure outlined for 1500 K.C. to compensate for any slight discrepancy caused by the adjustment of the series padding condenser.

Intermediate Band

5 M. C. Set the signal generator to 5 M.C. and connect its output to the antenna post of the receiver through a 400 ohm resistor. The ground of the signal generator is connected to the chassis frame or ground post and externally grounded. Turn the band selector switch to intermediate band, the receiver dial to 5 M.C. and the volume control full on.

Adjust the intermediate oscillator trimming condenser, shown on the tube layout chart, until a signal is heard. Note: There may be two signals present, use the one obtained by minimum capacity setting and adjust the trimming condenser to the peak of the signal. Then adjust the intermediate and antenna trimming condensers to maximum output.

Short Wave Band.

2 M. C. The intermediate padding condenser is adjusted at 2 M.C. The same procedure as outlined for the adjustment of the 600 K.C. padding condenser is used only, of course, on 2 M.C. instead of 600 K.C.

15 M.C. and 6 M.C. The same procedure is employed as outlined for the intermediate band only, of course, the parallel trimming condenser is adjusted at 15 M.C. and the series padding condenser at 6 M.C.

ALIGNMENT DATA

SERIES-651-L-D-P. 662-E

Circuits and Layouts on Data Sheets-43 & 47

I. F. ALIGNMENT

Set the signal generator to 456 K.C. and connect the output to the grid cap of the 6A8 tube through a .1 Mfd. condenser. The generator ground is connected to the chassis ground post or frame, which must be externally grounded. The receiver dial is set to its highest frequency (gang open) and the volume control turned full on.

The I. F. trimmers located as shown on the tube layout chart are then adjusted by means of a non-metallic screw driver until maximum output is obtained.

R. F. ALIGNMENT

Broadcast Band 1500 K.C. The signal generator is set to 1500 K.C. and connected to the antenna post of the receiver through a .00025 Mfd. condenser.

The generator ground lead and chassis frame must be connected and externally grounded.

With the receiver dial set at 1500 K.C. and volume full on, adjust the oscillator trimming condenser until a signal is heard. Note: There may be two signals present, use the one obtained by minimum capacity setting of the trimming condenser and adjust it to its peak. The antenna trimming condenser is then adjusted for maximum output.

600 K. C. The signal generator and the receiver dial are then set to 600 K.C. The 600 K.C. padding condenser, located as shown on the tube layout chart, is adjusted for maximum output. While making this adjustment, rock the tuning control back and forth through the signal until maximum output results. Following this, it is advisable to repeat the procedure outlined for 1500 K.C., in order to compensate for any slight discrepancy caused by the adjustment of the series padding condenser.

WAVE TRAP ADJUSTMENT

The foregoing alignment having been completed, set the signal generator to 456 K.C. and the gang condenser at minimum frequency (gang closed). Connect the generator to the antenna post of the receiver through a .00025 Mfd. condenser. Then adjust the wave trap trimming condenser to minimum output. Several thousand microvolts will be required to make this adjustment.

Series 662-E only.

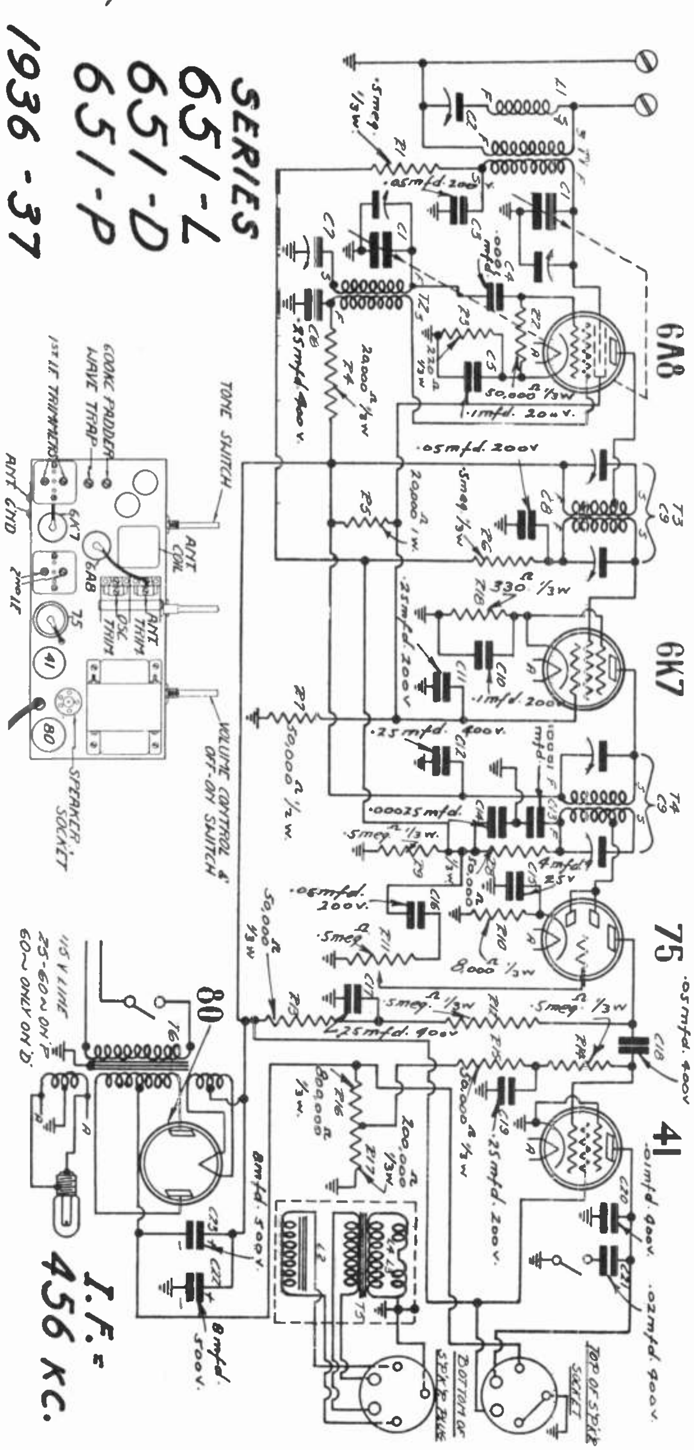
Short Wave Band

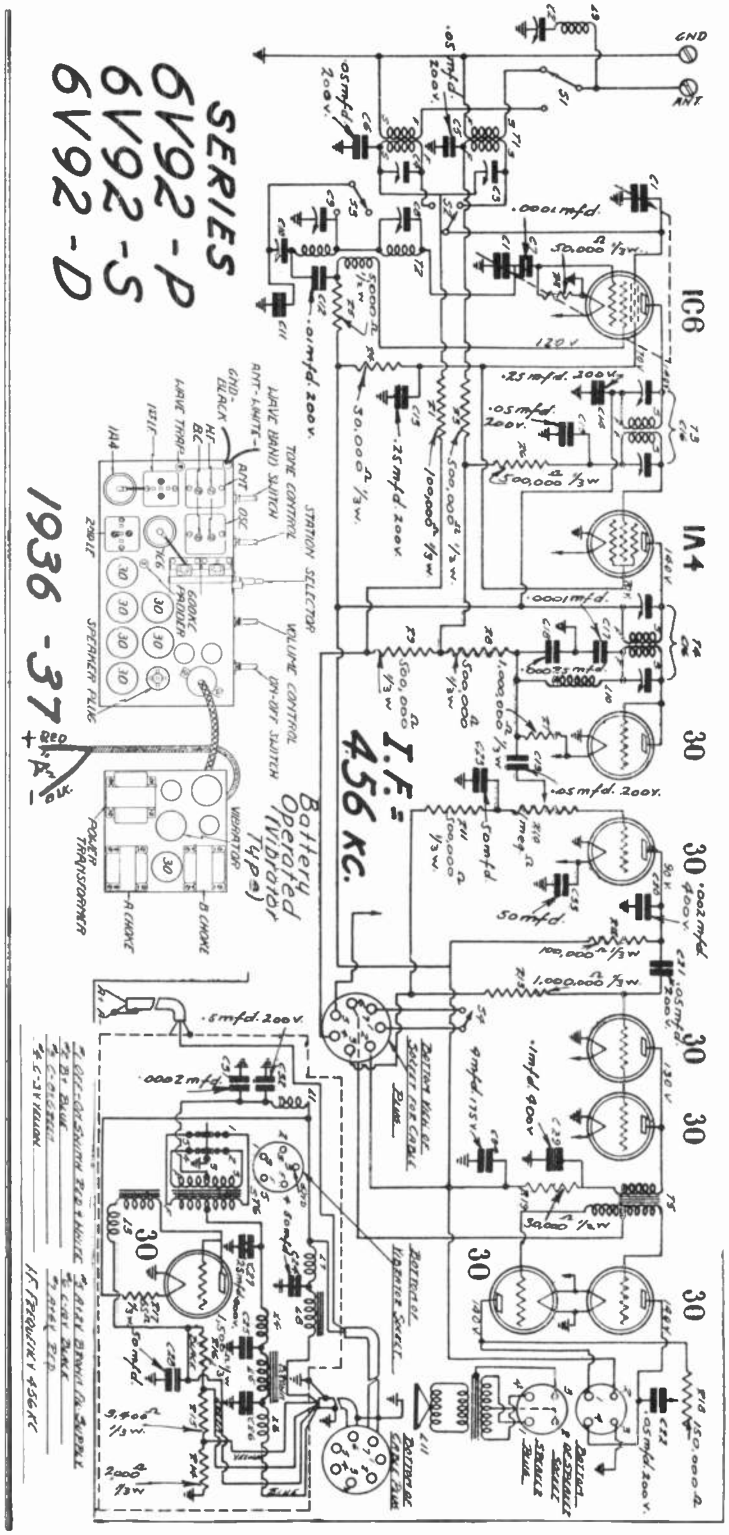
15 M.C. Set the signal generator to 15 M. C. and connect its output to the antenna post of the receiver through a 400 ohm resistor. The ground of the signal generator is connected to the chassis frame or ground post and externally grounded. Switch the receiver to short wave band, set the receiver dial to 15 M.C. and turn the volume control full on.

Adjust the short wave oscillator trimming condenser, shown on the tube layout chart, until a signal is heard. Note: There may be two signals present, use the one obtained by the minimum capacity setting and adjust the trimming condenser to the peak of the signal. Then adjust the short wave antenna trimming condenser for maximum output.

World Radio History

Alignment Instructions for 6V92 models on Data Sheet -40

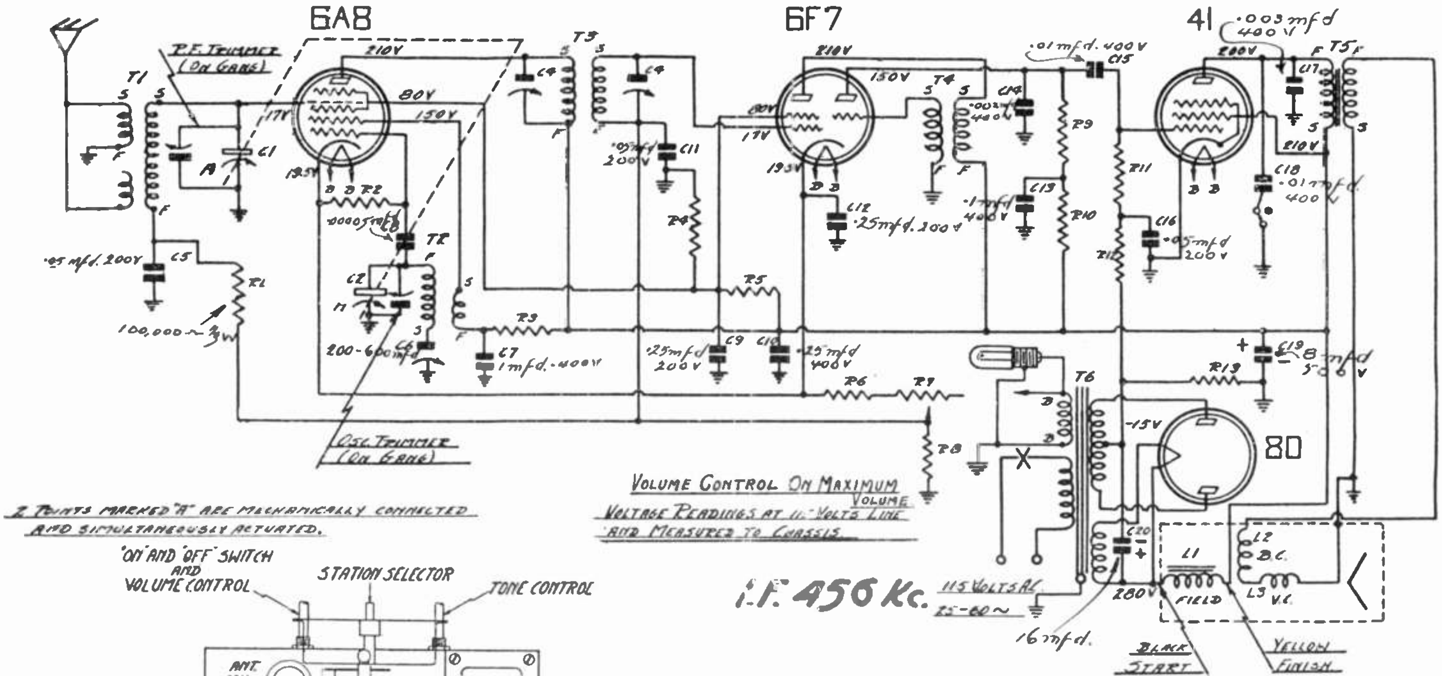


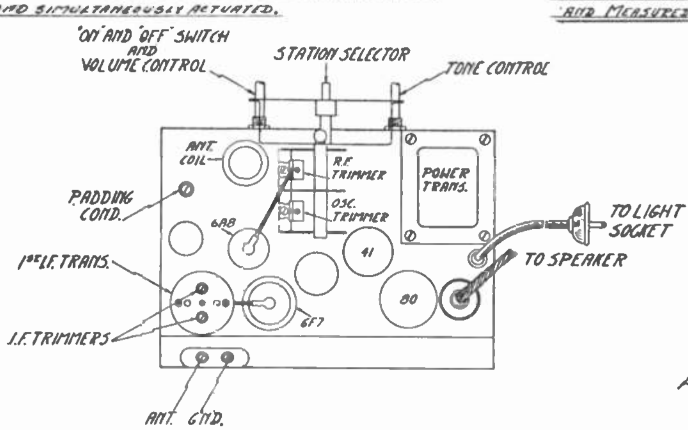


DATA SHEET

COURTESY-
PHONOLA-47
DOM. ELECTROHOME IND. LTD.

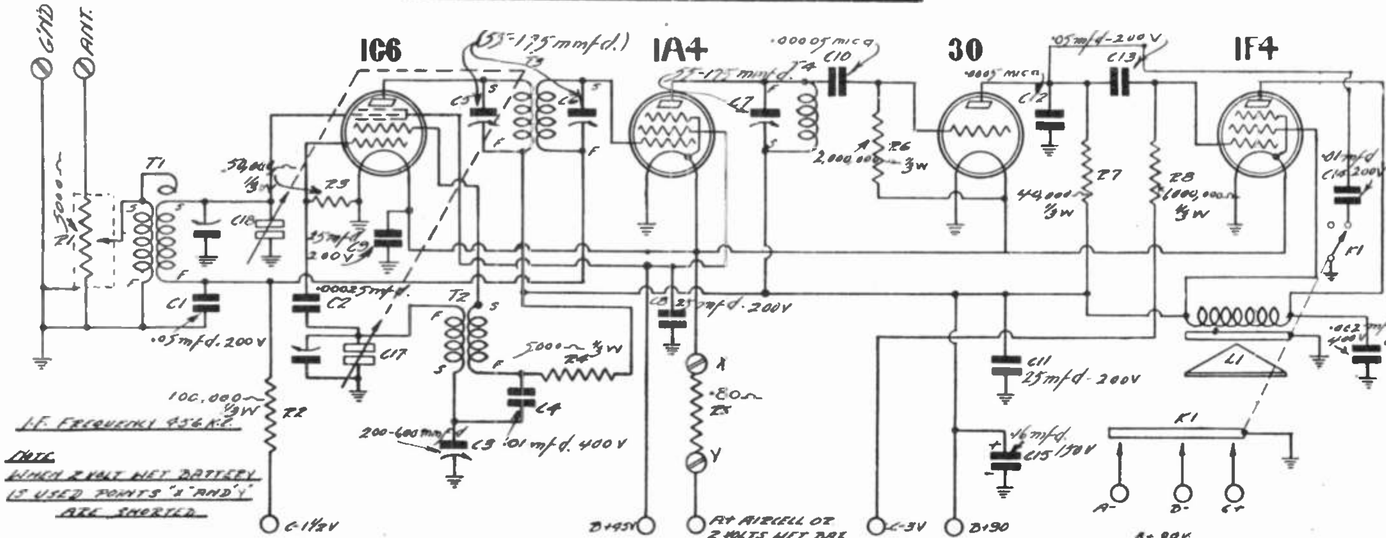
World Radio History





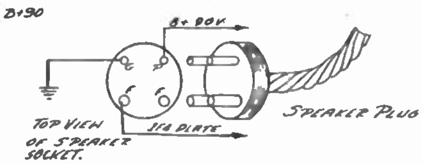
SERIES 641
1936-37

Alignment Data on Data Sheet-47



SERIES 6B41-M~6B41-D. I.F. 456 Kc.
1936-37

Alignment Data etc. on Data Sheet-49



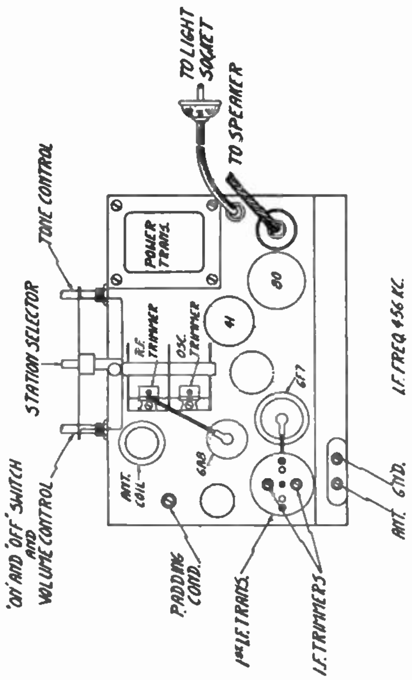
DATA SHEET

Courtesy
PHONOLA-48
Dom. Electrohome Ind. Ltd.

World Radio History

ALIGNMENT DATA

SERIES 641



Circuit on Data Sheet—48

I. F. ALIGNMENT

Set the signal generator to 456 K.C., and connect the output to the grid cap of the 6A8 tube through a .1 Mfd. condenser. The generator ground is connected to the chassis ground post or frame which must be externally grounded. The receiver dial is set to its highest frequency (gang open), and the volume control turned full on.

The I. F. trimmers, located as shown on the tube layout chart, are then adjusted by means of a non-metallic screw driver until maximum output results.

R. F. ALIGNMENT

1500 K. C. Set the signal generator to 1500 K.C., and connect its output lead to the antenna post of the receiver in series with a .00025 Mfd. condenser. The ground from the signal generator must be connected to the chassis ground lead or frame, and externally grounded. With the receiver dial set at 1500 K.C., and volume full on, adjust the oscillator trimming condenser until a signal is heard.

Note: There may be two signals present, use the one obtained by the minimum capacity setting of the trimming condenser and adjust it to its peak. Then adjust the antenna trimming condenser for maximum output.

600 K.C. Set the receiver dial and the signal generator to 600 K.C . Adjust the 600 K.C. padding condenser for maximum output. While making this adjustment rock the tuning control back and forth through the signal until maximum output results.

Following this, it is advisable to repeat the procedure outlined for 1500 K.C. to compensate for any slight discrepancy caused by the adjustment of the series padding condenser.

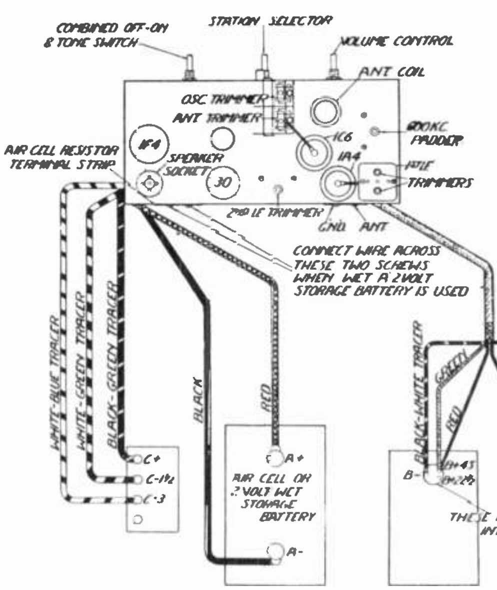
The R. F. sensitivity of this receiver is 100 microvolts at 1500 K.C., and 125 microvolts at 600 K.C.

VOLTAGES

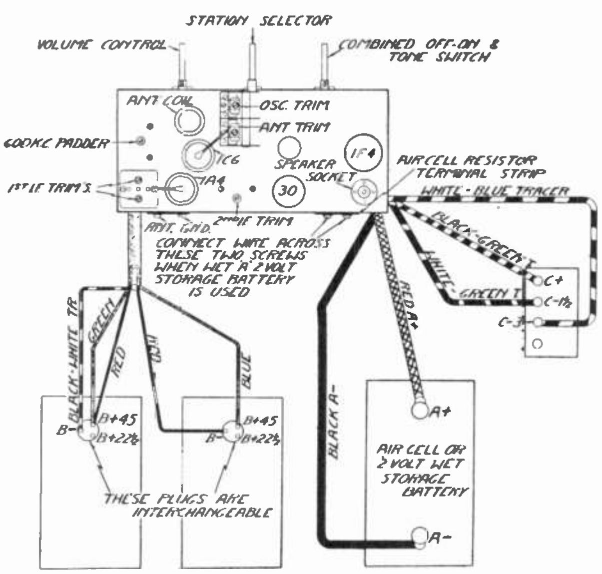
All voltages indicated on the diagram are measured from the chassis with a voltmeter of 1000 ohms per volt. Readings were taken with volume control turned full on, line voltage at 115 volts and antenna and ground leads shorted together.

Alignment Data

SERIES 6B41-M 6B41-D



MODEL 6B41-M



MODEL 6B41-D

Circuit on Data Sheet—48

I. F. ALIGNMENT

Set the signal generator to 456 K.C. and connect the output to the grid cap of the 1C6 tube through a .1 Mfd. condenser. The generator ground is connected to the chassis ground post or frame, which must be externally grounded. The receiver dial is set at maximum frequency (gang open), and the volume control turned full on.

The 1st and 2nd I. F. trimming condensers located as shown on the tube layout chart, are then adjusted by means of a non-metallic screw driver until maximum output is obtained. It is recommended that the chassis be placed on a non-metallic surface, otherwise the adjustment of C7 may be affected.

R. F. ALIGNMENT

1500 K.C. The signal generator is set to 1500 K.C. and connected to the antenna post of the receiver through a .00025 Mfd. condenser.

The generator ground lead and chassis frame must be connected and externally grounded.

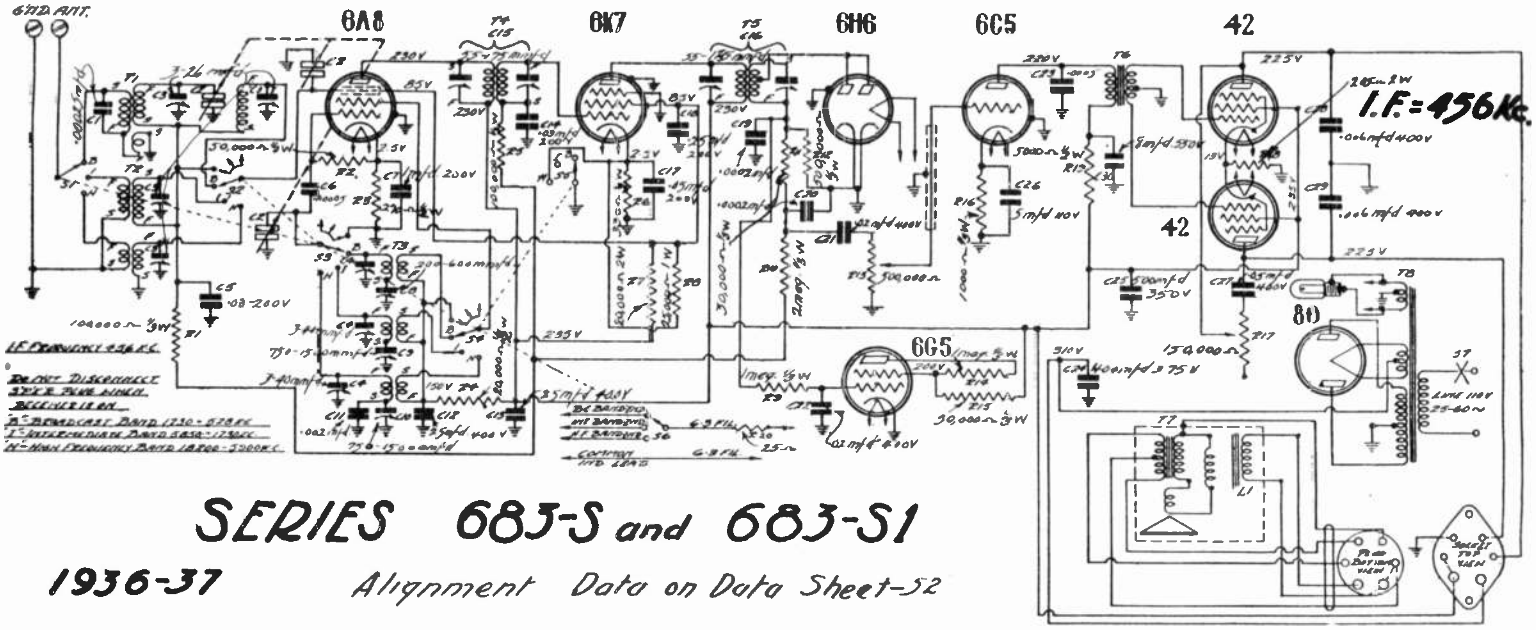
With the receiver dial set at 1500 K.C. and volume full on, adjust the oscillator trimming condenser until a signal is heard.

Note: There may be two signals present, use the one obtained by minimum capacity setting of the trimming condenser and adjust it to its peak. The antenna trimming condenser is then adjusted for maximum output.

600 K. C. The signal generator and the receiver dial are then set to 600 K.C. The 600 K.C. padding condenser, located as shown on the tube layout chart, is adjusted for maximum output. While making this adjustment, rock the tuning control back and forth through the signal until maximum output results. Following this, it is advisable to repeat the procedure outlined for 1500 K.C., in order to compensate for any slight discrepancy caused by the adjustment of the series padding condenser.

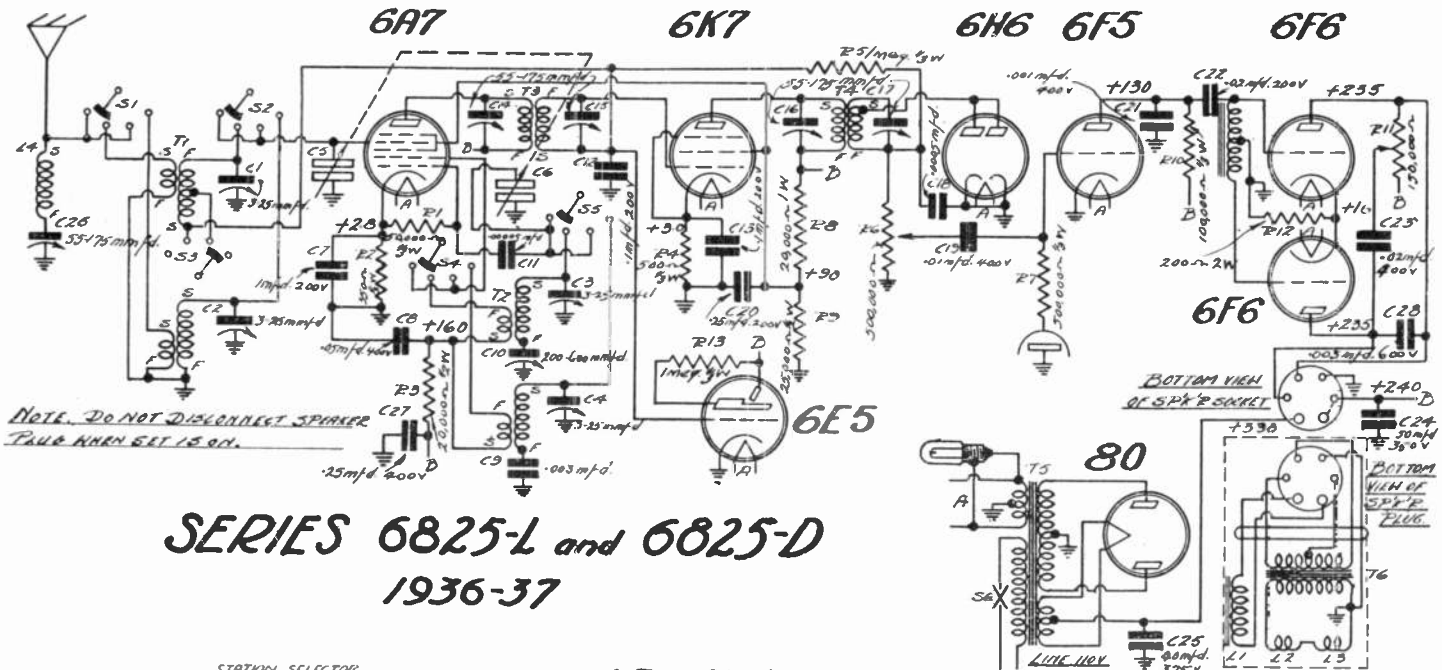
The R. F. sensitivity of this receiver is 65 microvolts at 1500 K.C. and 90 microvolts at 600 K.C.

World Radio History



SERIES 683-S and 683-S1

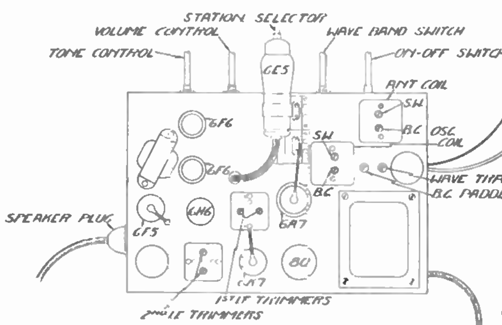
1936-37 Alignment Data on Data Sheet-52



SERIES 6825-L and 6825-D

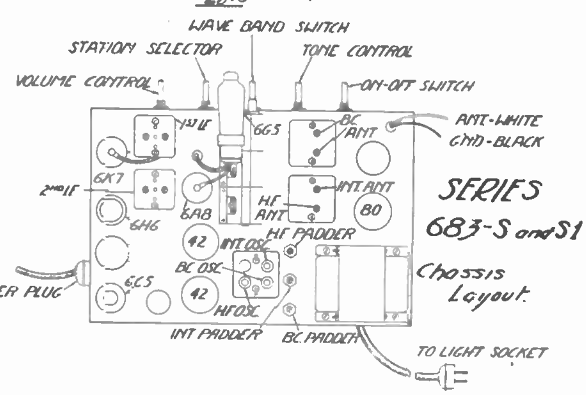
1936-37

I.F. = 456Kc.



SERIES - 6825-L and D Chassis Layout. TO LIGHT SOCKET

Alignment Data on Data Sheet-52

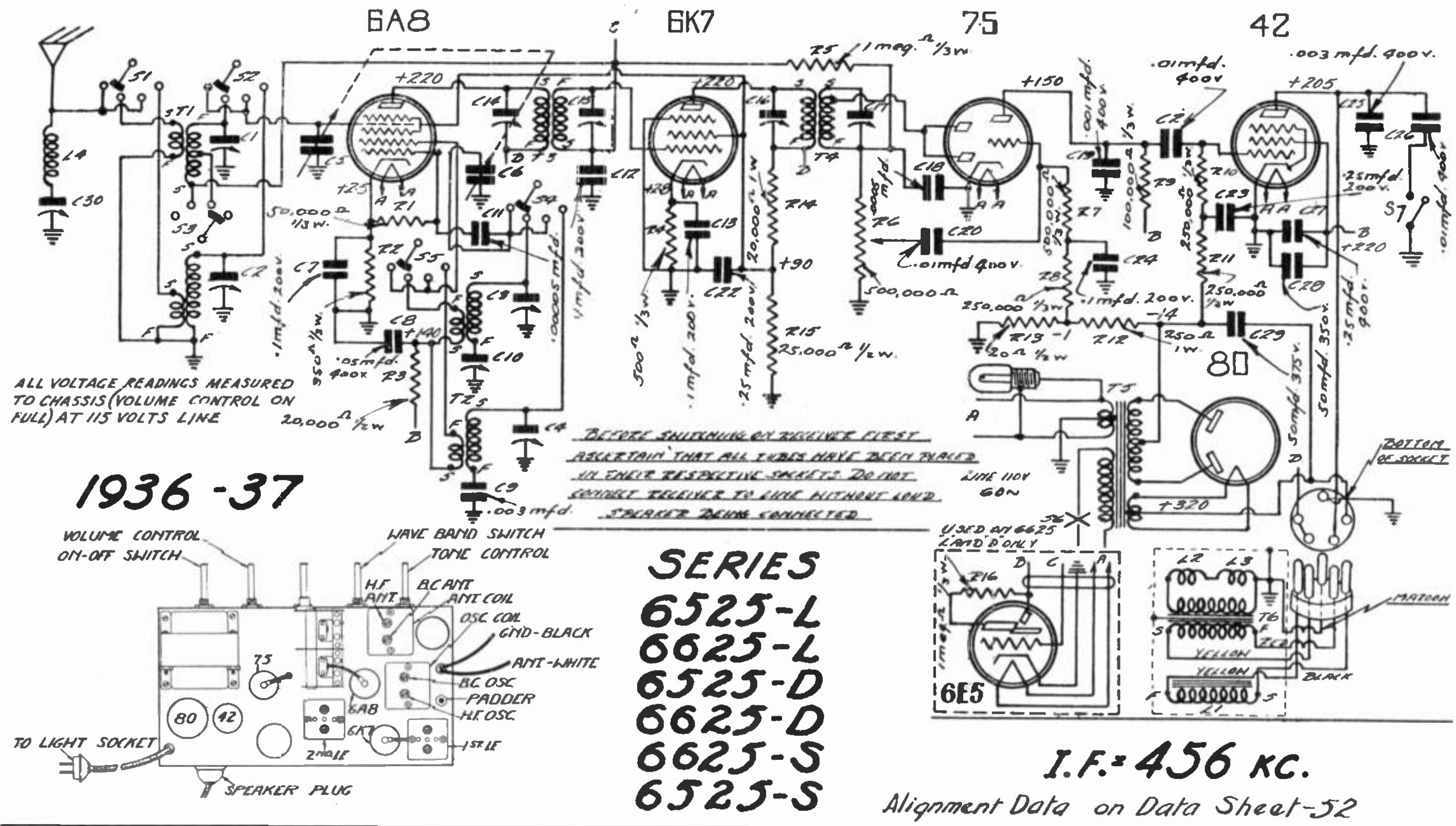


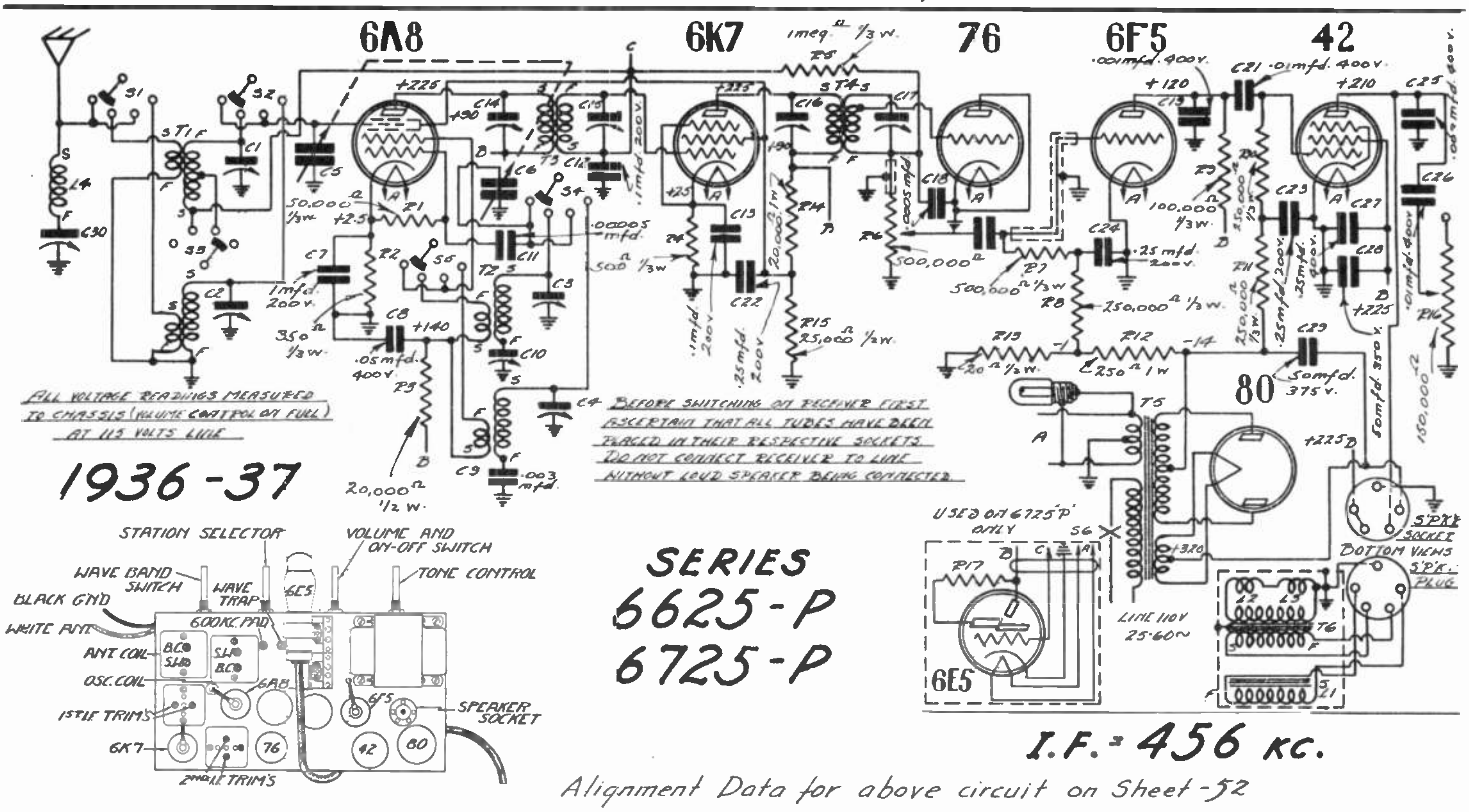
SERIES 683-S and S1 Chassis Layout.

DATA SHEET

COURTESY
PHONOLA-50
DOM. ELECTROHOME IND. LTD.

World Radio History





DATA SHEET

COURTESY-
PHONOLA-51
DOM. ELECTROHOME IND. LTD.

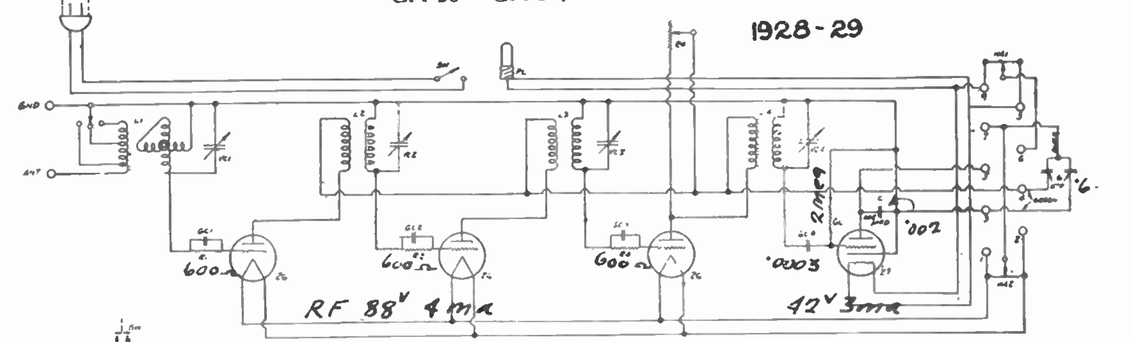
World Radio History

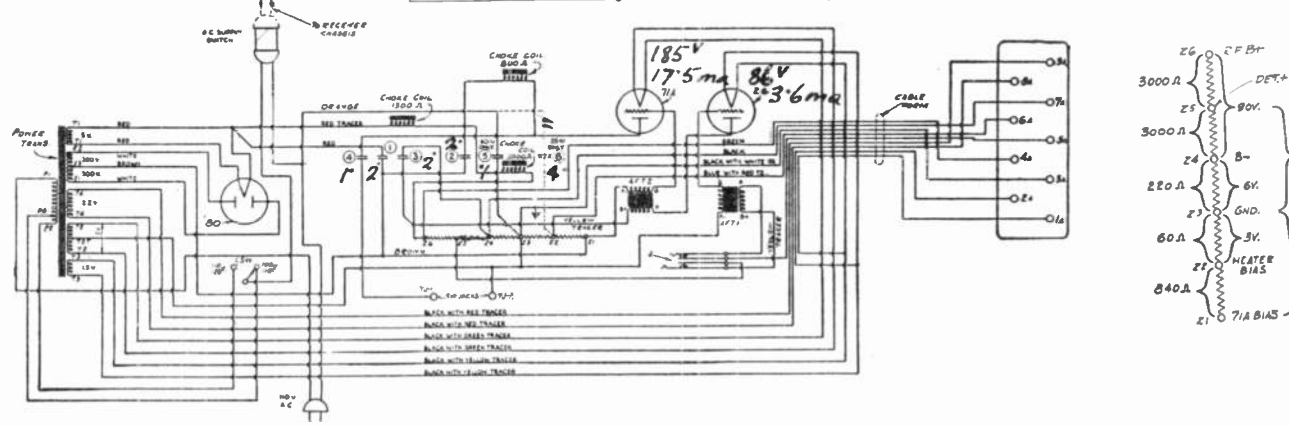
Six Tube Electric Models

CK-20 CK-22. CK-2ᶜ CK-27

1928-29

1928-29
CK-20
CK-25
Table Models
CK-22
CK-27
Consoles

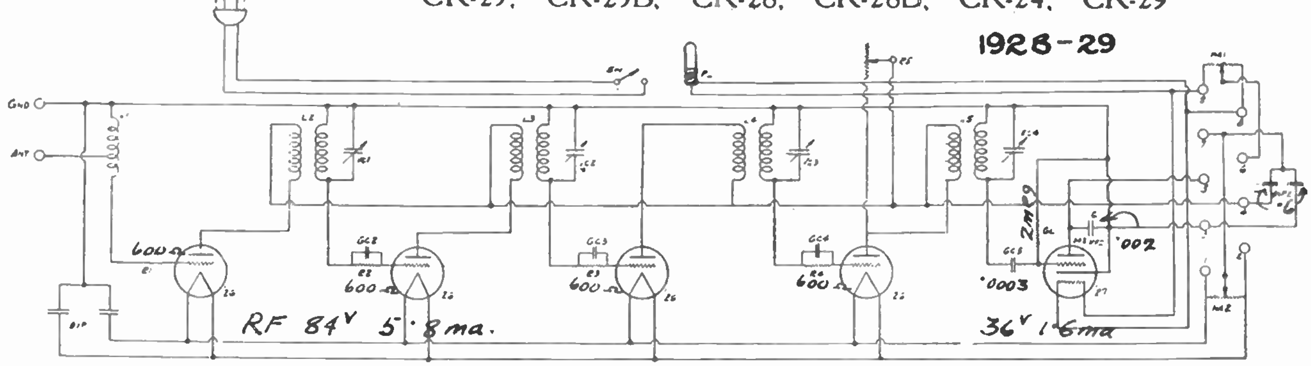


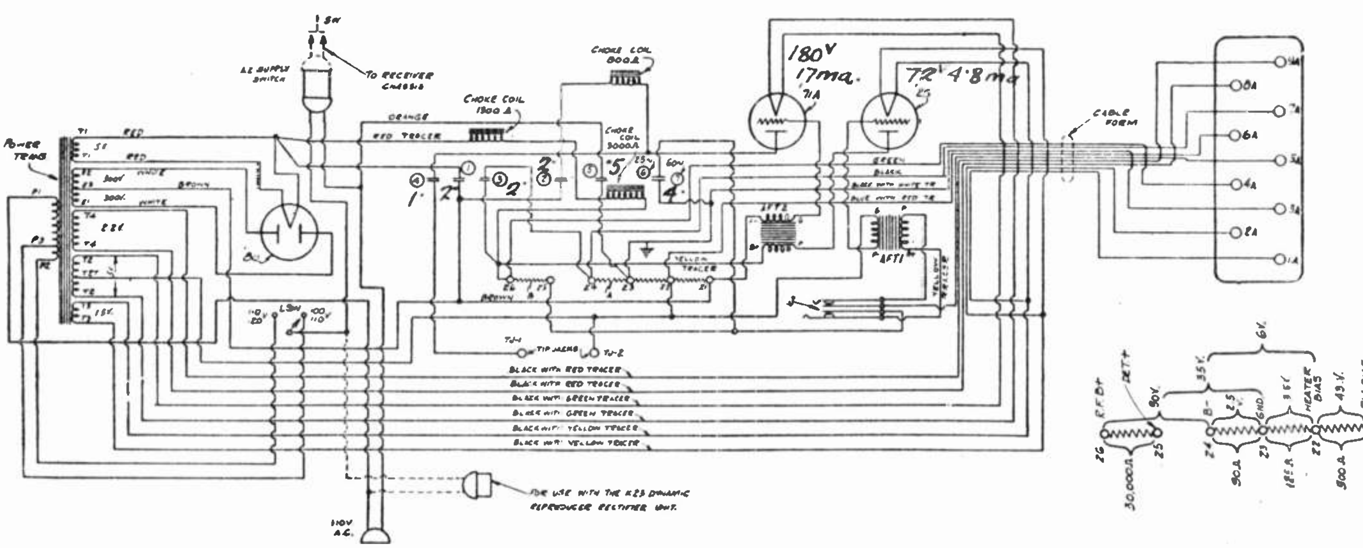


1928-29
All
High Boy
Consoles
CK-28
CK-28B
CK-29
25 Cycle
Models

CK-23. CK-23B. CK-28. CK-28B. CK-24. CK-29

1928-29





Printed in Canada

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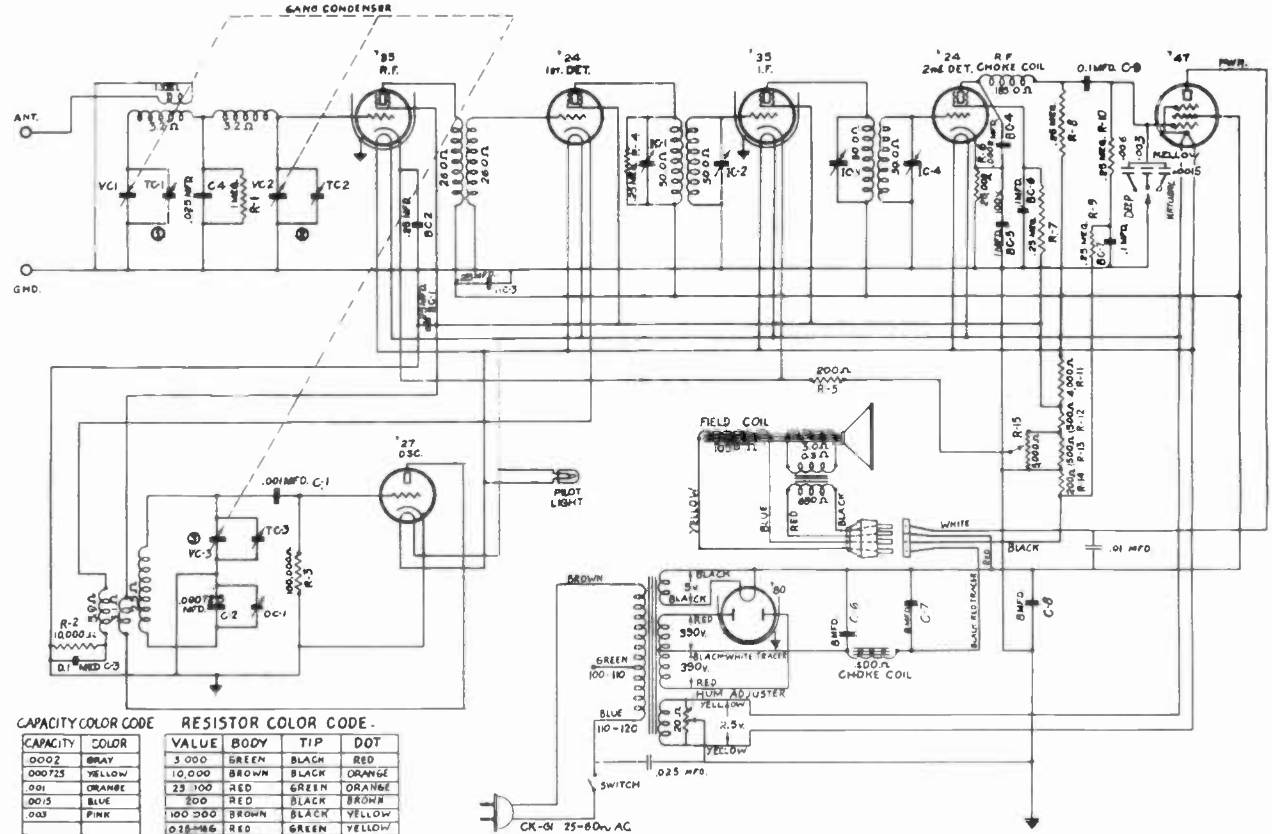
DATA SHEET

KOLSTER—6

World Radio History



CAPACITY COLOR CODE

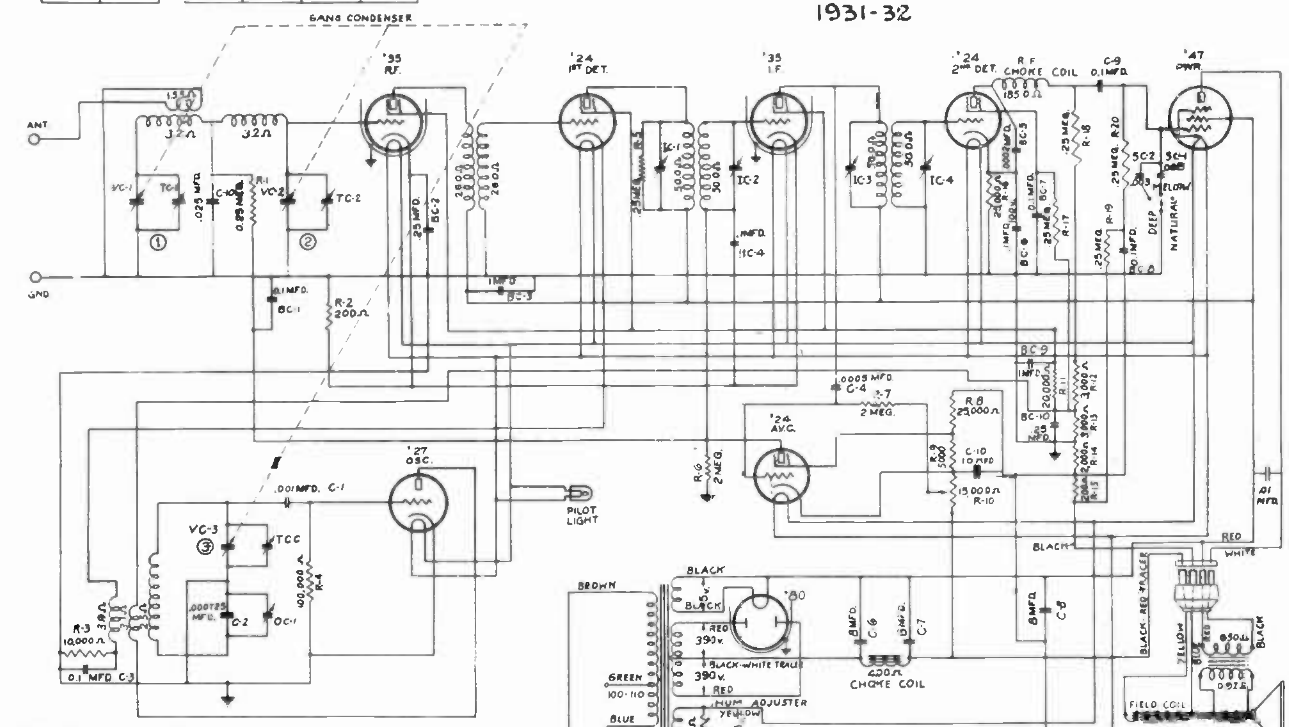
CAPACITY	COLOR
.0002	GRAY
.000725	YELLOW
.001	ORANGE
.0015	BLUE
.003	PINK

RESISTOR COLOR CODE.

VALUE	BODY	TIP	DOT
5 000	GREEN	BLACK	RED
10,000	BROWN	BLACK	ORANGE
25 000	RED	GREEN	ORANGE
200	RED	BLACK	BROWN
100 000	BROWN	BLACK	YELLOW
.025 MEG	RED	GREEN	YELLOW
1.0 MEG	BROWN	BLACK	GREEN

KOLSTER MODELS CK-61 AND CK-66

1931-32



CAPACITY COLOR CODE

CAPACITY	COLOR
.0002	GRAY
.0005	RED
.000725	YELLOW
.001	ORANGE
.0015	BLUE
.003	PINK

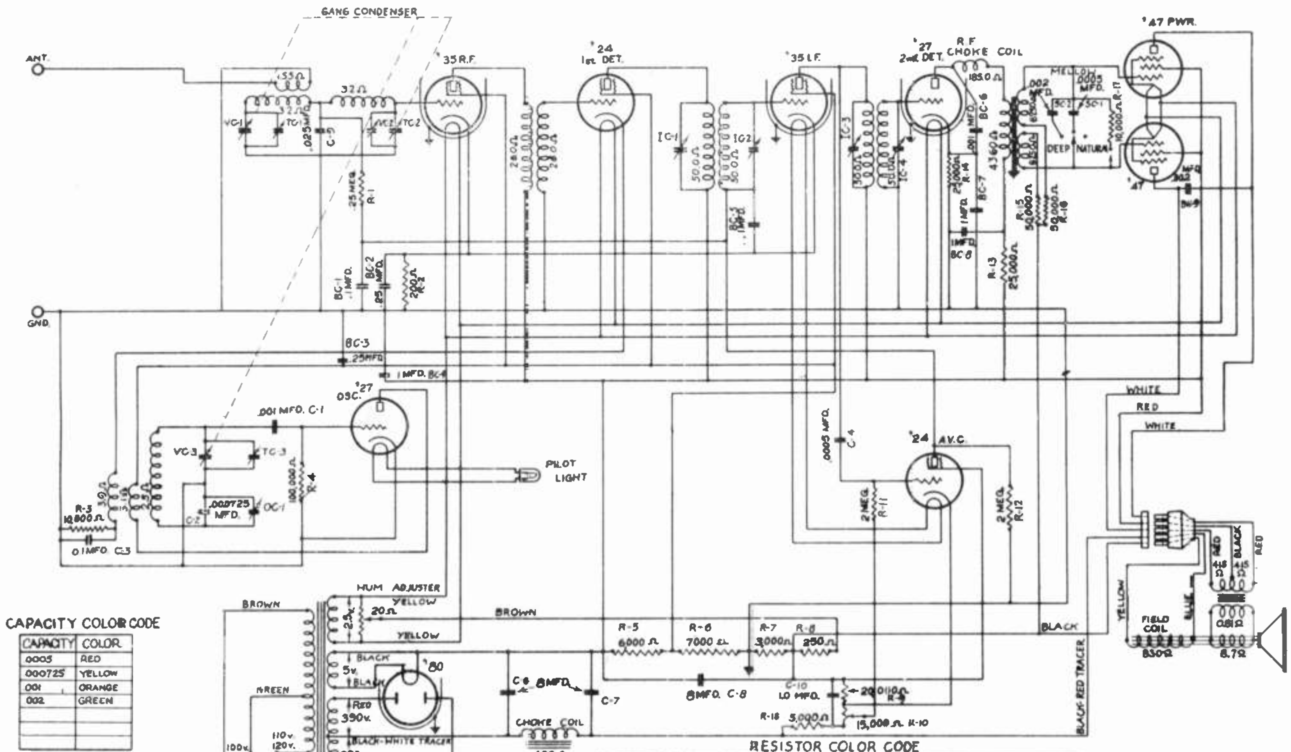
RESISTOR COLOR CODE.

VALUE	BODY	TIP	DOT
200	RED	BLACK	BROWN
5 000	GREEN	BLACK	RED
10 000	BROWN	BLACK	ORANGE
15 000	BROWN	GREEN	ORANGE
20 000	RED	BLACK	ORANGE
25 000	RED	GREEN	ORANGE
100.000	BROWN	BLACK	YELLOW
0.25 MEG	RED	GREEN	YELLOW
2 MEG	RED	BLACK	GREEN

KOLSTER MODEL CK-71

1931-32

World Radio History



CAPACITY COLOR CODE

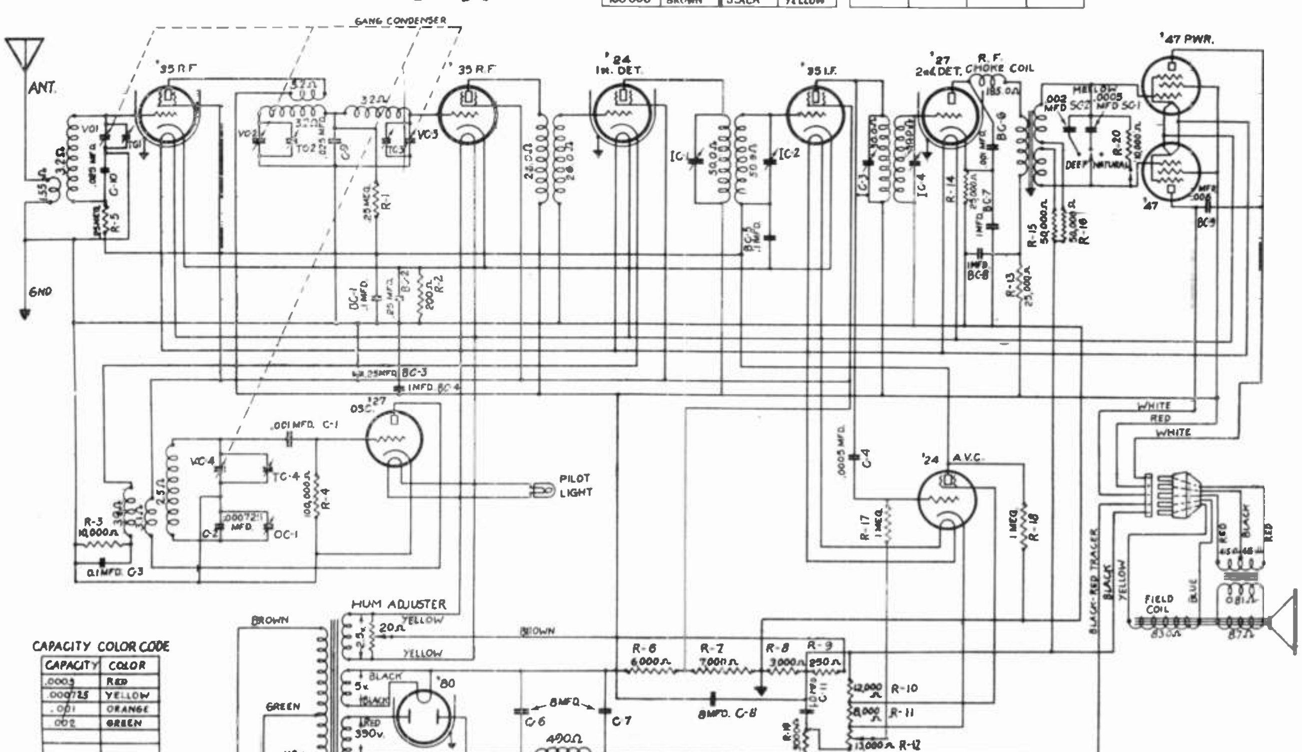
CAPACITY	COLOR
.0005	RED
.000725	YELLOW
.001	ORANGE
.002	GREEN

RESISTOR COLOR CODE

VALUE	BODY	TIP	DOT
200	RED	BLACK	BROWN
5,000	GREEN	BLACK	RED
10 000	BROWN	BLACK	ORANGE
20 000	RED	BLACK	ORANGE
25 000	RED	GREEN	ORANGE
50 000	GREEN	BLACK	ORANGE
100 000	BROWN	BLACK	YELLOW

VALUE	BODY	TIP	DOT
0.25 MEG	RED	GREEN	YELLOW
2 MEG	RED	BLACK	GREEN

KOLSTER MODEL CK-81
1931-32



CAPACITY COLOR CODE

CAPACITY	COLOR
.0005	RED
.000725	YELLOW
.001	ORANGE
.002	GREEN

RESISTOR COLOR CODE

VALUE	BODY	TIP	DOT
600	BLUE	BLACK	BROWN
8.000	GRAY	BLACK	RED
10.000	BROWN	BLACK	ORANGE
12 000	BROWN	RED	ORANGE
25 000	RED	GREEN	ORANGE
50.000	GREEN	BLACK	ORANGE
100.000	BROWN	BLACK	YELLOW

VALUE	BODY	TIP	DOT
0.25 MEG	RED	GREEN	YELLOW
1 MEG	BROWN	BLACK	GREEN
5000	GREEN	BLACK	RED

KOLSTER MODEL CK-91
1931-32.

World Radio History

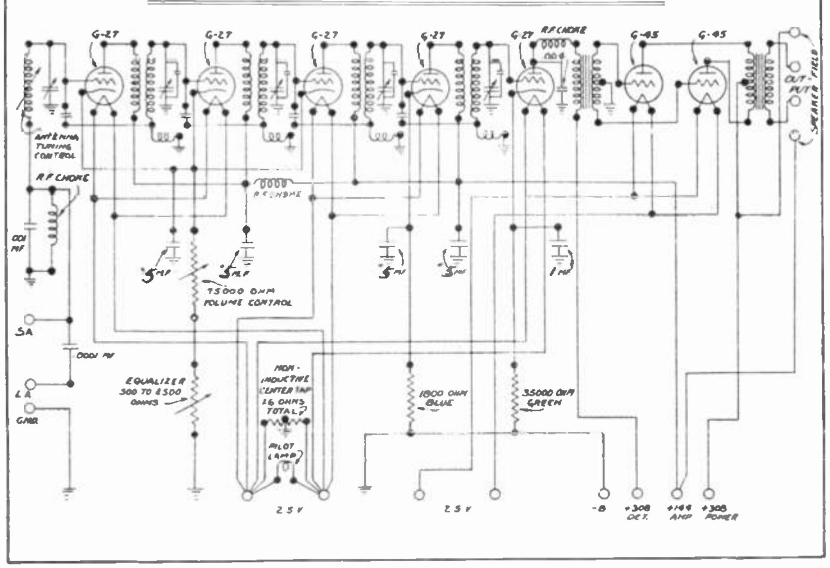
DATA SHEET

DATA SHEET #5 NOW ELIMINATED.

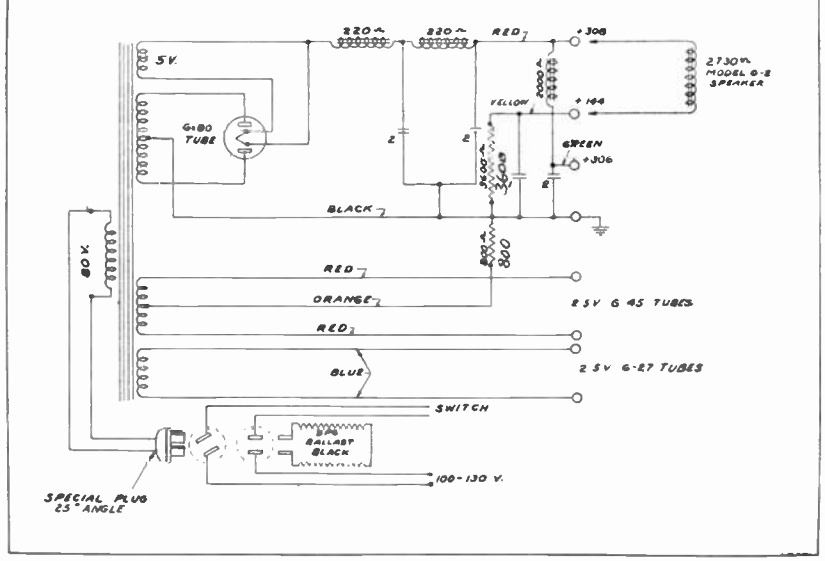
MAJESTIC—4

60 Cycle

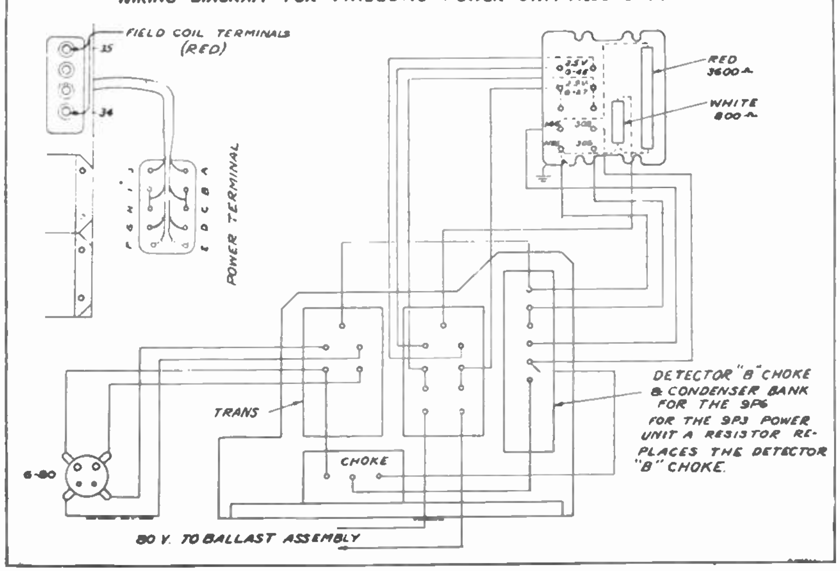
SCHEMATIC DIAGRAM FOR MODEL 90 MAJESTIC RECEIVER



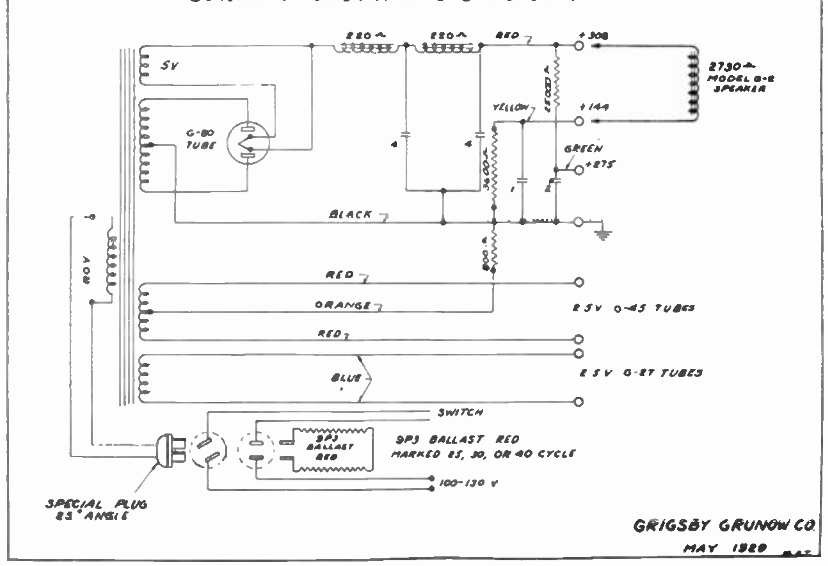
SCHEMATIC DIAGRAM OF 9P6 POWER UNIT



WIRING DIAGRAM FOR MAJESTIC POWER UNIT-MODEL 9P6 & 9P3



SCHEMATIC DIAGRAM OF 9P3 POWER UNIT



Chassis Fitted in Models (91) L.B. and (92) H.B., (1929-30)

25 Cycle

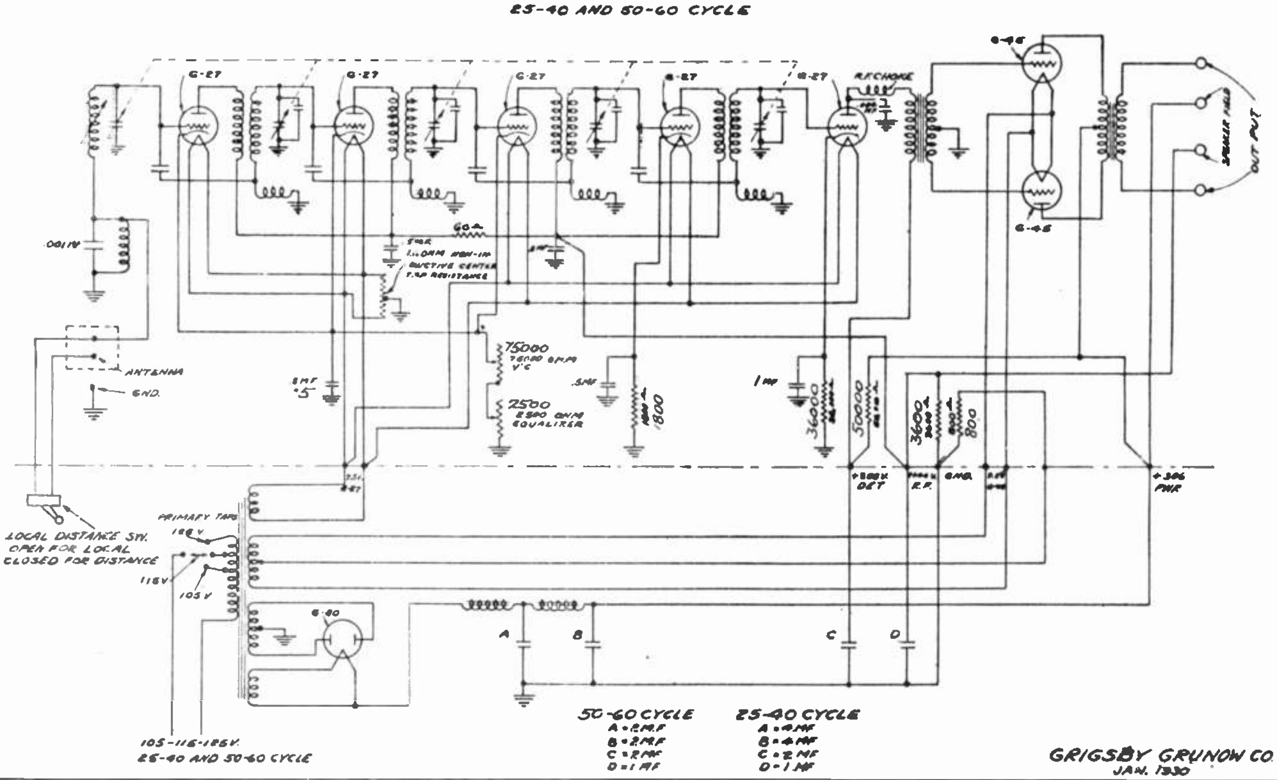
Printed in Canada

—Courtesy Rogers-Majestic Corp. Ltd.

SCHEMATIC DIAGRAM FOR MODEL 90-B MAJESTIC CHASSIS
25-40 AND 50-60 CYCLE

FIG. 69

Chassis Fitted in Rogers-Majestic 590 L.B. 596 Console 594 L.B. 597 H.B. 1930

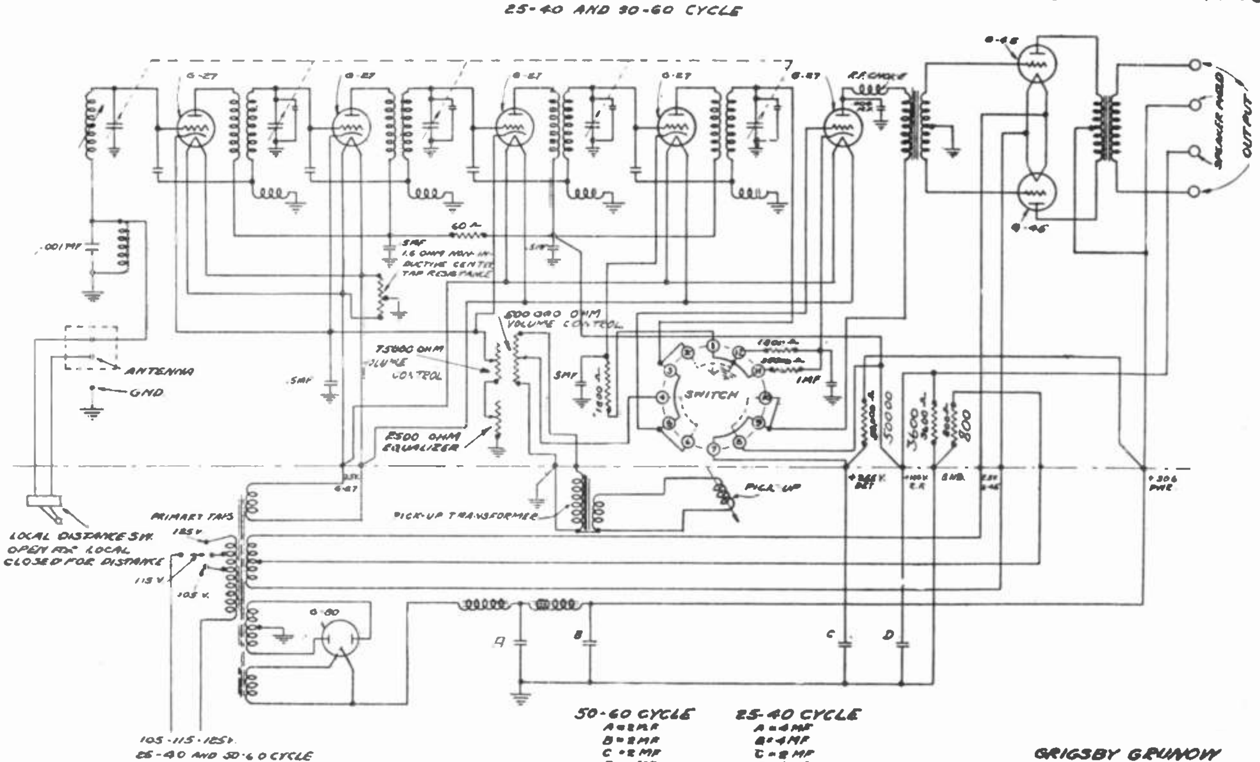


SCHEMATIC DIAGRAM FOR MODEL 100-B MAJESTIC CHASSIS
25-40 AND 50-60 CYCLE

FIG 73

Chassis Fitted in Rogers-Majestic 589 Phono-Comb. 1930

NOTE—Majestic Model 101 Phono-Comb. Uses same Circuit But Power Unit is Separate 1929-30



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World Radio History

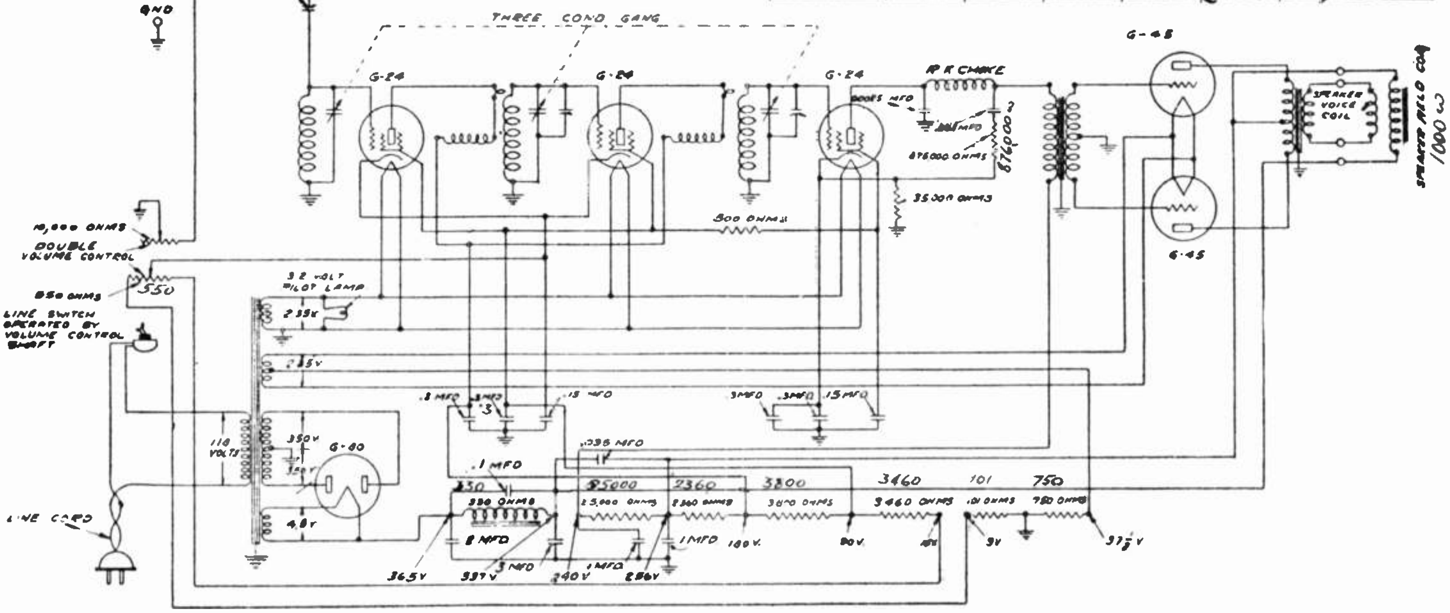
MAJESTIC SCREEN GRID RECEIVER

MODEL 30 CHASSIS
115 VOLT 60 CYCLE

1930-31

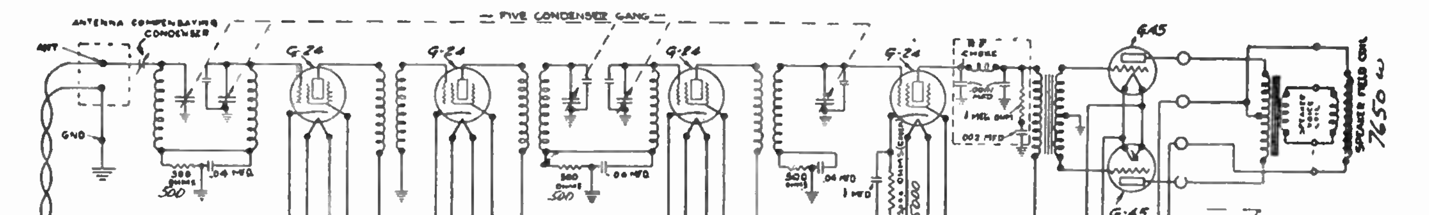
TUBE POSITION	TYPE OF TUBE	PLATE M. A. Normal	PLATE M. A. Grid Test	Plate Volts	(S.G. Volts)	Cathode Volts	Filament Volts	Cont. Grid Volts
R.F.	G 24	3		180	90	3	2.35	3
DET	G 24	3		225	90 *	10 *	2.35	10 *
P.P.	G 45	25		250				37.5

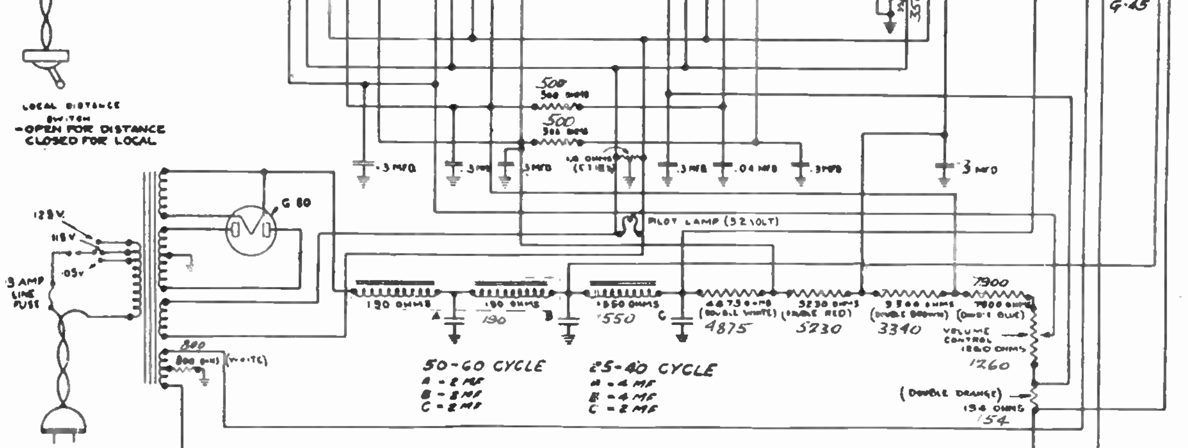
* MEASURED FROM CHASSIS (GROUND)

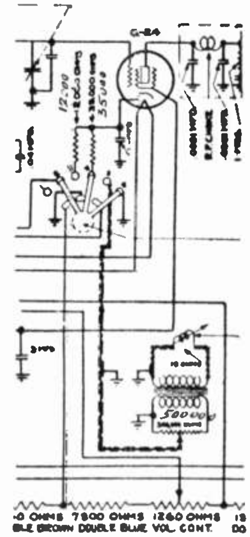


SCHEMATIC DIAGRAM of MAJESTIC SUPER SCREEN GRID RECEIVER

MODEL 130-A CHASSIS 25-40 & 50-60 CYCLE **1930-31** **I.F. 175. Kc**







PICKUP CONNECTIONS

MODEL 230-A

Type of Tube	Position	Filament Voltage	Plate Voltage	Grid Bias Voltage	Cathode Volts	Normal Plate Milliamperes	Screen Grid Voltage
G-24	R. F.	2.35	180	3	3	3	90
G-24	Power Detector	2.35	263	12	12	5	125
G-45	Power	2.5	250	50		32	

Line Voltage 115 A. C. on 115 volt tap.

Printed in Canada

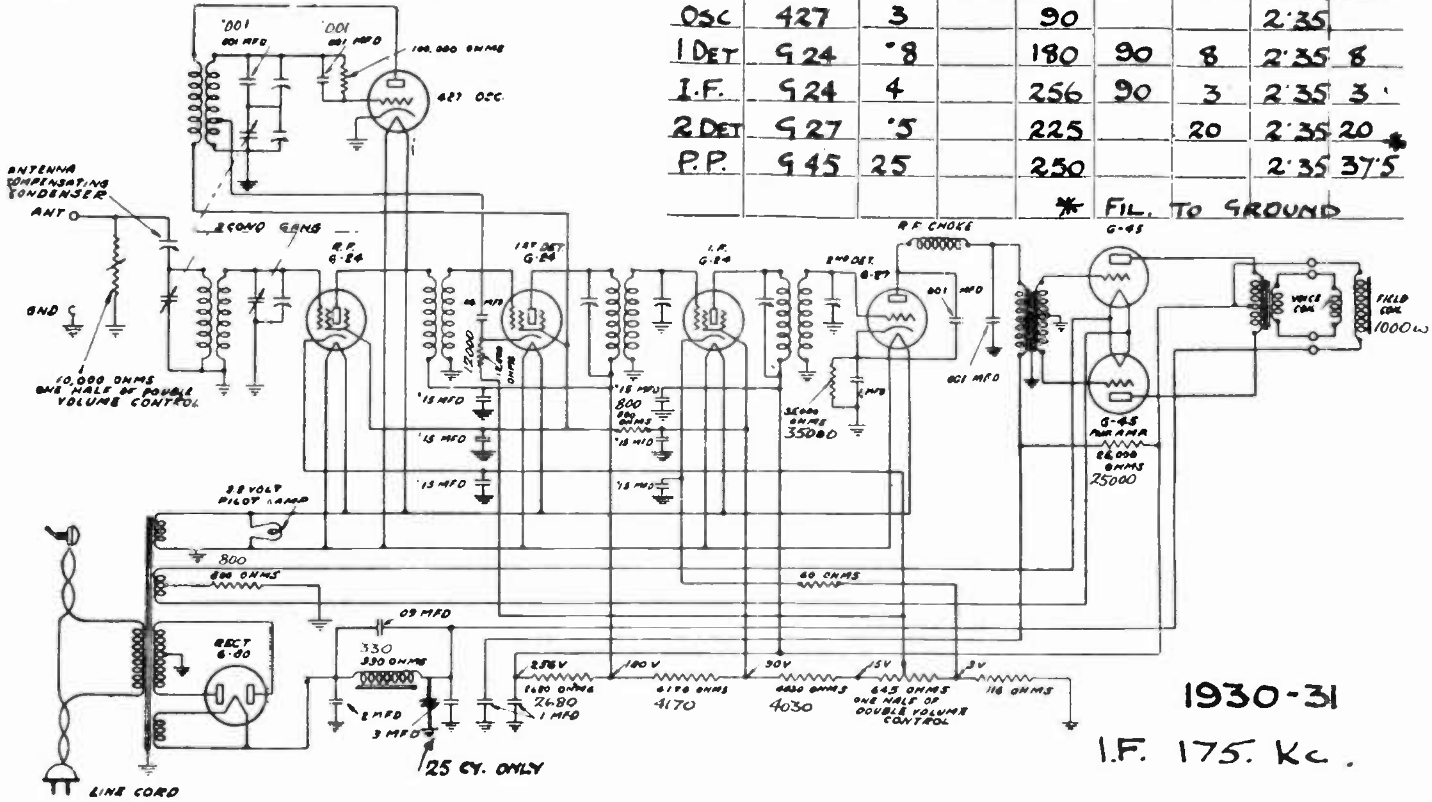
—Courtesy Rogers-Majestic Corp. Ltd.

World Radio History

SCHEMATIC DIAGRAM OF MAJESTIC SCREEN GRID SUPERHETERODYNE RECEIVER
MODEL 50 CHASSIS 110 VOLT 50-60 CYCLE

TUBE POSITION	TYPE OF TUBE	PLATE M. A. Normal	Grid Test	Plate Volts	(S.G. Volts)	Cathode Volts	Filament Volts	Cont. Grid Volts
R.F.	G 24	3		180	90	3	2.35	3
OSC	427	3		90			2.35	
1 DET	G 24	.8		180	90	8	2.35	8
I.F.	G 24	4		256	90	3	2.35	3
2 DET	G 27	.5		225		20	2.35	20 *
P.P.	G 45	25		250			2.35	37.5

* FIL. TO GROUND



1930-31

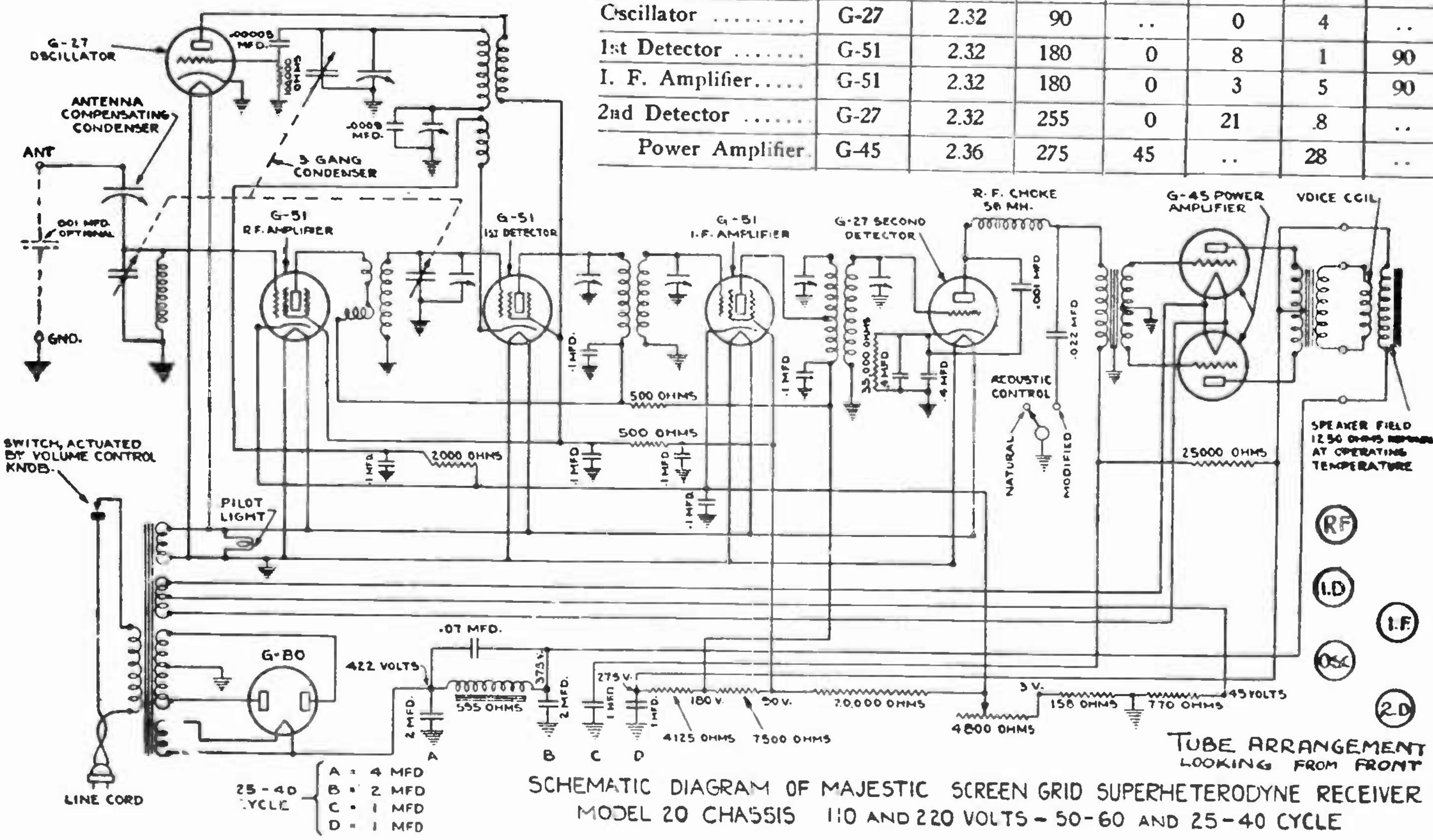
I.F. 175 Kc.

TUBE ARRANGEMENT MODEL 50 — LOOKING FROM BACK.

R.F. OSC I.D. I.F. 2.D

I.F. 175 Kc

Stage	Tube	Fil. Volts	Plate Volts	Grid Volts	Cathode Volts	Normal Plate M. A.	Screen Volts
1st R. F.	G-51	2.32	180	0	3	5	90
Oscillator	G-27	2.32	90	..	0	4	..
1st Detector	G-51	2.32	180	0	8	1	90
I. F. Amplifier	G-51	2.32	180	0	3	5	90
2nd Detector	G-27	2.32	255	0	21	.8	..
Power Amplifier	G-45	2.36	275	45	..	28	..



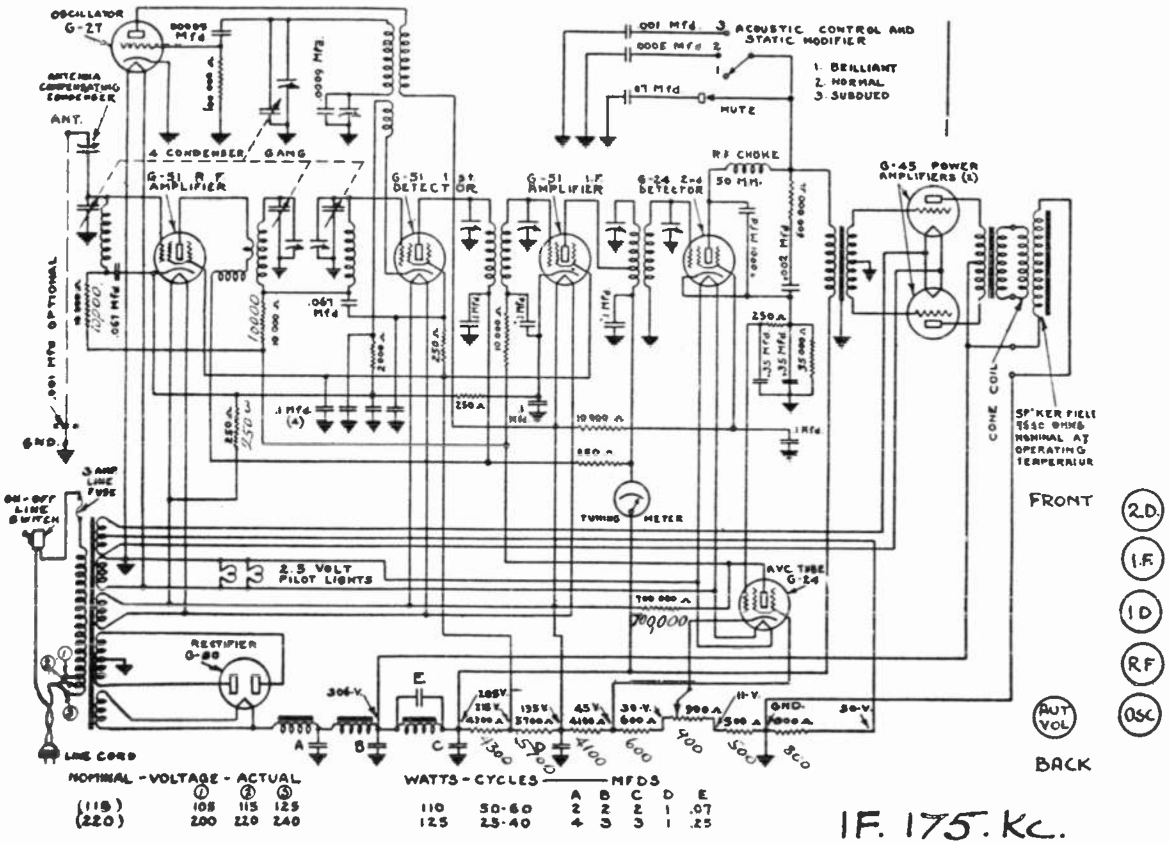
TUBE ARRANGEMENT LOOKING FROM FRONT

25-40 CYCLE { A = 4 MFD, B = 2 MFD, C = 1 MFD, D = 1 MFD

SCHEMATIC DIAGRAM OF MAJESTIC SCREEN GRID SUPERHETERODYNE RECEIVER
MODEL 20 CHASSIS 110 AND 220 VOLTS - 50-60 AND 25-40 CYCLE

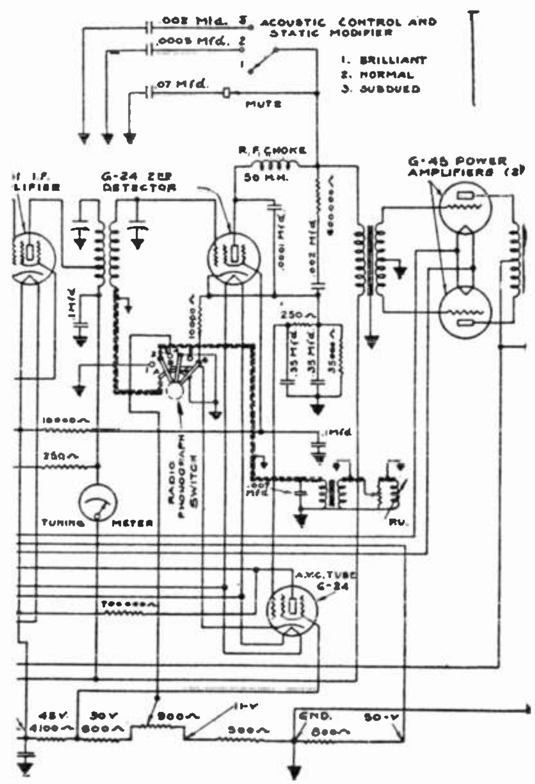
World Radio History

SCHEMATIC DIAGRAM OF MAJESTIC SCREEN GRID SUPERHETERODYNE AUTOMATIC VOLUME CONTROL RECEIVER - MODEL 60 CHASSIS 115 AND 220 VOLTS. 25-40 AND 50-60 CYCLES



IF. 175. Kc.

PHONOGRAPH COMBINATION MODEL 160 CHASSIS



Stage	Tube	Fil. Volts	Plate Volts	Grid Volts	Cathode Volts	Normal Plate M.A.	Screen Volts
1st R.F.	G-51	2.35	285	....	3	4.5	215
Oscillator	G-27	2.35	135	....	....	4.0	......
1st Detector	G-51	2.35	285	....	8	4.5	215
I.F. Amplifier	G-51	2.35	285	....	3	4.5	215
2nd Detector	G-24	2.35	275	....	12	.25	135
Power Amplifier	G-45	2.4	300	50	....	32.5	......
Automatic Volume Control Tube	G-24	2.35	*	....	11	0	45

NOTE—All plate, screen, control and cathode voltages measured from ground (chassis) with a 1,000 ohm per volt meter.
*Readings erratic owing to resistance in circuit.

COLOR CODE OF POWER UNIT

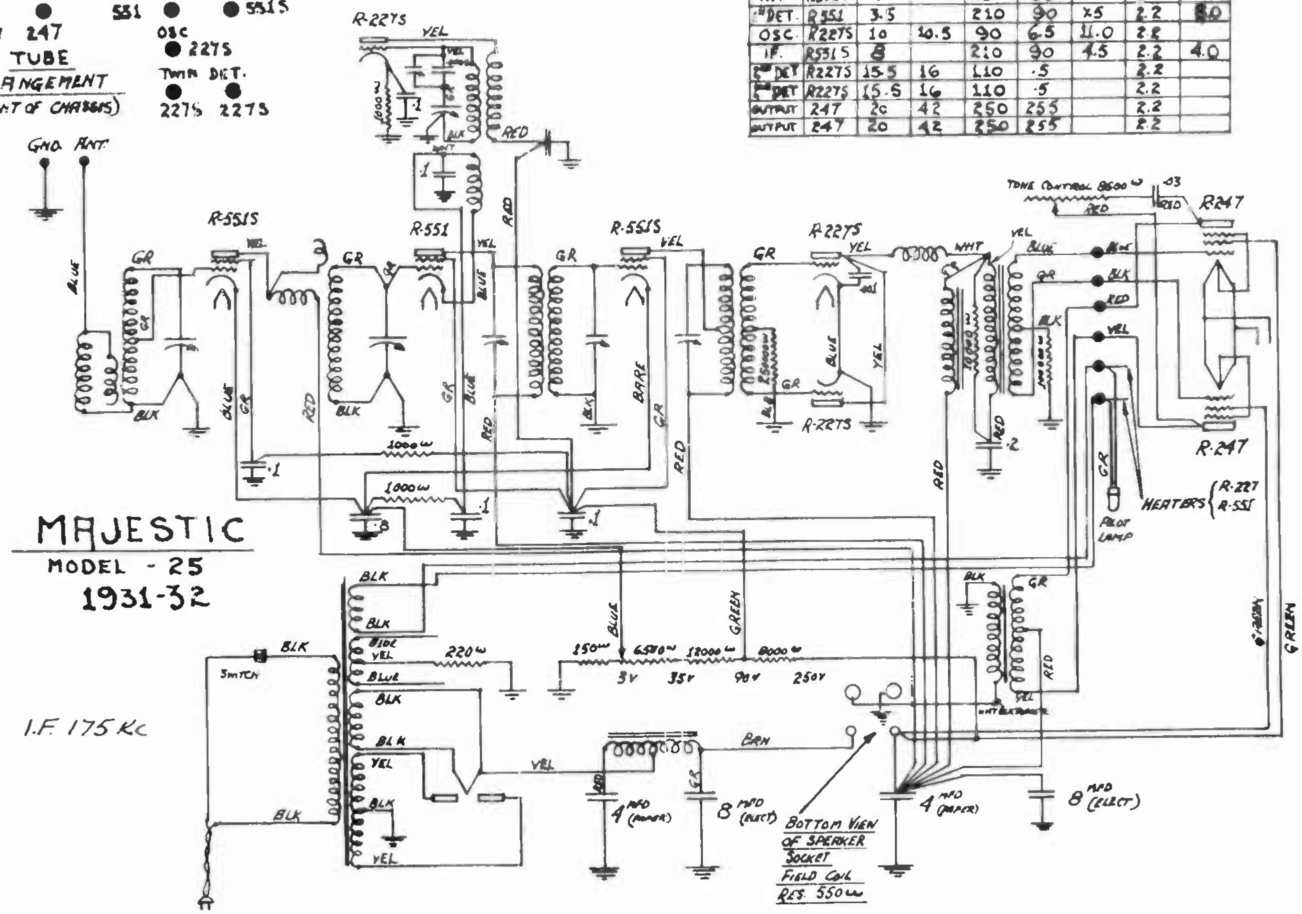
Trans. Prim. Start—Red
105V—Red and White
115V—Yellow
125V—Green
45 Fil.—Blue
45 C.T.—Red
Heater (135V above ground)—White
Heater (2 Det., A.V.C., and Osc.)—Red
High Sec.—Green
C.T.H.C.—Bare
80 Fil.—Brown

2 Mfd. Condenser—Green
2 Mfd. Condenser—Red
2 Mfd. Condenser—Blue
1 Mfd. Condenser—Yellow
.07 Mfd. Condenser—White
Condenser Common—Black
Filter Output—Red
Detector Choke Low Side—Green
Junction of Chokes—Blue

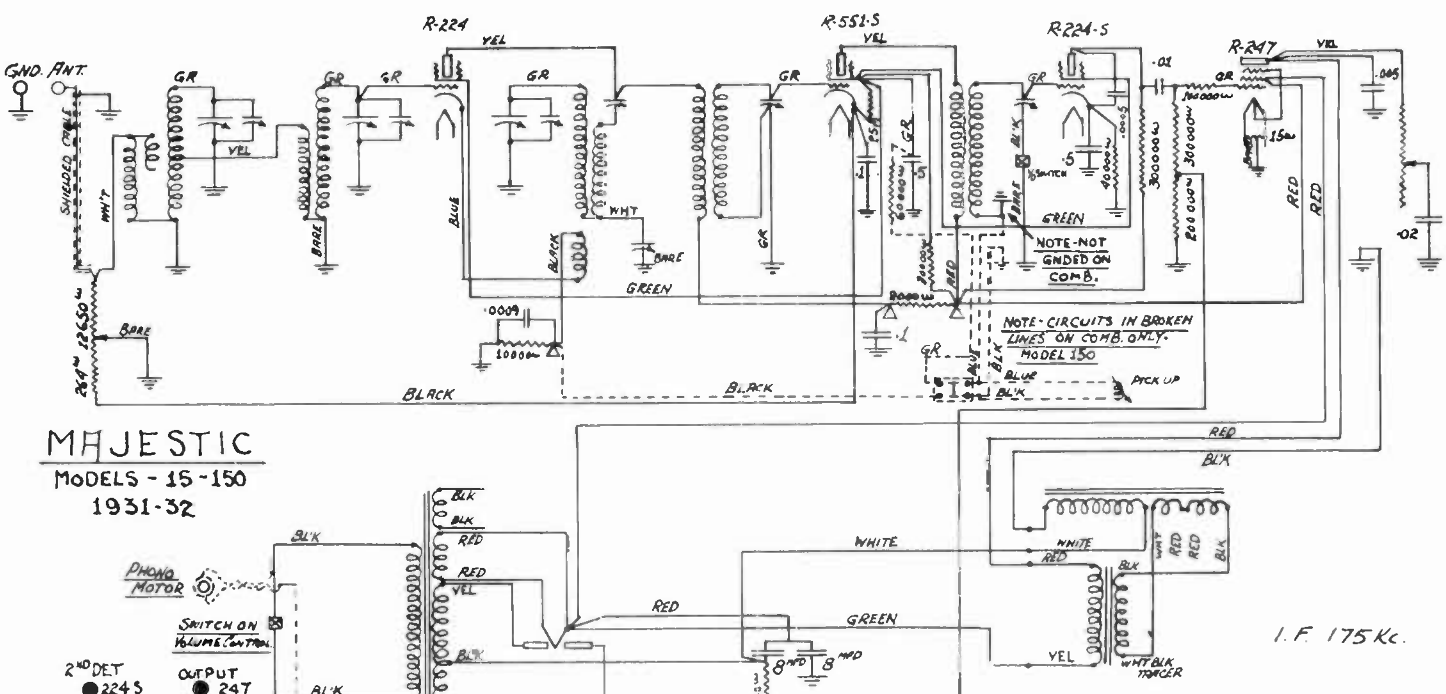
1930-31

—Courtesy Rogers-Majestic Corp. Ltd.

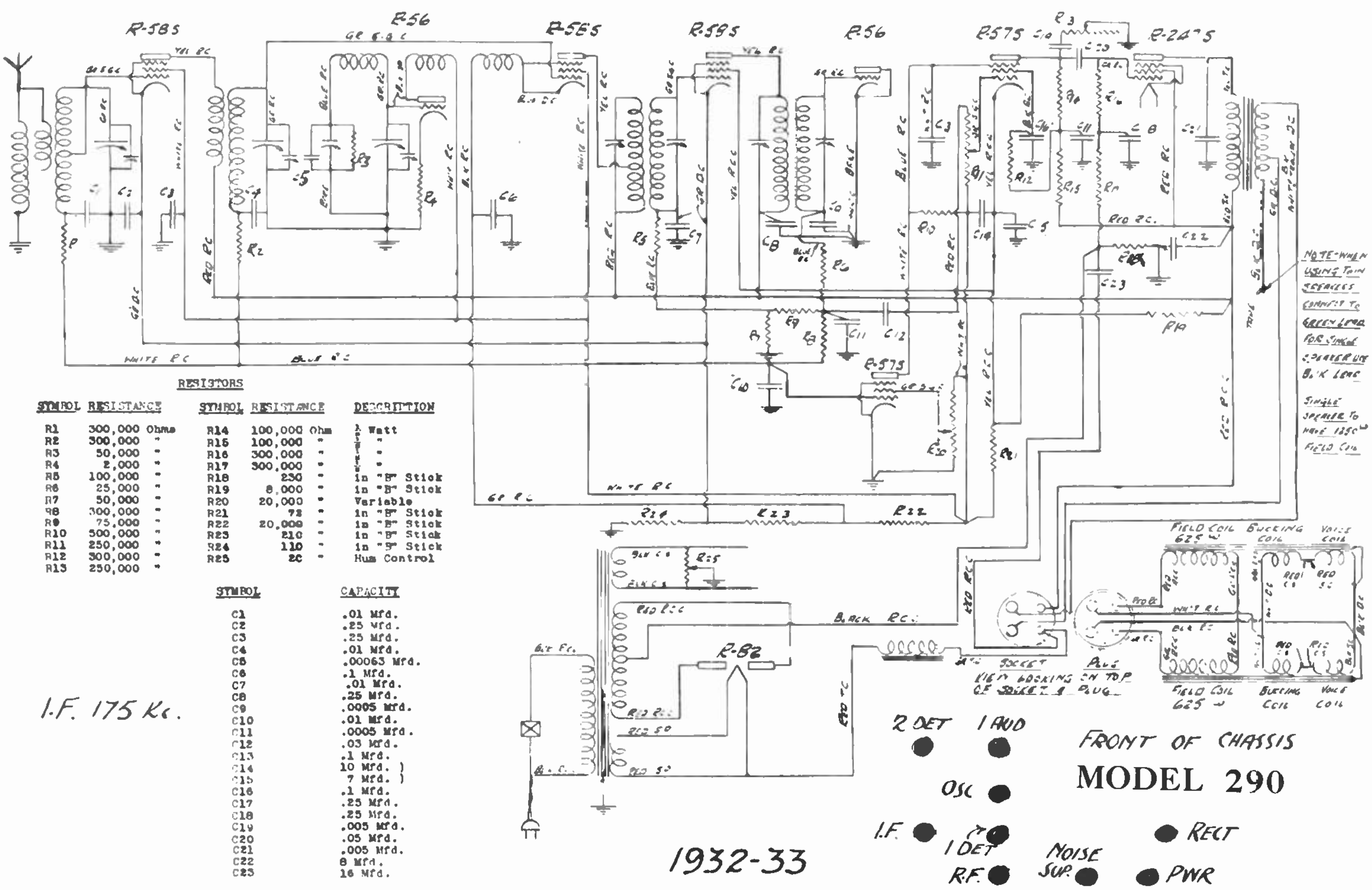
World Radio History



TUBE POSITION	TYPE OF TUBE	PLATE M.A. NORMAL	PLATE M.A. GRID TEST	PLATE VOLTS	GRID V. SG. VOLTS	CATHODE VOLTS	FIL VOLTS	C GRID SG ONLY
RF.	R551S	7		215	90	5	2.2	4.0
1st DET.	R551	3.5		210	90	x5	2.2	8.0
OSC.	R227S	10	10.5	90	6.5	11.0	2.2	
IF.	R551S	8		210	90	4.5	2.2	4.0
2nd DET	R227S	15.5	16	110	.5		2.2	
2nd DET	R227S	15.5	16	110	.5		2.2	
OUTPUT	247	20	42	250	255		2.2	
OUTPUT	247	20	42	250	255		2.2	



TUBE POSITION	TYPE OF TUBE	PLATE M.A. NORMAL	PLATE M.A. GRID TEST	PLATE VOLTS	GRID V. S.G. VOLTS	CATHODE VOLTS	FIL VOLTS	C.GREEN S.G. ONLY
1st DET OSC	224	.3	.5	220	85	6	2.2	4.8
IF	551S	12	18	220	40	5	2.2	5
2nd DET	224S	.2	.3	65	70	8	2.2	9
OUTPUT	247	22	24	220	230		2.2	.3



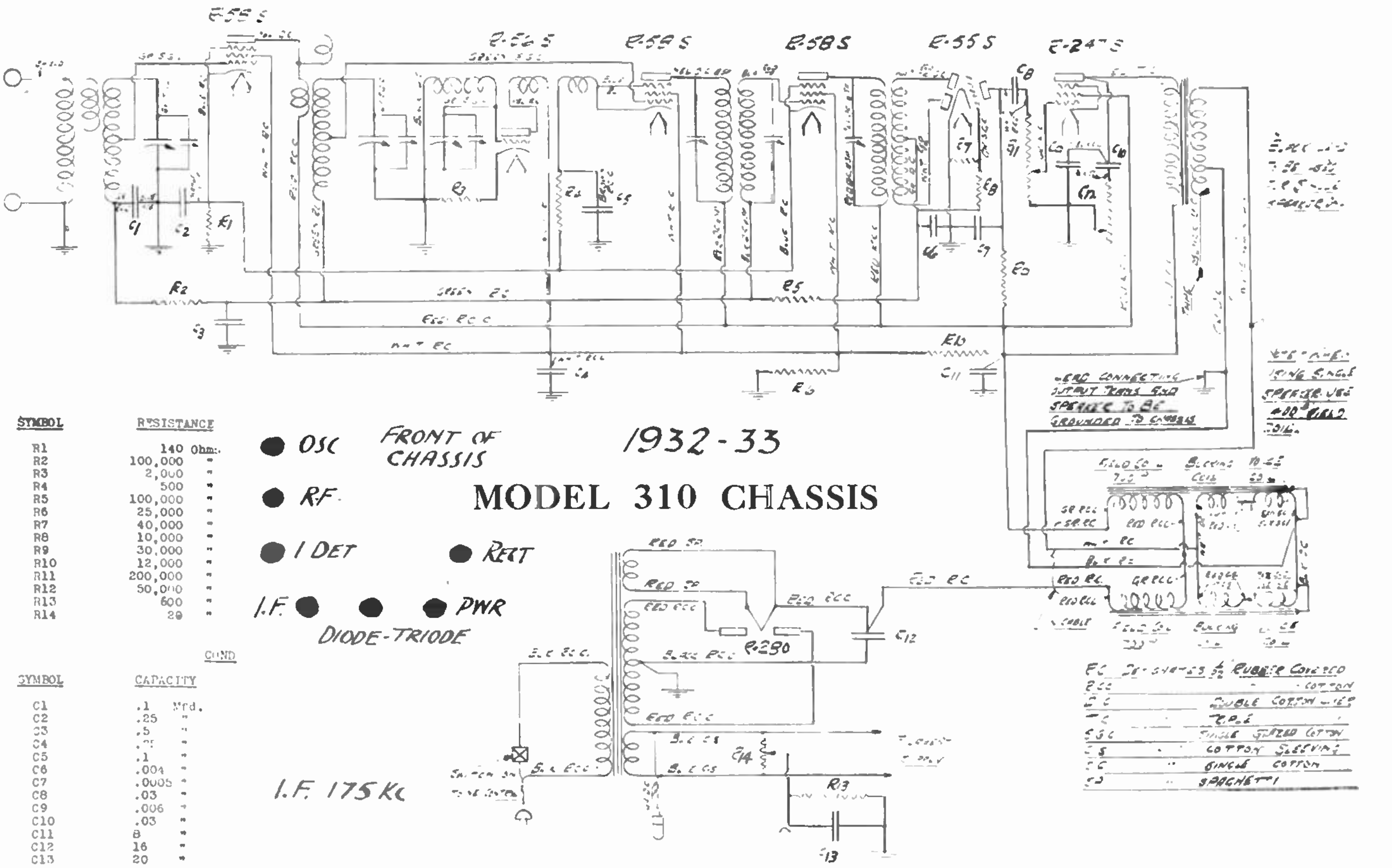
RESISTORS

SYMBOL	RESISTANCE
R1	300,000 Ohms
R2	300,000 "
R3	50,000 "
R4	2,000 "
R5	100,000 "
R6	25,000 "
R7	50,000 "
R8	300,000 "
R9	75,000 "
R10	500,000 "
R11	250,000 "
R12	300,000 "
R13	250,000 "

SYMBOL	RESISTANCE	DESCRIPTION
R14	100,000 Ohm	½ Watt
R15	100,000 "	" "
R16	300,000 "	" "
R17	300,000 "	" "
R18	230 "	in "B" Stick
R19	8,000 "	in "B" Stick
R20	20,000 "	Variable
R21	72 "	in "B" Stick
R22	20,000 "	in "B" Stick
R23	210 "	in "B" Stick
R24	110 "	in "B" Stick
R25	20 "	Hum Control

SYMBOL	CAPACITY
C1	.01 Mfd.
C2	.25 Mfd.
C3	.25 Mfd.
C4	.01 Mfd.
C5	.00063 Mfd.
C6	.1 Mfd.
C7	.01 Mfd.
C8	.25 Mfd.
C9	.0005 Mfd.
C10	.01 Mfd.
C11	.0005 Mfd.
C12	.03 Mfd.
C13	.1 Mfd.
C14	10 Mfd. }
C15	7 Mfd. }
C16	.1 Mfd.
C17	.25 Mfd.
C18	.25 Mfd.
C19	.005 Mfd.
C20	.05 Mfd.
C21	.005 Mfd.
C22	8 Mfd.
C23	16 Mfd.

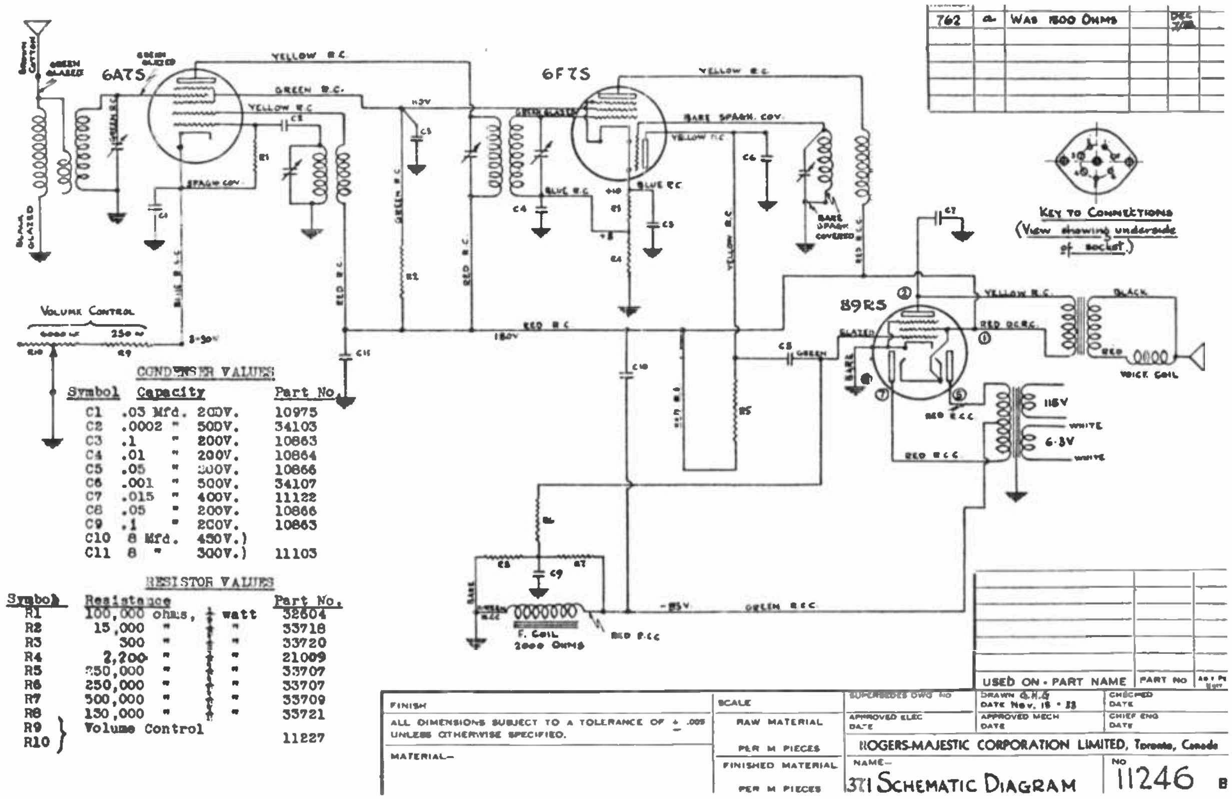
I.F. 175 Kc.



SYMBOL	RESISTANCE
R1	140 Ohms
R2	100,000 "
R3	2,000 "
R4	500 "
R5	100,000 "
R6	25,000 "
R7	40,000 "
R8	10,000 "
R9	30,000 "
R10	12,000 "
R11	200,000 "
R12	50,000 "
R13	600 "
R14	20 "

SYMBOL	CAPACITY (COND)
C1	.1 Mfd.
C2	.25 "
C3	.5 "
C4	.[illegible] "
C5	.1 "
C6	.004 "
C7	.0005 "
C8	.03 "
C9	.006 "
C10	.03 "
C11	8 "
C12	16 "
C13	20 "

I.F. 175 Kc



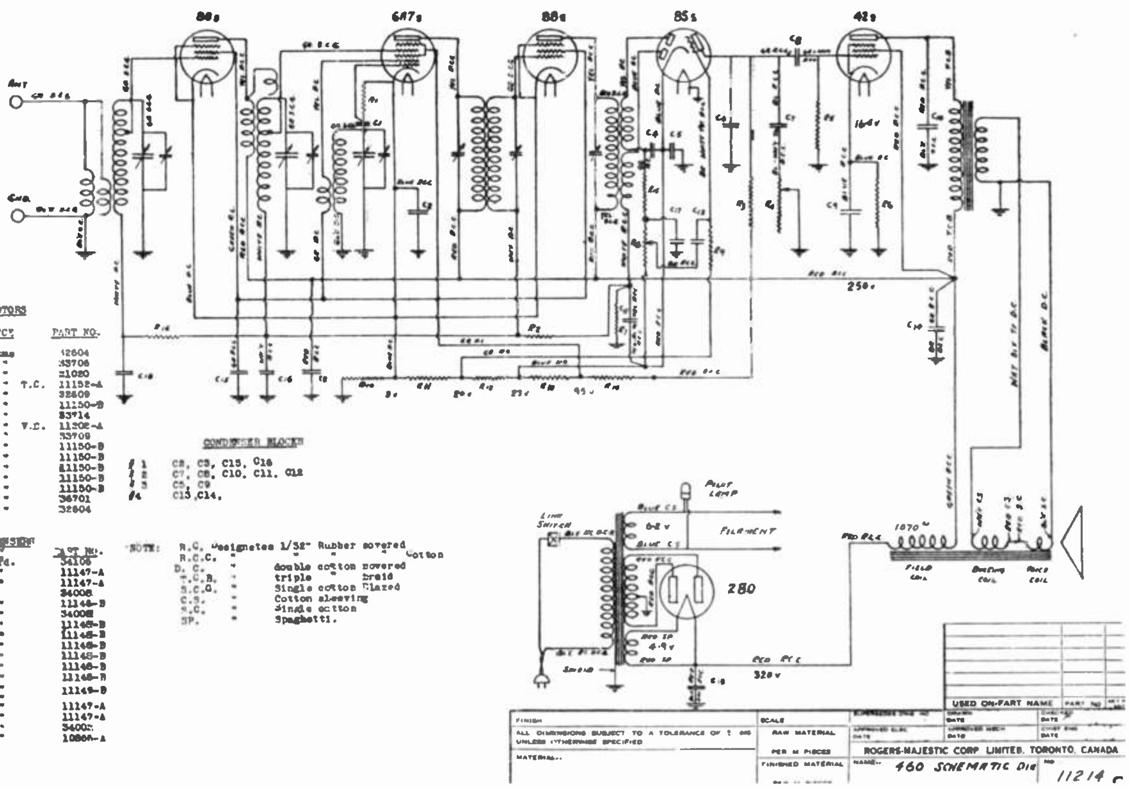
CONDENSER VALUES

Symbol	Capacity		Part No.
C1	.03 Mfd.	200V.	10975
C2	.0002 "	500V.	34103
C3	.1 "	200V.	10863
C4	.01 "	200V.	10864
C5	.05 "	200V.	10866
C6	.001 "	500V.	34107
C7	.015 "	400V.	11122
C8	.05 "	200V.	10866
C9	.1 "	200V.	10863
C10	8 Mfd.	450V.)	
C11	8 "	300V.)	11103

RESISTOR VALUES

Symbol	Resistance		Part No.
R1	100,000 ohms,	½ watt	32604
R2	15,000 "	½ "	33718
R3	300 "	½ "	33720
R4	2,200 "	½ "	21009
R5	250,000 "	½ "	33707
R6	250,000 "	½ "	33707
R7	500,000 "	½ "	33709
R8	130,000 "	½ "	33721
R9 } R10 }	Volume Control		11227

Model 403 CHASSIS 371 *1933-34.* *I.F. 465 Kc.*



RESISTORS

SYMBOL	RESISTANCE		PART NO.
R1	100,000 Ohms		32604
R2	100,000 "		33706
R3	250,000 "		21020
R4	250,000 "	T.C.	11152-A
R5	250,000 "		32609
R6	408 "		11150-B
R-7	300,000 "		33714
R8	250,000 "	V.C.	11202-A
R9	500,000 "		33709
R10	134 "		11150-B
R11	1,800 "		11150-B
R12	380 "		11150-B
R13	9,000 "		11150-B
R14	10,000 "		11150-B
R-15	50,000 "		36701
R16	100,000 "		32604

CONDENSERS

SYMBOL	CAPACITY	PART NO.
C1	.00025 Mfd.	34106
C2	.5 "	11147-A
C3	.1 "	11147-A
C4	.0006 "	34008
C5	10 "	11146-B
C6	.0003 "	34008
C7	.05 "	11148-B
C8	.05 "	11148-B
C9	10 "	11146-B
C10	.005 "	11148-B
C11	.01 "	11148-B
C12	.05 "	11148-B
C13	16 "	11149-B
C14	8 "	
C15	.25 "	11147-A
C16	.25 "	11147-A
C17	.0002 "	34002
C18	.05 "	10866-A

CONDENSER BLOCKS

# 1	C2, C3, C15, C16
# 2	C7, C8, C10, C11, C12
# 3	C5, C9
# 4	C13, C14,

NOTE: R.C. designates 1/32" Rubber covered
R.C.C. " " " " Cotton
D. C. " double cotton covered
T.C.B. " triple " braid
S.C.G. " Single cotton Glazed
C.S. " Cotton sleeving
S.C. " Single cotton
SP. " Spaghetti.

Models 465-470-475 CHASSIS 460 *1933-34* *I.F. 175 Kc.*

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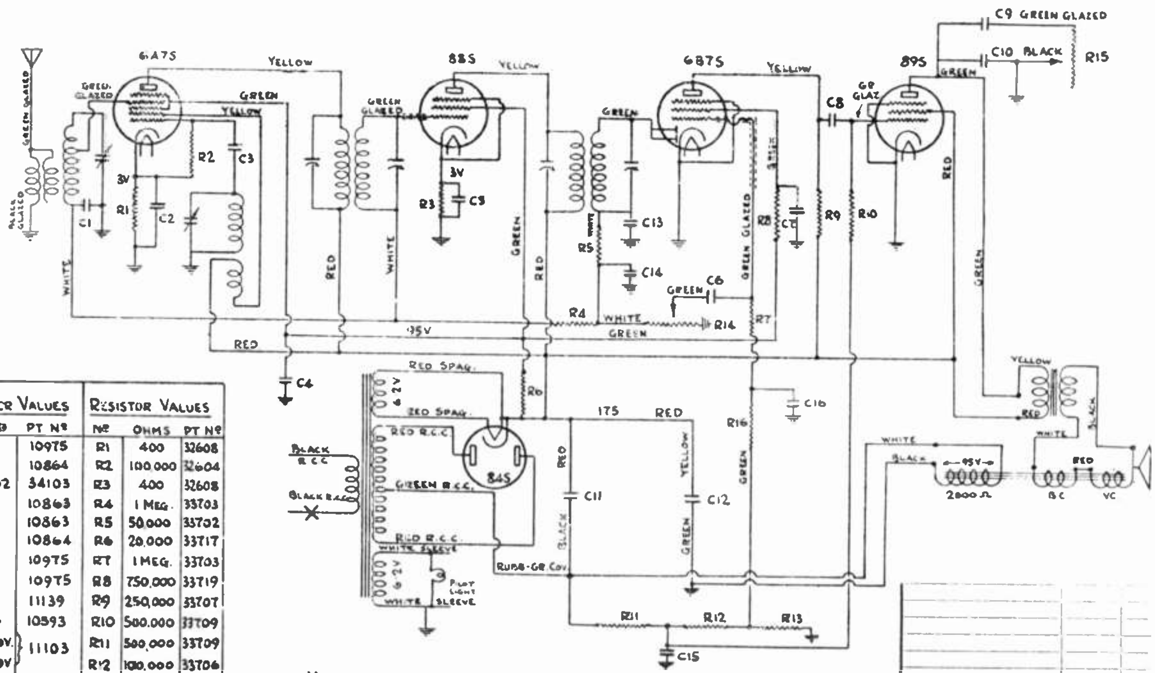
World Radio History



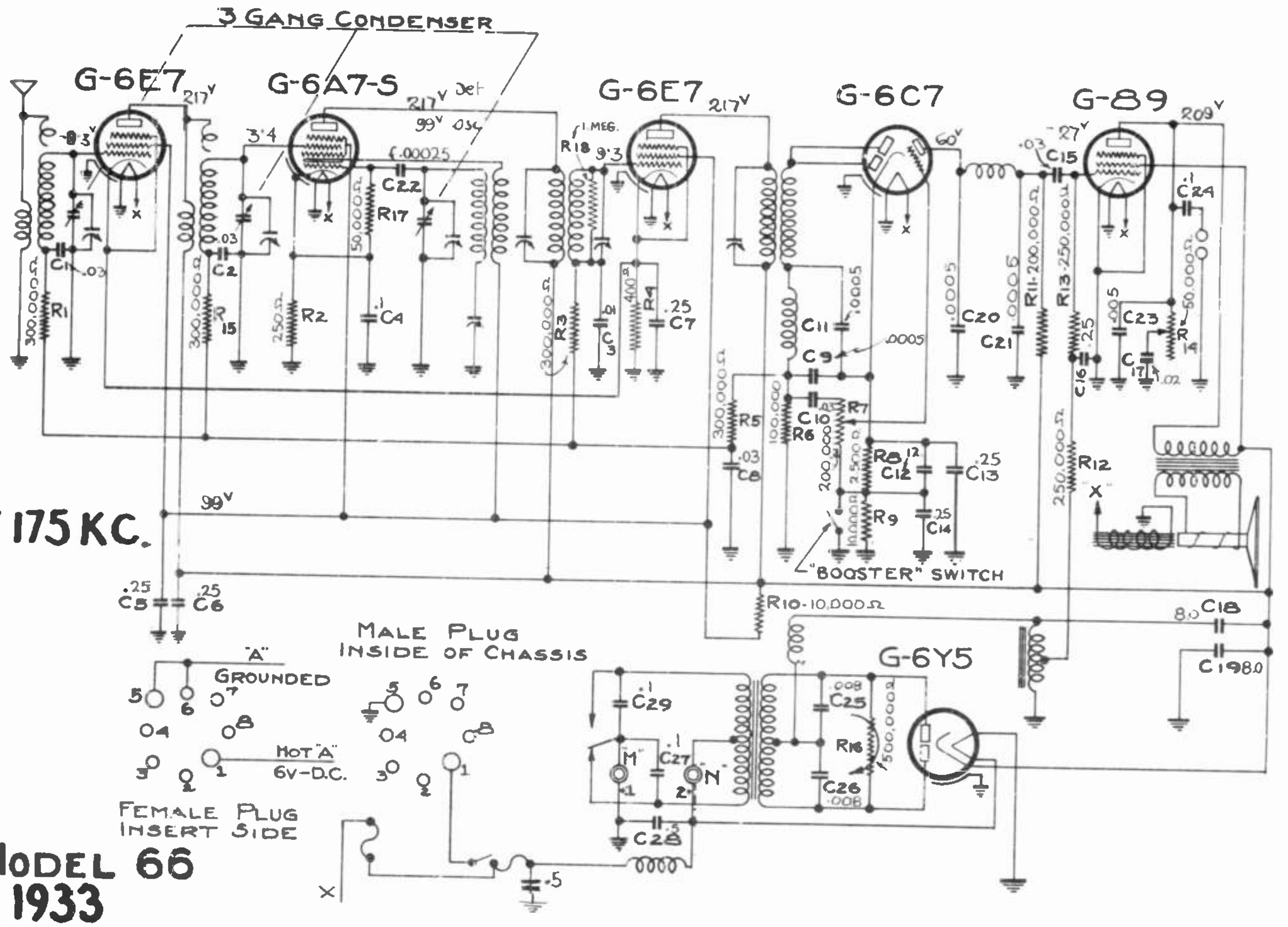
Condenser Values			Resistor Values		
Nº	MFD	PT Nº	Nº	OHMS	PT Nº
C1	·03	10975	R1	400	32608
C2	·01	10864	R2	100,000	32604
C3	·0002	34103	R3	400	32608
C4	·1	10863	R4	1 Meg.	33703
C5	·1	10863	R5	50,000	33702
C6	·01	10864	R6	20,000	33717
C7	·03	10975	R7	1 Meg.	33703
C8	·03	10975	R8	750,000	33719
C9	·05	11139	R9	250,000	33707
C10	·005	10593	R10	500,000	33709
C11	8-450V.	11103	R11	500,000	33709
C12	8-300V		R12	100,000	33706
C13	·0002	34103	R13	15,000	33718
C14	·0001	34104	R14	500,000 volume control	11132 (table) 11133 (console)
C15	·1	10863	R15	25,000 tone control	11117 (table) 11134 (console)
C16	·1	10863	R16	100,000	32604

Note :- Centre tap of 845 plates is yellow R.C.C. on Chassis #563E only.

ROGERS-MAJESTIC CORP. LIMITED. TORONTO, CANADA

Drawn G.H.G. Date Nov. 3 - 33

Model 460 **CHASSIS 563** *1933-34* *I.F. 465 Kc.*



IF 175 KC.

MODEL 66
1933

Printed in Canada

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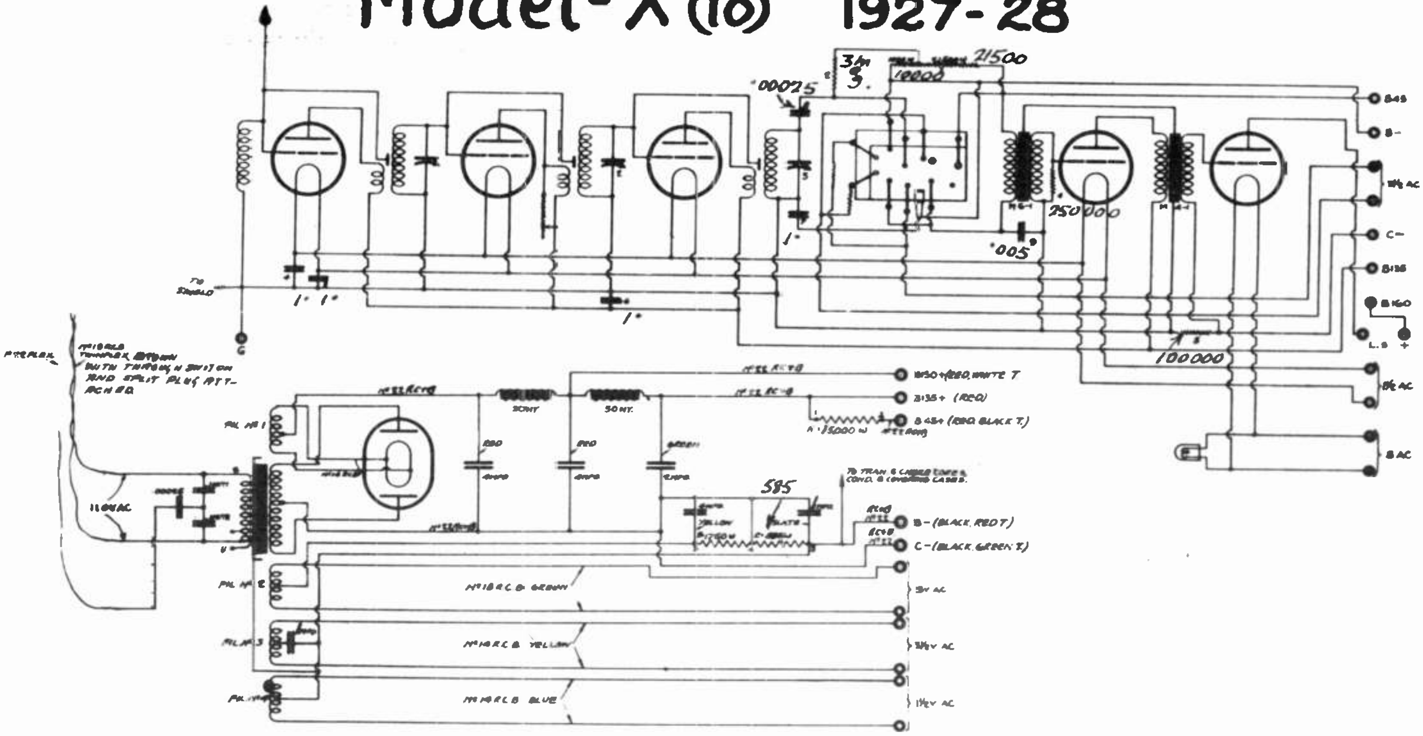
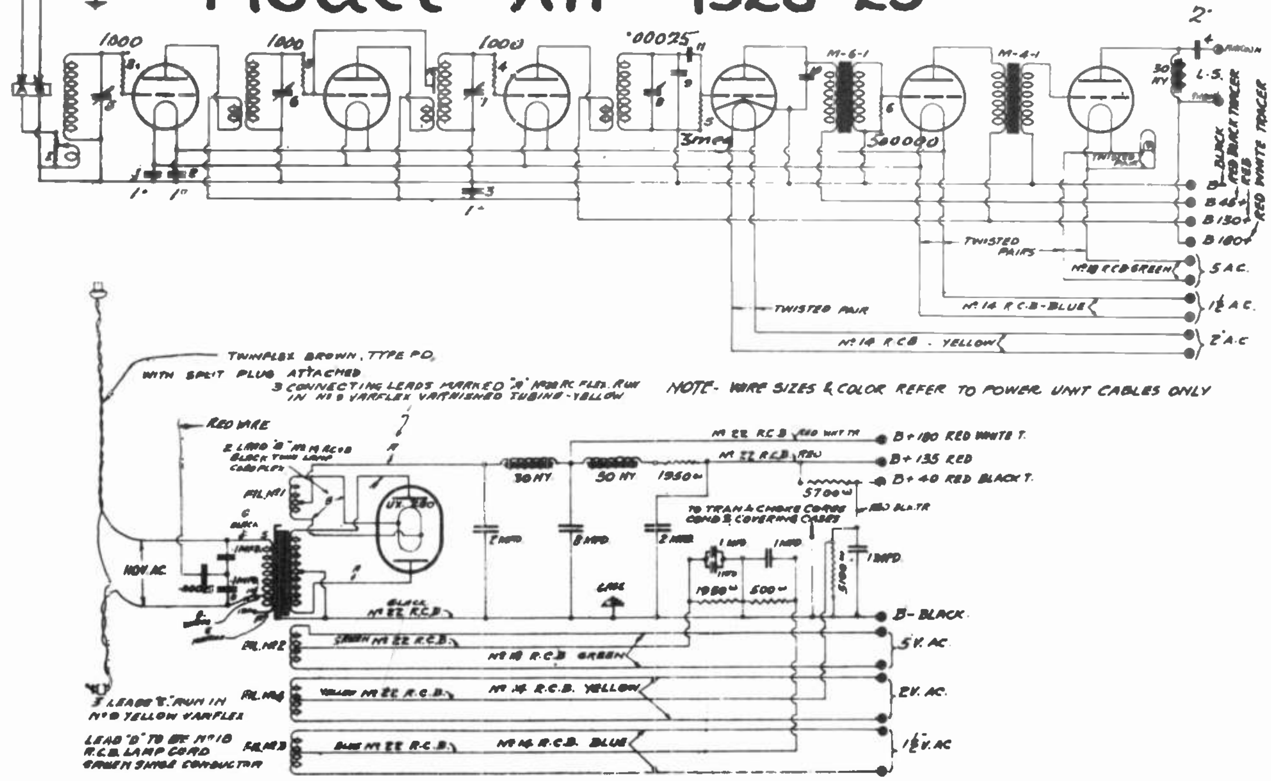
World Radio History

Model-X (10) 1927-28



Model-XII 1928-29



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DATA SHEET

—Courtesy Canadian Marconi Co. Limited.

MARCONI—2

World Radio History

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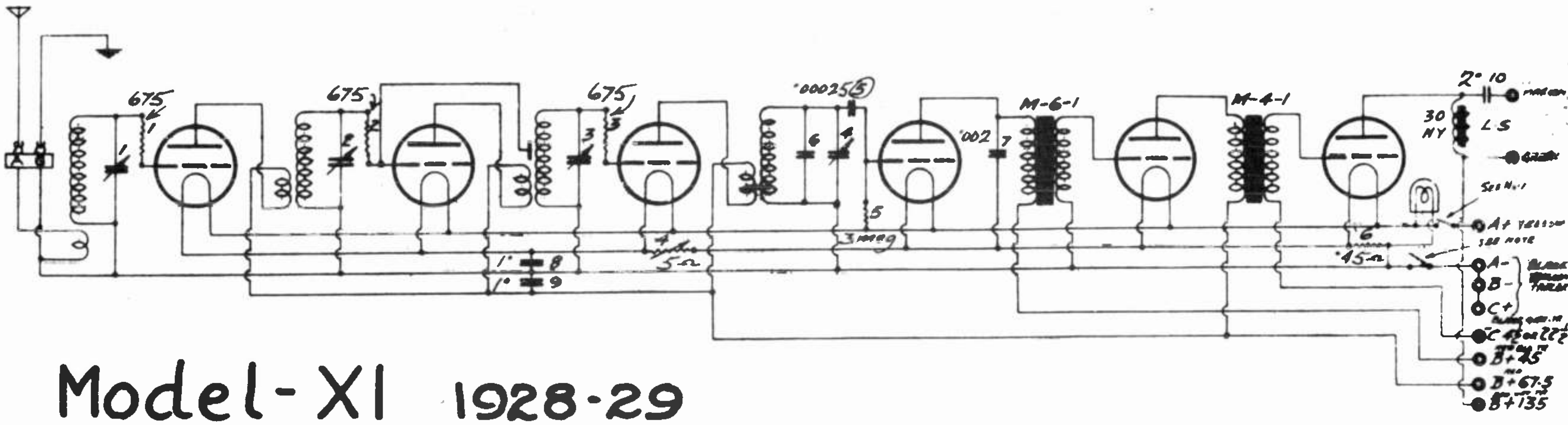
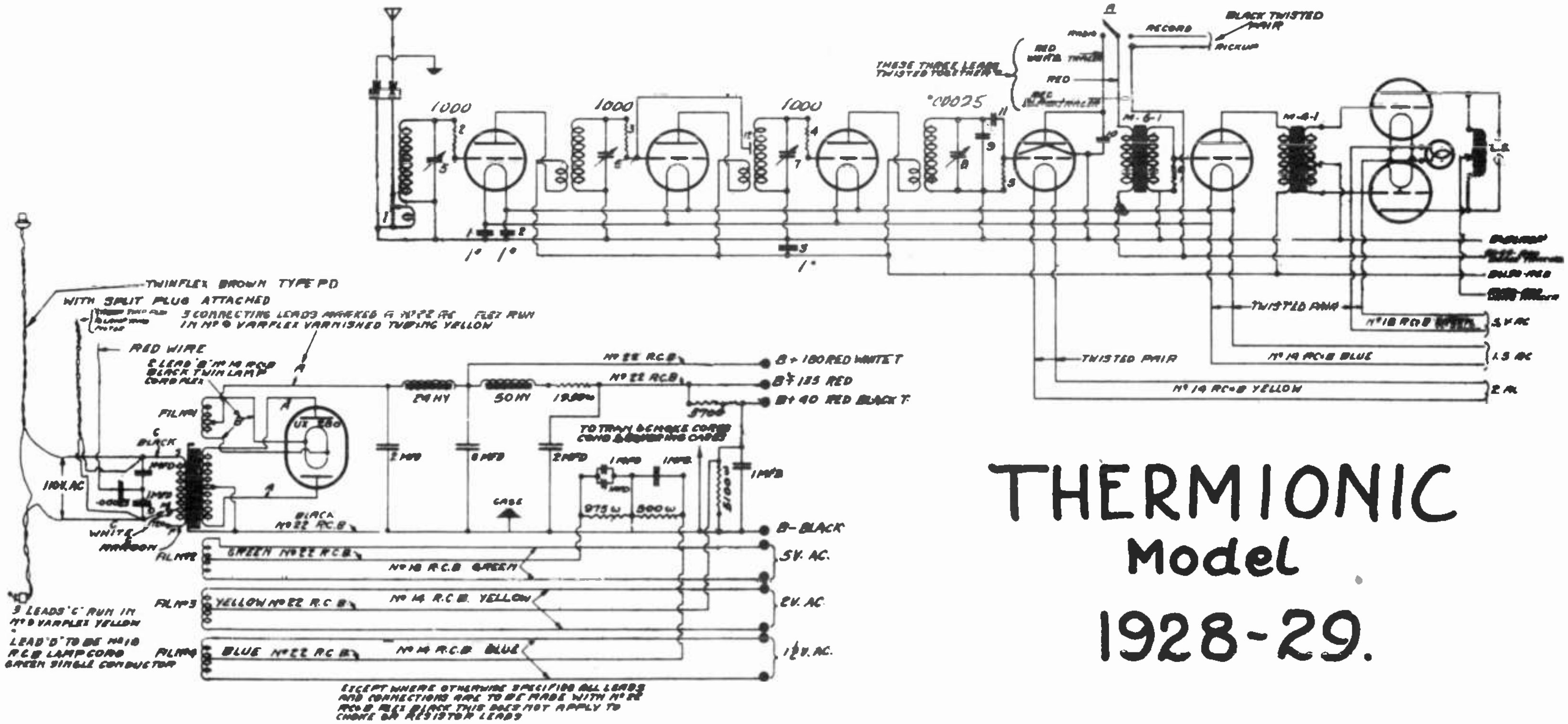
DATA SHEET



Model-XI 1928-29

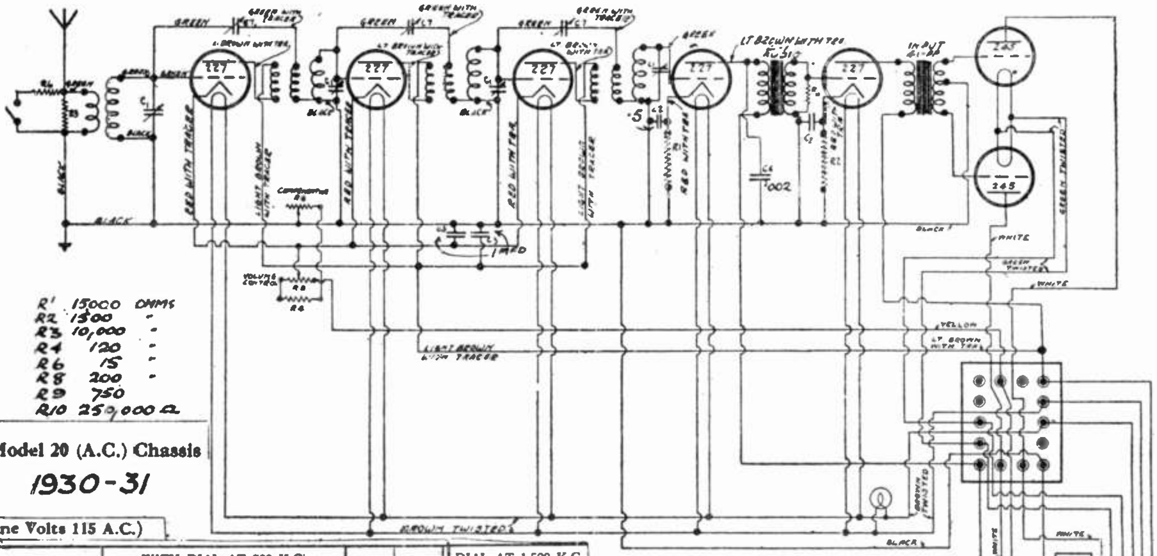


THERMIONIC Model 1928-29.

—Courtesy Canadian Marconi Co. Limited.

MARCONI—3

World Radio History

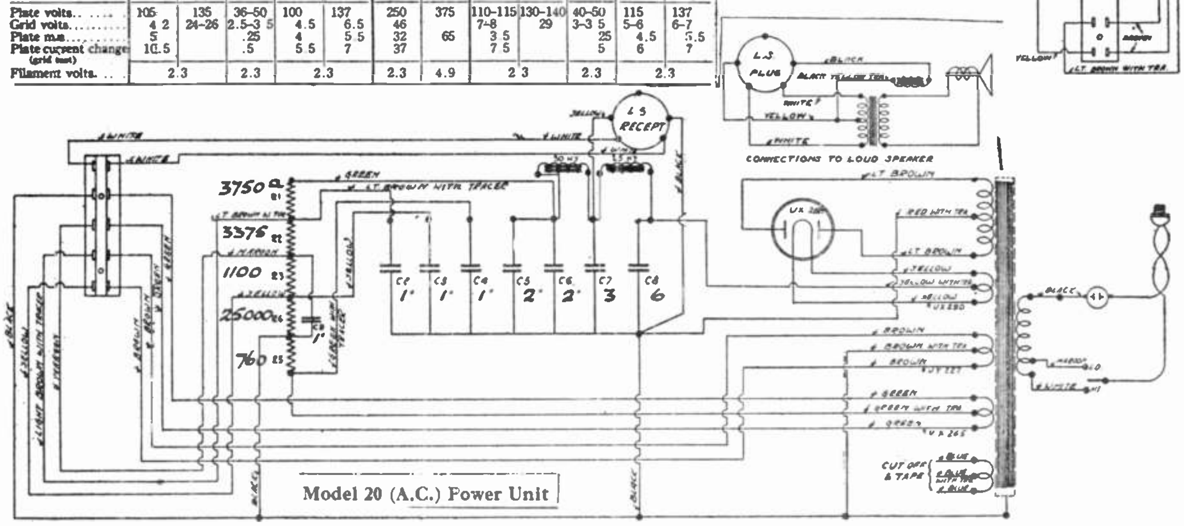


Model 20 (A.C.) Chassis

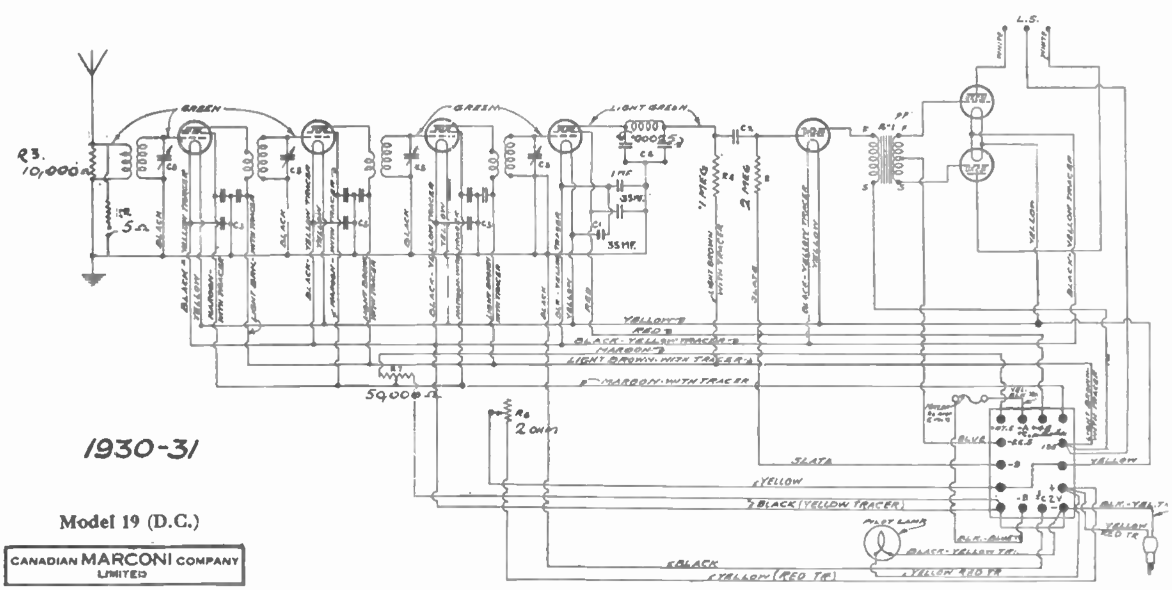
1930-31

(Line Volts 115 A.C.)

Type and Position of Tubes	WITH DIAL AT 500 K.C. 1st, 2nd, 3rd R.F. UY227		Det. UY227	1st A.F. UY227		2nd A.F. UX245	Rect. UX280	DIAL AT 1,500 K.C. 1st, 2nd, 3rd R.F. UY227		Det. UY227	1st A.F. UY227	
Volume control	On	Off.		On	Off			On	Off		On	Off
Plate volts	105	135	36-50	100	137	250	375	110-115	130-140	40-50	115	137
Grid volts	4 2	24-26	2.5-3 5	4.5	6.5	46		7-8	29	3-3 5	5-6	6-7
Plate m.a.	5		.25	4	5 5	32	65	3 5		25	4.5	5.5
Plate current change (grid test)	10.5		.5	5 5	7	37		7 5		5	6	7
Filament volts	2.3		2.3	2.3		2.3	4.9	2 3		2.3	2.3	



Model 20 (A.C.) Power Unit



1930-31

Model 19 (D.C.)

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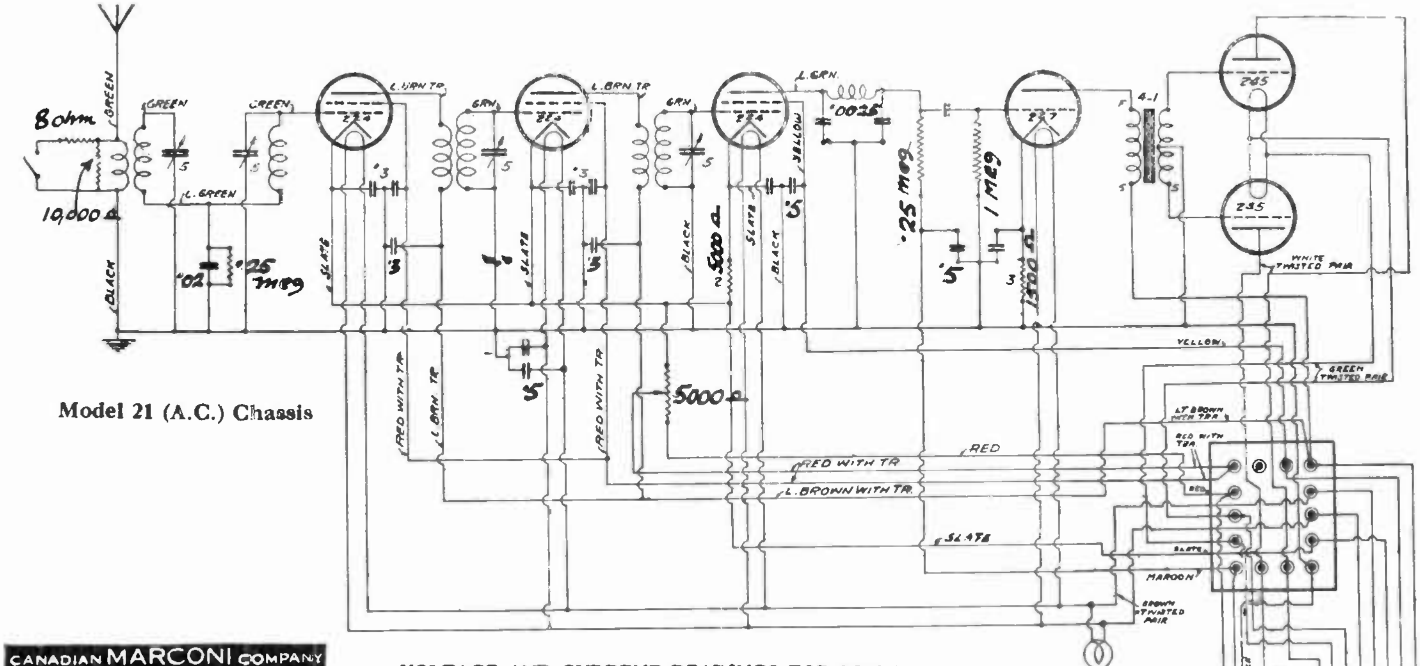
World Radio History



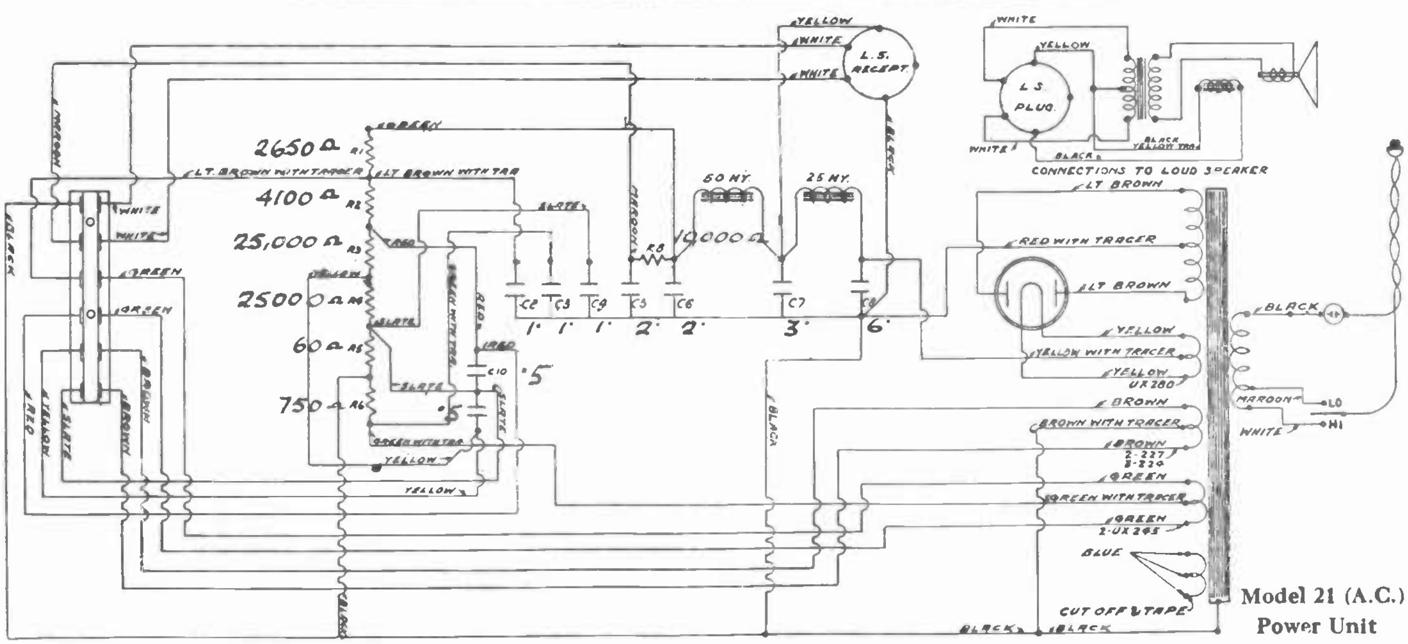
Model 21 (A.C.) Chassis

CANADIAN MARCONI COMPANY LIMITED

VOLTAGE AND CURRENT READINGS FOR Model 21

As read on a set tester. (Line volts 115 A.C.)

Type and position of tubes	UY224 1st, 2nd R.F.		UY224 Detector	UY227 1st A.F.	UX245 2nd A.F.	UX280 Rect.
Volume Control	On	Off				
Plate volts	165	180	110	180	250	375 A.C.
Plate current	4	0	.25	8	32	65
Screen grid volts	80	0	32		...	...
Control grid volts	1.8	1.3	6	12	42	...
Filament volts	2.3	2.3	2.3	2.3	2.3	4.9



Model 21 (A.C.) Power Unit

MODEL 21(AC) 1930-31

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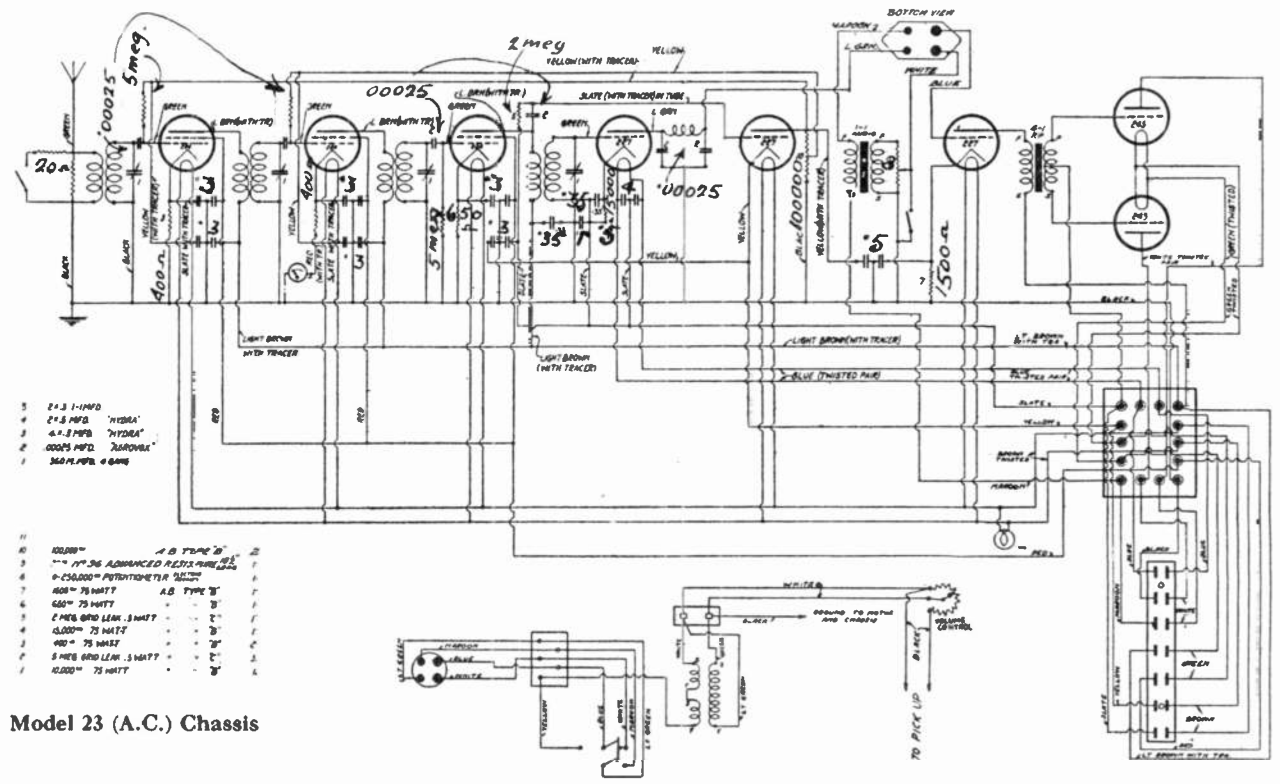
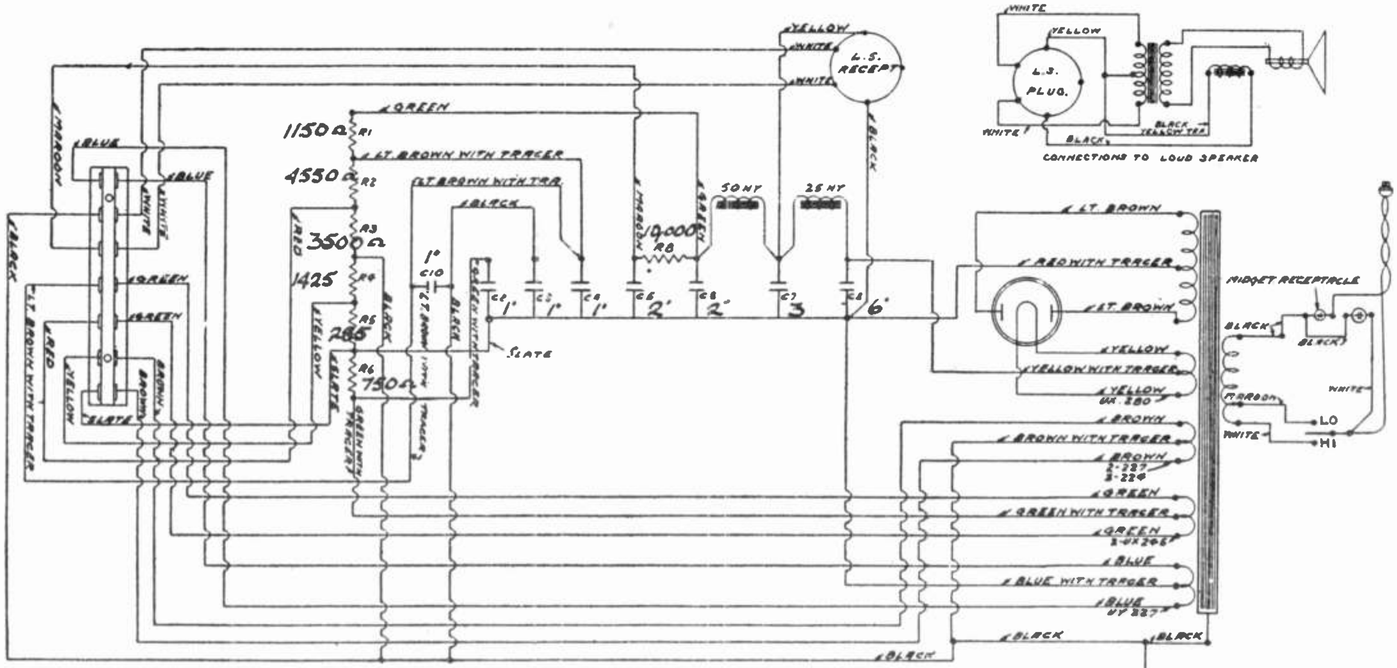
World Radio History



Model 23 (A.C.) Chassis



NOTE - FOR WIRING ARRANGEMENT SEE DWG. NO 26740 DIAGRAM SHOWS 16 POINT RECEPTACLE & L.S. RECEPTACLE AS SEEN WHEN LOOKING UNDER POWER UNIT.

Model 23 (A.C.) Power Unit

1930-31

VOLTAGE AND CURRENT READINGS FOR "SENIOR" (MODEL 22) and "COMBINATION" (MODEL 23)

As read on a set tester (Line Volts 115 A.C.)

Type and Position of tubes	UY224 1st, 2nd, 3rd R.F.	UY227 Vol. Cont'l.	UY227 Det.	UY227 1st A.F.	UX245 2nd A.F.	UX280
Plate volts	150	24	225	150	240	375 A.C.
Plate current	3 to 4	...	1	5	30	65 ea.
Screen grid volts	60	...	...	...	...	...
Control grid volts	1.5-2	39	19	8	44	...
Plate current change (grid swing test)	25-1 ma.	...	25	1 5	5	...
Filament volts	2 3	2.3	2 3	2.3	2.3	4.9

CANADIAN MARCONI COMPANY LIMITED

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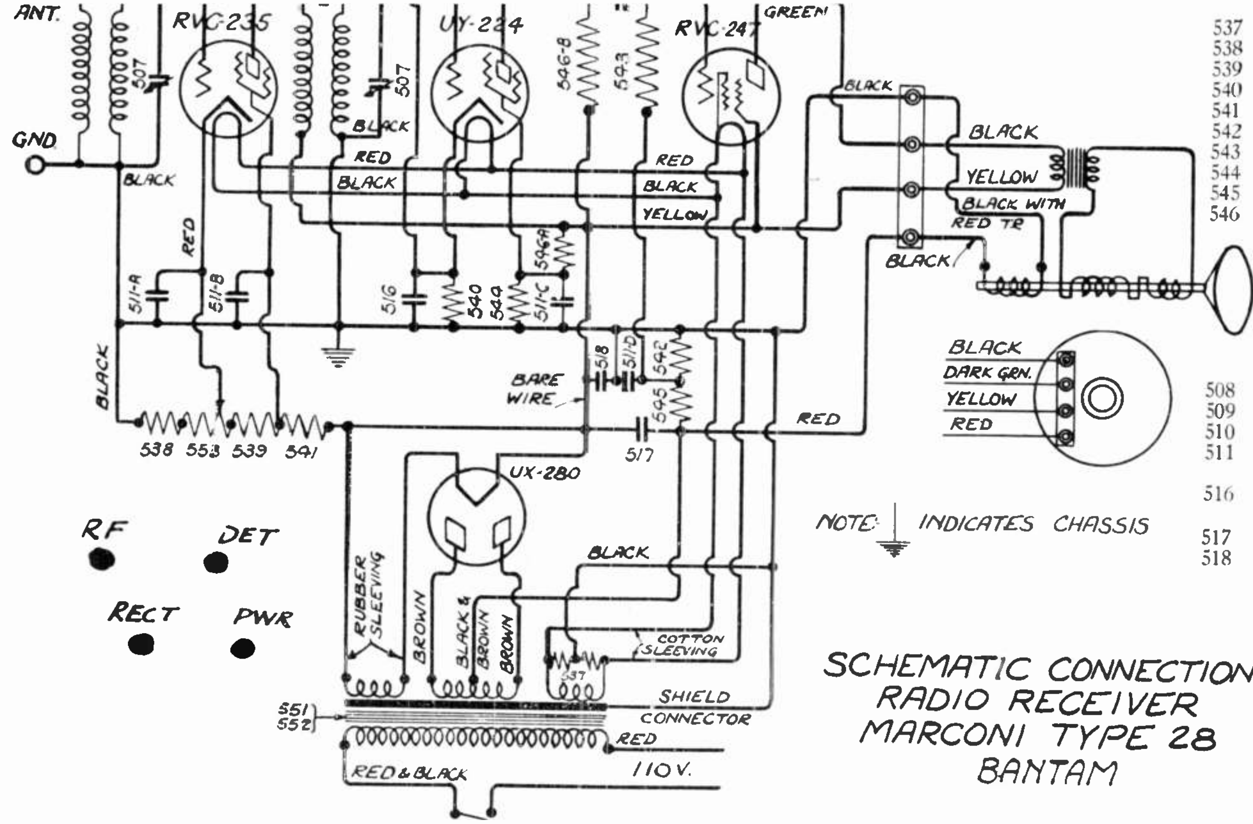
World Radio History

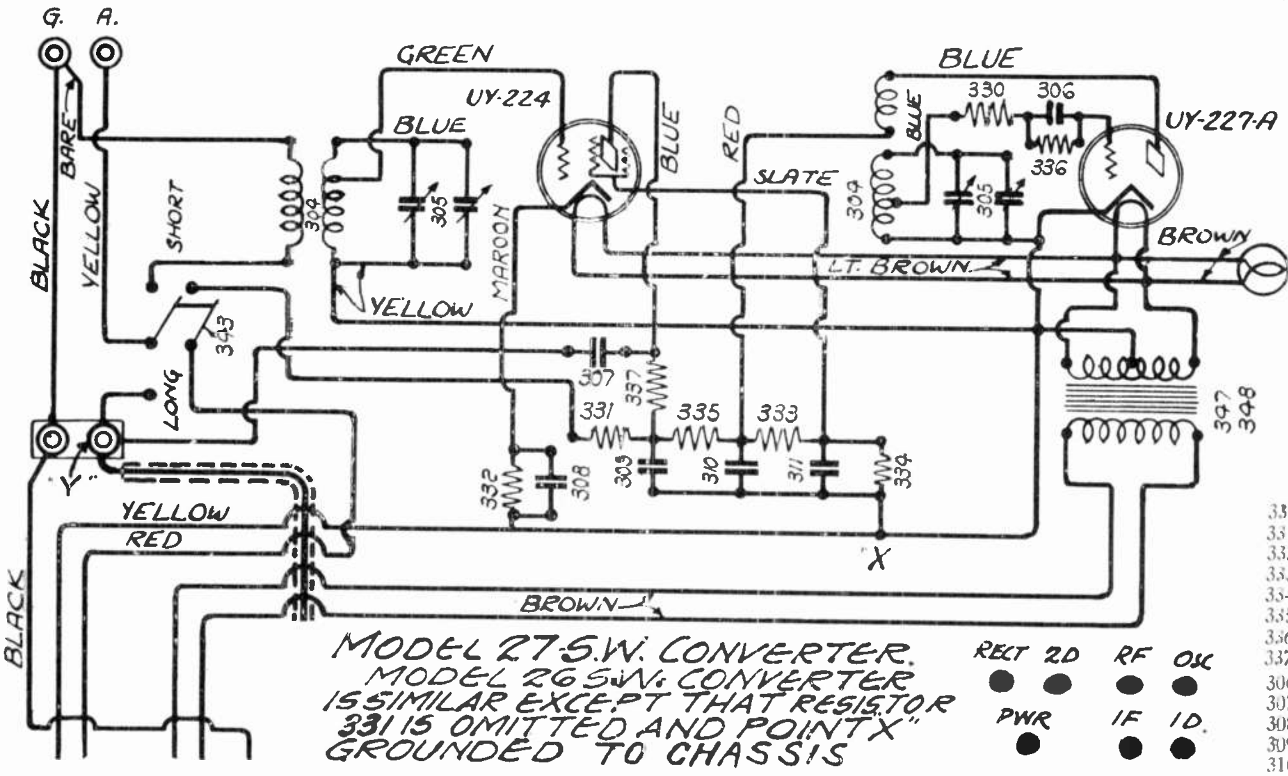


SCHEMATIC CONNECTIONS
RADIO RECEIVER
MARCONI TYPE 28
BANTAM

537	Resistor	20 Ohm
538	"	200 "
539	"	20,000 "
540	"	40,000 "
541	"	50,000 "
542	"	200,000 "
543	"	500,000 "
544	"	500,000 "
545	"	1 Meg. "
546	"	1 " "
508	"	11 Mmf.
509	"	.006 MF.
510	"	.00025 mf.
511	"	.1 Mf.
516	"	paper, .25 Mf.
517	"	paper, 8 Mf.
518	"	4 Mf.

Position	Type	Plate Volts	Plate Current	Screen Volts	Grid Volts
R.F.	RVC 235	230	4 ma.	75	1.5-45
Detector	UY 224	45	.5 "	35	6
Power	RVC 247	210	26 "	240	4

MODEL 28 "BANTAM"
1931-32



MODEL 27-S.W. CONVERTER.
MODEL 26 S.W. CONVERTER
IS SIMILAR EXCEPT THAT RESISTOR
331 IS OMITTED AND POINT "X"
GROUNDED TO CHASSIS

330	75 Ohms
331	4,000 "
332	5,000 "
333	6,000 "
334	6,000 "
335	15,000 "
336	15,000 "
337	50,000 "
306	.0001 Mf.
307	.00025 Mf.
308	.1 Mf.
309	.1 Mf.
310	.1 Mf.
311	.1 Mf.

Position	Type	Plate Volts		Plate Current		Screen Volts		Grid Volts	
Detector	U.Y.224	48	56	—	.5	30	56	2.2	2.4
Oscillator	U.Y.227-A	60	60	5	5.5	—	—	—	0

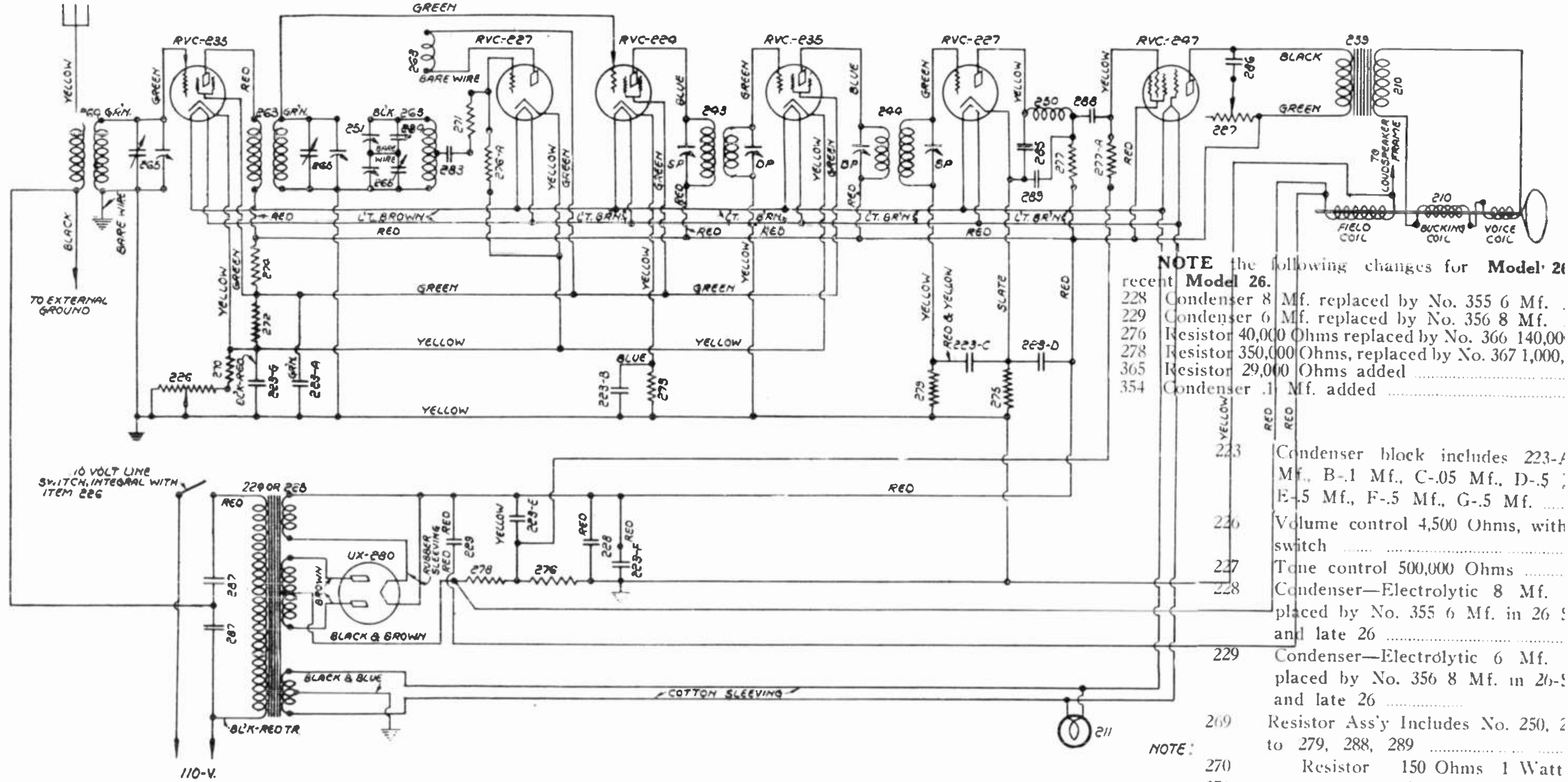
D.C. Voltage Supply socket. Fil. (Pos.) to Plate (Neg.)
Plate, Screen and Grid Volts measured to Cathode

MODEL
26-S.W. AND 27-S.W.
CONVERTER UNITS
1931-32

—Courtesy Canadian Marconi Co. Limited.

World Radio History

SUPERHETERODYNE RADIO RECEIVER MODEL 26 - 1931-32



NOTE the following changes for **Model 2**[...]
recent **Model 26.**

228	Condenser 8 Mf. replaced by No. 355 6 Mf.
229	Condenser 6 Mf. replaced by No. 356 8 Mf.
276	Resistor 40,000 Ohms replaced by No. 366 140,00[...]
278	Resistor 350,000 Ohms, replaced by No. 367 1,000,[...]
365	Resistor 29,000 Ohms added ....
354	Condenser .1 Mf. added ....

223	Condenser block includes 223-[...] Mf., B-.1 Mf., C-.05 Mf., D-.5 [...] E-.5 Mf., F-.5 Mf., G-.5 Mf. .....
226	Volume control 4,500 Ohms, with switch ....
227	Tone control 500,000 Ohms ....
228	Condenser—Electrolytic 8 Mf. [...] placed by No. 355 6 Mf. in 26 [...] and late 26 ....
229	Condenser—Electrolytic 6 Mf. [...] placed by No. 356 8 Mf. in 26-[...] and late 26 ....
269	Resistor Ass'y Includes No. 250, [...] to 279, 288, 289 ....

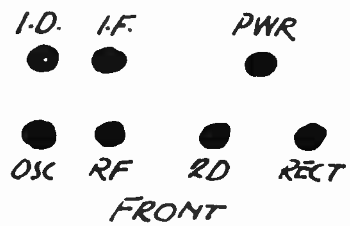
270	Resistor	150 Ohms	1 Watt	
271	"	6,000 "	1 "	
272	"	8,000 "	1 "	
273	"	10,000 "	1 "	
274	"	16,000 "	2 "	
275	"	30.000 "	1 "	
276	"	40.000 "	1 "	
		(Late Models—140,000 O[...]		
276-A	"	40,000 Ohms	1 Watt	
277 & 277-A	"	100,000 "	½ "	
278	"	350,000 "	1 "	
		(Late Models—1 [...]		
279	"	1,000,000 Ohms	½ Watt	
283	Condenser	750 Mmf.	Toothpick	
284	"	680 "	+ or — 2%	
285	"	.0025 Mf.	Tubular	.....
286	"	.02 "	"	.....
287	"	2x.02 "		.....
288	"	.02 "	Moulded	.....
289	"	.00025 "	"	.....

SHORT AND LONG WAVE RECEIVER, MODEL 26-SW - 1931-32

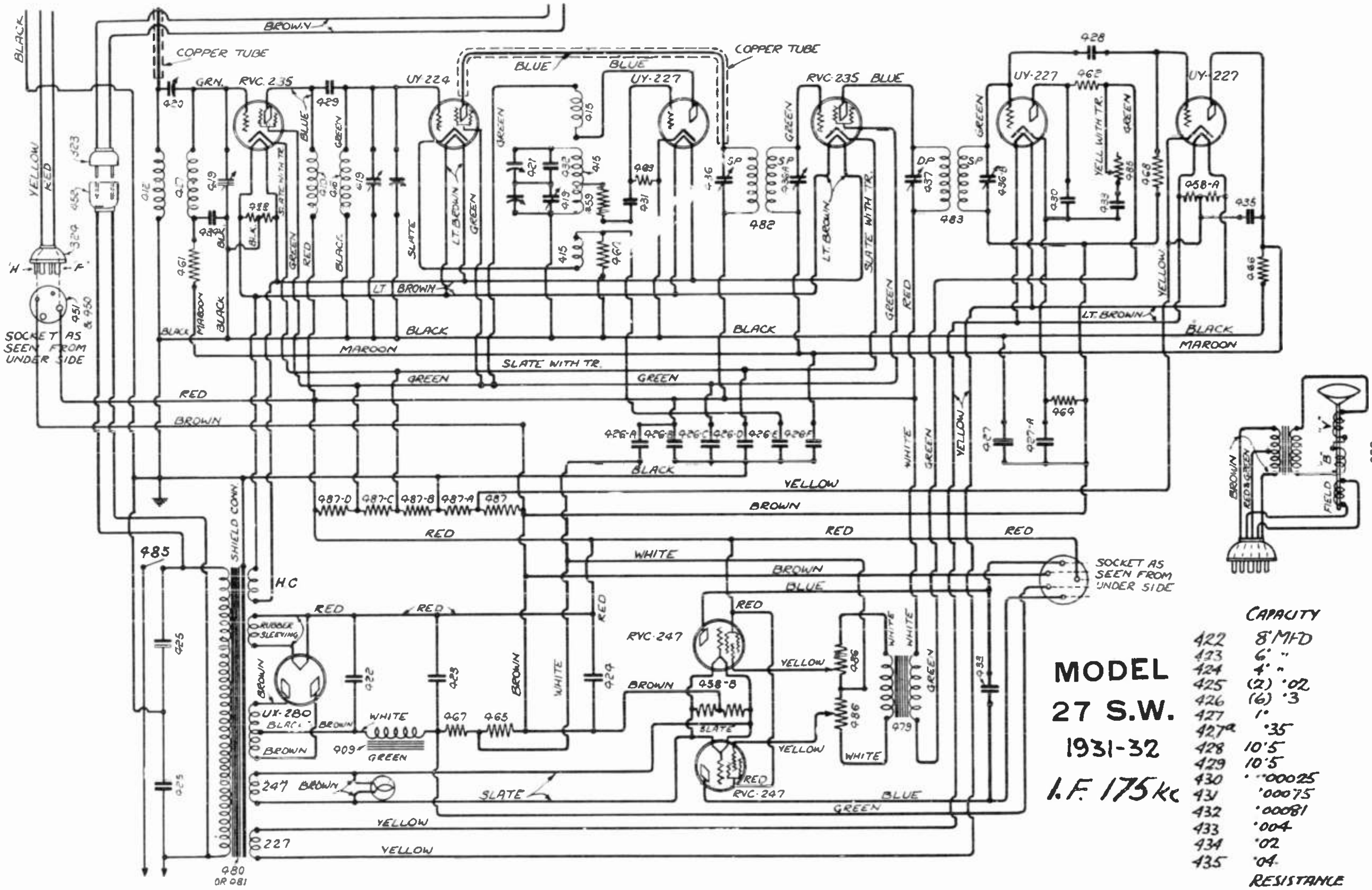
26-S.W. differs from this chassis only in minor details. A four prong socket is used for supplying plate voltage and a cord and plug for supplying 115 volts A.C. to the converter chassis. All voltage readings, continuity measurements, parts numbers, etc., given for Model 26 apply to Model 26-S.W. as well.

Note that a .1 Mf. grid bypass condenser No. 354 is used in place of .5 Mf. 223-E in Model 26 S.W. and in recent Model 26 receivers.

Position	Type	Plate Volts	Plate Current	Screen Volts	Grid Volts
R. F.	RVC-235	215	2.5	50	2.5
1st. Det.	UY-224	210	.5	50	4.5
Osc.	UY-227-A	50	3.	......	2.5
I. F.	RVC-235	215	2.5	50	2.5
2nd. Det.	UY-227-A	150	.5	......	8-14
Pentode	RVC-247	200	30.	215	5.



World Radio History



MODEL 27 S.W. 1931-32

I.F. 175kc

CAPACITY

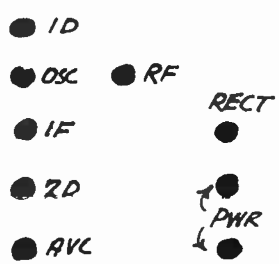
422	8 MFD
423	6 "
424	4 "
425	(2) .02
426	(6) .3
427	1
427a	.35
428	10.5
429	10.5
430	.00025
431	.00075
432	.00081
433	.004
434	.02
435	.04

RESISTANCE

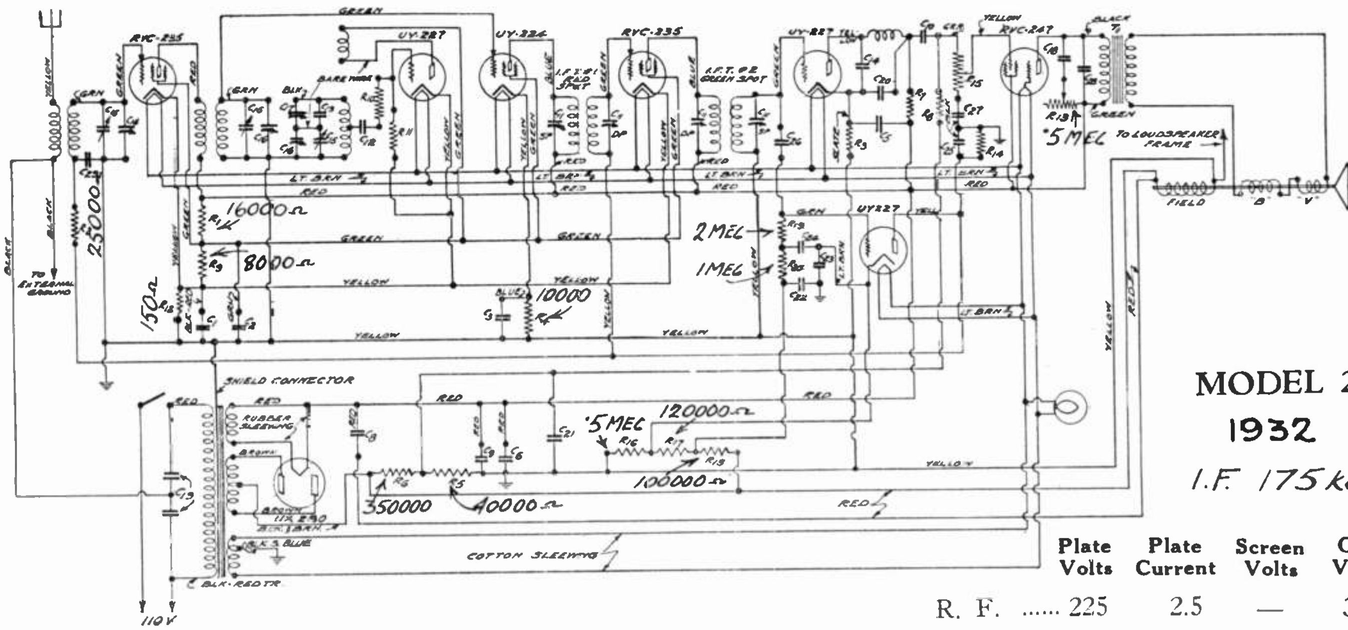
458	20 OHM.
459	5000 Ω
460	10,000
461	15,000
462	25000
463	40000
464	50000
465	140,000
466	250000
467	350000
468	1 MEG
487	733
" a	3400
" b	83
" c	6500
D	3900

The circuit of this receiver is basically the same as the Model 26-S.W. The addition of Automatic Volume Control and push pull pentodes greatly improve the performance of the receiver.

Position	Type	Plate Volts	Plate Current	Screen Volts	Grid Volts	Heater Volts
R. F.	RVC.235	125	3.5	70	2.5	2.4
1st. Det.	UY-224	125	.7	70	8	2.4
Oscillator	UY-227-A	70	6			2.4
I. F.	RVC.235	135	6	80	.5	2.4
2nd Det.	UY-227-A	190	.5		22	2.4
A.V.C.	UY-227-A	12.5			1	2.4
Power	RVC.247	240	26	250	8-10	2.4



World Radio History



MODEL 29
1932
I.F. 175 kc.

	Plate Volts	Plate Current	Screen Volts	Grid Volts
R. F.	225	2.5	—	3
1st. Det.	225	.5	54	5
Oscillator	54	4	—	2.5
I. F.	235	3	62	2.5
2nd. Det.	135	Nil	—	15
A.V.C.	25	Nil	- -	1
Power ...	200	30	215	5

C^1, C^5, C^6	.5 MFD.	R^3	30000 Ω	R^{11}	40000 Ω
$C^2, C^3, C^{22}, C^{23}, C^{24}$	.1 "	R^7, R^8	100000 Ω	R^{14}	500000 Ω
C^8 – 8.0 Mfd. C^9 – 6.0 "		R^{10}	6000 Ω	R^{15}	800000 Ω
C^{10}, C^{18}, C^{19}	.02 "				
C^{12} .00075 C^{13}	.00068				
C^{14}, C^{20}	.00025				
C^{25}, C^{29}	.04				
C^{26}, C^{27}	.25				
C^{28}	.004				

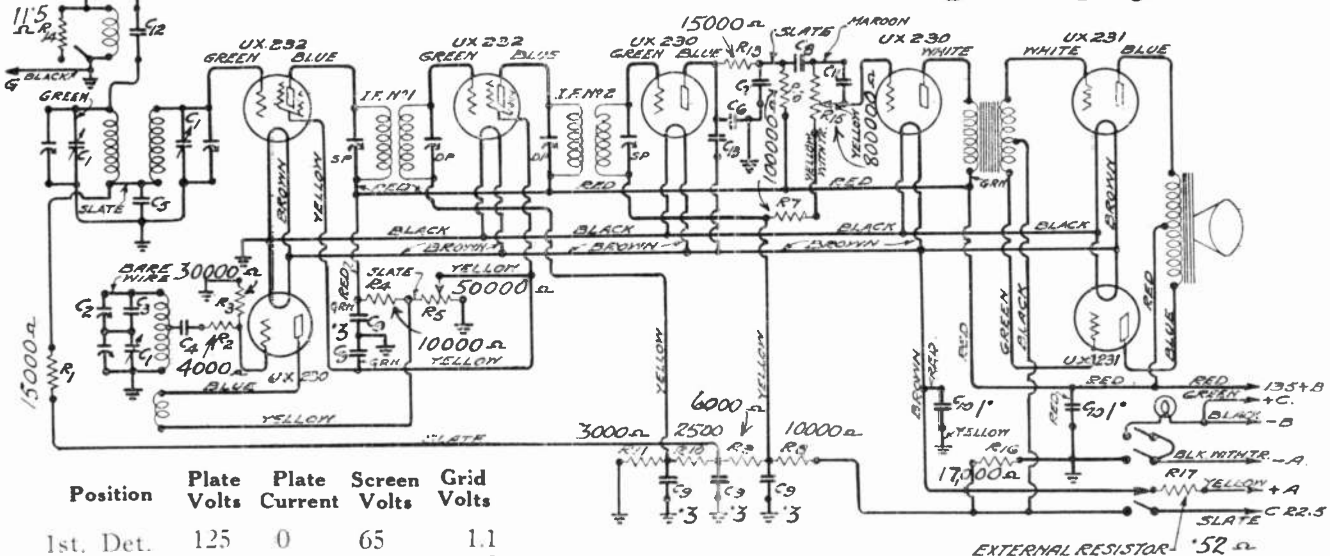
MODEL-29

REC 2D AVC RF OSC

PWR IF ID.

PWR AF 2D OSC MODEL.32.

IF I.D.



Position	Plate Volts	Plate Current	Screen Volts	Grid Volts
1st. Det.	125	0	65	1.1
Osc.	64	4	—	0
I.F.	125	2	65	2.2
2nd. Det.	65	.15	—	11.
1st. A.F.	120	.2	—	2.
Power ...	109	5.	—	21.

C 1	.00038	C 6, C-13	.001
C 2	.000075	C 7	.00025
C 3	.00085	C 8	.02
C 4	.00075	C 11	.0005
C 5	.01	C 12, C 12a	20 Mmf

MODEL 32
1932

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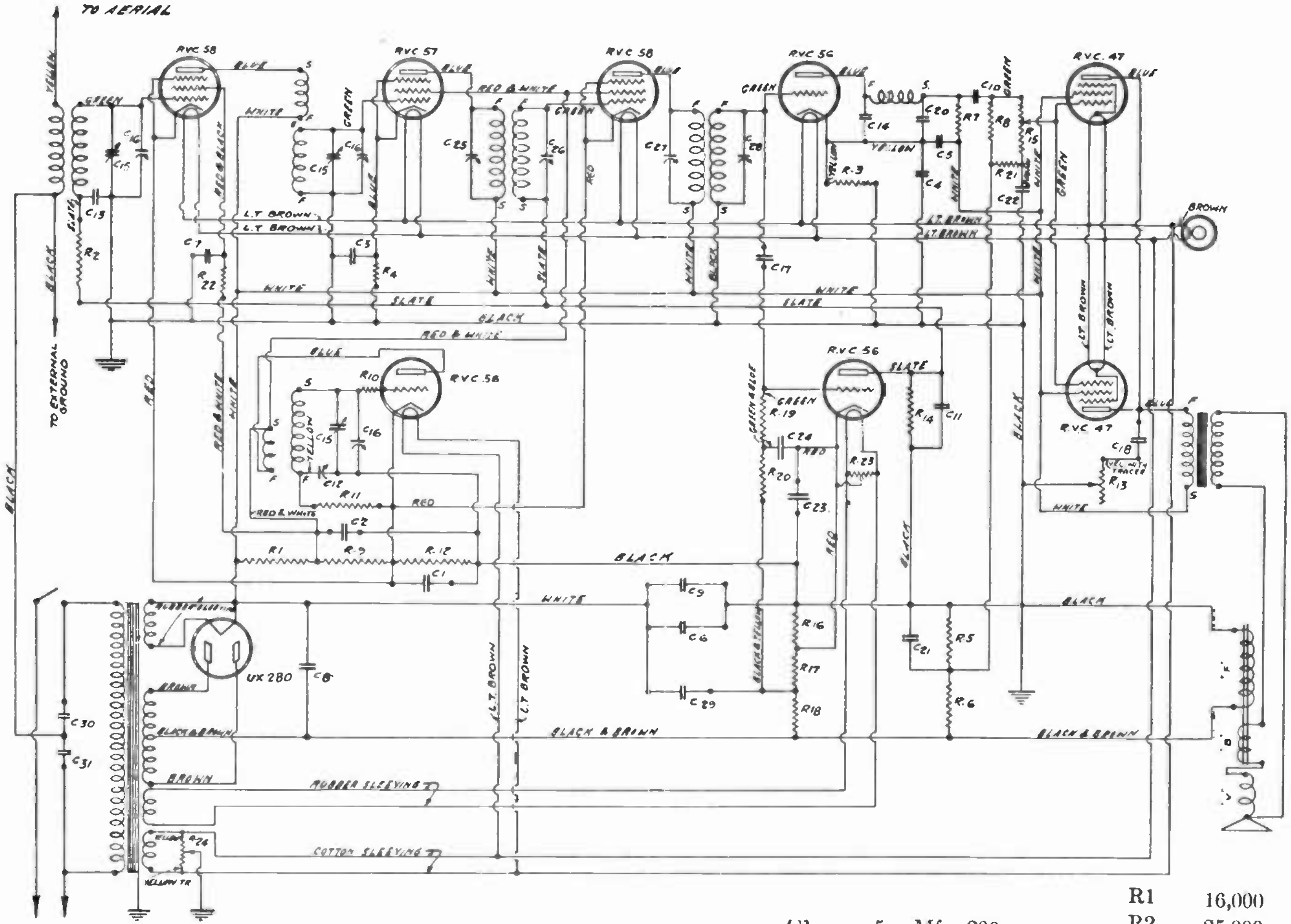
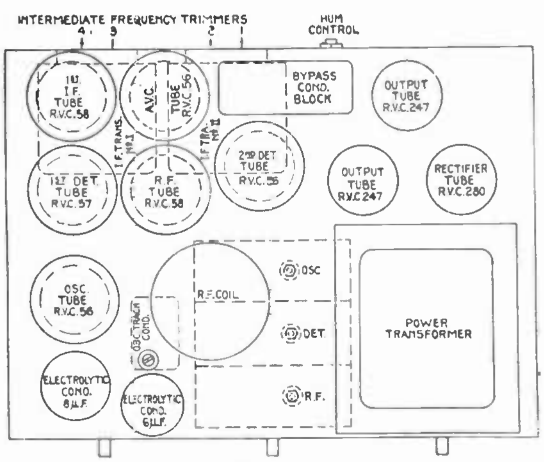
Model 34 1932-33 I.F. 175 Kc.



	Voltages to Cathode				Voltages to Chassis	
	Grid	Plate	Screen	Sup.	Cath.	Heater
R.F.	5	245	67	0	4	.1
1st Det.	4	240	58	0	5	.1
Osc.	0	65	...	..	4	0
I.F.	0	240	67	0	4	.1
2nd Det.	12	147	...	..	12	0
AVC	.5	5	...	..	27	27
Power	5	240	247	..	..	..

C1	.5	Mf	200
C2	1.	"	"
C3	.1	"	"
C4	1.	"	"
C5	.25	"	400
C6	.5	"	"
C7	.1	"	200
C8	8.	"	400
C9	6.	"	250
C10	.006	"	
C11	.04	"	200
C12	850	Mmf	
C13	.04	Mf	200
C14	.001	"	
C15	21-325	Mmf	
C16	60	Mmf	
C17	100	"	
C18	.15	Mf	400
C20	250	Mmf	
C21	.03	Mf	200
C22	.25	"	200
C23	.1	"	"
C24	.1	"	"
C25	6-70	Mmf	I.F.
C26	70-140	"	"
C27	70-140	"	"
C28	6-70	"	"
C29	.25	Mf	
C30	.02	"	
C31	.02	"	

R1	16,000
R2	25,000
R3	50,000
R4	10,000
R5	50,000
R6	380,000
R7	100,000
R8	750,000
R9	15,000
R10	2,500
R11	40,000
R12	300
R13	100,000
R14	1 Meg.
R15	800,000
R16	525,000
R17	100,000
R18	100,000
R19	2 Meg.
R20	1 Meg.
R21	200,000
R22	2,500
R23	20
R24	6



MODEL 34

TRIMMER ADJUSTMENT MODEL 34

I.F.—175 K.C. Adjust in order No. 1, No. 2, No. 3, No. 4.
R.F.—Trim at 1,400 K.C. in order—Osc., Det., and R.F.
Oscillator Tracking Condenser—Adjust at 600 K.C.

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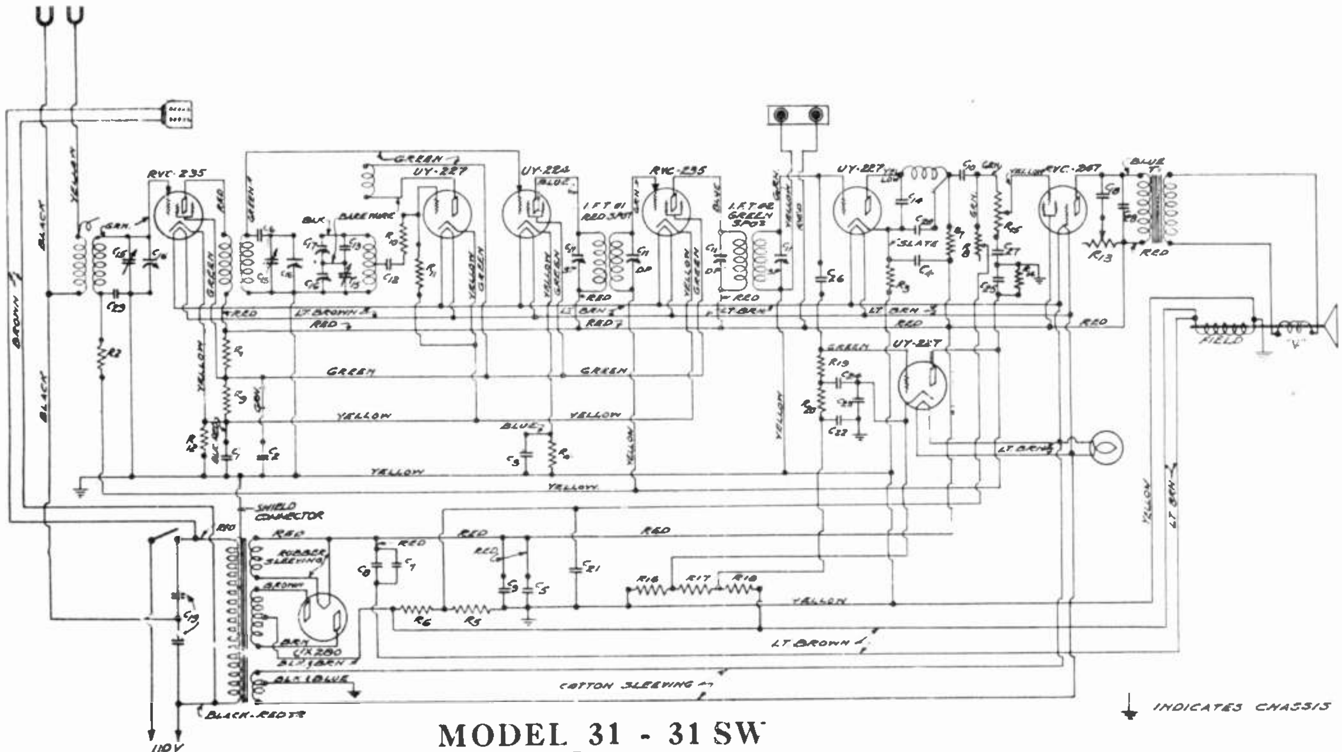


MODEL 31 - 31 SW
1932

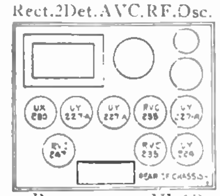
I.F. 175 kc

C-1	0.5 mf
C-2	1 mf
C-3	0.1 mf
C-4	0.5 mf
C-5	0.5 mf
C-6	.04 mf +
C-7	8 mf
C-8	8 mf
C-9	6 mf
C-10	0.02 Mf
C-11	
C-12	750 mmf
C-13	800 mmf
C-14	0.0025 mf
C-15	380 mmf
C-16	
C-17	
C-18	.1 mf
C-19	2x.02 mf
C-20	.00025 mf
C-21	.04 mf
C-22	.1 mf
C-23	.1 mf
C-24	.1 mf
C-25	.04 mf
C-26	25 mmf
C-27	.25 mf
C-28	.004 mf
C-29	.04 mf
C-30	160 Mmf.
C-31	
C-32	.00025 Mf
C-33	.1 Mf.
C 34	.0001 Mf.

R-1	16,000
R-2	25,000
R-3	30,000
R-4	10,000
R-5	40,000
R-6	350,000
R-7	190,000
R-8	200,000
R-9	8,000
R-10	6,000
R-11	40,000
R-12	150
R-13	100,000
R-14	1.5 Meg
R-15	800,000
R-16	500,000
R-17	120,000
R-18	100,000
R-19	2 Meg
R-20	1 Meg
R-21	5,000
R-22	250,000
R-23	15,000
R-24	75
R-25	15,000
R-26	6,000
R-27	6,000

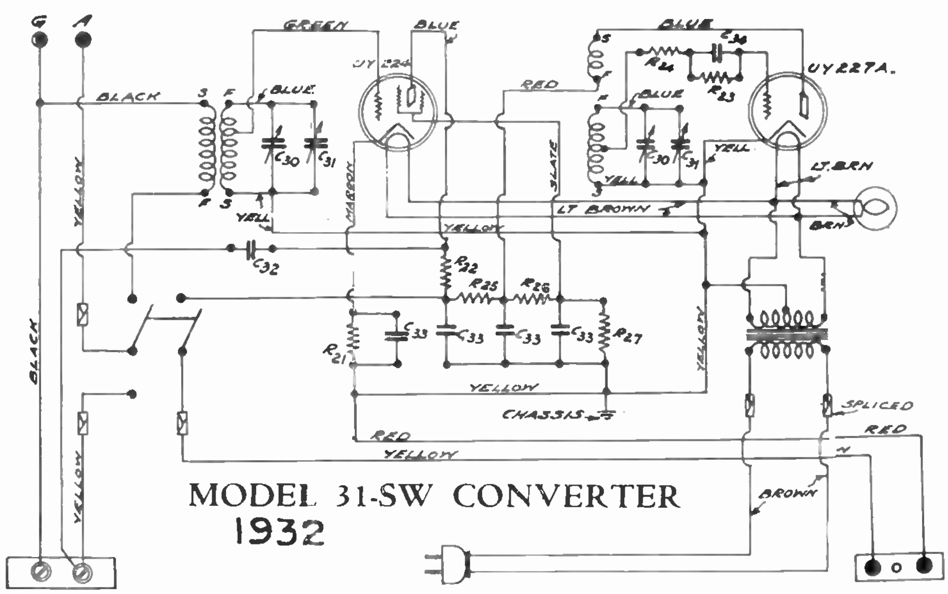
Position	Plate Volts	Plate Current	Screen Volts	Grid Volts
R. F.	235	3	55	Nil
1st. Det.	225	.25	55	4.5
Oscillator	55	2.5	—	2.5
I. F.	235	2.5	55	2.
2nd Det.	110	.5	—	16
A.V.C.	12	Nil	—	Nil.
Power	225	22	235	7

Rect.2Det.AVC.RF.Osc.



Pwr. IF. 1Det.

Model 29-31 and 31-SW



MODEL 31-SW CONVERTER
1932

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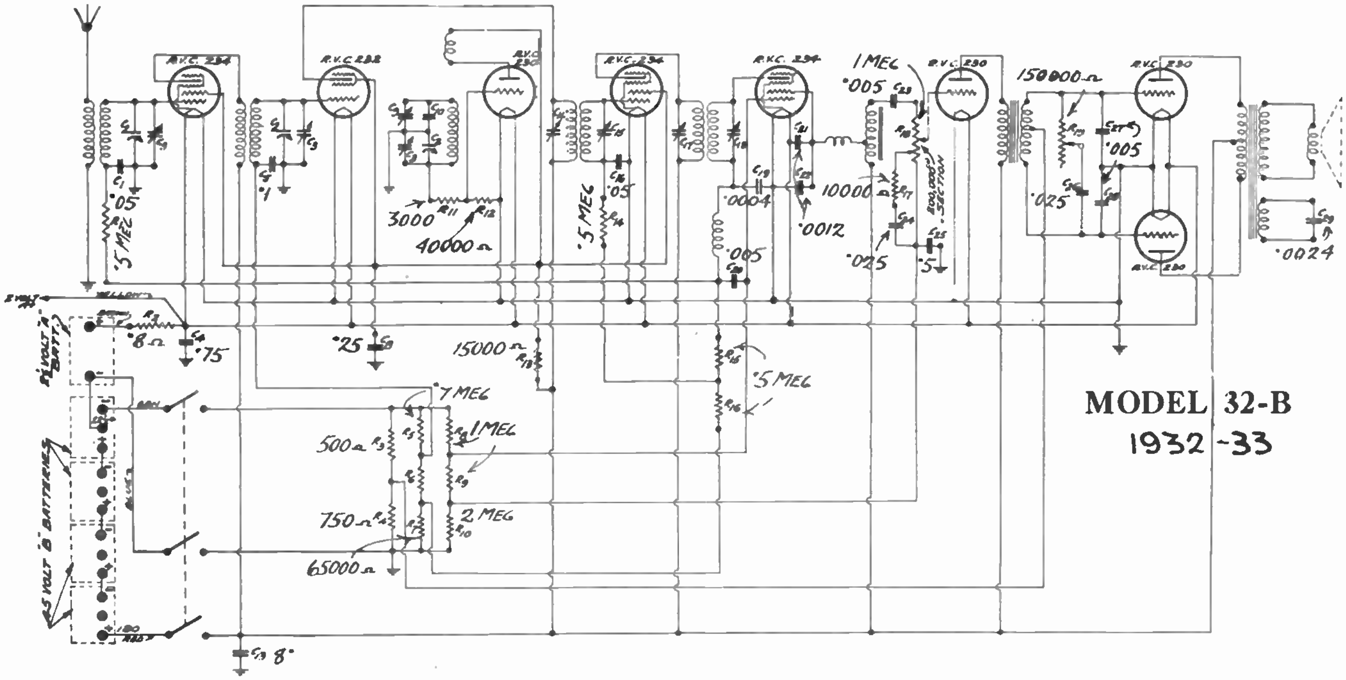
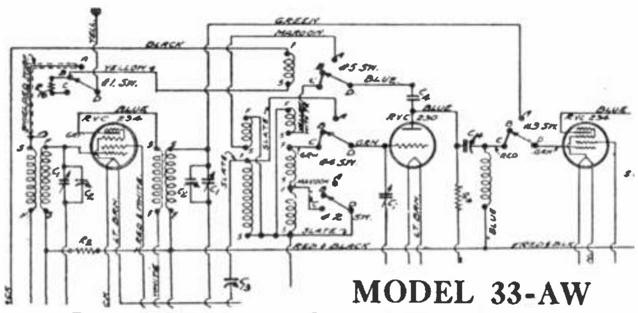


MODEL 32-B
1932-33

Radiotron No.	Control Grid to Filament Volts	Screen Grid to Filament Volts	Plate to Filament Volts	Screen Current M.A.	Plate Current M.A.
R.F.	0.2	65	157	1.0	3.0
1st Detector	0.5	65	157	0.1	0.2
Oscillator	1.0	..	65	...	4.0
I.F.	0.5	65	157	1.0	3.0
2nd Detector	2.0	155	0	4.0	0
1st A.F.	1.0		155	...	2.5
Power	14.0		155	...	1.2

MODEL 32-B

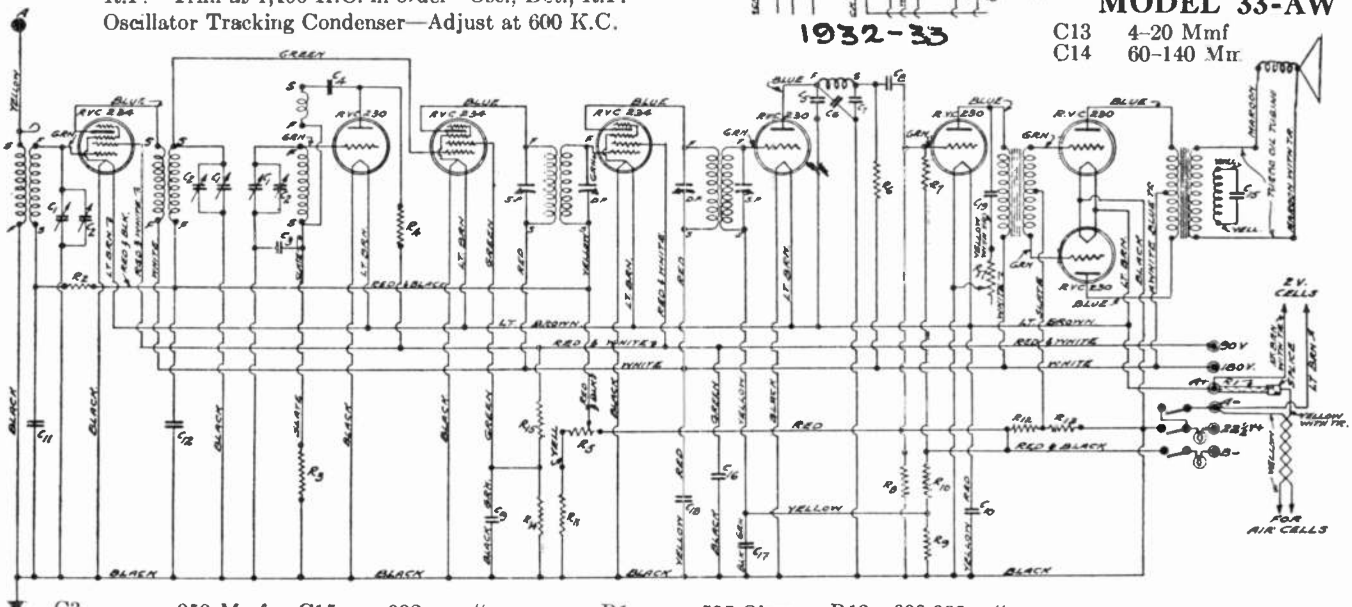


MODEL 33-AW
1932-33

C13 4-20 Mmf
C14 60-140 Mmf

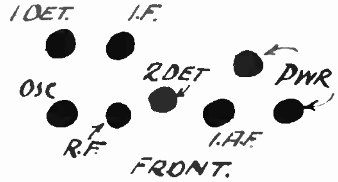
TRIMMER ADJUSTMENTS

I.F.—175 K.C. adjust in order—No. 1, No. 2, No. 3, No. 4
R.F.—Trim at 1,400 K.C. in order—Osc., Det., R.F.
Oscillator Tracking Condenser—Adjust at 600 K.C.



C3	950 Mmf	C15	.002 "	R1	.525 Ohms	R10	600,000 "
C4	.002 Mf	C16	.3 "	R2	1,000 "	R11	7,700 "
C5	.001 "	C17	.3 "	R3	500,000 "	R12	650 "
C6	.001 "	C18	1 "	R4	10,000 "	R13	1,300 "
C7	.00025 "	C19	.04 "	R5	50,000 "	R14	34,000 "
C8	.02 "			R6	450,000 "	R15	16,500 "
C9	.3 "			R7 R8	500,000 "	R17	250,000 "
C10	1 "			R9	350,000 "		
C11	.1 "						
C12	.1 "						

—MODEL 33
1932-33



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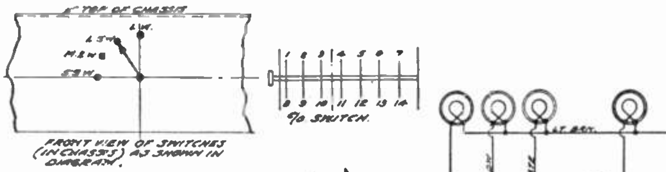
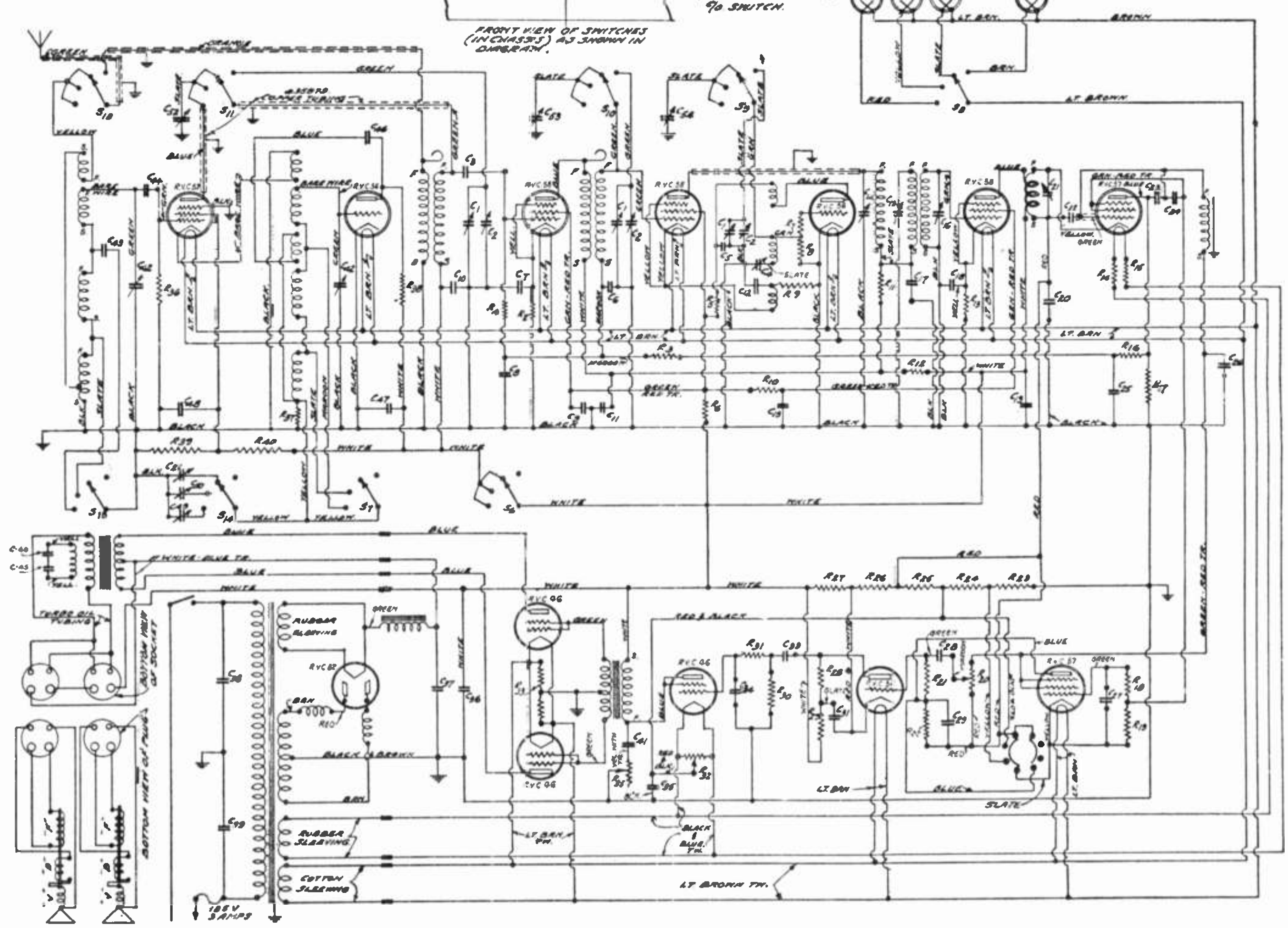
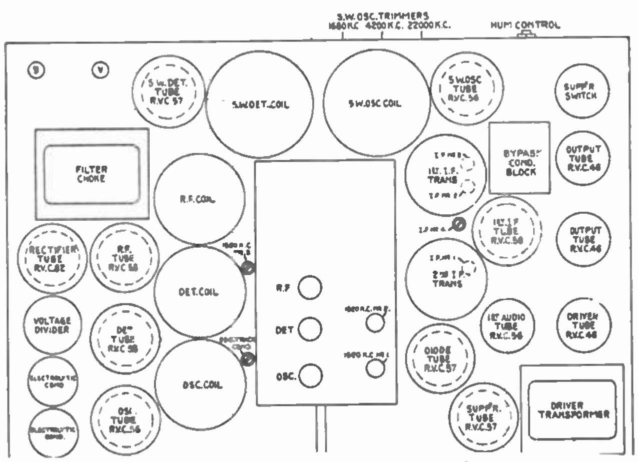
Models 36-37

1932-33 IF. 175 Kc.





MODEL 37 Model 36 is identical except for output transformer and speaker connections which are as in Model 35.



(MODELS 36-37 ONLY)

S/W I.F.—1520 K.C. Adjust in order—No. 1, No. 2, No. 3.
S/W Oscillator Tracking Condensers. Adjust at following frequencies—(1) Red Band—12,000 K.C. (Approx. 81° on dial) (2) Yellow band—4,500 K.C. (Approx. 93° on dial) (3) Green Band—1,650 K.C. (Approx. 90° on dial).

RESISTORS FOR MODELS 35, 36-37

*Models 36, 37 only. †Model 35 only.

R1†	100,000 Ohms	R21	1 Meg. Ohms
R2	400 "	R21	1 " "
R3	100,000 "	R23	315 "
R4*	5 Meg. "	R24	210 "
R5	1,000 "	R25	485 "
R6	15,000 "	R26	225 "
R7	25,000 "	R27	6,350 "
R8	40,000 "	R28	10,000 "
R9	2,500 "	R29	10,000 "
R10	1,000 "	R30	200,000 "
R11	10,000 "	R31	50,000 "
R12	1,000 "	R32	6 "
R13	400 "	R33	20 "
R14	.525 "	R35	100,000 "
R15	.525 "	R36*	1 Meg. "
R16	500,000 "	R37*	250,000 "
R17	1 Meg. "	R38*	10,000 "
R18	1 Meg. "	R39*	20,000 "
R19	2 " "	R40*	200,000 "
R20	100,000 "		

VOLTAGE READINGS AND CONDENSERS FOR MODELS 35, 36-37 → SEE DATA SHEET - 16

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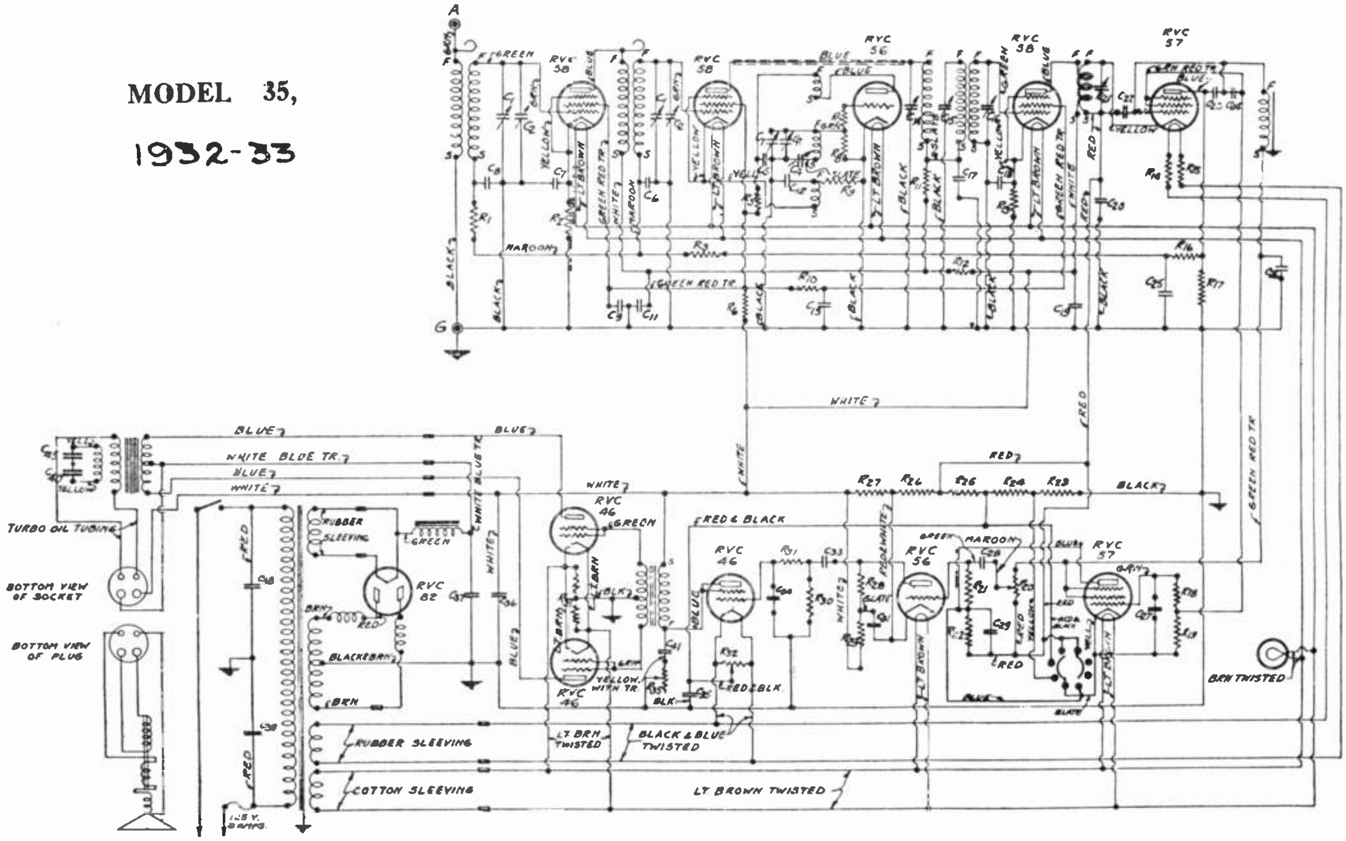
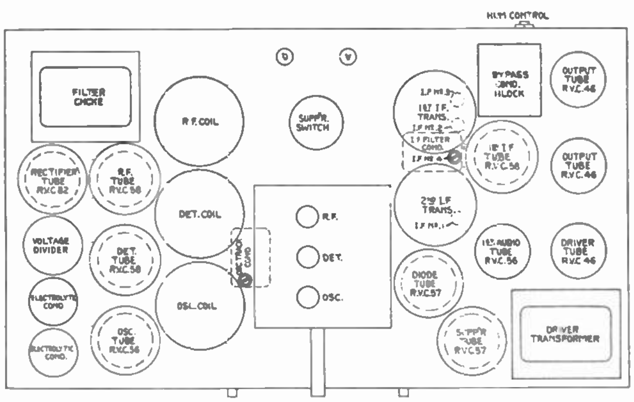
MODEL 35,

1932-33





Model 35

VOLTAGE READINGS—MODELS 35, 36-37

	VOLTAGES to Cathode			VOLTAGES to Chassis		
	Grid	Pl.	Scr.	Sup.	Cath.	Htr.
B.C.-R.F.	0	215	90	0	..	..
1st Det.	0	185	85	0	6	..
B.C. Osc.	0	90	..	..	..	..
I.F.	0	230	90	0	3	..
Diode	+13	−18	−18	−18	40	25
Suppressor	0	9	9	9	15	
1st. A.F.	.1	130	.	..	44	.1

	VOLTAGES to Cathode or Fil.			
	Grid	Pl.	Scr.	Sup.
*S/W R.F.	.5	230	30	0
*S/W Osc.	25	165	..	..
Driver	18	230	225	..
Power	0	380	0	..
Rect.	..	420	..	..

*Models 36-37 only.

TRIMMER ADJUSTMENTS—MODELS 35, 36-37

I.F.—175 K.C. Adjust in order—No. 1, No. 2, No. 3, No. 4.
R.F.—Trim at 1400 K.C. in order—Osc., Det., and R.F.
Oscillator Tracking Condenser—Adjust at 600 K.C.

CONDENSERS FOR MODELS 35, 36-37

*Models 36, 37 only. †Model 35 only.

C1*	21–370	Mmf	C27	.01	Mf
C1†	21–370	"	C28	.02	"
C2	60	"	C29	.05	"
C3*	250	"	C31	1.	"
C4	850	"	C33	.02	"
C5	.1	Mf	C34	500	Mmf
C6	.05	"	C35	1.	Mf
C7	.1	"	C36	8	"
C8	.05	"	C37	8	"
C9	.1	"	C38	.02	"
C10*	.1	"	C39	.02	"
C11	.1	"	C40	.004	"
C12	.1	"	C41	.2	"
C13	.1	"	C42*	13–268	Mmf
C14	6–70	Mmf	C43*	360	"
C15	6–70	"	C44*	250	"
C16	6–70	"	C45	.004	Mf
C17	.004	Mf	C46*	.002	"
C18	.1	"	C47*	.1	"
C19	.1	"	C48*	.1	"
C20	.05	"	C49*	308	Mmf
C21	6–70	Mmf	C50*	665	"
C22	250	"	C51*	248	"
C23	.01	Mf	C52*	4–20	"
C24	.01	"	C53*	6–70	"
C25	.001	"	C54*	6–70	"
C26	250	Mmf			

RESISTORS FOR MODELS 35, 36-37

SEE DATA SHEET -

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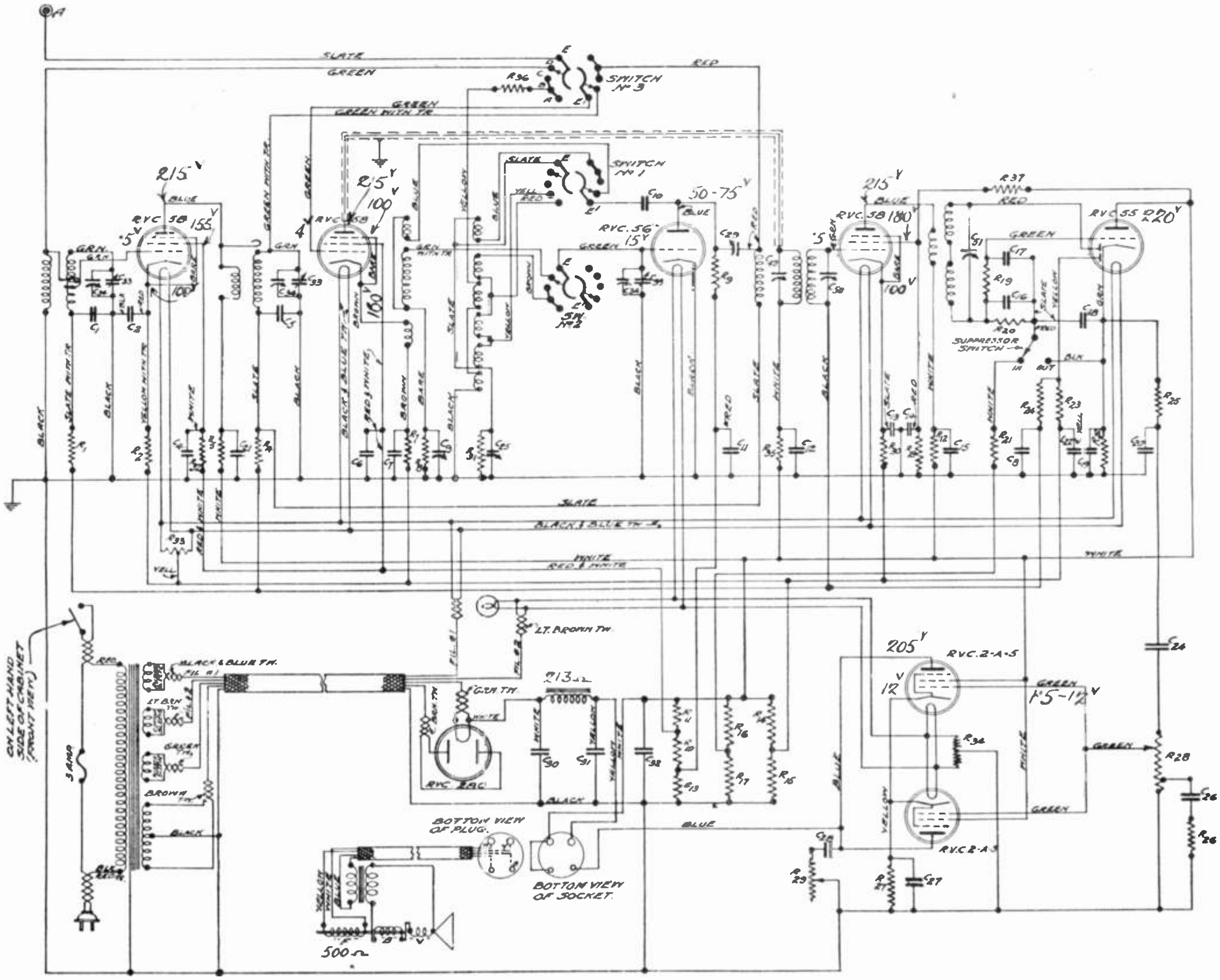
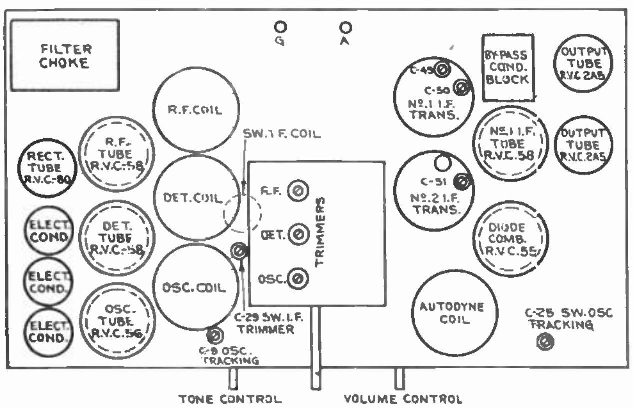
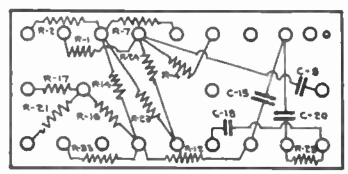
Model 40 1933-34 I.F. 175 kc.



Note—Late models have an additional resistor (R38) connected between Tone Control (R29) and condenser C28.





RESISTOR PANEL—MODEL 40

C-8, C-18, R-14, R-17 & R-23, NEXT TO CHASSIS

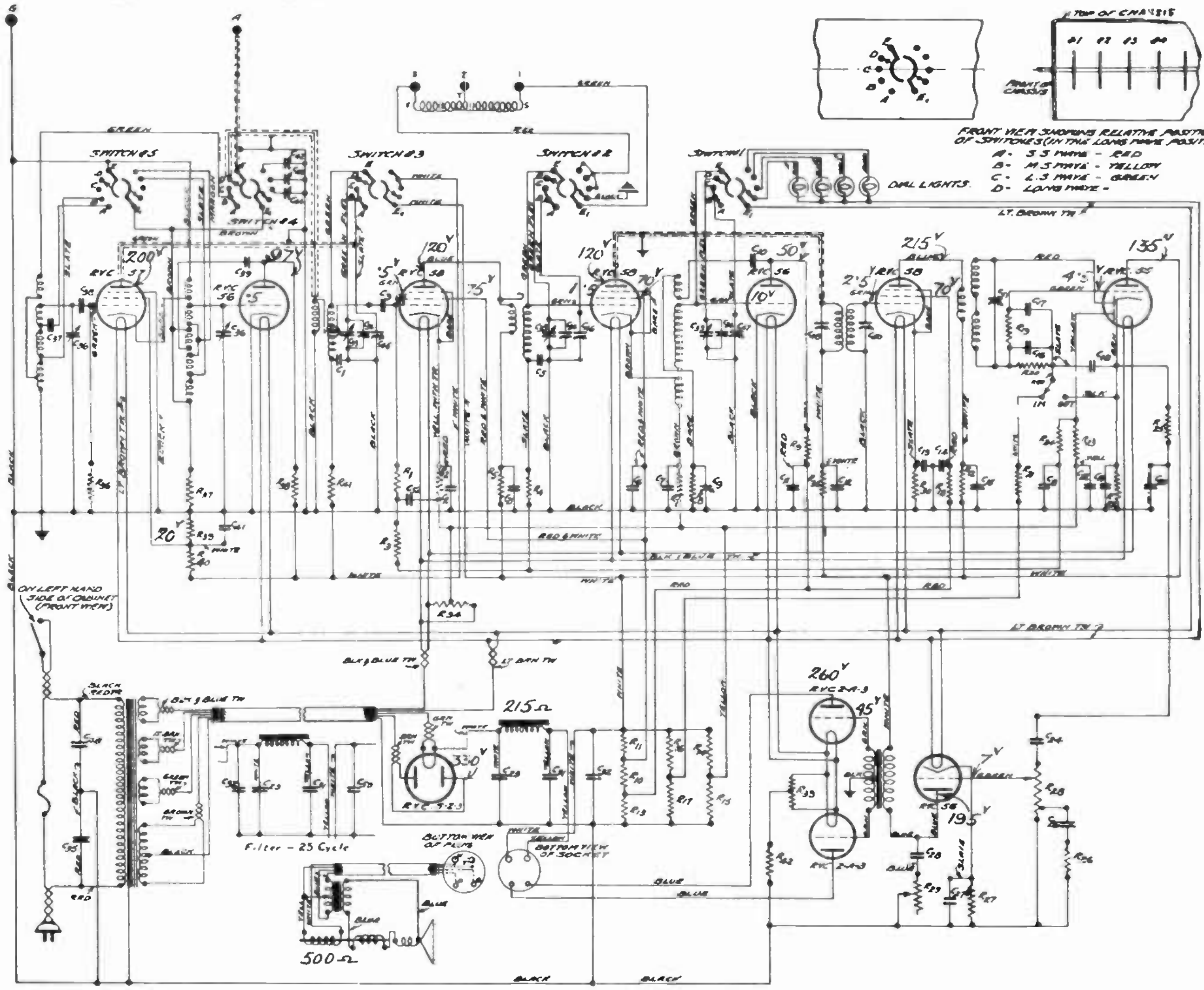
LEGEND

C 2, 4, 7, 11, 12, 13, 14, 15, 21, 28.	·1 mfd
C1 C5, C8.	·05 "
C6	·5 "
C18	·25 "
C10, C19	·001 "
C20	·0005 "
C22 1· mfd. C24 ·02 C26 ·04	"
C30, 31, 32 8 mfd C27 10 00	"

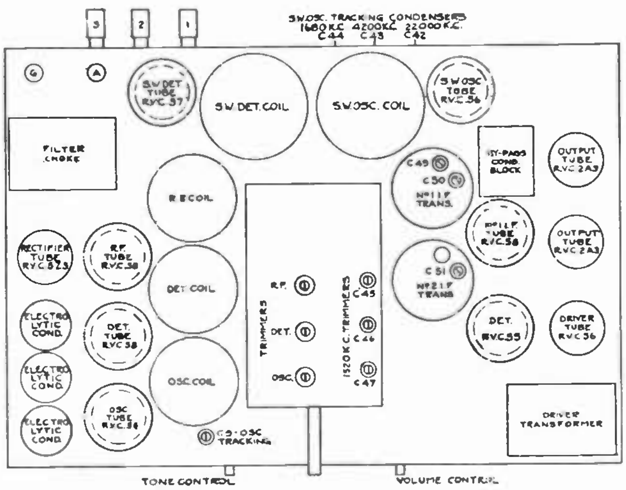
R1, 4, 9, 14, 32, 37,	10000 Ω	R2	400 Ω
R5, 12, 35	1000 Ω	R7	2500 Ω
R8, 29, 19	100000 Ω	R10	12000 Ω
R11	6000 Ω	R13	25000 Ω
R15	4000 Ω	R16	77000 Ω
R20, 23, 24	200,000 Ω	R27	205 Ω
R33, 34	20 Ω	R36	150 Ω

R17	45000 Ω	R18	80000 Ω
R22	15000 Ω	R26	8000 Ω
R30	400 Ω	R31	2500 Ω
R38	1300 Ω		

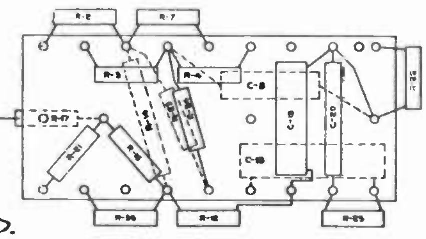
World Radio History



Note change in filter circuit for 25 cycle models.



Top view of resistor panel →



LEGEND.

C2, 7, 11, 12, 13, 14, 15, 21, 41, 52,			.1 mfd.
C1 5, 8.			.05 "
C6			.5 "
C10	.002	C18	.25 "
C19	.001	C26	.08
C22, 27			1"
C23, 31, 32 (53, 25~ only)			8"
C24, 28, 35, 48			.02

R1	5	Megohms	R12	1,000	"	R22	15,000	Ohms	R34	20	"
R2	400	Ohms	R13	25,000	"	R23	.2	Megohms	R35	1,000	"
R3	.1	Megohms	R14	10,000	"	R24	.2	"	R36	1	Megohms
R4	10,000	Ohms	R15	4,000	"	R25	50,000	Ohms	R37	.25	"
R5	1,000	"	R16	.1	Megohms	R26	8,000	"	R38	10,000	Ohms
R7	2,500	"	R17	45,000	Ohms	R27	2,500	"	R39	29,000	"
R8	.1	Megohms	R18	1,000	"	R28	500,000	"	R40	.2	Megohms
R9	10,000	Ohms	R19	.1	Megohms	R29	100,000	"	R41	1,000	Ohms
R10	12,000	"	R20	.2	"	R30	400	"	R42	700	"
R11	6,000	"	R21	50,000	Ohms	R33	20	"			

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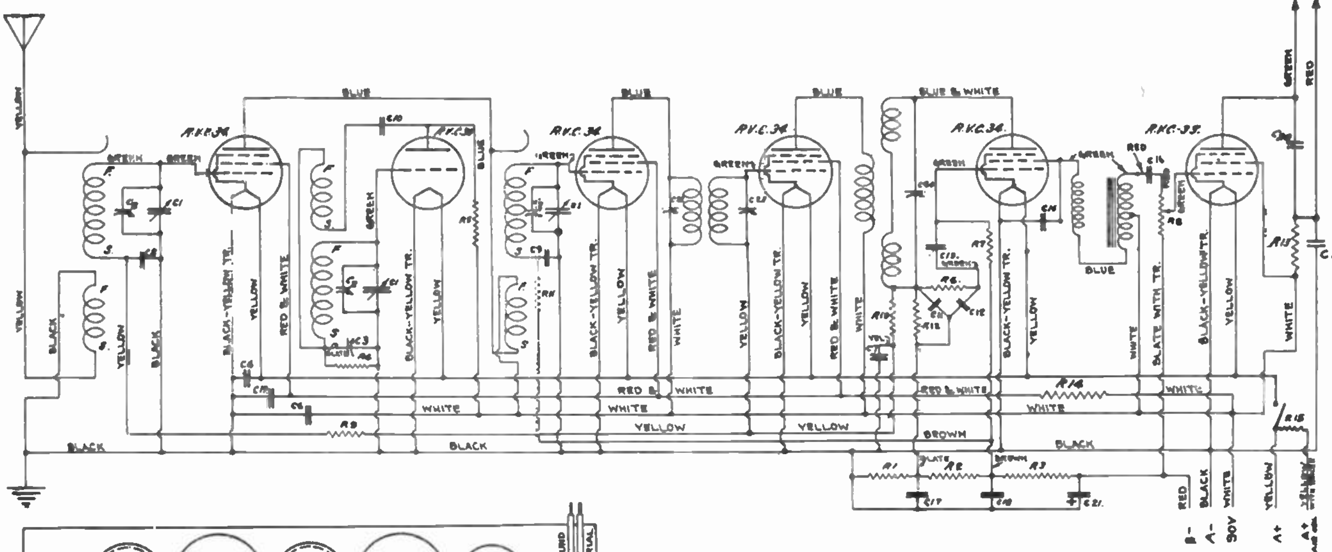
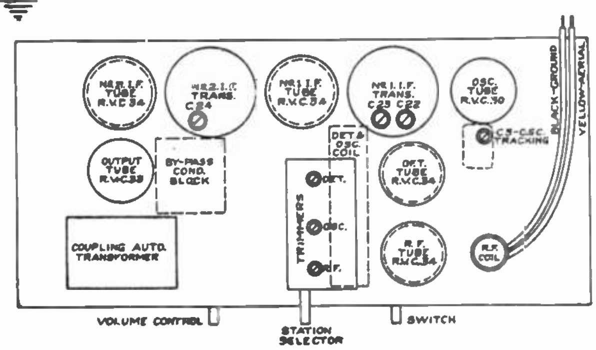
Model 43 1933-34 I.F. 175 Kc.





VOLTAGE READINGS–

		Plate	Screen	C. Grid
R.F.	34......	80	55	0
Oscillator	30.....	75	..	2–8*
Detector	34.....	80	55	.4
I.F.	34.....	80	55	0
Diode	34. ...	0	72	0
Power	33.....	80	80	1

*Tube must be in socket.

R1	75
R2	215
R3	285
R4	.35 Meg.
R5	10,000
R6	.1 Meg.
R7	2 "
R8	.5 "
R9	.5 "
R10	.5 "
R11	.1 "
R12	1 "
R13	1,000
R14	10,000
R15	0.685

C1	12–370 Mmf
C2	40
C3	850–1,050
C4	1
C5	1
C6	.25
C7	.05
C8	.05
C9	.05
C10	2,000
C11	100
C12	100
C13	6,000
C14	1,000
C16	.02
C17	.1
C18	.1
C19	.1
C20	6,000
C21	10
C22	6–70
C23	6–70
C24	70–140

Model 45

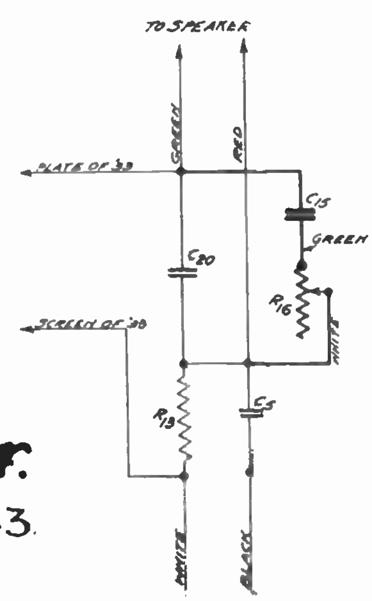
The wiring diagram of Model 45 is identical with Model 43 except for the addition of a Tone Control to the output circuit as shown in cut.

Continuity, Voltage Readings and Alignment are exactly the same as Model 43.

ADDITIONS TO PARTS LIST FOR MODEL 45 ONLY

R16 250,000 Ohms Tone Control and Switch. Type 41541 (Replaces Switch—Type No. 39977)

C15 .05 Mf. 400 volt Tubular Condenser...........
Speaker Type X775 (Replaces Type A3).......



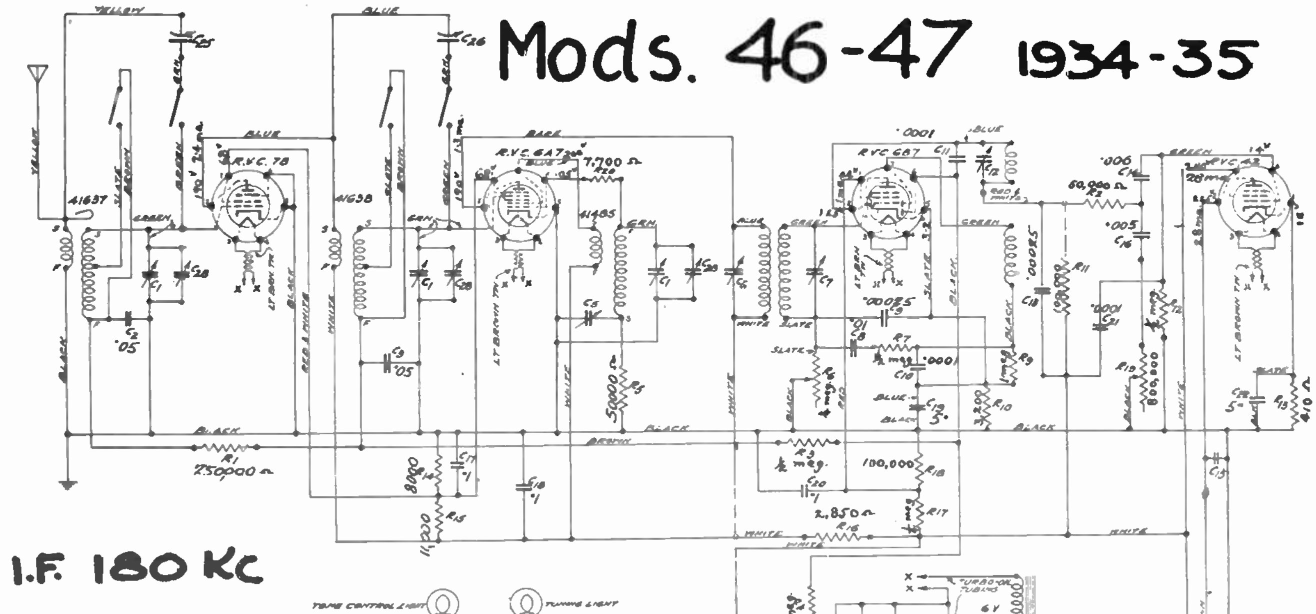
Model 42 Auto Receiver 1933

Same as Westinghouse Model 43.

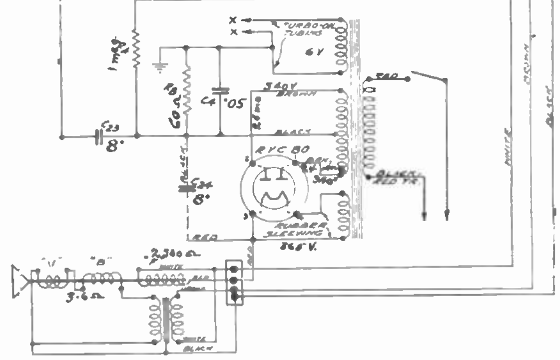
See WESTINGHOUSE 18.

World Radio History

Mods. 46-47 1934-35



I.F. 180 Kc



Short Wave Circuits:—On examining the wiring diagram it will be observed that when the Wave Change Switch is turned to Short Wave, one winding each of the R.F. and 1st detector grid coils is shorted out and at the same time, S/W trimmers C25 and C26 are connected from primary to secondary of the R.F. and Detector coils, thus serving to increase the coupling as well as acting as trimmers. As the broadcast band trimmers are always in circuit, it is obvious that changing their adjustment will affect **both** short wave and broadcast bands. Therefore, it will be necessary to re-adjust C25 and C26 every time the broadcast band is re-aligned.

No change in the oscillator circuit is made for short wave as the second harmonic of the oscillator is used to produce the 180 K.C. beat with the incoming S/W signal. As the oscillator is still tuned to the broadcast band when the receiver is switched to short wave, some interference may be experienced from powerful broadcast stations. This cannot be avoided.

ALIGNMENT:

Always proceed in the following order when aligning trimmer condenser:—(1) I.F. Trimmers, (2) R.F. Trimmers, (3) Oscillator Tracking Condenser, (4) Short Wave Trimmers.

IMPORTANT:—Always have the Volume Control turned on full and reduce the output of the Test Oscillator to a point where only a moderate signal is reproduced, in order to prevent bringing the A.V.C. into operation. Accurate alignment can only be obtained by using an output meter.

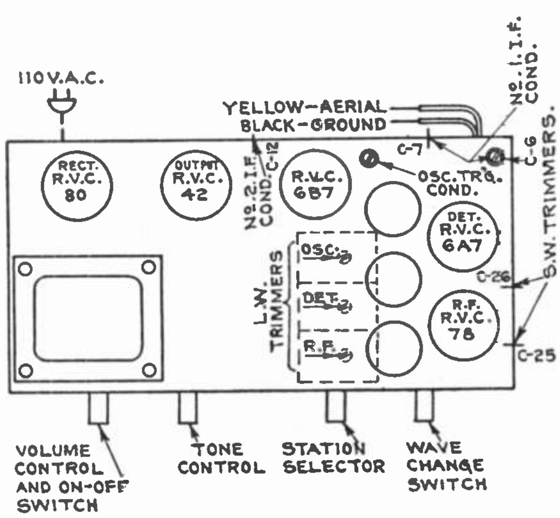
I.F. Trimmers:—Connect a 180 K.C. Test Oscillator to the grid cap of the 6A7 tube and to chassis, leaving the grid clip in place. If there is no blocking condenser in the Test Oscillator, a .1 Mf. 200 volt condenser should be connected in series with the lead from the Test Oscillator to grid. This is necessary to avoid shorting out the bias resistor. The I.F. trimmers should now be adjusted for maximum output, in the following order:—C12, C7, C6.

R.F. Trimmers:—Connect a Broadcast Band Test Oscillator to the antenna and ground leads and tune the receiver and oscillator to 1,400 K.C. Adjust in order:—Oscillator, Detector and R.F. Trimmers.

Tune Test Oscillator and receiver to 600 K.C. and adjust Oscillator Tracking Condenser (C5).

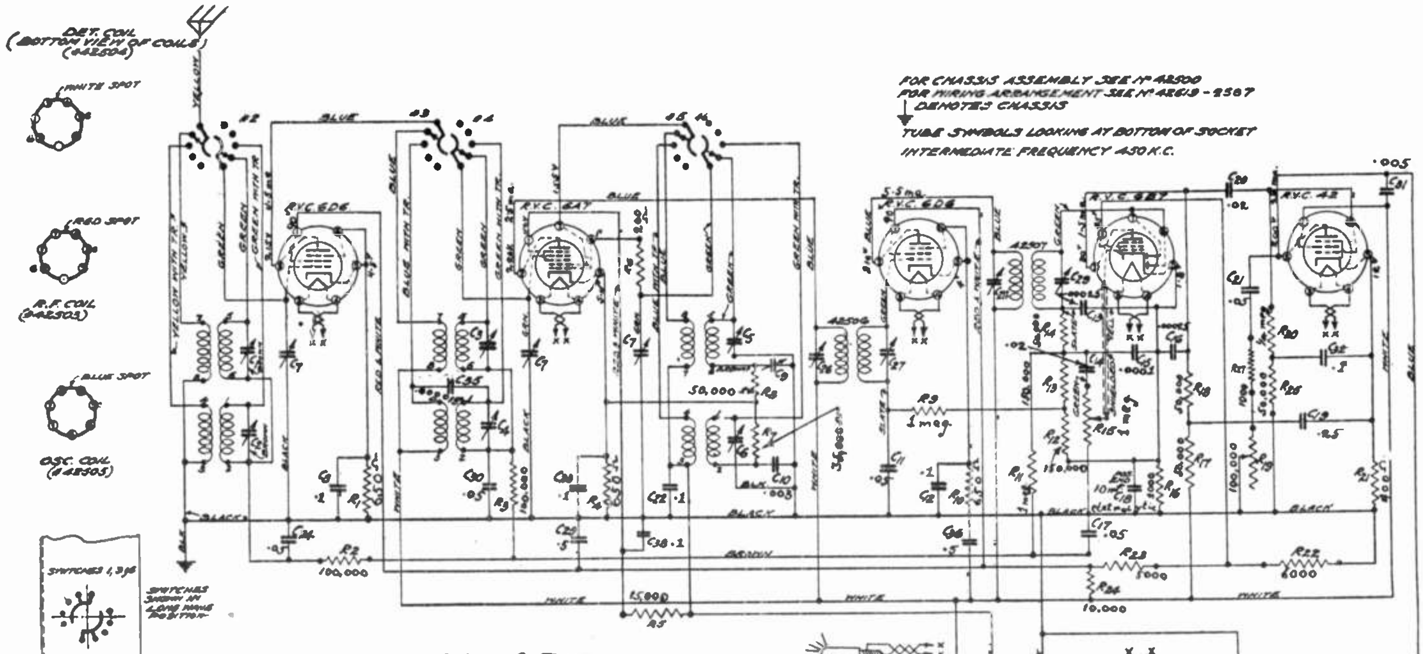
Short Wave Trimmers:—First make sure that the Broadcast Band Trimmers are properly aligned then switch to short wave and set the receiver dial to 1,120 and the Test Oscillator to 2,400 K.C. The S/W Trimmers C26 and C25 should then be adjusted for maximum output.

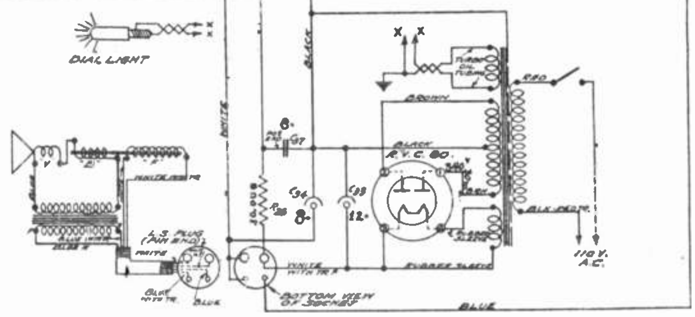
If the Test Oscillator will not supply a fundamental frequency of 2,400 K.C. it may be set at 800 or 600 K.C. Do not attempt to use a harmonic of 1,200 K.C. as this frequency may be picked up directly, as mentioned under "Short Wave Circuit."



World Radio History

Models 49-51. 1934-35





ALIGNMENT: I.F. 450 Kc.

Always proceed in the following order when aligning trimmer condenser:—(1) I.F. Trimmers, (2) R.F. Trimmers, (3) Oscillator Tracking Condenser, (4) Short Wave Trimmers.

IMPORTANT:—Always have the volume control turned full on and reduce the output of the Test Oscillator to a point where only a moderate signal is reproduced, in order to prevent bringing the A.V.C. into operation. Accurate alignment can only be obtained by using an output meter.

I.F. Trimmers:—Connect a 450 K.C. Test Oscillator to the grid cap of the 6A7 tube and to chassis, leaving the grid clip in place. If there is no blocking condenser in the Test Oscillator, a .1 Mf. 200 volt condenser should be connected in series with the lead from the Test Oscillator to grid. This is necessary to avoid changing the bias. The I.F. trimmers should now be adjusted for maximum output, in the following order:—C29, C28, C27, C26.

R.F. Trimmers:—Turn the tuning condenser to minimum and set the dial pointer to the last scale division. Connect a Broadcast Band Test Oscillator to the antenna and ground leads and tune the receiver and oscillator to 1,400 K.C. Adjust in order:—Oscillator (C5), Detector (C3) and R.F. (C1) Trimmers.

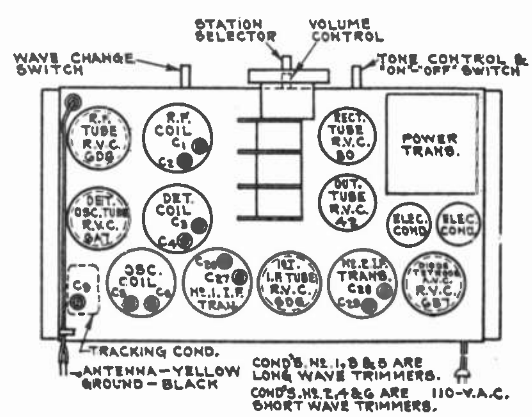
Tune Test Oscillator and receiver to 600 K.C. and adjust Oscillator Tracking Condenser (C9) for maximum output.

Short Wave Trimmers:—It is highly desirable that the S/W Oscillator trimmer remain as adjusted in the factory and care should be taken not to disturb the setting of this condenser (C6). If this adjustment has not been disturbed or the wiring of the receiver altered, the S/W circuits should be aligned as follows:—Connect a test oscillator to the A and G leads, using a 200 Mmf condenser in series with the antenna lead. Adjust the test oscillator to give a 14,000 K.C. signal and tune the receiver to the signal. The Detector and R.F. trimmers (C4 and C2) should now be adjusted for maximum output.

If the adjustment of the S/W oscillator trimmer has been changed, it will have to be properly reset, otherwise, the receiver may not tune to the maximum frequency required. The easiest way of accomplishing this is to use an additional short wave receiver. This receiver is tuned to a 16,000 K.C. unmodulated signal supplied by the Test Oscillator. The receiver to be adjusted is then turned on and the gang condenser set at minimum. The S/W Oscillator Trimmer (C6) is now adjusted to the point where this circuit is oscillating at a frequency which, when picked up by the auxiliary receiver (still tuned to the Test Oscillator) will produce a low beat note. This indicates that the S/W Oscillator is tuned to 16,000 K.C. The Detector and R.F. Trimmers (C4 and C2) are then aligned as described above, taking care not to make any further change in the setting of the S/W Oscillator Trimmer (C6) while making these adjustments.

Wave Change Switch:—Dirty switch contacts will cause noisy and intermittent operation and should therefore be cleaned periodically with gasoline or alcohol. *Do not use any lubricant on these contacts.*

We also recommend periodic cleaning of the contact springs in the gang tuning condenser.



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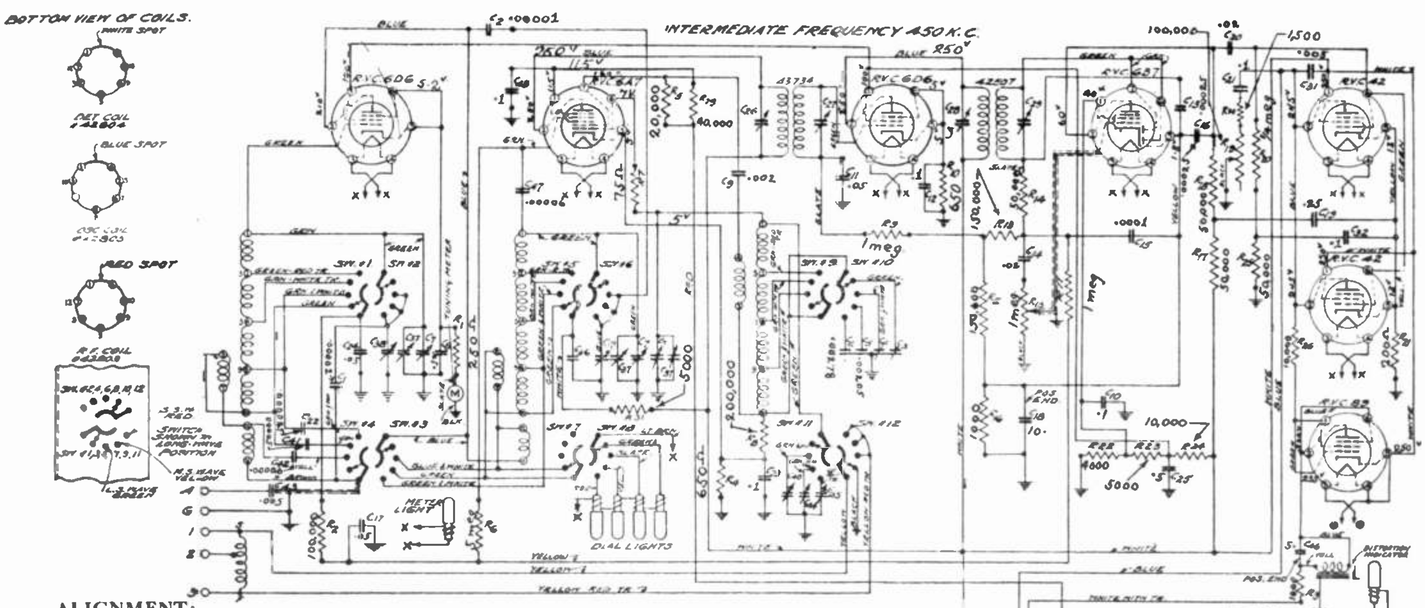
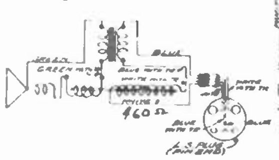
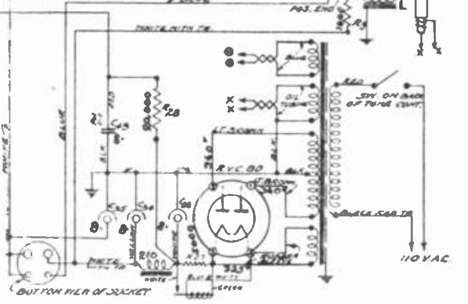
MODEL 53







Mod. 53
1934-35

ALIGNMENT:

Always proceed in the following order:—(1) I.F. Trimmers, (2) Broadcast Band Trimmers and Oscillator Padding condenser, (3) Short Wave Trimmers and S/W Oscillator Padding condenser. Note that any alteration to the B.C. band trimmers will affect the alignment of the short wave circuits. Correct alignment can only be obtained by using a weak signal and measuring the output voltage with an output meter.

I.F. Trimmers:—Connect a 450 K.C. Test Oscillator to the grid cap of the 6A7 tube and to chassis, leaving the grid clip in place. If there is no blocking condenser in the Test Oscillator, a .1 Mf. condenser should be inserted in the lead to the grid cap. Adjust in order:—C29, C28, C27, C26.

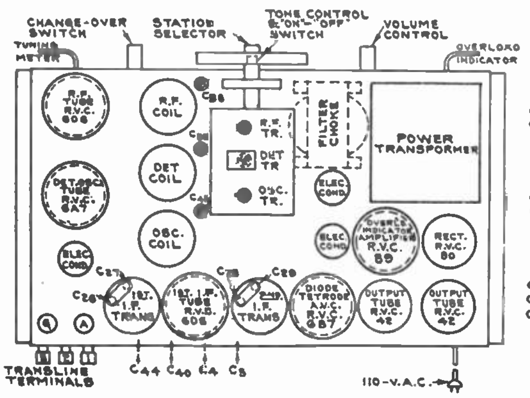
Broadcast Band Trimmers:—First see the dial reads maximum with the condenser plates in full mesh. Connect a Test Oscillator to the A & G terminals, adjust it to supply a 1,400 K.C. signal and set the receiver dial to 1,400 K.C. Adjust in order, Oscillator, Detector and R.F. Trimmers. (See chassis diagram.)

Tune Test Oscillator and receiver to 600 K.C. and adjust Oscillator Padding Condenser C3.

Short Wave Trimmers:—Switch to the Red Band and connect a S/W Test Oscillator to A & G terminals using a 200 Mmf. condenser in series with the lead to the antenna terminal. The test oscillator should be set at 14,000 K.C. and the dial of the receiver at 21.4 meters. The Oscillator, Detector and R.F. S/W Trimmers (C45, C39 and C38) should now be adjusted. As there is some tendency toward interlocking between the Oscillator and Detector circuits, it will be necessary *to re-adjust these two trimmers several times* in order to obtain the maximum output.

Switch to the Yellow Band, set the dial to 48 meters, adjust the Test Oscillator to give a 6,000 K.C. signal and carefully adjust S/W Trimmer C44 for maximum output.

Switch to Green Band, set the dial to 100 Meters, set the Test Oscillator to give a 3,000 K.C. signal and adjust C40 for maximum output. Adjust the Test Oscillator to supply a 1,700 K.C. signal and turn the dial to 175 Meters. Adjust S/W Oscillator Tracking Condenser C4 while rocking the dial back and forth.



IF. 450 Kc.

C3 B'CAST. OSC. TRACK.
C4 L.S.W. OSC. TRACK.

C38 R.F. S.W. TRIM.
C39 1ST. DET. S.W. TRIM.

C45 S. S.W. OSC. TRIM.
C44 M.S.W. OSC. TRIM.
C40 L.S.W. OSC. TRIM.

Overload Indicator: This device is provided to indicate when the audio output of the power tubes has reached the maximum for undistorted output. Considerably greater volume can be obtained but a large percentage of harmonics will be present and some distortion will be apparent. The functioning of this device is as follows:—The D.C. voltage drop across the speaker field is applied to the plate and cathode of a type 89 tube while the grid is connected to the cathode through the primary of the output transformer. Normally, no plate current flows in this tube but when the audio voltage across the output transformer reaches a certain value, sufficient plate current (approx. 10 Ma.) flows to cause the relay to close, which changes the colored slide in front of the pilot lamp. This takes place at a peak output of approximately 4.5 watts.

Adjustment of Overload Indicator:—The procedure for adjusting the overload indicator is as follows:—First make sure that both 42 output tubes and the 89 relay tube are in O.K. condition, next, connect an output voltmeter across the primary of the output transformer (this can conveniently be done by connecting to the grid and plate pins of the speaker socket).

Supply a signal to the receiver from a modulated oscillator and turn the volume control up slowly until the indicator changes to red. The output meter should then read approximately 125 volts, if too high, turn down the volume control and turn the adjusting screw on the back of the indicator case, counter clockwise about half a turn. If too low, turn clockwise. Again increase the volume and note the voltage at which the light changes. Repeat this procedure until an adjustment is secured which allows the slide to change when the voltage reads approximately 125 volts A.C. R.M.S., which is equivalent to an output of 4.5 watts. Note that the change back from red to green takes place at a somewhat lower voltage. Care should be taken not to unscrew the adjustment too far or the spring retainer will drop down and it will be necessary to remove the indicator and re-assemble.

Before disassembling, remove the pilot light socket and rubber grommet from the top of the case. Two small screws on the back retain the mechanism.

Delay Relay: A thermostatic switch is connected to the filament of the rectifier tube and is used to prevent full voltage being applied to the filter condenser until the tubes in the receiver are sufficiently heated to draw plate current. About ten to fifteen seconds is required for the relay to heat up when it closes and shorts out the 5,000 Ohm resistor R27. If the receiver is switched on shortly after turning it off, the relay will naturally operate somewhat more quickly.

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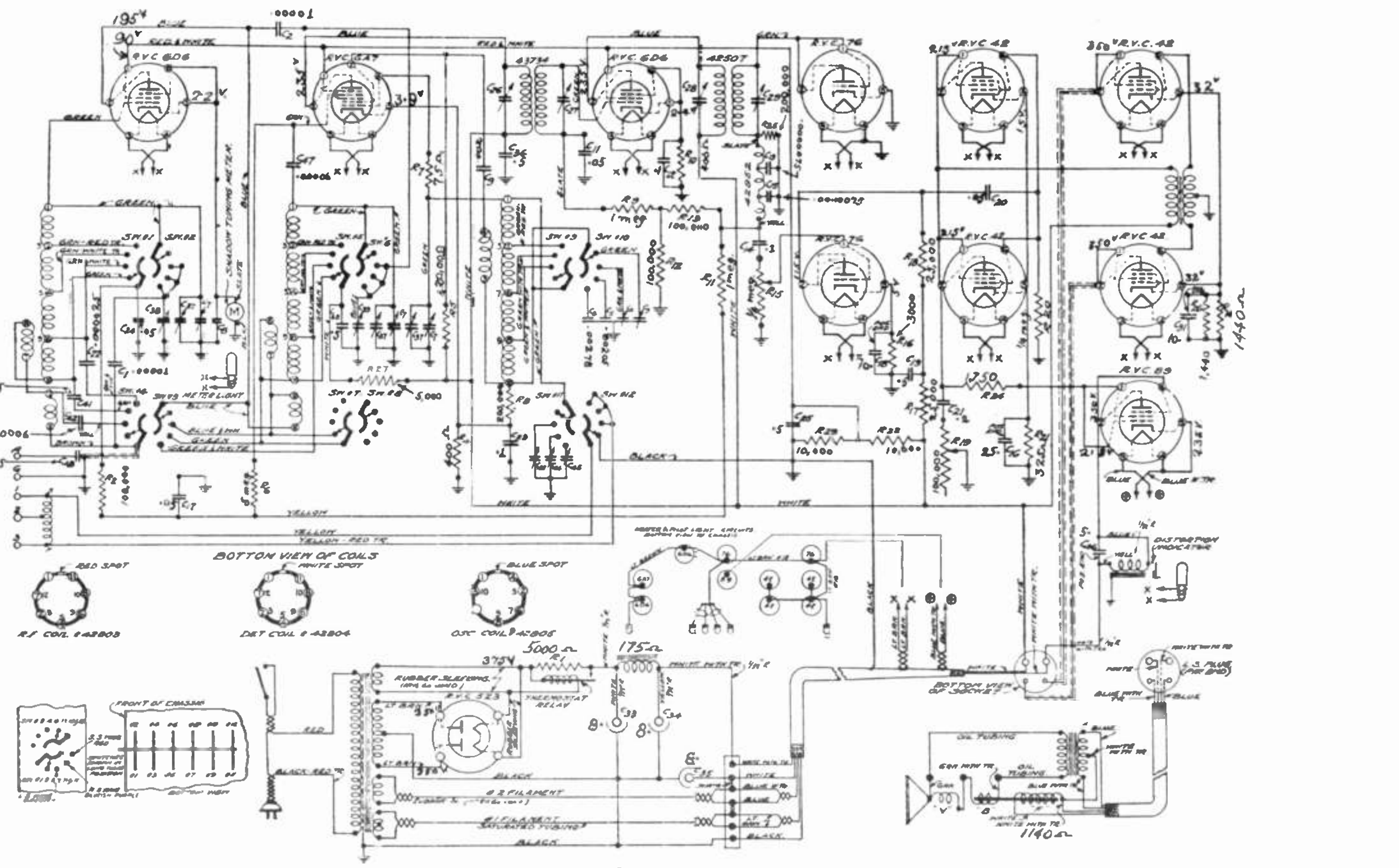


Adjustment of Overload Indicator:—The procedure for adjusting the overload indicator is as follows:—First make sure that both 42 output tubes and the 89 relay tube are in O.K. condition, next, connect an output voltmeter across the speaker voice coil.

Supply a signal to the receiver from a modulated oscillator and turn the volume control up slowly until the indicator changes to red. The output meter should then read approximately 7.85 volts, if too high, turn down the volume control and turn the adjusting screw on the back of the indicator case, counter clockwise about half a turn. If too low, turn clockwise. Again increase the volume and note the voltage at which the light changes. Repeat this procedure until an adjustment is secured which allows the slide to change when the voltage reads approximately 7.85 volts A.C. R.M.S., which is equivalent to an output of 8 watts. Note that the change back from red to green takes place at a somewhat lower voltage. Care should be taken not to unscrew the adjustment too far or the spring retainer will drop down and it will be necessary to remove the indicator and re-assemble.

Before disassembling, remove the pilot light socket and rubber grommet from the top of the case. Two small screws on the back retain the mechanism.

Delay Relay: A thermostatic switch is connected to the filament of the rectifier tube and is used to prevent full voltage being applied to the filter condenser until the tubes in the receiver are sufficiently heated to draw plate current. About ten to fifteen seconds is required for the relay to heat up when it closes and shorts out the 5,000 ohm resistor R27. If the receiver is switched on shortly after turning it off, the relay will naturally operate somewhat more quickly.

ALIGNMENT:

Always proceed in the following order:—(1) I.F. Trimmers (2) Broadcast Band Trimmers and Oscillator Padding Condenser

(3) Short Wave Trimmers and S/W Oscillator Padding Condenser. Note that any alteration to the B.C. band trimmers will affect the alignment of the short wave circuits. Correct alignment can only be obtained by using a weak signal and measuring the output voltage with an output meter.

I.F. Trimmers:—Connect a 450 K.C. Test Oscillator to the grid cap of the 6A7 tube and to chassis, leaving the grid clip in place. If there is no blocking condenser in the Test Oscillator, a .1 Mf. condenser should be inserted in the lead to the grid cap. Adjust in order:—C29, C28, C27, C26.

Broadcast Band Trimmers:—First see that the dial pointer is set at maximum when the gang condenser plates are fully meshed. Connect a Test Oscillator to the A and G terminals, adjust it to supply a 1,400 K.C. signal and set the receiver dial to 1,400 K.C. Adjust in order:—Oscillator, Detector and R.F. Trimmers. (See chassis diagram.)

Tune Test Oscillator and receiver to 600 K.C. and adjust Oscillator Padding Condenser C3.

Short Wave Trimmers:—Switch to the Red Band and connect a S/W Test Oscillator to A & G terminals using a 200 Mmf. condenser in series with the lead to the antenna terminal. The test oscillator should be set at 14,000 K.C. and the dial of the receiver at 21.4 metres. The Oscillator, Detector and R.F. S/W Trimmers (C45, C39 and C38) should now be adjusted. Make a careful adjustment of all three, using a very weak signal. Note the reading on the output meter, then make a slight readjustment of the Detector Trimmer (C39), carefully retune the receiver and again read the output meter. Proceed in this manner until the optimum adjustment is obtained. A final readjustment of the R.F. Trimmer may be required but *do not* touch the Oscillator Trimmer again.

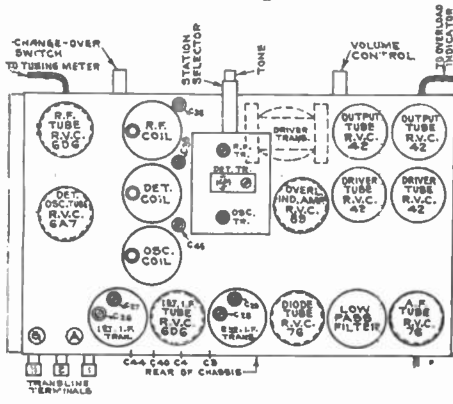
Switch to the Purple Band, set the dial to 48 metres, adjust the Test Oscillator to give a 6,000 K.C. signal and carefully adjust S/W Oscillator Trimmer C44 for maximum output.

Switch to Green Band, set the dial to 100 metres, set the Test Oscillator to give a 3,000 K.C. signal and adjust S/W Oscillator Trimmer C40 for maximum output. Adjust the Test Oscillator to supply a 1,700 K.C. signal and turn the dial to 175 metres. Adjust S/W Oscillator Tracking Condenser C4 while rocking the dial back and forth.

Model 54

1934 - 35

IF. 450 Kc.



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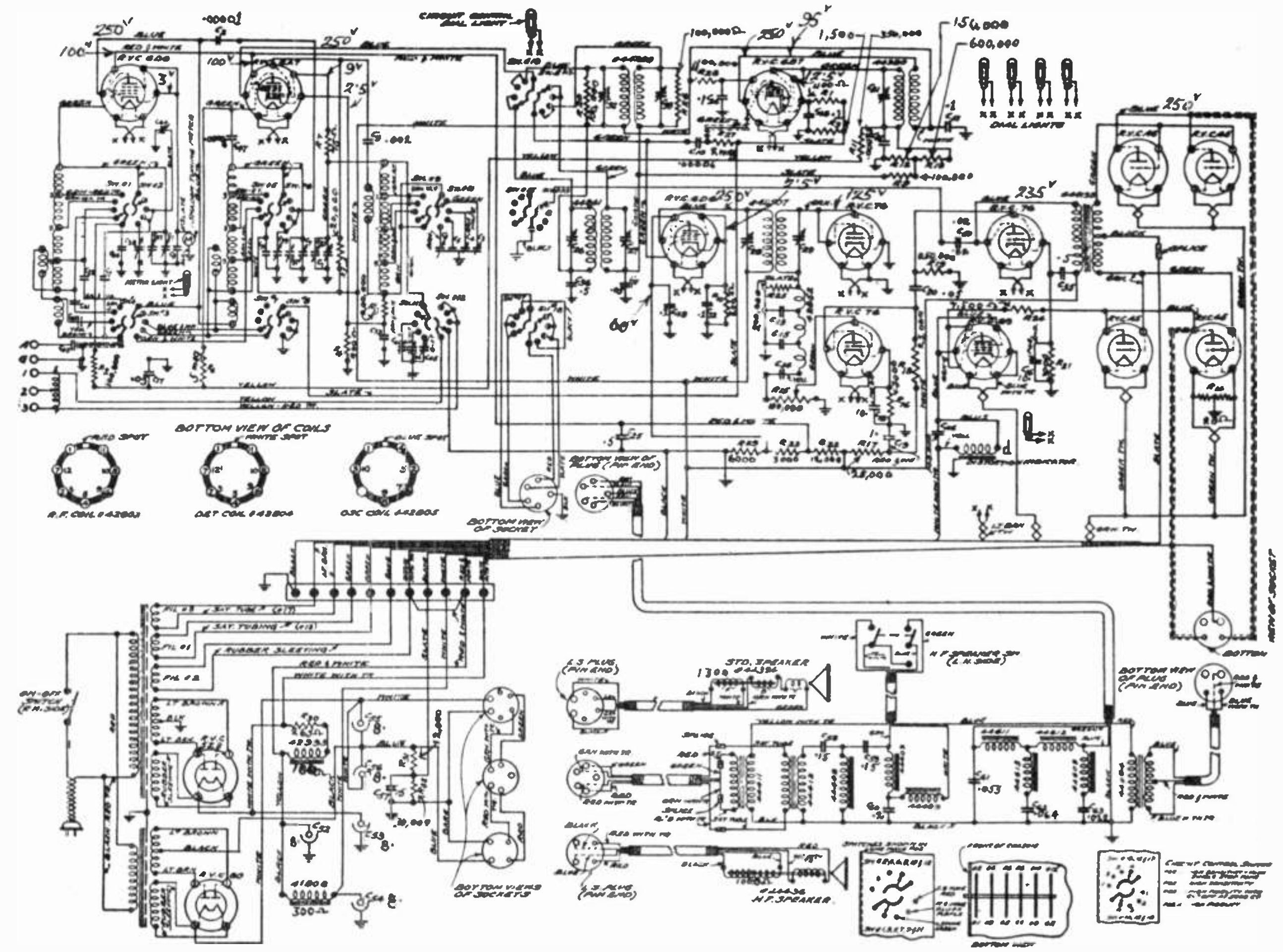


Overload Indicator:—The audio frequency output of the power stage is applied to the grid and cathode of the 89 relay tube. When this voltage reaches a value corresponding to an output of 8 watts, sufficient plate current flows (approx. 10 Ma.) to operate the indicator. **Adjustment:**—Make sure all output and rectifier tubes and the 89 relay tube are in O.K. condition.

Connect an output meter across the voice coil terminals of the dynamic speaker. See that the C.C. switch is in position No. 3 (60-5,000 cycles) and the speaker switch turned for dynamic speaker only.

Supply a signal from a modulated test oscillator and increase volume until the output meter reads 6.9 volts, which should be a sufficiently strong signal to cause the indicator to change to red. If change takes place at a lower or higher voltage, adjust upper screw on back of indicator case and again increase volume to check operating point.

NOTE:—2.78 volts (RMS) across voice coil = 1 watt and 8.8 volts = 10 watts.

ALIGNMENT: also see Data Sheets 24 - 25.

The leads from the Test Oscillator should be connected to the grid cap of the 6A7 Detector tube and to chassis, leaving the grid clip in place. If the oscillator is not provided with a blocking condenser, a .1 Mf. 300 volt condenser should be connected in the lead to the grid. (1) Loosen Trimmer C28 until the screw is quite loose and then adjust C29 for maximum output. This will require a fairly strong signal from the oscillator. (2) Without making any further change in C29, proceed to adjust C28 for maximum output. (3) With the C.C. switch in Position No. 2, adjust C27 and C26. (4) Turn the C.C. switch to Position No. 3 and align C33 and C32. (5) Increase the output of the Test Oscillator until the tuning meter shows a reasonable deflection and adjust C31 for *minimum* output. This adjustment also gives maximum deflection of the tuning meter.

All adjustments except that for C31 should be made with a weak signal. The adjustment for C29 and C28 should be made carefully or the audio frequency response of the receiver will be affected.

Broadcast Band Trimmers:—First see that the dial pointer is set at maximum when the gang condenser plates are fully meshed. Connect a Test Oscillator to the "A" and "G" terminals, adjust it to supply a 1,400 K.C. signal and set the receiver dial to 1,400 K.C. Adjust in order:—Oscillator, Detector and R.F. Trimmers. (See chassis diagram.)

I.F. Trimmers:—A sharply tuned 450 K.C. Test Oscillator modulated at about 100 cycles or less, is required. A .2 to .5 Mf. condenser connected across the modulator grid inductance will usually bring the modulation down to this frequency. Note that

Tune Test Oscillator and receiver to 600 K.C. and adjust Oscillator Padding Condenser C3.

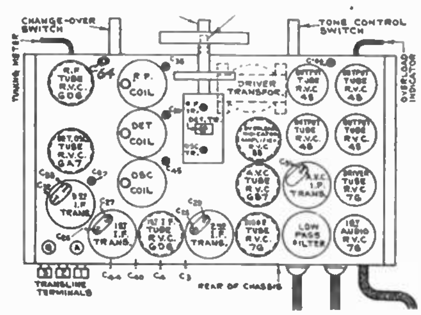
Short Wave Trimmers:—Switch to the Red Band and connect a S/W Test Oscillator to "A" and "G" terminals, using a 200 Mmf. condenser in series with the lead to the antenna terminal. The test oscillator should be set at 15,000 K.C. and the dial of the receiver at 20 metres. The Oscillator, Detector and R.F. S/W Trimmers (C45, C39 and C38) should now be adjusted. Make a careful adjustment of all three, using a very weak signal. Set the Test Oscillator to 11,000 K.C., tune the receiver to this frequency (approximately 27 metres) and adjust Tracking Condenser C6 while rocking the dial back and forth. Reset the oscillator to 15,000 K.C. and carefully tune the receiver to this signal. Note the reading on the output meter, make a slight re-adjustment of the Detector Trimmer (C39), carefully retune the receiver and again note the output reading. Proceed in this manner until the optimum adjustment is obtained. A final re-adjustment of the R.F. Trimmer may be required but *do not* touch the Oscillator Trimmer again.

If the receiver seems to lack sensitivity, replace the 6A7 tube and repeat the operations described in the above paragraph.

Switch the Purple Band, set the dial to 48 metres, adjust the Test Oscillator to give a 6,000 K.C. signal and carefully adjust S/W Oscillator Trimmer C44 for maximum output. When this has been completed, adjust the S/W R.F. Trimmer C64 for maximum signal. Do not touch the Detector Trimmer.

Switch to Green Band, set the dial to 100 metres, set the Test Oscillator to give a 3,000 K.C. signal and adjust S/W Oscillator Trimmer C40 for maximum output. Adjust the Test Oscillator to supply a 1,700 K.C. signal and turn the dial to 175 metres. Adjust S/W Oscillator Tracking Condenser C4 while rocking the dial back and forth.

Mod. 55
1934 - 35
I.F. 450 Kc.



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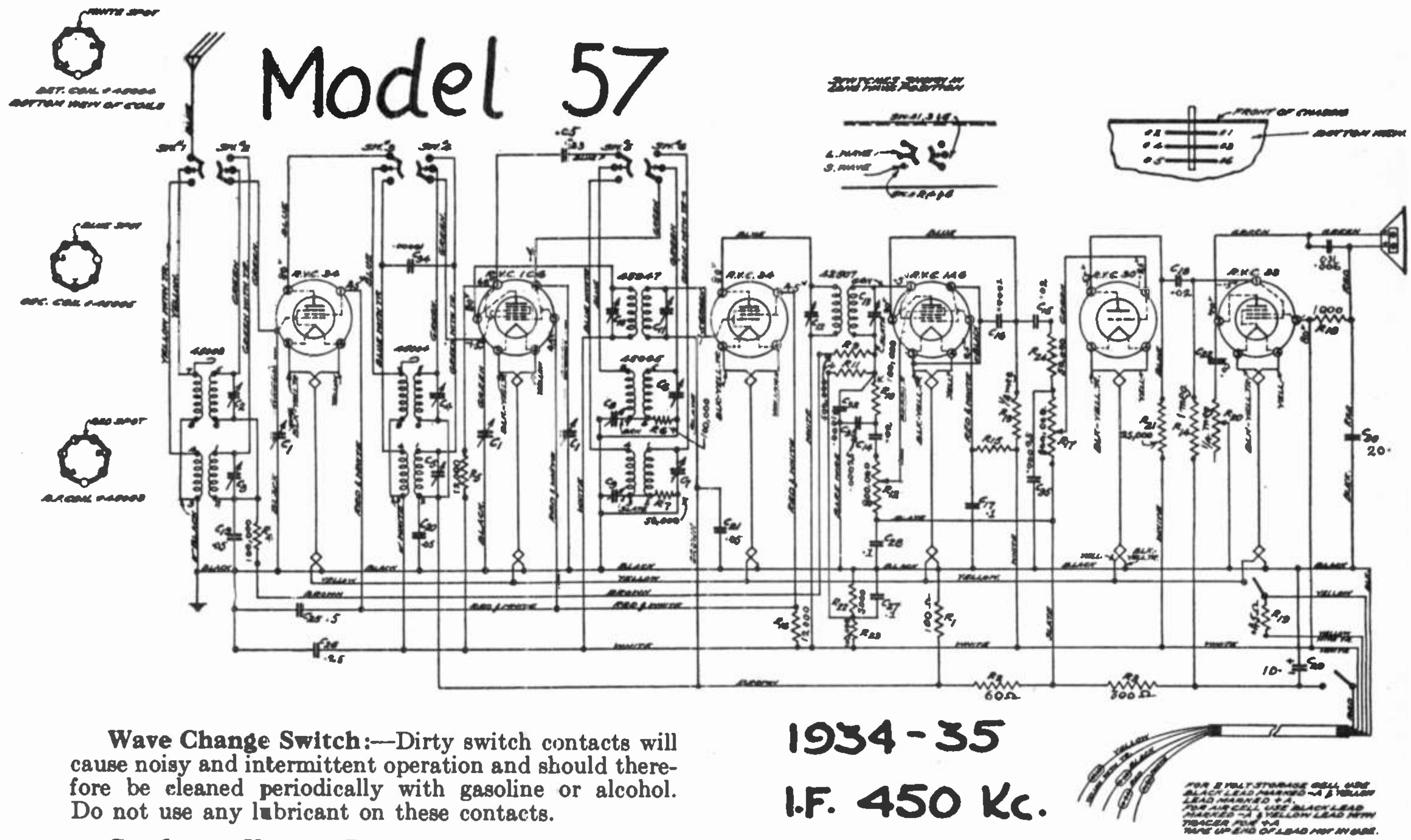
Model 57



1934-35

I.F. 450 Kc.

Wave Change Switch:—Dirty switch contacts will cause noisy and intermittent operation and should therefore be cleaned periodically with gasoline or alcohol. Do not use any lubricant on these contacts.

Condenser Vernier Drive:—Slipping of this drive mechanism may be caused by lack of tension in the ball race spring. Erratic action is usually due to low spots on the inner surface of the ball race, which will necessitate replacing this part. A special lubricant (Castordag) can be obtained for lubricating this mechanism.

ALIGNMENT:

I.F. Trimmers:—Adjust the Test Oscillator to supply a modulated 450 K.C. signal and connect to grid cap of 1C6 and chassis. The grid clip should remain in place and a series condenser of about .1 Mf. should be used in the lead from the test oscillator.

Turn the volume control on full and reduce output from test oscillator until an output meter connected across the speaker terminals reads not more than 24 volts. Adjust in order, C13, C12, C11 and C10. Re-adjust the attenuator on the test oscillator as necessary, to keep the audio output below 24 volts.

Broadcast Band Trimmers:—Set dial pointer to last index mark to the right on the dial when the gang condenser is at minimum capacity (plates out of mesh). Connect test oscillator to aerial lead and to chassis. Tune receiver to 136 and supply a 1,400 K.C. signal. Adjust C6, C4 and C2, at all times keeping the audio output at a very low value by adjusting the attenuator on the test oscillator.

Tune receiver to 55 and supply a 550 K.C. signal. Adjust oscillator padding condenser C2 for maximum output, while rocking the dial back and forth.

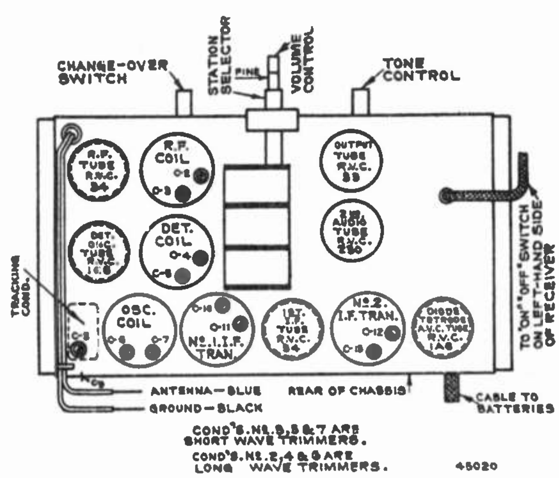
Short Wave Trimmers:—The test oscillator should be connected to the aerial lead, using a 250 Mmf. series condenser and to chassis (not to ground lead). See that the chassis is also connected to ground. Unscrew short wave oscillator trimmer C7 until it is held by about two threads. Rotate the gang to tune in the 15,000 K.C. signal which should appear at about 140-142 on the dial.

Make a rough adjustment of the short wave detector and S/W R.F. trimmers and then make a final adjustment of each by carefully observing the output meter reading while rocking the dial slightly after each adjustment of the trimmer screw. Keep the output below 24 volts while making these adjustments.

After making these adjustments, tune the receiver slowly toward 134 to pick up the image frequency signal which should give about 1/3 the output of the true signal. If no image frequency is picked up, the oscillator has been trimmed to the wrong peak (trimmer too far in). If more than 1/3, the oscillator is O.K. but the R.F. and Detector trimmers are adjusted toward the image frequency.

These incorrect trimming positions result in good sensitivity at top and bottom of the scale but weak in the middle. Correct trimming results in uniformly high sensitivity.

Set pointer at 58 and supply a 6,000 K.C. signal. Adjust S/W Oscillator padding condenser C9 while rocking the dial.



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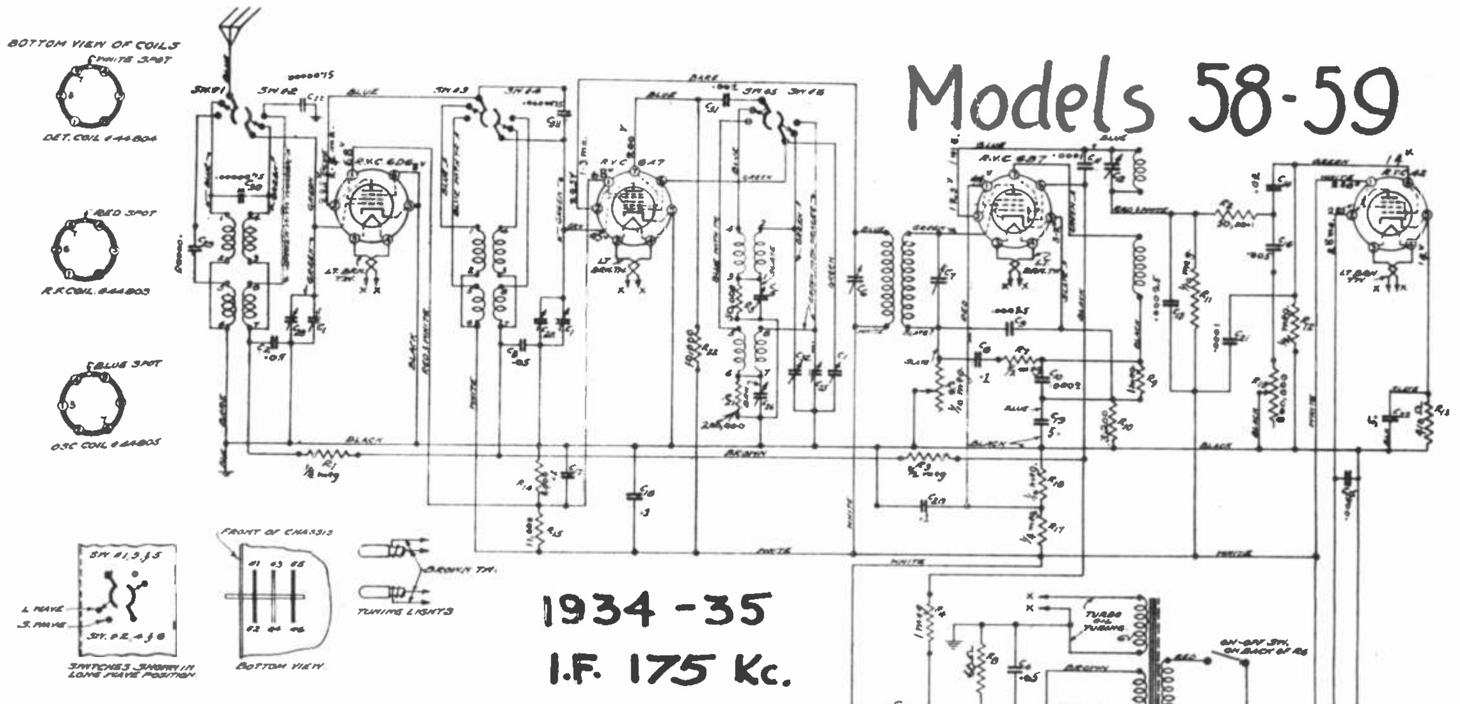
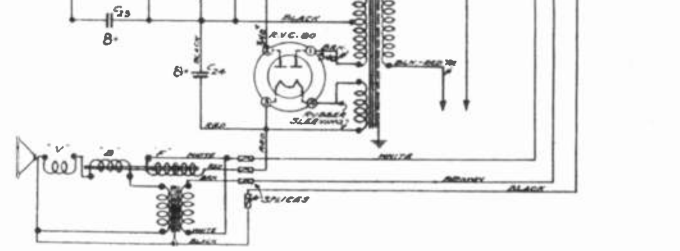
World Radio History

Models 58-59



1934-35

I.F. 175 Kc.



The R.F. and Det. S/W coils use the same trimmers as are used on Broadcast, the design of the receiver insures proper alignment of both sets of coils providing the alignment instructions are carefully carried out. Do not change the setting of these two trimmers unless facilities are available for retrimming the receiver on short wave.

Wave Change Switch:—Dirty switch contacts will cause noisy and intermittent operation and should therefore be cleaned periodically with gasoline or alcohol. Do not use any lubricant on these contacts.

Condenser Vernier Drive:—Slipping of this drive mechanism may be caused by lack of tension in the ball race spring. Erratic action is usually due to low spots on the inner surface of the ball race, which will necessitate replacing this part. A special lubricant (Castordag) can be obtained for lubricating this mechanism.

ALIGNMENT:

I.F. Trimmers:—Connect a 175 K.C. Test Oscillator to the grid cap of the 6A7 tube and to chassis, leaving the grid clip in place. If there is no blocking condenser in the Test Oscillator, a .1 Mf. condenser should be connected in the lead from the Oscillator to the grid cap. Adjust in order:—C12, C7 and C6.

Broadcast Band Trimmers:—With the gang condenser set at *minimum* capacity (plates out), the dial pointer should be set at the last index mark to the left of the dial.

Connect the Test Oscillator to the aerial lead and to chassis. Tune the receiver to 138 and adjust the Test Oscillator to supply a 1,400 K.C. signal. Adjust in order:—Oscillator (C32), Detector and R.F. Trimmers.

Tune receiver to 60 and supply a 600 K.C. signal. Adjust Oscillator Padding condenser C5 while rocking the dial back and forth.

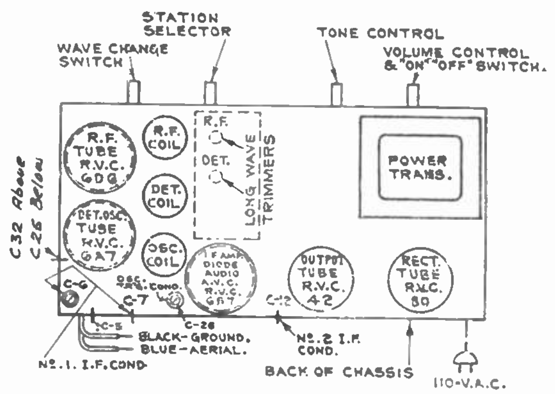
Short Wave Trimmers:—Set pointer at 140 and supply a weak 15,000 K.C. signal, connecting one lead of the Test Oscillator to the aerial lead, using a 250 Mmf series condenser, and the other lead to chassis (not to ground lead). Tune in the signal by adjusting S/W Oscillator Trimmer C25. The signal may be tuned in with two settings of this trimmer, the adjustment with the trimmer the farthest out is correct. After setting this condenser, adjust the Detector Trimmer while rocking the dial slightly. Adjust the R.F. Trimmer the same way. Only slight adjustments of these two trimmers should be required if the dial pointer has been correctly set.

In making these adjustments the signal should not be greater than will produce a reading of 1 volt across the voice coil.

Tune the receiver slowly toward 134 to pick up the image frequency signal. This should give about ⅓ the output of the true signal. If no image is picked up the osc. trimmer C25 has been set to the wrong peak. If more than ⅓, C25 is set O.K. but detector and R.F. Trimmers are adjusted toward the image position.

These incorrect trimming positions result in good sensitivity at 15,000 and 6,000 K.C. but weak at 12,000 and 10,000 K.C. Correct trimming gives good sensitivity at all points on the dial.

Set pointer at 58 and supply a 6,000 K.C. signal. Adjust S/W Oscillator Padding Condenser C26 while rocking the dial back and forth. Switch back to Broadcast Band and check alignment of oscillator trimmer C32 at 1,400 K.C. while rocking the dial back and forth. *Do not touch the R.F. or detector trimmers after they have been adjusted on short wave.*



44485

DATA SHEET

PRINTED IN CANADA

— COURTESY

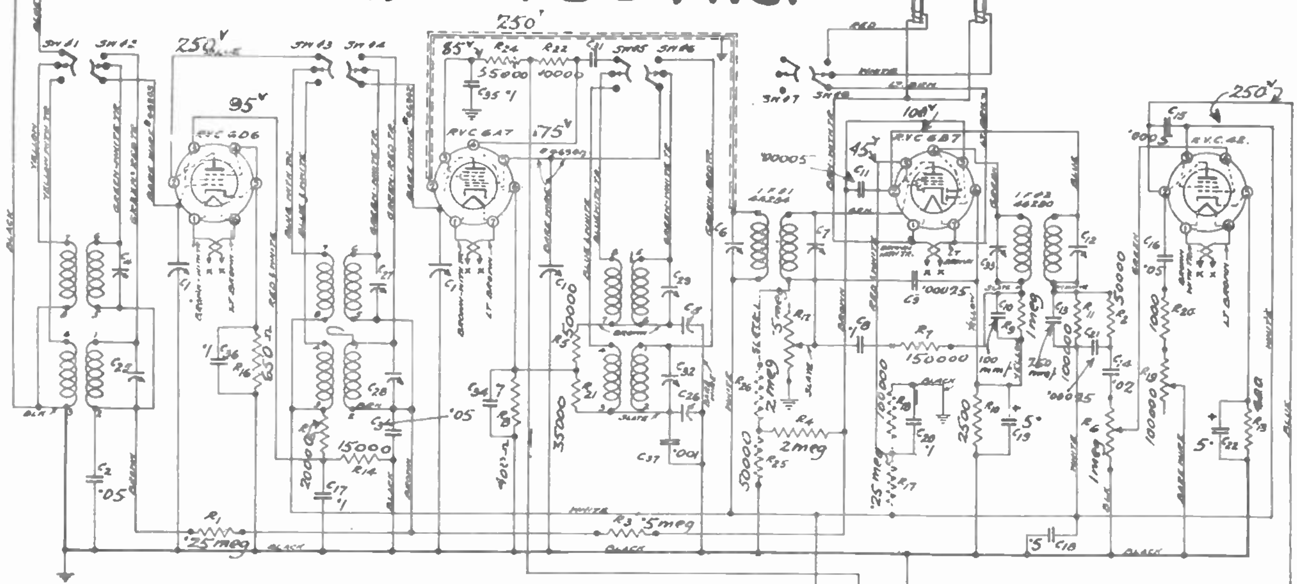
MARCONI-28 CO. LTD.

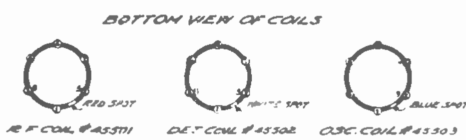
DATA SHEET

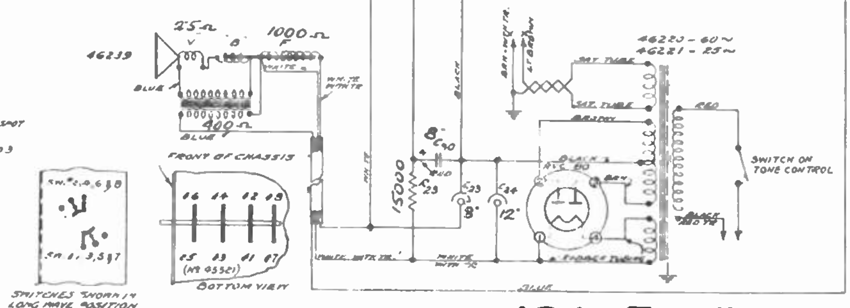
MARCONI-29 CO. LTD.

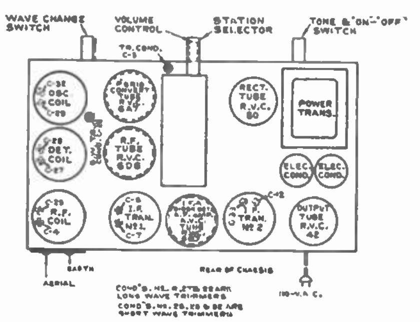
World Radio History

I.F. = 450 K.C.



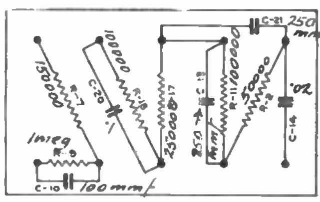






1935-36

MODELS 62-63



RESISTOR PANEL.

I.F. Trimmers:—Set the gang condenser at minimum and connect a 450 K.C. Test Oscillator to the grid cap of the 6A7 tube leaving the grid clip in place. A .1 Mf. blocking condenser should be used in series with the lead from the Test Oscillator. Turn the volume control on full and reduce the output of the T.O. until the output of the receiver is not more than ½ Watt (e.g. 1.07 volts at 400 cycles across voice coil). Adjust, in order, C12, C33, C7, C6. Go over these adjustments several times to insure the best possible setting.

Broadcast Band Alignment:—Set the gang condenser at minimum capacity (plates out of mesh) and adjust pointer to the lower side of the black band on the right hand side of dial scale.

Connect the Test Oscillator to the A and G terminals and supply a 1,600 K.C. signal. Tune the receiver to 1,600 and adjust, in order, C29, C27, C4.

Tune the receiver to 580 and supply a 580 K.C. signal. Adjust oscillator tracking condenser C5 while rocking the dial slightly in order to secure the maximum output. A final adjustment should be made at 1,600 K.C.

These adjustments should be made with the volume control full on and the output of the T.O. reduced to give a maximum output from the receiver of not more than ½ Watt.

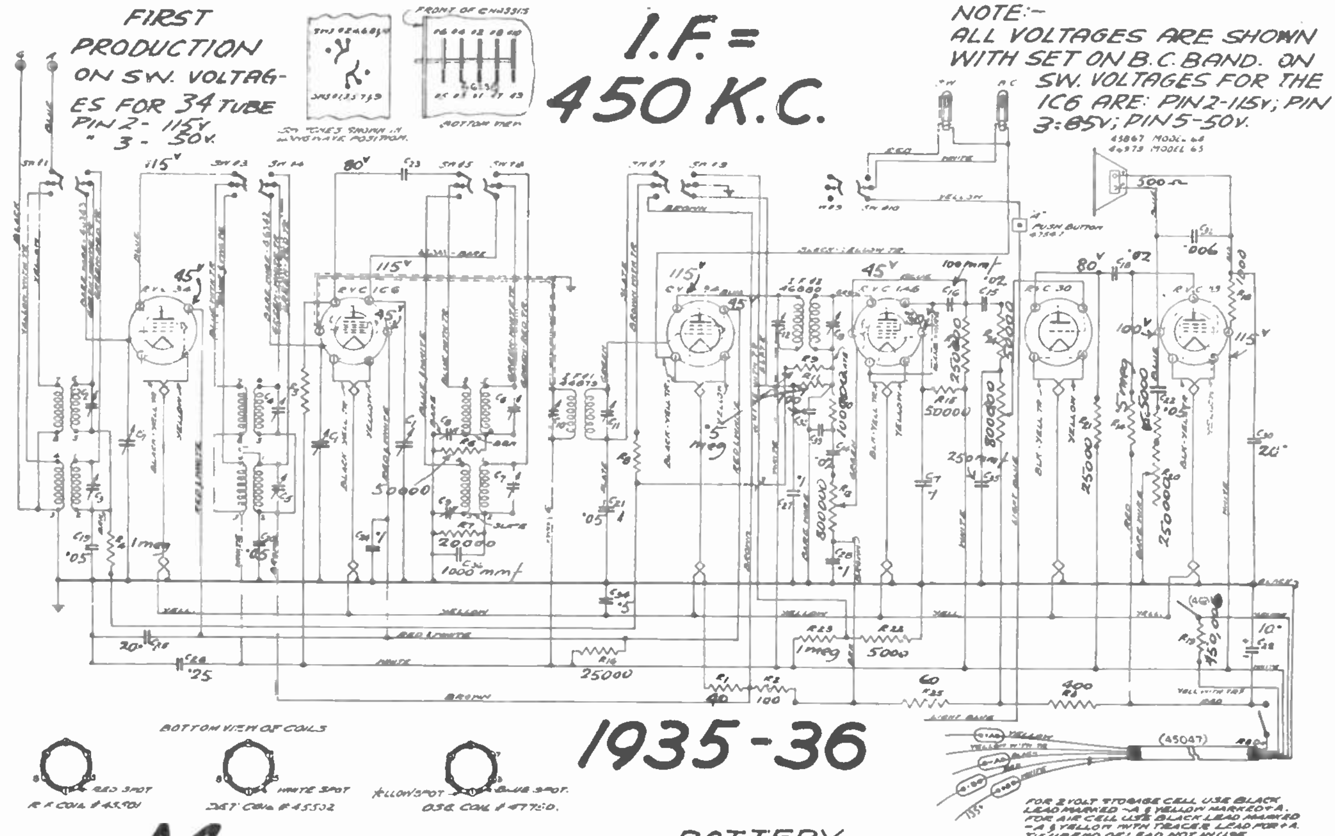
Holes are provided in the tops of R.F. Det., and Osc. coil shield cans to permit the insertion of a tuning wand. This device may be used to check the correctness of alignment. Inserting one end of the wand in a coil, increases its inductance and inserting the other end decreases its inductance. With the receiver tuned to a steady signal, inserting either end of the wand in any of the three coils will cause a drop in output if all circuits are correctly aligned. If an increase is noted, it will indicate incorrect adjustment of the trimmer.

The same procedure can be used for checking short wave alignment.

Short Wave Alignment:—If correct short wave alignment is to be obtained it is imperative to use a test oscillator that will supply the necessary test frequency as fundamentals and that will attenuate the signal so that a very low output is obtained from the receiver. An output meter is, of course, also essential. Connect the T.O. to the "A" and "G" terminals using a 250 mmf. condenser in series with the aerial lead and adjust it to supply a 16 M.C. signal. Rotate the gang condenser until the pointer is at 16 M.C. and tune in the 16 M.C. signal by adjusting C32, C28 and C25. To obtain exact trimming the detector trimmer C26 should be varied while rocking the gang condenser back and forth until maximum output is obtained.

Rotage the gang till the pointer is at approximately 6 M.C. and supply a 6 M.C. signal. Adjust S/W tracking condenser C10 while rocking the dial slightly to obtain maximum output. A final adjustment should be made at 16 M.C.

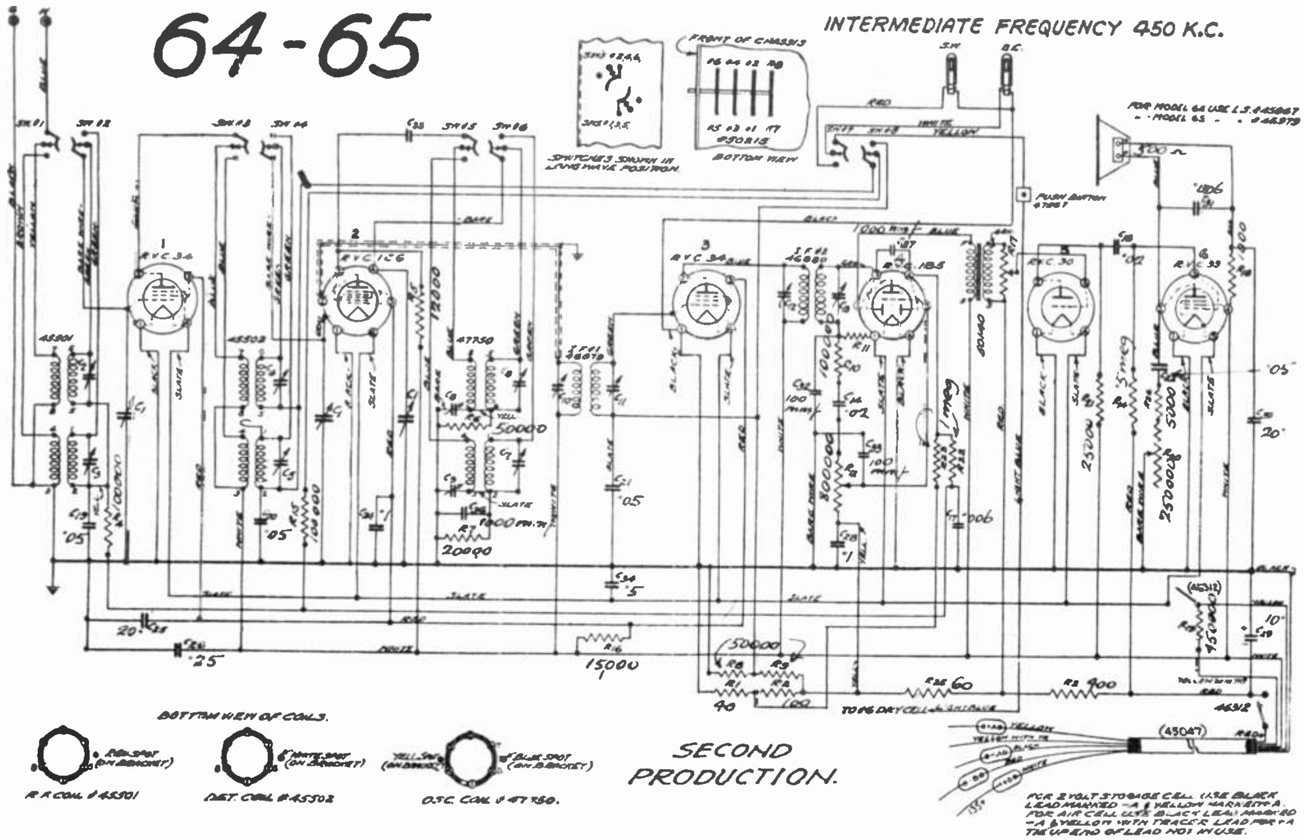
World Radio History



1935-36

MODELS 64-65

BATTERY-OPERATED.



SECOND PRODUCTION.

ALIGNMENT INSTRUCTIONS, ETC. ON DATA SHEET 32

COURTESY- CANDN.

DATA SHEET

PRINTED IN CANADA

MARCONI-31

CO. LTD

World Radio History

ALIGNMENT INSTRUCTIONS FOR MODELS 64-65 BATTERY-OPERATED

GENERAL DATA:

Circuit:—Dual Wave, six tube battery operated superheterodyne with automatic volume control.

Frequency Range:—525 to 1730 K.C. and 5600 to 18000 K.C.

Intermediate Frequency:—450 K.C.

Undistorted Power Output:—485 Milliwatts.

Maximum Power Output:—685 Milliwatts.

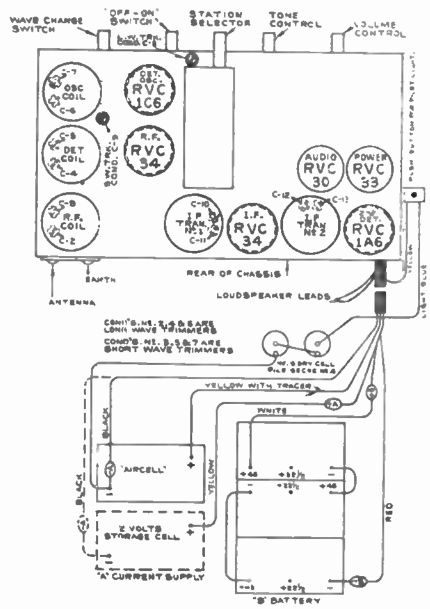
Sensitivity in Microvolts for 100 MW output:—Short wave (10 M.C.) 8 MV., Long Wave (1000 K.C.) 3 MV.

Selectivity:—30 K.C. at 1000 times input at 1000 K.C.

Image Ratio:—13000/1 at 1000 K.C.

Filament Current:—620 Ma. at 2.1 volts.

Total Plate Current:—26 Ma. at 135 volts.

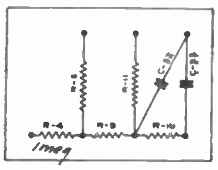


BATTERIES:—

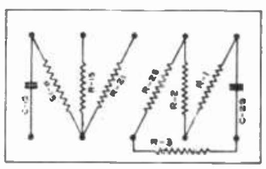
Do not attempt to operate the receiver with more than 135 volts of "B" battery or the tubes will be damaged.

No "C" battery is required as correct bias voltages are automatically supplied to all tubes by the potential divider (R1, R2, R25 and R3). This permits using "B" batteries even after they have dropped as low as 100 volts, although maximum sensitivity and tone quality can only be expected with fresh "B" batteries.

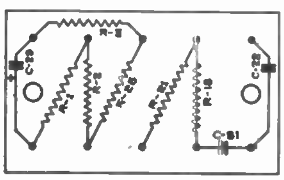
When the total "B" voltage drops below about 112 volts, the 1C6 tube may not oscillate on the short wave bands. The actual voltage at which oscillation stops will vary with different tubes and if the receiver does not function on short wave when the batteries are partially run down, it may be necessary to try several new 1C6 tubes, in order to obtain one that will operate satisfactorily.



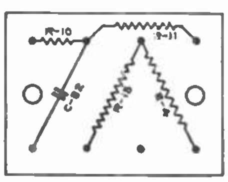
Resistor Panel



First Production



Resistor Panel



Second Production.

ALIGNMENT

I.F. Trimmers:—Set gang condenser at minimum and connect a 450 K.C. Test Oscillator to the grid cap of the 6A7 tube leaving the grid clip in place. A .1 Mf. blocking condenser should be used in series with the lead from the Test Oscillator. Turn the volume control on full and reduce the output of the T.O. until the output of the receiver is not more than 100 MW (e.g. 27 volts at 400 cycles across the speaker terminals). Adjust, in order, C13, C12, C11, C10. Go over these adjustments several times to insure the best possible setting.

Broadcast Band Alignment:—Set the gang condenser at minimum capacity (plates out of mesh) and adjust pointer to the lower side of the black band on the right hand side.

Connect the test oscillator to the A & G terminals and supply a 1600 K.C. signal. Tune the receiver to 1600 and adjust, in order, C6, C4, C2.

Tune the receiver to 580 and supply a 580 K.C. signal. Adjust the oscillator tracking condenser C8 while rocking the dial slightly in order to secure the maximum output. A final adjustment should be made at 1600 K.C.

These adjustments should be made with the volume control full on and the output of the T.O. reduced to give a maximum output from the receiver of not more than 100 MW.

Holes are provided in the tops of R.F. Det. and Osc. coil shield cans to permit the insertion of a tuning wand. This device may be used to check the correctness of alignment. Inserting one end of the wand in the coil, increases its inductance and inserting the other end decreases its inductance. With the receiver tuned to a steady signal, inserting either end of the wand in any of the three coils will cause a drop in output if all circuits are correctly aligned. If an increase is noted, it will indicate incorrect adjustment of the trimmer.

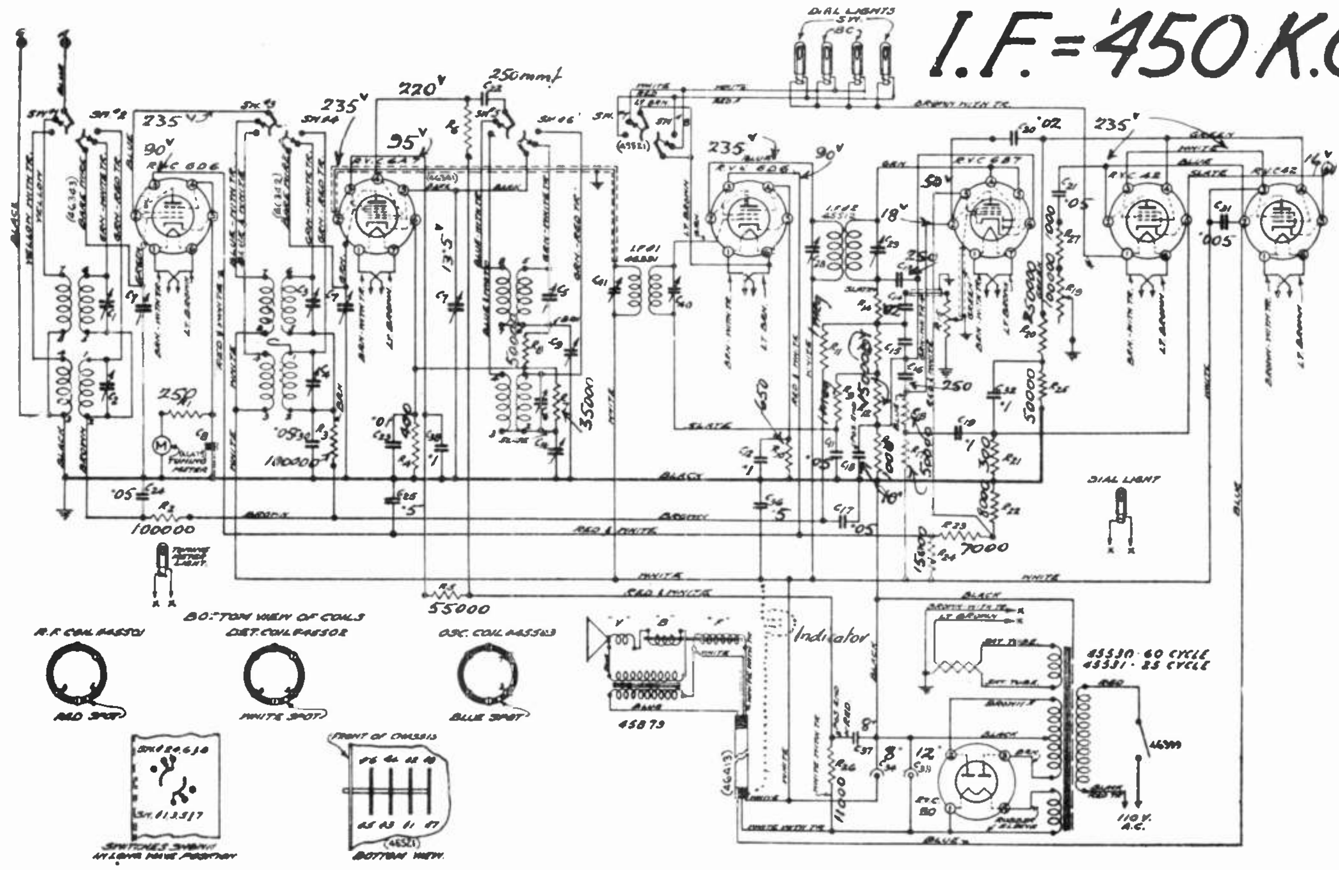
The same procedure can be used for checking short wave alignment.

Short Wave Alignment:—If correct short wave alignment is to be obtained it is imperative to use a test oscillator that will supply the necessary test frequency as fundamentals and that will attentuate the signal so that a very low output is obtained from the receiver. An output meter is, of course, also essential. Connect the T.O. to the "A" and "G" terminals using a 250 mmf. condenser in series with the aerial lead and adjust it to supply a 16 M.C. signal. Rotate the gang condenser until the pointer is at 16 M.C. and tune in the 16 M.C. signal by adjusting C7, C5, and C3. To obtain exact trimming, the detector trimmer C5 should be varied while rocking the gang condenser back and forth until maximum output is obtained.

Rotate the gang till the pointer is at approximately 6 M.C. and supply a 6 M.C. signal. Adjust S/W tracking condenser C9 while rocking the dial slightly to obtain maximum output. A final adjustment should be made at 16. M.C.

World Radio History

I.F.=450 K.C.



1935-36

MODEL 66

DATA BELOW ALSO APPLIES TO MODELS 67 and 68

RESISTANCE OF COILS, ETC.

Primary 60 cy. Power Trans.	4	Ohms
Secondary 60 " " "	220	"
Primary 25 " " "	7.5	"
Secondary 25 " " "	360	"
Primary I.F. Trans. No. 46391	10	"
Secondary " " No. 46391	9	"
Primary " " No. 45512	9	"
Secondary " " No. 45512	10	"
Primary " " No. 45511 (Models 67-68)	5.5	"
Secondary " " No. 45511 (Models 67-68)	9	"
Primary I.F. Trans. No. 45513 (Models 67-68)	14	Ohms
Secondary " " No. 45513 (Models 67-68)	14	"
Primary Output Trans. (Model 66)	243	"
Primary Output Trans. (Model 67)	200	"
Primary Output Trans. (Model 68)	285	"
Speaker Voice Coil (Model 66)	2.1	"
Speaker Voice Coil (Model 67)	1.5	"
Speaker Voice Coil (Model 68)	7.5	"
Field Coil (Hot)	1300	"
Tuning Meter	400	"

Voice Coil Impedance: Model 66—2.3 Ohms; Model 67—1.5 Ohms; Model 68—8.3 Ohms.

VOLTAGE READINGS

CONTINUITY

SOCKET PINS TO CHASSIS—NEW R.M.A. STANDARD PIN NUMBERS

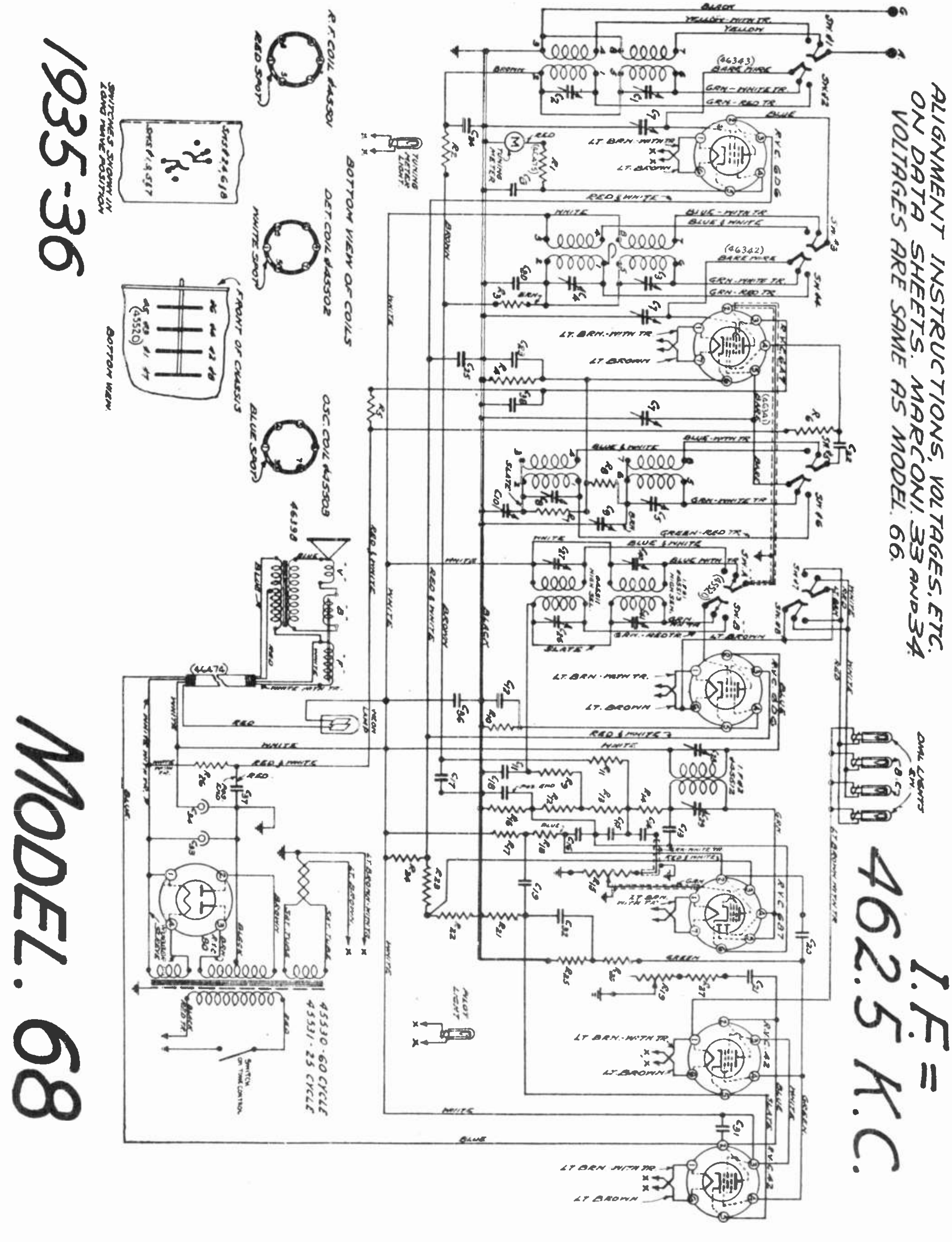
		Voltage CAP	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	Continuity CAP	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6
R.F.	6D6	0	235	90	5.5	5.5	—	1.4 Meg	30,000	15,000	650	650	—
Det. Osc.	6A7	0	235	95	220	13.5	4	1.4 Meg	30,000	98,000	50,000	50,650	400
I.F.	6D6	0	235	90	5	5	—	1.2 Meg	30,000	15,000	650	650	—
2nd Det.	6B7	0	18	50	0	0	2.25	0-1 Meg	130,000	8,000	351,000	351,000	1,000
Power	42	—	225	235	0	16	—	—	30,000	30,000	300,000	300	—
Rectifier	80	—	380 A.C.	380 A.C.	340	—	—	—	110*	110*	31,200	—	—

*180 Ohms in 25 cycle models.

ALIGNMENT INSTRUCTIONS, LAYOUT, ON DATA SHEET -34

World Radio History

Model 68.--Model 67 is identical except that Overload Indicator is omitted.



DATA SHEET

COURTESY- CANON.

MARCONI-33a

CO. LTD.

PRINTED IN CANADA

World Radio History

ALIGNMENT INSTRUCTIONS FOR MODELS 66-67-68

GENERAL DATA:

Circuit:—Dual Wave, 7 tube, superheterodyne with preselector and full Automatic Volume Control.

Frequency:—1,750-525 K.C. and 18,000 to 5,650 K.C.

Intermediate Frequency:—450 K.C.

Undistorted Power Output:—Model 66, 3.2 Watts; Models 67 and 68, 3.3 Watts.

Maximum Power Output:—Model 66, 4.5 Watts; Models 67 and 68, 5.4 Watts.

Sensitivity in Microvolts for 0.5 Watt output:—

Model 66, Long Wave—3.5 Mv. Short Wave—7 Mv.

Models 67 and 68, Long Wave, High Sensitivity—1 Mv. High Selectivity—3.5 Mv.

Models 67 and 68, Short Wave, High Sensitivity—3.5 Mv.

Selectivity, Model 66:—28 K.C. at 1,000 times input.

Models 67 and 68, High Selectivity—24 K.C. High Sensitivity—38 K.C.

Image Ratio:—Better than 20,000/1 at 1,000 K.C.

Power Rating:—115v. A.C.: 60 cy., 72 Watts; 25 cy., 74 Watts.

Short Wave Circuit—A six-pole, double throw switch is used to substitute short wave coils for the broadcast band coils, the circuit arrangement remaining unchanged. Individual trimmers are provided for each secondary winding and padding condensers are provided for both the long and short wave oscillator coils.

Second Detector:—The 6B7 acts as a diode detector and 1st audio amplifier and supplies A.V.C. to the R.F., Converter and I.F. grids. Note that the I.F. is controlled to a lesser extent than the others due to its grid return being connected to a lower point on the A.V.C. potential divider (R14, R13, R12). The I.F. Signal is applied to both diode plates of the 6B7, where it is rectified and the resulting audio frequency appears across R14 and R15, a portion of it being tapped off by the arm of the volume control and applied to the control grid of the 6B7, where it is amplified and passed on to the 42 Power tube.

Selectivity Switch (Models 67 and 68 only):—This switch is used to cut in either of two I.F. transformers between the 1st Detector and the I.F. Amplifier tube. One of these (No. 45513) is designed to give normal selectivity and full tone quality with maximum sensitivity. The other (45511) is designed to give high selectivity as an aid in separating stations when interference is experienced from stations in adjacent channels. A slight loss in sensitivity and fidelity occurs when this transformer is used. Always use High Sensitivity position when tuning for short wave stations.

Overload Indicator (Model 68 only):—A neon glow lamp is connected across a portion of the primary winding of the output transformer. When the audio voltage across this portion of the winding rises to approximately 70 volts, the lamp will glow. This corresponds to a power output of approximately 1.5 watts. As the volume is raised, the brilliancy increases and indicates that satisfactory tone quality cannot be expected.

Vernier Drive:—These models are fitted with an improved type of planetary ball type vernier and silent gear type condenser drive. A hardened drive spindle is used which should give a minimum amount of trouble. The spindle and drive shaft may be disassembled by removing the split washer under the pinion gear inside the condenser frame.

ALIGNMENT

I.F. Trimmers:—Connect a 450 K.C. Test Oscillator to the grid clip of the 6A7 tube and to chassis, leaving the grid clip in place. A .1 Mf. blocking condenser should be used in the lead from the Test Oscillator.

Model 66 only:—Adjust, in order, C29, C28, C40, C41.

Models 67 and 68:—With switch in "High Selectivity" position, adjust, in order, C29, C28, C27, C26, then turn to "High Sensitivity" and adjust C40 and C41.

Caution:—I.F. alignment is made at the factory using cathode ray oscilloscopes, and, as these circuits are very stable, it is inadvisable to attempt realignment unless you are certain it is necessary. This is particularly important in Models 67 and 68 where it may be difficult to obtain correct I.F. adjustment unless the visual method of alignment is used.

Broadcast Band Trimmers:—With the gang condenser set at minimum capacity (plates out of mesh), the dial pointer should be set to point between the letters "G" and "A" of the word "Mega." Connect the Test Oscillator to the "A" and "G" terminals and supply a 1,600 K.C. modulated signal. Rotate the condenser until the dial pointer is at 160 and adjust, in order, C5, C3, C1.

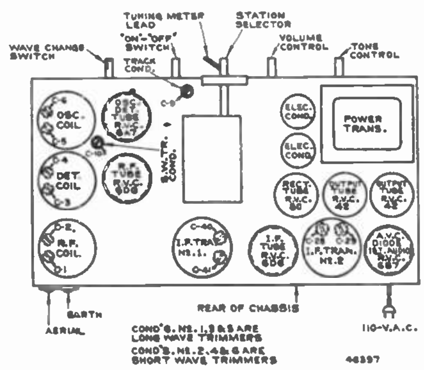
Supply a 580 K.C. signal and set pointer to 58. Adjust oscillator tracking condenser C9 while rocking the dial slightly.

Holes are provided in the tops of R.F., Det. and Osc. shield cans to permits the insertion of a tuning wand. This device permits checking to correctness of the alignment without varying the trimmer adjustment.

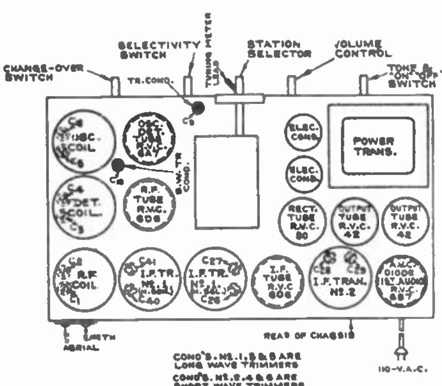
Short Wave Trimmers:—If correct short wave alignment is to be obtained it is imperative to use a test oscillator that will supply the necessary test frequency as fundamentals and that will attenuate the signal so that a very low output is obtained from the receiver. An output meter is, of course, also essential. Connect the T.O. to the "A" and "G" terminals using a 250 mmf. condenser in series with the aerial lead and adjust it to supply a 16,000 K.C. signal. Rotate the gang condenser until the pointer is at 1,520 K.C. (equivalent to 16 M.C.) and tune in the 16 M.C. signal by adjusting C2, C4 and C6. To obtain exact trimming the detector trimmer (C4) should be varied while rocking the gang condenser back and forth until maximum output is obtained.

Rotate the gang till the pointer is at approximately 58 and supply a 6,000 K.C. signal. Adjust S/W tracking condenser C10 while rocking the dial slightly to obtain maximum output.

Note:—Models 67 and 68 wiring diagrams are identical except for the neon lamp overload indicator which is used on Model 68 only.



Model 66

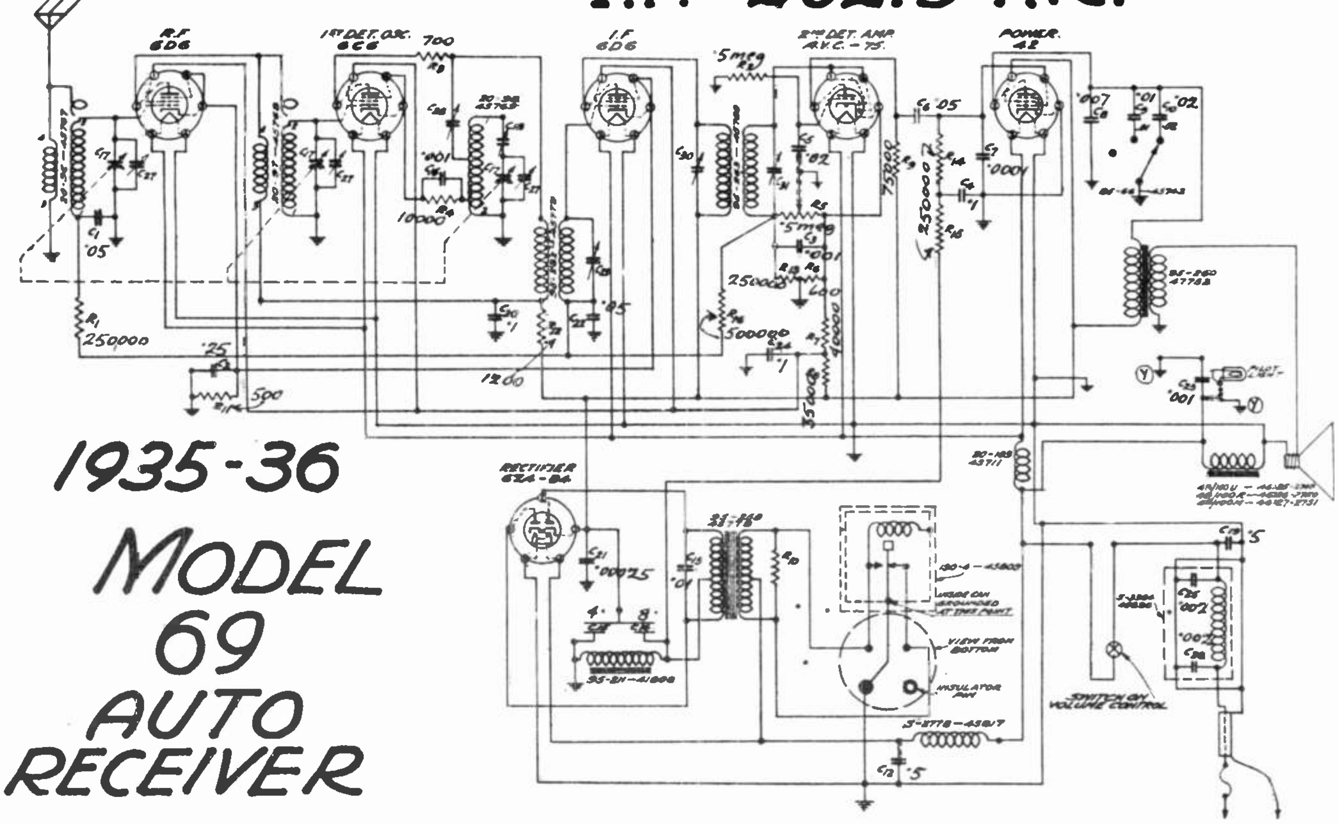


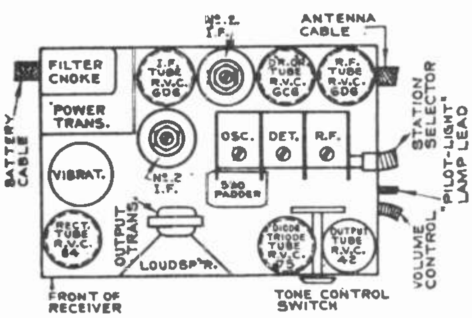
Model 67-68

World Radio History

I.F. = 262.5 K.C.

1935-36 MODEL 69 AUTO RECEIVER





VOLTAGE READINGS

Position	Tube	Ef	Ek	Eg¹	Eg²	Eg³	Ep
R.F. Amplifier	6D6	5.6	4.1	*	4.1	76	200
1st Det.-Osc.	6C6	5.6	4.5	0	4.5	76	200
I.F. Amplifier	6D6	5.6	4.1	*	4.1	76	200
2nd Det. A.V.C.	75	5.6	1.3	0	0	—	165
Power Amp.	42	5.6	0	3	0	200	192
Rectifier	84	5.6	200	—	—	—	—

f—Filament; k—Cathode; g^1—Control Grid; g^2—Suppressor; g^3—Screen Grid; p—Plate; *—Depends on applied signal strength. All voltages measured from indicated points to ground. Battery voltage 6 volts. (Check voltages with condenser gang in full mesh.)

ALIGNMENT

I.F. Alignment:—

To balance the I.F. Circuit, connect the 252½ K.C. test oscillator to the grid of the 6C6 tube through a 0.5 mfd. condenser and to ground. Adjust the 1st I.F. primary trimmer to maximum output from either the speaker or an output meter. Follow in the same manner with the secondary, and the primary and secondary of the 2nd I.F. transformer. This completes the I.F. circuit adjustment.

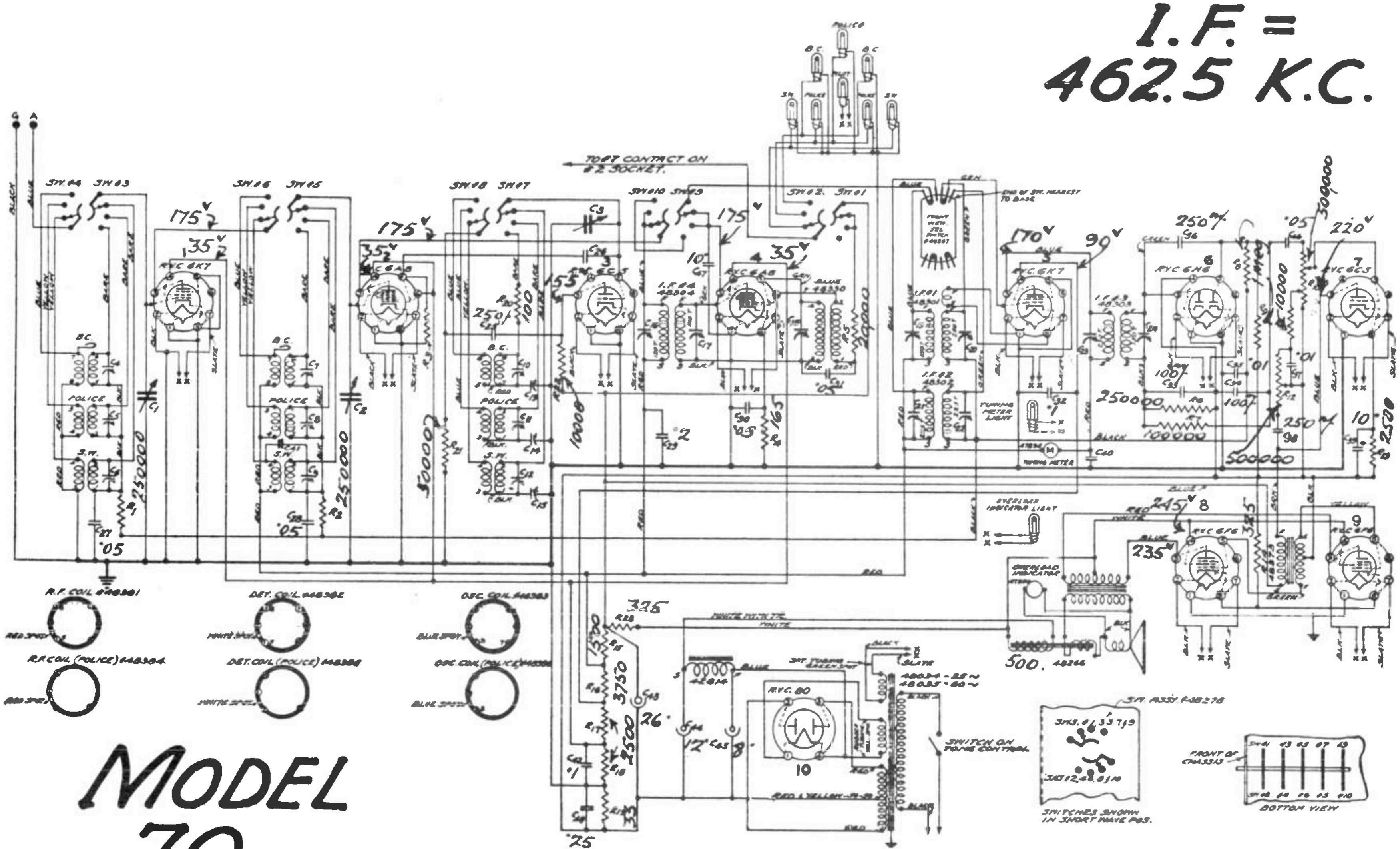
R.F. Alignment:—

1. Next attach the test oscillator through a 150 mmf. condenser to the antenna and ground leads.
2. Turn condenser plate completely out of mesh.
3. Set test oscillator to 1600 K.C.
4. Adjust the oscillator condenser trimmer to approximate resonance at 1600. Disregard dial setting for this operation.
5. Set test oscillator to 1400 K.C. and turn gang condenser to resonance and peak the three trimmers accurately. Now set pointer on the dial to 1400 K.C. by turning indicator screw from rear of head through pilot light socket hole.
6. Set test oscillator to 600 K.C. and tune set to pick up the signal. Rock the dial over this point while adjusting the padder condenser for greatest output.

If the dial is off calibration at the low frequency end after this is done the indicator may be moved slightly in either direction to give a uniform accuracy over the entire scale.

World Radio History

I.F. = 462.5 K.C.



MODEL 70 1935-36

ALIGNMENT INSTRUCTIONS, LAYOUT, ETC. ON DATA SHEET MARCONI.-37

COURTESY- CANDN MARCONI-36 CO. LTD.

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DATA SHEET

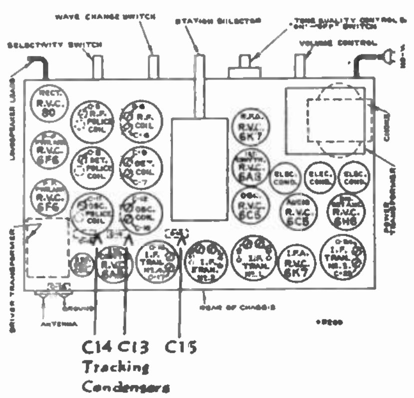
World Radio History

RESISTANCE OF COILS

Coil	Resistance
Primary Power Transformer 60 cycle	3.14 Ohms
" " " 25 "	5 "
Secondary " " 60 "	186 "
" " " 25 "	400 "
Primary I.F. Trans. No. 1 (48301)	6.5 "
Secondary " " " "	9 "
Primary " " No. 2 (48302)	8.5 "
Secondary " " " "	8.5 "
Primary " " No. 3 (48303)	9.5 "
Secondary " " " "	5 "
Primary I.F. Trans. No. 4 (48304)	4.5 Ohms
Secondary " " " "	4.5 "
Primary Driver Trans. (48373)	2,000 "
Secondary " " "	8,500 "
Primary Output "	700 "
Overload Indicator coil	75 "
Tuning Meter coil	350 "
Filter Choke coil	200 "
Speaker Field	500 "
Voice Coil	2.5 "

ALIGNMENT INSTRUCTIONS

MODEL 70



Note: After aligning the I.F. Circuits, all subsequent trimming operations should be made with the Selectivity Switch in the "High Selectivity" position (Left).

S.W. I.F. Trimmers:—Supply a 1680 K.C. signal to the grid cap of the 6A8 second converter tube through a .05 Mf. condenser, leaving the grid clip in place. Turn W.C. switch to short wave and set gang at minimum. Adjust C18 for maximum output.

Note that the oscillator circuit, contrary to usual practice is tuned to a frequency **lower** than the signal, i.e., to 1217.5 K.C. Hence, if C18 is found to peak at two points, the correct setting is with the greater capacity (trimmer in).

Connect the test oscillator to the grid of the first converter tube, 6A8 through a condenser. Adjust C17 and C16 for maximum output. See that the input is reduced to keep the output below .5 watts.

Broadcast Band Trimmers:—With the gang condenser at minimum capacity, set the pointer between the letters "E" and "G" of the word "MEGA" on outer scale. Set the switch for broadcast band, connect test oscillator to A and G and supply a 1600 K.C. signal. With dial pointer indicating 1600 K.C., adjust C10, C7 and C4. If two peaks are noted on C10, the adjustment with the trimmer farthest out (lower capacity) is correct.

Supply a 580 K.C. signal and adjust C13 while rocking the dial back and forth at this frequency to obtain maximum output.

Police Band: (S.W. Band No. 1):—With the W.C. switch in the central position, supply a 6600 K.C. signal to A and G through a 400 Ohm non-inductive resistor. Rotate the dial to indicate 6.6 M.C. and adjust C11, C8 and C5.

Tune to 2.4 M.C. and supply a 2400 K.C. signal. Adjust C14 while rocking the dial slightly to obtain maximum output. Recheck C11 at 6600 K.C. as above.

Short-Wave Band (No. 2):—Connect the test oscillator as above and turn the W.C. switch to the extreme left. With the dial pointer indicating 20 M.C., tune in a signal of this frequency by adjusting, in order, C12, C9 and C6. Set the dial to approximately 8 M.C. and tune in a signal of this frequency by adjusting C15. Rock the dial to obtain the adjustment giving the greatest output. Recheck C12 at 20 M.C.

Note: On Broadcast, Police and Short Wave Bands if two settings of the oscillator trimmers are noted, the setting corresponding to the smaller capacity (trimmer out) is the correct one.

We recommend checking the correctness of alignment of R.F. Det. and Oscillator circuits by inserting a tuning wand into the tops of the coil shields. If the output decreases when either end of the wand is inserted, the circuit is correctly aligned.

ALIGNMENT:

R.F. Trimmers:—Connect Test Oscillator to grid clip of 6A8 tube and chassis, leaving grid clip in place and using a .1 Mf. condenser in series with the lead from the test oscillator to the grid clip. Adjust to supply a frequency of 462.5 K.C.

With the Selectivity Switch in "High Selectivity" position, adjust, in order, C24, C23, C20 and C19. Recheck several times to make sure maximum output is obtained.

Turn Selectivity Switch to "Standard Selectivity" (Right) and align C22 and C21.

If a Cathode Ray Oscillograph is used, the double image method is considered best for the alignment of I.F. circuits. The folding back of the high and low frequency sides makes symmetrical adjustment easy and very accurate, and reduces the possibility of frequency error in aligning, since a small error is more obvious with two images on the screen.

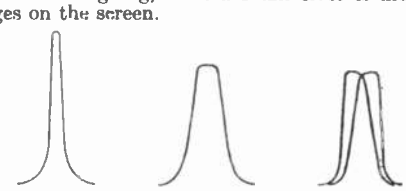


FIG. 1 FIG. 2 FIG. 3

Fig. 1 shows the image obtained on the high selectivity and Fig. 2 on the standard selectivity position. Fig. 3 shows a double image which represents a circuit not symmetrically aligned to 462.5 K.C. but usually the closest approach to Fig. 2 that can be obtained with the use of an output meter.

DATA SHEET

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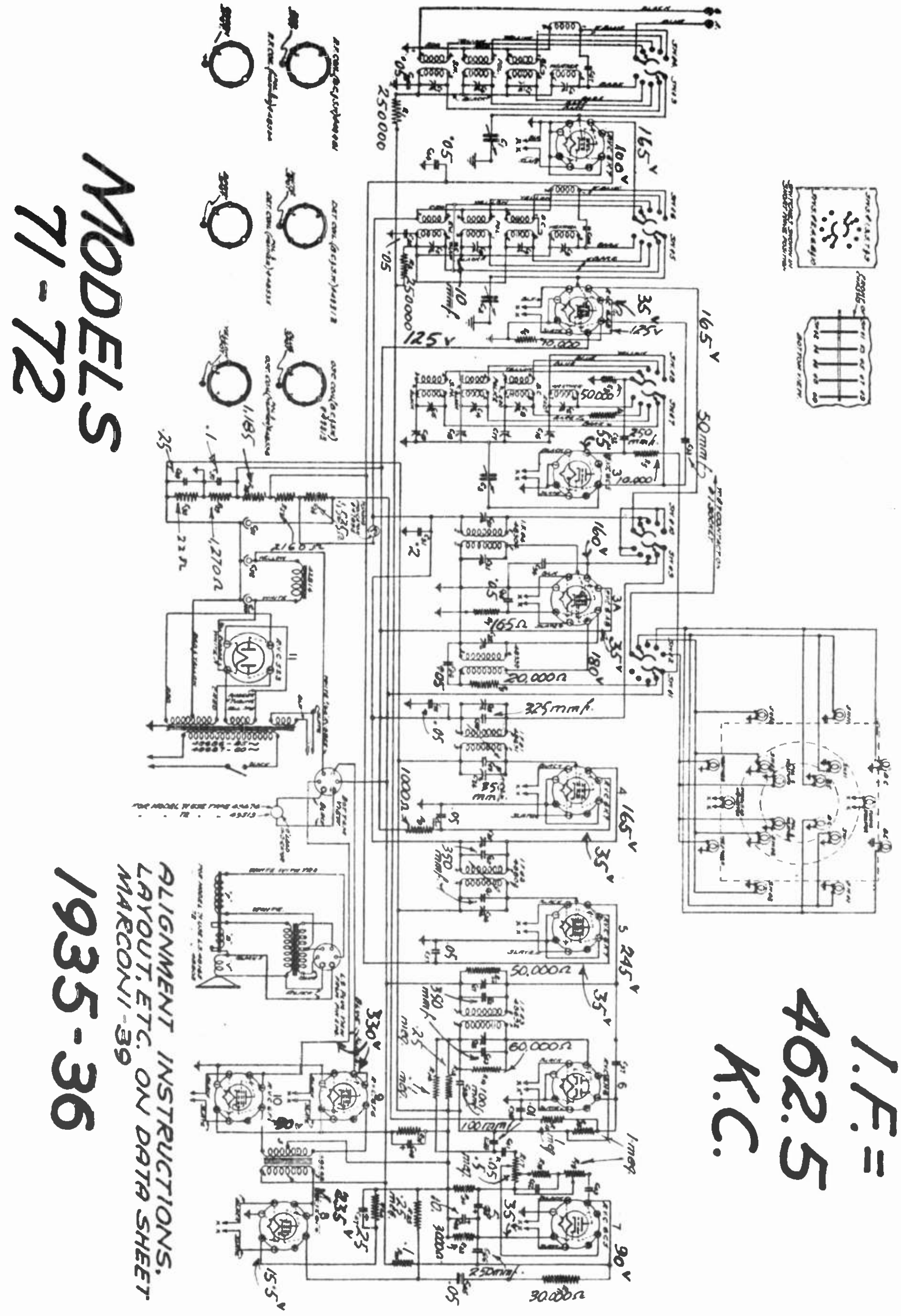
World Radio History



COURTESY- CANDN.

DATA SHEET MARCONI-38

CO LTD.

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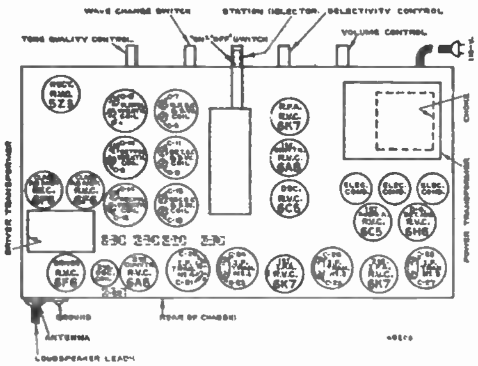
World Radio History

RESISTANCE OF COILS

Pri. I.F. Trans. No. 1 (48691)	4.5	Ohms	Pri. Power Trans. 25 Cycle 48686	2.5	Ohms
Sec. " " No. 1 "	4	"	Sec. " " " " "	175	"
Pri. " " No. 2 (48802)	4.5	"	Pri. " " 60 " 48687	2	"
Sec. " " No. 2 "	4	"	Sec. " " " "	130	"
Pri. " " No. 3 (48692)	4	"	Filter Choke Coil 42814	200	"
Sec. " " No. 3 "	4	"	Speaker Field Coil	1,000	"
Pri. " " No. 4 (48304)	4	"	Tuning Meter	375	"
Pri. Driver Trans. (48688)	400	"	Voice Coil	4.5	"
Sec. " " "	700	"	Aerial Coil, Weather Band	95	"
Pri. " "	500	"	Plate " " "	375	"
Sec. " "	1	"	Impedance of Voice Coil M71	5.2	"
			" " " M72	6.5	"

ALIGNMENT INSTRUCTIONS

MODELS 71-72



ALIGNMENT:

I.F. Trimmers:—Set gang at minimum, W.C. switch to broadcast band and variable I.F. control at maximum selectivity.

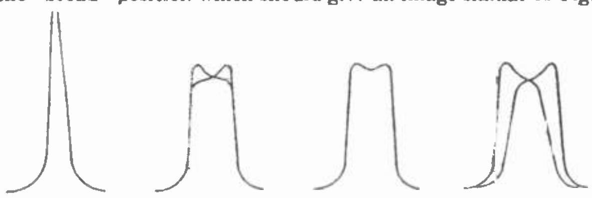
Connect Test Oscillator to grid clip of tube No. 5 (2nd I.F.). Supply a 462.5 K.C. signal and adjust C28 and C27.

Connect Test Oscillator to grid clip of tube No. 4 (1st I.F.) and adjust C26 and C25. Touch up C28 and C27.

Connect Test Oscillator to grid clip of tube No. 2 (mixer) and adjust C24 and C23. Touch up all trimmers, in order, C28, 27, 26, 25, 24 and 23.

It is absolutely essential that the diode transformer be in perfect alignment before attempting to trim the other transformers.

If a Cathode Ray Oscilloscope is used for alignment of the I.F. circuits, the double image method is preferred and exactly the same procedure should be followed as specified above. After alignment is completed, the image seen should correspond to Fig. 1. As a check on the correctness of alignment, turn the selectivity control to the "broad" position which should give an image similar to Fig. 3.



1 2 3 4

If the curve is slightly unbalanced as in Fig. 2, it may be corrected by a slight adjustment of C28. If, however, it is badly out as in Fig. 4, the entire alignment procedure should be repeated as it will be impossible to get correct trimming of all circuits with the oscillator connected to the grid of the mixer tube.

An opening has been made in the chassis base plate which permits connecting the oscilloscope to the junction of R14 and C40, which is a more suitable point to connect to than to the audio output. Similar provision has been made in the Model 70.

S.W. I.F. Trimmers:—Switch to short wave leaving control at maximum selectivity. Supply a 1680 K.C. signal through a condenser to grid clip of tube No. 3A (2nd converter).

Adjust C22 for maximum output. Note that this oscillator is tuned to the **lower** peak, i.e., 1217.5 K.C.

Connect T.O. through a condenser to grid clip of tube No. 2 (1st converter) and supply a 1680 K.C. signal. Adjust C20 and C21

Broadcast Band Trimmers:—With gang condenser at maximum capacity, set dial pointer to centre line on right hand side of dial. Connect T.O. to A and G terminals, using a standard dummy antenna or a .00025 Mf. series condenser. Rotate dial to indicate 1600 K.C., and supply a signal of this frequency. Adjust in order, C13, C9 and C5. If C13 peaks at two points, the correct setting is with the trimmer further out.

Track C17 at 580 K.C. while rocking the dial to obtain the best setting.

Retrim C13 at 1600 K.C.

Police Band Trimmers:—Switch to police band and supply a 6600 K.C., signal to A and G through a 400 ohm non-inductive resistor. Set dial at 6.6 M.C. and adjust, in order, C14 and C10 and C6.

Track C18 at 2400 K.C., while rocking the dial to obtain maximum output.

Retrim C14 at 6600 K.C.

Short Wave Band Trimmers:—Connect the T.O. to A and G using a 400 ohm series resistor. Set dial to 20 M.C. and supply a signal of this frequency and adjust, in order, C15, C11 and C7.

Track C19 at 8. M.C. while rocking the dial to obtain maximum output.

Retrim C20 at 20 M.C.

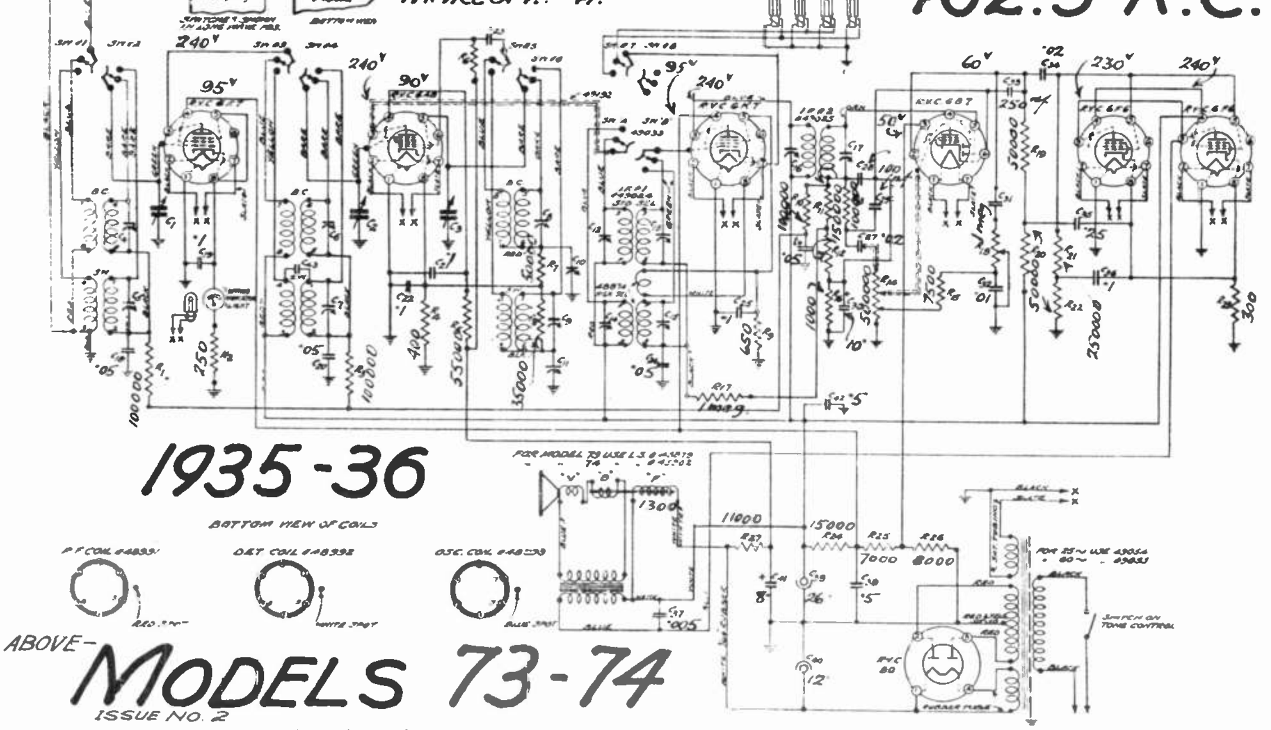
Weather Band Trimmers:—Use standard dummy antenna and supply a 370 K.C. signal to A and G. Trim C12, C8 and C4 with the dial set to this frequency.

Track C16 at 160 K.C. while rocking the dial.

World Radio History

ALIGNMENT INSTRUCTIONS, LAYOUTS, ETS. FOR MODELS - 73 - 74 AND 75 ON DATA SHEET MARCONI.-41.

I.F. = 462.5 K.C.

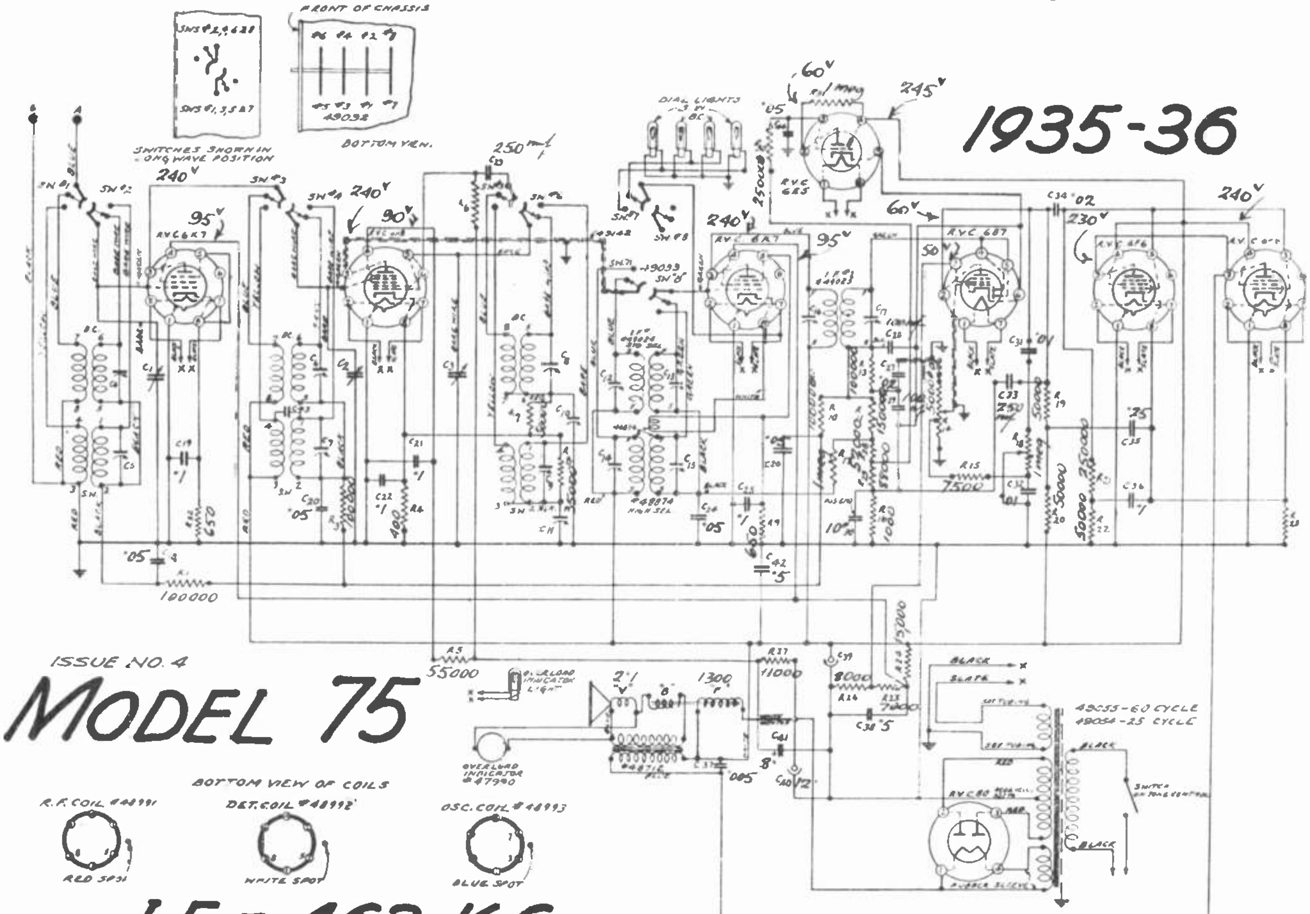


1935-36

ABOVE-

MODELS 73-74

ISSUE NO. 2



1935-36

ISSUE NO. 4

MODEL 75

I.F. = 462 K.C.

DATA SHEET

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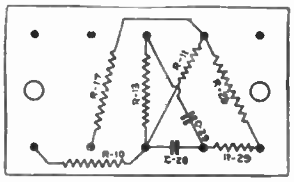
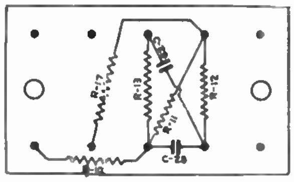
MARCONI-40 CO. LTD.

World Radio History

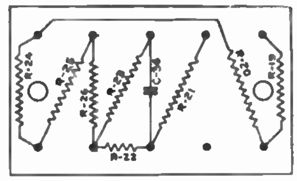
ALIGNMENT INSTRUCTIONS
MODELS 73-74-75



49875 (Model 75 only)



49874 (Models 73-74 only)



49870 (Models 73-74-75)

RESISTOR PANELS.

GENERAL DATA :

Circuit:—Dual wave, 7 tube superhetrodyne with preselector and full automatic volume control and adjustable selectivity.

The circuit is essentially the same as Models 67 and 68.

Frequency Range:—B.C.Band—529 to 1725 K.C. S.W.Band 5650 to 18000 K.C.

Intermediate Frequency:—462.5 K.C.

Power Output:—Undistorted—3.9 Watts. Maximum 5.5 Watts.

Sensitivity:—Better than 5 microvolts on the broadcast band and better than 3 M.V. on shortwave, for an output of 0.5 Watts.

Selectivity.—34 or 24 K.C. at 1000 times input.

Image Ratio:—Better than 20,000 at 1,000 K.C.

Power Rating:—115 V. A.C.; 60 Cy., 72 Watts; 25 Cy., 74 Watts.

Adjustable Selectivity:—By means of a D.P.D.T. switch either one of two I.F. transformer may be used, one of which provides a broad I.F. channel and the other a narrow channel. A third winding is incorporated in the latter to introduce a small amount of regeneration which improves the selectivity and increases the gain. In replacing this coil assembly be sure that the polarity of the coils is correct.

Tuning Indicators:—Models 73 and 74 are equipped with a shadow type tuning meter which is actuated by the plate current of the R.F. tube.

In Model 75 the new R.V.C. 6E5 Cathode Ray tuning indicator is used. The A.V.C. voltage is applied to the control grid of the triode portion which acts as a D.C. amplifier to control the electron beam.

ALIGNMENT :

I.F. Trimmers:—With the selectivity switch in the High Selectivity position, supply a 462.5 K.C. signal to the grid clip of the 6A8 through a .1 Mf. condenser. Adjust, in order, C17, C16, C15, C14.

Switch to "Broad Selectivity" and adjust C13 and C12.

Broadcast Band Trimmers:—With the gang condenser set at minimum capacity, the pointer should be set midway between the letter "C" and the end of the broadcast scale.

Using a standard dummy antenna, supply a modulated 1600 K.C. signal to the A. and G. terminals. Set pointer at 1600 and adjust C8, C6 and C4 for maximum output.

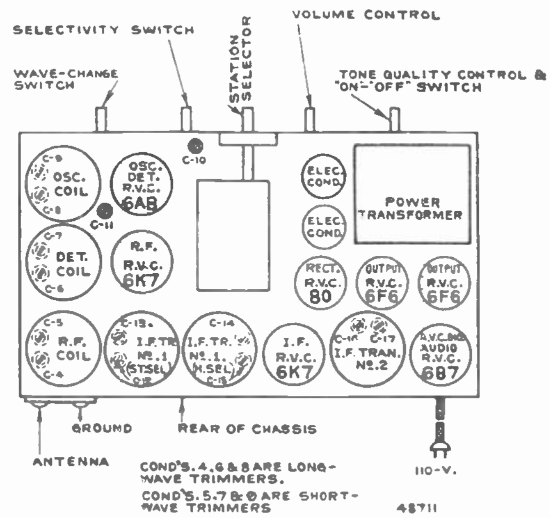
Supply a 580 K.C. signal and track C10 while rocking the tuning control back and forth. Recheck C8 at 1600 K.C.

Short Wave Band Trimmers:—Switch to shortwave and rotate tuning control until pointer is at 1510 K.C. Supply a 16 M.C. signal using a 400 ohm non-inductive resistor in series with the lead to the "A" terminal, and adjust C9, C7 and C5 for maximum output. If two peaks are noticed when adjusting C9, the one with the trimmer further out is correct.

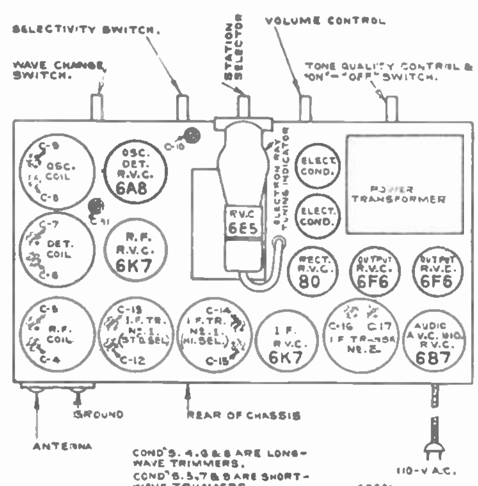
Rotate tuning control to set pointer at 570 K.C. and supply a 6 M.C. signal. Adjust C 11 while rocking the tuning control to obtain the adjustment giving maximum output.

Check alignment at 16 M.C. and re-adjust C9 if necessary.

We recommend that a tuning wand be used to check the correctness of alignment on Broadcast and Shortwave Bands.

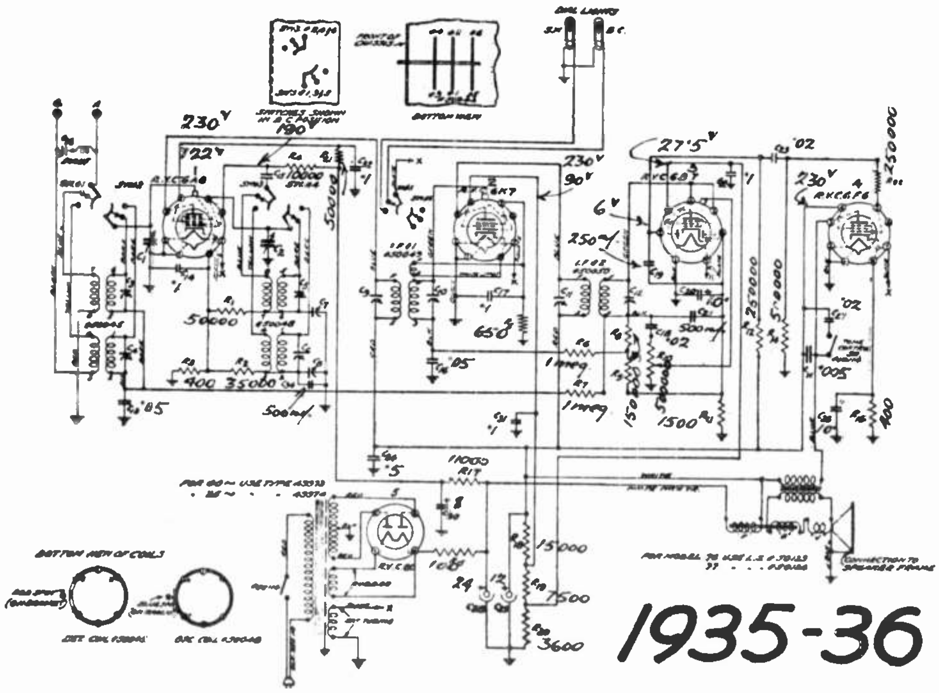


Models 73, 74



Model 75

World Radio History



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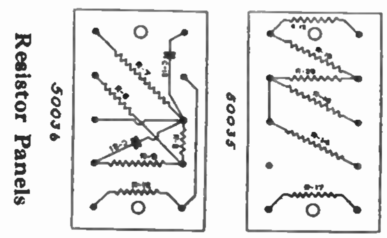

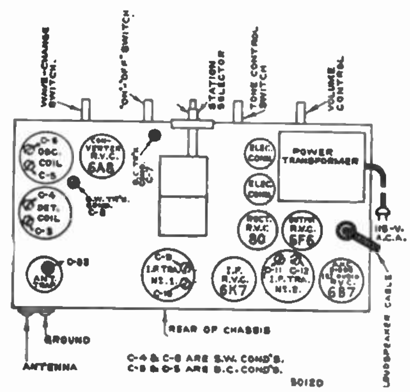

MODELS 76-77

I.F.=462.5 K.C.

VOLTAGE READINGS

SOCKET PINS TO CHASSIS.

CAP	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8
0	0	230	122	−16	190	0	4
0	0	230	90	4.5	—	0	4.5
0	0	27.5	0	0	1.5	0	—
—	0	220	230	0	—	0	13.5
—	330 A.C.	330 A.C.	320	—	—	—	—

GENERAL DATA:

Circuit:—Dual wave, five-tube superheterodyne with full automatic volume control and antenna trap circuit.

Frequency Range:—Broadcast Band, 528 to 1725 K.C. Short Wave Band, 5650 to 18,000 K.C.

Intermediate Frequency:—462.5 K.C.

Power Output:—Undistorted, 2.3 Watts. Maximum, 4.5 Watts.

Power Rating:—115 Volts A.C., 60 cycle—56 Watts, 25 cycle—61 Watts.

Voice Coil Impedance:—Model 76—4.10 Ohms; Model 77—2.15 Ohms.

Antenna Trap Circuit:—The possibility of interference from stations operating at frequencies around 462 K.C., has been prevented by the use of a tuned trap in the antenna circuit. This trap circuit normally should be tuned to 462.5 K.C., but if interference is experienced from some particular long wave station, it may be tuned to the frequency of the interference signal.

ALIGNMENT:

I.F. Trimmers:—Set gang condenser at minimum and supply a 462.5 K.C. signal to grid clip of 6A8 through a .1 Mf condenser. Adjust, in order, C12, C11, C10 and C9. See that the input is always low enough to avoid causing the A.V.C. to operate.

Broadcast Trimmers:—Connect the Test Oscillator to the A and G terminals through a standard dummy antenna. If necessary, a 200 Mmf series condenser may be used in place of the dummy antenna.

Set gang condenser at minimum and supply a 1725 K.C. signal. Adjust oscillator trimmer C5 to tune in this signal.

Supply a 1600 K.C. signal and tune the receiver to pick up this signal and adjust detector trimmer C3 for maximum output. The dial pointer should be set to indicate 1600 K.C. after the above adjustments have been completed.

Supply a 580 K.C. signal and track C7 for maximum output while rocking the tuning control back and forth at this frequency.

Check alignment at 1600 K.C. and adjust C5 if necessary.

Short Wave Band:—Switch to short wave and rotate tuning control until pointer is at 1510 K.C. on the Broadcast scale.

Supply a 16 M.C. signal through a 400 Ohm resistor to A and G terminals. Adjust C6 and C4 for maximum output. If two settings of C6 are found which give approximately equal output, the one with the trimmer further out is correct.

Rotate tuning control until pointer is at 570 K.C. (on Broadcast scale) and supply a 6 M.C. signal. Adjust tracking condenser C8 while rocking the tuning control to find the setting giving maximum output.

Check alignment at 16 M.C. and adjust C6 if necessary.

Wave Trap:—With gang condenser at maximum capacity, supply a strong 462.5 K.C. signal to A and G and adjust C33 for minimum output.

DATA SHEET

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MARCONI-42

CO LTD.

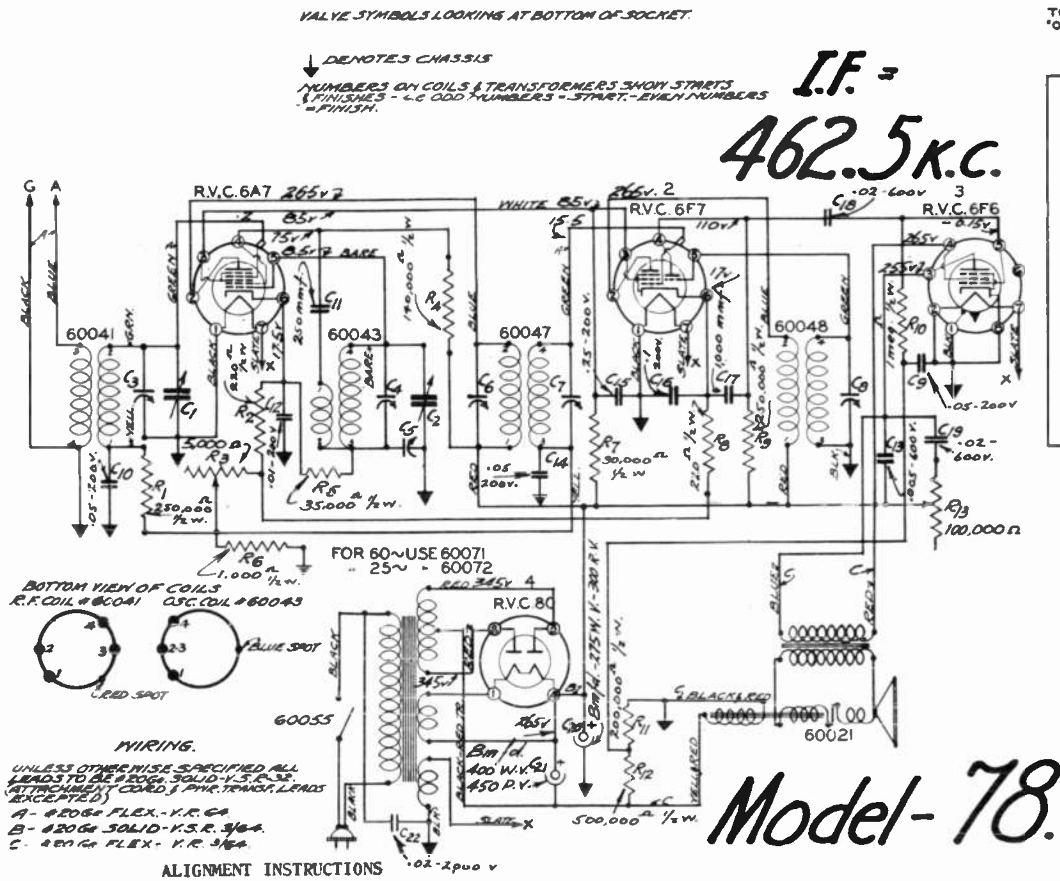
World Radio History

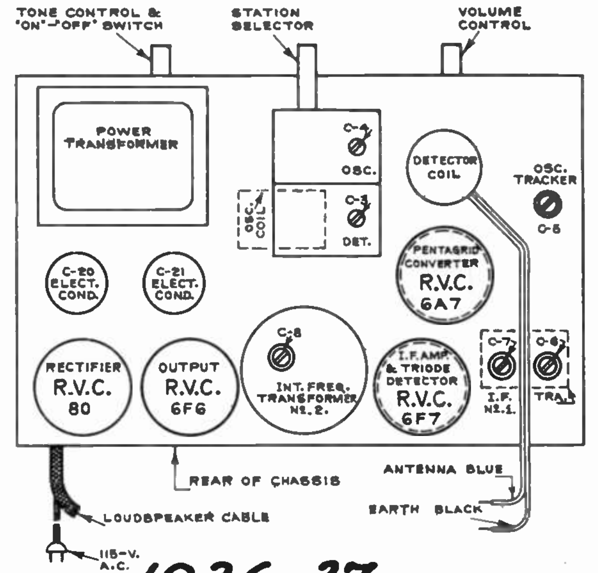
MARCONI-43

Courtesy - Canad. Marconi Co. Ltd.

DATA SHEET

I.F. = 462.5 K.C.





1936-37

Model-78.

ALIGNMENT INSTRUCTIONS

In order to properly realign this receiver the radiotrician should have available an output meter and a well attenuated test oscillator capable of giving the following frequency fundamentals:-

462.5 KC for I.F. alignment.

1600 KC and 580 KC for broadcast band alignment.

The manual volume control should always be kept at maximum, and the signal from the test oscillator should be kept as low as possible. In any case the signal should not be of sufficient strength to bring the automatic volume control into operation.

ALIGNMENT OF INTERMEDIATE FREQUENCY TRANSFORMERS

Set gang capacitor at minimum capacity and supply a modulated 462.5 KC signal from a test oscillator to the control grid cap of the 6A7 converter tube through a 0.1 mfd. capacitor leaving the grid connector in place. Adjust in order C8, C7, and C6 for maximum output. This operation should be checked to ascertain that maximum output has been obtained.

ALIGNMENT OF BROADCAST BAND

(1) Check setting of pointer. With gang capacitor at maximum, the pointer should be set horizontally with respect to the last graduation mark on the left hand side of dial scale.

(2) Rotate tuning knob until pointer is at 1600 KC.

(3) Supply 1600 KC signal from test oscillator to the aerial and ground leads using a standard dummy antenna.

(4) Adjust oscillator trimmer C4 to tune the 1600 KC signal.

(5) Adjust R.F. trimmer C3 for maximum output.

(6) Shift test oscillator to 580 KC.

(7) Rotate tuning capacitor until the 580 KC signal is reached.

(8) Adjust oscillator tracking capacitor C5 while rocking the gang capacitor to and fro past the signal until the combination of adjustments giving the greatest reading of the output meter is obtained.

(9) Recheck at 1600 KC.

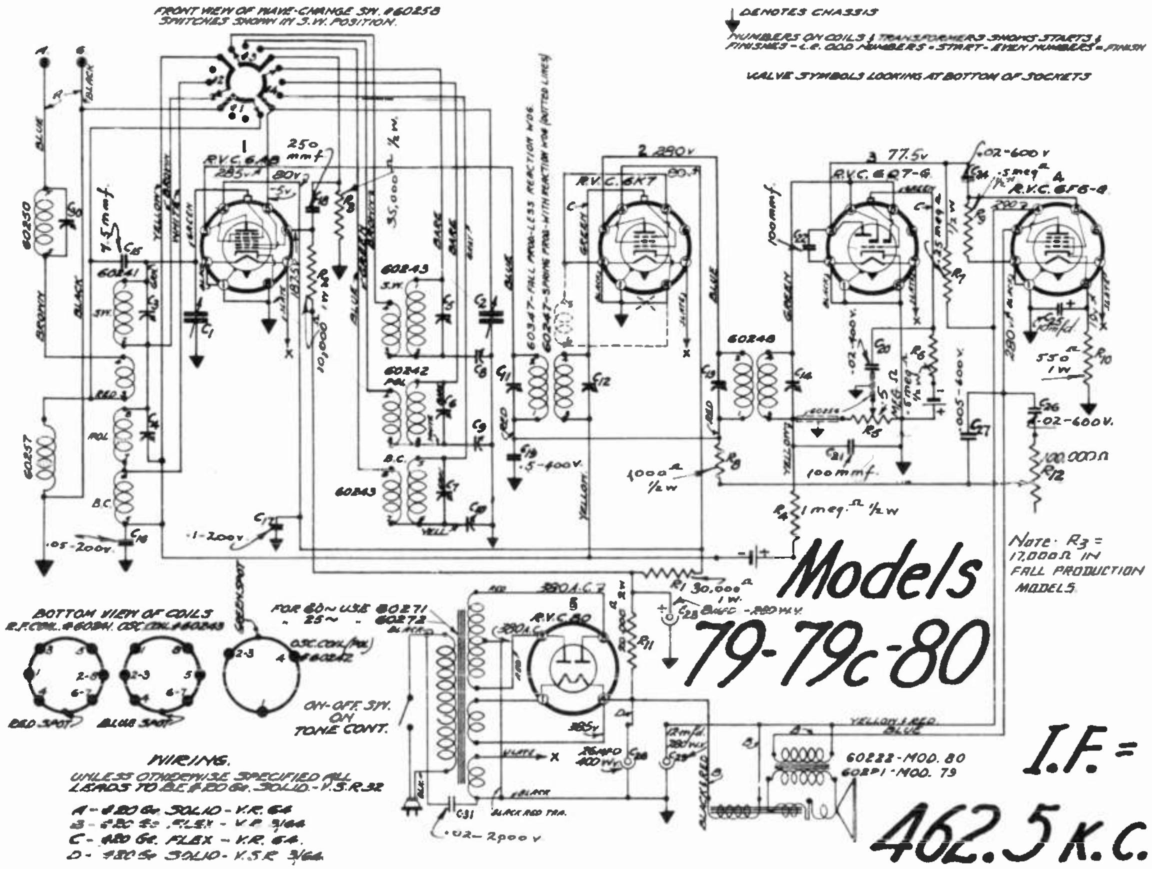
World Radio History

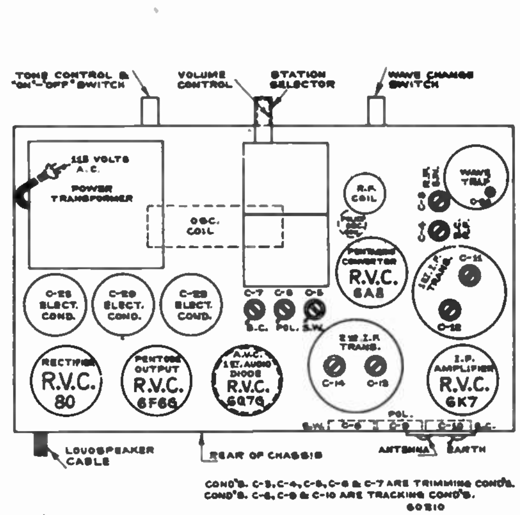
"MARCONI-44" DATA SHEET

COURTESY - CANDN. MARCONI CO. LTD.

Models 79-79c-80

I.F. = 462.5 K.C.





1936-37

ALIGNMENT OF INTERMEDIATE FREQUENCY TRANSFORMERS

Set gang capacitor at minimum capacity and supply a modulated 462.5 KC signal from a test oscillator to the control grid cap of the 6A8 converter tube through a 0.1 mfd. capacitor leaving the grid connector in place. Adjust in order C14, C13, C12, and C11 for maximum output. This operation should be checked to ascertain that maximum output has been obtained.

ALIGNMENT OF BROADCAST BAND

(1) Set gang capacitor at maximum capacity (plates meshed).

(2) Set dial pointer to the last marking on the low frequency end of the dial.

(3) Rotate tuning knob until pointer is at 1500 KC.

(4) Supply a 1500 KC signal from a test oscillator to the aerial and ground leads.

(5) Adjust broadcast oscillator trimmer C7 to tune in the 1500 KC signal.

(6) Adjust broadcast R.F. trimmer C4 for maximum output.

(7) Shift test oscillator to 580 KC.

(8) Rotate the tuning capacitor until the 580 KC signal is reached.

(9) Adjust broadcast oscillator tracking capacitor C10 while rocking the gang capacitor to and fro past the signal until the combination of adjustments giving the greatest reading of the output meter is obtained.

(10) Recheck at 1500 KC.

ALIGNMENT OF POLICE BAND

(1) Turn Wavechange switch to police band - centre position.

(2) Rotate tuning knob until pointer is at 4800 KC marking on dial.

(3) Supply a 4800 KC signal from test oscillator to the aerial and ground leads.

(4) Adjust police band oscillator trimmer C6 while rocking the gang capacitor to and fro past the signal until the combination of adjustments giving the greatest reading of the output meter is obtained.

Alignment of Police Band-Con.

(5) Shift test oscillator to 1720 KC.

(6) Rotate tuning capacitor until 1720 KC signal is reached.

(7) Adjust police band oscillator tracking capacitor C9 while rocking the gang capacitor to and fro past the signal until the combination of adjustments giving the greatest reading of the output meter is obtained.

ALIGNMENT ON SHORT WAVE BAND

(1) Turn wavechange switch to short wave band extreme left.

(2) Rotate tuning knob until pointer is at 15 MC. marking on dial.

(3) Supply a 15 MC signal from test oscillator to aerial and ground leads.

(4) Adjust short wave oscillator trimmer C5 to tune in this signal.

(5) Adjust short wave R.F. trimmer C3 for maximum output.

(6) Shift test oscillator to 5600 KC.

(7) Rotate tuning capacitor until 5600 KC signal is reached.

(8) Adjust short wave oscillator tracking capacitor C8, while rocking the gang capacitor to and fro past the signal until the combination of adjustments giving the greatest reading of the output meter is obtained.

(9) Recheck 15 MC alignment.

ALIGNMENT OF WAVE TRAP

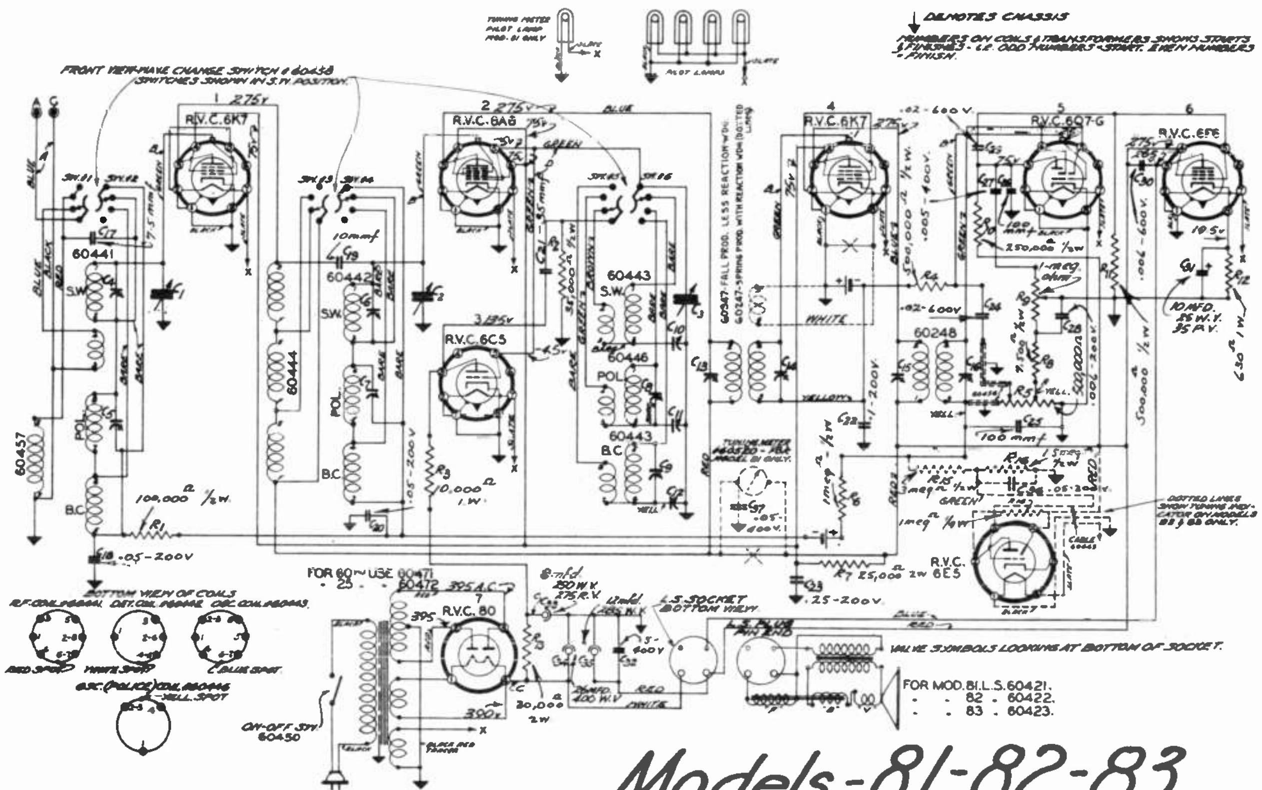
(1) Set gang capacitor to approximately 580 KC.

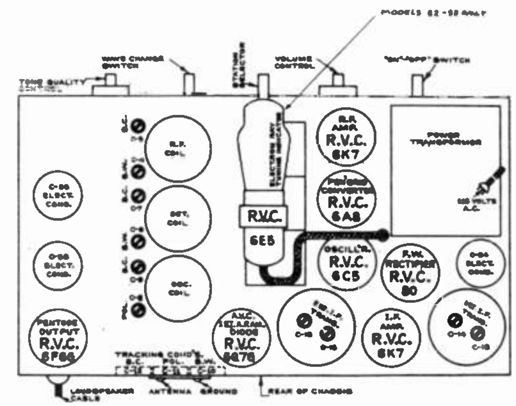
(2) Supply a strong 462.5 KC signal to the aerial and ground leads.

(3) Adjust C30 for MINIMUM output.

World Radio History

DATA SHEET





Models-81-82-83

1936-37

I.F. = 462.5 K.C.

The manual volume control should always be kept at maximum, and the signal from the test oscillator should be kept as low as possible. In any case the signal should not be of sufficient strength to bring the automatic volume control into operation.

ALIGNMENT OF INTERMEDIATE FREQUENCY TRANSFORMERS

Set gang capacitor at minimum capacity and supply a modulated 462.5 KC signal from a test oscillator to the control grid cap of the 6A8 converter tube through a 0.1 mfd. capacitor leaving the grid connector in place. Adjust in order C16, C15, C14 and C13 for maximum output. This operation should be checked to ascertain that maximum output has been obtained.

ALIGNMENT OF BROADCAST BAND

(1) Set gang capacitor at maximum capacity (plates meshed).

(2) Set dial pointer in a horizontal position on the left hand side, i.e., midway between the two scales.

(3) Rotate tuning knob until pointer is at 1500 KC.

(4) Supply a 1500 KC signal from a test oscillator to the aerial and ground leads.

(5) Adjust broadcast oscillator trimmer C9 to tune in the 1500 KC signal.

(6) Adjust R.F. trimmers C7 and C5 for maximum output.

(7) Shift test oscillator to 580 KC.

(8) Rotate the tuning capacitor until the 580 KC signal is reached.

(9) Adjust broadcast oscillator tracking capacitor C12 while rocking the gang capacitor to and fro past the signal until the combination of adjustments giving the greatest reading of the output meter is obtained.

(10) Recheck at 1500 KC.

ALIGNMENT OF POLICE BAND

(1) Turn wave change switch to police band - centre position.

Alignment of Police Band-Con.

(2) Rotate tuning knob until pointer is at 4800 KC marking on dial.

(3) Supply a 4800 KC signal from test oscillator to the aerial and ground leads.

(4) Adjust police band oscillator trimmer C8 while rocking the gang capacitor to and fro past the signal until the combination of adjustments giving the greatest reading of the output meter is obtained.

(5) Shift test oscillator to 1720 KC.

(6) Rotate tuning capacitor until 1720 KC signal is reached.

(7) Adjust police band oscillator tracking capacitor C11 while rocking the gang capacitor to and fro past the signal until the combination of adjustments giving the greatest reading of the output meter is obtained.

ALIGNMENT OF SHORT WAVE BAND

(1) Turn wave change switch to short wave band extreme left.

(2) Rotate tuning knob until pointer is at 16 MC marking on dial.

(3) Supply a 16 MC signal from test oscillator to aerial and ground leads.

(4) Adjust short wave R.F. trimmers C6 and C4 for maximum output.

(5) Shift test oscillator to 5600 KC.

(6) Rotate tuning capacitor until 5600 KC signal is reached.

(7) Adjust short wave oscillator tracking capacitor C10, while rocking the gang capacitor to and fro past the signal until the combination of adjustments giving the greatest reading of the output meter is obtained.

(8) Recheck 16 MC alignment.

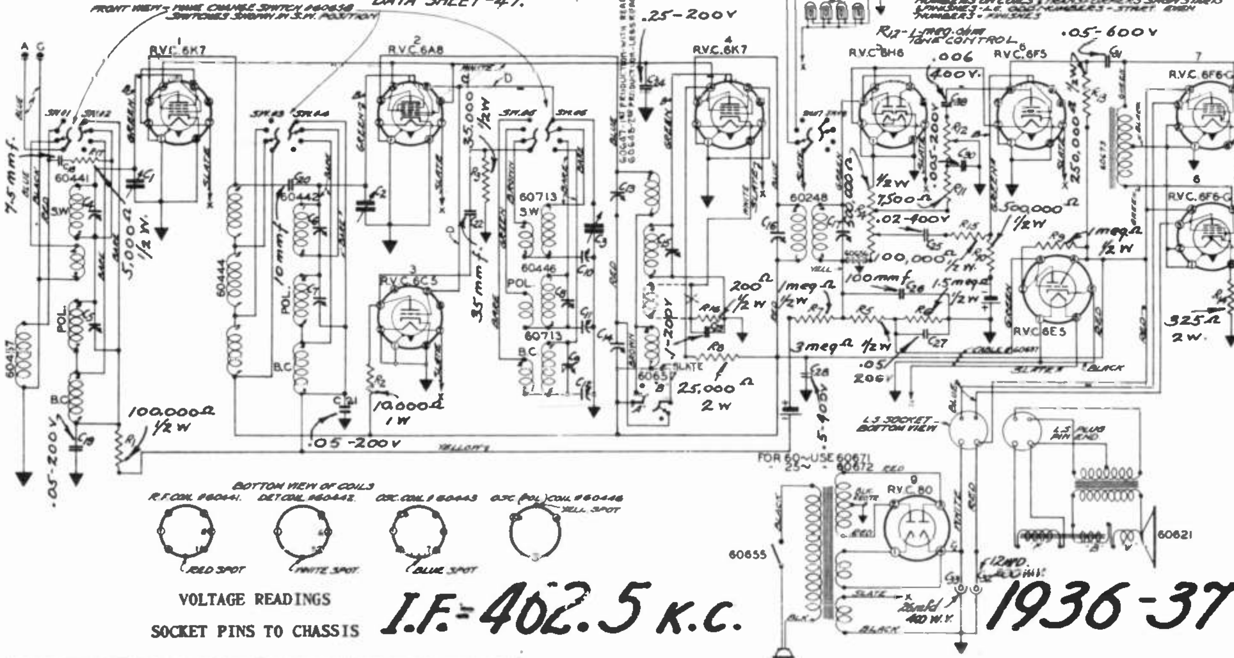
World Radio History

DATA SHEET

MARCONI-46

COURTESY - CANDN. MARCONI CO. LTD

ALIGNMENT INSTRUCTIONS FOR ALIGNING I.F. TRANSFORMERS, BROADCAST BAND, POLICE BAND, AS GIVEN BELOW, ALSO APPLY TO MODEL 85. DATA SHEET-47.



VOLTAGE READINGS

SOCKET PINS TO CHASSIS

I.F.=462.5 K.C.

1936-37

	CAP	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8
6K7 R.F.Amplifier	0.3	0	280	76	0	-	0	0
6A8 Pentagrid Converter	0.1	0	260	75	-7.5	75	-	-
6C5 Oscillator	-	0	175	-	-7.5	-	-	-
6K7 I.F.Amplifier	0	0	260	75	-	-	0	1.65
6H6 Diode Det.& AVC	-	0	-0.6	0	-0.6	-	0	0
6F5.1st A.F. Amp.	0.3	0	-	75	-	-	0	0
6F6 Output	-	0	255	260	0	-	0	18.5
6F6 Output	-	0	255	260	0	-	0	18.5
80 Rectifier	-	375 AC	375 AC	380	-	-	-	

ALIGNMENT OF INTERMEDIATE FREQUENCY TRANSFORMERS

Set gang capacitor at minimum capacity, selectivity switch in sharp selectivity position i.e., to the right, and supply a modulated 462.5 KC signal from a oscillator to the control grid cap of the 6A8 converter tube through a 0.1 mfd. capacitor leaving the grid connector in place. Adjust in order C17, C16, C15 and C13 for maximum output. This operation should be checked to ascertain that maximum output has been obtained. Switch to broad selectivity i.e., to left and adjust C14.

The manual volume control should always be kept at maximum, and the signal from the test oscillator should be kept as low as possible. In any case the signal should not be of sufficient strength to bring the automatic volume control into operation.

ALIGNMENT OF BROADCAST BAND

(1) Set gang capacitor at maximum capacity (plates meshed).

(2) Set dial pointer in a horizontal position on the left hand side, i.e., midway between the two scales.

(3) Rotate tuning knob until pointer is at 1500 KC.

(4) Supply a 1500 KC signal from a test oscillator to the aerial and ground leads.

(5) Adjust broadcast oscillator trimmer C9 to tune in the 1500 KC signal.

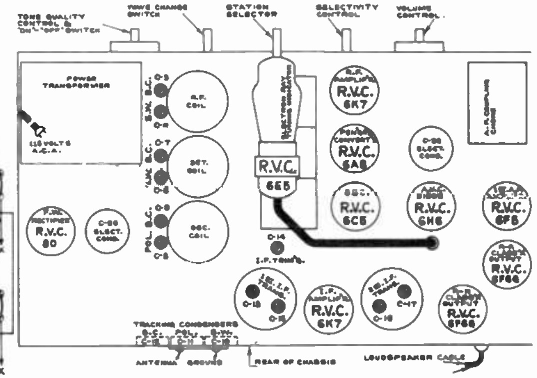
(6) Adjust R.F. Trimmers C7 and C5 for maximum output.

(7) Shift test oscillator to 580 KC.

(8) Rotate the tuning capacitor until the 580 KC signal is reached.

(9) Adjust broadcast oscillator tracking capacitor C12 while rocking the gang capacitor to and fro past the signal until the combination of adjustments giving the greatest reading of the output meter is obtained.

(10) Recheck at 1500 KC.



Model - 84

ALIGNMENT OF POLICE BAND

(1) Turn wave change switch to police band - centre position.

(2) Rotate tuning knob until pointer is at 4800 KC marking on dial.

(3) Supply a 4800 KC signal from test oscillator to the aerial and ground leads.

(4) Adjust police band oscillator trimmer C8 while rocking the gang capacitor to and fro past the signal until the combination of adjustments giving the greatest reading of the output meter is obtained.

(5) Shift test oscillator to 1720 KC.

(6) Rotate tuning capacitor until 1720 KC signal is reached.

(7) Adjust police band oscillator tracking capacitor C11 while rocking the gang capacitor to and fro past the signal until the combination of adjustments giving the greatest reading of the output meter is obtained.

ALIGNMENT OF SHORT WAVE BAND

(1) Turn wave change switch to short wave band extreme left.

(2) Rotate tuning knob until pointer is at 16 MC marking on dial.

(3) Supply a 16 MC signal from test oscillator to aerial and ground leads.

(4) Adjust short wave R.F. trimmers C6 and C4 for maximum output.

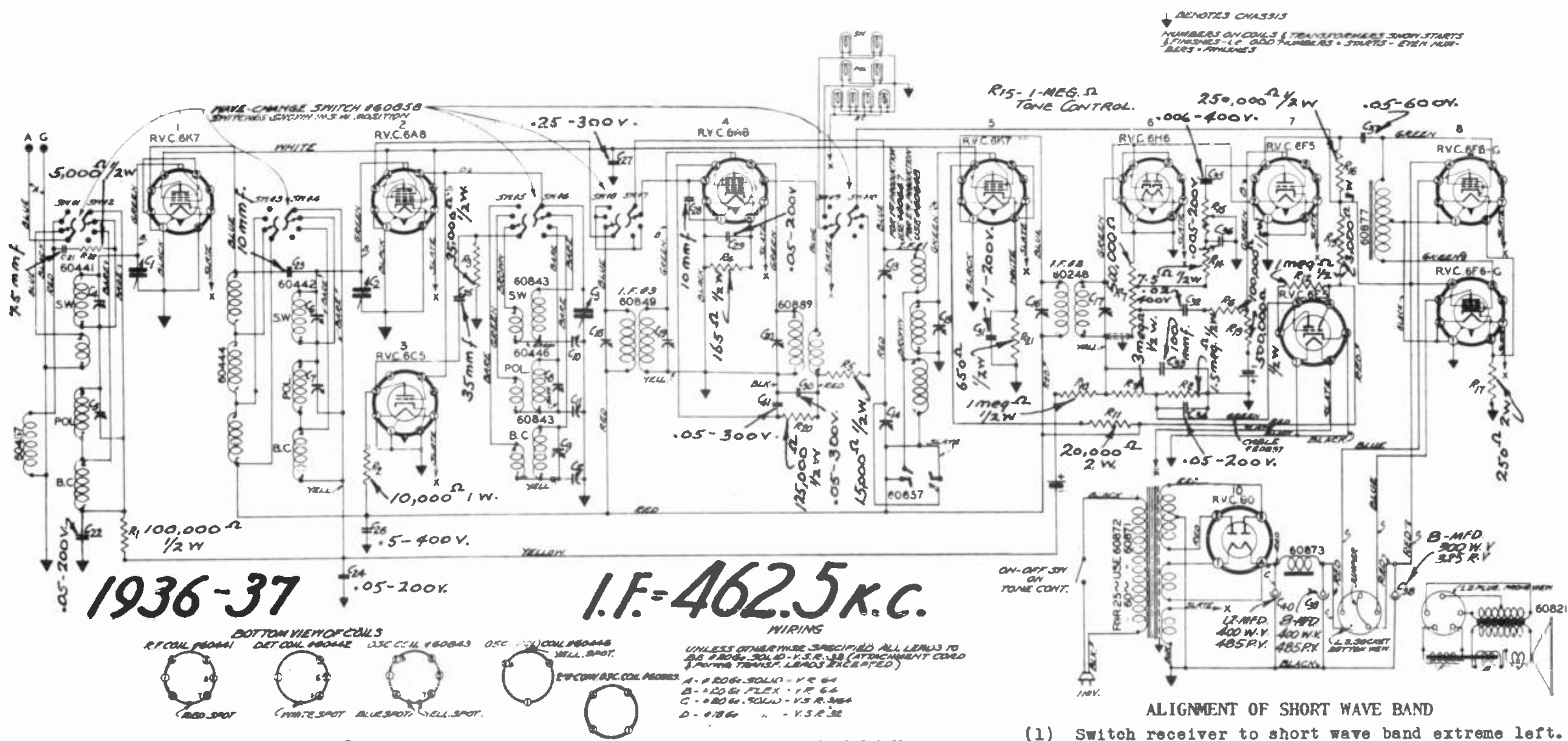
(5) Shift test oscillator to 5600 KC.

(6) Rotate tuning capacitor until 5600 KC signal is reached.

(7) Adjust short wave oscillator tracking capacitor C10, while rocking the gang capacitor to and fro past the signal until the combination of adjustments giving the greatest reading of the output meter is obtained.

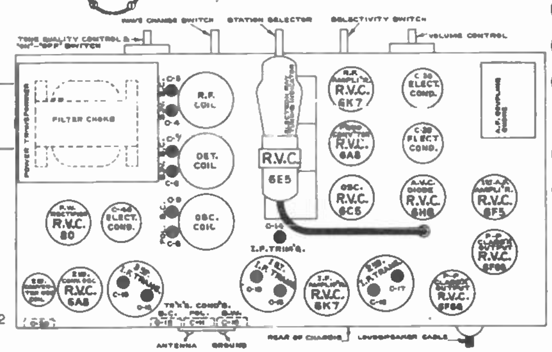
(8) Recheck 16 MC alignment.

World Radio History



1936-37

I.F.=462.5 K.C.



MODEL-85

Instructions for alignment of Intermediate Frequency Transformers, Broadcast Band and Police Band are same as for Model 84 shown on Data Sheet 46.

VOLTAGE READINGS

SOCKET PINS TO CHASSIS

	CAP	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8
R.V.C. 6K7 R.F. Amplifier	0	0	205	75	0	-	6 AC	0
R.V.C. 6A8 1st Converter	0	0	205	75	6	75	6 AC	0
R.V.C. 6C5 Oscillator	0	0	145	-	6	-	6 AC	0
R.V.C. 6A8 2nd Converter	0	0	205	40	0	210	6 AC	1.2
R.V.C. 6K7 I.F. Amplifier	0	0	205	75	8	-	6 AC	3
R.V.C. 6H6 Diode Det. & A.V.C.	0	0	0	0	0	-	6 AC	0
R.V.C. 6F5 1st A.F. Amp.	-0.2	0	-	100	-	-	6 AC	0
R.V.C. 6F6 Pentode Output	-	0	280	290	0	-	6 AC	18
R.V.C. 80 Full wave rectifier	-	385 AC	385 AC	370	-	-	6 AC	-

All readings with the exception of the 2nd converter taken with wave change switch on Broadcast Band, volume control at maximum and tuning capacitor at minimum, using a 1000 ohm per volt meter. 2nd Converter Voltages taken with wave change switch on short-wave band.

ALIGNMENT OF SHORT WAVE BAND

(1) Switch receiver to short wave band extreme left.

(2) Set gang capacitor at minimum capacity.

(3) Supply a 1620 KC signal from a test oscillator to the control grid cap of the 6A8 2nd converter tube.

(4) Adjust C20 to tune in the 1620 KC signal.

(5) Supply 1620 KC signal to control grid cap of 6A8 1st converter.

(6) Adjust C19 and C18 for maximum output.

(7) Rotate tuning knob until pointer is at 16MC marking on dial.

(8) Supply a 16 MC signal from test oscillator to aerial and ground leads.

(9) Adjust short wave R.F. trimmers C6 and C4 for maximum output.

(10) Shift test oscillator to 5600 KC.

(11) Rotate tuning capacitor until 5600 KC signal is reached.

(12) Adjust short wave oscillator tracking capacitor C10, while rocking the gang capacitor to and fro past the signal until the combination of adjustments giving the greatest reading of the output meter is obtained.

(13) Recheck 16 MC alignment.

COURTESY - CANON

MARCONI-47

CO. LTD.

DATA SHEET

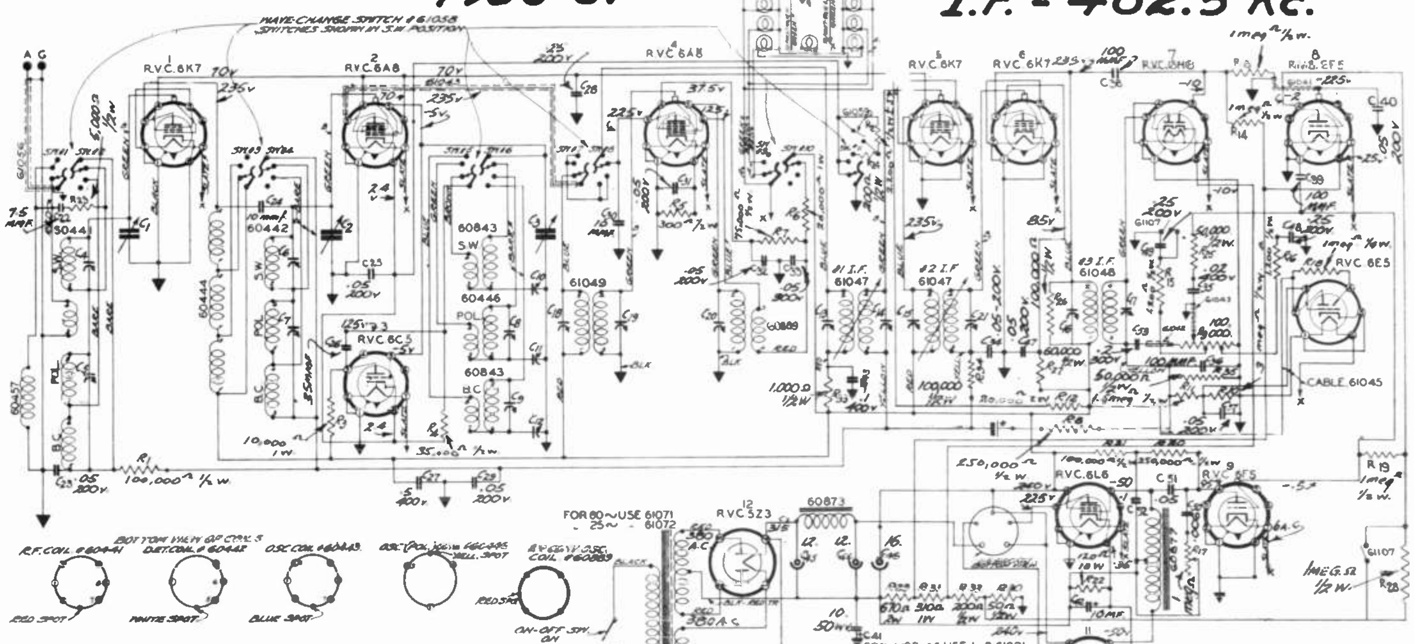
World Radio History

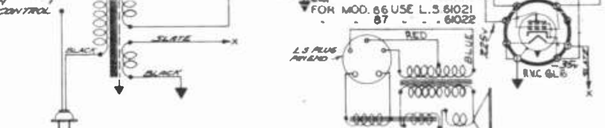
COURTESY - CANDN. MARCONI-48 CO. LTD.

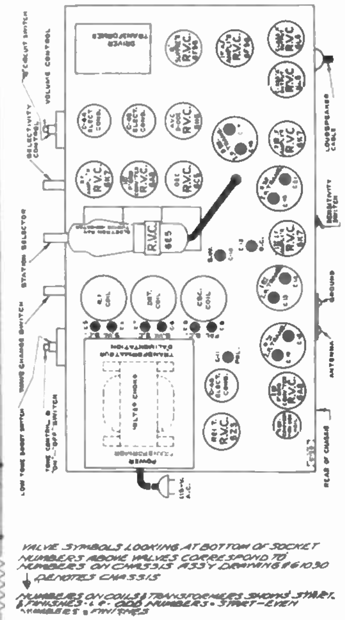
DATA SHEET

1936-37

I.F. = 462.5 Kc.







MODELS 86-87

ALIGNMENT OF INTERMEDIATE FREQUENCY TRANSFORMERS

(1) Set gang capacitor at minimum capacity, selectivity control in the sharp selectivity position, i.e., extreme left end supply a modulated 462.5 KC signal from a test oscillator to the control grid cap of the 6K7, 2nd I.F. tube.

(2) Adjust the diode transformer trimmers C17 and C16 for maximum gain.

(3) Apply the 462.5 KC signal to the control grid cap of the 6K7 1st I.F. amplifier tube.

(4) Adjust C21 and C15 and touch up C17 and C16.

(5) Apply the 462.5 KC signal to the control grid cap of the 6A8 1st convertor tube.

(6) Adjust C14 and C13 and touch up C17, C16, C21 and C15.

ALIGNMENT OF BROADCAST BAND

(1) Set gang capacitor at maximum capacity.

(2) Set indicator line to correspond with the last index mark on the right hand side of the dial scale.

(3) Rotate tuning knob until indicator line is at 1500 KC.

(4) Supply a 1500 KC signal from a test oscillator to the aerial and ground leads.

(5) Adjust broadcast oscillator trimmer C9 to tune in the 1500 KC signal.

(6) Adjust R.F. trimmers C7 and C5 for maximum output.

(7) Shift test oscillator to 580 KC.

(8) Rotate the tuning capacitor until the 580 KC signal is reached.

(9) Adjust broadcast oscillator tracking capacitor C12 while rocking the gang capacitor to and fro past the signal until the combination of adjustments giving the greatest reading of the output meter is obtained.

(10) Recheck at 1500 KC.

ALIGNMENT OF POLICE BAND

(1) Turn wavechange switch to police band - centre position.

(2) Rotate tuning knob until indicator is at 4800 KC marking on dial.

(3) Supply a 4800 KC signal from test oscillator to the aerial and ground leads.

(4) Adjust police band oscillator trimmer C8 while rocking the gang capacitor to and fro past the signal until the combination of adjustments giving the greatest reading of the output meter is obtained.

(5) Shift test oscillator to 1720 KC.

(6) Rotate tuning capacitor until 1720 KC signal is reached.

(7) Adjust police band oscillator tracking capacitors C11 while rocking the gang capacitor to and fro past the signal until the combination of adjustments giving the greatest reading of the output meter is obtained.

ALIGNMENT OF SHORT WAVE BAND

(1) Switch receiver to short wave band - extreme left.

(2) Set gang capacitor at minimum capacity.

(3) Supply a 1620 KC signal from a test oscillator to the control grid cap of the 6A8, 2nd converter tube.

(4) Adjust C20 to tune in the 1620 KC signal.

(5) Remove test oscillator leads from 6A8, 2nd converter tube and apply the 1620 KC signal to the control grid cap of the 6A8 1st converter tube.

(6) Adjust C19 and C18 for maximum output.

(7) Rotate tuning knob until indicator is at 16 MC marking on dial.

(8) Supply a 16 MC signal from test oscillator to aerial and ground leads.

(9) Adjust short wave RF trimmers C6 and C4 for maximum output.

(10) Shift test oscillator to 5600 KC.

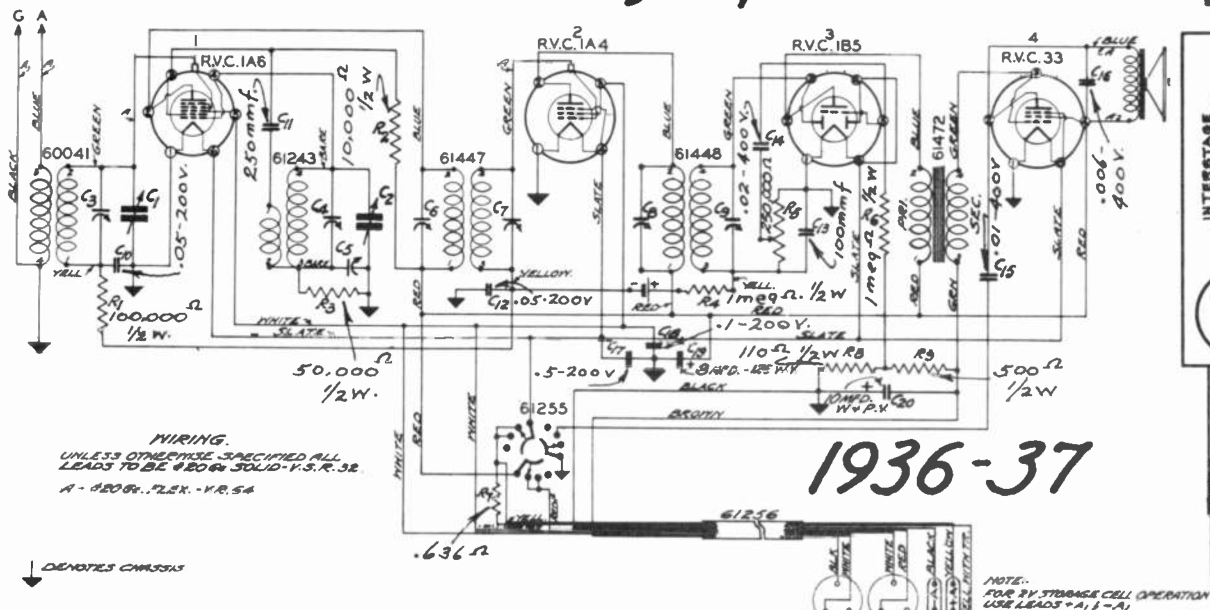
(11) Rotate tuning capacitor until 5600 KC signal is reached.

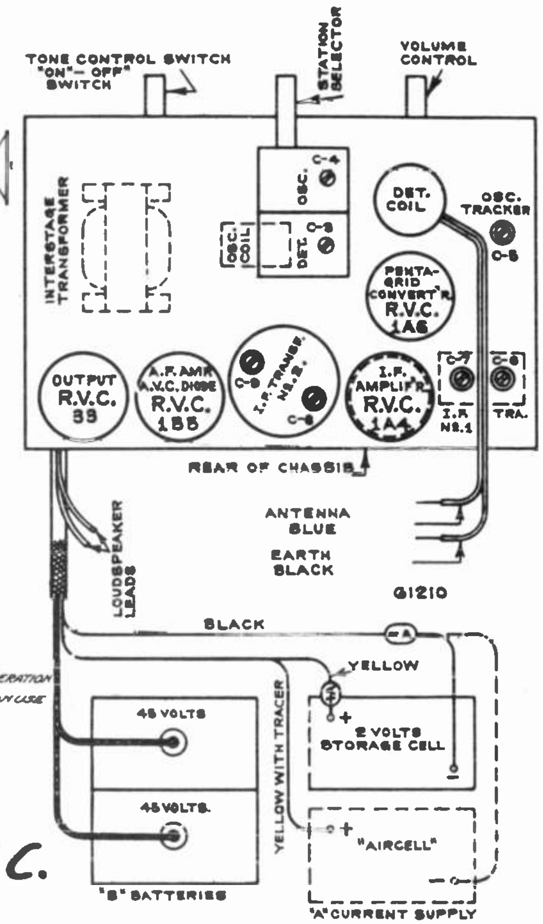
(12) Adjust short wave oscillator tracking capacitor C10, while rocking the gang capacitor to and fro past the signal until the combination of adjustments giving the greatest reading of the output meter is obtained.

(13) Recheck 16 MC alignment.

World Radio History

Battery Operated





Model -88

I.F. = 252.5 K.C.

COURTESY - CANAD. MARCONI-49 CO. LTD

VOLTAGE READINGS

SOCKET PINS TO CHASSIS

	CAP	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8
R.V.C. 1A6 Pentagrid converter	-	80V	70V	-	37.5V	-	-	-
R.V.C.1A4 I.F. Amplifier	-	80V	37.5V	-	-	-	-	-
R.V.C. 1B5 Diode Det.A.V.C. & 1st A.F. Amp.	-	80V	1.75V	-	-	-	-	-
R.V.C. 33 Pentode Output	-	77.5V	7V	80V	-	-	-	-

ALIGNMENT OF BROADCAST BAND

(1) Set gang capacitor at maximum (plates meshed).
(2) Set pointer to the last marking on the low frequency end of the dial.
(3) Rotate tuning knob until pointer is at 1600 KC.
(4) Supply 1600 KC signal from test oscillator to the aerial and ground leads using a standard dummy antenna.
(5) Adjust oscillator trimmer C4 to tune the 1600 KC signal.
(6) Adjust R.F. trimmer C3 for maximum output.
(7) Shift test oscillator to 580 KC.
(8) Rotate tuning capacitor until the 580 KC signal is reached.
(9) Adjust oscillator tracking capacitor C5 while rocking the gang capacitor to and fro past the signal until the combination of adjustments giving the greatest reading of the output meter is obtained.
(10) Recheck at 1600 KC.

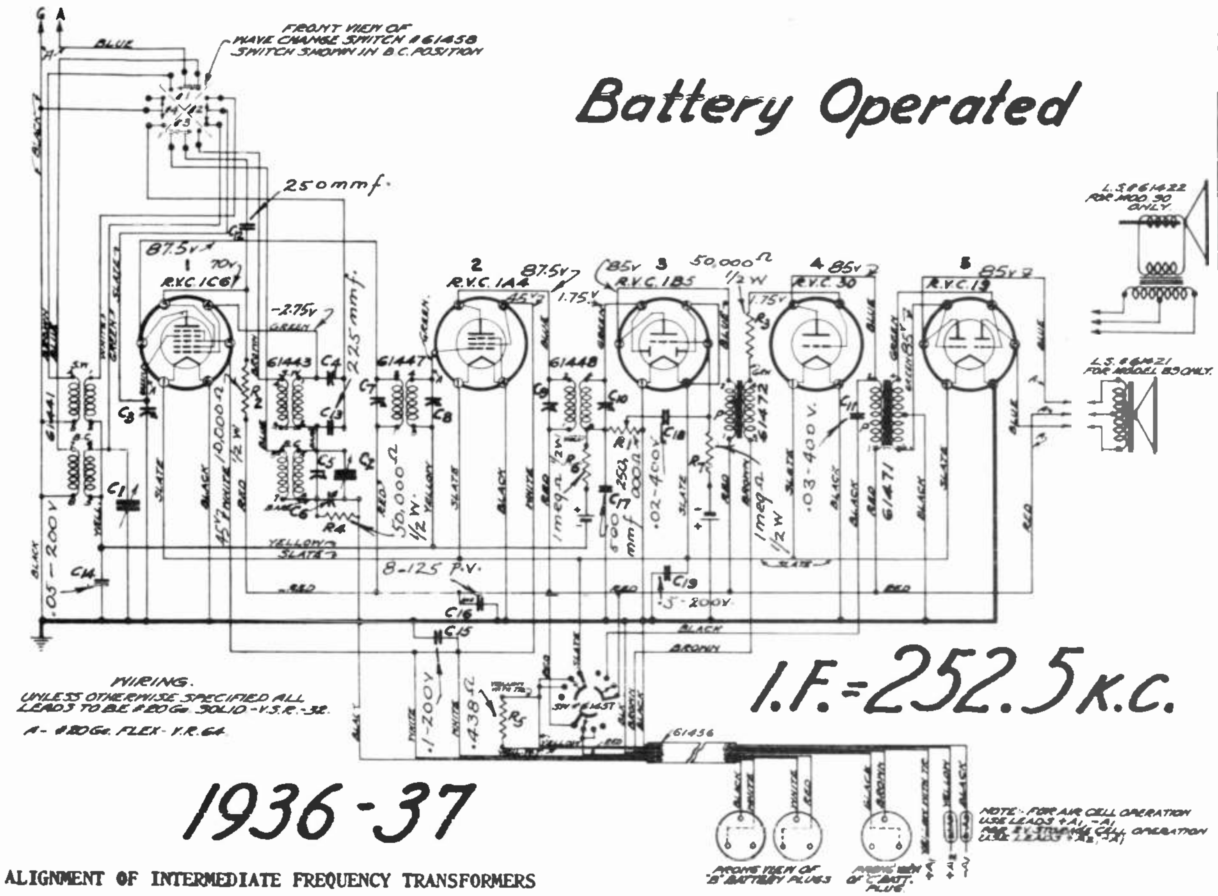
ALIGNMENT OF INTERMEDIATE FREQUENCY TRANSFORMERS

Set gang capacitor at minimum capacity and supply a modulated 252.5 KC signal from a test oscillator to the control grid cap of the 1A6 converter tube through a 0.1 mfd. capacitor leaving the grid connector in place. Adjust in order C9, C8, C7, and C6 for maximum output. This operation should be checked to ascertain that maximum output has been obtained.

DATA SHEET

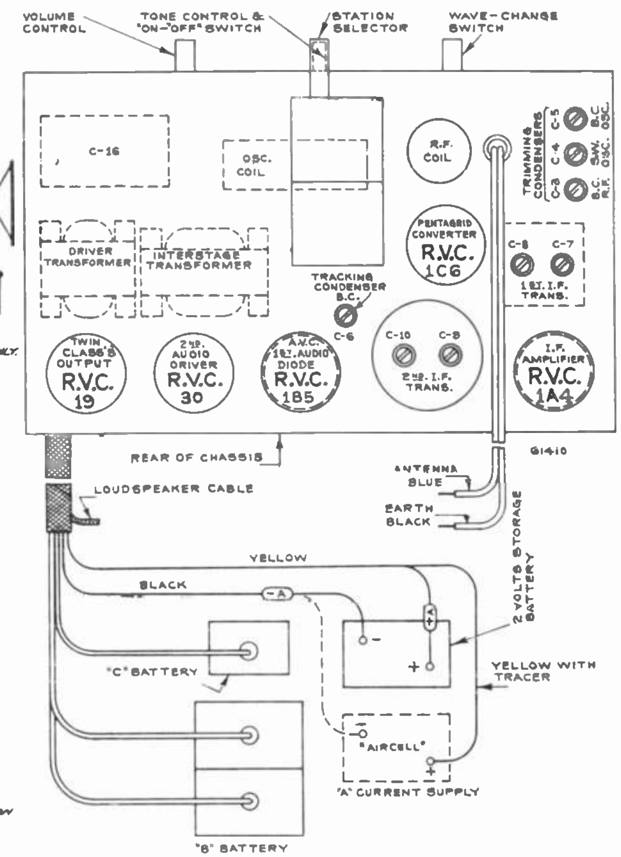
World Radio History

Battery Operated



I.F.=252.5 K.C.

1936-37



MARCONI-50

COURTESY - CANDN. MARCONI CO. LTD.

Models-89-90

DATA SHEET

ALIGNMENT OF INTERMEDIATE FREQUENCY TRANSFORMERS

Set gang capacitor at minimum capacity and supply a modulated 252.5 KC signal from a test oscillator to the control grid cap of the IC6 converter tube through a 0.1 mfd. capacitor leaving the grid connector in place. Adjust in order C10, C9, C8 and C7 for maximum output. This operation should be checked to ascertain that maximum output has been obtained.

ALIGNMENT OF BROADCAST BAND

(1) Set gang capacitor at minimum(plates out of mesh).

(2) Supply a 1725 K.C.signal to the aerial and ground leads using a standard dummy antenna.

(3) Adjust broadcast oscillator trimmer C5 to tune the 1725 K.C. signal.

(4) Shift test oscillator to 1600 K.C.

(5) Rotate the gang capacitor until the 1600 K.C. signal is reached. (If calibration is not correct, loosen set screw holding pointer to shaft).

(6) Set the pointer to the 1600 K.C. marking on the dial and adjust C3 for maximum output.

(7) Set test oscillator to 580 K.C.

(8) Rotate tuning capacitor until the 580 K.C. signal is reached.

(9) Adjust oscillator tracking capacitor C6 while rocking the gang capacitor to and fro past the signal until the combination of adjustments giving the greatest reading of the output meter is obtained.

(10) Recheck at 1600 K.C.

ALIGNMENT OF SHORT WAVE BAND

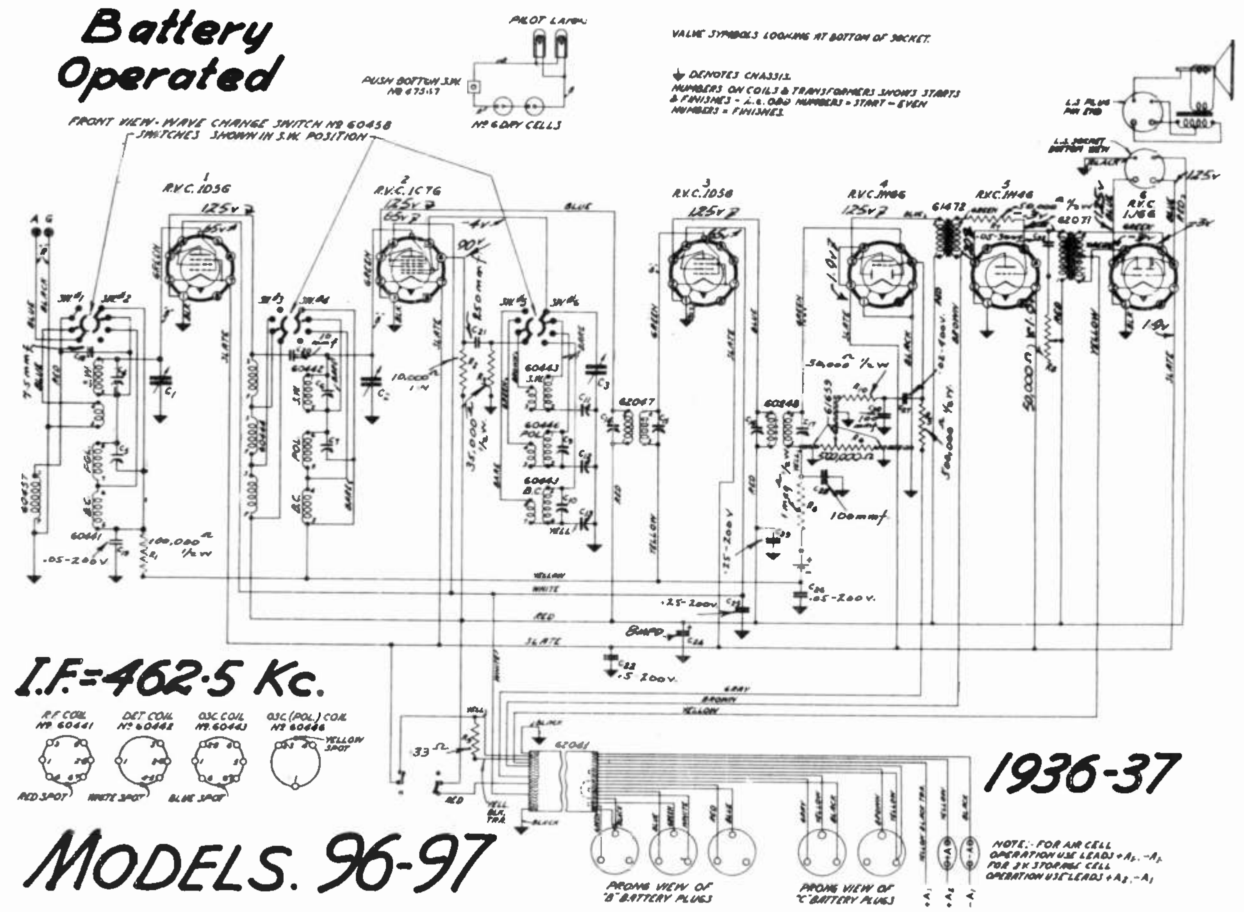
(1) Switch to short wave band.

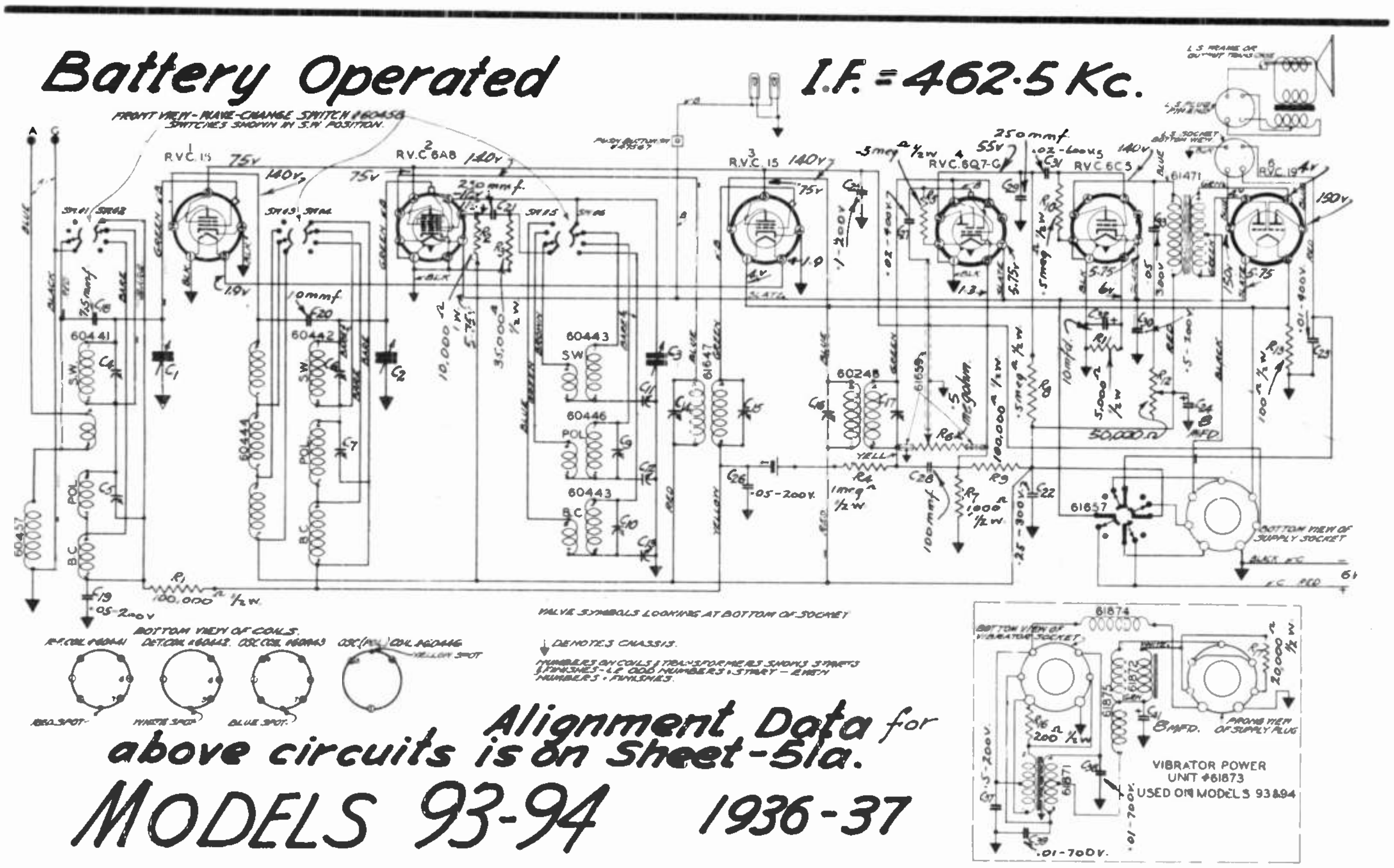
(2) Set dial pointer to 80 degrees.

(3) Set test oscillator to 6000 K.C.

(4) Adjust short wave oscillator trimmer C4 until the 6000 K.C.signal corresponds with the 80th division on the dial scale. If two peaks are obtainable when adjusting C4 the one with the trimmer furthest out(minimum capacity)is correct. This adjustment must be made accurately otherwise the frequency range desired will not be covered.

World Radio History





DATA SHEET

COURTESY— CANDN.
MARCONI - 51
CO. LTD.

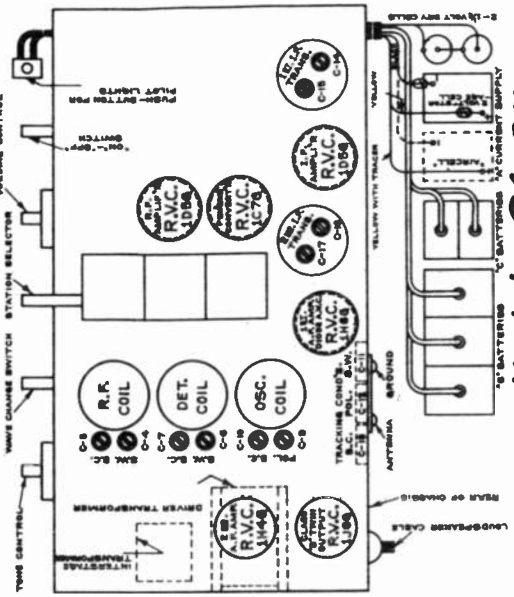
Alignment Data

Models-93-94-96-97

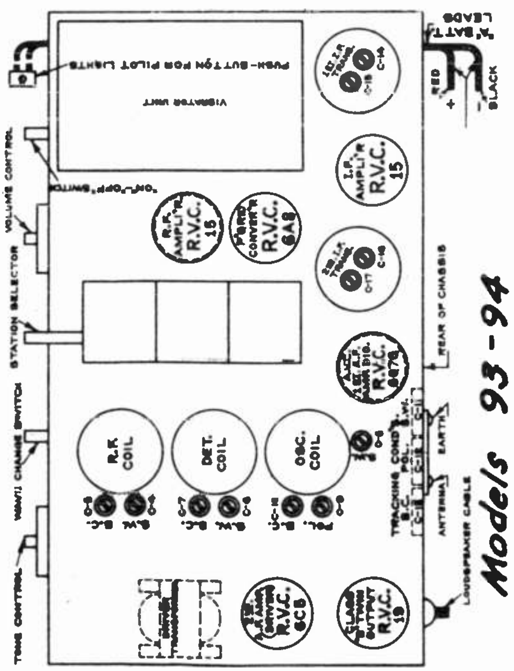
1936 -37

Circuits on Data Sheet-51

Models-96-97



Socket Layouts, Trimmer Locations, etc..



Models 93-94

In order to properly realign this receiver the radiotrician should have available an output meter and a well attenuated test oscillator capable of giving the following frequency fundamentals:-

462.5 KC for I.F. alignment.
1500 KC and 580 KC for broadcast band alignment.
4800 KC and 1720 KC for police band alignment.
16,000 KC and 5600 KC for short wave band alignment.

The manual volume control should always be kept at maximum, and the signal from the test oscillator should be kept as low as possible. In any case the signal should not be of sufficient strength to bring the automatic volume control into operation.

If a Cathode Ray Oscillograph is used instead of an output meter the vertical plates should be connected between the junction R6, C17 and C28, i.e., the upper soldering lug on the volume control and chassis. The alignment should produce a round topped, rather than a sharp peaked image.

ALIGNMENT OF INTERMEDIATE FREQUENCY TRANSFORMERS

(6A8 on Models 93 and 94)

Set gang capacitor at minimum capacity and supply a modulated 462.5 KC signal from a test oscillator to the control grid cap of the 1C7G converter tube through a 0.1 mfd. capacitor leaving the grid connector in place. Adjust in order C17, C16, C15 and C14 for maximum output. This operation should be checked to ascertain that maximum output has been obtained.

ALIGNMENT OF BROADCAST BAND

(1) Set gang capacitor at maximum capacity (plates meshed).

(2) Set dial pointer in a horizontal position on the left hand side, i.e., midway between the two scales.

(3) Rotate tuning knob until pointer is at 1500 KC.

(4) Supply a 1500 KC signal from a test oscillator to the aerial and ground leads.

(5) Adjust broadcast oscillator trimmer C10 to tune in the 1500 KC signal.

(6) Adjust R.F. trimmers C7 and C5 for maximum output.

(7) Shift test oscillator to 580 KC.

(8) Rotate the tuning capacitor until the 580 KC signal is reached.

(9) Adjust broadcast oscillator tracking capacitor C13 while rocking the gang capacitor to and fro past the signal until the combination of adjustments giving the greatest reading of the output meter is obtained.

(10) Recheck at 1500 KC.

ALIGNMENT OF POLICE BAND

(1) Turn wavechange switch to police band — centre position.

(2) Rotate tuning knob until pointer is at 4800 KC marking on dial.

(3) Supply a 4800 KC signal from test oscillator to the aerial and ground leads.

(4) Adjust police band oscillator trimmer C9 while rocking the gang capacitor to and fro past the signal until the combination of adjustments giving the greatest reading of the output meter is obtained.

NOTE: 5,6 and 7 apply to Models 96-97 only.

(5) Shift test oscillator to 1720 KC.

(6) Rotate tuning capacitor until 1720 KC signal is reached.

(7) Adjust police band oscillator tracking capacitor C12 while rocking the gang capacitor to and fro past the signal until the combination of adjustments giving the greatest reading of the output meter is obtained.

ALIGNMENT OF SHORT WAVE BAND

(1) Turn wavechange switch to short wave band extreme left.

(2) Rotate tuning knob until pointer is at 16MC marking on dial.

(3) Supply a 16 MC signal from test oscillator to aerial and ground leads.

(4) Adjust short wave R.F. trimmers C6 and C4 for maximum output.

(5) Shift test oscillator to 5600 KC.

(6) Rotate tuning capacitor until 5600 KC signal is reached.

(7) Adjust short wave oscillator tracking capacitor C11, while rocking the gang capacitor to and fro past the signal until the combination of adjustments giving the greatest reading of the output meter is obtained.

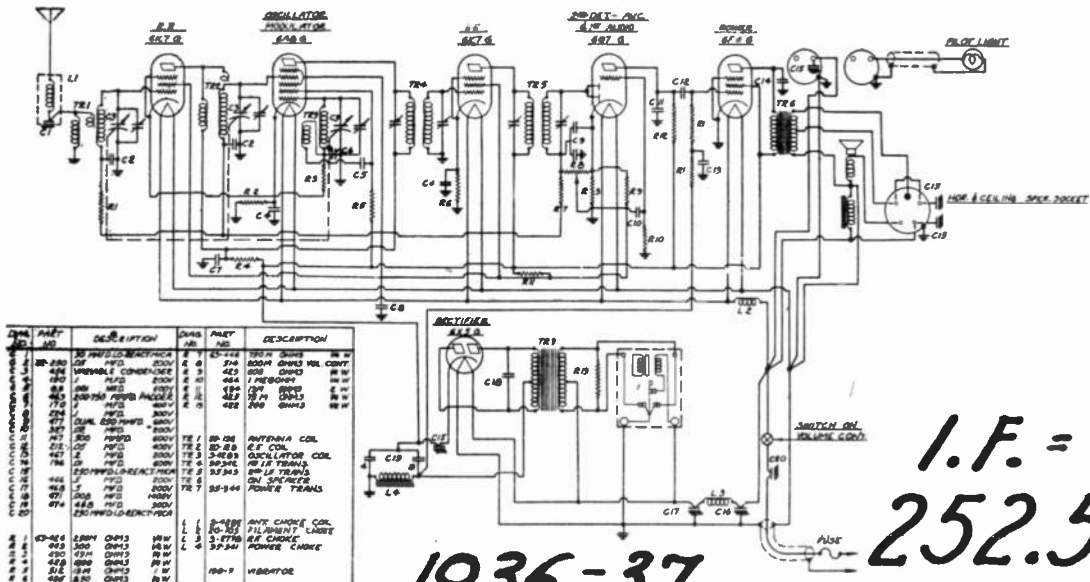
(8) Recheck 16 MC alignment.

MARCONI-51a

Courtesy-Canad. Marconi Co. Ltd.

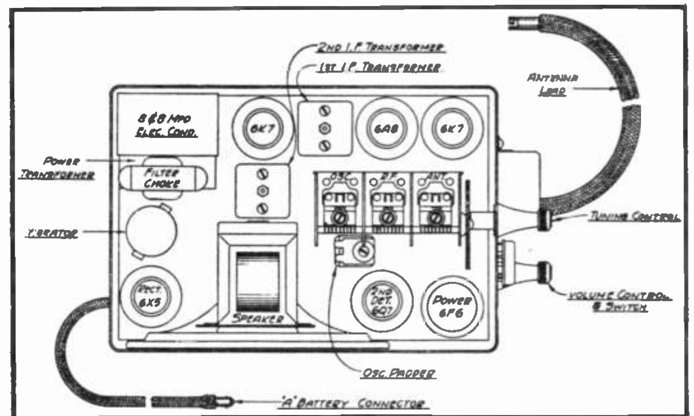
DATA SHEET

World Radio History



1936-37

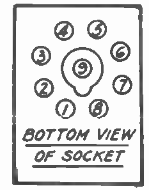
I.F. = 252.5 K.C.



SOCKET VOLTAGES MODEL 95

Tube	Position	1	2	3	4	5	6	7	8	9
6K7	R.F. Amp.	0	5.8	175	84	4.6	—	0	4.6	0
6A8	1st Det. Osc.	0	0	175	84	—16	110	5.8	4.6	0
6K7	I. F. Amp.	0	5.8	180	84	3.6	—	0	3.6	0
6Q7	2nd Det. A. V. C. 1st Audio	0	5.8	130	.3	.3	—	0	1.3	0
6F6	Power	0	0	170	180	—3.4	—	5.8	0	—
6X5	RECT.	0	5.8	AC	—	AC	—	0	180	—

Model-95



ALIGNMENT

Every Marconi receiver is balanced, and the sensitivity measured on accurate crystal controlled signal generators before leaving the factory, and unless a part is changed, or the receiver otherwise altered, the adjustment should not be tampered with.

When alignment is thus required, an accurately calibrated service oscillator and output meter are essential.

The proper procedure is as follows :—

"A" Connect the service oscillator to the control grid of the 6A8 tube and the chassis.

Connect the output meter across the primary of the speaker transformer.

Set the service oscillator to 252.5 K.C., and adjust the trimmers on the I.F. transformers for the greatest output reading. These adjustments should be repeated several times using as weak an input signal as possible so as to obtain greater accuracy.

"B" Change the service oscillator lead from the grid of the 6A8 to the antenna connection. A male Delco Remy connector may be used in making a connection to the antenna lead.

Set the service oscillator at 1400 K.C.

Rotate the gang capacitor one and one fourth turns from the minimum setting. At the proper position eight teeth on the tuning gear will be visible past the gear bracket.

Adjust the oscillator, R.F. and antenna trimmers in that order to the point giving the greatest output.

"C" Set the service oscillator at 600 K.C. and rotate the gang capacitor to tune in this signal. Move the gang capacitor to and fro past the signal meanwhile adjusting the oscillator padder capacitor until the combination of adjustments giving the greatest reading of the output meter is obtained.

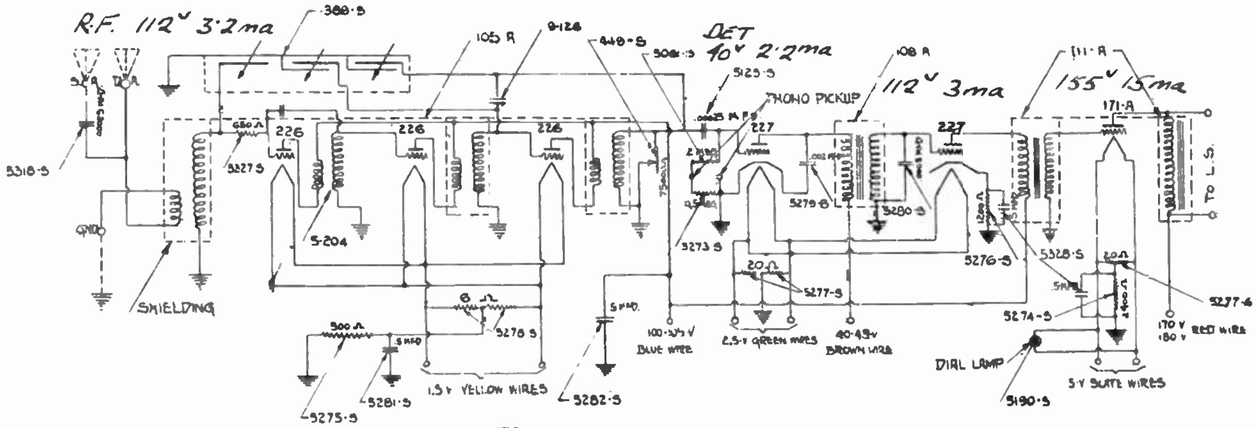
"D" Repeat operation "B".

COURTESY- CANDN. MARCONI-52 CO. LTD.

DATA SHEET

World Radio History

6-Tube Chassis Fitted in Table Console and Phono-Comb. Models 1928-29

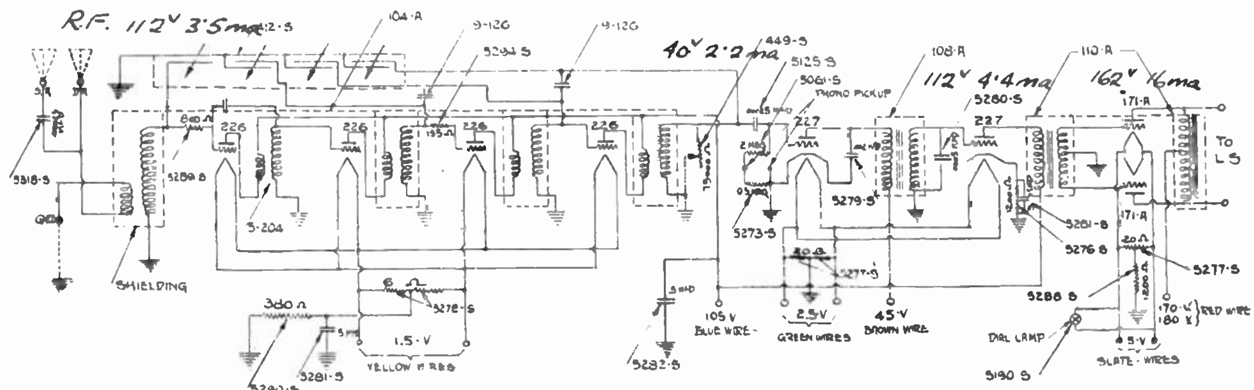


NOTE: ABOVE INDICATED PART NUMBERS ARE THE ELECTRICAL PART AND ASSEMBLY NUMBERS OF ITEMS USED IN CIRCUIT. WHEN ORDERING PARTS OR ASSEMBLIES SPECIFY THIS NUMBER AS WELL AS NAME OF ITEM.

FIG. 1
CIRCUIT DIAGRAM OF 6 TUBE A.C SET

6 TUBE A.C. (MODELS 60, 61, 62, 65, AND 66)

8-Tube Chassis Fitted in all Models 1928-29



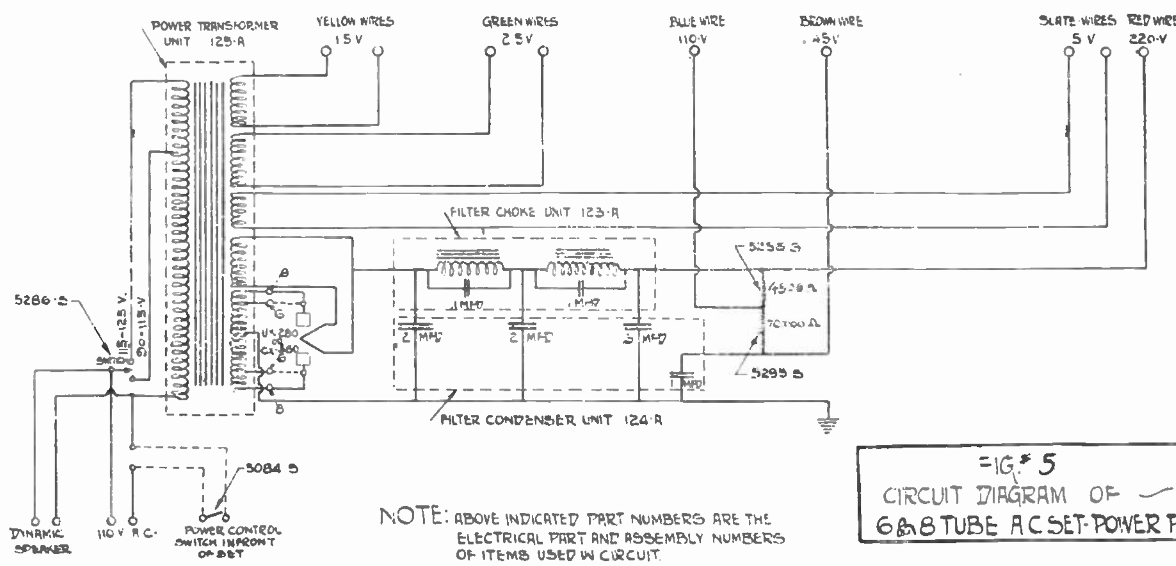
NOTE: ABOVE INDICATED PART NUMBERS ARE THE ELECTRICAL PART AND ASSEMBLY NUMBERS OF ITEMS USED IN CIRCUIT. WHEN ORDERING PARTS OR ASSEMBLIES SPECIFY THIS NUMBER AS WELL AS NAME OF ITEM

Power Unit for above Models

FIG. 2
CIRCUIT DIAGRAM OF 8 TUBE A.C SET

8 TUBE A.C. (MODELS 80, 83, 84, 85, 86, AND 88)

NOTE—Plates of Rectifier Tube connect to Points 6-6 of Power Transformer for 6 Tube Models Points 8-8 for 8 Tube Models



NOTE: ABOVE INDICATED PART NUMBERS ARE THE ELECTRICAL PART AND ASSEMBLY NUMBERS OF ITEMS USED IN CIRCUIT.

FIG. 5
CIRCUIT DIAGRAM OF 6 & 8 TUBE A.C SET-POWER PACK

Printed in Canada

—Courtesy Mohawk Radio Ltd.

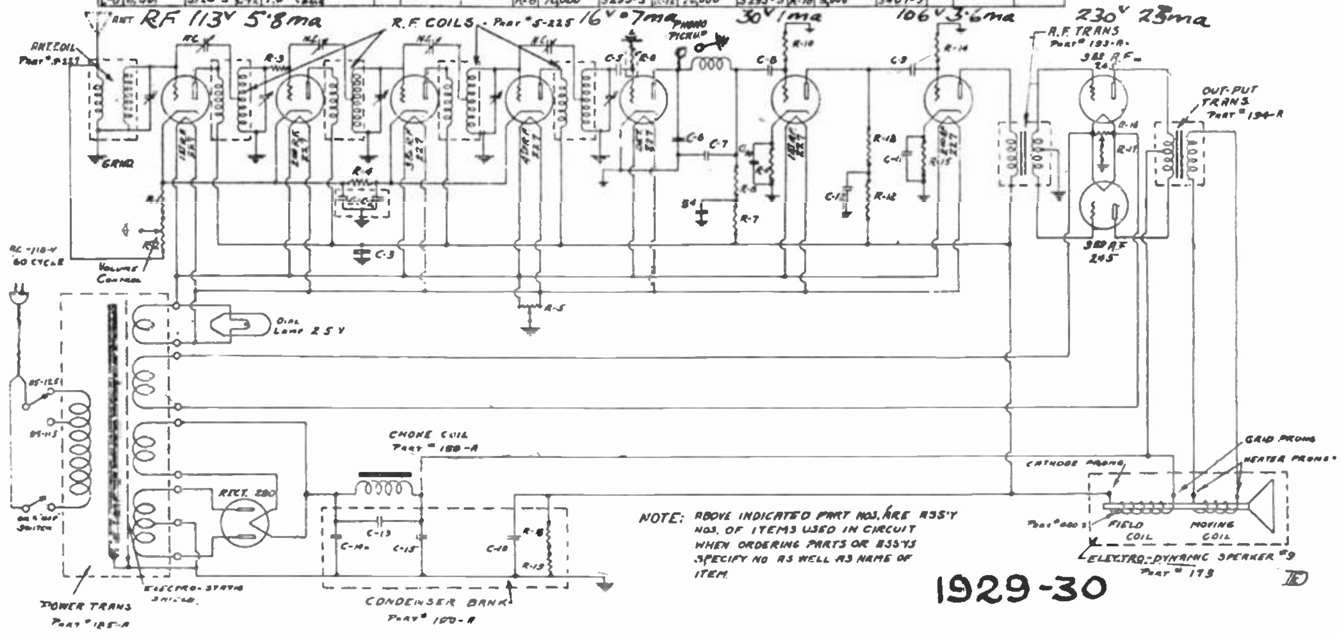
World Radio History

180-W

Model 96
60 Cycle

VALUE AND PART NUMBER OF CIRCUIT ELEMENTS

UNIT	CAP IN MFD	PART No	UNIT	CAP IN MFD	PART No	UNIT	CAP MFD	PART No	UNIT	RES IN OHMS	PART No	UNIT	RES IN OHMS	PART No	UNIT	RES IN OHMS	PART No	UNIT	RES IN OHMS	PART No
C-1	0.1 one	5593-5	C-7	0.001	5124-5	C-13	0.1 Cond. Bank	190-A	R-1	380	5520-5	R-7	70,000	5295-5	R-13	25,000	5172-5	R-19	6,000	5407-5
C-2	0.1 unit	5593-5	C-8	0.01	5003-5	C-14	2.0		R-2	10,000	731-5	R-8	2 Megohms	5061-5	R-14	0.5 Megohm	5221-5			
C-3	0.5 one	5598-5	C-9	0.01	5003-5	C-15	2.0		R-3	1500	6004-5	R-9		5221-5	R-15	2,400	5274-5			
C-4	0.5 unit	5598-5	C-10	0.5		C-16	2.0		R-4	100	5524-5	R-10	0.5	5221-5	R-16	20	5277-5			
C-5	0.00025	5125-5	C-11	0.5					R-5	20	5277-5	R-11	2400	5274-5	R-17	1,000	5559-5			
C-6	0.001	5124-5	C-12	1.0 Cond. Bank					R-6	70,000	5295-5	R-12	70,000	5295-5	R-18	6,000	5407-5			



1929-30

CIRCUIT DIAGRAM NO. 90 CHASSIS 60 CYCLE

No Table Models

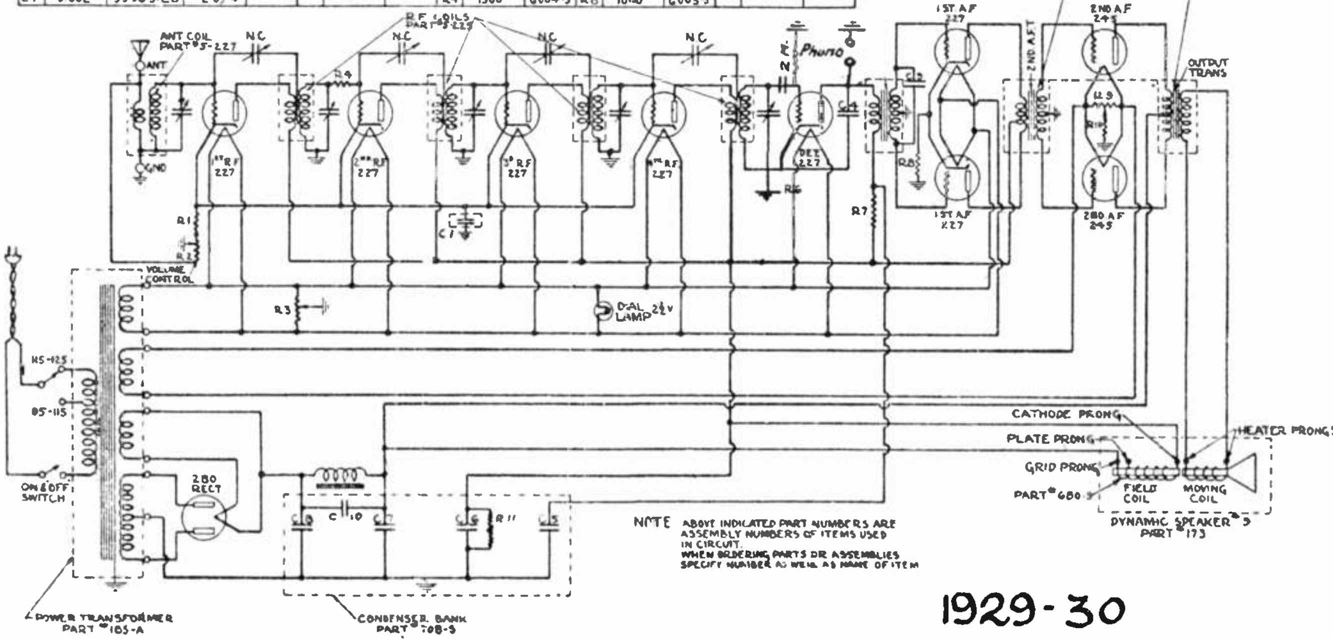
90 Chassis Fitted in Low Boy High Boy and Phono-Comb.
1929-30

For Power Unit Connections See Data Sheet 5

182-W

VALUE AND PART No OF CIRCUIT ELEMENTS

UNIT	CAP IN MFD	PART No	UNIT	CAP IN MFD	PART No	UNIT	CAP IN MFD	PART No	UNIT	RES IN OHMS	PART No	UNIT	RES IN OHMS	PART No	UNIT	RES IN OHMS	PART No
C1	0.1	5593-5	C5	1.0 Cond. Bank		C9	0.00025	5125-5	R1	380	5520-5	R5	100	5594-5	R9	20	5277-5
C2	0.1 one	5592-5	C6	1.0	708-5	C10	[illegible]	5612-5	R2	10000	731-5	R6	10000	5170-5	R10	1000	5559-5
C3	0.5 unit	5592-5	C7	1.0					R3	20	5277-5	R7	70000	5295-5	R11	6000	5568-5
C4	0.002	5596-5	C8	2.0					R4	1500	6004-5	R8	1040	6005-5			



Model 90
25 Cycle

1929-30

CIRCUIT DIAGRAM NO. 90 CHASSIS 25 CYCLE

Printed in Canada

—Courtesy Mohawk Radio Ltd.

World Radio History

181-W

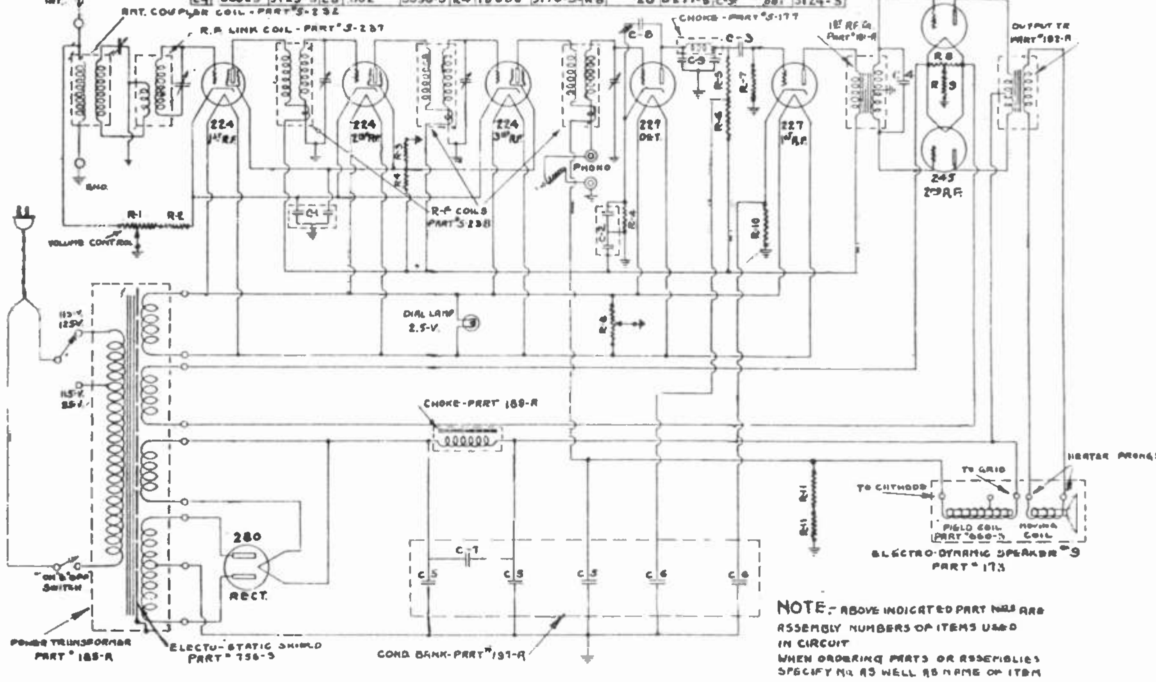
Model 96 Screen Grid Chassis

Available in L.B. H.B. Comb.

Early 1930

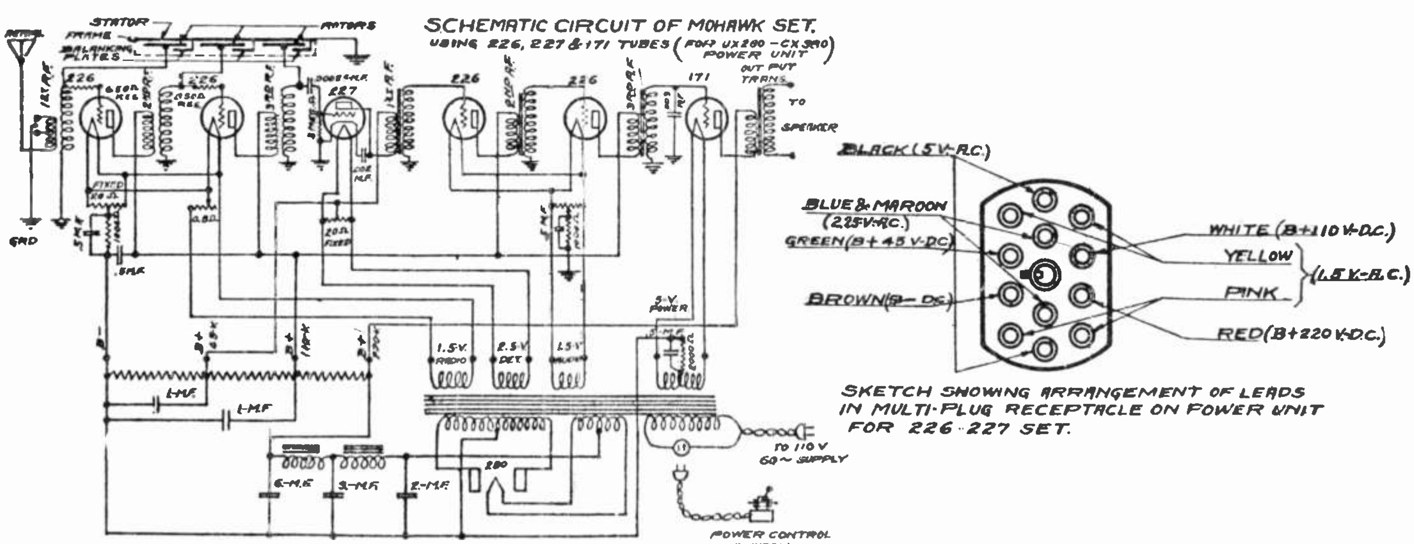
VALUE AND PART No OF CIRCUIT ELEMENTS

UNIT	CAP IN MFD	PART No	UNIT	CAP IN MFD	PART No	UNIT	RES IN OHMS	PART No	UNIT	RES IN OHMS	PART No	UNIT	RES IN OHMS	PART No
C1	Two-.5	5328-5	C5	2	Cond. Bank 187-A	R1	10000	731-5	R5	70000	5295-5	R9	1000	8559-5
C2	Two-.5	5592-5	C6	1		R2	300	5361-5	R6	25000	5172-5	R10	2000	5595-5
C3	.01	5605-5	C7	.1		R3	25000	5172-5	R7	5 MEG	5275-5	R11	6000	5588-5
C4	.00025	5125-5	C8	.002	5596-5	R4	10000	5170-5	R8	20	5277-5	C-9	.001	5124-5



CIRCUIT DIAGRAM NO. 96 CHASSIS

60 CYCLE 1929-30.



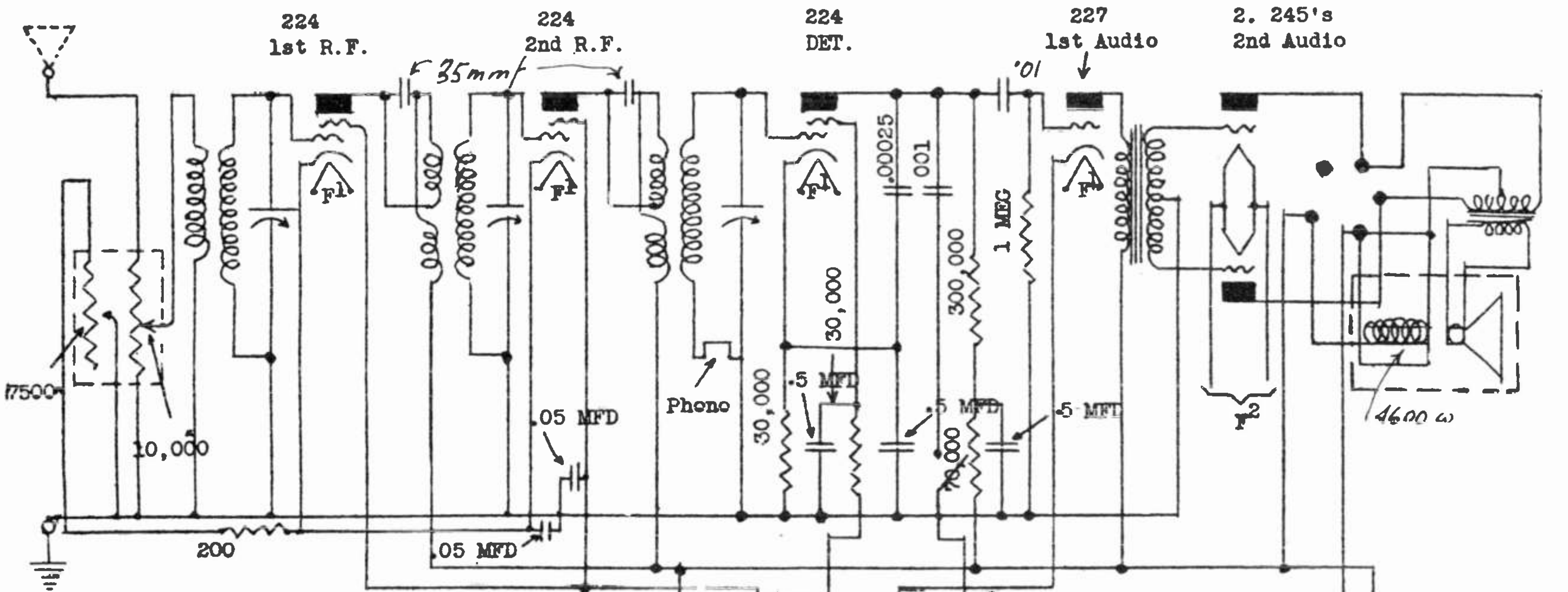
Printed in Canada

—Courtesy Mohawk Radio Ltd.

World Radio History

DATA SHEET

Printed in Canada



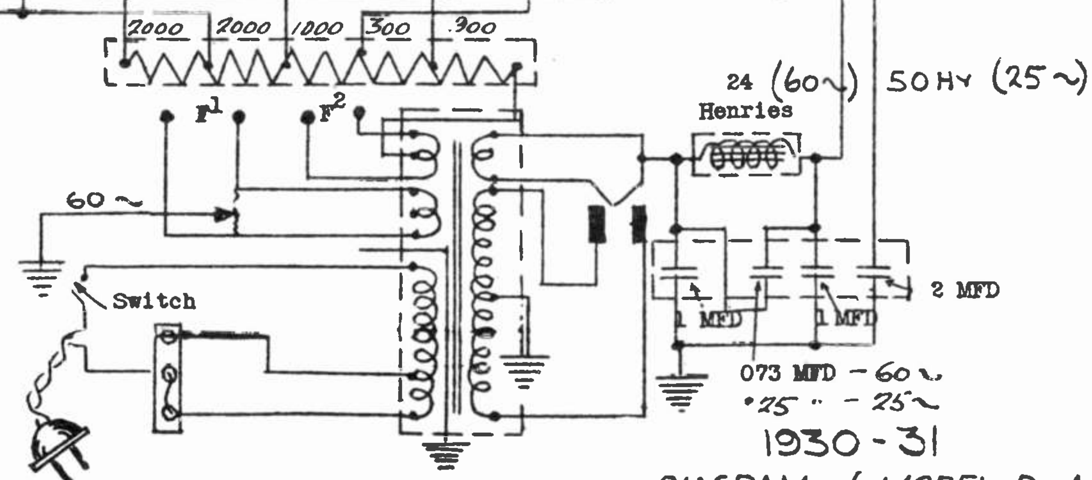
These voltage readings are taken under the following conditions: Volume control in full on position, but antenna disconnected from chassis so that no signal is heard from the loud speaker. AC line voltage 111 volts, and fuse to the power transformer in the "above 110 volts" position.

25 Cycle Readings

	Plate Voltage	Plate Mils.	Screen Volts	Grid Volts	Fil. Volts
1st R.F.	100	2.8	60	1.5	2.25
2nd R.F.	100	2.8	60	1.5	2.25
Det.	40	....	18	5.0	2.25
227	70	7	....	....	2.25
245	195	24	....	33	2.35
245	195	24	....	33	2.35
280	380-380	....	....	....	4.8

60 Cycle Readings

	Plate Voltage	Plate Mils.	Screen Volts	Grid Volts	Fil. Volts
1st R.F.	115	2.75	68	1.75	2.25
2nd R.F.	115	2.75	68	1.75	2.25
Detector	45	....	20	5.	2.25
227	85	8.75	....	....	2.25
245	230	26	....	40	2.35
245	230	26	....	40	2.35
280	365-365	....	....	....	4.8

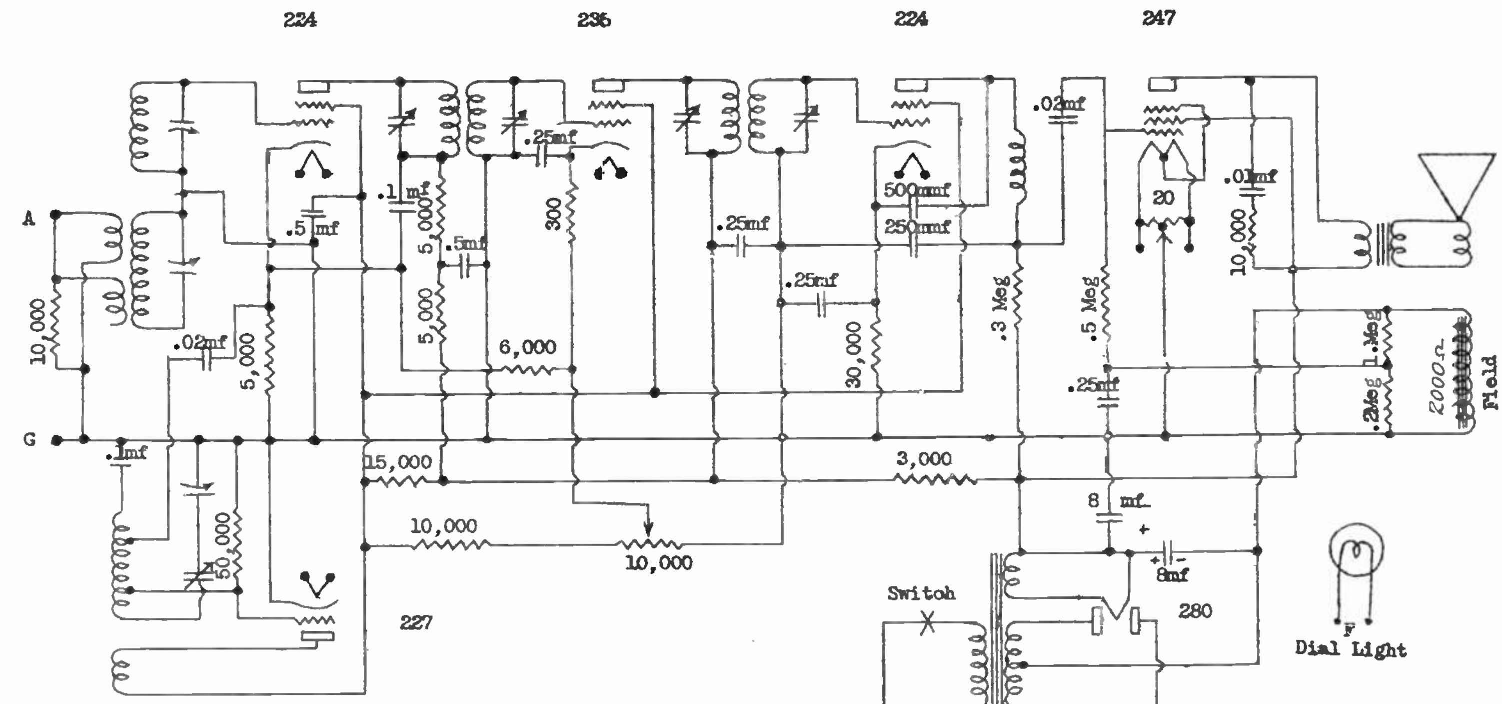


1930-31

DIAGRAM of MODEL D & A

MOHAWK—6

—Courtesy Mohawk Radio Ltd.



I.F. 175kc.

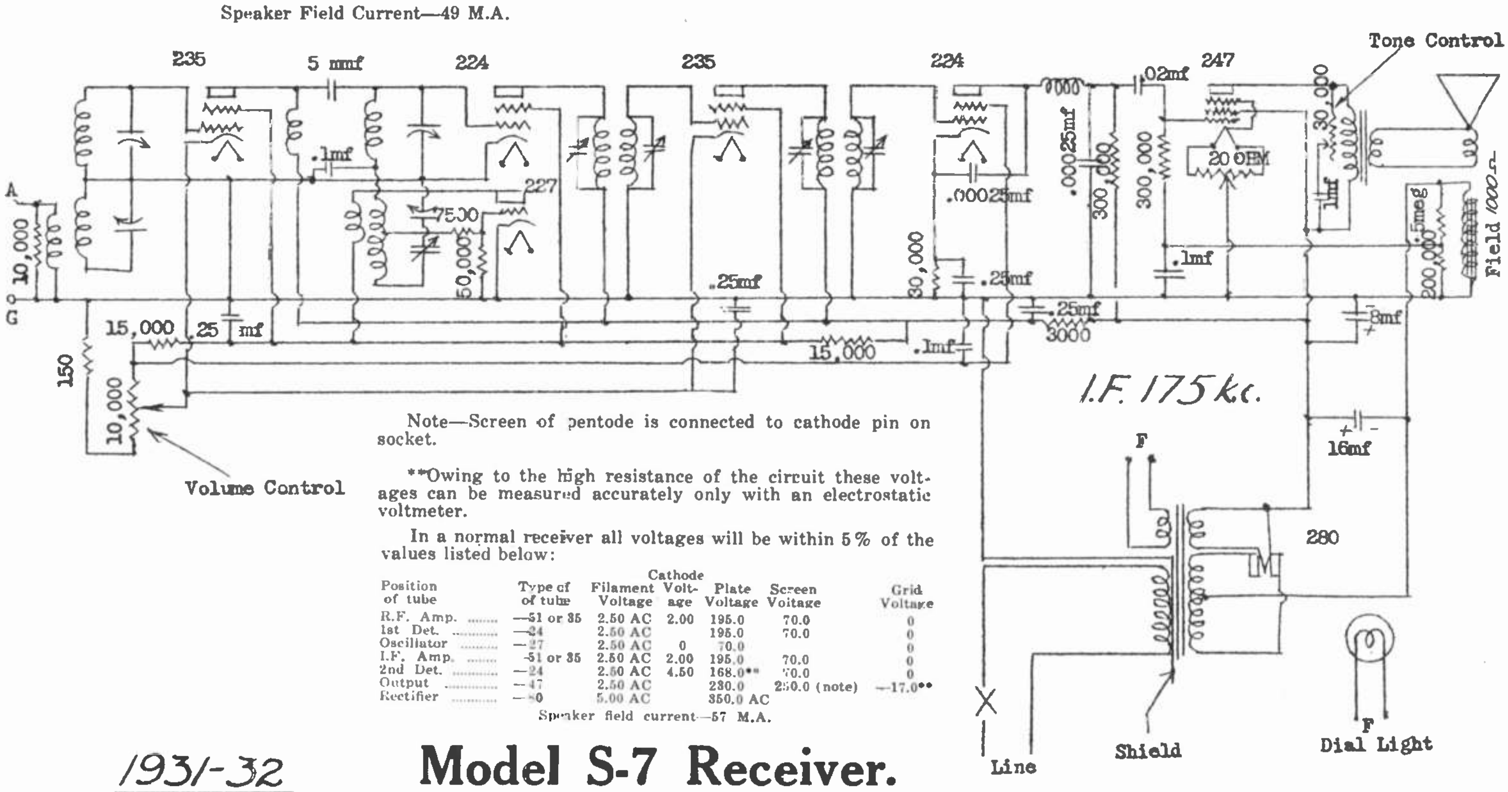
In a normal receiver all voltages will be within 5% of the values listed below:

Position of tube	Type of tube	Filament Voltage	Cathode Voltage	Plate Voltage	Screen Voltage	Grid Voltage
1st Det.	—24	2.5	4.2	185	70	0
Oscillator	—27	2.5	0	70	—	0
I.F. Amp......	—51 or —35	2.5	1.8	195	70	0
2nd Det........	—24	2.5	4.5	195**	70	0
Output	—47	2.5	—	225	245 (note)	—17**

Speaker Field Current—49 M.A.

Model S-6 Receiver.

1931-32



I.F. 175kc.

Note—Screen of pentode is connected to cathode pin on socket.

**Owing to the high resistance of the circuit these voltages can be measured accurately only with an electrostatic voltmeter.

In a normal receiver all voltages will be within 5% of the values listed below:

Position of tube	Type of of tube	Filament Voltage	Cathode Voltage	Plate Voltage	Screen Voltage	Grid Voltage
R.F. Amp.	—51 or 35	2.50 AC	2.00	195.0	70.0	0
1st Det.	—24	2.50 AC		195.0	70.0	0
Oscillator	—27	2.50 AC	0	70.0		0
I.F. Amp.	-51 or 35	2.50 AC	2.00	195.0	70.0	0
2nd Det.	—24	2.50 AC	4.50	168.0**	70.0	0
Output	—47	2.50 AC		230.0	250.0 (note)	—17.0**
Rectifier	—80	5.00 AC		350.0 AC		

Speaker field current—57 M.A.

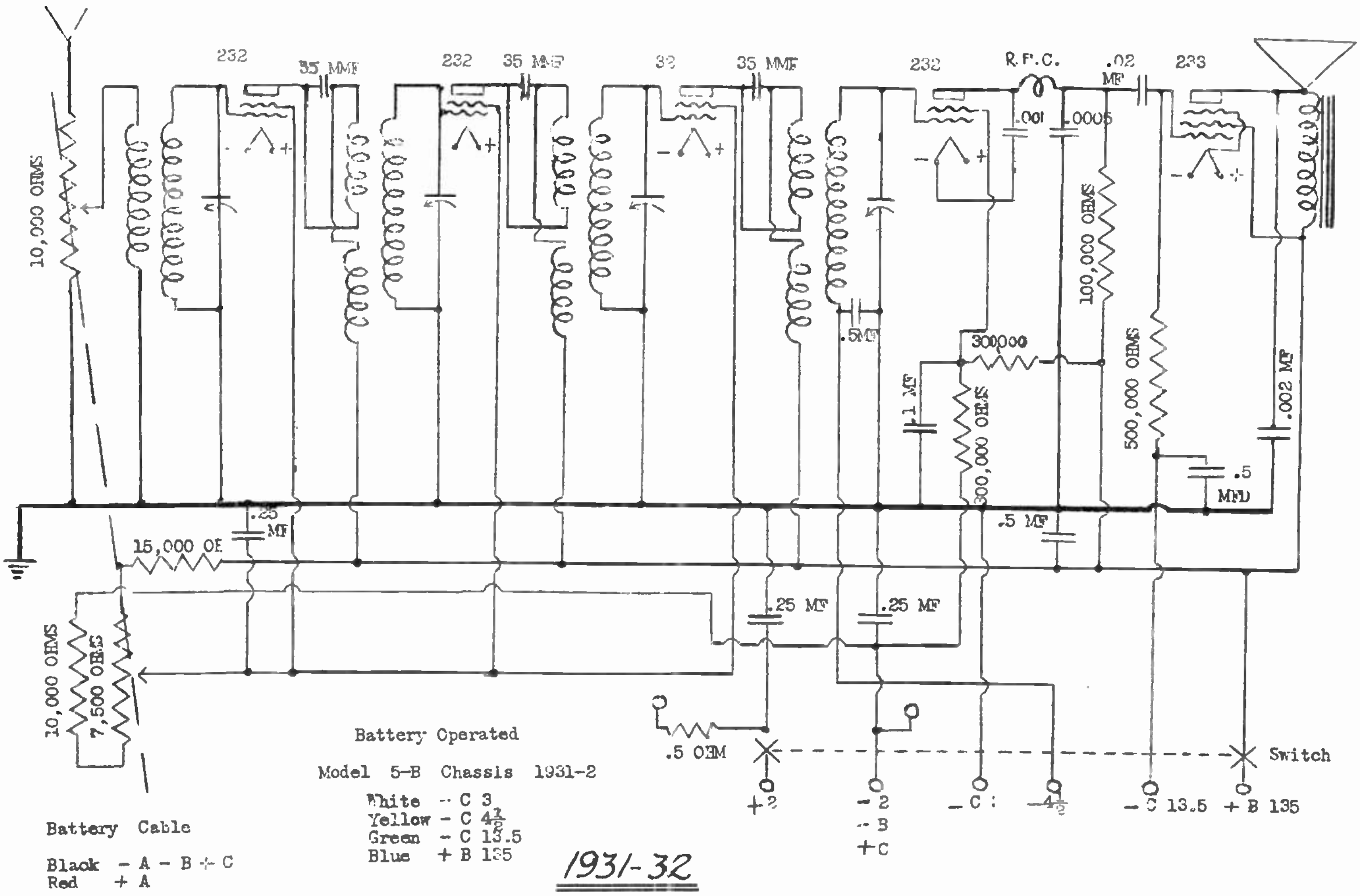
Model S-7 Receiver.

1931-32

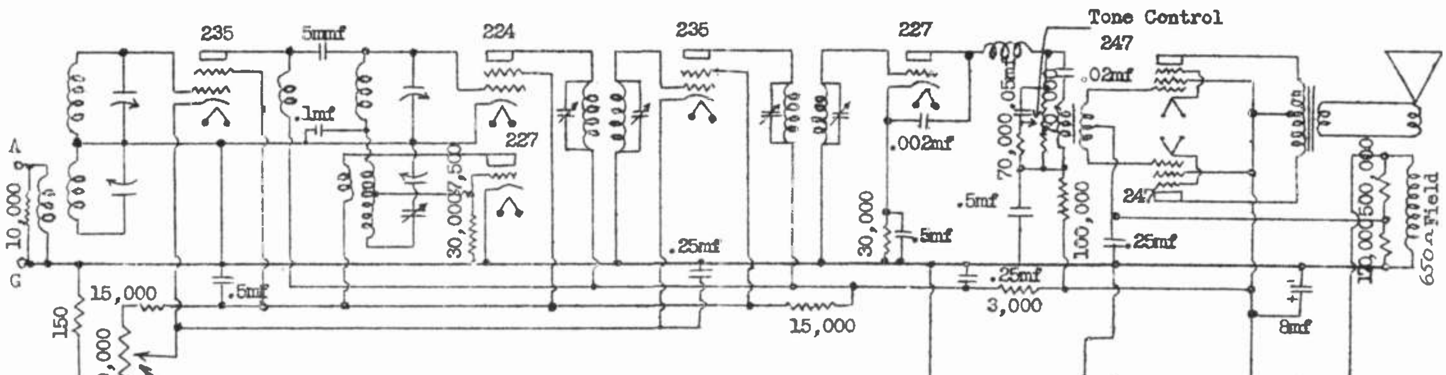
Printed in Canada

—Courtesy Mohawk Radio Ltd.

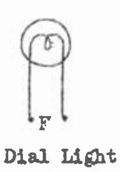
World Radio History

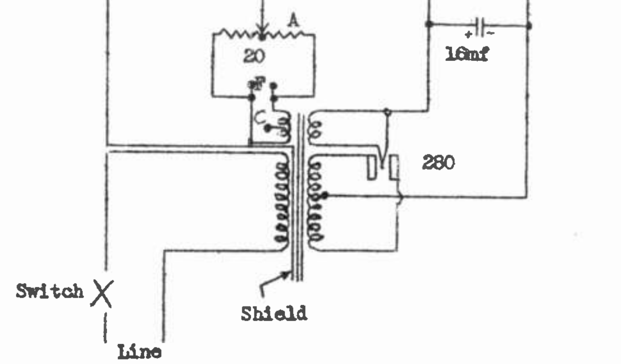


1931-32



I.F. 175 Kc.





In a normal receiver all voltages will be within 5% of the values listed below:

Position of tube	Type of of tube	Filament Voltage	Cathode Voltage	Plate Voltage	Screen Voltage	Grid Voltage
R.F. Amp.	—51 or —35	2.5 AC	2.1	200	70	0
1st Det.	—24	2.5 AC		205	70	0
Oscillator	—27	2.5 AC	0	70		0
I.F. Amp.	—51 or —35	2.5 AC	2.1	200	70	0
2nd Det.	—24	2.5 AC	10	125		0
Output	—47	2.5 AC		235	250 (note)	—17.0**

Speaker field current—91 M.A.

Note—Screen of pentode is connected to cathode pin on socket.

**Owing to the high resistance of the circuit these voltages can be measured accurately only with an electrostatic voltmeter.

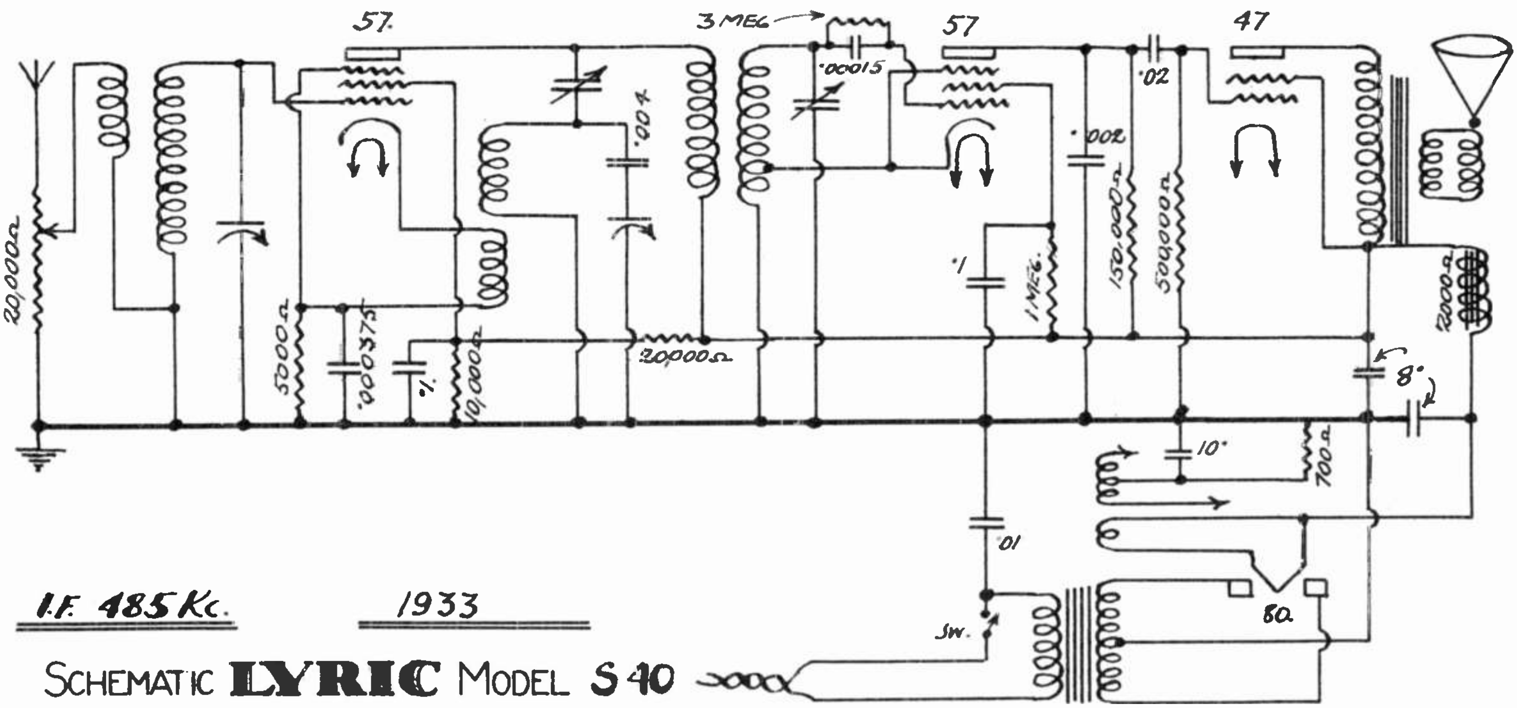
Model S-8 Receiver.

1931-32

Printed in Canada

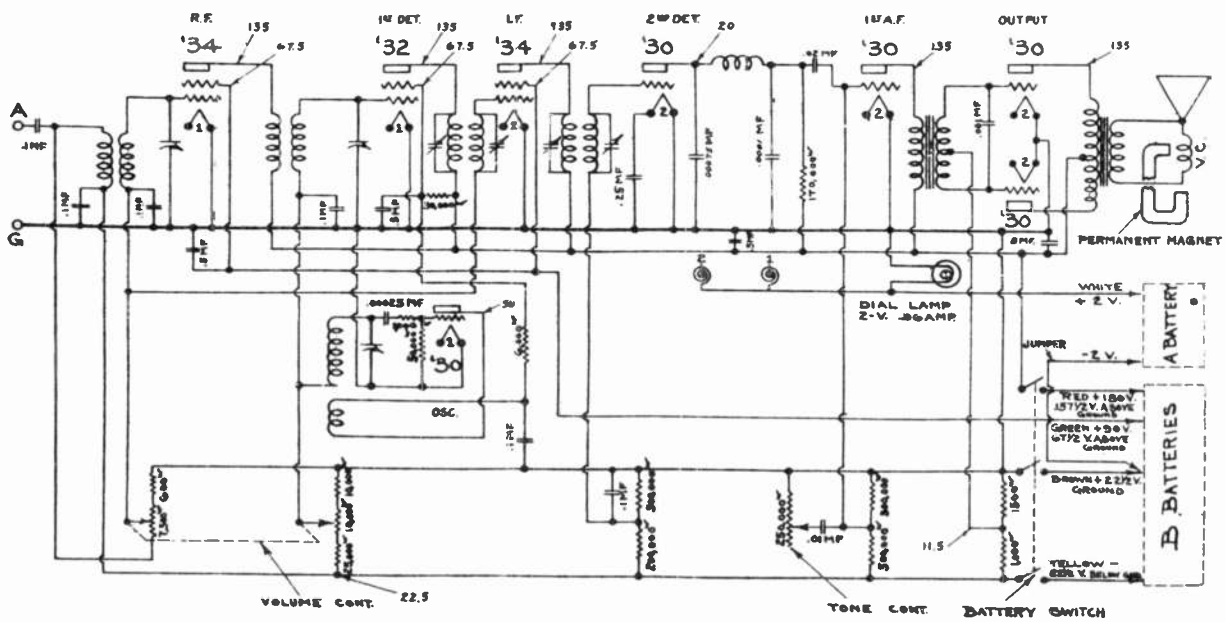
—Courtesy Mohawk Radio Ltd.

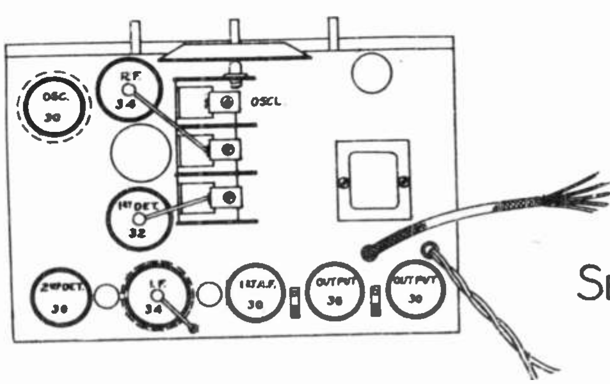
World Radio History



I.F. 485 Kc. 1933

SCHEMATIC LYRIC MODEL S 40





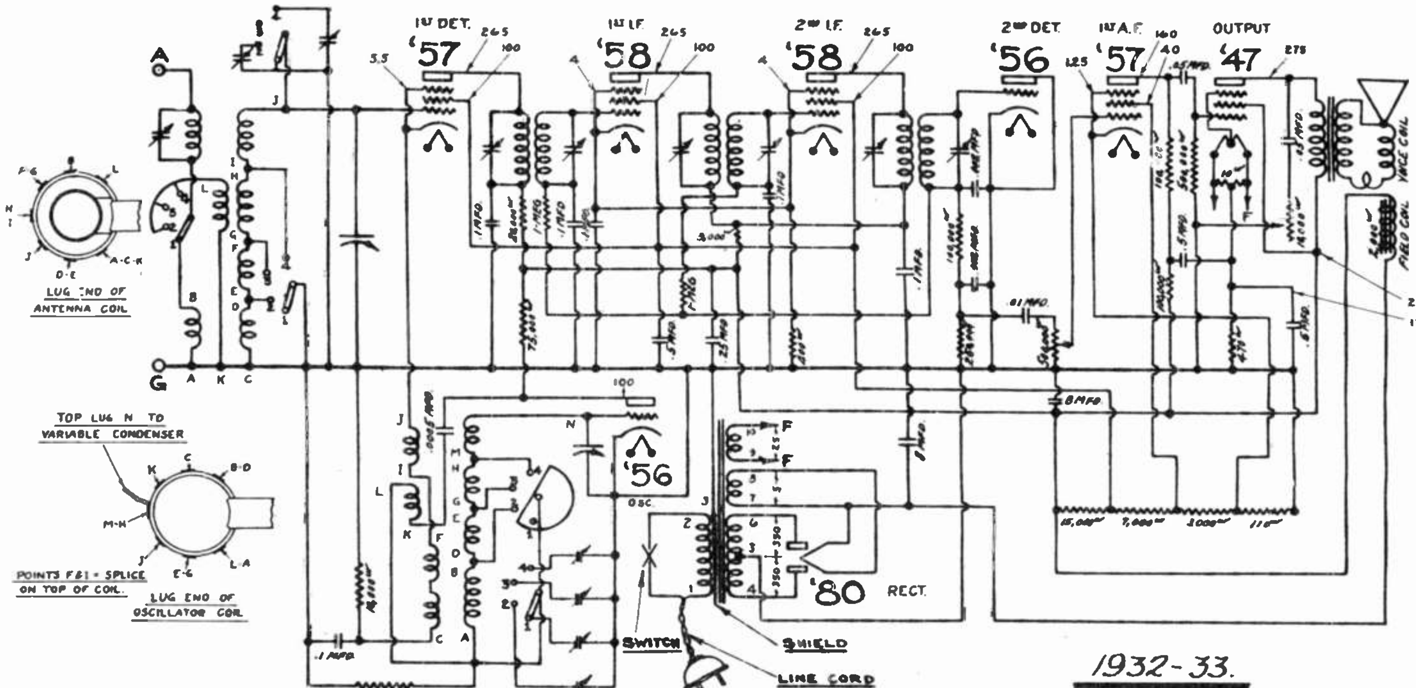
NOTE: All Voltage Readings Listed Are Taken With All Controls Turned On Full And No Signal - Use 1000Ω Per Volt - Voltmeter.

I.F. 175 Kc.

1932-33.

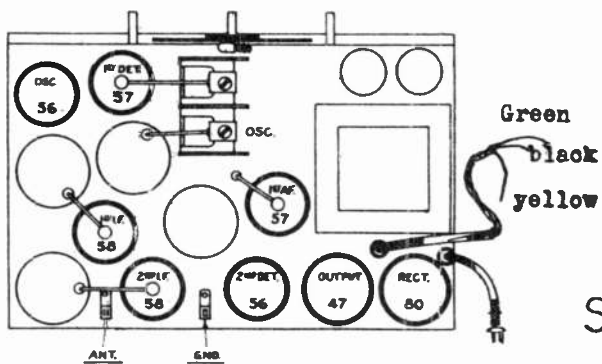
SERVICE SCHEMATIC LYRIC MODEL B-80

World Radio History

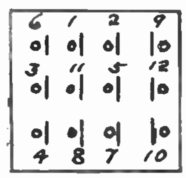


I.F. 500Kc.

1932-33.

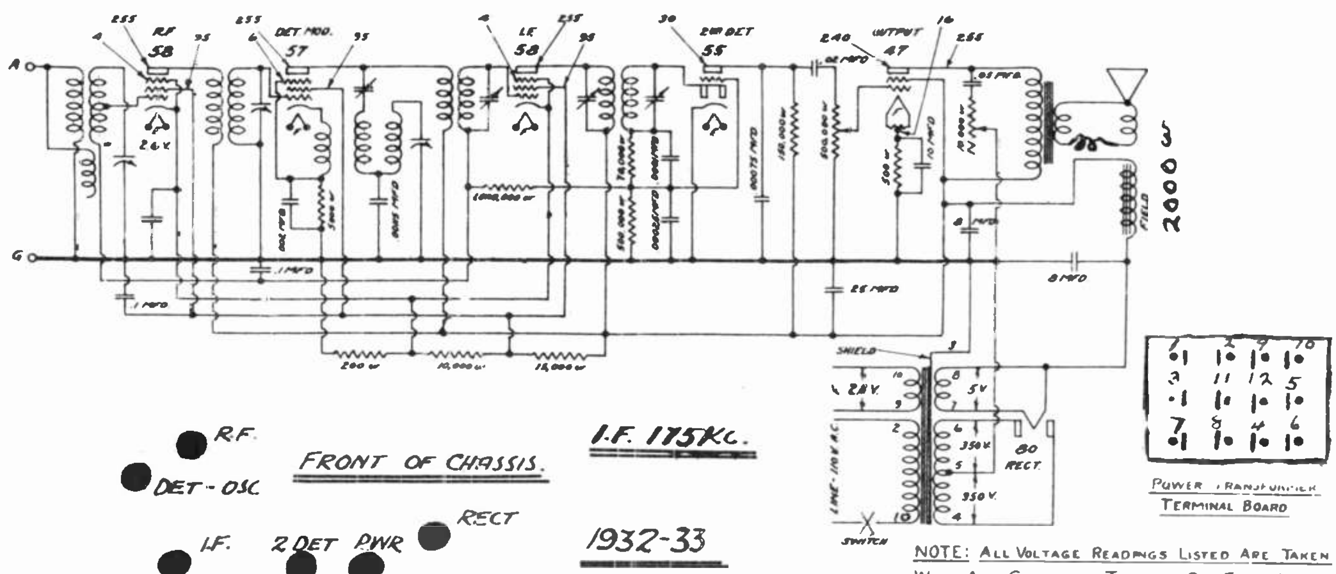


Colour code on speaker corresponds to colour code on cable.



Yellow in cable to yellow in speaker
Green in cable to green in speaker
Black in cable to the two blacks in speaker

SCHEMATIC LYRIC MODEL SW-80



FRONT OF CHASSIS.

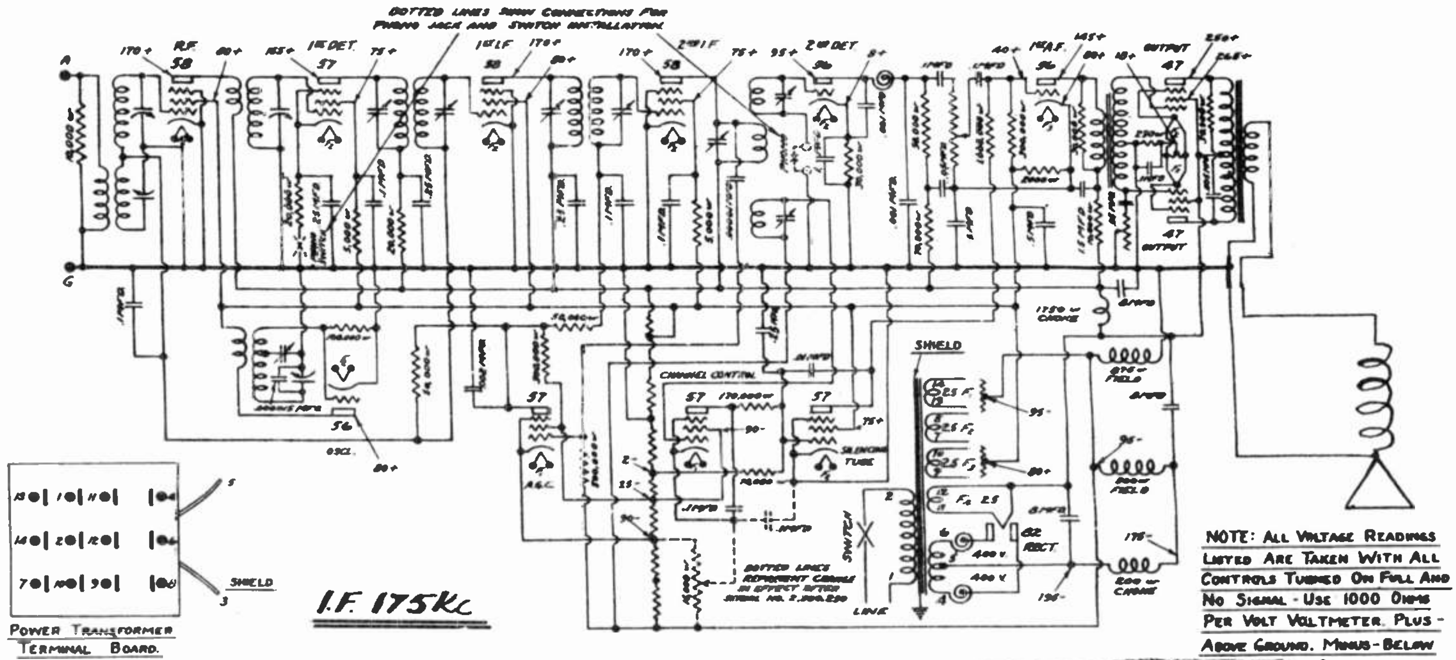
I.F. 175Kc.

1932-33

NOTE: ALL VOLTAGE READINGS LISTED ARE TAKEN WITH ALL CONTROLS TURNED ON FULL AND NO SIGNAL - USE 1000Ω PER VOLT - VOLTMETER.

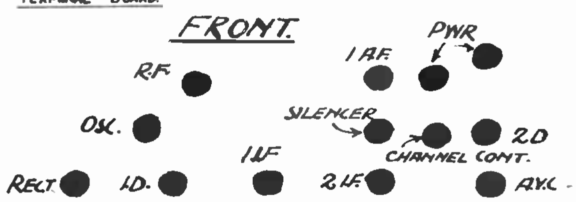
SCHEMATIC LYRIC MODEL SA-65

World Radio History

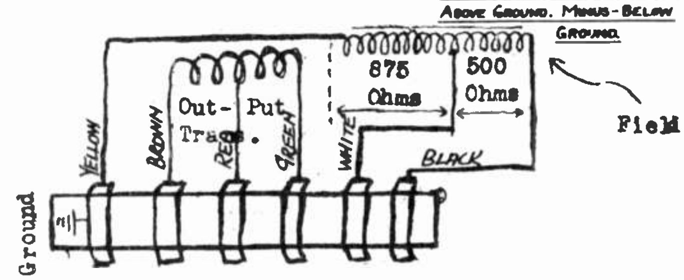


I.F. 175Kc

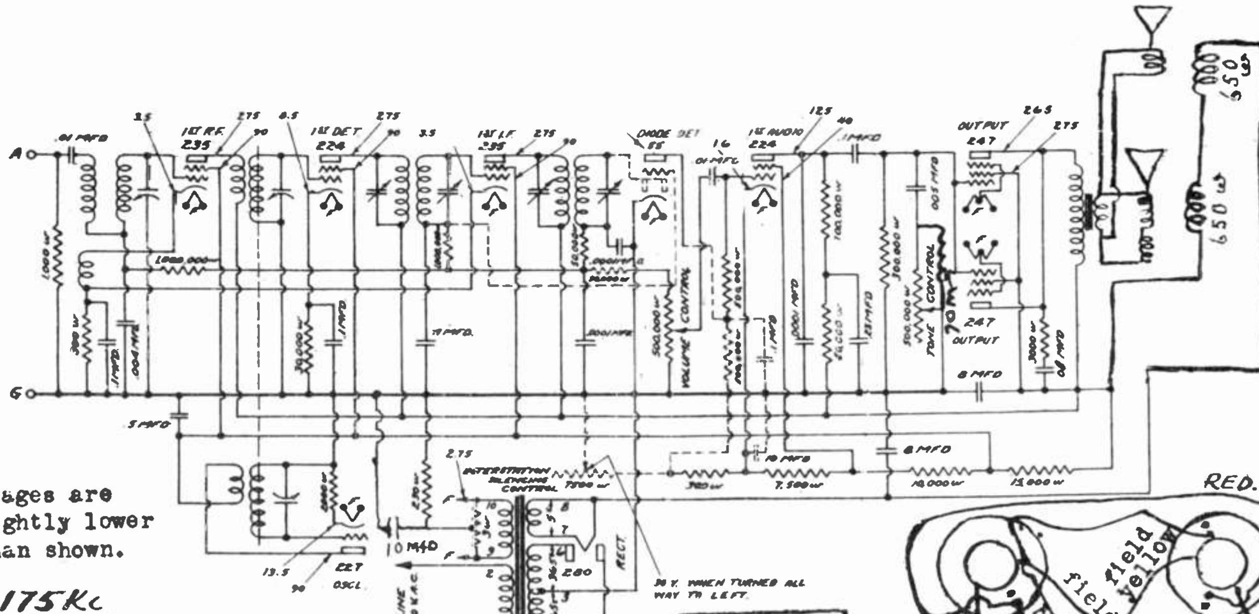
NOTE: ALL VOLTAGE READINGS LISTED ARE TAKEN WITH ALL CONTROLS TURNED ON FULL AND NO SIGNAL - USE 1000 OHMS PER VOLT VOLTMETER. PLUS - ABOVE GROUND. MINUS - BELOW GROUND.



1932-33

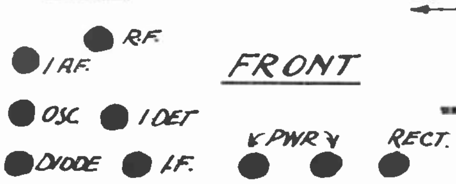


SCHEMATIC LYRIC MODEL SA-130

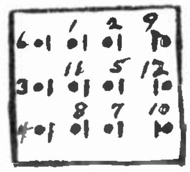


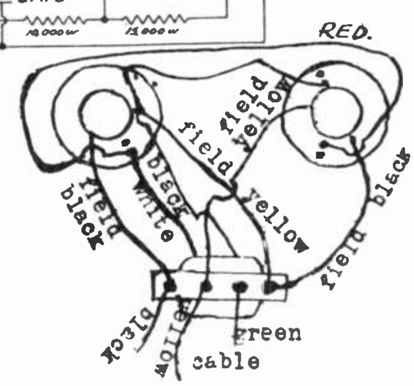
Voltages are slightly lower than shown.

I.F. 175Kc



1932-33


POWER TRANSFORMER TERMINAL BOARD



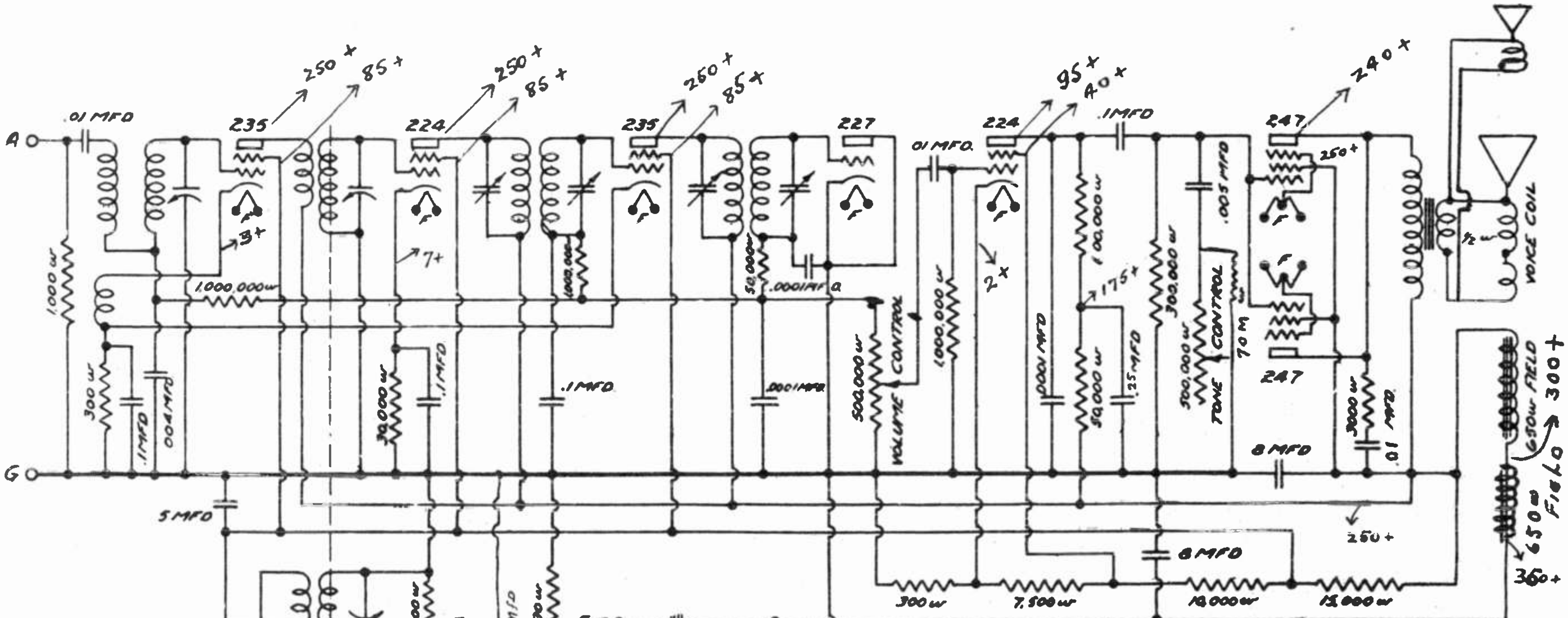
SERVICE SCHEMATIC LYRIC SA90 AND -S90

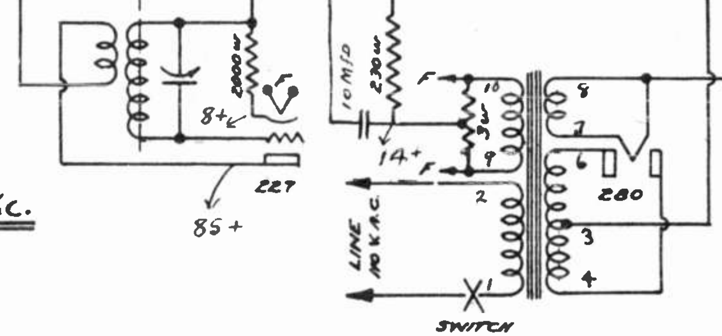
Printed in Canada

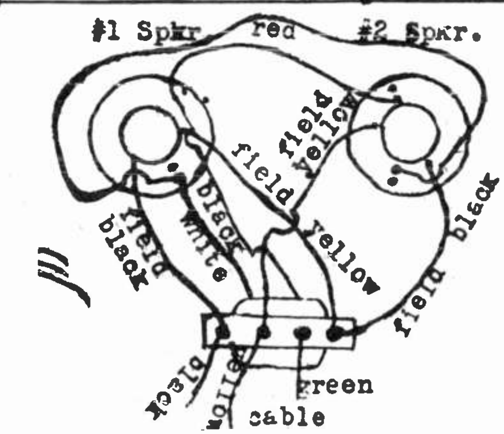
—Courtesy Mohawk Radio Ltd.

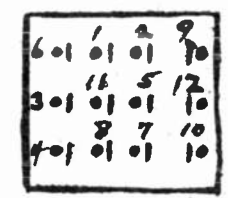
World Radio History

Printed in Canada



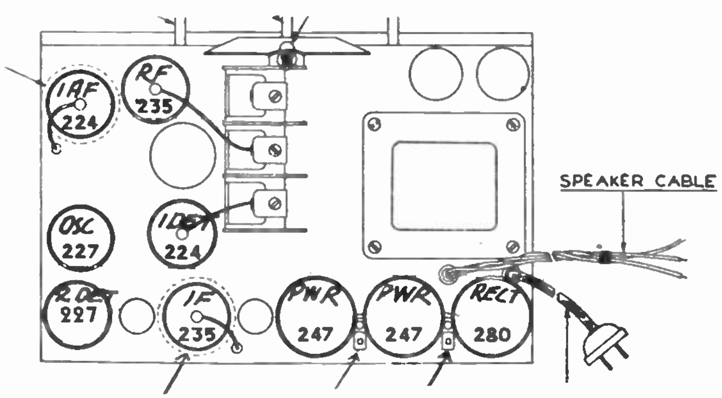






POWER TRANSFORMER TERMINAL BOARD

12 - 11 Blank



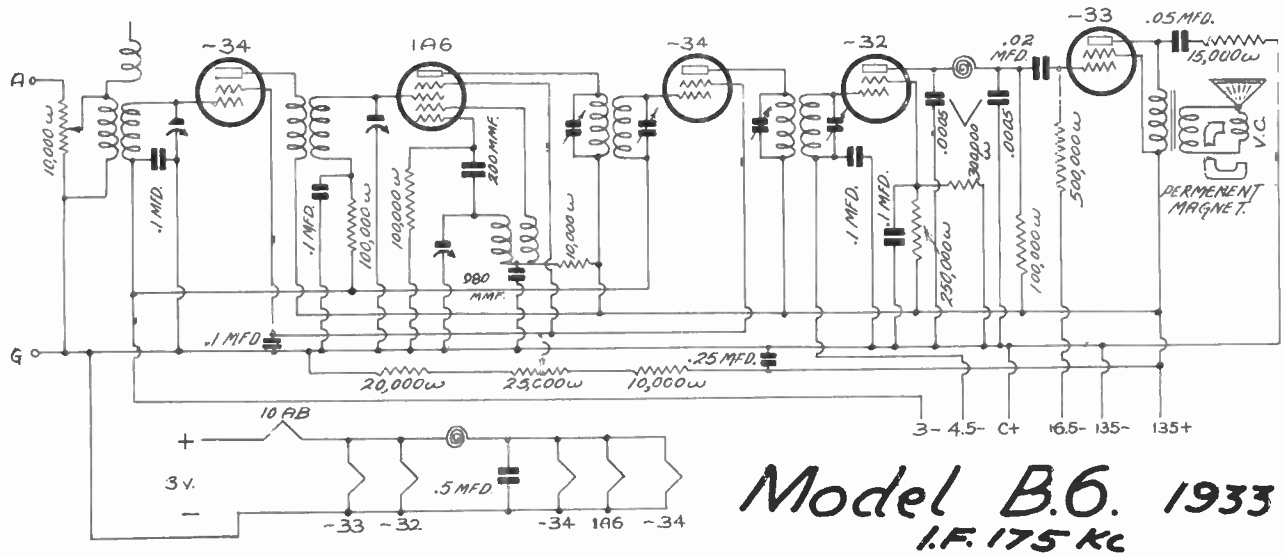
SPEAKER IN MODEL 39. 650 Ω

SCHEMATIC DIAGRAM OF LYRIC MODEL -39 AND 49

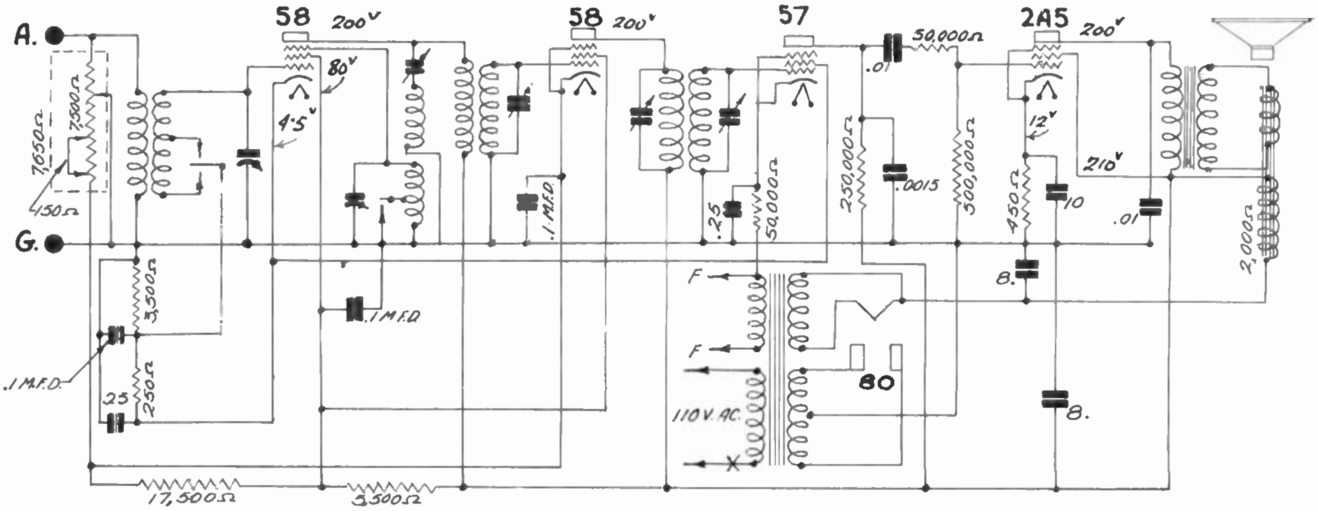
MODEL 49 - DUAL SPEAKER

1932-33

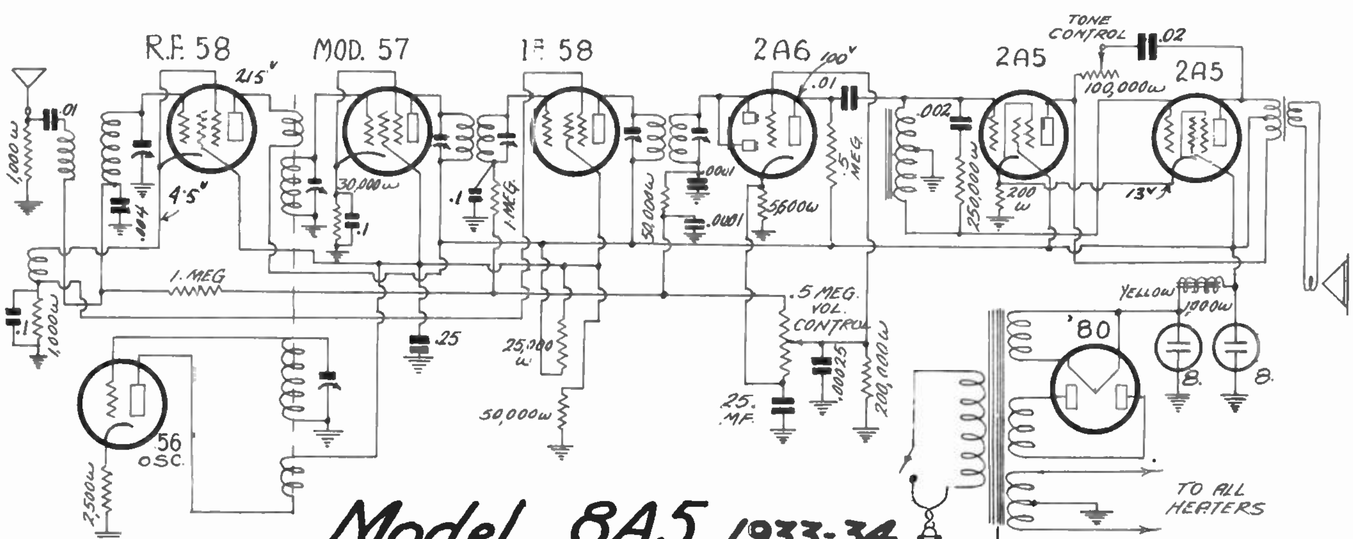
—Courtesy Mohawk Radio Ltd.



Model B.6. 1933
I.F. 175 Kc



Model -450 1933-34 (BERTMAN) I.F. 175 Kc.



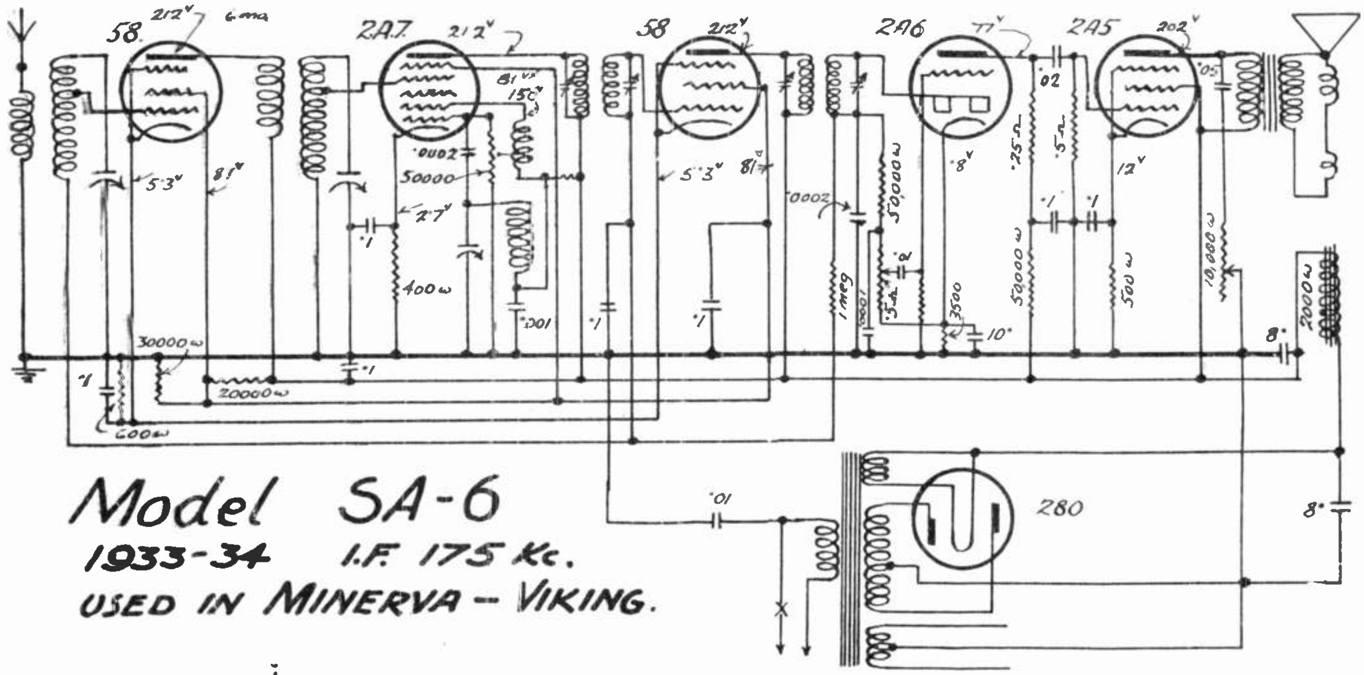
Model 8A5 1933-34
I F 175 Kc

DATA SHEET

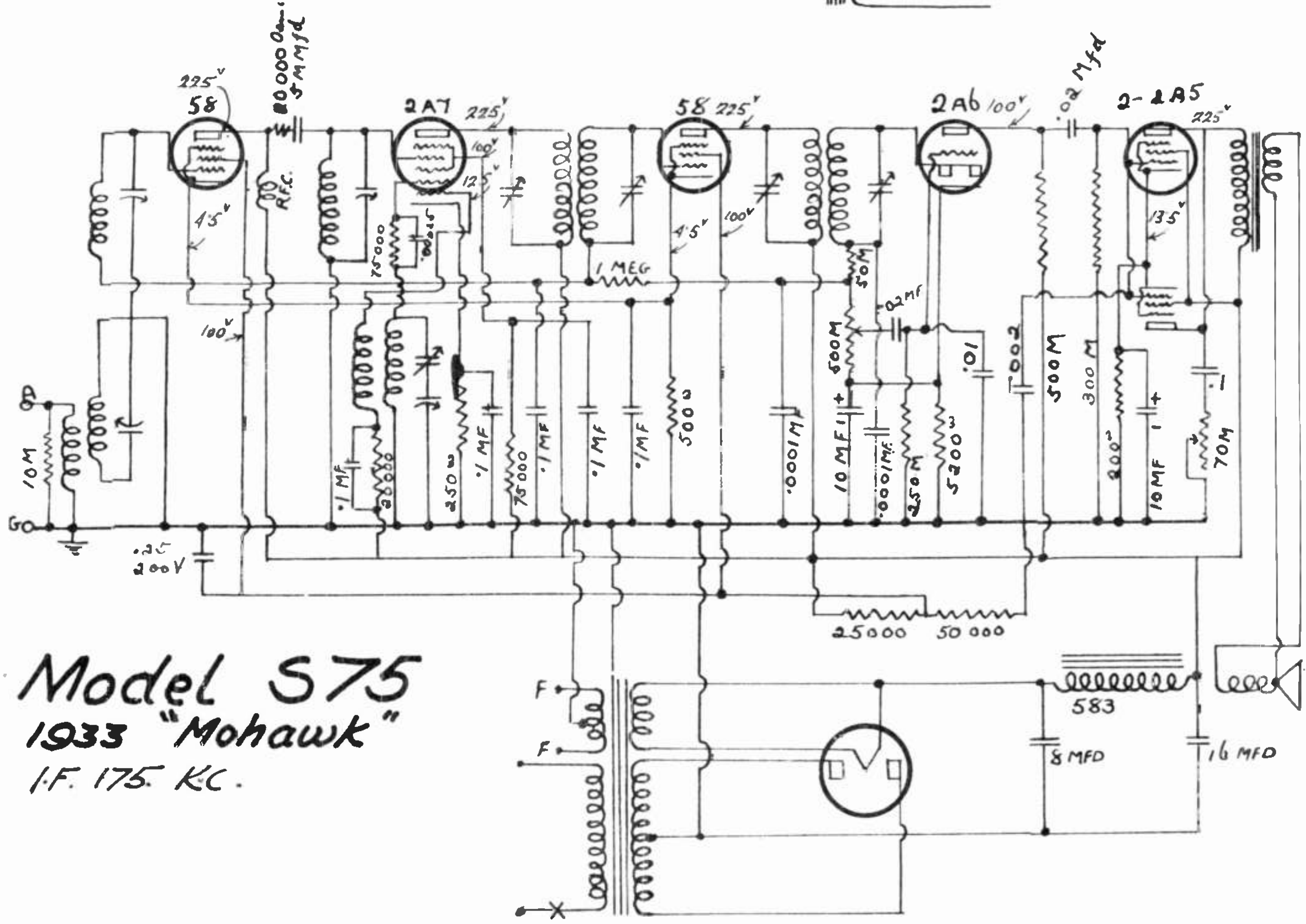
PRINTED IN CANADA

MOHAWK-13

World Radio History



Model SA-6
1933-34 I.F. 175 Kc.
USED IN MINERVA — VIKING.



Model S75
1933 "Mohawk"
I.F. 175 K.C.

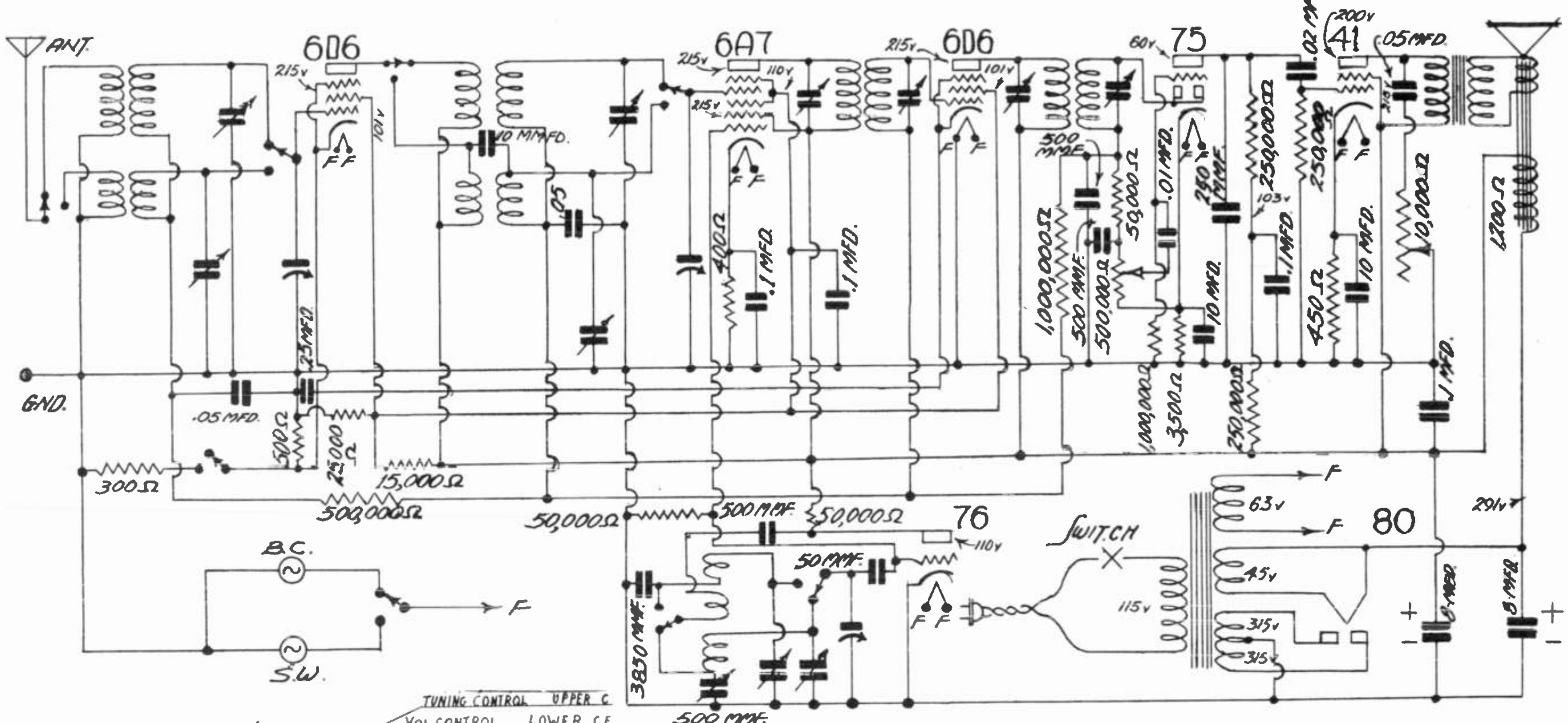
DATA SHEET
PRINTED IN CANADA
MOHAWK.14.

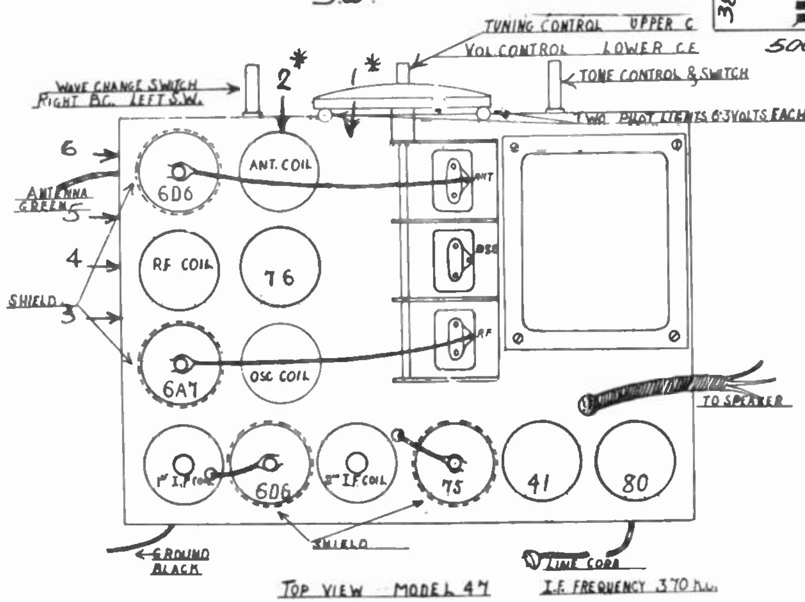
World Radio History

DATA SHEET

PRINTED IN CANADA

~COURTESY MOHAWK-15 CO. LTD.





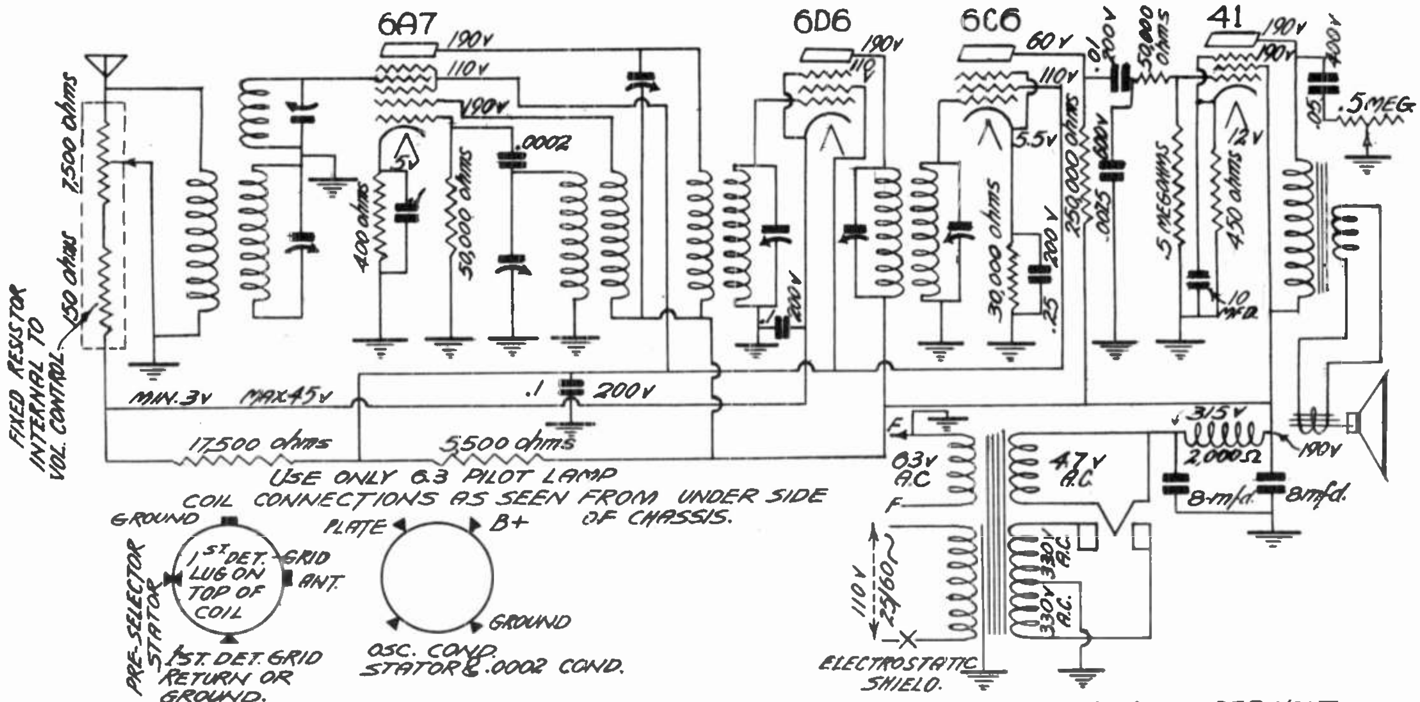
LYRIC Model 47

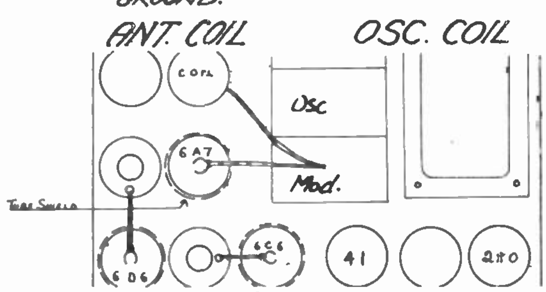
1934-35 I.F. 370 Kc.

*	1.	Ant	BC.	Trimmer
*	2	"	S.W.	"
	3	Osc	BC	"
	4	R.F.	BC	"
	5	R.F.	SW	"
	6	Osc	"	"

* reached from below.

World Radio History

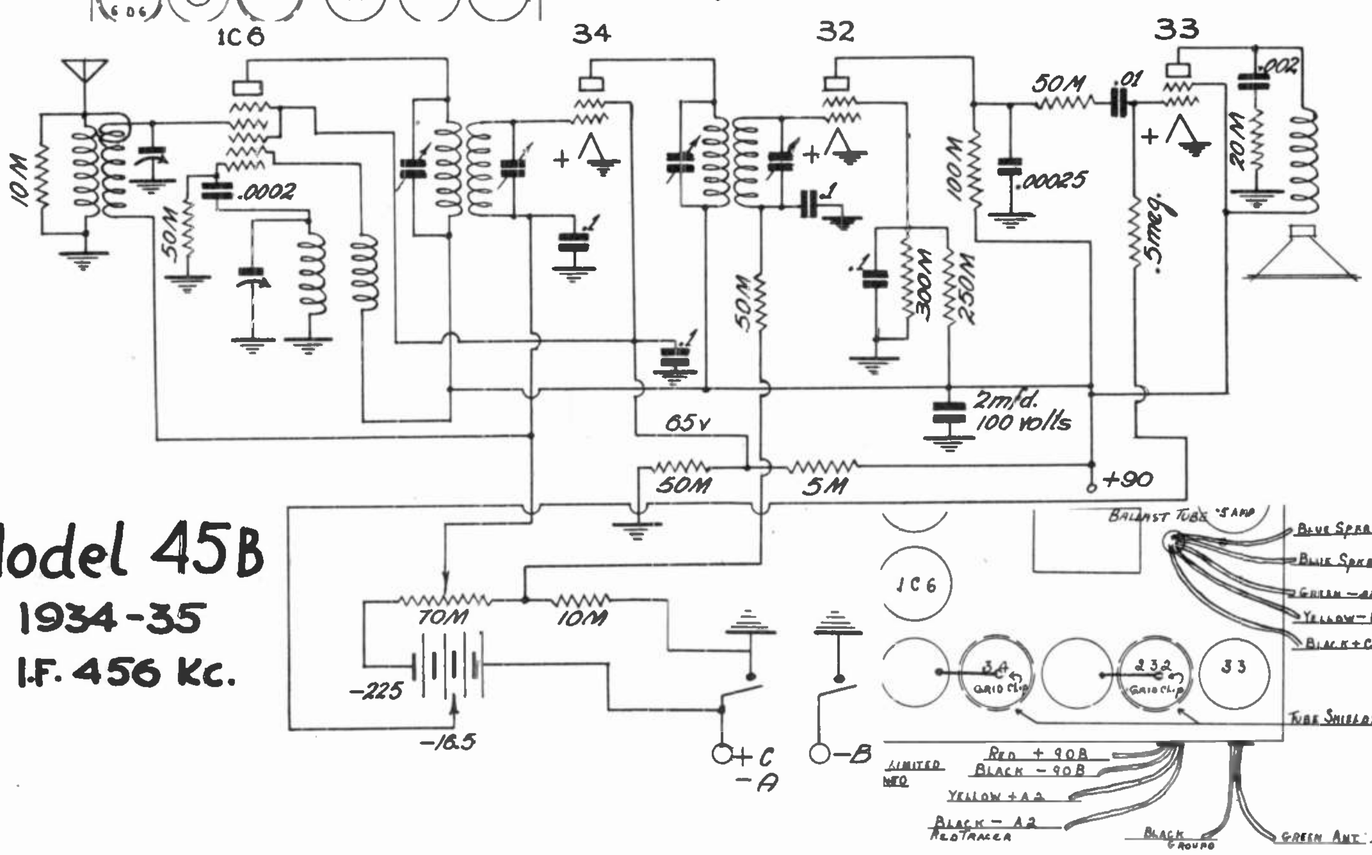




D.C. VOLTAGES MEASURED WITH 1000Ω PER VOLT VOLTMETER. NEG. OF METER TO GROUND.
D.C. VOLTAGES BELOW 25 USE 50 VOLT RANGE ABOVE 100 VOLTS USE 300 VOLT RANGE.
ALL READINGS TAKEN WITH VOLUME CONTROL MAX. NO SIGNAL.

LYRIC Model 45

1934-35 I.F. 456 Kc



Model 45B

1934-35

I.F. 456 Kc.

DATA SHEET

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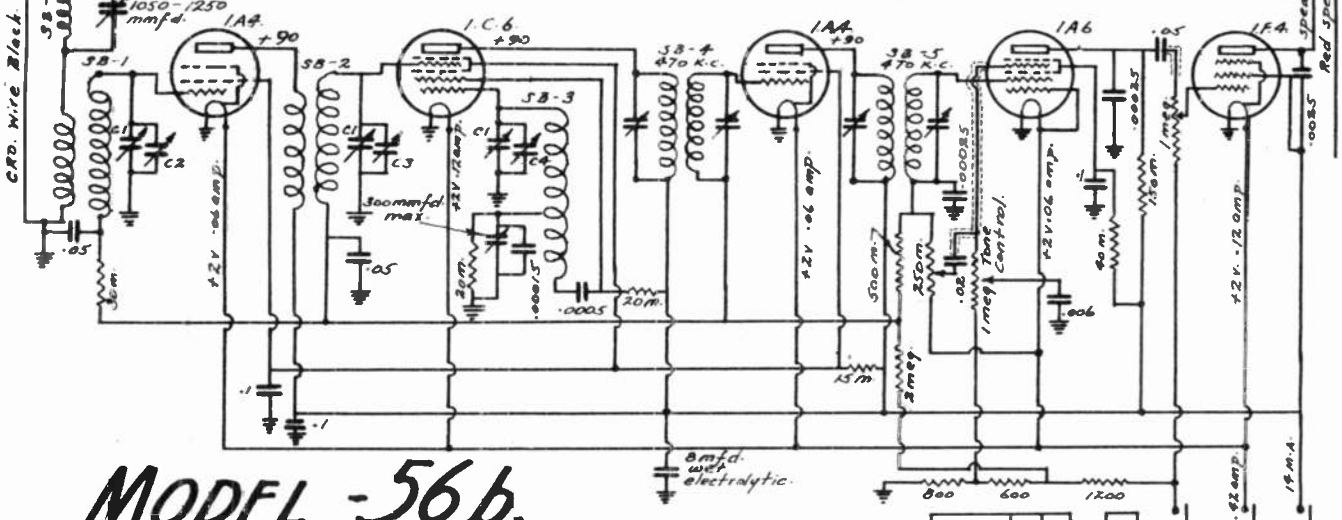
Courtesy MOHAWK-16 Co Ltd.

World Radio History

Battery Operated 1936-37



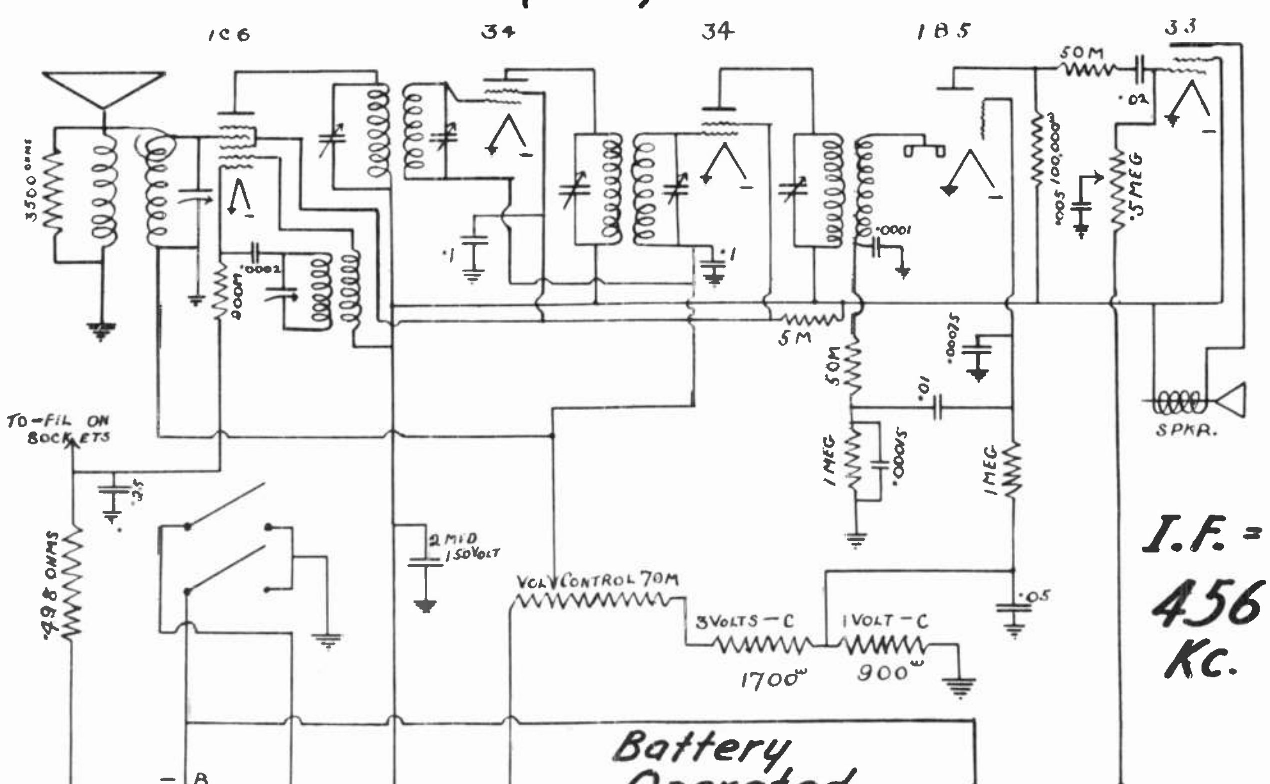
MODEL -56b.

I.F. = 470 Kc.

Alignment Instructions on Data Sheet - 17a.

Note: Shorting wire is only used across resistor when using 2v. storage battery

MODEL - 55b (below) 1936-37



I.F. = 456 Kc.

Battery Operated

Alignment Instructions on Data Sheet - 17a.

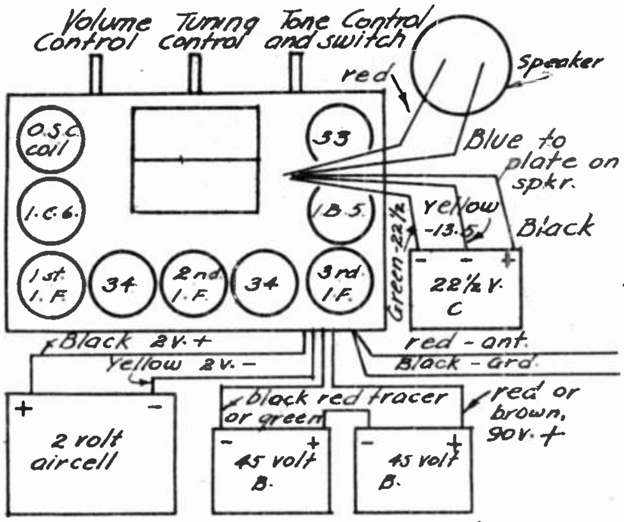
DATA SHEET

COURTESY:-

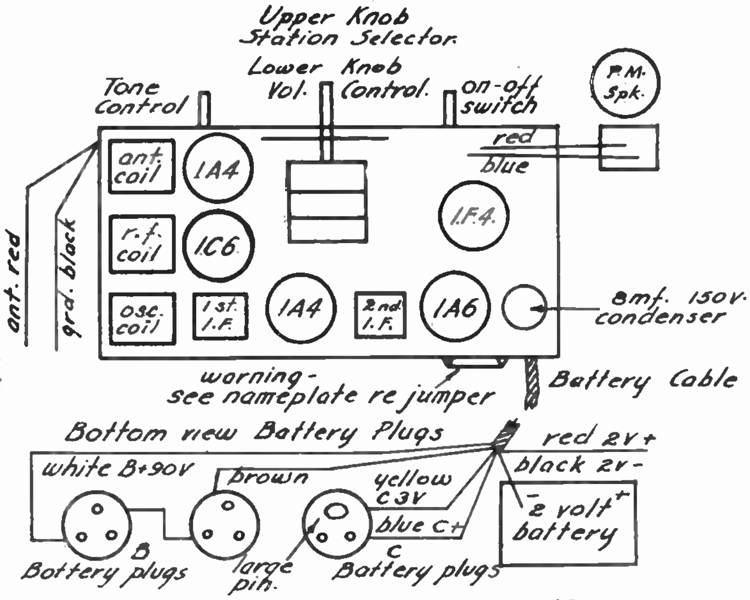
MOHAWK-17

RADIO CO. LTD.

World Radio History



Above: Socket layout for Model 55b.



Above: Socket layout for Model 56b.

Circuits for Models 55b and 56b on Data Sheet 17.

ALIGNMENT INSTRUCTIONS FOR MODELS 55b and 56b.

A signal generator capable of supplying a modulated carrier of 456 K.C. 600 K.C. and 1400 K.C. is essential. Alignment by other methods than the signal generator is not recommended.

The receiver must be grounded to the generator throughout all measurements.

The receiver volume control should be set for maximum volume, and the signal input from the generator should be adjusted for small output deflections.

456 K.C. I.F. Adjustment

1. Remove chassis and speaker from cabinet.
2. Connect input from signal generator in series with a .1 mfd. condenser to the grid of the 1C6 tube.
3. Set generator to supply a modulated 456 K.C. (470 K.C. for Model 56B) signal, until a small output deflection on the output voltmeter is obtained. Adjust trimmer condensers located on the top of the first and second I.F. transformer cans for Maximum deflection.
4. Remove signal generator connection from the grid of 1C6 tube.
5. 470 K. C. Rejector Adjustment (For Model 56B only)

   Rotate station selector knob until gang condenser capacity is all in. Replace .1 mfd. condenser with regular dummy Antenna or 250 mmfd. condenser, and connect to Antenna (Red) lead of Receiver. The ground lead, (Black) should be connected to the ground or the signal generator throughout all measurements.

   1. Adjust attenuator on signal generator for maximum input to the receiver and proceed to adjust 470 K.C. rejector condenser (located at the front of the chassis base) for minimum deflection on the output meter. It is also essential that the input frequency be 470 K.C. or loss in gain will result on the low frequency end of the band.

R.F. Adjustment

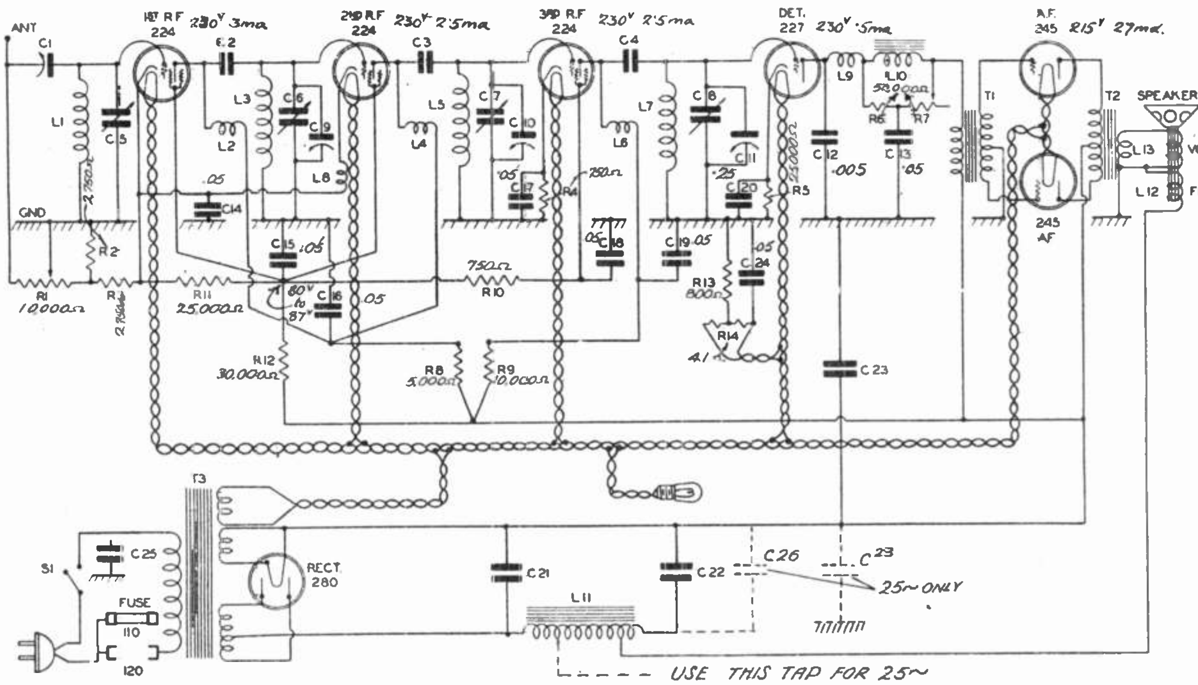
1. With signal generator adjusted to 1400 K.C., rotate station selector knob until dial reaches 1400 K.C. then adjust osc. and Ant. shunt trimmers (located on top of Gang Condenser) for maximum output deflection on the output meter.
2. Change signal generator frequency to 600 K.C. and rotate station selector knob until dial reads 600 K.C. (See note below for 56B). As this chassis employs an osc. tracking section, no adjustment is necessary at this frequency. However, it is necessary to check this for sensitivity and proper dial setting.

Note: For Model 56B only, adjust Oscillator series trimmer (located at rear of chassis base) rotating station selector knob back and forth slowly for maximum output deflection.

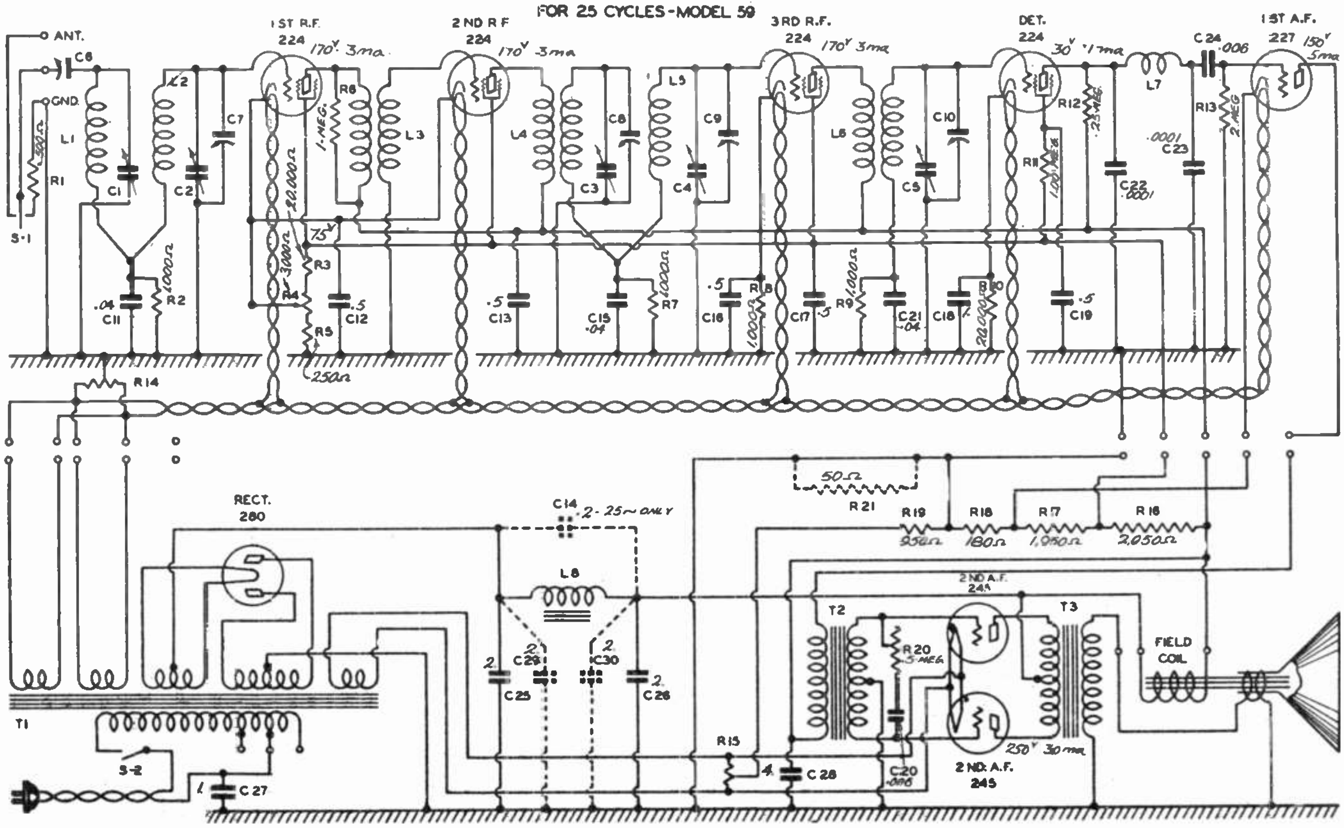
3. Recheck Osc., R.F. and Antenna adjustments at 1400 K.C.

World Radio History

THE "LUCERNE" MODEL 73 SCHEMATIC DIAGRAM 74-25 CYCLE 1931



THE "BANFF" MODEL SCHEMATIC DIAGRAM OF MODEL 58 CHASSIS DOTTED LINES SHOW ADDITIONS FOR 25 CYCLES-MODEL 59 1931



DATA SHEET

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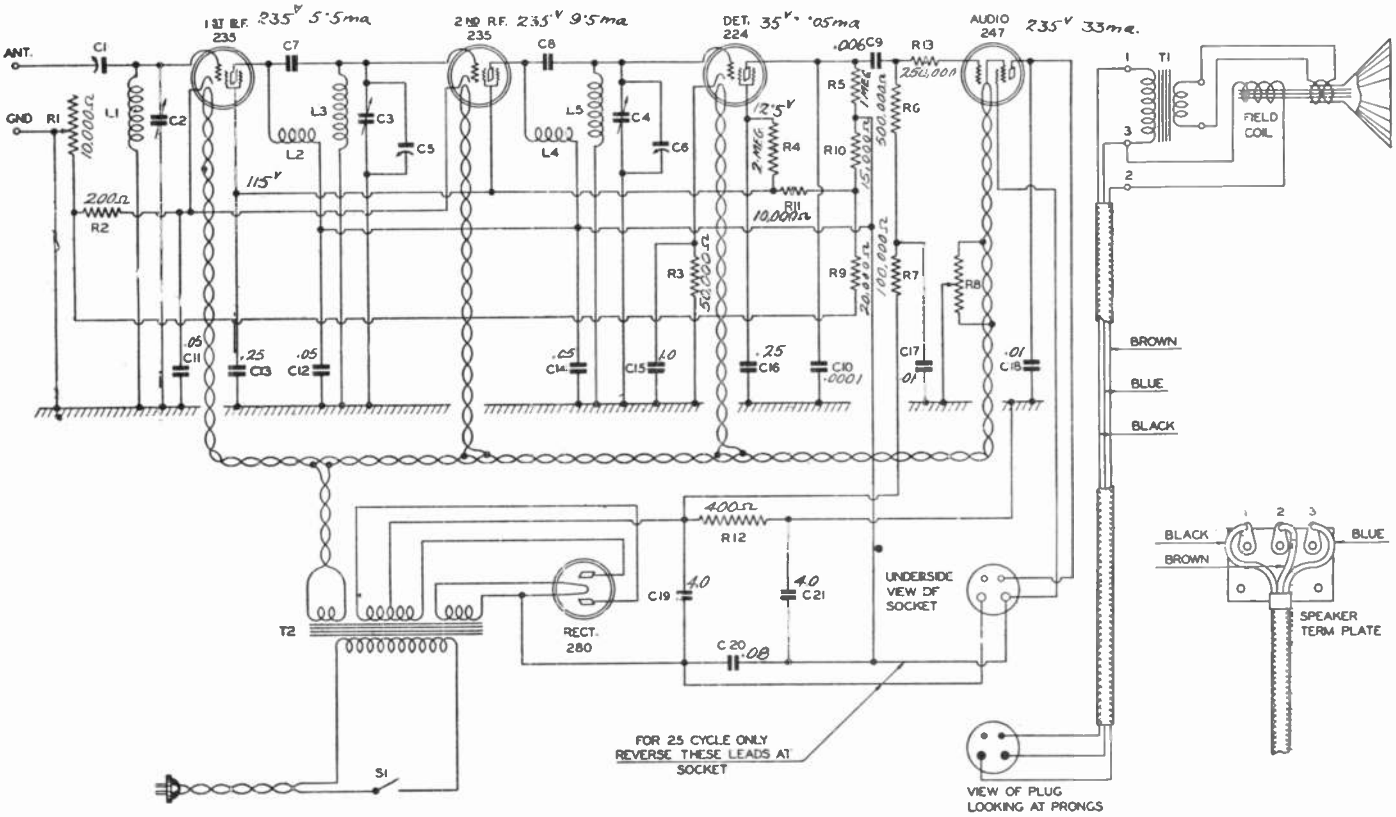
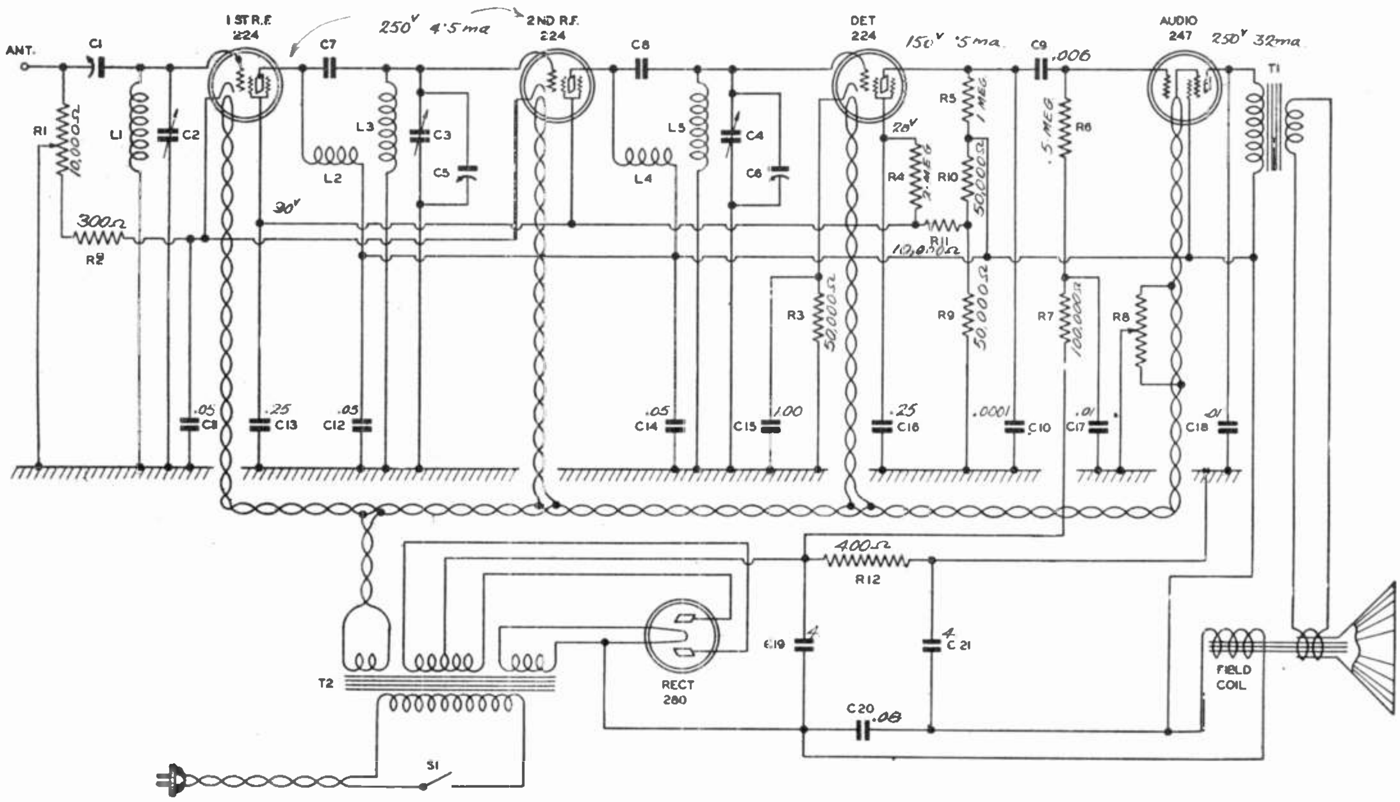
World Radio History

THE "NIPIGON" MODEL #5S CHASSIS - 60 CYCLE #6S CHASSIS - 25 CYCLE - 1931

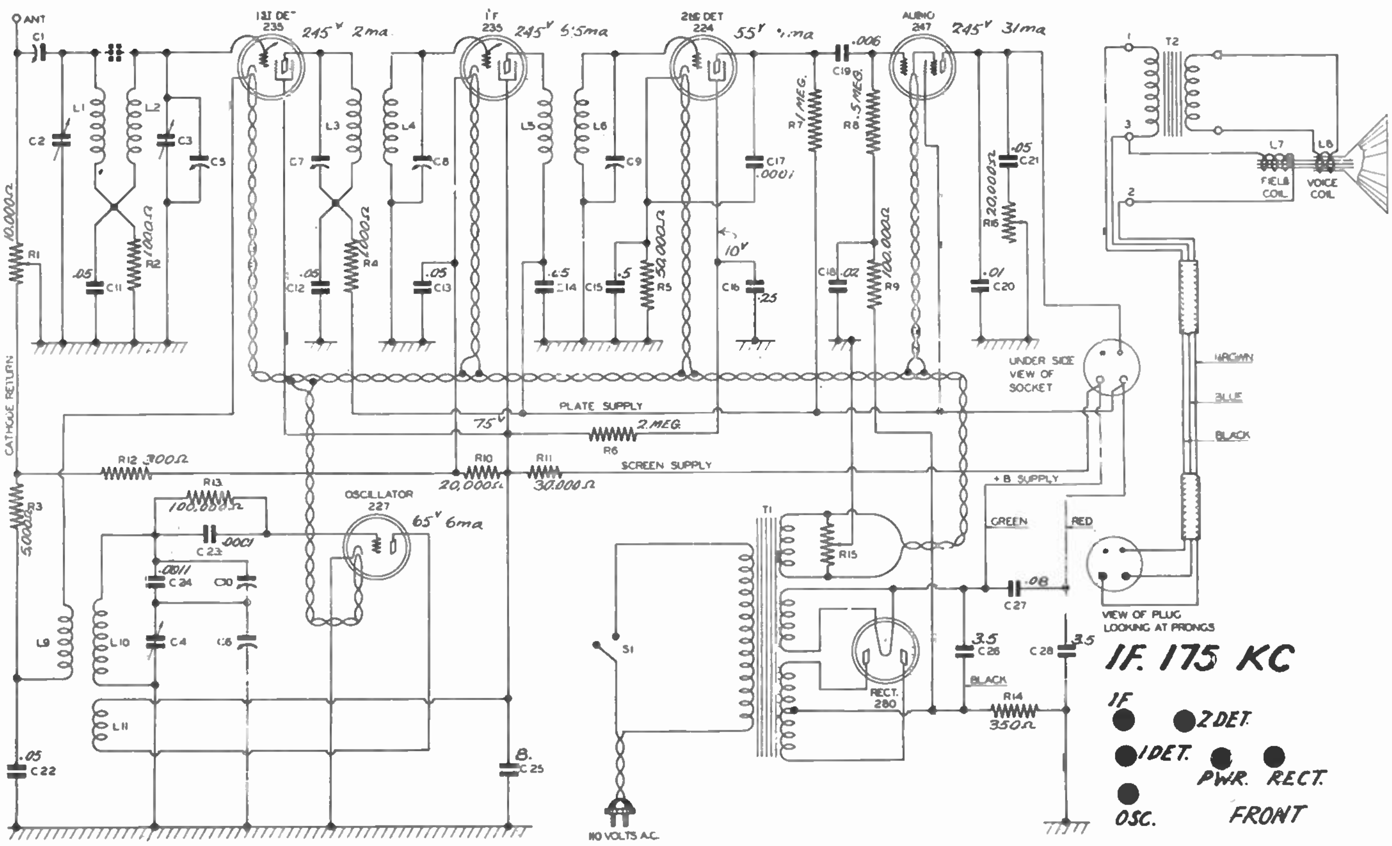


THE "MINAKI" MODEL #5 CHASSIS - 60 CYCLE #6 CHASSIS - 25 CYCLE 1931

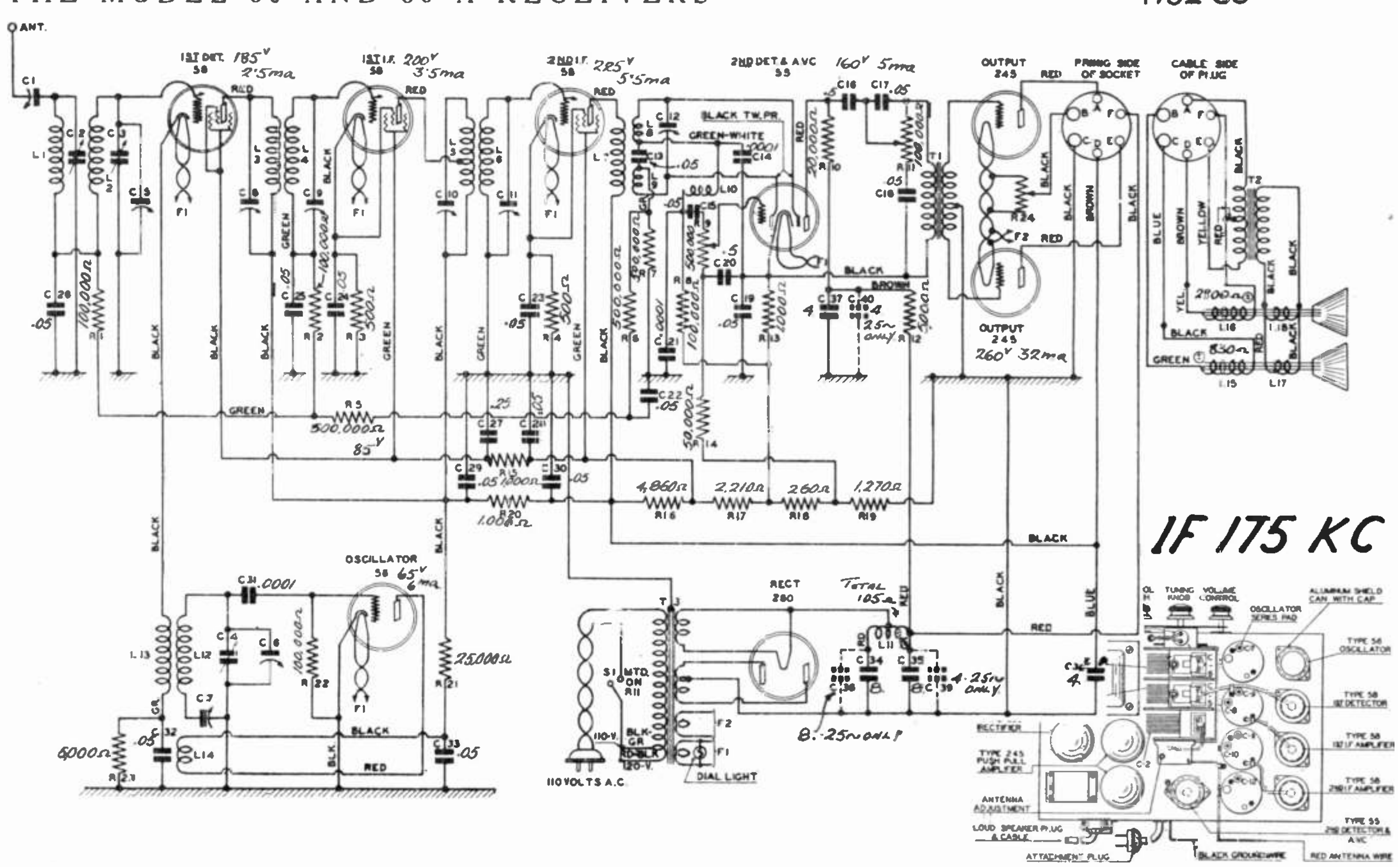


World Radio History

THE "RICHELIEU" MODEL #31 CHASSIS · 60 CYCLE #32 · 25 CYCLE 1931-32



THE MODEL 80 AND 80-A RECEIVERS 1932-33



DATA SHEET

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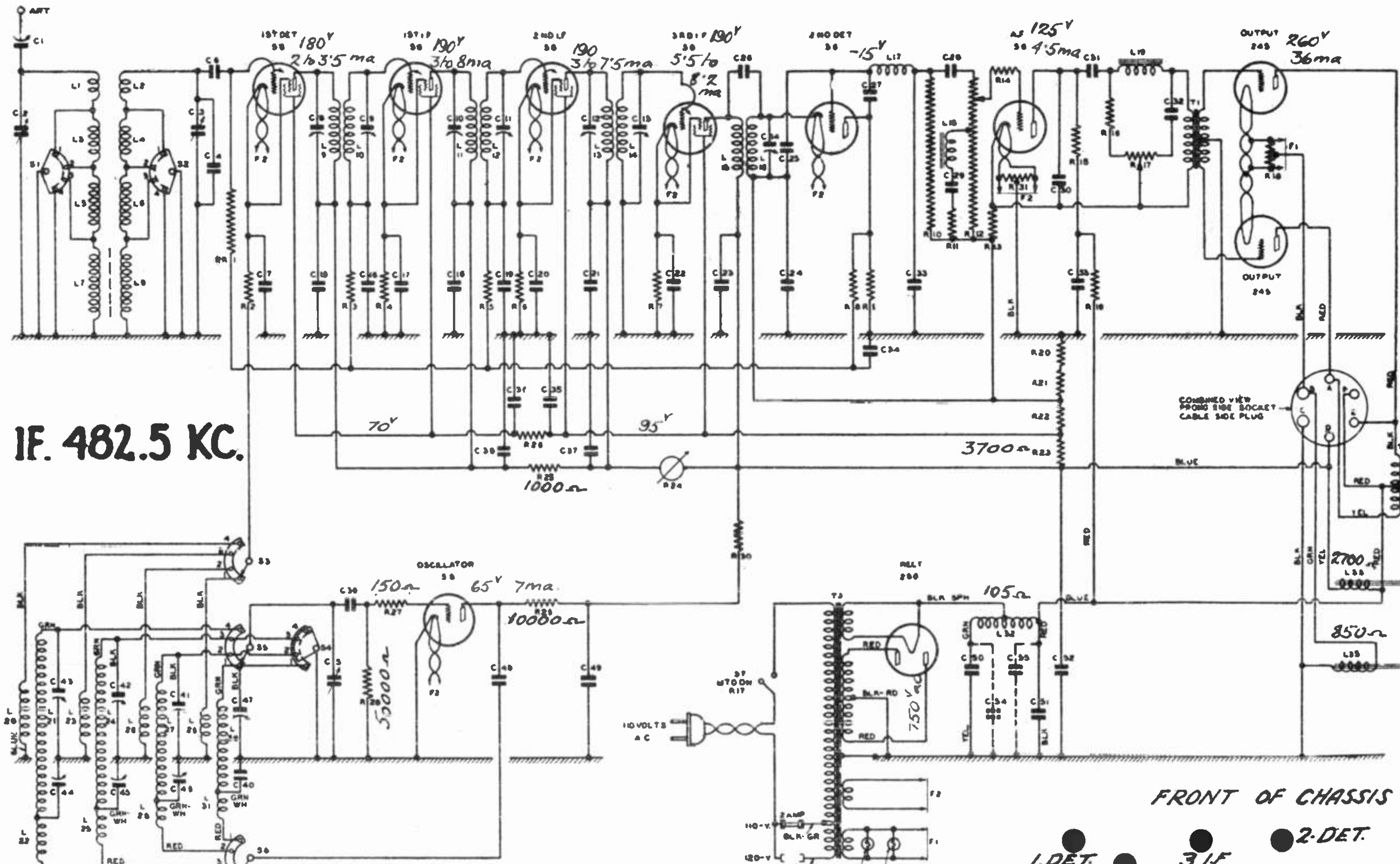
COURTESY NORTHERN ELECTRIC CO. LTD. 6

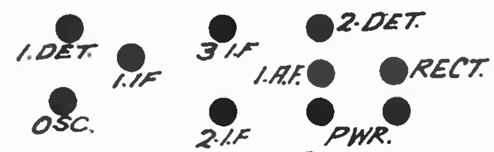
World Radio History

IF. 482.5 KC.



The bands which can be obtained with the quadri-wave tuning employed in this set are: (1) .54 to 1.6 megacycles; (2) 1.5 to 3.6 megacycles; (3) 3.3 to 9 megacycles; (4) 8 to 20 megacycles.

FRONT OF CHASSIS



Models-101-101a
1932-33

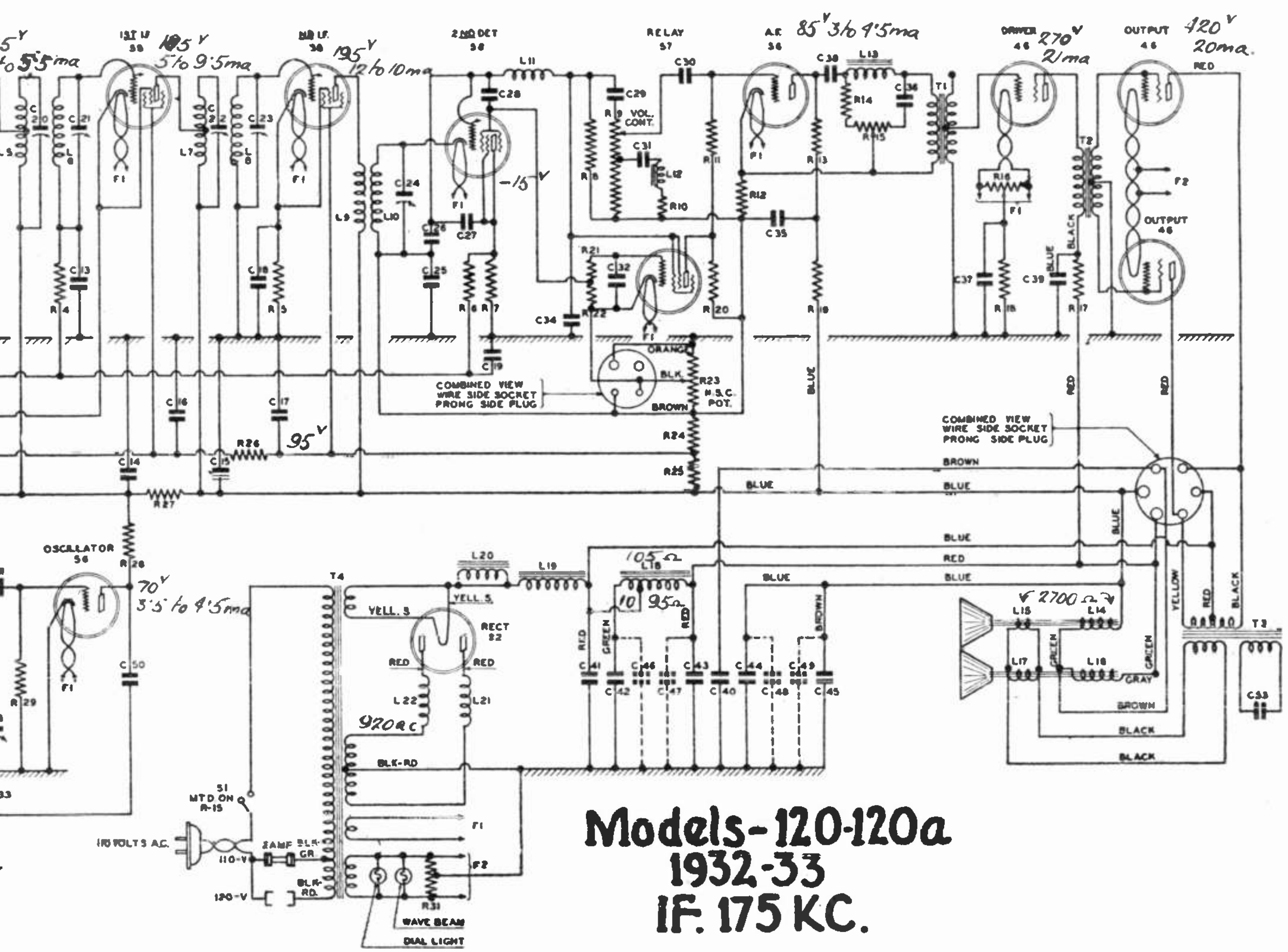
C-7, C-17, C-20, C-22, C-24, C-27, C-28, C-32, C-35, C-36, C-37, C-38, C-48	.05 mfd.
C-15, C-16, C-18, C-19, C-21, C-23	.005 "
C-25, C-33, C-39	.0001 "
C-26, C-30	.001 "
C-29	.003 "
C-31	.5 "
C-40	.006 "
C-34, C-49	.25 "
C-50, C-51, C-54	8. "
C-52, C-53, C-55	4 "

R-1, R-8, R-12	.5 meg.
R-2	5,000 ohms
R-3, R-5, R-10, R-14, R-17	.1 meg "
R-4	350 "
R-6, R-7	2,000 "
R-9	1. meg. "
R-11	15,000 "
R-13	1,500 "
R-15	25,000 "
R-16, R-19, R-26, R-29, R-30	10,000 "
R-20	1,400 "
R-21	110 "
R-22	2,270 "

DATA SHEET NORTHERN ELECTRIC-7 CO. LTD.

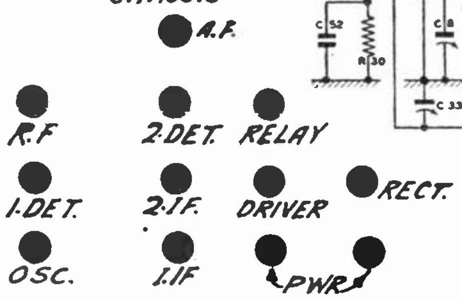
COURTESY

World Radio History



Models-120-120a
1932-33
IF. 175 KC.

FRONT OF CHASSIS



C-9, C-10, C-11, C-12, C-13, C-14, C-15, C-16, C-17, C-18
C-19, C-25, C-27, C-28, C-29, C-30, C-32, C-36, C-38
C-50, C-52 — — — — — — — — .05 mfd.
C-26, C-34, C-51 — — — — — — — .0001 "
C-37, C-41, C-43, C-46, C-47 — — — — 8. "
C-39, C-40, C-42, C-44, C-45, C-48, C-49 - 4. "
C-31 — — — — — — — — — — — .025
C-35 — — — — — — — — — — — .5
C-53 — — — — — — — — — — — .0025

R-1, R-3, R-4, R-8, R-15, R-29 — .1 meg
R-5 — — — — — — — — — 500-ohms
R-6 — — — — — — — — — .5 meg.
R-7, R-11, R-20, R-21 — — — 1. meg.
R-9 — — — — — — — 0- 500,000 Ω
R-10 — — — — — — — — 15,000 Ω
R-12, R-26, R-27 — — — — 1,000 "
R-17-R-30 — — — — — — 5,000 Ω
R-18 — — — — — — — — — 1,500 Ω
R-22 — — — — — — — — — 2-meg.
R-23 — — — — — — — — — 2,000 Ω
R-24 — — — — — — — — — 2,800 Ω
R-25 — — — — — — — — — 4,440 Ω
R-28 — — — — — — — — — 30,000 Ω
R-13, R-14, R-19 — — — — — 10,000 Ω

Model-40 1933

Auto-Receiver

uses same circuit as Westinghouse model-43 see data sheet Westinghouse-18.

DATA SHEET

COURTESY NORTHERN ELECTRIC-8 CO.

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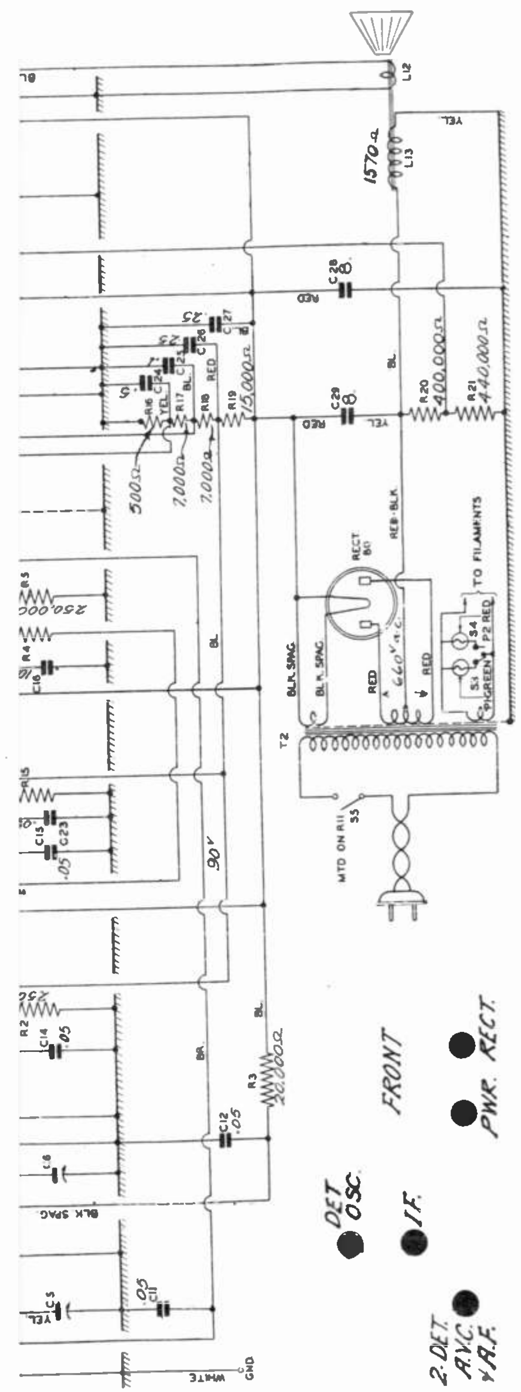

DATA SHEET

COURTESY NORTHERN ELECTRIC-9 CO. LTD.

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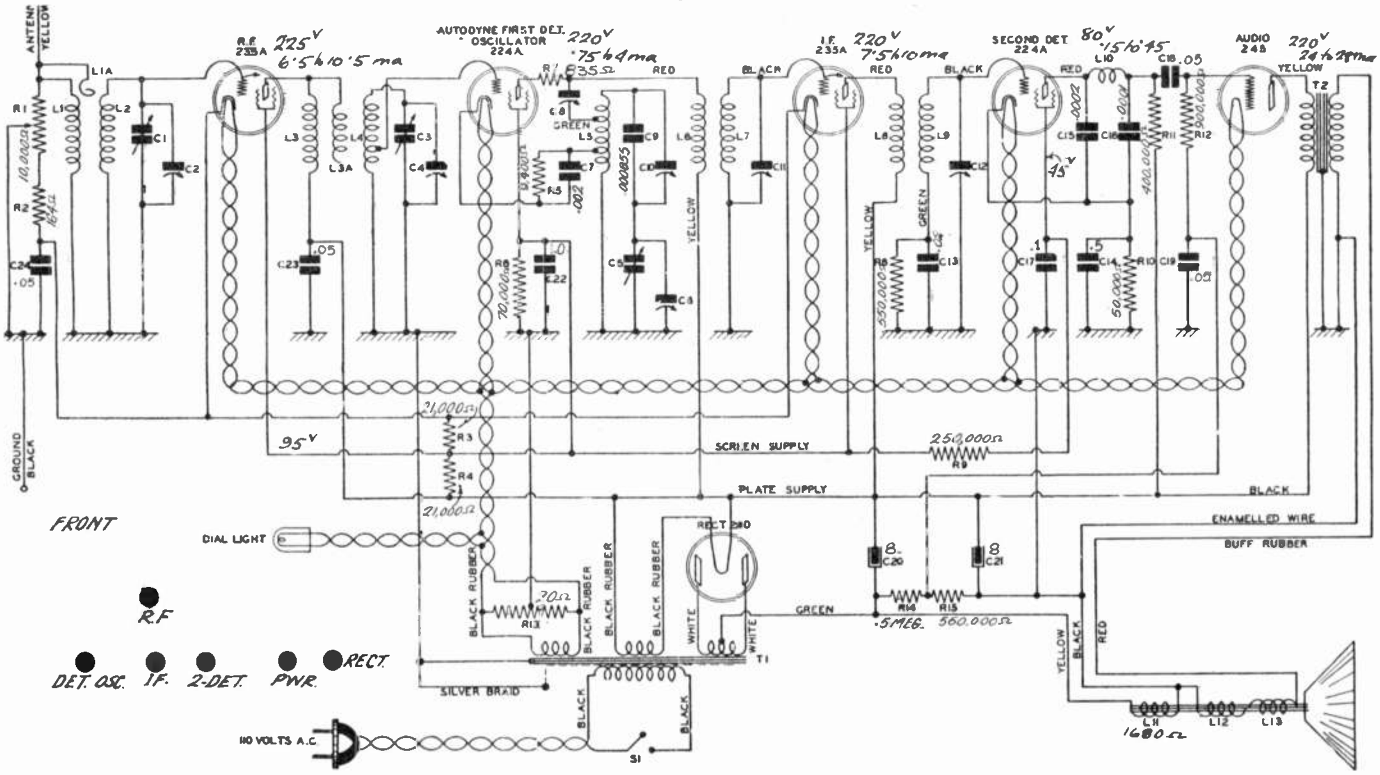
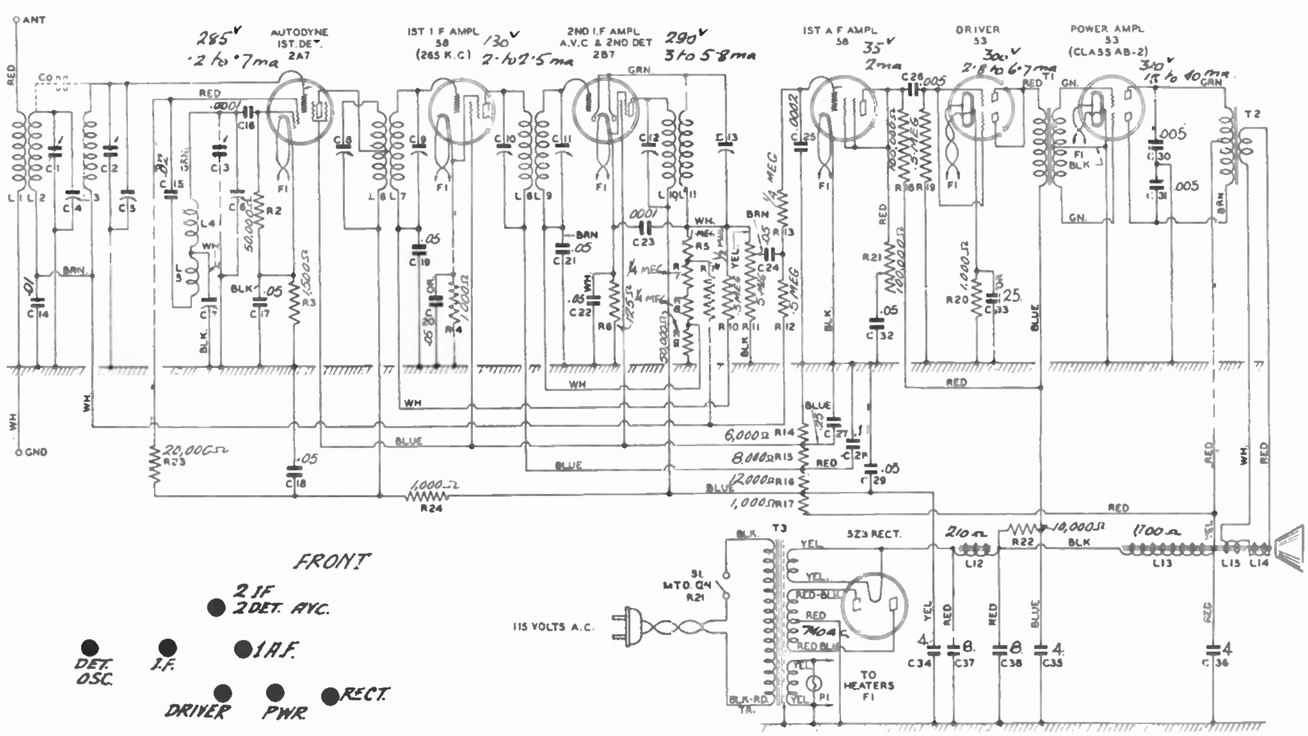
World Radio History

Models-60-60a 1932-33 IF. 175 KC



Models-70-70a 1934 IF. 265 KC.



DATA SHEET

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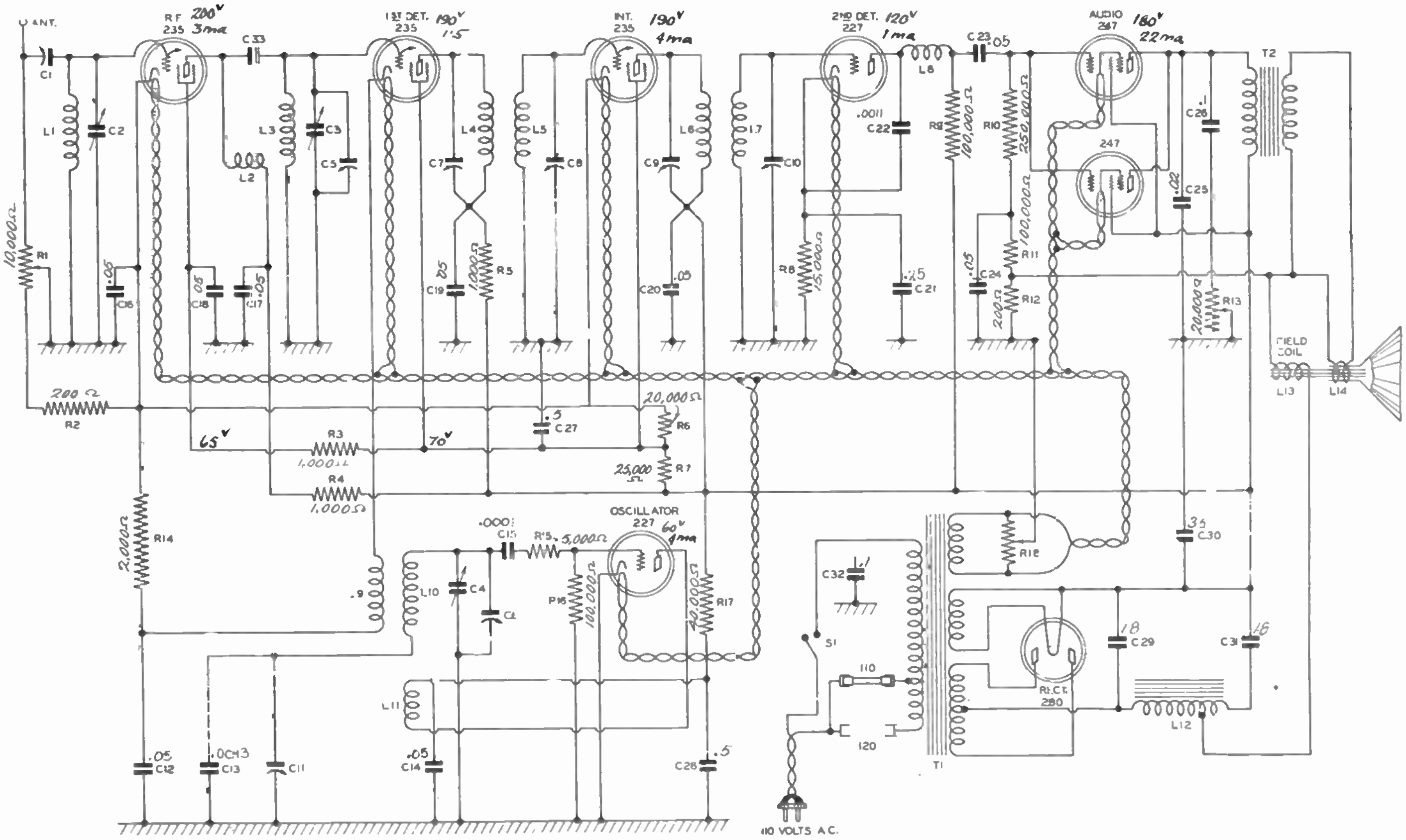
COURTESY
NORTHERN ELECTRIC-11 CO. LTD.

World Radio History

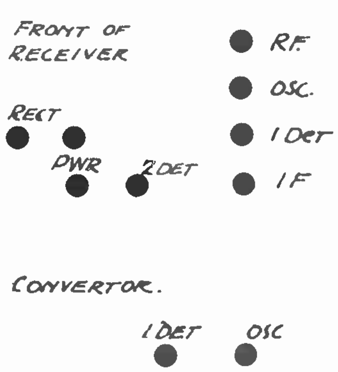
THE "JASPER" AND "PICTOU" MODELS

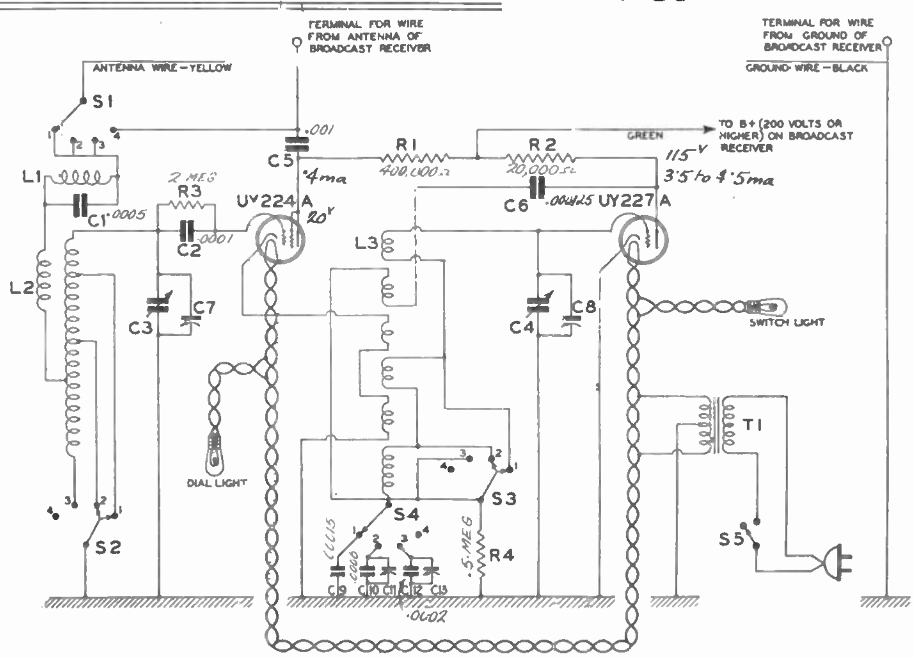
Models–20-21 1931-32 also models-22-23 1932 IF 175 KC



THE MODEL 22 NORMAL BROADCAST AND SHORT WAVE RECEIVER 1932-33

Model-23 (25 cycle) is receiver above in conjunction with model-24. Converter shown at right.





DATA SHEET

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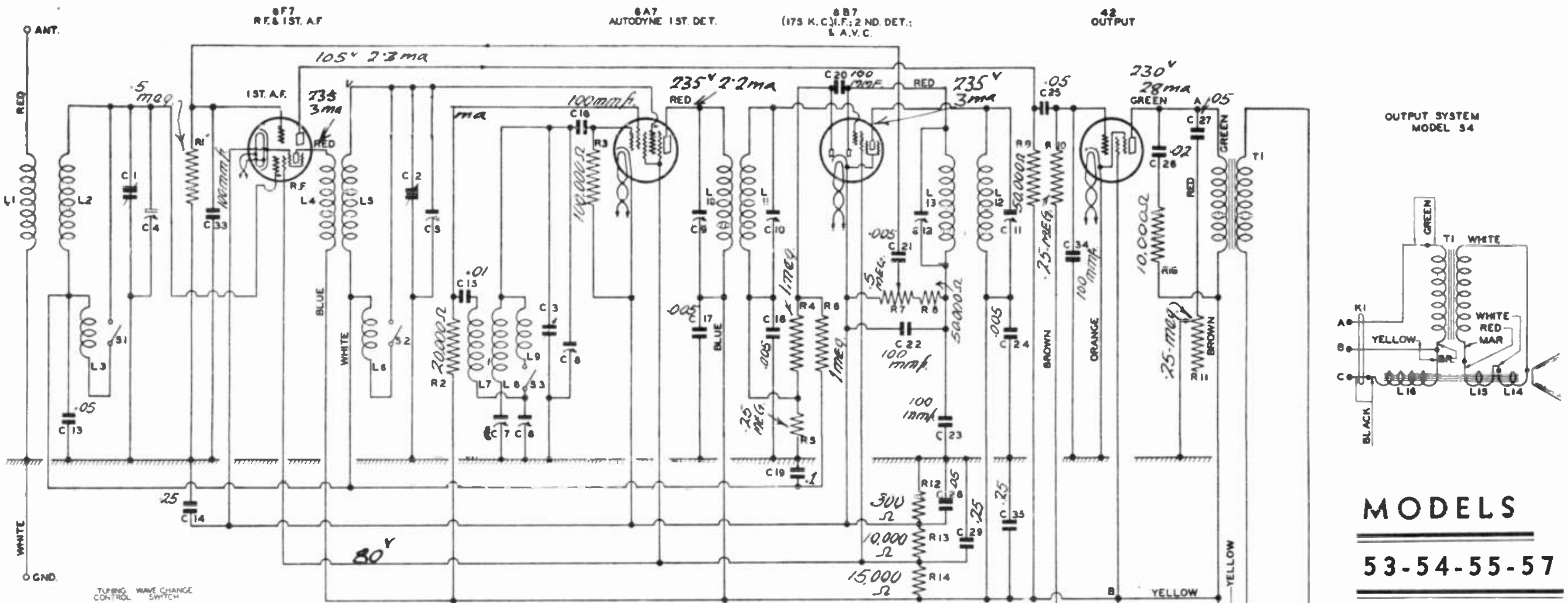
COURTESY NORTHERN ELECTRIC CO. LTD. -12

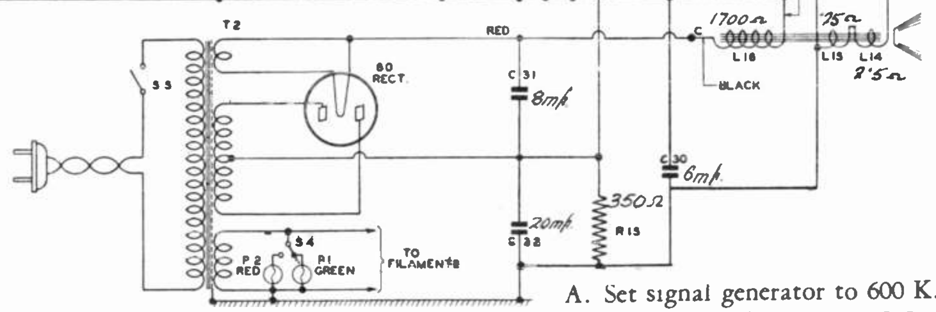
World Radio History

DATA SHEET

NORTHERN ELECTRIC-13

Courtesy Co. Ltd.



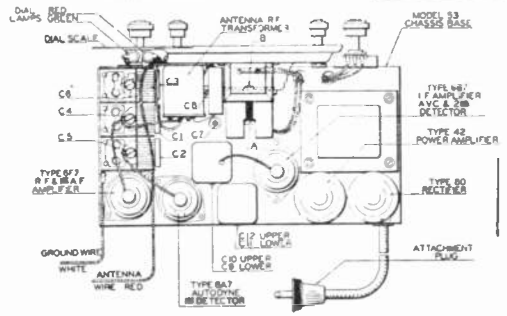


MODELS

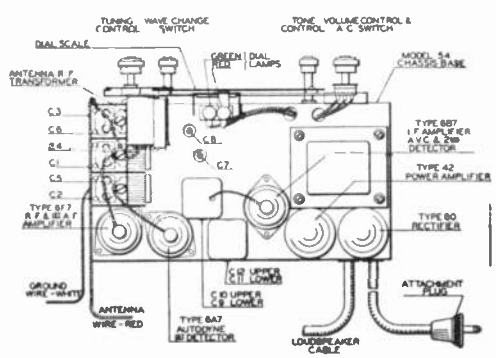
53-54-55-57

1934-35

I.F. 175 Kc.



—The Model 53-55 chassis.



—The Model 54 and 57 Console chassis only.

A. Set signal generator to 175 K.C.
B. Couple to control grid terminal type 6-A-7 autodyne first detector.
C. Align C-9, C-10, C-11 and C-12.

A. Set signal generator to 1600 K.C.
B. Set receiver dial to 1600 K.C. (green band).
C. Connect signal generator to antenna.
D. Align C-5, C-6 and C-4.

A. Set signal generator and receiver dial to 1400 K.C.
B. Realign C-4 and C-5 if necessary.

A. Set signal generator to 600 K.C.
B. Set receiver dial to 600 K.C. (green band).
C. Align C-7.

A. Repeat No. 2 as above for check.

A. Check at 1000 K.C.

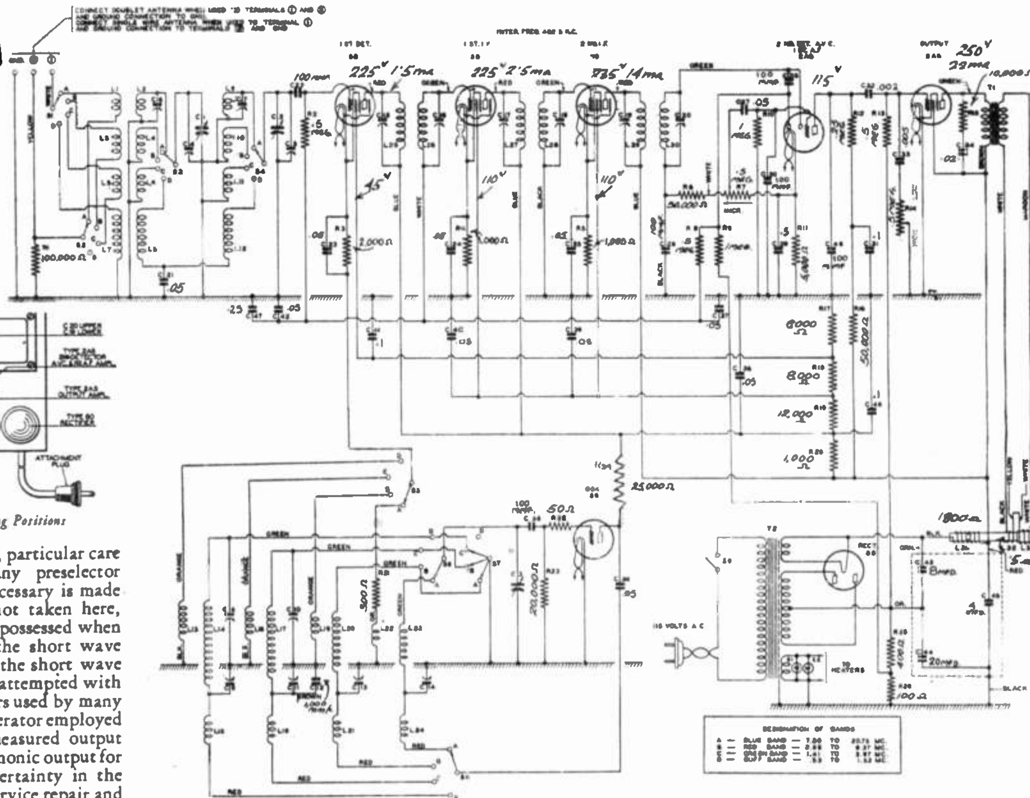
A. Set signal generator to 2500 K.C.
B. Set receiver dial to 2500 K.C. (red band).
C. Align C-8.

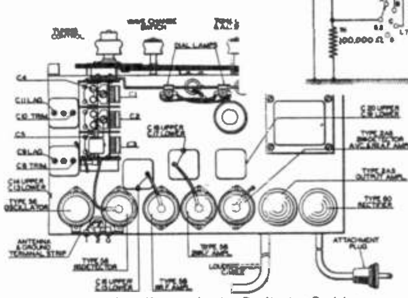
The location of the trimming condensers mentioned above is shown in Fig. 1, both A. and B.

Only a high quality, thoroughly reliable signal generator should be used and the output variations indicated by an output meter in preference to listening to volume changes at the loudspeaker.

World Radio History

Models 72-72A
1934-35
I.F. 462.5 Kc.





Model 72 Chassis showing Realigning Positions

In realigning the Model 72 Receiver, particular care should be exercised to see that any preselector coupling variation which may be necessary is made within very close limits. If care is not taken here, the full sensitivity which this receiver possessed when it left the factory will be lost and the short wave bands rendered useless. Realigning of the short wave bands of this receiver should not be attempted with some of the very questionable oscillators used by many servicemen. The oscillator or signal generator employed should be capable, preferably, of a measured output in fundamentals. Oscillators using harmonic output for short wave realigning will cause uncertainty in the aligning point and result in delay in service repair and mediocre or unsatisfactory short wave results to the user.

An output meter is of course essential. On no account touch the short wave band trimmers without an output meter connected across the voice coil and with a reliable and efficient signal generator at the input.

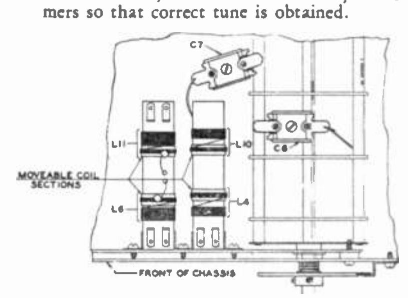
1. **I.F. ALIGNING:—**
   (*a*) Set signal generator to 462.5 K.C. and connect to control grid 2nd I.F. tube.
   (*b*) Align C-19 and C-20.
   (*c*) Connect to control grid 1st I.F. tube.
   (*d*) Align C-17 and C-18.
   (*e*) Connect to control grid first detector tube.
   (*f*) Align C-15 and C-16.

2. **BROADCAST BAND OSCILLATOR:—**
   (*a*) Set receiver dial to 1.400 megacycles.
   (*b*) Set signal generator to 1400 K.C. and connect to control grid first detector tube through .1 mf. capacitor.
   (*c*) Align C-8 (unmarked) (adjust to highest frequency peak where trimmer farthest out).
   (*d*) Still with signal generator at 1400 K.C., connect to antenna terminal No. 1 of receiver, through 200 mmf. mica capacitor; re-tune receiver to signal if necessary.
   (*e*) Align R.F. transformer secondary capacitors C-4 and C-5. These should not be changed on any other band. They should not be changed at all unless very low sensitivity is indicated. In any case, when adjustment is made, trimmer should be from ½ to one turn open.
   (*f*) Set signal generator at 600 and tune receiver dial pointer to 600 K.C. (approximately .6 megacycle). Vary receiver dial pointer within half a channel on either side, at the same time adjust oscillator lag trimmer C-9 so that correct tune obtained.

SHORT WAVE BAND 1.45 TO 3.5 MEGACYCLES (GREEN BAND):—
   (*a*) Set signal generator to 3 meg. and connect to control grid 1st detector tube through .1 mf. capacitor.
   (*b*) Set receiver dial pointer to 3 meg.
   (*c*) Align C-10 (adjust to highest frequency peak where trimmer farthest out).
   (*d*) Connect signal generator to antenna terminal No. 1 on receiver through 200 mmf. capacitor, strapping No. 2 and No. 3 on terminal strip to ground.
   (*e*) Adjust sliding coils L-11 and L-6. Great care must be exercised in the movement of these two coil sections. Alcohol should be used to loosen the coil from its fixture before any attempt is made to move them. Coils L-11 and L-6 are indicated in Figure 2 of the service manual. They are located on the coil structure to the left of the three coils running parallel with the side of the chassis.
   (*f*) Set signal generator to 1700 K.C. and tune set. Vary receiver dial pointer within ½ channel on either side, at the same time adjusting oscillator lag trimmer C-11 so that correct tune is obtained. It will be found that in some sets the pointer reads about one division low.

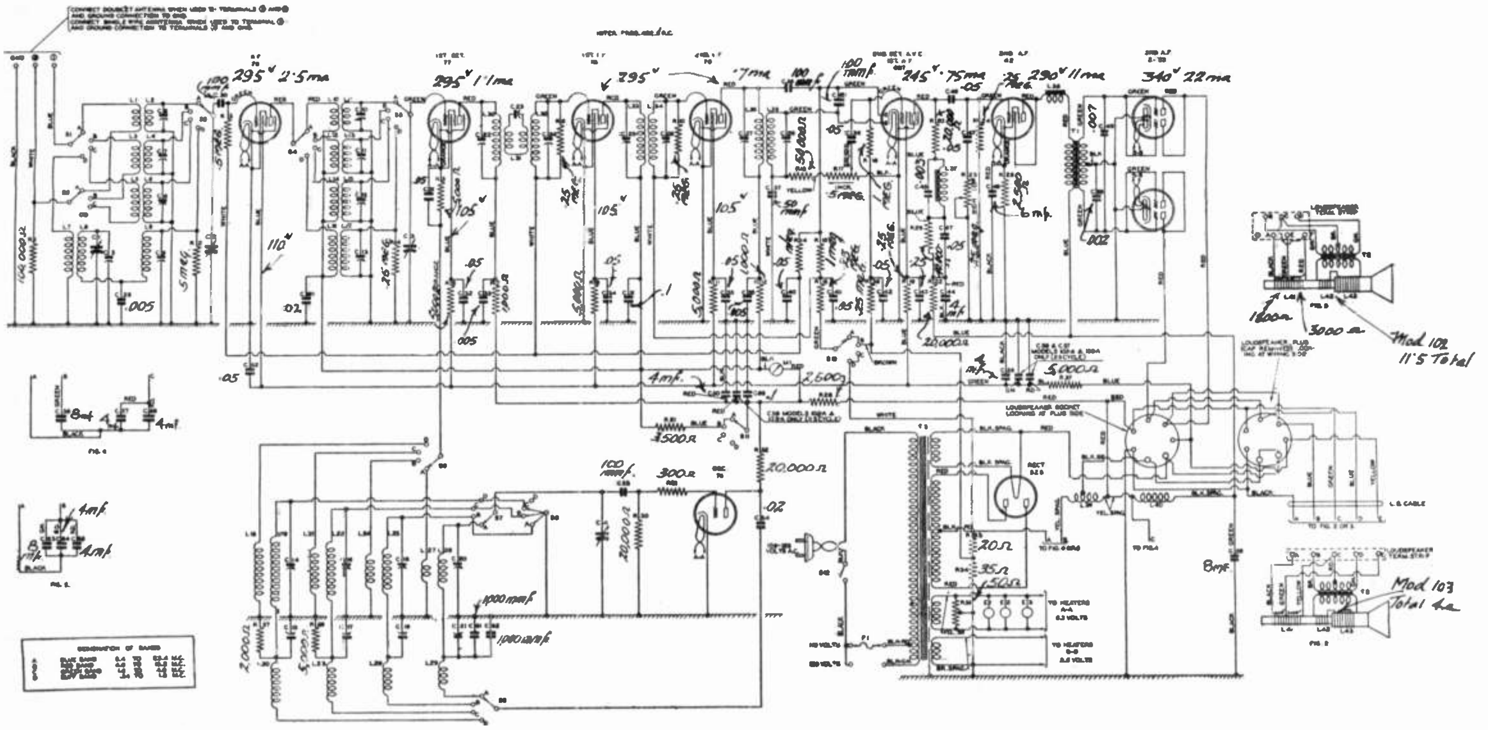
SHORT WAVE BAND 3.0 TO 9.0 MEGACYCLES (RED BAND):—
   (*a*) Set signal generator and receiver dial pointer to 7.0 megacycles.
   (*b*) Connect signal generator to antenna terminal No. 1 on receiver through .1 mf., capacitor, strapping No. 2 and No. 3 to ground.
   (*c*) Vary coupling between coils L-10 and L-4. As in No. 3 above, great care must be exercised in the movement of the coils. See that coils are loosened with alcohol before any attempt is made to turn them. Coils L-10 and L-4 can be located at the top right-hand coil of the three on the left of the chassis base looking at the wiring with the chassis up-ended.
   (*d*) Set signal generator to 3.4 megacycles and tune receiver.
   (*e*) Align C-13 and vary receiver dial pointer within ½ a channel on either side; at the same time adjust trimmer so that correct tune is obtained.

5. **SHORT WAVE BAND 7.5 TO 20.75 MEGACYCLES (BLUE BAND):—**
   (*a*) Connect signal generator to antenna terminal No. 1 on receiver through .1 mf. capacitor and strap terminals No. 2 and No. 3 on strip to ground.
   (*b*) Set signal generator to 16 meg. and tune in receiver.
   (*c*) Adjust C-6 and C-7 for maximum output (both trimmers should be on peak of greatest capacity). C-6 and C-7 are the small trimmers mounted inside the chassis.
   (*d*) Set signal generator to 9 meg. and tune in receiver.
   (*e*) Align C-14. Vary pointer within ½ a channel on either side; at the same time adjust trimmers so that correct tune is obtained.



On later production models of this receiver, it will be found that a change has been made in the structure of the blue band trimming arrangements by removing L-9 and C-7. Since the preselector coil and its tuning capacitor for the blue band are not in circuit with this arrangement, an increase in sensitivity results on extreme short wave signals. The same realigning details will apply, however, only the adjustment for C-7 being left out.

World Radio History



Models 102 = 103 1934-35 102a = 103a

REALIGNING DETAILS:—In realigning the Models 102 or 103 receivers a thoroughly reliable signal generator and an output meter must be used. Great care must be exercised in varying the sliding sections of coils L-6, L-15, L-4 and L-3. Proceed as follows:—

1. I.F.:—

(*a*) Set signal generator to 462.5 K.C. and connect to 2nd I.F. control grid lead through .1 mf. generator.

(*b*) Remove type 76 oscillator tube. Turn volume control to maximum and tone control to treble. Connect ground to set.

(*c*) Align C-27 and C-28.

(*d*) Connect signal generator to 1st I.F. control grid through .1 mf. capacitor.

(*e*) Align C-25 and C-26.

(*f*) Connect signal generator to control grid 1st detector tube through .1 mf. capacitor.

(*g*) Align C-22, C-23 and C-24.

(*h*) Do not realign any trimmer once set.

2. BUFF BAND:—

(*a*) Replace oscillator tube. Set wave change switch to buff band and dial to 1400 K.C.

(*b*) Set signal generator to 1400 K.C. and connect to number one antenna terminal through 200 mmf. capacitor.

(*c*) Align C-14.

(*d*) Set signal generator to 600 K.C. and receiver to 600 K.C.

(*e*) Align broadcast lay capacitor C-15.

(*f*) Set signal generator and receiver to 1400 K.C.

(*g*) Realign C-14 if necessary.

(*h*) Align C-5 (on gang) C-9 and C-13.

(*i*) Set signal generator and receiver to 600 K.C.

(*j*) Set signal generator and receiver to 600 K.C.

(*k*) Align C-15 turning dial pointer short distance either side of 600 K.C. position.

(*l*) Set signal generator and receiver to 1400 K.C.

(*m*) Realign C-14, C-5, C-9 and C-13.

3. GREEN BAND:—

(*a*) Turn wave change switch to green band. Set signal generator and receiver to 1.7 meg.

(*b*) Align C-17.

(*c*) Adjust sliding sections preselector coils L-6 and L-15.

(*d*) Set signal generator and receiver to 3.4 meg.

(*e*) Align C-16, C-8 and C-12.

(*f*) Set signal generator and receiver to 1.7 meg.

(*g*) Realign C-17 and sliding sections coils L-6 and L-15 if necessary.

(*h*) Cement coils into place.

4. RED BAND:—

(*a*) Turn wave change switch to red band. Set signal generator and receiver to 4.5 meg. Connect signal generator to No. 1 terminal on receiver through .1 mf. capacitor.

(*b*) Align C-19.

(*c*) Adjust sliding sections coils L-4 and L-13.

(*d*) Set signal generator and receiver to 9.0 meg.

(*e*) Align C-18, C-7 and C-11.

(*f*) Set signal generator and receiver to 4.5 meg.

(*g*) Realign C-19 and readjust sliding sections of L-4 and L-13.

(*h*) Cement coils into place.

5. BLUE BAND:—

(*a*) Turn wave change switch to blue band. Set signal generator and receiver to 11.0 meg.

(*b*) Align C-11.

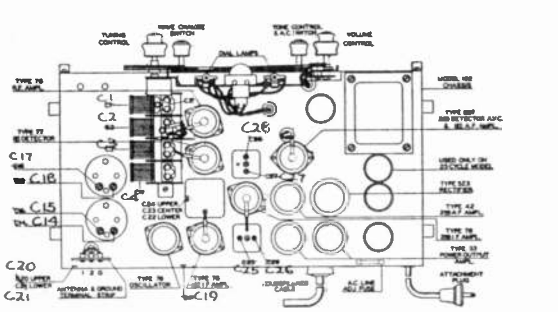
(*c*) Set signal generator and receiver to 16.0 meg.

(*d*) Align C-20, C-6 and C-10.

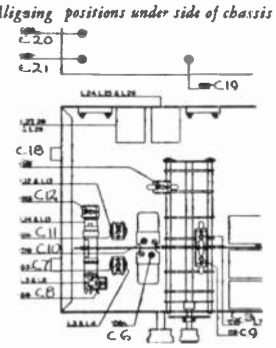
(*e*) Set signal generator and receiver to 11.0 meg.

(*f*) Align C-20, turning dial pointer short distance either side of 11.0 meg. position.

Chassis layout showing tube and aligning positions



Aligning positions under side of chassis



DATA SHEET

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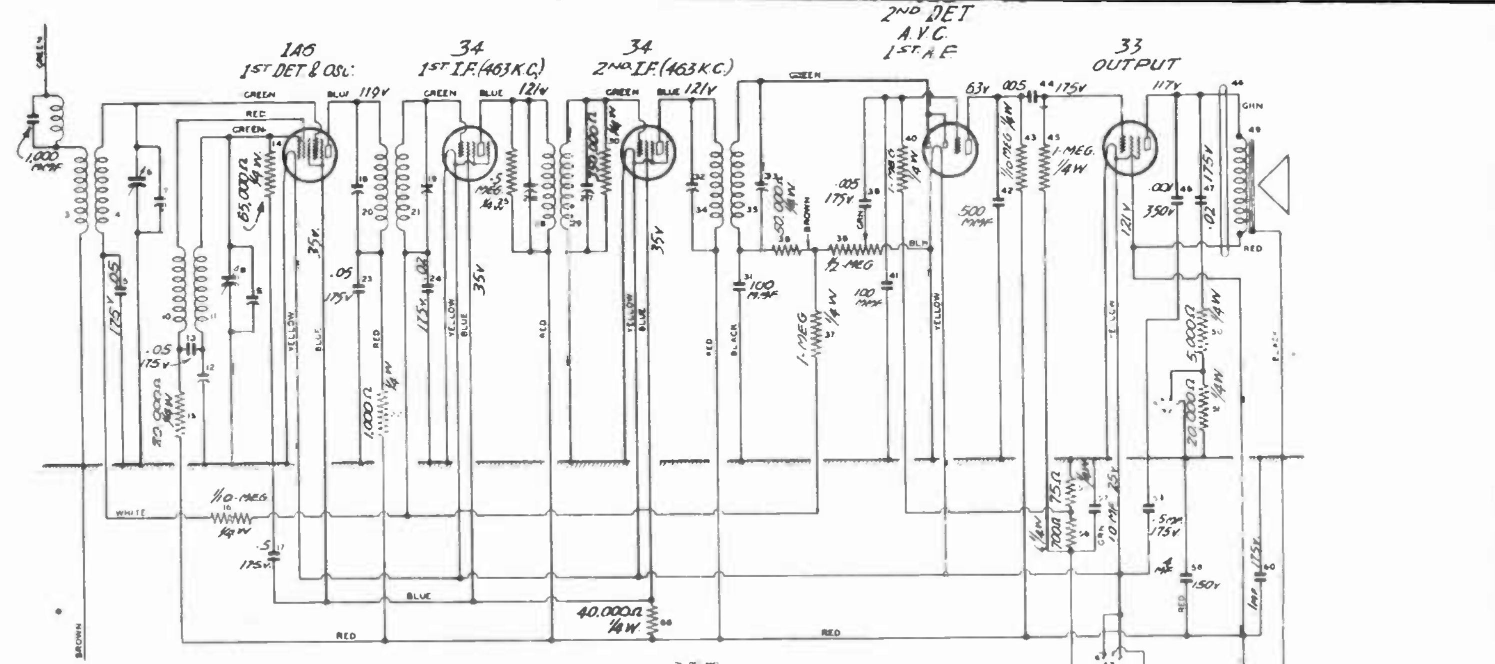
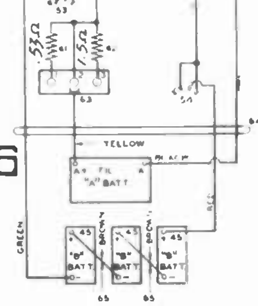
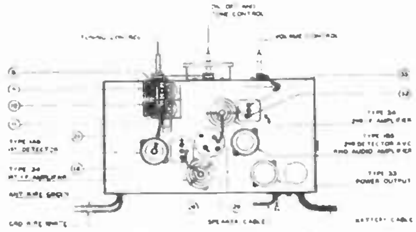


MODELS - 502N - 503N
BATTERY-OPERATED

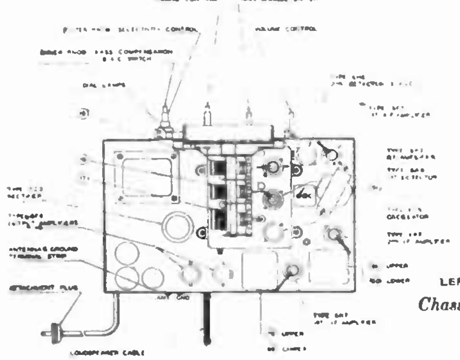




Chassis layout showing aligning positions.

I.F. = 463 K.C.

1935-36

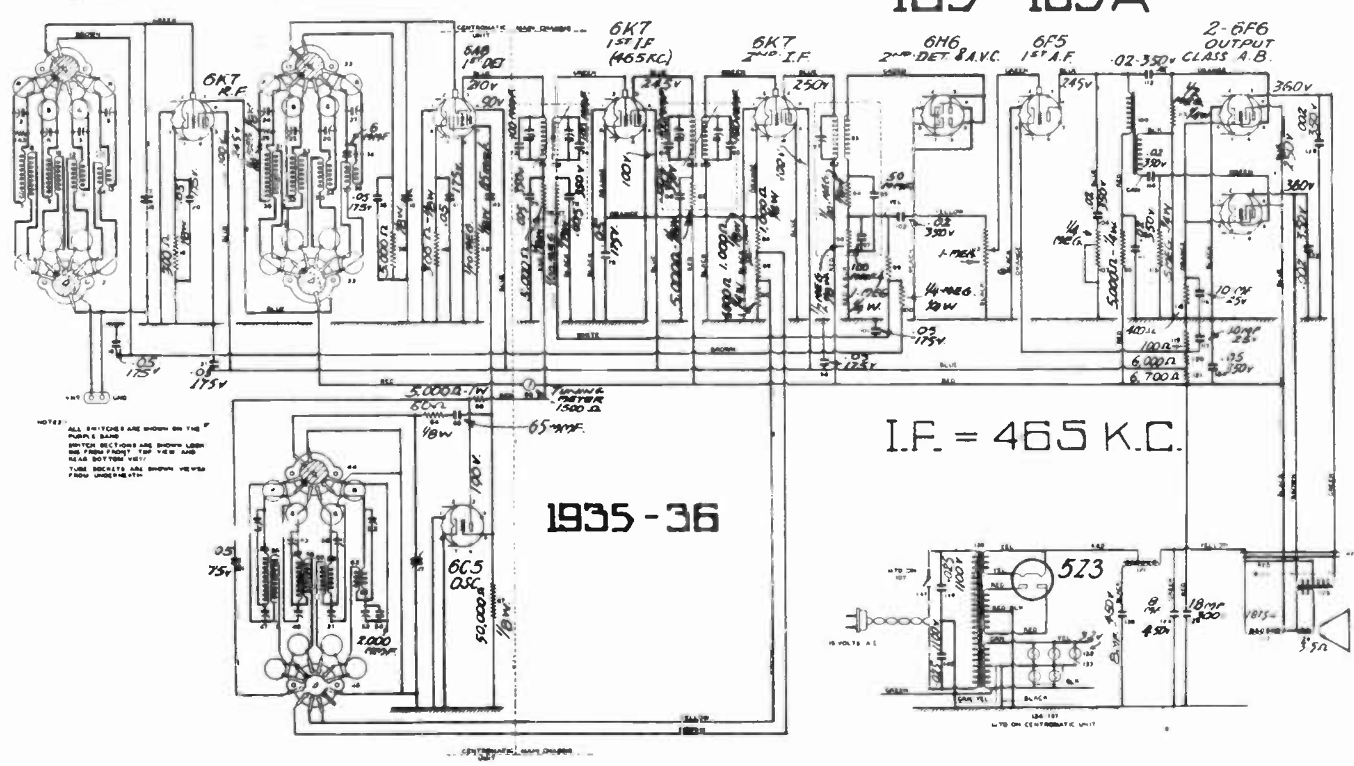


LEFT:-

Chassis Layout Model 105 Receiver showing realigning positions.

BELOW—

MODELS - 105 - 105A



I.F. = 465 K.C.

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ALIGNMENT INST'S. FOR MODELS.-105-105A & 502N-503N

MODELS-105-105-A

REALIGNING DETAILS:—Any realignment found necessary on this receiver should be very carefully carried out, in order to take full advantage of the excellent sensitivity and of the variable selectivity feature of this receiver. A reliable test oscillator or signal generator should be used in preference to oscillators utilizing harmonics. These latter are definitely incapable of properly aligning the high sensitivity all-wave bands of this receiver. The I.F. Transformers may be aligned, readily but it is not recommended that the Antenna, R.F., and Oscillator Trimmers be changed unless trouble has definitely been traced to these points.

I. F. ALIGNMENT:—

(*a*) Set Signal Generator to 465 KC., and connect output through a 0.1 mf. condenser to the grid cap of the first detector, type 6A8.

(*b*) Turn expander control all the way in a counterclockwise direction. (Most selective position). (This is very important. Two peaks will be obtained if alignment is attempted with the control in the "broad" position. These peaks can be used for alignment checking only with oscilloscope equipment similar to what is used in the original factory alignment.)

(*c*) Align trimmers, items 69, 70, 80, 81 and 91 for maximum output.

(*d*) Reduce the output from the oscillator to as low a value as will give an output reading, and check the adjustments. All trimmers should peak properly.

NOTE:—

Due to change in bias mentioned previously, the I.F. sensitivity will vary on the different bands, and will be least on the Purple band, equal on the Buff and Green bands, and maximum on the Red band.

PURPLE BAND:—

(*a*) Connect signal generator to antenna terminal through a 200 mmf., (0.0002 mf.) mica capacitor. Connect ground terminal to ground.

(*b*) Set signal generator and receiver to 350 KC., and adjust trimmers, items 46, 24 and 3, for maximum output.

(*c*) Set signal generator and set to 140 KC., and adjust lag capacitor 47, at the same time slowly rocking the tuning capacitor back and forth until the point of maximum sensitivity is obtained.

(*d*) Go back to 350 KC., and check alignment.

BROADCAST, OR BUFF BAND:—

(*a*) With signal generator still connected as above, set generator and receiver to 1600 KC., with wave-change switch in broadcast position.

(*b*) Adjust trimmers, items 48, 25 and 4, for maximum output.

(*c*) Set generator and receiver for 600 KC., and adjust lag capacitor item 49, at the same time slowly rocking the tuning condenser back and forth until the point of maximum sensitivity is obtained.

(*d*) Go back to 1600 KC., and check alignment.

GREEN BAND:—

(*a*) Connect signal generator to antenna terminal of receiver through a 400-ohm Carbon Resistor. Connect receiver ground terminal to ground. Put wave-change switch in green band position.

(*b*) Set generator and receiver to 5000 KC., and adjust trimmers, items 50, 26 and 5, for maximum output.

(*c*) Set generator and receiver to 2000 KC., and adjust lag capacitor, item 51, at the same time rocking the tuning capacitor back and forth until the point of maximum sensitivity is obtained.

(*d*) Go back to 5000 KC., and check the alignment.

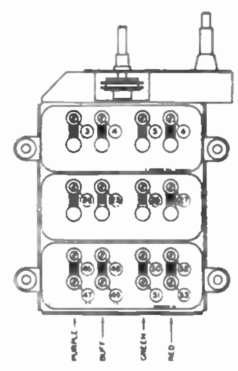
RED BAND:—

(*a*) With generator still connected as for the green band, set wave-change switch for red band.

(*b*) Set signal generator and receiver to 18000 KC., and adjust oscillator trimmer, item 52, to bring in maximum signal. Adjust trimmers, items 27 and 6, each in turn, at the same time slowly rocking the tuning capacitor back and forth until the point of maximum sensitivity is obtained.

(*c*) Set generator and receiver for 6500 KC., and adjust the lag capacitor, item 53, at the same time slowly rocking the tuning capacitor back and forth until the point of maximum sensitivity is obtained.

(*d*) Go back to 18000 KC., and check the alignment.



Centromatic unit showing lower Realigning Positions.

MODELS-502N-503N

SPECIAL NOTE

In the Model 503-N (serial Nos. 2301 to 2350) a departure from standard assembly as compared to the Model 502-N was made. A variable tone control is used instead of the fixed tone control supplied with the model 502-N. This means that there are then four controls on the Model 503-N having these serial numbers as compared to three on the model 502-N. The lower left hand knob is the tone control referred to above.

ALIGNMENT.

In order to secure full advantage of the careful design and precision construction of this receiver, any re-alignment necessary should be carefully carried out. A reliable test oscillator or signal generator should be employed. Oscillators utilizing harmonics are not satisfactory. An output meter with a resistance of 1000 ohms per volt should be used. Standard output 23.5 volts for 30% modulation. If a 4000 ohm meter is used, standard output is 9.8 volts.

I.F. ALIGNMENT:—

(*a*) Set the signal generator to 463 KC., and connect the output to the grid of the first detector, type 1A6, through a 0.1 mf. capacitor.

(*b*) Adjust trimmers 18, 19, 26, 27, 32, & 33 for maximum output.

(*c*) Reduce the output from the signal generator to as low a value as will give an output reading, and check the adjustments. All trimmers should peak properly.

R.F. ALIGNMENT:—

(*a*) Connect the signal generator to the antenna terminals of the set through a 100 mmf. (.0001 mf.) mica capacitor.

(*b*) Adjust the signal generator and the receiver to 1500 KC. Adjust trimmers 7 and 8 for maximum output.

(*c*) Set generator and receiver for 600 KC, and adjust trimmer 12, at the same time slowly rocking the tuning capacitor back and forth until the point of maximum sensitivity is found.

(*d*) Return to 1500 KC., and check alignment.

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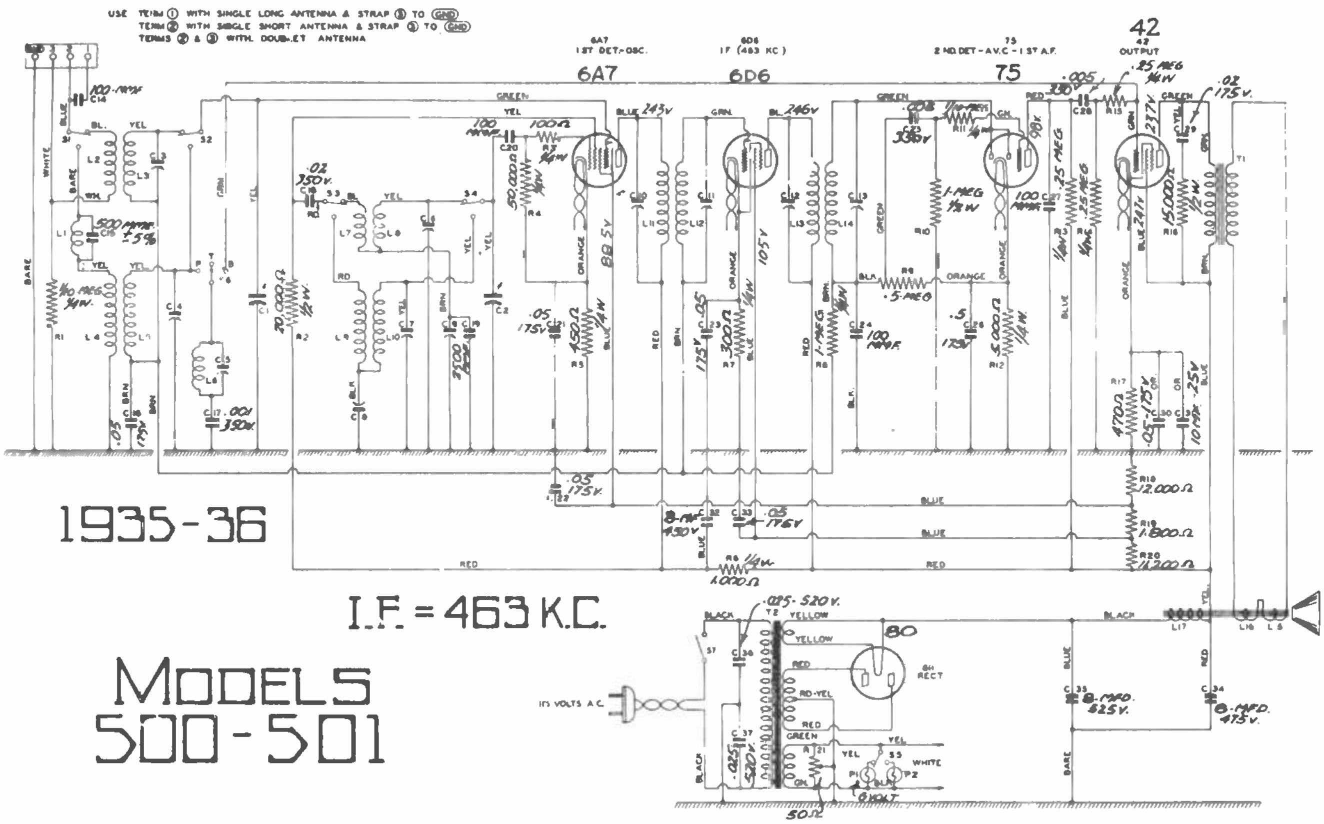
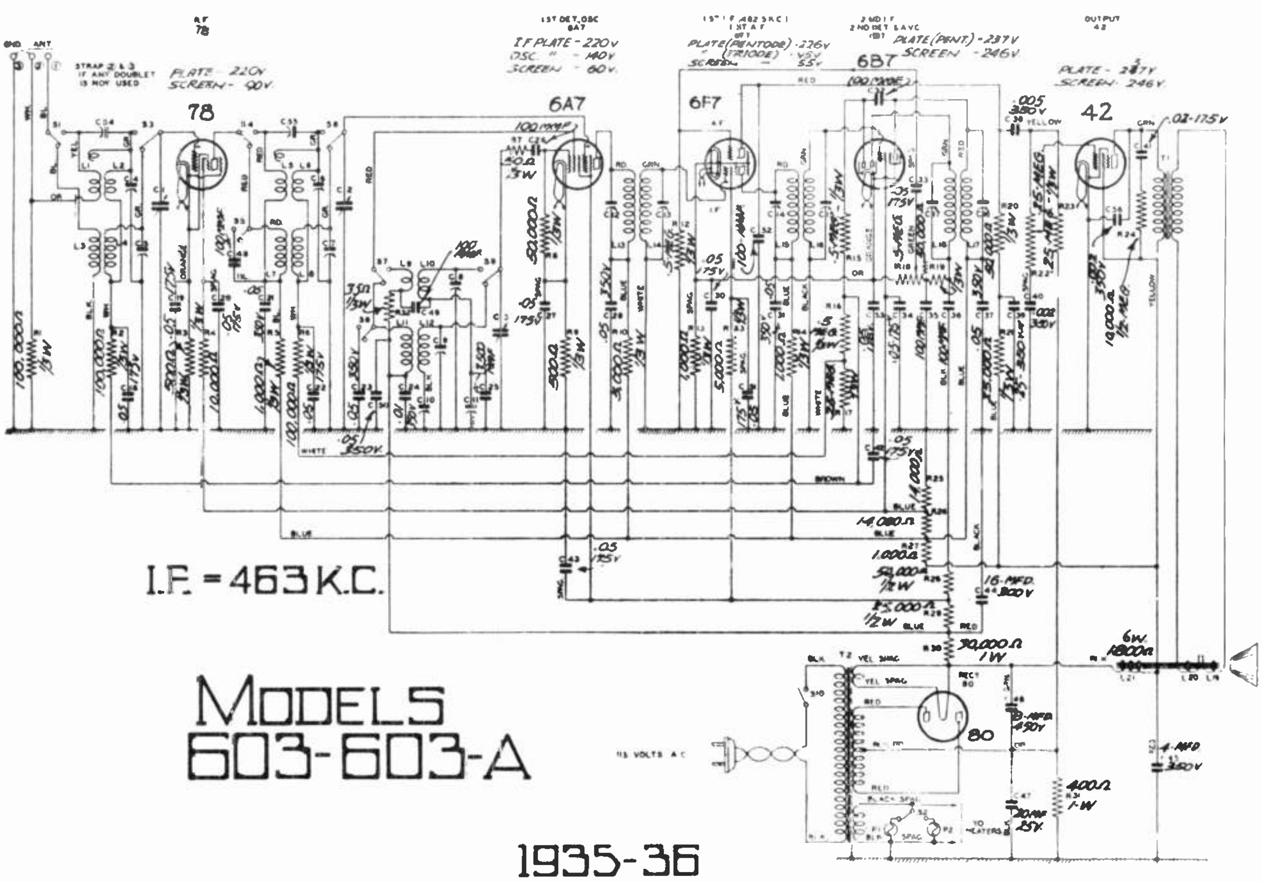


1935-36

I.F. = 463 K.C.

MODELS 500-501



I.F. = 463 K.C.

MODELS 603-603-A

1935-36

World Radio History

ALIGNMENT INSTRUCTIONS FOR MODELS - 500-1 - 603-3A

SAME INSTR. APPLY TO M-500 AND M-501

MODELS: 500-501

REALIGNING DETAILS:—In order to secure full advantage of the excellent design and construction of this receiver, it is necessary that any re-alignment carried out should be done carefully, and that only a reliable test oscillator or signal generator should be used. Oscillators utilizing harmonics should not be used. An output meter connected across the loudspeaker voice coil should be used. The I.F. transformers may be readily aligned, but it is urgently recommended that the antenna and oscillator trimmers should not be changed unless trouble has definitely been traced to these points.

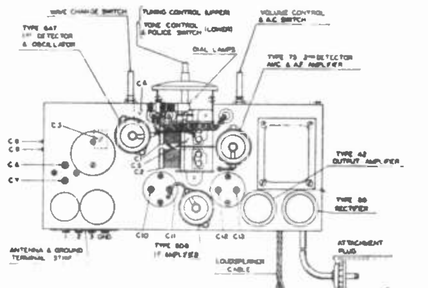


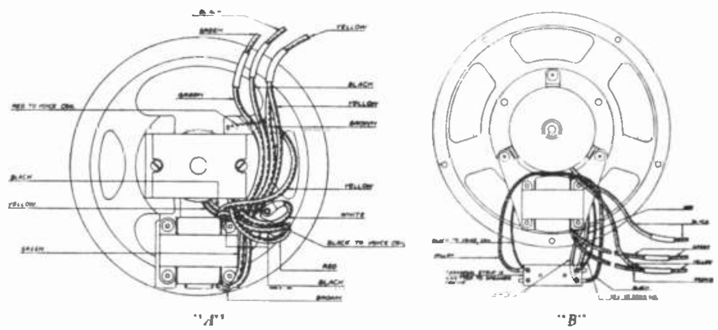
Fig. 1.—Chassis Layout showing Aligning Positions. (500)

1. I.F. ADJUSTMENT:—
   (*a*) Set signal generator to 463 K.C. and connect output through an 0.1 mfd. condenser to the grid cap of the 1st detector (type 6-A-7).
   (*b*) Adjust C-10, C-11, C-12 and C-13 for maximum output.
   (*c*) Reduce the output from the oscillator to as low a value as will give an output reading and check the adjustments. All trimmers should peak properly

2. BROADCAST BAND:—
   (*a*) Connect signal generator to antenna terminal number 2, through a 200 mmf. (0.0002 mf.) mica condenser. Ground terminals 3 and GND.
   (*b*) Set signal generator and receiver for 600 K.C., and adjust lag condenser C-8, at the same time slowly rocking the tuning condenser back and forth until the point of maximum sensitivity is obtained.
   (*c*) Set signal generator and receiver to 1600 K.C., and adjust C-7 and C-4 for maximum output.

3. POLICE BAND:—
   (*a*) With signal generator still connected as above, set generator to 2400 K.C., set receiver to 1474 K.C., and turn police switch all the way in a counter-clockwise direction.
   (*b*) Adjust C-5 for maximum output.

4. SHORT-WAVE BAND:—
   (*a*) Connect signal generator to terminal number 2 through a 400-ohm resistor (not wire wound)
   (*b*) Set signal generator and receiver to 6.4 megacycles.
   (*c*) Align C-9 for maximum output, at the same time slowly rocking the turning condenser back and forth until maximum sensitivity is obtained.
   (*d*) Set signal generator and receiver to 15 megacycles and align C-6 for maximum output.



"A" *Model 500* "B" *Model 501*

(*e*) Adjust C-3, at the same time rocking the gang slowly back and forth, until maximum sensitivity is obtained.

IMPORTANT NOTE:—In the aligning of the Broadcast Band, it was found that better results could be obtained with an absolute minimum capacity at trimmer C-4. To accomplish this the screw was removed and the normally variable top plate bent back. The trimmer is located on the chassis wall midway between wavechange switch and police tone control switch.

MODELS: 603-603A

REALIGNING DETAILS:—In order to secure full advantage of the excellent design and construction of this receiver, it is necessary that any realignment carried out should be done carefully, and that only a reliable test oscillator or signal generator should be used. Oscillators utilizing harmonics should not be used. An output meter connected across the loudspeaker voice coil should be used. The I.F. transformers may be readily realigned, but it is urgently recommended that the R.F. and oscillator trimmers should not be changed unless trouble has been experienced in these circuits.

1. I.F. ADJUSTMENT
   (*a*) Set signal generator to 463 K.C., and connect output through a 0,1 mfd. capacitor to grid cap of 1st detector (type 6-A-7).
   (*b*) Adjust C-12, C-13, C-14, C-15, C-16 and C-17 for maximum output.
   (*c*) Reduce the output from the oscillator to as low a value as will give an output reading, and check the adjustments. All trimmers should peak properly.

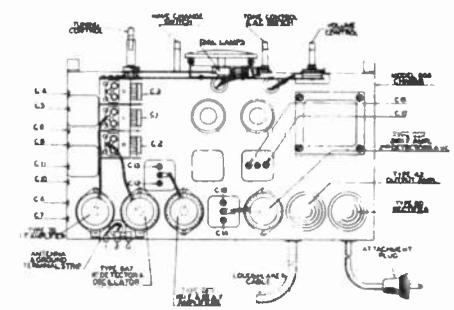


Fig. 1—Chassis Layout showing aligning positions (603)

2. BROADCAST BAND
   (*a*) Connect signal generator to antenna terminal number 1 through a 200 mmf. (0.0002 mf.) mica capacitor. Ground terminals number two and three.
   (*b*) Turn signal generator off, adjust pointer on set to about 600 K.C. and adjust C-10 for maximum noise output.
   (*c*) Adjust signal generator and set to 1400 K.C., and adjust C-5, C-7 and C-9 for maximum output.

3. SHORT-WAVE BAND
   (*a*) Connect signal generator to terminal number one through a 400-ohm resistance (not wire wound).
   (*b*) Make sure C-54 and C-55 are open about one turn.
   (*c*) Adjust signal generator to 6 mc., and tune set to it. Adjust C-11 for maximum output, retuning set each time C-11 is shifted. This adjustment is not critical.
   (*d*) Adjust signal generator to 14 mc., and tune set to it.
   (*e*) Tune set slowly back and forth across the signal, at the same time adjusting C-4 and C-6 until the best sensitivity is obtained.

DATA SHEET

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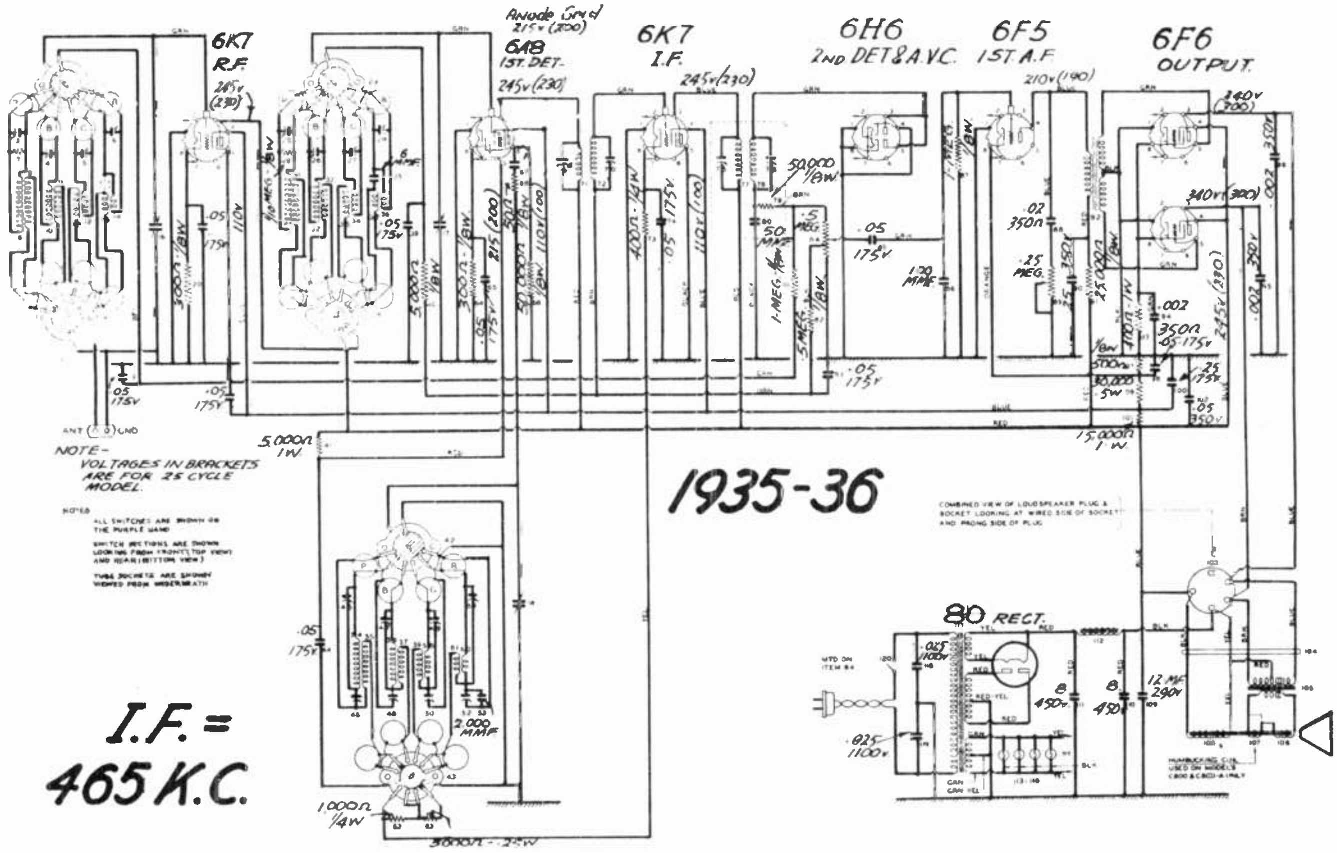
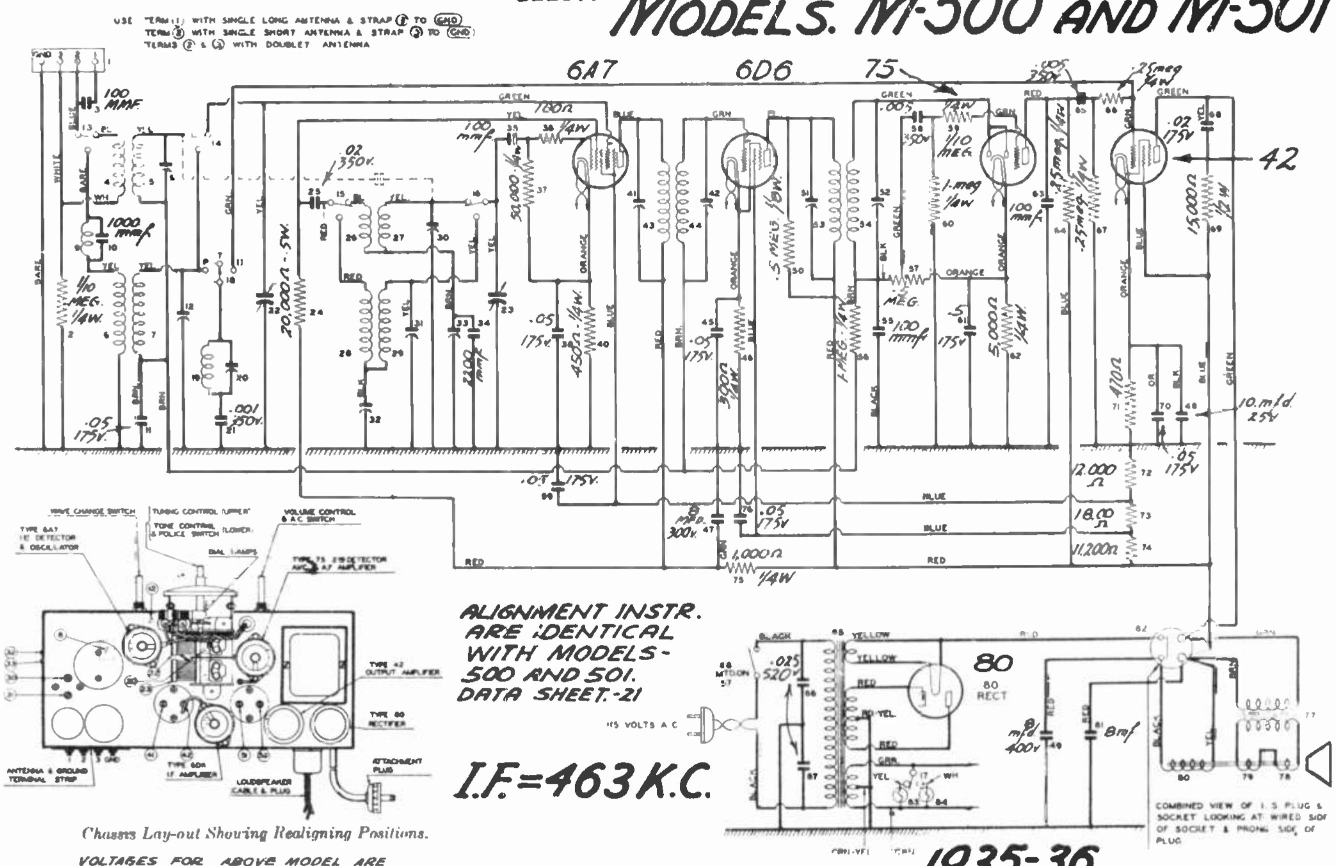
MODELS. C-800 AND C-801

ALIGNMENT INSTRUCTIONS ETC. ON DATA SHEET.-22a



BELOW- MODELS. M-500 AND M-501



VOLTAGES FOR ABOVE MODEL ARE SAME AS FOR MODELS 500-501 (DATA SHEET.-20)

1935-36

COURTESY- NORTHERN ELECTRIC CO. LTD.

DATA SHEET-22

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ALIGNMENT INSTRUCTIONS MODELS C-800- C-801

GENERAL:—The Model C-800 is an eight tube A.C. operated radio receiver in a table type Cabinet. The Model C-801 is identical except that a console cabinet is used and a larger loudspeaker. These models are of the "all-wave" type, and have an additional long wave (low frequency) or "X" band for reception of weather report, aviation and other signals.

A new airplane type dial mechanism with an indirectly illuminated etched glass dial and a "Flying Spot" vernier is used. This is mounted with other parts of the tuning assembly upon the "Centromatic Unit" or cushioned selector assembly. The dial is calibrated in megacycles, except the long wave band which is in kilocycles. The principal short wave bands of interest are indicated and are identified in meters or by abbreviations of their service designations.

The A.C. load rating for both 60 cycle and 25 cycle models is 92 watts at 115 volts.

TUNING RANGES:—Only one of the four dial pointers is illuminated at one time. By its colour and position on the dial it identifies the correct scale to read.

Wave Band	*Frequency Range*	*Color of Indicator*
Long Wave	120 to 375 kilocycles	Purple
Broadcast	.525 to 1.835 megacycles	Buff
Police	1.755 to 5.850 megacycles	Green
Short wave	5.7 to 18.6 megacycles	Red

VACUUM TUBES:—All of the tubes with the exception of the rectifier are of the metal case type with eight prong bases. Their functions are as follows:—

6K7	R.F. Amplifier
6A8	1st Detector and Oscillator
6K7	I.F. Amplifier
6H6	2nd Detector and A.V.C.
6F5	1st A.F. Amplifier
6F6(2)	Class AB Push-Pull Output
80	Rectifier

ALIGNMENT

In order that full advantage may be taken of the excellent design and construction of this receiver, any realignment found necessary should be carried out carefully and only with the aid of a reliable signal generator. Oscillators utilizing harmonics should not be employed. The I.F. transformers may be aligned readily, but it is urgently recommended that the antenna, R.F., and oscillator trimmers should not be adjusted unless trouble has been traced definitely to these points.

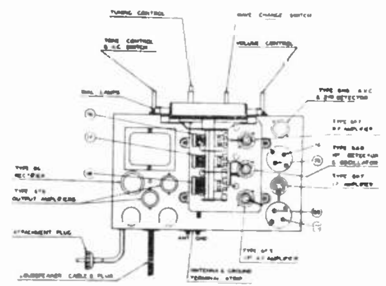
I.F. ALIGNMENT:

(*a*) Set the signal generator at 465 k.c., and connect its output through a 0.1 mf. capacitor to the grid cap of the first detector (type 6A8 tube).

(*b*) Adjust trimmers, items 76, 75, 70, 69, for maximum output, with the wave-change switch in the broadcast position and the gang closed.

(*c*) Reduce the output from the signal generator to as low a value as will give an output reading and check the adjustments. All trimmers should peak properly.

NOTE:—Due to change in bias on the I.F. amplifier tube, which was mentioned previously, the I.F. sensitivity will vary on the different bands.



Chassis Layout showing Top Aligning Positions.

PURPLE BAND:

(*a*) Connect the signal generator to the antenna terminal through a 200 mmf. (0.0002 mf.) mica capacitor. Connect ground terminal to ground.

(*b*) Set the signal generator and receiver to 350 K.C. and adjust trimmers, items 45, 25 and 3, for maximum output.

(*c*) Set the signal generator and set at 140 K.C and adjust the lag capacitor, item 46, at the same time rocking the tuning gang back and forth until the point of maximum sensitivity is found.

(*d*) Go back to 350 K.C., and check alignment.

(*e*) Return to 140 K.C. and check.

BUFF OR BROADCAST BAND:

(*a*) With the signal generator output connected as above, set it and the receiver at 1600 K.C. with the wave-change switch in the broadcast position.

(*b*) Adjust trimmers items 47, 26 and 4 for maximum output.

(*c*) Set generator and receiver at 600 K.C. and adjust the lag capacitor, item 48, while varying the gang setting slightly back and forth until the point of maximum sensitivity is found.

(*d*) Go back to 1600 K.C. and check alignment.

GREEN BAND:

(*a*) Connect the signal generator output to the antenna terminal of the receiver through a 400 ohm (carbon type) resistor. Connect receiver ground terminal to ground. Put the wave-change switch in the green band position.

(*b*) Set the generator and receiver at 5000 K.C., and adjust the trimmers items 49, 27, and 5 for maximum output.

(*c*) Set the generator and receiver at 2000 K.C., and adjust the lag capacitor, item 50, while rocking the gang as before, until the point of maximum sensitivity is found.

(*d*) Go back to 5000 K.C. and check the alignment.

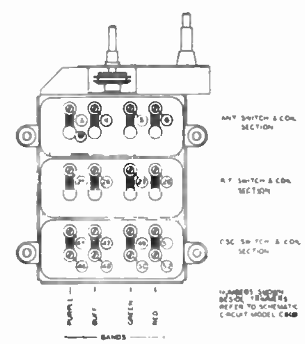
RED BAND:

(*a*) With the signal generator still connected as for the green band, set the wave-change switch at the red band.

(*b*) Set the signal generator and receiver at 18,000 K.C. and adjust the oscillator trimmer, item 51, to bring in maximum signal. Adjust trimmers, items 28 and 6, in turn, while rocking the tuning gang back and forth to locate the point of maximum sensitivity.

(*c*) Set the generator and receiver at 6500 K.C., and adjust the lag capacitor, item 52, while rocking the main tuning control as before, until the point of maximum sensitivity is found.

(*d*) Go back to 18,000 K.C. and check the alignment.



Centromatic Unit showing lower Realigning Positions.

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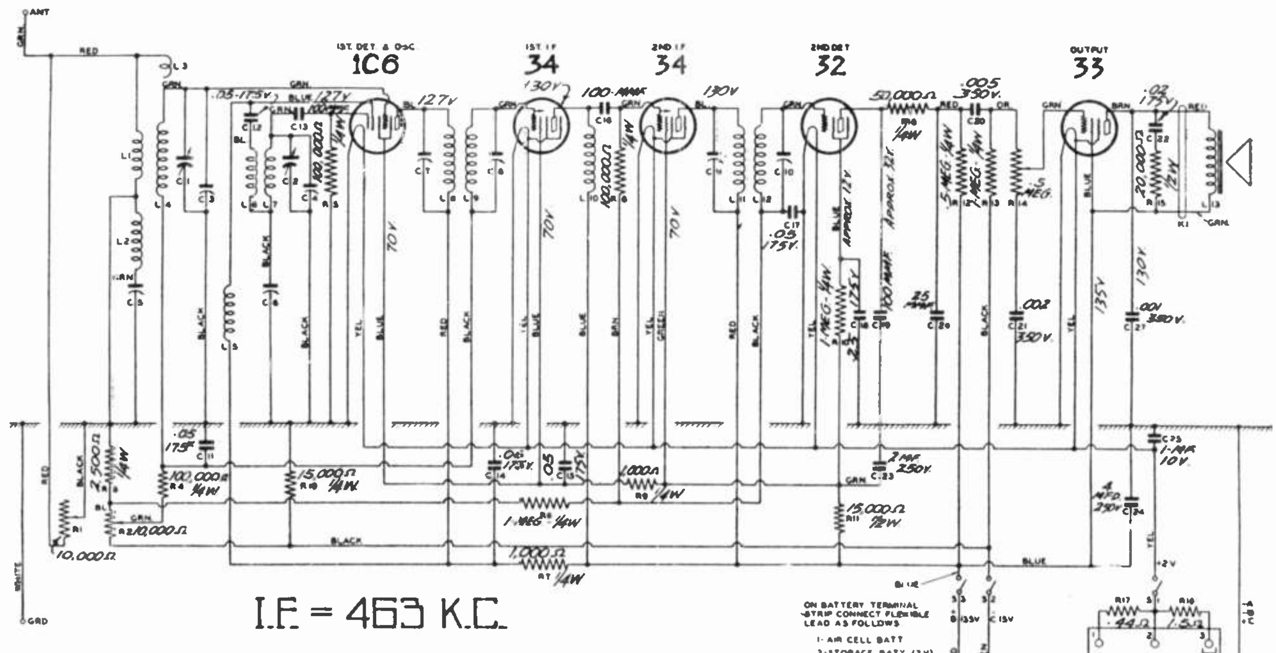
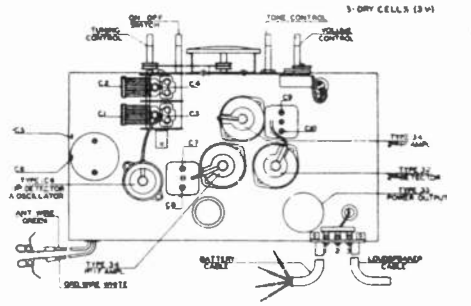


REALIGNING DETAILS:—In realigning the Model 502 chassis proceed as follows:—

1. **I.F. ADJUSTMENTS:** —
   (*a*) Set signal generator to 463 K.C. and connect to control grid 1st Det. tube.
   (*b*) Align C-7, C-8, C-9 and C-10.
   (*c*) Repeat second time for close adjustment.
2. **R.F. ADJUSTMENTS:**—
   (*a*) Set signal generator and receiver to 600 K.C.
   (*b*) Connect to receiver through 200 mmf capacitor at antenna lead.
   (*c*) Align C-6 varying tuning point on receiver slightly above and below 600 K.C. position on dial.
   (*d*) Set pointer to read exactly .6 mc. on scale if this is necessary.
   (*e*) Set signal generator and receiver to 1400 K.C. (1.4 mc.)
   (*f*) Align C-3 and C-4.
3. **TRAP CIRCUIT:**—
   (*a*) With signal generator still connected to antenna, set to 463 K.C.
   (*b*) Tune receiver to 540 K.C. (.54 mc.)
   (*c*) Increase output from signal generator until reading obtained on output meter.
   (*d*) Adjust trimmer C-5 until this reading is reduced to a minimum.



Chassis Layout, showing Aligning Positions.

In the adjustments given above a good quality signal generator and an output meter should be used. Connect the output meter in series with a 1.0 mf capacitor across the loudspeaker. Standard output is 26 volts.

MODELS 502 - 503

BATTERY - OPERATED

1935-36

SOCKET VOLTAGE AND CURRENT READINGS

Tube	Position	Filament	Plate	Screen	Bias	Plate Current	
						Normal Bias	Red. Bias (4½ volts)
1C6	1st Det. & Oscillator	2.0	127 (A) 127	70	1.4 (B)	3.5	6.5
34	1st I.F.	2.0	130	70	1.4 (B)	2.8	3.5
34	2nd I.F.	2.0	130	70	.2	2.8	3.5
32	2nd Det.	2.0	(C)	(C)	.8	.1	.2
33	Output	2.0	130	135	2 (D)	11.5	17.0

(a) Oscillator anode.
(b) Volume Control on minimum for this reading.
(c) Correct readings impossible with analyser method due high resistance in circuit. (Approximately 32 volts plate and 12 volts screen reading to ground).
(d) Correct bias 14 volts: Cannot be read with analyser method.
Readings taken with Volume Control at Maximum and tone control treble.
Tuning dial at 540 K.C.
Fil. tap on terminal No. 3 using dry cells.

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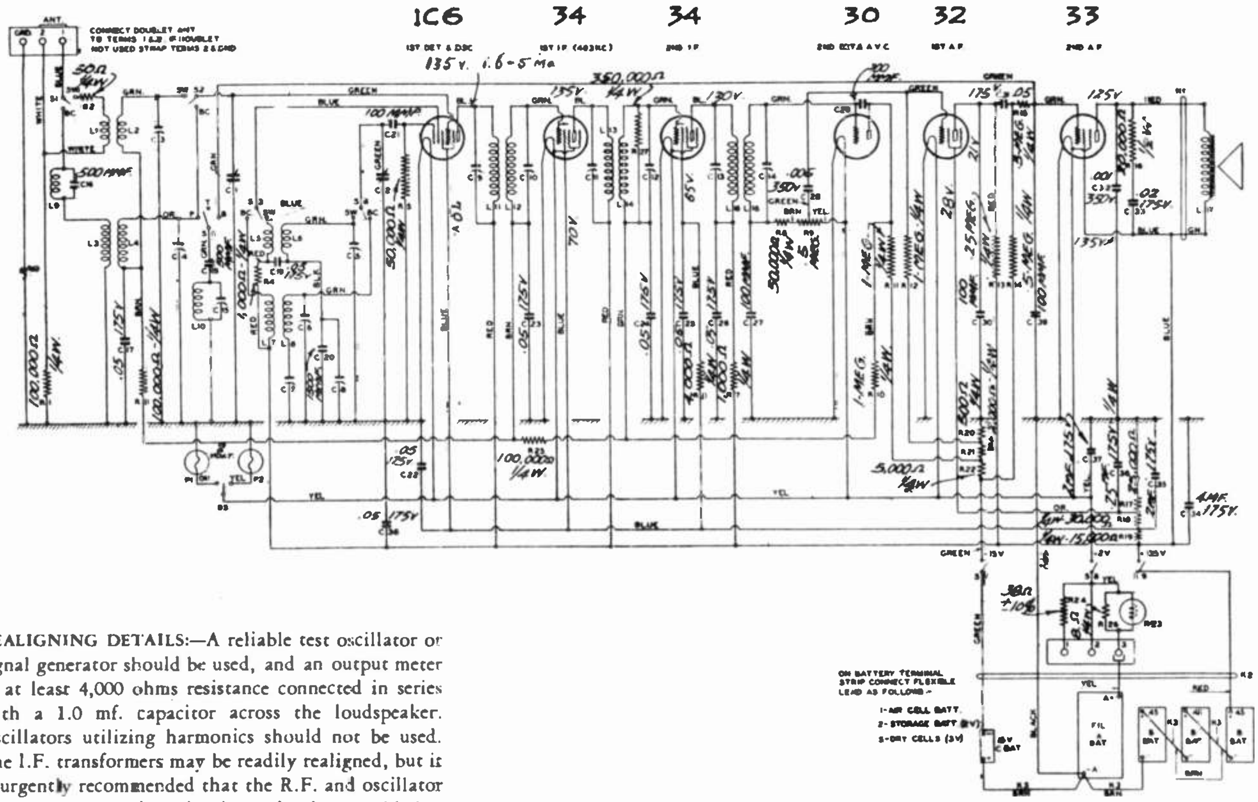


REALIGNING DETAILS:—A reliable test oscillator or signal generator should be used, and an output meter of at least 4,000 ohms resistance connected in series with a 1.0 mf. capacitor across the loudspeaker. Oscillators utilizing harmonics should not be used. The I.F. transformers may be readily realigned, but it is urgently recommended that the R.F. and oscillator adjustments should not be changed unless trouble has definitely been traced to these points. Standard output (100 milliwatts) is obtained with 27 volts across the speaker. Terminals 2 and 3 on the antenna should be strapped to ground when generator is connected, to terminal number 1.

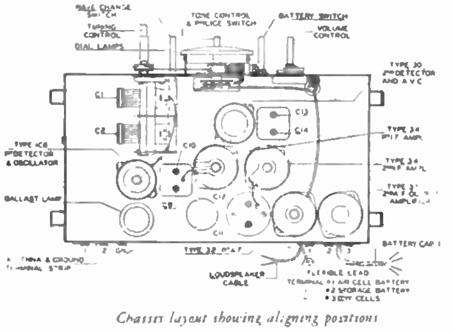
MODEL- 601
BATTERY - OPERATED

1935-36

I.F. = 463 K.C.

1. I.F. ADJUSTMENT:—
   - (a) Set signal generator to 463 K.C. and connect output through an 0.1 mfd. capacitor to grid cap of the 1st detector (type 1-C-6).
   - (b) Adjust C-9, C-10, C-11, C-12, C-13, C-14 for maximum output.
   - (c) Reduce the output from the oscillator to as low a value as will give an output reading and check the adjustments. All trimmers should peak properly.

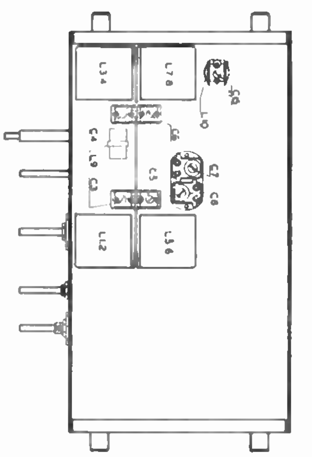
2. R.F. ADJUSTMENTS (Broadcast Band):—
   - (a) Set signal generator and receiver to 600 K.C.
   - (b) Connect output from generator to receiver through 200 mmf. mica capacitor to terminal number 1 on the antenna strip. Adjust C-7 for maximum output, at the same time slowly rocking the gang back and forth until the point of maximum sensitivity is obtained.
   - (c) Set generator and receiver to 1500 K.C.
   - (d) Adjust C-6 and C-4 for maximum output.



Chassis layout showing aligning positions

3. POLICE BAND ADJUSTMENTS:—
   - (a) With the signal generator still connected to the antenna, set it to 2400 K.C.
   - (b) Tune set to 1474 K.C. and put police switch in extreme counter-clockwise position.
   - (c) Adjust C-15, and at the same time rock the gang back and forth until the point of maximum sensitivity is obtained.

4. R.F. ADJUSTMENTS (Short-Wave Band):—
   - (a) Set signal generator and receiver to 16 megacycles.
   - (b) Connect to antenna terminal number 1 through a 400-ohm resistor (not wire wound).
   - (c) Align C-5.
   - (d) Align C-3 and rock gang slowly back and forth until most sensitive point is obtained.
   - (e) Set signal generator and receiver to 6 megacycles.
   - (f) Align C-8, and rock gang slowly back and forth until most sensitive point is obtained.



Bottom view of chassis showing aligning position

World Radio History

DATA SHEET

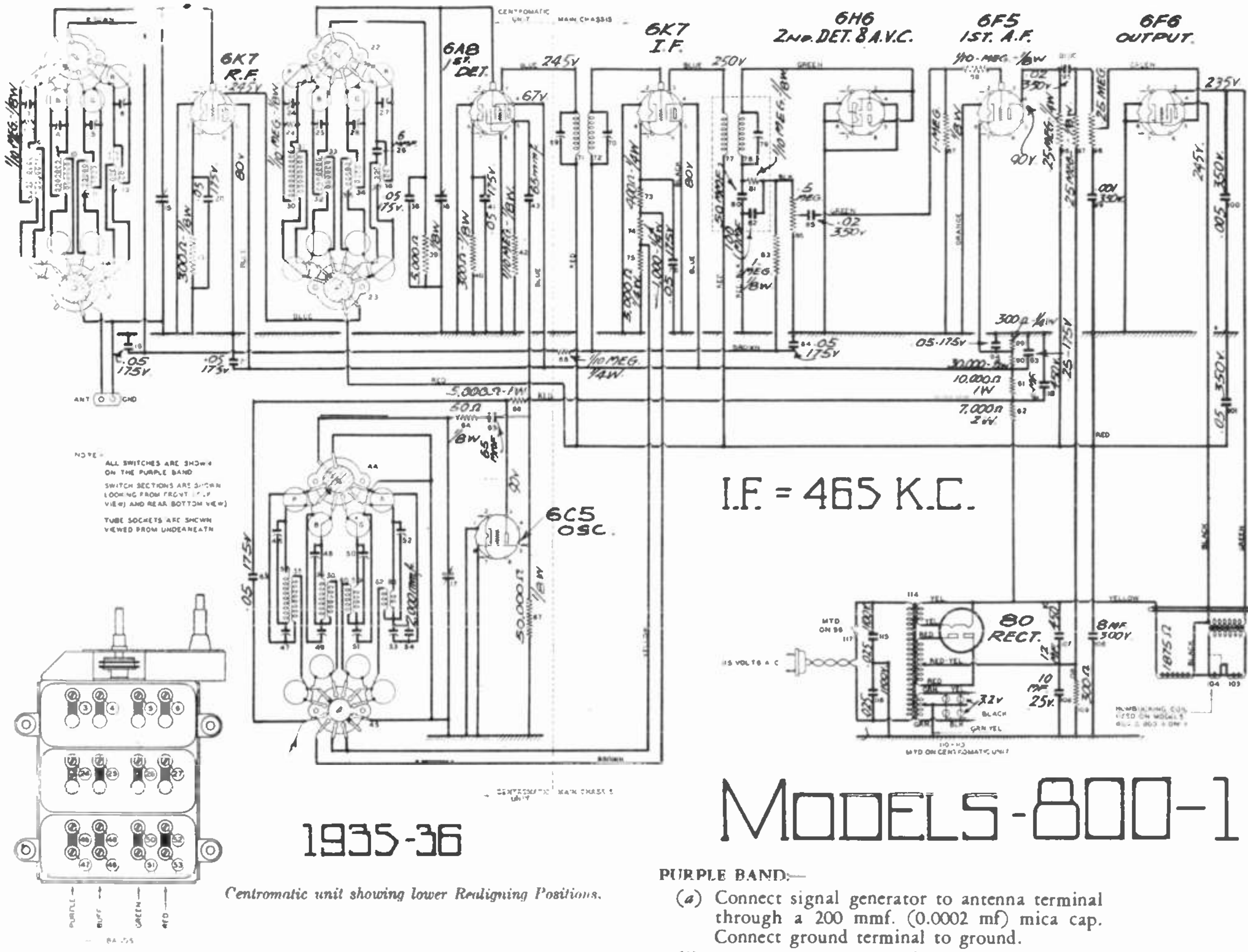
NORTHERN ELECTRIC-25 CO. LIMITED

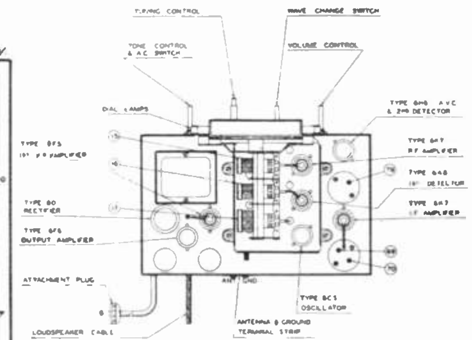
COURTESY—

PRINTED IN CANADA

MODELS-800-1

1935-36





Chassis Layout showing Top Aligning Positions.

Centromatic unit showing lower Realigning Positions.

I. F. ALIGNMENT:—

(*a*) Set signal generator to 465 K.C., and connect output through 0.1 mf. capacitor to the grid cap of the first detector, type 6A8.

(*b*) Adjust trimmers, items 69, 70 and 79, for maximum output, with wave-change switch in broadcast position and gang closed.

(*c*) Reduce the output from the oscillator to as low a value as will give an output reading and check the adjustments. All trimmers should peak properly.

NOTE: Due to change in bias mentioned previously, the I. F. sensitivity will vary on the different bands, and will be least on the purple band, equal on the buff and green bands, and maximum on the red band.

PURPLE BAND:—

(*a*) Connect signal generator to antenna terminal through a 200 mmf. (0.0002 mf) mica cap. Connect ground terminal to ground.

(*b*) Set signal generator and receiver to 350 K.C., and adjust trimmers, items 46, 24 and 3, for maximum output.

(*c*) Set signal generator and set to 140 K.C., and adjust lag condenser 47, at the same time slowly rocking the tuning condenser back and forth until the point of maximum sensitivity is obtained.

(*d*) Go back to 350 K.C., and check alignment.

(*e*) Return to 140 K.C., and check alignment.

BROADCAST, OR BUFF BAND:—

(*a*) With signal generator still connected as above, set generator and receiver to 1600 K.C., with wave-change switch in broadcast position.

(*b*) Adjust trimmers, items 48, 25 and 4, for maximum output.

(*c*) Set generator and receiver for 600 K.C., and adjust lag condenser, item 49, at the same time slowly rocking the tuning condenser back and forth until the point of maximum sensitivity is obtained.

(*d*) Go back to 1600 K.C., and check alignment.

GREEN BAND:—

(*a*) Connect signal generator to antenna terminal of receiver through a 400-ohm carbon resistor. Connect receiver ground terminal to ground. Put wave-change switch in green band position.

(*b*) Set generator and receiver to 5000 K.C., and adjust trimmers, items 50, 26 and 5, for maximum output.

(*c*) Set generator and receiver to 2000 K.C., and adjust lag condenser, item 51, at the same time rocking the tuning condenser back and forth until the point of maximum sensitivity is obtained.

(*d*) Go back to 5000 K.C., and check the alignment.

RED BAND:—

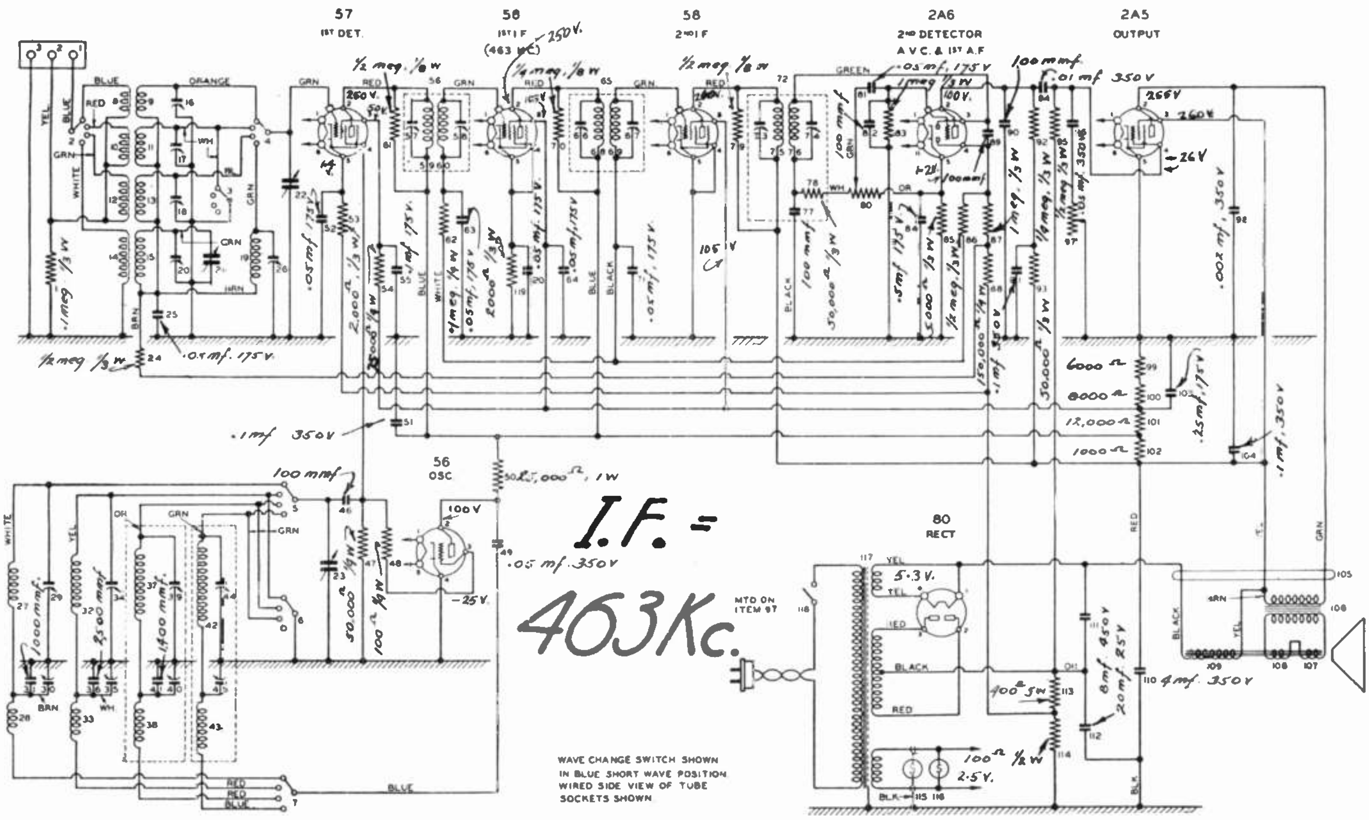
(*a*) With generator still connected as for the green band, set wave-change switch for red band.

(*b*) Set signal generator and receiver to 18000 K.C., and adjust oscillator trimmer, item 52, to bring in maximum signal. Adjust trimmers, items 27 and 6, each in turn, at the same time slowing rocking the tuning condenser back and forth until the point of maximum sensitivity is obtained.

(*c*) Set generator and receiver for 6500 K.C., and adjust the lag condenser, item 53, at the same time slowly rocking the tuning condenser back and forth until the point of maximum sensitivity is obtained.

(*d*) Go back to 18000 K.C., and check the alignment.

World Radio History



REALIGNING DETAILS:

1. **I.F. ADJUSTMENTS:—**
   (*a*) Set signal generator to 463 K.C.; connect output through 0.1 mf. capacitor to grid cap of first detector.
   (*b*) Adjust trimmers items 57, 58, 66, 67, 73, 74.
   (*c*) Reduce output from oscillator to low value output reading and check adjustments. All trimmers should peak properly.

2. **BROADCAST BAND:—**
   (*a*) Set signal generator and receiver to 1300 K.C.; connect through 200 mmf. capacitor to antenna terminal 1. Strap terminals 2 and 3 together for all alignment. Ground chassis.
   (*b*) Adjust trimmers items 44, 30, and 25.
   (*c*) Set receiver and signal generator to 600 K.C.; adjust lag condenser, item 45; at the same time slowly rock tuning condenser back and forth until point of maximum sensitivity found.
   (*d*) Set signal generator and receiver to 1300 K.C.; readjust items 44, 20 and 25.

3. **GREEN BAND:—**
   (*a*) Wave change switch to green band. Receiver and signal generator to 3.5 megacycles, with input to antenna terminal 1 through 400 ohms (non-inductive resistence such as carbon).
   (*b*) Adjust trimmers items 39 and 18.
   (*c*) Set receiver and generator to 1.7 megacycles; adjust lag condenser item 40; at same time slowly rock tuning condenser back and forth until point of maximum sensitivity found.
   (*d*) Go back to 3.5 megacycles and realign items 39 and 18.

4. **RED BAND:—**
   (*a*) Wave change switch to red band. Receiver and generator to 7 megacycles with antenna connected as above.

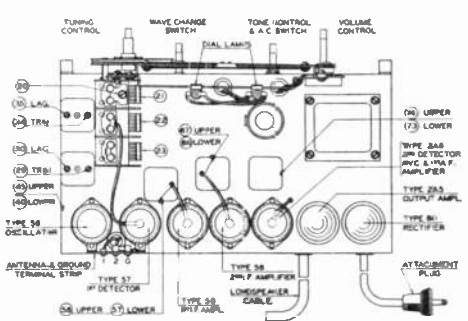
Models

N72 & N72A

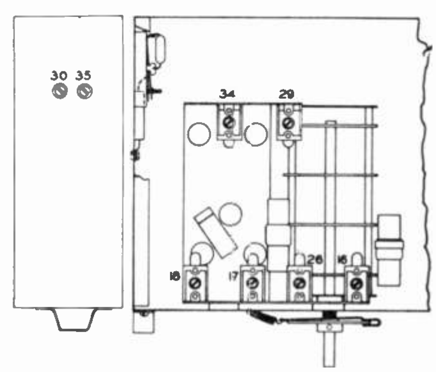
1936-37

5. **BLUE BAND:—**
   (*a*) Wave change switch to blue band. Receive and generator to 16 megacycles; antenna connected as above.
   (*b*) Adjust trimmer item 29.
   (*c*) Adjust trimmer item 16; at same time rock gang slowly back and forth until point of maximum sensitivity found.
   (*d*) Set receiver and generator to 8 megacycles; adjust lag capacitor item 30; at same time rock gang slowly back and forth until point of maximum sensitivity obtained.
   (*e*) Go back to 18 megacycles and check alignment.

(*b*) Adjust trimmers items 34 and 17.
(*c*) Set receiver and generator to 3.4 megacycles; adjust lag capacitor item 35, at same time rock gang slowly back and forth until maximum sensitivity obtained.
(*d*) Go back to 7.0 megacycles and realign items 34 and 17.



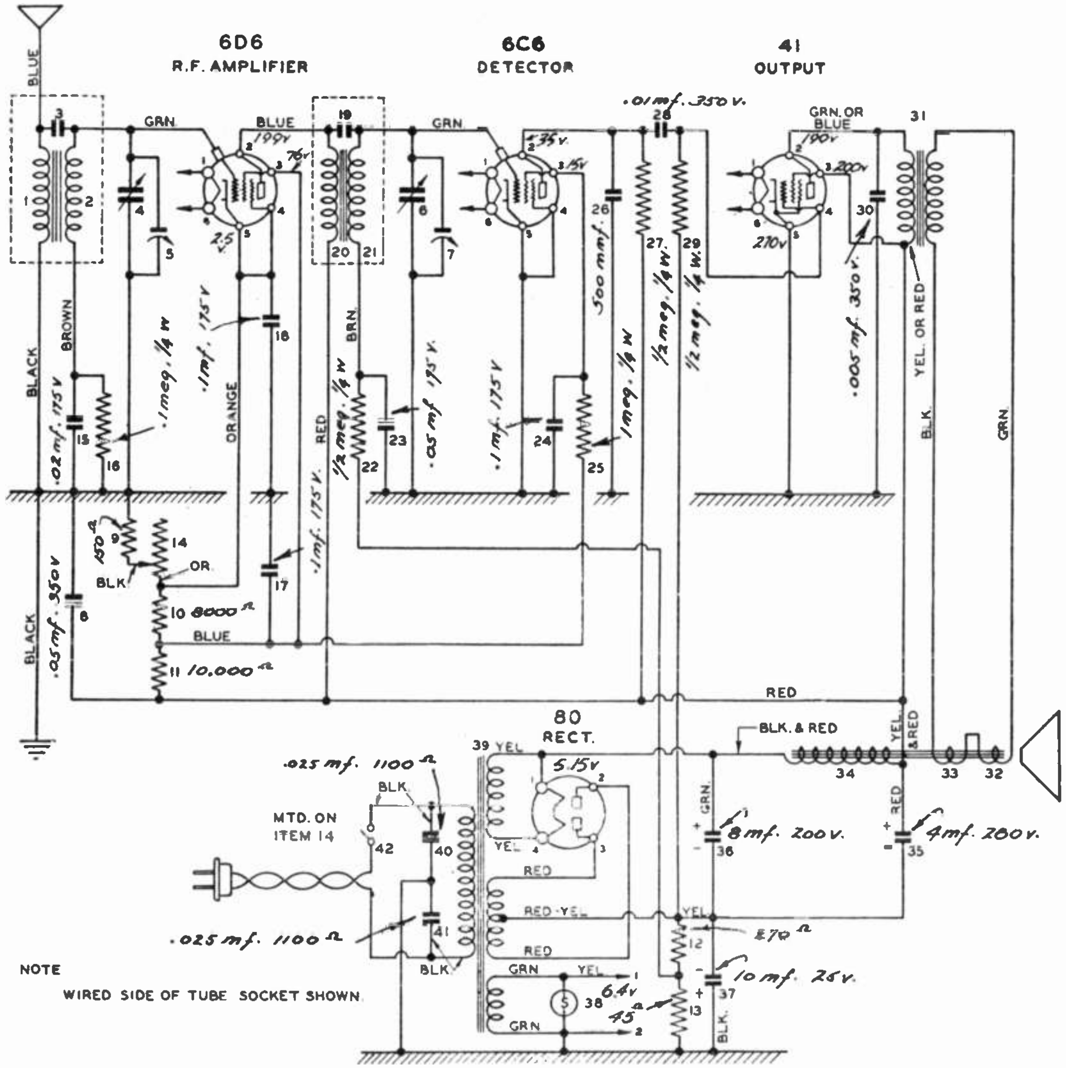
Chassis Layout showing realigning positions.



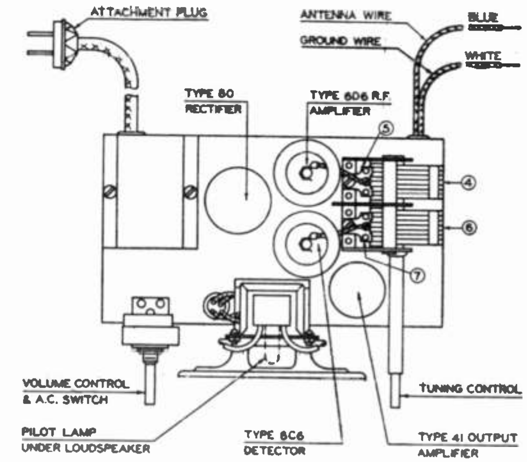
Chassis Underside View.

DATA SHEET Courtesy — NORTHERN ELECTRIC - 26 CO. LTD.

World Radio History



Model 410
1936-37



Chassis Layout Showing the Aligning Positions

Alignment Data

To secure full advantage of the performance characteristics of this receiver, any re-alignment necessary should be carried out with a reliable test oscillator or signal generator and an output meter.

(*a*) With the gang all in, check that the pointer is opposite the dot on the dial plate.

(*b*) Set the signal generator at 1400 kilocycles, and connect the output through an 0.1 mf. to the r-f amplifier grid. With the pointer set at 1400 kc. on the dial, adjust the front trimmer on the gang (item 7) for maximum output.

(*c*) With the same adjustments of set and generator, apply the test signal through a 100 mmf. (.0001 mf.) mica capacitor to the antenna lead. Adjust the rear trimmer on the gang (item 5) for maximum response, while at the same time slowly varying the generator frequency slightly until the point of maximum sensitivity is found.

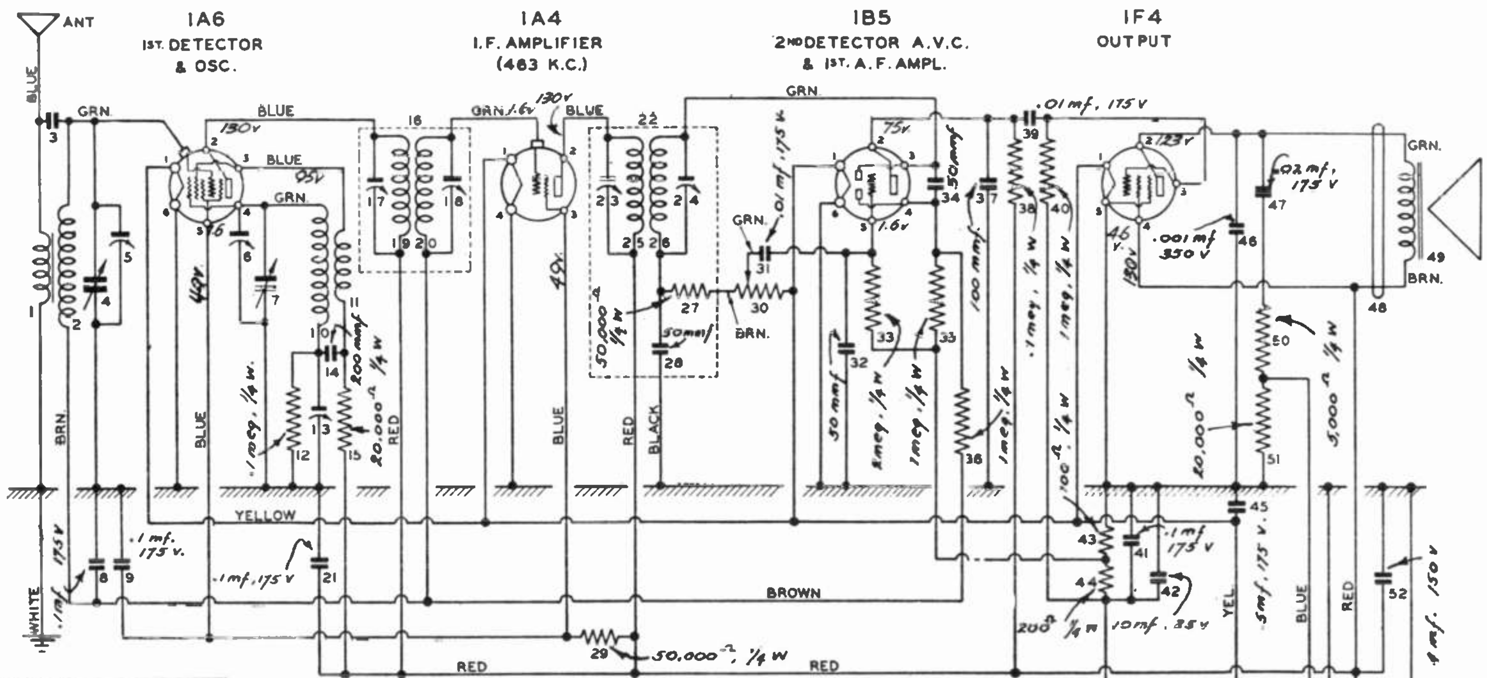
(*d*) Check dial at exactly 1400 kc., and at 1000 kc

World Radio History

Battery Operated

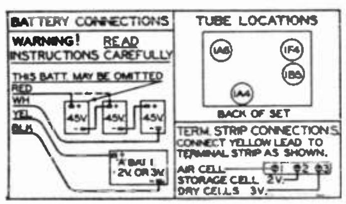
DATA SHEET

COURTESY — NORTHERN ELECTRIC Co. LTD. -28



WIRED SIDE OF TUBE SOCKETS SHOWN.

SHAFT SIDE OF BATTERY SWITCH SHOWN.



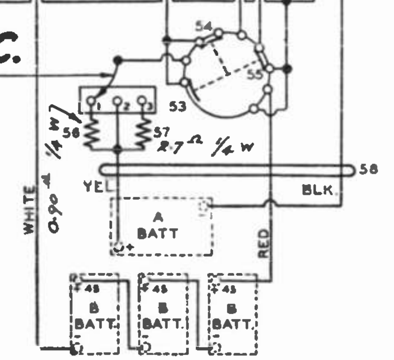
Model 412

1936-37

I.F. 463 Kc.

FLEXIBLE YELLOW LEAD CONNECT TO

TERMINAL	FOR BATTERY
# 1	2V AIR CELL
# 2	2V STORAGE BATT
# 3	3V DRY CELL



FILAMENT VOLTS - 2.0

Alignment Data

To secure full advantage of the performance characteristics of this receiver, any re-alignment should be carried out carefully. A reliable test oscillator or signal generator should be used, and an output meter. Due to the high impedance of the loudspeaker winding (approximately 10,000 ohms) the 150 volt scale of a 1000 ohms per volt (or more) rectifier type output meter is recommended. The commonly used meter of 4000 ohms total resistance is not suitable.

I. F. ALIGNMENT:—

(*a*) Set the generator at 463 k.c. and connect the output through an 0.1 mf. capacitor to the grid of the type 1A6 first detector tube.

(*b*) Adjust trimmer 17, 18, 23 and 24 for maximum output.

(*c*) Reduce the output from the signal generator to as low a value as will give an output reading, and check the adjustments. All trimmers should peak properly.

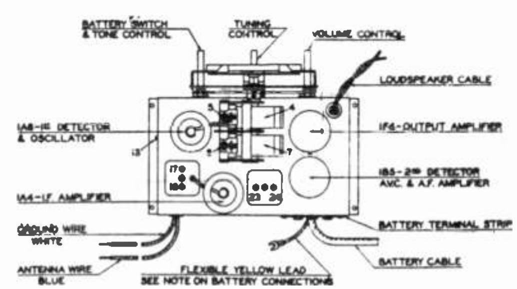
R. F. ALIGNMENT:—

(*a*) Connect the signal generator to the antenna lead through a 100 mmf. (.0001 mf.) mica capacitor.

(*b*) Set the signal generator at 600 k.c. and adjust the lagging capacitor, item 13, at the same time rocking the gang back and forth until the point of maximum sensitivity is found.

(*c*) Check that the indicator pointer aligns with the dial using a 600 k.c. signal. If not reset pointer.

(*d*) Adjust set and generator to 1600 k.c. and align capacitors, items 6 and 5 for maximum output.



World Radio History

Alignment Data
Models 511 and 414

To secure full advantage of the performance characteristics of this receiver, any realignment necessary should be carried out carefully. A reliable test oscillator or signal generator, and also an output meter should be employed.

I.F. ALIGNMENT:

(a) Set the signal generator at 463 K.C., and connect its output through an 0.1 mf. capacitor to the grid cap of the first detector (type 6A8 or 6A8G) tube. Set the receiver dial at about 600 K.C.

(b) Sensitivity and selectivity depend greatly upon the regeneration control trimmer, item 27. The set should be allowed to operate and heat up for half an hour at least before attempting adjustments. If possible, the line voltage should be raised to 125 volts to make sure that trouble will not occur subsequently if the line voltage rises to such values.

First unscrew trimmer, item 27, and then adjust trimmers, items 18 and 19, for maximum output.

(c) Screw in the regeneration control trimmer, item 27. The further this capacitance is increased the greater is the sensitivity. However, a limit is set by approach to a condition of instability and oscillation. Unless the line voltage is high, as noted above, the adjustment should be backed off from this optimum point to insure against instability developing later with the set in use.

(d) Reduce the output from the signal generator to as low a value as will give an output reading, and check the adjustments of trimmers, items 18 and 19. Both should peak properly.

R.F. ALIGNMENT:

(a) With the gang all in, check the position of the pointer. It should line up with the .53 mc. calibration.

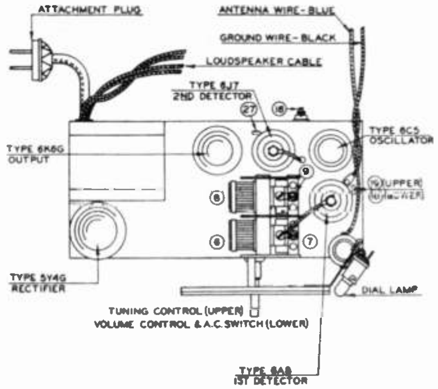
(b) Couple the signal generator to the antenna lead through a 100 mmf. mica capacitor. Connect the ground lead (black) to ground.

(c) Set the signal generator and the receiver at 1600 kilocycles. Adjust the trimmer, item 9, to bring in the signal.

(d) Adjust trimmer, item 7, for maximum output.

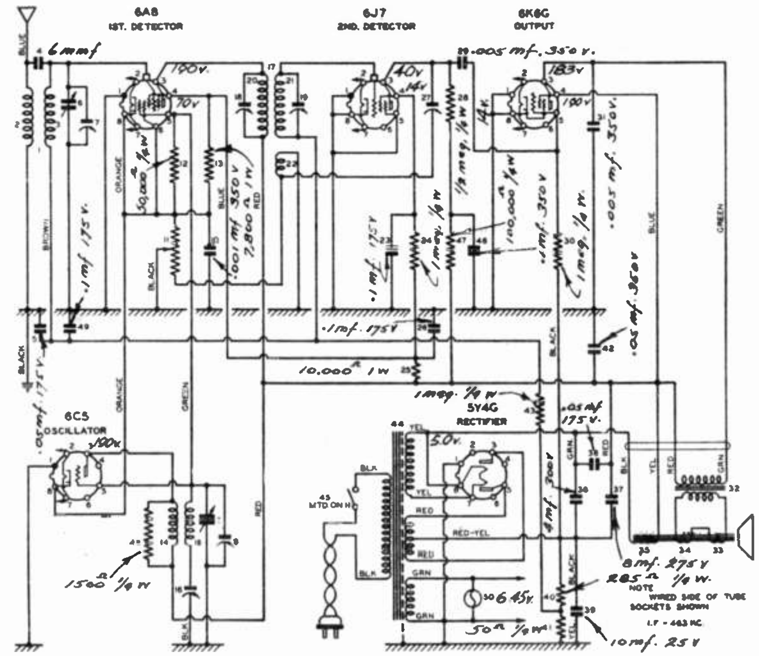
(e) Set the generator at 600 kilocycles, and tune the receiver to the signal. Adjust the lagging trimmer, item 16, for maximum output, while rocking the gang.

(f) Recheck at 1600 kilocycles.

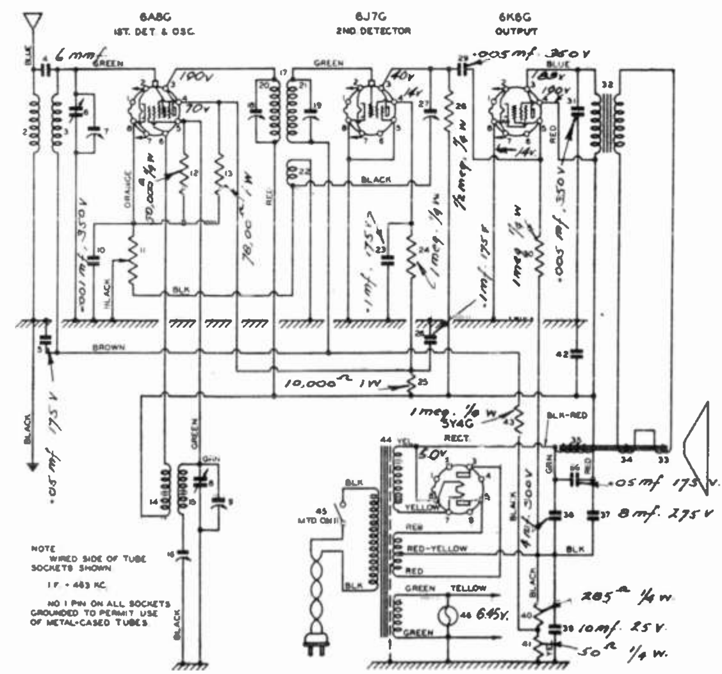


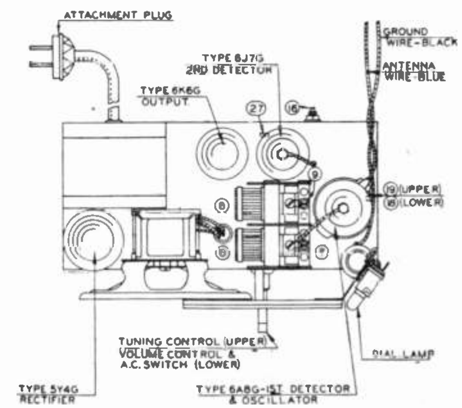
Model 511—Chassis Layout showing Aligning Positions.

Model 511
1936-37
I.F. = 463Kc.



Model 414
1936-37
I.F. = 463 Kc





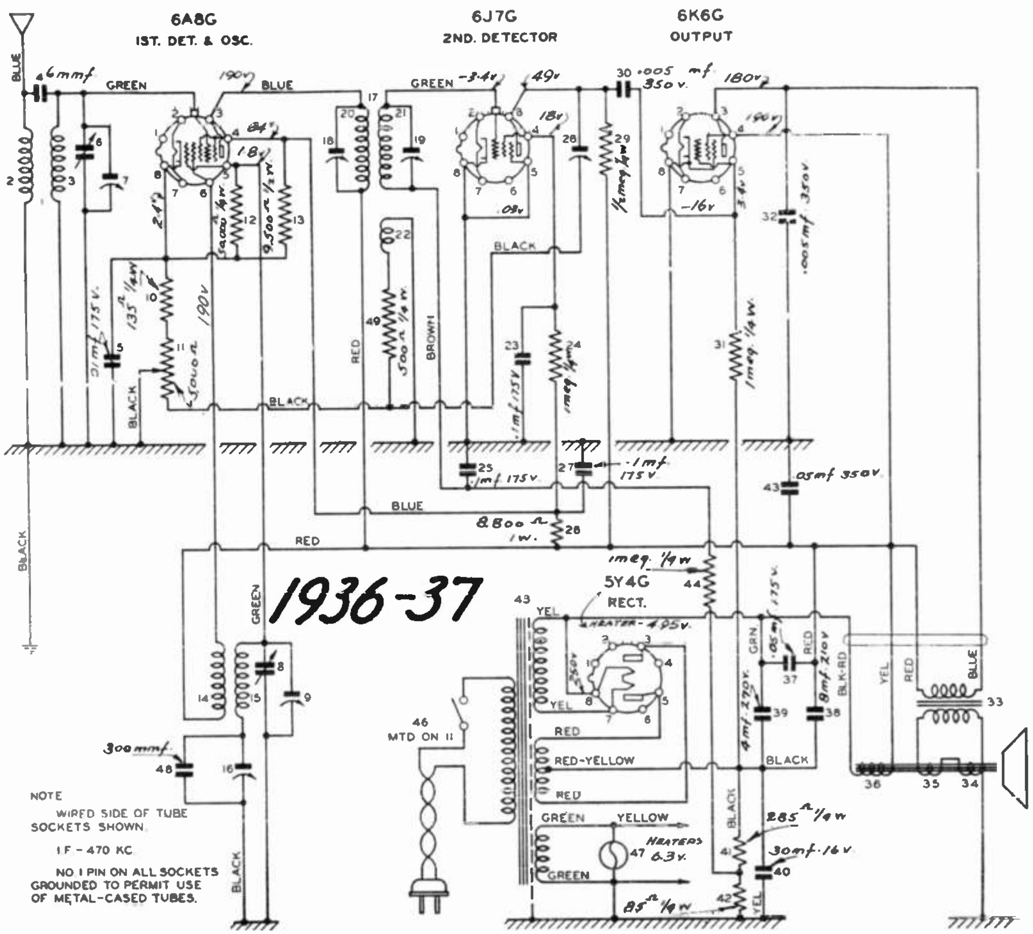
Model 414—Chassis Layout showing Aligning Positions.

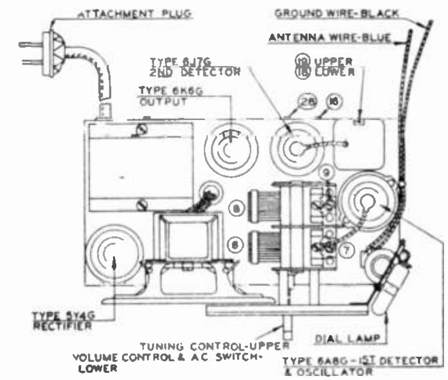
DATA SHEET COURTESY- NORTHERN ELECTRIC-29 Co. LTD.

World Radio History

DATA SHEET

COURTESY- NORTHERN ELECTRIC CO. LTD. -29a





I.F. = 470 K.C.

REALIGNING INSTRUCTIONS

To secure full advantage of the performance characteristics of this receiver, any realignment necessary should be carried out carefully. A reliable test oscillator or signal generator, and also an output meter should be employed.

I.F. ALIGNMENT:

(*a*) Set the signal generator at 470 k.c. and connect its output through an 0.1 mf. capacitor to the grid cap of the first detector (type 6A8G) tube. Set the receiver dial at about 600 k.c.

MODEL-422 "BALMORAL"

(*b*) Sensitivity and selectivity depend greatly upon the regeneration control trimmer, item 28. The set should be allowed to operate and heat up for half an hour at least before attempting adjustments. If possible, the line voltage should be raised to 125 volts to make sure that trouble will not occur subsequently if the line voltage rises to such values.
First unscrew trimmer, item 28, and then adjust trimmers, items 18 and 19, for maximum output.

(*c*) Screw in the regeneration control trimmer, item 28. The further this capacitance is increased the greater is the sensitivity. However, a limit is set by approach to a condition of instability and oscillation. Unless the line voltage is high, as noted above, the adjustment should be backed off from this optimum point to insure against instability developing later with the set in use.

(*d*) Reduce the output from the signal generator to as low a value as will give an output reading, and check the adjustments of trimmers, items 18 and 19. Both should peak properly.

R.F. ALIGNMENT:

(*a*) With the gang all in, check the position of the pointer. It should line up with the .52 mc. calibration.

(*b*) Couple the signal generator to the antenna lead through a 100 mmf. mica capacitor. Connect the ground lead (black) to ground.

(*c*) Set the signal generator and the receiver at 1600 kilocycles. Adjust the trimmer, item 9, to bring in the signal.

(*d*) Adjust trimmer, item 7, for maximum output.

(*e*) Set the generator at 600 kilocycles, and tune the receiver to the signal. Adjust the lagging trimmer, item 16, for maximum output, while rocking the gang.

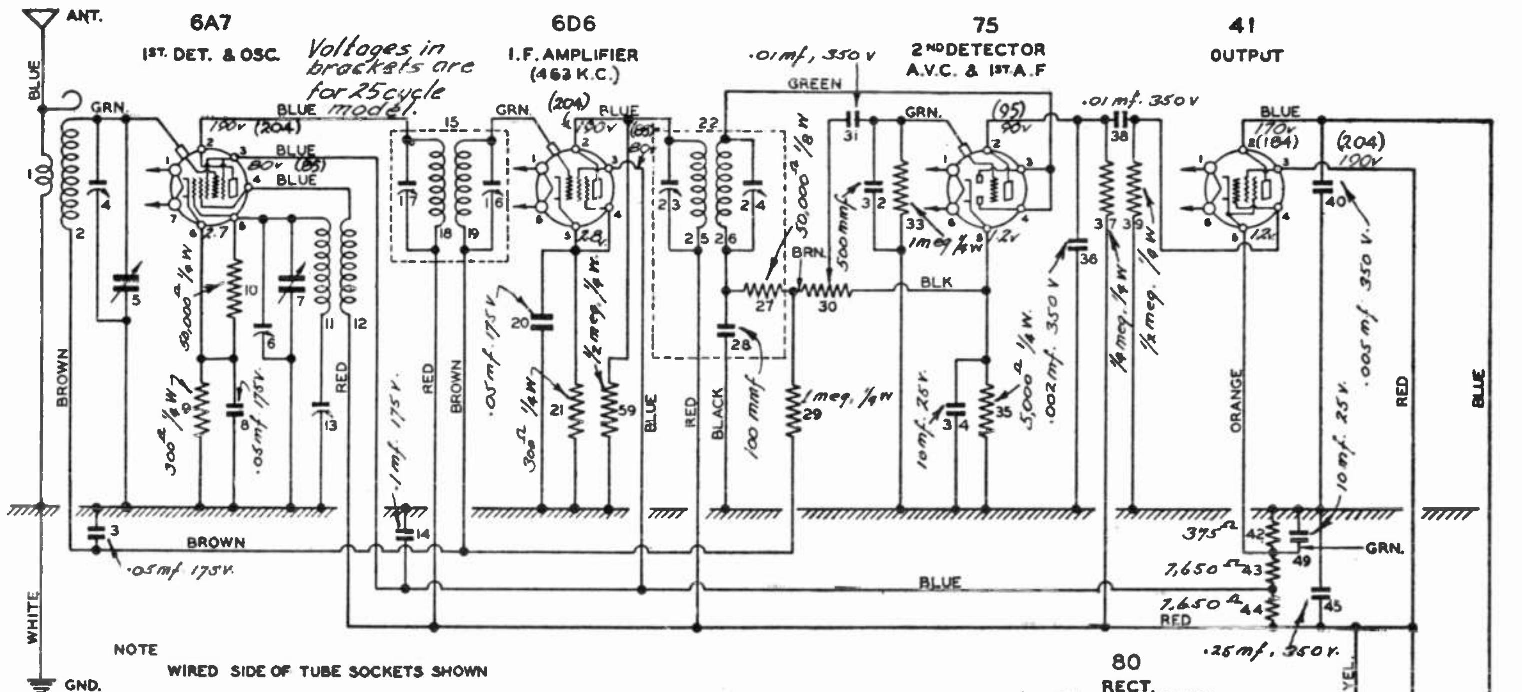
(*f*) Recheck at 1600 kilocycles.

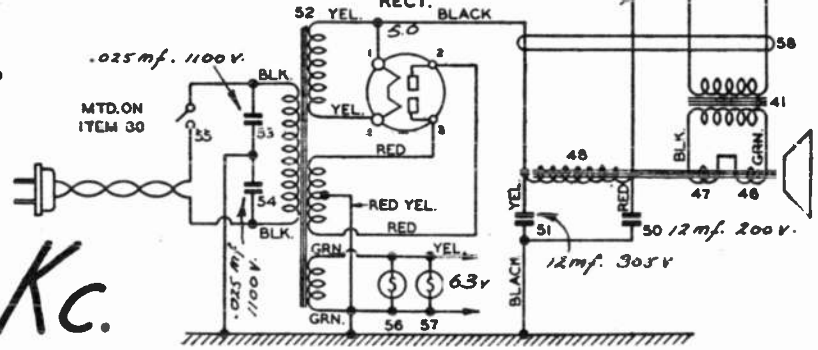
World Radio History

Models 510-512

DATA SHEET NORTHERN ELECTRIC-30

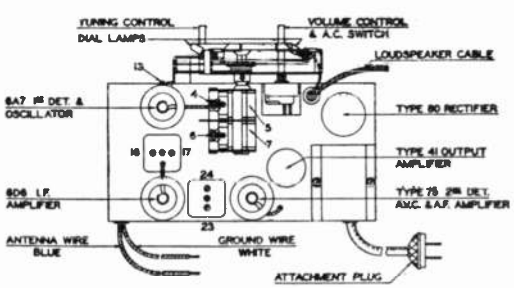
COURTESY- NORTHERN ELECTRIC Co. LTD.





1936-37

I.F.=463Kc.



REALIGNING INSTRUCTIONS

To secure full advantage of performance characteristics of this receiver, any re-alignment necessary should be carried out carefully. A reliable test oscillator or signal generator should be used with an output meter.

I. F. ALIGNMENT:

(*a*) Set the generator at 463 kc. and connect the output through an 0.1. mf. capacitor to the grid of the first detector, type 6A7 model

(*b*) Adjust trimmers 16, 17, 23 and 24 for maximum output.

(*c*) Reduce the output from the signal generator to as low a value as will give an output reading, and check the adjustments. All trimmers should peak properly.

R. F. ALIGNMENT:

(*a*) Connect the signal generator to the antenna lead of the set through a 100 mmf. (.0001 mf.) mica capacitor.

(*b*) Adjust the signal generator and the receiver to 1400 kc. Adjust trimmers 4 and 6 for maximum output.

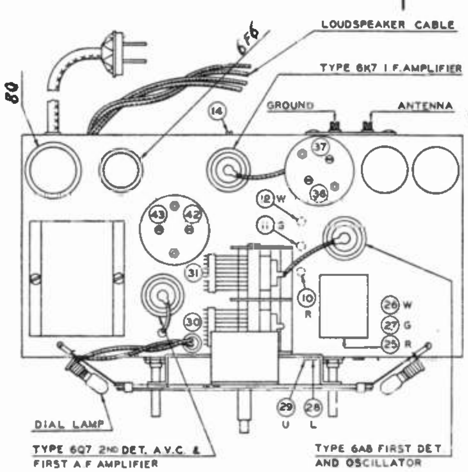
(*c*) Set generator and receiver at 600 kc., and adjust trimmer 13, at the same time slowly rocking the tuning capacitor back and forth until the point of maximum sensitivity is found.

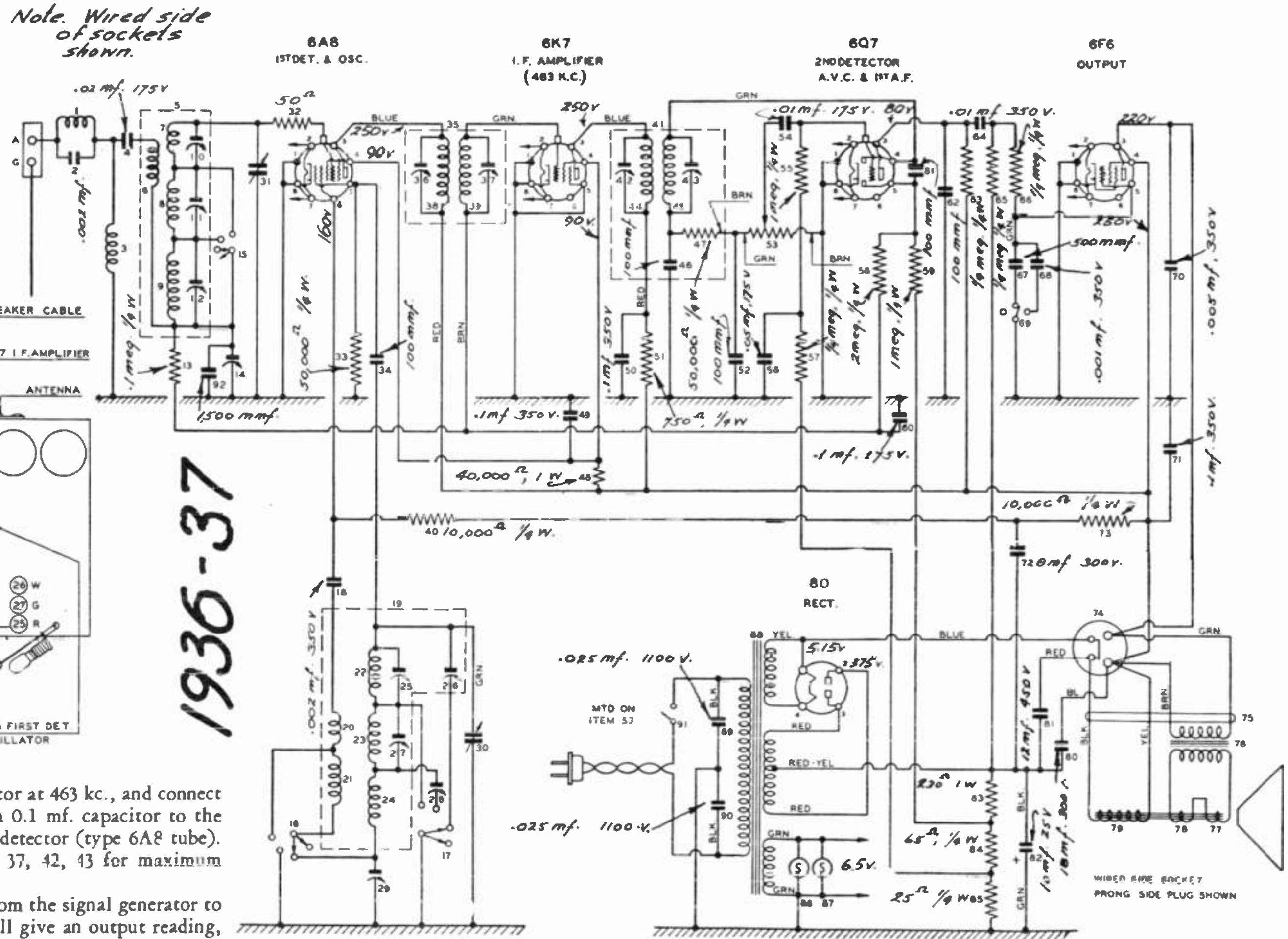
World Radio History

Models 514-515

I.F: 463Kc.

1936-37





I. F. ALIGNMENT:

(*a*) Set the signal generator at 463 kc., and connect its output through a 0.1 mf. capacitor to the grid cap of the first detector (type 6A8 tube).

(*b*) Adjust trimmers 36, 37, 42, 43 for maximum output.

(*c*) Reduce the output from the signal generator to as low a value as will give an output reading, and check the adjustments. Volume control of receiver should be adjusted to maximum for all alignment. All trimmers should peak properly.

R. F. ALIGNMENT—SHORT-WAVE, OR RED BAND:

(*a*) Check position of pointer with gang all in. It should be about 1/16 inch below the 1700 kc end of the police band calibration.

(*b*) Couple the signal generator to the first detector grid through a 400 ohm carbon resistor, and connect the ground terminal to ground.

(*c*) Set the generator and receiver at 15.0 megacycles. Adjust the oscillator trimmer, item 25, to bring in the signal. (Make sure the correct peak is obtained and not that due to the image, with the gang turned out more.)

(*d*) Adjust the antenna trimmer, item 10, while rocking the gang back and forth.

(*e*) Set the generator at 6.0 megacycles and tune the receiver to it. Adjust lagging capacitor, item 14, (connected to the antenna coil) for maximum output.

(*f*) Recheck at 15.0 megacycles.

POLICE AND AVIATION, OR GREEN BAND:

(*a*) Using the same 400 ohm dummy antenna, set the generator and receiver at 4.8 megacycles. Adjust the oscillator trimmer, item 27, to bring in the signal. (The wrong peak, due to the image, is now that with the gang turned farther in than for the correct one.)

(*b*) Adjust the antenna trimmer, item 11, for maximum output, while rocking the gang.

(*c*) Set the generator at 1.7 megacycles and tune the receiver to it. Adjust trimmer, item 11, for maximum output.

(*d*) Recheck at 4.8 megacycles.

BROADCAST, OR SILVER-GRAY BAND:

(*a*) Replace the 400 ohm resistor in the generator lead with a 200 mmf. mica capacitor.

(*b*) Set the generator at 1400 kilocycles and the receiver at 1.4 megacycles. Adjust oscillator trimmer, item 26, to bring in the signal.

(*c*) Adjust the antenna trimmer, item 12, for maximum output.

(*d*) Set the generator at 600 kilocycles, and tune the receiver to the signal. Adjust the lagging trimmer, item 29, for maximum output, while rocking the gang.

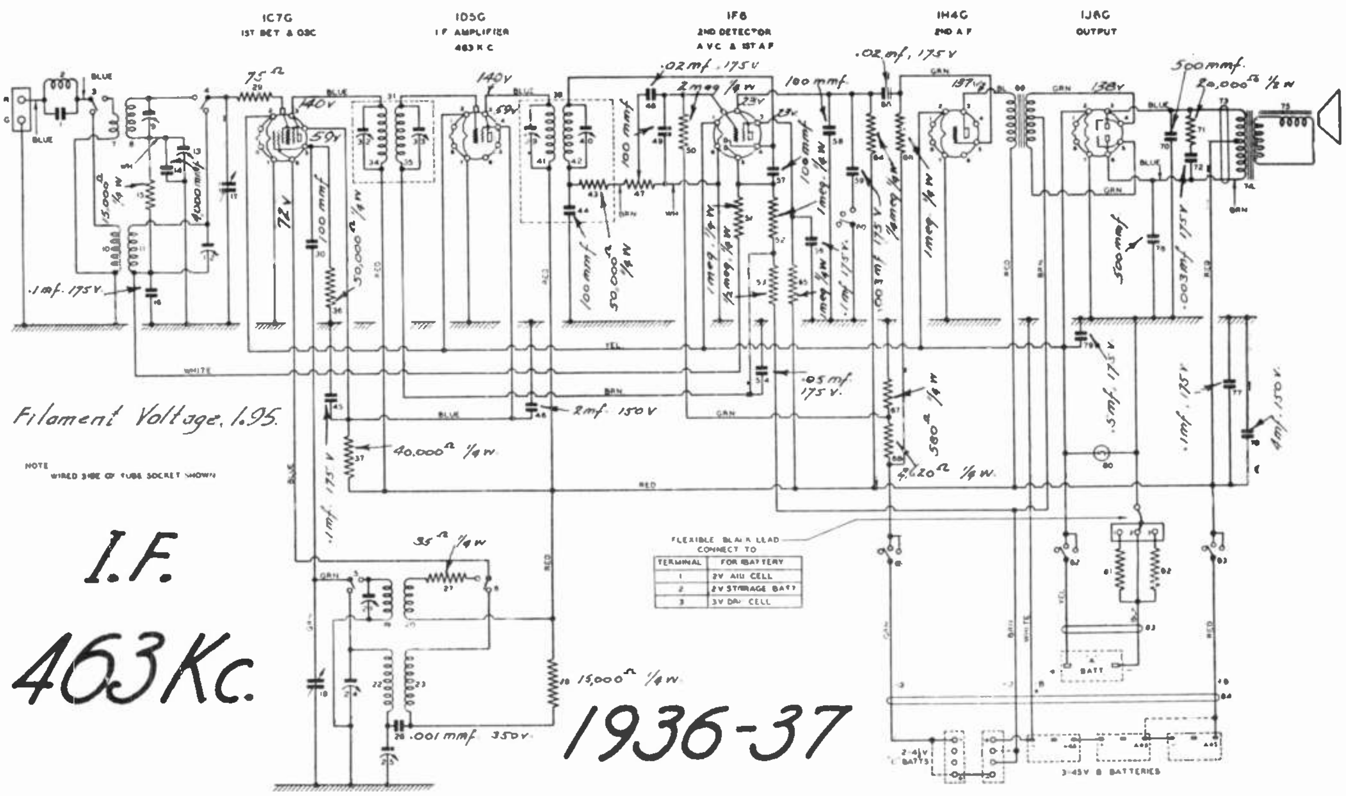
(*e*) Recheck at 1400 kilocycles.

NOTE: If trimmer, item 26, is changed greatly while adjusting the broadcast band, the oscillator settings at 4.8 and 15.0 megacycles will change slightly. Therefore, these two points should be rechecked after the broadcast band has been aligned.

DATA SHEET

COURTESY—NORTHERN ELECTRIC-31 CO. LTD.

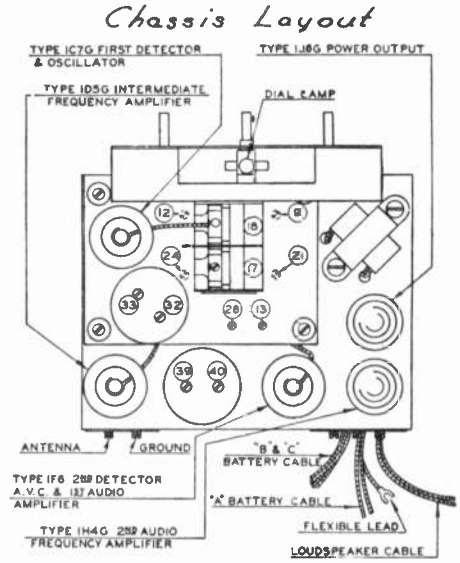
World Radio History



Models 516-517

Battery Operated

Chassis Layout



ALIGNMENT DATA

To secure full advantage of the performance characteristics of these receivers, any re-alignment necessary should be carried out carefully. A reliable test oscillator or signal generator should be used, and an output meter. Oscillators employing harmonics for the high frequency band should not be used.

I.F. ALIGNMENT:

(*a*) Set the generator at 463 k.c., and connect its output through an 0.1 mf capacitor to the grid of the type 1C7G, first detector tube.

(*b*) Adjust trimmer capacitors, items 32, 33, 39 and 40 for maximum output.

(*c*) Reduce the output from the signal generator to as low a value as will give an output reading from the receiver, and check the adjustments. All trimmers should peak properly.

R.F. ALIGNMENT—BROADCAST BAND:—

(*a*) Connect the output of the signal generator to the antenna terminal through a 100 mmf. mica capacitor. Connect ground terminal to ground.

(*b*) Check that the indicator is at the small mark at the end of the short wave-band when the gang is turned all in.

(*c*) Set the signal generator and adjust the set to 1600 kilocycles. Adjust trimmer, item 24, to bring in the signal. Then adjust trimmer, item 12, for maximum sensitivity.

(*d*) Set generator at 600 k.c. and tune the receiver to it. Adjust trimmer, item 25, for maximum sensitivity while rocking the gang.

(*e*) Recheck at 1600 k.c.

R.F. ALIGNMENT—SHORT-WAVE BAND:—

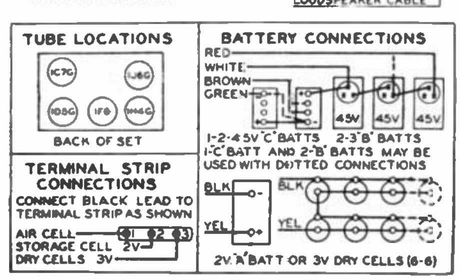
(*a*) Substitute a 400 ohm resistor in place of the capacitor in the lead from the signal generator.

(*b*) Set the signal generator and the receiver at 15 megacycles. Adjust the trimmer, item 21, to bring the signal in. (Make sure that the set is not tuned to the image frequency, which should come in with signal generator at approximately 14.1 m.c.)

(*c*) Adjust trimmer, item 9, for maximum sensitivity while rocking the gang.

(*d*) Set the generator at 6.0 m.c., and tune the receiver to the signal. Adjust trimmer, item 13, for maximum response.

(*e*) Recheck at 15.0 m.c.

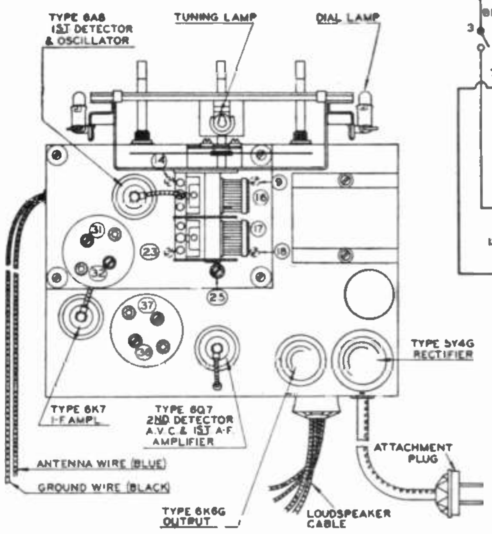


DATA SHEET

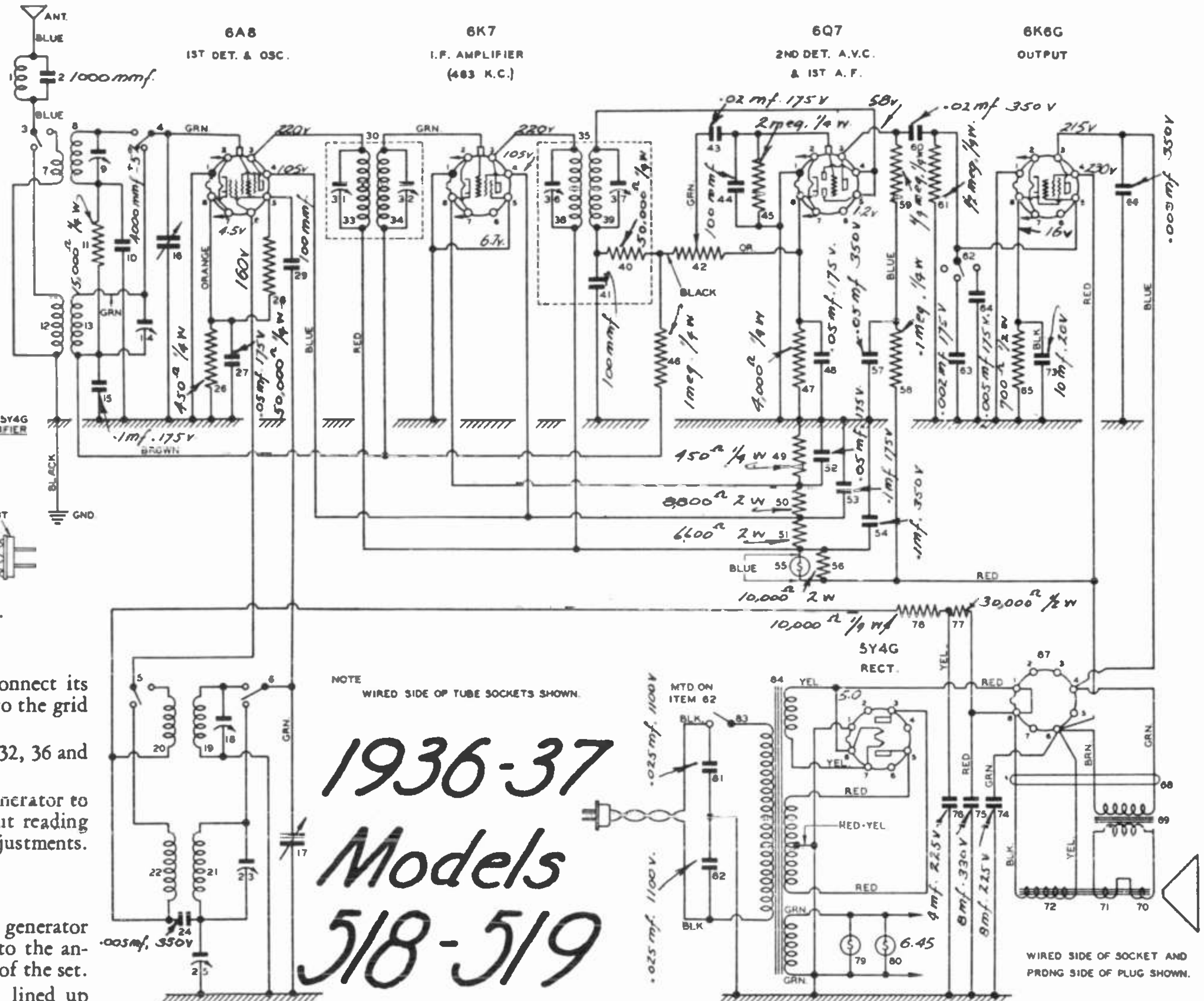
COURTESY - NORTHERN ELECTRIC Co. LTD. -32

World Radio History

I.F. 463 Kc.



Chassis Layout showing Top Aligning Positions.



I.F. ALIGNMENT:

(*a*) Set the generator at 463 kc., and connect its output through a 0.1 mf. capacitor to the grid of the type 6A8, first detector tube.

(*b*) Adjust trimmer capacitors, items 31, 32, 36 and 37 for maximum output.

(*c*) Reduce the output from the signal generator to as low a value as will give an output reading from the receiver, and check the adjustments. All trimmers should peak properly.

R.F. ALIGNMENT—BROADCAST BAND:

(*a*) Connect the output of the signal generator through a 100 mmf. mica capacitor to the antenna lead. Ground the ground lead of the set.

(*b*) Check that the indicator pointer is lined up with the small mark at the end of the short-wave-band calibration when the gang is turned all in. The pointer is of the push-on type and can be forced around as required.

(*c*) Set the signal generator and set at 1600 kilocycles. Adjust trimmer, item 23, to bring in the signal. Then adjust trimmer, item 14, for maximum sensitivity.

(*d*) Set the generator at 600 kc., and tune the receiver to it. Adjust trimmer, item 25, while rocking the gang, for maximum sensitivity.

(*e*) Recheck at 1600 kc.

R.F. ALIGNMENT—SHORT-WAVE BAND:

(*a*) Substitute a 400-ohm resistor in place of the capacitor in the lead from the signal generator.

(*b*) Set the signal generator and the receiver at 15 megacycles. Adjust the trimmer, item 18, to bring in the signal. (Make sure that the set is not tuned to the image frequency, which should come in with the signal generator set at approximately 14.1 mc.)

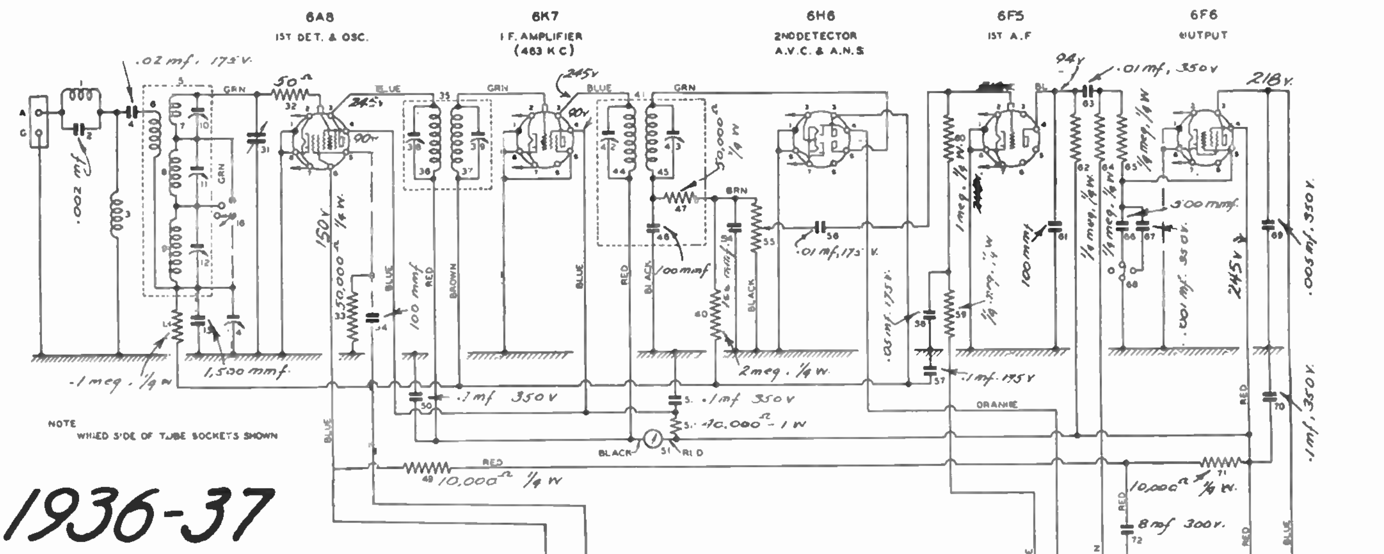
(*c*) Adjust trimmer, item 9, for maximum sensitivity while rocking the gang.

(*d*) Since the lag capacitor, item 10, is fixed, it is unnecessary to lag at the low frequency end.

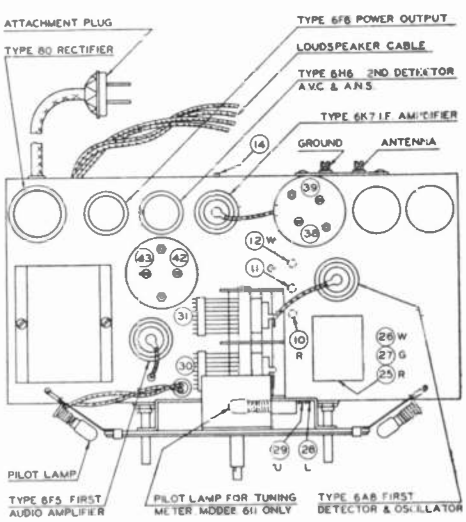
DATA SHEET

COURTESY— NORTHERN ELECTRIC-33 CO. LTD.

World Radio History



1936-37



Chassis Layout showing Aligning Positions.

I.F. = 463 Kc.

Models 610-611

REALIGNING INSTRUCTIONS

To secure full advantage of the performance characteristics of this receiver, any realignment necessary should be carried out carefully. A reliable test-oscillator or signal generator should be employed, and an output meter. (Do not use an oscillator that relies on harmonics to cover the short-wave bands.)

I. F. ALIGNMENT:

(*a*) Set the signal generator at 463 kc., and connect its output through a 0.1 mf. capacitor to the grid cap of the first detector (type 6A8 tube).

(*b*) Adjust trimmers 36, 37, 42, 43 for maximum output.

(*c*) Reduce the output from the signal generator to as low a value as will give an output reading, and check the adjustments. All trimmers should peak properly.

R. F. ALIGNMENT—SHORT-WAVE, OR RED BAND:

(*a*) Check position of pointer with gang all in. It should be about 1-16 inch below the 1700 kc end of the police band calibration.

(*b*) Couple the signal generator to the first detector grid through a 400 ohm resistor, and connect the ground terminal to ground.

(*c*) Set the generator and receiver at 15.0 megacycles. Adjust the oscillator trimmer, item 25, to bring in the signal. (Make sure the correct peak is obtained and not that due to the image with the gang turned out more.)

(*d*) Adjust the antenna trimmer, item 10, while rocking the gang back and forth.

(*e*) Set the generator at 6.0 megacycles and tune the receiver to it. Adjust lagging capacitor, item 14, (connected to the antenna coil) for maximum output.

(*f*) Recheck at 15.0 megacycles.

POLICE AND AVIATION, OR GREEN BAND:

(*a*) Using the same 400 ohm dummy antenna, set the generator and receiver at 4.8 megacycles. Adjust the oscillator trimmer, item 27, to bring in the signal. (The wrong peak, due to the image, is now that with the gang turned further in than for the correct one.)

(*b*) Adjust the antenna trimmer, item 11, for maximum output, while rocking the gang.

(*c*) Set the generator at 1.7 megacycles and tune the receiver to it. Adjust trimmer, item 11, for maximum output.

(*d*) Recheck at 4.8 megacycles.

BROADCAST, OR SILVER-GRAY BAND:

(*a*) Replace the 400 ohm resistor in the generator lead with a 200 mmf mica capacitor.

(*b*) Set the generator at 1400 kilocycles and the receiver at 1.4 megacycles. Adjust oscillator trimmer, item 26, to bring in the signal.

(*c*) Adjust the antenna trimmer, item 12, for maximum output.

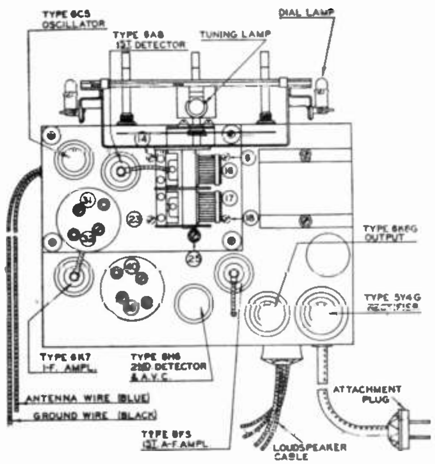
(*d*) Set the generator at 600 kilocycles, and tune the receiver to the signal. Adjust the lagging trimmer, item 29, for maximum output, while rocking the gang.

(*e*) Recheck at 1400 kilocycles.

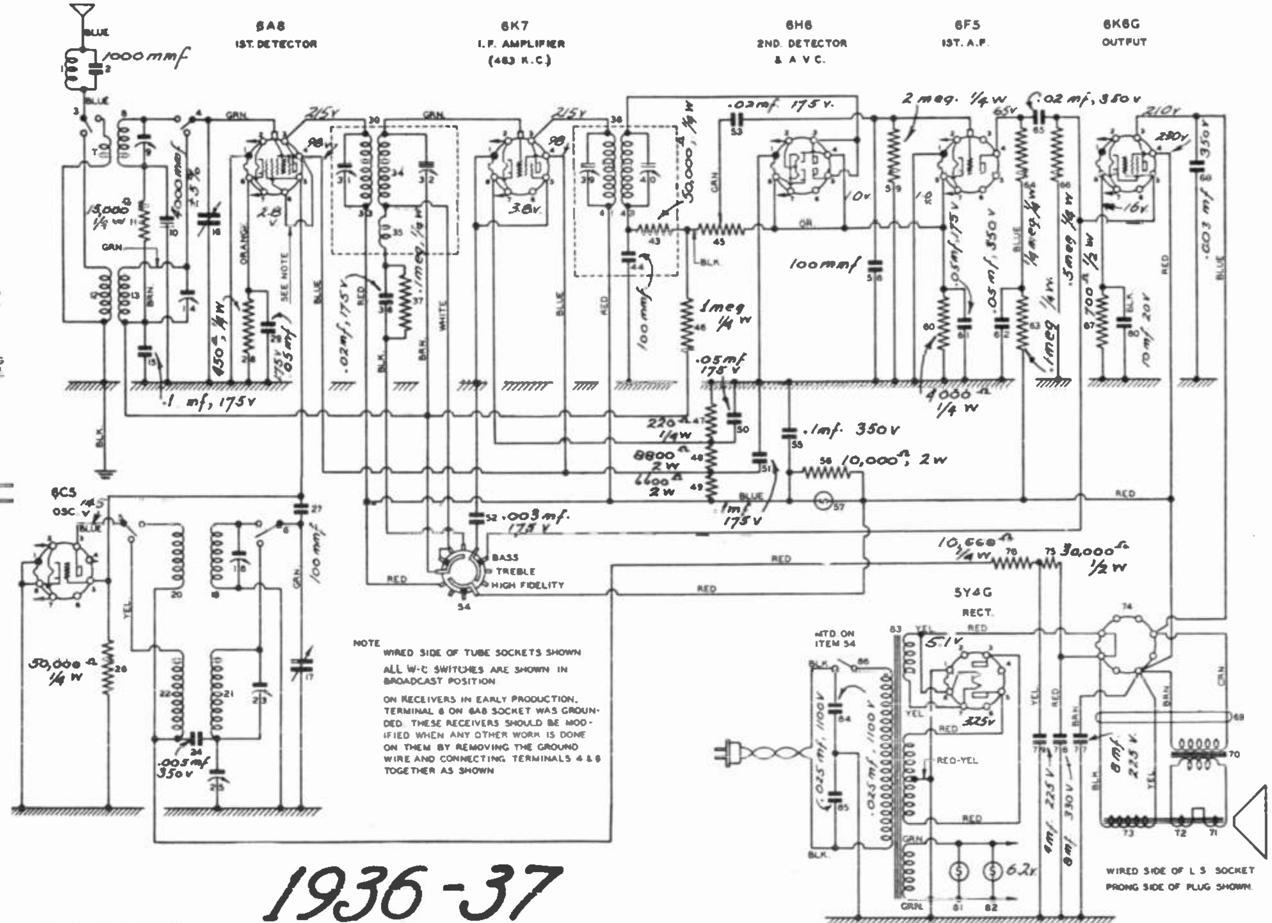
NOTE: If trimmer, item 26, is changed greatly while adjusting the broadcast band, the oscillator settings at 4.8 and 15.0 megacycles will change slightly. Therefore, these two points should be rechecked after the broadcast band has been aligned.

World Radio History

I.F.=463Kc.



Chassis Layout showing Top Aligning Positions.



1936-37

I-F ALIGNMENT:

(*a*) Set the wave-change switch in the broadcast position, with the gang closed, and the fidelity switch in the normal (contracted-selectivity) position. Accuracy in setting the signal generator to the required intermediate frequency of 463 k.c. is essential to ensure good tracking of the i-f and r-f circuits. Couple the output of the generator through a 0.1 mf. capacitor to the grid cap of the first detector (type 6A8) tube.

(*b*) The first i-f transformer has a single sharp response in the contracted selectivity position. The second, by itself, has a broader response with two peaks and a small dip in between. Re-alignment can be carried out in the usual manner, the double peaking being masked in the composite response of the two transformers. Adjust trimmers, items 31, 32, 39 and 40 for maximum response.

(*c*) Reduce the output from the signal generator to as low a value as will give an output reading and check the adjustments. All trimmers should peak properly.

(*d*) Set the fidelity control in the "high-fidelity" (expanded-selectivity) position. If the adjustments previously made are correct, as the signal generator frequency is varied a few kilocycles on either side of 463 k.c. the output from the receiver should remain nearly constant, due to the flat-top band-pass characteristics, and then should drop off fairly abruptly and symmetrically for frequencies further above and below.

R.F. ALIGNMENT:

(*a*) Connect the output of the signal generator through a 100 mmf. mica capacitor to the antenna lead. Ground the ground lead of the set.

(*b*) Check that the indicator pointer is lined up with the small mark at the end of the short-wave-band calibration when the gang is turned all in. The pointer is of the push-on type and can be forced around as required.

(*c*) Set the signal generator and set at 1600 kilocycles. Adjust trimmer, item 23, to bring in the signal. Then adjust trimmer, item 14, for maximum sensitivity.

(*d*) Set the generator at 600 k.c., and tune the receiver to it. Adjust trimmer, item 25, while rocking the gang, for maximum sensitivity.

(*e*) Recheck at 1600 k.c.

R.F. ALIGNMENT—SHORT-WAVE BAND:

(*a*) Substitute a 400-ohm resistor in place of the capacitor in the lead from the signal generator.

(*b*) Set the signal generator and the receiver at 15 megacycles. Adjust the trimmer, item 18, to bring in the signal. (Make sure that the set is not tuned to the image frequency, which should come in with the signal generator set at approximately 14.1 mc.).

(*c*) Adjust trimmer, item 9, for maximum sensitivity while rocking the gang.

(*d*) Since the lag capacitor, item 10, is fixed, it is unnecessary to lag at the low frequency end.

Models 713 & 721

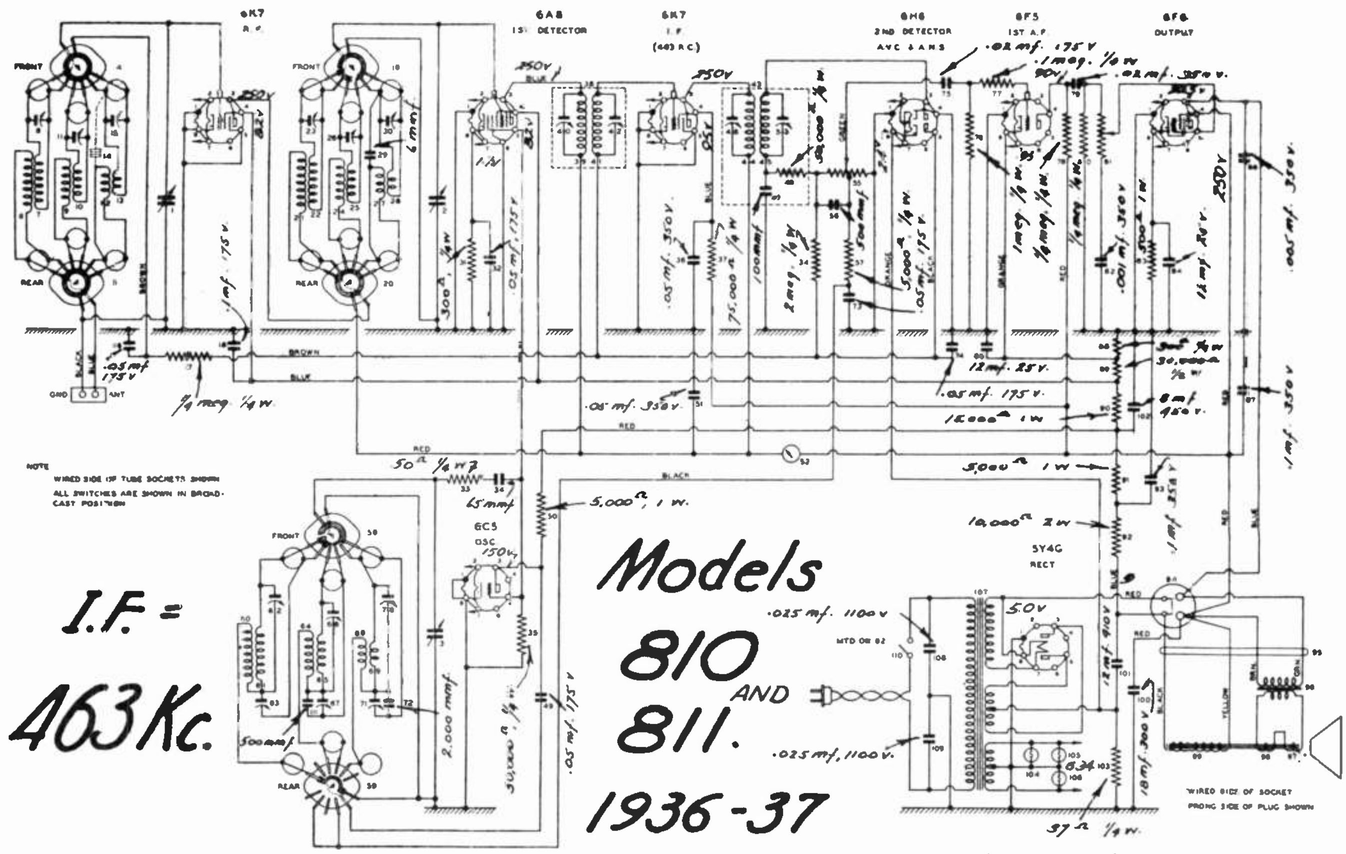
DATA SHEET

COURTESY — NORTHERN ELECTRIC CO. LTD. — 35

World Radio History

I.F. = 463 Kc.

Models 810 and 811. 1936-37



I.F. ALIGNMENT:

(*a*) Set the signal generator at 463 K.C., and connect its output through a 0.1 mf. capacitor to the grid cap of the first detector (type 6A8) tube.

(*b*) Adjust trimmers, items numbers 53, 46, 42 and 40, for maximum output, with the wave-change switch in the broadcast position and the gang closed.

(*c*) Reduce the output from the signal generator to as low a value as will give an output reading and check the adjustments. All trimmers should peak properly.

R.F. ALIGNMENT—BROADCAST (SILVER-GRAY) BAND:

(*a*) Connect the output of the signal generator to the antenna terminal through a 200 mmf. mica capacitor. Connect the ground terminal to ground.

(*b*) Check that the main indicator pointer lines up with the lower ends of the amateur and 49 metre band markings on the dial scale when the gang is turned all in.

(*c*) Set the signal generator and the receiver at 1600 kilocycles. Adjust trimmer, item 62, to bring in the signal. Then adjust trimmers, items 23 and 8, for maximum sensitivity.

(*d*) Set the generator at 600 K.C., and tune the receiver to it Adjust trimmer, item 63, for maximum sensitivity while rocking the gang.

(*e*) Recheck at 1600 K.C

R.F. ALIGNMENT—POLICE AND AVIATION (GREEN) BAND:

(*a*) Substitute a 400 ohm. resistor in place of the capacitor in the lead from the signal generator.

(*b*) Set the generator and the receiver at 5.0 megacycles. Adjust trimmer, item 66, to bring the signal in. (Make sure that the set is not tuned to the image frequency, which should come in with the generator frequency reduced to approximately 4.37 mc.).

(*c*) Adjust trimmers, items 26 and 11, for maximum sensitivity while rocking the gang.

(*d*) Set the generator at 1.9 mc. and tune the set to the signal. Adjust trimmer, item 67, for maximum response while rocking the gang.

(*e*) Recheck at 5.0 mc.

R.F. ALIGNMENT—SHORT-WAVE (RED) BAND:

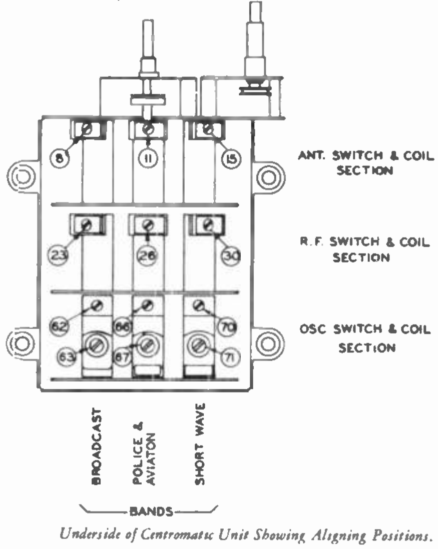
(*a*) With the signal generator still connected as for the police-aviation band, set the wave-change switch for the short-wave band.

(*b*) Set the signal generator and receiver at 16 megacycles and adjust the trimmer, item 70, to bring in the signal. (Make sure that the set is not tuned to the image frequency.)

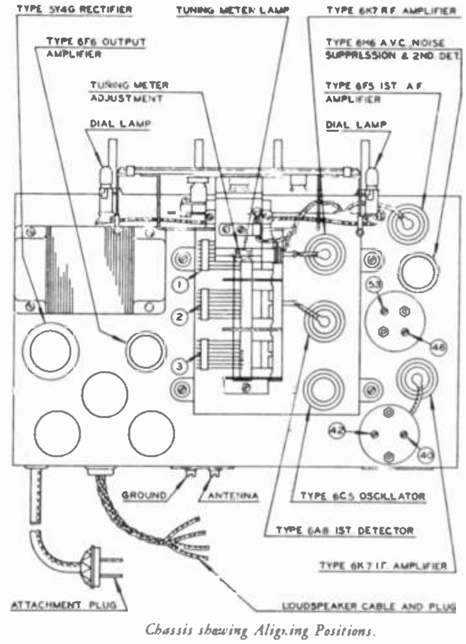
(*c*) Adjust trimmers, items 30 and 15, for maximum sensitivity while rocking the gang.

(*d*) Set the generator at 6 mc. and tune the set to the signal. Adjust trimmer, item 71, for maximum output while rocking the gang.

(*e*) Recheck at 16 mc.



Underside of Centromatic Unit Showing Aligning Positions.

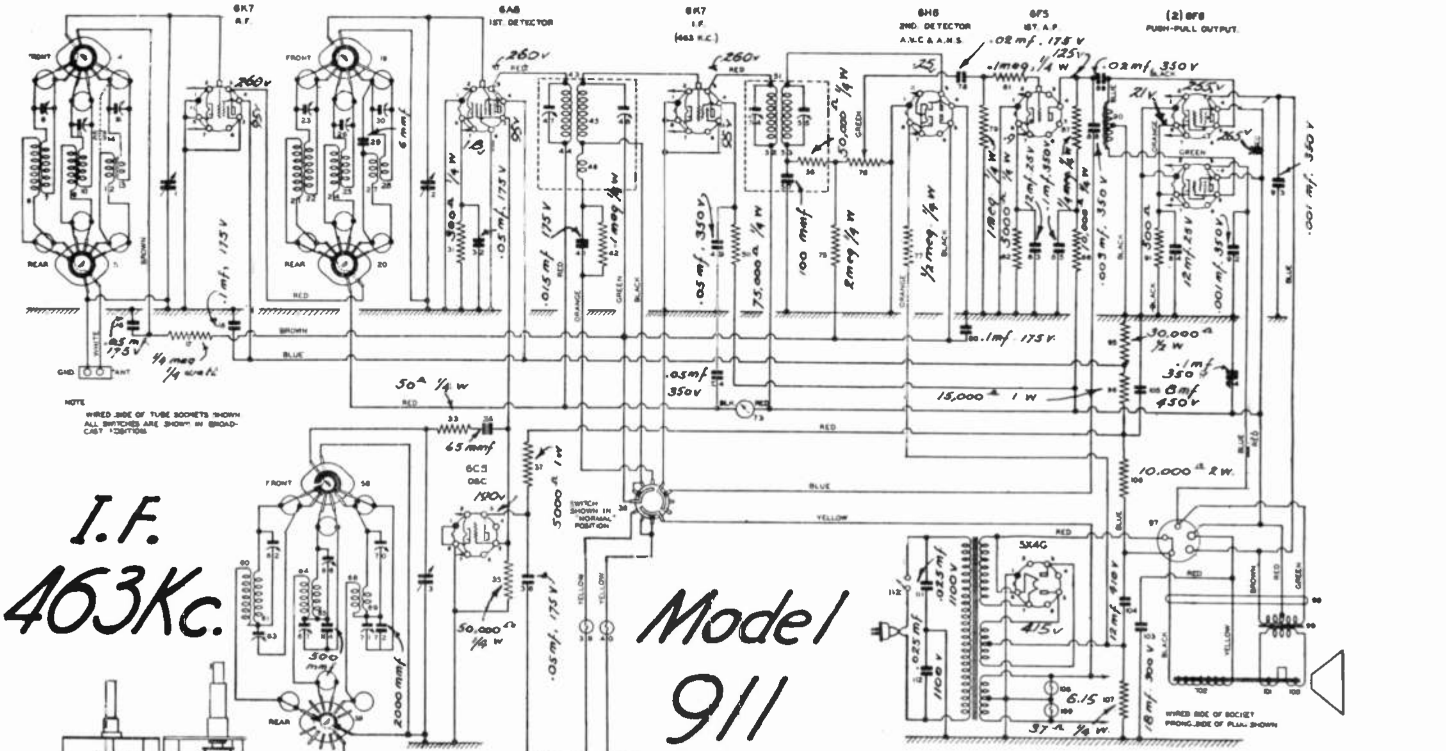


Chassis showing Aligning Positions.

DATA SHEET

Courtesy — NORTHERN ELECTRIC-36 Co. LTD.

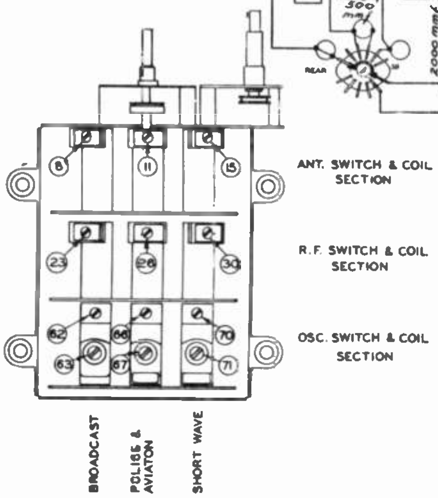
World Radio History



I.F. 463Kc.

Model 911

1936 -37



Underside of Centromatic Unit showing Aligning Positions.

I-F ALIGNMENT:

(*a*) Set the wave-change switch in the broadcast position with the gang closed, and fidelity switch in the normal (contracted-selectivity) position. Accuracy in setting the signal generator to the required intermediate frequency of 463 KC is essential to good tracking of the r-f and i-f circuits. Couple the output of the generator through an 0.1 mf capacitor to the grid cap of the first detector (type 6A8) tube.

(*b*) The first i-f transformer has a single sharp response (in the contracted-sensitivity position). The second, by itself, has a broader response with two peaks having a small dip in between. However, unless the trimmers are badly out of adjustment the re-alignment can be carried out in the usual manner, and this double peak will be masked in the composite response of the two transformers. Adjust trimmers, items 55, 54, 48 and 47 for maximum output.

(*c*) Reduce the output from the signal generator to as low a value as will give an output reading and check the adjustments. All trimmers should peak properly.

(*d*) Set the fidelity switch in the high-fidelity (expanded-selectivity) position. If the adjustments previously made are correct, as the generator output is varied a few kilocycles on either side of 463 KC the output should remain nearly constant due to the flat band-pass characteristic and then should drop off fairly abruptly and symmetrically for frequencies above and below

R-F ALIGNMENT—BROADCAST (SILVER-GRAY) BAND:

(*a*) Connect the output of the signal generator to the antenna terminal through a 200 mmf. mica capacitor. Connect the ground terminal to ground.

(*b*) Check that the main indicator pointer lines up with the lower ends of the amateur and 49 metre band markings on the dial scale when the gang is turned all in.

(*c*) Set the signal generator and the receiver at 1600 kilocycles. Adjust trimmer, item 62, to bring in the signal. Then adjust trimmers, items 23 and 8, for maximum sensitivity.

(*d*) Set the generator at 600 K.C., and tune the receiver to it. Adjust trimmer, item 63, for maximum sensitivity while rocking the gang.

(*e*) Recheck at 1600 K.C.

R-F ALIGNMENT—POLICE AND AVIATION (GREEN) BAND:

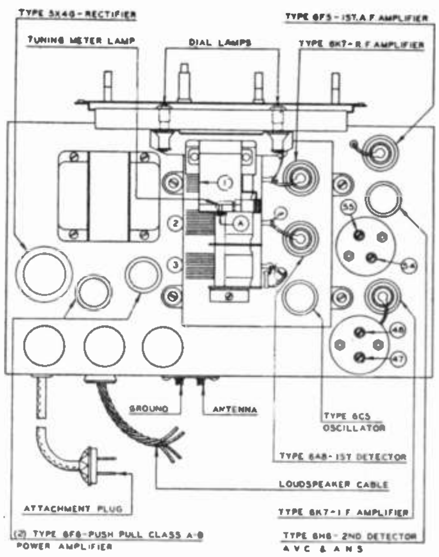
(*a*) Substitute a 400 ohm resistor in place of the capacitor in the lead from the signal generator.

(*b*) Set the generator and the receiver at 5.0 megacycles. Adjust trimmer, item 66, to bring the signal in. (Make sure that the set is not tuned to the image frequency, which should come in with the generator frequency reduced to approximately 4.37 m.c.).

(*c*) Adjust trimmer, items 26 and 11, for maximum sensitivity while rocking the gang.

(*d*) Set the generator at 1 9 m.c., and tune the set to the signal. Adjust trimmer, item 67, for maximum response while rocking the gang.

(*e*) Recheck at 5.0 m.c.



R-F ALIGNMENT—SHORT-WAVE (RED) BAND:

(*a*) With the signal generator still connected as for the police-aviation band, set the wave-change switch for the short-wave band.

(*b*) Set the signal generator and receiver at 16 megacycles and adjust the trimmer, item 70, to bring in the signal. (Make sure that the set is not tuned to the image frequency).

(*c*) Adjust trimmers, items 30 and 15, for maximum sensitivity while rocking the gang.

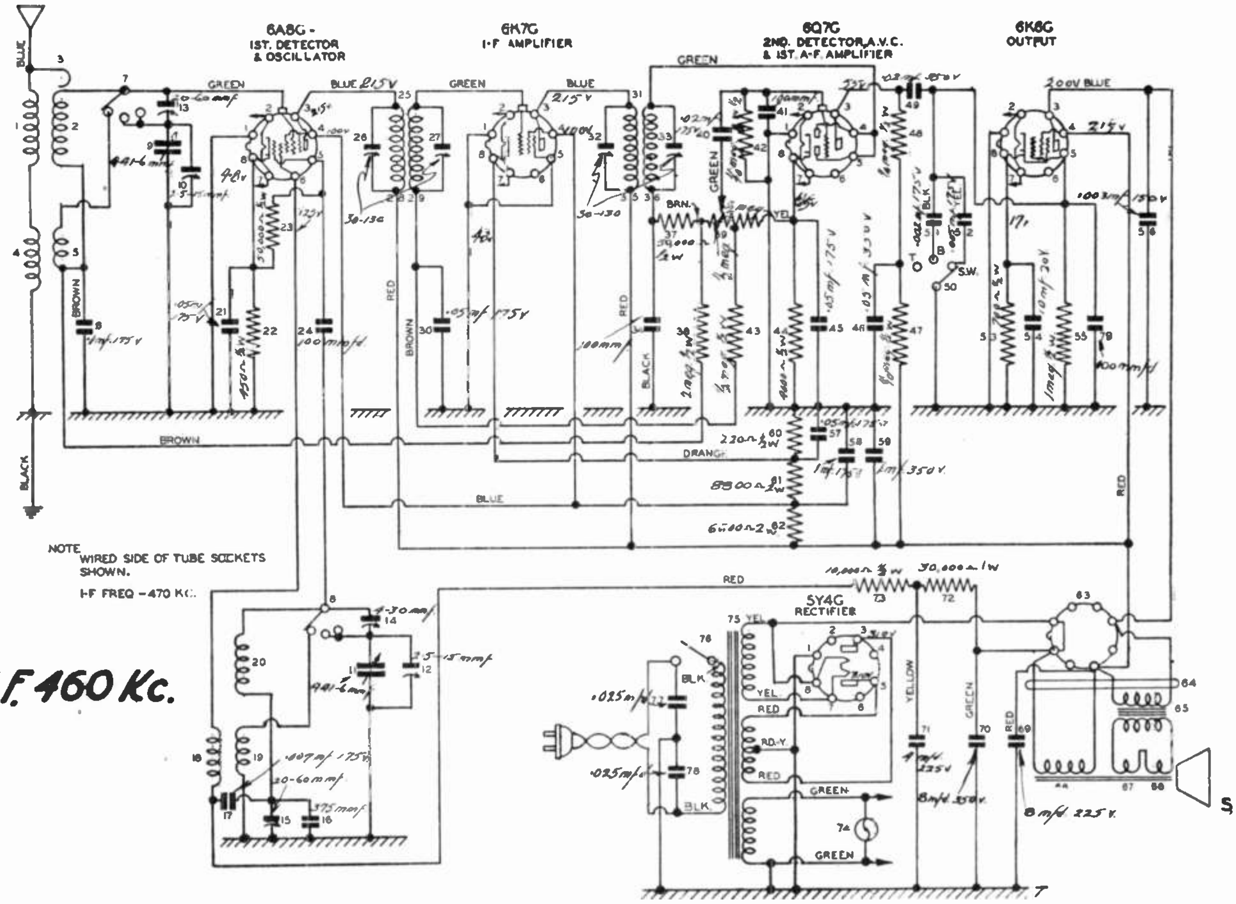
(*d*) Set the generator at 6 m.c., and tune the set to the signal. Adjust trimmer, item 71, for maximum output while rocking the gang.

(*e*) Recheck at 16 m.c.

DATA SHEET COURTESY - NORTHERN ELECTRIC Co. LTD. -37

DATA SHEET NORTHERN ELECTRIC-38

World Radio History



I.F. 460 Kc.

MODELS 520 - 521
1936-37

REALIGNING INSTRUCTIONS

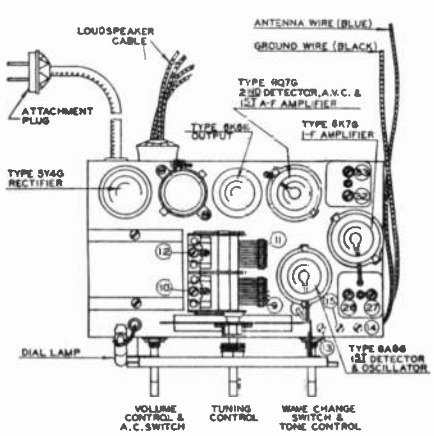


Figure 1.—Chassis Layout Showing Aligning Positions.

To secure full advantage of the performance characteristics of these receivers, any realignment necessary should be carried out carefully A reliable test oscillator or signal generator and also an output meter, should be employed. A signal generator utilising harmonics to cover the short-wave band should not be used.

I.F. ALIGNMENT:

(*a*) Set the signal generator to 470 k.c. and connect its output through a 0.1 mf. capacitor to the grid cap of the first detector (type 6A8G tube). Set the receiver dial to about 600 k.c. and turn the wave change switch to the broadcast position.

(*b*) Adjust trimmers, items 26, 27, 32 and 33 for maximum output.

(*c*) Reduce the output from the generator to as low a value as will give an output reading and check the adjustments. All trimmers should peak properly.

R.F. ALIGNMENT—BROADCAST BAND:

(*a*) With the gang all in check the position of the pointer It should line up with the end of the calibration line. Put the wave-change switch in broadcast position.

(*b*) Couple the signal generator to the antenna (blue) lead through a 100 mmf. mica capacitor. Connect the ground (black) lead to ground.

(*c*) Set the generator and receiver to 1600 k.c. Adjust trimmer, item 12, to bring in the signal and then adjust timmer, item 10, for maximum sensitivity.

(d) Set the generator to 600 k.c. and tune the receiver to it. Adjust trimmer, item 15, at the same time rocking the gang, until maximum sensitivity is obtained.

(*e*) Recheck at 1600 k.c.

R.F. ALIGNMENT—SHORT-WAVE BAND:

(*a*) Substitute a 400 ohm carbon resistor in place of the capacitor in the lead from the signal generator. Turn the wave-change switch to the short-wave position.

(*b*) Set the receiver and generator to 9.0 megacycles and adjust trimmer, item 14, to bring in the signal.

(*c*) Set generator and receiver to 9.4 megacycles and adjust trimmer, item 13, at the same time rocking the gang until maximum sensitivity is obtained.

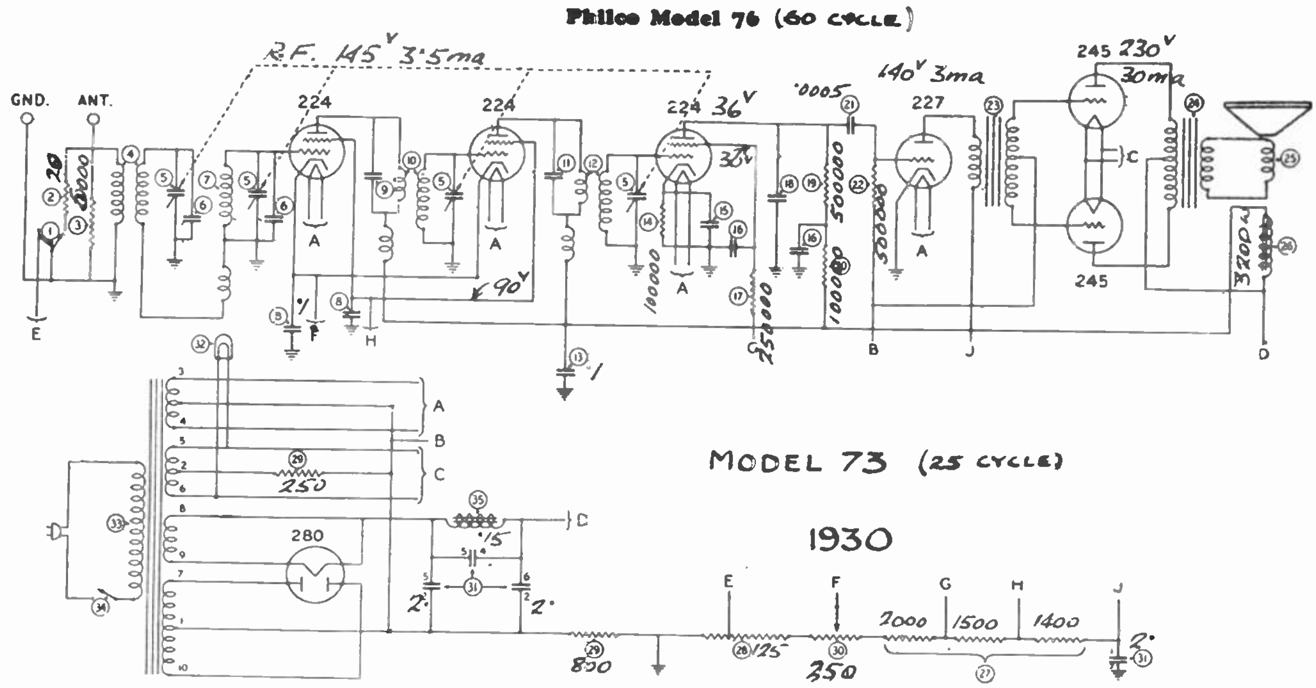
(*d*) Recheck at 9.0 megacycles.

World Radio History

Models 73-76
1930

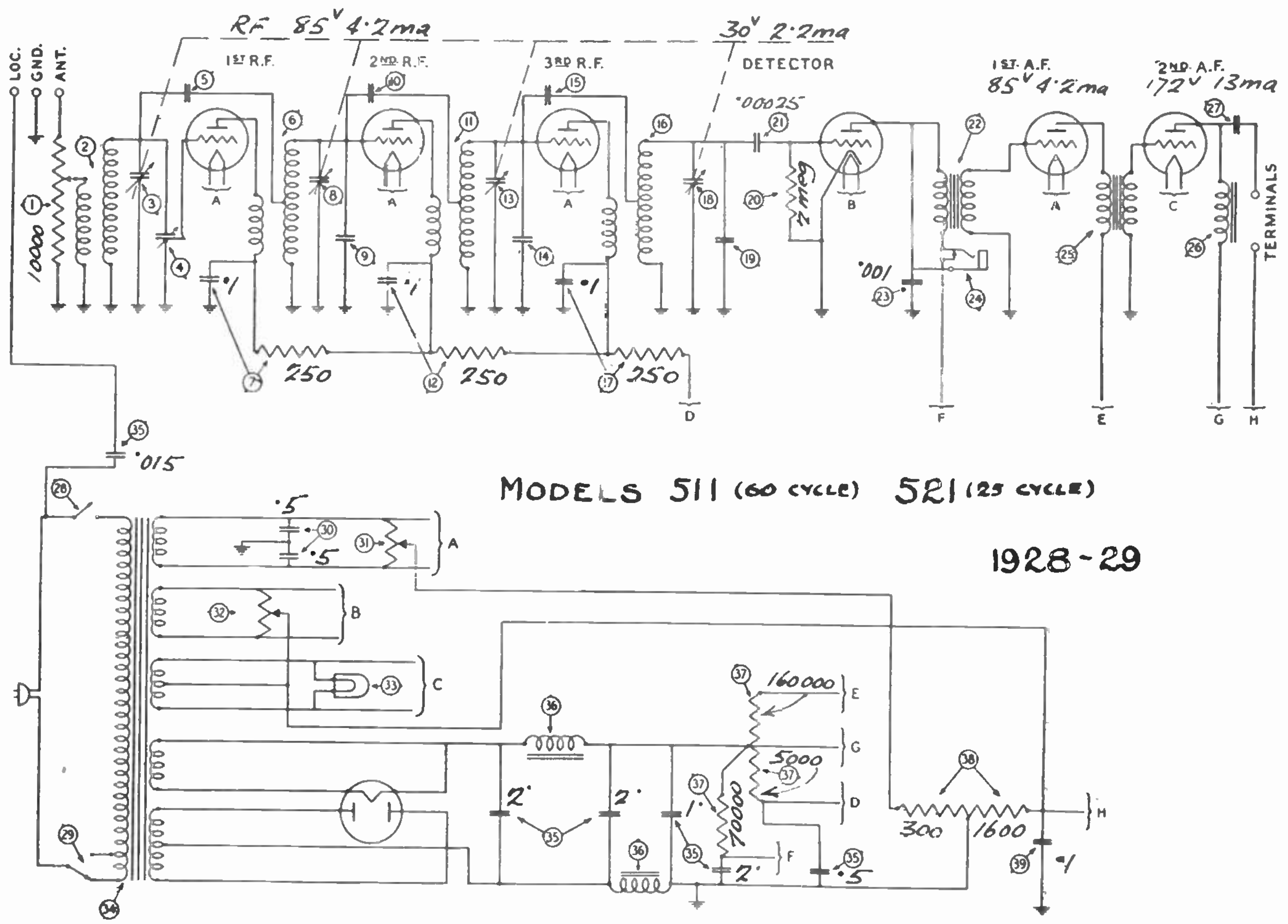
Table
Low Boy
High Boy
De Luxe High Boy

NOTE— Condensers No. 9 and 11 Must on no account be disturbed as they cannot be adjusted correctly in the Field



Models 511-521
1928-29

Table
Low Boy
High Boy



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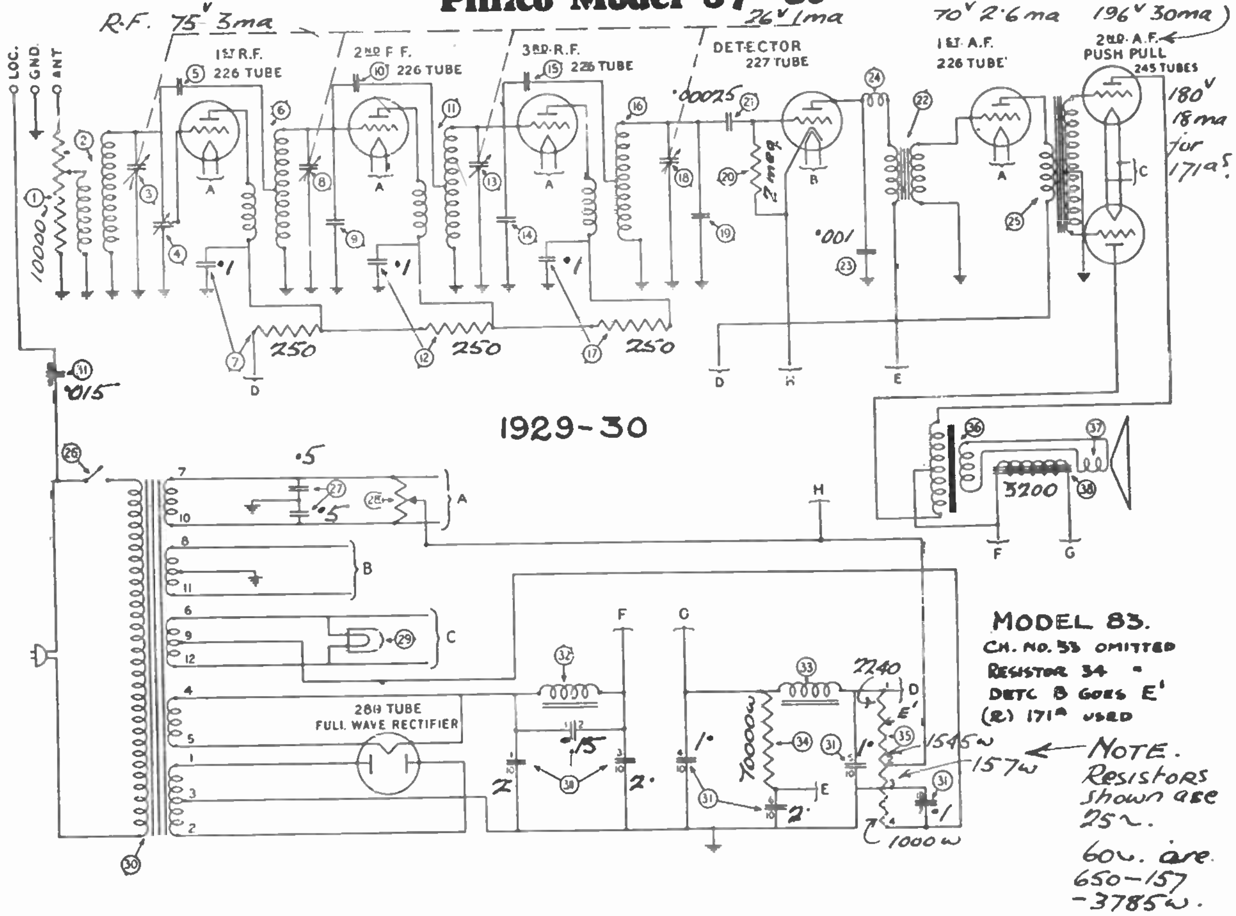
World Radio History

Models
83-87
1929-30

Low Boy
High Boy
De Luxe
High Boy

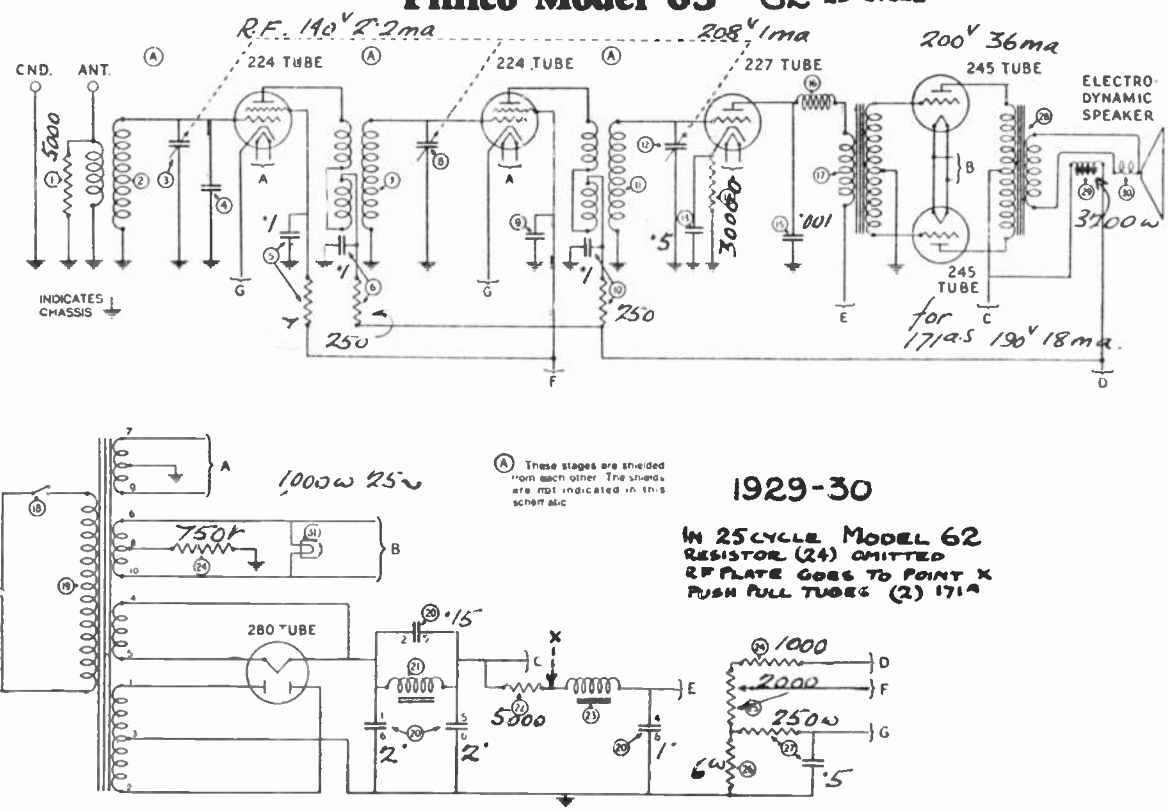
Philco Model 87-83 25 CYCLE



Models
62-65
1929-30

Table
Low Boy
High Boy
De Luxe
High Boy

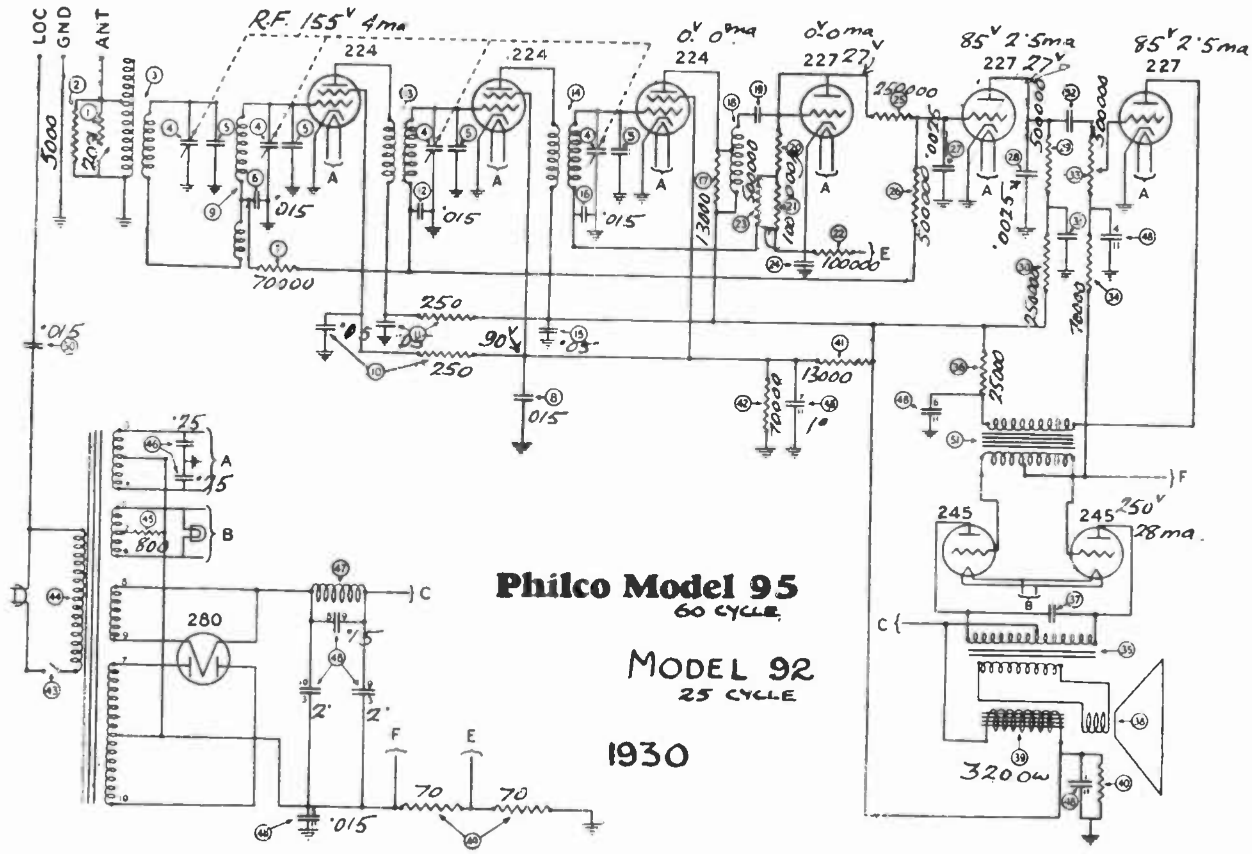
Philco Model 65-62 25 CYCLE



World Radio History

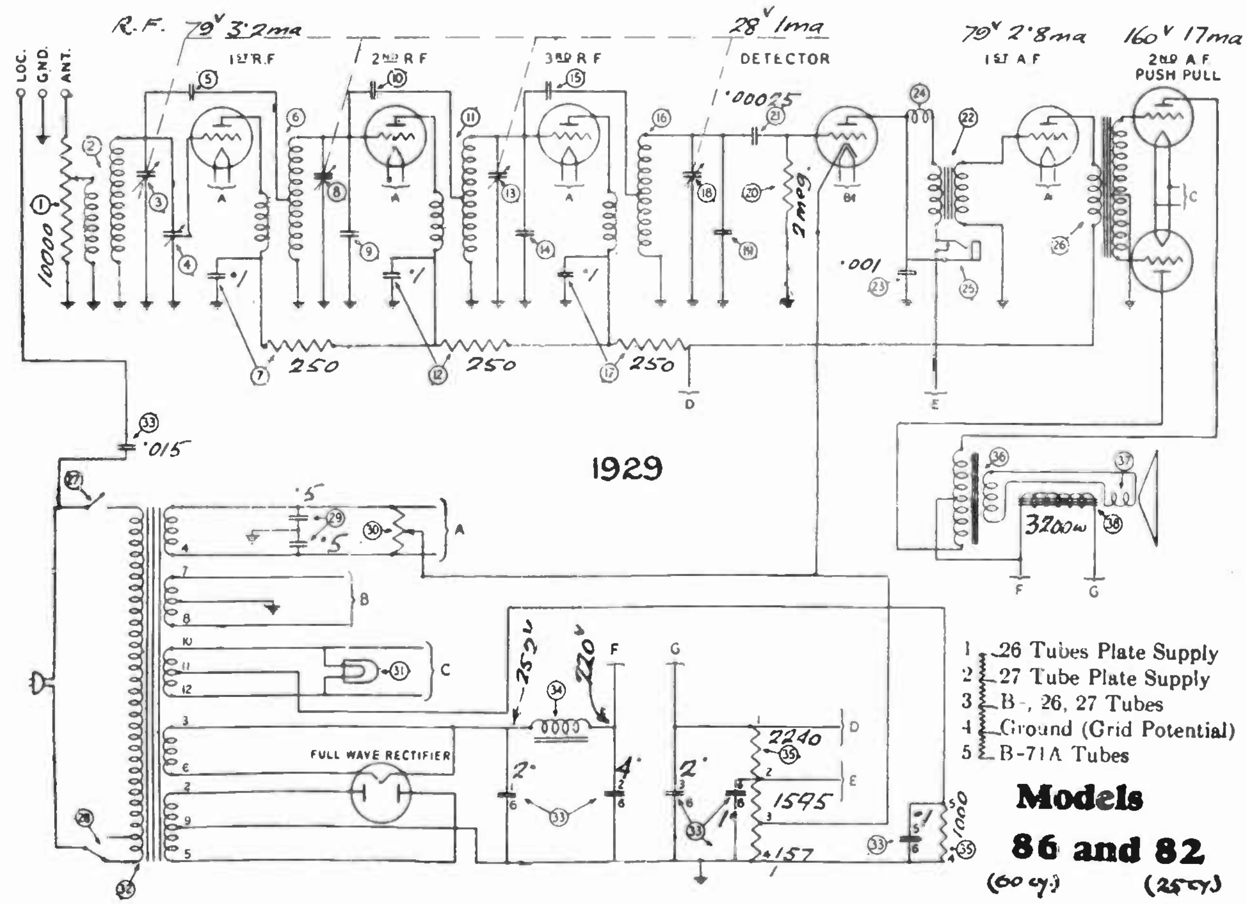
Models
92-95
1930

Table
Low Boy
High Boy
De Luxe
High Boy



Models
82-86
1929

Low Boy
De Luxe
High Boy



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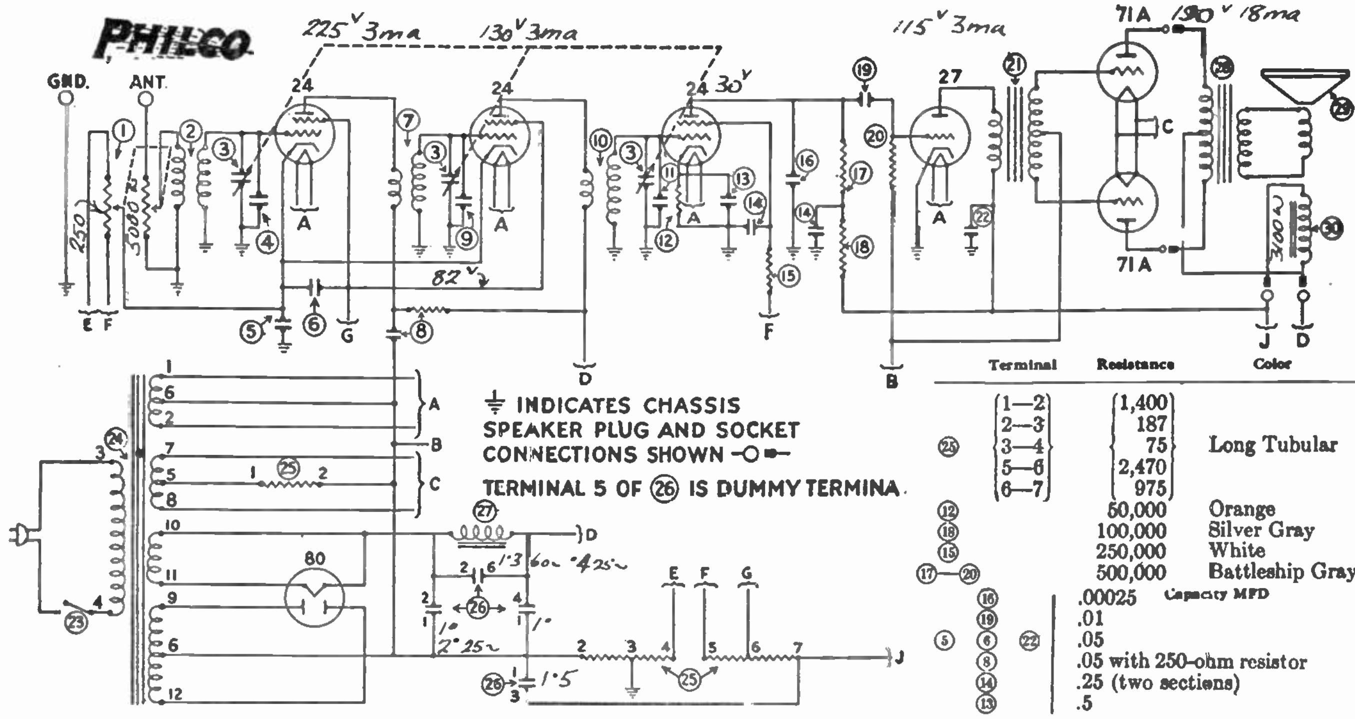
World Radio History

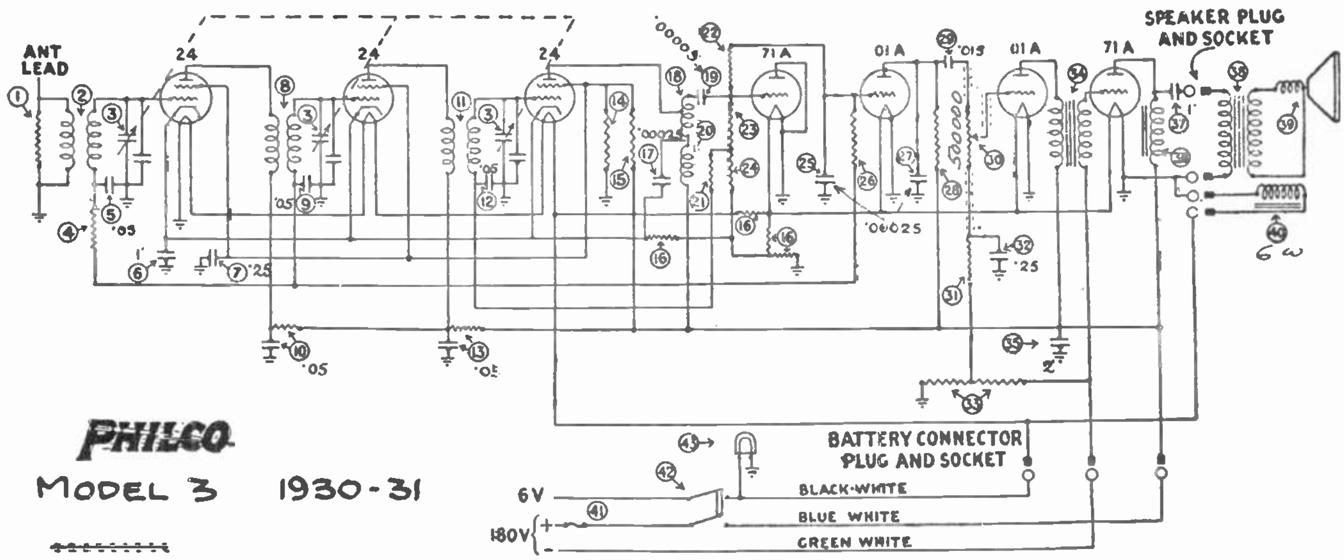


Terminal	Resistance	Color
25: 1—2	1,400	Long Tubular
2—3	187	
3—4	75	
5—6	2,470	
6—7	975	
12	50,000	Orange
18	100,000	Silver Gray
15	250,000	White
17—20	500,000	Battleship Gray

	Capacity MFD
16	.00025
19	.01
5, 6, 22	.05
8	.05 with 250-ohm resistor
14	.25 (two sections)
13	.5

Tube Type	Tube Circuit	Filament Voltage	Plate Voltage	Grid Voltage	Screen Grid Voltage	Cathode Voltage	Plate Milliamperes
24	R. F.	2.3	250	3.0	90.0	11	4.5
24	Detector	2.3	35	1.0	2.0	8	....
27	1st Audio	2.3	120	1.0	....	8	3.0
71-A	2d Audio	5.0	215	50.0	....		18.0

Models 20 and 20-A
1930-31



MODEL 3 1930-31

INDICATES GROUNDED SHIELDING

Resistance Data

Fig.	Resistance in Ohms
1	10,000
4-23-24-28	100,000
14	50,000
15	25,000
16	250-1-30-39
21-26	1,000,000
22-31	250,000
33	500-300
10-18	250

Tube Socket Readings

Type	Position	A	B	C	Screen	Mills
224	R.F.	2	150	2	80	1.5
171A	Det.-Rect.	5				
201A	Det.-Amp.	5	45	1		1
201A	1 A.F.	5	140	2.5		8
171A	2 A.F.	5	142	32		16

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World Radio History

DATA SHEET

PHILCO—8

TUBE ARRANGEMENT

Det. Rect. 227
Det. Amp. 227
1 A.F. 227
2 I.F. 224
1 I.F. 224
1 Det. 224
Osc. 227
R.F. 224

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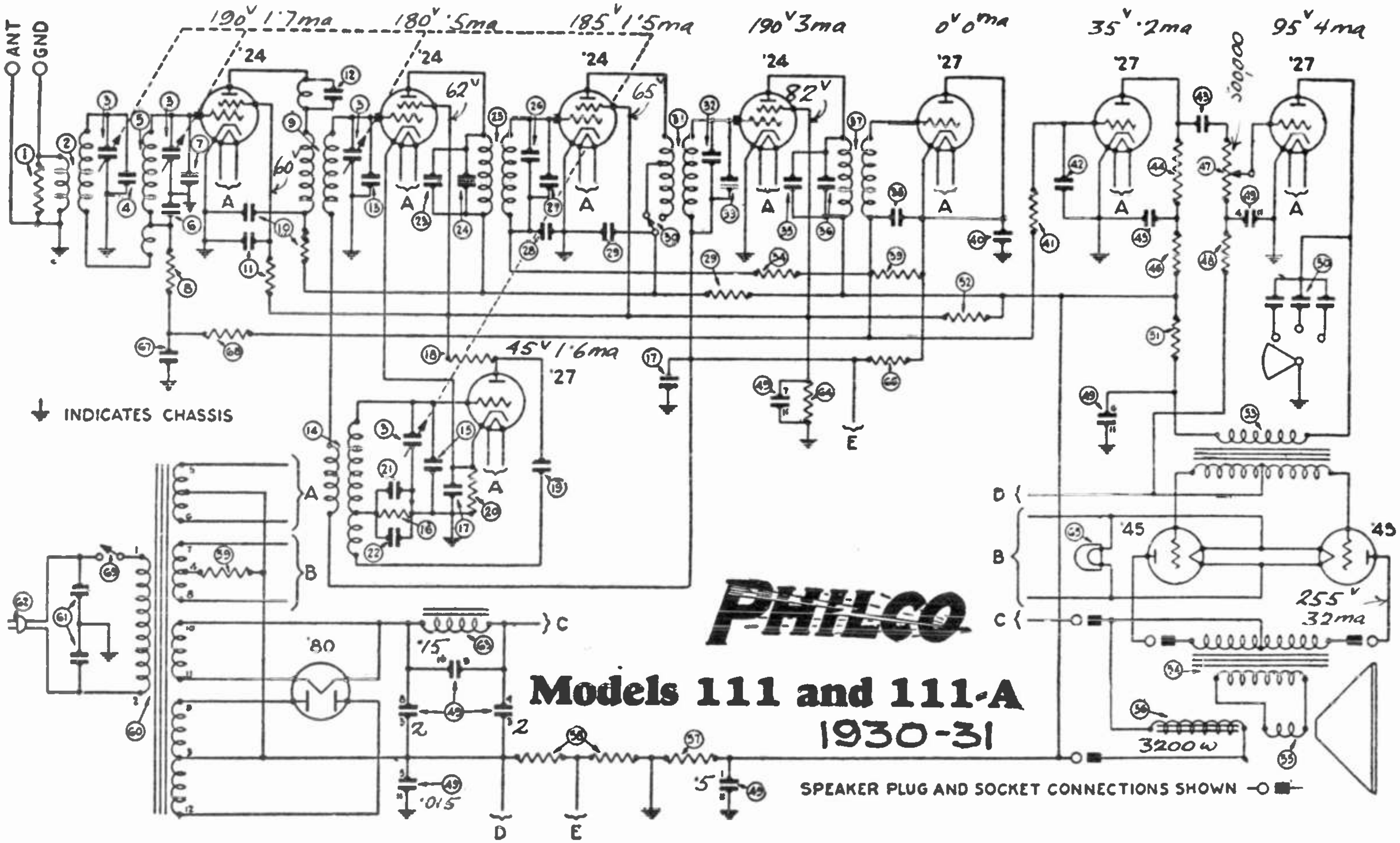


PHILCO

Models 111 and 111-A

1930-31

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

Circuit	Filament Volts	Plate Volts	Screen Grid Volts*	Control Grid Volts	Cathode Volts	Plate Milli-Amperes	Screen-Grid Milli-Amperes ‡
1st R. F.	2.1	190	60	.2	5	1.7	1.75
Osc.	2.1	45	..	.7	7	1.6	....
1st Det.	2.1	180	62	4.6	8	.5†	.15
1st I. F.	2.1	185	65	...	5	1.5	1.7
2nd I. F.	2.1	190	82	2.2	5	3	1.85
Det. Rect.	2.2	...	..	.4	.5	.....	....
Det. Amp.	2.2	35	..	.4	5	.20‡	....
1st A. F.	2.1	95	..	11.2	5	4.	....
2nd A. F.	2.2	255	..	50	...	32.5	....
2nd A. F.	2.2	255	..	50	...	32.5	....
Rect.	4.9	...	..	...	...	50/Plate	....

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

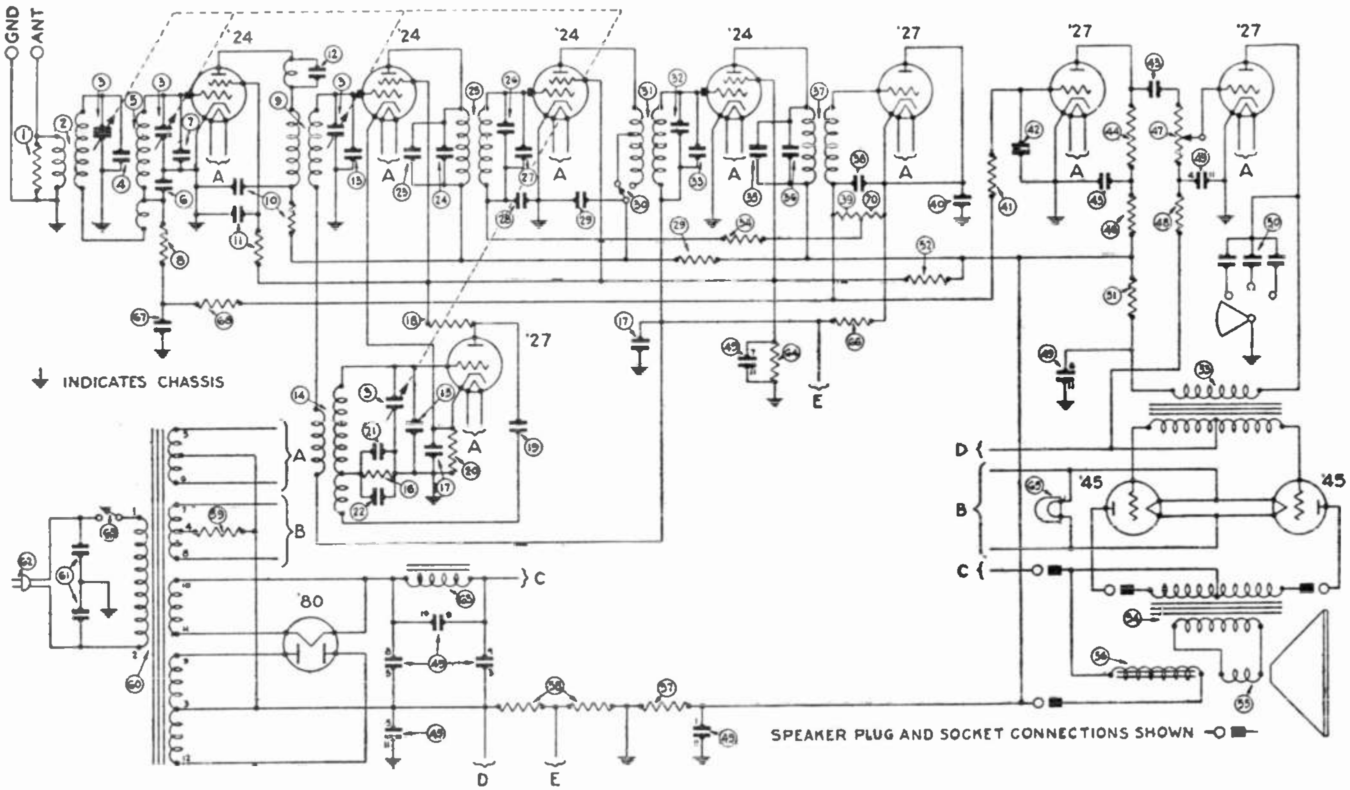
.05	10,000
.05	100,000
.25	50,000
.00011	13,000
.0007	1,000
.05	500,000
.05	500,000
.00005	250,000
.5	70,000
.00025	25,000
.015	10,000
.05	70
.015	800
.05	

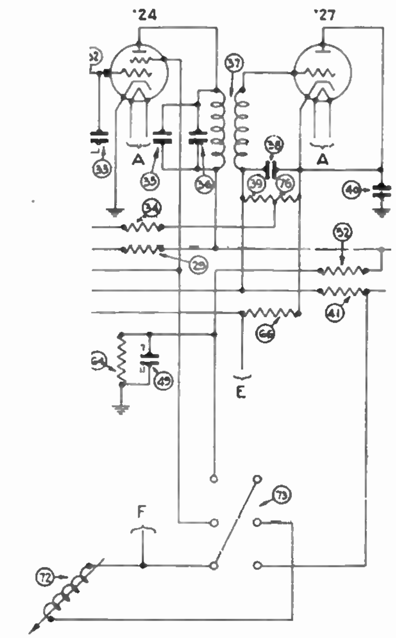
Note—Volume Control Off; Station Selector turned to Low Frequency End; Range Switch set in "Normal" Position.

I.F. 175 Kc

DATA SHEET

Printed in Canada

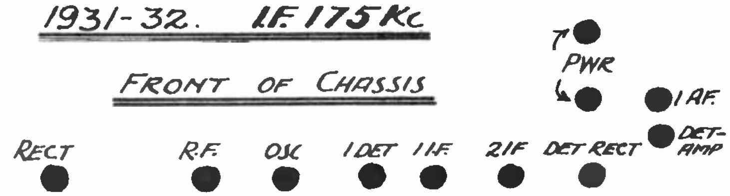




MODEL 212 AND 212-A

RADIO-PHONOGRAPH

Models 112 and 112-A Receivers



6	.05
10 11	.05 and 250 Ohm Resistor
17	.25 (two sections)
19 23 27 33 38	.00011
21	.0007
28	.05
29	.05 and 250 Ohm Resistor
35	.00005
40	.5
42	.00025
43	.015
45	.05
61	.015 (two sections)
67	.05

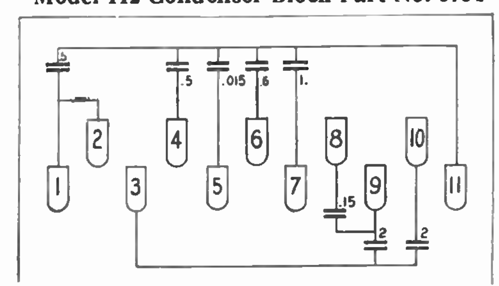
20	1.	1,000
1	.5	10,000
18	1.	13,000
51 52	1.	25,000
16 30 70	.5	50,000
48 64	1.	70,000
8 41 66 68	.5	100,000
46	1.	250,000
34	.5	500,000
44	1.	500,000
58		70
59		800
57		10,000

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

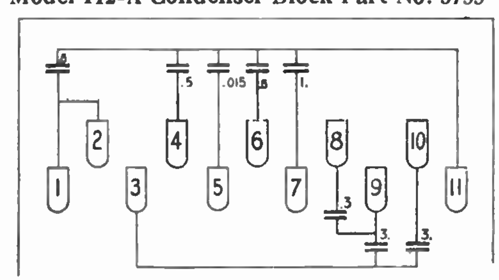
*Read with C 100 Scale.
†Read with 20 Mil. Scale.
‡Read with 2 Mil. Scale.

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

Model 112 Condenser Block Part No. 3754



Model 112-A Condenser Block Part No. 3755

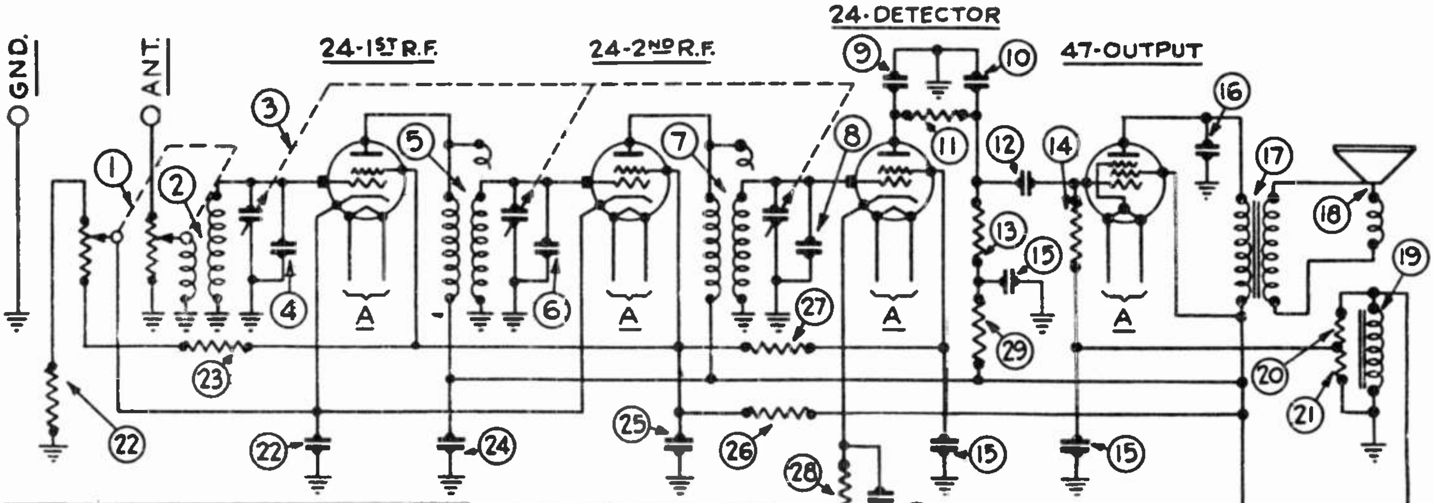


—Courtesy Philco Products Ltd. of Canada

PHILCO-9

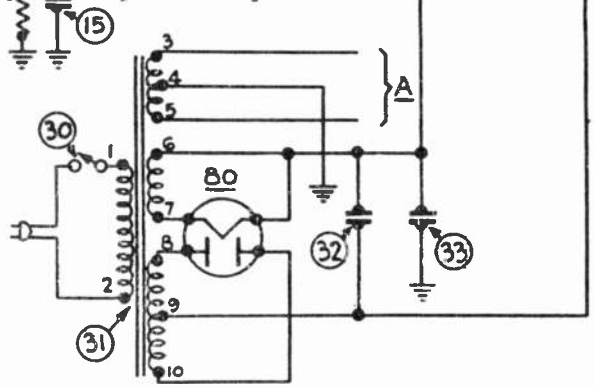
World Radio History

24-DETECTOR



9 10	.00025
12 16	.01
25	.05
22	.05 and 150 Ohm resistor
15	.1, .15, .25, 2-.5 (50-60 cycles)
	.05, .15, .25, 2-.5 (25-40 cycles)
24	.05
33	(50 to 60 cycles) 6.
	(25 to 40 cycles) 10.
34	6.

22	150 and .05
11	10,000
23	15,000
26	25,000
28	32,000
27 29	99,000
21	160,000
13	240,000
14 20	490,000



Tube Circuit	Plate Volts	Screen Grid Volts	Control Grid Volts	Cathode Volts	Plate Milli-amperes
1st R.F.	245	90	2.5	3.0	4.5
2nd R.F.	250	90	2.5	3.0	5.5
Det.	100	42	8.0	8.0	0
Output	175*	190*	1.0*	...	2.7*

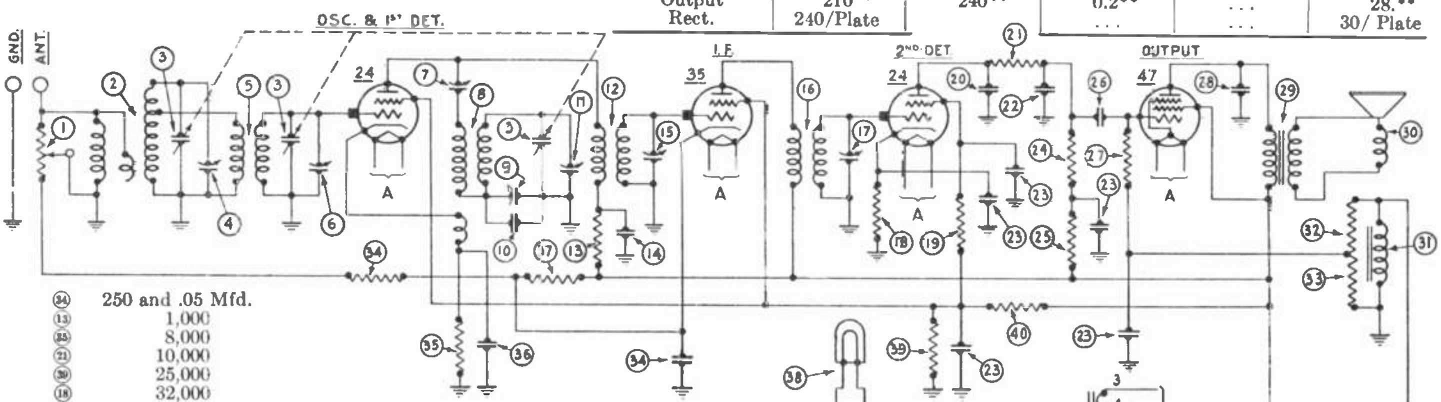
1.R.F. FRONT 1931-32

PHILCO MODELS 50 AND 50-A

2 RF RECT

DET PWR

Tube Circuit	Plate Volts	Screen Grid Volts	Control Grid Volts	Cathode Volts	Plate Milli-amperes
Osc. & 1st Det.	220*	85*	9.0*	9.0*	...
I.F.	210	85	3.0	3.0	6.2
2nd Det.	75	54	5.2	5.2	0
Output	210**	240**	0.2**	...	28.**
Rect.	240/Plate		...	...	30/ Plate



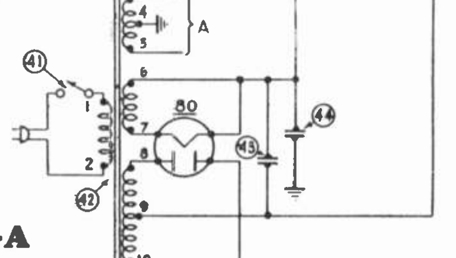
34	250 and .05 Mfd.
13	1,000
35	8,000
21	10,000
39	25,000
18	32,000
40	32,000
37	51,000
19 25	99,000
33	160,000
24 27 32	490,000
20 22	.00025
10 36	.00011
26 28	.01
14	.05
23	.1, .15, .25, 2-.5 (50-60 cy.)
	.2, .15, .25, 2-.5 (25-40 cy.)
43	6 (50-60 cycles)
	10 (25-40 cycles)
44	6

I.F. 175 Kc

2 DET

I.F. RECT.

OSC + 1 DET PWR



PHILCO MODELS 51 — 51-A

1932-33 52 AND 52-A.

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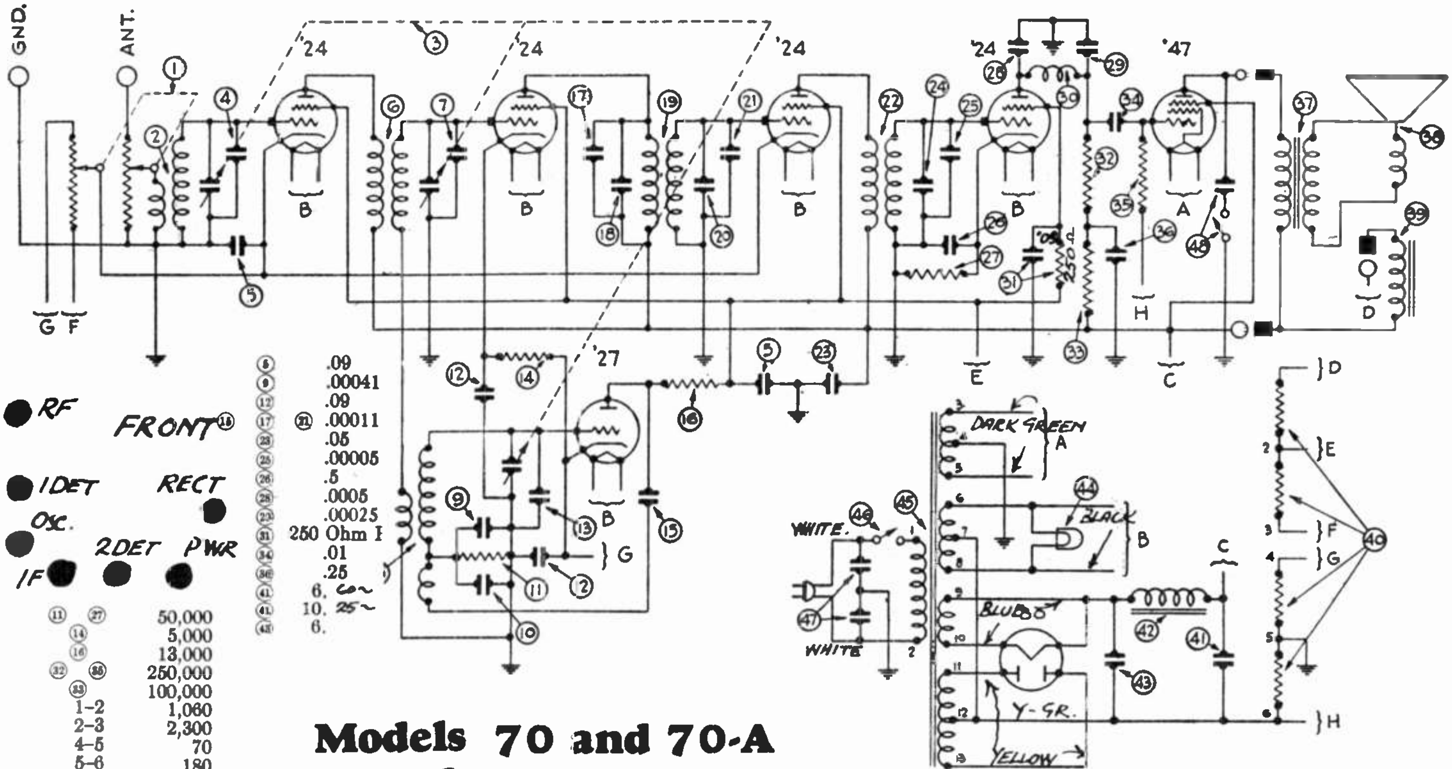
World Radio History



(8)	.09
(9)	.00041
(12)	.09
(17) (21)	.00011
(23)	.05
(25)	.00005
(26)	.5
(28)	.0005
(29)	.00025
(31)	250 Ohm I
(34)	.01
(36)	.25
(41)	6. 60~
(41)	10. 25~
(43)	6.

(11) (27)	50,000
(14)	5,000
(16)	13,000
(32) (35)	250,000
(33)	100,000
1–2	1,060
2–3	2,300
4–5	70
5–6	180

RF
FRONT (18)
1DET
RECT
OSC.
2DET
PWR
IF

Models 70 and 70-A

I.F. 260Kc.

Circuit	Plate Volts	Screen Grid Volts	Control Grid Volts	Cathode Volts	Plate Milli-amperes
1st R. F.	250	85	3.	19.5	3.
1st Det.	250	87	5.5	21.5	.5
Osc.	85	...	2.	19.5	2.5
1st I. F.	250	87	3.	19.5	3.
2nd Det.	105	75	6.	22.	.1
Audio	245	255	1.	...	...

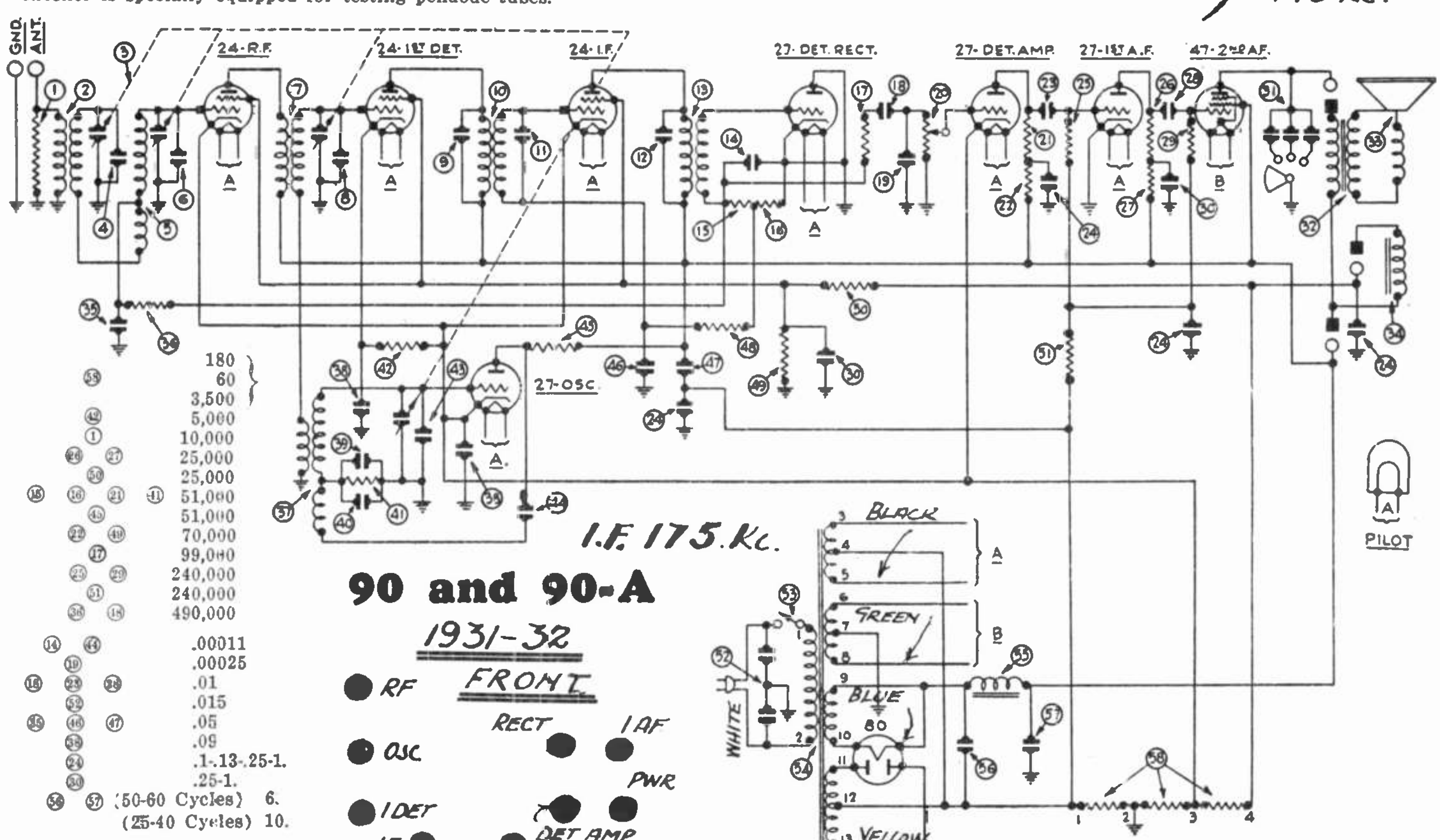
MODEL 270 AND 270-A RADIO-PHONOGRAPH

1931-32

Circuit	Plate Volts	Screen Grid Volts	Control Grid Volts	Cathode Volts	Plate Milliamperes
R. F.	255	60	.25	20	2.4
Osc.	65	...	.6	20	3.6
1st Det.	250	64	6.0	24	.25
I. F.	270	76	.25	18	.4
Det. Rect.	0	...	0	17	0
Det. Amp.	140	...	.4	18	2.0
1st A. F.	45	...	.4	20	1.8
Output	220*	240*	1.0*	..	32.*

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

90-90a 175 Kc.



	180
(55)	60
	3,500
(42)	5,000
(1)	10,000
(26) (27)	25,000
(50)	25,000
(15) (16) (21) (41)	51,000
(45)	51,000
(22) (49)	70,000
(17)	99,000
(25) (29)	240,000
(51)	240,000
(36) (18)	490,000
(14) (44)	.00011
(19)	.00025
(18) (23) (28)	.01
(52)	.015
(35) (46) (47)	.05
(38)	.09
(24)	.1-.13-.25-1.
(30)	.25-1.
(56) (57) (50-60 Cycles)	6.
(25-40 Cycles)	10.

I.F. 175 Kc.

90 and 90-A

1931-32

FRONT

RF
OSC
1DET
I.F.
RECT
1AF
PWR
DET AMP
DET-RECT

NOTE.
MODEL 90 WITH 2-47's IN OUTPUT HAS 260 Kc I.F.

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World Radio History

DATA SHEET

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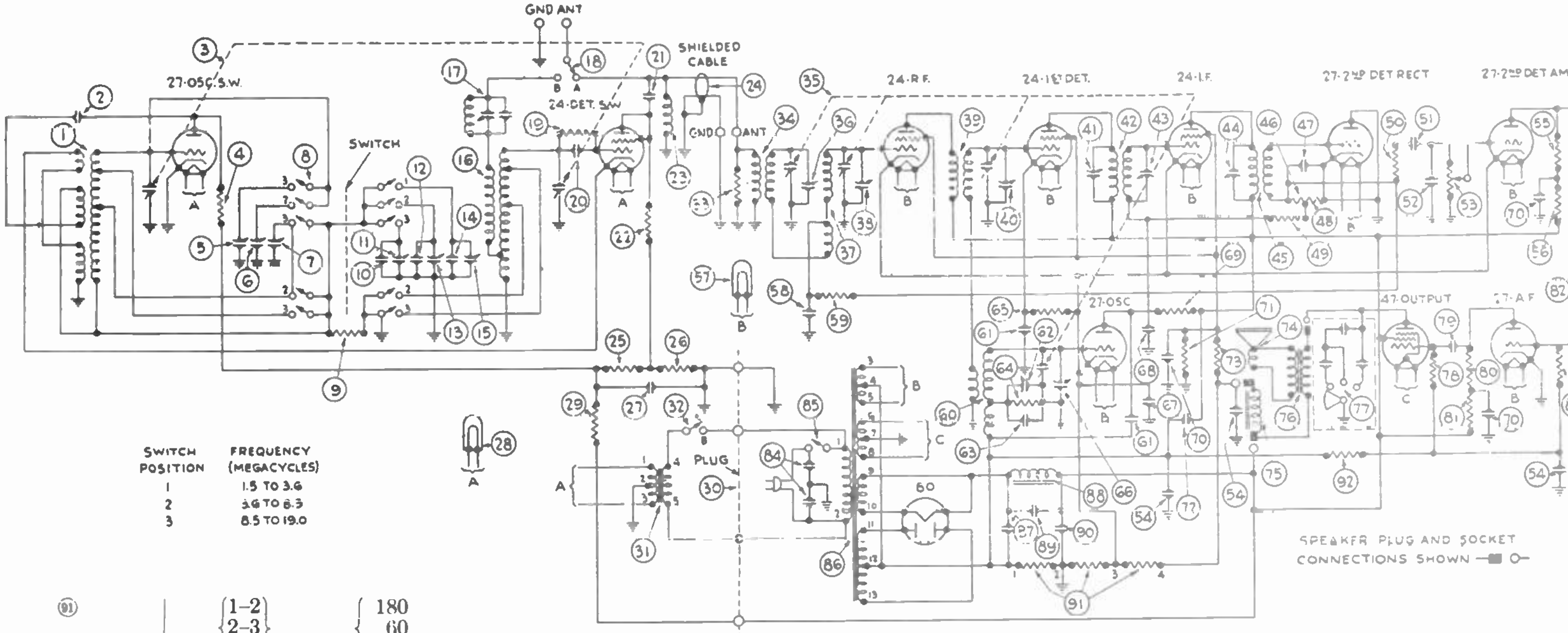
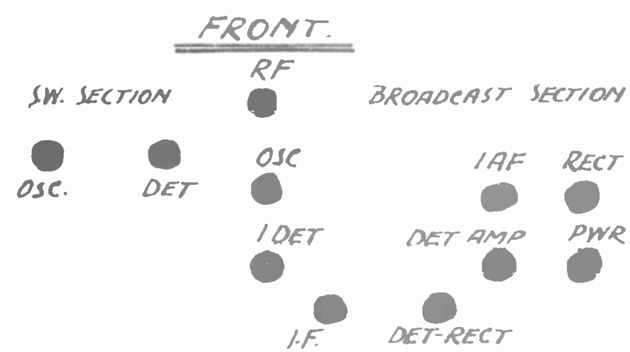


Switch Position	Frequency (Megacycles)
1	1.5 to 3.6
2	3.6 to 8.5
3	8.5 to 19.0

(91)	1–2	180
	2–3	60
	3–4	3500
(29)	......	5,000
(65)	.....	5,000
(33)	......	10,000
(4)	......	13,000
(75)	.....	25,000
(80) (61)	......	25,000
(25) (26)	......	32,000
(46) (48) (55) (64)	......	51,000
(69) (81)	......	51,000
(56) (71)	.....	70,000
(22)	......	99,000
(50) (78)	......	99,000
(9) (92)	......	240,000
(78) (83)	......	240,000
(49) (59)	......	490,000
(92)	......	490,000
(19)	......	2,000,000

(20) (47) (67)	.00011
(14) (21) (52)	.00025
(63)	.0007
(12)	.0008
(10)	.00125
(51) (79) (82)	.01
(84)	.015 Double
(2) (58) (66) (72)	.05
(61) (89)	.09 (50-60 cycles)
(89)	.18 (25-40 cycles)
(54)	3–.25 each
(70)	1, .25, .1 (50-60 cycles)
	1, .25, .25 (25-40 cycles)
(87)	6 (50-60 cycles)
(90)	6 (50-60 cycles)
(87)	10 (25-40 cycles)
(90)	14 (25-40 cycles)



Model 490 Receiver

1931 - 32

I.F. 175 Kc.

Tube / Circuit	Filament Volts	Plate Volts	Screen Grid Volts	Control Grid Volts	Cathode Volts	Plate Milli-amperes
SHORT WAVE UNIT*						
Osc.	2.2	110	...	3.3	0	...
1st Det.	2.2	24	24	5.	0	...
BROADCAST UNIT*						
R. F.	2.1	220	50	6.	15	2.
Osc.	2.1	80	...	6	15	2.3
1st Det.	2.1	210	55	5	15	.5
I. F.	2.1	220	60	8	15	0
Rect. Det.	2.1	...	...	...	14	...
Ampl. Det.	2.1	150	...	0	15	1.3
1st Audio	2.1	150	...	2	15	1.5
Output	2.4**	205**	220**	7**	...	28.**

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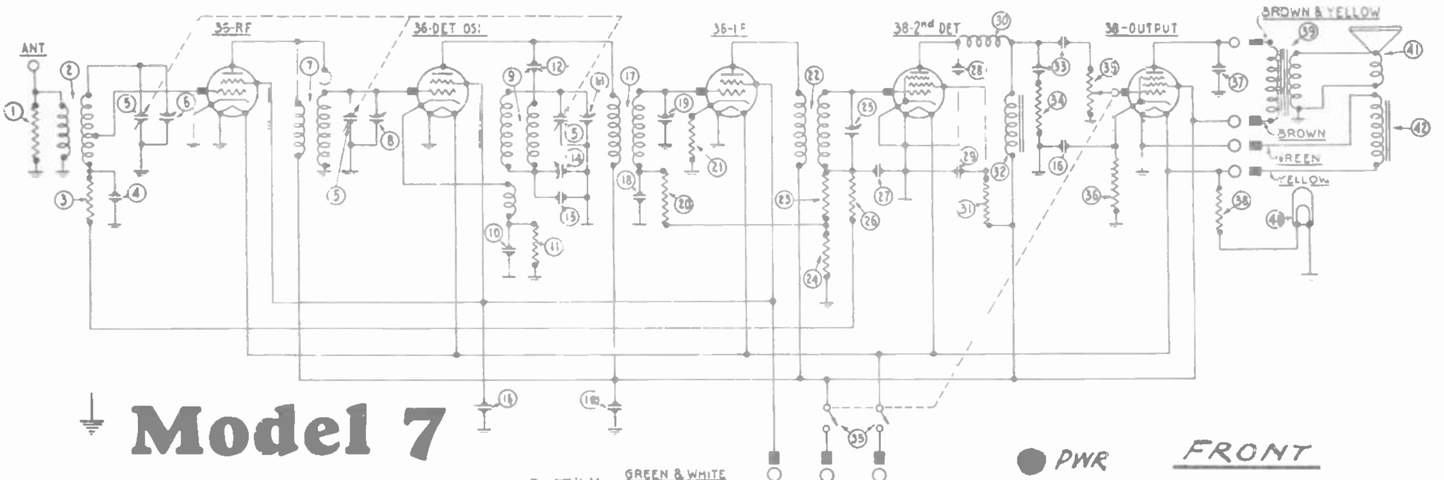
World Radio History



Model 7

(35)	7
(21)	225
(34)	1,250
(1) (11)	5,000
(31) (41)	50,000
(3) (23) (41)	99,000
(20) (26)	490,000

(27)	.00025
(10) (16)	.0007
(28) (37)	.002
(33)	.015
(4) (18)	.05
(29)	.25
(16)	.25, .5, 1.

I.F. 175 Kc

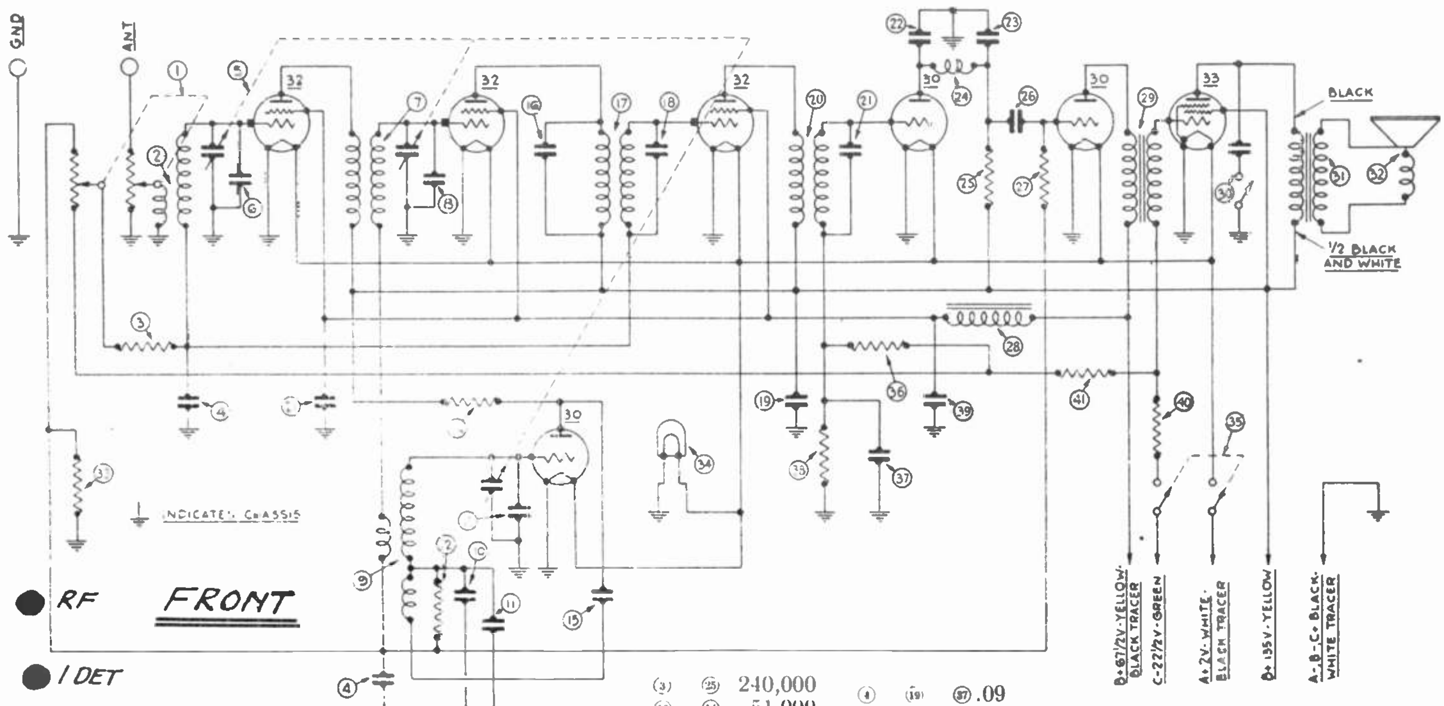
PWR — FRONT

2 DET — 1932-33

IF — DET-OSC — RF

Circuit	Plate Volts	Control Grid Volts	Screen Grid Volts	Cathode Volts	Plate Milli-Amperes
R.F.	129	0.0	61	0.0	2.8
Det.-Osc.	129	0.0	61	6.0	0.8
I.F.	129	0.0	61	0.5	2.0
2nd Det.	115	0.0	50	0.0	6.0
Output	125	0.0	129	11.0	6.0

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



RF — FRONT

1 DET

OSC — PWR

IF — 2 DET — 1AF

I.F. 260 Kc

1932-33

(3)	(25)	240,000
(12)	(14)	51,000
	(27)	490,000
	(33)	3,000
	(36)	32,000
	(35)	99,000
	(40)	5,000
	(41)	10,000

(4)	(19)	(37)	.09
	(12)		.000410
	(15)		.000110
(22)	(23)		.002
	(26)		.01
	(38)		2.

Philco Model 35

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World Radio History

DATA SHEET

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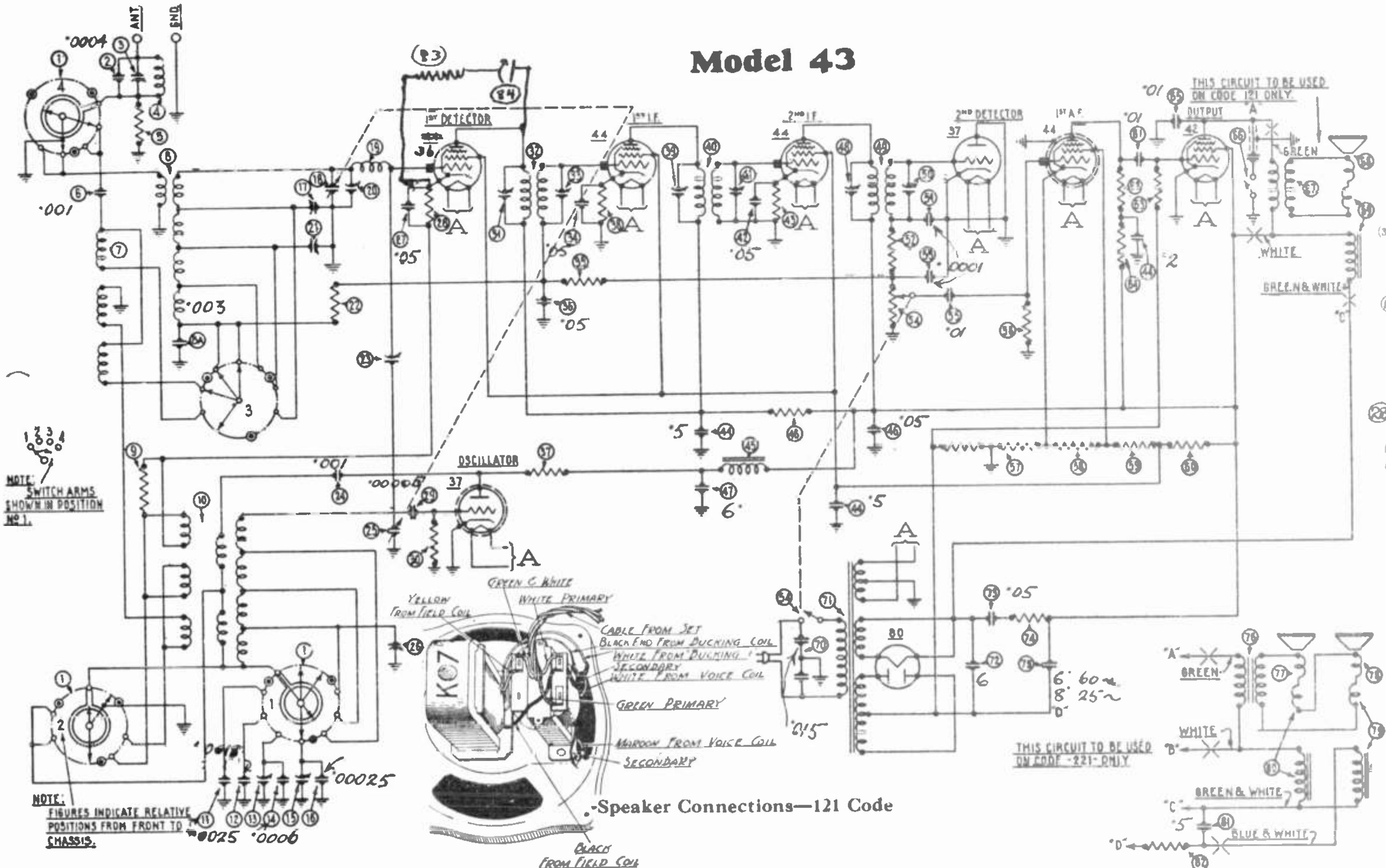
Model 43

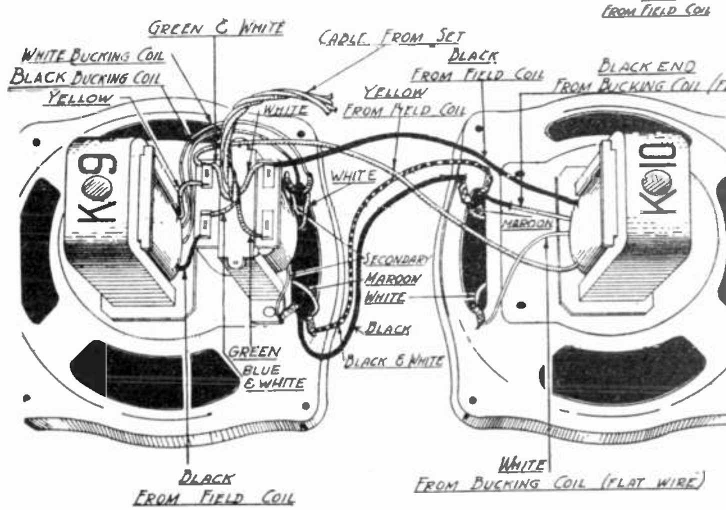


-Speaker Connections—121 Code

	Watts	Ohms
38, 43	23	500
9	.5	1,000
5	.5	2,000
6	.5	3,000
58, 59	1.	5,000
82	..	5,620
	~~.5~~	~~8,000~~
37	1.	10,000
73	.5	10,000
60	3.	13,000
28, 64	.5	25,000
62	.5	70,000
22, 62	.5	99,000
30, 63	.5	490,000
56	.5	1,000,000
35	5	2,000,000

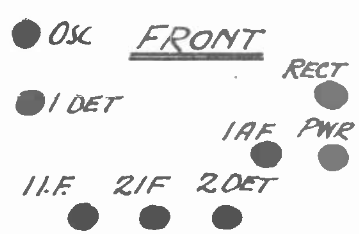
Model 43

1932-33



-Twin Speaker Connections—221 Code

Tube / Circuit	Filament Volts F to F	Plate Volts P to K	Screen Grid Volts SG to K	Control Grid Volts CG to K	Cathode Volts K to F
Osc.	6.3	175	—	6.	—
1st Det.	6.3	235	80	8.0 ~~3.0~~	12.0
1st I. F.	6.3	235	80	.2	3.0
2nd I. F.	6.3	235	80	3.5	3.5
2nd Det.	6.3	0	—	0	0
1st Audio	6.3	45	45	.2	2.0
Output	6.3	215	240	.4	15.0



I.F. 450 Kc.

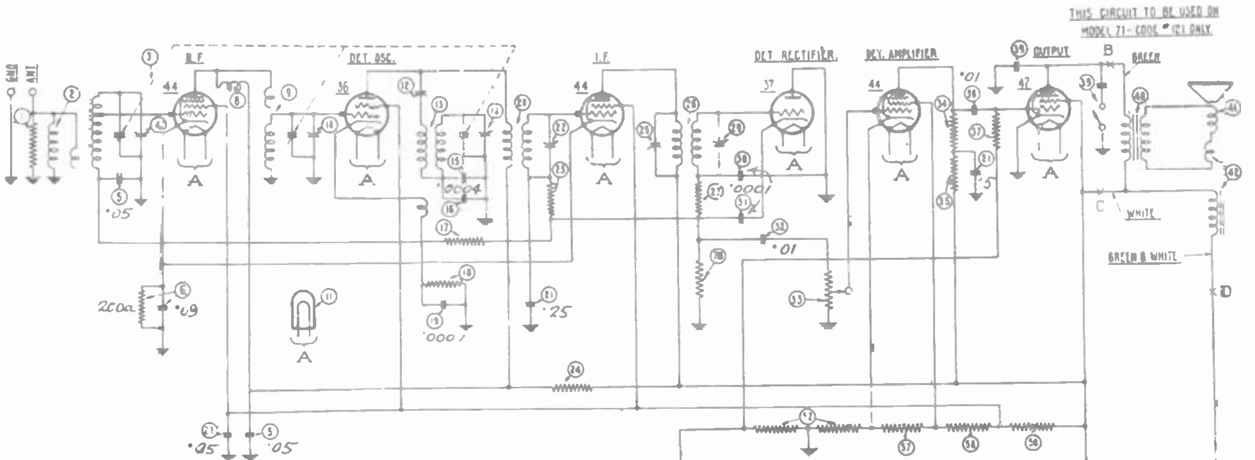
The Philco Radio of the 43 Series is an eight tube superheterodyne short wave and broadcast wave combination, employing the high efficiency 6.3 volt filament tubes, automatic volume control and pentode output. The same superheterodyne circuit is employed for both short wave and broadcast wave ranges, with an intermediate frequency of 450 kilocycles.

The chassis is made in two different types, one known as the 121 code, employing a single dynamic speaker, and the other known as the 221 code, employing twin dynamic speakers.

PHILCO-14

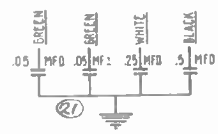
—Courtesy Philco Products Ltd. of Canada

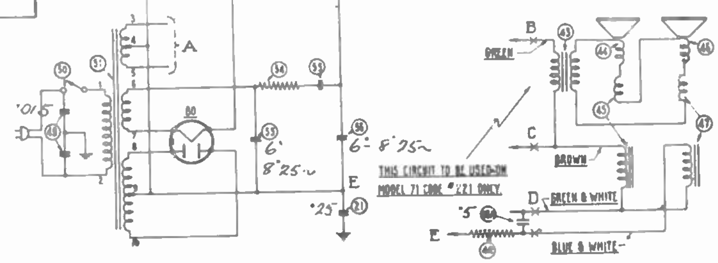
World Radio History

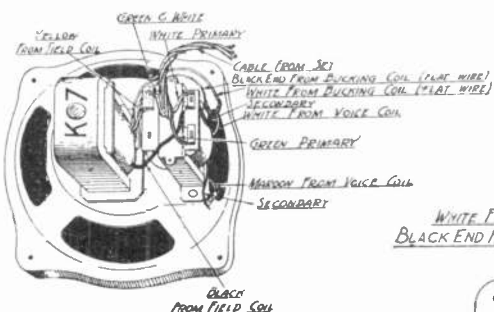


Model 71 Series

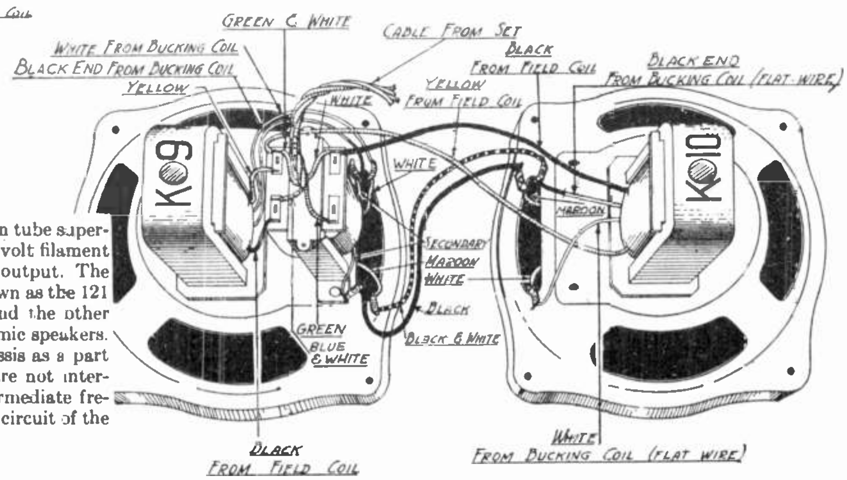
1932-33







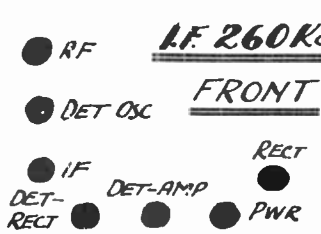
—Speaker Connections—121 Code



-Twin Speaker Connections—221 Code

The Philco Radio of the 71 series is a seven tube superheterodyne, employing the high efficiency 6.3 volt filament tubes, automatic volume control and pentode output. The chassis is made in two different types, one known as the 121 code, employing a single dynamic speaker, and the other known as the 221 code, employing twin dynamic speakers. These code numbers appear on the radio chassis as a part of the model number. Chassis of one code are not interchangeable with those of another. The intermediate frequency used in adjusting the superheterodyne circuit of the 71 series is 260 kilocycles.

(62)	WATTS	185 & 245
(24)	.5	1,000
(57)(58)	.5	5,000
(48)	(Twin Speaker)	5,620
(1)(64)	.5	10,000
(50)	3.	13,000
(18)	.5	15,000
(35)	.5	25,000
(34)	.5	70,000
(27)	.5	99,000
(20)	.5	240,000
(37)	.5	490,000
(17)(23)	.5	1,000,000



Circuit	Plate Volts—P to K	Screen Grid Volts—SG to K	Control Grid Volts—CG to K	Cathode Volts—K to F
R. F.	245	90	4.	20
Det. Osc.	235	90	2.3	20
I. F.	255	90	.2	20
Det. Rect.	0	. .	. .	15
Audio	50	50	.3	20
Output	250	260	.2	15
Rectifier	365/plate	. .	. .	. .

*All of the above readings were taken from the under side of the chassis, using test prods and leads with a suitable A.C. voltmeter for filament voltages and a high resistance multi-range D.C. voltmeter for all other readings. Volume control at maximum and station selector turned to low frequency end. Readings taken with a radio set tester and plug-in adapter will not be satisfactory.

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World Radio History

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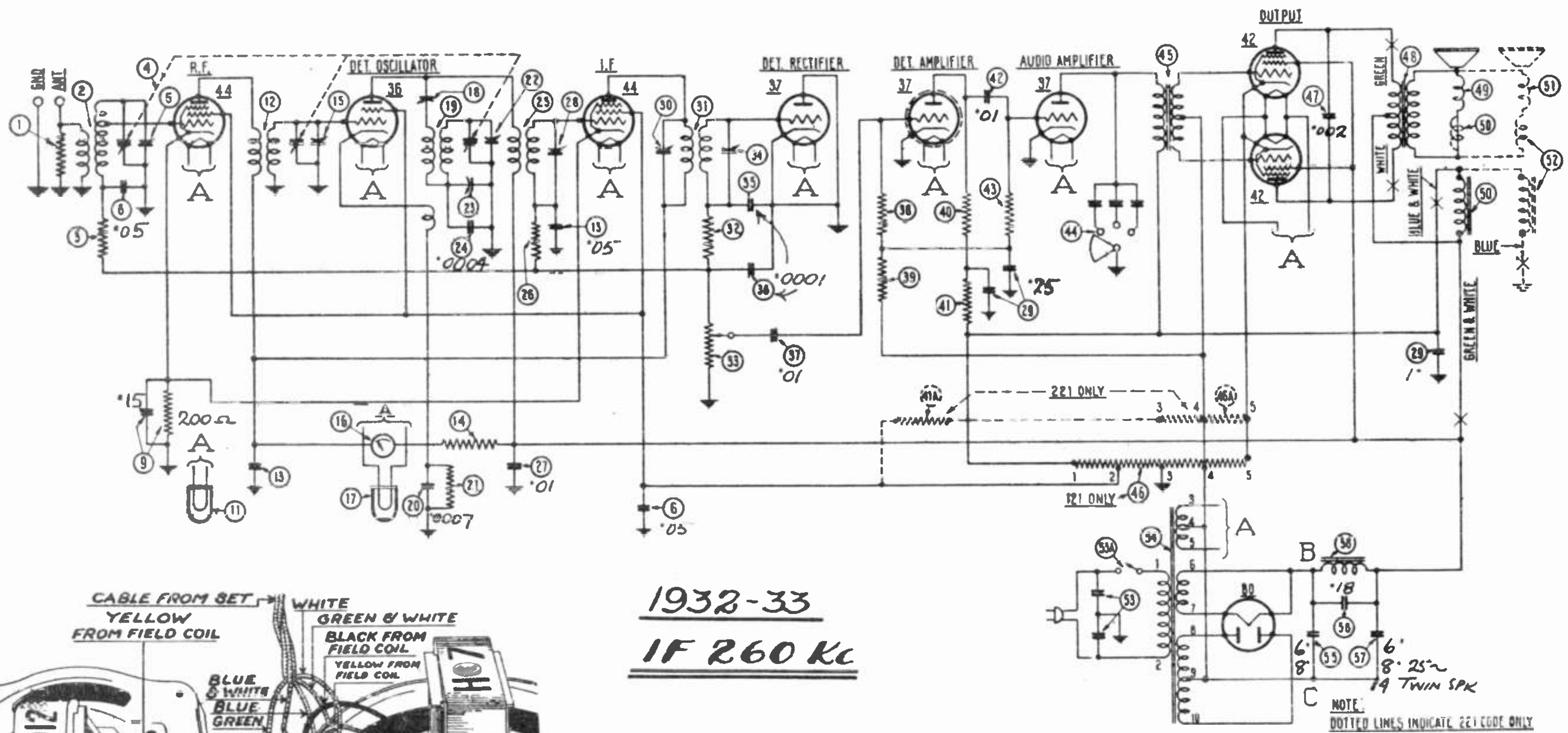
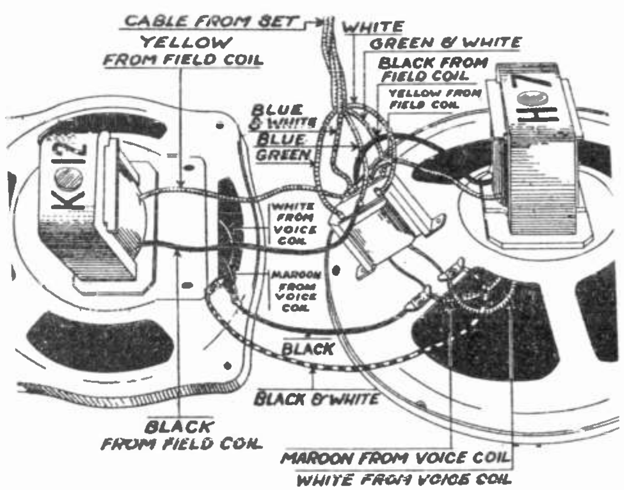
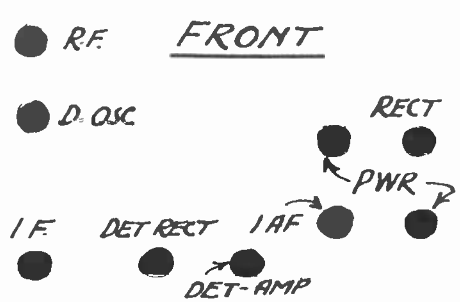
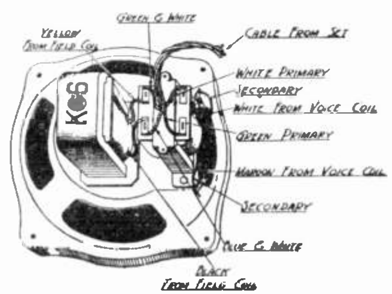




—Speaker Connections—221 Code





-Speaker Connections—121 Code

PHILCO MODEL 91 SERIES

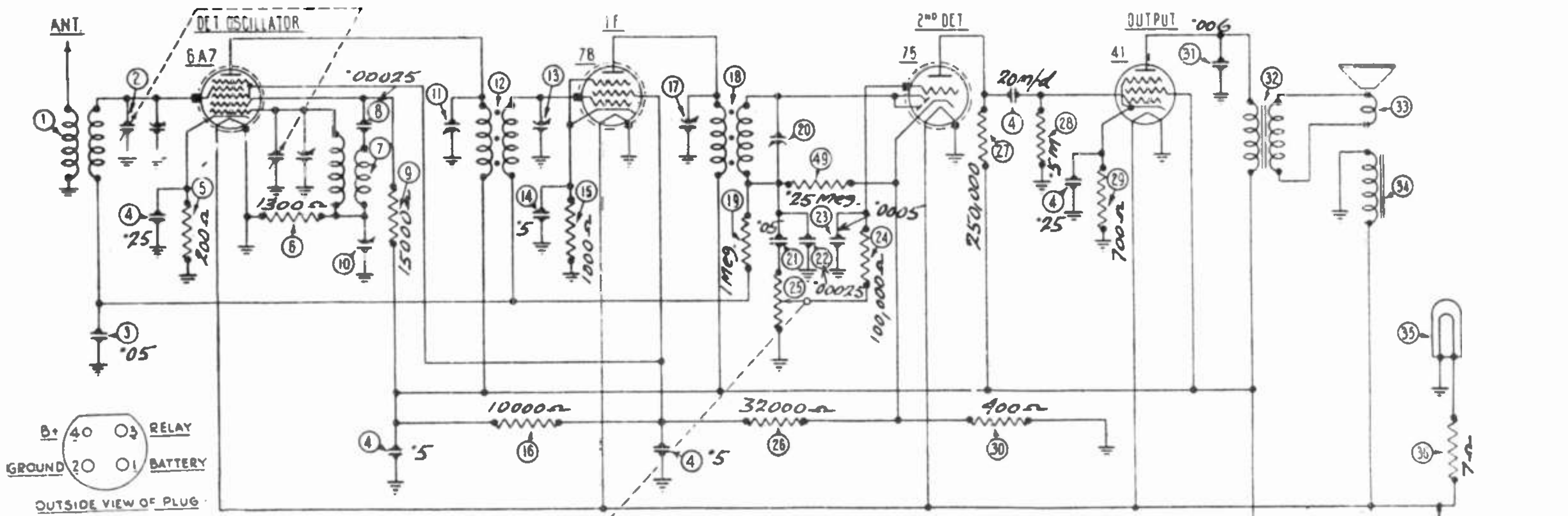
Tube Circuit	Plate Volts	Screen Grid Volts	Control Grid Volts	Cathode Volts
R.F.	200	50	.6	25
Det.—Osc.	250	80	10	10
I.F.	250	85	.2	5
Det.—Rect.	0	. . .	.2	2
Det.—Ampl.	60	. . .	.2	2
Audio	100	. . .	0	2
Output	240	250	15	15
Output	240	250	15	15

(46) Single Speaker	900	(21)	15,000
	2700	(41)	25,000
	95	(41)a	13,000
	205	(32)	99,000
(46)a Twin Speaker	85	(40)	51,000
	205	(39)	490,000
(14)	1,000	(43) (38)	1,000,000
(1)	10,000	(3) (26)	2,000,000

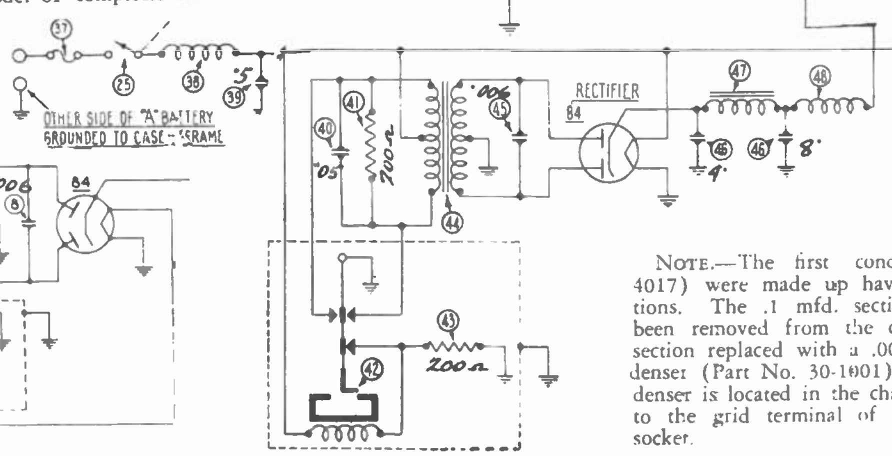
—Courtesy Philco Products Ltd. of Canada

World Radio History

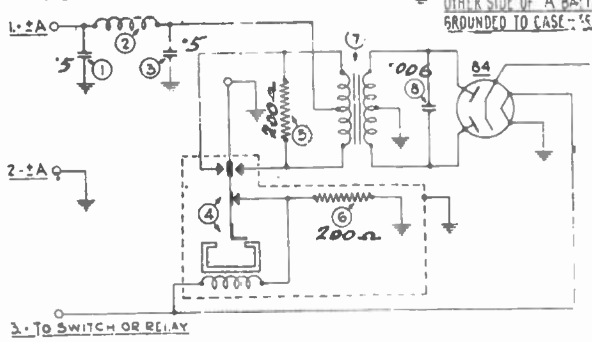
Model-5 1934 IF 460 K.C



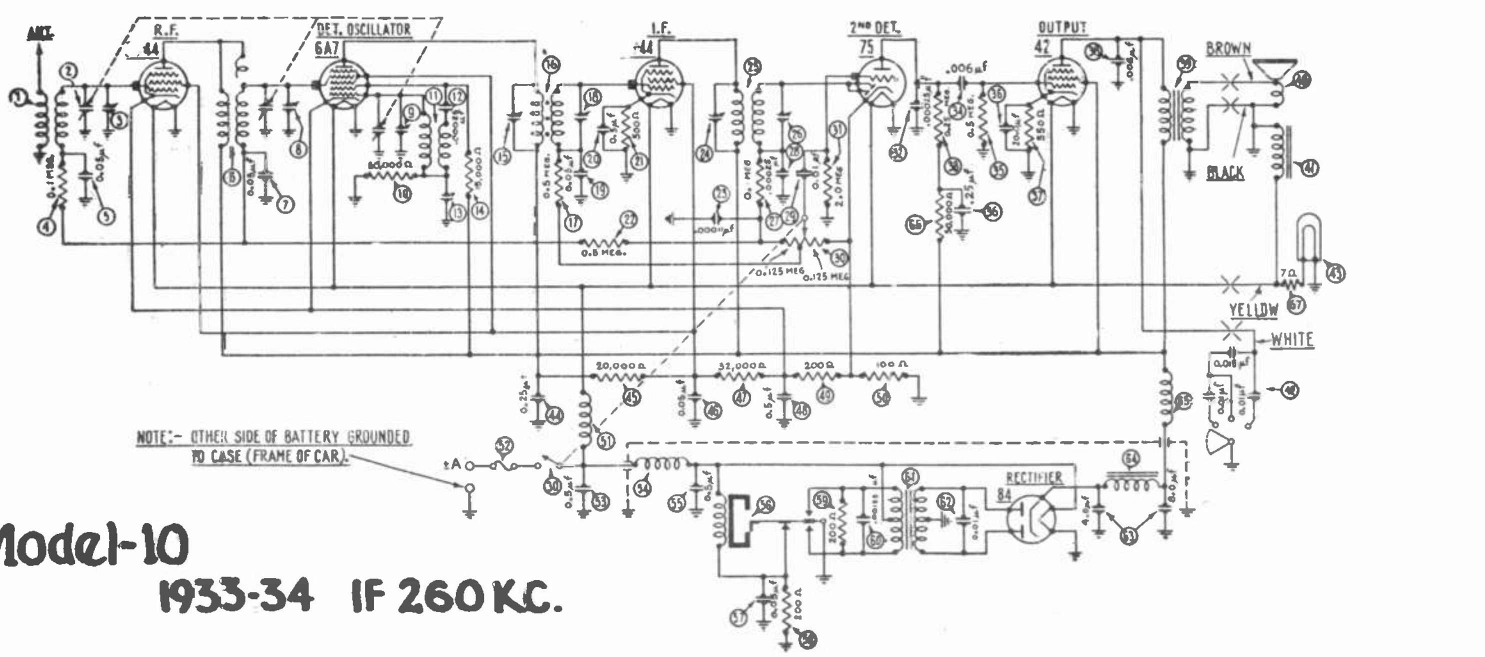
The Model EF takes the place of the EB dynamotor. The cable connection between the Vibrator and the Model 6F completes the installation of the Vibrator.



MODEL EF VIBRATOR



NOTE.—The first condensers (30-4017) were made up having five sections. The .1 mfd. section has now been removed from the can and this section replaced with a .006 mfd. condenser (Part No. 30-1001). This condenser is located in the chassis adjacent to the grid terminal of the 41 tube socket.



Model-10

1933-34 IF 260 K.C.

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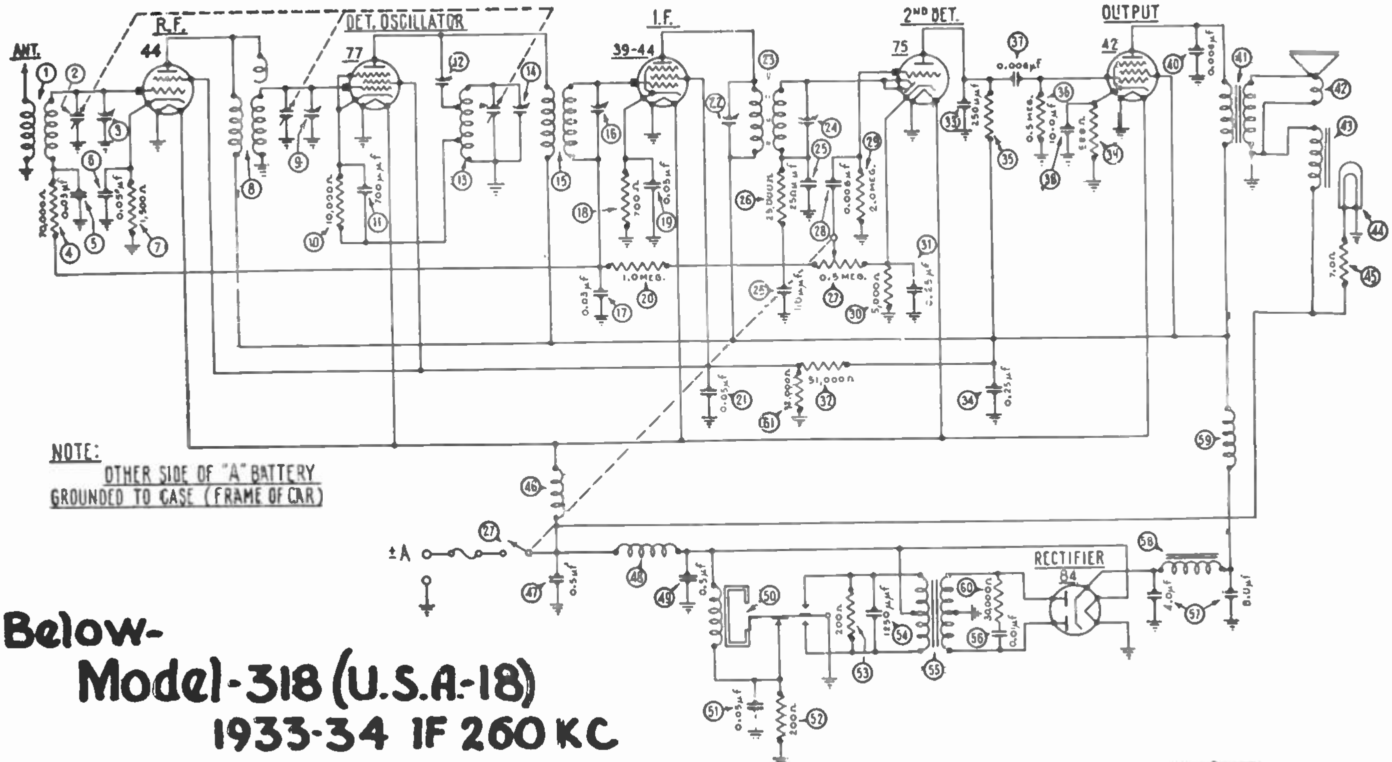
COURTESY PHILCO-17 PRODUCTS LTD

World Radio History

Model - 11 1933-34 IF 260 K.C



Below- Model-318 (U.S.A.-18) 1933-34 IF 260 KC

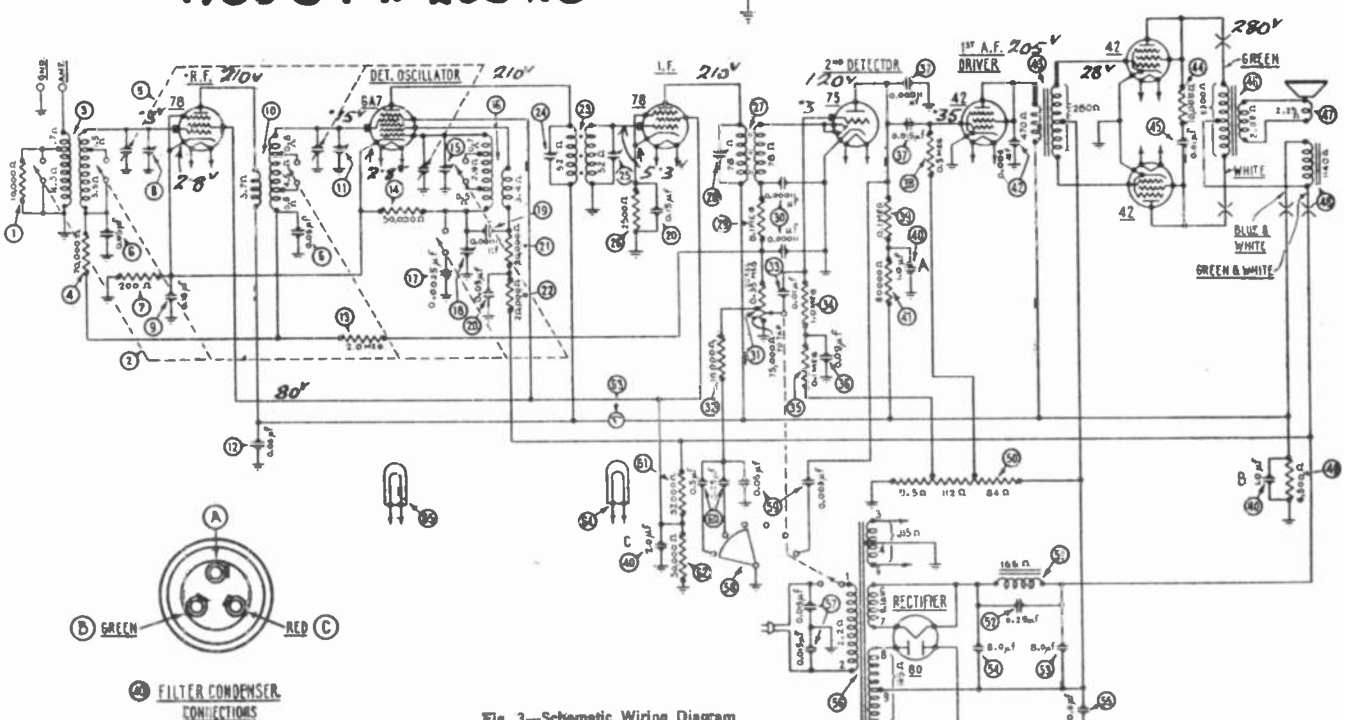


Fig. 3—Schematic Wiring Diagram

NOTE: In current production—(32)-a Resistor (240,000) (Red-Yellow-Yellow), Part No. 4410—(*not* shown in Schematic), is connected *between* line running from (13) to junction of (29), (30); and ground. (33)-a Condenser (.05), Part No. 30-4020—(*not* shown in Schematic), is connected *between* high side of Volume Control (31) and junction of (29), (30). (60) External Condenser in Tone Control circuit has but one section (in current production),—the .05 mfd. on point two. Point one goes directly to (33).

DATA SHEET

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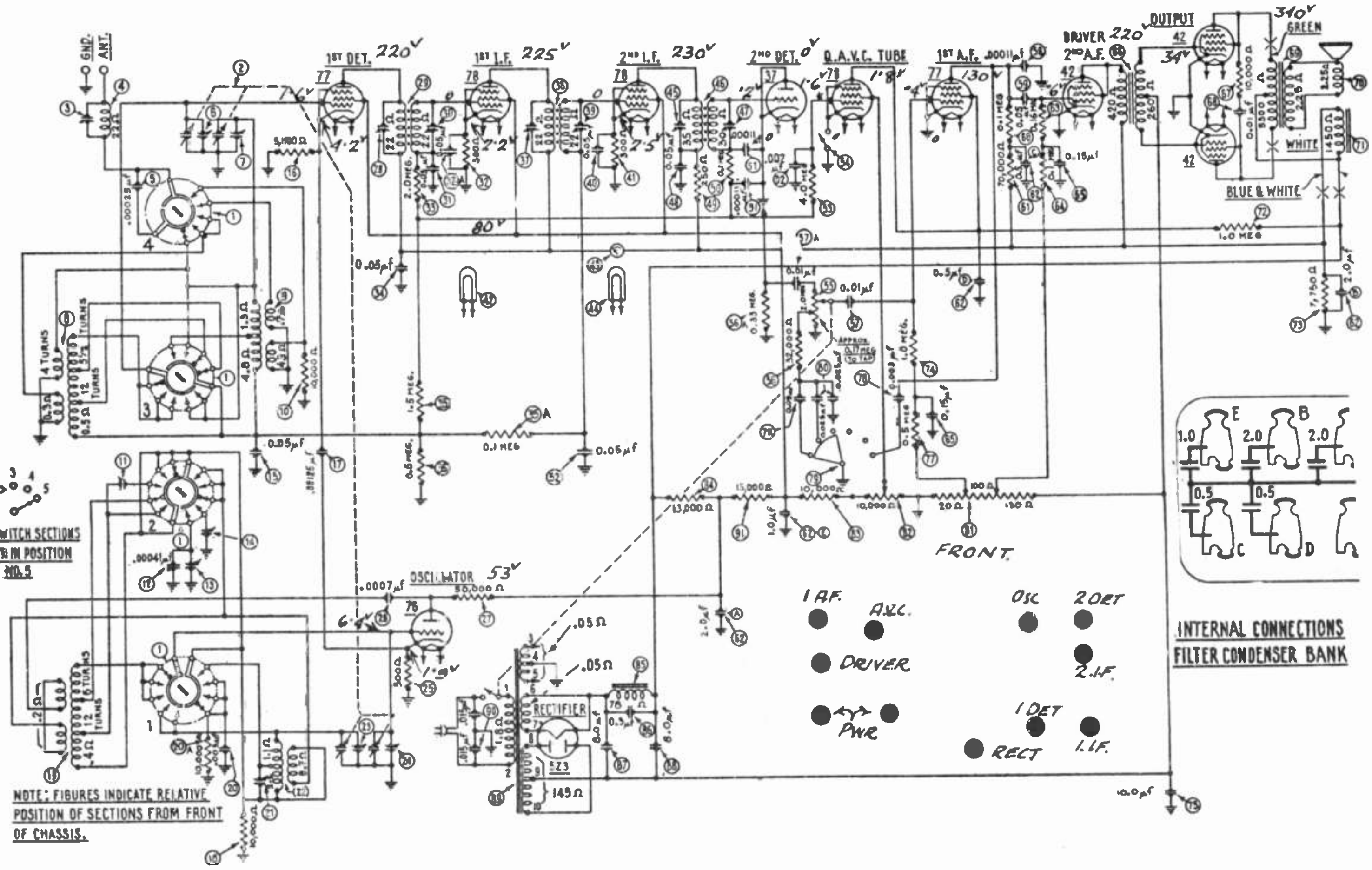
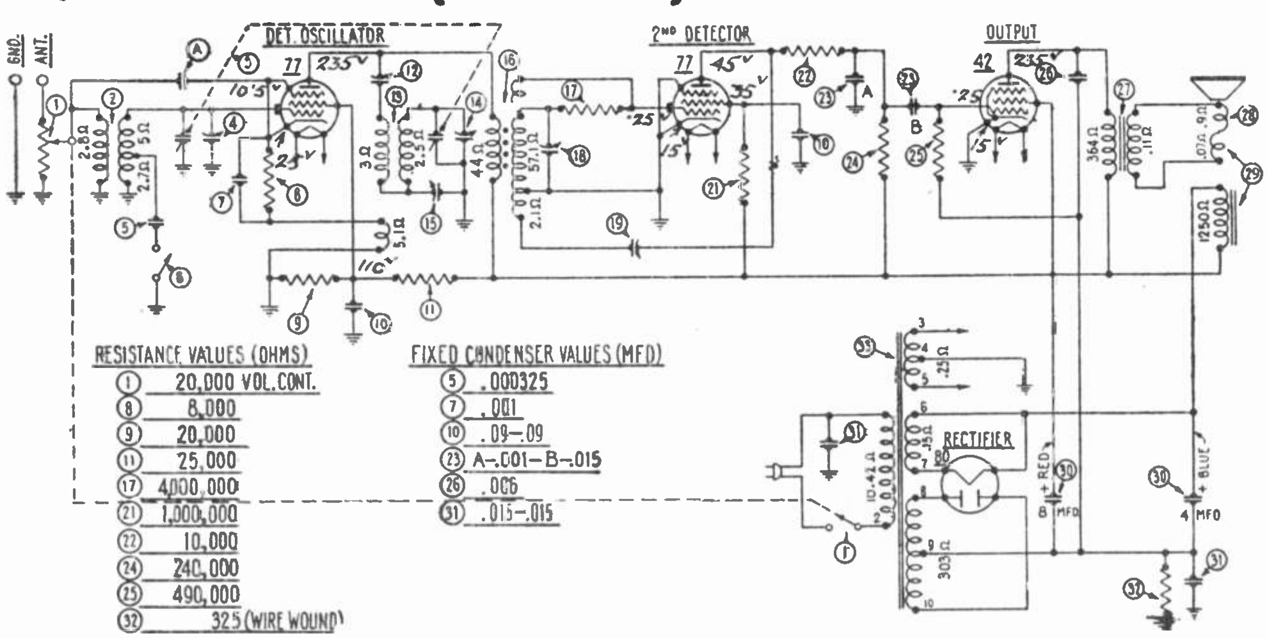
COURTESY PHILCO-18 PRODUCTS LTD.

World Radio History

Model-316 (U.S.A-16) 1933-34-35 IF. 460 Kc.



Models-357-358 (U.S.A. 57-58) 1933-34 IF 460 KC



RESISTANCE VALUES (OHMS)	
1	20,000 VOL. CONT.
8	8,000
9	20,000
11	25,000
17	4,000,000
21	1,000,000
22	10,000
24	240,000
25	490,000
32	325 (WIRE WOUND)

FIXED CONDENSER VALUES (MFD)	
5	.000325
7	.001
10	.09—.09
23	A-.001-B-.015
26	.006
31	.015—.015

Model 58 is a four tube superheterodyne receiver, very similar to Model 57. Note that the center tap of filament winding goes to —B instead of to ground. In the Model 58 one end of the oscillator pick-up coil goes directly to the cathode of the detector-oscillator tube, and the other end to the 8000 ohm resistor and .001 condenser, the other ends of these two units being grounded.

DATA SHEET

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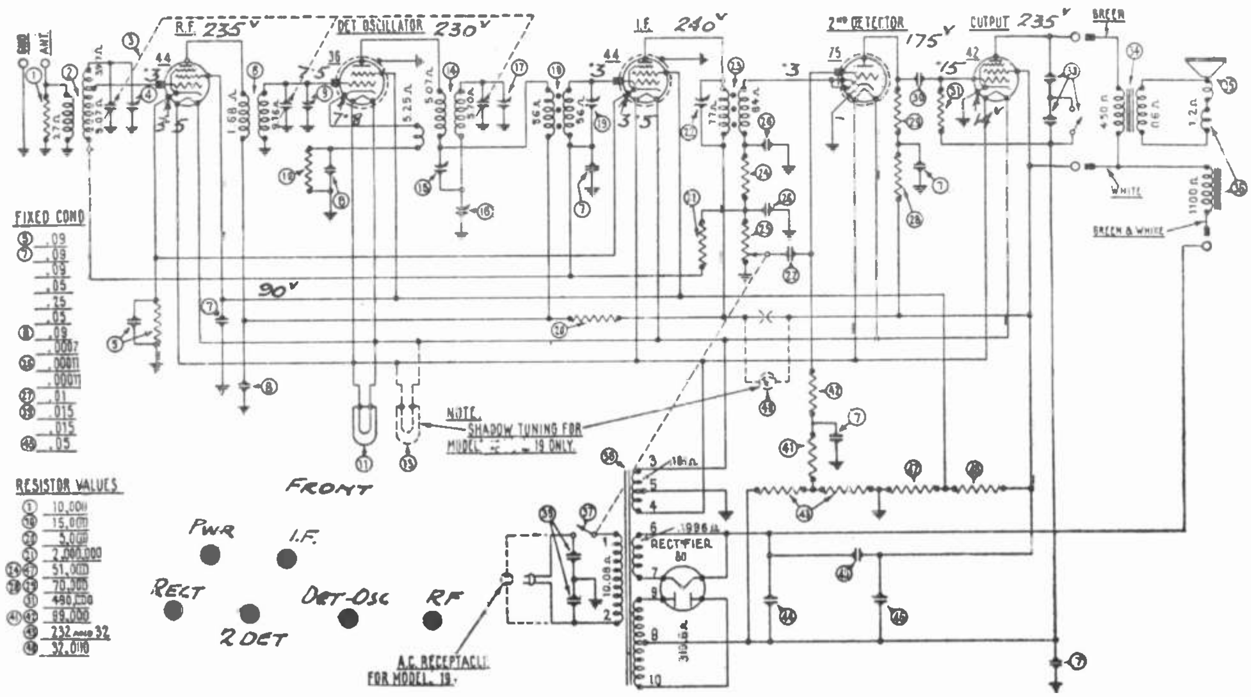
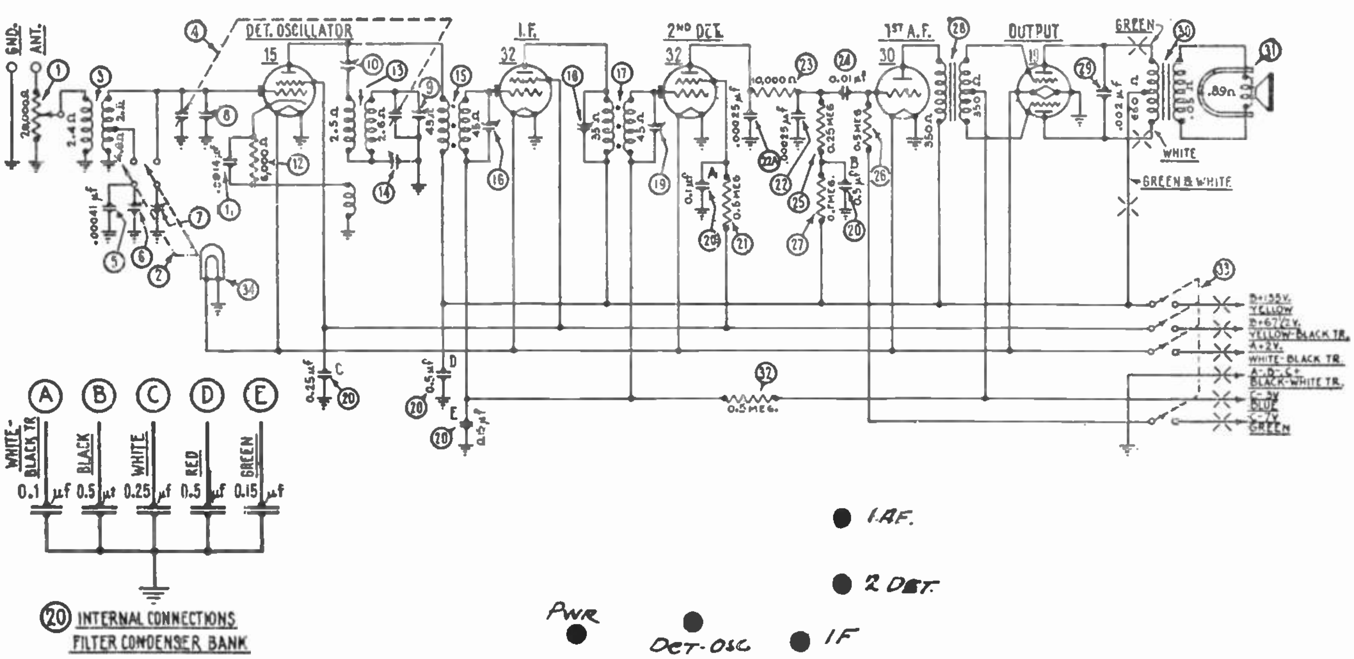
COURTESY PHILCO-19 PRODUCTS LTD.

World Radio History

Models-319-389(U.S.A. 19-89) 1933-34 IF 260 KC



Model-337(U.S.A. 37) 1933-34 IF 460 K.C.



DATA SHEET

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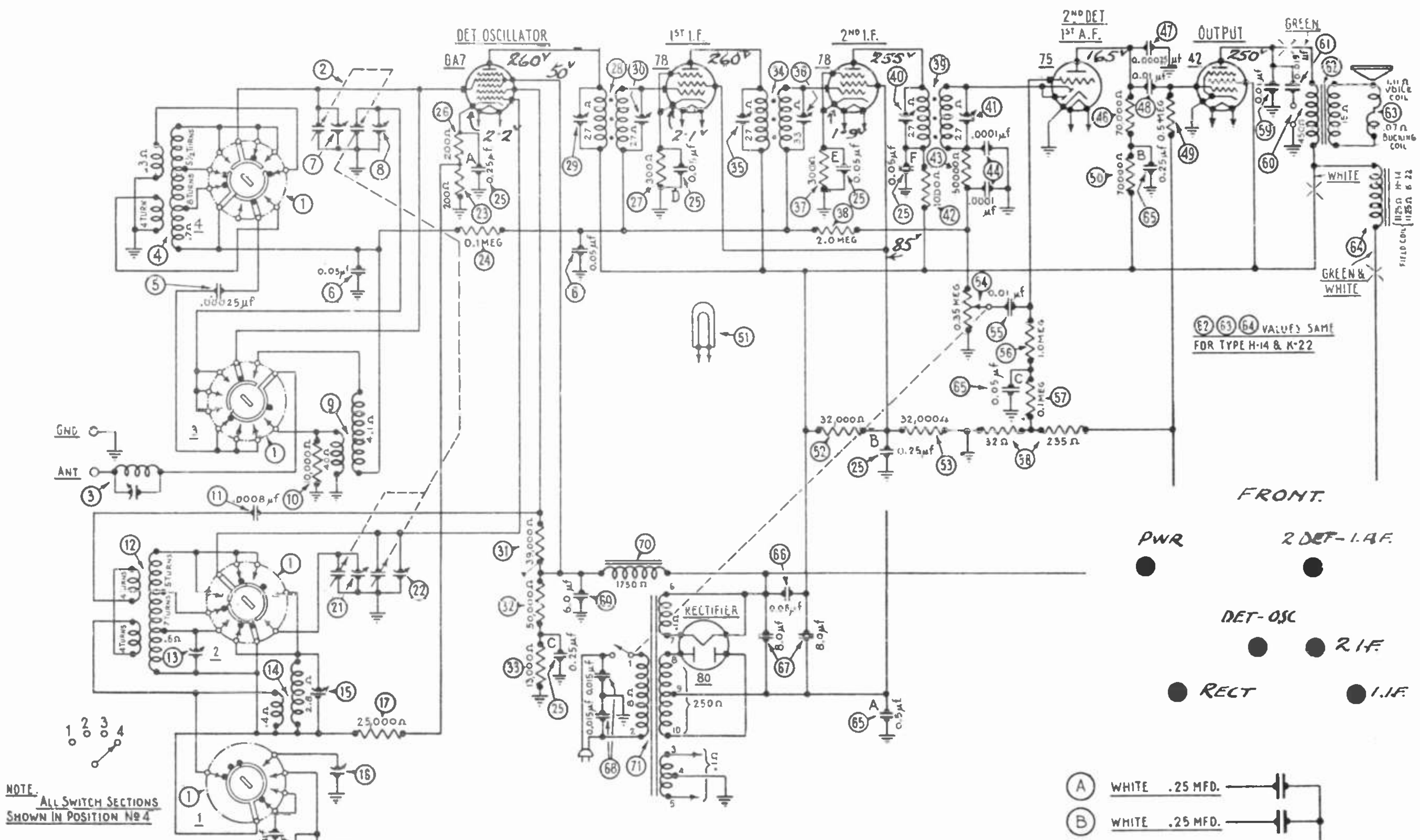
COURTESY
PHILCO-20
PRODUCTS LTD

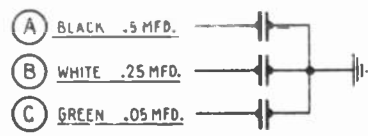
World Radio History

Model-344 (U.S.A 44) 1933-34 IF 460 K.C.



ADJUSTMENT OF THE DIAL FREQUENCIES—
In the following procedure, the frequency ranges are:

Range 1	520 K.C.—1500 K.C.
Range 2	1.5 M.C.—4.0 M.C.
Range 3	4.0 M.C.—11.0 M.C.
Range 4	11.0 M.C.—23.0 M.C.



(65) BY-PASS CONDENSER BLOCK CONNECTIONS

(25) BY-PASS CONDENSER BLOCK CONNECTIONS

COURTESY PHILCO-21 PRODUCTS LTD.

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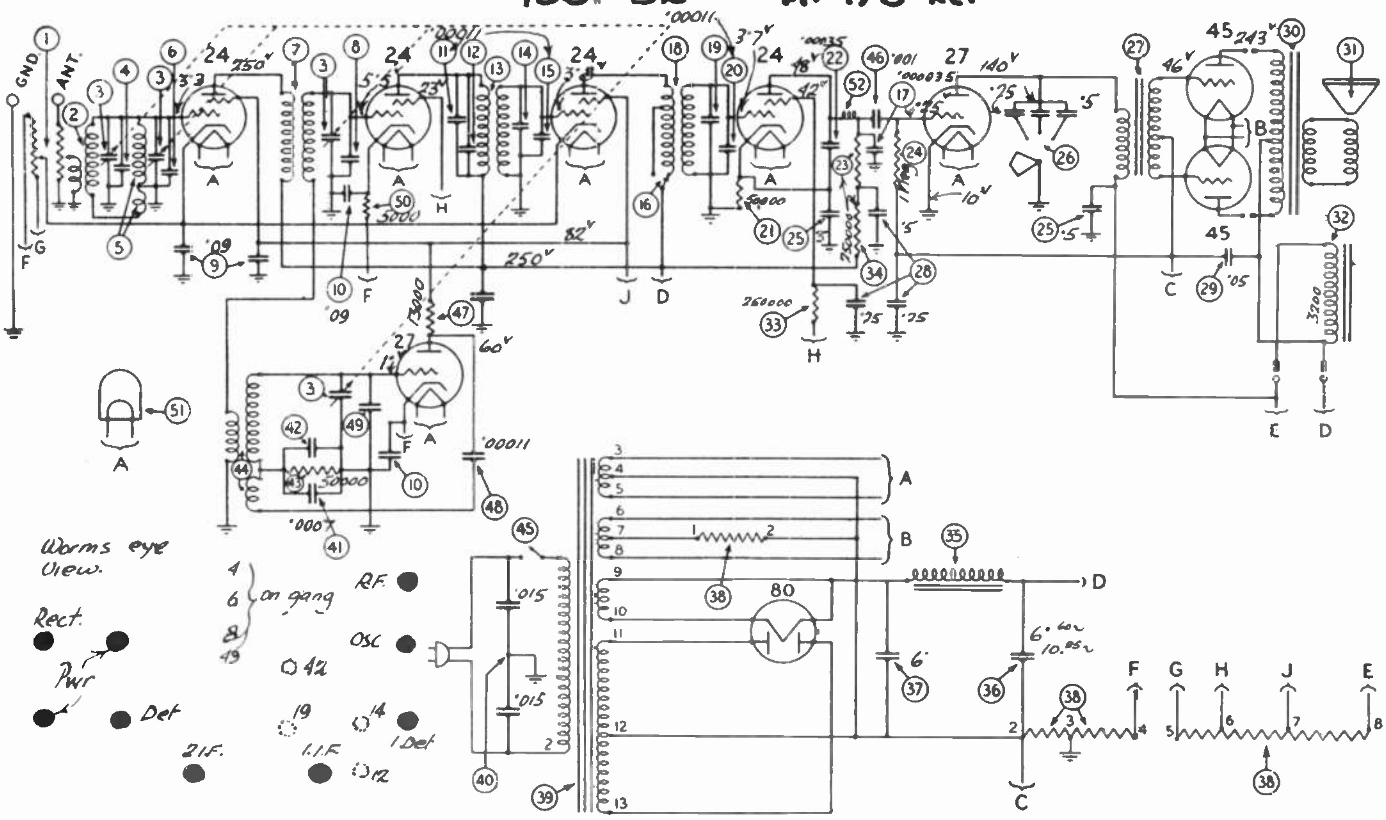
DATA SHEET

Models 90 and 90-A

WITH 2- TYPE 45 TUBES

1931-32 I.F. 175 Kc.



MODEL 90

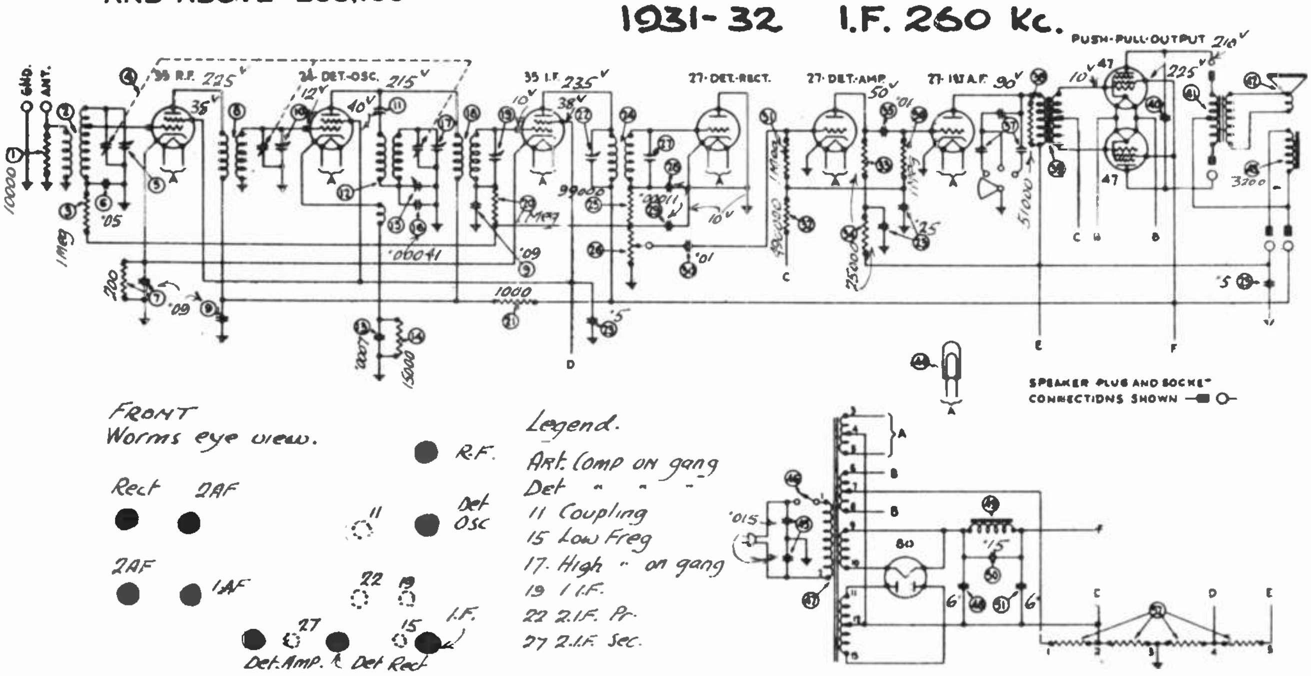
WITH 2- TYPE 47 TUBES

SERIAL No. 32,001 TO B35,000

AND ABOVE B53,100

also see Data Sheet-11

1931-32 I.F. 260 Kc.



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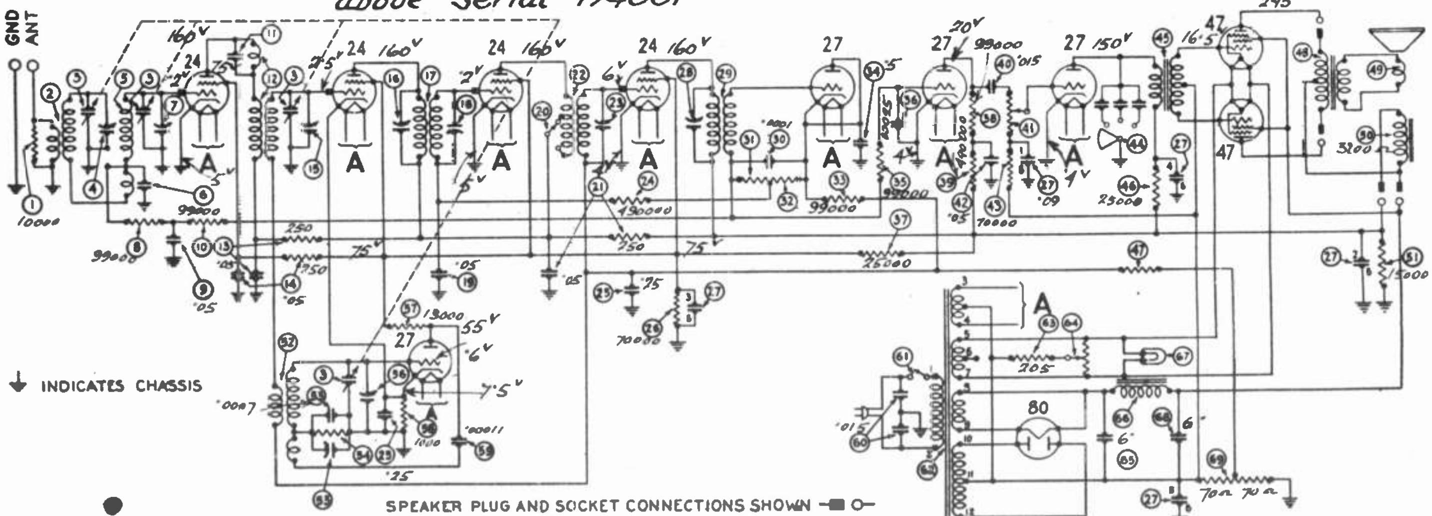
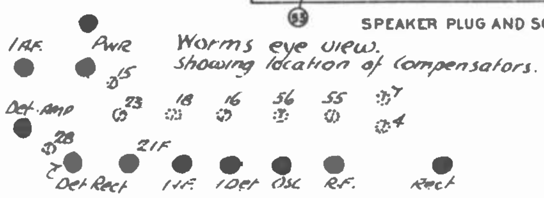
World Radio History

Models 112a-112a 1931-32 I F 175 kc

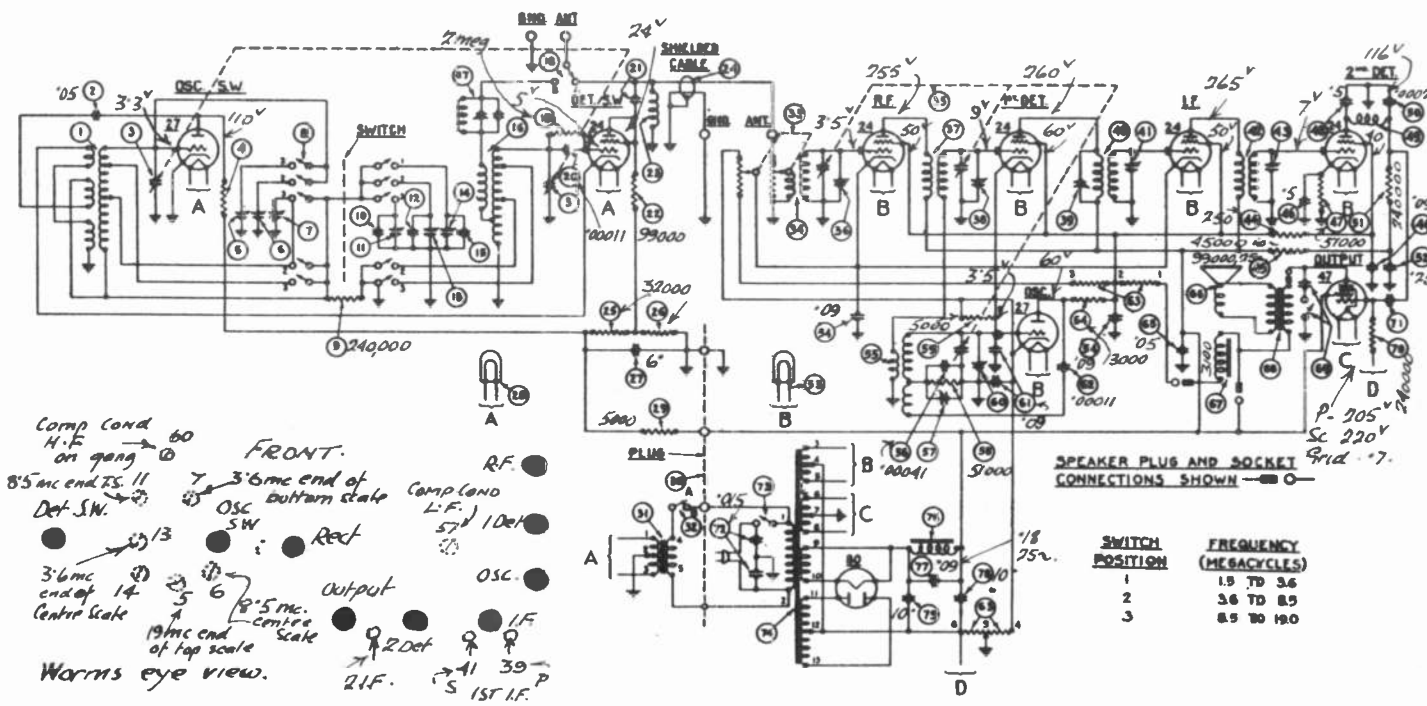
above serial 174001





also see Data Sheet 9

Models 470-470a 1932 I.F. 260 Kc.



SWITCH POSITION	FREQUENCY (MEGACYCLES)
1	1.5 TO 3.6
2	3.6 TO 8.5
3	8.5 TO 19.0

Tube and alignment condenser locations.

DATA SHEET

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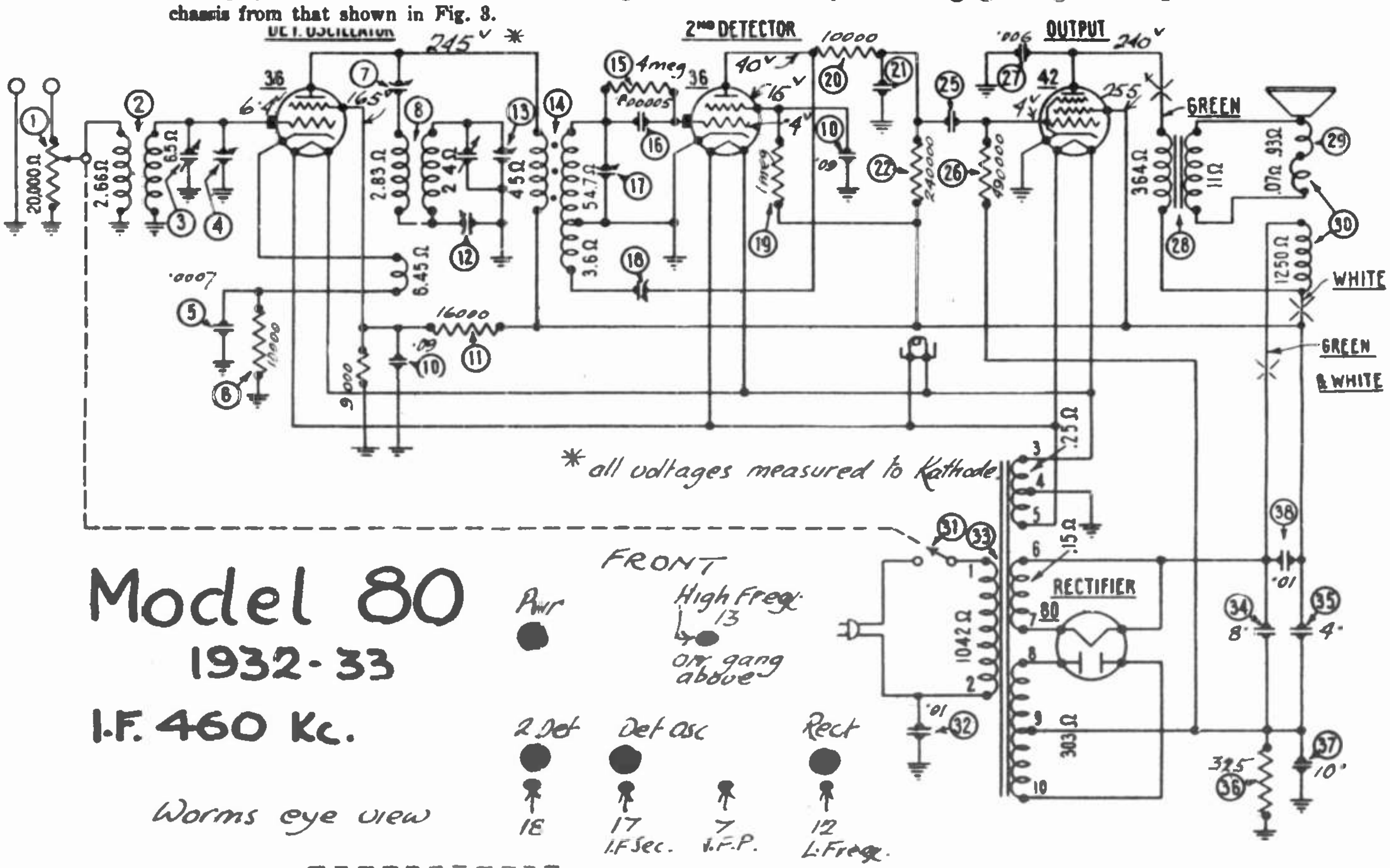
COURTESY PHILCO-23 PRODUCTS LTD.

World Radio History

* A number of circuit changes were made on chassis of run No. 5 and above. This run number is rubber stamped in a star on the back of the chassis. Refering to Fig. 2 and 3, the condenser (37) connects to the B- end of resistor [illegible] instead of to ground. The bucking coil - that section of [illegible] in series with the voice coil - is shorted out. The 10 mfd. dry electrolytic condenser (37) is eliminated, and replaced with a substitute .015 section combined with [illegible], part 3793R. The .01 mfd. condenser [illegible] is eliminated. The positions of (19) [illegible] and [illegible] are changed in the chassis from that shown in Fig. 3.



Model 80

1932-33

I.F. 460 Kc.

FRONT

Pwr

High Freq. 13

on gang above

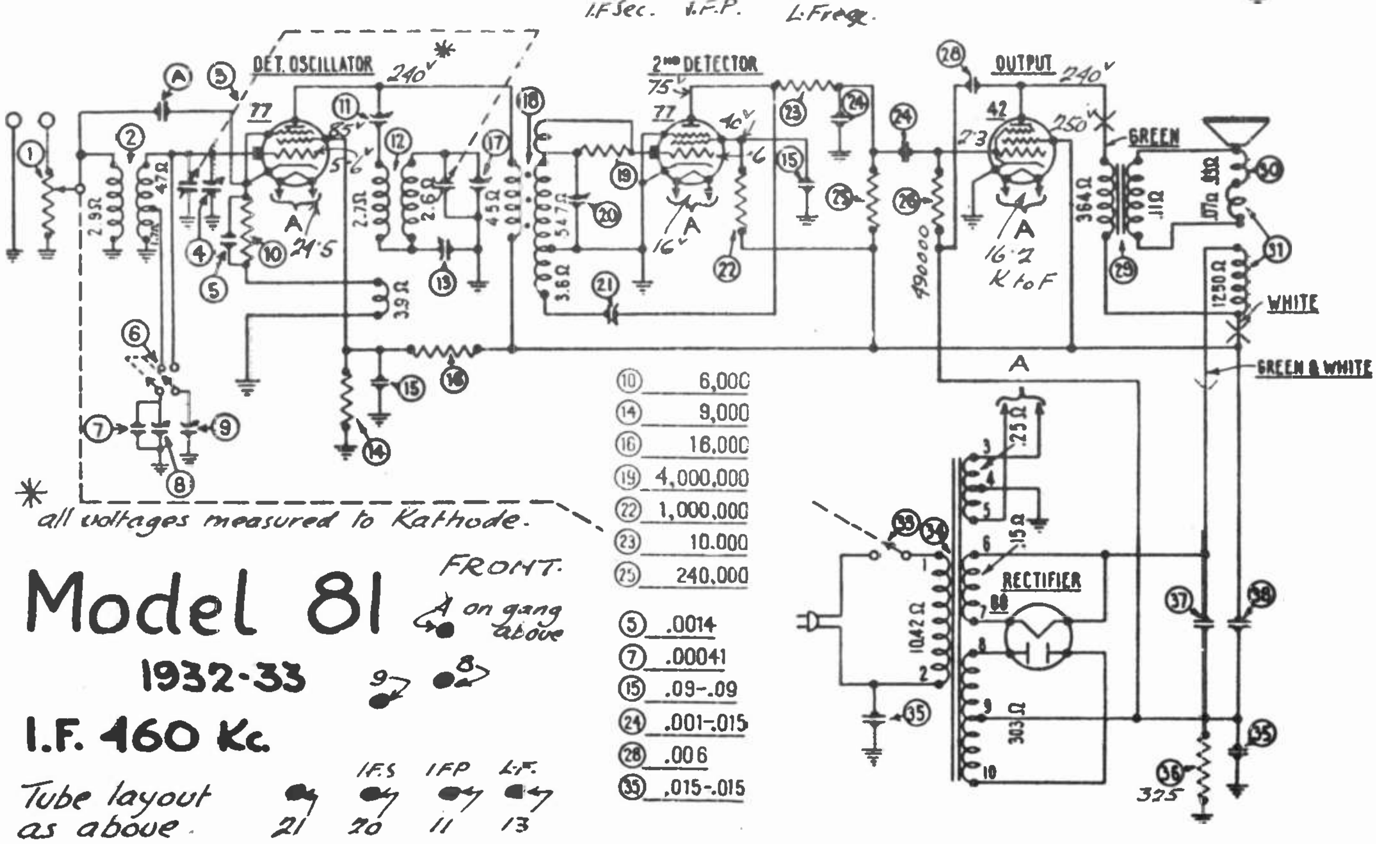
2 Det — 18

Det osc — 17 I.F. Sec.

7 I.F.P.

Rect — 12 L. Freq.

Worms eye view



(10)	6,000
(14)	9,000
(16)	16,000
(19)	4,000,000
(22)	1,000,000
(23)	10.000
(25)	240,000
(5)	.0014
(7)	.00041
(15)	.09-.09
(24)	.001-.015
(28)	.006
(35)	.015-.015

* all voltages measured to Kathode.

Model 81

1932-33

I.F. 460 Kc.

FRONT.

A on gang above

9 8

Tube layout as above

I.F.S I.F.P L.F.

21 20 11 13

DATA SHEET

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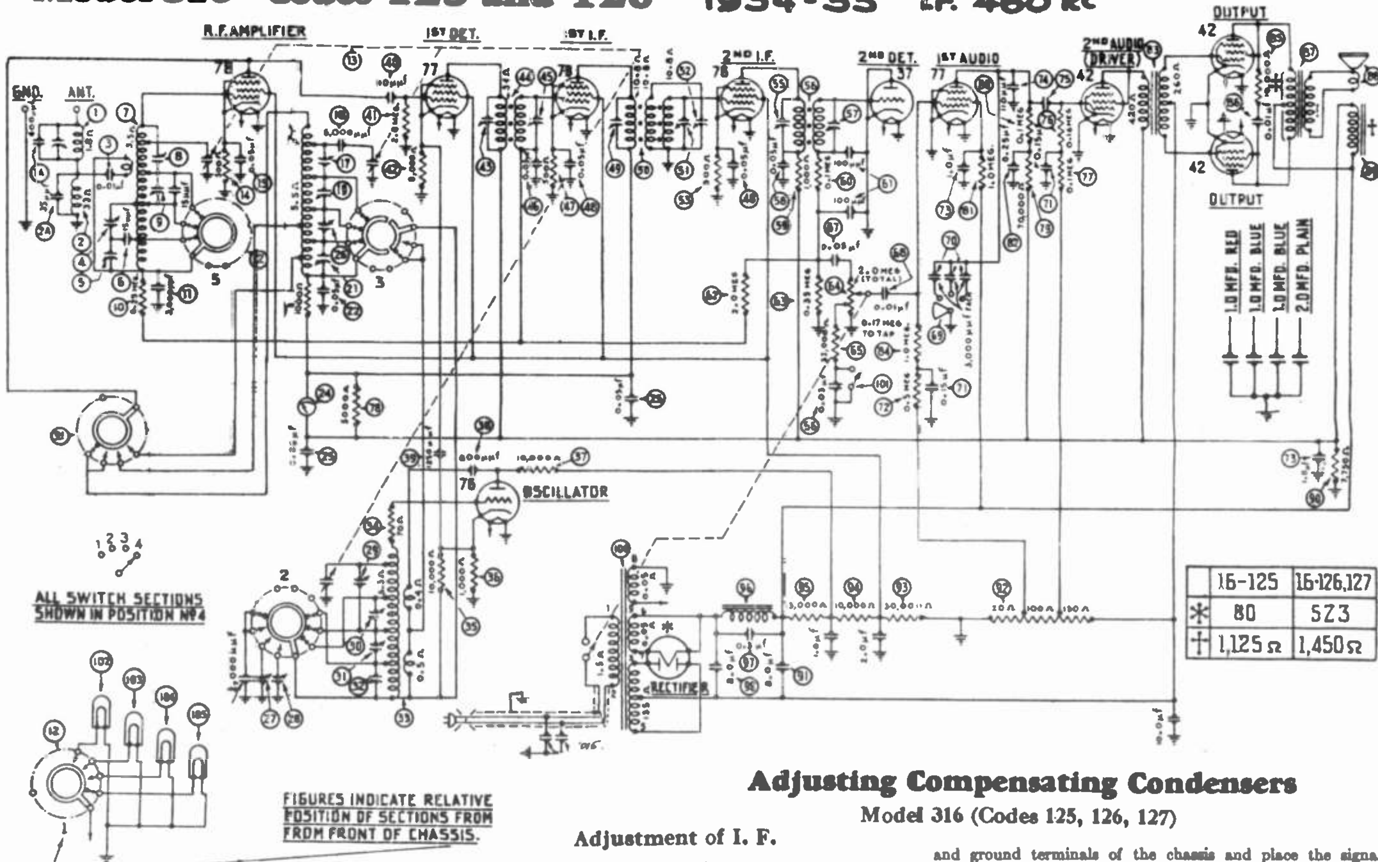
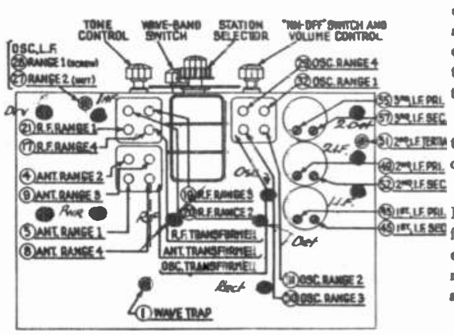
COURTESY PHILCO-24 PRODUCTS LTD.

World Radio History

Model 316—Codes 125 and 126 1934-35 I.F. 460 Kc



	16-125	16-126,127
*	80	5Z3
†	1,125 Ω	1,450 Ω



Line Voltage 115

Code 125

Tube Function	78 R.F.	77 1st Det.	78 Osc.	78 1st I.F.	78 2d I.F.	37 2d Det.	77 1st Aud.	42 Driver	42 Output
Circuit									
F to F	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
P to K	175	185	70	180	180	0	60	190	275 ca.
SG to K	65	42	...	65	65	...	48	190	275 ca.
K to Gnd.	3.4	4.8	5.4	2.3	3.5	0	0	0	0

Code 126

Tube Function	78 R.F.	77 1st Det.	78 Osc.	78 1st I.F.	78 2d I.F.	37 2d Det.	77 1st Aud.	42 Driver	42 Output
Circuit									
F to F	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
P to K	310	230	75	215	215	0	70	215	230
SG to K	75	70	...	75	80	...	56	215	230
K to Gnd.	2.8	5.8	6.1	2.8	3.3	0	0	0	0

Adjusting Compensating Condensers

Model 316 (Codes 125, 126, 127)

Adjustment of I. F.

1. Remove the antenna connection from the receiver, disconnect the grid clip from the first detector (type 77 tube), and connect the "ANT" output terminal of the Model 048 or 024 signal generator to the grid cap of this tube; connect the "GND" terminal of the signal generator to the "GND" terminal of the receiver.

2. Connect the 0 to 20 volt range of the output meter in the Model 048 or 025 tester to the plate prongs of the two output tubes or to the two bottom prongs of the speaker plug.

3. Adjust the signal generator to a frequency of 460 K.C. Place the receiver in operation with the dial turned to the low frequency end of the broadcast band, wave band switch to extreme left, and with the volume control adjusted near its maximum setting. Adjust the signal generator attenuator for approximately half-scale reading of the output meter.

4. Using the Philco fibre adjusting screw driver, part No. 27-7059, adjust the I. F. compensating condensers in the following order to give maximum reading in the output meter: ㊿, 🄰, ㊿, ㊿, ㊿, ㊿, ㊿. (Fig. 4).

Adjustment of Wave-Trap

1. Connect the signal generator leads to the antenna and ground terminals of the receiver. Replace the grid clip on the first detector grid cap.

2. Set the wave-band switch of the receiver to the extreme left (broadcast position) (Range No. 1, 550–1500 K.C.), and turn the station selector to 550 K.C.

3. With the signal generator in operation at 460 K.C., adjust the wave-trap ① condenser until a minimum reading is obtained on the output meter. The Philco fibre wrench, part No. 3164, is used for this adjustment.

Adjustment of High Frequency Padders

1. Leaving the output meter connected to the receiver connect the Philco Model 091 signal generator to the antenna and ground terminals of the chassis and place the signal generator in operation.

2. Turn the wave-band switch to Range 4 (extreme right) and adjust the station selector to 18.0 megacycles, at which point the fifth harmonic of the 3600 K.C. signal will be heard. By means of the Philco padder wrench, part No. 3164, adjust the oscillator, R.F. and antenna padders for maximum reading in the output meter and in the order mentioned. These padders are numbered ㉚, ⑰ and ⑧, respectively in figure No. 4. To make certain that the adjustment has been correctly made check the sixth harmonic at 21.6 M.C. on the dial.

3. Turn the wave-band switch to Range 3 (4.1–10.0 M.C.) and adjust the tuning dial to 7.2 M.C. (the second harmonic of the 3600 K.C. signal). Adjust the oscillator, R.F. and antenna padders (㉙, ⑲ and ⑨, respectively) for maximum output. Check the calibration of the dial at the upper portion of the third band by tuning in the image of the 10.8 M.C. signal at approximately 9.9 on the dial (If there is an appreciable error in calibration at this point, readjust padder ㉙ for maximum output. Return the dial to the 7.2 M.C. position, tuning for maximum output. Readjust padders ⑲ and ⑨.)

4. Turn the wave-band switch to scale No. 2 (1.5–4.0 M.C.) and tune in the fundamental frequency from the signal generator at 3.6 M.C. Adjust padders ㉘, ㉑ and ④ for maximum output.

5. At this point it will again be necessary to make use of the broadcast type signal generator Models 024, 048 or equivalent. Connect the output of this signal generator to the antenna and ground terminals of the chassis. Turn the station selector dial to 1.5 M.C. (Range 2) and adjust the signal generator to the same frequency (1500 K.C.). Adjust padder ㉗ (nut).

6. Turn the wave-band switch to Range No. 1 (broadcast band) and set the dial at 1500 K.C. Adjust the signal generator to this frequency and adjust padders ㉛, ⑳ and ⑤ for maximum output.

7. Tune the receiver and the signal generator to 600 K.C. and adjust padder ㉜ (screw) for maximum output.

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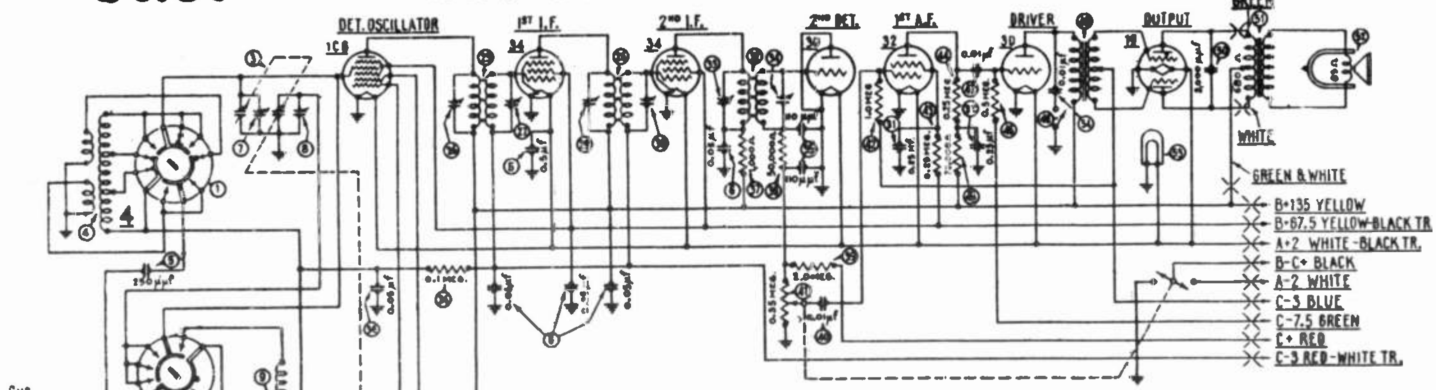
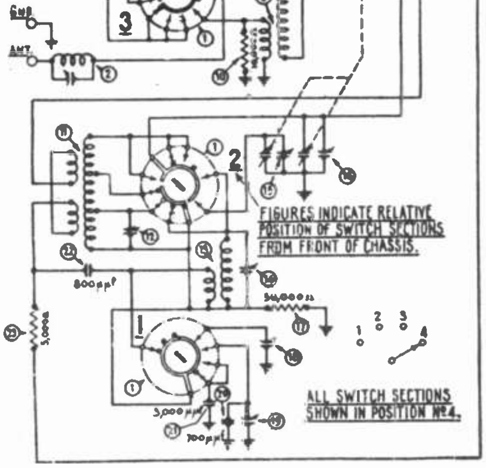
COURTESY PHILCO-25 PRODUCTS LTD.

World Radio History

Model 344 1934-35 I.F. 460. Kc.





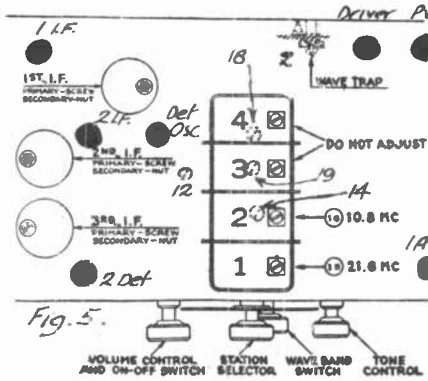


Fig. 5.

	Det.-Osc.	1st I. F.	2nd Det.	1st A. F.	Driver	Output
	1C6	34	30	32	30	19
F	1.9	1.9	1.9	1.9	1.9	1.9
P	P-135 G2-120	135	..	40	135	135
Sc	67½	67½	..	35	..	..

Model 334, Code 121 is intended for use with a 2 volt storage battery, three 45 volt heavy duty "B" batteries and three 4½ volt "C" batteries. The Model 334, Code 123 has in addition to the above a special lead permitting operation with the type SA600 "Special" air cell battery. This receiver must not be used with the ordinary type A-600 air cell battery.

ADJUSTING MODEL 334

DO NOT ATTEMPT TO ADJUST the compensating condensers mounted upon sections numbered 3 and 4 of the Tuning Condenser Assembly. These have been adjusted, and sealed, at the factory.

1—ADJUSTMENT OF THE INTERMEDIATE FREQUENCY—Remove the grid clip from the type 1C6 tube and connect the "ANT" output terminal of the signal generator to the grid cap of the tube. Connect the "GND" terminal of the signal generator to the "GND" terminal of the receiver chassis.

Connect the output meter to the primary terminals of the output transformer. Set the signal generator at 460 K.C. (the intermediate frequency of Model 34) and adjust each of the I.F. compensating condensers in turn, to give maximum response in the output of the receiver. The location of the I.F. compensating condensers is shown in Figure 2. Each of these transformers has a dual compensating condenser mounted at its top, and accessible thru a hole in the top of the coil shield. In the dual compensators, the Primary circuit is adjusted by turning the screw; the Secondary circuit is adjusted by turning the hex-head nut.

2—ADJUSTMENT OF THE WAVE TRAP—Replace the grid clip upon the Detector-Oscillator tube (Type 1C6). Connect the output leads from the signal generator directly to the antenna and ground terminals of the receiver. Set the Wave-Band Switch of the receiver to the standard broadcast band (Range 1) and the Station Selector at the low frequency (520 K.C.) end. Adjust the Wave Trap ③ condenser to give MINIMUM response to a 460 K.C. signal from the signal generator. The Wave Trap ③ is located at rear and underneath the chassis, and is shown in Figures 2 and 5. It is reached from the rear of the chassis.

3—ADJUSTMENT OF THE DIAL FREQUENCIES—Model 34 has four separate frequency bands or ranges, each obtained by one of the four positions of the wave-band switch. There is a compensating condenser for each range, which must now be adjusted. In the following procedure, the frequency ranges referred to, and obtained by the different positions of the switch are:

Range 1............520 K.C.—1500 K.C.
Range 2............1.5 M.C.—4.0 M.C.
Range 3............4.0 M.C.—11.0 M.C.
Range 4............11.0 M.C.—23.0 M.C.

Connect the output terminals of the Model 091 or equivalent Signal Generator, to the "ANT" and "GND" terminals of the receiver chassis. Connect an output meter to the primary terminals of the Output Transformer of the receiver. Set the Wave-Band Switch to Range 4, and the Station Selector at 21.6 M.C. The sixth harmonic of the 3.6 M.C. crystal in the Model 091 Signal Generator is picked up at this point. Adjust the compensating condenser ⑱ on Section 1 of Tuning Condenser for maximum response in the output of the receiver.

Turn the Wave-Band Switch to Range 3, and the Station Selector to 10.8 M.C. Here, the third harmonic of the 3.6 M.C. crystal will be heard. Adjust the compensating condenser ⑯ on Section 2 of Tuning Condenser for maximum response in the output of the receiver.

Turn the Wave-Band Switch to Range 2, and adjust the Station Selector to 3.6 M.C. The "Antenna" connection between the Signal Generator and the receiver chassis must be removed for this adjustment, otherwise the output of the Signal Generator will be too great. Adjust the compensating condenser ⑲ to give maximum response in the output circuit. This compensating condenser is located underneath the chassis and is not accessible from above. See Figure 5.

This concludes adjustments requiring the Model 091 (or equivalent) high frequency signal generator.

The Model 048 or its equivalent is now used again. Turn the Wave-Band Switch of the set to Range 2 and the Station Selector to 1.5 M.C. Set the Signal Generator at 1500 K.C. Make sure the "Antenna" connection between the Signal Generator and the Chassis has been restored. Adjust compensating condenser ⑳ located underneath the chassis, (Figure 5). Adjustment is made from the underside of the chassis.

Tune the Wave-Band Switch to Range 1 and the Station Selector to 1400 K.C. Set the Signal Generator at 1400 K.C. Adjust compensating condenser ⑭, which is located underneath the chassis. (See Figure 5). This adjustment is made from the underside of chassis.

Finally, with Wave-Band Switch at Range 1, and Station Selector at 520 K.C., set the Signal Generator at 520 K.C. and adjust compensating condenser ⑫ (Figure 5). This compensating condenser is also mounted underneath the chassis, and reached from below.

For proper and accurate adjustment of Model 334, the procedure must be followed exactly in the order given. The adjustment should not be undertaken without proper equipment as mentioned above.

DATA SHEET

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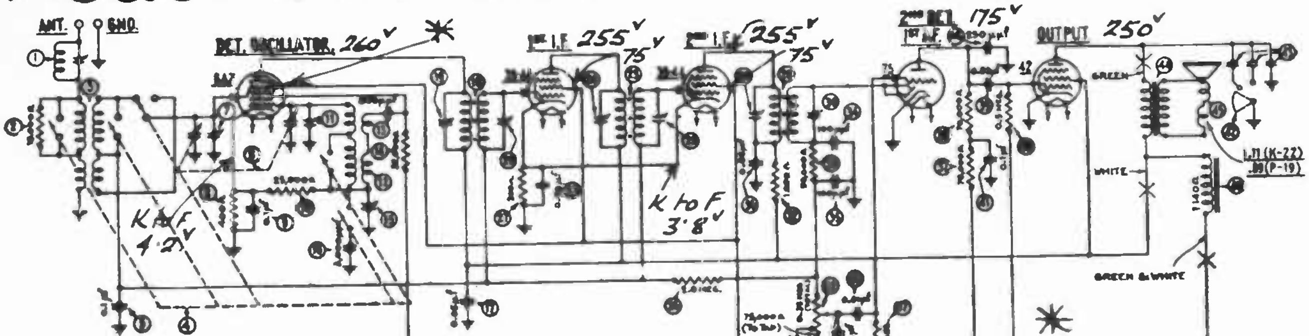
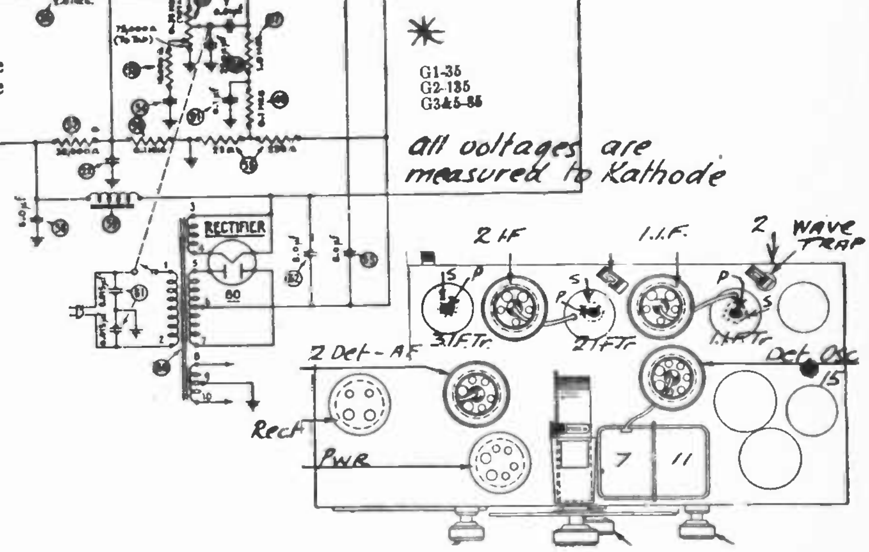
COURTESY PHILCO-26 PRODUCTS LTD.

World Radio History

Model 345 1934-35 I.F. 460.Kc.



ADJUSTMENT OF THE WAVE TRAP—Replace the grid clip upon the Detector-Oscillator tube (Type 6A7).



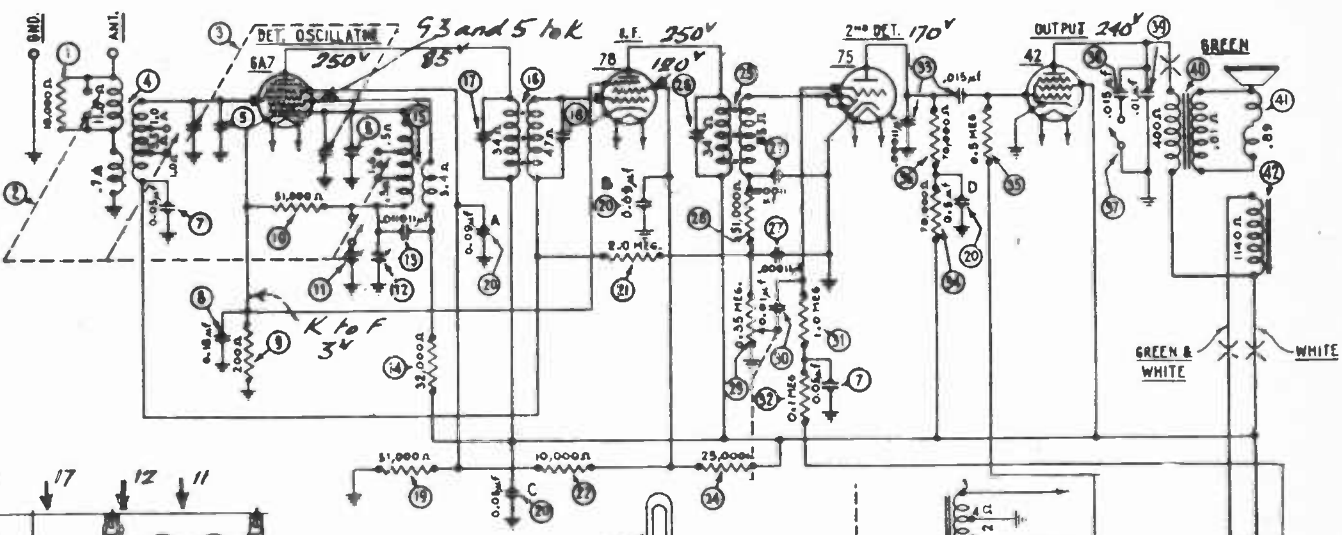
DETECTOR, AND OSCILLATOR "HIGH" AND "LOW" FREQUENCY ADJUSTMENTS—The "antenna" and "oscillator H. F." compensators are located on top of the tuning condenser assembly, reached from above.

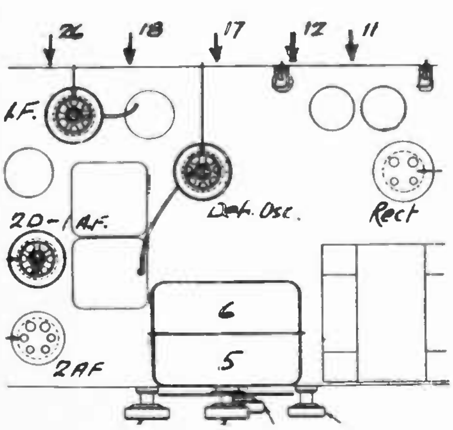
Set the signal generator at 1500 K.C., tune in this signal on the set and adjust the antenna compensator ⑦ (nearest tuning control) to give maximum reading in the output meter.

Next adjust the oscillater H. F. condenser ⑪ (located on the other section of tuning condenser) to maximum reading.

Finally set the signal generator at 600, tune in this signal and adjust the osscillator "L. F. condenser", located underneath chassis (⑮ in Fig. 4) to maximum reading. This adjustment is reached thru the hole in top of chassis, between the two electrolytic condensers (left hand end of chassis when facing rear).

Model 360 1933-34 I.F. 460 Kc



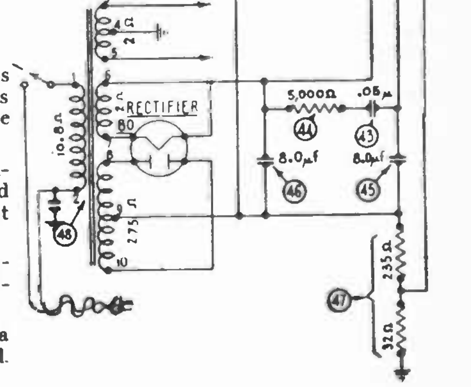


The intermediate frequency compensating condensers first should be adjusted. The intermediate frequency is 460 K. C. These condensers are ⑰, ⑱ and ㉖, accessible from rear of chassis.

Next, the high frequency ⑥ and antenna ⑤ compensating condensers are adjusted. These are mounted upon the tuning condenser assembly ⑤; ⑤ is nearest front of chassis.

The low frequency compensating condensers are adjusted last. These are ⑪ for Police Band, ⑫ for Broadcast Band, and are at rear of chassis.

The I. F. compensating condensers should be given a final retrimming after these adjustments are completed.



DATA SHEET

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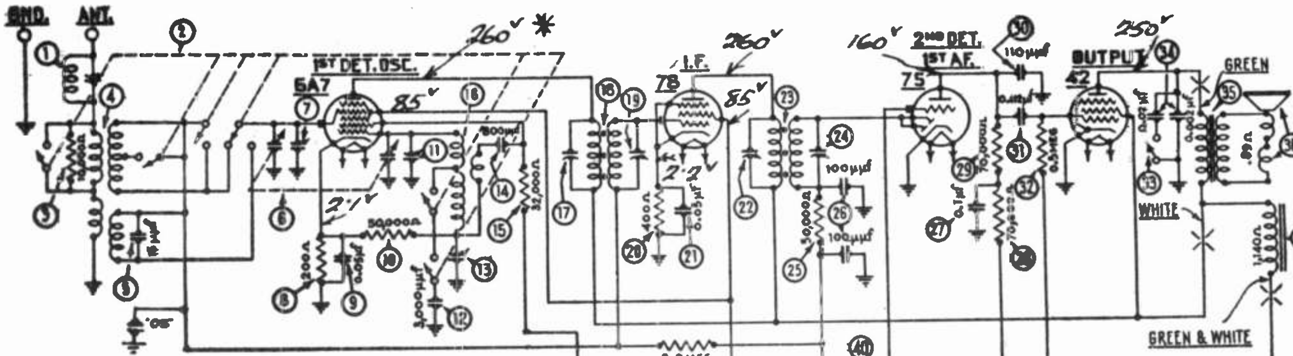
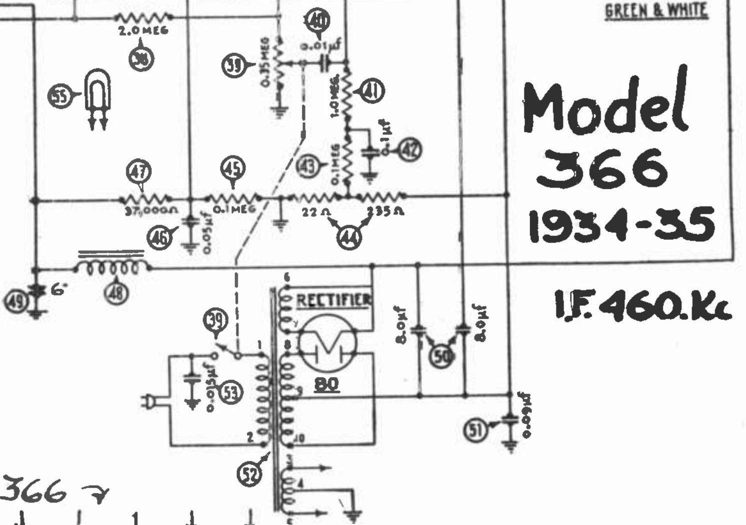
COURTESY PHILCO-27 PRODUCTS LTD.

World Radio History

Model 366 1934-35

I.F. 460 Kc

The adjustment of the compensating condensers in Model 66 Receiver requires the use of an accurate signal generator such as Philco Model 024, an efficient output meter (Philco Model 012 or Model 025 are recommended), and a suitable fibre hex wrench. Connect the output meter to the plate and cathode prongs of the 42 output tube.

Adjustments are made in the following order:

(1)—I. F. (Intermediate Frequency)—Remove grid clip from cap on 6A7 tube and connect antenna lead from signal generator to cap of tube. Connect ground lead to ground post on set. Turn on set and signal generator; set wave switch of latter to 460 K. C. (the I. F. of Model 66) and dial of set at 540, wave band switch to left. Adjust each of the four I. F. compensating condensers ⑰, ⑲, ㉒ and ㉔ in turn so that maximum reading is obtained in the output meter. If the meter reading goes off scale, adjust the attenuator on the signal generator so as to get a lower reading. These I. F. condensers (visible in Fig. 4) are adjusted by inserting the hex wrench thru the holes in rear of chassis sub-base (except one to extreme left when facing rear of set). Two of the holes are covered by small metal buttons which can be removed temporarily by hand.

(2)—WAVE TRAP—Replace grid clip on cap of 6A7 tube and connect antenna lead from signal generator to antenna post on set. Set signal generator at 460 K. C. and adjust wave trap ① so as to get MINIMUM reading in output meter.

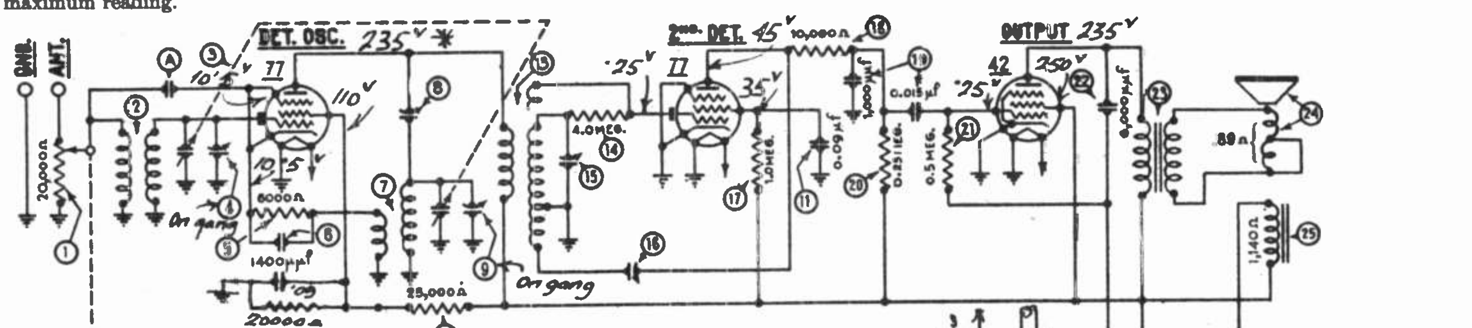
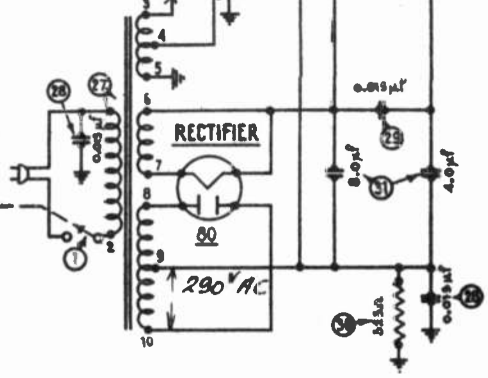
(3)—ANT. and OSC. H. F.—These adjustments ⑦ and ⑪ are located on top of the tuning condenser assembly at right (facing front of set) and adjusted from above. The "ANT" ⑦ is nearest front of set. Set signal generator at 1700 and dial of set at 1700 and adjust these two condensers to get maximum output meter reading.

(4)—OSC. L. F.—This condenser ⑫ is located underneath chassis and is reached from underneath. Set dial of set and signal generator switch at 600, and adjust for maximum reading.

366 →
24 22 17 19 1
● IF ● Det Osc ● Rect
● 2 Det
● Pwr. ●11 ●13
●7

* voltages are all measured to Kathode.

Model. 359 1934-35 IF. 460 Kc

Regen. I.F. Comp.
16 P. S.
Rect 2 Det
Pwr
Det-Osc
FRONT.
(Top View)

IF. 460 Kc.

In Model 359 the I. F. primary and secondary condensers and the "regeneration" compensating condenser are located at the rear of chassis and accessible from the rear; the "ANT" and "OSC H. F." are located on the side of the tuning condenser

Finally adjust the regeneration condenser ⑯. With the set connected to an antenna, turn the station selector to receive a station at about 130 on the dial. With a screw driver turn the small fibre hex-head screw (which operates the regeneration condenser) located at rear of chassis below antenna and ground terminals, clockwise until the set squeals or oscillates. Then turn the hex-screw ¼ of a turn back until the squealing stops. Tune in other stations on different points on the scale to make sure that the squealing is eliminated. It will be necessary to readjust this condenser if a different type 77 tube is used for second detector.

DATA SHEET

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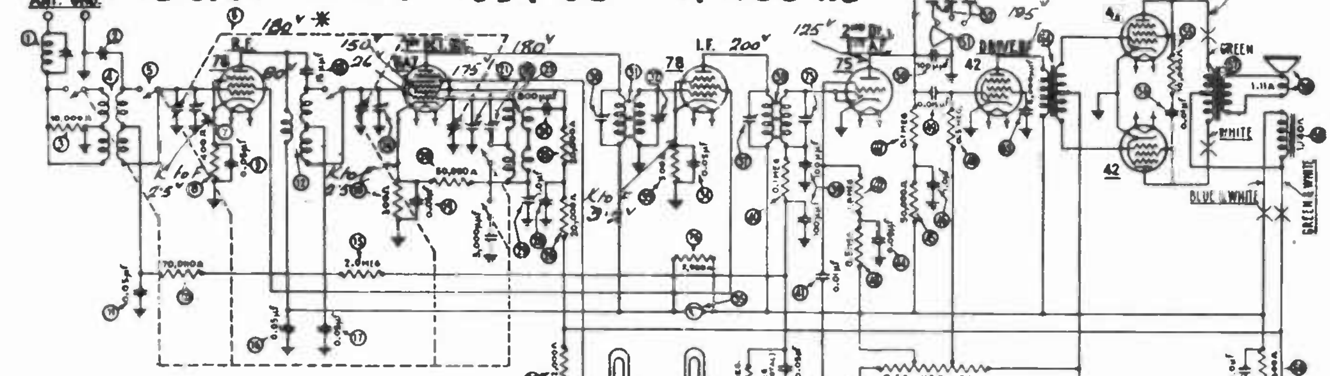
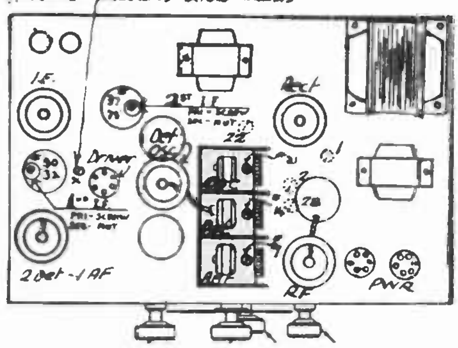
Courtesy PHILCO-28 PRODUCTS LTD.

World Radio History

Model 3118 1934-35 I.F. 260 Kc

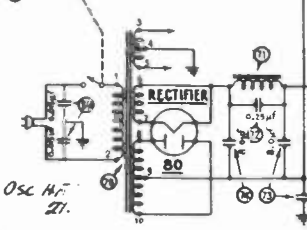


× Early models 75 omitted 37 on chassis
Dotted indicates below chassis



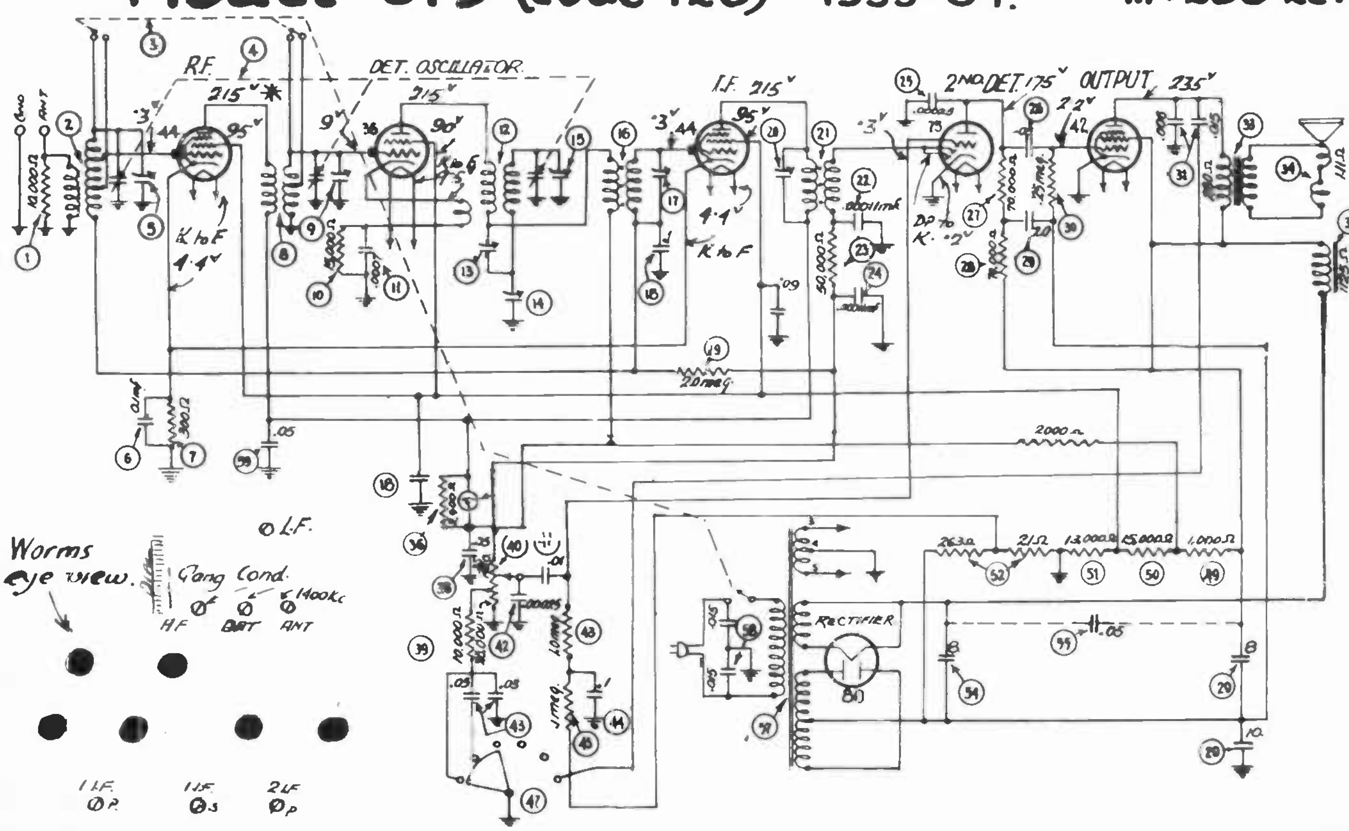
For method of adjustment see Model 366.

Legend.
1.I.F. P.30 - S.32
2.I.F. P-37 - S.75
Wave Trap 1.
Broadcast Ant 7. Det 14 Osc HF 21.
Osc (Low Freq) 28
S.W. Ant HF 2 - Osc HF 22



* all voltage measurements taken to Kathode

Model 319 (code 128) 1933-34. I.F. 260 Kc.



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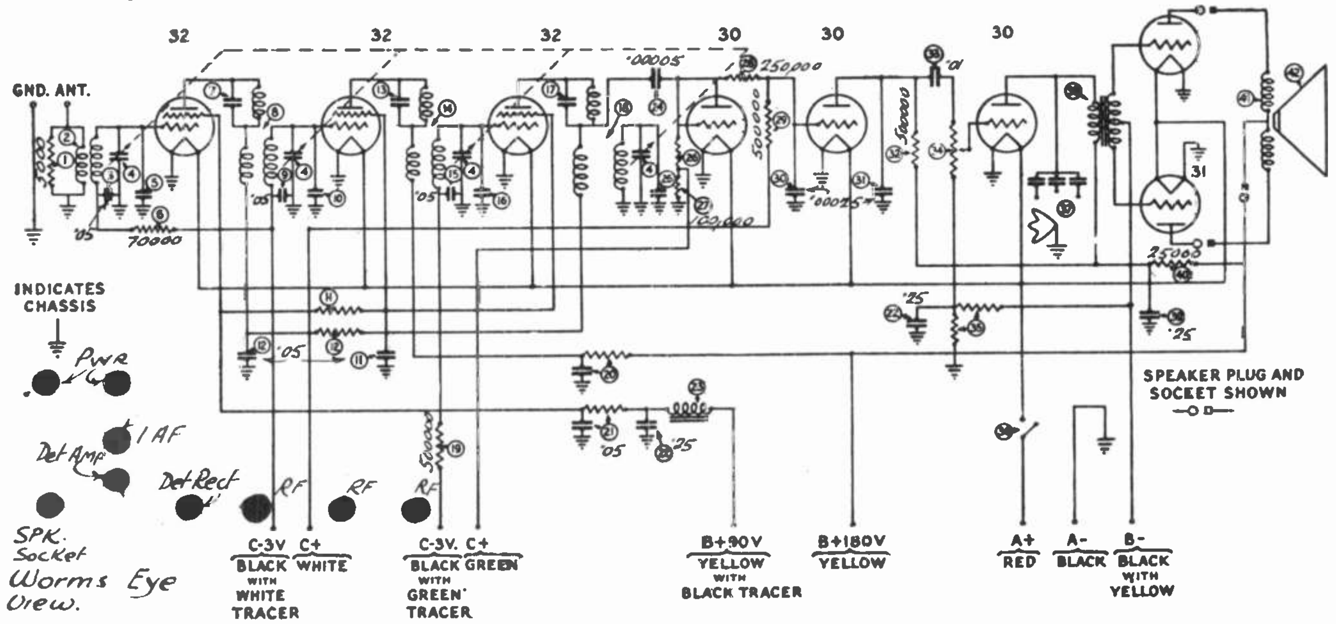
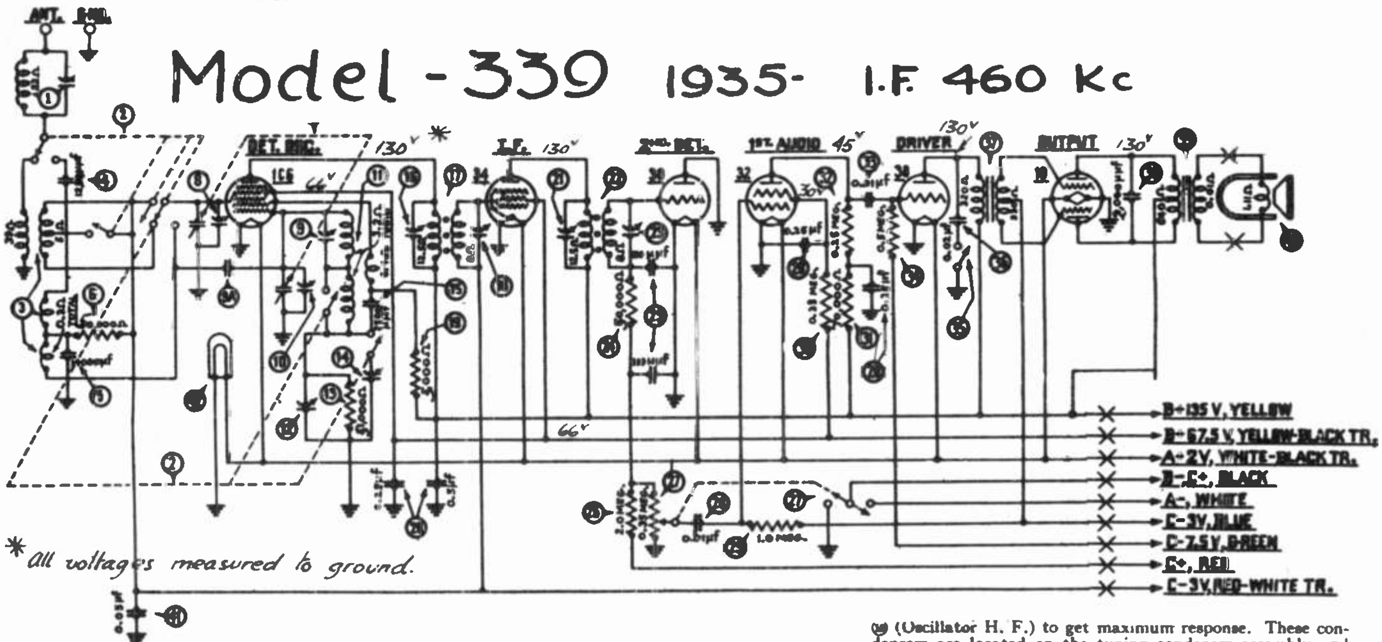
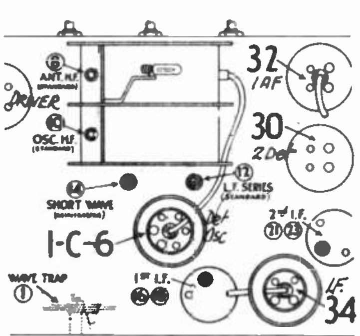
COURTESY PHILCO-29 PRODUCTS LTD.

Model-30 1931-32



Model-339 1935- I.F. 460 Kc





-Locations of Compensating Condensers

FIG 2.

Adjustment of the Intermediate Frequency

Set the signal generator at 460 K. C. (the intermediate frequency of Model339) and with the receiver and signal generator turned on, the wave band switch at left and dial at 600 K. C., adjust each of the I. F. compensating condensers in turn, to give maximum response in the output meter. If the needle on the meter goes off scale, turn back the attenuator on the signal generator.

Adjustment of the Wave Trap

Replace the grid clip upon the Detector-Oscillator tube (Type 1C6). Connect the output leads from the 024 signal generator directly to the antenna and ground terminals of the receiver. Set the Wave-Band Switch of the receiver to the standard broadcast band (left position) and the Station Selector at the low frequency (600 K. C.) end. Adjust the Wave Trap condenser to give MINIMUM response to a 460 K. C. signal from the signal generator.

Adjustments for Standard Waves

H. F. end: Set signal generator at 1500 K. C. and dial at 150 (lower scale). Now adjust condensers (8) (Antenna) and (10) (Oscillator H. F.) to get maximum response. These condensers are located on the tuning condenser assembly and visible in Fig. 2.

L. F. (series): Turn dial to 60 and set signal generator at 600. Adjust condenser (12) for maximum output. This is reached from the top, through hole in chassis at rear of tuning condenser (see Fig. 2).

Adjustment of Short-Wave Compensators

The crystal controlled signal generator is used for these adjustments. Connect its leads to antenna and ground posts of set. Turn the wave band switch to the right, and the 091 signal generator "on." H. F. or maximum: Turn the dial of the set to about half way between 14 and 15 megacycles (top scale) and you should there pick up the 4th harmonic (14.4) of the 3.6 M. C. signal. Adjust the S. W. (maximum) compensator (6) (see Fig. 4) to give maximum response in the output meter. This compensator is reached from underneath the chassis.

S. W. (minimum): Turn dial of set to a little more than 7 megacycles at which point the second harmonic of the signal generator (7.2 M. C.) should be heard. Adjust condenser (14) (S. W. series) for maximum response. This condenser is reached from above, through hole in top of chassis (see Fig. 2).

DATA SHEET

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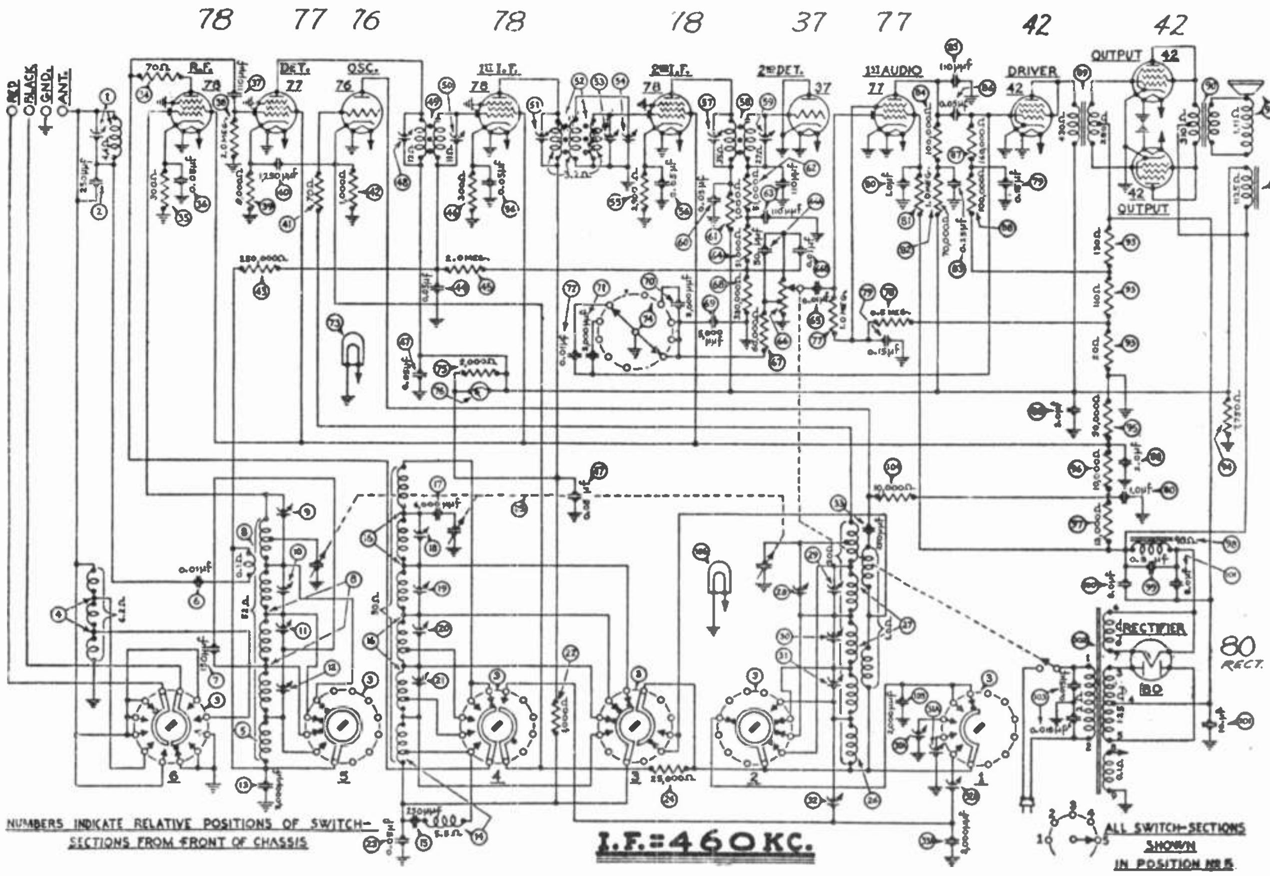
COURTESY PHILCO-30 PRODUCTS LTD.

World Radio History



MODEL. 3116B
1935-36

Tube Socket Voltages
Measured to Ground—Line Voltage 115

Tube Point	78 R.F.	77 1st Det.	76 Osc.	78 1st I.F.	78 2d I.F.	37 2d Det.	77 1st A.F.	42 Dri-ver	42 Out-put
P	187	202	75	193	199	0	67	192	279
SG	74	74	...	74	74	.	52	192	279
K	1.8	5.4	5.0	1.8	5.1	..	..	...	...
	80 Rect. Cathode—290V.								

Above voltages were obtained by using a PHILCO type 025 Circuit Tester (or 048A All-purpose Tester), using test prods applied to underside of chassis. Volume control at minimum; dial at 55; waveband switch standard broadcast (band 4). Use Fig. 1 for test points. H-13 Speaker used.

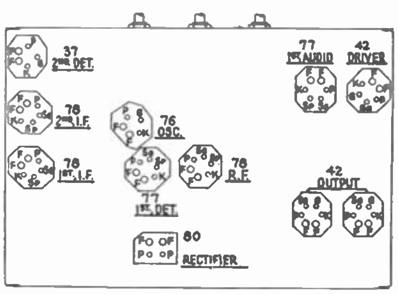


Fig. 1. Tube Sockets as viewed from bottom

Power Transformer Data

Term-inals	A.C. Volts	Current	Circuit	Color
1–2	120	......	Primary	White
3–5	720	123 M.A.	Secondary	Yellow
6–7	5.0	2.0 A.	Fil. Rect.	Blue
8–9	6.3	5.0 A.	Filaments	Black
4	..	....	Center Tap of 3-5	Yellow, Green Tracer

Adjusting Compensating Condensers

MODELS. 3116B AND 3116X

Adjustment of compensating condensers in Model 3116 requires an accurate signal generator covering long-wave, standard wave, police, and short-wave frequencies. The PHILCO Model 088 All-Wave Signal Generator, having a continuous range of from 100 to 20000 K.C. will be ideal for this purpose.

An output meter is also needed. PHILCO Model 025 Circuit Tester includes a high-grade output meter.

Philco No. 3164 fibre wrench and No. 27-7059 fibre handled screwdriver complete the equipment needed for making these adjustments. The locations of the various compensating condensers is shown in Fig. 2. Connect the output meter to the plate contacts of the output tubes (using the adapters provided with the "025") and set it at the 0-30 volt range.

I.F.—Set the Signal Generator at 460 K.C., and attach its antenna lead to the grid cap of the 77 1st detector tube (having removed the grid clip from the tube). Connect the ground terminal of the Signal Generator to the ground terminal of the set. Turn on the set, turn the waveband switch to standard broadcast (second position from left) and set dial at 55. Turn condenser 64 (2nd I.F. tertiary) all the way down before adjusting the other I.F. Compensators. Now with the fibre screwdriver, adjust condensers 59 and 57 (3rd I.F.), 53 and 51 (2nd I.F.), and then 50 and 48 (1st I.F.) until maximum reading is obtained in the output meter. Turn down the "attenuator" on the signal generator if the output meter needle goes off the scale. Now adjust condenser 64 (2nd I.F. tertiary for maximum reading).

WAVE TRAP—Connect the Signal Generator antenna and ground leads to the antenna and ground posts of the set. Replace the grid clip on the 77 tube cap. With the signal generator operating at 460 K.C. and the set controls adjusted as for I.F., adjust wavetrap 1 until the minimum reading is obtained in the output meter.

SHORTWAVE (DAYTIME BAND)—Turn wave band switch to the shortwave (daytime) position (extreme right). Set signal generator at 18 megacycles and dial of set at 18.0 (top scale). Now adjust the oscillator, Antenna, and R.F. shortwave compensators in turn, for maximum reading. These are 28, 9 and 18 respectively.

SHORTWAVE (NIGHT-TIME BAND)—Turn the waveband switch to position 4 (counting from the left). Set the signal generator and receiver at 9.5 megacycles and adjust the oscillator, antenna and R.F. compensators respectively, in this [illegible] for maximum reading. These are 29, 10 and 19.

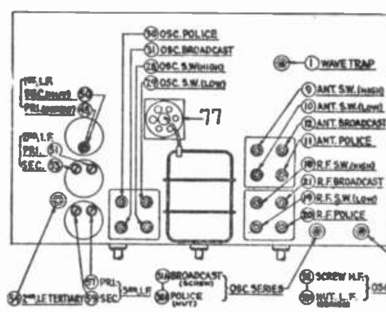


Fig. 2. Locations of Compensating Condensers

POLICE AND AMATEUR BAND—Turn the waveband switch to position 3. Set the dial and signal generator at 4.0 megacycles and adjust condensers 30, 11 and 20 respectively for maximum reading.

Set the signal generator at 1600 K.C. and turn the dial to 1.6. Adjust condenser 34a (nut), oscillator police series, to maximum reading.

STANDARD BROADCAST BAND—Turn the waveband switch to position 2 (from left). Set the dial and signal generator at 1500 K.C. and adjust condensers 31, 12 and 21 for maximum reading.

Set the dial and signal generator at 600 K.C. and adjust condenser 34a (screw), broadcast series, for maximum reading.

LONGWAVE BAND—Turn waveband switch to position 1 (left). Set the dial and signal generator at 340 K.C. and adjust condenser 35 (screw) to maximum. This is the upper end of the longwave (low frequency) band. Finally, set the dial and signal generator at 175 K.C. and adjust condenser 35a (nut) for maximum reading. This is the lower end of the longwave band.

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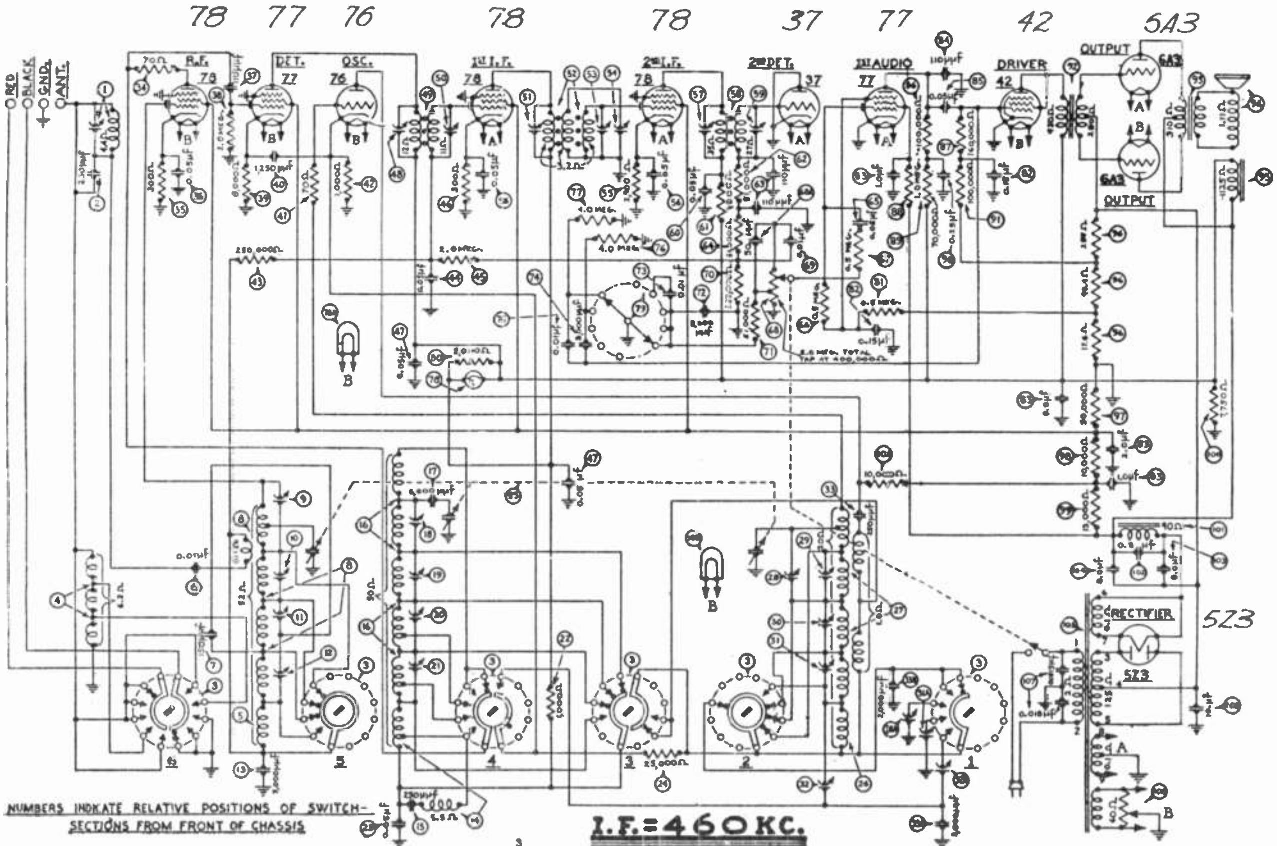
COURTESY PHILCO-31 PRODUCTS LTD

World Radio History

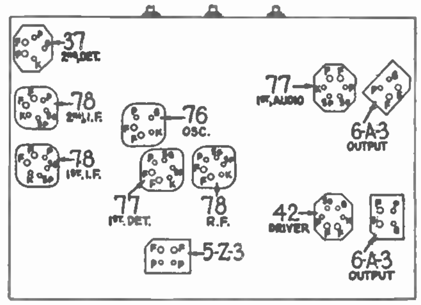


MODEL. 3116X 1935-36

NOTE- FOR ALIGNMENT INSTRUCTIONS ETC. SEE DATA SHEET. PHILCO.-31.

Tube Socket Voltages
(Line Voltage 115) All Voltages Measured to Ground

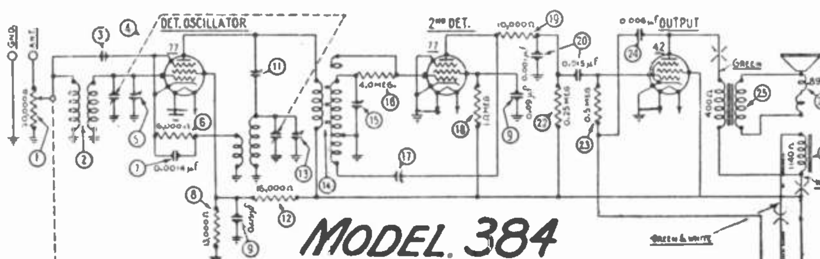
Tube Point	78 R.F.	77 1st Det.	76 Osc.	78 1st I.F.	78 2d I.F.	37 2d Det.	77 1st A.F.	42 Driver	6A3 Output	5Z3
P	207	215	98	208	212	0	95	220	320	.
SG	89	89		89	89	..	72	220	320	...
K	2.2	5.2	..2	2 1	6.4	0	.	....	..	340



Tube Sockets as viewed from bottom

VOLTAGES.

Circuit	Det Osc.	2nd Det.	2nd A F. (Output)	Rectifier
Type Tube	77	77	42	80
Filament Volts—F to F	6 3	6 3	6 3	5 0
Plate Volts—P to K	240	70	225	315
Screen Grid Volts—SG to K	95	23	225	...



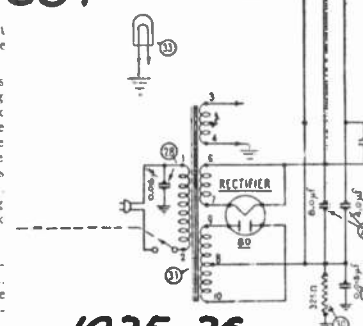
MODEL. 384

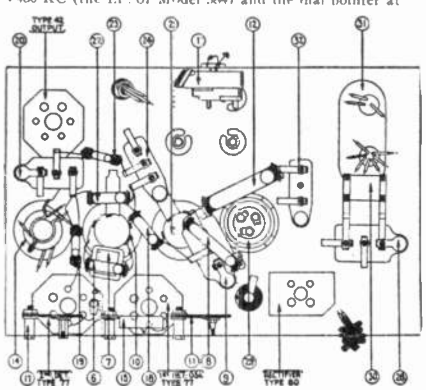
ADJUSTMENTS

The I.F. primary and I.F. secondary condensers should be adjusted first. Set the signal generator at 460 KC (the I.F. of Model 384) and the dial pointer at 600. Adjust I.F. condensers (11) and (15) so that maximum signal is obtained. These condensers are at rear of chassis, accessible from rear.

Next, adjust the "regeneration" condenser. This is (17) located at the right hand rear of chassis (facing rear). Adjustment is made by turning the fibre hex nut with either a screw driver or the special fibre wrench. The procedure is: tune in a signal at the high frequency (1500) end of the dial and turn the fibre nut clockwise until oscillation or squealing is heard. Then turn the nut half a turn back (to left). Now tune in a low frequency station, and if squealing is still heard, turn the adjusting nut half a turn back from the squealing point.

The OSC HF (13) and ANT compensating condensers (5) are adjusted last in the order mentioned. These are located on the tuning condenser gang, the ANT (5) being nearest the front of set. In early production sets use the fibre handle screw driver for adjustment, later production, the fibre hex wrench. In making these adjustments, set the signal generator at 1400 and the station selector at 140.





Bottom View of Chassis Showing Parts

1935-36
I.F. = 460 K.C.

DATA SHEET

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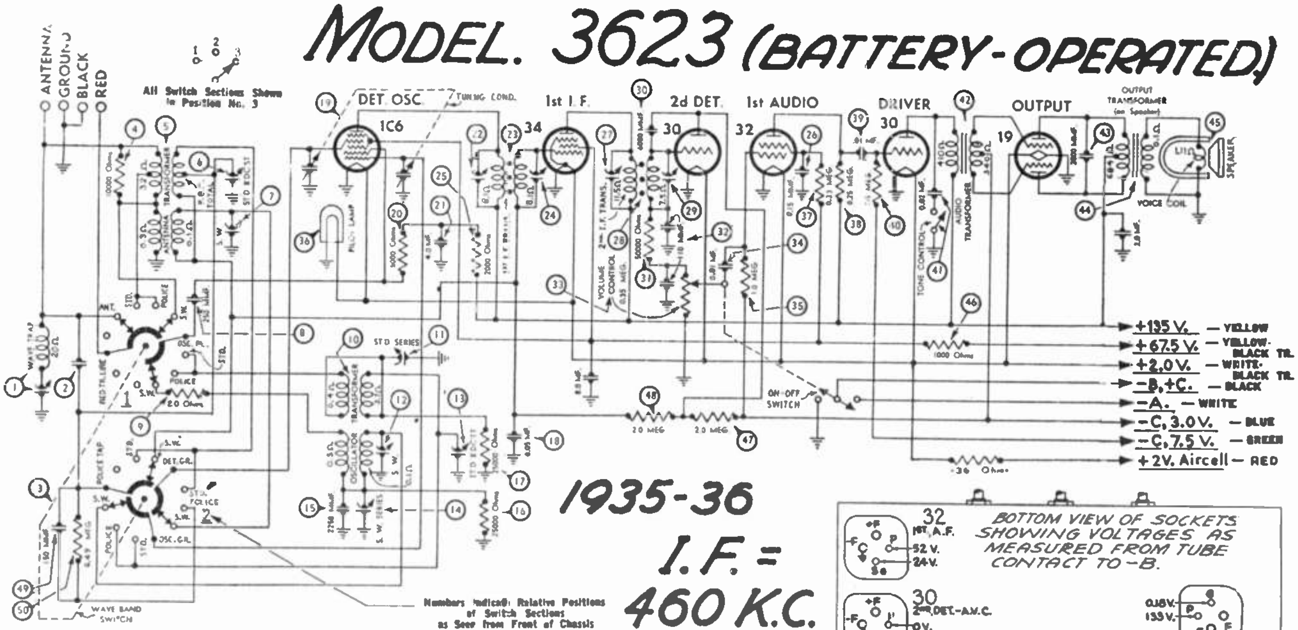
COURTESY- PHILCO-32 PRODUCTS LTD.

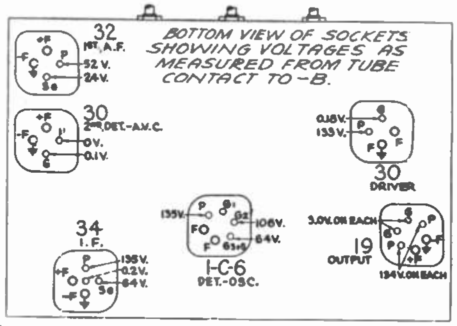
World Radio History

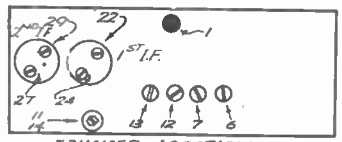
MODEL. 3623 (BATTERY-OPERATED)



1935-36

I.F. = 460 K.C.





TRIMMER LOCATIONS

Adjustment of I.F.

1. Remove the antenna connection from the receiver, disconnect the grid clip from the first detector (type 1C6 tube), and connect the "ANT" output terminal of the signal generator to the grid cap of this tube; connect the "GND" terminal of the signal generator to the "GND" terminal of the receiver.

2. Connect the "025" output meter adapter leads to the plate and one filament contact of the type 30 driver tube. Set it at the 0–30 volt range.

3. Adjust the signal generator to a frequency of 460 K.C. Place the receiver in operation with the dial turned to the low frequency end of the standard broadcast band, wave band switch to extreme left (clockwise), and have the volume control adjusted near its maximum setting. Adjust the signal generator attenuator for approximately half-scale reading of the output meter.

4. The I.F. compensating condensers are located at the tops of the I.F. coil shields and adjusted by turning the two screws in top. Adjust condensers (29) and (27) (2d I.F. primary and secondary) for maximum reading in the output meter, and then condensers (22) and (24) (1st I.F. primary and secondary).

Adjustment of Wave-Trap

1. Connect the signal generator leads to the antenna and ground terminals of the receiver. Replace the grid clip on the 1C6 grid cap.

2. With the wave-band switch of the receiver still in the extreme left (broadcast position), turn the station selector to 550 K.C.

3. With the signal generator in operation at 460 K.C., adjust the wave-trap (1) condenser until a MINIMUM reading is obtained on the output meter. The wave-trap compensator is reached from rear of chassis.

Adjustment of High and Low Frequency Compensators

1. With the wave-band switch still at Position No. 1 (broadcast band) set the dial at 150 K.C. Set the signal generator at 1.5 M.C. and adjust compensators (12) and (6) for maximum output. These are the oscillator and antenna "H.F. standard" compensators respectively.

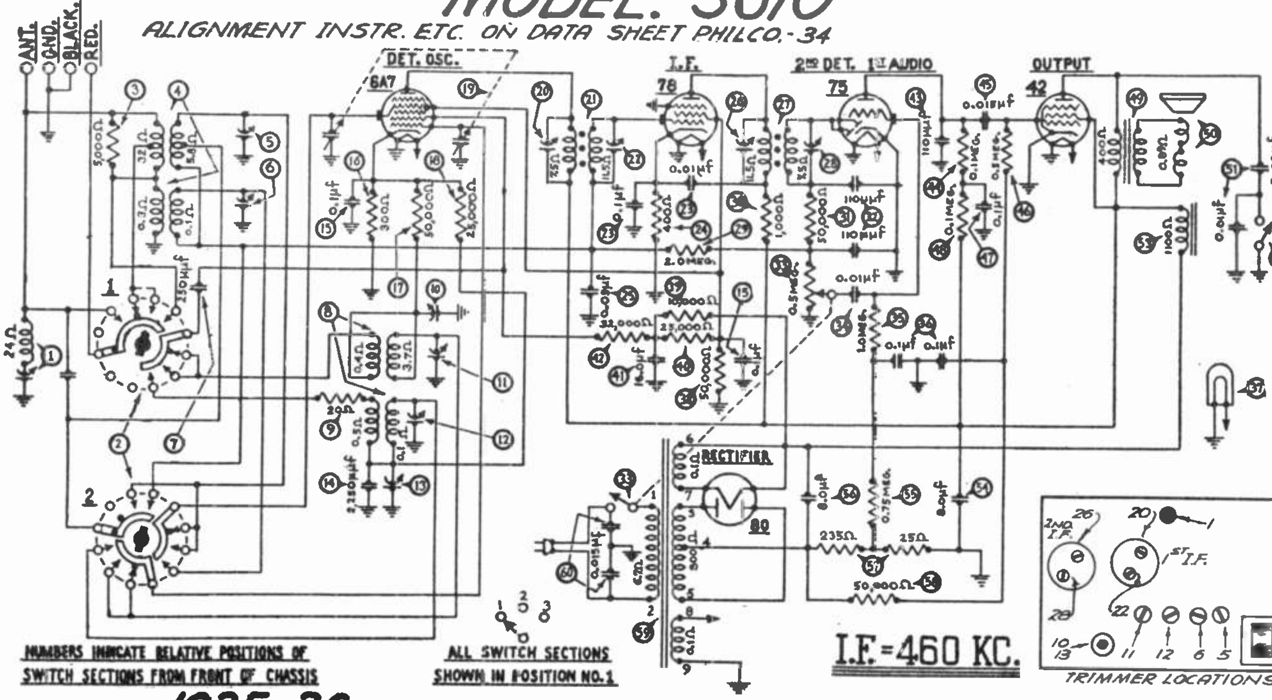
2. Tune the receiver and the signal generator to 600 K.C. and adjust compensator (11) (screw) for maximum output. This is the oscillator standard series (L.F.) compensator.

3. Turn the wave-band switch to the extreme right (short-wave band) and adjust the station selector to 18.0 megacycles. Set the signal generator at 18 M.C. Adjust the oscillator S.W., and antenna S.W. compensators for maximum reading in the output meter. These are numbered (13) and (7) respectively in figure No. 2.

4. Turn the tuning dial to 6.0 M.C., set the signal generator at 6.0 M.C., and adjust condenser (14) osc. series (S.W.) (nut) to maximum signal.

MODEL. 3610

ALIGNMENT INSTR. ETC. ON DATA SHEET PHILCO.-34



TRIMMER LOCATIONS

NUMBERS INDICATE RELATIVE POSITIONS OF SWITCH SECTIONS FROM FRONT OF CHASSIS

ALL SWITCH SECTIONS SHOWN IN POSITION NO.1

I.F.=460 KC.

1935-36

DATA SHEET

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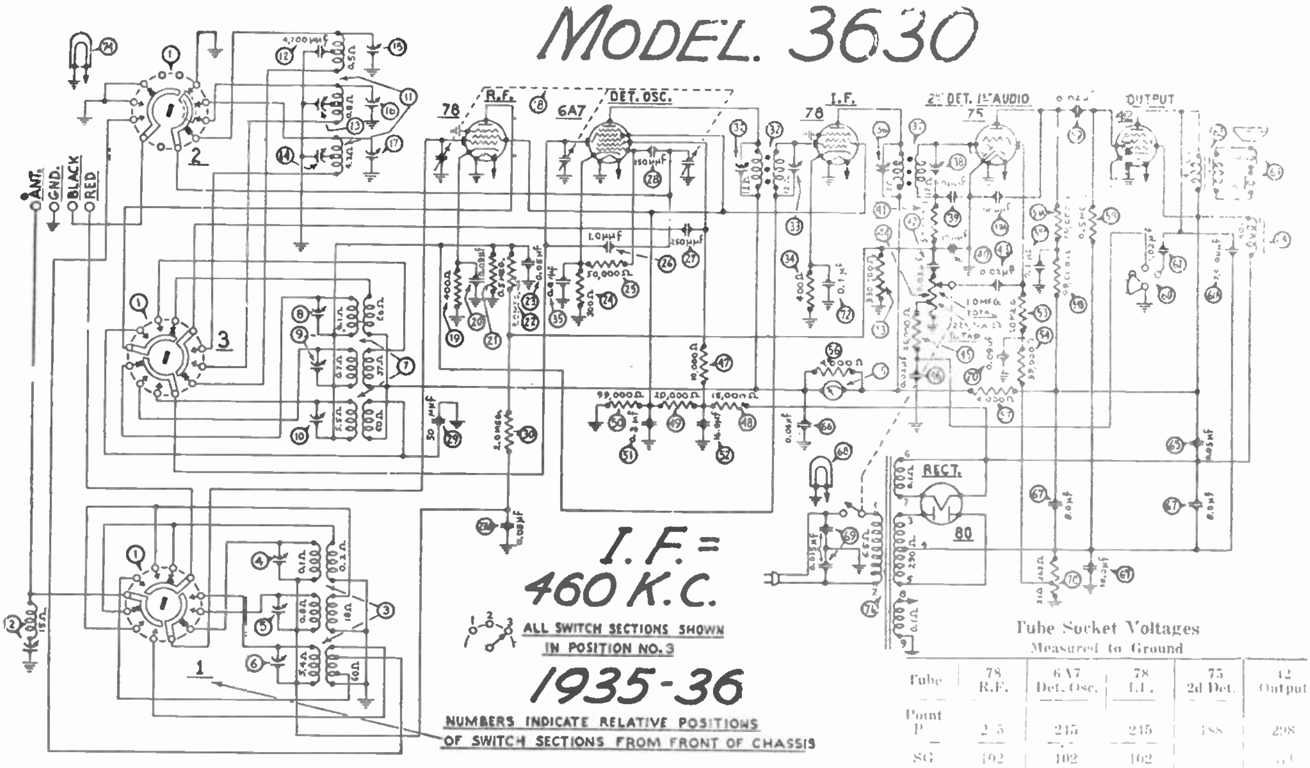
COURTESY- PHILCO-33 PRODUCTS LTD.

World Radio History

MODEL. 3630



Adjustment of I.F.

1. Remove the antenna connection from the receiver, disconnect the grid clip from the first detector (type 6A7 tube), and connect the "ANT" output terminal of the broadcast signal generator to the grid cap of this tube; connect the "GND" terminal of the signal generator to the "GND" terminal of the receiver.

2. Connect the 0 to 30 volt range of the output meter in the Philco 048A or 025 unit to the plate and cathode of the output tube or to the two bottom prongs of the speaker plug.

3. Adjust the signal generator to a frequency of 460 K.C. Place the receiver in operation with the dial turned to the low frequency end of the standard broadcast band, wave band switch to extreme left (clockwise), and have the volume control adjusted near its maximum setting. Adjust the signal generator attenuator for approximately half-scale reading of the output meter.

4. The I.F. compensating condensers are located at the tops of the I.F. coil shields. The primary is adjusted by turning the screw in top and the secondary by the nut. Adjust condensers (36) and (38) (2d I.F. primary and secondary) for maximum reading in the output meter, and then condensers (31) and (33) (1st I.F. primary and secondary).

Adjustment of Wave-Trap

1. Connect the signal generator leads to the antenna and ground terminals of the receiver. Replace the grid clip on the 6A7 grid cap.

2. With the wave-band switch of the receiver still in the extreme left (standard band), (540-1720 K.C.), turn the station selector to 55.

3. With the signal generator in operation at 460 K.C. adjust the wave-trap (2) condenser until a MINIMUM reading is obtained on the output meter. The Philco fibre wrench, part No. 3164, is used for this adjustment. The wave-trap compensator is reached from rear of chassis.

Adjustment of High and Low Frequency Compensators

1. With the wave-band switch still at Range No. 1 (broadcast band), set the dial at 1700 K.C. Set the signal generator at this frequency and adjust compensators (11), (6) and (10) for maximum output. These are the oscillator, antenna, and R.F. "standard" compensators respectively.

2. Tune the receiver and the signal generator to 600 K.C. and adjust compensator (17) (screw) for maximum output. This is the oscillator L.F. standard compensator.

3. Turn the waveband switch to the second (middle) position. Set the dial at 3.6 M.C. at which point the fundamental of the 091 signal will be heard. If the Model 088 Signal Generator is being used, set it at 3.6 M.C. Adjust condensers (13), (5) and (9) in succession. These are the oscillator, antenna and R.F. police band adjustments.

4. Turn the tuning dial to 1.8 M C., and set the signal generator (Model 026 or Model 088) at 1800 K.C. Adjust condenser (16) (Osc. L.F., police) (nut), to maximum signal.

5. Turn the wave-band switch to Band 3 (extreme right) and adjust the station selector to 18.0 megacycles. Set the signal generator at 18 M C. By means of the Philco wrench, part No. 3164, adjust the oscillator S.W., antenna S.W. and R.F. S.W. compensators for maximum peak in the output meter. These are numbered (15), (4) and (8) respectively in figure No. 2.

Tube Socket Voltages

Measured to Ground

Tube	78 R.F.	6A7 Det. Osc.	78 I.F.	75 2d Det.	42 Output
Point P	2 5	245	245	188	298
SG	102	102	102		[illegible]
K	2.7	2.6	2.6		
	6A7: G 3 & 5 = 175				

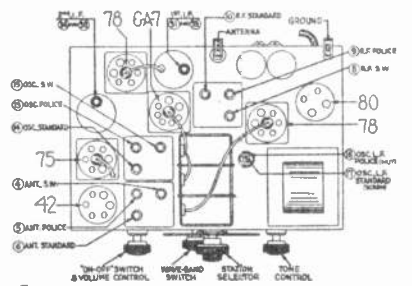


Figure. 2. LOCATION OF TUBES AND COMPENSATING COND

Tube Socket Voltages

Measured to Ground

Tube	6A7 Det. Osc.	78 I.F.	75 2d Det.	42 Output
Point P	255	250	145	238
SG	85	85	......	255
K	2.3	2.5	......	......
	6A7: G 3 & 5 = 147			

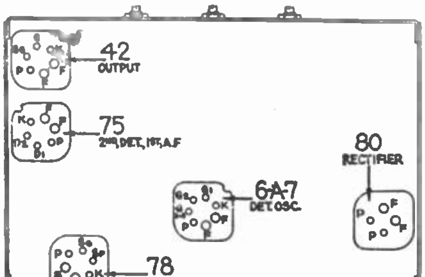


Fig. 1. Tube Sockets as viewed from bottom.

ADJUSTMENTS FOR MODEL. 3610

SEE CIRCUIT ON PHILCO DATA SHEET. 33

Adjustment of I.F.

1. Remove the antenna connection from the receiver, disconnect the grid clip from the first detector (type 6A7 tube), and connect the "ANT" output terminal of the signal generator to the grid cap of this tube; connect the "GND" terminal of the signal generator to the "GND" terminal of the receiver.

2. Connect the 0 to 30 volt range of the output meter to the plate and cathode of the output tube or to the two bottom prongs of the speaker plug.

3. Adjust the signal generator to a frequency of 460 K.C. Place the receiver in operation with the dial turned to the low frequency end of the standard broadcast band, wave band switch to extreme left (clockwise), and have the volume control adjusted near its maximum setting. Adjust the signal generator attenuator for approximately half-scale reading of the output meter.

4. The I.F. compensating condensers are located at the tops of the I.F. coil shields and adjusted by turning the two screws in top. Adjust condensers (26) and (28) (2d I.F. primary and secondary) for maximum reading in the output meter, and then condensers (20) and (22) (1st I.F. primary and secondary).

Adjustment of Wave-Trap

1. Connect the signal generator leads to the antenna and ground terminals of the receiver. Replace the grid clip on the 6A7 grid cap.

2. With the wave-band switch of the receiver still in the extreme left (broadcast position), turn the station selector to 550 K.C.

3. With the signal generator in operation at 460 K.C., adjust the wave-trap (1) condenser until a MINIMUM reading is obtained on the output meter.

Adjustment of High and Low Frequency Compensators

1. With the wave-band switch still at Position No. 1 (broadcast band), set the dial at 1600 K.C. Set the signal generator at this frequency and adjust compensators (11) and (5) for maximum output. These are the oscillator and antenna "H.F. standard" compensators respectively.

2. Tune the receiver and the signal generator to 600 K.C. and adjust compensator (10) (screw) for maximum output. This is the oscillator L.F. standard compensator.

3. Turn the wave-band switch to the extreme right (short-wave band) and adjust the station selector to 18.0 megacycles. By means of the Philco wrench, part No. 3164, adjust the oscillator S.W., and antenna S.W. compensators for maximum reading in the output meter. These are numbered (12) and (6) respectively.

4. Turn the tuning dial to 7.2 M.C., and adjust condenser (13) osc. L.F., (S.W.) (nut) to maximum signal.

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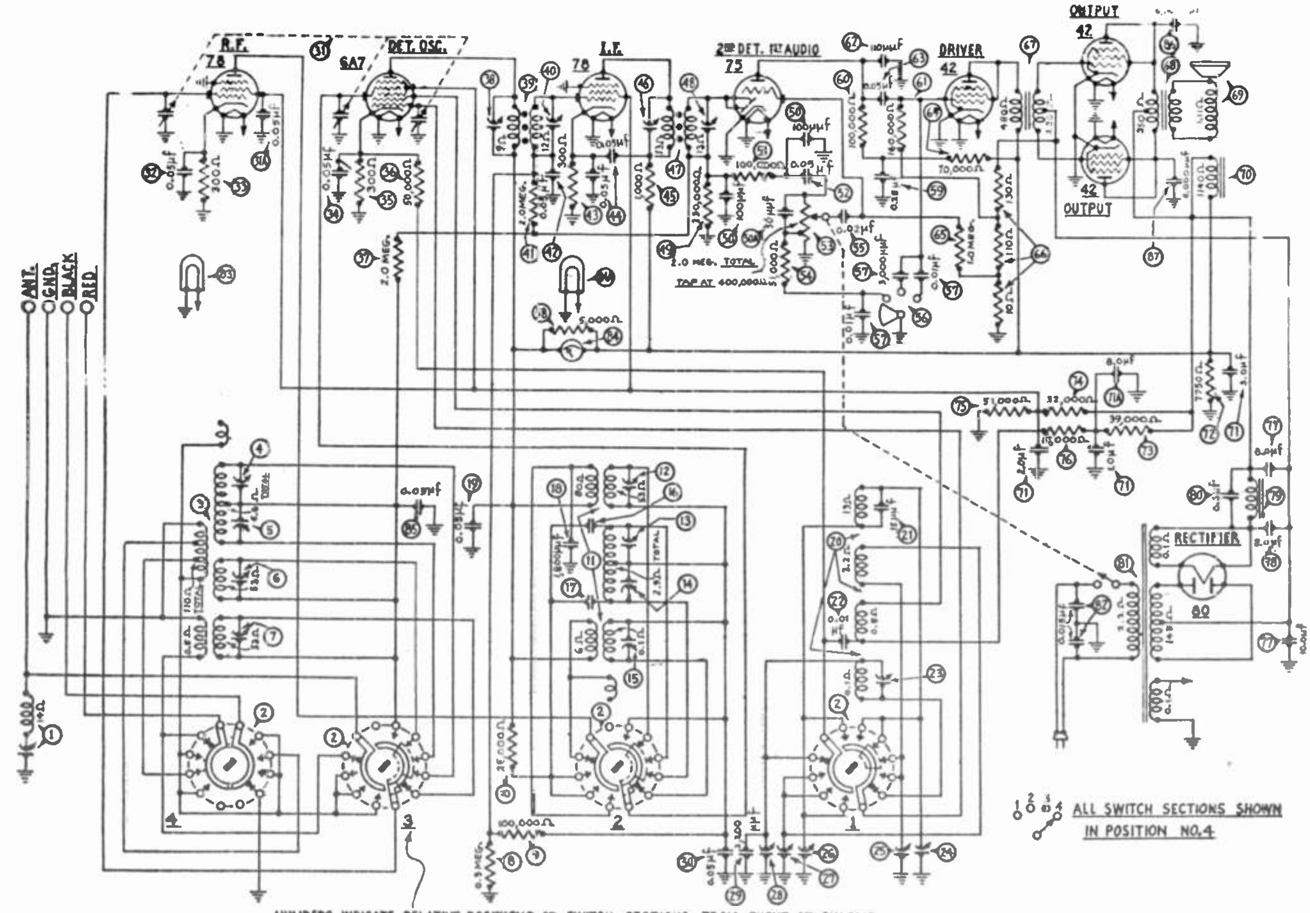

NUMBERS INDICATE RELATIVE POSITIONS OF SWITCH SECTIONS FROM FRONT OF CHASSIS

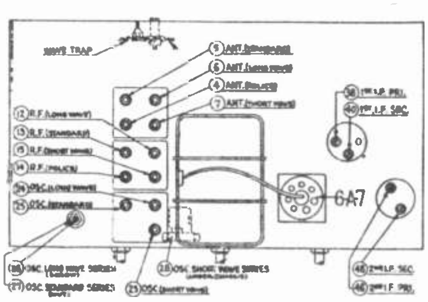

Fig. 2. Locations of Compensating Condensers

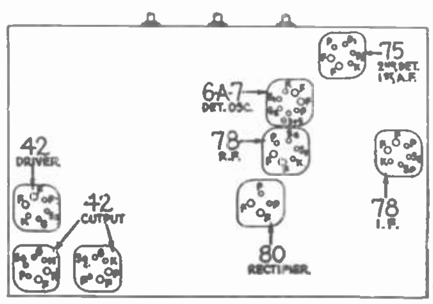

Fig. 1. Tube Sockets as viewed from bottom.

Tube Socket Voltages (Line Voltage 115)

Measured to Ground

Tube	78 R.F.	6A7 Det. Osc.	78 I.F.	75 2d Det.	42 Driver	42 Output
Point P	55	200	200	115	200	300
SG	90	90	90	......	200	300
K	2.2	2.3	2.6	......	......	......
	6A7: G 3 & 5 = 155					

Power Transformer Data

Terminals	A.C. Volts	Current	Circuit	Color
1–2	120	....	Primary	White
3–5	760	140 M.A.	Secondary	Yellow
6–7	5.0	2.0 A.	Fil. Rect.	Blue
8–9	6.3	3.75 A.	Filaments	Black
4	......	....	Center Tap of 3–5	Yellow, Green Trace

I.F.—Set the Signal Generator at 460 K.C., and attach its antenna lead to the grid cap of the 6A7 tube on the Model 3650 (having removed the grid clip from the tube). Connect the ground terminal of the Signal Generator to the ground terminal of the set. Turn on the set, turn the waveband switch to second position (standard) and set dial at 55. Now with the fibre screwdriver, adjust condensers (46) and (48) (2d I.F.) and then (38) and (40) (1st I.F.) until maximum reading is obtained in the output meter. Turn down the "attenuator" on the signal generator if the output meter needle goes off the scale.

WAVE TRAP—Connect the Signal Generator antenna and ground leads to the antenna and ground posts of the set. Replace the grid clip on the 6A7 tube cap. With the signal generator operating at 460 K.C. and the set controls adjusted as for I.F., adjust wavetrap (1) until the minimum reading is obtained in the out-put meter.

SHORTWAVE—Turn waveband switch to position 4 (extreme right). Set signal generator at 18 megacycles and dial of set at 18.0 (top scale). Now adjust the oscillator, R.F., and Antenna compensators in turn, for maximum reading. These are (23), (15) and (7) respectively.

Turn the dial to 6.0 M.C., set the signal generator at 6.0 M.C., and adjust condenser (23) for maximum reading. This compensator is located underneath the chassis and reached from underneath. (See Fig. 3).

STANDARD WAVE — Turn the waveband switch to position 2 (standard broadcast), set signal generator at 1500 and dial of set at 150. Now adjust the oscillator, R.F., and antenna "Standard" condensers. These are (25), (13) and (5) respectively.

Now turn the dial to 60, set signal generator at 600 and adjust condenser (27) (oscillator standard-series) (nut) for maximum reading.

POLICE BAND—Turn waveband switch to position 3 from left (police band); set dial at 2.4 and signal generator at 2400 K.C. Adjust condensers (4) and (14) for maximum reading. (Antenna and R.F. Police.)

LONG WAVE (Weather) BAND — Turn waveband switch to position 1 (left) (Longwave). Set dial at 35 and signal generator at 350 K.C. Adjust condensers (24), (12) and (6) (oscillator, R.F., and Antenna Longwave) for maximum reading.

Turn dial to 17, signal generator to 170 and adjust condenser (26) (longwave series) (screw) for maximum reading.

MODEL. 3650

I.F. = 460 K.C.

1935-36

DATA SHEET

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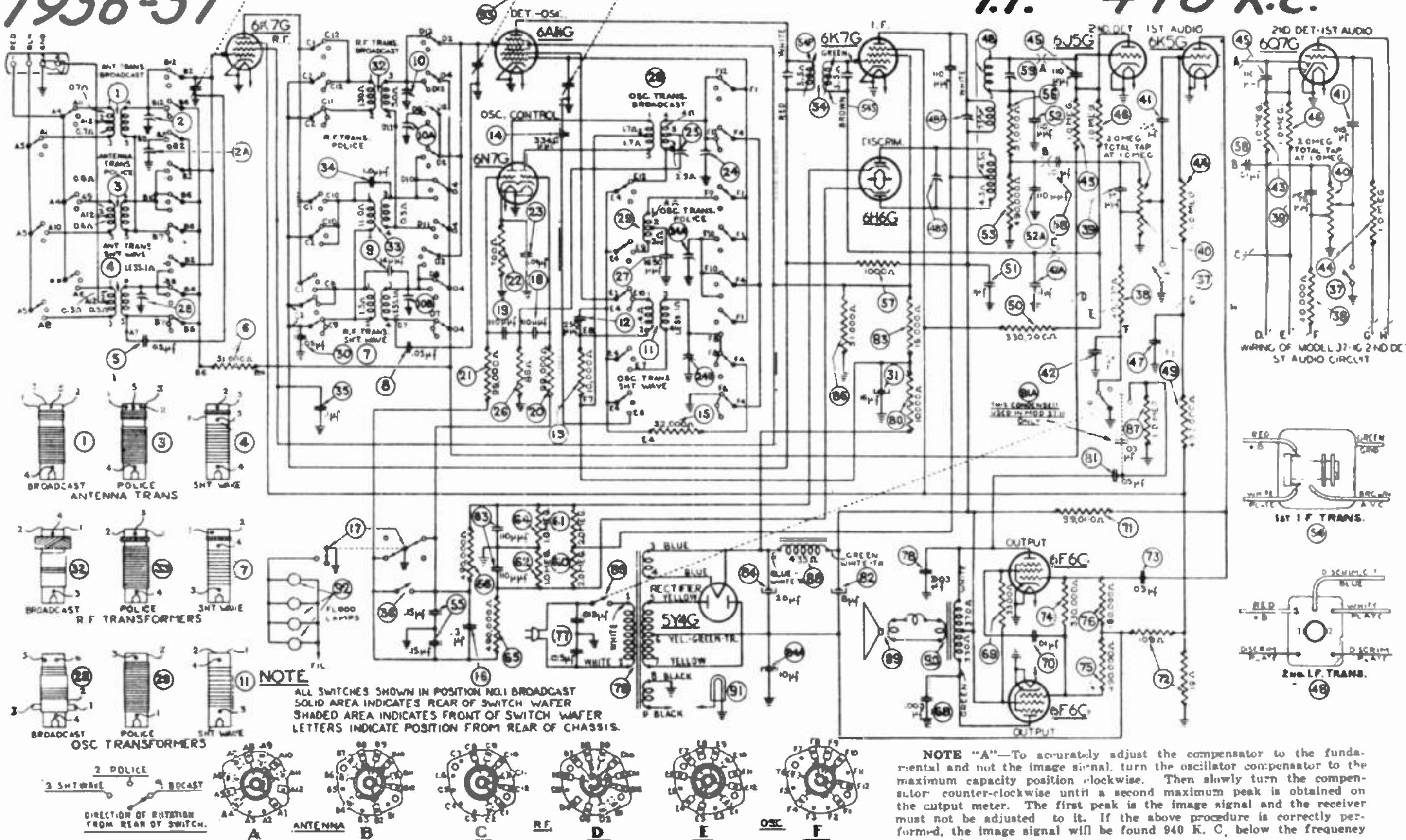
COURTESY - PHILCO-35 PRODUCTS LTD

World Radio History

1936-37

I.F. = 470 K.C.



NOTE "A"—To accurately adjust the compensator to the fundamental and not the image signal, turn the oscillator compensator to the maximum capacity position clockwise. Then slowly turn the compensator counter-clockwise until a second maximum peak is obtained on the output meter. The first peak is the image signal and the receiver must not be adjusted to it. If the above procedure is correctly performed, the image signal will be found 940 K. C. below the frequency being used.

NOTE "B"—To eliminate the effect of the R. F. compensator detuning the Osc circuit, a variable tuning condenser, Philco Part No. 45-2325 is connected from the oscillator compensator to ground when designated in the padding instructions above. Tune the added condenser until the second harmonic of the receiver oscillator beats against the signal from the generator, resulting in a maximum indication on the output meter. Then adjust compensators as noted for maximum output.

INTERMEDIATE FREQUENCY CIRCUIT

1: Set controls as follows:

a. Magnetic Tuning "off"
b. Bass compensation minimum
c. Volume control maximum
d. Receiver Dial 580 K. C
e. Signal Generator 470 K. C

2. Adjust the I. F. compensators for maximum with signal generator output lead connected through a .1 mfd. condenser to the grid of the tubes as follows:

Input Point	Compensators in Order
6K7G—1st I. F.	(59) (48P)
6A8G—1st Det.	(54S) (54P)

RADIO FREQUENCY CIRCUIT

Tuning Range 7.25 to 22 M. C.

1. Connect the signal generator output lead through a .1 mfd. condenser to terminal 1, and the generator ground to terminal 3 on aerial input panel. Terminals 2 and 3 must be connected with the shorting link provided on the aerial panel.

2. Other controls set as given under intermediate frequency circuit with the exception of those as follows:

Range Switch	Signal Generator	Receiver Dial	Compensators In Order
3	18 M. C.	18 M. C.	(24B) See Note A
3	18 M. C.	18 M. C.	(10B) (2B) Use Shunt Condenser on (24B) (Note B)
3	18 M. C.	18 M. C.	(24B) (Note A)

Tuning Range 2.3 to 7.4 M.C.

Adjust compensators for maximum as follows:

Range Switch	Signal Generator	Receiver Dial	Compensators In Order
2	7 M.C.	7 M.C.	(24A)
2	6 M.C	6 M.C	(10A) (2A)

Tuning Range 530 to 1720 K. C.

Adjust compensators for maximum as follows:

Range Switch	Signal Generator	Receiver Dial	Compensators In Order
1	1600 K. C.	1600 K. C	(24) (10) (2)
1	580 K. C	580 K. C	(25) Roll gang
1	1600 K. C.	1600 K. C.	(24)
1	1500 K. C.	1500 K. C.	(10) (2)

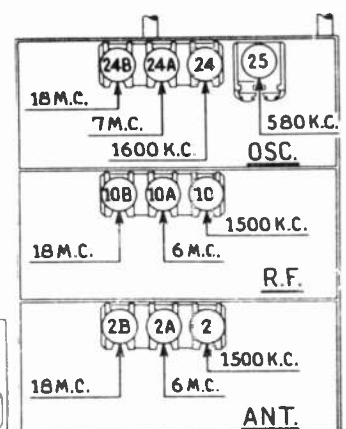
MAGNETIC TUNING ADJUSTMENT

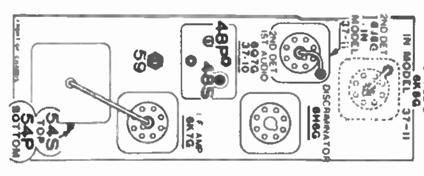
Set the range switch in position one (530 to 1720 K. C.) and the magnetic tuning switch in the "out" position. Now turn the signal generator and receiver dial to any frequency in the Broadcast band. The receiver dial must be adjusted very accurately for maximum output.

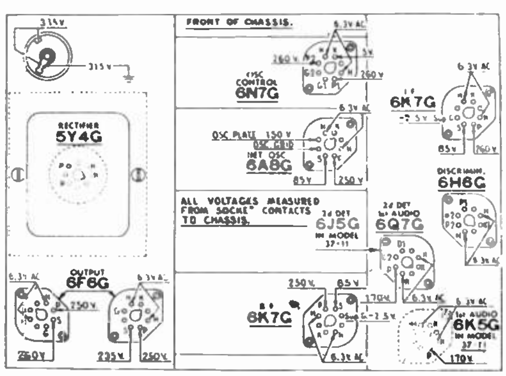
Set the magnetic tuning control in the "on" position (clockwise) Compensator (48S) of the magnetic tuning transformer is now adjusted for maximum output.

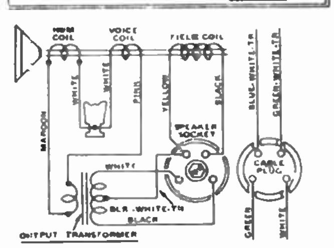
The above adjustment is now checked for accuracy, by turning the magnetic tuning control "off" and "on". When this is done there should be no change in the tone of the received signal. If a change of tone or hiss develops, it indicates a shift in frequency and the adjustment must be made again

Models 37-310 and 37-311.





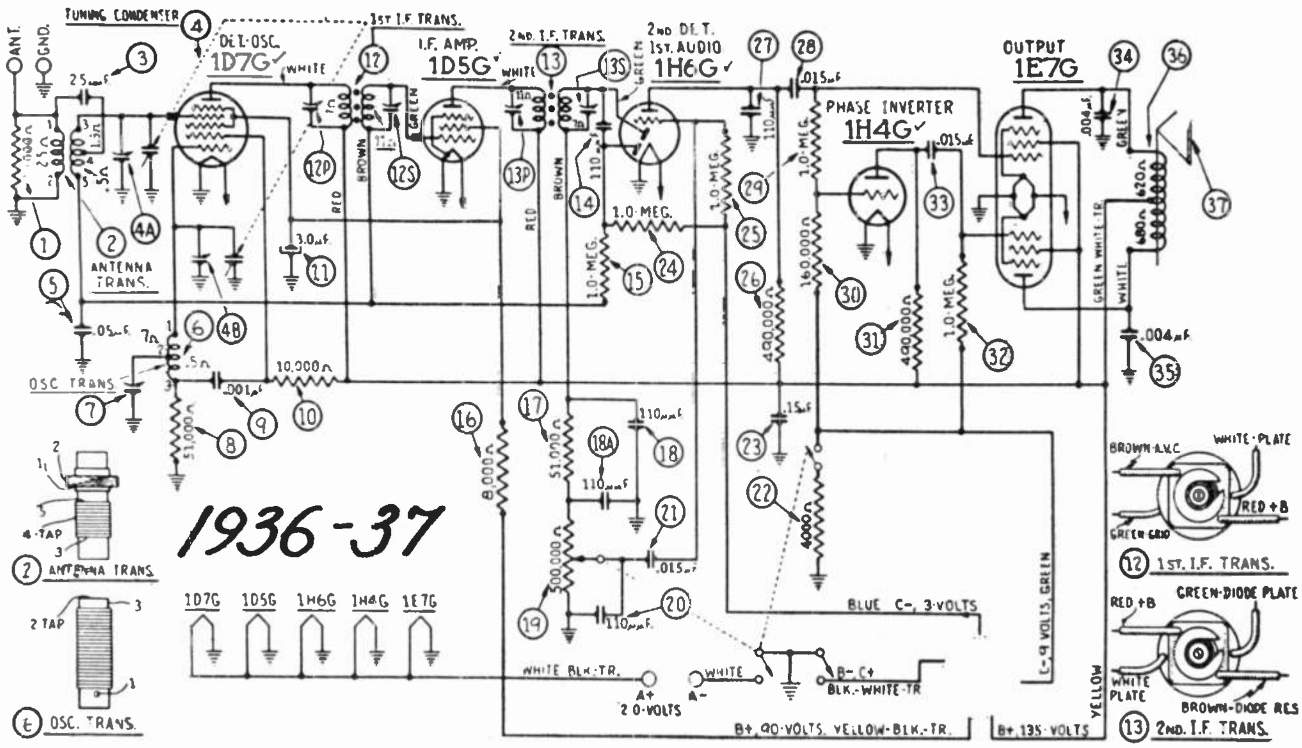




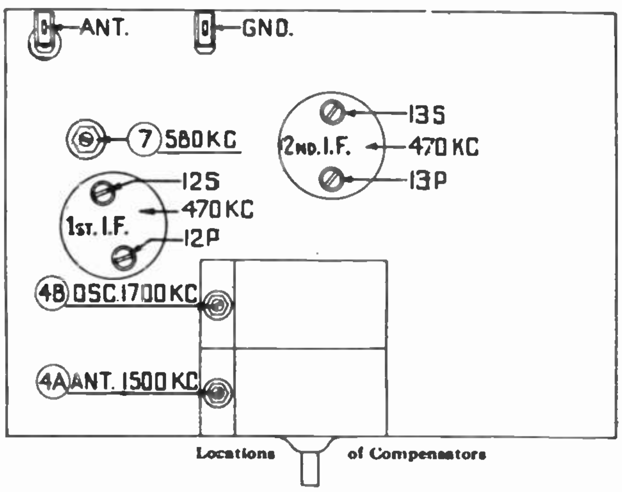
DATA SHEET

COURTESY — PHILCO - 36 LTD.

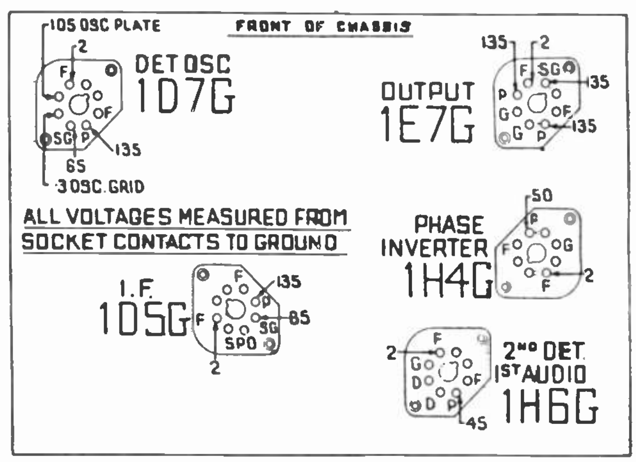
World Radio History



Model-37-333



Locations of Compensators



View of Sockets from Underside Chassis

INTERMEDIATE FREQUENCY CIRCUIT

Frequency 470 K.C.

1. Connect the 088 Signal Generator output lead through a .1 mfd. condenser to the control grid of the 1C7G tube; and the ground connection of the output lead to the chassis. Then turn the tuning condenser to approximately 580 K.C. and adjust the signal generator for 470 K.C.

2. Now adjust compensators (13)s, 2nd I.F. Sec., (13)p 2nd I.F. Pri., (12)s 1st I.F. Sec., and (12)p 1st I.F. Pri. for maximum output.

RADIO FREQUENCY CIRCUIT

530 to 1720 K.C.

1. Remove the signal generator output lead from the 1C7G tube and connect it through a 100 mmfd. condenser to the antenna post of the receiver, and the generator ground lead to the chassis.

2. Turn signal generator to 1700 K.C. Rotate receiver tuning condenser to maximum capacity position (counter-clockwise); then place a 006" gauge between the rotor and stator plates (left side of tuning condenser facing front of receiver), and turn condenser until rotor and stator gauge touch gauge. Now remove gauge without disturbing setting of the plates. Compensators (4)b Osc. and (4)a Ant. are then adjusted for maximum output.

3 Turn signal generator and receiver dials to 580 K.C. and adjust compensator (7) as follows:

First tune compensator (7) for maximum output. Then vary the tuning condenser for maximum output. Now retune compensator (7) and again vary the tuning condenser back and forth about 580 K.C. for maximum output. This operation of first tuning the compensator, then the tuning condenser is continued until maximum output is obtained at the 580 K.C. frequency.

4. Readjust the 1700 K.C. end of dial as given in paragraph 2 above.

5. Then turn signal generator and receiver dials to 1500 K.C. and adjust compensator (4)a Ant. for maximum output.

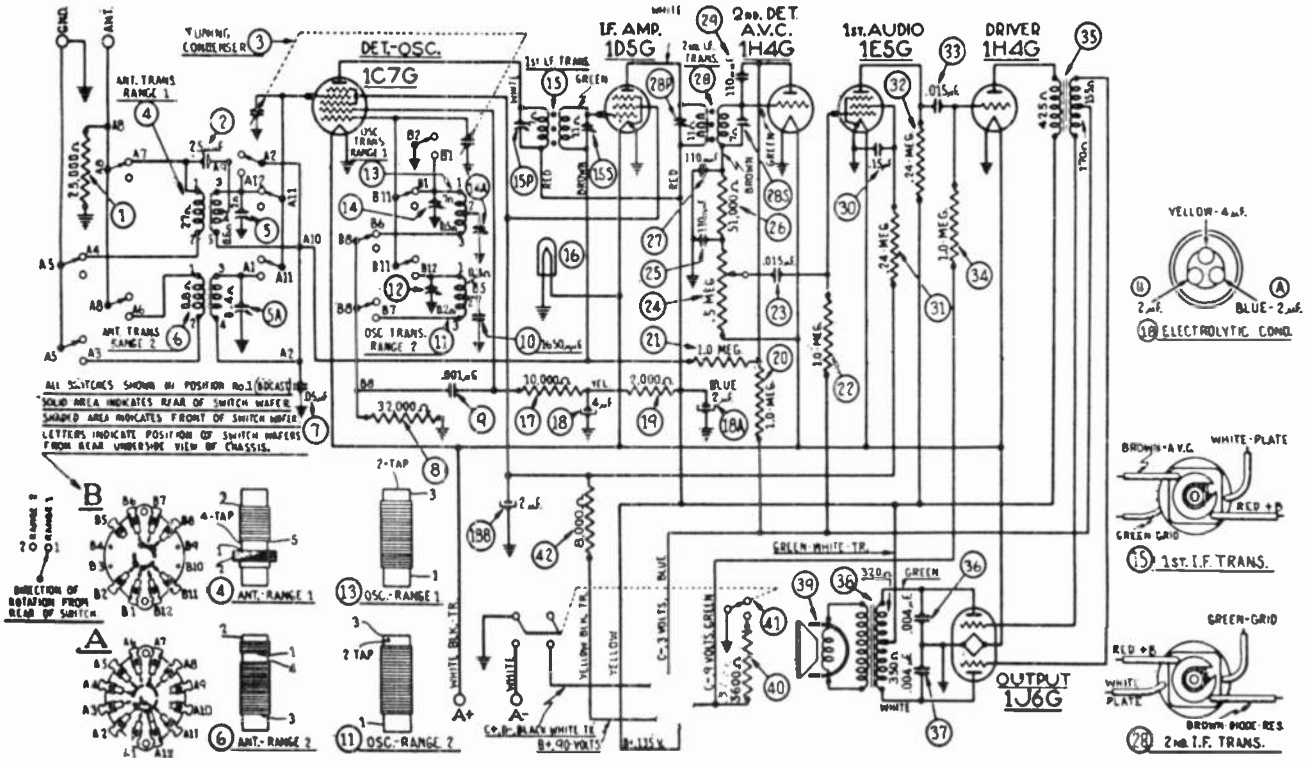
DIAL CALIBRATION—After the above adjustments have been performed, the dial pointer is adjusted to track properly with the tuning condenser. To do this turn signal generator to 1000 K.C. and tune the receiver tuning condenser for maximum output at this frequency. When maximum output is obtained dial pointer is adjusted to the 1000 K.C. mark on dial.

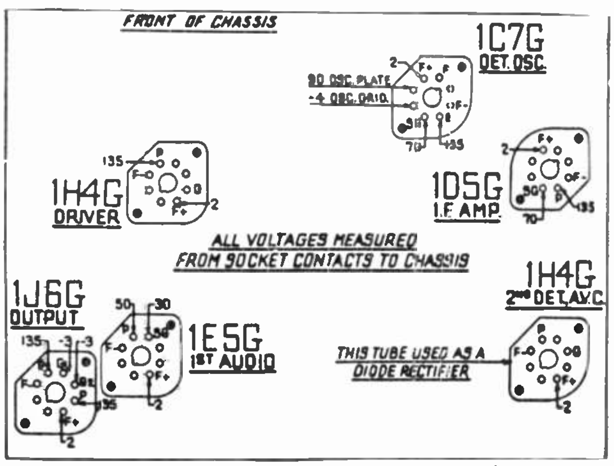
I.F. = 470 K.C.

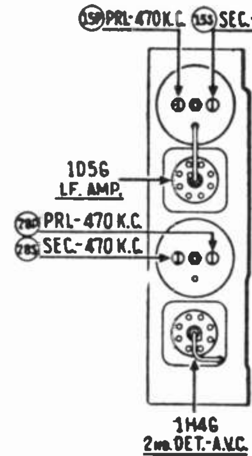
DATA SHEET

COURTESY - PHILCO -37 LTD.

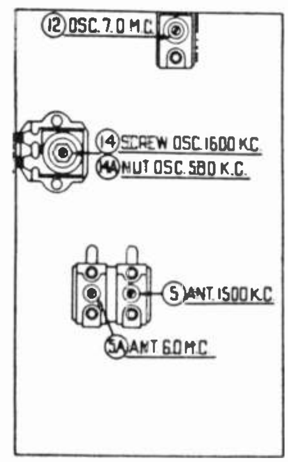
World Radio History







I.F. Compensators
Top of Chassis



R.F. Compensators
Underside of Chassis

Model-37-338

I.F.= 470 K.C.

1936-37

INTERMEDIATE FREQUENCY CIRCUIT

Frequency 470 K.C.

1. Connect the 088 Signal Generator output lead through a .1 mfd. condenser, to the control grid of the 1C7G tube, and the generator ground lead to the chassis.

2. Set the range switch in position No. 1 (Broadcast), then rotate the tuning condenser of the receiver to the maximum capacity position (clockwise) and adjust the signal generator for 470 K.C. Now adjust compensators (28)s 2nd I.F. Sec., (28)p 2nd I.F. Pri., (15)s 1st I.F. Sec. and (15)p 1st I.F. Pri. for maximum output.

RADIO FREQUENCY CIRCUIT

Tuning Range 2.3 M.C. to 7.4 M.C.

1. Remove the signal generator output lead from the grid of the 1C7G tube and connect it through a 200 mmf Condenser to the antenna terminal on input panel (rear of chassis), and the generator ground lead to the ground terminal of this panel.

2. Set the range switch in position No. 2. Turn the receiver and signal generator dials to 7.0 M.C. Now adjust compensator (12) for maximum output.

3. Turn signal generator and receiver dials to 6.0 M.C. and adjust compensator (5)a for maximum output.

Tuning Range 530 to 1720 K.C.

1. Set range switch in position No. (1) (Broadcast). Turn signal generator and receiver dials to 1600 K.C. Then adjust (14) Osc. "Screw", and (5) antenna for maximum output.

2. Turn signal generator and receiver dials to 580 K.C. and adjust compensator (14)a Osc., "nut" as follows: To adjust compensator (14)a the tuning condenser must be rolled for maximum output, thusly: First turn the compensator (14)a for maximum output. Then vary the tuning condenser for maximum output about 580 K.C. Now retune compensator (14)a and again vary the tuning condenser back and forth about the 580 K.C. dial mark for maximum output.

This operation of first tuning the compensator, then the tuning condenser is continued until maximum output is obtained at the 580 K.C. dial mark. If the signal generator is not accurately calibrated the maximum point on the dial of the receiver may fall slightly above or below the 580 K.C. dial mark.

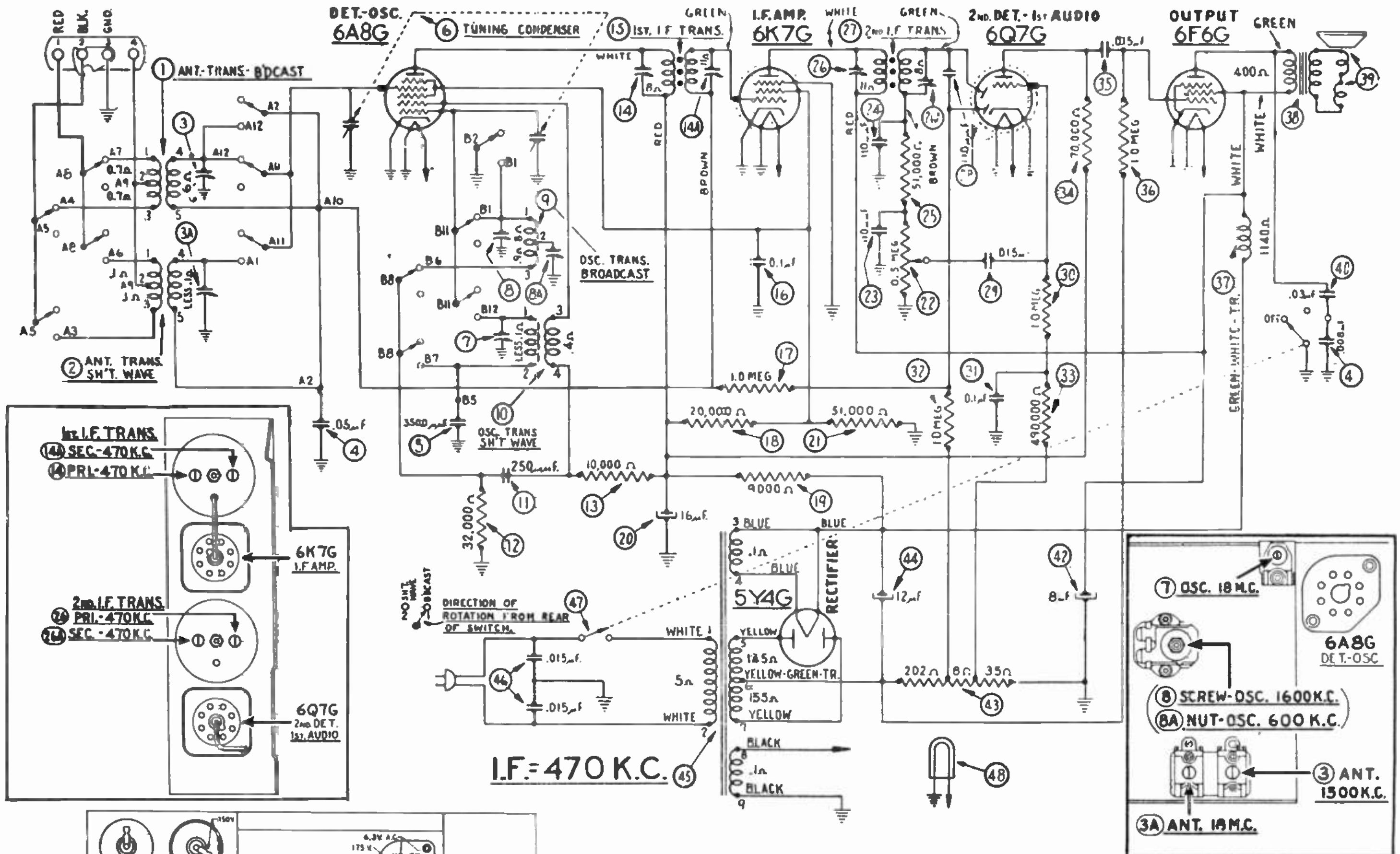
3. Turn signal generator and receiver dials to 1600 K.C. and readjust compensator (14) Osc. "screw" for maximum output.

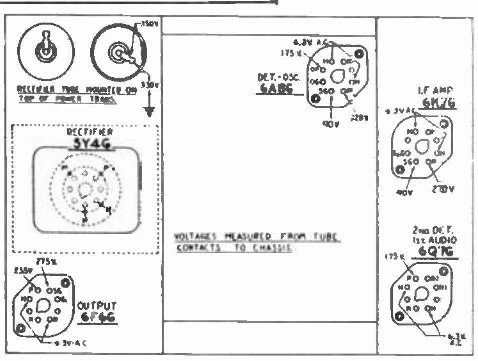
4. Turn signal generator and receiver dials to 1500 K.C. and readjust compensator (5) for maximum output.

DATA SHEET

COURTESY - PHILCO - 38 LTD.

World Radio History





INTERMEDIATE FREQUENCY CIRCUIT

1 Turn range switch to Range 1. Rotate the tuning control to approximately 600 K.C. Connect the 088 Signal Generator output lead through a .1 mfd. condenser to the grid of the 6A8G tube.

2 Set Signal Generator indicator for 470 K.C. adjust attenuator for approximately ¼ scale reading on output meter. Then adjust compensators (26)a 2nd I.F. Sec., (26) 2nd I.F. Pri., (14)a 1st I.F. Sec., (14) 1st I.F. Pri., for maximum reading on output meter.

RADIO FREQUENCY CIRCUIT

Range 2.—5.7 to 18 M.C.

1 Remove the signal generator output lead and series condenser from the 6A8G tube and connect them to the ANT. TERMINAL No. 1, on aerial input panel (rear of chassis) and the generator ground lead to GND. TERMINAL No. 3, rear of chassis. Connect TERMINAL No. 2 to GROUND TERMINAL No. 3 with connector link provided on the panel.

2 Set range switch in position No. 2 (S.W.). Turn signal generator and receiver dials to 18 M.C. and adjust compensator (7) Osc. for maximum output.

3 The adjustment of the antenna compensator on the high frequency range causes a slight detuning of the oscillator circuit. In order to overcome this detuning effect, connect a variable condenser of approximately 350 mfd., having a good vernier drive, across the oscillator section of the tuning condenser. Leaving the signal generator and receiver dials at 18 M.C., tune the added condenser so that the second harmonic of the receiver oscillator will beat against the signal from the signal generator. The antenna compensator (3)a should then be adjusted to give maximum output.

4 Now remove the external condenser from the tuning condenser of receiver and turn compensator (7) osc. to the maximum capacity position (clockwise), then without moving signal generator or receiver tuning condenser, turn compensator (7) (counter-clockwise) until a second peak is reached on the output meter. The first peak is caused by tuning to the image frequency signal and must be neglected. Compensator (7) is adjusted on the second peak to give maximum output.

RANGE 1: 530 to 1720 K.C.

Turn range switch to Range No. 1. Turn the Receiver dial to 1600 K.C. Then adjust compensators (8) and (3) for maximum reading on output meter.

The 088 Signal Generator dial is set at 800 K.C. and the second harmonic of this frequency (1600 K.C.) is used in making the above adjustment.

2 The low frequency end of the band is now tuned by turning Signal Generator and Receiver dials to 600 K.C. and adjusting compensator (8)a—see note (a) below—for maximum output.

(a) When compensator (8)a osc. series is being adjusted, the Tuning Condenser must be rolled for maximum output. This is accomplished as follows: First tune compensator (8)a for maximum output. Then vary the Tuning Condenser for maximum output at 600 K.C. Now retune Compensator (8)a and again vary the tuning condenser back and forth at 600 K.C., for maximum output. This operation of first tuning the Compensator, then the Tuning Condenser is continued until maximum output is obtained at the 600 K.C. frequency.

3 Set the Signal Generator and Receiver Dials for 1600 K.C. and re-adjust Compensator (8) for maximum output. Then turn the dials to 1500 K.C. and re-adjust compensator (3) for maximum reading on output meter.

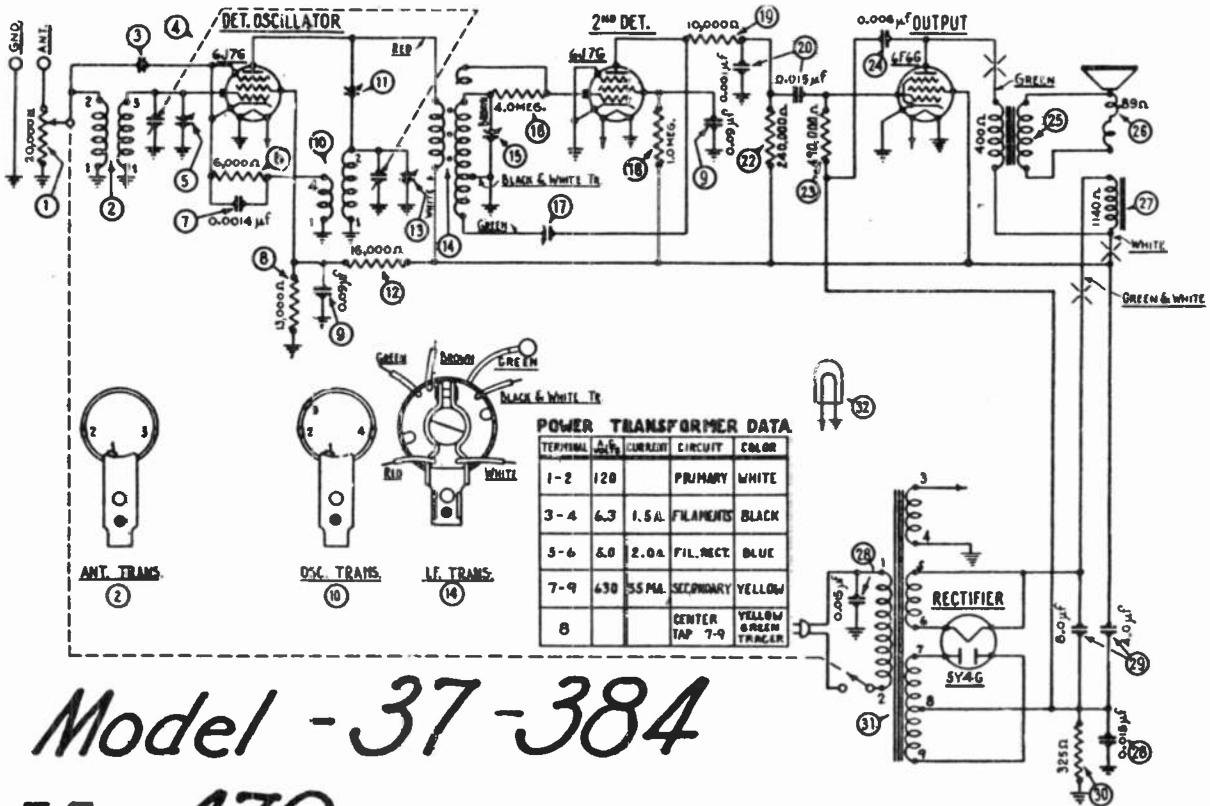
MODEL 37-361

1936 -37

DATA SHEET

COURTESY— PHILCO LTD. -39

World Radio History



POWER TRANSFORMER DATA

TERMINAL	A.C. VOLTS	CURRENT	CIRCUIT	COLOR
1-2	120		PRIMARY	WHITE
3-4	6.3	1.5A.	FILAMENTS	BLACK
5-6	5.0	2.0A.	FIL. RECT.	BLUE
7-9	630	55 MA.	SECONDARY	YELLOW
8			CENTER TAP 7-9	YELLOW GREEN TRACER

Model - 37 - 384

I.F. = 470 K.C.

1936 - 37

When adjusting each circuit, care should be taken to have the signal generator attenuator set to approximately ¼ scale reading on output meter.

Intermediate Frequency Circuit

1. Turn gang condenser to maximum capacity (counter-clockwise) and set the volume control of the receiver in the maximum position (clockwise).

2. Connect the 088 signal generator output lead through a .1 mfd. condenser, to the grid of the 6J7G Detector-oscillator tube and the generator ground to the chassis.

3. Turn the sensitivity control (17) to maximum capacity position (clockwise), and then release 1½ turns (counter-clockwise).

4. Set signal generator at 470 K.C. and adjust compensators (11) and (15) for maximum reading on the output meter. Then turn sensitivity control (17) clockwise until a hiss (oscillation) is heard. Now turn sensitivity control (17) counter-clockwise until the hiss ceases, then continue for ¼ turn more.

TUBE SOCKET VOLTAGES
(Measured from Tube Contact to Chassis)

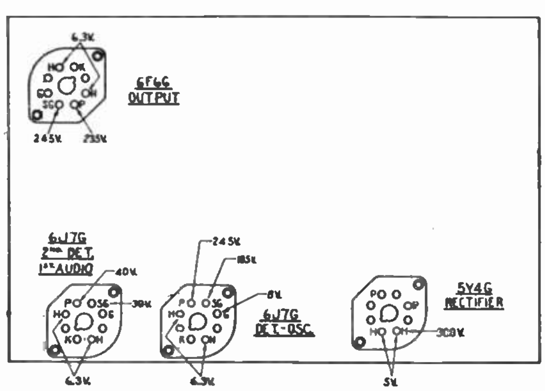


Fig. 2. Tubes as viewed from underside of Chassis

The voltages at the points indicated by the arrows above were obtained with a Philco type 025 Circuit Tester which contains a high resistance (1000 ohms per volt) voltmeter.

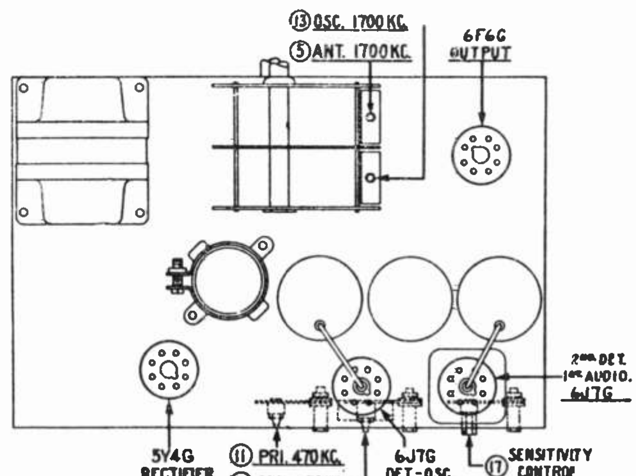


Fig. 1. Locations of Compensating Condensers

Radio Frequency Circuit

1. Turn the gang condenser to the minimum capacity position (extreme clockwise) and place a .006" (six-thousandths inch) gauge between the stator and rotor plates. Now turn the gang counter-clockwise until stator and rotor plates touch gauge.

2. Remove gauge from gang condenser. Now place signal generator output lead through a 100 mmfd. condenser to the aerial post of the receiver. Set signal generator at 850 K.C., (using second harmonic, 1700 K.C.) Adjust compensators (13) osc., and (5) ant., for maximum reading on output meter.

3. Turn signal generator to 1400 K.C. and adjust gang condenser for maximum output. Then adjust compensator (5) for maximum reading on output meter.

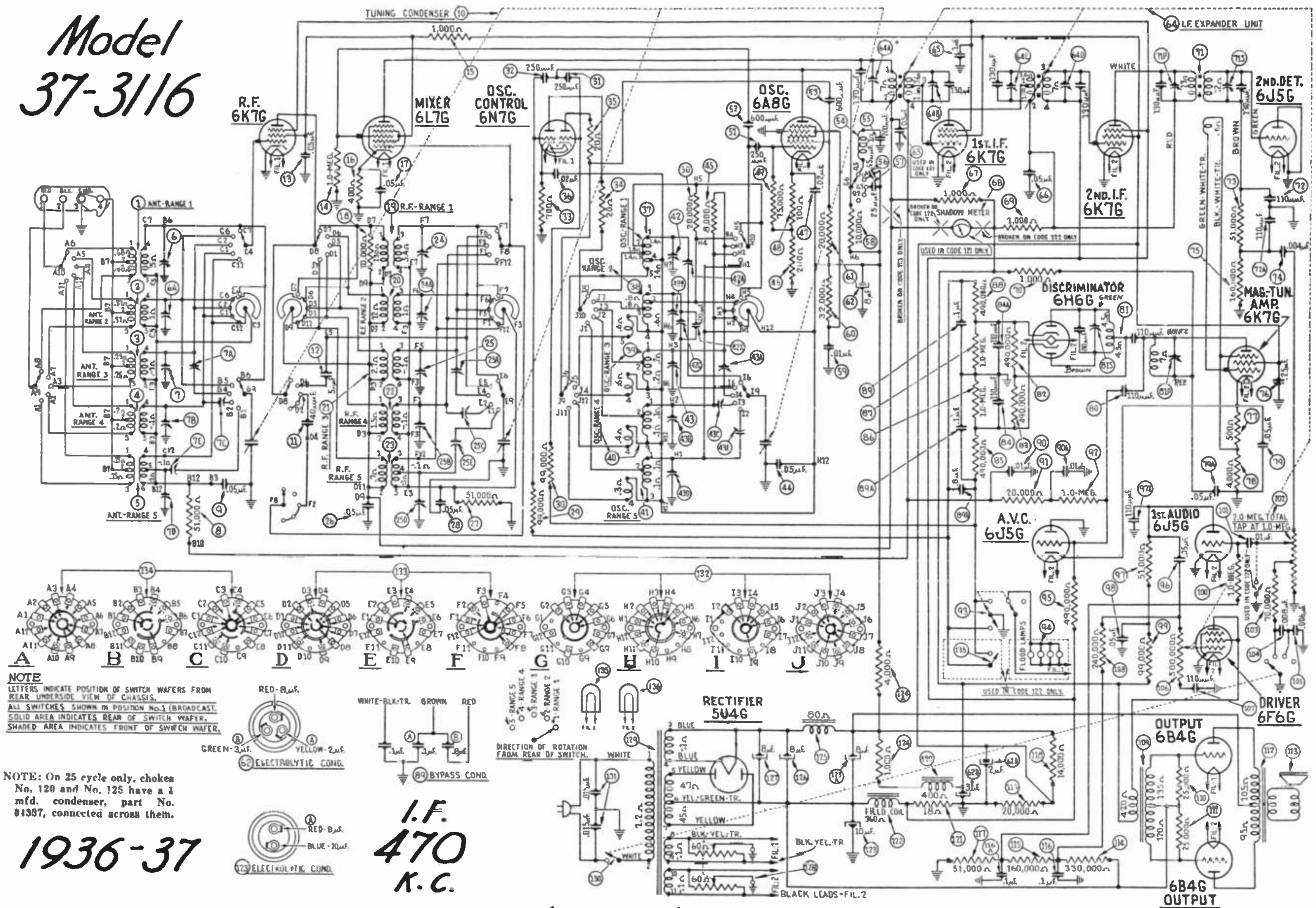
4. After the above adjustments are completed, the dial pointer is checked for calibration by turning signal generator to 1000 K.C. Then tune receiver for maximum signal. The dial pointer should then indicate 1000 K.C.

DATA SHEET

COURTESY - PHILCO - 40 LTD.

World Radio History

Model 37-3116



NOTE

LETTERS INDICATE POSITION OF SWITCH WAFERS FROM REAR UNDERSIDE VIEW OF CHASSIS.
ALL SWITCHES SHOWN IN POSITION No.1 (BROADCAST.
SOLID AREA INDICATES REAR OF SWITCH WAFER.
SHADED AREA INDICATES FRONT OF SWITCH WAFER.

NOTE: On 25 cycle only, chokes No. 120 and No. 125 have a 1 mfd. condenser, part No. 84357, connected across them.

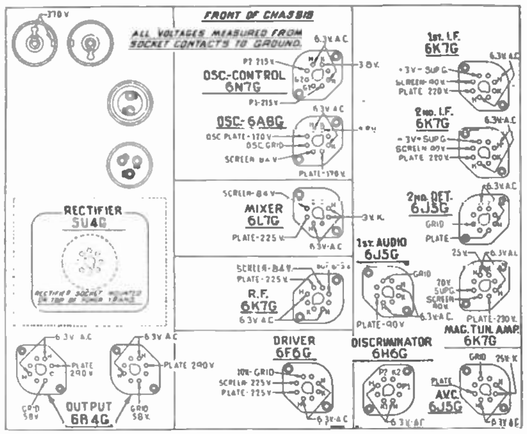
1936-37

I.F. 470 K.C.

ALIGNMENT INSTRUCTIONS ON DATA SHEET – 41a

DATA SHEET

COURTESY – PHILCO-41 CO. LTD.



Socket Voltages, Measured from Underside of Chassis

The voltaces indicated by arrows were measured with a Philco 025 Circuit Tester which contains a voltmeter having a resistance of 1000 ohms per volt. Volume Control at minimum, range switch in broadcast position, line voltage 115 A.C.

INTERMEDIATE FREQUENCY CIRCUIT

Frequency 470 K.C.

1. Connect the 088 Signal Generator output lead in series with a .1 mfd. condenser to the grid of the 6L7G tube, and the ground connection of the output lead to the chassis.

2. Set the receiver volume control in the maximum position. Turn the fidelity-selectivity control clockwise; magnetic tuning control in the "off" position (counter-clockwise); range switch in position No. 1 (Broadcast); tuning condenser to approximately 580 K.C., and adjust the signal generator for 470 K.C.

3. Now adjust compensators (64B) 1st I.F. Sec., (64A) 1st I.F. Pri., (64D) 2nd I.F. Sec., (64C) 2nd I.F. Pri., (71S) 3rd I.F. Sec., and (71P) 3rd I.F. Pri., for maximum output.

4. Turn the fidelity-selectivity control to the expanded position (counter-clockwise). The intermediate frequency curve is now checked for symmetry as follows: Slowly shift the signal generator dial between 460 K.C. and 480 K.C. As the dial is turned two peaks will be indicated on the output meter—one about 465 K.C., and the other about 475 K.C. These peaks should give the same deflection or reading on the output meter. If they are unequal, compensator (71S) must be readjusted slightly to the right or left—depending on which peak gives the lowest reading—until they are equalized.

Each time the compensator is set in another position, rotate the signal generator dial through 460 to 480 K.C. and note the reading of each peak on the output meter. If the peaks become more equal when compensator (71S) is turned to the left, continue in this direction until they are equal. If they become more unequal turn the compensator to the right. Continue this adjustment in either direction until the peaks equalize.

5. After adjusting the third I.F. transformer, turn the fidelity-selectivity control clockwise (selective position) and adjust the attenuator of the signal generator for maximum output. Now tune the primary compensator (81P) of the magnetic tuning transformer for minimum output.

RADIO FREQUENCY CIRCUIT

Tuning Range 11.5-18.2 M.C.

1. The signal generator output lead with the .1 mfd. condenser, is connected to terminal No. 1 on the aerial input panel (rear of chassis) and the generator ground lead to terminal No. 3. Terminals 2 and 3 must be connected with the shorting link provided on the panel.

2. Set the magnetic tuning control in the "off" position, and the fidelity-selectivity control in the extreme clockwise position. Set the range switch in position No. 5 (11.5 to 18.2 M.C.) Turn the receiver and signal generator dials to 18 M.C. and adjust the generator attenuator for a readable indication on the output meter. Now adjust compensator (43D) by turning the screw (clockwise) to the maximum capacity position, then slowly turn it counter-clockwise until a second maximum peak is reached on the output meter. The first peak from maximum capacity is the image signal and the receiver must not be adjusted to this signal. On some receivers, however, only one peak will be found, therefore, adjust compensator (43D) to this peak. If the above procedure is correctly performed, the image signal will be found at 17.060 M.C. by advancing the signal generator input, and turning the receiver dial to this frequency mark on the scale.

3. Leaving the signal generator and receiver dials at 18 M.C. the antenna and R.F. compensators (7D) and (25D) are now adjusted by connecting a variable condenser (Philco Part No. 45-2325) across the oscillator compensator (43D) contact (first contact from the left side of the receiver facing rear underside view of the chassis) and ground. Now tune the added condenser until the second harmonic of the receiver oscillator beats against the signal from the generator, resulting in a maximum indication on the output meter. Note: It may be necessary to increase the signal generator output to obtain a signal of sufficient strength for reading on the output meter. Compensators (7D) and (25D) are now adjusted for maximum output. After these adjustments, remove the external condenser and readjust compensator (43D) as given in paragraph 2 above.

4. Turn the signal generator and receiver dials to 12 M.C. and adjust compensators (43E), (25E) and (7E) for maximum output.

5. Readjust compensator (43D) as given in paragraph 2 above, for maximum output.

6. Readjust compensators (7D), (25D) and (43D) as given in paragraph 3 above. This readjustment is to correct any variation that the low frequency compensator may have caused in the high end of this range.

Tuning Range (7.35-11.6 M.C.)

1. Turn selector switch to Range 4. Set the signal generator and receiver dials to 11.0 M.C. Now adjust compensator (43B) for maximum output. Check for image at 10.06 M.C.

2. Leaving signal generator and receiver dial turned to 11.0 M.C., connect the external variable condenser across the oscillator compensator (43B) contact (third contact from left side of the receiver facing rear underside view of chassis) and ground. Tune the added condenser for maximum output, then adjust compensators (7B) and (25B) for maximum output. Remove the added condenser and adjust (43B) for maximum.

3. Turn the signal generator and receiver dials to 7.5 M.C. and adjust compensators (43C), (25C) and (7C) for maximum output.

4. Readjust compensator (43B) as given in paragraph 1 above.

5. Readjust compensators (7B), (25B) and (43B) as given in paragraph 2 above.

Tuning Range (4.7 to 7.4 M.C.)

1. Turn selector switch to range 3. Set the signal generator and receiver dials for 7.0 M.C. and adjust compensators (43), (25) and (7) for maximum output.

2. Rotate the signal generators and receiver dials to 5.0 M.C., then adjust compensators (43A), (25A) and (7A) for maximum output.

3. Readjust compensators (43), (25) and (7) on the 7.0 M.C. signal.

Tuning Range (1.58 to 4.75 M.C.)

1. Turn the selector switch to range 2. Set the signal generator and receiver dials to 4.5 M.C. Now adjust compensators (42B), (24A) and (6A) for maximum output.

2. Rotate the signal generator and receiver dials to 1.7 M.C. Compensator (42C) Osc. series is now adjusted for maximum output as follows:

First tune compensator (42C) for maximum output, then vary the tuning condenser of the receiver for maximum output about the 1.7 M.C. dial mark. Now turn compensator (42C) slightly to the right or left and vary the receiver tuning condenser for maximum output. If the output reading increases, turn compensator (42C) in the same direction a trifle more, and again vary the tuning condenser for maximum output. If the output decreases, set the compensator in the opposite direction. This procedure of first setting the compensator and then varying the tuning condenser is continued until there is no further gain in output reading.

3. Readjust compensators (42B), (24A) and (6A) for maximum output as given in paragraph 1 above.

Tuning Range (530 to 1600 K.C.)

1. Set selector switch in range 1. Rotate the signal generator and receiver dial to 1500 K.C. Adjust compensators (42), (24) and (6) for maximum output.

2. Turn the signal generator and receiver dials to 580 K.C. Compensator (42A) Osc. series is now adjusted, using the same procedure as given in paragraph 2 under Tuning Range (1.58 to 4.75 M.C.). The only difference in the two adjustments is the frequency and compensator used.

3. Readjust compensator (42) on 1500 K.C. and compensators (24) and (6) on a 1400 K.C. signal.

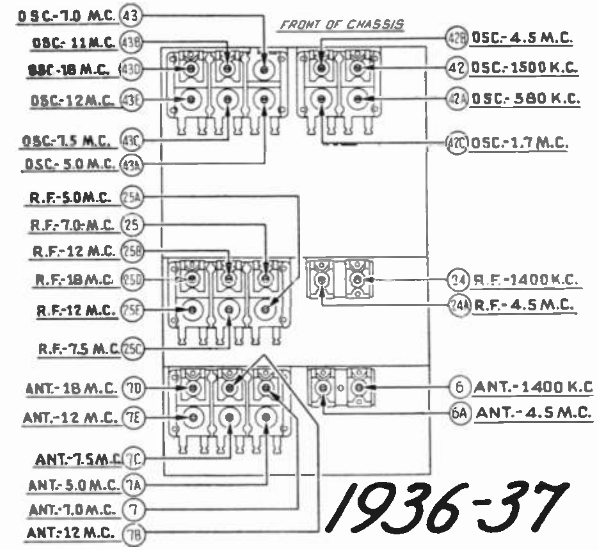
ADJUSTMENT OF THE MAGNETIC TUNING CONTROL

1. Leave the selector switch in position 1. Set the fidelity-selectivity control in the "selective" position (clockwise). Magnetic tuning in the "out" position. Turn the signal generator and dial to 1000 K.C., then adjust the receiver tuning condenser for maximum output.

NOTE: It is very important to accurately adjust the receiver tuning condenser, also, adjust the signal generator attenuator to maximum output.

2. Turn the (Magnetic Tuning Control) to the "on" position (clockwise). Compensator (81S) Sec. of magnetic tuning transformer is now adjusted for maximum output. If the indicator of the output meter goes off scale, turn the volume control of the receiver toward the minimum position until a readable indication is obtained.

3. The above adjustment is now checked for accuracy, by turning the magnetic tuning control "off". When this is done there should be no change in the tone of the receiver signal. If a change of tone or a hiss develops, it indicates a shift in frequency and the adjustment must be made again.

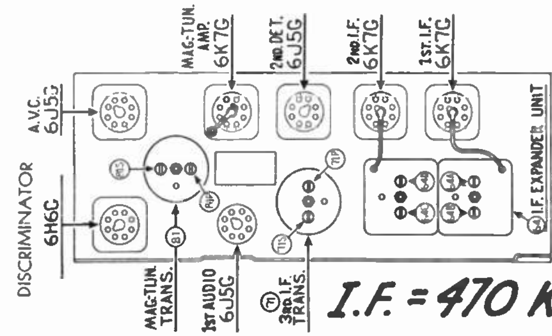


1936-37

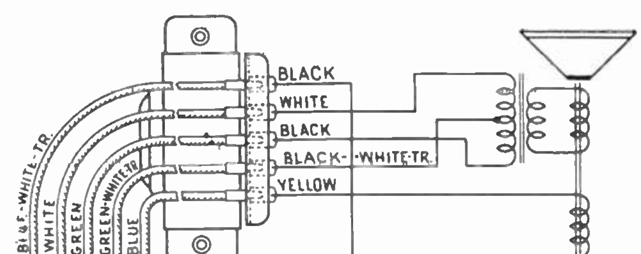
Alignment Data

Model-37-3116

See Circuit on Sheet-41



I.F. = 470 Kc.

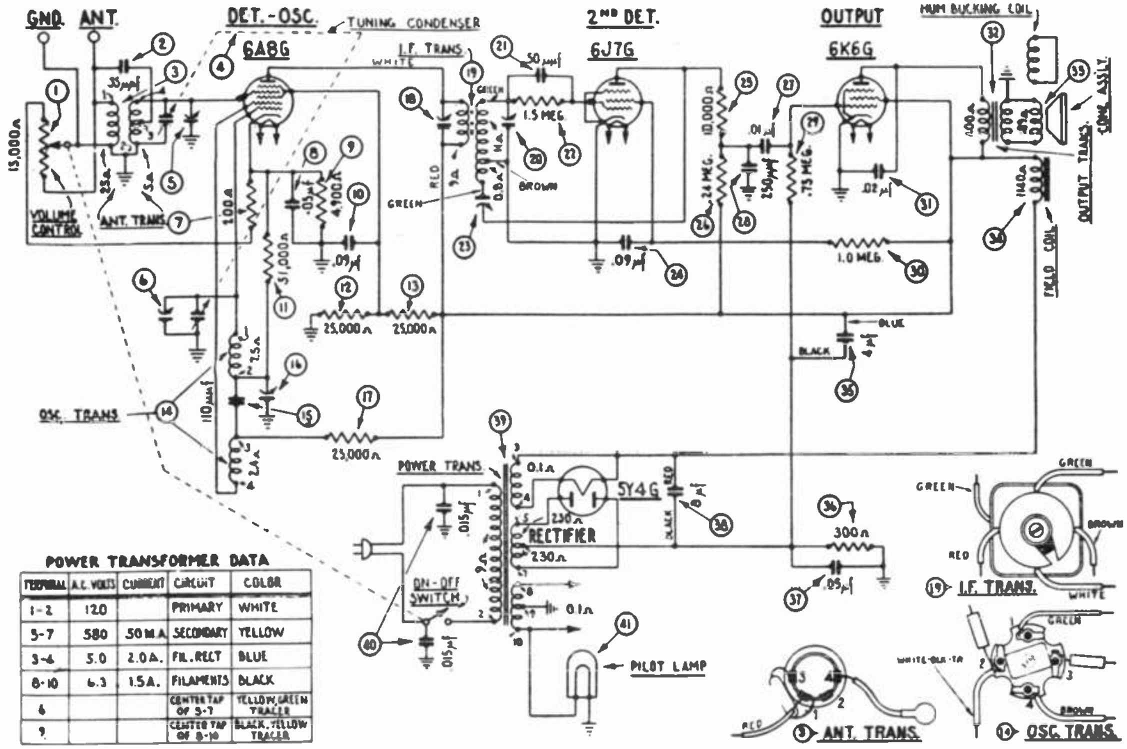


Speaker Wiring

COURTESY- PHILCO LTD.

DATA SHEET

World Radio History



POWER TRANSFORMER DATA

TERMINAL	A.C. VOLTS	CURRENT	CIRCUIT	COLOR
1-2	120		PRIMARY	WHITE
5-7	580	50 M.A.	SECONDARY	YELLOW
3-4	5.0	2.0 A.	FIL. RECT	BLUE
8-10	6.3	1.5 A.	FILAMENTS	BLACK
6			CENTER TAP OF 5-7	YELLOW, GREEN TRACER
9			CENTER TAP OF 8-10	BLACK, YELLOW TRACER

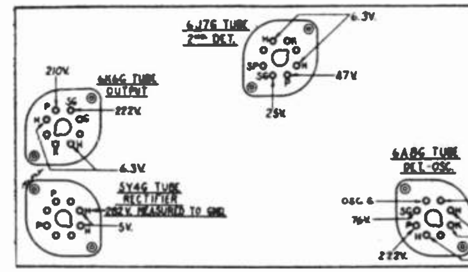


Fig. 2. Tube Sockets as Viewed from Underside of Chassis. (Measured from Socket Terminal to Ground Volume Control in Maximum Position)

COURTESY PHILCO LTD. - 42

DATA SHEET

I.F. = 470 K.C.

Model 37-3600

1936-37

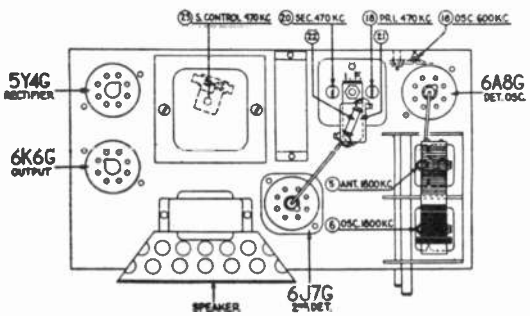


Fig. 1. Location of Compensators

Radio Frequency Circuit

1. Remove the signal generator output lead from the 6A8G tube, and connect it to the aerial lead of the receiver through a 100 mmfd. condenser.

2. Turn the gang condenser to minimum capacity position, (counter-clockwise) and place a .006" (six thousandths inch) gauge between the stator and rotor plates. Now turn the gang clockwise until stator and rotor plates touch gauge.

3. Remove gauge from gang condenser. Now set signal generator at 900 K.C., (using second harmonic 1800 K.C.), adjust compensators (6) and (5) for maximum reading on output meter.

4. Turn the signal generator and receiver gang condenser to 600 K.C., and adjust compensator (16). In doing so, the gang condenser must be rolled slightly above and below the 600 K.C. signal until the maximum reading is indicated on the output.

5. Turn the gang condenser to 1800 K.C. and signal generator to 900 K.C., (using second harmonic of signal generator 1800 K.C.), readjust compensator (6) for maximum reading on output meter. Set gang as per paragraph 2, for this adjustment.

6. Turn the gang condenser and signal generator to 1400 K.C., readjust compensator (5) for maximum reading on output meter. After the above adjustments are completed and receiver is placed in the cabinet, the dial pointer is properly placed by turning the signal generator to 1,000 K.C. Then tune receiver for maximum signal. The dial pointer is then placed on gang shaft, so that it indicates 1000 K.C. on dial.

Intermediate Frequency Circuit

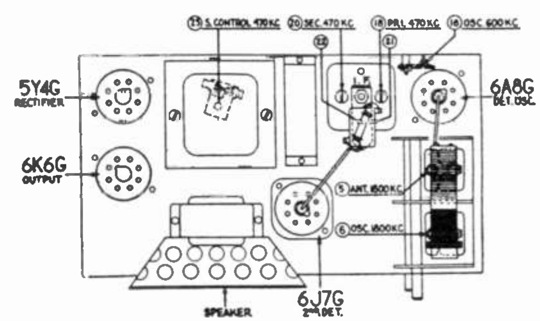
1. Connect the 088 signal generator output lead through a .1 mfd. condenser to the grid of the 6A8G tube and the ground lead to the chassis.

2. Turn the sensitivity compensator (23) to maximum capacity position (clockwise), and then release it; 1½ turns (counter-clockwise).

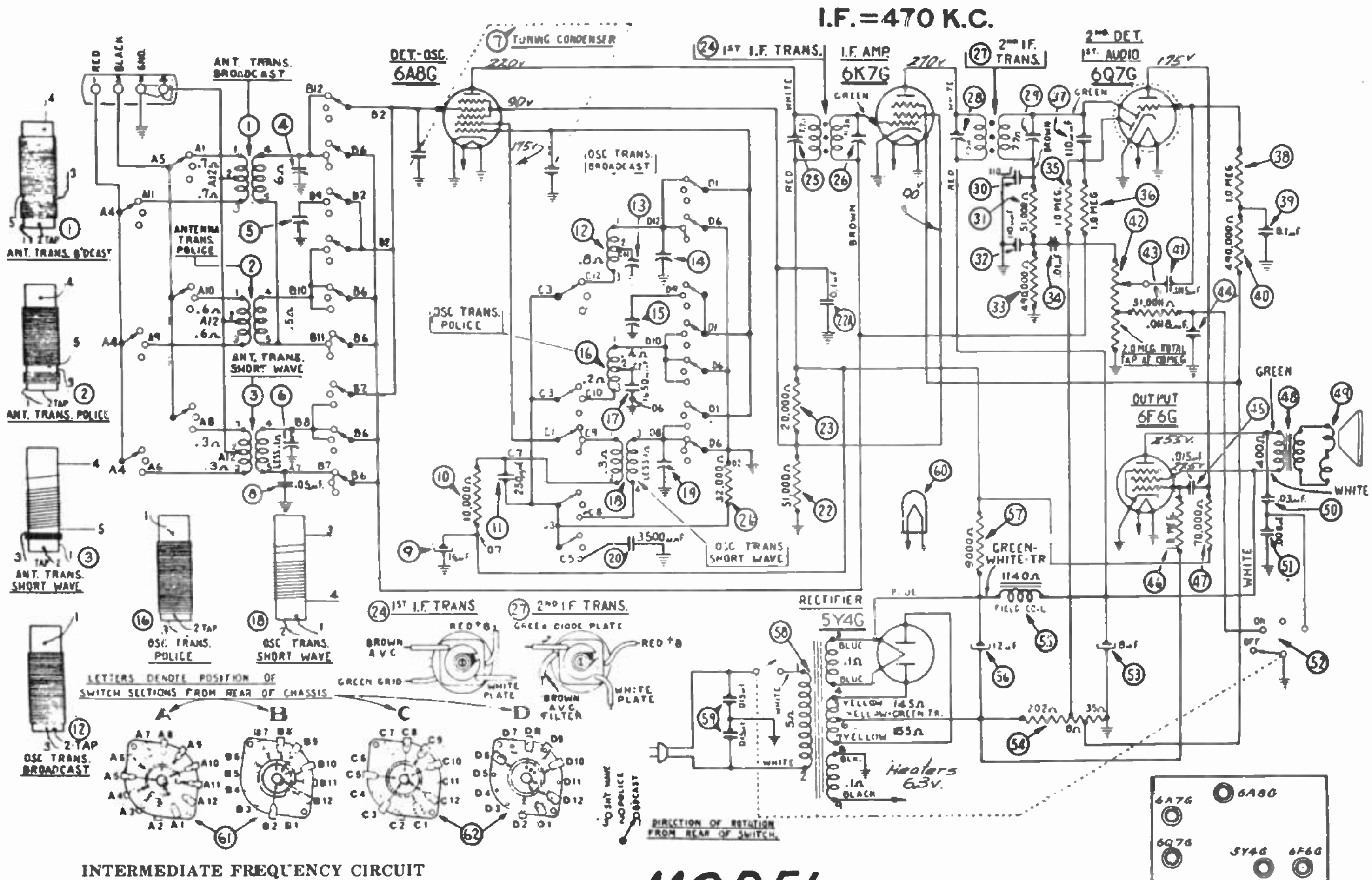
3. Turn gang condenser to approximately 600 K.C. Set the signal generator at 470 K.C.

4. Adjust the compensator (18) and (20) for maximum reading on the output meter. Then turn the sensitivity compensator (23) clockwise until a hiss, (oscillation) is heard. Now turn the compensator (23) counter-clockwise until hiss ceases, then continue for ¼ turn more.

When adjusting each circuit, care should be taken to have the signal generator attenuator set for approximately ¼ scale reading on output meter.



World Radio History



MODEL 37-3610 TUBE LAYOUT.

MODEL 37-3610

1936-37

INTERMEDIATE FREQUENCY CIRCUIT

Frequency 470 K.C.

1 Connect the 088 signal generator output lead through a .1 mfd. condenser to the control grid of the 6A8G and the ground connection of output lead to the chassis.

2 The tuning range switch is set in position No. 1 (Broadcast). Rotate the tuning condenser of receiver to the maximum capacity position (counter-clockwise), and adjust the signal generator for 470 K.C.

3 Adjust compensators (29) 2nd I.F. Sec., (28) 2nd I.F. Pri., (26) 1st I.F. Sec. and (25) 1st I.F. Pri. for maximum reading on output meter.

RADIO FREQUENCY CIRCUIT

Tuning Range—7.3 to 22.0 M.C.

1 Remove the signal generator output lead from grid of 6A8G tube and connect it through a 0.1 mf. condenser to terminal No. 1 on aerial input panel, rear of chassis. Connect generator ground lead to chassis. Terminals 2 and 3 of aerial input panel must be connected with connector link provided on the panel.

2 Set tuning range switch in position No. 3. Turn signal generator and receiver dial to 18.0 M.C. and adjust compensators (19) osc. and (6) ant. for maximum output.

The adjustment of the antenna compensator on the high frequency range causes a slight detuning of the oscillator circuit. In order to overcome this detuning effect, connect a variable condenser of approximately 350 mmf., having a good vernier drive, across the oscillator section of the tuning condenser. Leaving the signal generator and receiver dials at 18.0 M.C., tune the added condenser so that the second harmonic of the receiver oscillator will beat against the signal from the 088 signal generator. The antenna compensator (C) should then be adjusted to give maximum output. Now remove the external condenser and turn compensator (19) to maximum capacity (clockwise) then without moving signal generator or receiver tuning condenser, back off compensator (19) (counter-clockwise) until a second peak is reached on the output meter.

Note:—The first peak is caused by tuning to the image signal and must be neglected.

Tuning Range: 2.3 to 7.4 Megacycles.

1 Turn range switch to position No. 2 (Police). Rotate signal generator and receiver dials to 7.0 M.C. Then adjust compensator (15) for maximum output. Now turn signal generator and receiver dials to 6.0 M.C. and adjust compensator (5) for maximum reading on output meter.

Tuning Range: 530 to 1720 Kilocycles.

1 Set range switch in position No. 1 (standard broadcast). The 088 signal indicator is set at 800 K.C. and the receiver dial at 1600 K.C.

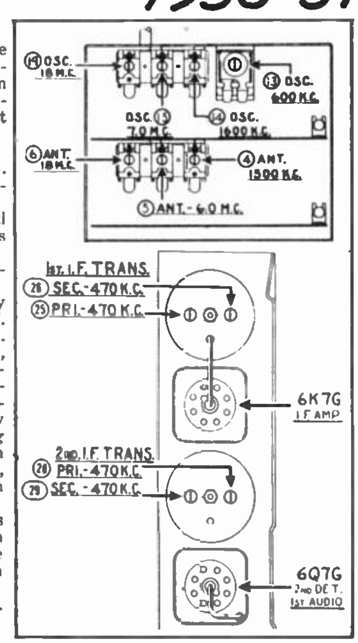
(a) In adjusting the receiver at 1600 K.C., the second harmonic of 800 K.C., to which the signal generator is tuned, is used.

Now adjust compensator (14) osc., (4) ant. for maximum output.

2 The low frequency end of the band is now tuned by turning signal generator and receiver dials to 600 K.C. and adjust compensator (13) for maximum output. When compensator (13) osc. series is being adjusted, the tuning condenser must be rolled for maximum output. This is accomplished as follows: First tune compensator (13) for maximum output. Then vary the tuning condenser for maximum output about 600 K.C. Now retune compensator (13), and again vary the tuning condenser back and forth at 600 K.C. for maximum output. This operation of first tuning the compensator, then the tuning condenser is continued until maximum output is obtained at the 600 K.C. frequency.

3 After the low frequency (600 K.C.) end of range 1 is adjusted, the 1600 K.C. end is re-adjusted, as given in Paragraph 1 above, to correct any variation that the low frequency series compensator may have caused in the alignment of the high frequency end.

4 Now turn signal generator and receiver dial to 1500 K.C. and re-adjust compensator (4) for maximum output.



DATA SHEET

COURTESY-
PHILCO LTD. - 43

World Radio History

Alignment of the Compensators

To accurately adjust this receiver, precision test equipment is necessary. A signal generator such as the Philco Model 088 Signal Generator, covering from 110 to 20,000 K.C. is recommended for use in adjusting the compensators at the various frequencies specified. A visual indication of the receiver output is also necessary to obtain correct adjustment of the compensators. Philco Model 025 Circuit Tester contains a sensitive output meter and is recommended for these adjustments.

Philco Fibre Handle Screw-Driver No. 27-7059 and Variable Condenser Part No. 45-2325 complete the necessary equipment for these adjustments. The locations of the various compensators are shown in Figs. 2 and 3.

The following procedure must be observed in adjusting the compensators:

DIAL ADJUSTMENT—The tuning condenser is set at the maximum capacity position, by turning the tuning knob counter-clockwise. Loosen the set screw of dial hub and set dial, with Glowing Indicator centered between the first and second index lines at the low frequency end of the broadcast scale.

OUTPUT METER—The 025 Output Meter is connected between one of the plate prongs of the 1J6G tube and the chassis. Then adjust the meter to use the (0-30) volt scale.

INTERMEDIATE FREQUENCY CIRCUIT

Frequency 470 K.C.

1. Connect the 088 Signal Generator output lead, through a .1 mfd. condenser to the control grid of the 1C7G tube, and the ground connection of the output lead to the chassis.
2. Set the range switch in position No. 1 (Broadcast). Rotate the tuning condenser to approximately 580 K.C. Then adjust the signal generator for 470 K.C.
3. Adjust compensators (30S), (30P), (28S), and (28P) for maximum output, see Fig. 2.

RADIO FREQUENCY CIRCUIT

Tuning Range (7.35 to 22 M.C.)

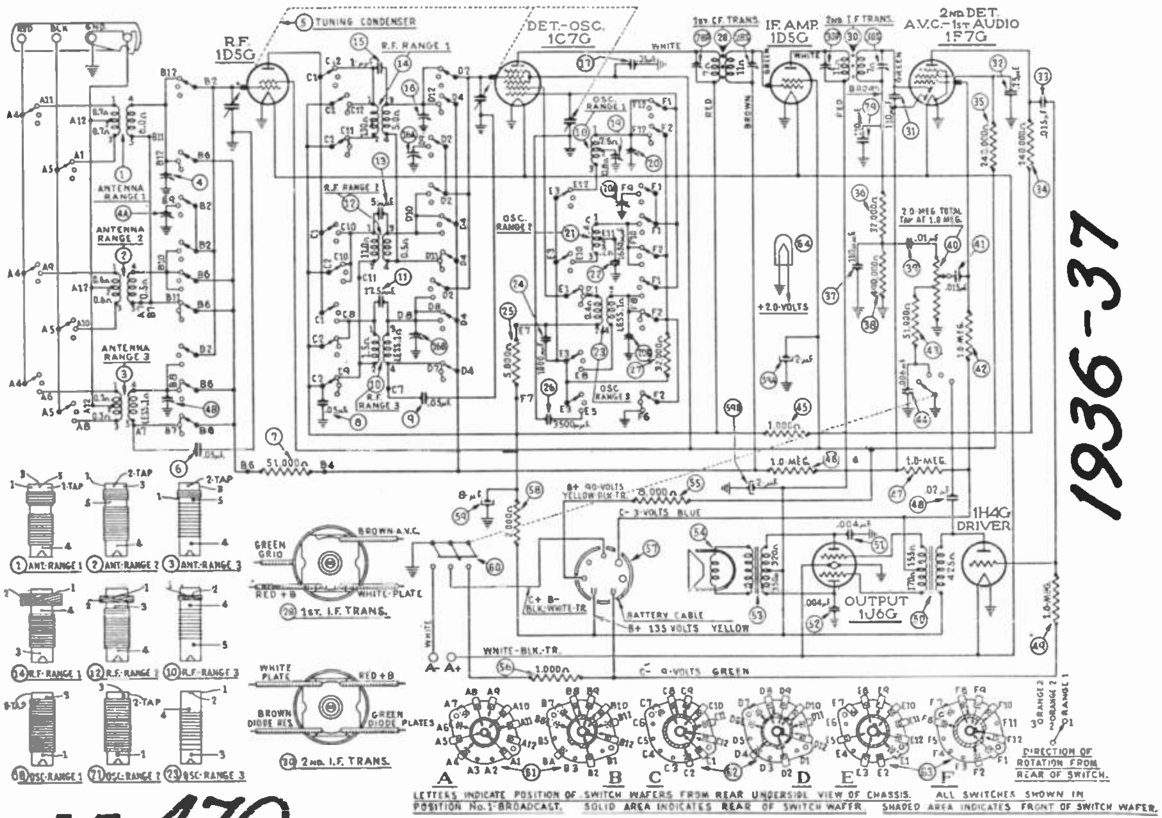
1. Remove the signal generator output lead from the grid of the 1C7G, and connect it through the .1 mfd. condenser to terminal No. 1 on the aerial input panel. Connect the generator ground lead to terminal No. 3. Terminals 2 and 3 of the aerial input panel must be shorted with the connector link provided on the panel during the following adjustments.
2. Set the range switch in position No. 3 (extreme clockwise). Turn the signal generator and receiver dials to 20 M.C.
3. Now adjust compensator (20B) by turning the screw (clockwise) to the maximum capacity position, then slowly turn it counter-clockwise until a second maximum peak is reached on the output meter. The first peak from maximum capacity is the image signal and the receiver must not be adjusted to it. NOTE: In adjusting some receivers only one peak will be observed, therefore tune the compensator to maximum on this peak. If the above procedure is correctly performed, the image signal will be found at 19.060 M.C., by advancing the signal generator input, and turning the receiver dial to this frequency mark on the scale.
4. Leaving the signal generator and receiver dials at 20 M.C. the antenna and R.F. compensators (4B) and (16B) are now adjusted, by connecting a variable condenser (Philco Part No. 45-2325) across the oscillator compensator (20B) contact (first contact from the left side of the receiver facing rear underside view of the chassis) and ground. Now tune the added condenser until the second harmonic of the receiver oscillator beats against the signal from the generator, resulting in a maximum indication on the output meter. NOTE: It may be necessary to increase the signal generator output to obtain a signal of sufficient strength for reading on the output meter. Compensators (4B) and (16B) are now adjusted for maximum output. After these adjustments, remove the external condenser and readjust compensator (20B) as given in paragraph 3 above.

Tuning Range 2.3 to 7.4 M.C.

1. Turn the range switch to position No. 2 (middle range). Rotate the signal generator and receiver dials to 7.0 M.C. Then adjust compensator (20A) for maximum output.
2. Now turn the signal generator and receiver dials to 6 M.C. and adjust compensators (4A) Ant., and (16A) R.F. for maximum output.

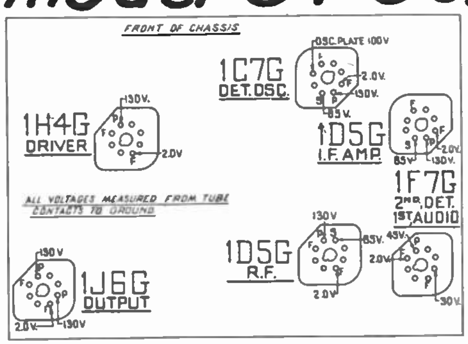
Tuning Range 530 to 1720 K.C.

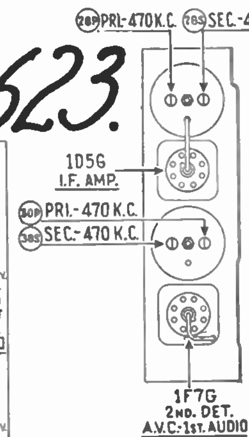
1. Turn the range switch to position No. 1 (Broadcast). Set the 088 signal generator indicator and the receiver dial to 1600 K.C. Now adjust compensators (20) osc., (4) ant. and (16) R.F. for maximum output.
2. The low frequency end of this range is now adjusted as follows: Turn the signal generator and receiver dials to 580 K.C. Now tune compensator (19) for maximum output, then vary the tuning condenser of the receiver for maximum output about the 580 K.C. dial mark. Turn compensator (19) slightly to the right or left and vary the receiver tuning condenser for maximum output. If the output reading increases, turn compensator (19) in the same direction a trifle more and again vary the tuning condenser for maximum output. This procedure of first setting the compensator, and then varying the tuning condenser, is continued until there is no further gain in the output reading. When a decrease in output is noted turn the compensator in the opposite direction.
3. Set the signal generator and receiver dials as given in Paragraph 1 above and adjust compensator (20) for maximum output.
4. Now turn the signal generator and receiver dials to 1500 K.C. and adjust compensators (4) ant. and (16) R.F. for maximum output.



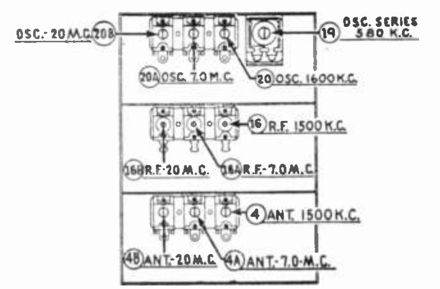
I.F.=470 K.C.

Model-37-3623.





I. F. Compensators, Top of Chassis



R. F. Compensators, Under Side of Chassis

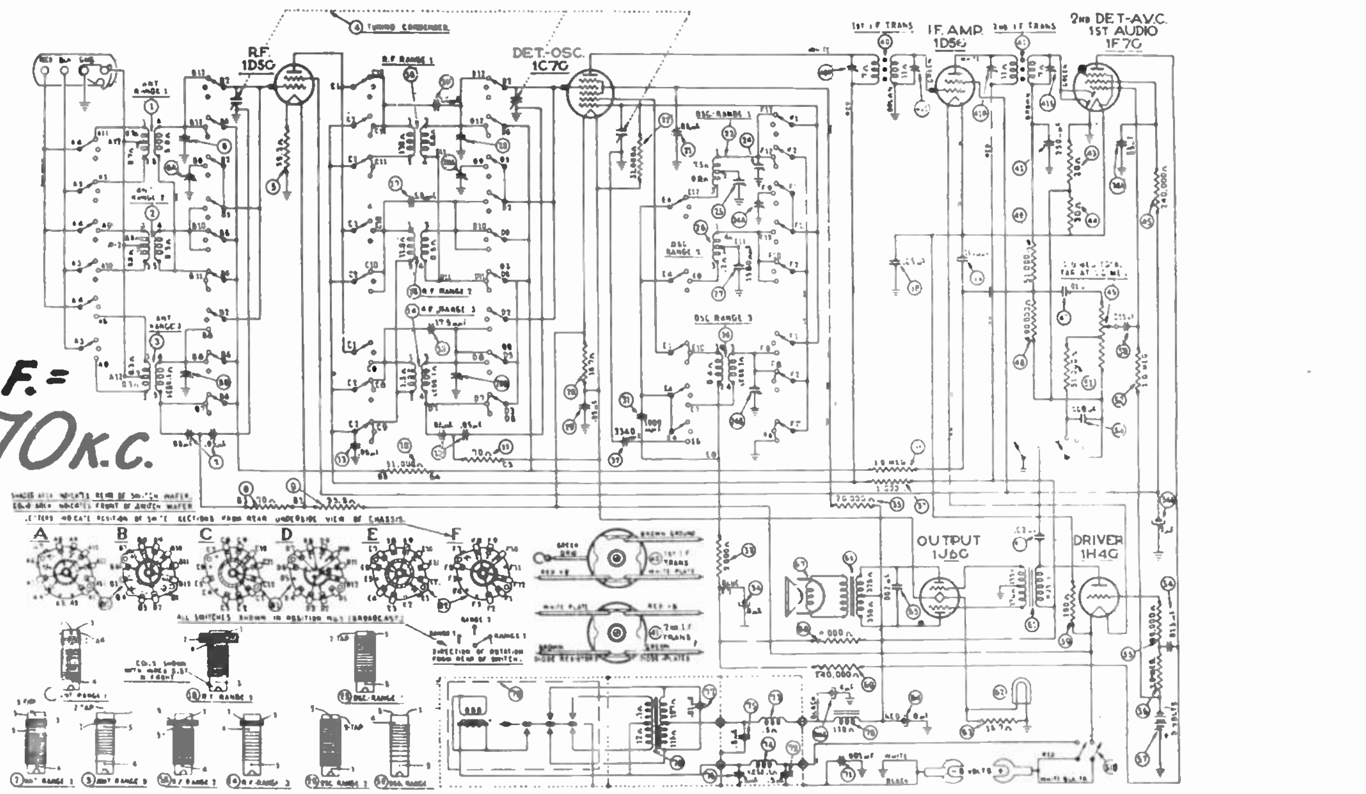
1936-37

COURTESY- PHILCO-AA LTD.

DATA SHEET

World Radio History

I.F. = 470K.C.



INTERMEDIATE FREQUENCY CIRCUIT

Frequency 470 K.C.

1. Connect the 088 Signal Generator output lead through a .1 mfd. condenser to the control grid of the 1C7G tube, and the ground connection of the Generator to the chassis. Turn the Volume Control to maximum volume position.

2. Set the range switch in position No. 1 (Broadcast), then rotate the tuning condenser of the receiver to approximately 580 K.C. and adjust the signal generator for 470 K.C.

3. Adjust compensators (41S) 2nd I.F. Sec., (41P) 2nd I.F. Pri., (40S) 1st I.F. Sec., and (40P) 1st I.F. Pri. for maximum reading on the output meter.

RADIO FREQUENCY CIRCUIT

Tuning Range (7.35) to (22.0) M.C.

1. Remove the signal generator output lead from the grid of the 1C7G tube and connect it through the .1 mfd. condenser to terminal No. 1 on aerial input panel and the generator ground lead to terminal No. 3, rear of chassis. Terminals 2 and 3 must be connected by the shorting link provided on the panel.

2. Set the range switch in position No. 3. Turn the receiver and signal generator dials to 18 M.C. Now adjust compensator (24B) by turning the screw (clockwise) to the maximum capacity position, then slowly turning it (counter-clockwise) until a second peak signal is reached on the output meter. The first peak from maximum capacity is the image signal and must not be used. Note—In adjusting some receivers only one peak will be observed, therefore, tune the compensator to maximum on this peak. If the above procedure is correctly performed, the image signal will be found at 17.06 M.C. by advancing the signal generator attenuator and turning the receiver dial to this frequency mark on the dial.

3. The antenna and R.F. Compensators (6B) and (20B) are now adjusted by connecting a variable condenser of approximately 350 mmfd., Philco Part No. 45-2325 across the oscillator section of the gang condenser and ground. Leaving the signal generator and receiver dials at 18 M.C., tune the added condenser from the maximum capacity point until the second harmonic of the receiver oscillator beats against the signal from the generator thereby bringing in the signal. The antenna and R.F. compensators (6B) and (20B) are then adjusted for maximum output. Now remove the external condenser and readjust compensator (24B) for maximum output.

Tuning Range (2.3) to (7.4) M.C.

1. Set range switch in position 2. Rotate signal generator and receiver dials to 7.0 M.C. Now adjust compensator (24A) for maximum output.

2. Turn the signal generator and receiver dials to 6.0 M.C. and adjust compensators (20A) R.F. and (6A) Ant. for maximum output.

Tuning Range (530) to (1720) K.C.

1. Set range switch in position No. 1 (Broadcast). Rotate the signal generator and receiver dials to 1600 K.C. Now adjust compensators (24) Osc., (20) R.F. and (6) Ant. for maximum output.

2. Rotate the signal generator and receiver dials to 580 K.C. Compensator (25) Osc. series is now adjusted for maximum output as follows:

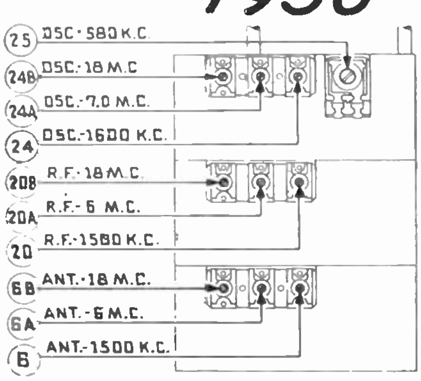
First tune compensator (25) for maximum output, then vary the tuning condenser of the receiver for maximum output about the 580 K.C. dial mark. Now turn compensator (25) slightly to the right or left and vary the receiver tuning condenser for maximum output. If the output reading increases, turn compensator (25) in the same direction a trifle more, and again vary the tuning condenser for maximum output. If the output decreases, set the compensator in the opposite direction. This procedure of first setting the compensator and then varying the tuning condenser is continued until there is no further gain in output reading.

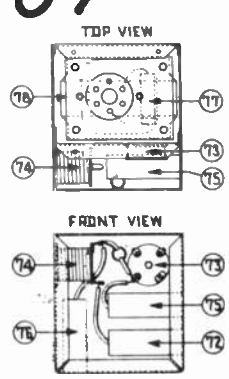
3. Readjust compensator (24) for maximum output, by turning the signal generator and receiver dials to 1600 K.C.

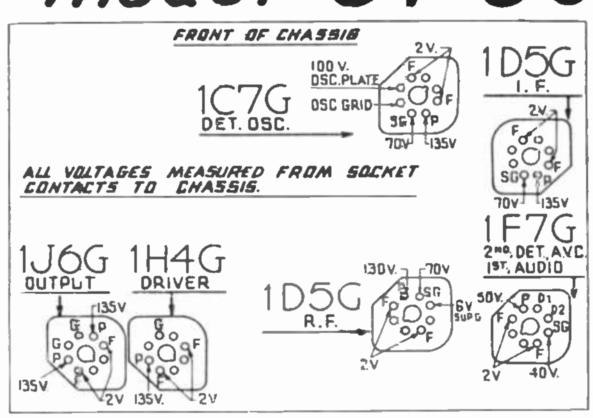
4. Turn the signal generator and receiver dials to 1500 K.C. and adjust compensators (20) R.F. and (6) Ant. for maximum output.

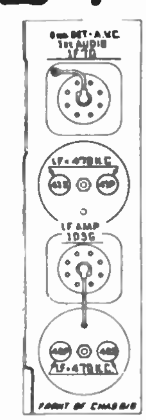
Model-37-3624

1936-37









DATA SHEET

COURTESY - PHILCO-45 LTD.

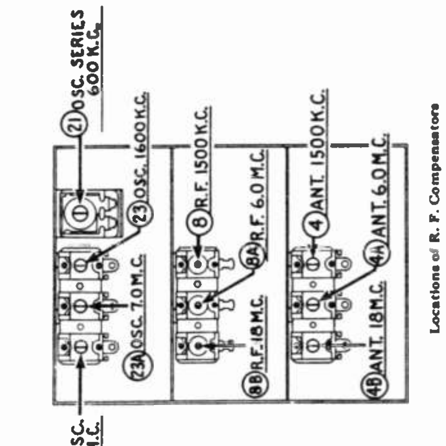
World Radio History

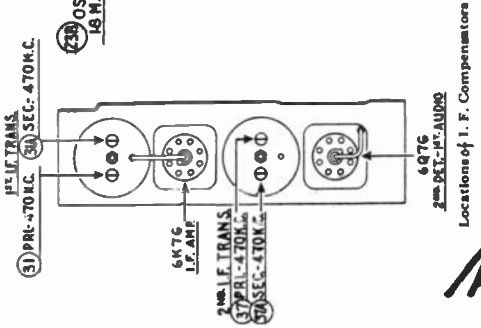
Courtesy- PHILCO-46 LTD.

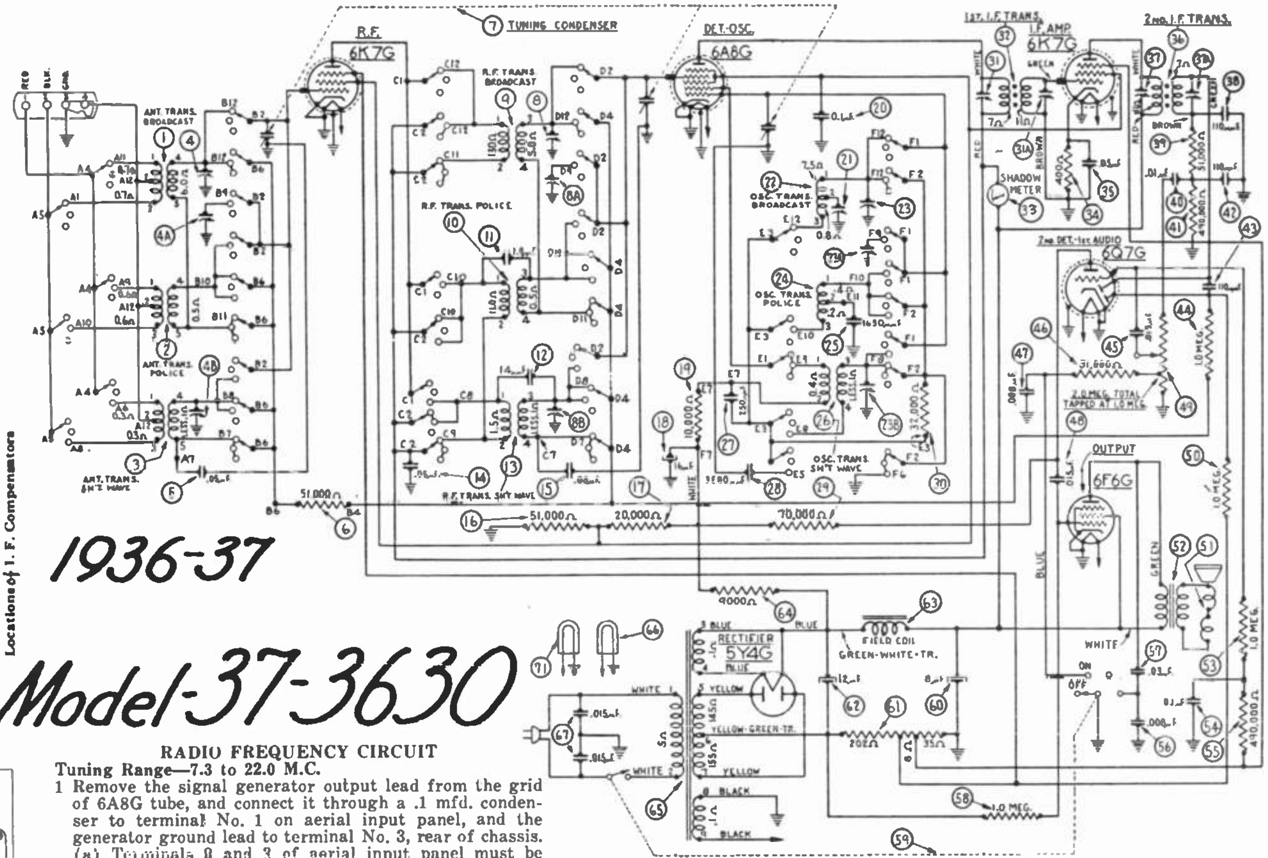
DATA SHEET

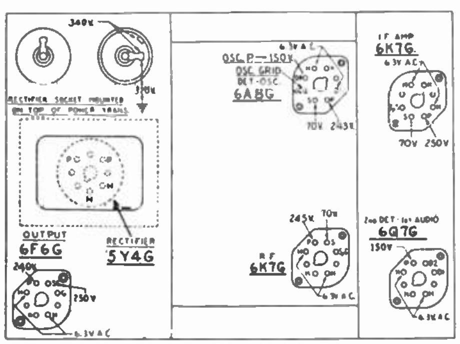
1936-37

Model-37-3630









Alignment Data

I.F. = 470 K.C.

INTERMEDIATE FREQUENCY CIRCUIT

Frequency 470 K.C.

1 Connect the 088 Signal Generator output lead, through a .1 mfd. condenser, to the control grid of the 6A8G tube; and the ground connection of the output lead to the chassis.

2 Set the range switch in position No. 1 (Broadcast), then rotate the tuning condenser of the receiver to the maximum capacity position (counter-clockwise), and adjust the signal generator for 470 K.C.

3 Adjust compensators (37)a 2nd I.F. Sec., (37) 2nd I.F. Pri., (31)a 1st I.F. Sec., and (31) 1st I.F. Pri. for maximum reading on output meter.

RADIO FREQUENCY CIRCUIT

Tuning Range—7.3 to 22.0 M.C.

1 Remove the signal generator output lead from the grid of 6A8G tube, and connect it through a .1 mfd. condenser to terminal No. 1 on aerial input panel, and the generator ground lead to terminal No. 3, rear of chassis. (a) Terminals 2 and 3 of aerial input panel must be connected with connector link provided on the panel, during these adjustments.

2 Set the tuning range switch in position No. 3 (Short Wave). Turn the signal generator and receiver dials to 18 M.C. and adjust compensators (23)b Osc., (8)b R.F. and (4)b Ant. for maximum output. (See Note (a) below).

(a) The adjustment of the Radio Frequency compensator on the high frequency range causes a slight detuning of the oscillator circuit. In order to overcome this detuning effect, connect a variable condenser of approximately 350 mmfd., having a good vernier drive, across the oscillator section of the tuning condenser. Leaving the signal generator and receiver dials at 18 M.C., tune the added condenser so that the second harmonic of the receiver oscillator will beat against the signal from the 088 signal generator bringing in the signal. The antenna and R.F. compensators (4)b and (8)b should then be adjusted to give maximum output. Now remove the external condenser and turn compensator (23)b to maximum capacity (clockwise) then without moving signal generator or receiver tuning condenser, back off compensator (23)b (counter-clockwise) until a second peak is reached on the output meter. The first peak is caused by tuning to the image frequency signal and must not be used.

Tuning Range 2.3 to 7.4 M.C.

1 Turn the range switch to position No. 2 (police). Rotate the signal generator and receiver dials to 7.0 M.C. Then adjust compensator (23)a for maximum output. Now turn the signal generator and receiver dials to 6.0 M.C. and adjust compensators (8)a R.F. and (4)a Ant. for maximum reading on the output meter.

Tuning Range 530 to 1720 K.C.

1 Set the range switch in position No. 1 (Broadcast). Set the 088 Signal Generator indicator at 800 K.C. and the receiver dial at 1600 K.C.

(a) In adjusting the receiver at 1600 K.C. the second harmonic of 800 K.C., to which the signal generator is tuned, is used. The second harmonic of 800 K.C. is 1600 K.C. Now adjust compensators (23) Osc., (8) R.F. and (4) Ant. for maximum reading on output meter.

2 The low frequency end of the range is now tuned by turning the signal generator and receiver dials to 600 K.C. and adjusting compensator (21) Osc. Series—(see Note (a) below)—for maximum reading on output meter.

(a) While compensator (21) is being adjusted, the tuning condenser must be rolled for maximum output. This is accomplished as follows:—First tune compensator (21) for maximum output. Then vary the tuning condenser for maximum output at 600 K.C. Now retune compensator (21), and again vary the tuning condenser back and forth at 600 K.C. for maximum output. This operation of first turning the compensator then the tuning condenser is continued until maximum output is obtained at the 600 K.C. frequency.

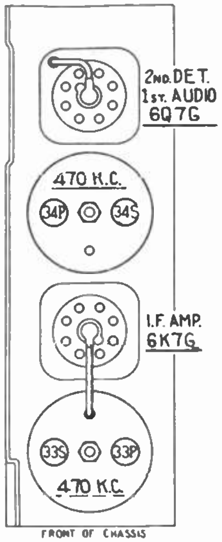
3 After the low frequency (600 K.C.) end of the range is adjusted, the 1600 K.C. end is readjusted, as given in Paragraph (1) above, to correct any variation that the low frequency series compensator may have caused in the alignment of the high frequency end.

4 Now turn the signal generator and receiver dials to 1500 K.C. and readjust compensators (4) Ant., and (8) R.F., for maximum output.

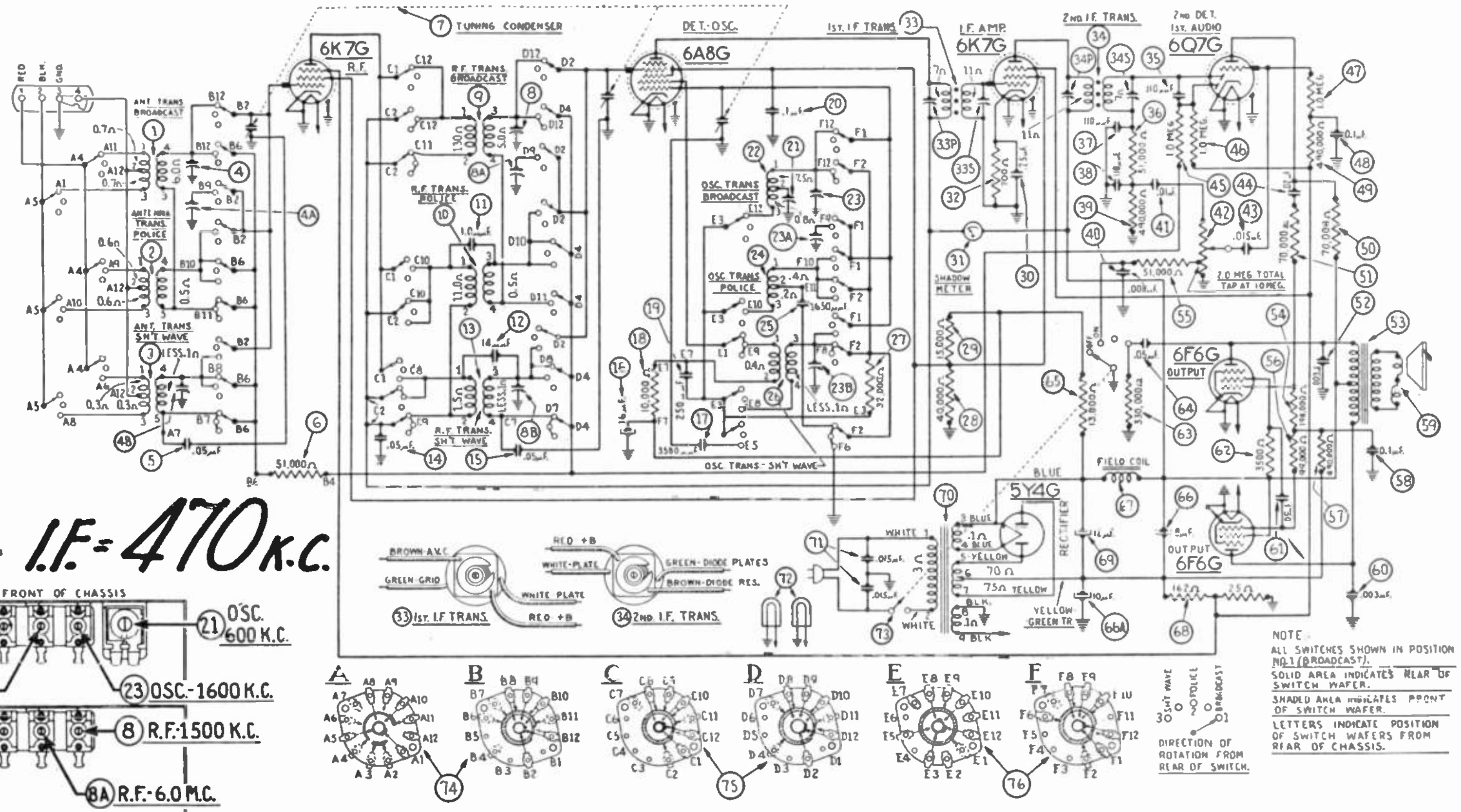
World Radio History

COURTESY — PHILCO — LTD.

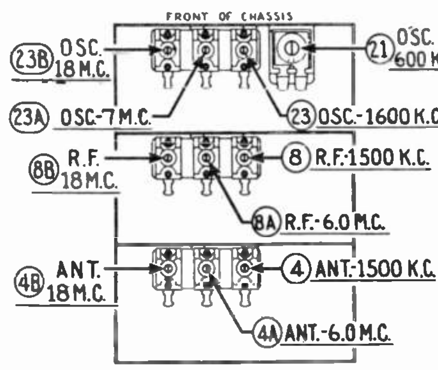
DATA SHEET



Location of I. F. Compensators



I.F. = 470 K.C.



Locations of R. F. Compensators

Model-37-3640

1936-37

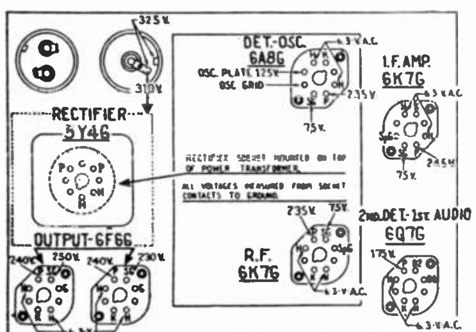


Fig. 1—Socket Voltages Measured from Underside of Chassis

INTERMEDIATE FREQUENCY CIRCUIT

Frequency 470 K.C.

1—Connect the 088 Signal Generator output lead, through a .1 mfd. condenser, to the control grid of the 6A8G tube; and the ground connection of the output lead to the chassis.

2—Set the range switch in position No. 1 (Broadcast), then rotate the tuning condenser of the receiver to the maximum capacity position (counter-clockwise), and adjust the signal generator for 470 K.C.

3—Adjust compensators (34)s 2nd I.F. Sec., (34)p 2nd I.F. Pri., (33)s 1st I.F. Sec., and (33)p 1st I.F. Pri. for maximum reading on output meter.

RADIO FREQUENCY CIRCUIT

Tuning Range—7.3 to 22.0 M.C.

1—Remove the signal generator output lead from the grid of 6A8G tube, and connect it through the .1 mfd. condenser to terminal No. 1 on aerial input panel, and the generator ground lead to terminal No. 3, rear of chassis.

(a) Terminals 2 and 3 of aerial input panel must be connected with connector link provided on the panel, during these adjustments

2—Set the tuning range switch in position No. 3 (Short Wave). Turn the signal generator and receiver dials to 18 M.C. and adjust compensators (23)b Osc., (8)b R.F. and (4)b Ant. for maximum output (see note (a) below).

(a) The adjustment of the Radio Frequency compensator on the high frequency range causes a slight detuning of the oscillator circuit. In order to overcome this detuning effect, connect a variable condenser of approximately 350 mmfd., having a good vernier drive, across the oscillator section of the tuning condenser. Leaving the signal generator and receiver dials at 18 M.C., tune the added condenser so that the second harmonic of the receiver oscillator will beat against the signal from the 088 signal generator bringing in the signal. The antenna and R.F. compensator (4)b and (8)b should then be adjusted to give maximum output. Now remove the external condenser and turn compensator (23)b to maximum capacity (clockwise) then without moving signal generator or receiver tuning condenser, back off compensator (23)b counter-clockwise) until a second peak is reached on the output meter. The first peak is caused by tuning to the image frequency signal and must not be used.

Tuning Range—2.3 to 7.4 M.C.

1—Turn the range switch to position No. 2 (police). Rotate the signal generator and receive dials to 7.0 M.C. Then adjust compensator (23)a for maximum output. Now turn the signal generator and receiver dials to 6.0 M.C. and adjust compensators (8)a R.F. and (4)a Ant. for maximum reading on the output meter.

Tuning Range—530 to 1720 K.C.

1—Set the range switch in position No. 1 (Broadcast). Set the 088 Signal Generator indicator at 800 K.C. and the receiver dial at 1600 K.C.
(a) In adjusting the receiver at 1600 K.C. the second harmonic of 800 K.C., to which the signal generator is tuned, is used. The second harmonic of 800 K.C. is 1600 K.C. Now adjust compensators (23) Osc., (8) R.F. and (4) Ant. for maximum reading on output meter.

2—The low frequency end of the range is now tuned by turning the signal generator and receiver dials to 600 K.C. and adjusting compensator (21) Osc. series (see Note (a) below) for maximum reading on output meter.
(a) While compensator (21) is being adjusted, the tuning condenser must be rolled for maximum output. This is accomplished as follows: First tune compensator (21) for maximum output. Then vary the tuning condenser for maximum output at 600 K.C. Now retune compensator (21) and again vary the tuning condenser back and forth at 600 K.C. for maximum output. This operation of first turning the compensator then the tuning condenser is continued until maximum output is obtained at the 600 K.C. frequency.

3—After the low frequency (600 K.C.) end of the range is adjusted, the 1600 K.C. end is readjusted, as given in Paragraph (1) above, to correct any variation that the low frequency series compensator may have caused in the alignment of the high frequency end.

4—Now turn the signal generator and receiver dials to 1500 K.C. and readjust compensators (4) Ant., and (8) R.F., for maximum output.

World Radio History

REPAIR
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№ 883

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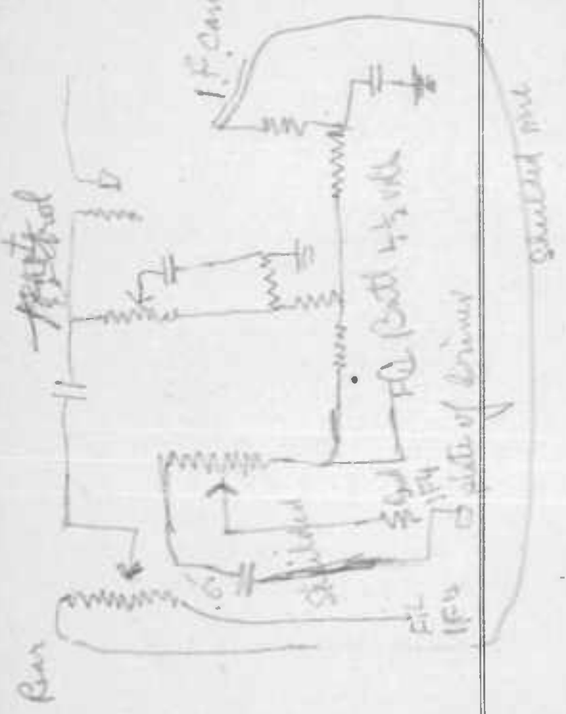
MATERIAL



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World Radio History

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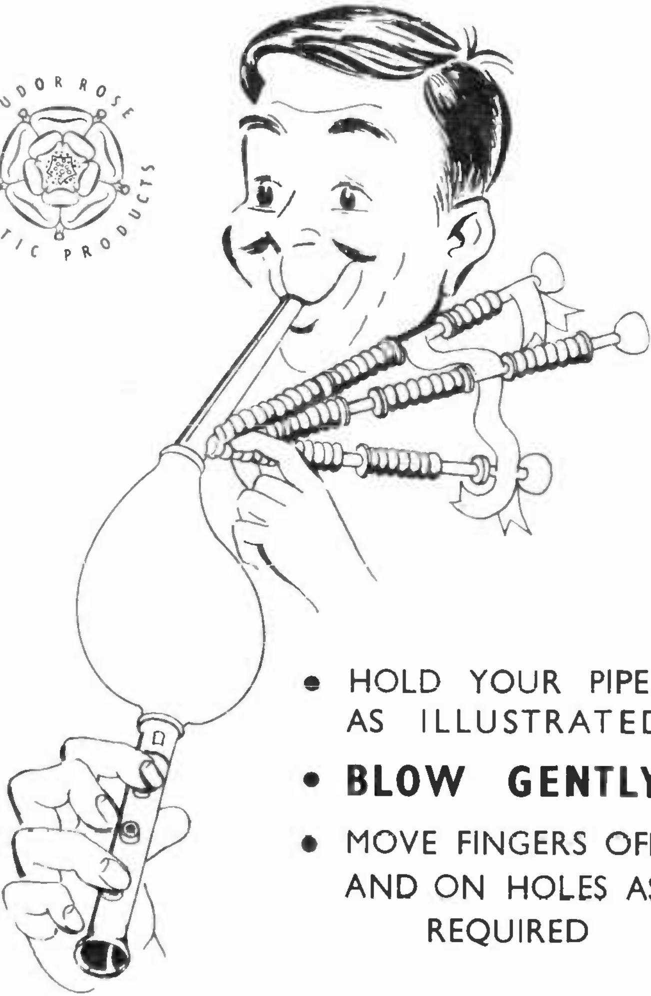
TUDOR ROSE PLASTIC PRODUCTS



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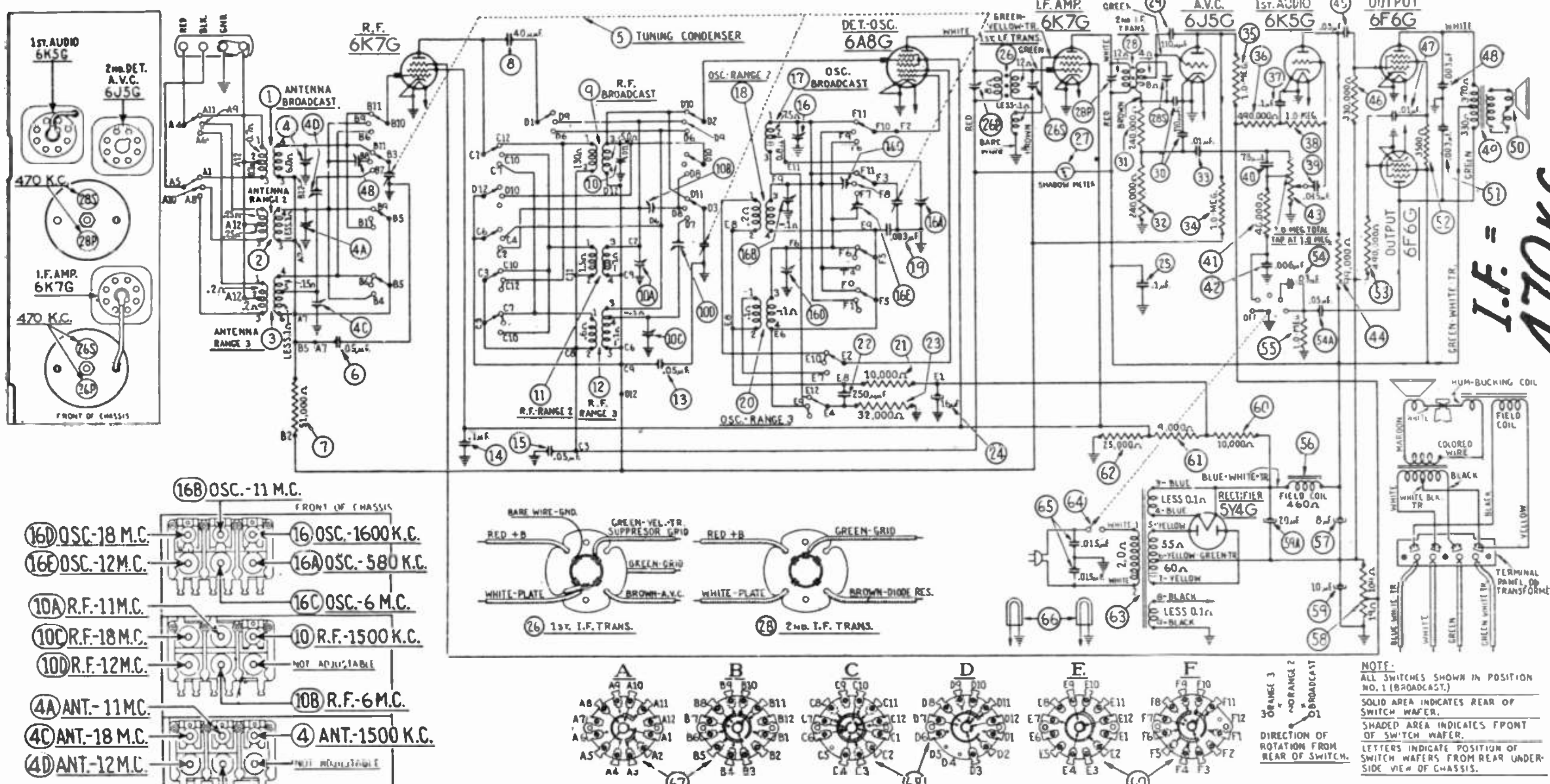
DATA SHEET

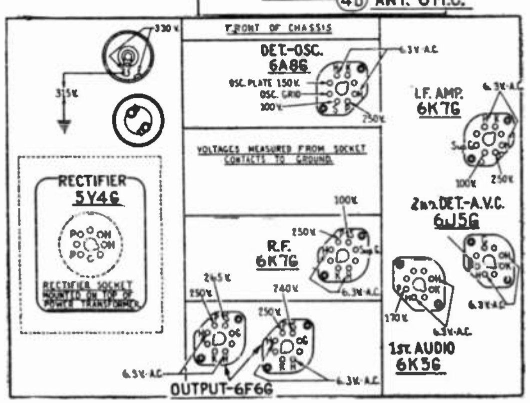
Model-37-3650

1936-37

I.F. = 470 K.C.

COURTESY - PHILCO LTD.





INTERMEDIATE FREQUENCY CIRCUIT

Frequency 470 K.C.

1. Turn volume control to maximum volume position. Connect the 088 Signal Generator output through a .1 mfd. condenser. to the control grid of the 6A8G tube and the ground connection of the output lead to the chassis.

2. Set the range switch in position No. 1 (Broadcast), then rotate the tuning condenser of the receiver to the maximum capacity position (counter-clockwise) and adjust the signal generator for 470 K.C.

3. Adjust compensators (28S) 2nd I.F. Sec., (28P) 2nd I.F. Pri., (26S) 1st I.F. Sec. and (26P) 1st I.F. Pri. for maximum reading on the output meter.

RADIO FREQUENCY CIRCUIT

Tuning Range—7.3 to 18.0 M.C.

1. Remove the signal generator output lead from the grid of the 6A8G tube and connect it through the .1 mfd. condenser to terminal No. 1 on aerial input panel and the generator ground lead to terminal No. 3, rear of chassis. Terminals 2 and 3 must be connected with the shorting link provided on the panel during these adjustments.

2. Set the range switch in position No. 3. Turn the receiver and signal generator dials to 18 M.C. Now adjust compensator (16D) by turning the screw (clockwise) to the maximum capacity position. Then slowly turn it counter-clockwise until a second peak signal is reached on the output meter. The first peak from maximum capacity is the image signal and must not be used. NOTE: In some cases only one peak will be found, therefore, tune the compensator to this peak. If the above procedure is correctly performed, the image signal will be found at 17,060 M.C., by advancing signal generator input and turning receiver dial to this frequency mark on the dial.

3. The antenna and R.F. compensators (4C) and (10C) are now adjusted by connecting a variable condenser of approximately 350 mmfd.,—having a good vernier drive—across the oscillator compensator (16D) contact (first contact from left side of receiver facing rear underside view of chassis) and ground. Leaving the signal generator and receiver dials at 18 M.C., tune the added condenser until the second harmonic of the receiver oscillator beats against the signal from the generator, thereby giving an indication on the output meter. It may be necessary to increase the signal generator output to obtain a signal of sufficient strength for reading on the output meter. The antenna and R.F. compensators (4C) and (10C) should then be adjusted for maximum output. Then remove external condenser and readjust compensator (16D) as given in paragraph 2 above.

4. Turn signal generator and receiver dials to 12 M.C. and adjust compensators (16E), (10D), (4D) for maximum output.

5. Now turn signal generator and receiver dials to 18 M.C. and re-adjust compensators (16D), (10C) and (4C) as given in Paragraphs 2 and 3 above.

Tuning Range—5.7 to 11.6

1. Set range switch in position No. 2. Rotate signal generator and receiver dials to 11 M.C. Compensator (16B) is now adjusted as given in Paragraph 2, under tuning range 7.3 to 18 M.C. above. Check image signal on the 10.06 dial mark. The only difference in the two procedures is the frequency used.

2. Turn the signal generator to 11 M.C. Then connect a 350 mmfd. variable condenser from the oscillator compensator (16P) contact (third contact from left side of the receiver, facing rear underside view of chassis) and ground. Tune the added condenser, as given in Paragraph 3 under tuning range 7.3 to 18 M.C. Now adjust compensators (10A) and (4A) for maximum output. The only difference in the two procedures is in the connection of the variable condenser and the frequency used.

3. Readjust compensator (16B) as given in Paragraph 1 for maximum output.

4. Turn signal generator and receiver dials to 6 M.C. and adjust compensators (16C), (10B) and (4B) for maximum output.

5. After the 6 M.C. end of scale is adjusted, the high frequency end is readjusted as given in Paragraphs 1, 2 and 3 above.

Tuning Range—530 to 1720 K.C.

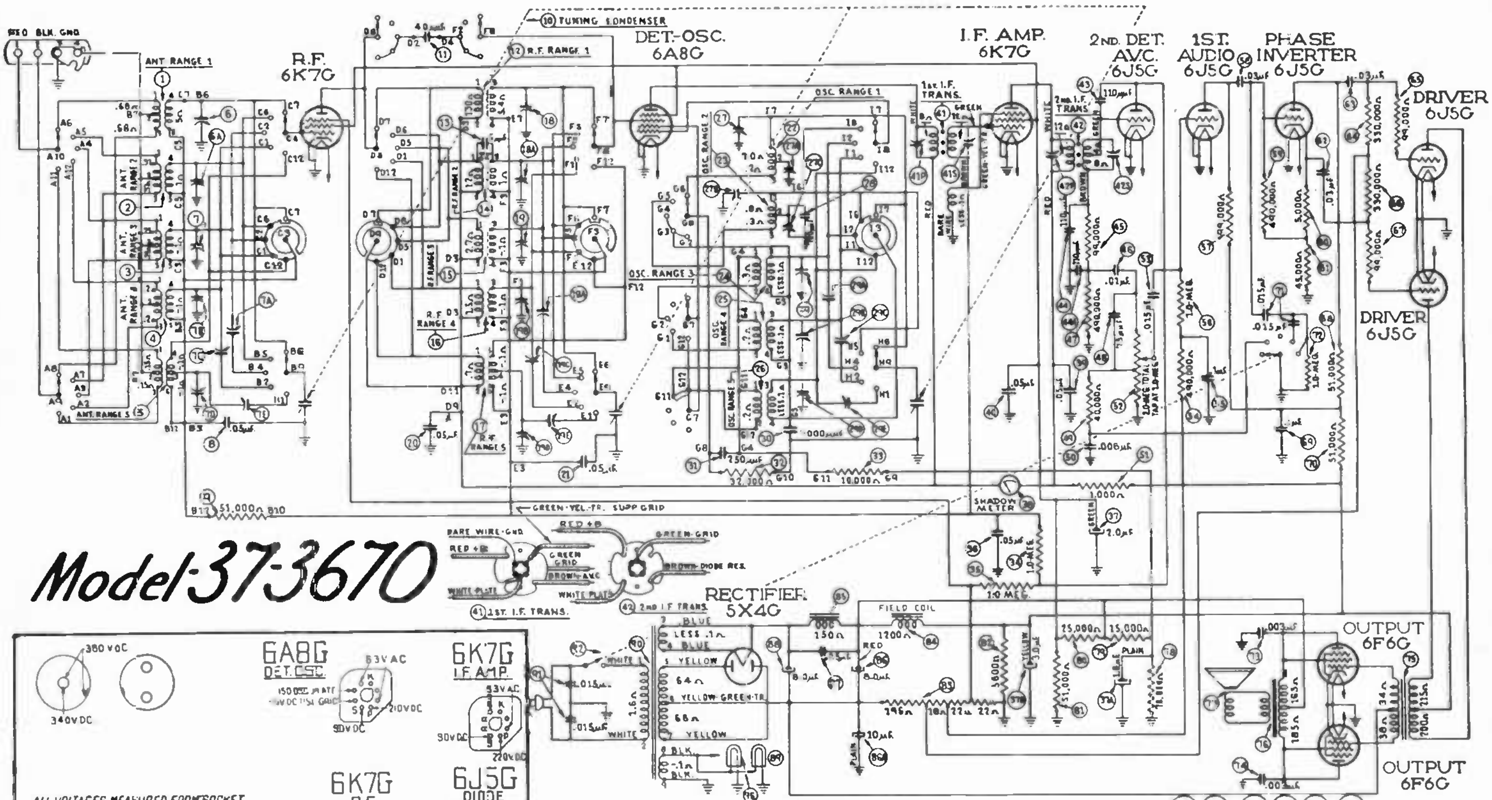
1. Turn signal generator and receiver dials to 1600 K.C.—If signal generator scale is not calibrated for 1600 K.C. the dial of the generator may be rotated to 800 K.C. and the second harmonic of this frequency (1600 K.C.) may be used for following adjustments. Compensators (16), (10) and (4) are now adjusted for maximum output.

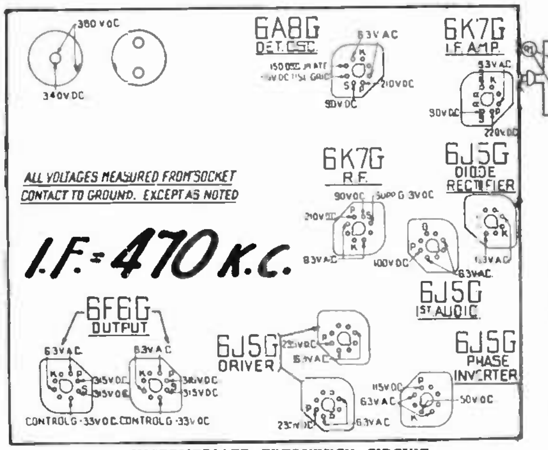
2. Turn signal generator and receiver dials to 580 K.C. and adjust compensator (16A) for maximum output. This is accomplished as follows: First tune compensator (16A) for maximum output. Then vary the tuning condenser for maximum output about the 580 K.C. scale mark. Now retune compensator (16A), and again vary the tuning condenser back and forth about 580 K.C. for maximum output. This operation of first tuning the compensator, then the tuning condenser is continued until maximum output is obtained on or about the 580 K.C. dial mark.

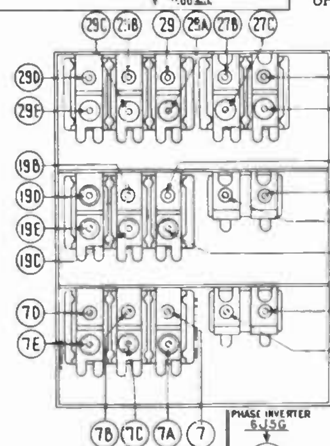
3. Turn signal generator and receiver dials to 1600 K.C. and readjust compensator (16) for maximum output.

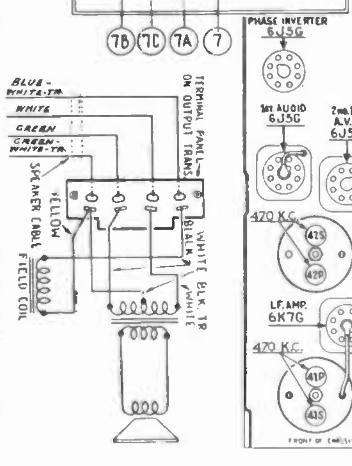
4. Now rotate signal generator and receiver dials to 1500 K.C. and adjust compensators (10) and (4) for maximum output.

World Radio History









INTERMEDIATE FREQUENCY CIRCUIT

Frequency 470 K.C.

1. Connect the 088 Signal Generator output lead through a .1 mfd. condenser to the control grid of the 6A8G tube, and the ground connection of the output lead to the chassis. Turn the Volume Control to maximum volume position.

2. Set the range switch in position No. 1 (Broadcast), then rotate the tuning condenser of the receiver to approximately 580 K.C. and adjust the signal generator for 470 K.C.

3. Adjust compensators (42S) 2nd I.F. Sec., (42P) 2nd I.F. Pri., (41S) 1st I.F. Sec., and (41P) 1st I.F. Pri. for maximum reading on the output meter.

RADIO FREQUENCY CIRCUIT

Tuning Range (11.5) to (18.2) M.C.

1. Remove the signal generator output lead from the grid of the 6A8G tube and connect it through the .1 mfd. condenser to terminal No. 1 on aerial input panel and the generator ground lead to terminal No. 3, rear of chassis. Terminals 2 and 3 must be connected by the shorting link provided on the panel.

2. Set the range switch in position No. 5. Turn the receiver and signal generator dials to 18 M.C. Now adjust compensator (29D) by turning the screw (clockwise) to the maximum capacity position, then slowly turning it (counter-clockwise until a second peak signal is reached on the output meter. The first peak from maximum capacity is the image signal and must not be used. NOTE—In adjusting some receivers only one peak will be observed, therefore, tune the compensator to maximum on this peak. If the above procedure is correctly performed, the image signal will be found at 1[illegible].06 M.C. by advancing the signal generator attenuator and turning the receiver dial to this frequency mark on the dial.

3. The antenna and R.F. compensators (7D) and (19D) are now adjusted by connecting a variable condenser of approximately 350 mmfd.—Philco Part No. 45-2325 across the oscillator compensator (29D) (First contact from left side of the receiver facing rear underside of chassis) and ground. Leaving the signal generator and receiver dials at 18 M.C., tune the added condenser from the maximum capacity point until the second harmonic of the receiver oscillator beats against the signal from the generator thereby bringing in the signal. The antenna and R.F. compensators (7D) and (19D) are then adjusted for maximum output. Now remove the external condenser and readjust compensator (29D) as given in paragraph 2 above.

4. Turn signal generator and receiver dials to 12 M.C. and adjust compensator (29E) for maximum output. Then adjust compensators (19E) and (7E) for maximum output.

5. Now turn the signal generator and receiver dials to 18 M.C. and readjust compensators (29D) Osc., (7D) Ant., and (19D) R.F. as given in paragraphs 2 and 3 above.

Tuning Range (7.35) to (11.6) M.C.

1. Set range switch in position 4. Rotate signal generator and receiver dials to 11 M.C. Now adjust compensator (29B) by turning the screw (clockwise) to the maximum capacity position, then slowly turn it (counter-clockwise) until a second peak signal is reached on the output meter. The first peak from maximum capacity is the image signal and must not be used. NOTE—In adjusting some receivers only one peak will be observed, therefore, tune the compensator to maximum on this peak. If the above procedure is correctly performed, the image signal will be found at 10.06 M.C. by advancing the signal generator attenuator and turning receiver dial to this frequency mark on the dial.

2. Using the 11 M.C. signal, compensators (19B) R.F. and (7B) Ant. are adjusted by using the procedure given in paragraph 3, under tuning range (11.5) to (18.2) M.C. with the exception that the external condenser is connected across compensator (29B) (Third contact from left side of the receiver) and ground.

3. Remove the variable condenser and readjust compensator (29B) Osc. as given in paragraph 1 above.

4. Turn the signal generator and receiver dials to 7.5 M.C. and adjust compensators (29C) Osc. series, (19C) R.F. and (7C) Ant. for maximum output.

5. Due to the slight interaction of the high and low frequency compensators of this range, compensators (29B) Osc., (19B) R.F. and (7B) Ant. must be readjusted using the procedure in paragraphs 1 and 2 above.

Tuning Range (4.7) to (7.4) M.C.

1. Set range switch in Position 3. Turn signal generator and receiver dials to 7.0 M.C. Now adjust compensator (29) Osc., (19) R.F. and (7) Ant. for maximum output.

2. Turn the signal generator and receiver dials to 5.0 M.C. and adjust compensators (29A), (19A) and (7A) for maximum output.

3. Turn the signal generator and receiver dials to 7.0 M.C. and readjust compensators (29) Osc., (19) R.F. and (7) Ant. for maximum output.

Tuning Range (1.58) to (4.75) M.C.

1. Set the range switch in position 2. Turn the signal generator and receiver dials to 4.5 M.C.

2. Now adjust compensators (27B) Osc., (18A) R.F. and (6A) Ant. for maximum output.

3. Rotate the signal generator and receiver dials to 1.7 M.C. Compensator (27C) Osc. series is now adjusted for maximum output as follows:

First tune compensator (27C) for maximum output, then vary the tuning condenser of the receiver for maximum output about the 1.7 M.C. dial mark. Now turn compensator (27C) slightly to the right or left and vary the receiver tuning condenser for maximum output. If the output reading increases, turn compensator (27C) in the same direction a trifle more, and again vary the tuning condenser for maximum output. If the output decreases, set the compensator in the opposite direction. This procedure of first setting the compensator and then varying the tuning condenser is continued until there is no further gain in output reading.

4. Turn signal generator and receiver dials to 4.5 M.C. and readjust compensators (27B), (18A) and (6A) as given in Paragraphs 1 and 2 above.

Tuning Range (530) to (1600) K.C.

1. Set range switch in position No. 1 (Broadcast). Rotate the signal generator and receiver dials to 1500 K.C. Now adjust compensators (27) Osc., (18) R.F. and (6) Ant. for maximum output.

2. Tune signal generator and receiver dials to 580 K.C. Compensator (27A) Osc. series is then adjusted for maximum output as given in paragraph 3 under tuning range (1.58) to (4.75) M.C., the only difference in the procedure being in the frequency used.

3. Readjust compensator (27) for maximum output, by turning the signal generator and receiver dials to 1500 K.C.

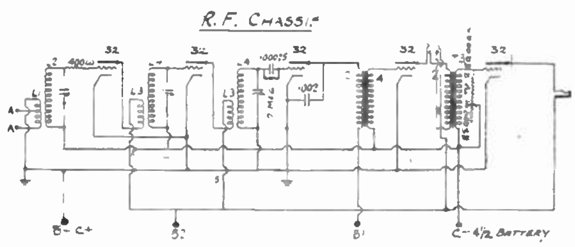
4. Turn the signal generator and receiver dials to 1400 K.C. and adjust compensators (18) R.F. and (6) Ant. for maximum output.

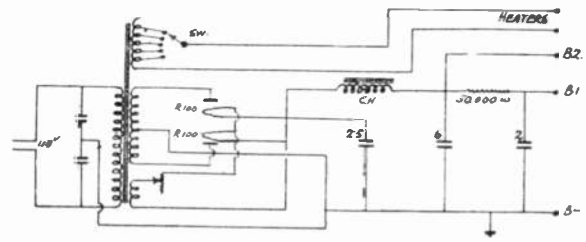
1936 -37

DATA SHEET

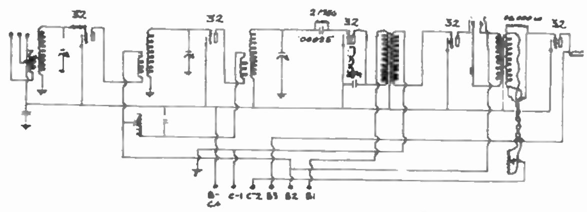
COURTESY - PHILCO-49 LTD.

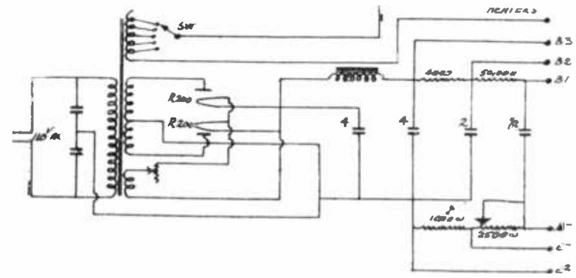
World Radio History



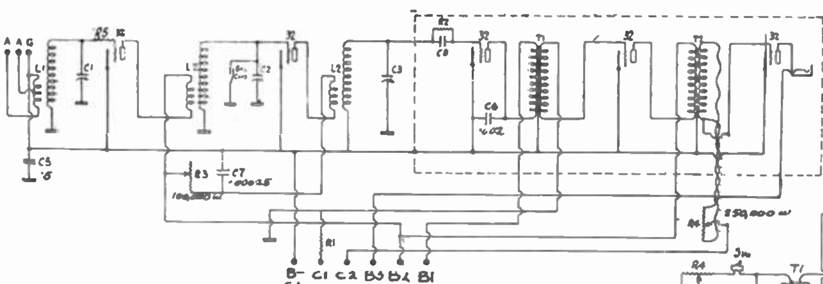


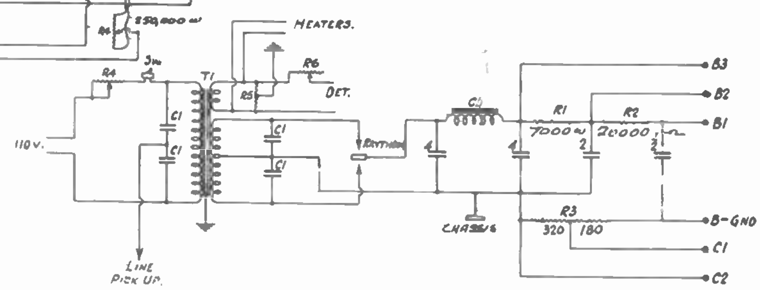
Models 100-110 Early 120
1925-26





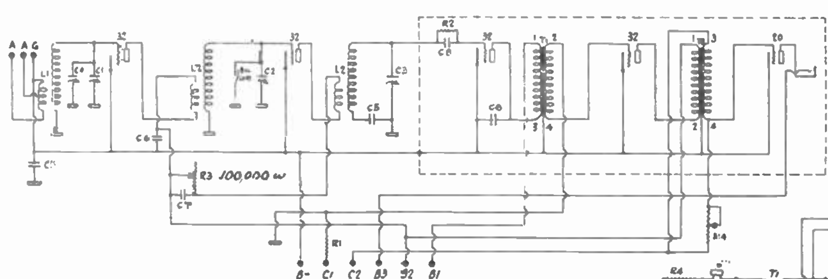
Models 120 Special and 150
1926.

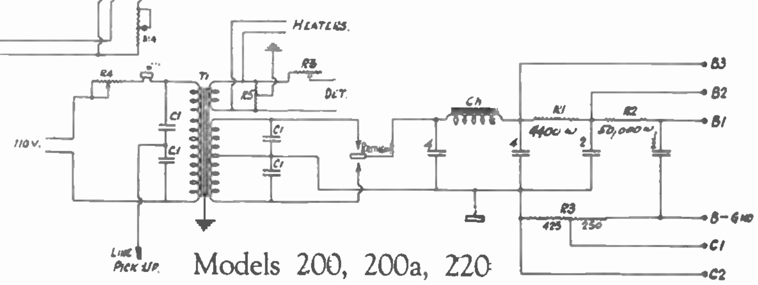




2 Dial

Models 250-260 90 and Cameo
1927-28





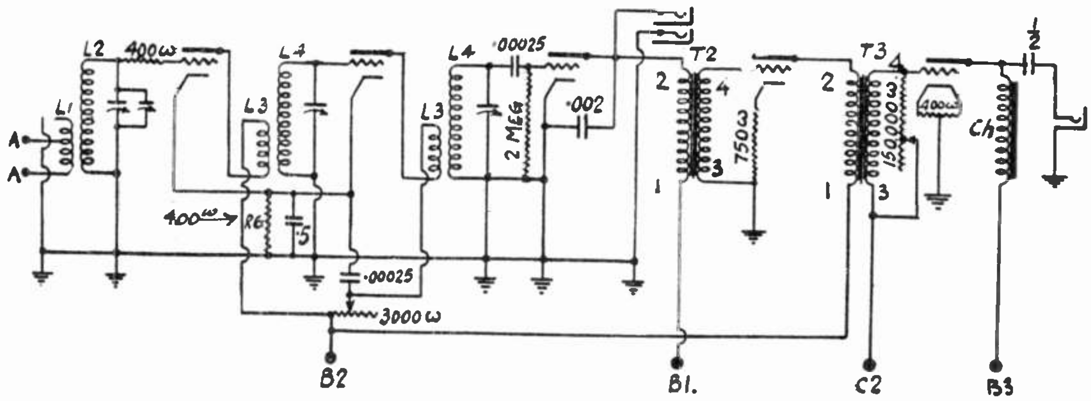
Models 200, 200a 220.
1927-28

Models 200, 200a, 220
(1 Dial) 1927-28

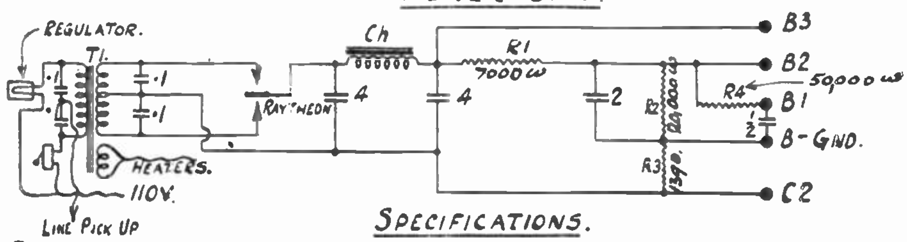
World Radio History

400 Chassis Fitted in Models
400 L.B.
400 H.B.
400 Comb.
410 H.B.
420 Table
400 H.B. (Dynamic)
1928-29

R.F. CHASSIS.



POWER UNIT.



SPECIFICATIONS.

POWER UNIT FOR TYPE 15 POWER TUBE.

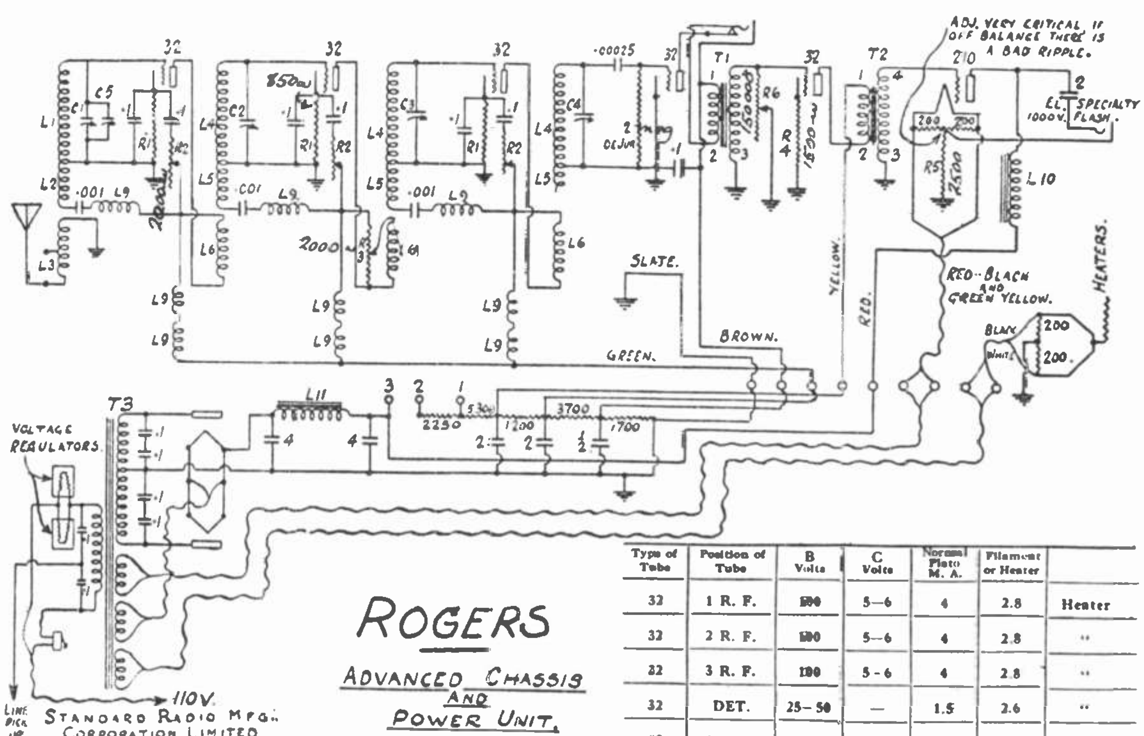
T1 :- UNIVERSAL (25 AND 60 CYCLE) PART 2260

Ch PART 2271.

REGULATORS. { 25 CYC TYPE 6-20 REGULATOR.
60 " " 4H-20 "

ROGERS-400
1928-29

Advanced Chassis Fitted in Models
440 Console
460 De Luxe Console
480 Table
490 Console
1928-29



STANDARD RADIO MFG. CORPORATION LIMITED TORONTO CAN.

ROGERS
ADVANCED CHASSIS AND POWER UNIT.
1928-29

Type of Tube	Position of Tube	B Volts	C Volts	Normal Plate M. A.	Filament or Heater	
32	1 R. F.	180	5—6	4	2.8	Heater
32	2 R. F.	180	5—6	4	2.8	"
32	3 R. F.	180	5 - 6	4	2.8	"
32	DET.	25—50	—	1.5	2.6	"
32	1 A. F.	135	9	4	2.8	"
210	PWR.	400	40	18	7.5	Filament

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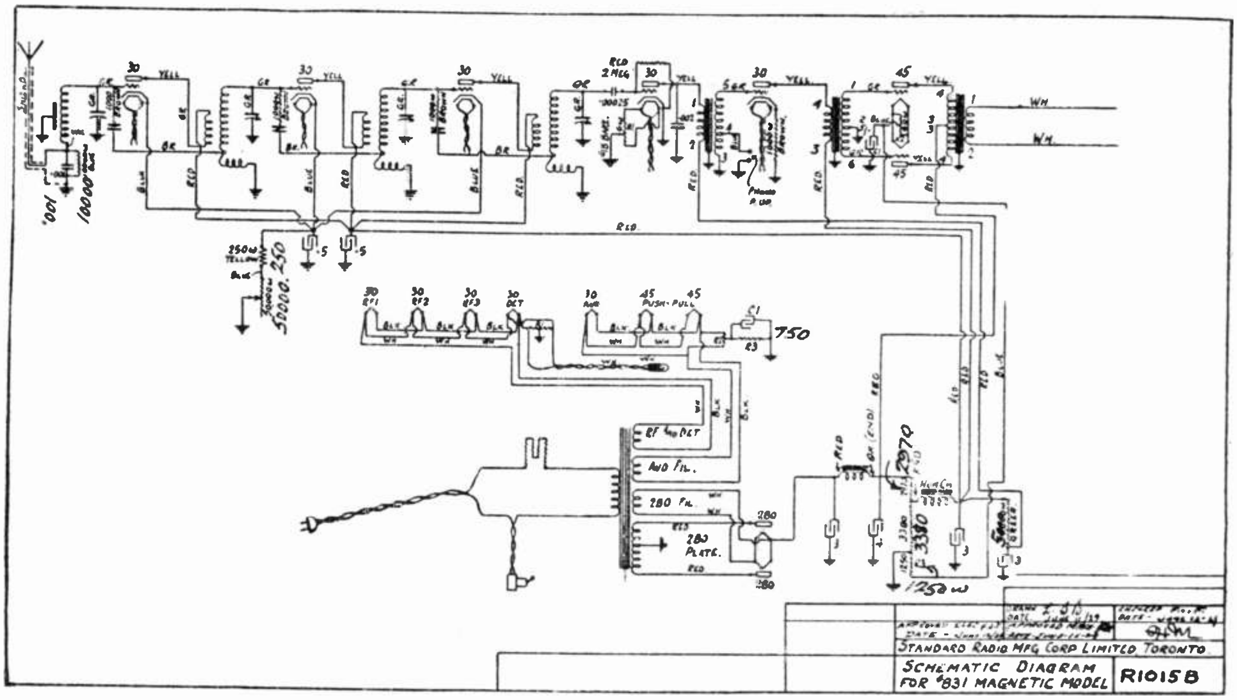
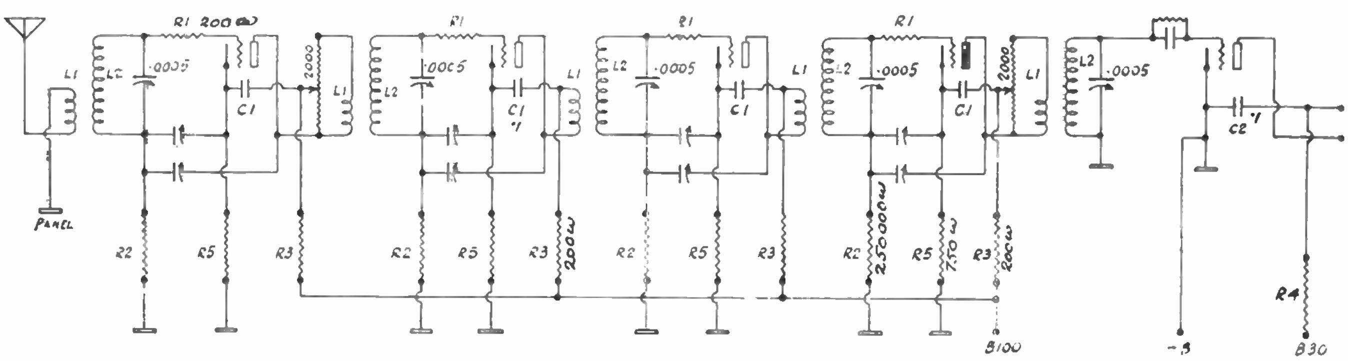
World Radio History

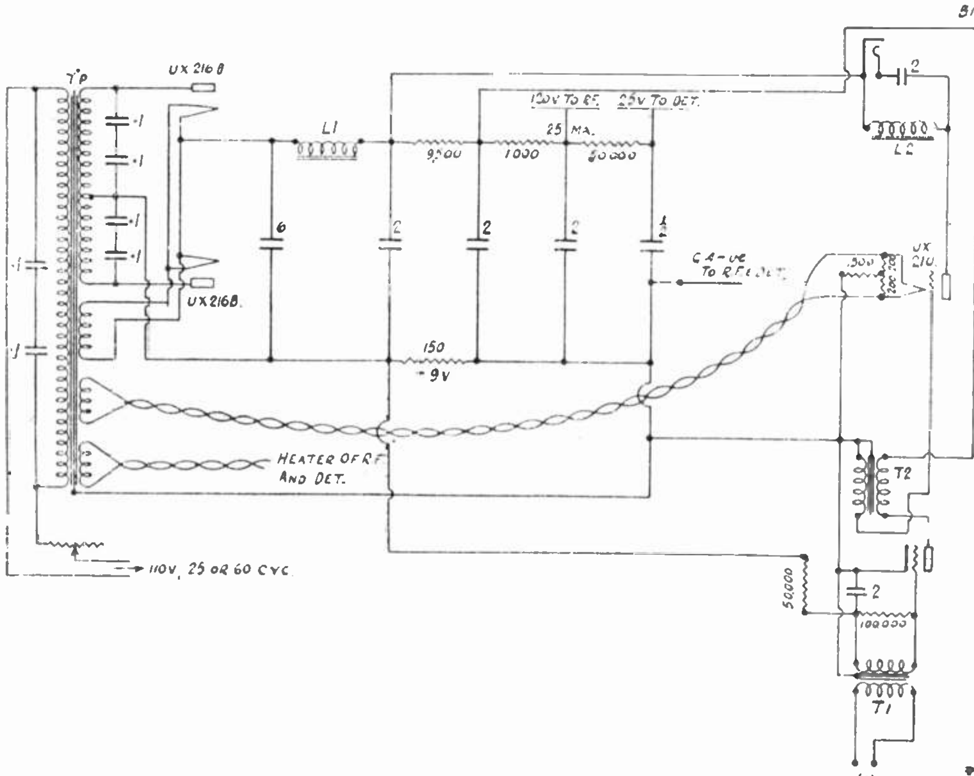
Chassis Fitted in Table Model 520
1929-30



Jubilee Chassis
1927-28



Jubilee Power Unit



ROGERS
JUBILEE (1927)

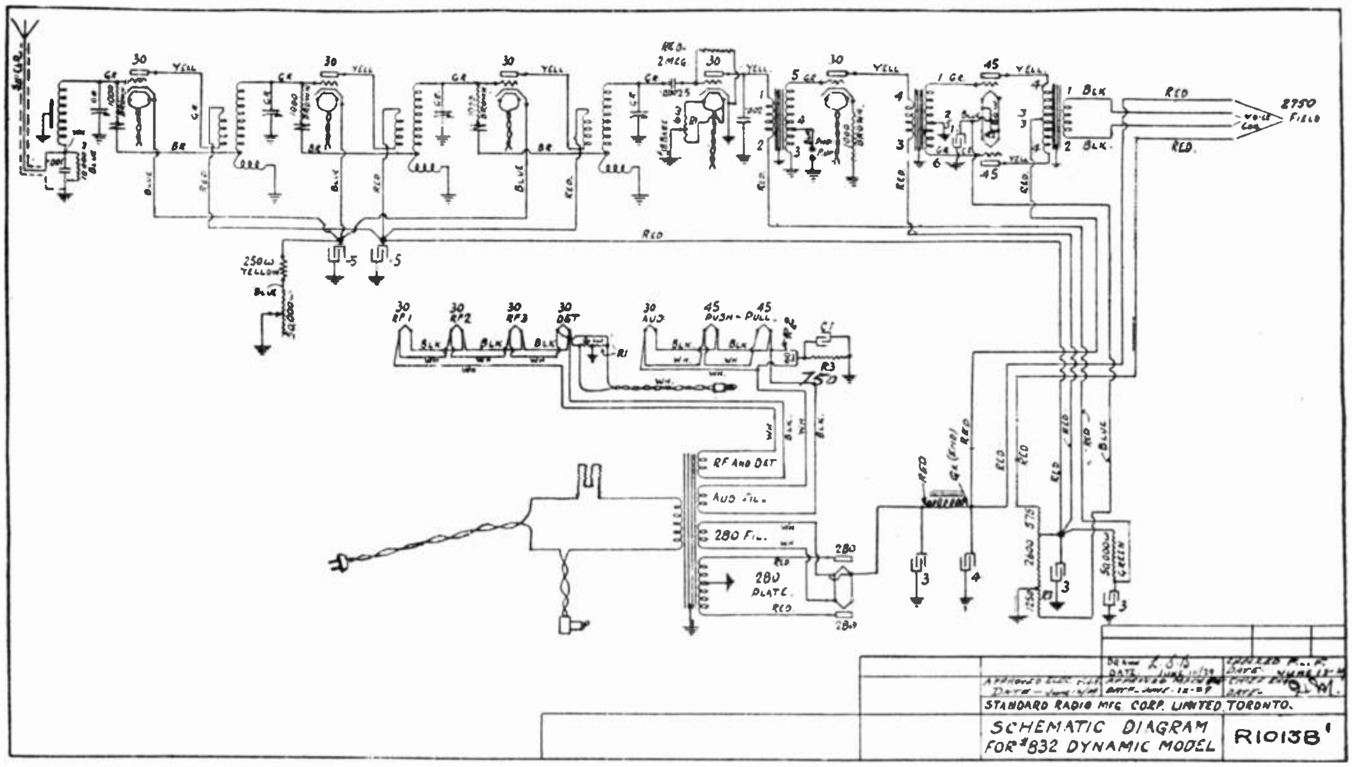
H2159

Dwg E 2158

World Radio History

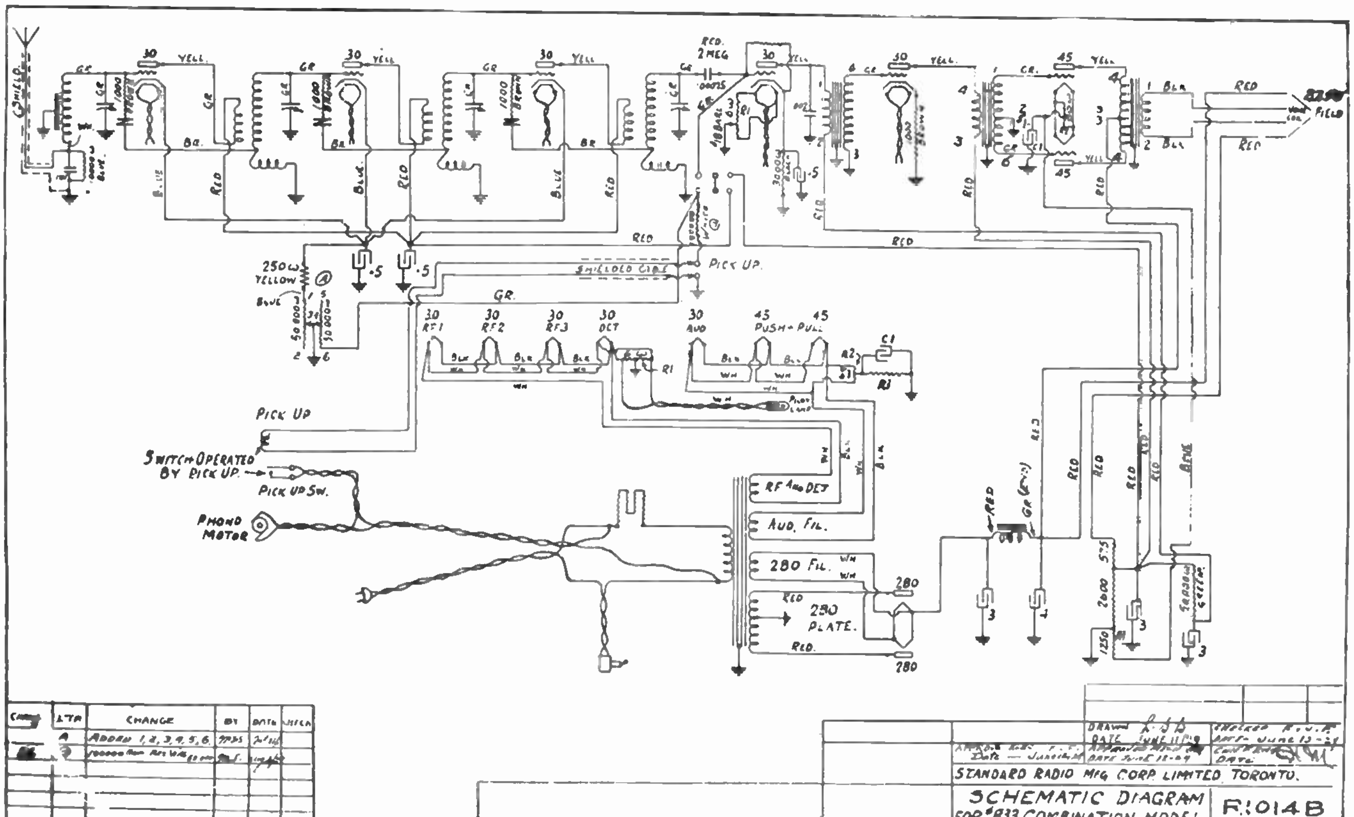
Chassis Fitted in Rogers Models 530 L.B. 540 H.B. 550 H.B. (Doors) 1929-30

Rogers-Majestic 591 L.B. 592L.B. 595 H.B. (Doors) 599 Console 1930



1929-30 Fitted in Rogers Model 580 575 1929-30

Rogers-Majestic 586 588 1930



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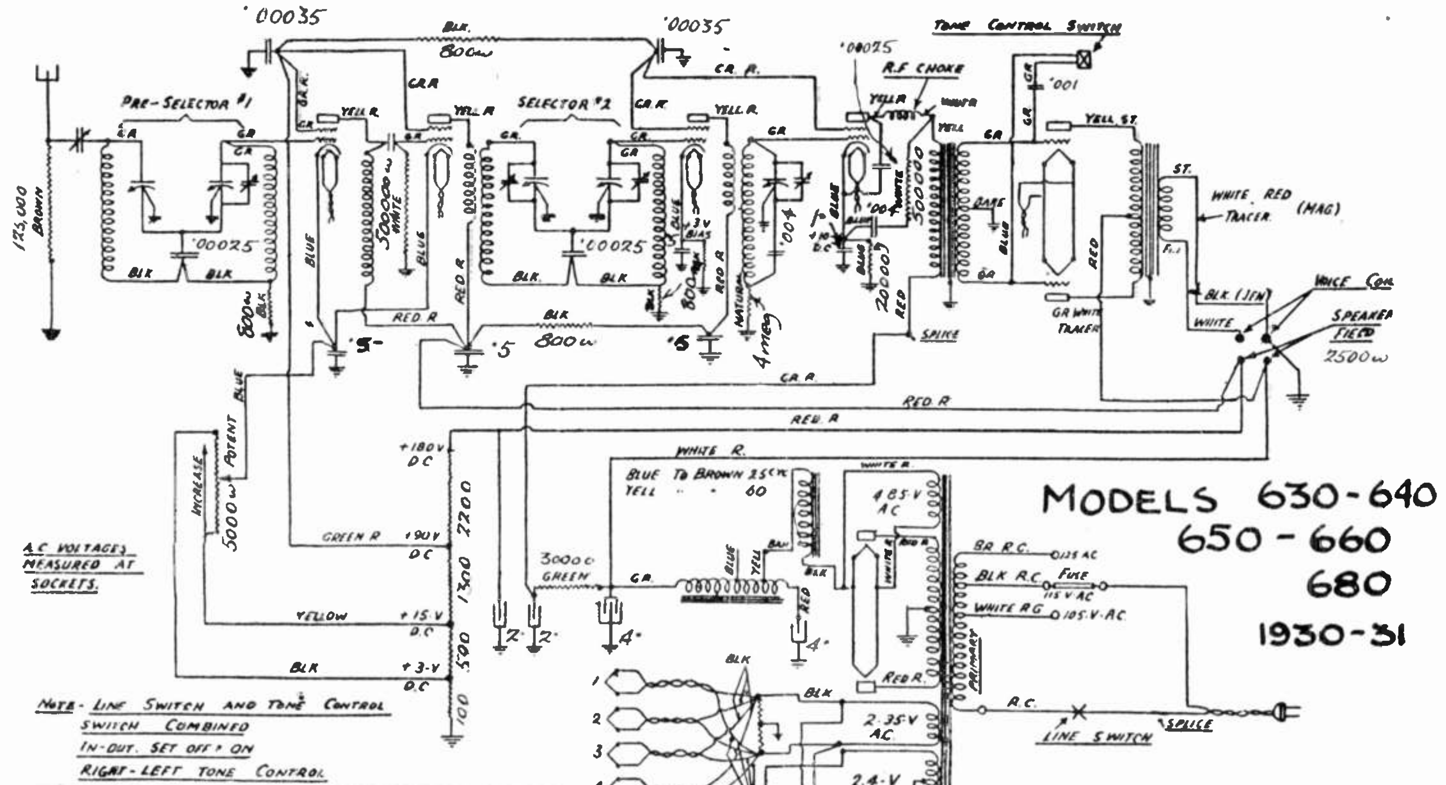
World Radio History

MODELS 630-640 650-660 680 1930-31

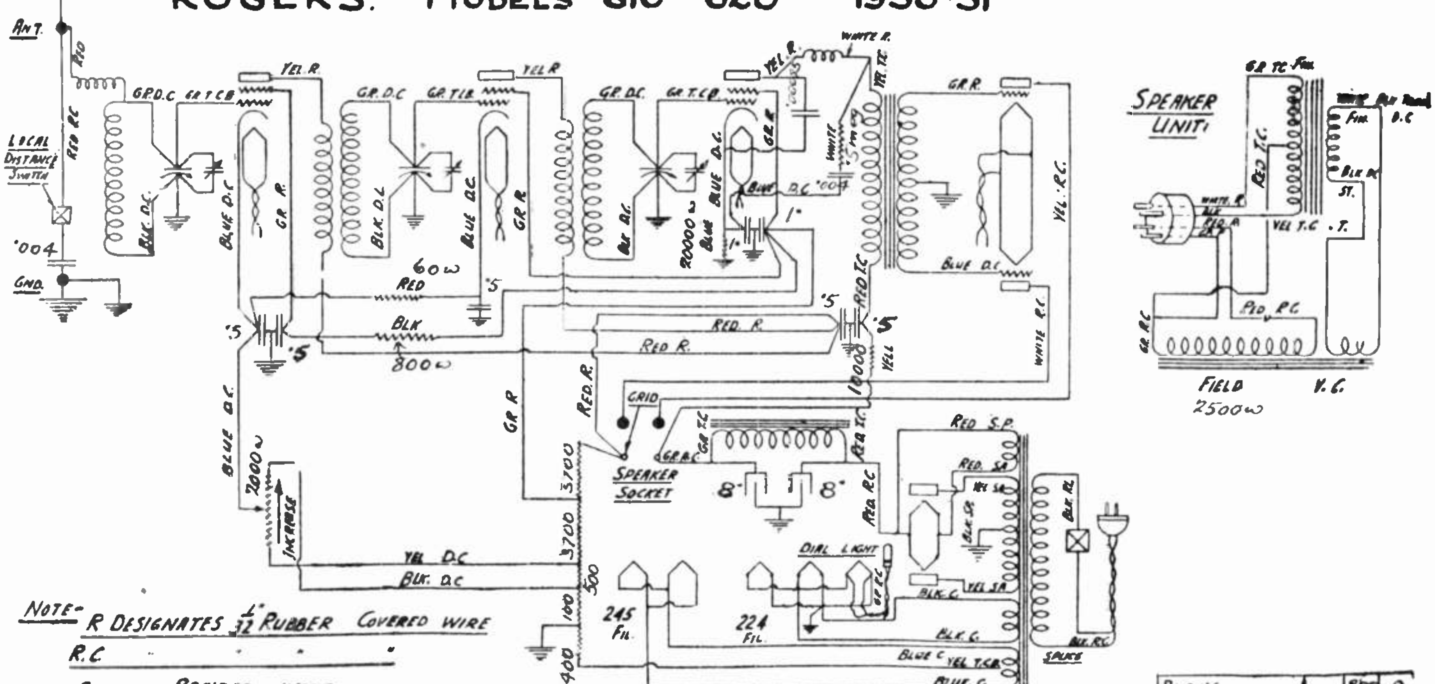


A.C. VOLTAGES MEASURED AT SOCKETS.

NOTE - LINE SWITCH AND TONE CONTROL SWITCH COMBINED
IN-OUT. SET OFF & ON
RIGHT-LEFT TONE CONTROL

TYPE OF TUBE	M. A. Normal	Plate Volts	Grid Volts (S.G. Volts)	Filament Volts	Cont. Grid Volts (S.G. Only)
R.F.—224	3.2	165	76	2.3	3.3
Det -224	.5	265	76	2.3	.3
P.P. 245	18	225		2.3	-Bias 50

ROGERS. MODELS 610-620 1930-31



NOTE - R DESIGNATES $\frac{1}{32}$ RUBBER COVERED WIRE
R.C " " " "
COTTON BRAIDED WIRE
D.C. DOUBLE COTTON COVERED WIRE
SP SPAGHETTI.
C COTTON SLEEVING.
T.C. TRIPLE COTTON BRAID

TYPE OF TUBE	POSITION OF TUBE	A VOLTS 5	B VOLTS 6	C VOLTS (Control Grid) 7	CATHODE-HEATER VOLTS 8	NORMAL PLATE M.A. 9	SCREEN GRID VOLTS 12
224	R.F.	—	170	3.2	2.3	5.5	86
·224	Det.	—	250	7.0	2.3	.5	43
245	P.P.	2.25	227	46	—	15	—

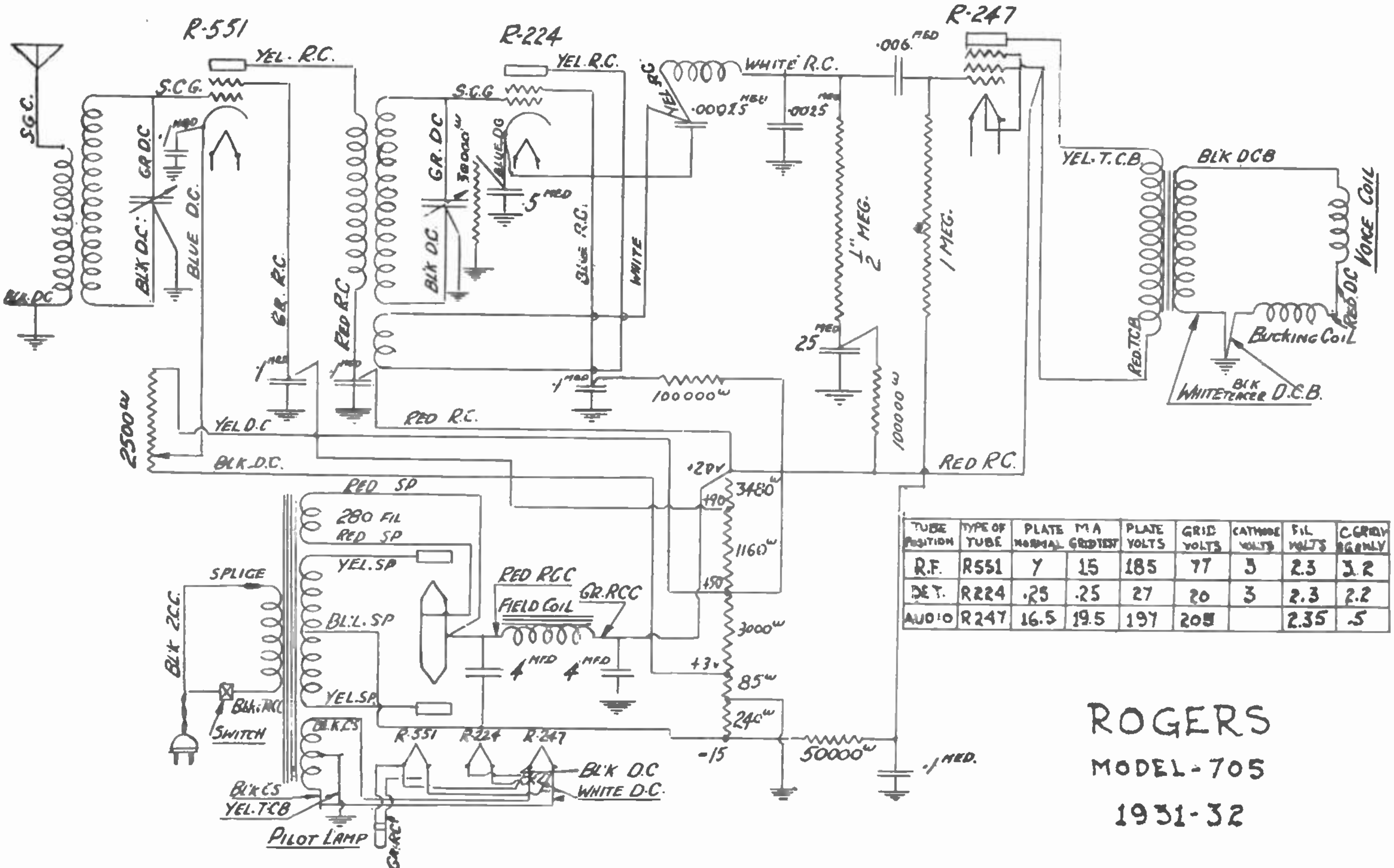
BLACK	800	Ω
YELLOW	10,000	"
BLUE	20,000	"
GREEN	30,000	"
WHITE	500,000	"
NATURAL	4	MEG.

Line Voltage 120

Volume Control Position Full on.

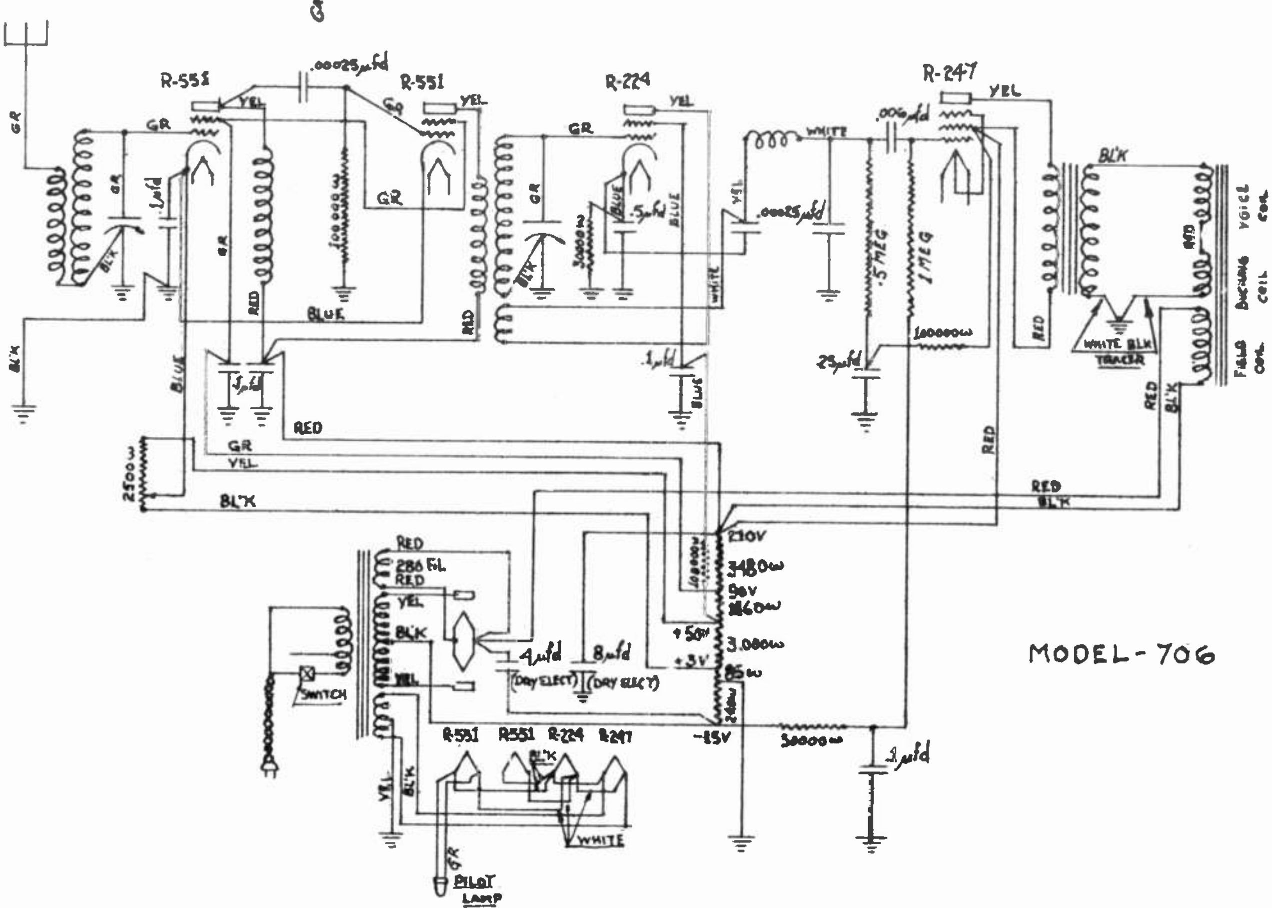
Printed in Canada

—Courtesy Rogers-Majestic Corp. Ltd.



TUBE POSITION	TYPE OF TUBE	PLATE M.A NORMAL	PLATE M.A GREATEST	PLATE VOLTS	GRID VOLTS	CATHODE VOLTS	FIL VOLTS	C.GRID SG ONLY
R.F.	R551	Y	15	185	77	3	2.3	3.2
DET.	R224	.25	.25	27	20	3	2.3	2.2
AUDIO	R247	16.5	19.5	197	205		2.35	.5

ROGERS
MODEL-705
1931-32



MODEL-706

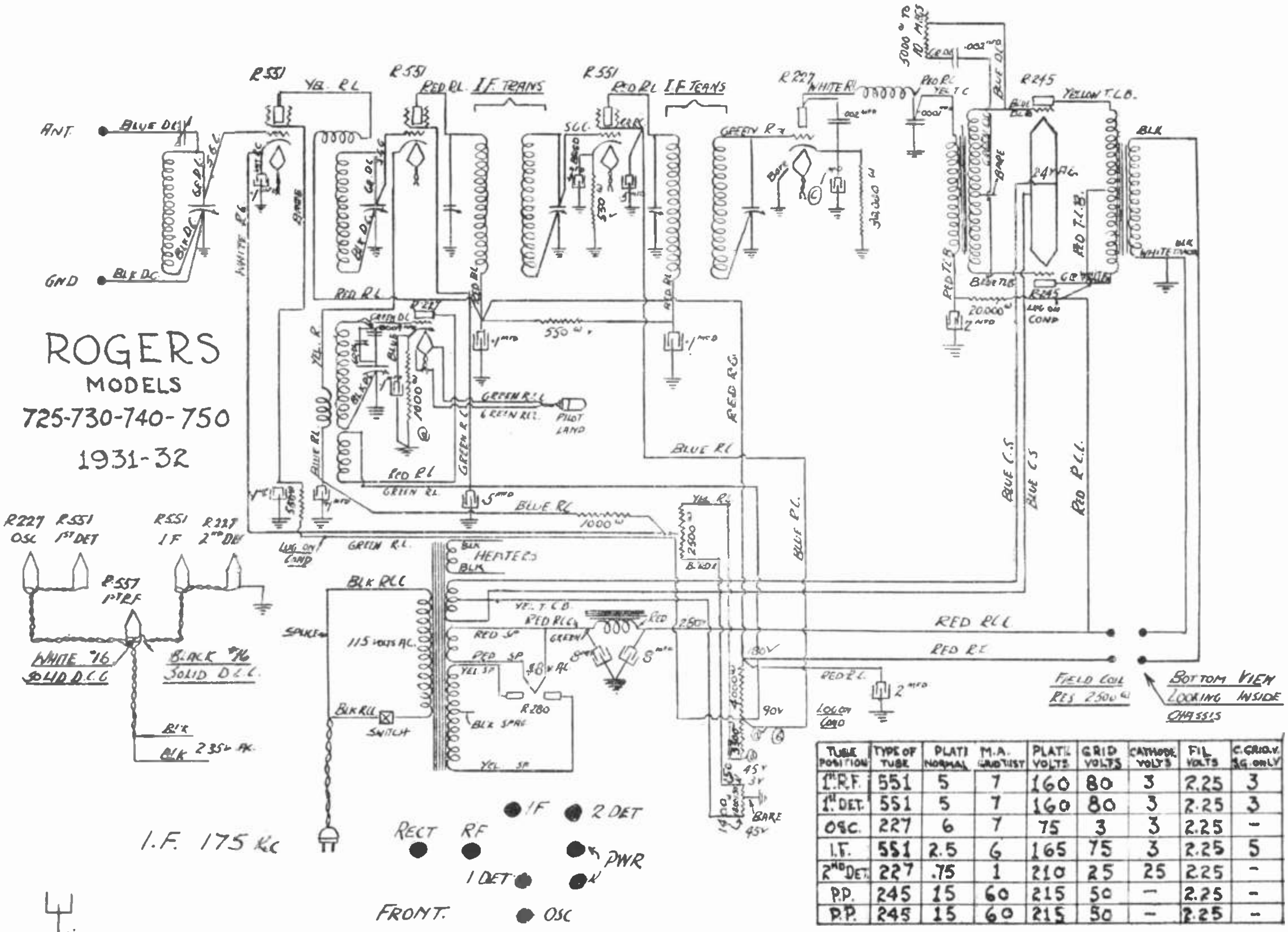
World Radio History

ROGERS

MODELS

725-730-740-750

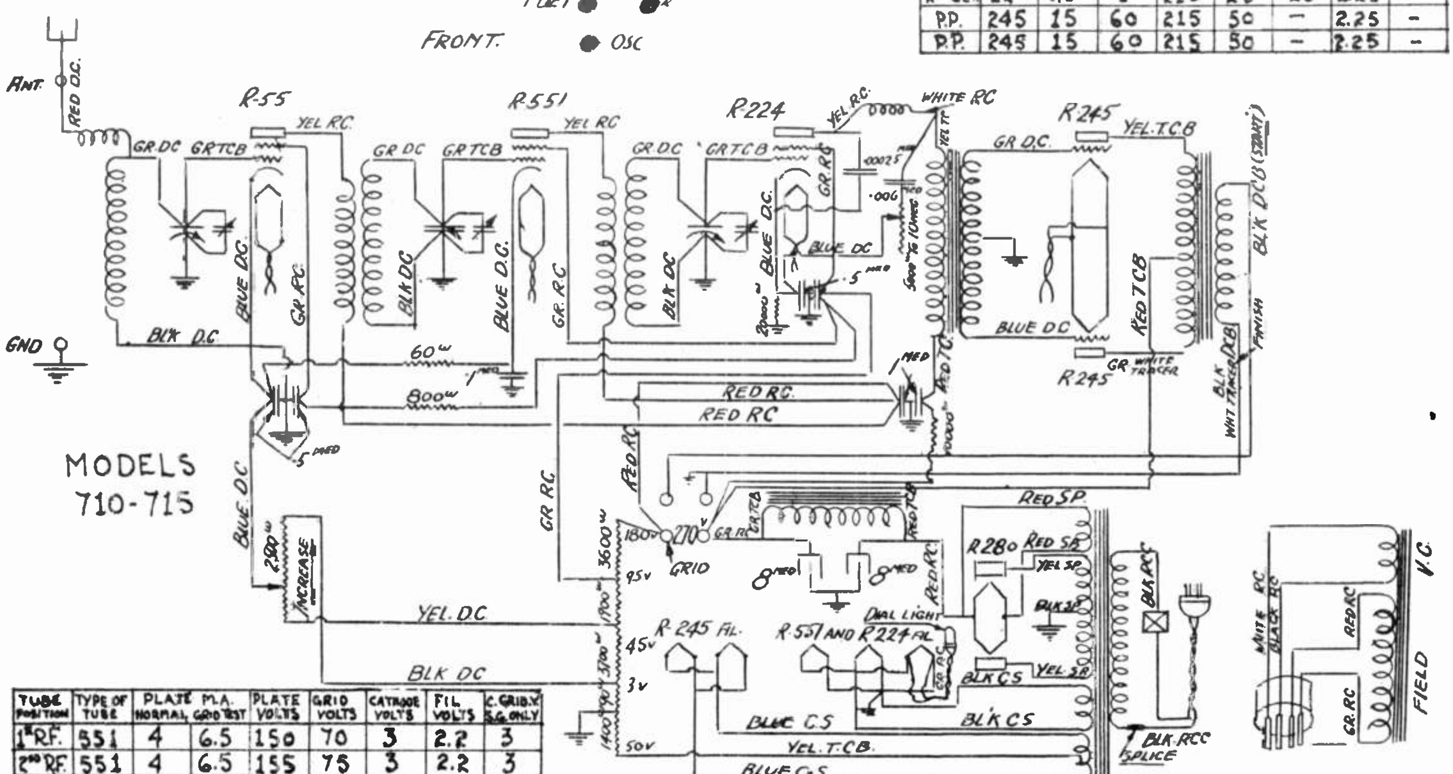
1931-32



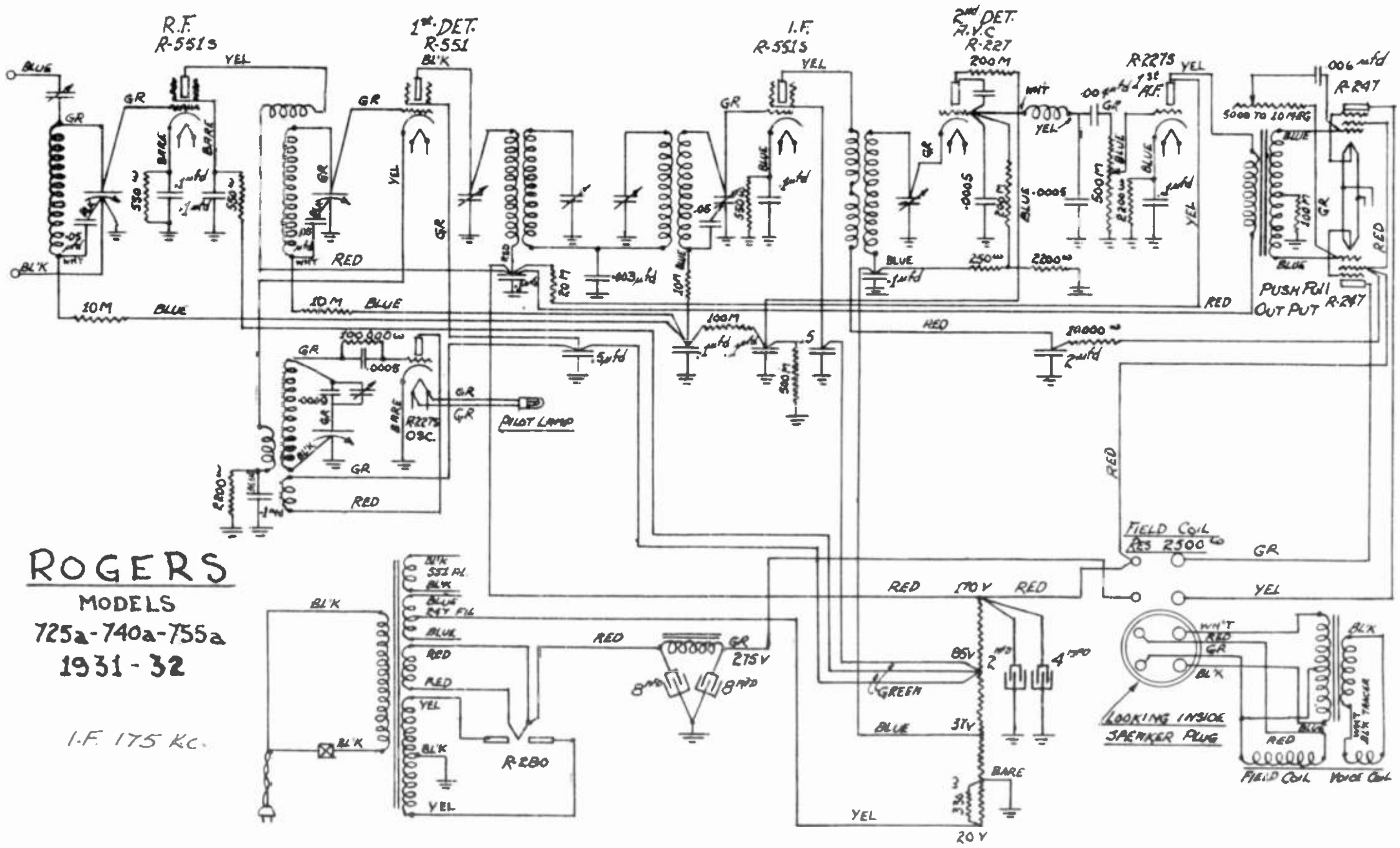
TUBE POSITION	TYPE OF TUBE	PLATE M.A. NORMAL	M.A. GRID TEST	PLATE VOLTS	GRID VOLTS	CATHODE VOLTS	FIL. VOLTS	C. GRID.V. S.G. ONLY
1ST R.F.	551	5	7	160	80	3	2.25	3
1ST DET.	551	5	7	160	80	3	2.25	3
OSC.	227	6	7	75	3	3	2.25	-
I.F.	551	2.5	6	165	75	3	2.25	5
2ND DET.	227	.75	1	210	25	25	2.25	-
P.P.	245	15	60	215	50	–	2.25	-
P.P.	245	15	60	215	50	–	2.25	-

MODELS

710-715



TUBE POSITION	TYPE OF TUBE	PLATE M.A. NORMAL	M.A. GRID TEST	PLATE VOLTS	GRID VOLTS	CATHODE VOLTS	FIL. VOLTS	C. GRID.V. S.G. ONLY
1ST R.F.	551	4	6.5	150	70	3	2.2	3
2ND R.F.	551	4	6.5	155	75	3	2.2	3
DET.	224	.5	1.5	215	63	7	2.2	5.5
P.P.	245	14	52	200	45	–	2.2	-
P.P.	245	14	52	200	45	–	2.2	–

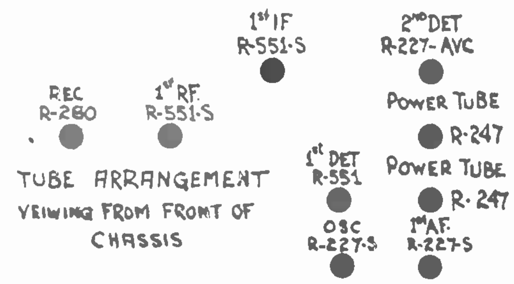


ROGERS

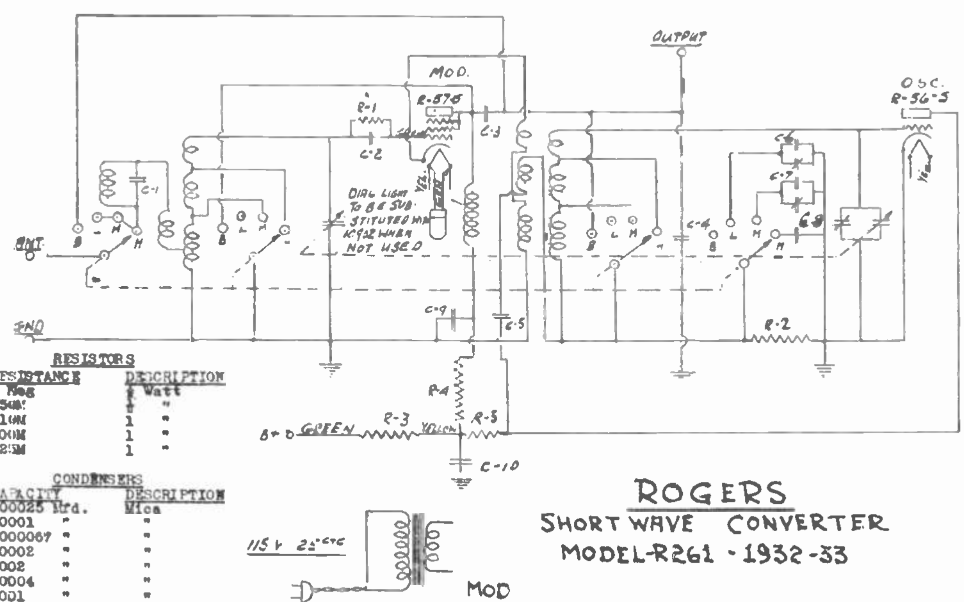
MODELS
725a-740a-755a
1931-32

I.F. 175 Kc.

Tube Position	Type of Tube	PLATE M.A. Normal	PLATE M.A. Grid Test	Plate Volts	Grid Volts (S.G. Volts)	Cathode Volts	Filament Volts	Cont. Grid Volts (S.G. Only)
1 R.F.	R551S	6	7.5	155	75	3.5	2.1	.5
1st Det.	R551	3	6.5	150	72	7.5	2.1	3
Osc.	R227S	1.5	8	70	.5		2.1	
1st I.F.	R551S	2.5	8	205	80	2.5	2.1	7.5
2 Det.	R227			—7.5	.5	+35	2.1	
1 A.F.	R227S	5	12	230	1	7.5	2.1	
Pent.	R247	22	55	230	30		2.1	
Pent.	R247	25	55	230	30		2.1	



TUBE ARRANGEMENT
VEIWING FROM FRONT OF CHASSIS



RESISTORS

SYMBOL	RESISTANCE	DESCRIPTION
R1	½ Meg	½ Watt
R2	250M	½ "
R3	10M	1 "
R4	300M	1 "
R5	25M	1 "

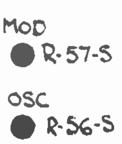
CONDENSERS

SYMBOL	CAPACITY	DESCRIPTION
C1	.00025 Mfd.	Mica
C2	.0001 "	"
C3	.000067 "	"
C4	.0002 "	"
C5	.002 "	"
C6	.0004 "	"
C7	.001 "	"
C8	.0015 "	"
C9	.01 "	Tubular
C10	8.0 "	Electrolytic

NOTE : C-10 to be used on 8-tube combination only.

ROGERS

SHORT WAVE CONVERTER
MODEL-R261 - 1932-33



TUBE ARRANGEMENT
VEIWING FROM FRONT OF CHASSIS.

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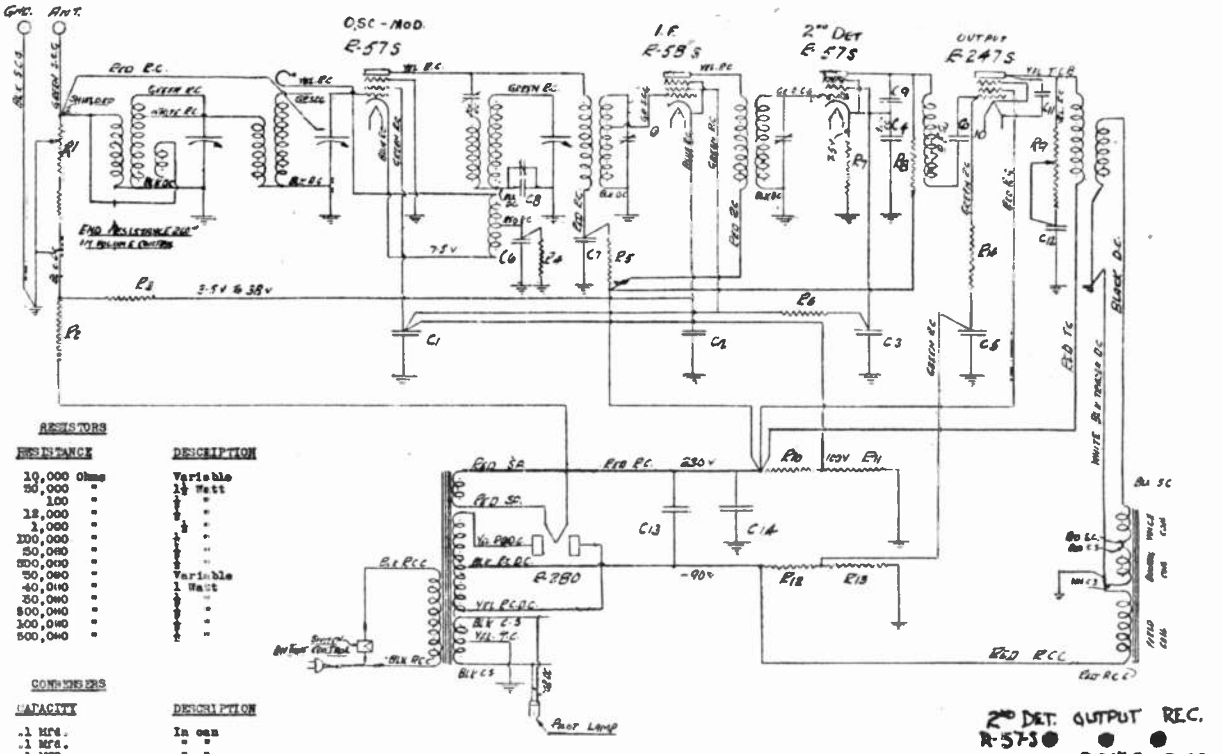
World Radio History



ROGERS
MODELS - 805 - 815
1932-33

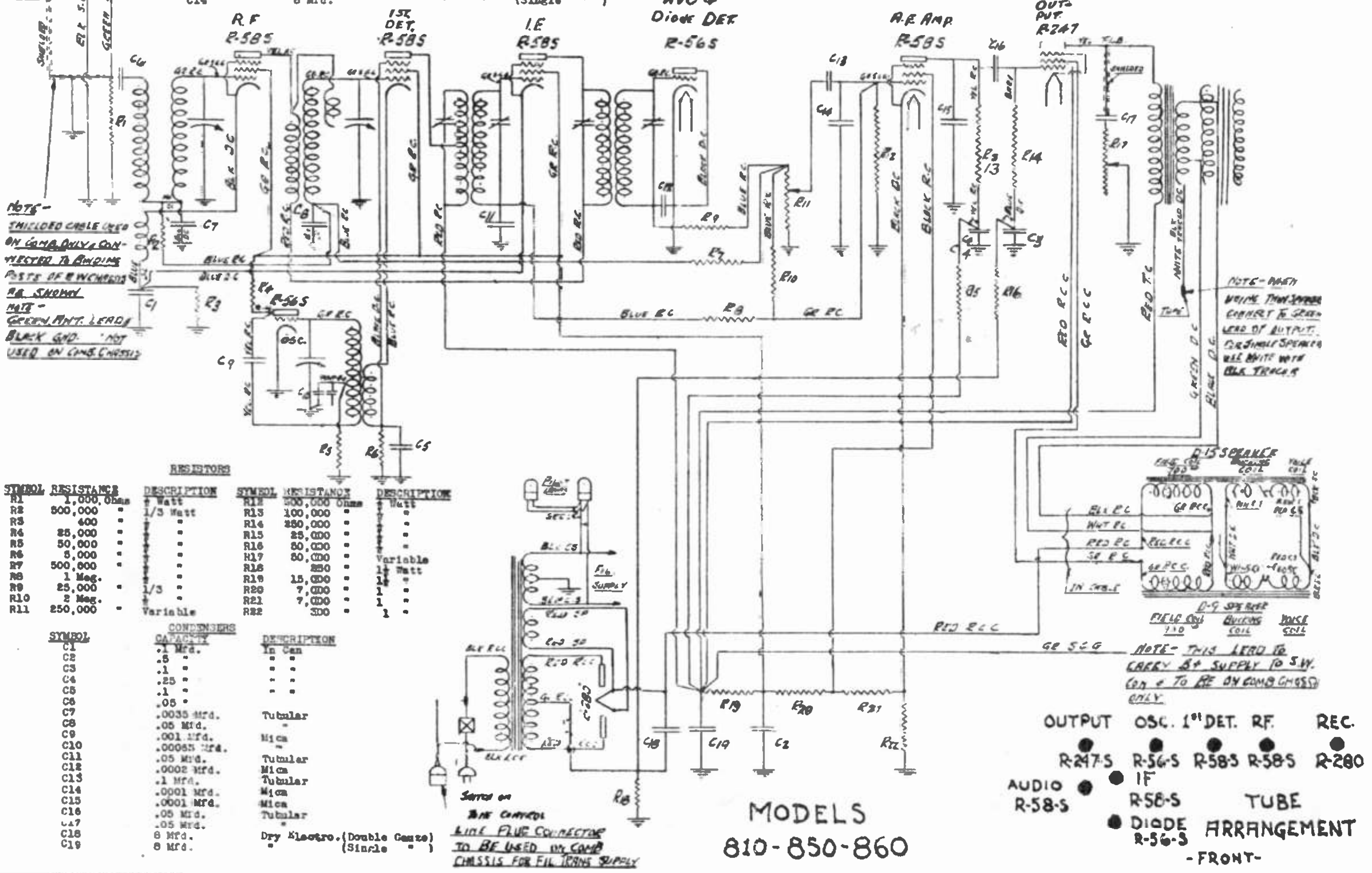
2ND DET. R-57-S ● OUTPUT R-247-S ● REC. R-280 ●
IF ● R-58-S
OSC-MOD ● R-57-S
TUBE ARRANGEMENT
-FRONT-

RESISTORS

SYMBOL	RESISTANCE	DESCRIPTION
R1	10,000 Ohms	Variable
R2	50,000 "	1½ Watt
R3	100 "	[illegible] "
R4	12,000 "	[illegible] "
R5	1,000 "	[illegible] "
R6	100,000 "	[illegible] "
R7	50,000 "	[illegible] "
R8	500,000 "	[illegible] "
R9	50,000 "	Variable
R10	40,000 "	1 Watt
R11	50,000 "	[illegible] "
R12	500,000 "	[illegible] "
R13	100,000 "	[illegible] "
R14	500,000 "	[illegible] "

CONDENSERS

SYMBOL	CAPACITY	DESCRIPTION
C1	.1 Mfd.	In can
C2	.1 Mfd.	" "
C3	.1 Mfd.	" "
C4	.5 Mfd.	" "
C5	.25 Mfd.	" "
C6	.0012 Mfd.	Mica
C7	.1 Mfd.	Tubular
C8	.00087 Mfd.	Mica
C9	.00025 Mfd.	Mica
C10	.01 Mfd.	Tubular
C11	.002 Mfd.	"
C12	.05 Mfd.	"
C13	8 Mfd.	Dry Electro. (Double Gauze)
C14	8 Mfd.	" " (Single ")



RESISTORS

SYMBOL	RESISTANCE	DESCRIPTION
R1	1,000 Ohms	[illegible] Watt
R2	500,000 "	1/3 Watt
R3	400 "	[illegible] "
R4	25,000 "	[illegible] "
R5	50,000 "	[illegible] "
R6	5,000 "	[illegible] "
R7	500,000 "	[illegible] "
R8	1 Meg.	[illegible] "
R9	25,000 "	1/3 "
R10	2 Meg.	[illegible] "
R11	250,000 "	Variable

SYMBOL	RESISTANCE	DESCRIPTION
R12	500,000 Ohms	[illegible] Watt
R13	100,000 "	[illegible] "
R14	250,000 "	[illegible] "
R15	25,000 "	[illegible] "
R16	50,000 "	[illegible] "
R17	50,000 "	Variable
R18	250 "	1½ Watt
R19	15,000 "	1½ "
R20	7,000 "	1 "
R21	7,000 "	1 "
R22	300 "	1 "

CONDENSERS

SYMBOL	CAPACITY	DESCRIPTION
C1	.1 Mfd.	In Can
C2	.5 "	" "
C3	.1 "	" "
C4	.25 "	" "
C5	.1 "	" "
C6	.05 "	
C7	.0035 Mfd.	Tubular
C8	.05 Mfd.	"
C9	.001 Mfd.	Mica
C10	.00065 Mfd.	"
C11	.05 Mfd.	Tubular
C12	.0002 Mfd.	Mica
C13	.1 Mfd.	Tubular
C14	.0001 Mfd.	Mica
C15	.0001 Mfd.	Mica
C16	.05 Mfd.	Tubular
C17	.05 Mfd.	"
C18	8 Mfd.	Dry Electro. (Double Gauze)
C19	8 Mfd.	" (Single ")

MODELS
810-850-860

OUTPUT R-247-S ● OSC. R-56-S ● 1ST DET. R-58-S ● RF. R-58-S ● REC. R-280 ●
AUDIO ● R-58-S
IF ● R-58-S
● DIODE R-56-S
TUBE ARRANGEMENT
-FRONT-

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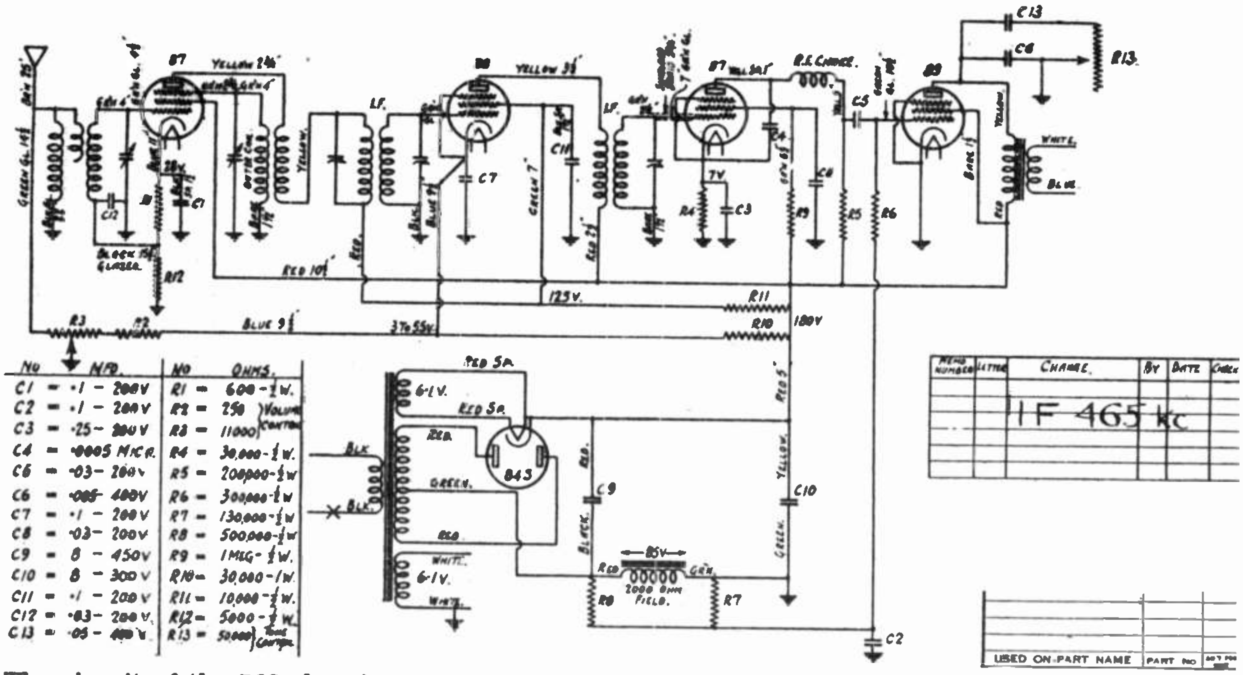
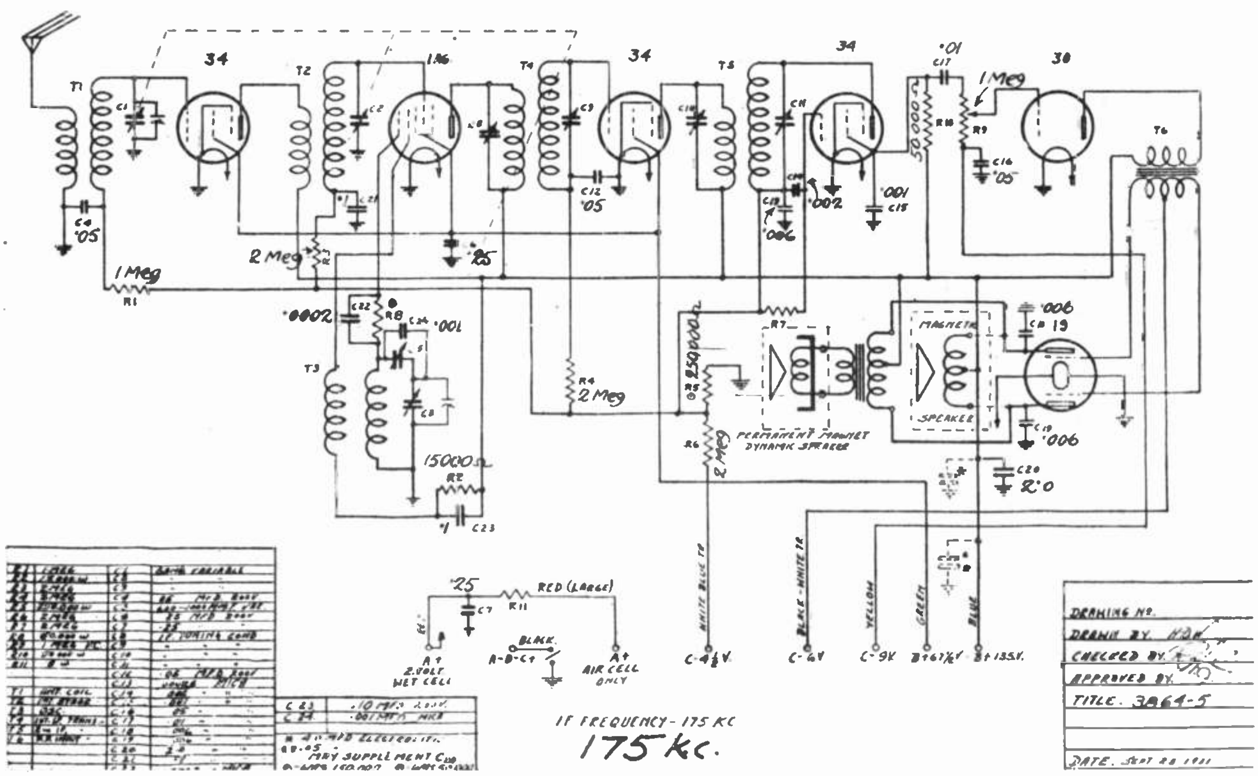


The circuit of the 562 chassis, as used in the model 905 portable receiver, consists of an 87s oscillator modulator, an 88s I.F. amplifier, an 87s second detector and an 89s power amplifier. The rectifier is an 84s full wave rectifier.

Model 905, 1933-34



Battery Models 925 and 930 1933-34

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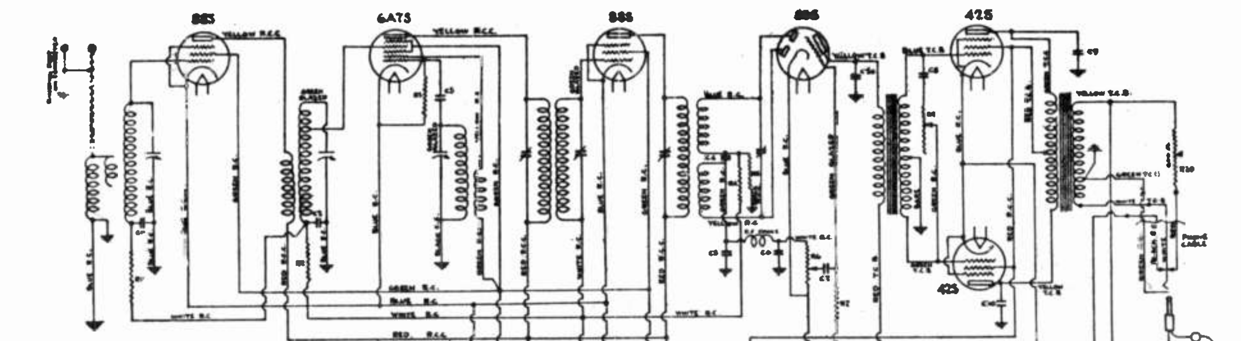


RESISTORS

SYMBOL	RESISTANCE		PT. NO.
R1	50,000 Ohms	1/4W.	36701
R2	50,000 "	1/4W.	36701
R3	100,000 "	1/4W.	32804
R4	100,000 "	1/4W.	32804
R5	300,000 "	1/4W.	32806
R7	250,000 "	1/2W.	33V02
R8	50,000 "	1/2W.	33V07
R6	250,000 "	Volume Control	11198 Console, 11199 Comb'n.
R9	1 Megohm	Tone Control	11198 Console, 11199 Comb'n.
R10	3,640 Ohms	Multiple Resistor Part #11194	
R11	4,300 "		
R12	9,000 "		
R13	1,000 "		
R14	540 "		
R15	75 "		
R16	350 "		
R17	10,000 "	1/2 Watt	
R18	2 Megohms	1/2 "	
R19	4,000 Ohms	1/2 watt	
R20	600 "	2 watt	
R21	50,000 "	Variable control	

CONDENSERS

SYMBOL	CAPACITY		PT. NO.
C1	.05 Mfd.	200 V.	10864
C2	.05 "	200 V.	10864
C3	.00025 Mfd.	600 V.	34894
C4	.03 "	200 V.	10975
C5	.0002 "	600 V.	34103
C6	.0001 "	400 V.	34104
C7	.05 "	200 V.	10975
C8	.005 "	600 V.	10683
C9	.005 "	600 V.	10683
C10	.005 "	600 V.	10698
C11	.5 "	200 V.	By Pass Condenser Unit Pt. 11200
C12	.25 "	200 V.	
C13	.1 "	400 V.	
C14	.1 "	200 V.	
C15	.1 "	200 V.	
C16	5. Mfd.	25 V. Electrolytic	#11196
C17	8. "	500 V.	Filter Condenser Block Pt. #11198
C18	8. "	450 V.	
C19	8. "	450 V.	
C20	.0006 Mfd.	640 V.	34105

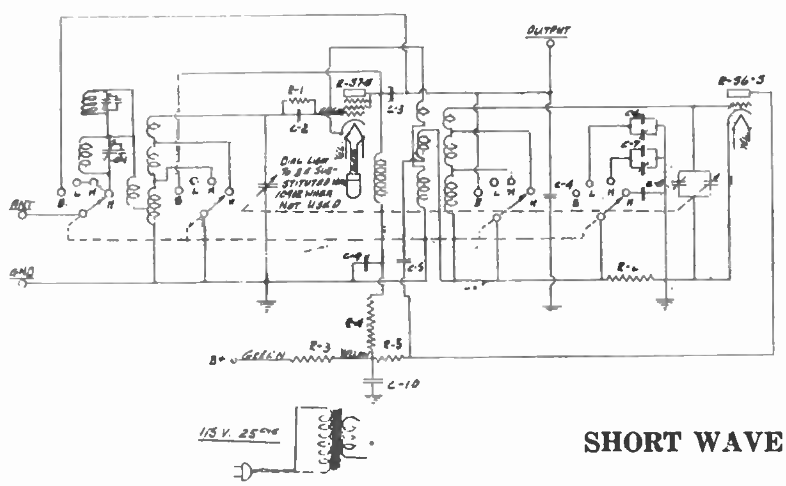
Models 935-955-965

The circuit of the 771 chassis, is used in the model 935, the 772 chassis in model 955 and 772A chassis in the 965, consists of an 88s R.F. amplifier, a 6A7s oscillator modulator, an 88s I.F. amplifier, an 85s second detector and A.V.C., and two 42s tubes as the class "A" output. A 280 is the rectifier. In addition a 56s and a 57s tube is used in the 261 converter in models 955 and 965.

The all wave chassis is known as the 772 chassis and is the 771 chassis with the addition of the 261 chassis (Osc.-Mod.) fed into the input, of the 771.

935, 955 and 965

1933-34



SHORT WAVE CONVERTER MODEL R261

The converter consists of two circuits—a detector and oscillator. A type R57S tube connected as a triode (Suppressor and screen grids being tied to the plate) is employed as a grid leak detector; and for the oscillator a type R56S tube is used.

The antenna circuit is tuned by means of a tapped coil, the unused portion of inductance being short circuited at the higher frequencies by positions III and IV of the wave change switch. A similarly tapped coil is used to tune the oscillator circuit and on the same form is wound the feedback and cathode windings. A two gang condenser is employed, one section tuning the oscillator and one the antenna circuit.

Position I, or "Broadcast" position of the wave change switch connects the antenna post of the converter directly to the antenna post of the receiver, grounds the detector plate and short circuits the oscillator grid coil.

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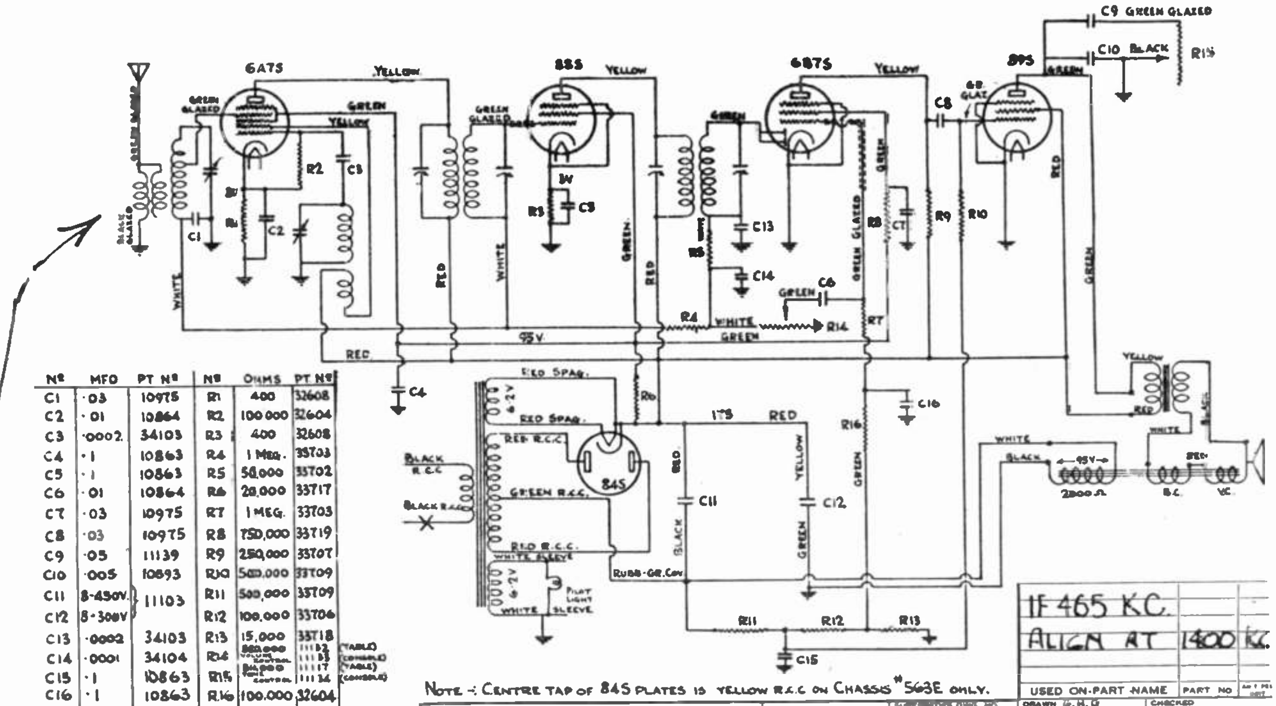
—Courtesy Rogers-Majestic Corp. Ltd.

World Radio History

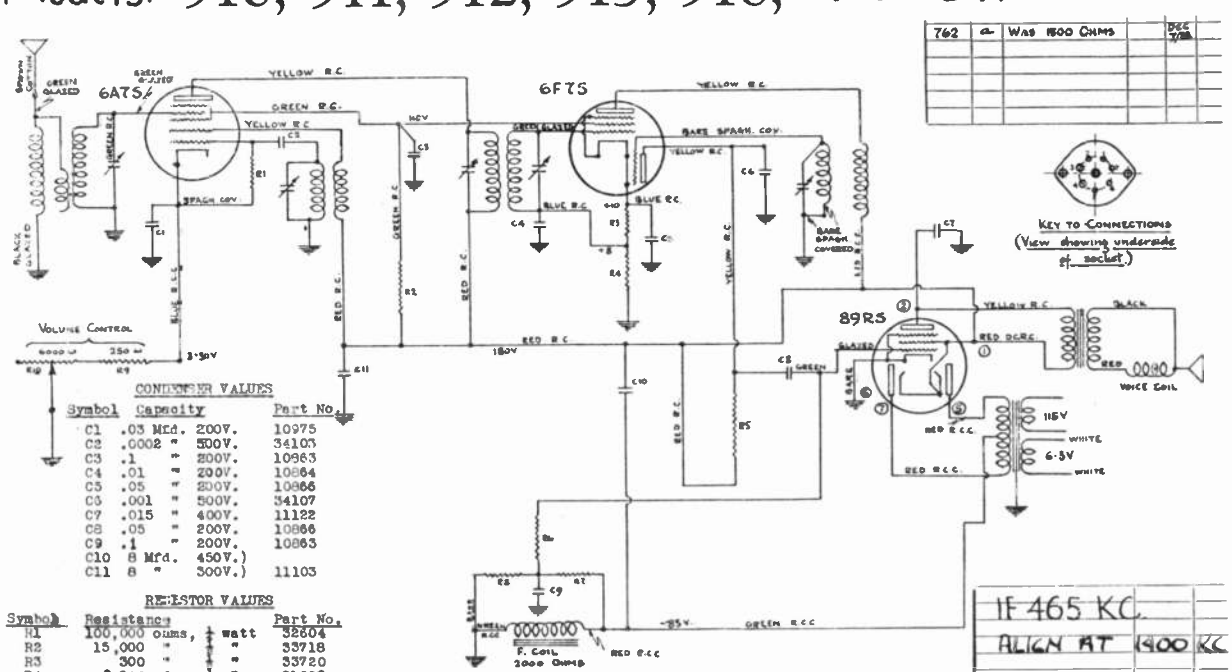


Nº	MFD	PT Nº	Nº	OHMS	PT Nº	
C1	·03	10975	R1	400	32608	
C2	·01	10864	R2	100 000	32604	
C3	·0002	34103	R3	400	32608	
C4	·1	10863	R4	1 MEG.	33703	
C5	·1	10863	R5	50,000	33702	
C6	·01	10864	R6	20,000	33717	
C7	·03	10975	R7	1 MEG.	33703	
C8	·03	10975	R8	750,000	33719	
C9	·05	11139	R9	250,000	33707	
C10	·005	10893	R10	500,000	33709	
C11	8-450V.	11103	R11	500,000	33709	
C12	8-300V		R12	100,000	33706	
C13	·0002	34103	R13	15,000	33718	
C14	·0001	34104	R14	500,000 VOLUME CONTROL	11132 / 11133	(TABLE) (CONSOLE)
C15	·1	10863	R15	500,000 TONE CONTROL	11117 / 11134	(TABLE) (CONSOLE)
C16	·1	10863	R16	100,000	32604	

The circuit used in the 563 chassis and employed in the models 910, 911, 912 and 916 is the latest superheterodyne circuit using the latest Seal shielded Duo-valve tubes. A 6A7s tube used as an osc.-mod., an 88s as an intermediate frequency amplifier, a 6B7s second detector A.V.C. and audio, and an 89s power output tube. The rectifier is an 84s full wave rectifier. The I.F. is tuned to 465 K.C.

The circuit of the chassis used in the console models (915 and 916) is identical with that in the mantle with the exception of the speaker and R16 and C16. The speaker is a standard D15 Jensen speaker with a 2,000 ohm field, while R16 and C16 are required to eliminate the hum produced when the D15 speaker is used.

Models. 910, 911, 912, 915, 916, 1933-34.



CONDENSER VALUES

Symbol	Capacity		Part No.
C1	.03 Mfd.	200V.	10975
C2	.0002 "	500V.	34103
C3	.1 "	200V.	10863
C4	.01 "	200V.	10864
C5	.05 "	200V.	10866
C6	.001 "	500V.	34107
C7	.015 "	400V.	11122
C8	.05 "	200V.	10866
C9	.1 "	200V.	10863
C10	8 Mfd.	450V.)	
C11	8 "	300V.)	11103

RESISTOR VALUES

Symbol	Resistance		Part No.
R1	100,000 ohms,	½ watt	32604
R2	15,000 "	½ "	33718
R3	300 "	½ "	33720
R4	2,200 "	½ "	21009
R5	250,000 "	½ "	33707
R6	250,000 "	½ "	33707
R7	500,000 "	½ "	33709
R8	130,000 "	½ "	33721
R9 } R10 }	Volume Control		11227

Mod 903-4, 403-4. CHASSIS 371

1933-34

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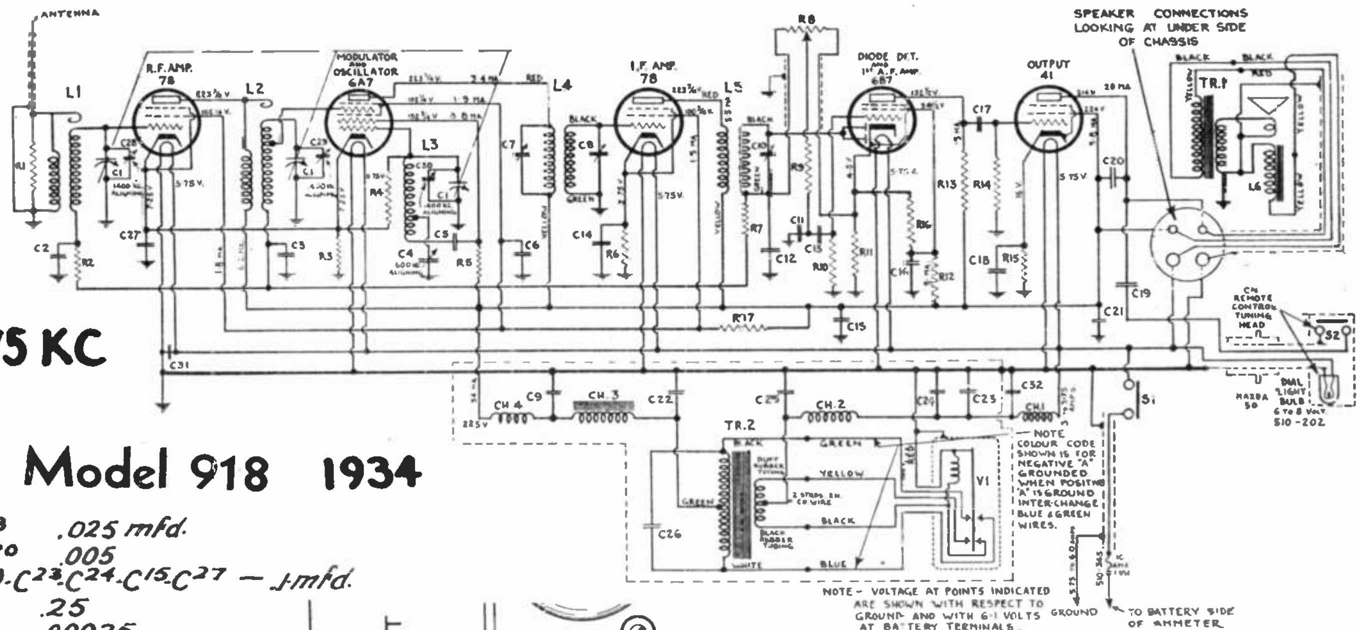
World Radio History

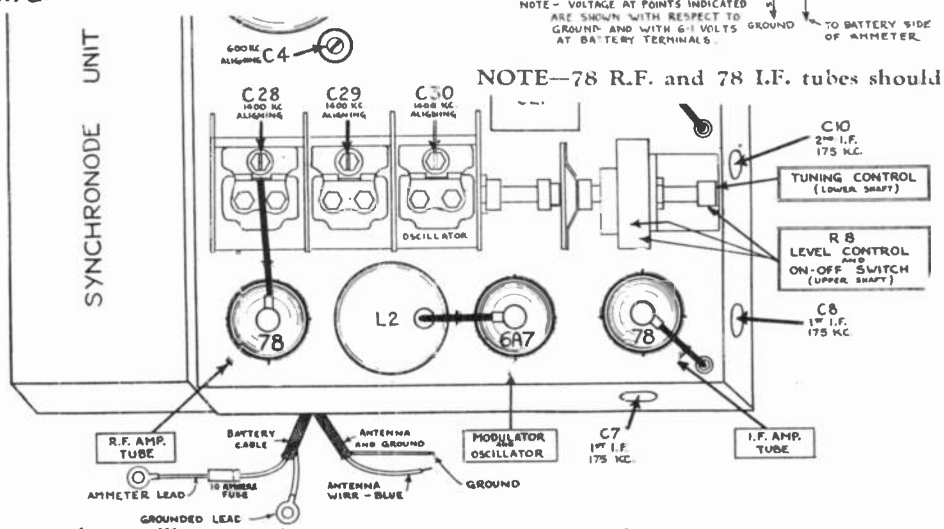


IF 175 KC

Model 918 1934

C2-C3	.025 mfd.
C5-C20	.005
C6-C9-C23-C24-C15-C27	— 1 mfd.
C25	.25
C11	.00025
C13	.02
C14-C17	.05
C16	.15
C18	16.
C19	.01
C21	8.
C22	.12
C26	.012
L6	5.5 ohms
R1	10,000
R2-R4	50,000
R3	450
R5	20,000
R6	550
R7-R10	1-meg.
R8	500,000
R9	100,000
R11	775
R12	30,000
R13	200,000
R14	300,000
R15	750
R16	9,300
R17	21,000

NOTE—78 R.F. and 78 I.F. tubes should be 88s.



Connect the service oscillator to the grid cap of the type 6A7S tube, allowing the tube grid connection to remain in position. Tune the receiver to 1400 kilocycles. Disconnect the antenna, if necessary.

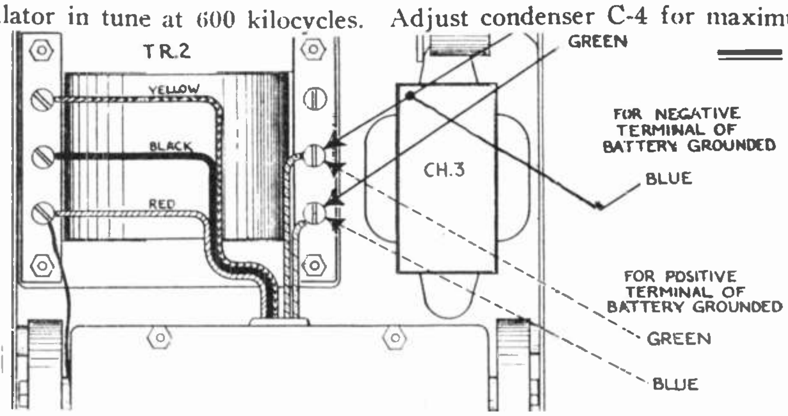
Adjust the intermediate frequency aligning condensers, C-10, C-8 and C-7, in that order, for maximum reading of the output meter. Transfer the service oscillator output connections to the antenna.

Adjust aligning condensers C-30, C-29 and C-28, in that order, for maximum reading of the output meter.

Adjust the receiver and service oscillator in tune at 600 kilocycles. Adjust condenser C-4 for maximum.

Synchronode Connections

The power "B" eliminator or Synchronode is built into the radio unit. When shipped to you this unit is wired for use on cars in which the negative (—) terminal of the battery is grounded (connected to frame). When installed on a car having the positive (+) battery terminal grounded, a change must be made in the Synchronode connections. *The receiver will not operate with the Synchronode connections reversed and if operation is attempted under such conditions, damage to the mechanism will result.*



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—Courtesy Rogers-Majestic Corp. Ltd.

World Radio History

ALIGNMENT

The following information sheets apply to all 1934-35 series Rogers, Majestic and De Forest Crosley receivers which use an I. F. of 456 KC. In general, those using 175 KC also follow the same procedure.

The method of alignment in all cases is practically identical, in that the I.F. is aligned first (see paragraph 4 "I.F.STAGES.") Please note that where the alignment point is not specified as in (C, C, C, C), the first C stands for the secondary of the I.F. transformer, next to the second detector, and the second C for the primary. The third C stands for the secondary of the next I.F. transformer and the fourth C for the primary of this transformer, and so on. In other words, work back from the second detector.

Upon the care and exactitude with which alignment adjustments are made, depends the degree of satisfaction the receiver will provide. Proper alignment can only be arrived at by the use of proper equipment and procedure. Such being the case, it is of prime importance that the following recommendations and routines be closely followed, whenever the need for re-alignment occurs.

The tools and equipment required consist of: (1) a good signal generator (service oscillator) equipped with a good attenuator and providing modulated fundamental frequencies at 456 kc/s., 600 kc/s., 1,400 kc/s., 6.0 mc/s. and 15.0 mc/s.; (2) a reliable output meter, preferably of the rectifier type; (3) a non-inductive 400 ohm 1 watt filament type resistor and; (4) a suitable combination aligning wrench and screw-driver, such as Part No. 32702 or equivalent; (5) a .0002 Mfd. Condenser, used as a dummy Antenna on the broadcast band; and (6) a .05 or .1 Mfd. Series Condenser for use during I.F. alignment.

With the foregoing equipment on hand, re-alignment should be attempted only after a complete understanding of the following routines. The chassis should always be removed from the cabinet during alignment adjustments.

I. F. STAGES

(1) Connect output meter across voice coil terminals of the speaker.

(2) Connect output lead of signal generator to the control grid cap of the oscillator-modulator tube (6A7S) through a .05 or .1 Mfd. Condenser, allowing grid lead to remain in position. Range selecting switch must be in broadcast position for I.F. Alignment.

(3) Turn the receiver and generator on and adjust generator to exactly 456 kc/s. Set receiver volume control at maximum. Adjust generator output for a low reading of output meter. Short circuit the oscillator section of the Gang, to avoid spurious signals.

(4) Commencing at the I.F. transformer which supplies the diode or second detector, and working progressively back to the I.F. transformer connected to the output of the oscillator modulator, carefully adjust the I.F. aligning nuts and screws (C , C , C , C , in that order) for maximum increase in reading of output meter. As the adjustment is being made, gradually reduce the generator output, so as to avoid possible overloading of any stage. Overloading may result in false alignment. Carefully check adjustments.

R.F. AND OSC. STAGES (STANDARD BAND)

(1) Connect output lead of signal generator through a .0002 Mfd. Condenser to the antenna lead of receiver. Connect generator ground lead to ground of receiver. If the receiver under adjustment is equipped for selective antennae, arrange the terminal connections as for Conventional antenna, vis.: Short No. 1 and No. 2, Short No. 3 and No. 4, Short No. 5 and No. 6, connect ground to No. 2 and generator output lead through .0002 Mfd. Condenser to No. 3.

(2) Tune receiver and generator to 1,400 kc/s. Roughly adjust oscillator, interstage and antenna stage parallel pads (C , C , C) see layout in that order for maximum sensitivity.

(3) Tune generator to exactly 600 kc/s., and adjust receiver (without regard for dial calibration) to the generator frequency.

World Radio History

(4) Adjust 600 kc/s. series pad (without regard for dial calibration) for maximum sensitivity, rocking the tuning control in the usual manner during this adjustment.

(5) If after this adjustment the dial calibration is incorrect, loosen dial pointer screw and reset pointer to exactly 600 kc/s.

(6) Tune generator to 1,400 kc/s. and adjust receiver in tune. If calibration is incorrect, adjust oscillator parallel condenser to correct dial calibration, then carefully align antenna and interstage trimmers. Recheck oscillator, interstage and antenna parallel pads (C , C , C) in that order for maximum sensitivity. When adjusting these condensers use as little capacity as possible.

THIS IS IMPORTANT.

After the foregoing adjustments have been made, the series and parallel padding condensers should not be touched again.

R.F. AND OSC. STAGES (SHORT WAVE)

(1) Adjust band selector switch for short-wave operation. Connect generator output lead to control grid cap of oscillator-modulator tube, through .05 or .1 Mfd. Condenser, and tune generator to exactly 15 mc/s. (15,000 kc.)

(2) Adjust receiver tuning and note at what points on the dial (near 15 mc/s.) the generator is heard. Two points, approximately 1 mc/s. apart, should be observed. The signal having the highest frequency is the desired one. The other, observed 1 mc/s. lower in frequency, is the image frequency and must be identified as such to avoid error.

(3) If the signal of highest frequency value falls at some other point on the dial than 15 mc/s., it should be moved to 15 mc/s. by adjustment of the oscillator parallel pad (C). This adjustment should be made in small steps as a gradual adjustment, in order to avoid losing the correct signal. After the foregoing has been completed, recheck for correct adjustment by tuning receiver approximately 14 mc/s., at which point the image frequency should be observed.

(4) Connect generator output lead through 400 ohm resistor directly to antenna lead or terminal of receiver. This resistance should be located at antenna terminal panel or at the end of the receiver antenna lead. Adjust generator to exactly 15 mc/s. Adjust receiver in tune with generator (without regard for dial calibration).

Attempt alignment of interstage and antenna stage parallel pads (C , C) see layout in that order. When aligning interstage coil the tuning control must be rocked in the same manner as when making a series osc. pad adjustment. If receiver has no interstage coil, the tuning control must be rocked when aligning the antenna coil. Should interstage refuse to peak, adjust interstage paralled pad (C) for minimum capacity value and find alignment by slowly tuning receiver towards high frequency end of the dial, and at the same time increase capacity of oscillator parallel pad (C). Continue this adjustment until a peak is obtained, which indicates that the oscillator and interstage are in alignment. This adjustment should be made without regard for dial calibration. Watch carefully for double peak, choosing one requiring most capacity, if present.

(5) Adjust antenna stage parallel pad (C) see layout for maximum sensitivity.

(6) Recheck parallel pads of oscillator, interstage and antenna stage in that order (disregard dial calibration).

(7) Adjust generator ~~to~~ exactly 6.0 mc/s. and tune receiver to generator. Adjust 6.0 mc/s. series oscillator pad (C) see layout for maximum sensitivity, rocking the tuning control slightly in the usual manner during this adjustment. (Disregard dial calibration). If calibration is incorrect, it must be left that way because readjustment of series tracker will impair the sensitivity; moving pointer will, of course, upset broadcast calibration.

(8) Adjust generator to 15 mc/s., and recheck alignment of parallel pads (C , C , C) see layout at that point for maximum sensitivity. If 6.0 mc/s. series pad required more than a slight amount of correction this rechecking is very important.

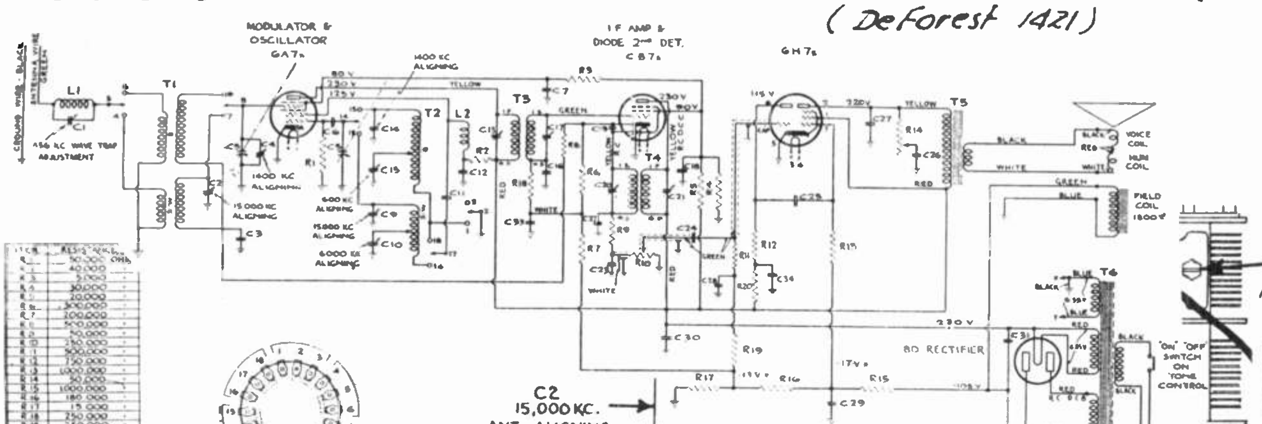
After completion of short-wave alignment, in accordance with the foregoing routine, it is important that no further adjustment be made of the "Standard Band" condensers. If the Standard Band condensers are adjusted, complete re-alignment of the short-wave should follow.

The notation "without regard for dial calibration" mentioned throughout the aligning routine, has reference to the fact that at short-wave, calibration of the dial scale is approximate only. Therefore, short-wave alignment should always be made for the condition of maximum sentitivity, disregarding variation in dial calibration. At standard band frequencies, the logging of the dial scale can be held to within 10 kc/s. (1 dial division).

World Radio History

Models 4421 - 22. 1934-35 I.F 456 Kc. (also Majestic 2421-22)

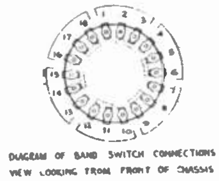
(DeForest 1421)



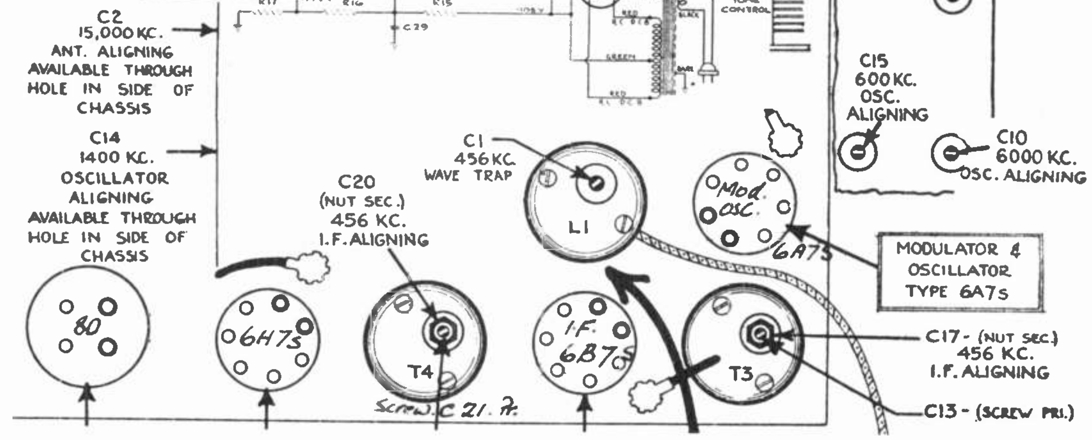
VOLTAGES SHOWN ARE APPROX READINGS THAT SHOULD BE OBTAINED BETWEEN POINT WHERE VOLTAGE IS INDICATED AND GROUND (CHASSIS), WITH A 1000 OHMS PER VOLT VOLTMETER, USING 250 VOLT RANGE. EXCEPT VOLTAGES THAT ARE MARKED * WHICH ARE ACTUAL VOLTAGES AND CANNOT BE MEASURED WITH ORDINARY VOLTMETER

ITEM	RESISTANCE
R1	50,000 OHMS
R2	40,000 "
R3	5,000 "
R4	30,000 "
R5	20,000 "
R6	300,000 "
R7	200,000 "
R8	500,000 "
R9	50,000 "
R10	250,000 "
R11	500,000 "
R12	750,000 "
R13	1000,000 "
R14	50,000 "
R15	1000,000 "
R16	180,000 "
R17	15,000 "
R18	250,000 "
R19	250,000 "
R20	50,000 "

ITEM	CAPACITY
C1	456 KC WAVE TRAP
C2	15,000 KC ANT ALIGN
C3	.05 MFD
C4	1400 KC ANT ALIGN
C5	2 GANG CONDENSER
C6	.00005 MFD
C7	.1 "
C8	
C9	15,000 KC OSC ALIGN
C10	6000 KC OSC ALIGN
C11	.001 MFD
C12	8 "
C30	8 "
C13	456 KC I F ALIGN
C14	1400 KC OSC ALIGN
C15	600 KC OSC ALIGN
C16	.05 MFD
C17	456 KC I F ALIGN
C18	.5 MFD
C19	.01 "
C20	456 KC I F ALIGN
C21	456 KC I F ALIGN
C22	.0002 MFD
C23	.0001 "
C24	.01 "
C25	.05 "
C26	.05 "
C27	.002 "
C28	.1 "
C29	* .35 "
C31	8 "
C32	
C33	.05 MFD
C34	.1 MFD

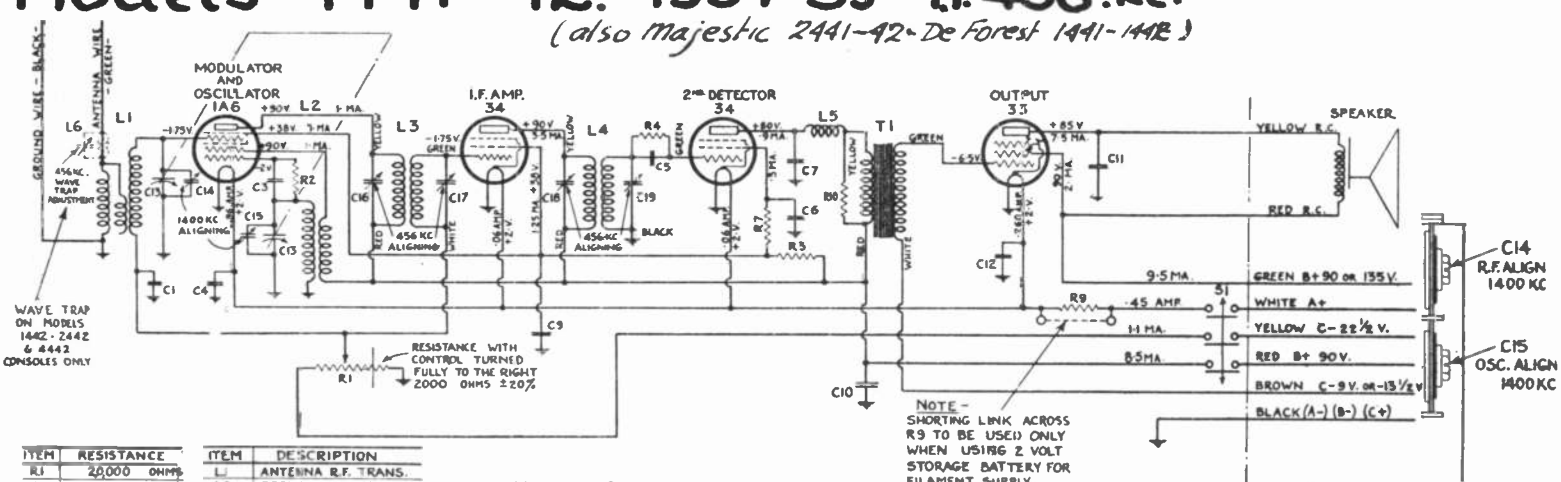


for alignment instructions see Data Sheets 17a-b



Models 4441-42. 1934-35 I.F 456 .Kc.

(also Majestic 2441-42 - De Forest 1441-1442)



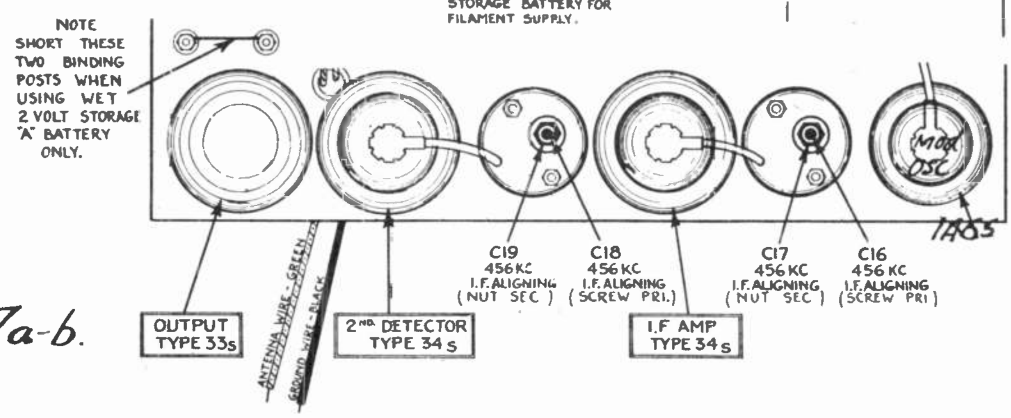
ITEM	RESISTANCE	
R1	20,000	OHMS
R2	100,000	"
R3	16,000	"
R4	2,000,000	"
R7	100,000	"
R9	·6	"
R10	300,000	"

ITEM	CAPACITY	
C1	·1	MFD.
C3	·0002	"
C4	·25	"
C5	·0001	"
C6	·1	"
C7	·0002	"
C9	·25	"
C10	·5	"
C11	·003	"
C12	·25	"
C13	TUNING COND.	
C14	R.F. ALIGNING	
C15	OSC. ALIGNING	

ITEM	DESCRIPTION
L1	ANTENNA R.F. TRANS.
L2	OSCILLATOR COIL
L3	1st I.F. TRANSFORMER
L4	2nd I.F. TRANSFORMER
L5	R.F. CHOKE, DET. PLATE
L6	WAVE TRAP ASSEM.
T1	AUDIO TRANSFORMER
S1	BATTERY "ON"-"OFF" SWITCH
SPEAKER	MODELS - 1441 - 2441 USES 6" BEST MAGNETIC
SPEAKER	MODELS - 1442 - 2442 - 4442 USES 8" BEST MAGNETIC

for alignment see Sheets 17a-b.

NOTE
SHORT THESE TWO BINDING POSTS WHEN USING WET 2 VOLT STORAGE "A" BATTERY ONLY.

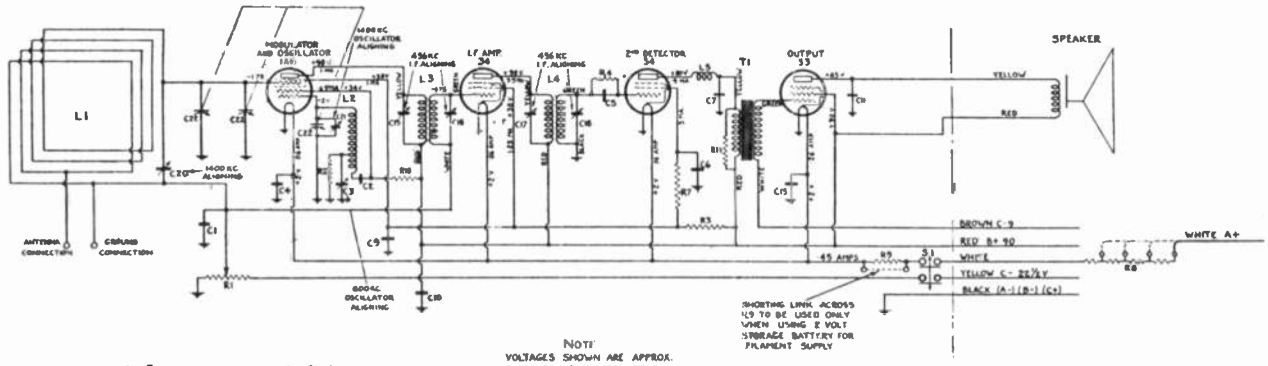


DATA SHEET

Courtesy ROGERS-18 MAJESTIC CORP. LTD.

World Radio History

Model 4443 1934-35 I.F. 456.Kc.



ITEM	RESISTANCE	
R1	50,000	OHMS
R2	100,000	"
R3	16,000	"
R6	2,000,000	"
R7	100,000	"
R8	4 × ½	"
R9	·6	"
R10	50,000	"
R11	500,000	"

ITEM	CAPACITY	
C1	·1	MFD
C2	·0005	"
C3	VARIABLE	
C4	·25	"
C5	·0001	"
C6	·1	"
C7	·0002	"
C9	·25	"
C10	·5	"
C11	·005	"
C15	·25	"

NOTE
VOLTAGES SHOWN ARE APPROX. READINGS THAT SHOULD BE OBTAINED WITH A 1000 OHMS PER VOLT VOLTMETER, BETWEEN POINT WHERE VOLTAGE IS INDICATED AND GROUND (CHASSIS).

ALSO Mod. 5441.
KING - 1935

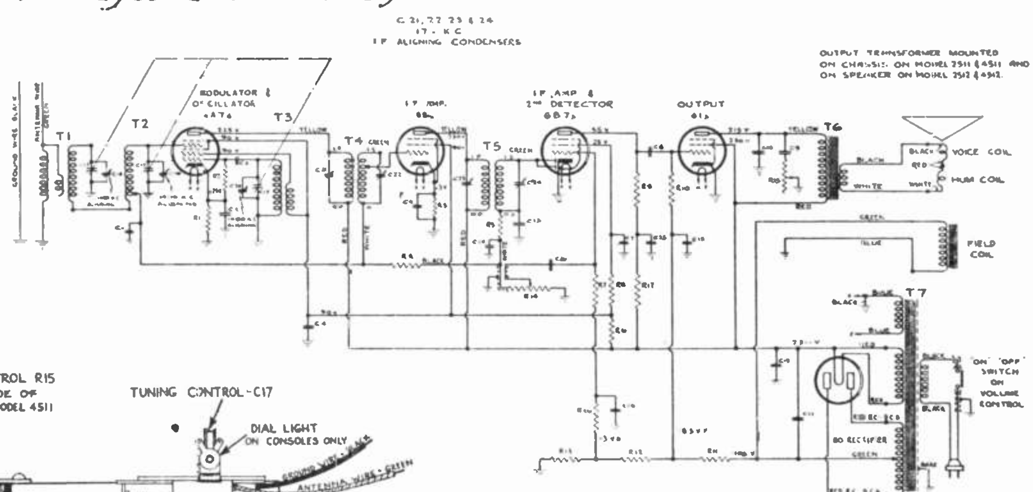
for Service Information see Data Sheets 17a-b.

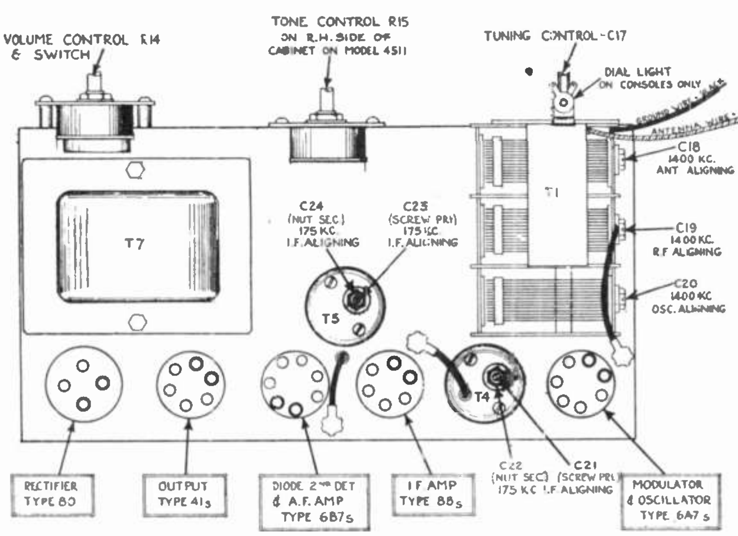
Models 4511-2-3-4 1934-35. I F 175 Kc.

(also Majestic 2511-12-13)

I.F. 175 Kc.

NOTE
VOLTAGES SHOWN ARE APPROX READINGS THAT SHOULD BE OBTAINED WITH A 1000 OHMS PER VOLT VOLTMETER BETWEEN POINT WHERE VOLTAGE IS INDICATED AND GROUND (CHASSIS) EXCEPT VOLTAGES THAT ARE MARKED & WHICH ARE ACTUAL VOLTAGES AND CANNOT BE MEASURED WITH ORDINARY VOLTMETERS





ITEMS MARKED ✱ USED ON MODELS 2511 & 2513 ONLY
" " □ " " " 2512 & 2514 "
" " ○ " " " 4511 & 4513 "
" " ● " " " 4512 & 4514 "

ITEM	CAPACITY	
C1	·05	MFD
C2	·01	"
C3	·0002	"
C4	·1	"
C5	·1	"
C6	·05	"
C7	·1	"
C8	·05	"
C9	·05	"
C10	·002	"
C11	8	"
C12	8	"
C13	·0002	"
C14	·0001	"
✱○ C15	·1	"
□● C15	·5	"
C16	·1	"
✱○ C17	3 GANG COND	
□● C17		
C18	1400 KC ANT ALIGN	
C19	" R.F. "	
C20	" OSC. "	
C21	I.F. ALIGNING	
C22	"	
C23	"	
C24	"	
□● C25	·1	MFD

ITEM	RESISTANCE	
R1	400	OHMS
R2	100,000	"
R3	400	"
R4	500,000	"
R5	50,000	"
R6	250,000	"
R7	500,000	"
R8	500,000	"
R9	250,000	"
R10	500,000	"
R11	1,000,000	"
R12	150,000	"
R13	50,000	"
✱○ R14	250,000	"
□● R14	250,000	"
○ R15	50,000	"
✱□● R15	50,000	"
R16	100,000	"
□● R17	100,000	"

DATA SHEET

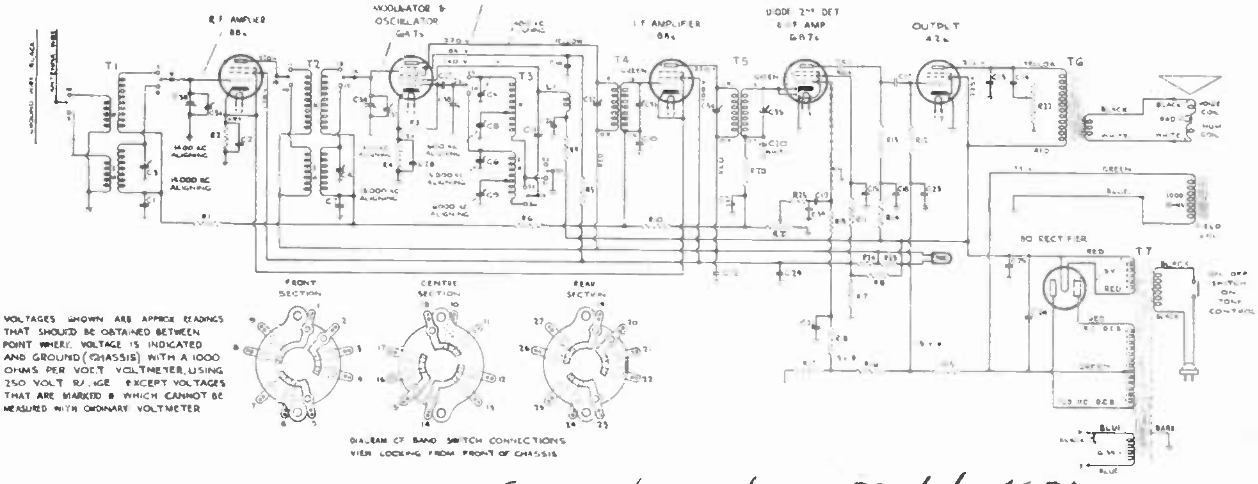
— COURTESY
ROGERS-19
MAJESTIC CORP. LTD.

World Radio History

Model 4624 1934-35 I.F. 456 Kc.

ITEM	CAPACITY
C1	.05 MFD.
C2	.1
C3	15,000 K ANT ALIGN
C4	15,000 K RF ALIGN
C5	1400 KC OSC. ALIGN
C6	15,000 K OSC. ALIGN
C7	.05 MFD.
C8	600 KC OSC. ALIGN
C9	6000 KC OSC. ALIGN
C10	.05 MFD.
C11	.001
C12	.1
C13	.005
C14	.05
C15	.1
C16	.1
C17	.05
C18	.1
C19	[illegible]
C20	[illegible]
C21	[illegible]
C22	.1
C23	.5
C24	8
C25	8
C26	8
C27	.00005 MFD.
C28	[illegible] MFD.
C29	[illegible]

ITEM	RESISTANCE
R1	100,000 OHMS
R2	150
R3	50,000
R4	300
R5	5,200
R6	100,000
R7	15,000
R8	10,000
R9	20,000
R10	500,000
R11	500,000
R12	500,000
R13	250,000
R14	100,000
R15	1,000,000
R16	300,000
R17	5,000
R18	250,000
R19	500,000
R20	50,000
R21	10,000
R22	50,000
R23	5,400
R24	50,000
R25	50,000



VOLTAGES SHOWN ARE APPROX READINGS THAT SHOULD BE OBTAINED BETWEEN POINT WHERE VOLTAGE IS INDICATED AND GROUND (CHASSIS) WITH A 1000 OHMS PER VOLT VOLTMETER, USING 250 VOLT RANGE EXCEPT VOLTAGES THAT ARE MARKED ● WHICH CANNOT BE MEASURED WITH ORDINARY VOLTMETER

Same Layout as Model 4621

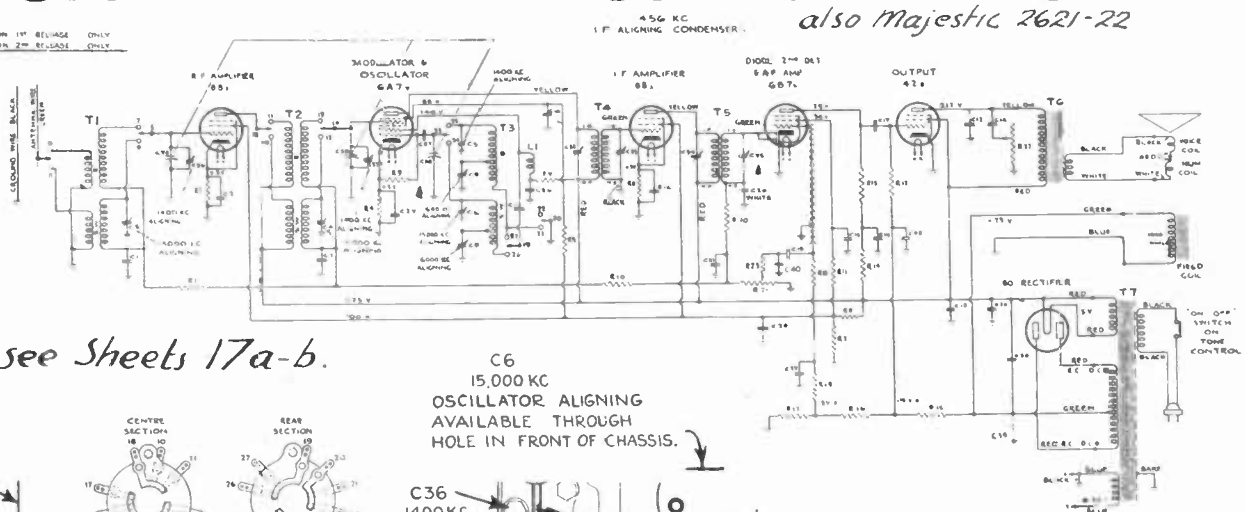
Alignment instructions on Sheets 17a-b.

Models 4621-2-3 1934-35 I.F 456 Kc.

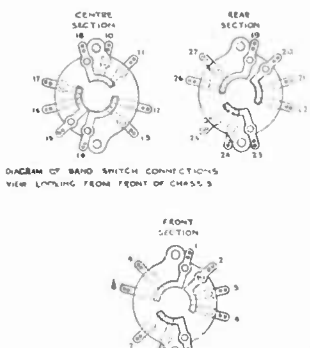
also Majestic 2621-22

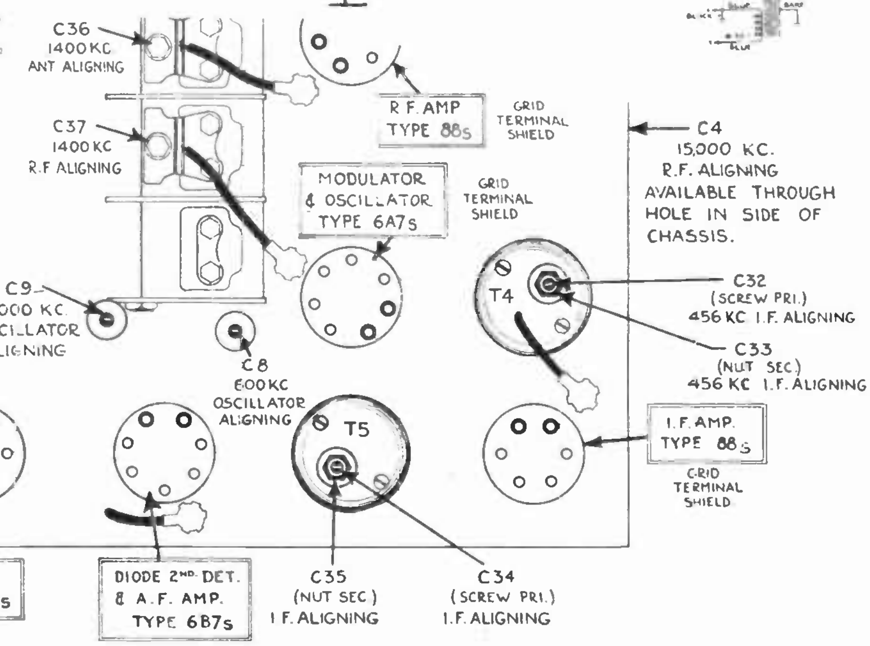
ITEMS MARKED ● ARE ON 1ST RELEASE ONLY
ITEMS MARKED ○ ARE ON 2ND RELEASE ONLY

ITEM	CAPACITY
C1	.05 MFD.
C2	.1
C3	15,000 K ANT ALIGN
C4	15,000 K RF ALIGN
C5	1400 K OSC. ALIGN
C6	15,000 K OSC. ALIGN
C7	.05 MFD
C8	600 K OSC. ALIGN
C9	6000 K OSC. ALIGN
C10	.05 MFD
C11	.001
C12	.1
C13	.005
C14	.05
C15	[illegible]
C16	.1
C17	.05
C18	.1
C19	.05
C20	.0005
C21	.0001
C22	[illegible]
C23	.5
C24	8
C25	8
C26	8
C27	16
C28	.00005
C29	[illegible]
C32	456 K I.F. ALIGNING
C33	456 K I.F. ALIGNING
C34	456 K I.F. ALIGNING
C35	456 K I.F. ALIGNING
C36	1400 K ANT ALIGN
C37	1400 K RF ALIGN
C38	456 K I.F. [illegible]
C39	.01 MFD
C40	.05



see Sheets 17a-b.





ITEM	RESISTANCE
R1	100,000 OHMS
R2	150
R3	50,000
R4	300
R5	15,000
R6	5,200
R7	15,000
R8	10,000
R9	20,000
R10	500,000
R11	500,000
R12	500,000
R13	250,000
R14	100,000
R15	1,000,000
R16	300,000
R17	50,000
R18	15,000
R19	100,000
R20	10,000
R21	250,000
R22	50,300
R25	50,000

DATA SHEET

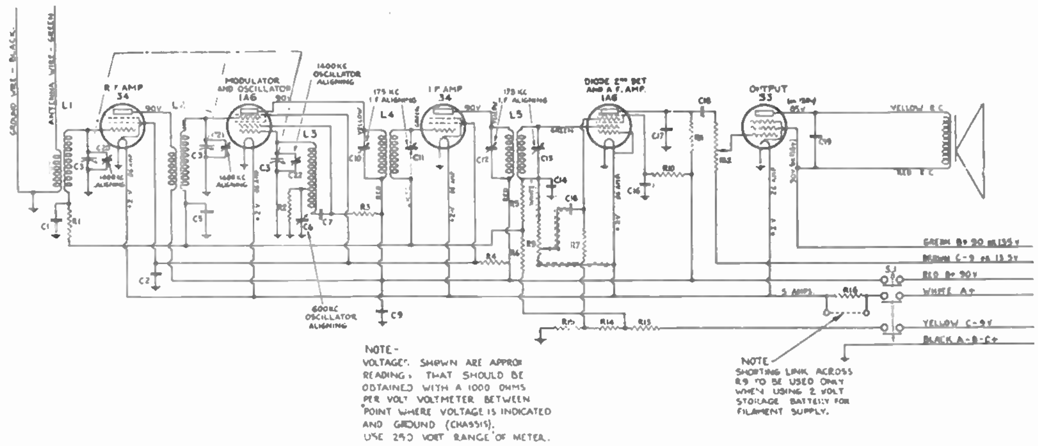
—Courtesy **ROGERS-20** MAJESTIC CORP. LTD.

World Radio History

Model 4541-42 1934-35 I.F. 175 Kc.

ITEM	RESISTANCE	
R1	30,000	OHMS
R2	50,000	-
R3	20,000	-
R4	15,000	-
R5	500,000	-
R6	500,000	-
R7	1,000,000	-
R8		
R9	250,000	-
R12	1,000,000	-
R10	40,000	-
R11	150,000	-
R13	4,420	-
R14	445	-
R15	885	-
R16	·55	-

ITEM	CAPACITY
C1	·05 MFD
C2	·1 -
C3	3 GANG COND.
C5	·05 MFD
C6	600KC OSC ALIGNING
C7	·0005 MFD
C9	16 -
C10	I.F. ALIGNING
C11	- - -
C12	- - -
C13	- - -
C14	·00025 -
C15	·02 -
C16	·1 -
C17	·00025 -
C18	·05 -
C19	·0025 -
C20	1400 KC ANT. ALIGNING
C21	1400 KC R.F. ALIGNING
C22	1400 KC OSC ALIGNING



for alignment instructions see Sheets 17a-b.

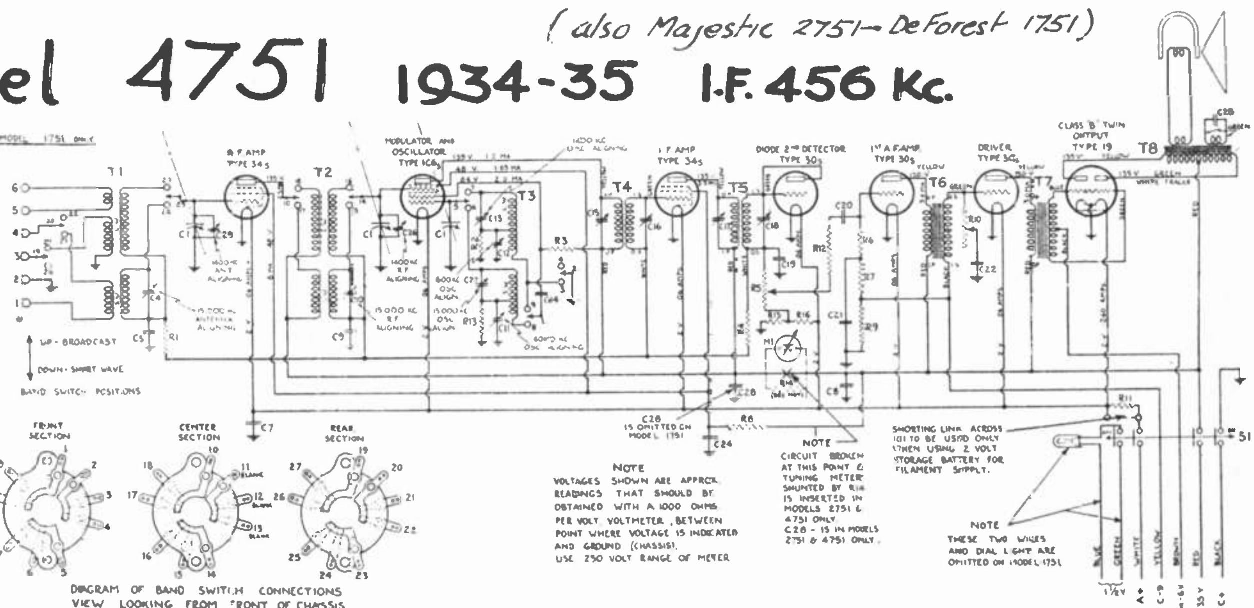
(also Majestic 2751 - DeForest 1751)

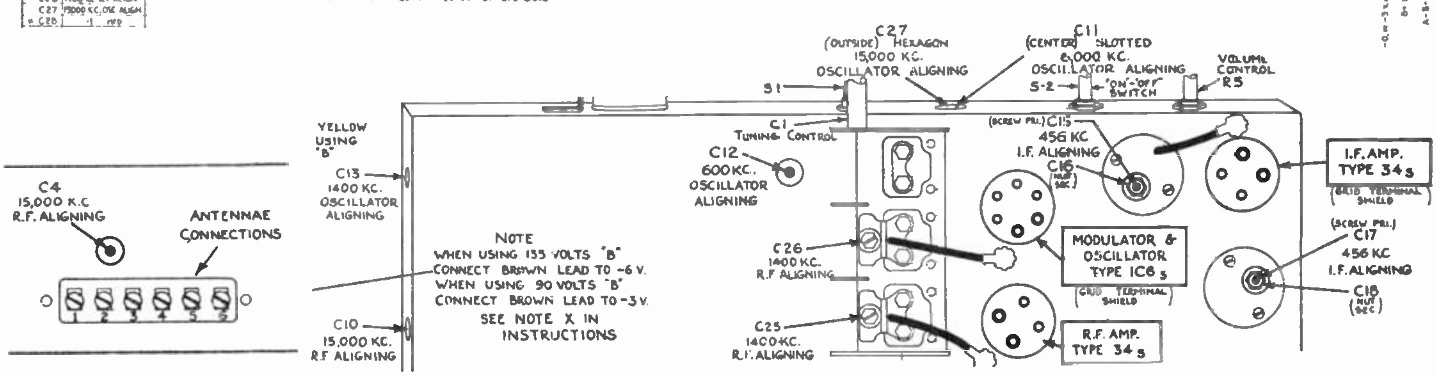
Model 4751 1934-35 I.F. 456 Kc.

ITEMS MARKED * ARE OMITTED ON MODEL 1751 ONLY

ITEM	RESISTANCE	
R1	25,000	OHMS
R2	50,000	-
R3	20,000	-
R4	500,000	-
R5	250,000	-
R6	1,000,000	-
R7	500,000	-
R8	25,000	-
R9	5,800	-
R10	1,500,000	-
R11	·56	-
R12	100,000	-
R13	16,000	-
* R14	1,200	-
R15	100	-
R16	400	-

ITEM	CAPACITY
C1	3 GANG COND
C4	15000 KC ANT ALIGN
C5	·05
C7	·5
C8	16 MFD
C9	·05
C10	15000 KC R.F. ALIGN
C11	6000 KC OSC ALIGN
C12	600 KC OSC ALIGN
C13	1400 KC OSC ALIGN
C14	·0005 MFD
C15	I.F. ALIGNING
C16	- - -
C17	- - -
C18	- - -
C19	·0005 MFD
C20	·02 -
C21	·05 -
C22	·0025 -
C23	·0015 -
C24	·1 -
C25	1400 KC ANT ALIGN
C26	1400 KC R.F. ALIGN
C27	15000 KC OSC ALIGN
* C28	·1 MFD





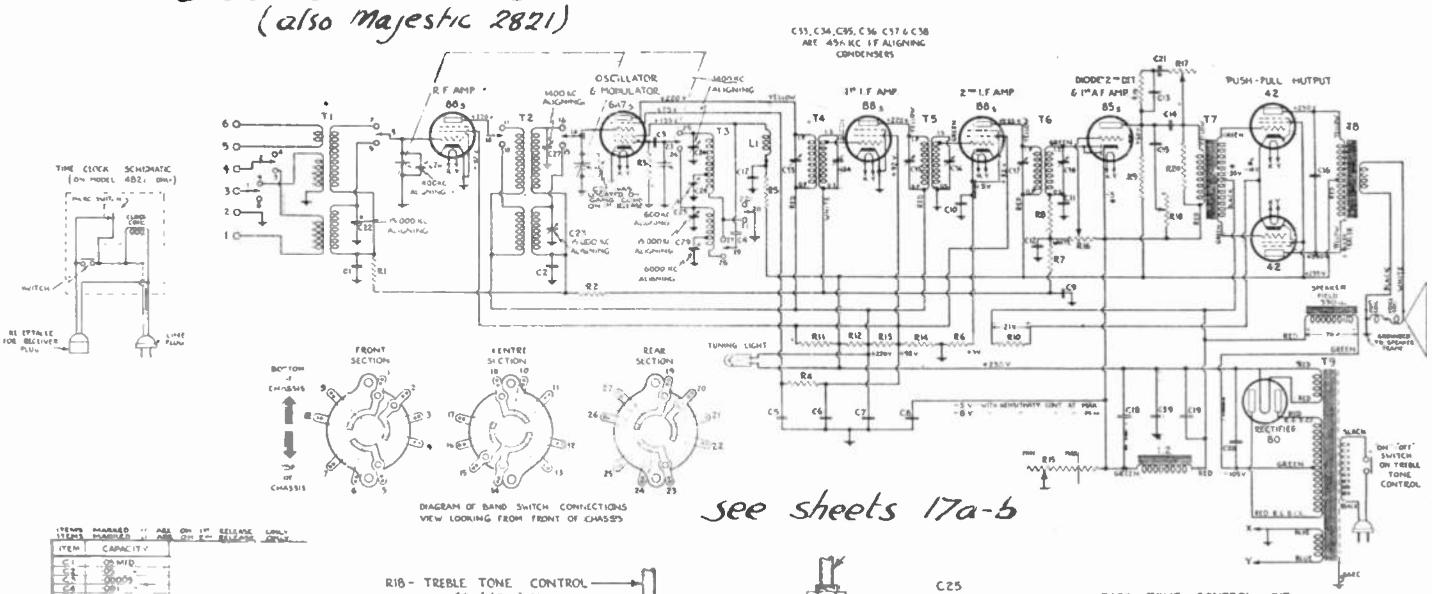
DATA SHEET

— COURTESY ROGERS-21 MAJESTIC CORP. LTD.

World Radio History

Model 4821-2 1934-35 I.F. 456 Kc.

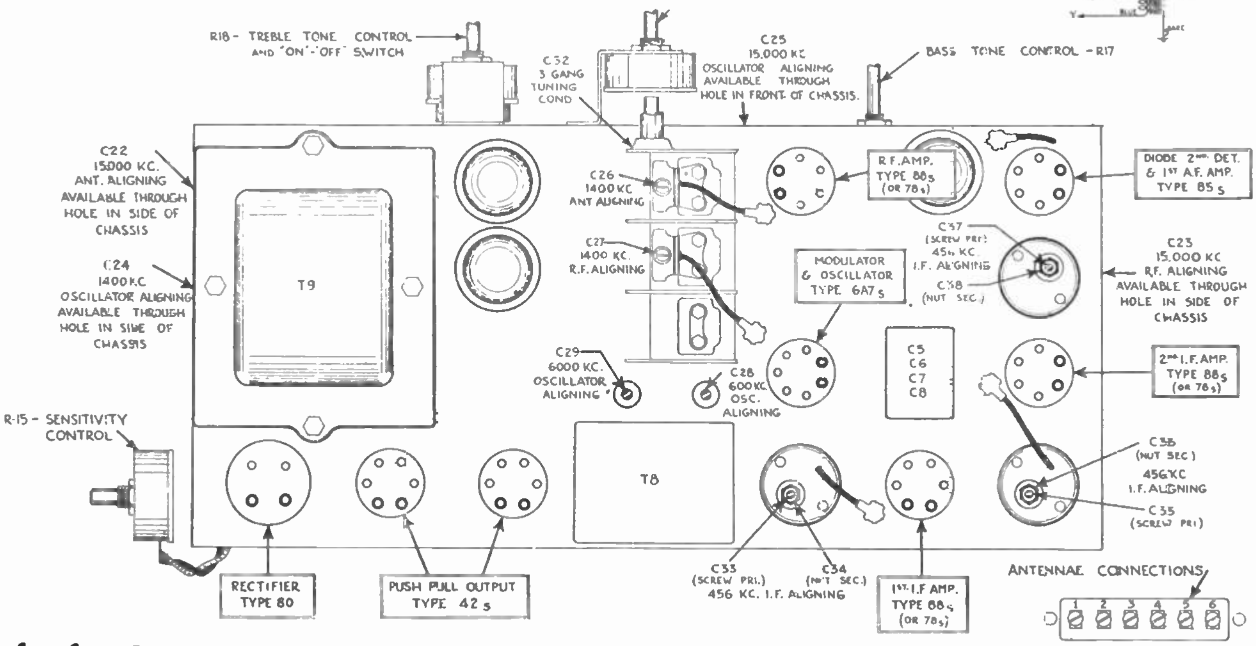
(also Majestic 2821)



see sheets 17a-b

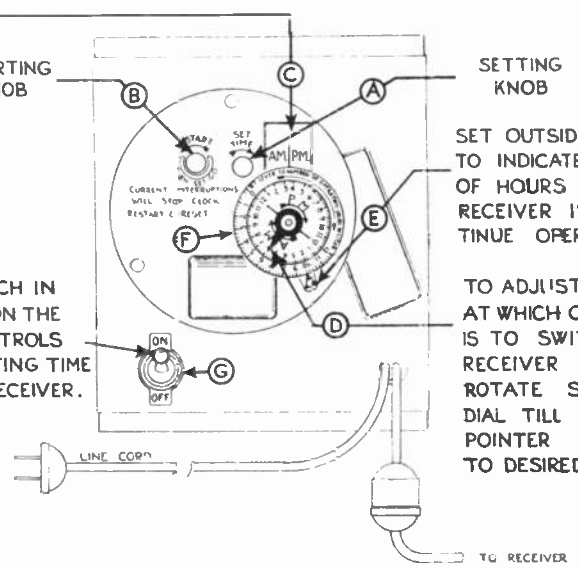
ITEM	CAPACITY
C1	.05 MFD.
C2	.05
C3	.00005
C4	.001
C5	1
C6	.25
C7	.5
C8	1
C9	.05
C10	1
C11	.0002
C12	.0001
C13	.02
C14	.002
C15	.04
C16	[illegible]
C17	[illegible]
C19	[illegible]
C18	[illegible]
C20	[illegible]
C21	1
C22	15000 KC ANT ALIGN
C23	15000 KC RF ALIGN
C24	1400 KC OSC ALIGN
C25	15000 KC OSC ALIGN
C26	1400 KC ANT ALIGN
C27	1400 KC RF ALIGN
C28	600 KC OSC ALIGN
C29	6000 KC OSC ALIGN
C30	
C31	
C32	3 GANG COND
C33	456 KC IF ALIGN
C34	456 KC IF ALIGN
C35	456 KC IF ALIGN
C36	456 KC IF ALIGN
C37	456 KC IF ALIGN
C38	456 KC IF ALIGN
C39	1 MFD
C27	6000 KC RF ALIGN

ITEM	RESISTANCE
R1	100,000 OHMS
R2	470,000
R3	50,000
R4	5,000
R5	40,000
R6	370
R10	350
R11	250,000
R12	5,500
R13	87,000
R14	3,000
R7	500,000
R8	50,000
R9	40,000
R15	70 - 250
R16	250,000
R17	1,000,000
R18	50,000
R19	100,000
R20	500,000



Mod 4822 has no clock

WHEN STARTING CLOCK BE SURE CENTRE POINTER INDICATES A.M. OR P.M. SIDE OF LINE. IF ON WRONG SIDE ADVANCE CLOCK 12 HOURS.



SET OUTSIDE POINTER TO INDICATE NUMBER OF HOURS THAT THE RECEIVER IS TO CONTINUE OPERATING.

WITH SWITCH IN "ON" POSITION THE CLOCK CONTROLS THE OPERATING TIME OF RADIO RECEIVER.

TO ADJUST TIME AT WHICH CLOCK IS TO SWITCH RECEIVER "ON" ROTATE SETTING DIAL TILL CENTER POINTER POINTS TO DESIRED TIME.

for alignment instructions see SHEETS 17a-b

DATA SHEET

PRINTED IN CANADA

— COURTESY ROGERS-22 MAJESTIC CORP. LTD.

World Radio History

Models-R 5525 (Rogers) CRUSADER D5525 (DeForest) M5525 (Majestic)

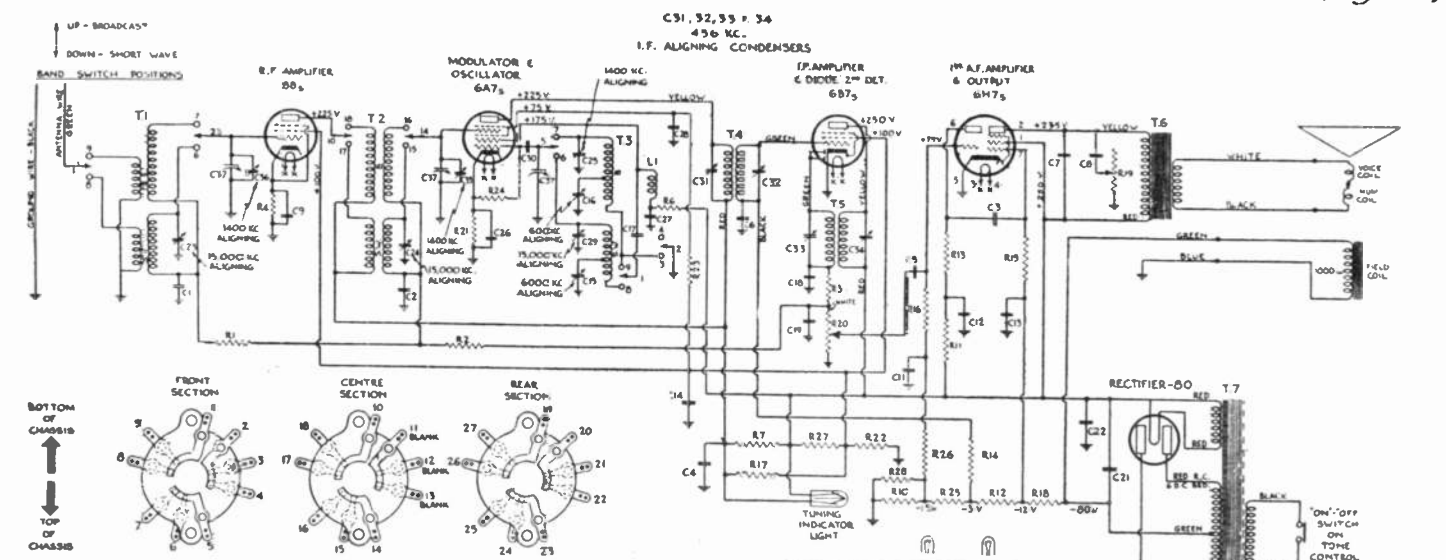
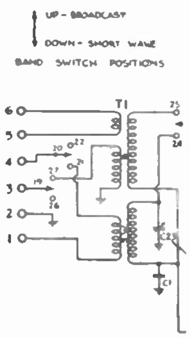
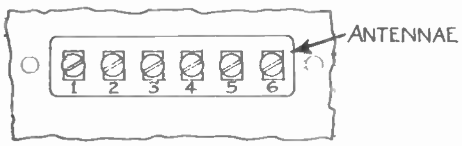


DIAGRAM OF BAND SWITCH CONNECTIONS VIEW LOOKING FROM FRONT OF CHASSIS

ITEM	CAPACITY	LIMITS	RATED WORKING VOLTAGE
C1	.05 MFD.	± [illegible] %	200
C2	.05 "	± [illegible] %	200
C3	.05 "	± [illegible] %	400
C4	.1 "	± [illegible] %	400
C5	.01 "	± [illegible] %	200
C6	.05 "	± [illegible] %	200
C7	.005 "	± [illegible] %	600
C8	.05 "	± [illegible] %	600
C9	.1 "	± [illegible] %	200
C11	.1 "	± [illegible] %	200
C12	.1 "	± [illegible] %	400
C13	.5 "	± [illegible] %	200
C14	.1 "	± [illegible] %	400
C15	6000 KC OSC ALIGN		
C29	15,000 KC OSC ALIGN		
C16	600 KC OSC ALIGN		
C17	.001 MFD	± 10 %	750
C18	.0002 "	± 20 %	750
C19	.0001 "	± 20 %	750
C20			
C21	8.0 "	± [illegible] %	525 (PEAK)
C22	16.0 "	± [illegible] %	410 (PEAK)
C23	15,000 KC ANT ALIGN		
C24	15000 KC RF ALIGN		
C25	1400 KC OSC ALIGN		
C26	.1 MFD	± [illegible] %	200
C27	8.0 MFD	± [illegible] %	450 (PEAK)
C28	.1 "	± [illegible] %	400
C30	.00005	± 10 %	750
C31	456 KC I.F. ALIGNING		
C32	456 KC I.F. ALIGNING		
C33	456 KC I.F. ALIGNING		
C34	456 KC I.F. ALIGNING		
C35	1400 KC R.F. ALIGN		
C36	1400 KC ANT ALIGN		

ITEM	RESISTANCE	REMARKS	PART NO
R1	100,000 OHMS	CARBON	32604
R2	500,000 "	"	40505
R3	50,000 "	"	32618
R4	300 "	"	40503
R6	20,000 "	"	33805
R7	10,000 "	"	33907
R10	25,000 "	"	40504
R11	100,000 "	"	33706
R12	200,000 "	"	33728
R13	500,000 "	"	33709
R14	250,000 "	"	33774
R15	500,000 "	"	33788
R16	000,000 "	"	33709
R17	10,000 "	"	33703
R18	1,000,000 "	"	33907
R19	50,000 "	"	33742
R20	250,000 "	TONE CONTROL	11715
R21	300 "	VOL. CONTROL	11708
R22	10,000 "	CARBON	40503
R23	5,000 "	"	33907
R24	40,000 "	"	33733
R25	45,000 "	"	21057
R26	250,000 "	"	32628
R27	50,000 "	"	33759
R28	60,000 "	"	33767
		"	33908
		"	40506

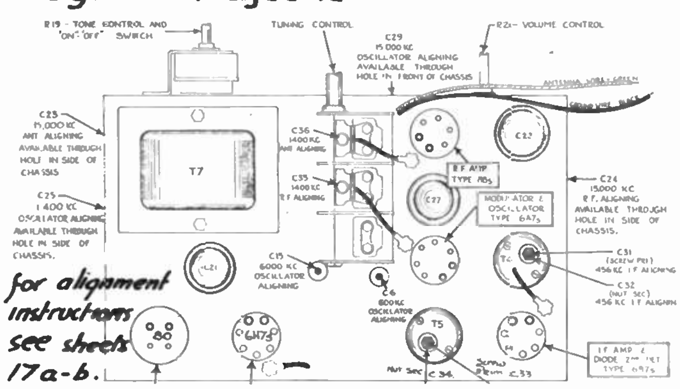




Antenna Connections for DeForest Model D5525 only Otherwise circuit as above.

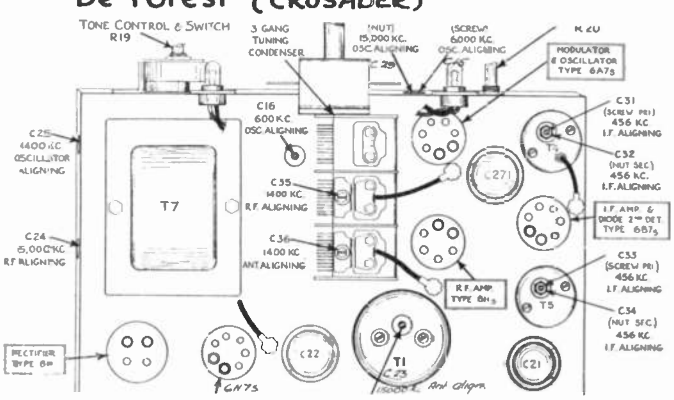
1935. I.F. 456 Kc.

Rogers – Majestic



for alignment instructions see sheets 17a-b.

De Forest (CRUSADER)



DATA SHEET

COURTESY- **ROGERS-23** MAJESTIC CORP. LTD.

World Radio History

Models- R5725-26 *(Rogers)* M5725 *(Majestic)*

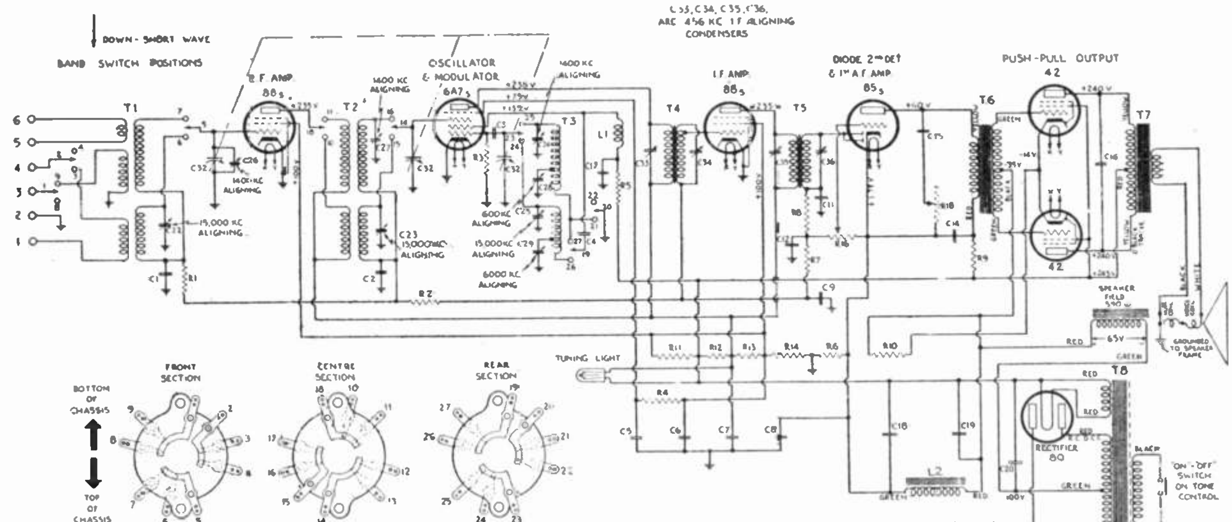
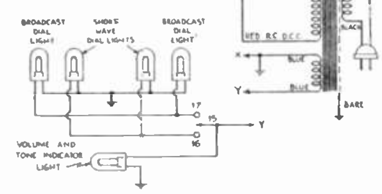
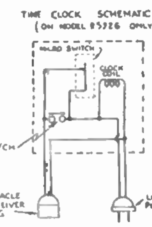


DIAGRAM OF BAND SWITCH CONNECTIONS
VIEW LOOKING FROM FRONT OF CHASSIS





ITEM	CAPACITY	LIMITS	RATED WORKING VOLTAGE	REMARKS	PART NO
C1	.05 MFD	± 10 %	200	TUBULAR	38102
C2	.05 -	± 10 %	200	-	38102
C3	.00005 -	± 10 %	750	MICA	34114
C4	.001 -	± 20 %	750	-	34107
C5	.1 -	± 10 %	300	BLOCK CONDENSER	11923
C6	.25 -	± 10 %	300		
C7	.5 -	± 10 %	300		
C8	.1 -	± 10 %	200		
C9	.05 -	± 10 %	200	TUBULAR	38102
C10	-				
C11	.0002 -	± 20 %	750	MICA	34103
C12	.0001 -	± 20 %	750	-	34124
C14	.25 -	± 10 %	400	TUBULAR	38127
C15	.05 -	± 10 %	400	-	38102
C16	.0015 -	± 20 %	800	TUBULAR OIL IMP	11977
C17	8 -	[illegible] %	500 (PEAK)	DOUBLE DRY ELECTROLYTIC	39003
C19	8 -	[illegible] %	500 (PEAK)		
C18	8 -	[illegible] %	525 (PEAK)	DRY ELECTROLYTIC	39001
C20	8 -	[illegible] %	525 (PEAK)	WET ELECTROLYTIC	39002
C22	15,000 KC ANT ALIGN			IN ANT TRANS ASSY	
C23	15,000 KC R.F. ALIGN			IN R.F. TRANS ASSY	
C24	1400 KC OSC ALIGN			IN OSC COIL ASSY	
C25	15000 KC OSC ALIGN			VARIABLE	4082
C26	1400 KC ANT ALIGN			PART OF GANG COND	
C27	1400 KC R.F. ALIGN			VARIABLE	4082
C28	600 KC OSC ALIGN			-	4036
C29	6000 KC OSC ALIGN			-	4167
C32	3 GANG COND				12209
C33	456 KC I.F. ALIGN			IN 1ST I.F. TRANS	
C34	456 KC I.F. ALIGN			IN 1ST I.F. TRANS	
C35	456 KC I.F. ALIGN			IN 2ND I.F. TRANS	
C36	456 KC I.F. ALIGN			IN 2ND I.F. TRANS	

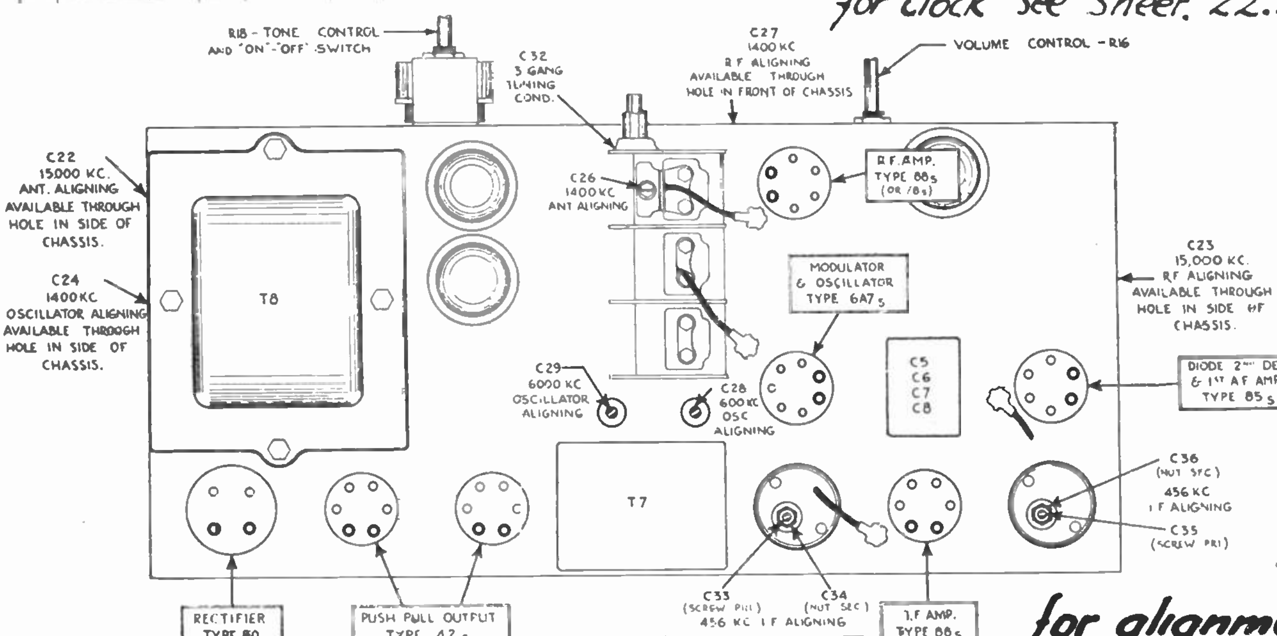
ITEM	DESCRIPTION	PART NO
T1	ANTENNA TRANS ASSY	4077
T2	INTERSTAGE R.F. COIL ASSY	4259
T3	OSCILLATOR COIL ASSY	4260
T4	1ST I.F. TRANS ASSY	4511
T5	2ND I.F. TRANS ASSY	4514
T7	AF PUSH PULL INPUT TRANS ASSY	4381
T8	OUTPUT TRANSFORMER ASSEM	4385
T9	POWER TRANS ASSEMBLY	4387
L1	R.F. CHOKE ASSEMBLY	4136
L2	FILTER CHOKE ASSEMBLY	4391
	SPEAKER ASSEM (MODEL 160)	4075

ITEM	RESISTANCE	LIMITS	WATTS	REMARKS	PART NO
R1	100,000 OHMS	± 15 %	¼ W	CARBON	12604
R2	100,000 -	± 15 %	¼ -	-	12604
R3	50,000 -	± 20 %	½ -	-	11037
R4	5,000 -	± 15 %	½ -	-	11035
R5	40,000 -	± 15 %	½ -	-	33737
R6	45 -	± 10 %	1 -	6 SECTION CANDOHM	2276
R10	330 -	± 10 %	15 -		
R11	20,000 -	± 10 %	1 -		
R12	3,500 -	± 10 %	1 -		
R13	10,000 -	± 10 %	2 -		
R14	9,000 -	± 10 %	15 -		
R7	500,000 -	± 20 %	½ -	CARBON	33709
R8	50,000 -	± 20 %	¼ -	-	32618
R9	40,000 -	± 15 %	1 -		33805
R16	250,000 -			VOLUME CONT	11706
R18	50,000 -			TONE CONT	11715

VOLTAGES SHOWN ARE APPROX. READINGS THAT SHOULD BE OBTAINED BETWEEN POINT WHERE VOLTAGE IS INDICATED AND GROUND (CHASSIS), WITH A 1000 OHMS PER VOLT VOLTMETER USING 250 VOLT RANGE.

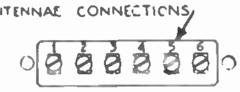
1935 · I.F. 456. Kc.

for clock see Sheet 22.



NOTE - C25 15,000 KC. OSCILLATOR ALIGNING AVAILABLE FROM UNDER SIDE OF CHASSIS.

ANTENNAE CONNECTIONS



for alignment instructions see Sheets 17a-b.

DATA SHEET

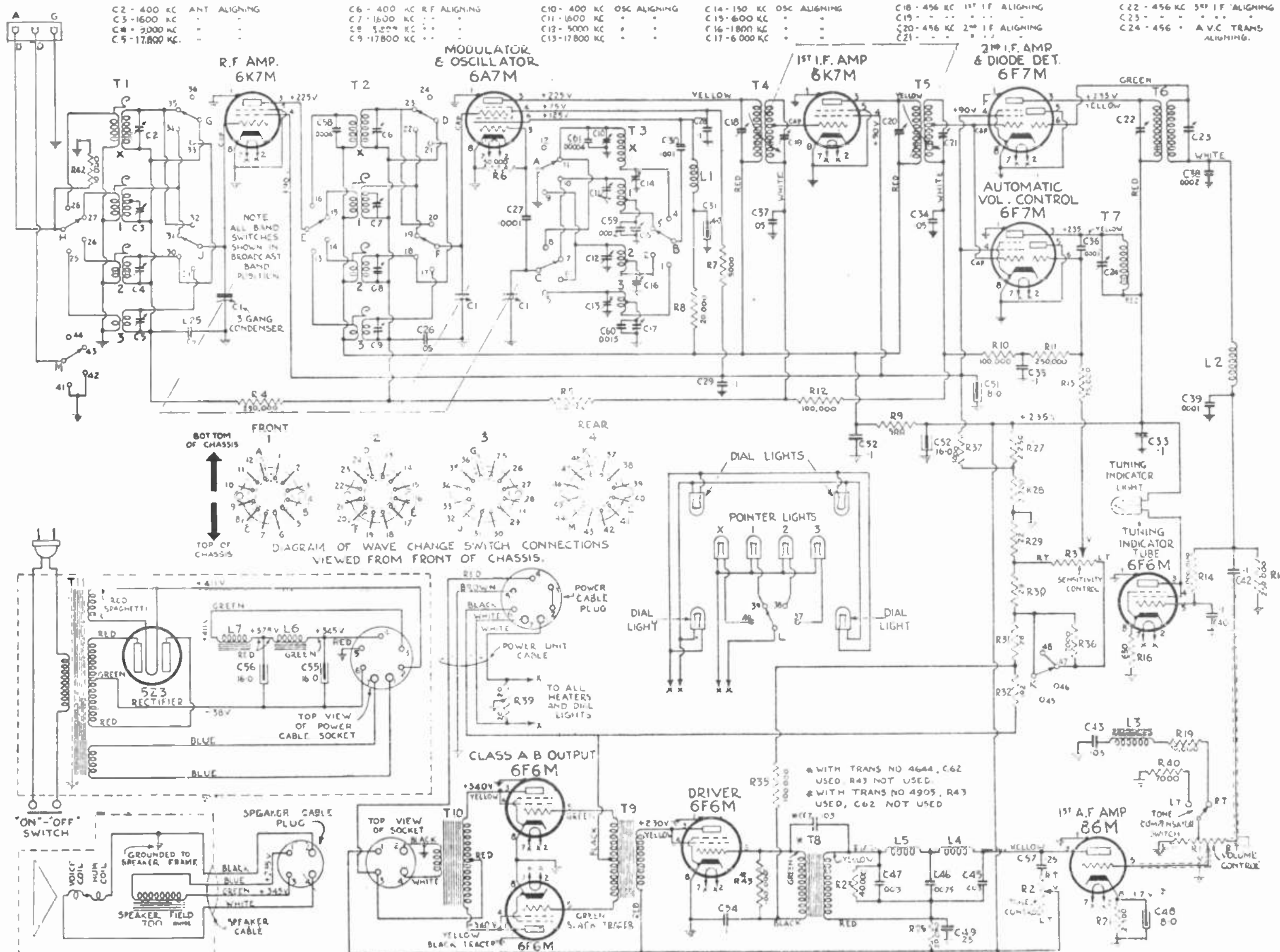
COURTESY- ROGERS-24 MAJESTIC CORP. LTD.

World Radio History

1935-36

THIS CIRCUIT USED IN –

DE FOREST CROSLEY "BUCKINGHAM"



VOLTAGES SHOWN ARE APPROX. READINGS THAT SHOULD BE OBTAINED WITH A 1000 OHM PER VOLT VOLTMETER ON 300 V RANGE BETWEEN POINTS WHERE VOLTAGE IS INDICATED AND GROUND (CHASSIS) WITH SENSITIVITY CONTROL SET FOR MAX. SENSITIVITY (NO SIGNAL INPUT) LINE VOLTAGE 115 VOLTS
NOTE — FIXED RESISTANCES HAVE VALUES SHOWN IN OHMS. FIXED CONDENSERS HAVE VALUES SHOWN IN MICROFARADS

ALIGNMENT INSTRUCTIONS ON DATA SHEETS - 11 & 12

DATA SHEET

COURTESY – ROGERS-MAJESTIC CO. LTD.

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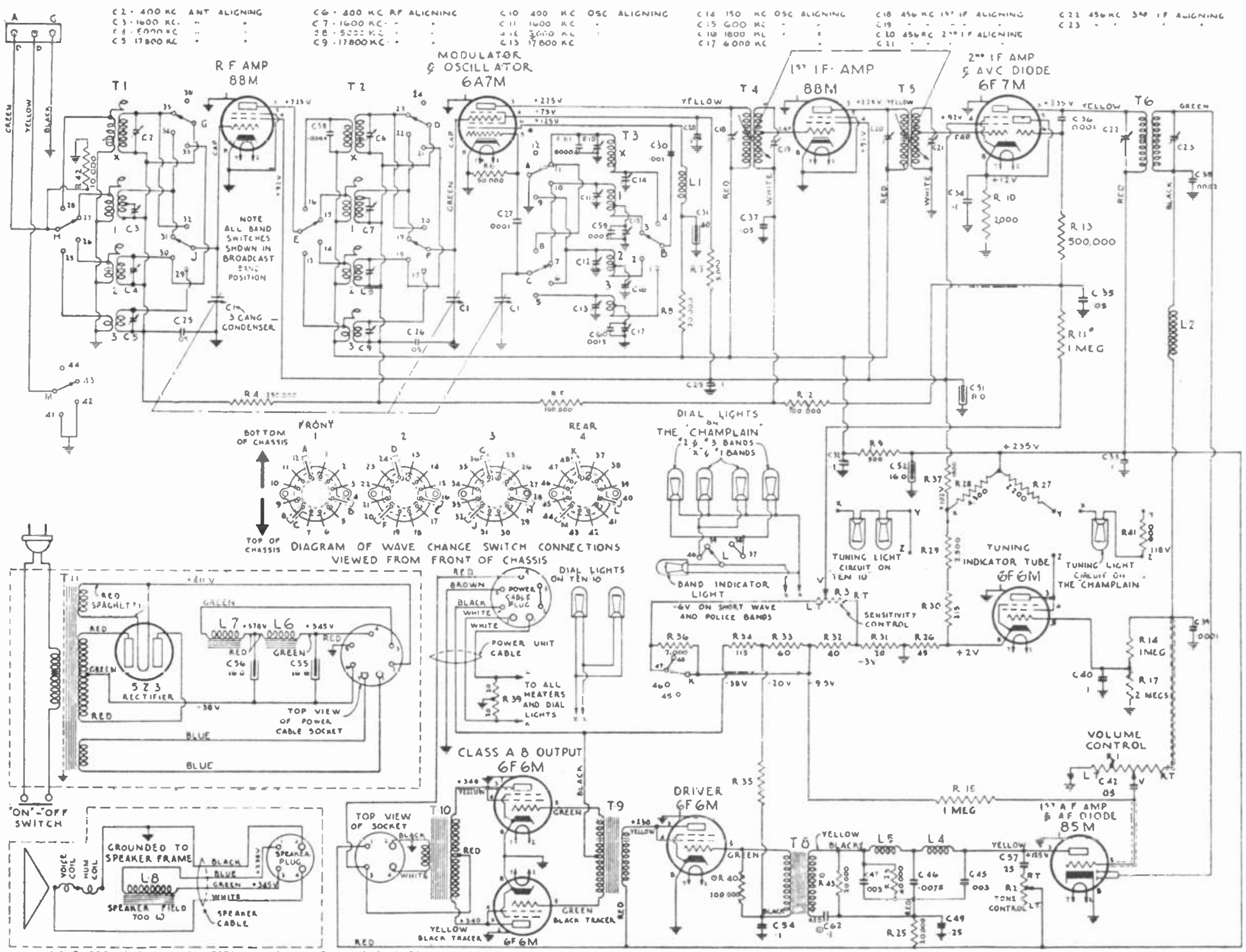
World Radio History

1935-36

THIS CIRCUIT USED IN -

MAJESTIC - "CHAMPLAIN"

ROGERS - "10-10"



VOLTAGES SHOWN ARE APPROX READINGS THAT SHOULD BE OBTAINED WITH A 1000 OHMS PER VOLT VOLTMETER ON 300V RANGE BETWEEN POINTS WHERE VOLTAGE IS INDICATED AND GROUND (CHASSIS) WITH SENSITIVITY CONTROL SET FOR MAX SENSITIVITY (NO SIGNAL INPUT). LINE VOLTAGE - 115 VOLTS.

NOTE - FIXED RESISTANCES HAVE VALUES SHOWN IN OHMS. FIXED CONDENSERS HAVE VALUES SHOWN IN MICROFARADS

⊙-ON FIRST RELEASE R 40 IS USED, R 43 & C62 NOT USED — ON SECOND RELEASE R 43 & C62 ARE USED, R 40 IS NOT USED—

ALIGNMENT INSTRUCTIONS ON DATA SHEETS-11&12.

DATA SHEET

COURTESY

ROGERS-MAJESTIC-2

CO. LTD.

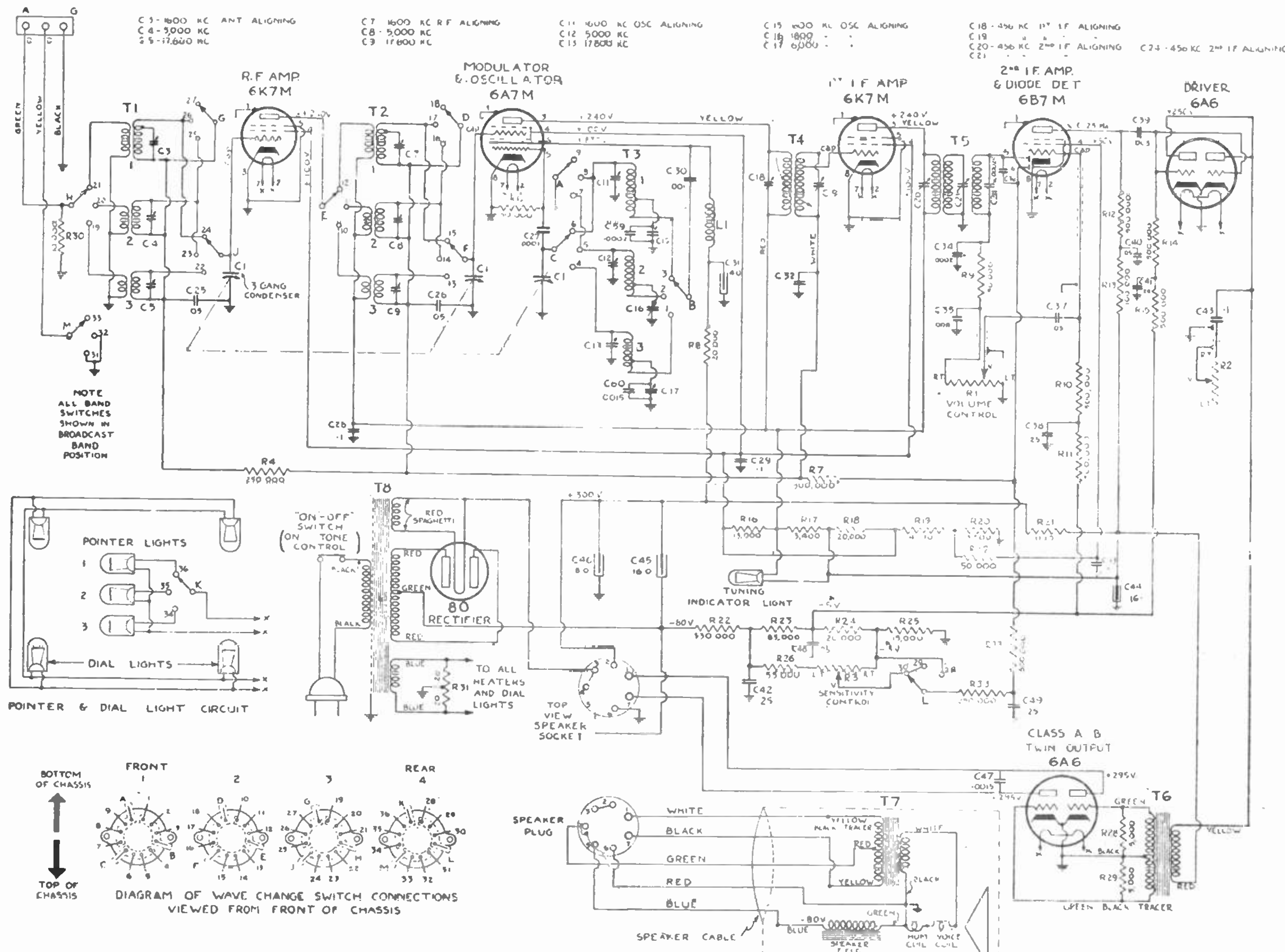
PRINTED IN CANADA

World Radio History

1935-36

THIS CIRCUIT USED IN -

DE FOREST CROSLEY DUCHESS AND EMPRESS



VOLTAGES SHOWN ARE APPROX READINGS THAT SHOULD BE OBTAINED WITH A 1000 OHMS PER VOLT VOLTMETER ON 300 V RANGE, BETWEEN POINTS WHERE VOLTAGE IS INDICATED AND GROUND (CHASSIS) WITH SENSITIVITY CONTROL SET FOR MAX SENSITIVITY (NO SIGNAL INPUT) LINE VOLTAGE 115 VOLTS.
NOTE — FIXED RESISTORS HAVE VALUES SHOWN IN OHMS FIXED CONDENSERS HAVE VALUES SHOWN IN MICROFARADS
VOLTAGES MARKED • CANNOT BE MEASURED WITH AN ORDINARY VOLTMETER

ALIGNMENT INSTRUCTIONS ON DATA SHEETS 11 & 12

DATA SHEET ROGERS-MAJESTIC-3

COURTESY - ROGERS-MAJESTIC CO. LTD.

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World Radio History

1935-36

THIS CIRCUIT USED IN -

MAJESTIC - "FRONTENAC"

ROGERS - "10-85"

COURTESY -

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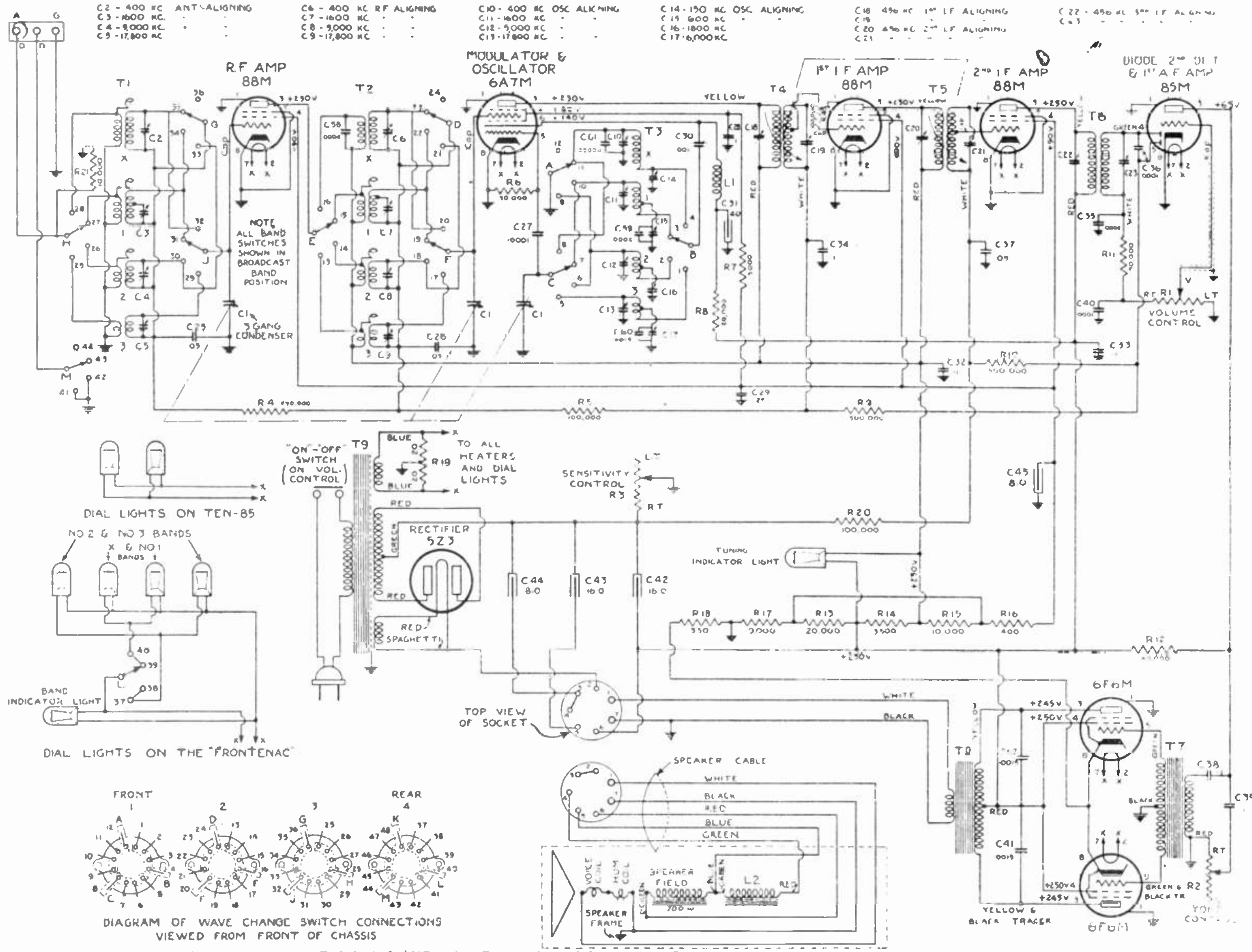
DATA SHEET - 4



VOLTAGES SHOWN ARE APPROX. READINGS THAT SHOULD BE OBTAINED WITH A 1000 OHMS PER VOLT VOLTMETER ON 300V RANGE BETWEEN POINTS WHERE VOLTAGE IS INDICATED AND GROUND (CHASSIS) WITH SENSITIVITY CONTROL SET FOR MAX. SENSITIVITY (NO SIGNAL INPUT) LINE VOLTAGE 115 VOLTS

NOTE - FIXED RESISTANCES HAVE VALUES SHOWN IN OHMS. FIXED CONDENSERS HAVE VALUES SHOWN IN MICROFARADS.

ALIGNMENT INSTRUCTIONS ON DATA SHEETS. 11 & 12

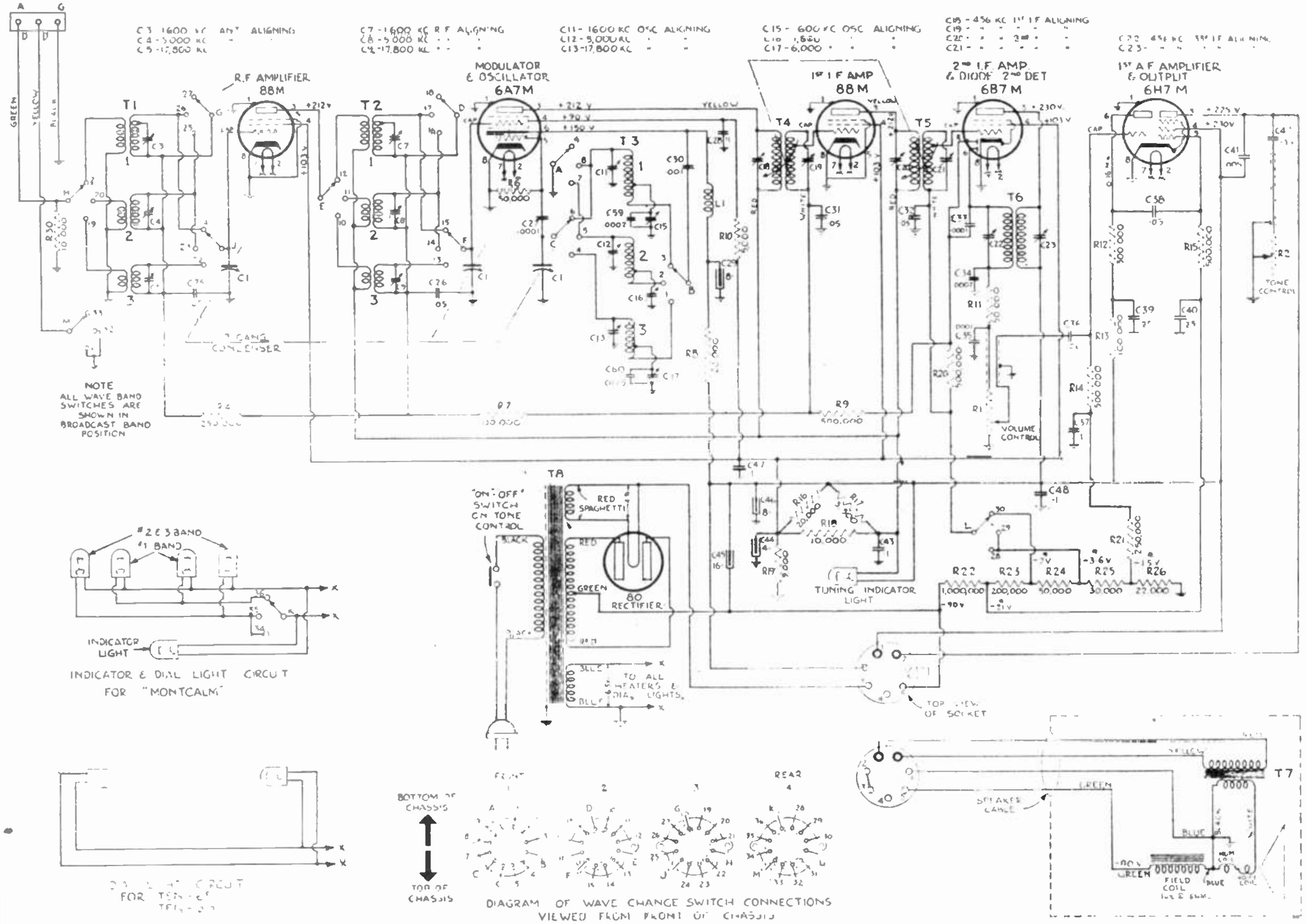
World Radio History

1935-36

THIS CIRCUIT USED IN -

MAJESTIC - "MONTCALM"

ROGERS - "10-65" AND "10-66"



VOLTAGES SHOWN ARE APPROX READINGS THAT SHOULD BE OBTAINED WITH A 1000 OHMS PER VOLT VOLTMETER ON 300 V RANGE BETWEEN POINTS WHERE VOLTAGE IS INDICATED AND GROUND (CHASSIS) LINE VOLTAGE 115 V (NO SIGNAL INPUT) VOLTAGES MARKED • CANNOT BE MEASURED WITH AN ORDINARY VOLTMETER.

NOTE - FIXED RESISTORS HAVE VALUES SHOWN IN OHMS FIXED CONDENSERS HAVE VALUES SHOWN IN MICROFARADS.

ALIGNMENT INSTRUCTIONS ON DATA SHEETS. 11 & 12

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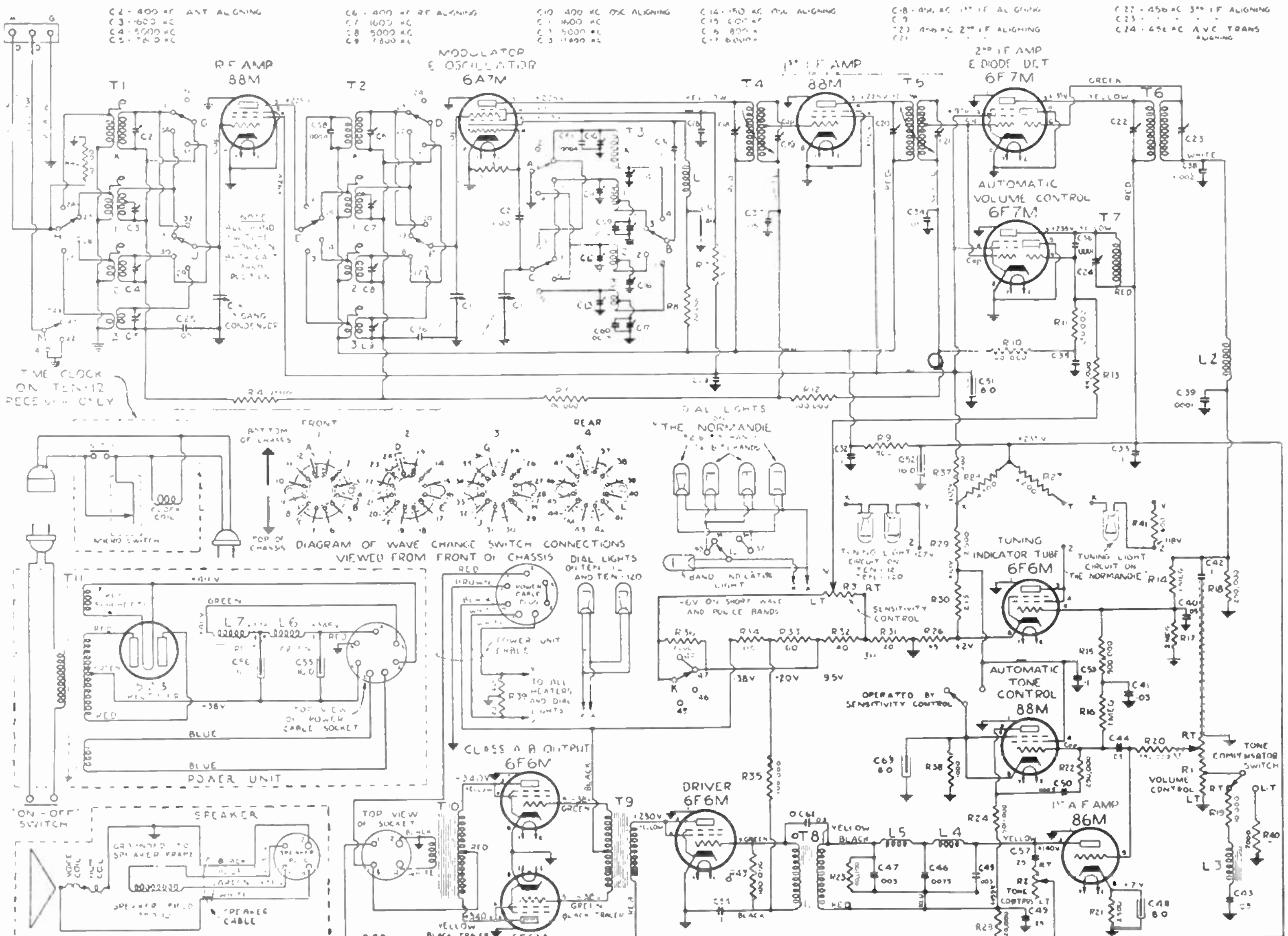
DATA SHEET

World Radio History

1935-36

THIS CIRCUIT USED IN -

MAJESTIC - "NORMANDIE"
ROGERS - "10-12" AND "10-120"



VOLTAGES SHOWN ARE AVERAGE READINGS THAT SHOULD BE OBTAINED WITH A 1000 OHMS PER VOLT VOLTMETER ON 300V RANGE BETWEEN POINTS WHERE VOLTAGE IS INDICATED AND GROUND (CHASSIS) WITH SENSITIVITY CONTROL SET FOR MAX SENSITIVITY (NO SIGNAL INPUT) LINE VOLTAGE - 115 VOLTS

NOTE - FIXED RESISTANCES HAVE VALUES SHOWN IN OHMS FIXED CONDENSERS HAVE VALUES SHOWN IN MICROFARADS.

○ WITH TRANS NO. 4590 & 4644 C62 USED R43 NOT USED. WITH TRANS NO 4355, R43 USED, C62 NOT USED

ALIGNMENT INSTRUCTIONS ON DATA SHEETS. 11 & 12.

DATA SHEET ROGERS-MAJESTIC-6

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World Radio History

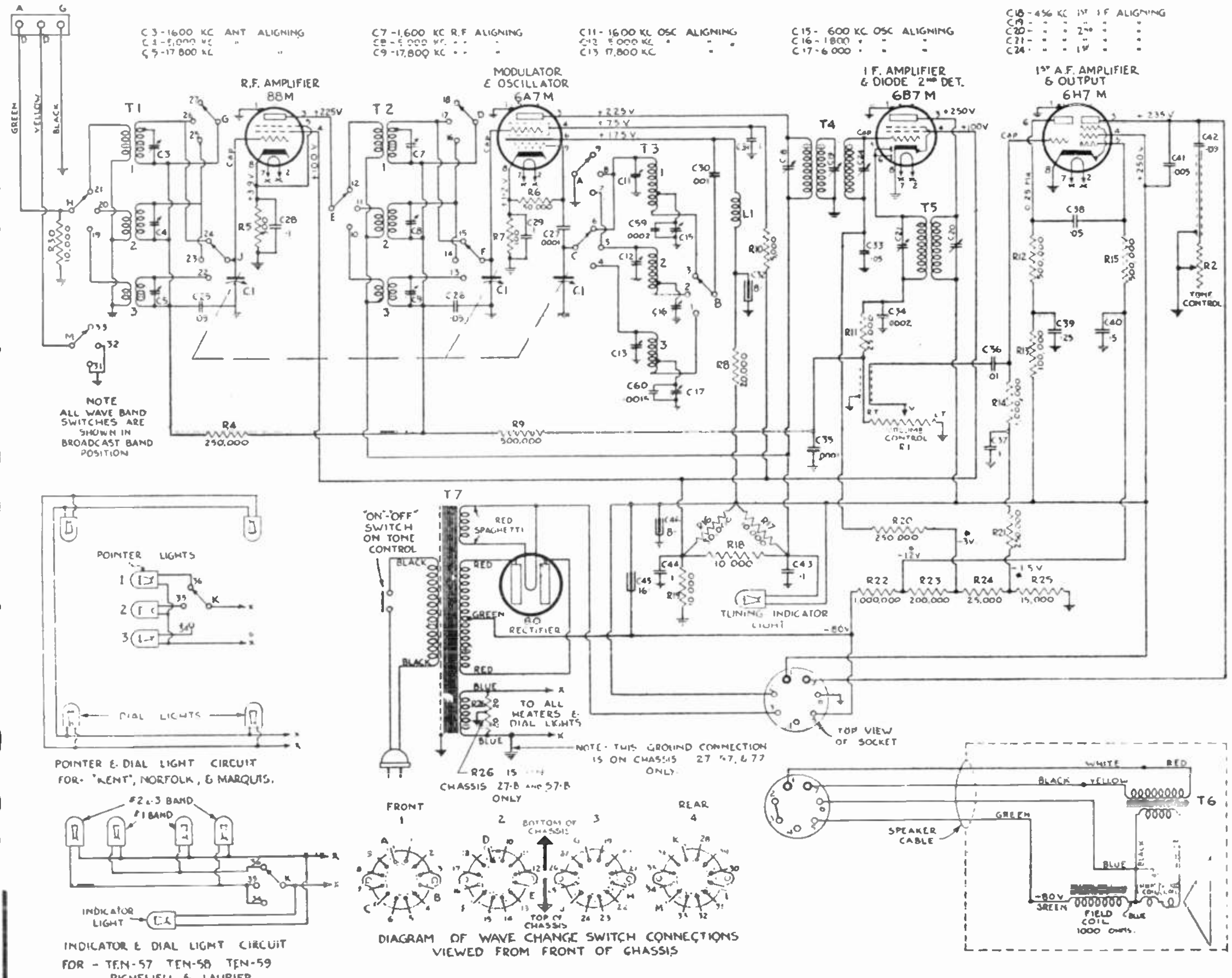
1935-36

THIS CIRCUIT USED IN:-

DE FOREST CROSLEY. "KENT" "MARQUIS"

MAJESTIC. "RICHELIEU" "LAURIER"

ROGERS. "10-57" "10-58" "10-59"



VOLTAGES SHOWN ARE APPROX READINGS THAT SHOULD BE OBTAINED WITH A 1000 OHMS PER. VOLT VOLTMETER ON 300 V RANGE, BETWEEN POINTS WHERE VOLTAGE IS INDICATED AND GROUND (CHASSIS) LINE VOLTAGE 115 V (NO SIGNAL INPUT)

NOTE - FIXED RESISTORS HAVE VALUES SHOWN IN OHMS. FIXED CONDENSERS HAVE VALUES SHOWN IN MICROFARADS

VOLTAGES MARKED * CANNOT BE MEASURED WITH AN ORDINARY VOLTMETER

ALIGNMENT INSTRUCTIONS ON DATA SHEETS. 11 & 12

DATA SHEET ROGERS-MAJESTIC-7

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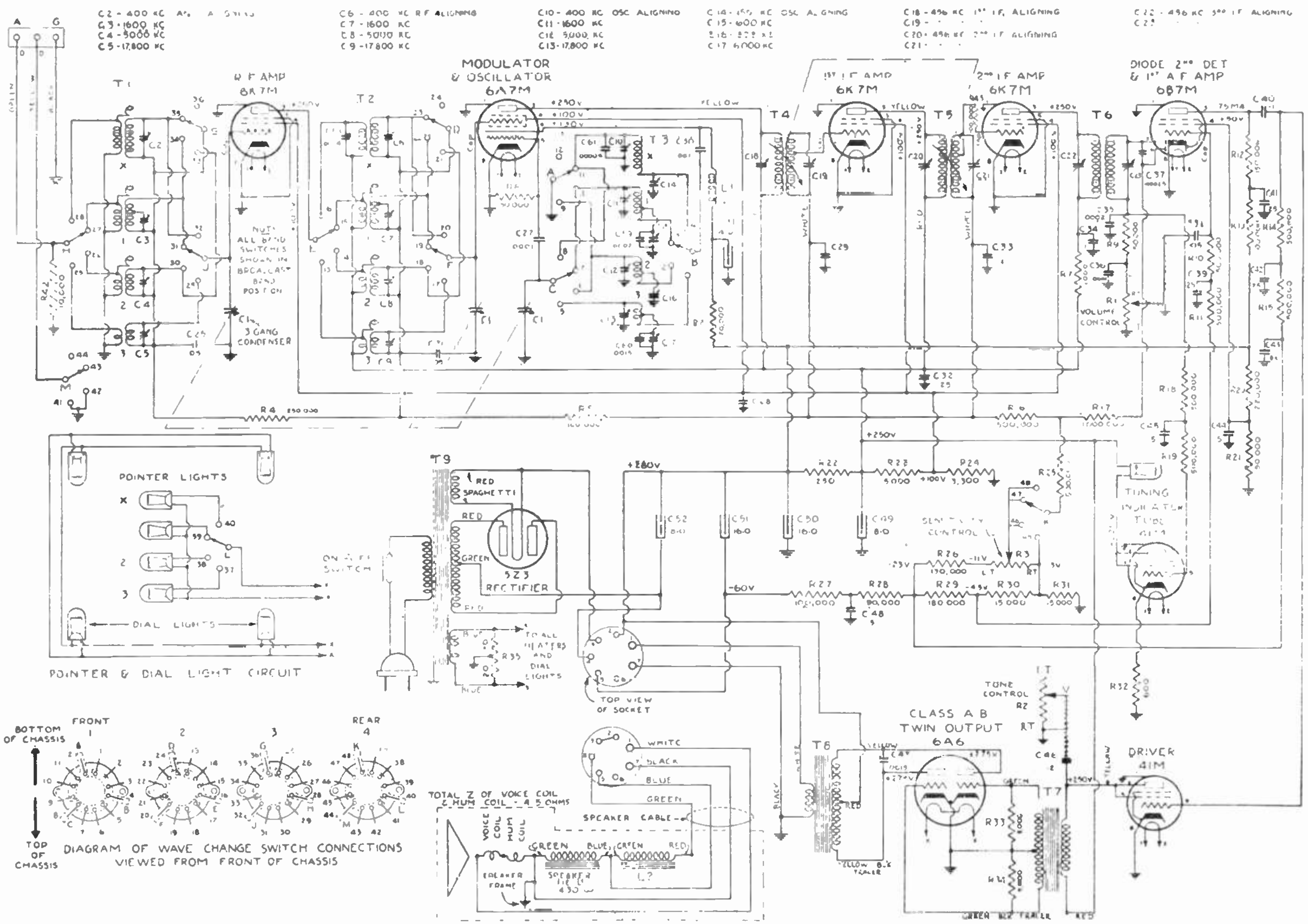
World Radio History

1935-36
THIS CIRCUIT USED IN
DE FOREST CROSLEY "WALES"

DATA SHEET ROGERS-MAJESTIC-8
COURTESY- ROGERS-MAJESTIC CO LTD.
PRINTED IN CANADA



NOTE
VOLTAGES SHOWN ARE APPROX READINGS THAT SHOULD BE OBTAINED WITH A 1000 OHMS PER VOLT VOLTMETER ON 500 V RANGE, BETWEEN POINTS WHERE VOLTAGE IS INDICATED AND GROUND (CHASSIS) WITH SENSITIVITY CONTROL SET FOR MAX. SENSITIVITY (NO SIGNAL INPUT) LINE VOLTAGE 115 VOLTS
FIXED RESISTANCES HAVE VALUES SHOWN IN OHMS. FIXED CONDENSERS HAVE VALUES SHOWN IN MICROFARADS.

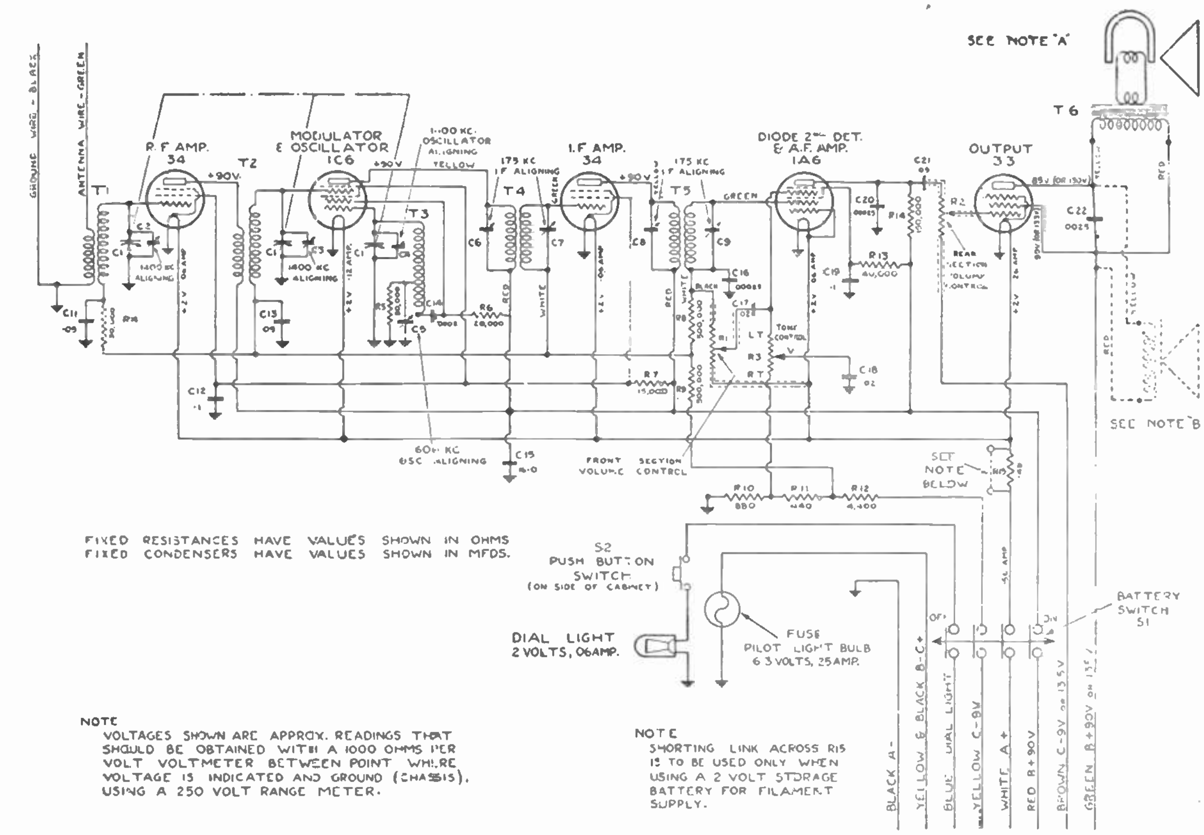
ALIGNMENT INSTRUCTIONS ON DATA SHEETS 11 & 12

World Radio History

1935-36

THIS CIRCUIT USED IN—

DE FOREST CROSLEY
"B510" AND "B515"
MAJESTIC
"HURON" AND "CHIPPEWA"
ROGERS
"ETON" AND "HARROW"
BATTERY-OPERATED



FIXED RESISTANCES HAVE VALUES SHOWN IN OHMS
FIXED CONDENSERS HAVE VALUES SHOWN IN MFDS.

NOTE
VOLTAGES SHOWN ARE APPROX. READINGS THAT SHOULD BE OBTAINED WITH A 1000 OHMS PER VOLT VOLTMETER BETWEEN POINT WHERE VOLTAGE IS INDICATED AND GROUND (CHASSIS), USING A 250 VOLT RANGE METER.

NOTE
SHORTING LINK ACROSS R15 IS TO BE USED ONLY WHEN USING A 2 VOLT STORAGE BATTERY FOR FILAMENT SUPPLY.

ALIGNMENT INSTRUCTIONS, LAYOUT, ETC. ON DATA SHEET 14

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World Radio History

1935-36

THIS CIRCUIT USED IN —

DE FOREST CROSLEY
"CAMBRIDGE" AND "OXFORD"
MAJESTIC
"ALGONQUIN" AND "IROQUOIS"
ROGERS
"B7/30" AND "B7/35"
BATTERY - OPERATED

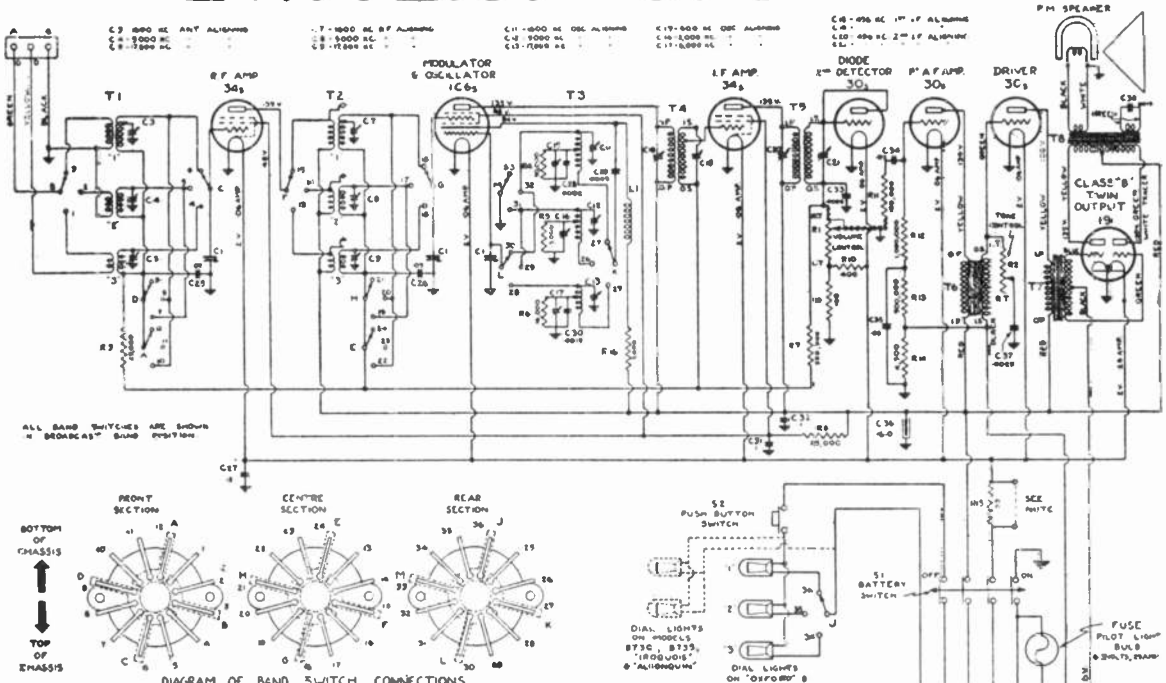

DIAGRAM OF BAND SWITCH CONNECTIONS
VIEW LOOKING FROM FRONT OF CHASSIS

NOTE
VOLTAGES SHOWN ARE APPROX READINGS THAT SHOULD BE OBTAINED WITH A 1000 OHMS PER VOLT VOLTMETER BETWEEN POINT WHERE VOLTAGE IS INDICATED AND GROUND (CHASSIS), USING A 250 VOLT RANGE METER.

FIXED RESISTANCES HAVE VALUES SHOWN IN OHMS
FIXED CONDENSERS HAVE VALUES SHOWN IN MFDS.

NOTE
SHORTING LINK ACROSS R15 IS TO BE USED ONLY WHEN USING A 2 VOLT STORAGE BATTERY FOR FILAMENT SUPPLY

ALIGNMENT INSTRUCTIONS, LAYOUT, ETC. ON DATA SHEETS. 13&14.

COURTESY- ROGERS-MAJESTIC CO. LTD.

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World Radio History

ALIGNMENT INSTRUCTIONS, ETC. FOR ALL 1935-36 DE FOREST CROSLEY, MAJESTIC AND ROGERS A.C. RECEIVERS.

PREFACE

Re-alignment of a radio receiver may be in order periodically. Replacement of R. F. and I. F. transformers or by-pass condensers in associated circuits, should always be followed by complete re-alignment. Tube changes may also be followed by re-alignment, if it is required that the receiver be kept up to maximum performance. Irrespective of the type of receiver, re-alignment should only be attempted where proper equipment is available, to ensure that the various adjustments are made in accordance with the following instructions.

In the past, where the I. F. transformer coupling was fixed, re-alignment, without the use of special equipment, has been practiced with more or less satisfactory results. Invariably, where such adjustments have been made without the use of a signal generator and output meter, relying on a station signal and the ear only, the results have been far from satisfactory.

With the introduction of special I. F. systems, such as those encountered in the models described, alignment by ear is not only impossible, but also disastrous to receiver performance. Improper alignment will render expanding I. F. amplifiers inoperative, so far as the high fidelity expansion process is concerned, and make impossible the attainment of high selectivity in the selective position. *It is, therefore, imperative that the equipment specified be used when re-aligning receivers. Of equal importance is the necessity of strict adherence to the routine of aligning adjustments given in the schedule which follows.*

EQUIPMENT

A list of equipment is supplied and although definite specification as to the manufacturer is not gi... , the recommendation is made that only dependable equipment, of a reliable manufacturer, be used.

The list of equipment is in two parts; (A) "Essential Equipment" and (B) "Optional Equipment." Wherever possible the equipment under (B) should be available for use. Such equipment is used in the production testing of these receivers and it follows that service adjustments if they are to equal the original standard, should be made with similar equipment.

(a) ESSENTIAL EQUIPMENT

1. A satisfactory aligning wrench and screw-driver such as Part No. 32702.
2. An output meter of the rectifier type, with several ranges permitting its use with receivers of a type other than those under discussion. Two ranges, 0-2 volt and 0-5 volts will generally be adequate.
3. A signal generator or service oscillator, capable of supplying a modulated signal at 150, 400, 456, 600, 1,600, 1,800, 5,000, 6,000 and 17,800 kc/s. The signal generator frequency should be variable at all the above frequencies and *must have a good variable attenuator or output control.* If the signal generator is to be used with the oscillograph suggested under (B), it should be equipped for connection to the Frequency Modulator and should be arranged so that the audio frequency modulation may be cut out.
4. A non-inductive, 400 ohm 1 watt resistor (filament type), to be used as police and short-wave band dummy antenna. Part No. 32608.
5. A .0002 mfd. midget mica condenser for use as a dummy antenna when aligning at broadcast frequencies and for "X" band.
6. A .05 mfd. paper condenser (400 volt) for use during I. F. alignment.
7. A .01 mfd. paper condenser (400 volt) with short leads and clips to short osc. section of gang condenser during I. F. alignment.

(b) OPTIONAL EQUIPMENT

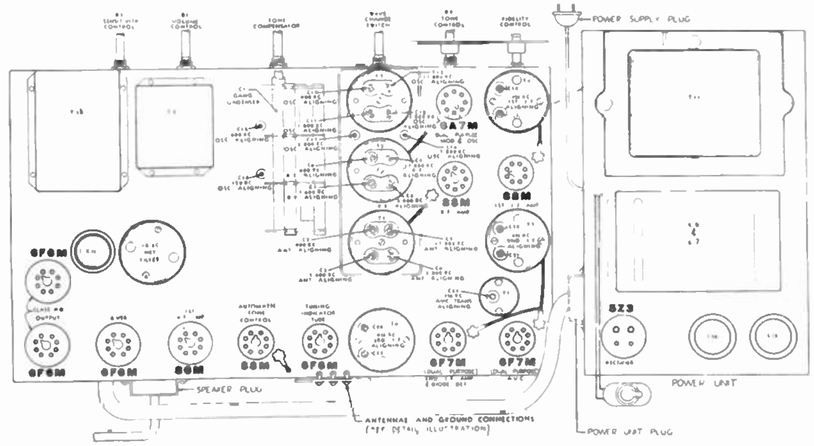
The following equipment can be used to advantage where it is available. It permits visual examination of the I. F. alignment and enables adjustment of the I. F. stages so that expansion and contraction of the selectivity curve is symmetrical. This expansion and contraction as explained in detail elsewhere is accomplished through a mechanical variation of the coupling between primary and secondary windings of one or more of the I. F. transformers. Details of operation of the oscillograph and associated equipment are invariably supplied by the manufacturers of such equipment and will not be dealt with here.

1. A Cathode-Ray Oscillograph which should employ a built-in "vertical" amplifier and linear sweep and synchronizing circuits.
2. A Frequency Modulator.
3. A signal generator as discussed under Section (A) 3.

Some manufacturers of the foregoing equipment present it in the form of a single or two unit assembly. The choice of single or multi-unit equipment is entirely a matter of personal preference. (Prices of any of the above equipment sent on application.

PROCEDURE OF ALIGNMENT

With the equipment available, the routine to be followed becomes of first importance. Before attempting alignment, carefully read over the following procedure to fix in mind the order in which adjustments are made. Reference should be made to the top view of chassis layout for location of the various aligning points mentioned. Always remove the chassis from the cabinet during alignment.



TYPICAL LAYOUT FOR ALL 1935-36 DE FOREST CROSLEY, MAJESTIC AND ROGERS A.C. RECEIVERS. ALIGNING POSITIONS SHOWN ALSO.

I. F. STAGES

(1) Connect an output meter of suitable range directly across the voice coil terminals of the speaker.

(2) Connect the .01 mfd. by-pass condenser across the oscillator section of the gang condenser C1.

(3) Connect the output lead of the signal generator to the control grid of the type 6A7M tube through the .05 mfd. condenser. Allow the control grid clip to remain in position. Wave change switch must be in "broadcast" position and gang condenser at minimum capacity (all out).

(4) Adjust the receiver "Fidelity" control to "normal" position. *This is very important.* This is the contracted or maximum selectivity position.

(5) With receiver and signal generator "on", adjust signal generator to exactly 456 kc/s. Adjust receiver sensitivity and volume controls to maximum and generator output to give a low reading on output meter. (See Note X).

(6) (a) Commencing at the secondary of the diode stage I. F. transformer and working progressively backward to the output of the 6A7M stage, align condensers C23, C22, C21, C20, C19 and C18 in that order for maximum increase in reading of output meter. Carefully recheck adjustments until further adjustment fails to improve alignment.
(b) In receivers having a separate A. V. C. system, the A. V. C. transformer trimmer C24, should be adjusted for minimum output.

(7) Adjust receiver "Fidelity" control full counter-clockwise to the "High Fidelity" position. With the control in this position the receiver will be in the "expanded" or least selective condition.

(8) Adjust generator output to a low level and gradually tune it upwards in frequency until a peak is found, which should appear at approximately 463.5 kc/s. (or + 7.5 kc/s.). Holding the generator output constant, note carefully the exact output meter reading.

(9) Still holding the generator output constant, slowly tune the generator lower in frequency, to locate a second peak which should appear at approximately 448.5 kc/s. (or — 7.5 kc/s.). If it is impossible to determine the 7.5 kc. interval exactly, it is important that these two measurements be made at exactly the same frequency interval above and below 456 kcs., otherwise symmetry cannot be obtained.

(10) Upon locating the second peak (and if the original adjustment has been properly made) it should be found that the reading of the output meter is approximately the same value as that noted at 463.5 kc/s. Small variations in the order of plus or minus 5% are permissable. If the two readings agree within the limits given, it may be considered that proper alignment has been reached and that further adjustment of aligning condensers is unnecessary. Following this, other alignment can be carried out.

(10a) If, however, it is found that the output meter readings do not agree within a reasonable

CONTINUED ON DATA SHEET -12

DATA SHEET ROGERS-MAJESTIC-11

COURTESY-

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World Radio History

ALIGNMENT INSTRUCTIONS, ETC. FOR DE FOREST CROSLEY, MAJESTIC AND ROGERS 1935-36 A.C. RECEIVERS.

CONTINUED FROM DATA SHEET 11

amount, further adjustment will be in order. First try further aligning adjustments as outlined under section 4, 5 and 6 and rechecking as per sections 7, 8, 9 and 10 *with the coupling in the selective position.* Should this fail to produce results, locate the peak at which the lower output reading is obtained and try to increase this by carefully adjusting C, and C of the diode stage I. F. transformer. As this stage peaks rather broadly, it is possible that slight mis-alignment may be encountered which would result in the condition discussed under section (10a). *Do not attempt to re-align any of the 1st or 2nd I. F. trimmers with the coupling in the high fidelity or expanded position.*

Where an oscillograph and frequency modulator is available, it is possible to observe visually on the screen of the cathode ray tube the actual selectivity curve of the I. F. stages under "normal" (contracted) and "high fidelity" (expanded) conditions and to watch the change in this curve as the "Fidelity" (or selectivity) control is adjusted.

The ability to visualize this change permits precise adjustment of the diode stage aligning condensers so that symmetrical expansion of the I. F. selectivity curve takes place as the "Fidelity" control is rotated from the normal towards the high fidelity position. Most satisfactory results will generally be obtained by first aligning by standard method using output meter, and then using the oscillograph to "shape" the selectivity curve by adjustment of the diode trimmers.

Details of the operation of the cathode ray oscillograph will not be given here as they are usually supplied by the manufacturer of such equipment.

A routine covering the application of this device to the I. F. adjustments is, however, of value. The routine is as follows:

(1) Complete alignment of all I. F. stages in accordance with sections 1 to 10 inclusive of section headed "I. F. Stages."

(2) Connect output of signal generator to the control grid cap of the 6A7M (Osc.-Mod.) tube through a .05 mfd. condenser. Allow grid clip to remain in position, band switch being in the broadcast position. Tune oscillator to sweep I. F. at 456 kc/s.

(3) Connect input terminals of vertical amplifier (of cathode ray oscillograph) to the contact arm and grounded terminals of receiver volume control.

(4) Place receiver, oscillograph generator and frequency modulator in operation. Adjust receiver volume control to maximum. Adjust "Fidelity" control to normal position. Synchonize oscillograph pattern in center of screen. Adjust vertical and horizontal amplifier gain controls for reasonable amplitude and width.

(5) Observe the wave form projected on the screen, noting any irregularities or departures from a normal pattern. If irregularities are present, carefully check adjustment of I. F. aligning condensers, particularly those associated with the diode stage transformer.

(6) Adjust "Fidelity" control slowly to the full counter clockwise position (expanded) checking oscillograph pattern closely to ensure that expansion is taking place symmetrically. If a lop-sided pattern develops, it is due to mis-alignment of the diode transformer. Correct by adjusting diode aligning condensers to produce symmetrical pattern.

(7) Recheck pattern at contracted position (normal). This completes I. F. alignment.

R. F. AND OSC. STAGES (STANDARD BROADCAST BAND)

(1) Connect the generator output to antenna and ground terminals "A" and "G" with the .0002 mfd. condenser right at terminal panel. Ground receiver and generator.

(2) Connect output meter across speaker voice coil terminals.

(3) Adjust wave-band switch for standard band operation.

(4) Set receiver volume and sensitivity controls at maximum. Adjust fidelity control to normal position.

(5) Set receiver dial to log exactly 1,500 kc/s. Adjust signal generator to exactly 1,600 kc/s. and set for a low value of reading on output meter. (See Note X).

(6) Align carefully C3, C7 and C11, (parallel padders) in that order for maximum increase in reading of output meter.

(7) Adjust signal generator to exactly 600 kc/s. Set receiver to 600 kc/s. signal and align C15 (series padder) rocking the tuning control in the usual manner during this adjustment. If dial does not log correctly, loosen set screw and re-adjust.

(8) Retune signal generator and receiver to 1,500 kc/s. and check condition of alignment of C3, C7 and C11, at that point. If C11 required more than a small amount of adjustment it may be found necessary to re-align the parallel padders to correct logging.

This completes the standard band alignment.

R. F. AND OSC. STAGES ("X" BAND)

(1) Connect output meter across speaker voice coil terminals. Connect signal generator output to the conventional antenna terminals "A" and "G" of the receiver, the .0002 mfd. condenser being in series with the antenna lead right at the terminal panel. Ground receiver and generator. Remove .01 mfd. condenser from osc. section of gang.

(2) Place receiver and generator in operation. Adjust wave-change switch for "X" band operation. Set volume and sensitivity controls at maximum. Adjust "Fidelity" control to "normal" position. Tune receiver (dial) and generator to exactly 400 kc/s. Adjust generator output for low value of reading on output meter. (See Note X).

(3) Starting with the oscillator stage, align carefully C2, C6 and C10 for maximum increase in reading of output meter.

(4) For most satisfactory results, start with oscillator trimmer screwed up fairly tight, so that it is necessary to reduce capacity to tune in signal. The antenna and interstage trimmers should be fairly loose in starting.

(5) Tune the generator to exactly 150 kc/s. Adjust the receiver to tune in the 150 kc/s. signal. Align C14 (series tracking) rocking the tuning control slightly during this adjustment. If C14 is found to be out more than a very slight amount, it will be necessary to recheck carefully the parallel pads C2, C6 and C10.

This completes "X" band alignment.

R. F. AND OSC. STAGES (POLICE AND AMATEUR BAND)

(1) Connect the signal generator output to antenna and ground terminals "A" and "G" with the 400 ohm resistor in the antenna lead right at the terminal panel.

(2) Connect output meter across speaker voice coil terminals.

(3) Adjust wave-band switch for police band operation.

(4) Set receiver sensitivity and volume controls at maximum. Fidelity control should be in normal position.

(5) Set receiver dial to log exactly at 5,000 kc/s Adjust signal generator to exactly 5,000 kc/s. and adjust output for a low value of reading on output meter. (See Note X).

(6) Align carefully the parallel padders C4, C8 and C12, in that order for maximum increase in reading of output meter.

(7) Adjust signal generator to exactly 1,800 kc s. Set receiver tuning to 1,800 kc/s. signal.

(8) Align 1,800 kc/s. series padder C16, rocking tuning control slightly in the usual manner, during this adjustment, until maximum output is obtained.

(9) Retune receiver and generator to 5,000 kc s, and check condition of alignment of the parallel padders C4, C8 and C12, at that point. If the series padder C16, required more than a small amount of change, it may be found necessary to align the parallel padders to correct logging.

This completes the Police-Amateur band alignment.

X NOTE: Excessive output from the signal generator may cause overload of one or more stages. If overloading occurs, false aligning peaks may be indicated by the output meter. It is very important, therefore, that only sufficient output from the signal generator be used that will give a readable indication on the output meter.

As the various stages are brought into alignment, the receiver sensitivity will increase, necessitating a gradual reduction in the output of the signal generator.

As it is impossible to set the dial scale itself for logging purposes on more than one band, it should only be set for the broadcast band where scale calibration is more important than on the other bands. For this reason, all adjustments should be made on the broadcast band before attempting alignment of any other band.

The antenna and ground connections for Police and Short-wave Bands referred to above are for receivers built to use the C. R. C. special antenna. On the older models, the connections remain the same except that the middle terminal "D" should be shorted to "G". Should any doubt exist as to the internal connections, then connect "D" to "G", otherwise on the older sets, the two high frequency bands would be dead at the antenna circuit.

SHORT-WAVE FOREIGN BAND

R. F. AND OSC. STAGES

Alignment on this band is somewhat different and should not be attempted until the following procedure is carefully studied, otherwise it is possible to apparently align the parallel pads but still find the sensitivity extremely low.

1. Connect signal generator output to "A" and "G" terminals of receiver with 400 ohms, dummy antenna resistor right at receiver terminal panel.
2. Ground generator and receiver.
3. Place receiver and generator in operation. Adjust wave-change switch to short-wave band. Set volume and sensitivity controls at maximum. Adjust fidelity control to "normal" position. Tune receiver dial to 17,800 and set generator at same frequency.
4. Commence aligning procedure by adjusting oscillator trimmer C13, then the interstage C9, carefully rocking to gang condenser meanwhile. This is important, as the sensitivity may be down as much as ten times when the normal "straight-through" process of alignment is used. When further rocking and alignment produces no improvement in sensitivity, proceed to align the antenna circuit C5. Sometimes rocking the gang while aligning will improve the sensitivity on this band.
5. Adjust signal generator to 6,000 kc/s. and tune in the signal on the receiver. Adjust the series padder C17 while rocking the gang in the usual manner until the sensitivity is maximum.
6. Recheck all adjustments at 17,800 kc/s. being sure to rock the tuning condenser at the same time the interstage trimmer is adjusted.
7. The set should now be checked to make sure that the oscillator has not been aligned on the image. Leave the signal generator set at 17,800 kc/s., increase its output considerably then tune the receiver 912 kc/s. lower in frequency or to 16,888 kc/s. (approximately). If the oscillator is correctly aligned, the image will be found here. If it does not appear, it will be found 912 kc/s. higher in frequency than 17,800 kc/s. then tune the receiver 912 kc/s. lower in frequency or to 16,888 kc/s. (approximately). If the oscillator is correctly aligned, the image will be found here. If it does not appear, it will be found 912 kc/s. higher in frequency than 17,800 or at 18,712 kc/s. This indicates that the wrong oscillator peak has been chosen. The trimmer should be loosened off until the correct one is located.

World Radio History

ALIGNMENT DATA, ETC. FOR THE FOLLOWING 7-TUBE BATTERY-OPERATED MODELS –

DE FOREST CROSLEY CAMBRIDGE AND OXFORD
MAJESTIC ALGONQUIN AND IROQUOIS
ROGERS B7/30 AND B7/35

CIRCUIT ON DATA SHEET 10

ALIGNMENT

Proper alignment can only be arrived at by the use of proper equipment and procedure. It is, therefore, important that the following recommendations and routines be closely followed wherever the need for re-alignment occurs.

The need for re-alignment will normally occur following transformer or condenser changes affecting the tuned I. F., R. F. and oscillator circuits. It is also good practice where convenient and possible to periodically re-align various stages of the receiver, not only to overcome gradual process of change which may develop but also to retain the receiver at its maximum peak performance, particularly following tube changes.

The recommended equipment required for re-alignment consists of:

(1) A good signal generator (service oscillator) equipped with a good attenuator and providing modulated fundamental frequencies at 456 kc., 600 kc., 1,600 kc., 2 megacycles, 5 megacycles, 6 megacycles and 17.5 megacycles.

(2) A reliable output meter of the rectifier type with a range of 0-1 volt.

(3) A .0002 microfarad condenser used as a dummy antenna in the broadcast band; a 400 ohm resistor for use as police and short-wave dummy antenna.

(4) Two .05 or .1 microfarad condensers for use during I. F. alignment.

(5) A suitable combination aligning wrench and screw-driver.

With the equipment recommended, re-alignment should be attempted only after the information in the following paragraphs has been read over and the serviceman is familiar with the exact location of the various adjusting screws and nuts. It is recommended that the chassis is removed from the cabinet during re-alignment.

I. F. STAGES

(1) Connect the output meter across the voice coil terminals of the speaker.

(2) Connect the output leads of the signal generator to the control grid cap of the oscillator-modulator tube (type 1C6S) through a .05 or .1 microfarad condenser, allowing the grid lead to remain in position. The band selector switch should be adjusted for broadcast reception during I. F. alignment.

(3) Connect a .05 or .1 microfarad condenser across the plates of the oscillator section of the gang condenser in order to load the oscillator tube and prevent spurious signals from being produced.

(4) Turn the receiver and generator on and adjust the generator to exactly 456 kilocycles. Set the receiver volume control at maximum. Adjust the generator output for a low reading on the output meter scale.

(5) Commencing at the input to the type 30S diode stage, progressively check alignment of C21, C20, C19 and C18 in that order adjusting the condenser nuts for maximum increase in reading of the output meter. As the adjustment is being made, gradually reduce the signal generator output as necessary to avoid possible overloading of any stage. If overloading is permitted to occur, it may result in false aligning peaks. Carefully recheck all adjustments.

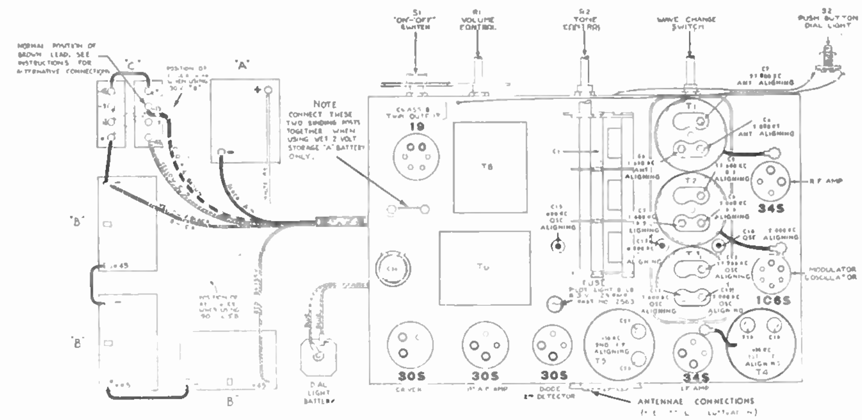
R. F. AND OSCILLATOR STAGES
Number One Band (Broadcast Band)

(1) If the receiver under adjustment is equipped for use of either conventional or special short-wave antenna systems, it is necessary that the terminals be properly arranged as for use with a conventional antenna. This means that terminal "A" is used as the input or antenna lead. The center terminal "D" and terminal "G" are to be jumpered together by a short connector and used as the ground connection.

(2) With the generator connected to the antenna (through the .0002 mfd. condenser) and the ground terminals of the receiver, tune the receiver and generator to exactly 1,600 kilocycles. Adjust C11, C7 and C3 in that order for maximum increase in reading of output meter, keeping the generator output at a low value in order that overloading be avoided.

(3) Tune generator to exactly 600 kilocycles, tune in signal on the receiver, then adjust C15 oscillator series padding condenser rocking the tuning control in the usual manner during this adjustment until maximum sensitivity is obtained. If the dial does not log correctly, the pointer should be shifted accordingly.

(4) Tune the receiver and generator to 1,600 kilocycles and compensate by re-adjusting C11, C7 and C3 in that order for any change that may have been introduced by adjustment of C15 or error in logging caused by shifting the dial pointer.



TOP VIEW OF CHASSIS FOR 7-TUBE MODEL.

R. F. AND OSCILLATOR STAGES
Number Two Band (Police-Amateur Band)

This band covers a frequency range of approximately 1,700 kilocycles to five megacycles.

(1) Adjust the wave-change switch for operation at No. 2 band. Signal generator output lead should be connected to the antenna terminal previously indicated through the 400 ohm resistor, located at the terminal panel. The signal generator and receiver should be adjusted in tune at exactly five megacycles (5,000 kc.).

(2) Adjust aligning condensers C12, C8 and C4 in that order for maximum increase in reading of output meter, reducing signal generator output as necessary to prevent overloading.

(3) Adjust receiver and generator in tune at exactly two megacycles (2,000 kc.) and adjust series tracker C16 rocking the tuning control in the usual manner during this adjustment until maximum sensitivity is obtained.

When adjusting C16, a check should be made to insure that 1,700 kilocycles is reached at the extreme low frequency end of the No. 2 band.

(4) Tune generator and oscillator to exactly five megacycles and recheck C12, C8 and C4 compensating for any change that may have taken place through the adjustment of the series tracker C16. Check for image response by increasing generator output, and leaving frequency fixed; image should be located by tuning receiver 912 kc s lower in frequency. If it appears 912 kc/s higher in frequency, the wrong oscillator peak has been chosen, the one requiring the least capacity being the correct one.

Number 3 Band (Short-Wave Band)

This band covers International short-wave broadcasting between the limits of six and nineteen megacycles.

(1) With signal generator connected to the receiver terminals as for police band operation, the band switch being in the short-wave position, adjust signal generator and receiver in tune at 17.5 megacycles. Adjust aligning condenser C13, C9 and C5 in that order for maximum increase in reading of output meter. During adjustment of the interstage trimmer C9 it is absolutely essential to rock the tuning

CONTINUED ON DATA SHEET 14

World Radio History

CONTINUED FROM DATA SHEET 13

control slightly to avoid interlocking between the input to the modulator and the oscillator stage. The tuning control should be rocked as for a series padder adjustment.

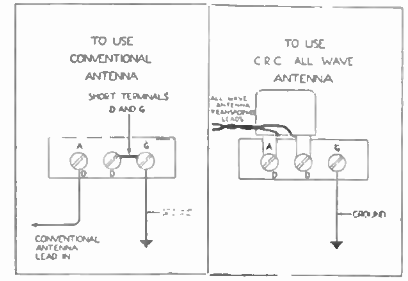
(2) Adjust signal generator and receiver in tune at exactly six megacycles and adjust C17, the oscillator series tracking condenser, rocking the tuning control in the usual manner during this adjustment.

(3) Retune signal generator and receiver to exactly 17.5 megacycles and recheck adjustment of C13, C9 and C5 in that order compensating for any changes that may have developed through adjustment of C17, again rocking the gang while adjusting the interstage trimmer. After alignment of the short-wave band, the image response at 17.5 mcs. should be checked by increasing generator output, leaving frequency fixed, then tuning the receiver 912 kc/s lower in frequency, where the image should be located, if the proper oscillator peak has been chosen. If not, the image will appear 912 kc/s higher, indicating that the wrong oscillator peak has been chosen, and re-alignment is necessary.

The foregoing is a complete routine covering alignment of the seven tube battery chassis. In conclusion it is necessary to point out that rechecking of all adjustments is very important.

As the various bands are entirely separate as regards the tuned circuit, it is possible to re-align any one band without the necessity of re-adjusting the other. It is best to align the broadcast band first, as it is sometimes necessary to shift the pointer for logging purposes. The importance of keeping the signal generator output at a low value during re-alignment, cannot be over-emphasized.

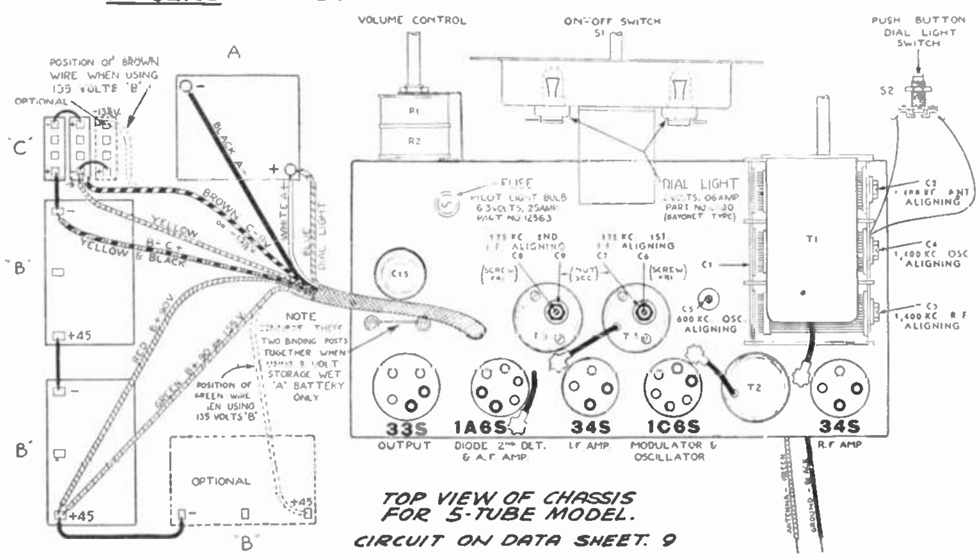
RIGHT — SHOWING CONNECTION OF CONVENTIONAL OR CANDN. RADIO CORP. DOUBLET ALL-WAVE ANTENNAE TO 7-TUBE BATTERY-OPERATED CHASSIS.



It is always good practice before starting re-alignment to allow the receiver to operate for a period of from fifteen minutes to one-half hour before adjustment is attempted. This permits the various circuit elements that might be subject to change through temperature variation, to stabilize and permit of a much more complete and lasting adjustment.

ALIGNMENT DATA, ETC. FOR THE FOLLOWING 5-TUBE BATTERY-OPERATED MODELS—

DE FOREST CROSLEY B510 AND B515
MAJESTIC HURON AND CHIPPEWA
ROGERS ETON AND HARROW



TOP VIEW OF CHASSIS FOR 5-TUBE MODEL.

CIRCUIT ON DATA SHEET 9

ALIGNMENT

Periodically it may be necessary or desirable to re-align the R. F., oscillator and I. F. stages of these receivers.

Such alignment may be in order, following changes affecting the I. F., R. F. or oscillator coils or tube changes affecting those stages.

When alignment is necessary, it should only be carried out with proper equipment, as it is, of course, a very important adjustment. A serviceman attempting aligning adjustments should be equipped with a proper output indicator, a satisfactory aligning wrench and screw-driver and a good service oscillator or signal generator capable of supplying fundamental frequencies at 175 kilocycles, 600 and 1,400 kilocycles. Procedure of alignment follows:

(1) Connect the output lead of service oscillator to the control grid cap of the type 1A6S oscillator-modulator tube, allowing the control grid clip to remain in position.

(2) Short the plates of the oscillator section of the gang condenser.

(3) With the service oscillator or signal generator tuned to exactly 175 kilocycles, align in order C9, C8, C7 and C6. As these adjustments are being made, it is particularly important that the output of the signal generator be kept at a low value in order to avoid possible overload of the second detector or output tube. Such overloads if allowed to develop may result in false readings of the output indicator or meter. As the receiver is brought into alignment, the sensitivity will tend, of course, to increase and a gradual reduction of the signal generator output should be made in order to prevent overloading.

(4) Connect output lead of service oscillator to green antenna wire of receiver and ground signal generator to the black wire of the receiver. Remove short on oscillator section of gang condenser. Rotate the gang condenser to full-in position and adjust tuning indicator so that pointer indicates exactly 535 kilocycles.

(5) Adjust service oscillator to exactly 1,400 kilocycles and adjust the receiver tuning so that dial pointer indicates exactly 1,400 kilocycles. Align oscillator, parallel pad C4, interstage condenser C3 and antenna condenser C2 for maximum sensitivity.

(6) Tune generator to exactly 600 kc/s. and adjust receiver (without regard for dial calibration) to the generator frequency.

(7) Adjust 600 kc/s. series pad (C5) (without regard for dial calibration) for maximum sensitivity rocking tuning control in the usual manner during this adjustment.

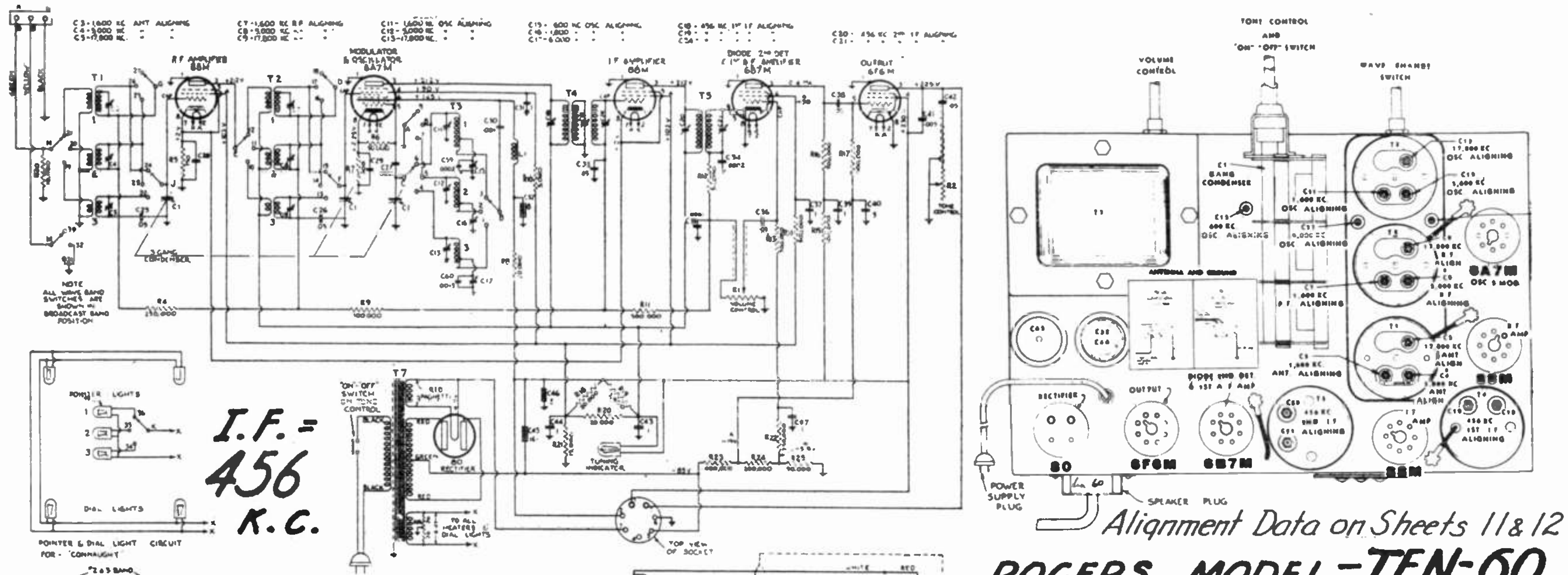
(8) If after this adjustment the dial calibration is incorrect, loosen dial pointer screw and reset pointer to exactly 600 kc/s.

(9) Tune generator to exactly 1,400 kc/s. and adjust receiver in tune. If calibration is incorrect, adjust oscillator parallel condenser (C4) to correct dial calibration, then carefully align antenna (C2) and interstage (C3) trimmers. Recheck C2, C3, C4 in that order for maximum sensitivity. When adjusting these condensers use as little capacity as possible.

World Radio History

DATA SHEET

COURTESY - ROGERS-MAJESTIC-15 CORP. LTD.

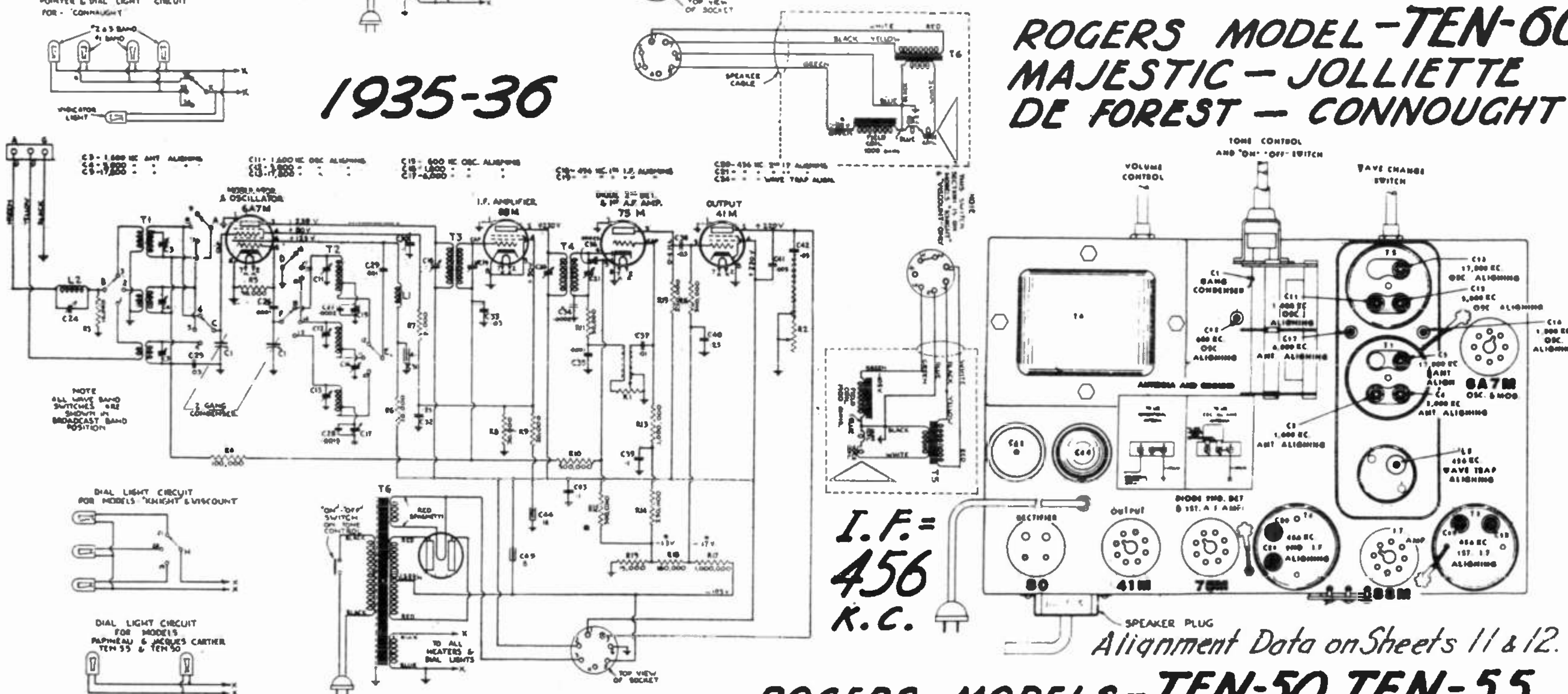


I.F. = 456 K.C.

Alignment Data on Sheets 11 & 12

ROGERS MODEL-TEN-60
MAJESTIC — JOLLIETTE
DE FOREST — CONNOUGHT

1935-36



I.F. = 456 K.C.

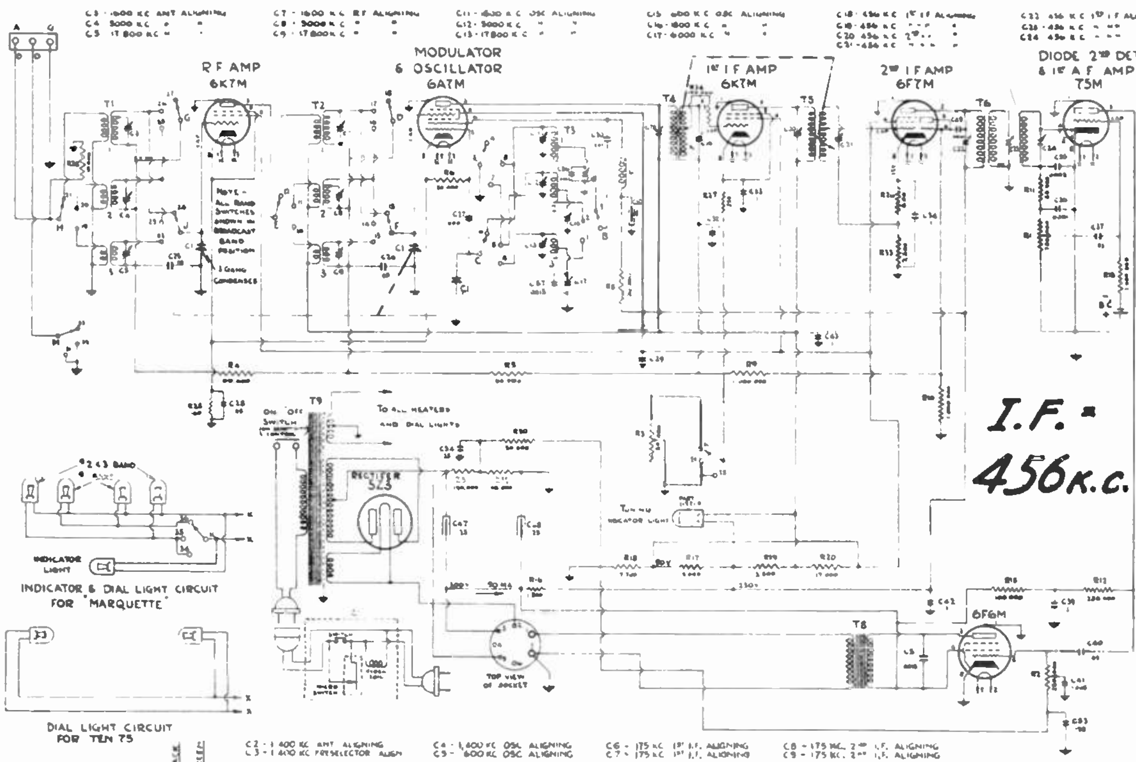
Alignment Data on Sheets 11 & 12.

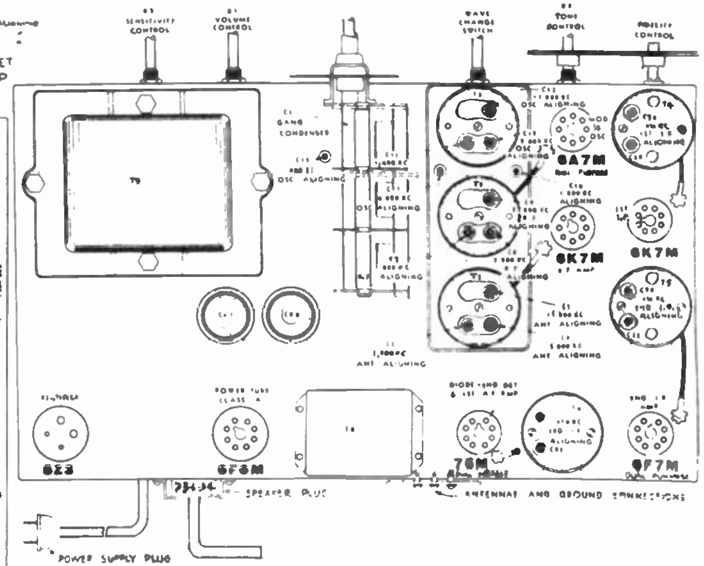
ROGERS MODELS-TEN-50, TEN-55
MAJESTIC—PAPINEAU, JACQUES CARTIER
DE FOREST — KNIGHT, VISCOUNT

World Radio History

DATA SHEET

COURTESY — ROGERS MAJESTIC-16 CORP. LTD.



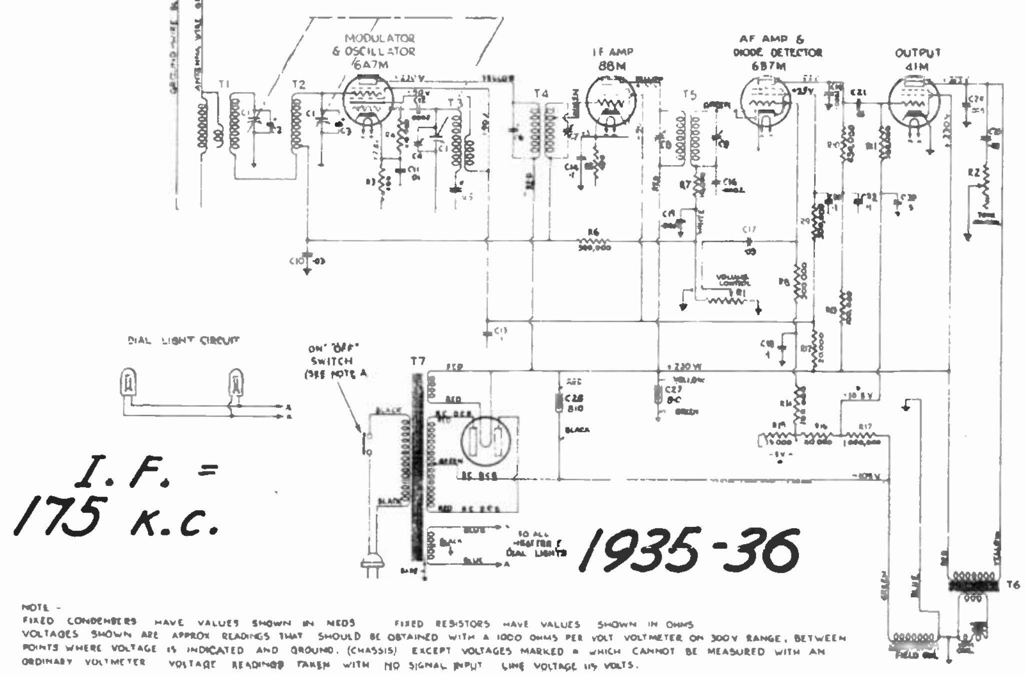


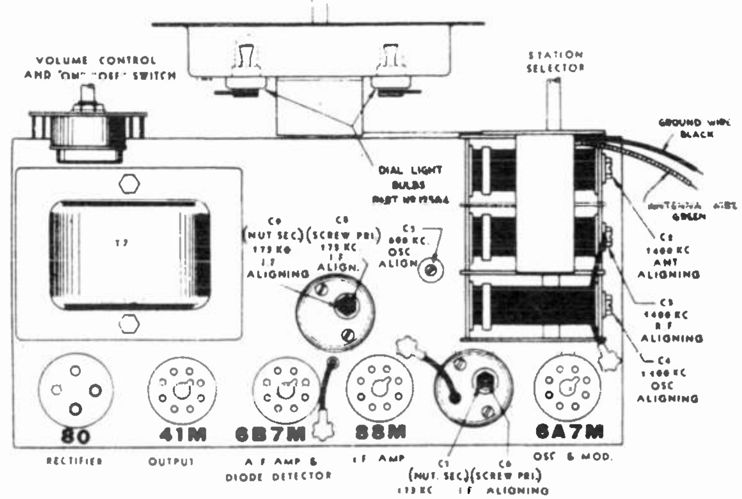
I.F. = 456 K.C.

ROGERS MODELS-TEN-76, TEN 75.

MAJESTIC MODELS "MARQUETTE"

Alignment Data for both these circuits on Sheets 11 & 12.





I. F. = 175 K.C.

1935-36

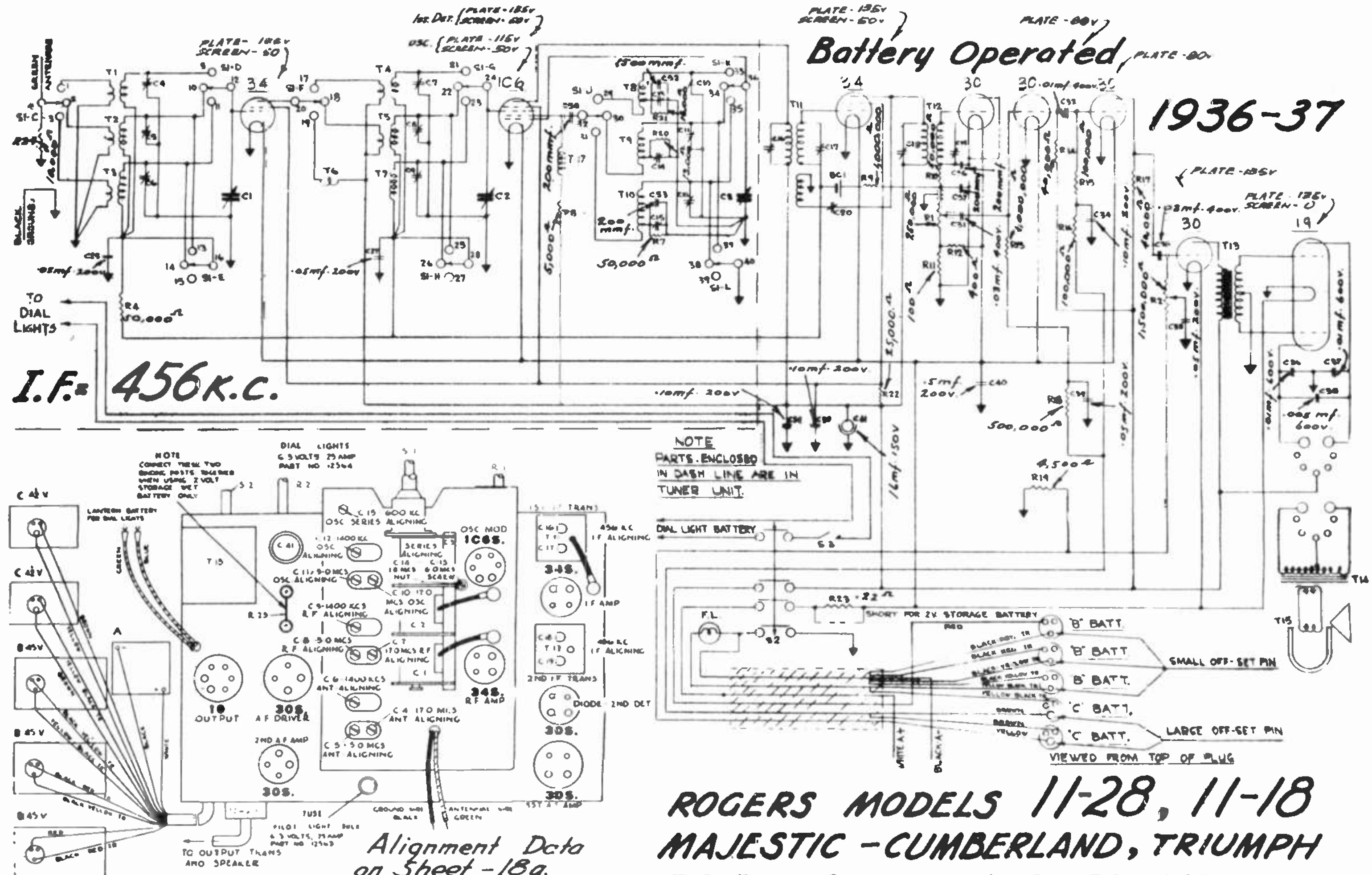
ROGERS MODELS-TEN-45, TEN-51

MAJESTIC MODEL "MADELAINE"

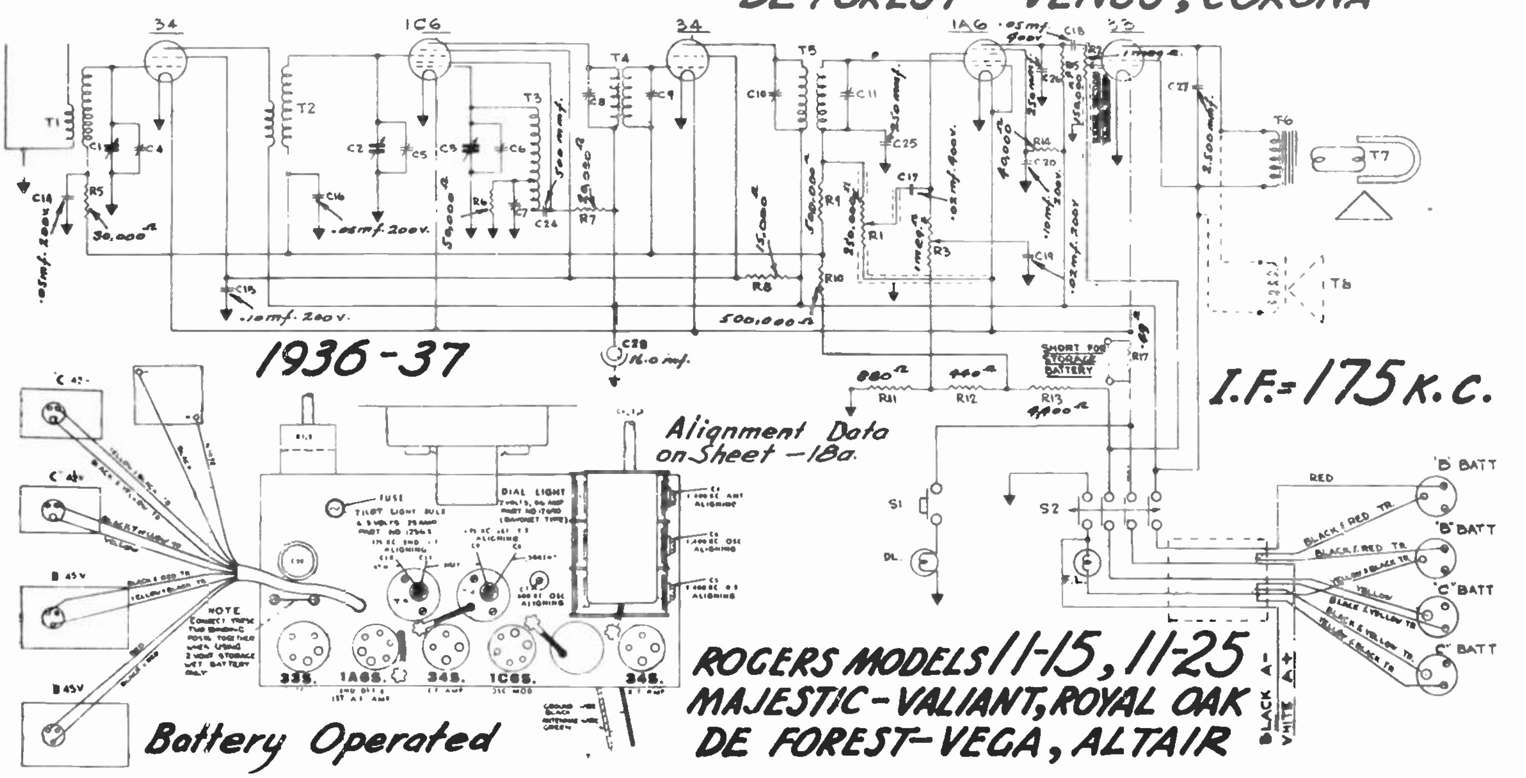
DE FOREST CROSLEY "EARL"

NOTE -
FIXED CONDENSERS HAVE VALUES SHOWN IN MFDS FIXED RESISTORS HAVE VALUES SHOWN IN OHMS
VOLTAGES SHOWN ARE APPROX READINGS THAT SHOULD BE OBTAINED WITH A 1000 OHMS PER VOLT VOLTMETER ON 300V RANGE, BETWEEN POINTS WHERE VOLTAGE IS INDICATED AND GROUND. (CHASSIS) EXCEPT VOLTAGES MARKED * WHICH CANNOT BE MEASURED WITH AN ORDINARY VOLTMETER VOLTAGE READINGS TAKEN WITH NO SIGNAL INPUT LINE VOLTAGE 115 VOLTS.

World Radio History



ROGERS MODELS 11-28, 11-18
MAJESTIC - CUMBERLAND, TRIUMPH
DE FOREST - VENUS, CORONA



ROGERS MODELS 11-15, 11-25
MAJESTIC - VALIANT, ROYAL OAK
DE FOREST - VEGA, ALTAIR

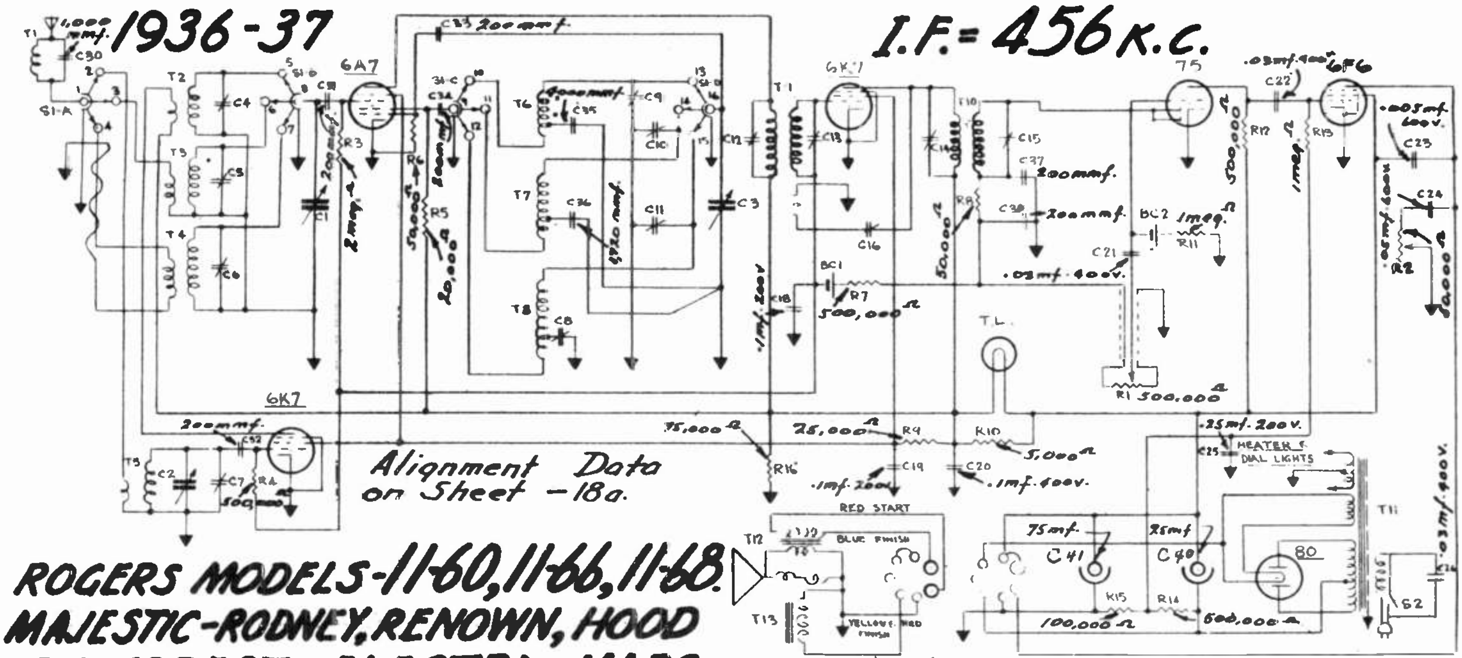
DATA SHEET

COURTESY:-
ROGERS MAJESTIC-17
CORP. LTD.

World Radio History

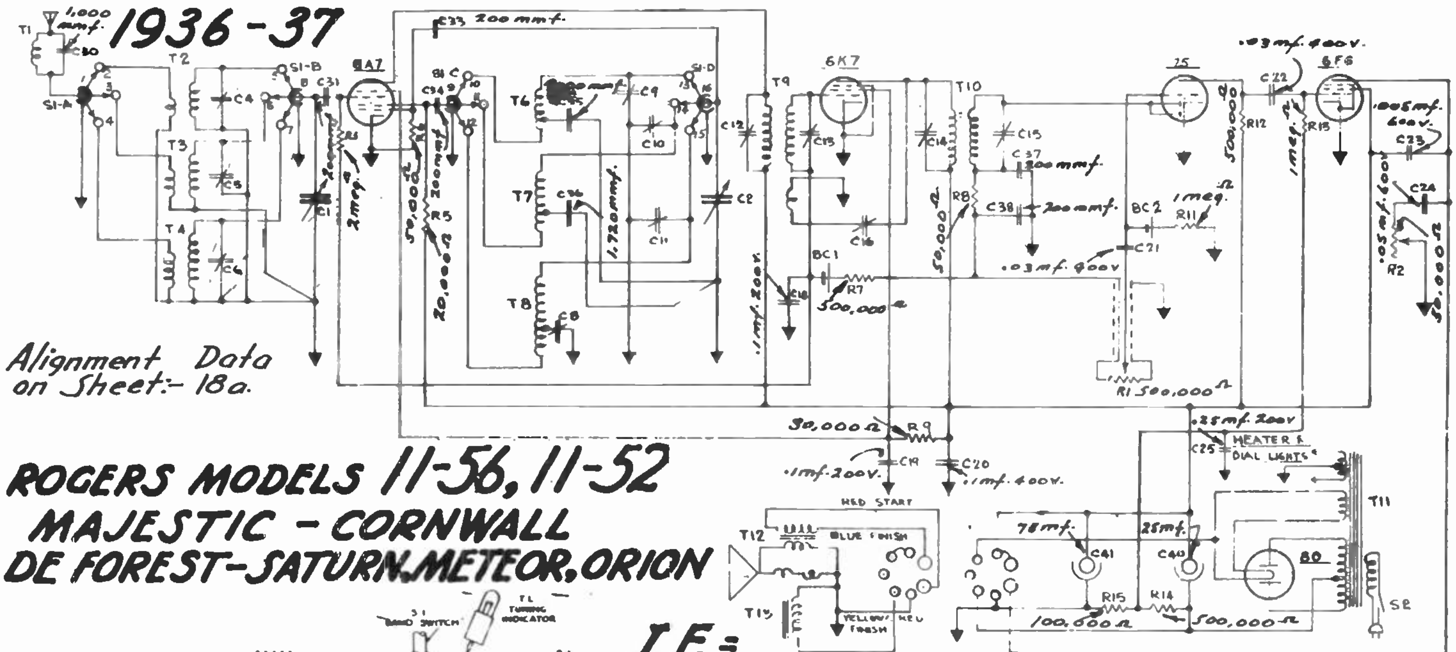
1936-37

I.F. = 456 K.C.



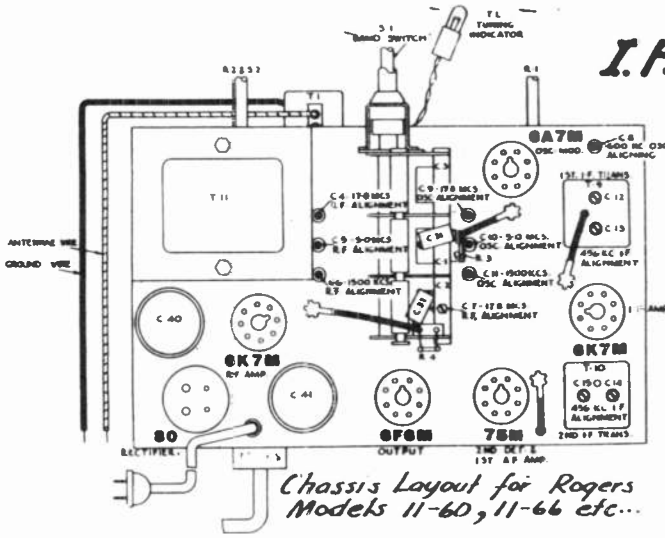
ROGERS MODELS-11-60, 11-66, 11-68.
MAJESTIC-RODNEY, RENOWN, HOOD
DE FOREST-ELECTRA, MARS

1936-37

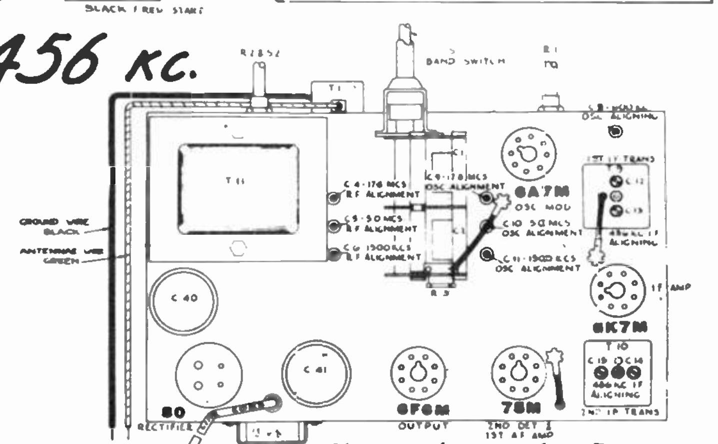


ROGERS MODELS 11-56, 11-52
MAJESTIC - CORNWALL
DE FOREST-SATURN, METEOR, ORION

I.F. = 456 KC.



Chassis Layout for Rogers Models 11-60, 11-66 etc...



Chassis Layout for Rogers Models 11-56, 11-52 etc...

DATA SHEET

COURTESY:-

ROGERS MAJESTIC-18.

CORP. LTD.

World Radio History

ROGERS 11-52, 11-56, 11-60, 11-66, 11-68 — MAJESTIC VICTORY, NELSON, HOOD, RENOWN, RODNEY — DE FOREST METEOR, SATURN, ORION, ELECTRA, MARS, NEPTUNE

I. F. ALIGNMENT *For Circuits see Data Sheet -18 and 19*

The I. F. transformers used in these chassis are iron core and are tuned to 456 kc. The method of aligning the I. F. transformers is normal with the exception that a metal shield must be placed between the 2nd I. F. transformer and the 6K7M tube high enough to shield the grid of the latter tube from any metal parts of the aligning wrench that may extend outside the I. F. transformer shield can.

R. F. ALIGNMENT

(a) With the tuning condenser set at maximum capacitance and the band switch in the broadcast band position, adjust the pointer until it is exactly opposite the 5.7 mc. mark on the short-wave scale.

(b) Turn the condenser to minimum capacitance position. Connect the signal generator to the antenna circuit through a proper dummy antenna and adjust the oscillator pad so that the set will just tune to 1,700 kc.

(c) Turn the tuning condenser until the pointer is exactly opposite the 1,500 kc. mark and note how close this comes to being 1,500 kc. as indicated by the signal generator. A slight compromise may be made here in order to have the pointer read correctly at 1,500 kc. and still have the band extended to about 1,700 kc. Then adjust the antenna parallel pad for resonance.

(d) Rotate the tuning condenser until the pointer is opposite 600 kc. and adjust the oscillator series pad for maximum sensitivity.

(e) It may be necessary now to return to 1,500 kc. for a slight re-adjustment of both oscillator and antenna parallel pad if the oscillator series pad was very much out of adjustment in the operation mentioned in the above paragraph.

(f) The adjustment of the parallel pads for both police band and short-wave band will be done in a manner similar to that described above. Note, however, that there are no adjustments of the oscillator series pads in these bands.

The frequency ranges and aligning frequencies are as follows:

Frequency Range	Aligning Frequency
530 - 1700 kc.	600 - 1500 kc.
1.7 - 5.7 mc.	2.0 - 5.0 mc.
5.7 - 18.5 mc.	6.0 - 17.8 mc.

ROGERS 11-15, 11-25 — MAJESTIC VALIANT, ROYAL OAK — DE FOREST VEGA, ALTAIR

For Circuits see Data Sheet -17

(1) Connect the output lead of service oscillator to the control grid cap of the type 1C6S oscillator-modulator tube, allowing the control grid clip to remain in position.
(2) Turn gang condenser to minimum capacity.
(3) With the service oscillator or signal generator tuned to exactly 175 kilocycles, align in order C11, C10, C9 and C8. As these adjustments are being made, it is particularly important that the output of the signal generator be kept at a low value in order to avoid possible overload of the second detector or output tube. Such overloads if allowed to develop may result in false readings of the output indicator or meter. As the receiver is brought into alignment, the sensitivity will tend, of course, to increase and a gradual reduction of the signal generator output should be made in order to prevent overloading.
(4) Connect output lead of service oscillator to green antenna wire of receiver and ground signal generator to the black wire of the receiver. Remove generator lead from grid of 1C6S tube. Rotate the gang condenser to full-in position and adjust tuning indicator so that pointer indicates exactly 535 kilocycles.

(5) Adjust service oscillator to exactly 1,400 kilocycles and adjust the receiver tuning so that dial pointer indicates exactly 1,400 kilocycles. Align oscillator parallel pad C6, interstage pad C5 and antenna pad C4 for maximum sensitivity.

(6) Tune generator to exactly 600 kc/s. and adjust receiver (without regard for dial calibration) to the generator frequency.

(7) Adjust 600 kc/s. series pad (C7) (without regard for dial calibration) for maximum sensitivity rocking tuning control in the usual manner during this adjustment.

(8) If after this adjustment the dial calibration is incorrect, loosen dial pointer screw and reset pointer to exactly 600 kc/s.

(9) Tune generator to exactly 1,400 kc/s. and adjust receiver in tune. If calibration is incorrect, adjust oscillator parallel condenser (C6) to correct dial calibration, then carefully align antenna (C4), and interstage (C5) trimmers. Recheck C4, C5, C6 in that order for maximum sensitivity.

ROGERS 11-18, 11-28 — MAJESTIC CUMBERLAND, TRIUMPH — DE FOREST VENUS, CORONA

For Circuits see Data Sheet -17

I. F. STAGES

(1) Connect the output meter across the voice coil terminals of the speaker.

(2) Connect the output leads of the signal generator to the control grid cap of the oscillator-modulator tube (type 1C6S) through a .05 or .1 microfarad condenser, allowing the grid lead to remain in position. The band selector switch should be adjusted for broadcast reception during I. F. alignment.

(3) Connect a .05 or .1 microfarad condenser across the plates of the oscillator section of the gang condenser in order to load the oscillator tube and prevent spurious signals from being produced.

(4) Turn the receiver and generator on and adjust the generator to exactly 456 kilocycles. Set the receiver volume control at maximum. Adjust the generator output for a low reading on the output meter scale.

(5) Commencing at the input to the type 30S diode stage, progressively check alignment of C19, C18, C17 and C16 in that order adjusting the condenser nuts for maximum increase in reading of the output meter. As the adjustment is being made, gradually reduce the signal generator output as necessary to avoid possible overloading of any stage. If overloading is permitted to occur, it may result in false aligning peaks. Carefully recheck all adjustments.

R. F. AND OSCILLATOR STAGES — Number One Band (Broadcast Band)

(1) With the generator connected to the antenna (through the .0002 mfd. condenser) and the ground terminals of the receiver, tune the receiver and generator to exactly 1,600 kilocycles. Adjust C12, C9 and C6 in that order for maximum increase in reading of output meter, keeping the generator output at a low value in order that overloading be avoided.

(2) Tune generator to exactly 600 kilocycles, tune in signal on the receiver, then adjust C15 oscillator series padding condenser rocking the tuning control in the usual manner during this adjustment until maximum sensitivity is obtained. If the dial does not log correctly, the pointer should be shifted accordingly.

(3) Tune the receiver and generator to 1,600 kilocycles and compensate by re-adjusting C12, C9 and C6 in that order for any change that may have been introduced by adjustment of C15 or error in logging caused by shifting the dial pointer.

R. F. AND OSCILLATOR STAGES — Number Two Band (Police-Amateur Band)

(1) Adjust the wave-change switch for operation at No. 2 band. Signal generator output lead should be connected to the antenna terminal previously indicated through the 400 ohm resistor, located at the terminal panel. The signal generator and receiver should be adjusted in tune at exactly five megacycles (5,000 kc.).

(2) Adjust aligning condensers C11, C8 and C5 in that order for maximum increase in reading of output meter, reducing signal generator output as necessary to prevent overloading.

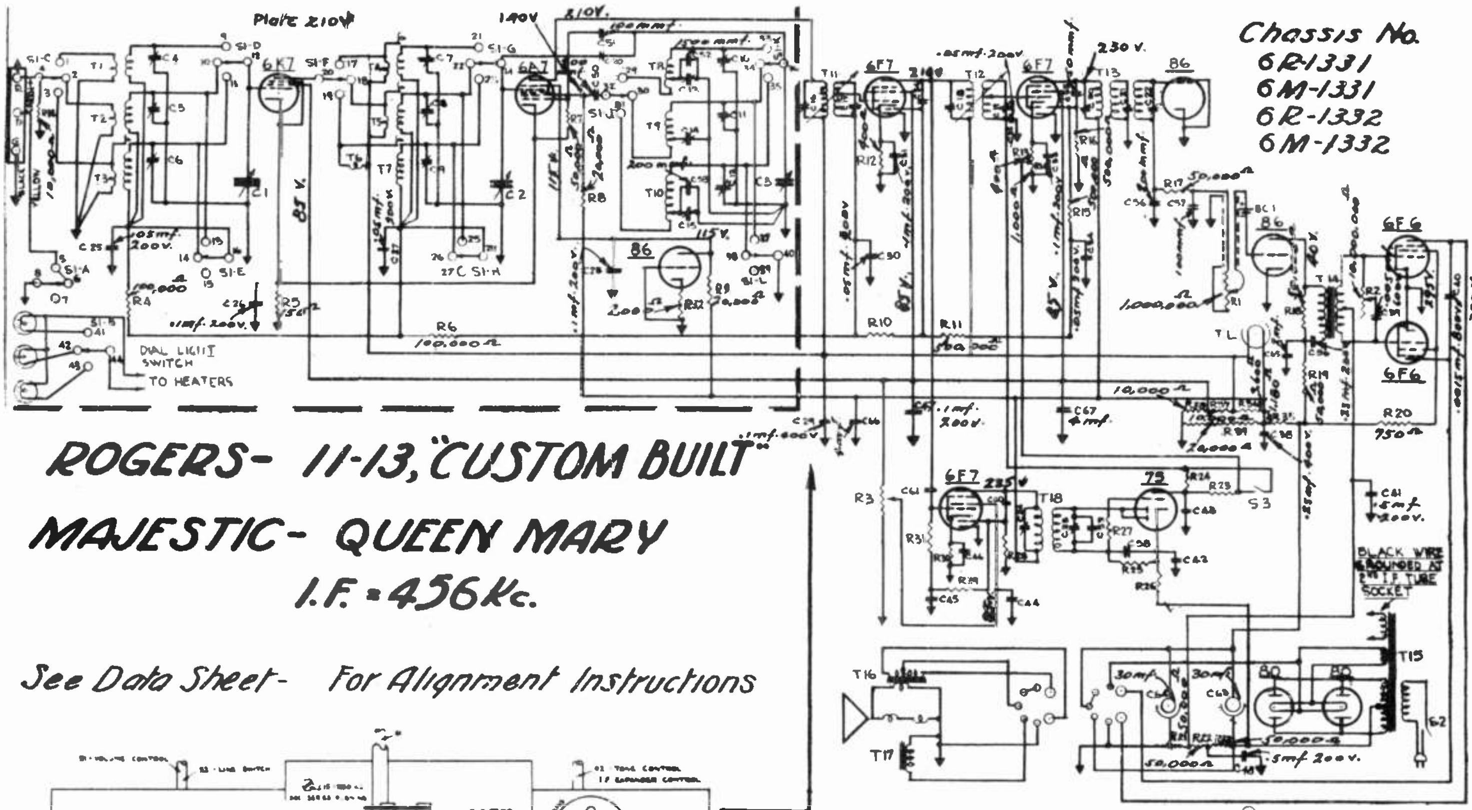
(3) Adjust receiver and generator in tune at exactly 1.8 (1,800 kc.) and adjust series tracker C14 rocking the tuning control in the usual manner during this adjustment until maximum sensitivity is obtained.

When adjusting C14, a check should be made to insure that 1,700 kilocycles is reached at the extreme low frequency end of the No. 2 band.

(4) Tune generator and oscillator to exactly five megacycles and recheck C11, C8 and C5 compensating for any change that may have taken place through the adjustment of the series tracker C14. Check for image response by increasing generator output, and leaving frequency fixed; image should be located by tuning receiver 912 kc/s lower in frequency. If it appears 912 kc/s higher in frequency, the wrong oscillator peak has been chosen, the one requiring the least capacity being the correct one.

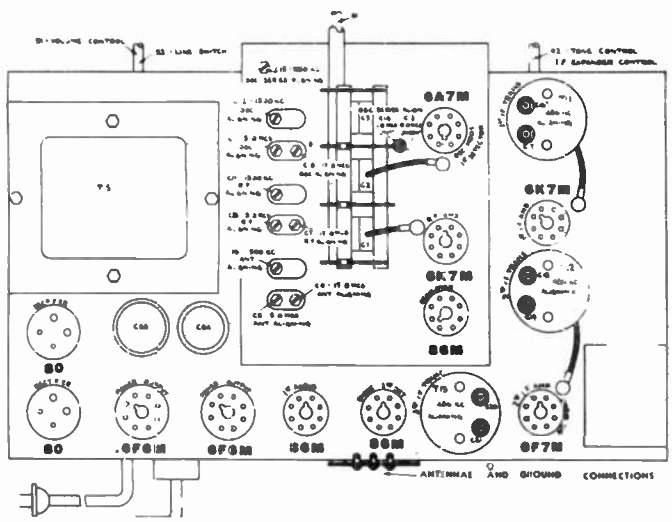
World Radio History

Chassis No.
6R-1331
6M-1331
6R-1332
6M-1332

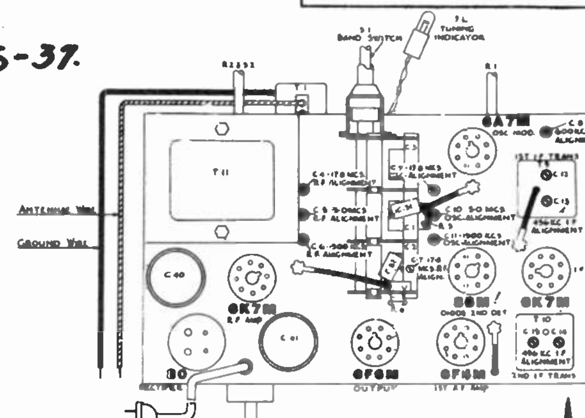


ROGERS- 11-13, "CUSTOM BUILT"
MAJESTIC- QUEEN MARY
I.F. = 456Kc.

See Data Sheet- For Alignment Instructions



1936-37.



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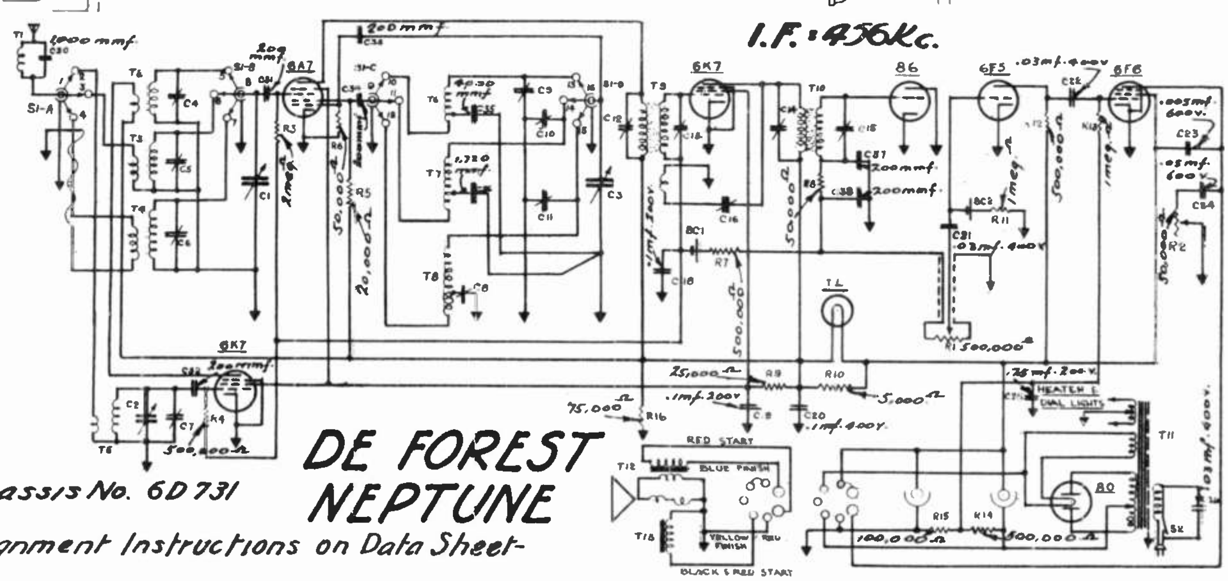


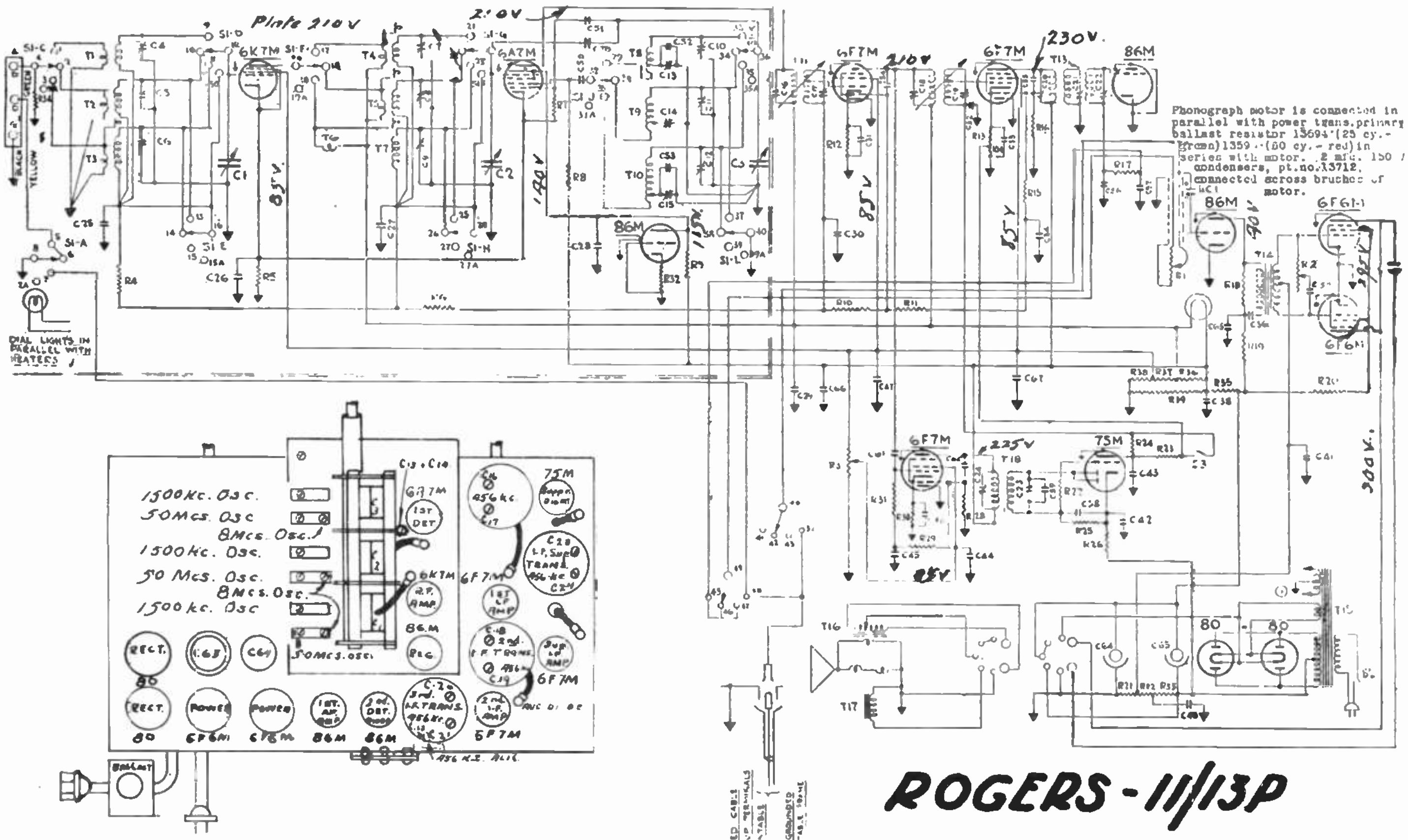
DE FOREST NEPTUNE

Chassis No. 6D731

Alignment Instructions on Data Sheet-

DATA SHEET ROGERS-MAJESTIC-19.

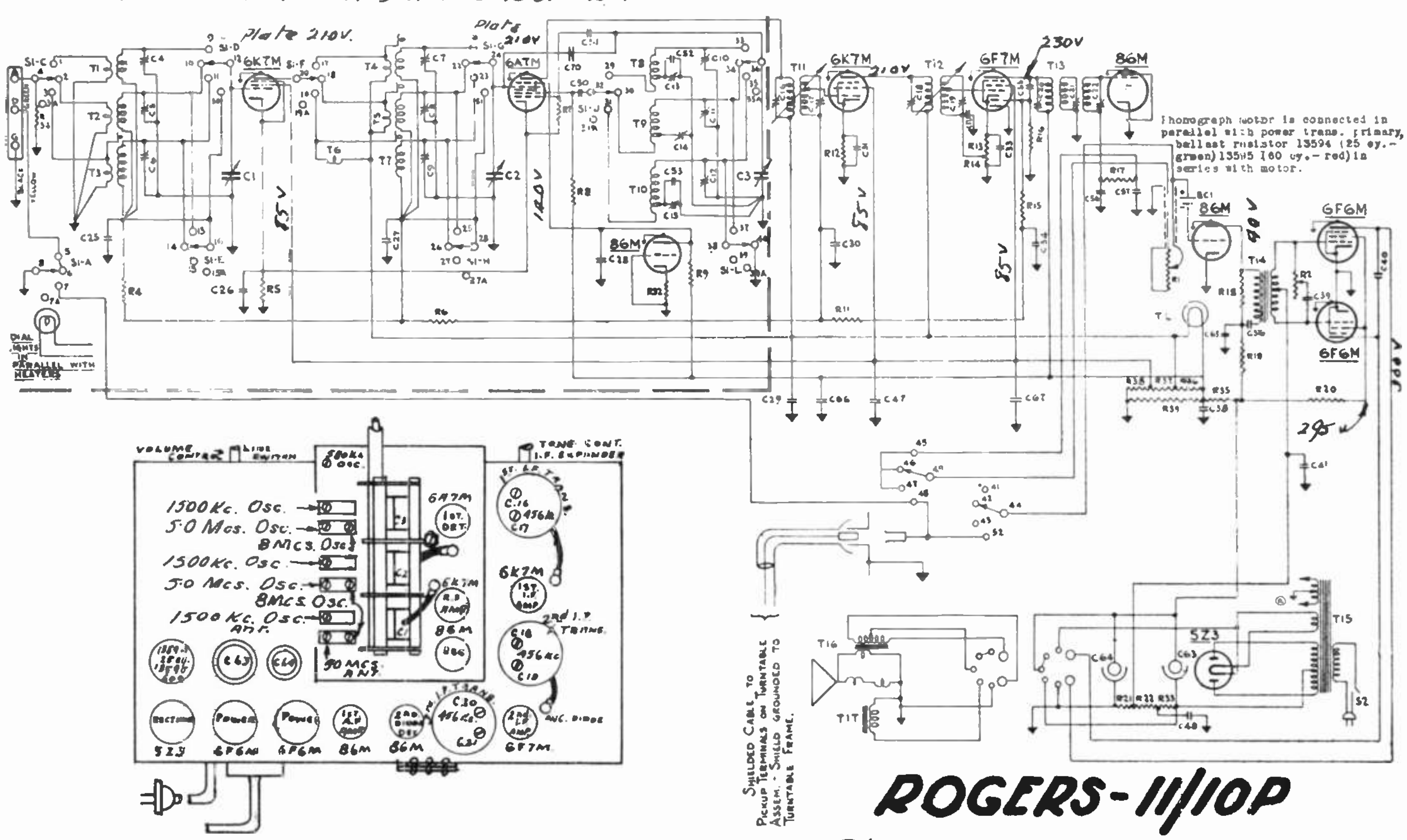
World Radio History



ROGERS - 11/13P

Chassis No. - 6R1333.

Instructions on Data Sheet - 24



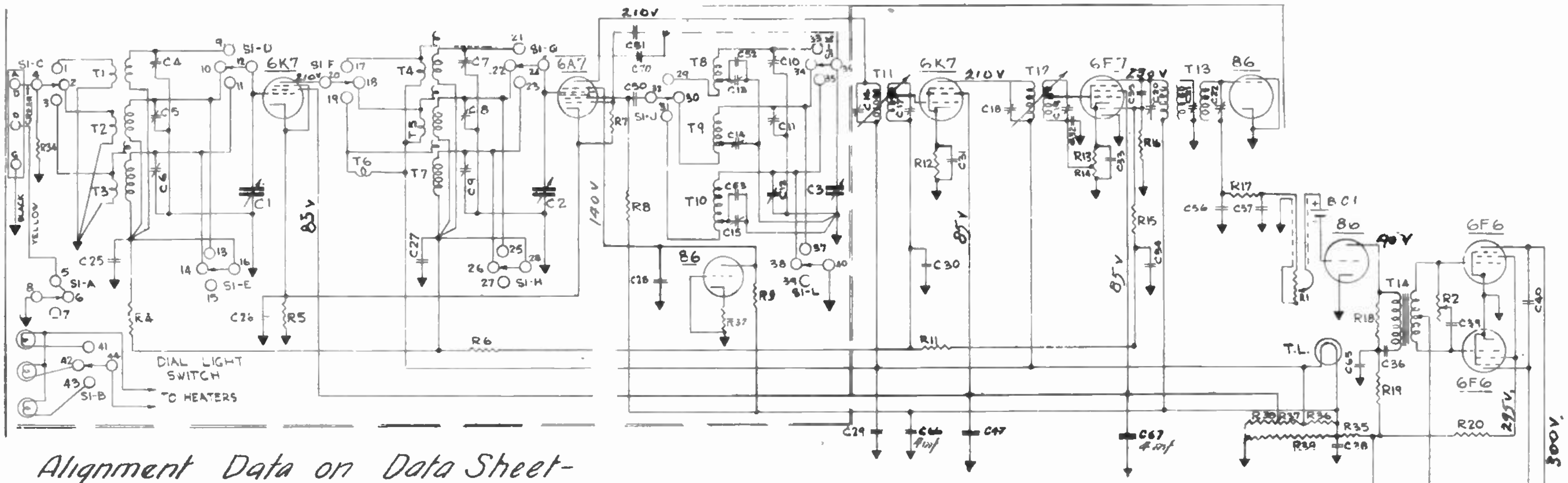
ROGERS - 11/10P

Instructions on Data Sheet - 24

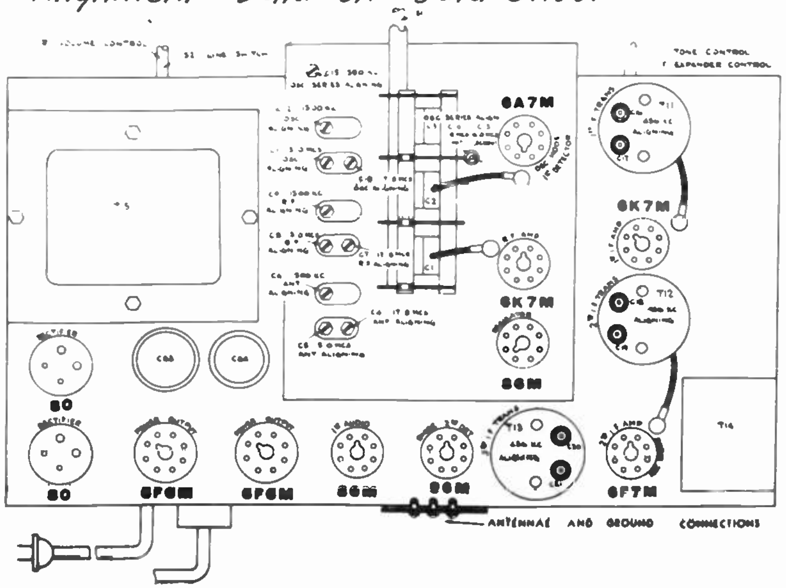
Chassis No. - 6R1031

DATA SHEET ROGERS-MAJESTIC-20

World Radio History

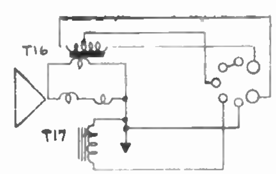


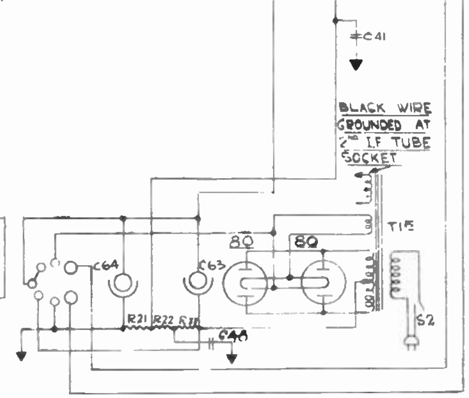
Alignment Data on Data Sheet-



Chassis No.
Rogers- 6R1131.
Majestic -6M1131.

1936-37.



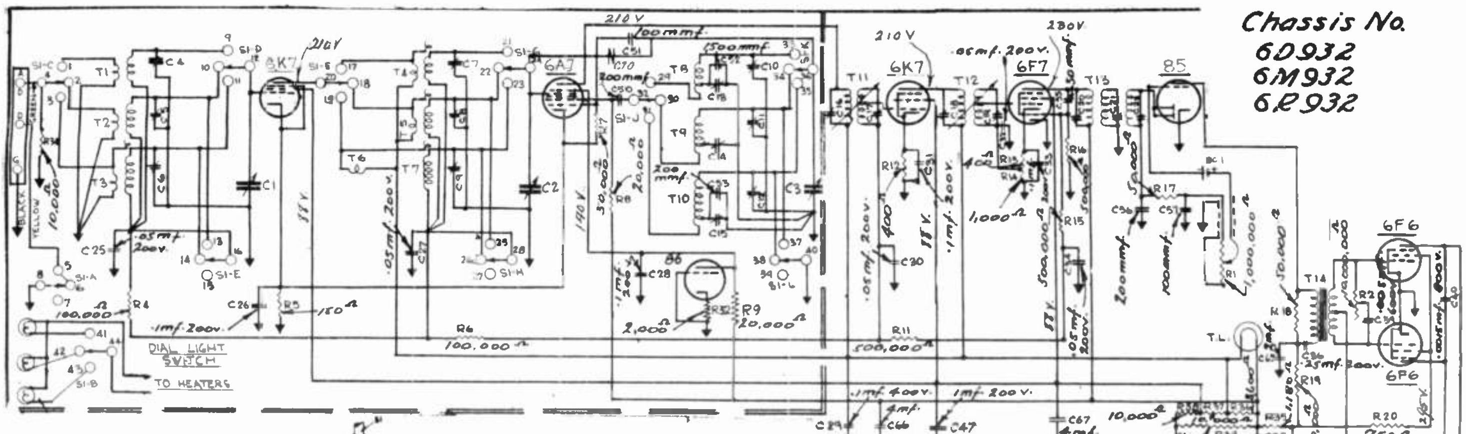


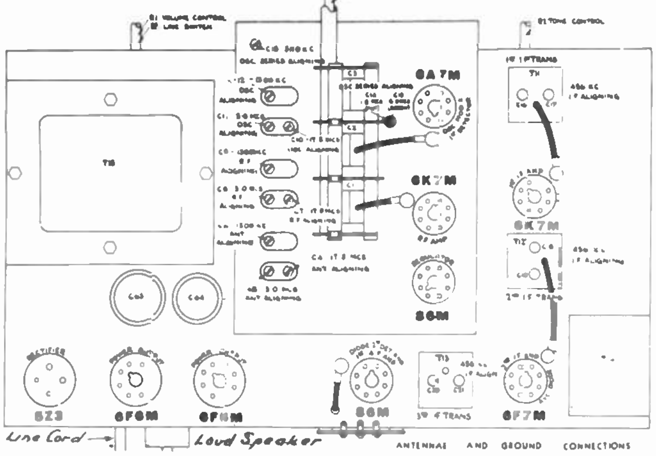
ROGERS-11/11.

MAJESTIC-QUEEN ELIZABETH.

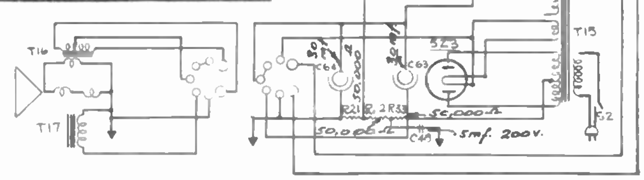
R1 1,000,000 Ohm	R8 20,000 Ohm	R16 500,000 Ohm	R32 2,000 Ohm	R38 10,000 Ohm	C25 0.05 mf. 200 V.	C32 0.05 mf. 200 V.	C41 0.3 mf. 200 V.	C53 800 mmf.
R2 10,000,000 Ohm	R9 20,000 Ohm	R17 50,000 Ohm	R33 50,000 Ohm	R39 20,000 Ohm	C26 0.1 mf. 200 V.	C33 0.1 mf. 200 V.	C47 0.1 mf. 200 V.	C55 50 mmf.
Graphite	R11 500,000 Ohm	R18 50,000 Ohm	R34 10,000 Ohm		C27 0.05 mf. 200 V.	C34 0.05 mf. 200 V.	C48 0.5 mf. 200 V.	C56 200 mmf.
R4 100,000 Ohm	R12 400 Ohm	R19 50,000 Ohm	Wire Wound		C28 0.1 mf. 200 V.	C36 0.25 mf. 200 V.	Mica	C57 100 mmf.
R5 150 Ohm	R13 400 Ohm	R20 750 Ohm	R35 1,180 Ohm	C1 450 mmf.	C29 0.1 mf. 400 V.	C38 0.25 mf. 400 V.	C50 200 mmf.	C63 30 mf.
R6 100,000 Ohm	R14 1,000 Ohm	R21 50,000 Ohm	R36 3,600 Ohm	C2 450 mmf.	C30 0.05 mf. 200 V.	C39 0.005 mf. 600 V.	C51 100 mmf.	C64 30 mf.
R7 50,000 Ohm	R15 500,000 Ohm	R22 50,000 Ohm	R37 10,000 Ohm	C3 450 mmf.	C31 0.1 mf. 200 V.	C40 0.0015 mf. 800 V.	C52 1500 mmf.	C65 2 mf.

Chassis No.
6D932
6M932
6R932



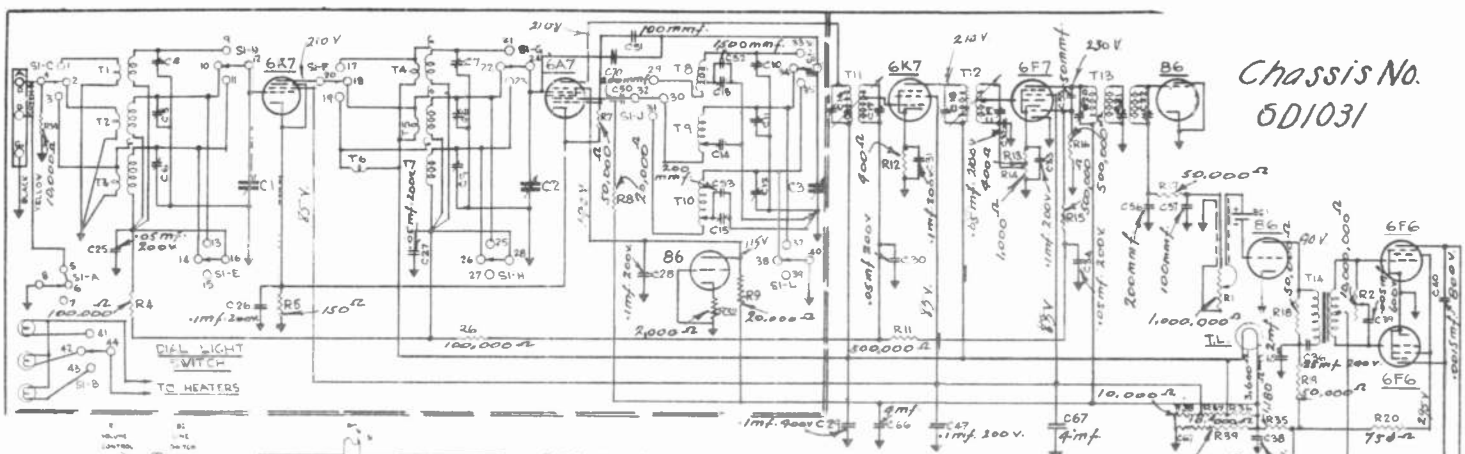


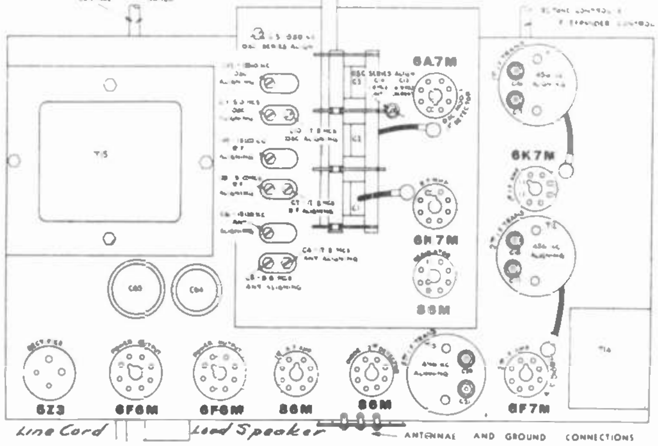
ROGERS - 11/95, 11/97
MAJESTIC-"RESOLUTION" "BONAVENTURE"
DE FOREST CROSLEY-"LYRA"



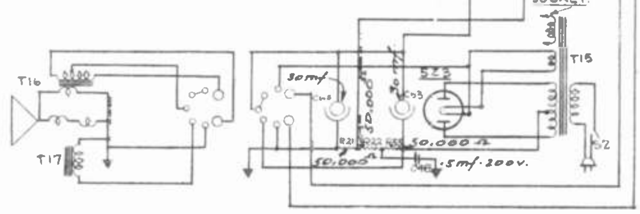
1936-37

Chassis No.
6D1031





DE FOREST CROSLEY-"COMET"

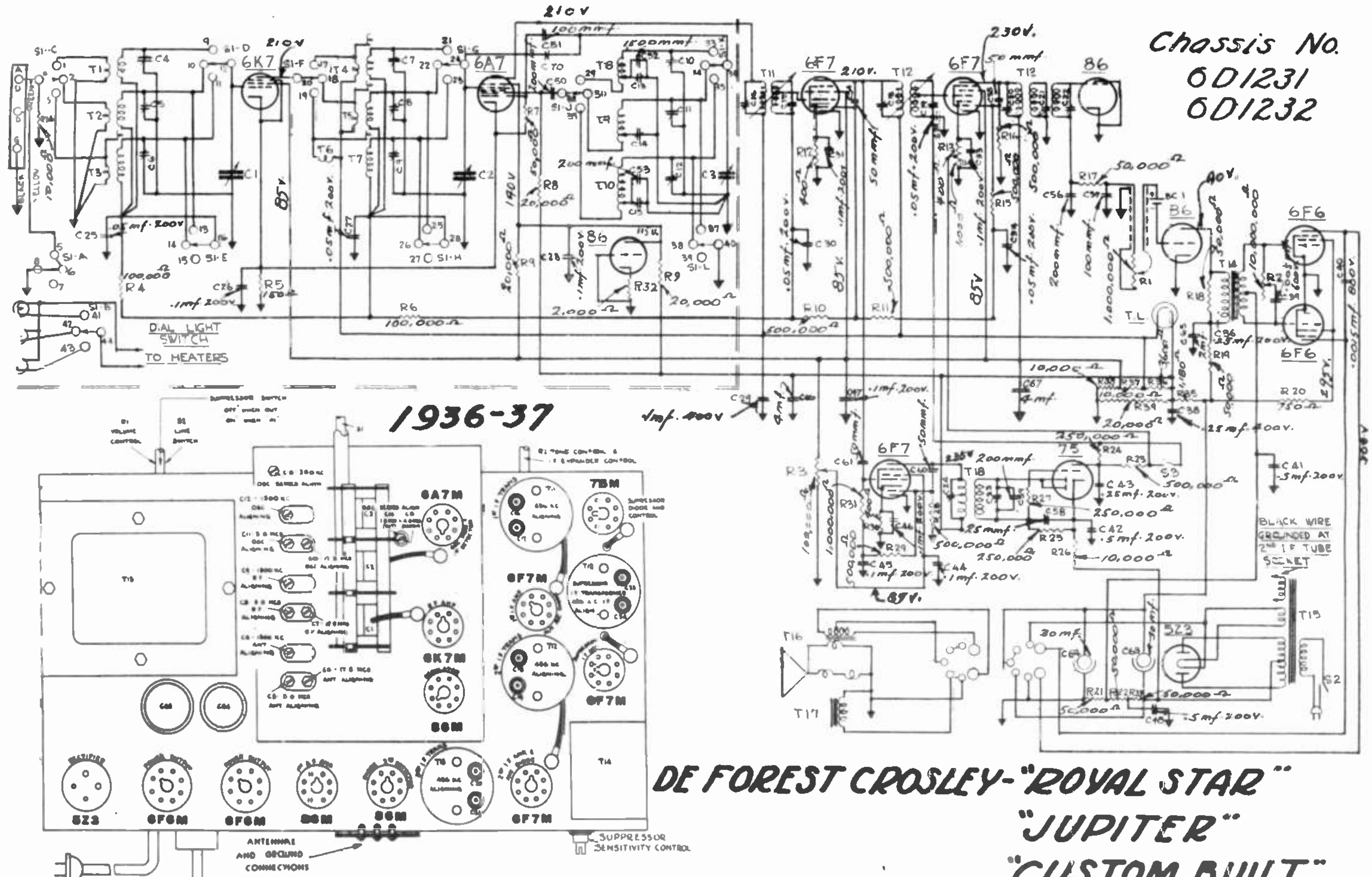


Alignment Data For Above Models on Data Sheet-

DATA SHEET ROGERS-MAJESTIC-22

World Radio History

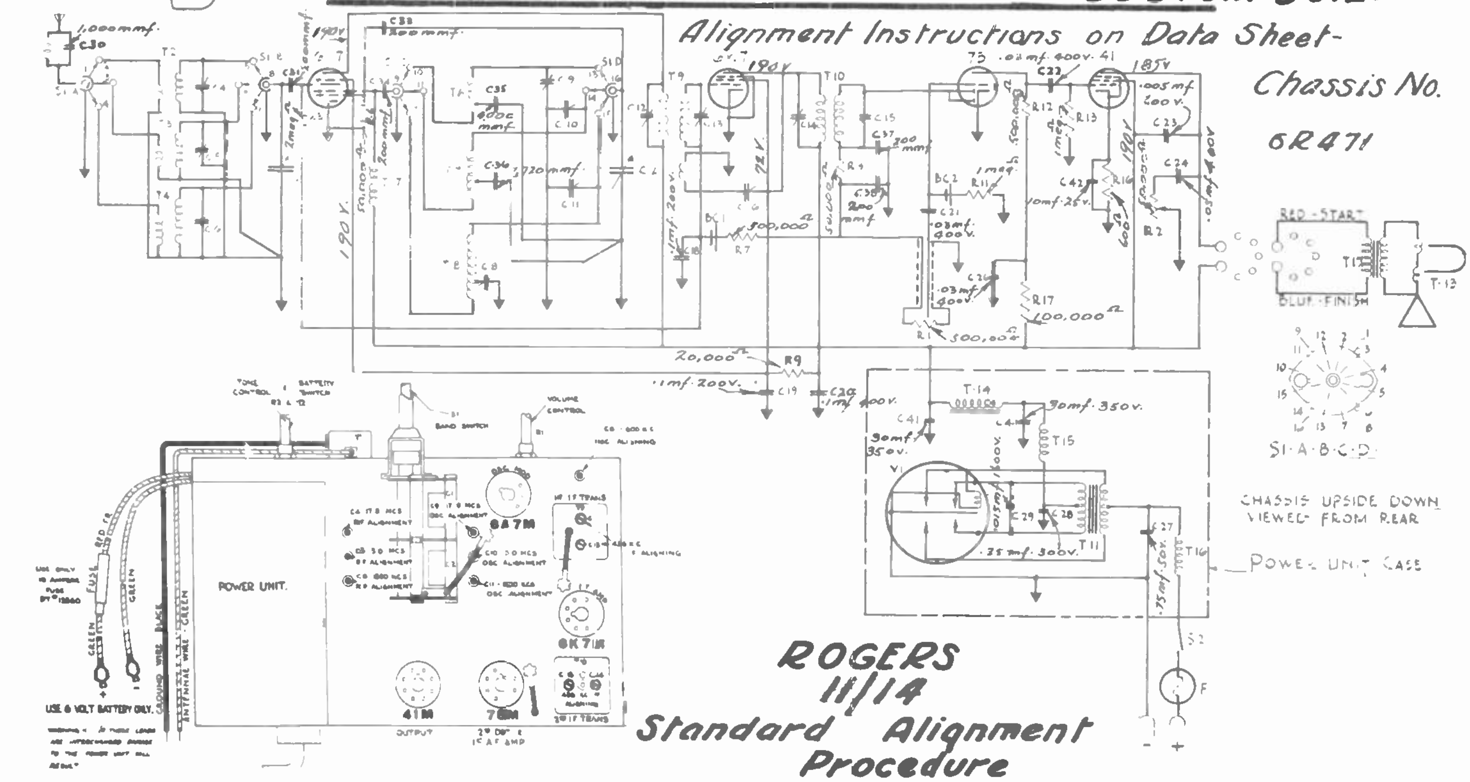
Chassis No. 6D1231 6D1232



DE FOREST CROSLEY-"ROYAL STAR" "JUPITER" "CUSTOM BUILT"

Alignment Instructions on Data Sheet-

Chassis No. 6R471



ROGERS 11/14 Standard Alignment Procedure

DATA SHEET ROGERS-MAJESTIC-23

ALIGNMENT INSTRUCTIONS

ROGERS- MODELS - 11/13-P, 11/10-P, 11/95, 11/97.

MAJESTIC-MODELS - QUEEN ELIZABETH, QUEEN MARY, RESOLUTION, BONAVENTURE.

DE FOREST CROSLEY-MODELS - COMET, LYRA, ROYAL STAR, JUPITER. CUSTOM BUILT.

I. F. STAGES (See also "Use of Oscillograph")

The following routine for I. F. alignment applies specifically to those chassis equipped with variable I. F. transformers. For those chassis equipped with fixed coupling transformers, the routine is similar, excepting that those adjustments covering "shaping" are not required.

(1) Connect an output meter of suitable range directly across the voice coil terminals of the speaker.

(2) Connect the .1 mfd. by-pass condenser across the oscillator section of the gang condenser C1.

(3) Connect the output lead of the signal generator to the control grid of the type 6A7M tube through the .1 mfd. condenser. Allow the control grid clip to remain in position. Wave change switch must be in "broadcast" position and gang condenser at minimum capacity (all out).

(4) Adjust the receiver "Fidelity" control to "full counter-clockwise" position. **This is very important.** This is the contracted or maximum selectivity position.
If the chassis under alignment is equipped with a noise suppressor stage, the volume control knob should be pulled out until the switch is operated, disconnecting the noise suppressor circuit.

(5) With receiver and signal generator "on," adjust signal generator to exactly 456 kc s. Adjust receiver volume control to maximum and generator output to give a low reading on output meter.

(6) Commencing at the secondary of the diode stage I. F. transformer and working progressively backward to the output of the 6A7M stage, align condensers C22, *C21, C20, C19, C18, C17 and C16 in that order for maximum increase in reading of output meter. Carefully recheck adjustments until further adjustment fails to improve alignment.

(7) Adjust receiver "Fidelity" control "full clockwise" to the "High Fidelity" position. With the control in this position the receiver will be in the "expanded" or least selective condition.

(8) Adjust generator output to a low level and gradually tune it upwards in frequency until a peak is found, which should appear at approximately 463.5 kc s. (or minus 7.5 kc s.). Holding the generator output constant, note carefully the exact output meter reading.

(9) Still holding the generator output constant, slowly tune the generator lower in frequency to locate a second peak, which should appear at approximately 448.5 kc s. (or minus 7.5 kc s.). If it is impossible to determine the 7.5 kc. interval exactly, it is important that these two measurements be made at exactly the same frequency interval above and below 456 kc s., otherwise symmetry cannot be obtained.

(10) Upon locating the second peak (and if the original adjustment has been properly made) it should be found that the reading of the output meter is approximately the same value as that noted at 463.5 kc s. Small variations in the order of plus or minus 5% are permissible. If the two readings agree within the limits given, it may be considered that proper alignment has been reached and that further adjustment of aligning condensers is unnecessary. Following this, other alignment can be carried out.

(11) If, however, it is found that the output meter readings do not agree within a reasonable amount, further adjustment will be in order. First try further aligning adjustments as outlined under section 4, 5 and 6 and rechecking as per sections 7, 8, 9 and 10 with the coupling in the selective position. Should this fail to produce results, locate the peak at which the lower output reading is obtained and try to increase this by carefully adjusting C20 and C22 of the diode stage I. F. transformer. As this stage peaks rather broadly, it is possible that slight mis-alignment may be encountered which would result in the condition discussed under section (11). **Do not attempt to re-align any of the 1st or 2nd I. F. trimmers with the coupling in the high fidelity or expanded position.**

(12) The adjustment of the suppressor I. F. transformer T18 is made in a similar manner to the other I. F. transformers except that the input signal should be reduced to a value where the suppressor is just starting to function, also the suppressor sensitivity control should be at maximum sensitivity (volume control knob in) when making this adjustment. As the circuits are brought nearer and nearer resonance the input signal should be correspondingly reduced to maintain the suppressor just at its threshold operating point. The condensers C23 and C24 permit adjustment of the suppressor I. F. transformer at 166 kc/s.

R. F. AND OSC. STAGES (STANDARD BROADCAST BAND)

(1) Connect the generator output to antenna and ground terminals "A" and "G" with the .0002 mfd. condenser right at terminal panel. Ground receiver and generator.

(2) Connect output meter across speaker voice coil terminals.

(3) Adjust wave-band switch for standard band operation.

(4) Set receiver volume control at maximum. Adjust fidelity control to normal position.

(5) Set receiver dial to log exactly 1,500 kc/s. Adjust signal generator to exactly 1,500 kc s. and set for a low value of reading on output meter.

(6) Align carefully C12, C9 and C6 (parallel padders) in that order for maximum increase in reading of output meter.

(7) Adjust signal generator to exactly 600 kc s. Set receiver to 600 kc s. signal and align C15 (series padder) rocking the tuning control in the usual manner during this adjustment.

(8) Retune signal generator and receiver to 1,500 kc s. and check condition of alignment of C12, C9 and C6 at that point. If C12 required more than a small amount of adjustment it may be found necessary to re-align the parallel padders to correct logging.
This completes the standard band alignment.

R. F. AND OSC. STAGES (POLICE AND AMATEUR BAND)

(1) Connect the signal generator output to antenna and ground terminals "A" and "G" with the 400 ohm resistor in the generator lead right at the terminal panel.

(2) Connect output meter across speaker voice coil terminals.

(3) Adjust wave-band switch for police band operation.

(4) Set receiver volume control at maximum. Fidelity control should be in normal position.

(5) Set receiver dial to log exactly at 5 mc s. Adjust signal generator to exactly 5 mc s. and adjust output for a low value of reading on output meter.

(6) Align carefully the parallel padders C11, C8 and C5, in that order, for maximum increase in reading of output meter.

(7) Adjust signal generator to exactly 1.8 mc s. Set receiver tuning to 1.8 mc s.

(8) Align 1.8 mc s. series padder C14 rocking tuning control slightly in the usual manner during this adjustment, until maximum output is obtained.

(9) Retune receiver and generator to 5 mc s. and check condition of alignment of the parallel padders C11, C8 and C5, at that point. If the series padder C14 required more than a small amount of change, it may be found necessary to align the parallel padders to correct logging.
This completes the Police-Amateur band alignment.

R. F. AND OSC. STAGES (SHORT-WAVE FOREIGN BAND)

Alignment on this band is somewhat different and should not be attempted until the following procedure is carefully studied, otherwise it is possible to apparently align the parallel pads, but still find the sensitivity extremely low.

(1) Connect signal generator output to "A" and "G" terminals of receiver with 400 ohms, dummy antenna resistor right at receiver terminal panel.

(2) Ground generator and receiver.

(3) Place receiver and generator in operation. Adjust wave-change switch to short wave band. Set volume control at maximum. Adjust fidelity control to "normal" position. Tune receiver dial to 17.8 mc s. and set generator at same frequency.

(4) Commence aligning procedure by adjusting oscillator trimmer C10, then the interstage C7, carefully rocking to gang condenser meanwhile. This is important, as the sensitivity may be down as much as ten times when the normal "straight-through" process of alignment is used. When further rocking and alignment produces no improvement in sensitivity, proceed to align the antenna circuit C4. Sometimes rocking the gang while aligning will improve the sensitivity on this band.

(5) Adjust signal generator to 6 mc s. and tune in the signal on the receiver. Adjust the series padder C13 while rocking the gang in the usual manner until the sensitivity is maximum.

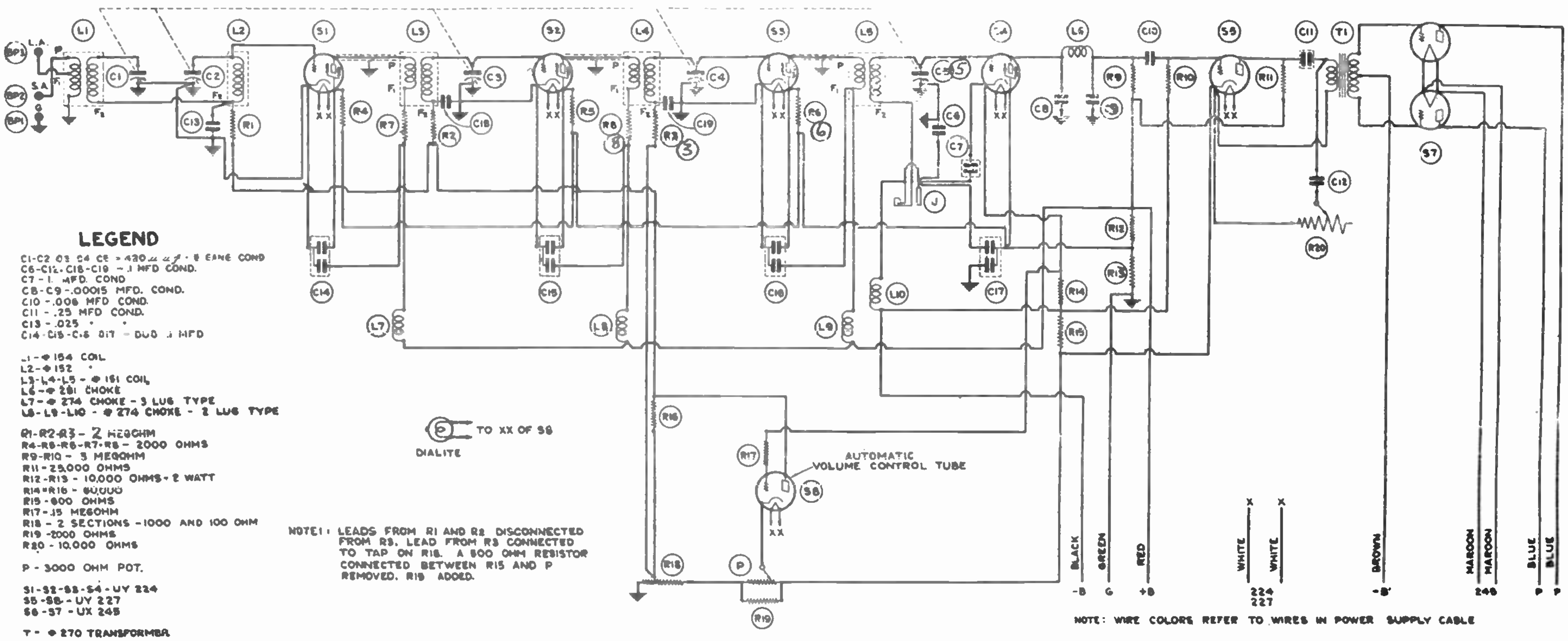
(6) Recheck all adjustments at 17.8 mc s., being sure to rock the tuning condenser at the same time the interstage trimmer is adjusted.

(7) The set should now be checked to make sure that the oscillator has not been aligned on the image. Leave the signal generator set at 17,800 kc s. increase its output considerably, then tune the receiver 912 kc s. lower in frequency or 16,888 kc s. (approximately). If the oscillator is correctly aligned, the image will be found here. If it does not appear, it will be found 912 kc s. higher in frequency than 17,800 or at 18,712 kc s. This indicates that the wrong oscillator peak has been chosen. The trimmer should be loosened off until the correct one is located.

ROGERS-MAJESTIC-24.

DATA SHEET

World Radio History



LEGEND

C1-C2 C3 C4 C5 = 420 $\mu\mu f$ - 5 GANG COND
C6-C12-C18-C19 - .1 MFD COND.
C7 - 1. MFD. COND
C8-C9 -.00015 MFD. COND.
C10 -.006 MFD COND.
C11 - .25 MFD COND.
C13 - .025 " "
C14-C15-C16 C17 - DUO .1 MFD

L1 - # 154 COIL
L2 - # 152 "
L3-L4-L5 - # 151 COIL
L6 - # 281 CHOKE
L7 - # 274 CHOKE - 3 LUG TYPE
L8-L9-L10 - # 274 CHOKE - 2 LUG TYPE

R1-R2-R3 - 2 MEGOHM
R4-R5-R6-R7-R8 - 2000 OHMS
R9-R10 - 5 MEGOHM
R11 - 25,000 OHMS
R12-R13 - 10,000 OHMS - 2 WATT
R14-R16 - 60,000
R15 - 800 OHMS
R17 - .15 MEGOHM
R18 - 2 SECTIONS - 1000 AND 100 OHM
R19 - 2000 OHMS
R20 - 10,000 OHMS

P - 3000 OHM POT.

S1-S2-S3-S4 - UY 224
S5-S8 - UY 227
S6-S7 - UX 245

T - # 270 TRANSFORMER

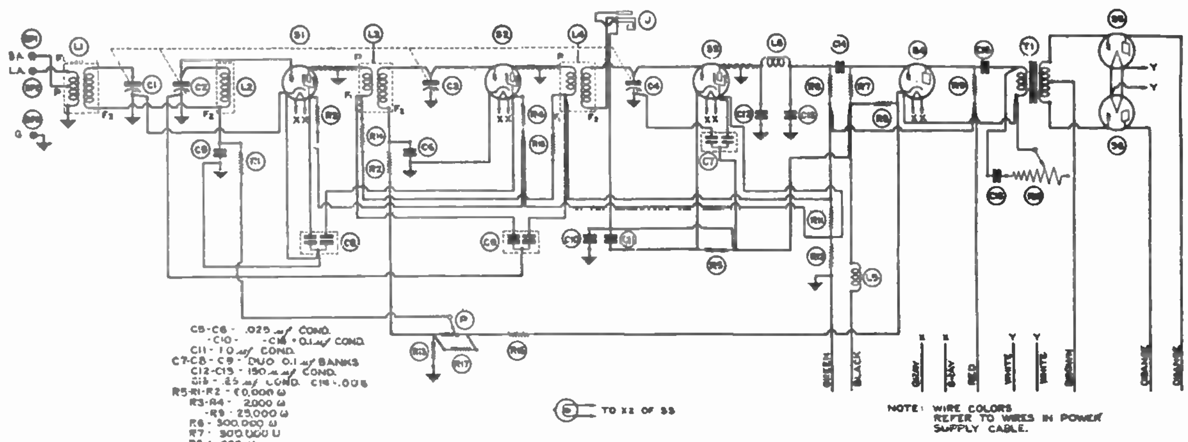
Schematic Diagram of Model 35-A SILVER MARSHALL Radio Chassis 1930

SILVER-MARSHALL—Model 35A

Tube No. in Order Tested (1)	Type of Tube (2)	Position of Tube in Set (3)	Meter Readings with Jewell Test Plug in Socket of: Operating Voltages: Filament or Heater (4)	Plate or Anode (5)	Control Grid—Space 60+ (6)	Normal Grid—Screen 60+ (7)	Cathode to Heater (8)	Milliamperes: Screen on L.P. 00 Plate (9)	Plate S.R. 00 Plate (10)	Tube Test (11)
1	224	1 R. F.	2.15	176	0	74	66	-	3.7	
2	224	2 R.F.	2.15	176	0	73	66	-	3.5	
3	224	3 R.F.	2.17	188	3	73	60	-	2.0	
4	224	Det.	2.19	118	11	40	11	-	.2	
5	227	1 A.F.	2.20	176	3	14	-	-	2.0	
6	245	2 A.F.	2.30	216	-	40	-	-	20	
7	245		2.30	216	-	40	-	-	20	
8	227	V.Con.	2.15	15	8	38	-	-	-	
9	280	Rect. .5.		-	-	-	-	28	28	
10										

SILVER-MARSHALL—Model 34A

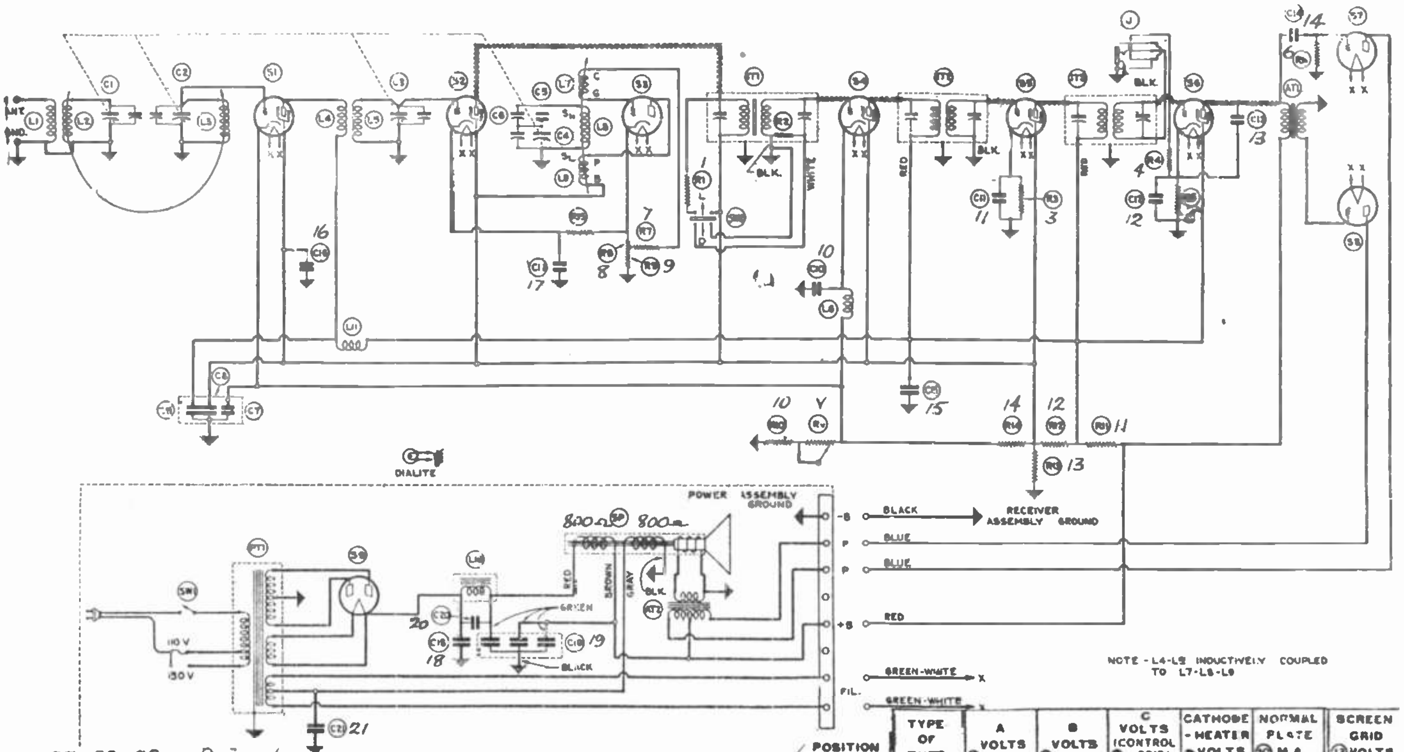
Tube No. in Order Tested (1)	Type of Tube (2)	Position of Tube in Set (3)	Meter Readings with Jewell Test Plug in Socket of: Operating Voltages: Filament or Heater (4)	Plate or Anode (5)	Control Grid—Space 60+ (6)	Normal Grid—Screen 60+ (7)	Cathode to Heater (8)	Milliamperes: Screen on L.P. 00 Plate (9)	Plate S.R. 00 Plate (10)	Tube Test (11)
1	224	1 R.F.	2.40	184	3.5	-	61	-	2.4	
2	224	2 R.F.	2.40	185	3	-	64	-	2.4	
3	224	Det.	2.44	106	13	-	13	-	.8	
4	227	1 A.F.	2.48	140	-	2	9	-	4.4	
5	245	2 A.F.	2.34	220	-	40	-	-	20	
6	245	2 A.F.	2.32	220	-	40	-	-	21	
7	280	Rect.	5.	-	-	-	-	26	26	



C5-C6 - .025 μf COND.
-C10- -C16 - 0.1 μf COND.
C11 - 1.0 μf COND.
C7-C8 - C9 - DUO 0.1 μf BANKS
C12-C13 - 150 $\mu\mu f$ COND.
C13 - .25 μf COND. C14 - .006
R5-R1-R2 - 60,000 ω
R3-R4 - 2,000 ω
-R9 - 25,000 ω
R6 - 300,000 ω
R7 - 300,000 ω
R8 - 400 ω
R10 - 10,000 ω
R11-R12 - 10,000 ω
R15 - 100 ω
R16-R14-R13 - 2000 ω
P - 1000 ω R17 - 2600 OHMS

Schematic Diagram of Model 34-A SILVER MARSHALL Radio Chassis 1930

World Radio History



32 A POWER PACK

Schematic Diagram of 36 A Receiver and 32 A Power Pack

C7-C8-C9 - 0.1 mf
C10 - 0.25 mfd.
C11 - 0.1 mfd.
C12 - 1.0 mfd.
C13 - .001 mfd.
C14 - 0.25 mfd.
C15 - 1.0 mfd.
C16 - 0.25 mfd.
C17 - 0.1 mfd.
C18 - 1 mfd.
C19 - Triple 8
C20 - o-25 mfd.
C21 - 0.1 mfd.

R8-R9 - 100 ohms
R10 - 375 ohms
Rv - 3,000 ohms
R11 - 3,500 ohms
R12 - 4,000 ohms
R13 - 10,000 ohms
R14 - 20,000 ohms
R15 - 10,000 ohms

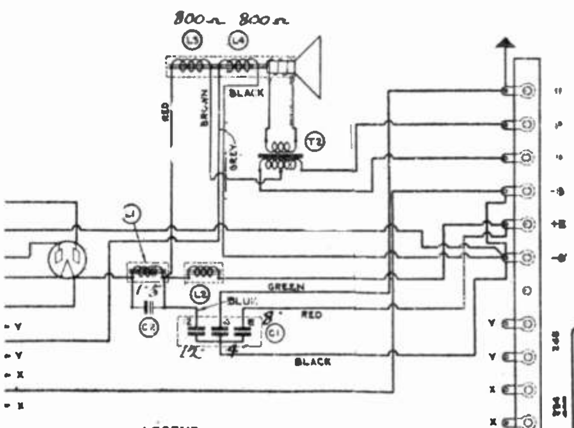
R1 - 25,000 ohms
R2 - 500 ohms
R3 - 750 ohms
R4 - 2,000 ohms
R5 - 25,000 ohms
R6 - 300,000 ohms
R7 - 400 ohms

POSITION	TYPE OF TUBE	A VOLTS (6)	B VOLTS (7)	C VOLTS (CONTROL GRID) (8)	CATHODE-HEATER VOLTS (9)	NORMAL PLATE M.A. (10)	SCREEN GRID VOLTS (13)
RF	224	2.27	162		7	4	85
1 DET	"	"	76		37.5	3	80
OSC.	227	"	82		37.5	11	—
1. INT	224	"	160		42.5	4	
2 "	"	"	"		45.	"	
2 DET	"	"	245		7.	"	
P.P.	(2)245	2.4	255	42.5		28	

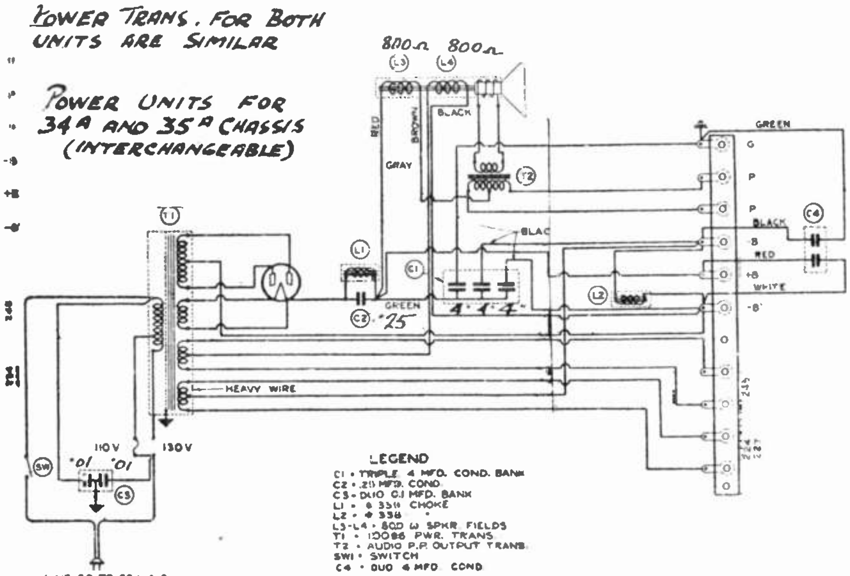
36A RECEIVER
32A POWER UNIT 1931

POWER TRANS. FOR BOTH UNITS ARE SIMILAR

POWER UNITS FOR 34A AND 35A CHASSIS (INTERCHANGEABLE)



LEGEND
C1 - 12-8-4 MFD. COND.
C2 - 1.5 MFD. COND.
C3 - DUO .1 MFD. COND.
L1 - #334 CHOKE
L2 - #335 "
L3-L4 - 800 ω SPEAKER FIELDS
T1 - #10096 POWER TRANS.
T2 - # 271 P.P. OUTPUT TRANS.
SW - SWITCH



LEGEND
C1 - TRIPLE 4 MFD. COND. BANK
C2 - .25 MFD. COND.
C3 - DUO 0.1 MFD. BANK
L1 - # 334 CHOKE
L2 - # 338 "
L3-L4 - 800 ω SPKR. FIELDS
T1 - 10086 PWR. TRANS.
T2 - AUDIO P.P. OUTPUT TRANS.
SW1 - SWITCH
C4 - DUO 4 MFD. COND.

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

1930

Schematic Diagram of 33-A Power Supply (60 cycle) for SILVER MARSHALL Radio

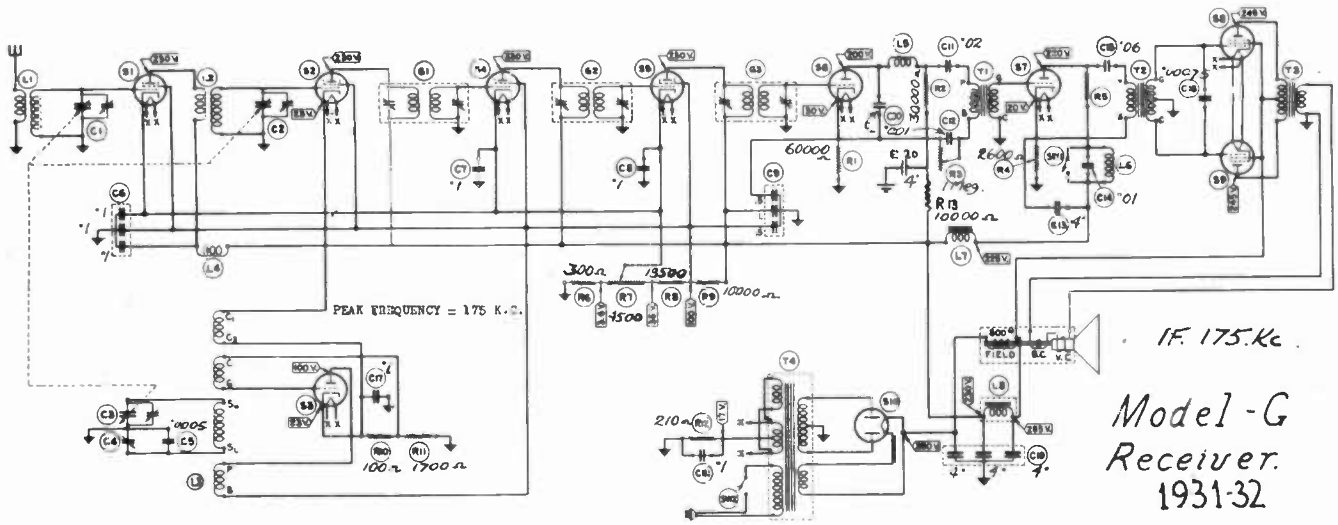
—Courtesy Silveradio Limited.

World Radio History

LEGEND FOR MODELS 30-B.C AND D

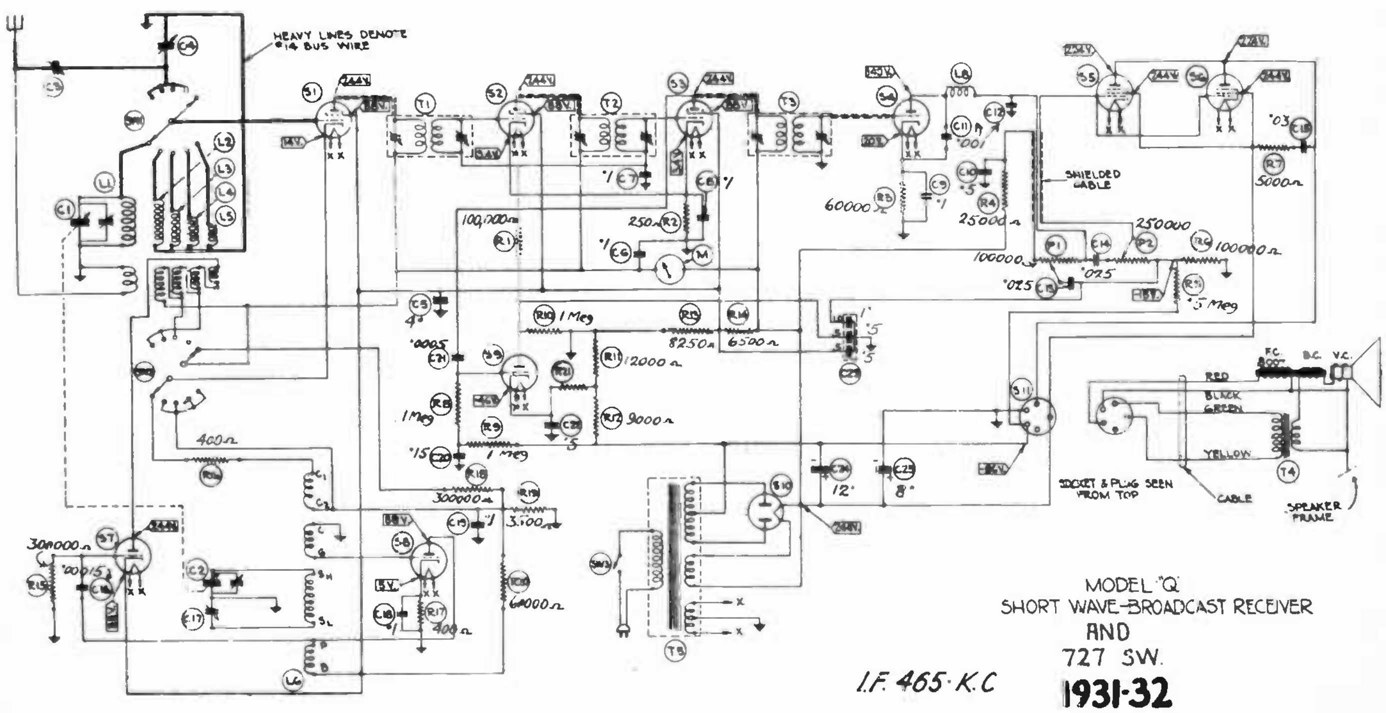
C^1 — .00035 mfd.	C^8 — .00015	C^{14} — 2.	R^6 — 3,000 ohms.	R^{12} — 1,500 ohms
C^2 — .00035 mfd.	C^9 — .1	R^1 — 400 ohms	R^7 — 60,000 "	R^{13} — 800
C^3 — .00035 "	C^{10} — .1	R^2 — 400 "	R^8 — 2,000	R^{14} — 2 meg
C^4 — .00035 "	C^{11} — .1	R^3 — 400 "	R^9 — 10,000	
C^5 — .00015	C^{12} — .1	R^4 — 3,000	R^{10} — 300,000	
C^6 — .0075	C^{13} — 4.	R^5 — 3,000	R^{11} — 3,500	

SEE DATA SHEET . 1.



I.F. 175 Kc.

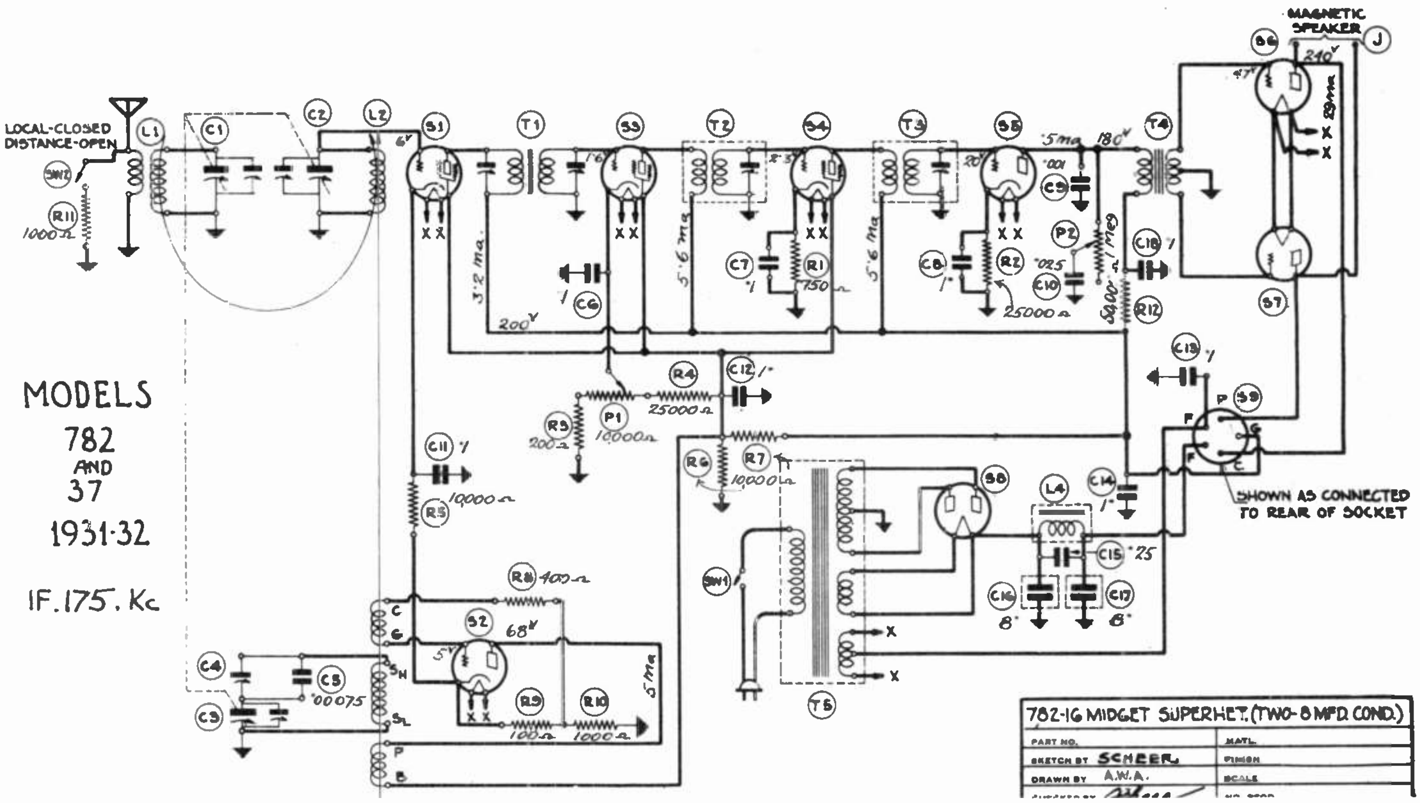
Model - G Receiver.
1931-32

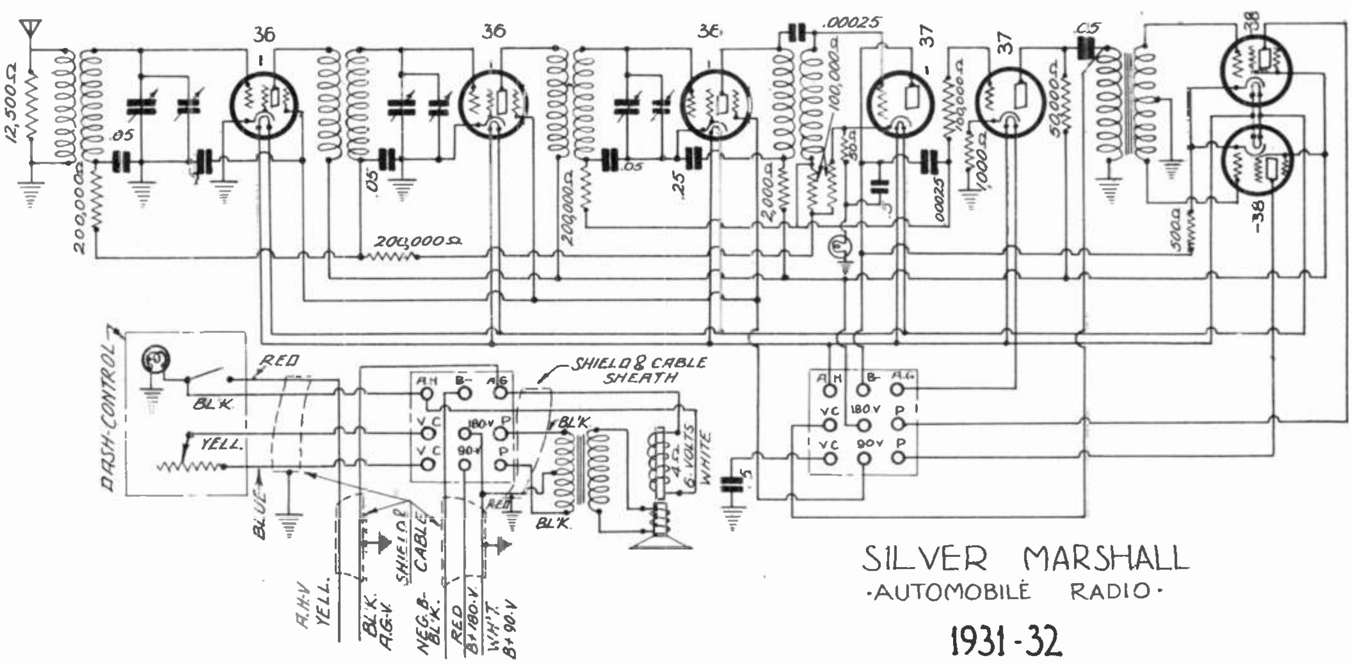


MODEL 'Q'
SHORT WAVE-BROADCAST RECEIVER
AND
727 SW.
1931-32

I.F. 465 K.C

World Radio History

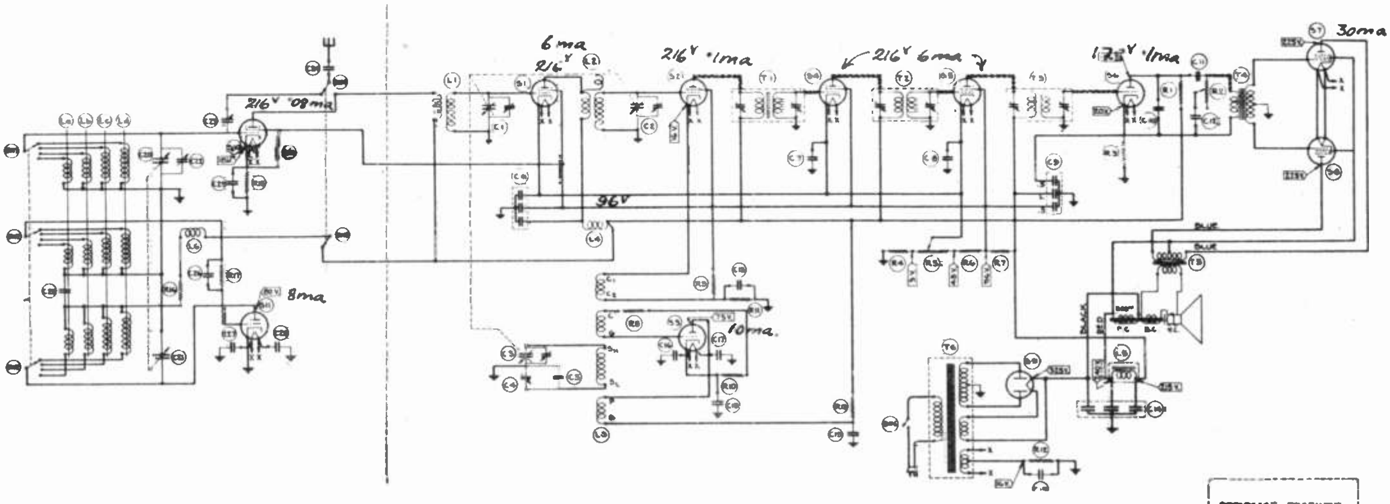




SILVER MARSHALL
·AUTOMOBILE RADIO·
1931-32

World Radio History

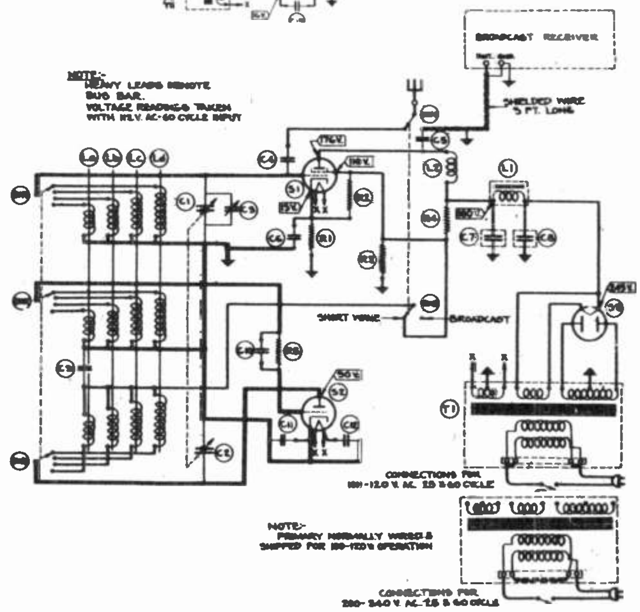
Model 726 SW. 1931-32 IF 175 KC.

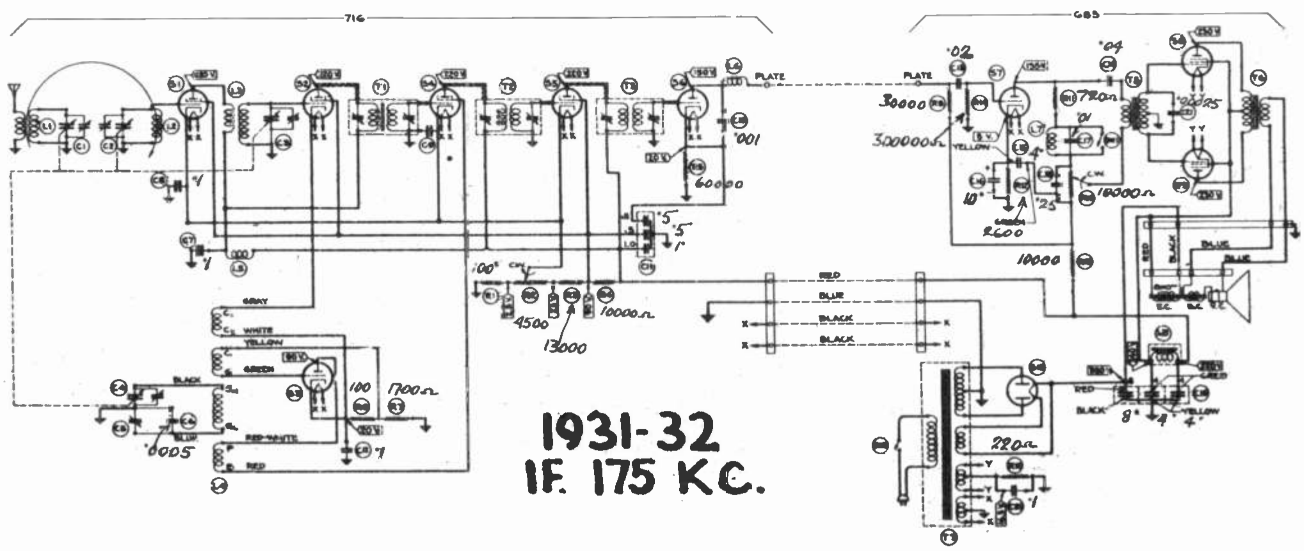


NOTE-
MODEL-726 SW. IS
BEARCAT CONVERTOR AND
MODEL-D-RECIEVER.

LEFT-
BEARCAT RECIEVER.

LOWER-
MODEL-716-TUNER
AND 683 AMPLIFIER.





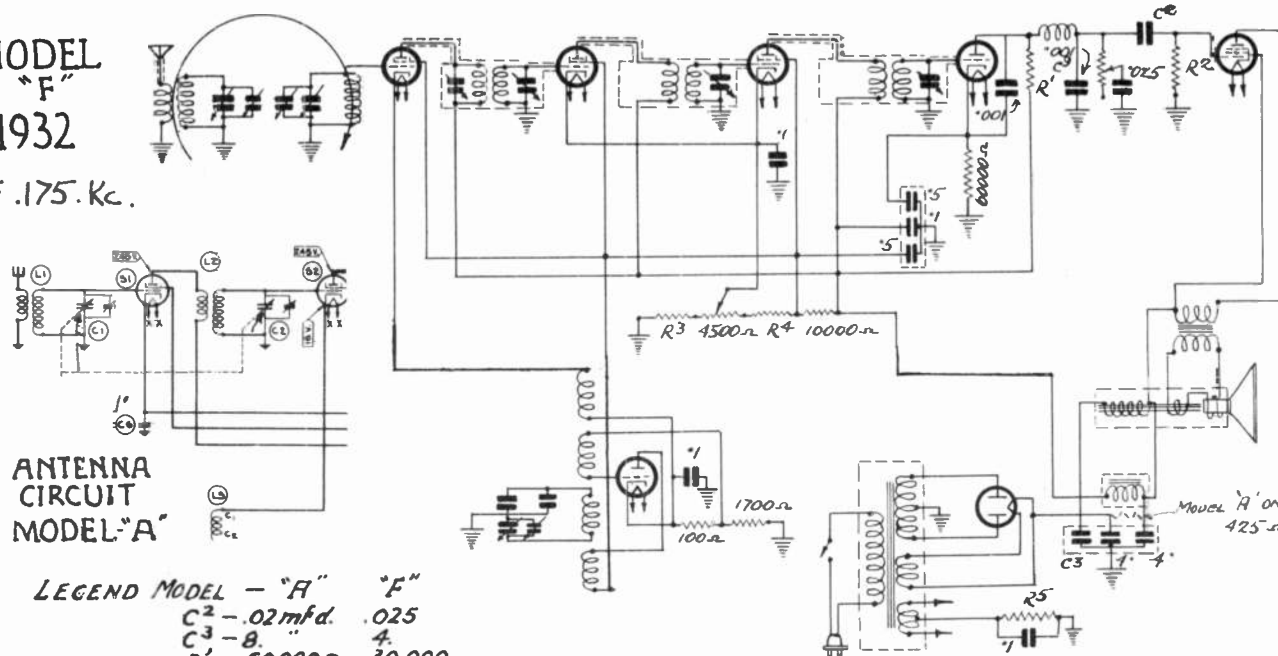
1931-32
IF. 175 KC.

DATA SHEET Printed in Canada SILVER MARSHALL-6

World Radio History

MODEL "F" 1932

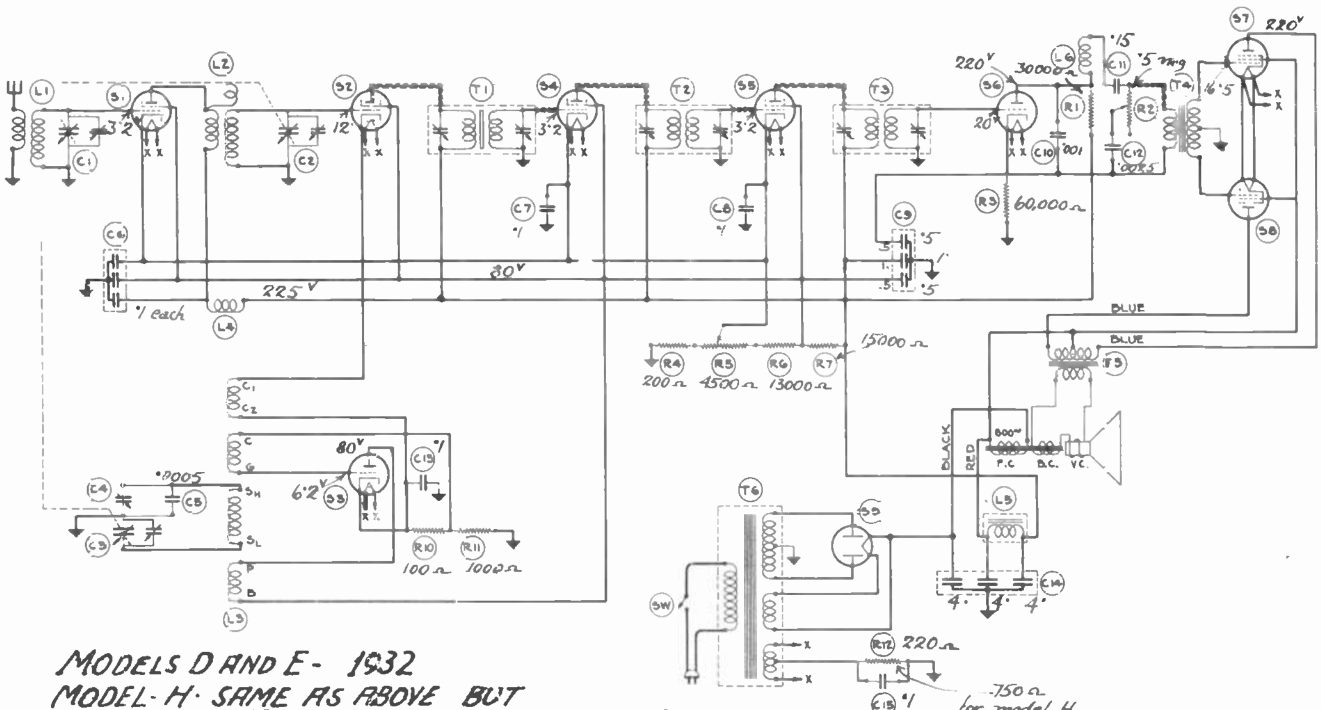
IF .175 Kc.



ANTENNA CIRCUIT MODEL "A"

LEGEND MODEL —	"A"	"F"
C^2	.02 mfd.	.025
C^3	8. "	4.
R'	60,000 Ω	30,000
R^2	100,000	25,000
R^3	120	100
R^4	10,000	6,000
SPKR FIELD	800 Ω	1250 Ω

MODELS "A" AND "F" PRACTICALLY THE SAME EXCEPT THAT "A" HAS EXTRA R.F. TUBE AS SHOWN.

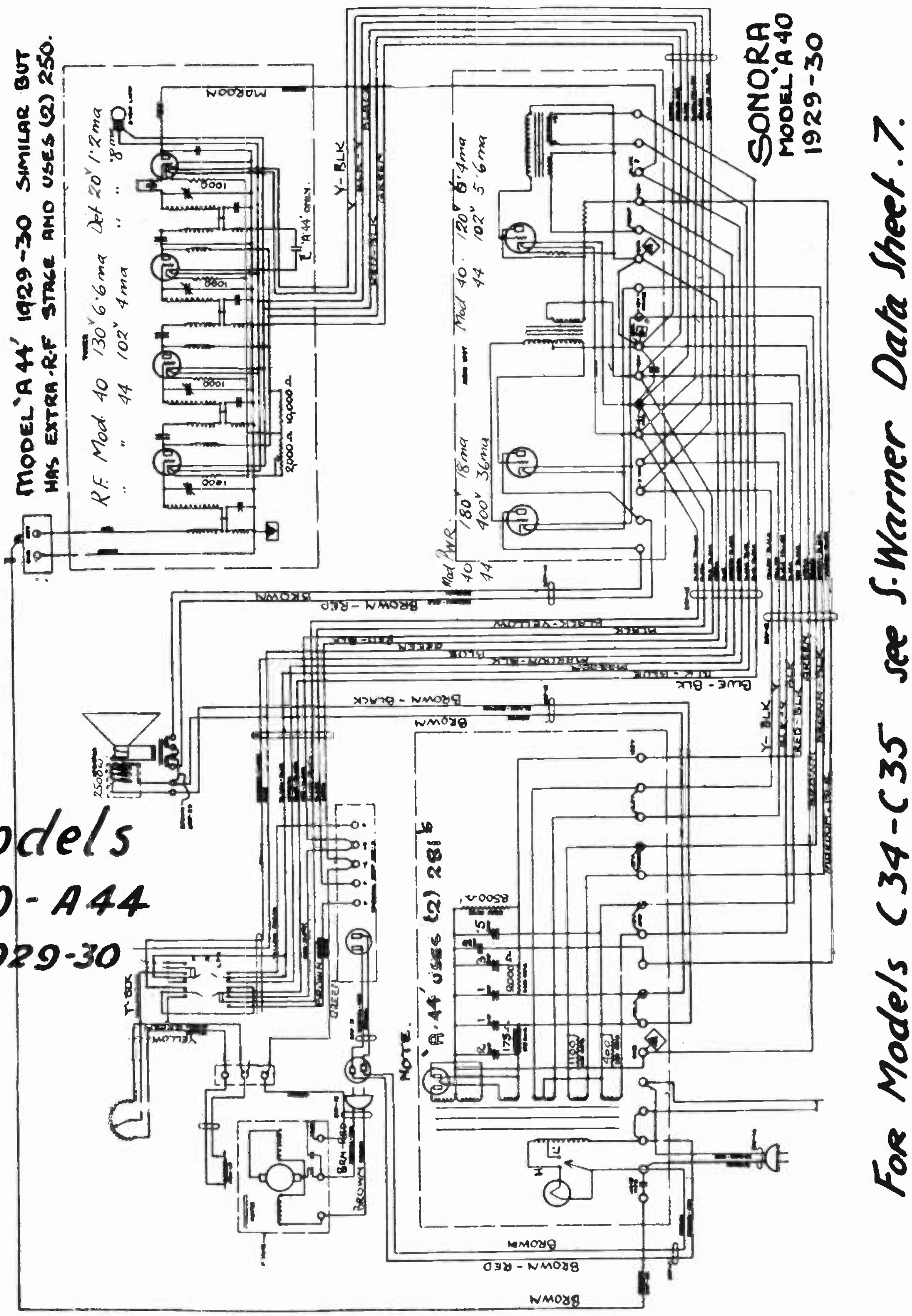


MODELS D AND E - 1932

MODEL-H- SAME AS ABOVE BUT USES P.P. 45'S

IF .175 Kc

World Radio History



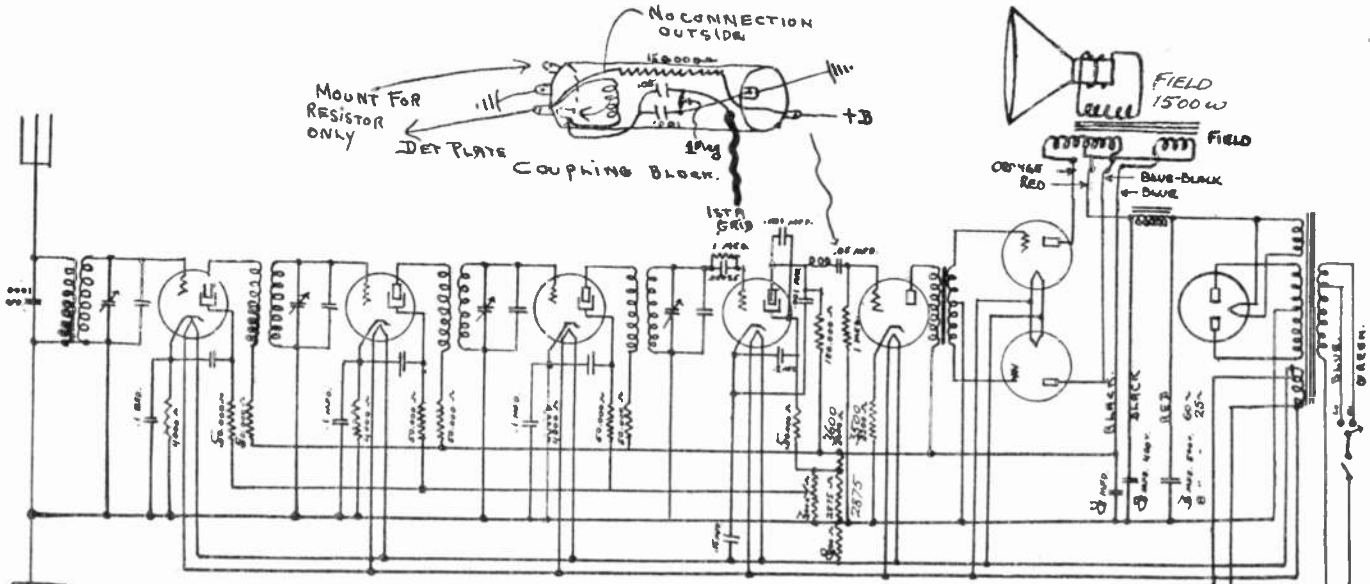
Models
A-40 - A44
1929-30

Printed in Canada

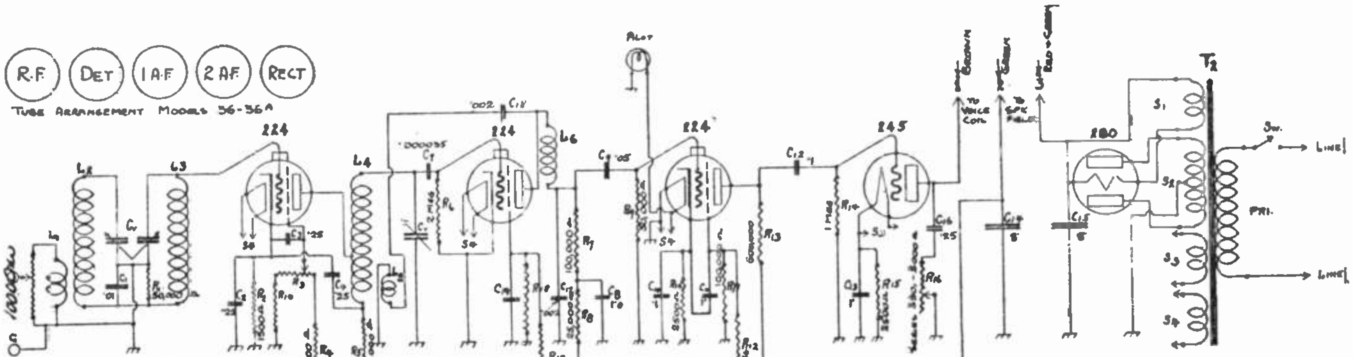
DATA SHEET

—Courtesy Sonora Corp. of Canada Ltd.

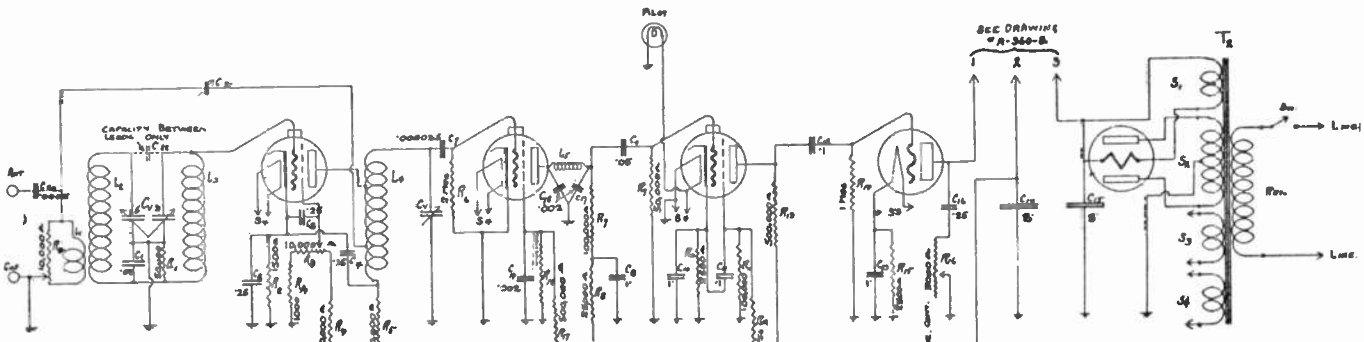
World Radio History



SONORA – MODELS – 31 AND 33 – 1929-30



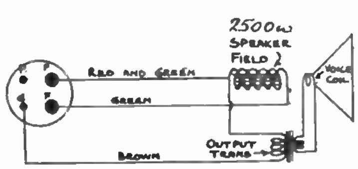
1930-31
MODEL-36.



1930-31
MODEL-36A

TYPE	POS.	'A'	'B'	'C'	SCREEN	CATH	M.A.
224	RF	2·4	150	2.5	40	·5	1·5
"	DET	"	100*	IND*	13*	—	2·5
"	1AF	"	35*	·5*	5*	·5	·5
245	2AF	"	235	·4*			19·4

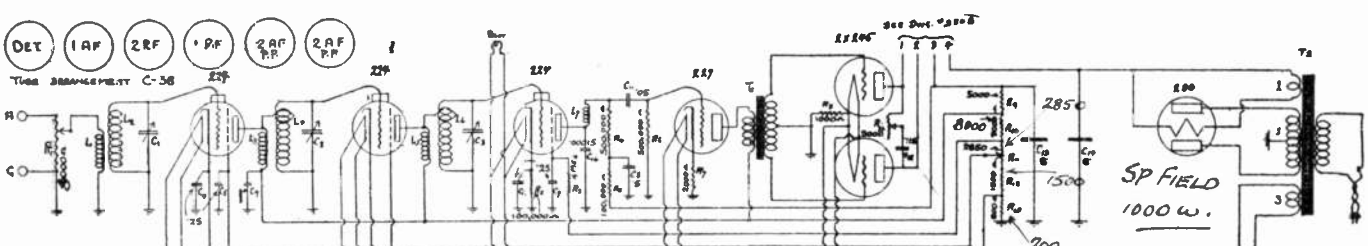
LINE VOLTAGE 115 VOLUME CONTROL MAX.
* READINGS NOT ACCURATE OWING TO RESISTANCE OF METER.



TYPE	POS.	'A'	'B'	'C'	SCREEN	CATH	M.A.
224	RF	2·35	165	3	50	45	1·2
	DETC	"	40 (on 300* scale)			22	·5
	1AF	"	155	7·5*	—		5·0
	2AF	"	225	45	—	—	23·0

LINE VOLTAGE 115 VOLUME CONTROL MAX.
* READINGS NOT ACCURATE OWING TO RESIST- OF METER

ANALYZER READINGS
C-38



MODEL C38.
1930-31

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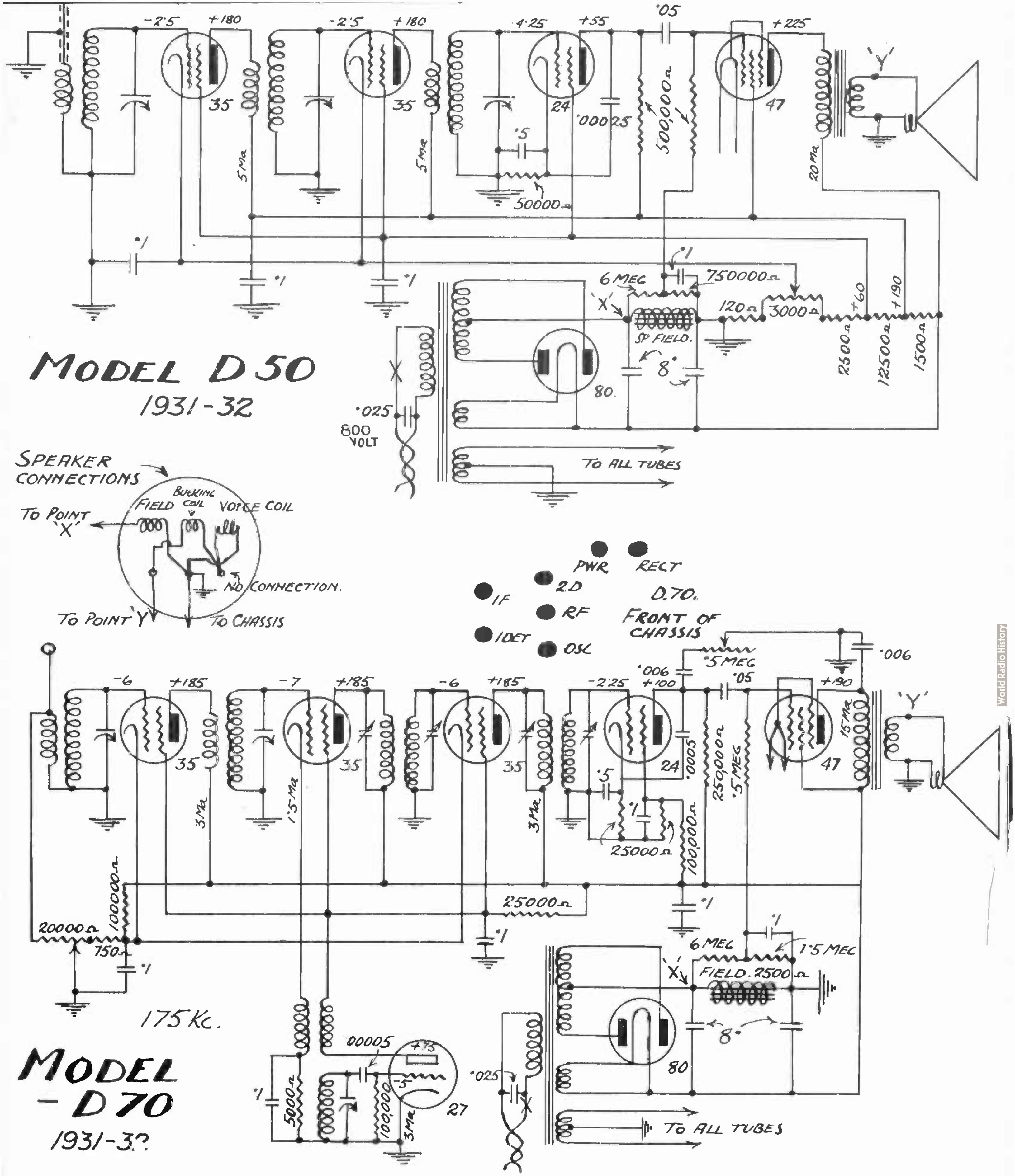
DATA SHEET **SONORA—3**

NOTE—FOR MODELS C34 AND C35 SEE STEWART-WARNER, DATA SHEET 7

World Radio History



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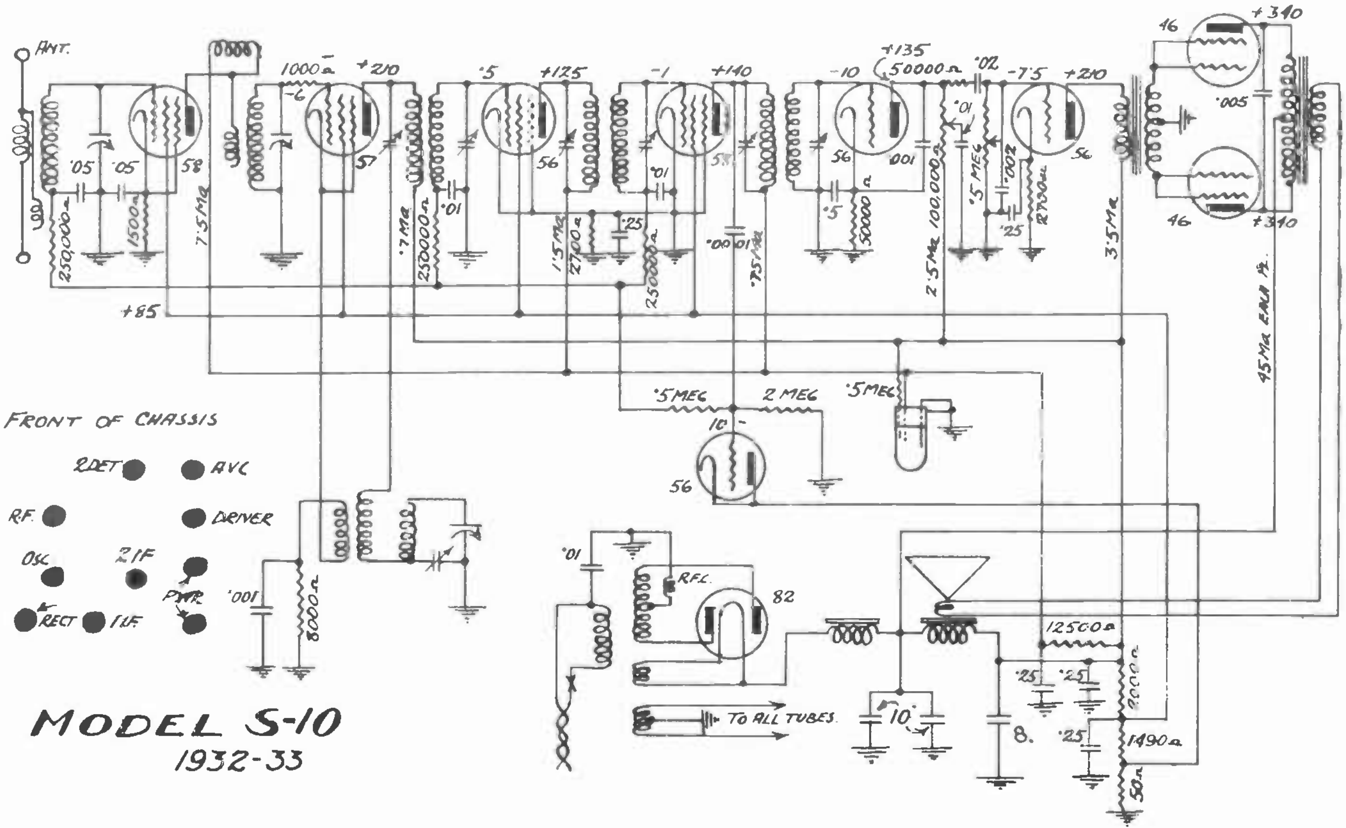
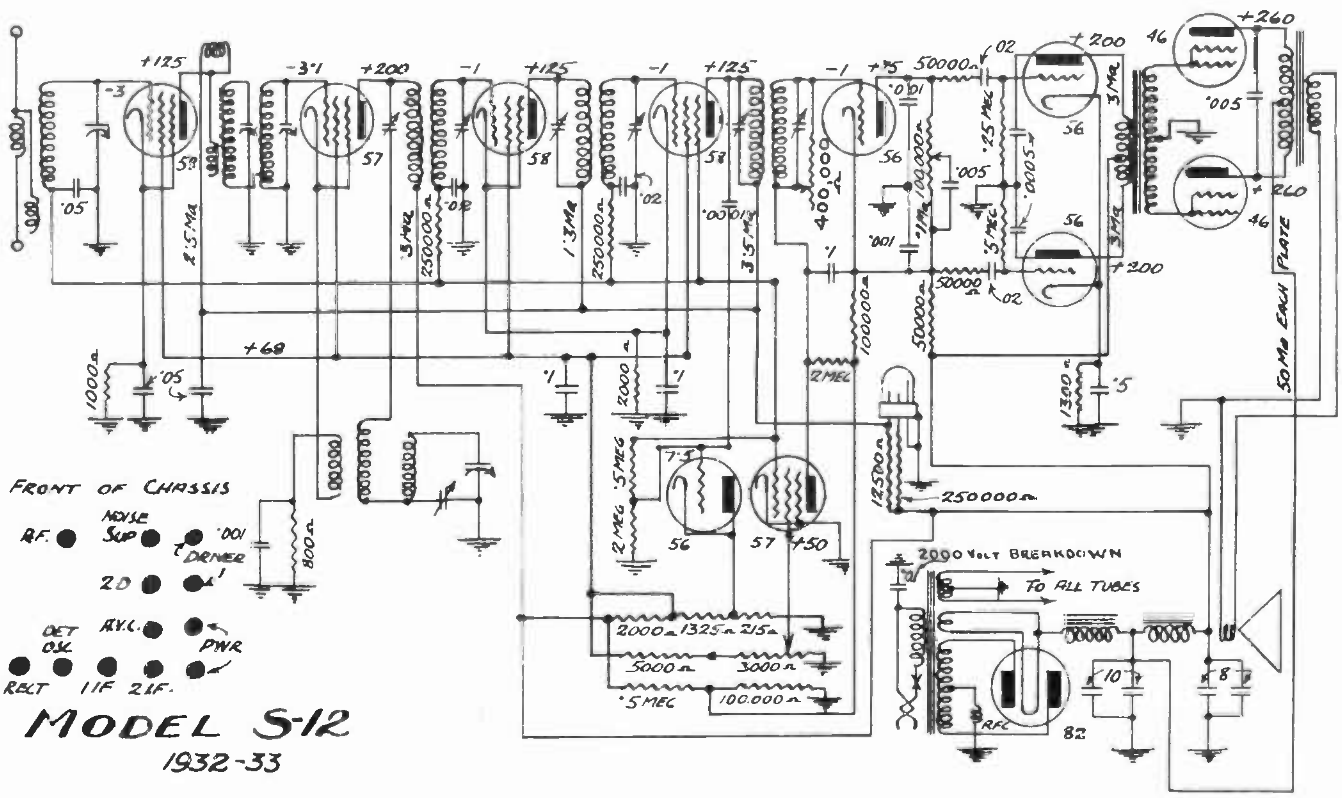
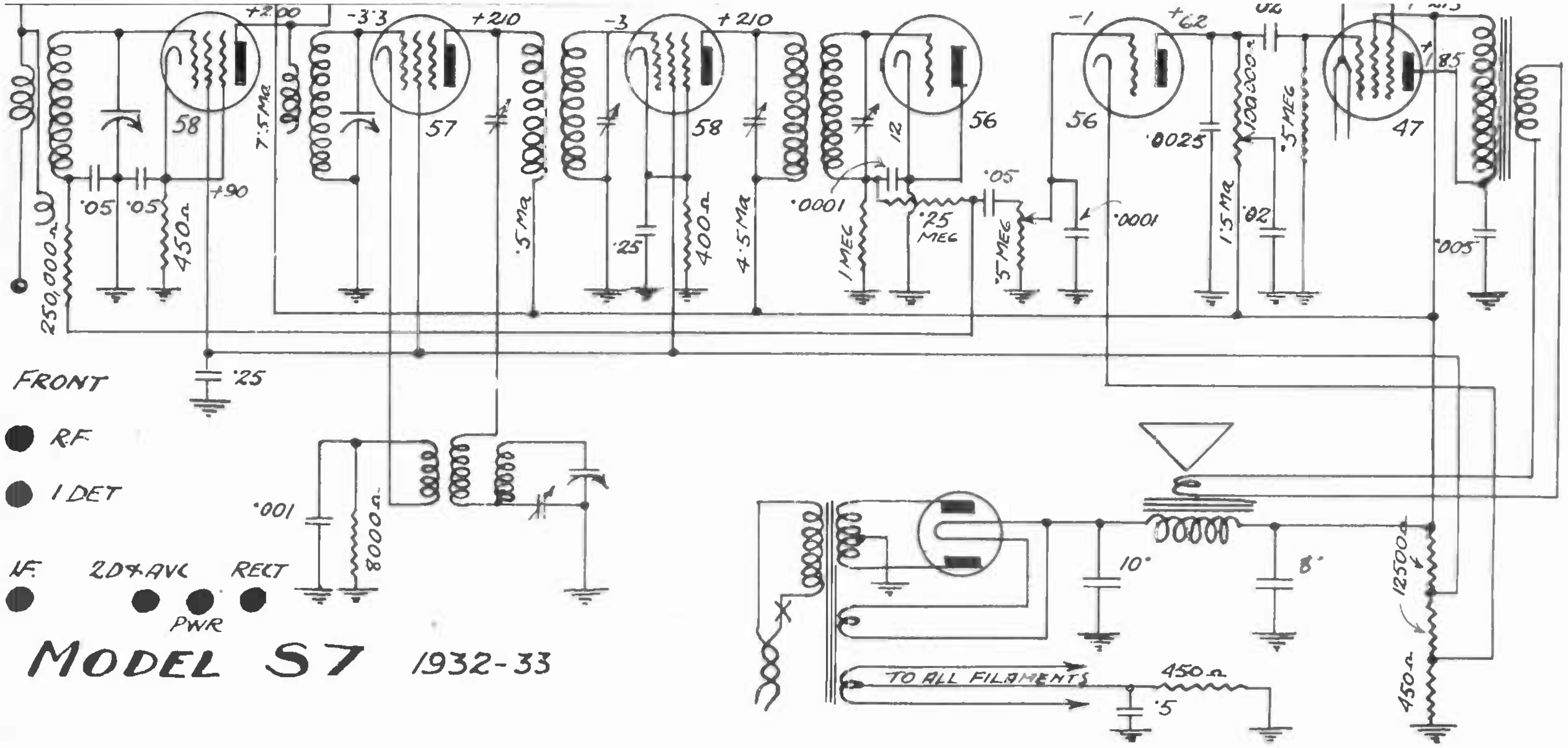


MODEL S-10
1932-33

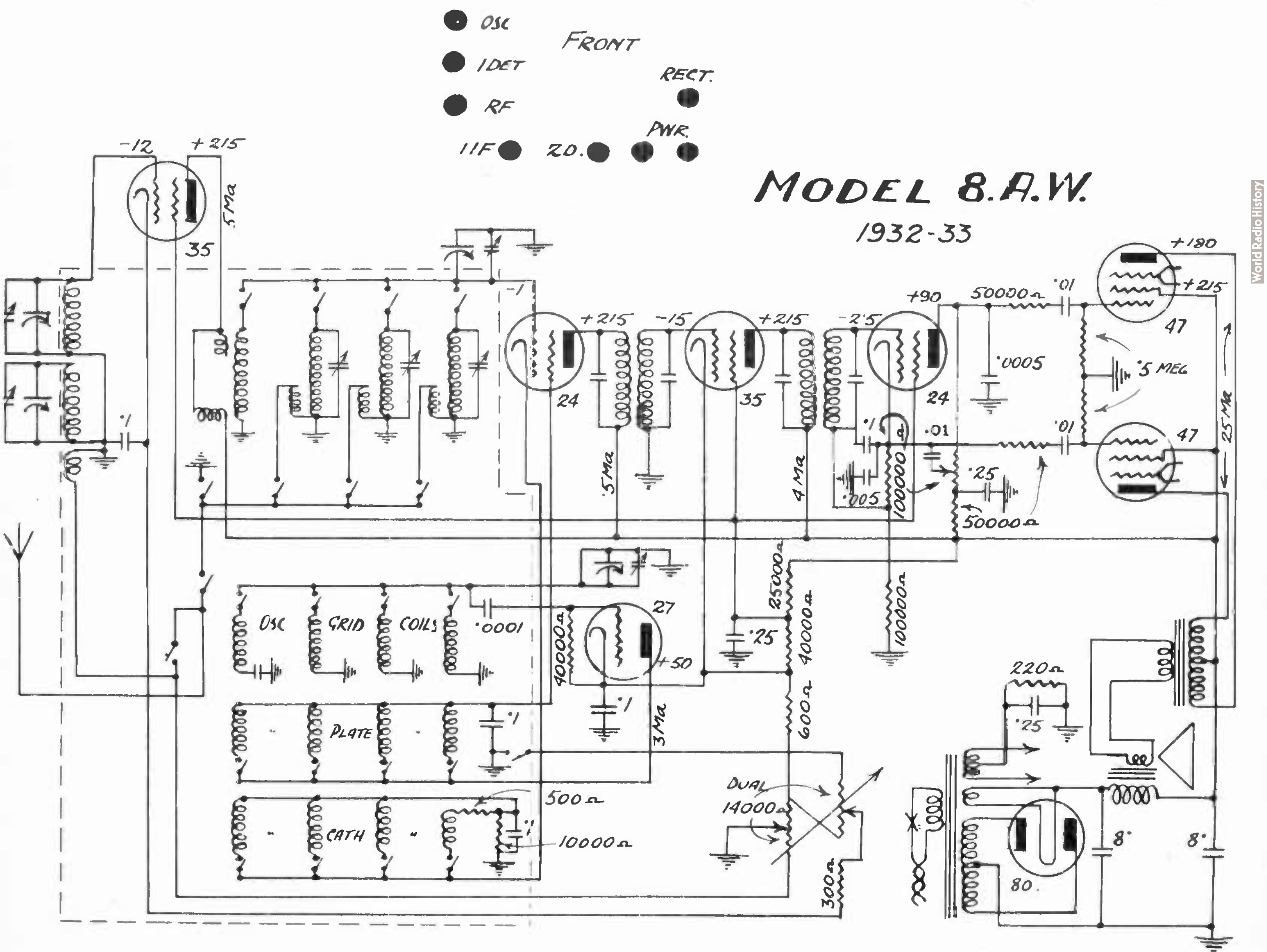


MODEL S-12
1932-33

World Radio History



MODEL S7 1932-33



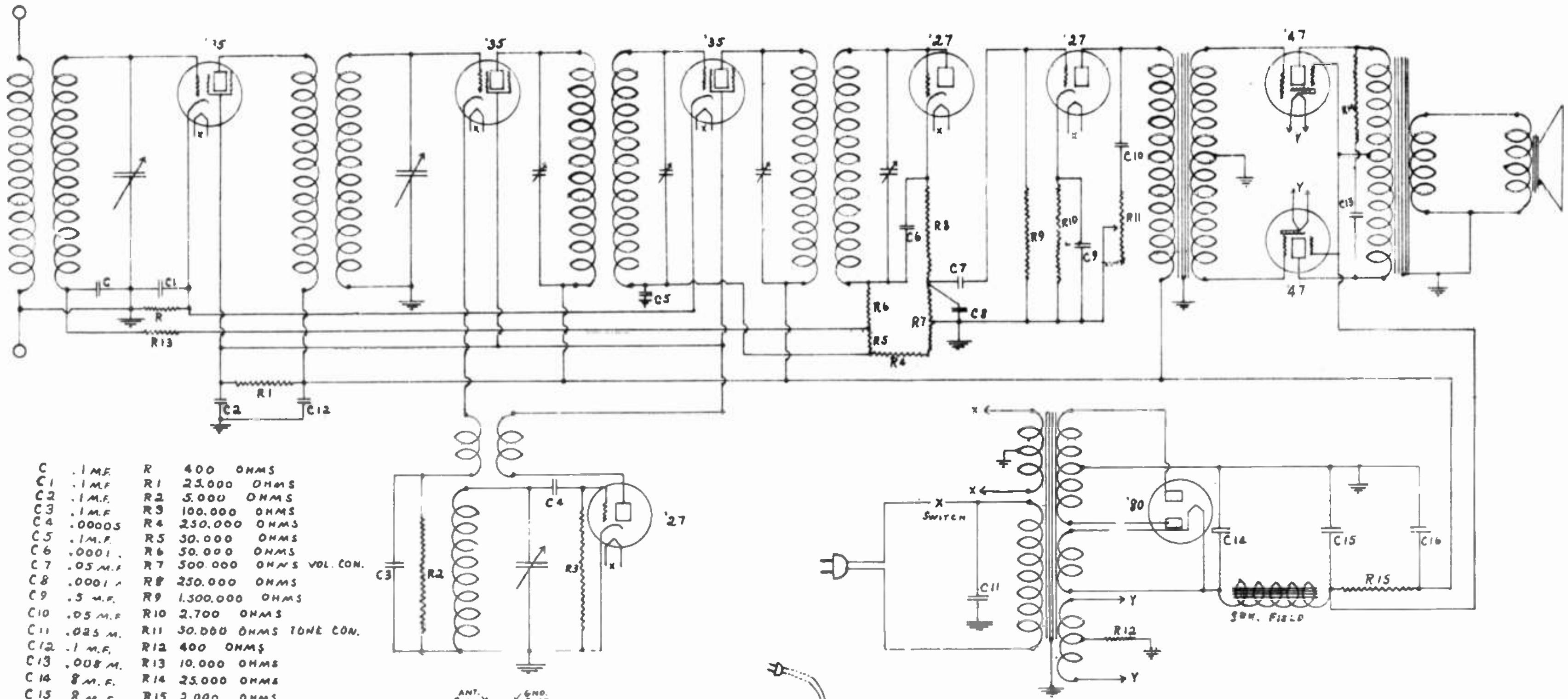
MODEL 8.A.W.

1932-33

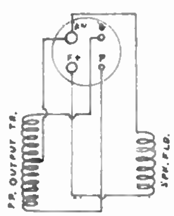
World Radio History

Printed in Canada

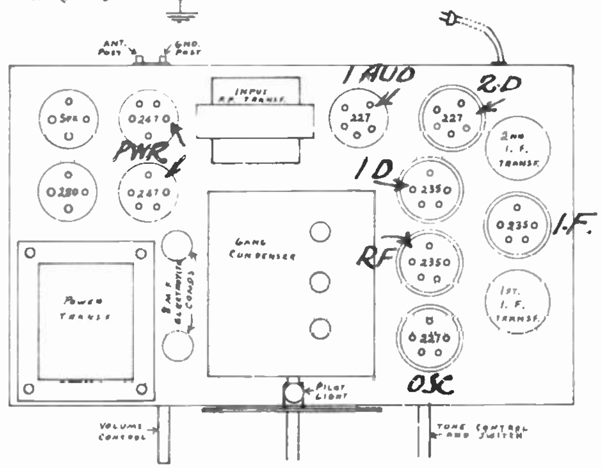
DATA SHEET



C	.1 M.F.	R	400 OHMS
C1	.1 M.F	R1	25.000 OHMS
C2	.1 M.F.	R2	5.000 OHMS
C3	.1 M.F	R3	100.000 OHMS
C4	.00005	R4	250.000 OHMS
C5	.1 M.F.	R5	50.000 OHMS
C6	.0001	R6	50.000 OHMS
C7	.05 M.F	R7	500.000 OHMS VOL. CON.
C8	.0001	R8	250.000 OHMS
C9	.5 M.F.	R9	1.500.000 OHMS
C10	.05 M.F	R10	2.700 OHMS
C11	.025 M.	R11	50.000 OHMS TONE CON.
C12	.1 M.F.	R12	400 OHMS
C13	.008 M.	R13	10.000 OHMS
C14	8 M.F.	R14	25.000 OHMS
C15	8 M.F.	R15	2.000 OHMS
C16	4 M.F		



Speaker Plug Connections
"Fraser" Model
View from back of Spk plug



Voltages

280 Fil to Gnd.	380 v.
Drop Across Spk. Field	128 v.
Low Side Spk. Fld to Ground	252 v.
Drop Across R15	40.5 v.
Low Side R15 to Gnd	211 v.
Drop Across R12	19 v.

Note

This chassis used on "Cartier" and "Fraser" Models. In the "Cartier" Model the Output P.P. Transformer replaces the Speaker Socket shown.

MODEL D.90. 1932

—Courtesy Sonora Corp. of Canada Ltd.

SONORA—7

SPARTON TUBE CHARACTERISTICS

			DETECTION			AMPLIFICATION						
Type	Filament Terminal Voltage	Filament Current Amperes	Detector Plate Voltage	Grid Return Lead to	Detector Plate Current Milli-Amperes	Amplifier Plate Voltage	Grid Bias Voltage— D.C. On Fil.	Grid Bias Voltage— A.C. On Fil.	Amplifier Plate Current Milli-Amperes	Screen Grid Volts +	Ohms Load for Maximum Undistorted Output	Maximum Undistorted Output Milli-watts
181	3.0	1.35	....	....	....	180	30.0	30.0	16	....	....	....
401	3.0	1.35	45	Cath.	2	90 180	3.0 13.5	3.0 13.5	5 6	....	....	....
401-A	5.0	.25	45	+F	1.5	90 135	4.5 9.0	......	2.5 3.0	....	11,000 20,000	15 55
410	7.5	1.25	....	....	....	250 350 425	18.0 27.0 35.0	22.0 31.0 39.0	10 16 18	....	13,000 11,000 10,000	400 900 1600
412-A	5.0	.25	45	+F	1.5	90 135	4.5 9.0	....	5.2 6.2	....	5,600 7,800	30 120
412-A	5.0	.25	....	....	....	135 157.5 180	9.0 10.5 13.5	11.5 13.0 16.0	6.2 9.5 7.6	....	3,700 3,700 10,800	120 195 275
424	2.5	1.75	90—180	Cath.	1.0	180 180	1.5 3.0	1.5 3.0	4.0 4.0	75 90	....	....
424	2.5	1.75	....	....	....	250	1.0	1.0	0.5	25	....	....
426	1.5	1.05	....	....	....	90 135 180	5.0 8.0 12.5	6.0 9.0 13.5	2.8 6.2 7.4	....	9,800 8,800 10,500	30 80 160
427	2.5	1.75	180	Cath.	.3	90 180	6.0 13.5	6.0 13.5	2.7 5.0	....	....	....
430	2.0	.06	45	+F	1.5	90	4.5	......	2.0	....	....	....
431	2.0	.13	....	....	....	135	22.5	......	8.0	....	....	170
432	2.0	.06	....	....	....	135	3.0	......	1.5	67.5	....	....
433	2.0	.26	....	....	....	135	13.5	......	14.0	135	7,500	650
435	2.5	1.75	250	Cath.	1.0—3.0	250	3.0	3.0	7.0	90	....	....
436	6.3	.3	....	....	....	90† 135* 135	1.5† 1.5* 1.5	......	1.8 3.0 3.5	55† 67.5* 75	....	....
437	6.3	.3	45	Cath.	.5—10	90† 135	6† 9	......	2.7 4.5	....	14,000 13,500	30 75
438	6.3	.3	....	....	....	135	13.5	......	8.0	135	15,000	375
445	2.5	1.5	....	....	....	180 250	33.0 48.5	34.5 50.0	35 34	....	3,500 3,900	780 1600
447	2.5	1.5	....	....	....	250	15.0	16.5	32	250	7000	2500
450	7.5	1.25	....	....	....	250 350 400 450	41.0 59.0 66.0 80.0	45.0 63.0 70.0 84.0	28 45 55 55	....	4,300 4,100 3,670 4,350	1000 2400 3400 4600
480	5.0	2.0	....	....	....	Maximum A.C. Voltage Per Plate 350 Volts R.M.S. Maximum Rectified Current 125 M.A.						
481	7.5	1.25	....	....	....	Maximum A.C. Voltage Per Plate 700 Volts R.M.S. Maximum Rectified Current 85 M.A.						
482-A	5.0	.3	....	....	....	200	45	......	18	....	4500	1500
482-B	5.0	1.25	....	....	....	250	32.5	35	18	....	4500	1750
483	5.0	1.25	....	....	....	250 250	65.5 62.5	58.0 65.0	20 36	....	4500	2000
484-A	3.0	1.3	100	Cath.	0.5	90 180	3 9	3 9	5 6	....	....	....
485	3.0	1.3	135	Cath.	0.3	90 180	3 9	3 9	5 6	....	....	....
486	3.0	.35	....	....	....	90	3.0	......	2.0	....	....	....

*Recommended values for use in Auotmobile Receivers.
†Recommended values for use in Receivers designed for 110 volts D.C. operation.

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—Sparton Radio of Canada.

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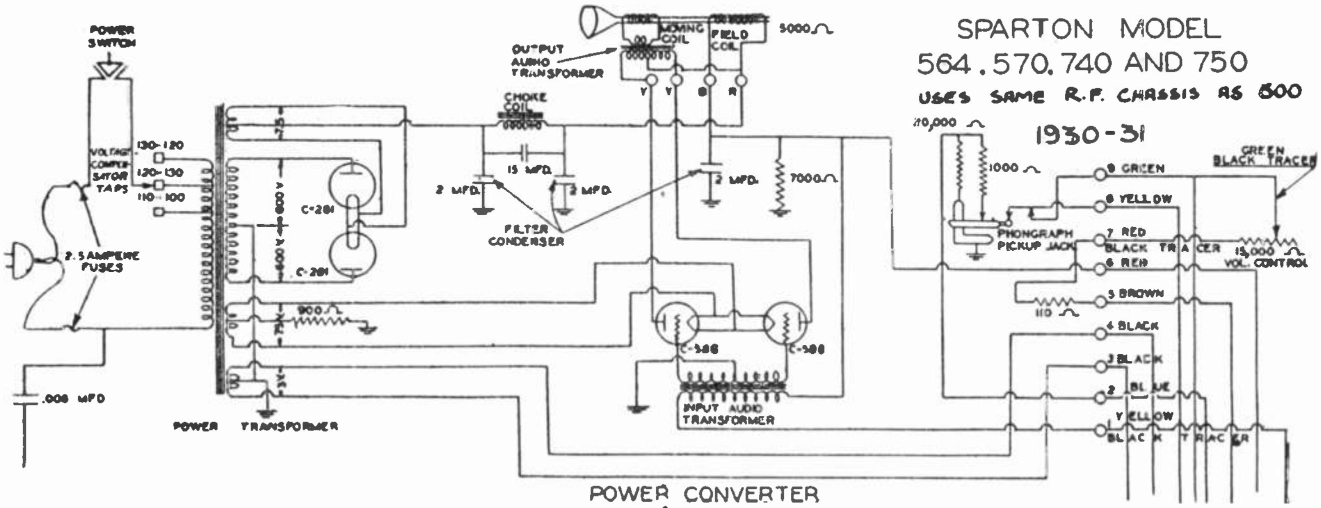
SPARTON MODEL 564 . 570 . 740 AND 750

USES SAME R.F. CHASSIS AS 600

1930-31



TYPE	POSITION	'A' VOLTS	'B' V.	'C' V.	PLATE MILLS
484	R.F.	2·9	110	4·5	6
484	DETC	2·9	105	10	1
586 OR 250	P.P. AUDIO	7·25	350	70	40
281	RECT	7·25	EACH TUBE		65

ALSO 301. CHASSIS. → 484 DETC

READINGS FOR 250 POWER CONVERTOR

1930-31

MODELS 931-589-591-593-600-610 620-737-235

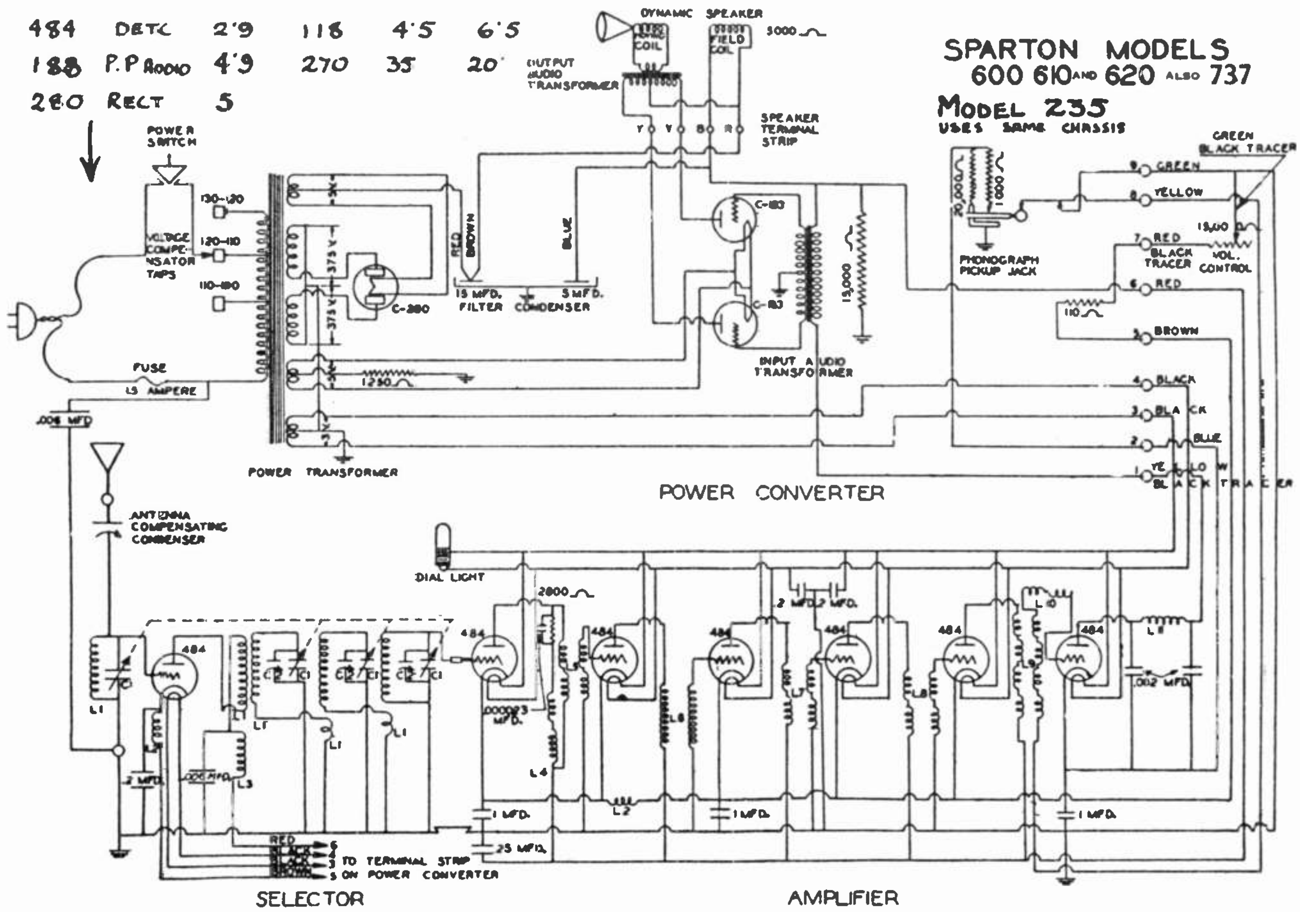
LINE VOLTAGE 118 – SET 120-130 TAP

VOLUME CONTROL MAX.

TYPE	POSITION	'A' VOLTS	'B' V	'C' V	PLATE MILLS
484	R.F	2·9	130	4·5	6·5
484	DETC	2·9	118	4·5	6·5
188	P.P AUDIO	4·9	270	35	20
280	RECT	5			

SPARTON MODELS 600 610 AND 620 ALSO 737

MODEL 235 USES SAME CHASSIS



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

C1 VARIABLE CONDENSERS
C2 EQUALIZING CONDENSERS
L1 TUNING COILS
L2 CATHODE COIL
L3 R.F. CHOKE COIL
L4 FIRST PLATE COIL
L5 COUPLING COIL
L6 FIRST R.F. TRANSFORMER
L7 SECOND R.F. TRANSFORMER
L8 THIRD R.F. TRANSFORMER
L9 FOURTH R.F. TRANSFORMER
L10 GRID COIL
L11 DETECTOR PLATE CHOKE

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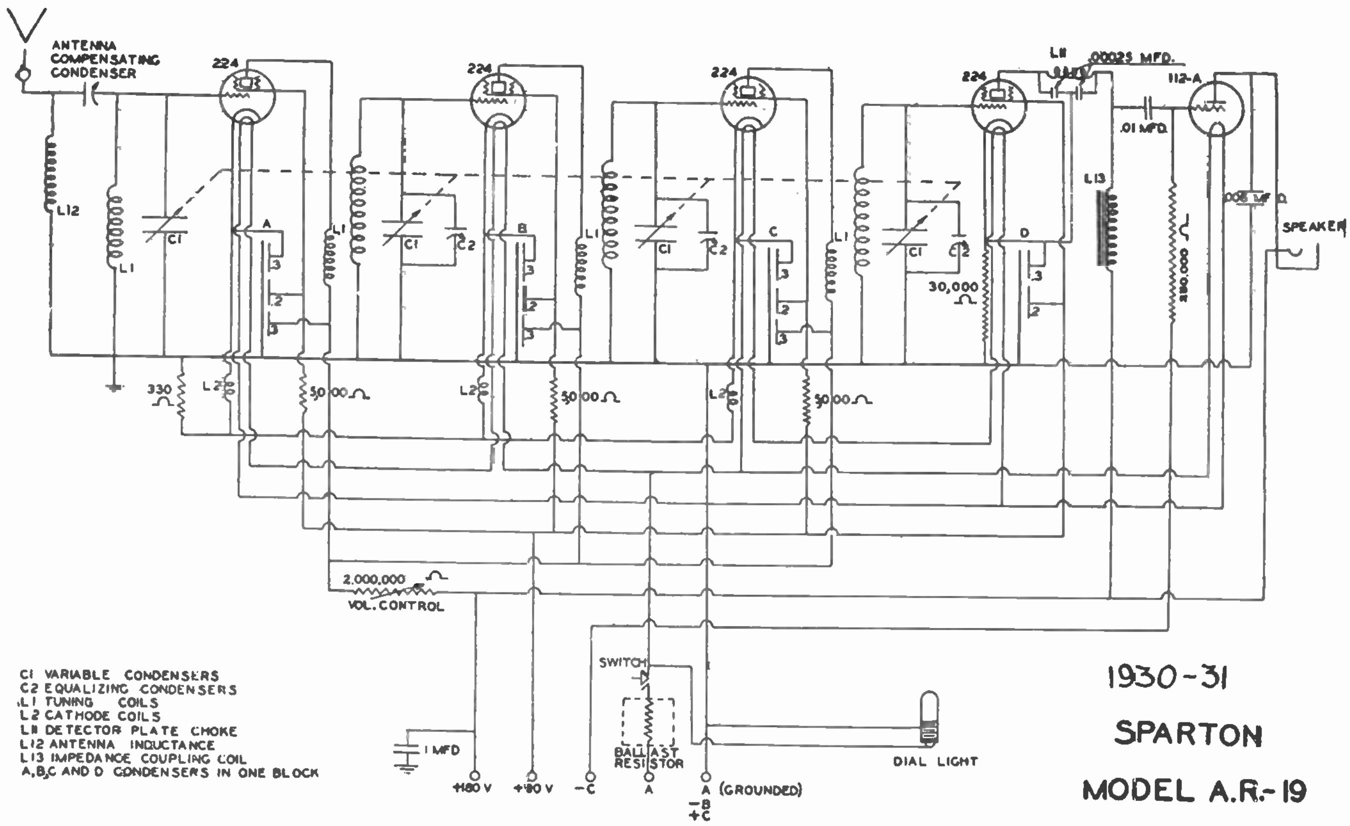
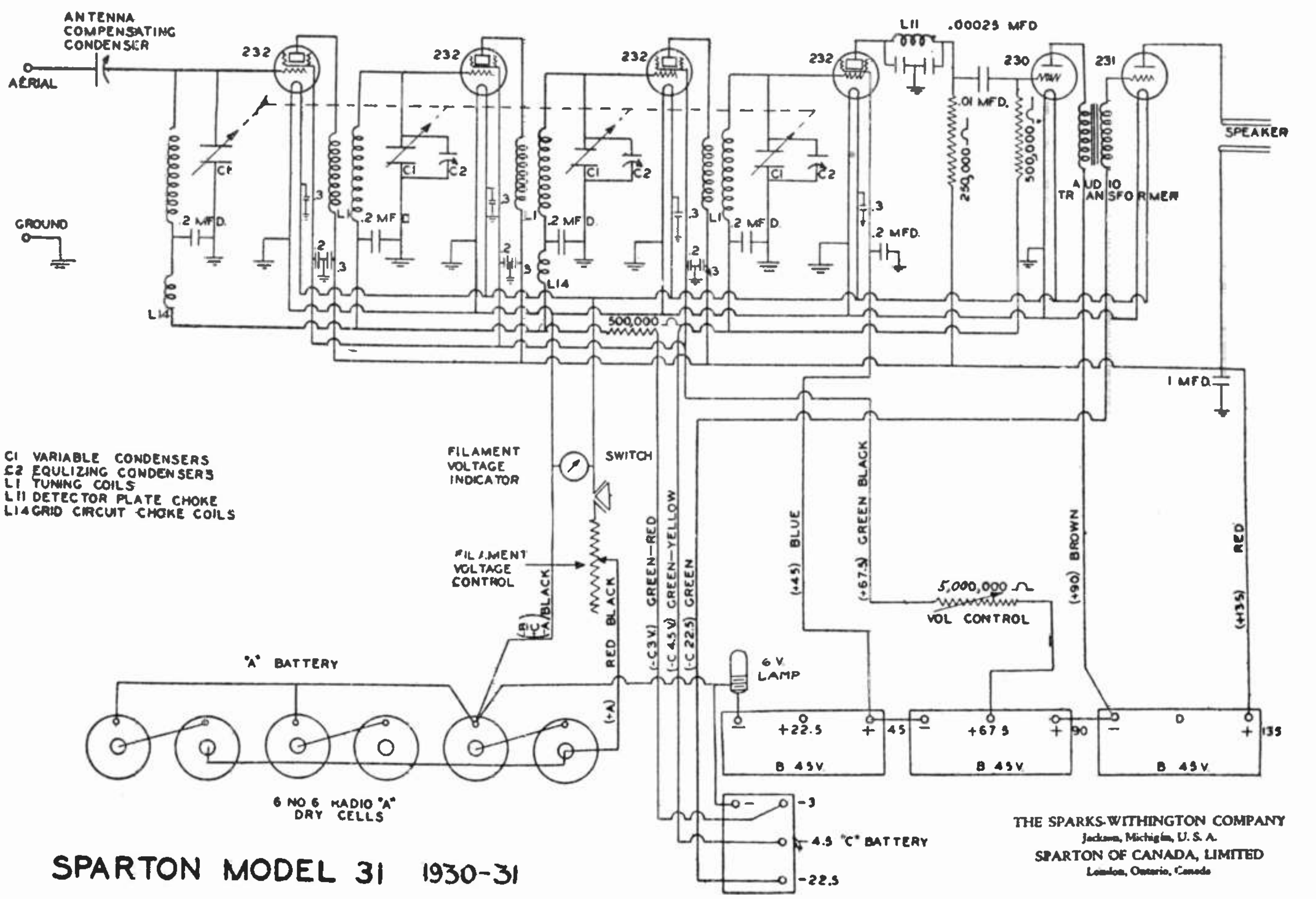


1930-31

SPARTON

MODEL A.R.-19



SPARTON MODEL 31 1930-31

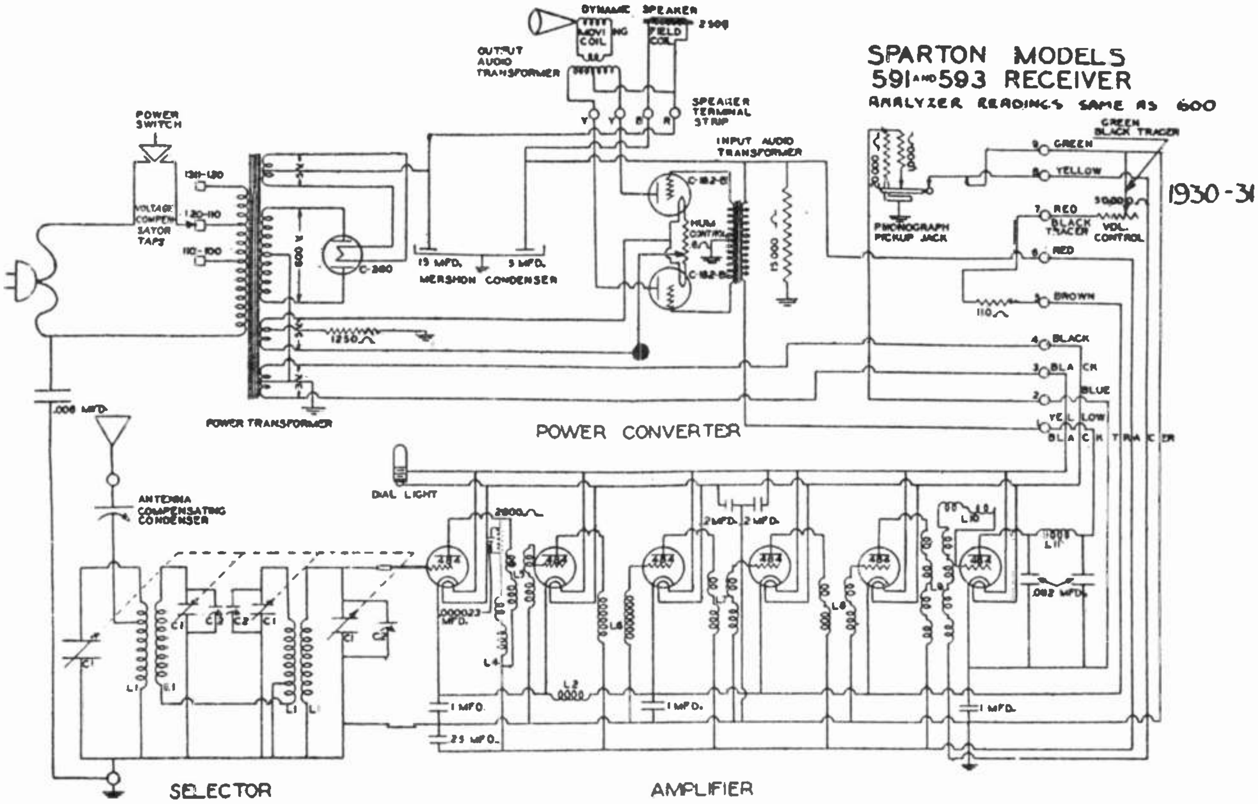
THE SPARKS-WITHINGTON COMPANY
Jackson, Michigan, U. S. A.
SPARTON OF CANADA, LIMITED
London, Ontario, Canada

World Radio History

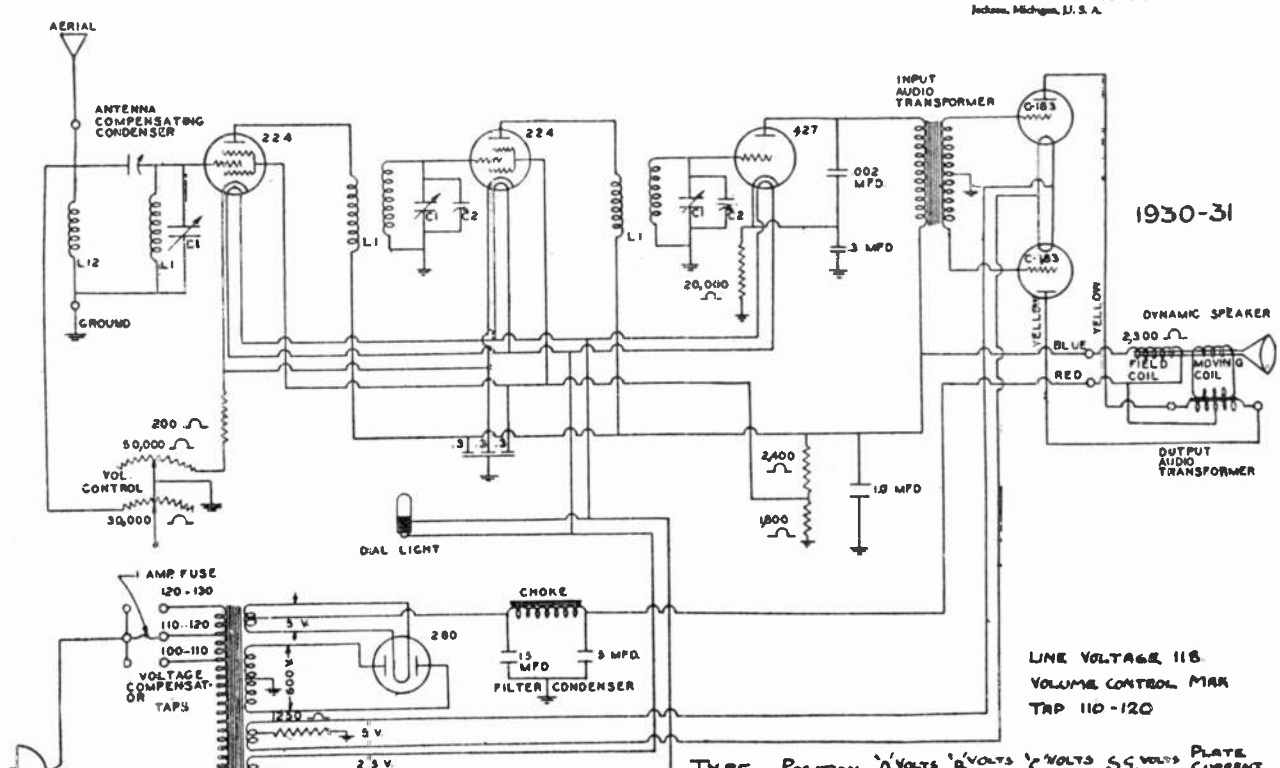
SPARTON MODELS 591 AND 593 RECEIVER

ANALYZER READINGS SAME AS 600

1930-31



THE SPARKS-WITHINGTON COMPANY
Jackson, Michigan, U. S. A.



LINE VOLTAGE 118
VOLUME CONTROL MAX
TAP 110-120

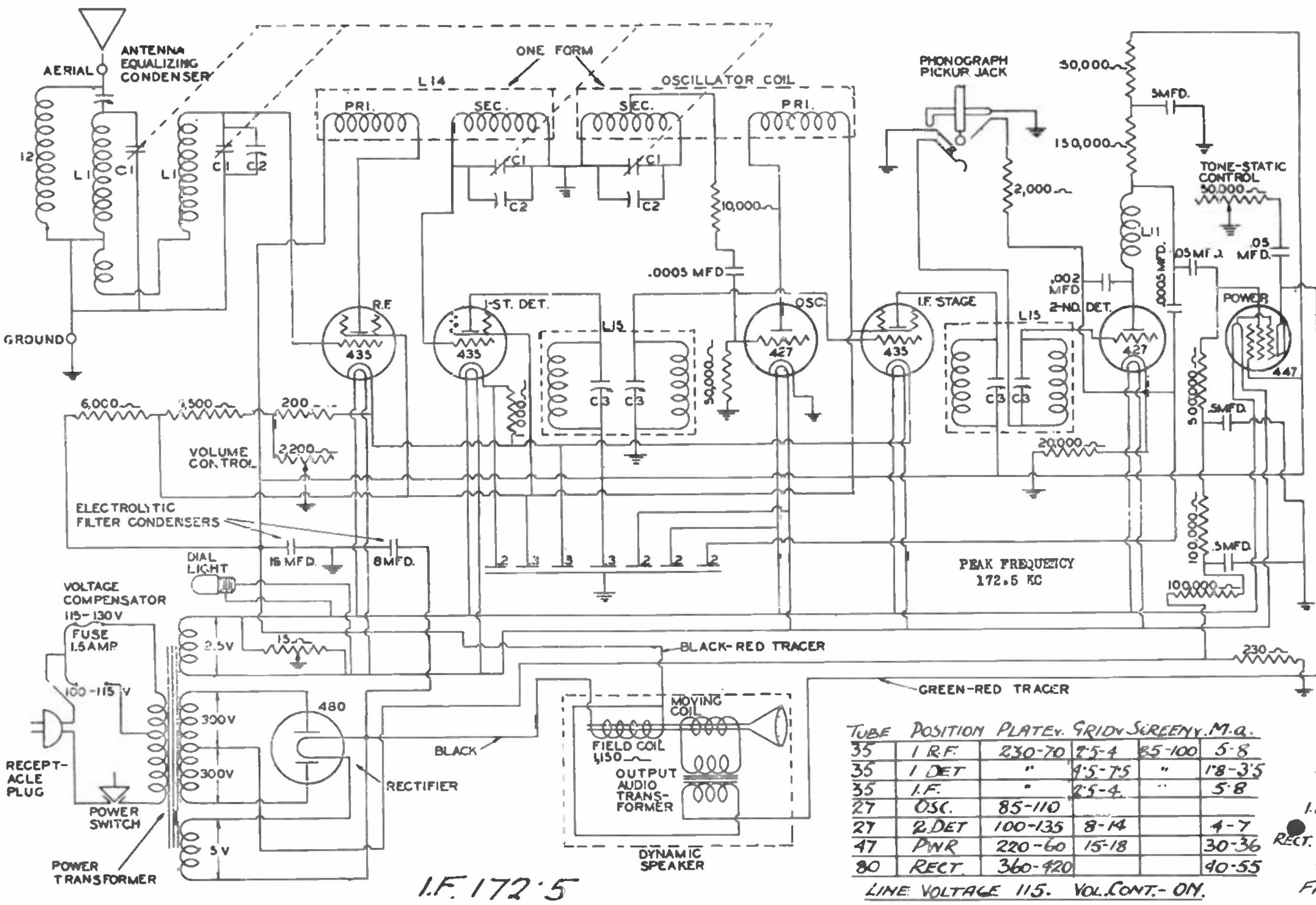
TYPE	POSITION	'A' VOLTS	'B' VOLTS	'C' VOLTS	S.G. VOLTS	PLATE CURRENT
224	R.F.	2.5	150	3.5	60	8
227	DETC	2.5	120	10		5
183	P.P.A	5	225	45		20
280	RECT	5				

1930-31

SPARTON MODEL 410 AND 420 A.C. RECEIVER

World Radio History

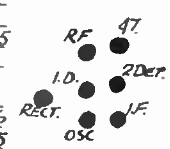
Sparton Model 10—Schematic Diagram 1931-32

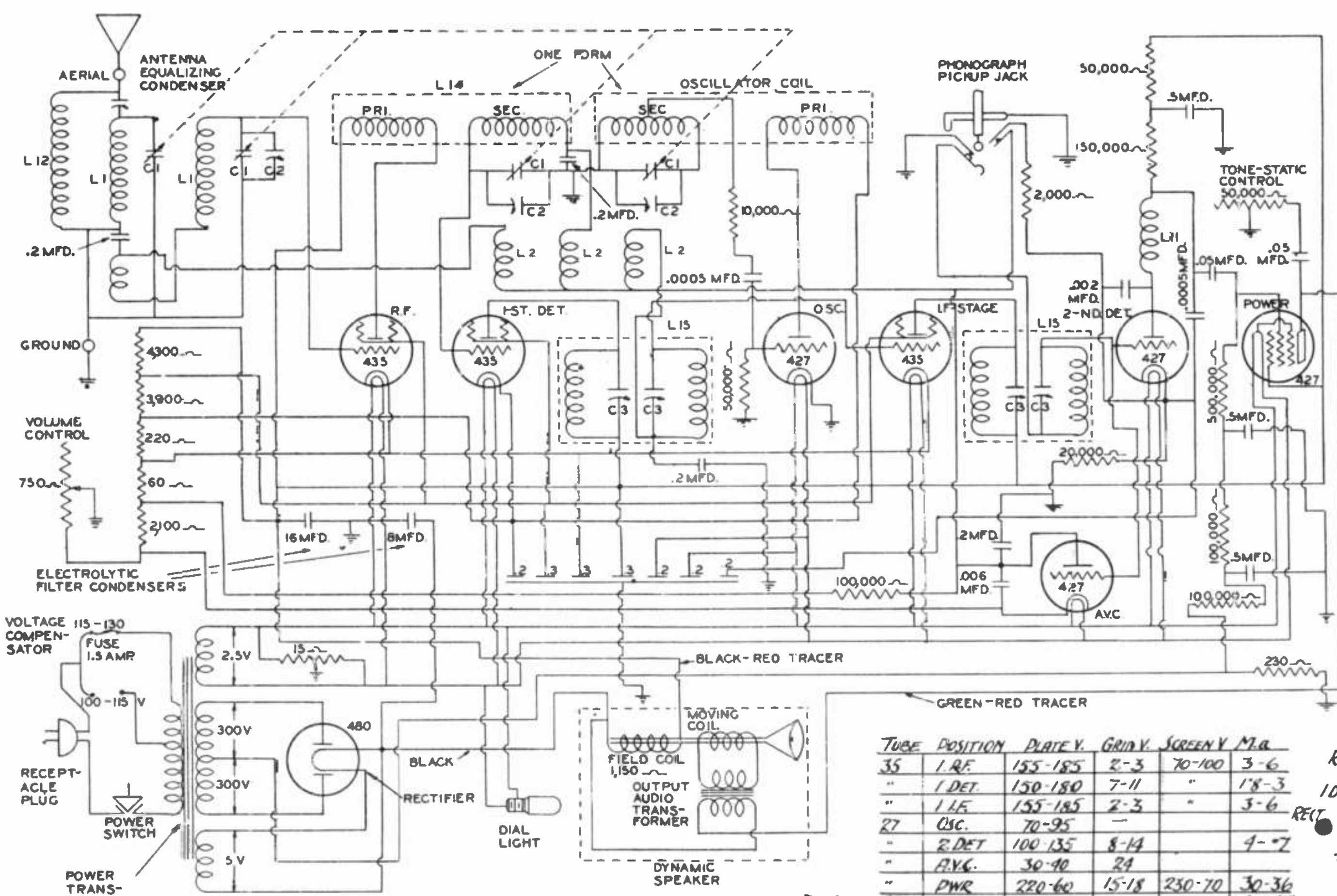


TUBE	POSITION	PLATE V.	GRID V.	SCREEN V.	M.a.
35	1 R.F.	230-70	2.5-4	85-100	5-8
35	1 DET	"	4.5-7.5	"	1.8-3.5
35	I.F.	"	2.5-4	"	5.8
27	OSC.	85-110			
27	2 DET	100-135	8-14		4-7
47	PWR	220-60	15-18		30-36
80	RECT.	360-420			40-55

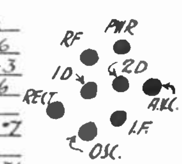
LINE VOLTAGE 115. VOL. CONT.- ON.

I.F. 172.5





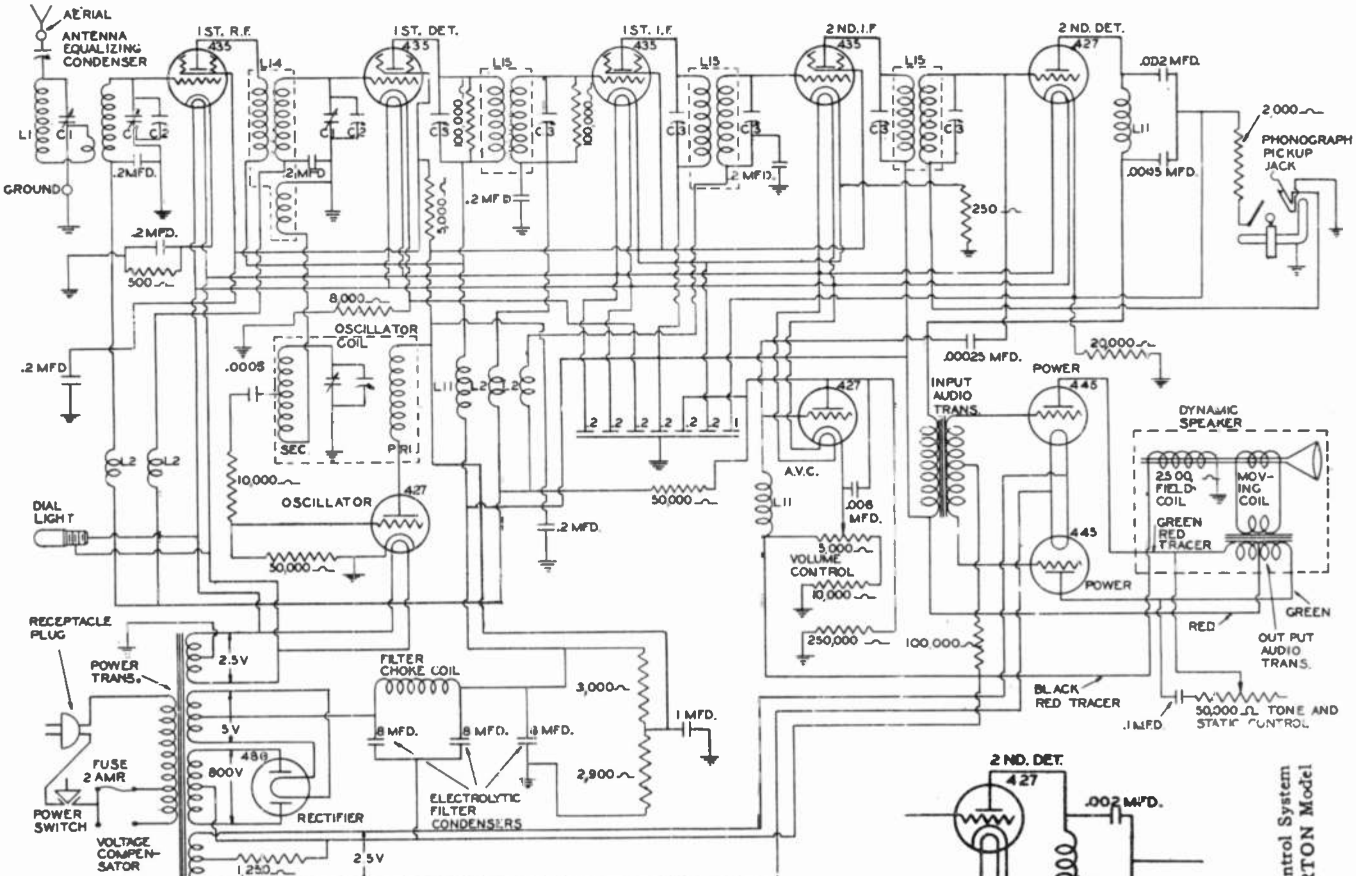
TUBE	POSITION	PLATE V.	GRID V.	SCREEN V	M.a
35	1 R.F.	155-185	2-3	70-100	3-6
"	1 DET.	150-180	7-11	"	1.8-3
"	1 I.F.	155-185	2-3	"	3-6
27	OSC.	70-95	—		
"	2 DET	100-135	8-14		4-7
"	A.V.C.	30-40	24		
"	PWR	220-60	15-18	230-70	30-36
80	RECT.	320-70			40-55



Sparton Model 15 1931-32

I.F. 172.5 KC

World Radio History

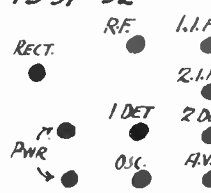


Sparton Model 25 and 26

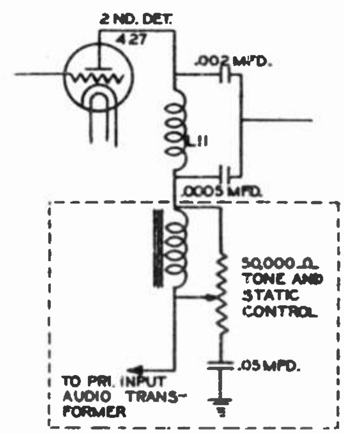
1931-32

TUBE	POSITION	PLATE VOLTS	GRID VOLTS	SCREEN VOLTS	PLATE Ma
35	RF	180-220	2.5-4	80-100	5-8.
"	1. DET	"	6.4-14	"	.8-1.8
"	1. IF	"	2.5-4	"	5-8
"	2. IF	"	"	"	5-8
27	OSC.	80-100	—		
"	2 DET	175-205	14-20		.7-1.0
"	A.V.C.	—	30-50		—
45	P. PULL	225-270	30-45		20 30

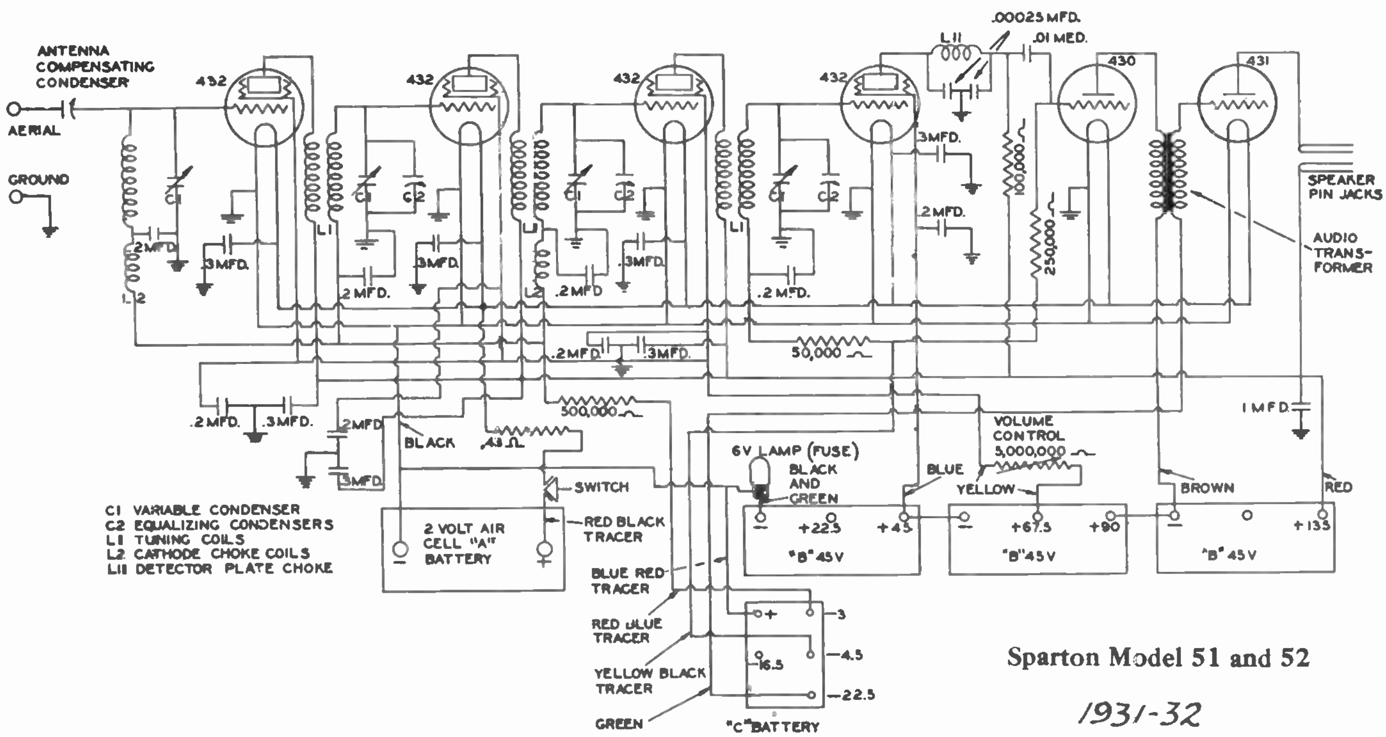
I.F. 172.5 Kc.



FRONT OF CHASSIS



Schematic Diagram of Tone Control System used on a few of the first SPARTON Model 25 and 26.



Sparton Model 51 and 52

1931-32

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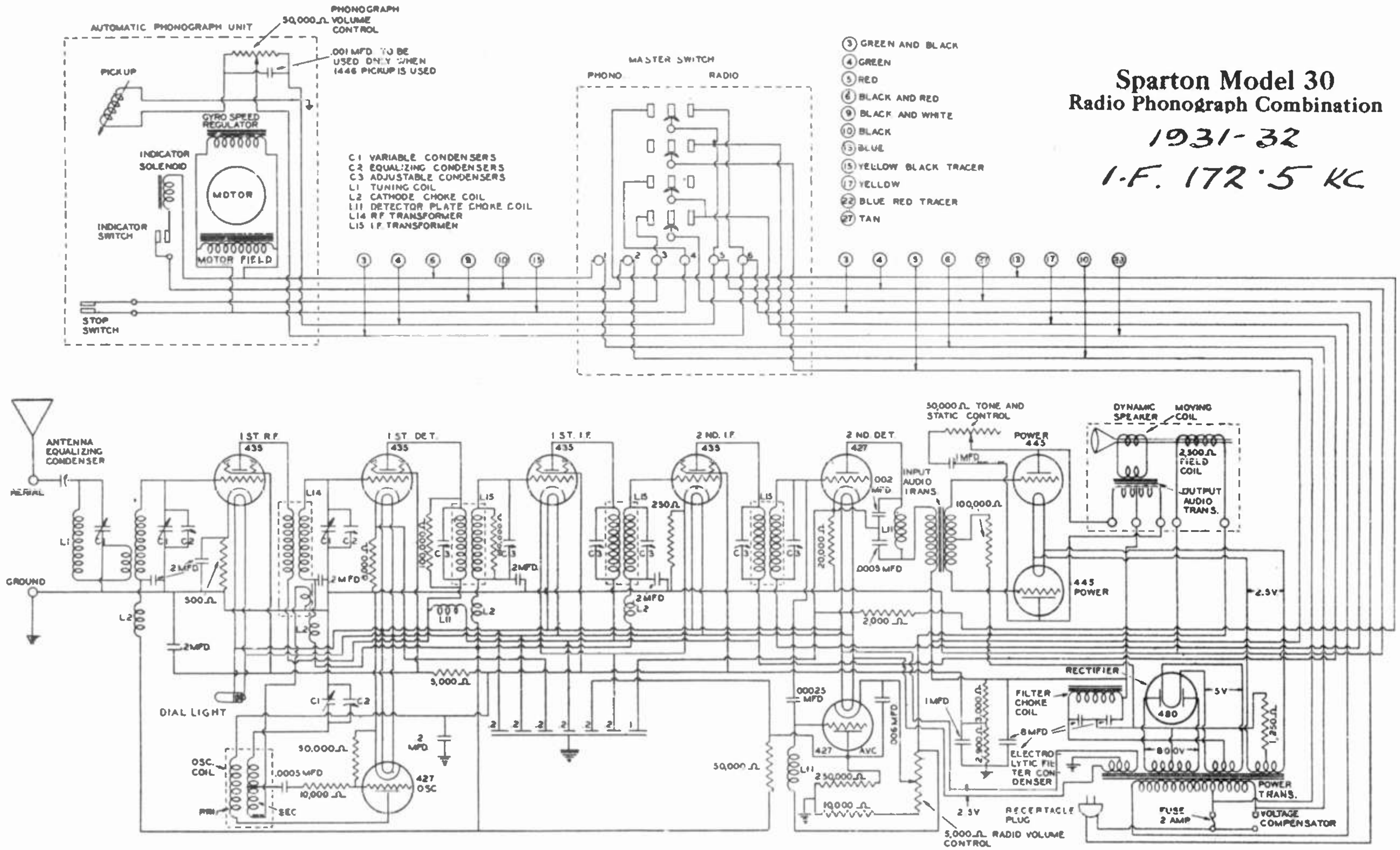
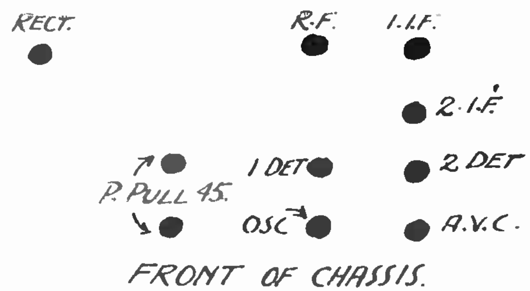
Sparton Model 30
Radio Phonograph Combination

1931-32

I.F. 172.5 KC



TUBE	POSITION	PLATE V.	GRID V.	SCREEN V.	PLATE M.a.
35	RF	180-220	2.5-4	80-100	5-8
"	I.F.	"	"	"	"
"	I.F	"	"	"	"
"	1 DET	"	6.4-14	"	.8-1.8
27	OSC.	80-100			
"	2 DET	170-205	14-20		.7-1
"	A.V.C.		30-50		
45	P-PULL	225-270	30-45		20-30



SPARTON-11

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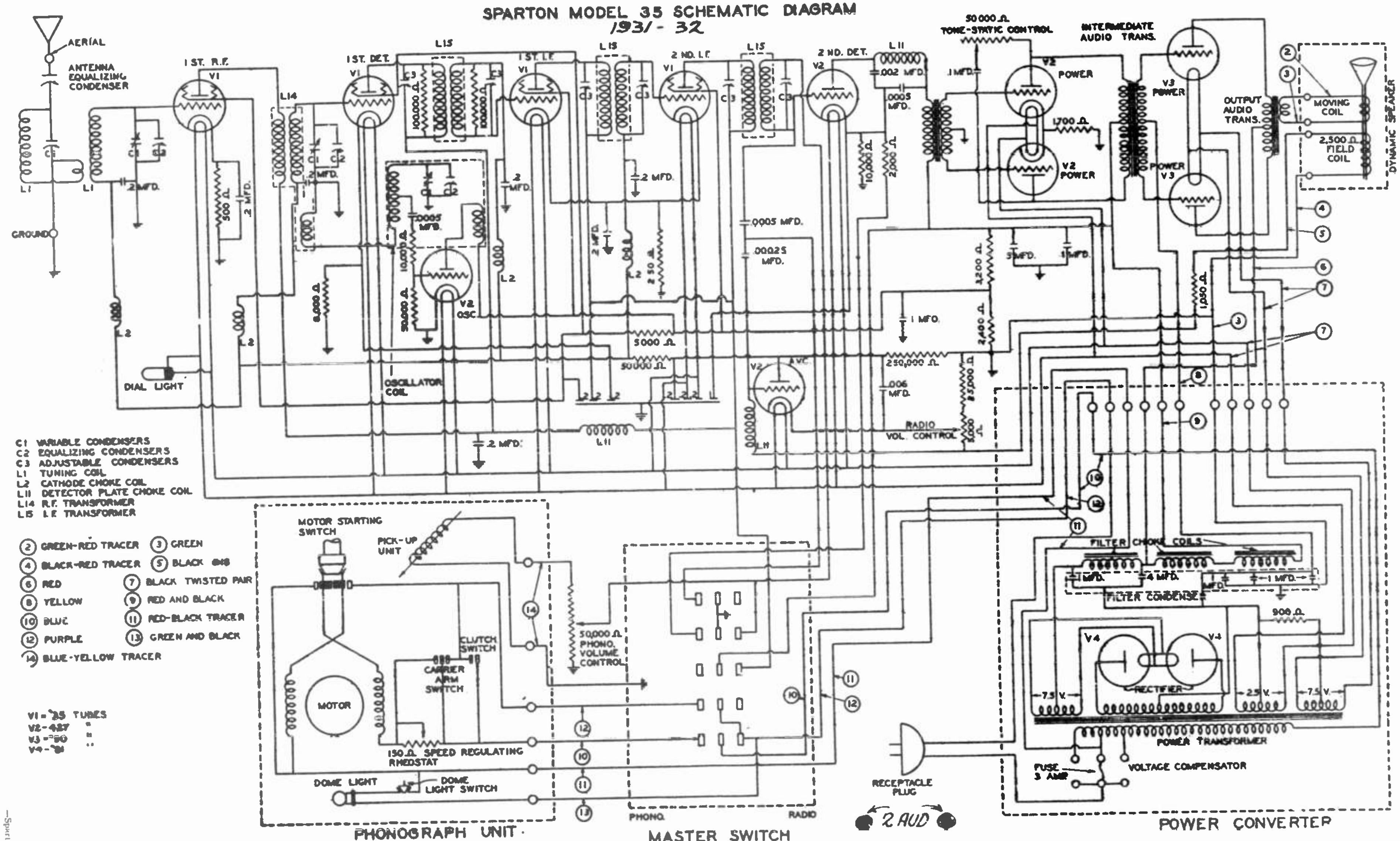
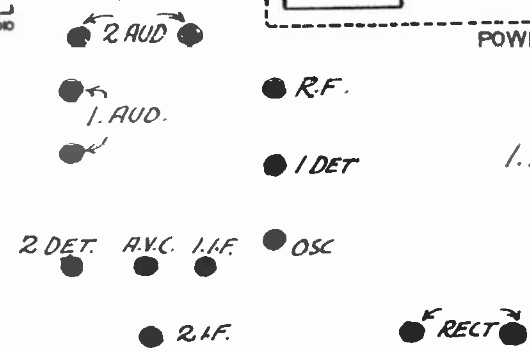
SPARTON MODEL 35 SCHEMATIC DIAGRAM
1931 - 32





I.F. 172.5 KC.

TUBE	POSITION	PLATE VOLTS	GRID VOLTS	SCREEN VOLTS	PLATE M.a.
35	RF + I.F.	190-230	2-4	70-95	4-8
"	1. DET	"	6-14	"	·8-1·8
27	2 DET	185-225	14-22		·7-1·1
"	OSC.	70-95			
"	A.V.C.		30-50		
"	1. AUD(PP)	190-230	14-22		5-8
50	2 " (PP)	350-420	60-90		36-48

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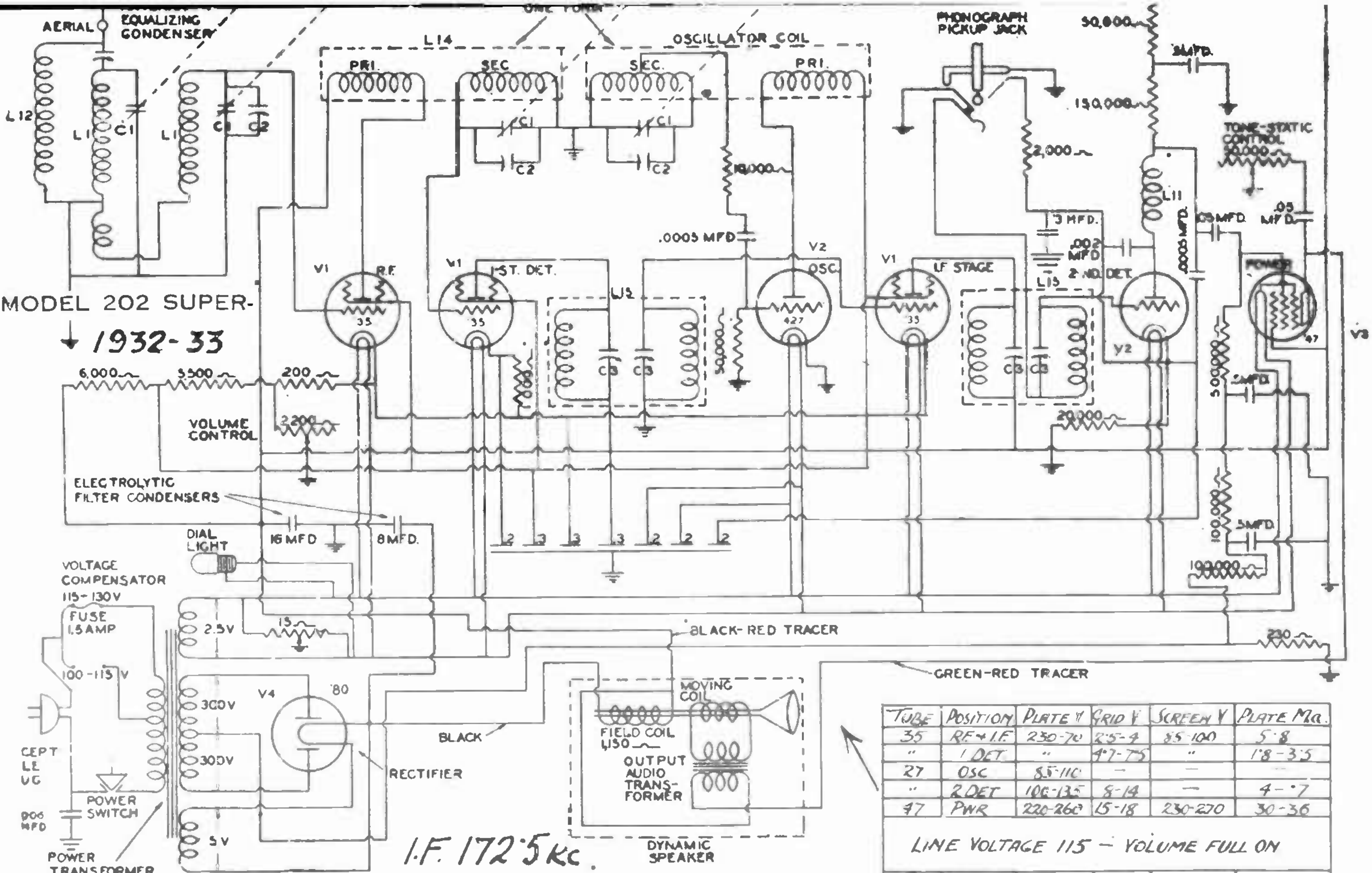
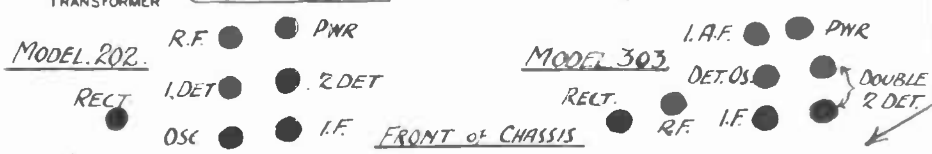
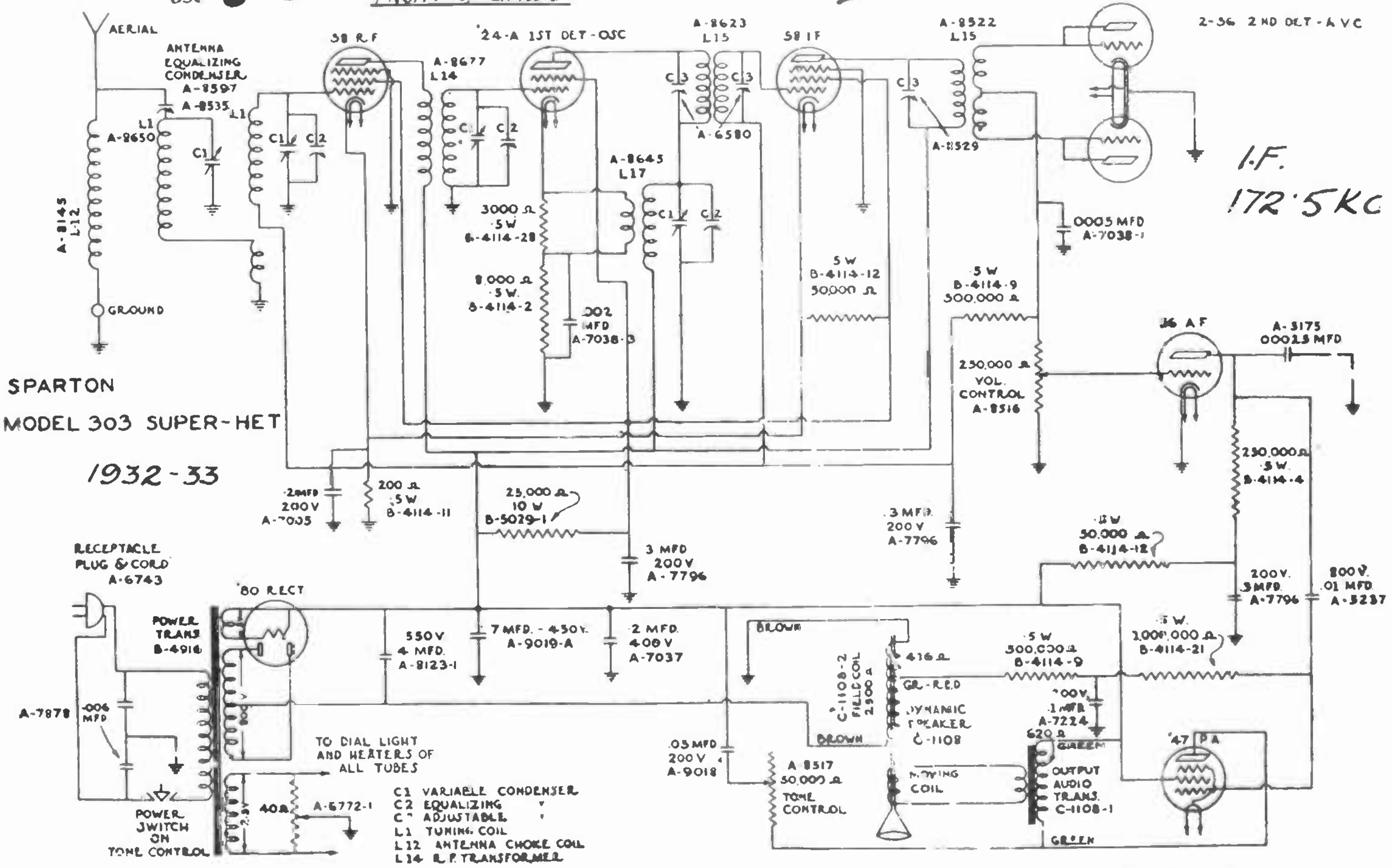


TUBE	POSITION	PLATE V	GRID V	SCREEN V	PLATE Ma.
35	RF+I.F.	230-70	2.5-4	85-100	5.8
"	1 DET.	"	4.7-7.5	"	1.8-3.5
27	OSC	85-110	—	—	—
"	2 DET	100-135	8-14	—	4-.7
47	PWR	220-260	15-18	230-270	30-36
LINE VOLTAGE 115 — VOLUME FULL ON					
58	RF+IF	218-242	2-4	95-105	5.5-7
24	D-OSC.	"	—	"	.7-8
56	D-AVC	—	—	—	
"	1.AF.	20-40	—	—	.5-.7
47	PWR	205-225	18-20	218-242	20-24





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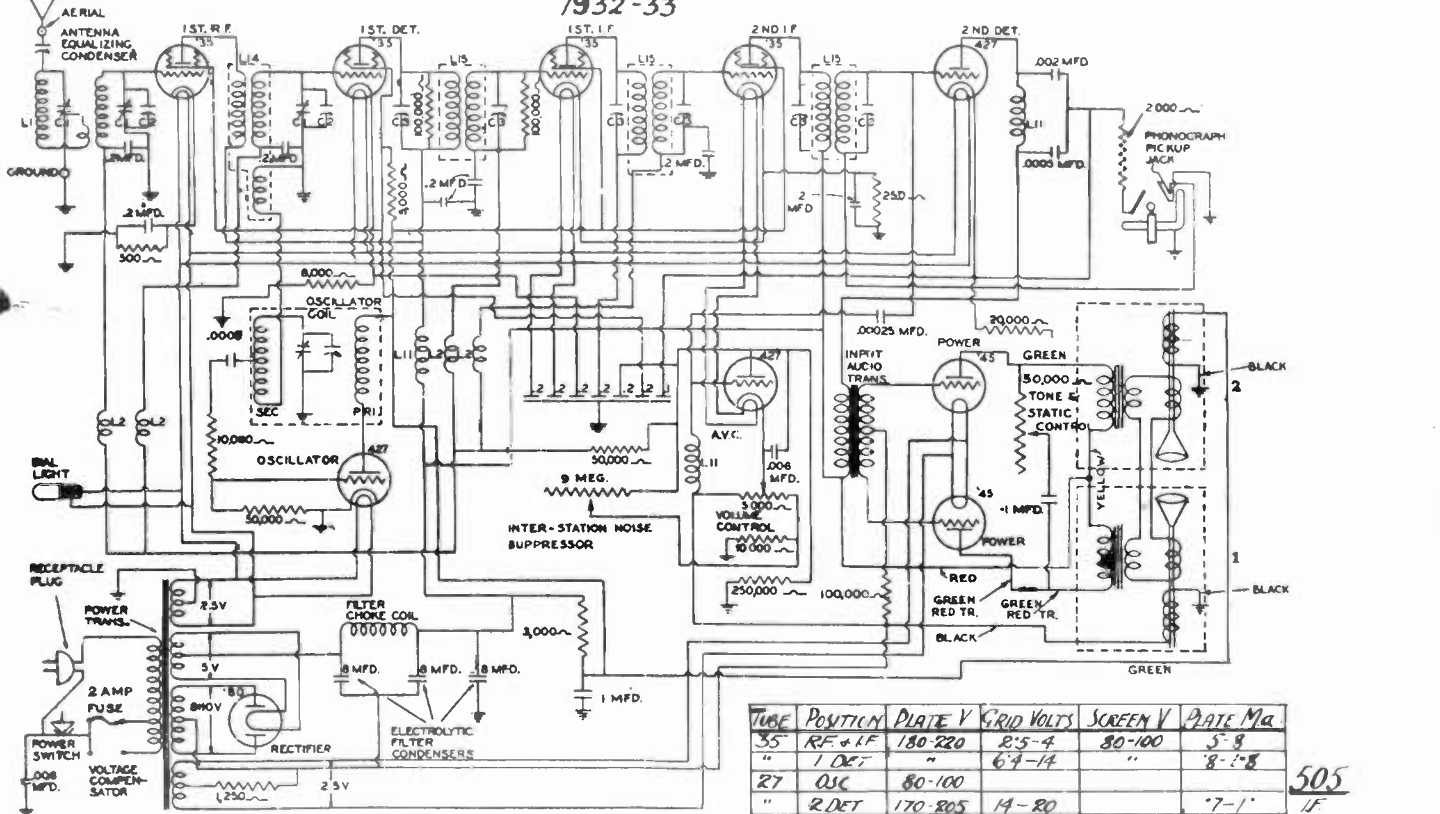
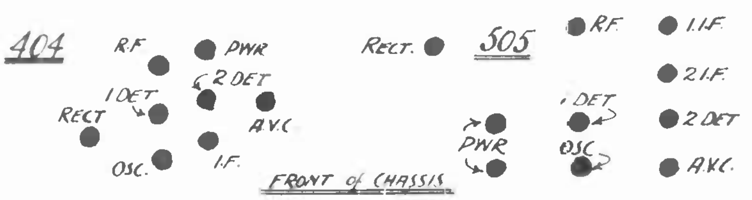
World Radio History

SPARTON MODEL 505 SUPER-HETERODYNE
1932-33



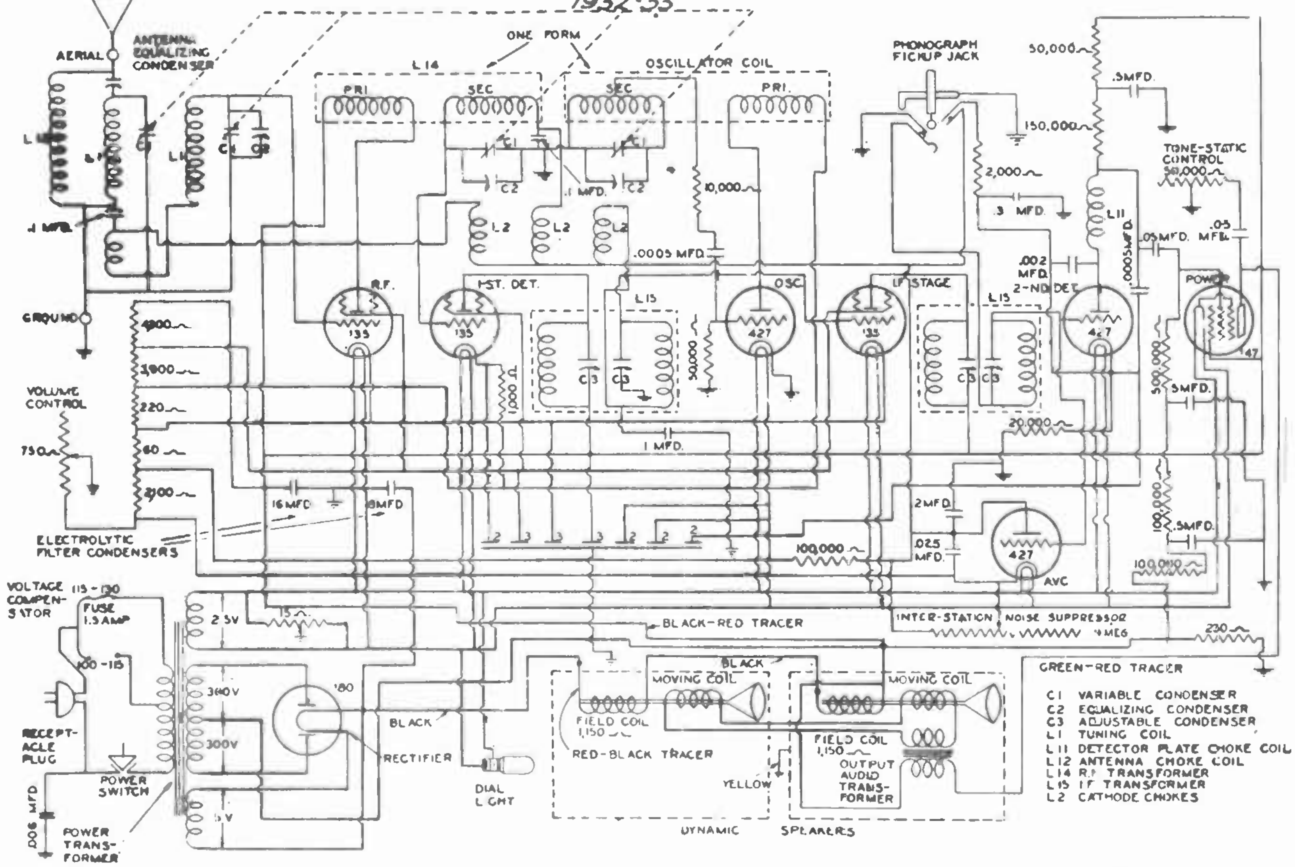


Tube	Position	Plate V	Grid Volts	Screen V	Plate Ma
35	RF & I.F.	180-220	2.5-4	80-100	5-8
"	1 DET	"	6.4-14	"	8-1.8
27	OSC	80-100			
"	2 DET	170-205	14-20		.7-1
"	A.V.C		30-50		
45	P-PULL	220-265	30-45		20-30
35	RF & I.F.	135-160	2-3	60-85	2.2-5.4
"	1 DET	"	6-10	"	1.6-2.7
27	OSC	60-80			
"	2 DET	90-115	7-12		.3-.6
"	A.V.C.	25-35	20		
47	PWR	190-220	13-16	200-300	24-26

505 I.F. 172.5 KC

404 I.F. 178.5 KC

SPARTON MODEL 404 SUPER-HETERODYNE
1932-33



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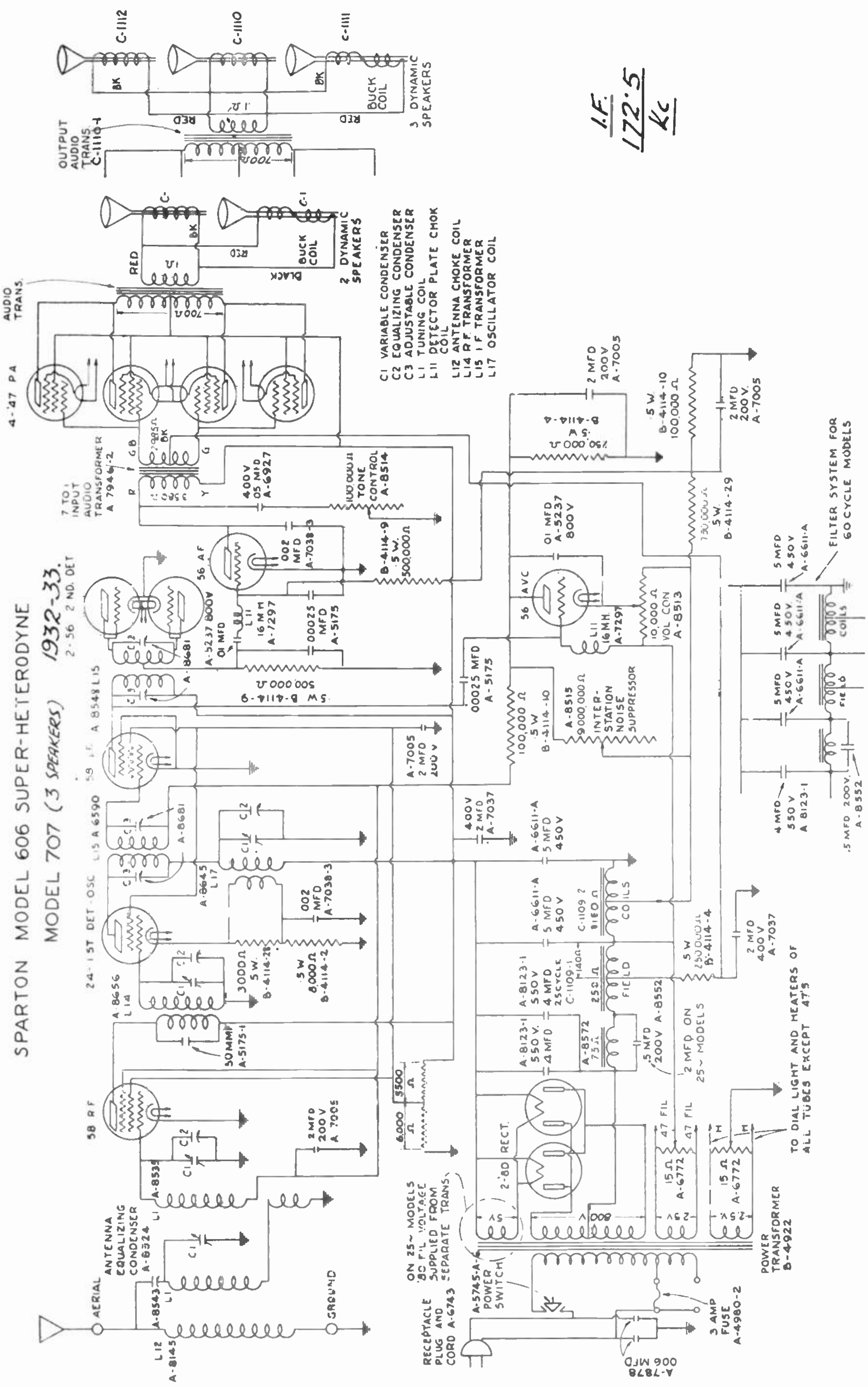
DATA SHEET

—Courtesy Sparks Withington Co., Inc.
—Sparton Radio of Canada.

SPARTON MODEL 606 SUPER-HETERODYNE
MODEL 707 (3 SPEAKERS) 1932-33.



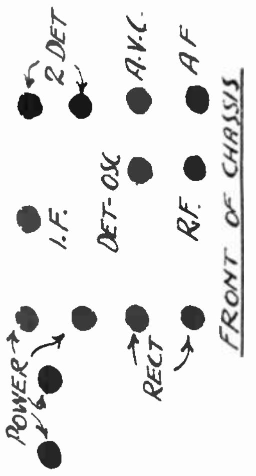
I.F. 172·5 Kc

TUBE	POSITION	PLATE VOLTS	GRID VOLTS	SCREEN VOLTS	PLATE Ma.
58	RF + I.F.	155-190	2·2-2·6	87-110	4·5-8
24	DET-OSC	"	5-9		·8-1·4
56	2 DET (DUAL)	*	*		*
56	A.F.	140-180	7-11		4-7
"	A.V.C.	30-50	50-80		
47	POWER	260-310	22-28	270-320	20-30

* PRESENT ONLY WHEN SIGNAL APPLIED

LINE VOLTS 115

VOLUME ON FULL



FRONT OF CHASSIS

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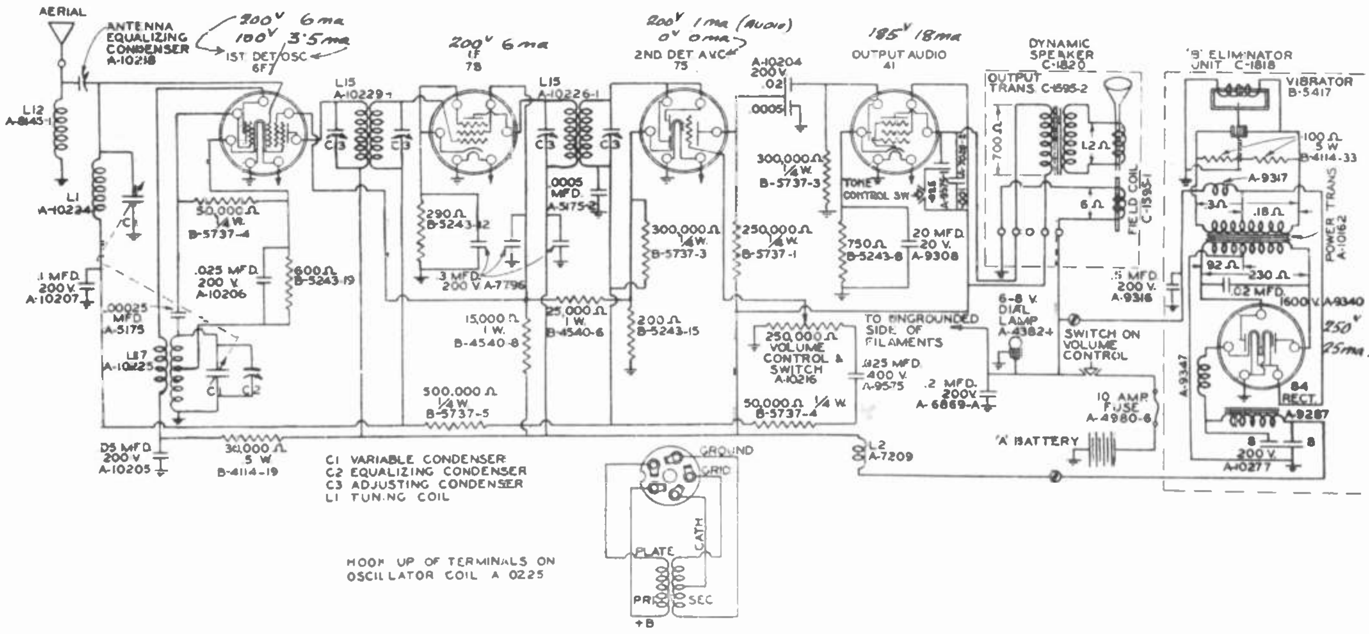
SPARTON– 15

Model-333 (Auto-Receiver) 1934 IF. 456 Kc.

-SUPERHETERODYNE AUTOMOBILE RADIO RECEIVER



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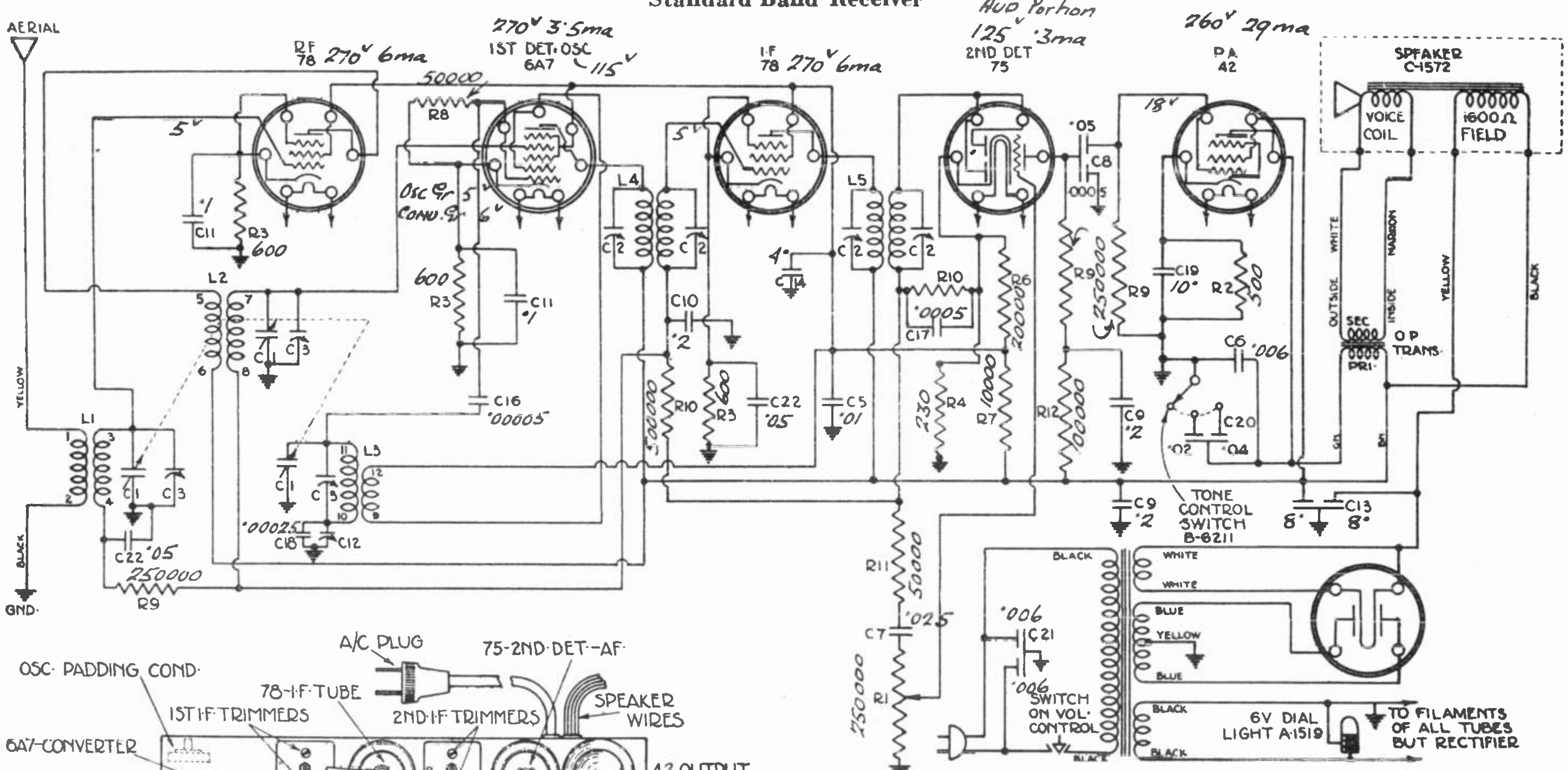
DATA SHEET

Schematic Diagram

Sparton Model 367
Standard Band Receiver



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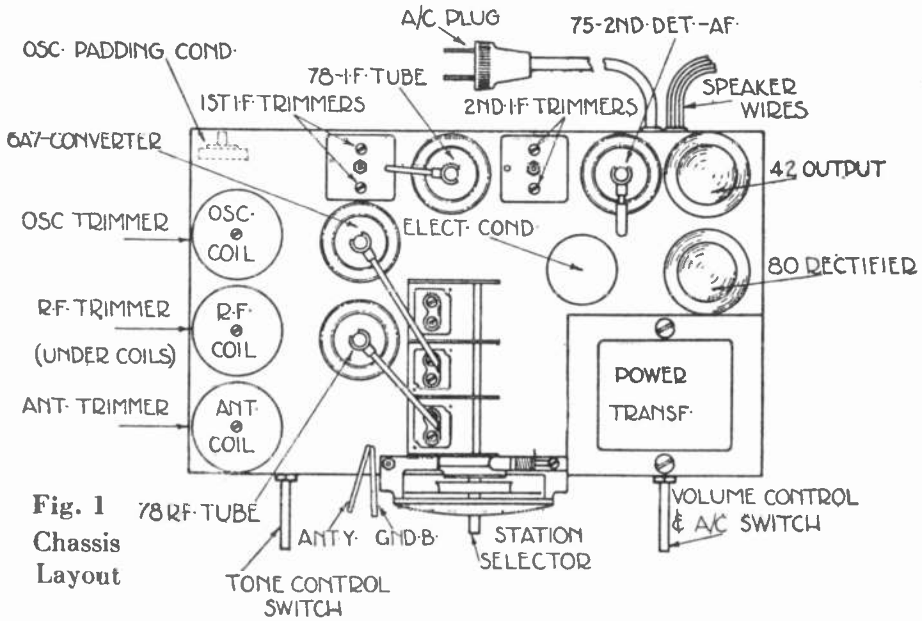


Fig. 1
Chassis
Layout

Intermediate Frequency Condensers—Adjust the test oscillator to 345 kilocycles, and feed the signal to the grid of the type 6A7 Converter. Adjust 1st and 2nd I.F. Trimmers to maximum output meter reading.

Oscillator Trimmer Condenser—Adjust oscillator trimmer condenser (see Fig. 1) to bring dial reading to 1500 with test oscillator signal of same frequency. If necessary, oscillator plates may be fanned at 600 K.C., and 900 K.C. and 1200 K.C. to correct calibration, over entire dial. Test oscillator fed into antenna.

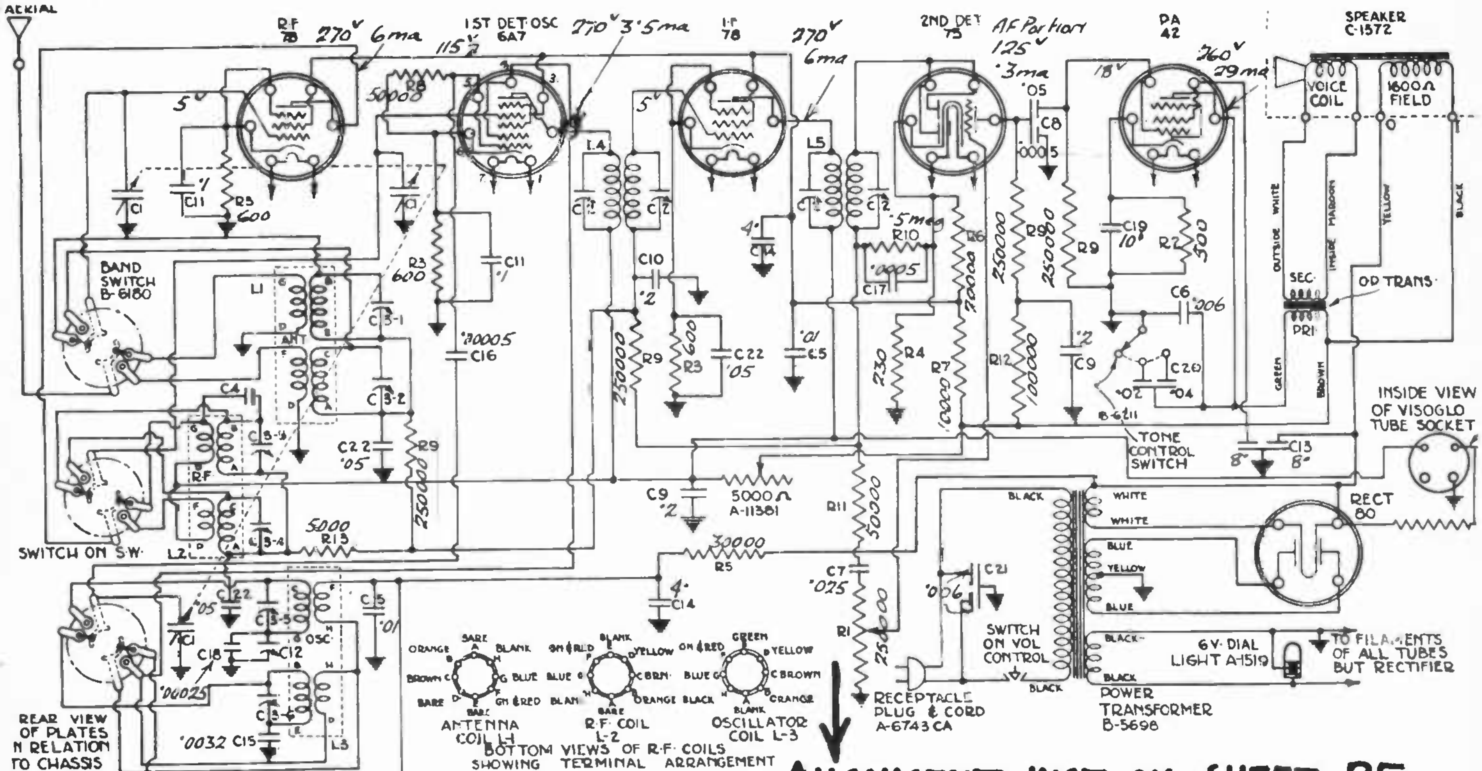
Adjust R.F. and Antenna Trimmers (see Fig. 1) at 1200 kilocycles for maximum output meter reading. R.F. gang condensers may be fanned at 600 K.C. and 900 K.C. for increased output at those frequencies.

1934 - 35

SPARTON-24.

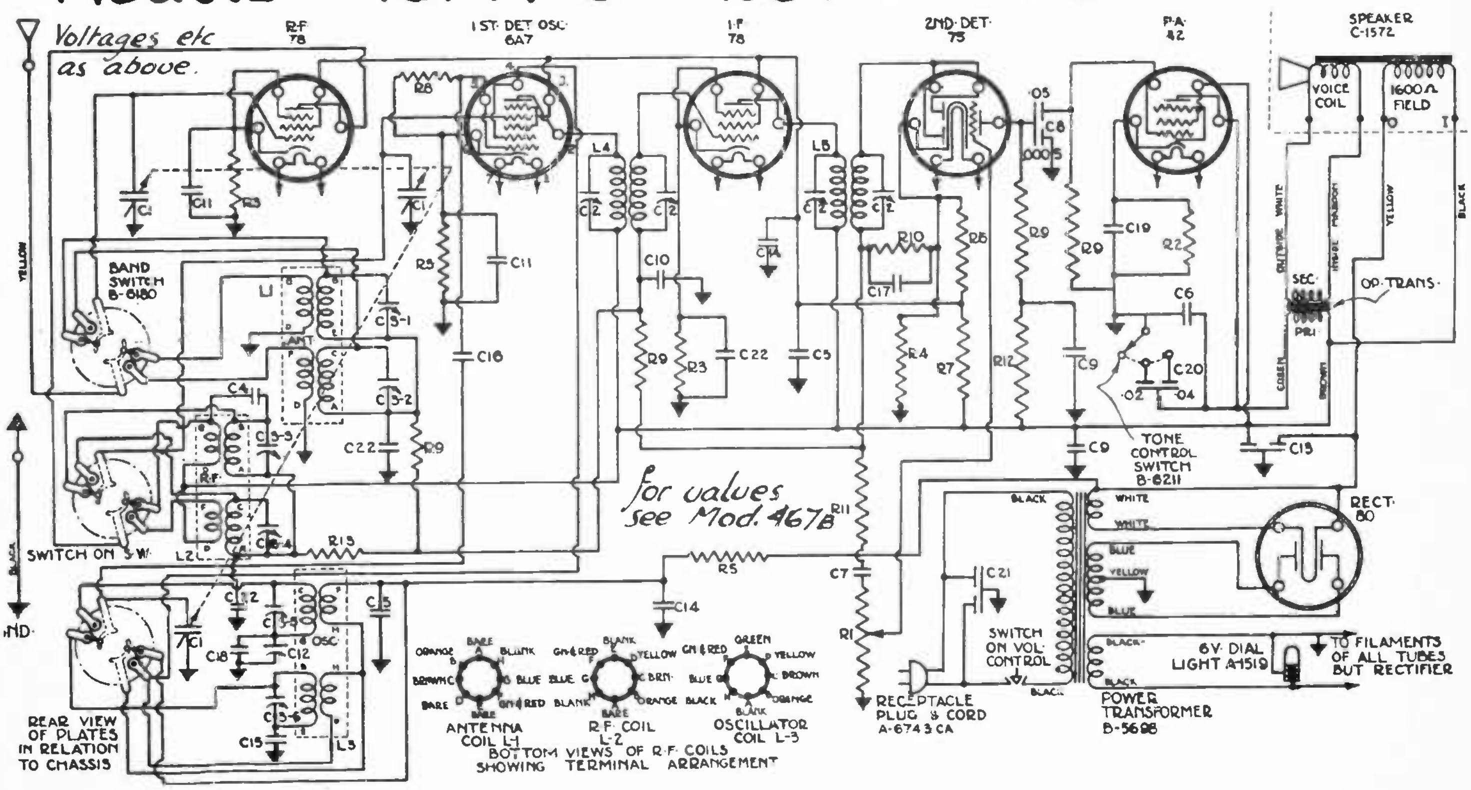
World Radio History

Model- 467 B. 1934-35 I.F. 345 Kc.



ALIGNMENT INST. ON SHEET 25A.

Models - 467A-C 1934-35 I.F. 345 Kc.



World Radio History

Alignment Instructions Mods 467A.B.C-970A-B.

NOTE—Before commencing the alignment of this receiver, see that the gang condenser plates are just flush when the dial pointer reads exactly 540 Kilocycles. If they do not flush at that frequency, loosen the lock-nut on the end of the station selector shaft, and with the plates flush turn the dial pointer to 540 by the lower cable drum and retighten the lock-nut.

1. Connect the output meter to the voice coil leads of the speaker, (maroon and white leads).

2. Attach the test oscillator to the receiver, feeding a signal of exactly 345 Kilocycles into the grid of the type 6A7 Converter tube. With the volume control full on and the receiver pointer set to the low frequency end of the dial, adjust the output of the oscillator to give ½ to ¾ scale reading on the output meter.

3. Adjust both the first and second I. F. trimmers located on the top of the chassis (see Fig. 1) to a maximum reading on the output meter. If the adjustment of these trimmers produces a maximum reading off the scale of the meter, reduce the oscillator output still further. Correct alignment of these trimmers is indicated by a maximum reading of the output meter for a minimum input signal from the test oscillator.

4. Attach the oscillator to the antenna and ground leads of the receiver, and adjust the frequency to exactly 1500 Kilocycles. Turn Band Selector switch to the Broadcast Band position. Adjust trimmer condenser C3-5 until, with the signal tuned in on the receiver, the dial pointer indicates exactly 1500 K.C.

5. Adjust the oscillator signal to exactly 600 K. C., and adjust the padding condenser C-12 until, with the oscillator signal tuned in on the dial, the dial pointer indicates exactly 600 K. C. Repeat the calibration of both 1500 and 600 K.C. on the dial until both points are correct without further adjustment of either C3-5 or C-12.

6. Adjust test oscillator to 1500 K.C. again and tune the receiver in to this signal, adjusting the dial carefully to give a maximum reading of the output meter. Adjust trimmer condensers C3-4 and C3-2 for a further maximum of the output meter, reducing the output of the test oscillator if necessary to bring this maximum reading on scale. The alignment of the Broadcast band of the receiver is complete.

7. Adjust the oscillator again to 1500 K.C. and tune the receiver exactly to that signal. Turn the Band selector switch to the Short-Wave Band position, and adjust the test oscillator to exactly 15,000 Kilocycles. Leaving the dial pointer set, adjust trimmer condenser C3-6 until the oscillator signal is heard, and the output meter is at a maximum reading.

8. With the same signal from the oscillator, and the dial pointer still set at the same position, adjust trimmer condensers C3-3 and C3-1 for a further maximum reading of the output meter.

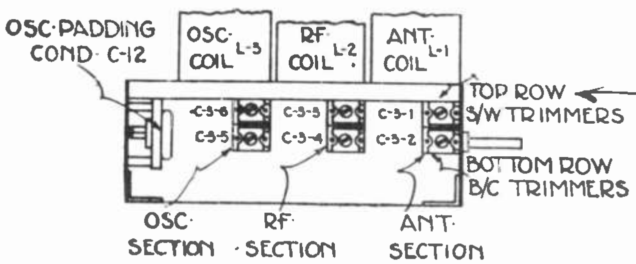
CAUTION—With the oscillator set at 15,000 K.C. two signals can be heard in the receiver, one at 15,000 and the other at 14,310 K.C. Do not mistake the latter signal for the former. In aligning the receiver at 15,000 K.C. the signal of highest frequency is the correct one, and the receiver is adjusted to it. After the alignment is complete, check to see if a second signal is audible at 14,310 K.C. If so, you will have been using the proper signal for the alignment.

14100 Kc.
Mods 970A-B

Mod 467B → ADJUSTMENT OF THE SPARTON VISO-GLO

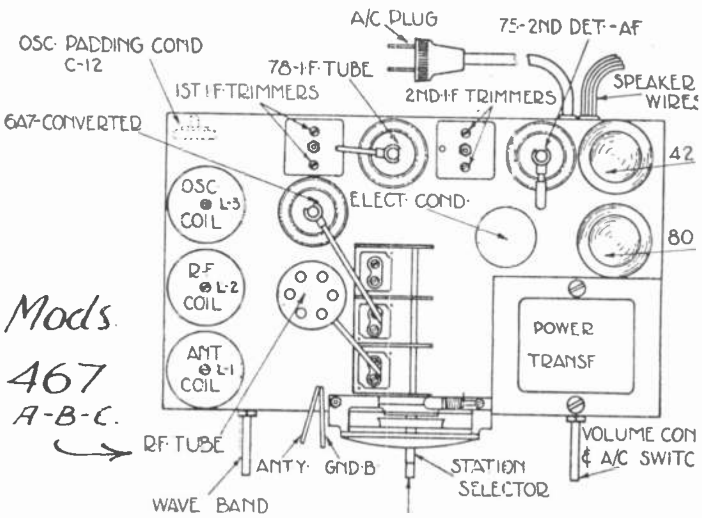
The Red Knurled Knob on the back of the chassis is the Viso-glo adjustment control. This control should be adjusted by turning it to the right or left until the Viso-glo is completely filled with light when a station has been properly tuned in.

With the control rotated in a clockwise direction, the light will respond to the most inaudible, weak, distant stations and will serve to help locate the small short wave stations. With the knob rotated in a counter-clockwise direction, the initial amount of light will be much less and the glow will indicate the stronger stations only. The same control will serve to compensate for unusually high or low line voltages affecting the intensity of the glow.

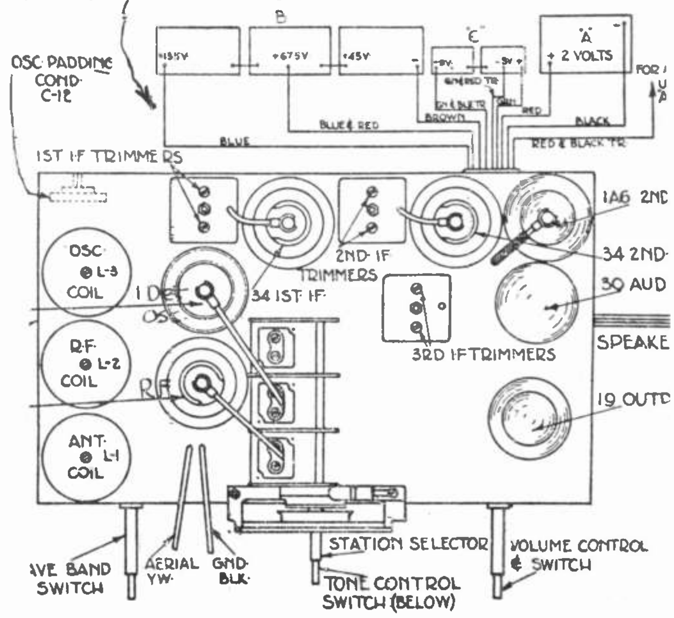


applies to all models

Mods. 970 A-B



Mods. 467 A-B-C.



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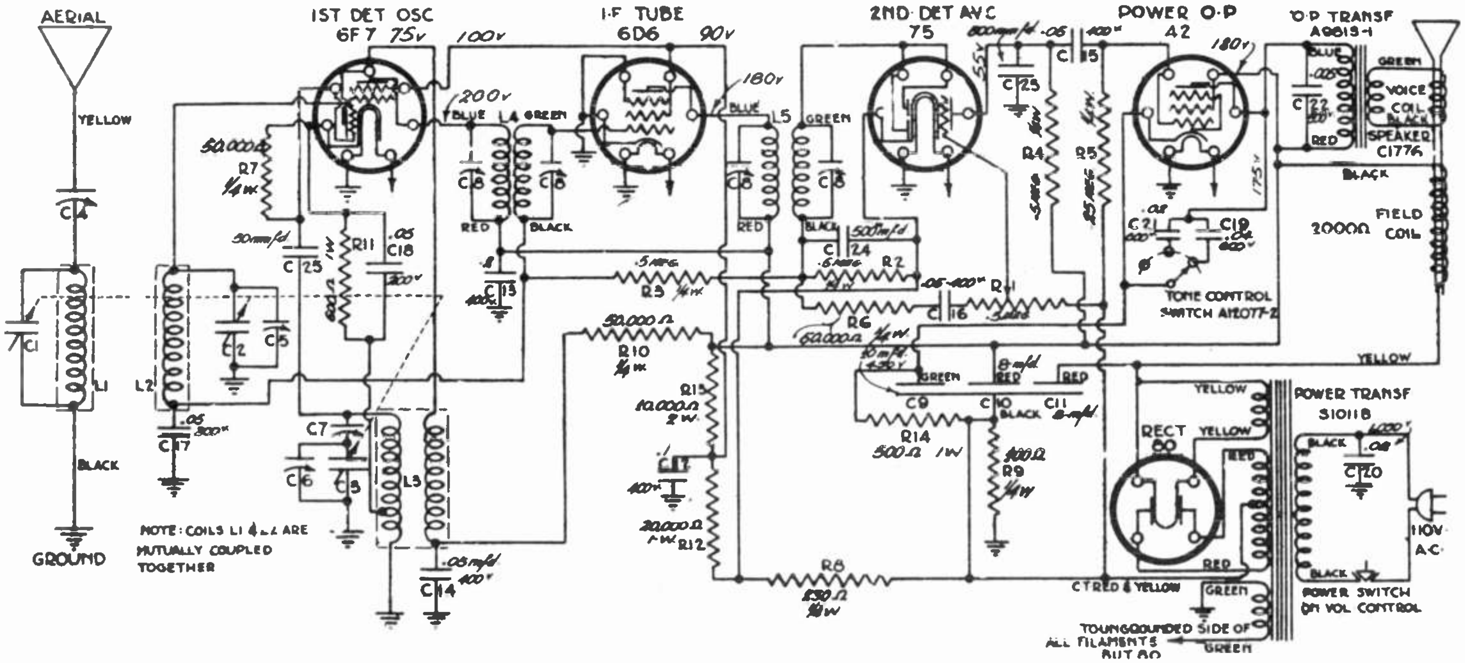
SPARTON - 25A.

World Radio History

I.F. = 345 K.C.



ALIGNMENT PROCEDURE

NOTE—Before commencing alignment make sure that the dial is set so that with the selector plates in flush, the pointer points to the last division on the broadcast scale.

1. INTERMEDIATE FREQUENCY AMPLIFIER—Set service oscillator at 345 K.C. and with test lead attached to the 6F7 (converter) grid cap, adjust trimmers C8 for maximum output reading on output meter.

2. OSCILLATOR TRIMMER — Set service oscillator at 1500 K.C. and connect test lead to yellow aerial lead, adjust trimmer C6 until with signal tuned in dial points to 150.

3. OSCILLATOR PADDER—Set service oscillator at 600 K.C. and adjust padder (C7) until with signal tuned in dial points to 60.

Re-check at 1500 as in section 2 above.

4. R. F. TRIMMERS—With service oscillator at 1500 and set tuned to that frequency, adjust C4 and C5 for maximum output.

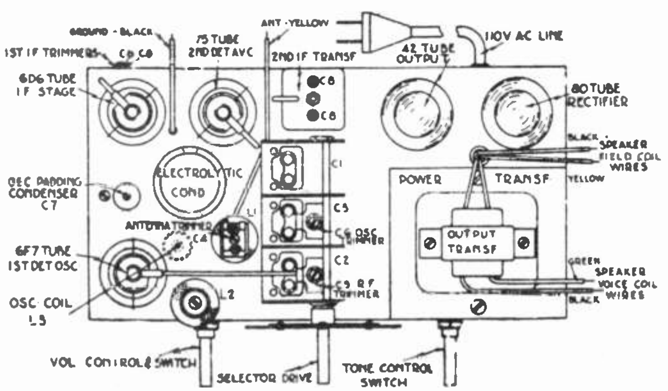
NOTE—In some cases better results will be obtained if C4 (the antenna trimmer) is readjusted on a station at 1400 K.C. when the set is connected to the aerial with which it is to be used.

WHAT TO LOOK FOR IN CASE OF TROUBLE

EXCESSIVE NOISE—Check alignment, check aerial, too short an aerial will result in the picking up of too large a percentage of noise. A ground should always be used.

The pointer on this set is in the form of a mark on the green dial screen, in some cases the set appears off calibration a few K. C. on all stations, this is due to the fact that the selector has shifted on its rubber mounting washers. The remedy is to tap the tuning knob gently in the desired direction, this causes the selector to shift far enough to remedy the trouble.

MODEL. 154
1935-36



CHASSIS LAYOUT

VOLTAGE ANALYSIS AND RESISTANCE CHART

Tube	Location	Plate Mils	Plate Volts	Screen Volts	Control Grid Volts	Heater Volts	Resistance to Ground: Plate	Grid	Screen	Cathode
6F7	R. F. Pent.	5	200	100	(2)	6.3	30,000	1 Meg.	20,000	600
	OSC. Tri.	2	75	—	(8)	—	80,000	50,000	—	—
6D6	1st I. F.	7	180	90	(1)	6.3	30,000	1 Meg.	20,000	0
75	2nd Det. A.V.C.	1—	55	—	(1)	6.3	500,000	500,000	—	330
42	Output	20	175	180	10 (2)	6.3	30,000	250,000	—	600
80	Rectifier	62	300	—	—	5.0	100	—	—	—

(1) Grid bias supplied by signal, cannot be read on analyzer.
(2) High resistance circuit not true voltage.
All readings taken with volume control on full and no signal applied to aerial.
All readings + or — 10%. All voltages taken on 1000 ohm per volt meter

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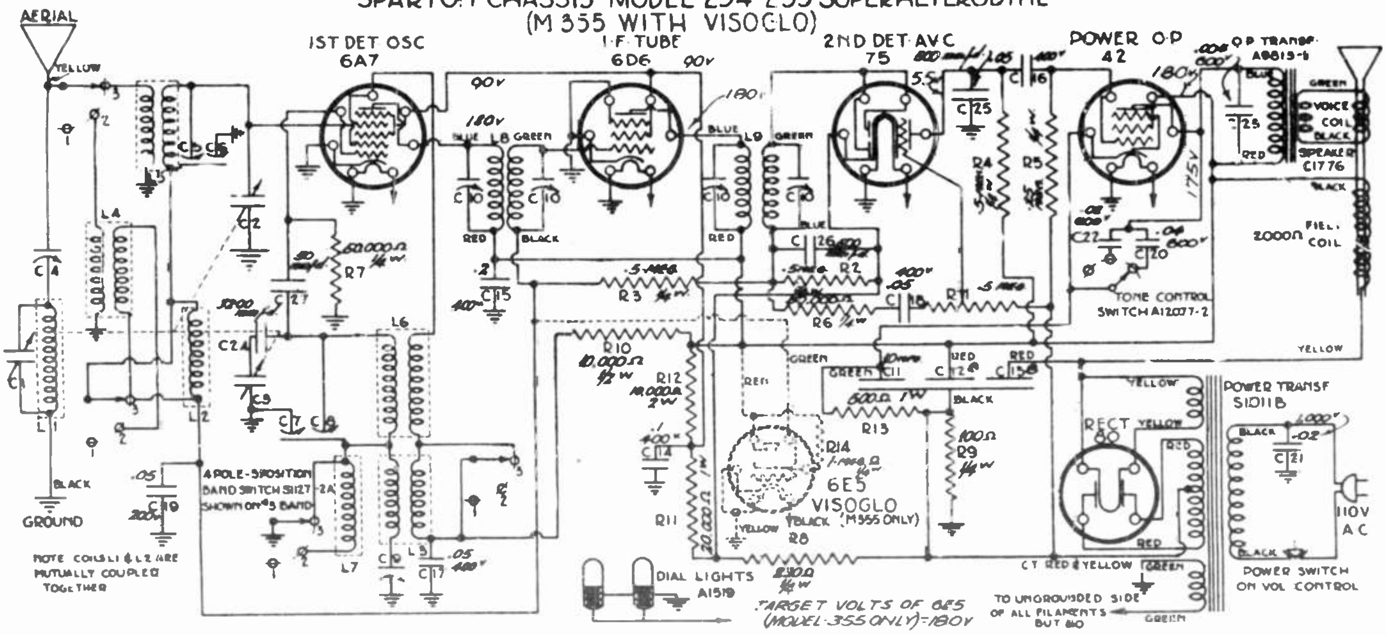
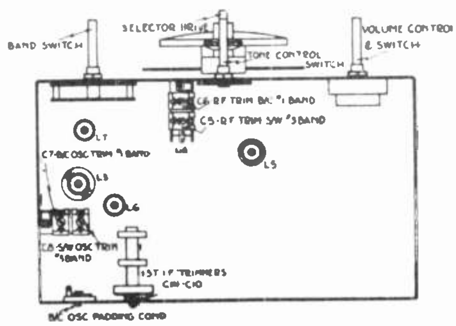
SCHEMATIC DIAGRAM
SPARTON CHASSIS MODEL 254-255 SUPERHETERODYNE
(M 355 WITH VISOGLO)



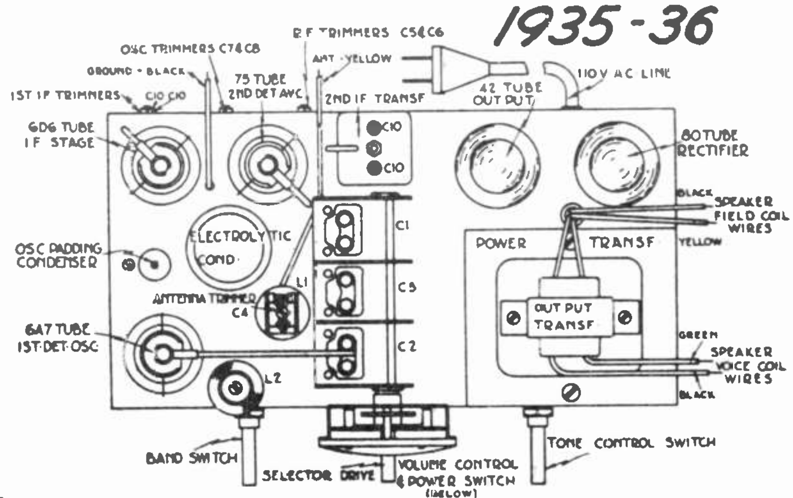
MODELS. 254-255 AND M-355

1935-36

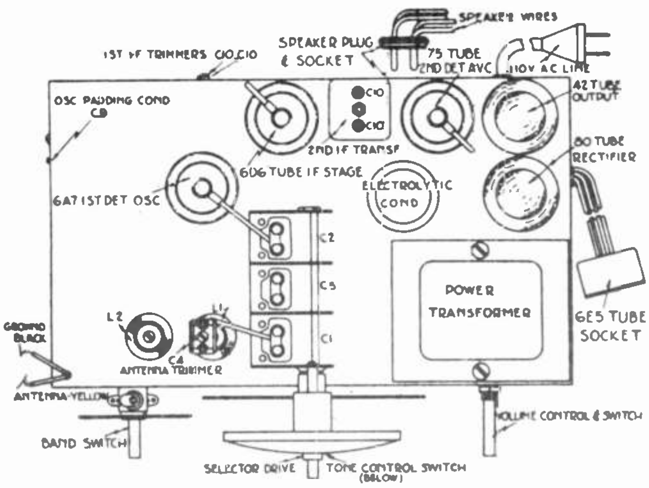


Bottom View 255 and 355

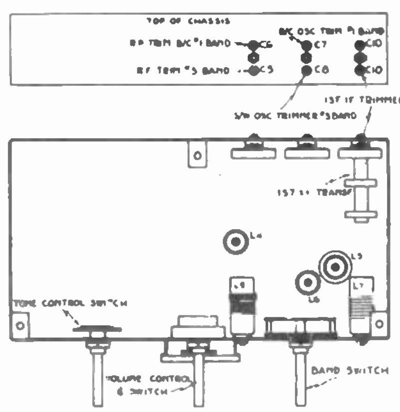
ALIGNMENT INSTRUCTIONS ON DATA SHEET SPARTON.-31



Model 254



Models 255 and 355



Bottom View 254

I.F. = 345 K.C.

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ALIGNMENT MODELS. 254-254-355

ALIGNMENT PROCEDURE

NOTE—Before commencing alignment make sure that the dial is set so that with the selector plates in flush, the pointer points to the last division on the broadcast scale.

1. INTERMEDIATE FREQUENCY AMPLIFIER
Set service oscillator at 345 K. C. and with test lead attached to 6A7 (converter) grid cap adjust the six condensers C10 for maximum reading on output meter.

2. OSCILLATOR TRIMMER
Set service oscillator at 1500 K.C. and connect test lead to yellow antenna lead, adjust trimmer C7 until with signal tuned in dial points to 160.

3. OSCILLATOR PADDER
Set service oscillator at 600K.C., and adjust padder (C9) until with signal tuned in dial points to 60.
Re-check at 1500 as in section 2 (above).

4. R. F. TRIMMERS
With service oscillator set at 1500 K.C., and set tuned to that frequency, adjust trimmers C4 and C6 for maximum output.

SHORT WAVE ALIGNMENT
1. With the service oscillator set at 15.000 K.C., adjust trimmer C8 until with signal tuned in, dial points to 15 on the red band.
2. Adjust short wave R. F. trimmer C5 to point of greatest output. The trimmer should then be turned a very small amount (about 1/16 turn) to the right to increase capacity slightly. This completes the alignment, there is no adjustment on the green band, this falls in with the other bands.

WARNING—Do not bend the selector plates, this destroys the selector alignment. Note—In some cases better results will be obtained if C4 (the antenna trimmer) is readjusted on a station at 1400 K.C., with the set connected to the aerial with which it is to operate.

CAUTION—With the oscillator set at 15000K.C. two signals can be heard in the receiver, one at 15000 K.C. and the other at 14310 K.C. Do not mistake the latter signal for the former. In aligning the receiver at 15000 K.C. the signal of highest frequency is the correct one and the receiver is adjusted to it. After the alignment is made check to see if a second signal is heard at 14310 K.C. If so you will have been using the correct signal for the alignment. This secondary image is noticeable on all short wave bands and should be considered before choosing any signal for alignment.

WHAT TO LOOK FOR IN CASE OF TROUBLE:

AUDIO HOWL—Check chassis bolts, these should be loose enough to allow the chassis to "float" on its rubber mounting washers, selector should also be free to float on its rubber cushions; check for microphonic tubes.

POOR SELECTIVITY—Check alignment.

EXCESSIVE NOISE—Check alignment, check aerial, too short an aerial will result in the picking up of too large a percentage of noise.

A GROUND MUST ALWAYS BE USED.

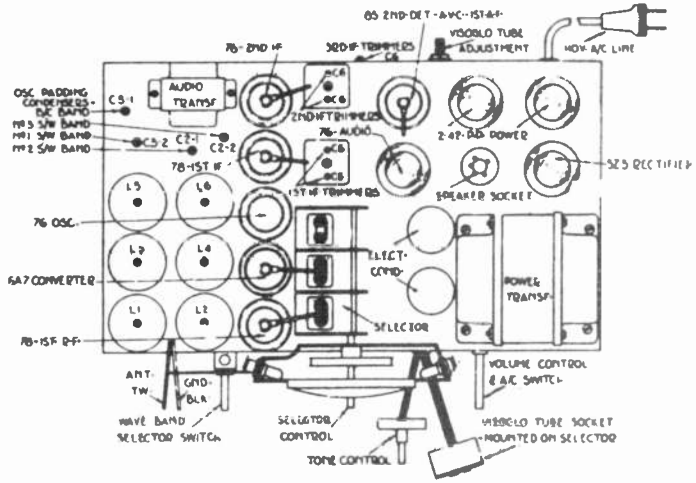
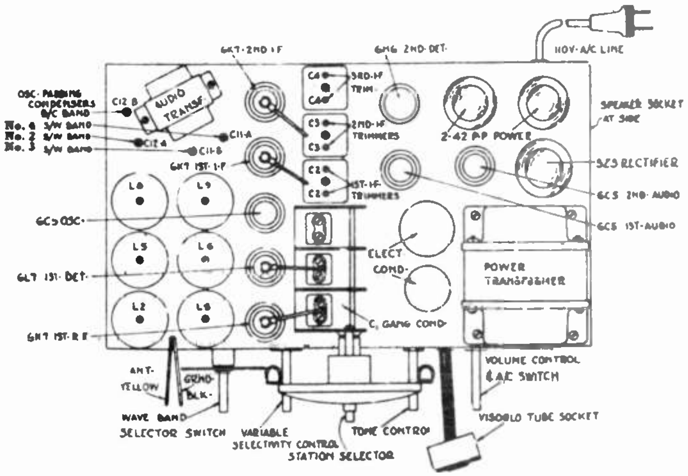
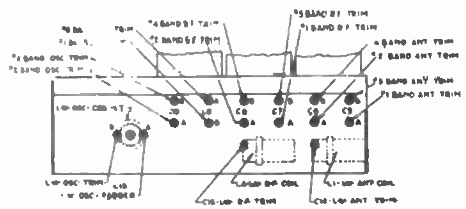


Fig. 1—Top View of Model 604 Chassis.

DETAILS OF
MODEL. 604
SEE CIRCUIT OF 604 ON DATA SHEET-35.



DETAILS OF
MODEL. 811
LEFT-
CHASSIS LAYOUT.
BELOW-
TRIMMER LOCATIONS.
CIRCUIT FOR 811 ON DATA SHEET-37



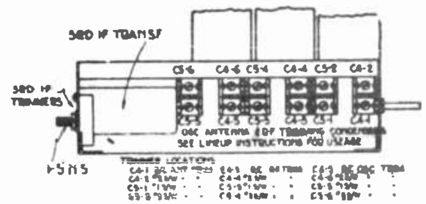


Fig. 2

End View of Chassis (Base Plate Removed) Showing Trimmer Condensers

Model. 604

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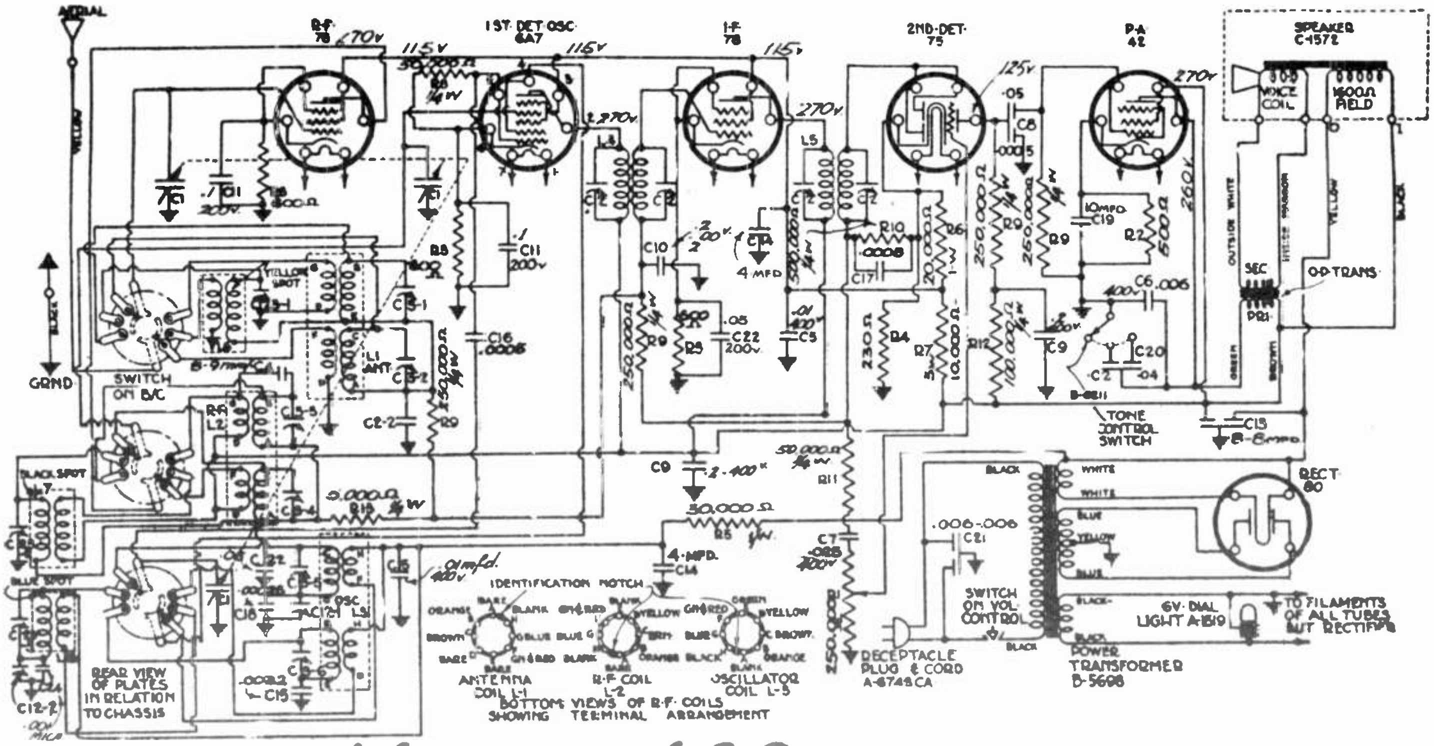


MODEL. 468

I.F. = 345 K.C.

1. Connect the output meter to the voice coil leads of the speaker. (maroon and white leads).

2. Attach the test oscillator to the receiver, feeding a signal of exactly 345 Kilocycles into the grid of the type 6A7 Converter tube. With the volume control full on and the receiver pointer set to the low frequency end of the dial, adjust the output of the oscillator to give ½ to ¾ scale reading on the output meter.

3. Adjust both the first and second I.F. trimmers located on the top of the chassis (see Fig. 1) to a maximum reading on the output meter. If the adjustment of these trimmers produces a maximum reading off the scale of the meter, reduce the oscillator output still further. Correct alignment of these trimmers is indicated by a maximum reading of the output meter for a minimum input signal from the test oscillator.

4. Attach the oscillator to the antenna and ground leads of the receiver, and adjust the frequency to exactly 1500 Kilocycles. Turn Band Selector switch to the Broadcast Band position. Adjust trimmer condenser C3-5 until, with the signal tuned in on the receiver, the dial pointer indicates exactly 1500 K.C.

5. Adjust the oscillator signal to exactly 600 K.C., and adjust the padding condenser C-12 until, with the oscillator signal tuned in on the dial, the dial pointer indicates exactly 600 K.C. Repeat the calibration of both 1500 and 600 K.C. on the dial until both points are correct without further adjustment of either C3-5 or C-12.

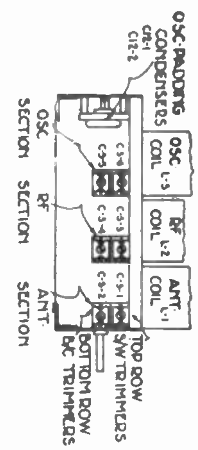
6. Adjust test oscillator to 1500 K.C. again and tune the receiver in to this signal, adjusting the dial carefully to give a maximum reading of the output meter. Adjust trimmer condensers C3-1 and C3-2 for a futher maximum of the output meter, reducing the output of the test oscillator if necessary to bring this maximum reading on scale. The alignment of the Broadcast band of the receiver is complete.

7. Adjust the oscillator again to 1500 K.C. and tune the receiver exactly to that signal. Turn the Band selector switch to the second Short-Wave Band position, and adjust the test oscillator to exactly 15,000 Kilocycles. Leaving the dial pointer set, adjust trimmer condenser C3-6 until the oscillator signal is heard, and the output meter is at a maximum reading.

8. With the same signal from the oscillator and the dial pointer still set at the same position, adjust trimmer condensers C3-3 and C3-4 for a further maximum reading of the output meter.

9. Adjust service oscillator to 4200 Kilocycles, turn Band Selector switch to the first short wave position and adjust condenser C23-3 so that when the signal is tuned in on the receiver, the dial pointer reads 4.2 megacycles or 4200 Kilocycles on the upper green dial. Reset the test oscillator to 2700 Kilocycles and adjust condenser C12-2 until signal is heard in set with dial pointer reading 2.7 on the green dial. It may be found that by adjusting the dial slightly off 2.7, e.g. 2.69 and readjusting the test oscillator to show a maximum reading on the output meter, that this reading is higher, indicating an increased gain. If the reading is lower than when set exactly at 2.7, the increased effect may be noticed at 2.71. Continue to throw the set slightly off calibration until a maximum increase in gain is noticed. This point is never far enough off calibration to affect station identification by frequency and yet in many instances a marked increase in sensitivity is obtained.

10. Reset the test oscillator to 4200 K.C. and tune the signal in on the dial of the receiver, adjusting it carefully to give a maximum reading on the output meter. Adjust condensers C23-1 and C23-2 for maximum gain as indicated by a further maximum reading on the output meter.



End View of Chassis (Base Plate Removed). Showing location of Broadcast and Second Short Wave Band Trimmer Condensers.

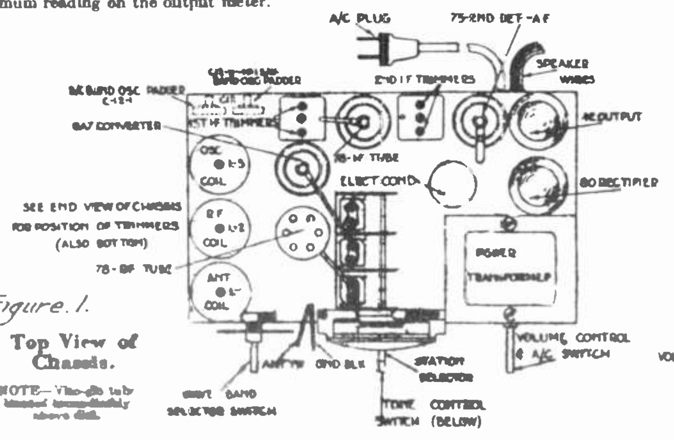
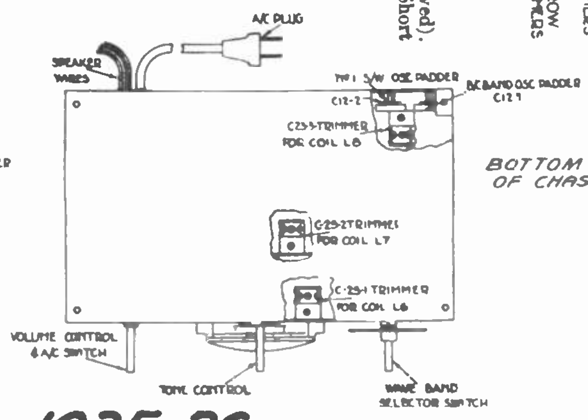


Figure. 1.

Top View of Chassis.

NOTE—



BOTTOM VIEW OF CHASSIS.

1935-36

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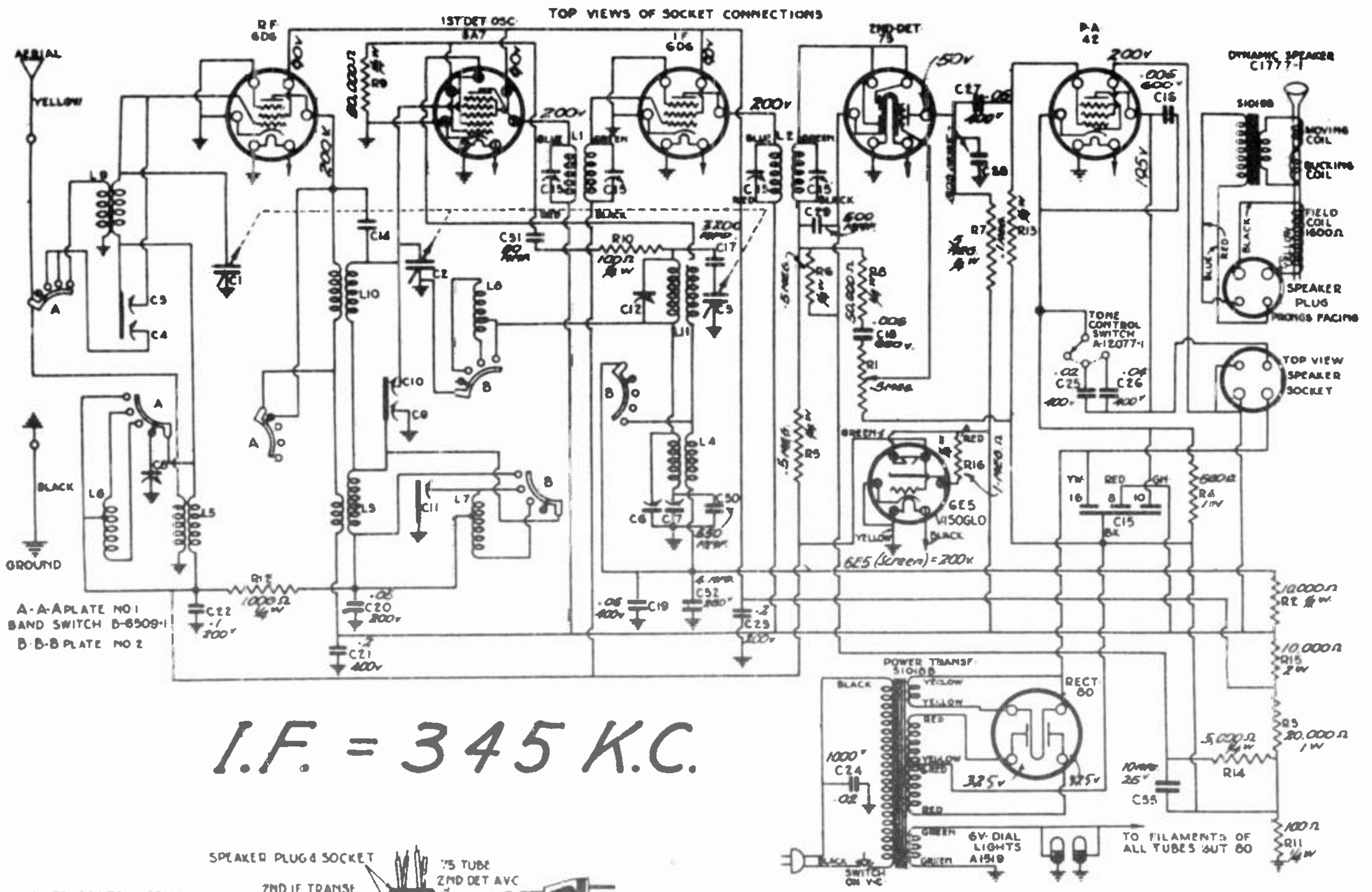
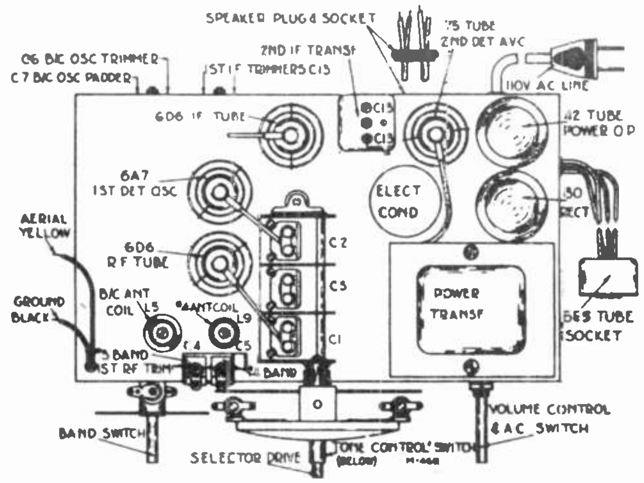
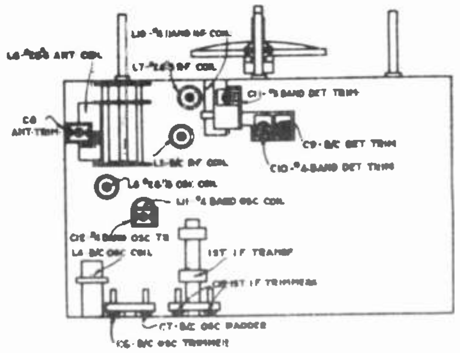


I.F. = 345 K.C.





ALIGNMENT PROCEDURE

Before commencing alignment the dial should be set so that with the selector plates in flush, the pointer points to the last line on the black scale.

1. I.F. AMPLIFIER—Set service oscillator at 345 K.C. and with test lead attached to 6A7 grid cap, adjust the 4 trimmers C13 for maximum reading on the output meter.

NOTE the electron ray viso glo can be used as an output meter.

2. OSCILLATOR TRIMMER—Set service oscillator at 1500 K.C. and connect test lead to yellow antenna lead. Adjust trimmer C6 until signal is tuned in with dial tuned to £50 on broadcast band.

3. OSCILLATOR PADDER — Set service oscillator at 600 K.C. and adjust padder C7 until with signal tuned in dial points to 60. Re-check at 1500 as in section 2 above.

4. R.F. TRIMMER—With the 1500 K.C. signal tuned in and dial at 150, adjust trimmers C9 and C8 for maximum output.

SHORT WAVE ALIGNMENT

NO. 3 S.W. (PURPLE) BAND—Set service oscillator at 15,000 K.C. and adjust trimmer C12 until with signal tuned in the pointer is at 15 on the purple dial scale

R.F.—Adjust C5 and C10 for maximum output.

NO. 2 S.W. (RED) BAND—Set service oscillator at 6,000 K.C. and adjust trimmers C1J and C4 for maximum output.

NO. 1 S.W. (GREEN) BAND—No adjustments are required on this band.

MODEL. 469

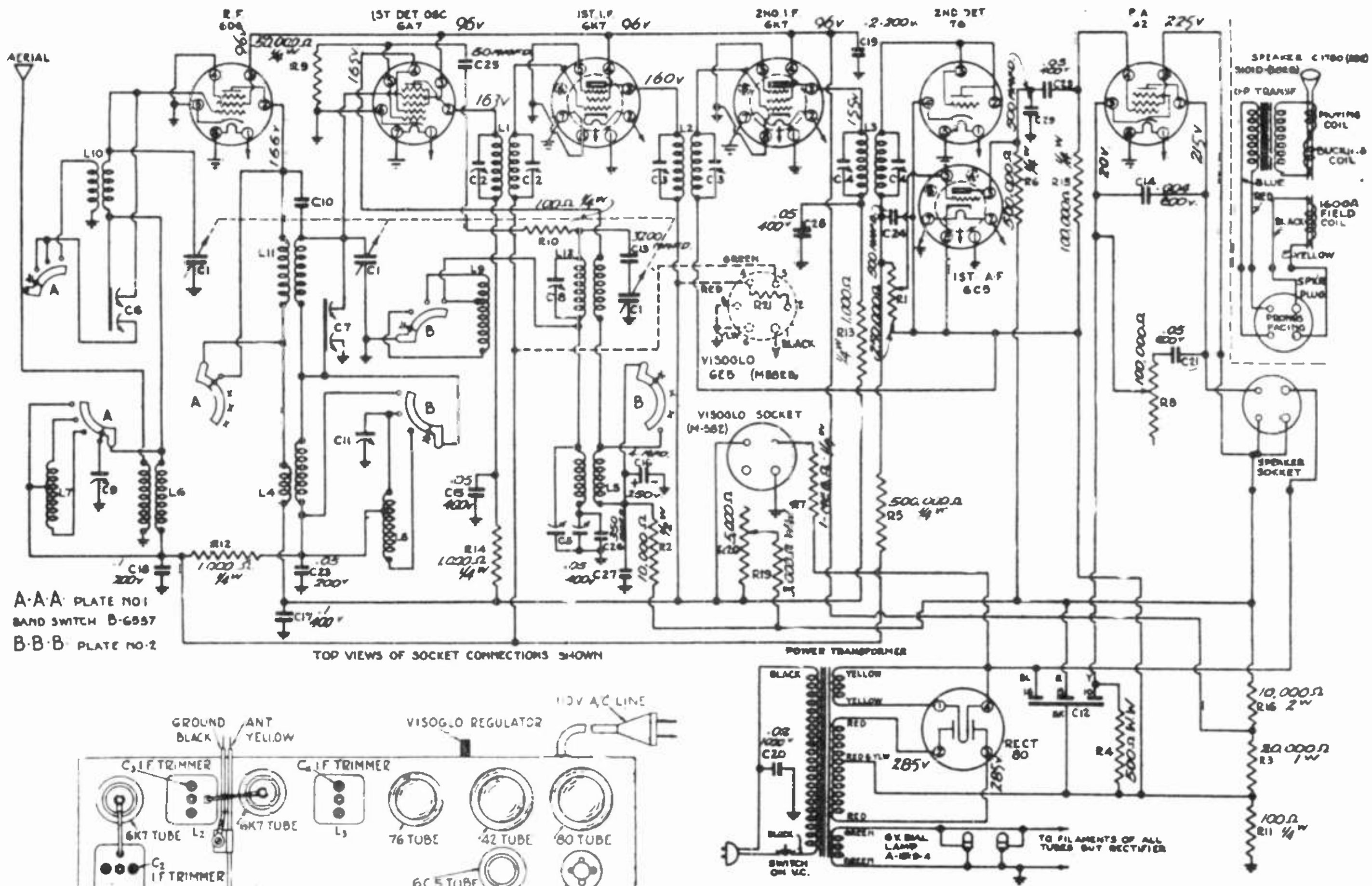
1935-36

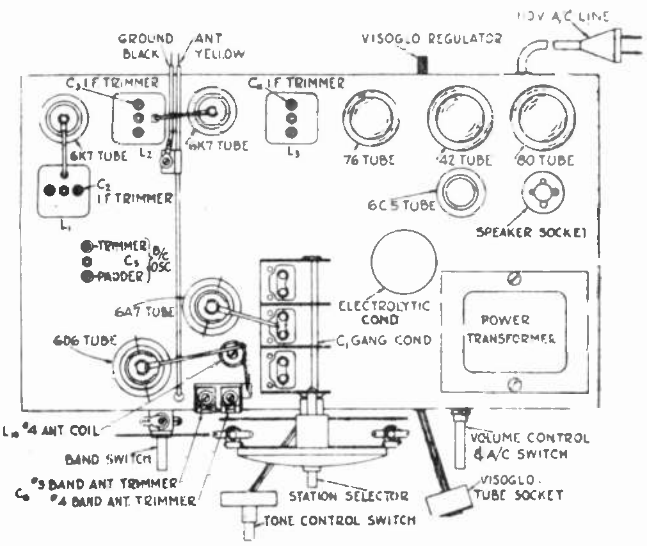
DATA SHEET

PRINTED IN CANADA

COURTESY- SPARTON-33 OF CANADA LTD.

World Radio History





MODEL. 582 AND 582B

SEE DATA SHEET SPARTON-36 FOR LAYOUT OF COILS AND TRIMMERS BENEATH CHASSIS.

NOTE - ALIGNMENT INSTRUCTIONS BELOW ALSO APPLY TO MODEL.-692.

1935-36

I.F. = 456 K.C.

ALIGNMENT INSTRUCTIONS

NOTE—Before commencing alignment make sure that the dial is set so that with the selector plates in flush, the pointer points to the last division on the dial

1. **INTERMEDIATE FREQUENCY AMPLIFIER**

Set service oscillator at 456 K.C. and with test lead attached to the 6A7 (converter tube) grid cap, adjust trimmers C2, C3 and C4 for maximum reading on the output meter.

2. **BROADCAST BAND ALIGNMENT**—(No. 1 Band)

(a) **OSCILLATOR TRIMMER**—Set service oscillator at 1500 K.C. and connect test lead to yellow antenna lead, adjust trimmer C5A until with signal tuned in dial points to 150 on the black scale.

(b) **OSCILLATOR PADDER**—Set service oscillator at 600 K.C. and adjust padder C5B so that with signal tuned in dial points to 60 on black scale; recheck at 1500 as in "a" above.

(c) **R. F. TRIMMERS**—With service oscillator set at 1500 K.C. and set tuned to that frequency, adjust trimmers C9, C7B for maximum reading on the output meter.

3. **SHORT WAVE ALIGNMENT.**

NUMBER 3 S.W. BAND (BLUE)—(No. 4 Band)—Set service oscillator at 15000 K.C. and adjust trimmer C8 until with signal tuned in dial points to 15 on the blue band. R.F. adjust r. f. trimmers C7A, C6B for maximum output.

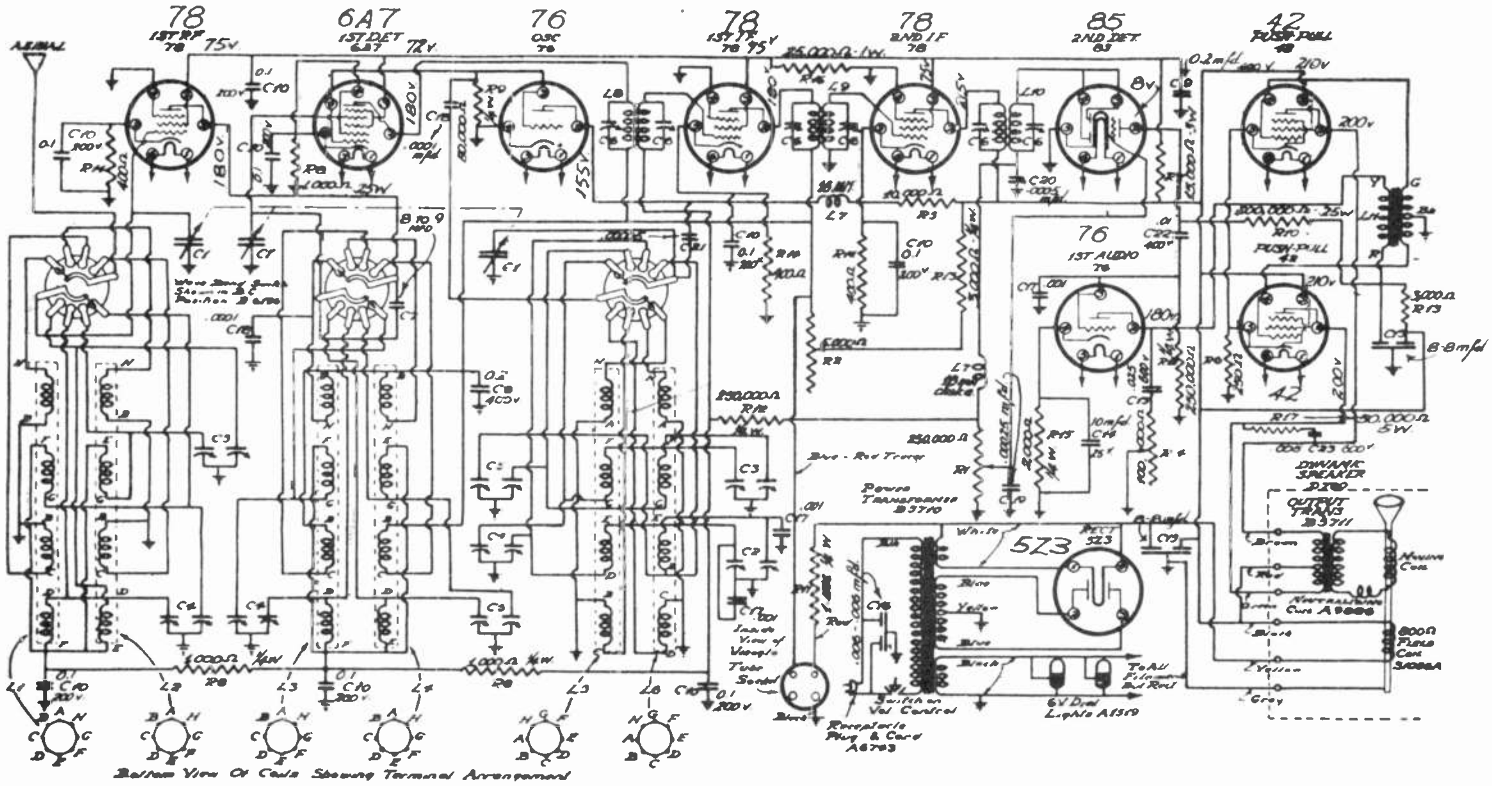
NUMBER 2 S.W. BAND (RED)—(No. 3 Band)—Set service oscillator at 6000 K.C. and adjust trimmers C11, C6A for greatest output.

NUMBER 1 S.W. BAND (GREEN)—(No. 2 Band)—No adjustments are required on this band.

WARNING—Do not bend selector plates, this destroys selector alignment.

CAUTION—With the oscillator set at 15000 two signals can be heard in the receiver, one at 15000 K.C. and the other at 14088 K.C.; do not mistake the latter signal for the former. In aligning the receiver at 15000 K.C. the signal of higher frequency is the correct one and the set should be adjusted to it. This secondary image is noticeable on all short wave bands and appears at a place lower in frequency than the desired signal by twice the I. F. frequency.

World Radio History



I.F. = 456 K.C.

ALIGNMENT PROCEDURE—Model 604

The step by step alignment procedure must be rigidly adhered to if the original degree of sensitivity and selectivity of the receiver are to be maintained.

The names of the various trimmer condensers referred to below by number are as follows:

C-6	I.F. Trimmer Condensers	C4-5	B.C. Band Oscillator Trimmer
C4-1	B.C. Band Ant. Trimmer	C5-5	No. 1 S.W. Band Oscillator Trimmer
C5-1	No. 1 S.W. Band Ant. Trimmer	C4-6	No. 2 S.W. Band Oscillator Trimmer
C4-2	No. 2 S.W. Band Ant. Trimmer	C5-6	No. 3 S.W. Band Oscillator Trimmer
C5-2	No. 3 S.W. Band Ant. Trimmer	C3-1	B.C. Band Oscillator Padding Condenser
C4-3	B.C. Band R.F. Trimmer	C3-2	No. 1 S.W. Band Oscillator Padding Condenser
C5-3	No. 1 S.W. Band R.F. Trimmer	C2-1	No. 2 S.W. Band Oscillator Padding Condenser
C4-4	No. 2 S.W. Band R.F. Trimmer	C2-2	No. 3 S.W. Band Oscillator Padding Condenser
C5-4	No. 3 S.W. Band R.F. Trimmer		

Figures 1 and 2 show location of these trimmers on the chassis.

NOTE—With condenser plates flush, the dial pointer should read exactly 540 K.C. The pointer can be adjusted to this position by loosening the hex-head binding nut on the station selector shaft.

1. INTERMEDIATE FREQUENCY ALIGNMENT.

(a) Connect output of oscillator to grid of type 6A7 converter tube and ground of chassis. Connect the output meter across the voice coil of the speaker.

(b) Adjust frequency of oscillator to exactly 456 K.C.

(c) Turn Volume Control to the full on position and reduce oscillator output until output meter reading is approximately 2/3 reading.

(d) Adjust trimmer condensers C-6 (see Fig. 1—6 trimmers in all) until output meter reading is at maximum. If the trimmer adjustments increase the output meter reading to an off-scale value, reduce the oscillator output to bring the needle on scale again, and continue to adjust for a maximum. Repeat the adjustment of the six C-6 condensers several times for a maximum reading on the meter.

NOTE—For satisfactory alignment of the I.F. stages, set selector switch in the broadcast position and set dial at about 1000 K.C.

2. OSCILLATOR AND R. F. ADJUSTMENTS

Connect oscillator to antenna.

(a) Broadcast Band.

Adjust condenser C4-5 so that with oscillator set at 1500 K.C. the receiver dial pointer reads exactly 1500. Adjust condenser C3-1 so that with oscillator set at 600 K.C. the dial pointer with signal tuned in reads exactly 600. Repeat adjustment of both C3-1 and C4-5 several times. With oscillator set at 1500 again and signal tuned in on receiver adjust condensers C4-1 and C4-3 for maximum output meter reading. The oscillator calibration has an allowable error of $\pm$ 5 K.C. at 600 K.C.

(b) No. 1 short wave band.

Repeat the above adjustment on No. 1 S.W. Band—trimming oscillator condenser C5-5 at 3000 K.C. and padding condenser C3-2 at 1500 K.C. Adjust condensers C5-1 and C5-3 at 3000 K.C. for maximum output meter reading.

(c) Repeat again on No. 2 S.W. Band—trimming oscillator condenser C4-6 at 7200 K.C. and padding condenser C2-1 at 3600 K.C. Trim condensers C4-2 and C4-4 for maximum output meter reading at 7200 K.C.

(d) Repeat adjustment again for No. 3 S.W. Band—trimming oscillator condenser C5-6 at 15000 K.C. and padding condenser C2-2 at 9000 K.C. Adjust condensers C5-2 and C5-4 for maximum output meter reading at 15000 K.C.

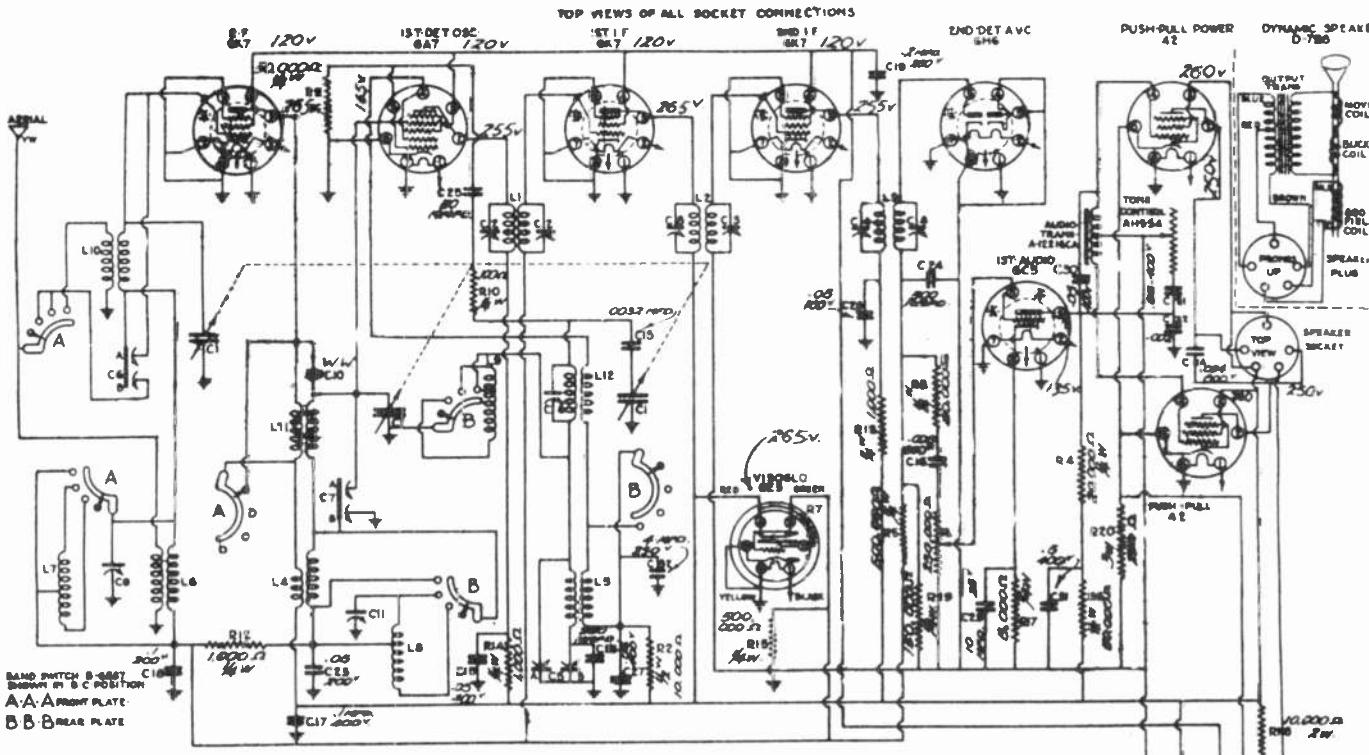
WARNING—In aligning the short wave bands of this receiver, for a given frequency signal from the oscillator, two signals might be heard on the receiver, apart in frequency by 900 K.C. The signal to which the receiver must be aligned is the signal of highest requency. Aligning to the lower frequency signal or spurious "image" will effect a distinct loss in sensitivity of the receiver.

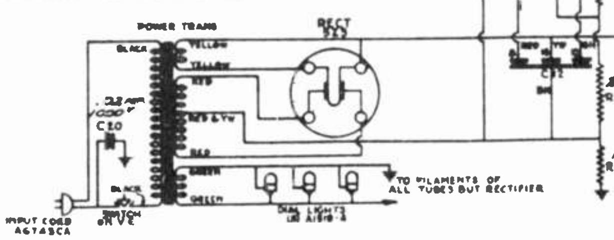
MODEL. 604

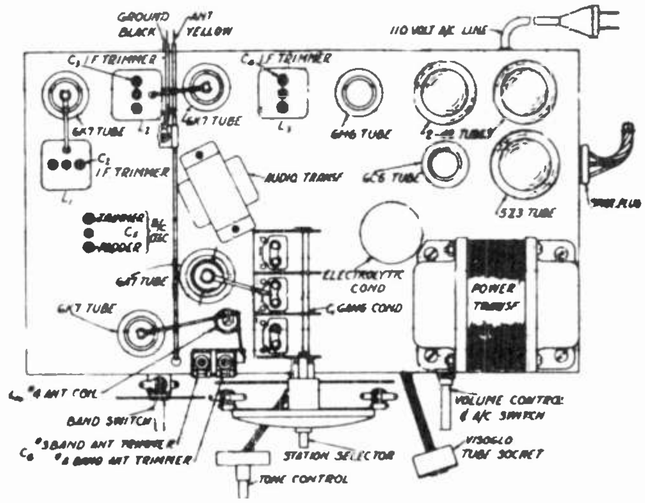
CHASSIS LAYOUT ON SPARTON DATA SHEET-31

1935

World Radio History

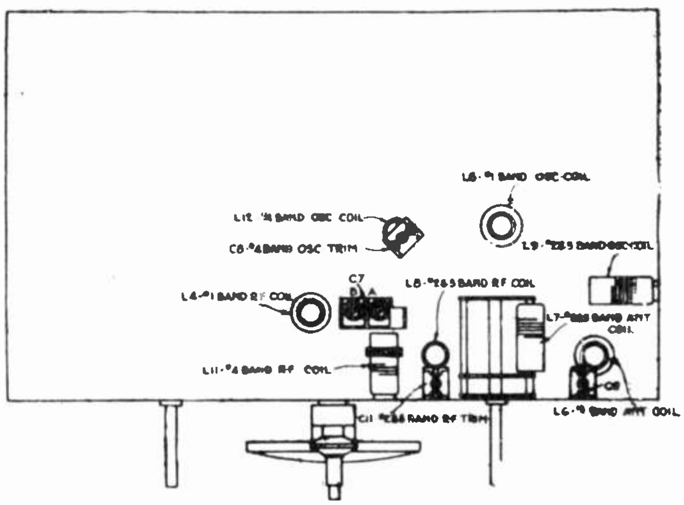






FOR ALIGNMENT INSTRUCTIONS SEE SPARTON DATA SHEET -34

NOTE: LAYOUT BELOW ALSO APPLIES TO MODELS.-582-582B ON DATA SHEET SPARTON.-34.



MODEL. 692

1935-36

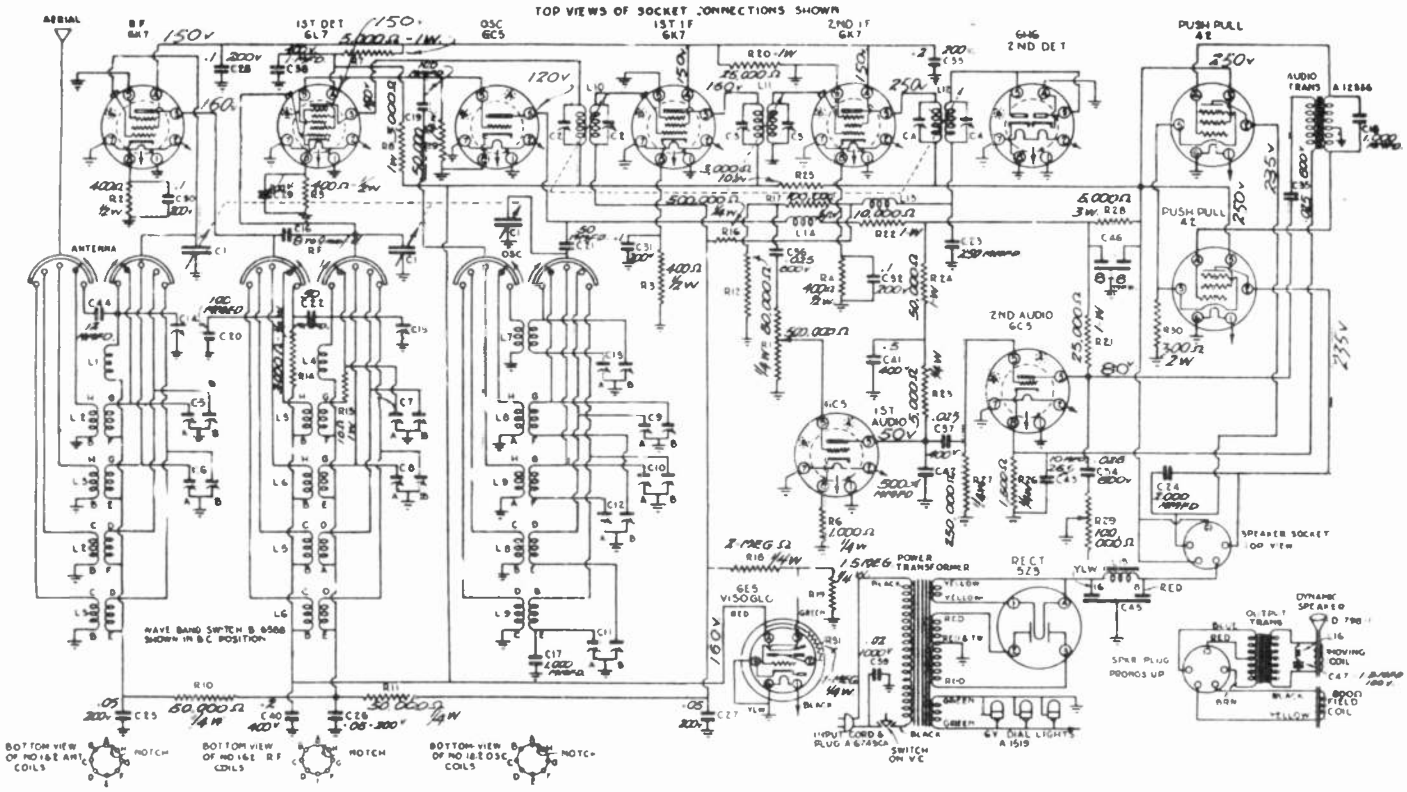
I.F. = 456 K.C.

DATA SHEET

PRINTED IN CANADA

COURTESY - SPARTON-36 OF CANADA LTD.

World Radio History



NOTE—Before commencing alignment make sure that the dial is set so that with the selector plates in flush, the pointer points to the last division on the dial.

1. INTERMEDIATE FREQUENCY AMPLIFIER.

Set service oscillator at 456 K.C. and with test lead attached to 6L7 (converter tube) grid cap adjust trimmers C2. C3, C4 for maximum reading on the output meter.

CAUTION—Be sure that the selectivity control is set at the position for maximum selectivity (turned to the right)

2. BROADCAST BAND ALIGNMENT.

(a) **OSCILLATOR TRIMMER**—Set service oscillator at 1500 K.C. and connect test lead to yellow antenna lead, adjust trimmer C 9 B until with signal tuned in dial points to 150 on black scale.

(b) **OSCILLATOR PADDER**—Set service oscillator at 600 K.C. and adjust padder C 12 B so that with signal tuned in, dial points to 60 on black scale. (Recheck at 1500 as in section "a" above).

(c) **R. F. TRIMMERS**—With service oscillator set at 1500 K.C. and set tuned to that frequency, adjust trimmers C 7 A and C 5 A for maximum output.

3. NUMBER 2 BAND ALIGNMENT.

(a) **OSCILLATOR TRIMMER**—Set service oscillator at 3000 K.C. and with band switch turned to the green position, adjust trimmer C 10 A until with signal tuned in dial points to 3.0 on the green scale.

(b) **OSCILLATOR PADDER**—Set service oscillator at 1500 K.C. and adjust padder C 12 A so that with signal tuned in dial points to 1.5 on the green scale. (Recheck at 3000 as above).

(c) **R. F. TRIMMERS**—With the service oscillator at 3000 K.C. and set tuned to that frequency, adjust trimmers C 6 A and C 8 A for maximum reading on the output meter.

4. NUMBER 3 BAND ALIGNMENT.

(a) **OSCILLATOR TRIMMER**—Set service oscillator at 7500 K.C. and with band switch turned to the red position, adjust trimmer C 9 A until with signal tuned in, dial points to 7 5 on the red scale.

(b) **OSCILLATOR PADDER**—Set service oscillator at 3750 K.C. and adjust padder C 11 B so that with signal tuned in dial points to 3.75 on the red scale (Recheck at 7500 as above).

(c) **R. F. TRIMMERS**—With the service oscillator at 7500 K.C. and the set tuned to that frequency, adjust trimmers C 5 B and C 7 B for maximum reading on output meter.

5. NUMBER 4 BAND ALIGNMENT.

(a) **OSCILLATOR TRIMMER**—Set service oscillator at 15000 K.C. and with band switch turned to the blue position, adjust trimmer C 10 B until with signal tuned in dial points to 15 on the blue scale

(b) **OSCILLATOR PADDER**—Set service oscillator at 9000 K.C. and adjust padder C 11 A so that with signal tuned in, dial points to 9. (Recheck at 15000 as above).

(c) **R. F. TRIMMERS**—With the service oscillator at 15000 and set tuned to that frequency, adjust trimmers C 6 B and C 8 B for maximum reading on output meter.

6. LONG WAVE "X" BAND ALIGNMENT.

(a) **OSCILLATOR TRIMMER** —Set service oscillator at 350 K.C. and with band switch turned to the brown position adjust trimmer C 13 B until with signal tuned in, dial points to 350 on the brown scale.

(b) **OSCILLATOR PADDER**—Set service oscillator at 150 and adjust padder C 13 A so that with signal tuned in, dial points to 150. (Recheck at 350 as above).

(c) **R. F. TRIMMERS**—With service oscillator at 350 K.C. and set tuned to that frequency, adjust trimmers C 14 and C15 for maximum reading on output meter.

MODEL. 811

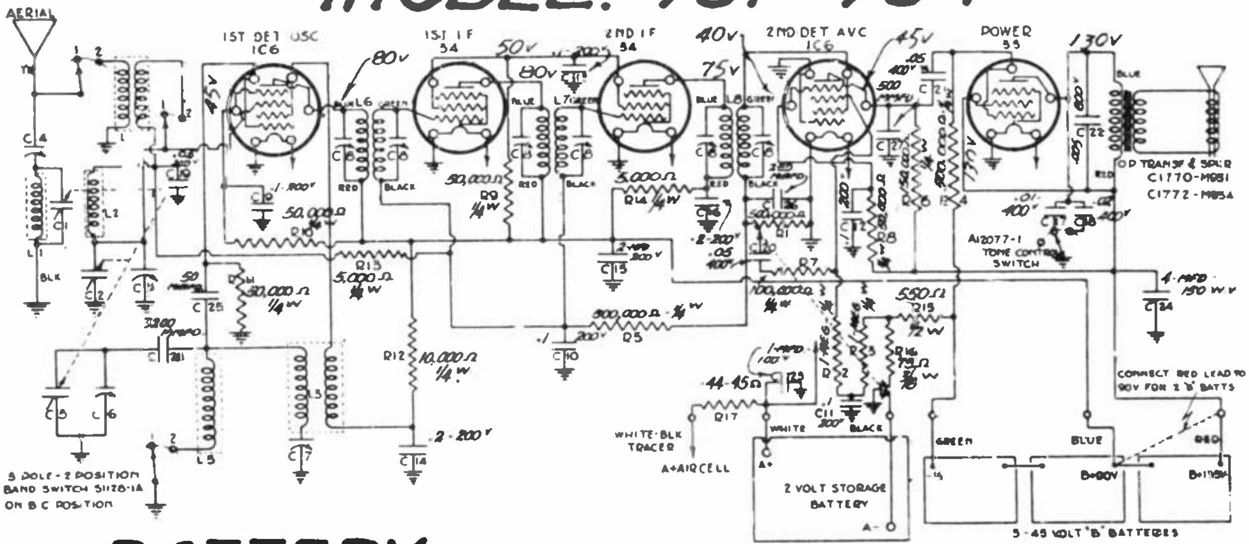
1935-36

NOTE.- CHASSIS LAYOUT, TRIMMER LOCATIONS, ETC. ON SPARTON DATA SHEET - 31.

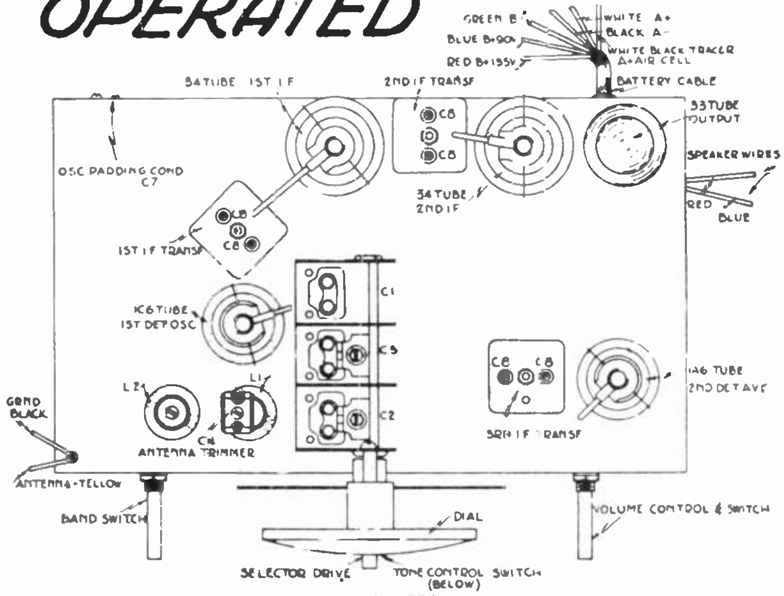
I.F. = 456 K.C.

World Radio History

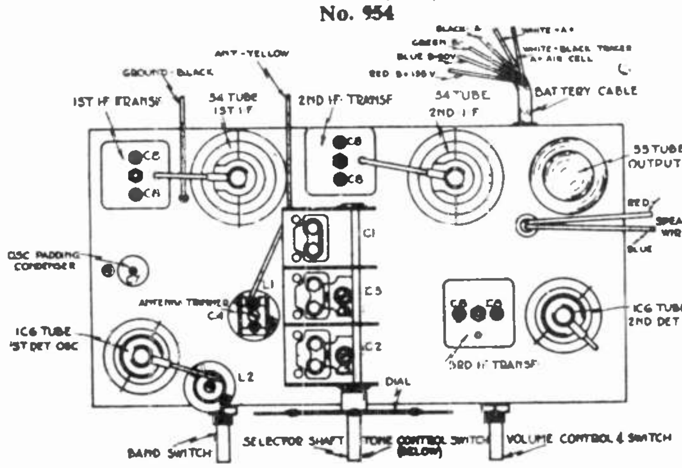
MODEL. 951-954



BATTERY-OPERATED I.F.=345 K.C. 1935-36



No. 954



No. 951

ALIGNMENT PROCEDURE

NOTE—Before commencing alignment make sure that the dial is set so that with the selector plates in flush, the pointer points to the last division on the dial.

1. **INTERMEDIATE FREQUENCY AMPLIFIER**—Set service oscillator at 345 K. C. and with test lead attached to 1C6 (converter) grid cap adjust the six condensers C8 for maximum reading on output meter.

2. **OSCILLATOR TRIMMER**—Set service oscillator at 1500 K. C. and connect test lead to yellow aerial lead, adjust trimmer C6 (on selector) until with signal tuned in dial points to 150.

3. **OSCILLATOR PADDER** — Set service oscillator at 600 K. C. and adjust padder (C7) until with signal tuned in dial points to 60. Re-check at 1500 as in section No. 2 above.

4. **R. F. TRIMMERS**—With service oscillator at 1500, adjust trimmers C4 and C5 for maximum output.

NOTE—In some cases better results will be obtained if C4 (the antenna trimmer) is adjusted with a station tuned in at 1400 K. C., when the set is connected to the aerial upon which it is to operate.

WHAT TO LOOK FOR IN CASE OF TROUBLE:

A—**Audio Howl**—check chassis mounting screws, these should be loose enough so that chassis is able to rest freely on rubber cushion washers. Also check for microphonic tube.

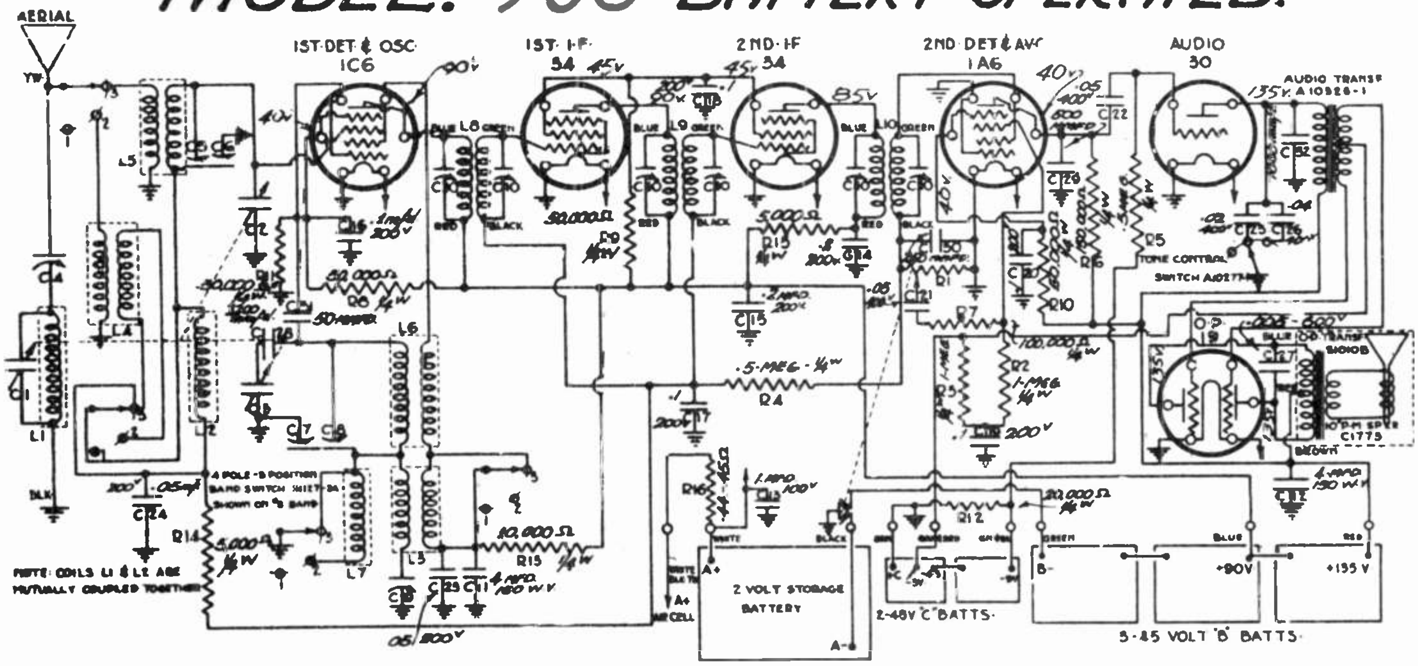
B—Poor selectivity—check alignment as above.

C—Excessive noise—check alignment, check aerial, too short an aerial will sometimes result in the picking up of too large a proportion of noise. A ground should ALWAYS be used.

NOTE—Models 951 and 954 are identical as far as the circuit is concerned. Model 951 has a disc dial and is mounted on a small chassis. Model 954 has an aeroplane dial and is mounted on a larger chassis.

World Radio History

MODEL. 968 BATTERY-OPERATED.

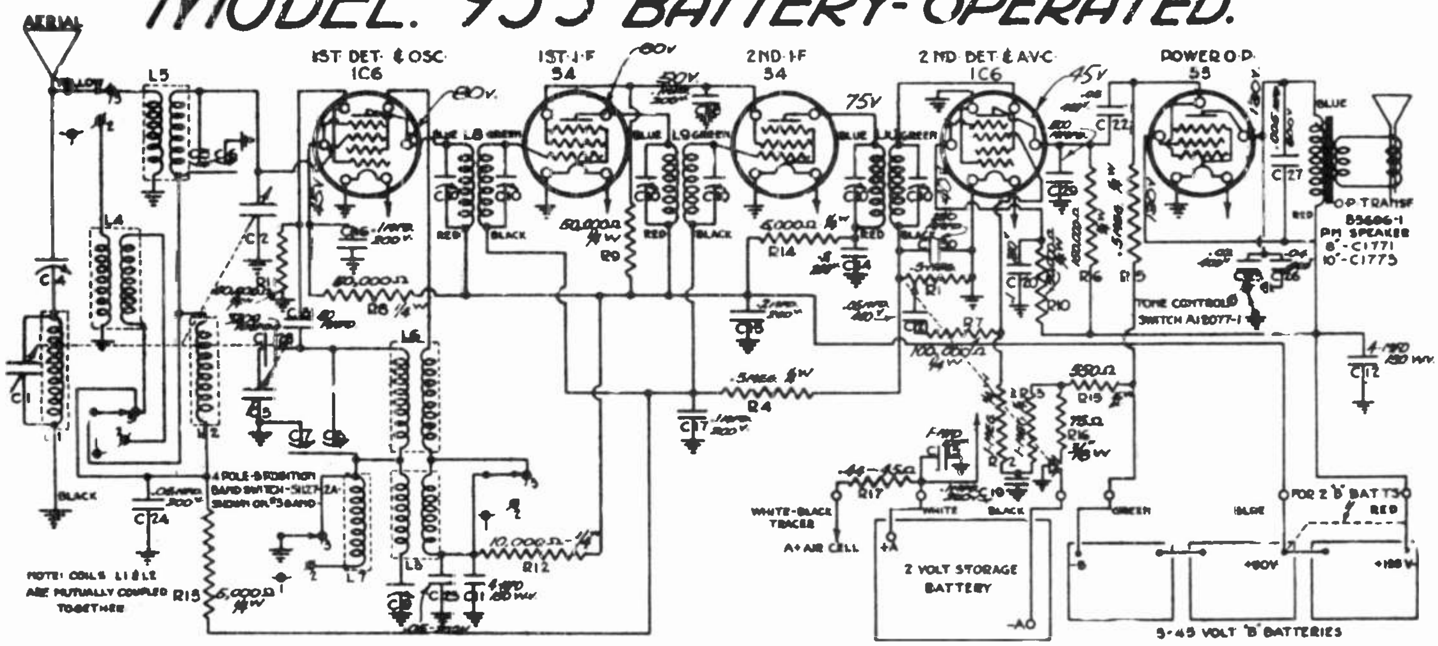


I.F. = 345 K.C.

1935-36

NOTE.-
I.F. ALIGNMENT IS SAME FOR BOTH MODELS. ALIGNING INSTRUCTIONS ETC. FOR MODELS 955 AND 968 ON DATA SHEET SPARTON. 40.

MODEL. 955 BATTERY-OPERATED.



DATA SHEET

PRINTED IN CANADA

COURTESY- SPARTON-39 OF CANADA LTD.

World Radio History

ALIGNMENT PROCEDURE

NOTE—Before commencing alignment make sure that the dial is set so that with the selector plates in flush, the pointer points to the last division on the broadcast scale.

1. **INTERMEDIATE FREQUENCY AMPLIFIER**—Set service oscillator at 345 K.C. and with test lead attached to 1C6 (converter) grid cap adjust the six condensers (C10) for maximum reading on the output meter.

2. **OSCILLATOR TRIMMER**—Set service oscillator at 1500 K. C. and connect test lead to yellow aerial lead, adjust trimmer C7 until with signal tuned in dial points to 150.

3. **OSCILLATOR PADDER** — Set service oscillator at 600 K. C., and adjust padder (C9) until with signal tuned in dial points to 60. Re-check at 1500 K. C. as above in section 2.

4. **R. F. TRIMMERS**—With service oscillator tuned to 1500 K. C., and set tuned to that frequency, adjust C6 and C4 for maximum output.

SHORT WAVE ALIGNMENT

1—With service oscillator set at 15,000 K. C. and band switch turned to the red position, adjust trimmer C8 until with signal tuned in dial points to 15 on the red band.

2. Adjust the short wave R. F. trimmer (C5) to point of greatest output. The trimmer should then be turned a very small amount (about 1-16 turn) to the right to increase capacity slightly.

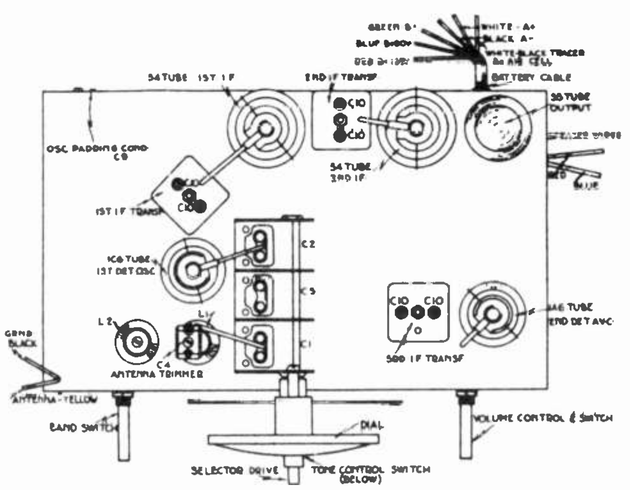
This completes the alignment, there is no adjustment on the green band, this falls in with the other bands.

WARNING—Do not bend the selector plates, this would destroy the selector alignment.

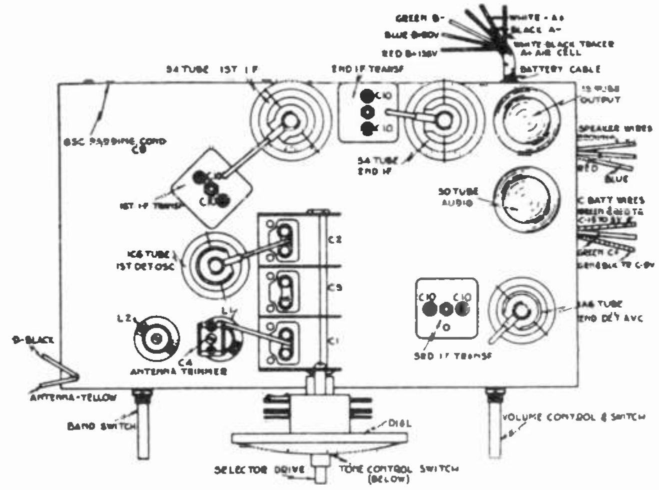
NOTE—In some cases better results will be obtained if C4 (the antenna trimmer) is readjusted with the set tuned to a broadcast station at 1100 K. C., and the set connected to the aerial with which it is to operate.

CAUTION—With the oscillator set at 1500 K.C. two signals can be heard in the receiver, one at 15000 K.C. and the other at 14310 K.C Do not mistake the latter signal for the former. In aligning the receiver at 15000 K.C. the signal of highest frequency is the correct one and the receiver is adjusted to it. After the alignment is made check to see if a second signal is heard at 14310 K.C. If so you will have been using the correct signal for the alignent.

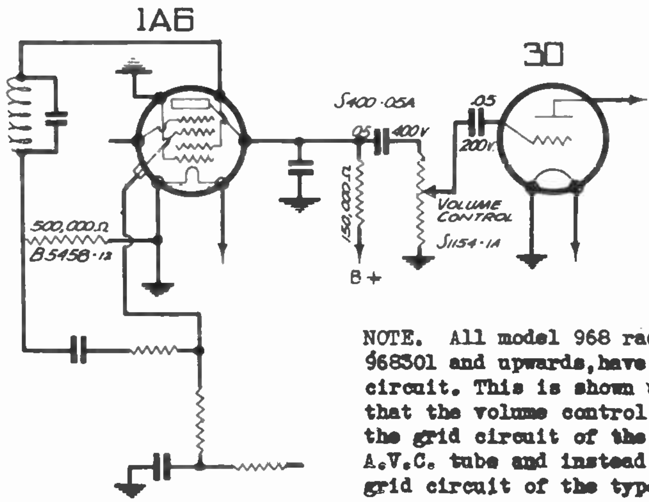
ALIGNMENT INSTRUCTIONS FOR MODELS. 955 AND 968

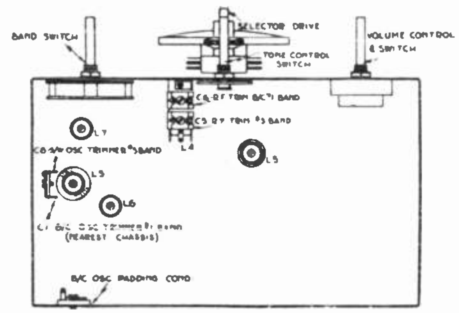


CHASSIS LAYOUT **MODEL. 955**



CHASSIS LAYOUT **MODEL. 968**





BOTTOM VIEW OF MODELS 955 AND 968

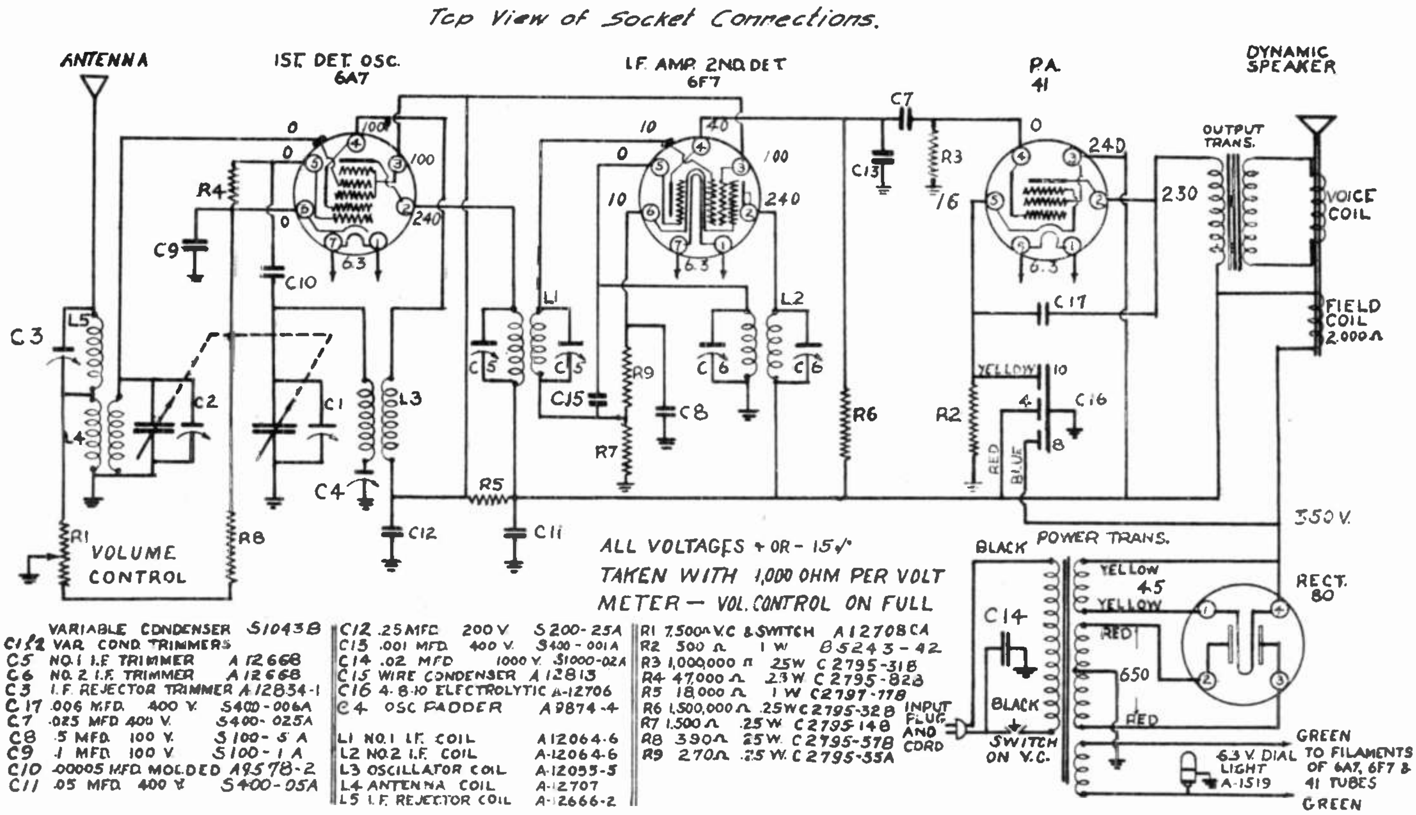
NOTE. All model 968 radios, serial number 968301 and upwards, have a new volume control circuit. This is shown above. You will notice that the volume control has been removed from the grid circuit of the type 1A6 detector and A.V.C. tube and instead has been placed in the grid circuit of the type 30 audio tube. This enables the volume to be turned completely off.

COURTESY - SPARTON-40 OF CANADA LTD

PRINTED IN CANADA

DATA SHEET

World Radio History



	VARIABLE CONDENSER		S1043B
C1 & 2	VAR. COND. TRIMMERS		
C5	NO. 1 I.F. TRIMMER		A 12668
C6	NO. 2 I.F. TRIMMER		A 12668
C3	I.F. REJECTOR TRIMMER		A 12834-1
C17	.006 MFD.	400 V.	S400-006A
C7	.025 MFD	400 V.	S400-025A
C8	.5 MFD.	100 V.	S100-.5 A
C9	.1 MFD.	100 V.	S100-.1 A
C10	.00005 MFD. MOLDED		A9578-2
C11	.05 MFD.	400 V.	S400-05A

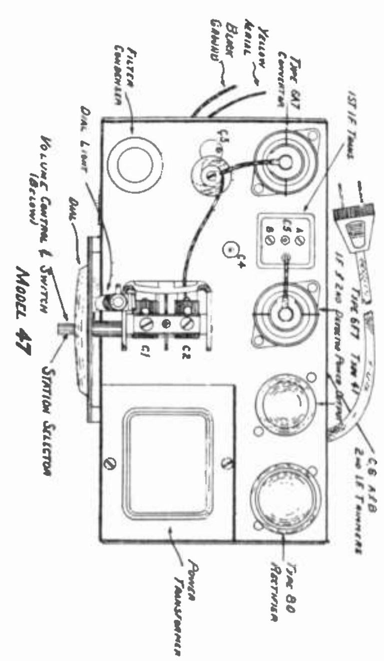
C12	.25 MFD.	200 V	S200-25A
C13	.001 MFD.	400 V.	S400-001A
C14	.02 MFD	1000 V.	S1000-02A
C15	WIRE CONDENSER		A 12813
C16	4-8-10 ELECTROLYTIC		A-12706
C4	OSC. PADDER		A9874-4
L1	NO. 1 I.F. COIL		A 12064-6
L2	NO. 2 I.F. COIL		A-12064-6
L3	OSCILLATOR COIL		A-12055-5
L4	ANTENNA COIL		A-12707
L5	I.F. REJECTOR COIL		A-12666-2

R1	7,500Ω V.C. & SWITCH		A 12708 CA
R2	500 Ω	1 W	B5243-42
R3	1,000,000 Ω	.25W	C 2795-31B
R4	47,000 Ω	.25 W	C 2795-82B
R5	18,000 Ω	1 W	C2797-11B
R6	1,500,000 Ω	.25W	C 2795-32B
R7	1,500 Ω	.25 W	C 2795-14B
R8	390Ω	.25 W.	C 2795-57B
R9	270Ω	.25 W.	C 2795-55A

Model 47K. 1936-37 I.F. = 456 Kc.

CHASSIS—

The model 47K has a four tube superheterodyne chassis. The circuit uses a two gang selector, a tuned I. F. rejector and two double tuned I. F. transformers. The 6A7 tube is used as a first detector oscillator or convertor. The 6F7 tube is connected in such a way as to allow the use of the pentode section as first I. F. amplifier, and the triode section as second detector. The 41 output and 80 rectifier circuits are of the conventional type. A six inch full dynamic speaker is used.



ALIGNMENT DATA—

A service oscillator should always be used when aligning this set.

Step by step procedure—

1. I. F. ALIGNMENT—

Set service oscillator at 456 K.C. and attach oscillator output lead to grid cap of 6A7 tube. Make sure dial on set is not turned to within 100 K.C. of 912 on the scale. Adjust trimmers C5A and B and C6A and B for maximum output.

2. I. F. REJECTOR—

With oscillator connected to yellow aerial wire and turned on fairly high, adjust C3 for **minimum** output.

3. OSCILLATOR TRIMMER—

Set service oscillator at 1500 K.C., and turn set dial to 1500. Adjust C1 until signal is tuned in.

4. OSCILLATOR PADDER—

Set service oscillator at 600 K.C. and turn set dial to that figure. Adjust padder C4 until signal is tuned in. Re-check at 1500 K.C. as in section 3 above.

5. R. F. TRIMMER—

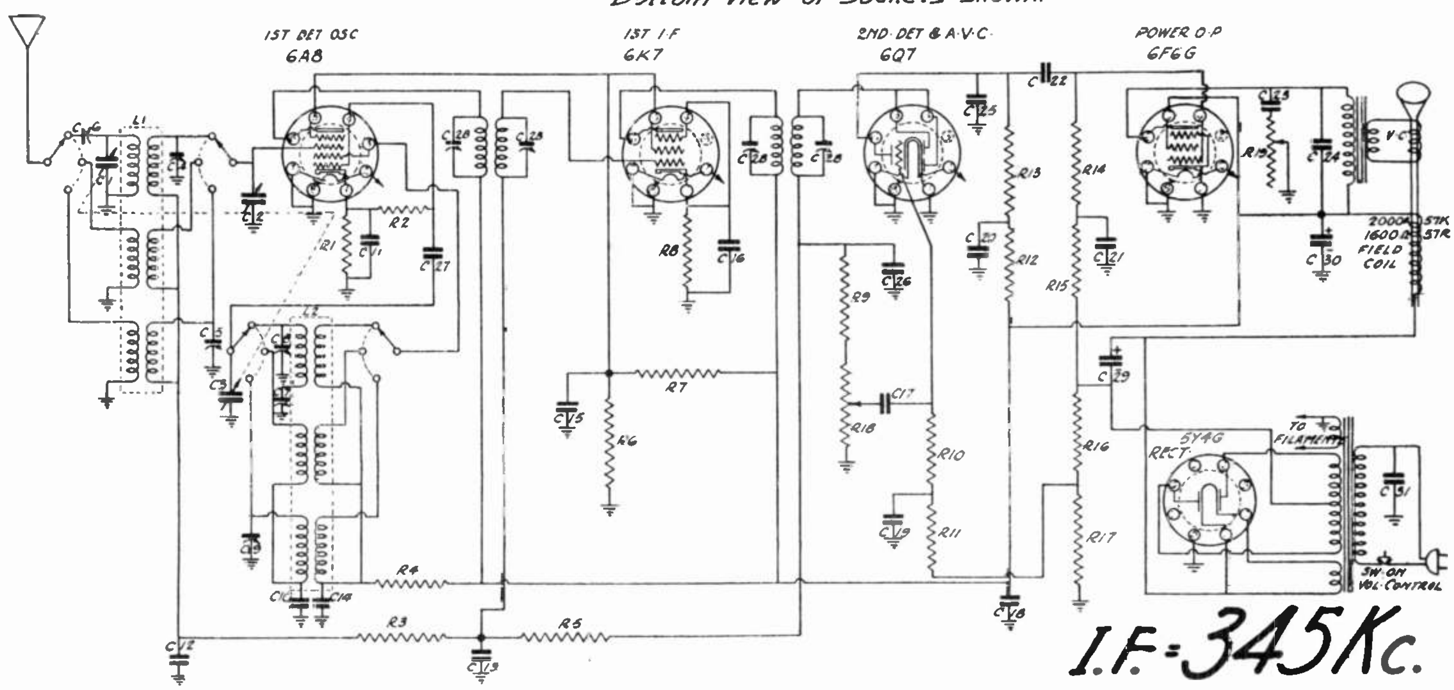
With service oscillator set at 1500 and set tuned to that frequency, adjust C2 for maximum output.

DATA SHEET

COURTESY — SPARTON-41. OF CANADA LTD.

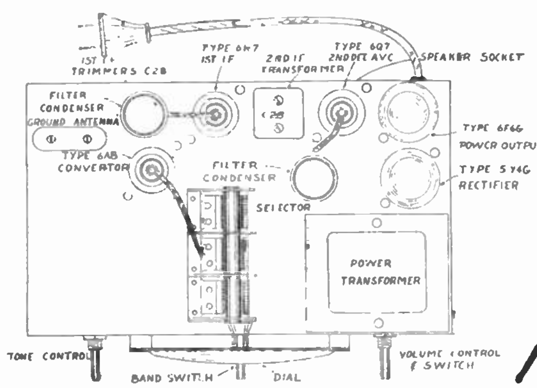
World Radio History

Bottom View of Sockets shown.

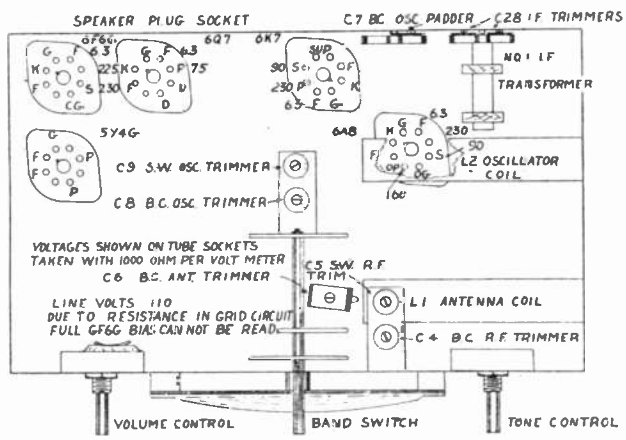


I.F.=345Kc.

Symbol	Value	Part No.	Symbol	Value	Part No.	Symbol	Value	Part No.	Symbol	Value	Part No.
C1	ANTENNA VAR. CONDENSER		C15	.2-200V.	S200 2A	C29	16 MF. ELECTROLYTIC 450V.	S1320A	R9	47,000 OHM. .25W.	C2795-82
C2	R.F. VAR. CONDENSER		C16	.05-100V.	S100-05A	C30	18 MF. ELECTROLYTIC 300V.	S1321A	R10	470,000 OHM. .25W.	C2795-29
C3	OSC. VAR. CONDENSER		C17	.01-400V.	S400-01A	L1	ANT. COIL		R11	1,000,000 OHM. .25W.	C2795-31
C4	BC. R.F. TRIMMER		C18	.1-400V.	S400-1A	L2	OSC. COIL		R12	100,000 OHM .25W.	C2795-25
C5	S/W R.F. TRIMMER		C19	.1-100V.	S100-1A	L3	NO. 1 I.F. COIL		R13	220,000 OHM. .25W.	C2795-27
C6	BC. ANT. TRIMMER		C20	.1-400V.	S400-1A	L4	NO. 2 I.F. COIL		R14	220,000 OHM. .25W.	C2795-27
C7	BC. PADDER CONDENSER		C21	.1-100V	S100-1A	R1	330 OHM. .25W.	C2795-56	R15	220,000 OHM. .25W.	C2795-27
C8	BC. OSC. TRIMMER		C22	.05-400V.	S400-05A	R2	47,000 OHM. .25W.	C2795-82	R16	220 OHM. 2W.	C2798-54E
C9	S/W OSC. TRIMMER		C23	.05-600V.	S600-05A	R3	100,000 OHM. .25W.	C2795-25	R17	22 OHM. 2W.	C2798-42E
C10	S/W MICA PADDER 1200 MMF.	A9578-19	C24	.005-600V.	S600-005A	R4	22,000 OHM. .5W.	C2796-78		57K	
C11	.05-100V.	S100-05A	C25	500 MMF. MICA	A9578	R5	1,000,000 OHM. .25W.	C2795-31	R18	500,000 OHM. V.C.	S1313-1A
C12	.05-100V.	S100-05A	C26	100 MMF. MICA	A9578-6	R6	22,000 OHM. 1W.	C2797-78	R19	100,000 OHM. T.C.	S1318-1A
C13	.05-100V	S100-05A	C27	50 MMF. MICA	A9578-17	R7	15,000 OHM. 2W.	C2798-76		57/R	
C14	.1-400V.	S400 1A	C28	I.F. TRIMMERS		R8	330 OHM. .25W.	C2795-56	R18	500,000 OHM. V.C.	S1313-2A
									R19	100,000 OHM. T.C.	S1318-2A



MODEL 57 = 1936-37



I. F. ALIGNMENT—

With the service oscillator set at 345 K.C. and the oscillator lead connected to the 1C6 grid cap, adjust trimmers C28 for maximum output.

B. C. Band Oscillator Trimmer

1. R. F. ALIGNMENT—

With the band switch in the B. C. position and the service oscillator tuned to 1500 K.C., adjust trimmer C8 until with set dial turned to 1500 signal is tuned in.

2. B. C. OSCILLATOR PADDER—

With service oscillator tuned to 600 K.C., adjust padder C 7 until with set tuned to 600 signal is tuned in. Re-check at 1500 K.C. as above section one.

3. B. C., R. F. TRIMMERS—

With service oscillator set at 1500 K.C., adjust C6 and C4 for maximum output.

4. S. W., R. F. (turn Band switch to red position).

Red band oscillator trimmer.

With service oscillator set at 15,000 K.C. and set tuned to 15 Meg., adjust trimmer C9 until signal is tuned in.

5. S. W., R. F. TRIMMERS—

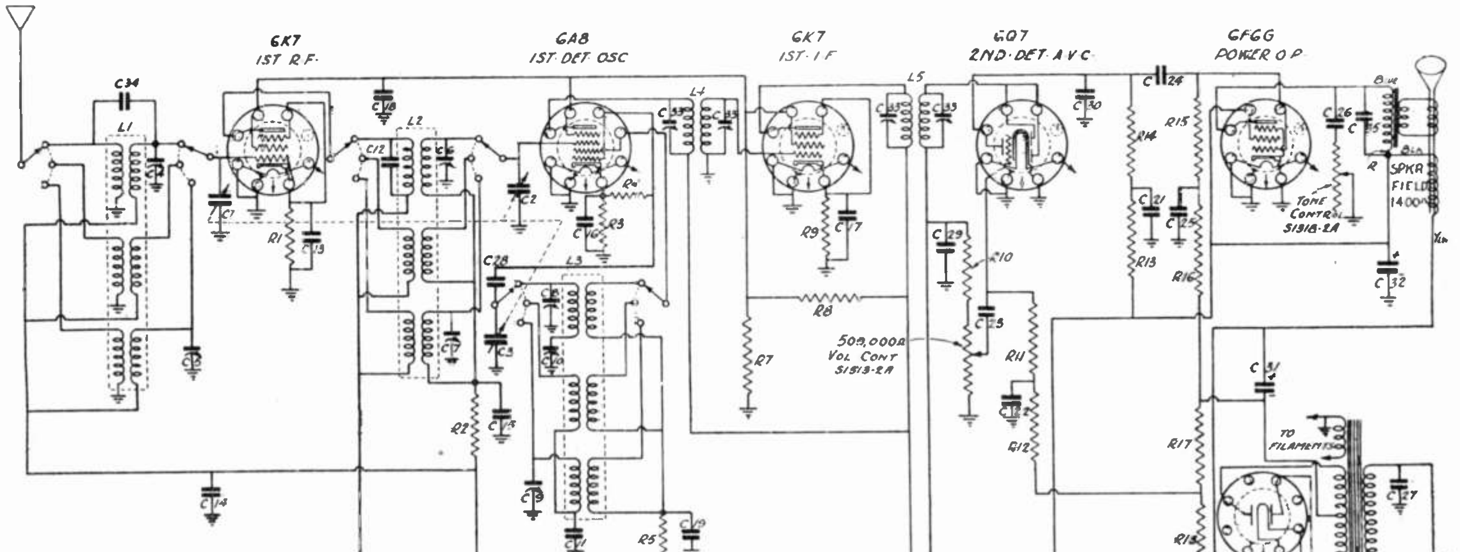
With service oscillator still set at 15,000 K.C., adjust trimmer C 5 for maximum output.

There is no adjustment on the intermediate S. W. Band.

DATA SHEET

COURTESY — SPARTON-42 OF CANADA LTD.

World Radio History



Bottom View of Sockets shown.

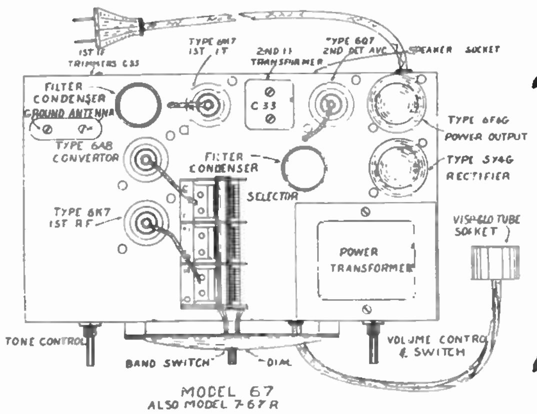
L1	ANT. COIL	S1902 A
L2	R.F. COIL	S1303-1A
L3	OSC. COIL	S1303-1A
L4	#1 I.F. COIL	S1158-3A
L5	#2 I.F. COIL	S1162-2A
C1	ANT. VAR. COND.	S1047 B
C2	R.F. " "	S1047 B
C3	OSC. " "	S1047 B
C4	B.C. ANT. TRIM.	
C5	S.W. ANT. TRIM.	
C6	B.C. R.F. TRIM.	
C7	S.W. R.F. TRIM.	
C8	B.C. OSC. TRIM.	
C9	S.W. OSC. TRIM.	
C10	B.C. OSC. PADDER	

C11	S.W. OSC. PAD. .200 mmf		A9578-19
C12	50 mmf MICA COND.		A9578-17
C13	.05 MFD.	100V.	S100-05A
C14	.05 "	"	S100-05A
C15	.05 "	"	S100-05A
C16	.05 "	"	S100-05A
C17	.05 "	"	S100-05A
C18	2 "	200V.	S200-2A
C19	.1 "	400V.	S400-1A
C20	.1 "	400V.	S400-1A
C21	.1 "	400V.	S400-1A
C22	.1 "	100V.	S100-1A
C23	.01 "	400V.	S400-01A
C24	.05 "	400V.	S400-05A
C25	.1 "	100V.	S100-1A

C26	.05 MFD. 600V.	S600-05A
C27	.02 " 1000V.	S1000-02A
C28	50 MMF. MICA COND.	A9578-17
C29	100 " " "	A9578-C
C30	580 " " "	A9578
C31	16 MFD. ELECT. 450V.	S1320A
C32	18 " " 300V	S1321A
C33	I.F. TRIMMERS	
C34	8-10 mmf COND.	
C35	.005 MFD. 600V	S600-005A

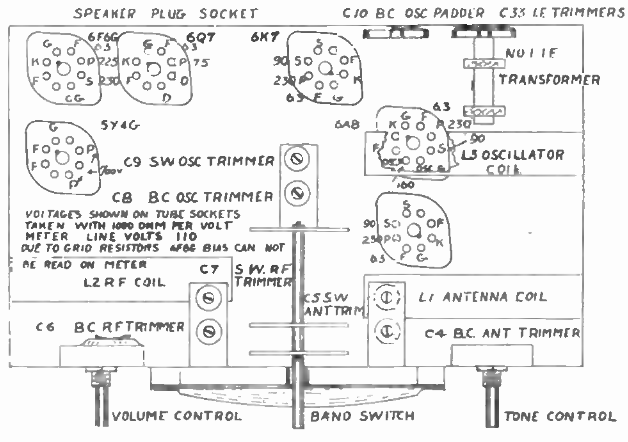
R1	330Ω	.25W	C2795-56B
R2	100,000Ω	.25W	C2795-25B
R3	330Ω	.25W	C2795-56B
R4	47,000Ω	.25W	C2795-82B
R5	22,000Ω	.5W	C2796-78A
R6	1,000,000Ω	.25W	C2795-31B
R7	22,000Ω	1W	C2797-78B
R8	15,000Ω	3W	C2798-76A
R9	330Ω	.25W	C2795-56B
R10	47,000Ω	.25W	C2795-82B
R11	470,000Ω	.25W	C2795-27B
R12	1,000,000Ω	.25W	C2795-31B
R13	100,000Ω	.25W	C2795-25B
R14	220,000Ω	.25W	C2795-27B
R15	220,000Ω	.25W	C2795-27B
R16	220,000Ω	.25W	C2795-27B
R17	220Ω	2W	C2798-34E
R18	22Ω	2W	C2798-42E

I.F. = 345 Kc.



MODEL 67
ALSO MODEL 7-67 R

MODEL 67 = 1936-37



I. F. ALIGNMENT—

With the service oscillator set at 345 K.C. and the oscillator lead connected to the 1C6 grid cap, adjust trimmers C33 for maximum output.

B. C. Band Oscillator Trimmer

1. **R. F. ALIGNMENT—**

With the band switch in the B. C. position and the service oscillator tuned to 1500 K.C., adjust trimmer C8 until with set dial turned to 1500 signal is tuned in.

2. **B. C. OSCILLATOR PADDER—**

With service oscillator tuned to 600 K.C., adjust padder C 10 until with set tuned to 600 signal is tuned in. Re-check at 1500 K.C. as above section one.

3. **B. C., R. F. TRIMMERS—**

With service oscillator set at 1500 K.C., adjust C6 and C4 for maximum output.

4. S. W., R. F. (turn Band switch to red position).

Red band oscillator trimmer.

With service oscillator set at 15,000 K.C. and set tuned to 15 Meg., adjust trimmer C9 until signal is tuned in.

5. **S. W., R. F. TRIMMERS—**

With service oscillator still set at 15,000 K.C., adjust trimmers C5 and C7 for maximum output.

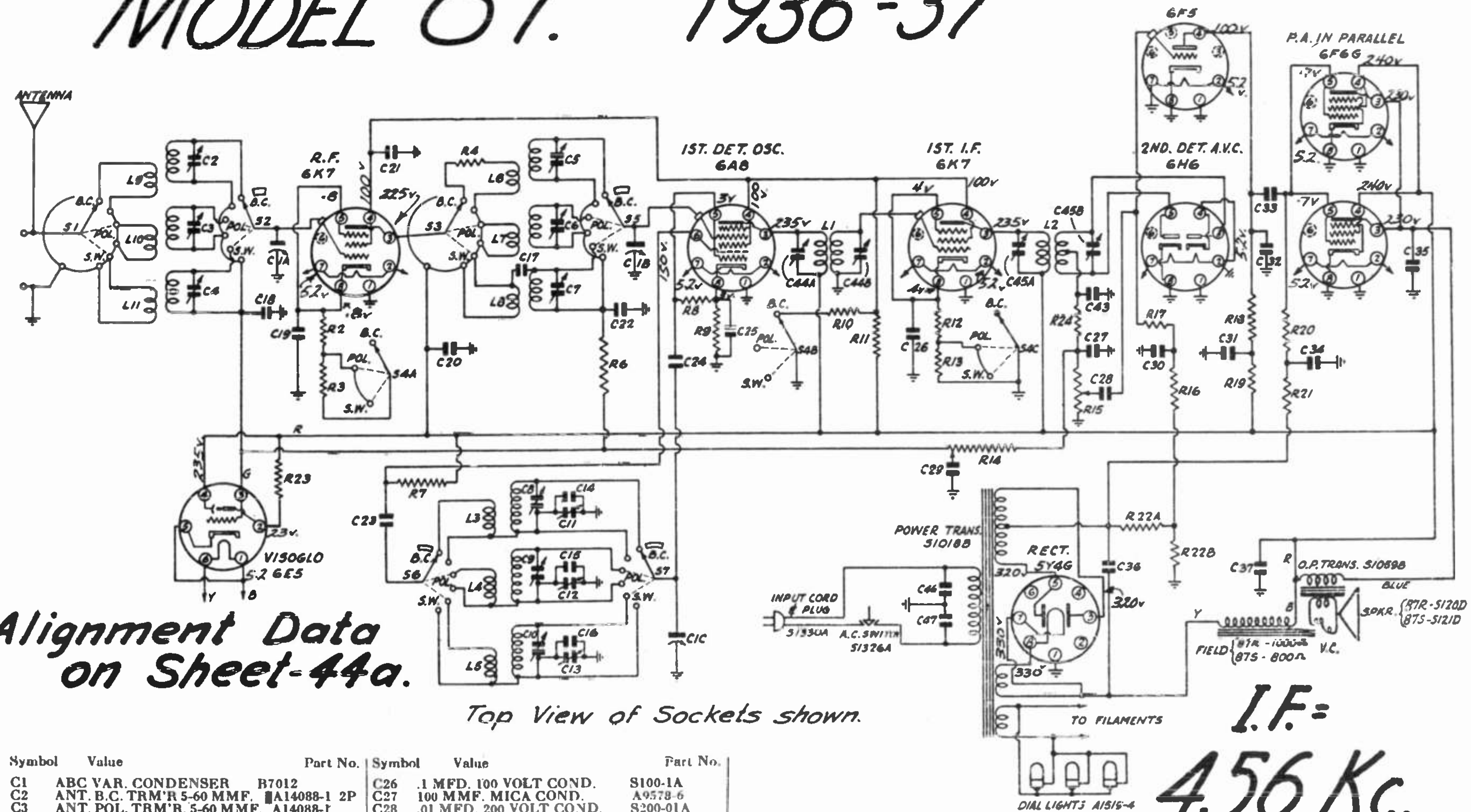
There is no adjustment on the intermediate S. W. Band.

DATA SHEET

COURTESY- SPARTON-43. OF CANADA LTD.

World Radio History

MODEL 87. 1936-37



Alignment Data on Sheet-44a.

Top View of Sockets shown.

I.F.= 456 Kc.

Symbol	Value	Part No.
C1	ABC VAR. CONDENSER	B7012
C2	ANT. B.C. TRM'R 5-60 MMF.	A14088-1 2P
C3	ANT. POL. TRM'R. 5-60 MMF.	A14088-1
C4	ANT. S.W. TRM'R. 5-60 MMF.	A14088-1
C5	R.F. B.C. TRM'R. 5-60 MMF.	A14088-1
C6	R.F. POL. TRM'R. 5-60 MMF.	A14088-1
C7	R.F. S.W. TRM'R 5-60 MMF.	A14088-1
C8	O.S.C. B.C. TRM'R. 5-60 MMF.	A14088-1
C9	O.S.C. POL. TRM'R. 5-60 MMF.	A14088-1
C10	O.S.C. S.W. TRM'R. 5-60 MMF.	A14088-1
C11	O.S.C. B.C. PADDER 5-60 MMF	A14088-1
C12	O.S.C. POL. PAD'R, 13-90 MMF.	A14088-2 3P
C13	O.S.C. S.W. PAD'R 46-180MMF.	A14088-3 4P
C14	430 MMF. MICA COND.	A9578-20
C15	1100 MMF. MICA COND.	A9578-21
C16	3760 MMF. MICA COND.	A9578-22
C17	12 MMF. COUPLER	A10896
C18	.05 MFD. 200 VOLT COND.	S200-05A
C19	.1 MFD. 100 VOLT COND.	S100-1A
C20	.05 MFD. 400 VOLT COND.	S400-05A
C21	.05 MFD. 400 VOLT COND.	S400-05A
C22	.05 MFD. 200 VOLT. COND.	S200-05A
C23	.006 MFD. 600 VOLT COND.	S600-006A
C24	50 MMF. MICA COND.	A9578-17
C25	.1 MFD. 100 VOLT COND.	S100-1A

Symbol	Value	Part No.
C26	.1 MFD. 100 VOLT COND.	S100-1A
C27	100 MMF. MICA COND.	A9578-6
C28	.01 MFD. 200 VOLT COND.	S200-01A
C29	.004 MFD. 200 VOLT COND.	S200-004A
C30	.1 MFD. 100 VOLT COND.	S100-1A
C31	.1 MFD. 400 VOLT COND.	S400-1A
C32	250 MMF. MICA COND.	A9578-5
C33	.05 MFD. 400 VOLT COND,	S400-05A
C34	.1 MFD. 100 VOLT COND.	S100-1A
C35	.006 MFD. 600 VOLT COND.	S600-006A
C36	16 MFD. 450 VOLT ELEC.	A14073
C37	30 MFD. 300 VOLT ELEC.	A14072
C43	100 MMF. MICA COND.	A9578-6
C44	NO. 1 I.F TRIMMER	A14231
C45	NO. 2 I.F. TRIMMER	A14231
C46	.006 MFD. 1000 VOLT COND.	S1000-006A
C47	.006 MFD. 1000 VOLT COND.	S1000-006A
R2	270 OHM. .25 WATT	C2795-55
R3	1000 OHM. .25 WATT	C2795-62
R4	2200 OHM. .1 WATT	C2794-66
R6	100,000 OHM. .25 WATT	C2795-25
R7	22000 OHM. .5 WATT	C2796-78
R8	56000 OHM. .25 WATT	C2795-83
R9	330 OHM. .25 WATT	C2795-56
R10	22000 OHM. .5 WATT	C2796-78

Symbol	Value	Part No.
R11	15000 OHM. 2 WATT	C2798-187
R12	270 OHM. .25 WATT	C2795-55
R13	470 OHM. .25 WATT	C2795-58
R14	500,000 OHM. TONE CONTR'L	A14089
R15	250,000 OHM. VOL. CONTROL	A14075
R16	1 MEGOHM .25 WATT	A2795-98
R17	560,000 OHM .25 WATT	C2795-95
R18	270,000 OHM. .25 WATT	C2795-91
R19	100,000 OHM. .25 WATT	C2795-25
R20	270,000 OHM. .25 WATT	C2795-91
R21	270,000 OHM. .25 WATT	C2795-91
R22A	CANDOHM 197 OHM.	A14081
R22B	CANDOHM 28 OHM	A14081
R23	1 MEGOHM .25 WATT (VISOGLO)	C2795-98
R24	56,000 OHM. .25 WATT	C2795-83
L1	NO. 1 I.F. TRANS.	A12064-12
L2	NO. 2 I.F. TRANS.	A12989-2
L3	B.C. OSC. COIL	A14241-1

Symbol	Value	Part No.
L4	POL. OSC. COIL	A14241-2
L5	S.W. OSC. COIL	A14241-3
L6	B.C. R.F. COIL	A14242-1
L7	POL. R.F. COIL	A14242-2
L8	S.W. R.F. COIL	A14242-3
L9	B.C. ANT. COIL	A14243-1
L10	POL. ANT. COIL	A14243-2
L11	SW. ANT. COIL	A14243-3
	NO. FROM BACK OF SET	
S1	ANT. PRI. SECTION	
S2	ANT. SEC. SECTION	
S3	R.F. PRI. SECTION	
S4A, S4B, S4C	BIAS AND SCREEN SECTION	
S5	F.R. SEC. SECTION	
S6	OSC. PLATE SECTION	
S7	OSC. GRID SECTION	

COURTESY- SPARTON-44. OF CANADA LTD.

DATA SHEET

World Radio History

ALIGNMENT INSTRUCTIONS

Due to the arrangement of the R.F. coils in this model, alignment of all R.F. bands is very easily done.

I.F. ALIGNMENT

Set service oscillator at 456 K.C. and connect oscillator output lead to grid cap of 6A8 tube. Connect output meter in speaker circuit either across voice coil, or in series with a condenser between one 6F6G plate and ground. (Complete instructions are supplied with your output meter to suit that particular instrument). With service oscillator turned on, adjust trimmers C44A and B and C45 A and B for maximum output.

1. B.C. OSCILLATOR TRIMMER

Turn band switch to "white" or B.C. position. Set service oscillator at 1500 K.C. and turn set dial to 1500. Then, with oscillator output lead attached to aerial terminal, adjust trimmer C8 until signal is tuned in.

2. B.C. OSCILLATOR PADDER

Set service oscillator at 600 K.C. and turn set dial to 600. Adjust padder C11 until signal is tuned in. Recheck at 1500 as in section one.

3. B.C. R.F. TRIMMERS

With set tuned to 1500 and oscillator set at that frequency adjust trimmers C2 and C5 for maximum output.

4. "RED" BAND OSCILLATOR TRIMMER

Set service oscillator at 6000 K.C. and turn set dial to 6 on the Red band. Then adjust trimmer C9 until signal is tuned in.

5. "RED" BAND OSCILLATOR PADDER

Set service oscillator at 2000 K.C. Turn set dial to 2 on the Red band. Adjust padder C12 until signal is tuned in. Recheck at 6000 K.C. as in section four.

6. "RED" BAND R.F. TRIMMERS

Set service oscillator at 6000 K.C. and tune set to 6 (on Red band). Then adjust trimmers C3 and C6 for maximum output.

7. "BLUE" BAND OSCILLATOR TRIMMER

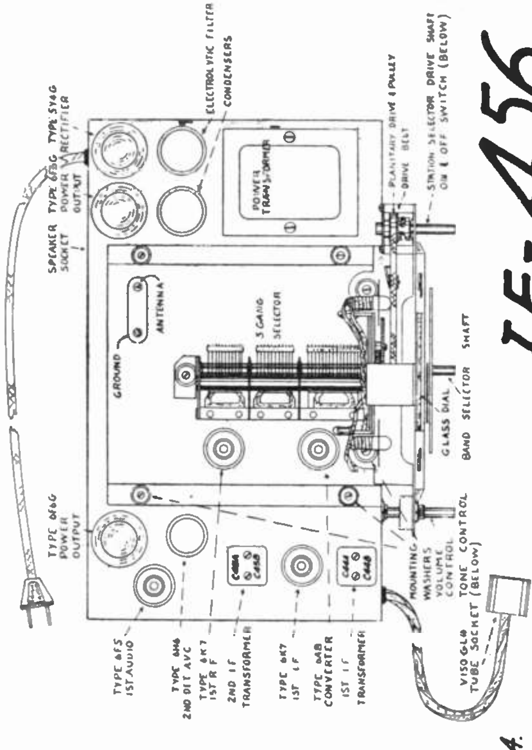
Set service oscillator at 15000 K.C. and turn set dial to 15 on the Blue band. Then adjust trimmer C10 until signal is tuned in.

8. "BLUE" BAND OSCILLATOR PADDER

Set service oscillator at 6000 K.C. and turn set dial to 6 on the Blue band. Adjust padder C13 until signal is tuned in. Recheck at 15000 as in section 7.

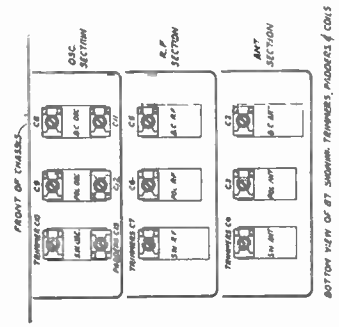
9. "BLUE" BAND R.F. TRIMMERS

With service oscillator set at 15000 K.C. and set tuned to that frequency, adjust trimmers C4 and C7 for maximum output.



Alignment Data for MODEL 87 1936-37

Circuit on Data Sheet 44.



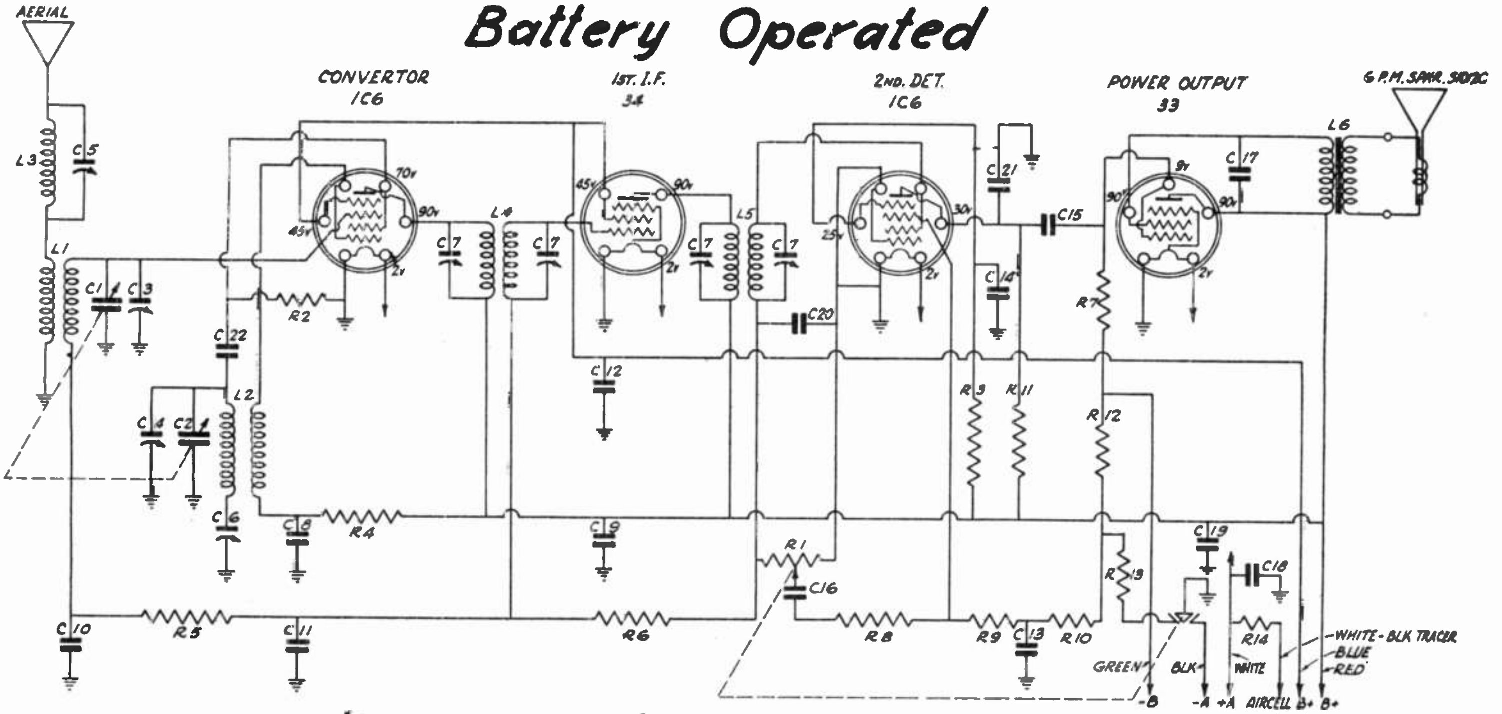
I.F. 456

COURTESY - SPARTON OF CANADA LTD

DATA SHEET

World Radio History

Battery Operated



L1	R.F. COIL ASSEM.	S1272A
L2	OSC. COIL ASSEM.	S1273A
L3	I.F. REJ. COIL ASSEM.	S1274A
L4	1ST. I.F. COIL ASSEM.	S1278A
L5	2ND. I.F. COIL-ASSEM.	S1277-2A
L6	O.P. TRANSF. ASSEM.	S1284A
C1	R.F. TUNING COND.	S1043B
C2	OSC. TUNING COND.	S1043B
C3	R.F. TRIMMING COND.	(ON SELECTOR)
C4	OSC. TRIMMING COND.	(" ")
C5	I.F. REJECTOR TRIM. COND.	S1275A
C6	OSC. PADDER COND.	S1275A
C7	I.F. TRIMMING COND.	S1198A
C8	.2 MFD. 200 VOLT COND.	S200-2A

C9	.2 MFD. 200 VOLT COND.	S200-2A
C10	.05 MFD. 200 VOLT COND.	S200-05A
C11	.1 MFD. 200 VOLT COND.	S200-1A
C12	.1 MFD. 200 VOLT COND.	S200-1A
C13	.1 MFD. 200 VOLT COND.	S200-1A
C14	.1 MFD. 200 VOLT COND.	S200-1A
C15	.05 MFD. 400 VOLT COND.	S400-05A
C16	.05 MFD. 400 VOLT COND.	S400-05A
C17	.01 MFD. 400 VOLT COND.	S400-01A
C18	1. MFD. 100 VOLT COND.	S100-10A
C19	4. MFD. 150 VOLT COND.	S1149A
C20	250 MMFD. MICA COND.	A9578-5
C21	500 MMFD. MICA COND.	A9578
C22	50 MMFD. MICA COND.	A9578-17

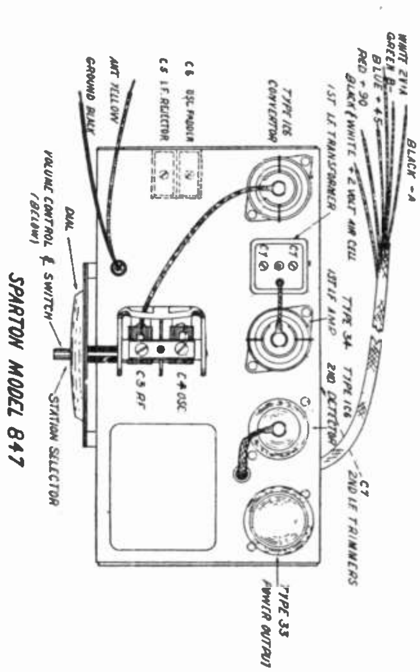
R1	500,000 Ω VOL. CONTROL & SWITCH	S1129-1A
R2	47,000 Ω .25 WATT RESISTOR	C2795-87B
R3	47,000 Ω .25 WATT RESISTOR	C2795-87B
R4	10,000 Ω .25 WATT RESISTOR	C2795-74B
R5	4,700 Ω .25 WATT RESISTOR	C2795-17B
R6	470,000 Ω .25 WATT RESISTOR	C2795-29B
R7	470,000 Ω .25 WATT RESISTOR	C2795-29B
R8	100,000 Ω .25 WATT RESISTOR	C2795-25B
R9	1,000,000 Ω .25 WATT RESISTOR	C2795-31B
R10	1,000,000 Ω .25 WATT RESISTOR	C2795-31B
R11	150,000 Ω .25 WATT RESISTOR	C2795-26B
R12	560 Ω .5 WATT RESISTOR	C2796-153B
R13	75 Ω .5 WATT RESISTOR	C2796-132B
R14	.40 Ω WIRE WOUND RESISTOR	S10000-B

I.F. = 345 Kc.

MODEL 847 - 1936-37

ALIGNMENT DATA—

When adjusting this model it is essential that a service oscillator be used. To get the required gain from the set it is necessary that all adjustments be made carefully.



1. I. F. STAGES—

Set service oscillator at 345 K.C., attach the output lead to the grid cap of the 1C6 convertor tube, connect output meter to speaker terminals, adjust the four trimmers marked C7 for maximum output.

2. I. F. REJECTOR—

With oscillator still set at 345 K.C., attach the output lead to the yellow antenna wire and with oscillator turned on fairly strong adjust C5 for minimum output.

NOTE—Make sure that the set is not tuned to a harmonic of the I. F. such as 690 K.C. or 1035, etc.

3. OSCILLATOR TRIMMER—

Set service oscillator at 1500 K.C. and with it still connected to the aerial of the set adjust trimmer C4 until, with the signal tuned in, the dial points to 1500.

4. OSCILLATOR PADDER—

Set service oscillator at 600 K.C. Turn set dial to that figure and adjust C6 until signal is tuned in. Readjust at 1500 as in section 3 (above).

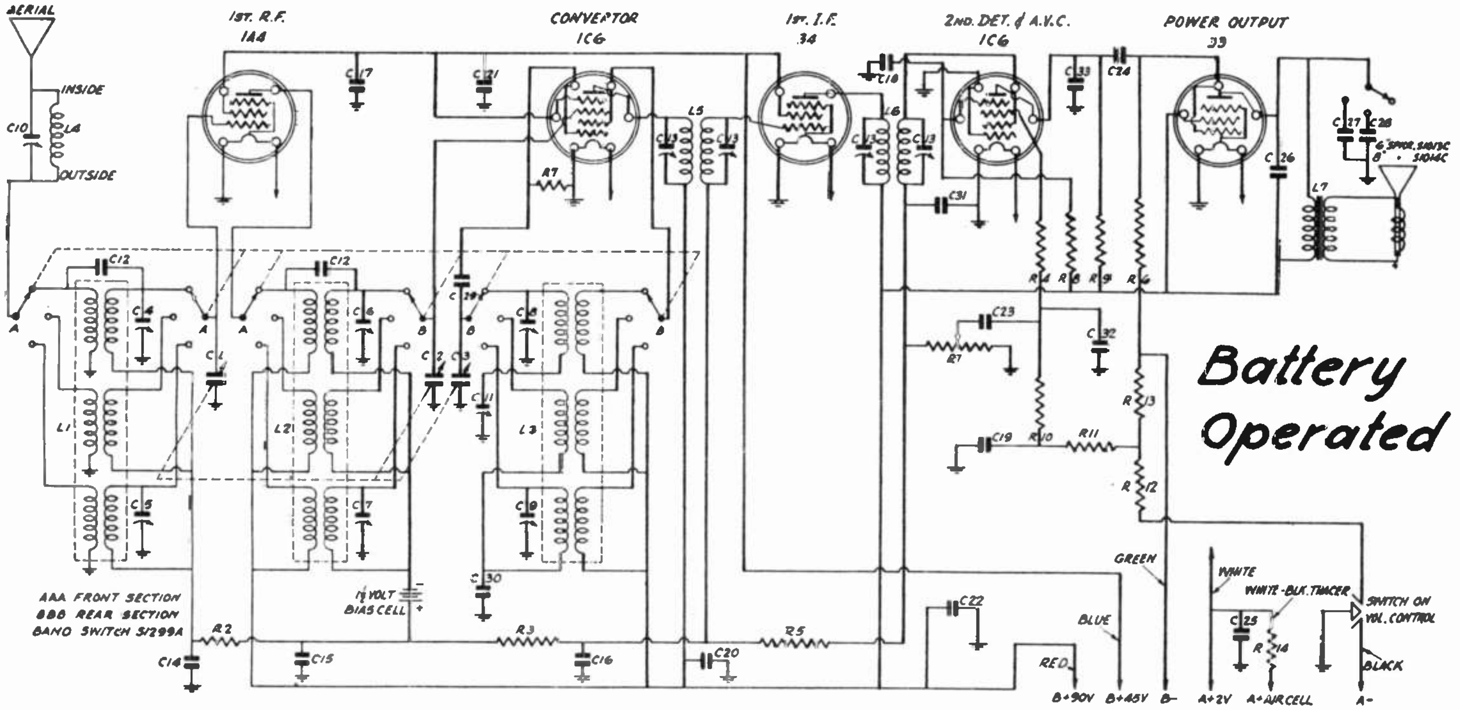
5. R. F. TRIMMER—

Set service oscillator at 1500 K.C. and with set tuned to 1500 K.C., adjust trimmer C3 for maximum output.

DATA SHEET

COURTESY - SPARTON - 45. OF CANADA LTD.

World Radio History



Battery Operated

L1	ANT COIL ASSEM.	S1302A
L2	R.F. COIL ASSEM.	S1303A
L3	OSC COIL ASSEM	S1304A
L4	I.F. REJECTOR COIL ASS.	S1274A
L5	1ST. I.F. COIL ASSEM	S1279-1A
L6	2ND I.F. COIL ASSEM.	S1279A
L7	O.P. TRANSF. ASSEM.	S1284A
C1	ANT. TUNING COND.	S1047B
C2	R.F. TUNING COND.	S1047B
C3	OSC. TUNING COND.	S1047B
C4	B/C ANT. TRIM. COND.	A11455CA
C5	S/W ANT. TRIM. COND.	A11455CA
C6	B/C R.F. TRIM. COND.	A11454CA
C7	S/W R.F. TRIM. COND.	A11454CA
C8	B/C OSC. TRIM. COND.	A11454CA
C9	S/W OSC. TRIM. COND.	A11454CA
C10	I.F. REJ. TRIM. COND.	S1288A
C11	B/C PADDING COND.	S1288A
C12	WIRE WOUND COND.	A12078CA
C13	I.F. TRIM. COND.	S1198A
C14	.05 MFD. 200 VOLT COND.	S200-05A
C15	.05 MFD. 200 VOLT COND.	S200-05A
C16	.1 MFD. 200 VOLT COND.	S200-1A
C17	.1 MFD. 200 VOLT COND.	S200-1A
C18	.1 MFD. 200 VOLT COND.	S200-1A
C19	.1 MFD. 200 VOLT COND.	S200-1A
C20	.2 MFD. 200 VOLT COND.	S200-2A
C21	4. MFD. 150 VOLT ELEC.	S1149A
C22	4. MFD. 150 VOLT ELEC.	S1149A
C23	.05 MFD. 400 VOLT COND.	S400-05A
C24	.05 MFD. 400 VOLT COND.	S400-05A
C25	1. MFD 100 VOLT COND	S100-1A
C26	.005 MFD. 600 VOLT COND.	S600-005A
C27	.04 MFD. 400 VOLT COND.	S400-04A
C28	.02 MFD. 400 VOLT COND.	S400-02A
C29	50 MMFD. MICA COND.	A9578-17
C30	1200 MMFD. MICA COND.	A9578-19
C31	250 MMFD. MICA COND.	A9578-5
C32	250 MMFD. MICA COND.	A9578-5
C33	500 MMFD MICA COND.	A9578

R1	500,000 Ω	VOL. CONTROL & SWITCH	S1129-1A
R2	4,700 Ω	.25 WATT RESISTOR	C2795-17
R3	100,000 Ω	.25 WATT RESISTOR	C2795-25
R4	100,000 Ω	.25 WATT RESISTOR	C2795-25
R5	470,000 Ω	.25 WATT RESISTOR	C2795-29
R6	470,000 Ω	.25 WATT RESISTOR	C2795-29
R7	47,000 Ω	.25 WATT RESISTOR	C2795-82
R8	47,000 Ω	.25 WATT RESISTOR	C2795-82
R9	150,000 Ω	.25 WATT RESISTOR	C2795-26
R10	1,000,000 Ω	.25 WATT RESISTOR	C2795-31
R11	1,000,000 Ω	.25 WATT RESISTOR	C2795-31
R12	75 Ω	.5 WATT RESISTOR	C2796-132
R13	560 Ω	.5 WATT RESISTOR	C2796-155
R14	.56 Ω	WIRE WOUND RESISTOR	A10000-9

I.F. = 345 Kc.

Model 857 1936-37

I. F. ALIGNMENT—

With the service oscillator set at 345 K.C. and the oscillator lead connected to the 1C6 grid cap, adjust trimmers C13 for maximum output.

I. F. rejector. With the service oscillator set at 345 K.C. and its output lead attached to the aerial of the chassis, adjust trimmer C10 for **minimum** output. Caution—make sure that the chassis is not tuned to a harmonic of 345.

B. C. Band Oscillator Trimmer

1. **R. F. ALIGNMENT—**
With the band switch in the B. C. position and the service oscillator tuned to 1500 K.C., adjust trimmer C8 until with set dial turned to 1500 signal is tuned in.

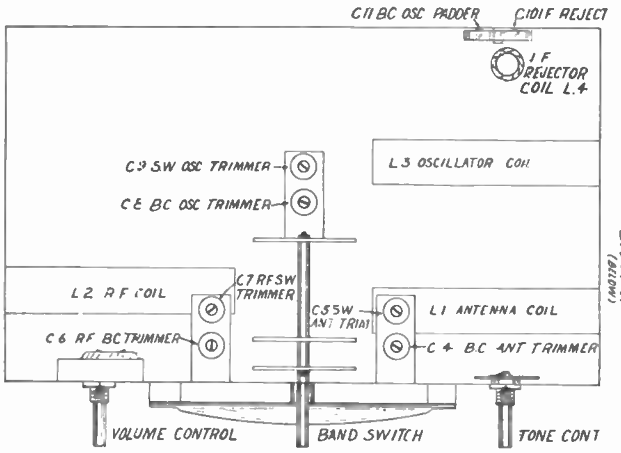
2. **B. C. OSCILLATOR PADDER—**
With service oscillator tuned to 600 K.C., adjust padder C11 until with set tuned to 600 signal is tuned in. Re-check at 1500 K.C. as above section one.

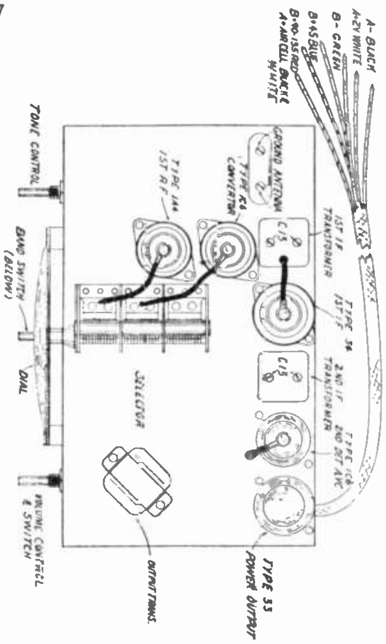
3. **B. C., R. F. TRIMMERS—**
With service oscillator set at 1500 K.C., adjust C6 and C4 for maximum output.

4. **S. W., R. F.** (turn Band switch to red position).
Red band oscillator trimmer.
With service oscillator set at 15,000 K.C and set tuned to 15 Meg., adjust trimmer C9 until signal is tuned in.

5. **S. W., R. F. TRIMMERS—**
With service oscillator still set at 15,000 K.C., adjust trimmers C5 and C7 for maximum output.

There is no adjustment on the intermediate S. W. Band.



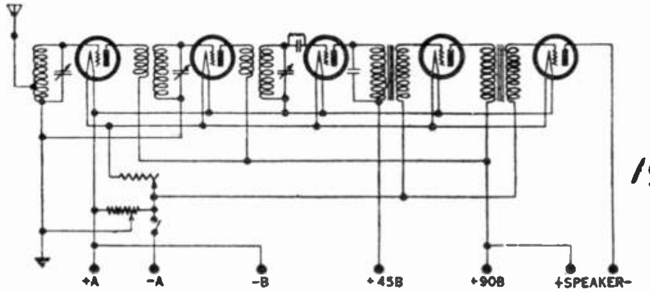


DATA SHEET

COURTESY - SPARTON - 46. OF CANADA LTD.

World Radio History

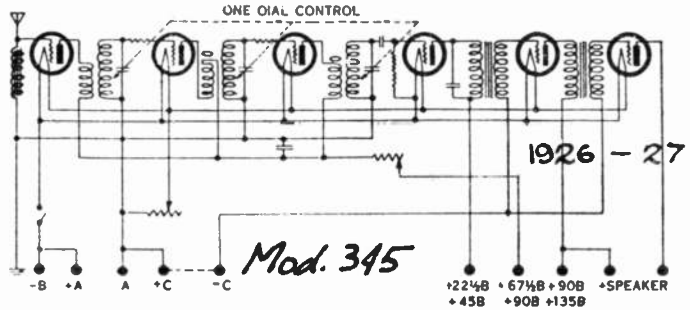
+B Pr. Red
+B 90 Red and Yellow
+B 45 Maroon
+C Green
—C 4½ Green with Black Tracer
—C Pr. Green with Yellow Tracer
—B Black with Red tracer
+A Yellow
—A Black with Yellow tracer



MODEL 300

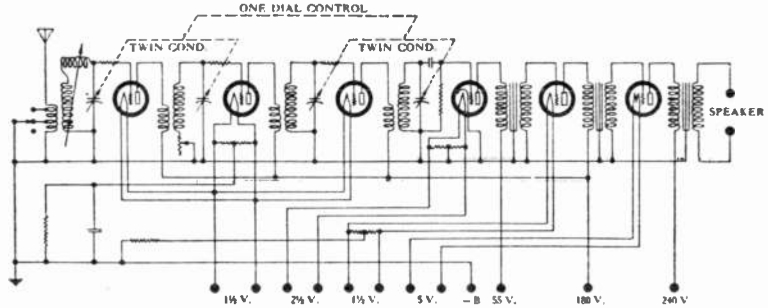
1925-26

Other early models 305-310-315 320-325-330-350-385-390.



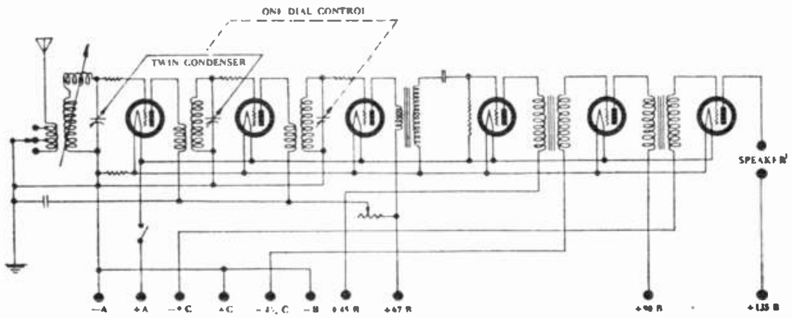
1926 - 27

Mod. 345



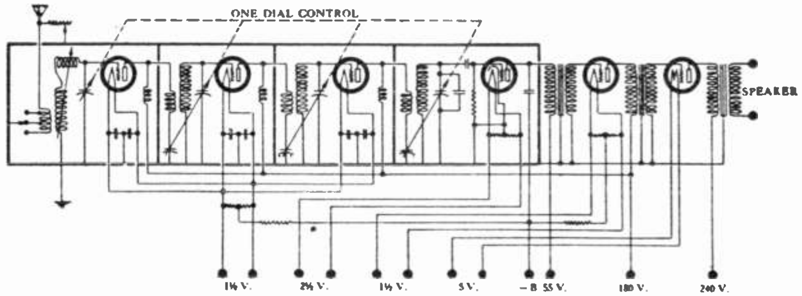
Model 530, 535

1927-28.



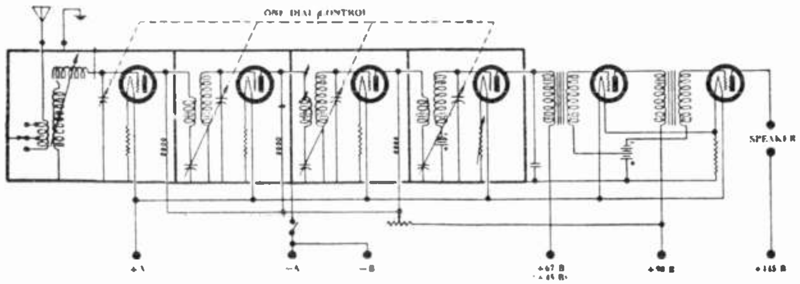
Model 500, 520, 525

1927-28



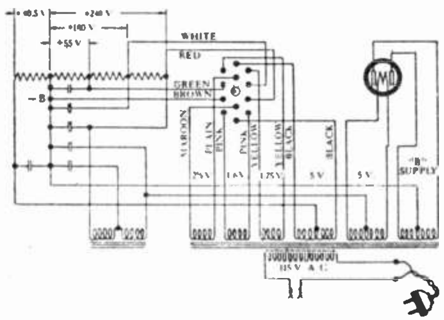
1927-28

Model 715, 720

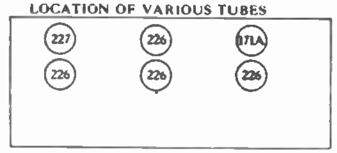


Model 700, 705, 710

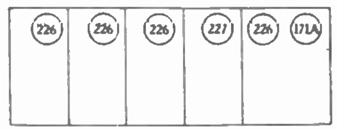
1927-28



LOCATION OF VARIOUS TUBES



Model 530, 535



Model 715, 720

—Courtesy Stewart Warner Speedometer Corp.

Printed in Canada

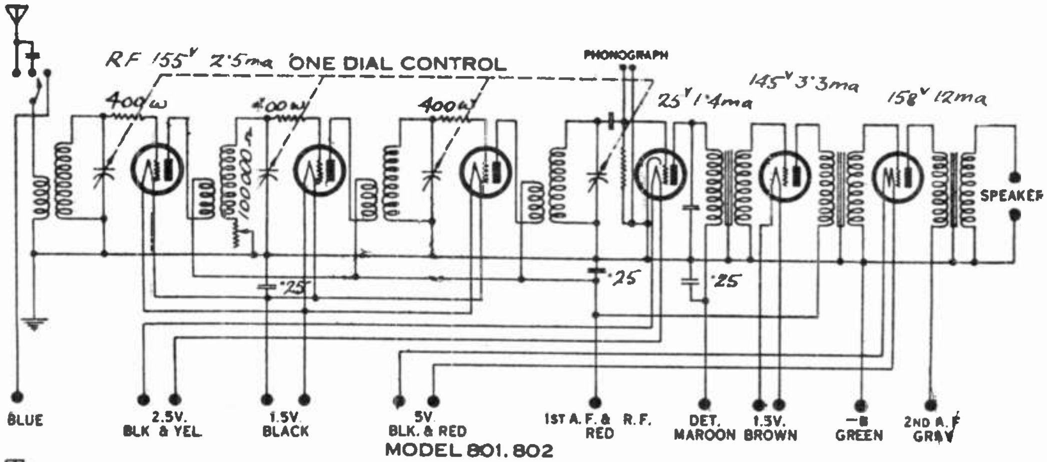
DATA SHEET

World Radio History

1928-29
Series 800

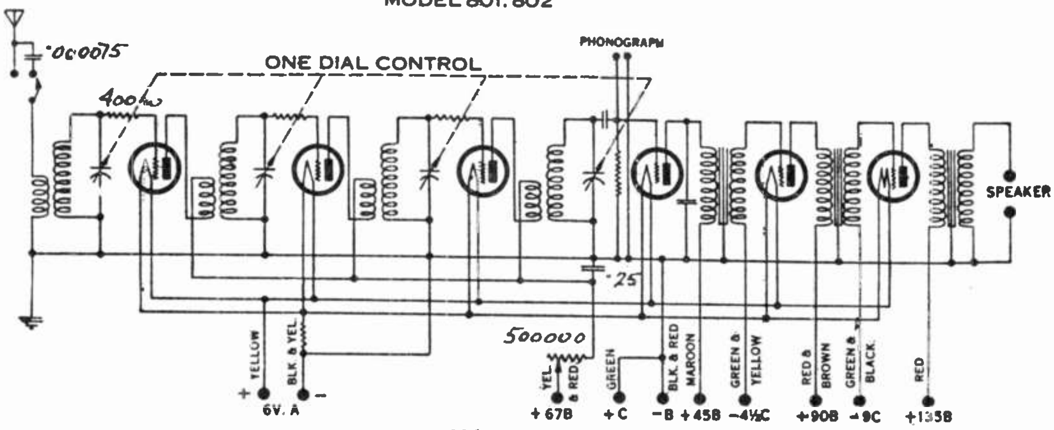
Models 801, 801A, 802 (60 Cy.) 811-811A (25 Cycle)

Standard Compact Fitted in Draw to Make Console Low Boy and High Boy



MODEL 801. 802

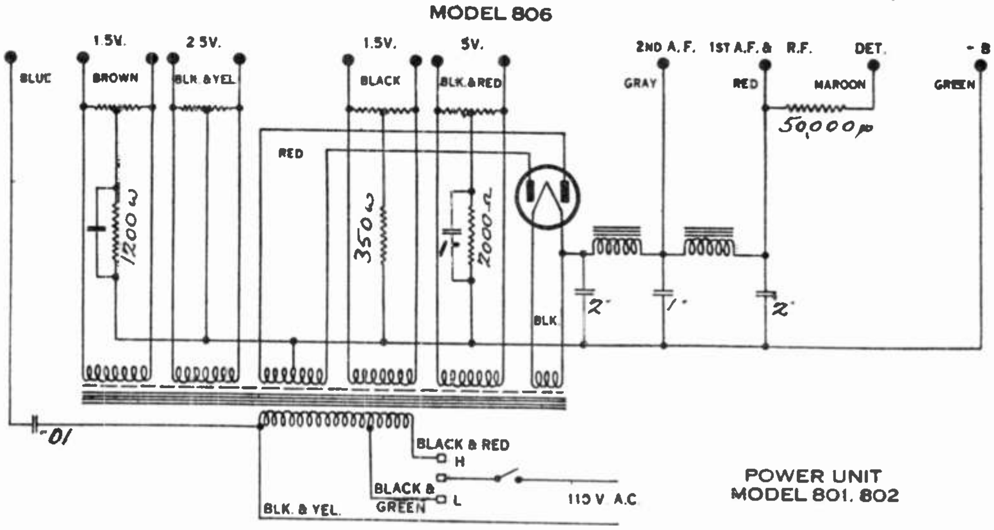
1928-29
Model 806
Battery Operated



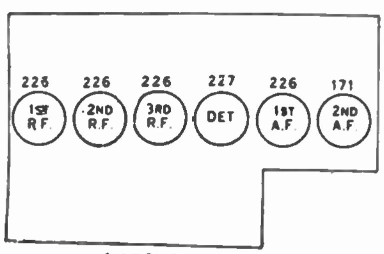
MODEL 806

1928-29
Series B
801B, 811B

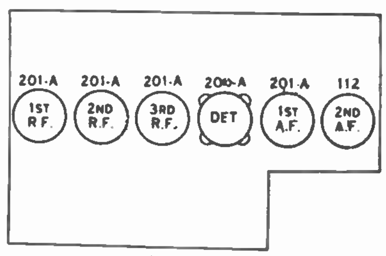
Same as 811 except that Push-Pull using (2) 112A tubes in last stage.



POWER UNIT
MODEL 801. 802



MODEL 801. 802



MODEL 806

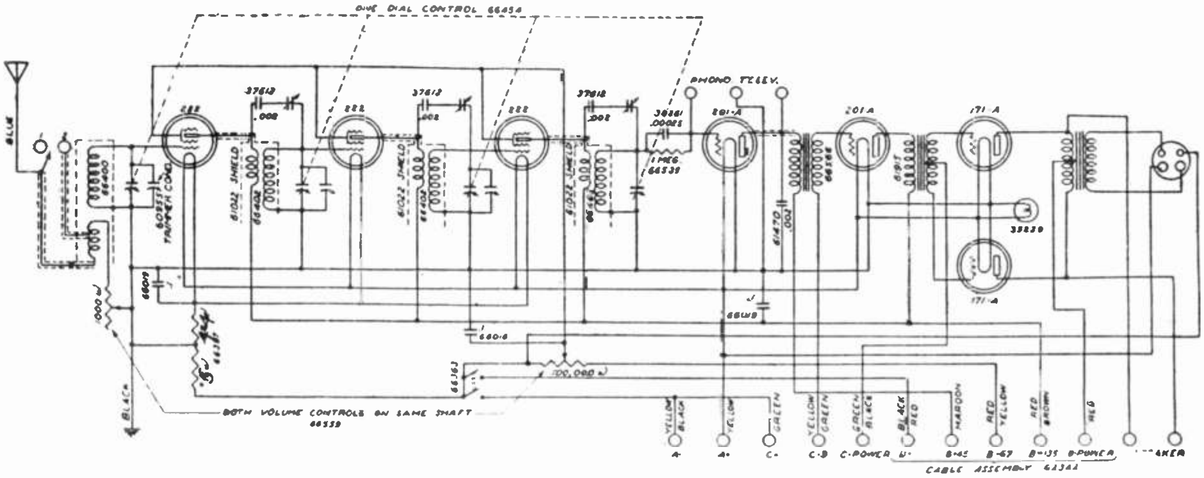
LOCATION OF VARIOUS TUBES

Printed in Canada

—Courtesy Stewart Warner Speedometer Corp.

World Radio History

1929
Series
950
Battery
Operated



CIRCUIT DIAGRAM OF 950 SERIES BATTERY SCREEN-GRID RECEIVER
1929-30

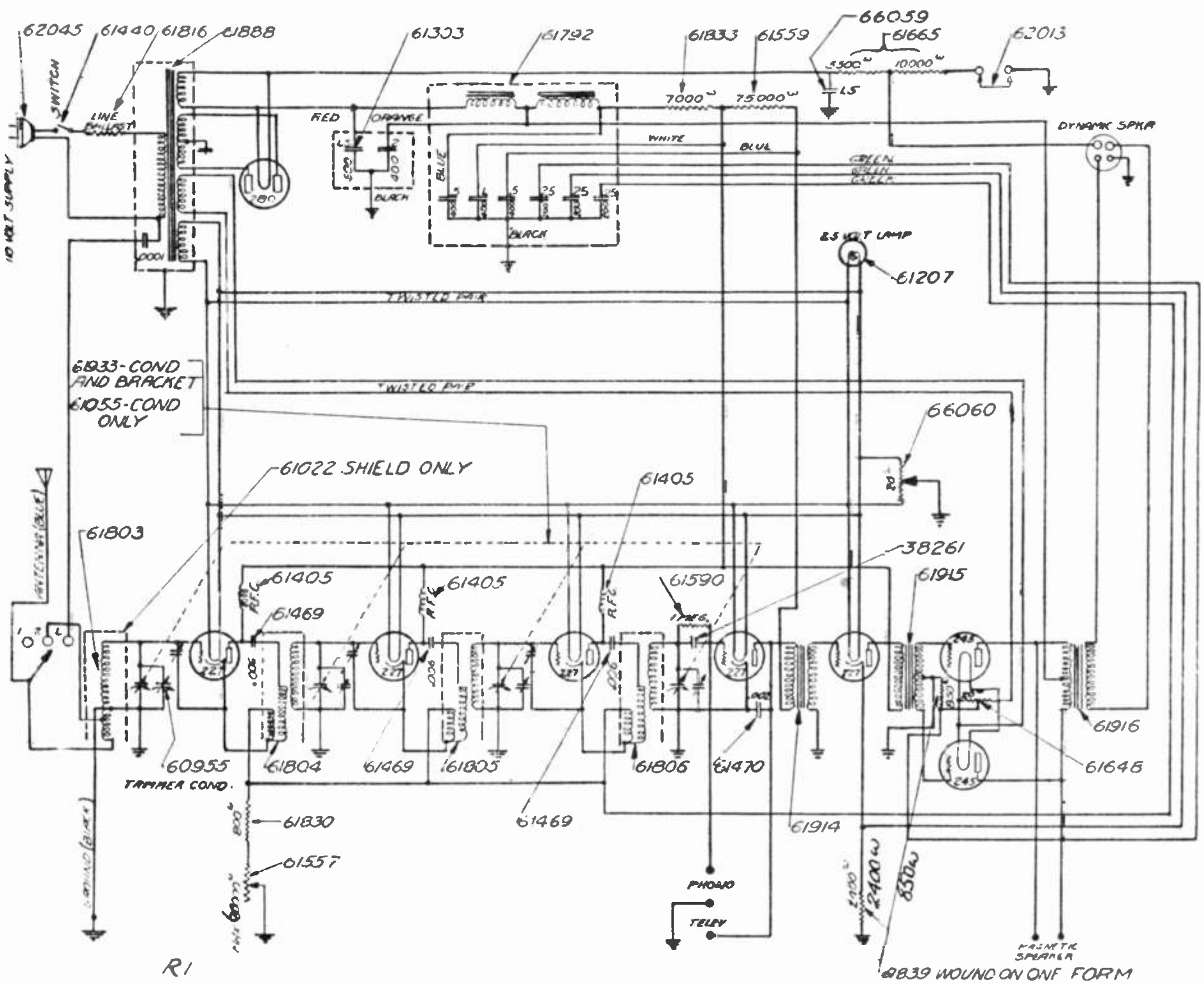
1929
Series
900

901 Table
902 Table
903 Chassis
(60 Cycle)

911 Table
912 Table
913 Chassis
(25 Cycle)

Draw Type
Chassis
Fitted in
Low Boy
High Boy
Phono-Comb.

RF. 132v 3.2ma
Det 32v 2.8ma
1AF 132v 5.4ma
2AF 226v 30ma



CIRCUIT DIAGRAM OF 900 SERIES A. C. BALANCED BRIDGE RECEIVERS
1929-30

World Radio History

RF. 166ᵛ 3·9 ma
Det 188ᵛ 6· ma
1AF 182ᵛ 5·7 ma
PWR 260ᵛ 24· ma

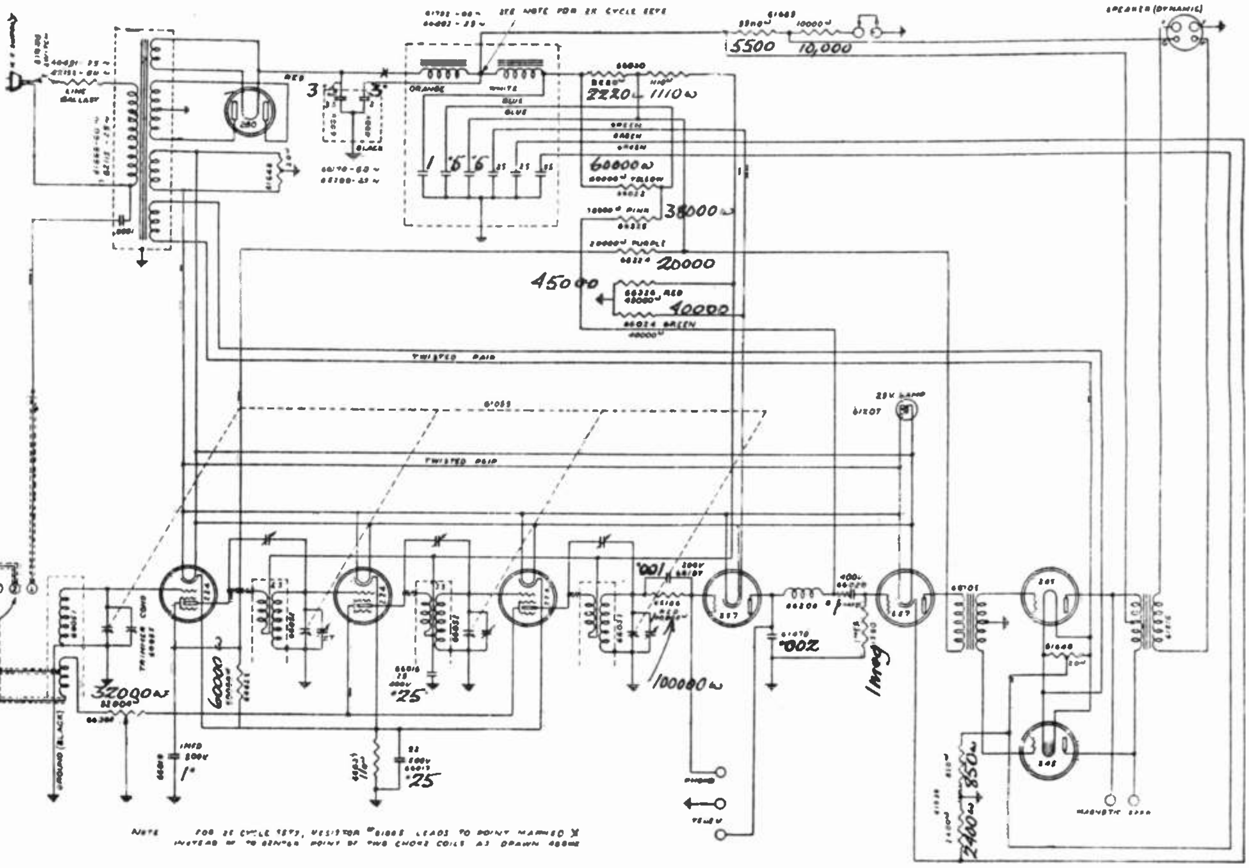
1929-30

Series 950

951 Table
952 Table
953 Chassis
(60 Cycle)

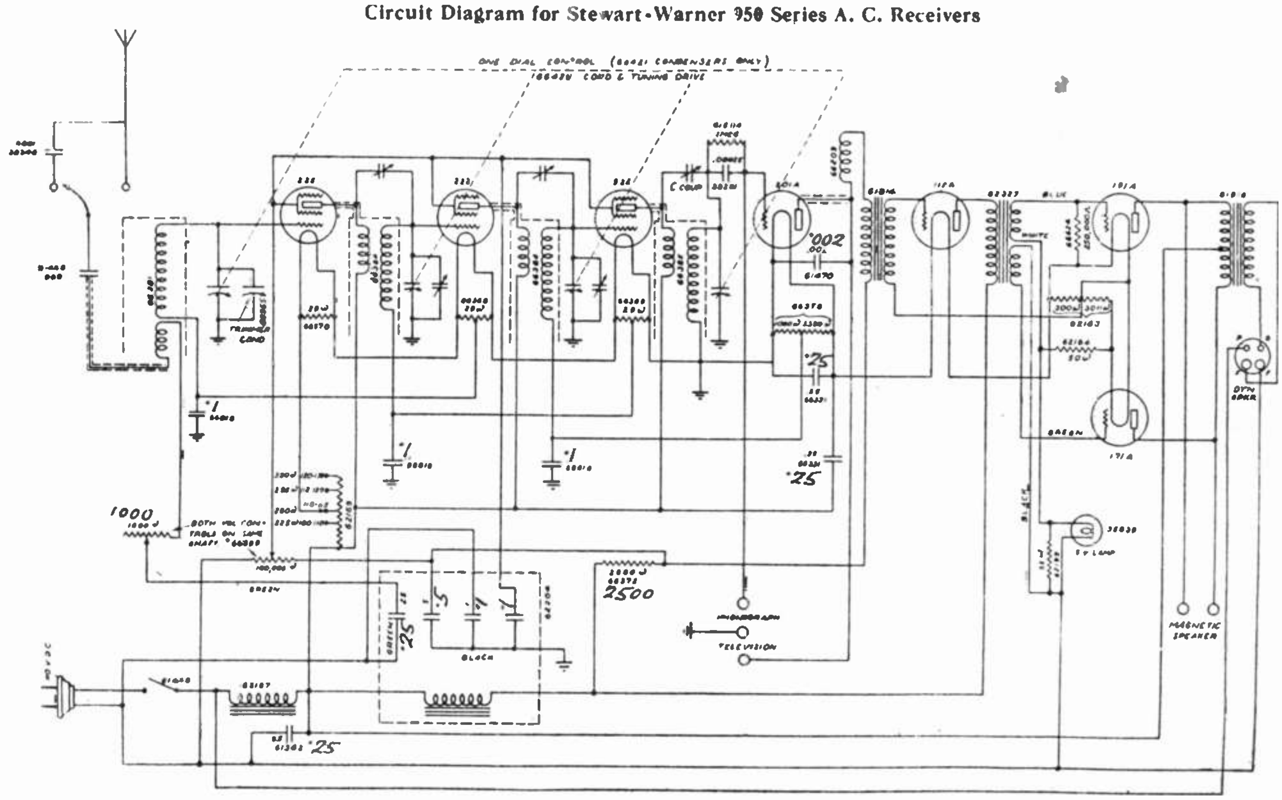
961 Table
962 Table
963 Chassis
(25 Cycle)

Draw Type
Chassis
Fitted in
Low Boy
High Boy
Phono-Comb.



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

1929
Series
950
110 Volt
D.C.
Receiver

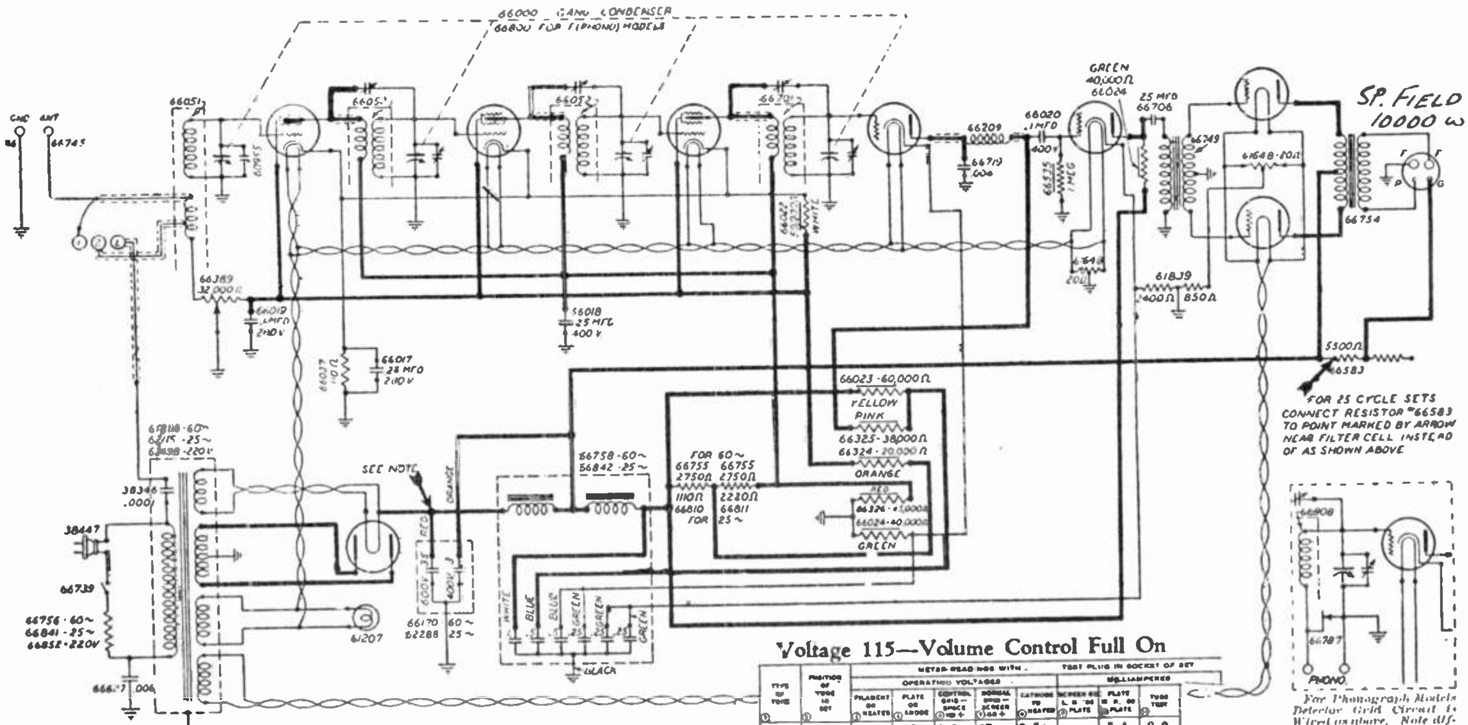


Circuit Diagram of Stewart-Warner 950 Series D. C. Receiver 1929-30

Printed in Canada

—Courtesy Stewart Warner Speedometer Corp.

World Radio History



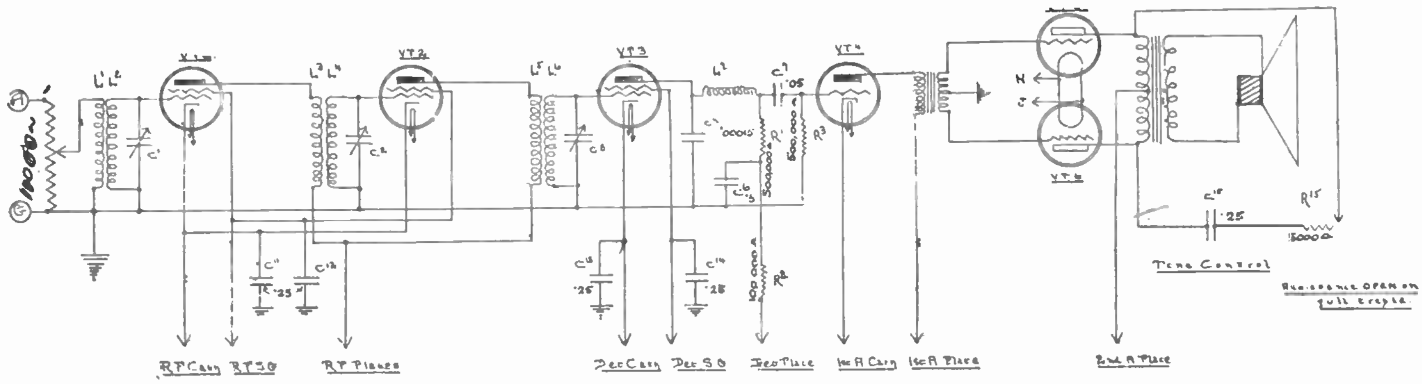
Voltage 115—Volume Control Full On

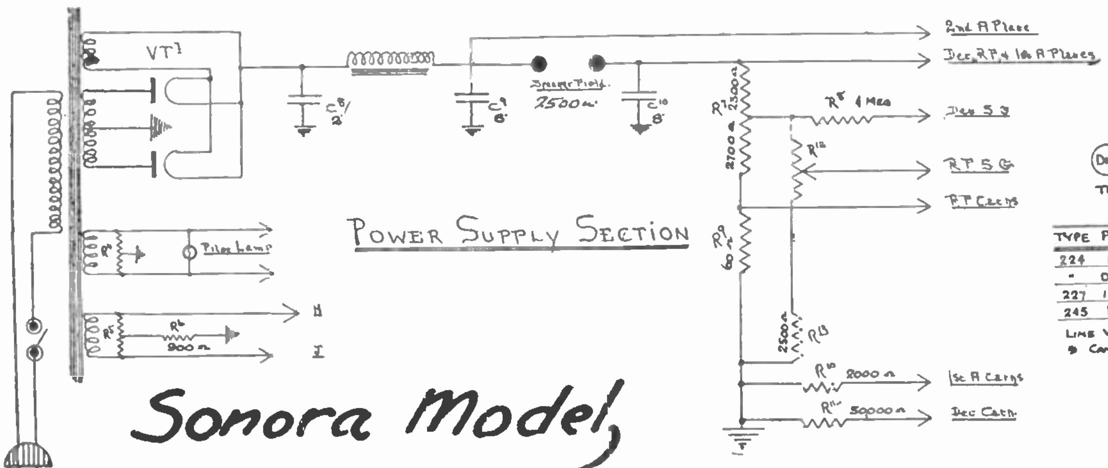
Type of tube	Position of tube in set	Filament or heater	Plate or anode	Control grid—space	Normal grid—screen	Cathode to heater	Screen grid plate	Plate	Tube test
224	R.F.	2.18	135	2.2	87	2.5	-	5.4	9.0
227	Det.	2.2	165	-	15.5	17	-	.5	.4
227	1 A.F.	2.18	120	-	.6	9	-	3.6	4.1
245	PP-AF	2.3	245	-	48	-	-	27	30

Stewart-Warner Model R-100A

SPEAKER FIELD 10000 ω

1930-31





POWER SUPPLY SECTION

Sonora Model,

(DET) (2RF) (1RF) (1AF) (P.P) (P.P) (RECT)

TUBE ARRANGEMENT LOOKING FROM FRONT

TYPE	POS.	A VOLT	B VOLTS	C VOLTS	CATH	S. GRID VOLTS	SCREEN CURRENT	MA
224	RF	2.2	150	2.1	2.1	70	1	4
"	DET.	"	*	*	*	*	*	*
227	1 AF	"	150	*	6.4	—	—	4.3
245	P.P.	"	245	50	—	—	—	28

LINE VOLTAGE 115. VOLUME CONTROL MAX.

* CANNOT BE ACCURATELY READ AT SOCKET.

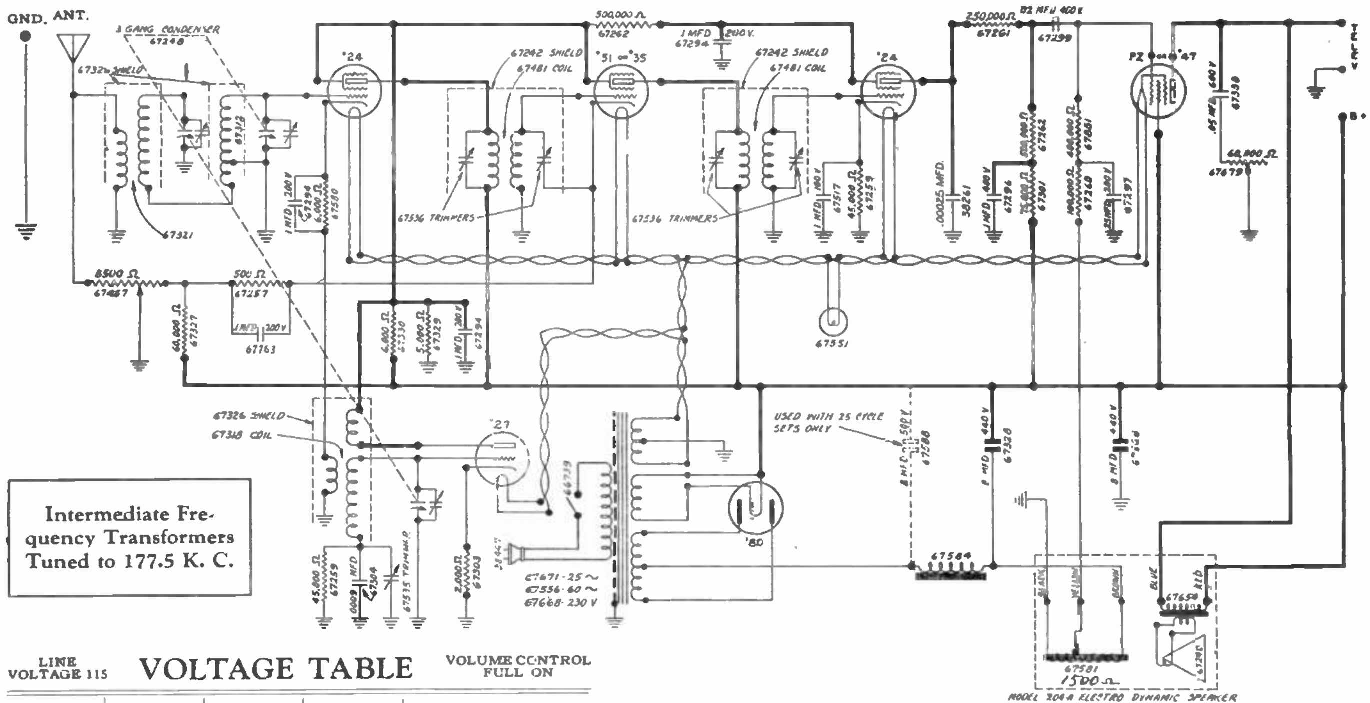
SONORA
MODELS C34 AND 35.
1930-31.

NOTE—THE LOWER CIRCUIT IS SONORA MODELS C34 AND C35

—Courtesy Stewart-Warner Speedometer Corp.

World Radio History

Models- R-102 a.b.e. 1931-32



Intermediate Frequency Transformers Tuned to 177.5 K. C.

LINE VOLTAGE 115

VOLTAGE TABLE

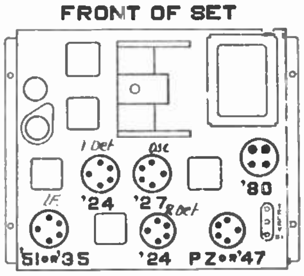
VOLUME CONTROL FULL ON

Type of Tube	Tube Circuit	Filament Voltage	Plate Voltage	Screen Grid Voltage	Bias Voltage
'24	1st Det.	2.45	250	95	5.5
'27	Osc.	2.45	95		9
'51	I. F.	2.40	250	95	3
'24	2nd Det.	2.45	70	30	7
P. Z. or '47	Output	2.45	230	250	15 ‡
'80	Rect.	4.8	170		

All D. C. voltages measured with respect to ground, using high resistance voltmeter of 1000 ohms per volt. Readings will vary depending upon voltage range of meter, being higher for higher range instruments. This variation is most marked for second detector screen grid and plate voltages.

‡ This reading obtained between ground and yellow speaker lead. Direct reading from grid to ground or reading taken with a set tester will show about 3 volts because of high resistance in grid circuit.

FRONT OF SET

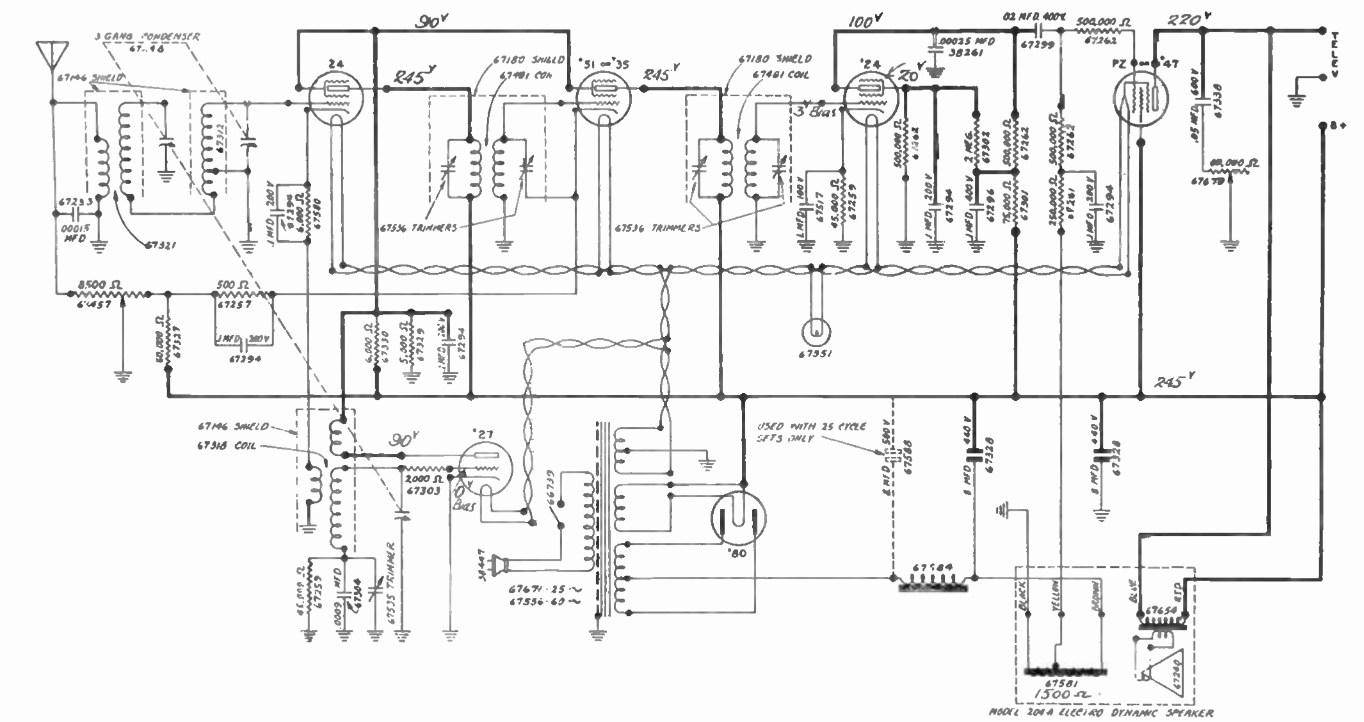


TUBE LOCATIONS

*This data sheet applies to the following serial numbers only:

Model 102-A, 34,000 upwards
Model 102-B, 10,500 upwards
Model 102-E, 10,200 upwards

Circuit used in lower numbers as below



DATA SHEET

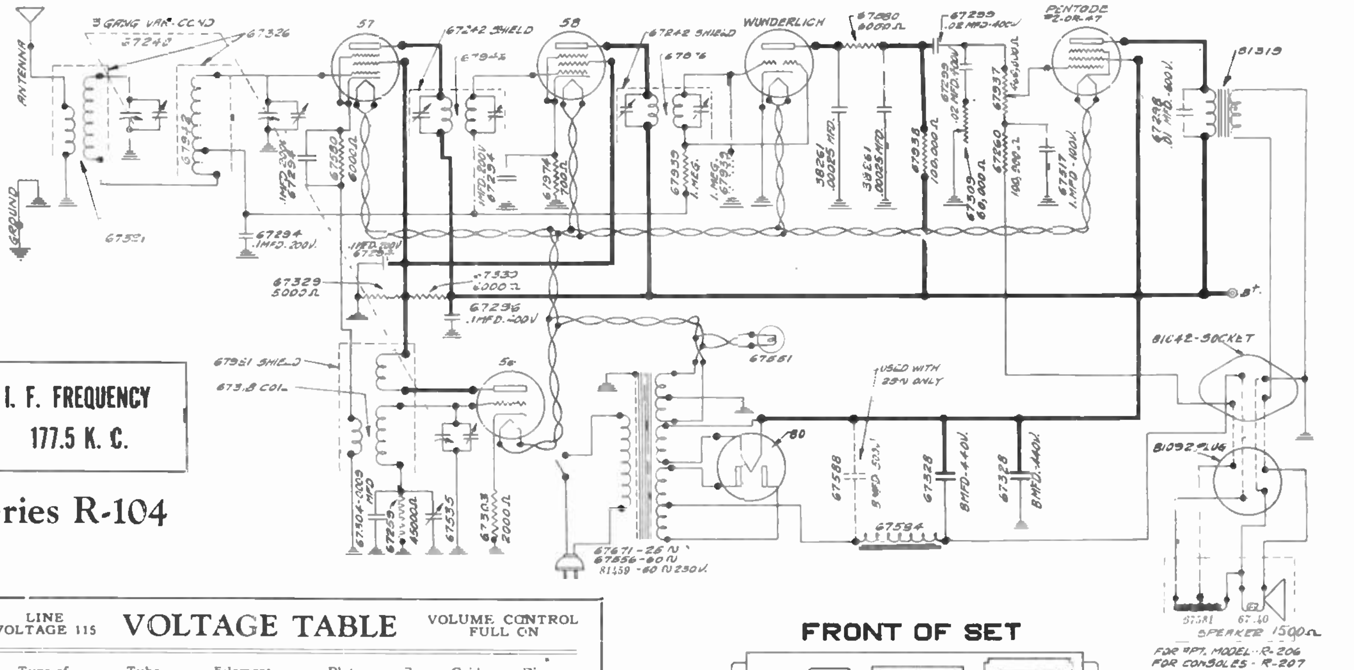
PRINTED IN CANADA

COURTESY STEWART-WARNER 8

ALEMITE CORP. LTD

World Radio History

Model R-104 - 1932



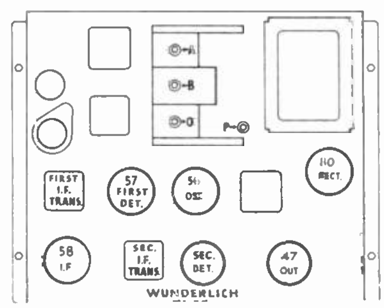
I. F. FREQUENCY
177.5 K. C.

Series R-104

LINE VOLTAGE 115	VOLTAGE TABLE			VOLUME CONTROL FULL ON	
Type of Tube	Tube Circuit	Filament Voltage	Plate Voltage	Screen Grid Voltage	Bias Voltage
'57	1st Det.	2.57	256	100	4.5
'56	Osc	2.57	100		7.8
'58	I. F.	2.56	255	100	3.9
Wunderlich	2nd Det.	2.56	37		
P. Z. or '47	Output	2.56	239	256	15.75 ‡
'80	Rect.	4.9			

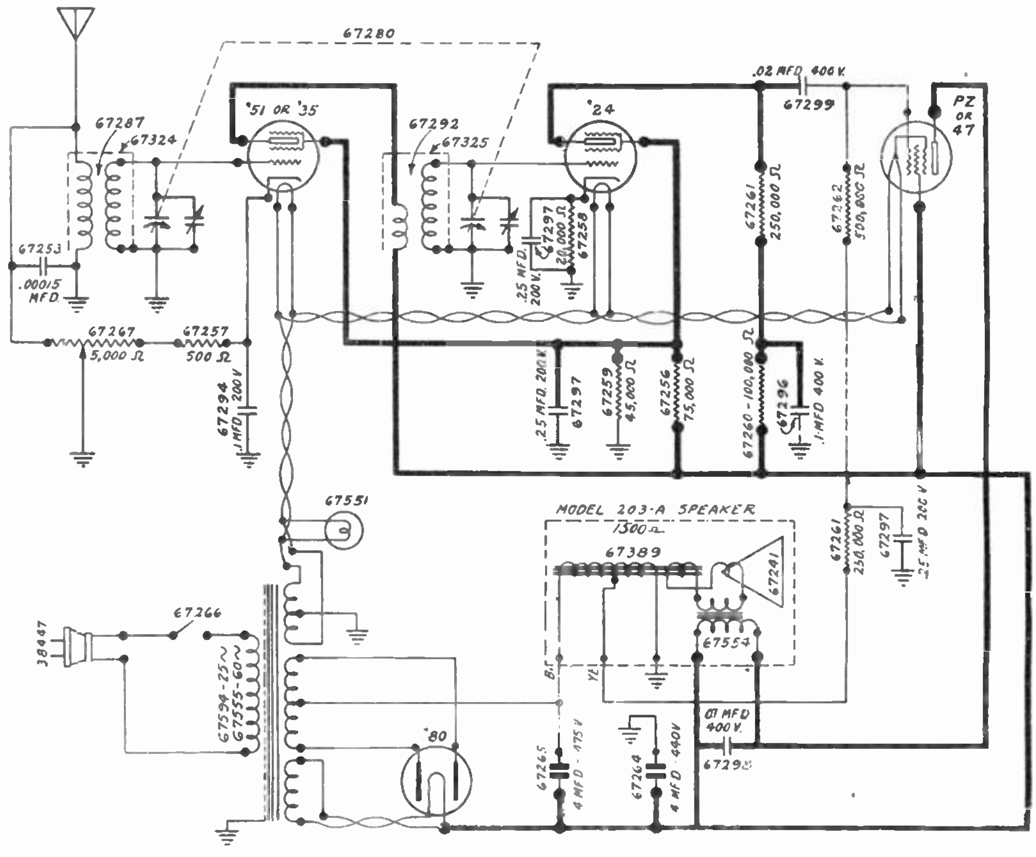
All D. C. voltages measured with respect to ground, using high resistance voltmeter of 1000 ohms per volt. Readings will vary, depending upon voltage range of meter being higher for higher range instruments. This variation is most marked for second detector plate voltages.

FRONT OF SET

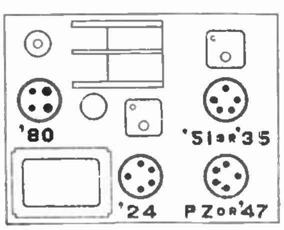


Model R-101-A and R-101-B

1931-1932



FRONT OF SET



Type of Tube	Plate Voltage	Screen Grid Voltage	Bias Voltage
'51	243	68	2.75
'24	80	68	6
PZ or '47	228	243	16 *

PRINTED IN CANADA

DATA SHEET

COURTESY
STEWART-WARNER 9
ALEMITE CORP LTD.

World Radio History

Circuit Data of Stewart-Warner Short Wave Converter R301-A, B, and E 1931-32-33-34

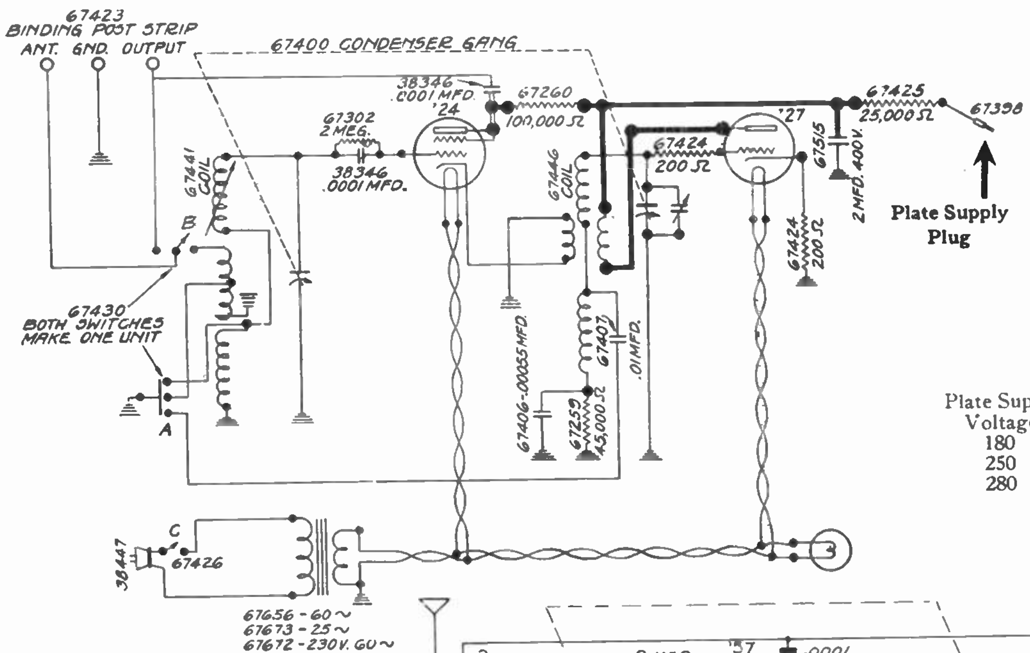


Plate Supply Plug

SWITCH POSITIONS

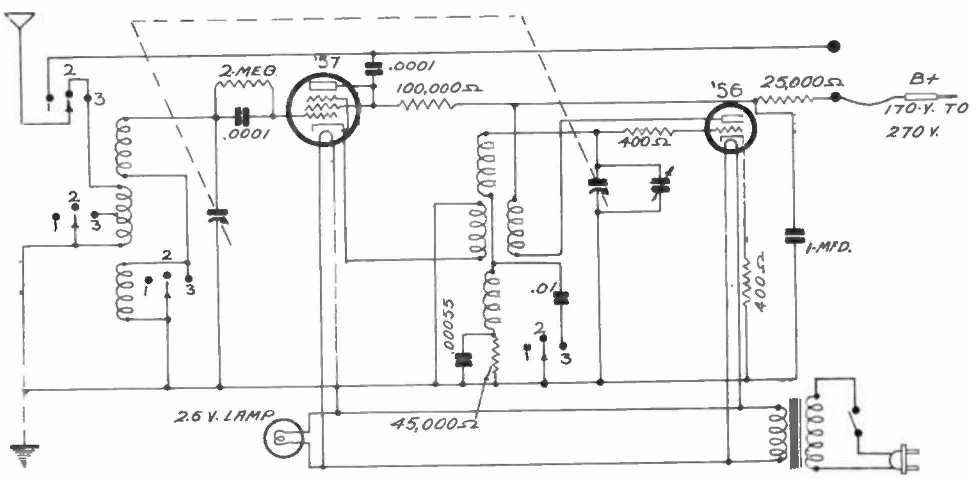
A - 'OFF' IN POSITION 1 AND 2 OF SELECTOR SWITCH
'ON' IN POSITION 3 OF SELECTOR SWITCH

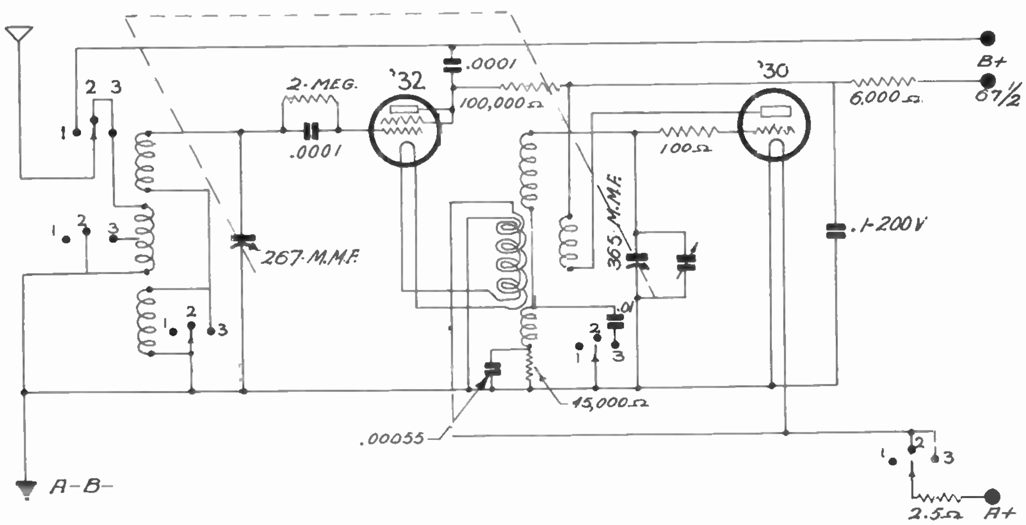
B - TO OUTPUT POST IN POSITION 1
TO COIL IN POSITIONS 2 AND 3

C - 'OFF' IN POSITION 1 OF SELECTOR SWITCH
'ON' IN POSITION 2 AND 3 OF SELECTOR SWITCH

Plate Supply Voltage	'24 Plate	'27 Plate
180	26	70
250	34	93
280	37	102

RIGHT CONVERTER G-81301 1931-32-33-34





LEFT CONVERTER MODEL-301-D 1932-33-34

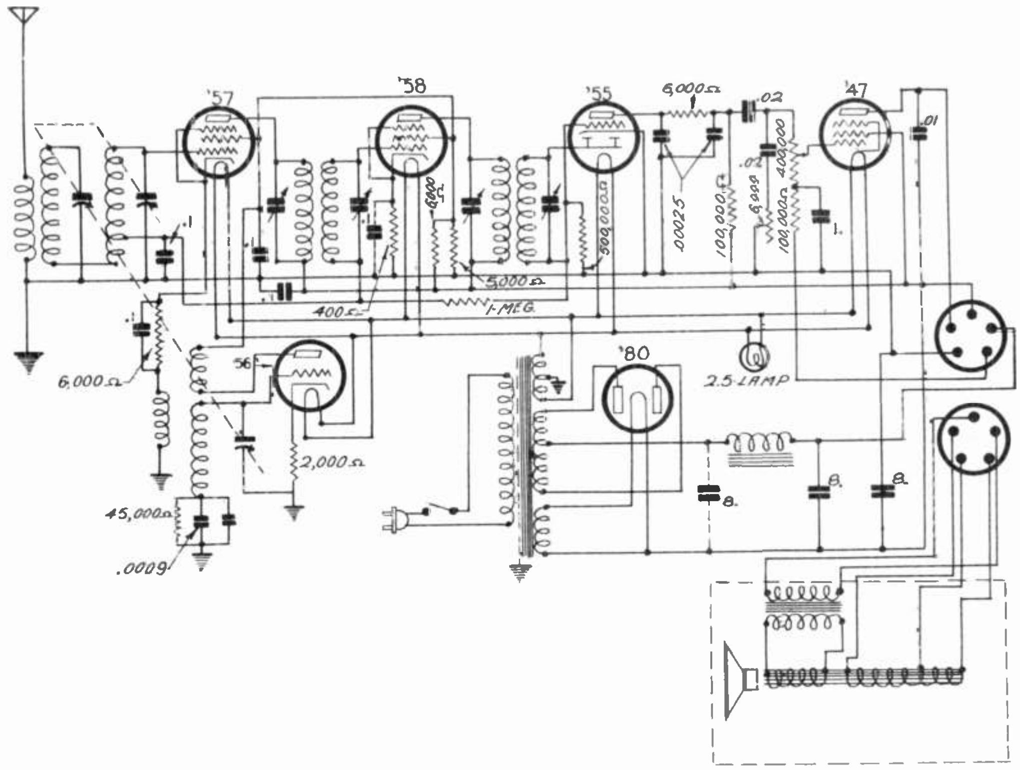
DATA SHEET

PRINTED IN CANADA

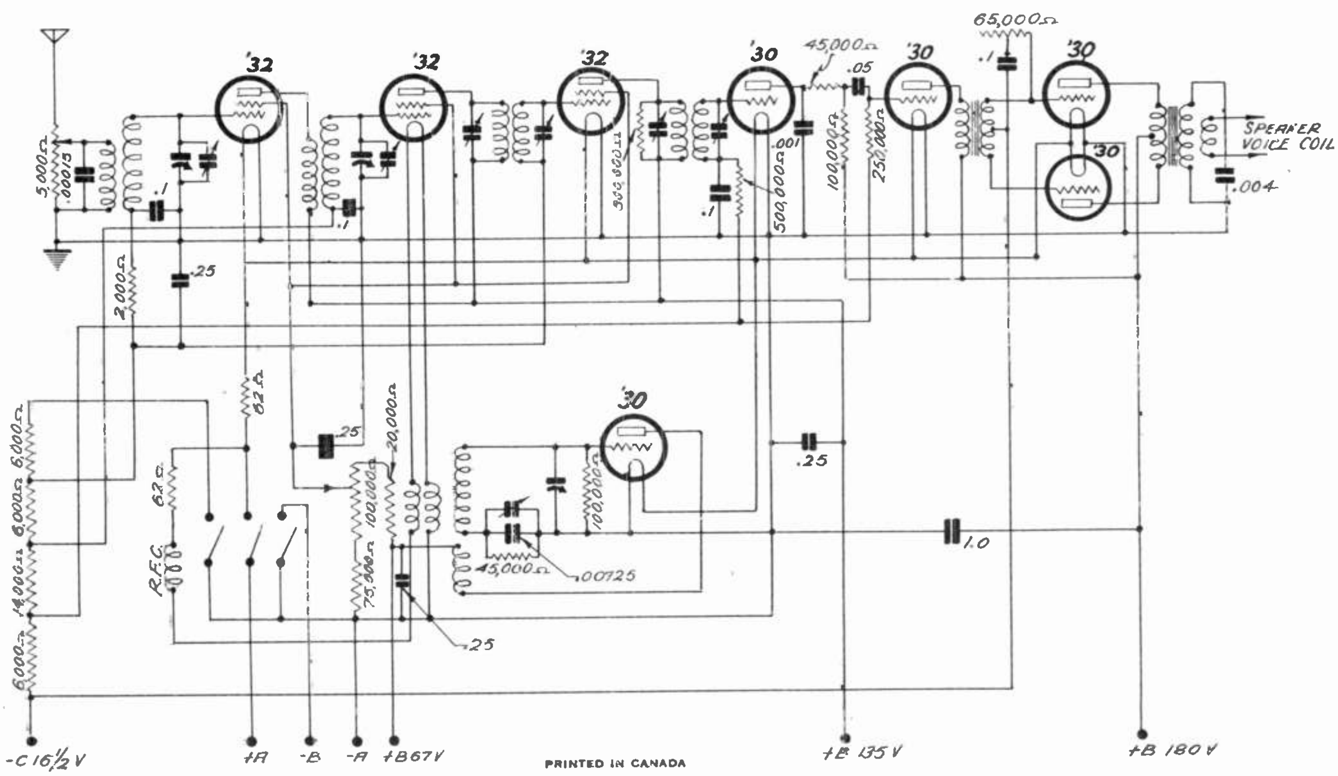
COURTESY STEWART-WARNER ALEMITE CORP. LTD.

World Radio History

STEWART-WARNER
KING
MODEL 33
1932
I.F. 177.5 KC.



MODEL R102-D 1933-34 I.F. 177.5 K.C.

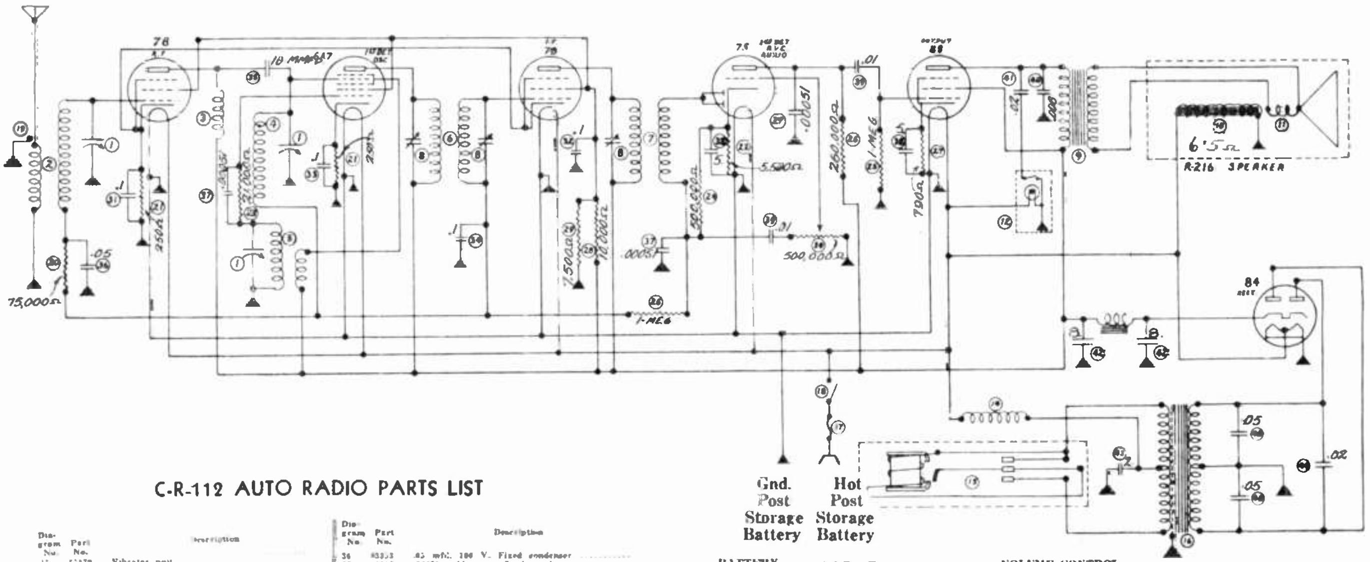


DATA SHEET

PRINTED IN CANADA

COURTESY
STEWART-WARNER 11
ALEMITE CORP LTD.

Model- C.R.112 - 1933-34



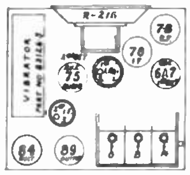
C-R-112 AUTO RADIO PARTS LIST

Diagram No.	Part No.	Description
15	53172	Vibrator unit
16	53200	Power transformers
17	63207	1 amp fuse
18		Power switch part of [illegible]
19	53260	Antenna lead assembly
20	53212	75,000 ohm ½ watt insulated resistor
21	53233	250 ohm ½ watt insulated resistor
22	53234	5,500 ohm ½ watt insulated resistor
23	53377	21,000 ohm ½ watt insulated resistor
24	53378	500,000 ohm ¼ watt insulated resistor
25	53379	1 meg ohm ½ watt insulated resistor
26	53273	260,000 ohm ½ watt insulated resistor
27	53247	790 ohm wirewound I. R. C. resistor
28	61724	10,000 ohm wirewound } wound on one form
29		7,500 ohm wirewound
30	53158	500,000 ohm Volume control
31	53193	.1 mfd. 200 V. Fixed condenser } mounted in one can
32		.1 mfd. 200 V. Fixed condenser
33		.1 mfd. 200 V. Fixed condenser
34		.1 mfd. 200 V. Fixed condenser
35	63106	10 mmfd. coupling condenser
36	63353	.05 mfd. 100 V. Fixed condenser
37	61812	.00051 mfd. mica fixed condenser
38	53104	5 mfd. 25 V. Electrolytic condenser } In one Container
		5 mfd. 25 V. Electrolytic condenser
39	53075	.01 mfd. 400 V. Fixed condenser
40	61175	.006 mfd. mica fixed condenser
41	63307	.02 mfd. 600 V. Fixed condenser
42	53192	8 mfd. 200 V. Electrolytic condenser } In one Container
		4 mfd. 200 V. Electrolytic
43	53191	2 mfd. 100 V. Fixed Condenser
44	63216	.02 mfd. 1005 V. Fixed condenser
45	63139	.05 mfd. 400 V. Fixed condenser

BATTERY VOLTAGE 6.3V. **VOLTAGE TABLE** VOLUME CONTROL FULL ON

Type of Tube	Tube Circuit	Filament Voltage	Plate Voltage	Screen Grid Voltage	Bias Voltage
78	R.F.	6	180	75	2.25
6A7	Osc. 1st Det.	6	180	75	1.50
78	I.F.	6	180	75	2.25
75	2nd Det. A.V.C.-Audio	6	85	. . .	1.25
89	Output	6	175	180	16

FRONT OF SET



TUBE LOCATIONS

Models 7-104 a-b 1932-33-34

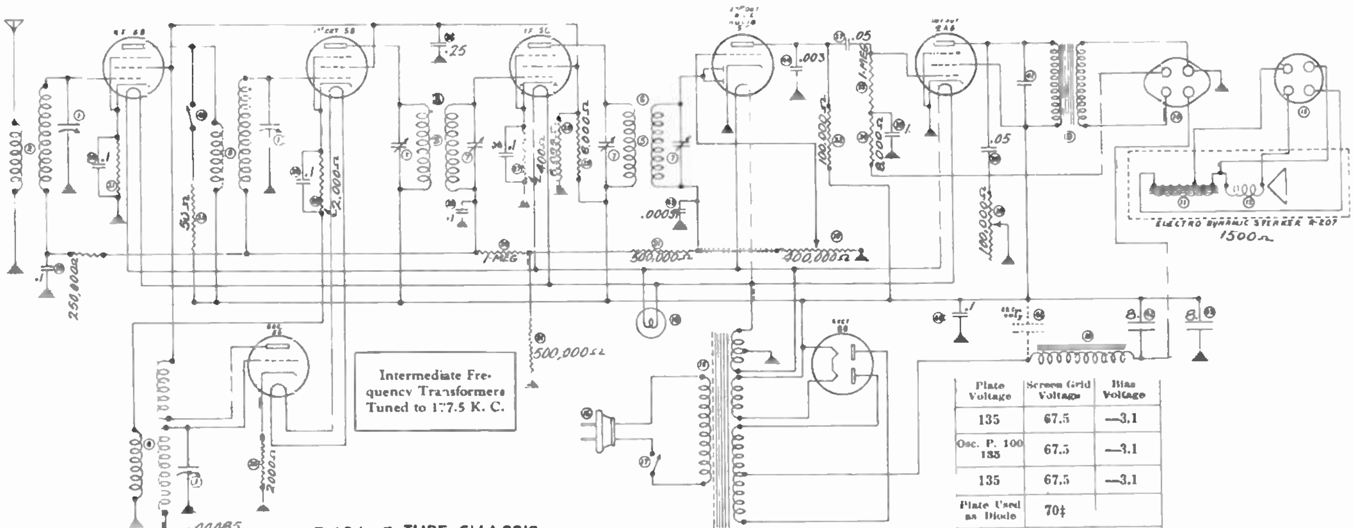
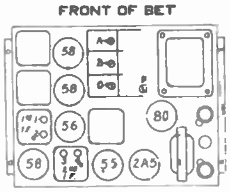


Plate Voltage	Screen Grid Voltage	Bias Voltage
135	67.5	—3.1
Osc. P. 100 135	67.5	—3.1
135	67.5	—3.1
Plate Used as Diode	70‡	
135	0	—9
135	0	—3

7-104 7 TUBE CHASSIS

FRONT OF SET



LINE VOLTAGE 115 **VOLTAGE TABLE** VOLUME CONTROL FULL ON

Type of Tube	Tube Circuit	Filament Voltage	Plate Voltage	Screen Grid Voltage	Bias Voltage
58	R. F.	2.45	245	95	5
58	1st Det.	2.45	240	95	6
56	Osc.	2.45	95		
58	I. F.	2.45	240	95	4
55	2nd Det. A.V.C. & Amp.	2.45	50		
2A5	Output	2.45	230	245	15‡

Diagram No.	Part No.	Description
18	67551	3 V. Pilot Lamp
19	67937	400,000 ohm Volume control
20	61102	100,000 ohm variable tone control
21	53360	1,200 ohm ½ watt insulated resistor
22	53361	250,000 ohm ½ watt insulated resistor
23	53117	50 ohm Electrad flexohm resistor
24	[illegible]	45,000 ohm ½ watt uninsulated resistor
25	[illegible]	2,000 ohm ½ watt insulated resistor
26	[illegible]	2,000 ohm 1 watt uninsulated resistor
27	53362	400 ohm ½ watt insulated resistor
28	[illegible]	5,000 ohm wirewound resistor
29	[illegible]	6,000 ohm wirewound resistor
30	[illegible]	1 meg ½ watt uninsulated resistor
31	[illegible]	300,000 ohm ½ watt uninsulated resistor
32	[illegible]	100,000 ohm 1 watt insulated resistor
33	[illegible]	1 meg ohm ½ watt insulated resistor
34	52836	8,000 ohm ½ watt insulated resistor
35	67296	.1 mfd. 200 V. Fixed condenser
36	67297	.25 mfd. 300 V. Fixed condenser
37	57130	.05 mfd. 400 V. Fixed condenser
38	[illegible]	1 mfd. 100 V. Fixed condenser
39	53239	.25 mfd. 400 V. Fixed condenser
40	[illegible]	.1 mfd. 400 V. Fixed condenser
41	67652	.015 mfd. 600 V. Fixed condenser
42	61347	[illegible] mfd. 435 V. Electrolytic condenser
43	67128	8 mfd. 440 V. Electrolytic condenser
44	[illegible]	.003 mfd. Mica Fixed condenser
45	[illegible]	.0051 mfd. Mica Fixed condenser
46	[illegible]	.00085 mfd. Mica Fixed condenser
47	[illegible]	Trimmer condenser

DATA SHEET

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STEWART-WARNER 12
ALEMITE CORP. LTD.

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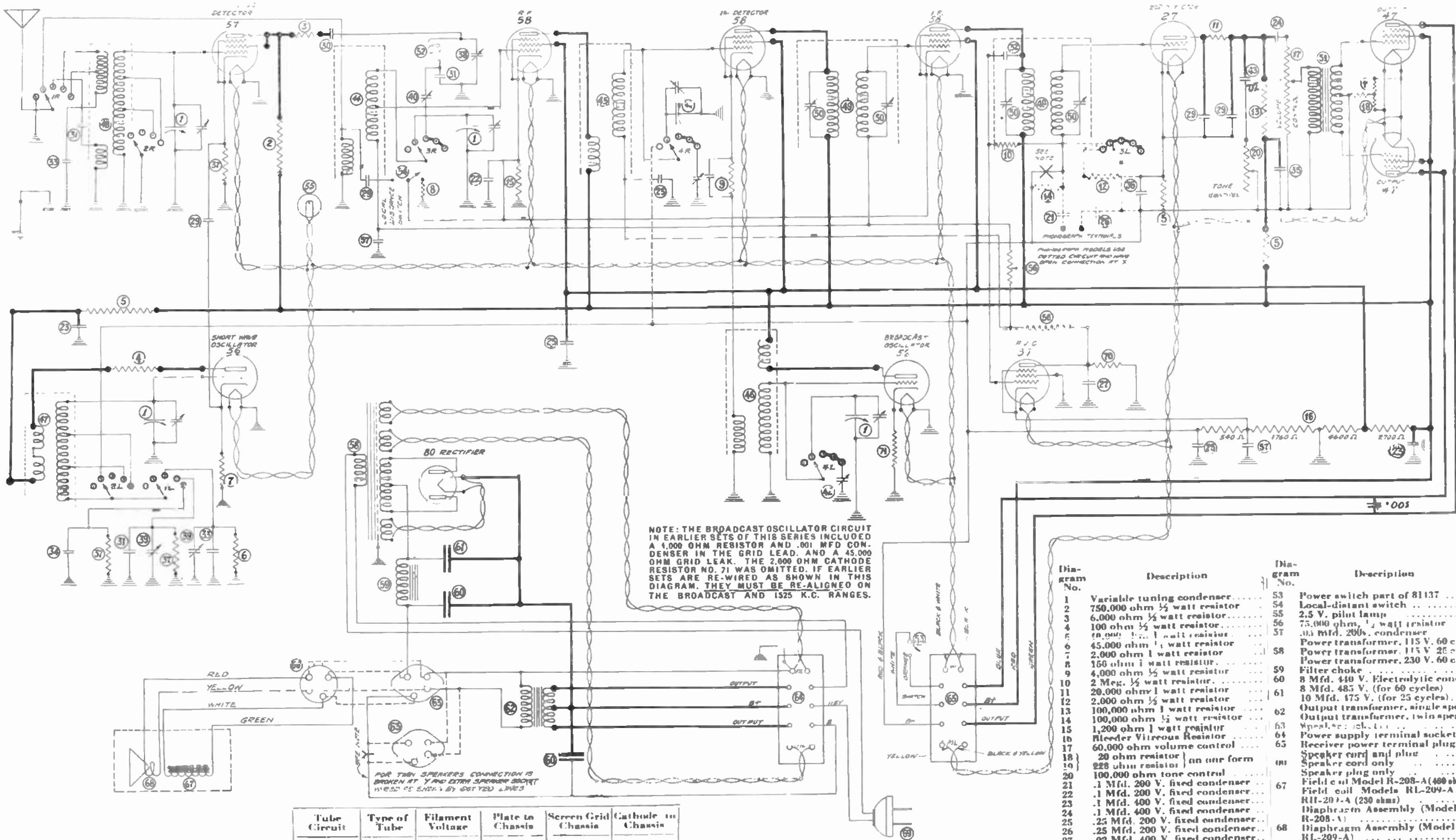

COURTESY **STEWART-WARNER 13** ALEMITE CORP. LTD.

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Diagram No.	Description
1	Variable tuning condenser
2	750,000 ohm ½ watt resistor
3	6,000 ohm ½ watt resistor
4	100 ohm ½ watt resistor
5	[illegible] 1 watt resistor
6	45,000 ohm ½ watt resistor
7	2,000 ohm 1 watt resistor
8	150 ohm 1 watt resistor
9	4,000 ohm ½ watt resistor
10	2 Meg. ½ watt resistor
11	20,000 ohm 1 watt resistor
12	2,000 ohm ½ watt resistor
13	100,000 ohm 1 watt resistor
14	100,000 ohm ½ watt resistor
15	1,200 ohm 1 watt resistor
16	Bleeder Vitreous Resistor
17	60,000 ohm volume control
18	20 ohm resistor } on one form
19	228 ohm resistor } on one form
20	100,000 ohm tone control
21	.1 Mfd. 200 V. fixed condenser
22	.1 Mfd. 200 V. fixed condenser
23	.1 Mfd. 400 V. fixed condenser
24	.1 Mfd. 400 V. fixed condenser
25	.25 Mfd. 200 V. fixed condenser
26	.25 Mfd. 200 V. fixed condenser
27	.02 Mfd. 400 V. fixed condenser
28	.02 Mfd. 400 V. fixed condenser
29	.001 Mfd. fixed condenser
30	.002 Mfd. 1000 V. fixed condenser
31	.0005 Mfd. fixed condenser
32	.00025 Mfd. fixed condenser
33	.0001 Mfd. fixed condenser
34	.003 Mfd. fixed condenser
35	.5 Mfd. 400 V. fixed condenser

Diagram No.	Description
53	Power switch part of 81137
54	Local-distant switch
55	2.5 V. pilot lamp
56	75,000 ohm ½ watt resistor
57	.05 Mfd. 200v. condenser
58	Power transformer, 115 V. 60 cyc. Power transformer, 115 V. 25 cyc. Power transformer, 230 V. 60 cyc.
59	Filter choke
60	8 Mfd. 440 V. Electrolytic cond.
61	8 Mfd. 485 V. (for 60 cycles) 10 Mfd. 475 V. (for 25 cycles)
62	Output transformer, single speak Output transformer, twin speake
63	Speaker socket
64	Power supply terminal socket
65	Receiver power terminal plug
66	Speaker cord and plug Speaker cord only Speaker plug only
67	Field coil Model R-208-A (400 ohms) Field coil Models RL-209-A or RH-209-A (230 ohms)
68	Diaphragm Assembly (Model R-208-A) Diaphragm Assembly (Model RL-209-A) Diaphragm Assembly (Model RH-209-A)
69	Cord and plug
70	1 Meg. ½ watt resistor
36	.1 Mfd. 100 V. fixed condenser
37	10,000 ohm ½ watt resistor
43	.02 Mfd. 400 V. fixed condenser

CAUTION

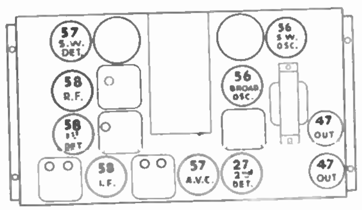
Reading must be taken with the set tuned to one of the short wave ranges, and the local - distance switch pulled out.

All D.C. voltages are measured between the tube socket terminal and chassis, using a high resistance voltmeter of 1000 ohms per volt. Readings will vary depending upon voltage range of meter, being higher for higher range instruments. This variation is most marked for all detector and oscillator D.C. voltages.

Readings taken with set testers plugged into tube sockets may deviate considerably from the values given in this table, due to their internal circuit arrangements.

Tube Circuit	Type of Tube	Filament Voltage	Plate to Chassis	Screen Grid Chassis	Cathode to Chassis
Short Wave Oscillator	56	2.4	81		5.2
Short Wave Detector	57	2.6	21	21	1.9
R. F.	58	2.4	188	102	2.1
Broadcast Oscillator	56	2.4	102		0
First Detector	58	2.4	188	102	9
I. F.	58	2.42	188	102	2.2
A. V. C.	57	2.44	0	0	—89
Second Detector	27	2.42	70		—92
Output	47	2.4	177	188	Fil. to chassis —97 Fil. to grid 16.5

TUBE LOCATIONS



CHASSIS MODEL 105

RECEIVER MODELS 50 to 59

1932-33-34

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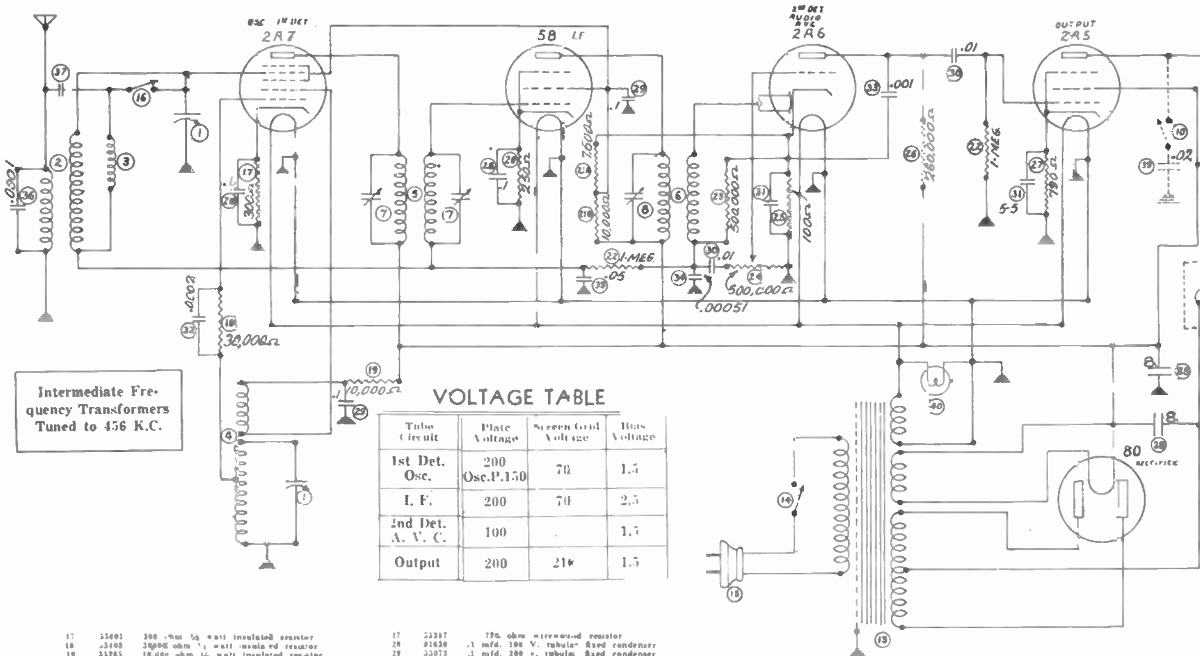
Models - R111 - CR111 1933-34



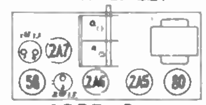
Intermediate Frequency Transformers Tuned to 456 K.C.

VOLTAGE TABLE

Tube Circuit	Plate Voltage	Screen Grid Voltage	Bias Voltage
1st Det. Osc.	200 Osc.P.150	70	1.5
I. F.	200	70	2.5
2nd Det. A. V. C.	100		1.5
Output	200	21*	1.5

R-317 Speaker used on C.R.-111
R-304-5 Speaker used on R-111

TUBE LOCATIONS
FRONT OF SET



MODEL R-111

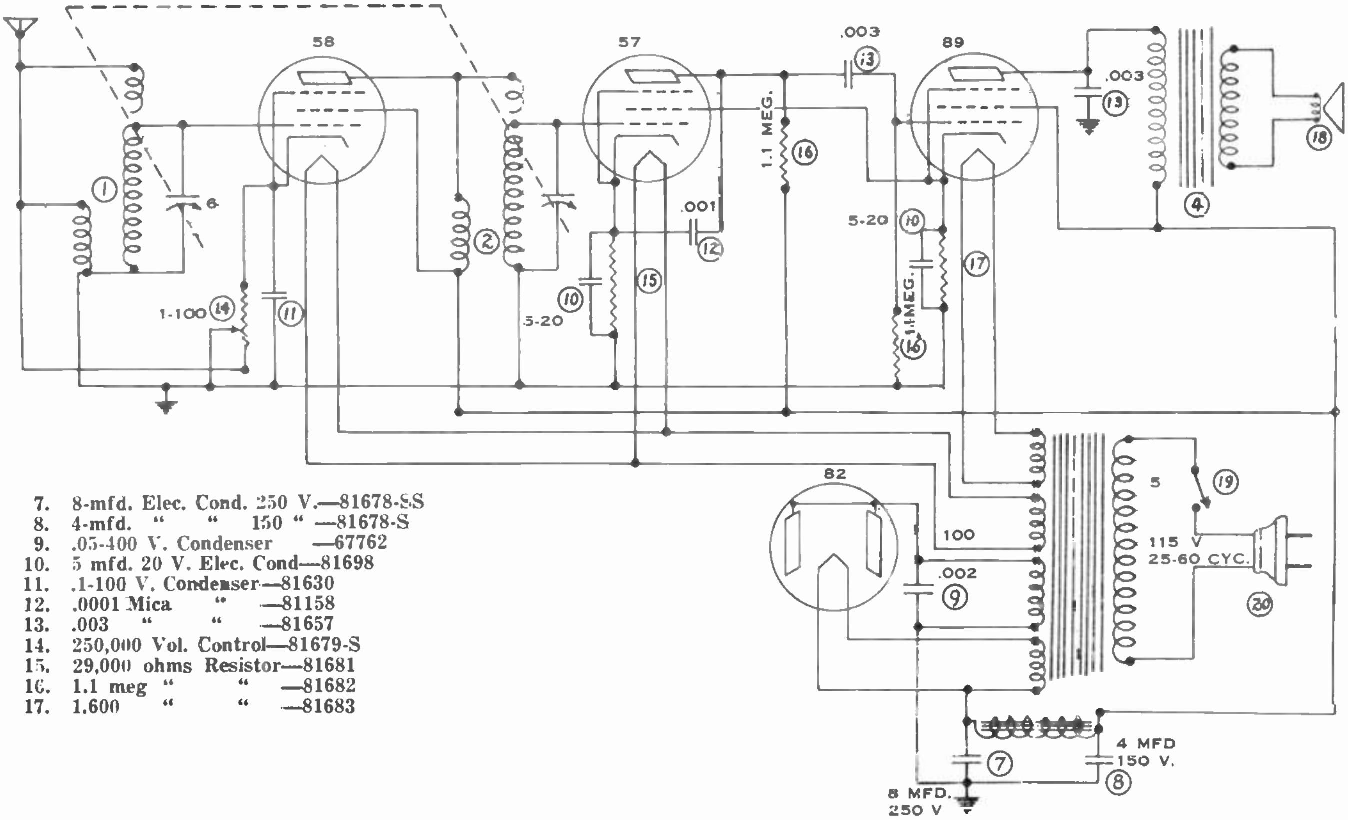
MODEL CR-111

17	53401	300 ohm ½ watt insulated resistor
18	53400	30,000 ohm ½ watt insulated resistor
19	53265	10,000 ohm ½ watt insulated resistor
20	53233	250 ohm ½ watt insulated resistor
21A 21B	81724	7,500 ohm wirewound resistor } wound on 10,000 ohm wirewound resistor } one form
22	53379	1 meg. ohm ½ watt insulated resistor
23	53376	500,000 ohm ½ watt insulated resistor
24A	53267	500,000 ohm volume control (CR 111)
24B	53266	500,000 ohm volume control (R-111)
25	53216	100 ohm ½ watt insulated resistor
26	53170	260,000 ohm ½ watt insulated resistor

27	53347	790 ohm wirewound resistor
28	81630	.1 mfd. 100 V. tubular fixed condenser
29	53073	.1 mfd. 200 V. tubular fixed condenser
30	53075	.01 mfd. 400 V. tubular fixed condenser
31	53194	5-5 mfd 25 V Electrolytic condenser
32	53186	.0002 mfd. mica fixed condenser
33	81156	.001 mfd. mica fixed condenser
34	81812	.00051 mfd. mica fixed condenser
35	83353	.05 mfd. 300 V tubular fixed condenser
36	81158	.0001 mfd. mica fixed condenser
37		Coupling condenser (part of 83234)
38	53182	8 mfd. 4[illegible]5 V. Electrolytic condenser
39	53078	.02 mfd. 400 V tubular fixed condenser

5	53173	1st. I.F. Transformer (456 K.C.)
6	53174	2nd. I.F. Transformer (456 K.C.)
7		I.F. trimmers (part of 53173)
8		I.F. trimmers (part of 53174)
9	53183	Output transformer
10	[illegible]	Tone control switch (R-111 only)
11A	[illegible]	Speaker field coil (Model R-317 speaker)

Model R108.b 1933-34



7. 8-mfd. Elec. Cond. 250 V.—81678-SS
8. 4-mfd. " " 150 " —81678-S
9. .05-400 V. Condenser —67762
10. 5 mfd. 20 V. Elec. Cond—81698
11. .1-100 V. Condenser—81630
12. .0001 Mica " —81158
13. .003 " " —81657
14. 250,000 Vol. Control—81679-S
15. 29,000 ohms Resistor—81681
16. 1.1 meg " " —81682
17. 1.600 " " —81683

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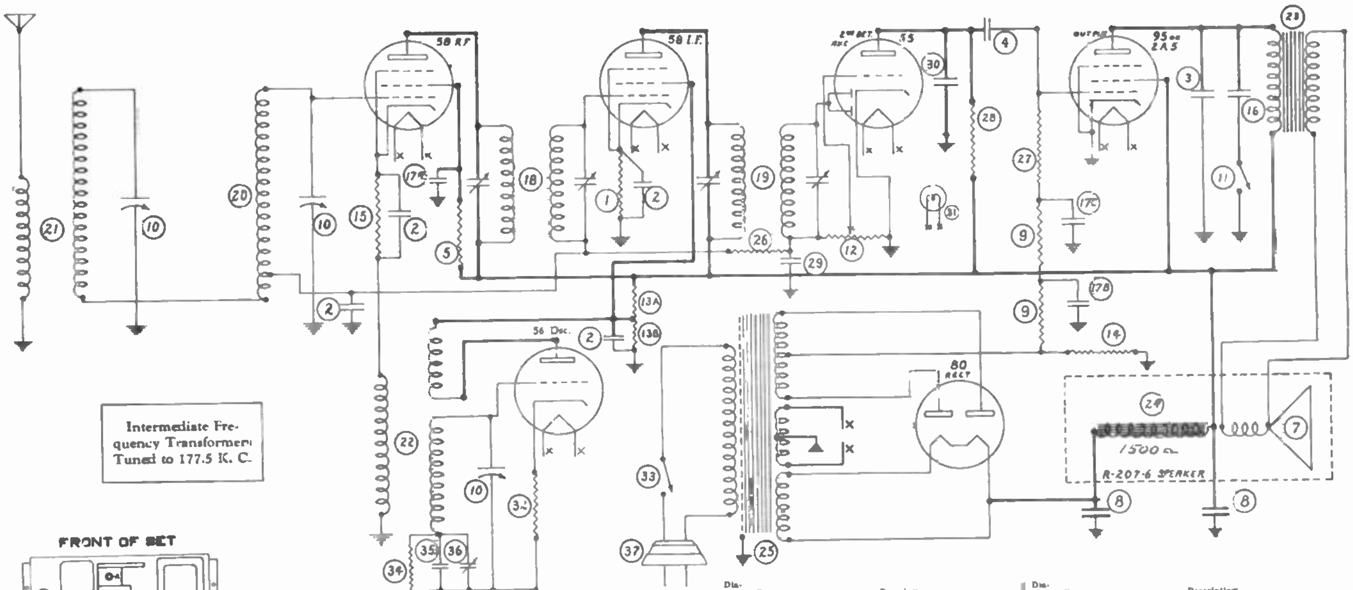
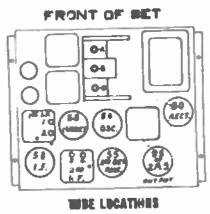
R-109 a - 109 b. 1933-34



Intermediate Frequency Transformers Tuned to 177.5 K. C.

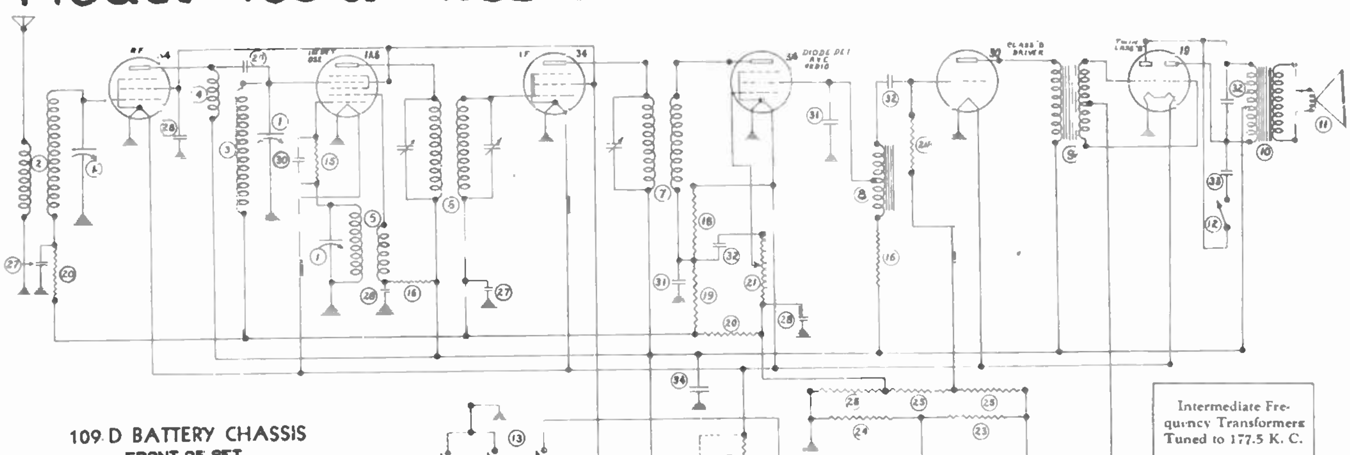


LINE VOLTAGE 115 — VOLTAGE TABLE — VOLUME CONTROL FULL ON

Type of Tube	Tube Circuit	Filament Voltage	Plate Voltage	Screen Grid Voltage	Bias Voltage
56	Osc.	2.40	88	...	9.6
58	1st Det.	2.40	208	92	5
58	I.F.	2.40	208	92	3.4
55	2nd Det.	2.42	18	...	...
95 or 2A5	Output	2.5	200	215	16.5*

Diagram No.	Part No.	Description
1	55309	500 ohm ½ watt uninsulated resistor
2	57294	.1 mfd. 200 V. fixed condenser (tubular)
3	47298	.01 mfd. 600 V. fixed condenser (tubular)
4	47299	.02 mfd. 400 V. fixed condenser (tubular)
5	55316	100,000 ohm 1 watt insulated resistor
6	51100	.1 mfd. 200 V. fixed condenser (tubular)
7	51274	Speaker diaphragm and shell assembly
8	51247	6 mfd. 485 V. Electrolytic condenser
9	55221	150,000 ohm ½ watt insulated resistor
10	65350	Variable tuning condenser
11	55315	Tone Control switch
12	51722	500,000 ohm Volume control
13A, 13B	51726	10,000 ohm wirewound resistor, 7,500 ohm wirewound resistor — wound on one form
14	51725	215 ohm wirewound resistor
15	55259	1,000 ohm ½ watt insulated resistor
16	53217	.04 mfd. 600 V. fixed condenser (tubular).
17A, 17B, 17C	55186	.5 mfd. 200 V. fixed condenser, .25 mfd. 100 V. fixed condenser, .25 mfd. 100 V. fixed condenser — in one can
25	55088	25-60 Cycle 115 V. Power Transformer
26	55222	900,000 ohm ½ watt insulated resistor
27	55223	160,000 ohm ½ watt insulated resistor
28	55217	115,000 ohm 3 watt insulated resistor
29	[illegible]	.00026 mfd. mica fixed condenser
30	51812	.00151 mfd. mica fixed condenser
31	47531	2 volt pilot lamp
32	[illegible]	1,500 ohm ½ watt insulated resistor
33		A. C. Switch (part of 51725)
34	55348	45,000 ohm ½ watt uninsulated resistor
35	[illegible]	.00085 mfd. mica fixed condenser
36	47535	Trimmer condenser
37	48045	A. C. Cord and plug assembly

Model - 109-d - 1933-34



Intermediate Frequency Transformers Tuned to 177.5 K. C.

109 D BATTERY CHASSIS

FRONT OF SET

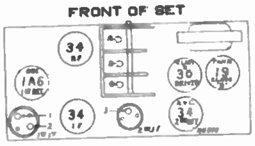


Diagram No.	Part No.	Description
15	[illegible]	50,000 ohm ½ watt insulated resistor
16	[illegible]	20,000 ohm ½ watt insulated resistor
17		
18	55287	1.1 meg ohm ½ watt insulated resistor
19	55385	2.1 meg ohm ½ watt insulated resistor
20	[illegible]	310,000 ohm ½ watt insulated resistor
21	55122	500,000 ohm Volume control
22	[illegible]	.48 ohm filament resistor
23	[illegible]	10,000 ohm ½ watt insulated resistor
24	55240	3,000 ohm ½ watt insulated resistor
25	[illegible]	150,000 ohm ½ watt insulated resistor
26	[illegible]	75,000 ohm ½ watt insulated resistor
27	[illegible]	.05 mfd. 100 V. fixed condenser (tubular)
28	[illegible]	.1 mfd. 100 V. fixed condenser (tubular)
29	[illegible]	10 mmfd. Coupling condenser
30	51157	.00025 mfd. fixed condenser (mica)
31	[illegible]	.00051 mfd. fixed condenser (mica)
32	[illegible]	.01 mfd. 400 V. fixed condenser (tubular)
33	[illegible]	.04 mfd. 200 V. fixed condenser (tubular)
34	[illegible]	4 mfd. 150 V. Electrolytic condenser

VOLTAGE TABLE

Type of Tube	Tube Circuit	Filament Voltage
34	R. F.	2.1
1A6	Osc. 1st Det.	2.1
34	I. F.	2.1
34	2nd Det. A.V.C. Audio	2.1
30	Class "B" Driver	2.1
19	Twin Class "B"	2.1

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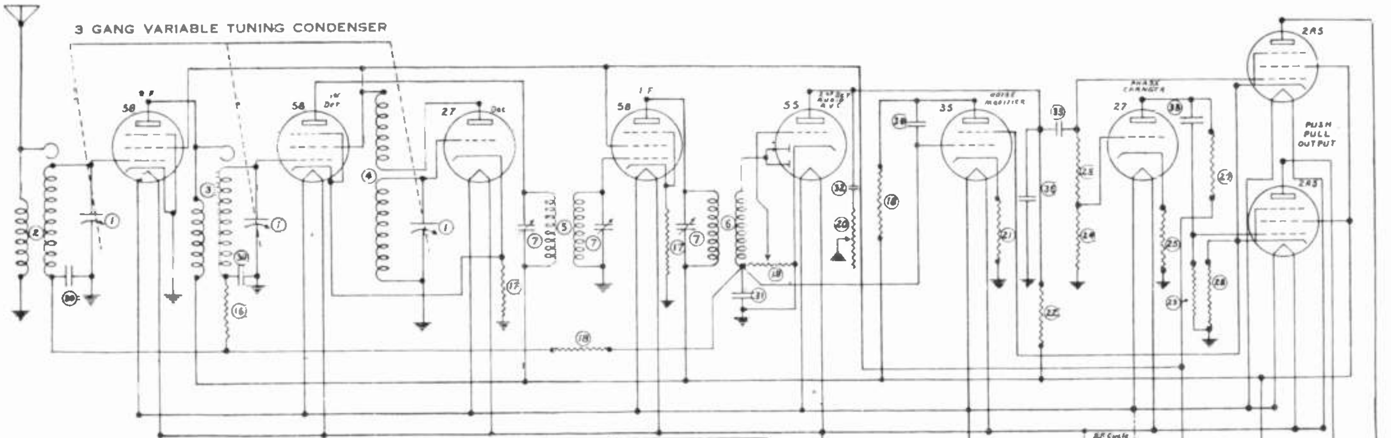
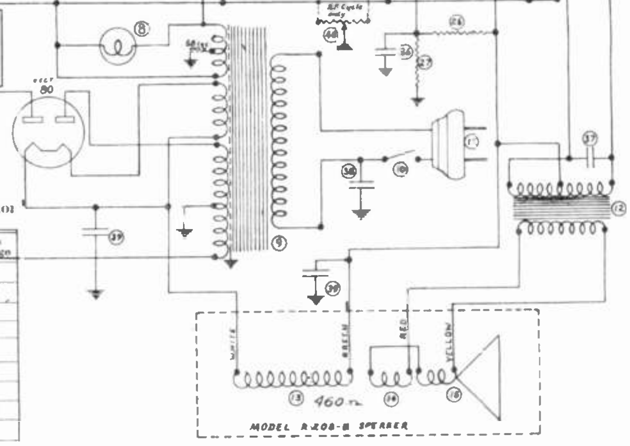
Models R110 a-b 1933-34

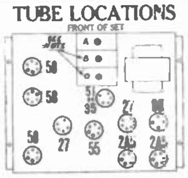




R-110-A & B
10 TUBE CHASSIS PARTS LIST

Diagram No.	Part No.	Description
1	81988	Variable tuning condenser
2	82024	Antenna tuning coil
3	82025	Detector tuning coil
4	83090	Oscillator tuning coil
5	81934	I. F. Transformer assembly 1st
6	81947	I. F. Transformer assembly 2nd
7	81949	Trimmer condenser
8	67521	2 V. pilot lamp
9	82416	25 cycle 115 V. Power Transformer
	83028	60 cycle 115 V. Power Transformer
10		A. C. Switch (part of No. 81904)
11	81974	Cord and plug assembly
12	81907	Output transformer
13	81265	Field coil (speaker)
14	55107	Bucking Coil (speaker)
15	81274	Speaker diaphragm shell assembly
16	55520	2,000 ohm ¼ watt insulated resistor
17	65372	500 ohm 1 watt insulated resistor
18	55343	1.1 meg ohm ⅓ watt insulated resistor
19	81904	500,000 ohm Volume control & A. C. switch
20	65207	100,000 ohm Tone Control
21	55373	4,000 ohm ⅓ watt insulated resistor
22	55374	110,000 ohm 1 watt insulated resistor
23	55275	300,000 ohm ⅓ watt insulated resistor
24	55376	51,000 ohm ¼ watt insulated resistor
25	55333	4,000 ohm 1 watt insulated resistor
26	83001	7,500 ohm 3 watt — Wound on one form
27		10,000 ohm 1 watt — Wound on one form
28		200 ohm 1.5 watt — Wound on one form
29	55337	76,000 ohm ⅓ watt insulated resistor
30	82252	.05 mfd. 100 V. tubular fixed condenser
31	81157	.00025 mica fixed condenser
32	82217	.01 mfd. 600 V. tubular fixed condenser
33	83007	.02 mfd. 600 V. tubular fixed condenser
34	81150	.0001 mfd. mica fixed condenser
35	81012	.00051 mfd. mica fixed condenser
36	81903	8 mfd. 150 V. Electrolytic condenser
37	82011	.004 mfd. 600 V. tubular fixed condenser
38	82216	.02 mfd. 1000 V. tubular fixed condenser
39	81347	8 mfd 485 V. Electrolytic condenser

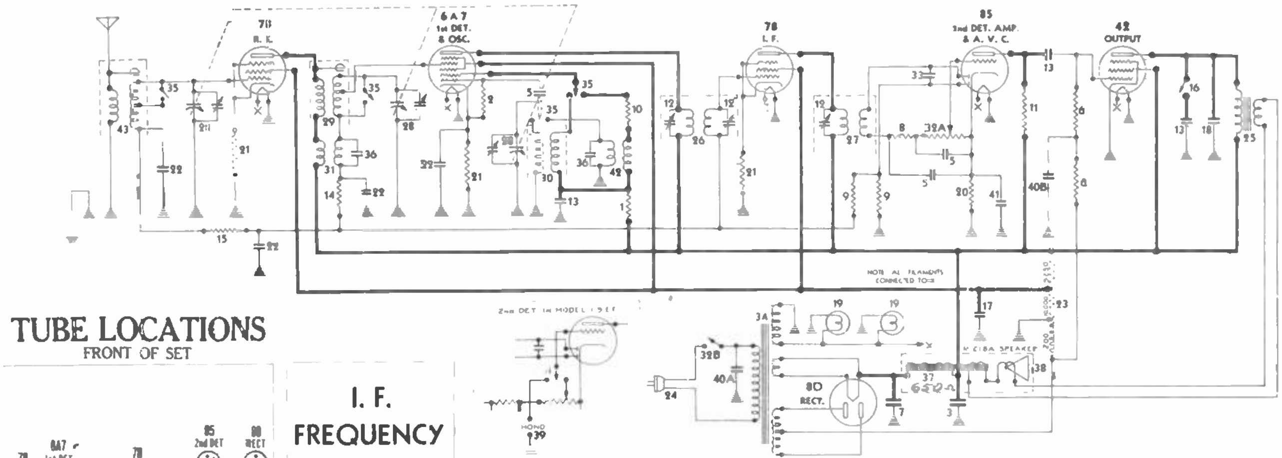
TUBE LOCATIONS
FRONT OF SET



Intermediate Frequency Transformers Tuned to 177.5 K. C.

LINE VOLTAGE 115 — **VOLTAGE TABLE** — VOLUME CONTROL FULL ON

Type of Tube	Tube Circuit	Filament Voltage	Plate Voltage	Screen Grid Voltage	Bias Voltage
58	R. F.	2.4	280	80	...
58	1st Det.	2.4	280	80	9
27	Osc.	2.4	80	...	9
58	I. F.	2.4	280	80	...
55	2nd Det. A.V.C.-Audio	2.4	30	...	...
35	Noise Modifier	2.4	5	16.5	...
27	Phase Changer	2.4	30	...	...
2A5	Output Push	2.4	275	280	16.5
2A5	Pull Output	2.4	275	280	16.5



TUBE LOCATIONS
FRONT OF SET

I. F. FREQUENCY 177.5 K. C.

Line Voltage 115 A. C. — **VOLTAGE TABLE** — Volume Control Full On

Type of Tube	Position in Circuit	Filament Voltage	Plate Voltage	Screen Grid Voltage	Control Grid Voltage	Cathode (Bias) Voltage
78	R. F.	6.1	260	104		3.2
6A7*	Det. & Osc.	6.1	260	104		3.0
78	I. F.	6.1	260	104		3.0
85	2nd Det	6.1	50	—		17.5
42	Output	6.1	247	260	-1.8†	0
80	Rectifier	5.1	320 Volts D. C. From Filament to Ground			

* Oscillator plate voltage 175; Oscillator grid voltage -5.
† Actual bias on 42 tube is 17.3 volts measured across 200 ohm section of voltage divider.
Speaker Field Voltage, 60.

R-119 PARTS LIST

Diag. No.	Part No.	Description
1	67100	20,000 ohm, 1 watt Carbon Resistor
2	67301	75,000 ohm, ¼ watt Carbon Resistor
3	67328	8 Mfd. 440 volt, Wet Electrolytic Condenser
4	73689	Phonograph Switch (Note: Used in Models R-119 EF only)
5	81157	.00025 Mfd. Mica Fixed Condenser
6	81161	250,000 ohm, ½ watt Carbon Resistor
7	81347	8 Mfd. 485 volt Wet Electrolytic Condenser
8	81681	29,000 ohm, ¼ watt Carbon Resistor
9	81682	1.1 Megohm, ¼ watt Carbon Resistor
10	81727	1000 ohm, ¼ watt Carbon Resistor
11	81810	100,000 ohm, 1 watt Carbon Resistor
12	81940	I. F. Trimmer Condenser
13	83007	.02 Mfd 600 volt Fixed Condenser
14	83078	2000 ohm, ¼ watt Carbon Resistor
15	83081	76,000 ohm, ½ watt Carbon Resistor
16	83179	Tone Control Switch
17	83214	.25 Mfd. 250 volt Fixed Condenser
18	83219	.01 Mfd. 600 volt Fixed Condenser
19	83278	6.3 volt Pilot Light Bulb
20	83285	10,000 ohm, ⅓ watt Carbon Resistor
21	83293	300 ohm, ¼ watt Carbon Resistor
22	83353	.05 Mfd. 100 volt Fixed Condenser
23	83398	9250-10,000-200 ohm Voltage Divider
32-A, 32-B	83424	500,000 ohm Volume Control; Line Switch — In one unit
35	83436	.002 Mfd. 1000 volt, Fixed Condenser
40-A, 40-B	83476	.02 Mfd. 1000 volt Fixed Condenser; .5 Mfd. 100 volt Fixed Condenser — In one unit
41	83537	10 Mfd. 25 volt Electrolytic Condenser

MODEL R-119 CHASSIS 1933-34

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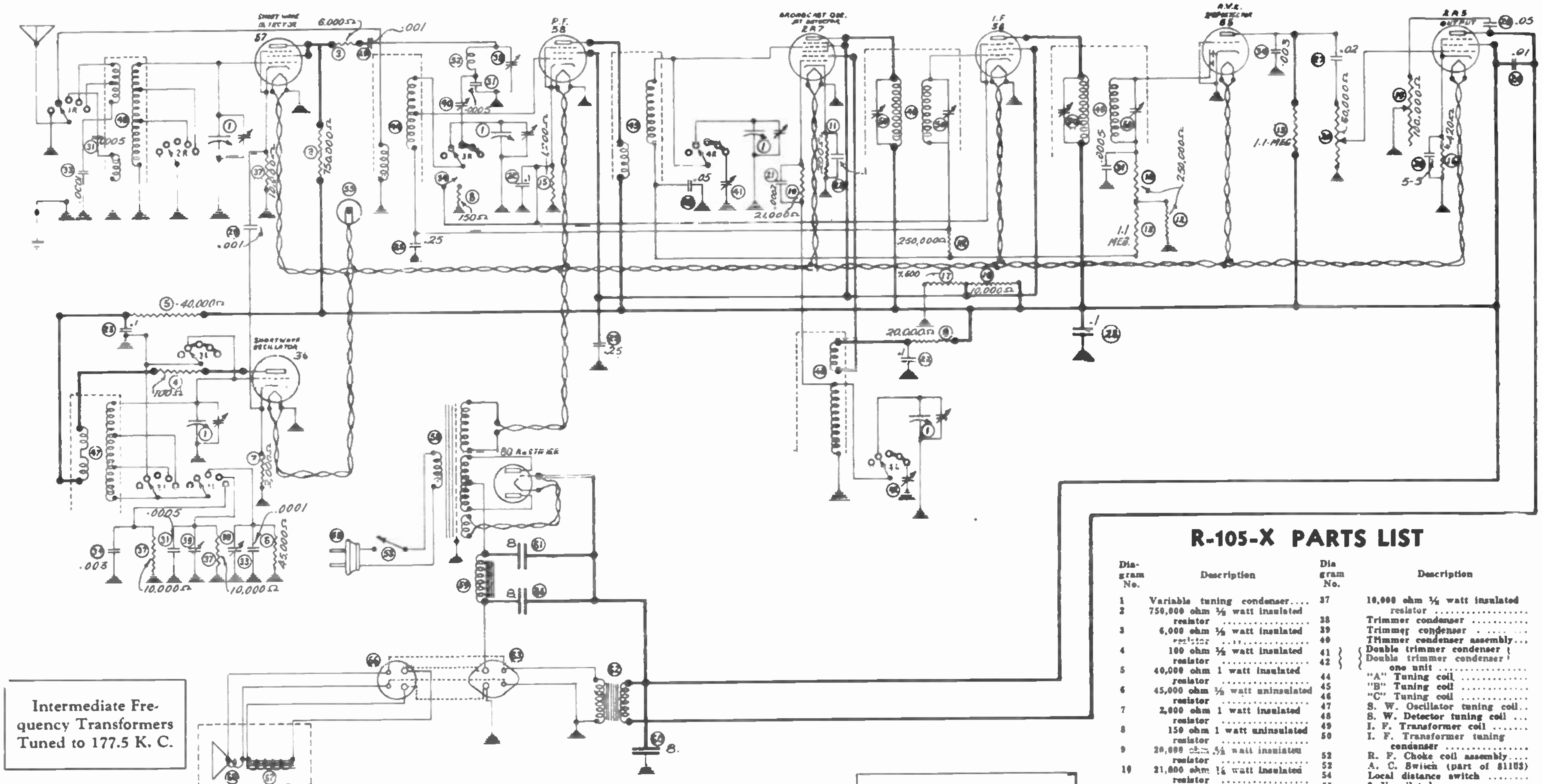
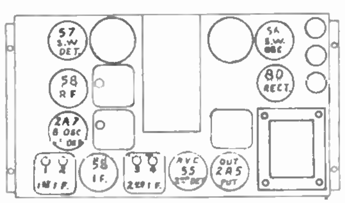


Intermediate Frequency Transformers Tuned to 177.5 K. C.

FRONT OF SET



TUBE LOCATIONS

VOLTAGE TABLE

LINE VOLTAGE 115

Type of Tube	Tube Circuit	Filament Voltage	Plate to Chassis	Screen Grid to Chassis	Cathode to Chassis
Short Wave Oscillator	56	2.4	100	0	7.5
Short Wave Detector	57	2.4	10	10	2.5
R. F.	58	2.4	255	85	3
1st Det. Broadcast Osc.	2A7	2.4	255 Osc. P.-180	85	1.5
I. F.	58	2.4	255	85	3
2nd Det. A.V.C. Audio	55	2.4	50	...	...
Output	2A5	2.4	250	260	15
Rectifier	80	4.9	...	...	...

CAUTION

Reading must be taken with the set tuned to one of the short wave ranges, and the local-distance switch pulled out.

All D.C. voltages are measured between the tube socket terminal and chassis, using a high resistance voltmeter of 1000 ohms per volt. Readings will vary depending upon voltage range of meter, being higher for higher range instruments. This variation is most marked for all detector and oscillator D.C. voltages.

Readings taken with set tester plug into tube socket may deviate considerably from the values given in this table, due to their internal circuit arrangement.

R-105-X PARTS LIST

Diagram No.	Description
1	Variable tuning condenser....
2	750,000 ohm ½ watt insulated resistor ....
3	6,000 ohm ½ watt insulated resistor ....
4	100 ohm ½ watt insulated resistor ....
5	40,000 ohm 1 watt insulated resistor ....
6	45,000 ohm ½ watt uninsulated resistor ....
7	2,000 ohm 1 watt insulated resistor ....
8	150 ohm 1 watt uninsulated resistor ....
9	20,000 ohm ½ watt insulated resistor ....
10	21,000 ohm ½ watt insulated resistor ....
11	200 ohm 1 watt insulated resistor ....
12	250,000 ohm ½ watt insulated resistor ....
13	1.1 meg ohm ½ watt insulated resistor ....
15	1,200 ohm 1 watt insulated resistor ....
16	420 ohm wirewound I.R.C. resistor ....
17, 18	7,500 ohm wirewound resistor / 10,000 ohm wirewound resistor (wound on one form)
19	100,000 ohm variable tone control ....
20	60,000 ohm volume control...
21	.0002 mfd. mica fixed condenser
22	.1 mfd. 300 V. tubular fixed condenser ....
23	.1 mfd. 400 V. tubular fixed condenser ....
24	.01 mfd. 600 V. tubular fixed condenser ....
25	.25 mfd. 200 V. tubular fixed condenser ....
26	.05 mfd. 400 V. tubular fixed condenser ....
27	.12 mfd. 400 V. tubular fixed condenser ....
28	.05 mfd. 200 V. tubular fixed condenser ....
29	.001 mfd. mica fixed condenser
31	.0005 mfd. mica fixed condenser
33	.0001 mfd. mica fixed condenser
34	.003 mfd. mica fixed condenser
35	5-5 mfd. 25V. Electrolytic condenser ....
37	10,000 ohm ½ watt insulated resistor ....
38	Trimmer condenser ....
39	Trimmer condenser ....
40	Trimmer condenser assembly...
41, 42	Double trimmer condenser / Double trimmer condenser — one unit ....
44	"A" Tuning coil ....
45	"B" Tuning coil ....
46	"C" Tuning coil ....
47	S. W. Oscillator tuning coil..
48	S. W. Detector tuning coil ...
49	I. F. Transformer coil ....
50	I. F. Transformer tuning condenser ....
52	R. F. Choke coil assembly....
52	A. C. Switch (part of 81103)
54	Local distance switch ....
55	3 V. pilot lamp ....
58	25-60 cycle 115 V. Power Transformer ....
59	Filter choke ....
60	8 mfd. 440 V. electrolytic condenser ....
61	8 mfd. 485 V. electrolytic condenser ....
62	Output transformer (new 81774
63	Speaker socket ....
66	Speaker cord and plug assembly
67	Speaker field coil ....
68	Speaker diaphragm and shell assembly ....
69	A. C. Cord and plug assembly

SERIES 105X CHASSIS 1934

STEWART-WARNER 17

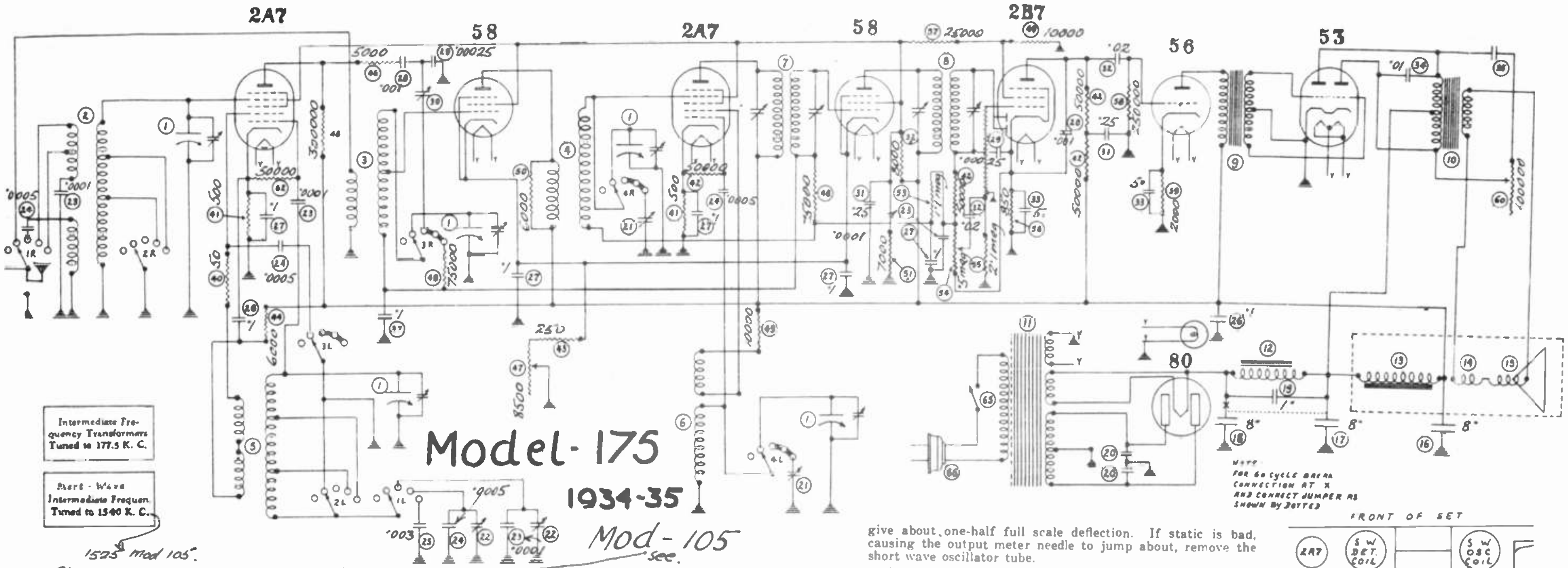
COURTESY STEWART-WARNER CORP. LTD.

PRINTED IN CANADA

World Radio History

DATA SHEET

STEWART-WARNER-18



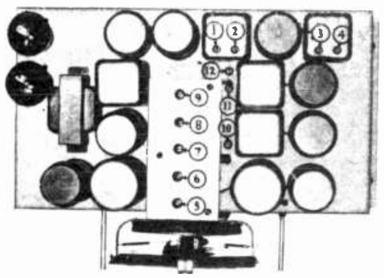
Alignment Instructions Mods 175 - 105.

There are five distinct circuits to be aligned in the 105 receiver. The order in which they are given below is the order in which they must be aligned.

(1) Intermediate Frequency Amplifier (177.5 K.C.)
(2) Broadcast Tuning Circuit (540-1550 K.C.)
(3) Short Wave Intermediate Frequency Amplifier (1525 K.C.)
(4) First Short Wave Circuit (180 to 80 meters)
(5) Second Short Wave Circuit (80 to 33 meters)

NOTE: The third short wave circuit requires no aligning since both condensers will be in step if short wave circuits (4) and (5) are properly aligned.

In aligning the Model 105 it is essential to use a high grade oscillator and a sensitive output meter. The R.F. signal fed



into the receiver must be very weak or it will cause the A.V.C. circuit to function, making correct alignment impossible. The output meter must be sufficiently sensitive to give a satisfactory reading with this low signal.

Before starting the alignment of the set, see that the volume control and inter-station noise suppressor are full on, and the output meter connected to the pentode plates thru .25mfd. condensers, or to the voice coil of the speaker. The tone control should be turned all the way to the right. This last step is helpful in reducing the tube "shish" and makes aligning easier.

(1) ALIGNING THE I. F. CIRCUITS AT 177.5 K. C.

Remove the grid clip from the first detector tube and connect the two output terminals of the oscillator in series with the grid clip and grid cap of the tube. Set the oscillator to exactly 177.5 K.C. and adjust its output to give about one half scale deflection of the output meter.

Carefully adjust the four I.F. trimmers Nos. 1, 2, 3 and 4 (see diagram) until output is at a maximum. After all four trimmers have once been adjusted, go back and readjust them again in the same order, since any change made in one affects the others to some extent so that readjustment is necessary.

(2) ALIGNING BROADCAST R. F. CIRCUITS

In this and all subsequent steps in alignment, remove the A.V.C. tube.

Before starting this alignment procedure, it is necessary to check the calibration of the set on the broadcast band, since this band must subsequently be used as a reference point in aligning the three short wave bands. This calibration check is very important. It can easily be done by disconnecting the test oscillator and tuning in some broadcast station between 1000 and 1400 K.C. whose frequency is definitely known.

If the dial reading of the set corresponds to the broadcast frequency of the station, the set is in calibration. If the dial reading is incorrect, turn the dial pointer to the proper frequency and carefully adjust trimmer No. 8 until the station is tuned in with maximum volume.

After the receiver is calibrated it must be aligned. To do this connect the test oscillator to the set aerial and ground terminals and set it to approximately 1400 K.C. Tune the set to this signal. Carefully adjust trimmers No. 7 and No. 9 for maximum output. Retune the set, which is thrown out of resonance when trimmers No. 7 and No. 9 are adjusted, and once more adjust these trimmers. Repeat this procedure until you are certain the output cannot be increased by further adjustment.

1525 mod 105

(3) ALIGNING SHORT WAVE I. F. (AT 1540 Kc (1525 mod '05)

Adjust the test oscillator to exactly 1540 K.C. by setting the broadcast receiver to this frequency and tuning the oscillator until the signal comes thru with maximum volume. Now shift the tuning range of the set to the second short wave band (80 to 33 meters). Adjust the oscillator output to give about one-half full scale deflection. If static is bad, causing the output meter needle to jump about, remove the short wave oscillator tube.

Using a Bakelite screwdriver, adjust trimmers Nos. 10, 11 and 12 to give maximum output.

NOTE: It should never be necessary to adjust the following short wave circuits unless the short wave trimmers or coils have been changed or tampered with. Alignment procedure as a rule should not go beyond this point.

(4) ALIGNING 180-80 METERS SHORT WAVE BAND

The following alignment procedure is extremely critical.

Tune the receiver to exactly 800 K.C. and adjust the output frequency of the test oscillator until its signal is a maximum at this frequency. Shift to the first short wave band of the set, and turn the pointer as far as it will go to the left. This tunes the set to 1600 K.C., which is the second harmonic of the test oscillator signal. Adjust trimmer No. 14 until this signal comes thru with maximum output.

Again using the calibrated broadcast band, set the test oscillator output to exactly 975 K.C., shift back to the first short wave band, and turn the pointer as far as it will go to the right. Adjust trimmer No. 5 until the oscillator signal (4th harmonic of 975 K.C.) is picked up with maximum output. If it has been necessary to change the adjustment of trimmer No. 5 appreciably, go back to trimmer No. 14 and adjust it again as outlined at the beginning of this section. This second readjustment is important.

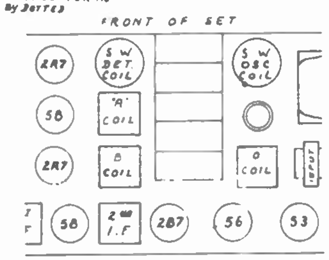
(5) ALIGNING 80-33 METERS SHORT WAVE BAND

Set the test oscillator to exactly 925 K.C. using the method previously outlined for 800 K.C. and 975 K.C. Shift the tuning range of the set to the second short wave band (80-33 meters) and turn the pointer as far as it will go to the left. Adjust trimmer No. 13 until the fourth harmonic of the 925 K.C. signal comes thru with maximum output.

Set the test oscillator at 1500 K.C., using the method previously outlined. Tune in the signal at approximately 50 meters, which is the 4th harmonic of 1500 K.C. and adjust trimmers Nos. 6 and 15* until the oscillator signal comes thru with maximum output. Retune the set and readjust trimmers 6 and 15. Trimmer No. 15* is not at all critical in its action.

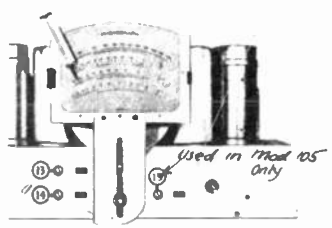
NOTE: It is very important that the aligning frequencies given in sections 3, 4 and 5 be exact, otherwise both the calibration and sensitivity, particularly at the third short wave band, will be badly off.

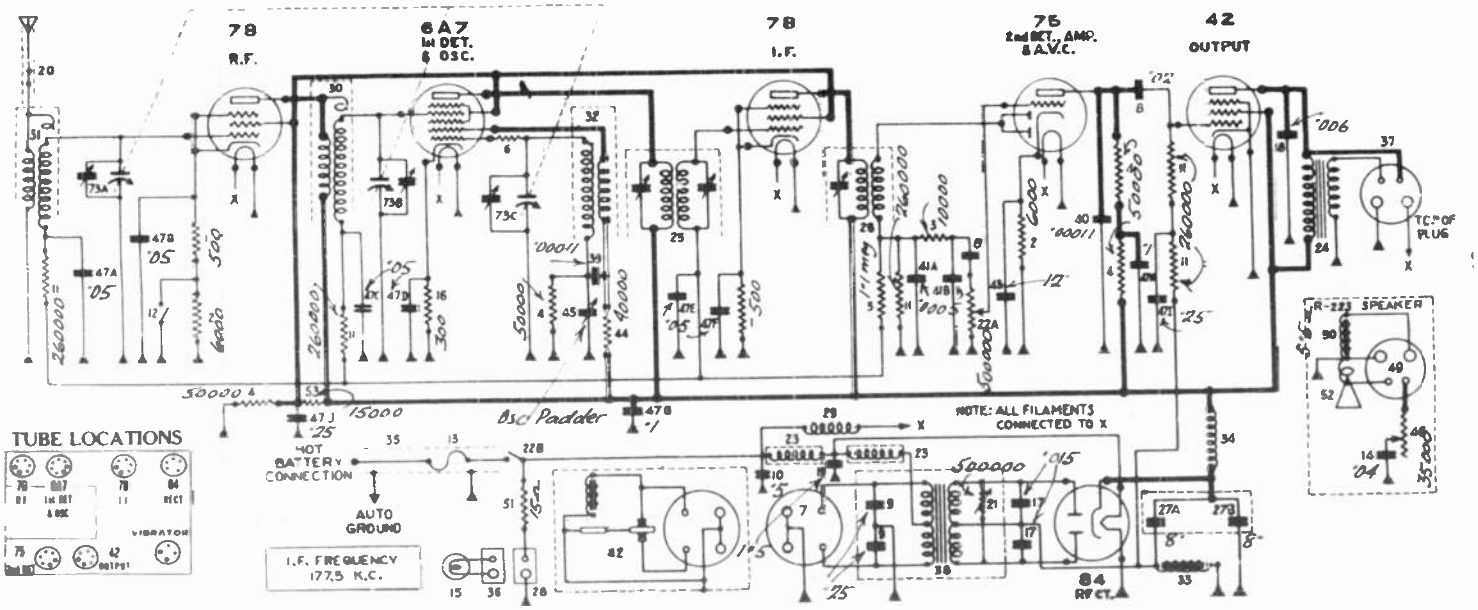
* *Mod 105 only.*



TUBE LOCATIONS

TYPE OF TUBES	PLATE TO CHASSIS	SCREEN GRID CHASSIS	CATHODE TO CHASSIS
2A7	190 OSC PLATE 220	95	4.5
58	245	95	4
2A7	245 OSC PLATE 200	95	4.5
58	245	95	4
2B7	215	30	.75
56	230		
53	300		





Model-117
1934-35.

IMPORTANT

All D.C. voltages measured from socket terminal to the chassis using a high resistance voltmeter of 1000 ohms per volt. Readings will depend upon the voltage range of the meter.

The values were obtained with a battery voltage of 6.0. The readings will vary with any other battery voltage.

STEWART-WARNER MODEL R-117

(R-1171 AUTO RADIO)

Circuit	Plate Voltage	Screen Grid Voltage	Cathode Voltage
R.F.	227	105	4.0
1st Det. & Osc.	227	105	2.6
I.F.	227	105	4.0
2nd Det.	148		1.8
Output	217	227	0
Rectifier			227

Note A: Oscillator grid voltage varies from 0 to 1400 K.C. to -5.0 at 600 K.C. Oscillator anode voltage may vary from 118 at 1400 K.C. to 128 volts at 600 K.C.

Note B: Actual bias voltage on the grid of the 42 tube is -15.5 which must be measured from ground to the filter choke terminal. Due to the high resistance grid leak, the voltmeter will show only about -1 volt at the grid terminal.

1. Power Supply Protective Resistor

The filter system and the rectifier tube are protected against breakdown from the high peak voltages during the warming up period by means of a special Globar resistor connected across the high voltage secondary of the power transformer (No. 21 in the attached diagram). This resistor has the unique property of dropping rapidly in resistance as the voltage across it rises, so that when the set is first turned on and secondary voltage is high it acts as a load on the power transformer and keeps the voltage below the danger point until the tubes warm up and take their normal current. When the B voltage drops to normal the protective Globar resistor increases its resistance to about 500,000 ohms., so that it draws no appreciable current while the set is in use.

Because of its unique voltage characteristics, the Globar resistor cannot be tested with an ordinary ohmmeter, since it will show a resistance of several megohms.

I. F. Alignment

The I. F. trimmers are located on the top of the I. F. transformers which may be reached by removing the front cover. The modulated oscillator should be set to exactly 177.5 K.C. and connected from the 6-A-7 control grid to ground. Adjust the oscillator output to give about half-scale reading of the output meter. Adjust all three I. F. trimmers to give maximum output reading.

The first I. F. Transformer has a double trimmer consisting of a slotted screw for one trimmer and a hex nut around it for the other.

After the I. F. trimmers have been aligned once, go back and repeat the procedure, since any adjustment of one will affect the others to some extent.

R. F. Alignment

The gang condenser trimmers can be reached by removing the back cover. Connect a .00025 mfd mica condenser in series with the output of the test oscillator and the aerial lead of the receiver. Adjust the receiver to approximately 1400 K.C. and carefully tune the service oscillator to give maximum receiver output. Adjust the two trimmers nearest to the shaft end of the gang condenser to give maximum output meter reading. The trimmer on the other condenser section (oscillator section) should not be touched unless the set does not calibrate properly.

The low-frequency oscillator padding trimmer located on the side of the chassis does not require adjustment in most cases.

World Radio History

DATA SHEET

STEWART-WARNER-20

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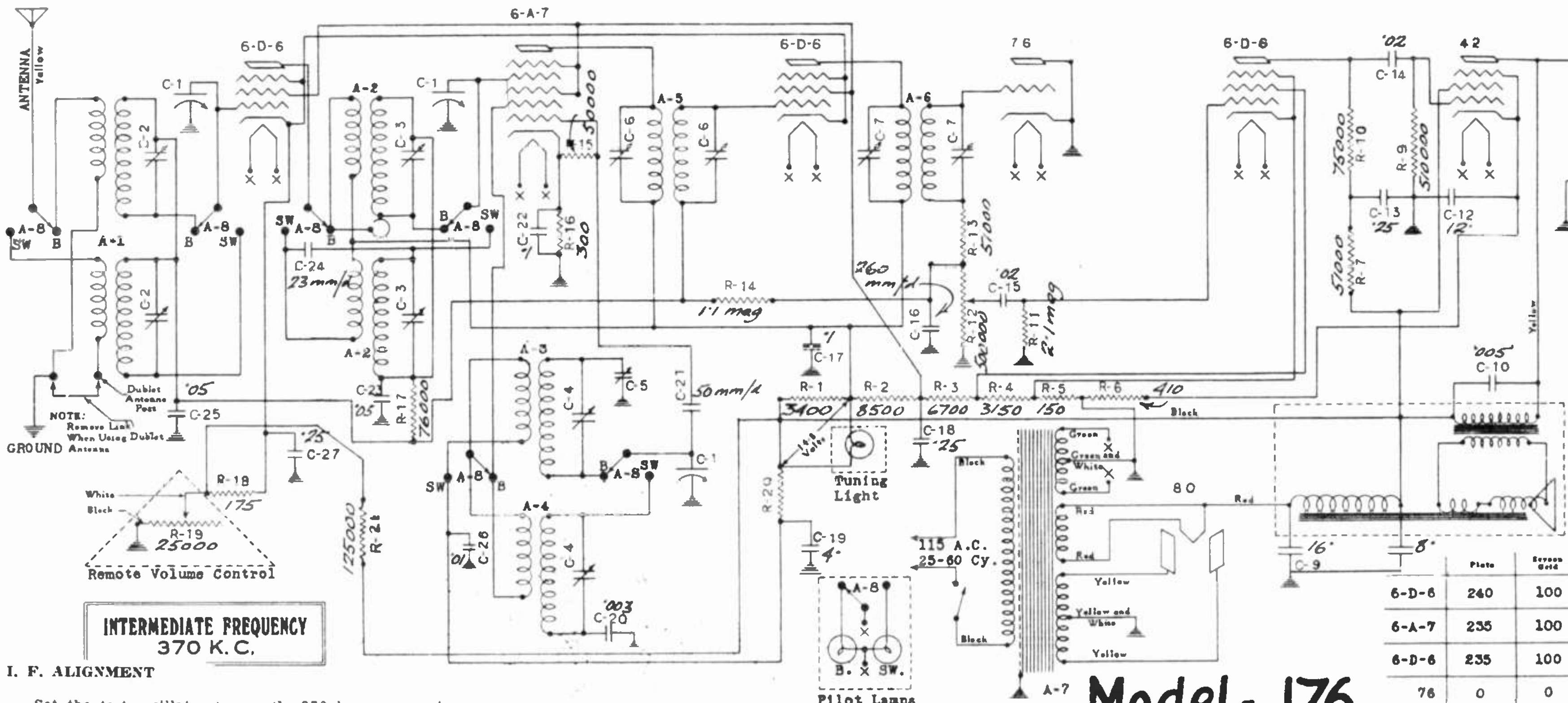


INTERMEDIATE FREQUENCY
370 K.C.

Model- 176
1934-35.

Tube	Plate	Screen Grid	Cathode (Bias)
6-D-6	240	100	2.8
6-A-7	235	100	2.6
6-D-6	235	100	2.8
76	0	0	0
6-D-6	120	33	1.5
42	240	255	15.5

I. F. ALIGNMENT

Set the test oscillator to exactly 370 k. c., connect the output leads of oscillator through an .02 mfd. coupling condenser to the 6A7 control grid to ground. Set the range switch (lower left-hand knob) to the broadcast position (clockwise). Carefully adjust the I. F. transformer trimmer No. 1, 2, 3 and 4 for maximum output, beginning with 2nd I.F. trimmers No. 3 and 4. Repeat the four adjustments since the adjustment of each trimmer has some effect on the others

BROADCAST BAND ALIGNMENT

4. Connect a standard dummy antenna in series with the test oscillator output and the receiver antenna lead. If a standard dummy antenna is not available a 400 ohm, 1 watt carbon resistor may be substituted with fairly good results.

5. With the test oscillator set at 1400 k. c., carefully tune receiver to the signal; adjust trimmer No. 9 (broadcast R. F. trimmer) and trimmer No. 8 (broadcast antenna shunt trimmer) for maximum output meter reading. Retune the receiver and check the adjustments

6. Set the test oscillator to approximately 600 k. c., and tune the receiver to the signal. Adjust trimmer No. 7 (broadcast oscillator series pad) to get maximum output meter deflection. Retune the receiver dial pointer to a peak, and readjust the trimmer. Continue this procedure of adjusting the trimmer until the output meter reading cannot be increased. Trimmer No. 7 should also be used to adjust calibration of 550 k. c. end of dial. This procedure must be followed or the receiver will not be properly adjusted.

7. With a 1400 k. c. signal, recheck alignment of trimmers Nos. 7, 8 and 9.

SHORT-WAVE ALIGNMENT

Note: It should never be necessary to adjust the following short-wave circuits unless the short-wave trimmers or coils have been changed or tampered with. Alignment procedure, as a rule, should not go beyond this point.

VERY IMPORTANT—A 400-ohm, 1-watt carbon resistor ONLY must be connected in series with the antenna lead The following alignment procedure is extremely critical.

1. Turn the receiver range switch to the short-wave band position (counter clockwise).

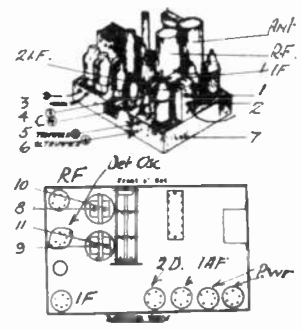
2. Set the test oscillator to give a 15000 k. c. signal. If the oscillator cannot reach this frequency, use the second harmonic of 7500 k. c., the third harmonic of 5000 k. c., or the fourth harmonic of 3,750 k. c., all of which will give a 15000 k. c. signal.

3. To calibrate this point, turn the receiver dial indicator to 15 (15 megacycles or 15,000 k. c.) on short-wave position of dial, and adjust trimmer No. 5 (short-wave oscillator shunt trimmer) to give maximum output. Generally, two peaks will be found. Align on the peak secured with the trimmer screw farthest out. Then adjust trimmer No. 11 (short wave R. F. shunt trimmer) for maximum output. (When adjusting trimmer No. 11 two peaks may be found. The correct one is when trimmer is turned farthest in). Then adjust trimmer No. 10 (short wave antenna shunt trimmer) for maximum output.

4. With a strong 15 000 k. c. signal from the oscillator, tune the receiver to 14260 k. c. and check for the image signal which should be weaker than 15,000 k. c. signal. If the 14260 signal is as strong as the 15,000 it shows that trimmer No. 11 is not properly adjusted. If no signal is received at 14,260 k. c., but one at 15,740 k.c., it shows that trimmer No. 5 is aligned on wrong frequency, and thus both No. 5 and 11 must be readjusted at the proper frequency.

NOTE: After completing the alignment, all of the trimmers except padding trimmer should be locked in place with ambroid or some similar cement in order that they will not be jarred out of adjustment.

NOTE: The short jumper wire between the two—ground clips on rear top of set must be in place or the sensitivity will be poor at 6,000 k. c. (6 megacycles).



Worms eye view.

World Radio History

DATA SHEET

STEWART-WARNER-21

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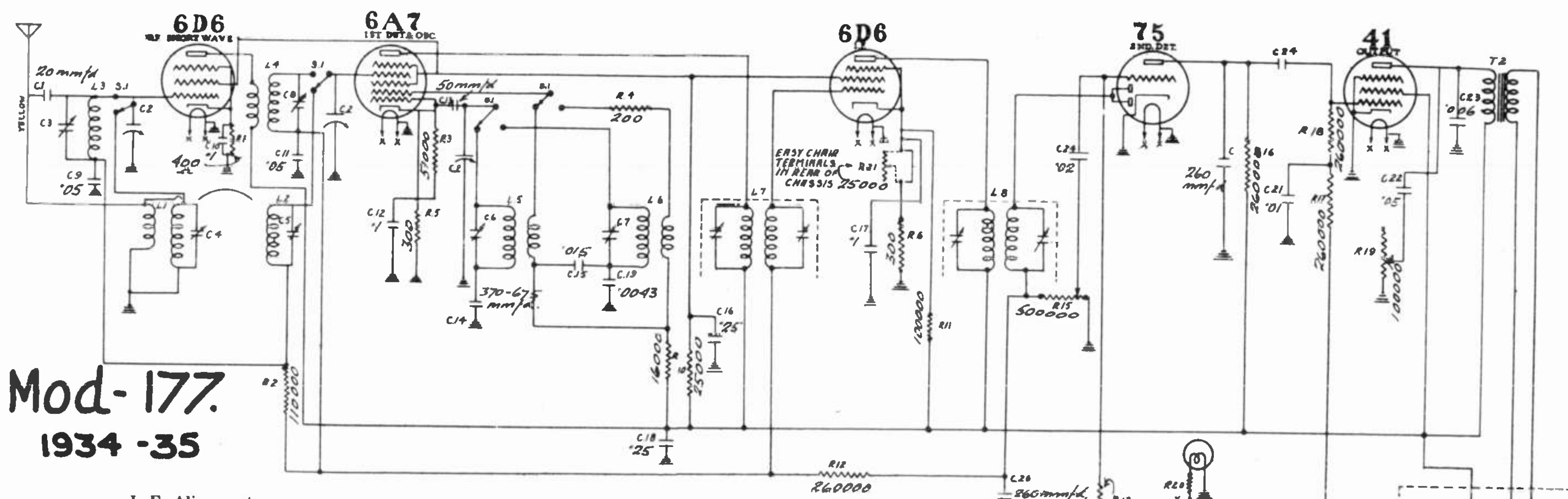
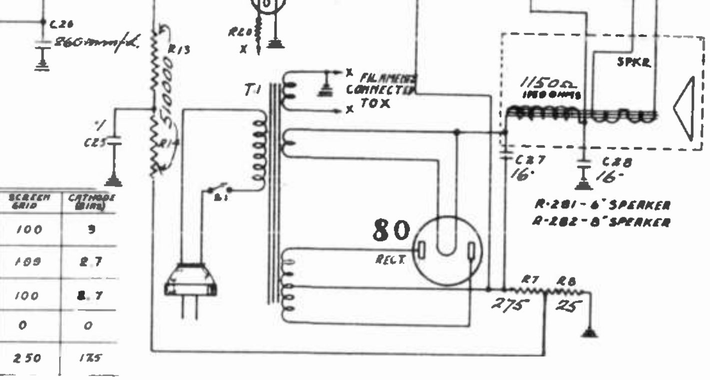


Mod-177
1934-35



I. F. Alignment

Set the test oscillator to exactly 370 k.c., connect the output leads of oscillator through an .02 Mfd. coupling condenser to the 6A7 control grid to ground. Set the range switch (lower left hand knob) to the broadcast position (clockwise). Carefully adjust the I. F. transformer trimmer No. 1, 2, 3 and 4 for maximum output, beginning with 2nd I. F. trimmers No. 3 and 4. Repeat the four adjustments since the adjustment of each trimmer has some effect on the others.

Broadcast Band Alignment

Whenever possible, use a broadcast station signal between 1300 and 1400 k.c. to calibrate the receiver dial. If no such station can be heard, you can use a 1400 k.c. signal from your oscillator, provided that it is properly calibrated. To calibrate the set, turn the dial to the exact frequency setting of the signal, then carefully adjust trimmer No. 7 (broadcast oscillator shunt trimmer) until the signal is tuned in with maximum volume at its correct frequency setting.

Connect a standard dummy antenna in series with the test oscillator output and the receiver antenna lead. If a standard dummy antenna is not available a 400 ohm, 1 watt carbon resistor may be substituted with fairly good results. THE DUMMY ANTENNA OR 400 OHM RESISTOR MUST REMAIN CONNECTED FOR ALL BROADCAST FREQUENCY ADJUSTMENTS IN ORDER TO SECURE PROPER ALIGNMENT OF THE ANTENNA STAGE. Ground the receiver chassis, and connect the oscillator ground to the chassis.

With the test oscillator set at 1400 k.c., carefully tune receiver to the signal; adjust trimmer No. 5 (broadcast 2nd Ant. trimmer) and trimmer No. 8 (broadcast antenna shunt trimmer), for maximum output meter reading. Retune the receiver and check the adjustments.

Set the test oscillator to approximately 600 k.c., and tune the receiver to the signal. Adjust trimmer No. 9 (broadcast oscillator series pad) to get maximum output meter deflection. Retune the receiver dial pointer to a peak, and readjust the trimmer. Continue this procedure of adjusting the trimmer until the output meter reading cannot be increased. Trimmer No. 9 should also be used to adjust calibration of 550 k.c. end of dial. This procedure must be followed or the receiver will not be properly adjusted.

7. With a 1400 k.c. signal, recheck alignment of trimmers Nos. 7, 8 and 5.

Short-Wave Alignment

NOTE :

It should never be necessary to adjust the following short-wave circuits unless the short-wave trimmers or coils have been changed or tampered with. Alignment procedure, as a rule, should not go beyond this point.

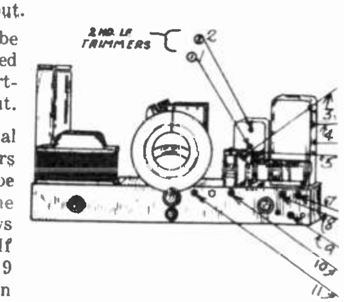
Turn the receiver range switch to the short-wave band position (counter clockwise).

Set the test oscillator to give a 15000 k.c. signal. If the oscillator cannot reach this frequency, use the second harmonic of 7500 k.c., the third harmonic of 5000 k.c., or the fourth harmonic of 3,750 k.c., all of which will give a 15000 k.c. signal.

POSITION IN CIRCUIT	PLATE	SCREEN GRID	CATHODE (BIAS)
S. WAVE R.F.	250	100	3
OSC DET.	OSC PLATE 248	109	2.7
I.F	248	100	8.7
2ND DET AVC & AUDIO	125	0	0
POWER OUTPUT	240	250	125

To calibrate this point, turn the receiver dial to 20 meters (15 megacycles or 15,000 k.c.) on short-wave oscillator shunt trimmer) to give maximum output. Generally, two peaks will be found. Align on the peak secured with the trimmer screw farthest out. Then adjust trimmer No. 11 (short-wave R.F. shunt trimmer) for maximum output. (When adjusting trimmer No. 11 two peaks may be found. The correct one is when trimmer is turned farthest in). Then adjust trimmer No. 6 (short-wave antenna shunt trimmer) for maximum output.

4. With a strong 15,000 k.c. (20 meter) signal from the oscillator, tune the receiver to 21 meters and check for the image signal which should be weaker than 15,000 k.c. (20 meter) signal. If the 21 meter signal is as strong as the 20 meter it shows that trimmer No. 11 is not properly adjusted. If no signal is received at 21 meters, but one at 19 meters, it shows that trimmer No. 10 is aligned on wrong frequency, and thus both No. 10 and 11 must be readjusted at the proper frequency.



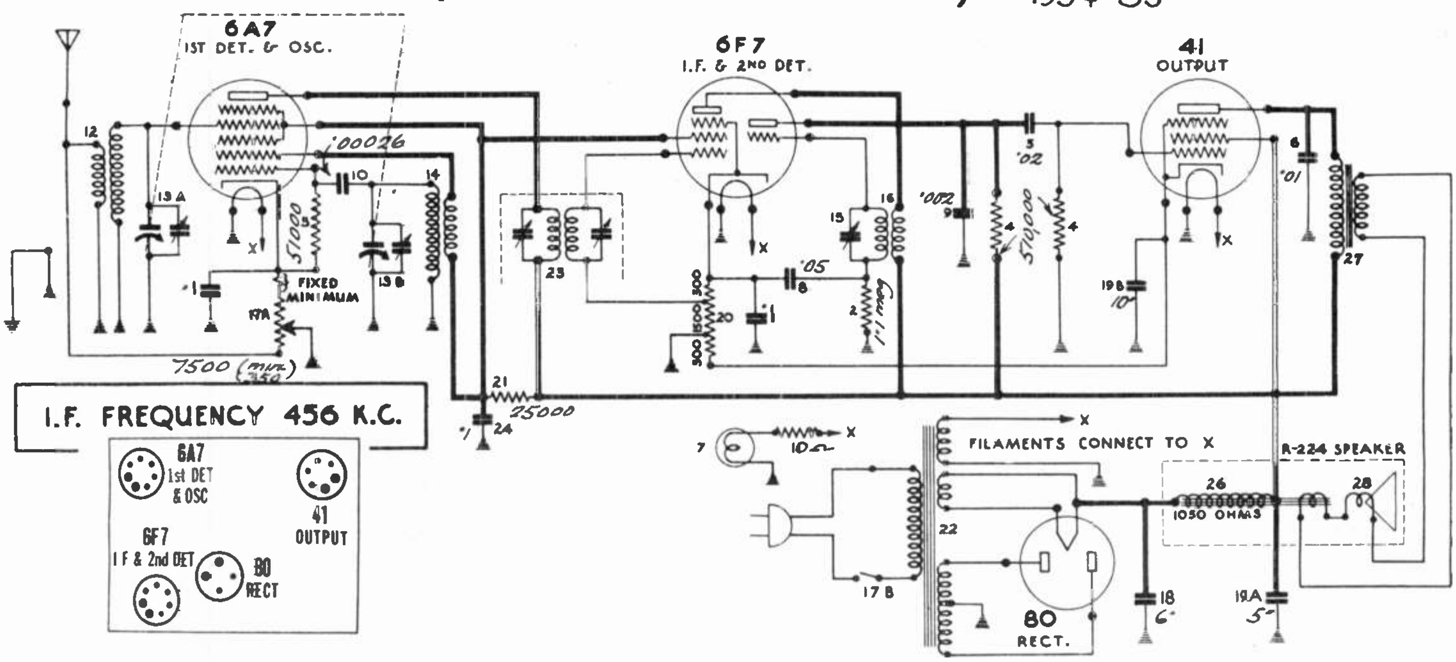
DATA SHEET

STEWART-WARNER-22.

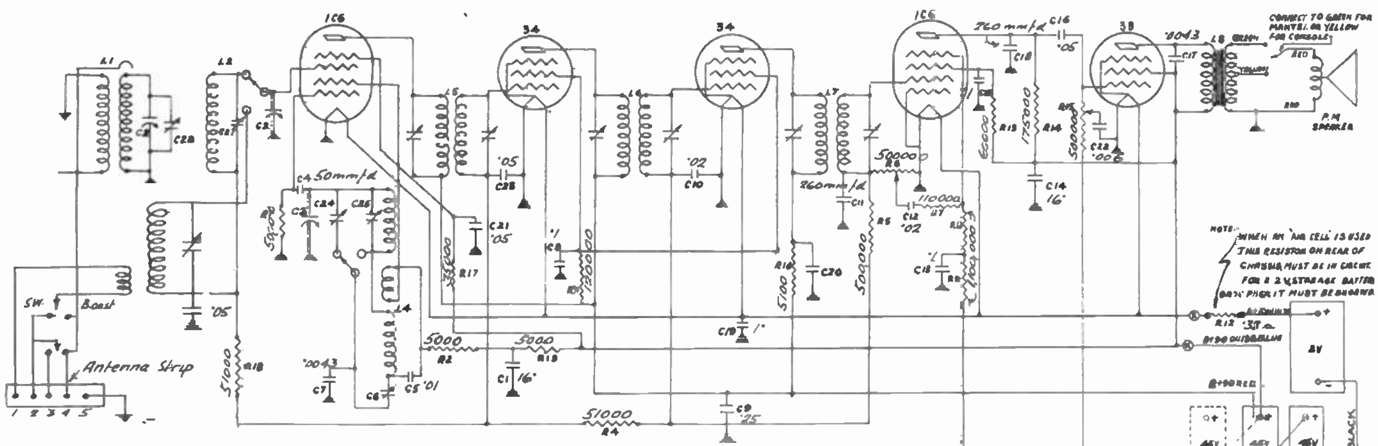
ALEMITE CORP. LTD

World Radio History

MODEL R-181 CHASSIS (RECEIVER MODELS 1811 to 1819) 1934-35



Model - R-182 1934-35



Alignment—The alignment operation can all be performed without removing the chassis from the cabinet.

(a) Connect an output meter to the speaker terminals or between plate and screen of the output tube

(b) Connect a 370 K.C. oscillator between the grid cap of the 1C6 first detector and ground. Make sure that there is a condenser (approximately .02mfd) in the oscillator leads so that the 1-C-6 grid is not shorted to the ground and the bias upset.

(c) With the volume control full on, align the I.F. stages beginning with the last and working forward, keeping the input signal low enough so that the lowest practical output reading is obtained. Particular care must be taken in aligning the I.F. because these circuits are very selective. If the alignment was very far out repeat the above operation. This alignment should be carried out with the range switch in the "broadcast band" position and the gang condenser set about 1400 K.C.

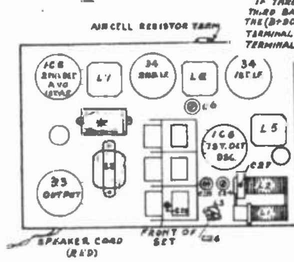
(d) Transfer the oscillator leads to the antenna and ground and tune it to 1400 K.C. With the range switch in the "broadcast position" set the dial on the receiver to 1400 K.C. and adjust C24, C27 and C28 in that order for maximum output. Keep the input from the oscillator as low as possible as before.

(e) Adjust the receiver and oscillator in tune at 550 K.C. and align C6 for maximum output, rocking the tuning condenser back and forth slightly while aligning.

(f) If an appreciable change in C6 was necessary operation (d) should be repeated.

(g) Turn the range switch to the short wave position and adjust the oscillator and tuning condenser in tune at 15 megacycles (20 meters). A fairly strong 20 meter signal will be received at two points on the dial: set the dial at the lowest wave length point.

(h) Adjust C25 and C26 in that order for maximum output.



TUBE	PLATE	SCREEN	BIAS
1C6	81 [illegible]	40	0
34	81	20	0
34	76	20	0
1C6	29	21	-1?
33	76	82	-8?

DATA SHEET

— COURTESY
STEWART-WARNER-25.
ALEMITE CO. LTD

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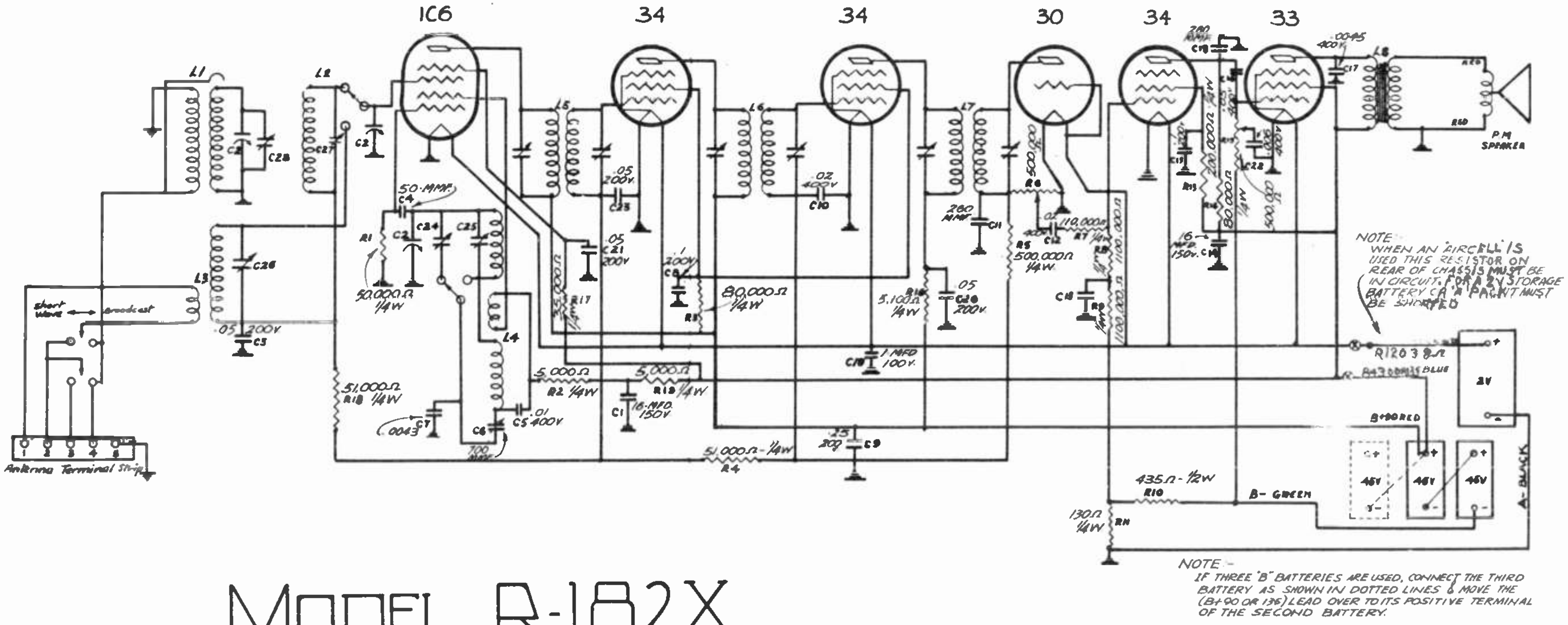


MODEL R-182X

BATTERY-OPERATED DOVER AND CALAIS

-ALIGNMENT INSTRUCTIONS-

Service Data—The following data is placed in this instruction book for the service man's use in case, on some occasion, he may not be supplied with a copy thereof.

If the receiver lacks sensitivity and the tubes and their voltages have checked O.K. (see voltage chart accompanying circuit diagram) proceed to check the alignment as follows.

Alignment—The alignment operation can all be performed without removing the chassis from the cabinet.

(a) Connect an output meter to the speaker terminals or between plate and screen of the output tube.

(b) Connect a 370 K.C. oscillator between the grid cap of the 1C6 first detector and ground. Make sure that there is a condenser (approximately .02mfd) in the oscillator leads so that the 1-C-6 grid is not shorted to the ground and the bias upset.

(c) With the volume control full on, align the I.F. stages beginning with the last and working forward, keeping the input signal low enough so that the lowest practical output reading is obtained. Particular care must be taken in aligning the I.F. because these circuits are very selective. If the alignment was very far out repeat the above operation. This alignment should be carried out with the range switch in the "broadcast band" position and the gang condenser set about 1400 K.C.

(d) Transfer the oscillator leads to the antenna and ground and tune it to 1400 K.C. With the range switch in the "broadcast position" set the dial on the receiver to 1400 K.C. and adjust C24, C27 and C28 in that order for maximum output. Keep the input from the oscillator as low as possible as before.

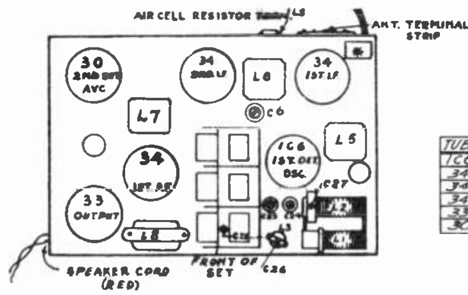
(e) Adjust the receiver and oscillator in tune at 550 K.C. and align C6 for maximum output, rocking the tuning condenser back and forth slightly while aligning.

(f) If an appreciable change in C6 was necessary operation (d) should be repeated.

(g) Turn the range switch to the short wave position and adjust the oscillator and tuning condenser in tune at 15 megacycles (20 meters). A fairly strong 20 meter signal will be received at two points on the dial: set the dial at the lowest wave length point.

(h) Adjust C25 and C26 in that order for maximum output.

NOTE—A bakelite screw driver must be used for adjusting C24 and C25.



I.F. = 370 K.C.

1935-36

TUBE	CIRCUIT LOCATION	FIL	PLATE	SCREEN	BIAS
1C6	1ST. DET. OSC.	2	81-OSC.65	40	0
34	1ST. I.F.	2	81	25	0
34	2ND. I.F.	2	78	26	0
34	1ST. AUDIO	2	27	20	-2‡
33	OUTPUT	2	76	82	-8.5*
30	2ND. DET.	2	–	–	+2

MEASURED WITH A 1000 OHMS PER VOLTMETER
‡ MEASURED ACROSS R11
* MEASURED FROM (B-) TO GROUND.
ALL VOLTAGES MEASURED FROM TUBE SOCKET TO GROUND USING 90 VOLTS OF "B" BATTERY AND ANTENNA SHORTED TO GROUND.
A-BATTERY CURRENT = .62 AMP.
'B' BATTERY CURRENT - 15MA. WITH 90V & 23MA WITH 135V.

COURTESY STEWART-WARNER-26

DATA SHEET

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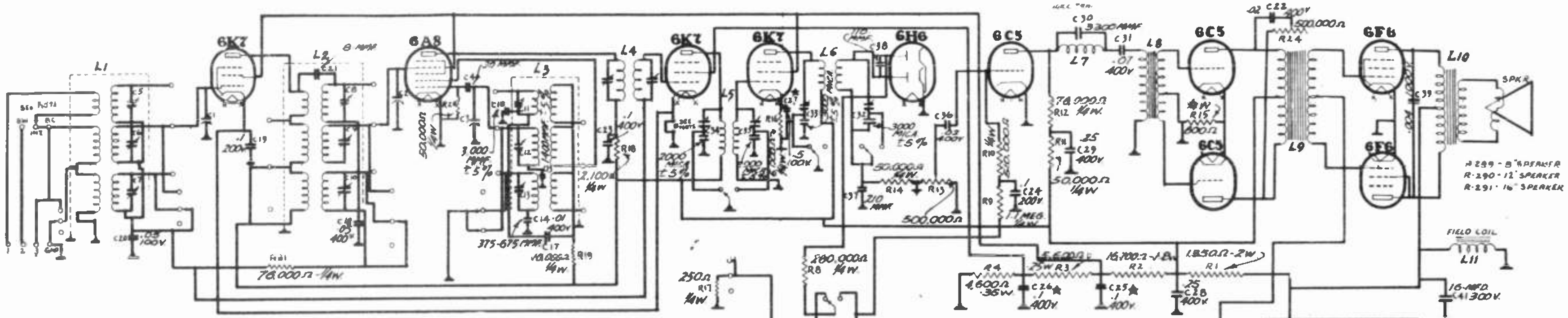
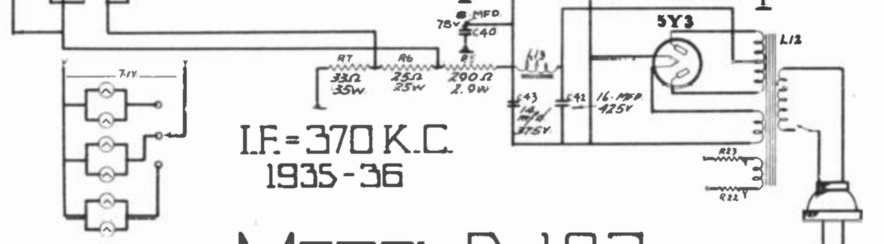
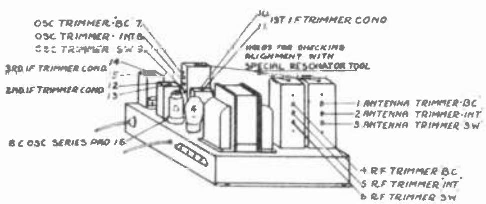
World Radio History







MODEL R-183
-MENDELSSOHN-MOZART-STRAUSS-

Note—Variable selectivity is incorporated in this receiver (right hand lever). Before proceeding with alignment, make sure that the selectivity switch lever is in the left hand position. This is the most selective position.

1. Connect an output meter to the speaker voice coil terminals, or between plate and screen of the 6-F-6 output tube.

2. Turn the manual volume control to maximum volume position (extreme right).

3. For all adjustments, use an all-bakelite aligning tool which has only a small metal screwdriver tip.

I. F. ALIGNMENT

Set the test oscillator to exactly 370 k.c. Connect the output leads of the oscillator through an .02 mfd. coupling condenser to the 6-A-8 control grid to chassis. Range switch should be set to the broadcast position (extreme right).

Carefully adjust the I.F. trimmers Nos. 10, 11, 12, 13, 14, and 15 for maximum output, beginning with 14 and 15. Repeat the six adjustments, since the adjustment of each trimmer has some effect on the others.

BROADCAST BAND ALIGNMENT

Check the position of the dial pointer on the condenser shaft by pushing the rotor plates of the gang condenser to maximum capacity position. The pointer should be set on centre of the black dividing line on 550 k.c. end of dial. Please note that the plates should be pushed with the fingers, and not turned by means of the dial drive knob.

2. The range switch (left-hand knob) should be set to the maximum clockwise position, which is the broadcast setting.

3. Connect a standard dummy antenna in series with the test oscillator output and the receiver antenna lead. If a standard dummy antenna is not available a 400 ohm, 1 watt carbon resistor may be substituted with fairly good results. THE DUMMY ANTENNA OR 400 OHM RESISTOR MUST REMAIN CONNECTED FOR ALL BROADCAST FREQUENCY ADJUSTMENTS IN ORDER TO SECURE PROPER ALIGNMENT OF THE ANTENNA STAGE. Ground the receiver chassis, and connect the oscillator ground to the chassis.

4. Whenever possible, use a broadcast station signal between 1300 and 1400 k.c. to calibrate the receiver dial. If no such station can be heard, you can use a 1400 k.c. signal from your oscillator, provided that it is properly calibrated. To calibrate the set, turn the dial pointer to the exact frequency setting of the signal, then carefully adjust trimmer No. 7 (broadcast oscillator shunt trimmer) until the signal is tuned in with maximum volume at its correct frequency setting.

5. With the test oscillator set at 1400 k.c., carefully tune receiver to the signal; adjust trimmer No. 4 (broadcast R.F. trimmer) and trimmer No. 1 (broadcast antenna shunt trimmer) for maximum output meter reading. Retune the receiver and check the adjustments.

6. Set the test oscillator to approximately 600 k.c., and tune the receiver to the signal. Adjust trimmer No. 16 (broadcast oscillator series pad) to get maximum output meter deflection. Retune the receiver dial pointer to a peak, and readjust the trimmer. Continue this procedure of adjusting the trimmer until the output meter reading cannot be increased. Trimmer No. 16 should also be used to adjust calibration of 550 k.c. end of dial. This procedure must be followed or the receiver will not be properly adjusted.

7. With a 1400 k.c. signal, recheck alignment of trimmers Nos. 1, 4, and 7.

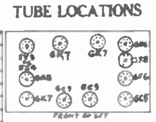
VOLTAGE CHART

TUBE	TUBE FUNCTION	HEATER	PLATE	BIAS	[illegible]
6K7	RF AMP	6.3	250	-6V●	75
6A8	1ST DET	6.3	[illegible]	-6V●	75
6K7	1ST IF	6.3	250	-6V●	35
6K7	2ND IF	6.3	250	7V†	75
6H6	2ND DET	6.3	0	0	0
6C5	1ST AUDIO	6.3	75	-3‡	0
6C5	PUSH-PULL-DRIVER	6.3	245	8V‖	0
6C5	PUSH-PULL-DRIVER	6.3	245	8V‖	0
6F6	PUSH-PULL-OUTPUT	6.3	300	34V§	300
6F6	OUTPUT	6.3	300	-34V§	300
5Y3	RECTIFIER	5			

● MEASURED FROM JUNCTION BETWEEN R-5 + R6 & CHASSIS
† MEASURED FROM CATHODE OF 6K7-2ND I F TO CHASSIS
‡ MEASURED FROM JUNCTION BETWEEN R6 & R7 & CHASSIS
‖ MEASURED FROM CATHODE OF 6C5 DRIVER TO CHASSIS
§ MEASURED FROM JUNCTION BETWEEN R5 & L13 TO CHASSIS

NOTE
ALL ABOVE VOLTAGES MEASURED WITH SELECTIVITY SWITCH IN THE MOST SELECTIVE POSITION AND ON BROADCAST BAND BIAS VOLTAGE -6 V. IS CHANGED TO -3 VOLTS IN BROAD POSITION

TUBE LOCATIONS



SHORT-WAVE ALIGNMENT

VERY IMPORTANT—A 400-ohm, 1-watt carbon resistor ONLY must be connected in series with the antenna lead to the oscillator. DO NOT OMIT THIS RESISTOR OR THE ALIGNMENT WILL BE INCORRECT.

The following alignment procedure is extremely critical.

1. Turn the receiver range switch to the short-wave band position (centre position).

2. Set the test oscillator to give a 15000 k.c. signal. If the oscillator cannot reach this frequency, use the second harmonic of 7500 k.c., the third harmonic of 5000 k.c., or the fourth harmonic of 3750 k.c., all of which will give a 15000 k.c. signal.

3. To calibrate this point, turn the receiver dial indicator to 15 (15 megacycles or 15,000 k.c.) on short-wave position of dial, and adjust trimmers No. 9 (short-wave oscillator shunt trimmer) to give maximum output. Generally, two peaks will be found. Align on the peak secured with the trimmer screw farthest out. Then adjust trimmer No. 6 (short wave R.F. shunt trimmer) for maximum output. (When adjusting trimmer No. 6 two peaks may be found. The correct one is when trimmer is turned farthest in). Then adjust trimmer No. 3 (short wave antenna shunt trimmer) for maximum output.

4. With a strong 15,000 k.c. signal from the oscillator, tune the receiver to 14260 k.c. and check for the image signal which should be weaker than 15,000 k.c. signal. If the 14260 signal is as strong as the 15,000 it shows that trimmer No. 6 is not properly adjusted. If no signal is received at 14,260 k.c., but one at 15,740 k.c., it shows that trimmer No. 9 is aligned on wrong frequency, and thus both No. 6 and No. 9 must be readjusted at the proper frequency.

INTERMEDIATE OR POLICE BAND

A 400 ohm resistance for dummy antenna should be used the same as in short-wave band.

1. Turn the receiver range switch to the extreme left position.

2. Set the test oscillator to give a 5000 k.c. signal.

3. To calibrate this point, turn the receiver dial pointer to 50 (5000) on middle wave frequency (inside band), and adjust trimmer No. 8 (2nd band oscillator shunt trimmer) to give a maximum output. The correct signal will be the one found when the trimmer is screwed the furthest out, or the lowest capacity setting. Adjust trimmers Nos. 5 and 2 for maximum output.

Note—If the 6-A-8-G or 6-K-7G Octal base tubes are interchanged with the 6-A-8 and 6-K-7 type metal tubes, the receiver should be completely realigned, otherwise a very noticeable reduction in sensitivity and selectivity will result. This is due to the difference in inter-electrode capacity between the metal and octal base glass tubes. However all tubes except the 6-K-7 and 6-A-8 types may be interchanged without affecting the alignment.

DATA SHEET

COURTESY- STEWART-WARNER-27
ALEMITE CORP LTD

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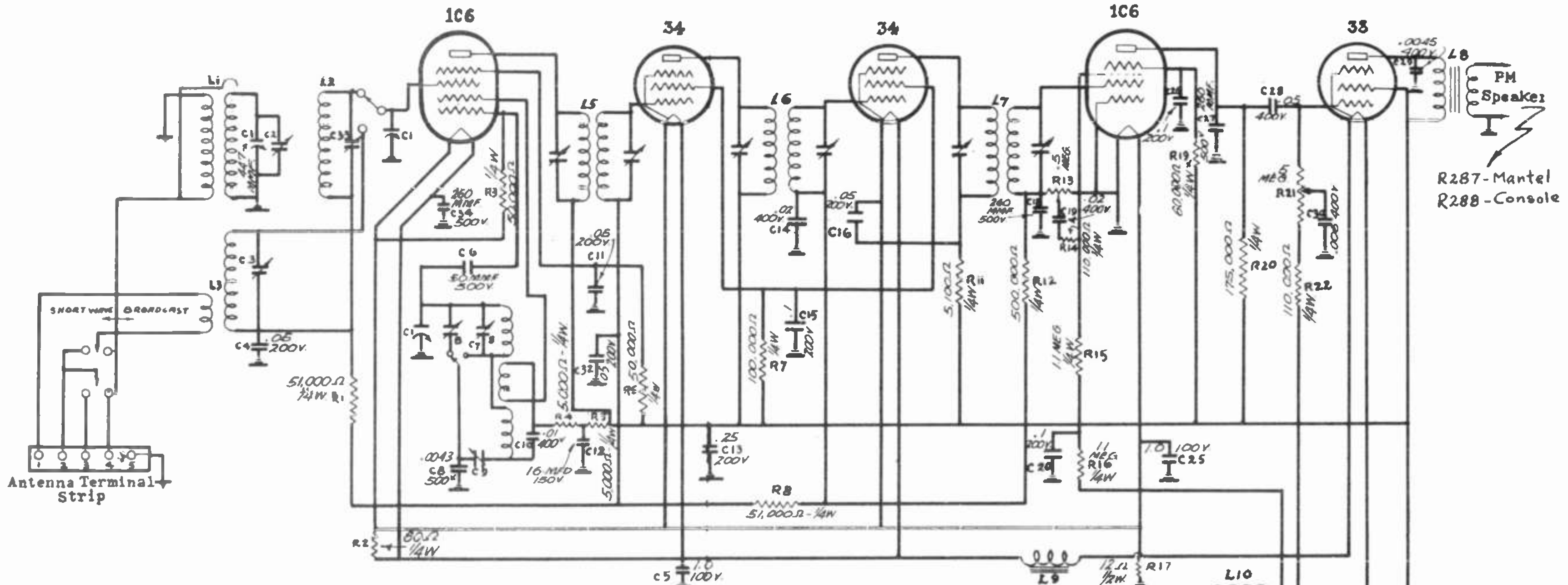
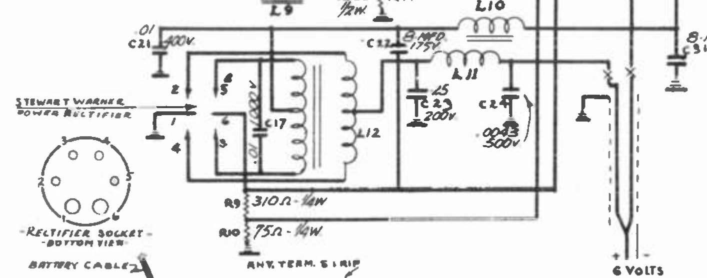
World Radio History



MODEL R-184
BATTERY-OPERATED MARVEL AND MIRACLE



ALIGNMENT INSTRUCTIONS FOR MODELS-R-184 AND R-187

If the receiver lacks sensitivity and the tubes and their voltages have checked O.K. (see voltage chart accompany ing circuit diagram) proceed to check the alignment as follows.

Alignment—The alignment operation can all be performed without removing the chassis from the cabinet

(a) Connect an output meter to the speaker terminals or between plate and screen of the output tube.

(b) Connect a 370 K.C. oscillator between the grid cap of the 1C6 first detector and ground. Make sure that there is a condenser (approximately .02mfd) in the oscillator leads so that the 1-C-6 grid is not shorted to the ground and the bias upset.

(c) With the volume control full on, align the I.F. stages beginning with the last and working forward, keeping the input signal low enough so that the lowest practical output reading is obtained. Particular care must be taken in aligning the I.F. because these circuits are very selective. If the alignment was very far out repeat the above operation. This alignment should be carried out with the range switch in the "broadcast band" position and the gang condenser set about 1400 K.C.

(d) Transfer the oscillator leads to the antenna and ground and tune it to 1400 K.C. With the range switch in the "broadcast position" set the dial on the receiver to 1400 K.C. and adjust C7B, C33 and C2 in that order for maximum output. Keep the input from the oscillator as low as possible as before.

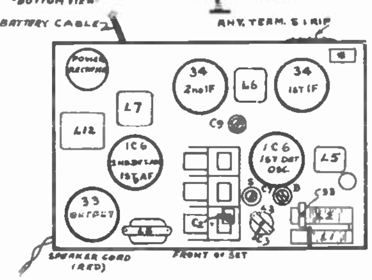
(e) Adjust the receiver and oscillator in tune at 550 K.C. and align C9 for maximum output, rocking the tuning condenser back and forth slightly while aligning.

(f) If an appreciable change in C9 was necessary operation (d) should be repeated.

(g) Turn the range switch to the short wave position and adjust the oscillator and tuning condenser in tune at 15 megacycles (20 meters). A fairly strong 20 meter signal will be received at two points on the dial: set the dial at the lowest wave length point.

(h) Adjust C7S and C3 in that order for maximum output.

NOTE—Insulated screw driver must be used for adjusting C7B and C7S



TUBE	CIRCUIT LOCATION	FIL.	PLATE	SCREEN	BIAS
1C6	1st DETECTOR OSC.	1.92	OSC 105 78	45	-1.92 ‖
34	1st I.F.	1.92	105	35	-1.92 ‖
34	2nd I.F.	1.92	97	35	-1.92 ‖
1C6	2nd DET. AVC. 1st AUDIO	1.92	45	25	-1.4 ≠
33	OUTPUT.	1.92	102	105	-10.5 *

MEASURED WITH A 1000 OHMS PER VOLT METER FROM TUBE SOCKET TO GROUND EXCEPT:-
‖ - MEASURED FROM (-) FIL. TO GROUND.
≠ MEASURED ACROSS R-10
* MEASURED FROM (-) FIL. TO JUNCTION OF R9 AND R22
DRAIN FROM 6 VOLT BATTERY - .98 AMP.

I.F. = 370 K.C.

1935-36

DATA SHEET

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COURTESY- STEWART-WARNER-28

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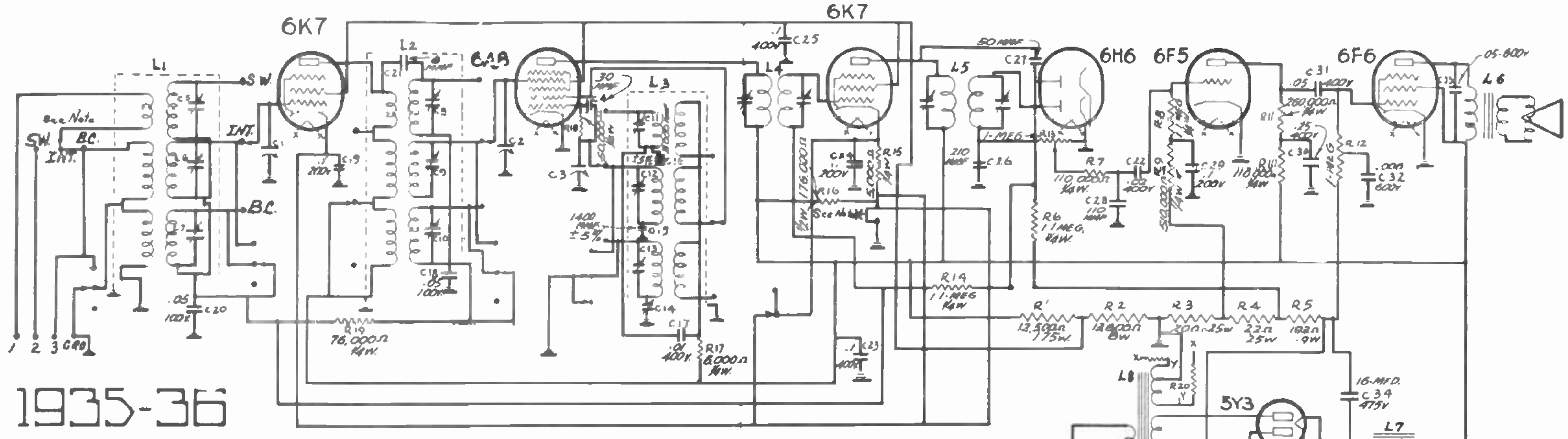


1935-36

I.F. = 370 K.C.

MODEL R-185 SCHUBERT-CHOPIN AND BEETHOVEN

I. F. ALIGNMENT

Set the test oscillator to exactly 370 k.c., connect the output leads of oscillator through an .02 mfd. coupling condenser to the 6-A-3 control grid to ground. Set the range switch (lower left-hand knob) to the broadcast position (clockwise). Carefully adjust the I.F. transformer trimmer Nos. 10, 11, 12 and 13, for maximum output, beginning with 2nd I.F. trimmers Nos. 12 and 13. Repeat the four adjustments since the adjustment of each trimmer has some effect on the others.

BROADCAST BAND ALIGNMENT

1. Check the position of the dial pointer on the condenser shaft by pushing the rotor plates of the gang condenser to maximum capacity position. The pointer should be set on centre of the black dividing line on 550 k.c. end of dial. Please note that the plates should be pushed with the fingers, and not turned by means of the dial drive knob.

2. The range switch (left-hand knob) should be set to the maximum clockwise position, which is the broadcast setting.

3. Connect a standard dummy antenna in series with the test oscillator output and the receiver antenna lead. If a standard dummy antenna is not availablle a 400 ohm, 1 watt carbon resistor may be substituted with fairly good results. THE DUMMY ANTENNA OR 400 OHM RESISTOR MUST REMAIN CONNECTED FOR ALL BROADCAST FREQUENCY ADJUSTMENTS IN ORDER TO SECURE PROPER ALIGNMENT OF THE ANTENNA STAGE. Ground the receiver chassis, and connect the oscillator ground to the chassis.

4. Wherever possible use a broadcast station signal between 1300 and 1400 k.c. to calibrate the receiver dial. If no such station can be heard, you can use a 1400 k.c. signal from your oscillator, provided that it is properly calibrated. To calibrate the set, turn the dial pointer to the exact frequency setting of the signal, then carefully adjust trimmer No. 7 (broadcast oscillator shunt trimmer) until the signal is tuned in with maximum volume at its correct frequency setting.

5. With the test oscillaor set at 1400 k.c., carefully tune receiver to the signal; adjust trimmer No. 4 (broadcast R.F. trimmer) and trimmer No. 1 (broadcast antenna shunt trimmer) for maximum output meter reading. Retune the receiver and check the adjustments.

6. Set the test oscillator to approximately 600 k.c., and tune the receiver to the signal. Adjust trimmer No. 14 (broadcast oscillator series pad) to get maximum output meter deflection. Retune the receiver dial pointer to a peak, and readjust the trimmer. Continue this procedure of adjusting the trimmer until the output meter reading cannot be increased. Trimmer No. 14 should also be used to adjust calibration of 550 k.c. end of dial. This procedure must be followed or the receiver will not be properly adjusted.

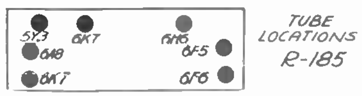
7. With a 1400 k.c. signal, recheck alignment of trimmers Nos. 1, 4, and 7.

VOLTAGE CHART

TUBE	TUBE FUNCTION	HEATER	PLATE	BIAS	SCREEN GRID
6K7	R.F. AMP.	6.3	250	-3 #	80
6A8	1ST DET. & OSC.	6.3	250	-3 #	80
6K7	I.F. AMP.	6.3	250	-3 #	80
6H6	2ND. DET.	6.3	0	0	0
6F5	1ST. AUDIO	6.3	100	-1.3 +	0
6F6	POWER OUTPUT	6.3	245	-16.5 #	250
5Y3	RECTIFIER	5	—	—	—

(6A8) OSC. PLATE = 220

\# CATHODE 6V. BROADCAST BAND ONLY.
CATHODE OV. INT AND S.W. BAND.
‡ MEASURED FROM JCT. BETWEEN R4 & R5 TO CHASSIS.
† MEASURED FROM JCT. BETWEEN R3 & R4 TO CHASSIS.
\# MEASURED FROM HIGH SIDE OF R5 TO CHASSIS
MEASUREMENTS MADE WITH 1000 Ω PER VOLT. VOLTMETER



TUBE LOCATIONS R-185

SHORT-WAVE ALIGNMENT

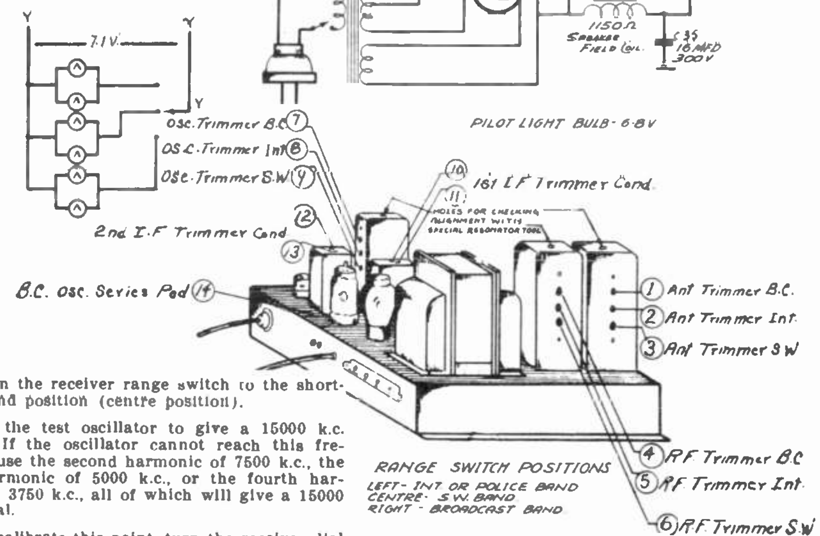
VERY IMPORTANT—A 400-ohm, 1-watt carbon resistor ONLY must be connected in series with the antenna lead to the oscillator. DO NOT OMIT THIS RESISTOR OR THE ALIGNMENT WILL BE INCORRECT.

1. Turn the receiver range switch to the shortwave band position (centre position).

2. Set the test oscillator to give a 15000 k.c. signal. If the oscillator cannot reach this frequency, use the second harmonic of 7500 k.c., the third harmonic of 5000 k.c., or the fourth harmonic of 3750 k.c., all of which will give a 15000 k.c. signal.

3. To calibrate this point, turn the receiver dial indicator to 15 (15 megacycles or 15,000 k.c.) on short-wave position of dial, and adjust trimmers No. 9 (short-wave oscillator shunt trimmer) to give maximum output. Generally, two peaks will be found. Align on the peak secured with the trimmer screw farthest out. Then trimmer No. 6 (short wave R.F. shunt trimmer) for maximum output. (When adjusting trimmer No. 6 two peaks may be found. The correct one is when trimmer is turned farthest in). Then adjust trimmer No. 3 (short wave antenna shunt trimmer) for maximum output.

4. With a strong 15,000 k.c. signal from the oscillator, tune the receiver to 14260 k.c. and check for the image signal which should be weaker than 15.000 k.c. signal. If the 14260 signal is as strong as the 15,000 it shows that the trimmer No. 6 is not properly adjusted. If no signal is received at 14,260 k.c., but one at 15,740 k.c., it shows that trimmer No. 9 is aligned on wrong frequency, and thus both No. 6 and No. 9 must be readjusted at the proper frequency.



INTERMEDIATE OR POLICE BAND

A 400 ohm resistance for dummy antenna should be used the same as in short-wave band.

1. Turn the receiver range switch to the extreme left position.

2. Set the test oscillator to give a 5000 k.c. signal.

3. To calibrate this point, turn the receiver dial pointer to 50 (500) on middle wave frequency (inside band), and adjust trimmer No. 8 (2nd band oscillator shunt trimmer) to give maximum output. The correct signal will be the one found when the trimmer is screwed the furthest out, or the lowest capacity setting. Adjust trimmers Nos. 5 and 2 for maximum output.

Note—If the 6-A-8-G or 6-K-7G Octal base tubes are interchanged with the 6-A-8 and 6-K-7 type metal tubes, the receiver should be completely realigned, otherwise a very noticeable reduction in sensitivity and selectivity will result.

DATA SHEET

COURTESY: STEWART-WARNER-29 ALEMITE CORP. LTD.

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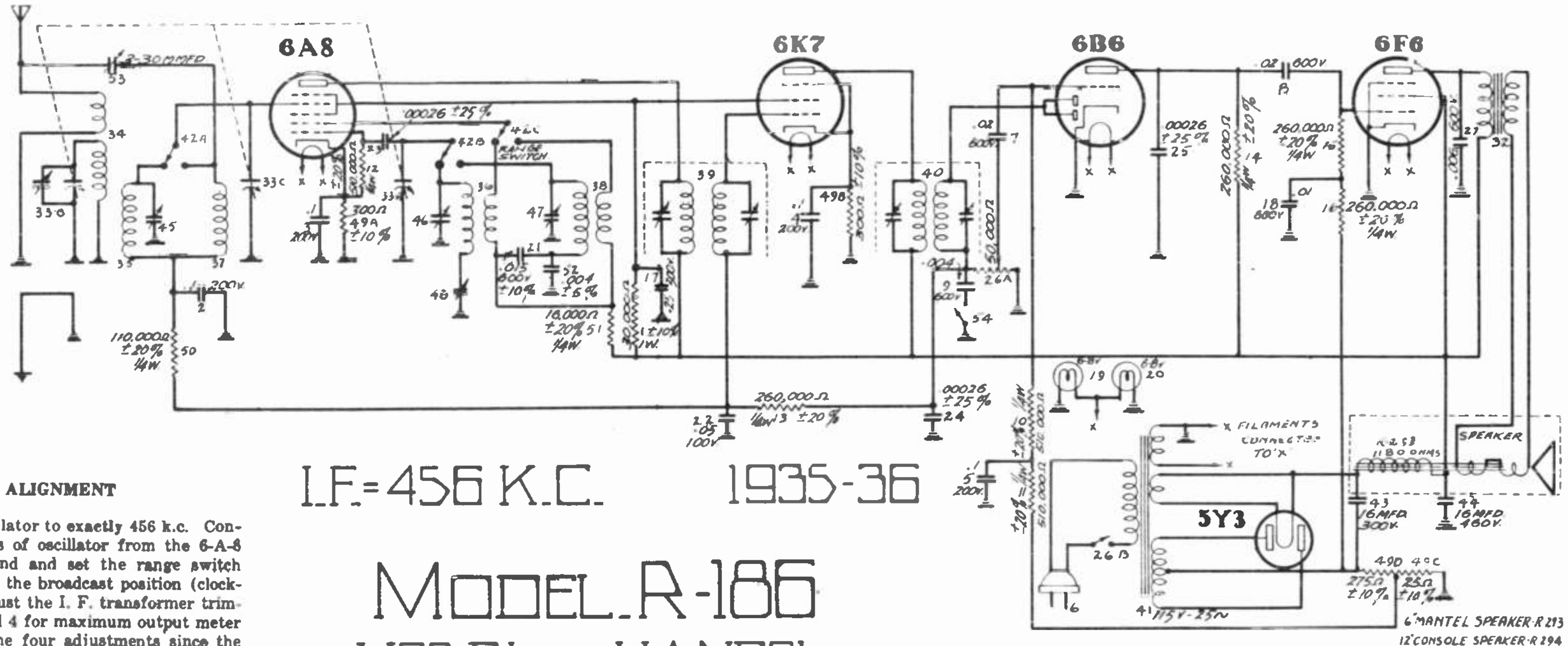


I.F.=456 K.C. 1935-36

MODEL R-186
VERDI AND HANDEL

I. F. ALIGNMENT

1. Set the test oscillator to exactly 456 k.c. Connect the output leads of oscillator from the 6-A-8 control grid to ground and set the range switch (right-hand knob) to the broadcast position (clockwise). Carefully adjust the I. F. transformer trimmers Nos. 1, 2, 3, and 4 for maximum output meter deflection. Repeat the four adjustments since the adjustment of each trimmer has some effect on the others.

BROADCAST BAND ALIGNMENT

1. Check the position of the dial on the condenser shaft by pushing the rotor plates of the gang condenser to full mesh. The dial should then read 530 k.c. Please note that the plates should be pushed with the fingers and not turned by means of the dial for this check.

2. Turn the range switch (right-hand knob) to the maximum clockwise position, which is the broadcast setting.

3. Whenever possible, use a broadcast station signal between 1300 and 1420 k.c. to calibrate the receiver dial. If no such station can be heard, you can use a 1400 k.c. signal from your oscillator, provided that it is properly calibrated. To calibrate the set, turn its dial to the exact frequency setting of the signal (either a station or the oscillator) then carefully adjust trimmer No. 5 (broadcast oscillator shunt trimmer) until the signal is tuned in with maximum volume at its correct frequency setting.

4. Connect a 400 or 500 ohm, 1 watt carbon resistor in series with the test oscillator output and the receiver antenna lead. **This resistor must remain connected for all broadcast and short-wave adjustments in order to secure proper alignment of the antenna stage. Ground the receiver chassis and connect the oscillator ground lead to the chassis.**

5. Set the test oscillator to approximately 1400 k.c. and carefully tune the receiver to the signal. Adjust trimmer No. 6 (broadcast detector shunt trimmer) and trimmer No. 7 (broadcast pre-selector shunt trimmer) for maximum meter reading. Retune the receiver and check the adjustments. Do not touch trimmer No. 5 since this will change the calibration.

6. Set the test oscillator to approximately 600 k.c. and tune the receiver to the signal. Adjust trimmer No. 8 (broadcast oscillator padding trimmer) to get maximum output meter deflection. Retune the receiver dial to a peak and readjust the trimmer. Continue this procedure of adjusting the trimmer and retuning the set until the output meter reading cannot be increased. **This procedure must be followed or the receiver will not be properly aligned.**

7. With a 1400 k.c. test oscillator signal, check alignment of trimmers No. 6 and 7.

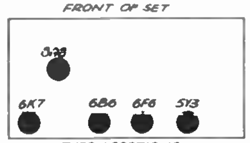
SHORT-WAVE BAND ALIGNMENT

1. Turn the receiver range switch to the short-wave band position (counter-clockwise).

2. Set the test oscillator to give a 20 meter (15,000 k.c.) signal. If your oscillator cannot reach this frequency, use the second harmonic of 7,500 k.c., the third harmonic of 5,000 k.c., or the fourth harmonic of 3,500 k.c.. all of which will give a 15,000 k.c. signal (or 20 metres).

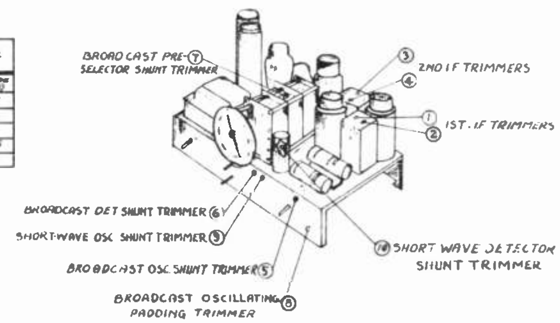
LINE VOLTAGE 115 A.C.	VOLTAGE TABLE				VOLUME CONTROL FULL ON
TUBE	POSITION IN CIRCUIT	FILAMENT	PLATE	SCREEN GRID	CATHODE (BIAS)
6A8	OSC DET.	6.25	250 DET 175 OSC	100	2.8
6K7	I.F.	6.25	250	100	2.8
6B6	2ND DET A.V.C. AUDIO	6.25	125	0	0
6F6	OUTPUT	6.25	240	250	17.5
5Y3	RECT	4.95	—	—	—

FRONT OF SET



TUBE LOCATIONS

3. To calibrate this point, turn the receiver dial to 15 meters on the inner dial scale and adjust trimmer No. 9 (shortwave oscillator shunt trimmer) to give maximum output. Generally two peaks will be found. Align on the peak secured with the trimmer screw farthest out. Then adjust trimmer No. 10 (short-wave detector shunt trimmer) to a peak. After this is done, try detuning No. 10 in either direction and retune the receiver dial. If this gives a higher output, continue detuning No. 10 and retuning the dial until the maximum output meter reading is reached. If this procedure results in a lower output, detune the trimmer in the opposite direction and retune the dial, etc.



4. Tune the receiver to about 21 meters, and check for the image signal which should be weaker than the 20 meter signal. If the image is as strong as the signal it shows that trimmer No. 10 is not properly adjusted. No signal at 21 meters but one at 19 meters shows that trimmer No. 9 is aligned on the image frequency and thus both No. 9 and 10 must be readjusted at the proper frequency.

Note: After completing the alignment, all of the trimmers except the padding trimmers should be locked in place with Ambroid or some similar type cement in order that they will not be jarred out of adjustment.

If the 6-A-8 and 6-K-, type tubes are interchanged with the all-metal type, it is usually necessary to realign the receiver. Other tubes can be interchanged without realignment.

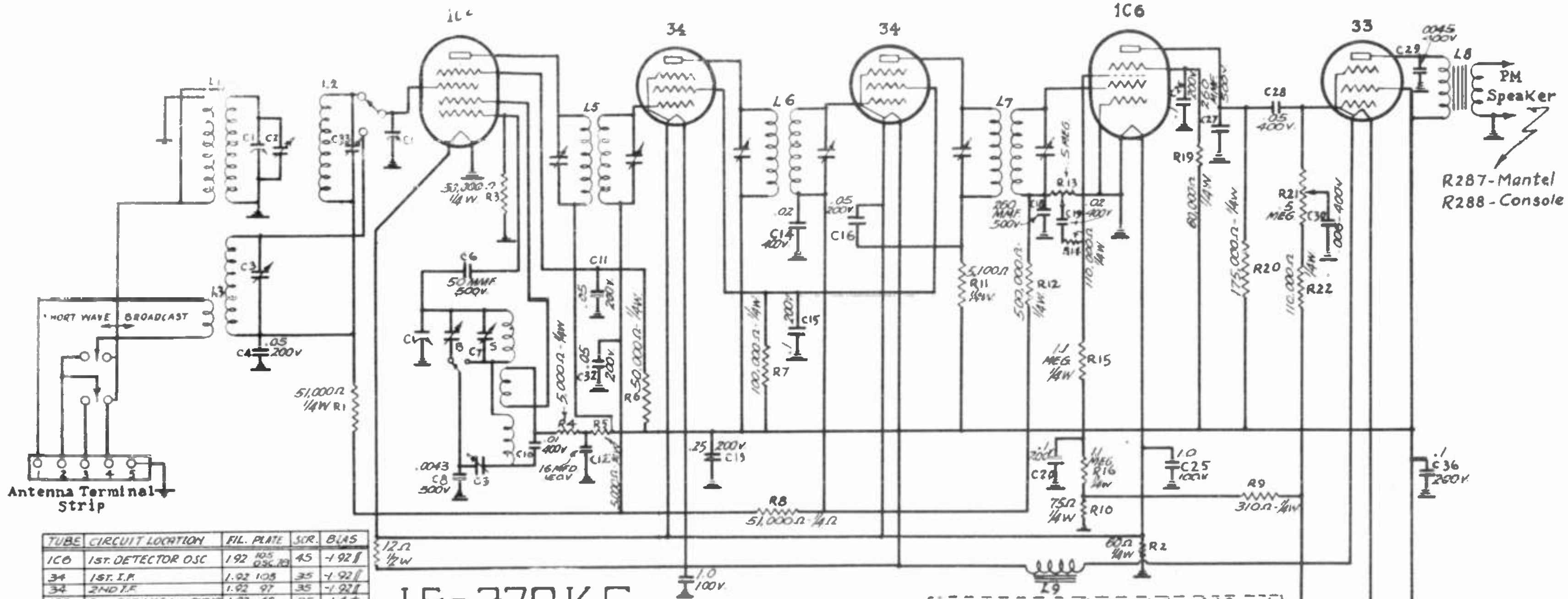
COURTESY- STEWART-WARNER-30 ALEMITE CORP. LTD

PRINTED IN CANADA

DATA SHEET

World Radio History

DATA SHEET STEWART-WARNER-31



TUBE	CIRCUIT LOCATION	FIL.	PLATE	SCR.	BIAS
1C6	1ST. DETECTOR OSC	1.92	105 OSC. 70	45	-1.92 ‖
34	1ST. I.F.	1.92	105	35	-1.92 ‖
34	2ND I.F.	1.92	97	35	-1.92 ‖
1C6	2ND DET. AVC 1ST AUDIO	1.92	45	25	-1 [illegible]
33	OUTPUT	1.92	102	105	-10.5 *

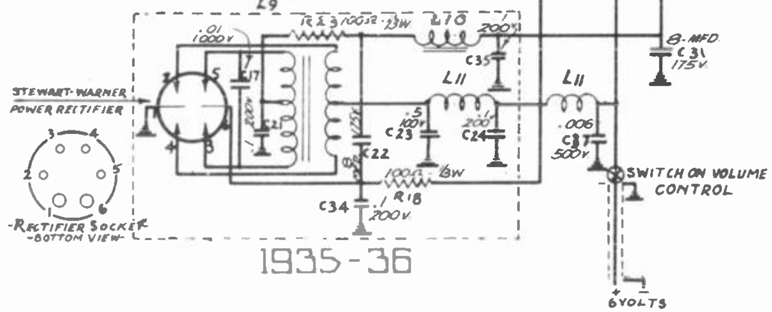
MEASURED WITH A 1000 OHMS PER VOLT METER FROM TUBE SOCKET TO GROUND, EXCEPT-
‖ MEASURED FROM (-) FIL TO GROUND
† MEASURED ACROSS R-10
* MEASURED FROM (-) FIL. TO JUNCTION OF R-9 & R22.
DRAIN FROM 6 VOLT BATTERY = .98 AMP

I.F. = 370 K.C.

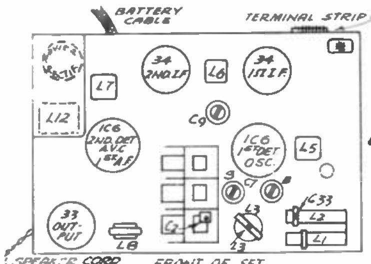
MODEL R-187
BATTERY-OPERATED

ALIGNMENT INSTRUCTIONS ON DATA SHEET-28.

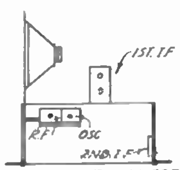
MARVEL AND MIRACLE



1935-36

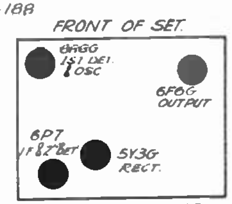


ABOVE- CHASSIS LAYOUT MODEL-R-187



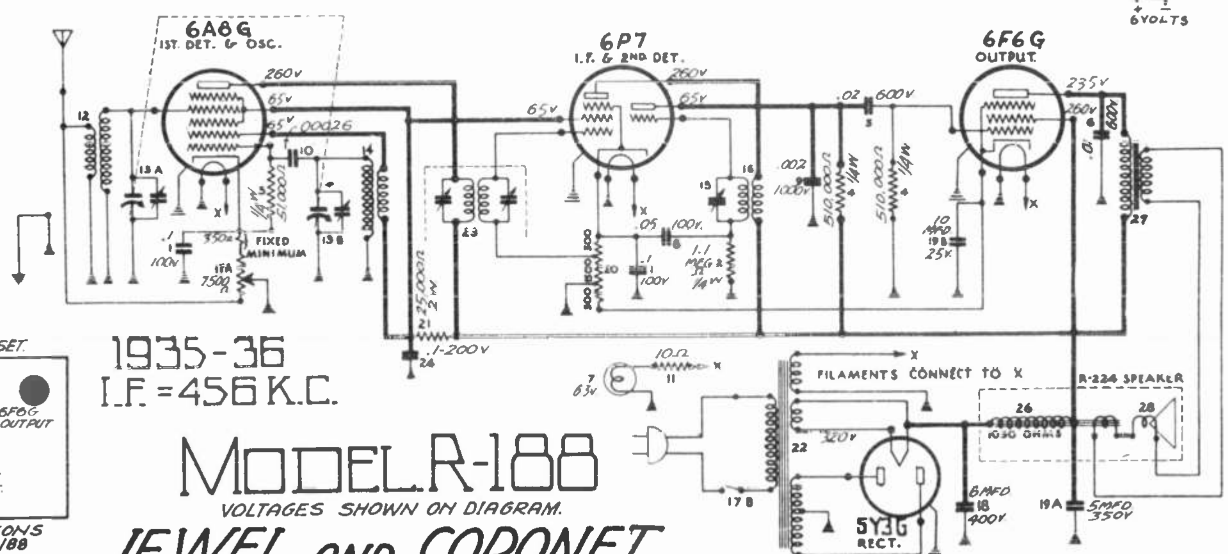
TRIMMER LOCATIONS FOR R-188

FRONT OF SET.



TUBE LOCATIONS MODEL R-188

1935-36
I.F. = 456 K.C.



MODEL R-188

VOLTAGES SHOWN ON DIAGRAM.

JEWEL AND CORONET

COURTESY STEWART-WARNER ALEMITE CORP LTD

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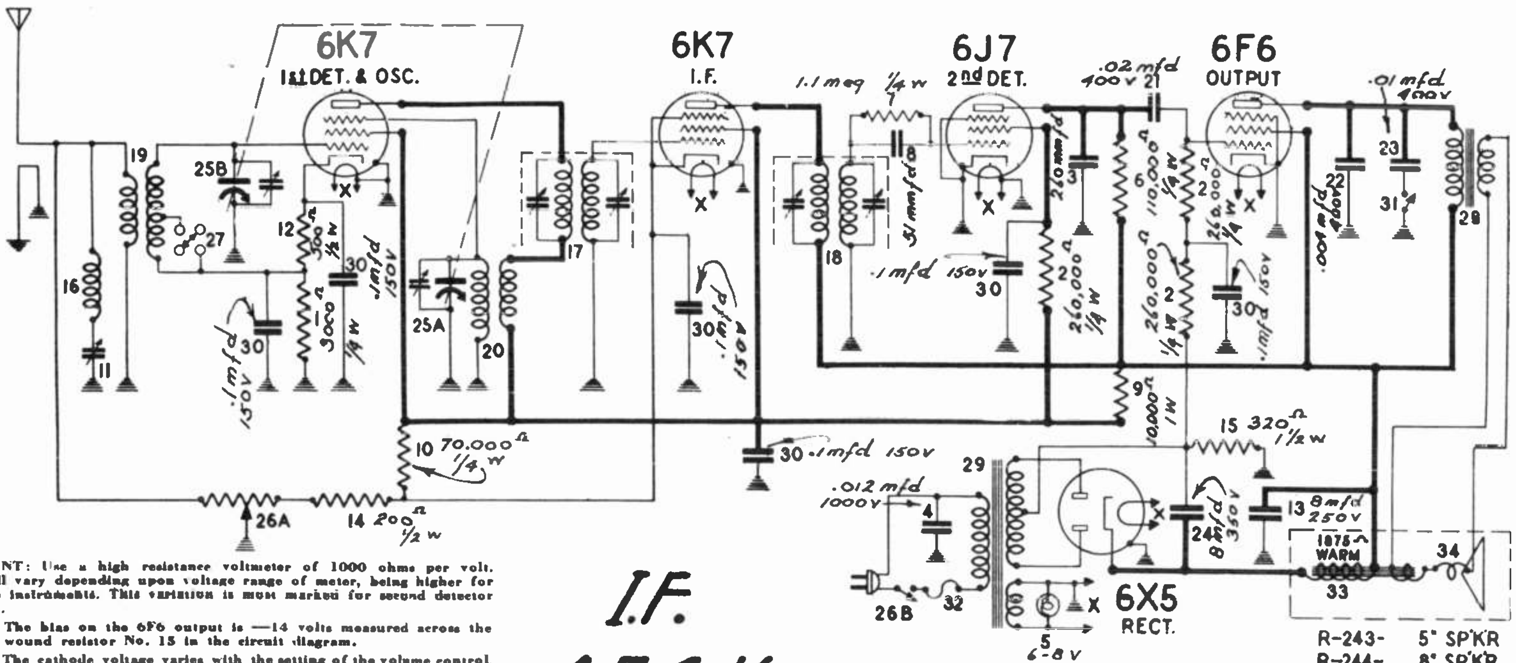
World Radio History

1936-37

CHASSIS MODEL R-142
(Receiver Models 1421 & 1425)

COURTESY-
STEWART-WARNER-32
ALEMITE CORP. LTD.



IMPORTANT: Use a high resistance voltmeter of 1000 ohms per volt. Readings will vary depending upon voltage range of meter, being higher for higher range instruments. This variation is most marked for second detector plate voltage.

NOTE A: The bias on the 6F6 output is —14 volts measured across the flexible wire wound resistor No. 15 in the circuit diagram.

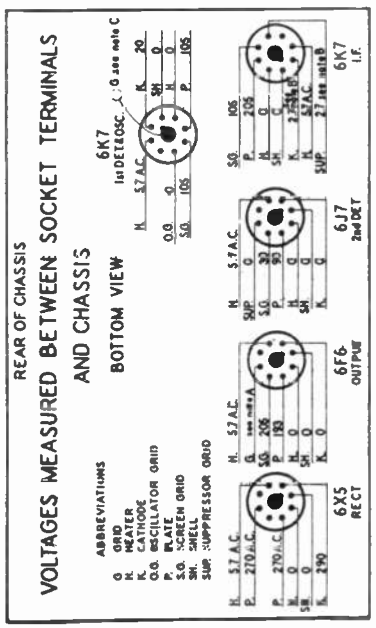
NOTE B: The cathode voltage varies with the setting of the volume control, from +2.5 volts for maximum volume to +30 volts for minimum volume.

NOTE C: Grid voltage for the 6K7 first detector is +17 volts measured across resistor No. 1 in the cathode circuit. Grid bias is —3 volts measured across resistor No. 12.

I.F. 456 Kc.

SOCKET VOLTAGES

LINE VOLTAGE 115 VOLTS. VOLUME CONTROL ON FULL. ANTENNA GROUNDED RANGE SWITCH SET ON BROADCAST POSITION. SET TUNED TO 530 KC.



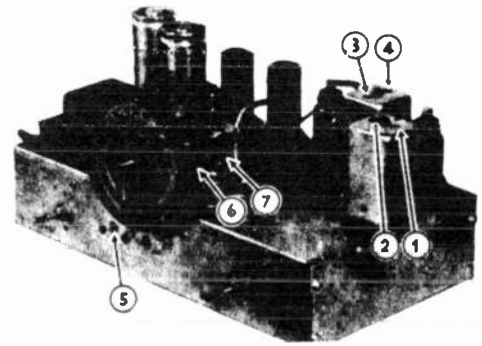
ALIGNING THE I.F. CIRCUIT

1. Connect the output meter in series with a .25 mfd. condenser between the plate of the 6F6 tube and ground, or across the voice coil, depending on the type of meter.
2. Turn the volume control to the maximum volume position. (Note: The volume control should be kept in this position throughout the entire alignment procedure.) Ground the antenna lead to the chassis.
3. Turn the range switch to the right (clockwise) to the broadcast position.
4. Adjust the test oscillator to exactly 456 KC. and connect its output to the control grid of the 6K7 first detector tube and the chassis.
5. Align I. F. trimmers No. 1, 2, 3 and 4 for maximum output as indicated on the output meter. No inward or sideward pressure should be applied to the alignment tool or the condenser may spring back to a different setting as soon as the tool is removed.
6. Repeat all I. F. trimmer adjustments since the changing of each trimmer will affect the others to a certain extent.

456 KC. WAVE TRAP ADJUSTMENT

1. Disconnect the antenna lead from ground.
2. Connect the test oscillator output in series with a 400 ohm carbon resistor to the receiver antenna lead, and connect the test oscillator ground lead to the receiver chassis. Ground the chassis.
3. Without changing the test oscillator from the frequency setting used in aligning the I. F. stage, adjust trimmer No. 5 for **MINIMUM** output. Increase the test oscillator output as a minimum is reached, in order to obtain a clearly defined setting of the trimmer. **NOTE:** If code interference is troublesome on a frequency in the neighborhood of 456 KC., the wave trap should be adjusted for **MINIMUM** output with the test oscillator set to the same frequency as the signal that is causing interference.

Trimmer Locations



R. F. ALIGNMENT

1. Set the test oscillator to 1400 KC. and apply the signal to the receiver antenna lead through a 400 ohm carbon resistor.
2. Tune the receiver to the signal for maximum output.
3. Adjust trimmer No. 7 (detector shunt trimmer) for maximum output.

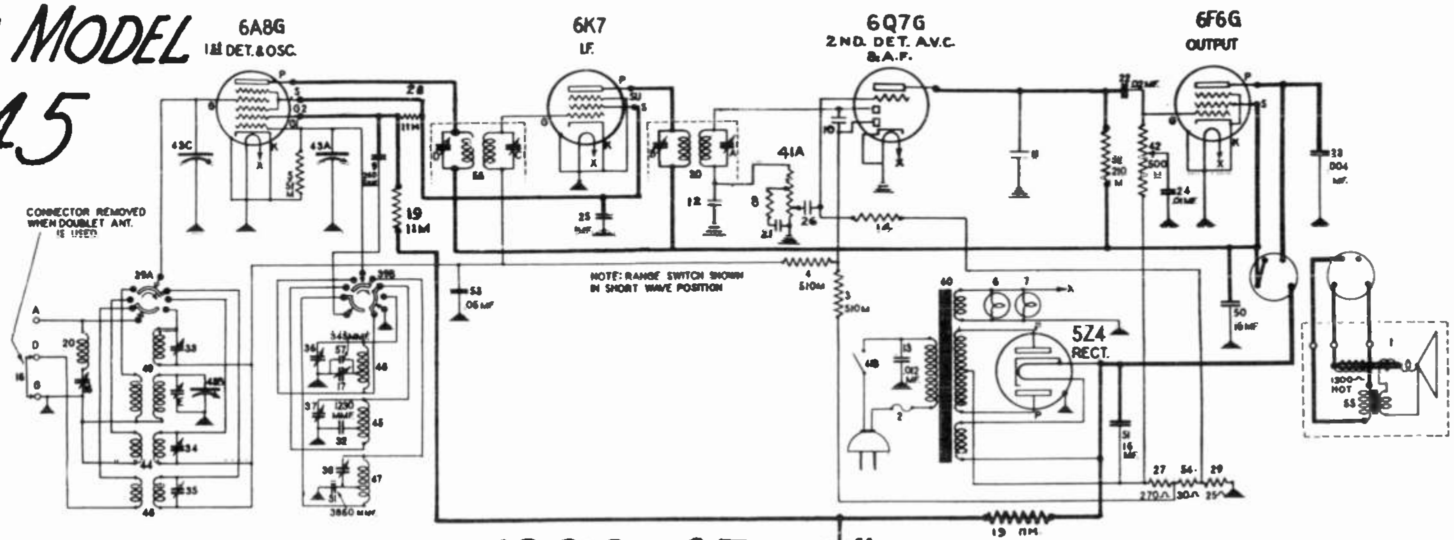
DATA SHEET

World Radio History

Chassis Model R-145

Receiver Models 1451-1459

I.F. 456 Kc.



1936 -37

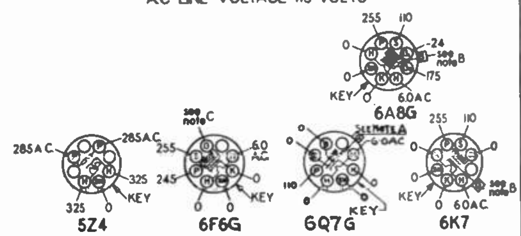
SOCKET VOLTAGES

VOLUME CONTROL ON FULL
RANGE SWITCH SET ON BROADCAST POSITION

ANTENNA GROUNDED
DIAL TUNED TO 525 KC.

BOTTOM VIEW OF CHASSIS

VOLTAGES MEASURED BETWEEN SOCKET TERMINALS AND CHASSIS
AC LINE VOLTAGE 115 VOLTS



REAR OF CHASSIS

IMPORTANT: Use a high resistance voltmeter of 1000 ohms per volt.

NOTE A: The grid bias for 6Q7G is—1.5 volts measured across resistor 29.

NOTE B: The grid bias for the 6A8G, 6K7, and the anode voltage of the A.V.C. section of the 6Q7G is—3.5 volts measured across resistors 29 and 54.

NOTE C: The grid bias for the 6F6G output tube is—19.5 volts measured across resistors 29, 54 and 27.

CALIBRATION AND ALIGNMENT

for Models R-145 & R-146

ALIGNING THE I. F. AMPLIFIER: Turn the volume control to maximum volume position and keep it in this position throughout the entire alignment procedure. Turn the range switch to the broadcast position (fully clockwise).

Connect the test oscillator output leads to the 6A8 control grid and chassis with a **.1 mfd. condenser in series with the** oscillator output. Set the oscillator to exactly 456 KC. Set the receiver dial at any point where it has no tuning effect on the oscillator signal.

Adjust the four I.F. trimmers, Nos. 1, 2, 3 and 4, for maximum output meter deflection, then repeat the trimmer adjustment.

BROADCAST BAND CALIBRATION AND ALIGNMENT: With the gang condenser in full mesh, the dial pointer should be on the white horizontal line below 530 KC. on the dial scale.

Turn the range switch to the extreme clockwise position and connect the test oscillator output to the A and G terminals of the receiver with a 400 ohm carbon resistor in series with the A terminal and the oscillator output.

Adjust the test oscillator to exactly 1500 KC. and turn the receiver dial pointer to 1500 KC. on the tuning dial. To calibrate the dial, adjust trimmer No. 5 for maximum output.

Carefully tune the receiver to the signal and adjust trimmers Nos. 6 and 7 for maximum output.

Adjust the test oscillator to 600 KC. and tune the receiver to the signal. Adjust trimmer No. 8 for maximum output. Then try to increase the output meter reading by detuning No. 8 slightly and retuning the receiver dial. If the output goes down, detune the trimmer in the opposite direction. Continue detuning the trimmer and retuning the receiver dial until maximum output meter deflection is secured. This operation is commonly known as "rocking" and when performed as described will give maximum selectivity and sensitivity even though the dial may be slightly off calibration at 600 KC.

R-145 Models

WAVE-TRAP ADJUSTMENT: (included only in chassis stamped "S"). The wave-trap adjusting trimmer, No. 13, is located on the back of the chassis. Leave the test oscillator connected to the A and G terminals through a 400 ohm resistor and set the oscillator at 456 KC. Then adjust the wave-trap trimmer No. 13 for minimum output. If some particular station with a frequency near 456 KC. causes code interference, it may be desirable to adjust the wave-trap on the actual frequency of the interfering station.

Check the adjustment of trimmers 5, 6, and 7 at 1500 KC.

BAND NO. 2 CALIBRATION AND ALIGNMENT: Turn the range switch to the center position.

Adjust the test oscillator to exactly 5.0 MC. and turn the receiver dial pointer to exactly 5.0 MC. on the tuning dial.

To calibrate the dial, adjust trimmer No. 9 for maximum output. If two peaks are found, the proper one is that with the trimmer screw farthest out.

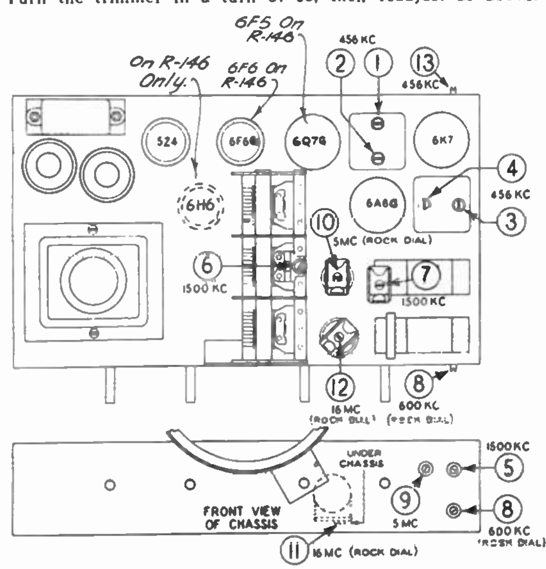
Carefully tune the receiver to the signal and adjust trimmer No. 10 for maximum output. Then try to increase the output by detuning No. 10 slightly and retuning the receiver dial. Continue detuning No. 10 and retuning the dial until the output meter deflection is a maximum.

BAND NO. 3 CALIBRATION AND ALIGNMENT: Turn the range switch to the extreme counter-clockwise position. Be sure the D and G terminals on the antenna terminal strip are connected together.

Set the test oscillator to 16 MC. and turn the receiver dial pointer to exactly 16 MC. on the tuning dial.

To calibrate the dial, adjust trimmer No. 11 for maximum output. Check to see that it has been adjusted to the proper peak by tuning the receiver to approximately 15.1 MC. A repeat signal should be heard at this point. If none is present, even with greatly increased oscillator output, retune the receiver to 16 MC. and adjust trimmer No. 11 to the proper peak with the trimmer screw farther out.

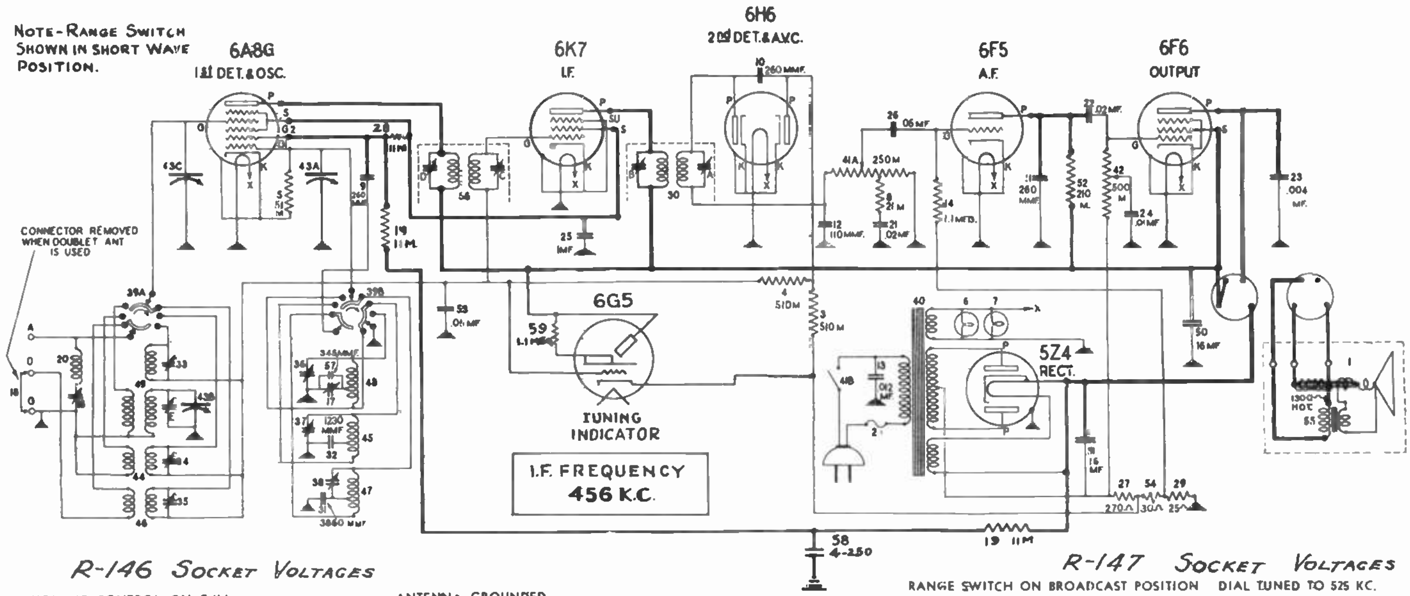
Carefully tune the receiver to the signal and adjust trimmer No. 12 to a peak. Then try to increase the output by detuning the trimmer slightly and retuning the dial until a maximum output meter deflection is secured. Check the adjustment by tuning the receiver to the image at about 15.1 MC. The image should be much weaker than the 16 MC. signal. If the signal at 15.1 MC. dial setting is equal to or stronger than the 16 MC. signal, trimmer No. 12 is not set to the proper peak. Turn the trimmer in a turn or so, then readjust as above.



COURTESY - STEWART-WARNER-33
ALEMITE CORP. LTD.

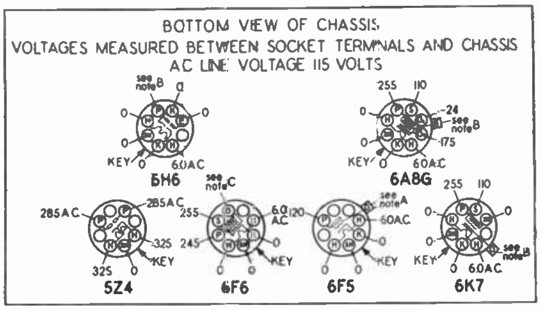
DATA SHEET

World Radio History



R-146 Socket Voltages

VOLUME CONTROL ON FULL
RANGE SWITCH SET ON BROADCAST POSITION
ANTENNA GROUNDED
DIAL TUNED TO 525 KC.



REAR OF CHASSIS

IMPORTANT: Use a high resistance voltmeter of 1000 ohms per volt.
NOTE A: The grid bias for the 6F5 is—1.5 volts measured across resistor 29.
NOTE B: The grid bias for the 6A8G, 6K7, and the anode voltage of the A.V.C. section of the 6H6 is—3.5 volts measured across resistors 29 and 54.
NOTE C: The grid bias for the 6F6 output tube is—19.5 volts measured across resistors 29, 54 and 27.

CHASSIS MODEL R-146

ABOVE
RECEIVER MODEL 1465

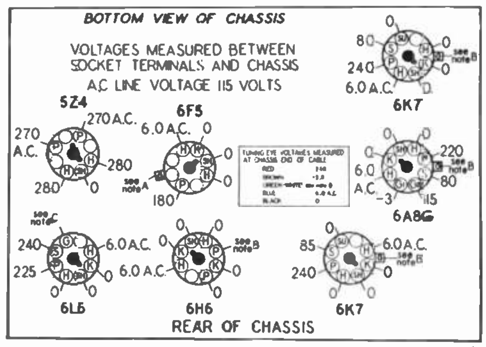
Alignment Data on Data Sheet-33

CHASSIS MODEL R-147

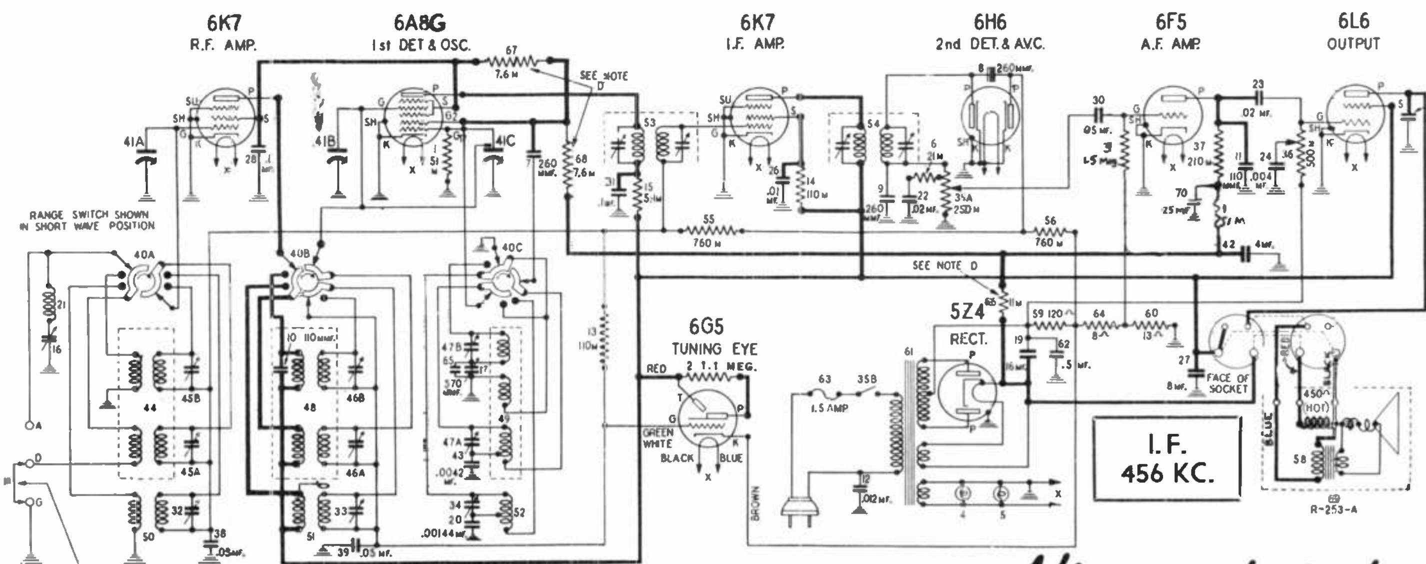
BELOW
RECEIVER MODELS 1471 - 1479

R-147 Socket Voltages

RANGE SWITCH ON BROADCAST POSITION
VOLUME CONTROL ON FULL
DIAL TUNED TO 525 KC.
ANTENNA GROUNDED



IMPORTANT: Use a high resistance voltmeter of 1000 ohms per volt.
NOTE A: The grid bias for the 6F5 is—1.3 volts measured across resistor 60.
NOTE B: The grid bias for the 6A8G, 6K7's, and the anode voltage of the A.V.C. section of the 6H6 is—2.0 volts measured across resistors 60 and 64
NOTE C: The grid bias for the 6L6 output tube is —13.0 volts measured across resistos 59, 64 and 60.



NOTE D: In receivers having serial numbers below 70,450, resistor 67 is omitted, and the screen grids of the 6K7, R.F. amplifier and the 6A8G receive their current through a 31,000 ohm, 1 watt carbon resistor which is connected to the screen grid of the 6L6. In addition, resistor 66 has a rating of 30,000 ohms, 1 watt and resistor 68 has a rating of 16,000 ohms, ¼ watt.

1936-37

Alignment Data on Sheet-35a.

DATA SHEET STEWART-WARNER-34

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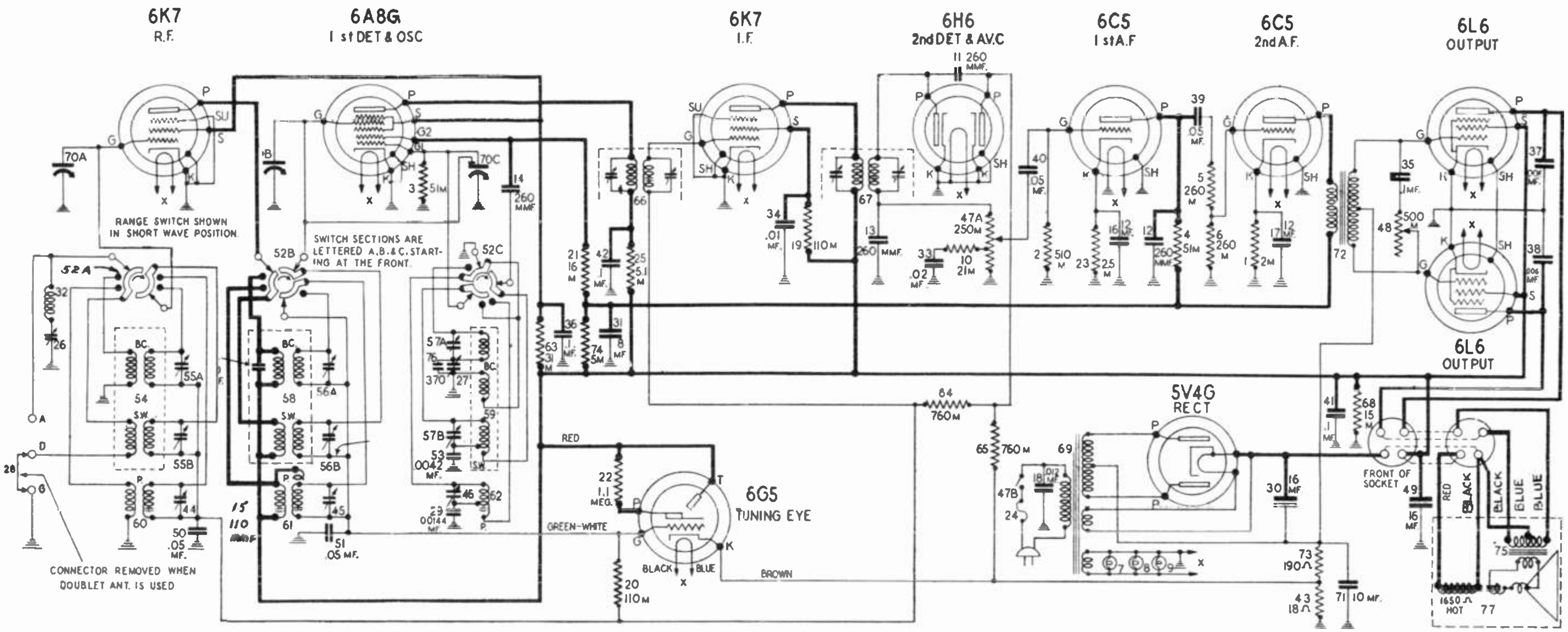
World Radio History

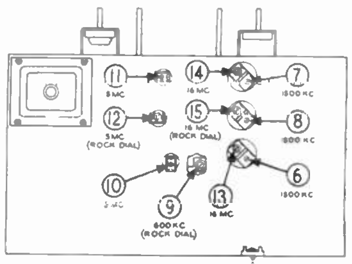


STEWART-WARNER-35

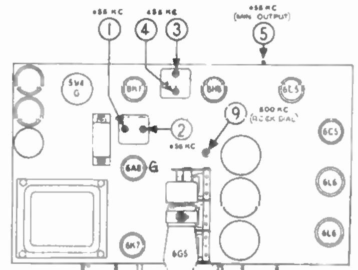
COURTESY - ALEMITE CORP. LTD.

I.F. = 456 K.C.

Alignment Data on Sheet-35a



BOTTOM VIEW OF CHASSIS



TOP VIEW OF CHASSIS

CHASSIS MODEL R-148

RECEIVER MODEL-1485

TRIMMER LOCATIONS

I.F. AMPLIFIER

Trimmer No.

1, 2 — First I.F. transformer trimmers

3, 4 — Second I.F. transformer trimmers

WAVE TRAP

5 — 456 KC. wavetrap trimmer

BAND No. 1 (BROADCAST) (527 to 1750 KC.)

6 Broadcast band oscillator shunt trimmer
7 Broadcast band antenna shunt trimmer
8 Broadcast band detector shunt trimmer
9 Broadcast band oscillator series padder

BAND No. 2 (1720 to 5600 KC.)

10 Band No. 2 oscillator shunt trimmer
11 Band No. 2 antenna shunt trimmer
12 Band No. 2 detector shunt trimmer

BAND No. 3 (5.5 to 18 MC.)

13 Band No. 3 oscillator shunt trimmer
14 Band No. 3 antenna shunt trimmer
15 Band No. 3 detector shunt trimmer

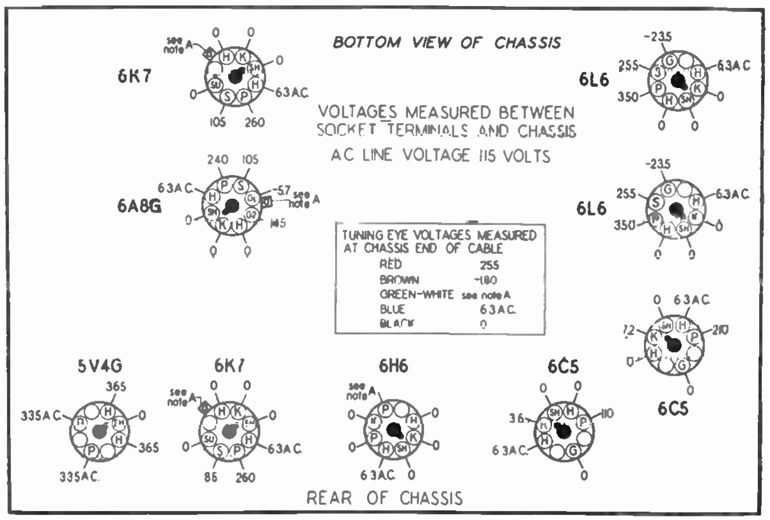
1936-37

SOCKET VOLTAGES

VOLUME CONTROL ON FULL — RANGE SWITCH SET ON BROADCAST POSITION — ANTENNA GROUNDED — SET TUNED TO 530 K. C.

IMPORTANT: Use a high resistance voltmeter of 1,000 ohms per volt.

NOTE A: -1.8 volts measured across resistor 43.



DATA SHEET

ALIGNMENT DATA MODEL R-148

Schematic Diagram on Data Sheet - 35

Receiver Model-1485

ALIGNMENT OF THE I.F. AMPLIFIER

1. (a) Turn the volume control to maximum volume position and keep it in this position throughout the entire alignment procedure.

(b) Connect the test oscillator output leads to the 6A8G control grid and the chassis with a .1 or .25 mfd. condenser **in series with the oscillator lead to the 6A8G grid.**

(c) Set the test oscillator to exactly 456 KC. Adjust the output of the test oscillator to give about half scale deflection on the output meter.

(d) Turn the range switch to the extreme clockwise position and set the tuning dial to any point where there is no tuning effect on the oscillator signal.

(e) Adjust the four I.F. transformer trimmers (trimmers No. 1, 2, 3, and 4) for maximum output meter deflection.

(f) Repeat the four trimmer adjustments, since the adjustment of each trimmer has some effect on the others.

ADJUSTMENT OF WAVE TRAP

2. (a) Leave the test oscillator at 456 KC. but connect the oscillator output to the A and G terminals of the receiver with a 400 or 500 ohm carbon resistor in series with the oscillator output and the A terminal.

(b) Adjust trimmer No. 5 for minimum output. Increase the oscillator output as necessary to obtain a clearly defined point of minimum output. If some particular station with a frequency slightly different than 456 KC. causes code interference, it may be advisable to adjust trimmer No. 5 on the actual frequency of the interfering station.

BAND NO. 1 (BROADCAST) CALIBRATION

3. (a) Check the position of the dial pointer on its shaft by turning the tuning knob until the rotor plates of the gang condenser are in full mesh. The slow-moving dial pointer should then coincide with the low frequency end of the dial scale. If it does not hold the dial gear and turn the pointer to the correct position.

(b) Turn the range switch control to the extreme right position. (Clockwise).

(c) Connect a 400 or 500 ohm carbon resistor in series with the test oscillator output and the receiver antenna terminal. (Note: This resistor should remain connected for all subsequent adjustments.

(d) Ground the receiver.

(e) Adjust the test oscillator to exactly 1500 KC.

(f) Tune in the 1500 KC. oscillator signal or a station above 1300 KC. on the dial and determine whether the dial calibration is correct at the high frequency end of the dial. If it is not correct, adjust trimmer No. 6 to give proper calibration. Do not adjust this trimmer if the dial calibration is correct at the high frequency end of the dial.

BAND NO. 1 (BROADCAST) ALIGNMENT

4. (a) With the test oscillator set at 1500 KC. tune the receiver to the signal for maximum output.

(b) Adjust trimmers No. 7 and 8 for maximum output. Do not touch trimmer No. 6 as this will change the calibration.

(c) Adjust the test oscillator to exactly 600 KC. and tune the receiver to the signal. Adjust trimmer No. 9 for maximum output. Then try to increase the output by detuning the trimmer and retuning the receiver dial. If this reduces the output, detune the trimmer on the opposite direction. Continue detuning the trimmer and retuning the dial until a maximum output meter deflection is secured. This operation is commonly known as "rocking." The object of this adjustment is to find the combination of trimmer adjustment and tuning condenser position which gives maximum output. This adjustment should not be changed regardless of whether the dial reads exactly 600 KC. or slightly off 600 KC. for maximum output.

(d) Check the adjustment of trimmers Nos. 6, 7 and 8 at 1500 KC.

BAND NO. 2 CALIBRATION

5. (a) Turn the range switch to the center position.

(b) Adjust the test oscillator to exactly 5.0 MC.

(c) Tune in the 5 MC. oscillator signal at or near 5 MC. on the receiver dial to determine whether the receiver dial calibration is correct at 5 MC. If it is, do not adjust trimmer No. 10. If the calibration is incorrect, set the dial pointer at 5 MC. on the dial, and adjust trimmer No. 10 until the oscillator signal comes in at this point. If there are two peaks, the proper one is that with the trimmer screw farthest out.

BAND NO. 2 ALIGNMENT

6. (a) With the test oscillator set at 5.0 MC., tune the receiver for maximum output.

(b) Adjust trimmer No. 11 and 12 for maximum output. After this is done try to increase the output meter reading by detuning No. 12 slightly and retuning the receiver dial. If the output goes down, detune the trimmer in the opposite direction. Continue detuning No. 12 and retuning the set until maximum output meter deflection is secured. Then readjust No. 11.

BAND NO. 3 CALIBRATION

7. (a) Turn the range switch to the extreme left (counter clockwise).

(b) Be sure that the D and G terminals on the antenna terminal strip are connected together.

(c) Adjust the test oscillator to exactly 16 megacycles.

(d) Tune in the 16 MC. oscillator signal at or near 16 MC. on the receiver dial to determine whether the receiver dial calibration is correct at 16 MC. If it is, do not adjust trimmer No. 13. If the calibration is incorrect, set the receiver dial pointer exactly at 16 MC. and adjust trimmer No. 13 until the oscillator signal comes in at this point.

(e) Check to see that trimmer No. 13 is adjusted to the proper peak by tuning the receiver to approximately 15.1 MC. If a repeat signal is not heard at this point, even with greatly increased oscillator output, retune the receiver to 16.0 MC. and adjust trimmer No. 13 to the proper peak with the trimmer screw farther out.

BAND NO. 3 ALIGNMENT

8. (a) With the test oscillator set at 16 MC. tune the receiver for maximum output.

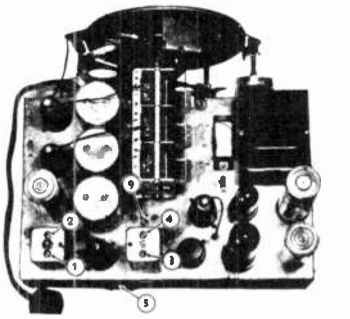
(b) Adjust trimmer No. 14 and 15 for maximum output. After this is done, try to increase the output meter deflection by detuning No. 15 slightly and retuning the receiver dial. If this causes the output to drop, detune the trimmer in the opposite direction. Continue detuning No. 15 and retuning the set until the output is at a maximum. Then readjust No. 14.

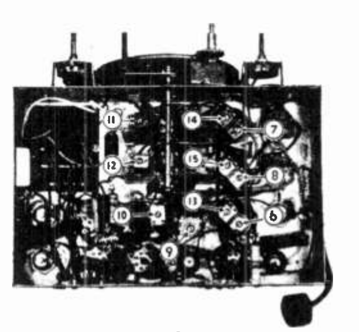
(c) Check the adjustment of No. 15 by tuning the receiver to the image at 15.1 MC. and noting if the image is much weaker than the 16 MC. signal. If the signal at 15.1 MC. dial setting is equal to or stronger than the 16 MC. signal, trimmer No. 15 is not set to the proper peak. Turn the trimmer in a turn or so, then readjust as in 8 (b).

ALIGNMENT DATA MODEL R-147

Receiver Models 1471 to 1479

Schematic Diagram on Data Sheet - 34





CALIBRATION AND ALIGNMENT

ALIGNING EQUIPMENT: For proper alignment, an output meter and an accurately calibrated oscillator with a tuning range from 456 KC. to 16 MC. are required.

Connect the output meter from the plate of the output tube to chassis. A convenient point to make the plate connection is to the yellow wire on speaker socket.

ALIGNING THE I. F. AMPLIFIER: Turn the volume control to maximum volume position and keep it in this position throughout the entire alignment procedure. Turn the range switch to the broadcast position (fully clockwise).

Connect the test oscillator output leads to the 6A8G control grid and chassis with a .1 mfd. **condenser in series with the oscillator output.** Set the oscillator to exactly 456 KC. Set the receiver dial at any point where it has no tuning effect on the oscillator signal.

Adjust the four I.F. trimmers, Nos. 1, 2, 3 and 4, for maximum output meter deflection, then repeat the trimmer adjustment.

WAVE-TRAP ADJUSTMENT: The wave-trap adjusting trimmer, No. 5, is located on the back of the chassis. Leave the test oscillator at 456 KC. Connect the oscillator output to the A and G terminals with a 400 ohm resistor in series with the A terminal and oscillator output. Then adjust the wave-trap trimmer No. 5 for **minimum** output. If some particular station with a frequency near 456 KC. causes code interference, it may be desirable to adjust the wave-trap on the actual frequency of the interfering station.

BROADCAST BAND CALIBRATION AND ALIGNMENT: With the gang condenser in full mesh, the dial pointer should be on the white horizontal line below 530 KC. on the dial scale. Leave the range switch in the extreme clockwise position, and leave the test oscillator connected to the A and G terminals of the receiver through a 400 ohm resistor.

Adjust the test oscillator to exactly 1500 KC. and turn the receiver dial pointer to 1500 KC. on the tuning dial. To calibrate the dial, adjust trimmer No. 6 for maximum output.

Carefully tune the receiver to the signal and adjust trimmers Nos. 7 and 8 for maximum output.

Adjust the test oscillator to 600 KC. and tune the receiver to the signal. Adjust trimmer No. 9 for maximum output. Then try to increase the output meter reading by detuning No. 9 slightly and retuning the receiver dial. If the output goes down, detune the trimmer in the opposite direction. Continue detuning the trimmer and retuning the receiver dial until maximum output meter deflection is secured. This operation is commonly known as "rocking" and when performed as described will give maximum selectivity and sensitivity even though the dial may be slightly off calibration at 600 KC.

BAND NO. 2 CALIBRATION AND ALIGNMENT: Turn the range switch to the center position.

Adjust the test oscillator to exactly 5.0 MC. and turn the receiver dial pointer to exactly 5.0 MC. on the tuning dial.

To calibrate the dial, adjust trimmer No. 10 for maximum output. If two peaks are found, the proper one is that with the trimmer screw farthest out.

Carefully tune the receiver to the signal and adjust trimmers Nos. 11 and 12 for maximum output. Then try to increase the output by detuning No. 12 slightly and retuning the receiver dial. Continue detuning No. 12 and retuning the dial until the output meter deflection is a maximum. Then readjust No. 11 for maximum output.

BAND NO. 3 CALIBRATION AND ALIGNMENT: Turn the range switch to the extreme counter-clockwise position. Be sure the D and G terminals on the antenna terminal strip are connected together.

Set the test oscillator to 16 MC. and turn the receiver dial pointer to exactly 16 MC. on the tuning dial.

To calibrate the dial, adjust trimmer No. 13 for maximum output. Check to see that it has been adjusted to the proper peak by tuning the receiver to approximately 15.1 MC. A repeat signal should be heard at this point. If none is present, even with greatly increased oscillator output, retune the receiver to 16 MC. and adjust trimmer No. 13 to the proper peak with the trimmer screw farther out.

Carefully tune the receiver to the signal and adjust trimmers Nos. 14 and 15 to a peak. Then try to increase the output by detuning No. 15 slightly and retuning the dial until a maximum output meter deflection is secured. Then readjust No. 14 for maximum output. Check the adjustment by tuning the receiver to the image at about 15.1 MC. The image should be much weaker than the 16 MC. signal. If the signal at 15.1 MC. dial setting is equal to or stronger than the 16 MC. signal, trimmer No. 15 is not set to the proper peak. Turn the trimmer in a turn or so, then readjust as above.

TRIMMER LOCATIONS

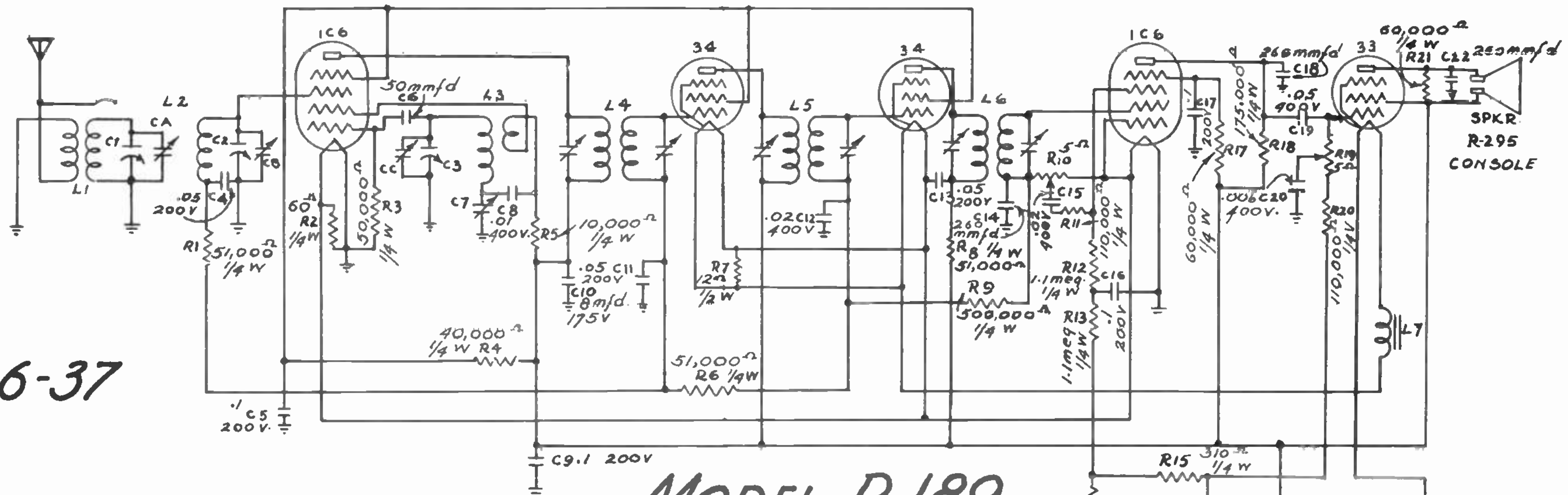
Trimmer Number		Alignment Frequency
1	1st I.F. transformer trimmer	456 KC.
2	1st I.F. transformer trimmer	456 KC.
3	2nd I.F. tranformer trimmer	456 KC.
4	2nd I.F. tranformer trimmer	456 KC.
5	Wave trap trimmer	456 KC.
6	Broadcast oscillator shunt trimmer	1500 KC.
7	Broadcast antenna shunt trimmer	1500 KC.
8	Broadcast detector shunt trimmer	1500 KC.
9	Broadcast oscillator series padder	600 KC.
10	Police oscillator shunt trimmer	5 MC.
11	Police antenna shunt trimmer	5 MC.
12	Police detector shunt trimmer	5 MC.
13	Short wave oscillator shunt trimmer	16 MC.
14	Short wave antenna shunt trimmer	16 MC.
15	Short wave detector shunt trimmer	16 MC.

World Radio History

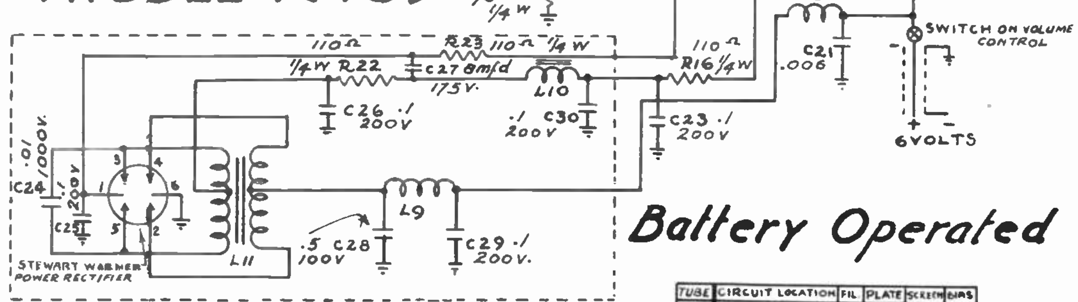
STEWART-WARNER-36 DATA SHEET

COURTESY ALEMITE CORP. LTD.

1936-37



MODEL-R-189



Battery Operated

TUBE	CIRCUIT LOCATION	FIL.	PLATE	SCREEN	BIAS
1C6	1ST. DETECTOR OSC.	1.92	105 OSC. 78	40	-1.92//
34	1ST I.F.	1.92	105	40	-1.92//
34	2ND I.F.	1.92	97	40	-1.92//
1C6	2ND DET.-AVC-1ST AUDIO	1.92	45	25	*1.4*
33	OUTPUT	1.92	102	105	-10.5*

MEASURED WITH A 1000 OHMS PER VOLT METER FROM TUBE SOCKET TO GROUND EXCEPT.—

// Measured From (−) Fil. to ground

* Measured Across R14

* Measured From (−) to Junction of R15 & R20

Drain from 6 Volt Battery ·98 Amp.

ALIGNMENT DATA

Alignment—The alignment operation can all be performed without removing the chassis from the cabinet.

(a) Connect an output meter to the speaker terminals or between plate and screen of the output tube.

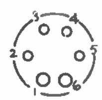
(b) Connect a 370 K.C. oscillator between the grid cap of the 1C6 first detector and ground Make sure that there is a condenser (approximately .02mfd) in the oscillator leads so that the 1-C-6 grid is not shorted to the ground and the bias upset.

(c) With the volume control full on, align the I.F. stages beginning with the last and working forward, keeping the input signal low enough so that the lowest practical output reading is obtained. Particular care must be taken in aligning the I.F. because these circuits are very selective. If the alignment was very far out repeat the above operation. This alignment should be carried out with the gang condenser set about 1400 K.C.

(d) Transfer the oscillator leads to the antenna and ground and tune it to 1400 K.C. Set the dial on the receiver to 1400 K.C. and adjust Cc, Cb and Ca in that order for maximum output. Keep the input from the oscillator as low as possible as before.

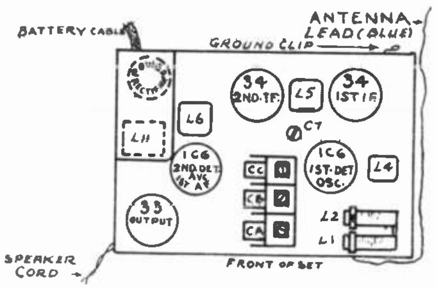
(e) Adjust the receiver and oscillator in tune at 550 K.C. and align C7 for maximum output, rocking the tuning condenser back and forth slightly while aligning

(f) If an appreciable change in C7 was necessary operation (d) should be repeated.



RECTIFIER SOCKET (BOTTOM VIEW)

IF-370 Kc.

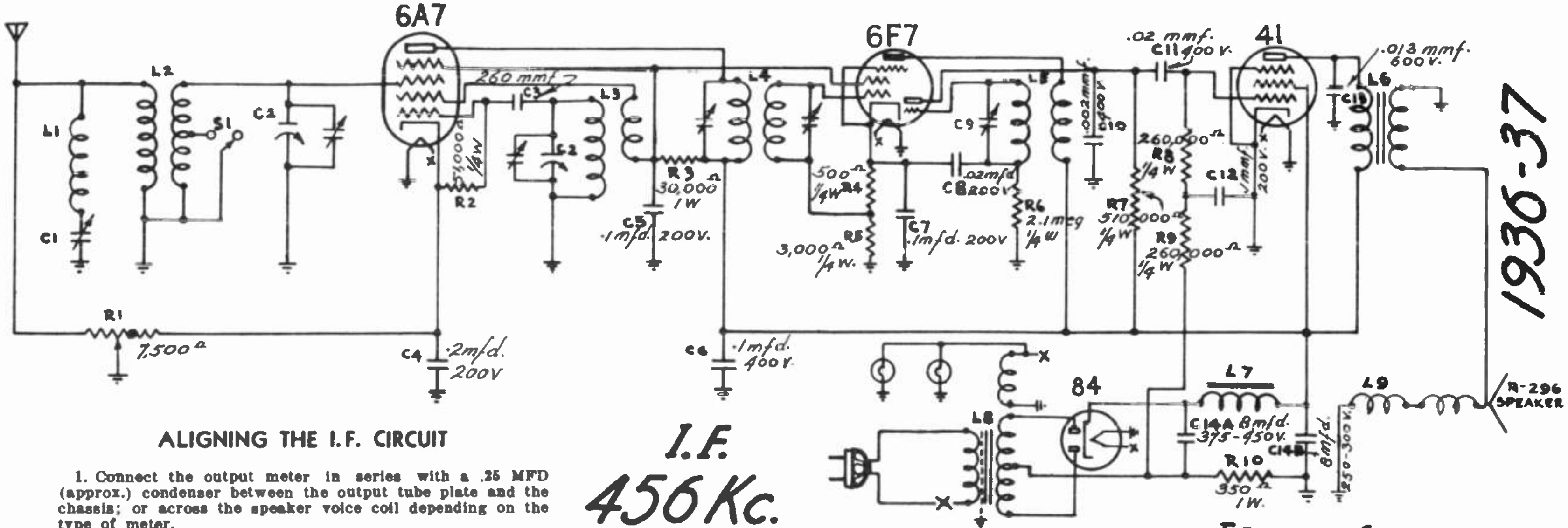


World Radio History

DATA SHEET

COURTESY- STEWART-WARNER-37 ALEMITE CORP. LTD.

1936-37



I.F. 456 Kc.

MODEL R-192

ALIGNING THE I.F. CIRCUIT

1. Connect the output meter in series with a .25 MFD (approx.) condenser between the output tube plate and the chassis; or across the speaker voice coil depending on the type of meter.

2. Turn the volume control to maximum. (Note: the volume control should be left in this position during the whole alignment procedure. Ground the antenna post to the chassis. (The antenna post is marked A).

3. Turn the range switch to the right to the Broadcast position.

4. Adjust the test oscillator to 456 K.C. and connect its output to the control grid cap of the 6A7 first detector and the chassis.

5. Align the three I.F. trimmers beginning with C9 for maximum output as indicated on the output meter.

6. Repeat all I.F. trimmer adjustments since the changing of each trimmer will affect the others to a certain extent.

456 K.C. WAVE TRAP ADJUSTMENT

1. Disconnect the antenna post from ground and connect it to the ouput of the test oscillator through a dummy antenna. A 200 or 250 MMFD. condenser will serve this purpose.

2. Without changing the test oscillator from the frequency setting used to align the I.F. circuits, adjust the wave trap trimmer C1 for minimum output. Increase the test oscillator output as a minimum is approached so that the trimmer can be accurately adjusted. It is very sharp.

NOTE: If code interference is troublesome on some frequency in the neighbourhood of 456 K.C. adjust the wave trap trimmer until it is a minimum with a signal from the test oscillator of the same frequency as the interfering code signal.

DIAL CALIBRATION

If the receiver should require calibration proceed as follows,—

1. Turn the gang condenser to full mesh and check to see that the dial pointer indicates 530. If it does not, loosen the screws holding the pointer and re-set it.

2. Adjust the test oscillator to 1400 K. C. and connect it to the antenna and ground terminals of the set through a dummy antenna.

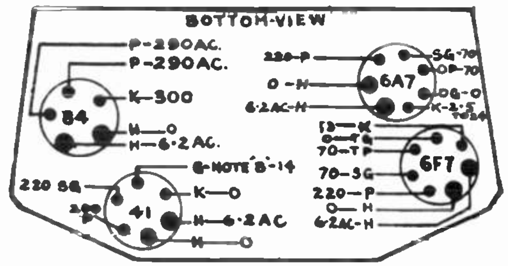
3. Turn the knob till the pointer indicates 1400 K. C. on the scale and adjust the trimmers on the gang for maximum output as indicated on the output meter.

R.F. ALIGNMENT

1. Set the test oscillator to 1400 K.C. and apply it to the receiver as above.

2. Turn the dial pointer to 1400 K.C. on the scale and adjust the trimmers on the gang for maximum output. Adjust the oscillator trimmer first; it is the one nearest to the front of the set. These trimmers can be reached through the hole in the back cover of the case.

FRONT OF SET

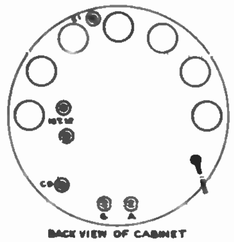


Voltages and Tube layout.

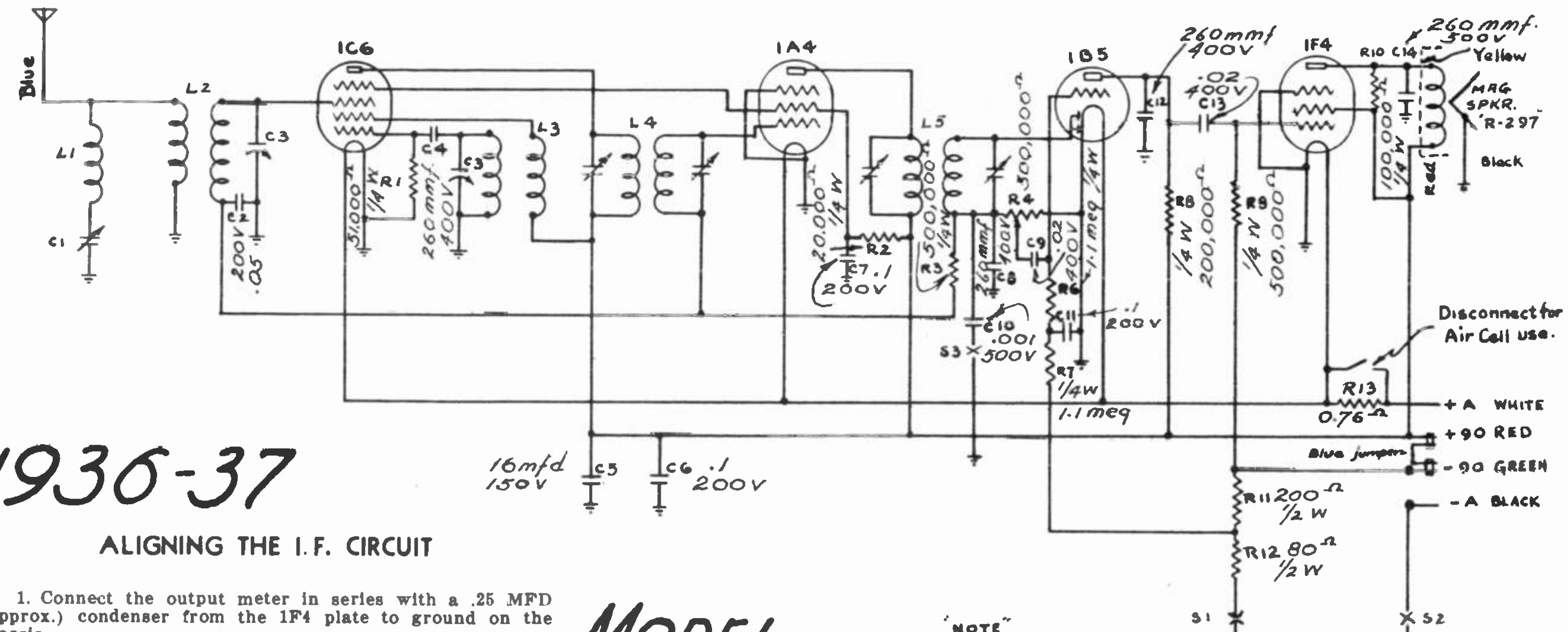
Note-"A"-all voltages to chassis using a 1000 ohms. per. volt. meter.

Note-"B"-measured across resistor -"R10."

Note-"C"- bias voltage across R4 - 2 volts



World Radio History



1936-37

ALIGNING THE I.F. CIRCUIT

1. Connect the output meter in series with a .25 MFD (approx.) condenser from the 1F4 plate to ground on the chassis.

2. Turn the volume control to maximum and leave it at this setting throughout the whole alignment procedure. Ground the antenna lead to the chassis.

3. Adjust the test oscillator to exactly 456 K.C. and connect its output between the 1C6 control grid cap and the chassis. Use an .05 MFD condenser in series with the lead if there is not already one in the oscillator itself.

4. Adjust the four I.F. trimmer condenser on top of the cans beginning with the second stage which feeds the 1B5 for maximum output as indicated on the output meter.

5. Repeat section 4 as the adjustment of any one trimmer will have some effect on the remaining ones.

456 KC. WAVE TRAP ADJUSTMENT

1. Disconnect the antenna lead from ground and connect it to the output of the test oscillator through a dummy antenna. A 200 or 250 MMFD condenser will serve this purpose.

2. Without changing the test oscillator from the frequency used in aligning the I.F. circuits, adjust the wave trap trimmer on the front of the chassis base for minimum output. Increase the test oscillator output as a minimum is approached so that the trimmer can be accurately adjusted. It is very sharp. NOTE: If code interference is troublesome on a frequency in the neighborhood of 456 K.C., adjust the wave trap trimmer until it is a minimum with a signal from the test oscillator of the same frequency as the interfering code signal.

MODEL R-193

Battery Operated

"NOTE"

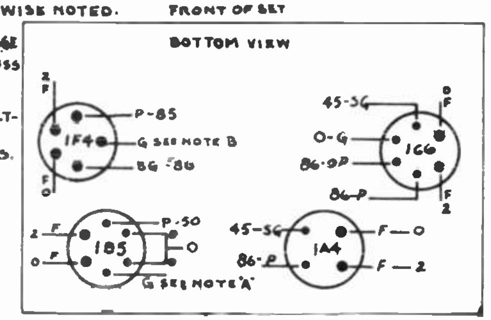
ALL VOLTAGES MEASURED FROM TUBE SOCKET TO CHASSIS WITH METER OF AT LEAST 1000 OHMS PER VOLT, EXCEPT AS OTHERWISE NOTED.

NOTE "A": THIS GRID BIAS VOLTAGE IS (-1) AND IS MEASURED ACROSS RESISTOR R12.

NOTE "B": THIS GRID BIAS VOLTAGE IS (-3.2) AND IS MEASURED FROM THE (-B) LEAD TO CHASSIS.

F	FILAMENT
P	PLATE
G	GRID
SG	SCREEN GRID
D	DIODE PLATE
OP	OSC. PLATE

FRONT OF SET



R.F. ALIGNMENT

1. Set the test oscillator at 1400 K.C. and apply it to the set as above.

2. Turn the pointer on the scale to 1400 K.C. and adjust the trimmers on the gang for maximum output. Adjust the oscillator trimmer first, the one nearest the front.

BATTERY DRAIN

1. The normal "A" battery drain is 360 milliamperes.

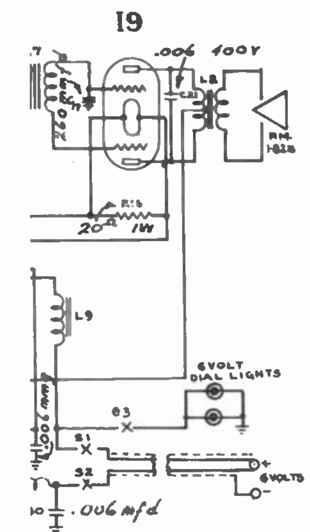
2. The normal "B" battery drain is 12 milliamperes from 90 volts of battery.

I.F. 456 Kc.

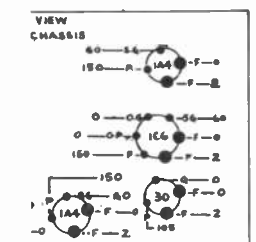
COURTESY - STEWART-WARNER-38 ALEMITE CORP. LTD.

DATA SHEET

ALEMITE CORP. LTD.



'936-37



...DE MEASURED WITH AN ORDINARY ...ER. THIS VOLTAGE IS OBTAINED FROM ... CELLS.

...AND ALIGNMENT: Turn the ...ounter-clockwise position. Be ...n the antenna terminal strip

...IC. and turn the receiver dial ...he tuning dial.

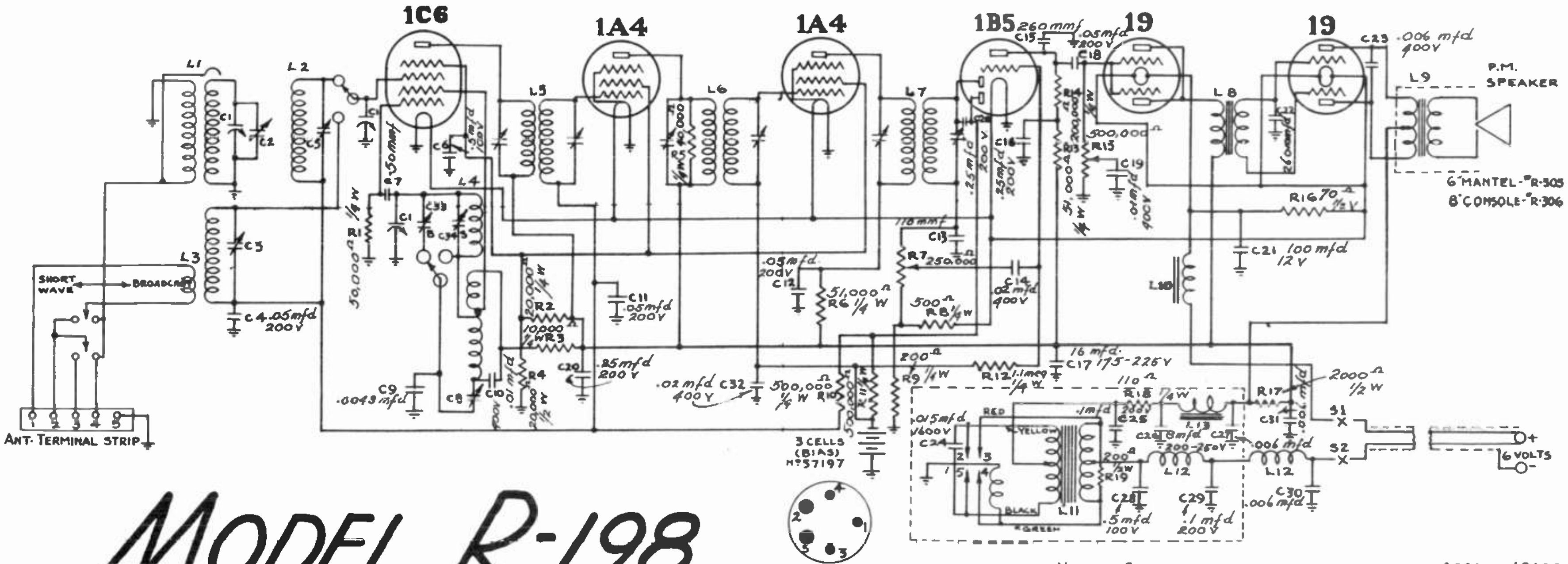
...t trimmer H for maximum ...s been adjusted to the proper ...approximately 15.1 MC. A ...l at this point. If none is ...ased oscillator output, retune ...ust trimmer H to the proper ...farther OUT.

...the signal and adjust trim...n try to increase the output ...uning the dial until a maxi...s secured. Then readjust B ...he adjustment by tuning the ...15.1 MC. The image should ...MC. signal; if the signal at ...or stronger than the 16 MC. ...the proper peak. Turn the ...readjust as above.

COURTESY - STEWART-WARNER-40 ALEMITE CORP. LTD.

DATA SHEET

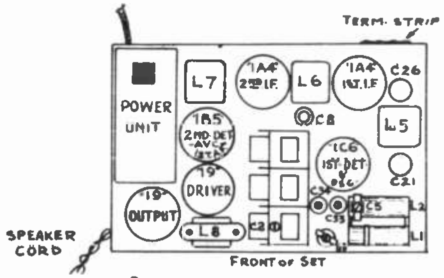
World Radio History



MODEL R-198

Battery Operated

VIBRATOR (SOCKET) BOTTOM VIEW



TUBE	CIRCUIT LOCATION	FIL.	PLATE	SCREEN	BIAS
19	OUTPUT	1·92	155	0	-2*
19	DRIVER	1·92	125		-4*
1B5	2ND DET.	1·02	90		-3$
1A4	I.F 2ND.	1 92	120	50	-3‡
1A4	I.F. 1ST.	1·92	130	50	-3‡
1C6	1ST. DET. & OSC.	1·92	130 OSC 95	50	-3‡

SEE NOTE

* DERIVED FROM FILAMENT VOLTAGE DROP.
$ OBTAINED FROM BIAS CELLS. CANNOT BE MEASURED WITH ORDINARY VOLTMETER.
‡ OBTAINED FROM BIAS CELLS THROUGH A.V.C. CIRCUIT

1936-37

I.F. 370 Kc.

DATA SHEET

COURTESY- STEWART-WARNER-41 ALEMITE CORP. LTD.

Service Data

If the receiver lacks sensitivity and the tubes and their voltages have checked O.K. (see voltage chart accompanying circuit diagram) proceed to check the alignment as follows.

Aligning Equipment—For proper alignment, an output meter and an accurately calibrated oscillator with a tuning range from 370 K.C. to 15 M.C. are required.

Alignment—The alignment operation can all be performed without removing the chassis from the cabinet.

(a) Connect an output meter across the voice coil terminals of the speaker.

(b) Connect a 370 K.C. oscillator between the grid cap of the 1-C-6 first detector and ground. Make sure that there is a condenser (approximately .02 MFD.) in the oscillator leads so that the 1-C-6 grid is not shorted to the ground and the bias upset.

(c) With the volume control full on, align the I.F. stages beginning with the last and working forward, keeping the input signal low enough so that the lowest practical output reading is obtained. Particular care must be taken in aligning the I.F. because these circuits are very selective. If the alignment was very far out repeat the above operation. This alignment should be carried out with the range switch in the "broadcast band" position and the gang condenser set about 1400 K.C.

(d) Transfer the oscillator leads to the antenna and ground and tune in to 1400 K.C. With the range switch in the "broadcast band" position set the dial on the receiver to 1400 K.C. and adjust C33, C5 and C2 in that order for maximum output. Keep the input from the oscillator as low as possible as before.

(e) Adjust the receiver and oscillator in tune at 550 K.C. and align C8 for maximum output, rocking the tuning condenser back and forth slightly while aligning.

(f) If an appreciable change in C8 was necessary operation (d) should be repeated.

(g) Turn the range switch to the short wave position and adjust the oscillator and tuning condenser in tune at 15 megacycles (20 meters). A fairly strong 20 meter signal will be received at two points on the dial; set the dial at the lowest wave length point.

(h) Adjust C34 and C3 in that order for maximum output.

NOTE:—A bakelite screw driver must be used for adjusting C34 and C33.

World Radio History

STEWART-WARNER-42

DATA SHEET

ALIGNING THE I. F. CIRCUIT

(1) Connect an output meter across the voice coil terminals of the speaker.

(2) Turn the volume control to maximum and leave it at this setting throughout the whole alignment procedure. Ground the antenna lead to the chassis.

(3) Adjust the test oscillator to exactly 456 KC and connect its output between the 1C7G control grid cap and the chassis. Use an .05 mfd. condenser in series with the lead if there is not already one in the oscillator itself.

(4) Adjust the four I.F. trimmer condensers on top of the cans, beginning with the second stage which feeds the 1H6G for maximum output as indicated on the output meter.

(5) Repeat section 4 as the adjustment of any one trimmer will have some effect on the remaining ones.

DIAL CALIBRATION

If the receiver should require calibration, proceed as follows:

(1) Disconnect the antenna lead from the ground and connect it to the output of the test oscillator through a dummy antenna. A 200 or 250 mmfd. condenser will serve the purpose.

(2) Turn the gang condenser to full mesh and check to see that the pointer lines up with the horizontal line below 530 KC on the scale. If it does not, shift the pointer.

(3) Adjust the test oscillator to 1400 KC and connect it to the set through the dummy antenna.

(4) Turn the knob till the pointer indicates 1400 KC on the scale and adjust the trimmers on the gang for maximum output using the weakest input signal that will give a satisfactory reading on the output meter.

R. F. ALIGNMENT

(1) Set the test oscillator at 1720 KC and apply it to the set as above.

(2) With the gang condenser set in the minimum capacity position, adjust trimmer, on back section of gang, for maximum output using the weakest input signal that will give a satisfactory reading on the output meter.

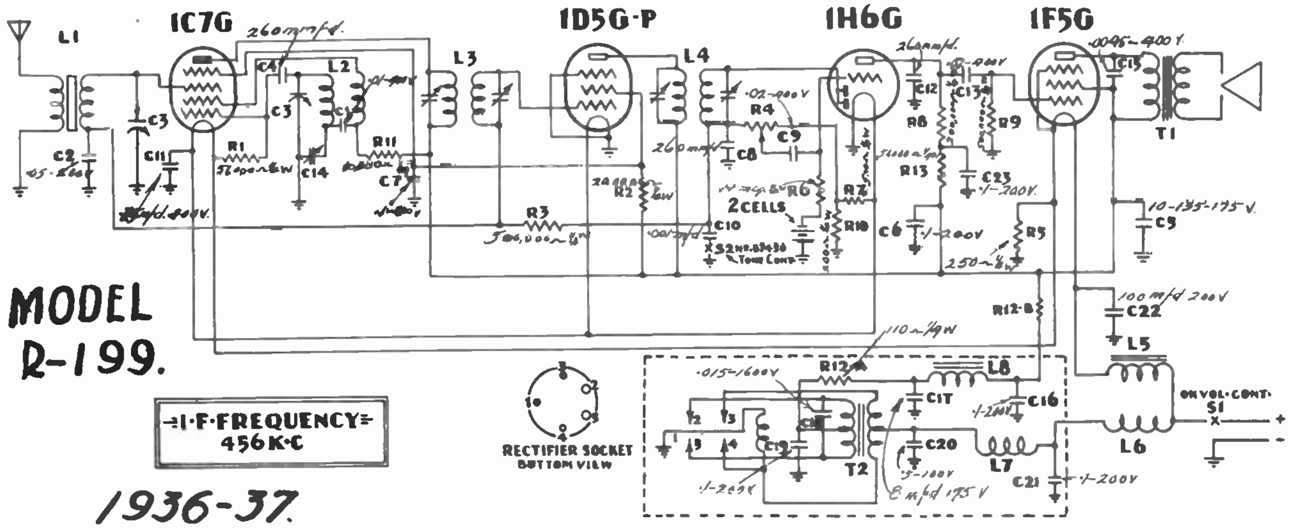
(3) Adjust the receiver and test oscillator in tune at 1400 KC and adjust trimmer on front section of gang for maximum output, keeping the input signal from the test oscillator as low as possible as before. Do not change adjustment of trimmer on back section of gang.

(C-13 on Model R-400)

(4) Adjust the receiver and test oscillator in tune at 600 KC and align C-14 for maximum output, rocking the tuning condenser back and forth slightly while aligning.

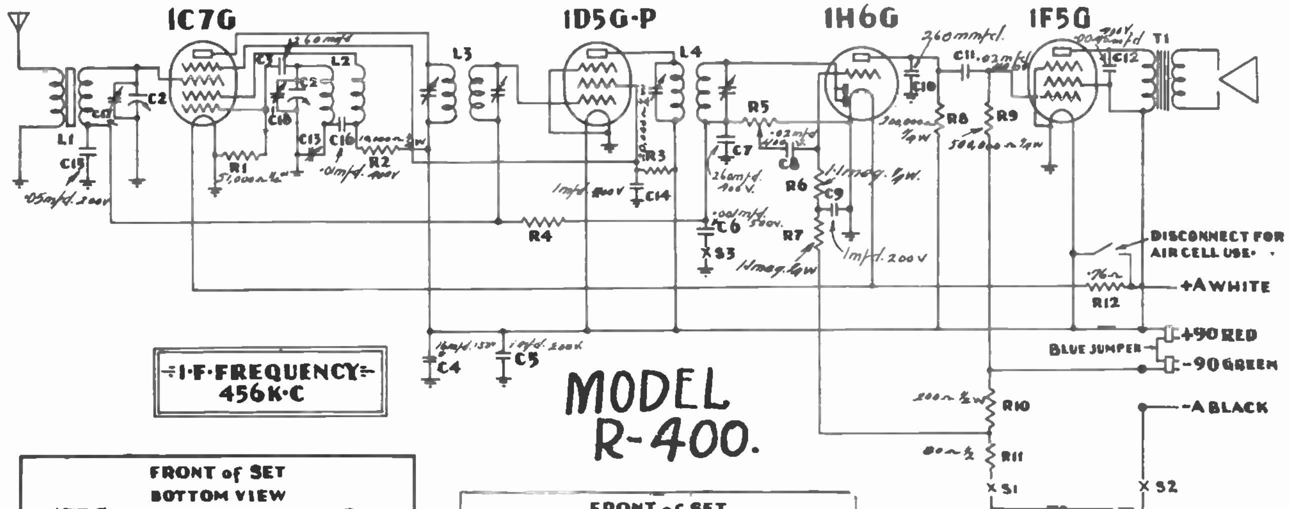
(5) If an appreciable change in C-14 was necessary operation 3 should be repeated. (C-13 on Model R-400)

MODEL R-199.



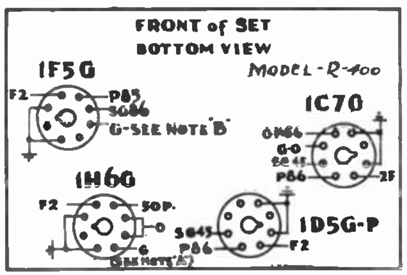
I·F·FREQUENCY 456K·C

1936-37.



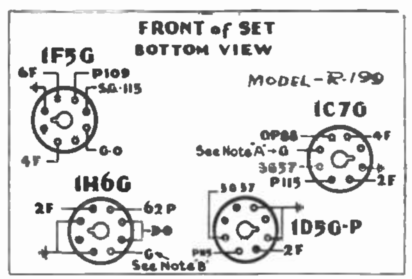
I·F·FREQUENCY 456K·C

MODEL R-400.



ALL VOLTAGES MEASURED FROM TUBE SOCKETS TO CHASSIS WITH METER OF AT LEAST 1000 OHMS PER VOLT, EXCEPT AS OTHERWISE NOTED.

'B' BATTERY DRAIN 12 MA.



Note:-BATTERY DRAIN AT 6 VOLTS IS .86 AMPS.

NOTE 'A' - BIAS OBTAINED THROUGH A.V.C. CIRCUIT.

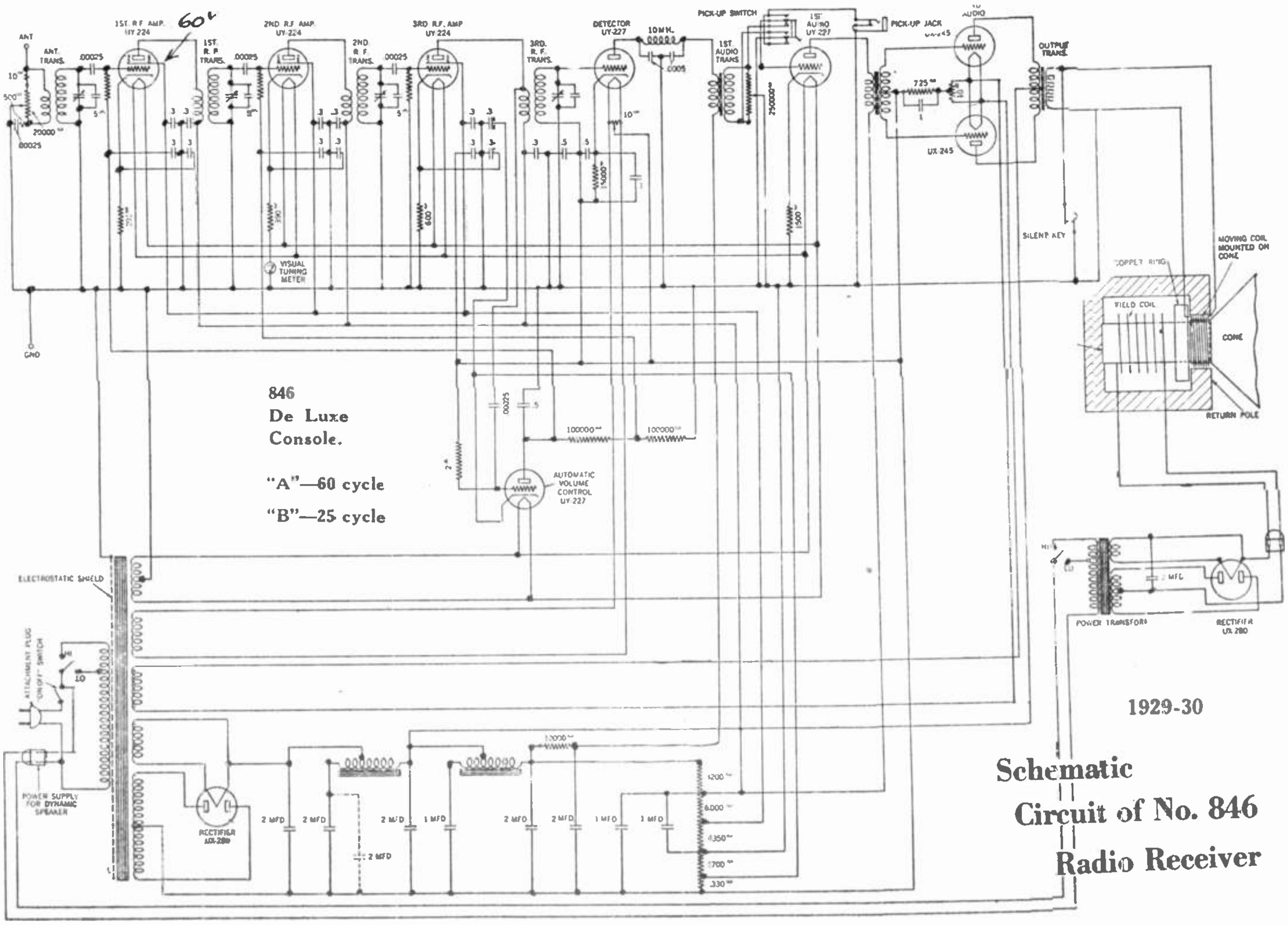
NOTE 'B' - BIAS (-2 V.) OBTAINED FROM BIAS CELLS NOT MEASURABLE.

ALL VOLTAGES MEASURED FROM TUBE SOCKETS TO CHASSIS WITH METER OF AT LEAST 1000 OHMS PER VOLT, EXCEPT AS OTHERWISE NOTED.

World Radio History

Model 846 1929-30

R.F. 145V 2·2ma. DET. 225V 2ma 120V 5·5ma 240V 30ma.



846
De Luxe
Console.

"A"—60 cycle

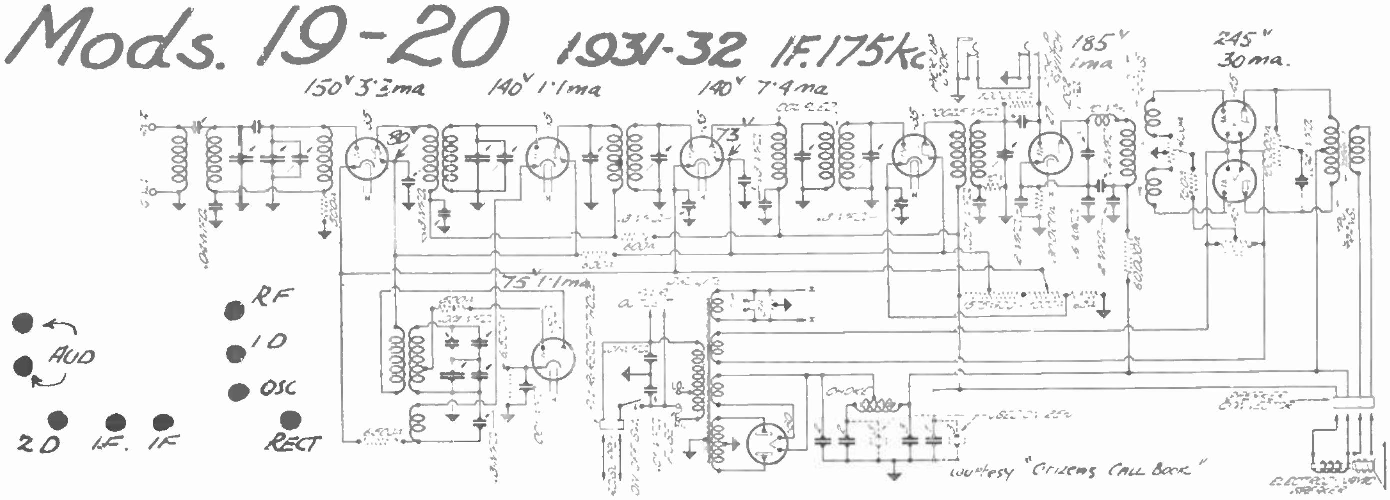
"B"—25 cycle

1929-30

Schematic Circuit of No. 846 Radio Receiver

Mods. 19-20 1931-32 I.F. 175 kc

185V 1ma 245V 30ma. 150V 3·5ma 140V 1·1ma 140V 7·4ma



Printed in Canada

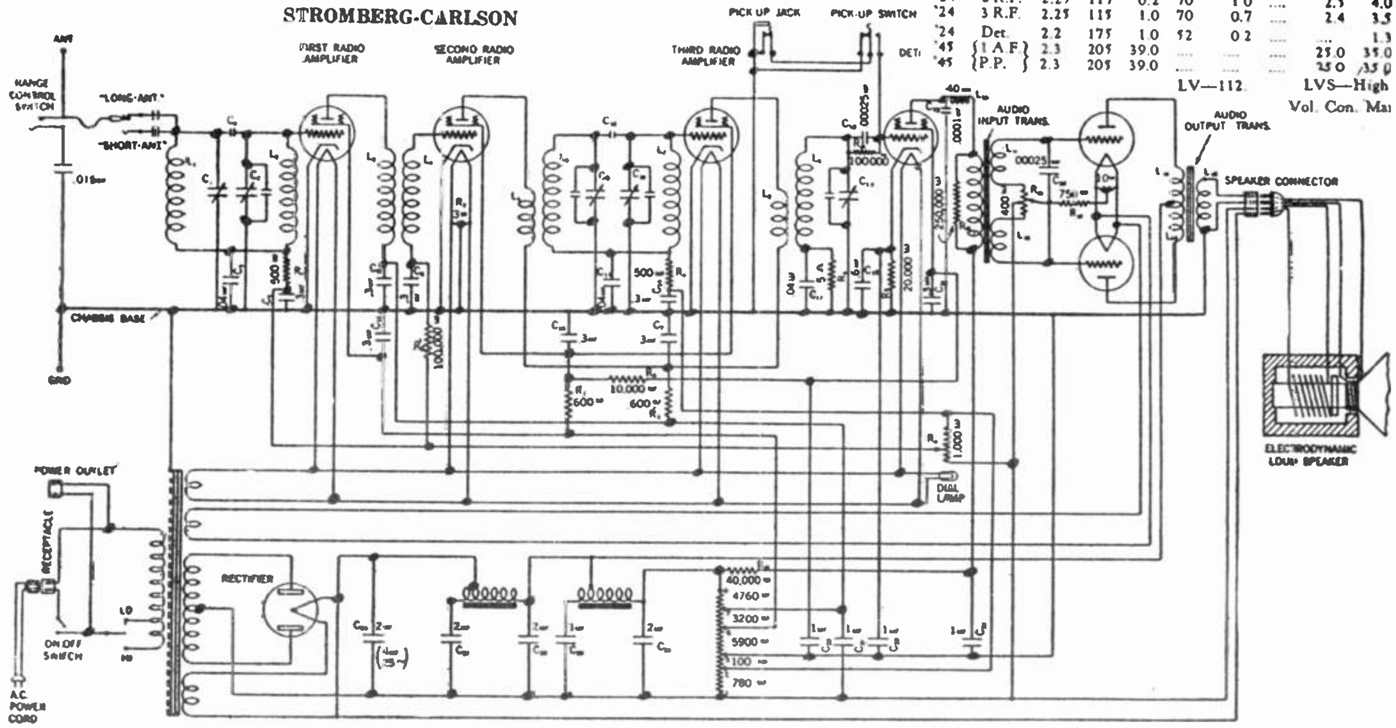
DATA SHEET

—Courtesy Stromberg-Carlson Telephone Mfg. Co. Limited

World Radio History

Schematic Circuit of Chassis for Nos. 10 and 11 Receivers 1930-31

STROMBERG-CARLSON

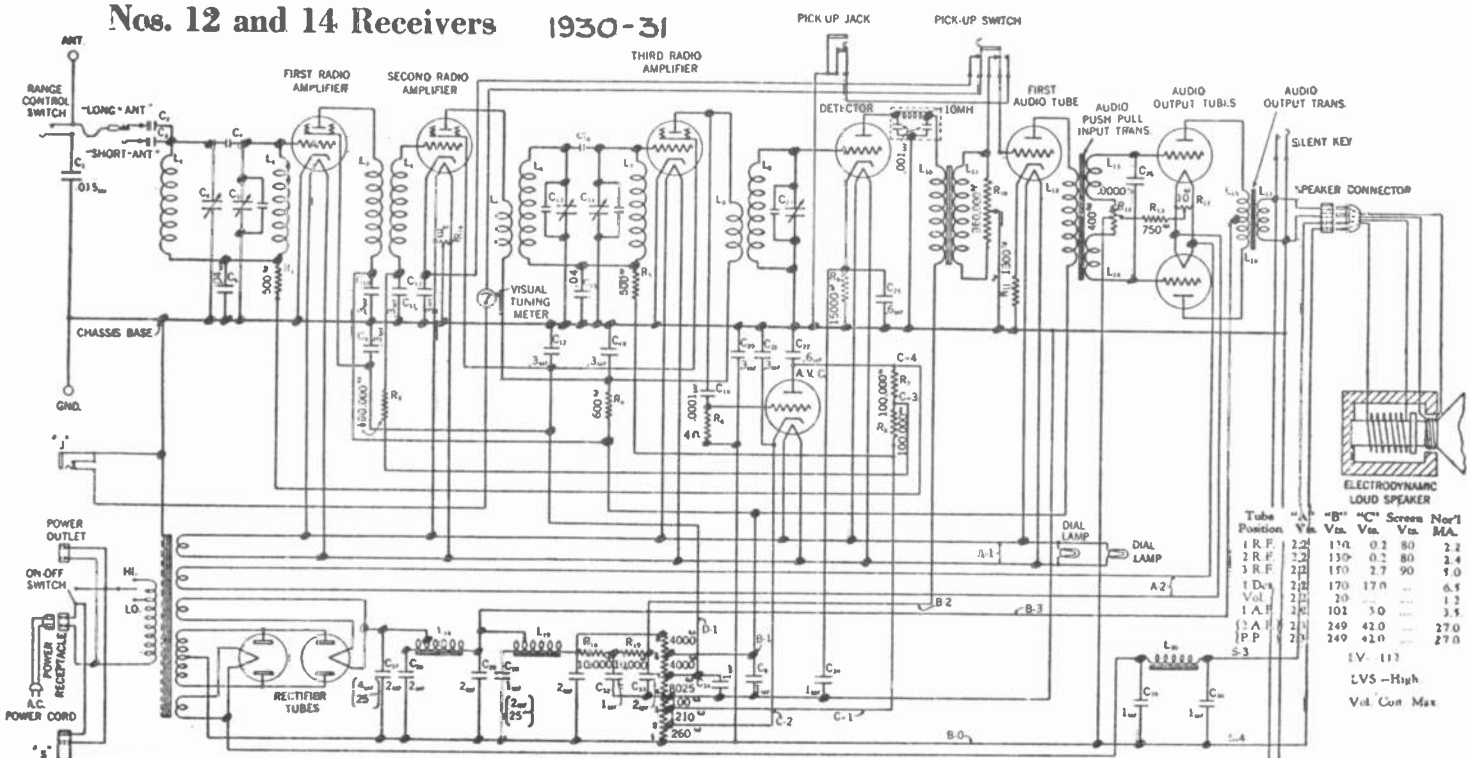


Type Tube	Tube Position	"A" Vts.	"B" Vts.	"C" Vts.	Screen Vts.	Screen Current	Cath. Vts.	Nor'l MA.	Grid Test MA.
'24	1 R.F.	2.2	120	0.2	71	7	....	2.0	3.5
'24	2 R.F.	2.25	117	0.2	70	1.0	....	2.5	4.0
'24	3 R.F.	2.25	115	1.0	70	0.7	....	2.4	3.5
'24	Det.	2.2	175	1.0	52	0.2	....	...	1.3
'45	1 A.F.	2.3	205	39.0	....	....	....	25.0	35.0
'45	P.P.	2.3	205	39.0	....	....	....	25.0	35.0

LV—112 LVS—High

Vol. Con. Max.

Nos. 12 and 14 Receivers 1930-31



Tube Position	"A" Vts.	"B" Vts.	"C" Vts.	Screen Vts.	Nor'l MA.
1 R.F.	2.2	130	0.2	80	2.2
2 R.F.	2.2	130	0.2	80	2.4
3 R.F.	2.2	150	2.7	90	5.0
1 Det.	2.2	170	17.0	...	6.5
Vol.	2.2	20	...	...	1.2
1 A.F.	2.2	102	3.0	...	3.5
2 A.F.	2.3	249	42.0	...	27.0
P.P.	[illegible]	249	42.0	...	27.0

LV—112

LVS—High

Vol. Con. Max.

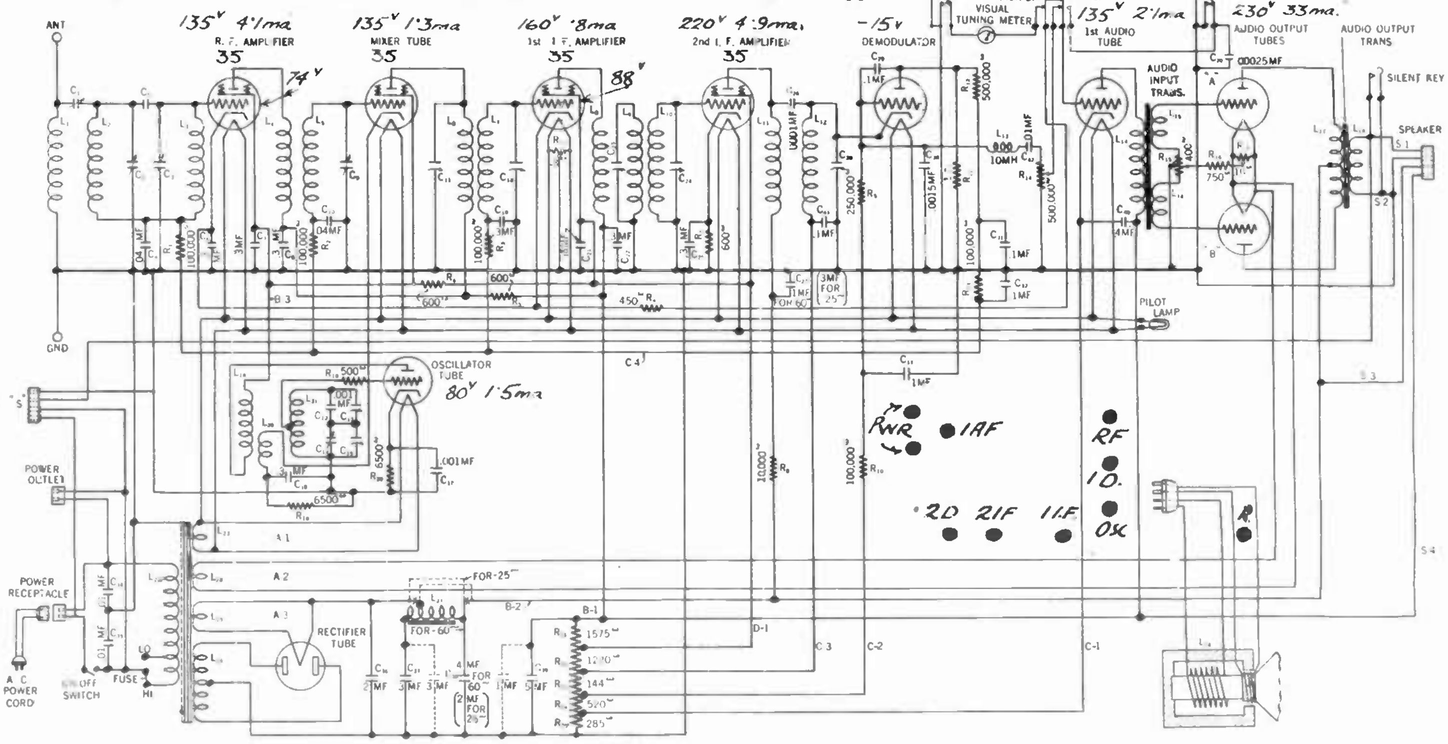
STROMBERG-CARLSON

Printed in Canada.

—Courtesy Stromberg-Carlson Telephone Mfg. Co. Ltd.

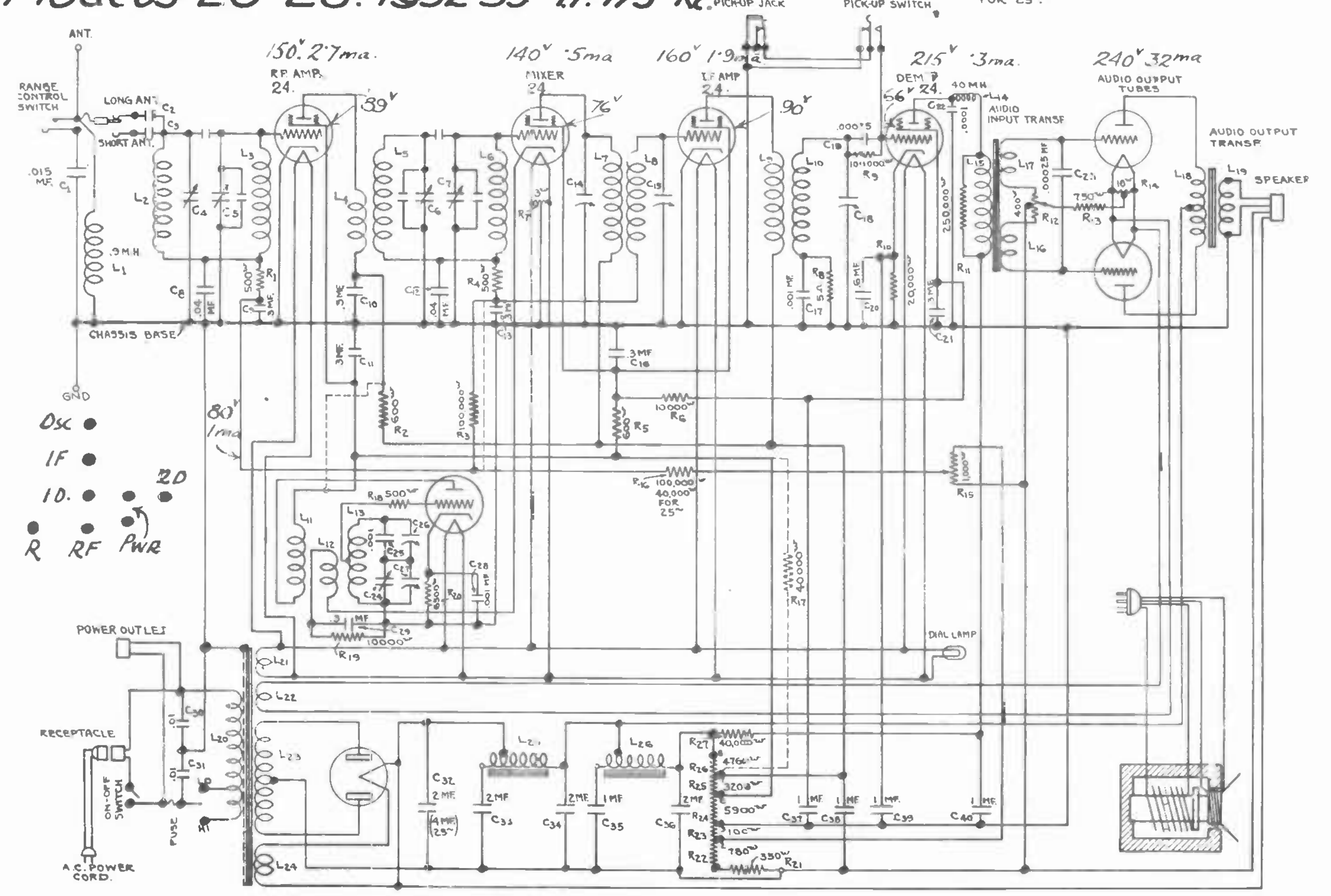
World Radio History

Models 22-24. 1932-33. I.F. 175. Kc.



Models 25-26. 1932-33 I.F. 175 Kc.

REVISE PER DOTTED LINES & RES. VALUES FOR 25~



DATA SHEET

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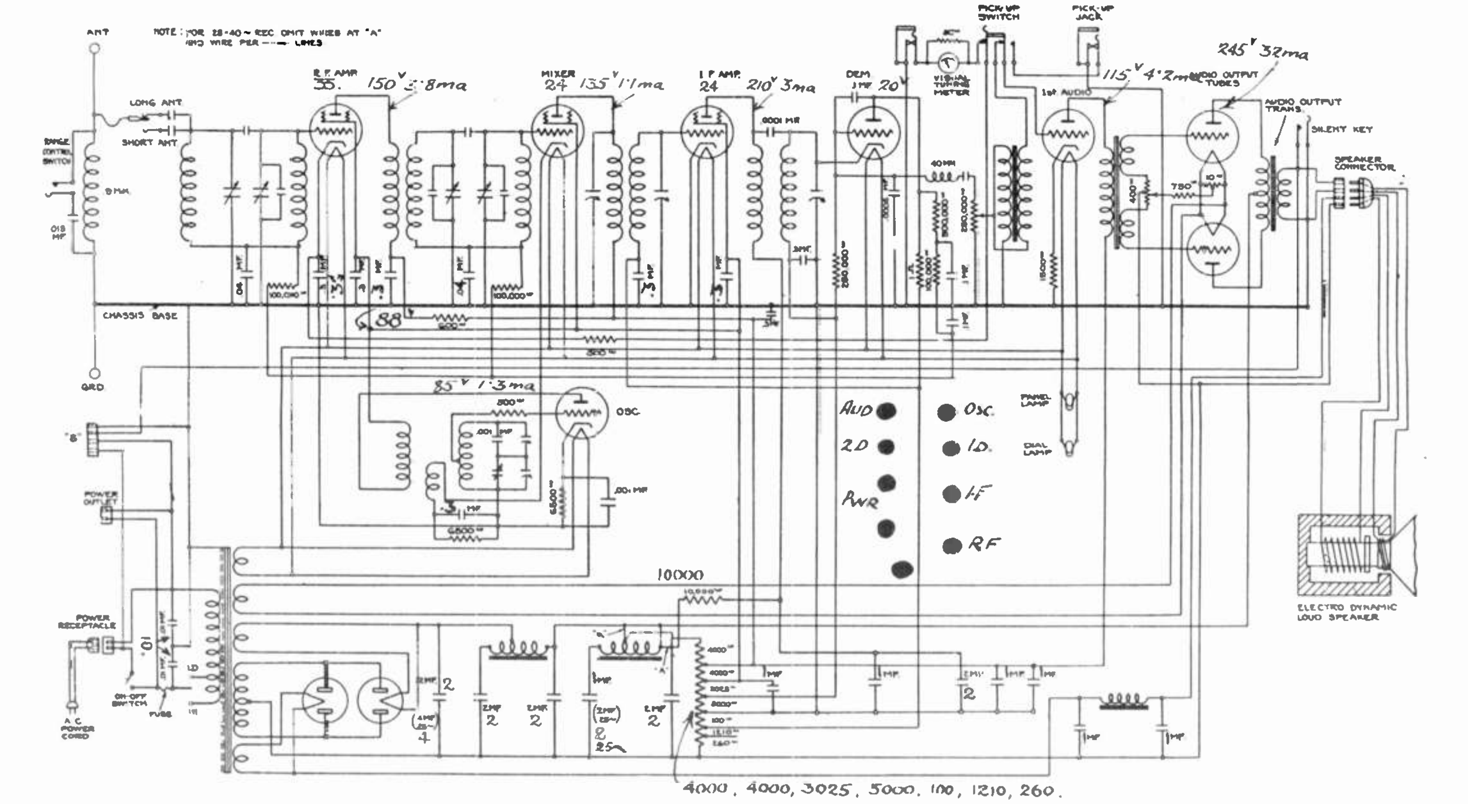
STROMBERG-CARLSON 7

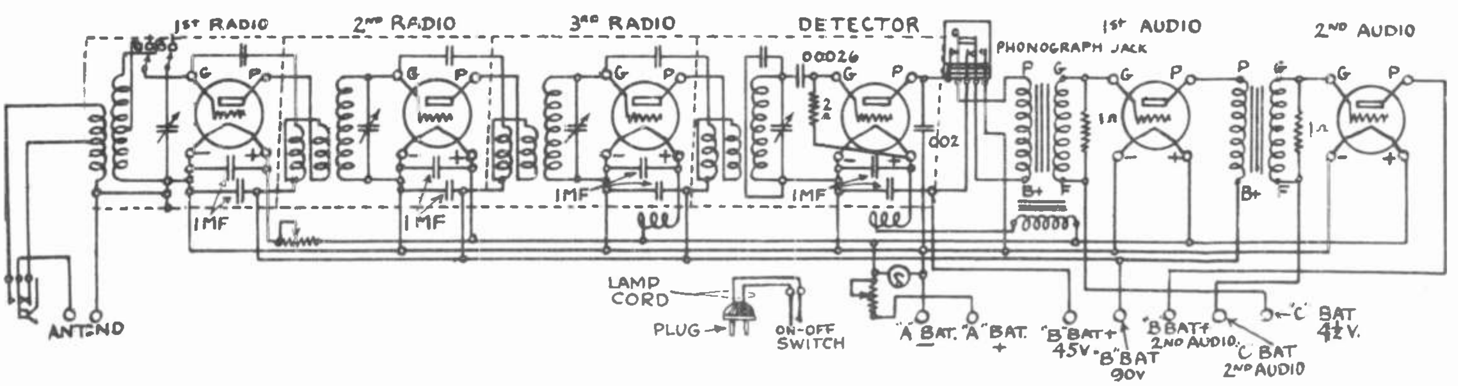
COURTESY TELEPHONE MFG CO LTD

World Radio History

Model 27 1932-33 I.F. 175. Kc.

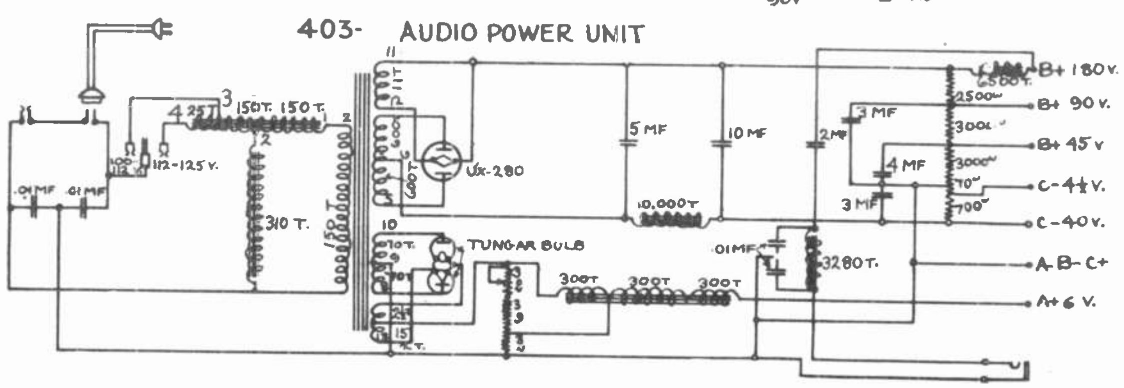


Models 633-634 1927-28



NOTE.
RECEIVER ABOVE ELECTRIFIED BY USE OF MODEL 403 POWER-UNIT AS SHOWN

403- AUDIO POWER UNIT



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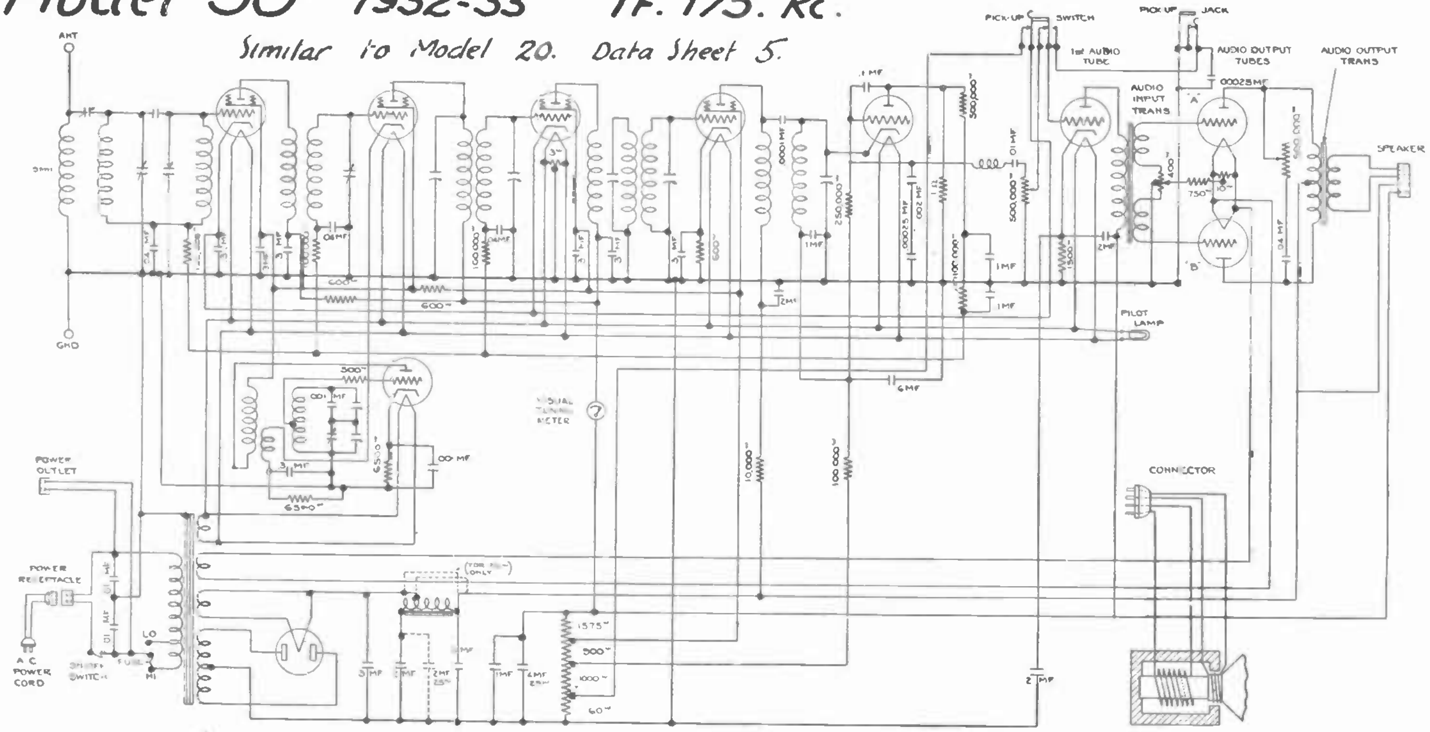
STROMBERG-CARLSON 8
TELEPHONE CO. LTD.

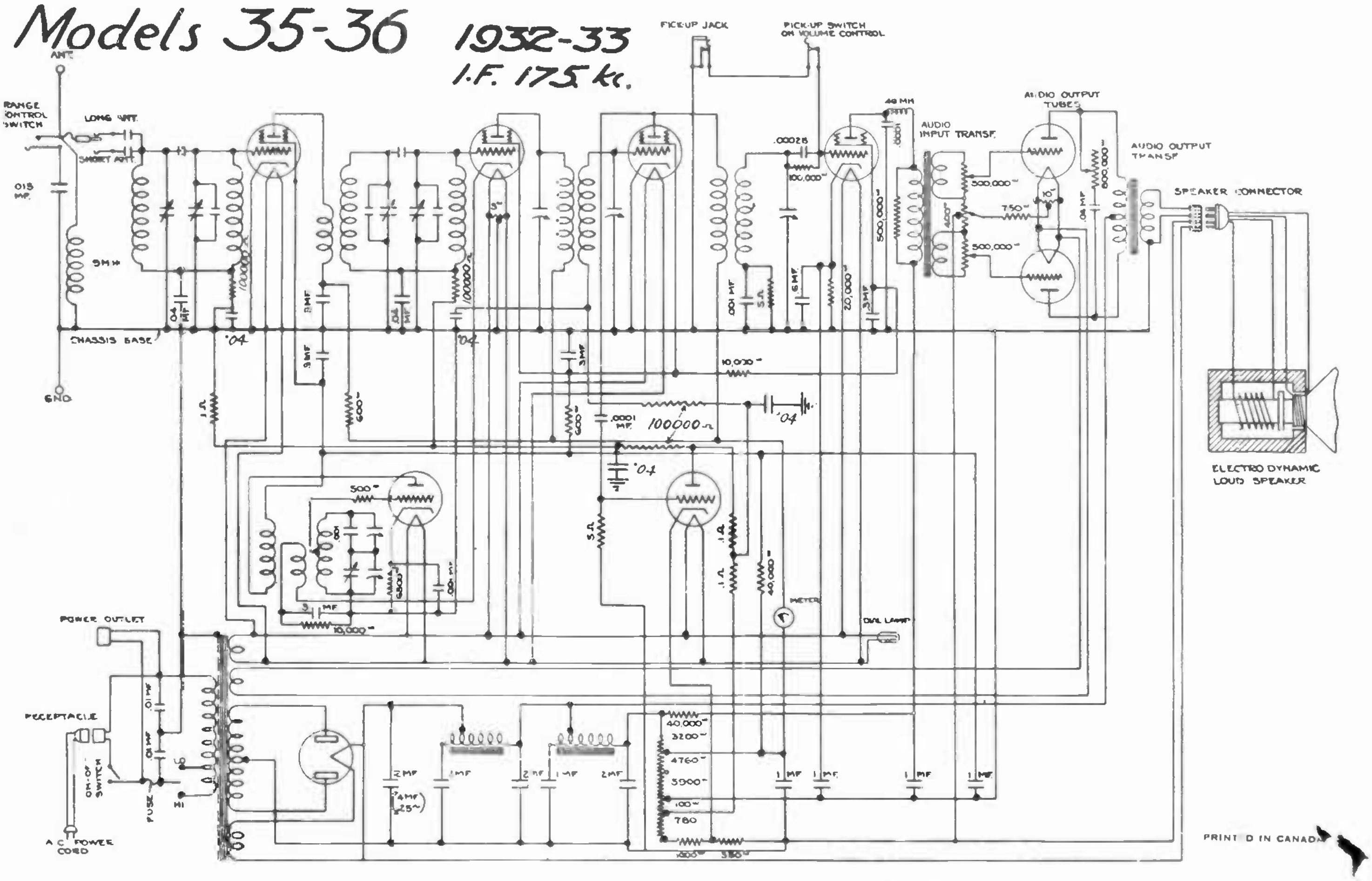
World Radio History

Model 30 1932-33 I.F. 175. kc.

Similar to Model 20. Data Sheet 5.



Models 35-36 1932-33 I.F. 175 kc.



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DATA SHEET STROMBERG-CARLSON-9

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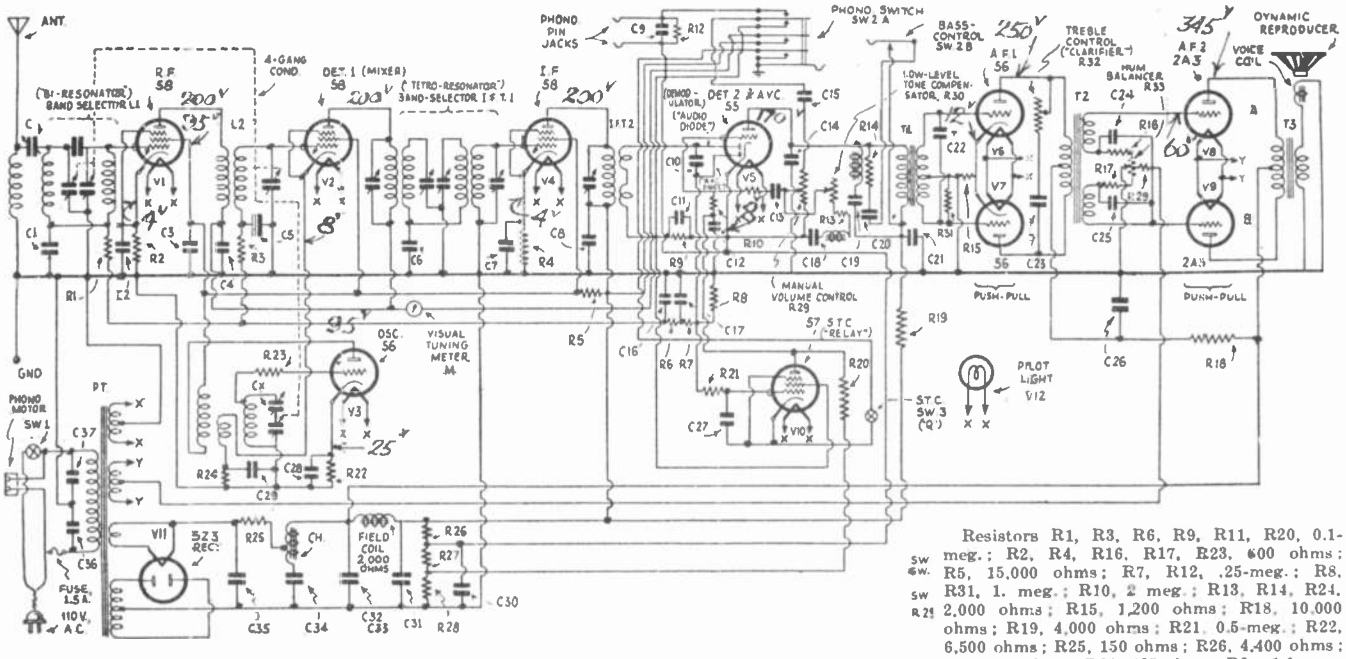
TELEPHONE MFG CO LTD

World Radio History

Models 48-49-50-51. (1933-34) I.F. 175 kc.



Courtesy "Radio Craft."

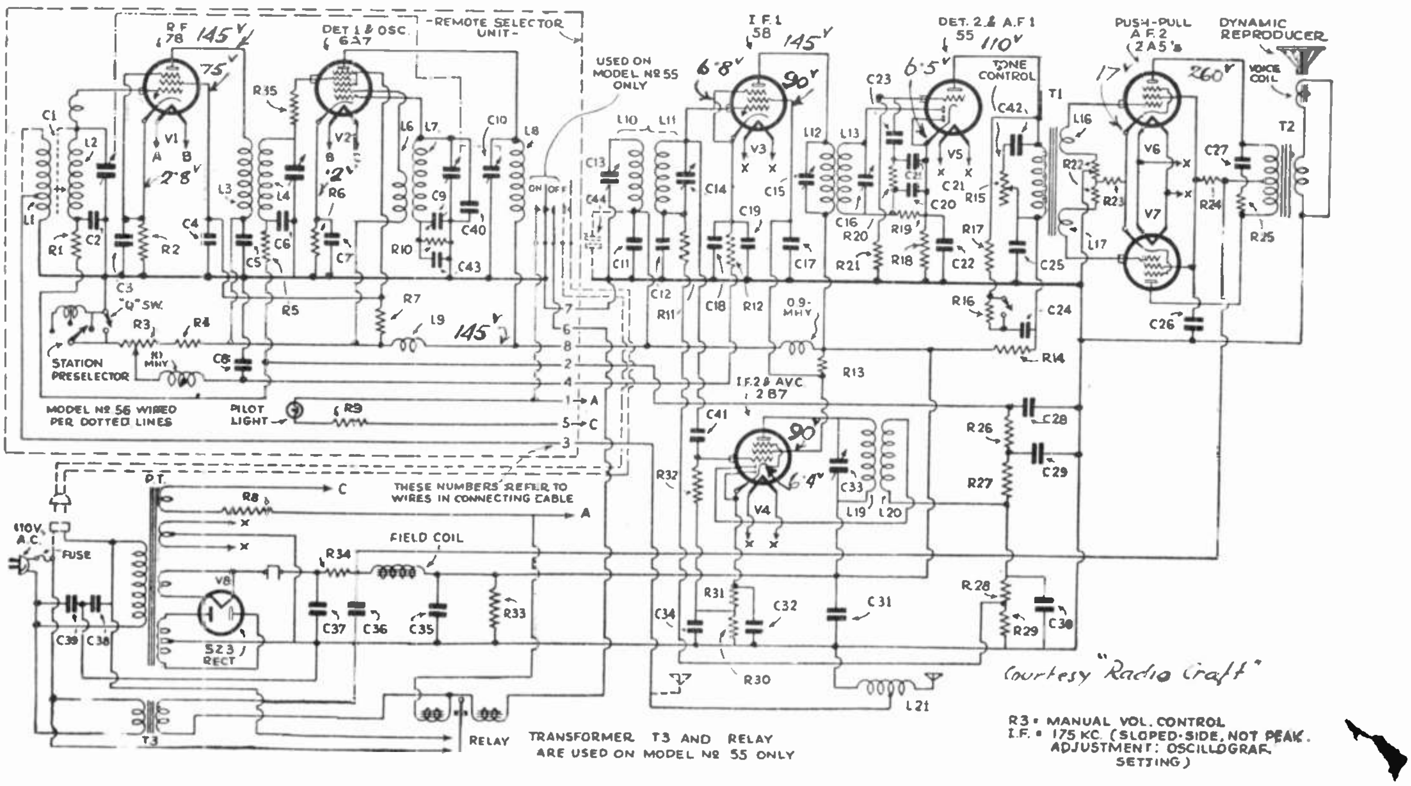
Resistors R1, R3, R6, R9, R11, R20, 0.1-meg.; R2, R4, R16, R17, R23, 600 ohms; R5, 15,000 ohms; R7, R12, .25-meg.; R8, R31, 1. meg.; R10, 2 meg.; R13, R14, R24, 2,000 ohms; R15, 1,200 ohms; R18, 10,000 ohms; R19, 4,000 ohms; R21, 0.5-meg.; R22, 6,500 ohms; R25, 150 ohms; R26, 4,400 ohms; R27, 175 ohms; R28, 425 ohms; R29, 1.0 meg. Potentiometer; R30, 3 megs., variable; R32, 0.25-meg. potentiometer; R33, 400 ohm potentiometer.

Condensers C1, C2, .04-mf.; C3, 0.6-mf.; C4, C7, C8, C29, 0.3-mf.; C5, C10, C12, C13, C15, C18, C23, C27, .04-mf.; C6, .004-mf.; C9, 250 mmf.; C11, C22, 50 mmf.; C14, C28, .001-mf.; C16, C-17, .05-mf.; C19, C26, 1 mf.; C20, 0.2-mf.; C21, C30, C31, C35, 4 mf.; C24, C25, 0.5-mf.; C32&33, 6 mf.; C34. 5 mf.; C36, C37, .01-mf.

Below Models 55-56 (1933-34) I.F. 175 kc.

Condensers C1, image adjuster; C2, C3, C4, C5, C6, C7, C12, C28, C29. .05 mf.; C8, C23, .04-mf.; C9, series padder; C10, I.F. trimmer in remote selector; C11, C30, .001 mf.; C13, C14, C15, C16, C33, I.F. trimmers; C17, C18, C31, C32, C34, .3-mf.; C19, C36, C37, 8 mf.; C20, C21, C41, C43, 100 mmf.; C22, C25, C26, C35, 4 mf.; C24, C42, .2-mf.; C27, .004-mf.; C38, C39, .01-mf.; C40, thermostatic condenser in remote selector oscillator circuit; C44, .002-mf.

Resistors R1, R5, R11, R20, R26, .1-meg.; R2, R12, R31, 600 ohms; R3, R10, R16, 10,000 ohms; R4, 16,000 ohms; R6, 300 ohms; R7, R13, R25, 15,000 ohms; R8, 14 ohms; R9, 47 ohms; R14, 4,000 ohms; R15, R19, R29, .25-meg.; R17, R18, 2,000 ohms; R21, R32, 2 megs.; R22, R23, 200 ohms; R24, 1000 ohms; R27, R28, .5-meg.; R30, 3,000 ohms; R33, 5,000 ohms; R34, 150 ohms; R35, 600 ohms.



DATA SHEET

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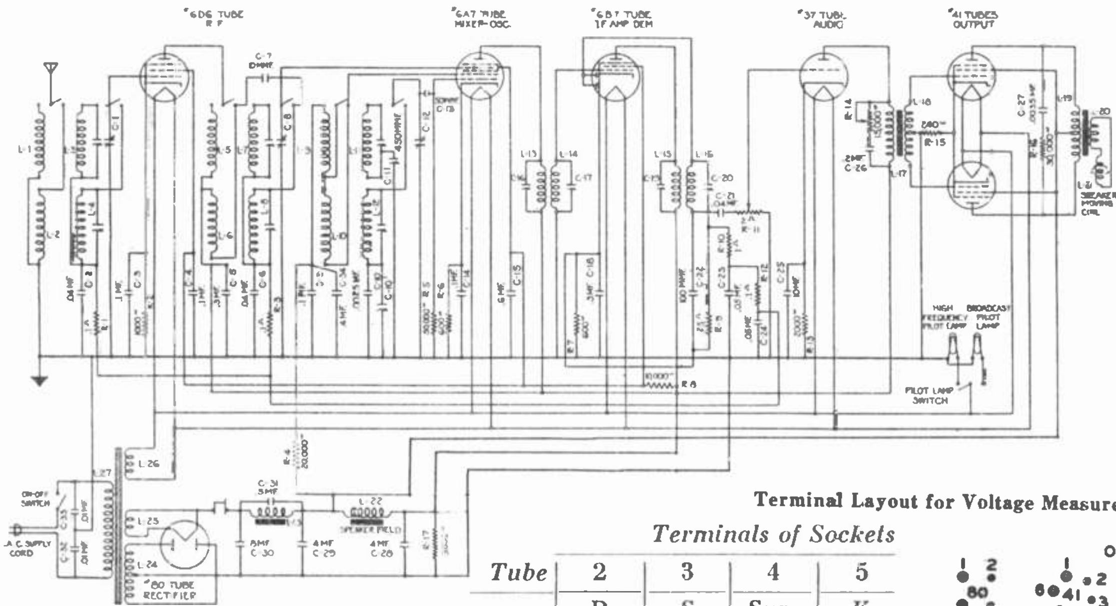
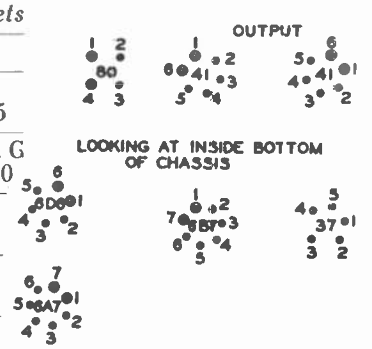
World Radio History



Terminal Layout for Voltage Measurement Chart.

Terminals of Sockets

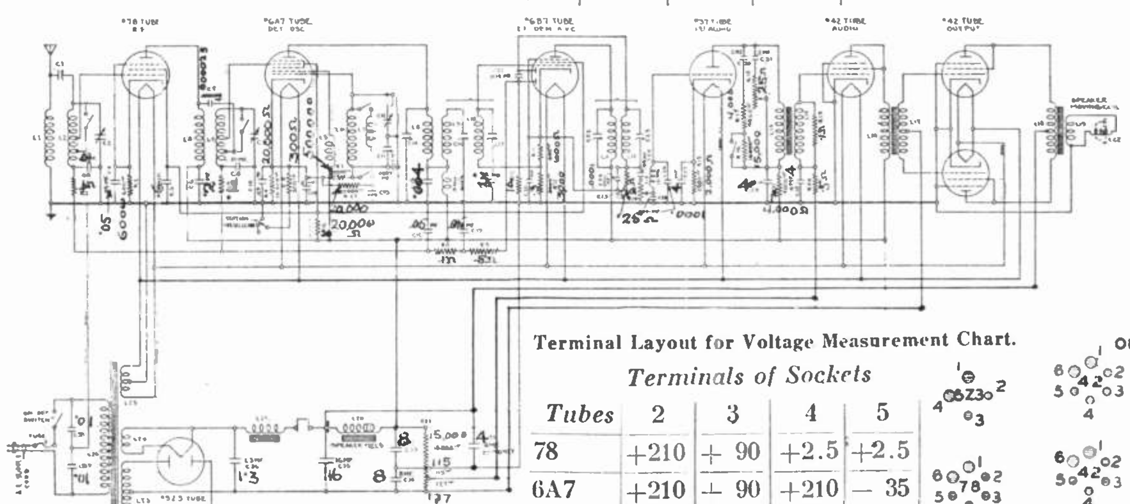
Tube	2	3	4	5
6D6	P 145	S 85	Sup. 5.5	K 5.5
6A7	Mix. P 145	S 85	Osc. P. 175	Osc. G —20
6B7	P 145	S 85	D 0	D 0
37	P 140	G 0	K 8	H 0
41's	P 250	S 250	G 0	K 16



Above.

MODEL. 60.

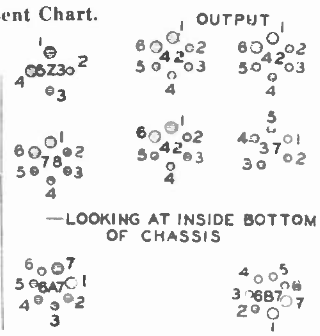
1934-35 I.F. 370 Kc.



Terminal Layout for Voltage Measurement Chart.

Terminals of Sockets

Tubes	2	3	4	5
78	+210	+ 90	+2.5	+2.5
6A7	+210	+ 90	+210	— 35
6B7	+210	+ 90		2.5
37	+190		+ 10	
42	+190		—3.5	
42	+350		— 35	



MODEL. 64.

1933-34 I.F. 265. Kc.

DATA SHEET

COURTESY

STROMBERG-CARLSON-11

TELEPHONE MFG. CO. LTD.

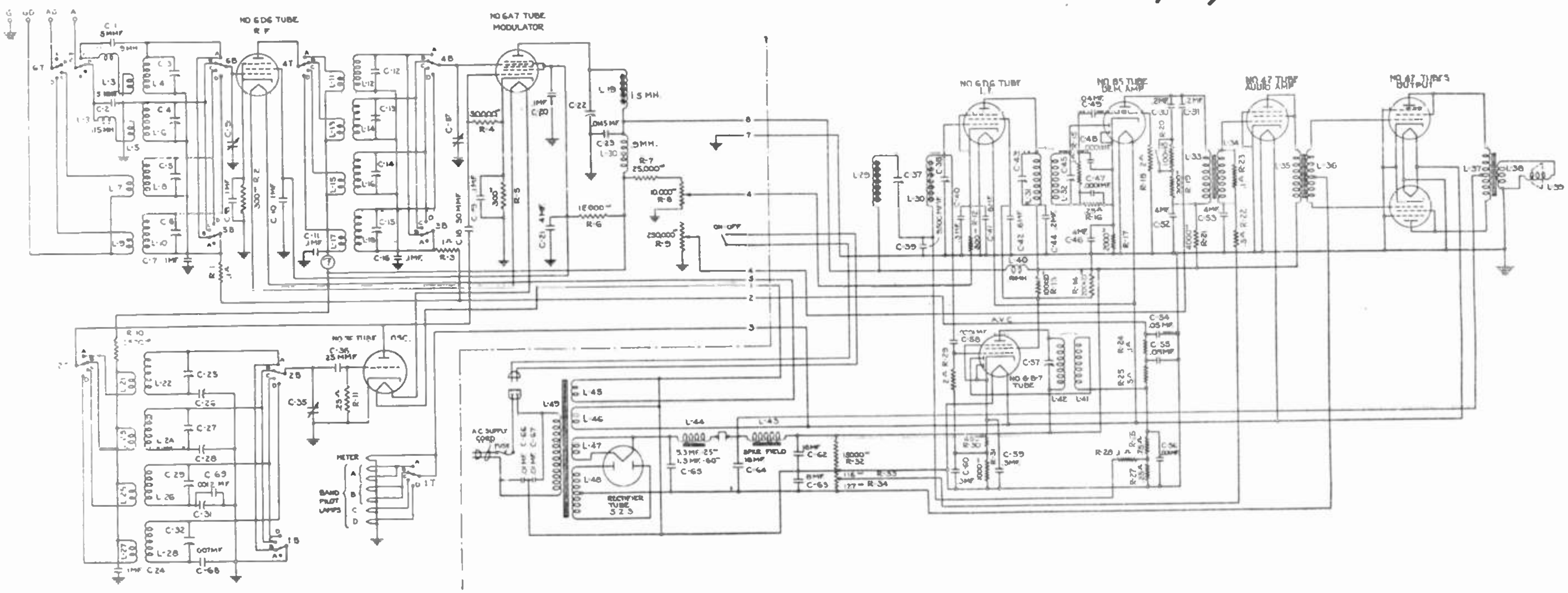
World Radio History

DATA SHEET

STROMBERG-CARLSON-12

COURTESY STROMBERG-CARLSON TELEPHONE MFG. CO. LTD.

Model 69. All-Wave Selector. Model 68. Amplifier Chassis.



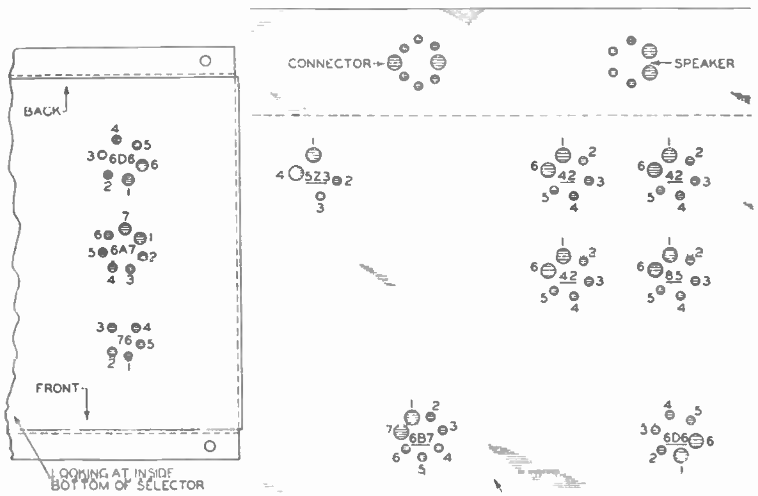
Schematic Circuit of Selector and Amplifier Chassis

Tube	Circuit	Terminals of Sockets 2	3	4	5	6
6D6	R. F. Amp.	+175	+ 89	+2.38	+2.38	
6A7	Mod.	+180	+ 89	+ 89	—8.6	+2.0
76	Osc.	+152	— 25	0		—
6D6	I. F. Amp.	+181	+100	+ 2.6	+2.6	
6B7	A. V. C.	+181	+100	0	+8.65	+8.65
85	1st Audio	+150	+ .1	+ 10	+ 10	
42	2nd Audio	+170	+170	— .22	0	
42	Output	+378	+378	— 37	0	
5Z3	Rectifier	484	484		—	—
Speaker Socket		+181	+382	+ 382	+ 382	- -

1934-35

Frequency output of Selector

545 kc.

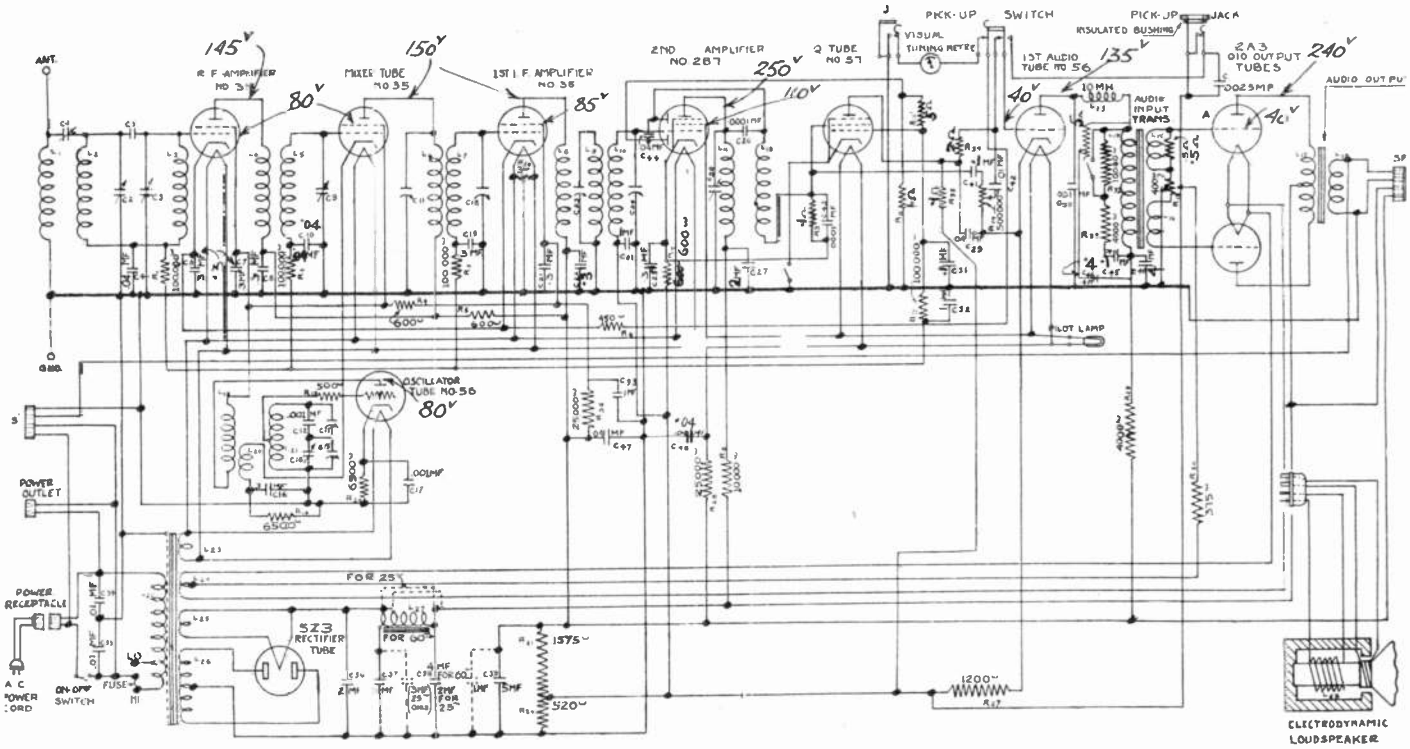


World Radio History

The Intermediate Amplifier circuits are aligned on oscillographs to obtain the proper shape of resonance curves having "steep" sides to get proper selectivity and fidelity. "Peak" methods of alignment (with oscillator and meter) do not give the desired curve, as it may be broad and unsymmetrical although a high peak is indicated. The adjustment of these circuits is very stable as shown by field experience and Proving Division tests. Therefore, as these adjustments cannot be duplicated exactly without the oscillograph equipment, it is recommended that the I. F. circuits never be adjusted by a service man.

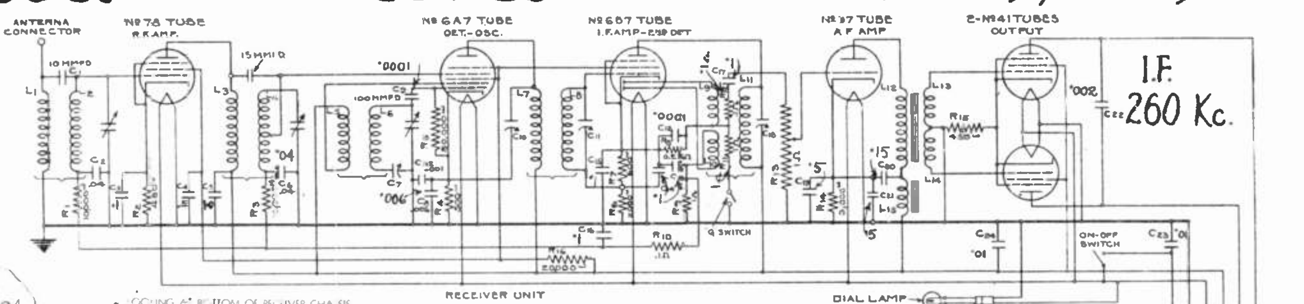
This applies to all late Models.

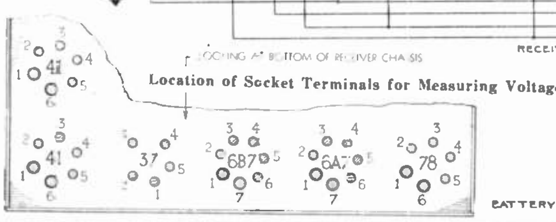
Model 42. 1932-33 IF 175 Kc

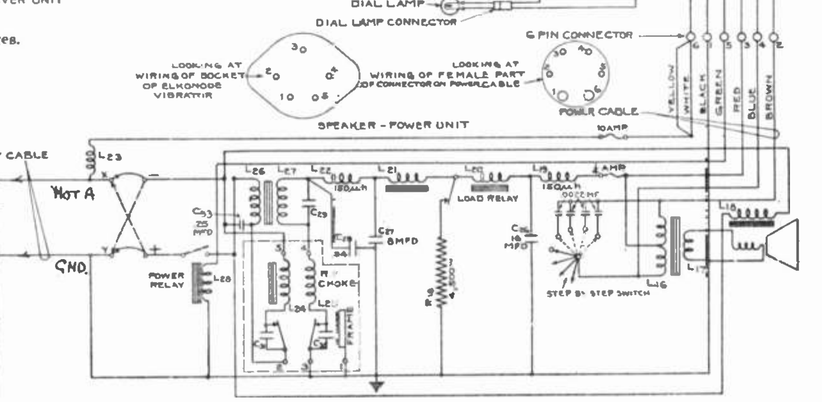


Model 33a. 1934-35

Note. Model 33 (1933-34) practically same.







Terminals of Sockets

Tube	1	2	3	4	5	6
No. 78	—6.1	+187	+81	+2.9	2.9	0
No. 6A7	—6.1	+187	+81	+187	—2 250 Scale	—3.6
No. 6B7	—6.1	+187	+81	+3 100 Scale	0	+12
No. 37	0	+166	0	+11	—6.1	—
No. 41	0	+184	+187	0	+14.5	—6.1

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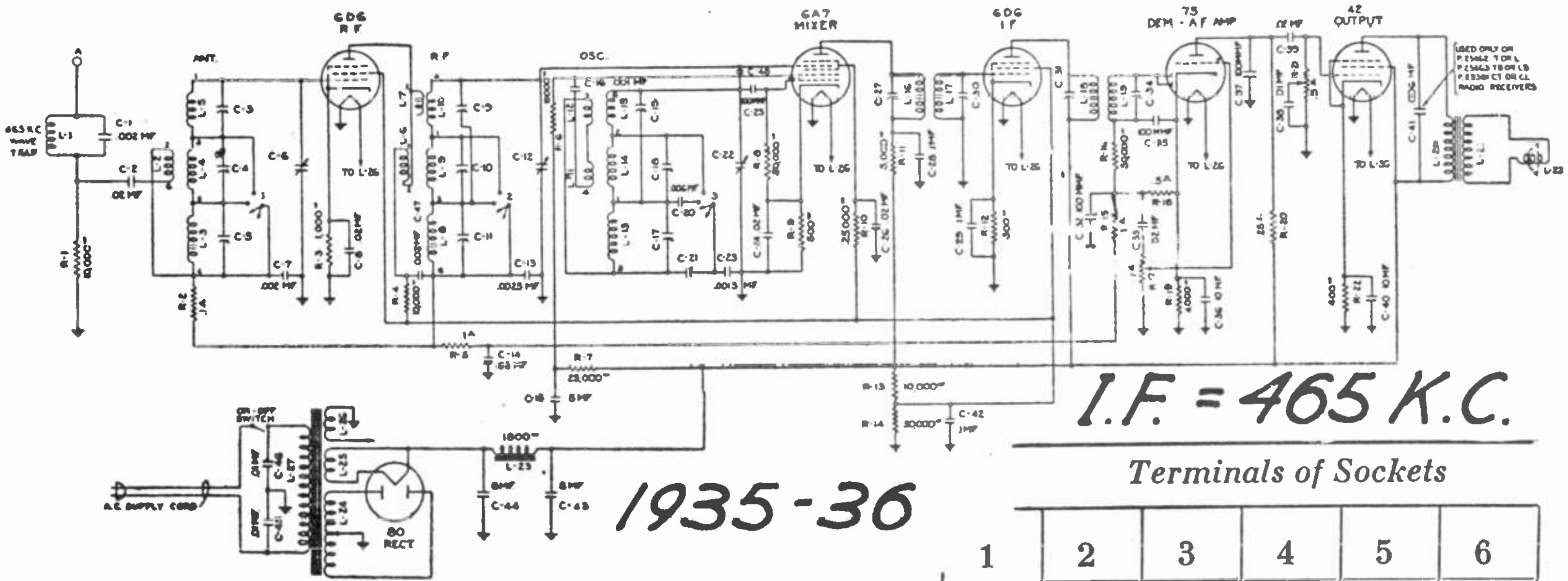


I.F. = 465 K.C.

1935-36

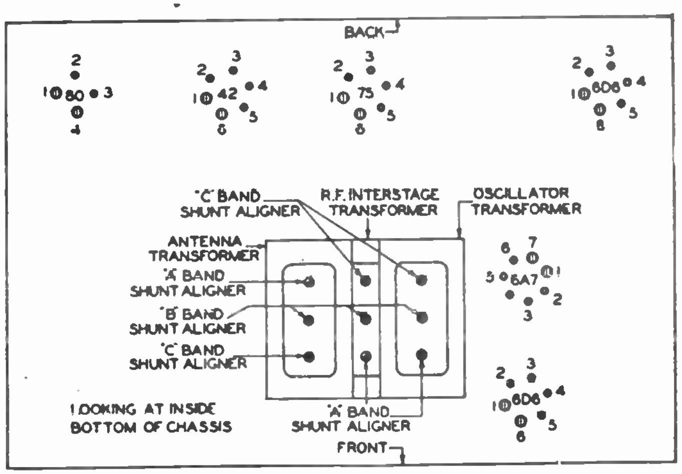
MODEL 58

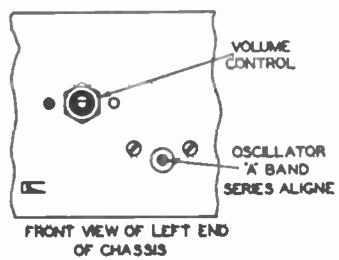
ALIGNMENT INSTRUCTIONS ON DATA SHEET -21

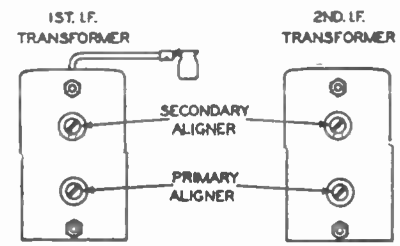
Terminals of Sockets

	1	2	3	4	5	6
6D6 R.F. AMP.		+ 53	+105	+ 5.8	+ 5.8	
6A7 OSC. MOD.		+225	+ 58	+145	— 4.4	+ 2.8
6D6 I.F. AMP.		+235	+105	+ 3.1	+ 3.1	
75 DEM. A.V.C. AUDIO		+ 61	0	0	+ 1.2	
42 OUTPUT		+225	+235	0	+13.5	
80 RECT.	+355	335	335	+355	—	—

SET TUNED TO 1000 K.C. "A" BAND.







Terminal Layout for Voltage Measurement Chart and Location of Various Aligning Capacitors.

DATA SHEET

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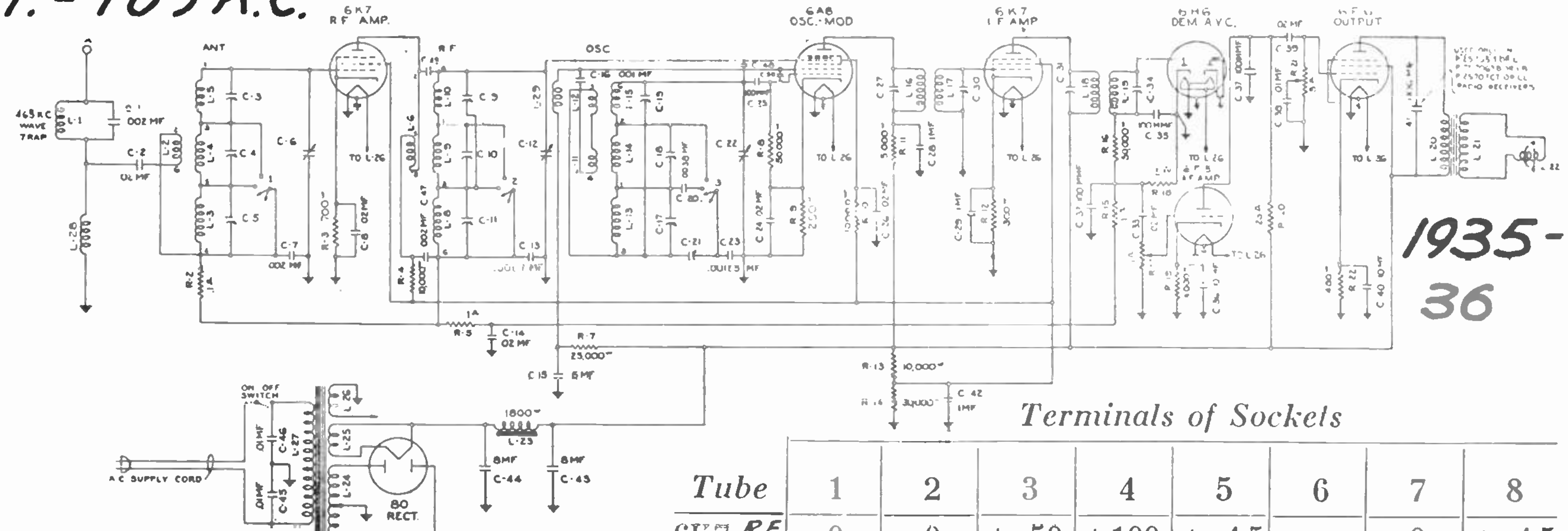
World Radio History

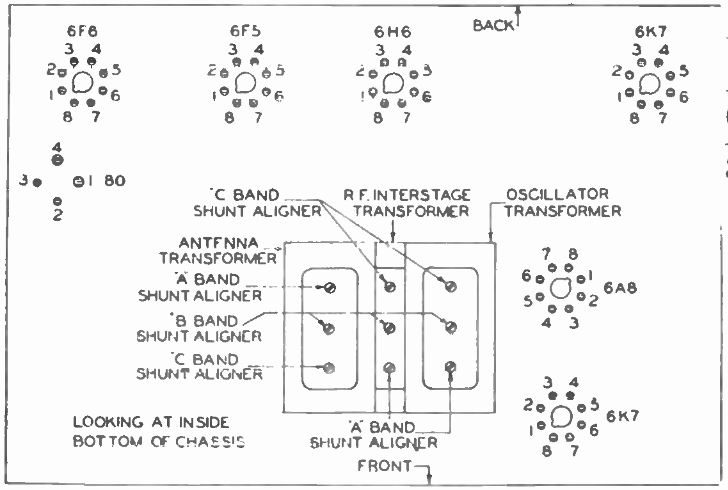
I.F.=465 K.C.



1935-36

MODEL 61

ALIGN. INSTRUCTIONS ON DATA SHEET 21

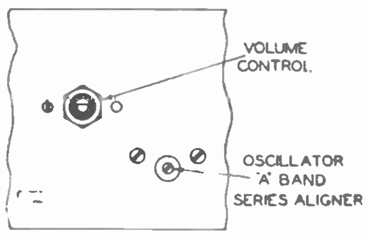


Terminal Layout for Voltage Measurement Chart and Location of Various Aligning Capacitors.

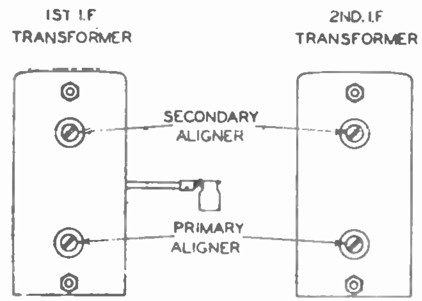
Terminals of Sockets

Tube	1	2	3	4	5	6	7	8
6K7 R.F. AMP.	0	0	+ 50	+100	+ 4.5	—	0	+ 4.5
6A8 OSC. MOD.	0	0	+220	+ 72	— 6	+160	0	+ 1.8
6K7 I.F. AMP.	0	0	+235	+100	+ 3	—	0	+ 3
6H6 DEM. A.V.C.	0	0	0	0	— .5	—	0	0
6F5 A.F. AMP.	0	0	—	+ 58	—	—	0	+ 1.2
6F6 OUT PUT	0	0	+220	+235	0	—	0	+14
80 RECT.	+355	335	335	+355	—	—	—	—

SET TUNED TO 1000 K.C. NO SIGNAL.



FRONT VIEW OF LEFT END OF CHASSIS



DATA SHEET

COURTESY-STROMBERG-CARLSON-15 MFG. CO. LTD.

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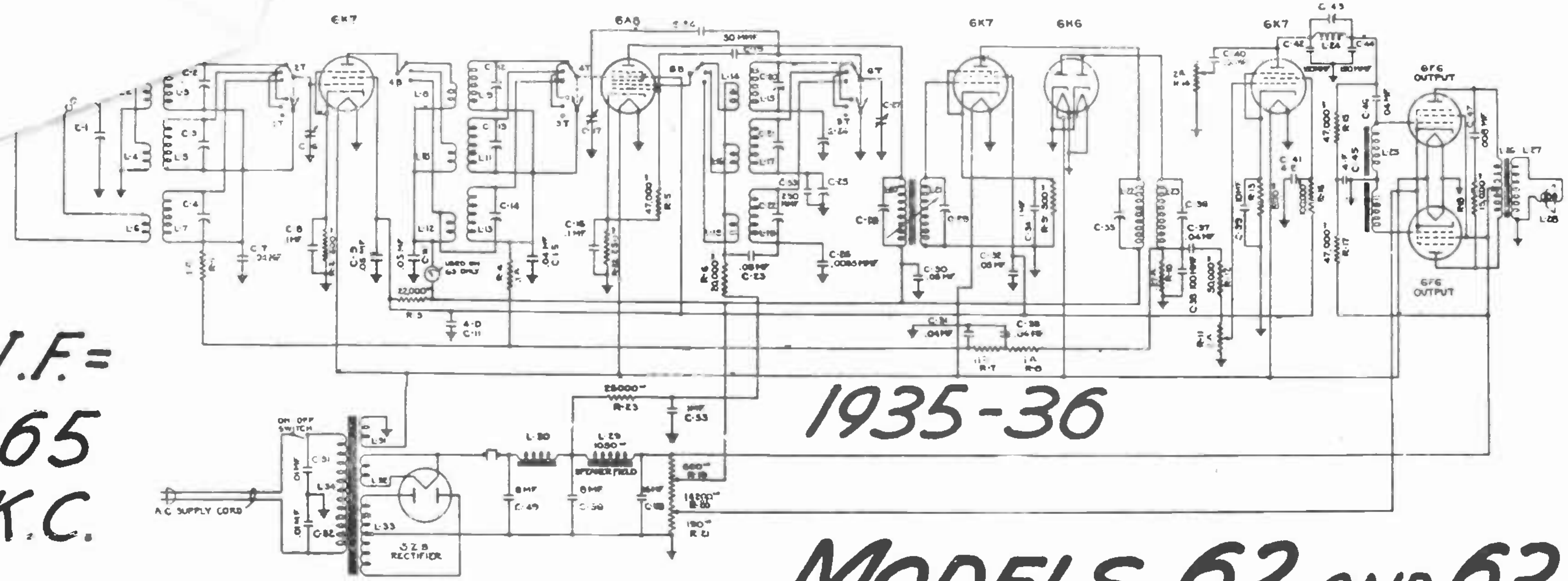
DATA SHEET

COURTESY- STROMBERG-CARLSON-16 MFG. CO. LTD.

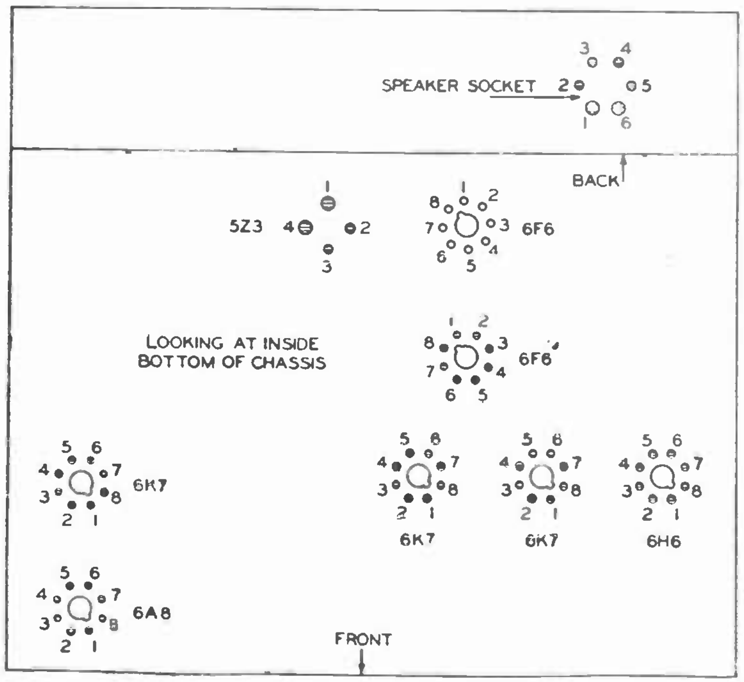


I.F. = 465 K.C.

1935-36

MODELS 62 AND 63

ALIGNMENT INSTRUCTIONS & TRIMMER LAYOUT ON DATA SHEETS 21 and 22.



Terminal Sockets

	1	2	3	4	5	6	7	8
6K7 R.F. AMP.	0	—	+230	+ 95	+ 3	—	—	+ 3
6A8 MOD. OSC.	0	—	+235	+ 95	0	+150	—	+ 3
6K7 I.F. AMP.	0	—	+230	+ 95	+ 3.5	—	—	+ 3.5
6H6 DEM. A.V.C.	0	—	0	0	0	—	—	—
6K7 A.F. AMP.	0	—	+ 25	+ 35	+1.5	—	—	+ 1.5
6F6 OUTPUT	0	0	+250	+260	0	—	0	+16
5Z3 REC.	+428	405	405	+428				
	+260	+400	+430	+430	+260	+260		

SET TUNED TO 1000 K.C. NO SIGNAL.

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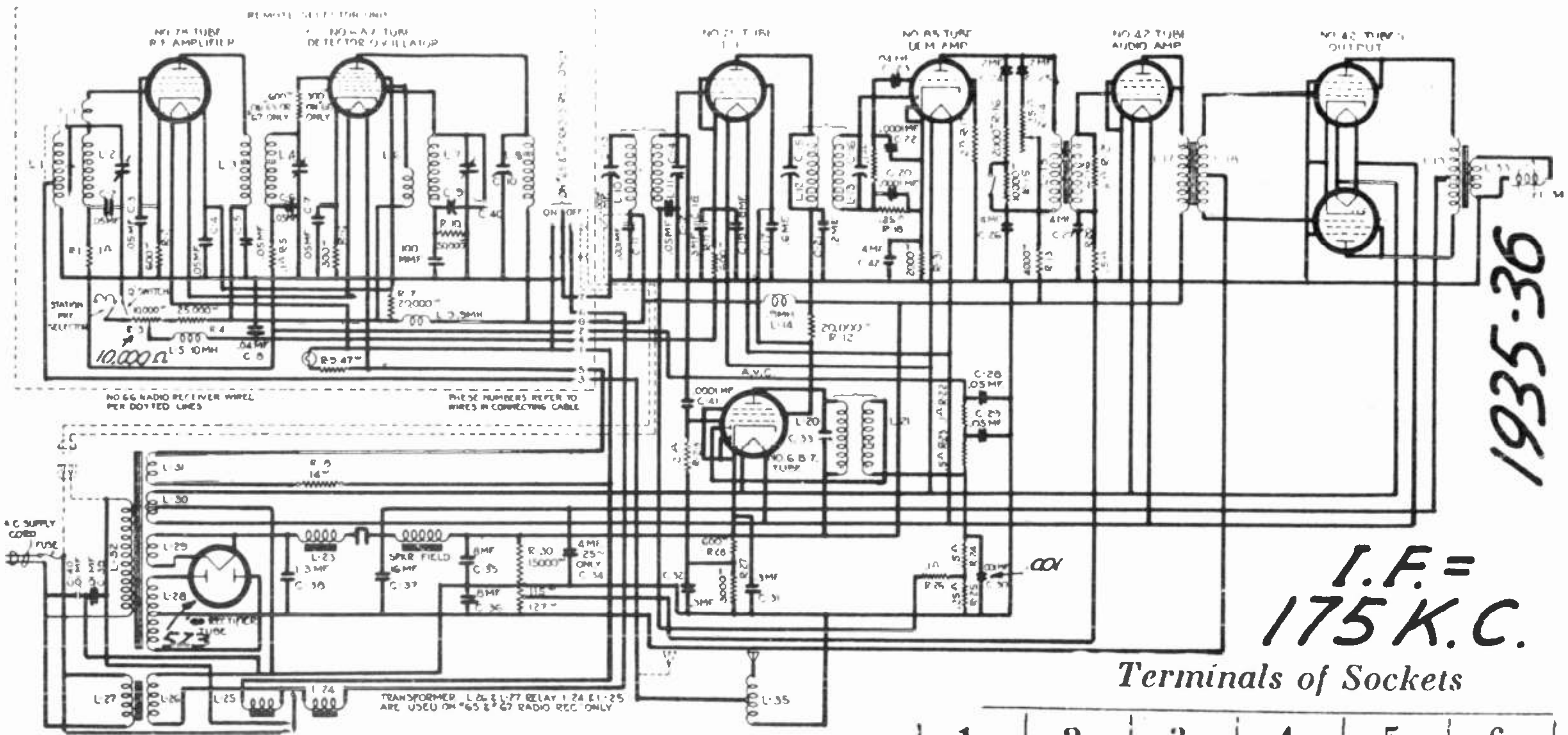
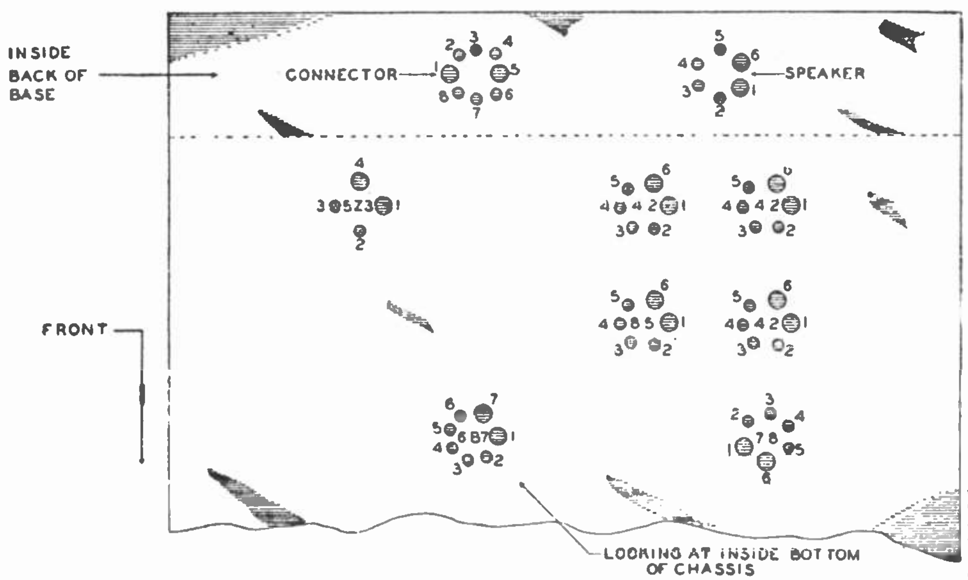
MODELS 65-66-67

TRIMMER LOCATIONS ON DATA SHEET 22

1935-36



I.F. = 175 K.C.



Terminals of Sockets

	1	2	3	4	5	6
78 R.F. AMP.		+200	+100	+ 3	+ 3	
6A7 MIXER OSC.		+200	+100	+200	-- 11	+ 3
78 I.F.		+180	+ 75	+ 2	+ 2	
6B7 I.F. DEM.		+180	+ 75	0	+ 12	+ 12
85 1ST. AUDIO		+180	0	+ 13	+ 13	
42 2ND. AUDIO		+170	+170	— 16	0	
42's OUT-PUTS		+345	+345	— 32	0	
A. C. voltage between plate terminals and chassis						
5Z3 RECT.		500	500			
Speaker Socket	0	+193	+350	+350	+350	0

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DATA SHEET

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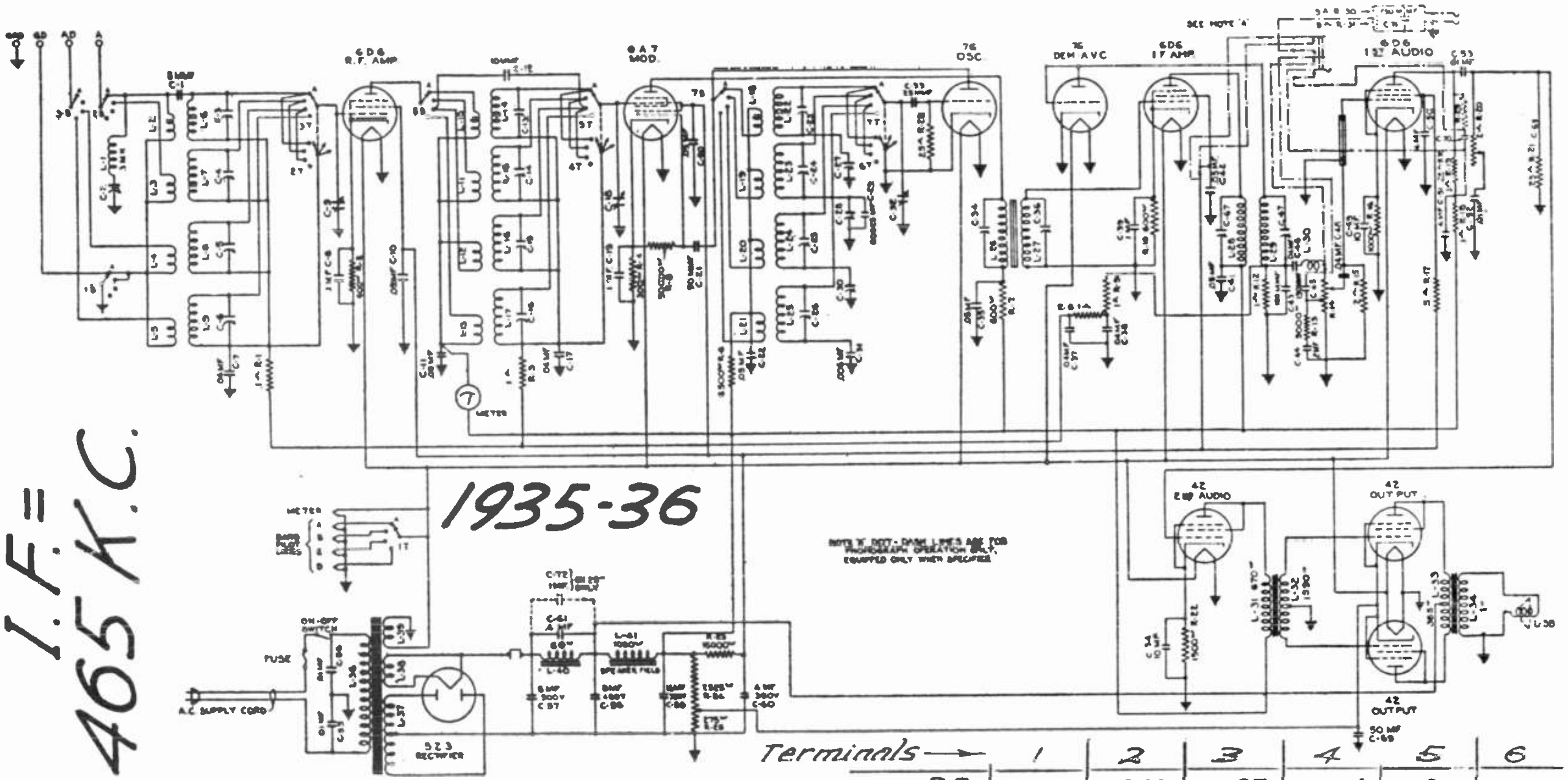
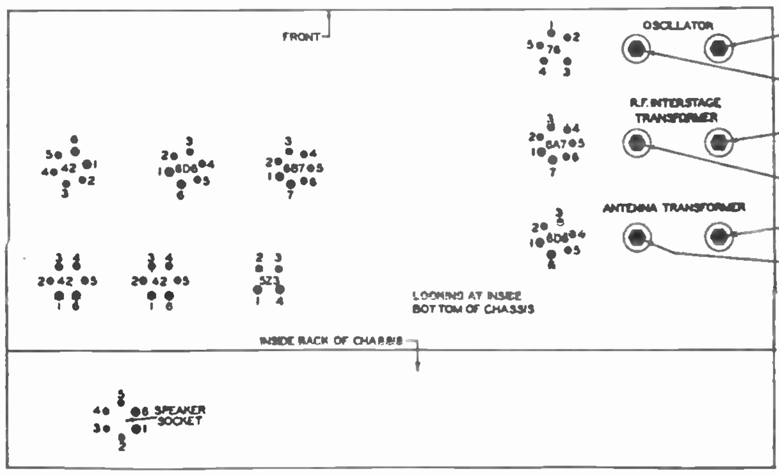
MODEL 82

I.F. = 465 K.C.



Terminals →	1	2	3	4	5	6
6D6 R.F. AMP.		+240	+ 95	+ 4	0	
6A7 MOD.		+240	+ 95	+ 95	− 2	+3.1
76 OSC.		+195	+ 30	0		
6D6 I.F. AMP.		+240	+ 95	+3.5	+3.5	
76 DEM. A.V.C.		0	0	0		
6D6 1ST. AUDIO		+ 68	+ 20	+ 1	+ 1	
42 2ND. AUDIO		+230	+230	0	+ 21	
42 OUTPUT		+390	+390	0	+ 37	
5Z3 RECT.	+410	398	398	+410		
Speaker Socket	0	+245	+400	+400	+390	0



ALIGNMENT INSTRUCTIONS ON DATA SHEETS. 21 & 22.

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DATA SHEET

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STROMBERG-CARLSON-19
MFG. CO. LTD.
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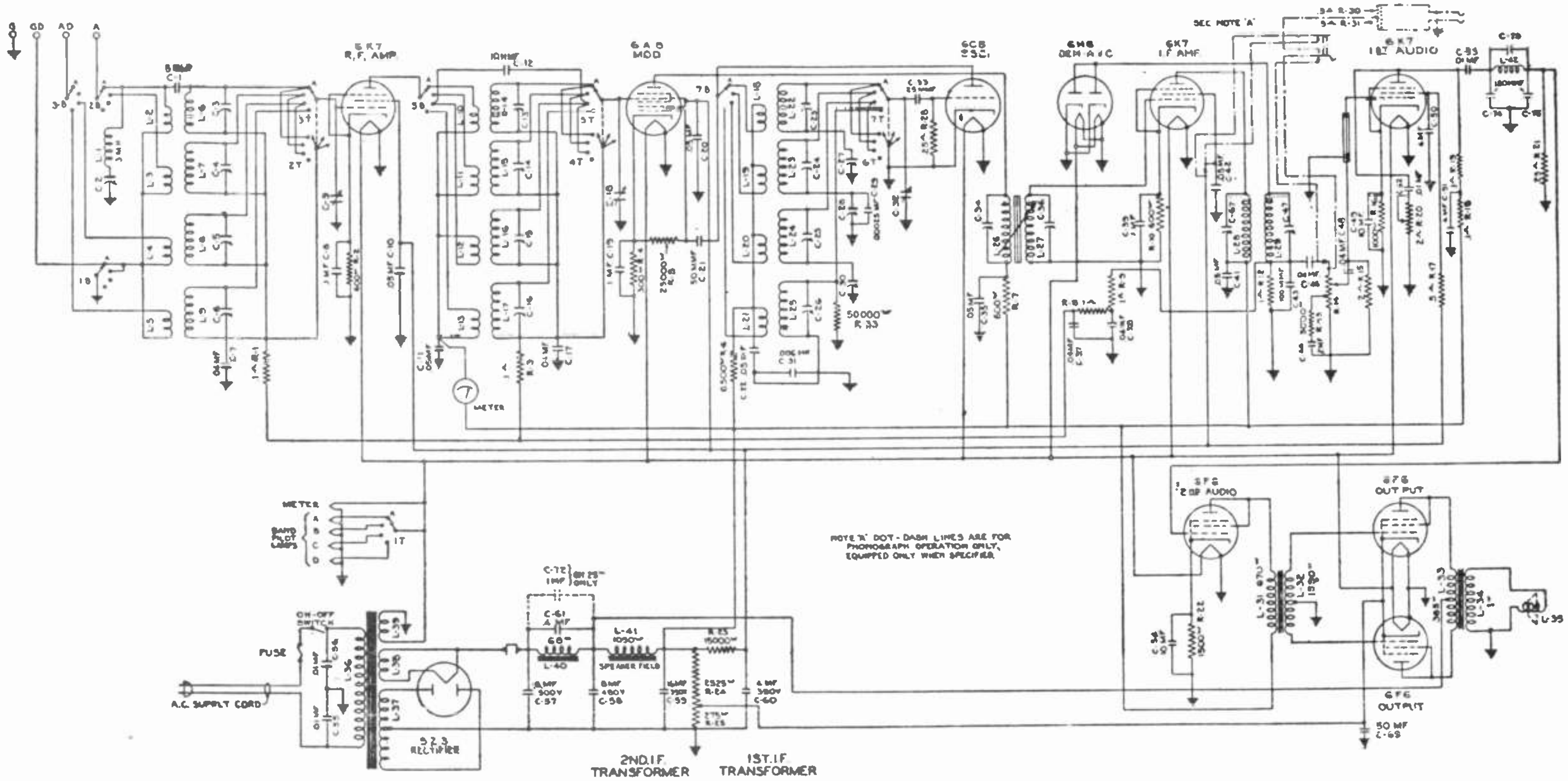
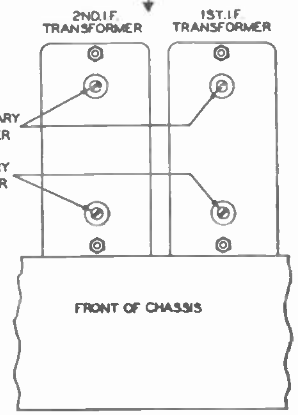
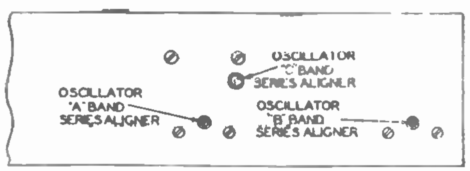


1935-36

I.F. = 465 K.C.



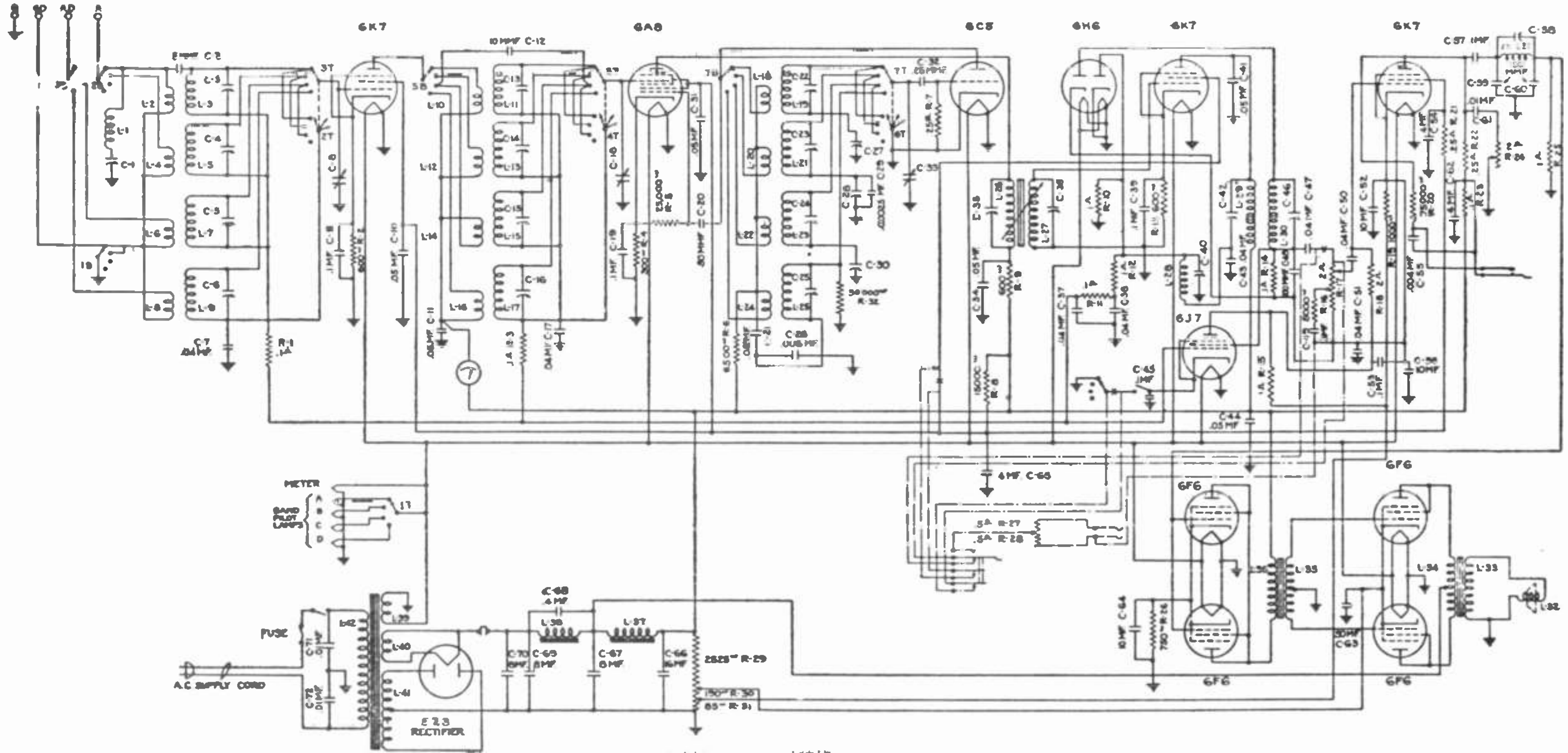
MODEL 83



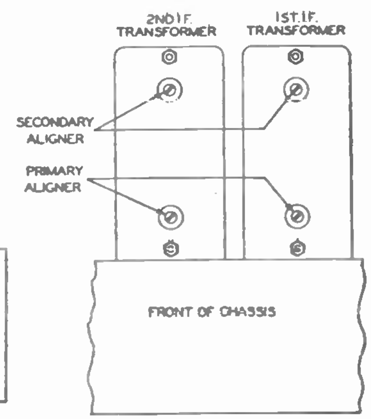
FRONT OF CHASSIS

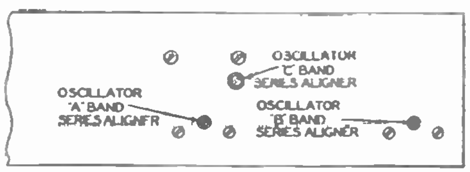
ALIGNMENT INSTRUCTIONS, ETC.
ON DATA SHEETS. 21822.

World Radio History



1935-36





FRONT OF CHASSIS

I.F. = 465 K.C.

MODEL 84

ALIGNMENT INSTRUCTIONS, VOLTAGES, ETC. ON DATA SHEETS 21-22

DATA SHEET

COURTESY-
STROMBERG-CARLSON-20
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ALIGNMENT INSTRUCTIONS
MODELS 58-61-62-63 82-83-84

For aligning the R.F. and I.F. circuits, it will be necessary to have two artificial antennas, one for the standard broadcast band only, the other for the short-wave bands. A 250 mmfd. capacitor in series with the high-side terminal of the signal generator will be satisfactory for use on the standard broadcast band, ("A" Band). A suitable antenna for the short-wave bands may consist of a non-inductive 400 ohm carbon resistor. Better alignment can be obtained if a low-loss shielded cable is used to connect the high and low output terminals of the signal generator to the receiver antenna and ground posts.

ALIGNING I.F. CIRCUITS: There are four adjustments (at 465 K.C.) for the I.F. alignment. Always align either R.F. or I.F. circuits (on receivers equipped with high fidelity circuits) with the high fidelity control at maximum counter-clockwise position (normal fidelity), unless the alignment is being checked at the high fidelity setting which requires cathode ray equipment.

In series with the "A" post of the signal generator connect a capacitor of 0.001 mfd. capacity, which will prevent the voltages (of the amplifier stage being aligned) from becoming upset. From the other terminal of this capacity connect a wire to the control grid of the No. 6K7, I.F. tube, (6D6 in model 58) and from "G" terminal of generator connect a wire to chassis base.

Adjust aligning capacitors which are connected across the secondary and primary coils of second I.F. transformer in the order given until maximum output is obtained.

Now remove wire lead (which connects from the .001 fixed capacitor and the No. 6K7, I.F. tube's grid) from the grid of the No. 6K7, I.F. tube (6D6 in model 58) and connect this wire lead to the control grid cap of the No. 6A8 Modulator tube (6A7 in model 58). Now adjust the aligning capacitors connected across the primary and secondary coils of the first I.F. transformer assembly; adjusting the secondary aligning capacitor first, and the primary aligning capacitor secondly.

ALIGNING R.F. CIRCUITS: On receiver chassis equipped with a "Q" circuit, make sure that "Q" switch is "off". Also on receivers equipped with a high fidelity control, set control for normal fidelity (maximum counter-clockwise rotation). Set tone control at normal position and volume control for maximum volume.

Set modulator switch of signal generator to "on" position. Connect insulated wire inside of shielded lead from high-side terminal of generator unit. Connect metal shield to low-side terminal of generator. The other end of wire inside shielded lead is connected to the particular artificial antenna being used, the other end of shield being connected to chassis base.

CAUTION: As each circuit is aligned in the attenuator on the signal generator must be adjusted. Also, in making these R.F. adjustments, always adjust aligning capacitor of circuit being aligned to maximum capacity and then slowly adjust capacitor in direction of minimum capacity. On some of the alignments, especially in oscillator circuits, it will be noted that there are two positions of aligning capacitor where the signal is obtained. Always leave aligning capacitor set at the minimum capacity setting where the signal is obtained.

Proceed in the following manner, except with Nos. 58 and 61 receivers where "C" band is aligned first.

"A" BAND ALIGNMENT: Set receiver and generator to high frequency setting called for in the table, for this band, of receiver. Adjust shunt aligning capacitors of oscillator, R.F. Amplifier, and Antenna Transformers. Set receiver and signal generator to low frequency setting called for in table, and align only the oscillator by means of oscillator series aligning capacitor. Again check adjustments of shunt aligning capacitors of Oscillator, R.F. Amplifier, and Antenna Transformers.

"B" BAND ALIGNMENT: Align Oscillator, R.F. Amplifier and Antenna Transformers in the same manner as for "A" band, using frequencies listed in table under "B" band.

"C" BAND ALIGNMENT: Proceed in same manner as for "A" and "B" bands.

"D" BAND ALIGNMENT: Proceed in the same manner as given for the "A", "B", and "C" bands.

ALIGNMENT FREQUENCIES.—

Nos. 58 and 61 Receivers

Band	High Frequency Aligning Point	Frequency for Aligning Oscillator Series Aligning Capacitor
"A"	1400 Kilocycles	600 Kilocycles
"B"	3000 Kilocycles	No Aligner
"C"	16 Megacycles	No Aligner

Nos. 62 and 63 Receivers

Band	High Frequency Aligning Point	Frequency for Aligning Oscillator Series Aligning Capacitor
"A"	1500 Kilocycles	600 Kilocycles
"B"	5000 Kilocycles	1800 Kilocycles
"C"	16 Megacycles	No Aligner

Nos. 82, 83, and 84 Receivers

Band	High Frequency Aligning Point	Frequency for Aligning Oscillator Series Aligning Capacitor
"A"	1500 Kilocycles	600 Kilocycles
"B"	4000 Kilocycles	1500 Kilocycles
"C"	10 Megacycles	4 Megacycles
"D"	19.8 Megacycles	No Aligner

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ABOVE- SOCKET LAYOUT, TRIMMER LOCATIONS AND TUBE VOLTAGES FOR MODEL 84

Socket

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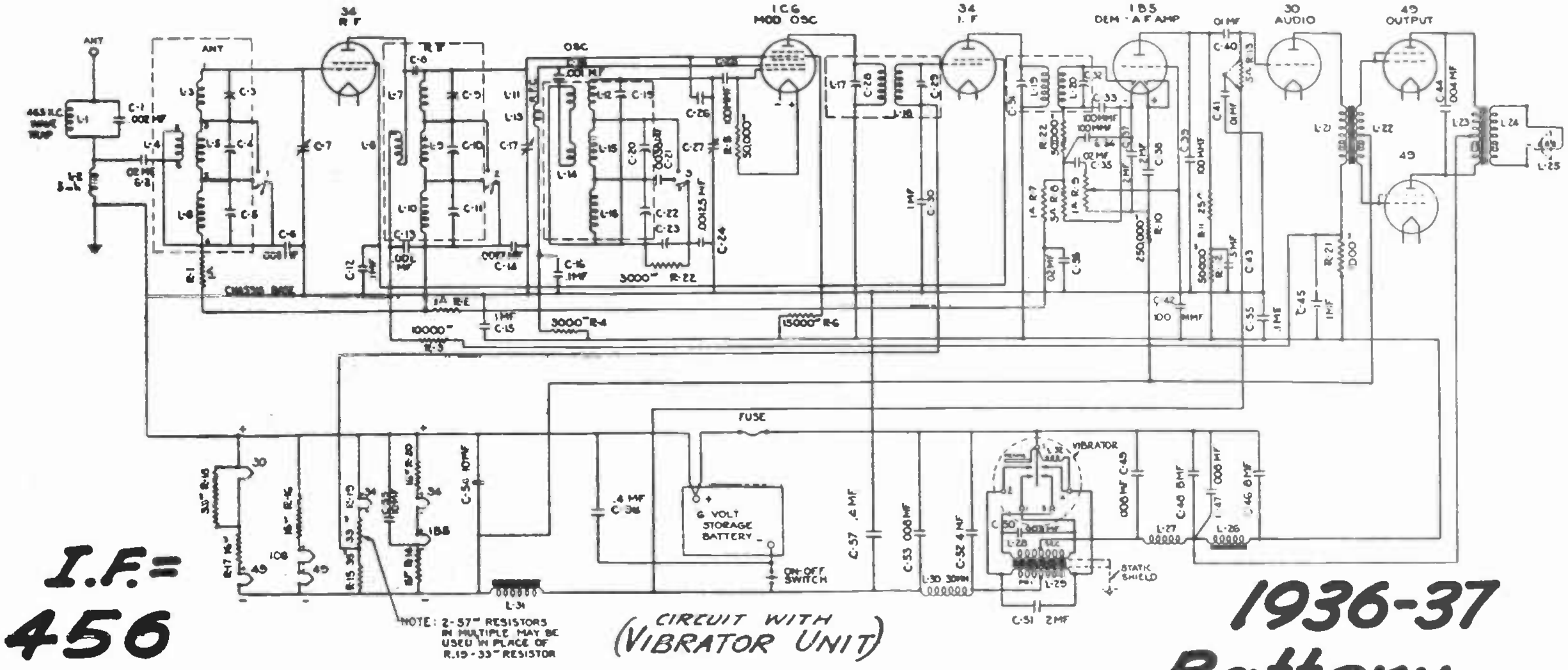
DATA SHEET STROMBERG-CARLSON-23

COURTESY- STROMBERG-CARLSON TELEPHONE CO. LTD.

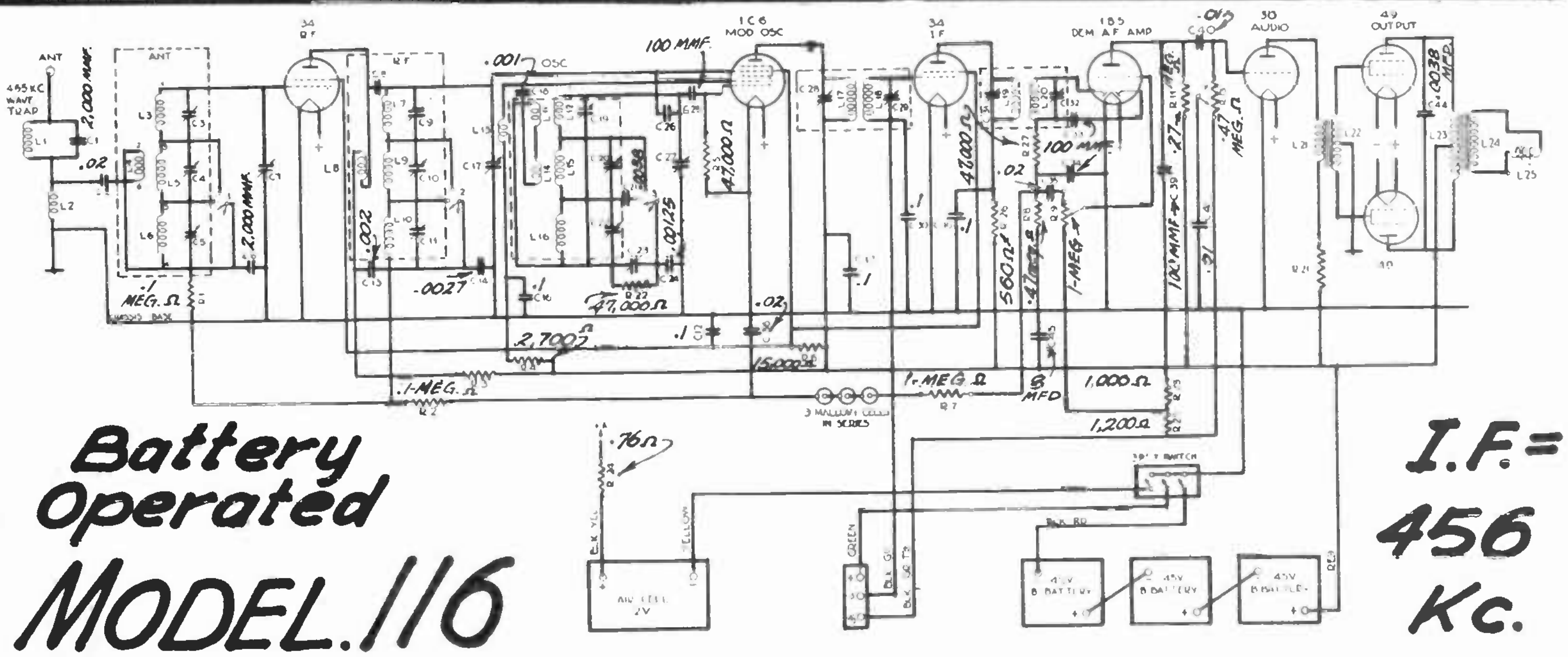
Alignment Data for both Models on Sheet-23a.



I.F.= 456 Kc.

1936-37 Battery Operated

MODEL. 115

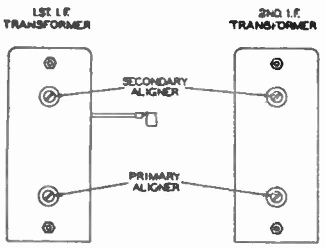


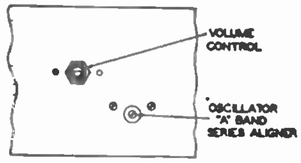
Battery Operated

MODEL. 116

I.F.= 456 Kc.

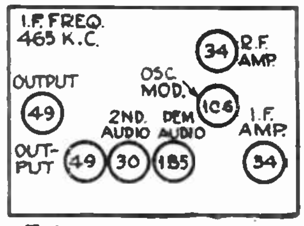
Alignment Data for Models 115-116



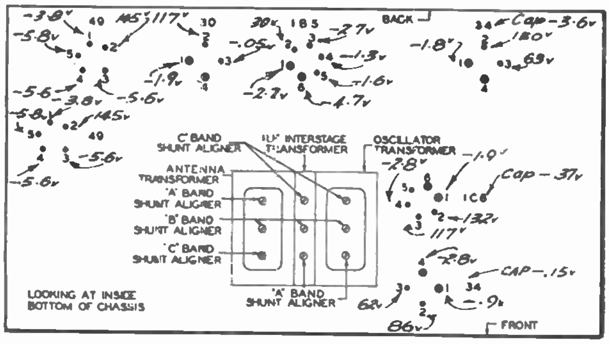


FRONT VIEW OF LEFT END OF CHASSIS

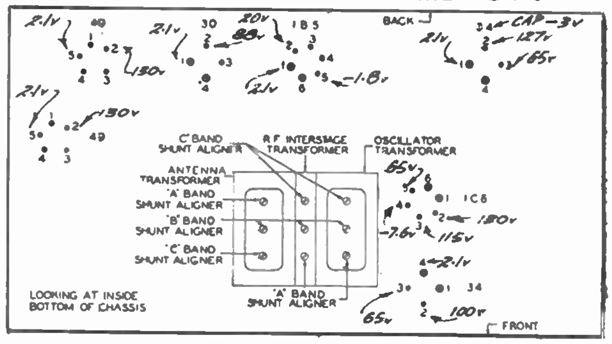
SEE SCHEMATIC CIRCUIT ON DATA SHEET -23



TUBE LAYOUT FOR MODELS. 115-116.



VOLTAGES AND TRIMMER LOCATIONS for MODEL. 115

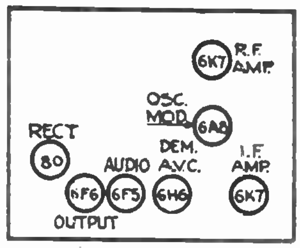


VOLTAGES AND TRIMMER LOCATIONS for MODEL. 116

R.F. ALIGNMENT.

Align in the following order.

1. Oscillator's "C" Band Shunt Aligner at 17 Megacycles (Capacitor C-7).
2. R. F. Interstage "C" Band Shunt Aligner at 17 Megacycles (Capacitor C-6).
3. Antenna "C" Band Shunt Aligner at 17 Megacycles (Capacitor C-3).
4. Oscillator's "B" Band Shunt Aligner at 3.4 Megacycles (Capacitor C-8).
5. R. F. Interstage "B" Band Shunt Aligner at 3.4 Megacycles (Capacitor C-5).
6. Antenna "B" Band Shunt Aligner at 3.4 Megacycles (Capacitor C-2).
7. Oscillator's "A" Band Shunt Aligner at 1.4 Megacycles (Capacitor C-9).
8. R. F. Interstage "A" Band Shunt Aligner at 1.4 Megacycles (Capacitor C-4).
9. Antenna "A" Band Shunt Aligner at 1.4 Megacycles (Capacitor C-1).
10. Oscillator's "A" Band Series Aligner at 0.6 Megacycles (Capacitor (23)).
11. Oscillator's "A" Band Shunt Aligner at 1.4 Megacycles (Capacitor C-9).
12. R. F. Interstage "A" Band Shunt Aligner at 1.4 Megacycles (Capacitor C-4).
13. Antenna "A" Band Shunt Aligner at 1.4 Megacycles (Capacitor C-1).



TUBE LAYOUT MODELS. 130-132

I.F. ALIGNMENT

Align in the following order.

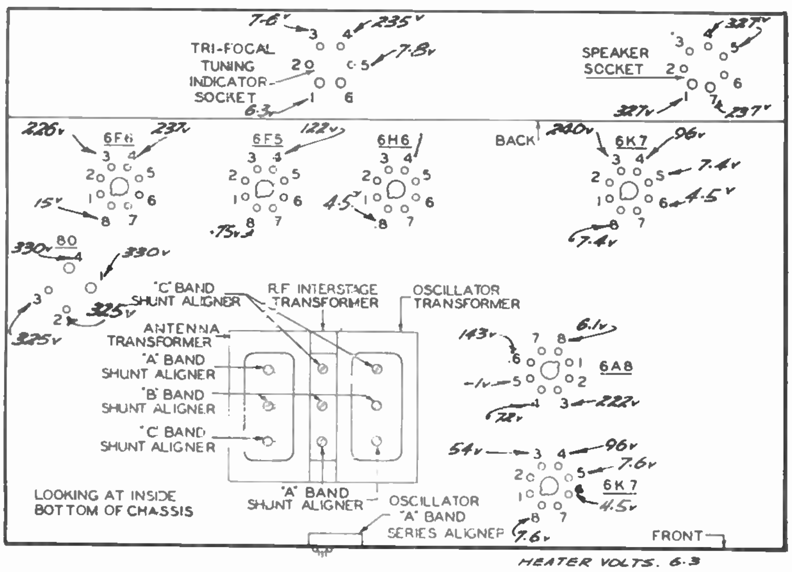
1. Secondary of 2nd I. F. Transformer (Capacitor C-13).
2. Primary of 2nd I. F. Transformer (Capacitor C-12).
3. Secondary of 1st I. F. Transformer (Capacitor C-11).
4. Primary of 1st I. F. Transformer (Capacitor C-10).

Alignment Data, etc. for Models. 130-132.

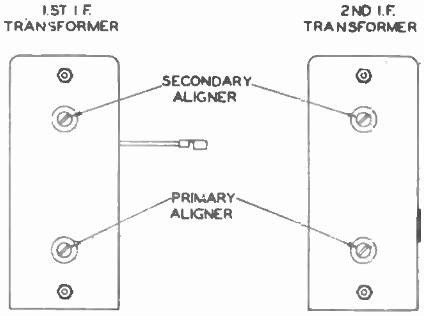
See circuit on Data Sheet -25

VOLTAGES for 130-132

TRIMMER LOCATIONS



HEATER VOLTS. 6·3



DATA SHEET

COURTESY-

STROMBERG-CARLSON-23a

TELEPHONE CO. LTD.

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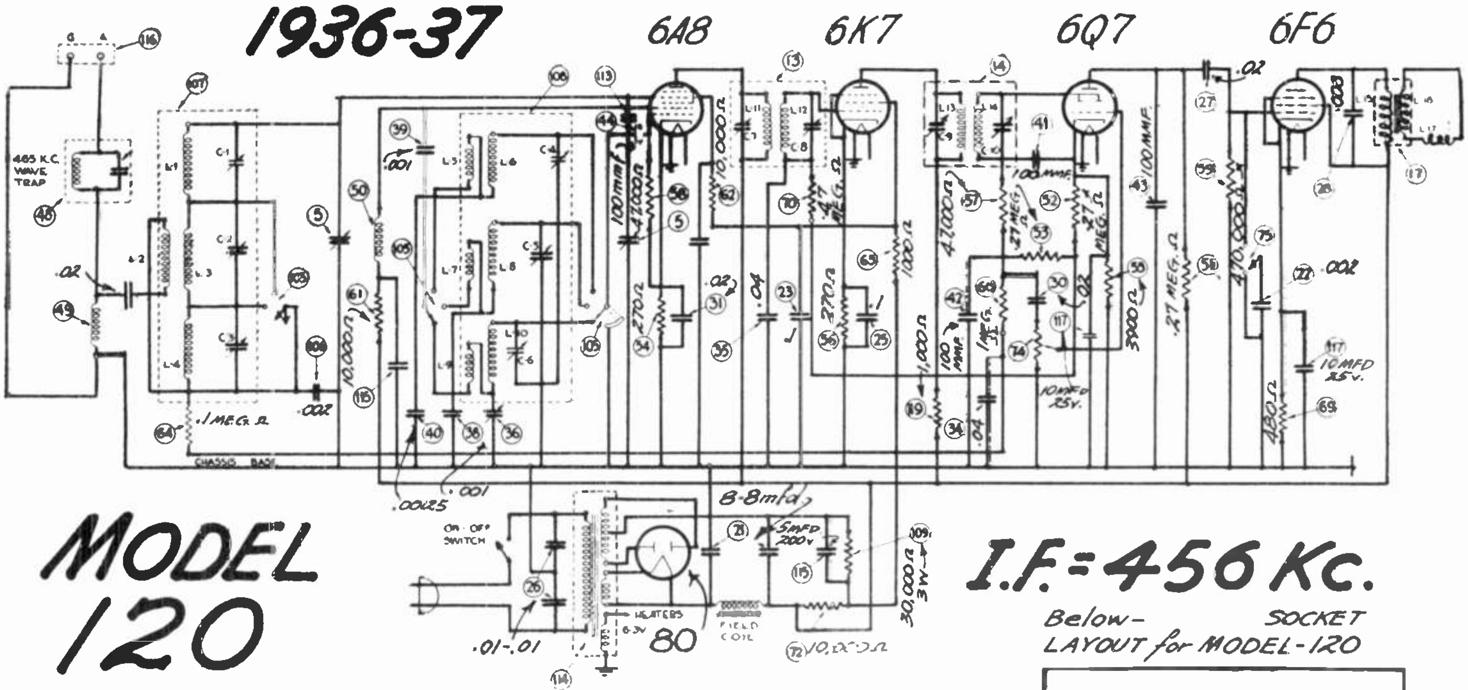
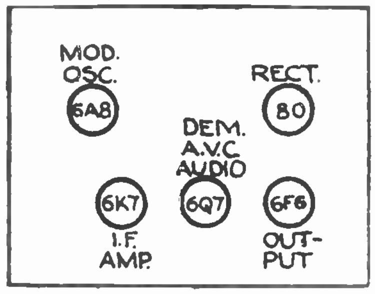
1936-37



MODEL 120

I.F.=456 Kc.

Below— SOCKET LAYOUT for MODEL-120

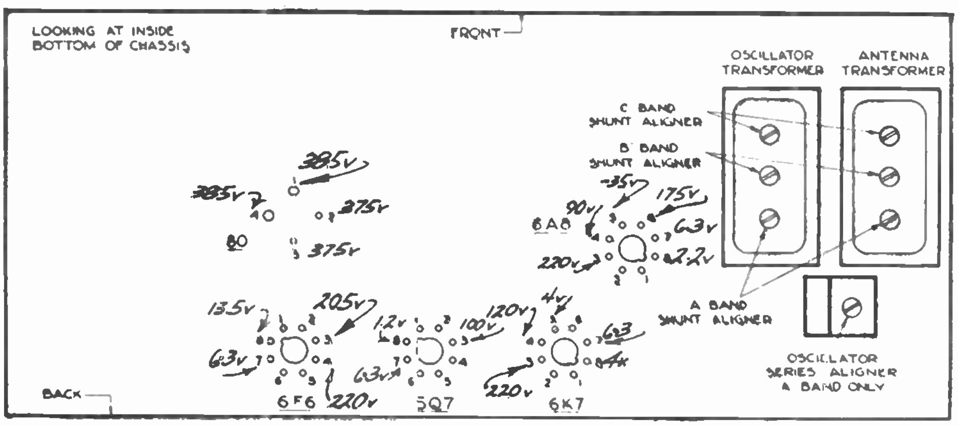


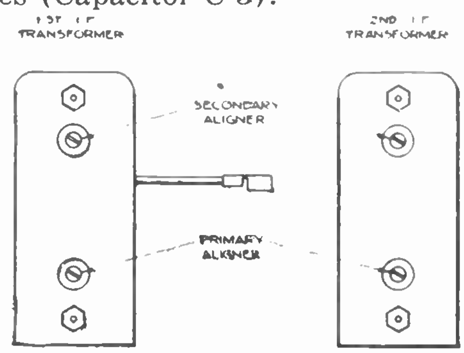
I.F. Alignment — ALIGN IN THE FOLLOWING ORDER.

1. Secondary of 2nd I. F. Transformer (Capacitor C-10).
2. Primary of 2nd I. F. Transformer (Capacitor C-9).
3. Secondary of 1st I. F. Transformer (Capacitor C-8).
4. Primary of 1st I. F. Transformer (Capacitor C-7).

R.F. Alignment — ALIGN IN THE FOLLOWING ORDER.

1. Oscillator's "C" Band Shunt Aligner at 17 Megacycles (Capacitor C-4).
2. Antenna "C" Band Shunt Aligner at 17 Megacycles (Capacitor C-1).
3. Oscillator's "B" Band Shunt Aligner at 3.4 Megacycles (Capacitor C-5).
4. Antenna "B" Band Shunt Aligner at 3.4 Megacycles (Capacitor C-2).
5. Oscillator's "A" Band Shunt Aligner at 1400 Kilocycles (Capacitor C-6).
6. Antenna "A" Band Shunt Aligner at 1400 Kilocycles (Capacitor C-3).
7. Oscillator's "A" Band Series Aligner at 600 Kilocycles (Capacitor (36).
8. Oscillator's "A" Band Shunt Aligner at 1400 Kilocycles (Capacitor C-6).
9. Antenna "A" Band Shunt Aligner at 1400 Kilocycles (Capacitor C-3).





SOCKET VOLTAGES AND TRIMMER LOCATIONS for MODEL-120.

DATA SHEET STROMBERG-CARLSON-24

COURTESY— STROMBERG-CARLSON TELEPHONE CO. LTD.

World Radio History

STROMBERG-CARLSON-25

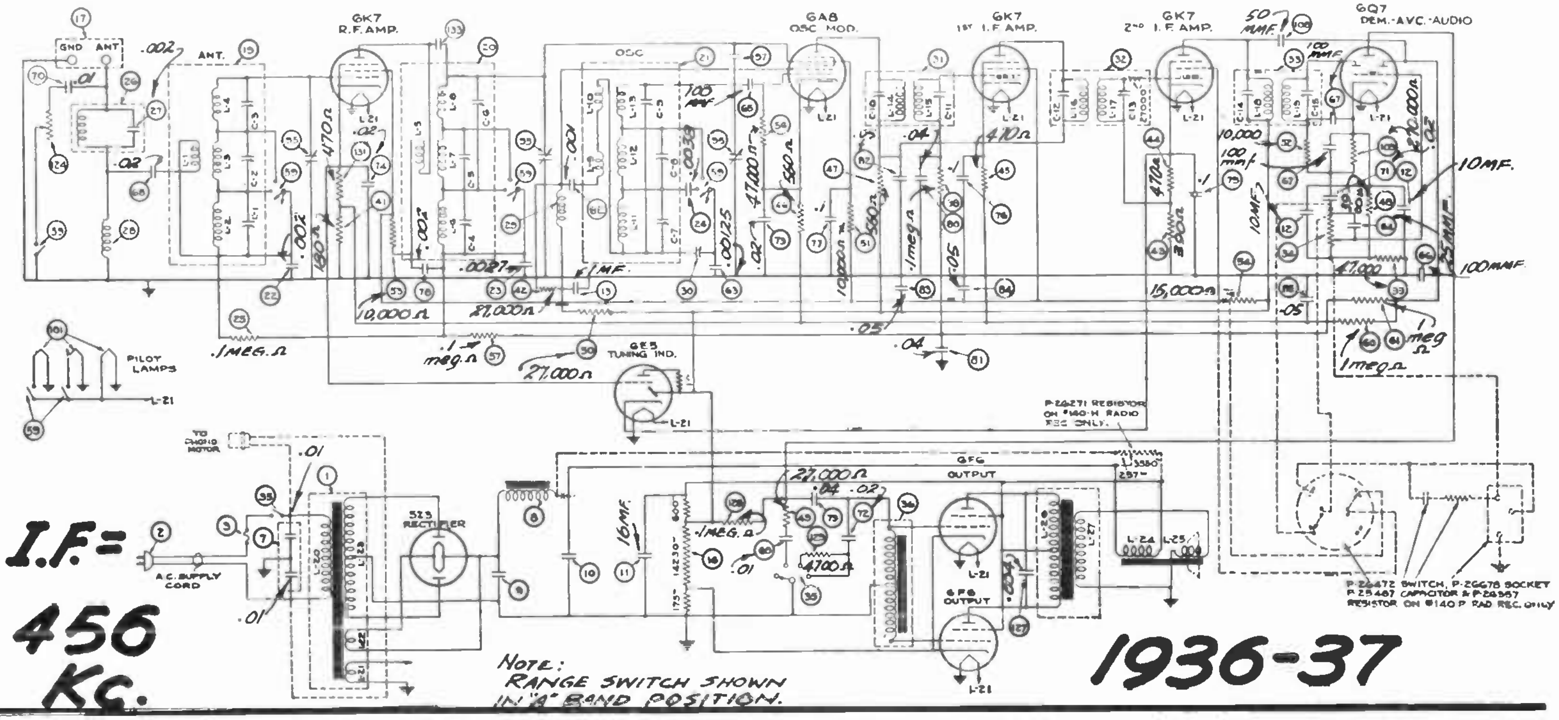
COURTESY- STROMBERG-CARLSON TELEPHONE CO. LTD.

MODELS 140-142

ALIGNMENT DATA ON SHEET-25a.

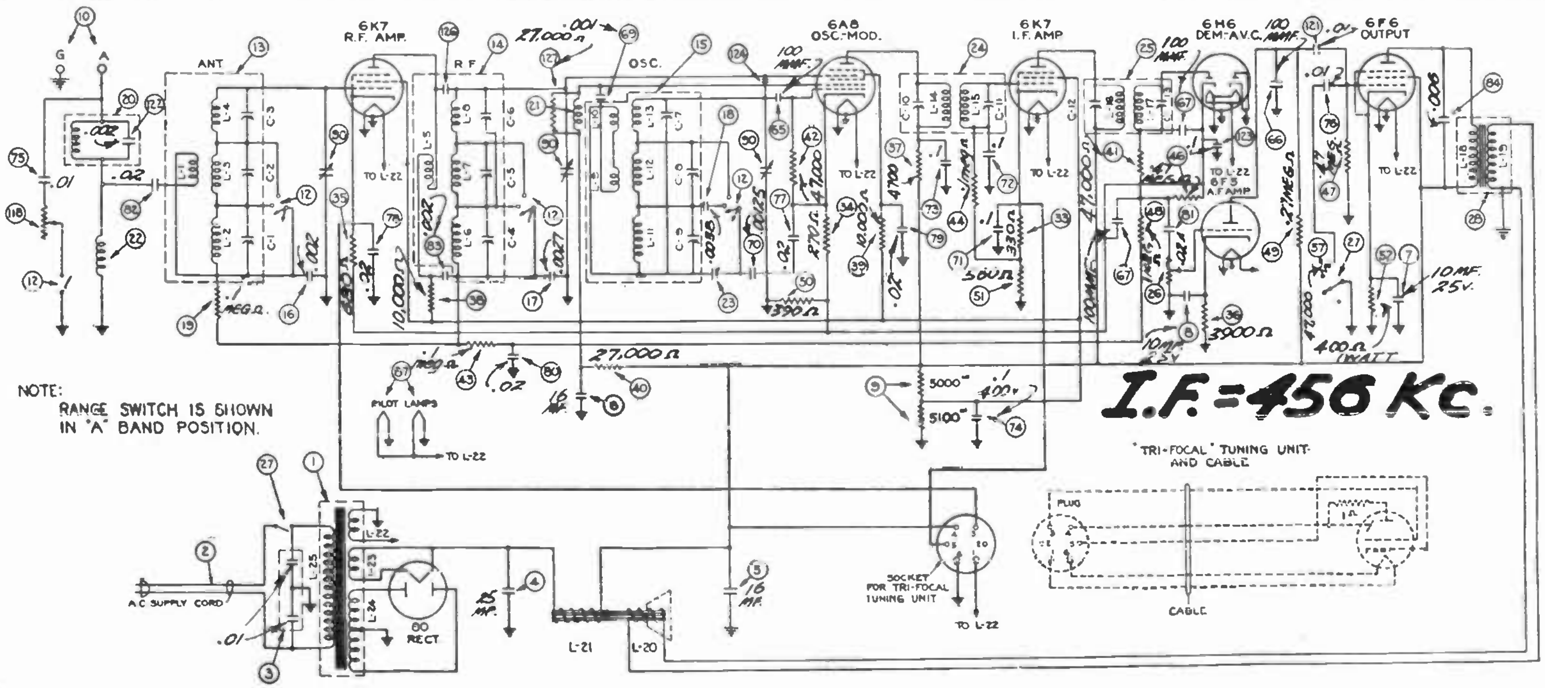
I.F.= 456 Kc.

1936-37



MODELS 130-132

ALIGNMENT DATA ON SHEET-23a.

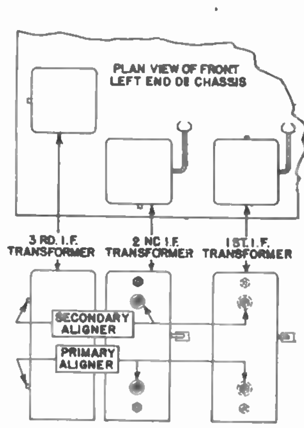


DATA SHEET

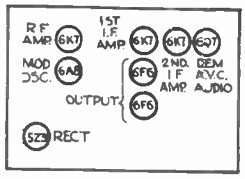
World Radio History

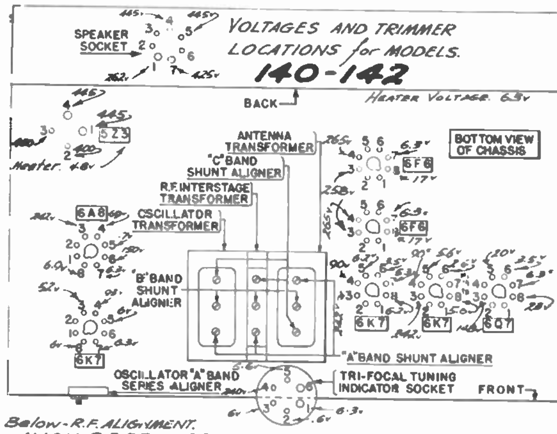
Alignment Information, etc. for Models. 140-142.

See schematic on Data Sheet-25



BELOW- TUBE LAYOUT FOR MODELS. 140-142.



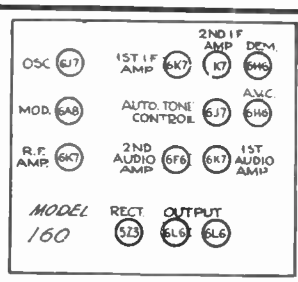


Below - I.F. ALIGNMENT
ALIGN IN THE FOLLOWING ORDER.

1. Secondary of 3rd I. F. Transformer (Capacitor C-15).
2. Primary of 3rd I. F. Transformer (Capacitor C-14).
3. Secondary of 2nd I. F. Transformer (Capacitor C-13).
4. Primary of 2nd I. F. Transformer (Capacitor C-12).
5. Secondary of 1st I. F. Transformer (Capacitor C-11).
6. Primary of 1st I. F. Transformer (Capacitor C-10).

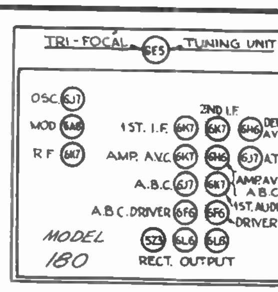
Below - R.F. ALIGNMENT.
ALIGN R.F. TRIMMERS IN THE FOLLOWING ORDER.

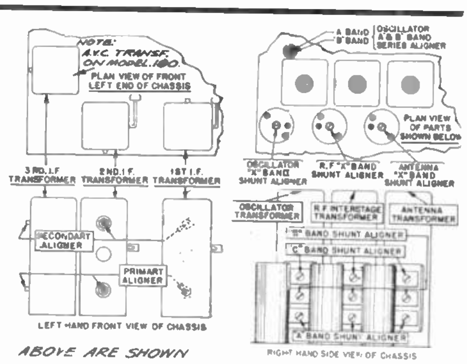
1. Oscillator's "C" Band Shunt Aligner at 17 Megacycles (Capacitor C-9).
2. R. F. Interstage "C" Band Shunt Aligner at 17 Megacycles (Capacitor C-6).
3. Antenna "C" Band Shunt Aligner at 17 Megacycles (Capacitor C-3).
4. Oscillator's "B" Band Shunt Aligner at 3.4 Megacycles (Capacitor C-8).
5. R. F. Interstage "B" Band Shunt Aligner at 3.4 Megacycles (Capacitor C-5).
6. Antenna "B" Band Shunt Aligner at 3.4 Megacycles (Capacitor C-2).
7. Oscillator's "A" Band Shunt Aligner at 1.4 Megacycles (Capacitor C-7).
8. R. F. Interstage "A" Band Shunt Aligner at 1.4 Megacycles (Capacitor C-4).
9. Antenna "A" Band Shunt Aligner at 1.4 Megacycles (Capacitor C-1).
10. Oscillator's "A" Band Series Aligner at 0.6 Megacycles (Capacitor (30)).
11. Oscillator's "A" Band Shunt Aligner at 1.4 Megacycles (Capacitor C-7).
12. R. F. Interstage "A" Band Shunt Aligner at 1.4 Megacycles (Capacitor C-4).
13. Antenna "A" Band Shunt Aligner at 1.4 Megacycles (Capacitor C-1).



Alignment Information for Models. 160 and 180

See circuit on Sheet-27





ABOVE ARE SHOWN
TRIMMER LOCATIONS, ETC FOR MODELS. 160-180

Intermediate Frequency Amplifier Adjustments

Because of the necessity of obtaining the proper shape of resonance curve of these stages in a high fidelity receiver, it is recommended that unless it is absolutely essential, these I. F. adjustments be untouched. In the factory these adjustments are made using a visual system which allows the operator to see the exact shape of the resonance curve. For this reason it is best to have these adjustments made at the factory. However, in the case where this cannot be done, the following procedure should be followed.

Operate the range switch of the receiver to the "A" range position. Set the tuning dial at its extreme low frequency position, and operate the "Tone-Fidelity" control knob so that the receiver is adjusted for the standard fidelity position as indicated by the fidelity indicator located on the front panel of the receiver. Never attempt to align the I. F. circuits of this receiver with the "Tone-Fidelity" control set at any position other than the standard fidelity. The I. F. circuits may then be checked for alignment by adjusting the aligning capacitors in the exact order as follows:

1. Secondary of 3rd I. F. Trans. (Capacitor C-18).
2. Primary of 3rd I. F. Trans. (Capacitor C-17).
3. Secondary of 2nd I. F. Trans. (Capacitor C-16).
4. Primary of 2nd I. F. Trans. (Capacitor C-15).
5. Secondary of 1st I. F. Trans. (Capacitor C-14).
6. Primary of 1st I. F. Trans. (Capacitor C-13).

Alignment of Long-Wave-Weather Range (Also Referred to as "X" Band) Circuits

1. Oscillator "X" Band Shunt Aligning Capacitor at 350 Kilocycles (Capacitor C-12) (C-13 ON MODEL 180.
2. R. F. Interstage "X" Band Shunt Aligning Capacitor at 350 Kilocycles (Capacitor C-8), C-9 ON MODEL 180.
3. Antenna "X" Band Shunt Aligning Capacitor at 350 Kilocycles (Capacitor C-4).
4. Oscillator "X" Band Series Aligning Capacitor at 150 Kilocycles (Capacitor Item 133). When operation No. 4 has been completed repeat operations 1, 2, and 3 again and in the exact order given. ITEM 150 ON MODEL 180

Alignment of Standard Broadcast Range (Also Referred to as "A" Band) Circuits

1. Oscillator's "A" Band Shunt Aligning Capacitor at 1500 Kilocycles (Capacitor C-11). C-12 ON MODEL 180
2. R. F. Interstage "A" Band Shunt Aligning Capacitor at 1500 Kilocycles (Capacitor C-7) C-8 ON MODEL 180
3. Antenna "A" Band Shunt Aligning Capacitor at 1500 Kilocycles (Capacitor C-3).
4. "A" Band, R. F. Bi-resonator Shunt Aligning Capacitor at 1500 Kilocycles (Capacitor C-19). C-20 ON MODEL 180
5. Oscillator "A" Band Series Aligning Capacitor at 600 Kilocycles (Capacitor with screw adjustment. Item 200) When operation No. 5 has been completed repeat operations 1, 2, 3, and 4 again and in the exact order given. ITEM 290 ON MODEL 180

Alignment of Amateur, Police, and Aircraft Range (Also Referred to as "B" Band) Circuits

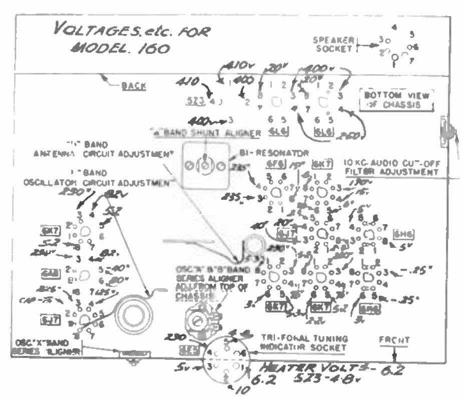
1. Oscillator's "B" Band Shunt Aligning Capacitor at 5 Megacycles (Capacitor C-10) C-11 ON MODEL 180
2. R. F. Interstage "B" Band Shunt Aligning Capacitor at 5 Megacycles (Capacitor C-6) C-7 ON MODEL 180
3. Antenna "B" Band Shunt Aligning Capacitor at 5 Megacycles (Capacitor C-2).
4. Oscillator "B" Band Series Aligning Capacitor at 1.8 Megacycles (Capacitor with nut adjustment. Item ~~200~~) When operation No. 4 has been completed repeat operations 1, 2, and 3 again and in the exact order given. ITEM 29 ON MODEL 180

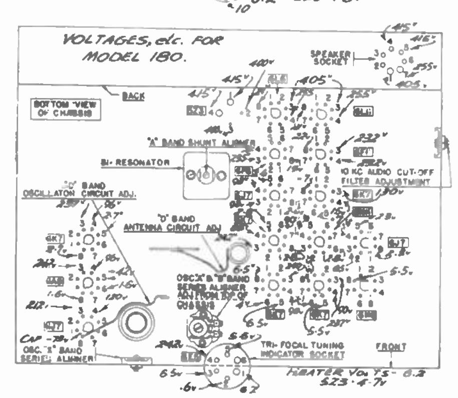
Alignment of Short-Wave-Foreign Range (Also Referred to as "C" Band) Circuits

1. Oscillator's "C" Band Shunt Aligning Capacitor at 16 Megacycles (Capacitor C-9). C-10 ON MODEL 180
2. R. F. Interstage "C" Band Shunt Aligning Capacitor at 16 Megacycles (Capacitor C-5). C-6 ON MODEL 180
3. Antenna "C" Band Shunt Aligning Capacitor at 16 Megacycles (Capacitor C-1).

Alignment of Ultra Short-Wave Range (Also Referred to as "D" Band) Circuits

1. The only adjustment which it is necessary to make for bringing the "D" Band Oscillator's circuit into alignment is accomplished by bending the ground loop (shown in "D" Band Oscillator Circuit Adjustment) either closer to the coil or farther away from the coil. This adjustment should be made with the signal generator set to a frequency of 20 megacycles.
2. The only adjustment which it is necessary to make for bringing the "D" Band Antenna's Circuit into alignment is accomplished by bending the grid lead loop (shown in "D" Band Antenna Circuit Adjustment) so as to form either a smaller or larger loop. This adjustment should also be made with the signal generator set to a frequency of 20 megacycles.





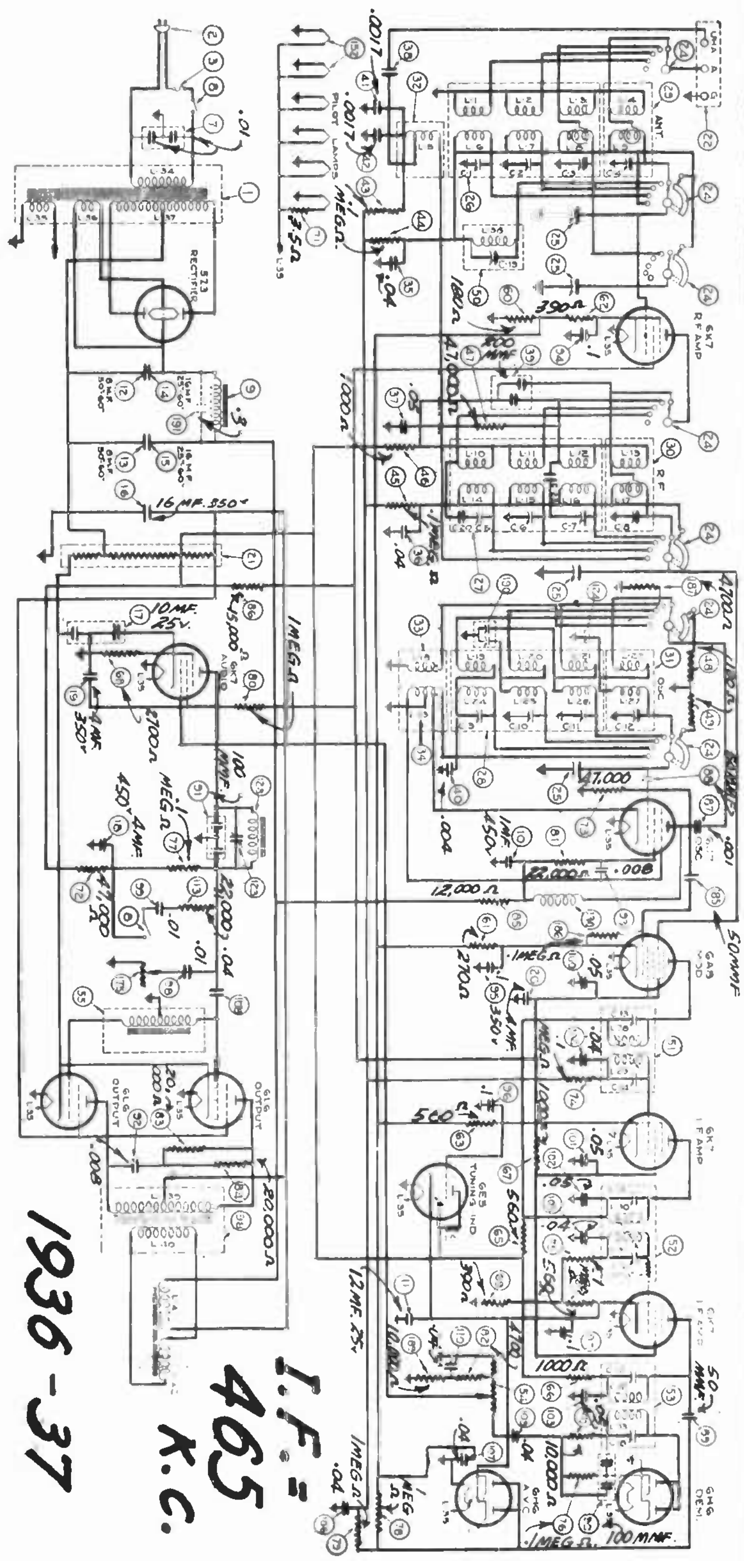
DATA SHEET

COURTESY- STROMBERG-CARLSON-25a TELEPHONE CO. LTD.

World Radio History

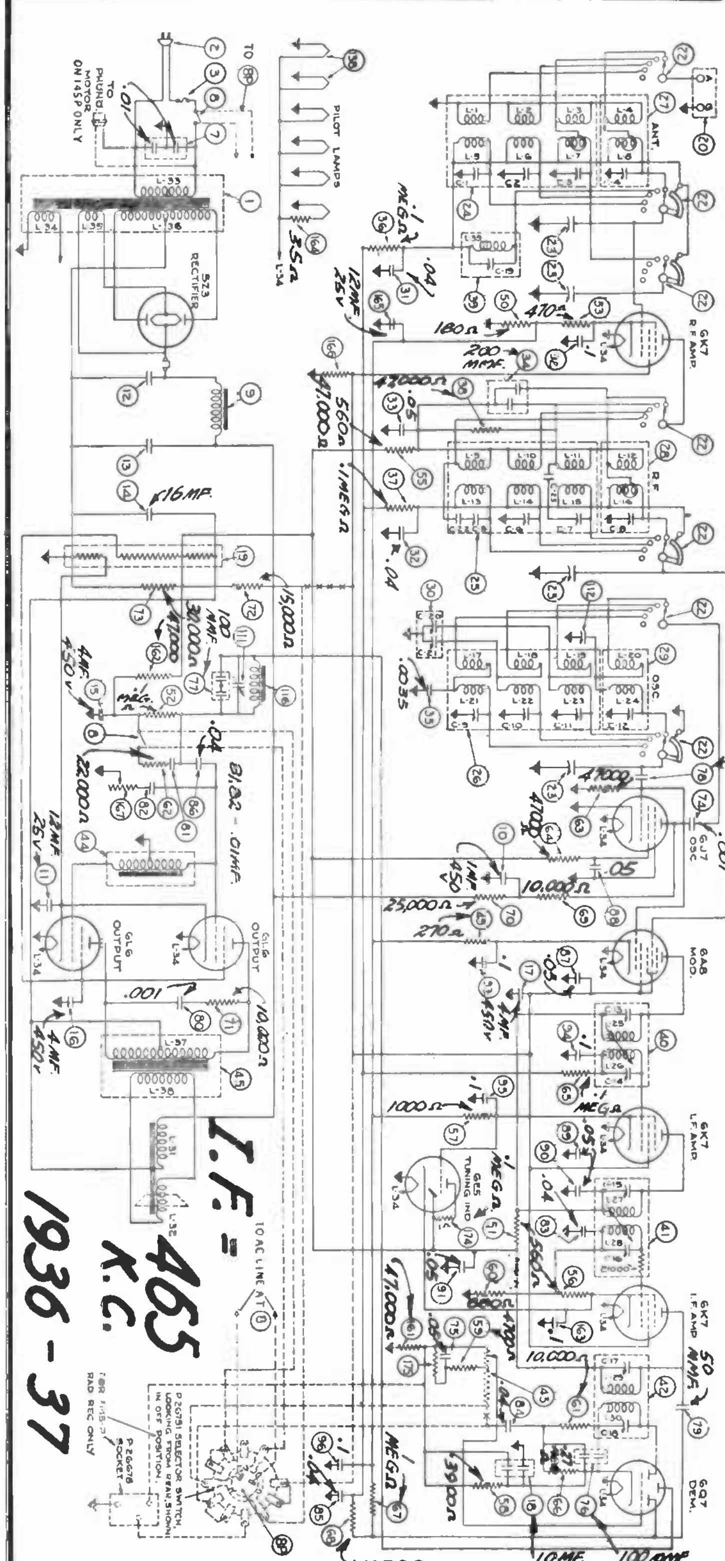
Model-150

Alignment Data on Sheet-26a



Model-145

Alignment Data on Sheet-26a



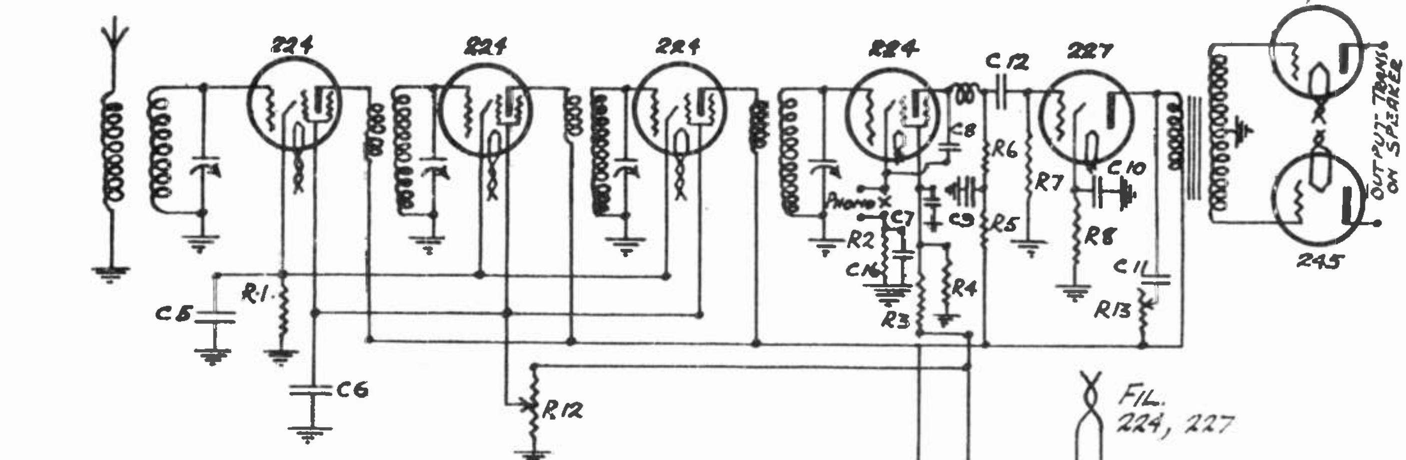
DATA SHEET

COURTESY-
STROMBERG-CARLSON-26
TELEPHONE CO. LTD.

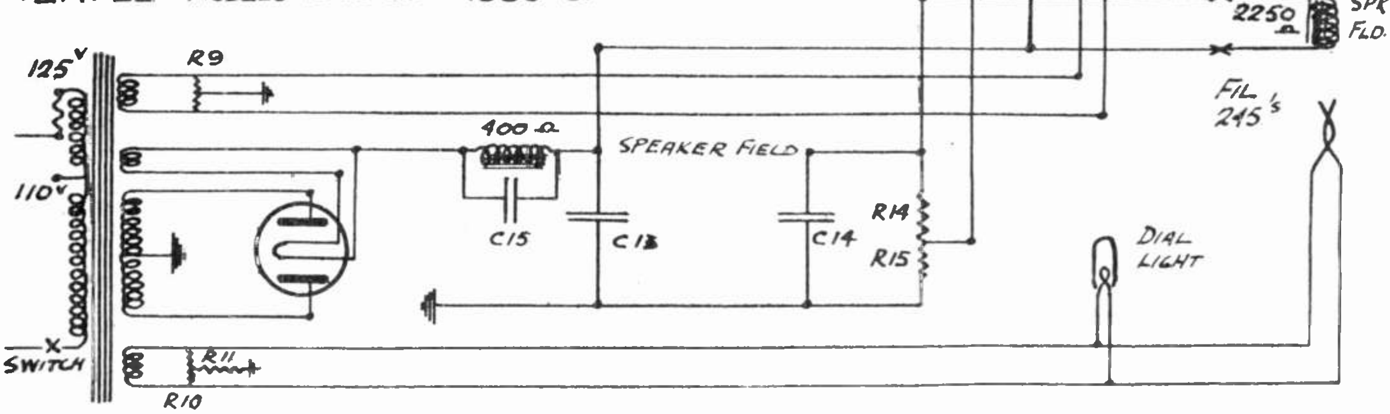
TELEPHONE CO. LTD.

DATA SHEET

STROMBERG-CARLSON-27
TELEPHONE CO. LTD.



TEMPLE Models 10-20-30 1930-31

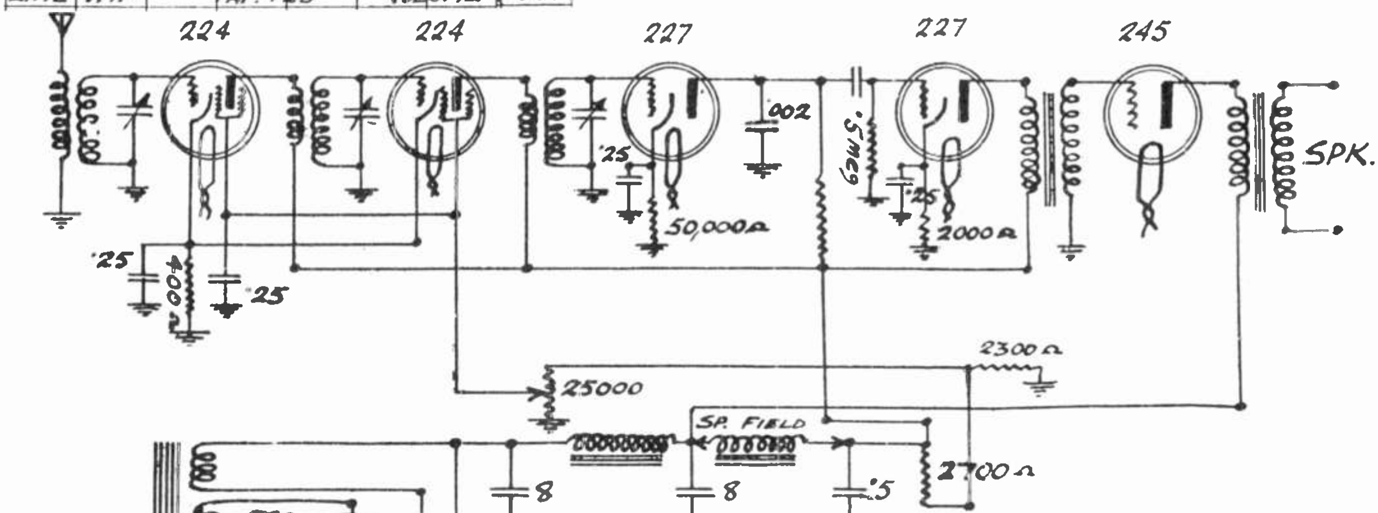


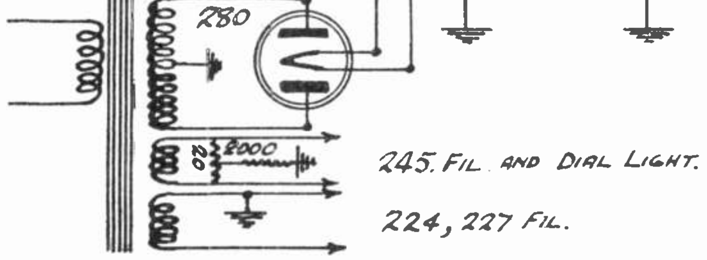
POSITION OF TUBE	TYPE OF TUBE	A VOLTS ⑥	B VOLTS ⑦	C VOLTS (CONTROL GRID) ⑧	CATHODE-HEATER ⑨ VOLTS	NORMAL PLATE ⑩ M.A.	SCREEN GRID ⑬ VOLTS
1RF	224	2.2	160	-3		1.3	75
2 "	"	"	"	"		"	"
3 "	"	"	"	"		"	"
DETC	"	"	34	-2.5		.01	37.5
1AF	227	"	115	-7		3.9	
P.P.	245	2.25	192	-36		20	
LINE	117V	TAP 125			VOLUME		MAX

	OHMS
R.1.	600
R2-3-4	43000
R5.	100000
R6.	250000
R7	2 Meg
R8.	2000
R9-10	20
R 11	900
R12-13	25000
R 14	2700
R 15	2300

	MFD
C5-6-9-16	.25
C7-12	.05
C8	.00025
C10	.5
C11	.15
* C13-14	8
C15	.5

* 25 CYCLE ONLY



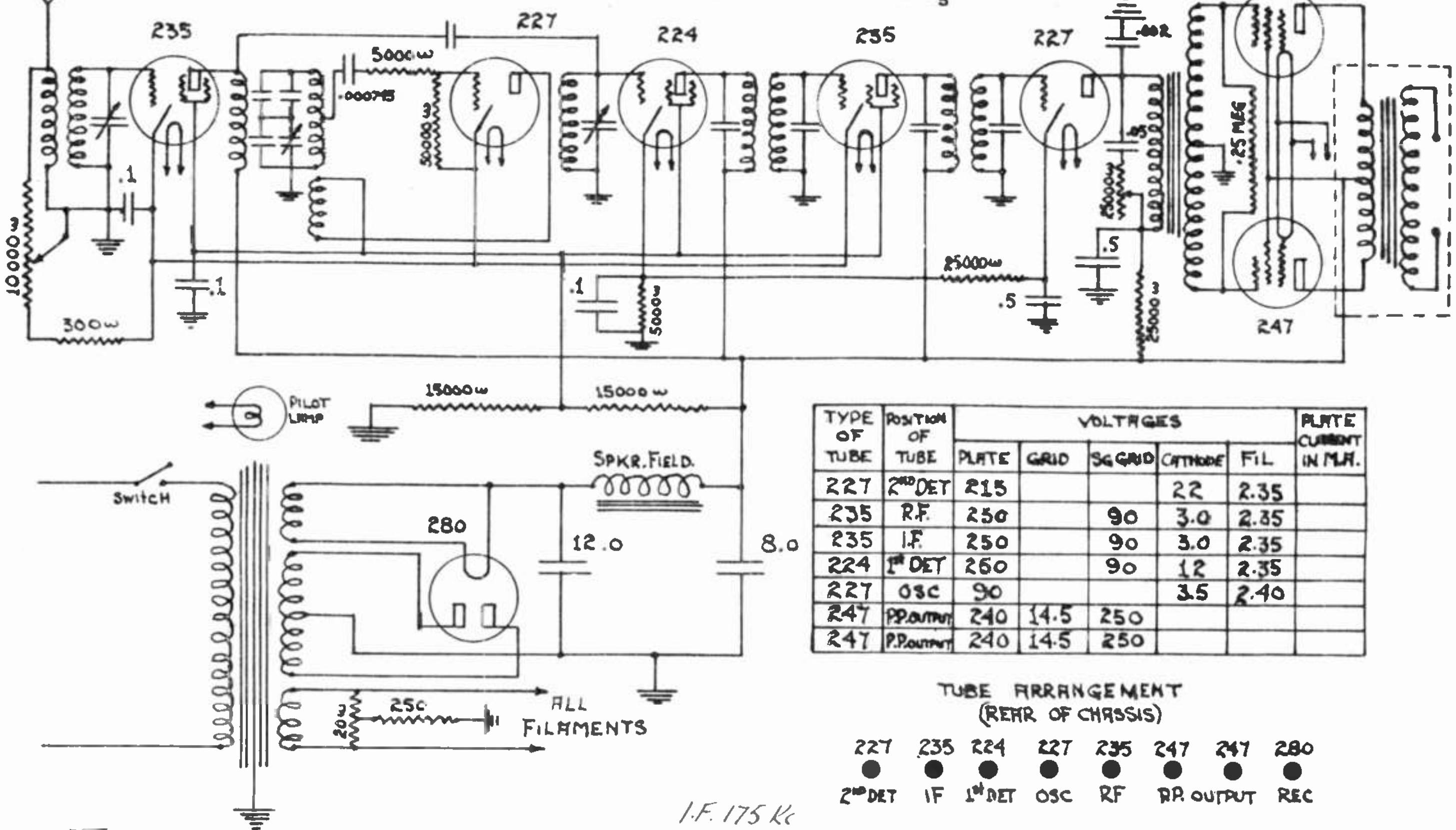


POSITION OF TUBE	TYPE OF TUBE	A VOLTS ⑥	B VOLTS ⑦	C VOLTS (CONTROL GRID) ⑧	CATHODE-HEATER ⑨ VOLTS	NORMAL PLATE ⑩ M.A.	SCREEN GRID ⑬ VOLTS
1RF	224	2.45	160	2.3	3	3	68
2RF	224	"	"	"	3	3	68
DETC	227	"	80	10	10	.25	
1AF	"	"	150	2	10	5	
2AF	245	"	230	42		28	
LINE	116V				VOLUME		MAX.

MIDGET MODEL 1930-31

World Radio History

TEMPLE MODEL 16 SUPERHETERODYNE RECEIVER
-1932-
schematic circuit diagram

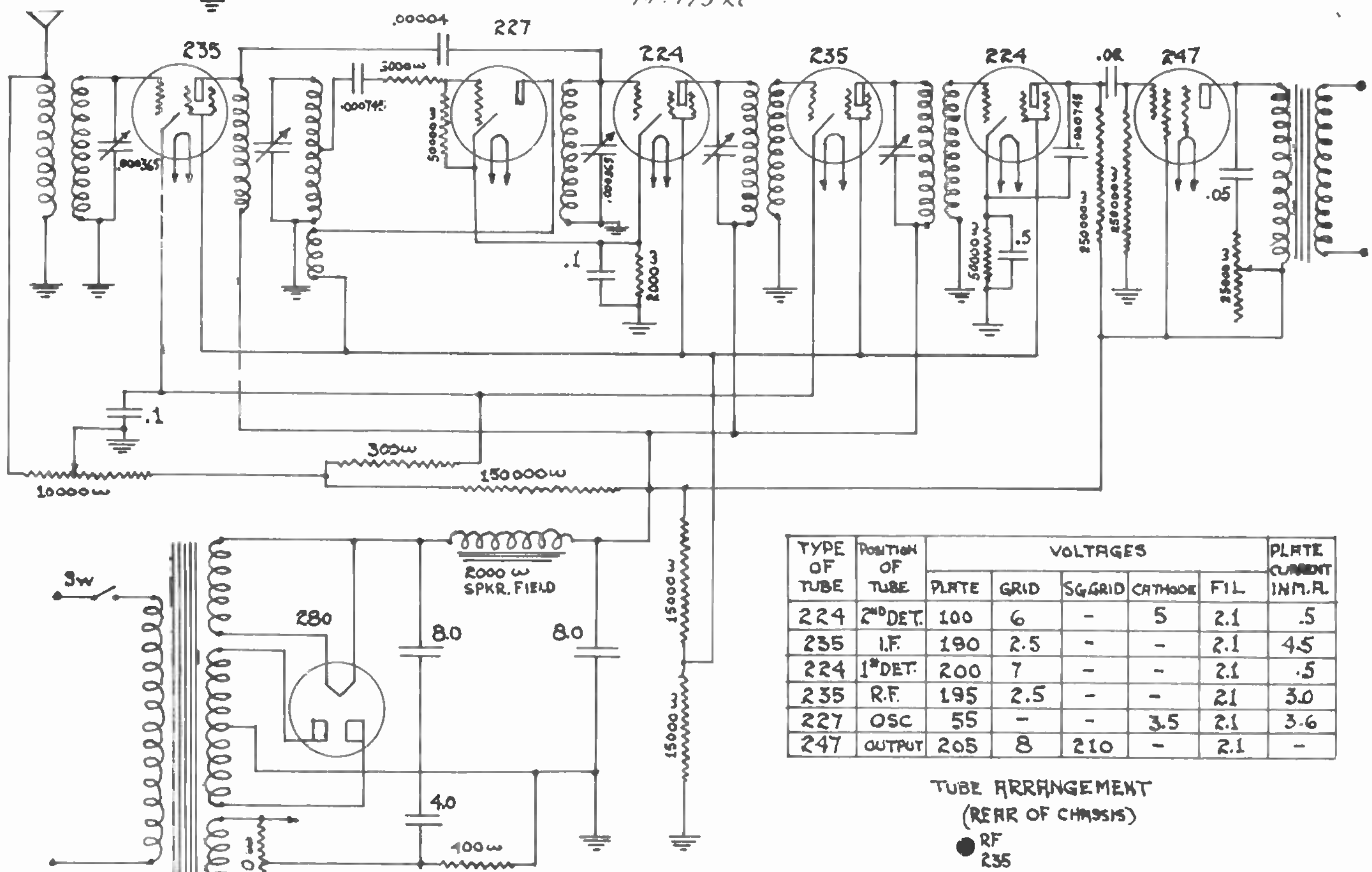


TYPE OF TUBE	POSITION OF TUBE	VOLTAGES					PLATE CURRENT IN MA.
		PLATE	GRID	SG GRID	CATHODE	FIL	
227	2ND DET	215			22	2.35	
235	R.F.	250		90	3.0	2.35	
235	I.F.	250		90	3.0	2.35	
224	1ST DET	250		90	12	2.35	
227	OSC	90			3.5	2.40	
247	P.P. OUTPUT	240	14.5	250			
247	P.P. OUTPUT	240	14.5	250			

TUBE ARRANGEMENT
(REAR OF CHASSIS)

227 2ND DET — 235 IF — 224 1ST DET — 227 OSC — 235 RF — 247 PP. OUTPUT — 247 PP. OUTPUT — 280 REC

I.F. 175 Kc

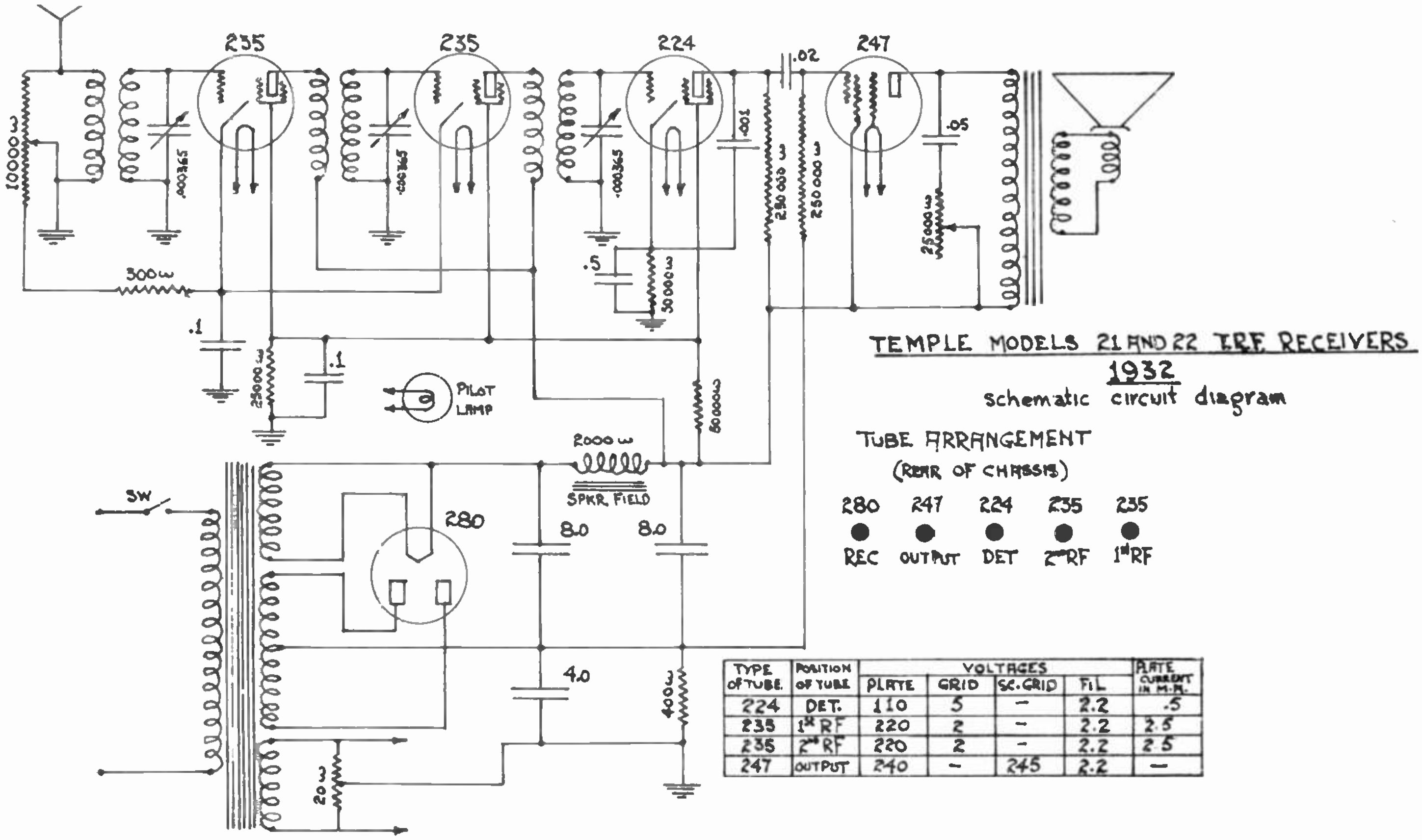


TYPE OF TUBE	POSITION OF TUBE	VOLTAGES					PLATE CURRENT IN M.A.
		PLATE	GRID	SG GRID	CATHODE	FIL	
224	2ND DET.	100	6	-	5	2.1	.5
235	I.F.	190	2.5	-	-	2.1	4.5
224	1ST DET.	200	7	-	-	2.1	.5
235	R.F.	195	2.5	-	-	2.1	3.0
227	OSC	55	-	-	3.5	2.1	3.6
247	OUTPUT	205	8	210	-	2.1	-

TUBE ARRANGEMENT
(REAR OF CHASSIS)

RF 235
OSC 227
1ST DET 224
REC 280
IF 235 — 2ND DET 224 — OUTPUT 247

TEMPLE MODELS 17, 18, 19 AND 23 SUPERHETERODYNE RECEIVERS
-1931-
schematic circuit diagram



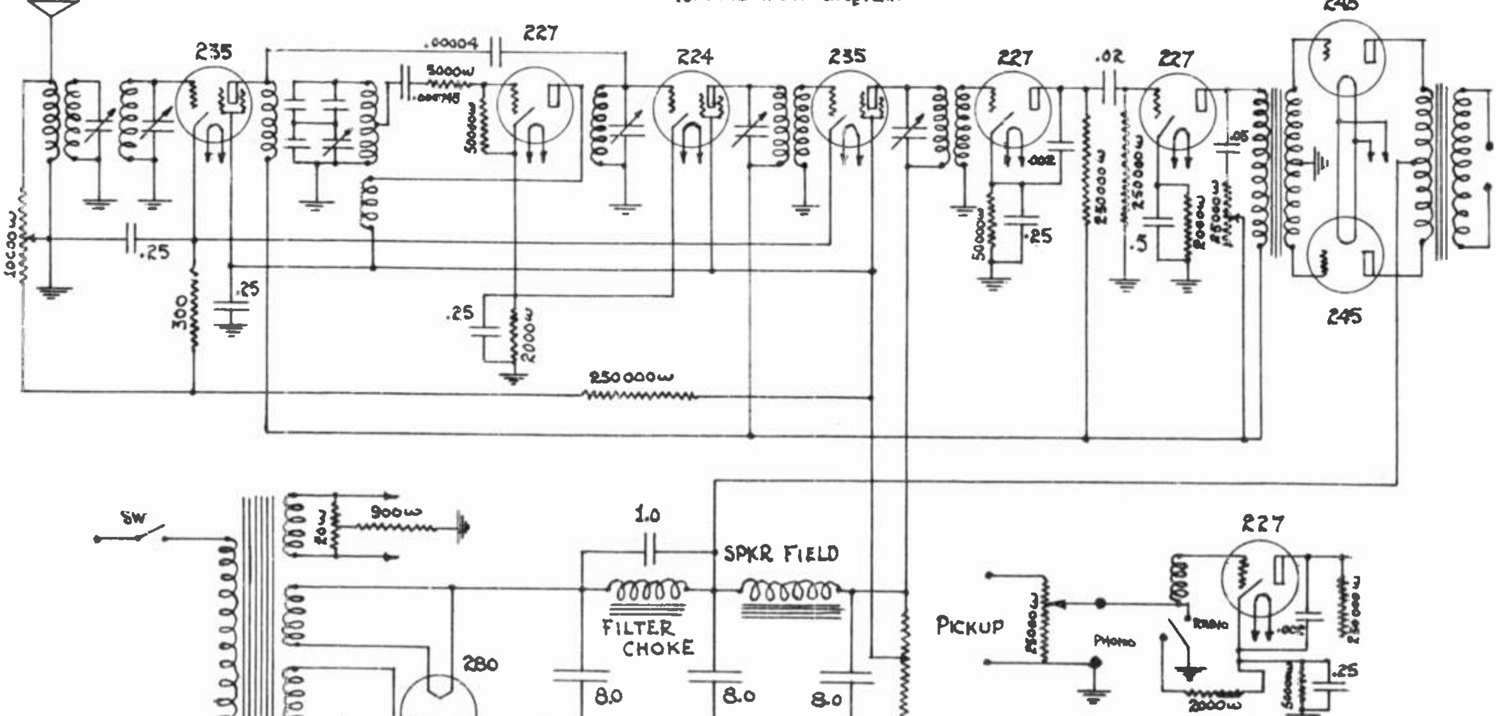
TEMPLE MODELS 21 AND 22 T.R.F. RECEIVERS
1932
schematic circuit diagram

TUBE ARRANGEMENT
(REAR OF CHASSIS)

280	247	224	235	235
REC	OUTPUT	DET	2nd RF	1st RF

TYPE OF TUBE	POSITION OF TUBE	VOLTAGES				PLATE CURRENT IN M.A.
		PLATE	GRID	SC. GRID	FIL	
224	DET.	110	5	–	2.2	.5
235	1st RF	220	2	–	2.2	2.5
235	2nd RF	220	2	–	2.2	2.5
247	OUTPUT	240	–	245	2.2	–

TEMPLE MODELS 24, 25 AND 26 SUPERHETERODYNE RECEIVER
1932
schematic circuit diagram



PHONO PICKUP CIRCUIT.

TUBE ARRANGEMENT
(REAR OF CHASSIS)

I.F. 175 Kc.

OSC	1st DET	RF	IF	2nd DET	P.P. OUTPUT		REC
227	224	235	235	227	245	245	280

TYPE OF TUBE	POSITION OF TUBE	VOLTAGES				PLATE CURRENT IN M.A.
		PLATE	GRID	SC. GRID	FIL	
245	OUTPUT	215	36	–	2.1	22
245	OUTPUT	215	36	–	2.1	22
227	1st AUDIO	130	2	–	2.1	4.5
227	2nd DET	80	7	–	2.1	.02
227	OSC	50	ZERO	–	2.1	4.5
235	IF	140	2.5	–	2.1	4.7
235	RF	140	2.5	–	2.1	5.1
224	1st DET	140	5	–	2.1	.02

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DATA SHEET

For Chassis—See Sheet 5.

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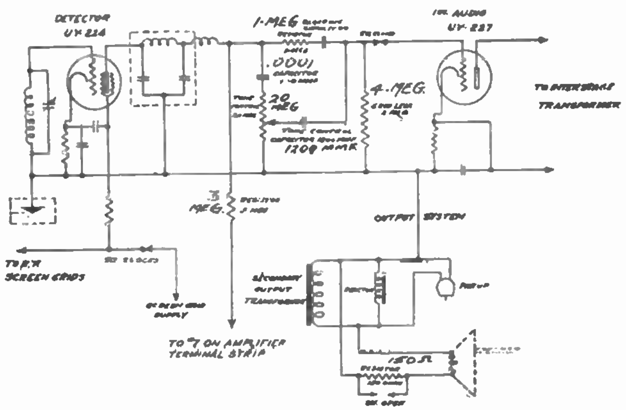
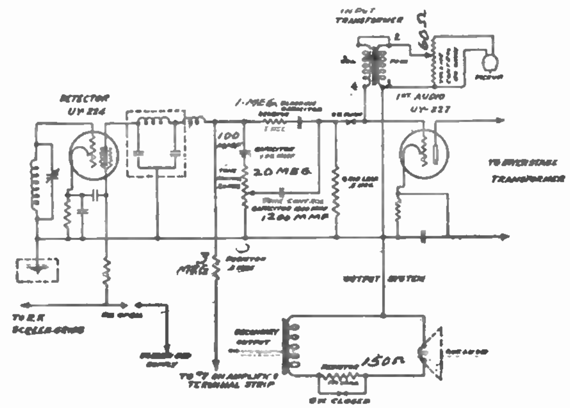
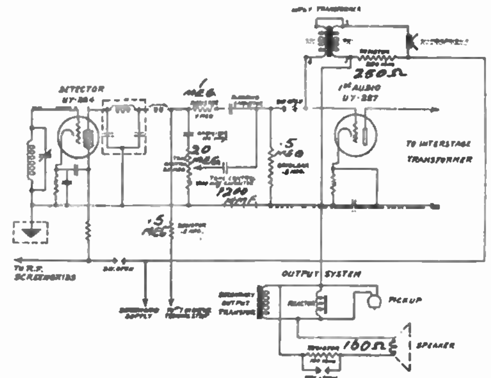


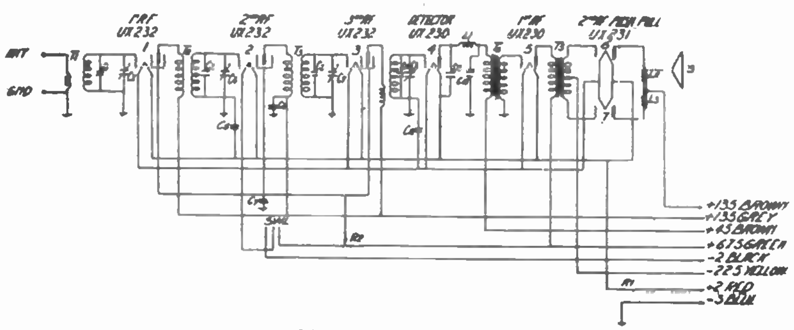
Fig. 23—Schematic Connections Between Detector and First Audio Tubes with Transfer Switch in "Radio Recording" position.



—Schematic Connections Between Detector and First Audio Tubes with Transfer Switch in "Record Reproduction" position.

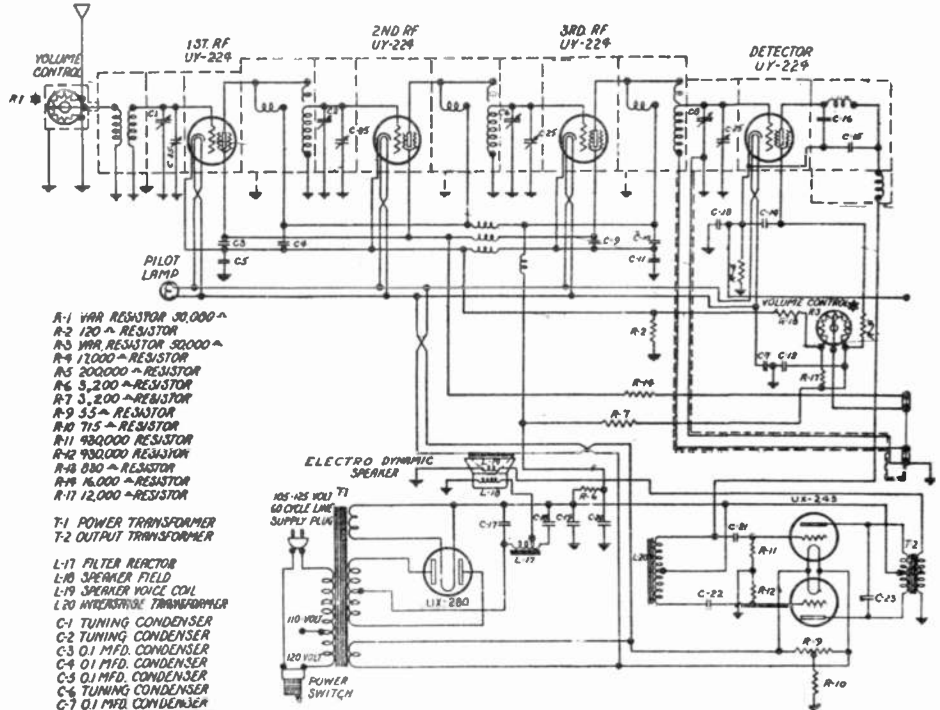


—Schematic Connections Between Detector and First Audio Tubes with Transfer Switch in "Home Recording" position.



—Schematic Wiring Diagram R-10 No. 1

R1 '56Ω R2 500,000ω R3 GREEN 50,000Ω
R4 2 meg R5 2 meg R6 BLUE 500,000Ω
R7 2 meg (YELLOW.) C-15 '002
C5-6-7-12 '5 C-13 '0005 C-14 '01



R-1 VAR RESISTOR 50,000Ω
R-2 120Ω RESISTOR
R-3 VAR. RESISTOR 50,000Ω
R-4 12,000Ω RESISTOR
R-5 200,000Ω RESISTOR
R-6 3,200Ω RESISTOR
R-7 3,200Ω RESISTOR
R-9 55Ω RESISTOR
R-10 715Ω RESISTOR
R-11 980,000 RESISTOR
R-12 930,000 RESISTOR
R-13 880Ω RESISTOR
R-14 16,000Ω RESISTOR
R-17 12,000Ω RESISTOR

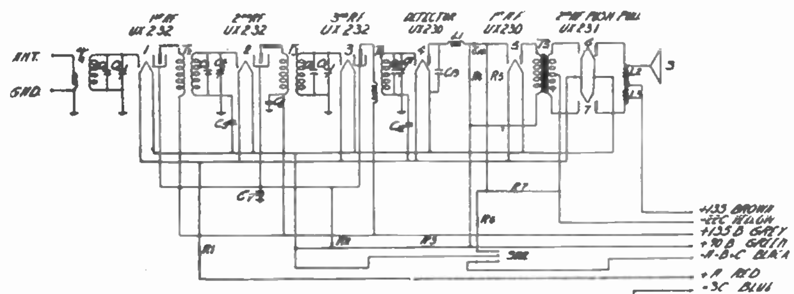
T-1 POWER TRANSFORMER
T-2 OUTPUT TRANSFORMER

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

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.

—Schematic Wiring Diagram, Victor Radio R-15

TUBE TYPE	POSITION	'A' VOLTS	'B' VOLTS	'C' VOLTS	S.G. VOLTS	PLATE MA.
224	1	2'1	153	2'7	77	2'9
"	2	"	"	"	"	3'4
"	3	"	"	2'8	75	3'1
"	4	"	215	4'6	34	'4
245 "	P.P	2'05	190			25



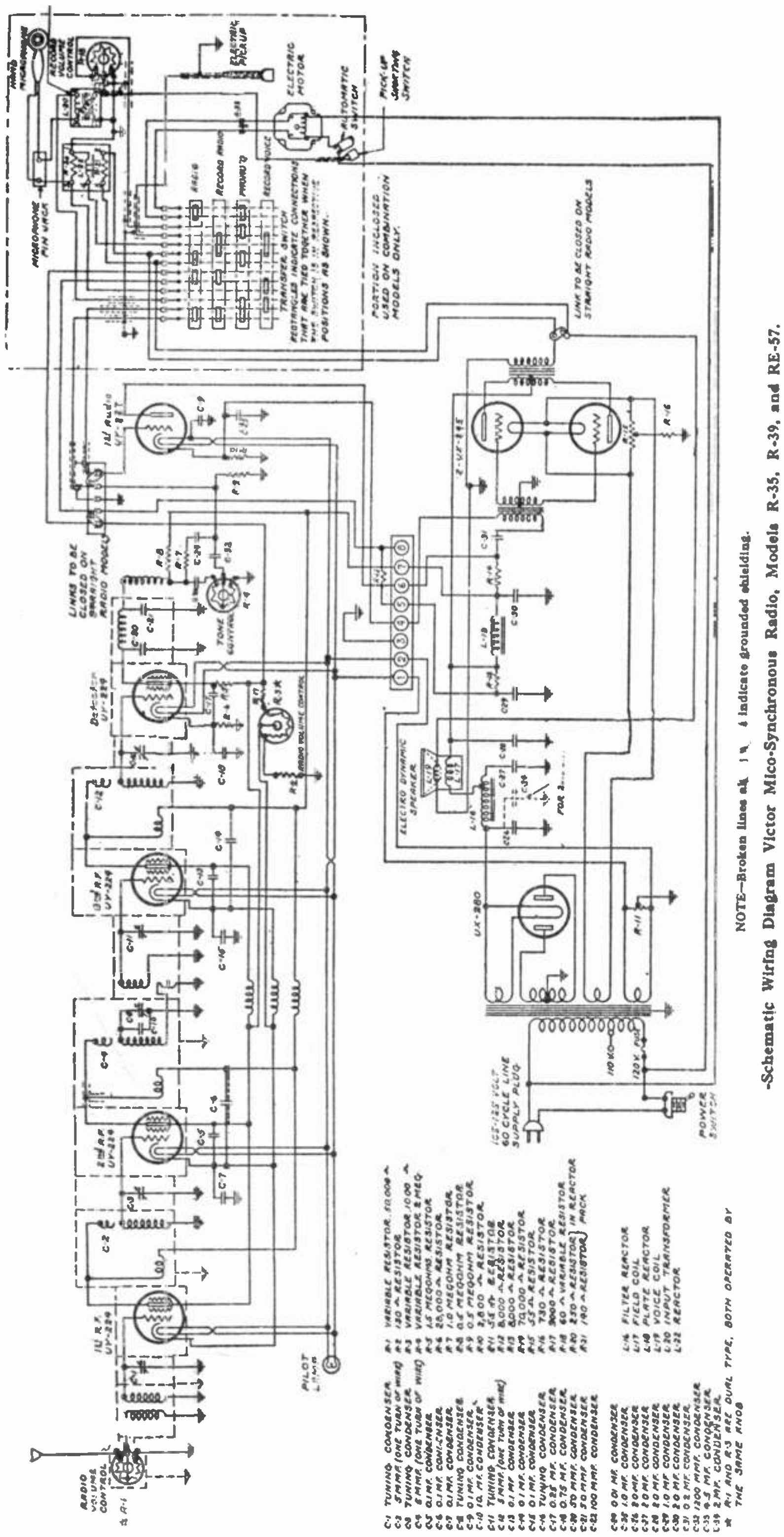
-Schematic Wiring Diagram R-10 No. 2

MODELS R10—R15—1930-31

—Courtesy Victor Talking Machine Co. Limited.

VICTOR—4

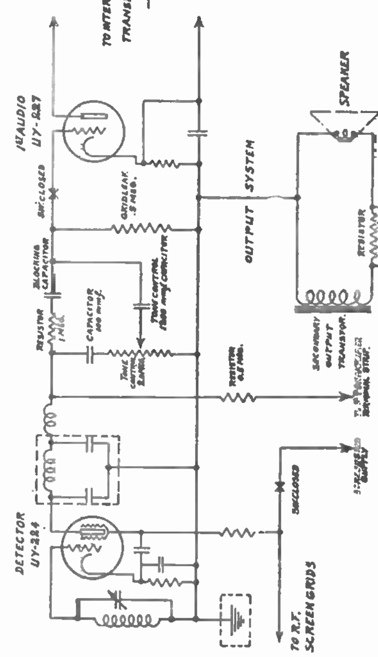
World Radio History



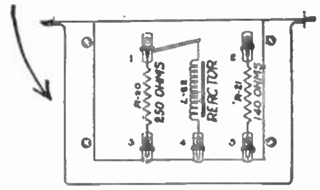
NOTE—Broken lines at 1, 2, 3, 4 indicate grounded shielding.

—Schematic Wiring Diagram Victor Mico-Synchronous Radio, Models R-35, R-39, and RE-57.

Type of Tube	Position of Tube	"A" Volts	"B" Volts	Screen Volts	Control Grid ("C") Volts	Cathode Volts	Normal MA.
		TUBE IN WESTON TEST SET					
224	1 RF	2'1	173	89	3'1	—	3'1
"	2 "	"	"	"	"	—	"
"	3 "	"	"	"	"	—	"
"	DETC	2'	50	3'4	1'5	8	'3
227	1 AF	2'1	67	—	'2	—	1'5
245	PP	2'25	222	—	37	—	24
280	RECT	4'9			CH PLATE		40
LINE VOLTAGE 112.							



—Schematic Connections Between Detector and First Audio Tubes with Transfer Switch in "Radio" Position.



Microphone Reactor Terminals and Connections

1930-31. Also see Data Sheet 4

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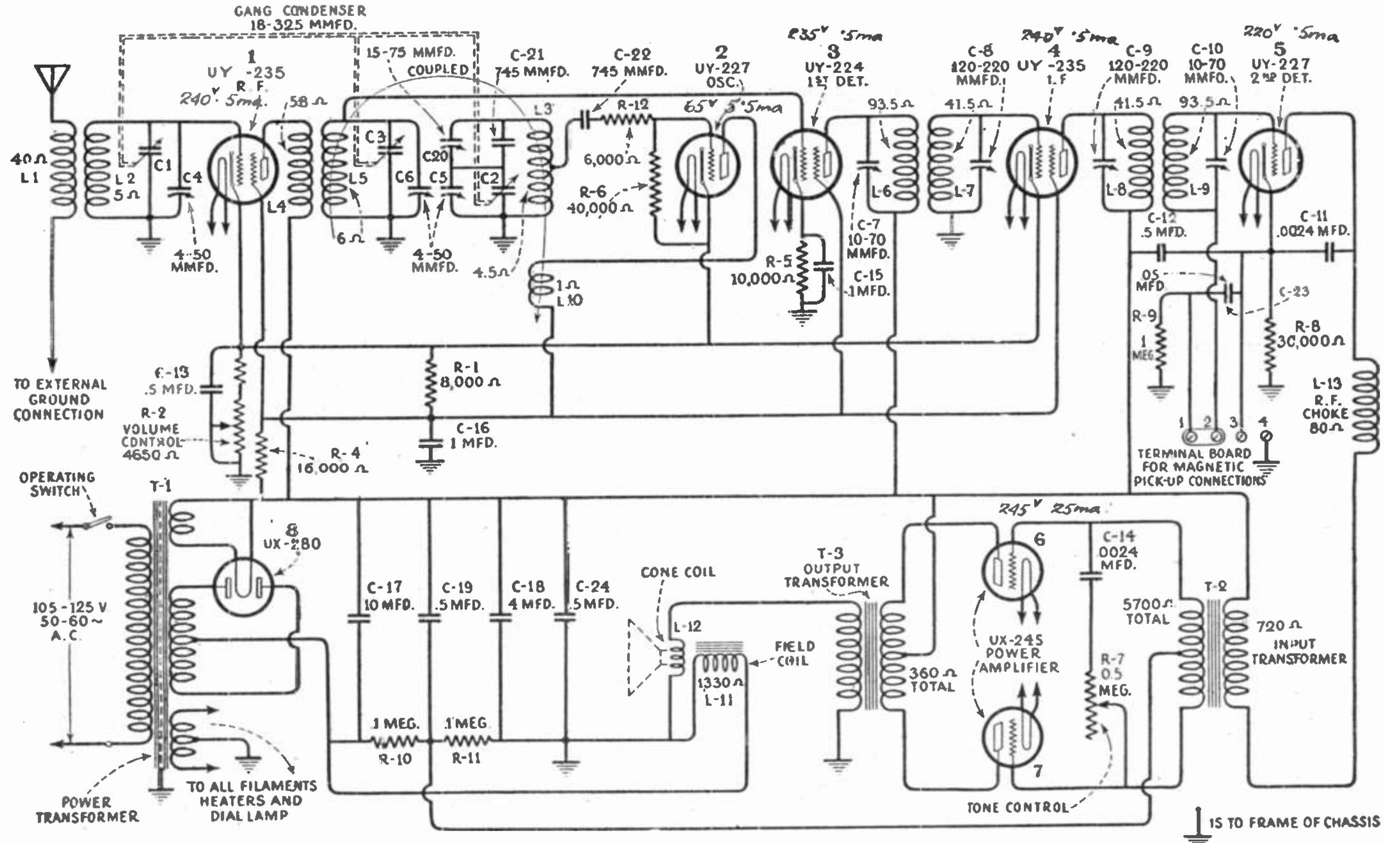
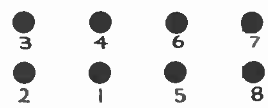
World Radio History

Models-R7-8-9
1931-32 IF 175 KC.

Models-R7-8-9 X USE P.P. 475

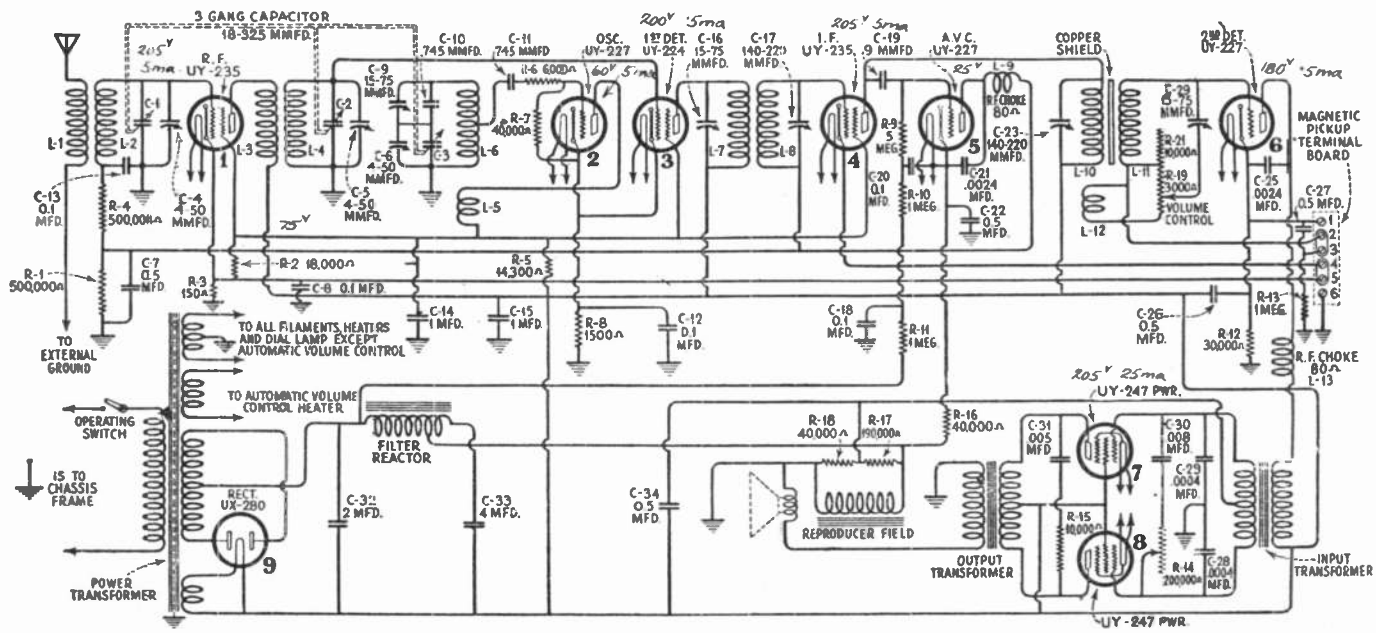


FRONT OF CHASSIS



FRONT OF CHASSIS

Models-R12-RE41 (COMB) 1931-32 IF 175 KC.



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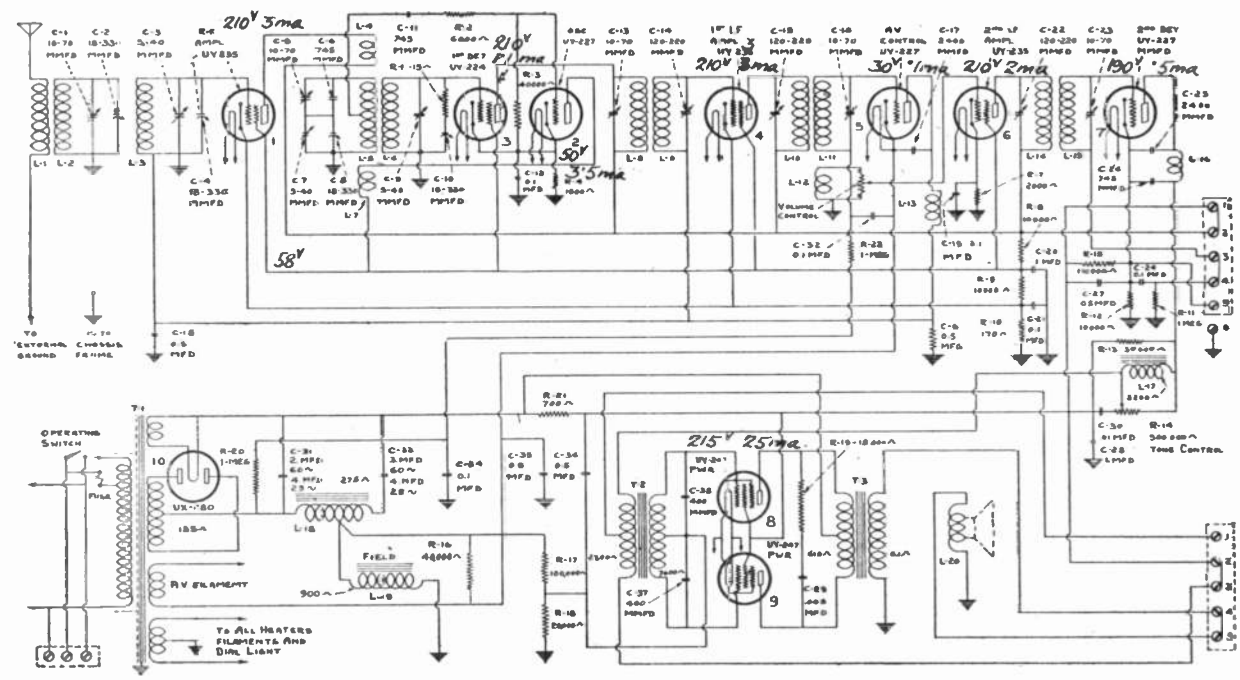
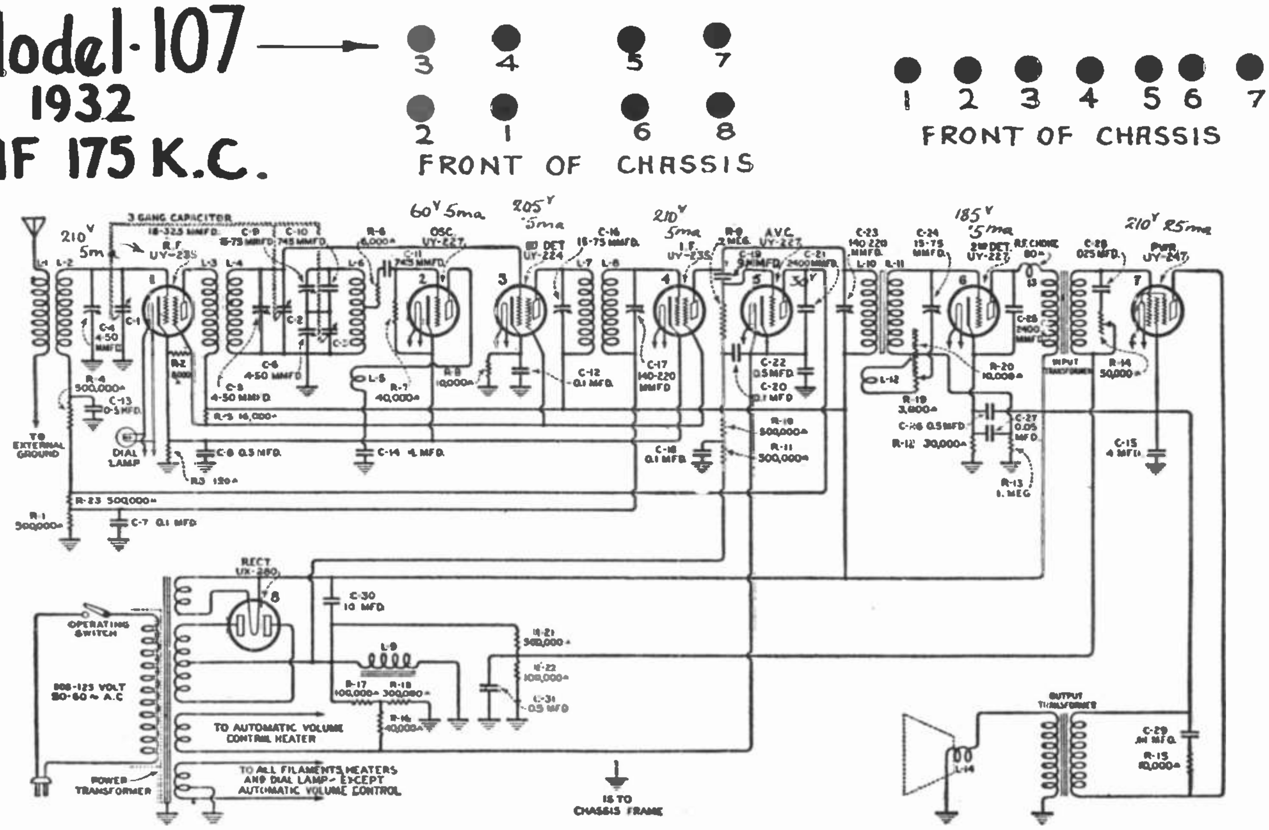
World Radio History

Models R20-R21 1931-32 IF 175 KC. ALSO RAE59 (COMB)



Model-107 1932 IF 175 K.C.



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DATA SHEET

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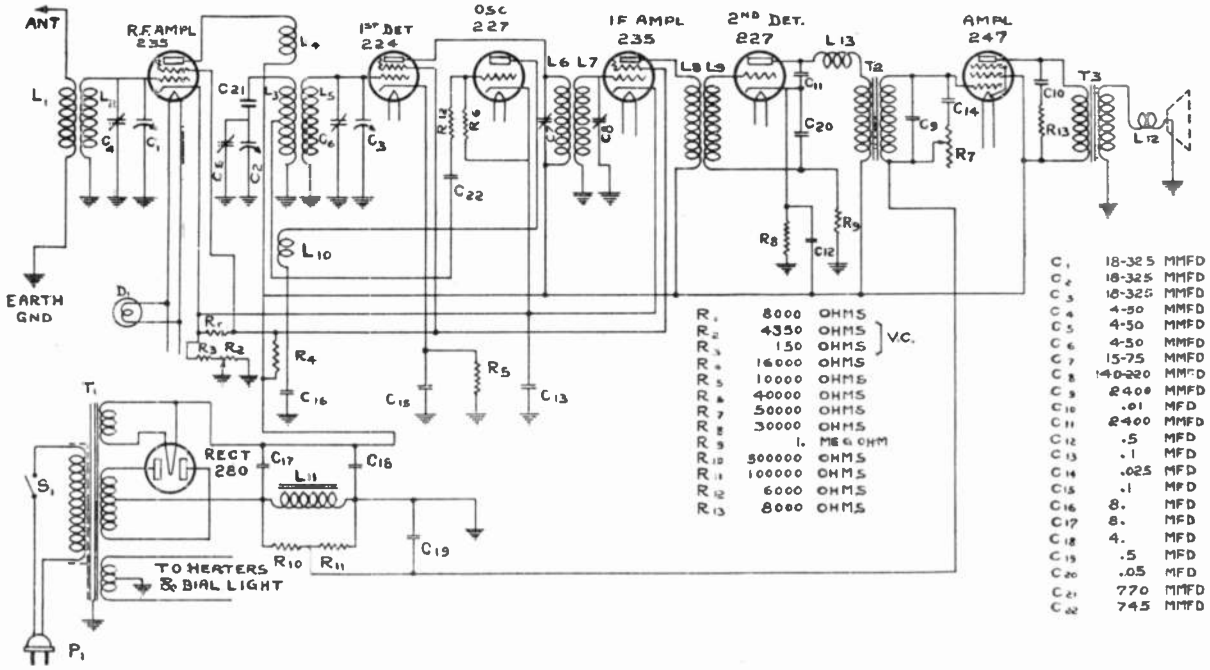
VICTOR-7

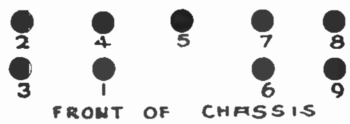
World Radio History

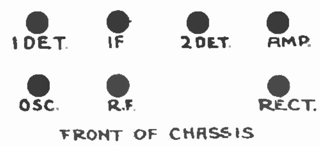
Models R 104·105·106 1932 IF 175 K.C.



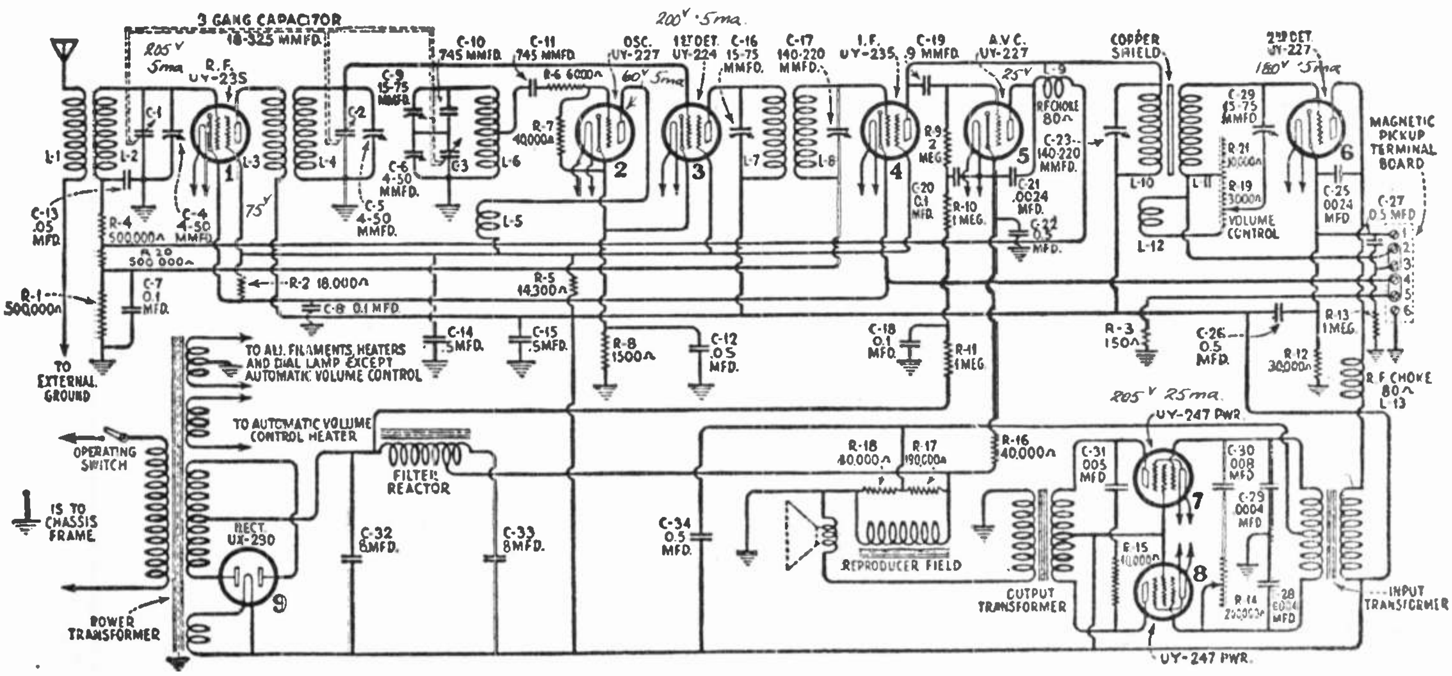
R_1	8000	OHMS	
R_2	4350	OHMS	V.C.
R_3	150	OHMS	V.C.
R_4	16000	OHMS	
R_5	10000	OHMS	
R_6	40000	OHMS	
R_7	50000	OHMS	
R_8	30000	OHMS	
R_9	1.	MEG OHM	
R_{10}	500000	OHMS	
R_{11}	100000	OHMS	
R_{12}	6000	OHMS	
R_{13}	8000	OHMS	

C_1	18-325	MMFD
C_2	18-325	MMFD
C_3	18-325	MMFD
C_4	4-50	MMFD
C_5	4-50	MMFD
C_6	4-50	MMFD
C_7	15-75	MMFD
C_8	140-220	MMFD
C_9	2400	MMFD
C_{10}	.01	MFD
C_{11}	2400	MMFD
C_{12}	.5	MFD
C_{13}	.1	MFD
C_{14}	.025	MFD
C_{15}	.1	MFD
C_{16}	8.	MFD
C_{17}	8.	MFD
C_{18}	4.	MFD
C_{19}	.5	MFD
C_{20}	.05	MFD
C_{21}	770	MMFD
C_{22}	745	MMFD





Model R109 1932 IF 175 KC.



DATA SHEET

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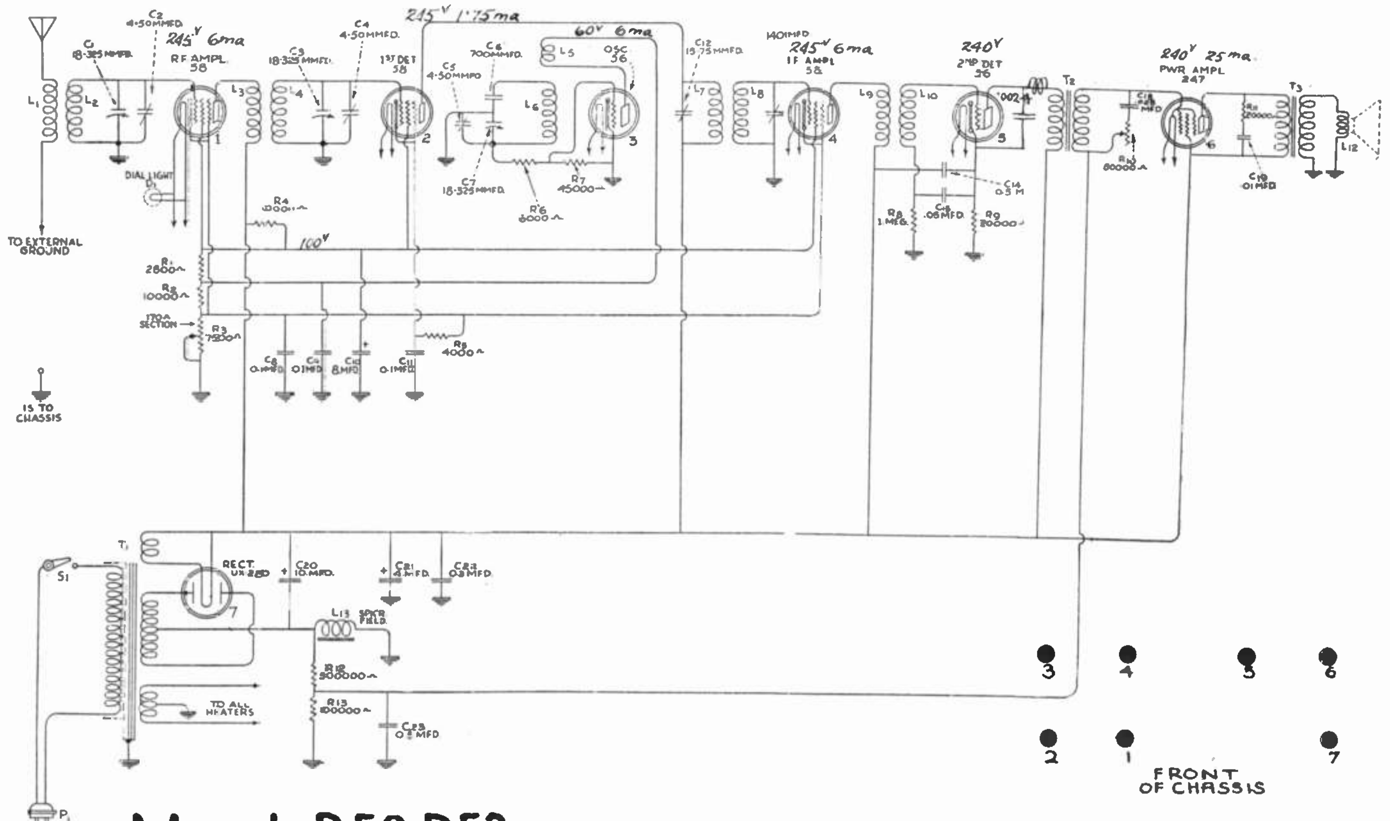
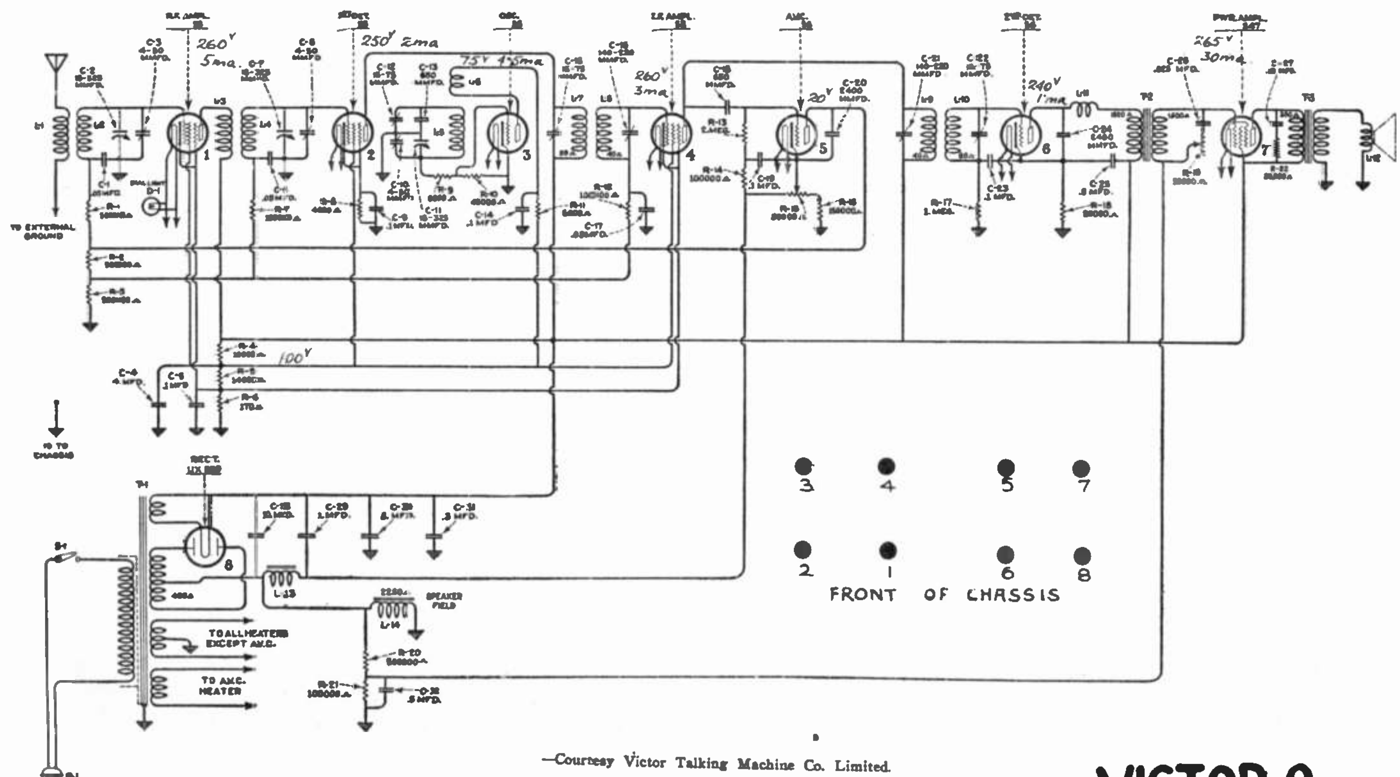
VICTOR-8

World Radio History

Models-R47-R48 1933 IF 175 KC.



Models-R50-R52 1932-33 IF. 175 K.C.



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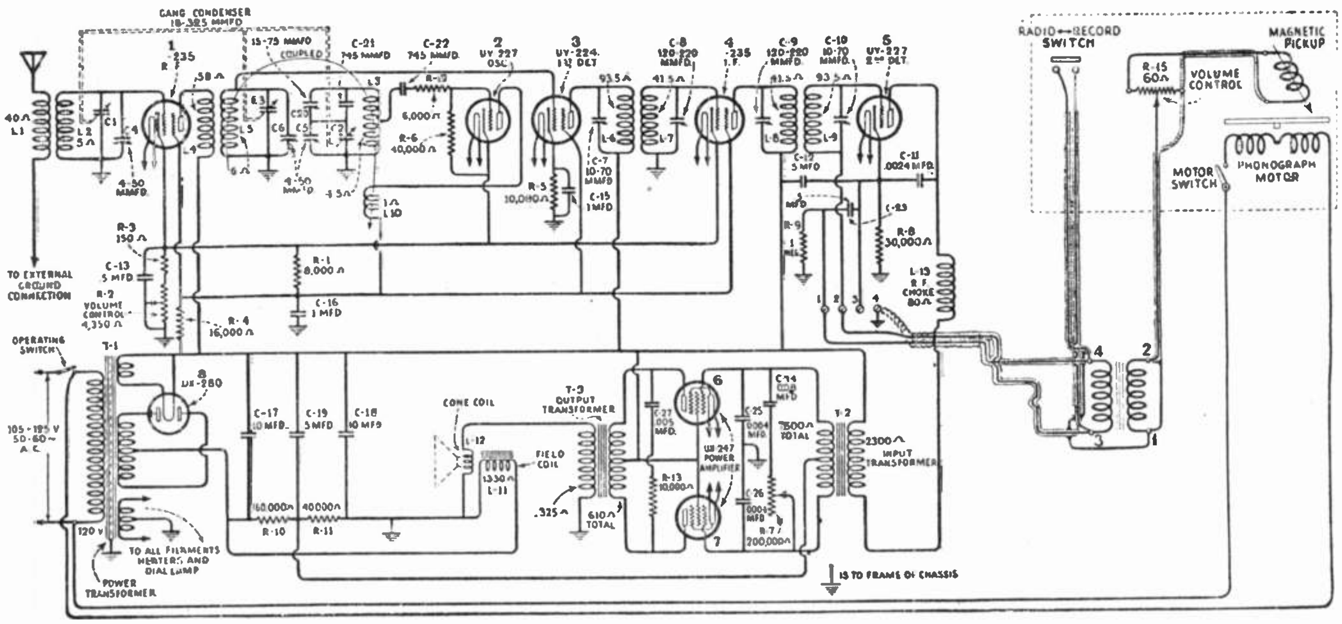
DATA SHEET

VICTOR-9

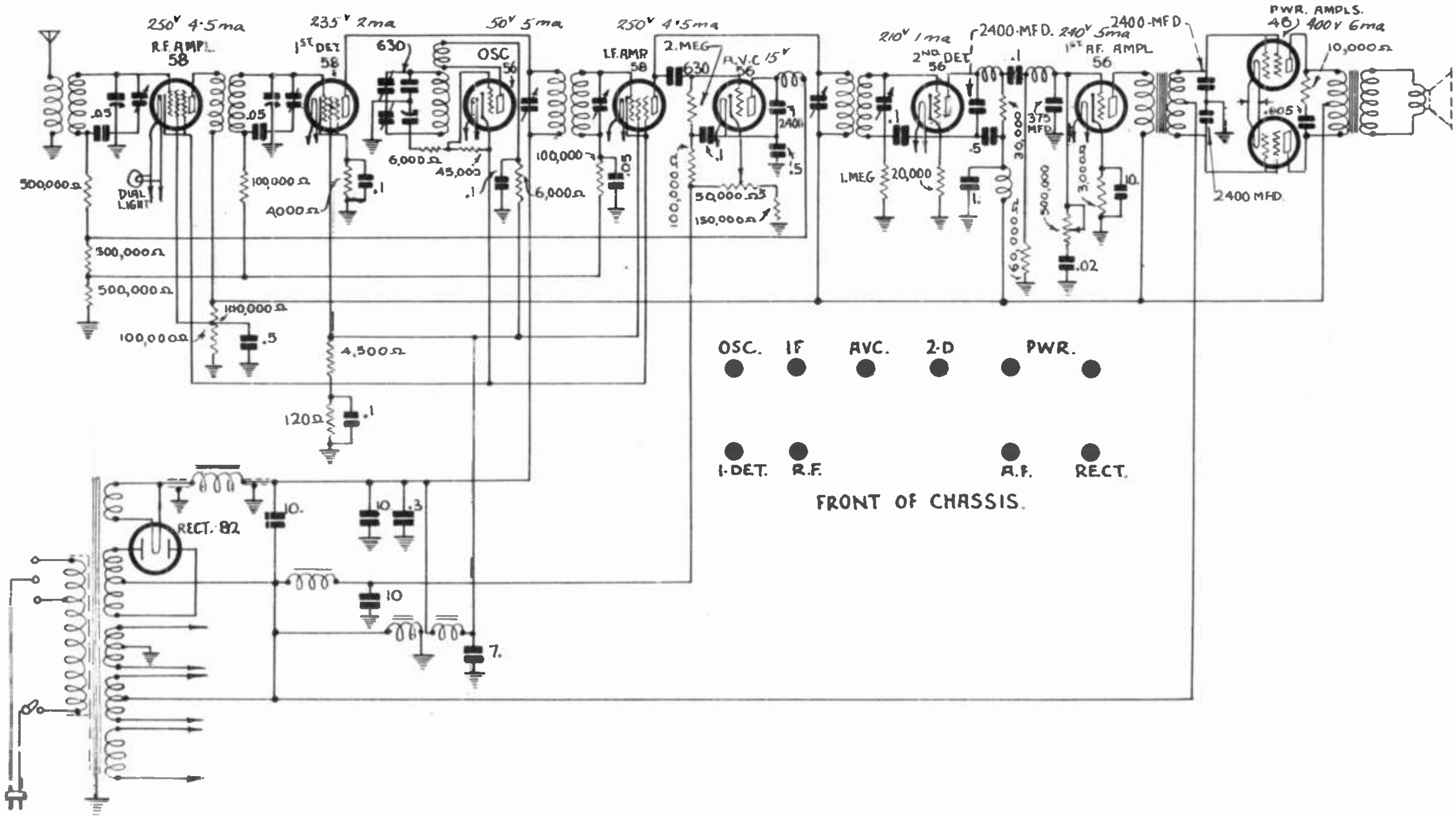
World Radio History

MODEL-RE-37-1932-33 IF. 175 K.C

SEE CIRCUITS 7-8-9 DATA SHEET-6



MODELS R54-56-81 (COMB) 1932-33 IF. 175 K.C.



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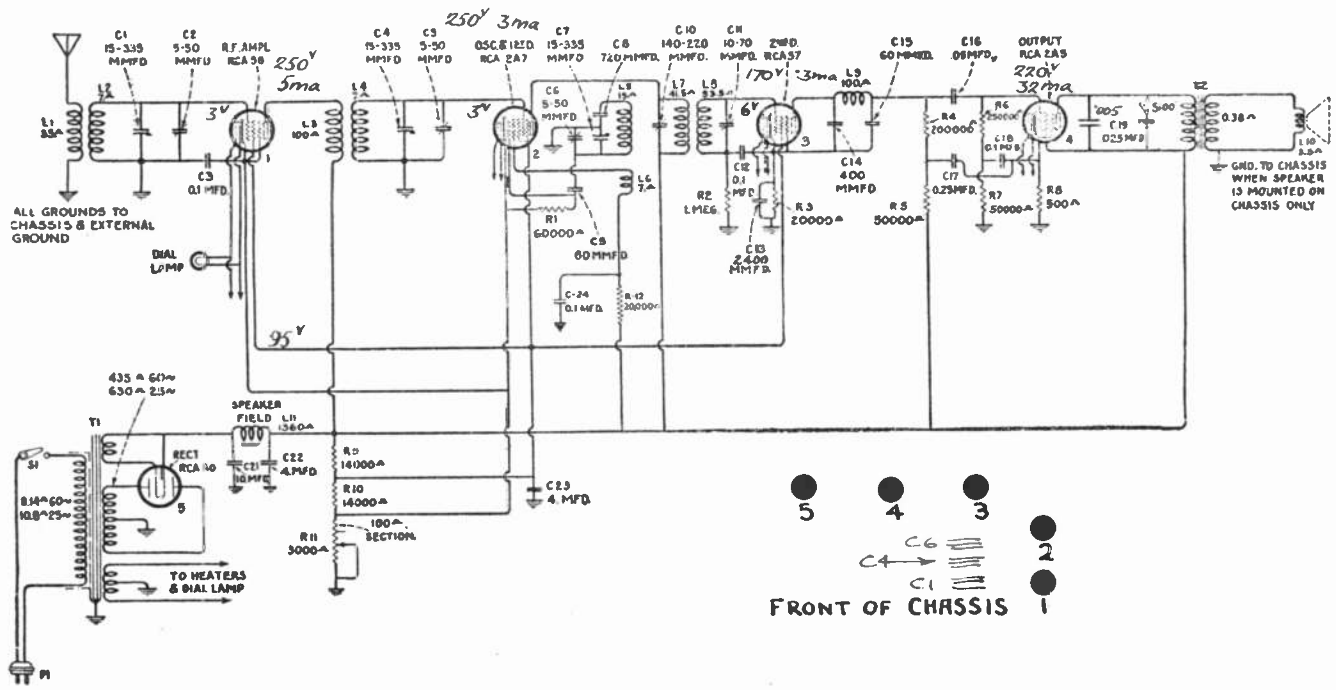
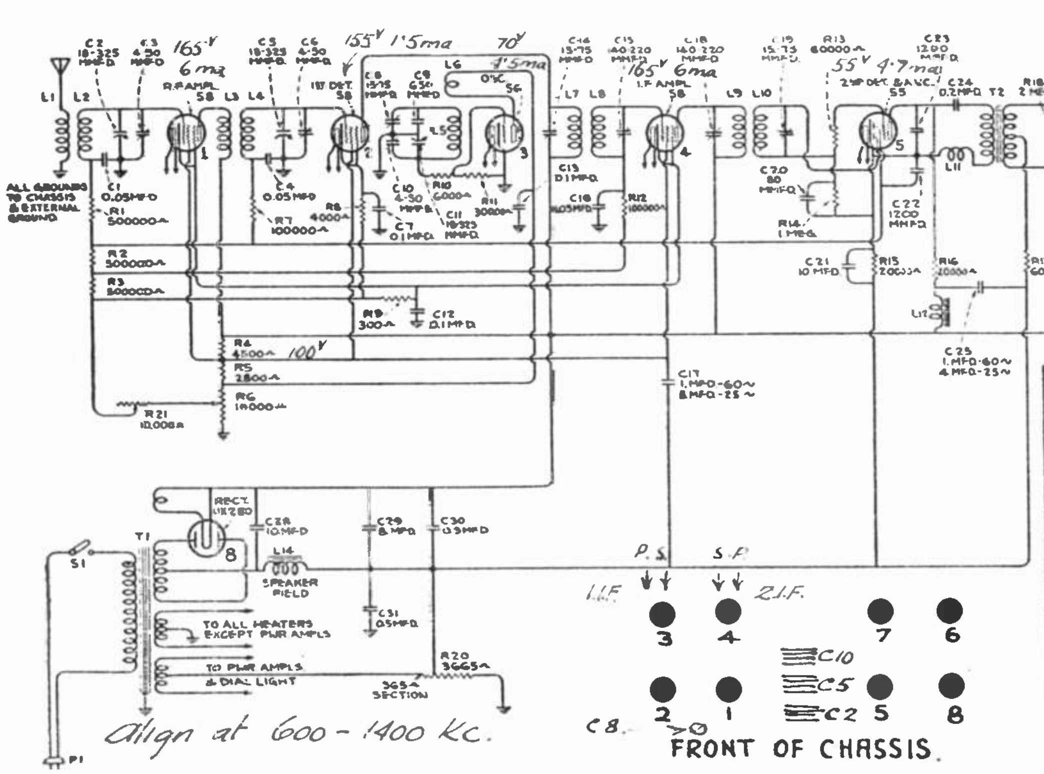
VICTOR-10

World Radio History

Model R28-28b-28-d-28f 1932-33 IF. 175 KC.



MODELS R53-80 1933 IF 175 K.C.



RESISTANCE AND CAPACITOR VALUES

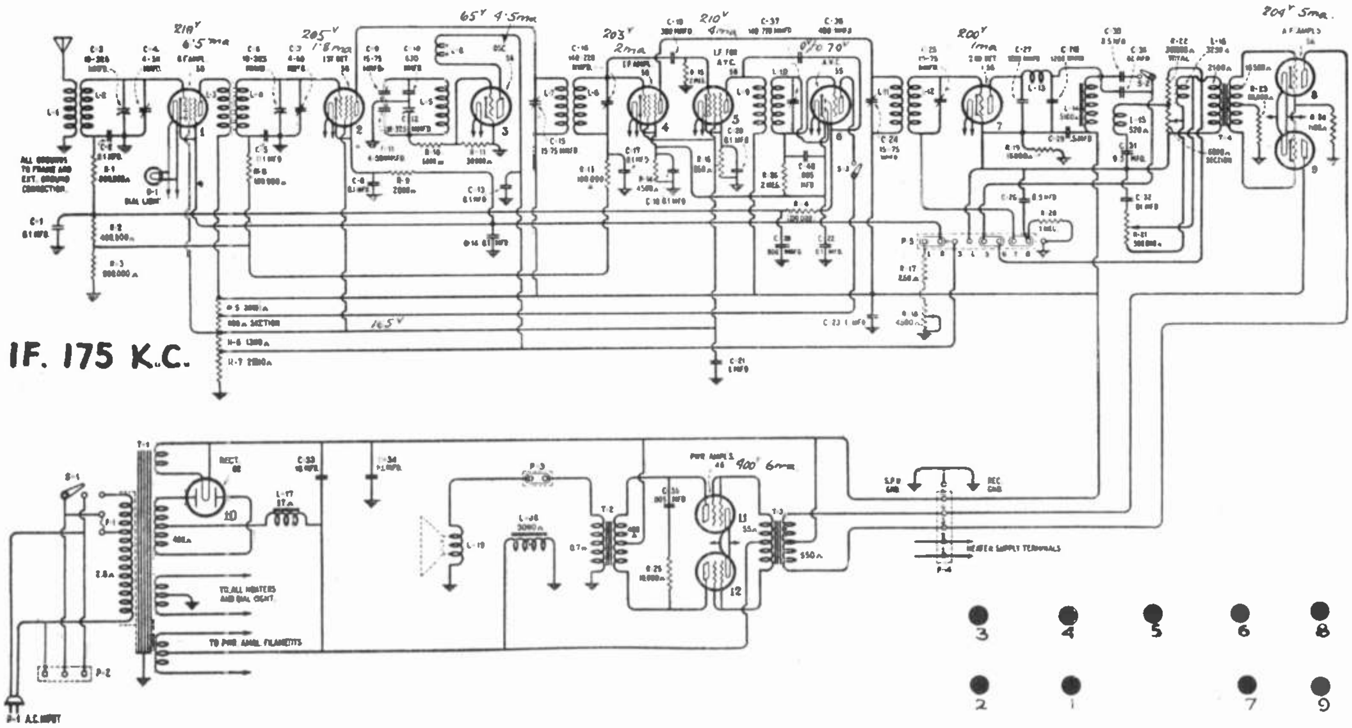
C-17—25 Cycles, 8.0 Mfd.
C-17—60 Cycles, 1.0 Mfd.
C-25—25 Cycles, 4.0 Mfd.
C-25—60 Cycles, 1.0 Mfd.
L-11—3,000 Ohms
L-12—3,000 Ohms
Interstage Primary—1,650 Ohms
Interstage Secondary—7,900 Ohms
Output Primary—875 Ohms
Output Secondary—0.375 Ohm
Power High Voltage—
60 Cycles, 375 Ohms
25 Cycles, 500 Ohms
Field—1,300 Ohms

—Courtesy Victor Talking Machine Co. Limited.

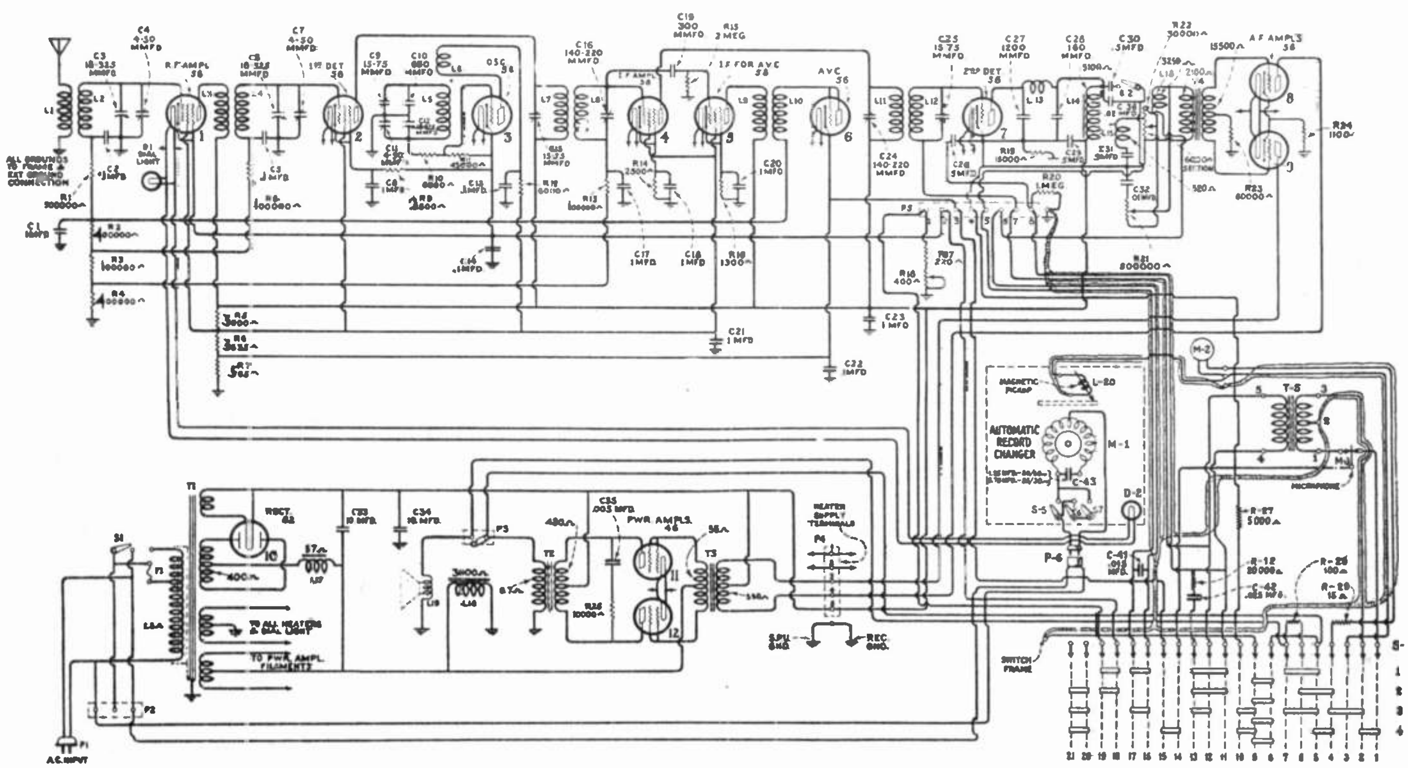
World Radio History

Model R22A 1932-33

NOTE- CIRCUIT OF R-22 SAME AS RAE84 BUT DOES NOT INCLUDE PHONO PORTION.



Model-RAE-84 1932-33 IF.175 K.C.



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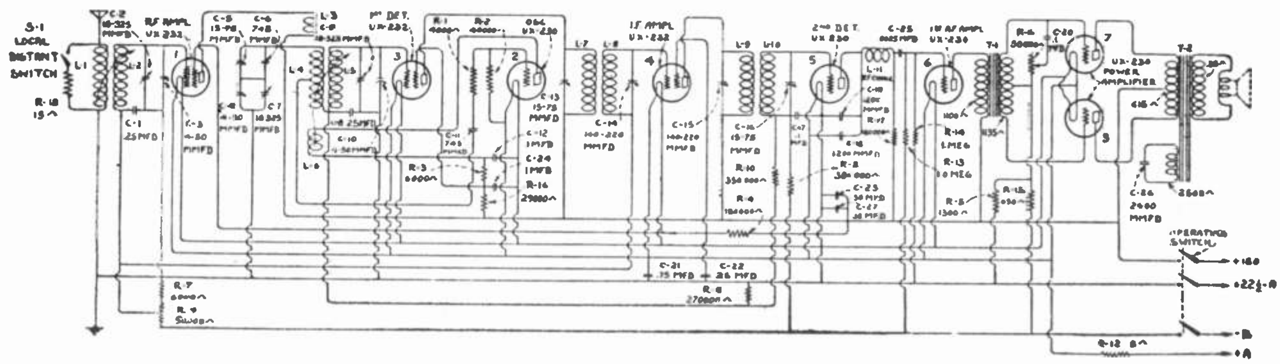
VICTOR-12

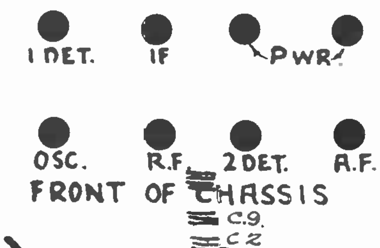
World Radio History

Model - R30 1932-33 IF. 175 K.C.

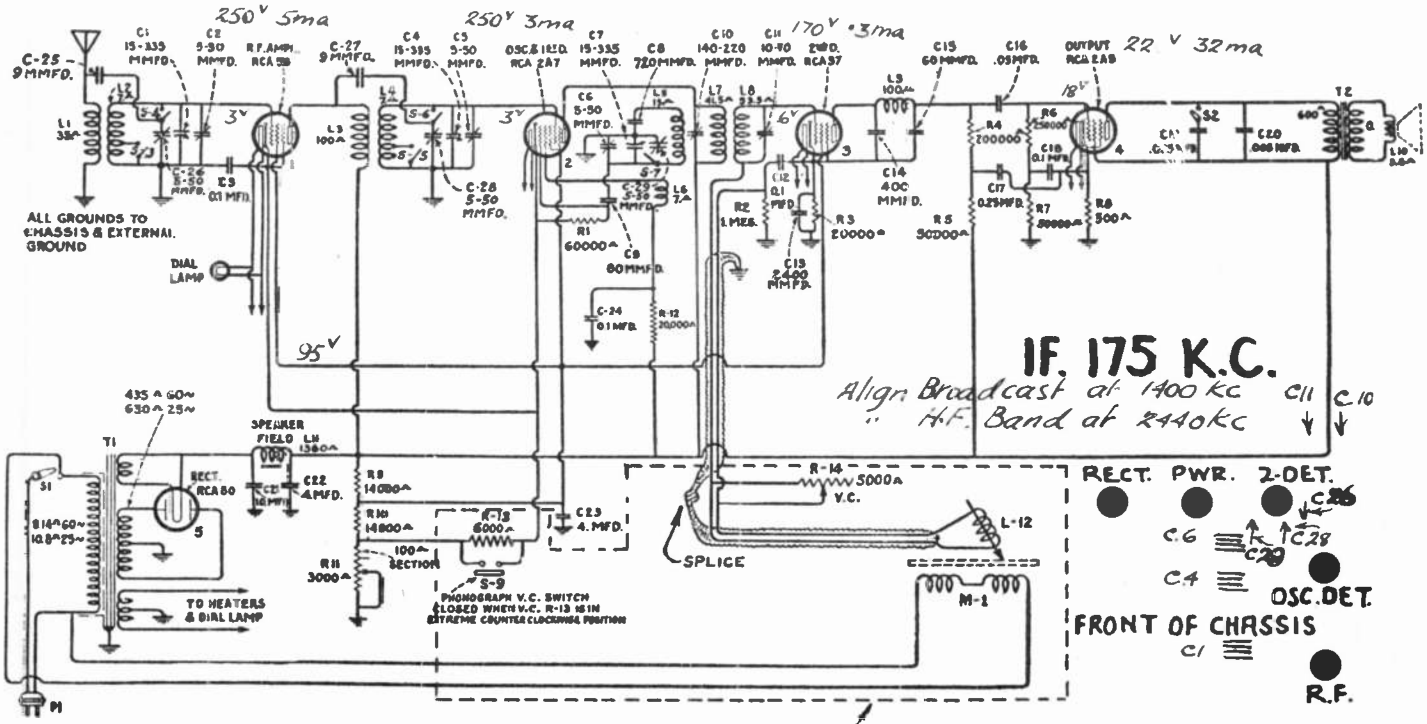


VOLUME CONTROL AT MAXIMUM

Tube	Grid V.	Screen V	Plate V	Plate ma
1	1.5	45	150	2.5
2	—	—	50	3.0
3	0.5	60	150	0.5
4	1.5	45	150	2.5
5	5.0	—	90	0
6	2.0	—	150	2.5
7	15.0	—	150	.5
8	15.0	—	150	.5



Models - 29-31-210-115-33(COMB) 1933-34



NOTE-PORTION ENCLOSED IN PHONO MODEL ONLY.

DATA SHEET

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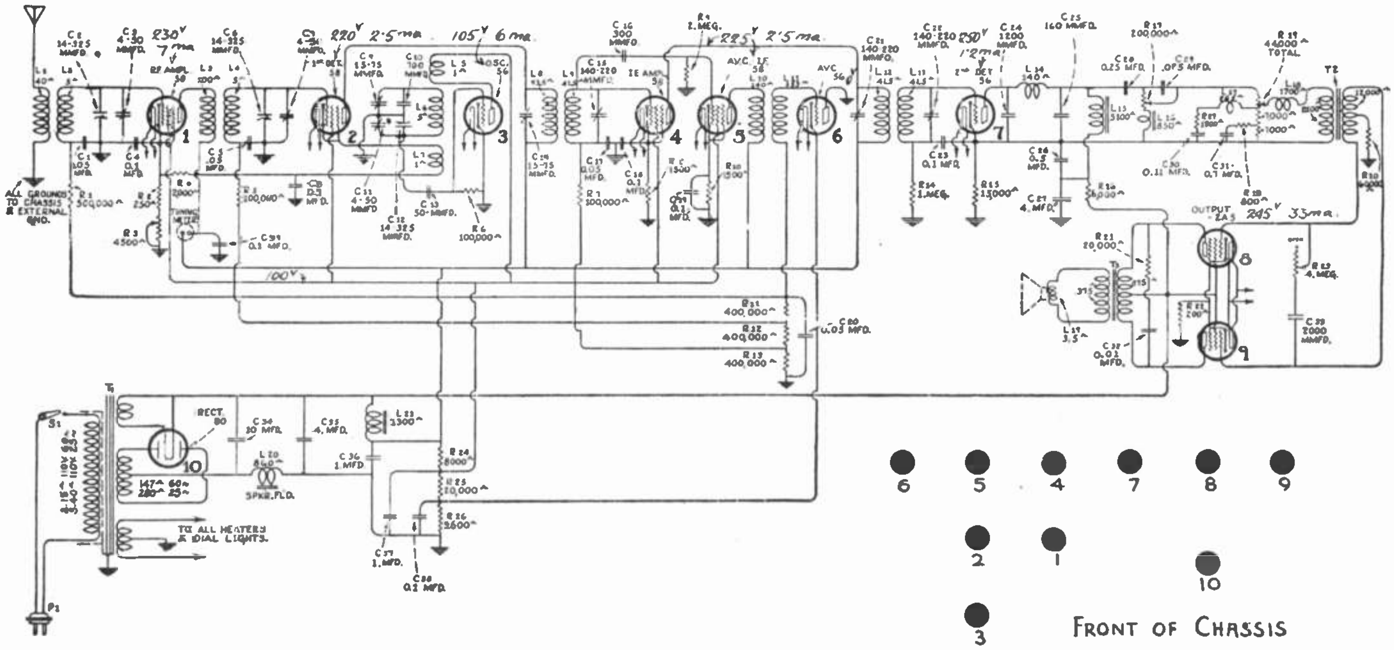
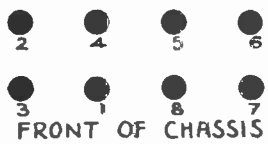
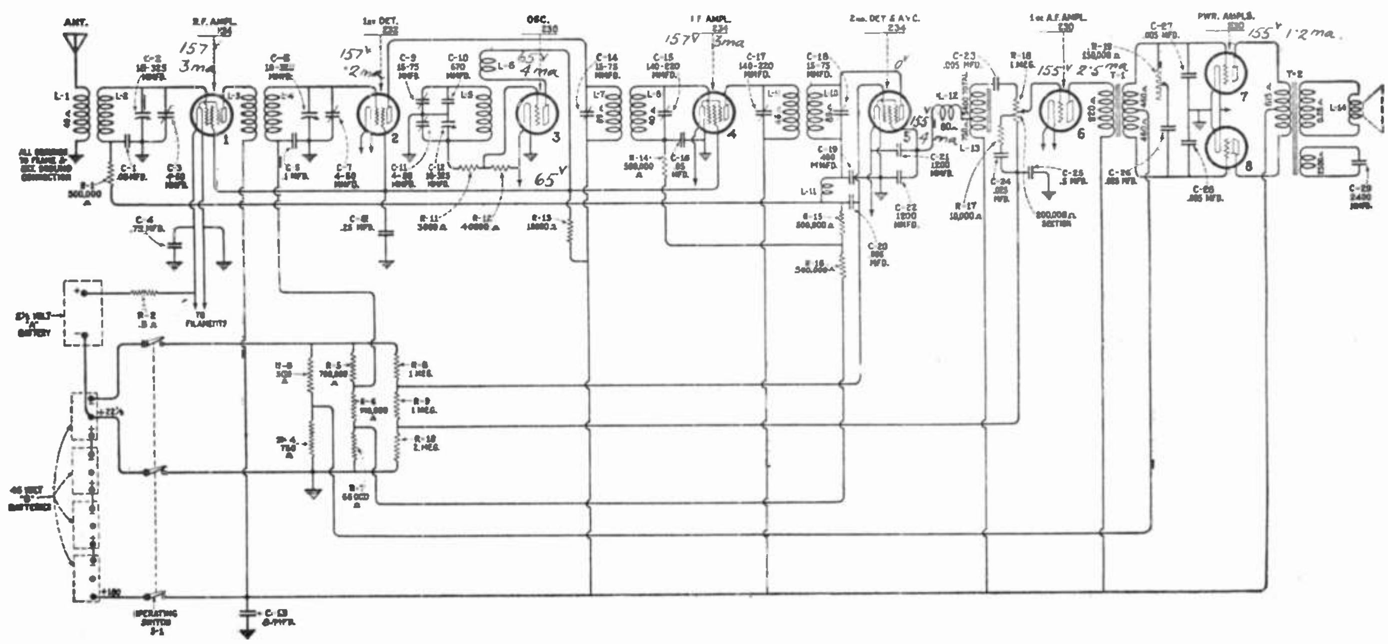
World Radio History

MODEL- R90 1933-34 IF. 175 K.C.





MODELS R67-68 1932-33 IF. 175 K.C.



DATA SHEET

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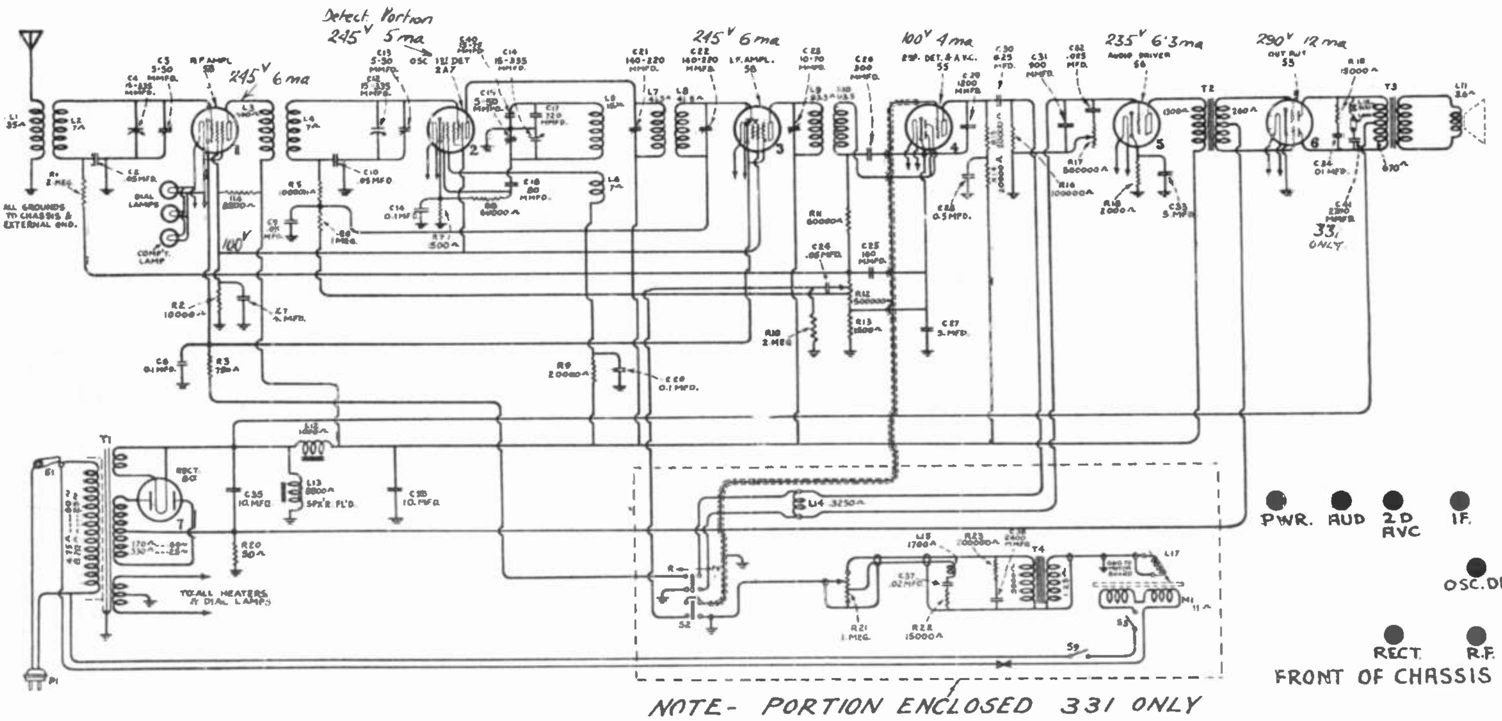
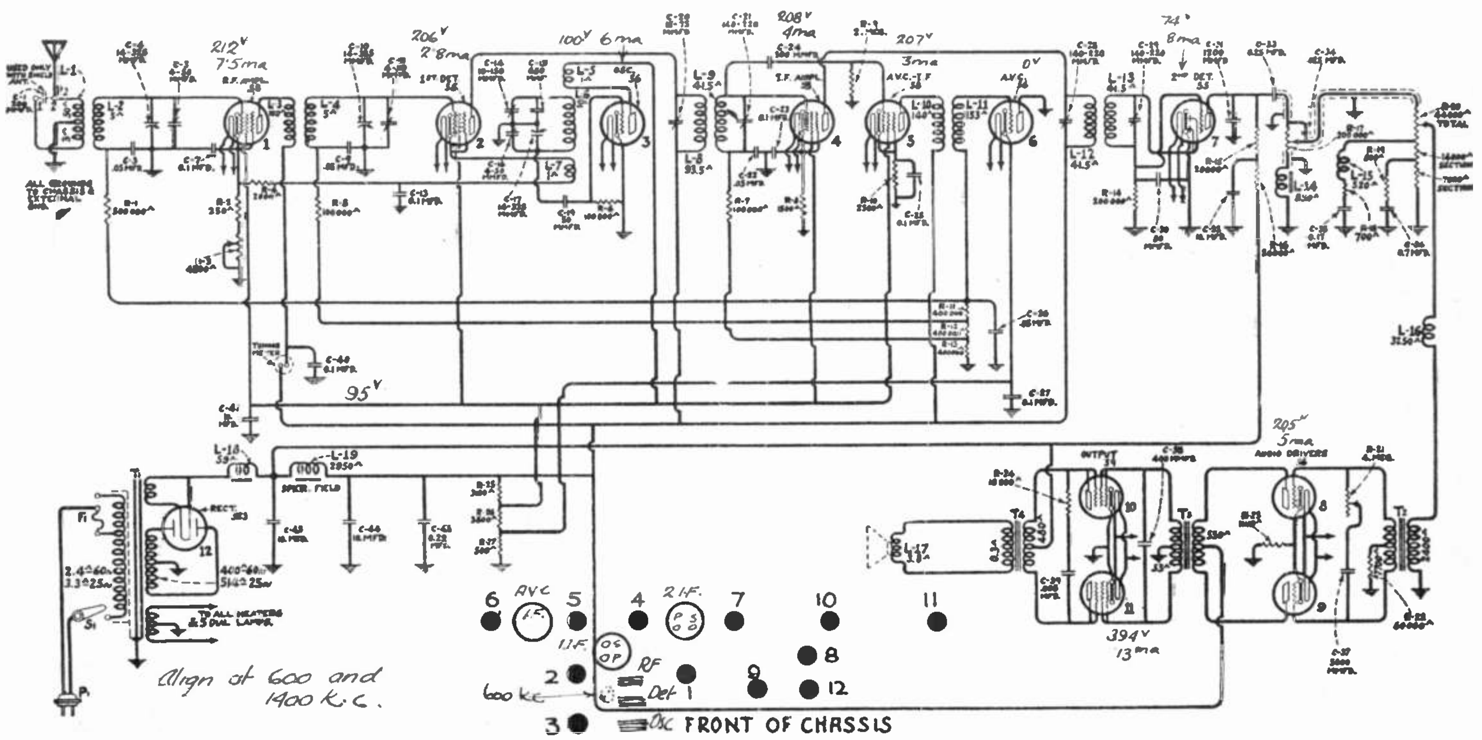
VICTOR 14

World Radio History

Models- R49 AND 331 (PHONO COMB) 1933-34 IF 175 KC.



Model-R280 1933-34 IF 175 KC.



DATA SHEET

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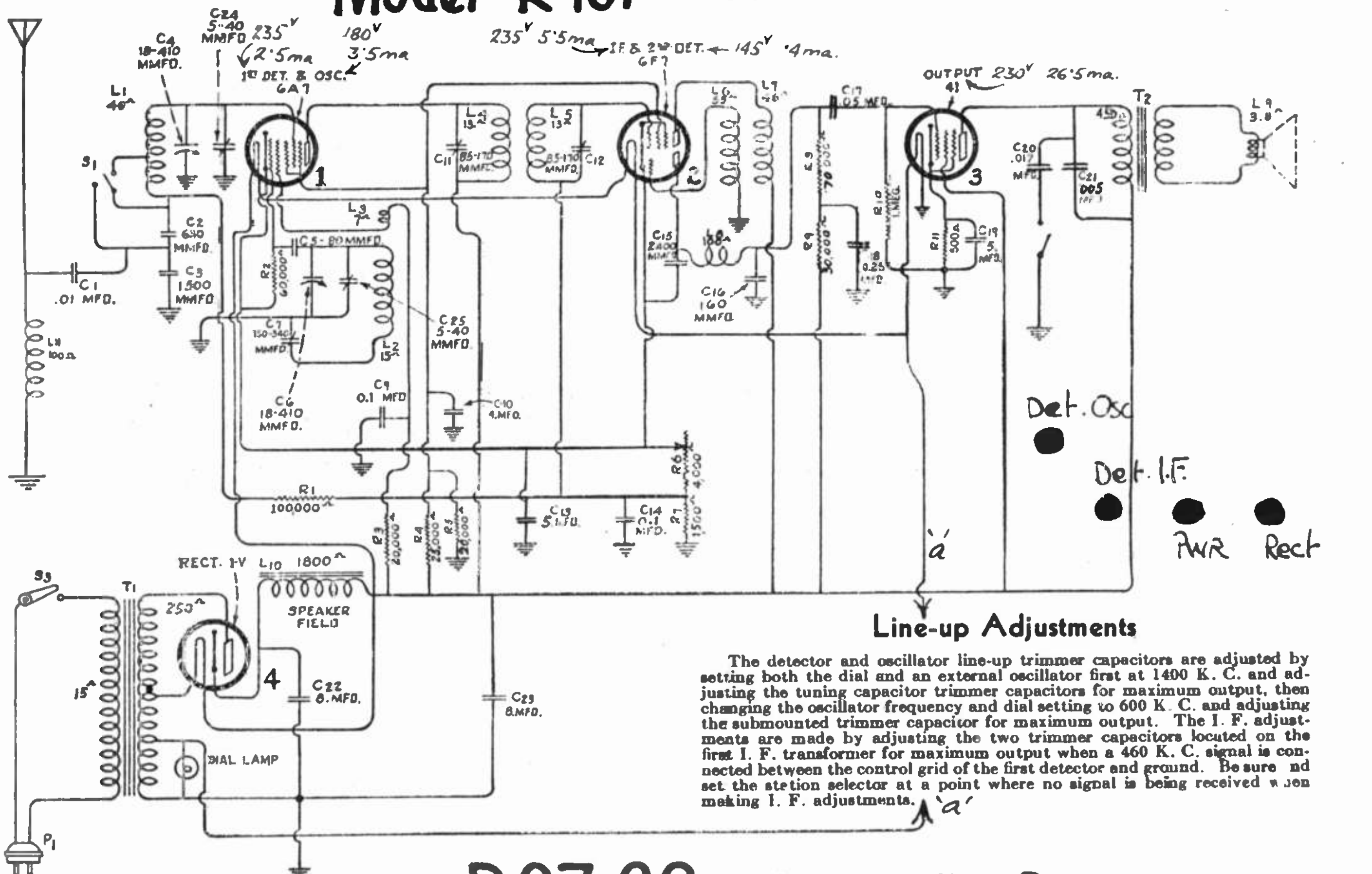
VICTOR 15

World Radio History

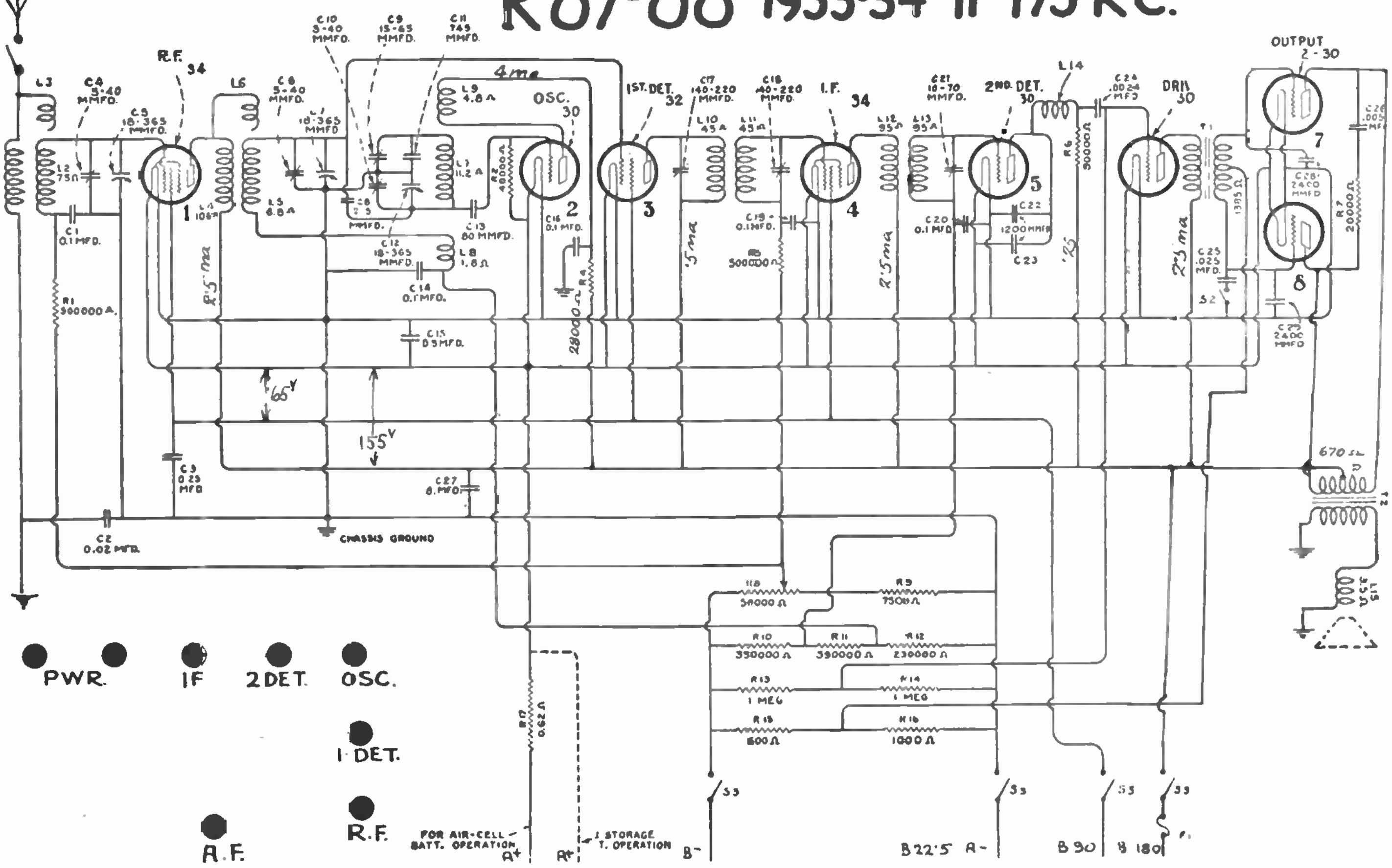
Model R 101 1933-34 IF 460 KC.



Line-up Adjustments

The detector and oscillator line-up trimmer capacitors are adjusted by setting both the dial and an external oscillator first at 1400 K. C. and adjusting the tuning capacitor trimmer capacitors for maximum output, then changing the oscillator frequency and dial setting to 600 K. C. and adjusting the submounted trimmer capacitor for maximum output. The I. F. adjustments are made by adjusting the two trimmer capacitors located on the first I. F. transformer for maximum output when a 460 K. C. signal is connected between the control grid of the first detector and ground. Be sure and set the station selector at a point where no signal is being received when making I. F. adjustments. 'a'

R87-88 1933-34 IF 175 KC.



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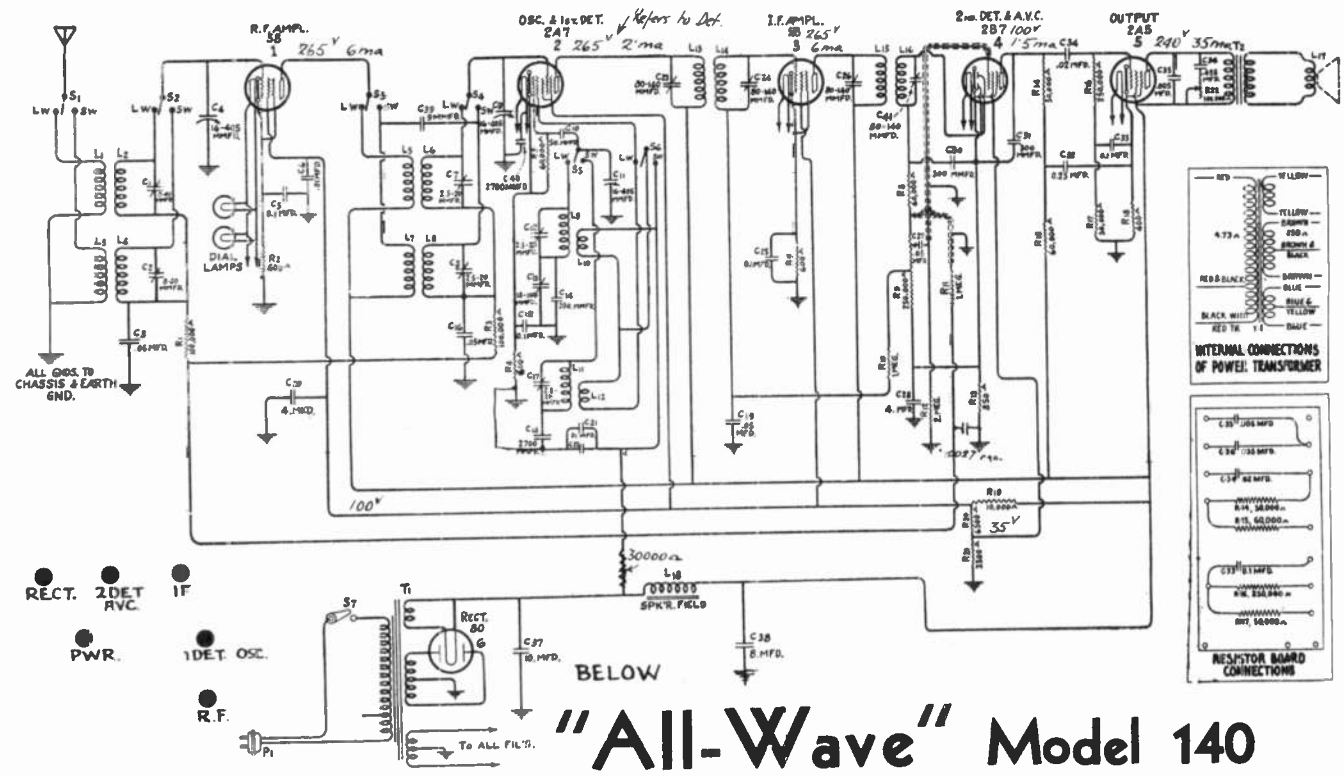
VICTOR .16

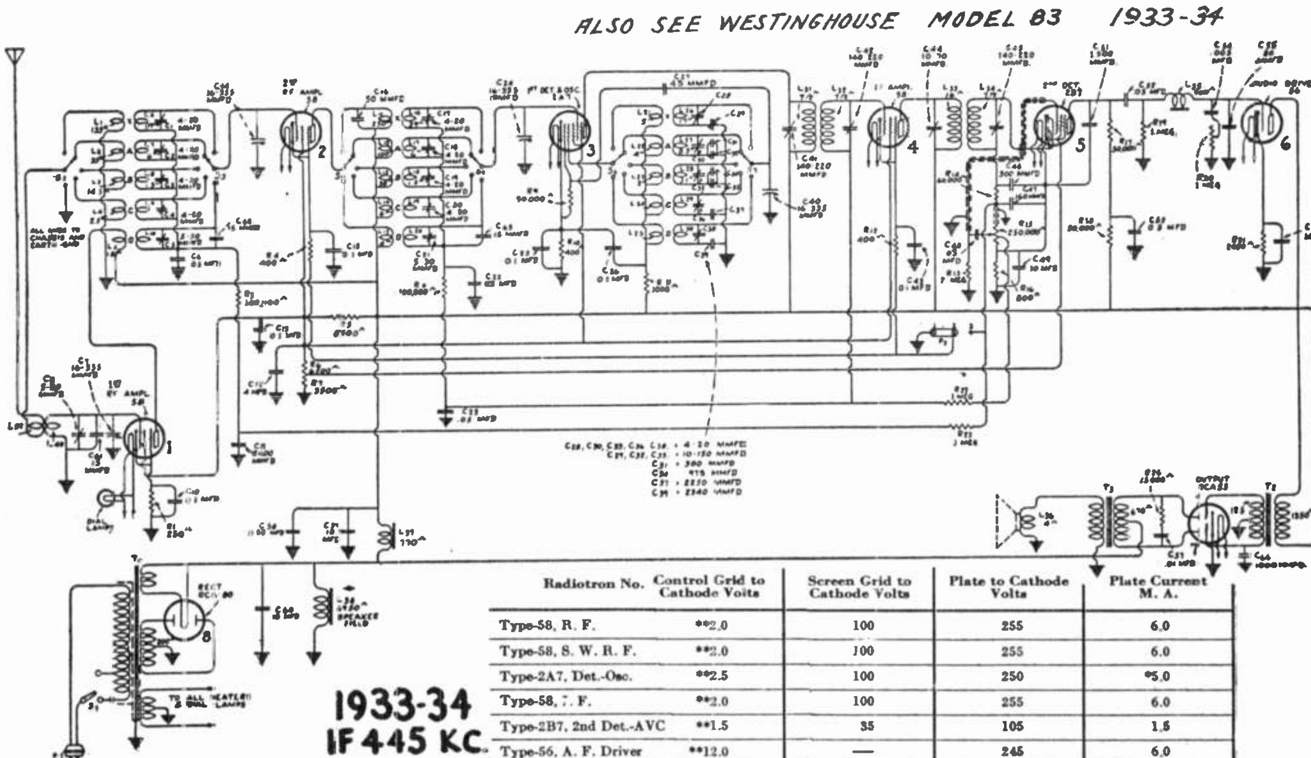
World Radio History

Models R122 and R221 1933-34 IF 370 KC



"All-Wave" Model 140

ALSO SEE WESTINGHOUSE MODEL 83 1933-34



1933-34
IF 445 KC.

Radiotron No.	Control Grid to Cathode Volts	Screen Grid to Cathode Volts	Plate to Cathode Volts	Plate Current M. A.
Type-58, R. F.	**2.0	100	255	6.0
Type-58, S. W. R. F.	**2.0	100	255	6.0
Type-2A7, Det.-Osc.	**2.5	100	250	*5.0
Type-58, I. F.	**2.0	100	255	6.0
Type-2B7, 2nd Det.-AVC	**1.5	35	105	1.5
Type-56, A. F. Driver	**12.0	—	245	6.0
Type-53, Output	0	—	300	36.0

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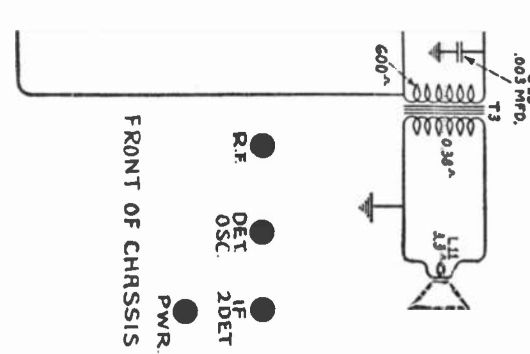
DATA SHEET

VICTOR 17



. receiver in operation and
ıat a weak signal is obtained
lume control is at its maxi-

ıe-up capacitors until maxi-
ximum deflection of the out-
ıt these capacitors a second
ing of adjustments.

justments, it is necessary to
the fact that the external
ween the control grid of the
ed as follows:

illator giving a signal at 175
r and an output meter.

n its case, shield the trans-
ed under R. F. adjustments,
d connect the oscillator out-
d and ground. Connect the
il of the loudspeaker. Then
ound and adjust the tuning
t the I. F. oscillator is heard
volume control at maximum,
out until a small deflection is
ıe action of the A. V. C. will
ect adjustments.

t one winding that is tuned
tor, the other windings being
l be adjusted for maximum

are made it is good practice
ıe R. F. adjustments, due to
curs. The reverse of this,

M-105 1934 IF 175 KC.

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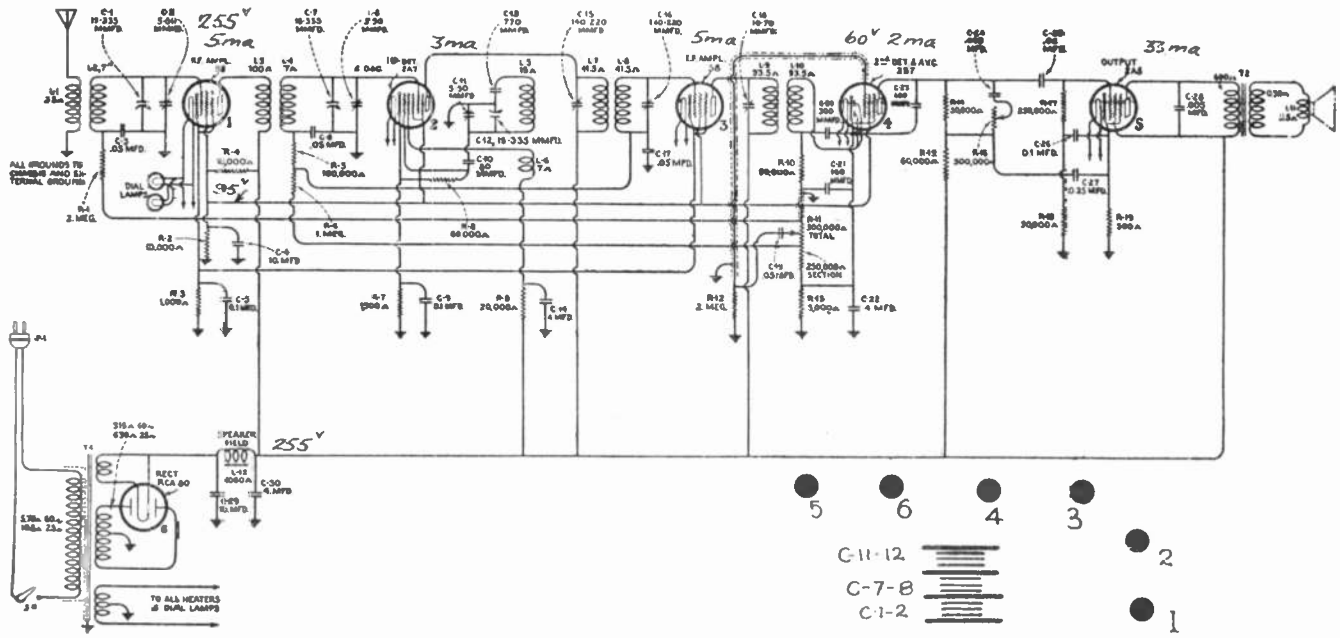
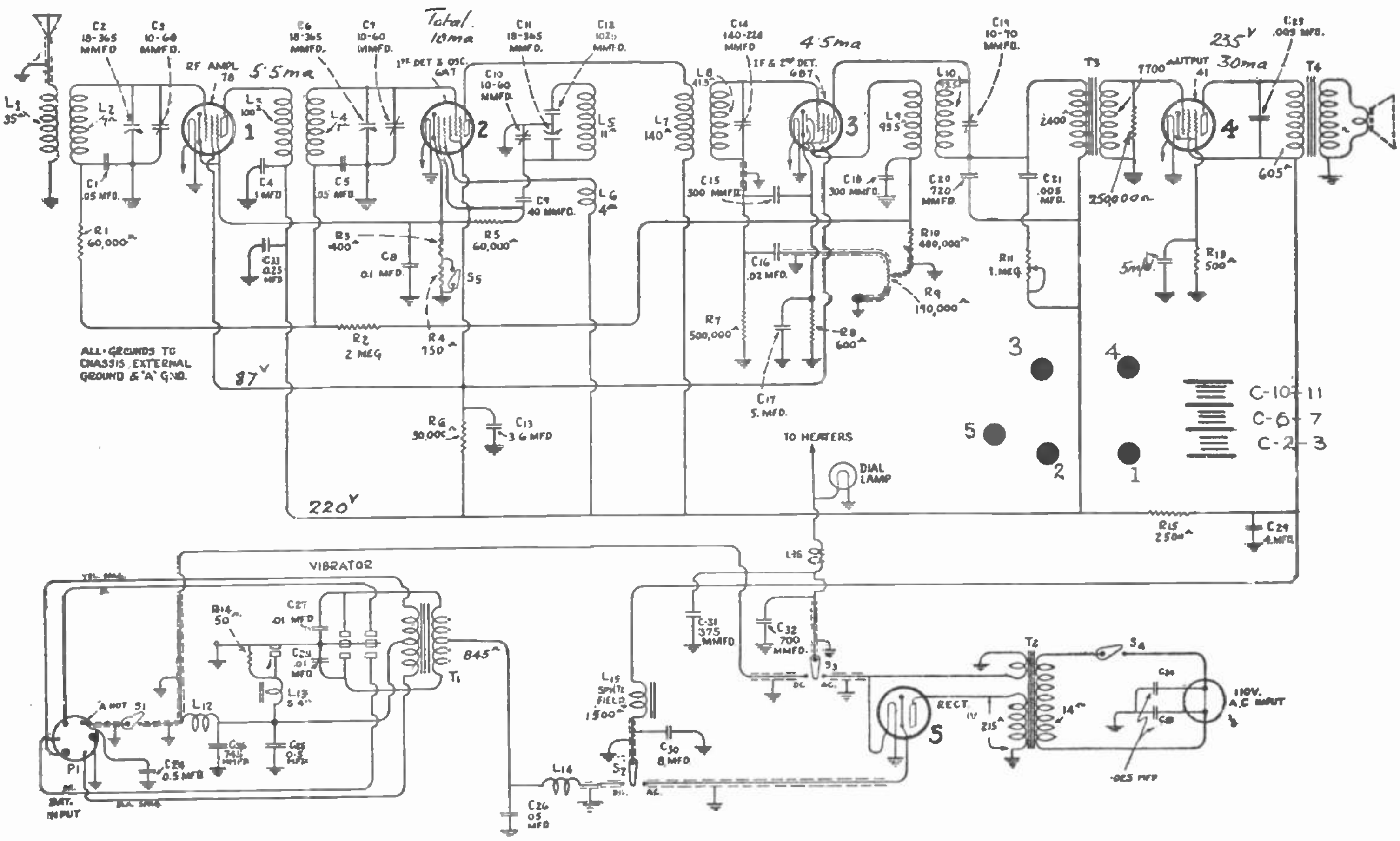
DATA SHEET

VICTOR 18

Model- R-37 1934 IF. 175 Kc.



Model- M-116(Portette) 1934 IF. 175 Kc.



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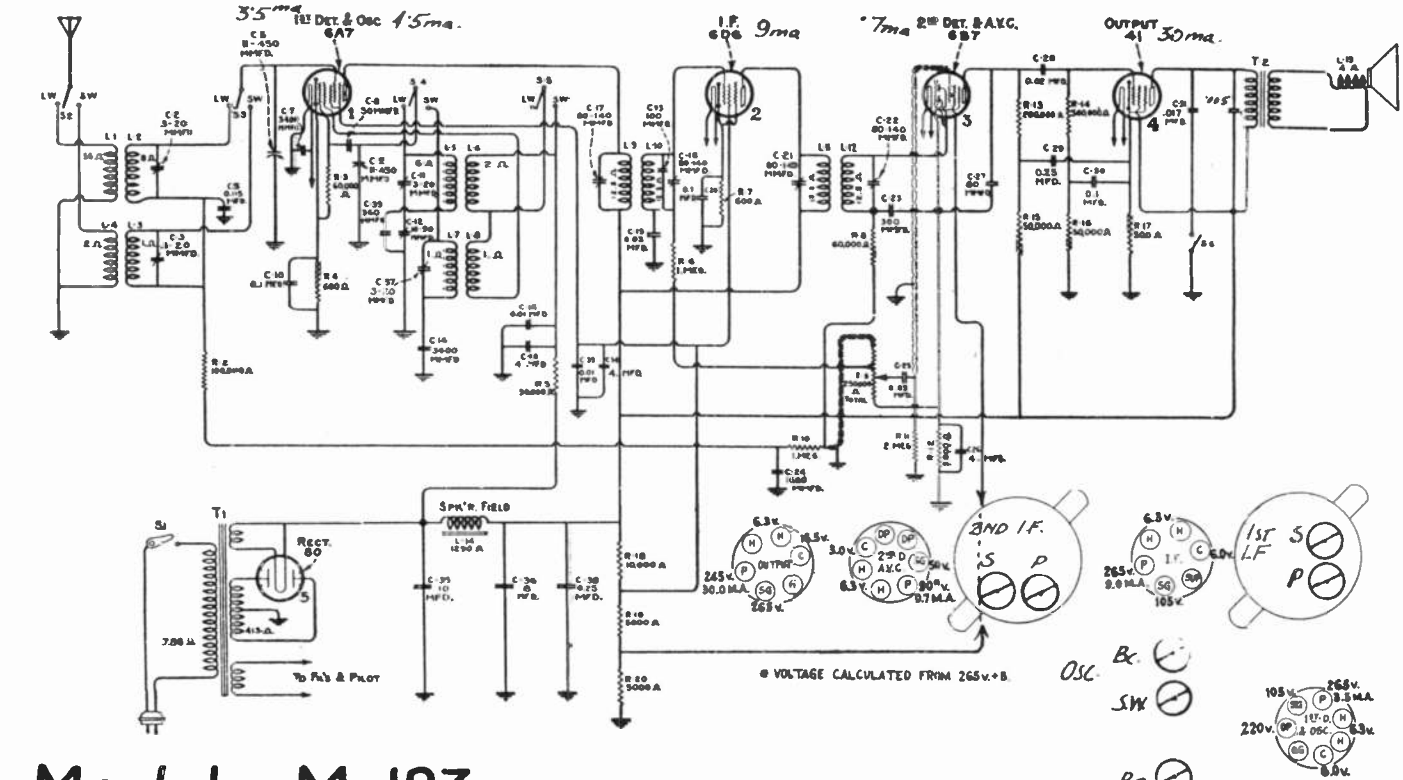
DATA SHEET

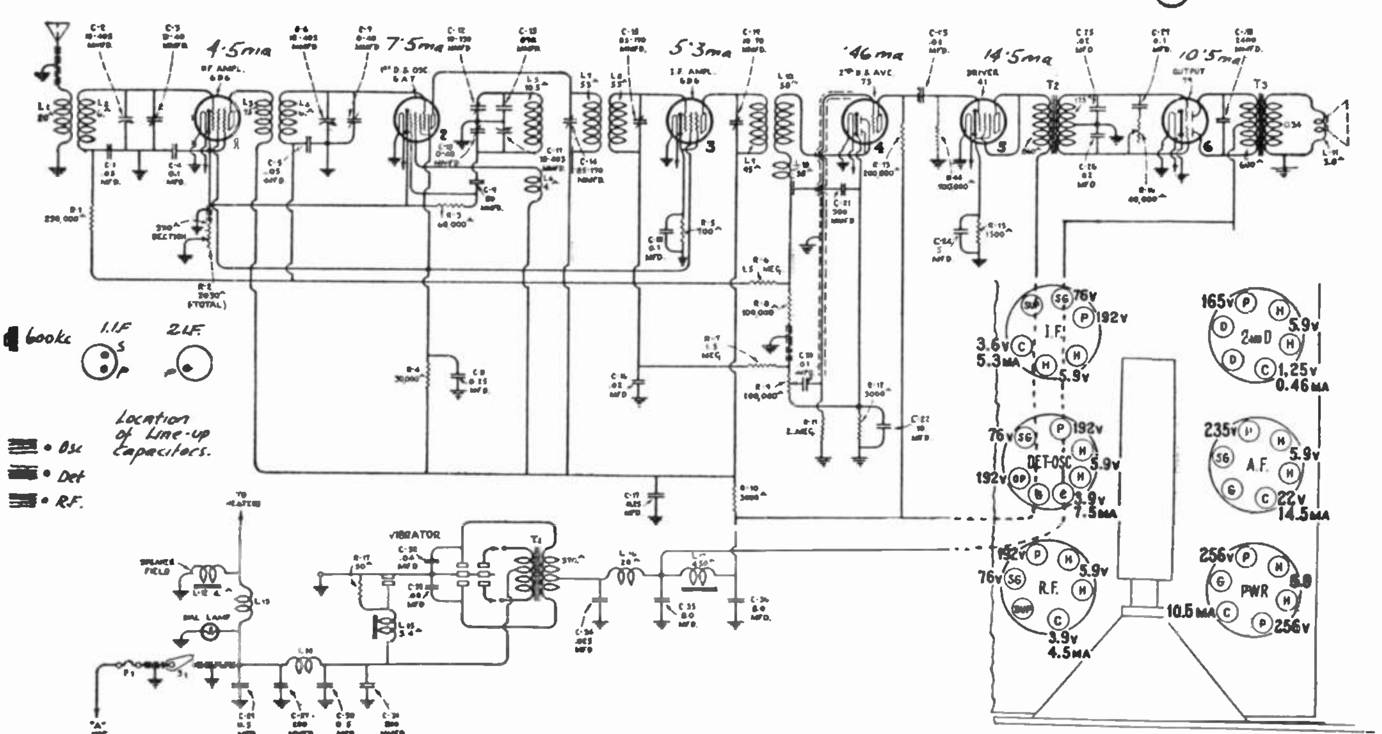
VICTOR-19

World Radio History

Models 118-211 1934-35 I.F. 460 Kc.



Model M-123 1934-35 I.F. 175 Kc.



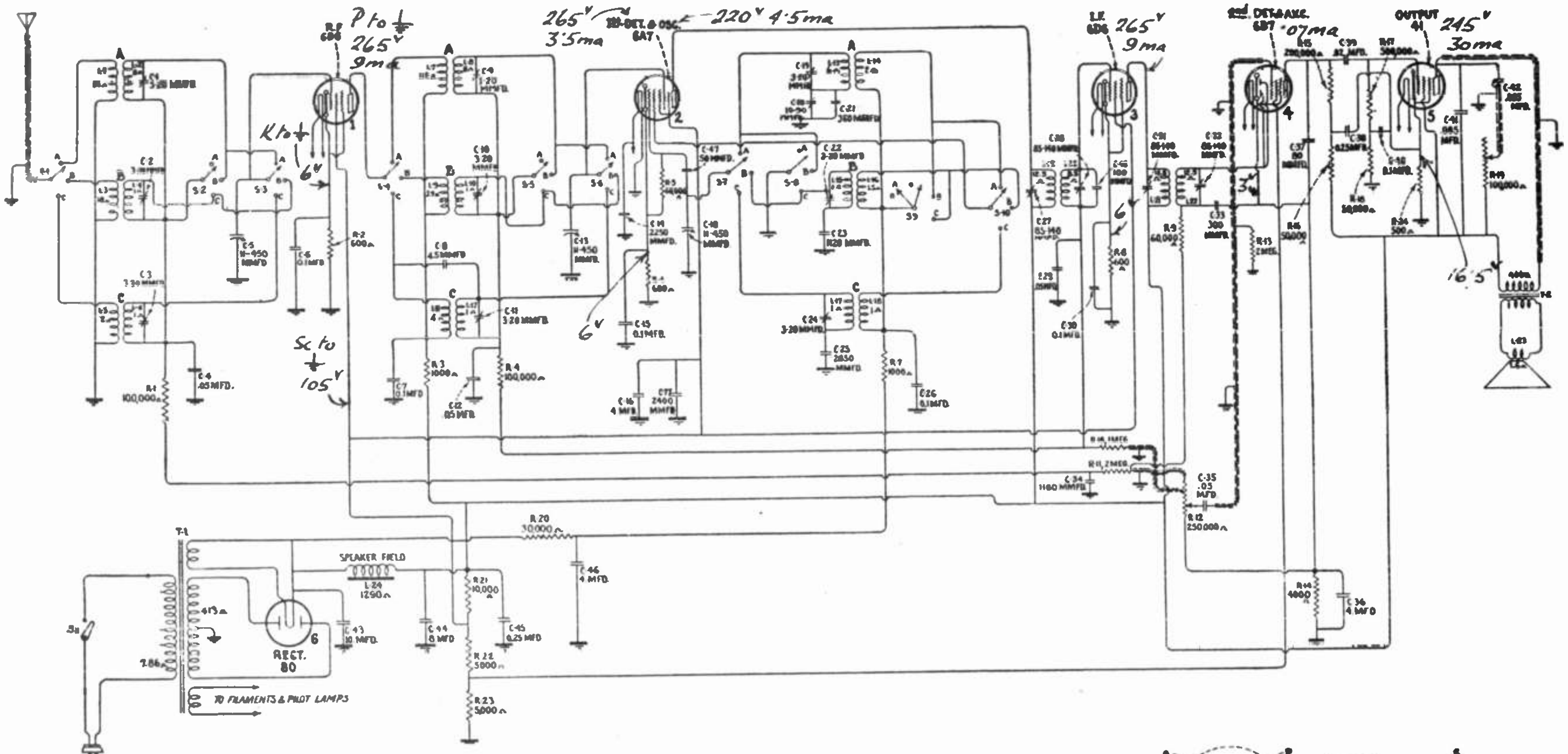
All voltages except heater are to ground.

DATA SHEET

R.C.A. VICTOR-20

Models 128-224 1934-35 I.F. 460 Kc.

DATA SHEET



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COURTESY VICTOR-20a.

TALKING MACHINE CO. LTD.

also Mod-129-226 - 1934-35

The chassis is similar in most respects to that on Victor Models 128 and 224 with the exception that the "B" band has been omitted. For alignment procedure, service data, etc., reference should be made to the Victor 128 and 224 Service Instructions ignoring, of course, any remarks applying to the "B" band in those models.

The wiring and schematic diagrams given herein show the connections for the "B" band which should be disregarded when referring to these diagrams.

for alignment instructions see SHEETS 20 b c.d.

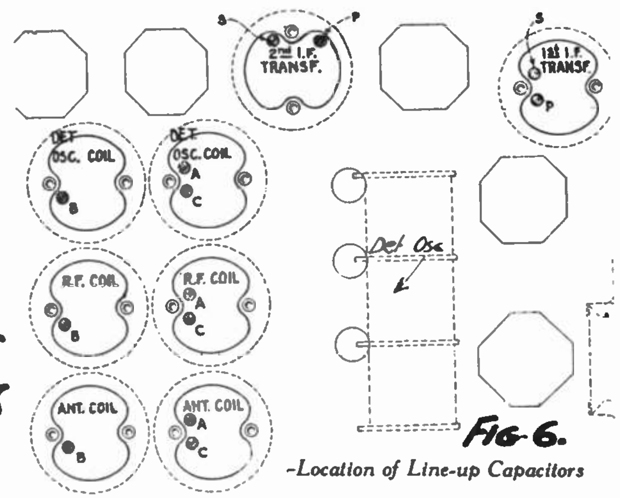


Fig-6.

-Location of Line-up Capacitors

DESCRIPTION OF ELECTRICAL CIRCUIT MODS 128 AND 224

The general circuit arrangement consists of an R. F. stage, a combined oscillator and first detector, an I. F. stage, a combined second detector and automatic volume control and a single Pentode output stage. A Type-80 rectifier, together with a suitable filtering system, provides plate and grid voltages for all tubes and field excitation for the loudspeaker.

The signal enters the receiver through a shielded antenna lead and is applied to the grid of the R. F. tube through the antenna coupling transformer. The secondary of this transformer is tuned to the signal frequency by means of one unit of the gang-capacitor. The output of this stage is transformer coupled to the grid circuit of the first detector, which is also tuned to the signal frequency by a unit of the gang-capacitor.

Combined with the signal in the first detector is the local oscillator, which is always at a 460 K. C. frequency difference (higher) from the signal frequency. A separate coil system and the third unit of the gang-capacitor are used in this circuit.

In conjunction with these three tuned circuits, it is well to point out that three different groups of tuned circuits are used, one for each tuning band. A three-position selector switch is provided for selecting the band in which the desired signal is located. In addition to selecting the desired coil system, additional groups of contacts are provided for short-circuiting the preceding lower frequency R. F. and detector coils and the two preceding oscillator coils. This is to prevent "dead" spots due to the absorption effects caused by the coils, the natural period of which, with tuning capacitor disconnected, fall in the next higher frequency band.

The output of the first detector, which is the I. F. signal (460 K. C.), is fed directly through two tuned circuits to the grid of the I. F. amplifier stage. The I. F. stage, which utilizes Radiotron Type-6D6, uses two transformers, which consist of four tuned circuits, all of which are tuned to 460 K. C.

The output of the I. F. amplifier is then applied to the diode electrodes of the Type-6B7, which is a combined second detector, automatic volume control and A. F. amplifier. The direct current component of the rectified signal produces a voltage drop across resistor R-12. The full voltage drop constitutes the automatic bias voltage for the R. F. while a tap is provided for the first detector and I. F. voltage. These automatic bias voltages for the R. F. first detector and I. F. give the automatic volume control action of the receiver. The volume control selects the amount of audio voltage that is applied to the grid of the Type-6B7 and thereby regulates the audio output of the entire receiver.

The output of the Type-6B7 is resistance coupled to the grid of the Type-41 tube, which is the power output amplifier. This tube is operated as a Pentode and provides high audio gain and satisfactory output power. The plate circuit of the output stage is matched to the cone coil of the reproducer by means of a step-down transformer.

The tone control consists of a variable resistor and fixed capacitor connected in series across the primary of the output transformer. At the minimum resistance position of the variable resistor, maximum attenuation of the high audio frequencies is obtained.

Plate and grid voltages for all tubes are supplied from the output of the rectifier-filter system. A Type-80 is used as a rectifier and a suitable network of capacitors and resistors gives the necessary filtering and voltages. The loudspeaker field is used as a filter reactor.

(1) LINE-UP PROCEDURE

The line-up procedure of this receiver is somewhat involved and it is important that these instructions be carefully followed when making adjustments. Properly aligned, this receiver has outstanding performance; improperly aligned, it may be impossible to receive signals on all bands.

Equipment

To properly align this receiver, proper test equipment must be used. This consists of a modulated R. F. oscillator having proper frequency range, an output indicator, an alignment tool and a tuning wand. These parts, which are shown on page 10 have been developed by the manufacturer of this receiver for use by service men to duplicate the original factory adjustments.

World Radio History

Checking with Tuning Wand

Before making any R. F., oscillator or first detector adjustments, the accuracy of the present adjustments may be checked by means of the tuning wand The tuning wand consists of a bakelite rod having a brass cylinder at one end and a special finely divided iron insert at the other end. Inserting the cylinder into the center of a coil lowers its inductance, while inserting the iron end increases its inductance. From this, it is seen that unless the trimmer adjustment for a particular coil is perfect at alignment frequencies, inserting one end of the wand may increase the output of a particular signal. A perfect adjustment is evidenced by a lowering of output when either end of the wand is inserted into a coil.

The shields over the R. F. coil assembly have a hole at their top for entrance of the tuning wand. The location of the various coils inside of the shield is shown in Figure 8. An example of the proper manner of using the tuning wand would be to assume the external oscillator were set at 1720 and the signal tuned in, and the output indicator should be connected across the voice coil of the loudspeaker. Then the tuning wand would be inserted, first one end and then the other end, into the top of the three transformers at the left of the R. F. assembly, facing the front of the chassis. A perfect adjustment of the trimmer would be evidenced by a reduction in output when each end of the wand is inserted in each of the three transformers. If one end—for example, the iron end—when inserted in one coil caused an increase in output, then that circuit is low. An increase in the trimmer capacitance would be the proper remedy.

(2) I. F. TUNING CAPACITOR ADJUSTMEMTS

Although this receiver has one I. F. stage, two transformers having four adjustable capacitors may require adjustment. The transformers are all peaked, being tuned to 460 K. C.

A detailed procedure for making this adjustment follows:

(a) Connect the output of an external oscillator tuned to 460 K. C. between the first detector grid and ground. Connect the output indicator across the voice coil of the loudspeaker.

(b) Place the oscillator in operation at 460 K. C. Place the receiver in operation and adjust the station selector until a point is reached (Band A) where no signals are heard and turn the volume control to its maximum position. Reduce the oscillator input until a slight indication is obtained in the output indicator.

(c) Refer to Figure 6. Adjust each trimmer of the I. F. transformers until a maximum output is obtained. Go over the adjustments a second time.

This completes the I. F. adjustments. However, it is good practice to follow the I. F. adjustments with the R.F. and oscillator adjustments due to interlocking which always occurs.

(3) R. F. OSCILLATOR, AND FIRST DETECTOR ADJUSTMENTS

Four R. F., oscillator and first detector adjustments are required in band "A." Three are required in bands "B" and "C."

To properly align the various bands, each band must be aligned and individually in the order given. This is "A," "B" and "C." The preliminary set-up requires the external oscillator to be connected between the antenna and ground terminals of the receiver and the output indicator must be connected across the voice coil of the loudspeaker. The volume control must be at its maximum position and the input from the oscillator must be at the minimum value possible to get an output indication under these conditions. In the high frequency bands, it may be necessary to disconnect the oscillator from the receiver and place it at a distance in order to get a sufficiently low input to the receiver.

The dial pointer must be properly set before starting any actual adjustments. This is done by turning the variable capacitor until it is at its maximum capacity position. One end of the pointer should point exactly at the horizontal line at the lowest frequency end of band "A," while the other end should point to within 1/64-inch of the horizontal line at the highest frequency end of band "A."

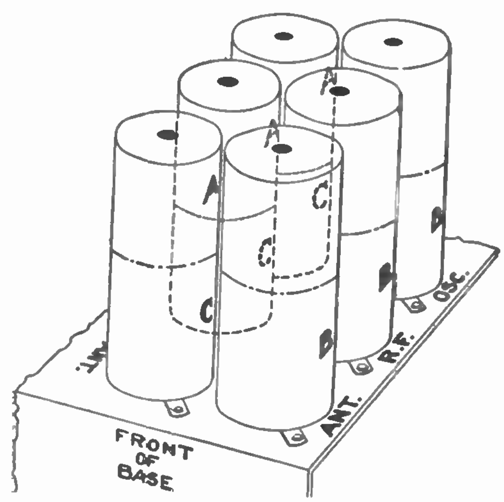


Figure 8—Location of Coils in Shields

World Radio History

Aligament Tool

Band "A"

(a) Set the Band Switch at "A."

(b) The oscillator series capacitor, located on the rear apron of the chassis, should be set at about the center of its range.

(c) Tune the external oscillator to 1,720 K. C., set the pointer at 1,720 K.C. and adjust the oscillator, detector and R. F. trimmers for maximum output.

(d) Shift the external oscillator frequency to 600 K.C. Tune in the 600 K.C. signal, irrespective of scale calibration, and adjust the series trimmers, located on rear apron of chassis, for maximum output, at the same time rocking the variable tuning capacitor. Then readjust at 1,720 K. C. as described in (c).

Band "B"

(a) Set the Band Switch at "B."

(b) The detector and antenna trimmers should first be tightened to approximately 3/4 maximum capacity (turned 3/4 of the way in).

(c) Tune the external oscillator to 5,160 K.C., set the pointer at 5,160 K.C. Adjust the oscillator trimmer for maximum output. The trimmer should be set at the first peak obtained when increasing the trimmer capacitor from minimum to maximum.

(d) Check for the image signal which should be received at approximately 4,240 K. C. on the dial. It may be necessary to increase the external oscillator output for this check.

(e) Reduce the capacity of the detector trimmer, while rocking the tuning capacitor, until the signal disappears. The first detector circuit is then in alignment with the oscillator circuit and the Type-6A7 tube is blocked. Then increase the capacity of the detector trimmer, while rocking the tuning capacitor, until the signal is peaked for maximum output.

(f) The antenna trimmer should now be peaked for maximum output. It is not necessary to rock the main tuning capacitor while making this adjustment.

Band "C"

(a) Set the Band Switch at "C."

(b) The detector and antenna trimmers should first be tightened to approximately 3/4 maximum capacity (turned 3/4 of the way in).

(c) Tune the external oscillator to 18,000 K. C., set the pointer at 18 M. Adjust the oscillator trimmer for maximum output. The trimmer should be set at the first peak obtained when increasing the trimmer capacitor from minimum to maximum.

(d) Check for the image signal, which should be received at approximately 17,080 on the dial. It may be necessary to increase the external oscillator output for this check.

(e) Reduce the capacity of the detector trimmer, while rocking the tuning capacitor, until the signal disappears. The first detector circuit is then in alignment with the oscillator circuit and the Type-6A7 tube is blocked. Then increase the capacity of the detector trimmer, while rocking the tuning capacitor, until the signal is peaked for maximum output.

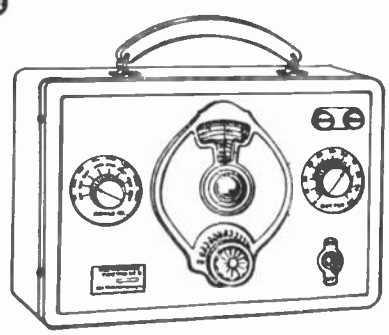
(f) The antenna trimmer should now be peaked for maximum output. It is not necessary to rock the main tuning capacitor while making this adjustment.

Output Indicator

Indicator is a neon lamp visual output indicator designed for use in conjunction with the Stock No. 9050 Test Oscillator. The indicator is very sensitive to changes of volume and frequency. It consists of a tapped transformer (giving three impedance inputs), a potentiometer and a neon lamp.

Oscillator

90 K. C. to 25,000 K. C.

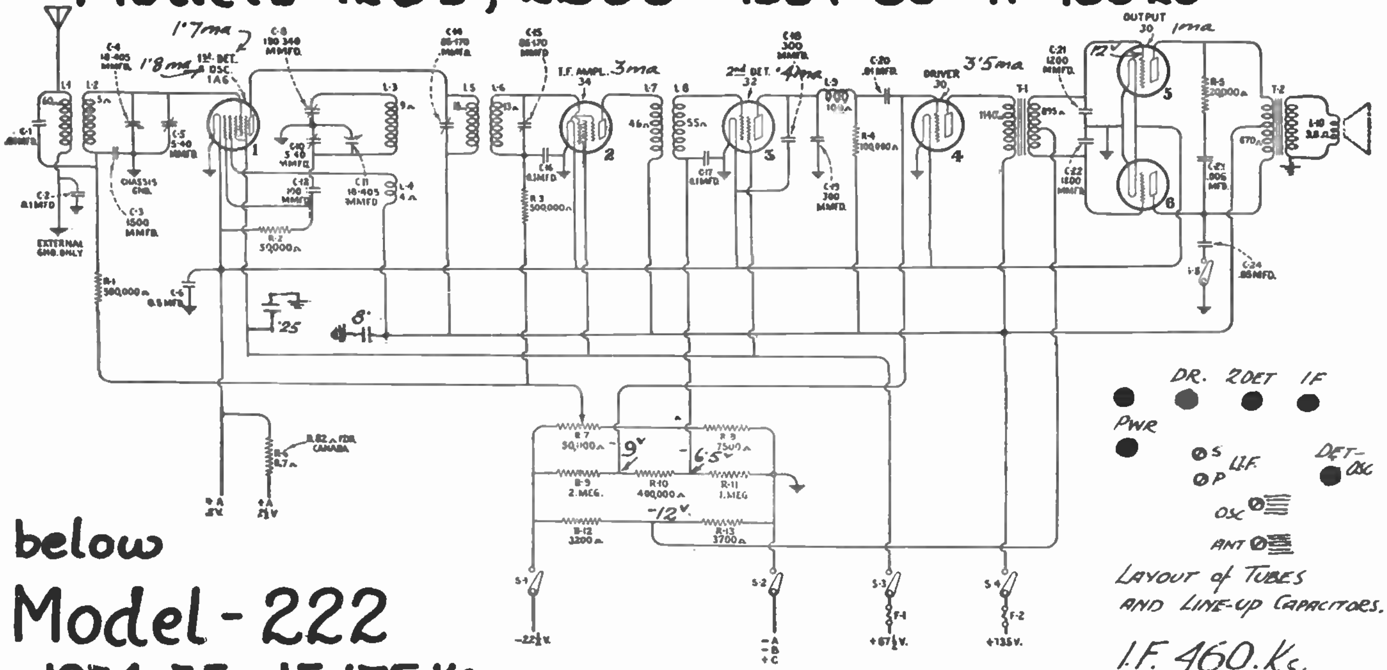


Tuning Wand

consists of a bakelite rod having a brass cylinder at one end and a special finely divided iron core at the other end. Inserting the brass cylinder into a coil lowers its inductance, while inserting the iron increases the inductance. From this it is evident that before adjusting trimmers, the adjustment may be checked by inserting each end of the wand into the coil. Proper adjustment is evidenced by a reduction in output with either end of the wand inserted into the coil. The wand is 7" long and 5/16" diameter.

World Radio History

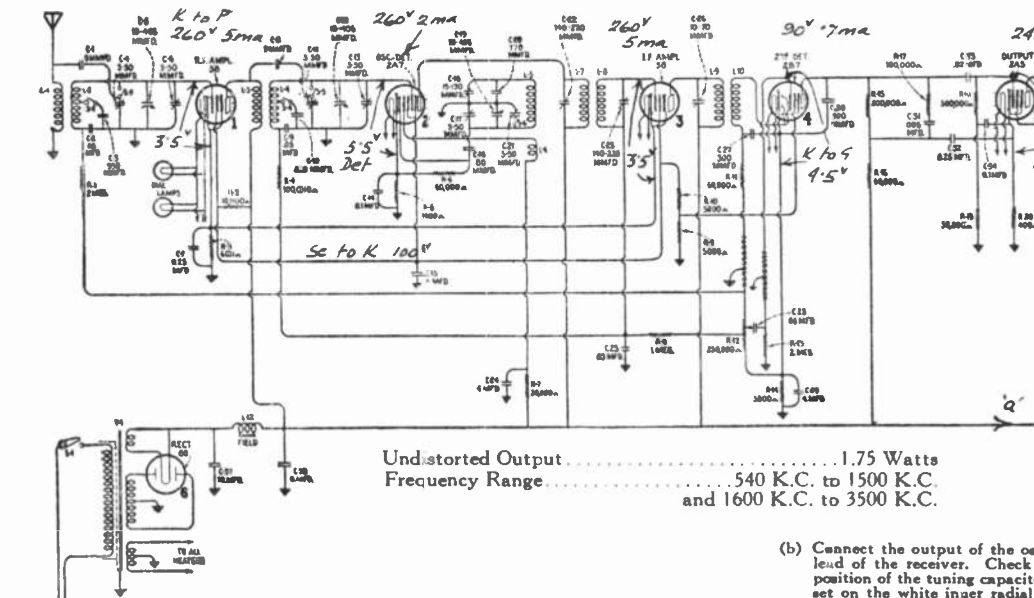
Models 126B, 223B 1934-35 IF 460 Kc



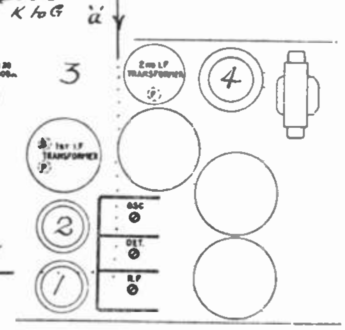
below

Model-222

1934-35. IF 175 Kc



Undistorted Output .... 1.75 Watts
Frequency Range .... 540 K.C. to 1500 K.C. and 1600 K.C. to 3500 K.C.



—Location of Line-up Capacitors.

Service work in conjunction with this receiver will be similar to that of other Superheterodyne receivers incorporating a similar type automatic volume control.

Line-up Adjustments

I. F. Tuning Adjustments—Two transformers comprising three tuned circuits (the secondary of the second transformer is untuned) are used in the intermediate amplifier. These are tuned to 175 K.C. and the adjustment screws are accessible from beneath the chassis as shown in Figure C.

R. F. and Oscillator Adjustments—The three gang capacitor screws are located on the main tuning capacitor, accessible at the top of the chassis. The high frequency capacitor screws are located on the Range Switch.

(b) Connect the output of the oscillator to the antenna and ground lead of the receiver. Check the dial at the extreme maximum position of the tuning capacitor. The indicator pointer should be set on the white inner radial line located at approximately 530 K.C. Then set the dial at 140, the oscillator at 1400 K.C. and connect the output meter across the cone coil. Adjust the oscillator output so that a slight deflection is obtained when the receiver volume control is at maximum.

(c) After making the 1400 K.C. adjustments, shift the oscillator to 600 K.C. and tune in the signal. Adjust the 600 K.C. trimmer, accessible from the top of the chassis, for maximum output while rocking the gang-capacitor back and forth. Then again check the adjustment described in (b).

(d) With the Range Switch at the counter-clockwise position, adjust the three tuning condenser line-up capacitors until maximum deflection is obtained in the output meter. Then shift the oscillator to 2440 K.C., the Range Switch to the clockwise position and the dial to 244. The three line-up capacitors located on the Range Switch and accessible from the bottom of the chassis should then be adjusted for maximum output.

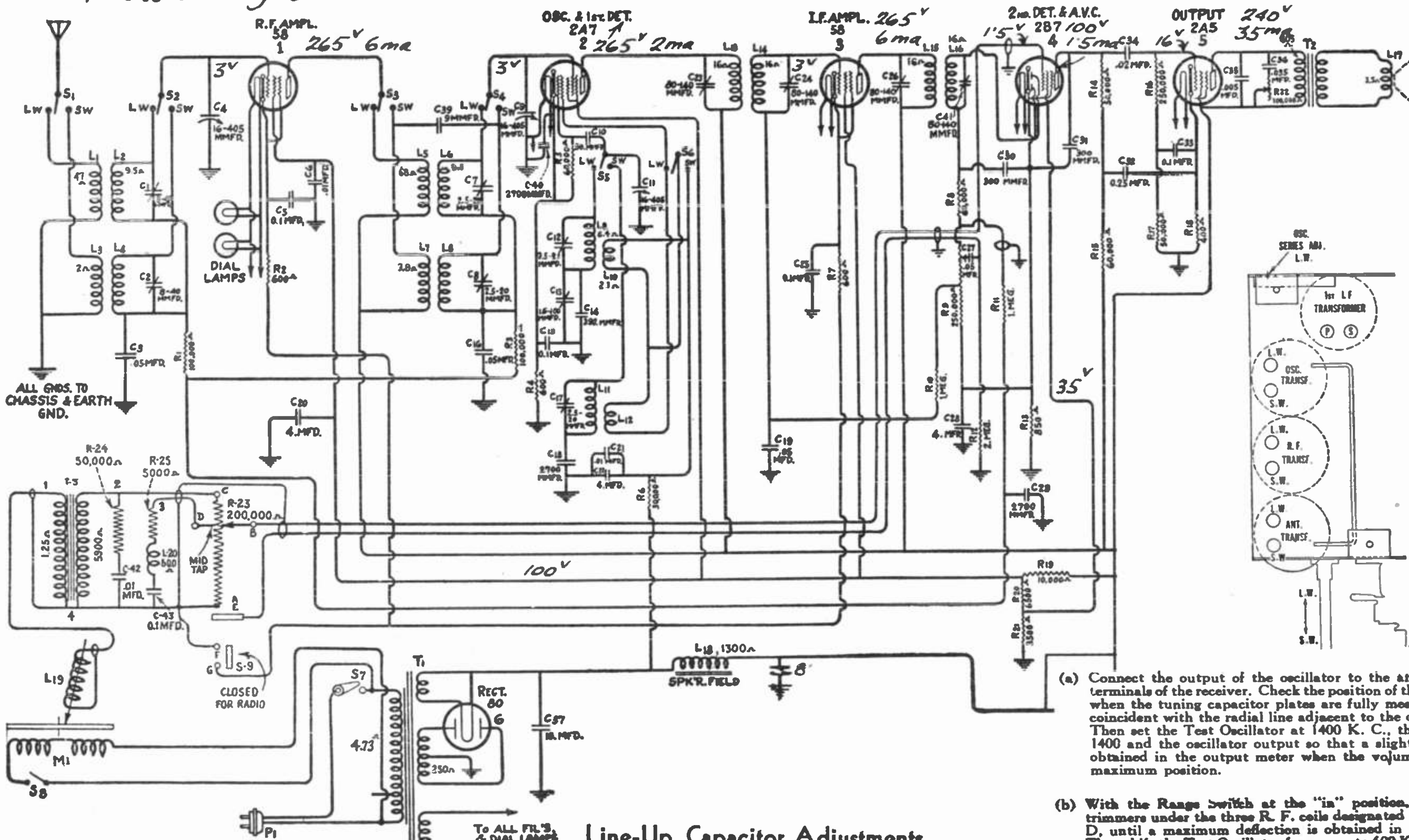
When making both the I. F. and R. F. adjustments, the important point to remember is that the receiver volume control must be at its maximum position and the minimum input signal necessary from the oscillator must be used.

World Radio History

Model-321 1934-35

I.F. 370 Kc.

DATA SHEET



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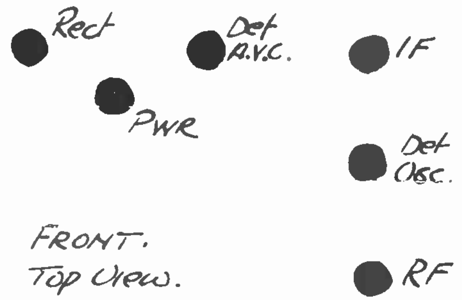


Line-Up Capacitor Adjustments

(a) Short-circuit the antenna and ground terminals and tune the receiver so that no signal is heard. Set the volume control at maximum and connect a ground to the chassis.

(b) Connect the test oscillator output between the first detector control grid, and chassis ground. Connect the output meter across the voice coil of the loudspeaker and adjust the oscillator output so that, with the receiver volume control at maximum, a slight deflection is obtained in the output meter.

Adjust the secondary and primary of the first and then the second I. F. transformers until a maximum deflection is obtained. Keep the oscillator output at a low value so that only a slight deflection is obtained on the output meter at all times. Go over these adjustments a second time, as there is a slight interlocking of adjustments. This completes the I. F. adjustments.

R. F. and Oscillator Adjustments—The R. F. line-up capacitors are located at the bottom of the coil assemblies instead of their usual position on the gang capacitor. They are all accessible from the bottom of the chassis except the 600 K. C. series capacitor, which is accessible from the rear of the chassis. Proceed as follows:

(a) Connect the output of the oscillator to the antenna and ground terminals of the receiver. Check the position of the indicator pointer when the tuning capacitor plates are fully meshed. It should be coincident with the radial line adjacent to the dial reading of 540. Then set the Test Oscillator at 1400 K. C., the dial indicator at 1400 and the oscillator output so that a slight deflection will be obtained in the output meter when the volume control is at its maximum position.

(b) With the Range Switch at the "in" position, adjust the three trimmers under the three R. F. coils designated as L. W. in Figure D, until a maximum deflection is obtained in the output meter. Then shift the Test Oscillator frequency to 600 K. C. The trimmer capacitor accessible from the rear of the chassis should now be adjusted for maximum output while rocking the main tuning capacitor back and forth through the signal. Then repeat the 1400 K. C. adjustment.

(c) Now place the Range Switch at the "out" position, shift the Test Oscillator to 15,000 K. C. and set the dial at 15 on megacycle scale. Adjust the three trimmer capacitors designated as S.W. in Figure D for a peak, beginning with the oscillator trimmer. It will be noted that the oscillator and first detector trimmers will have two peaks. The position which uses the lower trimmer capacitance, obtained by turning the screw counter-clockwise, is the proper adjustment for the oscillator while the position that uses a higher capacitance is correct for the detector. *Both of these adjustments must be made as indicated irrespective of output.* The R. F. is merely peaked. In conjunction with the detector adjustment, it is necessary to rock the main tuning capacitor back and forth while making the adjustment. This completes the line-up adjustments.

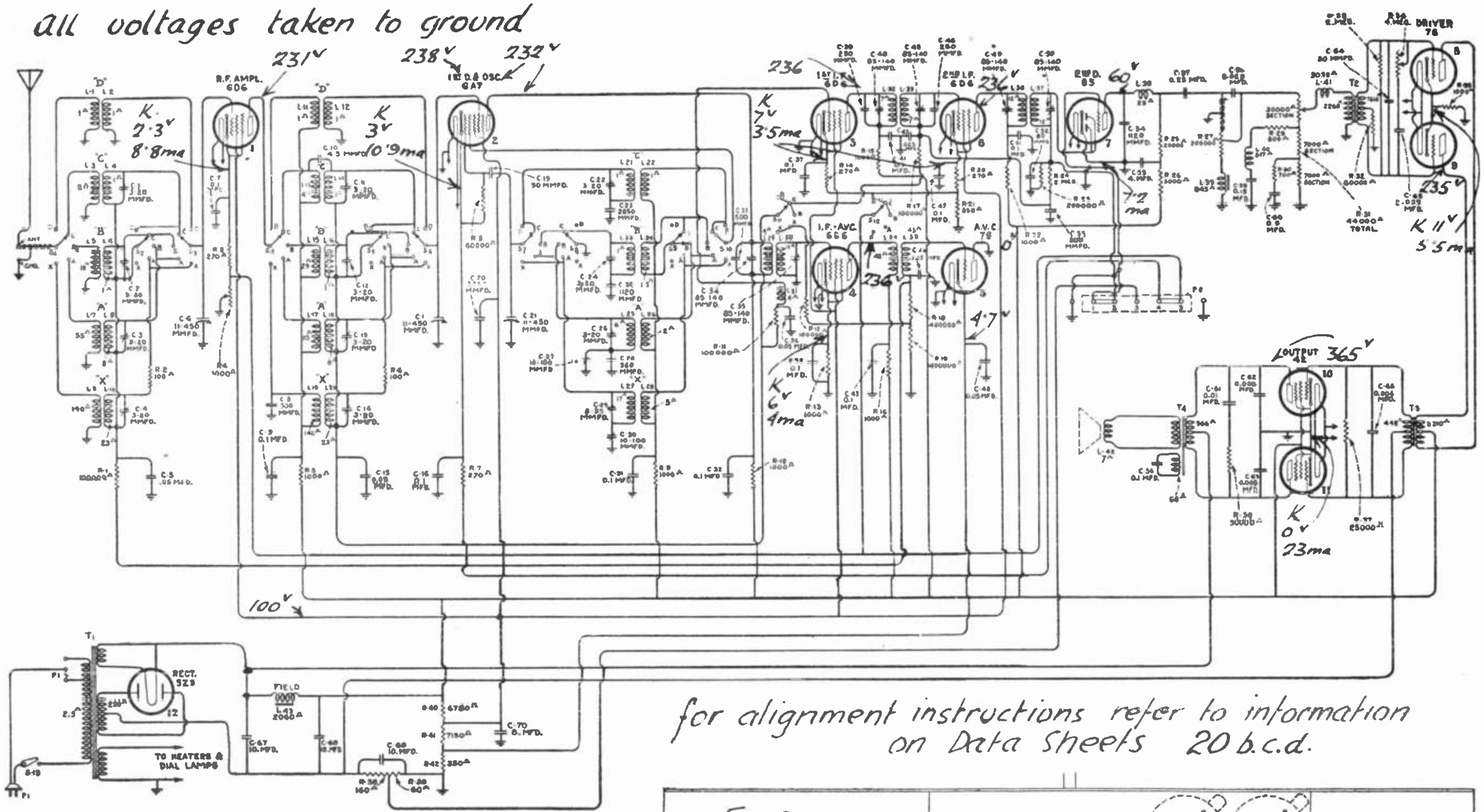
The important points to remember are the need for using the minimum oscillator output to obtain a deflection in the output meter with the volume control at its maximum position and the manner of obtaining the proper high frequency oscillator and detector adjustments.

World Radio History

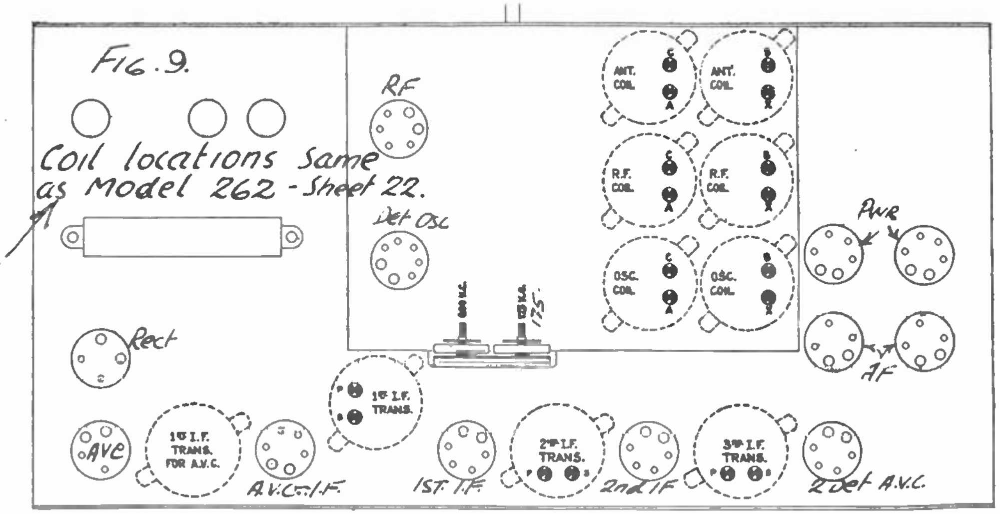
DATA SHEET

Model 281 1934-35 I.F. 460 Kc.

all voltages taken to ground



for alignment instructions refer to information on Data Sheets 20 b.c.d.



Although this receiver has three I. F. stages two for the signal and one for the A. V. C., only three transformers having six adjustable capacitors require adjustment. The fourth transformer is in the A. V. C. circuit and is broadly tuned, not requiring adjustments. The transformers are all peaked, being tuned to 460 K. C.

Band "X"

(a) The oscillator series capacitor, marked 175 K. C., Figure 9, is first tightened to near its maximum capacity position (screwed "in").

(b) Tune the external oscillator to 410 K. C., set the pointer at 410 K. C. and adjust the oscillator, detector and R. F. trimmers for maximum output.

(c) Shift the external oscillator to 175 K. C. Tune in the 175 K. C. signal irrespective of scale calibration and adjust the series trimmer marked 175 K. C. on Figure 9, for maximum output, at the same time rocking the variable tuning capacitor. Then readjust at 410 K. C. as described in (b).

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VICTOR-23 - COURTESY

World Radio History

DATA SHEET

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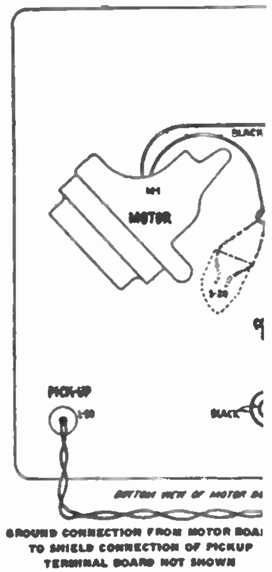

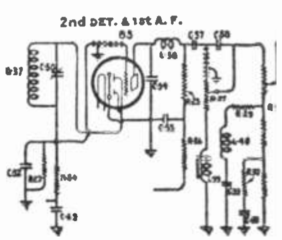

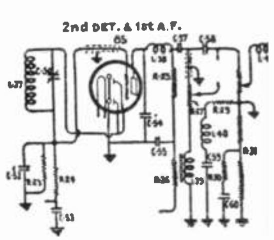

Radio Recc

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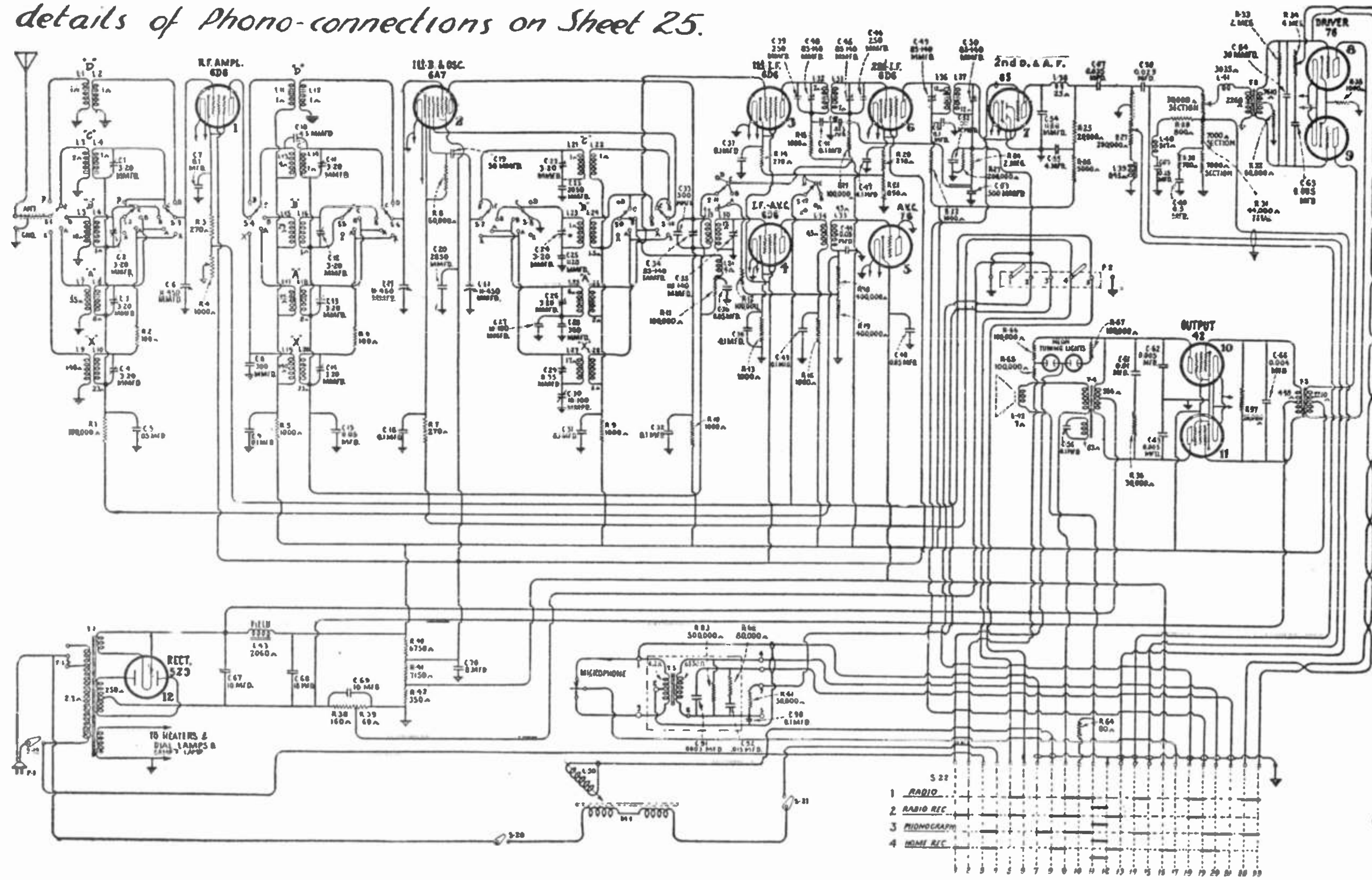
- COURTESY VICTOR-24 TALKING MACHINE CO. LTD

for voltages etc see Data Sheet 23 Model 281.
details of Phono-connections on Sheet 25.

Model - 381 - 1934-35



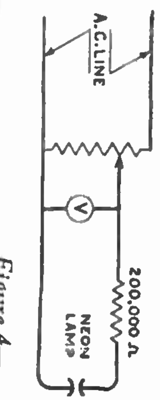


Figure 4—

DESCRIPTION OF ELECTRICAL CIRCUIT

As the chassis wiring of this instrument is similar to the Model 281 radio receiver (with the exception of those connections necessary for Phonograph and recording operation) reference to the Model 281 Service Notes will give the service man full instruction on the alignment procedure, etc., of this instrument.

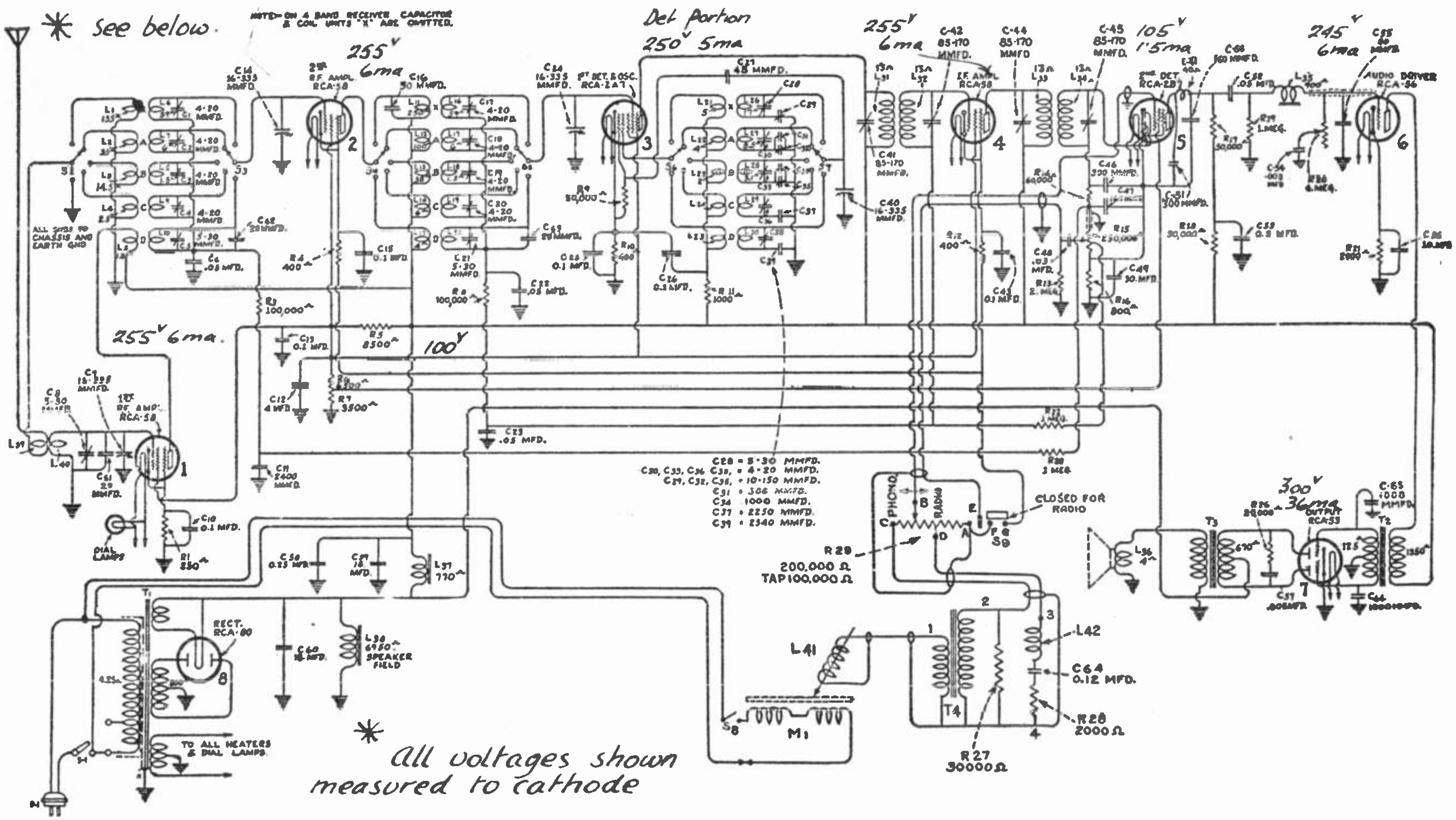
TESTING NEON LEVEL INDICATING LAMPS

Two Neon Level Indicating Lamps are provided so that a visual indication of the recording level may be obtained at all times. These lamps normally give long service without attention. However, if failure occurs, and all circuits have been checked and eliminated as possible source of failure, the lamps may be easily checked as indicated in the circuit shown in Figure 4. The method for checking involves testing for lighting between certain voltages. The lamps must not light before 52 volts have been applied and must not require a voltage greater than 64 volts to cause them to light. Lamps requiring different voltages from these are defective and must not be used.

World Radio History

Models 340 - 141 1934 I.F. 445 Kc.

DATA SHEET



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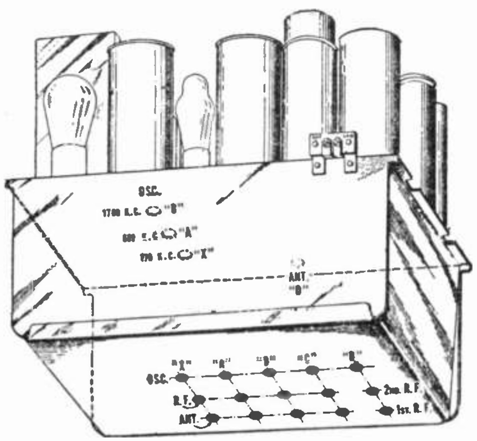
for alignment instructions see WESTINGHOUSE 83 Data Sheet Westinghouse 16. also Victor Mod 140 Sheet 17.

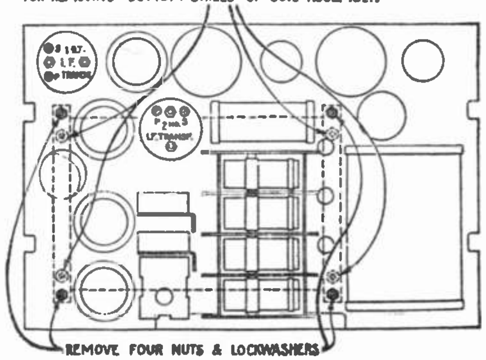


—Location of line-up capacitors

The tuning bands for the receiver chassis are as follows:

Selector Switch Position	Frequency Range (Kilocycles)	Wave-Length Range (Meters)
X	150–410	2000–732
A	540–1500	555–200
B	1500–3900	200–77.0
C	3900–10000	77.0–30.0
D	8000–18000	37.5–16.7

REMOVE FOUR NUTS & LOCKWASHERS SHOWN FOR REMOVING BOTTOM SHIELD OF COIL ASSEMBLY.



REMOVE FOUR NUTS & LOCKWASHERS TO REMOVE COIL ASSEMBLY.

—Location of nuts and lockwashers holding coil assembly

- COURTESY VICTOR-27 TALKING MACHINE Co. LTD.

World Radio History

Model 262 1934-35 I.F. 460 Kc.

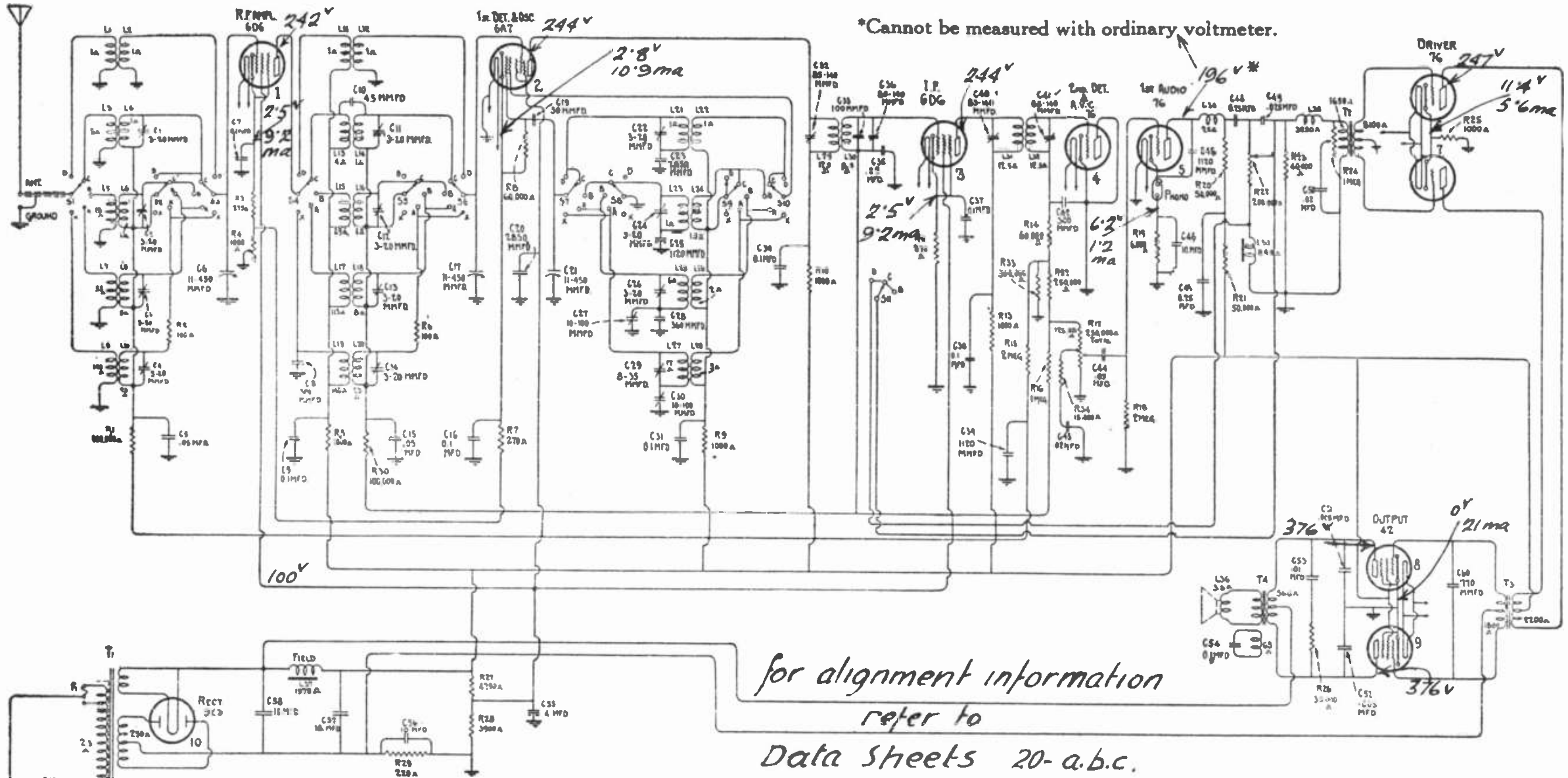
also see Data Sheets 30 a.b.c.

DATA SHEET

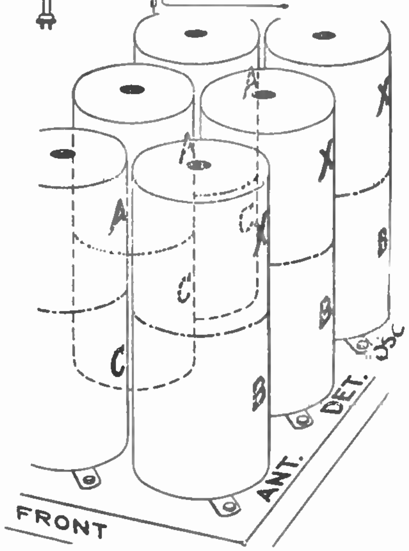
PRINTED IN CANADA

- COURTESY VICTOR-28

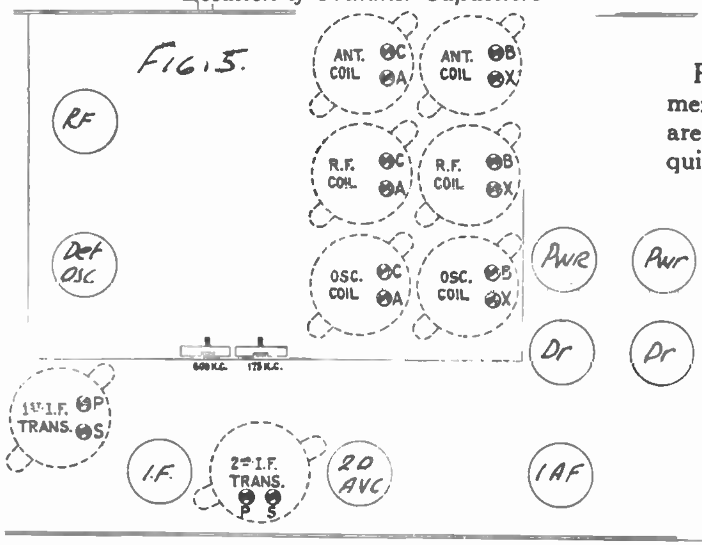
*Cannot be measured with ordinary voltmeter.



for alignment information refer to Data Sheets 20-a.b.c.



–Location of Trimmer Capacitors



R. F. OSCILLATOR AND FIRST DETECTOR ADJUSTMENTS

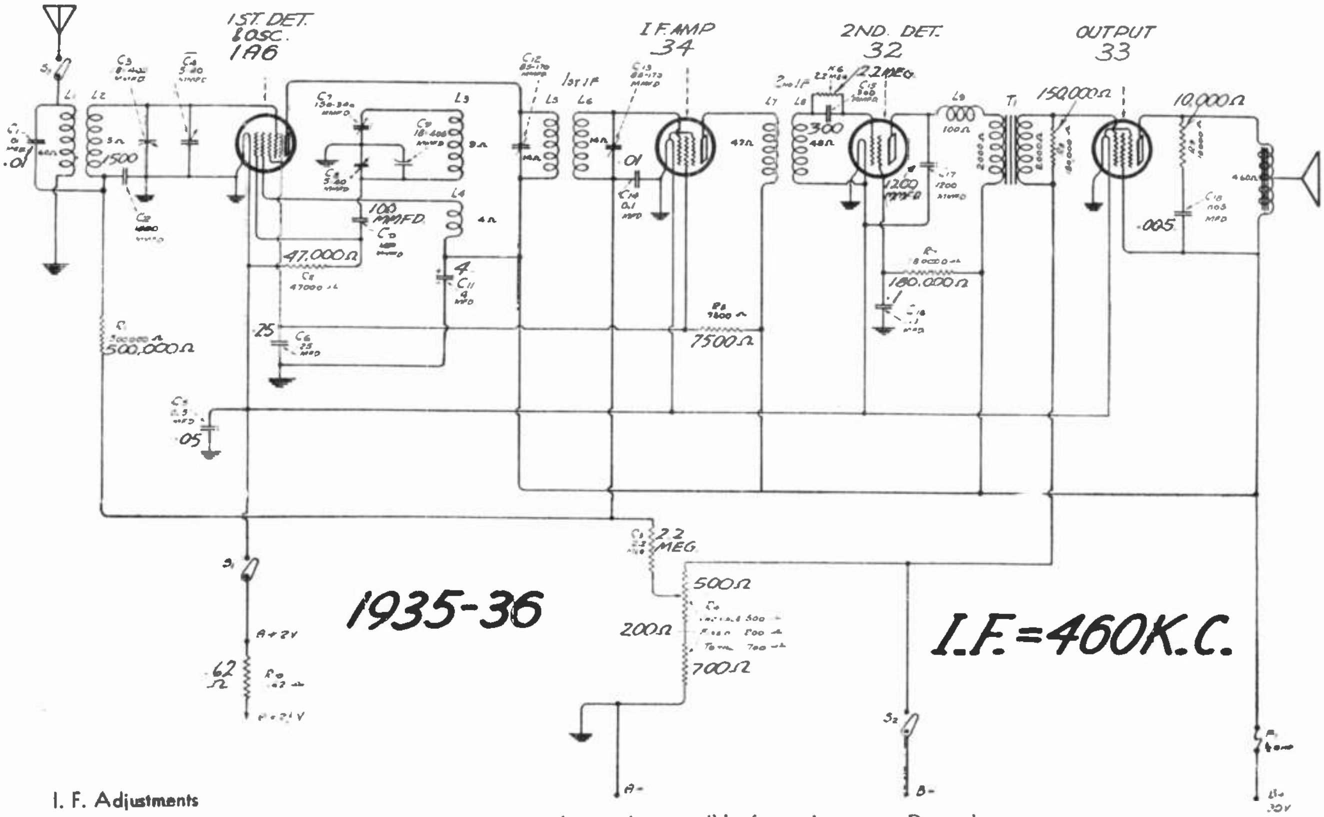
Four R. F., oscillator and first detector adjustments are required in bands "A" and "X". Three are required in bands "B" and "C." None are required in band "D."

Band "X"

(a) Tune the external oscillator to 410 KC, set the pointer at 410 KC and adjust the oscillator, detector and R. F. trimmers for maximum output.

(b) Shift the external oscillator to 175 KC. Tune in the 175 KC signal irrespective of scale calibration and adjust the series trimmer marked 175 KC on Figure 5, for maximum output, at the same time rocking the variable tuning capacitor. Then readjust at 410 KC as described in (a).

World Radio History



I. F. Adjustments

(a) Short circuit the antenna and ground terminals, and connect the output oscillator between the control grid cap of the first detector (Type-1A6) and ground. Place the oscillator in operation at 460 K. C. and adjust its output and the receiver volume control until an appreciable output is noted.

(b) Adjust the secondary and then the primary of the first I. F. transformer until the maximum signal is obtained.

This completes the I. F. adjustments. It is good practice to always follow the I. F. adjustments with the detector and oscillator adjustments, as there is an interlocking of adjustments that always occurs.

Detector-Oscillator Adjustments

The two gang capacitor trimmer screws are accessible at the top of the chassis. The series (600 K. C.) trimmer is accessible from the rear. Proceed as follows:

(a) Connect the oscillator between the antenna and ground terminals of the receiver.

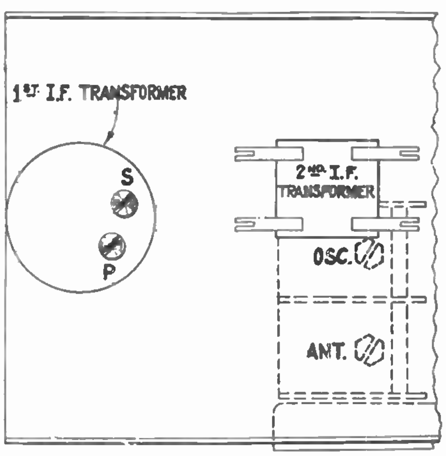
(b) Place the oscillator in operation at 1400 K. C., set the dial at 140 and adjust the oscillator output and receiver volume control until an appreciable signal is reached.

(c) Adjust each trimmer on the gang capacitor until maximum signal is obtained.

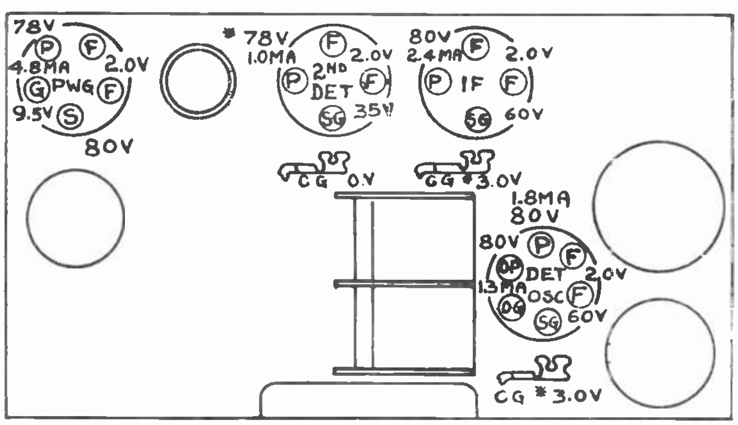
(d) Set the oscillator at 600 K. C. and tune in the signal on the receiver. Then adjust the series trimmer, located on the rear of the chassis, until maximum output is obtained. While making this adjustment, rock the tuning capacitor back and forth through the signal. Then again check the adjustment in (b).

MODELS BT4-1 BC4-1 (GENERAL ELECTRIC - MODELS A4B AND A4CB)

BATTERY-OPERATED

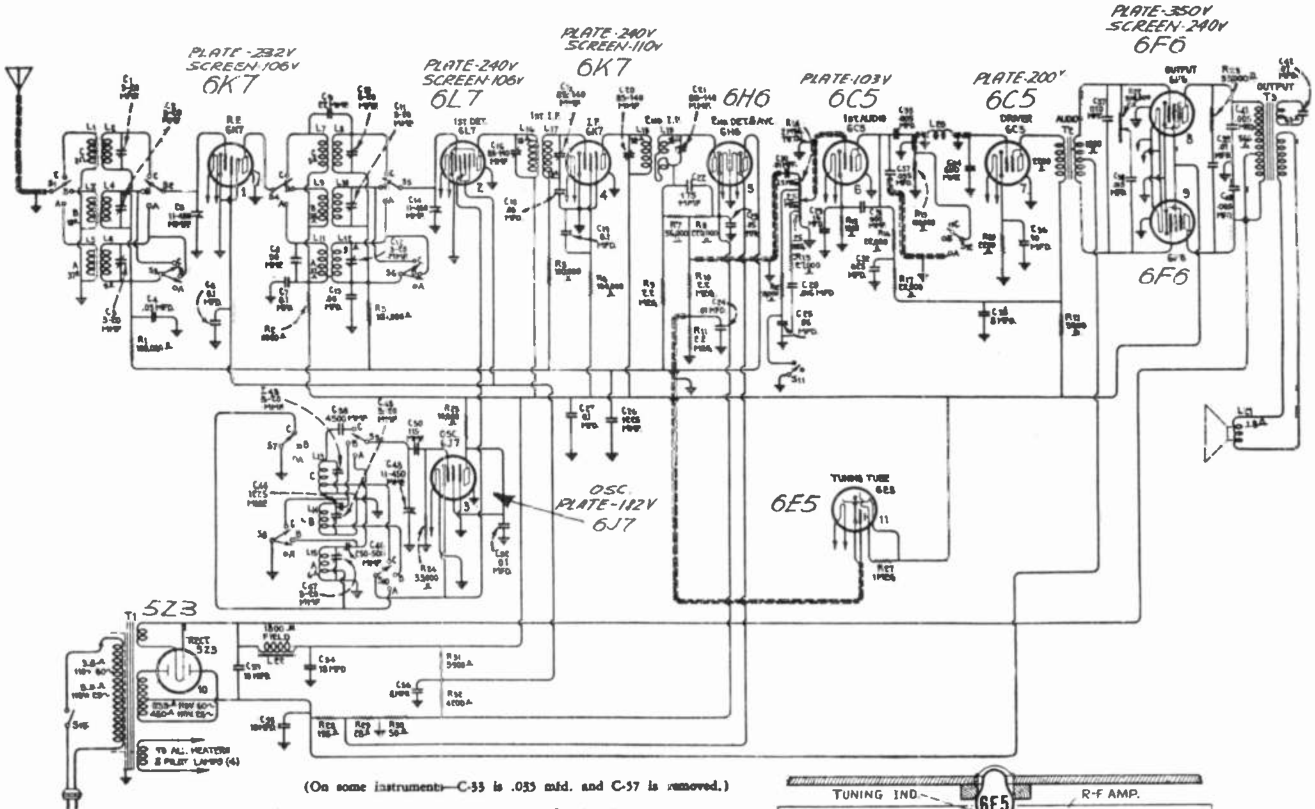


Location of Line-up Capacitors

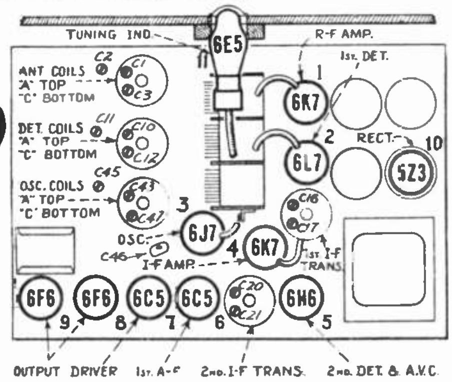


Socket Voltage Readings

World Radio History



(On some instruments—C-33 is .035 mfd. and C-57 is removed.)



MODEL. C10-1 (GENERAL ELECTRIC. A-108)

I-F Alignment

Connect the test Oscillator to the control grid cap of the i-f tube. Advance the volume control of the receiver to its full-on position. Tune the test Oscillator accurately to 460 kc. and align the trimmers C-20 and C-21 to give maximum receiver output. Regulate the Oscillator output during this adjustment so that the output indication is as small as can be conveniently observed. After completing the adjustments of these trimmers, re-connect the Oscillator so that it will feed into the control grid circuit of the Type-6L7 first detector. Then tune the first i-f transformer trimmers C-16 and C-17 for maximum receiver output.

R-F Alignment

After completing the i-f adjustments, it is advisable to correct the line-up of the circuits ahead of the first detector. The test Oscillator should be connected to the antenna-ground terminals of the receiver and the manual volume control turned to its maximum position. For each adjustment, the Oscillator output should be maintained as low as possible in order to avoid broadness of tuning which would result from a.v.c. action on a stronger signal.

Band A—This band should be aligned by supplying a 1720 kc. signal to the receiver, tuning the station selector to a dial reading of 1720 and adjusting the trimmers C-47, C-12 and C-3 to produce maximum receiver output. The Oscillator should then be shifted to 600 kc. and the receiver tuned to resonate this signal, disregarding the reading at which it is best received. Trimmer C-46 must then be adjusted, simultaneously while rocking the station selector backward and forward through the signal until the maximum output results from the combined operations. C-47 should be rechecked to assure that its adjustment has not changed because of the trimming of C-46.

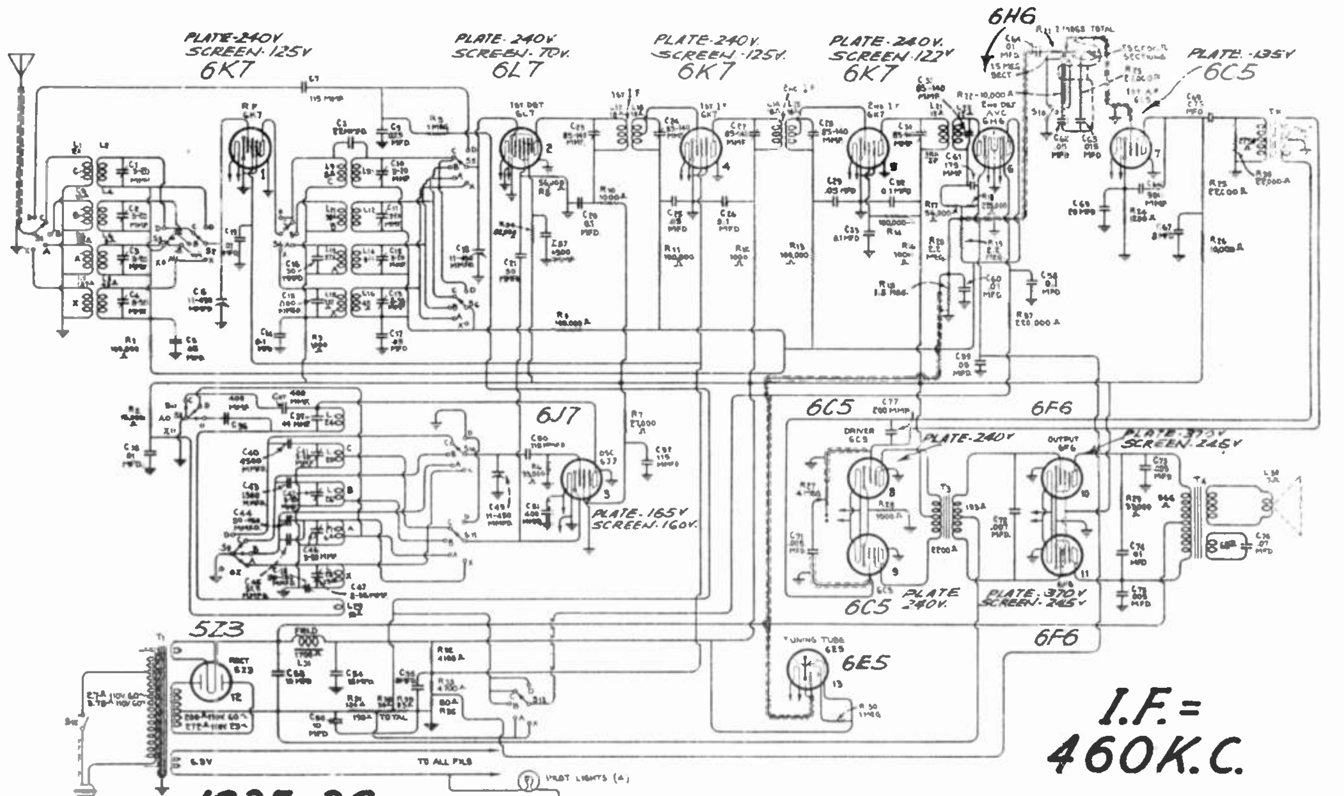
Band B—This band must be aligned at 6132 kc. by tuning the test Oscillator to such a frequency and turning the station selector to the 6132 kc. dial reading. Then tune the trimmer C-45 to produce maximum receiver output, using the setting of least capacitance which causes same. The presence of the proper "image" may be checked by tuning the receiver to 5212 kc. at which point the 6132 kc. signal will be heard if the trimmer C-45 has been properly set to the position of least capacitance for maximum (peak) output. It may be necessary to increase the Oscillator output for this check. *No adjustments are to be made.* Return the station selector to the 6132 kc. dial marking and trim capacitors C-11 and C-2 for maximum receiver output. No other adjustments are necessary on Band B.

Band C—Change the receiver so that it is operative and the dial reads 18,000 kc. on the "C" Band. Tune the test Oscillator to this same frequency. Then adjust the oscillator trimmer C-43 to produce maximum (peak) output. Two positions of this trimmer will be found which conform with this requirement. The one of least capacitance is correct. Check for the presence of "image" response at 17,080 kc. by shifting the receiver tuning. If it is received at such a point, the trimmer C-43 has been correctly adjusted to the right peak. *No adjustments are to be made during this check.* Tune the receiver back to the 18,000 kc. dial marking, readjust C-43 if necessary, and then tune the detector and antenna capacitors C-10 and C-1 for maximum receiver output. No further adjustments are necessary.

1935-36

I.F. = 460 K.C.

World Radio History



I.F. = 460 K.C.

1935-36

MODEL. C12-1 (GENERAL ELECTRIC MODEL. A-128)

I-F Adjustments—Connect the output of the test Oscillator from the Type-6L7 first detector control grid to chassis-ground and adjust its frequency to 460 kc. Tune the receiver to Band "A", setting the station selector at a point where no interference is received from local stations or the local oscillator. Then tune the i-f trimmers C-31, C-30, C-28, C-27, C-24 and C-23 in order, each for maximum indicated receiver output.

R-F Adjustments—Connect the Oscillator output to the antenna-ground terminals of the receiver. Keep the output indicator attached to the receiver output as above. For each adjustment, use the minimum signal which will give a perceptible indication on glow indicator.

Band A

(a) Set the range switch of the receiver to its Band A position and tune the selector to a dial reading of **1720 kc.** Tune the Oscillator to this same frequency and adjust trimmers C-46, C-12 and C-3 to produce maximum indicated receiver output.

(b) Shift the Oscillator to **600 kc.** and tune the receiver to pick up this signal, disregarding the dial reading at which it is best received. Then adjust trimmer C-44, simultaneously rocking the tuning control backward and forward through the signal, until maximum output is obtained from the combined operations. Repeat the alignment of C-46 as in (a) to correct for any change caused by adjustment of C-44.

Band X

(a) Change the range switch to its Band "X" position. Tune the receiver to read 400 kc. and set the Oscillator to produce this same frequency. Adjust trimmers C-47, C-13 and C-4 to produce maximum receiver output.

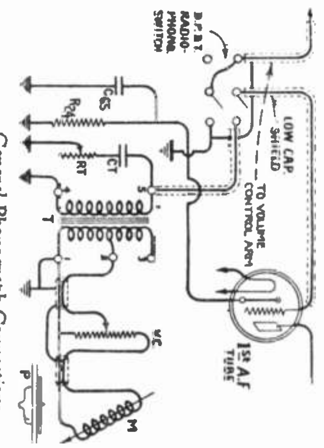
(b) Shift the Oscillator frequency to **150 kc.** and tune the receiver to pick up this signal, disregarding the dial reading at which it is best received. Then tune the oscillator series trimmer C-48, simultaneously rocking the tuning control (receiver) backward and forward through the signal, until maximum output results from the combined operations. Repeat the alignment of C-47 as in (a) to correct for any change caused by the adjustment of C-48.

Band B

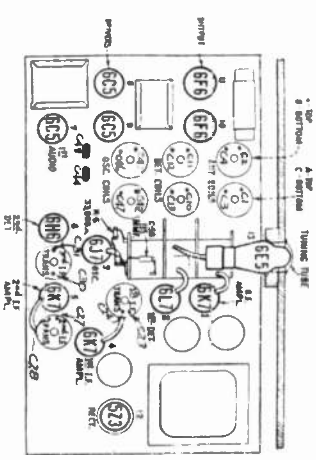
Place the receiver range switch in its Band "B" position and tune the station selector to a dial reading of **6132 kc.** Set the frequency of the Oscillator to **6132 kc.** Then adjust trimmer C-26 to give maximum receiver output. Two positions may be found which fulfill this condition. The one of least capacitance is correct. To assure that the right peak has been used; tune the receiver to 5212 kc. and increase the Oscillator output. The "image" of **6132 kc.** will be received at this point if C-26 has been adjusted to the proper point of maximum output. *No trimmer adjustments are to be made during this check.* Return the receiver tuning to **6132 kc.**, readjust C-26 if necessary, and then tune the detector and antenna coil trimmers, C-11 and C-2 to produce maximum (peak) receiver output as indicated on the glow meter.

Band C

Turn the receiver range switch to its Band "C" position and set the tuning control to a dial reading of **18,000 kc.** Tune the Oscillator to this same frequency. Adjust the oscillator parallel trimmer C-41 to produce maximum receiver output. Two positions of the trimmer will be found which fulfill such a condition. The one of least capacitance is correct. To assure that the right position has been used, check for the "image" of the **18,000 kc.** signal which will be received at **17,080 kc.** on the dial if C-41 is correctly adjusted. An increase in Oscillator output may be necessary. *No trimmer adjustments should be made during this check.* Return the receiver tuning to **18,000 kc.**, readjust C-41 if necessary, and then tune the detector and antenna trimmers C-10 and C-1 to give maximum receiver output.

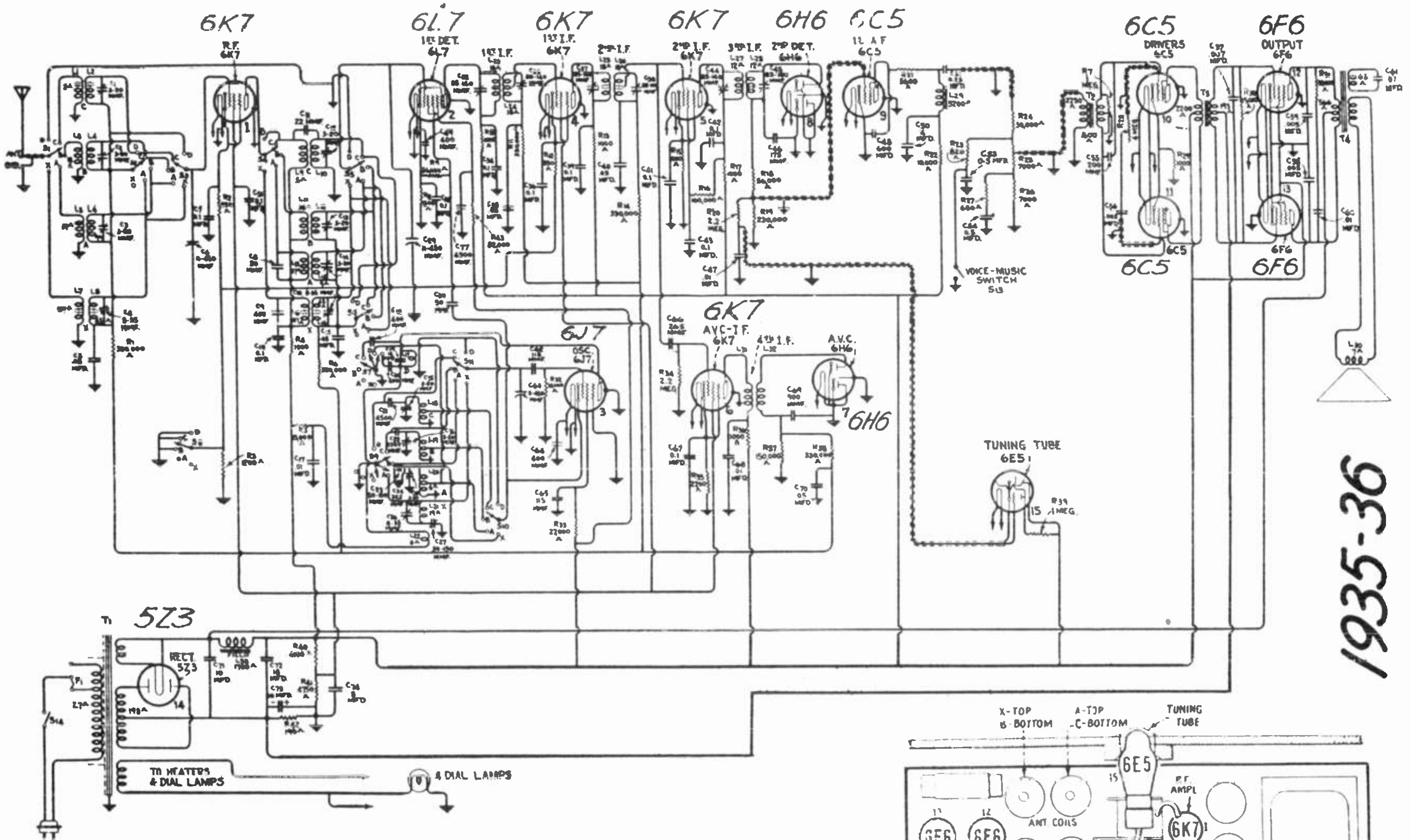


General Phonograph Connections



TRIMMER, COIL AND TUBE LOCATIONS

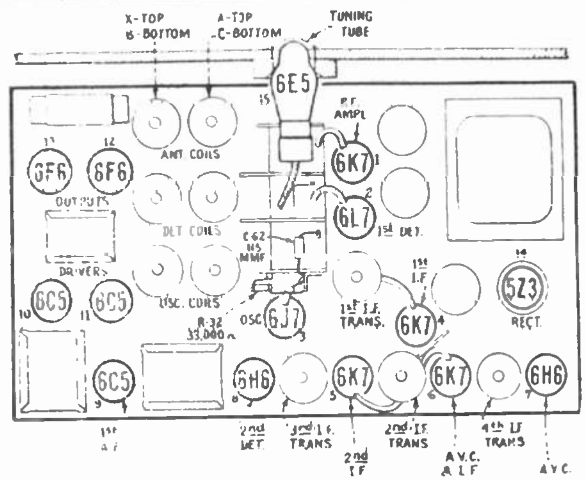
World Radio History



MODEL. C14-1
(GENERAL ELECTRIC A-148)

NOTE.- ALIGNMENT INSTR. ETC. ON DATA SHEET -33

I.F. = 460 K.C.



TUBE AND COIL LOCATIONS.

1935-36

COURTESY- R.C.A.

VICTOR-32

PRINTED IN CANADA

DATA SHEET

World Radio History

ALIGNMENT INSTR. ETC. FOR MODEL C14-1 (GENERAL ELECTRIC A-148)

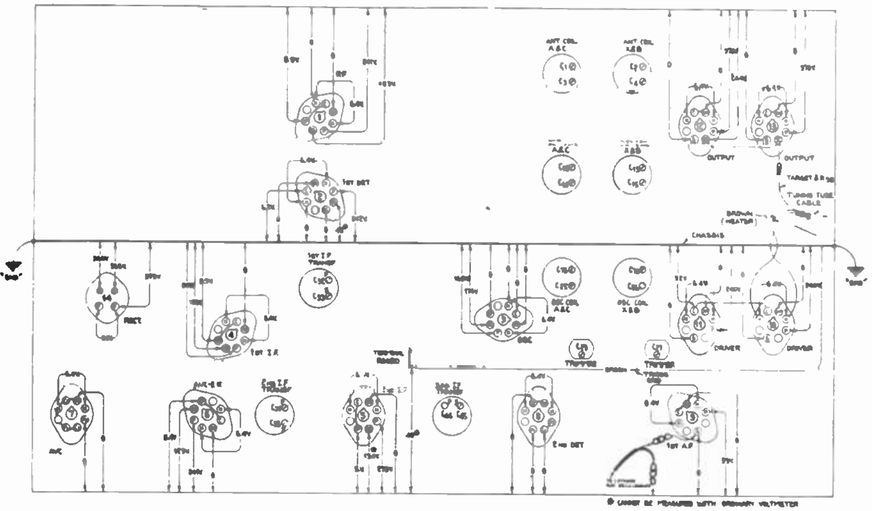


Figure 8—Trimmer Locations and Radiotron Socket Voltages

NOTE. – THE MANUFACTURER CONSIDERS THE CATHODE RAY ESSENTIAL IN ALIGNING THIS RECEIVER, AND CAN SUPPLY FULL INSTRUCTIONS UPON REQUEST.

Alignment Procedure

The extensive frequency range of this receiver necessitates a more or less involved method of alignment.

Circuits aligned by use of Cathode-Ray equipment will be as near to perfection as possible, hence this method is to be preferred in all cases. Alignment by other methods is oftentimes an approximation unless extreme care is taken and a good deal of time expended.

The necessity for alignment and direction of required change may be tested with the Tuning Wand. Its use is as follows:—

The Tuning Wand, which consists of a bakelite rod having a small brass cylinder installed at one end and a core of finely divided iron at the other, may be inserted into a tuned coil to obtain an indication of the tuning. With a signal being supplied to the receiver at the particular frequency of the circuit concerned, each end of the Wand should be placed through the center of the coil. Holes are provided in the coil shields for this test. A change in tuning will be produced by the presence of the brass cylinder or iron core and consequent change of receiver output occur. If there is a decrease of output when either of the two ends are inserted, the tuning is correct and will require no adjustment. However, should there be an increase of output due to the iron core and decrease with the brass cylinder, an increase in inductance or capacitance is indicated as necessary to bring the circuit into line. The trimmer involved should therefore be increased accordingly. If the brass cylinder end causes an increase in output, while the iron end causes a decrease, reduction of inductance will be necessary to bring the circuit into alignment. This will be equivalent to decreasing the trimmer concerned.

I-F TRIMMER ADJUSTMENT

Six trimmers are associated with the three i-f transformers. Their locations on the chassis are shown by Figure 8. Each must be aligned to a basic frequency of **460 kc.** The last i-f transformer should be adjusted first, the one preceding it second and the operation carried through successive stages until the first transformer has been aligned. For such a process, it is necessary to feed the output of the Full Range Oscillator to the stages in their order of alignment, adjusting the trimmers of each and observing the effect at the second detector output on the Cathode-Ray Oscillograph. The most convenient point for connection of the Oscillograph is at the control grid of the Type-6C5 first audio tube, with the vertical "Hi" input terminal attached to the grid connection and the "Gnd" to the chassis. The "Ext. Sync" terminals of the Oscillograph should be connected to the Frequency Modulator as illustrated in Figure 7. A .001 mfd. capacitor installed in series with the Oscillator "Ant." output lead will prevent the voltage constants of the stage being aligned from becoming upset.

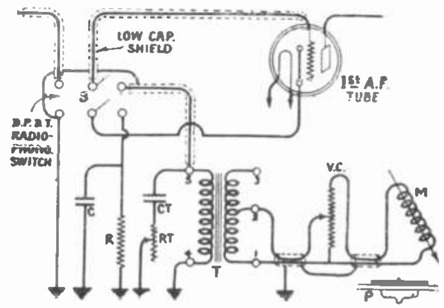


FIG. 10. General Phonograph Connections

ANTENNA, DETECTOR AND OSCILLATOR

For Bands A and X, adjustments must be made at the high and low frequency ends of the range. On Bands B and C, alignment is required only at the high frequency end. Band D is permanently adjusted during manufacture, hence no alignment will be necessary in this range. Locations of the various antenna, detector and oscillator trimmers are shown on Figure 8. The test Oscillator should be removed from connection with

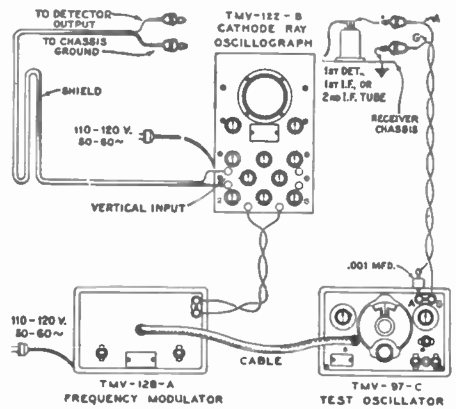


FIG. 7 Alignment Apparatus Connections

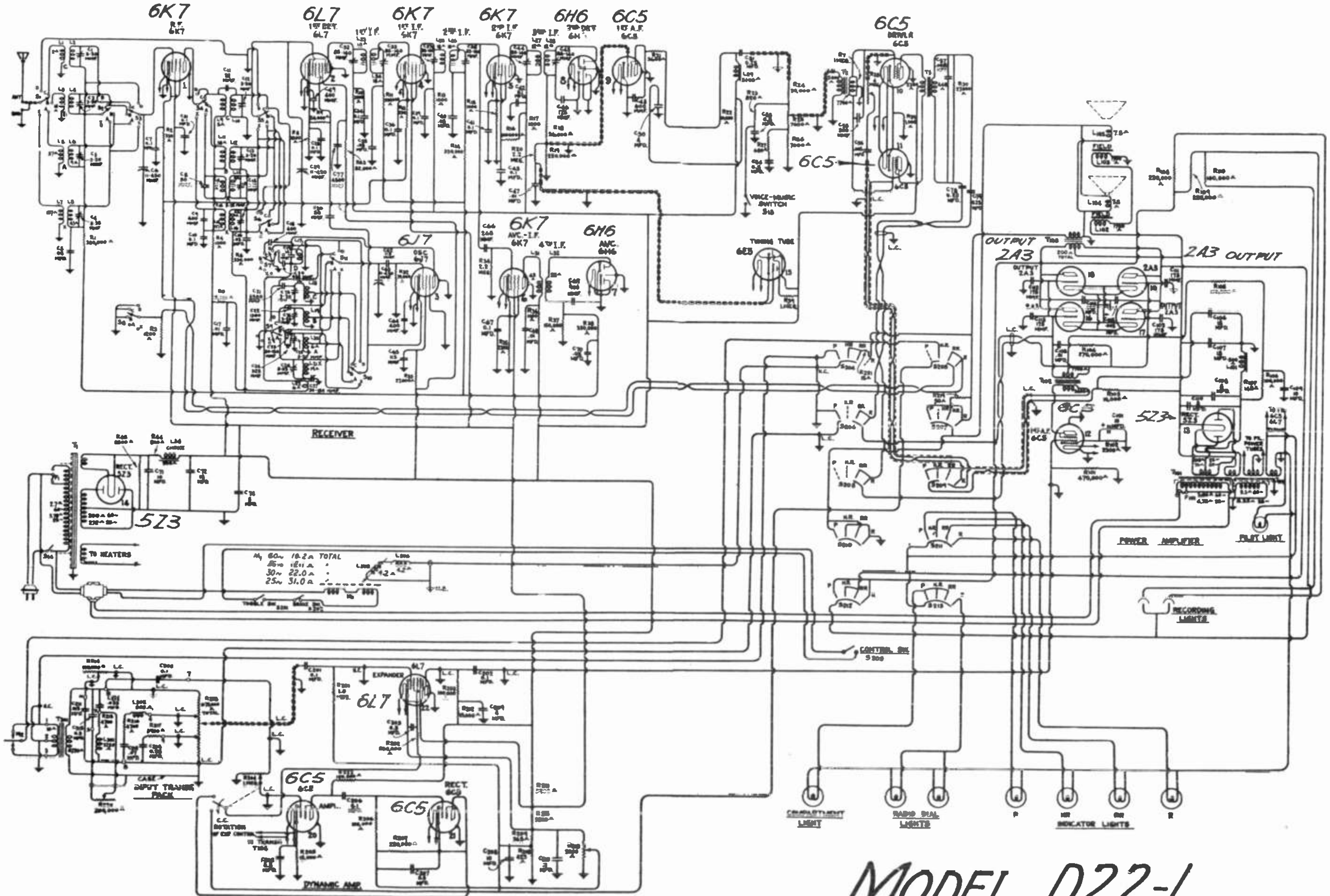
the i-f system and its output attached to the antenna-ground terminals of the receiver. No changes are to be made in the attachment of the Oscillograph at the second detector. During the adjustments, the Oscillator output should be regulated as often as is necessary to keep the oscillographic image as low as is practically observable. Such procedure will obviate apparent broadness of tuning which would result from a.v.c. action on a stronger signal. The sequence of alignment should be Band A, Band X, Band B and Band C.

COURTESY-R.C.A.

VICTOR-33

DATA SHEET

World Radio History



COURTESY-R.C.A. VICTOR-34

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DATA SHEET

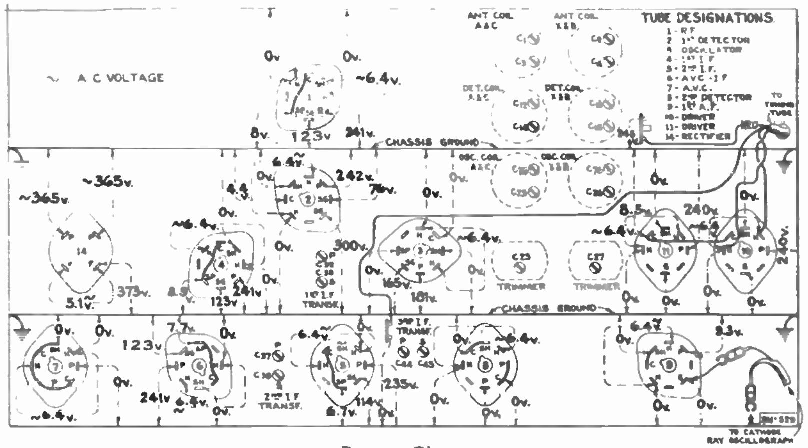
MODEL. D22-1

1935-36

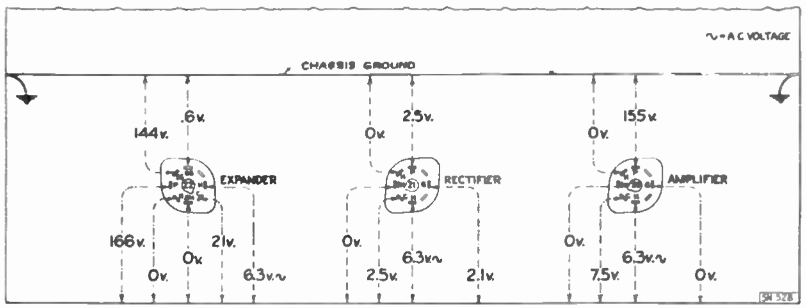
I.F. = 460 K.C.

NOTE- ALIGNMENT INSTRUCTIONS, TUBE LAYOUT, ETC. ON DATA SHEET -35

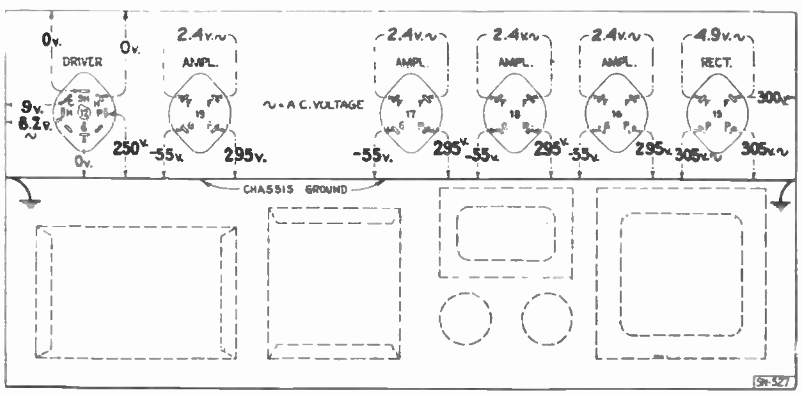
World Radio History



Receiver Chassis



Dynamic Amplifier



Power Amplifier

Radiotron Socket Voltages
Measured at 115 volts, 60 cycle supply—No signal being received

ALIGNMENT INSTRUCTIONS ETC.

MODEL D22-1
(OUTPUT METER METHOD)

I-F Adjustments—Connect the output of the test Oscillator from the Type 6L7 first detector control-grid to chassis-ground and adjust its frequency to 460 kc. Tune the receiver to Band "A", setting the station selector at a point where no interference is received from local stations or the local oscillator. Then tune the i-f trimmers C-45, C-44, C-38, C-37, C-33, and C-32 in order, each for maximum indicated receiver output.

R-F Adjustments—Connect the Oscillator output to the antenna-ground terminals of the receiver. Keep the output indicator attached to the receiver output as above. For each adjustment, use the minimum signal which will give a perceptible indication on the glow indicator

Band A

(a) Set the range switch of the receiver to its Band A position and tune the selector to a dial reading of 1720 kc. Tune the Oscillator to this same frequency and adjust trimmers C-25, C-14, and C-3 to produce maximum indicated receiver output.

(b) Shift the Oscillator to 600 kc. and tune the receiver to pick up this signal, disregarding the dial reading at which it is best received. Then adjust trimmer C-23, simultaneously rocking the tuning control backward and forward through the signal, until maximum output is obtained from the combined operations. Repeat the alignment of C-25 as in (a) to correct for any change caused by adjustment of C-23.

Band X

(a) Change the range switch to its Band "X" position. Tune the receiver to read 400 kc. and set the Oscillator to produce this same frequency. Adjust trimmers C-26, C-15, and C-4 to produce maximum receiver output.

(b) Shift the Oscillator frequency to 150 kc. and tune the receiver to pick up this signal, disregarding the dial reading at which it is best received. Then tune the oscillator series trimmer, C-27, simultaneously rocking the tuning control (receiver) backward and forward through the signal, until maximum output results from the combined operations. Repeat the alignment of C-26 as in (a) to correct for any change caused by the adjustment of C-27.

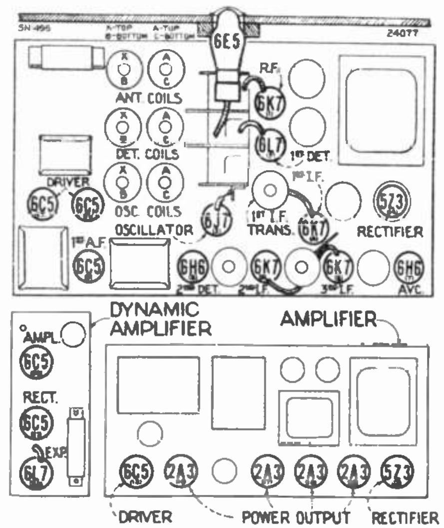
Band B

Place the receiver range switch in its Band "B" position and tune the station selector to a dial reading of 6132 kc. Set the frequency of the Oscillator to 6132 kc. Then adjust trimmer C-76 to give maximum receiver output. Two positions may be found which fulfill this condition. The one of least capacitance is correct. To assure that the right peak has been used, tune the receiver to 5212 kc. and increase the Oscillator output. The "image" of 6132 kc. will be received at this point if C-76 has been adjusted to the proper point of maximum output. *No trimmer adjustments are to be made during this check.* Return the receiver tuning to 6132 kc., readjust C-76 if necessary, and then tune the detector and antenna coil trimmers, C-13 and C-2 to produce maximum (peak) receiver output as indicated on the glow meter.

Band C

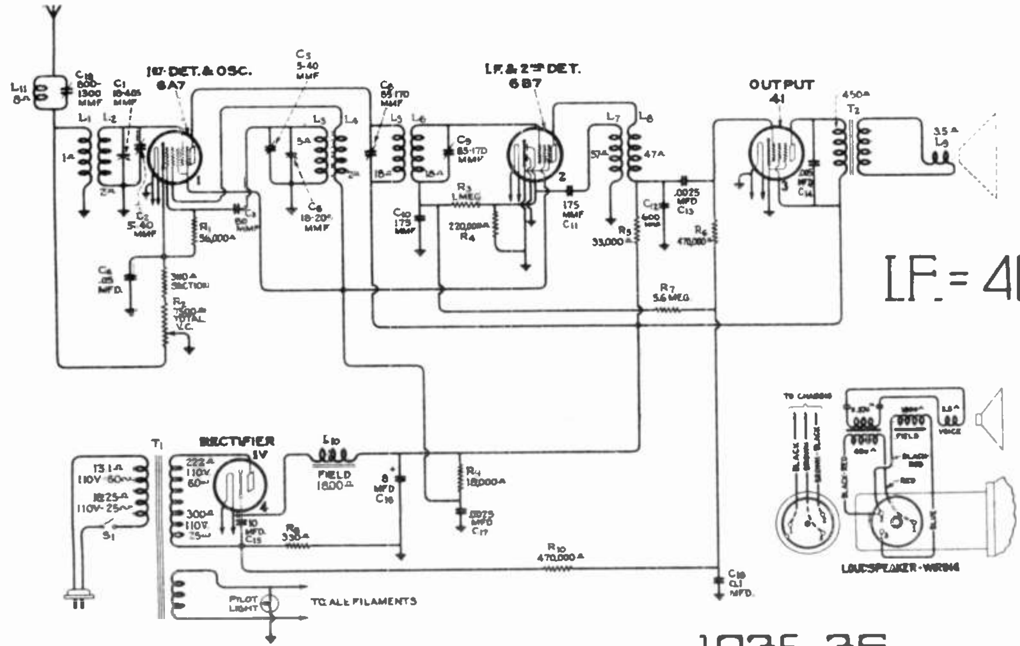
Turn the receiver range switch to its Band "C" position and set the tuning control to a dial reading of 18,000 kc. Tune the Oscillator to this same frequency. Adjust the oscillator parallel trimmer C-75 to produce maximum receiver output. Two positions of the trimmer will be found which fulfill such a condition. The one of least capacitance is correct. To assure that the right position has been used, check for the "image" of the 18,000 kc. signal which will be received at 17,080 kc. on the dial if C-75 is correctly adjusted. An increase in Oscillator output may be necessary. *No trimmer adjustments should be made during this check.* Return the receiver tuning to 18,000 kc., readjust C-75 if necessary, and then tune the detector and antenna trimmers, C-12 and C-1 to give maximum receiver output.

BAND D
NO ADJUSTMENT REQUIRED.

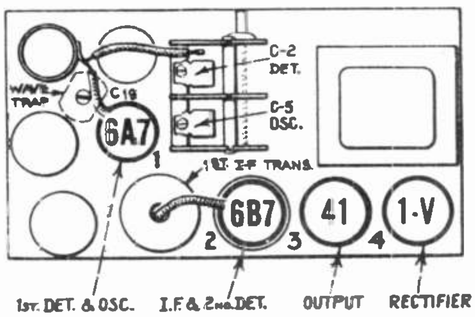


Radiotron and Coil Locations

World Radio History



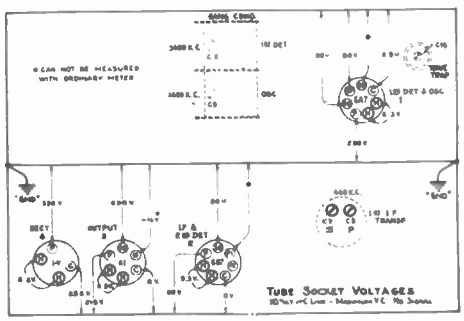
I.F. = 460 K.C.



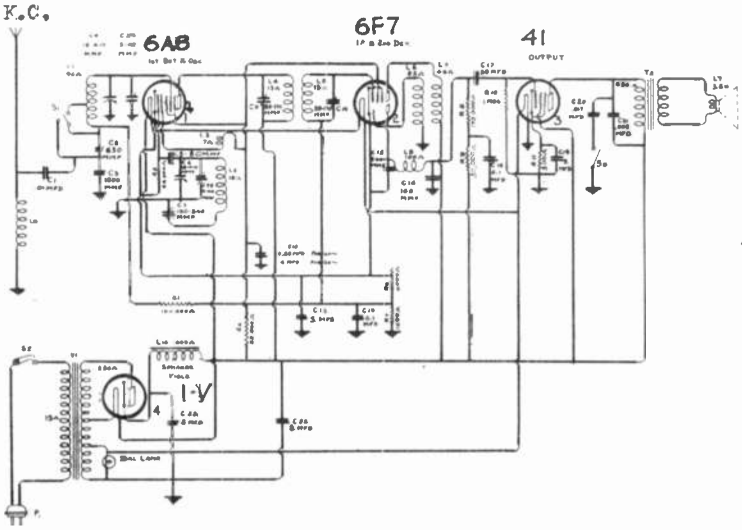
1935-36

MODEL-T4-2

[GENERAL ELECTRIC-A44]



Model T4-2 is similar to Model T4-1 except for several modifications including: re-arrangement of wave-trap circuit, removal of oscillator low frequency trimmer, replacement of the 6F7 and 6A8 tubes with 6B7 and 6A7 respectively, and the re-flexing of the I.F.stage for additional audio amplification. The I.F.remains at 460 K.C. The antenna and oscillator coils are aligned only at 1400 K.C.



1935-36

I.F. = 460 K.C.

MODEL. T4-1

[GENERAL ELECTRIC-A-43]

NOTE —

THE SAME SERVICE INSTRUCTIONS LAYOUT, VOLTAGES, ETC., AS SHOWN ABOVE APPLY TO MODELS T4-1 AND T4-2 ALIKE.

Line-up Adjustments

The detector and oscillator line-up trimmer capacitors are adjusted by setting both the dial and an external oscillator first at 1400 K. C. and adjusting the tuning capacitor trimmer capacitors for maximum output, then changing the oscillator frequency and dial setting to 600 K. C. and adjusting the submounted trimmer capacitor for maximum output. The I. F. adjustments are made by adjusting the two trimmer capacitors located on the first I. F. transformer for maximum output when a 460 K. C. signal is connected between the control grid of the first detector and ground. Be sure and set the station selector at a point where no signal is being received when making I. F. adjustments.

World Radio History

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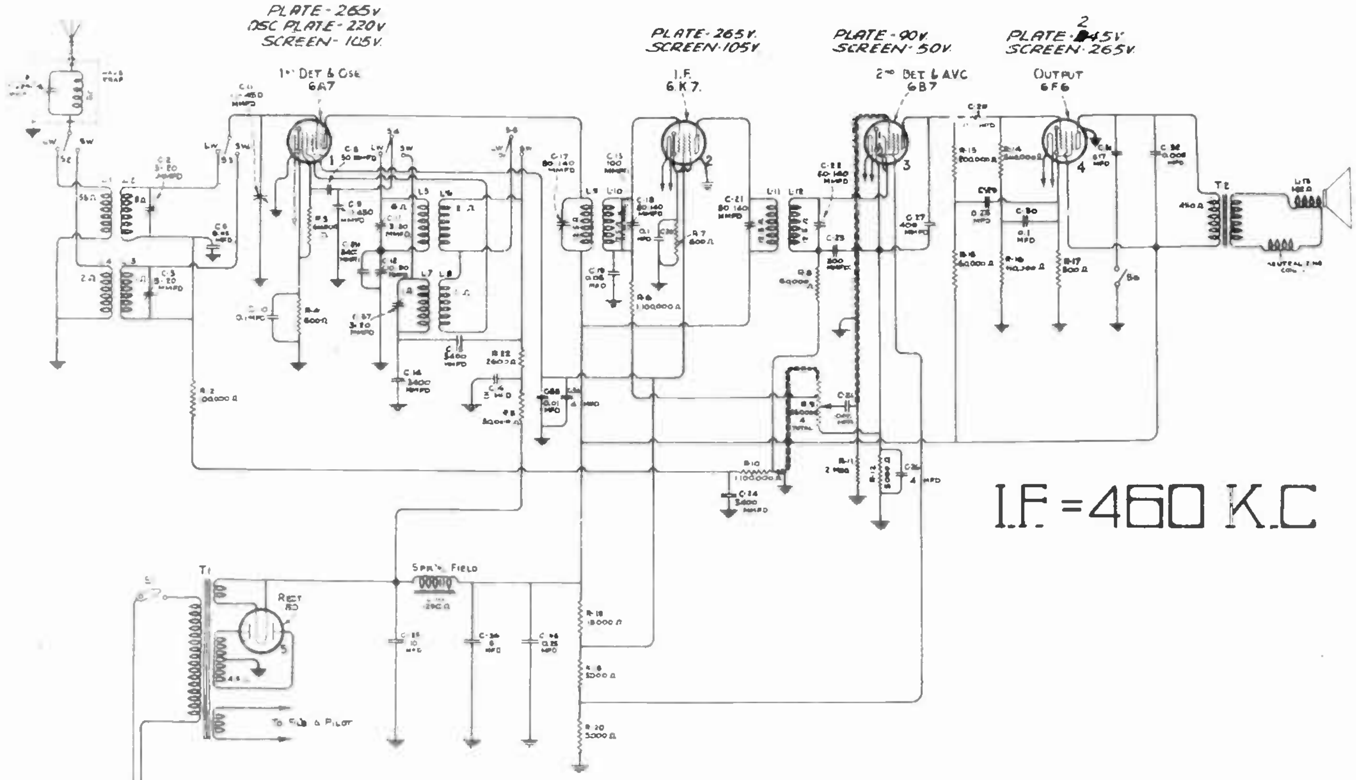


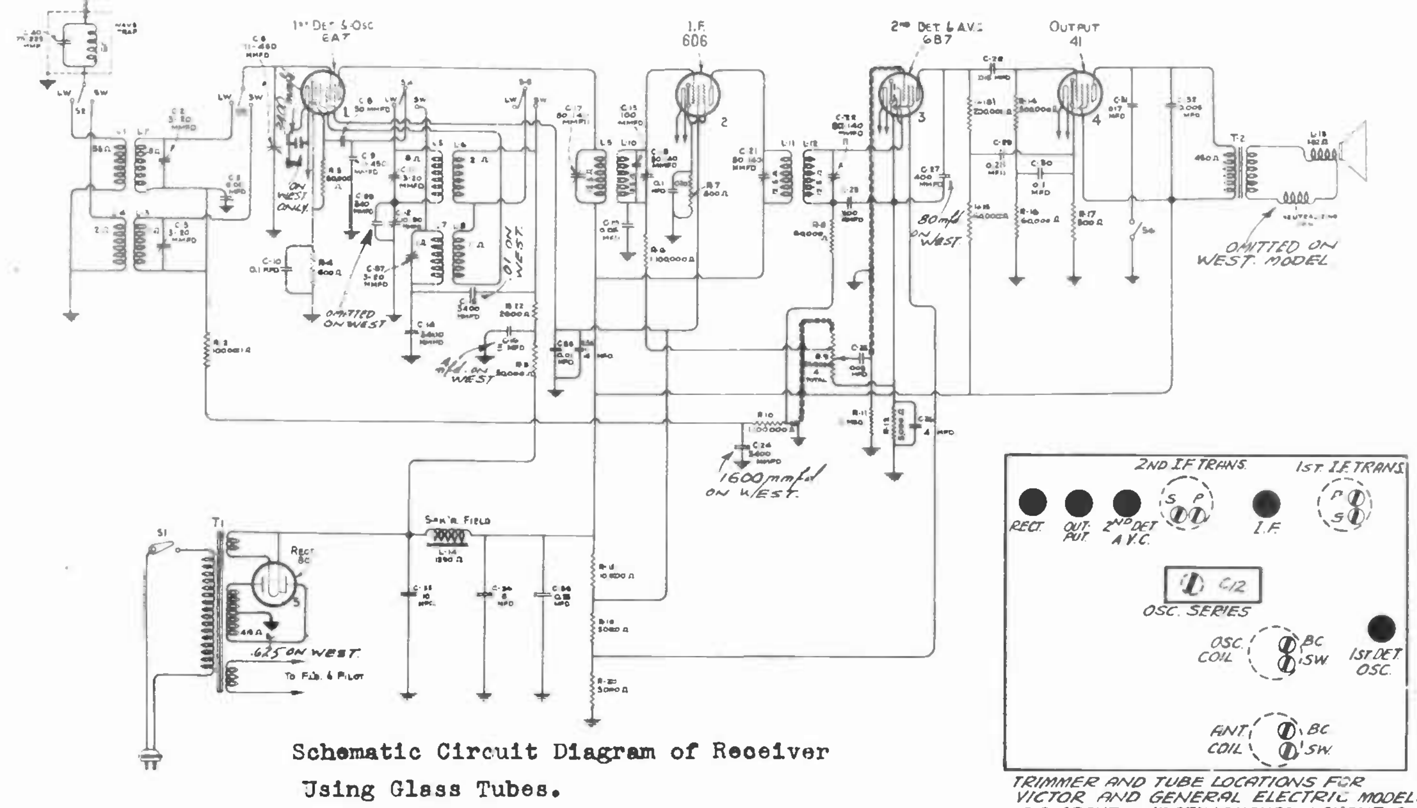
Schematic Circuit Diagram of Receiver Using Metal Tubes.

1935-36

MODELS T5-2 AND C5-2

[GENERAL ELECTRIC A-54 AND A-58]

NOTE– WESTINGHOUSE 155A AND 155X SAME AS CIRCUIT BELOW OMITTING WAVE TRAP



Schematic Circuit Diagram of Receiver Using Glass Tubes.

TRIMMER AND TUBE LOCATIONS FOR VICTOR AND GENERAL ELECTRIC MODELS AS ABOVE. WESTINGHOUSE LAYOUT ON DATA SHEET-38

DATA SHEET

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COURTESY-R.C.A.

VICTOR-37

ALIGNMENT INSTR. FOR MODELS. T5-2 AND C5-2. (ALSO GENERAL ELECTRIC MODELS. A-54 AND A-58) (ALSO WESTINGHOUSE 155A AND 155X OMITTING WAVE TRAP.)

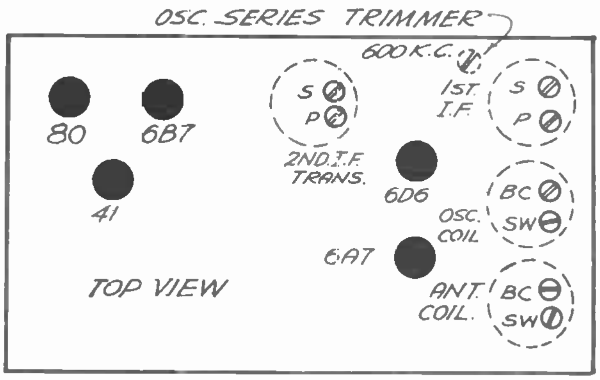
I.F. TUNING ADJUSTMENTS.

Two transformers comprising four tuned circuits are used in the intermediate amplifier. These are tuned to 460 K.C. and the adjustment screws are accessible as shown. Proceeds as follows:

(a) Short-circuit the antenna and ground terminals and tune the receiver so that no signal is heard. Set the volume control at maximum and connect a ground to the ground terminal.

(b) Connect the test oscillator output between the first detector control grid and chassis ground. Connect the output meter across the voice coil of the loudspeaker and adjust the oscillator output so that, with the receiver volume control at maximum, a slight deflection is obtained in the output meter.

(c) Adjust the secondary and primary of the first and then the second I.F. transformers



TRIMMER AND TUBE LAYOUT FOR WESTINGHOUSE MODEL 155A AND 155X.

until a maximum deflection is obtained. Keep the oscillator output at a low value so that only a slight deflection is obtained on the output meter at all times. Go over these adjustments a second time, as there is a slight interlocking of adjustments. This completes the I.F. adjustments.

R.F. AND OSCILLATOR ADJUSTMENTS.

The R.F. line-up capacitors are located at the bottom of the coil assemblies instead of their usual position on the gang capacitor. They are all accessible from the bottom of the chassis except the 600 K.C. series capacitor, which is accessible from the top of the chassis.

(a) Connect the output of the oscillator to the antenna and ground terminals of the receiver. Check the position of the indicator pointer when the tuning capacitor plates are fully meshed. It should be coincident with the radial line adjacent to the dial reading of *540. Then set the Test Oscillator at 1720 K.C., the dial indicator at 1720 and the oscillator output so that a slight deflection will be obtained in the output meter when the volume control is at its maximum position.

*530 ON WEST MODEL.

(b) With the Range Switch at the "in" position adjust the two trimmers under the two R.F. coils, designated as BC until a maximum deflection is obtained in the output meter. Then shift the Test Oscillator frequency to 600 K.C. The trimmer capacitor, accessible from the top of the chassis, should now be adjusted for maximum output while rocking the main tuning capacitor back and forth through the signal. Then repeat the 1720 K.C. adjustment.

(c) Now place the Range Switch at the "out" position, shift the Test Oscillator to 18,000 K.C. and set the dial at 18M. Adjust the two trimmer capacitors designated as SW for maximum output, beginning with the oscillator trimmer. It will be noted that the oscillator and first detector trimmers will have two positions at which the signal will give maximum output. The position which uses the lower trimmer capacitance, obtained by turning the screw counter-clockwise, is the proper adjustment for the oscillator, while the position that uses a higher capacitance is correct for the detector. The detector trimmer MUST be adjusted for maximum output while rocking the main tuning capacitor back and forth through the signal. Both of these adjustments must be made as indicated irrespective of output.

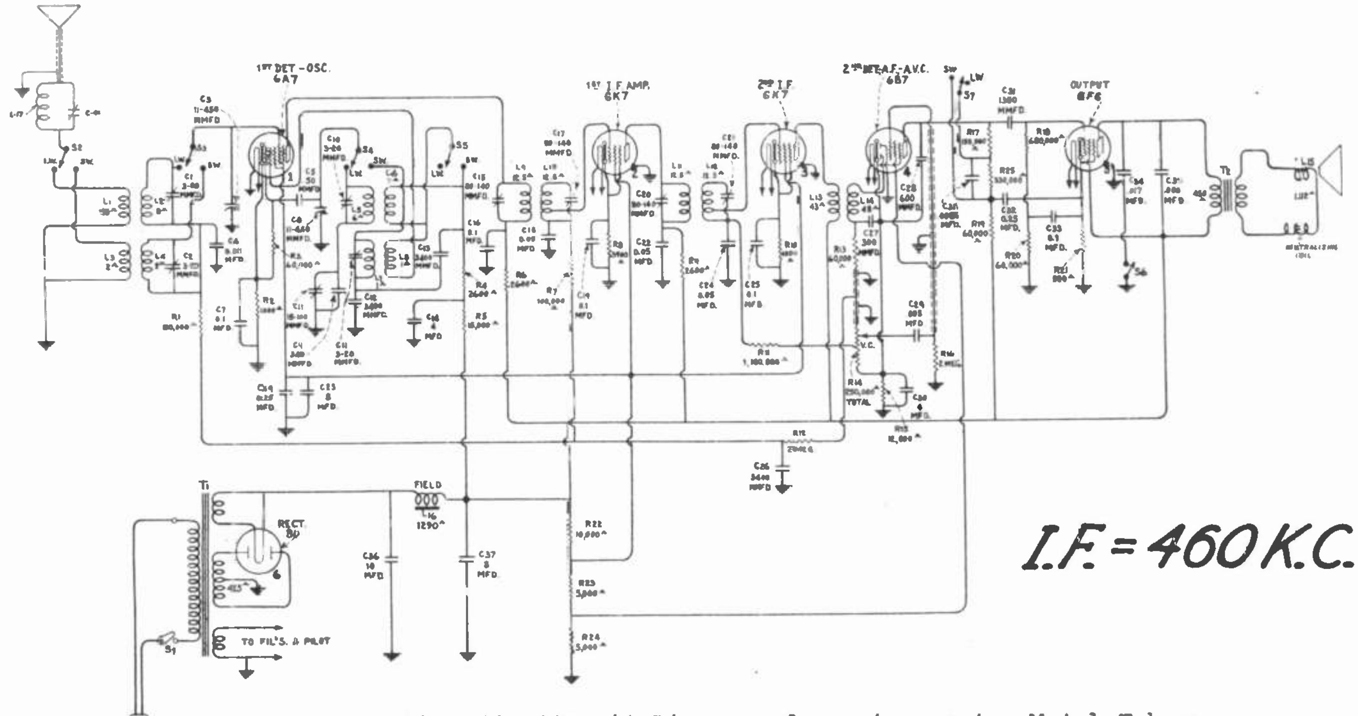
The important points to remember are the need for using the minimum oscillator output to obtain a deflection in the output meter with the volume control at its maximum position and the manner of obtaining the proper high frequency oscillator and detector adjustments.

WAVE TRAP ADJUSTMENT: VICTOR & G.E. ONLY

To eliminate code interference in localities near high powered radio telegraph stations operating at frequencies in the vicinity of 460 K.C., a wave trap consisting of a parallel resonent circuit is incorporated in these receivers.

With receiver in operation using its normal antenna tune, the station selector to the point at which the intermediate-wave interference is most intense. Then adjust the wave-trap trimmer to the point which cause maximum suppression of the interference.

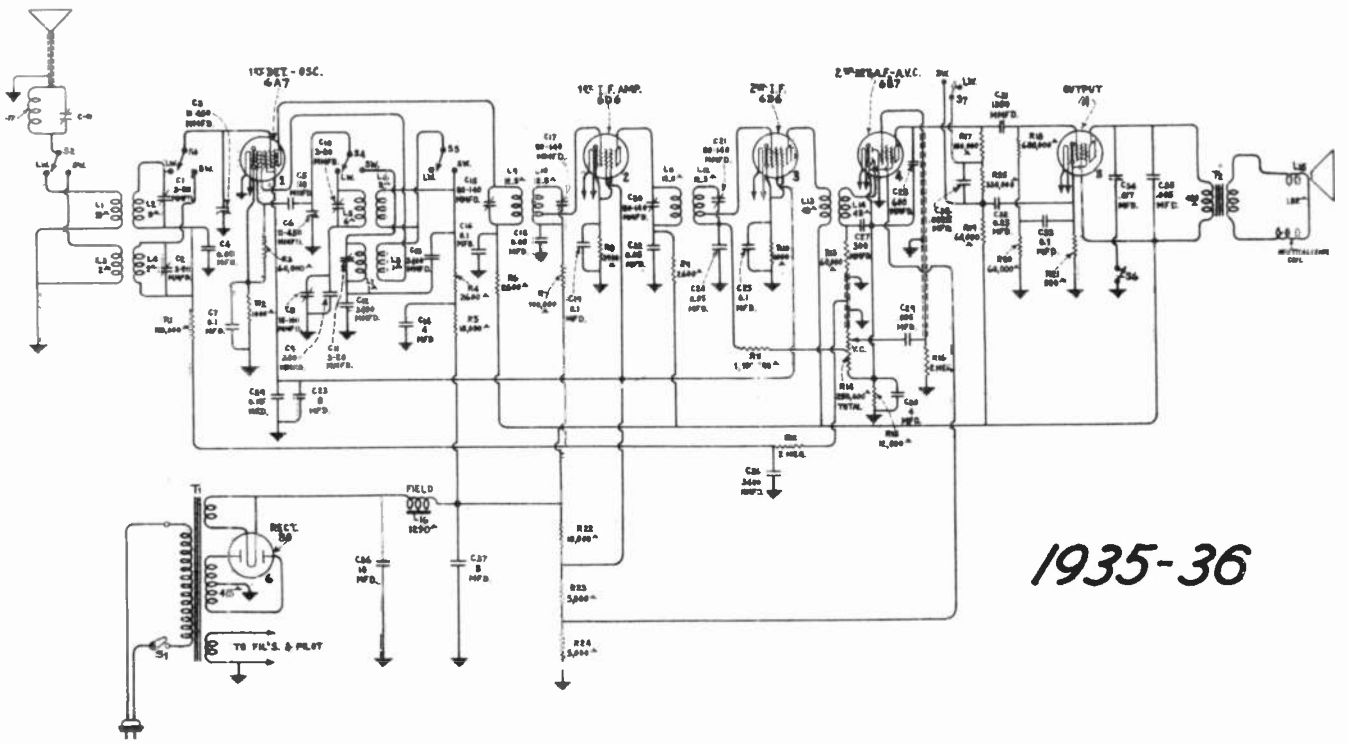
World Radio History



Schematic Circuit Diagram of receiver using Metal Tubes.

MODELS. T6-1 AND C6-1
(GENERAL ELECTRIC. A-63 AND A-68)

ALIGNMENT INSTRUCTIONS ON DATA SHEET.-40



Schematic Circuit Diagram of receiver using Glass Tubes.

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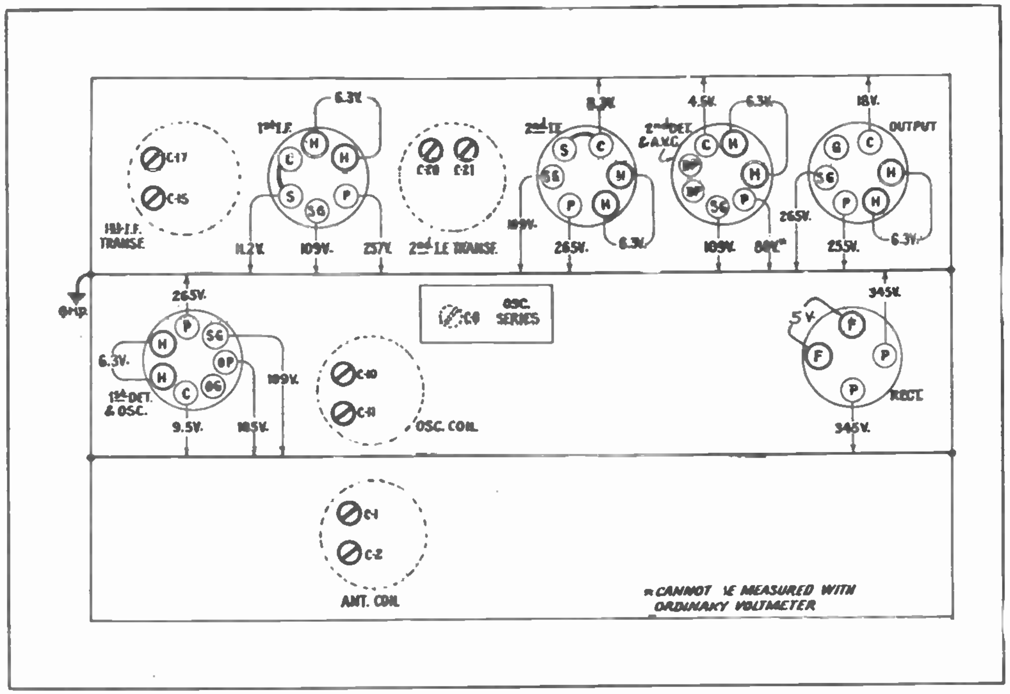
World Radio History

ALIGNMENT INSTRUCTIONS FOR MODELS T6-1 AND C6-1 (GENERAL ELECTRIC A-63 AND A-68)

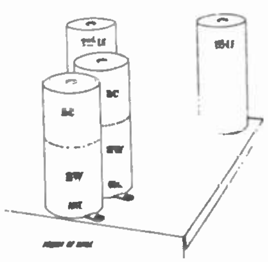


Trimmer Locations and Radiotron Socket Voltages to Ground
(Measured at 115-volt A.C. Supply—Maximum Volume Control—No Signal)

ALIGNMENT.

Preliminary Tests

Before making any adjustments, it is wise to determine the correctness of the existing alignment. This may be done by supplying a signal to the circuit (r-f, oscillator or i-f) from the "Full-Range Oscillator", and inserting the "Tuning Wand" into the coils involved. The "Tuning Wand" consists of a bakelite rod having a brass cylinder attached to one end, and a small core of finely divided iron compacted into the opposite end. By inserting the brass cylinder end into the center of a particular coil, through



Locations of Coils

in tune or resonance with the incoming signal, one end will bring about an increase of the signal, and the other end will cause a decrease.

I-F TUNING ADJUSTMENTS

The four i-f trimmer screws shown on Figure 2 must be tuned to 460 kc., as explained below:-

(a) Short circuit the antenna and ground terminals of the receiver to prevent external signal pick-up. Set the volume control to maximum and attach a good ground connection to the receiver.

(b) Feed the test oscillator output to the control grid of the first-detector. Connect an output indicator to the voice coil circuit. Regulate the oscillator output control so that a slight indication occurs on the indicating instrument.

(c) Adjust the secondary and primary trimmers of the second i-f transformer for maximum (peak) output. Then tune the first i-f transformer in a similar manner. The oscillator output should be maintained at as low a level as will give a good output indication. This will keep the signal from being affected by the a.v.c. action of the receiver. A slight improvement in line-up may be obtained by repeating the above procedure, since there is an interlocking effect between the several tuned circuits.

R-F AND OSCILLATOR ADJUSTMENTS

The trimmer capacitor locations for the r-f and oscillator stages are indicated on Figure 2. There adjustments should be performed as follows:

(a) Attach the oscillator output to the antenna-ground terminals of the receiver.

(b) Check the dial pointer and correct its position if necessary. It should be coincident with the dial marking adjacent to 540 when the gang condenser plates are in full mesh.

(c) With the external oscillator tuned to 1720 kc., and its output adjusted for the critical minimum at full volume control, set the station selector to the 1720 scale marking. Turn the range switch to its right position and adjust the trimmers C10 and C1 on Figure 2 to give maximum (peak) receiver output. Then shift the oscillator frequency to 600 kc., and tune in this signal to the receiver. Adjust the oscillator trimmer, C8, simultaneously rocking the tuning condenser slowly through the signal until the maximum output obtainable results from the two combined operations. The dial calibration should be disregarded for this adjustment. The oscillator trimmer C10 should be retuned at 1720 kc. to correct for any change caused by the 600 kc. adjustment.

(d) Turn the receiver range switch to its left (short-wave) position and set the station selector at the 18 megacycle dial marking. Turn the test oscillator to 18,000 kc. and regulate its output to produce a noticeable indication at the receiver output. Adjust C2 and C11 of the antenna and oscillator coils for maximum receiver output. There will be two positions of the trimmers which give maximum signal. On the oscillator, the position of minimum capacitance is correct; whereas the position of maximum capacitance is proper on the antenna trimmer. The latter should be made while slowly rocking the variable tuning condenser through the signal.

It is important in making the foregoing adjustments to have the receiver operating at maximum sensitivity and using as low an input as will give an accurate output indication. This procedure will obviate the broadness of tuning apparent from the effect of automatic volume control.

WAVE TRAP ADJUSTMENTS

To eliminate code interference in localities near high powered radio telegraph stations operating at frequencies in the vicinity of 460 K.C., a wave trap consisting of a parallel resonant circuit is incorporated in these receivers.

With receiver in operation using its normal antenna, tune the station selector to the point at which the intermediate-wave interference is most intense. Then adjust the wave-trap trimmer to the point which cause maximum suppression of the interference.

COURTESY R.C.A.

VICTOR-40

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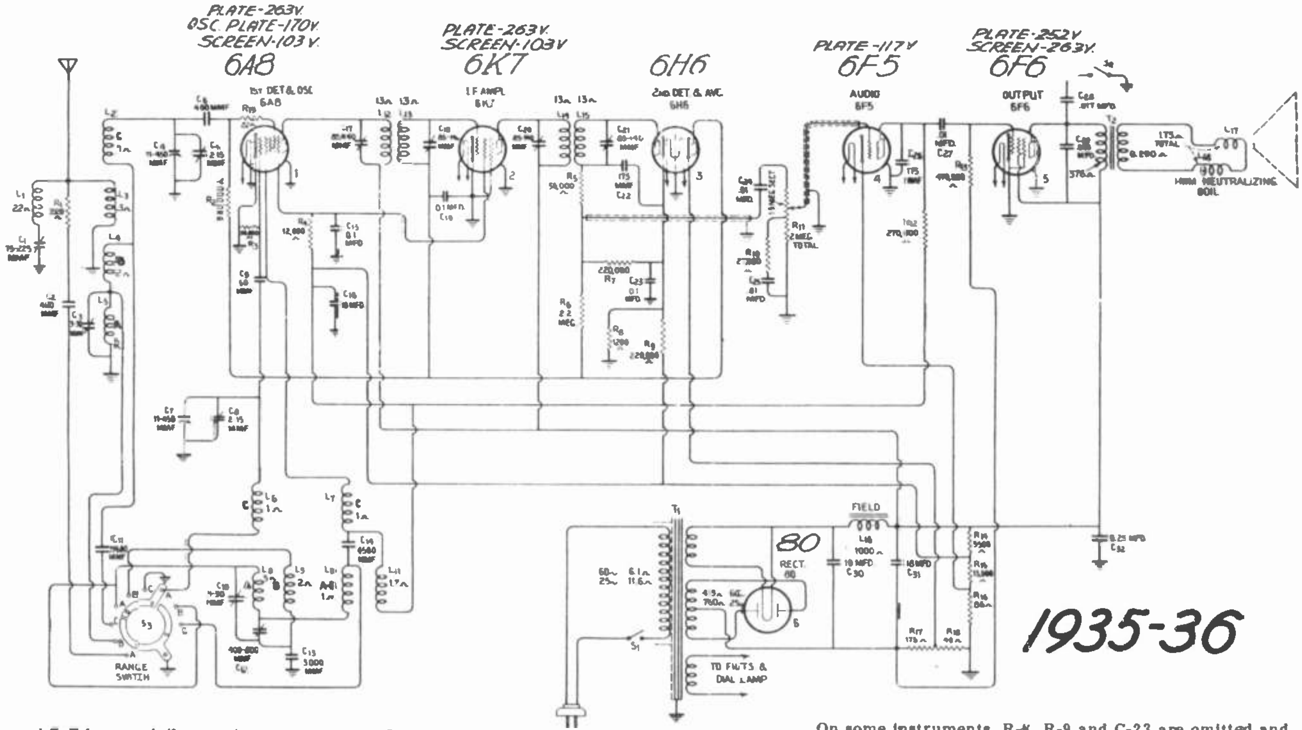
DATA SHEET

World Radio History



1935-36

On some instruments, R-8, R-9 and C-23 are omitted and the Type-6H6 first Cathode is directly grounded.

MODELS. T6-2 AND C6-3 (GENERAL ELECTRIC. A-64 AND A-69)

I.F.=460 K.C.

I-F Trimmer Adjustments Connect the output of the test oscillator between the control grid of the Type-6A8 first detector tube and chassis-ground. Tune the oscillator to 460 kc. Advance the receiver volume control to its full-on position and adjust the receiver tuning control to a point within its range where no interference is encountered either from local broadcast stations or the heterodyne oscillator. Increase the output of the test oscillator until a slight indication is apparent on the output indicator. Then adjust the two trimmers of the second i-f transformer to produce maximum (peak) indicated receiver output. Then, adjust the two trimmers of the first i-f transformer for maximum (peak) receiver output as shown by the indicating device. During these adjustments, regulate the test oscillator output so that the indication is always as low as possible.

R-F Trimmer Adjustments

The two trimmers which are at all times directly in shunt with the variable tuning condenser necessitate that the high-frequency range (Band C) be aligned first. The range selector switch should, therefore, be turned to its Band C position for the first adjustment. The Output Indicator should be left connected to the output system. Attach the output terminals of the test oscillator to the antenna and ground terminals of the receiver input.

Calibrate the dial by rotating the tuning control until the variable condenser plates are in their full mesh (maximum capacity) position and adjusting the dial pointer so that its end points to the *horizontal* graduation (530 kc.) at the low frequency end of the Band A scale.

Proceed further as follows:

(a) Adjust the test oscillator to 18.000 kc. and set the receiver tuning control to a dial reading of 18,000 kc.

(b) Regulate the output of the test oscillator until a slight indication is perceptible at the receiver output. Then adjust the trimmer on the oscillator section of the variable condenser to the point at which it produces maximum indicated receiver output. Two points may be found, each of which produces such a maximum. The one of *maximum trimmer capacitance* is correct and should be used. (The oscillator will be 460 kc. below the signal frequency at this adjustment point.)

(c) Adjust the trimmer of the antenna section of the variable condenser, simultaneously rocking the receiver tuning control backward and forward through the 18,000 kc. input signal, until maximum receiver output results from these combined operations. Rocking of the variable condenser will prevent inaccurate adjustment which would otherwise be caused by the inter-action between the heterodyne oscillator circuit and the antenna tuned circuit.

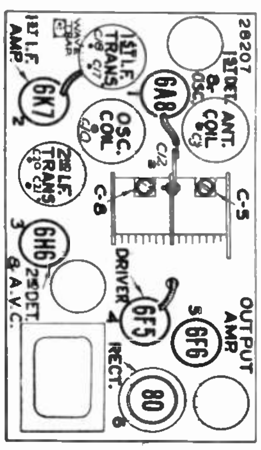
(d) Change the receiver range selector to its Band A position and set the receiver tuning control to a dial reading of 1400 kc. Tune the test oscillator to this same frequency and regulate its output to produce a slight indication on the receiver output indicating device.

(e) Adjust the high frequency trimmers of the Band A oscillator and antenna coils, C-10 and C-3 respectively, to the points at which each produces maximum indicated receiver output.

(f) Shift the test oscillator frequency to 600 kc. and tune the receiver to pick up this signal, disregarding the dial reading at which it is best received.

(g) Tune the low frequency trimmer, C-12, of the oscillator Band A coil, simultaneously rocking the tuning control of the receiver backward and forward through the signal, until maximum indicated receiver output results from these combined operations. The adjustment of C-10 and C-3 should be corrected at 1400 kc. to compensate for any changes caused by the adjustment of the low frequency oscillator coil trimmer.

Radiotron and Coil Locations



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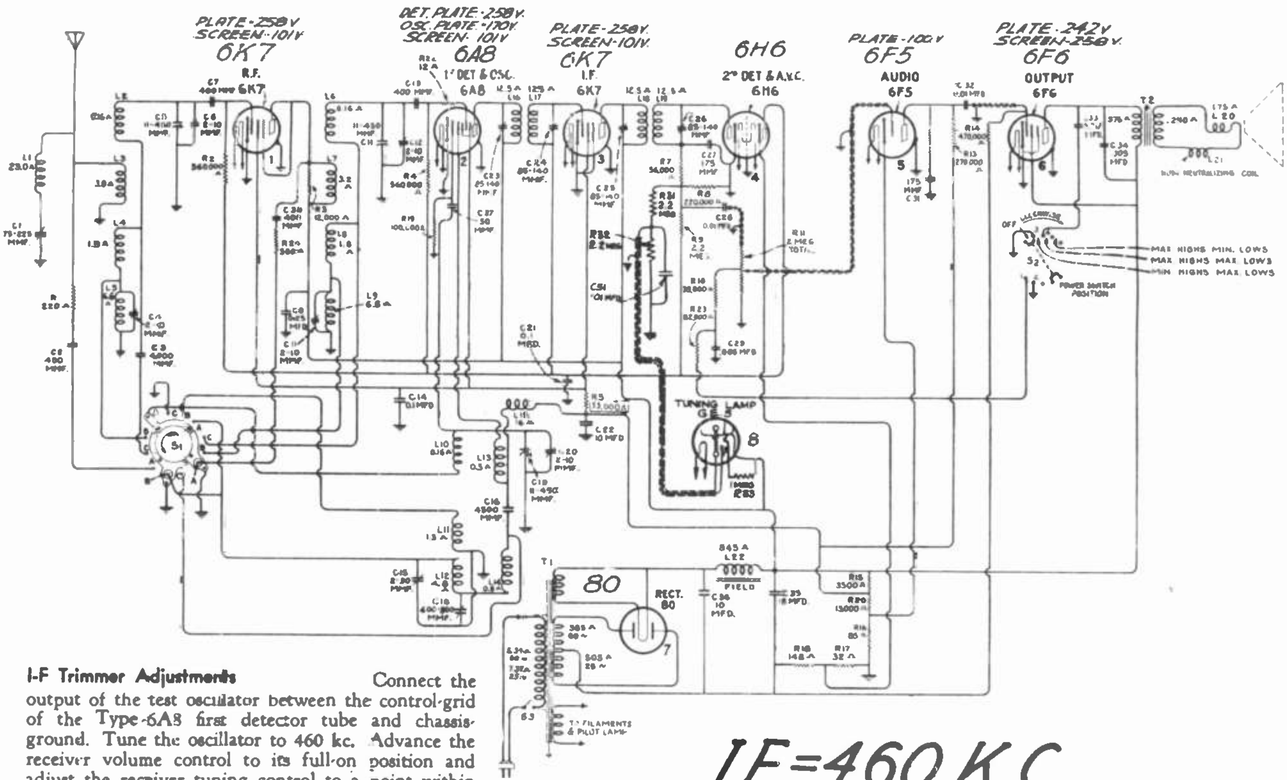
COURTESY- R.C.A. VICTOR-41

World Radio History



I.F.=460 K.C.

I-F Trimmer Adjustments Connect the output of the test oscillator between the control-grid of the Type-6A8 first detector tube and chassis-ground. Tune the oscillator to 460 kc. Advance the receiver volume control to its full-on position and adjust the receiver tuning control to a point within its range where no interference is encountered either from local broadcast stations or the heterodyne oscillator. Increase the output of the test oscillator until a slight indication is apparent on the output indicator. Then adjust the two trimmers, C-25 and C-26, of the second i-f transformer to produce maximum (peak) indicated receiver output. Then, adjust the two trimmers, C-23 and C-24, of the first i-f transformer for maximum (peak) receiver output as shown by the indicating device. During these adjustments, regulate the test oscillator output so that the indication is always as low as possible.

R-F Trimmer Adjustments

The seven trimmers associated with the r-f, first detector, and oscillator tuned circuits have their locations shown by Figure 3. The three trimmers which are at all times directly in shunt with the variable tuning condenser necessitate that the high-frequency range (Band C) be aligned first. The range selector switch should, therefore, be turned to its Band C position for the first adjustment. The Output Indicator should be left connected to the output system. Attach the output terminals of the test oscillator to the antenna and ground terminals of the receiver.

Calibrate the dial by rotating the tuning control until the variable condenser plates are in their full mesh (maximum capacity) position and adjusting the dial pointer so that its end points to the *horizontal* graduation (530 kc.) at the low frequency end of the Band A scale.

Proceed further as follows:

(a) Adjust the test oscillator to 18,000 kc. and set the receiver tuning control to a dial reading of 18,000 kc.

(b) Regulate the output of the test oscillator until a slight indication is perceptible at the receiver output. Then adjust the trimmer, C-20, on the oscillator section of the variable condenser to the point at which it produces maximum indicated receiver output. Two points may be found, each of which produces such a maximum. The one of *maximum trimmer capacitance* is correct and should be used (The oscillator will be 460 kc. below the signal frequency at this adjustment point.)

(c) Adjust the trimmer, C-12, of the detector section of the variable condenser, simultaneously rocking the receiver tuning control backward and forward through the 18,000 kc. input signal, until maximum receiver output results from these combined operations. Rocking of the variable condenser will prevent inaccurate adjustment which would otherwise be caused by the inter-action between the heterodyne oscillator circuit and the detector tuned circuit.

(d) With the receiver tuning control set to 18,000 kc. adjust the trimmer, C-6, on the antenna section of the variable condenser to the point which produces maximum (peak) indicated receiver output.

(e) Change the receiver range selector to its Band A position and set the receiver tuning control to a dial reading of 1,400 kc. Tune the test oscillator to 1,400 kc. and regulate its output to produce a slight indication on the receiver output indicating device.

(f) Adjust the high frequency trimmers of the Band A oscillator, detector, and antenna coils, C-15, C-9, and C-4 respectively, to the points at which each produces maximum indicated receiver output.

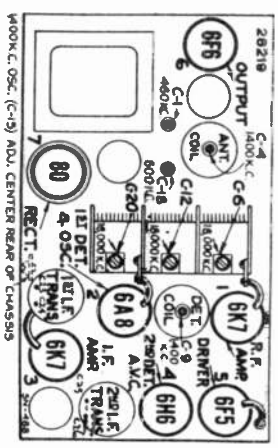
(g) Shift the test oscillator frequency to 600 kc. and tune the receiver to pick up this signal, disregarding the dial reading at which it is best received.

(h) Tune the low frequency trimmer, C-18, of the oscillator Band A coil, simultaneously rocking the tuning control of the receiver backward and forward through the signal, until maximum indicated receiver output results from these combined operations. The adjustment of C-20, C-12, and C-6 should be corrected at 18,000 kc. as in (b), (c), and (d); also C-15, C-9, and C-4 should be corrected at 1,400 kc. as in (f) to compensate for any changes caused by the adjustment of the low frequency oscillator coil trimmer.

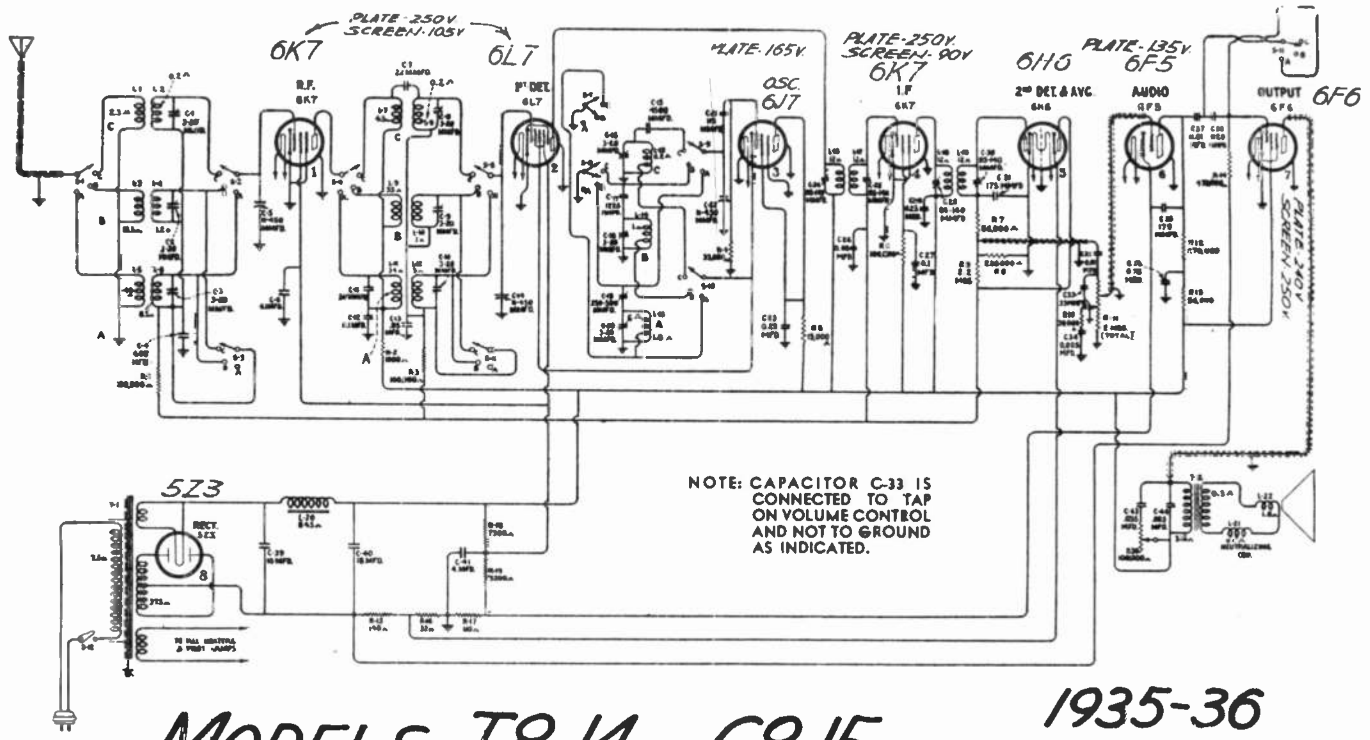
MODELS. T7-1 AND C7-1 (GENERAL ELECTRIC. A-70 AND A-75)

1935-36

Radiotron and Coil Locations

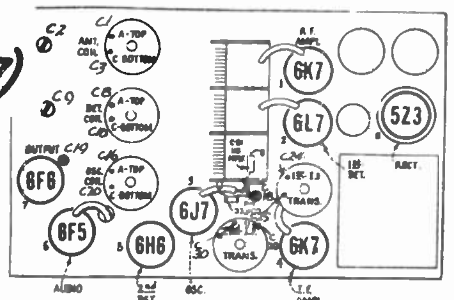


World Radio History



MODELS. T8-14 AND C8-15 (GENERAL ELECTRIC. A-82 AND A-87)

1935-36



TRIMMER, COIL AND TUBE LOCATIONS.

I.F. = 460 K.C.

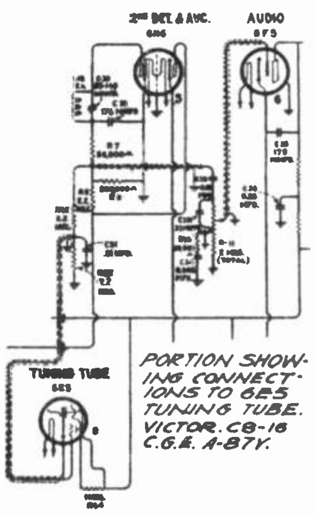
NOTE - MODEL. C8-16 IS THE SAME EXCEPT THAT IT HAS THE 6E5 TUNING TUBE. THE SAME APPLIES TO GENERAL ELECTRIC MODEL. A-87Y.

I-F Alignment

Connect the test Oscillator to the control grid cap of the i-f tube. Advance the volume control of the receiver to its full-on position. Tune the test Oscillator accurately to 460 kc, and align the trimmers C-29 and C-30 to give maximum receiver output. Regulate the Oscillator output during this adjustment so that the output indication is as small as can be conveniently observed. After completing the adjustments of these trimmers, re-connect the Oscillator so that it will feed into the control grid circuit of the Type-6L7 first detector. Then tune the first i-f transformer trimmers C-24 and C-25 for maximum receiver output.

R-F Alignment

After completing the i-f adjustments, it is advisable to correct the line-up of the circuits ahead of the first detector. The test Oscillator should be connected to the antenna-ground terminals of the receiver and the manual volume control kept at its maximum position. For each adjustment the Oscillator output should be maintained as low as possible in order to avoid broadness of tuning which would result from a.v.c. action on a stronger signal. **Band A** should be aligned by supplying a **1720** kc. signal to the receiver, tuning the station selector to a dial reading of **1720** and adjusting the trimmers C-20, C-1C and C-3 to produce maximum receiver output. The Oscillator should then be shifted to **600** kc. and the receiver tuned to resonate this signal, disregarding the reading at which it is best received. Trimmer C-19 must then be adjusted, simultaneously while rocking the station selector backward and forward through the signal until the maximum output results from the combined operations. C-20 should be rechecked to assure that its adjustment has not changed because of the trimming of C-19. **Band B** must be aligned at **6132** kc. by tuning the test Oscillator to such a frequency and turning the station selector to the same dial reading. Tune the trimmer C-18 to produce maximum receiver output, using the setting of least capacitance which causes same. The presence of the proper "image" may be checked by tuning the receiver to **5212** kc. at which point the **6132** kc. signal will be heard if the trimmer C-18 has been properly set to the position of least capacitance for maximum (peak) output. It may be necessary to increase the Oscillator output for this check. *No adjustments are to be made.* Return the station selector to the **6132** kc. dial marking and trim capacitors C-9 and C-2 for maximum receiver output. No other adjustments are necessary on Band B. Change the receiver so that it is operative and the dial reads **18,000** kc. on the "C" Band. Tune the test Oscillator to this same frequency. Then adjust the oscillator trimmer C-16 to produce maximum (peak) output. Two positions of this trimmer will be found which conform with this requirement. The one of least capacitance is correct. Check for the presence of "image" response at **17,080** kc. by shifting the receiver tuning. If it is received at such a point, the trimmer C-16 has been correctly adjusted to the right peak. *No adjustments are to be made during this check.* Tune the receiver back to the **18,000** kc. dial marking, re-adjust C-16 if necessary, and then tune the detector and antenna capacitors C-1 and C-8 for maximum receiver output. No further adjustments are necessary.



PORTION SHOWING CONNECTIONS TO 6E5 TUNING TUBE. VICTOR. C8-16 C.G.E. A-87Y.

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VICTOR-43

Trimmer Locations and Radiotron Socket Voltages to Ground
(Measured at 6.6 volts battery supply—Volume Control Maximum—No Signal)

1935-36

I.F. = 175 K.C.

I. F. ADJUSTMENTS

Three trimmers are provided in the i-f system, two on the first transformer and one on the second transformer.

(a) Tune the "Full Range Oscillator" to 175 kc. and connect its output to the first detector control grid and chassis ground. Tune the station selector to a point where no signals are received.

(b) Tune each of the trimmer capacitors, C17, C14 and C13, in order. C17 should be set for maximum (peak) output. C14 and C13 should be roughly adjusted for maximum

until the dial pointer is at the 1400 kc. scale marking.

(b) Adjust the oscillator trimmer, C-10; the detector trimmer, C7; and the r-f trimmer, C3, for maximum (peak) receiver output.

(c) Set the external oscillator to a frequency of 600 kc. and rotate the station selector until this signal is accurately tuned on the receiver. Adjust the oscillator trimmer C8, simultaneously rocking the tuning condenser slowly through the signal until the maximum obtainable output results from the two combined operations. This adjustment should be made irrespective of dial calibration.

(d) Recheck the adjustment of the 1400 kc. oscillator trimmer, as in (b), to correct any reflective errors caused by the procedure of (c.)

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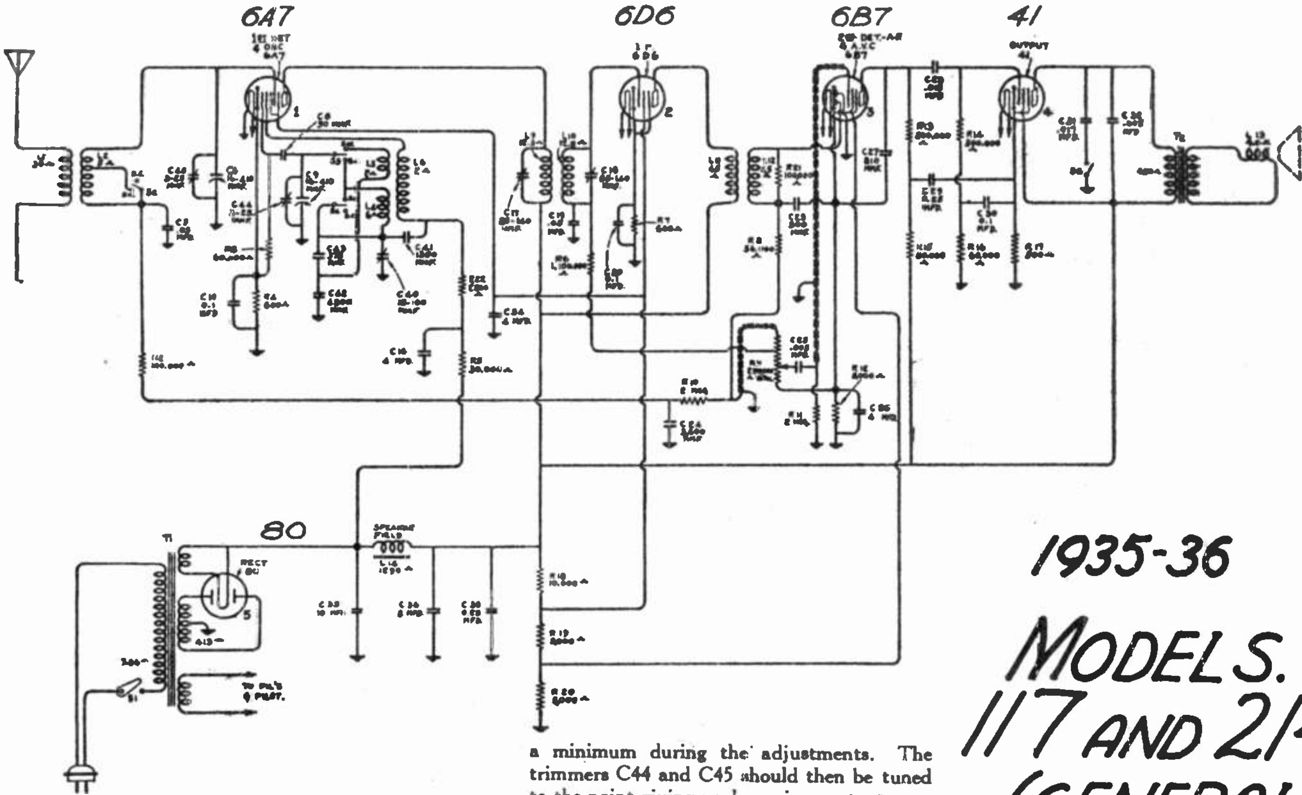
VICTOR-44

World Radio History



1935-36

MODELS. 117 AND 214 (GENERAL ELECTRIC. M-50 AND M-55a)

I-F Tuning Adjustments

(a) Short circuit the antenna and ground terminals and tune the receiver so that no signal is received. Set the volume control to its maximum position. Ground the receiver.

(b) Connect the output of the test oscillator between the first detector control grid and chassis ground. Attach an indicating meter, such as is illustrated on page 2, to the speaker circuit.

(c) Place the external oscillator into operation at 460 kc. Adjust the output so that a slight registration occurs on the output indicator. The output should be set at as low a value as will give a convenient indication during adjustment; this requirement is important in that the a.v.c. action is voided by such a method. Adjust the secondary and primary trimmers (C18 and C17) of the first i-f transformer for maximum receiver output.

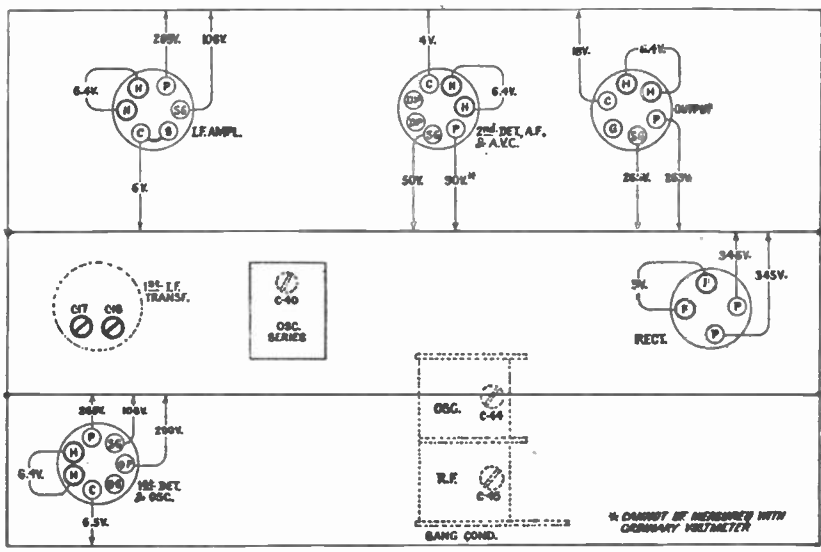
R-F and Oscillator Adjustments

(a) Connect the output of the modulated Full Range Oscillator to the antenna and ground terminals of the receiver. Check the position of the dial pointer. It should set exactly on the radial line, adjacent to the dial reading of 540 when the tuning capacitor plates are at full mesh. After correcting the dial pointer, place the receiver in operation and set the selector at 1720 kc., advance the volume control to maximum and turn the range switch to its broadcast position.

(b) Adjust the frequency of the external oscillator to 1720 kc. and regulate its output until a perceptible indication appears on the output indicator. This indication should be held at a minimum during the adjustments. The trimmers C44 and C45 should then be tuned to the point giving peak receiver output.

(c) Retune the test oscillator, setting its frequency to 600 kc. Turn the receiver selector control to the point where the incoming oscillator signal is received best. *This point will not always be exactly at 600 on the dial.* Then adjust the low-frequency trimmer C40, simultaneously rocking the tuning capacitor slowly through the signal until maximum receiver output results from these combined operations. This adjustment must be made irrespective of dial calibration. It is advisable to repeat the 1720 kc. adjustment of the oscillator trimmer C44 in order to correct for any change caused by the tuning of C40.

I.F. = 460 K.C.



Trimmer Locations and Radiotron Socket Voltages

(Measured at 115 volts line supply—Maximum Volume Control—No Signal)

DATA SHEET

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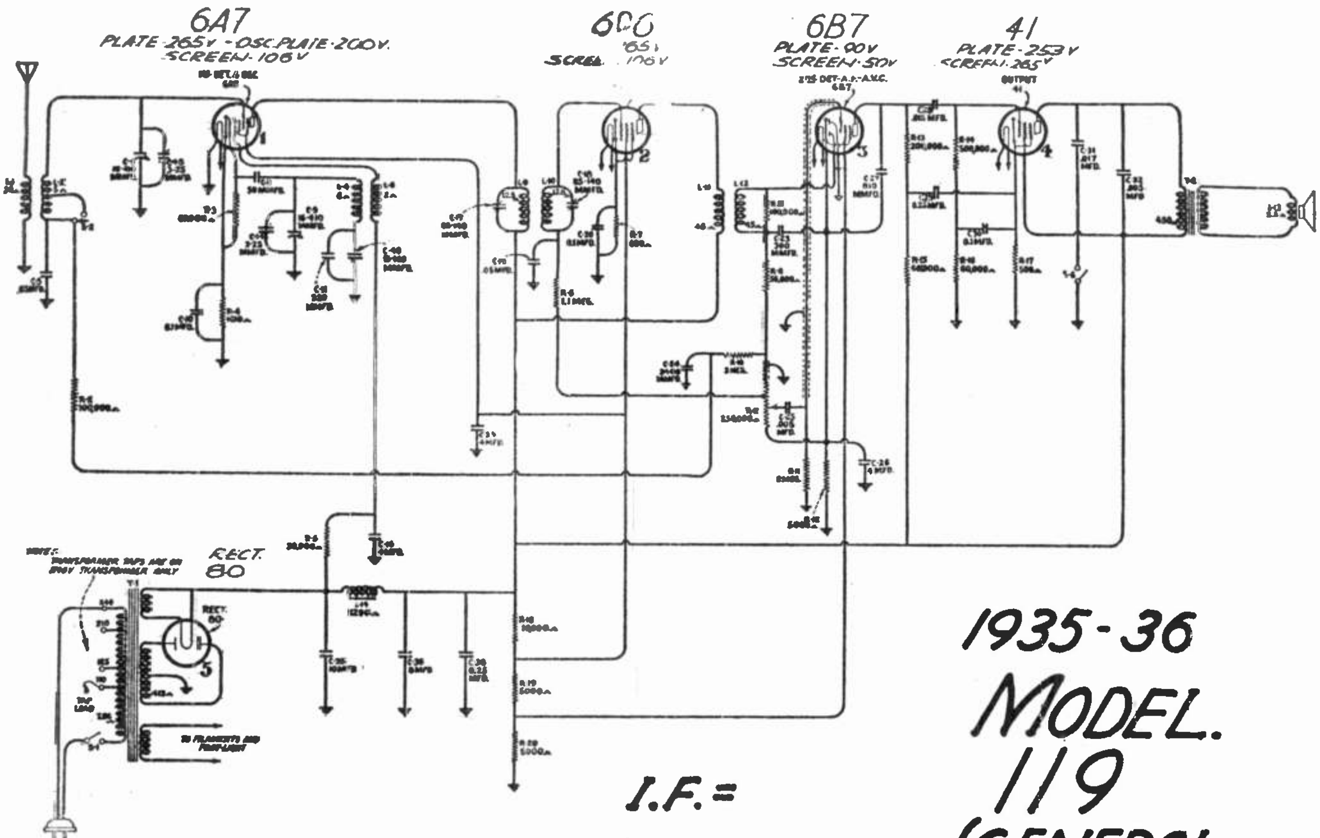
COURTESY-R.C.A.

VICTOR-45

World Radio History



1935-36 MODEL. 119 (GENERAL ELECTRIC.-M-52)

I.F.= 460 K.C.

I-F Tuning Adjustments:

There are two i-f transformers associated in the intermediate amplifier system. The first of these transformers is tuned by accessible trimmers. The second transformer has a natural tuning inherent to its design and does not require adjustment. To obtain the correct alignment proceed as follows:

(a) Short circuit the antenna and ground terminals and tune the receiver so that no signal is received. Set the volume control to its maximum position. Ground the receiver.

(b) Connect the output of the test oscillator between the first detector control grid and chassis ground.

(c) Place the external oscillator into operation at 460 kc. Adjust the output so that a slight registration occurs on the output indicator. The output should be set at as low a value as will give a convenient indication during adjustment; this requirement is important in that the a.v.c. action is voided by such a method. Adjust the secondary and primary trimmers (C18 and C17) of the first i-f transformer for maximum receiver output.

R. F. and Oscillator Adjustments:

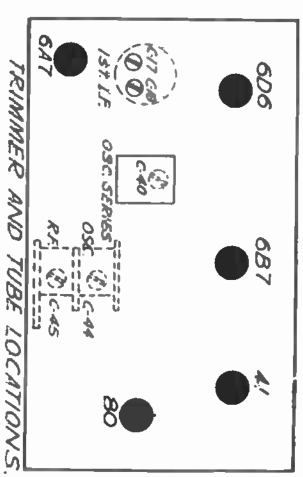
Three trimmers are provided, two for adjustment at 1720 kc. and one for oscillator line-up at 600 kc. No adjustments are required on the short-wave bands. Locations of the trimmers are shown on Figure They should be adjusted in the following manner:

(a) Connect the output of the modulated Full Range Oscillator to the antenna and ground terminals of the receiver. Check the position of the dial pointer. It should set exactly on the radial line, adjacent to the dial reading of 540 when the tuning capacitor plates are at full mesh. After correcting the dial pointer, place the receiver in operation and set the selector at 1720 kc., advance the volume control to maximum and turn the range switch to its broadcast position.

(b) Adjust the frequency of the external oscillator to 1720 kc. and regulate its output until a perceptible indication appears on the output indicator. This indication should be held at a minimum during the adjustments. The trimmers C44 and C45 should then be tuned to the point giving peak receiver output.

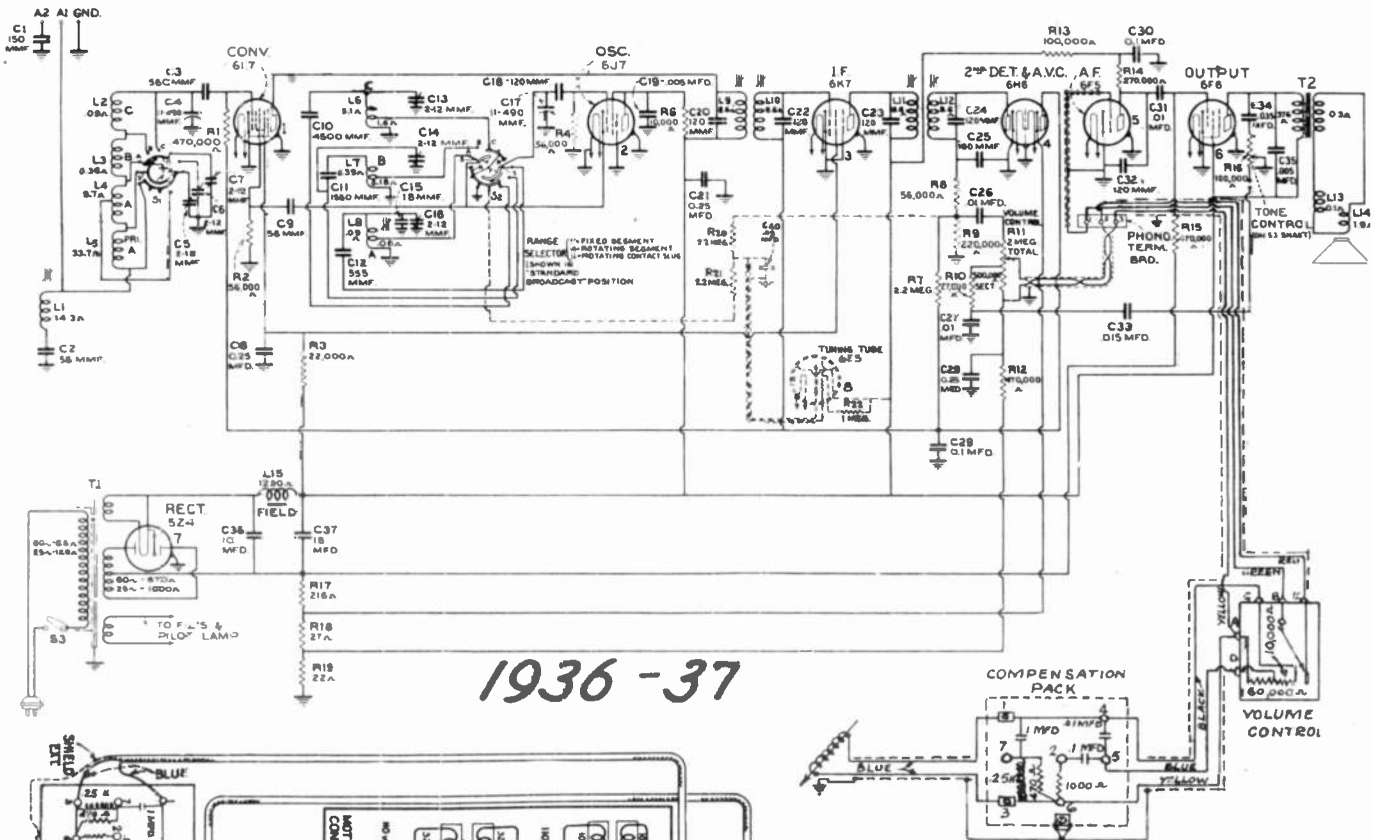
(c) Re-tune the test oscillator, setting its frequency to 600 kc. Turn the receiver selector control to the point where the incoming oscillator signal is received best. *This point will not always be exactly at 600 on the dial.* Then adjust the low-frequency trimmer, C40, simultaneously rocking the tuning capacitor slowly through the signal until maximum receiver output results from these combined operations. This adjustment must be made irrespective of dial calibration. It is advisable to repeat the 1720 kc. adjustment of the oscillator trimmer C44, in order to correct for any change caused by the tuning of C40.

NOTE - THESE ALIGNING INSTR. ETC. ALSO APPLY TO MODELS 117 AND 214 (GENERAL ELECTRIC - MODELS. M-50 AND M-55a. DATA SHEET VICTOR. 45.

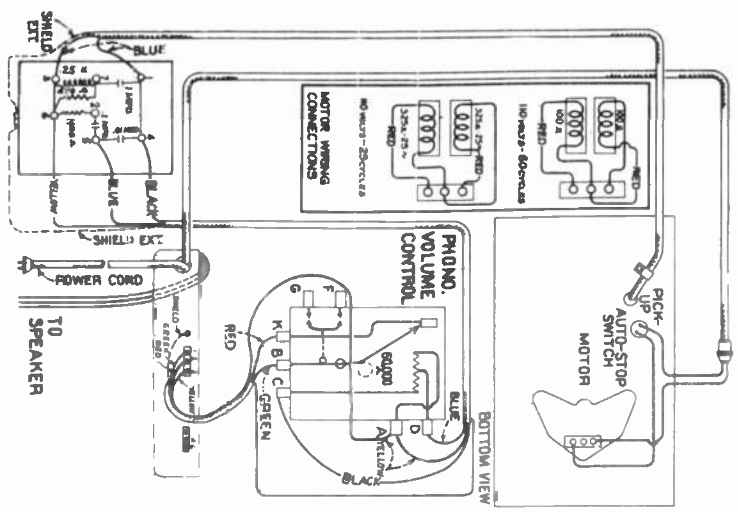


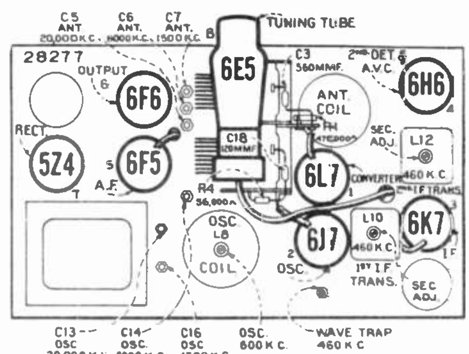
TRIMMER AND TUBE LOCATIONS.

World Radio History



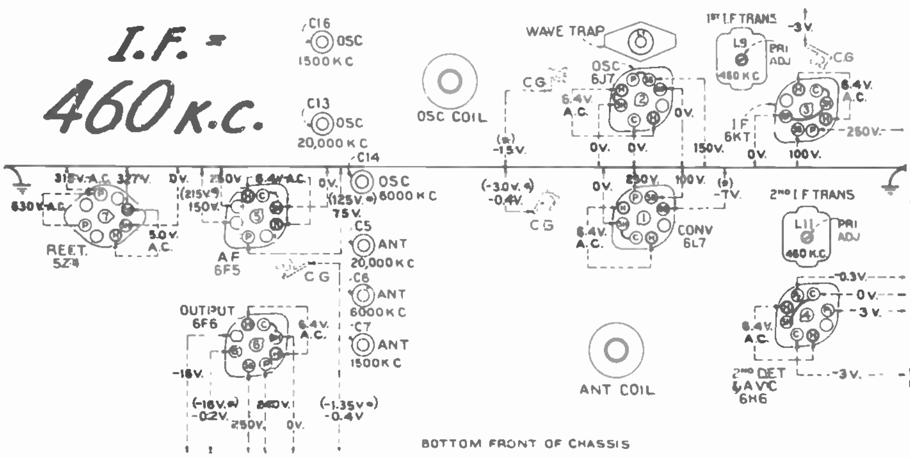
1936 - 37

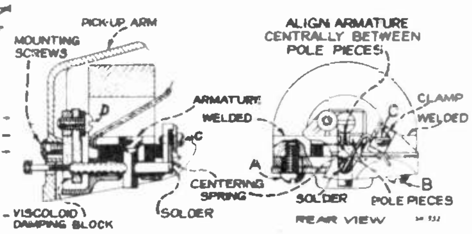




I.F. = 460 K.C.

R.C.A. Victor Model-8U.





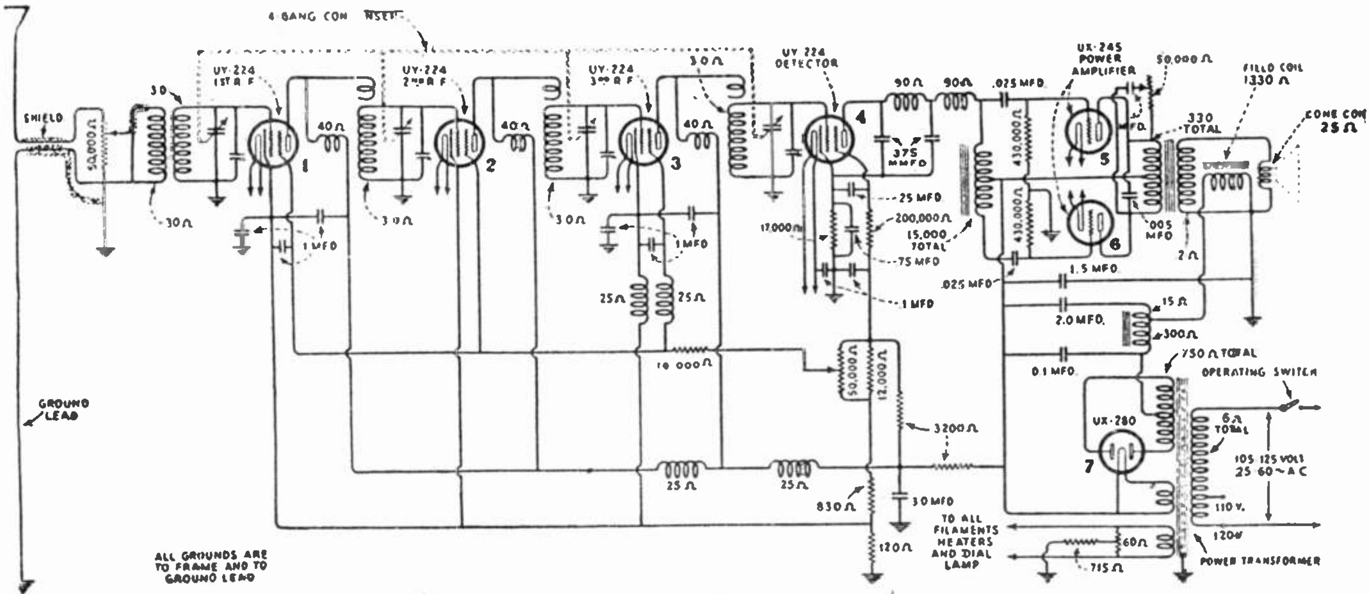
Details of Pickup

DATA SHEET

COURTESY —

R.C.A. VICTOR-47 CO. LTD.

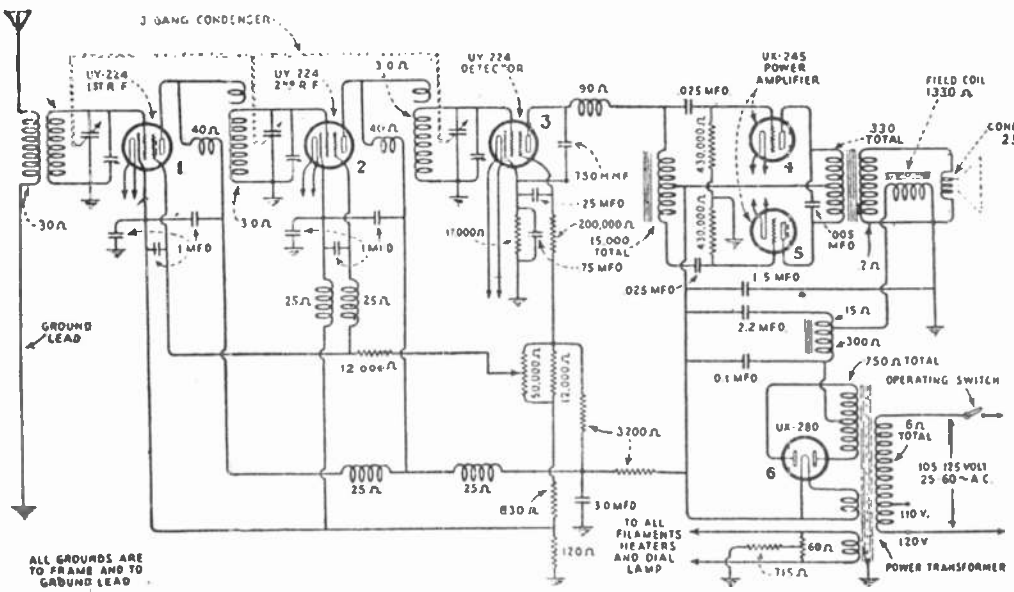
World Radio History



Tube No.	Cathode or Filament to Control Grid-Volts D.C.	Cathode to Screen Grid Volts D.C.	Cathode or Filament to Plate Volts D.C.	Plate Current M.A.	Screen Grid Current M.A.	Heater or Filament Volts
			Volume Control at Maximum			
1	—3.0	+95	180	3.0	0.9	2.3
2	—3.3	+95	180	3.0	0.7	2.3
3	—3.3	+95	180	3.0	0.8	2.3
4	—7.5	+23	210	1.0	0.3	2.3
5	*—6.0	—	210	27.0	—	2.3
6	*—6.0	—	210	27.0	—	2.3

Model 71

1930-31



Model 61

1930-31

Tube No.	Cathode or Filament to Control Grid-Volts D.C.	Cathode to Screen Grid Volts D.C.	Cathode or Filament to Plate Volts D.C.	Plate Current M.A.	Screen Grid Current M.A.	Heater or Filament Volts
			Volume Control at Maximum		—120-VOLT LINE	
1	—3.0	+95	180	3.0	0.9	2.3
2	—3.0	+95	180	3.0	0.8	2.3
3	—4.5	+27	240	0	0	2.3
4	*—6.0	—	210	27.0	—	2.5
5	*—6.0	—	210	27.0	—	2.5

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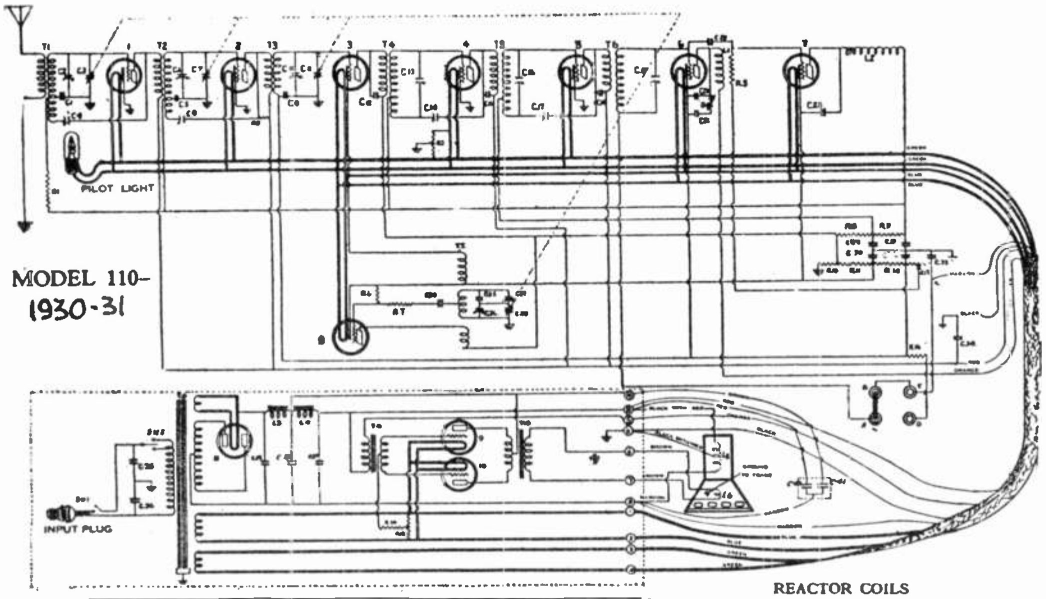
World Radio History

ALSO See DATA SHEET 9.



MODEL 110–
1930-31

KEY TO CIRCUIT DIAGRAM

RESISTORS, COLOUR AND VALUE (OHMS)

R1. Suppressor—Blue with Maroon—7,700.
R2. Stabilizer—Black with Grey—8,570.
R3. Filament Center-tapped Resistor Wire-wound—60.
R4. Variable Tone Control—0-50,000.
R5. Automatic Volume Control Grid Leak—Green with Grey 2,000,000.
R6. Oscillator Grid Leak—Black—40,000.
R7. Oscillator Grid Suppressor—Green and Blue—3,000.
R8. & R9. Automatic Bias Resistors—Red—100,000.
R10. Voltage Divider } Wire-wound—485.
R11 Resistors—mounted } Maroon with Green—8,000.
R12. together. } Wire-wound—395.
R13. Volume Control—1,600.
R14. Grid Bias Resistor—Yellow with Black—740.
R15. Filament Centre-tapped Resistor—Wire-wound—60.
R16. Extra Bias Resistor—Blue with Maroon—7,700.

CONDENSERS

C1-5-9 R.F. By-pass—.1 MFD. WG-44.
C18.-12. I.F. Primary Condenser—800 MMF.
C19. I.F. Tuning Condenser.
C20.-23 I.F. By-pass Condenser—2,500 MMF.
C21. Tone Control .05 MFD. WG-106.
C22. Coupling Condenser 800 MMF.
C24. Oscillator Grid Condenser 720 MMF.
C25. Oscillator Fixed Trimming Condenser 800 MMF
C29. By-pass .5 MFD.
C30. Condensers .5 MFD.
C31. Assembled in 1.0 MFD.
C32. two Containers .5 MFD.
C33. Marked WG-41 1.0 MFD.
C34. .5 MFD.
C35. Line Filter Condenser—Centre Tapped.
C36. .1 MFD. each half. S No. 700739.
C37. Filter 2 MFD.
C38. Condensers 4 MFD.
C39. Assembled with T10 4 MFD.
C40. External Filter 4 MFD.(2 of S No.552844
C41. Condensers 2 MFD.(2 of S No.579651

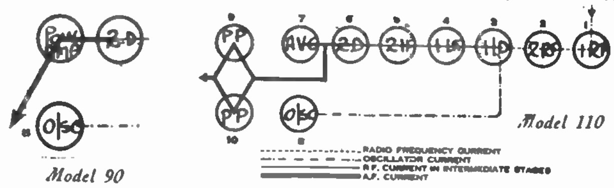
REACTOR COILS

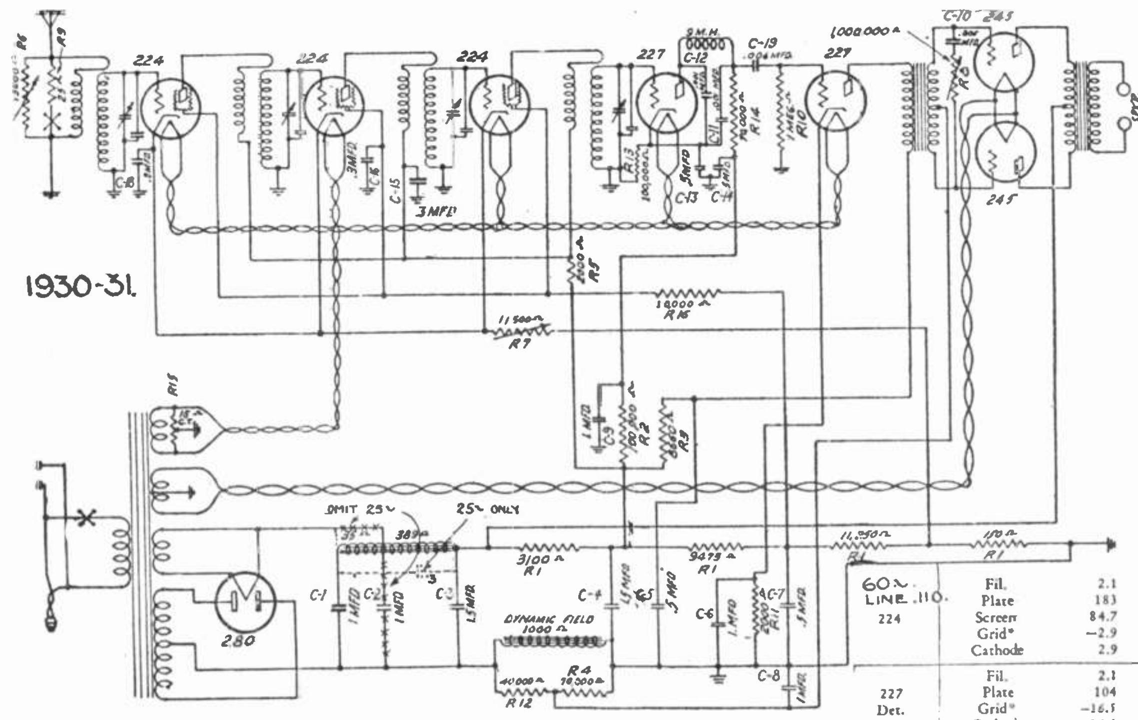
L1. I.F. Choke Coil (large)—85 ohms.
L2. I.F. Choke Coil (small)—35 ohms.
L3.-L4. Filter Reactor—10 henries, 300 ohms.
L5. Reproducer Field Coil—3,250 ohms, each side of tap.
L6. Reproducer Moving Coil—10 ohms.

Tube No.	Grid to Cathode Volts (D.C.)		Plate to Cathode Volts (D.C.)		Plate Current Milliamps. (D.C.)		Filament Volts (D.C.)
1	—0.5*	—4.8*	105	135	4.4	0	2.50
2	—0.6*	—6.0*	105	135	4.4	0	2.50
3	—7.6	—6.2	82	69	1.2	0.8	2.40
4	—0.6*	—6.2*	120	135	4.4	0	2.50
5	—0.6*	—2.4*	120	135	4.4	1.0	2.50
6	—26	—23	207	220	0.4	0.3	2.40
7	—0.1	—0.1	24*	24*	0	0	2.40
8	—0	—0	71	66	7.2	5.8	2.40
9 or 10	—40	—40	205	210	22	24	2.50

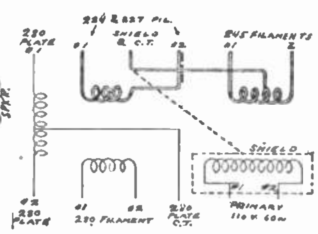
The meter readings tabulated below are approximately the correct figures as read with a Weston 537, 547 or Jewell 199 Set Tester. These tests are made with the set in operating condition with line voltage of 120 volts and the S.P.U. tap switch at 120 volt position. The plate currents may vary appreciably as the capacity of the cable may cause some of the circuits to oscillate. Where two readings are given for a certain position the first reading is taken with the volume control full on and the station selector detuned. The second is taken with the volume control turned completely off. The readings marked with an asterisk are not the actual socket voltages but are the indications given by a voltmeter having 1000 ohms per volt resistance. This is due to the 100,000 and 2,000,000 ohms per volt resistors in the set affecting the scale of the voltmeter.

The grid voltages of the R.F. and I.F. amplifier Radiotrons will also vary a great deal with the volume control adjustment and the strength of the incoming signal.

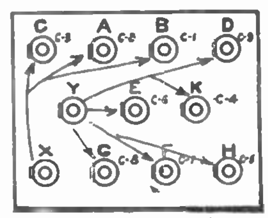




1930-31.



Power Transformer



CODE	Filter Condenser 60 CYCLE	25 CYCLE
A	1.0 MF.C2	
B	1.0 MF.C4	2.5 MF.C1
C	1.5 MF.C3	4. MF.C3
D	1.0 MF.C9	1.0 MF.C9
E	1.0 MF.C6	1.0 MF.C6
F	0.5 MF.C7	0.5 MF.C7
G	1.0 MF.C8	1.5 MF.C8
H	0.5 MF.C5	0.5 MF.C5
K	1.5 MF.C4	2.0 MF.C4
X	COMMON	COMMON
Y	COMMON	COMMON

60~ LINE 110.

Tube		
224	Fil.	2.1
	Plate	183
	Screen	84.7
	Grid*	−2.9
	Cathode	2.9
227 Det.	Fil.	2.1
	Plate	104
	Grid*	−16.5
	Cathode	16.5
227 1st A.F.	Fil.	2.2
	Plate	129
	Cathode	8.9
245 2nd A.F.	Fil.	2.2
	Plate	258
	Grid	47

*NOTE: Grid voltages on the 224 and detector tubes are measured from grid to cathode terminals on the tube socket. The grid voltage on the first audio tube cannot be measured from grid to cathode, but is measured from cathode to ground. The voltages are approximate, and will vary with different tubes.

WESTINGHOUSE MODEL 80

Printed in Canada

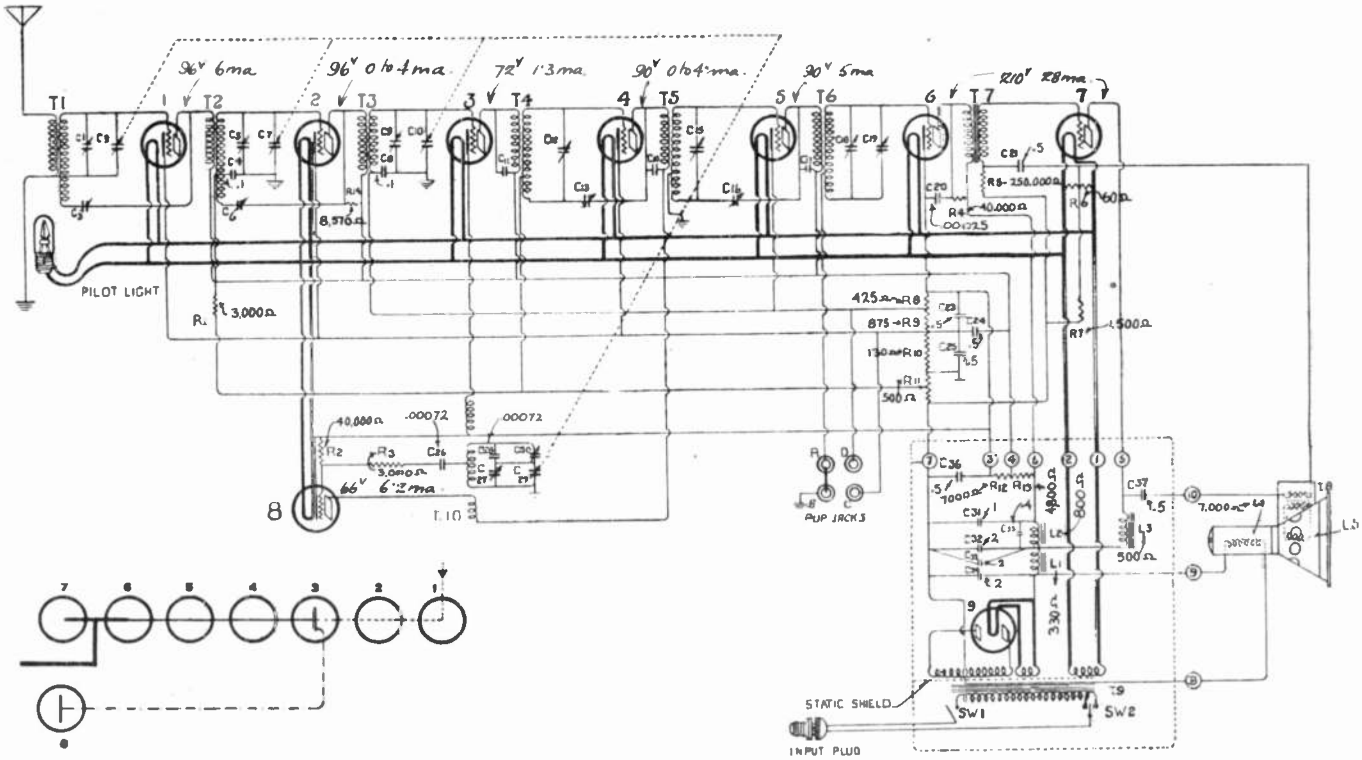
—Courtesy Canadian Westinghouse Co. Ltd.

World Radio History

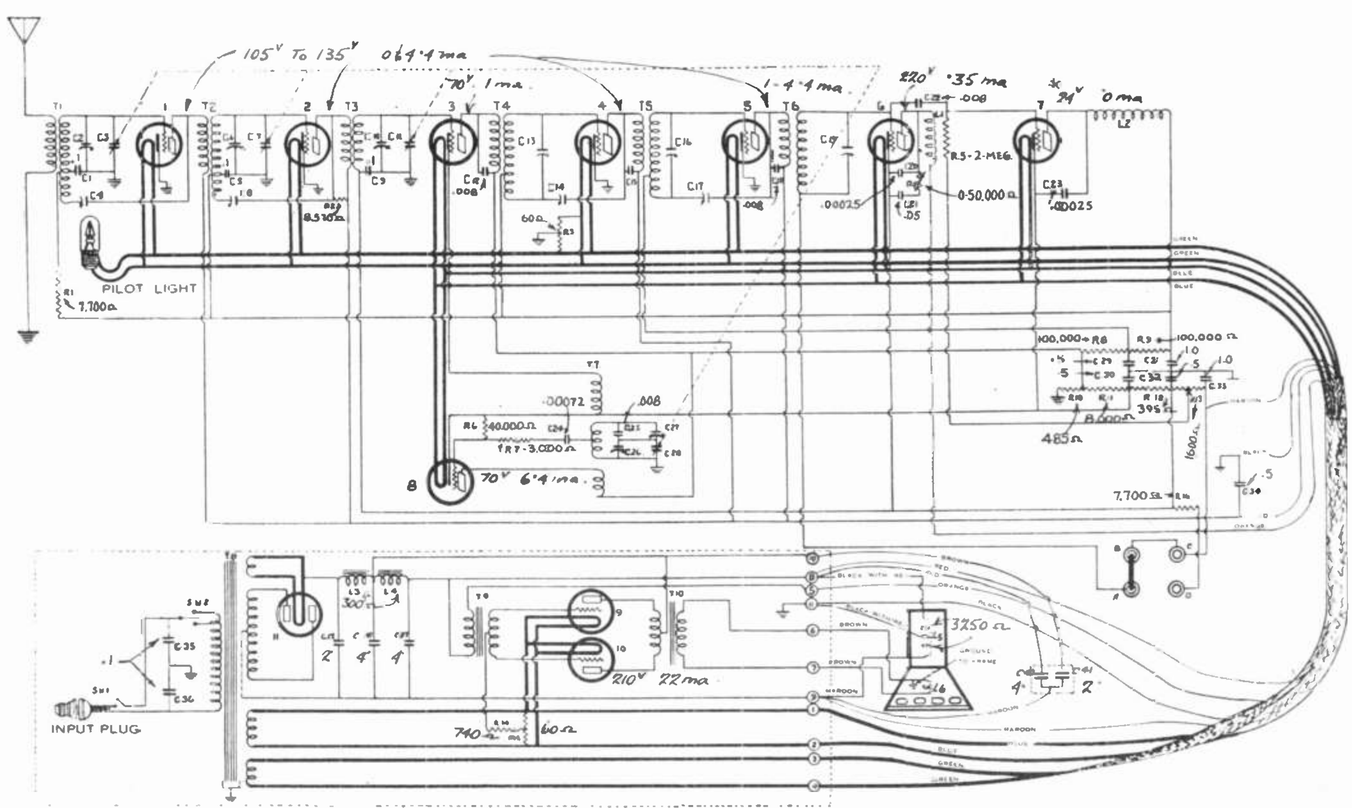
90 1930

SIMILAR CIRCUIT TO 99 AND 99 R
ALSO SEE DATA SHEET 6

I.F. 175·K.C.



110 AND 120 ← PHONO COMB. 1930-31 ALSO SEE DATA SHEET-8



DATA SHEET

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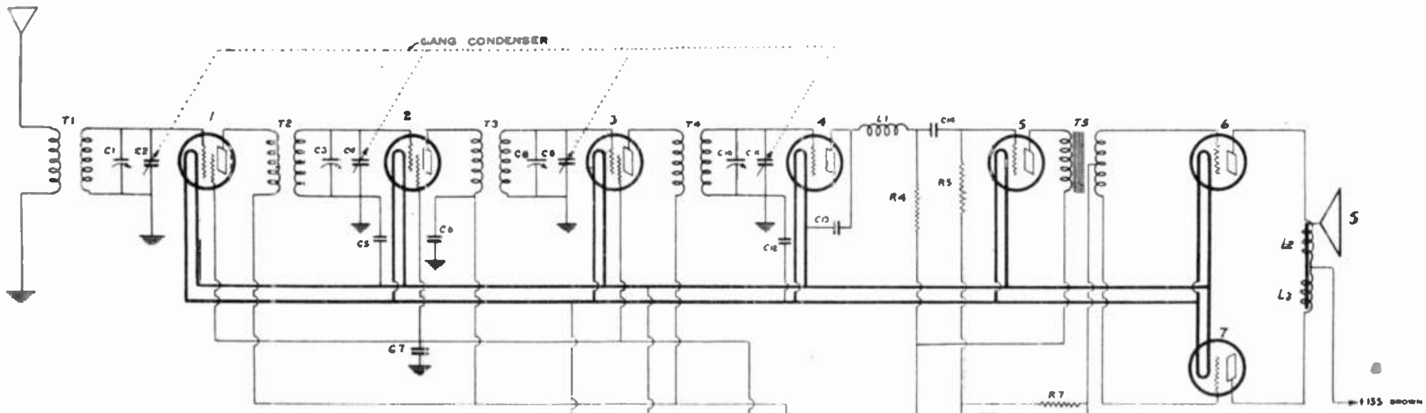
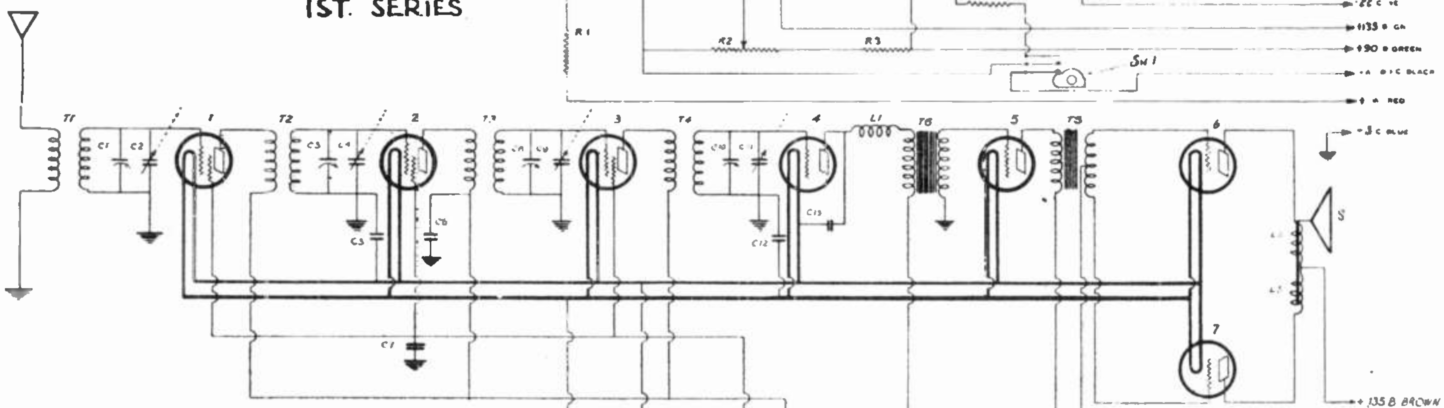
WESTINGHOUSE-9

World Radio History

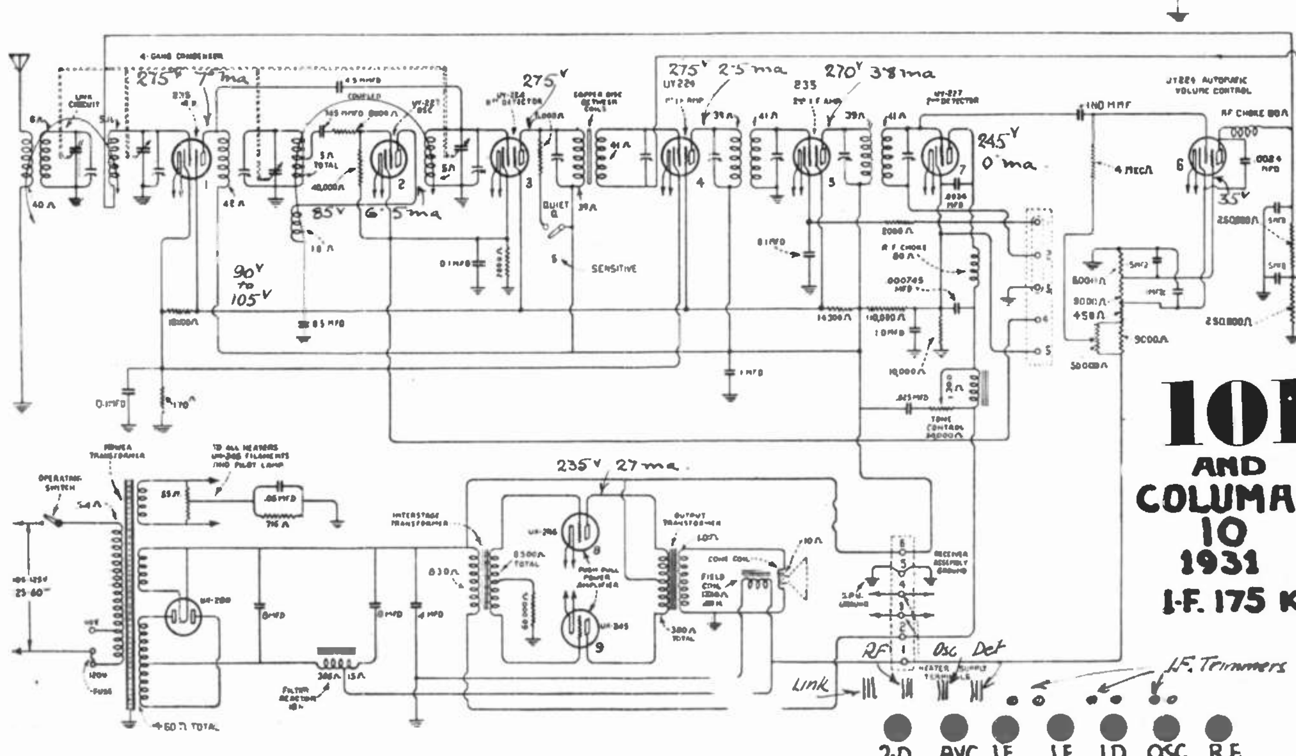


1ST. SERIES



2 ND. SERIES

MODEL-70
1930-31



101
AND
COLUMAIRE 10
1931
I-F. 175 K.C.

Align at 600 - 1400 Kc.

—Courtesy Canadian Westinghouse Co. Limited

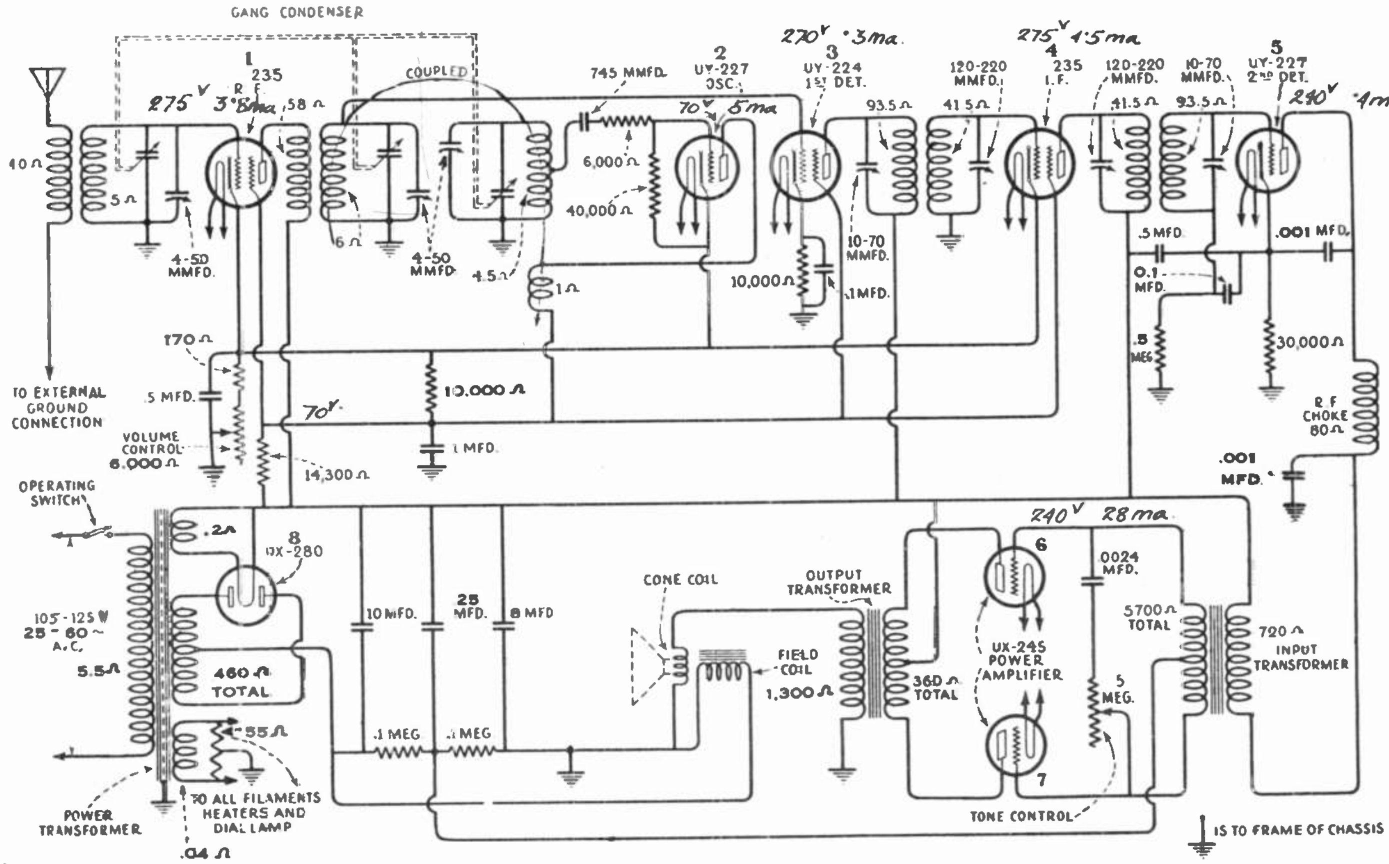
Printed in Canada

DATA SHEET

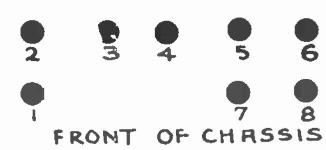
WESTINGHOUSE-10

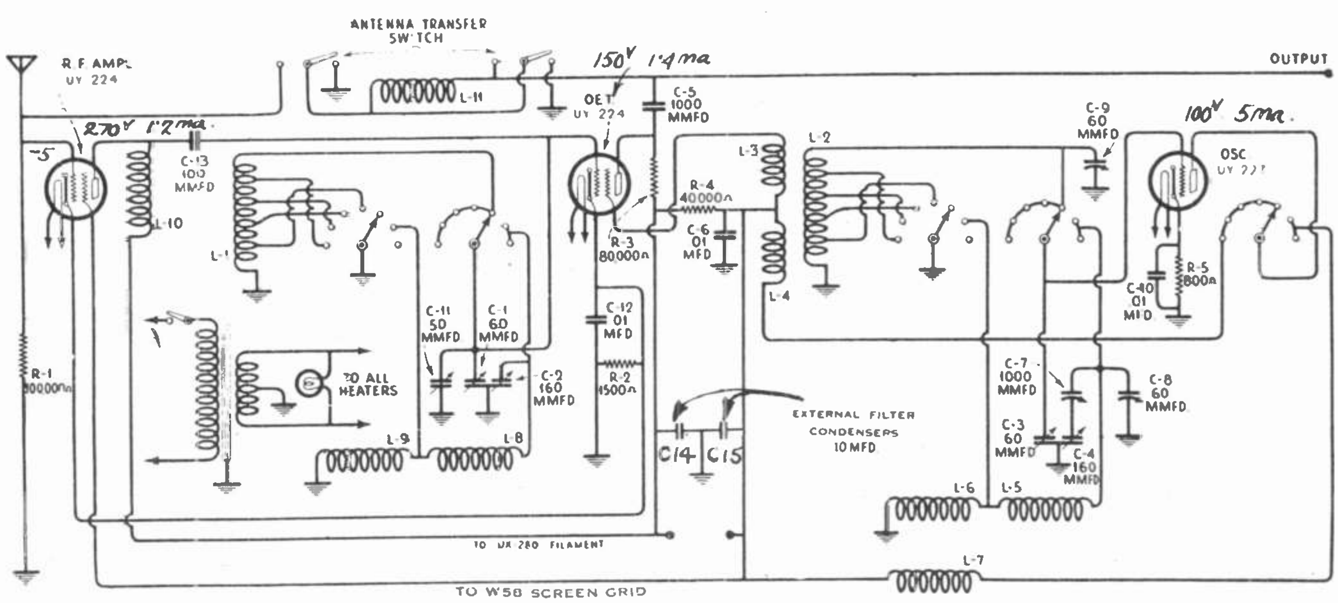
World Radio History

801 AND COLUMAIRE-8 1931-32 I.F. 175 K.C.



112 IS CONVERTER SHOWN BELOW IN CONJUNCTION WITH-82 CHASSIS 1931-32





DATA SHEET

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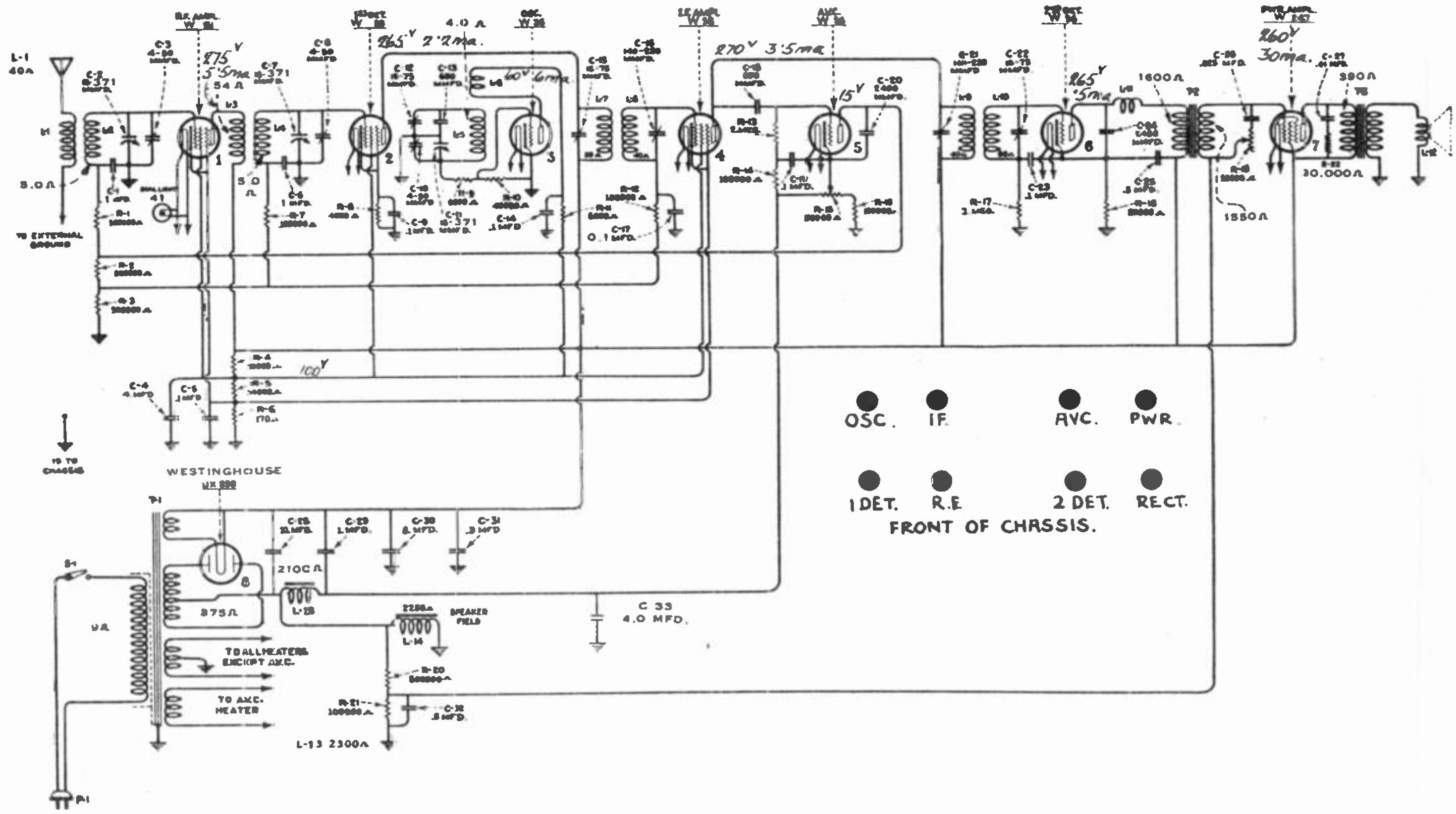
WESTINGHOUSE-11

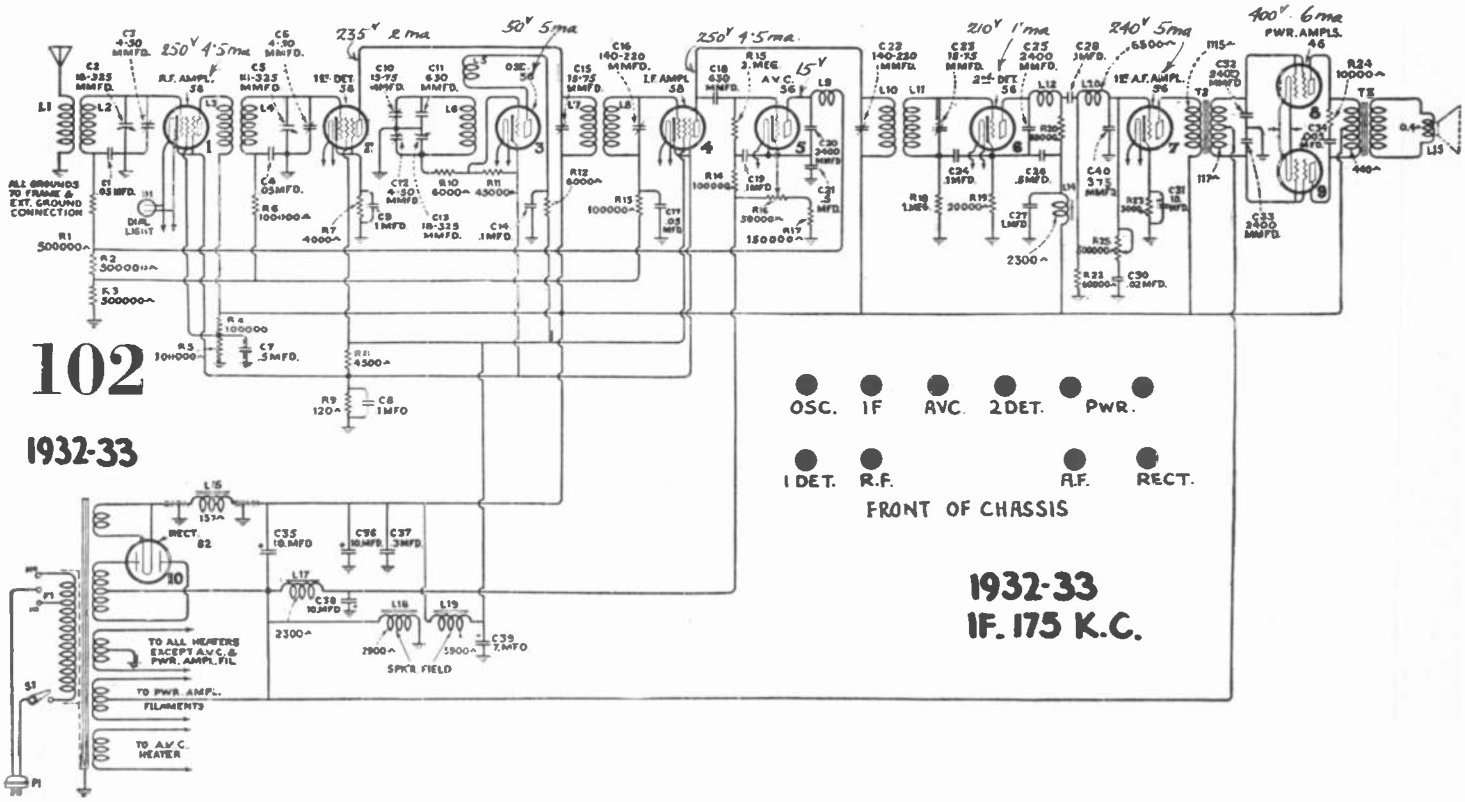
World Radio History

82 1932-33 IF 175 KC.



102

1932-33



1932-33
IF. 175 K.C.

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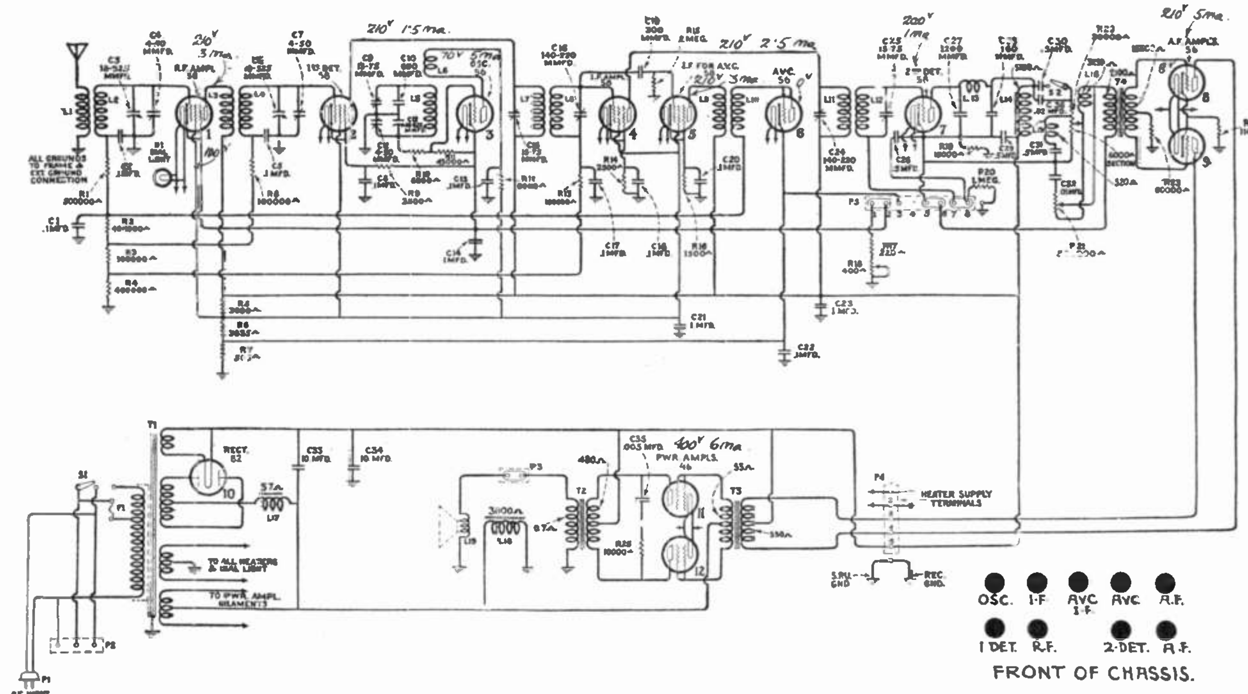
DATA SHEET

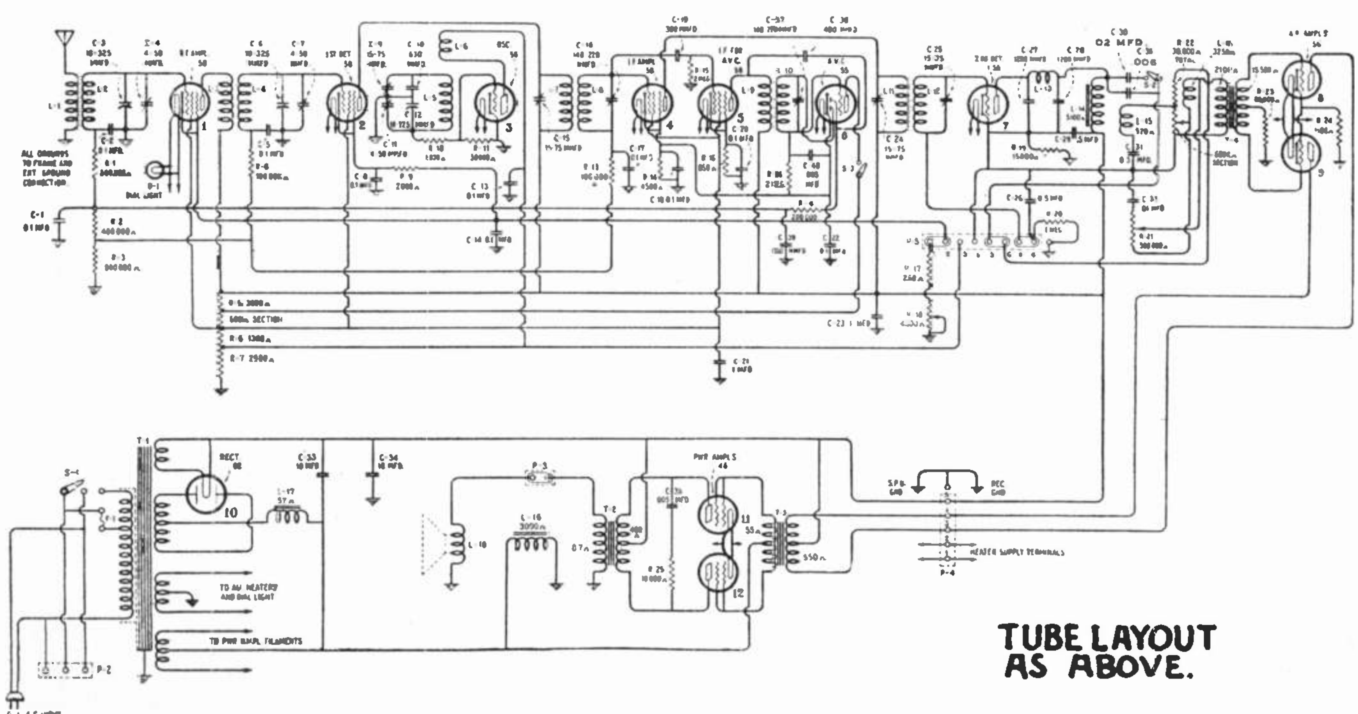
WESTINGHOUSE- 12

World Radio History

122 ALSO CONSOLAIRE GRAND 1932-33-I-F.175-K.C.



122A 1933-IF.175-K.C.



TUBE LAYOUT AS ABOVE.

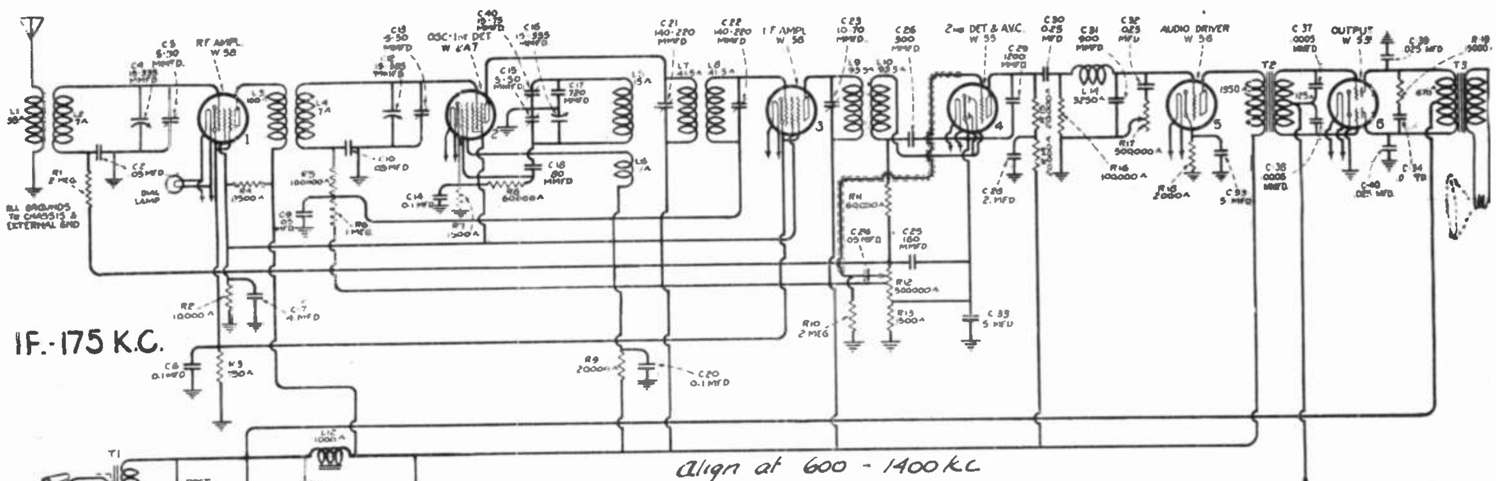
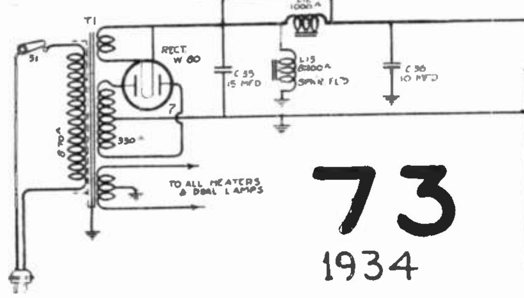
World Radio History

81 1931

SAME AS MODEL-71
SEE SHEET-7

SEE SHEET-7

OSC. I.F. 2D AUD.
R.F. PWR RECT.
FRONT OF CHASSIS.
C16 C12 C4

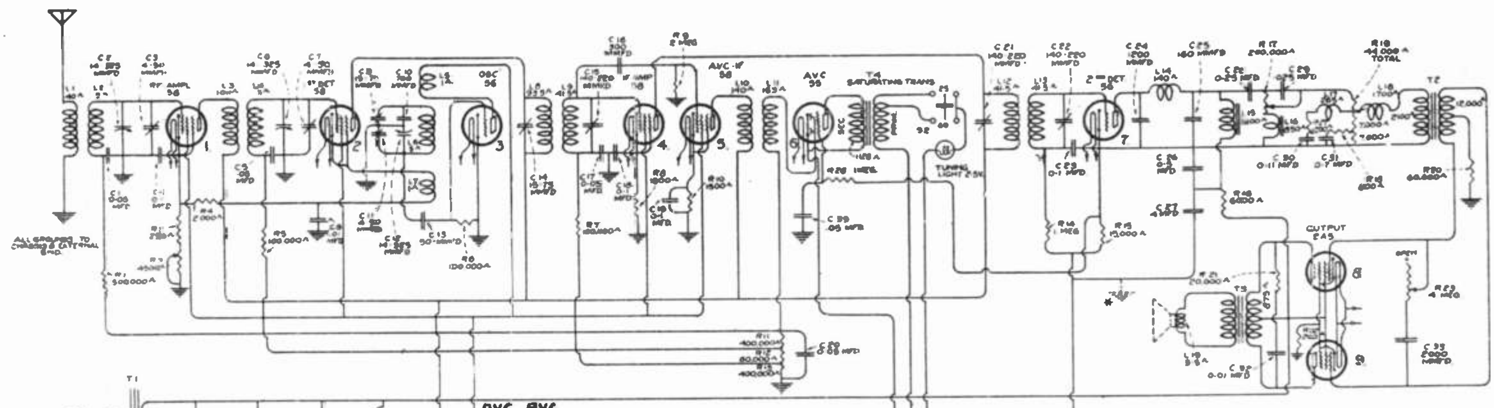
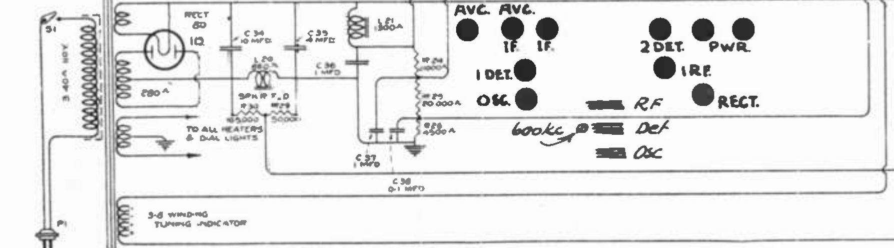
IF.-175 K.C.

align at 600 - 1400 kc

Radiotron No.	Cathode to Control Grid, Volts	Cathode to Screen Grid, Volts	Cathode to Plate, Volts	Plate Current, M.A.
Type 58 R.F.	4.0	100	245	6.0
*Type 2A7 Osc. Det.	4.0	100	245	5.0
Type 58 I. F.	4.0	100	245	6.0
Type 55 2nd Det. A. V. C.	6.0	......	100	4.0
Type 56 Driver A. F.	13.0	......	235	6.3
Type 53 Output	4.5	......	290	12.0
Type 80 Rectifier	600 R. M. S. Plate to Plate			88.0

*Voltages and current apply to detector portion of tube.

73
1934

AVC. AVC. IF. IF. 2 DET. PWR. 1 DET. 1 RF. OSC. RF RECT. 600kc Det Osc

IF. 175 KC.

Radiotron No.	Cathode or Filament to Plate Volts, D.C.	Plate Current M.A.
R. F.	230	7.0
1st Detector	220	2.5
Oscillator	105	6.0
I. F.	225	2.5
A. V. C.—I. F.	225	2.5
A. V. C.	0	......
2nd Detector	280	1.2
Power	270	33.0
Power	270	33.0

FIGURE A.—Note 1.—On early production resistor R27 was omitted.

*Note 2—The indicated ground connection applies only to some of the first run of production. In these earlier sets condenser C27 was connected from C26 to ground instead of from C26 to common point of R15 and R15.

103 1933-34

DATA SHEET

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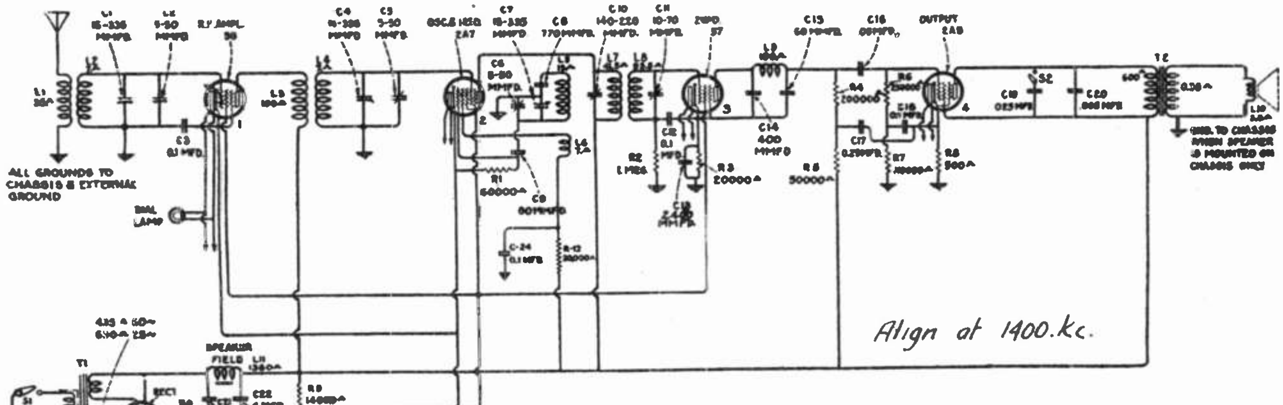
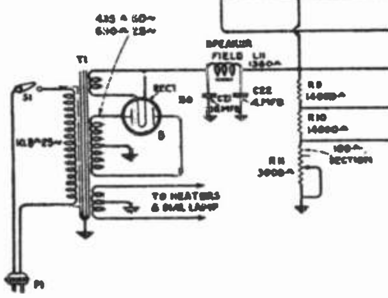
World Radio History

53 and Console 533 1933-34 I.F. 175 K.C.

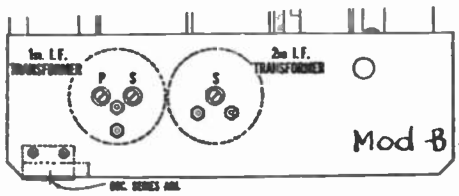




Align at 1400.kc.

MAXIMUM VOLUME CONTROL SETTING---NO SIGNAL

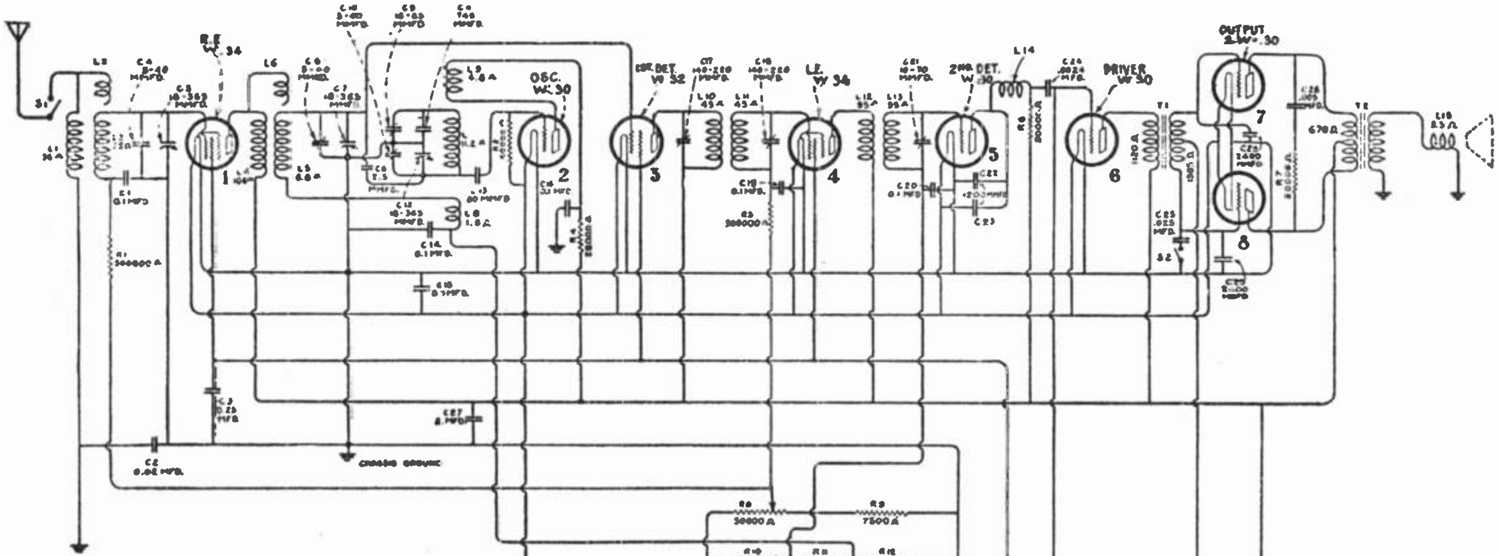
Radiotron No.	Cathode to Control Grid, Volts	Cathode to Screen Grid, Volts	Cathode to Plate Volts	Plate Current M.A.	Heater Volts
1. W-58 R.F. Amplifier	3.0	95	250	5.0	2.33
2. W-2A7 First Detector Oscillator	3.0	95	250	3.0	2.33
3. W-57 Second Detector	6.0	89	170	0.3	2.33
4. W-2A5 Power Amplifier	18.0	235	220	32.0	2.33



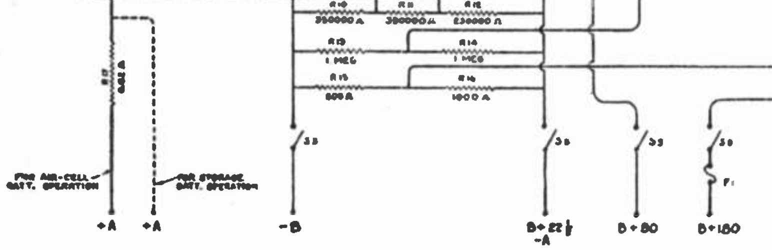
Mod B 83

Align at 600 - 1400 kc.

—*Location of Line-up Capacitor*



I.F. 175 K.C.



B83 1934

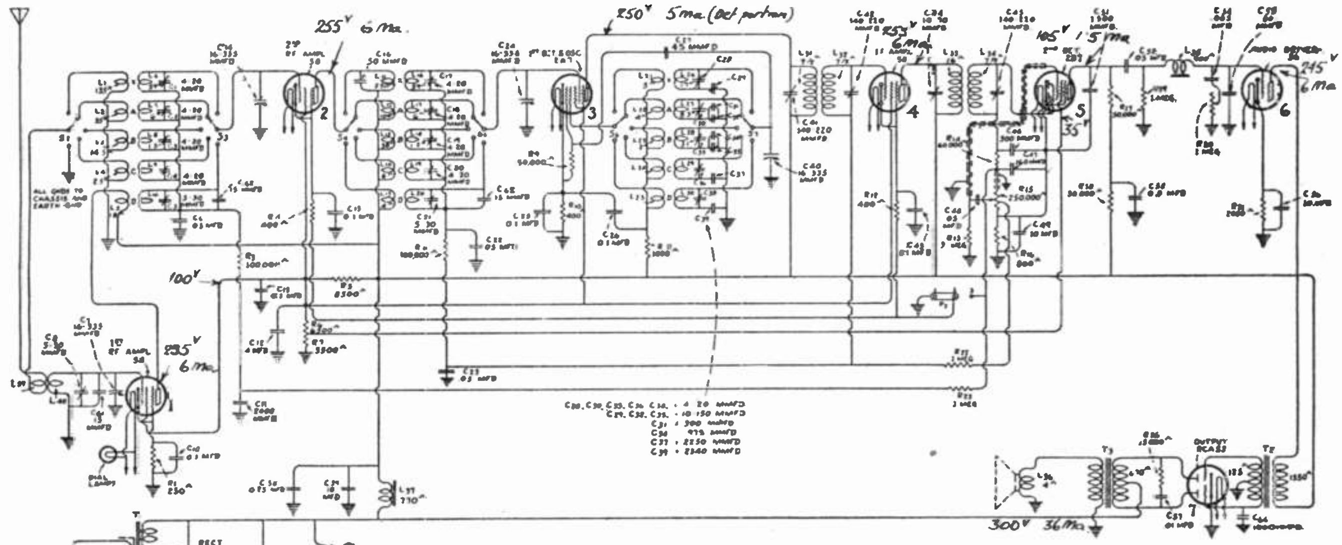
—Courtesy Canadian Westinghouse Co. Limited

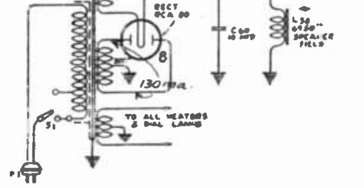
DATA SHEET

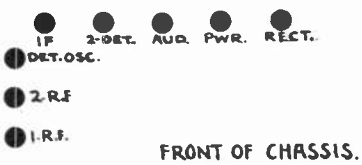
Printed in Canada

World Radio History

Model 83 "All Wave" 1933-34 I.F. 445 K.C.







NOTE:- On 4 band receiver capacitor and coil units marked "X" are omitted.

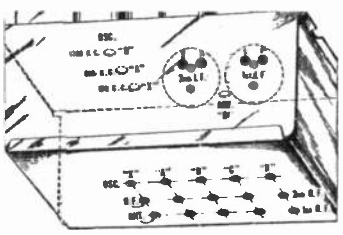


Figure D—Location of line-up capacitors.

Line-Up Capacitor Adjustments

This receiver is aligned in a similar manner to that of a standard broadcast band receiver. That is, the three main tuning capacitors are aligned by means of three trimmers in each band and on the three lowest frequency bands a series trimmer is adjusted for aligning the oscillator circuit. The other two bands do not require this low frequency trimmer, it being fixed in value. In the case of band D, it is necessary to adjust four trimmers due to the additional R. F. stage used.

The intermediate frequency amplifier is aligned in a similar manner to that of standard broadcast receivers except that it is aligned at 445 K. C. In order to properly align the receiver, it is essential that the Stock No. 9050 Test Oscillator be used. This oscillator covers the frequencies of 150 K. C. to 25,000 K. C. continuously, has good stability and includes an attenuator. In addition to the oscillator, a non-metallic screw-driver such as Style No. H22451, and an output meter are required. The output meter should be preferably a thermo-couple galvanometer connected either across or in place of the cone coil of the loudspeaker.

The output of the external oscillator should be at the minimum value necessary to obtain a deflection in the output meter when the volume control is at its maximum position.

The external oscillator output should be connected between antenna and ground for the R. F. and oscillator adjustments and between the first detector grid and ground for the I. F. adjustments. All adjustments are made for a maximum deflection in the output meter.

The accuracy of line-up of each band may be checked without touching the trimmer condensers, by the use of the tuning wand, Stock No. 6679.

One end of the wand consists of a brass cylinder. When this is inserted in a coil the effective inductance of the coil is lowered.

The other end of the wand contains a special finely divided iron suitable for use at radio frequencies. When this is inserted in a coil the inductance is raised.

To use the tuning wand a signal is first tuned in at the frequency at which a check is desired on alignment. The wand is then inserted slowly in the Antenna and R. F. transformers, using first one end and then the other end of the wand. Unless the alignment is perfect, it will be found that the power output indicated by the meter will be increased to a peak for a critical position of the wand in the coils.

The end of the wand required indicates whether the coil is high or low.

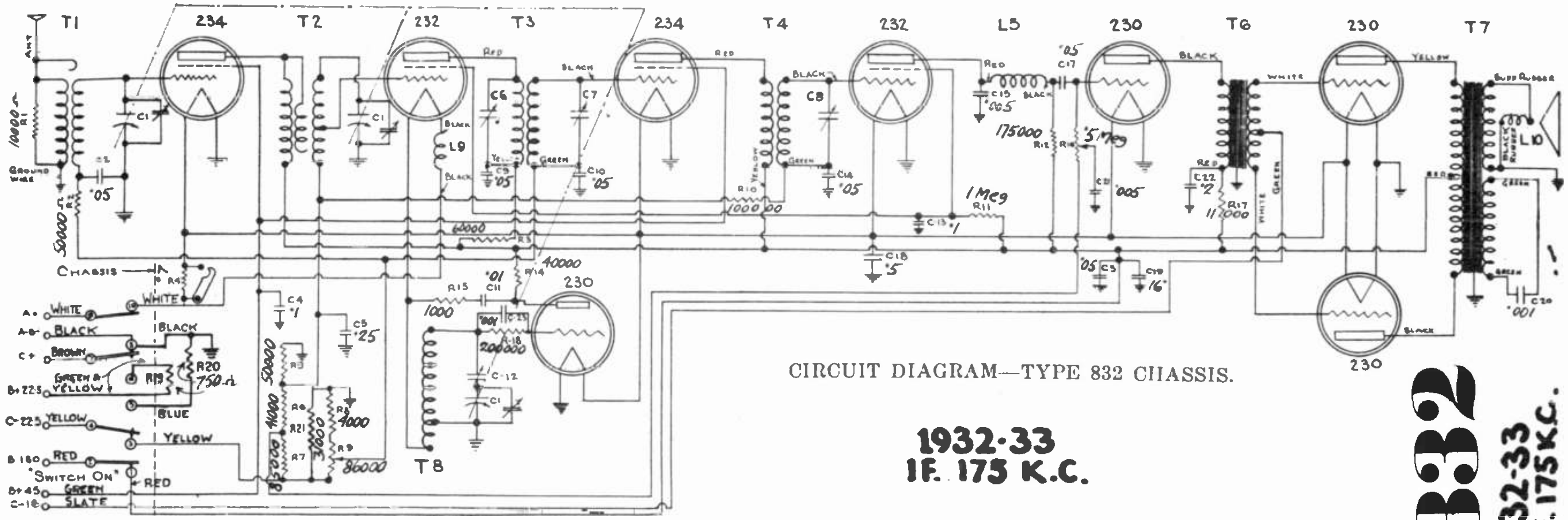
Of course, alignment correction at the high frequency end of a tuning range should be accomplished by the use of the trimmer condenser. If alignment correction should be required at the low frequency end of a tuning range it may be accomplished by sliding the end coil of the transformer. The winding farthest from the trimmer panel is pushed toward the trimmer panel to increase the inductance, and farther away to decrease the inductance. On band D coils, the last two or three turns may be pushed in a similar manner to obtain the proper inductance.

This adjustment should not be attempted unless a quite appreciable improvement will result (as shown by the tuning wand).

The following chart gives the details of all line-up adjustments. The receiver should be lined up in the order of the adjustments given on the chart. Refer to Figure D for the location of the line-up capacitors.

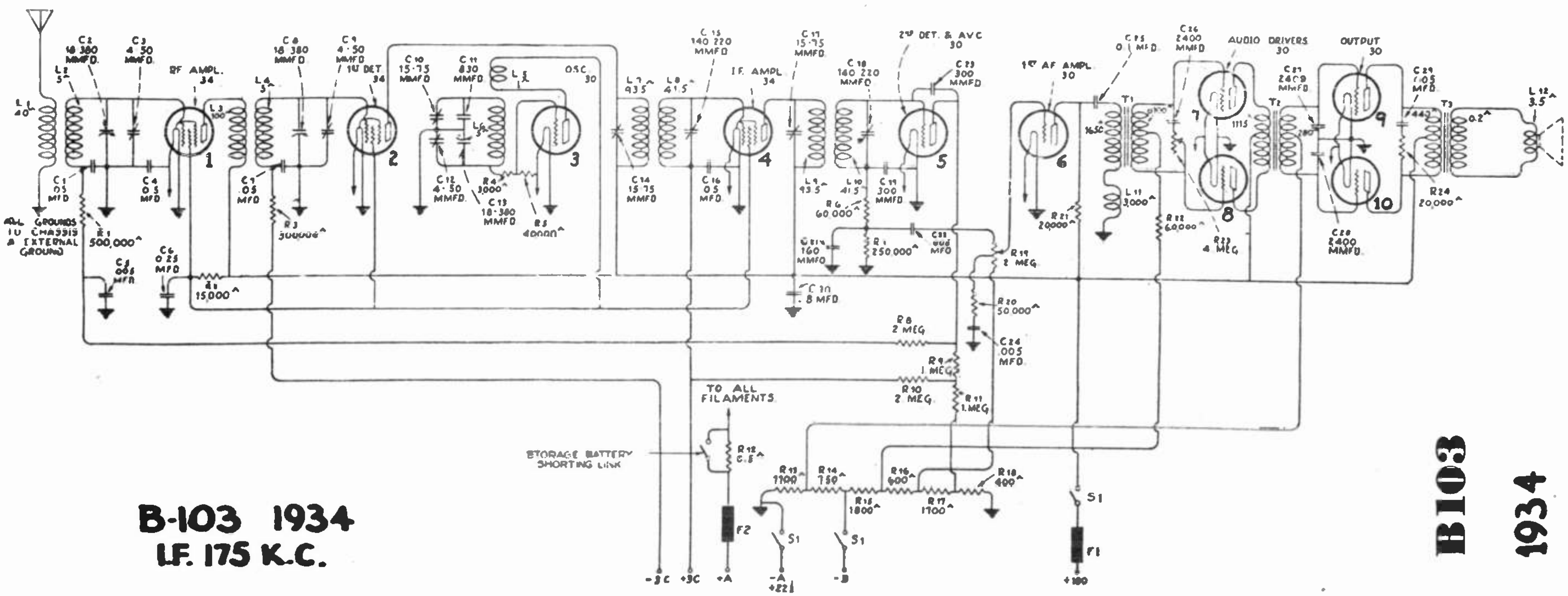
External Oscillator Frequency	Dial Setting	Location of Line-Up Capacitors	Position of Selector Switch	Adjust for
445 K. C.	Any setting that does not bring in station.	At rear of chassis	Any position that does not bring in station.	Maximum output.
370 K. C.	370 K. C.	Bottom of chassis	X	Maximum output.
175 K. C.	Set for signal.	Top of chassis	X	Maximum output while rocking dial back and forth
1400 K. C.	1400 K. C.	Bottom of chassis.	A	Maximum output.
600 K. C.	Set for signal.	Top of chassis.	A	Maximum output while rocking dial back and forth.
3900 K. C.	3900 K. C.	Bottom of chassis.	B	Maximum output.
1710 K. C.	Set for signal.	Top of chassis.	B	Maximum output while rocking dial back and forth.
10 M. C.	10 M. C.	Bottom of chassis.	C	Maximum output.
15 or 18 M. C.	15 or 18 M. C.	Bottom and top.	D	Maximum output. Adjust oscillator trimmer until two points are noted where signal is heard. Use for adjustment the higher frequency of these two points. This will be the point lying counter-clockwise from the other point.

World Radio History



CIRCUIT DIAGRAM—TYPE 832 CHASSIS.

1932-33
I.F. 175 K.C.



B-103 1934
I.F. 175 K.C.

832
1932-33
I.F. 175 K.C.

WESTINGHOUSE 17

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B103
1934

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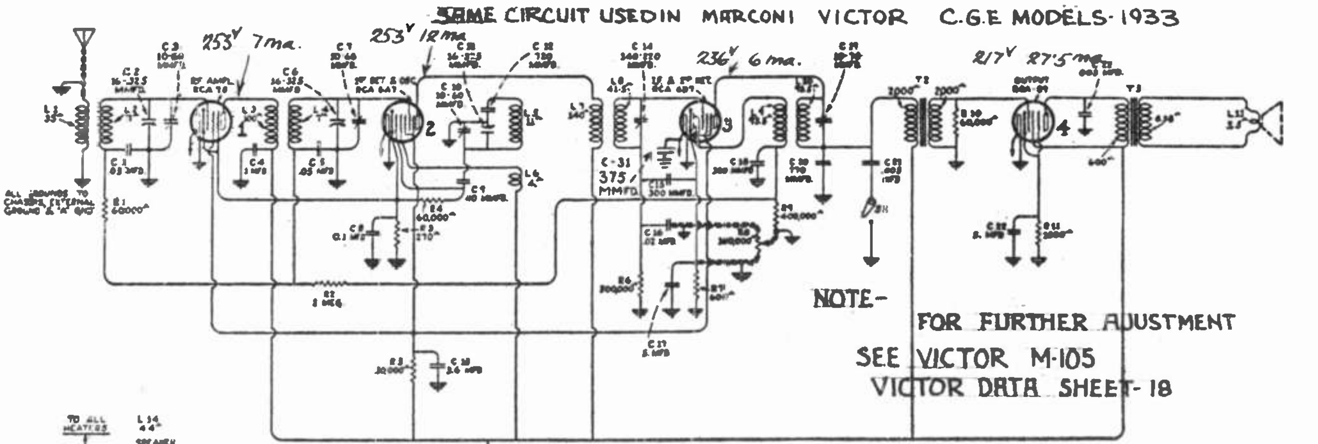
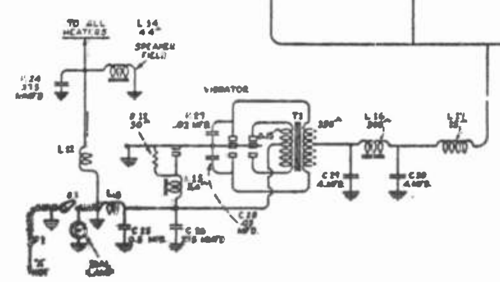
A43 Auto Radio 1933- IF-175 K.C.

SAME CIRCUIT USED IN MARCONI VICTOR C.G.E. MODELS-1933





VIBRATOR UNIT

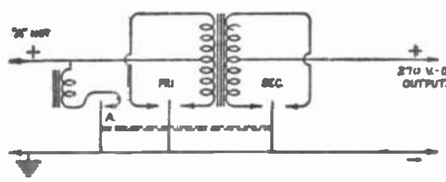


Figure C—Schematic of Vibrator Unit

When the switch is turned "on" the vibrator makes and breaks contact at point "A." This constitutes the driving action of the unit, and is in no way connected with the other circuits. The primary vibrator functions to connect the input low voltage current first across one-half and then across the other half of the primary of the transformer. This results in a pulsating direct current applied to the primary in an alternating direction. The result is an A. C. voltage emanating from the secondary of the transformer; as the transformer has a step-up ratio the A. C. secondary voltage is considerably greater than the primary. The secondary vibrator functions in a similar manner as that on the primary side, so that by reversing the alternations applied to the load, a pulsating D. C. is obtained. After filtering, this is used as plate and grid supply to all Radiotrons.

(1) Spring and Contact Adjustments Limits.

Proper adjustments of the various contacts are made in the following order and manner:

1. With 8 and 10, Figure D, firmly held against their respective stops and with 3 and 5 in contact with 8 and 10 respectively, the air gap between 1, 6 and 2, 7 shall be 0.015" plus or minus 0.005". On no particular unit however, shall the differences between the two air gaps exceed 0.005".

2. Adjust the buzzer screw, 11, Figure D, so that when the position of the armature is such that 1 and 2 are just making contact with 6 and 7 respectively, the contact between 4 and 9 shall just be breaking.

(2) Adjustment for the Reduction of Sparking.

If any pair of contacts show excessive sparking, the following procedure will in general reduce the sparking to a minimum.

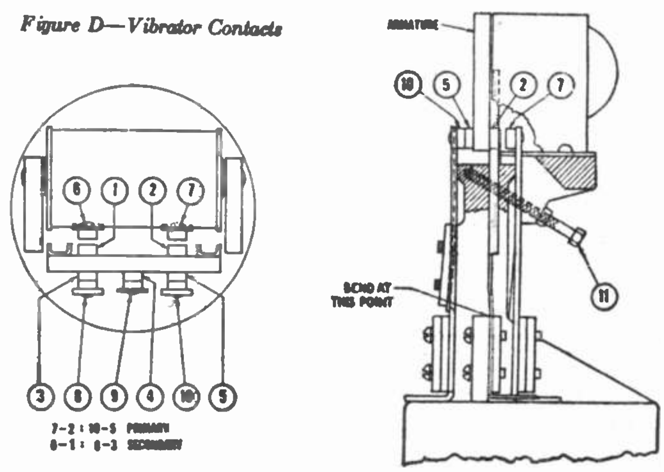
For example, consider the case where excessive sparking is occurring between 6 and 1. Sparking will be reduced to a minimum by bending the armature spring on that side (secondary side) away from 6 and toward 8. (See Figure D.) If the bend is too small, only a small change will be noted. However, if an excessive bend is made, the sparking will be transferred from 6, 1 to 8, 3.

The same method may be applied to any pair of contacts. Usually only a slight bend will be necessary. Although after bending, no change in the position of the armature contacts may be noted, a sufficient change in the initial force requirements will have been made to reduce sparking.

(3) Output Voltage.

When connected to a 6 volt primary source, the output voltage across a 5,000 ohm resistor (connected in place of the receiver load at the output of the filter), must be 230 volts or greater.

Figure D—Vibrator Contacts



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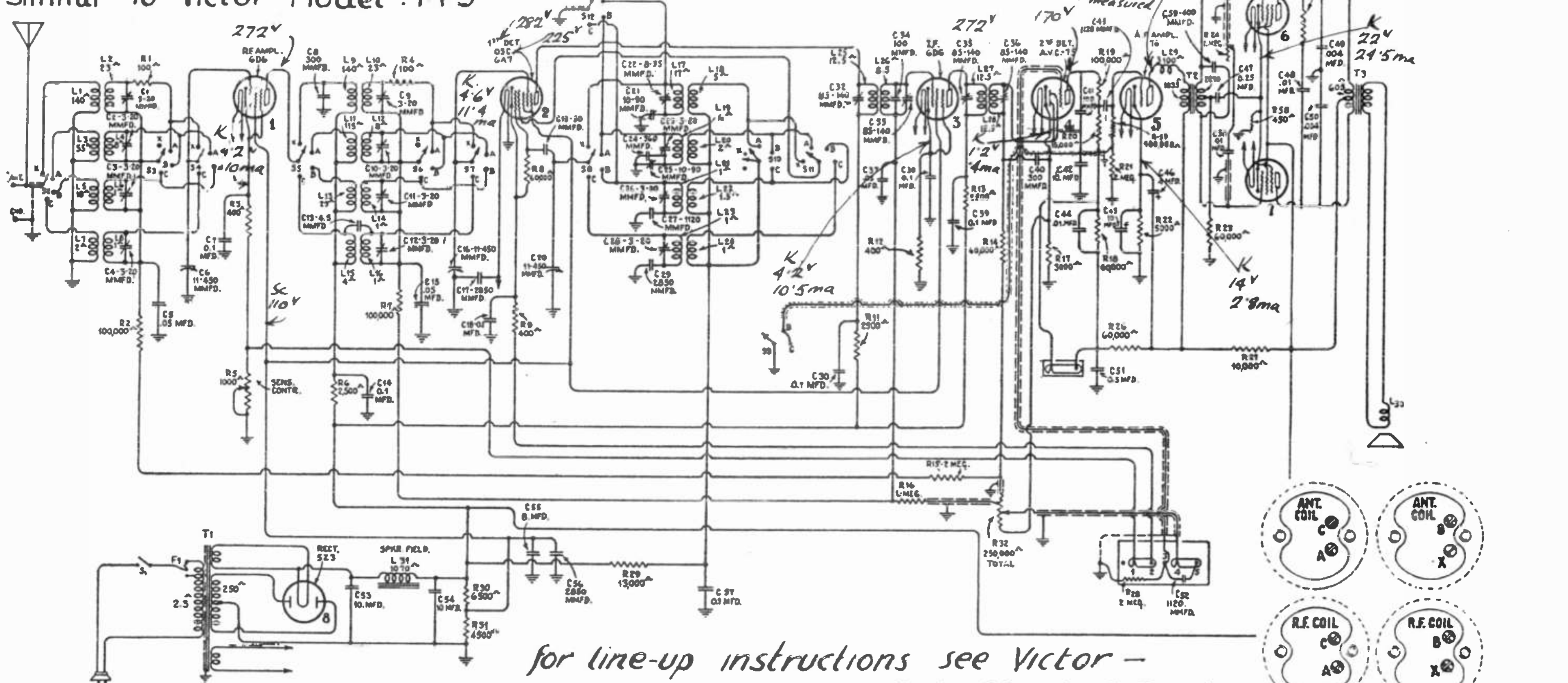
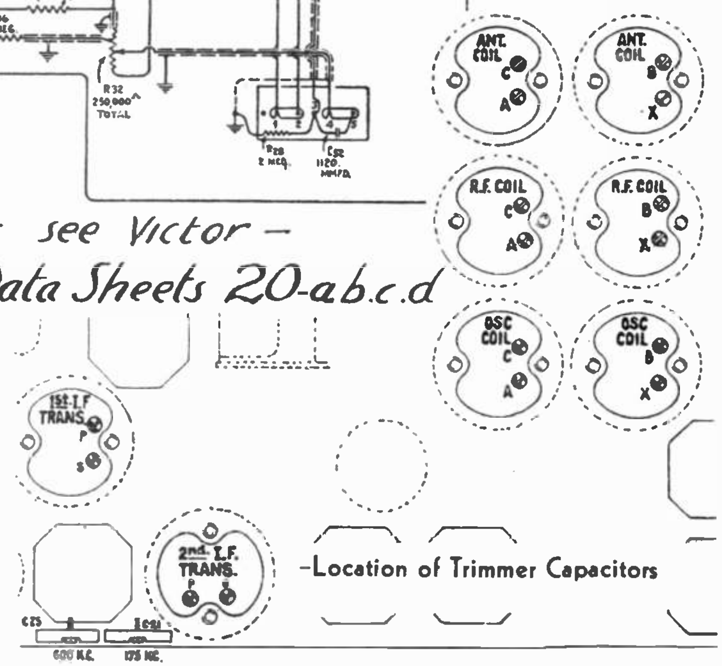
World Radio History

Model-84 1934-35 I.F. 460 Kc.

similar to Victor Model 143



for line-up instructions see Victor - Data Sheets 20-a.b.c.d



-Location of Trimmer Capacitors

Radiotron No.		Cathode to Ground Volts, D.C.	Screen Grid to Ground Volts, D.C.	Plate to Ground Volts, D.C.	Cathode Current, M.A.
W-6D6 R.F.		4.2	110	272	10.05
W-6A7	Oscillator	—	—	225	11.4
	1st Detector	4.6	110	282	
W-6D6 I.F.		4.2	110	272	10.5
W-75 2nd Det.		1.2	—	170*	0.4
W-76 A.F.		14.0	—	252	2.8
W-42 Power		22.0	295	290	24.5

DATA SHEET

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WESTINGHOUSE-19

World Radio History

DATA SHEET

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WESTINGHOUSE-20A

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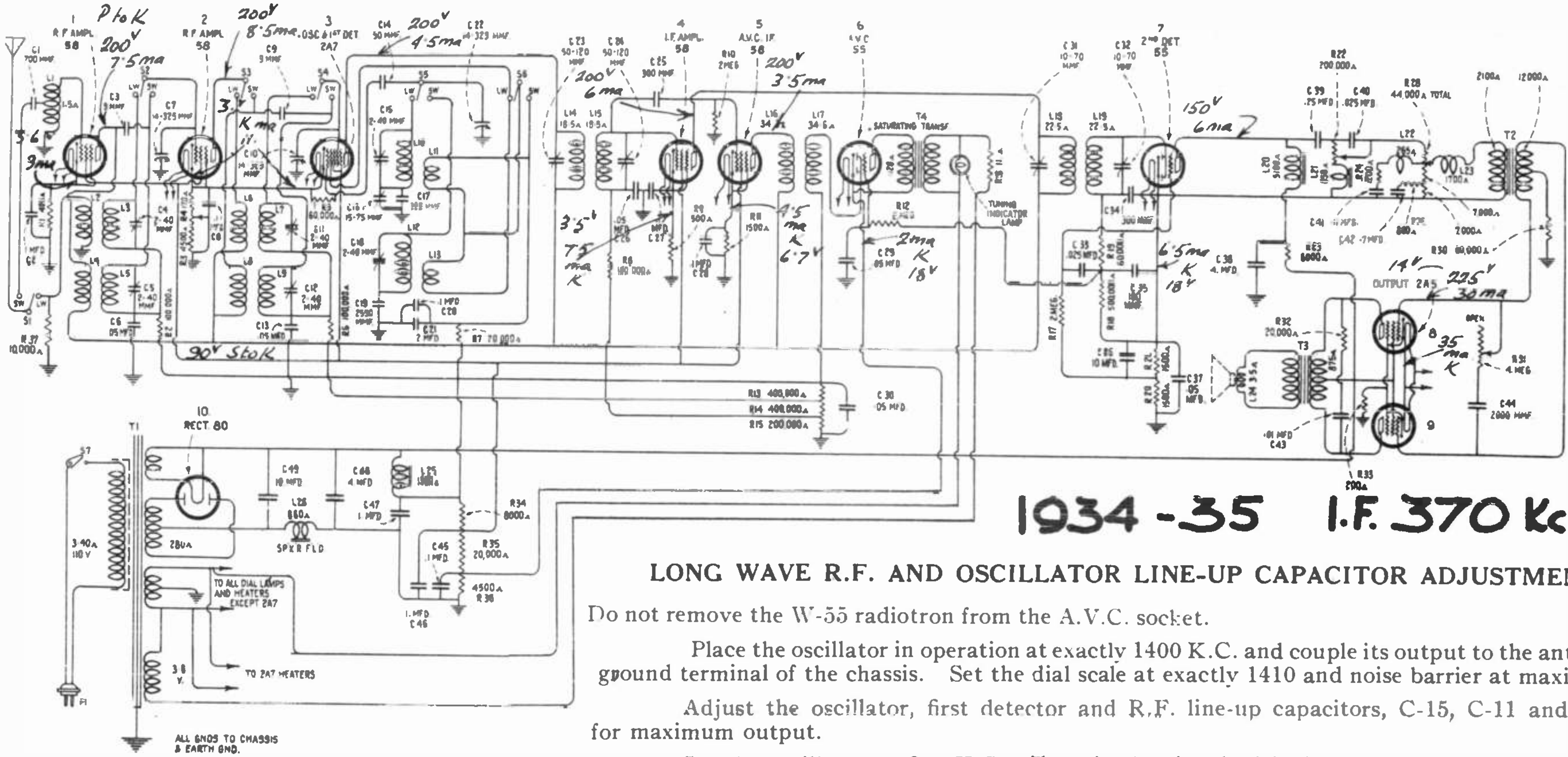
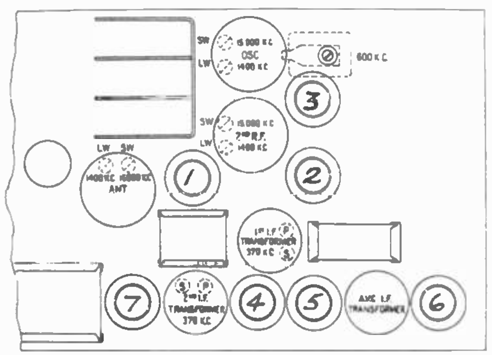


1934-35 I.F. 370 Kc.

Model-104



- TOP VIEW - REAR OF CHASSIS -

Location of Adjustable Capacitors

LONG WAVE R.F. AND OSCILLATOR LINE-UP CAPACITOR ADJUSTMENTS

Do not remove the W-55 radiotron from the A.V.C. socket.

Place the oscillator in operation at exactly 1400 K.C. and couple its output to the antenna ground terminal of the chassis. Set the dial scale at exactly 1410 and noise barrier at maximum

Adjust the oscillator, first detector and R.F. line-up capacitors, C-15, C-11 and C-4 for maximum output.

Set the oscillator at 600 K.C. Tune in the signal with the receiver until a maximum deflection is obtained in the output meter. Now adjust the 600 K.C. series capacitor, C-16, until a maximum deflection is obtained in the output meter. Rock the tuning capacitor back and forth while making this adjustment. Repeat the 1400 K.C. adjustment.

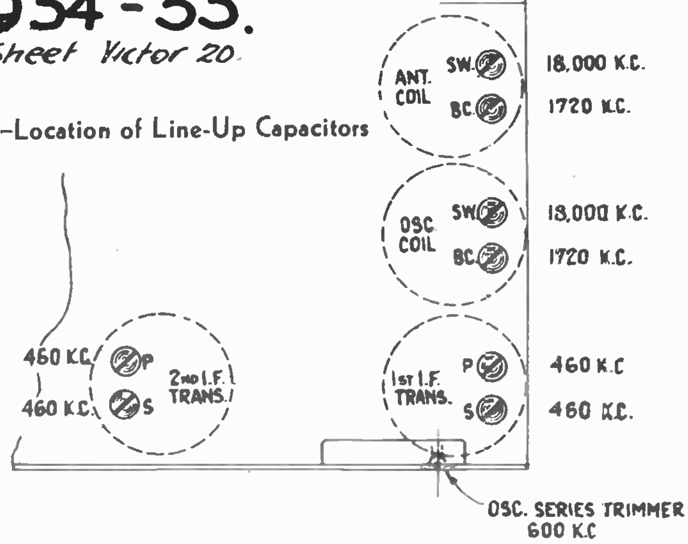
SHORT WAVE ADJUSTMENTS oscillator and the receiver should both be accurately tuned to 15000 kilocycles (1450 on receiver dial) while adjustment is made to the oscillator trimmer C-18. Leave the oscillator set at this frequency and rock the tuning condenser carefully back and forth while making adjustment to second R.F. short wave trimmer C-12. If after making this adjustment on C-12, the tuning of the receiver has appreciably changed and the oscillator signal does not come in at 1450 on the receiver dial, re-adjust oscillator short wave trimmer C-18, following this with a re-adjustment of the second R.F. short wave trimmer C-12, as above. Finally with the receiver tuned to the short wave oscillator signal, adjust the first R.F. short wave trimmer C-5 to give maximum output. It will be found that there are two positions of C-5 that will give maximum output. Choose the peak requiring the most capacity while rocking the gang condenser carefully.

This receiver has two I.F. stages, one for the second detector and one for the A.V.C., but only two of the three I.F. transformers are tuned by adjustable capacitors and require adjustments. The stage used for the A.V.C. is inherently tuned and does not require any adjustments.

World Radio History

Models 254 A and X 1934-35.

for circuit see Victor Model 118 – Data Sheet Victor 20



–Location of Line-Up Capacitors

I.F. Tuning Adjustments:

Two transformers comprising four tuned circuits are used in the intermediate amplifier. These are tuned to 460 K.C. and the adjustment screws are accessible as shown

(c) Adjust the secondary and primary of the first and then the second I.F. transformers until a maximum deflection is obtained. Keep the oscillator output at a low value so that only a slight deflection is obtained on the output meter at all times. Go over these adjustments a second time, as there is a slight interlocking of adjustments. This completes the I.F. adjustments.

R.F. and Oscillator Adjustments:

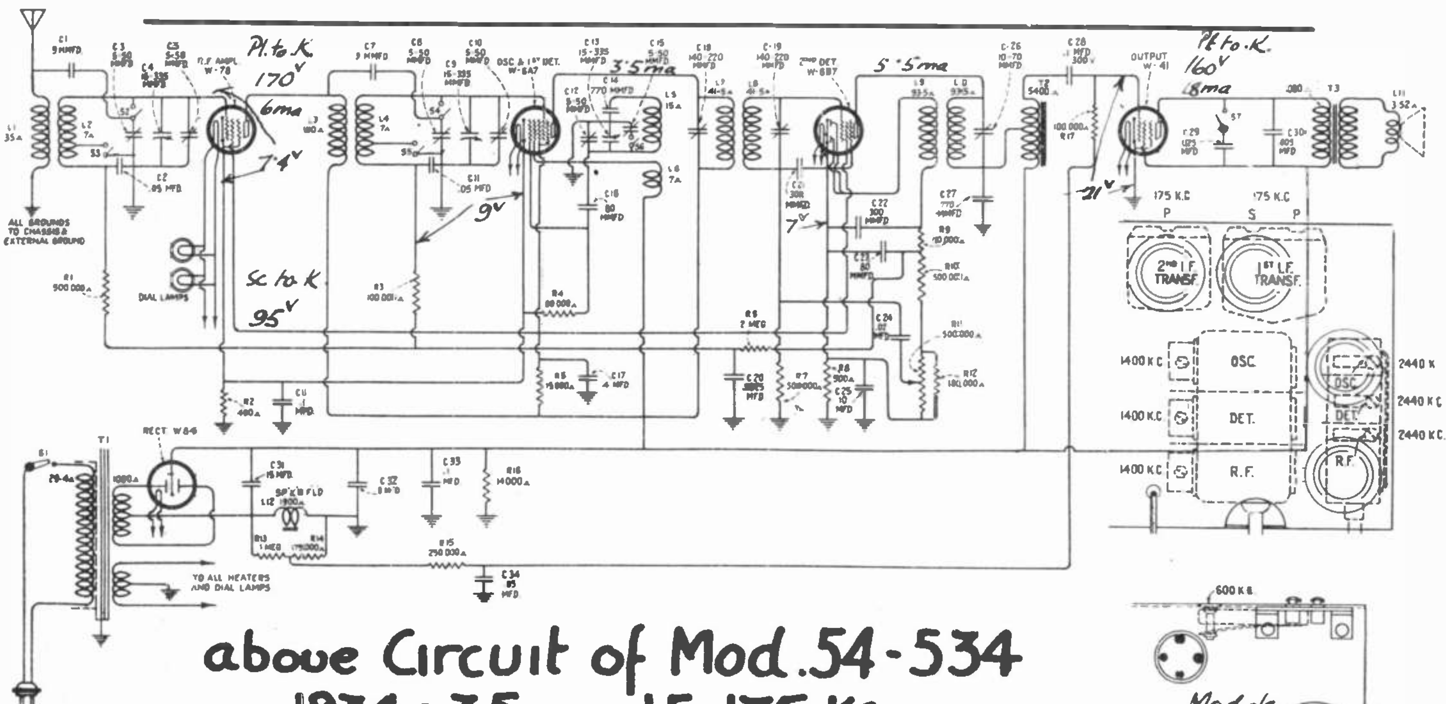
The R.F. line-up capacitors are located at the bottom of the coil assemblies instead of their usual position on the gang capacitor. They are all accessible from the bottom of the chassis except the 600 K.C. series capacitor, which is accessible from the top of the chassis. Proceed as follows:

(a) Connect the output of the oscillator to the antenna and ground terminals of the receiver. Check the position of the indicator pointer when the tuning capacitor plates are fully meshed. It should be coincident with the radial line adjacent to the dial reading of 540. Then set the Test Oscillator at 1720 K. C., the dial indicator at 1720 and the oscillator output so that a slight deflection will be obtained in the output meter when the volume control is at its maximum position.

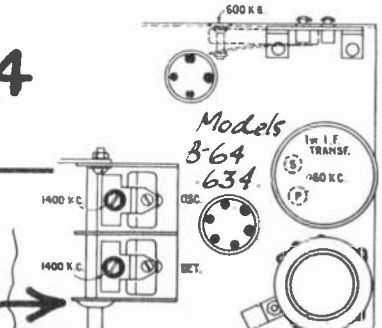
(b) With the Range Switch at the "in" position, adjust the two trimmers under the two R.F. coils, designated as BC in Figure 5, until a maximum deflection is obtained in the output meter. Then shift the Test Oscillator frequency to 600 K.C. The trimmer capacitor, accessible from the top of the chassis, should now be adjusted for maximum output while rocking the main tuning capacitor back and forth through the signal. Then repeat the 1720 K.C. adjustment.

(c) Now place the Range Switch at the "out" position, shift the Test Oscillator to 18,000 K.C. and set the dial at 18M. Adjust the two trimmer capacitors designated as SW in Figure 5 for maximum output, beginning with the oscillator trimmer. It will be noted that the oscillator and first detector trimmers will have two positions at which the signal will give maximum output. The position which uses the lower trimmer capacitance, obtained by turning the screw counter-clockwise, is the proper adjustment for the oscillator, while the position that uses a higher capacitance is correct for the detector. The detector trimmer must be adjusted for maximum output while rocking the main tuning capacitor back and forth through the signal. Both of these adjustments must be made as indicated irrespective of output.

The important points to remember are the need for using the minimum oscillator output to obtain a deflection in the output meter with the volume control at its maximum position and the manner of obtaining the proper high frequency oscillator and detector adjustments.



above Circuit of Mod.54-534
1934-35 IF 175 Kc.



Models B-64 - B-634 1934-35

Circuit same as VICTOR-126-B. Data Sheet-21.

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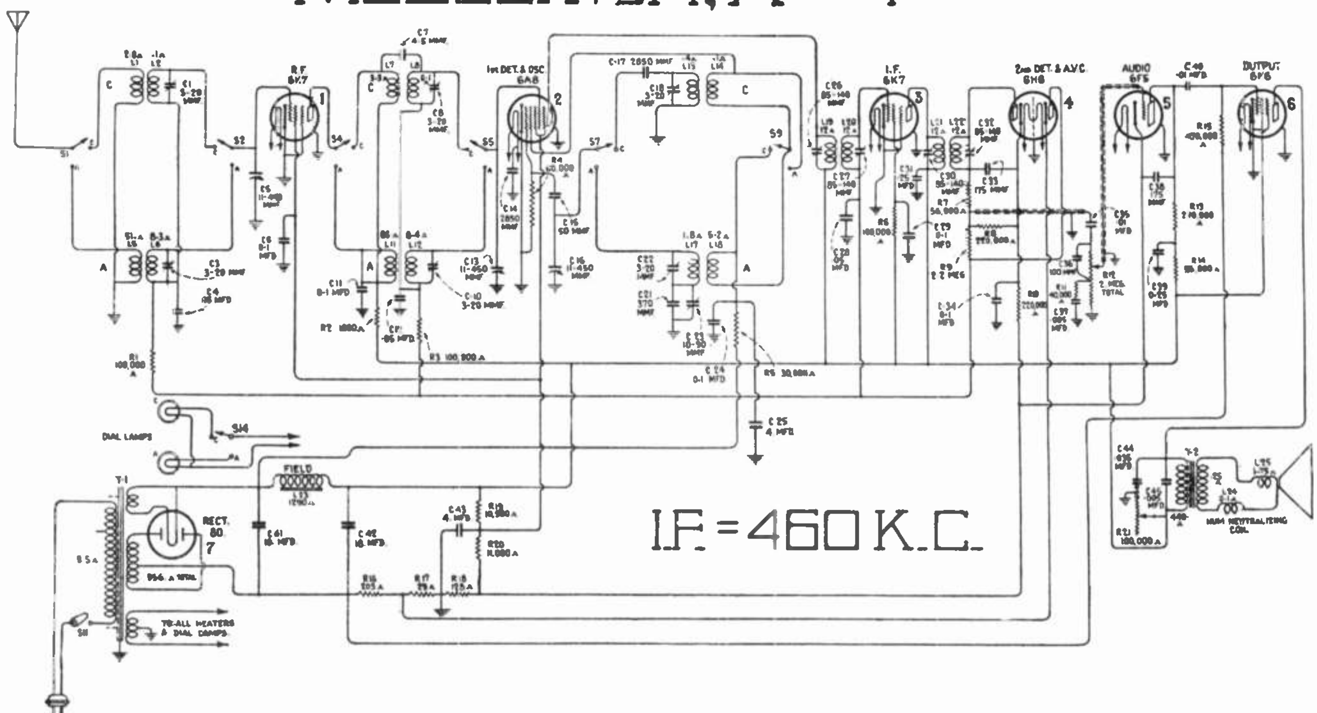
MODEL 175A, X AND Y

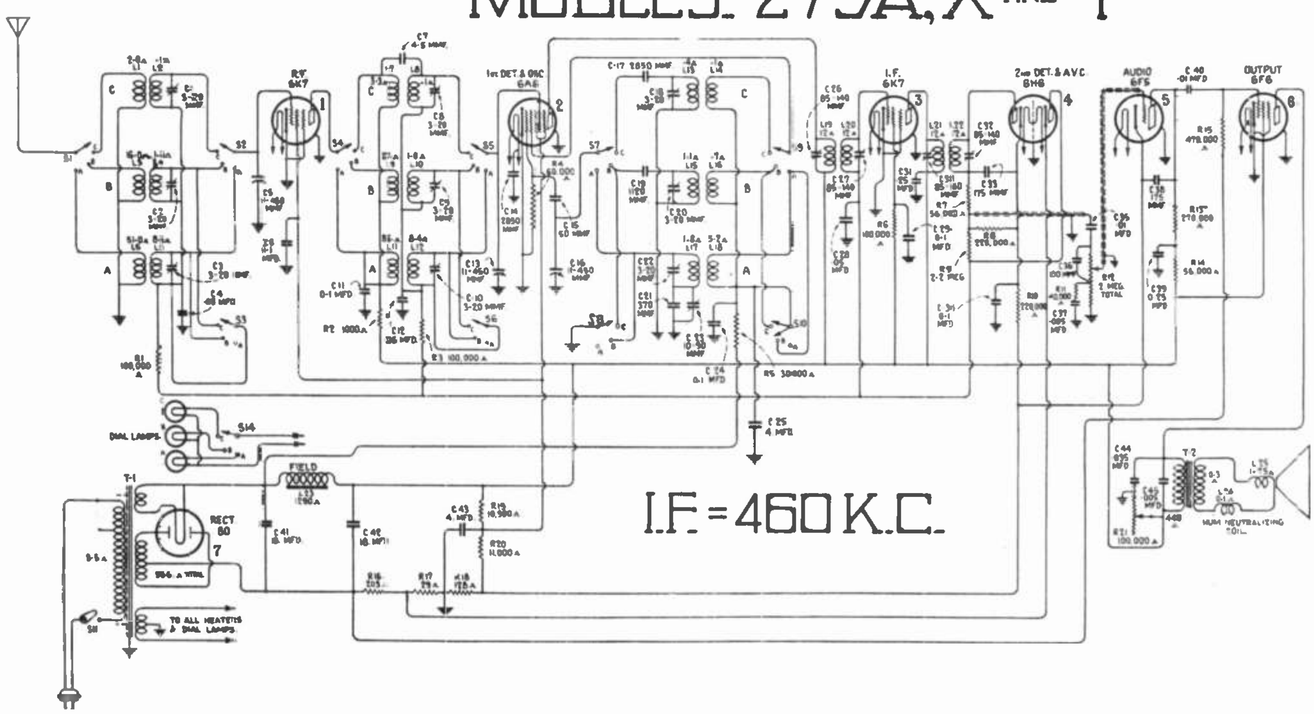


1935-36

W175 Schmatic Circuit Diagram

ALIGNMENT INSTR.
ON DATA SHEET-24

MODELS 275A, X AND Y

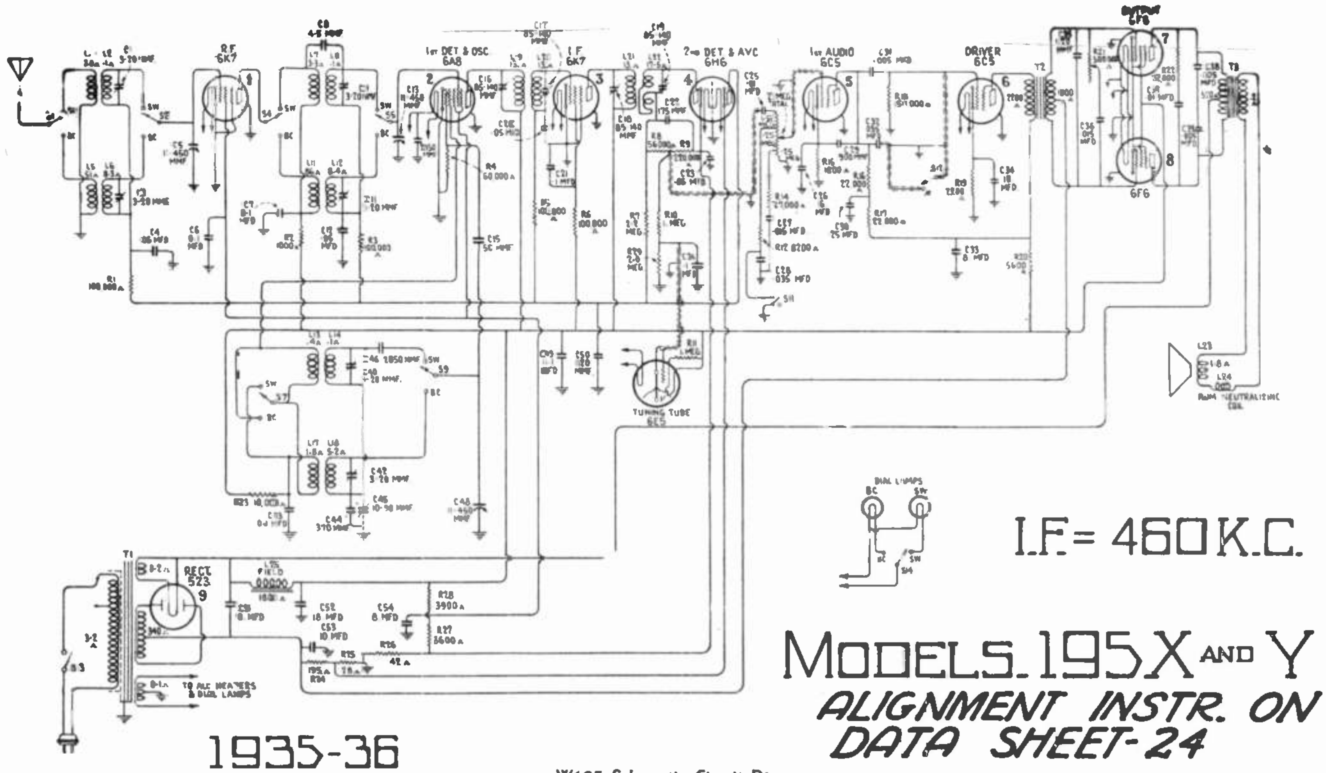


W275 Schematic Circuit Diagram

ALIGNMENT INSTR.
ON DATA SHEET-24

1935-36

World Radio History

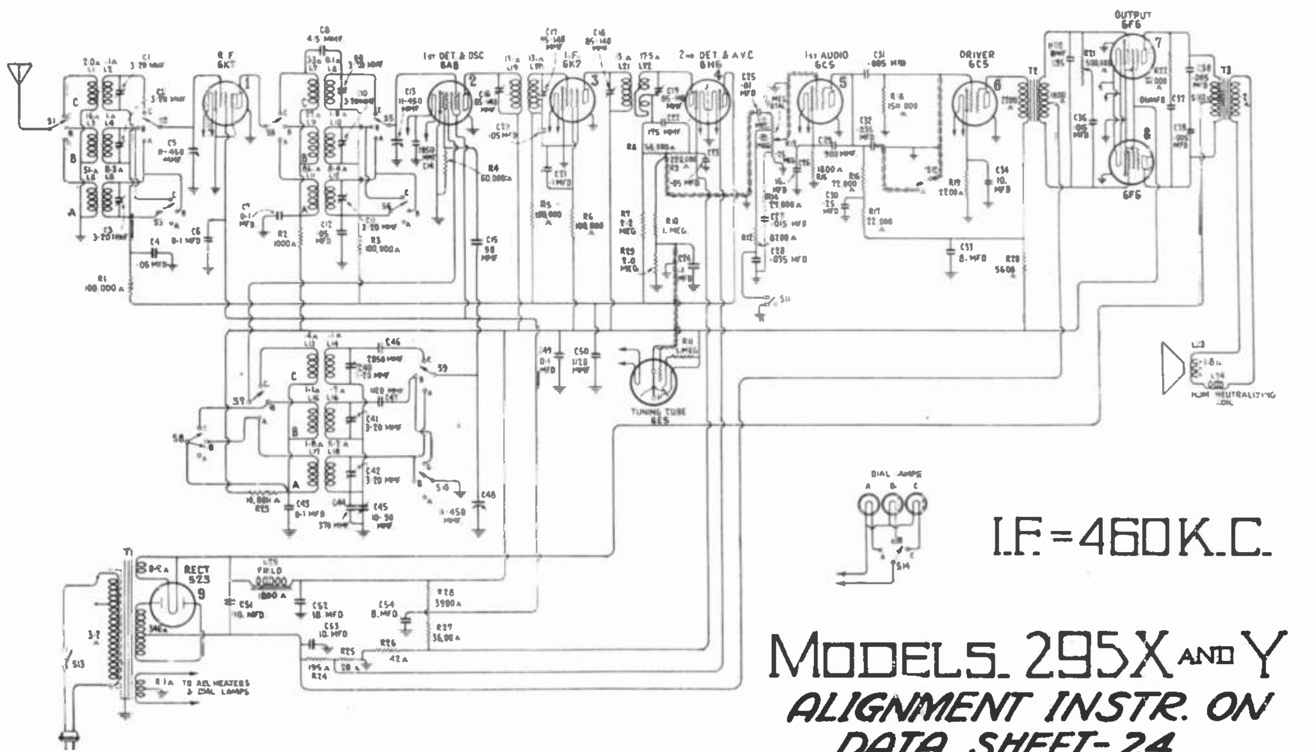


I.F. = 460 K.C.

MODELS 195X AND Y
ALIGNMENT INSTR. ON
DATA SHEET-24

1935-36

W195 Schematic Circuit Diagram



I.F. = 460 K.C.

MODELS 295X AND Y
ALIGNMENT INSTR. ON
DATA SHEET-24

1935-36

W295 Schematic Circuit Diagram

World Radio History

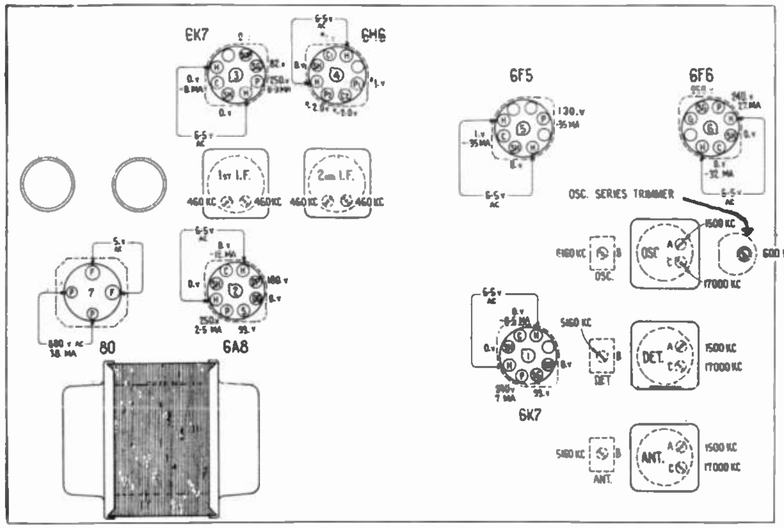


Figure 6A
W175 and W275 Radiotron Socket Readings and Trimmer Condensers

ALIGNMENT INSTRUCTIONS FOR MODELS. 175-275 AND 195-295

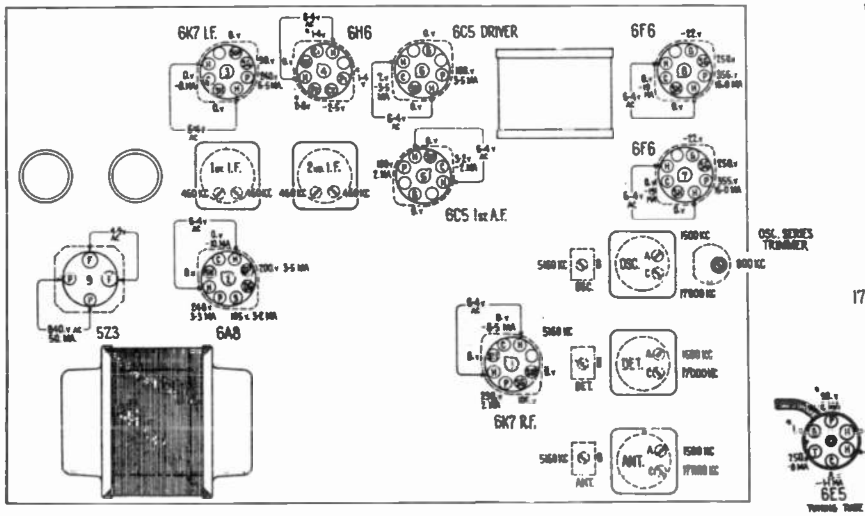


Figure 6A
W195 and W295 Radiotron Socket Readings and Trimmer Condensers

Checking with Tuning Wand—

Before making any R.F. oscillator or first detector adjustments, the accuracy of the existing adjustments may be checked with a tuning wand (Stock No. 6679). This wand consists of a bakelite rod having a brass cylinder at one end and a special finely divided iron insert at the other end. Inserting the cylinder into the center of a coil lowers its inductance, while inserting the iron end increases its inductance. From this, it is seen that unless the trimmer for a particular coil is properly aligned, the wand may increase the output of the receiver. A perfect adjustment is evidenced by a lowering of output when either end of the wand is inserted into a coil.

The shield over each R.F. coil assembly has a hole at its top for entrance of the tuning wand.

I. F. ADJUSTMENTS

Although this receiver has one I.F. stage, there are two transformers, each having two adjustable capacitors requiring adjustments. The transformers are all peaked, being tuned to 460 K.C.

A detailed procedure for making this adjustment follows:

(a) Connect the output of an external oscillator operating at 460 K.C. between the first detector grid and ground. Connect the output indicator across the voice coil of the loudspeaker.

(b) Place the receiver in operation and adjust the station selector until a point is reached where no signals are heard and turn the volume control to its maximum position. Reduce the oscillator output until a slight indication is obtained in the receiver output indicator.

(c) Refer to Figure 6. Adjust the trimmers of the I.F. transformers until maximum output is obtained. Go over the adjustments a second time.

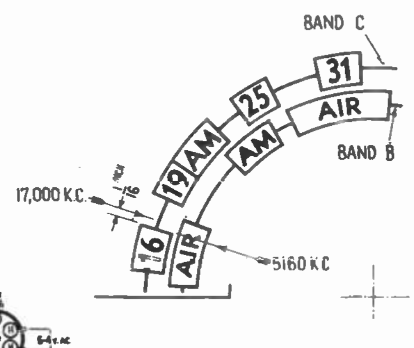


Figure 6B

Location of 5,160 and 17,000 K.C. Line-up Points

MODELS. 175-275 AND 195-295

This completes the I.F. adjustments. It is good practice to follow the I.F. adjustments with the R.F. and oscillator adjustments due to interlocking which always occurs between the two.

R. F. ADJUSTMENTS

Four oscillator and first detector adjustments are required in range "A". Three are required in range "B" and also in range "C".

To properly align the three ranges, each must be aligned individually in the order given. The preliminary set-up requires that the external oscillator be connected between the antenna and ground terminals of the receiver and the output indicator be connected across the voice coil of the loudspeaker. The volume control must be at its maximum position and the output of the oscillator must be at the minimum value possible to get an output indication under these conditions. In the high frequency bands, it may be necessary to disconnect the oscillator from the receiver and place it at a distance in order to get a sufficiently low input to the receiver.

The dial pointer must be properly set before starting actual adjustments. This is done by turning the variable capacitor until it is at its maximum capacity position. One end of the pointer should point exactly at the horizontal line at the low frequency end of band "A", while the other end should point to within $\frac{1}{16}$-inch of the horizontal line at the high frequency end of band "A".

Figure 6A shows the location of the trimmers for each band. Care must be exercised to only adjust the trimmers in the band under test. Figure 6B shows the location of the various line-up points on the dial.

RANGE "A"—

(a) Set the tuning range switch at "A" (Blue).
(b) Tune the external oscillator to 1,500 K.C., set the pointer at 1,500 K.C. and adjust the oscillator, detector and antenna trimmers for maximum output.
(c) Shift the external oscillator frequency to 600 K.C. Tune in the 600 K.C. signal, irrespective of scale calibration, and adjust the series trimmer for maximum output, at the same time rocking the variable tuning capacitor. Then readjust at 1,500 K.C. as described in (b).

RANGE "B"—

(a) Set tuning range switch at "B" (Green).
(b) Tune external oscillator to 5160 K.C. and set the gang condenser until the pointer indicates 5160 K.C.
(c) Adjust the oscillator, detector and antenna trimmers for maximum output.

RANGE "C"—

(a) Set the tuning range switch at "C" (Red).
(b) Tune the external oscillator to 17,000 K.C., and set the pointer at 17M. Adjust the oscillator trimmer for maximum output. The trimmer should be set at the first peak obtained when increasing the trimmer capacitor from minimum to maximum.
(c) Check for the image signal, which will be received at approximately 16,080 on the dial, if (b) has been properly done. It may be necessary to increase the external oscillator output for this check.
(d) Retune the receiver to the oscillator, leaving the oscillator set at 17,000 K.C. Adjust the antenna and detector short wave trimmers for maximum output.

No further adjustments are necessary.

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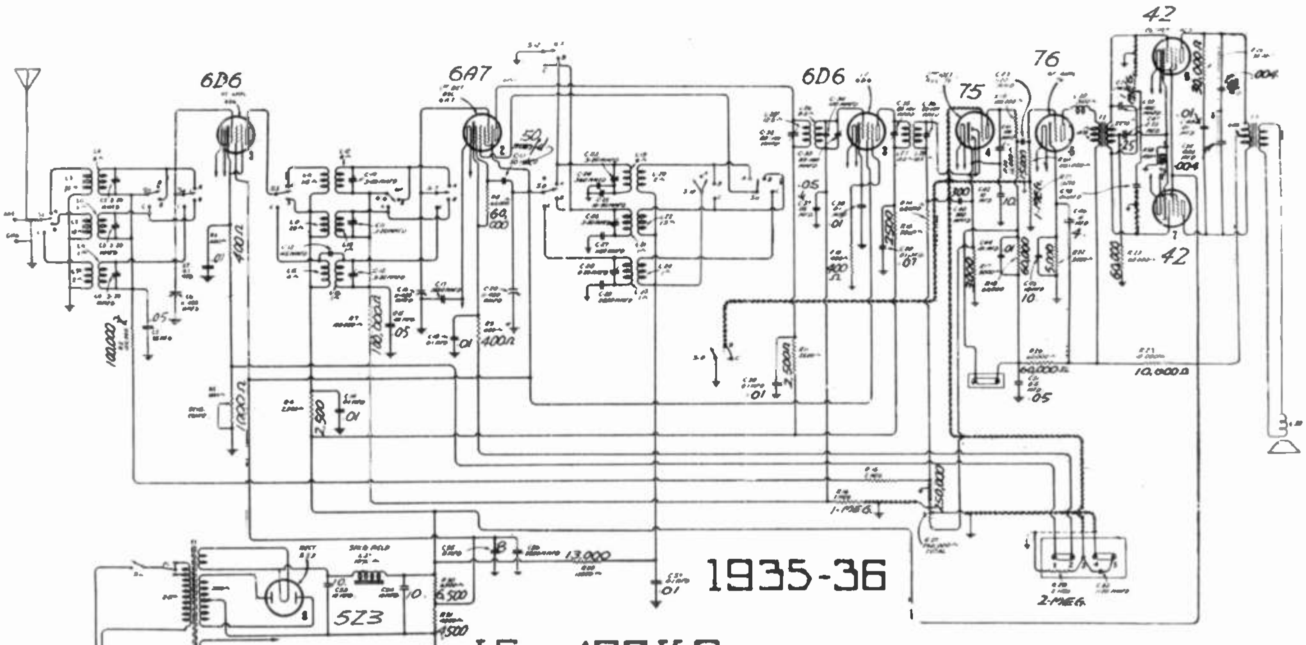
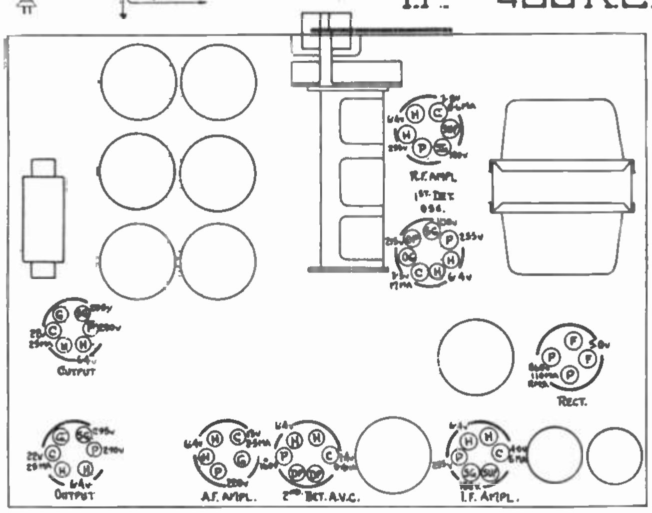


1935-36

I.F. = 460 K.C.

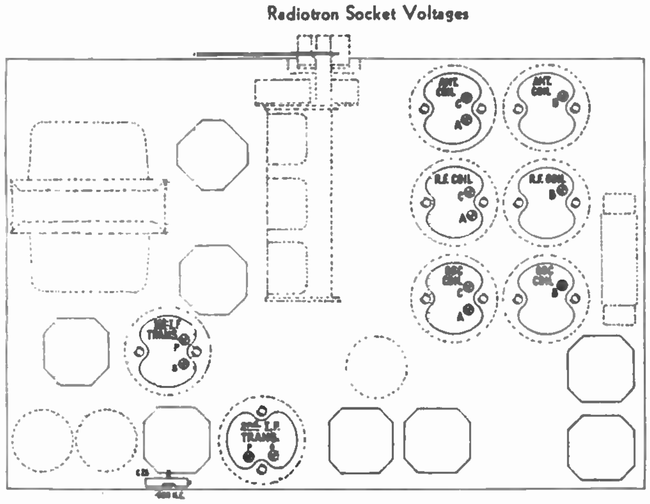
MODEL 185X



* CANNOT BE MEASURED WITH ORDINARY VOLTMETER

ALL VOLTAGES ARE TO GROUND

Radiotron Socket Voltages



Location of Trimmer Capacitors

Checking With Tuning Wand.—Before making any R.F., oscillator or first detector adjustments the accuracy of the present adjustments may be checked by means of the tuning wand (Stock No. 6679). The tuning wand consists of a bakelite rod having a brass cylinder at one end and a special finely divided iron insert at the other end. Inserting the cylinder into the center of a coil lowers its inductance, while inserting the iron end increases its inductance. From this, it is seen that unless the trimmer adjustment for a particular coil is perfect at alignment frequencies, inserting one end of the wand may increase the output of a particular signal. A perfect adjustment is evidenced by a lowering of output when either end of the wand is inserted into a coil.

The shields over the R.F. coil assembly have a hole at their top for entrance of the tuning wand.

I. F. TUNING CAPACITOR ADJUSTMENTS

This receiver has one I.F. stage with two transformers having four adjustable capacitors that may require adjustment. The transformers are all peaked at 460 K.C.

A detailed procedure for making this adjustment follows:

(a) Connect the output of an external oscillator tuned to 460 K.C. between the first detector grid and ground. Connect the output indicator across the voice coil of the loudspeaker.

(b) Place the oscillator in operation at 460 K.C. Place the receiver in operation and adjust the station selector until a point is reached (Position A) where no signals are heard and turn the volume control to its maximum position. Reduce the oscillator input until a slight indication is obtained in the output indicator.

CONTINUED ON DATA SHEET-26.

World Radio History

ALIGNMENT INSTRUCTIONS FOR MODEL 185X

CONTINUED FROM DATA SHEET-25.

(e) Adjust each trimmer of the I.F. transformers until maximum output is obtained. Go over the adjustments a second time.

This completes the I.F. adjustments. However, it is good practice to follow the I.F. adjustments with the R.F. and oscillator adjustments due to interlocking which always occurs.

R. F., OSCILLATOR AND FIRST DETECTOR ADJUSTMENTS

Four R.F. oscillator and first detector adjustments are required in Range "A". Three are required in Ranges "B" and "C".

To properly align the various ranges, each range must be aligned individually. The preliminary set-up requires the external oscillator to be connected between the antenna and ground terminals of the receiver and the output indicator across the voice coil of the loudspeaker. The volume and sensitivity controls must be at the maximum position and the input from the oscillator must be at the minimum value possible to get an output indication under these conditions. In the high frequency ranges, it may be necessary to disconnect the oscillator from the receiver and place it at a distance in order to get a sufficiently low input to the receiver.

The dial pointer must be properly set before starting any actual adjustments. This is done by turning the variable capacitor until it is at its maximum capacity position. One end of the pointer should point exactly at the horizontal line at the lowest frequency end of Range "A", while the other end should point to within 1/64 inch of the horizontal line at the highest frequency end of Range "A".

Range "A":—

(a) Set the tuning range switch at "A"

(b) Tune the external oscillator to 1,500 K.C., set the pointer at 1,500 K.C. and adjust the oscillator, detector and R.F. trimmers for maximum output.

(c) Shift the external oscillator frequency to 600 K.C. Tune in the 600 K.C. signal, irrespective of scale calibration, and adjust the series trimmers, marked 600 K.C., Figure 5, for maximum output, at the same time rocking the variable tuning capacitor. Then readjust at 1,500 K.C. as described in (b).

Range "B":—

(a) Set the tuning range switch at "B".

(b) Tune the external oscillator to 5,160 K.C. and set the pointer at 5,160 K.C. Adjust the oscillator trimmer for maximum output. The trimmer should be set at the first peak obtained when increasing the trimmer capacitor from minimum to maximum.

(c) Check for the image signal, which should be received at approximately 4,240 K.C. on the dial. It will be necessary to increase the external oscillator output for this check.

(d) The antenna and detector trimmers should now be peaked for maximum output.

Range "C":—

(a) Set the tuning range switch at "C".

(b) Tune the external oscillator to 17,000 K.C. and set the pointer at 17 M.C. Adjust the oscillator trimmer for maximum output. The trimmer should be set at the first peak obtained when increasing the trimmer capacitor from minimum to maximum.

(c) Check for the image signal, which should be received at approximately 16,080 on the dial. It may be necessary to increase the external oscillator output for this check.

(d) Reduce the capacity of the detector trimmer, while rocking the tuning capacitor, until the signal disappears. The first detector circuit is then at the oscillator frequency and the W-6A7 tube is blocked. Then increase the capacity of the detector trimmer, while rocking the tuning capacitor, until the signal is peaked for maximum output.

(e) The antenna trimmer should now be peaked for maximum output. It is not necessary to rock the main tuning capacitor while making this adjustment.

MAGNETIC PICKUP CONNECTIONS

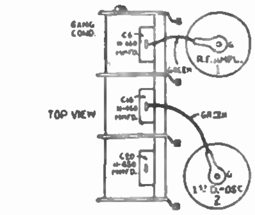
A Terminal Board is provided at the rear of the chassis for adding phonograph facilities to this instrument. Figure 7 shows the connections that will be required.

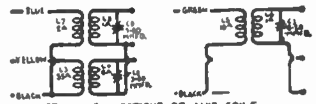
FIDELITY LINK

It will be noted that a small link is mounted on the rear apron of the chassis. The purpose of the link is to increase the low frequency output of the receiver when open.

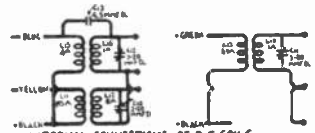
VOLTAGE READINGS

The following voltages are those at the various tube sockets while the receiver is in operating condition. No allowance has been made for currents drawn by the meter, and if low-resistance meters are used, such allowances must be made.

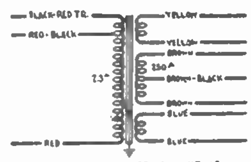




INTERNAL CONNECTIONS OF ANT. COILS

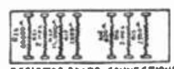


INTERNAL CONNECTIONS OF R.F. COILS



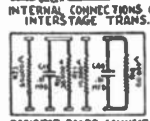
POWER TRANS. INTERNAL WIRING

INTERNAL CONNECTIONS OF OSC. COILS

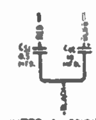


RESISTOR BOARD CONNECTIONS

INTERNAL CONNECTIONS OF INTERSTAGE TRANS.

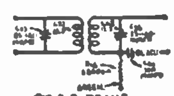


RESISTOR BOARD CONNECTIONS

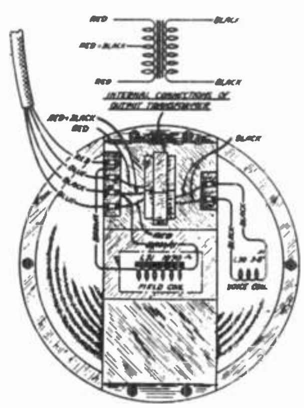


INTERNAL CONNECTIONS OF CAP. PACK

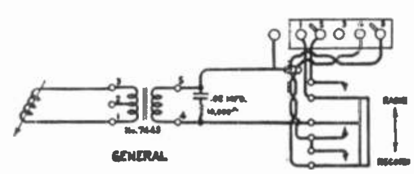
1ST I.F. TRANS.



2ND I.F. TRANS.



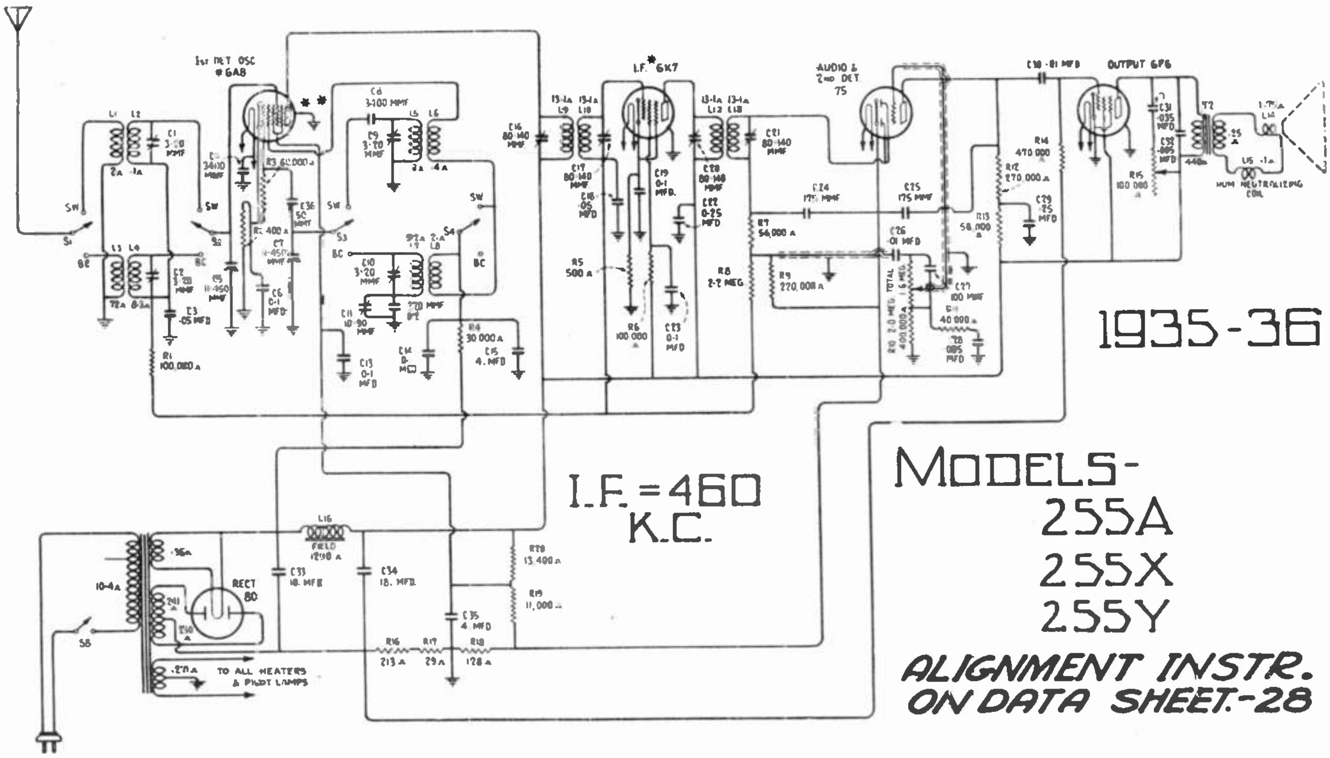
Reproducer Wiring



Magnetic Pickup Connections

Place Tuning Range Switch in A position during record reproduction

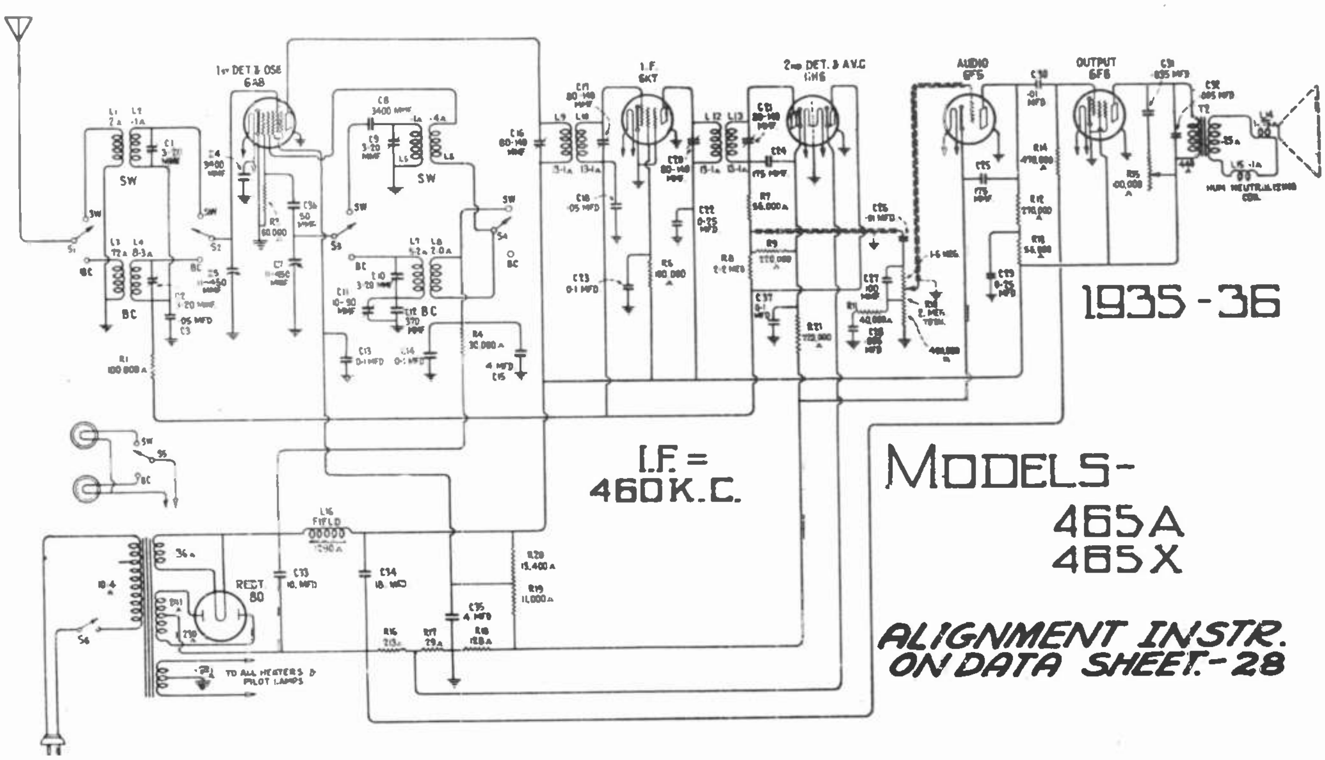
World Radio History



W255 Schematic Circuit Diagram

*On some chassis W-6A7 and W-78 are used instead of W-6A8 and W-6K7 respectively

**On early production pin No. 1 of 6A8 was connected to cathode instead of ground.

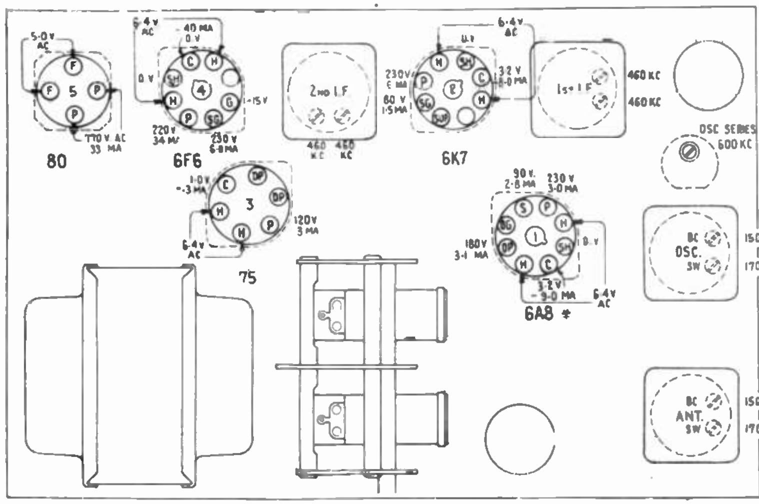


W465 Schematic Circuit Diagram

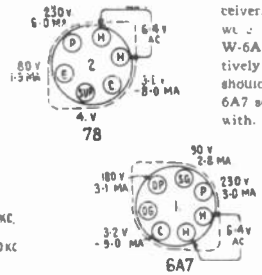
*On a very few sets W-6A7 and W-78 are used instead of W-6A8 and W-6K7 respectively.

World Radio History

ALIGNMENT INST. FOR MODELS 255A 255X, 255Y, 465A, 465X

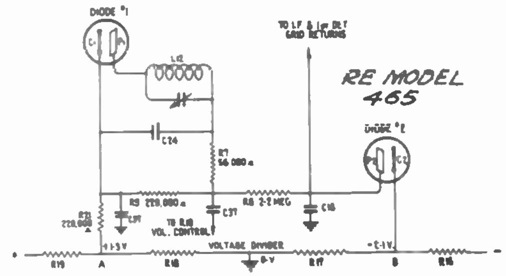


W255 Radiotron Socket Readings and Trimmer Condensers (Fig 4)

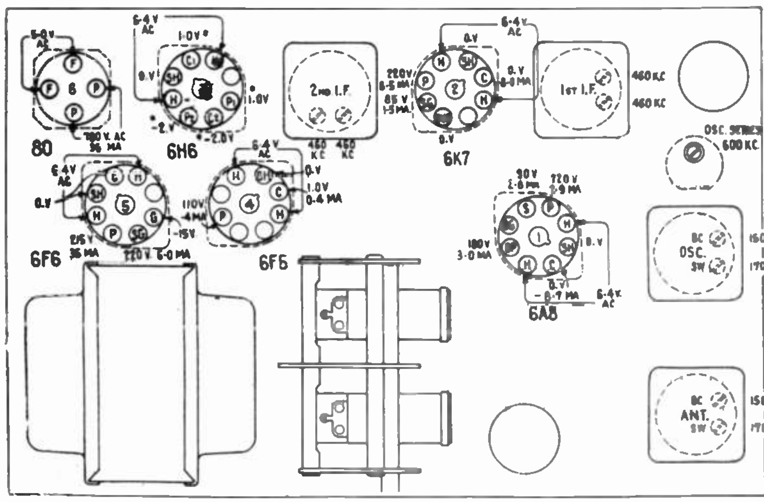


On some W-255A receivers, a W-6A7 and a W 78 were used in place of the W-6A8 and W-6K7 respectively. In this case, reference should be made to 78 and 6A7 sockets illustrated herewith.

RE MODEL W-255A



Detail of Second Detector and A.V.C. Circuit



W465 Radiotron Socket Readings and Trimmer Condensers

Checking with Tuning Wand—

Before making any R.F. oscillator or first detector adjustments, the accuracy of the existing adjustments may be checked with a tuning wand (Stock No. 6679). This wand consists of a bakelite rod having a brass cylinder at one end and a special finely divided iron insert at the other end. Inserting the cylinder into the center of a coil lowers its inductance, while inserting the iron end increases its inductance. From this, it is seen that unless the trimmer for a particular coil is properly aligned, the wand may increase the output of the receiver. A perfect adjustment is evidenced by a lowering of output when either end of the wand is inserted into a coil.

The shield over each R.F. coil assembly has a hole at its top for entrance of the tuning wand.

I.F.

Although this receiver has one I.F. stage, there are two transformers, each having two adjustable capacitors requiring adjustments. The transformers are all peaked, being tuned to 460 K.C.

A detailed procedure for making this adjustment follows:

(a) Connect the output of an external oscillator operating at 460 K.C. between the first detector grid and ground. Connect the output indicator across the voice coil of the loudspeaker.

(b) Place the receiver in operation and adjust the station selector until a point is reached where no signals are heard and turn the volume control to its maximum position. Reduce the oscillator output until a slight indication is obtained in the receiver output indicator.

(c) Refer to Figure 4. Adjust the trimmers of the I.F. transformers until a maximum output is obtained. Go over the adjustments a second time.

This completes the I.F. adjustments. It is good practice to follow the I.F. adjustments with the R.F. and oscillator adjustments due to interlocking which always occurs between the two.

R.F.

Three oscillator and first detector adjustments are required in range "BC". Two are required in range "SW".

To properly align the two ranges, each must be aligned individually in the order given. The preliminary set-up requires that the external oscillator be connected between the antenna and ground terminals of the receiver and the output indicator be connected across the voice coil of the loudspeaker. The volume control must be at its maximum position and the output of the oscillator must be at the minimum value possible to get an output indication under these conditions. In the high frequency bands, it may be necessary to disconnect the oscillator from the receiver and place it at a distance in order to get a sufficiently low input to the receiver.

The dial pointer must be properly set before starting actual adjustments. This is done by turning the variable capacitor until it is at its maximum capacity position. One end of the pointer should point exactly at the horizontal line at the low frequency end of band "BC", while the other end should point to within $\frac{1}{32}$-inch of the horizontal line at the high frequency end of band "BC".

Figure 4 shows the location of the trimmers for each band. Care must be exercised to only adjust the trimmers in the band under test.

RANGE "BC"—

(a) Set the tuning range switch at "BC".

(b) Tune the external oscillator to 1,500 K.C., set the pointer at 1,500 K.C. and adjust the oscillator and detector trimmers for maximum output.

(c) Shift the external oscillator frequency to 600 K.C. Tune in the 600 K.C. signal, irrespective of scale calibration, and adjust the series trimmer for maximum output, at the same time rocking the variable tuning capacitor. Then readjust at 1,500 K.C. as described in (b).

RANGE "SW"—

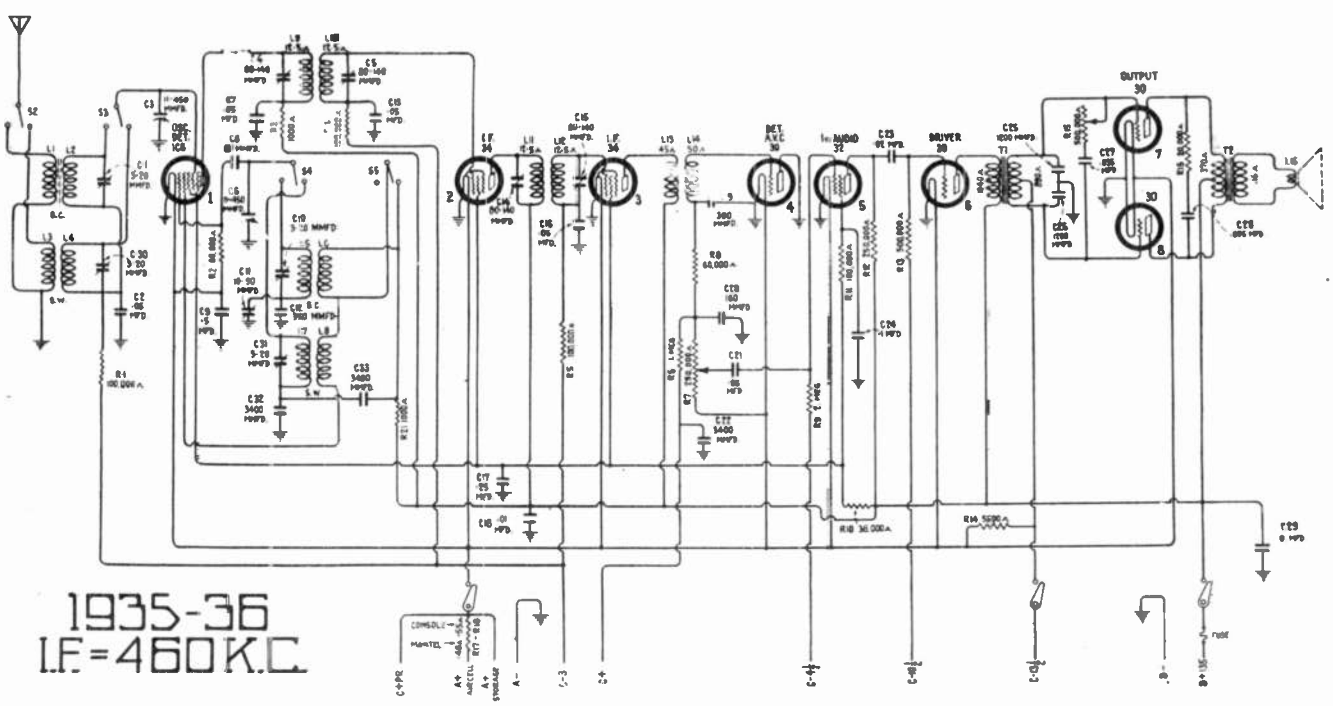
(a) Set the tuning range switch at "SW".

(b) Tune the external oscillator to 17,000 K.C., and set the pointer at 17M. Adjust the oscillator trimmer for maximum output. The trimmer should be set at the first peak obtained when increasing the trimmer capacitor from minimum to maximum.

(c) Check for the image signal, which will be received at approximately 16,080 on the dial, if (b) has been properly done. It may be necessary to increase the external oscillator output for this check.

(d) Retune the receiver to the oscillator, leaving the oscillator set at 17,000 K.C. Adjust the antenna (detector) short wave trimmer for maximum output.

World Radio History



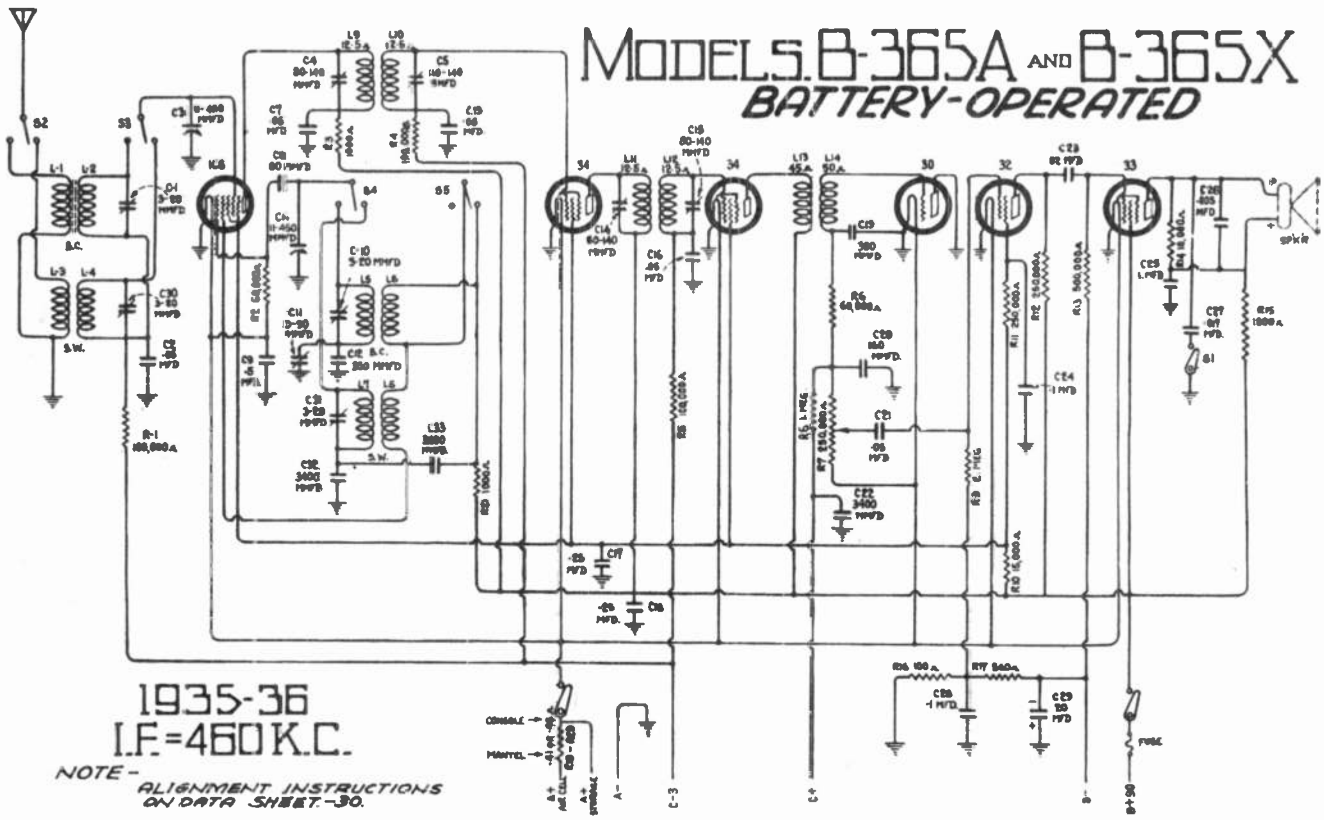
1935-36
I.F.=460 K.C.

MODELS B-285A AND B-285X
BATTERY-OPERATED

B +	— Red	
A —, B —	— Black	
B — 13½	— Black with Red strand	
C — 10½	— Green and Red	
C — 4½	— Green with Yellow strand	
C + P R	— Brown	
C +	— Green	COLOR
C — 3	— Yellow	CODE.
A +	— Brown	

NOTE - ALIGNMENT INSTRUCTIONS ON DATA SHEET-30.

MODELS B-365A AND B-365X
BATTERY-OPERATED



1935-36
I.F.=460 K.C.

NOTE - ALIGNMENT INSTRUCTIONS ON DATA SHEET-30.

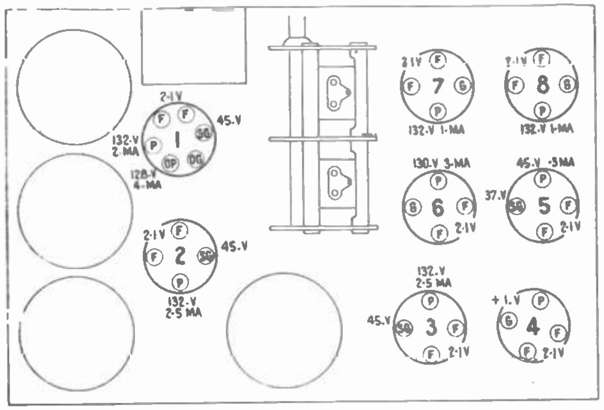
DATA SHEET

WESTINGHOUSE-30

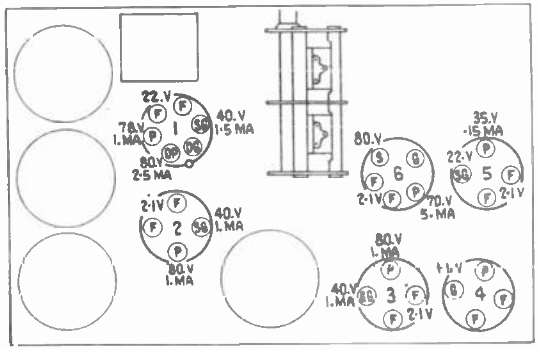
COURTESY CANDN

PRINTED IN CANADA

ALIGNMENT INST. ON MODELS. B-285A-B-285X-B-365A B-365X-B-385X



MODELS. B-285A AND B-285X Socket Voltages



MODELS. B-365A B-365X Socket Voltages

(1) *Line-up Capacitor Adjustments:—*

To properly align this receiver, it is essential that a modulated R.F. oscillator, such as Stock No. 9050, an output indicator and an alignment tool (Stock No. 4160) be available. Figure 3 shows the location of the various line-up capacitors.

I.F. Tuning Adjustments:—

Two tuned transformers comprising four tuned circuits are used in the intermediate amplifier. These are tuned to 460 K.C. and the adjustment screws are accessible as shown in Figure 3. Proceed as follows:

(a) Short-circuit the antenna and ground terminals and tune the receiver so that no signal is heard. Set the volume control at maximum and connect a ground to the ground terminal.

(b) Connect the test oscillator output between the first detector control grid and chassis ground. Connect the output meter across the voice coil of the loudspeaker and adjust the oscillator output so that, with the receiver volume control at maximum, a slight deflection is obtained in the output

(c) Adjust the secondary and primary of the first and then the second I.F. transformers until a maximum deflection is obtained. Keep the oscillator output at a low value so that only a slight deflection is obtained on the output meter at all times. Go over these adjustments a second time, as there is a slight interlocking of adjustments. This completes the I.F. adjustments.

R. F. and Oscillator Adjustments:

The R.F. line-up capacitors are located at the bottom of the coil assemblies instead of their usual position on the gang capacitor. They are all accessible from the bottom of the chassis except the 600 K.C. series capacitor, which is accessible from the top of the chassis. Proceed as follows:

(a) Connect the output of the oscillator to the antenna and ground terminals of the receiver. Check the position of the indicator pointer when the tuning capacitor plates are fully meshed. It should be coincident with the radial line adjacent to the dial reading of 530. Then set the Test Oscillator at 1500 K.C., the dial indicator at 1500 and the oscillator output so that a slight deflection will be obtained in the output meter when the volume control is at its maximum position.

(b) With the Range Switch at the "L.W." position adjust the two R.F. coils, until a maximum deflection is obtained in the output meter. Then shift the Test Oscillator frequency to 600 K.C. The trimmer capacitor, accessible from the top of the chassis, should now be adjusted for maximum output while rocking the main tuning capacitor back and forth through the signal. Then repeat the 1500 K.C. adjustment.

(c) Now place the Range Switch at the "S.W." position, shift the Test Oscillator to 17,000 K.C. and set the dial at 17M. Adjust the two trimmer capacitors designated as 17,000 K.C. in Figure 3 for maximum output, beginning with the oscillator trimmer. It will be noted that the oscillator and first detector trimmers will have two positions at which the signal will give maximum output. The position which uses the lower trimmer capacitance, obtained by turning the screw counter-clockwise, is the proper adjustment for the oscillator, while the position that uses a higher capacitance is correct for the detector. The detector trimmer must be adjusted for maximum output while rocking the main tuning capacitor back and forth through the signal. Both of these adjustments must be made as indicated irrespective of output.

The important points to remember are the need for using the minimum oscillator output to obtain a deflection in the output meter with the volume control at its maximum position and the manner of obtaining the proper high frequency oscillator and detector adjustments.

NOTES ON MODEL B-385X

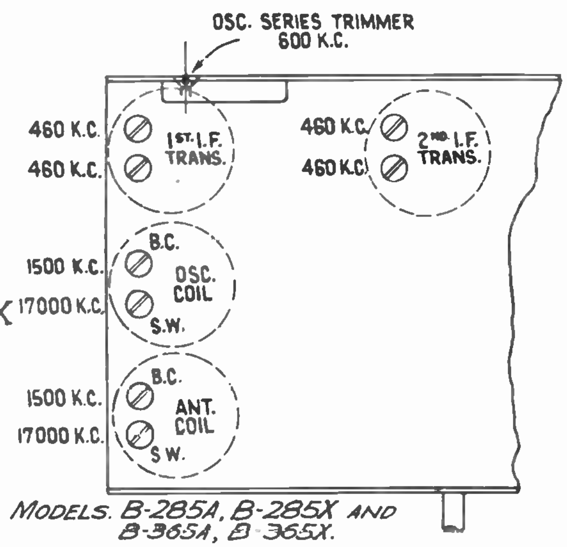
The Model B-385-X is similar to the Model B-285-X except for the following:

Condensers C-25 and C-26 are increased to 2400 mmfd. Condenser C-28 is decreased to 3400 mmfd. Resistor R-15 previously in series with it is omitted. Resistor R-11 has been increased to 250,000 ohms. Resistor R-14 has been increased to 6,500 ohms and connected as a bleeder across the C-6 volt tap instead of across the C-13½ volt tap.

2 - W-49 Radiotrons which do not require any C bias are now used in the output stage instead of W-30 Radiotrons.

The B Battery has been reduced to 90 volts and the following changes made in the C Battery taps: C-3 has been changed to C-1½; C-4½ has been changed to C-3; C-10½ has been changed to C-6 and connected to the circuit by means of the switch blade formerly used for connection of C-13½. C-13½ volt tap has been removed and the grid return from the centre tap of the push pull input transformer now goes directly to ground without any C bias.

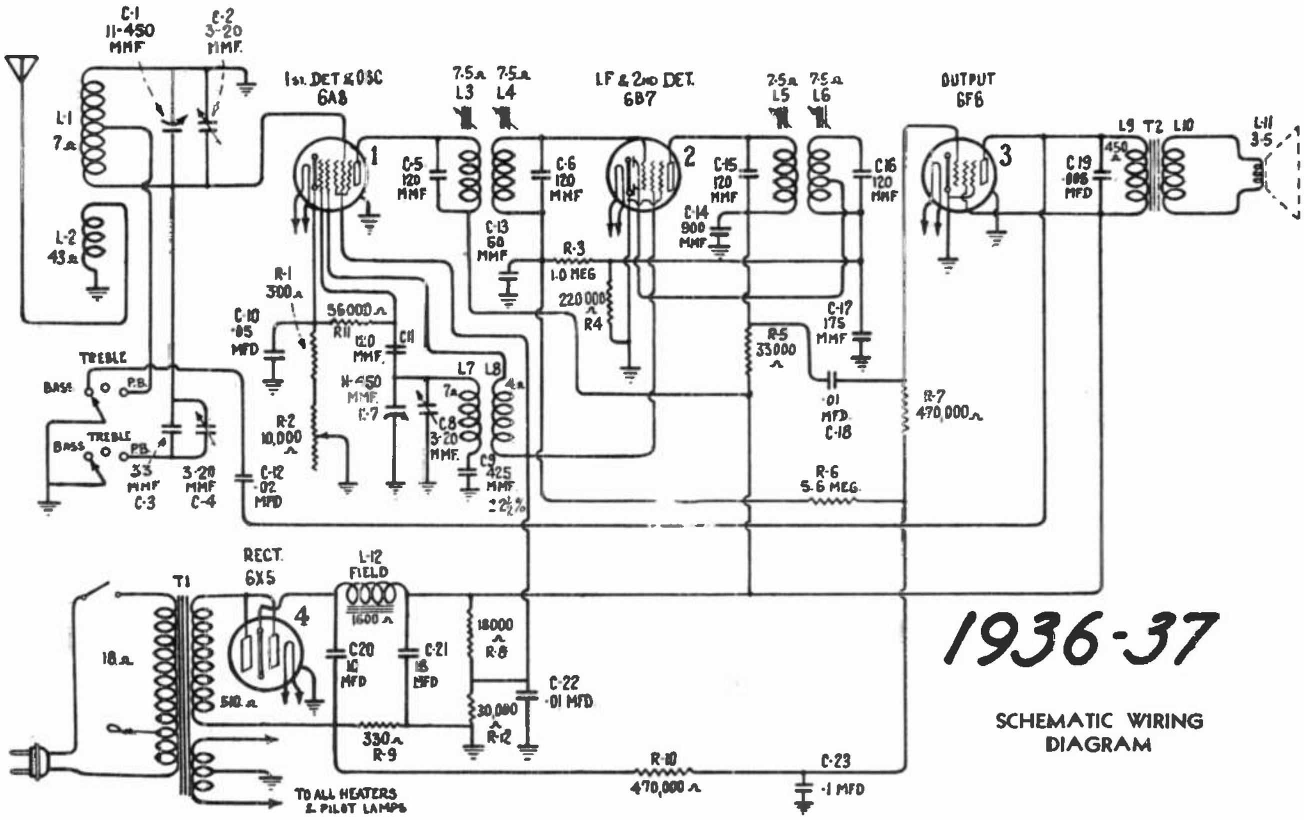
The colour code for the battery cable is given herewith: C+, Brown; A+, Brown; B+, Red; A-, Black; B-, Black; C+, Green; C-1½, Green; with Yellow Tracer; C-3, Yellow; C-6, Green and Red.



MODELS. B-285A, B-285X AND B-365A, B 365X.

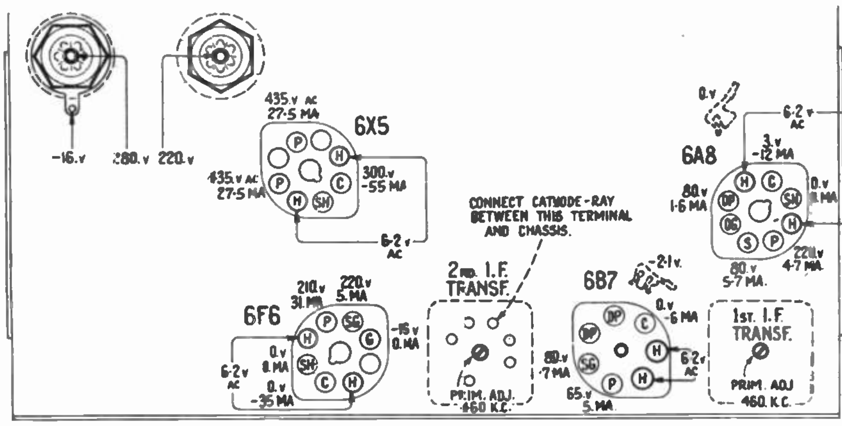
Location of Trimming Condensers

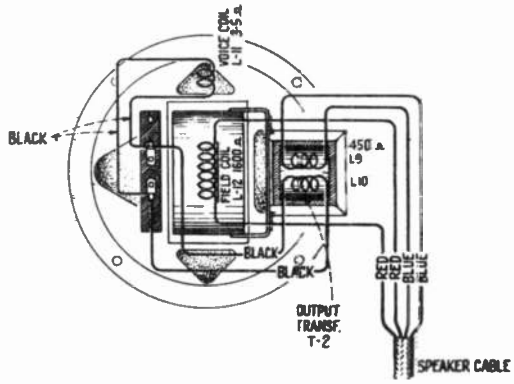
World Radio History



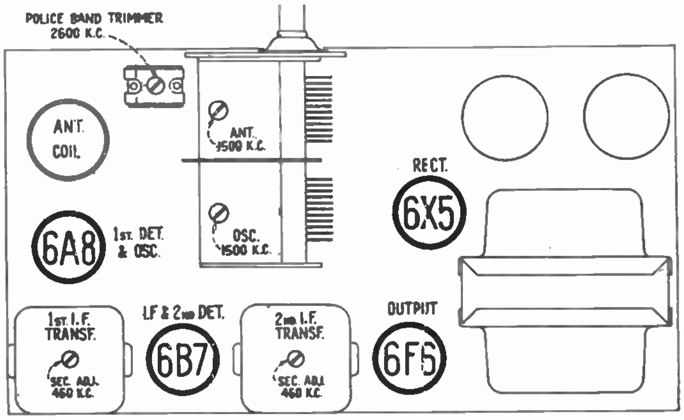
1936-37

SCHEMATIC WIRING DIAGRAM





REPRODUCER CONNECTIONS



TRIMMER LOCATIONS (also see below)

MODEL 410A

I.F.= 460Kc.

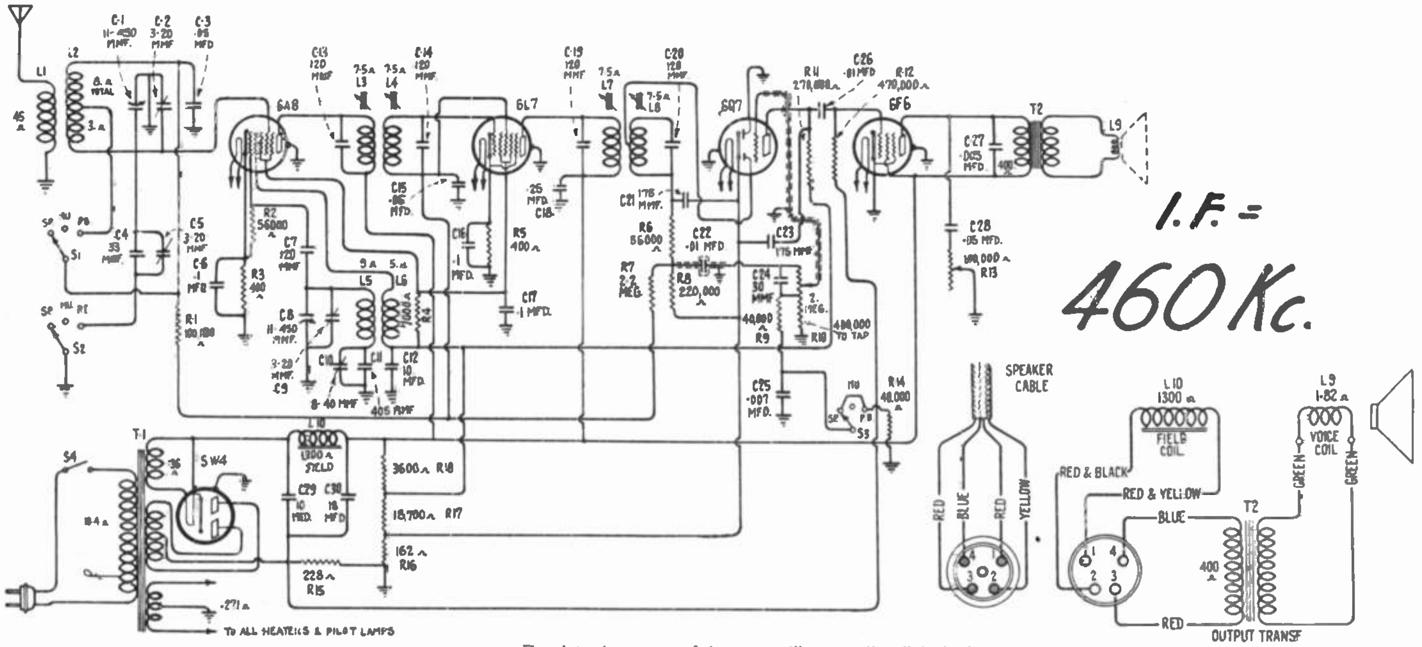
The line up adjustment is made in the usual way to the adjustment screws shown in the trimmer location diagram. When making adjustment the test oscillator frequency, receiver dial setting and switch position should correspond to the indicated line up frequency. When making I.F. adjustment the oscillator should be connected to the W-6A8 control grid and ground with the antenna and ground wires shorted.

This receiver is capable of 10 K.C. separation of broadcast stations when properly adjusted.

DATA SHEET

COURTESY- CANDN. WESTINGHOUSE-31 CO. LTD.

World Radio History



I.F. = 460 Kc.

Reproducer Wiring Diagram

MODELS 511A. and 511X.

1936-37.

Alignment Procedure

There are three alignment trimmers provided in the antenna transformer and oscillator coil tuned circuits. The i-f transformer adjustments are made by means of screws attached to molded magnetite cores. All of these circuits have been accurately adjusted during manufacture and should remain properly aligned unless affected by abnormal conditions or altered during servicing. Loss of sensitivity, improper tone quality, and poor selectivity are the usual indications of improper alignment.

I-F Core Adjustments:

The four adjustment screws (attached to molded magnetite cores) of the two i-f transformers are located one on top and one on bottom of each i-f transformer. Each circuit must be aligned to a basic frequency of 460 kc. To do this, attach the output indicator across the loudspeaker voice coil.

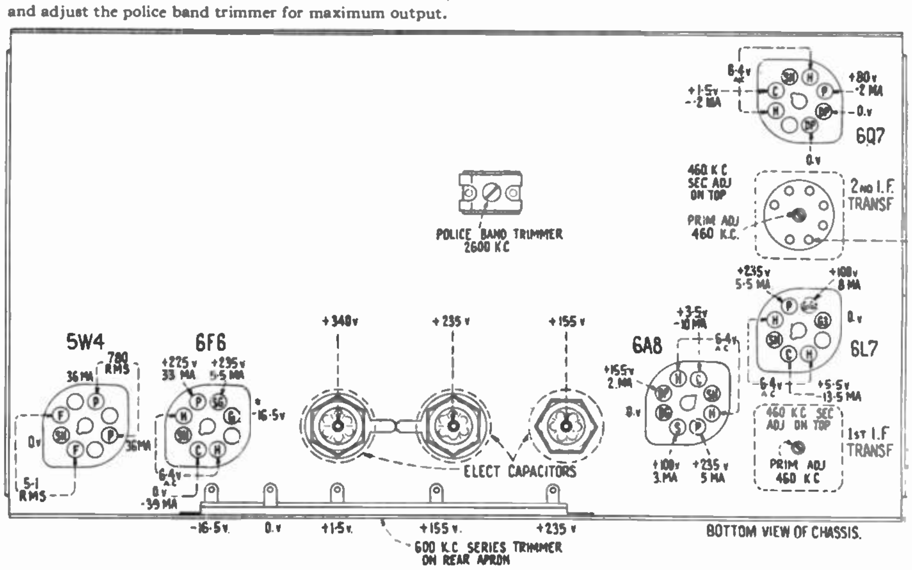
Connect the output of the test oscillator to the control grid of the W-6A8 through a .05 mfd. capacitor. Connect the test oscillator ground terminal to the ground terminal of the receiver chassis. Tune the oscillator to 460 kc. Advance the receiver volume control to its full-on position and adjust the receiver tuning control to a point, within its range, where no interference is encountered either from local broadcast stations or from the heterodyne oscillator. Increase the output of the test oscillator until a slight indication is present on the output indicator. Adjust the two magnetite core screws of the second i-f transformer to produce maximum (peak) indicated receiver output. Then, adjust the two magnetite core screws of the first i-f transformer for maximum (peak) receiver output as shown by the indicating device. During these adjustments, regulate the test oscillator output so that the indication is always as low as possible. By doing so, broadness of tuning due to a.v.c. action will be avoided. It is advisable to repeat the adjustment of all i-f magnetite core screws to assure that the interaction between them has not disturbed the original adjustment.

Broadcast Trimmer Adjustments:

Calibrate the tuning dial by setting the pointer to the angle of the border line of the dial immediately below the 530 kc. calibration point, with the two-gang tuning condenser in full mesh. The output indicator should be left connected to the system. Connect the test oscillator to antenna and ground terminals of the chassis through a 200 mmfd. condenser. Adjust the test oscillator to 1500 kc. and set the receiver tuning control to a dial reading of 1500 kc. Leave the volume control of the receiver at its maximum position. Make sure that the Power, Range and Music Speech Switch is at its broadcast position. Regulate the output of the test oscillator until a slight indication is perceptible at the receiver output. Then adjust the two trimmers, C9 and C2, of the oscillator and antenna transformer coils (mounted on the variable condenser) so that each produces maximum (peak) receiver output. After this maximum has been accurately obtained, shift the test oscillator to 600 kc. Tune the receiver to pick up this signal, disregarding the dial reading at which it is best received. Then, adjust the receiver oscillator series trimmer, C10, simultaneously rocking the tuning control backward and forward through the signal until maximum receiver output results from these combined operations. The adjustment at 1,500 kc. should then be repeated to correct for any change which may have been caused by the oscillator series trimmer adjustment.

Police Band Trimmer Adjustment:

This adjustment should be made with the same layout as the broadcast trimmer adjustment. The Power Range and Music-Speech Switch should be set to the police band position. Set the test oscillator dial and the receiver dial both to 2,600 kc. and adjust the police band trimmer for maximum output.



Radiotron Socket Voltages and Trimmer Locations

COURTESY - CANDN.

DATA SHEET WESTINGHOUSE - 32 CO. LTD.

World Radio History

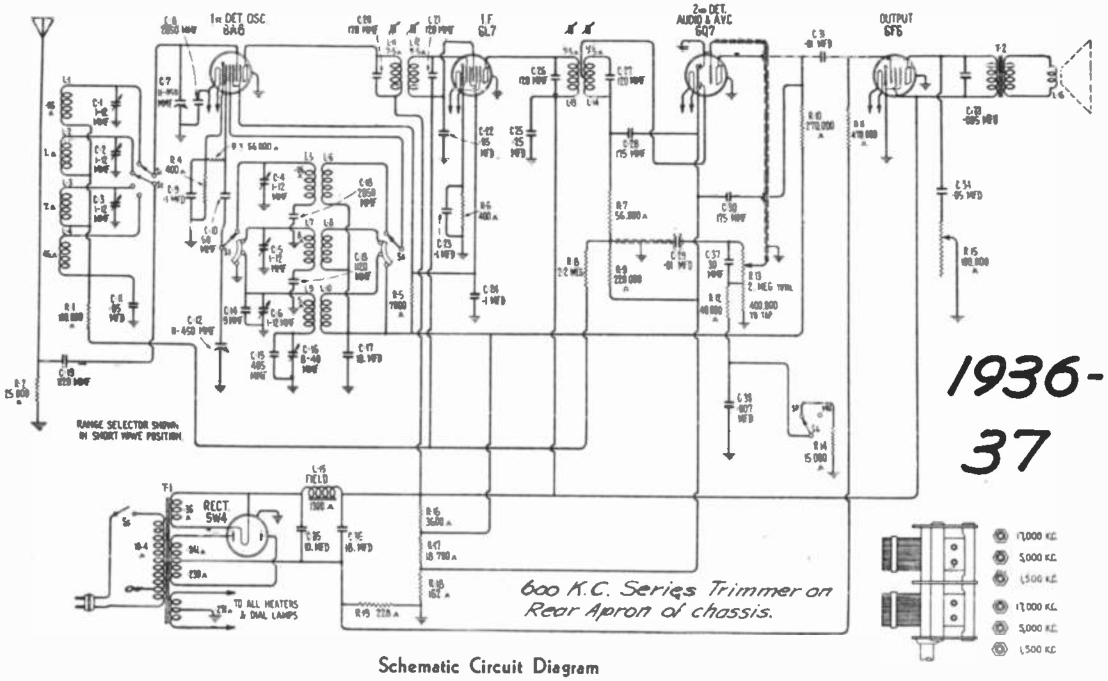
WESTINGHOUSE -33
Courtesy- Canad. Co. Ltd.

DATA SHEET

Models 512-A, X and Y

1936-37

I.F. = 460 K.C.

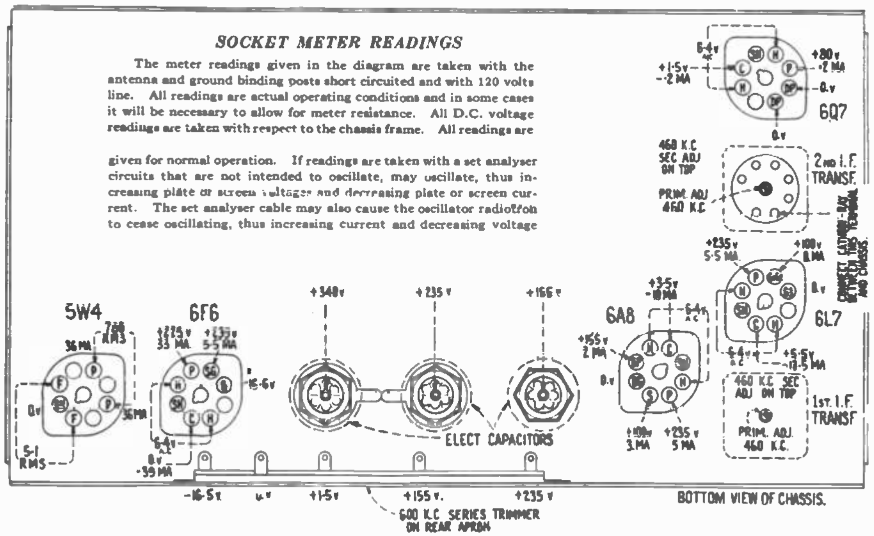


Schematic Circuit Diagram

Note--R2 was 1.0 Meg. on early production. On later production, also, two line filter condensers H36176 0.02 Mfd. were added; one from each side of line transformer primary to ground.

SOCKET METER READINGS

The meter readings given in the diagram are taken with the antenna and ground binding posts short circuited and with 120 volts line. All readings are actual operating conditions and in some cases it will be necessary to allow for meter resistance. All D.C. voltage readings are taken with respect to the chassis frame. All readings are given for normal operation. If readings are taken with a set analyser circuits that are not intended to oscillate, may oscillate, thus increasing plate or screen voltages and decreasing plate or screen current. The set analyser cable may also cause the oscillator radiotron to cease oscillating, thus increasing current and decreasing voltage



Radiotron Socket Voltages and I.F. Trimmer Locations

ALIGNMENT INSTRUCTIONS FOR MODELS-512A, X and Y. MODELS-813A, X and Y.

6L7 on Models 813A, X, and Y

Connect the output of the test oscillator to the control grid of the W-6A8 through a .05 mfd. capacitor. Connect the test oscillator ground terminal to the ground terminal of the receiver chassis. Tune the oscillator to 460 kc. Advance the receiver volume control to its full-on position and adjust the receiver tuning control to a point within its range, where no interference is encountered either from local broadcast stations or from the heterodyne oscillator. Increase the output of the test oscillator until a slight indication is present on the output indicator. Adjust the two magnetite core screws of the second i-f transformer to produce maximum (peak) indicated receiver output. Then adjust the two magnetite core screws of the first i-f transformer for maximum (peak) receiver output as shown by the indicating device

Broadcast Trimmer Adjustments:

Calibrate the tuning dial by setting the pointer to the angle of the border line of the dial immediately below the 530 kc. calibration point, with the two-gang tuning condenser in full mesh. The output indicator should be left connected to the system. Connect the test oscillator to antenna and ground terminals of the chassis through a 200 mmfd. condenser. Adjust the test oscillator to 1500 kc. and set the receiver tuning control to a dial reading of 1500 kc. Leave the volume control of the receiver at its maximum position. Make sure that the Range Selector is at its broadcast position. Regulate the output of the test oscillator until a slight indication is perceptible at the receiver output. Then adjust the two 1500 kc. trimmers (see diagram) of the oscillator and antenna transformer coils so that each produces maximum (peak) receiver ouput. After this maximum has been accurately obtained, shift the test oscillator to 600 kc. Tune the receiver to pick up this signal, disregarding the dial reading at which it is best received. Then, adjust the receiver 600 kc. series trimmer, C16, simultaneously rocking the tuning control backward and forward through the signal until maximum receiver output results from these combined operations. The adjustment at 1,500 kc. should then be repeated to correct for any change which may have been caused by the oscillator series trimmer adjustment.

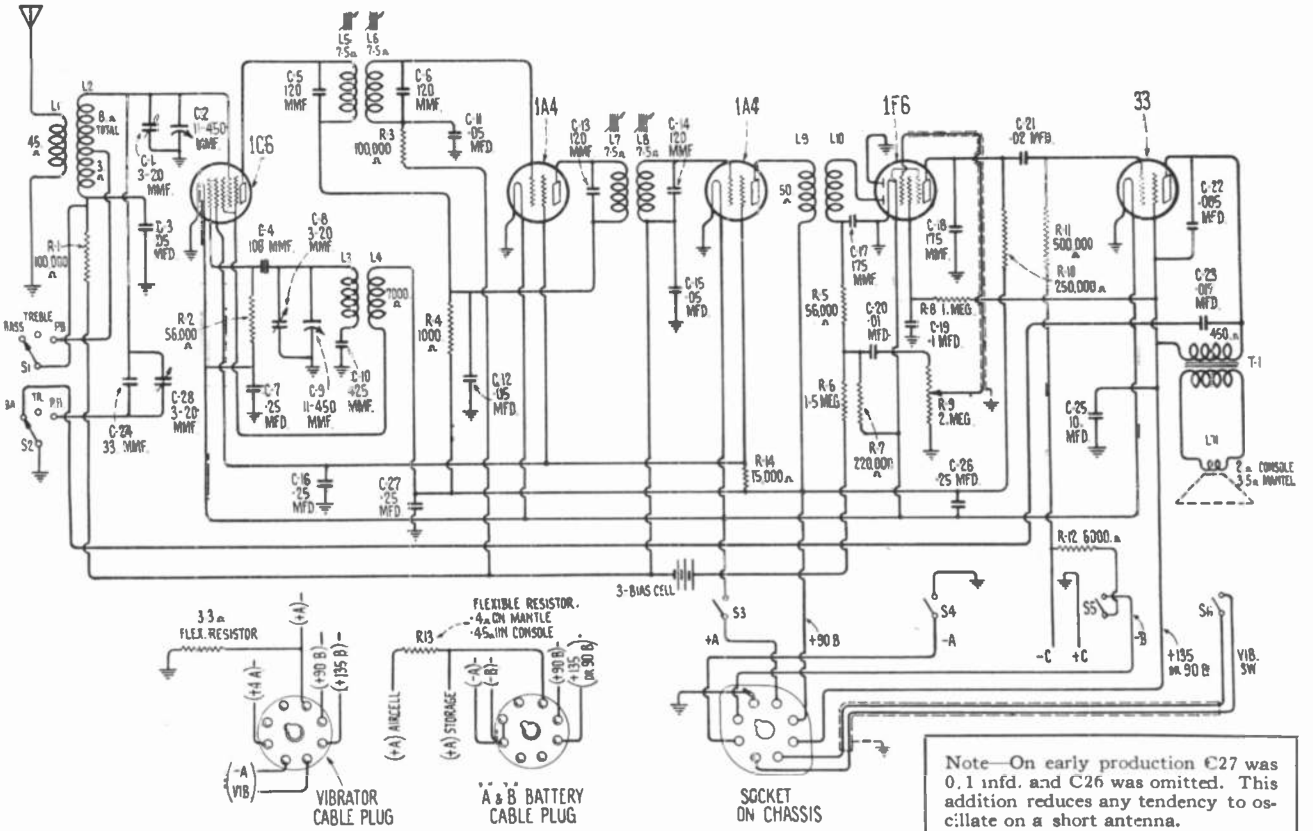
"Medium Wave" Trimmer Adjustments

Use the same equipment and layout as for broadcast trimmer adjustment. Place receiver range selector to its "medium wave" position with the receiver dial pointer set to 5000 kc. Tune the test oscillator to 5000 kc.; adjust the two air dielectric trimmers (see diagram) for maximum output. Two peaks may be found on the oscillator trimmer. The peak obtained with minimum capacity (plunger nearly out) should be used.

"Short Wave" Trimmer Adjustments

Leave the equipment set up the same as for the broadcast trimmer adjustment except that the output of the test oscillator to the antenna terminal of the receiver should be connected through a 400 ohm resistor. Set the receiver range selector to its "short wave" position and dial pointer to 17,000 kc. Tune the test oscillator to 17 000 kc. Adjust the oscillator 17,000 kc. trimmer (see diagram) for maximum output. Two peaks may be found. The peak with minimum capacity (plunger nearly out) should be used. Adjust the antenna 17,000 kc. trimmer until maximum output is reached, while slightly rocking the gang tuning condenser back and forth through the signal. Two peaks may be found with this circuit. The peak with maximum capacity (plunger nearly in) should be used. Check the image frequency by changing the receiver dial setting to 16.080 kc. The test oscillator signal should be faintly received at this position, indicating that the adjustment of the oscillator 17,000 kc. trimmer has been correctly made. No adjustment should be made while checking for this image signal.

World Radio History



Note—On early production C27 was 0.1 mfd. and C26 was omitted. This addition reduces any tendency to oscillate on a short antenna.

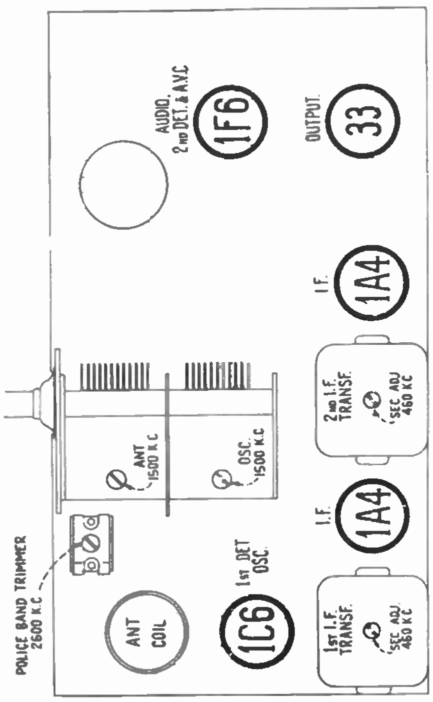
SCHEMATIC CIRCUIT DIAGRAM

MODELS - B517A AND B517X

Battery Operated

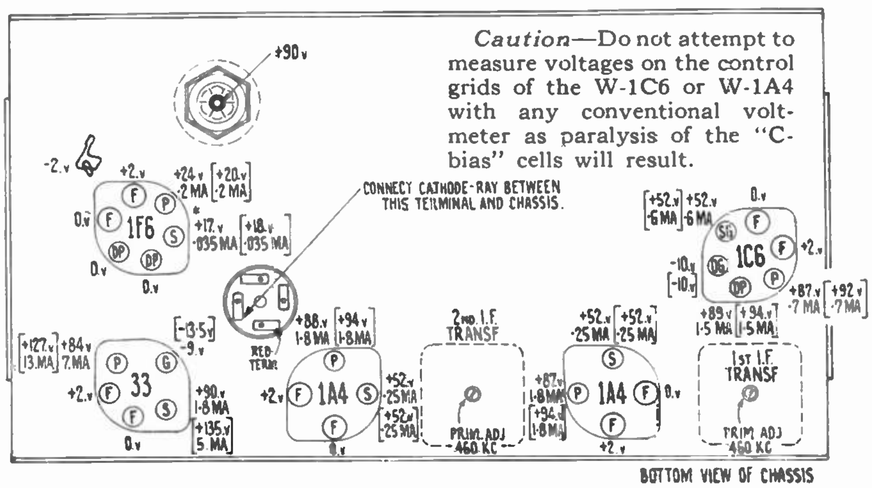
I.F. = 460Kc.

The line up adjustment is made in the usual way to the adjustment screws shown in the trimmer location diagram. When making adjustment the test oscillator frequency, receiver dial setting and switch position should correspond to the indicated line up frequency. When making I.F. adjustment the oscillator should be connected to the W-1C6 control grid through a .001 mfd. condenser and ground with the antenna and ground wires shorted.



TRIMMER LOCATIONS (also see below)

Caution—Do not attempt to measure voltages on the control grids of the W-1C6 or W-1A4 with any conventional voltmeter as paralysis of the "C-bias" cells will result.



BOTTOM VIEW OF CHASSIS

SOCKET VOLTAGES

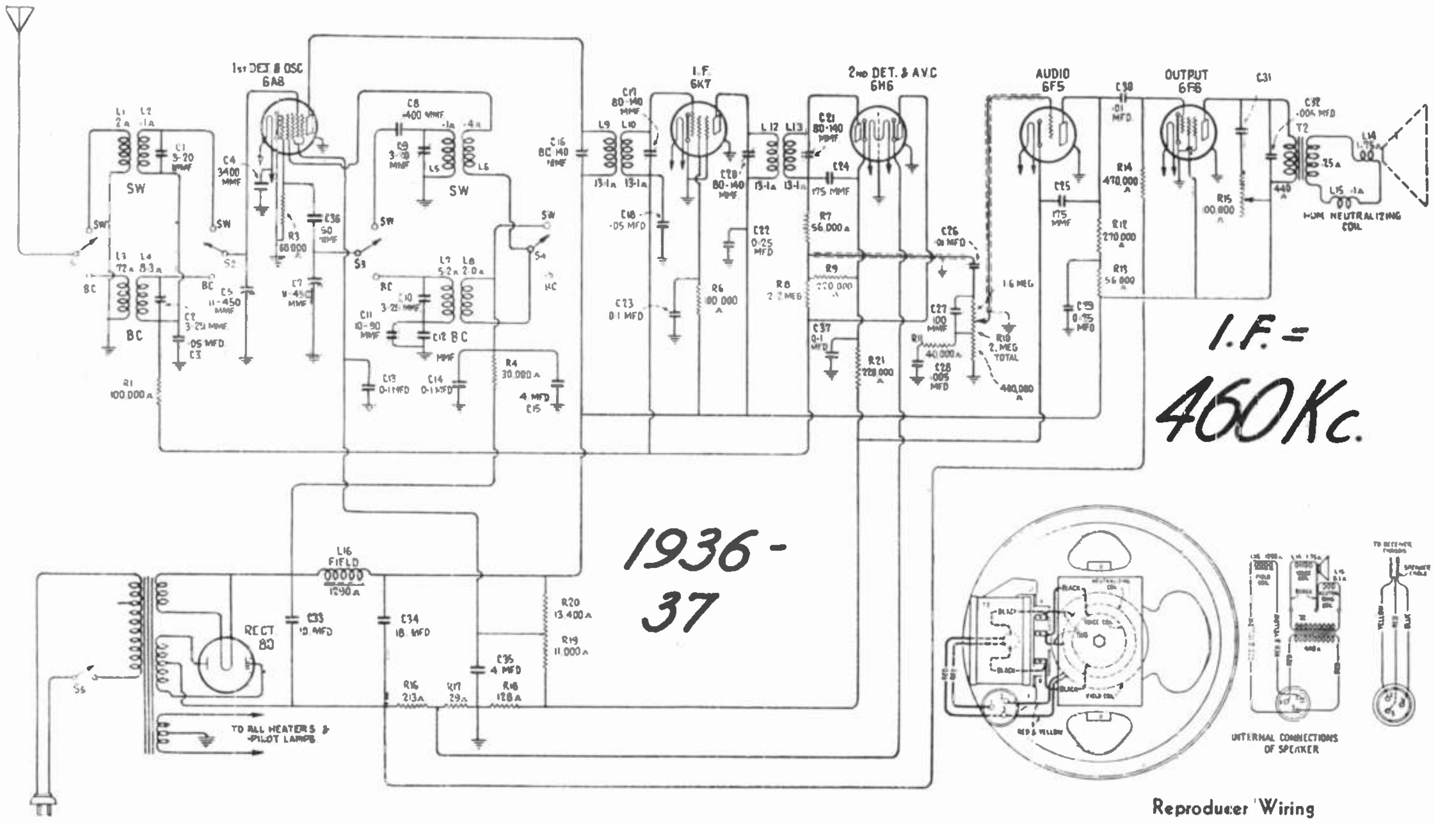
1936-37

COURTESY - CANDN.

DATA SHEET WESTINGHOUSE - 34

CO. LTD.

World Radio History



I.F. = 460Kc.

1936-37

Reproducer Wiring

MODEL W565X.

Although this receiver has one I.F. stage. there are two transformers, each having two adjustable capacitors requiring adjustments. The transformers are all peaked, being tuned to 460 K.C.

A detailed procedure for making this adjustment follows:

(a) Connect the output of an external oscillator operating at 460 K.C. between the first detector grid and ground. Connect the output indicator across the voice coil of the loudspeaker.

(b) Place the receiver in operation and adjust the station selector until a point is reached where no signals are heard and turn the volume control to its maximum position. Reduce the oscillator output until a slight indication is obtained in the receiver output indicator.

(c) Refer to Figure 4. Adjust the trimmers of the I.F. transformers until maximum output is obtained. Go over the adjustments a second time.

RANGE "BC"—

(a) Set the tuning range switch at "BC".

(b) Tune the external oscillator to 1,500 K.C., set the pointer at 1,500 K.C. and adjust the oscillator, detector and antenna trimmers for maximum output.

(c) Shift the external oscillator frequency to 600 K.C. Tune in the 600 K.C. signal, irrespective of scale calibration, and adjust the series trimmer for maximum output, at the same time rocking the variable tuning capacitor. Then readjust at 1,500 K.C. as described in (b).

RANGE "SW"—

(a) Set the tuning range switch at "SW".

(b) Tune the external oscillator to 17,000 K.C., and set the pointer at 17M. Adjust the oscillator trimmer for maximum output. The trimmer should be set at the first peak obtained when increasing the trimmer capacitor from minimum to maximum.

(c) Check for the image signal, which will be received at approximately 16,080 on the dial, if (b) has been properly done. It may be necessary to increase the external oscillator output for this check.

(d) Retune the receiver to the oscillator, leaving the oscillator set at 17,000 K.C. Adjust the antenna and detector short wave trimmers for maximum output.

No further adjustments are necessary.

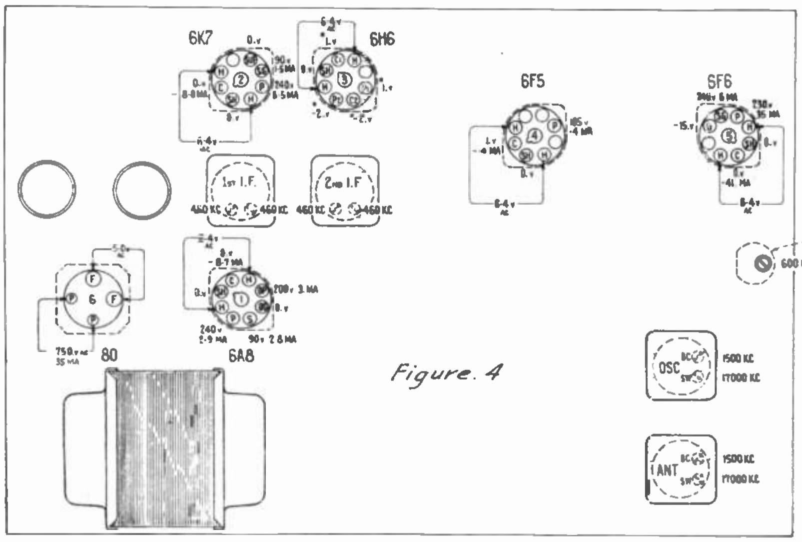


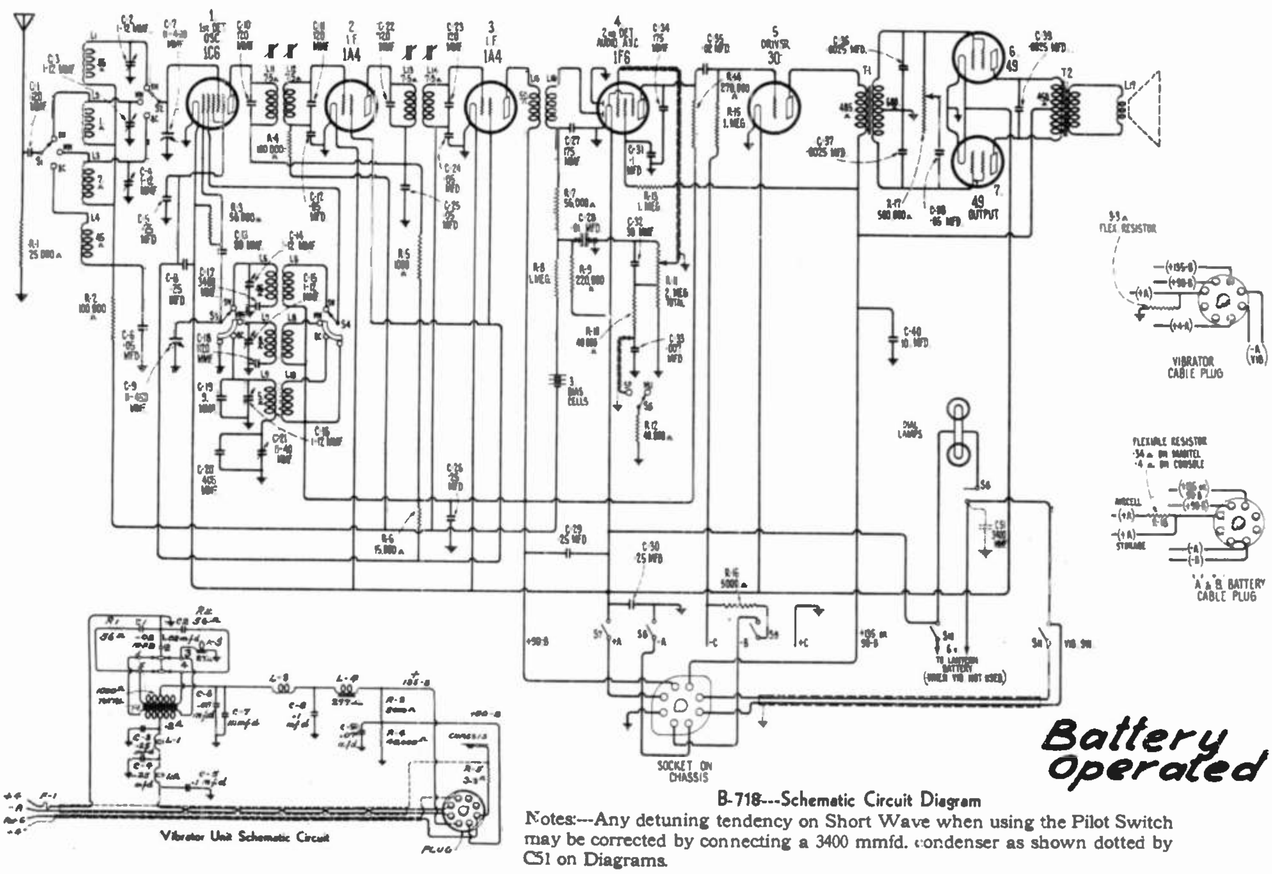
Figure. 4

DATA SHEET

COURTESY - CANDN.

WESTINGHOUSE CO. LTD. - 35

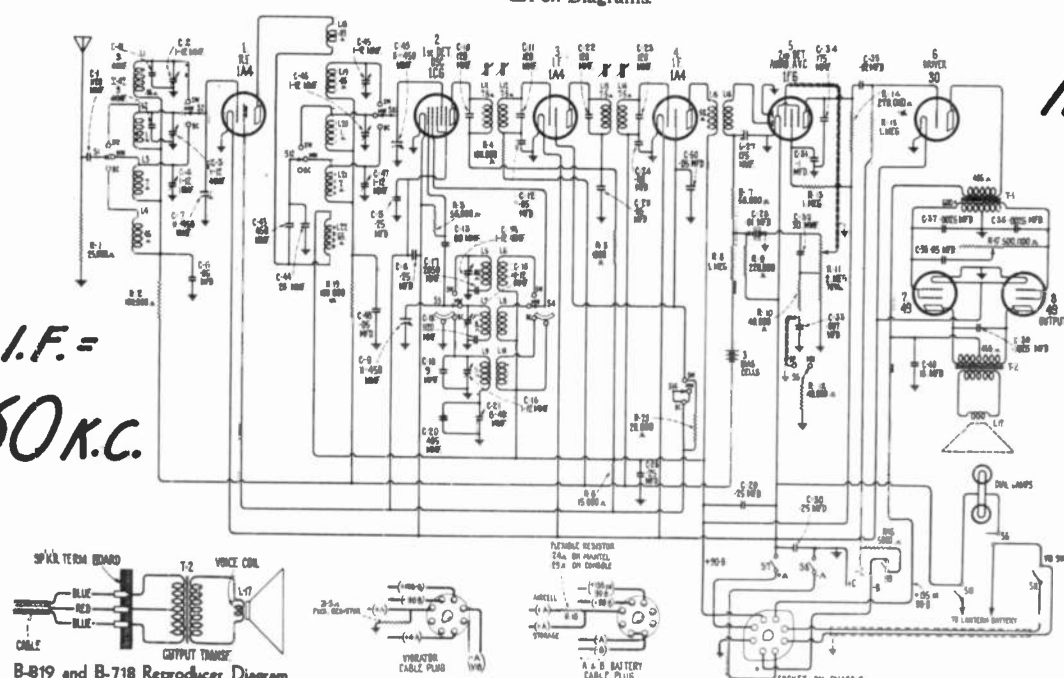
World Radio History



Battery Operated

B-718---Schematic Circuit Diagram

Notes:---Any detuning tendency on Short Wave when using the Pilot Switch may be corrected by connecting a 3400 mmfd. condenser as shown dotted by C51 on Diagrams.



Models B-718 and B-819

I.F. = 460 K.C.

See Data Sheet - 37a. for alignment instructions.

B-819--Schematic Circuit Diagram

See note under B-718 Schematic Circuit Diagram.

1936 - 37

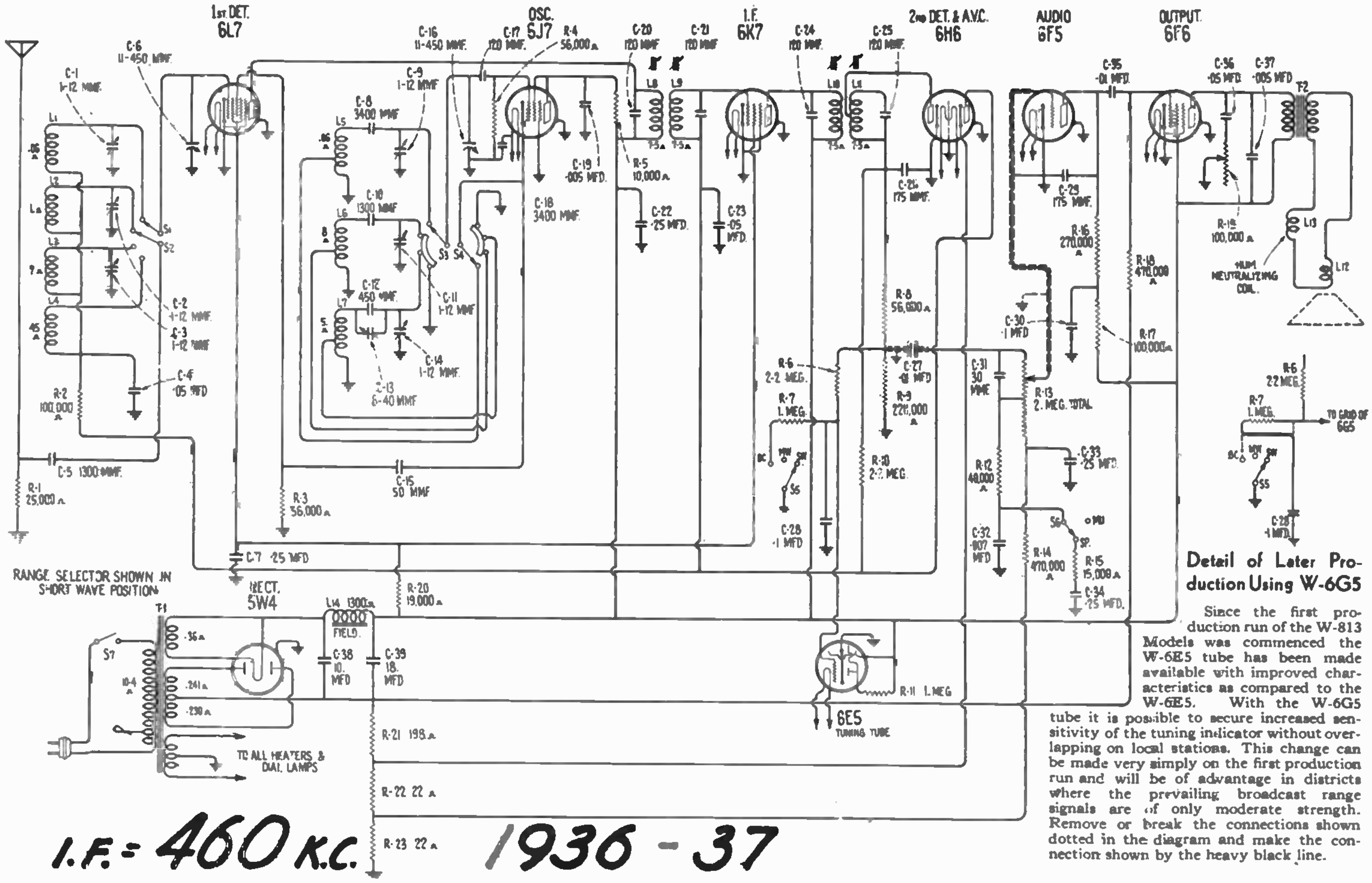
DATA SHEET

Courtesy- Canadian

WESTINGHOUSE - 36

Co. Ltd.

World Radio History



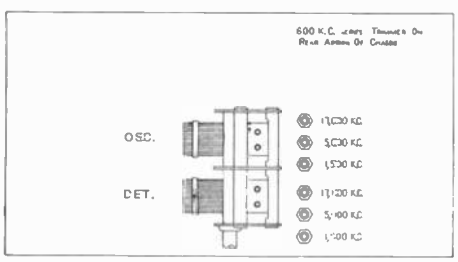
Detail of Later Production Using W-6G5

Since the first production run of the W-813 Models was commenced the W-6E5 tube has been made available with improved characteristics as compared to the W-6E5. With the W-6G5 tube it is possible to secure increased sensitivity of the tuning indicator without overlapping on local stations. This change can be made very simply on the first production run and will be of advantage in districts where the prevailing broadcast range signals are of only moderate strength. Remove or break the connections shown dotted in the diagram and make the connection shown by the heavy black line.

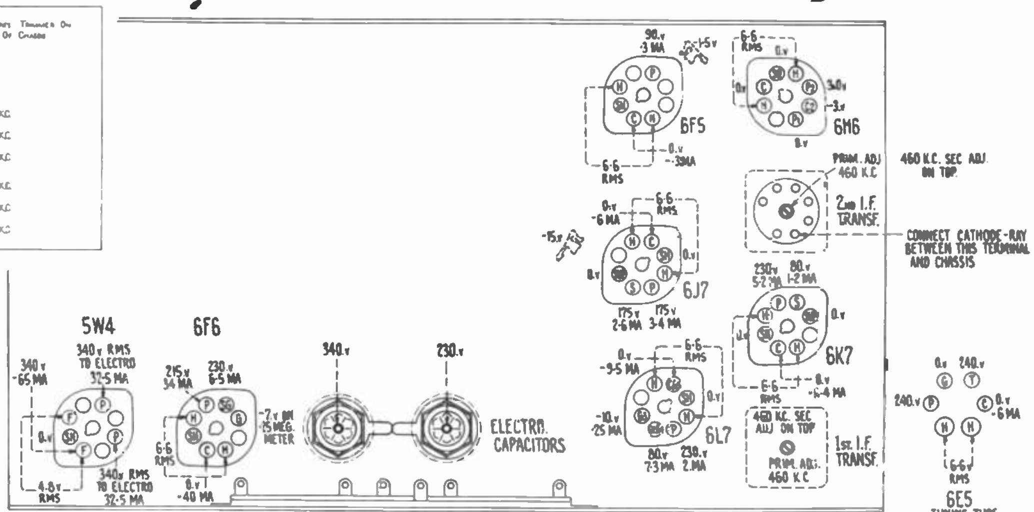
I.F. = 460 K.C. *1936 - 37*

Note--On later production the heater winding is grounded at one side instead of at centre. Grounded point is terminal No. 7 on 6J7 socket. Two line filter condensers are used (H36176 0.02 Mfd.) also; one from each side of line transformer to ground.

Models 813a, 813x, and 813y.



Alignment Data on Sheet-33



BOTTOM VIEW OF CHASSIS.

Radiotron Socket Voltages and I.F. Trimmer Locations

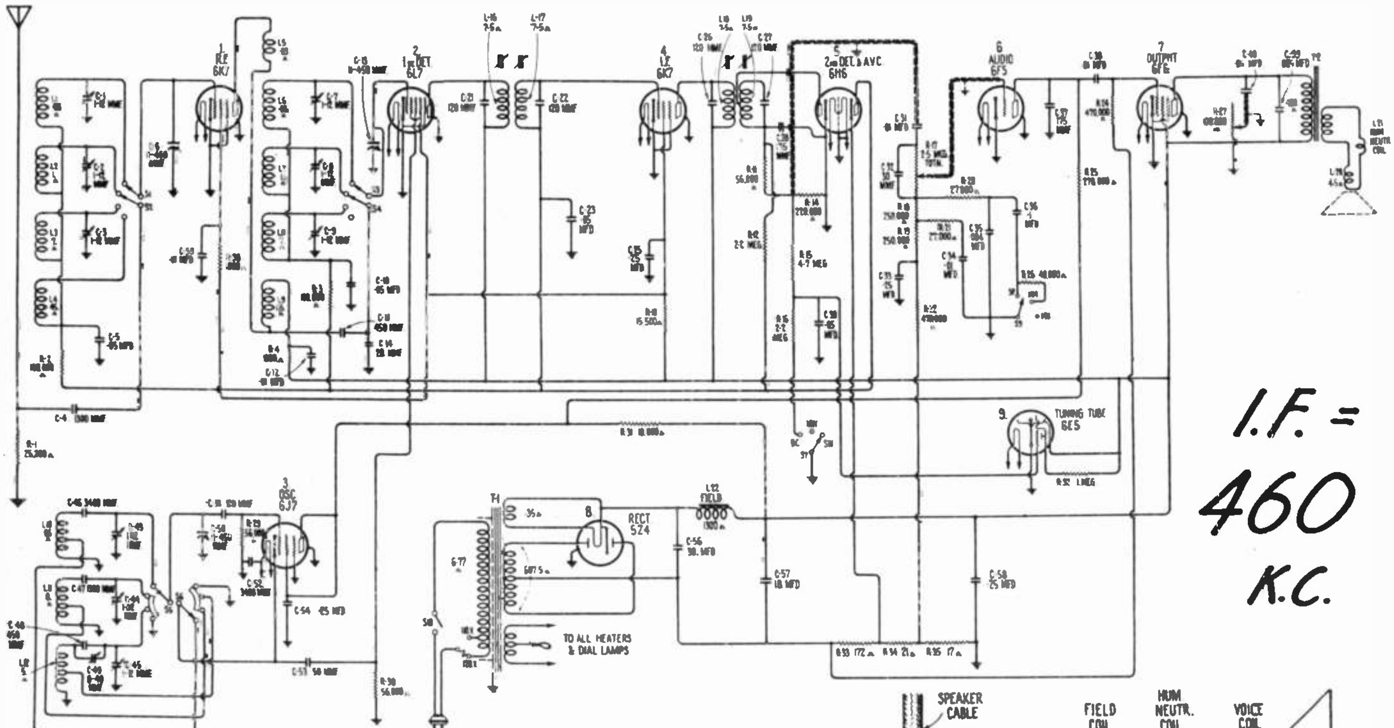
DATA SHEET

COURTESY- CANDN

WESTINGHOUSE - 37

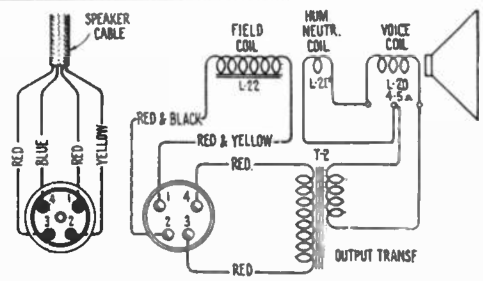
CO. LTD.

World Radio History



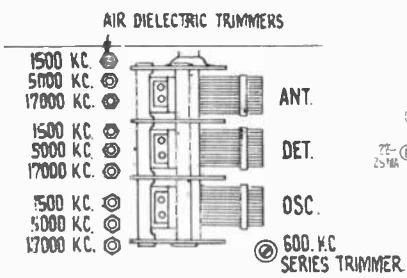
I.F. = 460 K.C.

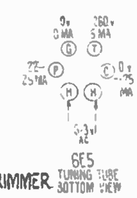
Notes:— 1. On early production the heater winding was grounded at centre instead of at contact No. 2 on the W-6H6 socket. 2. The lower end of tone control R27 was to positive plate supply terminal instead of to-chassis frame. The wiring diagram is up-to-date.



MODELS 914X and 914Y

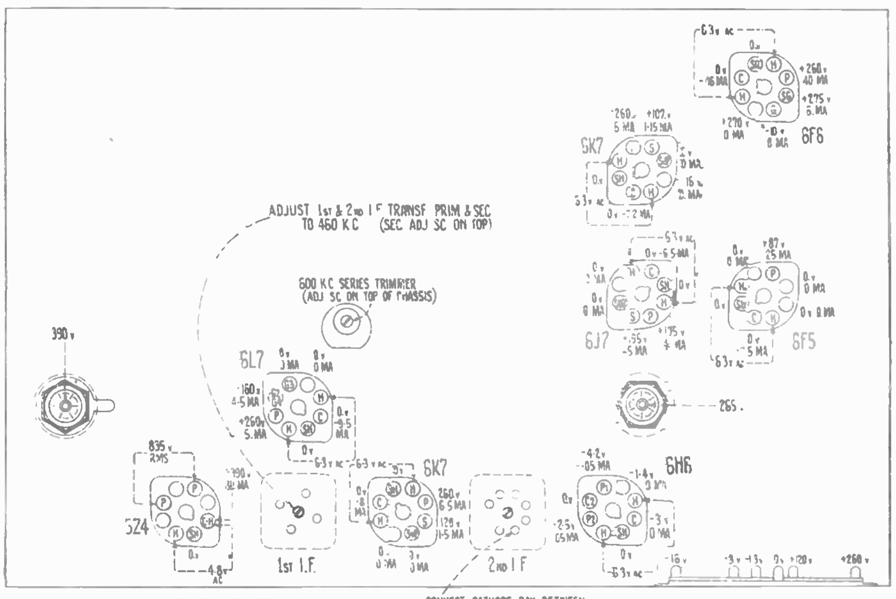
Alignment Data on Sheet-37a. *1936-37*





R.F. Alignment Points

When adjusting the Air Dielectric R.F. trimmers, it is necessary to use a special tool (See H-29644 in parts list) to slacken the lock nut on the trimmer, previous to the adjustment, and to tighten it again after the adjustment. Another special tool (See H-29643 in parts list) is available for making the actual adjustment to the trimmer. The adjustment should be made upward or downward on the plunger with a twisting motion. The special tool designed by the Canadian Westinghouse Company for this purpose is double ended; one end having a pin for the R.F. adjustments, the other end is a special socket screw driver for use in making I.F. adjustments.



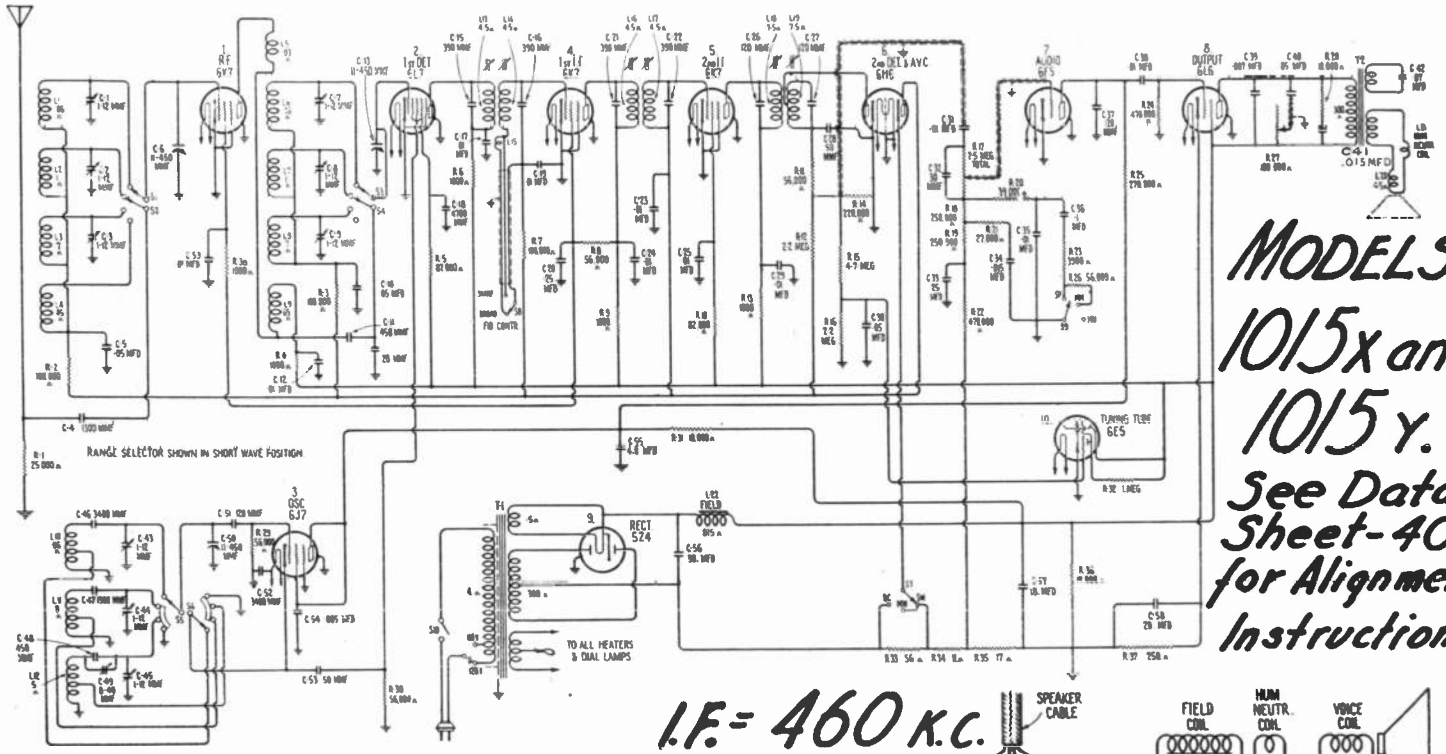
BOTTOM VIEW OF CHASSIS

CONNECT CATHODE-RAY BETWEEN THIS TERMINAL AND CHASSIS

DATA SHEET

COURTESY - CANDN. *WESTINGHOUSE - 38* *CO. LTD.*

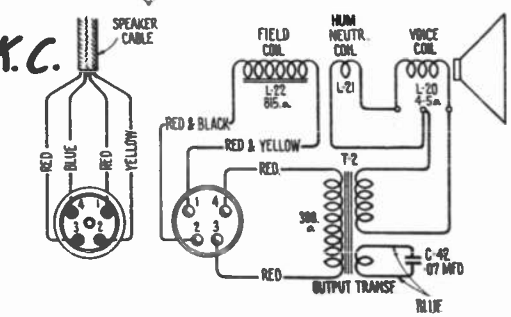
World Radio History



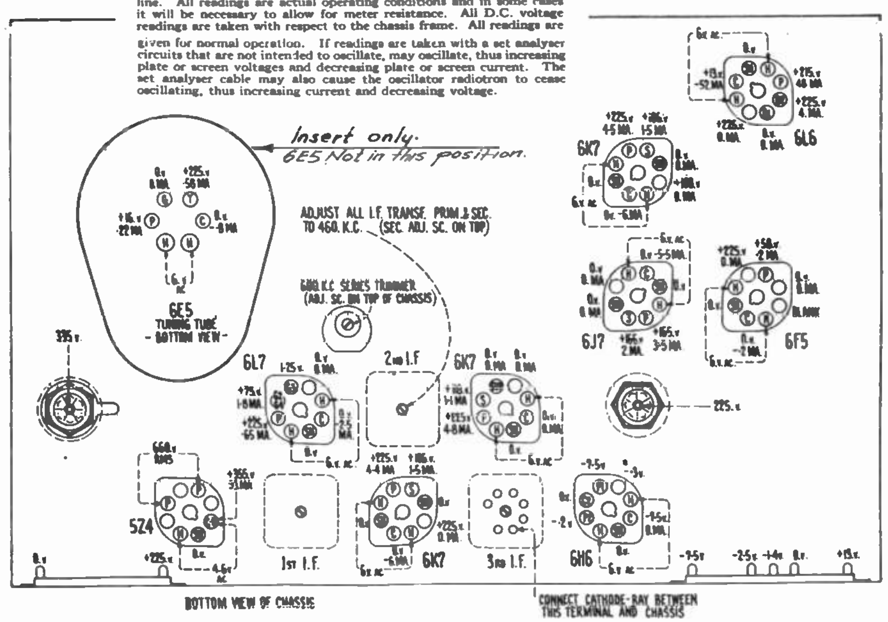
MODELS 1015X and 1015Y.

See Data Sheet-40 for Alignment Instructions

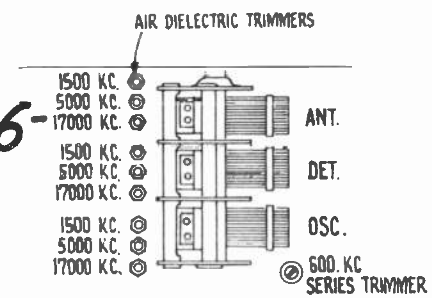
I.F. = 460 K.C.



The meter readings given in the diagram are taken with the antenna and ground binding posts short circuited and with 120 volts line. All readings are actual operating conditions and in some cases it will be necessary to allow for meter resistance. All D.C. voltage readings are taken with respect to the chassis frame. All readings are given for normal operation. If readings are taken with a set analyser circuits that are not intended to oscillate, may oscillate, thus increasing plate or screen voltages and decreasing plate or screen current. The set analyser cable may also cause the oscillator radiotron to cease oscillating, thus increasing current and decreasing voltage.



1936-37.



WESTINGHOUSE -39

COURTESY- CANDN. CO. LTD.

DATA SHEET

World Radio History

I.F. ADJUSTMENTS USING CATHODE RAY EQUIPMENT

1. Set up the Cathode Ray Equipment in the manner recommended by the manufacturer of the equipment. The frequency modulated oscillator should be connected to the control grid cap of the W-6K7 second I.F. radiotron (with grid lead in place), through a .001 Mfd. capacitor. The grounded side of the test oscillator output should be connnected to the receiver chassis frame. The cathode ray oscillograph vertical terminals should be connected to points indicated on the radiotron socket voltage diagram.

2. Place the receiver in operating condition. The fidelity control should be in the selective (counter clockwise) position. The antenna and ground terminals should be short circuited and if necessary the gang condenser adjusted so that no stray signals are fed into the I.F. amplifier during the adjustment.

Adjust the test oscillator to supply a 460 Kc. audio-modulated signal. Increase the output of the test oscillator until a deflection is noticeable on the oscillograph screen. The figures obtained represent several waves of the detected signal, the amplitude of which may be observed as an indication of output. Cause the wave image formed to be spread completely across the screen by adjusting the proper oscillograph controls.

3. Adjust the two magnetite screws of the third I.F. transformer (see radiotron socket voltage and I.F. trimmer location diagram) to produce maximum vertical deflection of the oscillograph image. This adjustment places the transformer in exact resonance with the 460 Kc. signal.

4. Set up the cathode ray and test oscillator equipment in the standard manner to provide a frequency modulated signal and a "double trace" image.

5. Adjust the frequency of the test oscillator until the two traces move together and overlap with their highest points exactly coinciding.

6. Now readjust the two magnetite core screws on the third I.F.transformer so as to cause the two traces on the oscillograph screen to coincide throughout their lengths and have maximum amplitude.

7. Without altering the adjustments of the apparatus, shift the "Ant." output of the test oscillator to the control grid cap of the W-6K7 first I.F. radiotron (with grid lead in place), through the .001 mfd. capacitor. Adjust the test oscillator output so that the amplitude of the image is approximately the same as used for adjustment (6) above.

8. The two second I.F. transformer magnetite core screws should then be adjusted so that they cause the forward and reverse traces to become coincident throughout their lengths and have maximum amplitude.

9. Without altering the adjustments of the apparatus, shift the "Ant." output of the test oscillator to the input of the I.F. system; i.e., to the grid cap of the W 6L7 first detector (with grid lead in place) through the .001 mfd. capacitor. Regulate the test oscillator output so that the amplitude of the oscillograph image is approximately the same as used for adjustment (6) above.

10. The two first I.F. transformer magnetite core screws should then be adjusted so as to cause the forward and reverse waves to become coincident throughout their lengths and have maximum amplitude.

11. Note width of oscillographic image at a point which is 50% of maximum amplitude Turn receiver fidelity control to extreme clockwise position (high fidelity position) Note width of oscillographic image at a point which is 50% of maximum amplitude. Under normal conditions the latter measurement should be approximately 50% greater in width than the former measurement. The image should also appear slightly double humped. These conditions indicate proper broadening of the band width of the I.F. amplifier.

12. Turn range selector to "Medium wave" position and note increase in amplitude. The amplitude should increase several times. It may be necessary to decrease output of test oscillator to keep image on screen.

13. It is preferable to use an R.F. signal when making adjustments to the tuning indicator I.F. transformer (fourth I.F. transformer). For that reason instructions for making this adjustment are included with the R.F. alignment instructions.

ALIGNMENT WITHOUT CATHODE RAY EQUIPMENT.

I.F. ADJUSTMENTS.

These are similar to those using Cathode Ray equipment but adjusting for max. output indication only.

R.F. ADJUSTMENT

Before attempting R.F. alignment it is necessary to set the pointer in the correct position with relation to the gang condenser plates. This is done by setting the pointer to the angle of the border line of the dial immediately below the 530 K.C. calibration point, with the gang tuning condenser in full mesh.

"Broadcast" Trimmer Adjustments:

The output indicator should be left connected to the system. Connect the test oscillator to antenna and ground terminals of the chassis through a 200 mmfd. condenser. Adjust the test oscillator to 1500 kc. and set the receiver tuning control to a dial reading of 1500 kc. Leave the volume control of the receiver at its maximum position. Make sure that the Range Selector is at its broadcast position. Regulate the output of the test oscillator until a slight indication is perceptible at the receiver output. Then adjust the three 1500 kc. trimmers (see diagram) of the oscillator, detector and antenna transformer coils so that each produces maximum (peak) receiver output. After this maximum has been accurately obtained, shift the test oscillator to 600 kc. Tune the receiver to pick up this signal, disregarding the dial reading at which it is best received. Then, adjust the receiver 600 kc. series trimmer, simultaneously rocking the tuning control backward and forward through the signal until maximum receiver output results from these combined operations. The adjustment at 1500 kc. should then be repeated to correct for any change which may have been caused by the oscillator series trimmer adjustment.

Tuning Indicator I.F. Adjustment:

This adjustment can most conveniently be made when the radio set is checked on broadcast after completing the R.F. alignment. No test oscillator or output indicator is required. With the antenna connected to the receiver tune in a fairly strong signal on the broadcast band (not necessarily a local station). Without watching the resonance indicator, tune the receiver by ear very carefully to secure the best quality of reproduction. Leave the receiver tuned to this point and adjust the two magnetic core screws of the fourth (tuning indicator) I.F. transformer to secure maximum resonance indication of the W-6E5 tuning tube. The receiver may now be tuned by an unskilled operator using the W-6E5 resonance indicator to secure the same degree of fine tuning as a skilled operator secures without the use of the indicator.

"Medium Wave" Trimmer Adjustment:

Use same equipment and layout as for "broadcast" alignment. Place the receiver range selector switch to its "medium wave" position with the dial pointer set at 5000 Kc. Tune the test oscillator to 5000 Kc. Adjust the oscillator 5000 Kc. air-trimmer to produce maximum output. Two peaks may be found with this circuit; the peak with minimum capacitance (plunger nearly out) should be used. Tighten locknut. Adjust the detector 5000 Kc. air-trimmer for maximum output while slightly rocking the gang condenser. Two peaks may be found with this circuit; the peak with maximum capacitance (plunger nearly in) should be used. Tighten locknut. Adjust the R.F. 5000 Kc. (X) air-trimmer to produce maximum output. Tighten locknut.

"Short-Wave" Trimmer Adjustments

Connect the "ANT" output of the test oscillator to the antenna terminal of the receiver through a 400 ohm resistor. Set the receiver range selector switch to its "short wave" position and its dial pointer to 17000 Kc. Adjust the test oscillator to 17000 Kc. Adjust oscillator 17000 Kc trimmer until maximum output is reached. Two peaks may be found with this circuit. The peak with minimum capacitance (plunger nearly out) should be used. Tighten locknut. Adjust detector 17000 Kc. trimmer until maximum output is reached while slightly rocking the gang condenser. Two peaks may be found with this circuit; the peak with maximum capacitance (plunger nearly in) should be used. Tighten locknut. Adjust the R.F. (X) 17000 Kc. trimmer until maximum output is reached, while slightly rocking the gang condenser. Two peaks may be found with this circuit; the peak with maximum capacitance (plunger nearly in) should be used. Tighten locknut. Check the image frequency by changing the receiver dial setting to 16080 Kc.; the image signal should be received at this position, indicating that the adjustments have been correctly made. No adjustments should be made while checking for the image signal.

Alignment Data MODEL W-1516X MODELS 1015X and Y

NOTE:- For MODELS 1015X + Y only

(x) Adjust ANT. not R.F.

(■) Refer to (8) not (6).

(●) High fidelity switch should be in counter-clockwise position.

SCHEMATIC CIRCUIT FOR MODEL W-1516X ON DATA SHEET-41.

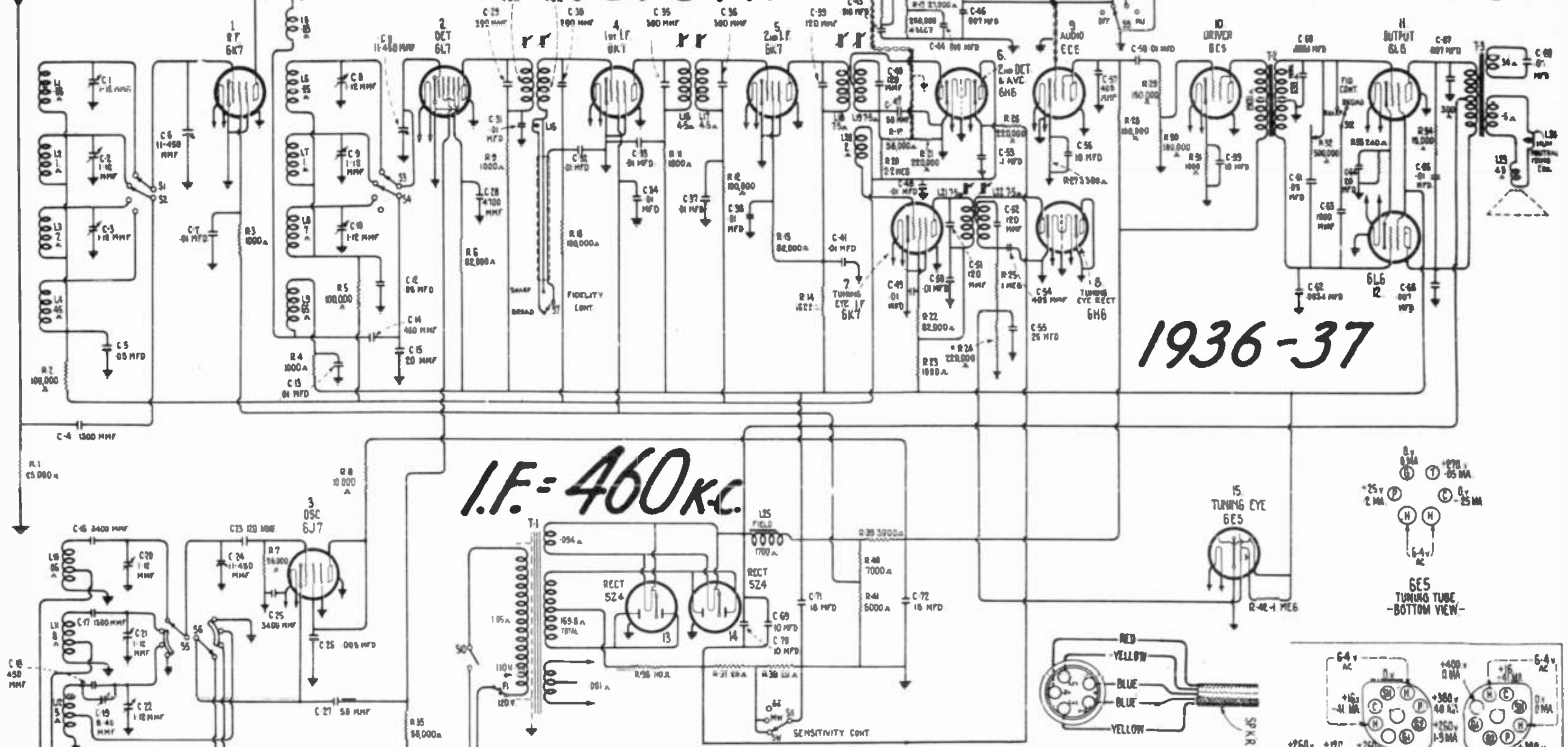
SCHEMATIC CIRCUIT FOR MODELS 1015X and Y ON DATA SHEET-39.

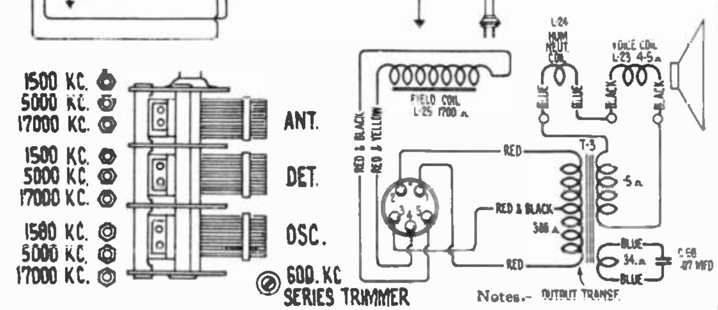
WHEN ALIGNING THE R.F. CIRCUITS, THE CHASSIS BOTTOM SHIELD MUST BE IN PLACE ON THE CHASSIS AND SECURELY FASTENED WITH ALL OF THE RETAINING SCREWS.

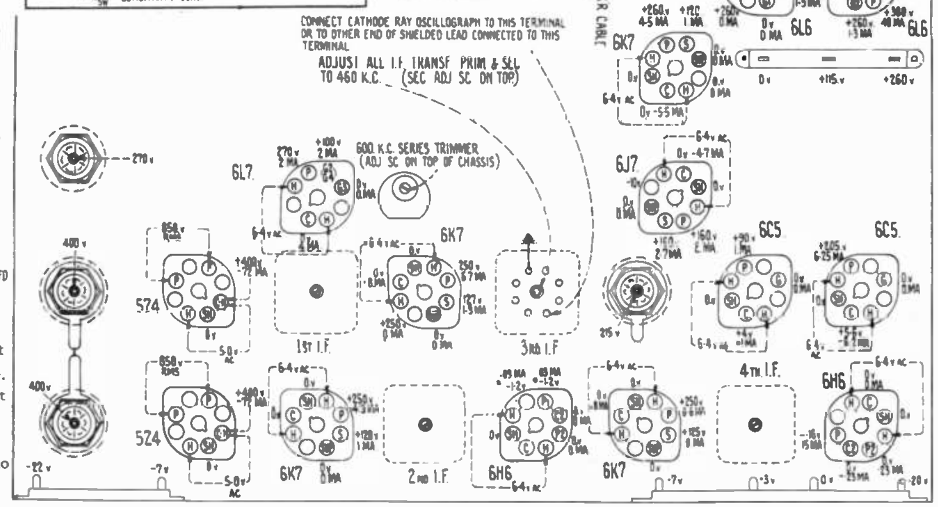
World Radio History

Model - W1516x.

Alignment Data on Sheet - 40.







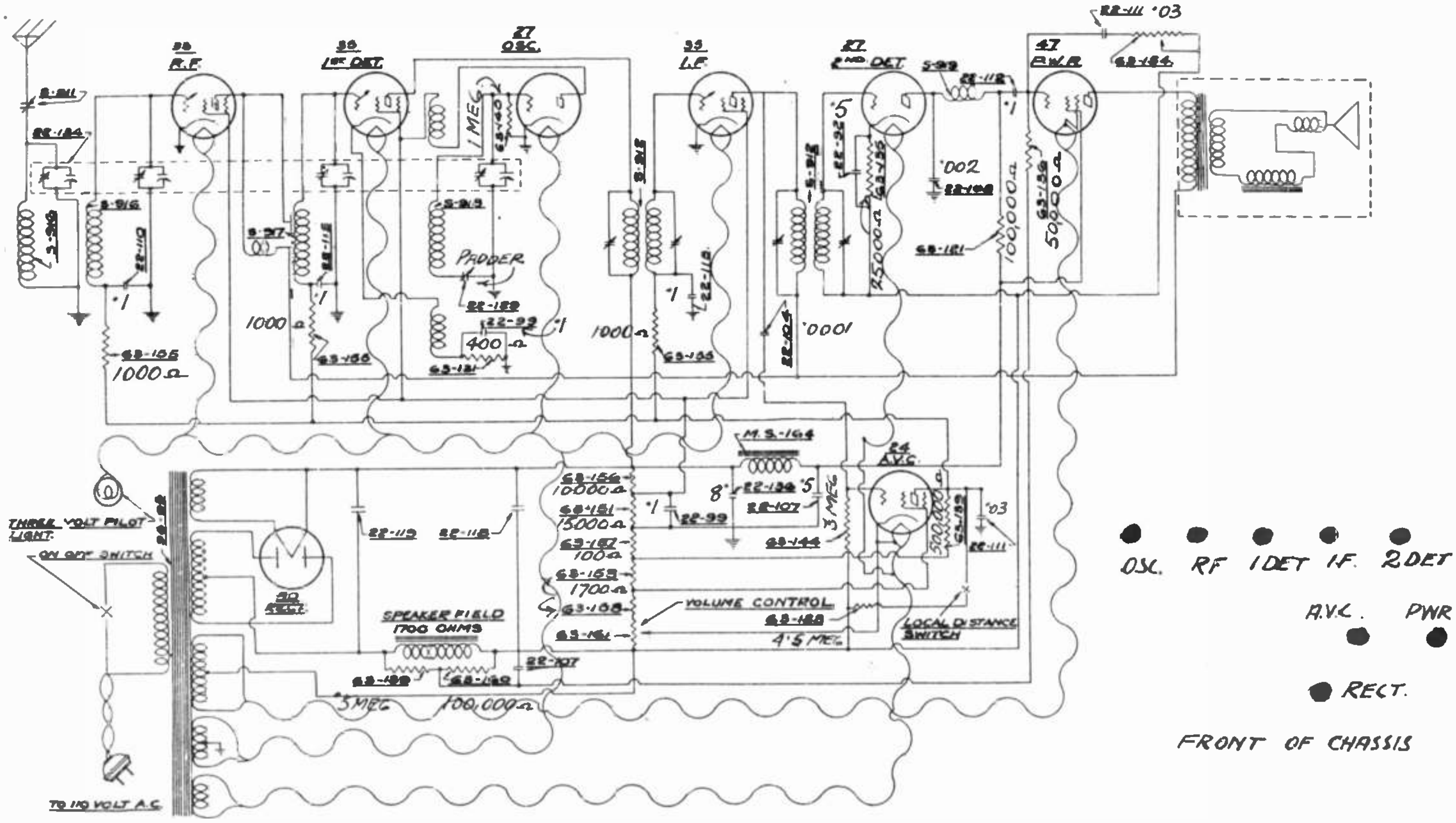
The meter readings given in the diagram are taken with the antenna and ground binding posts short circuited and with 120 volts line. All readings are actual operating conditions and in some cases it will be necessary to allow for meter resistance. All D.C. voltage readings are taken with respect to the chassis frame. All readings are given for normal operation. If readings are taken with a set analyser circuits that are not intended to oscillate, may oscillate, thus increasing plate or screen voltages and decreasing plate or screen current. The set analyser cable may also cause the oscillator radiotron to cease oscillating, thus increasing current and decreasing voltage

Notes.-

1. On later production the heater winding is grounded at one side instead of at centre. The grounded point is contact No. 2 on the W-6H6 socket.
2. The lower end of tone control R27 was also changed to go to chassis frame instead of to positive plate supply terminal.

DATA SHEET WESTINGHOUSE - 41 CO. LTD.

COURTESY - CANDN.



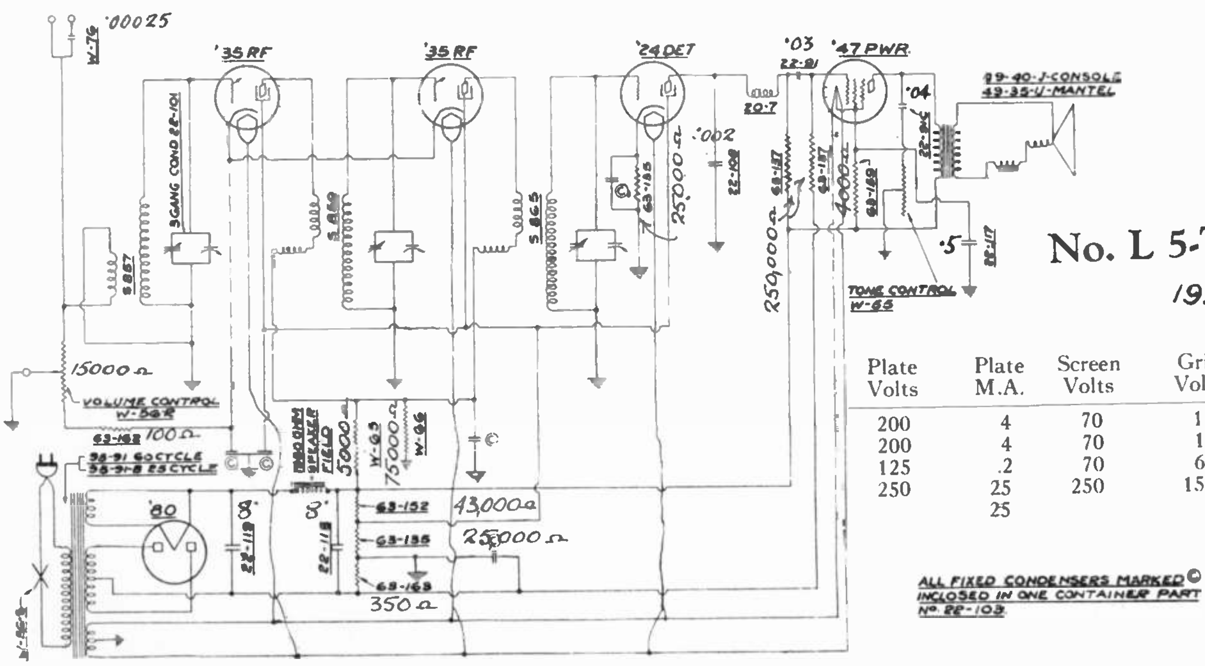
I.F. 175 Kc.

Type	Position	Fil. Volts	Plate Volts	Control Grid Volts	Cathode Volts	Plate M. A.	S.G. Volts
235	R. F.	2.25	170	— .4	0	4.5	64
235	1st Det.	2.25	165	— 1.5	1.5	3.	62
227	Osc.	2.1	55	0	0	4.5	0
235	I. F.	2.3	180	— 5.6	0	.75	80
227	2nd Det.	2.15	160	—14.5	8.5	.80	0
247	Power	2.4	250	—15	0	28.	250
224	A. V. C.	2.[illegible]	8	— .5	0	0	40
280	Rect.	4.7	0	0	0	34. eac.	0

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

No. CH 8-Tube

1931-32



No. L 5-Tube

1931-32

Plate Volts	Plate M.A.	Screen Volts	Grid Volts	Position
200	4	70	1.2	1st. R.F.
200	4	70	1.2	2nd. R.F.
125	.2	70	6	Det.
250	25	250	15	Power
	25			Rect.

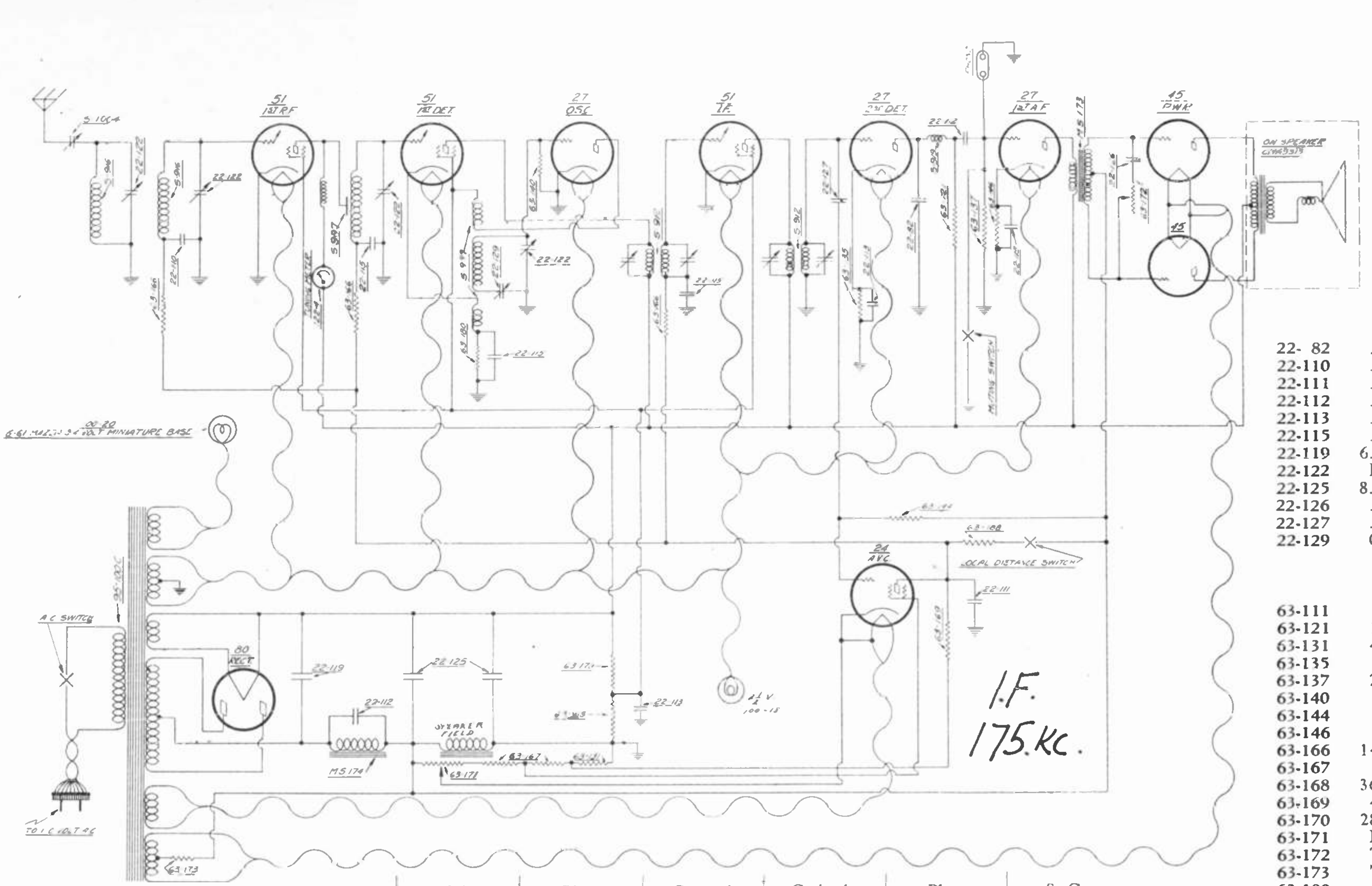
ALL FIXED CONDENSERS MARKED © INCLOSED IN ONE CONTAINER PART No. 22-103.

World Radio History

DATA SHEET.

Printed in Canada.

NOTE: FIRST SERIES HAVE VOL.CONT IN A.V.C. LATER MODELS HAVE 47S AND VOL CONT IN AUDIO CIRCUIT.



22- 82	.001	Mfd. ..	
22-110	.1	Mfd. ..	
22-111	.03	Mfd. ..	
22-112	.1	Mfd. ..	
22-113	.5	Mfd. ..	
22-115	.1	Mfd. ..	
22-119	6.	Mfd. ..	
22-122	Four Gang Var		
22-125	8.	Mfd. ..	
22-126	.006	Mfd. ..	
22-127	.000025	Mfd. ..	
22-129	Oscillator, Padd		

63-111	2M	Ohm
63-121	100M	Ohm
63-131	400	Ohm
63-135	25M	Ohm
63-137	250M	Ohm
63-140	1 Meg.	Ohm
63-144	3 Meg.	Ohm
63-146	2M	Ohm
63-166	1400	Ohm
63-167	8M	Ohm
63-168	3600	Ohm
63-169	400M	Ohm
63-170	2800	Ohm
63-171	Manual Volume	
63-172	Tone Control....	
63-173	750	Ohm
63-180	1M	Ohm
63-188	4½ Meg.	Ohm

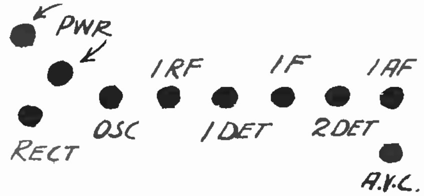
ZENITH AUTOMATIC RADIO

MODELS 91 and 92

1931-32

ZENITH -2

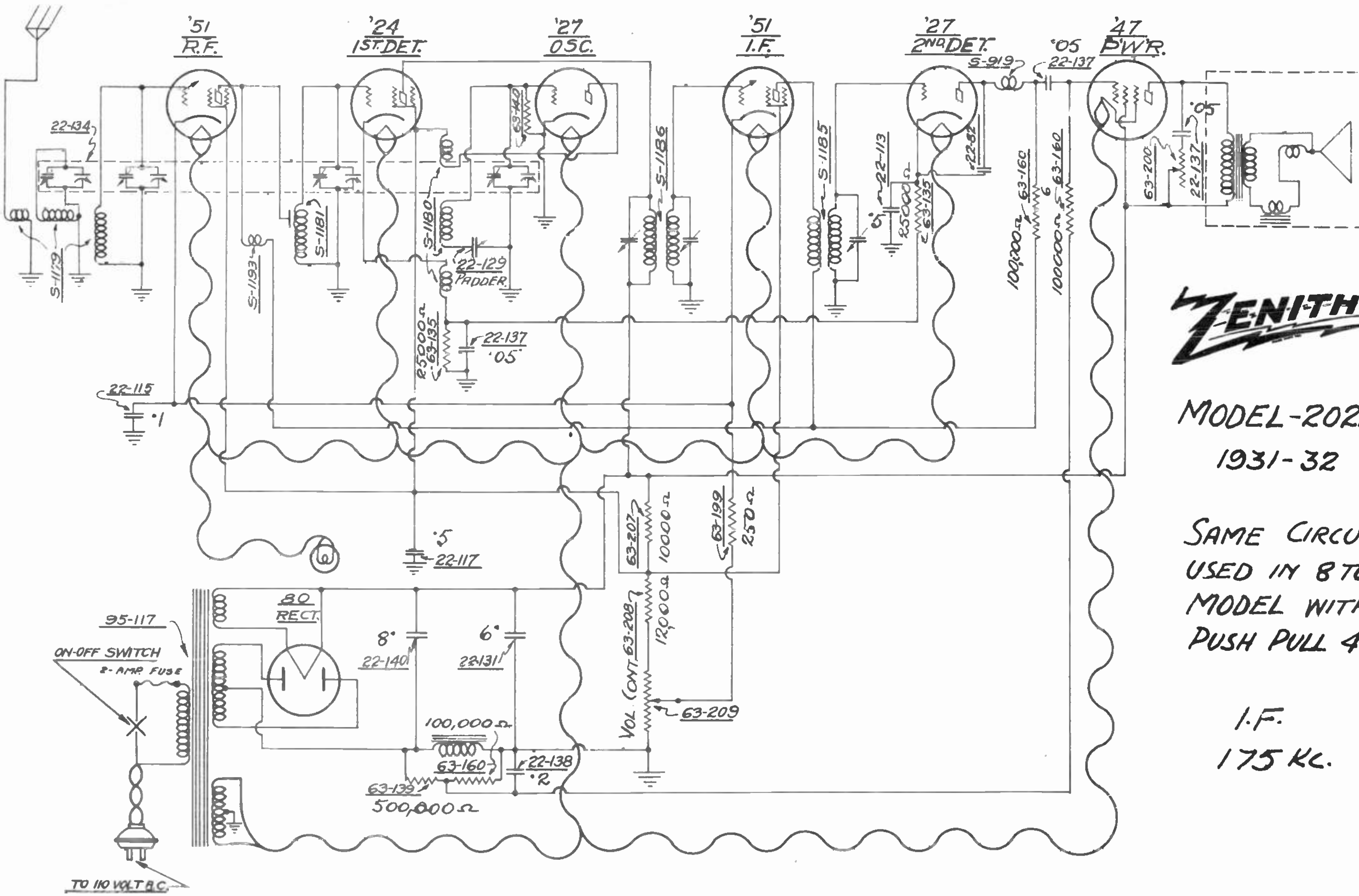
Position	Fil. Volts	Plate Volts	Control Grid Volts	Cathode Volts	Plate M. A.	S. G. Volts
1st. R. F.	2.25	175	.2	0	7.	100
1st. Det.	2.25	175	3.5	.4	3.5	90
Osc.	2.2	70	0	0	8.5	0
I. F.	2.2	200	4.	0	2.5	115
2nd. Det.	2.2	115	0	9.	.5	0
1st. Aud.	2.2	145	0	15	6.5	0
P. P.	2.2	275	54.	0	30.	0
A. V. C.	2.2	35	.4	0	0	54



TUBE LAYOUT FRONT OF CHASSIS

World Radio History

DATA SHEET.



ZENITH

MODEL-2022.

1931-32

SAME CIRCUIT USED IN 8 TUBE MODEL WITH PUSH PULL 47S.

I.F. 175 Kc.

Printed in Canada.

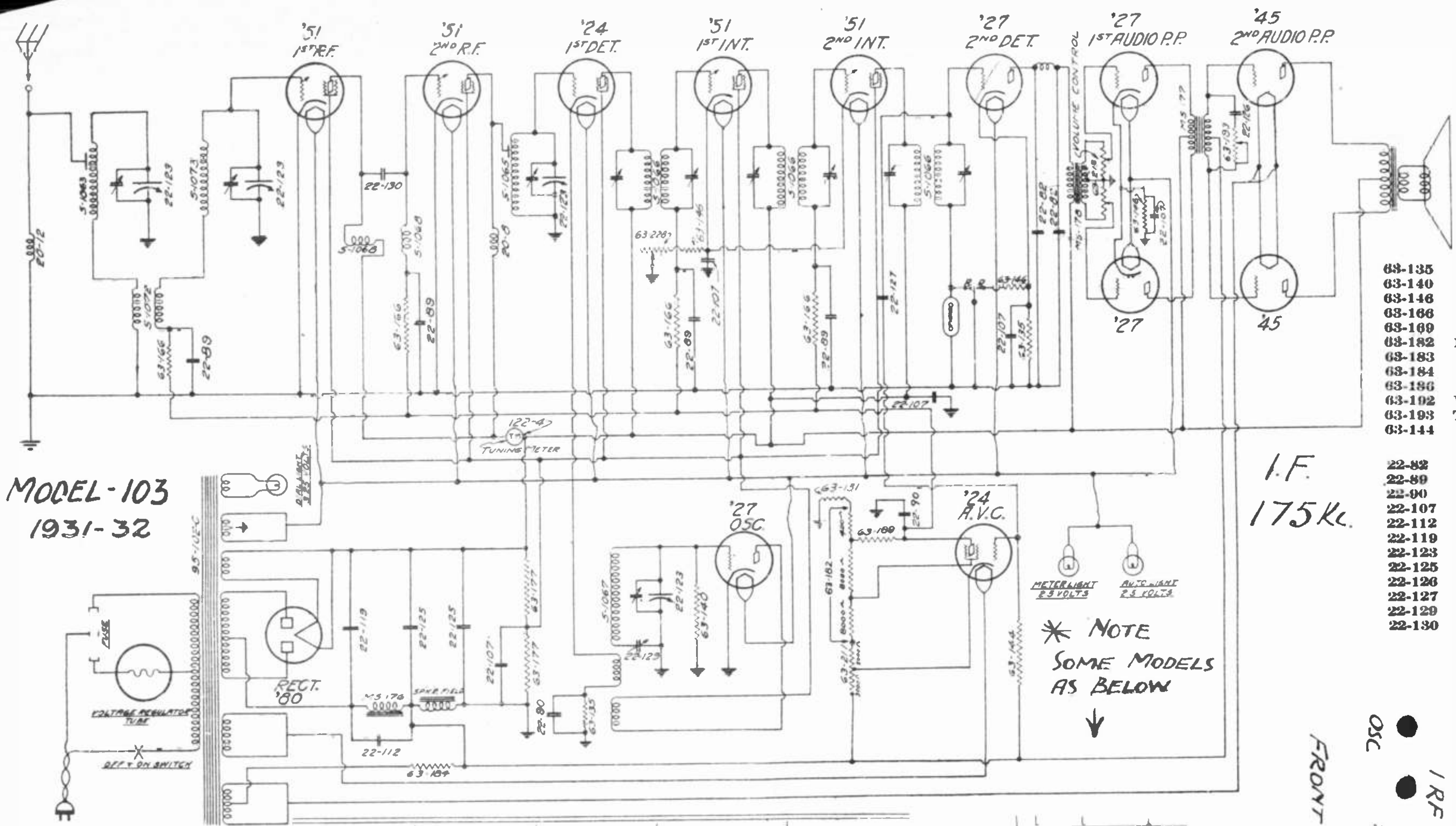
ZENITH -3

World Radio History

DATA SHEET.

MODEL-103

1931-32

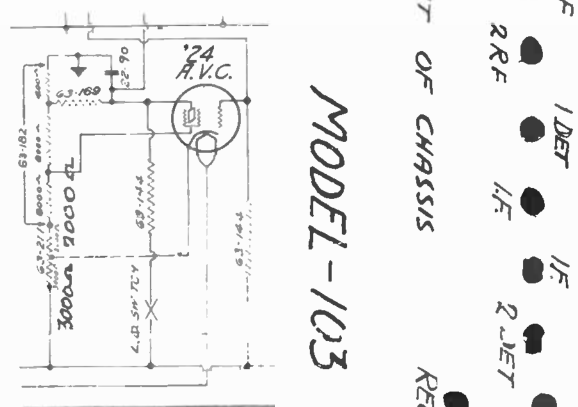


I.F.
175Kc.

63-135	25M
63-140	1 Meg
63-146	2M
63-166	1400
63-169	400M
63-182	16400
63-183	6M
63-184	750
63-186	5M
63-192	Volume Cont
63-193	Tone Control
63-144	3 Meg

22-82	.001
22-89	.1
22-90	.1
22-107	.1
22-112	.1
22-119	6.
22-123	Four Gar
22-125	8.
22-126	.006
22-127	.000025
22-129	Padder
22-130	.0001

✱ NOTE
SOME MODELS
AS BELOW



MODEL-103

FRONT OF CHASSIS

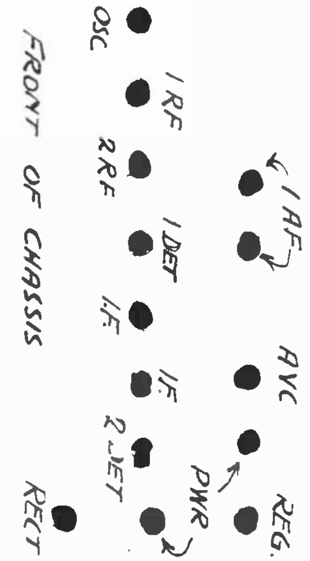


		Plate Volts	Control Grid Volts	Cathode Volts	Plate M. A.	S. G. Volts
1st. R. F.	2.2	185	— 9.	0.	2.5	80
2nd. R. F.	2.2	200	— 3.9	0.	3.	84
1st Det.	2.2	185	0.	+ 7.	.25	70
Osc.	2.2	80	0.	0.	7.	0
I. F.	2.2	185	— 4.	0.	2.	90
2nd. Det.	2.2	185	0.	+17.5	.5	0
1st. P. P.	2.2	165	0.	+12.5	3.	0
2nd. P. P.	2.3	240	—48.	0.	36.	0
A. V. C.	2.3	30	— .4	0.	0.	45

Printed in Canada.

ZENITH - 4

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