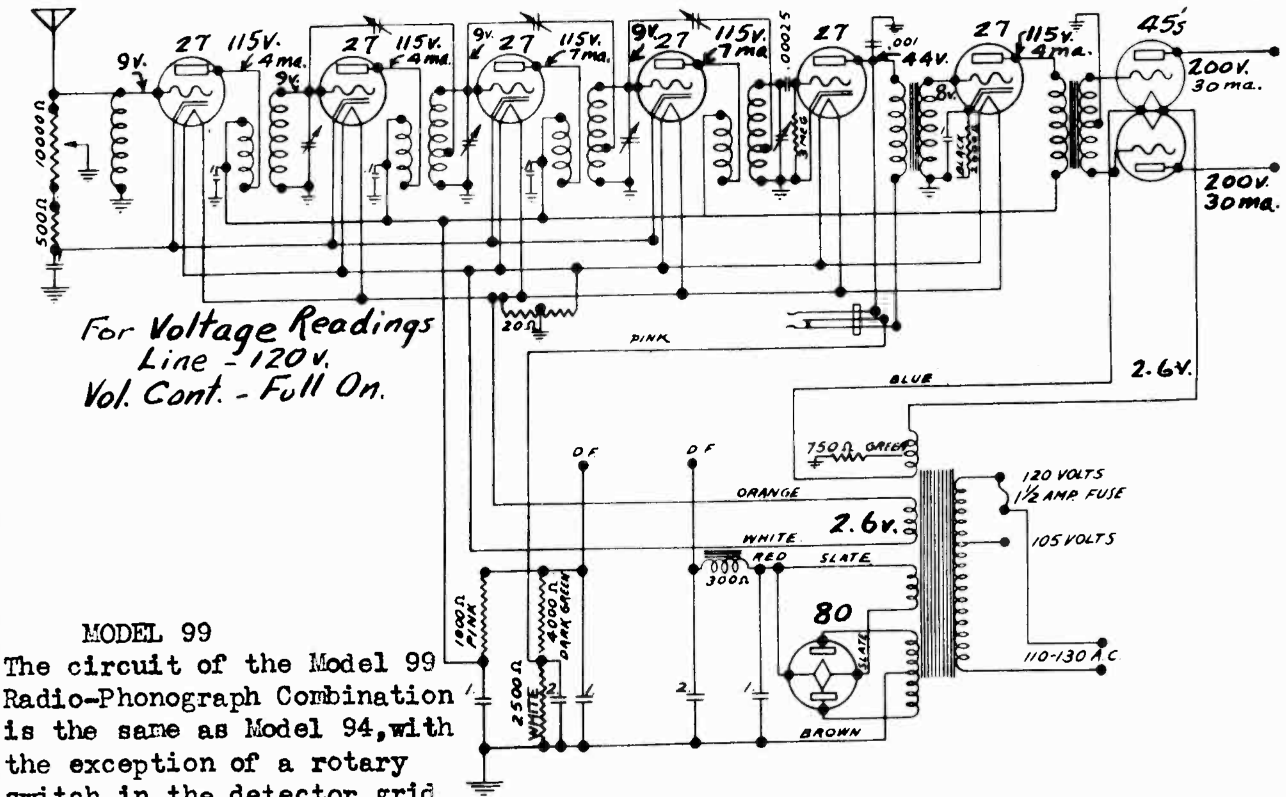
VOLUME VI

PERPETUAL TROUBLE SHOOTER'S MANUAL

JOHN F. RIDER

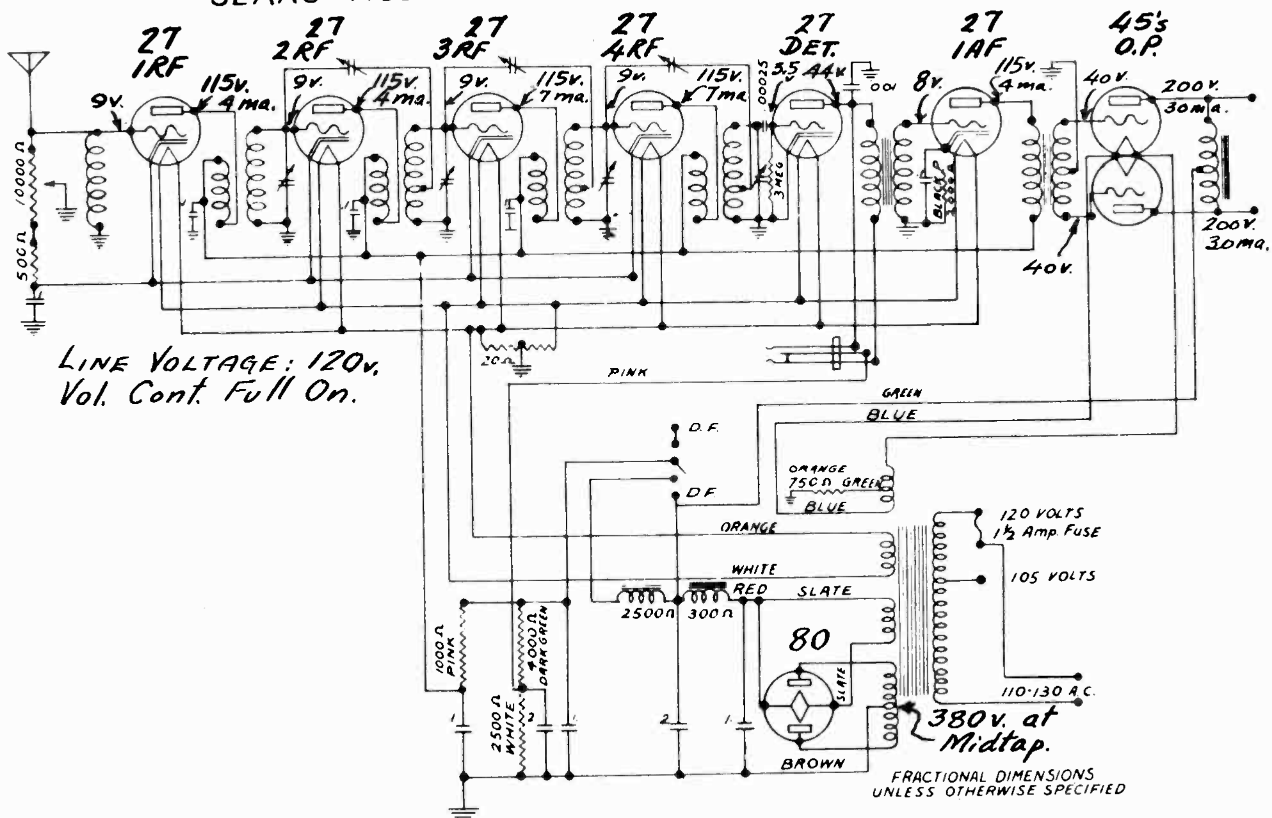
MODELS 52,95
MODELS 53,54,94,99
Schematics,Voltage

SEARS-ROEBUCK & CO.



MODEL 99
The circuit of the Model 99 Radio-Phonograph Combination is the same as Model 94, with the exception of a rotary switch in the detector grid circuit.

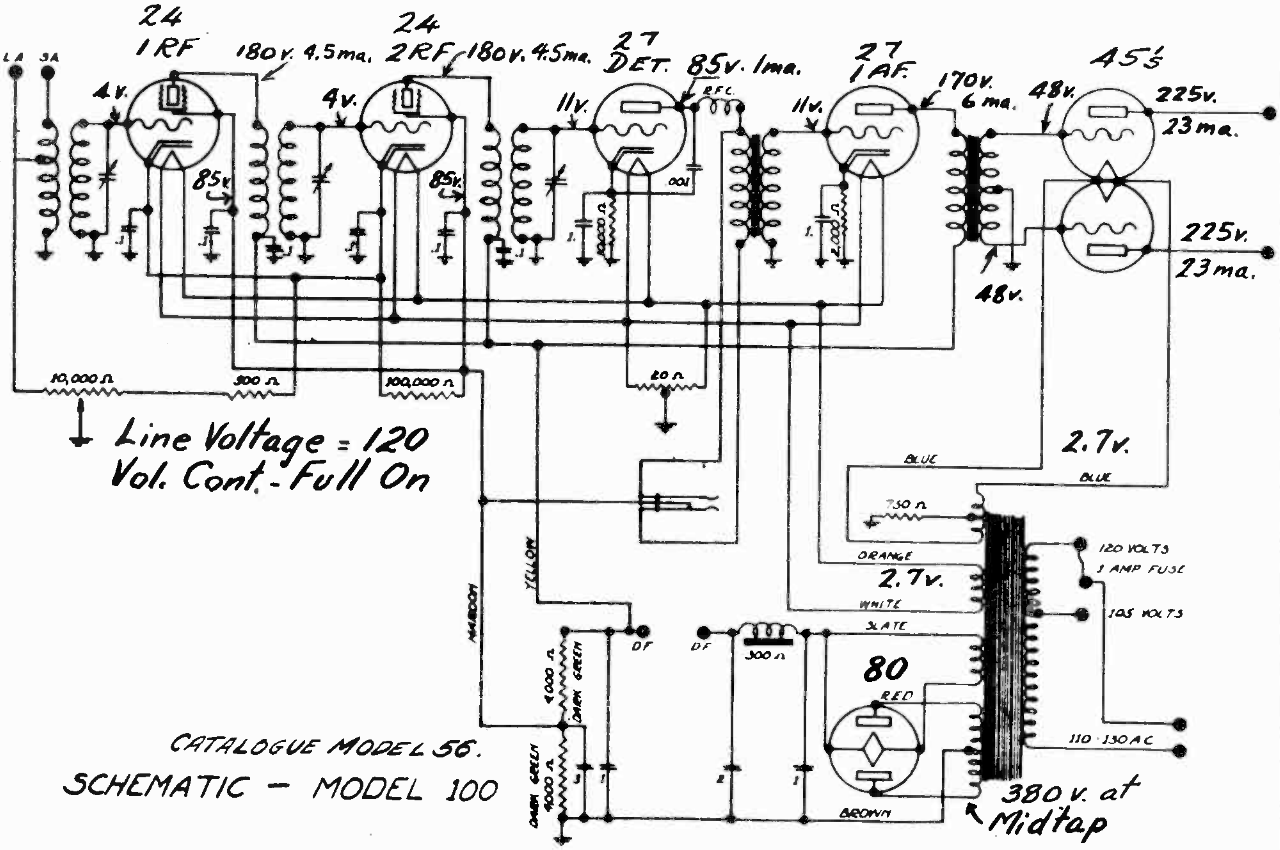
SCHEMATIC DIAGRAM
SEARS MODELS 53 AND 54-FACTORY MODEL 94



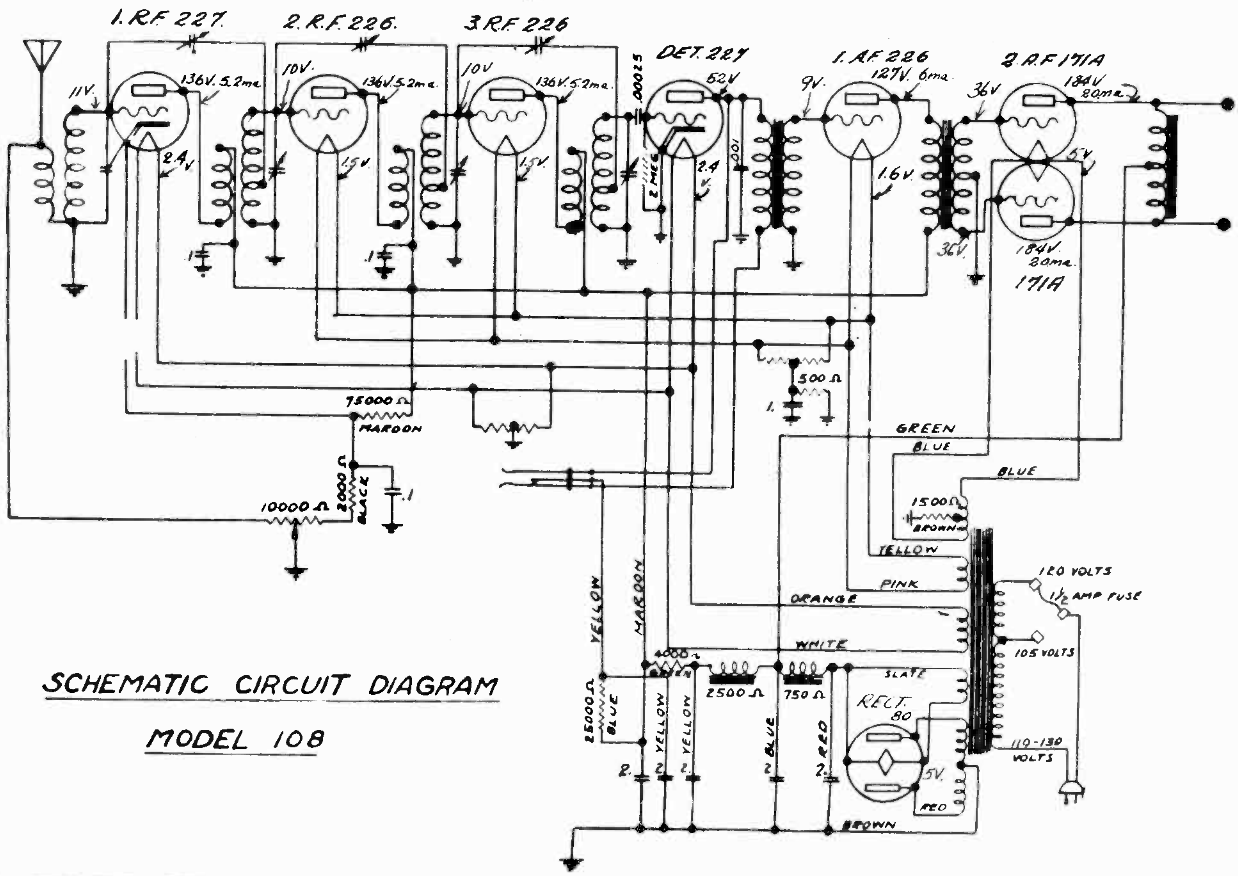
SCHEMATIC DIAGRAM
SEARS MODEL 52 FACTORY MODEL 95

MODELS 56,100
MODEL 108
Schematics,Voltage

SEARS-ROEBUCK & CO.



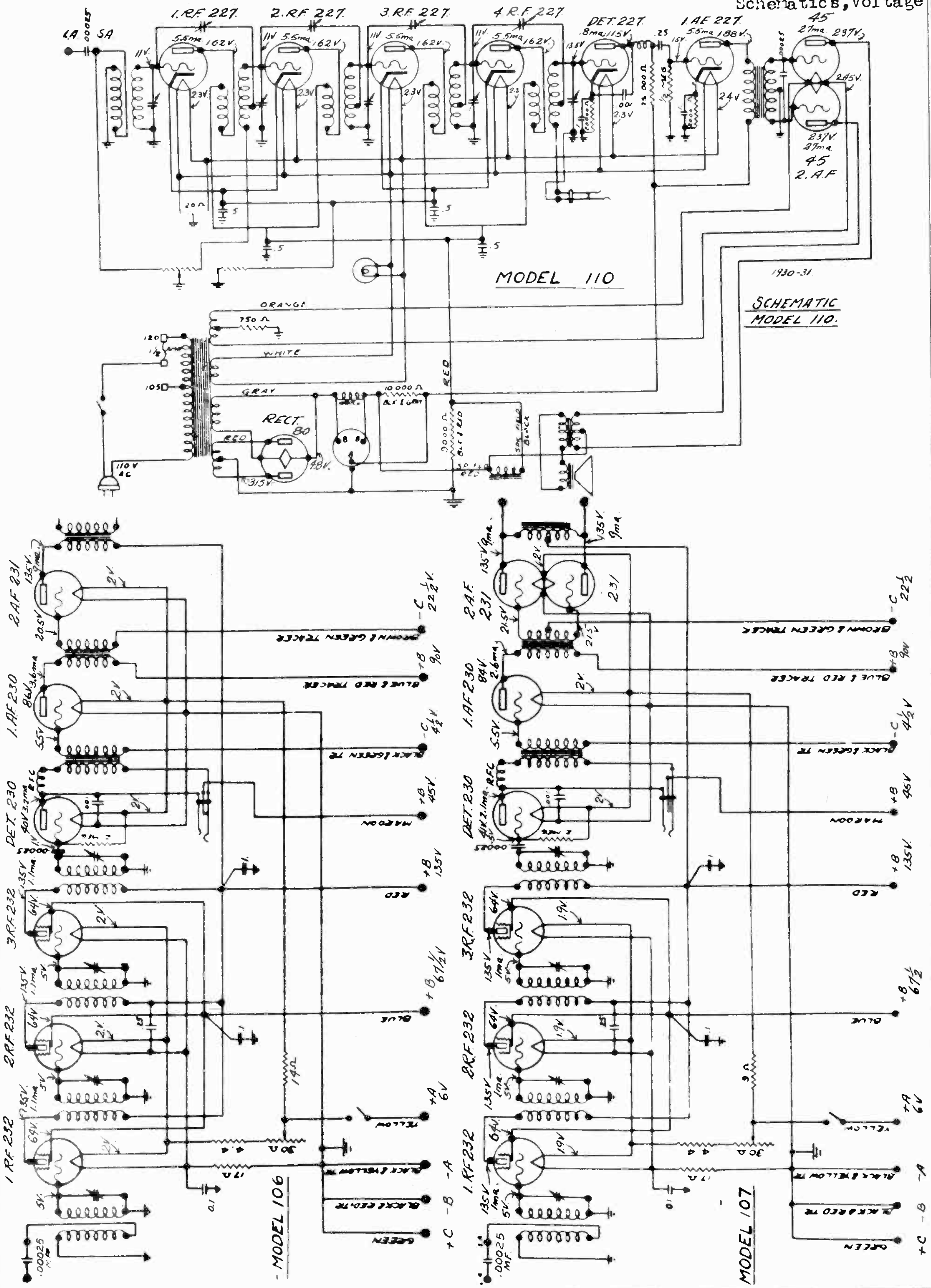
CATALOGUE MODEL 56.
SCHEMATIC — MODEL 100



SCHEMATIC CIRCUIT DIAGRAM
MODEL 108

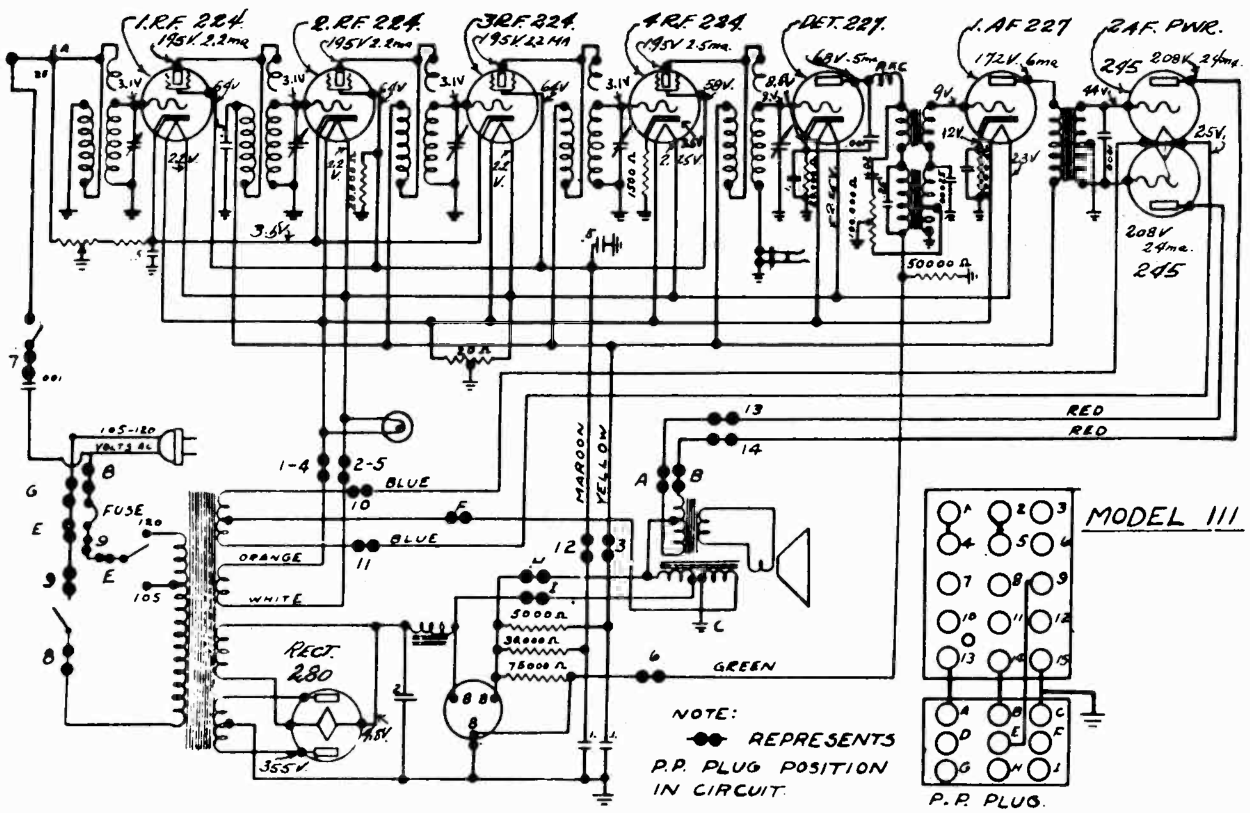
MODEL 106
MODEL 107
MODEL 110
Schematics, Voltage

SEARS-ROEBUCK & CO.

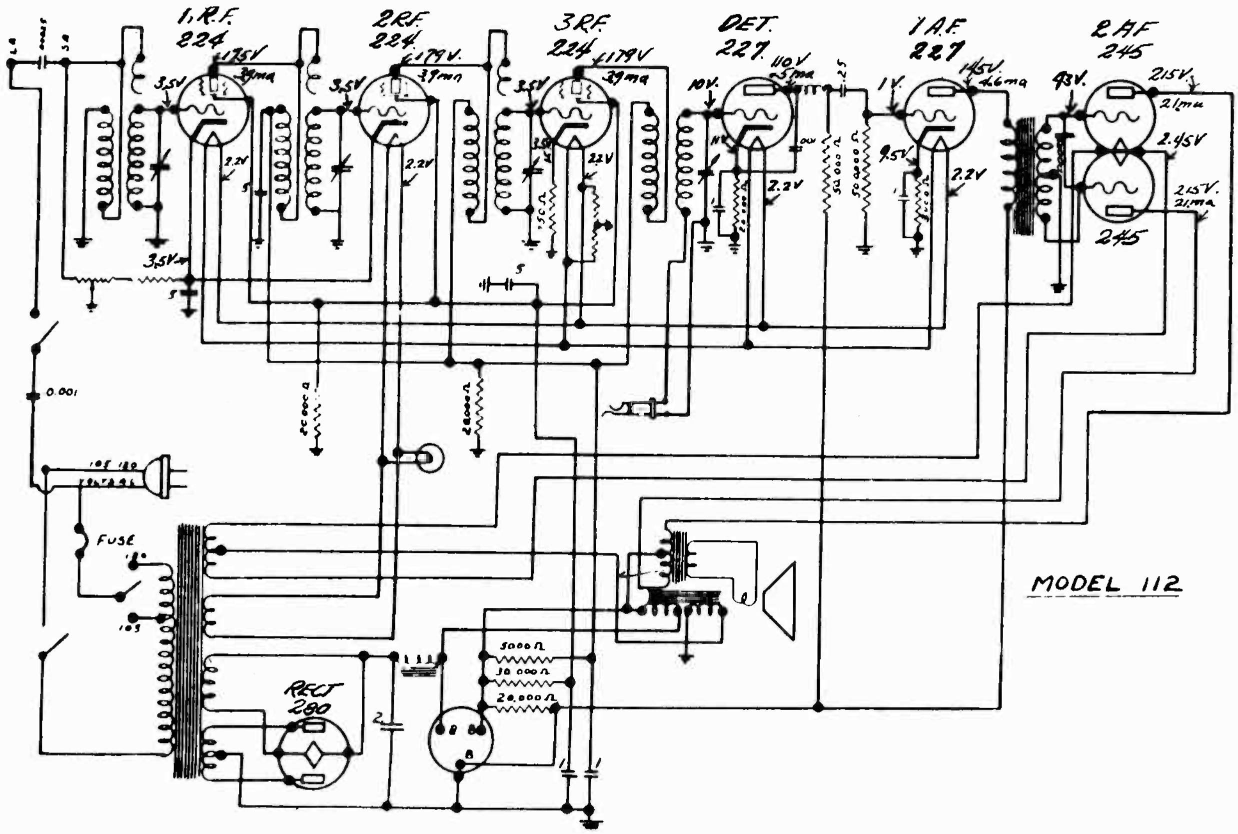


MODEL 111
MODEL 112
Schematics, Voltage

SEARS-ROEBUCK & CO.



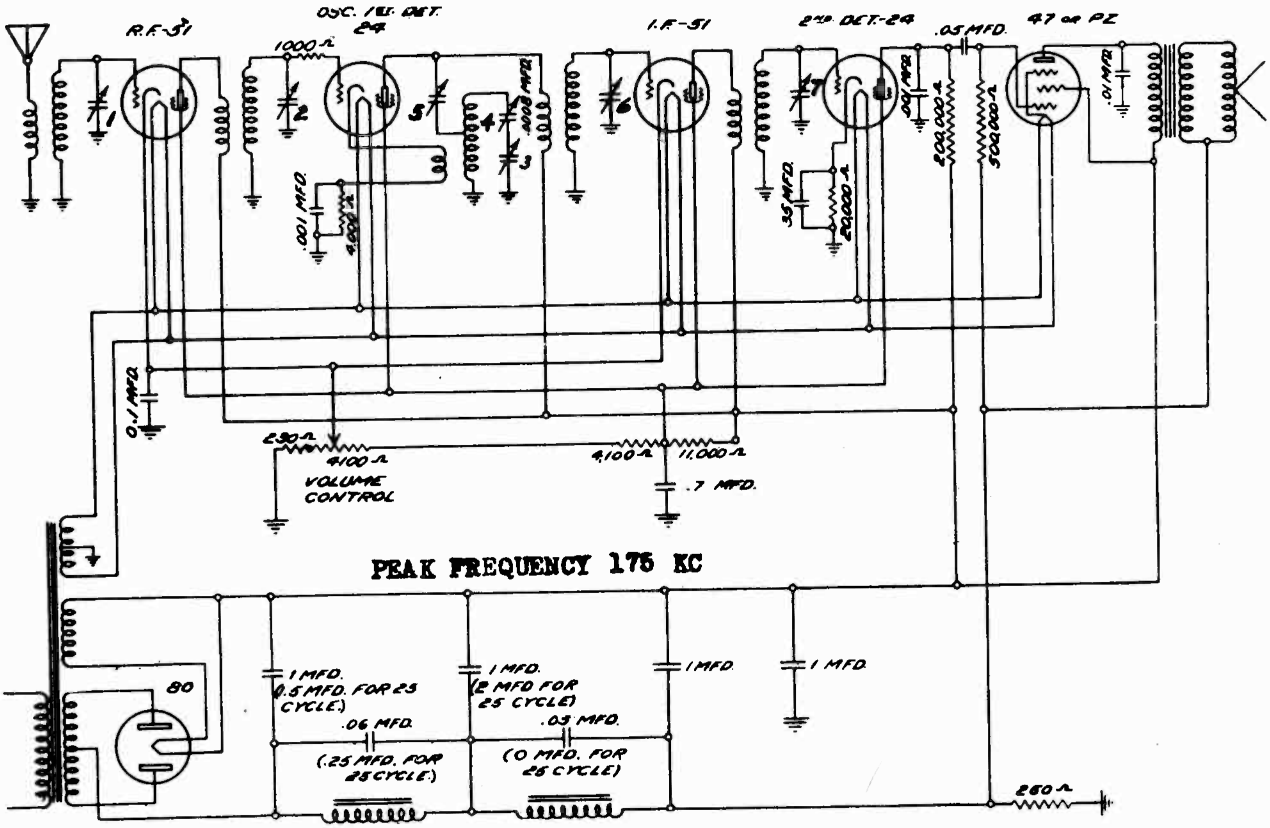
MODEL 111



MODEL 112

MODEL 1506
Schematic
Voltage

SEARS-ROEBUCK & CO.



READING TAKEN WITH WESTON MODEL 565 ANALYZER

MODEL No. CUSTOMER BY

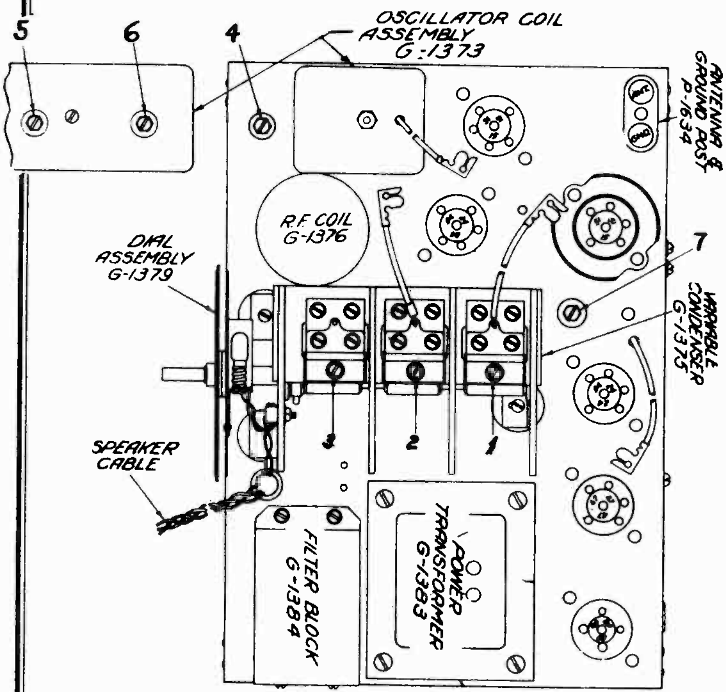
No.	Stage	Type Tube	"A" Volts	"B" Volts	Cont. Grid Volt	Cath. Volts	S. G. Volts	Ip Norm.
1	R. F.	51	2.15	235	2.4	2.5	80.	5.0
2	Autodyne	24	2.15	225	5.0	6.0	75.	3.0
3	I. F.	51	2.15	230	2.4	2.5	75.	4.0
4	2nd Det.	24	2.15	104	10.	15.	65.	0.6
5	Audio	47	2.25	250	16	0	260	30.
6	Rect.	80	4.4					57.5

Line Voltage 115. Order of Test: 1 Rect., 2 Power, 3 Det., Etc.
Volume Control Position, Full On.

NOTE: Since resistance tolerances in the sets are plus or minus 10% and tubes may vary over 20%, your readings may disagree with the above by plus or minus 30%.

MODEL 1506
Trimmers, Socket
Alignment

SEARS-ROEBUCK & CO.



READJUSTING TRIMMERS

Number 1 is the antenna trimmer.

Number 2 is the gang condenser trimmer tuning the grid of the Super-autodyne.

Number 3 is the gang condenser trimmer tuning the plate (or oscillator of the super-autodyne).

Number 4 is the oscillator padding trimmer.

Number 5 is the Super-autodyne plate trimmer.

Number 6 is the I. F. grid trimmer.

Number 7 is the second detector grid trimmer.

To readjust the trimmer, it will be necessary that a good design of 175 k. c. oscillator be employed, and that a dependable broadcast test oscillator be on hand so that stages handling intermediate frequency, and those handling radio frequency can be thoroughly checked. It is advisable to use a bakelite screwdriver when making any of these adjustments.

First, connect the 175 k. c. oscillator output leads from the control grid cap of the super-autodyne tube to ground. Do not remove any of the tubes from the sockets, and it is not necessary to disconnect the grid cap clip from the tube. Reset trimmers numbers 5, 6 and 7 for maximum output. While this test oscillator is working into the intermediate frequency stages, no adjustment of the tuning condenser on the receiver will have any effect, inasmuch as the intermediate frequency stage is fixed tuned.

If your test oscillator is properly designed, it will supply exactly 175 k. c., and when trimmers number 5, 6 and 7 are set for maximum output, they will be correctly adjusted and should be sealed.

Next, disconnect the 175 k. c. test oscillator and connect to the antenna binding post of the receiver, the output lead from your broadcast test oscillator, or tune in a broadcast signal around 1400 k. c., then reset trimmers numbers 2 and 1 respectively for maximum output. This adjustment will track the super-autodyne grid circuit of the R. F. stage.

To check the calibration of the receiver, whether it be high or low, trimmer number 3 should be reset until a station of known high frequency is brought in on the correct dial marking with peak volume. If your broadcast test oscillator is accurately calibrated, it might be used in place of the broadcasting station signal. In this adjustment, a broadcast station or test oscillator signal at about 1400 k. c. should be chosen. The setting of the trimmer at 1400 k. c. is more critical than it would be at 600 k. c.; calibration therefore more accurate.

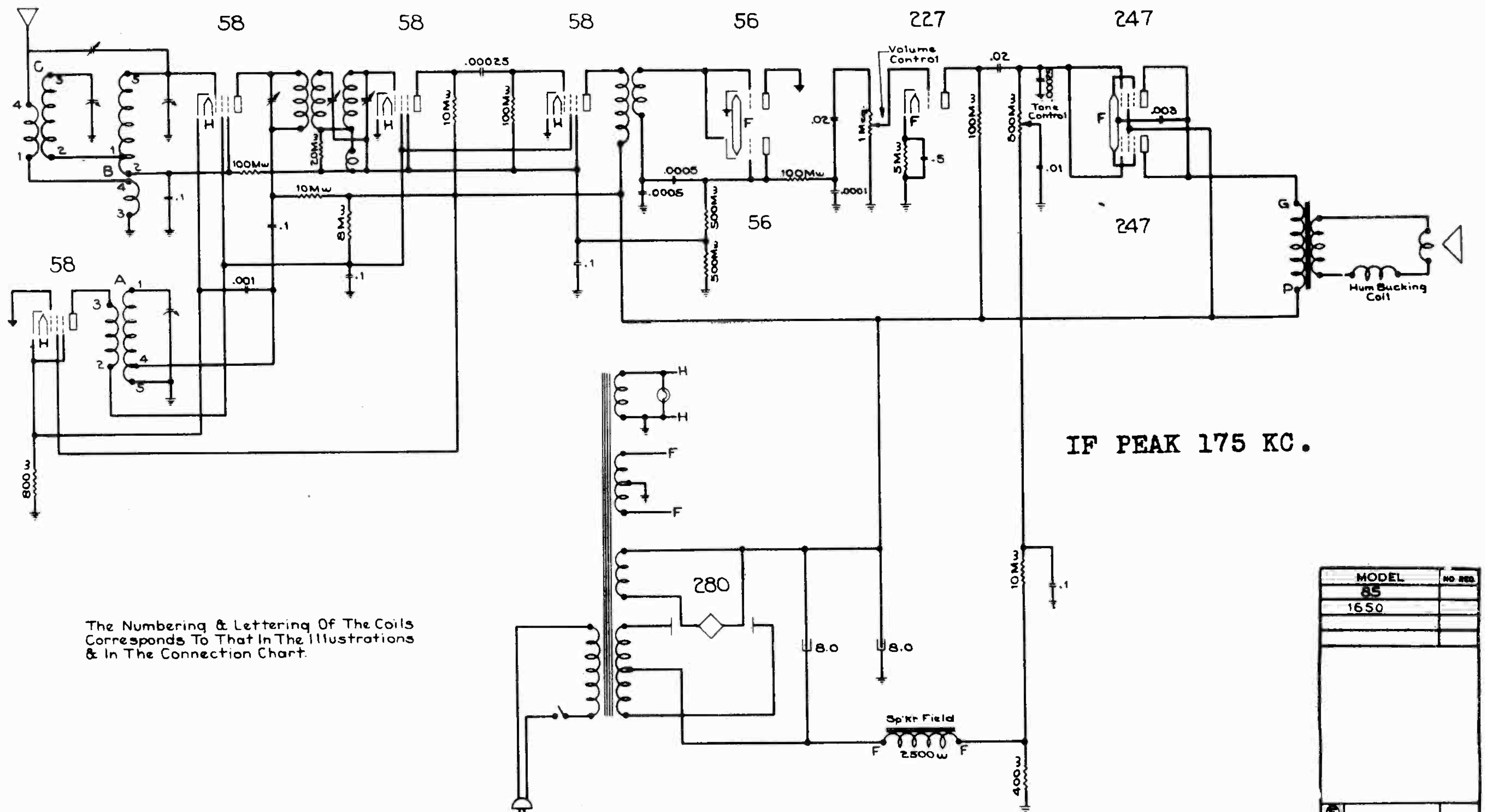
The next adjustment is important and not easily explained in writing, so pay close attention to the following instruction. We will now balance the oscillator to the r. f. and first detector stages.

Tune the external broadcast test oscillator and the receiver both to 600 k.c., then slowly increase or decrease the capacity of No. 4 (oscillator padding trimmer), at the same time and continuously tuning back and forth across the signal with the receiver tuning condenser gang. The output meter needle will now be swinging up and down in step with the variation in tuning. Watch the peak of this swinging closely and readjust No. 4 trimmer until the swinging needle reaches its highest peak.

Retune the receiver and broadcast test oscillator to 1400 k.c. and re-check trimmer No. 3 to make sure that the adjustment of No. 4 has not thrown the receiver out of calibration. If it has, then readjust No. 3 until the calibration is correct, (as previously explained), and check on trimmers No. 2 and No. 1, to make sure that the adjustment of No. 4 has not reduced the sensitivity.

MODEL 1650
Schematic

SEARS-ROEBUCK & CO.



IF PEAK 175 KC.

MODEL	NO REQ.
85	
1650	

ALTERATIONS: Revised 8-12-32; Revised 8-10-32; Added I.F. Unit

DRAWN Warren	DATE 7-11-32	CHECKED	DATE 7/12/32	SUPERSEDED BY	
TRACED	DATE	APPROVED	DATE 7-11-32	SUPERSEDES	
NAME SCHEMATIC DIAGRAM					
COLONIAL RADIO CORP. BUFFALO, N. Y.		PART NO. R7377		SH. NO. D	

Occasionally, a 58 oscillator tube refuses to function at the low frequency end of the scale. Try each of the other type 58 tubes in the oscillator socket until one is found which operates properly. Some receivers of this model use an 800 ohm (R7441) resistor instead of the 1000 ohm (R6154) in the oscillator cathode circuit to secure better functioning of the oscillator. If difficulty is experienced in finding a suitable 58 oscillator tube, replace the 1000 ohm resistor with the 800 ohm one.

MODEL 1650
Voltage
Transformer Data

SEARS-ROEBUCK & CO.

TUBE VOLTAGE and CURRENT CHART

TUBE	PLATE VOLTAGE	SCREEN VOLTAGE	GRID VOLTAGE	PLATE M. A.	SCREEN M. A.
58 - Oscillator	100	220	-15	10	4
58 - Translator	210	100	*	1	.4
58 - 1st I.F.	145	100	*	8	2
58 - 2nd I.F.	220	100	*	10	2.5
227 - 1st A.F.	95	--	-7	1.5	--
247 - Output	215	220	*	11.5	2
280 - Rectifier	Max. d.c. volts = 415 volts			Plate Current 30 m.a. each plate	

* High series resistance.

Control grid readings taken on 150 volt scale of 1000 ohms per volt meter; others on 750 volt scale. Because the A.V.C. action would change voltages and currents, no signal should be received when readings are taken. These are average values. Usually, deviations up to 20% are permissable and do not necessarily indicate a fault. Where series grid resistors prevent grid voltage readings, proper plate current at rated plate voltage will serve as an indication of proper grid bias and normal functioning of the tube. Care must be used when readings are taken with an analyzer since the capacity of the cable may cause the circuit to oscillate and give erratic readings. Usually, touching a finger to the grid or plate will stop oscillation.

POWER TRANSFORMER COLOR CODE

PRIMARY

Green; Black. Stranded wire leads.

RECTIFIER FILAMENT

Red. Solid wire leads.

RECTIFIER PLATE

Red; Blue. Slate center tap. Stranded wire leads.

R.F. FILAMENTS

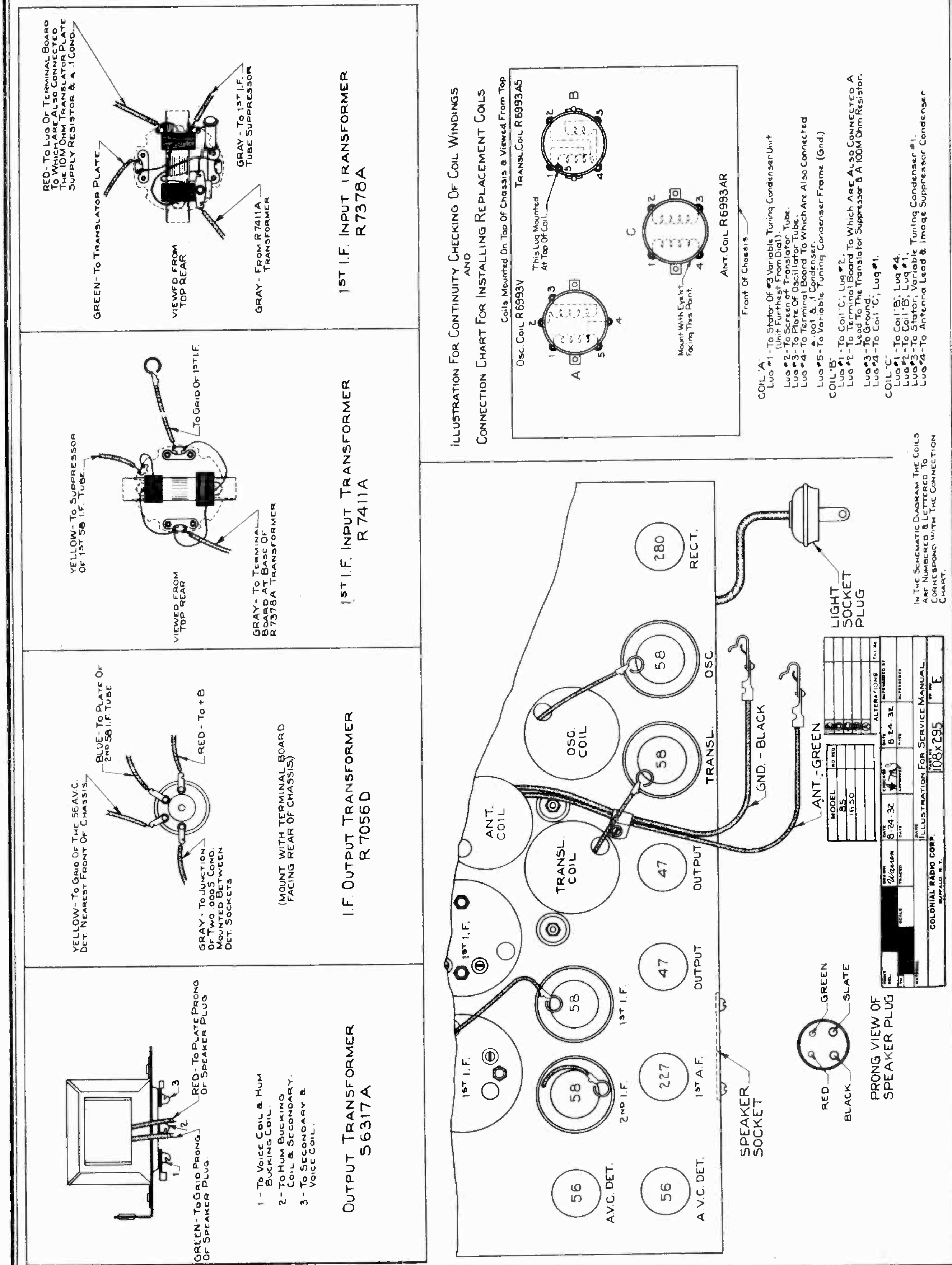
Yellow. Solid wire leads.

A.F. FILAMENTS

Orange. Solid wire leads.

MODEL 1650
Socket, Trimmers
Transformer Data

SEARS-ROEBUCK & CO.



MODELS 1652,1654
Voltage,Transformer Data

SEARS-ROEBUCK & CO.

TUBE VOLTAGE and CURRENT CHART

TUBE	PLATE VOLTAGE	SCREEN VOLTAGE	GRID VOLTAGE	PLATE M. A.	SCREEN M. A.
58 - Translator	190	85	-9 *	1.5	.1
58 - Oscillator	85	210	-12	10	5
58 - 1st IF	130	95	*	9	2
58 - 2nd IF	215	95	*	9	2
227 - 1st AF	80		*	1.2	
46 - Driver	230		*	5	2
46 - Output	375	+3.5	+3.5	15	
280 - Rectifier	Max. d.c. volts = 375			Plate Current 20m.a. per plate of ea.tube	

* High series resistance.

Control grid readings taken on 150 volt scale of 1000 ohms per volt meter; others on 750 volt scale. Readings should be taken with antenna and ground leads shorted together lest a signal should cause the A.V.C. action to change voltages and currents. These are average values. Usually, deviations up to 20% are permissable and do not necessarily indicate a fault. Where series grid resistors prevent grid voltage readings, proper plate current at rated plate voltage will serve as an indication of proper grid bias and normal functioning of the tube. Care must be used when readings are taken with an analyzer since the capacity of the cable may cause the circuit to oscillate and give erratic readings. Ordinarily, touching a finger to the grid or plate will stop oscillation.

The receiver should be turned on long enough for the speaker field to become hot before taking readings. Readings taken with the field coil cold will have higher values.

TRANSFORMER COLOR CODES

POWER TRANSFORMER

Primary:- Green; Black

Hi-Voltage Secondary:- Red; Blue; Slate center tap, stranded leads.

Rectifier Filaments:- Red. Heavy wire leads.

Secondary "F":- Yellow. Solid wire leads.

Secondary "H":- Orange. Solid wire leads. Brown. Center tap.

CLASS "B" INPUT

Primary:- Blue; Red

Secondary:- Green; Yellow; Slate center tap

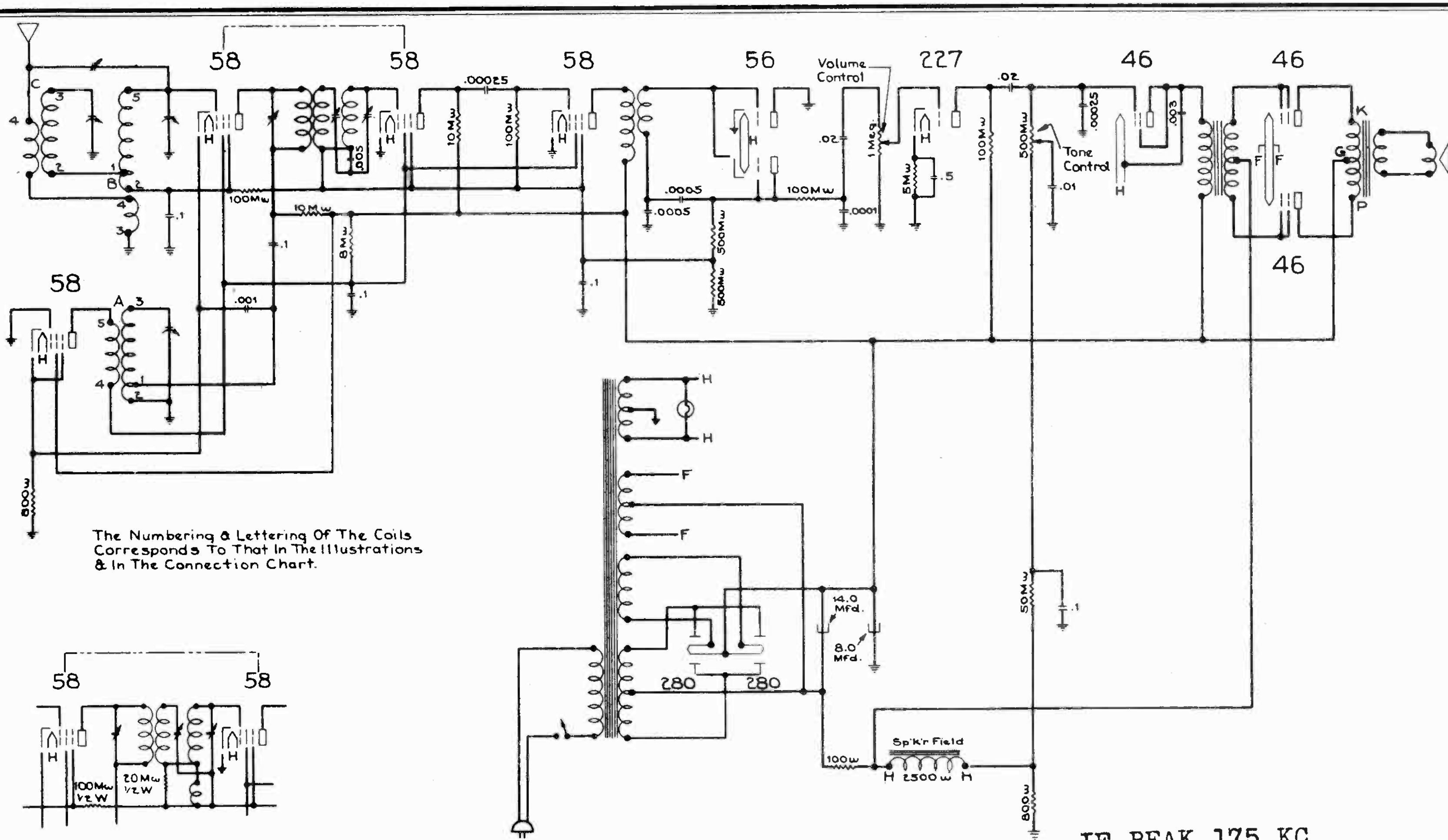
CLASS "B" OUTPUT

Primary:- Green; Blue; Red - center tap

Secondary:- Enamelled wire leads.

MODELS 1652,1654
Schematic

SEARS-ROEBUCK & CO.



The Numbering & Lettering Of The Coils Corresponds To That In The Illustrations & In The Connection Chart.

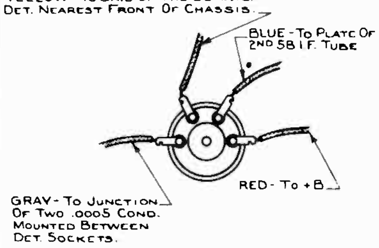
Those Sets Connected As Shown In The Schematic Use R 7725A I.F. Input Transf. Those Connected As In This Sketch (a coil and a 20Mω resistor in place of the .005 condenser) Use R 7411A I.F. Input Transf.

IF PEAK 175 KC

The A.V.C. action should be rendered inoperative when peaking the IF stages. This can be done by connecting a 3 volt battery across R2, with the positive terminal connected to ground and the negative terminal to point (5). R2 is the green resistor with black tip and yellow dot mounted across the 2nd IF tube socket and connected from suppressor to cathode.

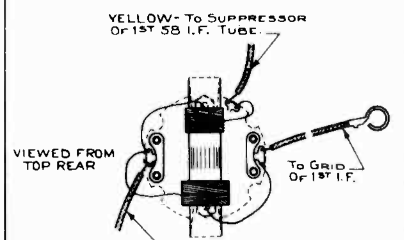
MODELS 1652,1654
Socket,Trimmers
Transformer Data
Coil Data

SEARS-ROEBUCK & CO.

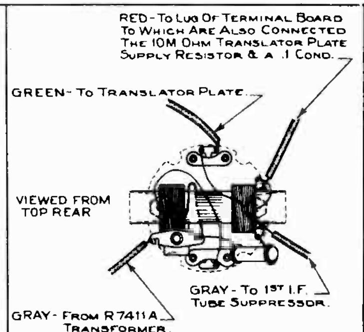


(MOUNT WITH TERM. BOARD FACING REAR OF CHASSIS)

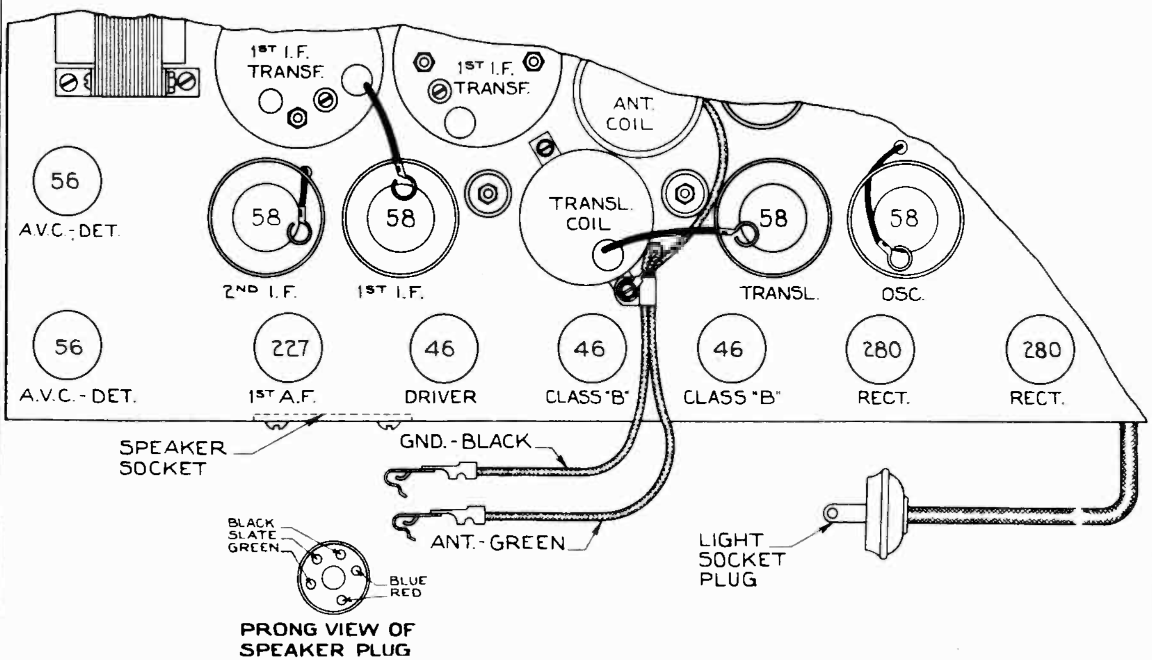
I.F. OUTPUT TRANSFORMER
R 7056 D



1ST I.F. INPUT TRANSFORMER
R 7411 A



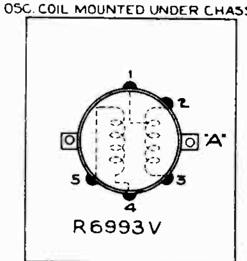
1ST I.F. INPUT TRANSFORMER
R 7378 A



PRONG VIEW OF SPEAKER PLUG

ILLUSTRATION FOR COIL REPLACEMENT AND CONTINUITY CHECKING

OSC. COIL MOUNTED UNDER CHASSIS

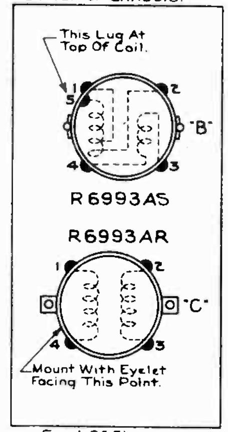


Bottom Of Chassis

COIL "A"

LUG #1 TO TERMINAL BOARD TO WHICH ARE ALSO CONNECTED A .001 & .1 CONDENSER.
LUG #2 TO VARIABLE TUNING CONDENSER FRAME. (GND.)
LUG #3 TO STATOR OF #3 VARIABLE TUNING COND. UNIT. (UNIT FURTHEST FROM THE DIAL)
LUG #4 TO 8M CANDOHM SCREEN SUPPLY RESISTOR; .1 COND. & SCREEN OF TRANSLATOR TUBE.
LUG #5 TO PLATE OF OSCILLATOR TUBE.

ANT. & TRANSL. COILS MOUNTED ON TOP OF CHASSIS.



Front Of Chassis

COIL "B"

LUG #1 TO COIL "C", LUG #2.
LUG #2 TO TERM. BOARD TO WHICH ARE ALSO CONNECTED A LEAD TO THE TRANSLATOR SUPPRESSOR; A 100M OHM RESISTOR & A .1 CONDENSER.
LUG #3 TO GROUND.
LUG #4 TO COIL "C", LUG #1.

COIL "C"

LUG #1 TO COIL "B", LUG #4.
LUG #2 TO COIL "B", LUG #1.
LUG #3 TO STATOR, VARIABLE TUNING CONDENSER #1.
LUG #4 TO ANTENNA LEAD & IMAGE SUPPRESSOR CONDENSER.

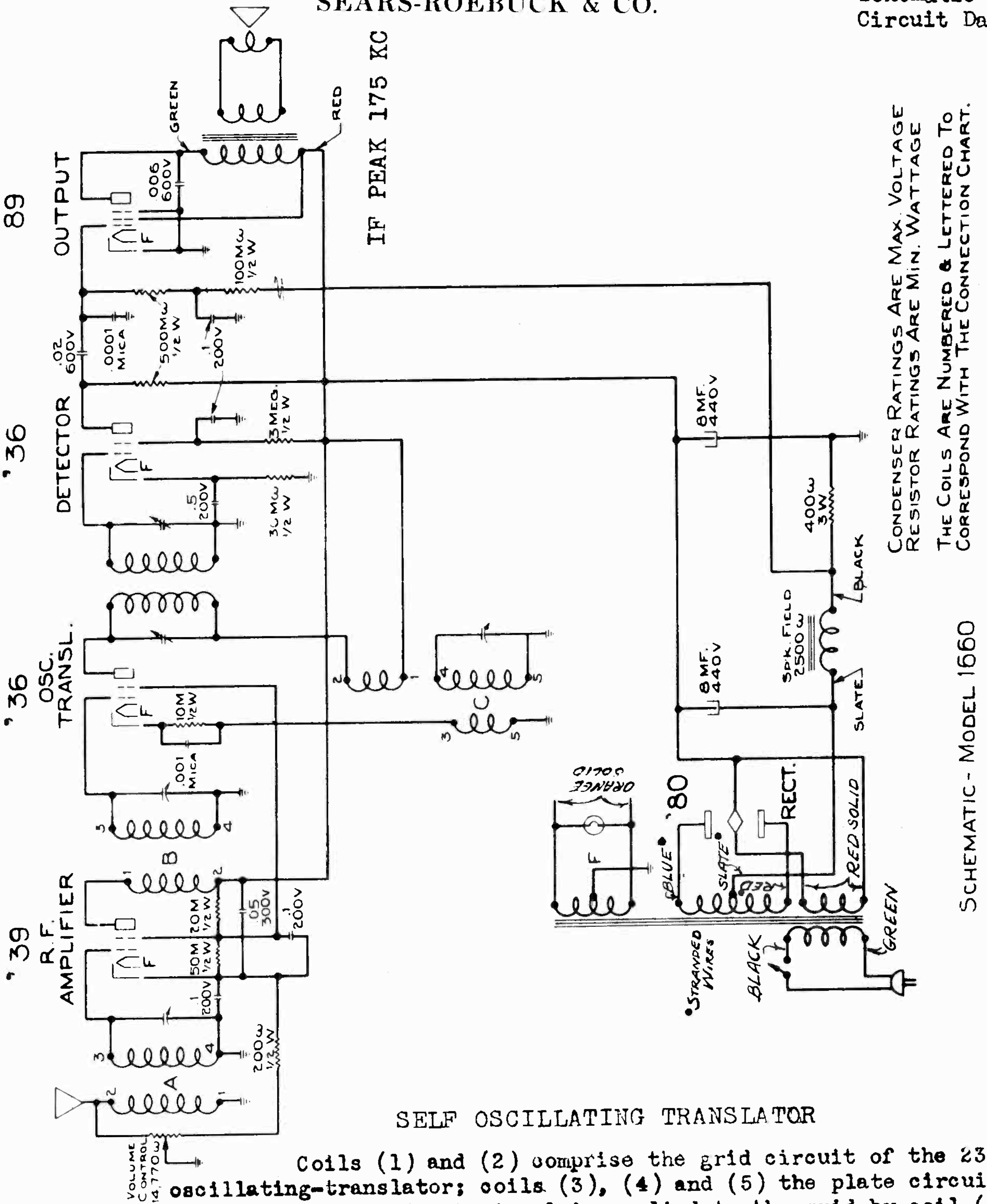
Lug Positions Are Viewed From Top Of Coils.

In The Schematic Diagram The Coils Are Numbered & Lettered To Correspond With This Connection Chart.

[redacted] Drawn W. Gausen. Date 10-6-32. Checked 10-7-32. Approved 10-13-32.
Name: ILLUSTRATION FOR SERVICE MANUAL
COLONIAL RADIO CORP. BUFFALO, N. Y. 108 x 310 E

MODEL 1660
Schematic
Circuit Data

SEARS-ROEBUCK & CO.

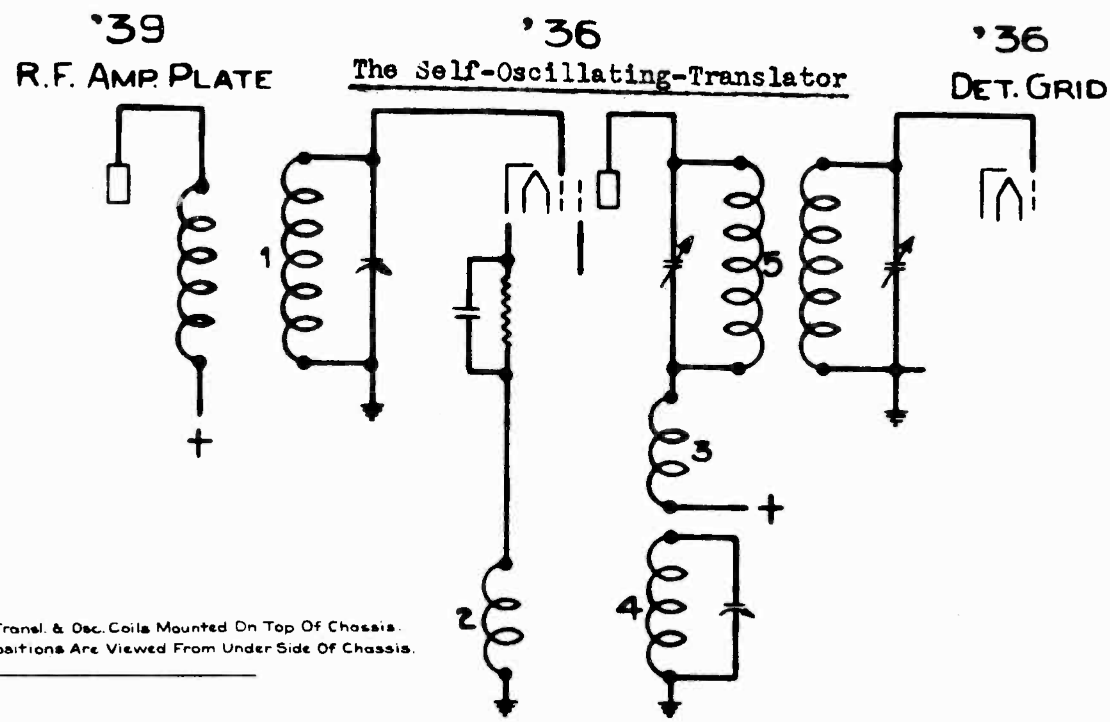


SELF OSCILLATING TRANSLATOR

Coils (1) and (2) comprise the grid circuit of the 236 oscillating-translator; coils (3), (4) and (5) the plate circuit. The amplified broadcast signal is applied to the grid by coil (1) which is tuned to the broadcast signal's frequency. Because coil (2) and (3) are coupled together through coil (4) feedback occurs and the tube is made to oscillate. The frequency of oscillation, determined by the tuned coil (4), is made 175 kc higher than the frequency of the broadcast signal and of coil (1). Since both the broadcast signal and a frequency 175 kc higher are impressed on the tube's grid, a 175 kc I.F. signal is created in the plate circuit of the tube. This 175 kc signal is selected by the tuned coil (5) and coupled to the detector grid.

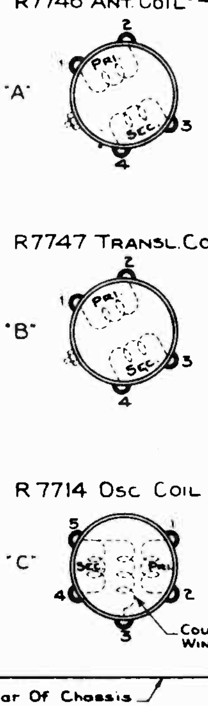
MODEL 1660
Socket, Trimmers
Coil Data

SEARS-ROEBUCK & CO.



Ant., Transl. & Osc. Coils Mounted On Top Of Chassis.
Luq Positions Are Viewed From Under Side Of Chassis.

Illustration For Coil Replacement and Continuity Checking



Coil "A"

Lug #1 – To Middle Terminal Of Volume Control And Ground Lead.
Lug #2 – To Antenna Lead & Volume Control.
Lug #3 – To #1 Stator, Variable Tuning Condenser (Stator Nearest Dial)
Lug #4 – To Variable Tuning Condenser Frame. (Gnd.)

Coil "B"

Lug #1 – To Plate Prong Of 239 R.F. Amplifier
Lug #2 – To B+
Lug #3 – To #2 Stator, Variable Tuning Condenser.
Lug #4 – To Variable Tuning Condenser Frame. (Gnd.)

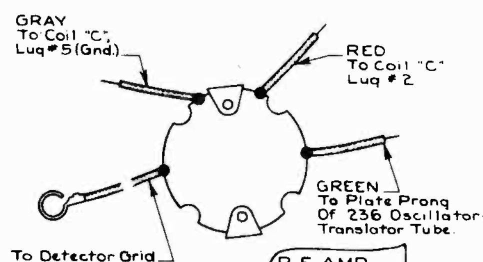
In The Schematic Diagram The Coils Are Numbered & Lettered To Correspond With This Connection Chart.

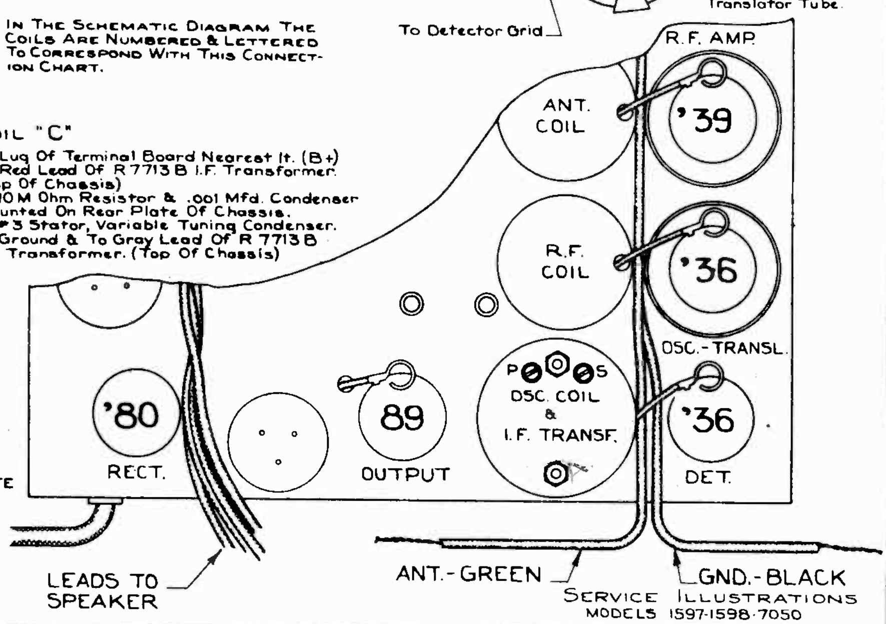
Coil "C"

Lug #1 – To Lug Of Terminal Board Nearest It. (B+)
Lug #2 – To Red Lead Of R 7713 B I.F. Transformer. (Top Of Chassis)
Lug #3 – To 10 M Ohm Resistor & .001 Mfd. Condenser Mounted On Rear Plate Of Chassis.
Lug #4 – To #3 Stator, Variable Tuning Condenser.
Lug #5 – To Ground & To Gray Lead Of R 7713 B I.F. Transformer. (Top Of Chassis)

I.F. Transformer R7713B

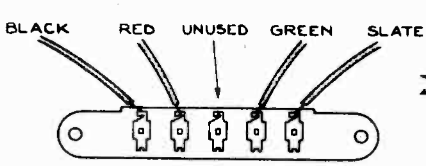
Mounted On Top Of R7714 Oscillator Coil





Connections To Speaker Terminal Strip

Viewed From Rear



Service Illustrations
Models 1597-1598-7050

MODEL 1660
Voltage
Hum Data
Alignment

SEARS-ROEBUCK & CO.

TUBE	Plate Voltage Vol. Cont. at Max.	Min.	Screen Voltage Vol. Cont. at Max.	Min.	Grid Voltage Vol. Cont. at Max.	Min.	Plate m.a. Vol.Cont. at Max.	Min.	Screen m.a. Vol.Cont.at Max.	Min.
239 - R. F.	155	135	90	90	-3.5	-30	0.5	0	1.4	0
236 - Osc. - Transl.	150	160	85	120	-5.3	-7.5	.6	.8	(a)	(a)
236 - Detector	65*	75*	25*	25*	-5	-5	.2	.2	(a)	(a)
89 - Output	145	150	160	170	* (-13 Actual)	* (-13 Actual)	21	26	4	5
280 - Rectifier	Max. d.c. = 275v.						Plate Current = 20 m.a. per plate			

Speaker field voltage = 100v. (a) - Too low to read * - High series resistance Watts = 45

Control grid readings taken on 150 volt scale of 1000 ohms per volt meter; others on 750 volt scale. Readings taken with antenna and ground shorted together and no signal received. These are average values. Ordinarily, deviations up to 20% are permissable and do not necessarily indicate a fault. Where series grid resistors prevent grid voltage readings, proper plate current at the rated plate voltage will serve as an indication of proper grid bias and normal functioning of the tube. Care must be used when readings are taken with an analyzer since the capacity of the cable may cause the circuit to oscillate and give erratic readings. Usually, touching a finger to the grid or plate will stop oscillation. These readings were taken with the speaker field hot. Readings taken when the field is cold will be higher because of the lowered field resistance.

HUM

Occasionally objectionable hum is encountered. Examine the 236 detector tube. Some tubes of this type have a U shaped heater and others have a reversed helix heater. The U shaped heater sometimes causes hum.

ALIGNMENT OF THE OSCILLATOR TRANSLATOR

If it becomes necessary to align the oscillator-translator and R.F. stages, it should be done at about 1250 kc and then "touched up" at about 1600 kc. Trouble may be experienced if an attempt is made to secure alignment at 1600 kc without having obtained approximate alignment at 1250 kc. At 1600 kc the capacity of the oscillator-translator trimmer may be sufficient to tune the oscillator-translator stage to the same frequency as the R.F. stage, resulting in feedback and violent oscillation.

MODEL 1670
Trimmers, Socket
Coil Data
Transformer Data

SEARS-ROEBUCK & CO.

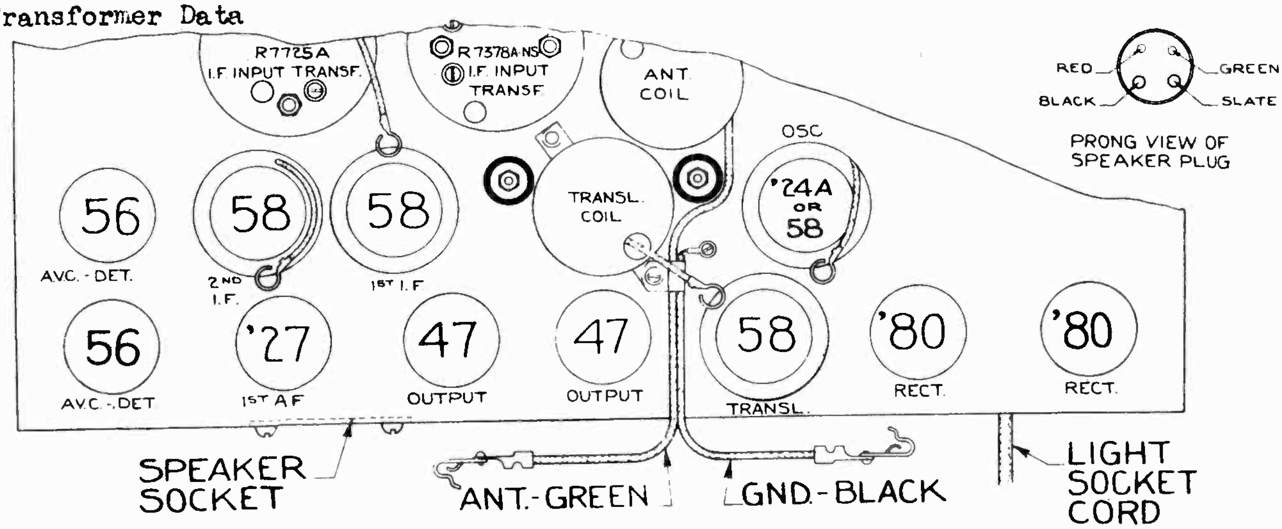
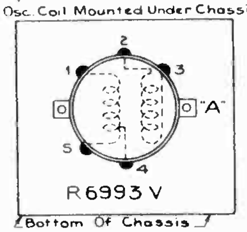


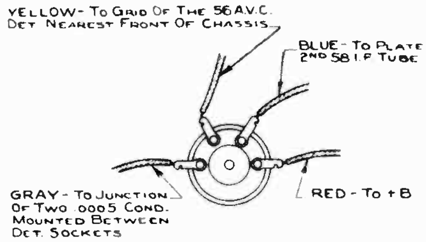
Illustration For Coil Replacement and Continuity Checking

Osc. Coil Mounted Under Chassis



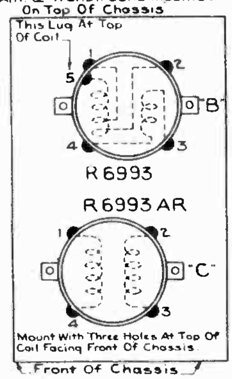
Coil "A"

Lug #1 To Stator Of #3 Variable Tuning Cond. Unit. (Unit Furthest From Dial)
Lug #2 To 10 M Ohm Translator & Oscillator Plate Supply Resistor. (When '24A Osc. Is Used)
Lug #2 To Screen Of Translator Tube. (When 58 Oscillator Is Used)
Lug #3 To Plate Of Oscillator Tube
Lug #4 To .1 & .001 Condensers
Lug #5 To Variable Tuning Condenser Frame (Gnd.)



(MOUNT WITH TERMINAL BOARD FACING REAR OF CHASSIS.)

Ant. & Transl. Coils Mounted On Top Of Chassis



Coil "B"

Lug #1 To Coil "A" Lug #2
Lug #2 To Lug On Terminal Board Are Also Connected a Lead To The Translator Suppressor, a 00M Ohm Resistor & a .1 Condenser.
Lug #3 To Ground.
Lug #4 To Coil "C", Lug #1.
Lug #5 To Translator Grid Lead & Stator Or #2 Variable Tuning Condenser Unit.

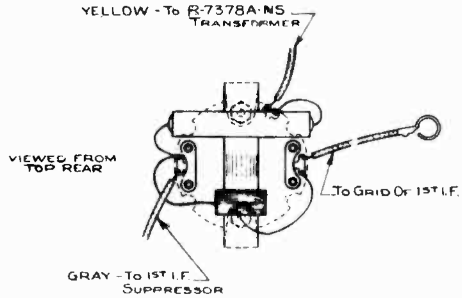
Coil "C"

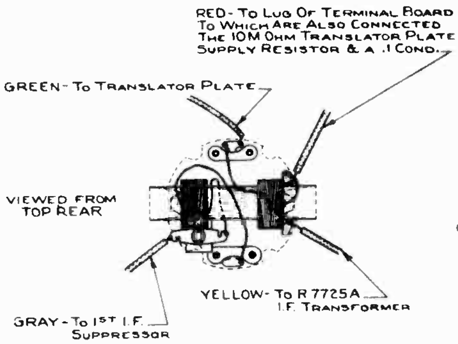
Lug #1 To Coil "B", Lug #4.
Lug #2 To Coil "B", Lug #1.
Lug #3 To Stator Of #1 Variable Tuning Condenser Unit
Lug #4 To Antenna Lead & Image Suppressor Condenser.

Lug Positions Are Viewed From Top Of Coils.

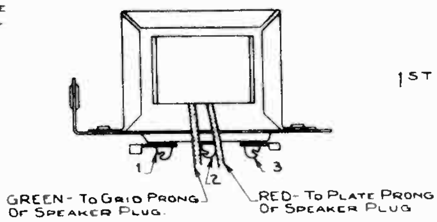
In The Schematic Diagram The Coils Are Numbered & Lettered To Correspond With This Connection Chart.

I.F. Output Transformer
R 7056 D





1ST I.F. Input Transformer
R7378A-NS

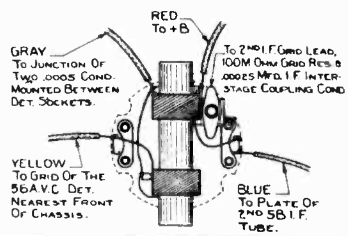


1 - To Voice Coil & Hum Bucking Coil.
2 - To Hum Bucking Coil & Secondary.
3 - To Secondary & Voice Coil.

Output Transformer
S6317A

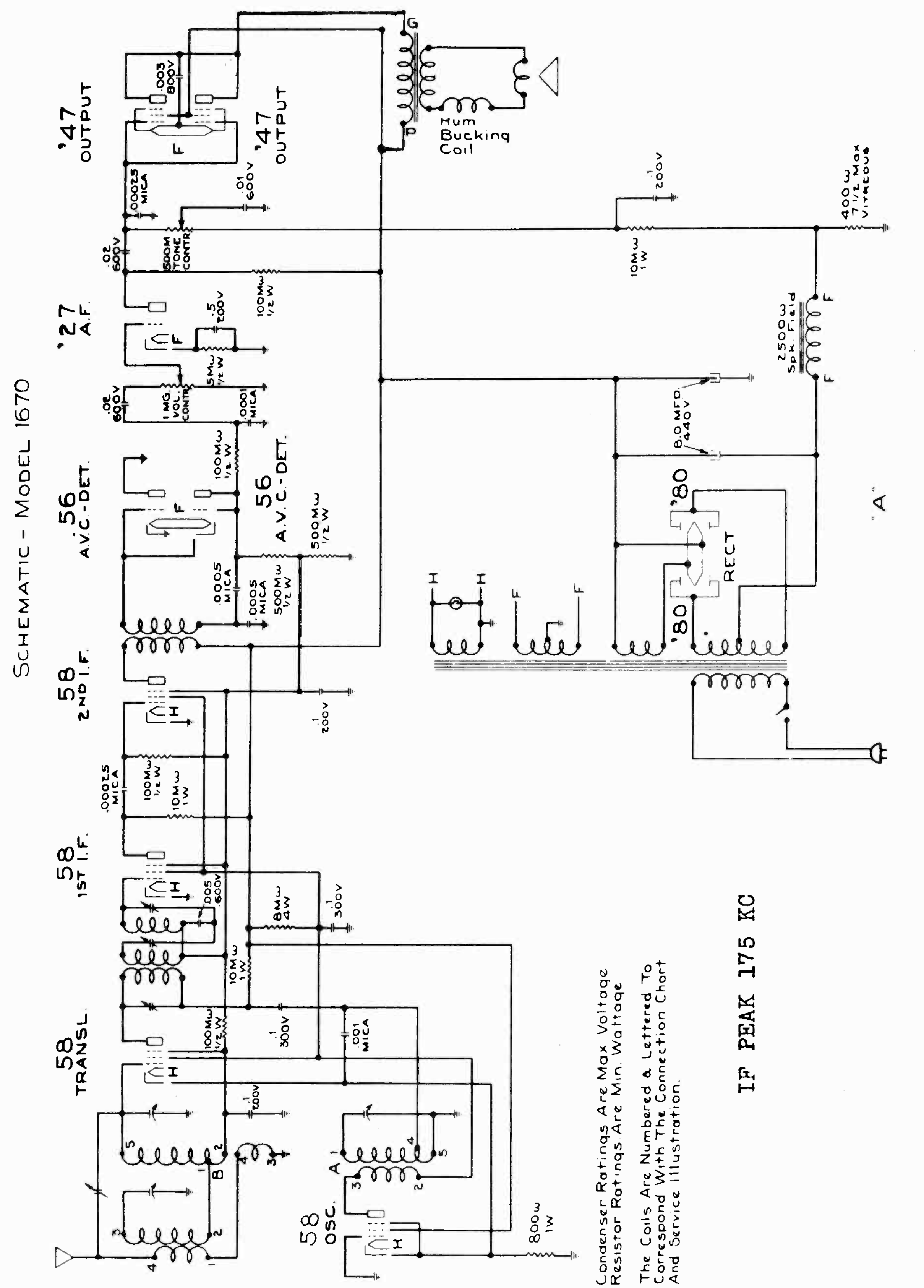
1ST I.F. Input Transformer
R7725A

Connections Of R6415R
I.F. Output Transformer
(Mounted Under Chassis)



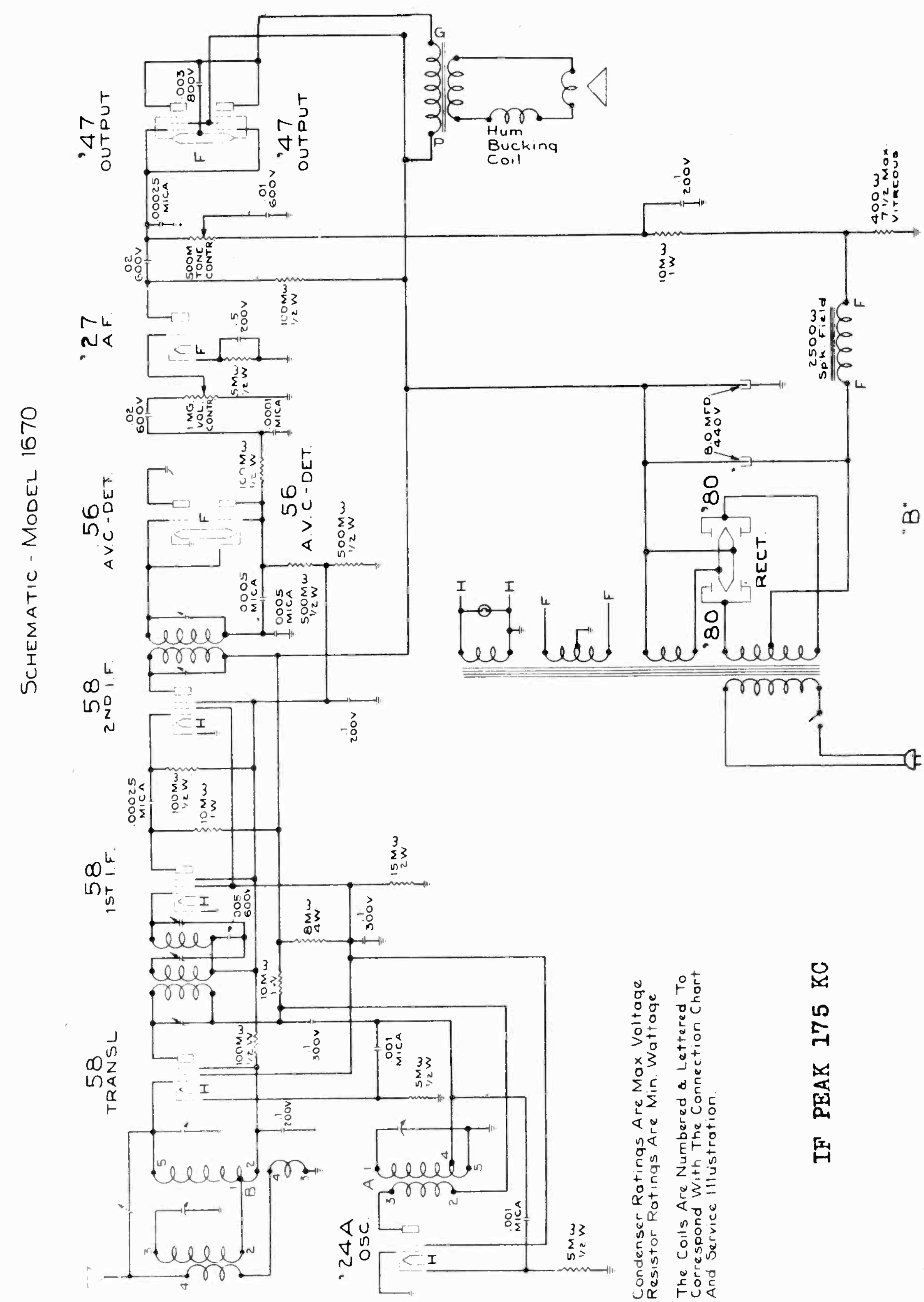
MODEL 1670 (Early)
Schematic "A"

SEARS-ROEBUCK & CO.



MODEL 1670 (Late)
Schematic "B"

SEARS-ROEBUCK & CO.



MODEL 1670
Voltage
Changes

SEARS-ROEBUCK & CO.

TUBE VOLTAGE AND CURRENT CHART

TUBE	Plate Voltage	Screen Voltage	Grid Voltage	Plate m.a.	Screen m.a.
58 - Oscillator	90	200	-12.5	8	3
224A- Oscillator	175	90	-10	1.3	.4
58 - Translator (with 58 Oscillator)	190	90	-6*	.9	.3
58 - Translator (with 224A Oscillator)	175	90	-6*	.9	.3
58 - 1st I. F.	115	95	*	7.5	2
58 - 2nd I.F.	210	95	*	8	2
227 - A. F.	70		-6 (Vol. Control At Minimum)	1.3	
247 - Output	200	210	-7 * (-24 Actual)	6.5	1.1
280 - Rectifier	Max. d.c. = 365v.			Plate current=13m.a. per plate of each tube	

Watts = 100
Speaker field voltage = 135v.
* - Reading low because of high series resistance

Model 1670 receivers are eleven tube superheterodynes, identical in circuit with Model 1650 receivers except that they use two type 280 rectifier tubes.

Original production used a 58 oscillator and a self-tuned I.F. output transformer (R-7056D). Later production receivers have a 224A oscillator and a condenser tuned I.F. output transformer (R-6415R) and are somewhat more selective.

Control grid readings taken on 150 volt scale of 1000 ohms per volt meter; others on 750 volt scale. Readings taken with antenna and ground shorted together and no signal received. These are average values. Ordinarily, deviations up to 20% are permissable and do not necessarily indicate a fault. Where series grid resistors prevent grid voltage readings, proper plate current at the rated plate voltage will serve as an indication of proper grid bias and normal functioning of the tube. Care must be used when readings are taken with an analyzer since the capacity of the cable may cause the circuit to oscillate and give erratic readings. Usually, touching a finger to the grid or plate will stop oscillation. These readings were taken with the speaker field hot. Readings taken when the field is cold will be higher because of the lowered field resistance.

MODELS 1805A,1808A
1826A,1841
Alignment

SEARS-ROEBUCK & CO.

The IF Stages:

1. Connect the low scale of the output meter across the loud speaker voice coil.

2. Connect the ground lead of the test oscillator to the chassis.

3. Connect the other lead of the test oscillator to the control grid of the 58 IF tube. The grid clip should be left attached to the cap and the tube shield must be in place.

4. Set the test oscillator to 175 kc and tune the IF output transformer. The locations of its tuning adjustments are shown in the Service Illustration.

5. Change the test oscillator connection to the control grid cap of the 58 translator tube and tune the IF input transformer.

6. In order to secure greater accuracy, repeat the adjustments, starting with the IF output transformer.

Always use as low an output as possible from the test oscillator in order to render the AVC action of the set inoperative.

RF Alignment (Broadcast):

1. Couple the output of the test oscillator to the green antenna lead of the set, with the antenna connected.

2. Set the test oscillator to 1740 kc. Its signal should be tuned in when the variable condenser plates are opened all the way. If the signal cannot be reached, the plate and grid leads to the oscillator coil, socket and wave switch, must be moved away from the chassis to reduce their capacity.

3. Set the test oscillator to 1400 kc. and tune in its signal. Then adjust the broadcast translator coil trimmer, mounted within the coil shield (See Service Illustration) and the trimmer on the antenna section of the variable condenser, for maximum output.

4. Set the test oscillator to 600 kc. and tune in its signal. Then slowly rotate the variable condenser back and forth a degree or two and, at the same time, adjust the oscillator padder, mounted under the chassis, for maximum output.

5. Repeat the 1740 kc. and 1400 kc. adjustments.

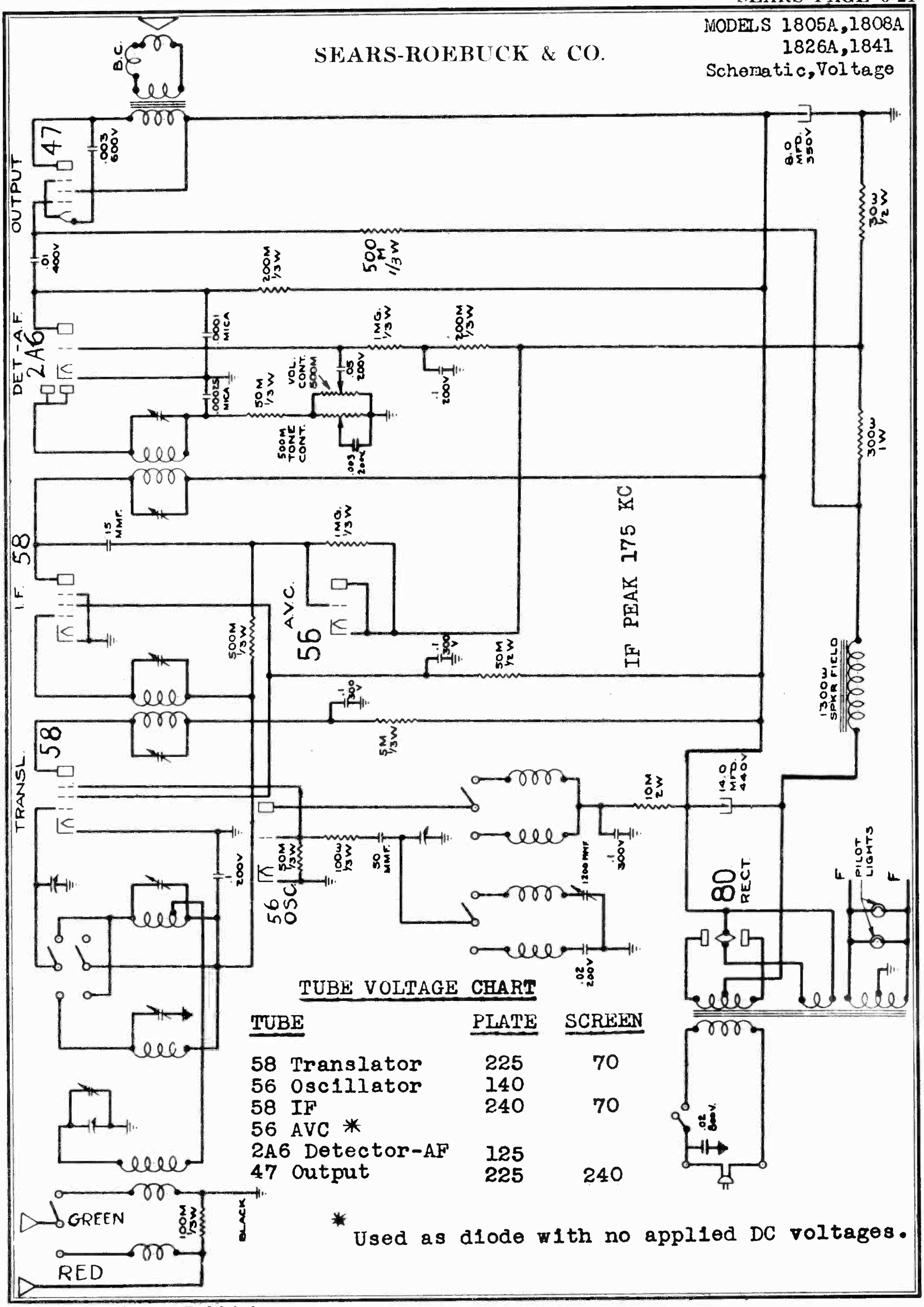
Short Wave Alignment:

1. Leave the test oscillator loosely coupled to the green antenna lead, as for broadcast alignment.

2. Set the test oscillator to 15000 kc. and adjust the short wave translator coil trimmer for maximum output.

SEARS-ROEBUCK & CO.

MODELS 1805A,1808A
1826A,1841
Schematic,Voltage



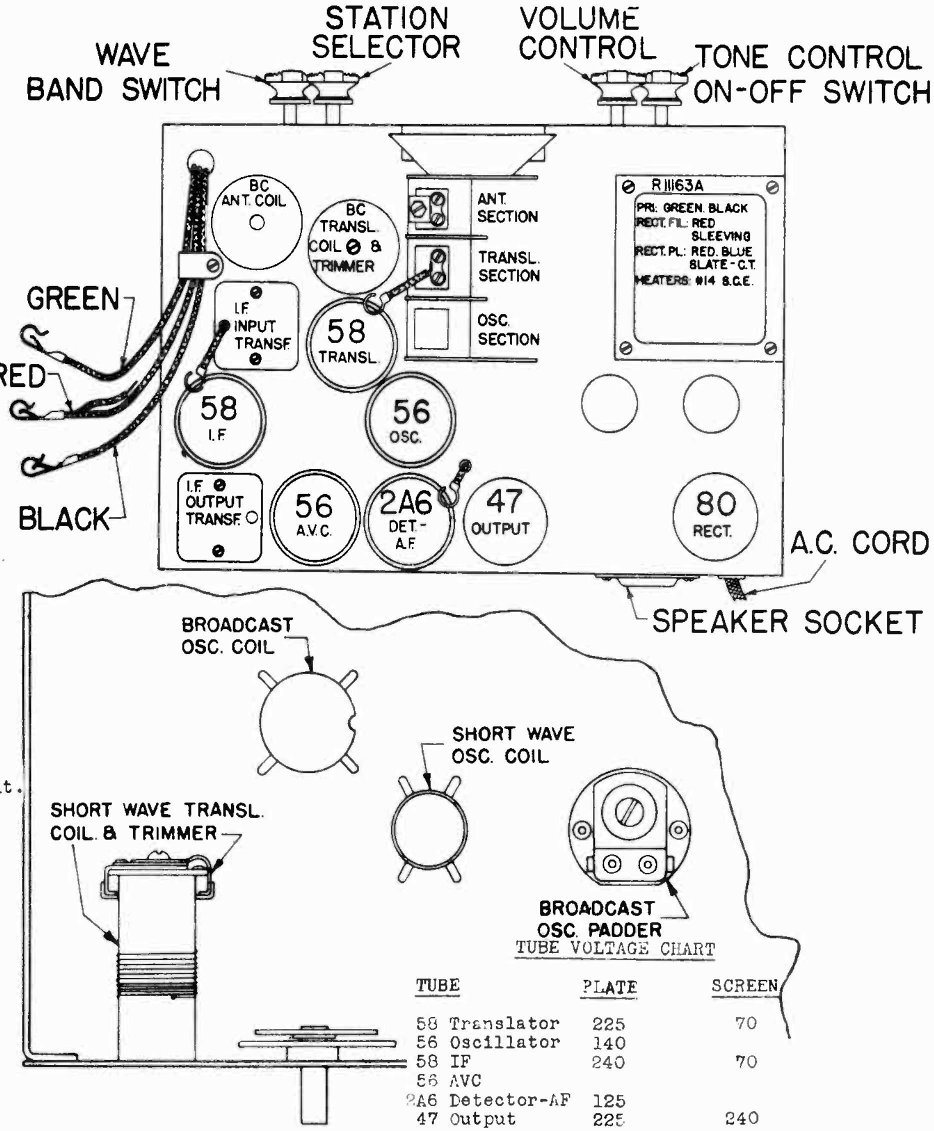
TUBE VOLTAGE CHART

TUBE	PLATE	SCREEN
58 Translator	225	70
56 Oscillator	140	
58 IF	240	70
56 AVC *		
2A6 Detector-AF	125	
47 Output	225	240

* Used as diode with no applied DC voltages.

MODELS 1809,1811
1833,1845
Alignment,Socket
Trimmers,Voltage

SEARS-ROEBUCK & CO.



TUBE VOLTAGE CHART

TUBE	PLATE	SCREEN
58 Translator	225	70
56 Oscillator	140	
58 IF	240	70
56 AVC		
2A6 Detector-AF	125	
47 Output	225	240

Used as diode with no applied DC voltages.

The IF Stages:

1. Connect the low scale of the output meter across the loud speaker voice coil.

2. Connect the ground lead of the test oscillator to the chassis.

3. Connect the other lead of the test oscillator to the control grid of the 58 IF tube. The grid clip should be left attached to the cap and the tube shield must be in place.

4. Set the test oscillator to 175 kc and tune the IF output transformer. The locations of its tuning adjustments are shown in the Service Illustration.

5. Change the test oscillator connection to the control grid cap of the 58 translator tube and tune the IF input transformer.

6. In order to secure greater accuracy, repeat the adjustments, starting with the IF output transformer.

Always use as low an output as possible from the test oscillator in order to render the AVC action of the set inoperative. The volume control of the receiver should always be in its full "on" position.

RF Alignment (Broadcast):

1. Couple the output of the test oscillator to the green antenna lead of the set, with the antenna connected.

2. Set the test oscillator to 1725 kc. Its signal should be tuned in when the variable condenser plates are opened all the way. If the signal cannot be reached, the plate and grid leads to the oscillator coil, socket and wave switch, must be moved away from the chassis to reduce their capacity.

3. Set the test oscillator to 1400 kc and tune in its signal. Then adjust the broadcast translator coil trimmer, mounted within the coil shield (See Service Illustration) and the trimmer on the antenna section of the variable condenser, for maximum output.

4. Set the test oscillator to 600 kc and tune in its signal. Then slowly rotate the variable condenser back and forth a degree or two and, at the same time, adjust the oscillator padder, mounted under the chassis, for maximum output.

5. Repeat the 1725 kc and 1400 kc adjustments. Be sure that the receiver volume control is always on full and that the output from the test oscillator is kept to the lowest possible value.

Short Wave Alignment:

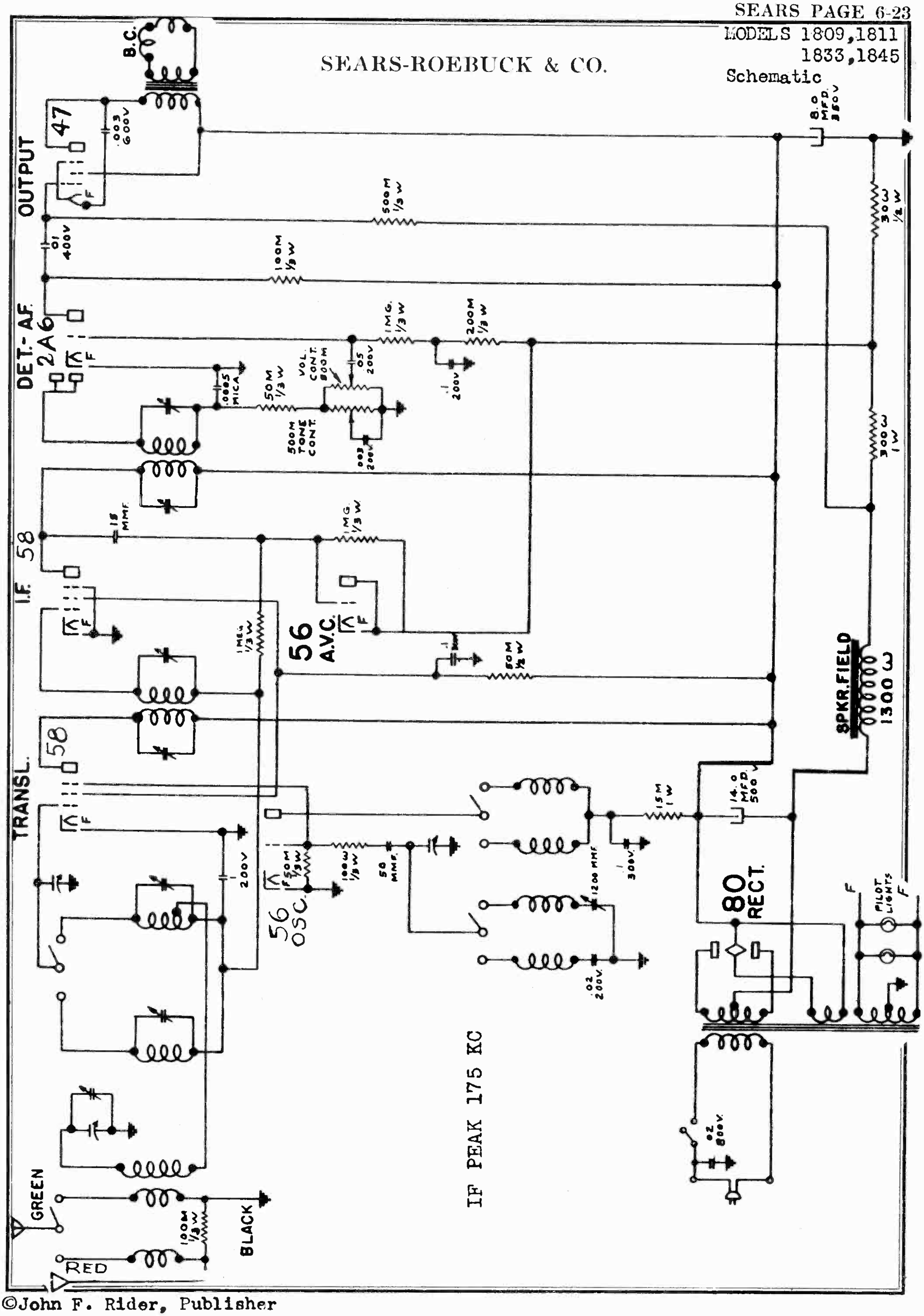
1. Leave the test oscillator loosely coupled to the green antenna lead, as for broadcast alignment.

2. Set the test oscillator to 14,000 kc and adjust the short wave translator coil trimmer for maximum output.

Parts for this model may be ordered from Colonial Radio Corp., 254 Rano St., Buffalo, N. Y.

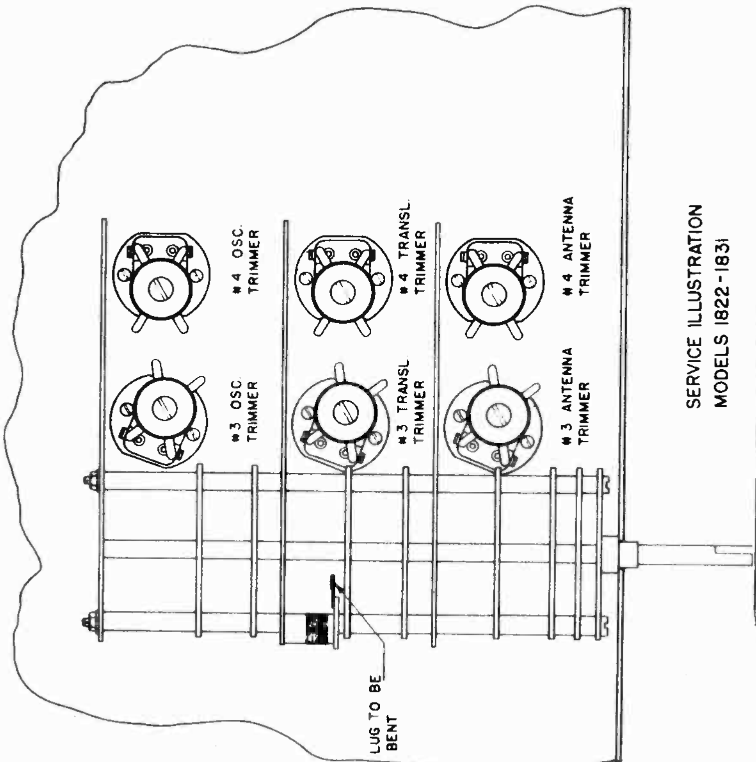
MODELS 1809,1811
1833,1845
Schematic

SEARS-ROEBUCK & CO.

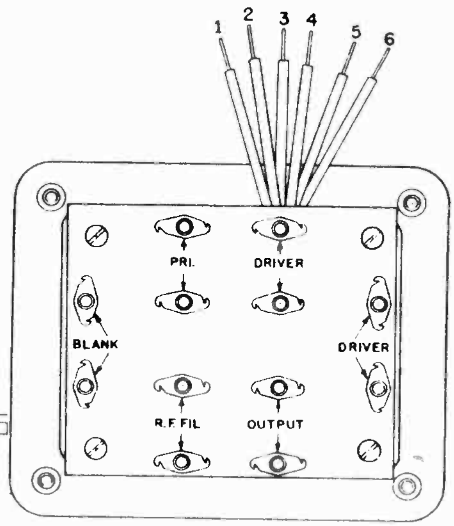


MODELS 1822,1831
Socket,Trimmers
Transformer Data

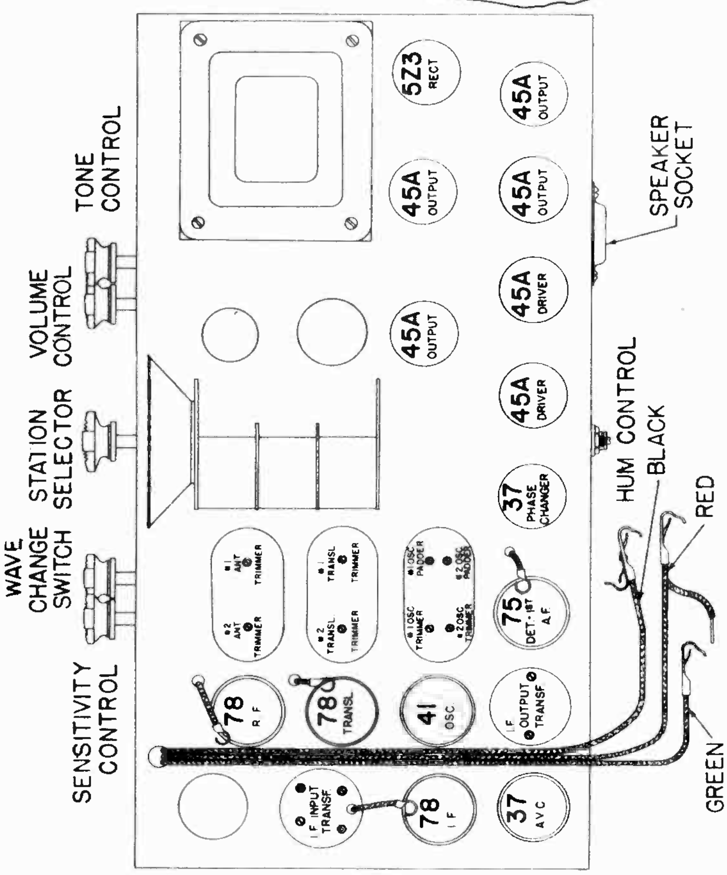
SEARS-ROEBUCK & CO.



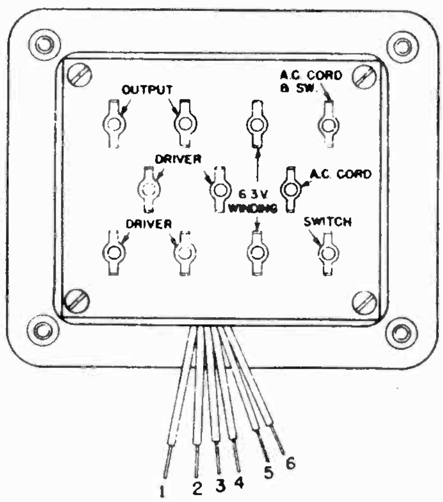
POWER TRANSFORMER
TERMINAL BOARD CONNECTIONS
MODELS 1822-1831



1-RED-RECT. PL.
2-BLUE-RECT. PL.
3-SLATE-RECT. C.T.
4-RED TRACER-RECT. FIL.
5-RED TRACER-RECT. FIL.
6-GREEN TRACER-R.F.-C.T.



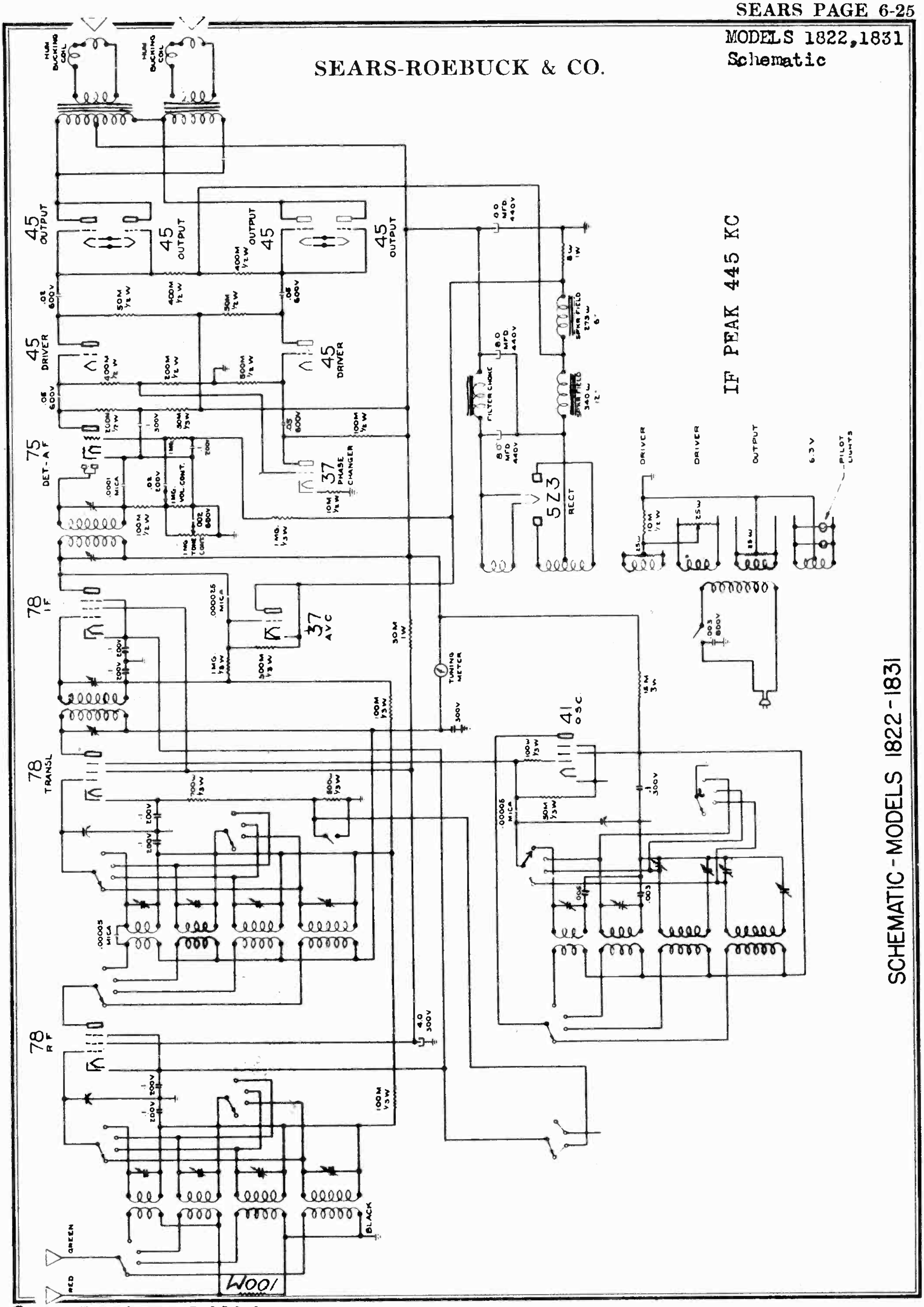
POWER TRANSFORMER
TERMINAL BOARD CONNECTIONS
MODELS 1822-1831



1-RED-RECT. PL.
2-BLUE-RECT. PL.
3-SLATE-RECT. C.T.
4-RED TRACER-RECT. FIL.
5-RED TRACER-RECT. FIL.
6-TAP FOR 6.3V. WINDING

MODELS 1822,1831
Schematic

SEARS-ROEBUCK & CO.



MODELS 1822,1831
Alignment,Parts

SEARS-ROEBUCK & CO.

ALIGNMENT PROCEDURE

The IF Stages:

1. Connect the low scale of the output meter across the loud speaker voice coil.

2. Connect the ground lead of the test oscillator to the chassis.

3. Connect the other lead of the test oscillator, through a .1 mfd condenser, to the control grid of the 78 IF tube. The grid clip should be left attached to the cap and the tube shield must be in place.

4. Set the test oscillator to 445 kc and tune the IF output transformer. The locations of its tuning adjustments are shown in the Service Illustration.

5. Change the test oscillator connection to the control grid cap of the 78 translator tube and tune the IF input transformer.

6. In order to secure greater accuracy repeat the adjustments, starting with the IF output transformer.

Always use as low an output as possible from the test oscillator in order to render the AVC action of the set inoperative.

RF Alignment; #1 Band (Broadcast):

1. Couple the output of the test oscillator to the antenna lead of the set, with the antenna connected.

2. Set the test oscillator to 1520 kc.

3. Turn the variable condenser plates all the way out. Then adjust the #1 oscillator trimmer for maximum output. The locations of all of the trimmers are shown in the Service Illustrations.

4. Set the test oscillator to 1400 kc and tune in its signal. Then adjust the #1 antenna trimmer and the #1 translator trimmer for maximum output.

5. Set the test oscillator to 600 kc and tune in its signal. Then slowly rotate the variable condenser back and forth a degree or two and, at the same time, adjust the #1 oscillator padder for maximum output.

6. Repeat the 1520 kc and 1400 kc adjustments for greater accuracy.

#2 Band:

1. Leave the test oscillator coupled to the antenna lead as for broadcast band alignment.

2. Set the test oscillator to 4250 kc.

3. Turn the variable condenser plates all the way out. Then adjust the #2 oscillator trimmer for maximum output.

4. Set the test oscillator to 4000 kc and tune in its signal. Then adjust the #2 antenna trimmer and the #2 translator trimmer for maximum output.

5. Set the test oscillator to 1700 kc and tune in its signal. Then slowly rotate the variable condenser back and forth a degree or two and, at the same time, adjust the #2 oscillator padder for maximum output.

#3 Band:

1. Set the test oscillator to 10 megacycles.

2. Turn the variable condenser plates all the way out. Then adjust the #3 oscillator trimmer for maximum output. As shown in the Service Illustrations, this trimmer is mounted inside of its coil, under the chassis.

3. Set the test oscillator to 9 megacycles and tune in its signal. Then adjust the #3 antenna trimmer and the #3 translator trimmer for maximum output.

4. Set the test oscillator to 4.5 megacycles and tune in its signal. If necessary, shift turns on the antenna and translator coils to secure maximum sensitivity. Be sure to cement the turns in place.

5. If turns have been shifted, repeat the 10 megacycle and the 9 megacycle adjustments, since they will have been affected by shifting of the turns.

#4 Band:

1. Set the test oscillator to 19 megacycles.

2. Turn the variable condenser plates all the way out. Then adjust the #4 oscillator trimmer for maximum output.

3. Set the test oscillator to 18 megacycles and tune in its signal. Then adjust the #4 antenna trimmer and the #4 translator trimmer for maximum output.

4. Set the test oscillator to 9 megacycles and tune in its signal. If necessary, shift turns on the antenna and translator coils to secure maximum sensitivity. Be sure to cement the turns in place.

5. If turns have been shifted, repeat the 19 megacycle and 18 megacycle adjustments since they will have been affected by shifting of the turns.

CAUTION: Care must be taken during the RF Alignment Procedure, that alignment is not made at the image frequency. See Service Manual Supplement #13.

TUBE VOLTAGE CHART

All readings are to be taken between the chassis and the respective element of each tube. The Wave Band switch should be in the Broadcast position.

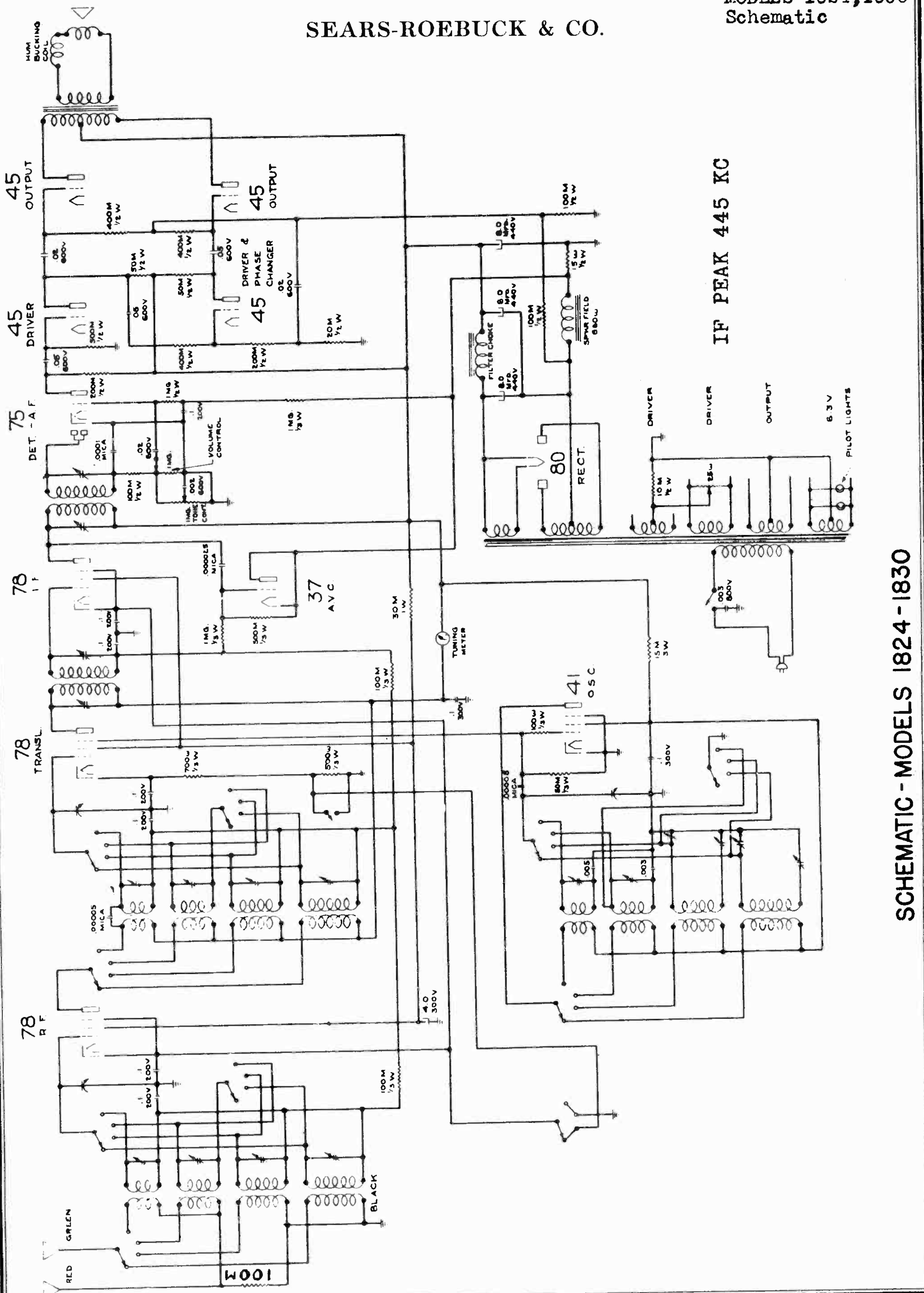
TUBE	PLATE	SCREEN	CATHODE
78 - RF -	255	100	
41 - Oscillator -	90	90	
78 - Translator -	255	100	
78 - IF -	260	100	
37 - AVC -	Used as diode with no applied DC voltage		
75 - Detector-AF -	115		
37 - Phase Changer-	120		12
45 - Drivers -	160		37
45 - Output -	250		0
5Z3 - Rectifier -			285

REPLACEMENT PARTS AND PRICE LIST

PART NO.	DESCRIPTION
R10521	Bezel
R8297A	Board - Terminal, double
R8308A	Board - Terminal, triple
R9446A	Board - Terminal, 4 terminals
R10760	Card - Operating
R10729	Choke - RF plate, #4 range
R10793A	Choke - Filter
R11043	Clip - Grid
R7011A	Clip - Red and green antenna leads
R7011B	Clip - Black ground lead
R10731	Coil - Antenna, broadcast
R10730	Coil - Oscillator, broadcast
R10732	Coil - Translator, broadcast
R6973K	Coil - Antenna, short wave #2 range
R10993A	Coil - Antenna, short wave, #3 range
R10993D	Coil - Antenna, short wave, #4 range
R6973M	Coil - Oscillator, short wave, #2 range
R10993C	Coil - Oscillator, short wave, #3 range
R10993F	Coil - Oscillator, short wave, #4 range
R6973L	Coil - Translator, short wave, #2 range
R10993B	Coil - Translator, short wave, #3 range
R10993E	Coil - Translator, short wave, #4 range
R10735	Condenser - Variable
R10735A	Condenser - Variable, complete with drive assembly
D4758P	Condenser - 8 mfd. electrolytic
R9237	Condenser - 4 mfd. electrolytic
R9426	Condenser - Padding, 1200 mmf.
R10884	Condenser - Padding, 475 mmf.
R10737	Condenser - Padding, 75 mmf.
R10197	Condenser - Trimmer
R10736	Condenser - Trimmer, double
R6138	Condenser - .1 mfd. 300 volts
R6444	Condenser - .1 mfd. 200 volts
R9145	Condenser - .05 mfd. 600 volts
R6629	Condenser - .02 mfd. 200 volts
R6761	Condenser - .02 mfd. 600 volts
R6954	Condenser - .005 mfd. 600 volts
R10739	Condenser - .003 mfd. 600 volts
R10738	Condenser - .003 mfd. 800 volts
R6933	Condenser - .002 mfd. 600 volts
R4303	Condenser - .0001 mfd. mica
R10794	Condenser - .00005 mfd. mica
R8711	Condenser - .000025 mfd. mica
R10740	Control - Tone and volume
R6969	Cord - Power supply
R10429A	Dial light diffusing disk
R10522	Escutcheon
R10982	Folder - Short wave
R10641	Glass - Escutcheon
R10980	Grommet - Variable condenser mounting
R10796B	Indicator - With mounting ring
R10827	Instruction leaflet
R10479	Knob
R10543	Knob with dot
R2288	Lamp - Pilot
R5487C	Lead - Antenna, red
R5346B	Lead - Antenna, green
R5345A	Lead - Ground, black
R10860	Meter - Tuning
R10462RA	Pointer
R10463W	Reflector
R10986	Resistor - Center tapped
R10800	Resistor - Variable, 25 ohms, hum adjuster
R7585	Resistor - 1 megohm, 1/3 watt carbon
R5823	Resistor - 1 megohm, 1/2 watt carbon
R6179	Resistor - 500 M ohms, 1/2 watt carbon
R7228	Resistor - 500 M ohms, 1/3 watt carbon
R5822	Resistor - 400 M ohms, 1/2 watt carbon
R5830	Resistor - 200 M ohms, 1/2 watt carbon
R5819	Resistor - 100 M ohms, 1/2 watt carbon
R7586	Resistor - 100 M ohms, 1/3 watt carbon
R6637	Resistor - 50 M ohms, 1/3 watt carbon
R6445	Resistor - 50 M ohms, 1/2 watt carbon
R6689	Resistor - 30 M ohms, 1 watt carbon
R6152	Resistor - 10 M ohms, 1/2 watt carbon
R8037	Resistor - 700 ohms, 1/3 watt carbon
R10142	Resistor - 500 ohms, 1/3 watt carbon
R8922	Resistor - 100 ohms, 1/3 watt carbon
R10907	Resistor - 15 M ohms, Candohm
R8684	Resistor - 8 ohms, 1 watt flexible
R10802A	Transformer - IF input
R10758	Transformer - IF output
R10825A	Transformer - Power - 60 cycle
R10825B	Transformer - Power - 60 cycle, complete with choke assembly
R10826A	Transformer - Power - 25 cycle

MODELS 1824,1830
Schematic

SEARS-ROEBUCK & CO.



MODELS 1824,1830
Alignment,Parts

SEARS-ROEBUCK & CO.

ALIGNMENT PROCEDURE

The IF Stages:

1. Connect the low scale of the output meter across the loud speaker voice coil.

2. Connect the ground lead of the test oscillator to the chassis.

3. Connect the other lead of the test oscillator, through a .1 mfd condenser, to the control grid of the 78 IF tube. The grid clip should be left attached to the cap and the tube shield must be in place.

4. Set the test oscillator to 445 kc and tune the IF output transformer. The locations of its tuning adjustments are shown in the Service Illustration.

5. Change the test oscillator connection to the control grid cap of the 78 translator tube and tune the IF input transformer.

6. In order to secure greater accuracy repeat the adjustments, starting with the IF output transformer.

Always use as low an output as possible from the test oscillator in order to render the AVC action of the set inoperative

RF Alignment; #1 Band (Broadcast):

1. Couple the output of the test oscillator to the antenna lead of the set, with the antenna connected.

2. Set the test oscillator to 1520 kc.

3. Turn the variable condenser plates all the way out. Then adjust the #1 oscillator trimmer for maximum output. The locations of all of the trimmers are shown in the Service Illustrations.

4. Set the test oscillator to 1400 kc and tune in its signal. Then adjust the #1 antenna trimmer and the #1 translator trimmer for maximum output.

5. Set the test oscillator to 600 kc and tune in its signal. Then slowly rotate the variable condenser back and forth a degree or two and, at the same time, adjust the #1 oscillator padder for maximum output.

6. Repeat the 1520 kc and 1400 kc adjustments for greater accuracy.

#2 Band:

1. Leave the test oscillator coupled to the antenna lead as for broadcast band alignment.

2. Set the test oscillator to 4250 kc.

3. Turn the variable condenser plates all the way out. Then adjust the #2 oscillator trimmer for maximum output.

4. Set the test oscillator to 4000 kc and tune in its signal. Then adjust the #2 antenna trimmer and the #2 translator trimmer for maximum output.

5. Set the test oscillator to 1700 kc and tune in its signal. Then slowly rotate the variable condenser back and forth a degree or two and, at the same time, adjust the #2 oscillator padder for maximum output.

#3 Band:

1. Set the test oscillator to 10 megacycles.

2. Turn the variable condenser plates all the way out. Then adjust the #3 oscillator trimmer for maximum output. As shown in the Service Illustrations, this trimmer is mounted inside of its coil, under the chassis.

3. Set the test oscillator to 9 megacycles and tune in its signal. Then adjust the #3 antenna trimmer and the #3 translator trimmer for maximum output.

4. Set the test oscillator to 4.5 megacycles and tune in its signal. If necessary, shift turns on the antenna and translator coils to secure maximum sensitivity. Be sure to cement the turns in place.

5. If turns have been shifted, repeat the 10 megacycle and the 9 megacycle adjustments, since they will have been affected by shifting of the turns.

#4 Band:

1. Set the test oscillator to 19 megacycles.

2. Turn the variable condenser plates all the way out. Then adjust the #4 oscillator trimmer for maximum output.

3. Set the test oscillator to 18 megacycles and tune in its signal. Then adjust the #4 antenna trimmer and the #4 translator trimmer for maximum output.

4. Set the test oscillator to 9 megacycles and tune in its signal. If necessary, shift turns on the antenna and translator coils to secure maximum sensitivity. Be sure to cement the turns in place.

5. If turns have been shifted, repeat the 19 megacycle and 18 megacycle adjustments since they will have been affected by shifting of the turns.

CAUTION: Care must be taken during the RF Alignment Procedure, that alignment is not made at the image frequency. See Service Manual Supplement #13.

TUBE VOLTAGE CHART

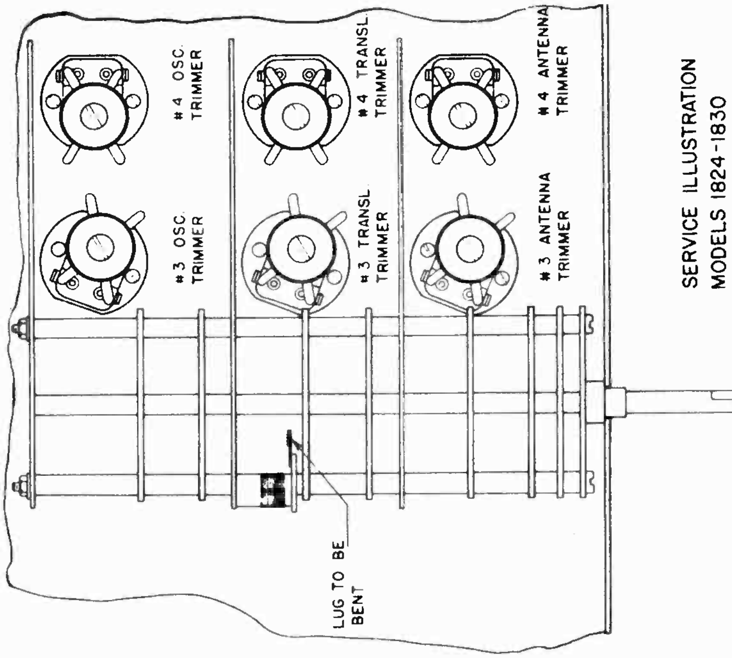
All readings are to be taken between the chassis and the respective element of each tube. The Wave Band switch should be in the Broadcast position.

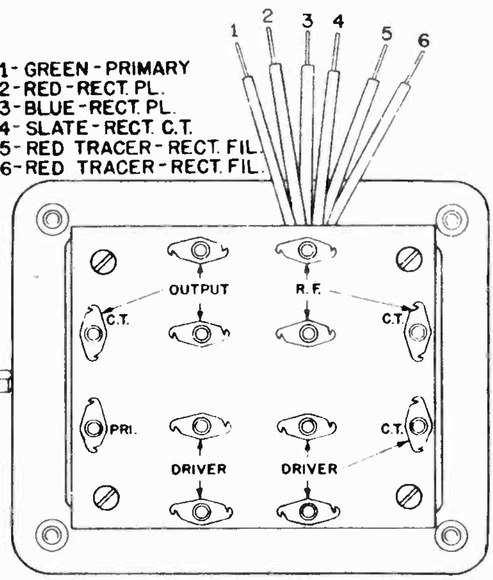
TUBE	PLATE	SCREEN
78 - RF	240	80
41 - Oscillator	95	95
78 - Translator	240	80
78 - IF	245	80
37 - AVC	Used as diode with no applied DC voltage	
75 - Detector-AF	120	
2-45 - Drivers	145	
2-45 - Output	240	

R10731	Coil	Antenna, broadcast
R6973K	Coil	Antenna, short wave, #2 range
R10993A	Coil	Antenna, short wave, #3 range
R10993D	Coil	Antenna, short wave, #4 range
R10730	Coil	Oscillator, broadcast
R6973M	Coil	Oscillator, short wave, #2 range
R10993C	Coil	Oscillator, short wave, #3 range
R10993F	Coil	Oscillator, short wave, #4 range
R10732	Coil	Translator, broadcast
R6973L	Coil	Translator, short wave, #2 range
R10993B	Coil	Translator, short wave, #3 range
R10993E	Coil	Translator, short wave, #4 range
R10793A	Choke	Filter
R10735	Condenser	Variable
R10735A	Condenser	Variable, with drive assembly
R9426	Condenser	Padding, 1200 mmf.
R10884	Condenser	Padding, 475 mmf.
R10737	Condenser	Padding, 75 mmf.
R10197	Condenser	Trimmer
R10736	Condenser	Trimmer, double
D4758P	Condenser	8 mfd. electrolytic
R9237	Condenser	4 mfd. dry, electrolytic
R6444	Condenser	.1 mfd. 200 volts
R6138	Condenser	.1 mfd. 300 volts
R9145	Condenser	.05 mfd. 600 volts
R6761	Condenser	.02 mfd. 600 volts
R6954	Condenser	.005 mfd. 600 volts
R10739	Condenser	.003 mfd. 600 volts
R10738	Condenser	.003 mfd. 800 volts
R6933	Condenser	.002 mfd. 600 volts
R4303	Condenser	.001 mfd. mica
R10794	Condenser	.00005 mfd. mica
R8711	Condenser	.000025 mfd. mica
R10740	Control	Tone and Volume
R6989	Cord	AC line
R2288	Lamp	Pilot
R5346B	Lead	Antenna, green
R5487A	Lead	Antenna, red
R5345C	Lead	Ground, black
R10860	Meter	Tuning
R10462RA	Pointer	
R10463W	Reflector	
R7585	Resistor	1 megohm, 1/3 watt carbon
R5823	Resistor	1 megohm, 1/2 watt carbon
R7228	Resistor	500 M ohm, 1/3 watt carbon
R6179	Resistor	500 M ohm, 1/2 watt carbon
R5822	Resistor	400 M ohm, 1/2 watt carbon
R5830	Resistor	200 M ohm, 1/2 watt carbon
R5819	Resistor	100 M ohm, 1/2 watt carbon
R7586	Resistor	100 M ohm, 1/3 watt carbon
R6637	Resistor	50 M ohm, 1/3 watt carbon
R6445	Resistor	50 M ohm, 1/2 watt carbon
R6689	Resistor	30 M ohms, 1 watt carbon
R5821	Resistor	20 M ohms, 1/2 watt carbon
R10907	Resistor	15 M ohms, Candohm
R6152	Resistor	10 M ohms, 1/2 watt carbon
R8037	Resistor	700 ohms, 1/3 watt carbon
R10142	Resistor	500 ohms, 1/3 watt carbon
R8922	Resistor	100 ohms, 1/3 watt carbon
R10752	Resistor	15 ohms, 1/2 watt, flexible
R10800	Resistor	25 ohms, hum adjuster
R10484	Rubber	Tube, cushion, chassis mounting
R10488	Rubber	Washer, cushion, chassis mounting
R10445A	Shaft	Dial drive assembly
R8395	Shield	Tube base
R10440	Shield	Tube top
R10441	Shield	Tube cap
R6450	Shield	Electrolytic condenser
R10753A	Shield	Coil
R10754A	Shield	Oscillator coil
R8315	Socket	4 prong
R8253	Socket	5 prong
R8367	Socket	5 prong speaker
R8092	Socket	6 prong
R10549	Socket	Pilot light
R10807	Speaker	
R10755A	Switch	Wave
R10756	Switch	"On - Off" and Sensitivity

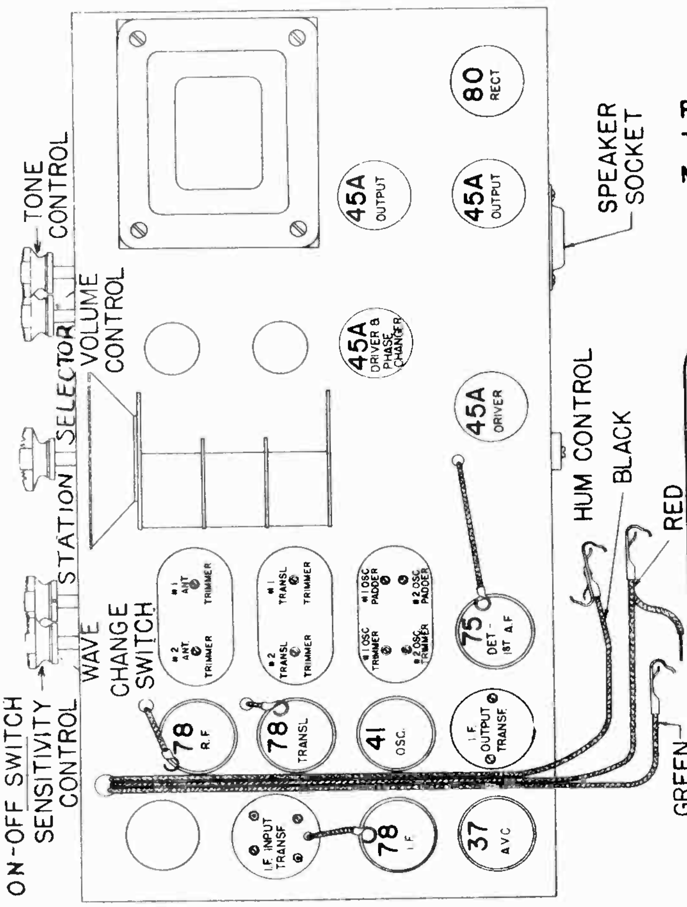
MODELS 1824,1830
Socket,Trimmers
Transformer Data

SEARS-ROEBUCK & CO.

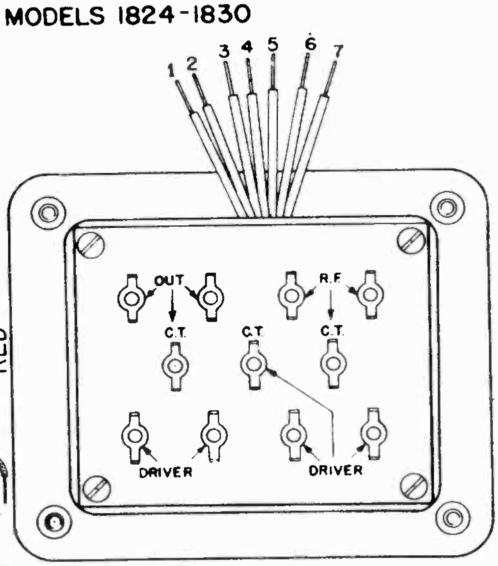




POWER TRANSFORMER
TERMINAL BOARD CONNECTIONS
MODELS 1824-1830



POWER TRANSFORMER
TERMINAL BOARD CONNECTIONS
MODELS 1824-1830



1- GREEN-PRIMARY
2- BLACK-PRIMARY
3- RED-RECT. PL.
4- BLUE-RECT. PL.
5- SLATE-RECT. C.T.
6- RED SLEEVING-RECT. FIL.
7- RED SLEEVING-RECT. FIL.

MODEL 1825-A
Alignment, Voltage
Socket, Trimmers

SEARS-ROEBUCK & CO.

ALIGNMENT PROCEDURE

The IF Stages:

1. Connect the low scale of the output meter across the loud speaker voice coil.

2. Connect the ground lead of the test oscillator to the chassis.

3. Connect the other lead of the test oscillator, through a .1 mfd. condenser, to the control grid of the 78 second IF tube. The grid clip should be left attached to the cap.

4. Set the test oscillator to 175 kc and tune the IF output transformer. The locations of the tuning adjustments are shown in the Service Illustrations.

5. Change the test oscillator connection to the control grid cap of the 78 translator tube and tune the IF input transformer.

6. In order to secure greater accuracy repeat the adjustments, starting with the IF output transformer. Use the lowest possible output from the test oscillator.

The IF stages are resistance-capacity coupled to each other, so that no tuned interstage transformer is used.

RF Alignment Broadcast:

1. Couple the output of the test oscillator to the green antenna lead of the set with the antenna connected.

2. Set the test oscillator to 1400 kc and adjust the broadcast translator coil trimmer and the trimmer on the antenna section of the variable condenser for maximum output. The locations of the trimmers are shown in the Service Manual Illustrations.

3. Set the test oscillator to 600 kc and tune in its signal. Then slowly rotate the variable condenser back and forth a degree or two and, at the same time, adjust the oscillator padder for maximum output.

4. Repeat the 1400 kc adjustments to secure greater accuracy. Always use the lowest possible output from the test oscillator.

TUBE VOLTAGE CHART

TUBE	PLATE	SCREEN
78 - Translator	200	90
76 - Oscillator	100	
78 - First IF	175	90
78 - Second IF	215	90
76 - AVC	Used as diode with no applied DC voltage	
75 - Det-AF	100	
76 - Phase Changer	130	
2-45 - Drivers	130	
4-45 - Output	210	

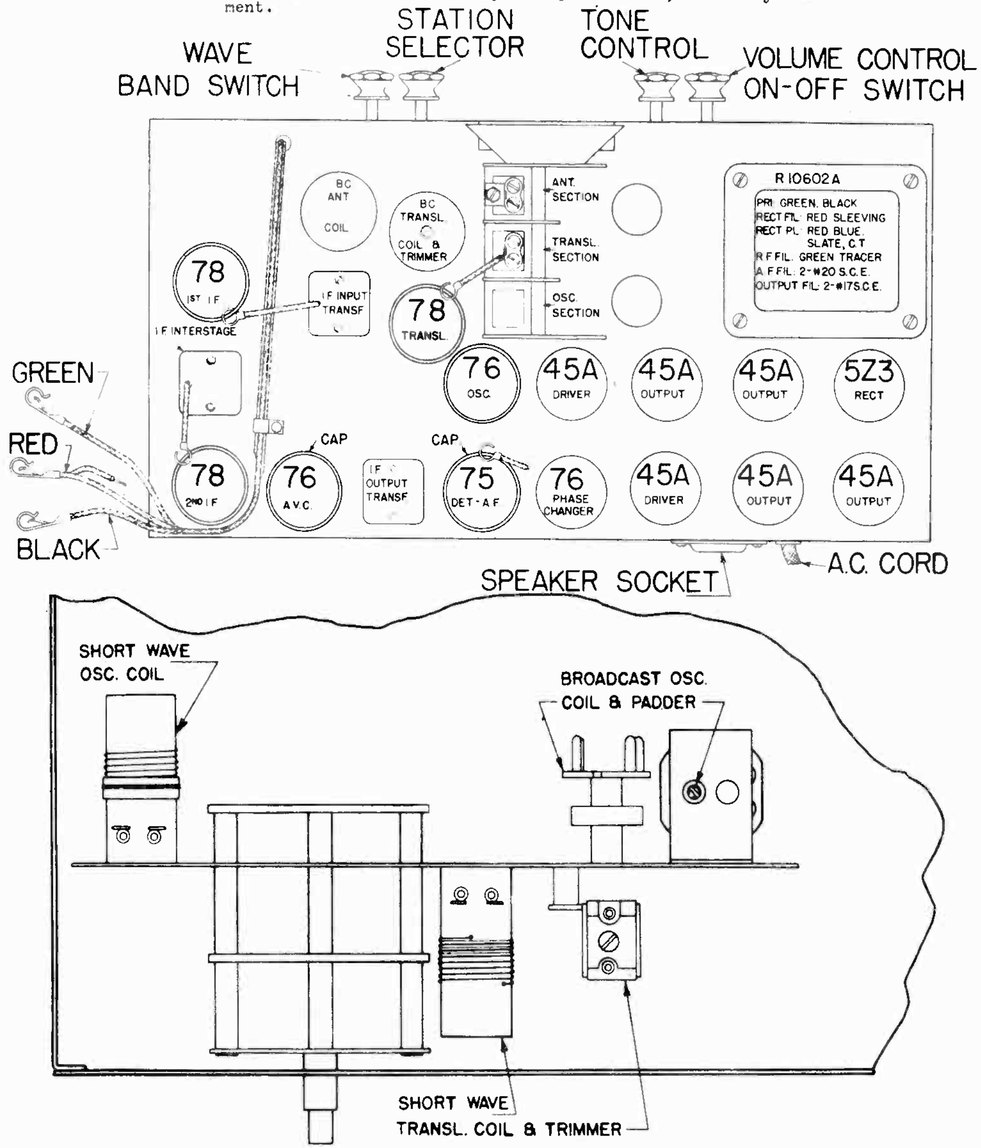
All readings are to be taken between the chassis and the respective element of each tube.

Short Wave Alignment:

1. Leave the test oscillator loosely coupled to the green antenna lead as for broadcast alignment.

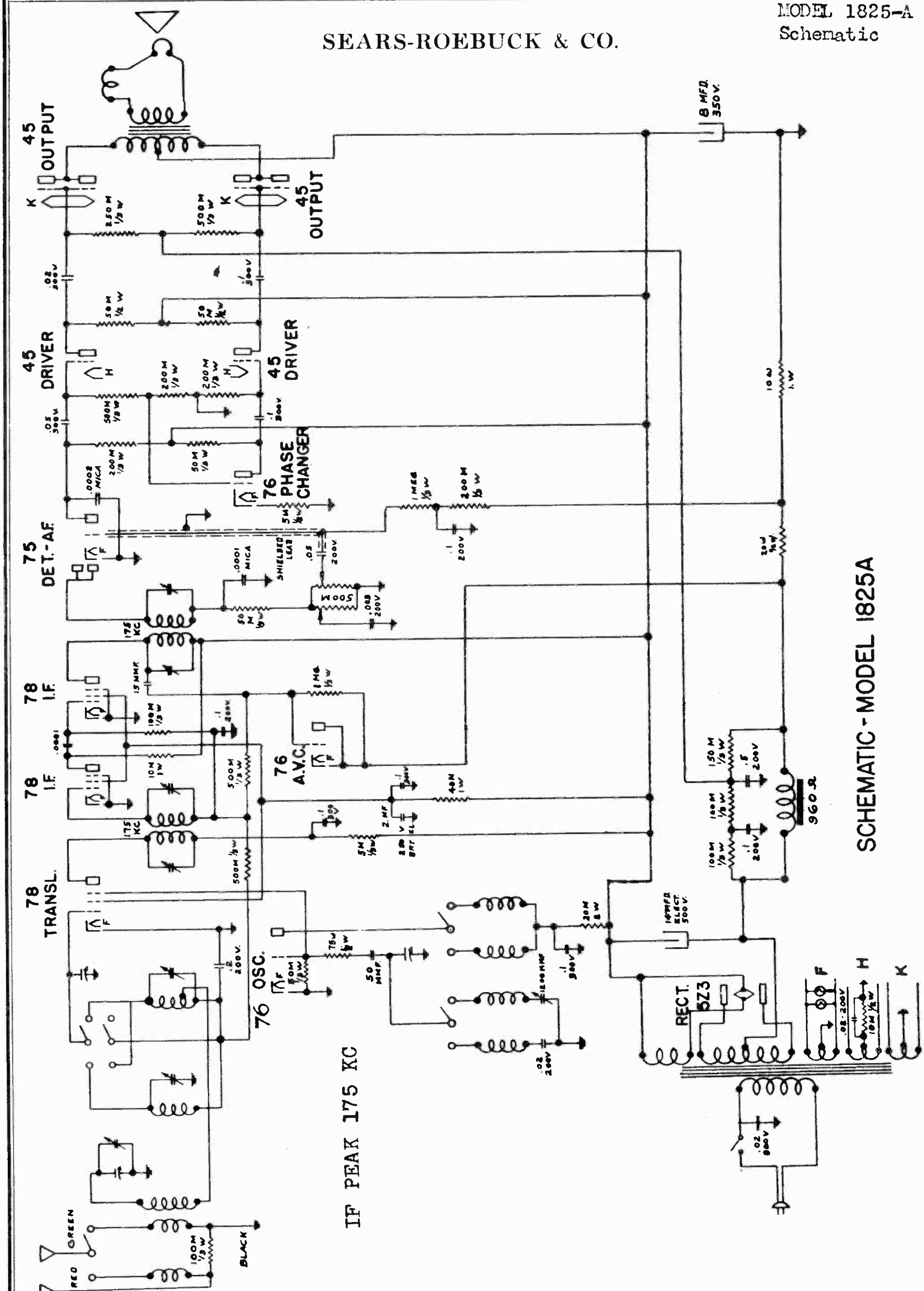
2. Set the test oscillator to 15,000 kc and tune in its signal. Then adjust the short wave translator trimmer for maximum output.

3. Set the test oscillator to 6000 kc and tune in its signal. If necessary, turns may be shifted on the short wave translator coil to secure maximum output. If turns are shifted, it will be necessary to repeat the 15,000 kc adjustment.



MODEL 1825-A
Schematic

SEARS-ROEBUCK & CO.

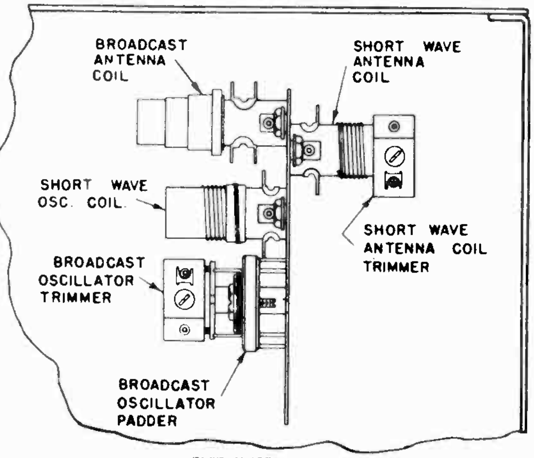


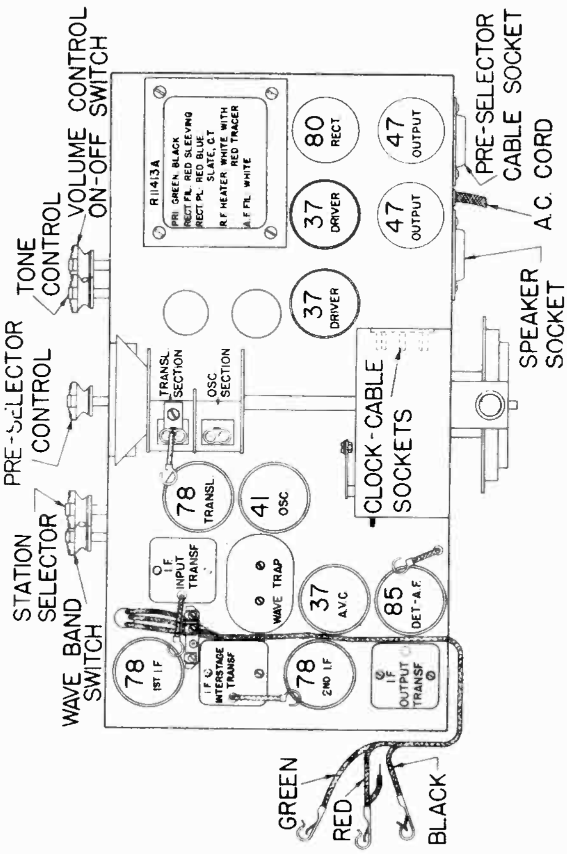
IF PEAK 175 KC

SCHEMATIC-MODEL 1825A

MODEL 1832
Socket, Trimmers
Clock Unit Tests
Drive Unit Test

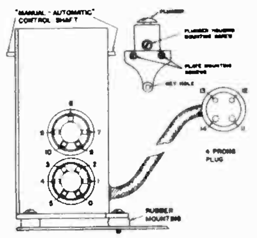
SEARS-ROEBUCK & CO.





TEST CHART

These tests are to be made with a continuity meter or ohmmeter except where otherwise indicated. If the "Improper Effect" is "Open Circuit", the trouble may be either in the unit or else may be due to a break in one of the cables, possibly right at the plug. If no such break is apparent, return the unit for repair or replacement to the Operadio Manufacturing Company, St. Charles, Ill.



DRIVE UNIT

TEST, IF FINGER FAILS TO STOP

6 Prong Socket:

Test	Proper Effect	Trouble if Improper Effect is had
#1 contact to #1 finger	Closed Circuit	Open Circuit
#2 contact to #2 finger	Closed Circuit	Open Circuit
#3 contact to #3 finger	Closed Circuit	Open Circuit
#4 contact to #4 finger	Closed Circuit	Open Circuit
#5 contact to #5 finger	Closed Circuit	Open Circuit
#0 contact to #0 finger	Closed Circuit	Open Circuit

TEST WITH FOUR PRONG PLUG IN CHASSIS & 110 VOLTS CONNECTED

5 Prong Socket:

Test	Proper Effect	Trouble if Improper Effect is had
#9 contact to #7	110 v. AC. reading	Open Circuit
#10 contact to #6 (Automatic Control on)	Closed	Open Circuit in Impulse switch

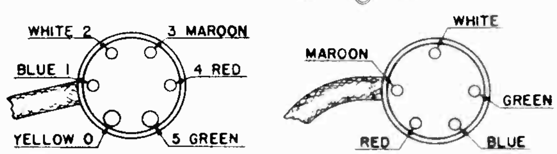
ABOVE TESTS O. K. BUT HUB DOES NOT ROTATE

4 Prong Plug:

Test	Proper Effect	Trouble if Improper Effect is had
#13 to #14	Closed Circuit	Open Circuit
#13 to #12 (to test off switch when hub is turned clockwise to end of rotation)	Closed Circuit	Open Circuit
#11 to #14 (with #7 & #9 shorted)	Closed Circuit	Open Circuit

IMPULSE BUTTON

Test	Proper Effect	Trouble if Improper Effect is had
With 4 prong plug in chassis, with 5 & 6 prong plugs out, 110 volts on, and automatic control on, press the impulse button	Hub should oscillate	Defective drive unit



CLOCK PLUGS
PRONG VIEWS

CLOCK UNIT TEST CHART

6 Prong Plug:

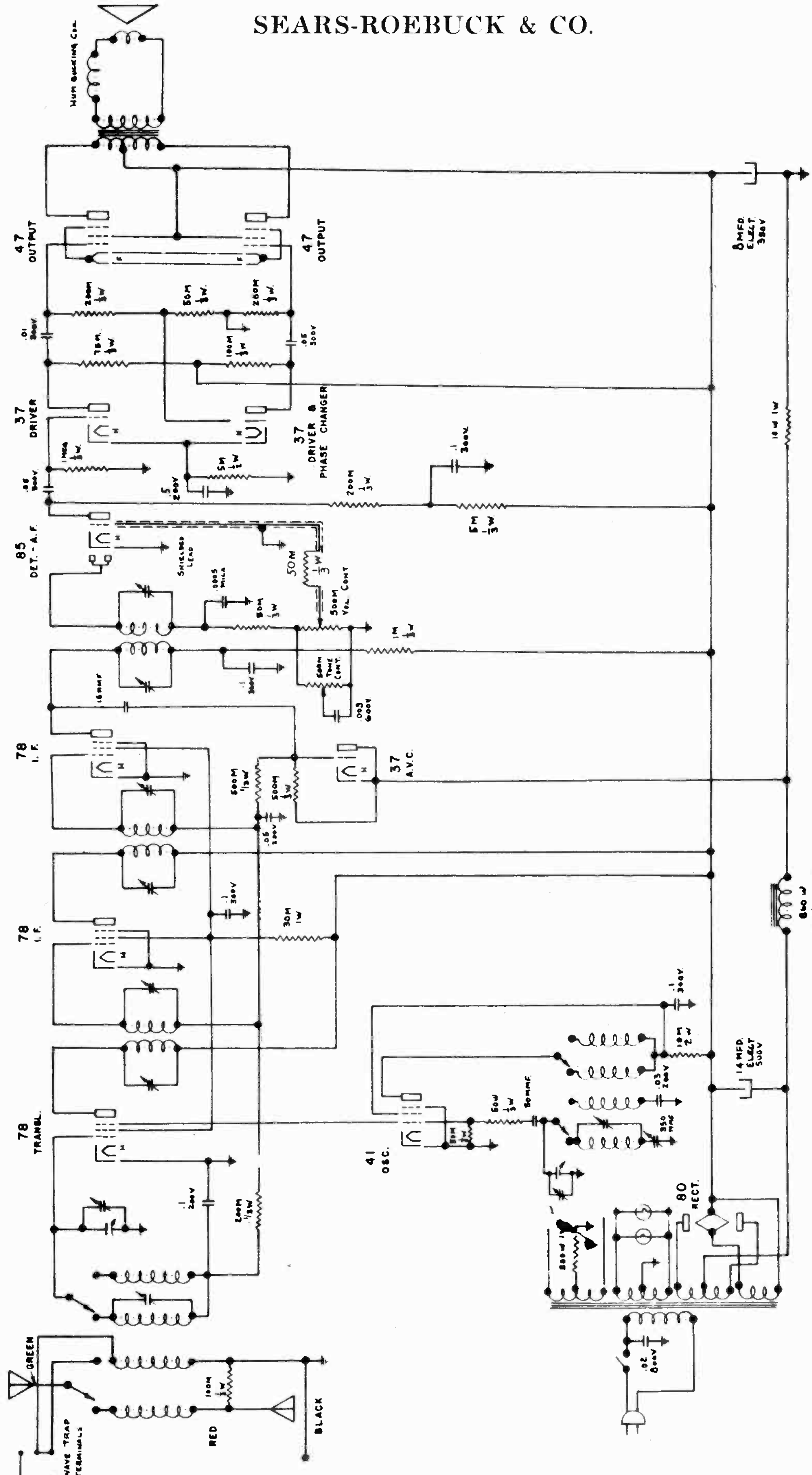
Test	Proper Effect	Trouble if Improper Effect is had
#1 (blue wire) to case	Closed	Open Circuit
#2 (white wire) to case	Closed	Open Circuit
#3 (maroon wire) to case	Closed	Open Circuit
#4 (red wire) to case	Closed	Open Circuit
#5 (green wire) to case	Closed	Open Circuit
#0 (yellow wire) to case	Closed	Open Circuit

5 Prong Plug:

Test	Proper Effect	Trouble if Improper Effect is had
White to case	Closed	Open Circuit
Maroon to green (with clock about 7 minutes off quarter hour positions and "On-Off" switch in "Off" position).	Closed	Open Circuit or defective switch
Red to blue (with clock on a quarter hour position).	Closed	Open Circuit

MODEL 1832
Schematic

SEARS-ROEBUCK & CO.



IF PEAK 480 KC.

SCHEMATIC - MODEL 1832

MODEL 1832
Alignment
Pre-Selector Data

SEARS-ROEBUCK & CO.

ALIGNMENT PROCEDURE

The IF Stages:

1. Connect the low scale of the output meter across the loud speaker voice coil.

2. Connect the ground lead of the test oscillator to the chassis.

3. Connect the other lead of the test oscillator, through a .1 mfd. condenser, to the control grid of the 78 second IF tube. The grid clip should be left attached to the cap.

4. Set the test oscillator to 460 kc and tune the IF output transformer. The locations of its tuning adjustments are shown in the Service Illustrations.

5. Change the test oscillator connections to the control grid cap of the 78 first IF tube and tune the IF interstage transformer.

6. Change the test oscillator connection to the control grid cap of the 78 translator tube and tune the IF input transformer.

7. In order to secure greater accuracy, repeat all of the operations, starting with the IF output transformer.

RF Alignment (Broadcast)

1. Before proceeding with the alignment of the receiver the wave trap must be disconnected. Connect a jumper between the yellow wire terminal and the blue wire terminal of the trap and disconnect the white lead from its terminal. Do not forget to reconnect the trap after finishing the alignment of the receiver.

2. Set the test oscillator to 1785 kc.

3. Loosely couple the output of the oscillator to the antenna lead of the set, with the antenna connected.

4. Turn the variable condenser plates all the way out. Then adjust the oscillator trimmer for maximum output. The locations of the trimmers are indicated in the Service Illustrations.

5. Set the test oscillator to 1500 kc and tune in its signal. Then adjust the trimmer on the translator section of the variable for maximum output.

6. Set the test oscillator to 600 kc and tune in its signal. Then slowly rotate the variable condenser back and forth a degree or two and, at the same time, adjust the broadcast oscillator padder for maximum output.

7. Repeat the 1785 kc and 1500 kc adjustments.

Short Wave Alignment:

1. Set the test oscillator to 16 megacycles, leaving it coupled to the set's antenna lead as for broadcast alignment.

2. Turn the wave band switch to the short wave position and tune in the test oscillator signal. Then adjust the trimmer on the short wave antenna coil for maximum output.

3. Set the test oscillator to 6 megacycles and tune in its signal. If necessary turns may be shifted on the short wave antenna coil to secure accurate alignment at this frequency. Should it be found necessary to shift turns, the antenna coil trimmer will have to be readjusted at 16 megacycles after the turns have been shifted.

TUBE VOLTAGE CHART

All readings are to be taken between the chassis and the respective element of each tube.

TUBE		PLATE VOLTAGE	SCREEN VOLTAGE
78 - Translator	-	255	80
41 - Oscillator	-	120	120
78 - First IF	-	255	80
78 - Second IF	-	250	80
37 - AVC	-	Used as diode with no applied DC voltage	
75 - Det-AF	-	105	
37 - Phase Changer	-	130	
45 - Drivers	-	150	
45 - Output	-	250	

AUTOMATIC PRE-SELECTOR

There are two units comprising the Automatic Pre-selector. One is the clock unit and the other is the Drive Unit, mounted on the chassis. Under no circumstances attempt to take the units apart since special tools and gages are required.

Should the Drive Unit fail to operate properly there are several external adjustments that can be made to it:

1. The OFF finger on the rotating hub at the rear of the Drive Unit should turn the receiver off just as the finger makes contact with the plunger while the hub is turning in a clockwise direction, as one faces the rear of the chassis. If the finger stops as it touches the plunger but the receiver does not switch off, loosen the hex head screw that positions the OFF finger. The head of this screw is located behind the large knurled turning ring. Also loosen the large knurled locking ring. Then move the OFF finger slightly forward and tighten the hex head screw and the knurled locking ring. If the OFF position still fails to operate properly, loosen the knurled locking ring and the hex head screw again and move the OFF finger backward from its original position. Then re-tighten the ring and screw. Two or three trials may be necessary before the correct position is determined.

2. If the receiver is tuned properly by some of the fingers but is not brought to the peak of resonance by other of the fingers, these fingers may have become shifted slightly and should be reset as described in the Instruction Booklet. If the set is not tuned properly by any of the fingers, the triangular plate at the rear of the unit may have become shifted. To correct this proceed as follows:

Set the pin for the next quarter hour interval to the #3 position. Then turn the hands of the clock so that the receiver is tuned automatically by the #3 finger. When the finger has stopped, insert the key in its key hole in the triangular plate. The tip of the key should enter the hole in the #3 finger without moving the finger. If it fails to do so, loosen the two screws that mount the triangular plate and shift the plate so that the key enters the hole in the finger. Then tighten the plate mounting screws. Care must be taken that the finger does not become moved during the operation. The adjustment should be checked by setting the pin for the next quarter hour interval to the #3 position and again testing for exact alignment between the key hole and the hole in the #3 finger. If the holes line up this time the setting is correct and should be so for all the fingers.

3. When any finger comes to its stop under the plunger the screw head of the plunger should be raised about .01 inches, approximately the thickness of a postal card, above its housing. If the plunger does not raise above its housing, the screw that positions the housing should be loosened. Then reset the housing so that the plunger does raise the required distance above it when pushed by any of the fingers, and re-tighten the screw.

Caution: Do not make this adjustment unless it is necessary since all of the fingers have to be reset slightly when the plunger adjustment is changed.

If the fore-going adjustments fail to correct the trouble the Drive Unit should be tested as indicated in the chart that follows. If these tests show that the unit is defective it should be removed from the chassis. To do so proceed as follows:

1. Remove the receiver chassis from the cabinet.

2. Remove the clip that holds the two plugs in their sockets on the side of the Drive Unit and pull the plugs from their sockets.

3. Loosen the set screws in the Drive Unit end of the coupling.

4. Remove the three screws that hold the unit to its mounting plate.

5. Disconnect the Manual Control Lever and slide the Drive Unit out of the coupling.

Defective units should be returned to the Operadio Manufacturing Company, St. Charles, Ill. for repair or replacement.

The receiver can be operated manually without the Drive Unit by plugging a four prong plug, with grid and plate prongs shorted together, into the four prong socket at the rear of the chassis.

When the new Drive Unit is being mounted, care must be taken that the shafts and coupling line up properly so that the condenser will turn freely. The front mounting foot of the Drive Unit is made of rubber so the necessary alignment adjustment can be had. The two rear feet, which are of steel, should be tightened after the front one has been adjusted.

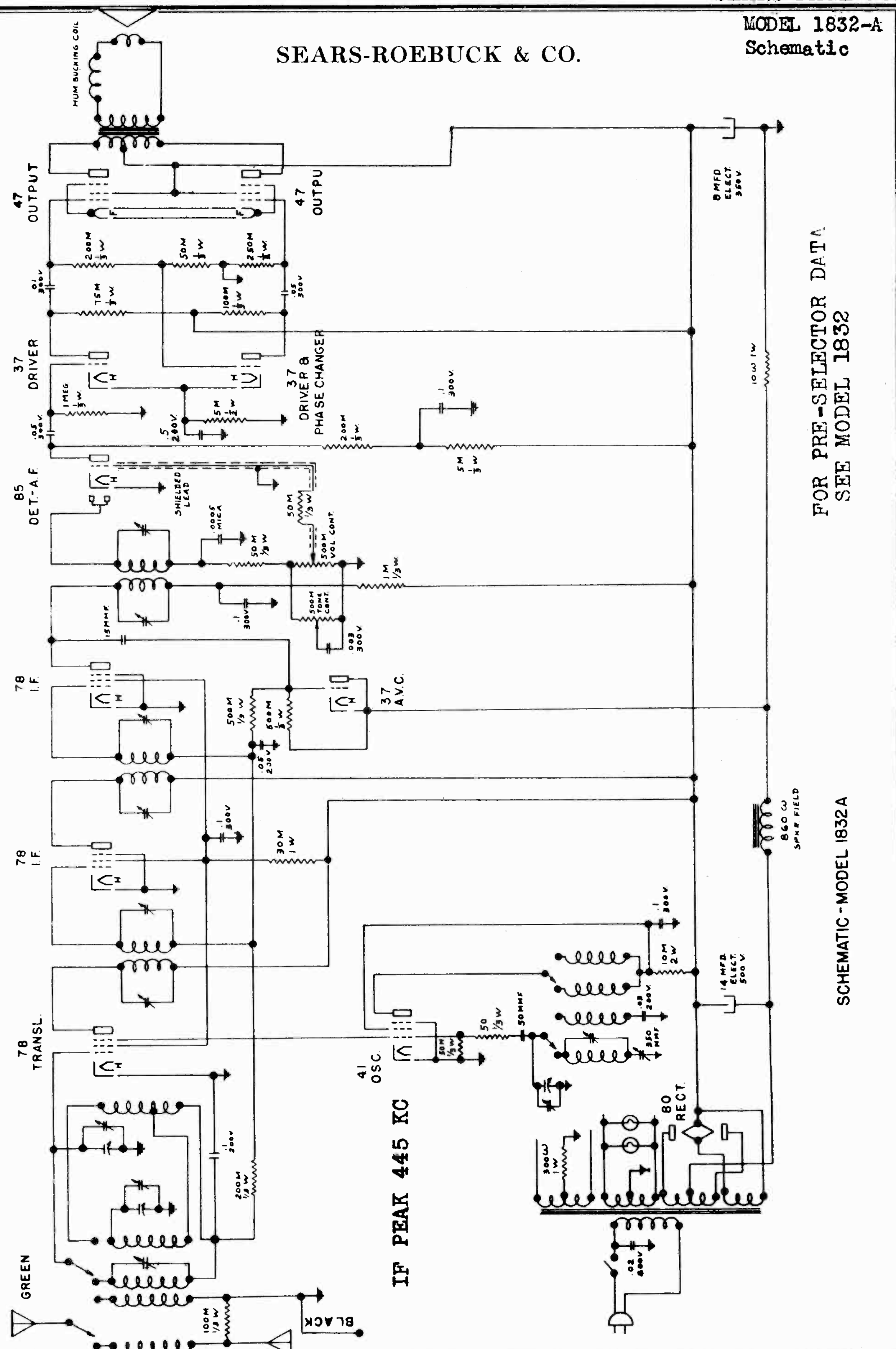
Turn the variable condenser so that its plates are fully meshed. Then turn the knurled turning ring all the way in the same direction and tighten the set screws in the coupling. If the setting is made correctly, three distinct clicks will be heard when the knurled turning ring is turned all the way in one direction. Three more clicks will be heard at the end of travel in the opposite direction. Turn the Automatic-Manual control shaft on the Drive Unit so that the flat surface of the projection of the shaft faces upward. Turn the control knob on the chassis to the Automatic position and connect the lever.

The Clock Unit

If the tests listed in the chart indicate that the Clock Unit is defective it should be removed from the cabinet and returned to the Operadio Company for repair or replacement. Pull the plugs out of the Drive Unit and loosen the clock clamping ring screw sufficiently to allow the clock to slide out of the front of the cabinet. The receiver can be operated manually even though the Clock Unit is removed. However, the four prong plug from the Drive Unit must be inserted in its socket at the rear of the chassis.

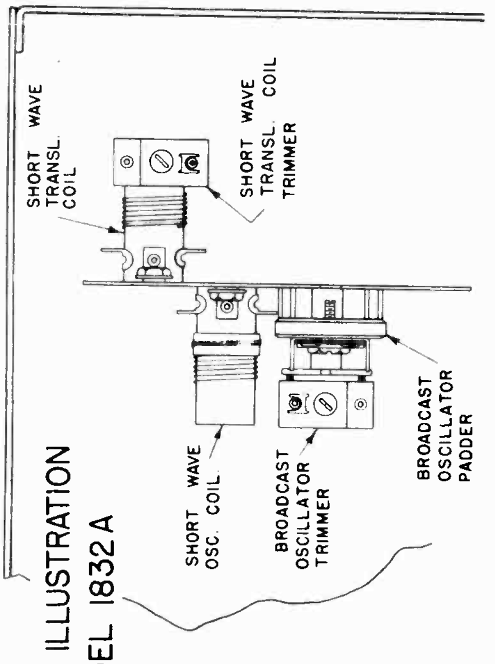
MODEL 1832-A
Schematic

SEARS-ROEBUCK & CO.

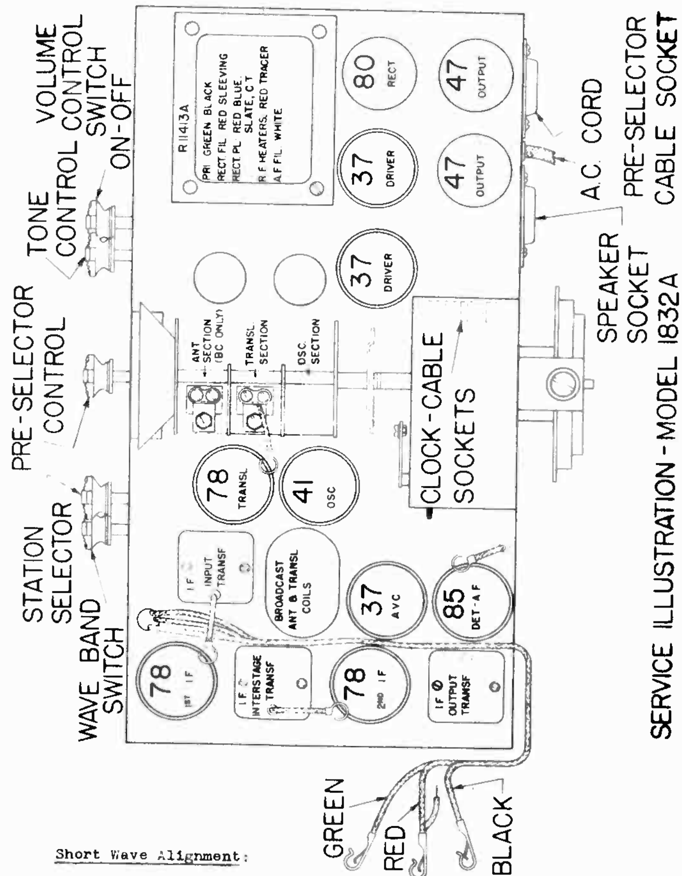


MODEL 1832-A
Alignment, Socket
Trimmers, Voltage

SEARS-ROEBUCK & CO.



SERVICE ILLUSTRATION MODEL 1832 A



SERVICE ILLUSTRATION - MODEL 1832A

ALIGNMENT PROCEDURE

The IF Stages:

1. Connect the low scale of the output meter across the loud speaker voice coil.

2. Connect the ground lead of the test oscillator to the chassis.

3. Connect the other lead of the test oscillator, through a .1 mfd. condenser, to the control grid of the 78 second IF tube. The grid clip should be left attached to the cap. Turn the volume control of the receiver to its full "on" position.

4. Set the test oscillator to 445 kc and tune the IF output transformer. The locations of its tuning adjustments are shown in the Service Illustrations.

5. Change the test oscillator connection to the control grid cap of the 78 first IF tube and tune the IF interstage transformer.

6. Change the test oscillator connection to the control grid cap of the 78 translator tube and tune the IF input transformer.

7. In order to secure greater accuracy, repeat all of the operations starting with the IF output transformer. Always use the lowest possible output from the test oscillator.

RF Alignment; Broadcast:

See Manual #13 for general alignment information. The broadcast band must be aligned before the short wave band.

1. Set the test oscillator to 1750 kc and loosely couple its output to the receiver's antenna lead, with the antenna connected.

2. Turn the variable condenser plates all the way out. Then adjust the broadcast oscillator trimmer for maximum output. The locations of all of the trimmers are indicated in the Service Illustrations.

3. Set the test oscillator to 1400 kc and adjust the trimmers on the antenna and translator sections of the variable condenser.

4. Set the test oscillator to 600 kc and tune in its signal. Then slowly rotate the variable condenser back and forth a degree or two and, at the same time, adjust the broadcast oscillator padder for maximum output.

5. Repeat the 1750 kc adjustment and then the 1400 kc adjustment, using the lowest possible output from the test oscillator.

Short Wave Alignment:

1. Set the test oscillator to 16 megacycles, leaving it coupled to the receiver's antenna lead as for broadcast alignment.

2. Turn the wave band switch to the short wave position and tune in the test oscillator signal. Then adjust the trimmer on the short wave translator coil for maximum output.

TUBE VOLTAGE CHART

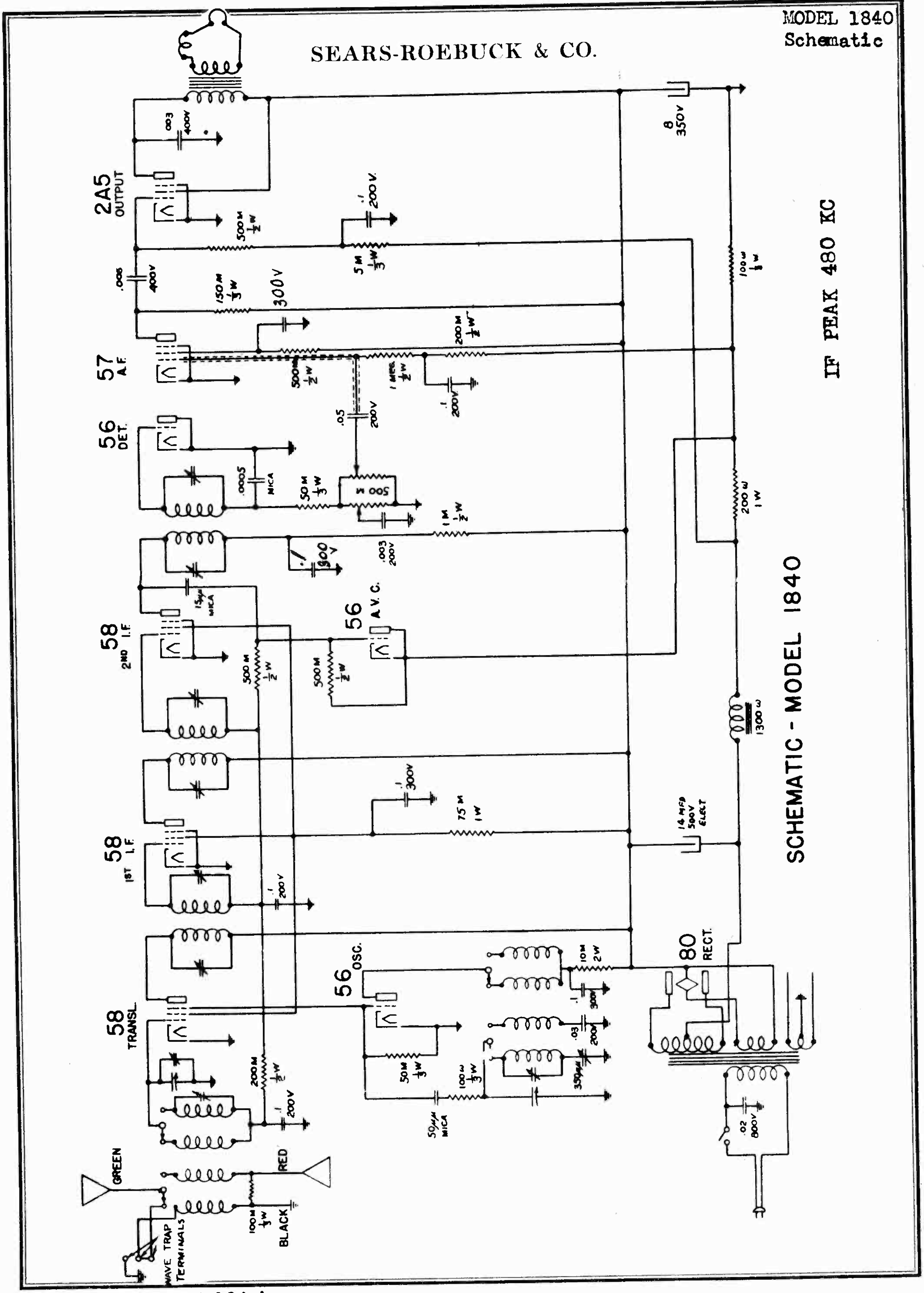
All readings are to be taken between the chassis and the respective element of each tube.

TUBE	PLATE VOLTAGE	SCREEN VOLTAGE
78 - Translator	255	80
41 - Oscillator	120	120
78 - First IF	255	80
78 - Second IF	250	80
37 - AVC	Used as diode with no applied DC voltage	
75 - Det-AF	105	
37 - Phase Changer	130	
45 - Drivers	150	
45 - Output	250	

The audio circuit, including the 85 tube, the two 37 drivers and the two output tubes is such that, in effect, it constitutes a first audio stage feeding into a push-pull driver stage, which in turn feeds the push-pull output stage. The phase changing circuit eliminates the need for audio coupling transformers.

The 37 AVC tube, which is used as a diode with plate grounded, is fed from the plate of the 78 second IF tube by means of the 15 mmf. condenser. The voltage drop created across the 500 M ohm resistor, connected between grid and cathode, is used for AVC voltage.

MODEL 1840
Schematic



MODEL 1840
Wave Trap Data
Alignment, Voltage

SEARS-ROEBUCK & CO

WAVE TRAP CONNECTIONS

In locations near the coast, where code interference from ship stations may be experienced, a wave trap can be added (Part #R11099). Some of the receivers already have this wave trap incorporated. It is mounted directly behind the IF output transformer. In receivers in which a trap is not already incorporated, a terminal board is provided so that one can be added, as indicated in Fig. 1.

To adjust the wave trap, proceed as follows:

1. With the wave switch in the BROADCAST position, fully mesh the variable condenser plates.

2. If the interfering signal can be picked up, adjust the two tuning condensers of the wave trap until the interfering signal disappears.

3. If the frequency of the interfering signal is known, the adjustment can be made more quickly and accurately by means of a test oscillator. Set the oscillator to the interfering frequency and couple its output to the antenna lead. The oscillator should be adjusted to give high output. Then adjust the wave trap until the oscillator signal disappears. Usually, the frequency of the interfering signal is very close to 500 kc and this frequency should be used if the interference is not heard at the time of the service call.

ALIGNMENT PROCEDURE

The IF Stages:

1. Connect the low scale of the output meter across the loud speaker voice coil.

2. Connect the ground lead of the test oscillator to the chassis.

3. Connect the other lead of the test oscillator, through a .1 mfd. condenser, to the control grid of the 58 second IF tube. The grid clip should be left attached to the cap and the tube shield must be in place.

4. Set the test oscillator to 480 kc and tune the IF output transformer. The locations of its tuning adjustments are shown in the Service Illustration.

5. Change the test oscillator connection to the control grid cap of the 58 first IF tube and tune the IF interstage transformer.

6. Change the test oscillator connection to the control grid cap of the 58 translator tube and tune the IF input transformer.

RF Alignment (Broadcast):

1. Disconnect the wave trap, if one is used. In receivers in which the trap is connected to a screw terminal board, the trap can be disconnected by replacing the jumper between the yellow wire terminal and the blue wire terminal and disconnecting the green lead of the trap from its terminal. In receivers in which the trap has been built in as original equipment, the same thing must be done by connecting a jumper between the blue and yellow leads of the trap and unsoldering the green lead.

2. Set the test oscillator to 1785 kc.

3. Couple the output of the oscillator loosely to the antenna lead of the set with the antenna connected.

4. Turn the variable condenser plates all the way out. Then adjust the oscillator trimmer for maximum output. This trimmer is mounted on the terminal board of the broadcast oscillator coil, as shown in the Service Illustration.

5. Set the test oscillator to 600 kc and tune in its signal. Then slowly rotate the variable condenser back and forth a degree or two and, at the same time, adjust the broadcast oscillator padder for maximum output. The location of this padding condenser is shown in the Service Illustrations.

6. Repeat the adjustment of the oscillator trimmer at 1785 kilocycles.

7. Set the test oscillator to 1500 kc and tune in its signal. Then adjust the trimmer on the translator section of the variable condenser for maximum output. In some of the receivers, this trimmer has been removed from the variable condenser, in which case this step in the alignment procedure may be omitted.

Short Wave Alignment:

1. Set the test oscillator to 16 megacycles, leaving it coupled to the set's antenna lead as for broadcast alignment.

2. Turn the wave band switch to the short wave position and tune in the test oscillator signal. Then adjust the trimmer on the short wave translator coil for maximum output.

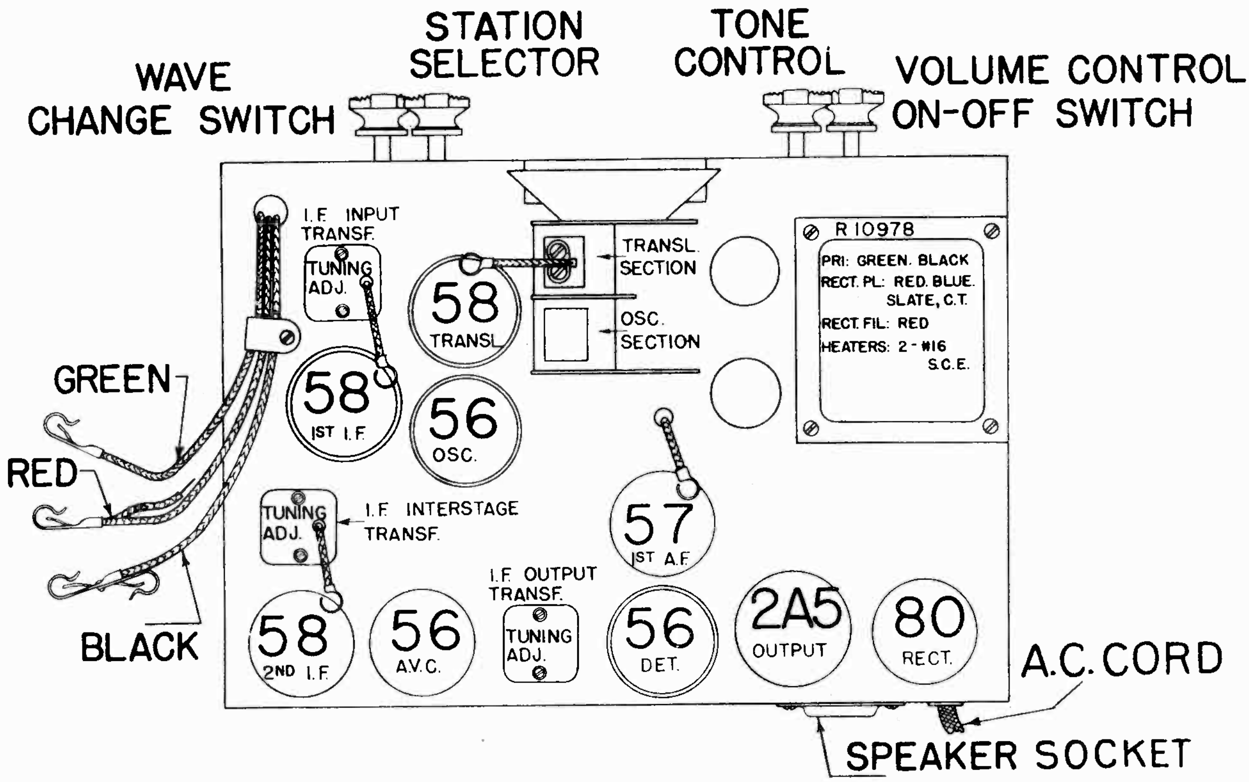
3. Set the test oscillator to 6 megacycles and tune in its signal. If necessary, turns may be shifted on the short wave translator coil to secure accurate alignment on this frequency. Should it be found necessary to shift turns, it will also be necessary to readjust the translator trimmer at 16 megacycles after the turns have been shifted.

TUBE VOLTAGE CHART

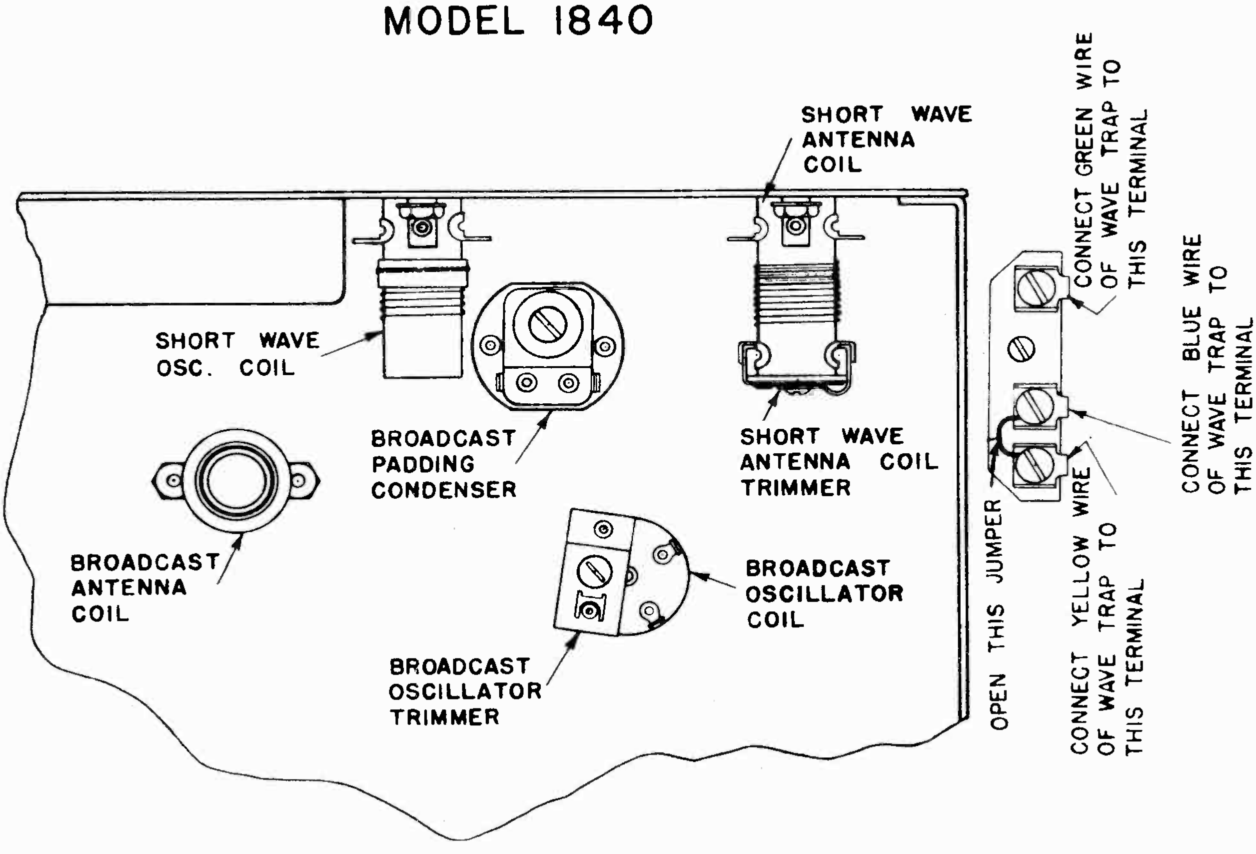
All readings are to be taken between the chassis and the respective element of each tube.

TUBE		PLATE	SCREEN
58 - Translator	-	260	95
56 - Oscillator	-	140	
58 - First IF	-	260	95
58 - Second IF	-	255	95
56 - AVC	-	Used as diode with no applied DC voltage.	
56 - Detector-AF	-	Used as diode with no applied DC voltage.	
57 - Audio	-	95	85
2A5 - Output	-	250	260

SEARS-ROEBUCK & CO.

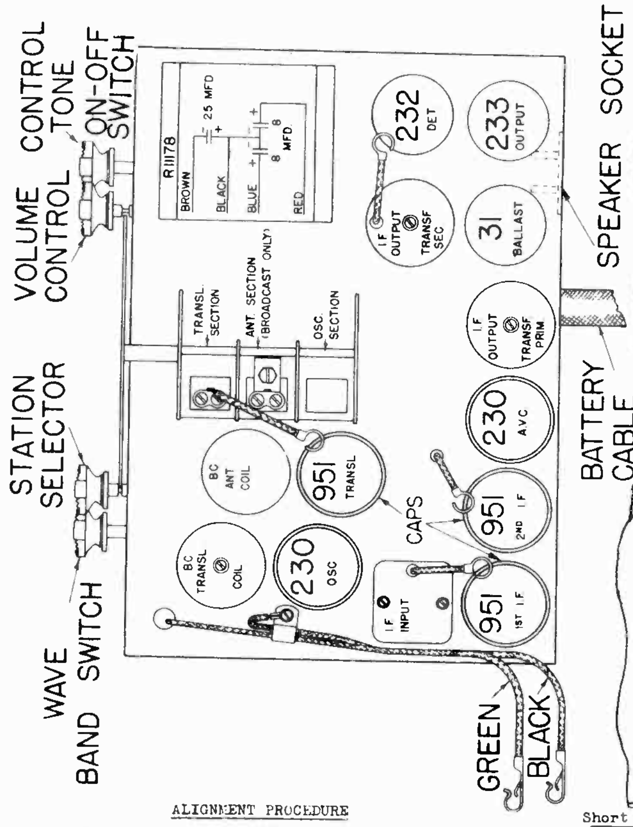


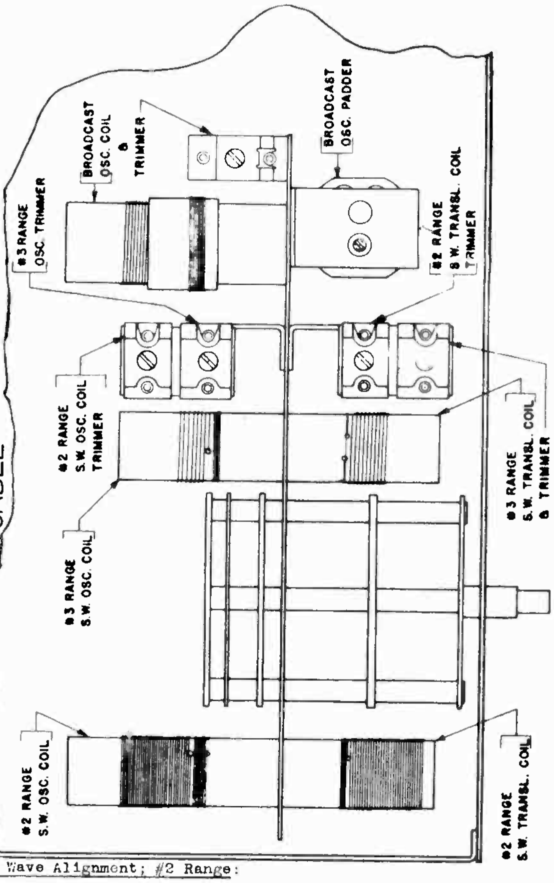
SERVICE ILLUSTRATION - MODEL 1840



MODEL 1857-A
Socket, Trimmers
Alignment, Voltage

SEARS-ROEBUCK & CO.





ALIGNMENT PROCEDURE

The IF Stages:

1. Connect the output meter across the loud speaker terminals.

2. Connect the ground lead of the test oscillator to the chassis.

3. Connect the other lead of the test oscillator, in series with a .1 mfd. condenser, to the grid of the first IF tube. Leave the grid clips attached to the caps.

4. Set the test oscillator to 175 kc and tune the IF output transformer, primary and secondary. Be sure the volume control is turned all the way on.

5. Change the test oscillator connection to the control grid of the translator tube and tune the IF input transformer.

6. Repeat the adjustments to secure greater accuracy. Start with the IF output transformer.

Always use as low an output as possible from the test oscillator in order to render the AVC action of the receiver inoperative.

Broadcast Alignment; #1 Range:

1. Loosely couple the test oscillator to the antenna lead of the receiver, leaving the antenna connected.

2. Set the test oscillator to 1700 kc.

3. With the wave switch turned to the broadcast position, open the variable condenser plates all the way. Then adjust the broadcast oscillator trimmer for maximum output. The locations of all of the trimmers are shown in the Service Illustrations.

4. Set the test oscillator to 1400 kc and tune in its signal.

5. Adjust the broadcast translator coil trimmer and then the trimmer on the antenna section of the variable condenser for maximum output.

6. Set the test oscillator to 600 kc and tune in its signal. Then slowly rotate the variable condenser back and forth a degree or two and, at the same time, adjust the broadcast oscillator padder for maximum output.

7. Repeat the 1700 kc and 1400 kc adjustments. Always use the lowest possible output from the test oscillator.

Short Wave Alignment; #2 Range:

1. Leave the test oscillator coupled to the set's antenna lead as for broadcast alignment.

2. Open the variable condenser plates all the way and peak the #2 range oscillator trimmer at 5250 kc.

3. Set the test oscillator to 4500 kc and tune in its signal. Then adjust the #2 range translator trimmer for maximum output.

4. Set the test oscillator to 1750 kc and tune in its signal. If necessary, turns may be shifted on the translator coil to secure maximum output. If turns are shifted it will be necessary to repeat the 5250 kc and 4500 kc adjustments.

Short Wave Alignment; #3 Range:

1. Leave the test oscillator coupled to the set's antenna lead as for the lower frequency ranges.

2. Open the variable condenser plates all the way and peak the #3 range oscillator coil trimmer at 15,500 kc.

3. Set the test oscillator to 14,000 kc and tune in its signal. Then adjust the #3 range translator coil trimmer for maximum output.

4. Set the test oscillator to 5225 kc and tune in its signal. If necessary turns may be shifted on the #3 range translator coil to secure maximum output. If turns are shifted it will be necessary to repeat the 15,500 kc and 14,000 kc adjustments.

TUBE VOLTAGE CHART

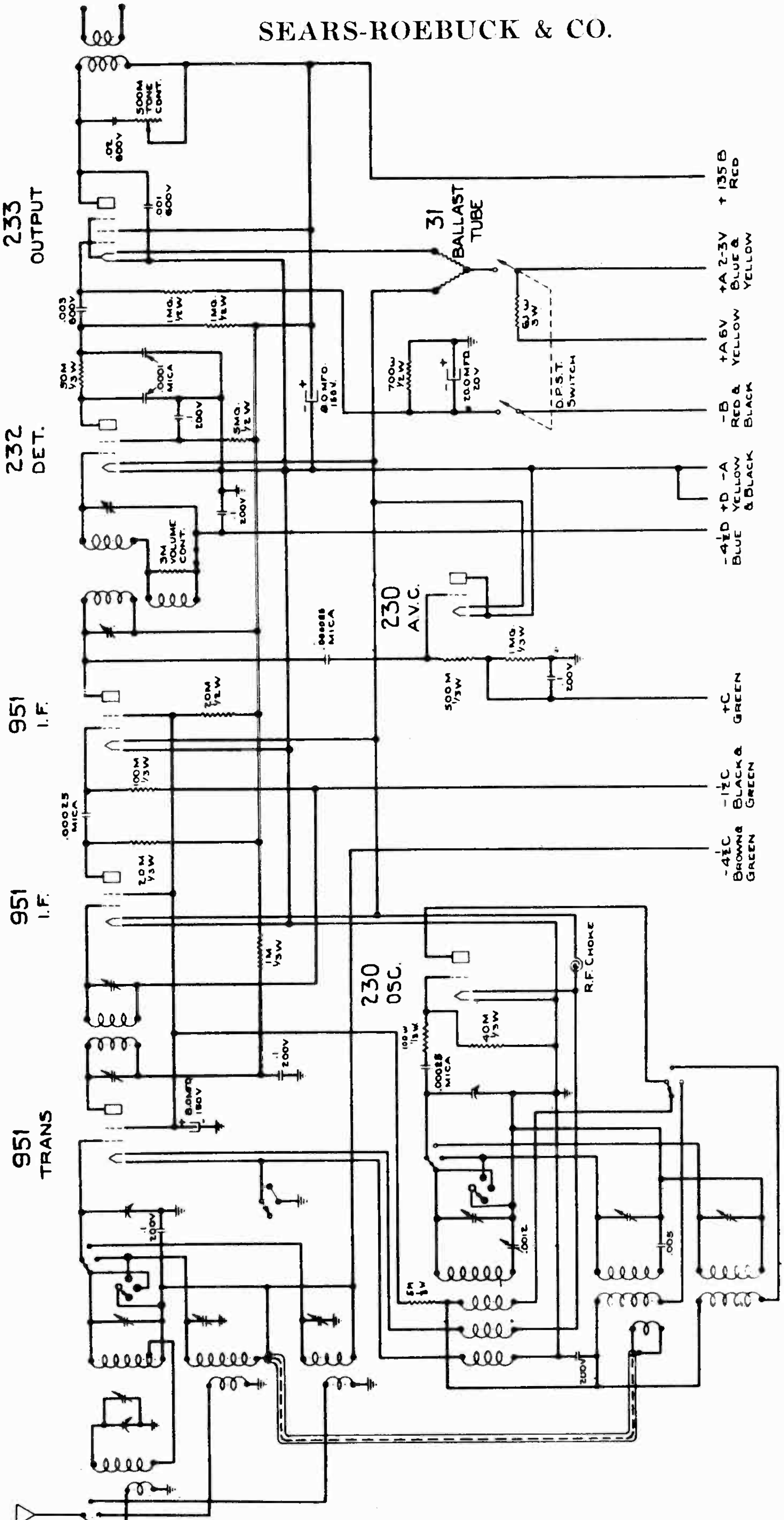
All readings are to be taken between the chassis and the respective element of each tube.

Tube	Plate Voltage	Screen Voltage
951 - Translator	120	50
230 - Oscillator	35	
951 - First IF	90	50
951 - Second IF	120	50
230 - AVC	Used as diode with no applied DC voltages.	
232 - Detector	* - Indicates low reading	*
233 - Output	115	120

* due to high series resistance in circuit

MODEL 1857-A
Schematic

SEARS-ROEBUCK & CO.

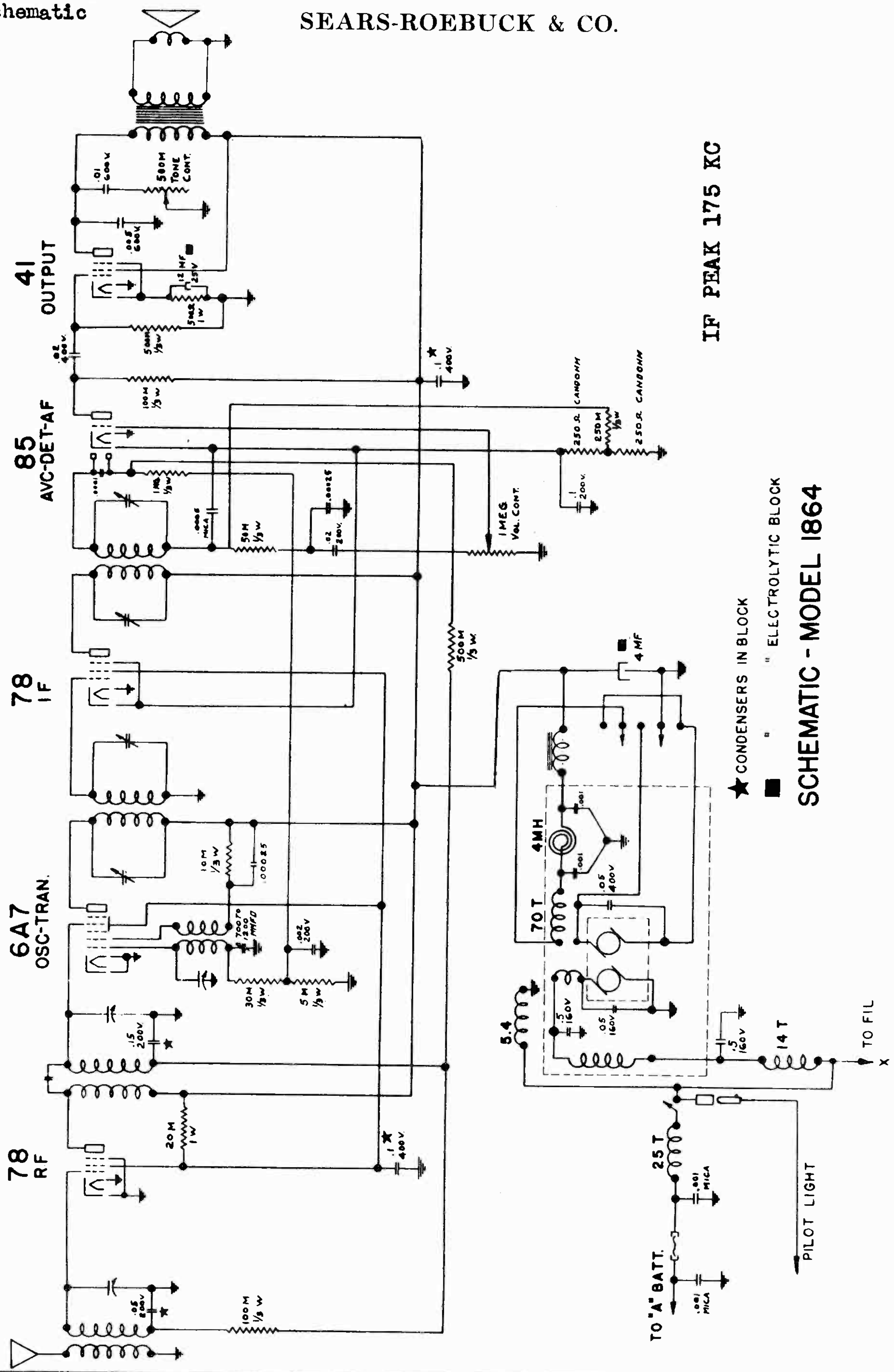


IF PEAK 175 KC

SCHEMATIC - MODEL 1857A

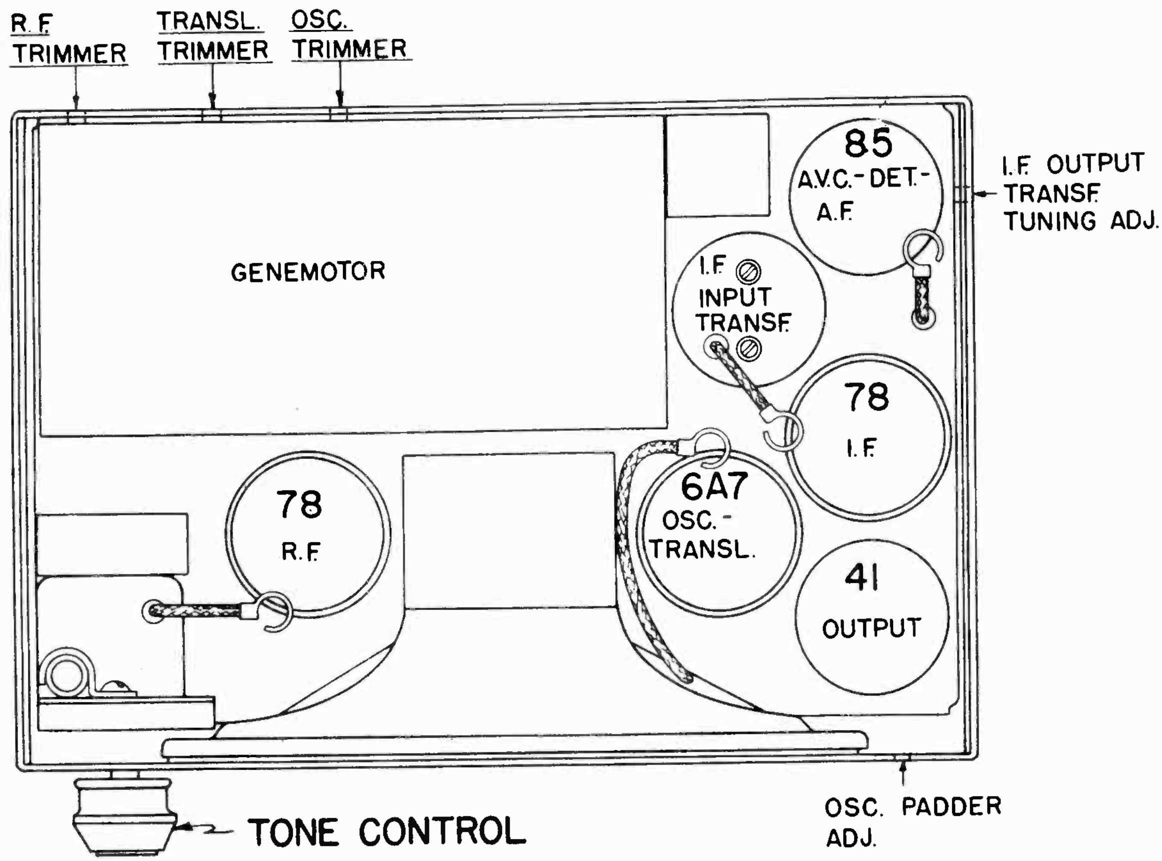
MODEL 1864
Schematic

SEARS-ROEBUCK & CO.



MODEL 1864
Alignment
Socket, Trimmers

SEARS-ROEBUCK & CO.



SERVICE ILLUSTRATION - MODEL 1864

ALIGNMENT PROCEDURE

The IF Stages:

1. Connect the output meter (low voltage scale) across the loud speaker voice coil.

2. Connect the ground lead of the test oscillator to the receiver chassis.

3. Connect the other lead of the test oscillator, in series with a .1 mfd. condenser, to the control grid cap of the 78 IF tube, leaving the grid clip attached to the cap.

4. Set the test oscillator to 175 kc and tune the IF output transformer. This transformer is mounted under the chassis and its adjustments are accessable through the hole in the right end of the chassis, as indicated in the Service Illustration.

5. Change the test oscillator connection to the grid of the translator tube and tune the IF input transformer.

6. Repeat the adjustments to secure greater accuracy. The volume control of the receiver should be turned to its full "on" position and the output from the test oscillator kept as low as possible in order to render the AVC action of the set inoperative.

RF Alignment:

1. Connect the test oscillator to the antenna lead through a .0002 mfd. condenser.

2. Set the test oscillator to 1520 kc. Open the variable condenser plates all the way and adjust the oscillator trimmer for maximum output.

3. Set the test oscillator to 1400 kc and adjust the RF and translator trimmers.

4. Set the test oscillator to 600 kc and tune in its signal. Then slowly rotate the variable condenser back and forth a degree or two and, at the same time, adjust the padder until maximum output is obtained.

5. Repeat the 1520 kc and 1400 kc adjustments. Always leave the receiver's volume control on full and the test oscillator's output at the lowest possible value.

TUBE VOLTAGE CHART

Readings taken with 1000 ohms per volt meter from chassis to indicated tube element.

TUBE	PLATE	SCREEN	OSC. PLATE
78 - RF	230	95	
6A7 - Osc-Transl	230	95	160
78 - IF	230	95	
85 - AVC-Det-AF	65		
41 - Output	230	220	

MODELS 1904,1904-A,1906 1914,1954,1964,1964-A Alignment,Chassis Layout

SEARS-ROEBUCK & CO.

In some of the sets, the 40 ohm resistor, R14, is omitted and a grounded center tap on the transformer used instead.

In earlier production, R3 was a 20M ohm, 1/2 watt resistor. In later production, this was changed to a 5M ohm, 1/3 watt resistor. In sets using a 20M ohm resistor, if trouble is experienced due to the set's not operating at the low frequency end of the C Band, which will be due to the oscillator "stalling", replace the 20M ohm resistor with a 5M ohm one.

The coupling between primary and secondary of the IF output transformer is variable and serves as the volume control.

R7 is the resistor which supplies AVC voltage. Residual bias is furnished by R13.

POWER TRANSFORMER COLOR CODE

RECTIFIER PLATE:RED. CENTER TAP, GREEN.
PRIMARY:BLUE.
HEATER:BLACK.

ALIGNMENT PROCEDURE

General:

During all of the alignment procedure, the volume control should be turned either all the way on, or else retarded slightly from the full "on" position, if retarding it is found to sharpen adjustments. The ground lead of the test oscillator should be connected to the chassis through a .1 mfd. condenser. The other lead of the test oscillator is to be connected in the manner described in the procedure. Where connection is made to a control grid cap, it is important to leave the grid clip attached to the grid cap and to leave the tube shields in place. No attempt should be made to "kill" the oscillator section of the 6A7 during the alignment.

The output from the test oscillator always should be kept at the lowest possible value that will give a satisfactory output meter reading and the coupling between the test oscillator and the receiver should be made as loose as possible. In the case of RF alignment on any of the bands, where the test oscillator is coupled to the antenna lead of the receiver with an antenna connected, alignment will be most accurate if the coupling to the antenna lead is made very loose. (The antenna lead and the oscillator lead separated.) If the test oscillator has a variable control for its power output, it is better to turn this control to its high position and then decrease the signal input to the receiver by decreasing the amount of coupling between the test oscillator and the receiver's antenna lead. If an actual antenna is not used and is replaced by a condenser or resistor, as described in the procedure, the input to the receiver should be kept low by decreasing the power output from the test oscillator.

When peaking the antenna and translator trimmers, for all wave bands, the variable condenser should be "rocked" back and forth a degree or two while the trimmer is being adjusted. This should not be done when peaking the oscillator trimmers; in this case, the variable condenser is turned so that the plates are completely out of mesh and left in this position during the adjustment. When adjusting the oscillator trimmers, if it is found that two peaks can be obtained, use the one in which the trimmer is screwed further out (less capacity). When adjusting the antenna and translator trimmers, if two peaks are found, use the adjustment in which the trimmer is screwed in furthest. Note that this is exactly opposite to the procedure for the oscillator trimmers.

Sequence of Alignment:

1. Align IF amplifier.
2. Align short wave, Band C.
3. Align short wave, Band B.
4. Align broadcast, Band A.

IF Alignment:

1. Set the test oscillator to 175 kc and connect its output lead to the control grid cap of the 6A7 tube.

2. Peak the IF output transformer tuning condensers, C13 and C14. These are mounted under the chassis, as shown in the Location of Parts Diagram.

3. Peak the IF input transformer, mounted on top of the chassis.

4. Repeat the adjustments to secure greater accuracy.

RF Alignment; Band C:

1. Loosely couple the output of the test oscillator to the antenna lead of the receiver, leaving the antenna connected. If it is impractical to use an actual antenna, the test oscillator can be connected directly to the antenna lead of the receiver, in series with a 400 ohm resistor and with no antenna connected to the receiver.

2. Set the test oscillator to 14500 kc and tune in its signal. Then adjust C3 for maximum output.

RF Alignment; Band B:

1. Loosely couple the output of the test oscillator to the antenna lead of the receiver, leaving the antenna connected. If it is impractical to use an actual antenna, the test oscillator can be connected directly to the antenna lead of the receiver, in series with a 400 ohm resistor and with no antenna connected to the receiver.

2. Set the test oscillator to 4500 kc and tune in its signal. Then adjust C2 for maximum output.

RF Alignment; Broadcast, Band A:

1. Couple the test oscillator to the antenna lead of the receiver, with the antenna connected; or connect the oscillator directly to the receiver antenna lead, in series with a .00025 mfd. condenser and with no antenna connected.

2. Set the test oscillator to 1400 kc and tune in its signal. Then adjust C1 and the trimmer on the middle section of the variable condenser for maximum output.

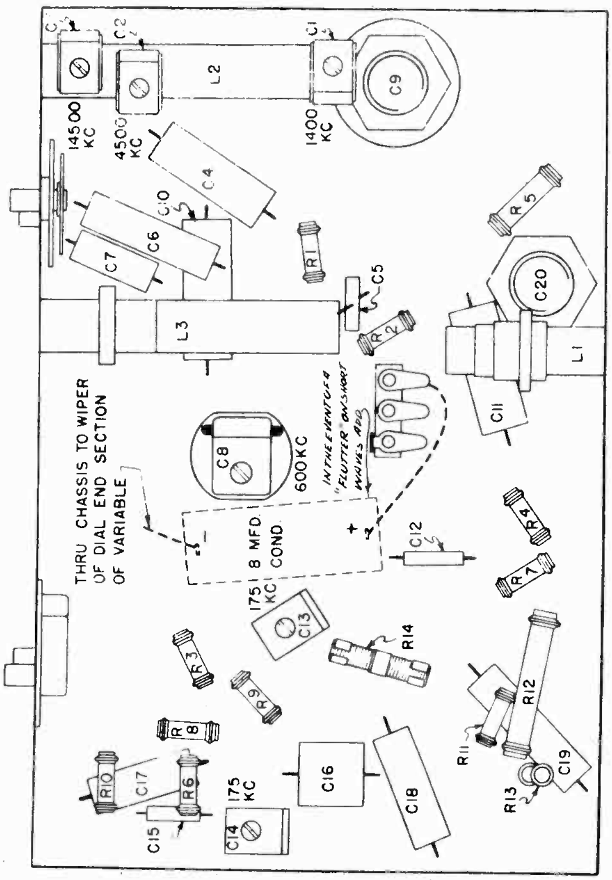
3. Set the test oscillator to 600 kc and tune in its signal. Then adjust the padding condenser, C8, for maximum output. The variable should be "rocked" back and forth a degree or two while making this adjustment.

4. Repeat the 1400 kc adjustment and then the 600 kc adjustment.

FAILURE OF THE VOLUME CONTROL TO REDUCE THE VOLUME SUFFICIENTLY

The Volume Control in these models consists of variable coupling between the primary and secondary of the IF output transformer. It sometimes happens that the movable coil slips on its shaft with the result that the volume cannot be reduced to zero, or else that it passes through zero and then begins to increase again as the Volume Control knob is turned counter clockwise. This condition can be corrected as follows:

1. Tune in a strong local station.
2. Slightly loosen the set screw that holds the movable coil bracket to the Volume Control shaft, so that the coil can be slipped around the shaft.
3. Turn the Volume Control shaft all the way counter-clockwise.
4. Leaving the shaft in this full counter-clockwise position, slip the movable coil around the shaft to the point of minimum volume.
5. Securely tighten the set screw.
6. If, with the coil turned to the point of minimum volume the volume still is too high, it can be reduced by rearranging the flexible leads. If improperly arranged, the capacity coupling of these leads may prevent a low enough minimum volume. However, it is a simple matter to shift the leads and so reduce the volume.

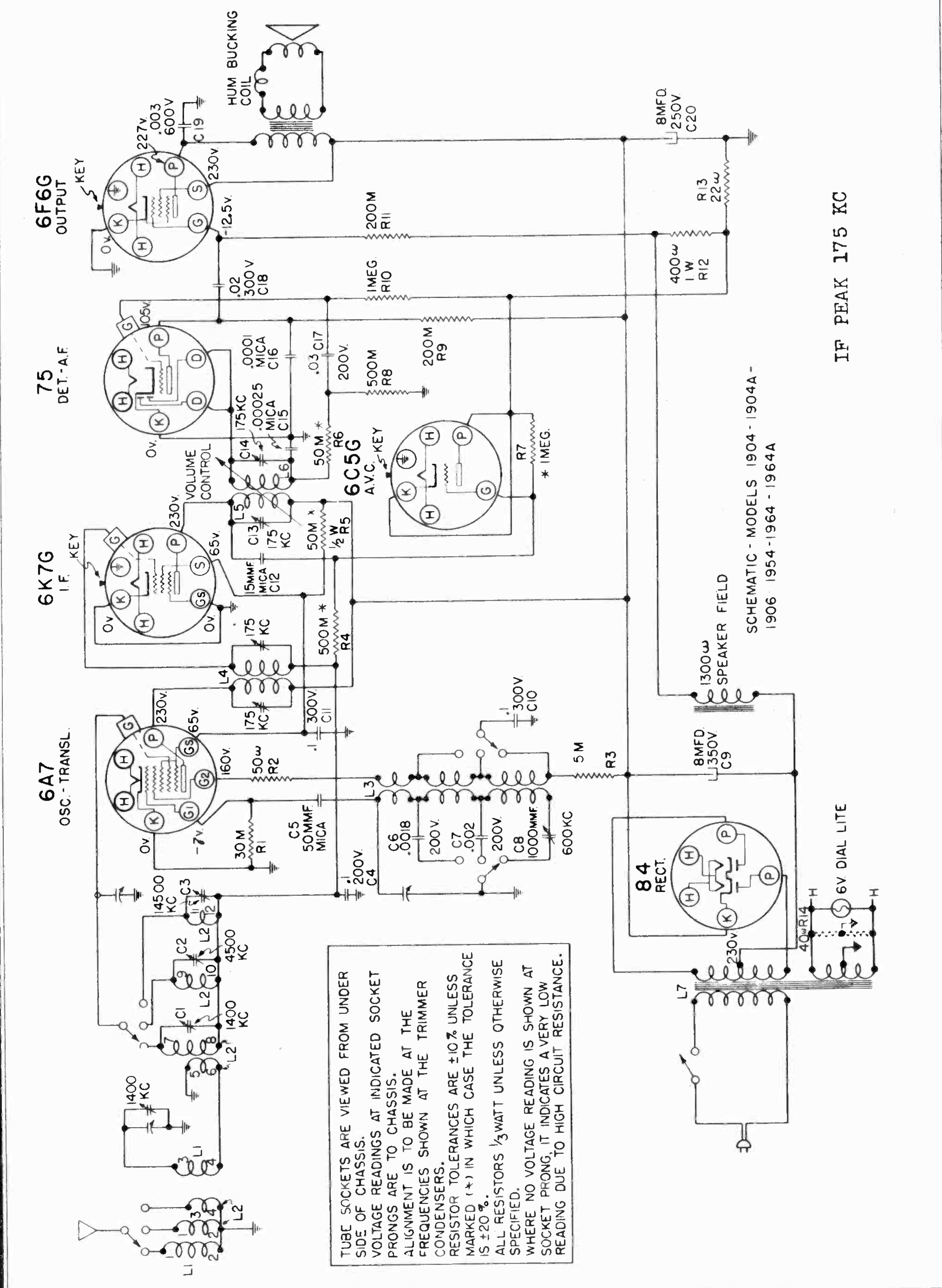


NOTE L4, L5, L6 ARE MOUNTED ON TOP OF THE CHASSIS.

LOCATIONS OF PARTS - MODELS 1904-1904A-1906-1914-1954-1964-1964A

MODELS 1904,1904-A,1906
1914,1954,1964,1964-A
Schematic

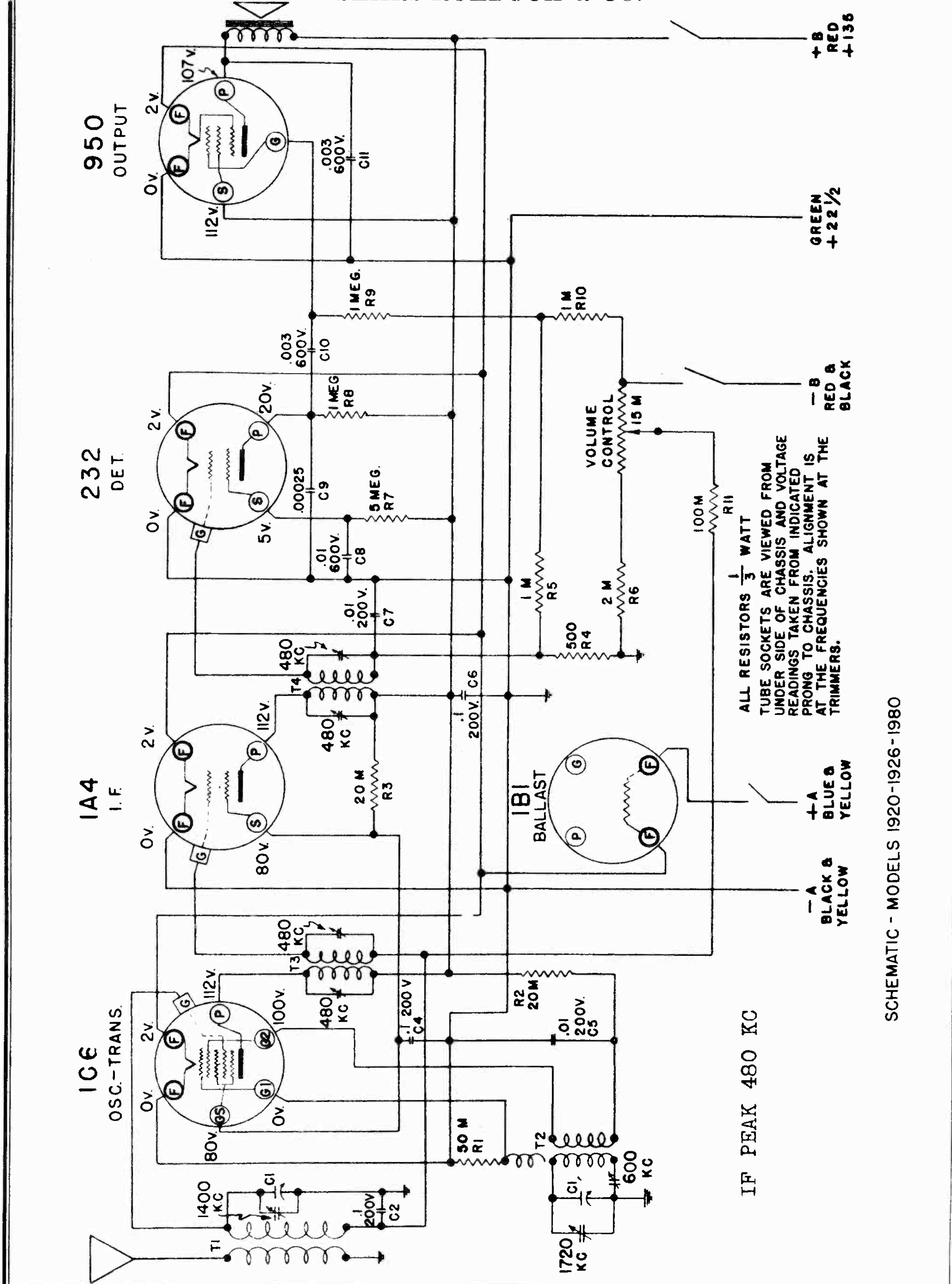
SEARS-ROEBUCK & CO.



TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS.
VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS.
ALIGNMENT IS TO BE MADE AT THE FREQUENCIES SHOWN AT THE TRIMMER CONDENSERS.
RESISTOR TOLERANCES ARE ±10% UNLESS MARKED (*) IN WHICH CASE THE TOLERANCE IS ±20%.
ALL RESISTORS 1/3 WATT UNLESS OTHERWISE SPECIFIED.
WHERE NO VOLTAGE READING IS SHOWN AT SOCKET PRONG, IT INDICATES A VERY LOW READING DUE TO HIGH CIRCUIT RESISTANCE.

MODELS 1920,1926,1980
Schematic

SEARS-ROEBUCK & CO.



MODELS 1920,1926,1980
Alignment,Chassis
Parts

SEARS-ROEBUCK & CO.

ALIGNMENT PROCEDURE

The IF Stages:

1. Connect the high scale of the output meter across the loud speaker.

2. Connect a 480 kc test oscillator, in series with a .1 mfd. condenser, between the control grid of the 1C6 and the chassis.

3. Adjust the IF output transformer and the IF input transformer for maximum output. Adjustments should be repeated for greater accuracy.

Broadcast Alignment:

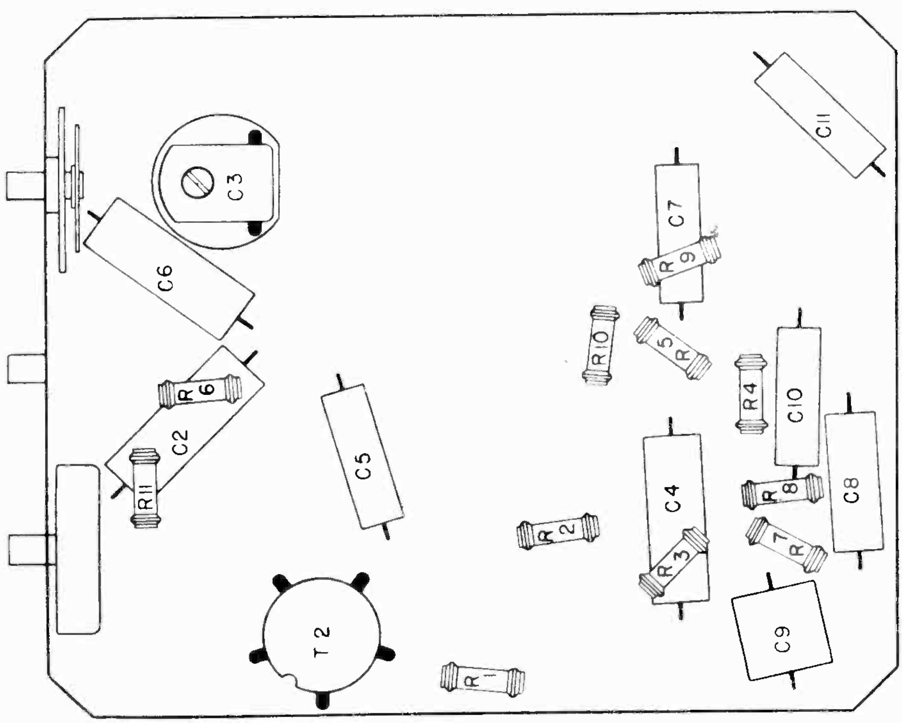
1. The output meter should be left connected as for IF alignment. Loosely couple the test oscillator to the antenna lead of the receiver, leaving the antenna connected.

2. Set the test oscillator to 1720 kc. Open the variable condenser plates all the way and adjust the trimmer on the oscillator section for maximum output. The oscillator section is the one further from the dial.

3. Set the test oscillator to 1400 kc and tune in its signal. Then adjust the trimmer on the other section of the variable condenser for maximum output. The variable should be rocked back and forth a degree or two while making this adjustment.

4. Set the test oscillator to 600 kc and tune in its signal. Then adjust the oscillator padder, C3, for maximum output. The variable should be rocked back and forth a degree or two while making this adjustment.

5. Repeat the 1720 kc and 1400 kc adjustments for greater accuracy.



NOTE: T1, T3, AND T4 ARE MOUNTED ON TOP OF CHASSIS.

LOCATIONS OF PARTS - MODELS 1920-1926-1980

SCHEMATIC LOCATION	PART NO.	DESCRIPTION
	R10562A	Bushing - Rubber
	R12160	Cable - Battery
	R11043	Clip - Grid
T1	R9973	Coil - Antenna
T2	R12161	Coil - Oscillator
T3	R12167A	Transformer - IF Input
T4	R12168A	Transformer - IF Output

REPLACEMENT PARTS AND PRICE LIST FOR SILVERTONE MODELS 1920, 1926, 1980.

SCHEMATIC LOCATION	PART NO.	DESCRIPTION
C1	R12162	Condenser - Variable, 1920, 1980
C1	R12628	Condenser - Variable, Model 1926
C3	R9975	Condenser - Oscillator padder
C2,C4,C6	R6444	Condenser - .1 mfd. 200 volts
C5,C7	R8432	Condenser - .01 mfd. 200 volts
C8	R7070	Condenser - .01 mfd. 600 volts
C10,C11	R7681	Condenser - .003 mfd. 600 volts
C9	R4592	Condenser - .00025 mfd. mica
	R12163	Control - Volume
R7	R8393	Resistor - 5 megohms, 1/3 watt carbon
R8,R9	R7585	Resistor - 1 megohm, 1/3 watt carbon
R11	R7586	Resistor - 100M ohms, 1/3 watt carbon
R1	R6637	Resistor - 50M ohms, 1/3 watt carbon
R2,R3	R6640	Resistor - 20M ohms, 1/3 watt carbon
R6	R6634	Resistor - 2M ohms, 1/3 watt carbon
R5,R10	R6636	Resistor - 1M ohms, 1/3 watt carbon
R4	R10142	Resistor - 500 ohms, 1/3 watt carbon

MODELS 1922-A, 1932-A
1982-A, 1992-A

Alignment, Socket
Trimmers, Chassis

SEARS-ROEBUCK & CO.

ALIGNMENT PROCEDURE

General:

During all of the Alignment Procedure, the Volume Control should be turned all the way on and the Tone Control should be turned all the way to the right to its brilliant position. The ground lead of the test oscillator is to be connected to the chassis through a .1 mfd. condenser. This prevents shorting of the grid bias of the tubes. The other lead of the test oscillator is to be connected in the manner described in the procedure. Where connection is made to a control grid cap, it is important to leave the grid clip attached to the grid cap and to leave the tube shields in place. No attempt should be made to "kill" the oscillator section of the 1C6 during the alignment.

The output from the test oscillator always should be kept at the lowest possible value that will give a satisfactory output reading. During the RF alignment, the coupling between the test oscillator and the antenna lead of the receiver should be made as loose as possible. (The antenna lead and the oscillator lead separated.) If the test oscillator has a variable control for its power output, turn this control to its high position and then decrease the signal input to the receiver by decreasing the amount of coupling between the test oscillator and the receiver's antenna lead. If an actual antenna is not used, and is replaced by a condenser or resistor, as described in the procedure, the input to the receiver should be kept low by decreasing the power output from the test oscillator.

When peaking the antenna and translator trimmers, the variable condenser should be "rocked" back and forth a degree or two while the trimmer is being adjusted. This should not be done when peaking the oscillator trimmers. In this case, the variable condenser is turned so that the plates are completely out of mesh and left in this position during the adjustment. When adjusting the oscillator trimmers, if it is found that two peaks can be obtained, use the one in which the trimmer is screwed further out (less capacity). When adjusting the antenna and translator trimmers, if two peaks are found, use the adjustment in which the trimmer is screwed in furthest. Note that this is exactly opposite to the procedure for the oscillator trimmers.

Sequence Of Alignment:

1. Align IF Amplifier,
2. Align Broadcast Band, Band A
3. Align Short Wave Band, Band B

IF Alignment:

1. Set the test oscillator to 175 kc and connect its output lead to the control grid cap of the 1C6 tube.

2. Peak the IF input transformer. This is the square can unit on top of the chassis.

3. Peak the IF output transformer secondary. This is the round can unit with the single adjusting screw mounted at the top rear of the chassis.

4. Peak the IF output transformer primary. This trimmer adjustment is C21 in the Location of Parts Diagram.

5. It is advisable to repeat the alignment for greater accuracy.

Broadcast RF Alignment; Band A:

1. Loosely couple the output of the test oscillator to the antenna lead of the receiver, leaving the antenna connected. If it is impractical to use an actual antenna, the test oscillator can be connected, in series with a .00025 mfd. condenser, directly to the antenna lead of the receiver.

2. Set the test oscillator to 1600 kc. Open the variable condenser plates all the way and adjust C2, the Broadcast oscillator trimmer, for maximum output.

3. Set the test oscillator to 1400 kc and tune in its signal. Peak the Broadcast antenna and translator trimmers. The antenna trimmer is the one on the variable condenser section nearest the dial. The translator trimmer is the one in the round can unit mounted next to the square can IF unit on top of the chassis.

4. Set the test oscillator to 600 kc and tune in its signal. Then adjust C6, the Broadcast oscillator padder, The variable should be "rocked" back and forth a degree or two during the adjustment.

5. Repeat the 1600 and 1400 kc adjustments.

Short Wave RF Alignment; Band B:

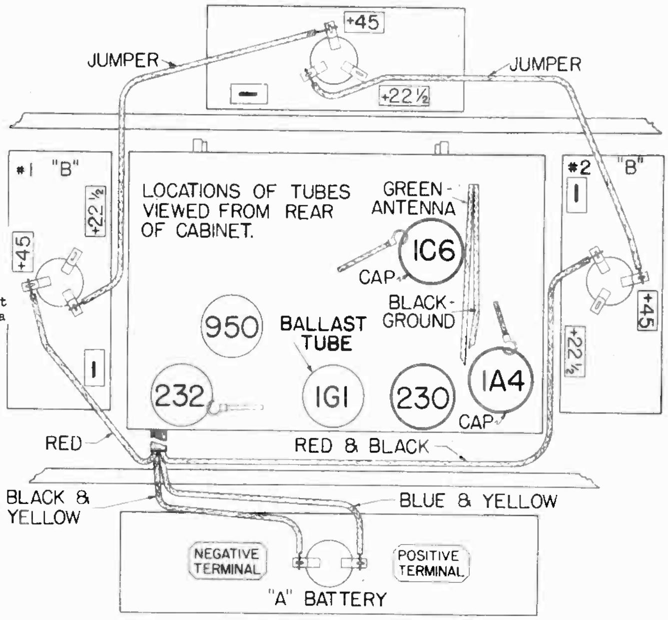
1. Loosely couple the test oscillator to the antenna lead of the receiver, leaving the antenna connected. If it is impractical to use an actual antenna, the test oscillator can be connected, in series with a 400 ohm resistor, directly to the antenna lead of the receiver.

2. Set the test oscillator to 16000 kc. Open the variable condenser plates all the way and peak C3, the Short Wave oscillator trimmer.

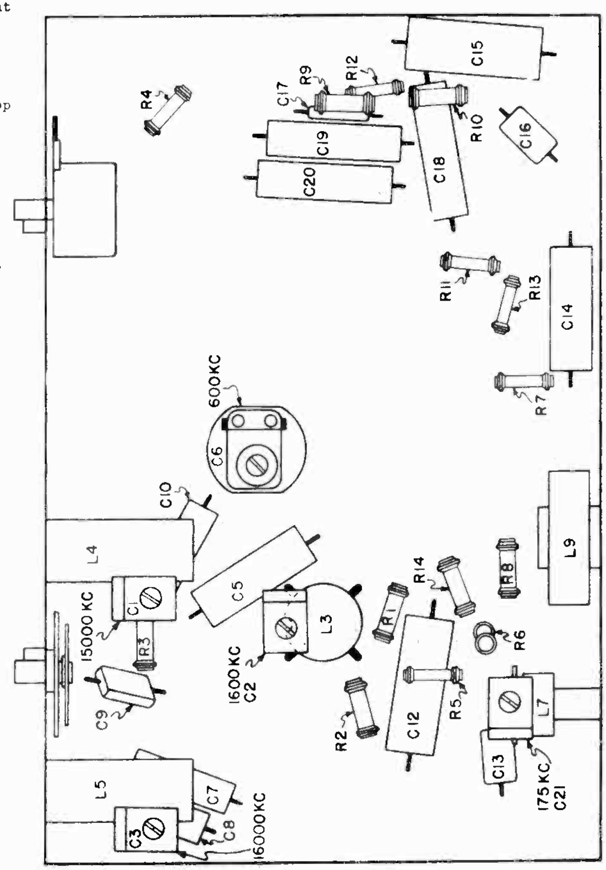
3. Set the test oscillator to 15000 kc and tune in its signal. Peak C1, the Short Wave translator trimmer.

Microphonic Howl:

Be sure that the wooden strips, inserted for shipping purposes, are removed from under the chassis. Also be certain that neither the control shafts nor knobs touch the cabinet. The chassis must float freely on its cushion rubber mountings, to prevent microphonics, particularly on Short Waves.



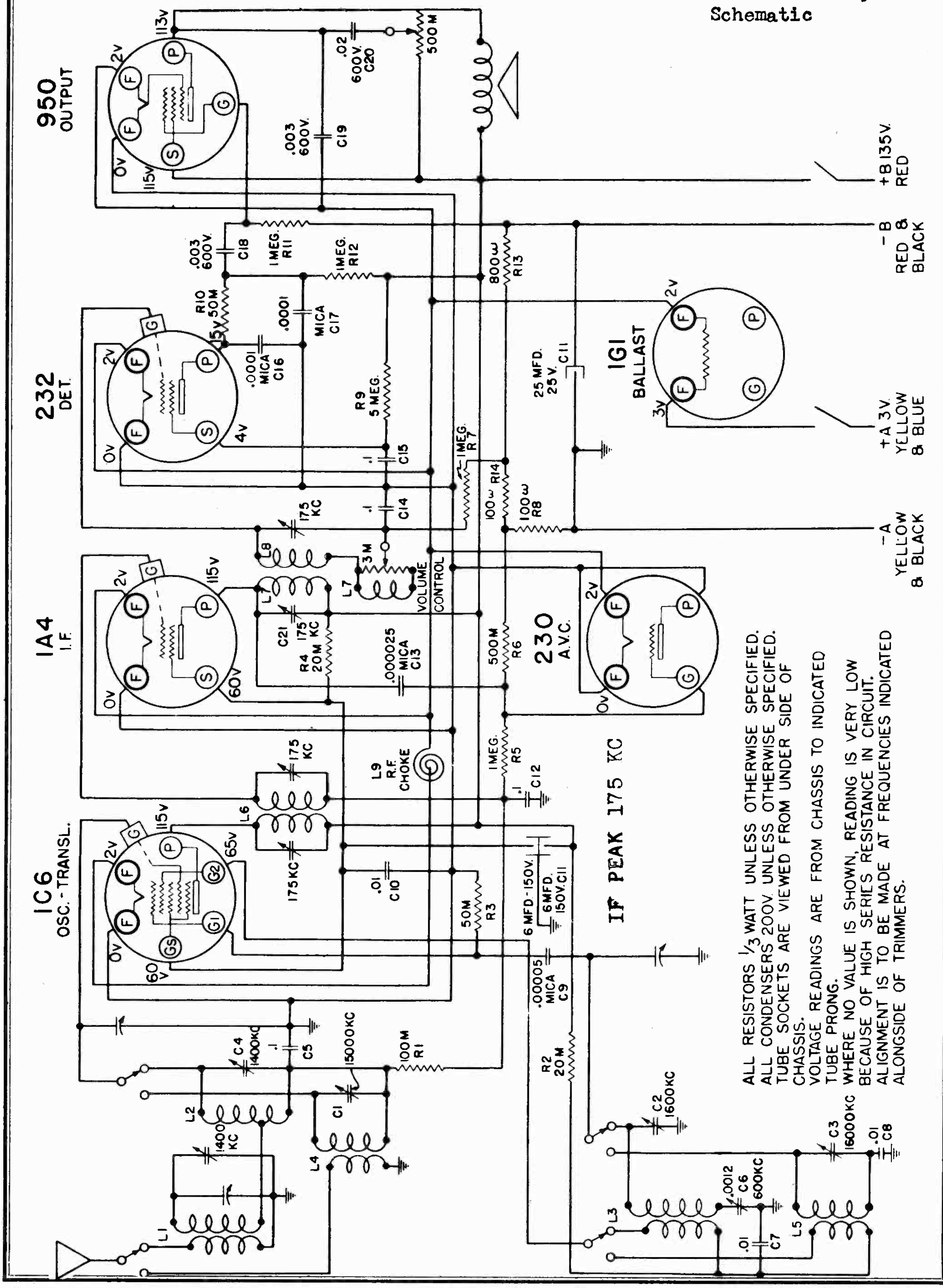
TUBE POSITIONS & BATTERY CONNECTIONS
MODELS - 1922A - 1982A



LOCATION OF PARTS - MODELS 1922A-1932A-1982A-1992A

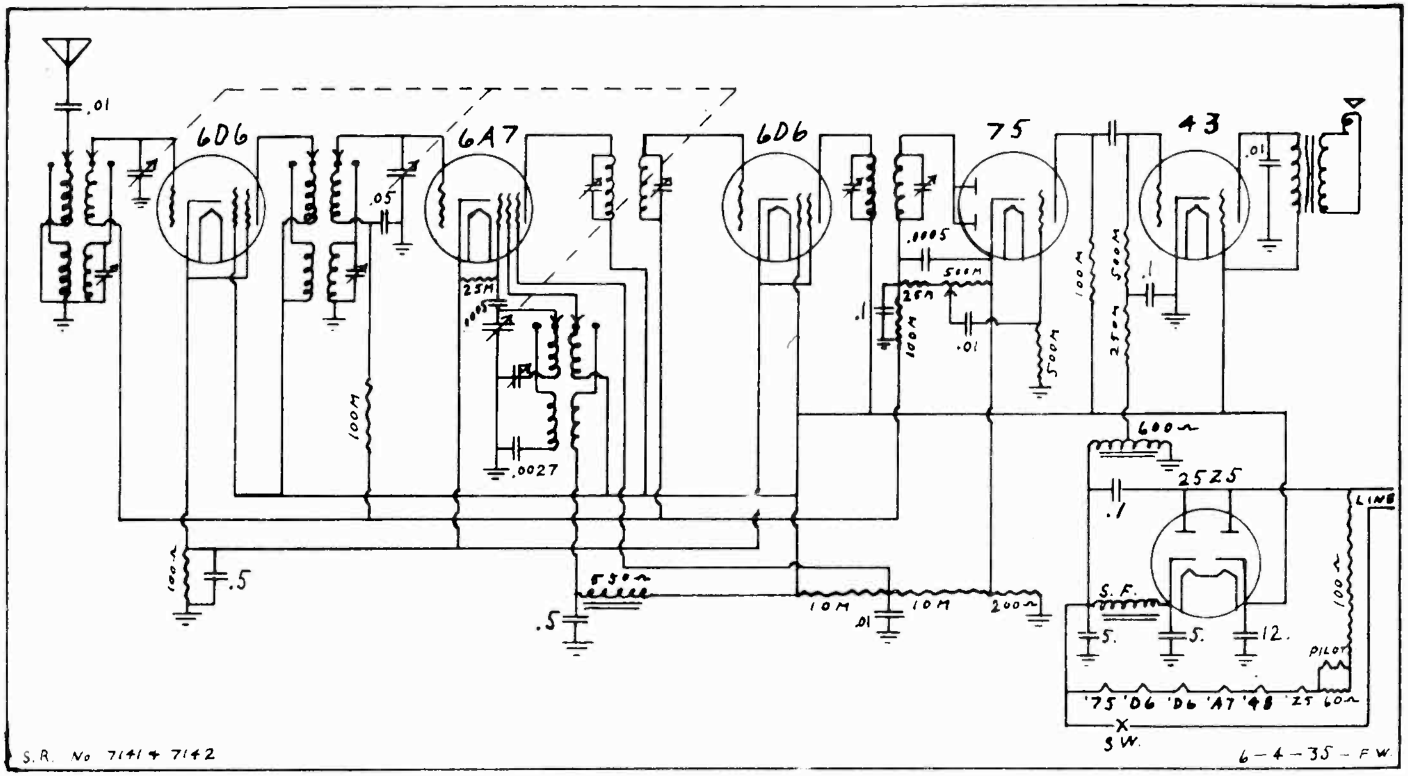
SEARS-ROEBUCK & CO.

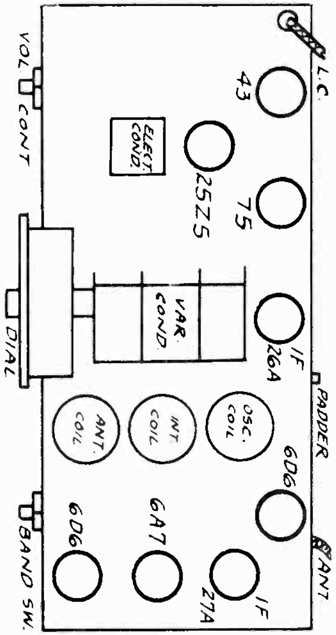
MODELS 1922-A,1932-A
1982-A,1992-A
Schematic



MODELS 7141,7142
Schematic, Socket
Trimmers, Voltage

SEARS-ROEBUCK & CO.





SOCKET LAYOUT

Socket voltages with 1000 ohm per volt D.C. meter - Line voltage 115V.

Type	Position	EF	EK	EG2	EG3	EP
6D6	RF & IF Amp.	6.3	2.2	85	2.2	85
6A7	1st Det.& Osc.	6.3	2.2	35	85•	85
75	2nd Det.& AVC	6.3	.8			55
43	Power output	30.	-.4#	85		80

• Osc. plate
\# 43 grid
F Filament

K - Cathode
G2- Screen grid
G3- Suppressor grid

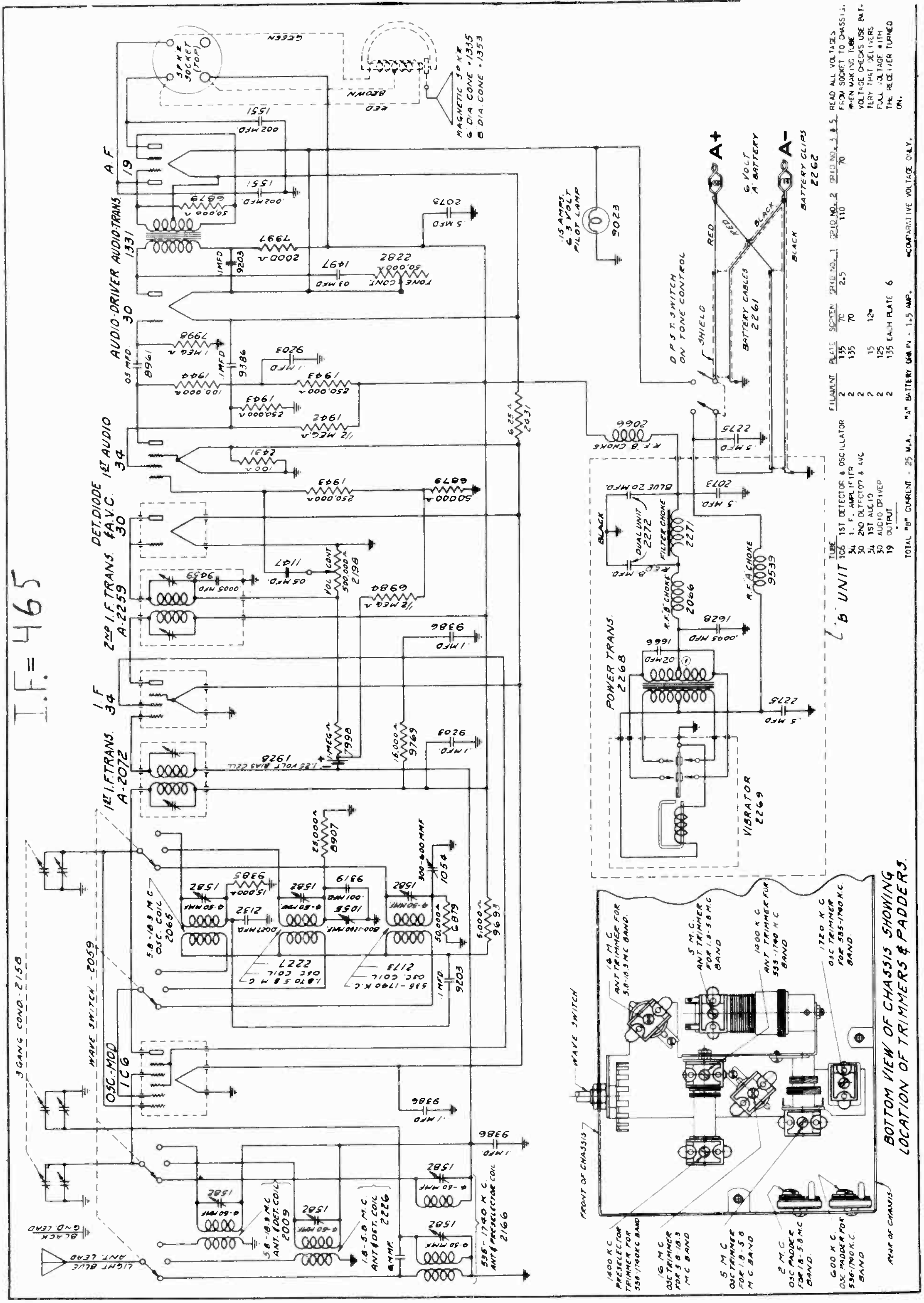
P - Plate

Alignment
1. I-f peaked at 456 kc.
2. Oscillator trimmer (beneath chassis) and gang condenser trimmers adjusted at 1720 kc.
3. Oscillator padding condenser adjusted at 600 kc. Rock tuning condenser.
4. Check alignment at 1400 kc.
5. Check short wave alignment at 12. megacycle

Parts for this model may be ordered from Echophone Radio Corporation 2611 Indiana Avenue, Chicago, Ill.

MODEL 31-B
Schematic, Voltage
Trimmers

SENTINEL RADIO CORP.



MODEL 31-B
Alignment
Parts List

SENTINEL RADIO CORP.

PART NUMBER		LIST PRICE
2166	535-1740 K.C. BAND ANTENNA AND PRESELECTOR COIL	$1.30
2173	535-1740 K.C. BAND OSCILLATOR COIL	.65
2226	1.8-5.8 M.C. BAND ANTENNA COIL	.70
2227	1.8-5.8 M.C. BAND OSCILLATOR COIL	.55
2009	5.8-18.3 M.C. BAND ANTENNA COIL	.60
2065	5.8-18.3 M.C. BAND OSCILLATOR COIL	.65
2072	FIRST I. F. TRANSFORMER	1.55
2259	SECOND I. F. TRANSFORMER	1.60
2282	TONE CONTROL WITH OFF AND ON SWITCH	1.24
2198	VOLUME CONTROL	.85
2059	WAVE SWITCH	.75
2272	8 & 20 MFD. DRY ELECTROLYTIC CONDENSER	1.95
2268	POWER TRANSFORMER	2.35
2271	FILTER CHOKE	1.00
2066	R. F. CHOKE	.28
9530	R.F. "A" CHOKE	.15
2269	VIBRATOR	6.00

PART NUMBER		LIST PRICE
6984	500,000 OHM 1/3 WATT RESISTOR	$ .19
6879	50,000 OHM 1/3 WATT RESISTOR	.19
9693	5,000 OHM 1/3 WATT RESISTOR	.19
9769	15,000 OHM 1/2 WATT RESISTOR	.19
8907	25,000 OHM 1/3 WATT RESISTOR	.19
9285	15,000 OHM 1/3 WATT RESISTOR	.19
9431	100 OHM 1/3 WATT RESISTOR	.19
9319	.001 MFD. MOULDED CONDENSER	.21
9458	.00025 MFD. MOULDED CONDENSER	.21
9459	.0005 MFD. MOULDED CONDENSER	.21
2132	.0027 MFD. MOULDED CONDENSER	.21
1628	.0045 MFD. MOULDED CONDENSER	.21
9386	.1 MFD. 200 VOLT CONDENSER	.19
9203	.1 MFD. 400 VOLT CONDENSER	.20
1747	.05 MFD. 200 VOLT CONDENSER	.15
8961	.05 MFD. 400 VOLT CONDENSER	.19
1551	.002 MFD. 600 VOLT CONDENSER	.18
1497	.03 MFD. 600 VOLT CONDENSER	.19
2275	.5 MFD. 100 VOLT CONDENSER	.50
1666	.03 MFD. 600 VOLT CONDENSER	.18
2073	.5 MFD. 400 VOLT CONDENSER	.56
2261	BATTERY CABLE (SINGLE SECTION)	.65

SIX VOLT BATTERY OPERATED
SIX TUBE SUPERHETERODYNE RECEIVER

ALIGNMENT PROCEDURE: REALIGNMENT OF THIS RECEIVER SHOULD NEVER BE NECESSARY UNLESS ONE OF THE OSCILLATOR, ANTENNA, OR R.F. COILS HAS BEEN REPLACED. LACK OF SENSITIVITY, SELECTIVITY, AND POOR TONE QUALITY MAY BE DUE TO ANY ONE OR A COMBINATION OF CAUSES, SUCH AS WEAK OR DEFECTIVE TUBES, BATTERY, OR SPEAKER, INADEQUATE OR EXCESSIVELY LONG ANTENNA, OPEN OR GROUNDED BIAS RESISTOR, BYPASS CONDENSER, ETC. UNDER NO CIRCUMSTANCES SHOULD REALIGNMENT BE ATTEMPTED UNTIL ALL OTHER POSSIBLE SOURCES HAVE BEEN FIRST THOROUGHLY INVESTIGATED AND HAVE BEEN DEFINITELY PROVEN NOT TO BE THE CAUSE. IF AN I.F. TUBE IS REPLACED IT IS ADVISABLE TO REALIGN THE I.F. AMPLIFIER, PARTICULARLY IF THE REPLACEMENT TUBE IS ONE OF A DIFFERENT MANUFACTURE THAN THE ONE IN THE RECEIVER. IT IS IMPORTANT WHEN ALIGNING TO CAREFULLY FOLLOW THE PROCEDURE IN THE ORDER GIVEN, OTHERWISE THE RECEIVER WILL LACK SENSITIVITY AND THE DIAL CALIBRATION WILL BE INCORRECT. IT IS IMPERATIVE THAT AN ACCURATELY CALIBRATED OSCILLATOR BE USED WITH SOME TYPE OF OUTPUT MEASURING DEVICE.

INTERMEDIATE ALIGNMENT:

1. CONNECT THE HIGH SIDE OF THE TEST OSCILLATOR OUTPUT TO THE CONTROL GRID OF THE 106 MODULATOR TUBE THROUGH A .02 MFD. CONDENSER. LEAVE THE GRID CAP CONNECTED TO THE GRID TERMINAL OF THE TUBE, AND CONNECT THE GROUND SIDE OF THE TEST OSCILLATOR TO THE RECEIVER GROUND.

2. SET THE TEST OSCILLATOR FREQUENCY TO 465 KILOCYCLES (THIS MUST BE ACCURATE).

3. ALIGN THE SECOND INTERMEDIATE TRANSFORMER BY TURNING ONE OF THE TRIMMER SCREWS ACCESSIBLE THROUGH HOLES IN THE TOP OF THE TRANSFORMER SHIELDS UP AND DOWN (INCREASING AND DECREASING CAPACITY) UNTIL MAXIMUM READING IS OBTAINED ON THE OUTPUT METER, AFTER WHICH ADJUST THE OTHER TRIMMER SCREW OF THE SAME TRANSFORMER FOR MAXIMUM SENSITIVITY.

4. ADJUST THE FIRST INTERMEDIATE TRANSFORMER IN THE SAME MANNER AS THE SECOND I. F. TRANSFORMER.

TO ALIGN THE VARIABLE CONDENSER: IT IS IMPORTANT WHEN ALIGNING THE GANG CONDENSER, PADDING AND TRIMMER CONDENSERS TO FOLLOW THE PROCEDURE CAREFULLY, OTHERWISE THE RECEIVER WILL BE INSENSITIVE AND THE DIAL CALIBRATION WILL BE INCORRECT. THE PADDING AND TRIMMER CONDENSERS LOCATED UNDERNEATH THE CHASSIS WILL BE REFERRED TO BY THEIR FUNCTION AS INDICATED ON THE CIRCUIT DIAGRAM.

1. CONNECT THE HIGH OUTPUT SIDE OF THE TEST OSCILLATOR THROUGH A 400 OHM RESISTOR TO THE RECEIVER ANTENNA LEAD AND THE LOW SIDE TO THE SET GROUND.

2. PLACE THE BAND SELECTOR SWITCH FOR OPERATION ON THE 18.3 TO 5.8 MEGACYCLE BAND, TUNE THE RECEIVER DIAL TO 16 MEGACYCLES, AND SET THE TEST OSCILLATOR FREQUENCY TO EXACTLY 16 MEGACYCLES. THEN TUNE IN THE 16 MEGACYCLE SIGNAL TO MAXIMUM OUTPUT BY ADJUSTING THE 16 MEGACYCLE OSCILLATOR TRIMMER. WHEN ADJUSTING THIS TRIMMER TWO PEAKS, THE FUNDAMENTAL AND THE IMAGE PEAK, WILL BE NOTICED. CARE MUST BE TAKEN THAT THE FUNDAMENTAL PEAK AND NOT THE IMAGE PEAK IS USED FOR ALIGNING THE RECEIVER AT 16 MEGACYCLES. ALWAYS BACK OFF THE TRIMMER TO MINIMUM CAPACITY, THEN SCREW DOWN THE TRIMMER (ADD CAPACITY) UNTIL THE FIRST PEAK WHICH IS THE FUNDAMENTAL AND THE PROPER ONE TO USE IS TUNED IN. IF THE TRIMMER IS SCREWED DOWN BEYOND THE POINT WHERE THE FIRST PEAK IS RECEIVED, THE INCORRECT IMAGE PEAK WILL BE TUNED IN. AFTER COMPLETING ADJUSTMENT OF THE OSCILLATOR TRIMMER AT 16 MEGACYCLES ALWAYS CHECK TO SEE IF THE PROPER PEAK HAS BEEN USED. TO DO THIS LEAVE THE TEST OSCILLATOR FREQUENCY AT 16 MEGACYCLES, INCREASE THE OUTPUT OF THE TEST OSCILLATOR AND TUNE THE RECEIVER DIAL TO APPROXIMATELY 15 MEGACYCLES. THEN VARY THE RECEIVER DIAL SLIGHTLY TO THE RIGHT AND LEFT OF 16 MEGACYCLES, AND IF THE FUNDAMENTAL PEAK WAS USED IN ALIGNING AT 16 MEGACYCLES THE TEST OSCILLATOR SIGNAL WILL BE HEARD AT APPROXIMATELY 15 MEGACYCLES ON THE RECEIVER DIAL. IF IT IS NOT POSSIBLE TO RECEIVE THE SIGNAL, THEN THE FUNDAMENTAL PEAK WAS NOT USED AND THE 16 MEGACYCLE OSCILLATOR TRIMMER MUST BE PROPERLY READJUSTED. AFTER PROPERLY ADJUSTING THE 16 MEGACYCLE OSCILLATOR TRIMMER ADJUST THE 16 MEGACYCLE ANTENNA TRIMMER FOR MAXIMUM 16 MEGACYCLE SENSITIVITY.

3. SET THE BAND SELECTOR SWITCH FOR OPERATION ON THE 1.8 TO 5.8 MEGACYCLE BAND, TUNE THE RECEIVER DIAL, AND SET THE TEST OSCILLATOR FREQUENCY TO EXACTLY 5 MEGACYCLES. BRING IN THE 5 MEGACYCLE SIGNAL TO MAXIMUM OUTPUT BY ADJUSTING THE 5 MEGACYCLE TRIMMER. NEXT ADJUST THE 5 MEGACYCLE ANTENNA TRIMMER FOR MAXIMUM 5 MEGACYCLE RESPONSE.

4. LEAVE THE BAND SELECTOR SWITCH FOR OPERATION ON THE 1.8 TO 5.8 MEGACYCLE BAND AND TUNE THE RECEIVER DIAL AND SET THE TEST OSCILLATOR FREQUENCY TO APPROXIMATELY 2 MEGACYCLES. WHILE ROCKING THE GANG CONDENSER SLIGHTLY TO THE RIGHT AND LEFT, ADJUST THE 2 MEGACYCLE OSCILLATOR PADDER CONDENSER FOR MAXIMUM SENSITIVITY.

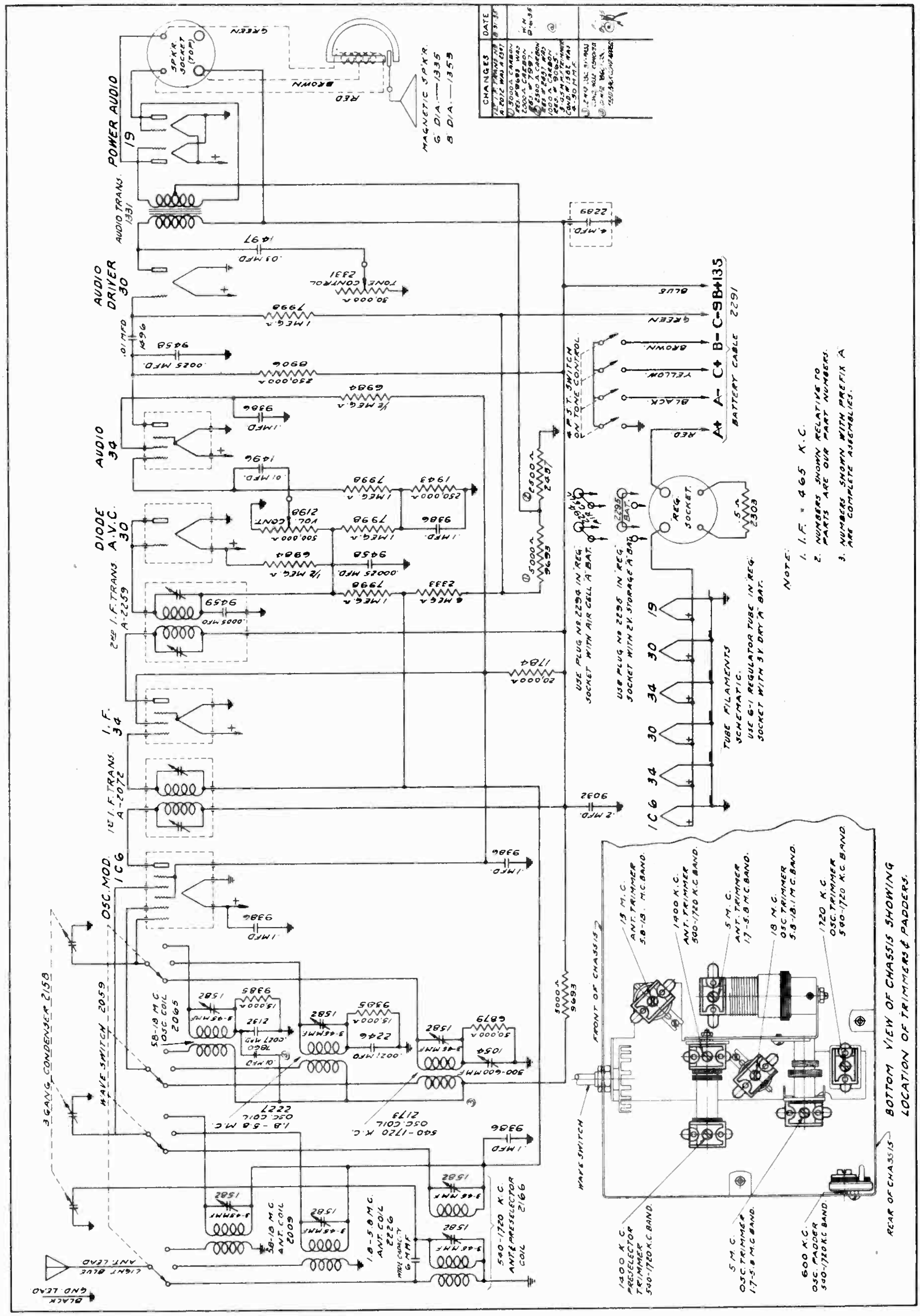
5. REPLACE 400 OHM RESISTOR IN SERIES WITH TEST OSCILLATOR LEAD WITH 200 MMFD. CONDENSER, PLACE THE BAND SELECTOR SWITCH FOR OPERATION ON THE 535-1740 KILOCYCLE BAND, AND SET THE TEST OSCILLATOR FREQUENCY TO EXACTLY 1720 KILOCYCLES. ROTATE GANG CONDENSER SO THAT PLATES ARE COMPLETELY OUT OF MESH. ADJUST 1720 KILOCYCLE OSCILLATOR TRIMMER TO BRING IN 1720 KILOCYCLE SIGNAL TO MAXIMUM OUTPUT

6. WITH BAND SELECTOR SWITCH PLACED FOR OPERATION ON 535-1740 KILOCYCLE BAND, SET THE TEST OSCILLATOR FREQUENCY AND RECEIVER DIAL TO EXACTLY 1400 KILOCYCLES. ADJUST THE 1400 KILOCYCLE PRESELECTOR AND ANTENNA TRIMMERS FOR MAXIMUM 1400 KILOCYCLE SIGNAL SENSITIVITY.

7. LEAVE BAND SELECTOR SWITCH SET FOR OPERATION ON 535-1740 KILOCYCLE BAND AND TUNE RECEIVER DIAL AND SET THE TEST OSCILLATOR TO APPROXIMATELY 600 KILOCYCLES. WHILE ROCKING THE GANG CONDENSER SLIGHTLY TO THE RIGHT AND LEFT ADJUST THE 600 KILOCYCLE OSCILLATOR PADDER FOR MAXIMUM SENSITIVITY.

MODEL 35-B
Schematic, Trimmers

SENTINEL RADIO CORP.



MODEL 35-B
Alignment
Parts List

SENTINEL RADIO CORP.

Part Number		List Price
2166	Antenna Coil for the 1720-540 Kilocycle Band	$1.30
2173	Oscillator Coil for the 1720-540 Kilocycle Band	.65
2009	5.8 to 18 Megacycle Band Antenna Coil	.60
2065	5.8 to 18 Megacycle Band Oscillator Coil	.65
2226	1.7 to 5.8 Megacycle Band Antenna Coil	.70
2227	1.7 to 5.8 Megacycle Band Oscillator Coil	.55
2072	First I. F. Transformer	1.55
2259	Second I. F. Transformer	1.60
2158	Three Gang Condenser	3.60
1331	Audio Transformer	1.40
2289	Wet Electrolytic Condenser	.85
2198	Volume Control	.85
2331	Tone Control and Off and On Switch	1.25
1054	Padding Condenser	.55
1582	Trimmer Condenser	.21
2295	Plug Marked "Use With Two Volt Battery"	$ .15
9458	.00025 Mfd. Mica Condenser	.21

Part Number		List Price
9459	.0005 Mfd. Mica Condenser	.21
2132	.0027 Mfd. Mica Condenser	.21
2246	.0021 Mfd. Mica Condenser	.28
9386	.1 Mfd. 200 Volt Condenser	.19
9032	.2 Mfd. 200 Volt Condenser	.23
1496	.01 Mfd. 600 Volt Condenser	.18
1497	.03 Mfd. 600 Volt Condenser	.19
7860	.01 Mfd. 400 Volt Condenser	.17
2303	.5 Ohm 1/4 Watt Flexible Resistor	.19
1943	250,000 Ohm 1/3 Watt Resistor Insulated Type	.19
2333	6 Meg Ohm 1/3 Watt Resistor	.19
7998	1 Meg Ohm 1/3 Watt Resistor	.19
6984	500,000 Ohm 1/3 Watt Resistor	.19
8906	250,000 Ohm 1/3 Watt Resistor	.19
1784	20,000 Ohm 1/3 Watt Resistor	.19
9693	5,000 Ohm 1/3 Watt Resistor	.19
9385	15,000 Ohm 1/3 Watt Resistor	.19
6879	50,000 Ohm 1/3 Watt Resistor	.19
2437	2,500 Ohm 1/3 Watt Resistor	.19

ALIGNMENT PROCEDURE: Realignment of this receiver should never be necessary unless one of the oscillator, antenna, or I. F. coils has been replaced. Lack of sensitivity, selectivity, and poor tone quality may be due to any one or a combination of causes, such as weak or defective tubes, battery or speaker, inadequate or excessively long antenna, open or grounded bias resistor, bypass condenser, etc. Under no circumstances should realignment be attempted until all other possible sources have been first thoroughly investigated and have been definitely proven not to be the cause.

If an I. F. tube is replaced it is advisable to realign the I. F. amplifier, particularly if the replacement tube is one of a different manufacture than the one in the receiver. It is important when aligning to carefully follow the procedure in the order given, otherwise the receiver will lack sensitivity and the dial calibration will be incorrect.

It is imperative that an accurately calibrated oscillator be used with some type of output measuring device.

INTERMEDIATE ALIGNMENT:

1. Connect the high side of the test oscillator output to the control grid of the 1C6 modulator tube through a .02 mfd. condenser. Leave the grid cap connected to the grid terminal of the tube, and connect the ground side of the test oscillator to the receiver ground.
2. Set the test oscillator frequency to 465 kilocycles (this must be accurate).
3. Align the second intermediate transformer by turning one of the trimmer screws accessible through holes in the top of the transformer shields up and down (increasing and decreasing capacity) until maximum reading is obtained on the output meter, after which adjust the other trimmer screw of the same transformer for maximum sensitivity.
4. Adjust the first intermediate transformer in the same manner as the second I. F. transformer.

TO ALIGN THE VARIABLE CONDENSER: It is important when aligning the gang condenser, padding and trimmer condensers to follow the procedure carefully, otherwise the receiver will be insensitive and the dial calibration will be incorrect. The padding and trimmer condensers located underneath the chassis will be referred to by their function as indicated on the circuit diagram.

1. Connect the high output side of the test oscillator through a 400 ohm resistor to the receiver antenna lead and the low side to the set ground.
2. Place the band selector switch for operation on the 5.8 to 18 megacycle band, tune the receiver dial, and set the test oscillator frequency to **exactly 18 megacycles.**

Rotate gang condenser so that plates are completely out of mesh and then tune in the **18 megacycle signal to maximum output by adjusting the 18 megacycle oscillator trimmer.** When adjusting this trimmer, two peaks, the fundamental and the image peak will be noticed. **Care must be taken that the fundamental peak and not the image peak is used for aligning the receiver at 18 megacycles.** Always back off the trimmer to minimum capacity, then screw down the trimmer (add capacity) until the first peak which is the fundamental and the proper one to use is tuned in. If the trimmer is screwed down beyond the point where the first peak is received, the incorrect image peak will be tuned in. After completing adjustment of the oscillator trimmer at 18 megacycles always check to see if the proper peak has been used. To do this leave the test oscillator frequency at 18 megacycles, increase the output of the test oscillator and tune the receiver dial to approximately 17 megacycles. Then vary the receiver dial slightly to the right and left of 17 megacycles, and if the fundamental peak was used in aligning at 18 megacycles the test oscillator signal will be heard at approximately 17 megacycles on the receiver dial. If it is not possible to receive the signal, then the fundamental peak was not used and the 18 megacycle oscillator trimmer must be properly readjusted.

3. With band selector switch set for operation on 5.8 to 18 megacycle band tune the receiver dial and set test oscillator frequency to **exactly 15 megacycles and adjust 15 megacycle antenna** trimmer for maximum 15 megacycle signal sensitivity
4. Place band selector switch for operation on 1.7 to 5.8 megacycle band, tune the receiver dial, and set test oscillator frequency to **exactly 5.8 megacycles.**

Rotate gang condenser so that plates are completely out of mesh and **bring in 5.8 megacycle signal to maximum output by** adjusting the 5.8 megacycle oscillator trimmer.

5. Replace the 400 ohm resistor in series with test oscillator lead with a 200 mmfd condenser, place the band selector switch for operation on the 540 to 1720 kilocycle band and set test oscillator frequency to **exactly 1720 kilocycles.**

Rotate gang condenser so that plates are completely out of mesh and **bring in the 1720 kilocycle signal to maximum output by adjusting 1720 kilocycle oscillator trimmer.**

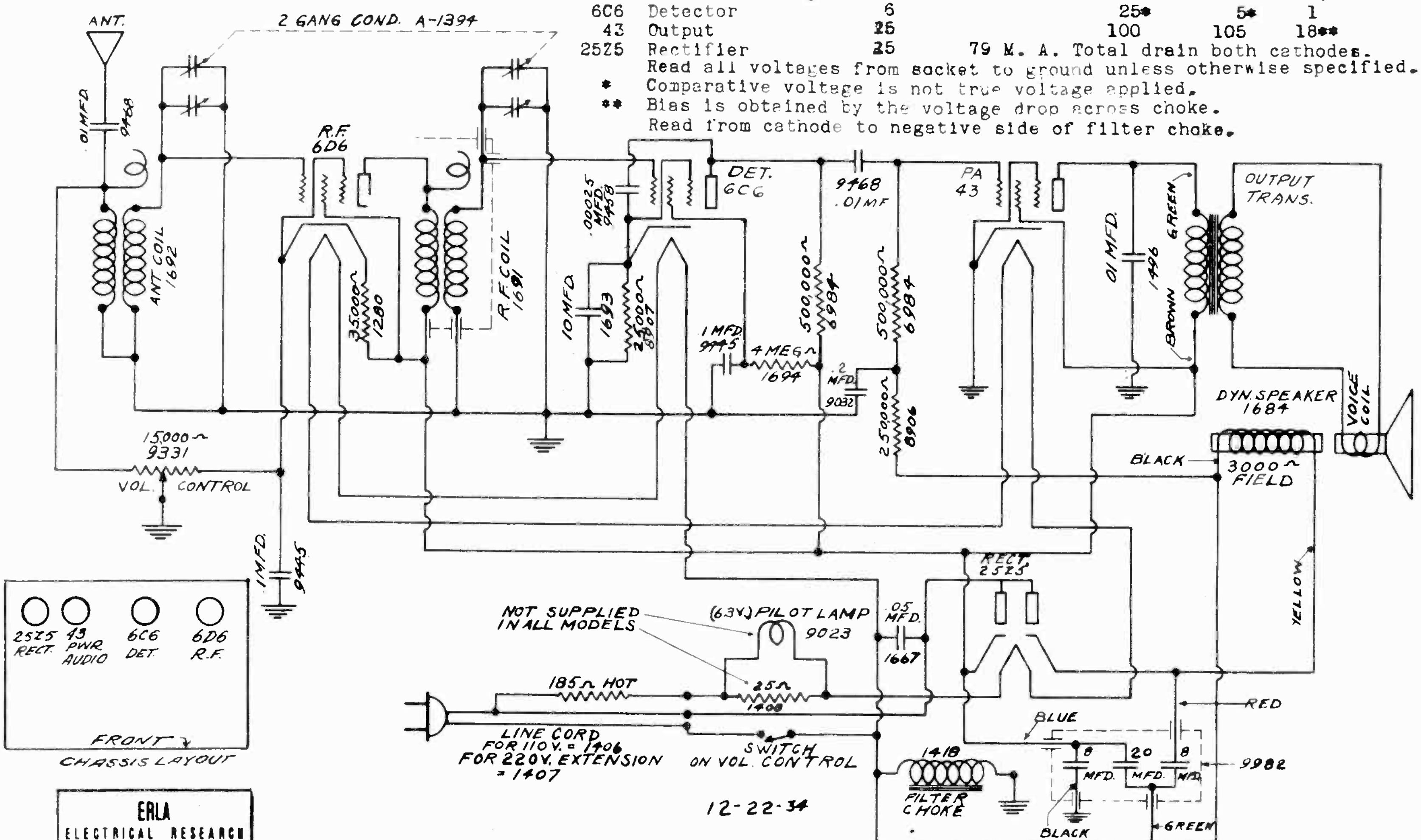
6. With band selector switch placed for operation on the 540 to 1720 kilocycle band set test oscillator frequency and receiver dial to **exactly 1100 kilocycles.** Adjust 1400 kilocycle preselector and antenna trimmers for maximum 1400 kilocycle signal sensitivity.
7. Leave band selector switch for operation on 540 to 1720 kilocycle band, tune receiver dial and set test oscillator frequency to approximately 600 kilocycles. While rocking gang condenser slightly to right and left adjust 600 kilocycle oscillator padder for maximum sensitivity.

MODEL 4100-B
Schematic, Voltage
Socket, Alignment

SENTINEL RADIO CORP.

TUBE		FILAMENT	PLATE	SCREEN	CATHODE
6D6	Radio Frequency	6	105	105	3.5
6C6	Detector	6	25*	5*	1
43	Output	25	100	105	18**
25Z5	Rectifier	25	79 M. A. Total drain both cathodes.		

Read all voltages from socket to ground unless otherwise specified.
* Comparative voltage is not true voltage applied.
** Bias is obtained by the voltage drop across choke. Read from cathode to negative side of filter choke.



ERLA
ELECTRICAL RESEARCH LABORATORIES, INC. CHICAGO

SCALE	DRAWN T.R.
CHECKED	APPD.

NOTE:
1. DOTTED LINES DENOTE SHIELDING.
2. ALL NOS. SHOWN RELATIVE TO PARTS ARE OUR PART NUMBERS.
3. NUMBERS SHOWN WITH PREFIX "A" ARE COMPLETE ASSEMBLIES.

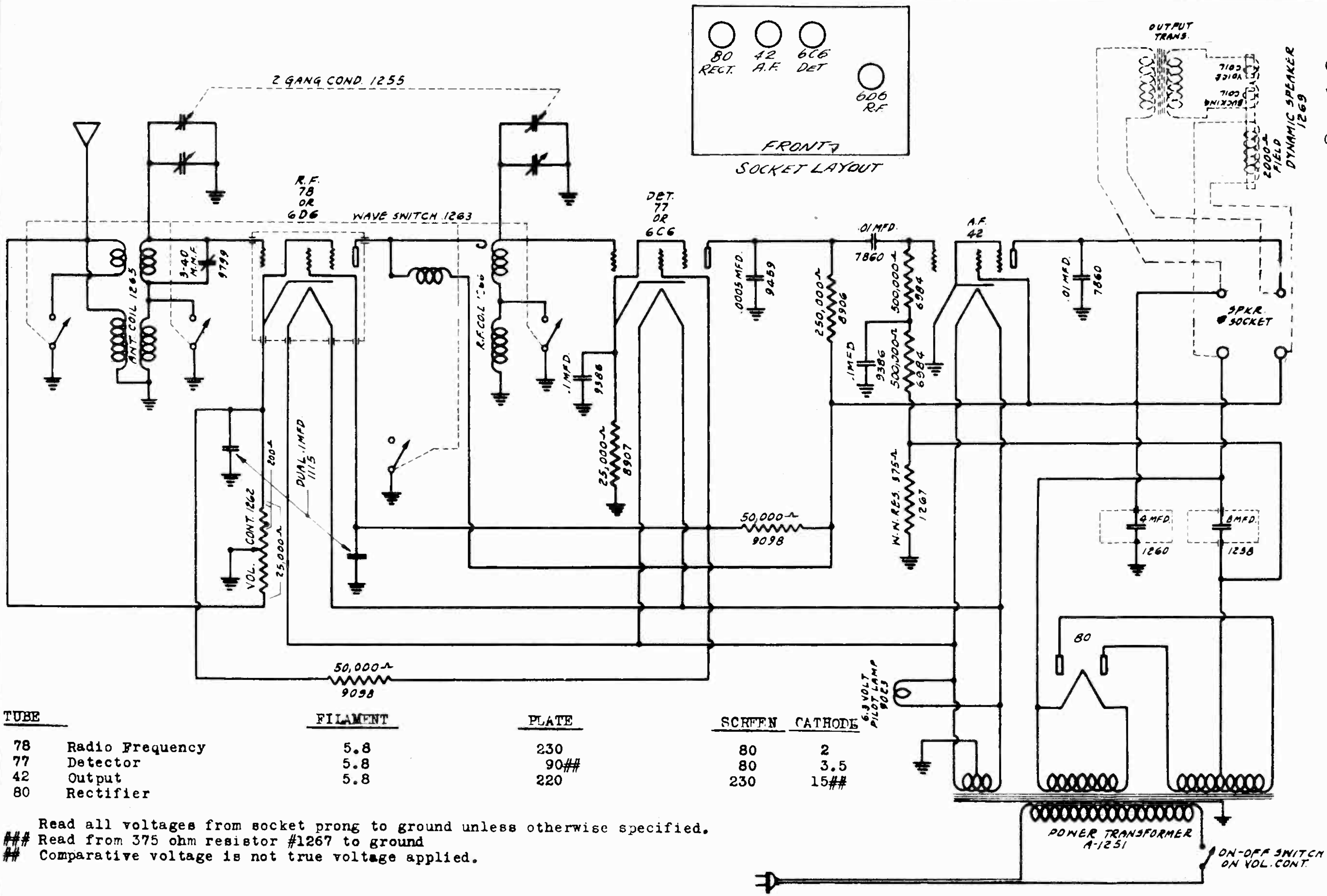
DO NOT SCALE THIS DRAWING WORK TO DIMENSIONS SHOWN

DIMENSION TOLERANCES	MATERIAL	
	USED ON MODEL 4100 B	
	FINISH	REQ'D.

2. Place the band selector switch for operation on the broadcast band, tune the receiver to exactly 1400 kilocycles on the dial and set the test oscillator frequency to 1400 kilocycles. THEN BRING IN THE 1400 KILOCYCLE SIGNAL TO MAXIMUM OUTPUT BY ADJUSTING THE TRIMMER CONDENSERS LOCATED ON TOP OF THE GANG CONDENSER.

MODEL 4500
Schematic, Socket
Voltage, Alignment

SENTINEL RADIO CORP.



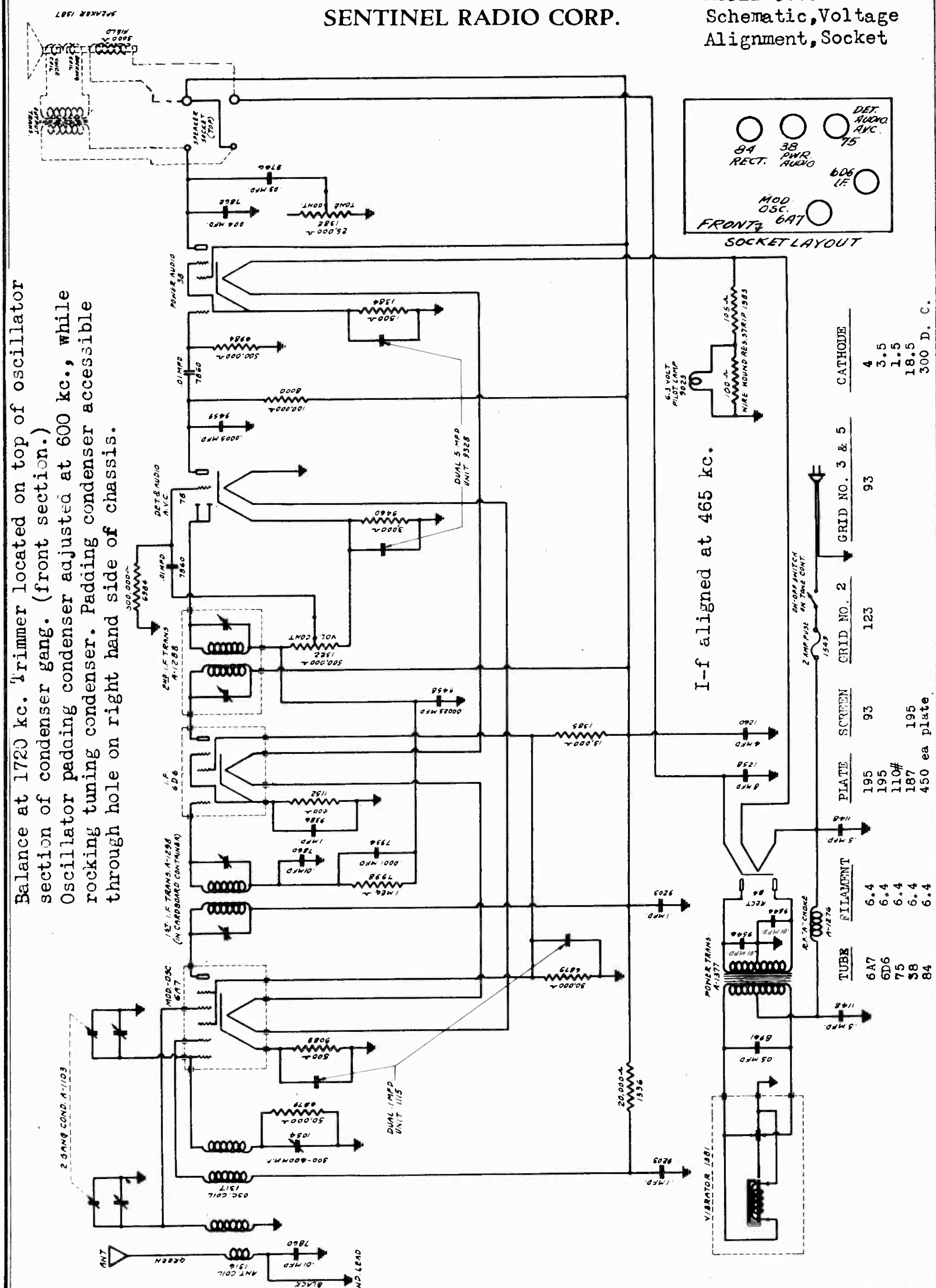
TUBE		FILAMENT	PLATE	SCREEN	CATHODE
78	Radio Frequency	5.8	230	80	2
77	Detector	5.8	90##	80	3.5
42	Output	5.8	220	230	15##
80	Rectifier				

Read all voltages from socket prong to ground unless otherwise specified.
Read from 375 ohm resistor #1267 to ground
Comparative voltage is not true voltage applied.

Balance at 1400 kc. Trimmers on top of gang condenser
Short wave adjustment at 4 mc. Trimmer on top of coil on top of chassis

SENTINEL RADIO CORP.

MODEL 5600
Schematic, Voltage
Alignment, Socket



Balance at 1720 kc. Trimmer located on top of oscillator section of condenser gang. (front section.)
Oscillator padding condenser adjusted at 600 kc., while rocking tuning condenser. Padding condenser accessible through hole on right hand side of chassis.

I-f aligned at 465 kc.

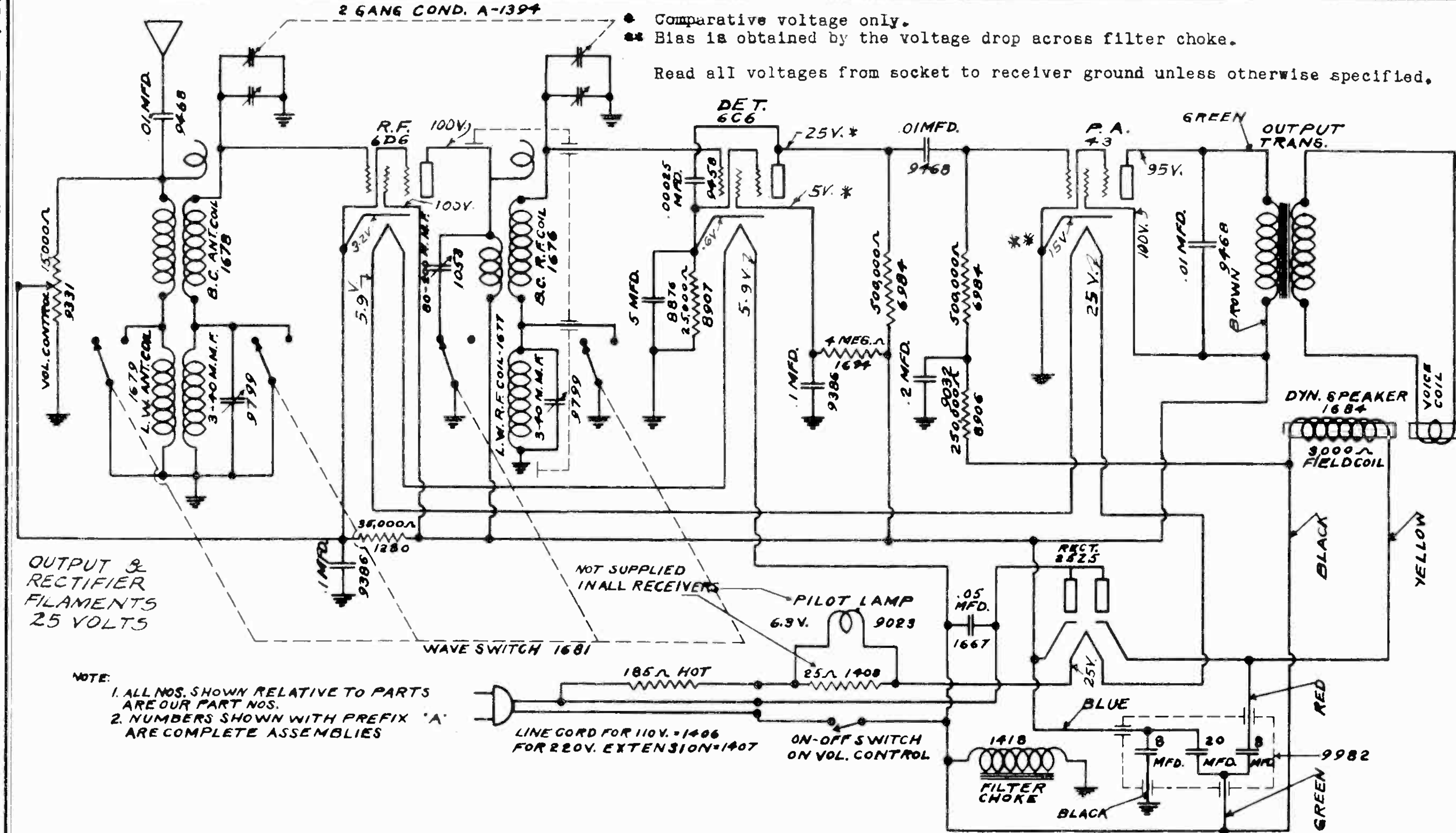
TUBE	FILAMENT	PLATE	SCREEN	GRID NO. 2	GRID NO. 3 & 5	CATHODE
6A7	6.4	195	93	123	93	4
6D6	6.4	195				3.5
75	6.4	110#				1.5
38	6.4	187	195			18.5
84	6.4	450 ea plate				300 D. C.

MODEL 4800
Schematic, Socket
Alignment, Voltage

SENTINEL RADIO CORP.

- * Comparative voltage only.
- ** Bias is obtained by the voltage drop across filter choke.

Read all voltages from socket to receiver ground unless otherwise specified.

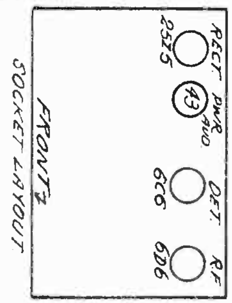


2. Place the band selector switch for operation on the 1500-540 kilocycle band, tune the receiver dial and set the test oscillator frequency to exactly 1400 kilocycles. Next adjust the two trimmer condensers located on top of the gang condenser for maximum 1400 kilocycle signal sensitivity.

3. Adjust the band selector switch for operation on the 350-140 kilocycle band, set the receiver dial and the test oscillator frequency to EXACTLY 150 kilocycles. Then bring in the 150 kilocycle signal to maximum output by adjusting the trimmer condenser located on and accessible through the hole in the back of the chassis. If adjustment of this trimmer causes the receiver to oscillate always adjust to the point where oscillation does not occur.

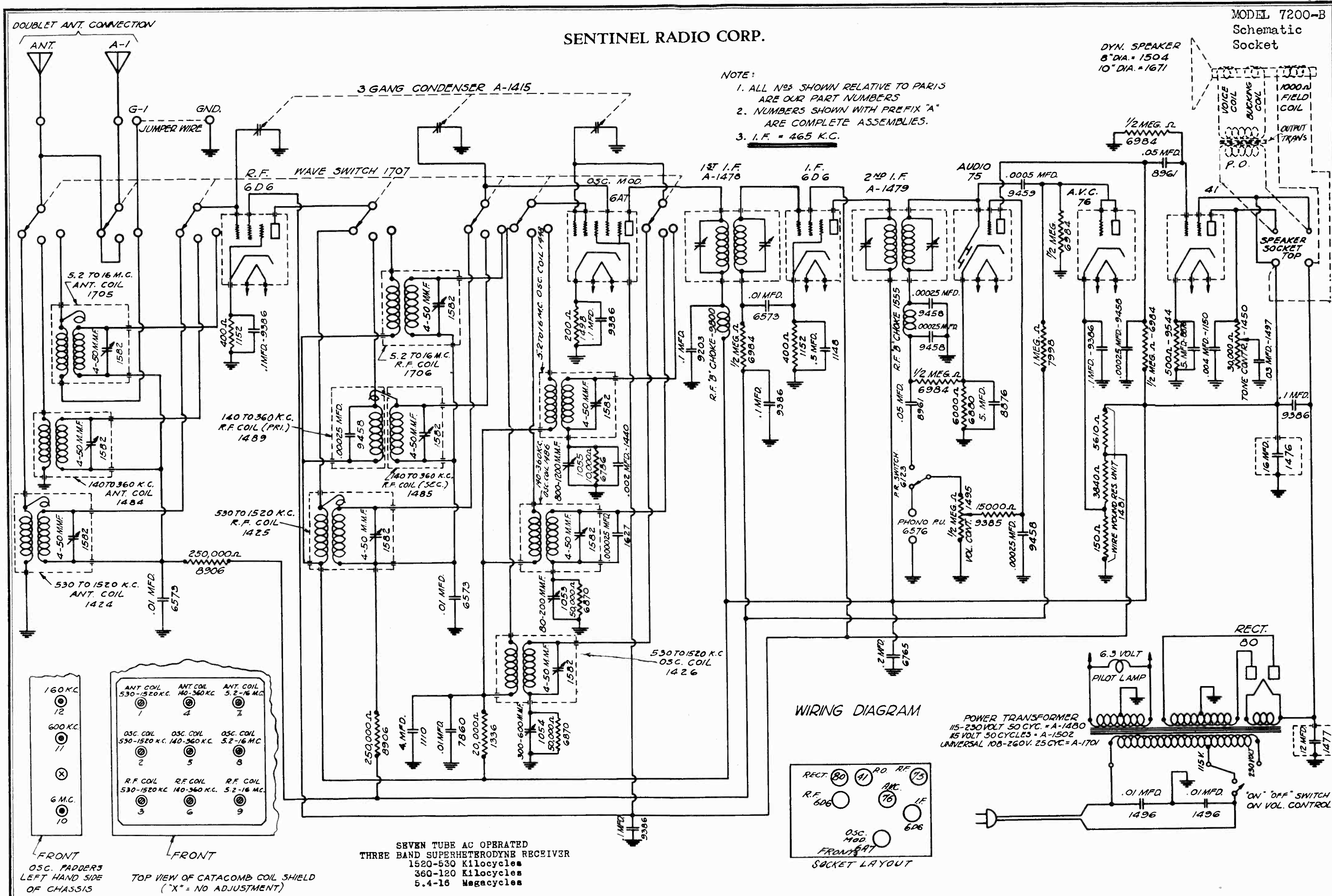
4. Leave the band selector switch for operation on the same band (350-140 kilocycles) and set the receiver dial and the test oscillator frequency to 340 kilocycles. Bring in this 340 kilocycle signal to maximum output by adjusting the trimmer condenser located on the coil underneath the chassis.

5. With the band selector switch, the test oscillator frequency, and the receiver dial set at 340 kilocycles, adjust the trimmer condenser mounted on the coil located above the chassis underneath the metal shield for maximum sensitivity.



MODEL 7200-B
Schematic
Socket

SENTINEL RADIO CORP.



SEVEN TUBE AC OPERATED
THREE BAND SUPERHETERODYNE RECEIVER
1520-530 Kilocycles
360-120 Kilocycles
5.4-16 Megacycles

MODEL 7200-B
Alignment
Voltage

SENTINEL RADIO CORP.

INTERMEDIATE ALIGNMENT:

Set the test oscillator frequency to 465 kilocycles. (This must be accurate).

Align the first intermediate transformer by turning one of the trimmer screws up and down (increasing and decreasing capacity) until maximum reading is obtained on the output meter, after which adjust the other trimmer screw of the same transformer for maximum sensitivity.

Adjust the other intermediate transformer in the same manner.

NOTE: Two type intermediate transformer trimmers have been used in this receiver. One type has two parallel holes in the top of the shield, one for each trimmer. The other type has a brass hex nut for adjusting one trimmer, the other intermediate trimmer being adjusted with the trimmer screw located inside of the brass hex nut. Regardless of which type trimmer is used, the procedure is the same.

TO ALIGN THE VARIABLE CONDENSER:

Adjustment of the trimmer condensers located inside of and accessible through the holes found in the top of the catacomb shield (mounted on top and in the left hand front corner of the receiver) and the padder condensers mounted on the left hand side of the chassis, will be referred to by numbers as indicated on the circuit diagram showing the relative location of these trimmers.

1. Connect the high output side of the test oscillator to the receiver antenna post and the ground to the ground post.

2. Place the band selector switch for operation on the 1520 to 535 kilocycle (broadcast) band. Tune the receiver to exactly 1400 kilocycles on the dial and set the test oscillator frequency to EXACTLY 1400 KILOCYCLES. THEN BRING IN THE 1400 KILOCYCLE SIGNAL TO MAXIMUM OUTPUT BY ADJUSTING THE TRIMMER MARKED NO. 2 ON CATACOMB DIAGRAM, after which adjust No. 1 and No. 3 trimmers in the order named for maximum sensitivity.

3. Leave the band selector switch for operation on the broadcast band (1520 to 535 kilocycles) and tune the receiver and set the oscillator to approximately 600 kilocycles. Then adjust the 600 kilocycle padding condenser No. 11, which is located on and accessible through the hole in the left hand side of the chassis, for maximum sensitivity. As this adjustment is quite critical, it is necessary to rock the variable condenser slightly to the right and to the left to find the point of greatest sensitivity.

4. Recheck the alignment at 1400 kilocycles as the 600 kilocycle adjustment may have changed the alignment at 1400 kilocycles.

5. Place the band selector switch for operation on the 360 to 120 kilocycle band and set the oscillator frequency and tune the receiver dial to EXACTLY 350 KILOCYCLES. THEN TUNE IN THIS 350 KILOCYCLE SIGNAL TO MAXIMUM OUTPUT BY ADJUSTING CATACOMB TRIMMER NO. 5, next adjust trimmers No. 4 and 6 for maximum sensitivity.

6. With the band selector switch in the same position, tune the receiver dial and set the oscillator frequency to approximately 150 kilocycles and then while rocking the variable condenser slightly to the right and left, adjust the 150 kilocycle trimmer No. 12 (located on the left hand side of the chassis) for maximum sensitivity.

7. Recheck 350 kilocycle adjustments.

8. Adjust the band selector switch for operation on the 5.4 to 16 megacycle band and tune the receiver dial and set the oscillator frequency to exactly 15 megacycles. When adjusting catacomb trimmer No. 8 two peaks (the fundamental and the image peak) will be noticed. CARE MUST BE TAKEN SO THAT THE FUNDAMENTAL PEAK AND NOT THE IMAGE PEAK IS USED FOR ALIGNING THE RECEIVER AT 15 MEGACYCLES. First back off catacomb trimmer No. 8 to minimum capacity, next screw down the trimmer (add capacity) until the first peak which is the fundamental and the one you are to use is tuned in. If the trimmer is screwed down beyond the point where this first peak is received, the incorrect image peak will be tuned in. When the first peak has been located adjust catacomb trimmer No. 8 TO BRING IN THE 15 MEGACYCLE SIGNAL TO MAXIMUM OUTPUT. After completing this adjustment always check to see if the proper peak has been used. To do this leave the test oscillator frequency at 15 megacycles and increase the output of the test oscillator and then tune the receiver dial to approximately 14 megacycles. Vary the receiver dial slightly to the right and left of 14 megacycles and if the fundamental peak was used in aligning at 15 megacycles the test oscillator signal will be heard at approximately 14 megacycles on the set dial. If it is not possible to receive the signal then the fundamental peak was not used and the 15 megacycle adjustment of trimmer No. 8 must be gone over and properly adjusted. After correctly completing catacomb trimmer No. 8 adjustment adjust catacomb trimmers No. 7 and 9 for maximum sensitivity.

9. Leave the band selector switch for operation on 5.4 to 16 megacycle band, set the oscillator frequency and tune the receiver dial to approximately 6 megacycles. While rocking the variable condenser slightly to the right and left, adjust the 6 megacycle trimmer No. 10 (located on the left hand side of the chassis) for maximum sensitivity.

10. Recheck 15 megacycle adjustments

This completes the alignment and it is recommended that all of the adjustments be gone over again. Generally it will be found that improved results can be obtained if this is done. Assuming that all tubes and component parts of the set are okeh, extreme inaccuracies in the dial calibration, low sensitivity, and poor selectivity are indications that the alignment procedure has not been followed. Should these conditions be apparent, proceed to realign, starting at the IF alignment and carefully follow each step in the order given.

VOLTAGE TABLE

Line Voltage : 115 volt 60 cycle
Volume Control : Full on
Wave Band : Broadcast

TUBE		FIL.	PLATE	SCREEN	CATHODE	GRID NO. 1	GRID NO. 2	GRID NO. 3 & 5
6A7	Oscillator & 1st Detector	6.2	250	94	2.5	4.5	175	94
6D6	Radio Frequency	6.2	250	94	3.4			
6D6	Intermediate Frequency	6.2	250	94	3.2			
75	2nd Detector & 1st Audio	6.2	70*		1.2			
76	Automatic Volume Control	6.2			3.4			
41	Output	6.2	250	94	15			
80	Rectifier	4.9		80 M. A. Total Drain				

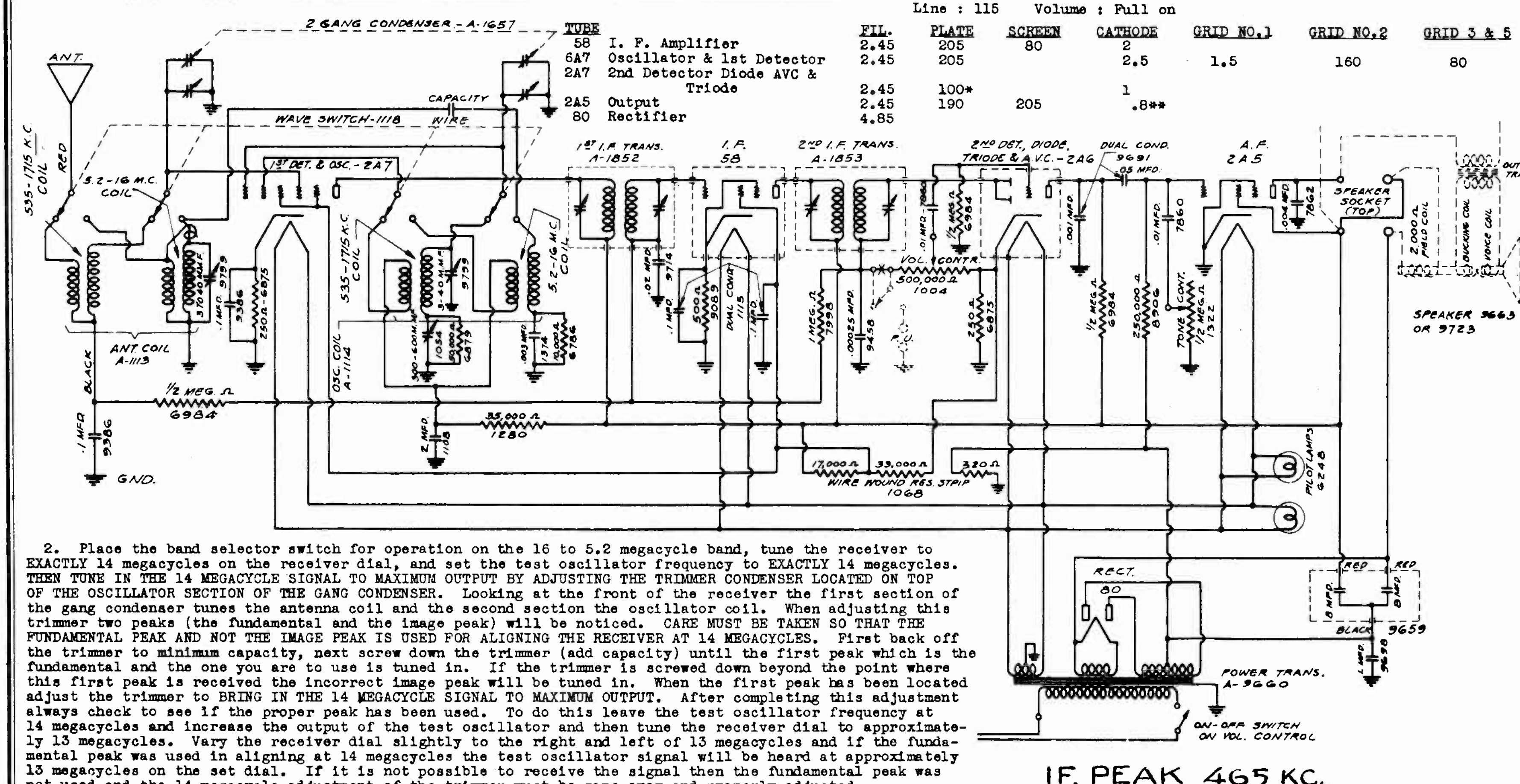
* Triode Plate
Read all voltages from socket to chassis with 1000 ohm per volt voltmeter.

MODEL 5700-B
Schematic, Socket Voltage, Alignment

SENTINEL RADIO CORP.

Line : 115 Volume : Full on

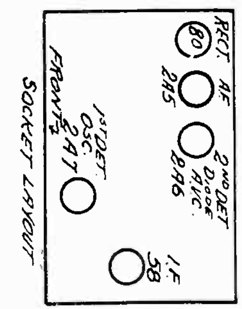
TUBE		FIL.	PLATE	SCREEN	CATHODE	GRID NO.1	GRID NO.2	GRID 3 & 5
58	I. F. Amplifier	2.45	205	80	2			
6A7	Oscillator & 1st Detector	2.45	205		2.5	1.5	160	80
2A7	2nd Detector Diode AVC & Triode	2.45	100*		1			
2A5	Output	2.45	190	205	.8**			
80	Rectifier	4.85						



IF. PEAK 465 KC.

* Triode Plate

** From grid to chassis



2. Place the band selector switch for operation on the 16 to 5.2 megacycle band, tune the receiver to EXACTLY 14 megacycles on the receiver dial, and set the test oscillator frequency to EXACTLY 14 megacycles. THEN TUNE IN THE 14 MEGACYCLE SIGNAL TO MAXIMUM OUTPUT BY ADJUSTING THE TRIMMER CONDENSER LOCATED ON TOP OF THE OSCILLATOR SECTION OF THE GANG CONDENSER. Looking at the front of the receiver the first section of the gang condenser tunes the antenna coil and the second section the oscillator coil. When adjusting this trimmer two peaks (the fundamental and the image peak) will be noticed. CARE MUST BE TAKEN SO THAT THE FUNDAMENTAL PEAK AND NOT THE IMAGE PEAK IS USED FOR ALIGNING THE RECEIVER AT 14 MEGACYCLES. First back off the trimmer to minimum capacity, next screw down the trimmer (add capacity) until the first peak which is the fundamental and the one you are to use is tuned in. If the trimmer is screwed down beyond the point where this first peak is received the incorrect image peak will be tuned in. When the first peak has been located adjust the trimmer to BRING IN THE 14 MEGACYCLE SIGNAL TO MAXIMUM OUTPUT. After completing this adjustment always check to see if the proper peak has been used. To do this leave the test oscillator frequency at 14 megacycles and increase the output of the test oscillator and then tune the receiver dial to approximately 13 megacycles. Vary the receiver dial slightly to the right and left of 13 megacycles and if the fundamental peak was used in aligning at 14 megacycles the test oscillator signal will be heard at approximately 13 megacycles on the set dial. If it is not possible to receive the signal then the fundamental peak was not used and the 14 megacycle adjustment of the trimmer must be gone over and properly adjusted.

3. Place the band selector switch for operation on the 1715 to 535 kilocycle band, set the oscillator to EXACTLY 1400 kilocycles and tune the receiver dial to EXACTLY 1400 kilocycles. BRING IN THIS 1400 KILOCYCLE SIGNAL TO MAXIMUM OUTPUT BY ADJUSTING THE SMALL TRIMMER CONDENSER which is located underneath near the center and towards the front of the chassis.

4. Next adjust the trimmer condenser on top of the antenna section of the gang condenser (front section) for maximum 1400 kilocycle signal output.

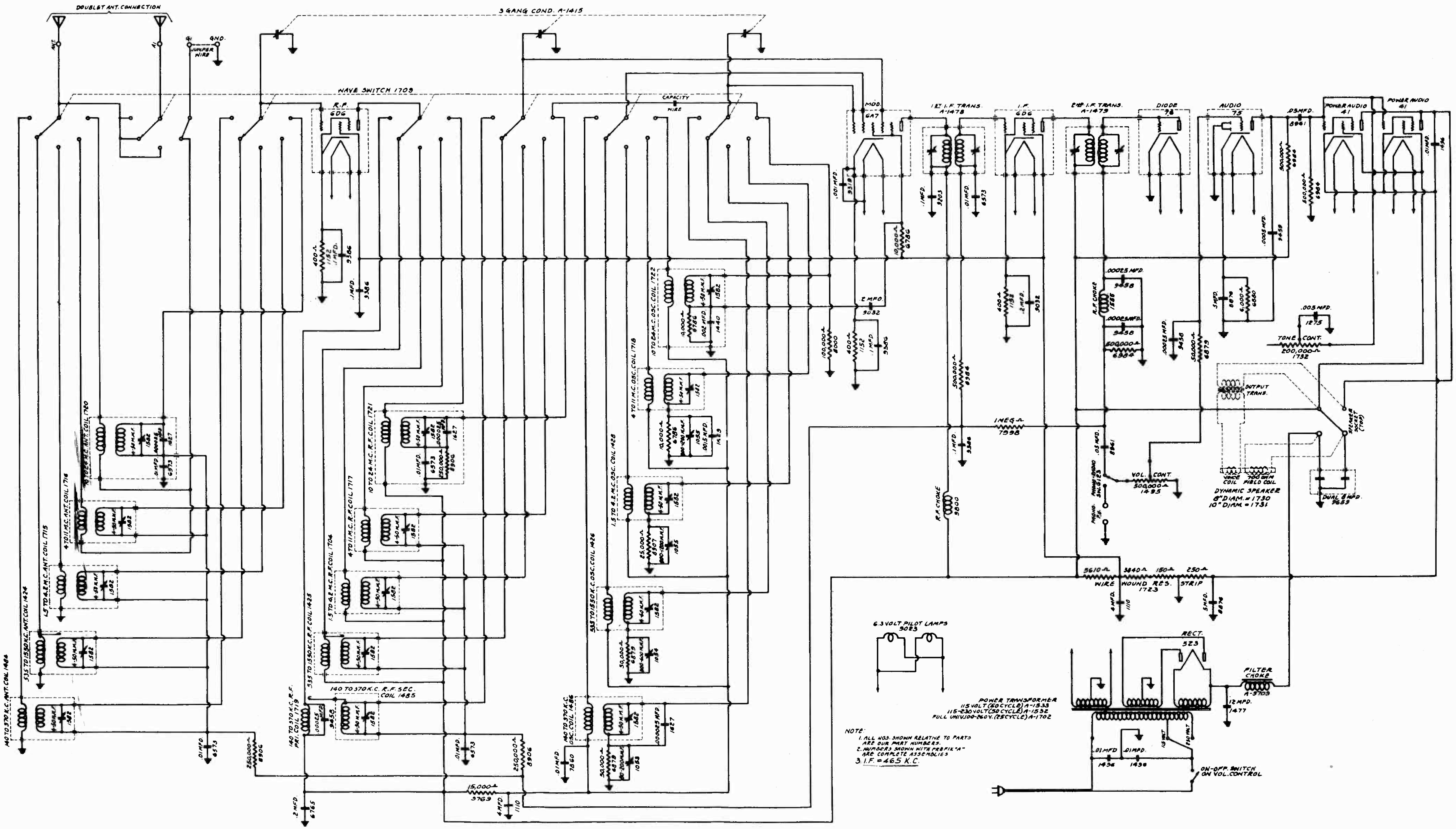
5. Leave the band selector switch for operation on the 1715 to 535 kilocycle band, set the test oscillator frequency to approximately 600 kilocycles, and adjust the receiver dial to approximately 600 kilocycles. Then while rocking the variable condenser slightly to the right and left adjust the 600 kilocycle padding condenser, which is located below the speaker and accessible through the hole in the front of the chassis for maximum output.

6. Recheck the 1400 kilocycle adjustment.

7. Place the band selector switch for operation on the 16 to 5.2 megacycle band, tune the receiver dial and set the oscillator frequency to EXACTLY 14 megacycles. Then adjust the trimmer condenser, which is located underneath and near the center of the right hand side of the chassis for maximum 14 megacycle signal output.

MODEL 8200-B
Schematic

SENTINEL RADIO CORP.



MODEL 8200-B
Alignment

SENTINEL RADIO CORP.

SERVICE NOTES
for the
FIVE BAND
EIGHT TUBE ALL WAVE AC SUPERHETERODYNE RECEIVER

ALIGNMENT PROCEDURE: Realignment of this receiver should never be necessary unless one of the oscillator, antenna, or RF coils has been replaced, and then only the frequency band in which that coil is used will require realignment. Lack of sensitivity, selectivity, and poor tone quality may be due to any one or a combination of causes such as weak or defective tubes or speaker, inadequate or excessively long antenna, open or grounded bias resistor, bypass condenser, etc. Under no circumstances should realignment be attempted until all other possible sources have been first thoroughly investigated and have definitely proven not to be the cause. If an IF tube is replaced it is advisable to realign the IF amplifier, particularly if the replacement tube is one of a different manufacture than the one in the receiver. IT IS IMPERATIVE THAT AN ACCURATELY CALIBRATED OSCILLATOR BE USED WITH SOME TYPE OF OUTPUT MEASURING DEVICE.

INTERMEDIATE ALIGNMENT:

1. Connect the high side of the oscillator output to the control grid of the 6A7 oscillator & modulator tube. Leave the grid cap disconnected and connect a 1 meg ohm resistor from the modulator grid to the chassis base.

2. Set the test oscillator frequency to 465 kilocycles. (This must be accurate).

3. Align the first intermediate transformer by turning one of the trimmer screws accessible through the holes in the top of the coil shield up and down (increasing and decreasing capacity) until maximum reading is obtained on the output meter, after which adjust the other trimmer screw of the same transformer for maximum sensitivity.

4. Adjust the other intermediate transformer in the same manner.

TO ALIGN THE VARIABLE CONDENSER: It is important when aligning the gang condensers, padder condensers, and trimmer condensers to follow the procedure carefully, otherwise the receiver will be insensitive and the dial calibration will be incorrect. The trimmer and padder condensers will be referred to by number as indicated on the diagram which shows their relative locations on the chassis.

1. Connect the high output side of the test oscillator through a .00025 Mfd. condenser to the set antenna post, and the ground to the set ground.

2. Place the band selector switch for operation on the 10 to 24 megacycle band, tune the receiver dial to EXACTLY 22 MEGACYCLES AND SET THE TEST OSCILLATOR FREQUENCY TO EXACTLY 22 MEGACYCLES. THEN TUNE IN THE 22 MEGACYCLE SIGNAL TO MAXIMUM OUTPUT BY ADJUSTING TRIMMER NO. 14. Next rock the gang condenser slightly to the right and left and adj st trimmers No. 13 and 15 for maximum 22 megacycle signal sensitivity. CARE MUST BE TAKEN SO THAT THE FUNDAMENTAL AND NOT THE IMAGE PEAK IS USED FOR ALIGNING THE RECEIVER AT 22 MEGACYCLES. When adjusting trimmer No. 14 always back off the trimmer to minimum capacity and then screw down the trimmer (add capacity) until the first peak, which is the fundamental and the one you are to use is tuned in. If the trimmer is screwed down beyond the point where the first peak is received, the incorrect image peak will be tuned in. After completing adjustment of trimmers No. 14, 13,and 15 always check to see if the proper peak has been used. To do this leave the test oscillator frequency at 22 megacycles, increase the output of the test oscillator, and tune the receiver dial to approximately 21 megacycles. Vary the receiver dial slightly to the right and left of 21 megacycles and if the fundamental peak was used in aligning at 22 megacycles the test oscillator signal will be heard at approximately 21 megacycles on the receiver dial. If it is not possible to receive the signal at approximately 21 megacycles, then the fundamental peak was not used and the 22 megacycle adjustment of trimmers No. 13, 14, and 15 must be gone over and properly adjusted.

3. Place the band selector switch for operation on the 4 to 11 megacycle band and set the receiver dial and the test oscillator frequency to EXACTLY 9.5 MEGACYCLES. When adjusting trimmer No. 10 the fundamental and the image peak will be noticed. CARE MUST BE TAKEN SO THAT THE FUNDAMENTAL AND NOT THE IMAGE PEAK IS USED FOR ALIGNING THE RECEIVER AT 9.5 MEGACYCLES. First back off trimmer No. 10 to minimum capacity then screw down the trimmer (add capacity) until the first peak, which is the fundamental and the proper one to use is tuned in. When the first peak has been located adjust trimmer No. 10 TO BRING IN THE 9.5 MEGACYCLE SIGNAL TO MAXIMUM OUTPUT. Next adjust trimmers No. 9 and 11 for maximum 9.5 megacycle sensitivity. After completing adjustment of trimmers No. 10, 11 and 9 always check to see if the proper peak has been used. To do this leave the test oscillator frequency at 9.5 megacycles and increase the test oscillator output. Vary the receiver dial slightly to the right and left of 8.5 megacycles and if the fundamental peak of trimmer No. 10 was used in aligning at 9.5 megacycles the test oscillator signal will be heard at approximately 8 megacycles on the receiver dial. If it is not possible to receive the signal, then the fundamental peak was not used and the 9.5 megacycle adjustment of trimmers No. 9, 10, and 11 must be gone over and properly adjusted.

4. Leave the band selector switch for operation on the 4 to 11 megacycle band and tune the receiver and set the test oscillator frequency to approximately 4.6 megacycles. Then while rocking the gang condenser slightly to the right and left adjust padder condenser No. 12 for maximum sensitivity.

5. Place the band selector switch for operation on the 1.5 to 4.2 megacycle band and tune the receiver dial and set the test oscillator frequency to EXACTLY 3.8 MEGACYCLES. THEN BRING IN THE 3.8 MEGACYCLE SIGNAL TO MAXIMUM OUTPUT BY ADJUSTING TRIMMER NO. 6, after which adjust trimmers No. 5 and 7 for maximum 3.8 megacycle signal sensitivity.

6. With the band selector switch in the same position (1.5 to 4.2 megacycle band) tune the receiver dial and set the test oscillator frequency to approximately 1.6 megacycles. Then while rocking the gang condenser slightly to the right and left, adjust padder condenser No. 8 for maximum 1.6 megacycle signal sensitivity.

7. Adjust the band selector switch for operation on the 1550 to 535 kilocycle band, tune the receiver dial and set the test oscillator frequency to EXACTLY 1400 KILOCYCLES. THEN BRING IN THE 1400 KILOCYCLE SIGNAL TO MAXIMUM OUTPUT BY ADJUSTING TRIMMER NO. 2, after which adjust trimmers No. 1 and 3 for maximum sensitivity

8. With the band selector switch set for operation on the 1550 to 535 kilocycle band tune the receiver dial and set the test oscillator frequency to approximately 600 kilocycles. Next while rocking the gang condenser slightly to the right and left adjust padder condenser No. 4 for maximum 600 kilocycle signal response.

9. Place the band selector switch for operation on the 140 to 370 kilocycle band, tune the receiver dial and set the test oscillator frequency to EXACTLY 340 KILOCYCLES. BRING IN THE 340 KILOCYCLE SIGNAL TO MAXIMUM OUTPUT BY ADJUSTING TRIMMER NO. 16, after which adjust trimmers No. 15 and 18 for maximum sensitivity.

10. With the band selector switch set for operation on the 140 to 370 kilocycle band tune the receiver dial and set the test oscillator frequency to approximately 160 kilocycles. While rocking the gang condenser slightly to the right and left adjust trimmer No. 19 for maximum 160 kilocycle signal response.

Alignment of all bands will rarely be necessary. If a coil on any one of the bands should become defective and replacement is necessary, then only the band in which the coil was replaced will require realignment. Wherever complete realignment has been made it is recommended that all of the adjustments be gone over again. Generally it will be found that improved results can be obtained if this is done. Assuming that all tubes and component parts of the set are okeh, then extreme inaccuracies in the dial calibration, low sensitivity, and poor selectivity are indications that the alignment procedure has not been followed. Should these conditions be apparent proceed to realign and carefully follow each step in the order given.

MODEL 8200-B
Voltage,Parts
Trimmers

SENTINEL RADIO CORP.

TUBE		FILAMENT	PLATE	SCREEN	CATHODE	GRID NO. 2	GRID NO. 3 & 5
6A7	Oscillator & Modulator	6.1	225		2.6	65	85
6D6	Radio Frequency	6.1	225	85	2.8		
6D6	Intermediate Frequency	6.1	225	85	2.8		
76	Automatic Volume Control	6.1			3.2		
75	2nd Detector & Audio	6.1	55*		.8		
41	Output	6.1	220	225	15		
41	Output	6.1	220	225	15		
5Z3	Rectifier	4.8	Total Drain 118 M.A.				

VOLUME CONTROL - FULL ON

WAVE BAND - 535-1550 K.C.

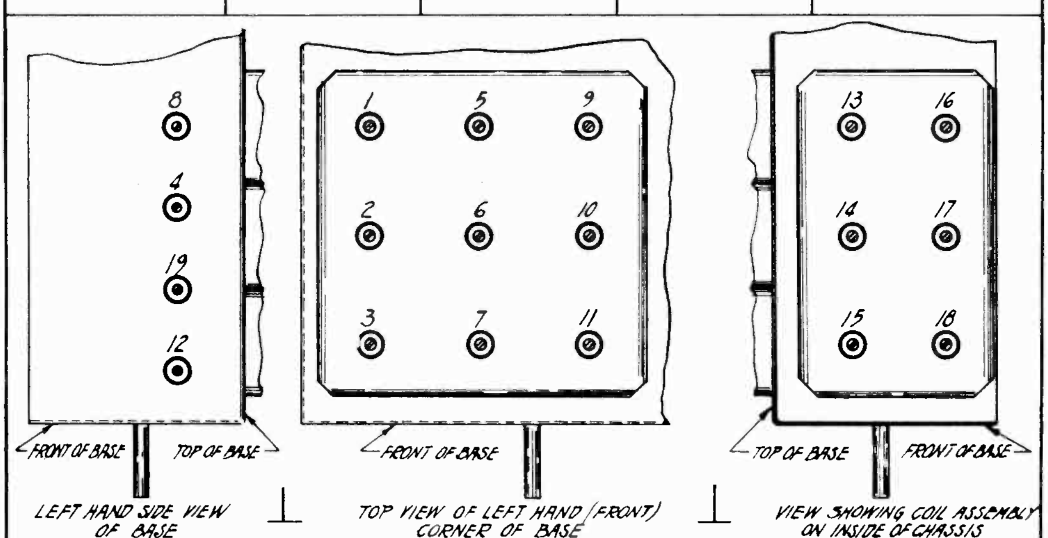
LINE VOLTAGE - 115 VOLTS

* Triode plate comparative voltage.
Read all voltages from socket to chassis with 1000 ohm per volt voltmeter.

PART NUMBER		LIST PRICE	PART NUMBER		LIST PRICE
1424	1550-535 K.C. Band Antenna Coil	$ .90	1055	Padding Condenser	$ .55
1425	1550-535 K.C. Band R. F. Coil	.95	1495	Volume Control & Off & On Switch	1.25
1426	1550-535 K.C. Band Oscillator Coil	.75	1732	Tone Control	.83
1715	1.5-4.2 M.C. Band Antenna Coil	1.00	9800	R. F. Choke	.22
1704	1.5-4.2 M.C. Band R. F. Coil	.95	1555	R. F.Choke	.70
1428	1.5-4.2 M.C. Band Oscillator Coil	.55	9458	.00025 Mfd. Moulded Condenser	.21
1716	4-11 M.C. Band Antenna Coil	1.00	9459	.0005 Mfd. Moulded Condenser	.21
1717	4-11 M.C. Band R. F. Coil	.95	9319	.001 Mfd. Moulded Condenser	.21
1718	4-11 M.C. Band Oscillator Coil	.95	1627	.000025 Mfd. Moulded Condenser	.21
1720	10-24 M.C. Band Antenna Coil	1.00	1628	.002 Mfd. Moulded Condenser	.21
1721	10-24 M.C. Band R. F. Coil	1.10	1629	.001 Mfd. Moulded Condenser	.21
1722	10-24 M.C. Band Oscillator Coil	.95	6765	.2 Mfd. 400 Volt Condenser	.26
1484	140-370 K.C. Band Antenna Coil	1.15	9203	.1 Mfd. 400 Volt Condenser	.20
1485	140-370 K.C. Band R. F. Coil	.90	8961	.05 Mfd. 400 Volt Condenser	.18
1719	140-370 K.C. Band R.F. (Pri.) Coil	.95	9386	.1 Mfd. 200 Volt Condenser	.19
1486	140-370 K.C. Band Oscillator Coil	.90	9032	.2 Mfd. 200 Volt Condenser	.23
1478	First I. F. Transformer	2.10	6573	.01 Mfd. 200 Volt Condenser	.17
1479	Second I. F. Transformer	2.10	1496	.01 Mfd. 600 Volt Condenser	.18
1415	Three Gang Condenser	4.40	1275	.005 Mfd. 400 Volt Condenser	.18
1709	Wave Switch	2.85	7860	.01 Mfd. 400 Volt Condenser	.17
9659	Dual 8 Mfd. Dry Electrolytic Condenser	2.80	1723	Vitreous Enameled Resistor	1.70
1477	12 Mfd. Wet Electrolytic Condenser	1.25	8906	250,000 Ohm 1/3 Watt Resistor	.19
1110	4 Mfd. Dry Electrolytic Condenser	1.14	6879	50,000 Ohm 1/3 Watt Resistor	.19
8876	5 Mfd. Dry Electrolytic Condenser	.85	8907	25,000 Ohm 1/3 Watt Resistor	.19
1532	115 Tapped 230 Volts 50-60 Cycle Power Transformer	6.25	6786	10,000 Ohm 1/3 Watt Resistor	.19
			9769	15,000 Ohm 1/3 Watt Resistor	.19
1533	115 Volt 50-60 Cycle Power Transformer	5.75	8000	100,000 Ohm 1/3 Watt Resistor	.19
1702	Full Universal Power Transformer	9.50	7998	1 Meg Ohm 1/3 Watt Resistor	.19
9709	Choke	1.60	6984	500,000 Ohm 1/3 Watt Resistor	.19
1420	Antenna and Ground Terminal Post Strip	.28	6880	6,000 Ohm 1/3 Watt Resistor	.19
6576	Phono Jacks	.14	1152	400 Ohm 1/3 Watt Resistor	.19
6123	Phono-Radio Switch	.55	6786	10,000 Ohm 1/3 Watt Resistor	.19
1514	Tuning Dial complete with Glass	2.75	1730	8" Dynamic Speaker	9.50
	Glass for above dial	.35	1731	10" Dynamic Speaker	11.00
1505	Two Speed Planetary Drive	1.10	1567	Large Bottom Section Tuning Knob	.30
9023	6.3 Volt .15 Ampere Pilot Light	.19	1568	Small Top Section Tuning Knob	.25
1582	Trimmer Condenser	.21	1571	Tone Control Knob	.25
1054	Padding Condenser	.55	1570	Band Selector Switch Knob	.30
1053	Padding Condenser	.50	1569	Volume Control Knob	.25

Prices are subject to change without notice. Part No. 8200-B

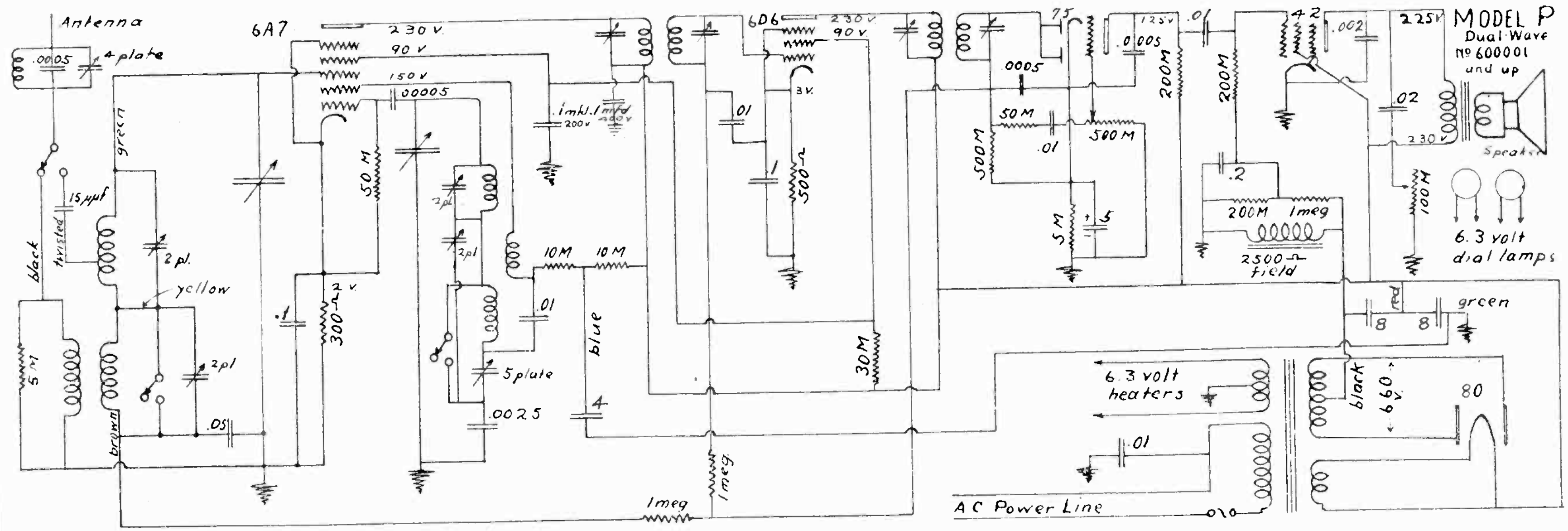
535-1550 K.C. BAND	1.5-4.2 M.C. BAND	4.0-11 M.C. BAND	10-24 M.C. BAND	140-370 K.C. BAND
1 - ANT. TRIMMER	5 - ANT. TRIMMER	9 - ANT. TRIMMER	13 - ANT. TRIMMER	16 - ANT. TRIMMER
2 - OSC. " "	6 - OSC. " "	10 - OSC. " "	14 - OSC. " "	17 - OSC. " "
3 - R.F. " "	7 - R.F. " "	11 - R.F. " "	15 - R.F. " "	18 - R.F. " "
4 - 600 K.C. OSC. PADDER	8 - 1.6 M.C. OSC. PADDER	12 - 4.6 M.C. OSC. PADDER		19 - 160 K.C. OSC. PADDER



VIEWS SHOWING ARRANGEMENT & LOCATION OF TRIMMERS & PADDERS.

MODEL P Dual Band
Above Serial 600001
Schematic, Voltage
Alignment

SIMPLEX RADIO CO.



IF PEAK 456 KC

OPERATING INSTRUCTIONS — MODEL P DUAL-BAND — Foreign and Domestic

CAUTION—Do not attempt to operate on current other than that noted on the instrument.

INSTALLATION—A good aerial, 25 to 50 feet long, well away from surrounding metal structures and power lines, is essential for best results. Power noise interferes especially with short-wave reception. If the set is located where power noise is prevalent it may be necessary to install an aerial high above the street and use a "transposition" lead-in to the set. A good ground connection (water pipe or equivalent) will also contribute to quieter reception.

CONTROL KNOBS—The left hand knob is, initially, the power switch, and thereafter, tone control. The second knob from the left is band selector switch. The third knob from the left is tuning control. The right hand knob is volume control.

SERVICE NOTES—If the radio fails to operate when unpacked, or stops working after a few days, proceed as follows: (1) Have the tubes checked. (2) Remove the chassis from the cabinet and check for loose connections. (3) Have a competent "Radio Service Man" check over entirely. Do not return unless you have made the above tests. This set left the factory carefully inspected.

The intermediate stages are carefully phased to 456 KC at the factory. Should rephasing be necessary, attach the output lead from a 456 KC test oscillator to the grid cap of he 6A7 tube, keep the signal to a very low audible value and carefully adjust the two trimmer screws in the top of each of the two tall cans to loudest volume. If an output meter is available it should be used across the two black leads at the speaker transformer. An oscillator covering a frequency from 550 KC to 16 MC should be used to rephase the R. F. The test oscillator output is attached to the aerial lead of the set. At all times keep the oscillator signal turned down to a low point of audibility. Trim the short-wave band first, then the broadcast band, setting the dial pointer to a frequency near the high frequency end of the scale in each case. The short-wave oscillator trimmer is located directly across the large (oscillator) coil looking at the under side of the set, and the R. F. short-wave trimmer at the right hand end of this coil. The broadcast band is next trimmed at the high frequency end of the broadcast scale, applying a signal from the oscillator corresponding to the dial setting and adjust the oscillator trimmer connected between the end of the oscillator coil and the porcelain base trimmer. Next trim the Broadcast R. F. by the trimmer connecting to the band switch. The broadcast band is next trimmed at the 550 KC end of the dial by adjusting the porcelain base trimmer at center of chassis until the signal is heard at the correct location on dial.

NOTE—Should it be necessary to write to the factory for parts or information, always give the serial number of the set as stamped on the back of the chassis.

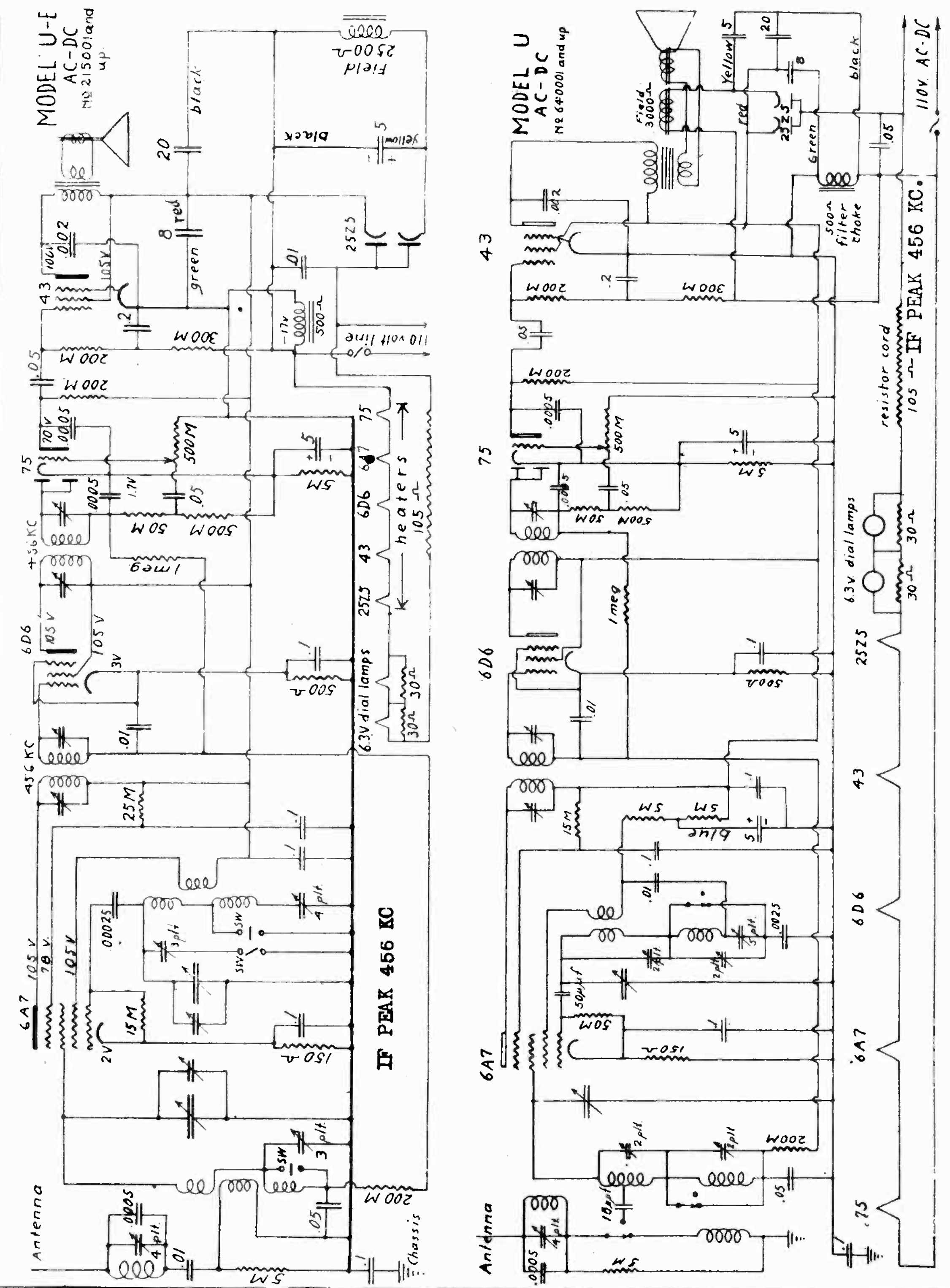
PHONOGRAPH—Install a sigle pole doulle-throw toggle switch near the 75 tube, disconnect the .01 mfd. condenser from the volume control and connect to one side of switch, connect the volume control to center terminal of the switch, connect one side of the phonograph pickup to remaining side of the switch and the other side of the pickup to "B" minus.

MODEL U AC-DC
Above Serial 640001
MODEL U-E, AC-DC
Above Serial 215001

SIMPLEX RADIO CO.

Schematics, Voltage Alignment

To rebalance set, remove from cabinet. Intermediates are first balanced by feeding a 456 KC signal into grid of 6A7 tube and adjusting trimmers in top of the two tall cans to greatest volume. Adjust wave trap in rear flange of chassis by turning the trimmer screw until a 456 KC signal applied to the antenna lead cannot be heard. Next, set band switch to broadcast position (counter-clock), turn tuning knob to 1400 KC, feed a 1400 KC signal into antenna lead and adjust trimmers on tuning condenser to greatest volume. Next, set band switch to long-wave (clockwise), turn tuning knob to 350 KC, feed a 350 KC signal into the antenna lead and adjust the two 3-plate trimmers on the under side of the panel to greatest volume. Turn tuning knob to 150 KC, set test oscillator to this frequency and adjust the 4-plate section of dual trimmer to maximum volume. Repeat the operations at 350 KC and 150 KC until trimming at one frequency does not affect the other.

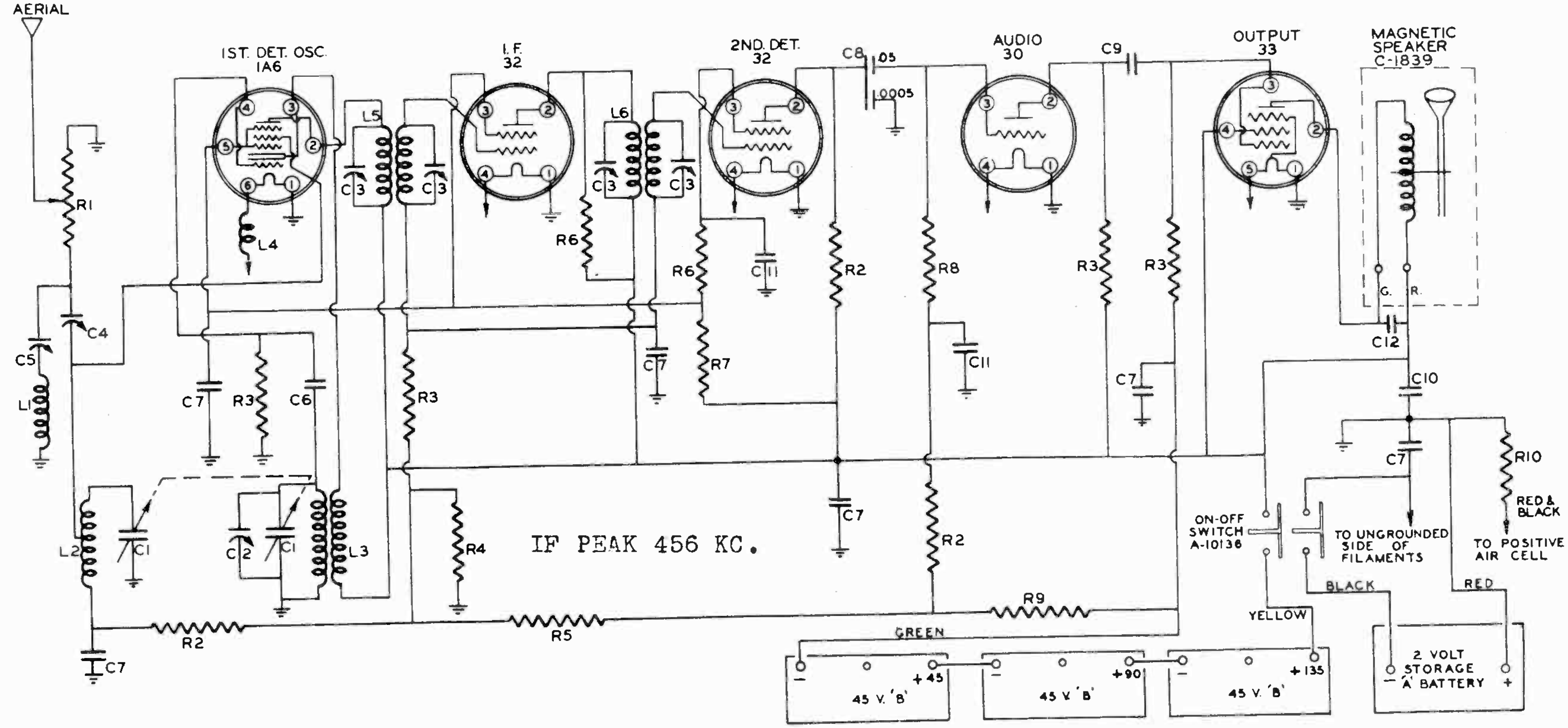


Short-wave oscillator trimmer attaches between the two ends of the oscillator coil located at the right. Broadcast oscillator trimmer is the lower section of the dual trimmer at the end of the chassis. Short-wave R. F. trimmer is at the lower end of the oscillator coil and the broadcast R. F. trimmer is to the left of this same coil.

PHONOGRAPH—Install a single pole double-throw toggle switch in rear of chassis nearest the 75 tube. Disconnect the .01 mfd. condenser from volume control and attach to one side of toggle switch, connect middle terminal of switch to terminal of volume control just disconnected, connect one side of phonograph pickup to remaining terminal of switch and other side to "B" minus.

SPARKS-WITHINGTON CO.

SCHEMATIC DIAGRAM
SPARTON MODEL 58 SUPERHETERODYNE COUNTRY HOME RECEIVER
BATTERY OPERATED



C1	VARIABLE CONDENSER	B-5650-1
C2	ADJUSTABLE CONDENSER	
C3	I.F. TRANSFORMER TRIMMERS	
C4	ANTENNA TRIMMER	A-7809-2
C5	EQUALIZING TRIMMER	A-7809-3
C6	.00025 MFD. MOLDED	A-5175
C7	.2 MFD. 200 V.	A-6869-A
C8	.05-.0005 MFD. 200 V.	A-9576
C9	.025 MFD. 200 V.	A-10206
C10	2 MFD. 150 V.	A-10318
C11	.05 MFD. 200 V.	A-9919
C12	.006 MFD. 600 V.	A-4434

R1	25,000 Ω	VOLUME CONTROL	A-10316
R2	250,000 Ω	.25 W.	B-5737-1
R3	50,000 Ω	.25 W.	B-5737-4
R4	200 Ω	WIREWOUND	B-5243-2
R5	100 Ω	WIREWOUND	B-5243-14
R6	500,000 Ω	.25 W.	B-5737-5
R7	25,000 Ω	.5 W.	B-4114-18
R8	100,000 Ω	.25 W.	B-5737-2
R9	750 Ω	WIREWOUND	B-5243-8
R10	.47 Ω	WIREWOUND	A-10000-3

L1	ANT. CHOKE COIL	A-9750
L2	NO. 1 R.F. COIL	A-11564
L3	OSCILLATOR COIL	A-10330
L4	CATHODE CHOKE	A-10401
L5	NO. 1 I.F. TRANSFORMER	A-10229-4
L6	NO. 2 I.F. TRANSFORMER	A-10356-1

MODEL 58
Voltage, Socket
Trimmers

SPARKS-WITHINGTON CO.

(ORIGINAL) EFFECTIVE OCTOBER 3, 1934

Sparton Model 58 Country Home Superheterodyne

(Battery Operated)

Schematic Drawing and Voltage-Resistance Chart

VOLTAGE-RESISTANCE CHART

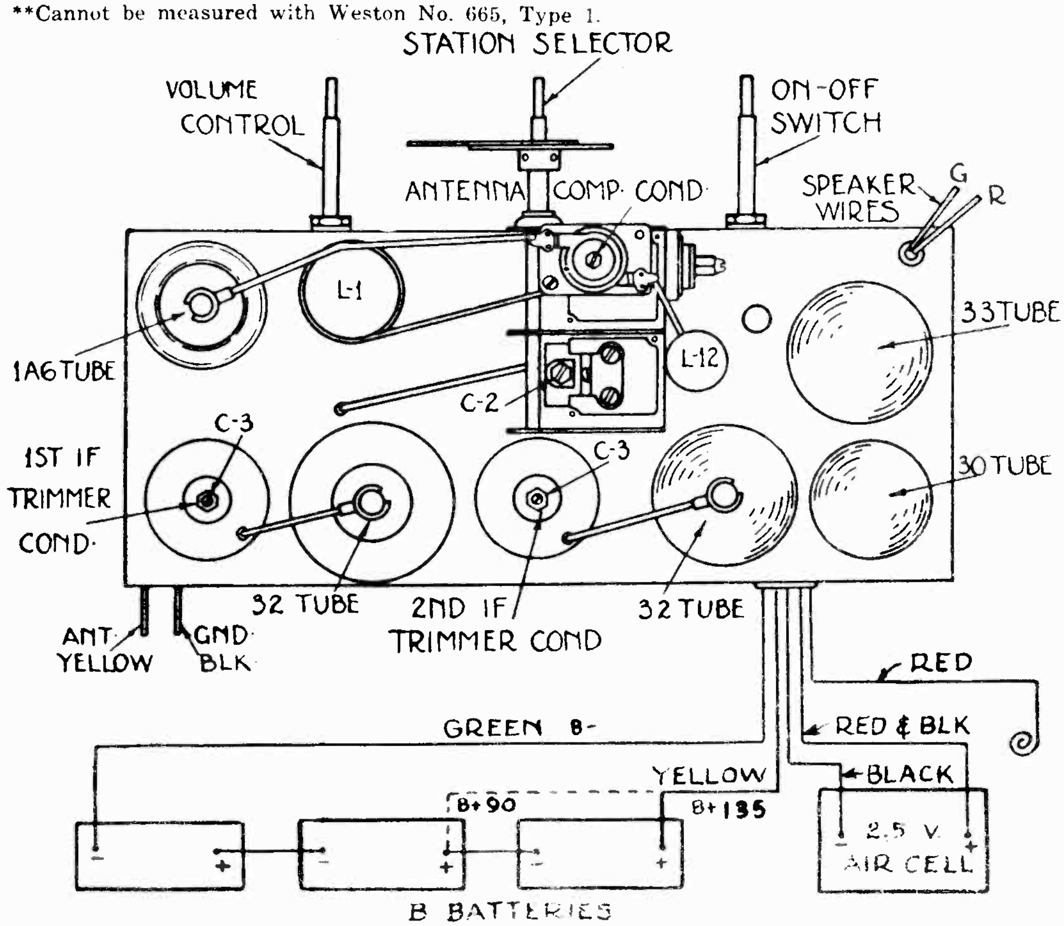
Condition of "A" Battery—Good
Condition of "B" Batteries—Good

Position of Volume Control—Full with Antenna Disconnected

Tube	Function	Voltage and Resistance of Each Socket Prong to Ground (See Prong Numbers on Schematic Diagram)							
		Measurement	Prong No. 1	Prong No. 2	Prong No. 3	Prong No. 4	Prong No. 5	Prong No. 6	Grid Cap
1A6	1st Detector-Oscillator	Volts	2.	115	115	*	50	0	1
		Ohms	0	*	*	65,000	*	0	300,000
32	I-F Amplifier	Volts	2.	120	40	0	—		.6
		Ohms	0	*	*	0	—		500,000
32	2d Detector-A.V.C.	Volts	2.	25	20	0	—		**
		Ohms	0	*	*	0	—		500,000
30	1st A. F. Amplifier	Volts	2.	50	1	0	—		—
		Ohms	0	*	600,000	0	—		—
33	Power Amplifier	Volts	2.	110	5	115	0		—
		Ohms	0	*	65,000	*	0		

NOTES: Voltage and resistance readings are for schematic diagram shown. Allow 15% + or — on all measurements. Always use meter scale which will give greatest deflection within scale limits. All measurements made with Weston Selective Analyzer No. 665, Type 1.

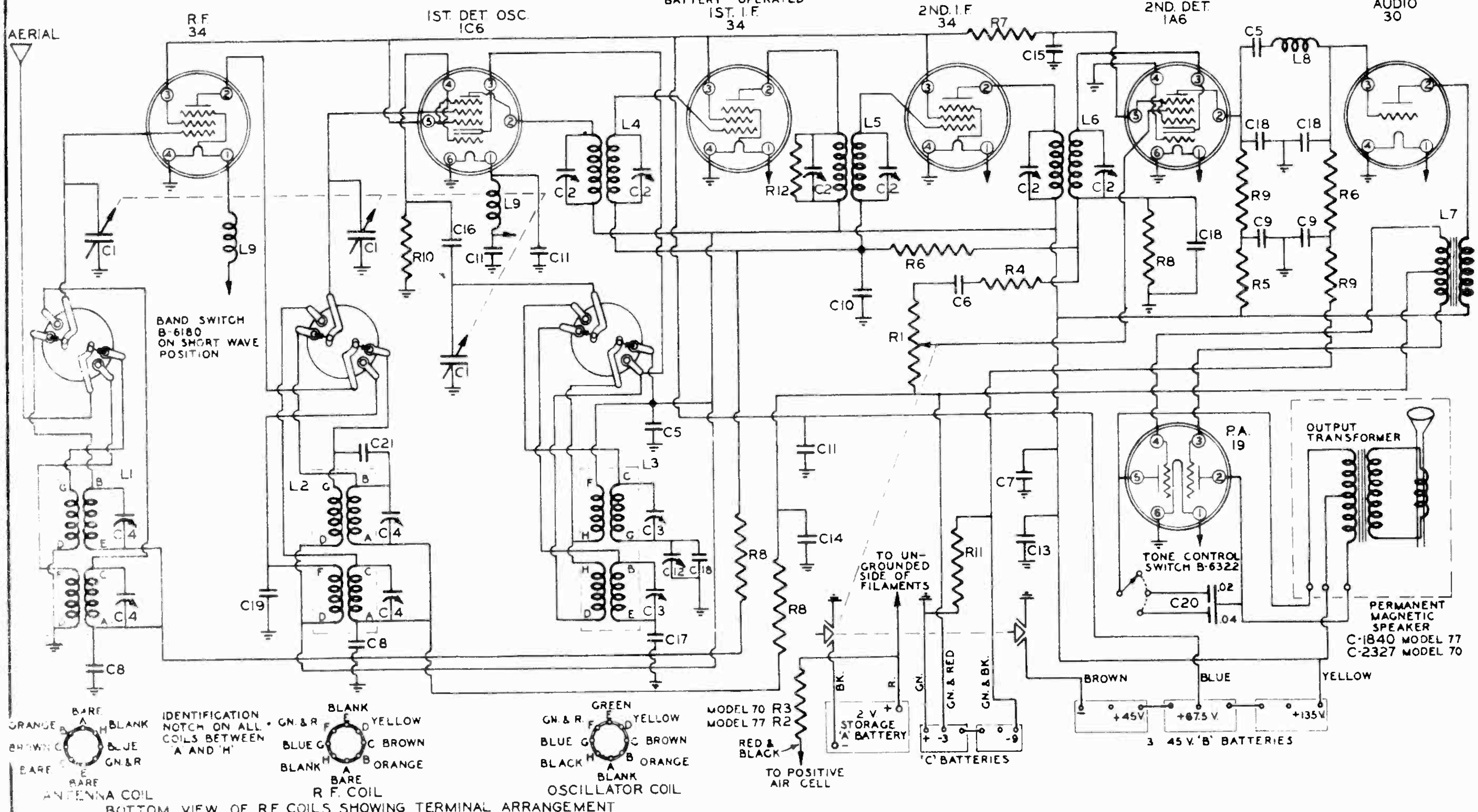
* Open **Cannot be measured with Weston No. 665, Type 1.



IF PEAK 345 KC.

SCHEMATIC DIAGRAM
SPARTON MODELS 70 AND 77 SUPERHETERODYNE COUNTRY HOME RECEIVER
BATTERY OPERATED

SPARKS-WITHINGTON CO.



C1	VARIABLE CONDENSER			B-6212
C2	I.F. TRIMMERS	ON COILS		
C3	R.F. TRIMMER & BRACKET			A-11289
C4	R.F. TRIMMERS			A-11454
C5	.01	MFD.	400 V.	A-9611
C6	.025	MFD.	400 V.	A-11409
C7	.5	MFD.	200 V.	A-11086-5
C8	.05	MFD.	200 V.	A-9919
C9	.1	MFD.	200 V.	A-10207
C10	.2	MFD.	200 V.	A-9922
C11	.2	MFD.	200 V.	A-7420

C12	100-300 MMF. PADDER	A-7809-5
C13	8 MFD. ELECTROLYTIC	A-11623
C14	10 MFD. ELECTROLYTIC 100 V.	A-10377
C15	1 MFD.	A-11130-1
C16	.00005 MFD. MOLDED	A-5175-1
C17	.0032 MFD. MOLDED	A-7038-8
C18	.00025 MFD. MOLDED	A-9578-5
C19	.0001 MFD. MOLDED	A-9578-6
C20	.02-.04 MFD. 400 V.	A-9612
C21	8 TO 9 MMF.	A-11261

R1	250,000 Ω V.C. AND 2 POLE SWITCH		A-11575
R2	39 TO .4 Ω	WIREWOUND	A-10000-6
R3	.3 TO .31 Ω	WIREWOUND	A-10000-5
R4	50,000 Ω	.25 W.	B-5737-4
R5	10,000 Ω	.25 W.	B-5737-12
R6	500,000 Ω	.25 W.	B-5737-5
R7	25,000 Ω	.25 W.	B-5737-9
R8	250,000 Ω	.25 W.	B-5737-1
R9	100,000 Ω	.25 W.	B-5737-2
R10	50,000 Ω	.25 W.	B-5458-3
R11	20,000 Ω	.25 W.	B-5458-6
R12	100,000 Ω	.25 W.	B-5458-2

L1	NO.1 R.F. COIL	A-11231
L2	NO.2 R.F. COIL	A-11232
L3	NO.3 R.F. COIL	A-11233
L4	NO.1 I.F. TRANSFORMER	A-6313-6
L5	NO.2 I.F. TRANSFORMER	A-6313-7
L6	NO.3 I.F. TRANSFORMER	A-6313-8
L7	AUDIO TRANSFORMER	A-11574
L8	16 M.H. CHOKE	A-3506
L9	CHOKE COIL .5 Ω	A-10401

MODELS 70,77
Voltage,Socket
Trimmers

SPARKS-WITHINGTON CO.

(ORIGINAL) EFFECTIVE NOVEMBER 7, 1933

Sparton Models 70 and 77 Country Home Superheterodyne

(Battery Operated)

Schematic Diagram and Voltage Resistance Chart

VOLTAGE-RESISTANCE CHART

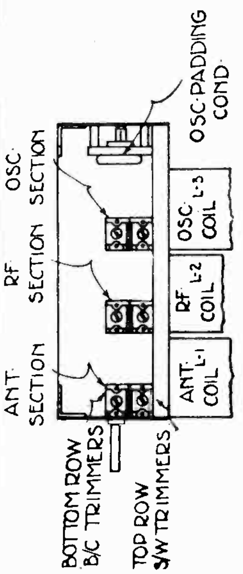
Condition of "A", "B" and "C" Batteries—Good

Position of Volume Control — Full with Antenna Disconnected
Position of Band Selector Switch — Short-Wave

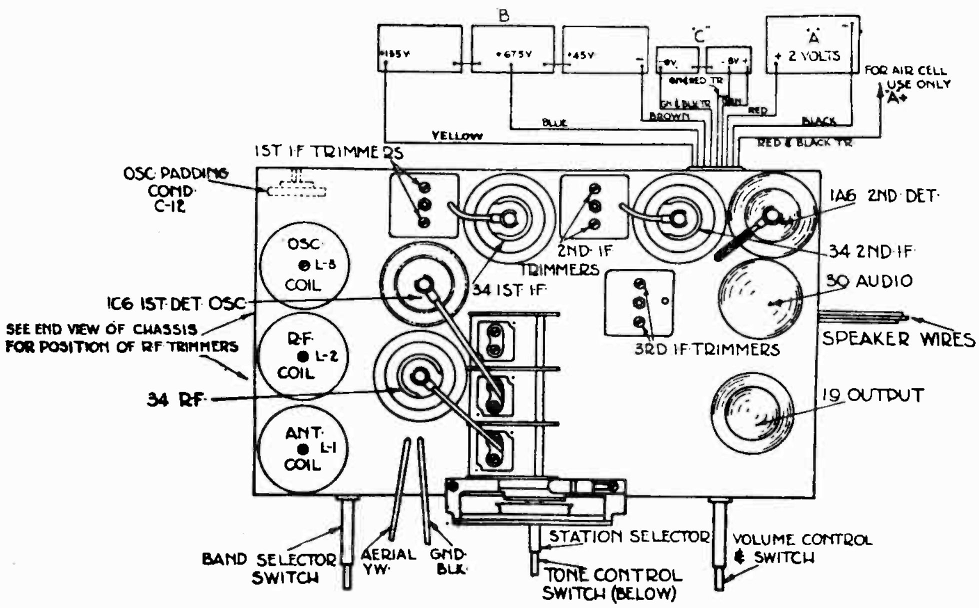
Tube	Function	Voltage and Resistance of Each Socket Prong to Ground (See Prong Numbers on Schematic Diagram)							
		Measurement	Prong No. 1	Prong No. 2	Prong No. 3	Prong No. 4	Prong No. 5	Prong No. 6	Grid Cap
34	R. F. Amplifier.	Volts	2.	130	45	0	—	—	1
		Ohms	0	250.000	*	0	—	—	300.000
1C6	First Detector-Oscillator.	Volts	2.	130	130	0	45	0	.5
		Ohms	0	*	*	55,000	*	0	300.000
34	First I. F.-Amplifier.	Volts	2.	130	45	0	—	—	1
		Ohms	0	*	*	0	—	—	600.000
34	Second I. F.-Amplifier.	Volts	2.	135	45	0	—	—	1
		Ohms	0	*	*	0	—	—	600.000
1A6	Second Detector-A. V. C.	Volts	2.	90	0	0	20	0	.5
		Ohms	0	*	300.000	0	*	0	9,000
30	First Audio Amplifier.	Volts	2.	130	1	0	—	—	—
		Ohms	0	*	600,000	0	—	—	—
19	Power Amplifier	Volts	2.	130	1	1	130	0	—
		Ohms	0	*	9.000	9000	*	0	—

NOTES: Voltage and resistance readings are for schematic diagram shown. See note under schematic diagram. Allow 15% + or — on all measurements. Always use meter scale which will give greatest deflection within scale limits. All measurements made with Weston Selective Analyzer No. 665, Type 1.

* Open



End View of Chassis



Top View of Chassis.

CHASSIS DIAGRAM MODELS 70 AND 77

MODELS 134,136
Schematic
Parts List

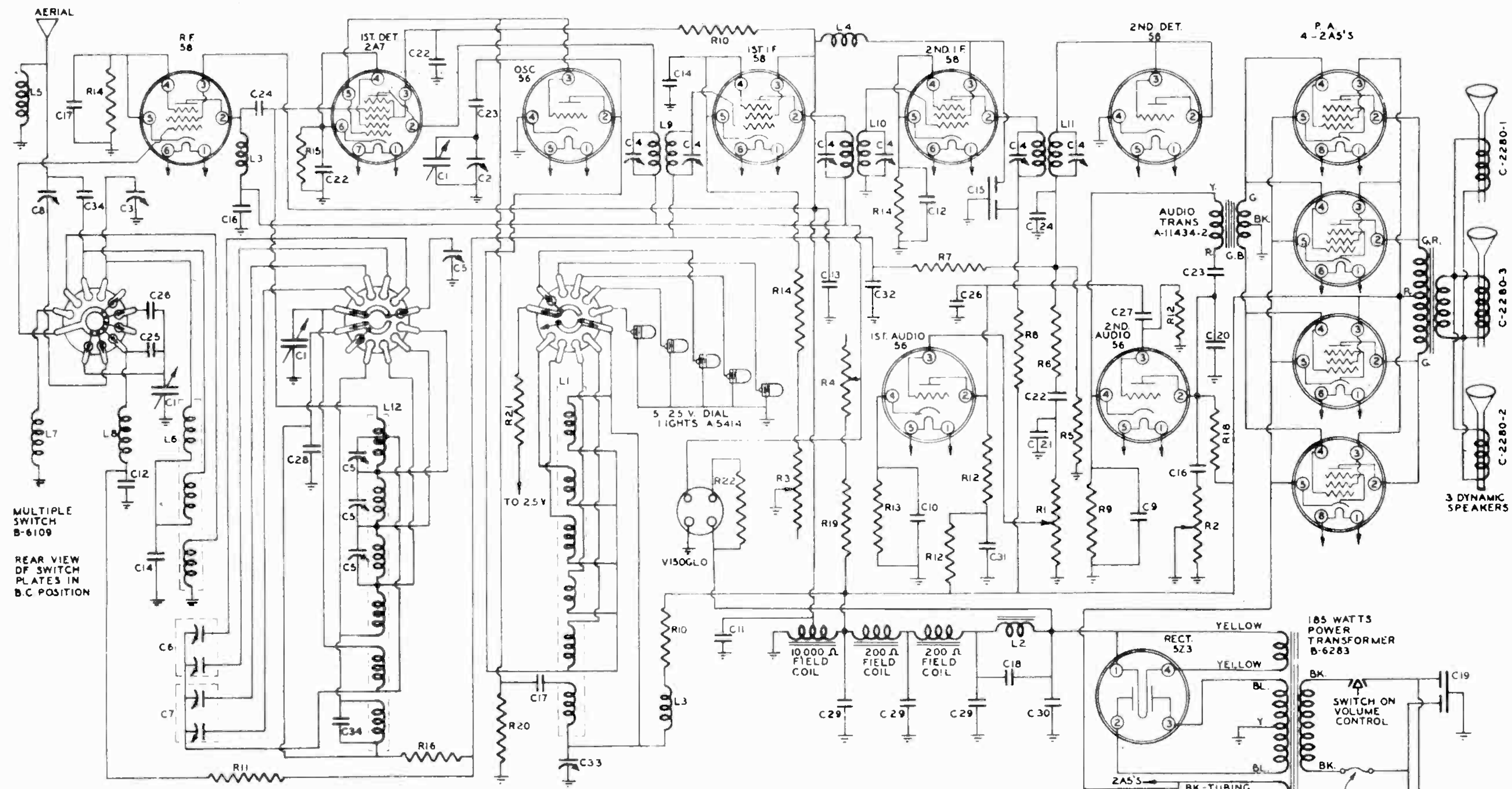
SPARKS-WITHINGTON CO.

SPARTON MODELS 134 AND 136 SUPERHETERODYNE

SCHEMATIC DIAGRAM

INTERMEDIATE FREQUENCY 456 KILOCYCLES

(TOP VIEWS OF SOCKET CONNECTIONS SHOWN)



C1	VARIABLE CONDENSER	C-1994
C2	EQUALIZING CONDENSER	
C3	S.W. ANT. EQUAL. COND.	A-10520
C4	I.F. TRIMMING COND.	A-6580-1
C5	TRIMMING CONDENSERS	A-7809-2
C6	TANDEM TRIMMER	A-10846-4
C7	TANDEM TRIMMER	A-10846-3
C8	B.C. BAND ANT. EQ. COND.	A-7809-2
C9	10 MFD. 25 V	A-10377
C10	10 MFD. 25 V.	A-11582
C11	10 MFD. 200 V.	A-6316-1
C12	.1 MFD. 200 V.	A-7224
C13	.2 MFD. 200 V.	A-7005
C14	.05 MFD. 200 V.	-10205
C15	.05-.05 MFD. 400 V	A-9920
C16	.05 MFD. 400 V	A-6927
C17	.006 MFD. 400 V.	A-9916
C18	.5 MFD. 400 V.	A-10758-3
C19	.006-.006 MFD. 600 V.	A-7878
C20	.002 MFD. MOLDED	A-9578-1
C21	.00025 MFD. MOLDED	A-9578-5
C22	.025 MFD. 200 V	A-10206-1
C23	.025 MFD. 400 V.	A-9575
C24	.00025 MFD. MOLDED	A-5175
C25	.001 MFD. MOLDED	A-7038-2
C26	.0005 MFD. MOLDED	A-9578
C27	.025 MFD. 400 V.	A-10758-2
C28	.05 MFD. 100 V.	A-6315-1
C29	5 MFD. 400 V.	A-6611-A
C30	4 MFD. 500 V.	A-8123-1
C31	2 MFD. 250 V.	A-10609-1
C32	1 MFD. 100 V.	A-11130-1
C33	PADDING CONDENSER	A-9941
C34	.000012 MFD.	A-10896

R1	250,000 Ω VOL. CONTROL	A-10447
R2	100,000 Ω TONE CONTROL	A-10418
R3	100,000 Ω SENSITIVITY CONT.	A-10446
R4	5,000 Ω VOLT. REGULATOR	A-11381
R5	300,000 Ω .25 W.	B-5458-4
R6	50,000 Ω .25 W.	B-5458-5
R7	500,000 Ω .25 W.	B-5458-12
R8	3,000 Ω .25 W.	B-5458-21
R9	1,700 Ω WIREWOUND	B-5243-27
R10	10,000 Ω .5 W.	B-4114-7
R11	10,000 Ω .25 W.	B-5458-20
R12	100,000 Ω .25 W.	B-5458-34
R13	5,000 Ω .5 W.	B-4114-20
R14	400 Ω WIREWOUND	B-5243-41
R15	500 Ω WIREWOUND	B-5243-32
R16	2,000 Ω .25 W.	B-5458-14
R17	170 Ω WIREWOUND	B-6061-6
R18	20,000 Ω .5 W.	B-4114-24
R19	7,000 Ω WIREWOUND	B-6061-7
R20	25,000 Ω .25 W.	B-5458-17
R21	1 Ω RESISTANCE WIRE	A-10717
R22	1,000,000 Ω .25 W.	B-5737-6

L1	OSCILLATOR COIL	A-10629
L2	CHOKE COIL	A-8572-2
L3	16 M.H. CHOKE COIL	A-3506
L4	CATHODE CHOKE COIL	A-7209
L5	ANT. CHOKE COIL	A-8145-1
L6	NO. 2,3,4 S.W. ANT. COIL	A-10893
L7	NO. 5 S.W. ANT. COIL	A-10853
L8	NO. 1 R.F. COIL	A-10605
L9	NO. 1 I.F. TRANSFORMER	A-10454
L10	NO. 2 I.F. TRANSFORMER	A-10455
L11	NO. 3 I.F. TRANSFORMER	A-10456
L12	R.F. TRANSFORMER	A-10885

MODELS 134,136
Voltage,Socket
Trimmers

SPARKS-WITHINGTON CO.

(ORIGINAL) EFFECTIVE OCTOBER 12, 1934

Sparton Models 134 and 136 A. C. Superheterodyne

Schematic Diagram and Voltage-Resistance Chart

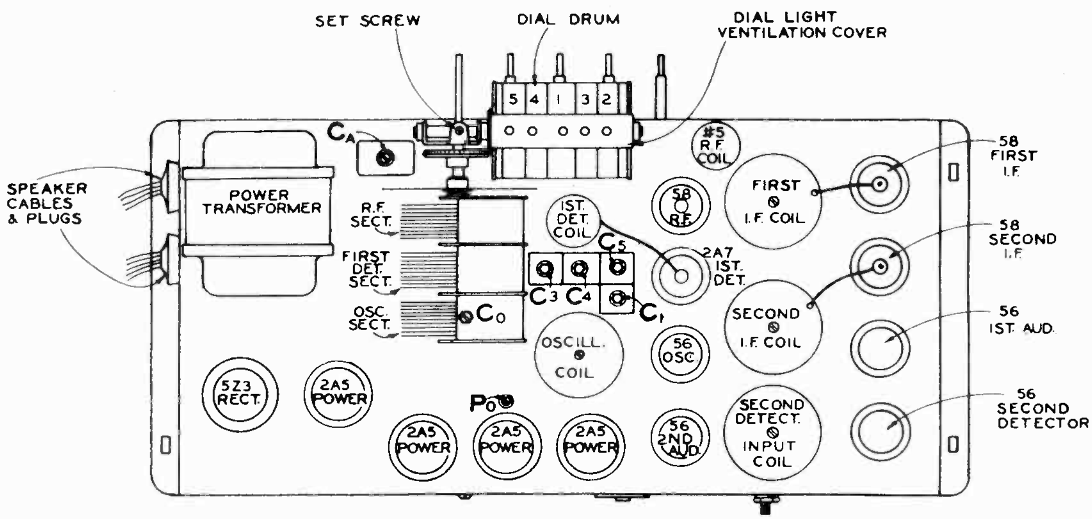
VOLTAGE-RESISTANCE CHART

Line Voltage — 120
Position of Viso-Glo Regulator — Full
Position of Tone Control — Full

Position of Volume Control — Full with Antenna Disconnected
Position of Band Selector Switch — Broadcast
Position of Inter-Station Noise Suppressor — Full

Tube	Function	Voltage and Resistance of Each Socket Prong to Ground (See Prong Numbers on Schematic Diagram)								
		Measurement	Prong No. 1	Prong No. 2	Prong No. 3	Prong No. 4	Prong No. 5	Prong No. 6	Prong No. 7	Grid Cap
58	R. F. Amplifier	Volts	2.5	220	110	3.8	3.8	0	—	0
		Ohms	0	17000	4000	400	400	0	—	—
2A7	Converter	Volts	2.5	220	65	3.8	65	3.8	0	0
		Ohms	0	17,000	13,000	500	25,000	500	0	600,000
56	Oscillator	Volts	2.5	195	38	0	0	—	—	—
		Ohms	0	20,000	25,000	0	0	—	—	—
58	1st I. F. Amplifier	Volts	2.5	220	110	1.5	1.5	0	—	0.4
		Ohms	0	17,000	4000	400	400	0	—	750,000
58	2nd I. F. Amplifier	Volts	2.5	300	110	4.5	4.5	0	—	0
		Ohms	0	12,000	4000	400	400	0	—	0
56	2nd Detector-A. V. C.	Volts	2.5	0	0	0	0	—	—	—
		Ohms	0	300,000	300,000	0	0	—	—	—
56	1st A. F. Amplifier	Volts	2.5	45	0	3.7	0	—	—	—
		Ohms	0	200,000	250,000	5,000	0	—	—	—
56	2nd A. F. Amplifier	Volts	2.5	200	0	8	0	—	—	—
		Ohms	0	37,000	100,000	1700	0	—	—	—
(4) 2A5	Power Amplifier	Volts	25	330	330	0	20	0	—	—
		Ohms	0	9000	9000	1500	175	0	—	—
5Z3	Rectifier	Volts	480	420	420	480	—	—	—	—
		Ohms	9500	35	35	9500	—	—	—	—

NOTES: Voltage and resistance readings are for schematic diagram shown on back of sheet. Allow 15% + or — on all measurements. Always use meter scale which will give greatest deflection within scale limits. All measurements made with Weston Selective Analyzer No. 665, Type 1.

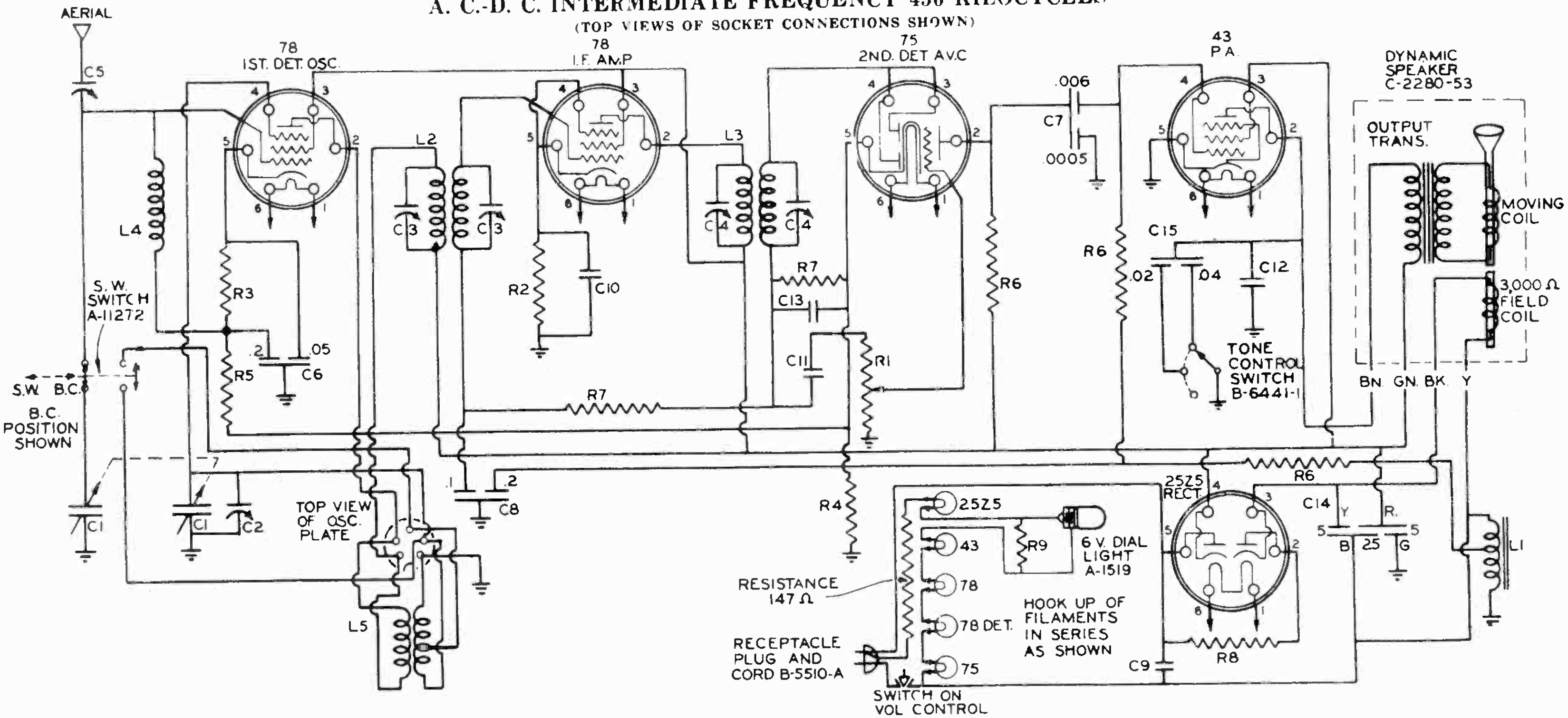


MODELS 134 AND 136 CHASSIS DIAGRAM
(Top View)

SPARKS-WITHINGTON CO.

SPARTON MODEL 506 SUPERHETERODYNE
SPARTON MODEL 594 SUPERHETERODYNE
SCHEMATIC DIAGRAM
A. C.-D. C. INTERMEDIATE FREQUENCY 456 KILOCYCLES

(TOP VIEWS OF SOCKET CONNECTIONS SHOWN)



C1	VARIABLE CONDENSER	B-5509
C2	ADJUSTABLE CONDENSER	
C3	NO.1 I.F. TRIMMER	A-11474
C4	NO.2 I.F. TRIMMER	A-9553
C5	ANTENNA TRIMMER	A-11499
C6	.05-.2 MFD. 100 V.	A-11092-7
C7	.006-.0005 MFD. 400 V.	A-11092-2

C8	.1-.2 MFD. 100 V.	A-11092-6
C9	.025 MFD. 400 V.	A-11086-4
C10	.1 MFD. 100 V.	A-11130-1
C11	.006 MFD. 400 V.	A-11130-4
C12	.01 MFD. 200 V.	A-11130-7
C13	.0005 MFD. MOLDED	A-9578
C14	5-25-5 MFD. ELECTROLYTIC	A-11093-1
C15	.04-.02 MFD. 200 V.	A-9612-1

R1	500,000 Ω VOL. CONTROL	A-11480
R2	400 Ω WIREWOUND	B-5243-30
R3	290 Ω WIREWOUND	B-5243-36
R4	100 Ω WIREWOUND	B-5243-37
R5	2,200 Ω WIREWOUND	B-5243-13
R6	300,000 Ω .25 W.	B-5737-3
R7	500,000 Ω .25 W.	B-5737-5
R8	50 Ω WIREWOUND	B-6061-1
R9	25 Ω WIREWOUND	A-9647

L1	TAPPED CHOKE	A-9566
L2	NO.1 I.F. TRANSFORMER	A-11476
L3	NO.2 I.F. TRANSFORMER	A-11477
L4	PRE SELECTOR COIL	A-9601
L5	OSCILLATOR COIL	A-11504

MODELS 506,594
Voltage,Socket
Trimmers

SPARKS-WITHINGTON CO.

(First Revision) EFFECTIVE SEPTEMBER 11, 1935

Sparton Model 506 A. C.-D. C. Superheterodyne
Sparton Model 594 A. C.-D. C. Superheterodyne
Schematic Drawing and Voltage-Resistance Chart

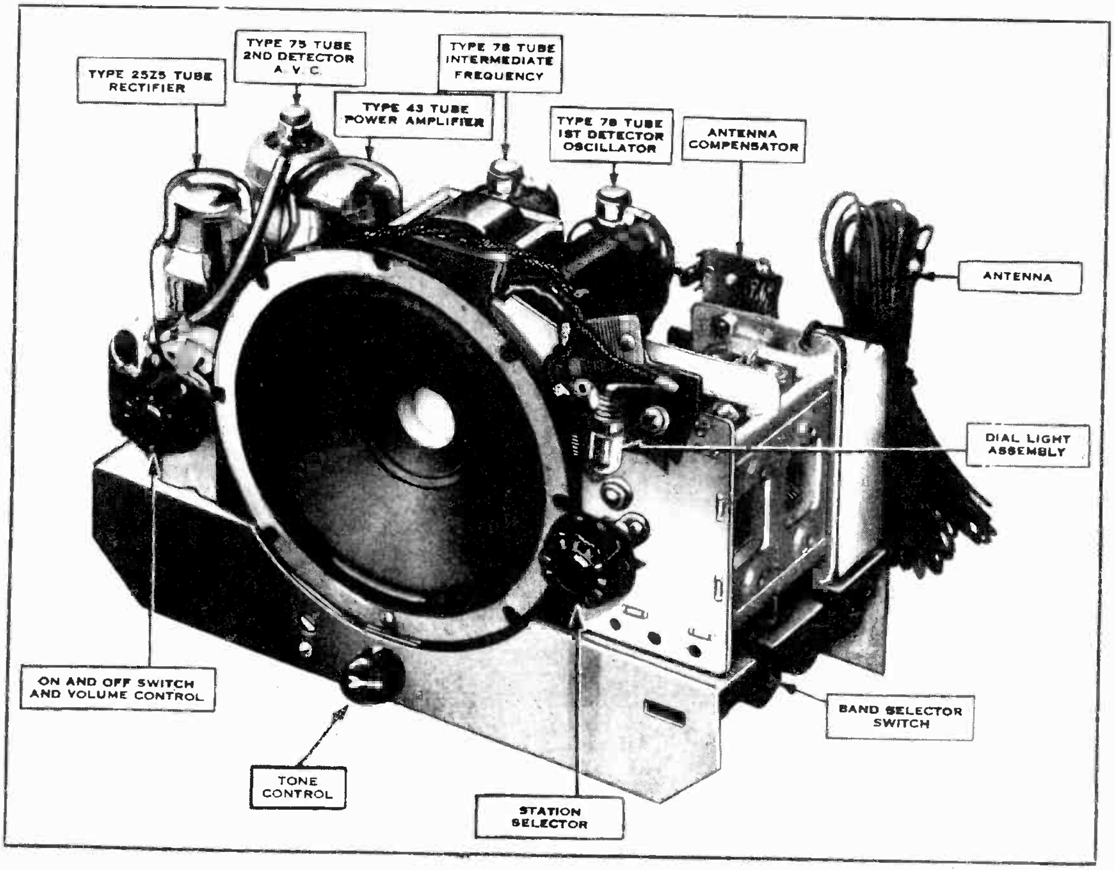
VOLTAGE-RESISTANCE CHART

Line Supply — A. C.
Line Voltage — 119

Position of Volume Control — Full with Antenna Disconnected
Position of Band Selector Switch — Short-Wave

Tube	Function	Voltage and Resistance of Each Socket Prong to Ground (See Prong Numbers on Schematic Diagram)							
		Measurement	Prong No. 1	Prong No. 2	Prong No. 3	Prong No. 4	Prong No. 5	Prong No. 6	Grid Cap
78	1st Detector-Oscillator	Volts	31	115	115	**	22	31	15
		Ohms	700	70.000	70.000	**	2500	700	2100
78	I-F Amplifier	Volts	31	115	115	4	4	31	**
		Ohms	700	50.000	50,000	300	300	700	1,000,000
75	2d Detector-A.V.C.	Volts	31	**	**	**	**	31	**
		Ohms	700	500,000	500,000	500 000	100	700	500,000
43	Power Amplifier	Volts	31	107	115	**	**	31	—
		Ohms	700	50.000	50,000	500.000	0	700	—
25Z5	Rectifier	Volts	31	118	115	95	116	31	—
		Ohms	700	850	45,000	3500	900	700	—

NOTES: Voltage and resistance readings are for schematic diagram shown. See note under schematic diagram. Allow 15% + or — on all measurements. Always use meter scale which will give greatest deflection within scale limits. All measurements made with Weston Selective Analyzer No. 665, Type 1.
**Cannot be measured with Weston No. 665, Type 1.



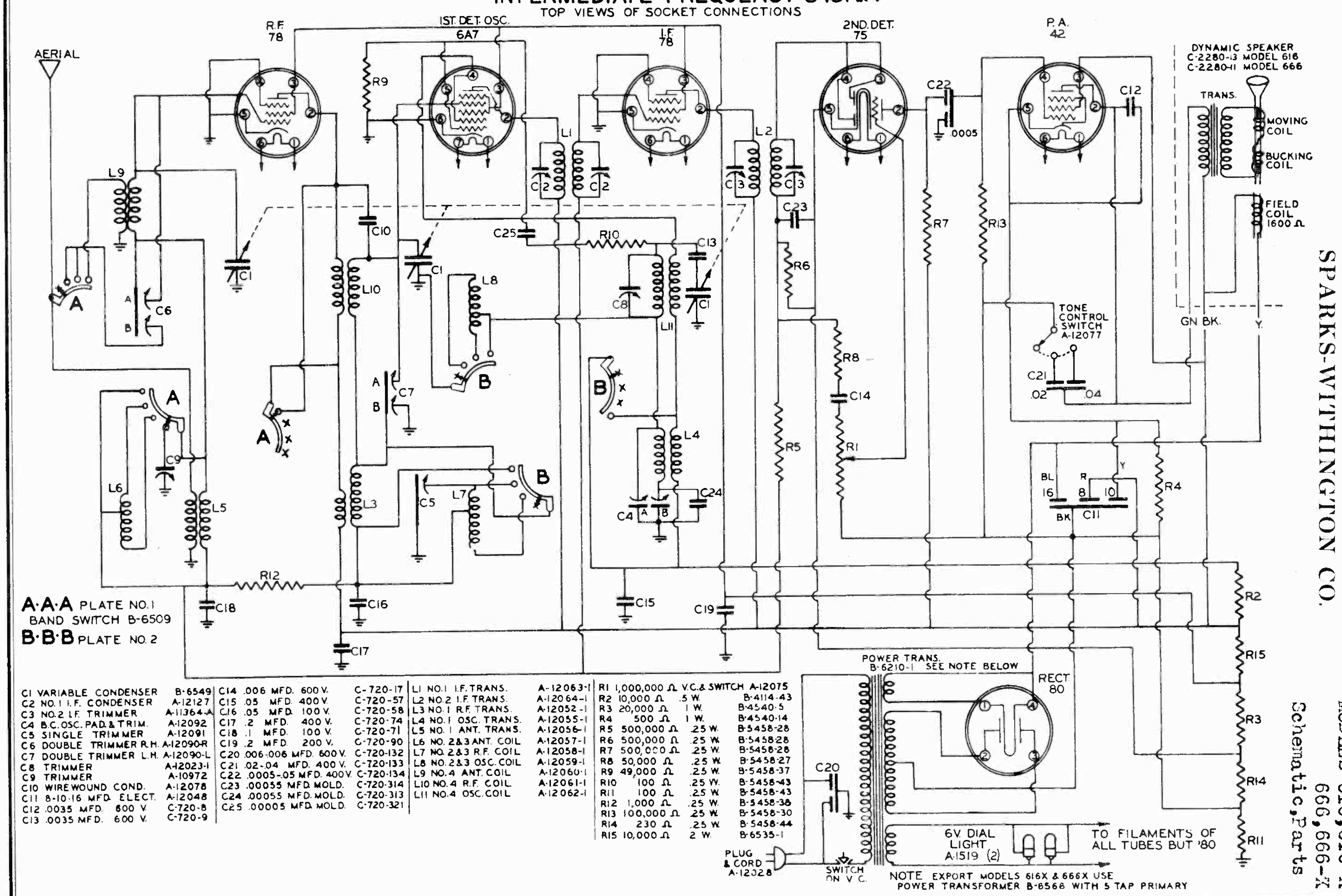
MODEL 594 CHASSIS

SPARKS-WITHINGTON CO.

MODELS 616,616-X
666,666-X
Schematic,Parts

SPARTON SUPERHETERODYNE MODELS 616, 616X, 666 & 666X
INTERMEDIATE FREQUENCY 345K.C.

TOP VIEWS OF SOCKET CONNECTIONS



A·A·A PLATE NO. 1
BAND SWITCH B-6509
B·B·B PLATE NO. 2

C1	VARIABLE CONDENSER	B-6549
C2	NO. 1 I.F. CONDENSER	A-12127
C3	NO. 2 I.F. TRIMMER	A-11364-A
C4	B.C. OSC. PAD. & TRIM.	A-12092
C5	SINGLE TRIMMER	A-12091
C6	DOUBLE TRIMMER R.H.	A-12090-R
C7	DOUBLE TRIMMER L.H.	A-12090-L
C8	TRIMMER	A-12023-1
C9	TRIMMER	A-10972
C10	WIREWOUND COND.	A-12078
C11	8-10-16 MFD. ELECT.	A-12048
C12	.0035 MFD. 600 V.	C-720-8
C13	.0035 MFD. 600 V.	C-720-9

C14	.006 MFD. 600 V.	C-720-17
C15	.05 MFD. 400 V.	C-720-57
C16	.05 MFD. 100 V.	C-720-58
C17	.2 MFD. 400 V.	C-720-74
C18	.1 MFD. 100 V.	C-720-71
C19	.2 MFD. 200 V.	C-720-90
C20	.006-.006 MFD. 600 V.	C-720-132
C21	.02-.04 MFD. 400 V.	C-720-133
C22	.0005-.05 MFD. 400 V.	C-720-134
C23	.00055 MFD. MOLD.	C-720-314
C24	.00055 MFD. MOLD.	C-720-313
C25	.00005 MFD. MOLD.	C-720-321

L1	NO. 1 I.F. TRANS.	A-12063-1
L2	NO. 2 I.F. TRANS.	A-12064-1
L3	NO. 1 R.F. TRANS.	A-12052-1
L4	NO. 1 OSC. TRANS.	A-12055-1
L5	NO. 1 ANT. TRANS.	A-12056-1
L6	NO. 2 & 3 ANT. COIL	A-12057-1
L7	NO. 2 & 3 R.F. COIL	A-12058-1
L8	NO. 2 & 3 OSC. COIL	A-12059-1
L9	NO. 4 ANT. COIL	A-12060-1
L10	NO. 4 R.F. COIL	A-12061-1
L11	NO. 4 OSC. COIL	A-12062-1

R1	1,000,000 Ω	V.C. & SWITCH	A-12075
R2	10,000 Ω	.5 W.	B-4114-43
R3	20,000 Ω	1 W.	B-4540-5
R4	500 Ω	1 W.	B-4540-14
R5	500,000 Ω	.25 W.	B-5458-28
R6	500,000 Ω	.25 W.	B-5458-28
R7	500,000 Ω	.25 W.	B-5458-28
R8	50,000 Ω	.25 W.	B-5458-27
R9	49,000 Ω	.25 W.	B-5458-37
R10	100 Ω	.25 W.	B-5458-43
R11	100 Ω	.25 W.	B-5458-43
R12	1,000 Ω	.25 W.	B-5458-36
R13	100,000 Ω	.25 W.	B-5458-30
R14	230 Ω	.25 W.	B-5458-44
R15	10,000 Ω	2 W.	B-6535-1

MODELS 616,616-X
666,666-X
Voltage,Socket
Trimmers

SPARKS-WITHINGTON CO.

(ORIGINAL) EFFECTIVE SEPTEMBER 11, 1935

Sparton Superheterodyne Models
616 616-X 666 666-X
Schematic Diagram and Voltage-Resistance Chart

VOLTAGE-RESISTANCE CHART

Line Voltage — 119
Position of Tone Control — Full

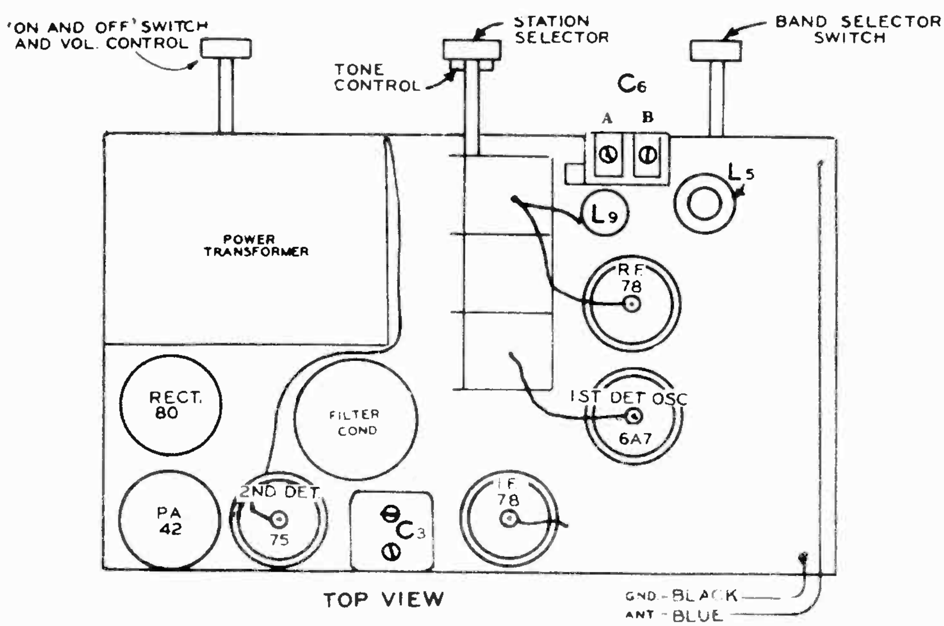
Position of Volume Control — Full with Antenna Disconnected
Position of Band Selector Switch — Short-Wave

Tube	Function	Voltage and Resistance of Each Socket Prong to Ground (See Prong Numbers on Schematic Diagram)								
		Measurement	Prong No. 1	Prong No. 2	Prong No. 3	Prong No. 4	Prong No. 5	Prong No. 6	Prong No. 7	Grid Cap
78	R-F Amplifier	Volts	*	310	160	0	0	*	—	**
		Ohms	0	28,000	18,000	0	0	0	—	1,000,000
6A7	1st Detector-Oscillator	Volts	*	300	160	235	7	0	*	**
		Ohms	0	28,000	18,000	38,000	5,000	0	0	1,000,000
78	I-F Amplifier	Volts	*	295	160	0	0	*	—	**
		Ohms	0	28,000	18,000	0	0	0	—	1,000,000
75	2d Detector-A.V.C.	Volts	*	140	**	**	0	*	—	**
		Ohms	0	500 000	600,000	600,000	350	0	—	1,000,000
42	Power Amplifier	Volts	*	280	300	0	18	*	—	—
		Ohms	0	28 000	28,000	135,000	500	0	—	—
80	Rectifier	Volts	440	405	410	440	—	—	—	—
		Ohms	30,000	250	250	30,000	—	—	—	—

NOTES: Voltage and resistance readings are for schematic diagram shown. See note under schematic diagram. Allow 15% + or — on all measurements. Always use meter scale which will give greatest deflection within scale limits. All measurements made with Weston Selective Analyzer No. 665, Type 1.

*Zero or 6.0 volts A. C., depending on twist of filament hook-up wire. When Prong No. 1 reads zero, Prong No. 6 (Prong No. 7 of Type 6A7 Tube) should read 6.0, and vice versa.

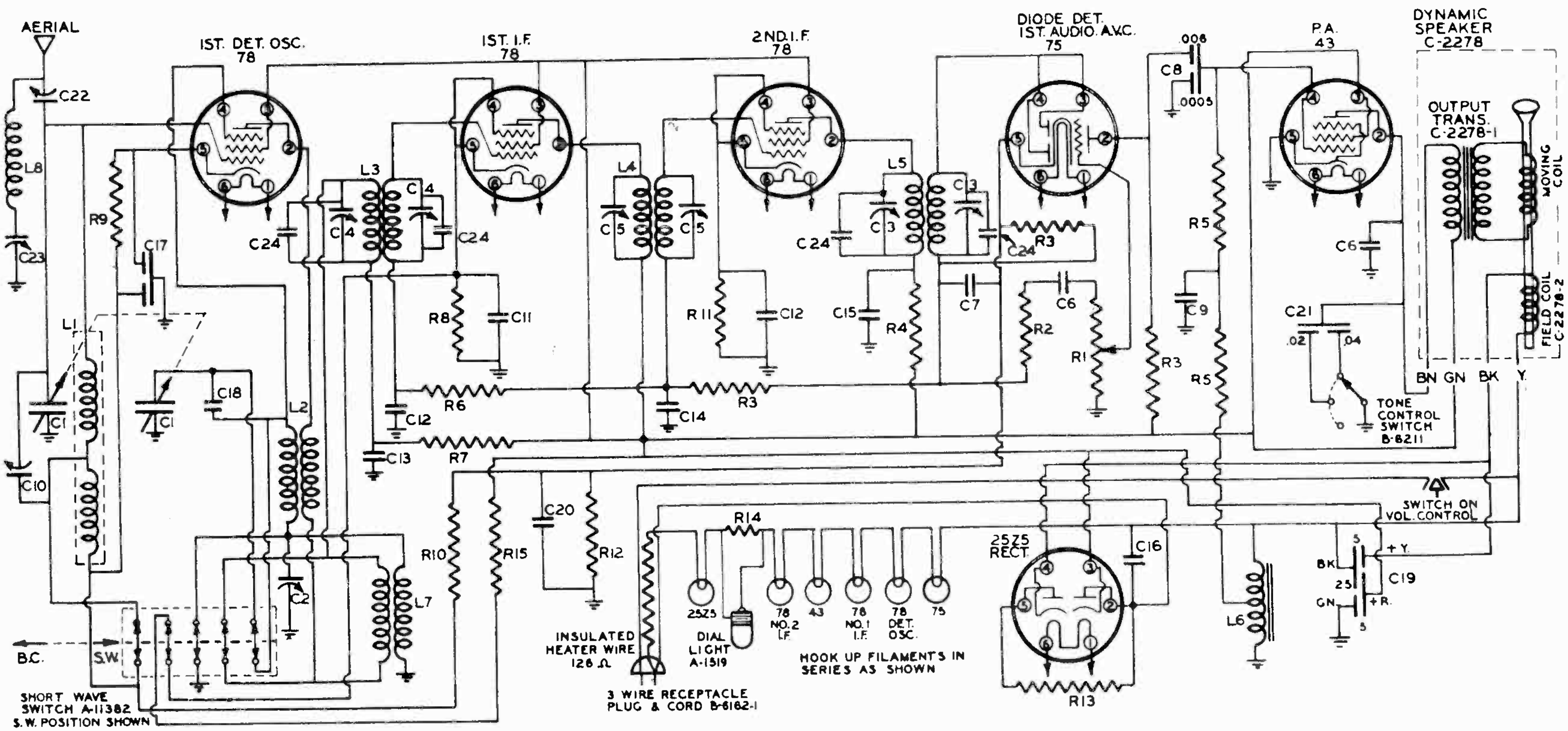
**Cannot be measured with Weston No. 665, Type 1.



CHASSIS DIAGRAM

SPARKS-WITHINGTON CO.

SCHEMATIC DIAGRAM
SPARTON MODEL 655 SUPERHETERODYNE
AC-DC INTERMEDIATE FREQUENCY 456 KC.
TOP VIEWS OF SOCKET CONNECTIONS SHOWN



Part	Description	Part No.
C1	VARIABLE CONDENSER	B-6153
C2	B.C. OSCILLATOR TRIMMER	A-10972
C3	ADJUSTABLE CONDENSER	A-11474
C4	ADJUSTABLE CONDENSER	A-10977
C5	ADJUSTABLE CONDENSER	A-11697
C6	.006 MFD. 400 V.	C-720-13
C7	.0005 MFD. MOLDED	A-11095-1
C8	.006-.0005 MFD. 400 V.	C-720-109
C9	.5 MFD. 100 V.	C-720-94
C10	S.W. ANTENNA TRIMMER	A-11071
C11	.1 MFD. 100 V.	C-720-69
C12	.05 MFD. 100 V.	C-720-51
C13	.05 MFD. 200 V.	C-720-49
C14	.1 MFD. 100 V.	C-720-66
C15	.05 MFD. 200 V.	C-720-52
C16	.025 MFD. 400 V.	C-720-41
C17	.05-.05 MFD. 100 V.	C-720-108
C18	.0005 MFD. MOLDED	A-9578-14
C19	5-25-5 MFD. ELECTROLYTIC	A-11093
C20	.1 MFD. 100 V.	C-720-62
C21	.02-.04 MFD. 200 V.	C-720-131
C22	B.C. ANTENNA TRIMMER	A-11484
C23	I.F. WAVE TRAP TRIMMER	A-11693
C24	.0001 MFD. MOLDED	A-11095-3
R1	250,000 Ω VOL. CONTROL	A-11069
R2	50,000 Ω .25 W.	B-5458-27
R3	500,000 Ω .25 W.	B-5458-28
R4	3,000 Ω .25 W.	B-5458-19
R5	300,000 Ω .25 W.	B-5458-29
R6	100,000 Ω .25 W.	B-5458-30
R7	15,000 Ω .5 W.	B-4114-23
R8	1,000 Ω .25 W.	B-5458-35
R9	290 Ω WIREWOUND	B-5243-36
R10	2,200 Ω WIREWOUND	B-5243-13
R11	600 Ω .25 W.	B-5243-23
R12	100 Ω WIREWOUND	B-5243-37
R13	50 Ω 2 W.	B-6061-2
R14	25 Ω WIREWOUND	A-9647
R15	20,000 Ω .5 W.	B-4114-24
L1	PRE-SELECTOR COIL	A-11045
L2	FOREIGN BAND OSC. COIL	A-11047
L3	NO.1 I.F. TRANSFORMER	A-11686
L4	NO.2 I.F. TRANSFORMER	A-11687
L5	NO.3 I.F. TRANSFORMER	A-11688
L6	CHOKE COIL	A-11038
L7	BROADCAST OSC. COIL	A-11763
L8	I.F. WAVE TRAP COIL	A-11692

MODEL 655
Voltage, Socket

SPARKS-WITHINGTON CO.

(ORIGINAL) EFFECTIVE FEBRUARY 1, 1935

Sparton Model 655 A. C.-D. C. Superheterodyne Schematic Diagram and Voltage-Resistance Chart

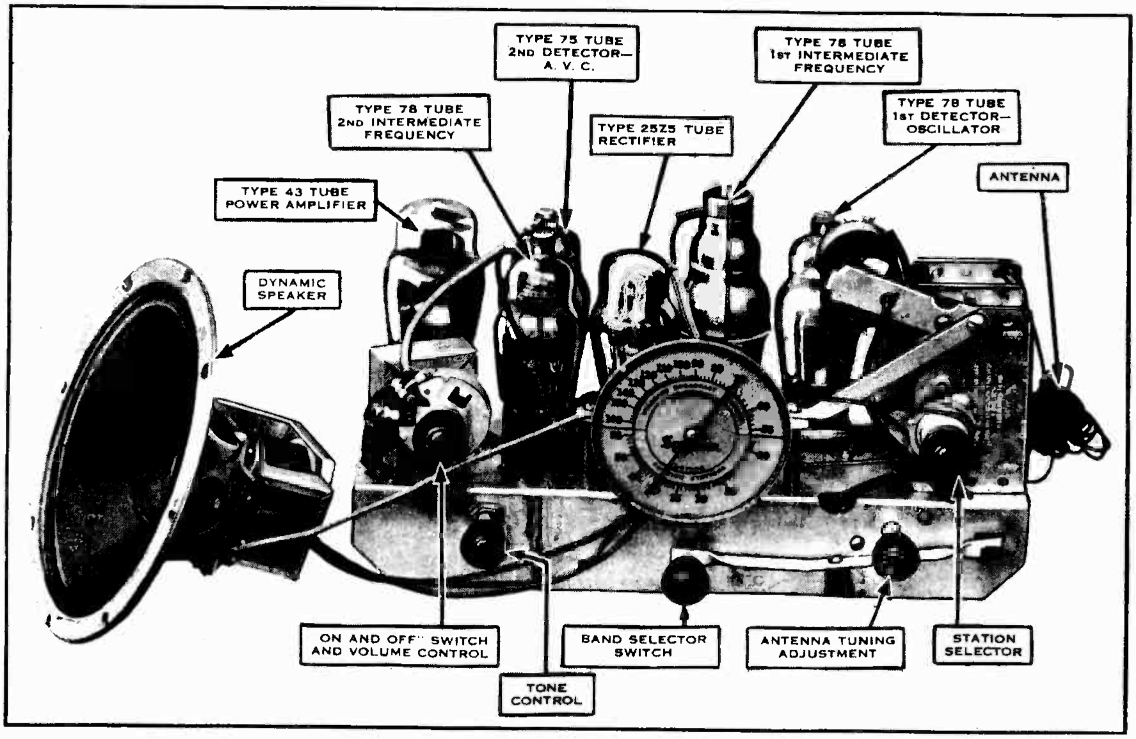
VOLTAGE-RESISTANCE CHART

Line Supply — A. C.
Line Voltage — 119

Position of Volume Control — Full with Antenna Disconnected
Position of Band Selector Switch — Short-Wave

Tube	Function	Voltage and Resistance of Each Socket Prong to Ground (See Prong Numbers on Schematic Diagram)							
		Measurement	Prong No. 1	Prong No. 2	Prong No. 3	Prong No. 4	Prong No. 5	Prong No. 6	Grid Cap
78	1st Detector-Oscillator	Volts	29	80	105	0	17.5	29	17.5
		Ohms	700	35,000	20,000	0	2500	700	2400
78	1st I-F Amplifier	Volts	29	105	105	7.5	7.5	29	0
		Ohms	700	20,000	20,000	1700	1700	700	800,000
78	2nd I-F Amplifier	Volts	29	80	100	3.3	3.3	29	0
		Ohms	700	22,000	20,000	600	600	700	800,000
75	2nd Det.-A.V.C.	Volts	29	**	**	**	.64	29	0
		Ohms	700	500,000	500,000	500,000	100	700	250,000
43	Power Amplifier	Volts	29	95	105	**	**	29	—
		Ohms	700	20,000	20,000	750,000	0	700	—
25Z5	Rectifier	Volts	29	28	105	74	30	29	—
		Ohms	700	700	20,000	3000	700	700	—

NOTES: Voltage and resistance readings are for schematic diagram shown. See note under schematic diagram. Allow 15% + or — on all measurements. Always use meter scale which will give greatest deflection within scale limits. All measurements made with Weston Selective Analyzer No. 665, Type 1.
**Cannot be measured with Weston No. 665, Type 1.

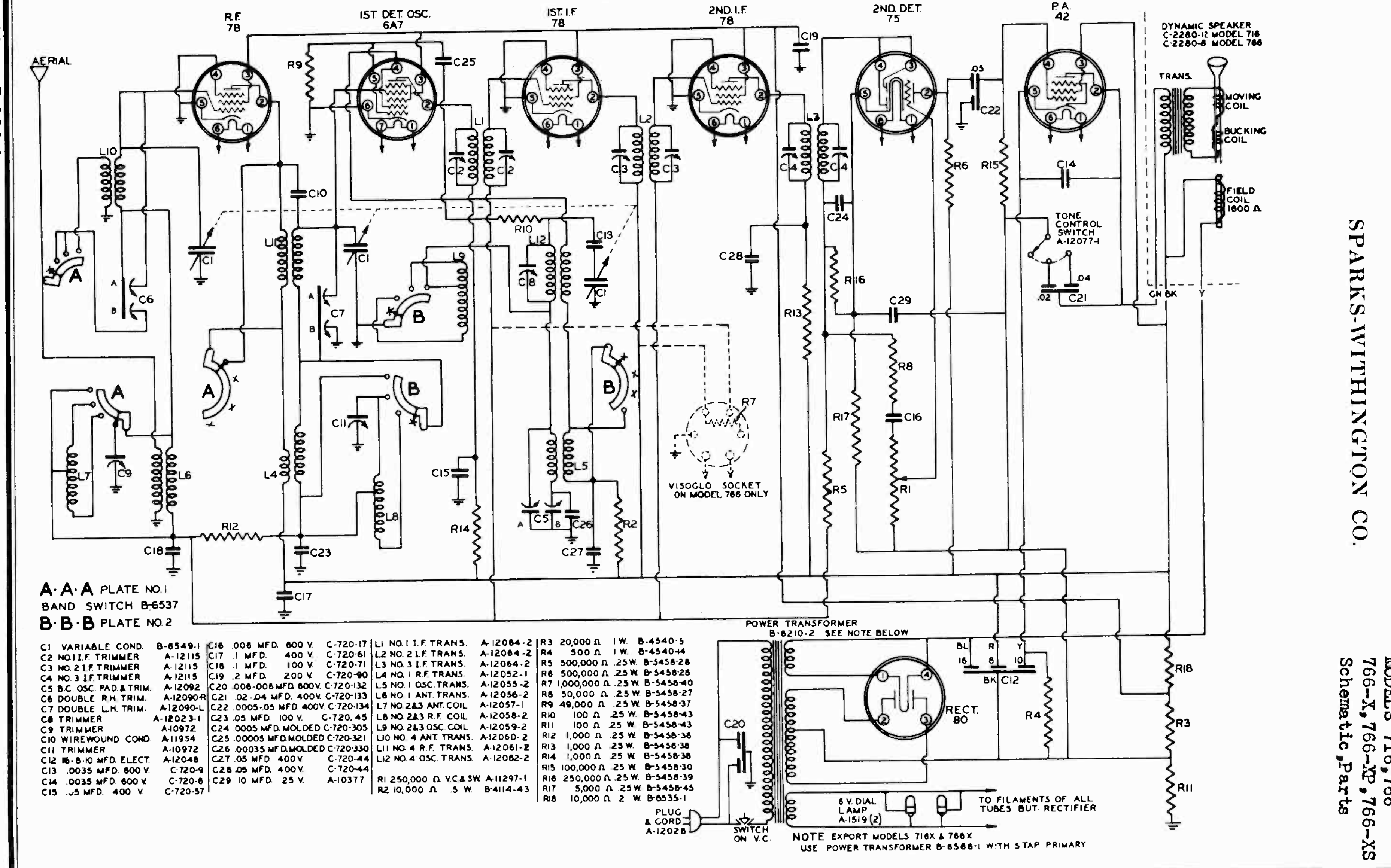


MODEL 655 CHASSIS

MODELS 716,766
766-X,766-XP,766-XS
Schematic,Parts

SPARKS-WITHINGTON CO.

SCHEMATIC DIAGRAM
SPARTON SUPERHETERODYNE MODELS 716X,766&766X
INTERMEDIATE FREQUENCY 456 K.C.
TOP VIEWS OF SOCKET CONNECTIONS



A·A·A PLATE NO.1
BAND SWITCH B-6537
B·B·B PLATE NO.2

C1	VARIABLE COND.	B-6549-1	C16	.008 MFD. 600 V.	C-720-17	L1	NO. 1 I.F. TRANS.	A-12084-2	R3	20,000 Ω	1 W.	B-4540-5
C2	NO. 1 I.F. TRIMMER	A-12115	C17	.1 MFD. 400 V.	C-720-61	L2	NO. 2 I.F. TRANS.	A-12084-2	R4	500 Ω	1 W.	B-4540-4
C3	NO. 2 I.F. TRIMMER	A-12115	C18	.1 MFD. 100 V.	C-720-71	L3	NO. 3 I.F. TRANS.	A-12084-2	R5	500,000 Ω	.25 W.	B-5458-28
C4	NO. 3 I.F. TRIMMER	A-12115	C19	.2 MFD. 200 V.	C-720-90	L4	NO. 1 R.F. TRANS.	A-12052-1	R6	500,000 Ω	.25 W.	B-5458-28
C5	B.C. OSC. PAD. & TRIM.	A-12092	C20	.008-.008 MFD. 600 V.	C-720-132	L5	NO. 1 OSC. TRANS.	A-12055-2	R7	1,000,000 Ω	.25 W.	B-5458-40
C6	DOUBLE R.H. TRIM.	A-12090-R	C21	.02-.04 MFD. 400 V.	C-720-133	L6	NO. 1 ANT. TRANS.	A-12056-2	R8	50,000 Ω	.25 W.	B-5458-27
C7	DOUBLE L.H. TRIM.	A-12090-L	C22	.0005-.05 MFD. 400 V.	C-720-134	L7	NO. 2&3 ANT. COIL	A-12057-1	R9	49,000 Ω	.25 W.	B-5458-37
C8	TRIMMER	A-12023-1	C23	.05 MFD. 100 V.	C-720.45	L8	NO. 2&3 R.F. COIL	A-12058-2	R10	100 Ω	.25 W.	B-5458-43
C9	TRIMMER	A-10972	C24	.0005 MFD. MOLDED	C-720-305	L9	NO. 2&3 OSC. COIL	A-12059-2	R11	100 Ω	.25 W.	B-5458-43
C10	WIREWOUND COND.	A-11954	C25	.00005 MFD. MOLDED	C-720-321	L10	NO. 4 ANT. TRANS.	A-12060-2	R12	1,000 Ω	.25 W.	B-5458-38
C11	TRIMMER	A-10972	C26	.00035 MFD. MOLDED	C-720-330	L11	NO. 4 R.F. TRANS.	A-12061-2	R13	1,000 Ω	.25 W.	B-5458-38
C12	16-8-10 MFD. ELECT.	A-12048	C27	.05 MFD. 400 V.	C-720-44	L12	NO. 4 OSC. TRANS.	A-12062-2	R14	1,000 Ω	.25 W.	B-5458-38
C13	.0035 MFD. 600 V.	C-720-9	C28	.05 MFD. 400 V.	C-720-44				R15	100,000 Ω	.25 W.	B-5458-30
C14	.0035 MFD. 600 V.	C-720-8	C29	10 MFD. 25 V.	A-10377	R1	250,000 Ω V.C.& SW.	A-11297-1	R16	250,000 Ω	.25 W.	B-5458-39
C15	.05 MFD. 400 V.	C-720-57				R2	10,000 Ω .5 W.	B-4114-43	R17	5,000 Ω	.25 W.	B-5458-45
									R18	10,000 Ω	2 W.	B-6535-1

MODELS 716,766
766-X,766-XP,766-XS
Voltage,Socket
Trimmers,Phonograph Data

SPARKS-WITHINGTON CO.

(ORIGINAL) EFFECTIVE SEPTEMBER 11, 1934

Sparton Superheterodyne Models

716-X 766 766-X 766-XP 766-XS

Schematic Diagram and Voltage-Resistance Chart

VOLTAGE-RESISTANCE CHART

Line Voltage — 119
Position of Tone Control — Full

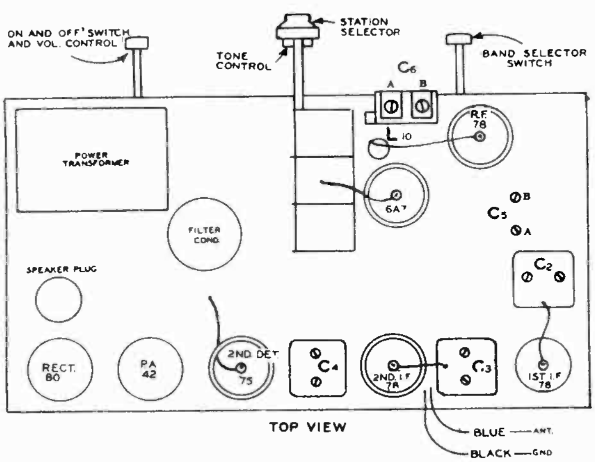
Position of Volume Control — Full with Antenna Disconnected
Position of Band Selector Switch — Short-Wave

Tube	Function	Voltage and Resistance of Each Socket Prong to Ground (See Prong Numbers on Schematic Diagram)								
		Measure-ment	Prong No. 1	Prong No. 2	Prong No. 3	Prong No. 4	Prong No. 5	Prong No. 6	Prong No. 7	Grid Cap
78	R-F Amplifier	Volts	*	275	170	0	0	*	—	**
		Ohms	0	29,000	20,000	0	0	0	—	1,000,000
6A7	Converter	Volts	*	275	170	210	5	3.8	*	**
		Ohms	0	29,000	20,000	40,000	55,000	900	0	1,000,000
78	1st I-F Amplifier	Volts	*	275	170	0	0	*	—	**
		Ohms	0	29,000	20,000	0	0	0	—	1,000,000
78	2d I-F Amplifier	Volts	*	275	170	0	0	*	—	**
		Ohms	0	29,000	20,000	0	0	0	—	1,000,000
75	2d Detector-A.V.C.	Volts	*	**	**	**	**	*	—	**
		Ohms	0	1,000,000	300,000	300,000	5,000	0	—	250,000
42	Power Amplifier	Volts	*	280	170	**	16	*	—	—
		Ohms	0	29,000	29,000	100,000	500	0	—	—
80	Rectifier	Volts	410	365	365	410	—	—	—	—
		Ohms	29,000	250	250	29,000	—	—	—	—

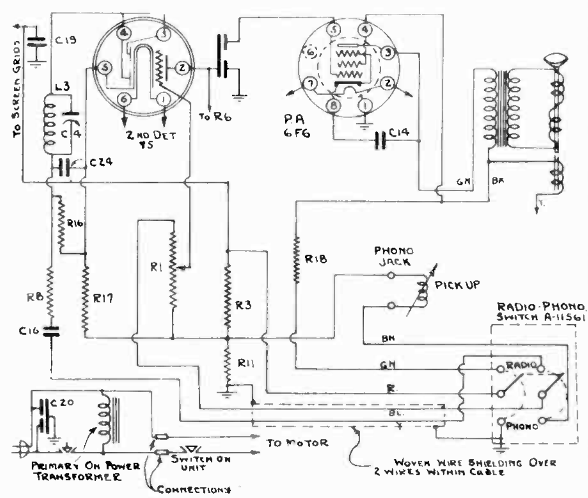
NOTES: Voltage and resistance readings are for schematic diagram shown. See note under schematic diagram. Allow 15% + or — on all measurements. Always use meter scale which will give greatest deflection within scale limits. All measurements made with Weston Selective Analyzer No. 665, Type 1.

*Zero or 6.0 volts, depending on twist of filament hook-up wire. If Prong No. 1 reads zero, Prong No. 6 (Prong No. 7 of Type 6A7) should read 6.0 volts, and vice versa.

**Cannot be measured with Weston No. 665, Type 1.



CHASSIS DIAGRAM

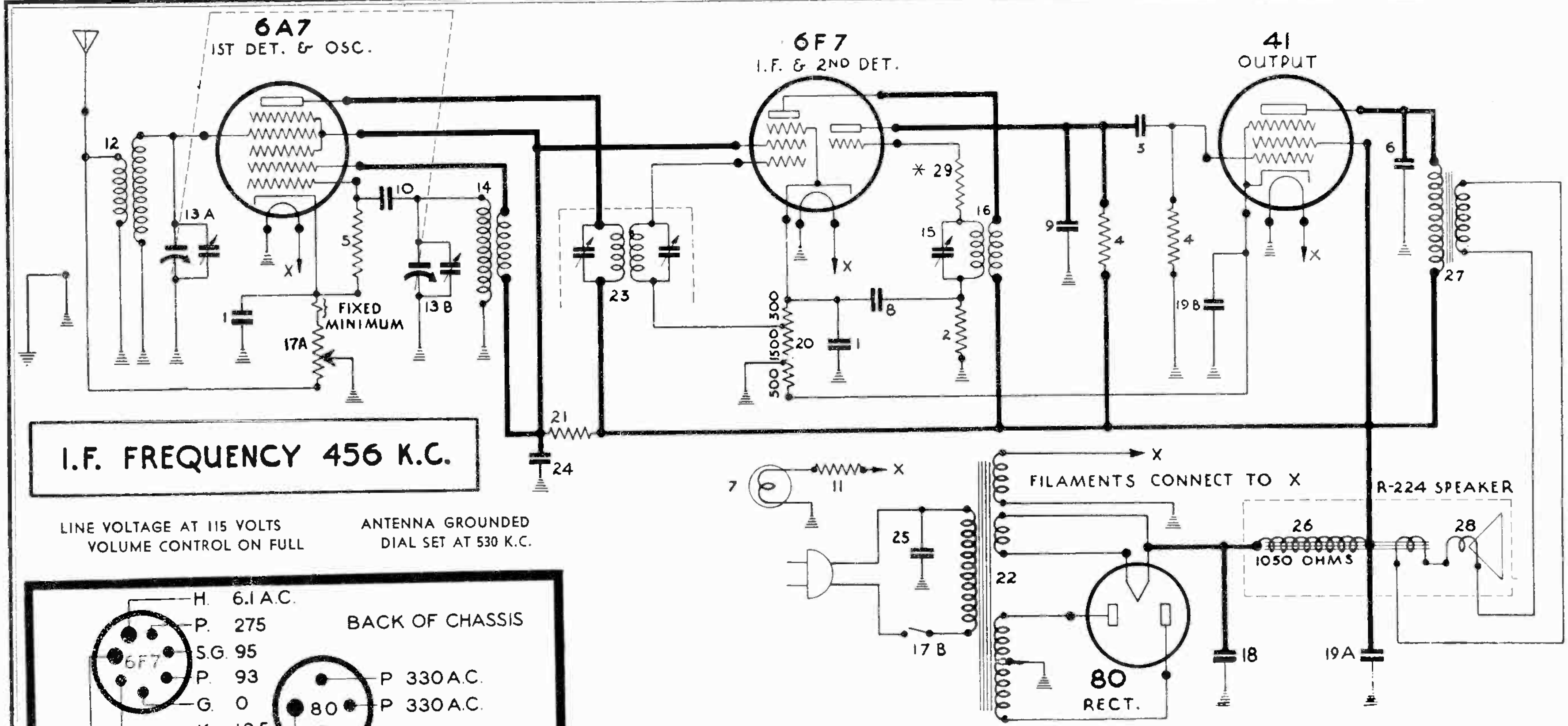


CIRCUIT FOR PHONOGRAPH PICK-UP

MODELS 1231 to 1239
Chassis R-123

Schematic, Socket, Voltage
Parts List

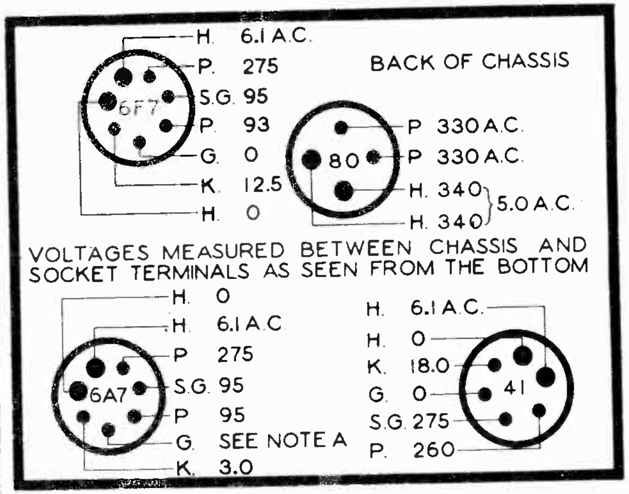
STEWART WARNER CORP.



I.F. FREQUENCY 456 K.C.

LINE VOLTAGE AT 115 VOLTS
VOLUME CONTROL ON FULL

ANTENNA GROUNDED
DIAL SET AT 530 K.C.



VOLTAGES MEASURED BETWEEN CHASSIS AND SOCKET TERMINALS AS SEEN FROM THE BOTTOM

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.

All bias voltages change with position of volume control. Use maximum position.

6F7 Pentode Grid Cap to ground 10 volts D.C.

Speaker field voltage with coil warm is 65 volts D.C.

NOTE A: The oscillator grid voltage with the dial set at 530 K.C. and volume control on full should be approximately —4 volts (300 volt scale).

R-123 PARTS LIST

(SEE OTHER SIDE FOR MISCELLANEOUS PARTS)

Diag. No.	Part No.	Description	List Price
1	81630	.1 mfd. 100 volt paper condenser	$0.30
2	81682	1.1 megohm, 1/4 w. carbon resistor	.20
3	83007	.02 mfd. 600 volt paper condenser	.35
4	83072	510,000 ohm, 1/4 w. carbon resistor	.20
5	83080	51,000 ohm, 1/4 w. carbon resistor	.20
6	83219	.01 mfd. 600 volt paper condenser	.30
7	83278	6.3 volt dial light bulb	.15
8	83353	.05 mfd. 100 volt paper condenser	.30
9	83436	.002 mfd. 1000 v. paper condenser	.25
10	83539	.00026 mfd. mica condenser	.25
11	83566	10 ohm, flexible resistor	.25
12	83948	Antenna coil	.80
13A, 13B	83949	Two section gang condenser	2.00
14	83950	Oscillator coil	.65
15	83952	2nd I.F. trimmer condenser	.30
16	83953	2nd I.F. transformer coil	.60
17A, 17B	83959	7500 ohm vol. cont. (with 350 ohm fixed minimum) and line switch	1.15
18	83960	6 mfd. 400 v. wet elec. condenser	.85

Diag. No.	Part No.	Description
19A, 19B	83962	5 mfd. 350 v. dry electro. cond.; 10 mfd. 25 v. dry electro. cond. — Model R-123-A only; Also see 84399
20	83963	Metal clad tapped bias resistor
21	83961	25,000 ohm, 2 watt carbon resistor
22	83966	Power trans., 115 volts, 60 cycles (Model R-123-A) (See No. 84400 & 84402 for other voltages & freq.)
23	83973	1st I.F. transformer
24	83974	.1 mfd. 200 volt paper condenser
25	83976	.012 mfd. 1000 volt shielded paper condenser
26	83987	Field coil and housing (1050 ohms)
27	84009	Output transformer
28	84010	Diaphragm and shell assembly
29	84236	2500 ohm, 1/4 watt carbon resistor
	84399	5 mfd. 350 v. dry electro. cond.; 10 mfd. 25 v. dry electro. cond. — R-123-B & W only
	84400	Power transformer, 115 volts, 25 to 133 cycles (Model R-123-B)
	84402	Power transformer 100 to 260 volts, 40 to 133 cycles (Model R-123-W)
	R-224	6 inch dynamic speaker with output transformer

* Diag. No. 29, 2500 ohm resistor is used on small proportion of sets.

MODELS 1231 to 1239
Chassis R-123
Circuit Data, Alignment
Trimmers, Parts List

STEWART WARNER CORP.

STEWART-WARNER MODEL R-123 CHASSIS

USED IN RECEIVER MODELS 1231 TO 1239

CIRCUIT DESCRIPTION

Tte Stewart-Warner Model R-123 Chassis is a four tube superheterodyne, having a tuning range of 530 to 1720 kc. The incoming signal goes to the tuned first detector circuit, and there its frequency is converted to 456 kc. in the 6A7 combination first detector and oscillator tube. This particular frequency is chosen to prevent image frequency interference.

The 456 kc. intermediate frequency signal is amplified by the pentode section of the 6F7 tube. The plate of the pentode section is coupled thru an I. F. transformer to the grid of the triode section, this section operating as the second detector. The triode is then resistance-coupled to the 41 pentode power output tube.

The volume control is double acting. It simultaneously reduces antenna output and increases the bias on the 6A7 tube.

The R-123-A chassis is designed for operation on 105 to 125 volt, 50 to 60 cycle power circuits. The R-123-B Chassis is made for use on 105 to 125 volt, 25 to 133 cycle lines while the R-123-W has a universal power transformer for operation on voltages ranging from 100 to 260 volts and any frequency from 40 to 133 cycles. This universal transformer in the R-123-W has a tapped primary which must be connected for the proper line voltage as shown on the tag attached to the chassis.

CALIBRATION AND ALIGNMENT

TEST EQUIPMENT

A high grade modulated service oscillator and an output meter are absolutely essential in order to properly align the R-123 chassis.

The oscillator should be capable of generating frequencies of 456 and 1400 kc.

PRECAUTIONS

When using your oscillator, do not rely on calibration curves for frequency determination but check the frequencies by comparison with broadcast station signals.

When aligning, keep the oscillator output low so that the second detector does not overload. Use the lowest output meter scale which will provide a steady reading and adjust the oscillator output so that the output meter reads near the center of the scale.

PRELIMINARY STEPS

To align the R-123 Chassis proceed as follows:

Remove the chassis from cabinet.

Connect the output meter from the 41 plate to chassis through a .25 mfd. condenser. The output meter can be connected across the voice coil terminals on the speaker if the meter is sensitive enough to provide at least half-scale reading.

Turn the volume control to maximum volume position.

TRIMMER LOCATIONS

1. } First I. F. transformer trimmers.
2. }
3. Second I. F. transformer trimmer.
4. Oscillator calibration trimmer.
5. Detector shunt trimmer.

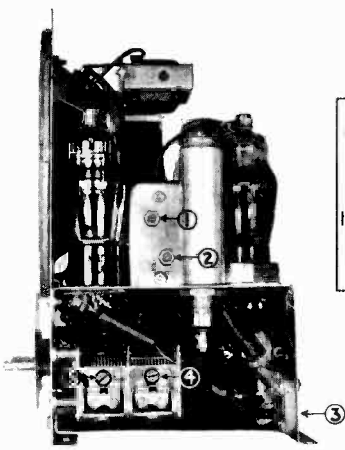
ALIGNMENT OF THE I. F. AMPLIFIER

1. (a) Set the test oscillator to exactly 456 kc.
   (b) Connect the output leads of the oscillator to the 6A7 control grid and chassis.
   (c) Make certain that no station is tuned in.
   (d) Carefully adjust the I. F. transformer trimmers No. 1, 2 and 3 for maximum output meter reading.
   (e) Repeat the three adjustments, since the adjustment of each trimmer has some effect on the others.

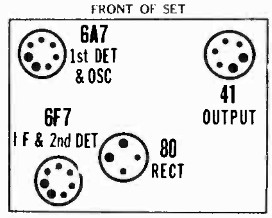
DIAL CALIBRATION

2. Check the position of the dial on the condenser shaft by turning the rotor plates of the gang condenser to full mesh. The dial should then read 530 kc.

3. A broadcast station between 1300 and 1420 kc. should be used to calibrate the dial. If no such station can be heard, you can use a 1400 kc. signal from your oscillator provided its calibration is accurately known. Proceed as follows:
   (a) Tune the receiver dial to the exact frequency reading of the signal (either a station or the oscillator.)
   (b) Carefully adjust the oscillator calibration trimmer No. 4 until the signal may be tuned in with maximum volume at its correct frequency setting.



TUBE LOCATIONS
FRONT OF SET



ALIGNMENT

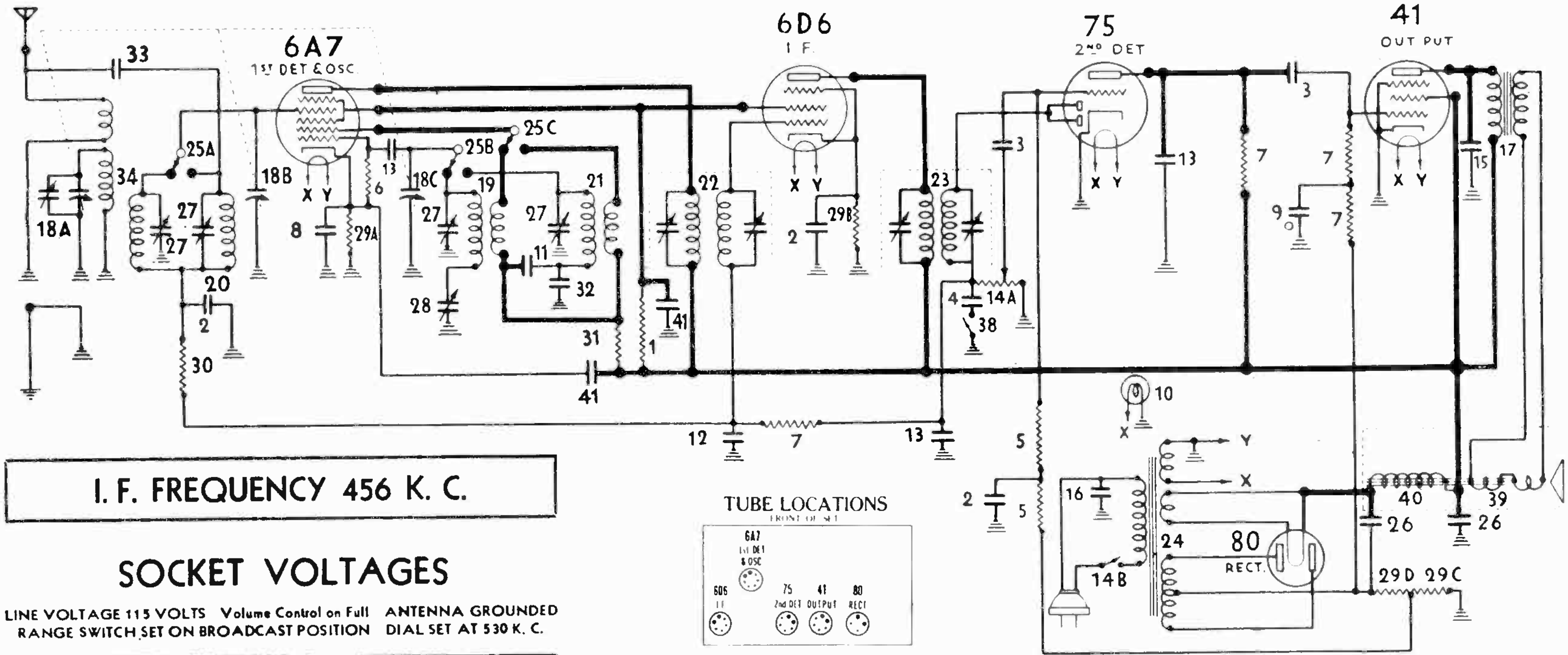
4. **(a) Connect a 400 to 500 ohm, 1 watt carbon resistor in series with the test oscillator output and the receiver antenna lead. This resistor is necessary to secure proper alignment of the detector trimmer.**
   (b) Ground the receiver chassis and connect the oscillator ground lead to the chassis.
   (c) Set the test oscillator to about 1400 kc. and carefully tune the receiver to the signal.
   (d) Adjust trimmer No. 5 (detector shunt trimmer) for maximum output meter reading.
   (e) Retune the receiver dial to a peak and readjust the trimmer.

MISCELLANEOUS PARTS NOT SHOWN ON CIRCUIT DIAGRAM

Part No.		List Price
17615	Volume Control Mtg. Lock Washer (3/8")	$0.01
31622	Tuning Dial Set Screw	.02
67034	Volume Control Mtg. Nut (3/8"-32)	.03
67263	No. 6 x 1/4" Self Tapping Screw	.03
81834	Six Prong Tube Socket	.10
81837	Four Prong Tube Socket	.15
81949	Seven Prong Tube Socket	.10
83552	Chassis Mtg. Screw (No. 10 x 7/8" Self Tapping)	.03
83574	Dial Light Socket and Bracket	.15
83578	Escutcheon Mtg. Wood Screw (No. 1 x 1/4" R.H.)	.01
83587	Front Plate Mtg. Screw (No. 8 x 1 1/4" Ornamental Head)	.01
83624	No. 8 x 1/4" Self Tapping Screw	.01
83941	Tuning Dial and Bushing	.40
83945	Volume Control Dial & Bracket	1.10
83970	Escutcheon Plate	.25
84015	Knob Washer (Paper 5/8" O.D.)	.01
84016	Rubber Washer (3/4" O.D.)	.02
84017	Knob (Model 1231)	.14
84130	Metal Front Grill (Model 1235 Only)	.80
84343	Knob (Model 1235 & 1236)	.18
84541	Wave Trap (to Eliminate 456 K.C. Code Interference)	1.00

MODELS 1251 to 1259
Chassis R-125
Schematic, Socket Voltage, Parts

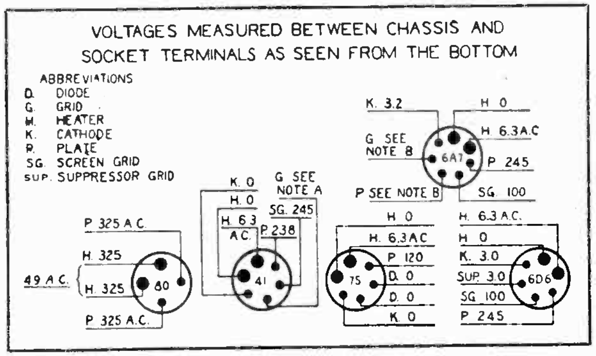
STEWART WARNER CORP.



I. F. FREQUENCY 456 K. C.

SOCKET VOLTAGES

LINE VOLTAGE 115 VOLTS Volume Control on Full RANGE SWITCH SET ON BROADCAST POSITION ANTENNA GROUNDED DIAL SET AT 530 K. C.



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.

Speaker field voltage with coil warm is 73 volts D. C.

NOTE A: The actual bias on the 41 output tube is —16.5 volts measured across the metal clad bias resistor 43C and 43D. The grid bias on the 75 2nd detector tube is —1.5 volts measured across the metal clad bias resistor 43C.

NOTE B: The oscillator plate voltage with the range switch on broadcast position and with the dial set at 530 K.C. should be approximately 172 volts. The oscillator grid voltage under similar conditions should be approximately —22 volts.

R-125 PARTS LIST

Diag. No.	Part No.	DESCRIPTION	List Price
1	62183	30,000 ohm, 1 watt carbon resistor	$0.20
2	81630	.1 mfd. 100 volt paper condenser	.30
3	83007	.02 mfd. 600 volt paper condenser	.35
4	83011	.004 mfd. 600 volt paper condenser	.30
5	83072	510,000 ohm, 1/4 watt carbon resistor	.20
6	83080	51,000 ohm, 1/4 watt carbon resistor	.20
7	83082	260,000 ohm, 1/4 watt carbon resistor	.20
8	83214	.25 mfd. 250 volt paper condenser	.30
9	83219	.01 mfd. 600 volt paper condenser	.30
10	83278	6.3 volt Dial Light bulb	.15
11	83352	.015 mfd. 600 volt paper condenser	.35
12	83353	.05 mfd. 100 volt paper condenser	.30
13	83539	.00026 mfd. molded mica condenser	.25
14-A, 14-B	83551	500,000 ohm volume control and line switch	1.25
15	83706	.006 mfd. 600 volt paper condenser	.35
16	83976	.012 mfd. 1000 volt shielded paper condenser	.35
17	84153	Output transformer (for R-226 8 inch speaker) (See 84312 for 12 inch speaker transformer)	2.25
18-A, 18-B, 18-C	84174	Three gang variable condenser	4.00
19	84180	Broadcast Oscillator Coil	.60
20	84183	Short Wave Antenna Coil	.50
21	84185	Short Wave Oscillator Coil	.80
22	84187	1st I. F. Transformer	1.75
23	84188	2nd I. F. Transformer	1.75
24	84189	Power Transformer 115 volts 60 cycles. R-125-A only (See No. 84408 for other voltages and frequencies)	4.00
25-A, 25-B, 25-C	84191	Range Switch	$0.75
26	84193	16 mfd. 350 volt Wet Electrolytic Condenser	1.50
27	84194	R. F. Trimmer Condenser (3 to 23 mmfd.)	.15
28	84195	Oscillator Padding Trimmer (300-600 mmfd.)	.50
29-A, 29-B, 29-C, 29-D	84196	300 ohm resistor; 300 ohm resistor; 25 ohm resistor; 275 ohm resistor	.65
30	84198	110,000 ohm 1/4 watt carbon resistor	.20
31	84199	16,000 ohm 1/4 watt carbon resistor	.20
32	84200	.004 mfd. molded mica condenser	.50
33	84220	Antenna Coupling Condenser (20 mmfd.)	.15
34	84229	Broadcast Pre-Selector Coil Assembly consists of No. 84175 and 84178 coils	1.00
	84312	Output Transformer (on R-227 12" Speaker)	2.50
	84404	Phonograph Switch (D.P.D.T.) (R-125-X only)	1.10
	84407	Phonograph Terminal Strip (R-125-X only)	.12
	84408	Power Transformer (100 to 240 volts, 25 to 133 cycles, R-125-X only)	7.00
38	84420	Tone Control Switch	.30
39	84501	Diaphragm and Shell Assembly for R-226 8" Speaker (Also see 84506)	2.50
40	84505	Field Coil and Housing for R-226 8" Speaker	3.75
	84506	Diaphragm and Shell Assembly for R-227 12" Speaker	3.25
	84507	Field Coil and Housing, for R-227 12" Speaker	4.00
41	84601	.25 mfd. 300 volt paper condenser	.30

MODELS 1251 to 1259
Chassis R-125
Alignment, Trimmers

STEWART WARNER CORP.

MODEL R-125 CHASSIS (Receiver Models 1251 to 1259)

ALIGNING EQUIPMENT

Experience has definitely shown that a selective radio chassis such as the Stewart-Warner Model R125 cannot be properly aligned by ear or "on the air". **An output meter and a high grade modulated service oscillator are absolutely essential.**

The oscillator should be capable of generating the frequencies of 456 K.C., 600 K.C., 1400 K.C., and a short wave range extending to 4000 K.C. or more.

When using your oscillator do not rely on calibration curves for frequency determination but check the frequencies by comparison with broadcast station signals.

PRELIMINARY STEPS

To align the R125 chassis proceed as follows:

1. Remove the chassis from the cabinet.
2. Connect the output meter across the primary of the output transformer on the dynamic speaker (center and blue wires on terminal strip.)
3. Turn the volume control to maximum volume position.

ALIGNMENT OF THE I. F. AMPLIFIER

1. (a) Set the test oscillator to exactly 456 K.C.

(b) Connect the output leads of the oscillator to the 6A7 control grid and ground.

(c) Set the range switch (right hand knob) to the broadcast position (fully clockwise). Make certain that no station is tuned in.

(d) Carefully adjust the I.F. Transformer trimmers Nos. 1, 2, 3, and 4 for maximum output meter deflection.

(e) Repeat the four trimmer adjustments since the adjustment of each trimmer has some effect on the others.

BROADCAST RANGE CALIBRATION

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. Calibrate the set at the high frequency end. 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 its calibration is accurately known.

(a) Turn the set dial to the exact frequency setting of the signal (either a station or the oscillator).

(b) Carefully adjust trimmer No. 5 (broadcast oscillator calibration trimmer) until the signal may be tuned in with maximum volume at its correct frequency setting.

BROADCAST RANGE ALIGNMENT

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. (a) Set the test oscillator to approximately 1400 K.C. and carefully tune the receiver to the signal.

(b) Adjust trimmers No. 6 and No. 7 (broadcast detector shunt trimmer and broadcast pre-selector shunt trimmer respectively) for maximum output meter reading.

(c) Retune the receiver and check the adjustments of trimmers No. 6 and No. 7. Do not touch trimmer No. 5 since this will change the calibration.

6. (a) Set the test oscillator to approximately 600 K.C. and tune the receiver to the signal.

(b) Adjust Trimmer No. 8 (broadcast oscillator padding trimmer) to get maximum output meter deflection.

(c) Retune the receiver dial to a peak and readjust the trimmer.

(d) 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. Repeat 5 a, 5 b, and 5 c.

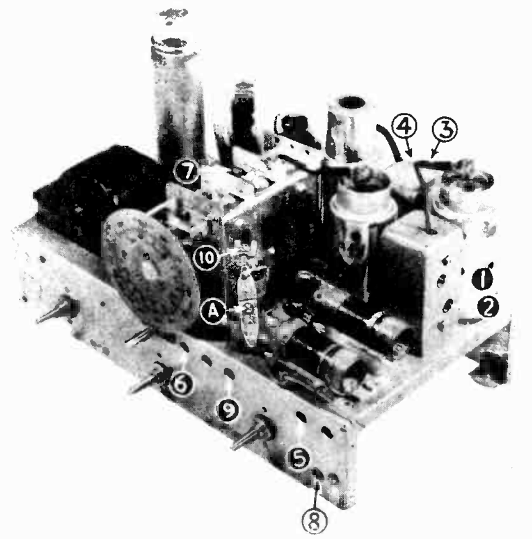
SHORT WAVE RANGE CALIBRATION

1. Turn the receiver range switch to the short wave band position (counter-clockwise).

2. Adjust the test oscillator to exactly 16,000 K.C. If you cannot obtain this frequency on your oscillator, you may use the second harmonic of 8000 K.C., the third harmonic of 5333 K.C., or the fourth harmonic of 4000 K.C., all of which will give a 16,000 K.C. signal.

3. (a) Set the receiver dial at 16.0 M.C. on the dial scale and adjust trimmer No. 9 (shortwave range oscillator calibration trimmer) until the signal may be tuned in at the correct dial setting with maximum volume. Usually there will be two peaks. The proper one is that with the trimmer screw farthest out.

(b) To be sure you have not adjusted trimmer No. 9 to the image frequency, check this point by setting the receiver dial to the image frequency, approximately 15.1 M.C., and see if the image signal can be heard. **(The image frequency is always the signal frequency minus twice the I.F. frequency or in this case 16,000 — 912 = 15,088 K.C. or approximately 15.1 M.C.)** If no signal can be heard at 15.1 M.C. dial setting even with greatly increased test oscillator output, but can be heard at 16.9 M.C. dial setting, Trimmer No. 9 is evidently improperly adjusted to the image frequency and so must be reset to the proper peak with the screw farther out. After readjusting trimmer No 9, again check to see that the image comes in at 15.1 M.C. dial setting and not at 16.9 M.C. dial setting.



SHORT WAVE RANGE ALIGNMENT

4. (a) Tune the set very carefully to the oscillator frequency, 16.0 M.C. for maximum output meter reading.

(b) Adjust trimmer No. 10 (second shortwave range detector shunt trimmer) to a peak. After this is done try to increase the output meter reading by detuning trimmer No. 10 slightly and retuning the receiver dial. Continue detuning trimmer No. 10 and retuning the set until maximum output meter deflection is secured.

IMPORTANT: The antenna coupling condenser marked "A" in the diagram is adjusted to a definite capacity at the factory and should not require any further adjustment. Therefore do not adjust trimmer "A" unless it is found that trimmer No 10 will not peak or if maximum output is obtained with No 10 either all the way out or all the way in. If it is necessary to adjust trimmer "A", turn its adjusting screw all the way in and then turn it out just far enough to give a satisfactory peak on No. 10 when trimmer No. 10's adjusting screw is almost all the way out.

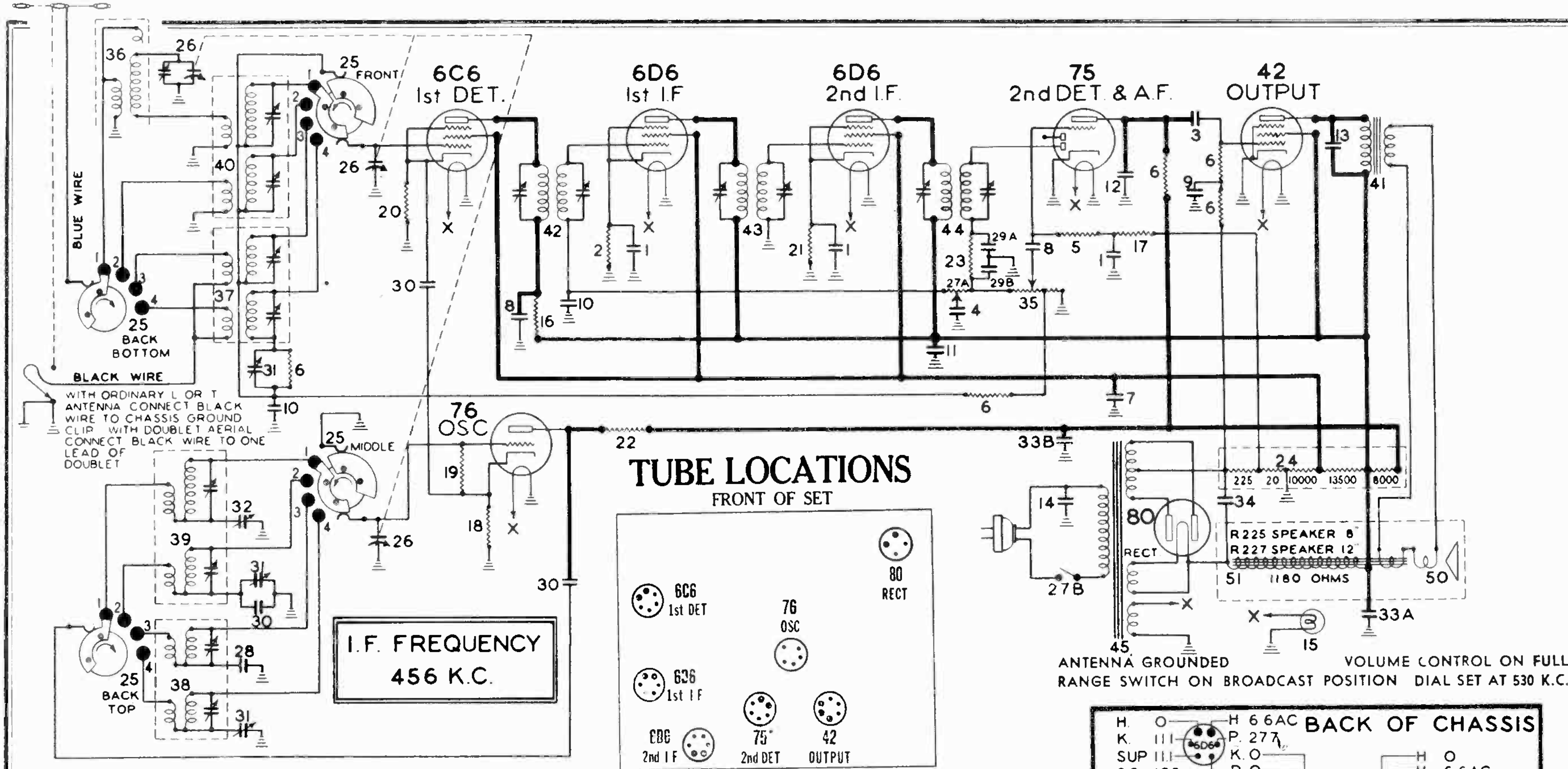
Always readjust No. 10 after adjusting trimmer "A".

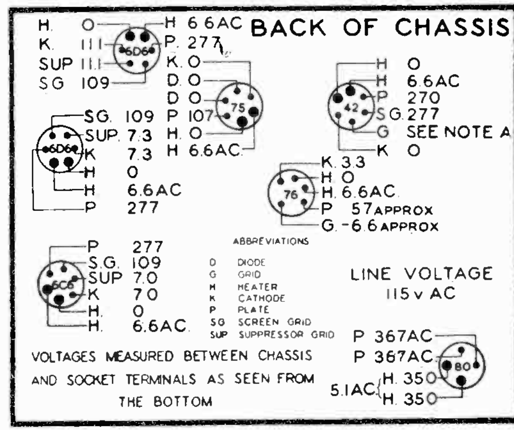
(c) Check the adjustment of trimmer No. 10 by tuning the receiver to 15.1 M.C. and noting if the image signal is much weaker than the 16.0 M.C. signal. If the signal at 15.1 M.C. dial setting is equal to or stronger than the 16.0 M.C. signal, trimmer No. 10 is not set to the proper peak and must be reset as in 4 (b) until a re-check shows that the signal at the 16.0 M.C. dial setting is much stronger than that at the 15.1 M.C. image dial setting.

NOTE: To prevent the trimmers from being jarred out of adjustment use Duco Household Cement or some similar product to fasten the trimmer screws in position after completing the alignment. Be careful that you do not apply too much cement because it must not be allowed to run between the trimmer plates.

MODELS 1261 to 1269 Chassis R-126 Schematic, Socket Voltage, Parts

STEWART WARNER CORP.





Diag. No.	Part No.	Description
1	81630	.1 mfd. 100 v. cond.
2	81829	1500 ohm, ¼ w. res.
3	83007	.02 mfd. 600 v. cond.
4	83011	.004 mfd. 600 v. cond.
5	83072	510,000 ohm ¼ w. res.
6	83082	260,000 ohm ¼ w. res.
7	83214	.25 mfd. 250 v. cond.
8	83219	.01 mfd. 600 v. cond.
9	83352	.015 mfd. 600 v. cond.
10	83353	.05 mfd. 100 v. cond.
11	83440	.1 mfd. 400 v. cond.
12	83539	.00026 mfd. mica cond.
13	83706	.006 mfd. 600 v. cond.
14	83976	.012 mfd. 1000 v. cond.
15	84058	Dial bulb (6-8 volt)
16	84199	16,000 ohm, ¼ w. res.
17	84235	1.1 meg., ¼ w. res.
18	84237	510 ohm, ¼ w. res.
19	84238	11,000 ohm, ¼ w. res.
20	84239	6,100 ohm, ¼ w. res.
21	84240	4,000 ohm, ¼ w. res.
22	84241	31,000 ohm, ½ w. res.
23	84242	31,000 ohm, ¼ w. res.
24	84273	Voltage divider
25	84274	Range switch
26	84275	3 gang variable condenser
27A, 27B	84279	300,000 ohm tone control and line switch
28	84280	.006 mfd. mica condenser
29A, 29B	84281	Dual .00026 mfd. mica cond.
30	84282	.001 mfd. mica condenser
31	84283	Short wave padding trimmer
32	84284	Broadcast padding trimmer
33A, 33B	84286	8 mfd. 450 v.cond. / 2 mfd. 400 v.cond.
34	84288	14 mfd. 475 v. cond.
35	84289	500,000 ohm vol. cont. (tap at 125,000 ohms from ground)
36	84290	Broadcast antenna coil
	84295	Coil trimmer condenser
37	84298	No. 3 ant. coil and trimmer / No. 4 ant. coil and trimmer
38	84302	No. 3 osc. coil and trimmer / No. 4 osc. coil and trimmer
39	84305	Broadcast osc. coil & trimmer / No. 2 osc. coil and trimmer
40	84308	B.C. 1st det. coil & trimmer / No. 2 ant. coil and trimmer
41	84312	Output transformer
42	84320	1st I.F. trans. (or sub. 84187)
43	84321	2nd I.F. trans. (or sub. 84187)
44	84322	3rd I.F. trans. (or sub. 84188)
45	84324	Power transformer (115 volts 60 cycles) (R-126-A only) (See 84410 for 100-240 volts)
46	84404	Phono. switch (R-126-X only)
47	84407	Phonograph Terminal Strip (R-126 x only)
	84410	Power trans. (100 to 240 volts, 25 to 133 cycles) (R-126-P & X)
49	84412	Phonograph Terminal Strip (R-126-P only)
50	84504	Diaphragm and shell assem. for 8" speaker (also see 84506)
51	84505	Field coil assem. R-225 speaker
	84506	Diaphragm and shell assem. for R-227 12" speaker
	84507	Field coil assem. R-227 speaker
	R-225	8" speaker and output trans.
	R-227	12" speaker and output trans.

IMPORTANT: Use a high resistance voltmeter of 1000 ohms per volt.

Speaker field voltage with coil warm is 75 volts.

Note A: The actual bias on the 42 tube is —17.5 V. measured across the 225 and 20 ohm sections of the voltage divider. The grid bias on the 75 tube is —1.4 V. volts measured across the 20 ohm section of the voltage divider.

MODELS 1261 to 1269
Chassis R-126
Circuit Data, Trimmers
Alignment

STEWART WARNER CORP.

STEWART-WARNER MODEL R-126 CHASSIS

CIRCUIT DESCRIPTION

The Stewart-Warner Model R-126 chassis is a seven-tube all-wave superheterodyne, covering a frequency range from 530 kilocycles to 23 megacycles in four tuning ranges, which can be selected by means of the range switch. This range switch is used to connect proper coils into the antenna and oscillator circuits, different coils being used for each range. Trimmer condensers are provided on each coil so that each circuit can be properly adjusted to give maximum efficiency on every frequency range. The spacing between the two coils wound on each form is sufficient to prevent coupling. To further guard against dead spots due to the absorption effects of the unused coils, the range switch is provided with contact arms which short circuit all coils of the ranges lower in frequency than the one in use.

Special, electrically symmetrical, antenna coils are employed so that efficient, relatively noise-free shortwave reception can be secured with a doublet-type of antenna without the use of any additional coupling devices. These coils are also designed so that a standard antenna having a single wire lead-in can be used where the noise level is low on the shortwave ranges.

A tuned pre-selector circuit is used only on the broadcast range to improve selectivity. After passing through this circuit, the signal is fed into the 6C6 first detector tube where it beats with the output of the 76 oscillator tube to produce a 456 kc. intermediate frequency signal. This particular frequency is chosen as the best value for an all-wave receiver, since it reduces image interference on the shortwave ranges.

The 456 kc. signal is amplified by the two-stage, high-gain I.F. amplifier using two 6D6 tubes. The amplified signal is then rectified by the 75 diode, producing a modulated D.C. voltage drop across the 500,000 ohm volume control. Any selected part of this voltage is impressed on the triode section of the 75 tube.

The triode section of the 75 tube operates as an audio frequency amplifier, which is resistance coupled to the 42 pentode power output tube.

The A.V.C. voltage is secured by smoothing out the modulated D.C. voltage drop across the volume control and applying it to the control grid of the first I.F. tube. To improve the A.V.C. action part of the voltage is also applied to the control grid of the 6C6 first detector tube.

CALIBRATION AND ALIGNMENT

TEST EQUIPMENT

Experience has definitely shown that a selective radio chassis such as the Stewart-Warner Model R-126 cannot be properly aligned by ear or "on the air." **A high grade modulated service oscillator and an output meter are absolutely essential.**

The oscillator should be capable of generating the frequencies of 456 kc., 600 kc., 1400 kc., and a short wave range extending to 4000 kc., or more. This oscillator must provide a wide range of signal output—very weak for proper alignment of the various bands so that the A.V.C. circuit will not be actuated and very strong for use when the receiver is badly out of adjustment or for shortwave alignment where harmonics may be used.

PRECAUTIONS

When using your oscillator do not rely on calibration curves for frequency determination but check the frequencies by comparison with broadcast station signals.

At all times during calibration and alignment use the lowest output meter scale which will provide a steady reading and adjust the oscillator output so that the output meter reads near the center of the scale.

For making trimmer adjustments use a bakelite aligning tool which has only a small metal screw driver tip.

Very Important: In aligning all but the I.F. stages it is absolutely necessary to have a 400 to 500 ohm CARBON resistor in series with the antenna lead to the oscillator. Do not omit this resistor or the alignment will be incorrect!

PRELIMINARY STEPS

To align the R-126 chassis proceed as follows:
Remove the chassis from the cabinet.
Connect the output meter across the primary of the output transformer on the dynamic speaker. (Center and blue wires on terminal strip.)
Turn the volume control to maximum volume position.

TRIMMER LOCATIONS

I. F. AMPLIFIER

1., 2. 1st I.F. transformer trimmers
3., 4. 2nd I.F. transformer trimmers
5., 6. 3rd I.F. transformer trimmers

530 TO 1540 K.C. BROADCAST RANGE

7. Range No. 1 (Broadcast) oscillator calibration trimmer
8. Range No. 1 (Broadcast) detector shunt trimmer
9. Range No. 1 (Broadcast) pre-selector shunt trimmer
10. Range No. 1 (Broadcast) oscillator padding trimmer

1500 TO 4600 K.C. SHORTWAVE RANGE

11. Range No. 2 oscillator calibration trimmer
12. Range No. 2 detector shunt trimmer
13. Range No. 2 oscillator padding trimmer

4.3 TO 12.6 MC. SHORTWAVE RANGE

14. Range No. 3 oscillator calibration trimmer
15. Range No. 3 detector shunt trimmer

11.0 TO 23.0 MC. SHORTWAVE RANGE

16. Range No. 4 oscillator calibration trimmer
17. Range No. 4 detector shunt trimmer
18. Range No. 4 oscillator padding trimmer
19. Range No. 4 detector padding trimmer

CALIBRATION AND ALIGNMENT

The following **procedure** on the proper adjustment of the various trimmers **is** divided into two classifications, **calibration and alignment. Calibration** consists of the adjustment of trimmers so that the signals can be received at the **proper** dial settings. Calibration on the R-126 is made at the high frequency end of the dial. In addition, there is also a calibration adjustment at the low frequency end of range No. 4. **Alignment** consists of adjustment of trimmers such that the antenna and oscillator circuits are tuned to give maximum sensitivity. Alignment thus does not concern the dial setting so that it is often only necessary to check calibration. However, if a re-calibration is made it is always necessary to go over the alignment. The calibration and alignment of each range is independent of all others so that one range may **be** re-calibrated or re-aligned without necessitating going over the trimmer adjustments on any of the other ranges.

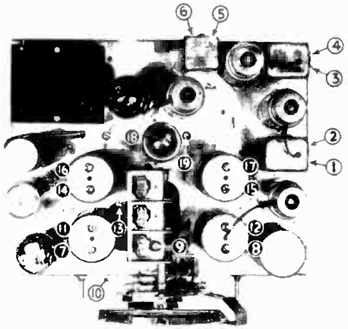
ALIGNMENT OF THE I. F. AMPLIFIER

1. (a) Set the test oscillator to **exactly** 456 kc.
(b) Connect the output leads of the oscillator to the 6C6 control grid and **ground.**
(c) **Set** the **range switch** (lower center knob) to the broadcast position (**dial pointer on** black dial **scale**). Make certain that no station is tuned in.
(d) Carefully adjust the I.F. Transformer **trimmers** No. 1, 2, 3, 4, 5, and 6 for **maximum output meter deflection.**
(e) **Repeat** the **six** trimmer **adjustments** since the adjustment of each trimmer **has** some effect on the others.

RANGE NO. 1 (BROADCAST) CALIBRATION

2. Check the position of the dial on the condenser shaft by turning the rotor plates of the gang condenser to full mesh. The dial should then read 530 kc. (The last division at low frequency end of the broadcast range.)
3. Leave the range switch in the **broadcast position.**

4. **Use a broadcast station signal between 1300 and 1420 kc. to calibrate the receiver dial on the broadcast range. If no such station can be heard, you can use a 1400 kc. signal from your oscillator provided its calibration is accurately known. Proceed as follows:**
(a) Set the receiver dial pointer to the exact frequency setting of the signal (either a station or the oscillator.)
(b) Carefully adjust trimmer No. 7 (Range No. 1 broadcast oscillator calibration trimmer) until the signal may be tuned in with maximum volume at its correct frequency setting.



RANGE NO. 1 (BROADCAST) ALIGNMENT

5. 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.

6. (a) Set the test oscillator to approximately 1400 kc. and carefully tune the receiver to the signal.
(b) Adjust trimmers No. 8 and No. 9 (Range No. 1 broadcast detector shunt trimmer and Range No. 1 broadcast pre-selector shunt trimmer, respectively) for maximum output meter reading.
(c) Retune the receiver and check the adjustments of trimmers No. 8 and No. 9. Do not touch trimmer No. 7 since this will change the calibration.
7. (a) Set the test oscillator to approximately 600 kc. and tune the receiver to the signal.
(b) Adjust trimmer No. 10 (Range No. 1 broadcast oscillator padding trimmer) to get maximum output meter deflection.
(c) Retune the receiver dial to a peak and readjust the trimmer.
(d) 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.**
8. Repeat 6 a, 6 b, and 6 c.

RANGE NO. 2 CALIBRATION

9. Turn receiver range switch to the range No. 2 position. (Dial pointer on red dial scale.)
10. (a) Adjust the oscillator to **exactly** 4000 kc.
(b) Set the receiver dial pointer to exactly 4000 kc. on the red dial scale and adjust trimmer No. 11 (range No. 2 oscillator calibration trimmer) until the signal comes in with maximum volume. If there are two peaks, the proper one is that with the trimmer screw farthest out.
(c) **To be sure you have not adjusted trimmer No. 11 to the image frequency, check this point by tuning the receiver dial to the image frequency, approximately 3100 kc. and see if the image signal can be heard. (The image frequency is the signal frequency minus twice the I.F. frequency or in this case 4000 — 912 = 3088 kc. or approximately 3100 kc.)** If no signal can be heard at about 3100 kc. dial setting even with greatly increased test oscillator output, trimmer No. 11 is evidently improperly adjusted and so must be reset to a new peak with the screw farther out. After re-adjusting trimmer No. 11 again check to see that the image comes in at 3100 kc. dial setting.

RANGE NO. 2 ALIGNMENT

11. (a) Tune the set very carefully to the oscillator signal at 4000 kc. for maximum output meter reading.
(b) Adjust trimmer No. 12 (range No. 2 detector shunt trimmer) to a peak.
(c) Check the adjustment of trimmer No. 12 by tuning the receiver to the image at about 3100 kc. and noting if the image signal is much weaker than the 4000 kc. signal. If the signal at 3100 kc. dial setting is equal to or stronger than the 4000 kc. signal trimmer No. 12 is not set to the proper peak and must be reset until a recheck shows that the signal at 4000 kc. dial setting is much stronger than at the 3100 kc. image dial setting.
12. (a) Set the test oscillator to approximately 1750 kc. and tune the receiver to the signal.
(b) Adjust trimmer No. 13 (range No. 2 oscillator padding trimmer) to get maximum output meter deflection.
(c) Retune the receiver dial to a peak and readjust the trimmer.
(d) Continue this procedure of adjusting the trimmer and retuning the dial until the output meter reading cannot be further increased.

RANGE NO. 3 CALIBRATION

13. Turn the receiver range switch to the range No. 3 position, (dial pointer on green dial scale).
14. (a) Adjust the test oscillator to **exactly** 12,000 kc. If you cannot obtain this frequency on your oscillator, you may use the second harmonic of 6000 kc., the third harmonic of 4000 kc., or the fourth harmonic of 3000 kc., all of which will give a 12,000 kc. signal.
(b) Set the receiver dial pointer at **exactly** 12.0 mc. on the green dial scale and adjust trimmer No. 14 (range No. 3 oscillator calibration trimmer) until the signal is tuned in with maximum volume. Usually there will be two peaks. The proper one is that with the trimmer screw farthest out.
(c) To be sure you have not adjusted trimmer No. 14 to the image frequency, check this point by tuning the receiver dial to the image frequency, approximately 11.1 mc., and see if the image signal can be heard. If no signal can be heard at 11.1 mc. dial setting even with greatly increased test oscillator output, trimmer No. 14 is evidently improperly adjusted to the image frequency and so must be reset to the proper peak with the screw farther out. After re-adjusting trimmer No. 14, again check to see that the image comes in at 11.1 mc. dial setting.

RANGE NO. 3 ALIGNMENT

15. (a) Tune the set very carefully to the oscillator signal at 12.0 mc. for maximum output meter reading.
(b) Adjust trimmer No. 15 (range No. 3 detector shunt trimmer) to a peak. After this is done try to increase the output meter by detuning trimmer No. 15 slightly and retuning the receiver dial. Continue detuning trimmer No. 15 and retuning the set until maximum output meter deflection is secured.
(c) Check the adjustment of trimmer No. 15 by tuning the receiver to the image at 11.1 mc. and noting if the image signal is much weaker than the 12.0 mc. signal. If the signal at 11.1 mc. dial setting is equal to or stronger than the 12.0 mc. signal, trimmer No. 15 is not set to the proper peak and must be reset as in 15 (b), until a recheck shows that the 12.0 mc. dial setting is much stronger that at the 11.1 mc image dial setting.

MODELS 1261 to 1269
Chassis R-126
Alignment,Part 2
Parts List
MODELS R-126-P,R-126-X
Data

STEWART WARNER CORP.

RANGE NO. 4 CALIBRATION

16. Turn the receiver range switch to the No. 4 position, (dial pointer on purple dial scale).

17. Leave the test oscillator set to **exactly** 12,000 kc.

(a) Set the receiver dial pointer to **exactly** 12.0 mc. on the purple dial scale.

(b) Adjust trimmer No. 18 (range No. 4 oscillator padding trimmer) until the signal gives maximum output meter reading.

(c) To be sure that you have not adjusted trimmer No. 18 on the image frequency, tune in the image signal at approximately 11.1 mc. on the receiving dial. If no signal can be heard at 11.1 mc. even with greatly increased test oscillator output, but can be heard at 12.9 mc. dial setting, trimmer No. 18 is evidently adjusted to the image frequency and so must be reset to the proper peak with the trimmer screw farther out. After re-adjusting trimmer No. 18, again check to see that the image comes in at 11.1 mc. dial setting and not at the 12.9 mc. dial setting.

18. (a) Set the test oscillator to **exactly** 20,000 kc. If your oscillator cannot reach this frequency, use the 2nd harmonic of 10,000 kc., the third harmonic of 6666 kc., the fourth harmonic of 5000 kc., or the fifth harmonic of 4000 kc. all of which will give a 20,000 kc. signal

(b) Set the receiver dial pointer to **exactly** 20.0 mc. on the purple dial scale.

(c) Adjust trimmer No. 16 (range No. 4 oscillator calibration trimmer) until the signal is tuned in with maximum volume. In adjusting the trimmer, there usually will be two peaks. The proper one is that with the trimmer screw farthest out.

(d) To be sure you have not adjusted trimmer No. 16 to the image frequency, check this point by tuning the receiver dial to the image frequency, approximately 19.1 mc. and see if the image signal can be heard. If no signal can be heard at 19.1 mc. dial setting even with greatly increased test oscillator output, but can be heard at 20.9 mc. dial setting, trimmer No. 16 is evidently improperly adjusted to the image frequency and so must be reset to the proper peak with the screw farther out. After re-adjusting trimmer No. 16 again check to see that the image comes in at 19.1 mc. dial setting and not at 20.9 mc. dial setting.

RANGE NO. 4 ALIGNMENT

19. (a) Tune the set very carefully to the oscillator frequency, 20.0 mc., for maximum output meter reading.

(b) Adjust trimmer No. 17 (range No. 4 detector shunt trimmer) to a peak. After this is done try to increase the output meter reading by detuning trimmer No. 17 slightly and retuning the receiver dial. Continue detuning trimmer No. 17 and retuning the set until maximum output meter deflection is secured.

(c) Check the adjustment of trimmer No. 17 by tuning the receiver to 19.1 mc. and noting if the image signal is much weaker than the 20.0 mc. signal. If the signal at 19.1 mc. dial setting is equal to or stronger than the 20.0 mc. signal, trimmer No. 17 is not set to the proper peak and must be reset as in 19b until a recheck shows that the signal at the 20.0 mc. dial setting is much stronger than that at the 19.1 mc. image dial setting.

20. (a) Set the test oscillator to about 12,000 kc. or use the second harmonic of 6000 kc., the third harmonic of 4000 kc., or the fourth harmonic of 3000 kc., all of which give a 12,000 kc. signal.

(b) Tune the set very carefully to the oscillator signal at 12.0 mc. to get maximum output meter reading.

(c) Adjust trimmer No. 19 (range No. 4 detector padding trimmer) to get maximum output meter deflection.

(d) Retune the receiver dial to a peak and readjust the trimmer.

(e) Continue this procedure of adjusting the trimmer and retuning the receiver until the output meter reading cannot be increased.

(f) Check the adjustment of padding trimmer No. 19 by tuning the receiver dial to the image signal at 11.1 mc. and noting if the image signal is much weaker than the 12 mc. signal. In case the signal at the 11.1 mc. dial setting is equal to or stronger than the signal at 12.0 mc., padding trimmer No. 19 must be re-adjusted to a different peak as in 20 (c), 20 (d) and 20 (e), so that the 11.1 mc. dial setting signal is much weaker than the 12.0 mc. dial setting signal.

NOTE: To prevent the trimmers from being jarred out of adjustment, use Duco Household Cement or some similar product to fasten the trimmer screws in position after completing the alignment. Be careful that you do not apply too much cement because it must not be allowed to run between the trimmer plates.

MISCELLANEOUS PARTS NOT SHOWN ON CIRCUIT DIAGRAM

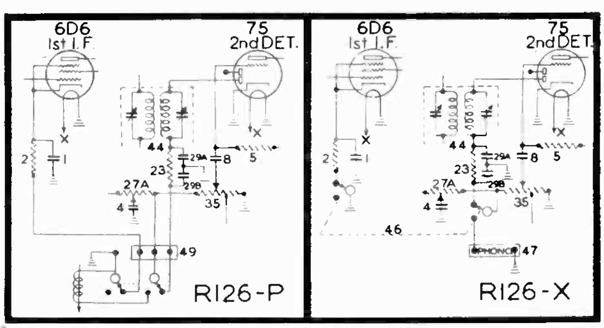
PART No.	DESCRIPTION	LIST PRICE
17615	Lock Washer for range switch	.01
67034	Mtg. nut for range switch, tone and volume controls	.03
67263	No. 6 x ¼" hex. head self tapping screw	.03
67567	Large terminal lug for No. 84288 wet electrolytic condenser	.05
67568	Extruded insulating washer for No. 84288 electrolytic condenser	.05
67681	Plain insulating washer for No. 84288 electrolytic condenser	.03
67977	Chassis mounting screw (No. 14 self tapping)	.03
81090	Escutcheon mounting screws (No. 1 x ¼") per 100	.60
81091	Speaker mounting screw (Console models only)	.01
81214	Set screw (for No. 84430 knob)	.02
81433	Set screw (for No. 84431 lever knob)	.02
81723	Ground clip	.10
81834	6 prong tube socket	.10
81837	4 prong tube socket	.15
81951	5 prong tube socket	.10
83249	Felt knob washer	.01
83318	Rubber grommet for mtg. gang condenser	.03
83497	Knob for volume and tone control	.20
83560	Tube shield	.15
83587	Baffle mounting screw (ornamental head)	.01
83614	Mtg. nut for No. 84286 Dual electrolytic condenser	.03
83668	Mtg. nut for No. 84288 Wet electrolytic condenser	.03
84203	2 lug terminal strip	.05
84234	Tube shield cap	.05
84270	Dial Escutcheon	.65
84287	Lock washer for No. 84286 Dual electrolytic condenser	.01
84318	Shielded control grid lead and clip	.20
84328	Shielded volume control cable	.30
84339	Cardboard filler (Models 1261 and 1262 only)	.05
84405	Knurled nut for phonograph switch	.02
84406	Escutcheon for phonograph switch	.02
84421	Lock washer for phonograph switch	.01
84428	Chassis mounting rubber washer	.03
84430	Knob for tuning control	.25
84431	Lever knob for range switch	.35

MODEL R-126 TUNING DRIVE PARTS

PART No.	DESCRIPTION	LIST PRICE
81108	Shaft Positioning Spring	.01
81109	Small Rubber Drive Ring	.03
81114	Gear Sector and Dial Disc Set Screw	.04
84246	Large Rubber Drive Ring	.02
84252	Vernier Drive Shaft with Drive Rings	.40
84253	Knob Drive Shaft and Knurled Drive	.20
84256	Dial Disc and Bushing	.30
84257	Gear Sector and Bushing	.20
84258	Dial Pointer and Bracket	.50
84259	Dial Light Bracket and Socket	.20
84260	Dial, Frame, and Rack Assembly	.75
84265	Dial Guide Bracket	.15
84272	Front Variable Condenser and Drive Mtg. Bracket	.15
84276	Dial only	.45

MODEL R126-P AND R126-X

100 TO 260 VOLTS, 25 TO 133 CYCLES



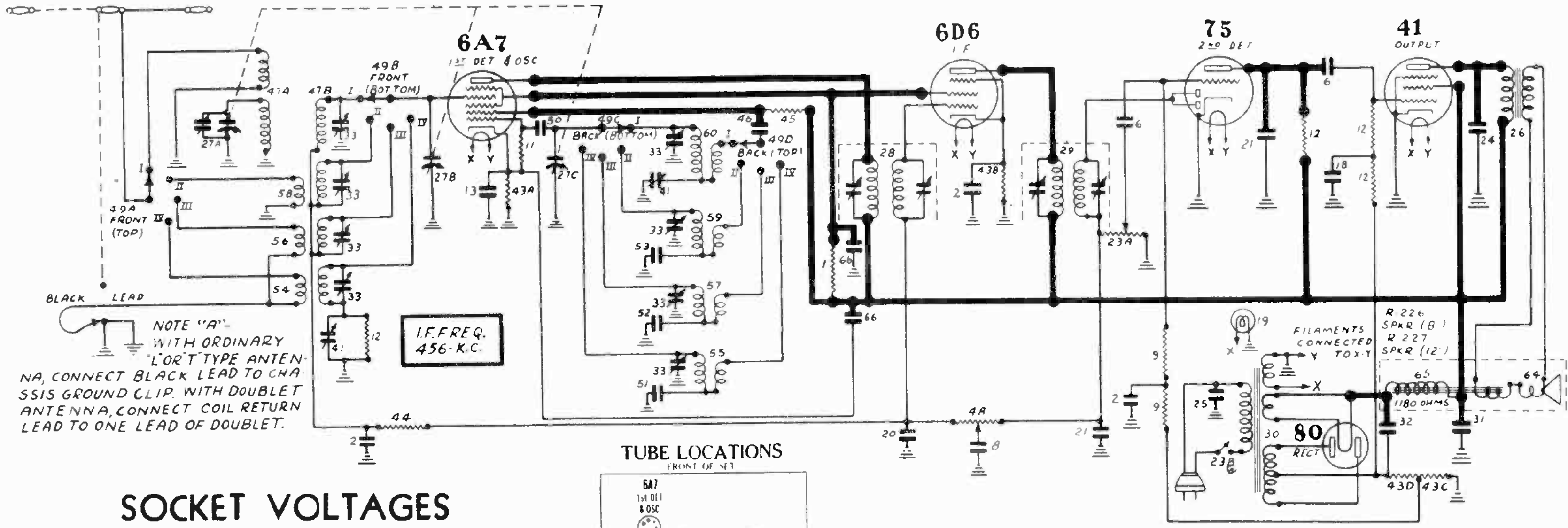
SEE PARTS LIST ON FIRST PAGE FOR PART NUMBERS, DESCRIPTIONS AND PRICES.

PHONOGRAPH AND UNIVERSAL POWER TRANSFORMER CONNECTIONS IN MODEL R-126-P AND R-126-X CHASSIS.

MODELS 1271 to 1279
Chassis R-127
Schematic, Socket
Voltage, Parts

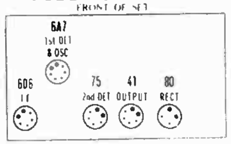
STEWART WARNER CORP.

STEWART-WARNER MODEL R-127 CHASSIS (RECEIVER MODELS 1271 to 1279)



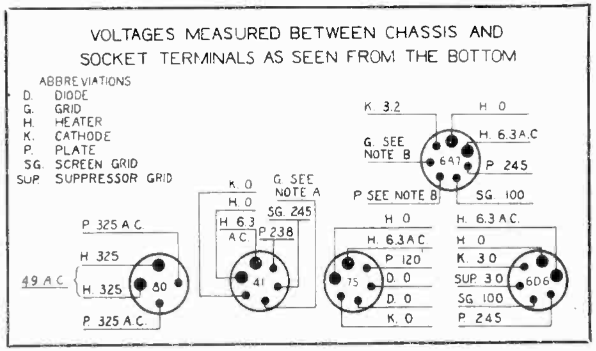
TUBE LOCATIONS

FRONT OF SET



SOCKET VOLTAGES

LINE VOLTAGE 115 VOLTS Volume Control on Full ANTENNA GROUNDED
RANGE SWITCH SET ON BROADCAST POSITION DIAL SET AT 530 K. C.



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.

Speaker field voltage with coil warm is 73 volts D. C.

NOTE A: The actual bias on the 41 output tube is —16.5 volts measured across the metal clad bias resistor 43C and 43D. The grid bias on the 75 2nd detector tube is —1.5 volts measured across the metal clad bias resistor 43C.

NOTE B: The oscillator plate voltage with the range switch on broadcast position and with the dial set at 530 K.C. should be approximately 188 volts. The oscillator grid voltage under similar conditions should be approximately — 14 volts.

R-127 PARTS LIST

SEE FOURTH PAGE FOR MISCELLANEOUS PARTS

Diag. No.	Part No.	DESCRIPTION	List Price
1	62183	30,000 ohm, 1 watt carbon resistor	$0.20
2	81630	.1 mfd. 100 volt paper condenser	.30
6	83007	.02 mfd. 600 volt paper condenser	.35
8	83011	.004 mfd. 600 volt paper condenser	.30
9	83072	510,000 ohm, ¼ watt carbon resistor	.20
11	83080	51,000 ohm, ¼ watt carbon resistor	.20
12	83082	260,000 ohm, ¼ watt carbon resistor	.20
13	83214	.25 mfd. 250 volt paper condenser	.30
18	83219	.01 mfd. 600 volt paper condenser	.30
19	83278	6.3 volt dial light bulb	.15
20	83353	.05 mfd. 100 volt paper condenser	.30
21	83539	.00026 mfd. molded mica condenser	.25
23-A, 23-B	83551	500,000 ohm volume control and line switch	1.25
24	83706	.006 mfd. 600 volt paper condenser	.35
25	83976	.012 mfd. 1000 volt shielded paper condenser	.35
26	84153	Output transformer (for R-226 8" speaker) See 84312 for 12 inch speaker transformer.	2.25
27-A, 27-B, 27-C	84174	3-gang variable condenser	4.00
28	84187	1st I. F. Transformer	1.75
29	84188	2nd I. F. Transformer	1.75
30	84189	Power Transformer (110 volts, 60 cycle) (R-127-A only)	4.00
31	84192	16 mfd. 350 volt wet electrolytic condenser (sub. No. 84193)	
32	84193	16 mfd. 350 volt wet elertrolytic condenser	1.50
33	84194	R. F. trimmer condenser (3 to 23 mmfd.)	.15
41	84195	Trimmer Condenser (300-600 mmfd.)	.50
43-A, 43-B, 43-C, 43-D	84196	300 ohm resistor, 300 ohm resistor, 25 ohm resistor, 275 ohm resistor — in one unit	.65
44	84198	110,000 ohm ¼ watt carbon resistor	.20
45	84199	16,000 ohm ¼ watt carbon resistor	$0.20
46	84200	.004 mfd. molded mica condenser	.50
47-A, 47-B	84229	Broadcast Pre-Selector Coil Assembly	1.00
	84312	Output transformer (for R-227 12" speaker)	2.50
48	84368	300,000 ohm variable tone control	.80
49-A, 49-B, 49-C, 49-D	84369	Range Switch	1.50
50	84370	.0001 mfd. molded mica condenser	.15
51	84371	.0004 mfd. molded mica condenser	.20
52	84372	.006 mfd. molded mica condenser	.60
53	84373	.0015 mfd. molded mica condenser	.25
54	84377	No. 4 band antenna coil	.90
55	84380	No. 4 band oscillator coil	.95
56	84381	No. 3 band antenna coil	.75
57	84383	No. 3 band oscillator coil	.85
58	84385	No. 2 band antenna coil	.55
59	84387	No. 2 band oscillator coil	.55
60	84389	Broadcast oscillator coil	.60
61	84404	Phonograph Switch (D.P.D.T.) (R-127-X only)	1.10
62	84407	Phonograph Terminal Strip (R-127-X only)	.12
63	84408	Power Transformer (100 to 240 volts, 25 to 133 cycles) (R-127-X only)	7.00
64	84504	Diaphragm and Shell Assembly (For R-226 8" speaker) (Also see No. 84506)	2.50
65	84505	Field Coil and Housing (For R-226 8" speaker)	3.75
	84506	Diaphragm and Shell Assembly (For R-227 12" speaker)	3.25
	84507	Field Coil and Housing (For R-227 12" speaker)	4.00
66	84601	.25 mfd. 300 volt paper condenser	.30
	R-226	8" Dynamic Speaker with output transformer	7.50
	R-227	12" Dynamic Speaker with output transformer	9.00

MODELS 1271 to 1279
Chassis R-127
Circuit Data, Trimmers
Alignment

STEWART WARNER CORP.

STEWART-WARNER R-127 CHASSIS

CIRCUIT DESCRIPTION

The Stewart Warner Model R127 Chassis is a five tube all wave superheterodyne. It covers a frequency range from 530 kilocycles to 23 megacycles in four tuning ranges, which can be selected at will thru the medium of a range switch. This range switch is used to connect proper coils into the antenna and oscillator circuits, different coils being used for each range. The use of individual coils results in better performance since they eliminate dead spots in the tuning range which are due to absorption effects encountered when several coils are wound on the same form.

The R127A Chassis is constructed for use on 105 to 125 volts 50 to 60 cycle power circuits and the R127X is arranged for use on 100 to 260 volt lines at any frequency from 25 to 133 cycles. The universal transformer in the R-127X used for these wide ranges of voltage and frequency has a tapped primary which must be connected as shown on the tag attached to the chassis.

A special electrically symmetrical antenna coil is employed so that efficient, relatively noise free short wave reception can be secured with a doublet type of antenna without the use of any additional coupling devices. During the reception of broadcast stations the incoming signal from the antenna enters the antenna and pre-selector coils and then goes to the 6A7 combination first detector and oscillator. The pre-selector coil is not used during the reception of short wave signals. The oscillator is designed so that it generates a frequency higher than the signal such that the signal and oscillator voltages "mix" within the 6A7 pentagrid converter and always produce a resultant frequency of 456 K.C. to which the I.F. amplifier is exactly tuned. This 456 K.C. frequency of the I.F. amplifier has been chosen as the best all round value for an all wave receiver. It is particularly advantageous in reducing image interference on the short wave bands.

The 456 K.C. signal from the 6A7 enters the pre-tuned, high gain, high selectivity, I.F. amplifier employing a 6D6 type tube. The amplified signal is then rectified by the 75 diodes so that a modulated D.C. voltage drop is produced across the 500,000 ohm volume control. The volume is then controlled by impressing any selected part of this voltage on the triode section of the 75 tube. In the triode of the 75 tube the audio signal is greatly amplified and fed by resistance coupling to the 41 tube for additional amplification and power output to the loud speaker.

CALIBRATION AND ALIGNMENT OF MODEL R127 CHASSIS

TEST EQUIPMENT

Experience has definitely shown that a selective radio chassis such as the Stewart-Warner Model R127 cannot be properly aligned by ear or "on the air". **An output meter and a high grade modulated service oscillator are absolutely essential.**

The oscillator should be capable of generating the frequencies of 456 K.C., 600 K.C., 1400 K.C., and a short wave range extending to 4000 K.C. or more. This oscillator must provide a wide range of signal output—very weak for proper alignment of the various bands so that the A.V.C. circuit will not be actuated and very strong for use when the receiver is badly out of adjustment or for shortwave alignment where harmonics may be used.

PRECAUTIONS

1. **When using your oscillator do not rely on calibration curves for frequency determination but check the frequencies by comparison with broadcast station signals.**
2. At all times during calibration and alignment use the lowest output meter scale which will provide a steady reading and adjust the oscillator output so that the output meter reads near the center of the scale.
3. For making trimmer adjustments use a bakelite aligning tool which has only a small metal screw driver tip.
4. **VERY IMPORTANT: IN ALIGNING ALL BUT THE I.F. STAGES IT IS ABSOLUTELY NECESSARY TO HAVE A 400 TO 500 OHM CARBON RESISTOR IN SERIES WITH THE ANTENNA LEAD TO THE OSCILLATOR. DO NOT OMIT THIS RESISTOR OR THE ALIGNMENT WILL BE INCORRECT!**

PRELIMINARY STEPS

To align the R-127 chassis proceed as follows:
1. Remove the chassis from the cabinet.
2. Connect the output meter across the primary of the output transformer on the dynamic speaker (center and blue wires on terminal strip.)
3. Turn the volume control to maximum volume position.

TRIMMER LOCATIONS

I. F. AMPLIFIER

1., 2. 1st. I. F. transformer trimmers

3., 4. 2nd. I. F. transformer trimmers

530 TO 1600 K.C. BROADCAST RANGE

5. Range No. 1 Broadcast oscillator calibration trimmer
6. Range No. 1 Broadcast detector shunt trimmer
7. Range No. 1 Broadcast pre-selector shunt trimmer
8. Range No. 1 Broadcast oscillator padding trimmer

1.54 TO 4.4 M.C. SHORTWAVE RANGE

9. Range No. 2 oscillator calibration trimmer
10. Range No. 2 detector shunt-trimmer

4.17 TO 12.5 M.C. SHORTWAVE RANGE

11. Range No. 3 oscillator calibration trimmer
12. Range No. 3 detector shunt trimmer

10.6 TO 23.0 M.C. SHORTWAVE RANGE

13. Range No. 4 oscillator calibration trimmer
14. Range No. 4 detector shunt trimmer
15. Range No. 4 detector padding trimmer

CALIBRATION AND ALIGNMENT

The following procedure on the proper adjustment of the various trimmers is divided into two classifications, **calibration and alignment. Calibration** consists of the adjustment of trimmers so that the signals can be received at the proper dial settings. Calibration on the R127 is always made at the high frequency end of the dial. **Alignment** consists of adjustment of trimmers such that the antenna and oscillator circuits are tuned to give maximum sensitivity. Alignment thus does not concern the dial setting so that it is often only necessary to check calibration. However, if a re-calibration is made it is always necessary to go over the alignment. The calibration and alignment of each range is independent of all others so that one range may be re-calibrated or re-aligned without necessitating going over the trimmer adjustments on any of the other ranges.

ALIGNMENT OF THE I. F. AMPLIFIER

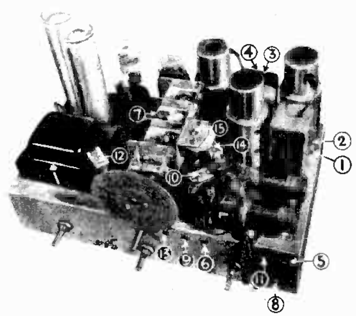
1. (a) Set the test oscillator to exactly 456 K.C.
(b) Connect the output leads of the oscillator to the 6A7 control grid and ground.
(c) Set the range switch (right hand knob) to the broadcast position (fully clockwise). Make certain that no station is tuned in.
(d) Carefully adjust the I.F. Transformer trimmers Nos. 1, 2, 3, and 4 for maximum output meter deflection.
(e) Repeat the four trimmer adjustments since the adjustment of each trimmer has some effect on the others.

RANGE No. 1 (BROADCAST) CALIBRATION

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 53 (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. Calibrate the set at the high frequency end. 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 its calibration is accurately known.

(a) Turn the set dial to the exact frequency setting of the signal (either a station or the oscillator).
(b) Carefully adjust trimmer No. 5 (Range No. 1 broadcast oscillator calibration trimmer) until the signal may be tuned in with maximum volume at its correct frequency setting.

Service Data for Stewart-Warner R-127 Chassis RECEIVER MODELS 1271 to 1279



RANGE No. 1 (BROADCAST) ALIGNMENT

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. (a) Set the test oscillator to approximately 1400 K.C. and carefully tune the receiver to the signal.
(b) Adjust trimmers No. 6 and No. 7 (Range No. 1 broadcast detector shunt trimmer and Range No. 1 broadcast pre-selector shunt trimmer respectively) for maximum output meter reading.
(c) Retune the receiver and check the adjustments of trimmers No. 6 and No. 7. Do not touch trimmer No. 5 since this will change the calibration.

6. (a) Set the test oscillator to approximately 600 K.C. and tune the receiver to the signal.
(b) Adjust trimmer No. 8 (Range No. 1 broadcast oscillator padding trimmer) to get maximum output meter deflection.
(c) Retune the receiver dial to a peak and readjust the trimmer.
(d) 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. Repeat 5 a, 5 b, and 5 c.

RANGE No. 2 CALIBRATION

1. Turn receiver range switch to range No. 2 position, which is the third position of the right hand knob when turning it in a clockwise direction.
2. Adjust the oscillator to **exactly** 4000 K.C.
3. (a) Set the receiver dial at 4.0 megacycles on the red dial scale and adjust trimmer No. 9 (Range No. 2 oscillator calibration trimmer) until the signal comes in with maximum volume. If there are two peaks, the proper one is that with the trimmer screw farthest out.

(b) To be sure you have not adjusted trimmer No. 9 to the image frequency check this point by setting the receiver dial to the image frequency, approximately 3.1 M.C. and see if the image signal can be heard. **(The image frequency is always the signal frequency minus twice the I.F. frequency or in this case 4000 — 912 = 3088 K.C. or approximately 3.1 M.C.)** If no signal can be heard at 3.1 M.C. dial setting even with greatly increased test oscillator output, trimmer No. 9 **is evidently improperly adjusted and so must be reset to a new** peak with the screw farther out. After re-adjusting trimmer No. 9 again check to see that the image comes in at 3.1 dial setting.

RANGE No. 2 ALIGNMENT

4. (a) Tune the set very carefully to the oscillator frequency, 4.0 M.C. for maximum output meter reading.
(b) Adjust trimmer No. 10 (Range No. 2 detector shunt trimmer) to a peak.
(c) Check the adjustment of trimmer No. 10 by tuning the receiver to 3.1 M.C. and noting if the image signal is much weaker than the 4.0 signal. If the signal at 3.1 M.C. dial setting is equal to or stronger than the 4.0 signal, trimmer No. 10 is not set to the proper peak and must be reset until a re-check shows that the signal at the 4.0 M.C. dial setting is much stronger than that at the 3.1 M.C. image dial setting.

RANGE No. 3 CALIBRATION

1. Turn the receiver range switch to range No. 3 position, which is the second position in a clockwise direction.
2. Adjust the test oscillator to **exactly** 12,000 K.C. If you cannot obtain this frequency on your oscillator, you may use the second harmonic of 6000 K.C., the third harmonic of 4000 K.C., or the fourth harmonic of 3000 K.C., all of which will give a 12,000 K.C. signal.
3. (a) Set the receiver dial at 12.0 M.C. on the green dial scale and adjust trimmer No. 11 (Range No. 3 oscillator calibration trimmer) until the signal may be tuned in at the correct dial setting with maximum volume. Usually there will be two peaks. The proper one is that with the trimmer screw farthest out.

(b) To be sure you have not adjusted trimmer No. 11 to the image frequency check this point by setting the receiver dial to the image frequency, approximately 11.1 M.C., and see if the image signal can be heard. If no signal can be heard at 11.1 M.C. dial setting even with greatly increased test oscillator output, trimmer No. 11 is evidently improperly adjusted to the image frequency and so must be reset to the proper peak with the screw farther out. After re-adjusting trimmer No. 11 again check to see that the image comes in at 11.1 dial setting.

RANGE No. 3 ALIGNMENT

4. (a) Tune the set very carefully to the oscillator frequency, 12.0 M.C. for maximum output meter reading.
(b) Adjust trimmer No. 12 (Range No. 3 detector shunt trimmer) to a peak. After this is done try to increase the output meter reading by detuning trimmer No. 12 slightly and retuning the receiver dial. Continue detuning trimmer No. 12 and retuning the set until maximum output meter deflection is secured.
(c) Check the adjustment of trimmer No. 12 by tuning the receiver to 11.1 M.C. and noting if the image signal is much weaker than the 12.0 M.C. signal. If the signal at 11.1 M.C. dial setting is equal to or stronger than the 12.0 M.C. signal. trimmer No. 12 is not set to the proper peak and must be reset as in 4 (b) until a re-check shows that the signal at the 12.0 M.C. dial setting is much stronger than that at the 11.1 M.C. image dial setting.

RANGE No. 4 CALIBRATION

1. Turn the receiver range switch to range No. 4 position, which is the farthest counter-clockwise position.
2. Set the test oscillator to give a 20,000 K.C. signal. If your oscillator cannot reach this frequency, use the 2nd harmonic of 10,000 K.C., the third harmonic of 6666 K.C., the fourth harmonic of 5000 K.C., or the fifth harmonic of 4000 K.C., all of which will give a 20,000 K.C. signal.
3. (a) Set the receiver dial at 20.0 M.C. on the purple dial scale and adjust trimmer No. 13 (Range No. 4 oscillator calibration trimmer) until the signal may be tuned in at the correct dial setting with maximum volume. Usually there will be two peaks. The proper one is that with the trimmer screw farthest out.

MODELS 1271 to 1279
Alignment,Part 2, Parts
MODEL R-127-X
Data

STEWART WARNER CORP.

(b) To be sure you have not adjusted trimmer No. 13 to the image frequency check this point by setting the receiver dial to the image frequency, approximately 19.1 M.C. and see if the image signal can be heard. If no signal can be heard at 19.1 M.C. dial setting even with greatly increased test oscillator output, but can be heard at 20.9 M.C. dial setting, trimmer No. 13 is evidently improperly adjusted to the image frequency and so must be reset to the proper peak with the screw farther out. After re-adjusting trimmer No. 13 again check to see that the image comes in at 19.1 M.C. dial setting and not at 20.9 M.C. dial setting.

RANGE No. 4 ALIGNMENT

4. (a) Tune the set very carefully to the oscillator frequency 20.0 M.C. for maximum output meter reading.

(b) Adjust trimmer No. 14 (Range No. 4 detector shunt trimmer) to a peak. After this is done try to increase the output meter reading value by detuning trimmer No. 14 slightly and retuning receiver dial. Continue detuning trimmer No. 14 and retuning the set until maximum output meter deflection is secured.

(c) Check the adjustment of trimmer No. 14 by tuning the receiver to 19.1 M.C. and noting if the image signal is much weaker than the 20.0 M.C. signal. If the signal at 19.1 M.C. dial setting is equal to or stronger than the 20.0 M.C. signal, trimmer No. 14 is not set to the proper peak and must be reset until a re-check shows that the signal at the 20.0 M.C. dial setting is much stronger than that at the 19.1 M.C. image dial setting.

5. (a) Adjust the test oscillator to 12,000 K.C., or use the second harmonic of 6000 K.C., the third harmonic of 4000 K.C., or the fourth harmonic of 3000 K.C., all of which will give a 12,000 K.C. signal. Carefully tune the dial to the signal at about 12 M.C. on the purple dial scale.

(b) Adjust trimmer No. 15 (Range No. 4 oscillator padding trimmer) for maximum output meter reading and then retune the dial.

(c) Repeat this procedure of adjusting the trimmer and retuning the dial until it does not increase the output meter reading.

6. Check the adjustment of padding trimmer No. 15 by tuning the receiver dial to the image signal, 11.1 M.C. In case the signal at the 11.1 M.C. dial setting is equal to or stronger than the signal at 12.0 M.C. dial setting, padding trimmer No. 15 must be re-adjusted to a different peak so that the 11.1 M.C. dial setting signal is much weaker than the 12.0 M.C. dial setting signal.

7. Set the oscillator to exactly 20,000 K.C. and repeat 4 a, 4 b and 4 c.

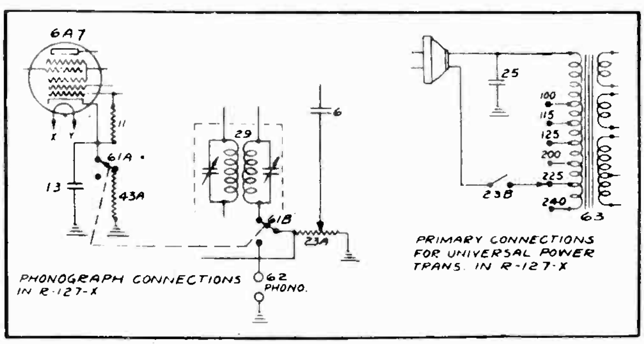
NOTE: To prevent the trimmers from being jarred out of adjustment use Duco Household Cement or some similar product to fasten the trimmer screws in position after completing the alignment. Be careful that you do not apply too much cement because it must not be allowed to run between the trimmer plates.

MISCELLANEOUS PARTS NOT SHOWN ON DIAGRAMS

Part No.	DESCRIPTION	List Price
17615	Range Switch, volume control, and tone control lock washer (⅜")	$0.01
67034	Range Switch, volume control, and tone control mtg. nut (⅜"-32)	.03
67263	No. 6x¼" self tapping screw	.03
67567	Electrolytic condenser terminal lug (large)	.03
67568	Electrolytic condenser extruded insulating washer	.06
67681	Electrolytic condenser plain insulating washer	.03
81091	Speaker mounting screw (model 1274 only)	.01
81148	3 lug terminal strip	.06
81346	1 lug terminal strip	.04
81723	Ground clip	.10
81834	6 prong tube socket	.10
81837	4 prong tube socket	.15
81949	7 prong tube socket	.10
83249	Felt knob washer	.01
83560	Tube shield	.15
83578	Dial escutcheon screws	.01
83587	Baffle mtg. screws	.01
83668	Electrolytic condenser mtg. nut	.03
83718	Gang condenser mtg. cup washer	.01
83722	Gang condenser mtg. rubber grommet	.03
84203	Two lug terminal strip	.05
84205	Dial light socket and bracket	.25
84213	Dial drive shaft and bearing	.35
84234	Tube shield cap	.05
84390	Dial face and bushing	.65
84405	Phonograph switch knurled nut (R-127 x only)	.02
84406	Phonograph switch escutcheon (R-127 x only)	.02
84421	Phonograph switch lock washer (R-127 x only)	.01
84428	Rubber chassis mtg. washer	.03
84486	Dial escutcheon	.25
84493	Chassis mtg. screw	.03
84494	Tuning, volume, and tone control knob	.15
84495	Range switch knob	.15

MODEL R127-X CHASSIS

FOR OPERATION ON 100-260 VOLTS, 25 TO 133 CYCLES



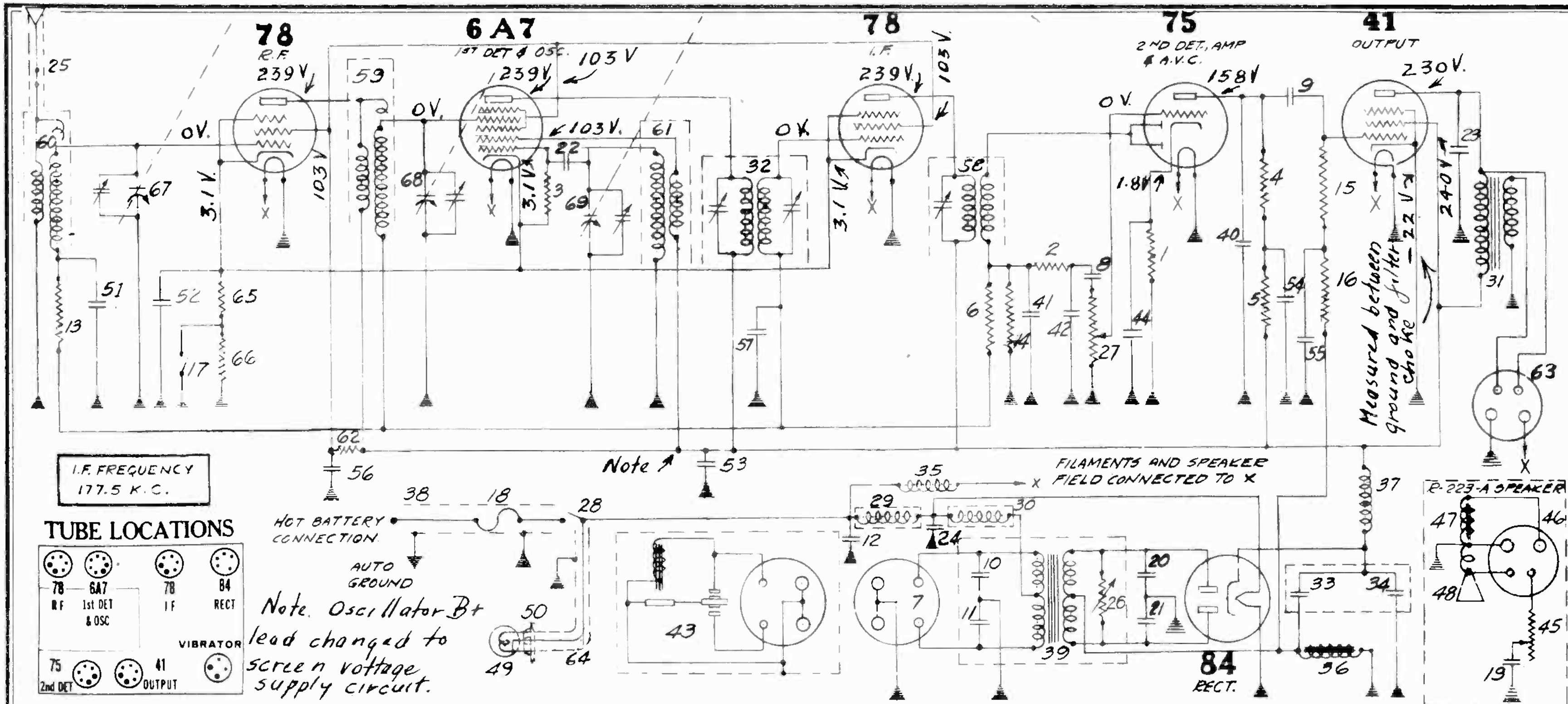
SEE PARTS LIST ON FIRST PAGE FOR PART NUMBERS, DESCRIPTIONS AND PRICES.

PHONOGRAPH AND UNIVERSAL POWER TRANSFORMER CONNECTIONS IN MODEL R127-X

STEWART WARNER CORP.

MODELS 1181, 1182, 1183
Chassis R-118
Schematic, Socket
Parts List

Form No. 6237 7-16-34 Printed in U.S.A.



MODEL R-118 PARTS LIST

DIAG. NO.	PART NO.	DESCRIPTION
1	67580	6000 ohm 1/4 watt carbon resistor
2	81162	10,000 ohm 1/4 watt carbon resistor
3	81645	50,000 ohm 1/4 watt carbon resistor
4	81645	50,000 ohm 1/4 watt carbon resistor
5	81645	50,000 ohm 1/4 watt carbon resistor
6	81682	1.1 megohm 1/4 watt carbon resistor
7	81637	Vibrator socket (standard 4 prong)
8	83007	.02 mfd. 600 volt paper condenser
9	83007	.02 mfd. 600 volt paper condenser
10	83058	.25 mfd. 100 volt paper condenser
11	83058	.25 mfd. 100 volt paper condenser
12	83063	.5 mfd. 100 volt paper condenser
13	83082	260,000 ohm 1/4 watt carbon resistor
14	83082	260,000 ohm 1/4 watt carbon resistor
15	83082	260,000 ohm 1/4 watt carbon resistor
16	83082	260,000 ohm 1/4 watt carbon resistor
17	83179	Local distance switch (SPST)
18	83207	15 ampere fuse
19	83217	.04 mfd. 600 volt paper condenser
20	83352	.015 mfd. 600 volt paper condenser
21	83352	.015 mfd. 600 volt paper condenser
22	83539	.00026 mfd. molded mica condenser
23	83706	.006 mfd. 600 volt paper condenser
24	83714	1.5 mfd. 100 V. shielded paper cond.
25	83723	Antenna lead and plug
26	83725	Special Globar resistor
27) 28)	83728	(500,000 ohm volume control) In One (On-off switch) Unit
29	83730	Vibrator R.F. choke
30	83730	Vibrator R.F. choke
31	83731	Output transformer
32	83732	First I.F. transformer
33) 34)	83734	(Dual 8 mfd. 350 volt dry) (Electrolytic Condenser)
35	83742	Filament R.F. choke
36	83760	Filter choke
37	83770	B supply R.F. choke
38	83777	Battery lead and fuse housing
39	83780	Power transformer
40	83784	.0011 mfd. molded mica condenser
41) 42)	83785	Dual .0005 mfd molded mica cond.
43	83800	Plug-in vibrator
44	83803	12 mfd 25 V. dry Electrolytic Condenser
45	83812	35,000 ohm tone control variable resistor
46	83845	Male speaker plug and bracket
47	83850	Speaker field coil and housing (5.5 ohms)
48	84021	Diaphragm & Shell assem. (R-223 Spkr.)
49	84058	6-8 volt dial light bulb (Mazda #50)
50	84076	Dial light socket and button
51)		(.05 mfd. 100 V. cond., black lead)
52)		(.05 mfd. 100 V. cond., black lead) In one
53)		(.5 mfd. 100 V. cond., blue lead) Unit.
54)	84077	(.1 mfd. 400 V. cond., red lead) Common
55)		(.1 mfd. 400 V. cond., red lead) Terminal
56)		(.25 mfd. 100 V. cond., green lead) grounded
57)		(.25 mfd. 300 V. cond., brown lead) to can
58	84079	2nd. I.F. transformer
59	84080	R.F. (B) coil
60	84081	Antenna (A) coil
61	84082	Oscillator (O) coil
62	84088	12,000 ohm 2 watt carbon resistor
63	84091	Speaker cable and female plug
64	84099	Dial light cable
65	84129	100 ohm, 1/2 watt flexible resistor
66	84131	400 ohm, 1/2 watt flexible resistor
67) 68) 69)	84224	3- gang variable condenser with mounting plate and shaft coupling
	R-223-A	Dynamic speaker

MISCELLANEOUS PARTS NOT SHOWN ON CIRCUIT DIAGRAM

PART NO.	DESCRIPTION
12606	Receiver mtg. nut, (5/16-18 hex.)
81346	1 lug terminal strip
83144	15,000 ohm spark plug suppressor
83145	10,000 ohm distributor suppressor
83242	#6 x 1/4" self tapping screws (dark finish) (for mtg. back cover and casing brackets)
83319	Fuse insulating tube
83624	#8 x 1/4 self tapping screw (Cad.Plate)
83711	8 lug terminal strip
83719	Front cover mtg. spade bolt (8-32)
83720	4 lug terminal strip
83721	Battery lead plug rubber grommet
83727	Back cover
83737	Front cover knurled nuts
83771	Receiver mounting stud
83772	Receiver mounting dash support washer
83806	Speaker grill cloth
83816	Aluminum vibrator shield
83836	Front cover & speaker grill cloth
83889	Shaft casing mtg. bracket
83892	Variable condenser shaft coupling
83904	Generator condenser
83937	Tone control knob
84094	Case assembly, less covers

MODEL 1181 REMOTE CONTROL HEAD PARTS

PART NO.	DESCRIPTION
15214	Long mtg. strap screw (10-32 x 1-1/4" RHMS)
84050	Bezel only, less glass
84052	Glass retainer ring
84053	Glass only
84054	Bezel gasket (blotting paper)
84058	Pilot light bulb (Mazda #50, 6-8 volts)
84059	Case Screw (4-40 x 3/16")
84060	Flexible casing set screw
84067	Steering post mounting bracket
84068	Steering post mounting strap
84076	Dial light button and socket
84100	Remote control head (less flexible shafts)
84106	Volume control knob
84309	Instrument panel mounting accessories

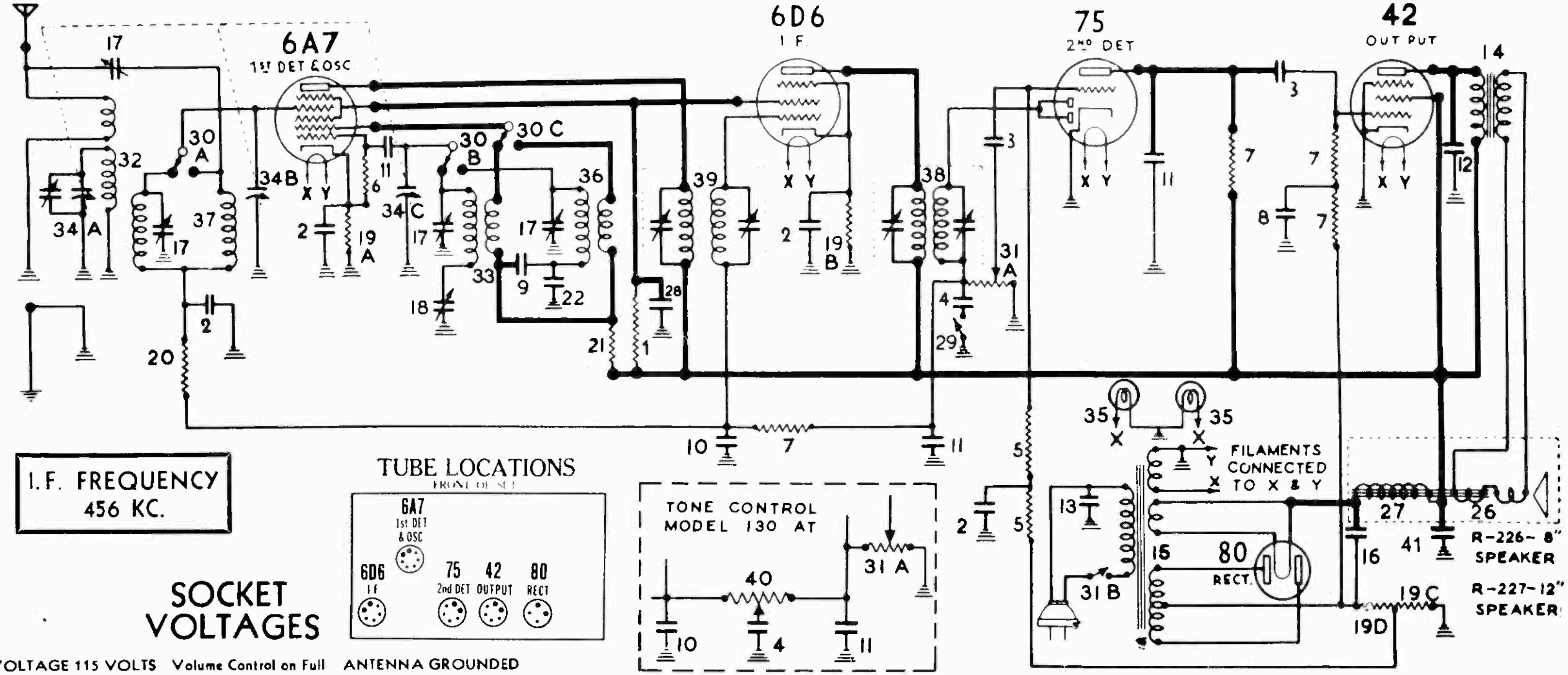
MODEL 1181 FLEXIBLE SHAFTS

PART NO.	DESCRIPTION
84065	Special tuning shaft, 28½ inches long
84066	Special volume control shaft, 28½ inches long
84110	Standard volume control shaft, 24½ inches long
84111	Standard tuning shaft, 24½ inches long
84127	Special tuning shaft, 36 inches long
84128	Special volume control shaft, 36 inches long

MODELS 1301 to 1309
Chassis R-130
Schematic, Voltage
Socket, Parts List

STEWART WARNER CORP.

STEWART-WARNER MODEL R-130 CHASSIS (RECEIVER MODELS 1301 to 1309)



SOCKET VOLTAGES

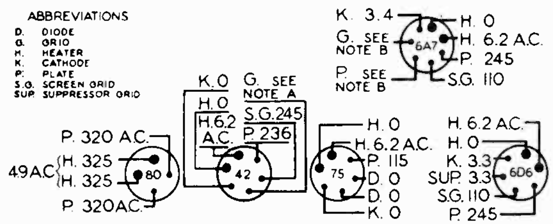
LINE VOLTAGE 115 VOLTS Volume Control on Full
RANGE SWITCH SET ON BROADCAST POSITION

ANTENNA GROUNDED
DIAL SET AT 530 KC.

VOLTAGES MEASURED BETWEEN CHASSIS AND SOCKET TERMINALS AS SEEN FROM THE BOTTOM

FRONT OF CHASSIS

ABBREVIATIONS
D. DIODE
G. GRID
H. HEATER
K. CATHODE
P. PLATE
S.G. SCREEN GRID
SUP. SUPPRESSOR GRID



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.

Speaker field voltage with coil warm is 70 volts D. C.

NOTE A: The bias on the 42 output tube is —17 volts measured across the metal-clad bias resistor 19C and 19D. The grid bias on the 75 second detector is —1.5 volts measured across the bias resistor 19C.

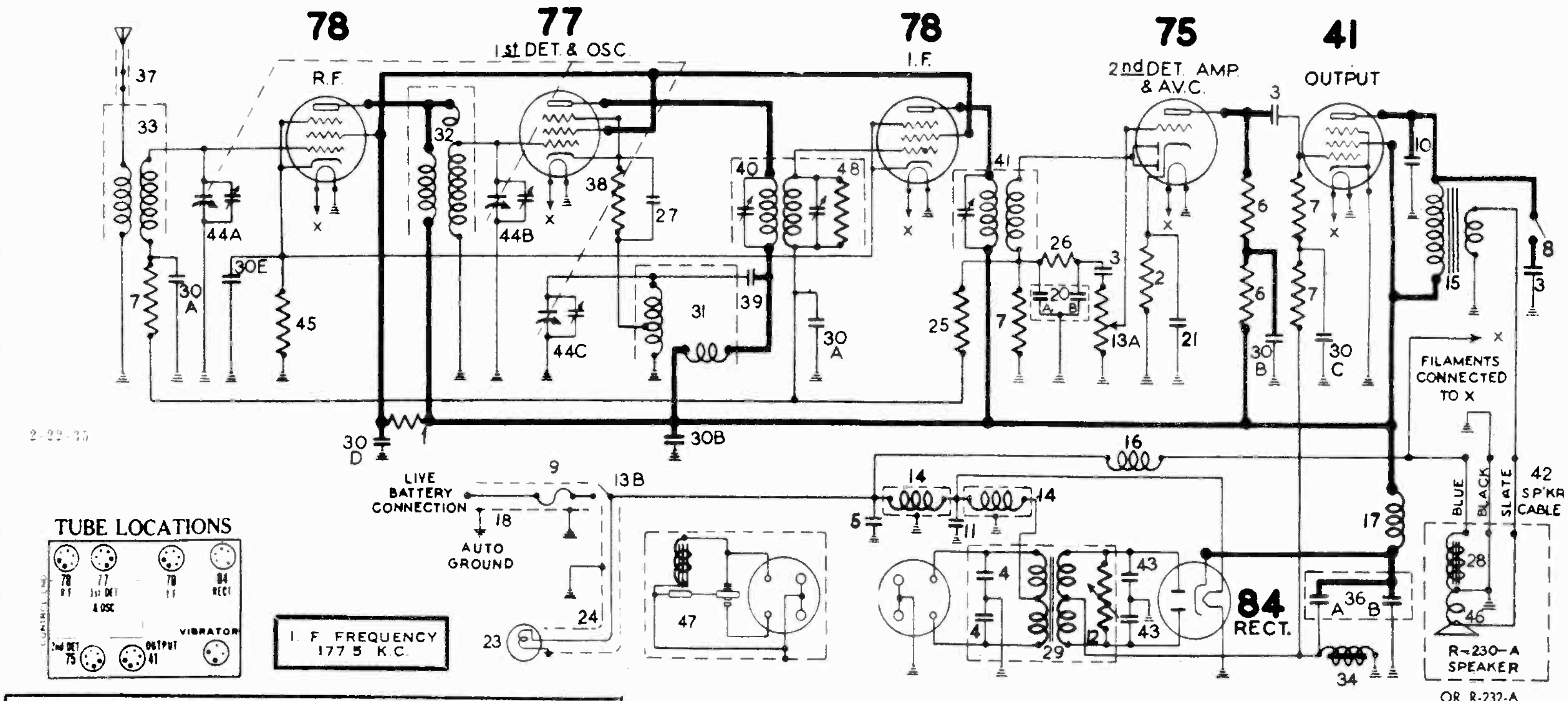
NOTE B: The oscillator plate voltage for the broadcast range setting with the dial set at 530 KC should be approximately 180 volts. The oscillator grid voltage under the same conditions should be about —18 volts.

R-130 PARTS LIST

Diag. No.	Part No.	Description	List Price
1	62183	30,000 ohm, 1 watt carbon resistor	.20
2	81630	.1 mfd. 100 volt paper condenser	.30
3	83007	.02 mfd. 600 volt paper condenser	.35
4	83011	.004 mfd. 600 volt paper condenser	.30
5	83072	510,000 ohm, 1/4 watt carbon resistor	.20
6	83080	51,000 ohm, 1/4 watt carbon resistor	.20
7	83082	260,000 ohm, 1/4 watt carbon resistor	.20
8	83219	.01 mfd. 600 volt paper condenser	.30
9	83352	.015 mfd. 600 volt paper condenser	.35
10	83353	.05 mfd. 100 volt paper condenser	.30
11	83539	.00026 mfd. molded mica condenser	.35
12	83706	.006 mfd. 600 volt paper condenser	.35
13	83976	.012 mfd. 1000 volt shielded paper condenser	.35
14	84153	Output transformer (for R-226-8 inch speaker) (See 84312 transformer for 12 inch speaker)	2.25
15	84189	Power transf. 115 volts, 60 cycles, R-130-A only (See 84408 for other voltages and frequencies)	1.00
16	84193	16 mfd. 350 volt wet electrolytic condenser	1.50
17	84194	R.F. trimmer condenser (3 to 30 mmfd.)	.15
18	84195	Oscillator padding trimmer (300-600 mmfd.)	.50
19A, 19B, 19C, 19D	84196	300 ohm resistor; 300 ohm resistor; 25 ohm resistor; 275 ohm resistor	.65
20	84198	110,000 ohm 1/4 watt carbon resistor	.20
21	84199	16,000 ohm 1/4 watt carbon resistor	.20
22	84200	.004 mfd. molded mica condenser	.50
	84312	Output transformer (on R-227 12" speaker)	2.50
23	84404	Phonograph switch (D.P.D.T.) (R-130-X only)	1.10
24	84407	Phonograph terminal strip (R-130-X only)	.12
25	84408	Power transformer (100 to 240 volts, 25 to 133 cycles) (R-130-X only)	7.00
26	84504	Diaphragm and shell assembly (For R-226 8" speaker) (Also see 84506)	2.50
27	84505	Field coil and housing (For R-226 8" speaker) (Also see 84507)	3.75
	84506	Diaph'm and shell as'mby (For R-227 12" spkr.)	3.25
	84507	Field coil and housing (For R-227 12" speaker)	4.00
28	84601	.25 mfd. 300 volt paper condenser	.30
29	84737	Tone control switch	.35
30	84738	Range switch	.75
31A, 31B	84739	500,000 ohm volume control and line switch	1.25
32	84746	Broadcast preselector coil assembly	1.15
33	84749	Broadcast oscillator coil	.50
34	84750	Three gang variable condenser	4.50
35	84759	6-8 volt dial light bulb	.20
36	84763	Short wave oscillator coil	.60
37	84765	Short wave antenna coil	.50
38	84776	2nd I.F. transformer	2.00
39	84777	1st I.F. transformer	2.00
40	84912	300,000 ohm Tone Control (AT and XT models only)	.75
41	85112	16 mfd. 300 volt wet electrolytic cond.	1.50

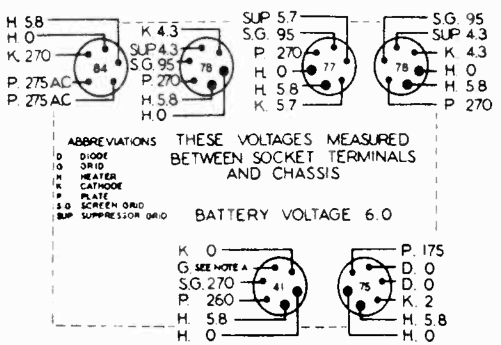
MODELS 1311 to 1319
Chassis R-131
Schematic, Voltage Socket, Parts List

STEWART WARNER CORP.



SOCKET VOLTAGES

BOTTOM VIEW OF CHASSIS



ABBREVIATIONS
D DIODE
G GRID
H HEATER
K CATHODE
P PLATE
S.G. SCREEN GRID
SUP SUPPRESSOR GRID

THESE VOLTAGES MEASURED BETWEEN SOCKET TERMINALS AND CHASSIS

BATTERY VOLTAGE 6.0

IMPORTANT: Use high resistance voltmeter of 1000 ohms per volt. Readings will vary depending upon range of meter. Make allowances for battery voltage variations.

NOTE A: The actual bias on the grid of the 41 tube is —23 volts which must be measured from chassis to the ungrounded filter choke terminal. Due to the high resistance of the grid leak, the voltmeter will show only about —1 volt at the grid.

MODEL R-131 PARTS LIST

Diag. No.	Part No.	Description	List Price
1	66023	60,000 ohm 1 watt carbon resistor	$0.25
2	67580	6,000 ohm 1/4 watt carbon resistor	.25
3	83007	.02 mfd. 600 volt paper condenser	.35
4	83058	.25 mfd. 100 volt paper condenser	.35
5	83063	.5 mfd. 100 volt paper condenser	.45
6	83080	51,000 ohm 1/4 watt carbon resistor	.20
7	83082	260,000 ohm 1/4 watt carbon resistor	.20
8	83179	Tone control switch	.30
9	83207	15 ampere fuse	.05
10	83706	.006 mfd. 600 volt paper condenser	.35
11	83714	1.5 mfd. 100 volt shielded condenser	.80
12	83725	Special Globar resistor	.45
14	83730	Vibrator R.F. Choke	.25
15	83731	Output transformer	2.00
16	83742	Filament R.F. choke	.16
13A, 13B	83728	500,000 ohm volume control; Line Switch	1.20
17	83770	"B" supply R.F. choke	.40
18	83777	Battery lead and fuse housing	.50
20	83785	Dual .0005 mfd. molded mica condenser	.32
21	83803	12 mfd. 25 volt dry electrolytic condenser	.80
23	84058	6 - 8 volt dial light bulb	.15
24	84099	Dial light cable	.35
25	84235	1.1 megohm carbon resistor	.20
26	84238	11,000 ohm 1/4 watt carbon resistor	.20
27	84282	.001 mfd. molded mica condenser	.25
28	84791	Field coil and housing (R-230A only) (Part 85118 for R-232A)	2.50
29	84798	Power transformer	3.50
30A, 30B, 30C, 30D, 30E	84806	.05 mfd. 300 volt paper cond. (green-white); .1 mfd. 400 v. paper cond. (red or red-white); .25 mfd. 100 volt paper cond. (green lead); .25 mfd. 300 volt paper cond. (white lead); .5 mfd. 100 volt paper cond. (orange lead)	2.50
31	84814	Oscillator (O) coil and shield assembly	1.50
32	84822	R.F. (B) coil and shield assembly	1.50
33	84825	Antenna (A) coil and shield assembly	1.40
34	84827	"B" supply filter choke	1.25
36A, 36B	84829	4 mfd.—400 volt dry electrolytic condenser; 8 mfd.—400 volt dry electrolytic condenser	2.50
37	84831	Antenna lead and plug	.10
38	85051	8000 ohm 1/4 watt carbon resistor	.20
39	84833	.00007 mfd. molded mica condenser	.20
40	84838	1st. I.F. transformer assembly	2.75
41	84842	2nd. I.F. transformer assembly	2.60
42	84845	Speaker cable	.50
43	84850	.03 mfd. 750 volt paper condenser	.25
44A, 44B, 44C	84866	Three gang variable condenser with mounting plate and shaft coupling	6.00
45	84888	300 ohm. 1/2 watt flexible wire resistor	.20
46	84891	Diaphragm, voice coil, and shell assembly (R-230A only) (Part 85119 for R-232A)	2.10
47	84904	Vibrator	5.00
48	83072	510,000 ohms 1/4 watt resistor	.20
38	85051	8000 ohm 1/4 watt carbon resistor	.20
28	85118	Field coil and housing (R-232A only)	2.50
46	85119	Diaphragm, and shell assembly (R-232A only)	2.10

MODELS 1311 to 1319
Alignment, Parts List
Circuit Data,

STEWART WARNER CORP.

SERVICE DATA FOR STEWART-WARNER R-131 CHASSIS

CIRCUIT DESCRIPTION

In the R-131 Chassis, the incoming signal is tuned and amplified in the 78 R.F. stage. Further amplification and frequency conversion to 177.5 KC. take place in the 77 combination first detector and oscillator tube.

The 177.5 KC. signal is amplified in the I.F. stage, using a 78 type tube, and then rectified in the diode section of the 75 second detector tube. The rectified current produces a modulated D.C. voltage across the diode load resistor No. 7. The audio component of this voltage appears across the 500,000 ohm volume control. Any part or all of this audio signal may be impressed on the triode section of the 75 tube where amplification takes place.

The modulated drop across resistor No. 7 is filtered and applied to the grids of the 78 R.F. and I.F. tubes to provide A.V.C.

POWER SUPPLY PROTECTIVE RESISTOR

The filter system and the rectifier tube are protected against breakdown during the warming-up period by the Globar resistor connected across the high voltage secondary of the power transformer (No. 12 in the circuit diagram). This resistor drops rapidly in resistance as the voltage across it rises, so that it acts as a load on the power transformer during the warm-up period and keeps the voltage below the danger point until the tubes are heated and take their normal current. 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.

CALIBRATION AND ALIGNMENT

A good modulated oscillator and a sensitive output meter are necessary for proper calibration and alignment of the R.F. and I.F. stages of this receiver. The output of the oscillator must be adjustable to give a very weak signal which will not actuate the A.V.C. of the receiver. The output meter must be sensitive enough to give sufficient reading with such a weak signal.

The output meter should be connected from the 41 plate to ground through a .25 mfd. condenser or across the voice coil, depending upon its sensitivity. A convenient point to connect the 41 plate is the terminal of the tone control switch.

During all calibration and alignment adjustments, keep the volume control full on.

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 77 control grid to ground. Adjust the oscillator output to give about half-scale reading of the output meter. Tune the set to make certain that no station or signal is tuned in since this would affect the output meter reading. Adjust all three I.F. trimmers to give maximum output reading.

In adjusting the I.F. transformer trimmers, it is desirable to use a bakelite screw driver or one having only a small metal tip. 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.

DIAL CALIBRATION

The dial of the Auto Radio is calibrated in kilocycles, except that the last two zeros have been omitted. Inasmuch as changes in the position of the flexible shafts may cause the calibration to vary, the dial can be calibrated as follows:

Tune in a station of known frequency between 800 and 1100 K.C. Insert a screw driver in the slotted shaft on the rear of the control head. Hold the tuning control knob so that the station remains tuned in properly and by turning the screw driver adjust the dial pointer so that it indicates the station frequency.

If the set is badly out of calibration such that it calibrates correctly at one part of the dial but not at another, it is necessary to adjust the oscillator shunt trimmer as explained below.

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. This condenser is absolutely necessary to secure proper alignment of the antenna stage.

Set the test oscillator to exactly 600 K.C. Tune the radio set to maximum volume. Calibrate the dial at the low frequency end by setting the pointer to read exactly 6.0 (600 K.C.).

Set the test oscillator to exactly 1400 K.C. Turn the tuning knob until the dial pointer indicates 14.0 (1400 K.C.) and then adjust the oscillator shunt trimmer (third one from shaft end of the variable condenser) until the signal is received with maximum output. Then adjust the other two gang condenser trimmers as directed under R.F. alignment.

R. F. ALIGNMENT

With the test oscillator set to approximately 1400 K.C., tune the set very carefully for maximum output.

Adjust the output of the oscillator to the minimum value which will give sufficient output meter deflection. Adjust the two trimmers nearest to the shaft end of the gang condenser to give maximum output meter reading.

MISCELLANEOUS PARTS NOT SHOWN ON DIAGRAM

Part No.	Description	List Price
12606	Receiver mtg. nut (5/16—18 hex.)	$0.02
17166	Single hole mtg. nut	.05
81346	1 lug terminal strip	.04
83144	15,000 ohm spark plug suppressor	.35
83145	10,000 ohm distributor suppressor	.35
83242	No. 8 x 1/4" self tapping screws (dark finish for mtg. back cover and casing brackets)	.02
83319	Fuse insulating tube	.02
83624	No. 8 x 1/4" self tapping screw (Cad. plate, for mtg. power transformer)	.01
83711	8 lug terminal strip	.12
83719	Front cover mtg. spade bolt (8-32)	.01
83720	4 lug terminal strip	.08
83721	Battery lead plug rubber grommet	.02
83727	Back cover	.90
83737	Front cover knurled nuts	.06
83771	Receiver mounting stud	.08
83772	Receiver mounting dash support washer	.04
83806	Speaker grill cloth	.12
83892	Variable condenser shaft coupling	.10
83893	Volume control shaft guide bushing	.05
83904	Generator condenser	.70
84853	Front cover assembly	1.00
84855	Dial Face (Model 1311)	.20
84869	Case assembly, less covers	3.75
84941	Aluminum vibrator shield assembly	.50
84990	Single hole mtg. plate	.80
85012	Single hole mtg. bolt	.06
85021	Case assembly (less covers) (1314 only)	4.00
85022	Back cover (model 1314)	1.00
85024	Front cover assembly (model 1314)	1.25
85037	Dial face (model 1314)	.20

REMOTE CONTROL HEAD PARTS

Part No.	Description	List Price
15214	Long mtg. strap screw (10/32 x 1 1/4" R.H.M.S.)	.01
84059	Case screw (4-40 x 3/16") Per hundred	.80
84060	Flexible casing set screw	.02
84067	Steering post mtg. bracket	.25
84068	Steering post mtg. strap	.15
84075	Bezel and glass	.50
84076	Dial light button and socket	.25
84106	Volume control knob	.25
84309	Instrument panel mounting accessories	.15
84854	Complete accessories for installation	5.00

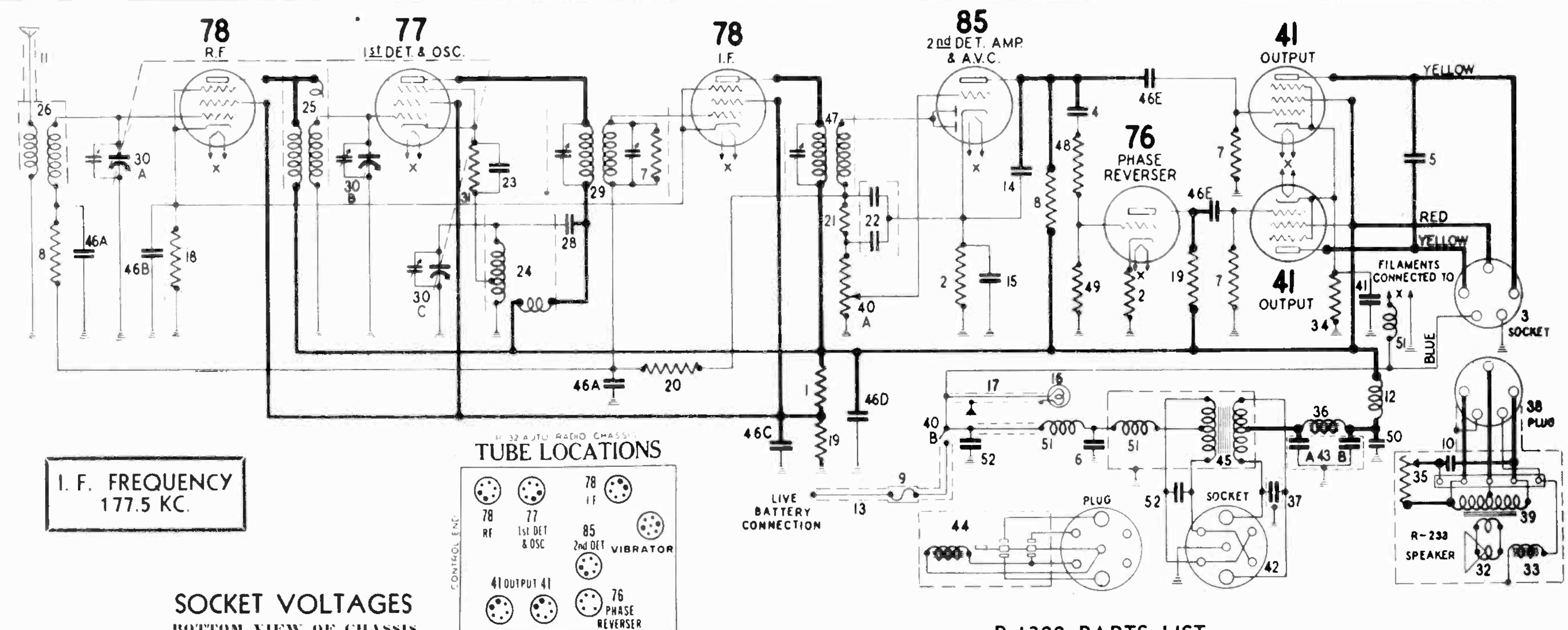
FLEXIBLE SHAFTS

Part No.	Description	List Price
84871	Tuning shaft, 24 inches long	1.50
84873	Volume control shaft, 24 inches long	1.50
84882	Tuning shaft, 36 inches long	2.00
84883	Volume control shaft, 36 inches long	2.00
84886	Tuning shaft, 30 inches long	2.00
84887	Volume control shaft, 30 inches long	2.00

Voltage, Parts List

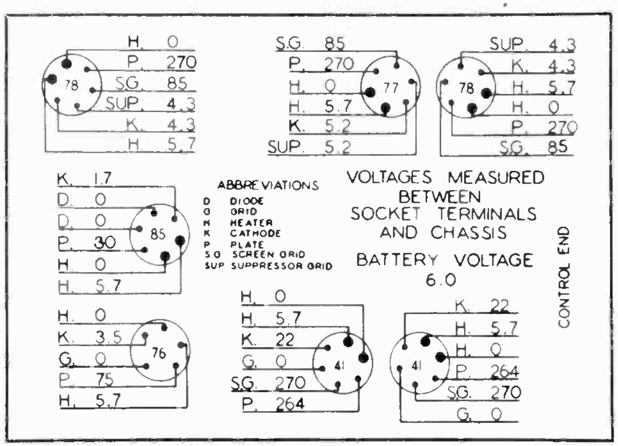
STEWART WARNER CORP.

MODEL Firestone R-1322
Chassis R-132
Schematic, Socket



I. F. FREQUENCY
177.5 KC.

SOCKET VOLTAGES
BOTTOM VIEW OF CHASSIS



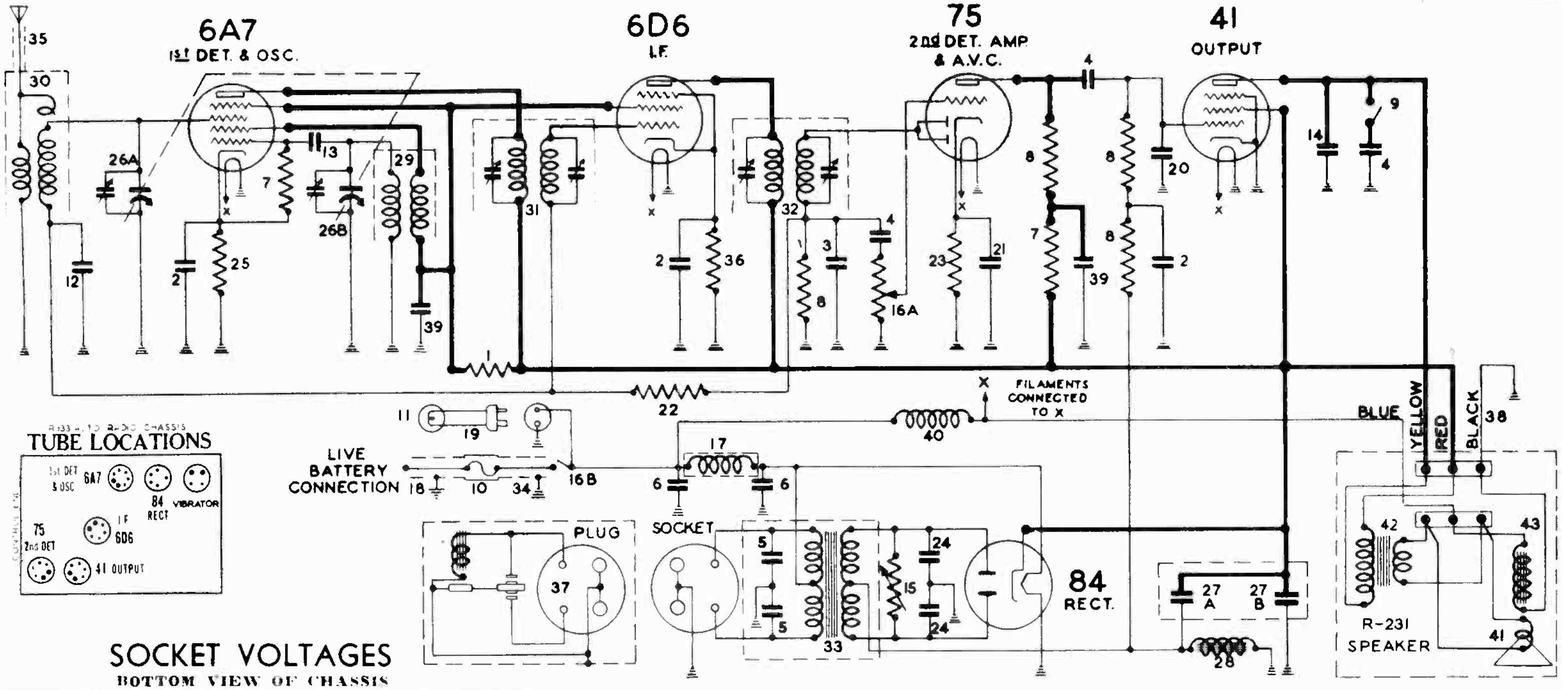
IMPORTANT: Use high resistance voltmeter of 1000 ohms per volt. Readings will vary depending upon range of meter. Make allowances for battery voltage variations.

R-1322 PARTS LIST

Diag. No.	Part No.	Description	List Price
1	66023	60,000 ohm 1 watt carbon resistor	$0.25
2	67303	2,000 ohm 1/4 watt carbon resistor	.25
3	81951	Speaker socket	.10
4	83007	.02 mfd. 600 volt paper condenser	.35
5	83011	.004 mfd. 600 volt paper condenser	.30
6	83063	.5 mfd. 100 volt paper condenser	.45
7	83072	510,000 ohm 1/4 watt carbon resistor	.15
8	83082	260,000 ohm 1/4 watt carbon resistor	.20
9	83207	15 ampere fuse	.05
10	83219	.01 mfd. 600 volt paper condenser	.30
11	83723	Antenna lead	.75
12	83770	"B" supply R. F. choke	.40
13	83777	Shielded battery lead and fuse housing	.50
14	83784	.0011 mfd. mica condenser	.22
15	83803	12 mfd. 25 volt dry electrolytic condenser	.80
16	84058	Pilot lamp	.15
17	84099	Pilot light cable	.35
18	84131	400 ohm 1/2 watt resistor	.20
19	84198	110,000 ohm 1/4 watt resistor	.20
20	84235	1.1 meg. 1/4 watt carbon resistor	.20
21	84238	11,000 ohm 1/4 watt carbon resistor	.20
22	84281	Dual .00026 mfd. mica condenser	.35
23	84282	.001 mfd. mica condenser	.25
24	84814	Oscillator coil	1.50
25	84822	R. F. coil	1.50
26	84825	Antenna coil	1.40
28	84833	.00007 mfd. mica condenser	.20
29	84838	1st I. F. transformer	2.75
30A, 30B, 30C	84866	Three gang variable condenser with mounting plate and shaft coupling	6.00
31	85051	8000 ohm 1/4 watt carbon resistor	.20
32	85058	Diaphragm and shell assembly	3.50
33	85098	Field coil and bracket assembly	3.25
34	85114	500 ohm 2 watt resistor	.25
35	85179	80,000 ohm tone control	.90
36	85183	Filter choke	1.50
37	85190	.005 mfd. 1200 volt paper condenser	.85
38	85193	Speaker plug and cable assembly	1.25
39	85195	Output transformer	3.25
40A, 40B	85215	250,000 ohm volume control; On-off switch	1.20
41	85216	10 mfd. 50 volt dry electrolytic condenser	.80
42	85217	Vibrator Socket	.15
43	85237	Dual 8 mfd. electrolytic condenser	3.00
44	85243	Vibrator	6.50
45	85256	Power transformer	5.00
46A	85259	.05 mfd. 300 volt cond. (green-white lead)	2.75
46B	85259	.5 mfd. 100 v. cond. (orange lead)	2.75
46C	85259	.25 mfd. 300 v. cond. (white lead)	2.75
46D	85259	.1 mfd. 400 v. cond. (red lead)	2.75
46E	85259	.02 mfd. 600 v. cond. (yellow & green leads)	2.75
47	85262	2nd I. F. transformer	2.50
48	85265	600,000 ohm 1/4 watt carbon resistor	.20
49	85266	70,000 ohm 1/4 watt carbon resistor	.20
50	85267	.01 mfd. mica condenser	.50
51	85391	R. F. choke assembly	.30
52	85394	.0005 mfd. mica condenser	.25

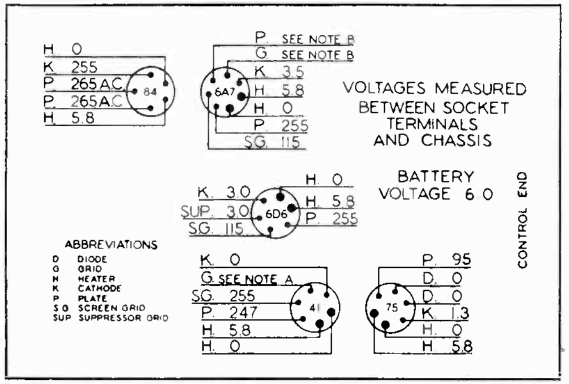
MODEL Firestone R-1332
Chassis R-133
Schematic, Socket
Voltage, Parts List

STEWART WARNER CORP.



SOCKET VOLTAGES

BOTTOM VIEW OF CHASSIS



IMPORTANT: Use high resistance voltmeter of 1000 ohms per volt. Readings will vary depending upon range of meter. Make allowance for battery voltage variations.

NOTE A: The actual bias on the grid of the 41 tube is —23 volts which must be measured from chassis to the ungrounded filter choke terminal. Due to the high resistance of the grid leak, the voltmeter will show only about —1 volt at the grid.

NOTE B: The oscillator grid voltage varies from about —3 at 1500 KC. to —5.0 at 530 KC. The oscillator anode voltage may vary from 115 at 1500 KC. to 120 at 530 KC.

I.F. FREQUENCY 456 KC.

R-1332 PARTS LIST

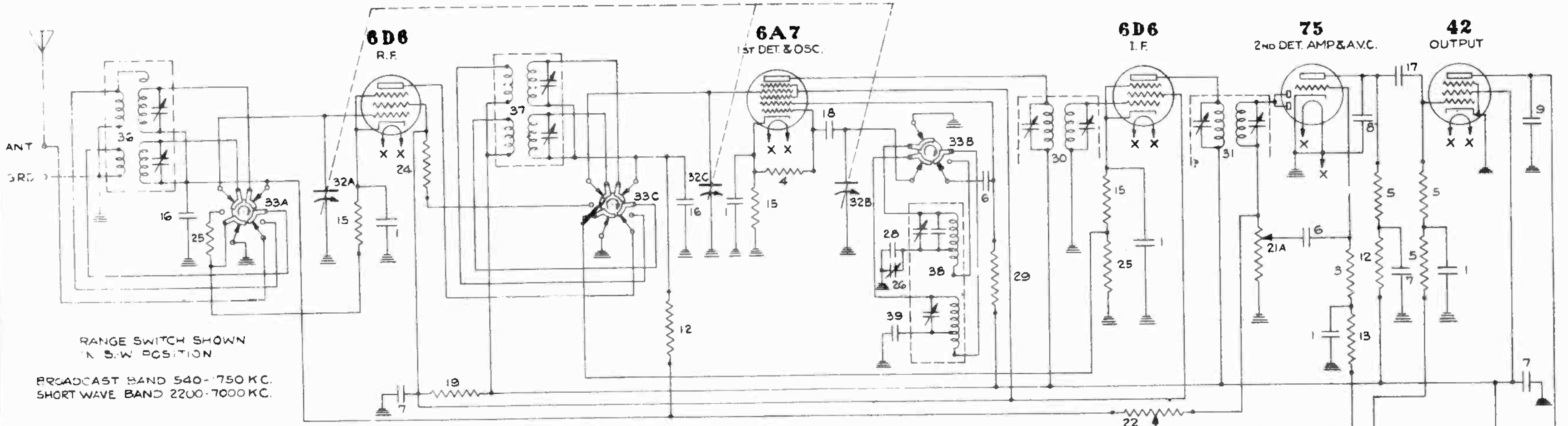
Diag. No.	Part No.	Description	List Price
1	66875	16,000 ohm 1 watt carbon resistor	$0.50
2	81630	.1 mfd. 100 volt paper condenser	.30
3	81812	.00051 mfd. mica condenser	.25
4	83007	.02 mfd. 600 volt paper condenser	.35
5	83058	.25 mfd. 100 volt paper condenser	.35
6	83063	.5 mfd. 100 volt paper condenser	.45
7	83080	51,000 ohm 1/3 watt resistor	.20
8	83082	260,000 ohm 1/4 watt resistor	.20
9	83179	Tone Control switch	.30
10	83207	Fuse	.05
11	83278	Pilot lamp	.15
12	83353	.05 mfd. 100 volt paper condenser	.30
13	83539	.00026 mfd. mica condenser	.25
14	83706	.006 mfd. 600 volt condenser	.35
15	83725	0-500,000 globar resistor	.45
16A, 16B	83728	Volume Control, On-Off Switch	1.20
17	83730	R. F. Choke	.25
18	83777	Battery lead and fuse housing	.50
19	83778	Light cable and plug assembly	.50
20	83783	.00011 mfd. mica condenser	.16
21	83803	12 mfd. 15 volt electrolytic condenser	.80
22	84235	1.1 meg. 1/4 watt resistor	.20
23	84240	4000 ohm 1/4 watt resistor	.20
24	84850	.03 mfd. 750 volt paper condenser	.25
25	84888	300 ohm 1/2 watt resistor	.20
26A, 26B	84958	Two-gang variable condenser with shaft coupling	4.50
27A, 27B	84961	4 mfd. 400 volt electrolytic condenser, 8 mfd. 400 volt electrolytic condenser	2.50
28	84962	Filter choke	1.25
29	84963	Oscillator coil assembly	1.00
30	84969	Antenna coil and shield assembly	1.25
31	84972	1st I.F. transformer assembly	2.75
32	84974	2nd I.F. transformer assembly	2.75
33	84975	Power transformer	3.50
34	84977	Battery lead and cap (to chassis)	.34
35	84978	Antenna lead	.40
36	84979	250 ohm 1/2 watt resistor	.15
37	84995	Vibrator	5.00
38	85027	Speaker cable	.30
39	85029	.1 mfd. 300 volt paper condenser	.40
40	85048	Filament R.F. Choke	.25
41	85376	Diaphragm and voice coil assembly	2.00
42	85378	Output transformer	2.00
43	85379	Field coil	1.25

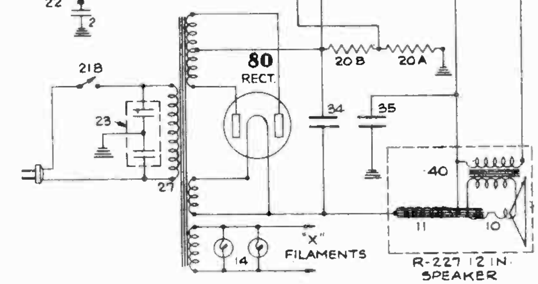
MODELS 1341 to 1349
Chassis R-134 (Temporary)
Schematic, Voltage, Socket
Trimmers, Parts List

STEWART WARNER CORP.

STEWART-WARNER MODEL R-134 CHASSIS (RECEIVER MODELS 1341 to 1349)

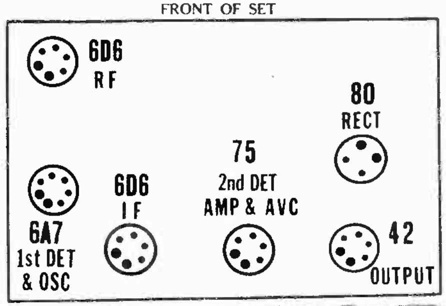
(TEMPORARY CIRCUIT DIAGRAM)





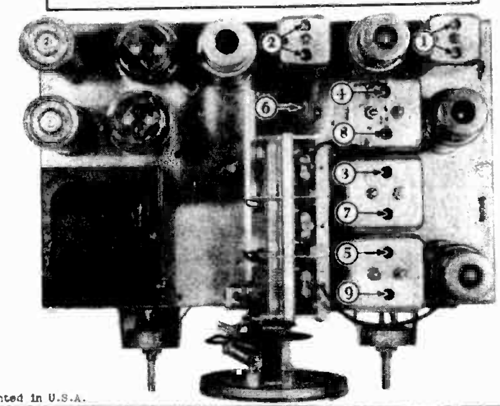
TUBE LOCATIONS

FRONT OF SET



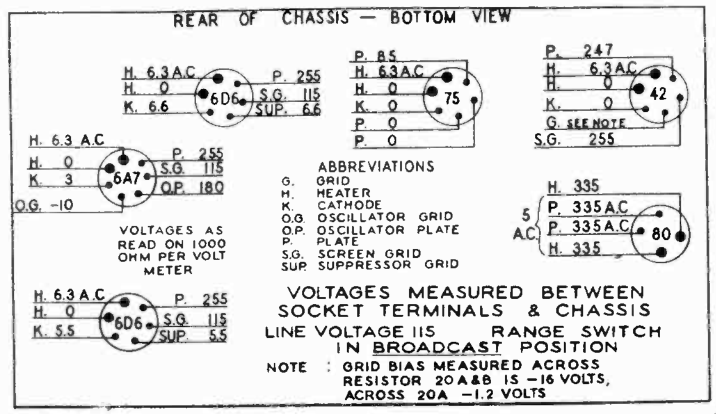
I.F. FREQUENCY
456 KC.

ITEM	PART Nº	DESCRIPTION
1	81630	1 MFD - 175V PAPER COND
2	83011	.004 MFD - 600V PAPER COND.
3	83072	310,000 OHM 1/4 W CARBON RES.
4	83080	51,000 OHM 1/4 W CARBON RES
5	83082	260,000 OHM 1/4 W CARBON RES.
6	83219	.01 MFD - 600V PAPER COND.
7	83440	1 MFD - 400V PAPER COND
8	83539	.00026 MFD MICA COND
9	83706	.006 MFD - 600V. PAPER COND.
10	84506	DIAPHRAGM & SHELL ASSEM. FOR R-227-A SPEAKER
11	84507	FIELD COIL & HOUSING FOR R-227-A SPEAKER
12	84138	110,000 OHM 1/4 W CARBON RES.
13	84235	1.1 MEGOHM 1/4 W. CARBON RES
14	84759	PILOT LAMP
15	84888	300 OHM 1/2 W. W.W RES
16	85055	.05 MFD - 100V. PAPER COND
17	85059	.05 MFD. - 300V. PAPER COND.
18	85061	.000051 MFD MICA COND.
19	85063	15,000 OHM - 2 W. CARBON RES.
20A	85067	BIAS RESISTOR - 20 OHM
20B		- 220 OHM
21A	85073	VOLUME CONTROL 750,000 OHM
21B		ON-OFF SWITCH
22	85074	TONE CONTROL 500,000 OHM
23	85078	DUAL .01 MFD - 750V PAPER COND
24	85116	25,000 OHM 1/2 W. CARBON RES
25	85117	1000 OHM 1/2 W. CARBON RES
26	85285	PADDING TRIMMER
27	85428	POWER TRANS. (115V - 60 CYCLE) (85900 POWER TRANS 115V - 25C USED ON MODEL 134-B)
28	85441	.00042 MFD. MICA COND
29	85442	21,000 OHM 1/2 W CARBON RES
30	85788	1ST I.F. TRANSFORMER
31	85789	2ND I.F. TRANSFORMER
32A TO C	85790	THREE GANG COND
33A TO C	85791	RANGE SWITCH
34	85792	16 MFD - 475V ELECT COND
35	85793	16 MFD - 475V ELECT COND
36	85829	ANT COIL & SHIELD ASSEM
37	85830	RF COIL & SHIELD ASSEM
38	85831	OSC COIL & SHIELD ASSEM
39	85837	.00194 MFD MICA COND
40	843 2	OUTPUT TRANS. (R-227-A SPEAKER



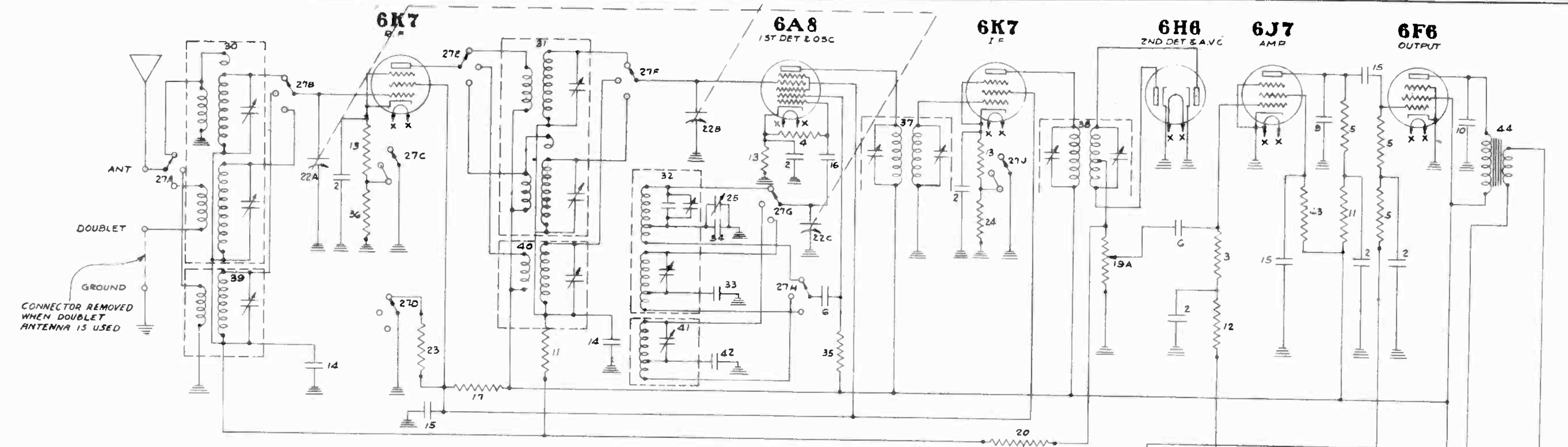
1. 1st I.F. TRANS. TRIMMERS
2. 2nd I.F. TRANS. TRIMMERS
3. BROADCAST OSCILLATOR SHUNT TRIMMER
4. BROADCAST DETECTOR SHUNT TRIMMER
5. BROADCAST ANTENNA SHUNT TRIMMER
6. BROADCAST OSCILLATOR SERIES PADDER
7. S.W. BAND OSCILLATOR SHUNT TRIMMER
8. S.W. BAND DETECTOR SHUNT TRIMMER
9. S.W. BAND ANTENNA SHUNT TRIMMER

SOCKET VOLTAGES



Form 7296 Printed in U.S.A.

MODELS 1361 to 1369
Chassis R-136 (Temporary) **STEWART WARNER CORP.**
Schematic, Socket, Parts
Trimmers



SOCKET VOLTAGES

REAR OF CHASSIS — BOTTOM VIEW

6K7: S. 0, K. 5.5, H. 6.2, H. 0, P. 245, S.G. 110, SUP. 5.5

6J7: P. 35, H. 6.2, S. 0, K. 0, H. 0, SUP. 0, S.G. 30

6F6: H. 6.2, S. 0, K. 0, H. 0, P. 235, S.G. 245, G. (see note)

6A8: S. 0, K. 4, H. 6.2, O.P. 150, H. 0, P. 245, S.G. 110, O.G. -5

6H6: P. 0, K. 0, P. 0, H. 0, S. 0, K. 0, H. 6.2

5Z4: P. 325 AC, P. 325 AC, F. 340, S. 0, F. 340, 5AC

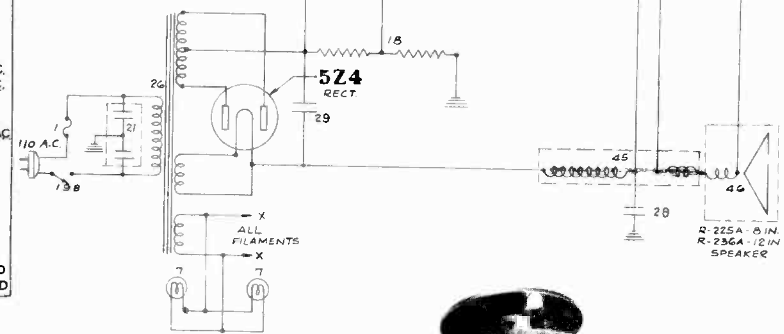
6K7: S. 0, K. 8, H. 6.2, H. 0, P. 245, S.G. 110, SUP. 8

ABBREVIATIONS
G. GRID
H. HEATER
K. CATHODE
O.G. OSCILLATOR GRID
O.P. OSCILLATOR PLATE
P. PLATE
S. SHELL
S.G. SCREEN GRID
SUP. SUPPRESSOR GRID

VOLTAGES MEASURED BETWEEN SOCKET TERMINALS & CHASSIS
LINE VOLTAGE — 115 V
RANGE SWITCH IN BROADCAST POSITION

NOTE: 6F6 GRID BIAS — 16.5 V MEASURED AT VOLTAGE DIVIDER IN (B—) LEAD

I.F. FREQUENCY
456 KC.



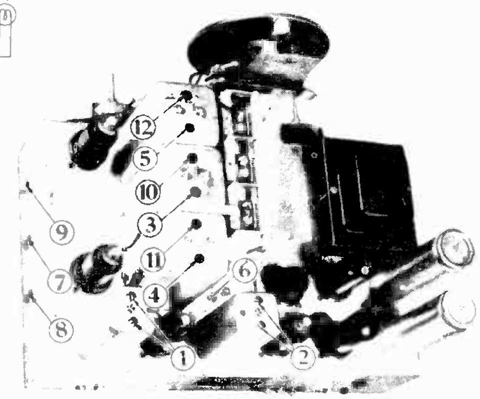
ITEM	PART NO	DESCRIPTION
1	38841	FUSE
2	81630	.1 MFD - 100 VOLT PAPER CONDENSER
3	83072	510,000 OHM 1/4 W CARBON RESISTOR
4	83080	51,000 OHM 1/4 W CARBON RESISTOR
5	83082	260,000 OHM 1/4 W CARBON RESISTOR
6	83219	.01 MFD - 600 V. PAPER CONDENSER
7	83278	DIAL LAMP
8	83352	.015 MFD. - 600 V. PAPER CONDENSER
9	83559	.00026 MFD MICA CONDENSER
10	83706	.006 MFD. - 600 V. PAPER CONDENSER
11	84198	110,000 OHM 1/4 W. CARBON RESISTOR
12	84235	1.1 MEG OHM 1/4 W CARBON RESISTOR
13	84888	300 OHM 1/2 W. WIRE WOUND RESISTOR
14	88053	.05 MFD. - 100 V PAPER CONDENSER
15	85058	.05 MFD. - 300 V PAPER CONDENSER
16	85061	.000051 MFD MICA CONDENSER
17	85063	15,000 OHM 2 W CARBON RESISTOR
18	85067	BIAS RESISTOR STRIP (TAPPED)
19A	85073	VOLUME CONTROL
19B		LINE SWITCH
20	85074	TONE CONTROL
21	85075	.01 MFD - 750 A.C. PAPER CONDENSER
22A, 22B, 22C	85084	VARIABLE CONDENSER (3 GANG)
23	85116	25,000 OHM 1/2 W. CARBON RESISTOR
24	85117	1,000 OHM 1/2 W. CARBON RESISTOR
25	83288	PADDING CONDENSER
26	85428	POWER TRANSFORMER
27A–27J	85429	RANGE SWITCH
28	85430	16 MFD - 300 V ELECTROLYTIC COND.
29	85431	16 MFD. - 400 V ELECTROLYTIC COND
30	85432	ANTENNA COIL & SHIELD ASSEM.
31	85433	R F COIL & SHIELD ASSEM
32	85434	OSC COIL & SHIELD ASSEM
33	85440	.00351 MFD. - MICA CONDENSER
34	85441	.00042 MFD - MICA CONDENSER
35	85442	21,000 OHM 1/2 W CARBON RESISTOR
36	85443	2,300 OHM 1/2 W. CARBON RESISTOR
37	85452	1ST I F TRANSFORMER
38	85453	2ND. I.F TRANSFORMER
39	85455	ANTENNA COIL ASSEM (POLICE BAND)
40	85456	R.F. COIL ASSEMBLY (POLICE BAND)
41	85457	OSC. COIL ASSEMBLY (POLICE BAND)
42	85467	.00137 MFD MICA CONDENSER
43	85472	1.6 MEGOHM 1/4 W CARBON RESISTOR
44	84312	OUTPUT TRANS (R-225A - 8 IN SPEAKER)
	85482	OUTPUT TRANS (R-236A - 12 IN SPEAKER)
45	84805	FIELD PLATE BRK'T & COIL ASSEM (R-225A)
	85478	FIELD PLATE BRK'T & COIL ASSEM (R-236A)
46	84504	DIAPH. & SHELL ASSEM. (R-225A)
	85592	DIAPH & SHELL ASSEM (R-236A)

TUBE LOCATIONS

FRONT OF SET

6K7 RF
6A8 1st DET & OSC
6K7 I F
6J7 A F
6H6 2nd DET & AVC
5Z4 RECT
6F6 OUTPUT

1. 1st I.F. TRANS. TRIMMERS
2. 2nd I.F. TRANS. TRIMMERS
3. BROADCAST OSCILLATOR SHUNT TRIMMER
4. BROADCAST DETECTOR SHUNT TRIMMER
5. BROADCAST ANTENNA SHUNT TRIMMER
6. BROADCAST OSCILLATOR SERIES PADDER
7. BAND NO. 2 OSCILLATOR SHUNT TRIMMER
8. BAND NO. 2 DETECTOR SHUNT TRIMMER
9. BAND NO. 2 ANTENNA SHUNT TRIMMER
10. BAND NO. 3 OSCILLATOR SHUNT TRIMMER
11. BAND NO. 3 DETECTOR SHUNT TRIMMER
12. BAND NO. 3 ANTENNA SHUNT TRIMMER



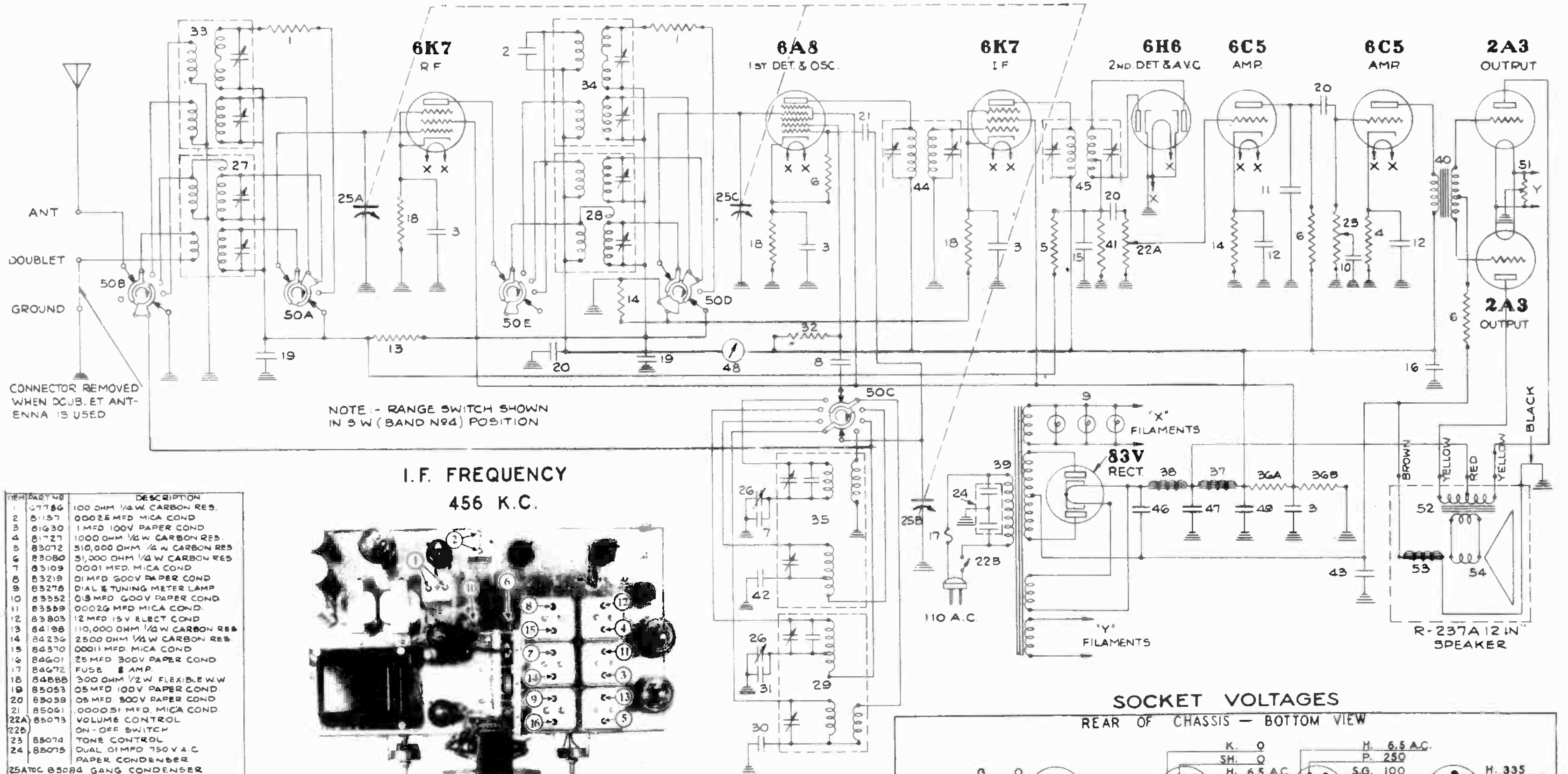
FORM 7210 PRINTED IN U.S.A.

MODELS 1371 to 1379
Chassis R-137 (Temporary)
Schematic, Socket, Parts
Trimmers

STEWART WARNER CORP.

STEWART-WARNER MODEL R-137 CHASSIS (RECEIVER MODELS 1371 to 1379)

(TEMPORARY CIRCUIT DIAGRAM)



I.F. FREQUENCY
456 K.C.

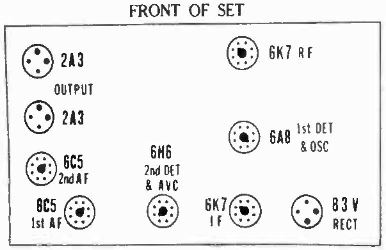
ITEM	PART NO	DESCRIPTION
1	67786	100 OHM 1/4 W. CARBON RES.
2	81157	.00025 MFD MICA COND
3	81630	.1 MFD 100V PAPER COND
4	81727	1000 OHM 1/4 W CARBON RES.
5	83072	510,000 OHM 1/4 W CARBON RES
6	83080	51,000 OHM 1/4 W CARBON RES
7	83109	.0001 MFD. MICA COND
8	83219	.01 MFD 600V PAPER COND
9	83278	DIAL & TUNING METER LAMP
10	83352	.015 MFD 600V PAPER COND
11	83559	.00026 MFD MICA COND.
12	83803	12 MFD 15 V ELECT COND
13	84198	110,000 OHM 1/4 W CARBON RES
14	84236	2500 OHM 1/4 W CARBON RES.
15	84370	.00011 MFD. MICA COND
16	84601	.25 MFD 300V PAPER COND
17	84672	FUSE 1 AMP.
18	84888	300 OHM 1/2 W FLEXIBLE W.W
19	85053	.05 MFD 100V PAPER COND.
20	85059	.05 MFD. 300V PAPER COND
21	85061	.000051 MFD. MICA COND.
22A	85073	VOLUME CONTROL
22B		ON-OFF SWITCH
23	85074	TONE CONTROL
24	85075	DUAL .01 MFD 750 V A.C. PAPER CONDENSER
25A TO C	85084	GANG CONDENSER
26	85285	PADDING TRIMMER
27	85432	ANTENNA COIL & SHIELD ASSEM
28	85433	R F COIL & SHIELD ASSEM
29	85434	OSC COIL & SHIELD ASSEM
30	85440	.00351 MFD MICA COND
31	85441	.00042 MFD MICA COND
32	85442	21,000 OHM 1/2 W CARBON RES.
33	85515	ANT COIL & SHIELD ASSEM (LONG WAVE & POLICE BAND)
34	85516	R.F COIL & SHIELD ASSEM (L.W. & P)
35	85517	OSC COIL & SHIELD ASSEM (L W & P)
36A 36B	85538	WIRE WOUND RES 5200 OHMS 4500 OHMS
37	85546	CHOKE ASSEM
38	85549	INPUT CHOKE ASSEM
39	85556	POWER TRANSFORMER ASSEM
40	85560	AUDIO COUPLING TRANS.
41	85561	200,000 OHM 1/4 W RES.
42	85562	.00144 MFD MICA COND
43	85563	40 MFD. 100V. ELECT COND.
44	85566	1ST I F TRANS ASSEM
45	85567	2ND I F. TRANS ASSEM.
46	85583	16 MFD 450V. ELECT. COND
47	85584	16 MFD. 350V. ELECT. COND
48	85587	TUNING METER
49	85588	16 MFD 300V. ELECT COND.
50A TO E	85589	RANGE SWITCH
51	85605	20 OHM 1/2 W W.W.- CENTER-TAPPED RES
52	G-85553	OUTPUT TRANSFORMER
53	G-85595	FIELD PLATE BRKT & COIL ASSEM.
54	G-85601	DIAPHRAGM & SHELL ASSEM

1. 1st I.F. TRANS. TRIMMERS
2. 2nd I.F. TRANS. TRIMMERS
3. BAND NO. 1 OSCILLATOR SHUNT TRIMMER
4. BAND NO. 1 DETECTOR SHUNT TRIMMER
5. BAND NO. 1 ANTENNA SHUNT TRIMMER
6. BAND NO. 1 OSCILLATOR SERIES PADDER
7. BROADCAST OSCILLATOR SHUNT TRIMMER
8. BROADCAST DETECTOR SHUNT TRIMMER
9. BROADCAST ANTENNA SHUNT TRIMMER
10. BROADCAST OSCILLATOR SERIES PADDER
11. BAND NO.3 OSCILLATOR SHUNT TRIMMER
12. BAND NO.3 DETECTOR SHUNT TRIMMER
13. BAND NO.3 ANTENNA SHUNT TRIMMER
14. BAND NO.4 OSCILLATOR SHUNT TRIMMER
15. BAND NO.4 DETECTOR SHUNT TRIMMER
16. BAND NO.4 ANTENNA SHUNT TRIMMER

FORM NO. 7252 PRINTED IN U.S.A.

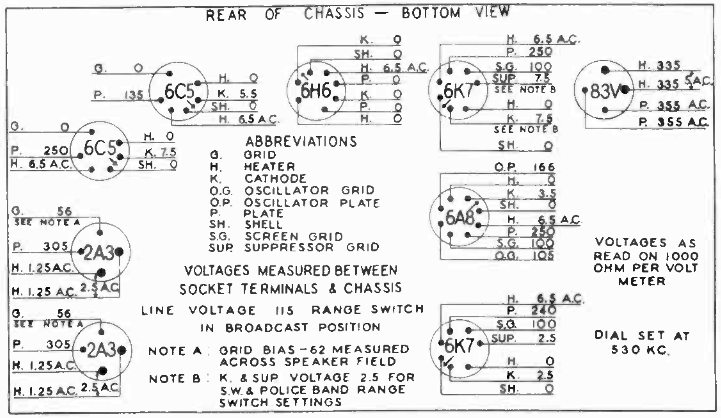
TUBE LOCATIONS

FRONT OF SET



SOCKET VOLTAGES

REAR OF CHASSIS — BOTTOM VIEW



ABBREVIATIONS
G. GRID
H. HEATER
K. CATHODE
O.G. OSCILLATOR GRID
O.P. OSCILLATOR PLATE
P. PLATE
SH. SHELL
S.G. SCREEN GRID
SUP. SUPPRESSOR GRID

VOLTAGES MEASURED BETWEEN SOCKET TERMINALS & CHASSIS

LINE VOLTAGE 115 RANGE SWITCH IN BROADCAST POSITION

NOTE A: GRID BIAS -62 MEASURED ACROSS SPEAKER FIELD

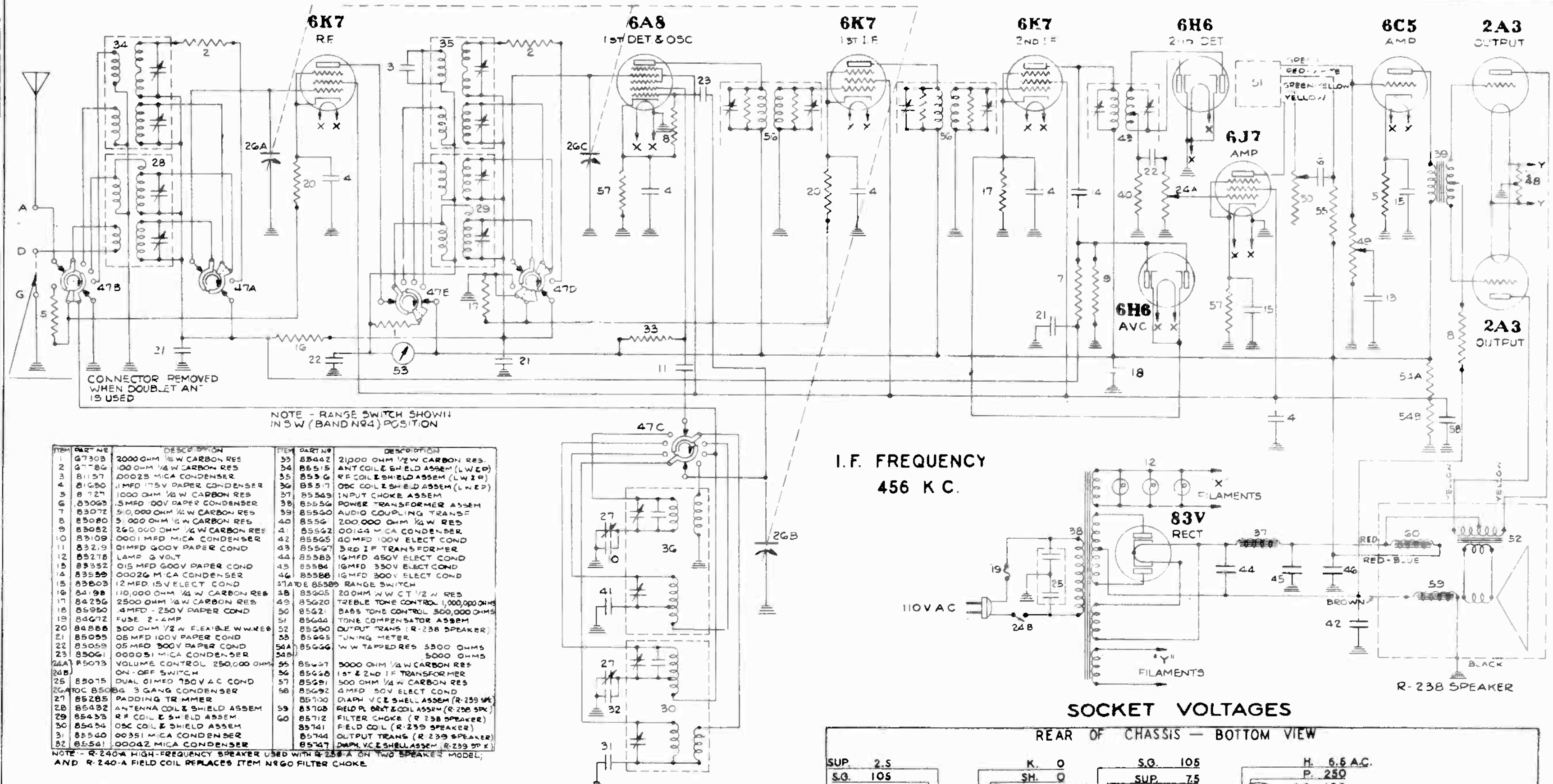
NOTE B: K. & SUP VOLTAGE 2.5 FOR S.W. & POLICE BAND RANGE SWITCH SETTINGS

VOLTAGES AS READ ON 1000 OHM PER VOLT METER

DIAL SET AT 530 KC.

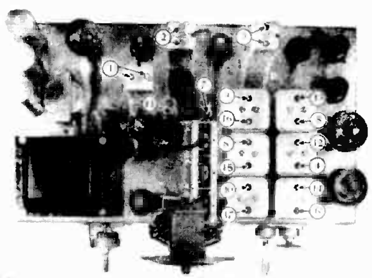
MODELS 1381 to 1389
Chassis R-138 (Temporary)
Schematic, Socket, Parts
Trimmers

STEWART WARNER CORP.



ITEM	PART Nº	DESCRIPTION
1	G7308	2000 OHM ¼ W CARBON RES
2	G7786	100 OHM ¼ W CARBON RES
3	81157	.00025 MICA CONDENSER
4	81680	.1 MFD 175 V PAPER CONDENSER
5	8 727	1000 OHM ¼ W CARBON RES
6	83063	.5 MFD 100 V PAPER CONDENSER
7	83072	510,000 OHM ¼ W CARBON RES
8	83080	51,000 OHM ¼ W CARBON RES
9	83082	260,000 OHM ¼ W CARBON RES
10	83109	.0001 MFD MICA CONDENSER
11	83219	.01 MFD 600 V PAPER COND
12	83278	LAMP 6 VOLT
13	83352	.015 MFD 600 V PAPER COND
14	83539	.00026 MICA CONDENSER
15	83803	12 MFD. 15 V ELECT COND
16	84198	110,000 OHM ¼ W CARBON RES
17	84256	2500 OHM ¼ W CARBON RES
18	85950	.4 MFD - 250 V PAPER COND
19	84672	FUSE 2-AMP
20	84886	300 OHM ½ W FLEXIBLE W.W. RES
21	85055	.05 MFD 100 V PAPER COND
22	85059	.05 MFD 300 V PAPER COND
23	85061	.000051 MICA CONDENSER
24A, 24B	85073	VOLUME CONTROL 250,000 OHM / ON-OFF SWITCH
25	85075	DUAL .01 MFD 750 V A.C. COND
26A TO C	85084	3 GANG CONDENSER
27	85285	PADDING TRIMMER
28	85432	ANTENNA COIL & SHIELD ASSEM
29	85433	R F COIL & SHIELD ASSEM.
30	85434	OSC COIL & SHIELD ASSEM
31	85540	.00351 MICA CONDENSER
32	85541	.00042 MICA CONDENSER
33	85442	21,000 OHM ½ W CARBON RES.
34	85515	ANT COIL & SHIELD ASSEM (L W & P)
35	85516	R F COIL & SHIELD ASSEM (L W & P)
36	85517	OSC COIL & SHIELD ASSEM (L W & P)
37	85549	INPUT CHOKE ASSEM
38	85556	POWER TRANSFORMER ASSEM
39	85560	AUDIO COUPLING TRANSF
40	8556	200,000 OHM ¼ W RES
41	85562	.00144 MICA CONDENSER
42	85565	40 MFD 100 V ELECT COND
43	85567	3RD I F TRANSFORMER
44	85583	16 MFD. 450 V ELECT COND
45	85584	16 MFD 350 V ELECT COND
46	85588	16 MFD 300 V ELECT COND
47A TO E	85589	RANGE SWITCH
48	85605	20 OHM W W C T ½ W RES
49	85620	TREBLE TONE CONTROL 1,000,000 OHMS
50	85621	BASS TONE CONTROL 500,000 OHMS
51	85644	TONE COMPENSATOR ASSEM
52	85650	OUTPUT TRANS (R-238 SPEAKER)
53	85665	TUNING METER
54A, 54B	85666	W W TAPPED RES 5500 OHMS / 5000 OHMS
55	85647	5000 OHM ¼ W CARBON RES
56	85668	1ST & 2ND I F TRANSFORMER
57	85691	500 OHM ¼ W CARBON RES
58	85692	4 MFD 50 V ELECT COND
	85700	DIAPH V C & SHELL ASSEM (R-239 SPK)
59	85708	FIELD PL BRKT & COIL ASSEM (R-238 SPK)
60	85712	FILTER CHOKE (R 238 SPEAKER)
	85741	FIELD COIL (R-239 SPEAKER)
	85744	OUTPUT TRANS (R 239 SPEAKER)
	85747	DIAPH. V.C. & SHELL ASSEM (R-239 SPK)

NOTE - R-240-A HIGH-FREQUENCY SPEAKER USED WITH R-238-A ON TWO SPEAKER MODEL; AND R-240-A FIELD COIL REPLACES ITEM Nº 60 FILTER CHOKE

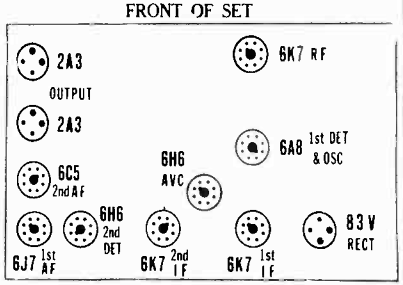


1. 1st I.F. TRANS TRIMMERS
2. 2nd I.F. TRANS TRIMMERS
3. 3rd I.F. TRANS TRIMMERS
4. LONG WAVE BAND OSC SHUNT TRIMMER
5. LONG WAVE BAND DET SHUNT TRIMMER
6. LONG WAVE BAND ANT SHUNT TRIMMER
7. LONG WAVE BAND OSC SERIES PADDER
8. BROADCAST OSC SHUNT TRIMMER
9. BROADCAST DET SHUNT TRIMMER
10. BROADCAST ANT. SHUNT TRIMMER
11. BROADCAST OSC SERIES PADDER
12. 1st S.W. BAND OSC SHUNT TRIMMER
13. 1st S.W. BAND DET SHUNT TRIMMER
14. 1st S.W. BAND ANT SHUNT TRIMMER
15. 2nd S.W. BAND OSC SHUNT TRIMMER
16. 2nd S.W. BAND DET SHUNT TRIMMER
17. 2nd S.W. BAND ANT SHUNT TRIMMER

(TEMPORARY CIRCUIT DIAGRAM)

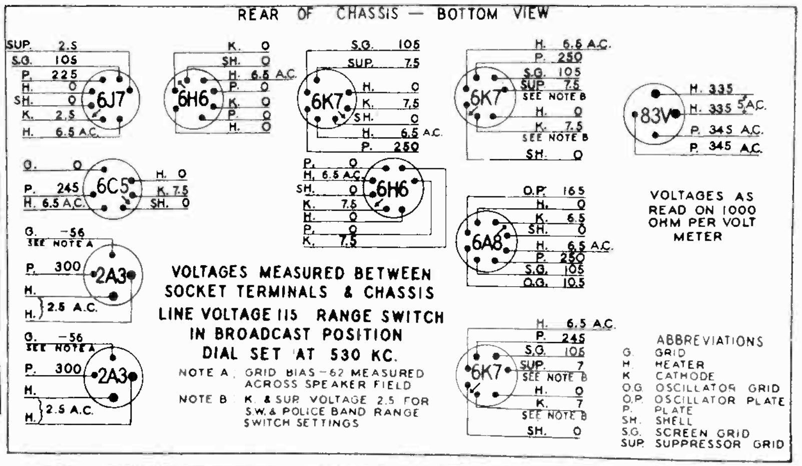
TUBE LOCATIONS

FRONT OF SET



SOCKET VOLTAGES

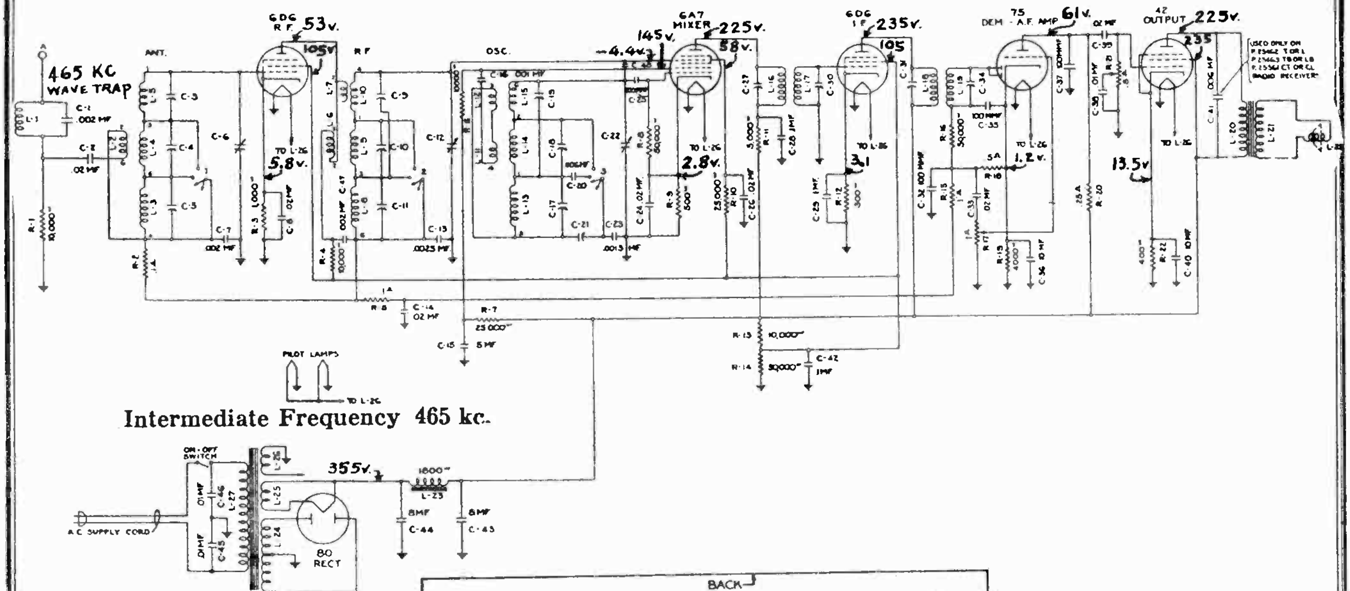
REAR OF CHASSIS — BOTTOM VIEW



Schematic, Voltage
Trimmers, Chassis

MODELS 58L, 58LB, 58T
58TB, 58W, 58WB

STROMBERG-CARLSON TEL. MFG. CO.



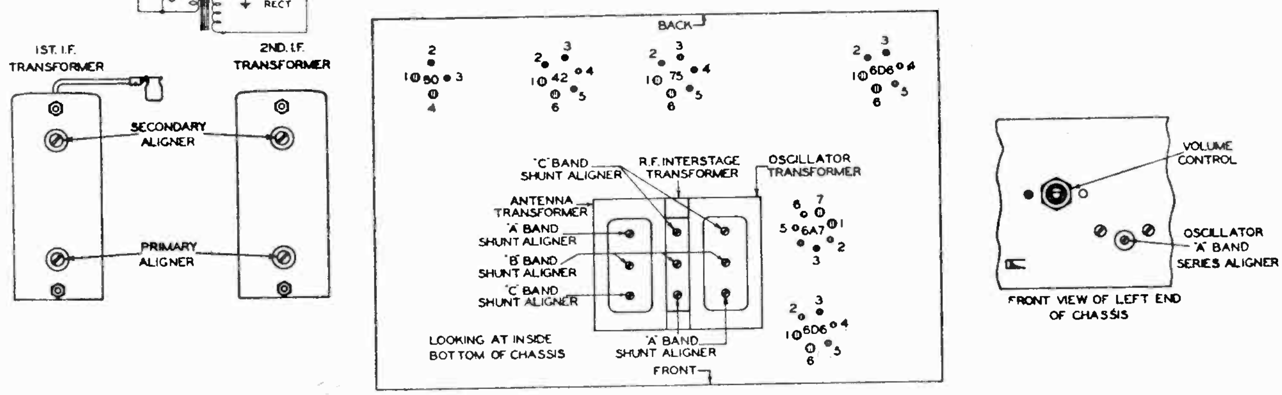


Fig. 1. Terminal Layout for Voltage Measurement Chart and Location of the Various Aligning Capacitors.

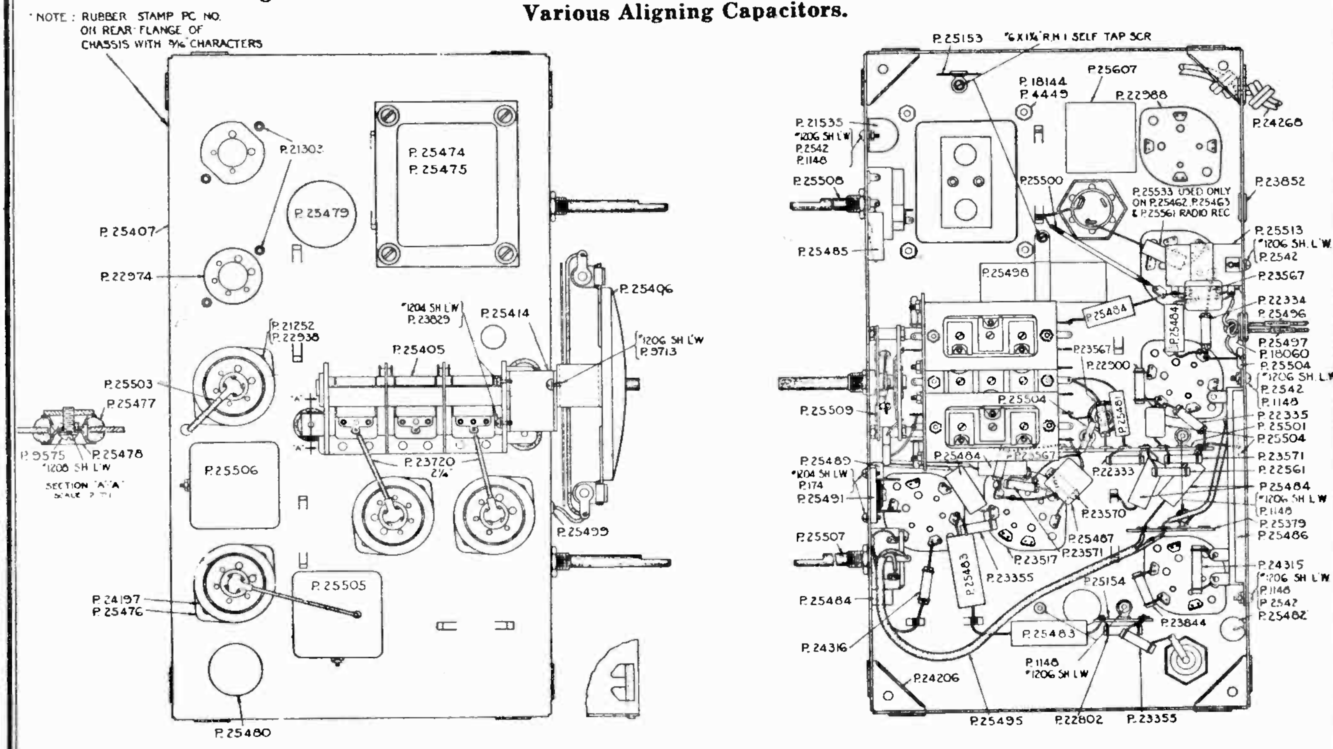
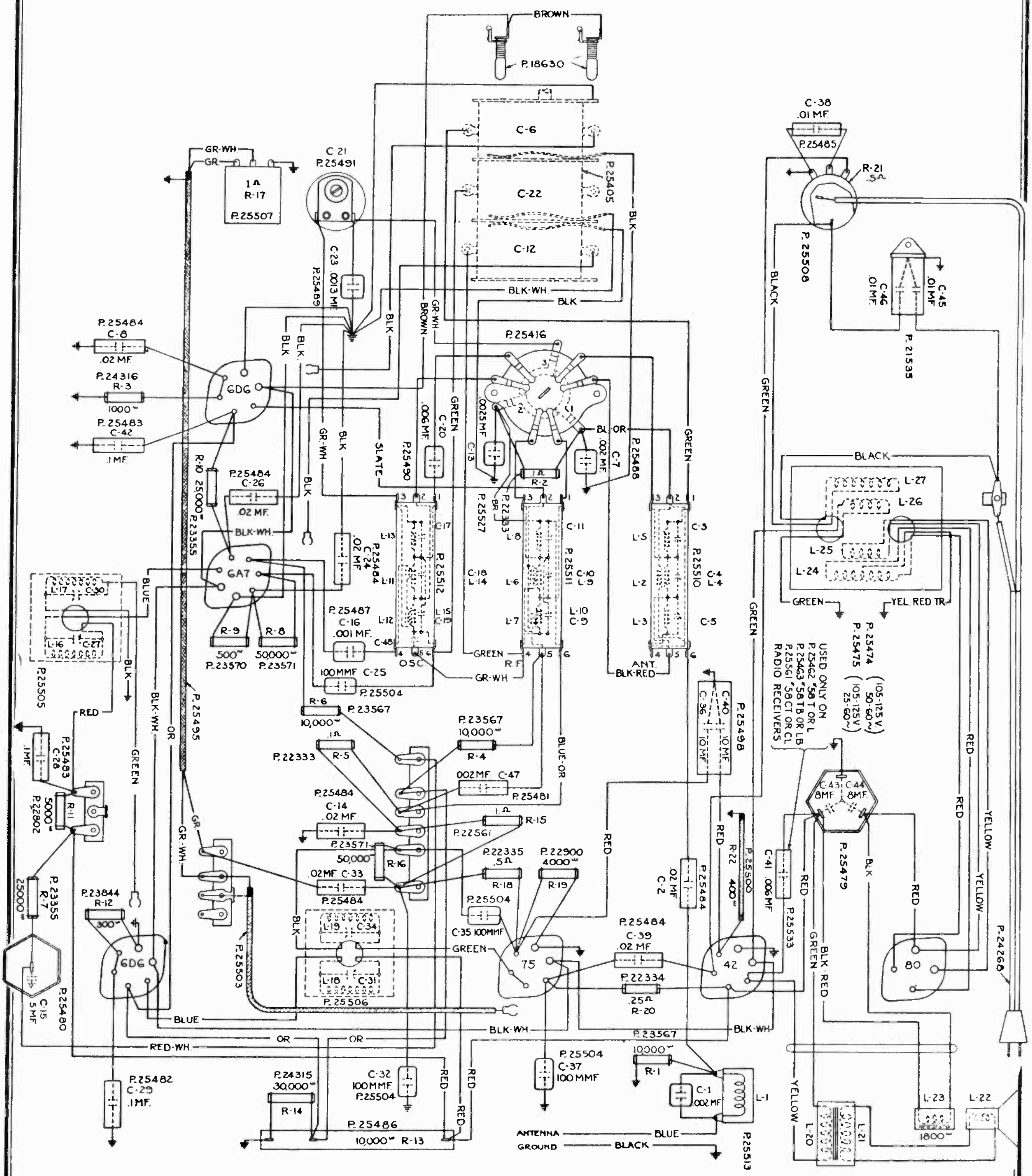


Fig. 3. Chassis Assembly.

MODEL 58 Series
Chassis Wiring
List of Models

STROMBERG-CARLSON TEL. MFG. CO.



No. 58-T	50-60 Cycles	P-25462 Chassis; P-25464 Loud Speaker
No. 58-TB	25-60 Cycles	P-25463 Chassis; P-25464 Loud Speaker
No. 58-L	50-60 Cycles	P-25462 Chassis; P-25464 Loud Speaker
No. 58-LB	25-60 Cycles	P-25463 Chassis; P-25464 Loud Speaker
No. 58-W	50-60 Cycles	P-25604 Chassis; P-25601 Loud Speaker
No. 58-WB	25-60 Cycles	P-25605 Chassis; P-25601 Loud Speaker

STROMBERG-CARLSON TEL. MFG. CO.

ELECTRICAL SPECIFICATIONS

Type of Circuit ---------- Superheterodyne
Tuning Ranges ---------- A—.54 to 1.7 megacycles; B—1.7 to 5.4 megacycles; C—5.4 to 18 megacycles
Number and Type of Tubes ---------- 3 No. 6K7, 1 No. 6A8, 1 No. 6H6, 2 No. 6F6, 1 No. 5Z3
Voltage Rating ---------- 105 to 125 volts
Frequency Rating ---------- 25-60 cycles and 50-60 cycles
Wattage Rating ---------- 105 watts
Intermediate Frequency ---------- 465 kc.

APPARATUS SPECIFICATIONS

No. 62 Receiver ---------- 50-60 Cycles ---------- P-25432 Chassis; P-25687 Loud Speaker
No. 62-B Receiver ---------- 25-60 Cycles ---------- P-25433 Chassis; P-25687 Loud Speaker
No. 63 Receiver ---------- 50-60 Cycles ---------- P-25684 Chassis; P-25687 Loud Speaker
No. 63-B Receiver ---------- 25-60 Cycles ---------- P-25685 Chassis; P-25687 Loud Speaker

CIRCUIT DESCRIPTION

Eight tubes, A. C. operated, Superheterodyne receiver employing metal tubes and having three tuning ranges. These three tuning ranges cover all the important broadcasts and special service bands of both American and Foreign stations. These receivers are also equipped with a high fidelity control providing high fidelity reception by means of a special band widener device and single unit high fidelity speaker. The No. 63 Receiver chassis is the same as the No. 62 Receiver chassis except for the addition of the Visual Tuning Meter. See P-25675, Installation and Operating Instructions, for properly installing and operating the No. 62 Receiver and P-25768, Installation and Operating Instructions, for properly installing and operating the No. 63 Receiver.

The various tubes in this receiver are used as follows: One of the No. 6K7 tubes functions as an R. F. Amplifier, another No. 6K7 is used in the I. F. Amplifier Stage, and the other No. 6K7 operates as an Audio Driver tube. The No. 6A8 tube is used as an Oscillator and also as a Modulator. The No. 6H6 tube is used as a Demodulator—Automatic Volume Control tube. The audio power output stage uses the two No. 6F6 tubes, and the No. 5Z4 is used as the rectifier in the power supply unit.

NORMAL VOLTAGE READINGS

The various values of voltages listed in the following table are obtained by measuring between the various tube socket contacts and the chassis base, with the tubes in their respective sockets. The receiver is, therefore, in operation when the measurements are made. Figure 1 shows the terminal layout of the sockets with the proper terminal numbers.

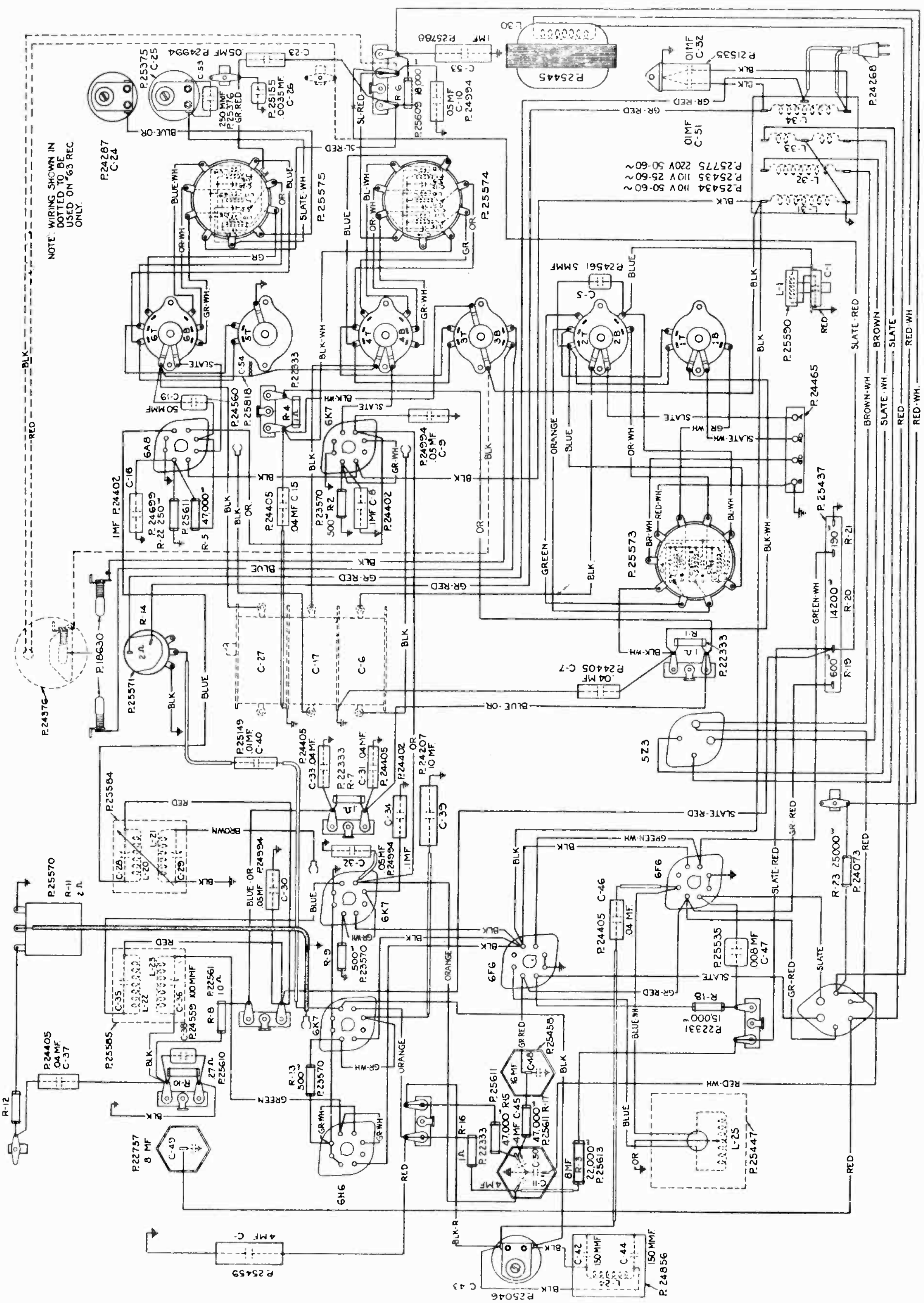
Voltages are given for a line voltage of 120 volts, and allowance should be made for differences when the line voltage is higher or lower. A meter having a resistance of 1000 ohms per volt should be used for measuring the D. C. voltages. Voltage values shown are those obtained on the lowest possible scale of a meter having the following ranges: 0-2.5, 0-10, 0-100, 0-250, 0-500, 0-1000 volts.

Tube	*Circuit*	*Cap.*	*Terminal Sockets*								*Heater Voltages Between Terminal Nos.*	
			1	2	3	4	5	6	7	8	*at*	*Volts*
6K7	R. F. Amp.	0	0	—	+230	+ 95	+ 3	—	—	+ 3	2–7,	*6.3* volts
6A8	Mod.-Osc.	0	0	—	+235	+ 95	0	+150	—	+ 3	2–7,	*6.3* volts
6K7	I. F. Amp.	0	0	—	+230	+ 95	+ 3.5	—	—	+ 3.5	2–7,	*6.3* volts
6H6	Dem.-A. V. C.	—	0	—	0	0	0	—	—	—	2–7,	*6.3* volts
6K7	A. F. Amp.	0	0	—	+ 25	+ 35	+1.5	—	—	+ 1.5	2–7,	*6.3* volts
6F6	Output	—	0	0	+250	+260	0	—	0	+16	2–7,	*6.3* volts
5Z3	Rectifier	—	+428	*405*	*405*	+428					1–4,	*4.85* volts
Speaker Socket			+260	+400	+430	+430	+260	+260				

Set tuned to 1000 kc., no signal. A. C. voltages are indicated by italics.

MODELS 62,63
Chassis Wiring

STROMBERG-CARLSON TEL. MFG. CO.



MODELS 62,63
Schematic
Chassis Assembly

STROMBERG-CARLSON TEL. MFG. CO.

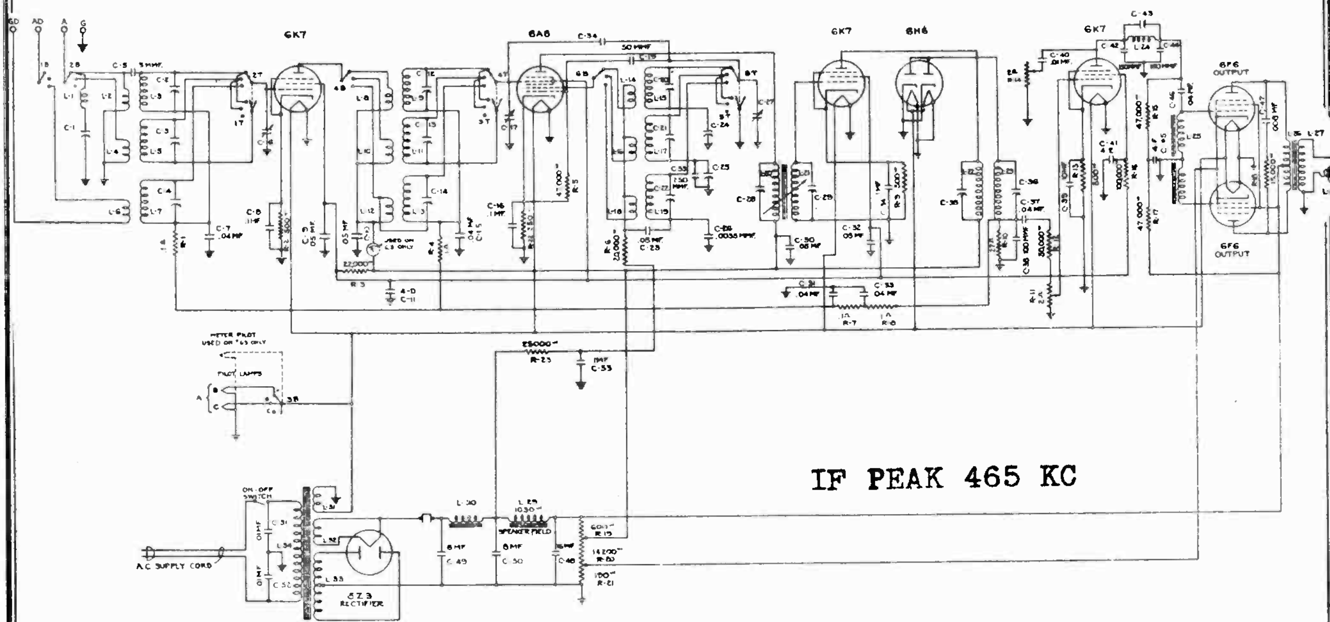


Fig. 2. Schematic Circuit of Receiver.

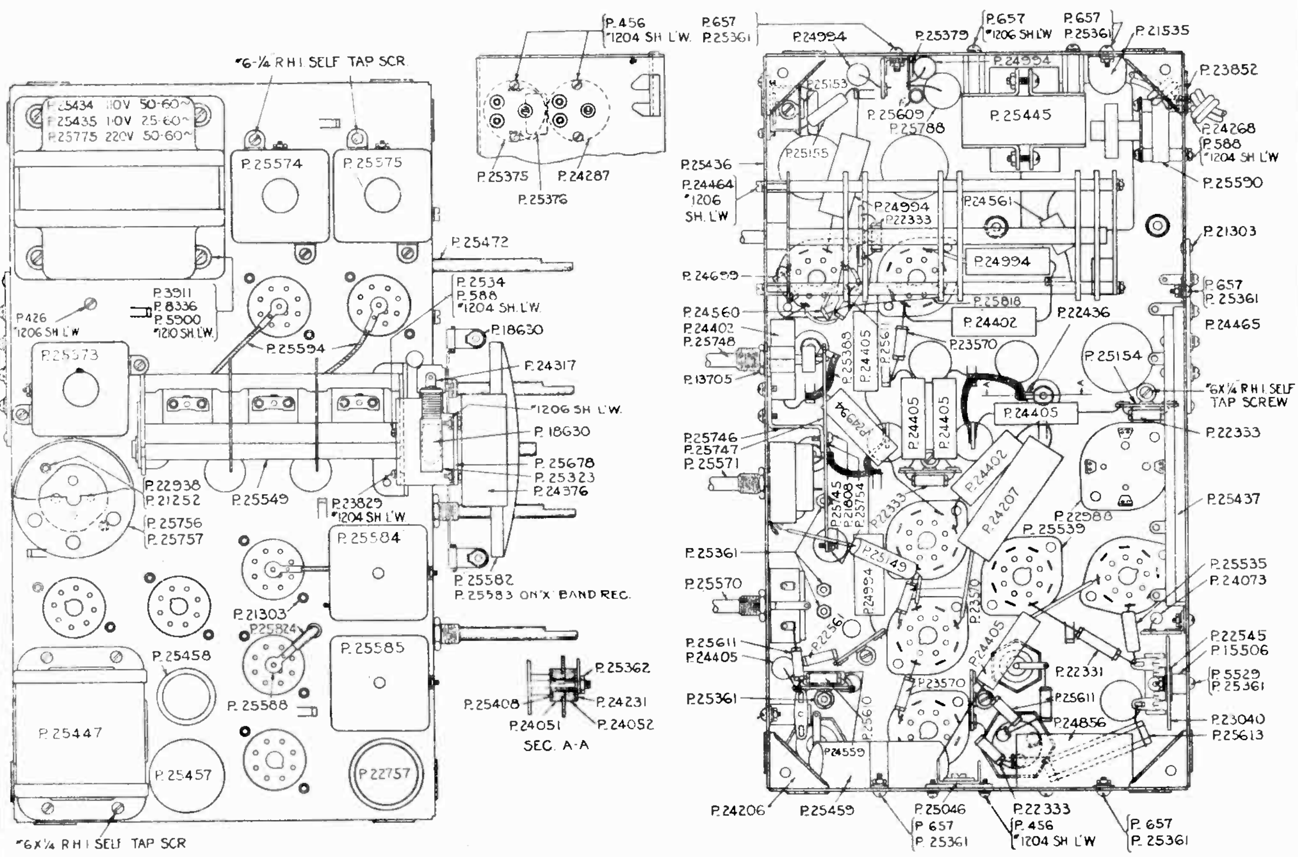


Fig. 3. Chassis Assembly.

MODELS 62,63
Socket,Trimmers
Parts List

STROMBERG-CARLSON TEL. MFG. CO.

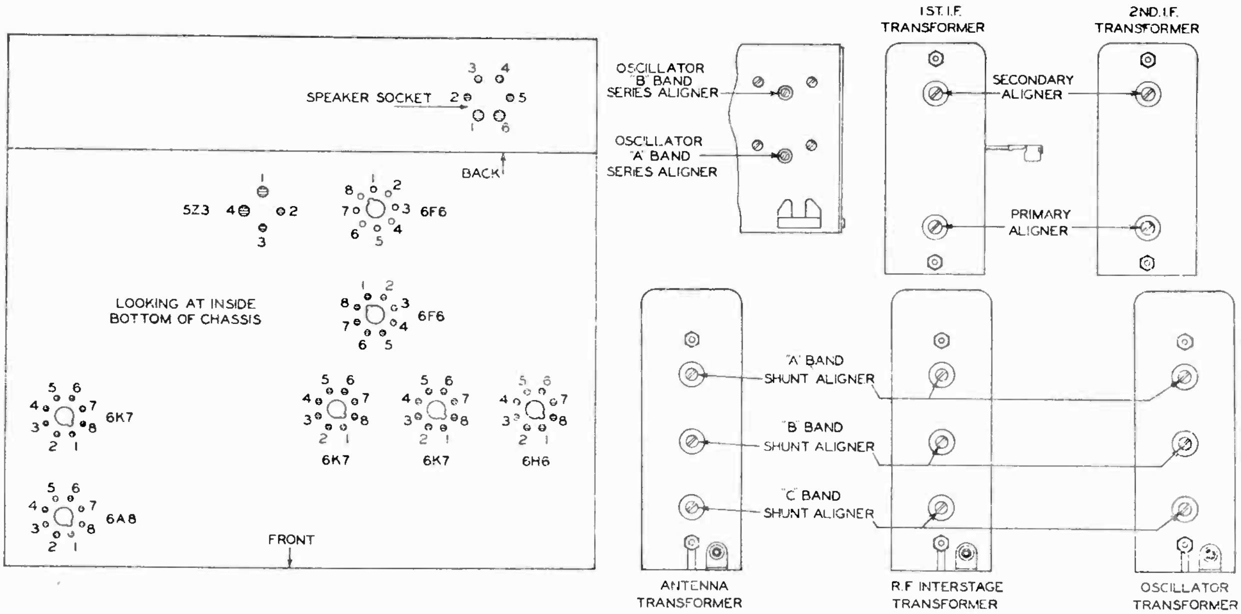


Fig. 1. Terminal Layout for Voltage Measurement Chart and Location of the Various Aligning Capacitors. CAUTION—Never Attempt to Align Receiver With Fidelity Control Set At Any Position Other Than the Maximum Counter-Clockwise Position.

Piece Number	Parts	Description of Parts	Required per Receiver	List Price Each
P-24165	Binding Post Assembly	Antenna and Ground	1	$ .40
P-25746	Bracket	Fidelity Control	1	.10
P-25458	Capacitor	Electrolytic	1	1.35
P-25457	Capacitor	Electrolytic	1	3.05
P-22757	Capacitor	Electrolytic	1	1.50
P-24207	Capacitor	Electrolytic	1	.85
P-25459	Capacitor	Electrolytic	1	.90
P-25788	Capacitor	Electrolytic	1	.95
P-24402	Capacitor	0.1 MF.	3	.45
P-24994	Capacitor	0.05 MF.	6	.45
P-24405	Capacitor	0.04 MF.	6	.45
P-21535	Capacitor	Two, 0.01 MF.	1	.80
P-25149	Capacitor	0.01 MF.	1	.30
P-25535	Capacitor	Type 3, 0.008 MF.	1	.60
P-25155	Capacitor	0.0035 MF.	1	.40
P-25376	Capacitor	Type O, 250 MMF.	1	.25
P-24559	Capacitor	Type O, 100 MMF.	1	.25
P-24560	Capacitor	Type O, 50 MMF.	1	.25
P-24561	Capacitor	Type O, 5 MMF.	1	.20
P-25046	Capacitor	Aligning, 220 MMF.	1	.50
P-24287	Capacitor	Aligning, 525 MMF.	1	.60
P-25375	Capacitor	Aligning, 1350 MMF.	1	1.00
P-25445	Choke Coil Assembly		1	2.75
P-25573	Coil Assembly	Antenna	1	3.75
P-25574	Coil Assembly	R. F. Stage	1	3.75
P-25575	Coil Assembly	Oscillator	1	3.75
P-24268	Cord	A. C. Supply	1	.75
P-25590	Filter Assembly	Antenna Wave Trap	1	.55
P-24856	Filter Assembly	Audio Cut-off Filter	1	2.50
P-18630	Lamp	Pilot	2	.13
P-25747	Lever	Fidelity Control	1	.10
P-25570	Potentiometer	Volume Control	1	.85
P-25571	Potentiometer	Tone Control and "On-Off" Switch	1	1.15
P-24699	Resistor	Type D, 250 ohms	1	.37
P-23570	Resistor	Type D, 500 ohms	3	.37
P-22331	Resistor	Type C, 15,000 ohms	1	.37
P-25609	Resistor	Type C, 18,000 ohms	1	.37
P-25613	Resistor	Type F, 22,000 ohms	1	.37
P-24073	Resistor	Type B, 25,000 ohms	1	.37
P-25611	Resistor	Type D, 47,000 ohms	4	.37
P-22333	Resistor	Type D, 0.1 megohm	4	.37
P-25610	Resistor	Type D, 0.27 megohm	1	.37
P-22561	Resistor	Type D, 1 megohm	1	.37
P-25437	Resistor	"B" Voltage Divider	1	.60
P-25748	Shaft Assembly	Fidelity Control	1	.50
P-25745	Shoulder Screw	Fidelity Control	1	.05
P-21808	Shoulder Screw	Fidelity Control	1	.05
P-22988	Socket	Tube, 4 Prong	1	.15
P-23040	Socket	Tube, 6 Prong	1	.15
P-25539	Socket	Tube, 8 Prong	7	.15
P-25687	Speaker	High Fidelity Loud Speaker	1	17.75
P-25472	Switch Assembly	Frequency Range	1	3.90
P-25447	Transformer Assembly	Audio Driver Stage	1	4.00
P-25688	Transformer Assembly	Audio Power Output	1	2.90
P-25584	Transformer Assembly	1st I. F.	1	4.25
P-25585	Transformer Assembly	2nd I. F.	1	1.95
P-25434	Transformer	Power, 50-60 Cycles, 110 Volts	1	6.75
P-25435	Transformer	Power, 25-60 Cycles, 110 Volts	1	12.85

Additional Parts used only on the No. 63 Receivers

P-24376	Meter	Visual Tuning	1	2.75
P-18630	Lamp	Pilot	1	.13

STROMBERG-CARLSON TEL. MFG. CO.

Engineering Data
Stromberg-Carlson No. 70 Series Radio Receivers

STROMBERG-CARLSON TELEPHONE MANUFACTURING COMPANY
Rochester, New York

ELECTRICAL SPECIFICATIONS

Type of Circuit		Superheterodyne
Tuning Ranges		A-520 to 1600 Kc.; B-1500 to 4200 Kc.; C-3700 to 10,000 Kc.; D-8500 to 23,000 Kc.
Type and Number of Tubes; No. 70 and 72		4 No. 6D6, 1 No. 6A7, 1 No. 76, 2 No. 6C6, 1 No. 6B7, 1 No. 42, 2 No. 2A3, 1 No. 5Z3.
No. 74		4 No. 6D6, 1 No. 6A7, 1 No. 76, 2 No. 6C6, 1 No. 6B7, 1 No. 42, 4 No. 2A3, 2 No. 5Z3.
Voltage Rating		105-125 Volts
Frequency Rating		25-60 Cycles and 50-60 Cycles
Wattage Rating	No. 70	160 Watts
	No. 72	225 Watts
	No. 74	300 Watts
Intermediate Frequency		260 or 370 Kc.

APPARATUS SPECIFICATIONS

No. 70 Receiver	50-60 Cycles	P-24783 Chassis; P-24777 Bass Loud Speaker; P-24819 Treble Loud Speaker
No. 70-B Receiver	25-60 Cycles	P-24784 Chassis; P-24777 Bass Loud Speaker; P-24819 Treble Loud Speaker
No. 72 Receiver	60 Cycles	P-24783 Chassis; P-24777 Bass Loud Speaker; P-24819 Treble Loud Speaker; No. 5-A Phonograph Assembly
No. 72-D Receiver	50 Cycles	Same as 60 Cycles except No. 5-D Phonograph Assembly
No. 72-B Receiver	25 Cycles	Same as 60 Cycles except P-24784 Chassis and No. 6-B Phonograph Assembly
No. 74 Receiver	60 Cycles	P-24785 Chassis; P-24855 Auditorium Type Loud Speaker; P-24819 Treble Loud Speaker; No. 6-A Phonograph Assembly
No. 74-D Receiver	50 Cycles	Same as 60 Cycles except No. 5-D Phonograph Assembly
No. 74-B Receiver	25 Cycles	Same as 60 Cycles except P-24786 Chassis; P-25378 Auditorium Type Loud Speaker and No. 6-B Phonograph Assembly

CIRCUIT DESCRIPTION

No. 70 and 72 RECEIVERS

Thirteen tubes, A. C. operated, All-wave superheterodyne, having four tuning ranges. See P-25252, Installation and Operating Instructions, for installation and operating procedure.

One 6D6 functions as an R. F. high frequency amplifier only on the "C" and "D" bands. On the other two lower bands this tube is shorted out and the tuning system functions as a "bi-resonator" system. The next 6D6 is used as an R. F. Amplifier. The remaining two 6D6 tubes are used as I. F. Amplifiers. The 6A7 is used as a modulator tube only. This is done in order to obtain maximum freedom of detrimental coupling between the oscillator and modulator.

The 76 tube functions as the oscillator. One 6C6 tube is used in a vacuum tube voltmeter circuit, resonance being indicated by the meter in the plate circuit of this tube, while the other 6C6 tube is used in the automatic noise suppression or "Q" circuit. The 6B7 tube acts as a demodulator, automatic volume control tube, and a triode first audio tube.

The No. 42 tube is operated as a triode audio driver tube for the No. 2A3 power output tubes. The 5Z3 tube is the rectifier tube in the power supply.

No. 74 RECEIVER

The arrangement and type of tubes used in this receiver is the same as in the No. 70 and 72 Receivers except for the addition of two more 2A3 tubes in the audio power output stage, and the additional 5Z3 rectifier tube in the power unit of the auditorium type loud speaker.

INSTRUCTIONS FOR THE REMOVAL AND REPLACEMENT OF THE TREBLE LOUD SPEAKER USED IN THE NO. 70, NO. 72 AND NO. 74 RECEIVERS

Unplug the speaker cord and remove the four machine screws holding the speaker to the baffle.

Care should be exercised in handling this speaker. Do not drop it face down on a flat surface or the center may be damaged due to the resulting air compression. Later speakers are provided with a stud on the front ring which prevents their being damaged in this manner. This stud may readily be removed from speakers to be used for replacement service, if the baffle is not provided with a hole for its accomodation.

The driving coil leads on these speakers are made of fine aluminum wire in order to reduce the mass to the value necessary for the reproduction of high frequencies. Avoid touching them as they are delicate and easily broken. Do not attempt to blow dust or chips from these speakers with compressed air as lead breakage may result.

The movement of the cone in actual service is only a few thousandths of an inch and is adequately taken care of by the thin aluminum center suspension. Do not force the cone back and forth with the fingers as you would an ordinary dynamic speaker or the center suspension may be damaged.

CENTERING THE DRIVING COIL OF TREBLE SPEAKER

Once the coil is correctly centered, it should never need readjustment. However, in case the center screw should be inadvertently loosened and the adjustment lost, the following instructions are given:

Provide three strips of clean, smooth paper, .006" to .008" thick, about ¼" wide, and about 3" long, for use as gauges. With the cone center clamping screw loosened, insert one end of each of the paper strips in the gap between the outside of the driving coil and the hole in the front plate, spacing the strips equidistantly around the coil. This may easily be done if the ends of the paper are cut to a point and tweezers are used for inserting them. Now, tighten the center clamping screw and "feel" the paper strips by pulling them with the tweezers to determine if any are pinched tightly in the gap. If this is found to be the case, the center screw should be loosened, and the cone moved slightly sidewise in a direction to relieve the pinched strip. Then, the screw should be retightened. The coil is considered centered when the three strips are equally free in the gap. Remove the strips by grasping them with the tweezers close to the front plate, rather than by pulling on the end of the strip, otherwise the paper may tear off against the edge of the hole, and thus a piece may be left in the gap.

In performing the centering operation, use great care not to damage the driving coil leads.

INSTRUCTIONS FOR THE REMOVAL AND REPLACEMENT OF THE BASS LOUD SPEAKER USED IN THE NO. 70 AND NO. 72 RECEIVERS

After unplugging the cords, remove the housings on each side of the speaker by taking out the necessary retaining screws and lifting off the housings. (In some models, the dividing network box is mounted astride the housings and must first be removed.) Then, take off the three clamps holding the cone ring to the baffle board. The four nuts which clamp the speaker to the labyrinth may now be removed with a flat wrench and the speaker lifted out.

In replacing the speaker, see that the cone ring is pushed firmly forward against the baffle, and that the housings are tight against the sides of the cone bracket.

INSTRUCTIONS FOR THE REMOVAL AND REPLACEMENT OF THE AUDITORIUM TYPE BASS LOUD SPEAKER USED IN THE NO. 74 RECEIVER

Two different methods of fastening the bass speaker to the floor of the cabinet have been used in this receiver. In the first method, the mounting screws are inserted from the inside of the cabinet and are screwed into metal sockets mounted in the bottom board. To remove the speaker, the acoustical labyrinths and the upper half of the cone housing must be removed to permit access to the hexagonal heads of the speaker mounting screws. First, remove the following wood screws:

(a) The six screws passing from the back through the two wooden cleats each side of the speaker, and into the cone housing.

(b) Two screws which fasten the two metal brackets on top half of cone housing to the baffle board.

(c) All screws which secure the labyrinth retaining brackets to the sides and bottom of cabinet.

(d) Two screws which pass through from the front of the baffle (near the bottom) into the labyrinths. The heads of these screws are just behind the lower edge of the skirt at the front of the cabinet.

The treble speaker should now be removed by taking out its four mounting screws, and unplugging the cord from the dividing network.

Now, the upper half of the cone housing and the labyrinths may be removed, after unplugging the remaining speaker cords. A wide chisel will be found handy for prying the labyrinths up off the cabinet floor sufficient to obtain a hand-hold on them. Have a small box ready to rest the right-hand labyrinth on to keep strain off the cord of the phonograph transformer.

Next, remove the four clamps holding the cone bracket to the baffle, and also the four hexagonal headed screws holding the speaker to the floor of the cabinet. The speaker may now be lifted straight up and out over the lower half of the cone housing.

In replacing the speaker, push it forward firmly against the baffle, and note if the foot brackets rest evenly on the cabinet floor. If not, wooden wedges should be placed under them so that the cone bracket will not be strained when the speaker is bolted down. When replacing the labyrinths, see that they are pushed over into firm contact with the ends of the cone housing.

In the second method, which is that used in more recent production, the bass speaker is fastened down by four hexagonal headed screws inserted from the bottom of the cabinet, and threaded into metal bars which clamp down the speaker mounting feet. These screws may be removed by reaching under the cabinet with a wrench. Then, remove the upper half of the cone housing after taking out its four retaining screws. This will expose the two clamps holding the cone bracket to the baffle. After these are removed, and the cords are unplugged, the speaker may be lifted out of the cabinet. In replacing the speaker, observe the same precautions as to wedging the base, if necessary, as were mentioned under the first method.

TO REMOVE RECTIFIER TUBE SHIELD FROM BASS SPEAKER (NO. 74 RECEIVER ONLY)

The tube shield is provided with keyhole mounting slots and is held by spring pressure against its mounting screws, which are left slack. To remove the shield, lift it straight up and then unhook from the mounting screws by pulling toward the left.

REDUCTION OF OUTPUT HUM

The amount of hum in the output of these receivers will be found to vary. This is due to the characteristics of the No. 2A3 tubes used in the output stage. Therefore, if a particular receiver is found to have excessive hum, it is recommended that several No. 2A3 tubes be tried. In this way a suitable set of matched tubes can be obtained which will give minimum hum.

REPLACEMENT PARTS

Parts Used on the Nos. 70, 72, and 74 Receivers:

Piece Number	Parts	Description of Parts	Required per Receiver	List Price Each
P-24465	Binding Post Assembly	Antenna and Ground	1	$ .40
P-24953	Capacitor Assembly	4 MF., Filter, 60 cycles	1	2.00
P-24835	Capacitor Assembly	Electrolytic	1	2.50
P-24906	Capacitor Assembly	By-pass	1	2.00
P-24402	Capacitor Assembly	0.1 MF.	6	.44
P-24405	Capacitor Assembly	0.04 MF.	11	.45
P-24904	Capacitor Assembly	0.05 MF.	11	.44
P-21207	Capacitor Assembly	Electrolytic	2	.66
P-21535	Capacitor Assembly	Two, 0.01 MF.	1	.30
P-25338	Capacitor Assembly	Used only on receivers for 25 cycles	1	2.16
P-25149	Capacitor Assembly	0.01 MF.	3	.50
P-25150	Capacitor Assembly	0.02 MF.	2	.40
P-24561	Capacitor	Type O, 5 MMF.	1	.30
P-24314	Capacitor	Type O, 10 MMF.	1	.25
P-24166	Capacitor	Type O, 25 MMF.	1	.26
P-24560	Capacitor	Type O, 50 MMF.	1	.25
P-24559	Capacitor	Type O, 100 MMF.	2	.25
P-25190	Capacitor	Type J, 500 MMF.	1	.24
P-24554	Capacitor	Type W, 700 MMF.	1	.34
P-24401	Capacitor	Type J, 0.004 MF.	1	.30
P-24636	Capacitor	Type W, 0.005 MF.	1	.30
P-25040	Capacitor	Aligning, 140 MMF.	1	3.10
P-24076	Capacitor	Aligning, 550 MMF.	1	.60
P-24350	Capacitor	Aligning, 1700 MMF.	1	1.30
P-24306	Capacitor	Aligning, 2000 MMF.	1	1.84
P-24787	Coil Assembly	Antenna, "A" and "C" Bands	1	4.50
P-24788	Coil Assembly	Bi-Resonator, "A" and "C" Bands	1	4.50
P-24789	Coil Assembly	R. F., "A" and "C" Bands	1	4.80
P-25354	Coil Assembly	Oscillator, "A" and "C" Bands	1	4.90
P-24791	Coil Assembly	Antenna, "B" and "D" Bands	1	4.50
P-24792	Coil Assembly	Bi-Resonator, "B" and "D" Bands	1	4.80
P-24793	Coil Assembly	R. F., "B" and "D" Bands	1	4.50
P-25355	Coil Assembly	Oscillator, "B" and "D" Bands	1	4.50
P-19612	Connector	A. C. Supply	1	.70
P-24890	Shaft Assembly	Tuning	1	.55
P-24900	Shaft Assembly	Vernier Tuning	1	.40
P-21856	Filter Assembly		1	2.50
P-22534	Fuse Block		1	.30
P-19332	Jack Assembly	Phonograph	1	.27
P-18417	Jack Assembly	Tel-ick-tor Meter Circuit	1	3.00
P-16630	Lamp	Pilot, 6 Volts	8	.12
P-21862	Meter	Tuning	1	2.75
P-24848	Potentiometer	Tone Control and A. C. Switch	1	1.85
P-24937	Potentiometer and Shaft Assembly	High Fidelity Control	1	9.00
P-18704	Resistor	Type B, 15,000 Ohms	1	.27
P-22327	Resistor	Type C, 600 Ohms	1	.27
P-25055	Resistor	Type C, 1,500 Ohms	1	.27
P-22329	Resistor	Type C, 4,500 Ohms	1	.27
P-23844	Resistor	Type D, 300 Ohms	1	.27
P-22808	Resistor	Type D, 600 Ohms	8	.27
P-23572	Resistor	Type D, 2,000 Ohms	1	.27
P-22900	Resistor	Type D, 4,000 Ohms	1	.27
P-25274	Resistor	Type D, 20,000 Ohms	1	.27
P-24355	Resistor	Type D, 25,000 Ohms	1	.27
P-23571	Resistor	Type D, 50,000 Ohms	4	.27
P-23354	Resistor	Type D, 75,000 Ohms	1	.27
P-22333	Resistor	Type D, 0.1 Megohm	7	.27
P-22334	Resistor	Type D, 0.25 Megohm	1	.27
P-22335	Resistor	Type D, 0.5 Megohm	1	.27
P-22561	Resistor	1 Megohm	2	.27
P-22871	Resistor	5 Megohms	1	.27
P-24810	Speaker	High Frequency	1	8.50
P-17350	Switch	"Q" Circuit	1	.75
P-24967	Switch Assembly	Phonograph	5	2.00
P-25044	Switch Assembly	Range	1	6.50
P-24517	Socket	Pilot Lamp	8	.15
P-16023	Socket	Tube, 4 Prong	6 used on the No. 70 and No. 72, 8 used on the No. 74	.17
P-23039	Socket	Tube, 5 Prong	2	.17
P-23040	Socket	Tube, 6 Prong	8	.17
P-23046	Socket	Tube, 7 Prong	2	.17
P-23043	Socket	Tube, 8 Prong	1	.17
P-24049	Transformer Assembly	Driver Stage	1	4.74
P-25347	Transformer Assembly	1st I. F.	1	9.00
P-25348	Transformer Assembly	2nd I. F.	1	9.00
P-25349	Transformer Assembly	Meter I. F.	1	9.00
P-25350	Transformer Assembly	Diode I. F.	1	9.00

Parts Used Only on the Nos. 70 and 72 Receivers:

Piece Number	Parts	Description of Parts	Required per Receiver	List Price Each
P-21816	Choke Assembly	A. C. Supply	1	6.50
P-19602	Cord		1	1.00
P-21224	Fuse	2½ Ampere	1	.10
P-21869	Network Assembly	For dividing circuits of Speakers	1	9.75
P-25020	Potentiometer	Volume Control	1	8.10
P-24873	Resistor	"B" Voltage Divider	1	1.00
P-24777	Speaker	Low Frequency	1	15.00
P-21805	Transformer Assembly	Output Stage	1	8.75
P-21837	Transformer	Power, 50-60 Cycles, 110 Volts	1	12.00
P-24838	Transformer	Power, 25-60 Cycles, 110 Volts	1	20.00

Parts Used Only on the No. 74 Receiver:

Piece Number	Parts	Description of Parts	Required per Receiver	List Price Each
P-21817	Choke Assembly	A. C. Supply	1	6.24
P-26255	Cord		1	1.00
P-25156	Fuse	5 Ampere	1	.18
P-24890	Network Assembly	For dividing circuits of Speakers	1	13.00
P-21072	Potentiometer	Volume Control	1	5.10
P-21871	Resistor	"B" Voltage Divider	1	1.00
P-24855	Speaker	Low Frequency	1	47.00
P-21806	Transformer Assembly	Output Stage	1	6.75
P-24839	Transformer	Power, 50-60 Cycles, 110 Volts	1	14.00
P-24840	Transformer	Power, 25-60 Cycles, 110 Volts	1	24.00

MODEL 70 Series
Chassis Assembly

STROMBERG-CARLSON TEL. MFG. CO.

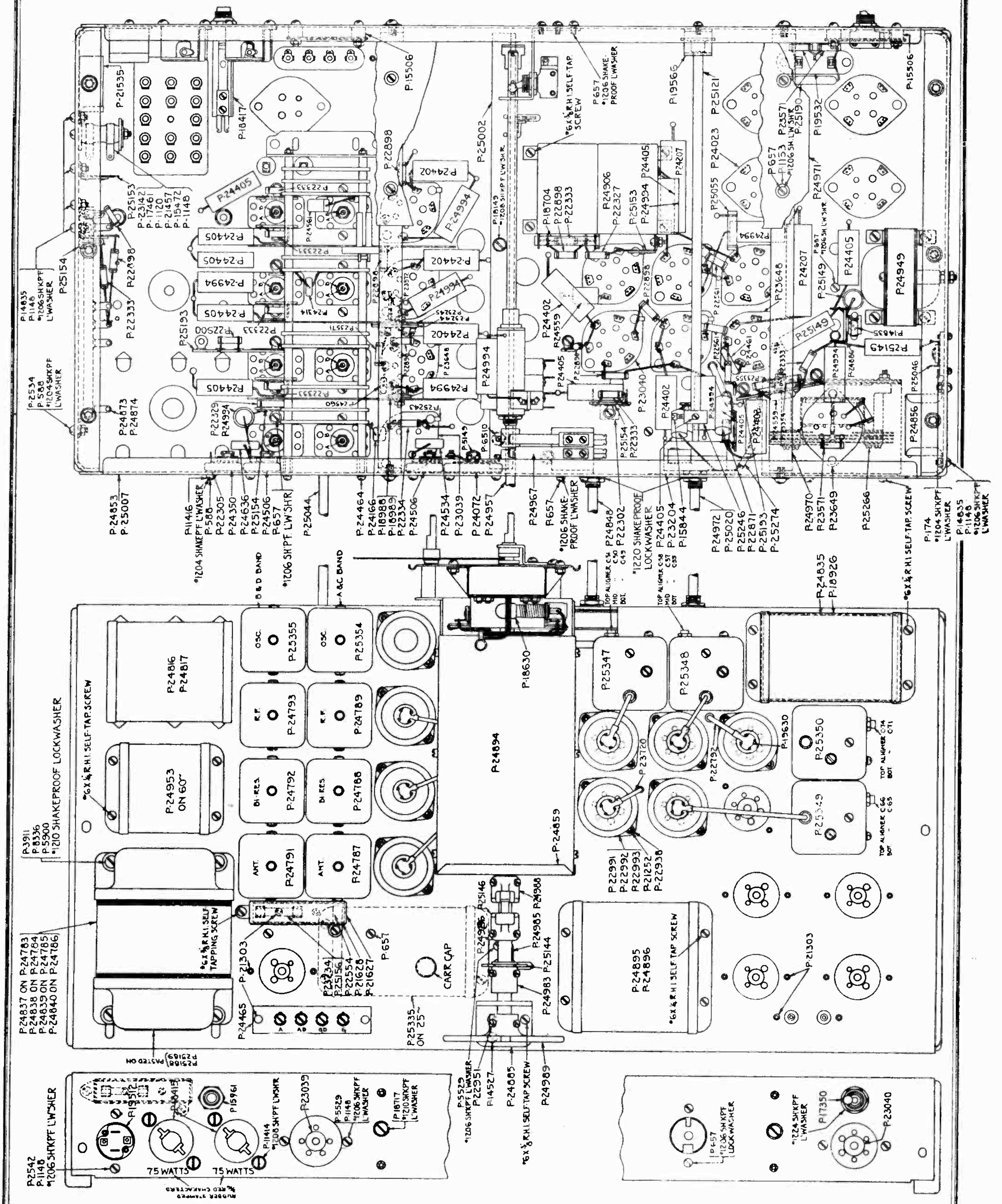


Fig. 4. Chassis Assembly.

MODEL 70 Series
Schematic

STROMBERG-CARLSON TEL. MFG. CO.

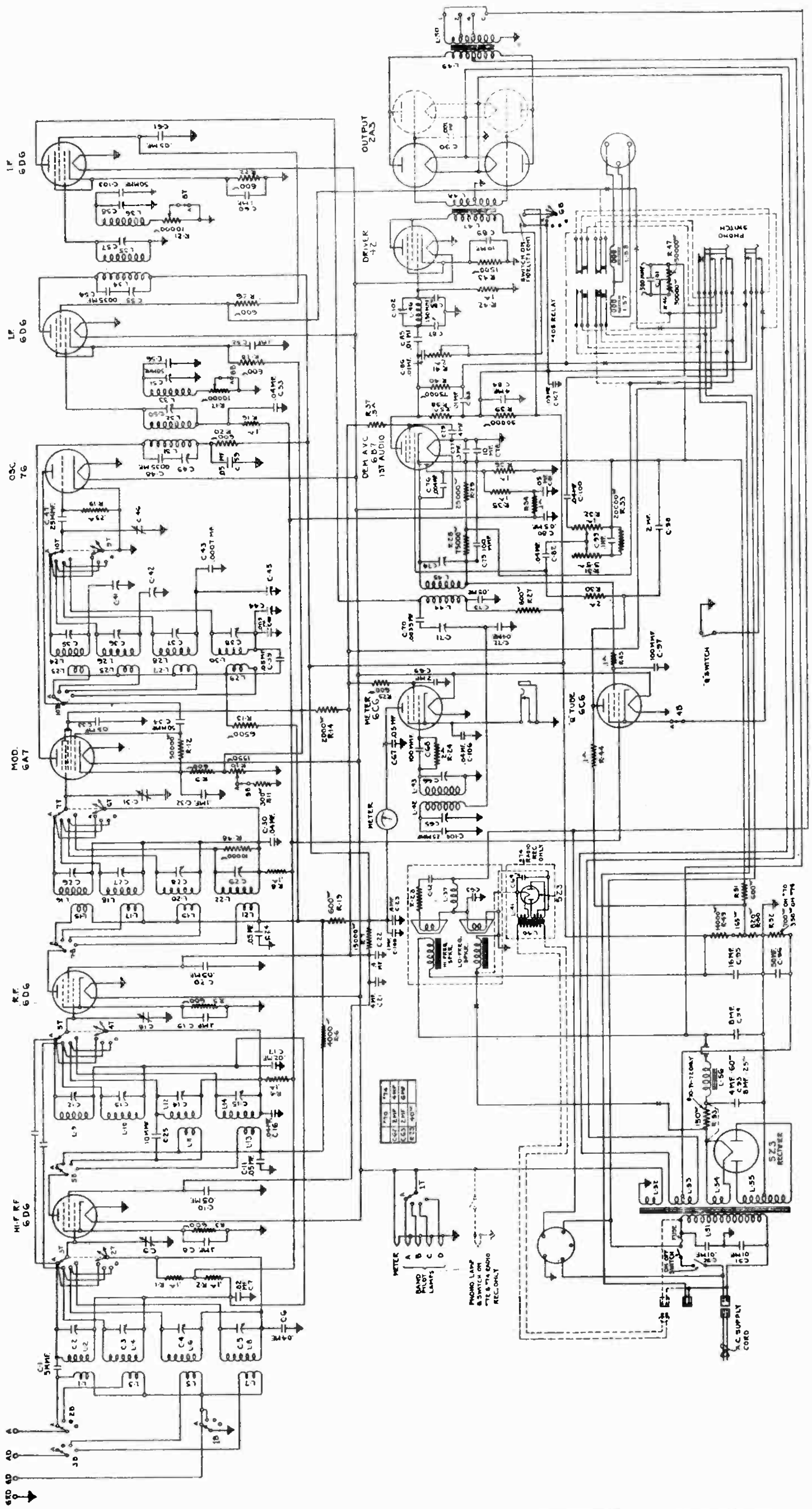


Fig. 2. Schematic Circuit of Receiver.

No. 405 Relay is furnished on special order for Tel-ek-tor equipped receivers.

MODEL 70 Series
Chassis Wiring

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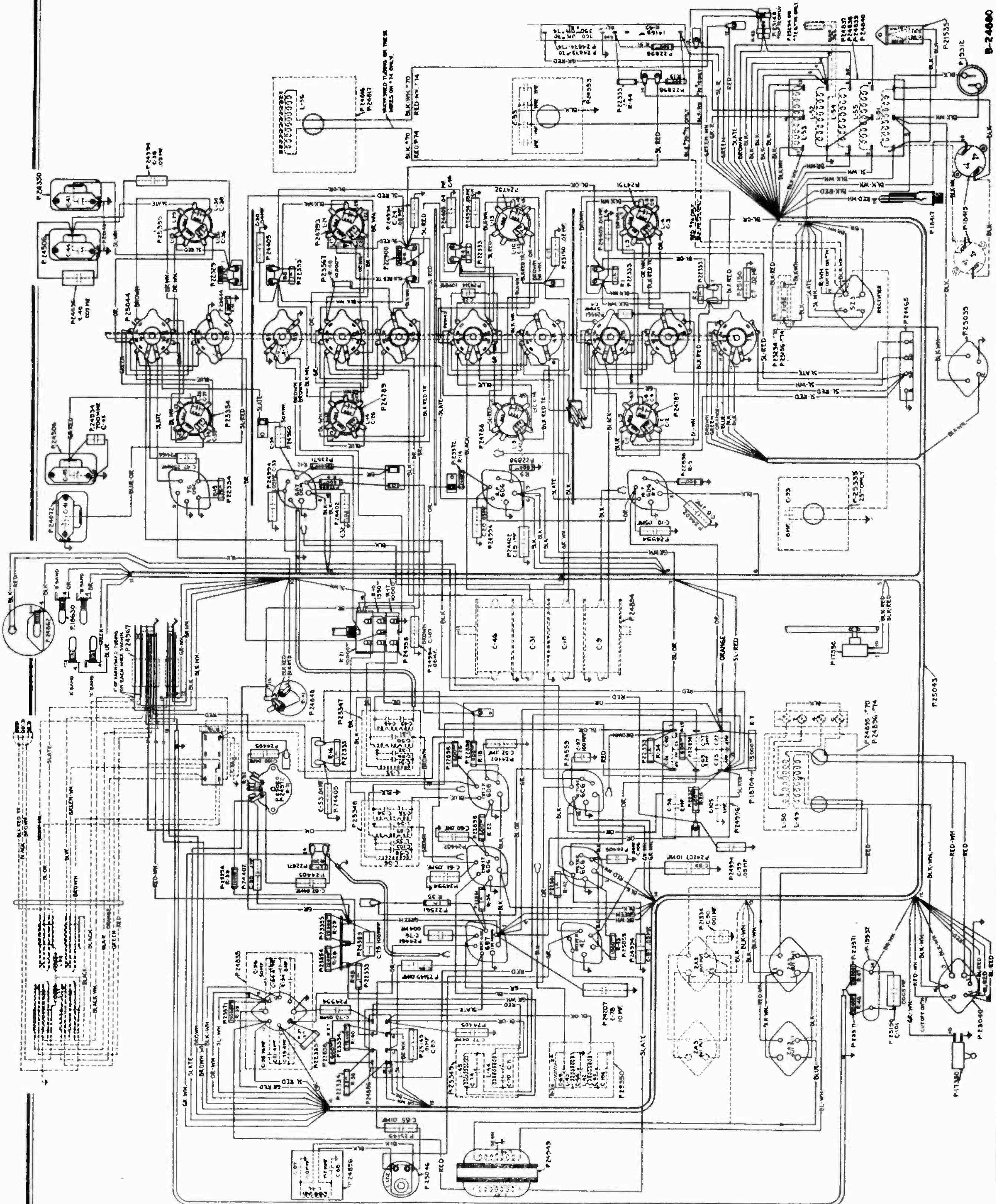


Fig. 3. Wiring Diagram of Chassis.

MODEL 70 Series
Voltage

STROMBERG-CARLSON TEL. MFG. CO.

These voltage readings are obtained by measuring between the various tube socket contacts and the base; with the tubes in place. The Receiver is, therefore, in operation when the measurements are made. Fig. 1, shows the terminal layout of the sockets with the proper terminal numbers. The terminals of each socket are numbered, starting with one heater or filament pin and proceeding around the pin circle clockwise to the other heater or filament pin. This is done looking at the bottom of the socket.

Voltages are given for a line voltage of 120 volts and allowance should be made for differences when the line voltage is higher or lower. A meter with a resistance of 1,000 ohms per volt should be used for measuring the D. C. voltages.

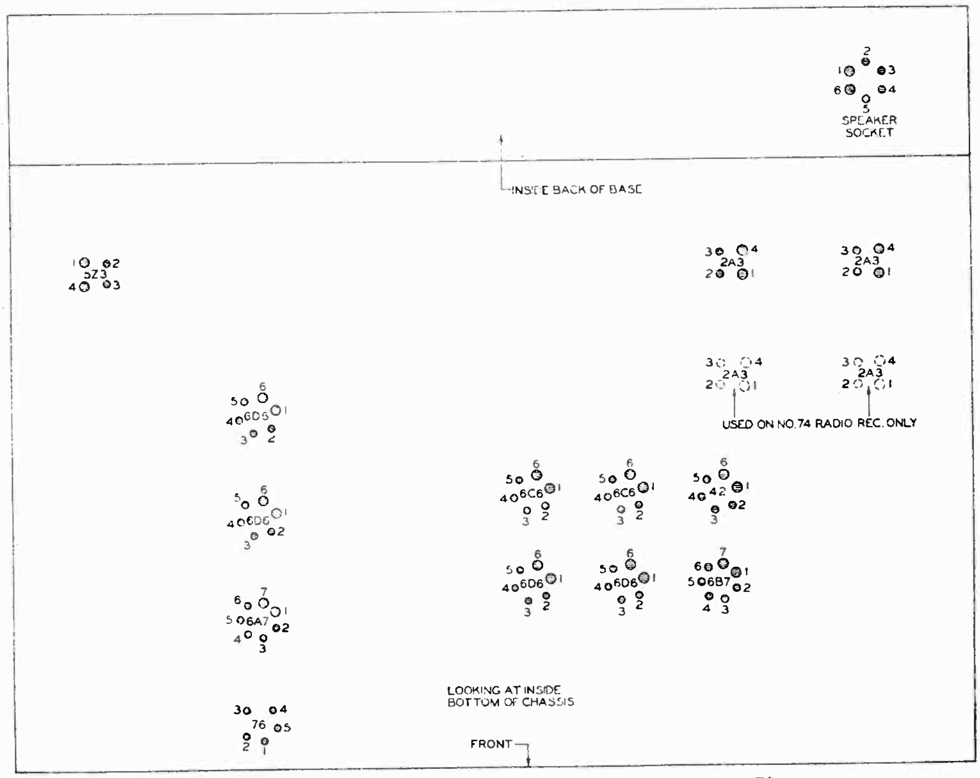


Fig. 1. Terminal Layout for Voltage Measurement Chart

Tube	*Circuit*	*Cap.*	*Terminals of Sockets* 1	2	3	4	5	6	7	*Heater Voltages Between Terminal Nos. at 120 Volts*
6D6	Hi-F, R. F.	0		+200	+ 87	+3.5	+3.5		—	1-6, *6.3* volts
6D6	R. F. Amp.	0		+220	+ 87	+3.5	+3.5		—	1-6, *6.31* volts
6A7	Mod.	0		+225	+ 75	+ 75	— 10			1-7, *6.31* volts
76	Osc.	—		+180	—25	0		—	—	1-5, *6.31* volts
6D6	1st I. F. Amp.	0		+225	+ 87	+ 10	+ 10		—	1-6, *6.32* volts
6D6	2nd I. F. Amp.	0		+225	+ 87	+3.5	+3.5		—	1-6, *6.32* volts
6B7	Dem.-Aud.	3		+130	+ 25	+ 12	0			1-7, *6.32* volts
6C6	"Q"	0		+ 12	+ 12	0	0		—	1-6, *6.32* volts
6C6	Meter	0		+225	+ 87	0	0			1-6, *6.32* volts
42	2nd Audio	—		+220	+220	0	+ 20		—	1-6, *6.32* volts
2A3s'	Output	—	+ 60	+375	0	+ 60	—	—	—	1-4, *2.53* volts
5Z3	Rectifier		+410	*405*	*405*	+410	—	—	—	1-4, *4.81* volts
Speaker			0	+388	+228	+365	+388	0	—	

Set tuned to 1000 kc., "A" Band, "Hi" Fidelity Control not operated, "Q" Switch Off, A. C. voltages are indicated by italics

MODEL 70 Series
Trimmers

STROMBERG-CARLSON TEL. MFG. CO.

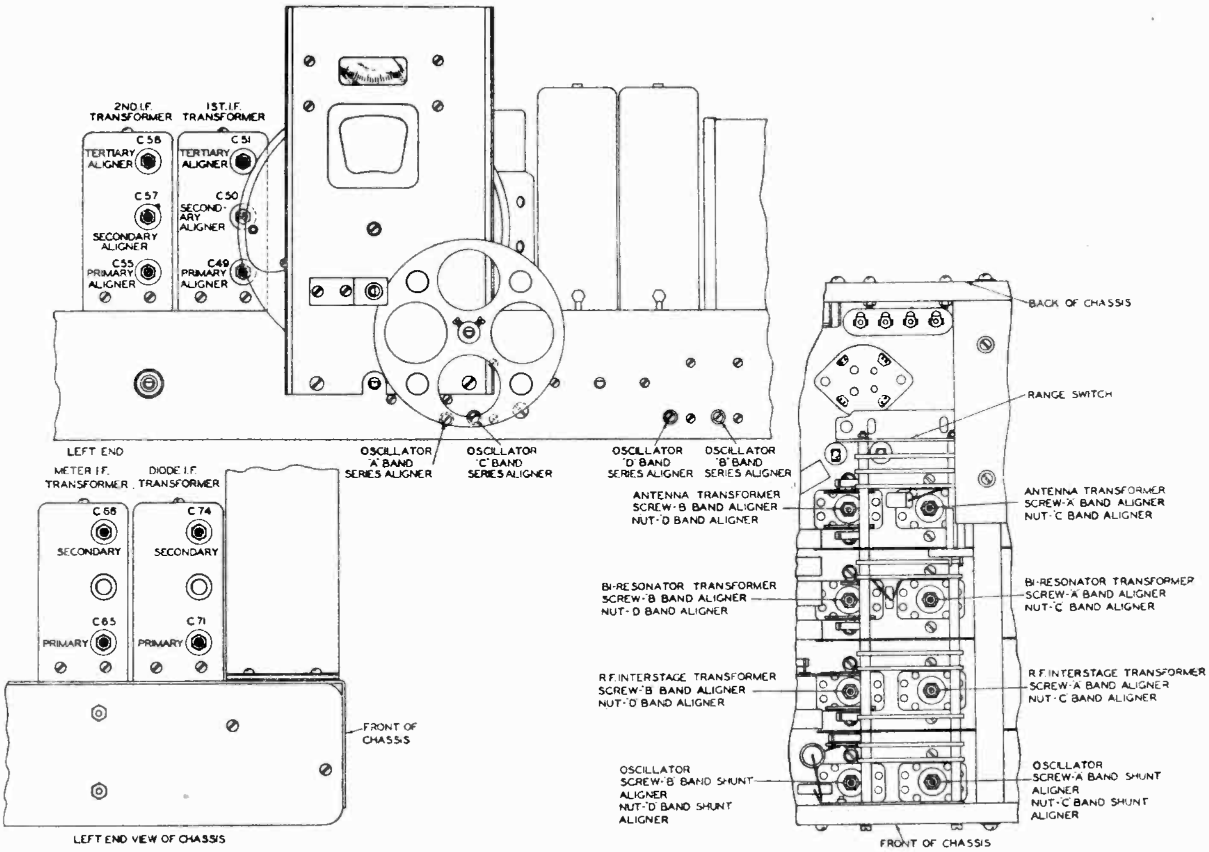


Fig. 5. Showing the Location of the Various Aligning Capacitors. For all R. F., I. F., and Tertiary Circuits.

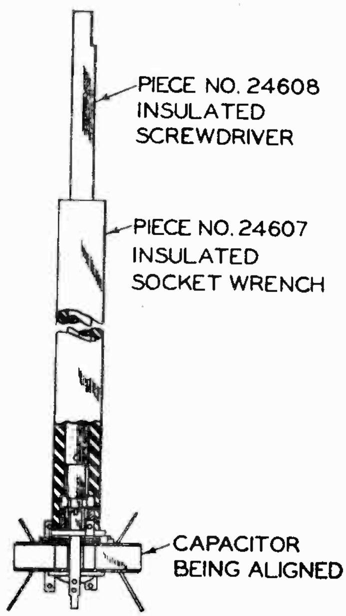


Fig. 6. Showing How the Special Aligning Tools Facilitate Making the Adjustments on the Aligning Capacitors.

STROMBERG-CARLSON TEL. MFG. CO.

ALIGNMENT INSTRUCTIONS

The unexcelled performance of a High Fidelity receiver cannot be obtained unless the receiver is properly aligned. In order to obtain this performance, it is necessary that these adjustments be carefully done. In the High Fidelity type of receiver, these adjustments will, of necessity, be more critical than in the standard radio receiver.

In making these adjustments, it is necessary that a good signal generator be used. In conjunction with the use of this signal generator, a good voltage output meter must be used in order to determine when resonance in the various circuits is obtained. An artificial antenna (dummy) of some sort should also be used. For most practical cases, a 250 micromicrofarad capacitor may be connected in series with the high side terminal of the signal generator. This capacitor should be connected as closely as possible to this terminal. CAUTION: Because of the different type circuit employed in these receivers for operating the visual tuning meter, it will not be possible to make the aligning adjustments by noting the action of this meter.

1. Remove the chassis from the cabinet but have it near enough to the cabinet so that the cords of the loud speakers may be plugged in. Then, turn the power switch to the "On" position. Make sure that the "Q" circuit switch is in the "Off" position and that the High Fidelity control is set for the normal selectivity position. Set the range switch to the "A" band position, and operate the volume control to the maximum position. Also operate the tone control to the normal position.

   Connect the ground or low side output terminal of the signal generator to the "Gd" and "G" binding posts on the receiver chassis. From the remaining terminal of the artificial antenna connect a wire to the "A" and "AD" binding posts on the receiver chassis.

2. **R. F. Adjustments.**

   Noting the various designated aligning capacitors shown in Figure 5, proceed in the following manner for aligning the radio frequency and meter circuits.

   (a) Operate the range switch on the chassis, to the "A" band position (full clockwise rotation). Align the receiver at 1500 Kc., aligning in the following sequence: Oscillator, R. F. Amplifier, "Bi" Resonator, Antenna.

   Align the oscillator's low frequency aligner (series aligning capacitor) at 600 Kc. on this "A" band. **Only the oscillator should be aligned at this frequency.**

   Check the alignment of all the R. F. circuits again at 1500 Kc.

   (b) Operate the range switch on the chassis, one position counter-clockwise from the "A" band position. This will be the position for the "B" band operation.

   Align the receiver at 4 megacycles in the same manner as was done for the 1500 Kc. of the "A" band.

   Align the oscillator's low frequency aligner (series aligning capacitor) at 1500 Kc. on this "B" band. **Only the oscillator should be aligned at this frequency.**

   Check the alignment of all the R. F. circuits again at 4 megacycles.

   (c) Operate the range switch on the chassis, one position counter-clockwise from the "B" band position. This will be the position for the "C" band operation.

   Align the receiver at 10 megacycles in the same manner as was done for the 1500 Kc. of the "A" band.

   Align the oscillator's low frequency aligner (series aligning capacitor) at 4 megacycles on this "C" band. **Only the oscillator should be aligned at this frequency.**

   Check the alignment of all the R. F. circuits again at 10 megacycles.

   (d) Operate the range switch on the chassis, one position counter-clockwise from the "C" band position. This will be the position for the "D" band operation.

   Align the receiver at 19.8 megacycles in the same manner as was done for the 1500 Kc. of the "A" band.

   Align the oscillator's low frequency aligner (series aligning capacitor) at 10 megacycles on this "D" band. **Only the oscillator should be aligned at this frequency.**

   Check the alignment of all the R. F. circuits again at 19.8 megacycles.

   NOTE: It will be noted that no instructions are given for aligning the receivers at other than two frequencies for any band. Every receiver is given an exacting check for "tracking" at various frequencies in each band before leaving the factory. It is felt by the manufacturers that should any receiver through accident require a check on the "tracking", it should be returned to the factory, where this may be easily and accurately done.

3. **Meter Circuit Adjustment**

   Adjust the signal generator to 600 Kc. and tune in this signal on the radio receiver. Be sure to tune for the maximum or peak as indicated on the visual meter of the chassis. Before adjusting the aligning capacitors of this circuit, make sure that the volume control is at the maximum volume position and the high fidelity control must be in the normal selectivity position. Also, release the locking nuts of the aligning capacitors. Then adjust the two aligning capacitors of this circuit, obtaining maximum indication on the visual tuning meter. After this adjustment, tighten the lock-nuts of these capacitors.

4. **I. F. Alignment**

   Because of the necessity of obtaining the proper shape of resonance curve of these stages, 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 better to have these adjustments made at the factory. However, in the case where this cannot be done, the following procedure should be followed.

   Set the signal generator to exactly 260 Kc., or 370 Kc., depending upon the intermediate frequency of the particular receiver stamped on the chassis. Operate the range switch of the receiver to the "A" band position. Set the receiver tuning dial at its extreme low frequency position and operate the tone control to the normal position. **Turn the high fidelity control to the normal selectivity position.** Never attempt to adjust the I. F. stages with the high fidelity control set at the high fidelity position. Before proceeding with the aligning, remove the 250 micromicrofarad capacitor (artificial antenna) from the signal generator lead and substitute for it a capacitor having a value of at least 0.25 microfarad. Now, connect this lead to the grid cap of the 6D6 tube used in the second I. F. amplifier stage. Do not remove the grid lead from the chassis connecting to this tube. Before attempting to adjust any of the I. F. aligning capacitors, release the locking-nuts and, after completing the adjustment, make sure that these lock-nuts are securely tightened.

   (a) Now, note from Figure 5, the aligning capacitors C-74 and C-71, and adjust these capacitors in the order given for maximum output reading on the output meter.

   (b) Move the signal generator lead and capacitor from the grid cap of the 6D6 tube used in the second I. F. amplifier stage to the grid cap of the 6D6 tube used in the first I. F. amplifier stage and adjust the aligning capacitors C-57 and C-55 (in this sequence), for maximum output reading on the output meter.

   (c) Move the signal generator lead from the grid cap of the first 6D6 tube used in the first I. F. amplifier stage, to the grid cap of the 6A7 tube. Now adjust the aligning capacitors C-50 and C-49 for maximum output reading on the output meter. This completes the necessary adjustments on the I. F. stages for normal operation of these High Fidelity receivers.

5. **Adjusting the I. F. Tertiary Circuits**

   In the High Fidelity receiver, some means must be used to obtain that selectivity which will give the necessary band width for High Fidelity reproduction. In these receivers, it will be noted from the schematic diagram that the first and second I. F. transformers are made up of three tuned circuits: the primary, secondary, and a third which we call the tertiary circuit. Included in each tertiary circuit is a variable resistance in series with the coil. Incorporated in these variable resistances is a switch which opens or closes this circuit. When the fidelity control is turned counter-clockwise as far as it is possible, the receiver functions with normal selectivity because the switches (incorporated in the variable resistors) are open. When the fidelity control is operated in a clockwise direction as far as it is possible, minimum resistance is inserted in series with the coil, resulting in the tertiary circuits acting as a heavy load across the secondary circuits, which, of course, results in broader tuning. As the fidelity control is operated in the opposite direction, more resistance is added in series with the tertiary coils which makes these circuits less effective, resulting in greater selectivity.

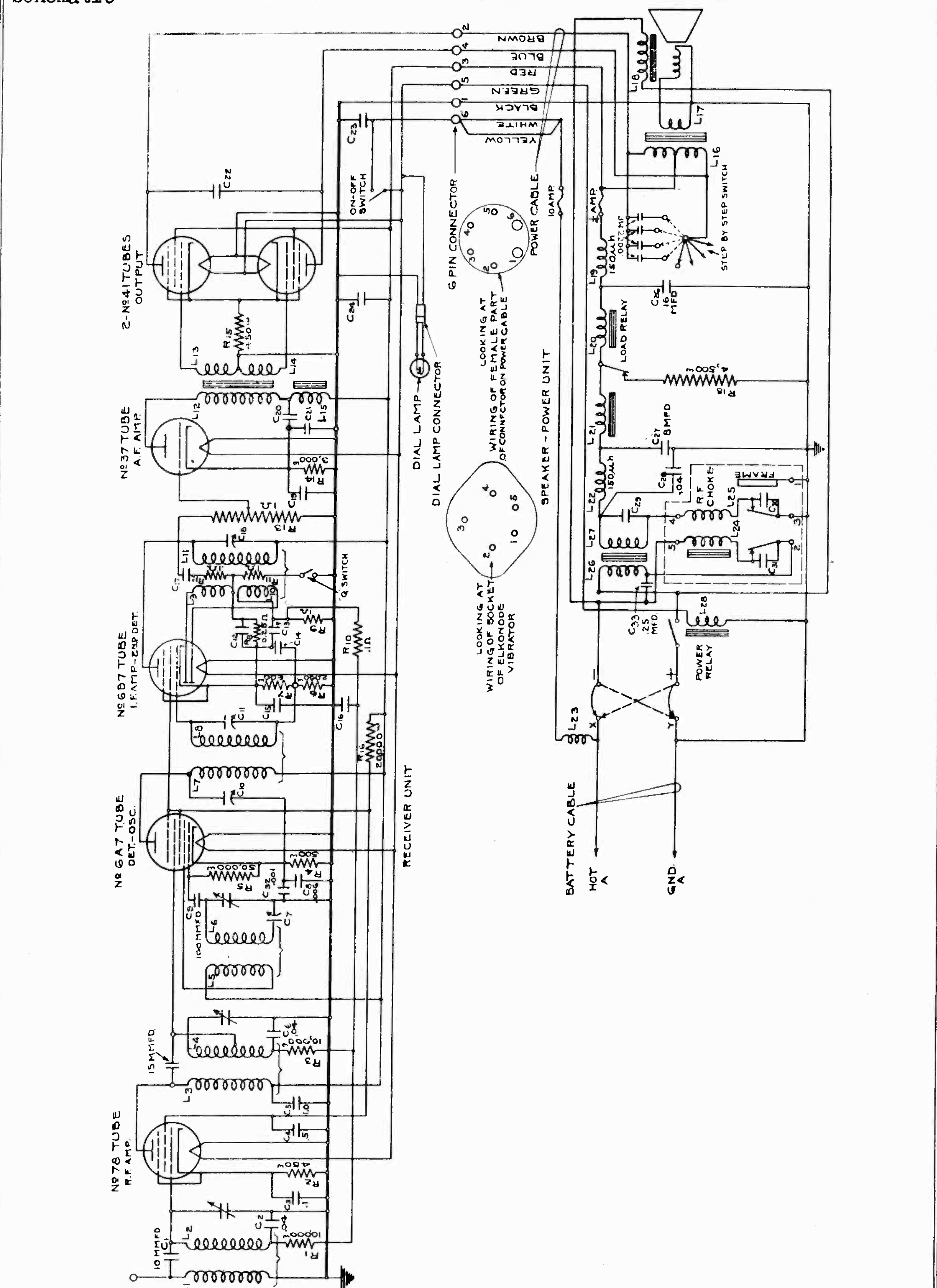
   When the R. F. and I. F. circuits are carefully aligned, operate the high fidelity control to the high fidelity position (maximum clockwise rotation). Now note from Figure 5 the location of the aligning capacitors in each tertiary circuit. Then, with the signal generator still set at the intermediate frequency, and its lead connected to the grid cap of the 6A7 tube, adjust these capacitors. Adjust the first I. F. tertiary aligning capacitor, C-51, until a minimum reading is obtained on the output meter. Then, adjust the second I. F. tertiary aligning capacitor, C-58, in the same manner.

   In order to make all these aligning adjustments in the most satisfactory manner, it is recommended that the service man use the special aligning tools manufactured by this company and listed as follows:

   1—Piece No. 24607 Insulated Aligning Wrench.
   1—Piece No. 24608 Insulated Aligning Screw Driver.
   See Figure 6.

MODEL 33-A
Schematic

STROMBERG-CARLSON TEL. MFG. CO.



STROMBERG-CARLSON TEL. MFG. CO.

Engineering Data
Stromberg-Carlson No. 82 Radio Receiver

STROMBERG-CARLSON TELEPHONE MANUFACTURING COMPANY
Rochester, New York

ELECTRICAL SPECIFICATIONS

Type of Circuit ---- Superheterodyne
Tuning Ranges ---- A-520 to 1600 Kc.; B-1500 to 4200 Kc.; C-3700 to 10,000 Kc.; D-8500 to 23,000 Kc.
Number and Type of Tubes ---- 3 No. 6D6, 1 No. 6A7, 2 No. 76, 3 No. 42, 1 No. 5Z3
Voltage Rating ---- 105-125 Volts
Frequency Rating ---- 25-60 Cycles and 50-60 Cycles
Wattage Rating ---- 136 Watts
Intermediate Frequency ---- 465 Kc.

APPARATUS SPECIFICATIONS

No. 82 Receiver ---- 50-60 Cycles ---- P-22723 Chassis; P-22738 Loud Speaker
No. 82-B Receiver ---- 25-60 Cycles ---- P-22724 Chassis; P-22738 Loud Speaker

CIRCUIT DESCRIPTION

Ten tubes, A. C. operated, All-wave superheterodyne receiver having four tuning ranges. See Pc-25385, Installation and Operating Instructions, for properly installing and operating this receiver.

One No. 6D6 tube functions as an R. F. Amplifier, another No. 6D6 tube is used in the I. F. Amplifier stage and the other No. 6D6 tube operates in the first audio stage which is resistance-coupled to the second audio stage. The No. 6A7 tube is used as a modulator tube only. This is done in order to obtain maximum freedom from detrimental coupling between this modulator and the oscillator tube. One No. 76 tube functions as the oscillator and the other No. 76 tube operates as a Demodulator and Automatic Volume Control tube. One No. 42 tube is operated as a triode audio driver tube for the power output tubes composed of two No. 42 tubes. These output tubes are also connected as triodes. The No. 5Z3 tube is used as the rectifier in the power supply unit.

NORMAL VOLTAGE READINGS

These voltage readings are obtained by measuring between the various tube socket contacts and the base with the tubes in place. The Receiver is therefore in operation when the measurements are made. Figure 1 shows the terminal layout of the sockets with the proper terminal numbers. The terminals of each socket are numbered, starting with one heater or filament pin and proceeding around the pin circle clockwise to the other heater or filament pin. This is done looking at the bottom of the socket.

Voltages are given for a line voltage of 120 volts and allowance should be made for differences when the line voltage is higher or lower. A meter with a resistance of 1000 ohms per volt should be used for measuring the D. C. voltages.

Tube	*Circuit*	*Cap.*	*Terminals of Sockets*							*Heater Voltages Between Terminals Nos. at 120 Volts*
			1	2	3	4	5	6	7	
6D6	R. F. Amp.	0		+240	+ 95	+ 4	0			1-6, *6.4* volts
6A7	Mod.	0		+240	+ 95	+ 95	— 2	+3.1	0	1-7, *6.4* volts
76	Osc.	—		+195	+ 30	0				1-5, *6.4* volts
6D6	I. F. Amp.	0		+240	+ 95	+3.5	+3.5			1-7, *6.4* volts
76	Demod-A. V. C.	—		0	0	0				1-5, *6.4* volts
6D6	1st Audio	0		+ 68	+ 20	+ 1	+ 1			1-6, *6.4* volts
42	2nd Audio	—		+230	+230	0	+ 21			1-6, *6.4* volts
42	Output	—		+390	+390	0	+ 37			1-6, *6.4* volts
5Z3	Rectifier	—	+410	*398*	*398*	+410				1-4, *4.75* volts
Speaker Socket			0	+245	+400	+400	+390	0		

Set tuned to 1000 Kc., "A" Band, A. C. voltages are indicated by italics

P-25502 Form 1887 Issue 1 Printed in U. S. A.

MODELS 82,82-B
Chassis Assembly

STROMBERG-CARLSON TEL. MFG. CO.

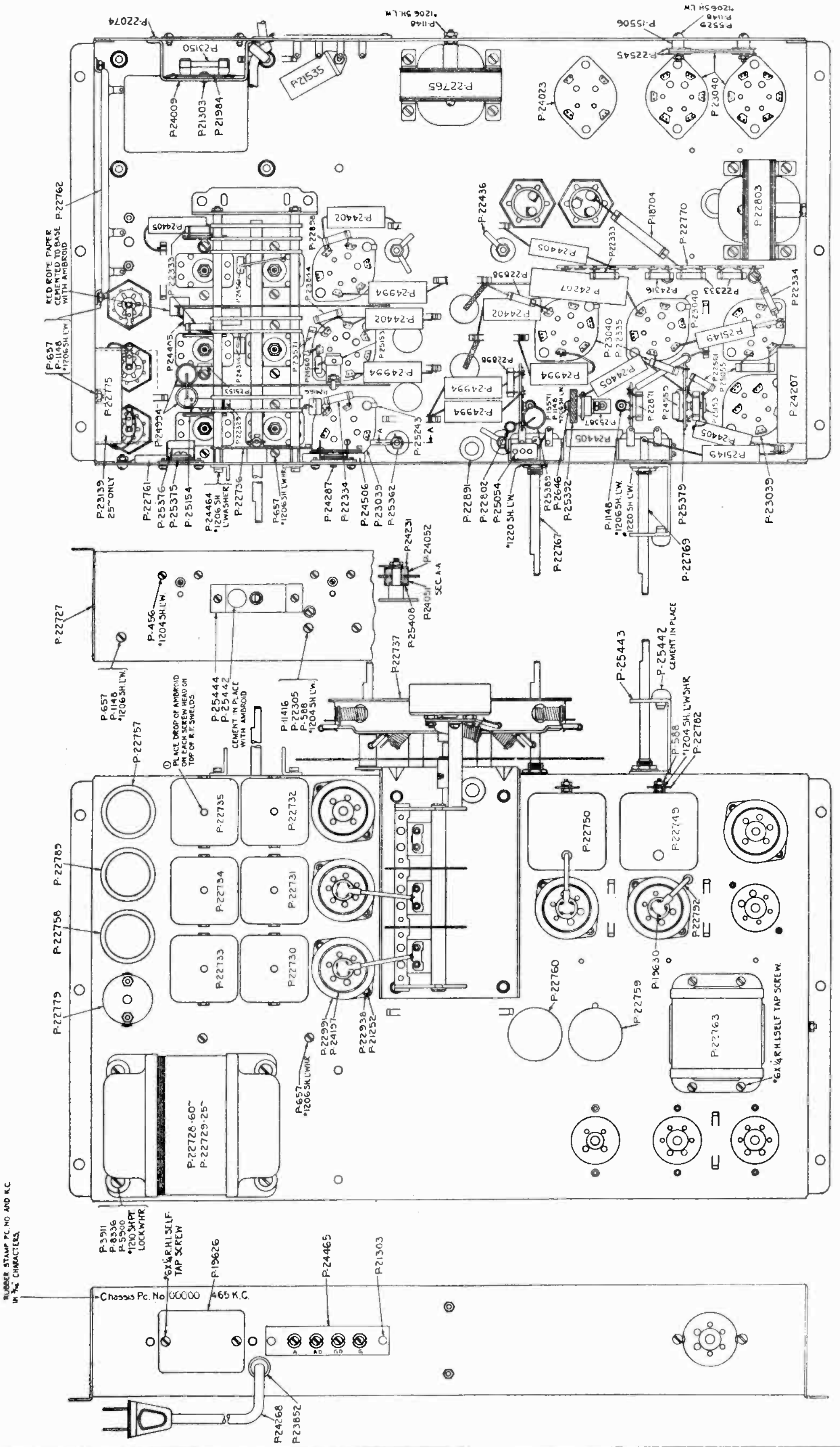


Fig. 4. Chassis Assembly.

STROMBERG-CARLSON TEL. MFG. CO.

MODELS 82,82-B
Schematic
Chassis Wiring

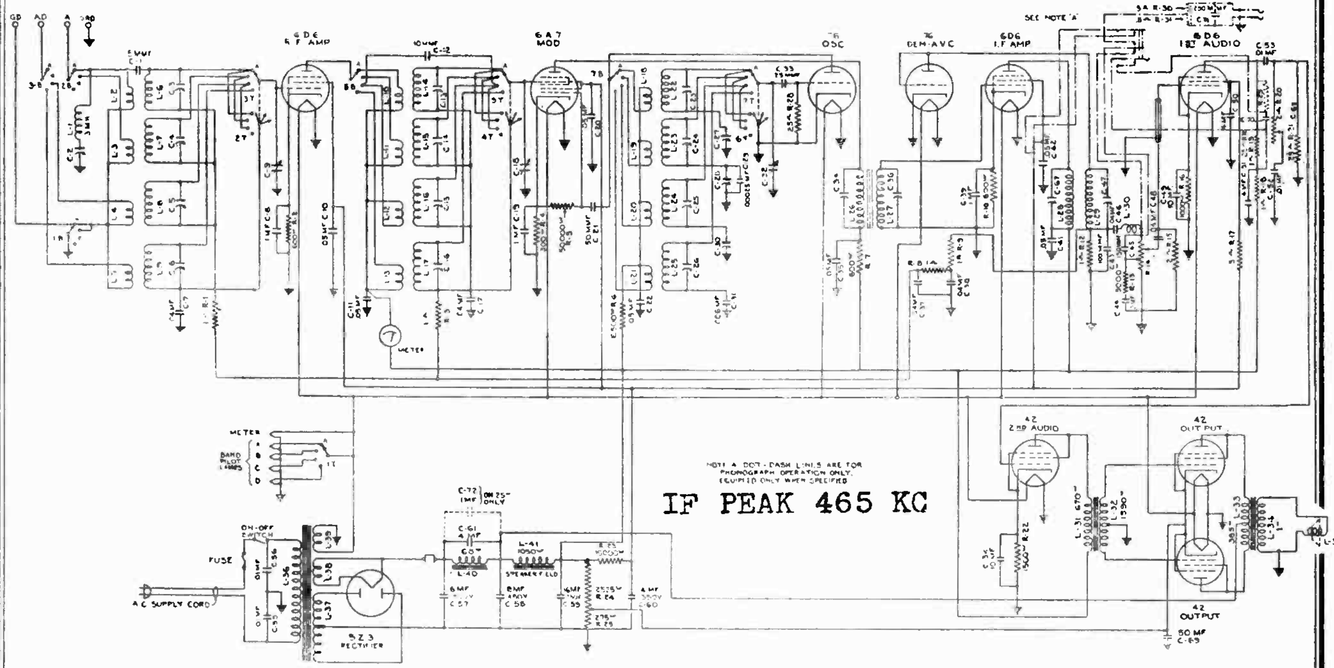


Fig. 2. Schematic Circuit of Receiver.

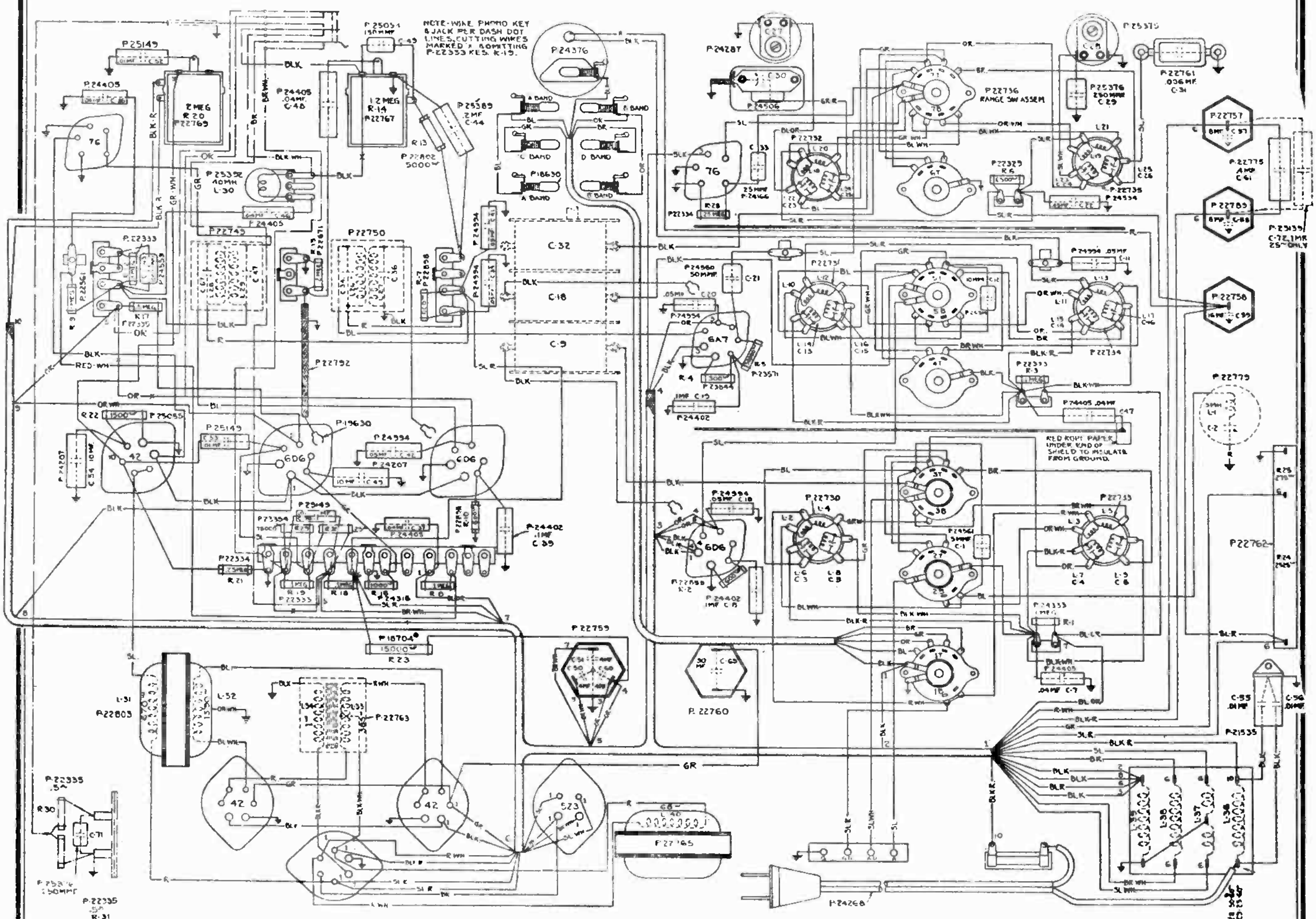


Fig. 3. Wiring Diagram of Chassis.

MODELS 82,82-B
Socket,Trimmers
Parts List

STROMBERG-CARLSON TEL. MFG. CO.

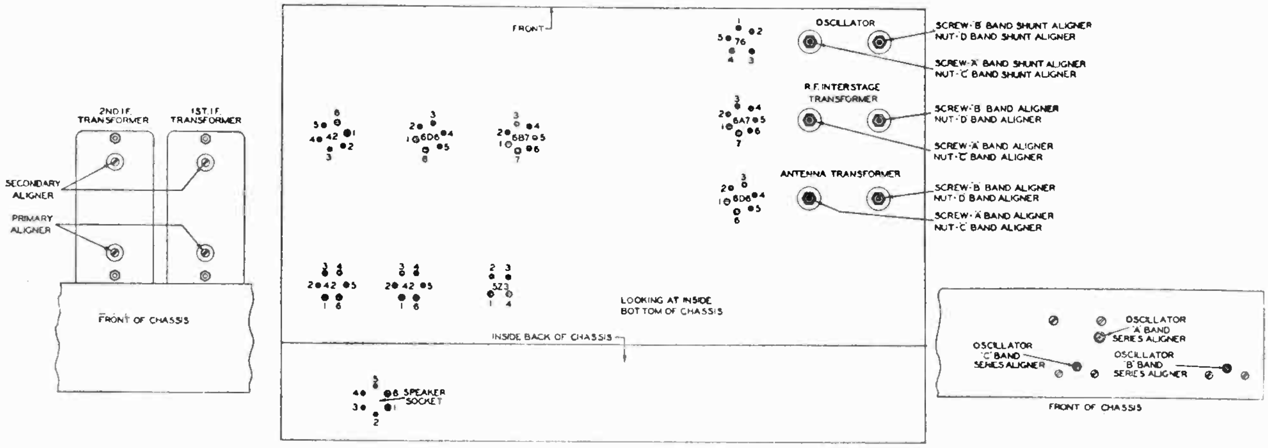


Fig. 1. Terminal Layout for Voltage Measurement Chart and Location of the Various Aligning Capacitors.

REPLACEMENT PARTS

Piece Number	Parts	Description of Parts	Required per Receiver	List Price Each
P-24465	Binding Post Assembly	Antenna and Ground	1	$ .40
P-23139	Capacitor Assembly	Used only on Receivers for 25 Cycles	1	1.00
P-22757	Capacitor	Electrolytic	1	1.50
P-22758	Capacitor	Electrolytic	1	1.50
P-22759	Capacitor	Electrolytic	1	3.00
P-22760	Capacitor	Electrolytic	1	2.50
P-22789	Capacitor	Electrolytic	1	1.50
P-24207	Capacitor	Electrolytic	2	.85
P-22775	Capacitor	0.4 MF	1	.35
P-25389	Capacitor	0.2 MF	1	.75
P-24402	Capacitor	0.1 MF	3	.45
P-24994	Capacitor	0.05 MF	7	.45
P-24405	Capacitor	0.04 MF	6	.45
P-21535	Capacitor	Two, 0.01 MF	1	.80
P-25149	Capacitor	0.01 MF	2	.30
P-22761	Capacitor	Type J, 0.006 MF	1	.75
P-25376	Capacitor	Type O, 250 MMF	1	.25
P-25054	Capacitor	Type O, 150 MMF	1	.25
P-24559	Capacitor	Type O, 100 MMF	1	.25
P-24560	Capacitor	Type O, 50 MMF	1	.25
P-24166	Capacitor	Type O, 25 MMF	1	.25
P-24314	Capacitor	Type O, 10 MMF	1	.25
P-24561	Capacitor	Type O, 5 MMF	1	.20
P-24287	Capacitor	Aligning, 525 MMF	1	.60
P-25375	Capacitor	Aligning, 1350 MMF	1	1.00
P-24506	Capacitor	Aligning, 2500 MMF	1	1.25
P-22765	Choke Coil Assembly		1	3.00
P-22730	Coil Assembly	Antenna, "A" and "C" Bands	1	4.50
P-22731	Coil Assembly	R. F., "A" and "C" Bands	1	4.50
P-22732	Coil Assembly	Oscillator, "A" and "C" Bands	1	4.50
P-22733	Coil Assembly	Antenna, "B" and "D" Bands	1	4.50
P-22734	Coil Assembly	R. F., "B" and "D" Bands	1	4.50
P-22735	Coil Assembly	Oscillator, "B" and "D" Bands	1	4.50
P-25392	Coil Assembly	40 Millihenry	1	1.75
P-24268	Cord	A. C. Supply	1	.75
P-22779	Filter Assembly	Antenna	1	1.00
P-23150	Fuse	2 Amperes	1	.12
P-21984	Fuse Block		1	.20
P-18630	Lamp	Pilot, 6 Volts	7	.13
P-21376	Meter	Visual Tuning	1	2.75
P-22767	Potentiometer	Volume Control	1	1.50
P-22769	Potentiometer	Tone Control and A. C. Switch	1	1.25
P-23844	Resistor	Type D, 300 ohms	1	.37
P-22898	Resistor	Type D, 600 ohms	3	.37
P-21316	Resistor	Type D, 1,000 ohms	1	.37
P-25055	Resistor	Type C, 1,500 ohms	1	.37
P-22802	Resistor	Type D, 5,000 ohms	1	.37
P-22329	Resistor	Type C, 6,500 ohms	1	.37
P-18704	Resistor	Type B, 15,000 ohms	1	.37
P-23571	Resistor	Type D, 50,000 ohms	1	.37
P-22333	Resistor	Type D, 0.1 Megohm	6	.37
P-22334	Resistor	Type D, 0.25 Megohm	2	.37
P-22335	Resistor	Type D, 0.5 Megohm	1	.37
P-22561	Resistor	Type D, 1 Megohm	1	.37
P-22871	Resistor	Type D, 2 Megohm	1	.37
P-22762	Resistor	"B" Voltage Divider	1	.75
P-24023	Socket	Tube, 4 Prong	1	.17
P-23039	Socket	Tube, 5 Prong	2	.17
P-23040	Socket	Tube, 6 Prong	6	.17
P-23648	Socket	Tube, 7 Prong	2	.17
P-22736	Switch Assembly	Frequency Range	1	5.00
P-22803	Transformer Assembly	Audio Driver Stage	1	4.00
P-22750	Transformer Assembly	1st I. F.	1	3.00
P-22749	Transformer Assembly	2nd I. F.	1	2.00
P-22728	Transformer	Power, 50-60 Cycles, 110 Volts	1	11.00
P-22729	Transformer	Power, 25-60 Cycles, 110 Volts	1	20.00

STROMBERG-CARLSON TEL. MFG. CO.

Engineering Data
Stromberg-Carlson No. 83 Radio Receiver

STROMBERG-CARLSON TELEPHONE MANUFACTURING COMPANY
Rochester, New York

ELECTRICAL SPECIFICATIONS

Type of Circuit .... Superheterodyne
Tuning Ranges .... A—520 to 1600 kc.; B—1500 to 4200 kc.; C—3.7 to 10 megacycles; D—8.5 to 23 megacycles
Number and Type of Tubes .... 3 No. 6K7, 1 No. 6A8, 1 No. 6C5, 1 No. 6H6, 3 No. 6F6, 1 No. 5Z3
Voltage Rating .... 105 to 125 volts
Frequency Rating .... 25 to 60 cycles and 50 to 60 cycles
Wattage Rating .... 135 watts
Intermediate Frequency .... 465 kc.

APPARATUS SPECIFICATIONS

No. 83 Receiver .... 50 to 60 Cycles .... P-25680 Chassis; P-25683 Loud Speaker
No. 83-B Receiver .... 25 to 60 Cycles .... P-25681 Chassis; P-25683 Loud Speaker

CIRCUIT DESCRIPTION

Ten tubes, A. C. operated, Superheterodyne receiver, equipped with four tuning ranges. These four tuning ranges cover all the important broadcasts and special service bands of both American and Foreign stations. High fidelity reproduction is obtained in this receiver by the use of a special band widener device and a Carpinchoe high fidelity speaker. See P-25701, Installation and Operating Instructions, for properly installing and operating this receiver.

The tubes used in this receiver are as follows: One No. 6K7 tube functions as an R. F. Amplifier, another No. 6K7 tube is used in the I. F. Amplifier and the other No. 6K7 tube operates in the First Audio Amplifier. The No. 6A8 tube is used as a Modulator tube only. The No. 6C5 tube is used as the Oscillator tube. The No. 6H6 tube is used as a Demodulator-Automatic Volume Control tube. One No. 6F6 tube is used in the Second Audio Amplifier which drives the two No. 6F6 tubes used in the audio power output stage. The No. 5Z3 tube is the rectifier tube of the power supply unit.

NORMAL VOLTAGE READINGS

The various values of voltages listed in the following table are obtained by measuring between the various tube socket contacts and the chassis base, with the tubes in their respective sockets. The receiver is, therefore, in operation when the measurements are made. Figure 1 shows the terminal layout of the sockets with the proper terminal numbers.

Voltages are given for a line voltage of 120 volts, and allowance should be made for differences when the line voltage is higher or lower. A meter having a resistance of 1000 ohms per volt should be used for measuring the D. C. voltages. Voltage values shown are those obtained on the lowest possible scale of a meter having the the following ranges: 0-2.5, 0-10, 0-100, 0-250, 0-500, 0-1000 volts.

Tube	*Circuit*	*Cap.*	*Terminals of Sockets* 1	2	3	4	5	6	7	8	*Heater Voltages Between Terminals Nos. at 120 Volts*
6K7	R. F. Amp.	0	0	—	+250	+ 70	+ 3	0	—	+ 3	2–7, *6.4* Volts
6A8	Mod.	0	0	—	+250	+ 70	—	+ 70	—	+ 2.5	2–7, *6.4* Volts
6C5	Osc.	—	0	—	+210	0	—	—	—	—	2–7, *6.4* Volts
6K7	I. F. Amp.	0	0	—	+250	+ 70	+ 3	—	—	+ 3	2–7, *6.4* Volts
6H6	Dem.—A. V. C.	—	0	—	—	—	—	—	—	—	2–7, *6.4* Volts
6K7	1st Audio	0	0	—	+100	+ 35	+ 1	—	—	+ 1	2–7, *6.4* Volts
6F6	2nd Audio	—	0	—	+240	+240	0	—	—	+20	2–7, *6.4* Volts
6F6	Output	—	0	—	+390	+390	0	—	—	+35	2–7, *6.4* Volts
5Z3	Rectifier	—	+410	*395*	*395*	+410					1–4, *4.75* Volts
Speaker Socket			0	+250	+410	+410	+395	0			

Set tuned to 1000 kc., no signal. A. C. voltages are indicated by italics.

MODELS 83, 83-B
Chassis Wiring

STROMBERG-CARLSON TEL. MFG. CO.

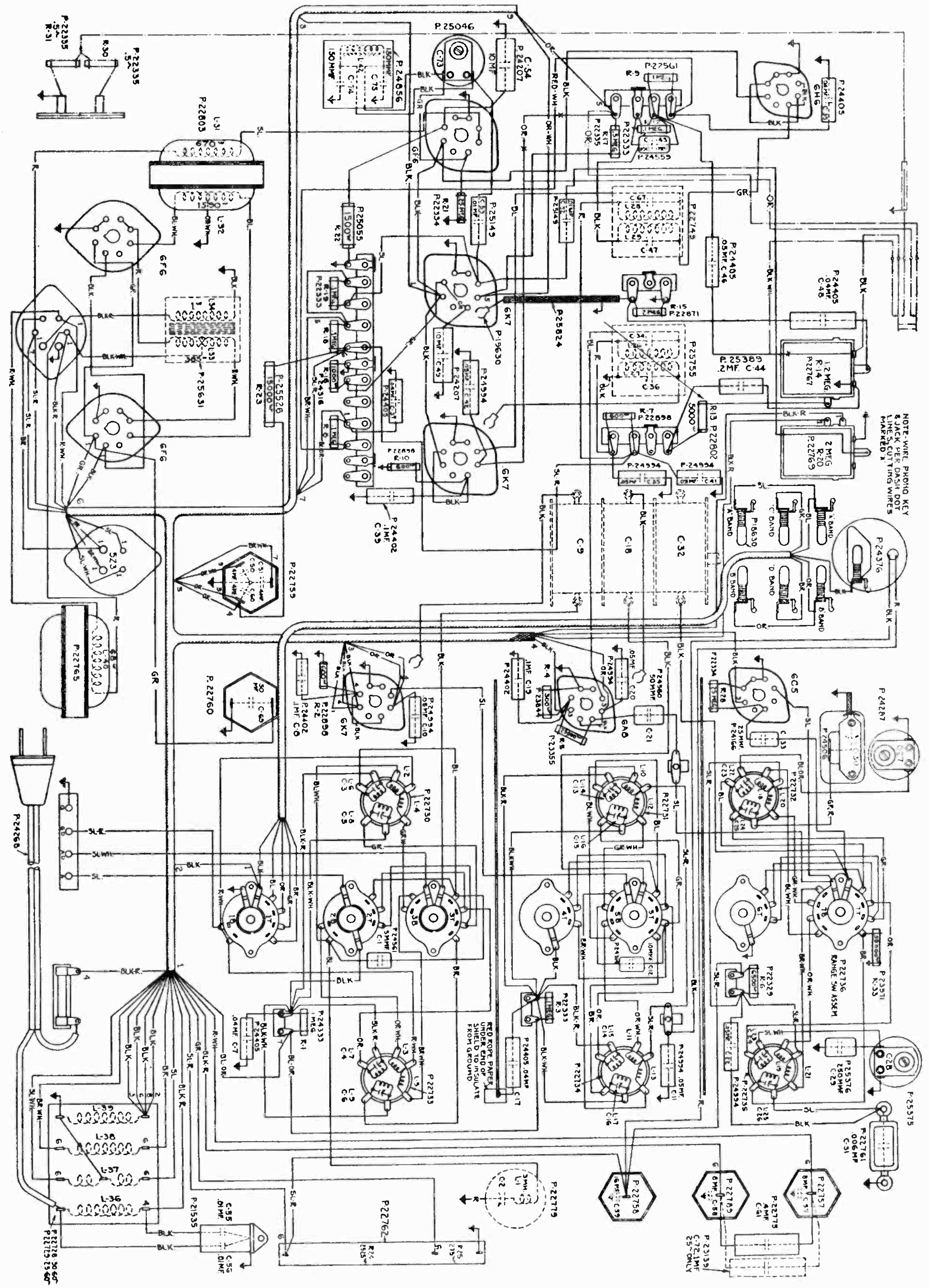


Fig. 4. Wiring Diagram of Chassis.

MODELS 83,83-B
Schematic
Chassis Assembly

STROMBERG-CARLSON TEL. MFG. CO.

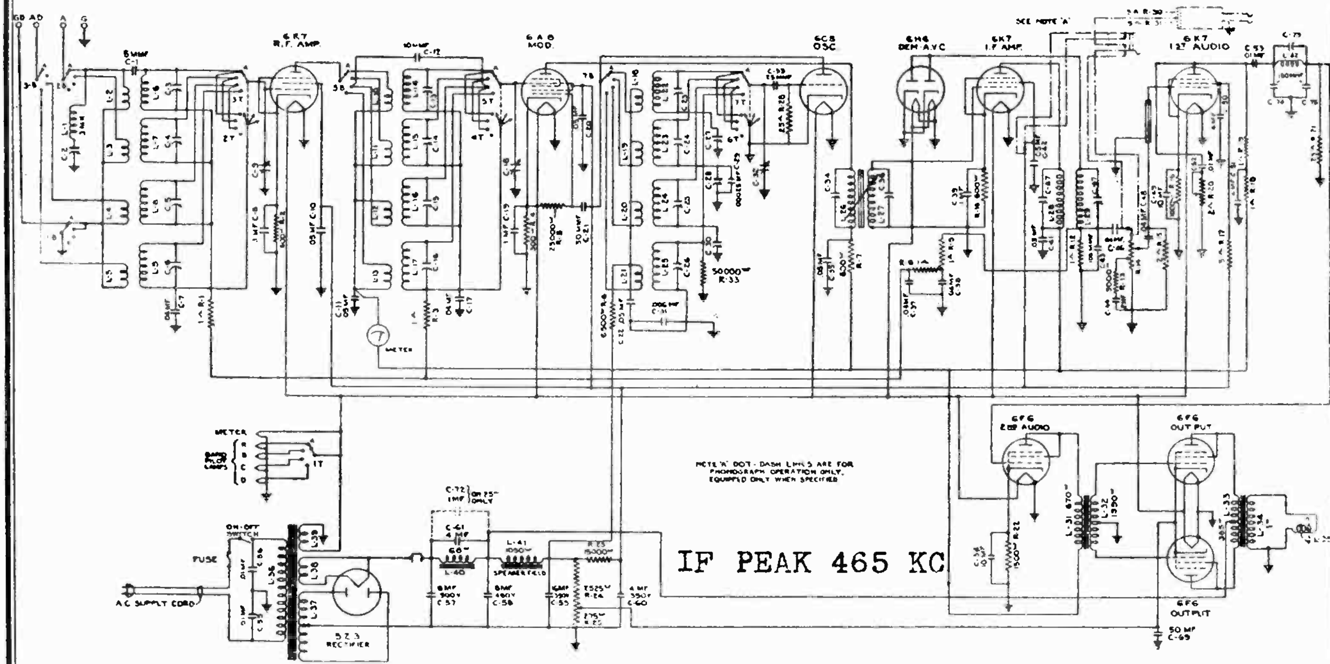


Fig. 2. Schematic Circuit of Receiver.

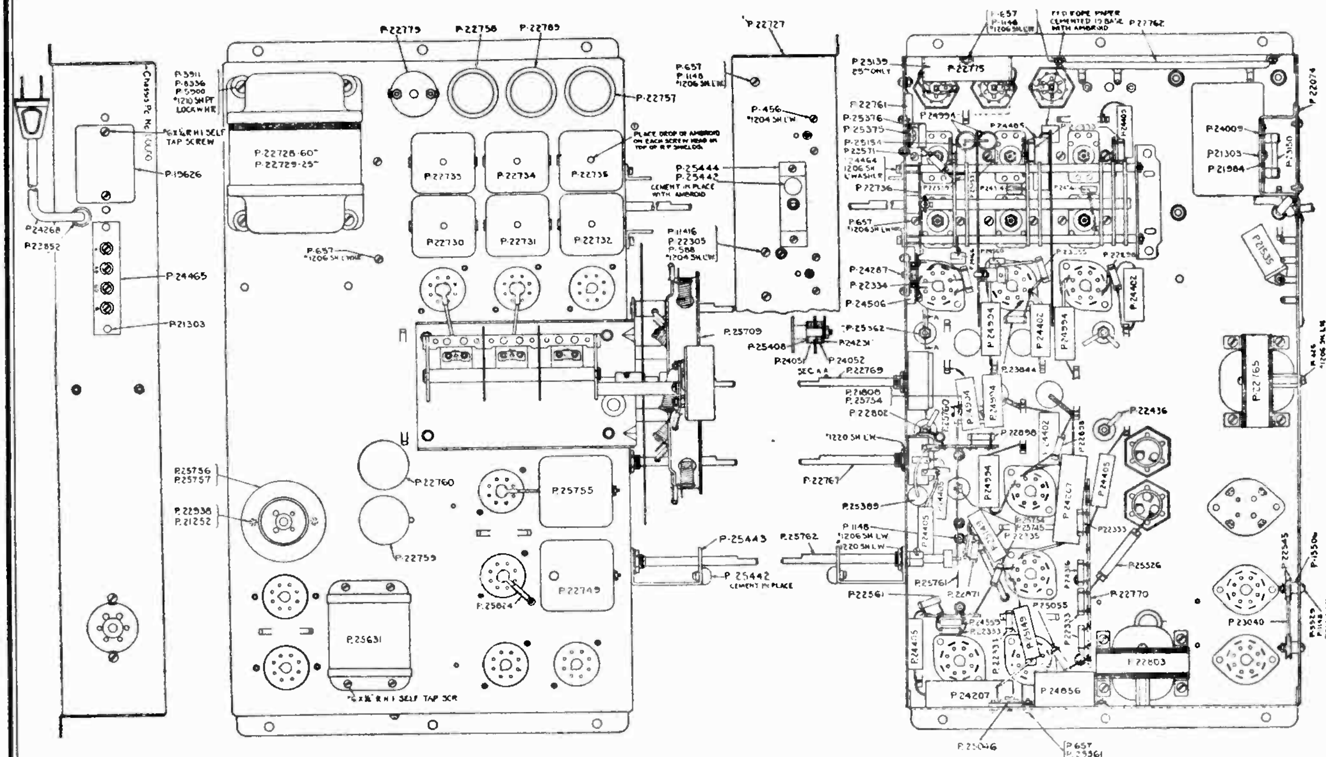


Fig. 3. Chassis Assembly.

MODELS 83,83-B
Socket,Trimmers
Parts List

STROMBERG-CARLSON TEL. MFG. CO.

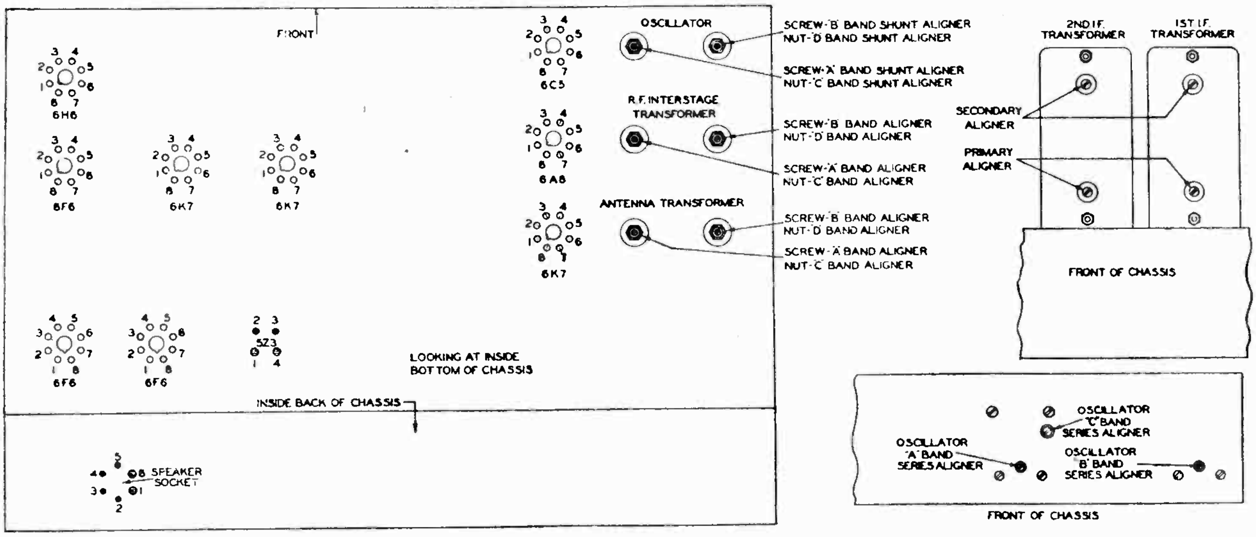
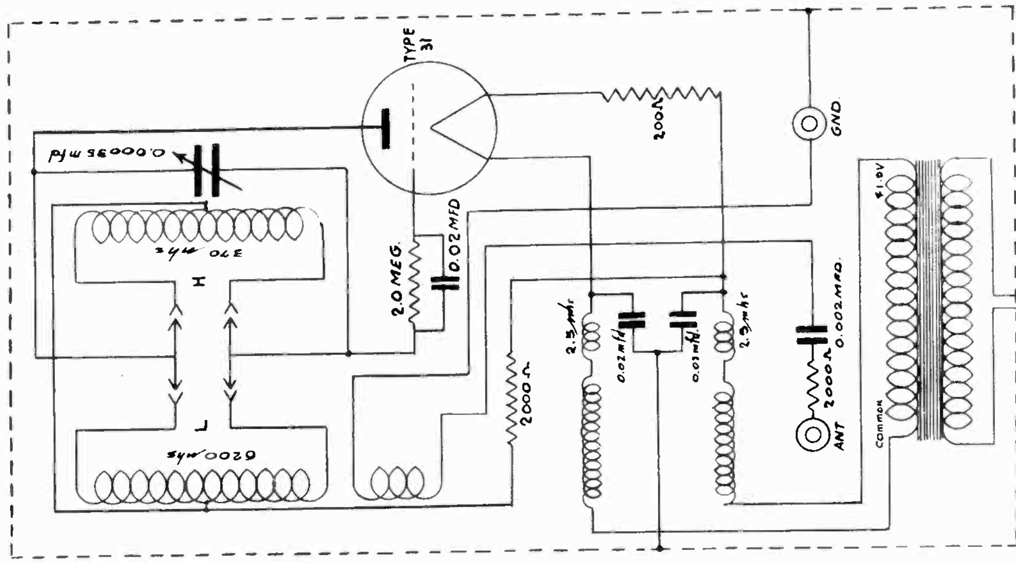


Fig. 1. Terminal Layout for Voltage Measurement Chart and Location of the Various Aligning Capacitors. CAUTION—Never Attempt to Align Receiver With Fidelity Control Set At Any Position Other Than the Maximum Counter-Clockwise Position.

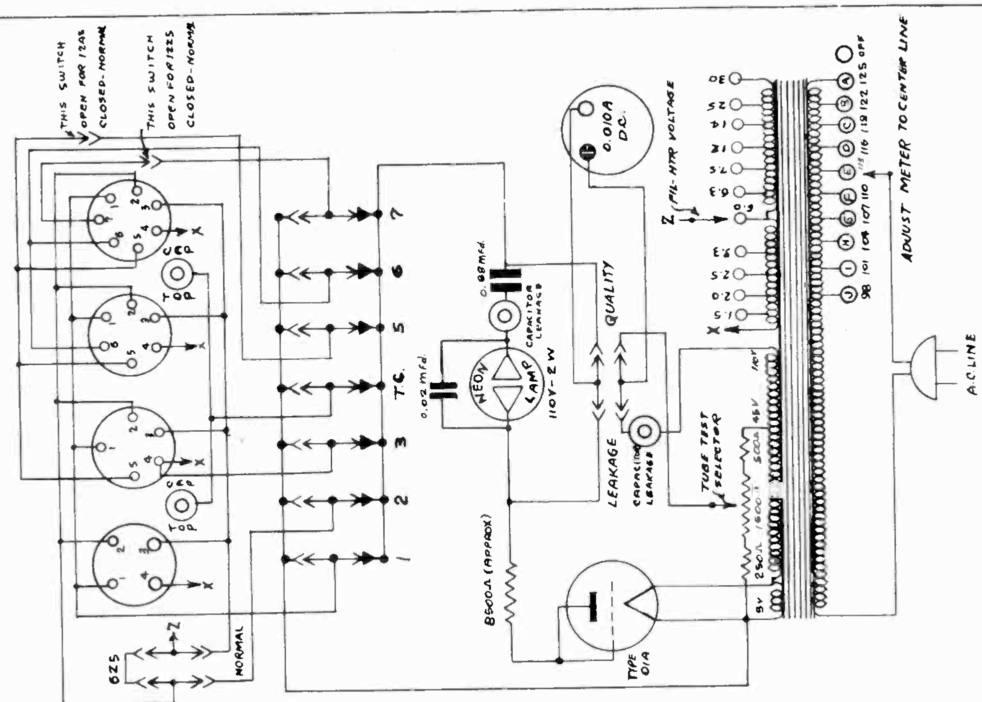
Piece Number	Parts	Description of Parts
P-24465	Binding Post Assembly	Antenna and Ground
P-22760	Capacitor	Electrolytic
P-22758	Capacitor	Electrolytic
P-22759	Capacitor	Electrolytic
P-22757	Capacitor	Electrolytic
P-22789	Capacitor	Electrolytic
P-24207	Capacitor	Electrolytic, 10 MF., 25v
P-23139	Capacitor	1 MF. (Used only on Receivers for 25-60 cycles)
P-22775	Capacitor	0.4 MF.
P-25389	Capacitor	0.2 MF.
P-24402	Capacitor	0.1 MF.
P-24994	Capacitor	0.05 MF.
P-24405	Capacitor	0.04 MF.
P-21535	Capacitor	Two, 0.01 MF.
P-25149	Capacitor	0.01 MF.
P-22761	Capacitor	0.006 MF.
P-25376	Capacitor	Type O, 250 MMF.
P-24559	Capacitor	Type O, 100 MMF.
P-24560	Capacitor	Type O, 50 MMF.
P-24166	Capacitor	Type O, 25 MMF.
P-24314	Capacitor	Type O, 10 MMF.
P-24561	Capacitor	Type O, 5 MMF.
P-21506	Capacitor	Aligning, 2,500 MMF.
P-25375	Capacitor	Aligning, 1,350 MMF.
P-24287	Capacitor	Aligning, 525 MMF.
P-25046	Capacitor	Aligning, 220 MMF.
P-22765	Choke Coil Assembly	Plate Voltage Supply Filter
P-22730	Coil Assembly	Antenna, "A" and "C" Bands
P-22731	Coil Assembly	R. F., "A" and "C" Bands
P-22732	Coil Assembly	Oscillator, "A" and "C" Bands
P-22733	Coil Assembly	Antenna, "B" and "D" Bands
P-22734	Coil Assembly	R. F., "B" and "D" Bands
P-22735	Coil Assembly	Oscillator, "B" and "D" Bands
P-24268	Cord	A. C. Supply
P-22779	Filter Assembly	Antenna
P-21984	Fuse Block	
P-23150	Fuse	2 Amperes
P-18630	Lamp	Pilot, 6 Volt
P-24376	Meter	Visual Tuning
P-22767	Potentiometer	Volume Control
P-22769	Potentiometer	Tone Control and A. C. Switch
P-23844	Resistor	Type D, 300 ohms
P-22898	Resistor	Type D, 600 ohms
P-24316	Resistor	Type D, 1,000 ohms
P-25055	Resistor	Type C, 1,500 ohms
P-22802	Resistor	Type D, 5,000 ohms
P-22329	Resistor	Type C, 6,500 ohms
P-25526	Resistor	Type F, 15,000 ohms
P-23355	Resistor	Type D, 25,000 ohms
P-23571	Resistor	Type D, 50,000 ohms
P-22333	Resistor	Type D, 0.1 megohm
P-22334	Resistor	Type D, 0.25 megohm
P-22335	Resistor	Type D, 0.5 megohm
P-22561	Resistor	Type D, 1 megohm
P-22871	Resistor	Type D, 2 megohm
P-22762	Resistor	"B" Voltage Divider
P-25756	Shield	Rectifier Tube
P-22988	Socket	Tube, 4 Prong
P-23040	Socket	Tube, 6 Prong
P-25539	Socket	Tube, 8 Prong
P-22736	Switch Assembly	Frequency Range
P-25755	Transformer Assembly	1st I. F.
P-22749	Transformer Assembly	2nd I. F.
P-22803	Transformer Assembly	Audio Driver Stage
P-25631	Transformer Assembly	Audio Power Output
P-22728	Transformer	Power, 50-60 cycles, 110 volts
P-22729	Transformer	Power, 25-60 cycles, 110 volts

MODEL 61
MODEL 85-PL
Schematics

SUPREME INSTRUMENTS CORP.



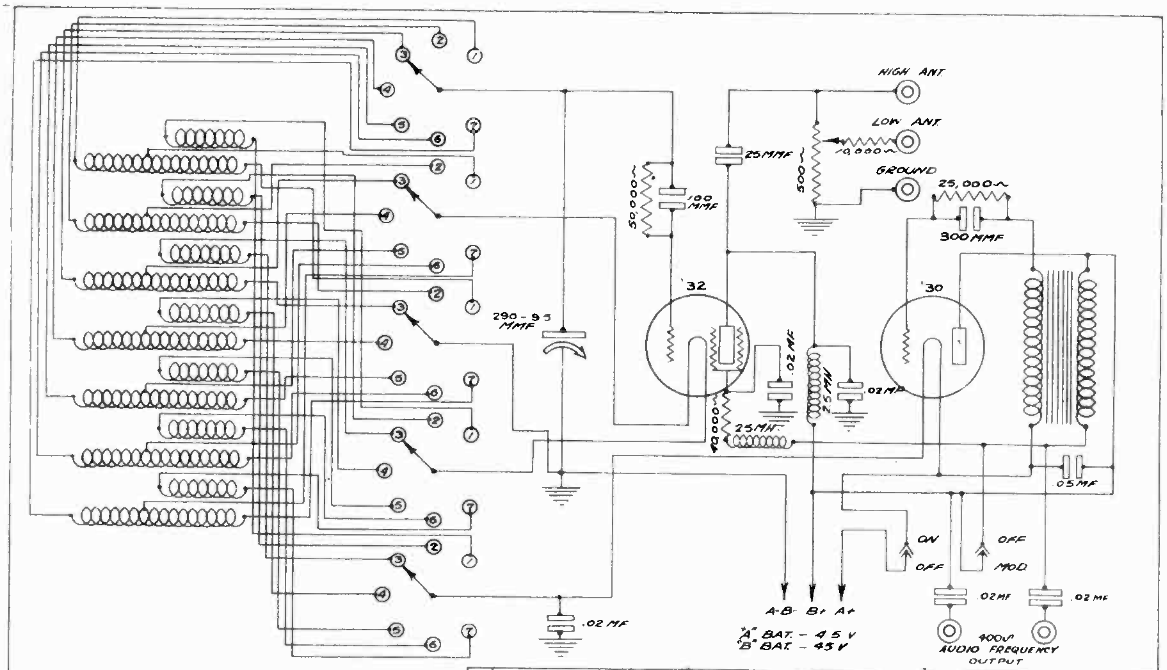
DRAWN / TRACED	SUPREME INSTRUMENTS CORP GREENWOOD, MISS.	
Ashcroft / Bulello		
CHECKED: W. H. Ashcroft	Schematic Model 61	July 3, 1934
APPROVED: Floyd Barrett		803 A



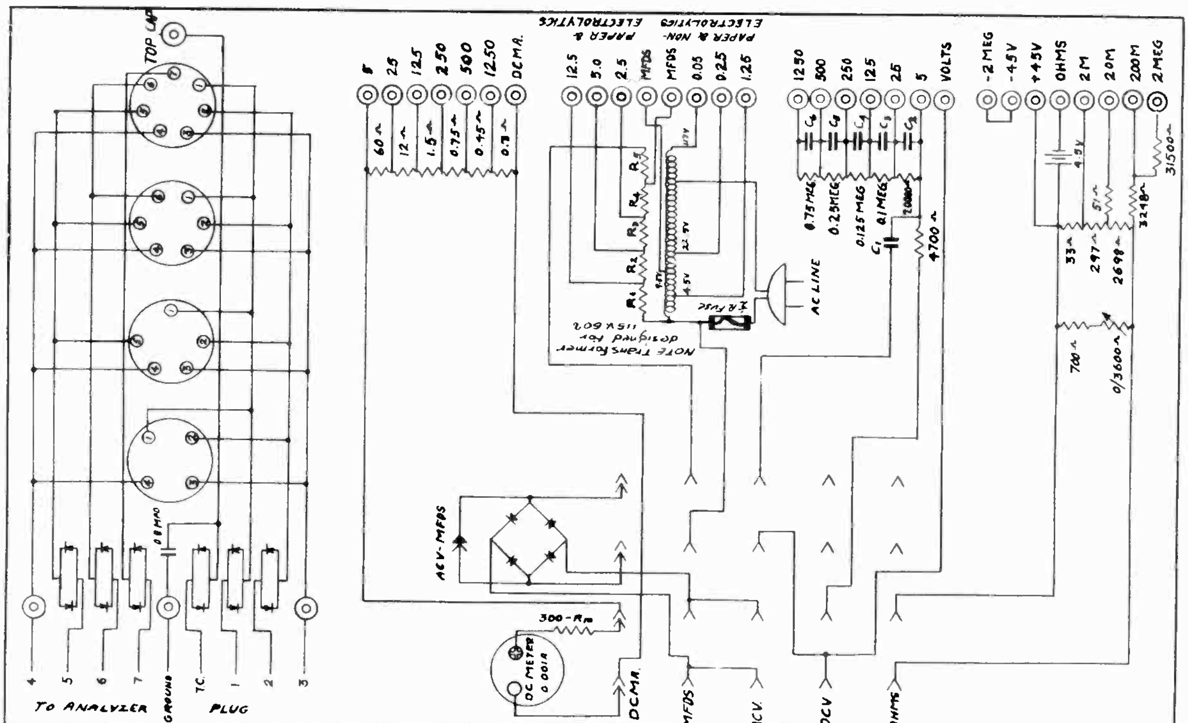
DRAWN / TRACED	SUPREME INSTRUMENTS CORP GREENWOOD, MISS	
Ashcroft / Bulello		
CHECKED	SCHEMATIC WIRING DIAGRAM MODEL 85 PL	11-20-34
APPROVED: Floyd Barrett		866A

MODEL 180
MODEL DeLuxe 333
Schematics

SUPREME INSTRUMENTS CORP.



Revised - 12-20-34	No 3	DRAWN & TRACED	SUPREME INSTRUMENTS CORP. GREENWOOD, MISS	
400 Audio Frequency Output Added		CHECKED	Schematic Diagram Model 180	6-11-34
"B" Batt. Vol. Changed from 22.5 V to 45 V		APPROVED		795B



f	CAPACITORS - MFDS						RESISTORS - OHMS				
	C_1	C_2	C_3	C_4	C_5	C_6	R_1	R_2	R_3	R_4	R_5
60~	0.88	0.109	0.0242	0.0193	0.0103	0.0031	139	195	319	2069	1019
50~	0.9	0.067	0.0215	0.014	0.0074	0.002	122	181	280	1778	559
40~	1.3	0.08	0.0271	0.022	0.0103	0.002	254	363	568	7336	302
25~	1.85	0.14	0.04	0.0335	0.0175	0.0065	456	634	898	2876	13

DRAWN & TRACED W.H. Ashcraft
CHECKED
APPROVED

SUPREME INSTRUMENTS CORP
GREENWOOD - MISS

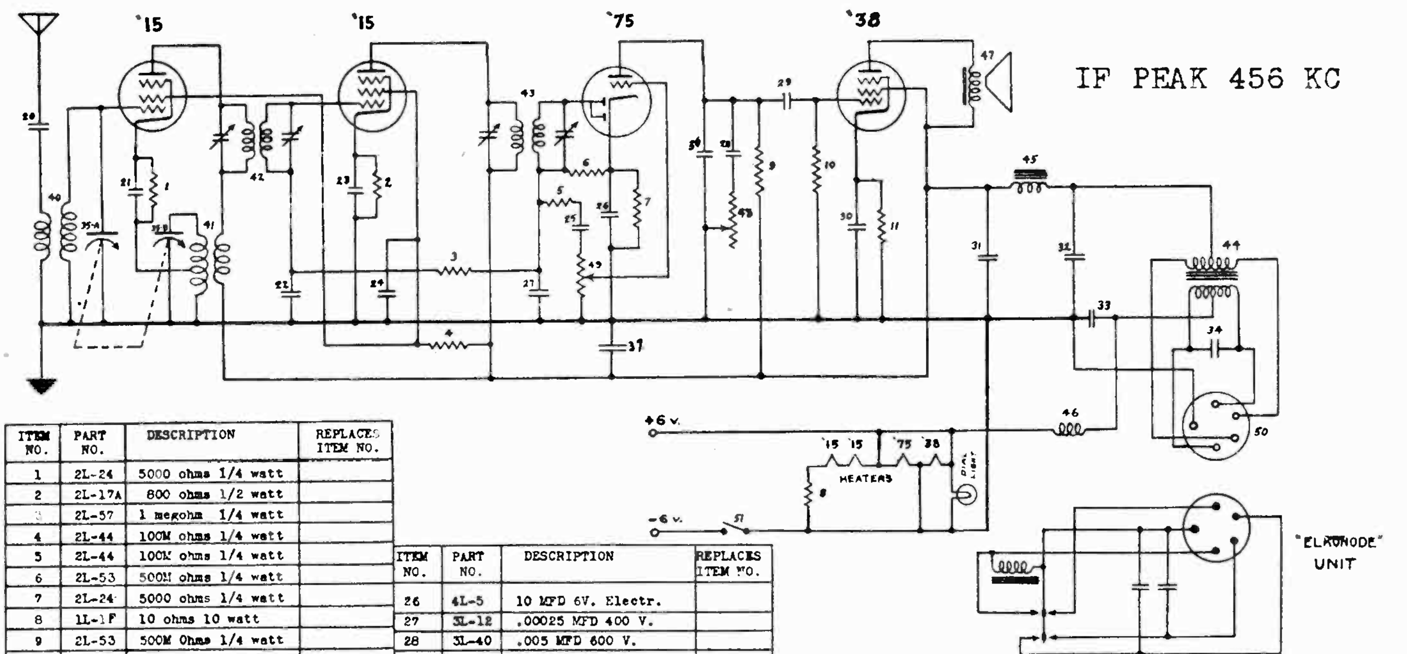
SCHEMATIC WIRING DIAGRAM
DELUXE MODEL 333

8-28-34

824-A

MODELS II-465, I-465
Schematic, Voltage
Parts, Data

L. TATRO PRODUCTS CORP.



ITEM NO.	PART NO.	DESCRIPTION	REPLACES ITEM NO.
1	2L-24	5000 ohms 1/4 watt	
2	2L-17A	800 ohms 1/2 watt	
3	2L-57	1 megohm 1/4 watt	
4	2L-44	100M ohms 1/4 watt	
5	2L-44	100M ohms 1/4 watt	
6	2L-53	500M ohms 1/4 watt	
7	2L-24	5000 ohms 1/4 watt	
8	1L-1F	10 ohms 10 watt	
9	2L-53	500M Ohms 1/4 watt	
10	2L-57	1 megohm 1/4 watt	
11	2L-19A	1500 ohms 1/2 watt	
12			
13			
14			
15			
16			
17			
18			
19			
20	3L-16	.02 MFD 400 V.	
21	3L-24	.0015 MFD 600 V.	
22	3L-17	.05 MFD 400 V.	
23	3L-18	.10 MFD 400 V.	
24	3L-18	.10 MFD 400 V.	
25	3L-16	.02 MFD 400 V.	

ITEM NO.	PART NO.	DESCRIPTION	REPLACES ITEM NO.
26	4L-5	10 MFD 6V. Electr.	
27	3L-12	.00025 MFD 400 V.	
28	3L-40	.005 MFD 600 V.	
29	3L-17	.05 MFD 400 V.	
30	4L-11	10 MFD 25v. Electr.	
31	4L-1	8 MFD 250v. Electr.	
32	4L-1	8 MFD 250v. Electr.	
33	3L-60	1 MFD 200v.	
34	3L-10H	.5 MFD 200 V.	
35A	7L-1	Ant. section V. C.	
35B	7L-1	Osc. section V. C.	
36	3L-23	.0005 MFD 600 V.	
37	3L-17	.05 MFD 400 V.	
38			
39			
40	8L-1	Antenna Coil	
41	8L-2	Osc. Coil with Item 42	
42	8L-2	Comp. I F trans. 456	
43	8L-3	2nd I F trans. 456 KC	

ITEM NO.	PART NO.	DESCRIPTION	REPLACES ITEM NO.
44	9L-1	Power transformer	
45	9L-11	Filter choke AF	
46	8L-4	RF Filter choke	
47	18L-1	Magnetic speaker	
48	10L-11	Tone Control	
49	10L-1	Volume Control	
50	13L-2	5 prong socket	
51		Switch with item 49	

The Model H & I is a low drain highly efficient 4 tube superheterodyne receiver operating from a 6 volt storage battery, and requires no B or C batteries. The six volt current from the battery is converted by means of an efficient rectifying vibrator and power transformer to the high voltage necessary for B and C supply. The two type '15 tube filaments are connected in series so that failure of type '15 filament will cause both type '15 tubes to become inoperative.

The colored "A" battery lead must be connected to the positive terminal of the storage battery, or the set will be inoperative and will draw abnormal battery current.

If all the tubes light and the receiver fails to function, make sure the 'Elkonode' vibrator is operating, and check for defective tubes by substitution in a normally operating receiver. Other suspected faulty parts are also best checked by the substitution method.

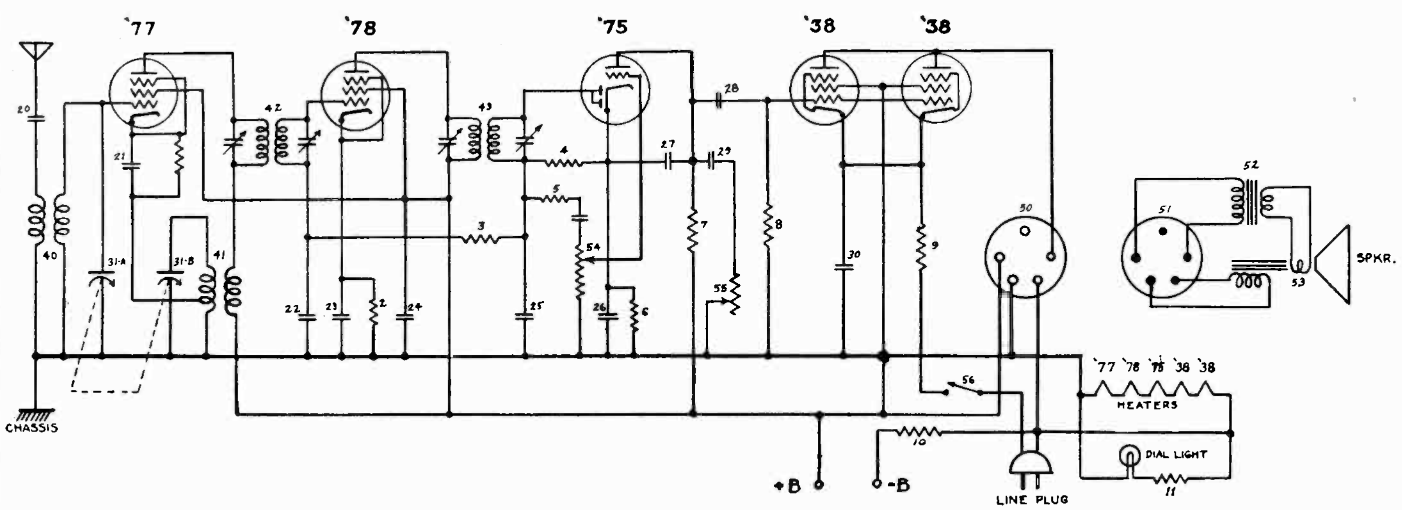
Tube socket voltage readings:

Tube	Use	(a) cathode	screen	*plate
'15	1st det.	3.5 v.	72 v.	154 v.
'15	IF ampl.	1.6 v.	72 v.	154 v.
'75	2nd det.	0.5 v.	(none)	42 v.
'38	Output.	13.5 v.	154 v.	144 v.

(a) measured with a voltmeter having a resistance of 30,000 ohms.
(*) measured with a voltmeter having a resistance of 300,000 ohms.
All measurements made from points indicated to chassis.

MODELS A-525,B-525
Schematic,Voltage
Parts, Data

L. TATRO PRODUCTS CORP.



ITEM NO.	PART NO.	DESCRIPTION	REPLACES ITEM NO.
1	2L-24	5000 ohms 1/4 watt	
2	2L-13	400 ohms 1/4 watt	
3	2L-57	1 megohm 1/4 watt	
4	2L-53	500M ohms 1/4 watt	
5	2L-33	30M ohms 1/4 watt	
6	2L-24	5000 ohms 1/4 watt	
7	2L-53	500M ohms 1/4 watt	
8	2L-57	1 megohm 1/4 watt	
9	2L-17A	800 Ohms 1/2 watt	
10	1L-5F	25 ohms 10 watt	
11	1L-13F	200 ohms 10 watt	
12			
13			
14			
15			
16			
17			
18			

ITEM NO.	PART NO.	DESCRIPTION	REPLACES ITEM NO.
20	3L-16	.02 mfd 400 v.	
21	3L-24	.0015 mfd 600 v.	
22	3L-17	.05 mfd 400 v.	
23	3L-18	.10 mfd 400 v.	
24	3L-18	.10 mfd 400 v.	
25	3L-12	.00025 mfd 400 v.	
26	4L-5	10 mfd 6v. electr.	
27	3L-23	.0005 mfd 600 v.	
28	3L-17	.05 mfd 400 v.	
29	3L-40	.005 mfd 600 v.	
30	4L-11	10 mfd 25v. electr.	
31A	7L-1	Antenna section V. C.	
31B	7L-1	Osc. section V. C.	
32			
33			
34			
35			
36			

ITEM NO.	PART NO.	DESCRIPTION	REPLACES ITEM NO.
40	8L-1	Antenna coil	
41	8L-2	Osc. coil, with item 42	
42	8L-2	Composite IF trans. 456	
43	8L-3	2nd IF trans. 456 KC.	
44			
45			
46			
47			
50	13L-6	Speaker socket (5 pin)	
51		Spkr plug pt of item 53	
52		Output trans.(item 53)	
53	18L-2	Dynamic speaker	
54	10L-1	Volume control	
55	10L-11	Tone Control	
56		Switch, part of item 55	
57			
58			
59			

The normal I. F. frequency is 456 KC.

L. TATRO PRODUCTS CORPORATION
DECORAH IOWA
MODEL A&B CIRCUIT DIAGRAM
DRAWN BY— I.E.B.
CHECKED BY—
APPROVED BY—
RELEASED — 11-28-34
CIRCUIT DRAWING
Nº 3A2

The Model A & B chassis is an efficient 5 tube superheterodyne receiver operating from 32 volt farm lighting systems, and employes a 45 volt B battery to increase the output power without the use of transformers or vibrators.

The heaters of the five tubes are connected in series across the 32 volt line. The failure of one filament will therefore cause all the tubes to become inoperative.

If all the tubes light and the receiver fails to operate, make sure that the 45 volt B battery is connected in the proper direction and try reversing the plug connection to the 32 volt line. If the operation is then unsatisfactory check the tubes one at a time in a normal operating receiver, and replace all defective tubes.

Tube socket voltage readings: (with B battery connected)

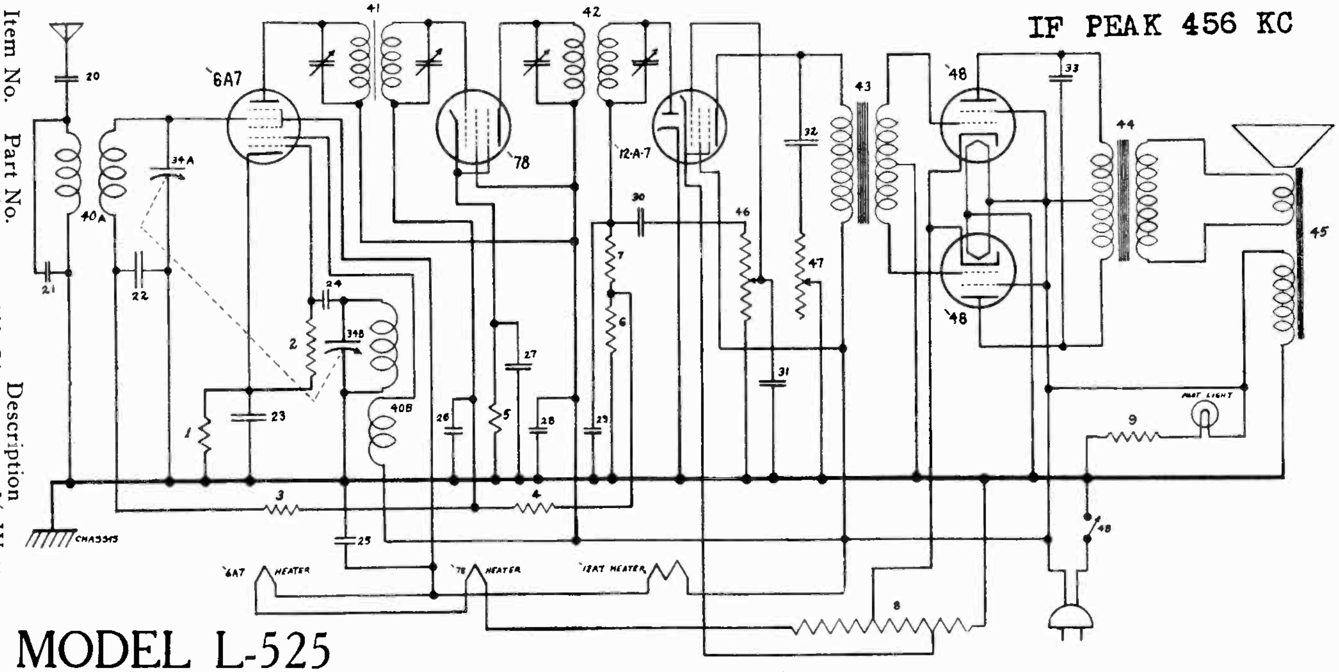
Tube	Use	(a) cathode	screen	* plate
'77	1st det.	3.2 v.	77 v.	77 v.
'78	IF ampl.	2.0 v.	77 v.	77 v.
'75	2nd det.	0.5 v.	(none)	38 v.
'38's	Output.	7.0 v.	77 v.	73 v.

(a) measured with a voltmeter having a resistance of 30,000 ohms.
(*) measured with a voltmeter having a resistance of 300,000 ohms.
All measurements made from points indicated to chassis.

MODEL L-525
Schematic, Voltage
Parts. Data

L. TATRO PRODUCTS CORP.

IF PEAK 456 KC



MODEL L-525

L' TATRO.
PRODUCTS CORPORATION
DECORAH IOWA
MODEL 'L' CIRCUIT DIAGRAM
DRAWING NUMBER 3A6
DRAWN BY [signature]
APPROVED BY C.A.H. 9-2-35.

TUBE SOCKET VOLTAGE READINGS TO CHASSIS

Tube	Use	Cathode	Grid	Screen	Plate
6A7	1st Det.	.1 V	0 (Cap)	19V (grid No. 4-5)	32V
	Oscillator		0 (grid No. 1)		32V (grid No. 2)
78	I. F. Ampl.	.1 V	0	32V	32V
12A7	2nd Det.	0 (Diode)			—.5 (diode)
	1st A. F. Ampl.	1.5 (Pentode)	0 (Cap)	32V	32V
48's	Output	3.5	0	32V	32V

The Model L Chassis is an efficient 5-tube superheterodyne receiver operating directly from 32-volt farm lighting systems, without the use of "B" batteries, transformer or vibrator.

The heaters of type 6A7, 78 and 12A7 in series with 22 Ohm resistor (item No. 9 above) are connected directly across the 32-volt line. Failure of either tube or the resistor will cause the other tubes to become inoperative. The heaters of the type 48 output tubes are in parallel connection across the 32-volt line. Failure of one tube (48) will not cause the set to become inoperative but will greatly reduce volume.

If all the tubes light and the receiver fails to operate, try reversing the plug connection to the 32-volt line. If the operation is then unsatisfactory, check the tubes one at a time in a normal operating receiver and replace all defective tubes.

All measurements taken with a volt meter having a resistance of 100,000 Ohms and with no signal applied to receiver

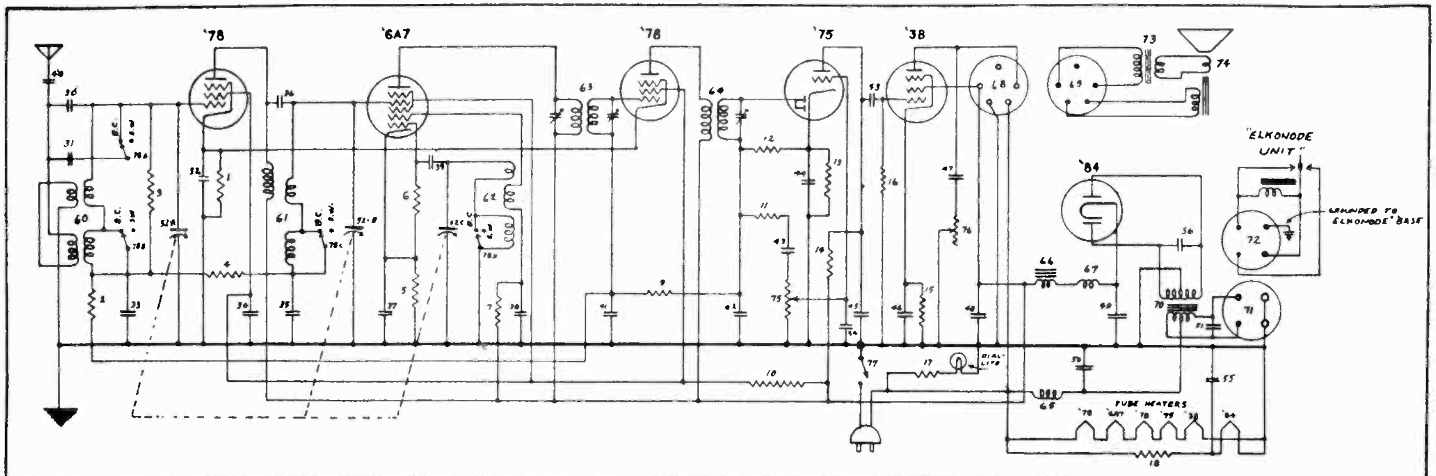
Drawing No. 3A6 shows the complete circuit diagram with itemized parts list. In ordering replacements parts always use the part number shown to facilitate filling orders and to eliminate mistakes and delay.

No adjustments are to be made to any trimmer condenser, either I. F. or R. F. without the aid of a correctly calibrated signal generator used in conjunction with a high resistance output meter connected from plate to plate of the type 48 output tubes. The normal I. F. frequency is 456 K. C.

Item No.	Part No.	Description	
1	2L-62	110 Ohm	¼ Watt
2	2L-49	250 M	¼ Watt
3	2L-49	250 M	¼ Watt
4	2L-57	1 Meg	¼ Watt
5	2L-62	110 Ohm	¼ Watt
6	2L-49	250 M	¼ Watt
7	2L-49	250 M	¼ Watt
8	1L-22G	22 Ohm	Wire wound
9	1L-13F	200 Ohm	10 Watt
20	3L-16	.025 Mfd	400 V
21	5L-2	.0001 Mfd	Mica
22	3L-17	.05 Mfd	400 V
23	3L-18	.1 Mfd	400 V
24	5L-2	.0001 Mfd	Mica
25	3L-18	.1 Mfd	400 V
26	3L-17	.05 Mfd	400 V
27	3L-18	.1 Mfd	400 V
28	3L-18	.1 Mfd	400 V
29	3L-12	.00025	400 V
30	3L-16	.025 Mfd	400 V
31	3L-23	.0005 Mfd	600 V
32	3L-25	.01 Mfd	600 V
33	3L-25	.01 Mfd	600 V
34A	7L-1	Antenna Section V. C.	
34B	7L-1	Oscillator Section V. C.	
40A	8L-11	Antenna Coil	
40B	8L-11	Oscillator Coil	
41	8L-12	1st I. F. Transformer	
42	8L-3	2nd I. F. Transformer	
43	9L-21	Input Audio Transformer	
44	9L-31	Output Audio Transformer with item 45	
45	18L-2	Dynamic Speaker	
46	10L-3	Volume Control 1 Meg	
47	10L-12	Tone Control 100 M	
48		Switch with item 47	

MODELS C-625,D-625
Schematic,Voltage
Parts, Data

L. TATRO PRODUCTS CORP.



ITEM NO.	PART NO.	DESCRIPTION	REPLACES ITEM NO.	ITEM NO.	PART NO.	DESCRIPTION	REPLACES ITEM NO.	ITEM NO.	PART NO.	DESCRIPTION	REPLACES ITEM NO.
1	2L-17A	800 ohms 1/2 watt		30		Part of item 60		56	3L-42H	.006 mfd 1600 v.	
2	2L-49	250M ohms 1/4 watt		31	5L-1	.00005 mfd mica		57			
3	2L-44	100M ohms 1/4 watt		32	3L-18	.10 mfd 400 v.		58			
4	2L-49	250M ohms 1/4 watt		33	3L-17	.05 mfd 400 v.		59			
5	2L-13	400 ohms 1/4 watt		34	3L-18	.10 mfd 400 v.		60	8L-5	Antenna coil	
6	2L-37	50M ohms 1/4 watt		35	3L-17	.05 mfd 400 v.		61	8L-6	Interstage coil	
7	2L-31	20M ohms 1/4 watt		36		Part of item 61		62	8L-7	Oscillator coil	
8				37	3L-18	.10 mfd 400 v.		63	8L-8	1st IF trans. 175 KC.	
9	2L-49	250M ohms 1/4 watt		38	3L-18	.10 mfd 400 v.		64	8L-9	2nd IF trans. 175 KC.	
10	2L-35	35M ohms 1/4 watt		39	5L-2	.0001 mfd mica		65	8L-4	RF choke	
11	2L-44	100M ohms 1/4 watt		40	3L-16	.02 mfd 400 v.		66	9L-11	AF choke	
12	2L-49	250M ohms 1/4 watt		41	3L-17	.05 mfd 400 v.		67	8L-10	RF choke (universal)	
13	2L-24	5000 ohms 1/4 watt		42	3L-23	.0005 mfd 600 v.		68	13L-6	5 P. spkr socket	
14	2L-53	500M ohms 1/4 watt		43	3L-16	.02 mfd 400 v.		69		speaker plug	
15	2L-19A	1500 ohms 1/2 watt		44	4L-5	10 mfd 6v. electr.		70	9L-2	power transformer	
16	2L-57	1 Megohm 1/4 watt		45	3L-23	.0005 mfd 600 v.		71	13L-1	4 P. Elkonode socket	
17	1L-13F	200 ohms 10 watt		46	4L-11	10 mfd 25 v.		72	15L-2	Elkonode type 51.	
18	1L-9G	50 ohms 20 watt		47	3L-17	.05 mfd 400 v.		73		Out. trans. with item 74	
19				48	4L-3	8 mfd 450 v. electr.		74	18L-4	Dynamic speaker	
20				49	4L-3	8 mfd 450 v. electr.		75	10L-1	volume control	
21				50	3L-50	1 mfd 200 v.		76	10L-11	tone control	
22				51	3L-9R	.25 mfd 200 v.		77		switch with item 75.	
23				52	7L-2	3 gang variable cond.		78	16L-1	CCT Selector sw. 4PDT.	
24				53	3L-17	.05 mfd 400 v.		79			
25				54	3L-23	.0005 mfd 600 v.		80			
26				55	3L-18	.10 mfd 400 v.		81			

The normal I. F. frequency is 177.5 KC.

L' TATRO PRODUCTS CORPORATION
DECORAH IOWA
MODEL C & D CIRCUIT DIAGRAM
DRAWN BY J.E.B.
CHECKED BY C.A.H.
APPROVED BY C.A.H. 12-10-34
DRAWING No 3A4

Note: The circuit selector switch wave range designations in the diagram above are reversed, the short wave position should be to the left, and the broadcast position to the right.

Model C & D is an efficient all electric 32 volt 6 tube superheterodyne receiver covering 2 wave ranges and requires no batteries. The thirty-two volt current from the light plant is converted by means of a vibrator, transformer, and rectifier tube to the high voltage necessary for B & C supply. The 75, two 78's, 6A7 and 38 tube filaments are connected in series. Failure of one filament in this series will therefore cause the other four tubes in the string to become inoperative. The 84 tube is fed thru a separate resistor so that failure of its filament may be located immediately.

If all the tubes light and the receiver fails to function, make sure the 'Elkonode' vibrator is operating, and check for defective tubes by substitution in a normally operating receiver. Other suspected faulty parts may also be checked by the substitution method.

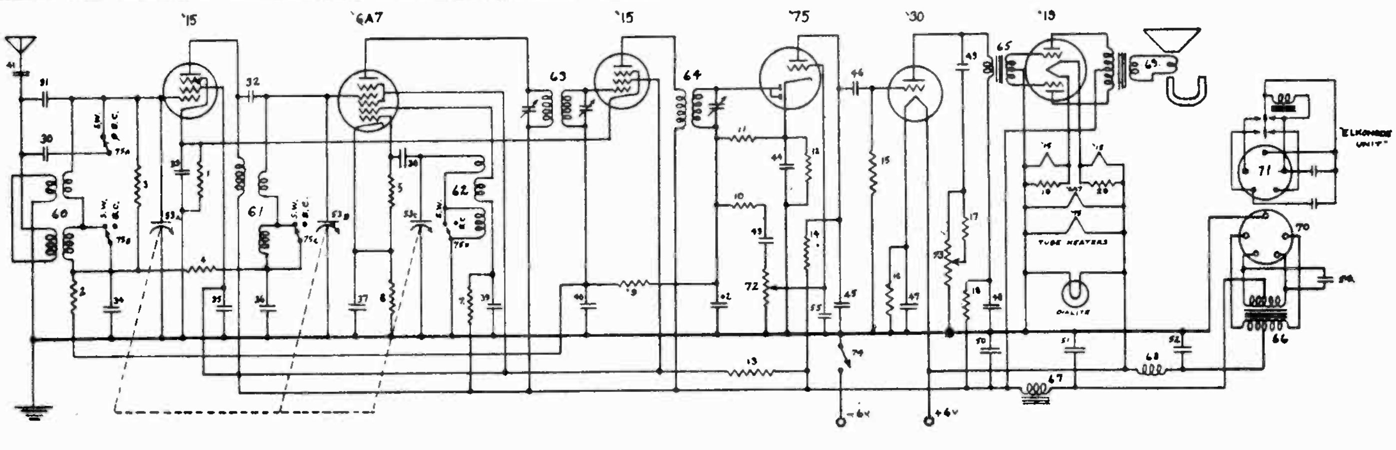
Tube socket voltage readings:

Tube	Use	(a) cathode	(b) screen	(b) plate
'78	RF ampl.	6.0 v.	88.0 v.	210 v.
'6A7	1st det.	3.0 v.	88.0 v.	210.v. *155 v.
'78	IF ampl.	6.0 v.	88.0 v.	210 v.
'75	2nd det.	1.05 v.	(none)	52 v.
'38	Output.	22.0 v.	210 v.	202 v.

(a) measured with a voltmeter having a resistance of 30,000 ohms.
(b) measured with a voltmeter having a resistance of 300,000 ohms.
(*) '6A7 anode grid voltage.
All measurements made from point indicated to chassis.

MODELS J-665, K-665
Schematic, Voltage
Parts, Data

L. TATRO PRODUCTS CORP.



ITEM NO.	PART NO.	DESCRIPTION	REPLACES ITEM NO.
1	2L-17A	800 Ohms 1/2 watt	
2	2L-49	250M ohms 1/4 watt	
3	2L-44	100M ohms 1/4 watt	
4	2L-49	250M ohms 1/4 watt	
5	2L-37	50M ohms 1/4 watt	
6	2L-13	400 ohms 1/4 watt	
7	2L-29	15M ohms 1/4 watt	
8			
9	2L-49	250M Ohms 1/4 watt	
10	2L-44	100M ohms 1/4 watt	
11	2L-49	250M ohms 1/4 watt	
12	2L-24	5000 ohms 1/4 watt	
13	2L-38	38M Ohms 1/4 watt	
14	2L-53	500M ohms 1/4 watt	
15	2L-57	1 Megohm 1/4 watt	
16	2L-5A	68 ohms 1/2 watt	
17	2L-24	5000 ohms 1/4 watt	
18	2L-29	15M ohms 1/4 watt	
19	2L-4A	53 ohms 1/2 watt	
20	2L-4A	53 ohms 1/2 watt	
21			
22			
23			
24			
25			
26			

ITEM NO.	PART NO.	DESCRIPTION	REPLACES ITEM NO.
27			
28			
29			
30	5L-1	.00005 mfd mica.	
31		part of item 60	
32		part of item 61	
33	3L-18	.10 mfd 400 v.	
34	3L-17	.05 mfd 400 v.	
35	3L-18	.10 mfd 400 v.	
36	3L-17	.05 mfd 400 v.	
37	3L-18	.10 mfd 400 v.	
38	5L-2	.0001 mfd mica.	
39	3L-18	.10 mfd 400 v.	
40	3L-17	.05 mfd 400 v.	
41	3L-40	.005 mfd 600 v.	
42	3L-23	.0005 mfd 600 v.	
43	3L-16	.02 mfd 400 v.	
44	4L-5	10 mfd 6v. electrolytic	
45	3L-12	.00025 mfd 400 v.	
46	3L-17	.05 mfd 400 v.	
47	4L-6	20 mfd 6 v. electr.	
48	3L-18	.10 mfd 400 v.	
49	3L-16	.02 mfd 400 v.	
50	4L-1	8 mfd 250 v. electr.	
51	4L-1	8 mfd 250 volt electr.	
52	3L-50	1 mfd s. 200 v.	

ITEM NO.	PART NO.	DESCRIPTION	REPLACES ITEM NO.
53A	7L-2	Antenna section V. C.	
53B		Det. section V.C. (7L-2)	
53C		Osc. section V.C. (7L-2)	
54	3L-10M	.50 mfd 200 v.	
55	3L-12	.00025 mfd 400 v.	
56			
57			
58			
59			
60	8L-5	Antenna coil	
61	8L-6	Interstage coil	
62	8L-7	Oscillator coil	
63	8L-8	1st IF transformer 175	
64	8L-9	2nd IF trans. 175 KC	
65	9L-21	AF push pull transf.	
66	9L-1	Power transformer	
67	9L-11	AF choke	
68	8L-4	RF choke	
69	18L-3	Perm. Mag. Dyn Spk & tr.	
70	13L-2	5 prong socket	
71	15L-1	Elkonode '75' vibrator.	
72	10L-1	volume control	
73	10L-11	tone control	
74		switch with item 72	
75	16L-1	Cct. selector sw. 4PDT.	
76			

The normal I. F. frequency is 177.5 KC.

L' TATRO PRODUCTS CORPORATION
DECORAH IOWA
MODEL J&K CIRCUIT DIAGRAM
DRAWN BY— JEB
CHECKED BY— CAH
APPROVED BY— CAH 12-7-34
CIRCUIT DRAWING
Nº 3A3

Model J & K is a DeLuxe low drain 6 volt battery superheterodyne receiver covering two wave ranges and requires no B or C batteries. The six volt current from the storage battery is converted by means of an efficient rectifying vibrator and power transformer to the high voltage necessary for B & C supply. The two type 15 tube filaments with appropriate shunt resistors are connected in series with the type 19 tube filament so that failure of one of these tube filaments automatically causes the other two tubes to become inoperative.

The colored 'A' battery lead must be connected to the positive terminal of the storage battery, or the set will be inoperative and will draw abnormal battery current.

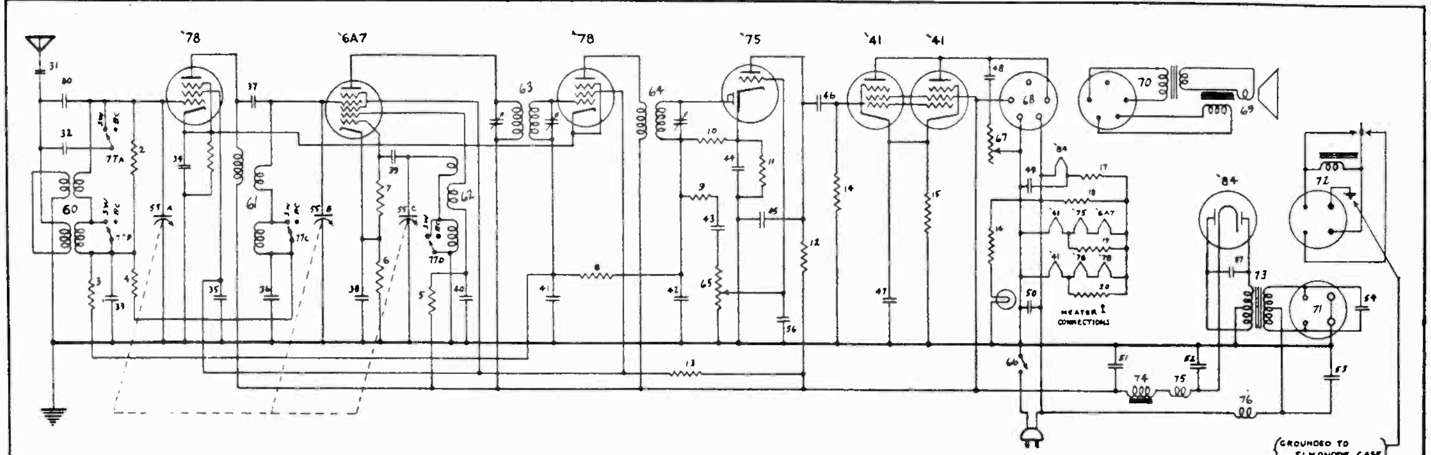
If all the tubes light and the receiver fails to function, make sure the 'Elkonode' vibrator is operating, and check for defective tubes by substitution in a normally operating receiver. Other suspected faulty parts may also be checked by the substitution method.

Tube	Use	(a) cathode	(b) screen	(b) plate
'15	RF ampl.	2.2 v.	55.0 v.	145 v.
'6A7	1st det.	2.2 v.	55.0 v.	145 v. *115 v.
'15	IF ampl.	2.2 v.	55.0 v.	145 v.
'75	2nd det.	0.6 v.	(none)	37 v.
'30	1st AF.	(c) 4.0 v.	(none)	88 v.
'19	Output.	(d) 2.0 v.	(none)	(e) 143 v.

(a) measured with a voltmeter having a resistance of 30,000 ohms.
(b) measured with a voltmeter having a resistance of 300,000 ohms.
(*) '6A7 anode grid voltage.
(c) drop across filament resistor.
(d) negative filament to chassis.
(e) both plates of '19 tube.
All measurements made from points indicated to chassis.

MODEL F-725
Schematic, Voltage
Parts, Data

L. TATRO PRODUCTS CORP.



ITEM NO.	PART NO.	DESCRIPTION	REPLACES ITEM NO.
1	2L-17A	800 ohms 1/2 watt	
2	2L-44	100M ohms 1/4 watt	
3	2L-49	250M ohms 1/4 watt	
4	2L-49	250M ohms 1/4 watt	
5	2L-31	20M ohms 1/4 watt	
6	2L-13	400 ohms 1/4 watt	
7	2L-37	50M ohms 1/4 watt	
8	2L-49	250M ohms 1/4 watt	
9	2L-44	100M ohms 1/4 watt	
10	2L-49	250M ohms 1/4 watt	
11	2L-24	5000 ohms 1/4 watt	
12	2L-53	500M ohms 1/4 watt	
13	2L-35	38M ohms 1/4 watt	
14	2L-57	1 megohm 1/4 watt	
15	2L-14A	450 ohms 1/2 watt	
16	1L-13F	200 ohms 10 watt	
17	1L-15F	13.8 ohms 10 watt	
18	1L-7F	44.0 ohms 10 watt	
19	1L-11F	125 ohms 10 watt	
20	1L-11F	125 ohms 10 watt	
21			
22			
23			
24			
25			
26			
27			
28			
29			

ITEM NO.	PART NO.	DESCRIPTION	REPLACES ITEM NO.
30		part of item no. 60	
31	3L-16	.02 mfd 400 v.	
32	5L-1	.00005 mfd mica cond.	
33	3L-17	.05 mfd 400 v.	
34	3L-18	.10 mfd 400 v.	
35	3L-18	.10 mfd 400 v.	
36	3L-17	.05 mfd 400 v.	
37		part of item no. 61	
38	3L-18	.10 mfd 400 v.	
39	5L-2	.0001 mfd mica cond.	
40	3L-18	.10 mfd 400 v.	
41	3L-17	.05 mfd 400 v.	
42	3L-23	.0005 mfd 600 v.	
43	3L-16	.02 mfd 400 v.	
44	4L-5	10 mfd 6 v. electrolytic.	
45	3L-23	.0005 mfd 600 v.	
46	3L-17	.05 mfd 400 v.	
47	4L-11	10 mfd 25 v. electrolytic.	
48	3L-17	.05 mfd 400 v.	
49	3L-18	.10 mfd 400 v.	
50	4L-14	20 mfd 40 v. N.P. electr.	
51	4L-4	16 mfd 450 v. electrolytic.	
52	4L-3	8 mfd 450 v. electrolytic.	
53	3L-50	1.0 mfd S 200 v.	
54	3L-9h	.25 mfd 200 v.	
55	7L-2	Three gang variable cond.	
56	3L-23	.0005 mfd 600 v.	
57	3L-42h	.005 mfd 1600 v.	
58			

ITEM NO.	PART NO.	DESCRIPTION	REPLACES ITEM NO.
59			
60	8L-5	Antenna coil	
61	8L-6	Interstage coil	
62	8L-7	Oscillator coil	
63	8L-8	1st IF transformer 175 KC.	
64	8L-9	2nd IF transformer 175 KC.	
65	10L-1	volume control	
66		switch with item no. 65	
67	10L-11	tone control	
68	13L-6	5 prong speaker socket	
69	18L-5	Dynamic speaker	
70		Out. trans & plug with #69	
71	13L-1	4 prong socket,	
72	15L-2	Elkonode type 51	
73	9L-2	Power transformer	
74	9L-11	A.F. choke	
75	8L-10	R.F. choke (universal)	
76	8L-4	R.F. choke	
77	16L-1	Cct. selector switch 4PDT	
78			
79			
80			
81			
82			
83			
84			
85			
86			
87			

IF PEAK 177.5 KC

L TATRO PRODUCTS CORPORATION
DECORAH IOWA
MODEL F CIRCUIT DIAGRAM
DRAWN BY E.A.H.
CHECKED BY
APPROVED BY 12-4-34
DRAWING Nº 3A5

The Model F is a DeLuxe 7 tube 32 volt receiver of the superheterodyne type covering two wave ranges. It operates from a 32 volt source without the use of B or C batteries. High voltage B supply current is obtained by means of an efficient vibrator used in conjunction with a transformer and rectifier tube. There are two series filament circuits which are connected in parallel, this combination in turn being in series with the type 84 tube with appropriate series and shunt resistors. Failure of any one tube filament will cause the other tube filaments to operate at incorrect voltages, and operation of the receiver with any tube removed is not recommended.

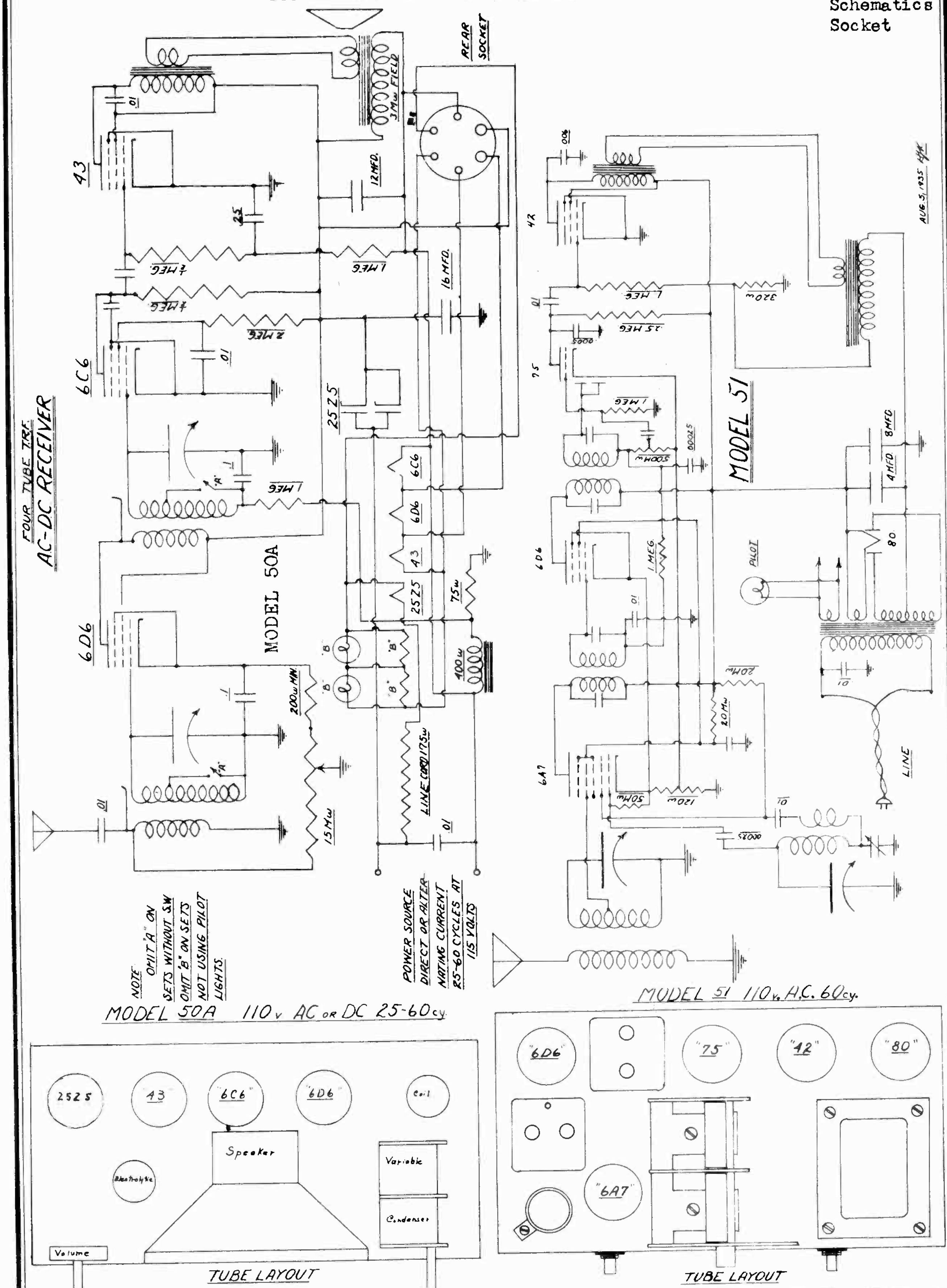
If all the tubes light and the receiver fails to function, make sure the 'Elkonode' vibrator is operating, and check for defective tubes by substitution in a normally operating receiver. Other suspected faulty parts may also be checked by the substitution method.

Tube	Use	(a) cathode	(b) screen	(b) plate
'78	RF ampl.	4.5 v.	73.0 v.	190 v.
'6A7	1st det.	2.5 v.	73.0 v.	190 v.
				*130 v.
'78	IF ampl.	4.5 v.	73.0 v.	190 v.
'75	2nd det.	0.9 v.	(none)	48 v.
(2) '41's	Output	16.0 v.	190 v.	187 v.

(a) measured with a voltmeter having a resistance of 30,000 ohms.
(b) measured with a voltmeter having a resistance of 300,000 ohms.
(*) '6A7 anode grid voltage.
All measurements made from point indicated to chassis.

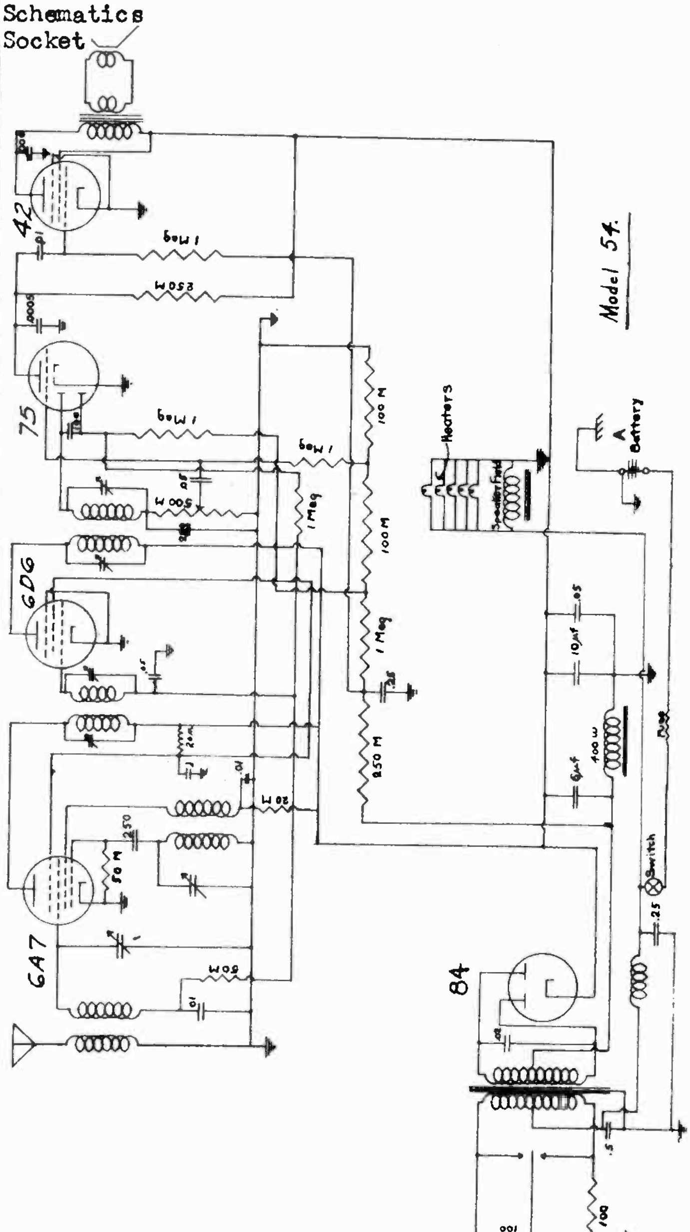
MODEL 50-A
MODEL 51
Schematics
Socket

TRAV-LER RADIO & TELEV. CORP.

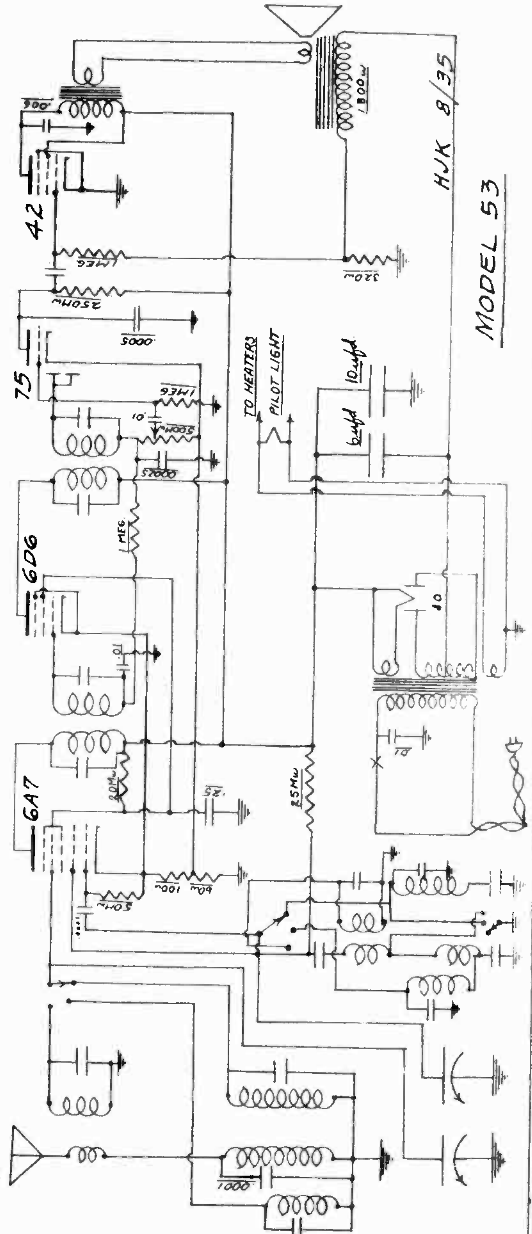


MODEL 53
MODEL 54
Schematics
Socket

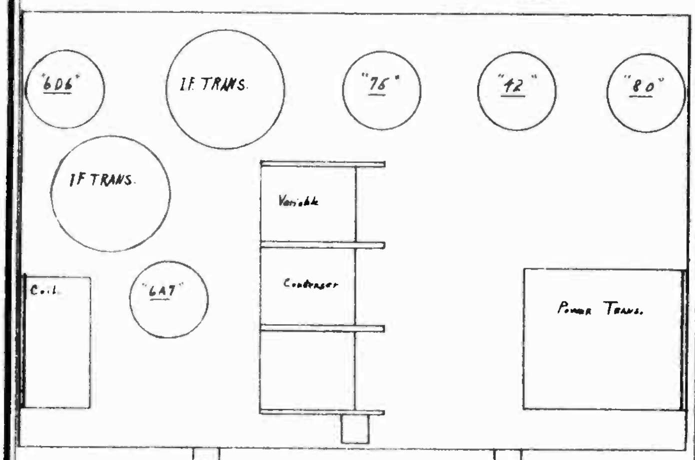
TRAV-LER RADIO & TELEV. CORP.



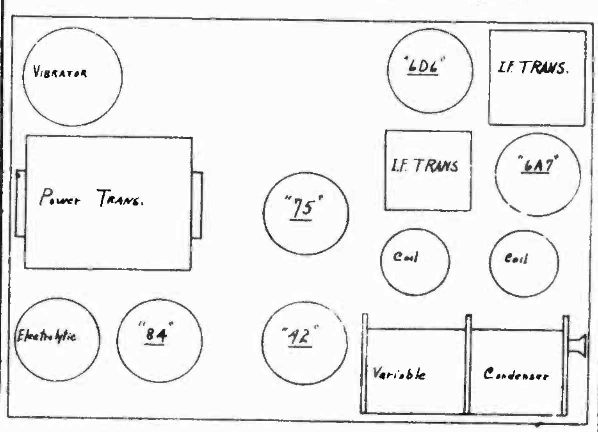
MODEL 53 110v. 60cy. A.C.



MODEL 54 6v. BATTERY



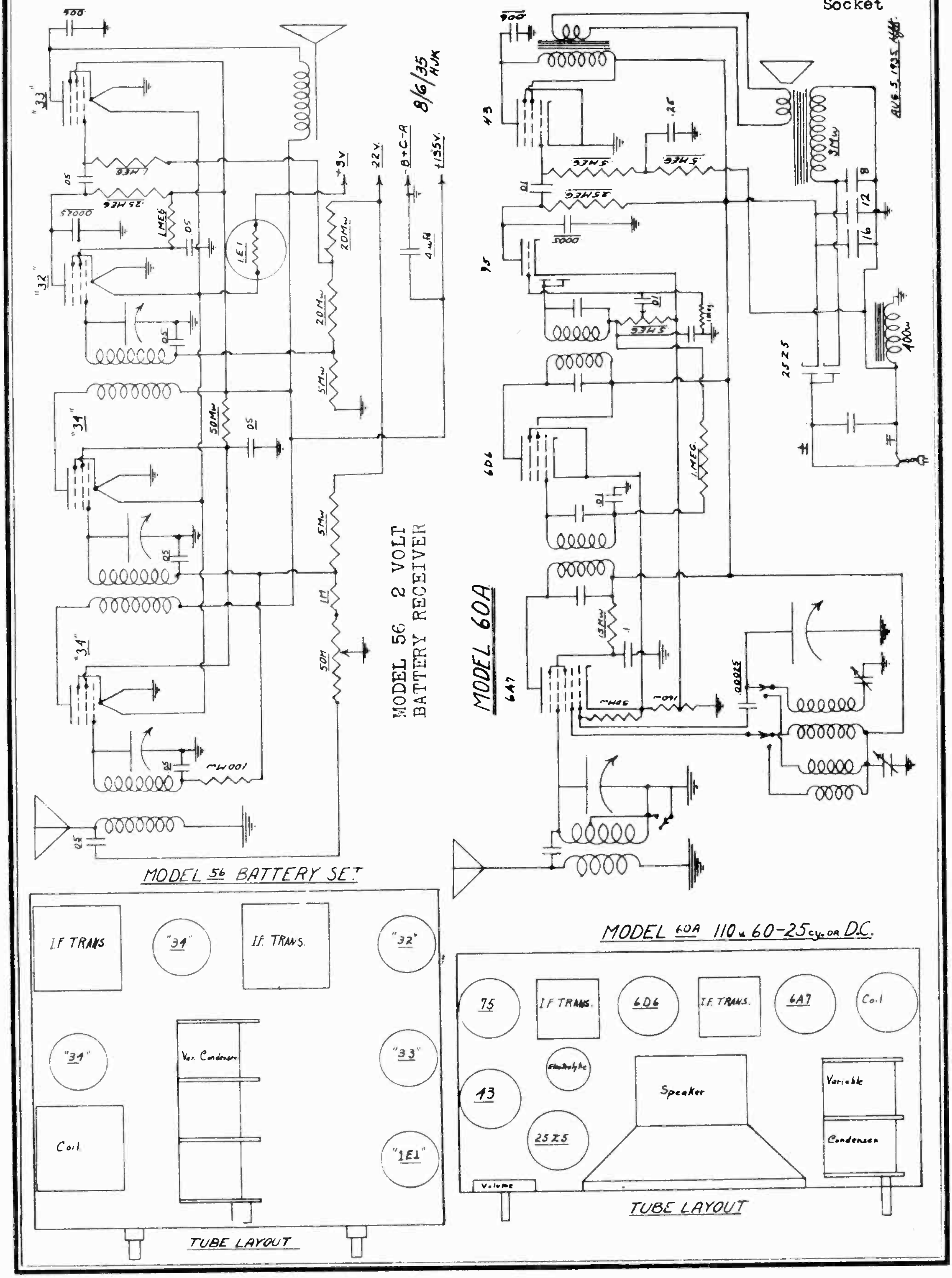
TUBE LAYOUT



TUBE LAYOUT

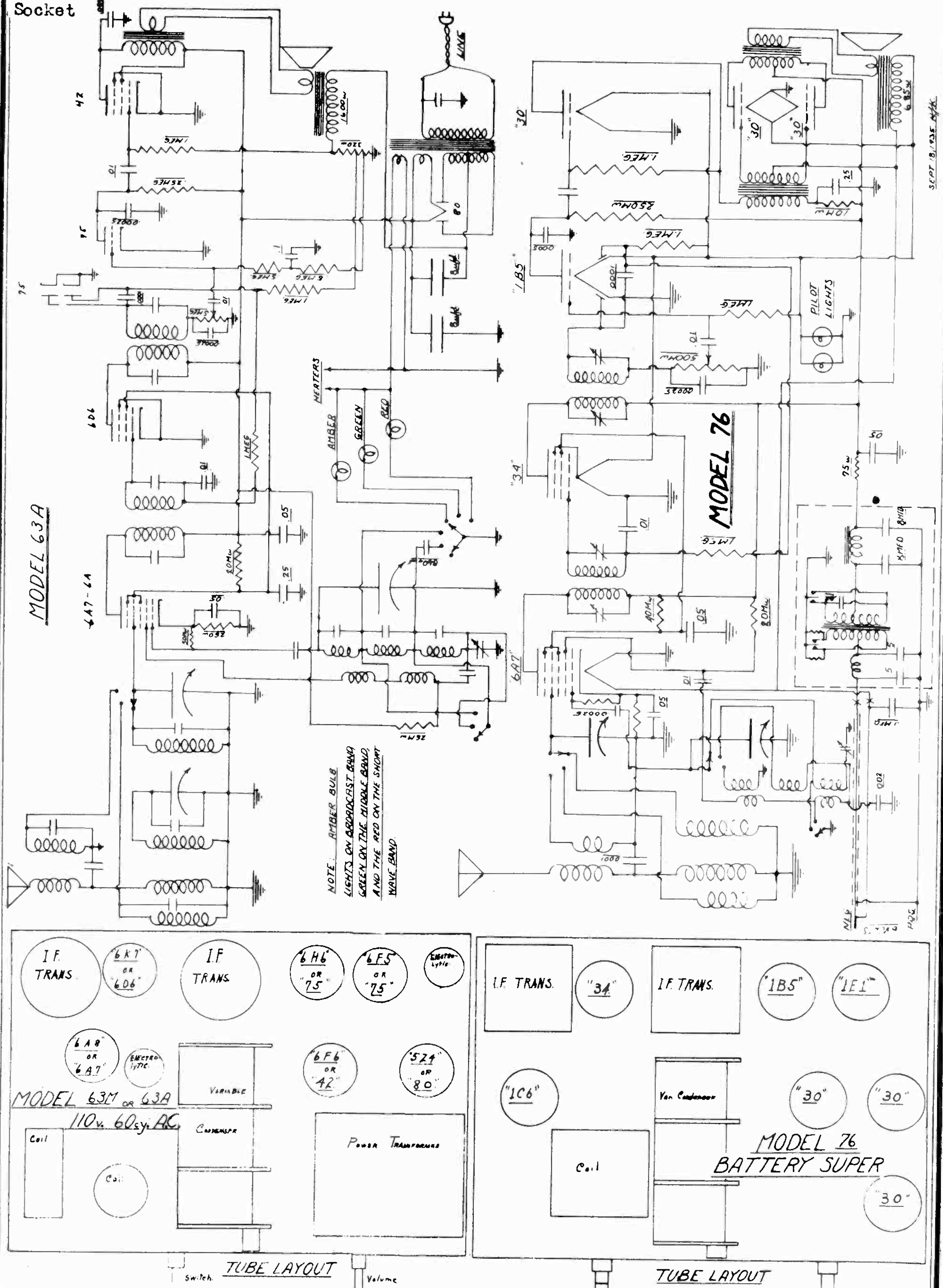
TRAV-LER RADIO & TELEV. CORP.

MODEL 56
MODEL 60-A
Schematics
Socket



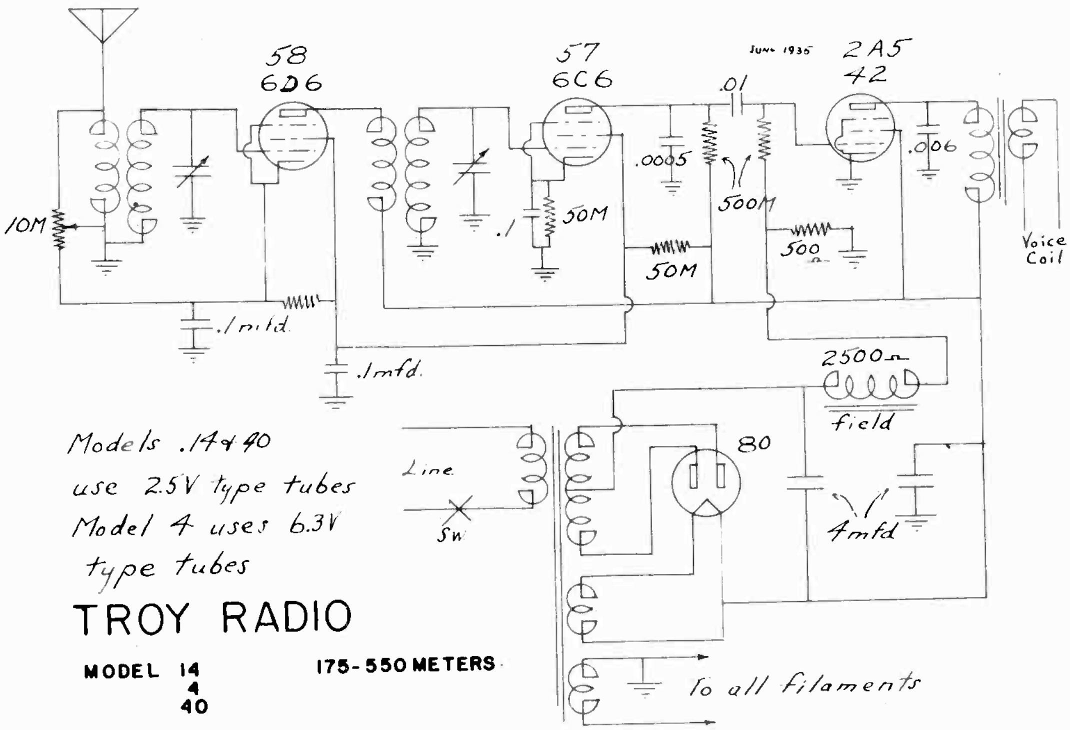
MODEL 63-A
MODEL 76
Schematics
Socket

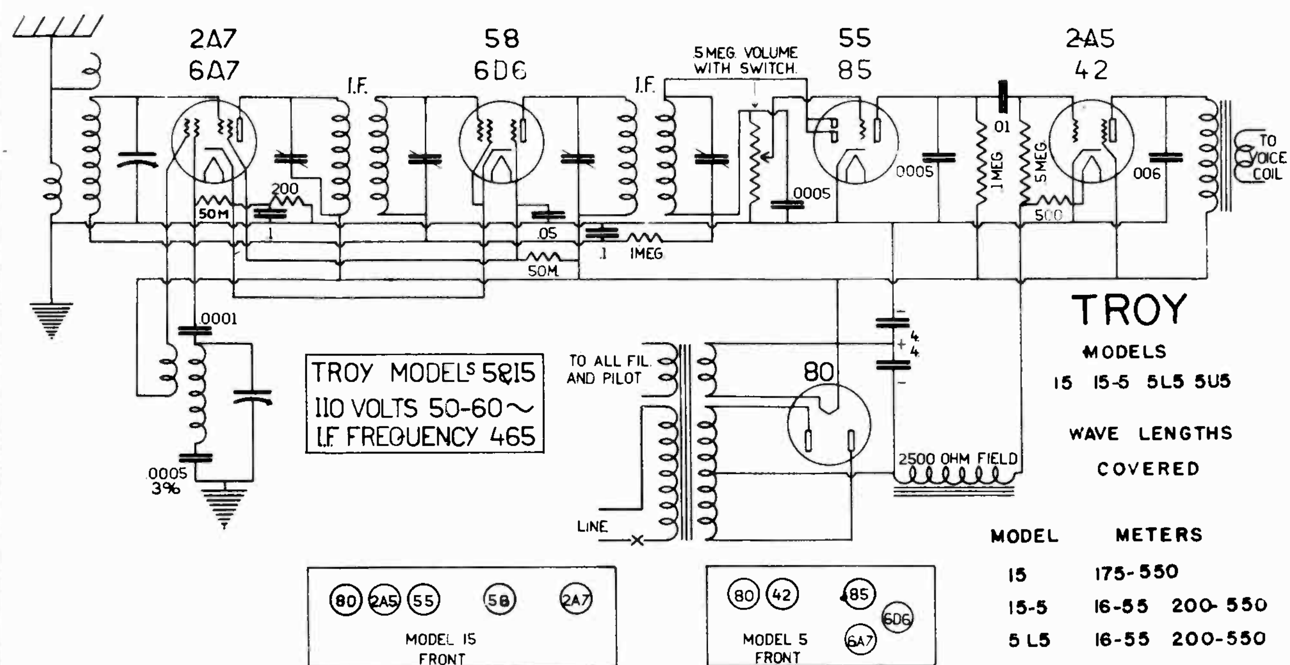
TRAV-LER RADIO & TELEV. CORP.



TROY RADIO MFG. CO.

MODELS 4,14,40
MODELS 5L5,5U5,15,15-5
Schematics, Socket





TROY

MODELS
15 15-5 5L5 5U5

WAVE LENGTHS COVERED

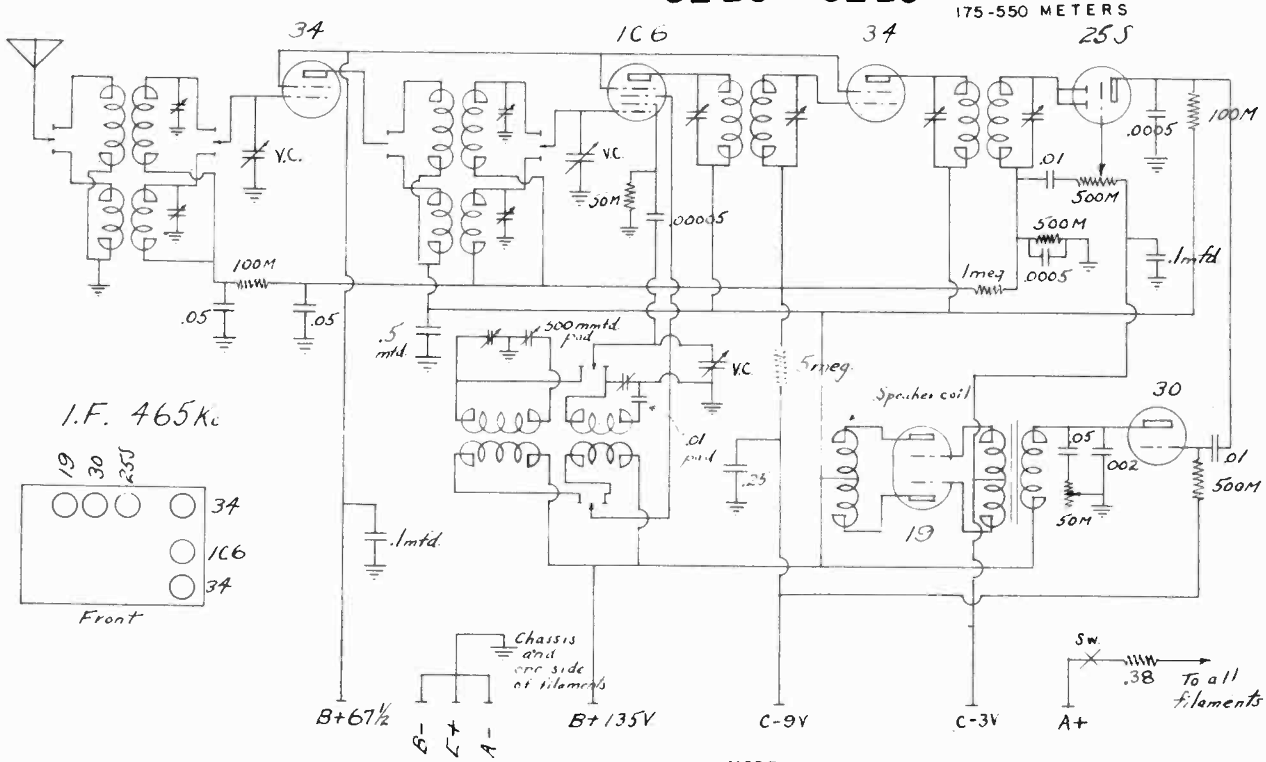
MODEL	METERS	
15	175-550	
15-5	16-55	200-550
5 L5	16-55	200-550
5 U5	16-55	200-550

MODELS 62BC, 62BU
MODELS 62C, 62PC, 62L, 62U
Schematics, Socket

TROY RADIO MFG. CO.

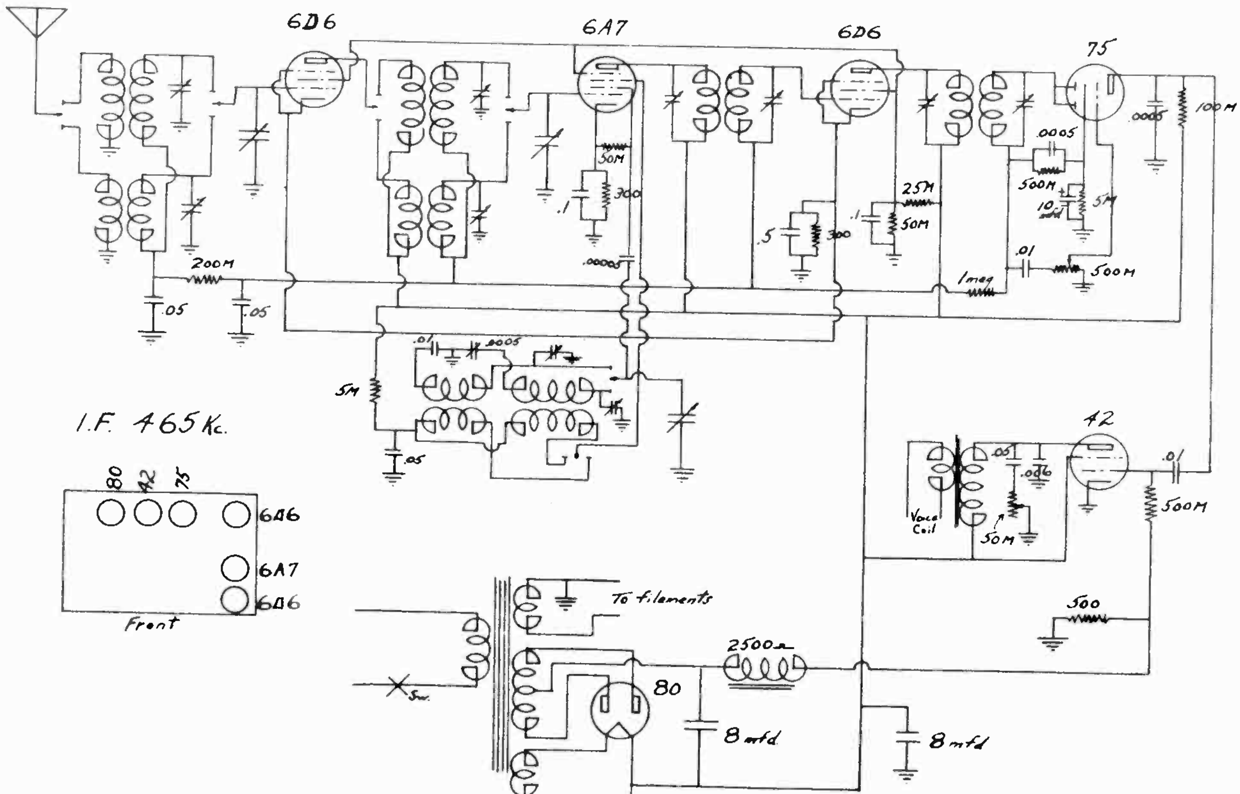
MODELS 62 BU 62 BC

WAVE LENGTH 16 - 55 175-550 METERS



MODELS 62L 62U 62C 62PC

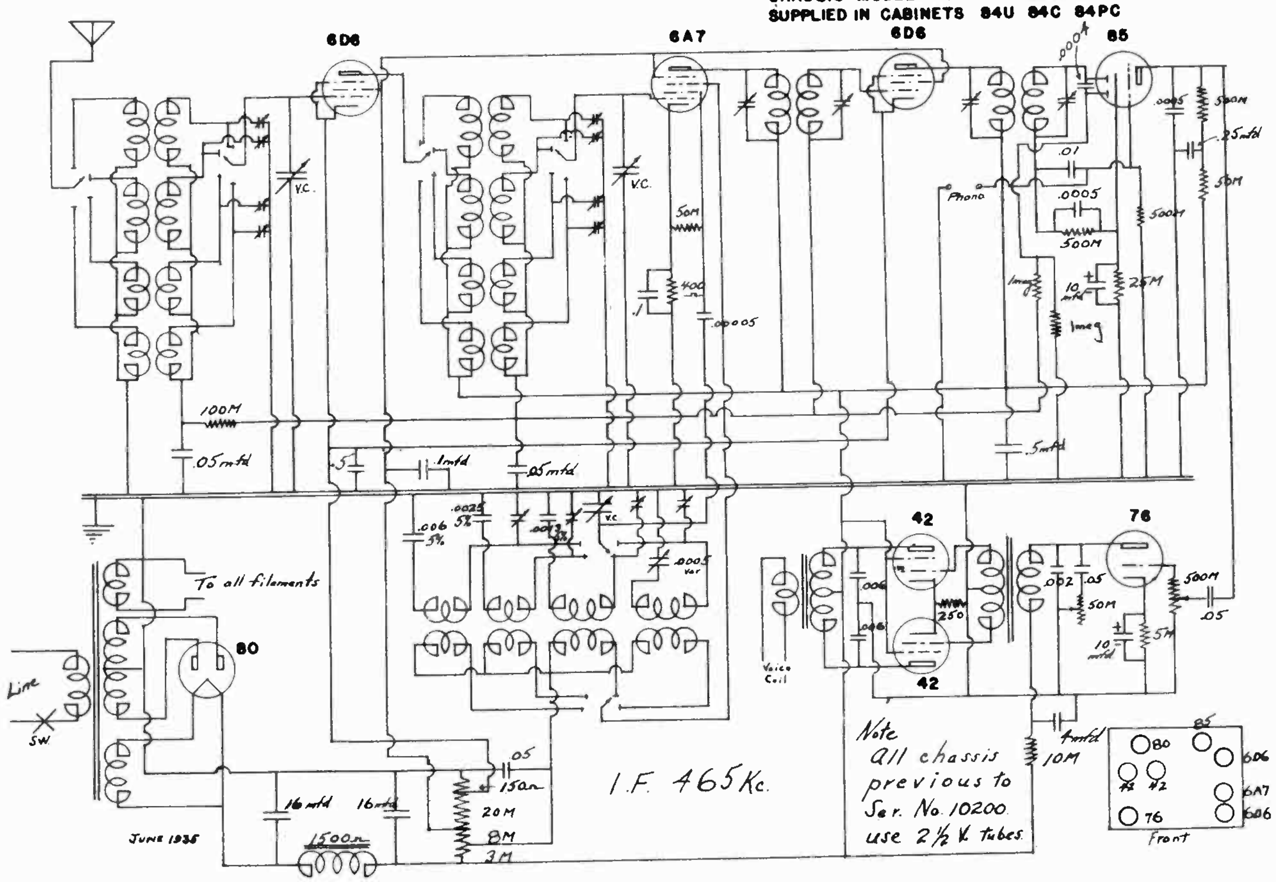
WAVE LENGTH 16-55 175-550 METERS

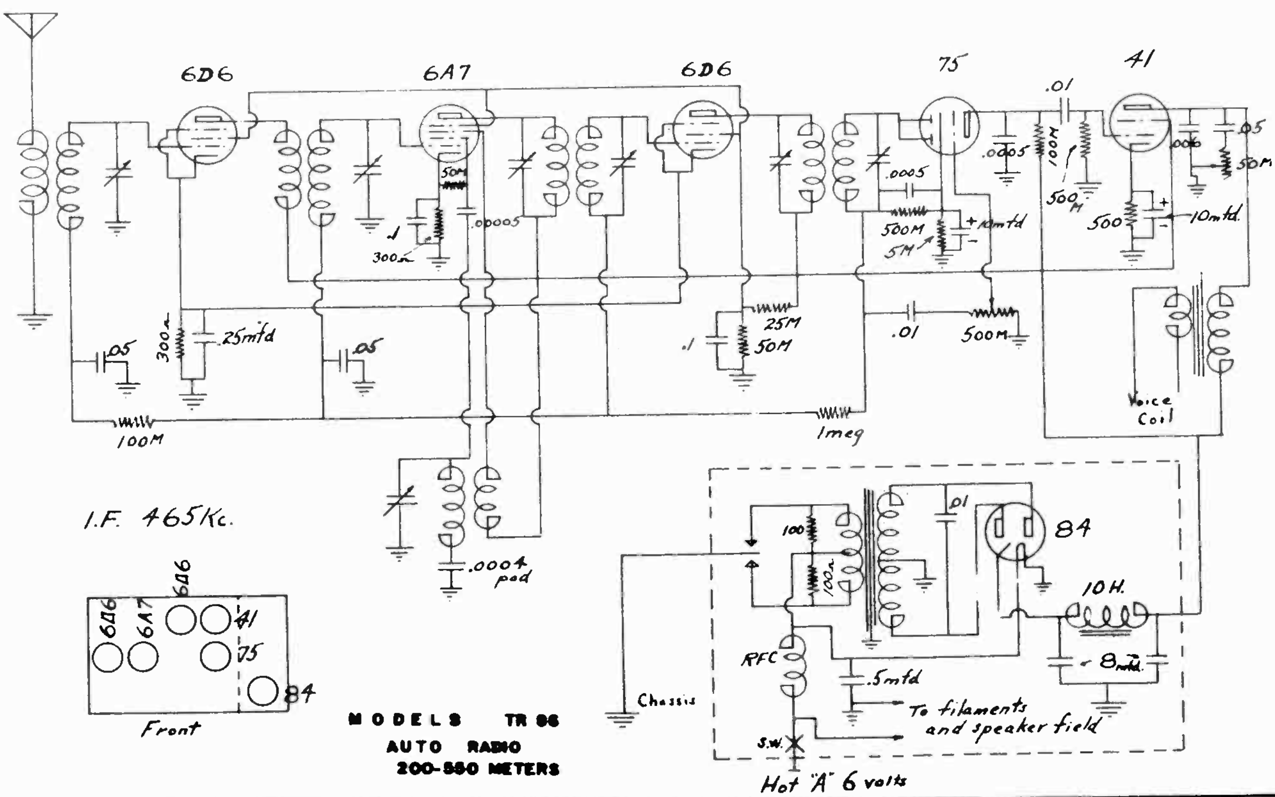


TROY RADIO MFG. CO.

MODELS 84C, 84PC, 84U
MODEL TR-86
Schematics, Socket

CHASSIS MODEL TR 84 15-550 METERS
SUPPLIED IN CABINETS 84U 84C 84PC





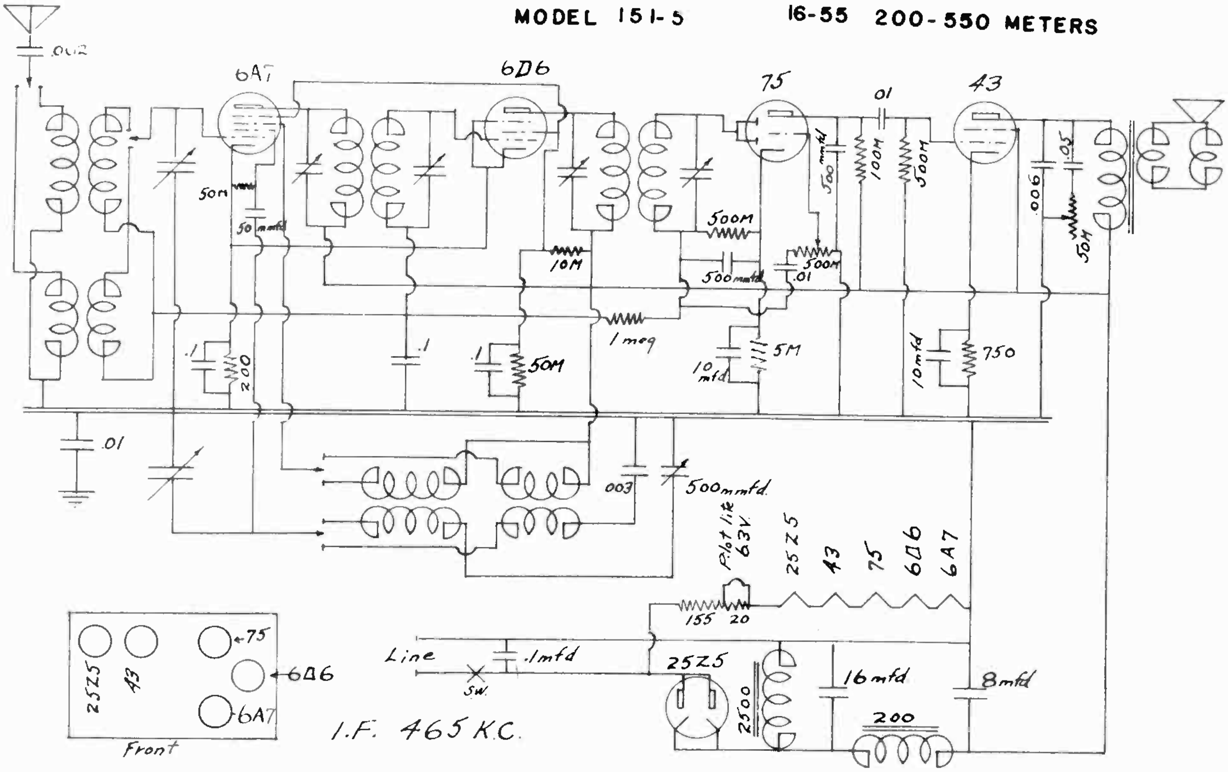
MODELS TR 86
AUTO RADIO
200-550 METERS

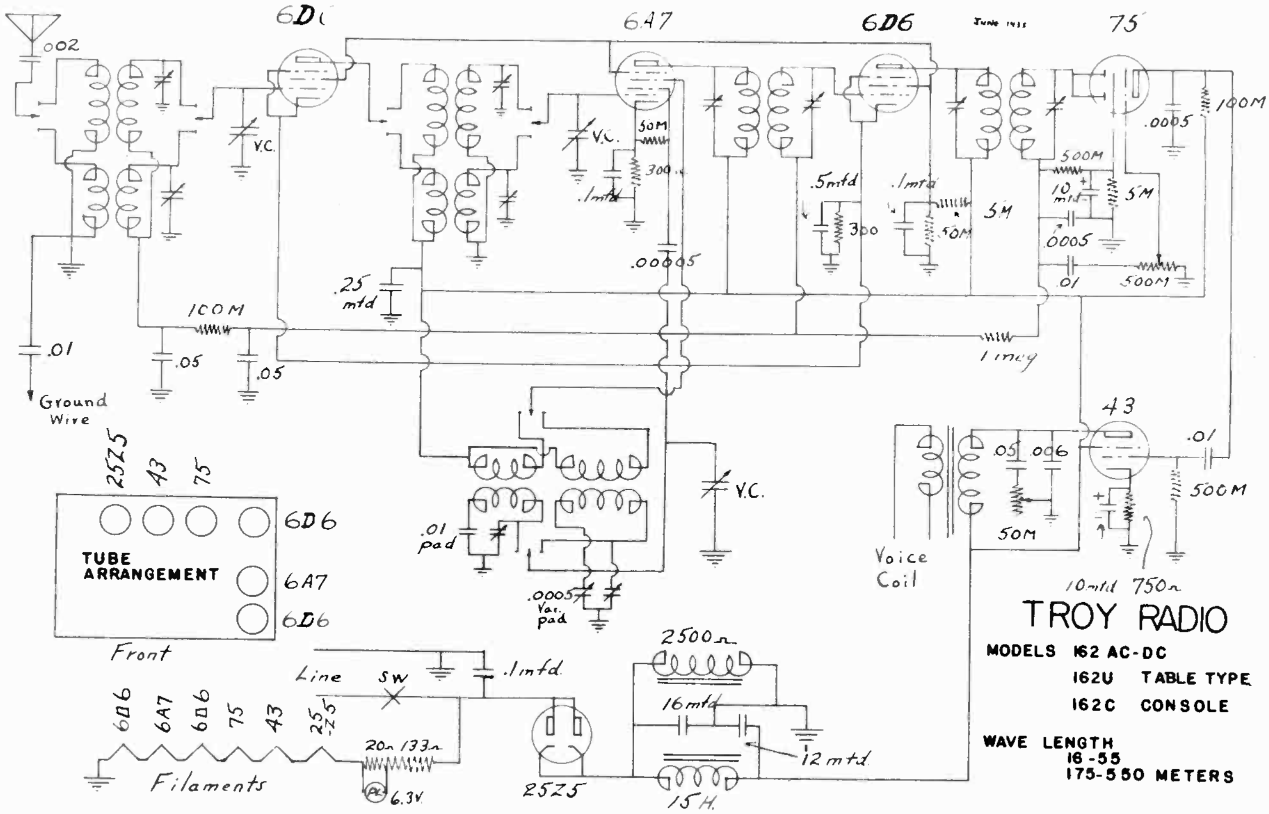
MODEL 151-5

MODELS 162C, 162U
Schematics, Socket

TROY RADIO MFG. CO.

MODEL 151-5 16-55 200-550 METERS





TROY RADIO

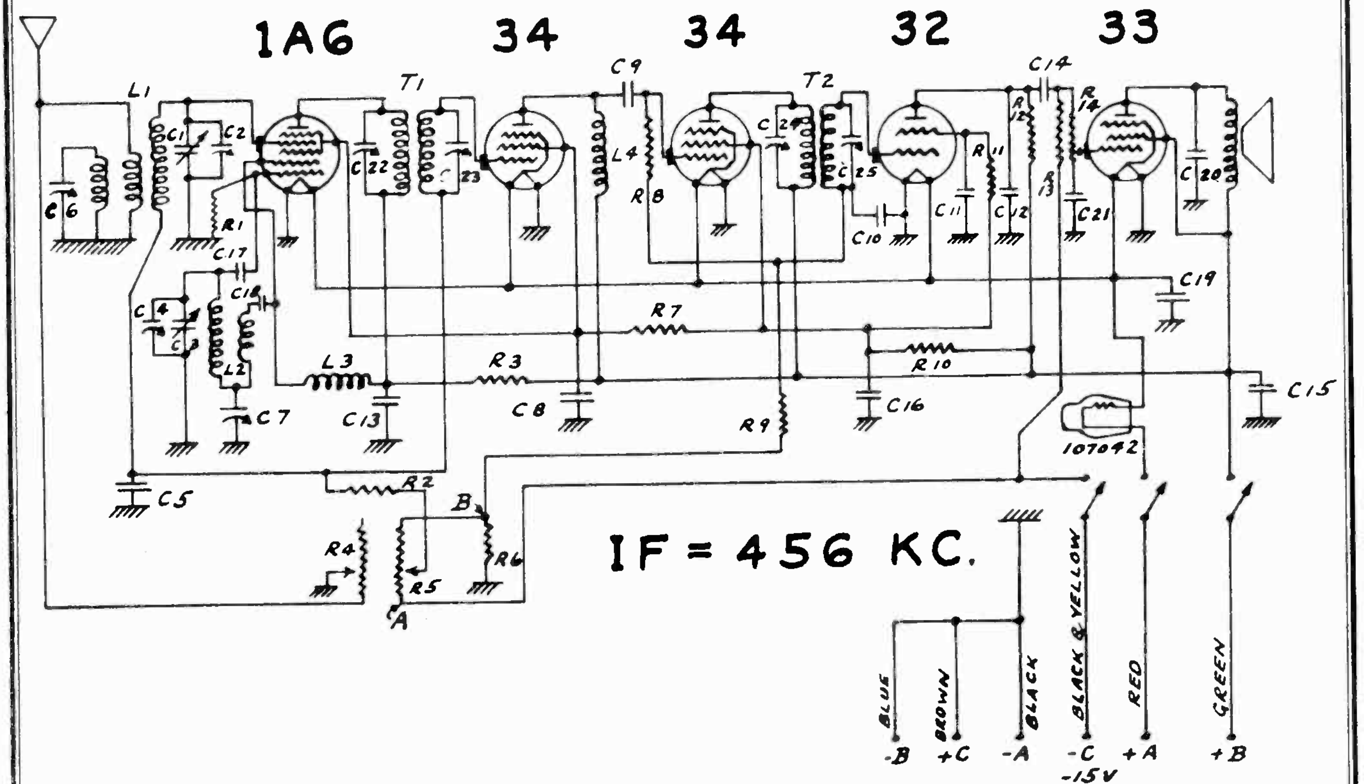
MODELS 162 AC-DC
162U TABLE TYPE
162C CONSOLE

WAVE LENGTH
16-55
175-550 METERS

MODELS 376BT,376F
376S
Schematic,Parts

UNITED AMERICAN BOSCH CORP.

SCHEMATIC WIRING DIAGRAM



SERVICE PARTS LIST

Battery Radio Receiver Model 376BT (Table Model)
Battery Radio Receiver Model 376S (Console Model)
Battery Radio Receiver Model 376F (Console Model)

Part No.	Dia. #	Description of Parts
		CONDENSERS
106815	(C1) (C2) (C3) (C4)	Variable condenser with trimmers
106386	C5	.05 mf - 200 V.
106382	(C6	60-250 mmf
	(C7	200-525 mmf
106386	C8	.05 mf - 200 V.
106417	C9	.0001 mica
106386	C10	.05 mf - 200 V.
102497	C11	.25 mf - 200 V.
106417	C12	.0001 mica
106386	C13	.05 mf - 200 V.
103659	C14	.005 mf - 350 V.
107029	(C15	4 mfd. 250 V.
Ed-2	(C16	2 mfd. 250 V.
101143	C17	.0001 mica
106386	C18	.05 mf - 200 V.
106720	C19	1 mfd - 200 V.
103659	C20	.005 mf - 350 V.
107043	C21	.0005 mica
	(C22) (C23) (C24) (C25)	35-130 mmf- part of 106835

Part No.	Dia. #	Description of Parts
		RESISTORS
105278	R1	100,000 ohms - 1/4 W
105278	R2	100,000 ohms - 1/4 W
105267	R3	1,000 ohms - 1/4 W
106829	(R4) (R5)	10,000 var. vol. control
105270	R6	2500 ohms - 1/4 W
105267	R7	1000 ohms - 1/4 W
105278	R8	100,000 ohms - 1/4 W
105281	R9	1 meg. - 1/4 W
102875	R10	15,000 ohms - 1/2 W
105281	R11	1 meg. - 1/4 W
105246	R12	1/2 meg. - 1/4 W
105281	R13	1 meg. - 1/4 W
106823	R14	500,000 var. tone control
		COILS
107040	L1	Antenna coil assembly
107033	L2	Osc. coil assembly
107020	L3	Choke coil assembly
107021	L4	Choke coil assembly
106835	T1-2	I.F. coil assembly

MODELS 376BT, 376F
376S
Socket, Trimmers
Alignment, Voltage

UNITED AMERICAN BOSCH CORP.

Part No.	Description of Parts
	CABLES & CABLE ASSEMBLIES
107037	Cable assembly, brown & black-chassis to spkr. Model 376BT
107038	Cable assembly, yellow, green, red - chassis to speaker - Model 376BT
107039	Cable assembly, brown, black, blue - chassis to battery - Model 376BT
107045	Antenna cable assembly
104445	Ground cable assembly
107541	Cable assembly, brown, black, blue - Model 376S
107543	Cable assembly black and brown, Model 376S
107479	Cable lead 6" long
107546	Cable lead 9" long

General Description

The American-Bosch Model 376 is a five-tube battery operated superheterodyne receiver. Its circuit comprises a combined first detector oscillator, two stages of intermediate frequency amplifier, a second detector and a power pentode output amplifier.

The tuning range of this receiver extends from 540 to 1650 kilocycles.

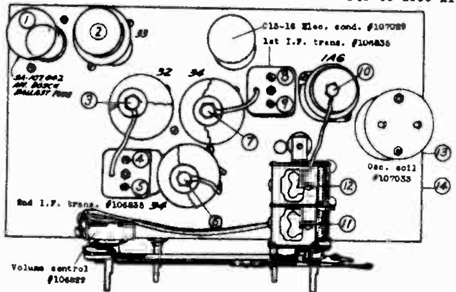


Figure #1

NOMENCLATURE

- #1 Ballast tube (107042)
- #2 Power output pentode
- #3 Second detector
- #4 I.F. trimmer
- #5 I.F. trimmer
- #6 2nd I.F. tube
- #7 1st I.F. tube
- #8 I.F. trimmer
- #9 I.F. trimmer
- #10 1st detector oscillator tube
- #11 Oscillator trimmer condenser
- #12 Antenna trimmer condenser
- #13 Oscillator lag. condenser
- #14 Wave trap trimmer (456 K.C.)

ALIGNMENT INSTRUCTIONS

To align the Model 376 chassis, it is essential to use a high grade modulated oscillator the output of which can be continuously adjusted to assure freedom from tube overload as individual circuits are brought into alignment.

The Model 376 uses an improved type of magnetic speaker, the windings of which are directly in the plate circuit of the output tube. The windings are of high impedance and necessitate care in the use of the output meter when aligning the chassis.

When an output meter of low resistance is connected across the windings of this type of a speaker, the power output is materially reduced. For this reason, it is necessary to use an output meter of high sensitivity and a resistance of at least 4,000 ohms.

Before attempting to align a receiver, the service man should familiarize himself with the general layout of the chassis, the location of the tubes and various alignment condensers. A top view of the chassis is shown in Fig. #1 and should be carefully studied before the actual work is started.

ALIGNING THE I.F. (456 K.C.)

1. Connect in series with high side of test oscillator leads a blocking condenser of at least .25 mfd. to prevent short circuit of receiver batteries in subsequent aligning operations.

2. Set volume control on full.

3. Tone control should be in bass position.

4. Short circuit antenna and ground leads to prevent local stations from interfering with subsequent aligning operations.
5. Connect output meter across loud speaker terminals (see note above).

6. Set test oscillator to 456 K.C. and adjust its output to produce measurable reading on output meter when test oscillator between frame of chassis and the grid of 34 I.F. tube #6.

7. Adjust #4 and #5 to maximum output, reducing signal oscillator output as stage is brought into resonance.

8. Connect test oscillator to grid of 1A6 tube #10 and adjust #8 and #9 to maximum output.

ALIGNING WAVE TRAP (Direct Signal 456 K.C.)

An adjustable wave trap is provided in series with the antenna circuit to prevent interference due to direct transmission of telegraphic signals at the intermediate frequency (456 K.C.).

1. With test oscillator still set at 456 K.C., connect oscillator leads to the antenna and ground terminals through a .0002 mfd. antenna condenser.

2. Set dial scale to 540 K.C. and adjust test oscillator output to obtain full scale reading on output meter.

3. Adjust wave trap trimmer #14 until a null or minimum reading of output meter is obtained.

ALIGNING OSCILLATOR AND R.F.

1. Connect test oscillator to grid of 1A6 first detector tube #10 and set test oscillator to 1500 K.C.

2. Set dial scale to maximum mark beyond 540 K.C. calibration point when gang is entirely closed.

3. Set scale at 1500 K.C. and adjust #11 to maximum output.

4. Connect test oscillator to antenna through a .0002 mfd. condenser and with scale still set at 1500 K.C., adjust #11 and #12 to maximum output.

5. Set scale and test oscillator to 600 K.C. and adjust #13 simultaneously, change this adjustment and the station selector of chassis for maximum output.

6. With test oscillator and scale set at 1500 K.C., readjust #11 and #12, since previous operations may have altered oscillator trimmer setting.

7. Check sensitivity across scale.

SOCKET VOLTAGES

Tube	Stage	Filament	Plate	Screen	Bias
33	Output	6.2	135	140	15. ("A" to ground)
32	2nd Oscillator	6.2	135	12	25. ("B" to ground)
34	I.F. trimmer	6.2	140	70	2.5 ("B" to ground)
34	I.F. trimmer	6.2	140	70	2.5 ("B" to ground)
1A6	1st detector	6.2	140	70	2.5 ("B" to ground)
	Oscillator		145		Total "B" voltage - 140

Note: The above readings were taken with fresh batteries. Corresponding reductions are to be expected as battery voltage drops due to use. The bias circuit serves to discharge the "C" battery at the proper rate to maintain quality and extend useful "B" battery life. The bias readings are measured between points "A" or "B" and the chassis frame, since high circuit resistances would make accurate readings at the grid prong of the tubes difficult. All of the above readings were taken with a voltmeter of 1,000 ohms per volt. Plate and screen measurements were taken on the 250 volt scale and will vary with other ranges.

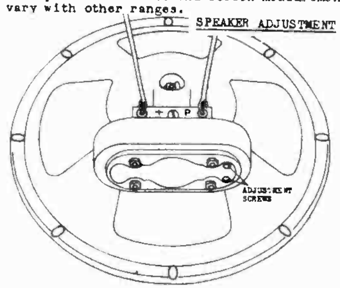


Figure #4

SPEAKER ADJUSTMENT

The speaker has been carefully adjusted at the factory and should not require any further attention, as this design has been found to be very stable in maintaining its adjustment. However, if for any reason an adjustment is needed, it may be done as follows:

1. With speaker connected to the receiver, tune in a strong signal and advance the volume control until the speaker begins to rattle (armature striking pole pieces).

2. Uncover the two holes shown in Fig. #4 by piercing the paper label.

3. This adjustment is of the rocker type and one screw must be loosened and the other tightened to adjust the position of the armature. Adjustment should proceed in quarter turn steps until best position of armature is found. When this condition is obtained, both screws should be tight.

ADAPTATION OF VARIOUS TYPES OF "A" BATTERY SUPPLY

The receiver is supplied without batteries. Any one of the following three types of "A" supply may be used.

1. Dry Cell Pack: A ballast tube (#107042) is provided with the receiver to accommodate the voltage drop of the dry cell pack which varies from slightly over 3 volts for a fresh battery to less than 2 volts for a battery near the end of its useful life.

2. Storage Battery Operation: When using a single cell of a storage battery whose terminal voltage is 2 volts, it is important that the ballast tube be replaced by an accessory which serves to short circuit the ballast tube socket terminal. Such an accessory will be supplied as service part #108015. Greater satisfaction will result when using the new low discharge type of battery which has been specifically developed for radio receiver use.

3. Air Cell Operation: The air cell, unlike the dry cell pack, does not vary greatly in terminal voltage during its useful life, and while the ballast tube may be used, it does not allow the total life of the aid cell to be realized because its use results in low filament voltage.

A service accessory #108014 which consists of a low fixed resistance should be used to replace the ballast tube when using the air cell.

IMPORTANT

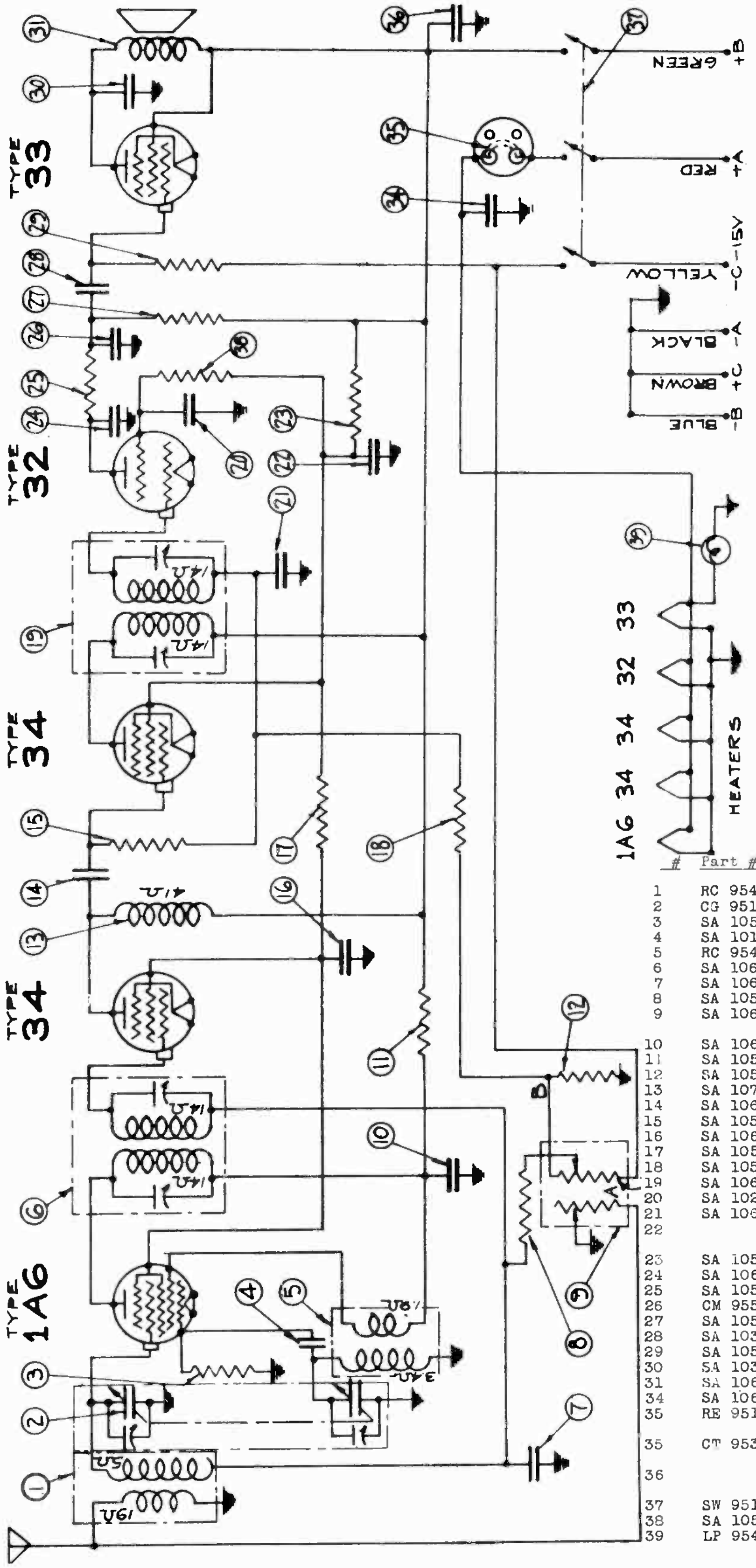
If the electrolytic condenser 107029 is of the polarized type (Ed. 1), it should be replaced by a non-polarized filter 107029 Ed. 2.

The first production lot of the Model 376 was equipped with an Ed. 1 filter. We have found that if the owner does not follow our instructions in making correct "B" battery connections serious damage may result to the receiver.

UNITED AMERICAN BOSCH CORP.

MODEL 385
Schematic, Voltage
Parts

AMERICAN-BOSCH RADIO MODEL 385



SOCKET VOLTAGES

TUBE	STAGE	FIL.	PLATE	SCREEN	BIAS
33	OUTPUT	6.2	135	140	15 (A TO GROUND)
32	2ND DET.	6.2	135	12	25 (B TO GROUND)
34	INT. FREQ.	6.2	140	70	2.5 (B TO GROUND)
34	INT. FREQ.	6.2	140	70	2.5 (B TO GROUND)
1A6	1ST DETECT	6.2	140	70	25 (B TO GROUND)
	OSCILLATOR		145	TOTAL B VOLTAGE - 140	

INT. FREQ. 463KC

#	Part #	Description of Parts
1	RC 9546	Ant. coil assembly
2	CG 9515	Variable condenser assy.
3	SA 105278	100,000 ohms, ¼ W. res.
4	SA 101143	.0001 mfd., mica cond.
5	RC 9547	Oscillator coil assembly
6	SA 106835	I.F. Coil Assembly
7	SA 106386	.05 mfd., 200 V. cond.
8	SA 105278	100,000 ohms, ¼ W. res.
9	SA 106829	Dual volume control (10,000 ohms per unit)
10	SA 106386	.05 mfd., 200 V. cond.
11	SA 105267	1000 ohms, ¼ W. res.
12	SA 105270	2500 ohms, ¼ W. res.
13	SA 107021	Choke coil assembly
14	SA 106417	.0001 mfd., mica cond.
15	SA 105278	100,000 ohms ¼ W. res.
16	SA 106386	.05 mfd., 200 V. cond.
17	SA 105267	1000 ohms, ¼ W. res.
18	SA 105281	1 meg., ¼ W. res.
19	SA 106835	I.F. coil assembly
20	SA 102497	.25 mfd., 200 V. cond.
21	SA 106386	.05 mfd., 200 V. cond.
22		2 mfd., 200 V. cond. (part of CE 959)
23	SA 105254	15,000 ohms, ¼ W. res.
24	SA 106417	.0001 mfd., mica cond.
25	SA 105276	50,000 ohms, ¼ W. res.
26	CM 955	.000025 mfd., mica cond.
27	SA 105246	½ meg., ¼ W. resistor
28	SA 103659	.005 mfd., 400 V. cond.
29	SA 105281	1 meg., ¼ W. resistor
30	SA 103659	.005 mfd., 400 V. cond.
31	SA 106918	Speaker assembly
34	SA 106720	1 mfd., 200 V. condenser
35	RE 9515	Adaptor socket resistance lead
35	CT 953	Adaptor socket short circuit link
36		4 mfd., 200 V. cond. (part of CE 959)
37	SW 9513	Switch assembly
38	SA 105281	1 meg., ¼ W. resistor
39	LP 954	Dial lamp

MODEL 385
Socket, Trimmers
Alignment

UNITED AMERICAN BOSCH CORP.

LINE-UP CAPACITOR ADJUSTMENTS

To align the chassis, it is essential to use a high grade modulated oscillator, the output of which can be continuously adjusted to assure freedom from tube overload as individual circuits are brought into alignment.

This model uses an improved type of magnetic speaker, the windings of which are directly in the plate circuit of the output tube. The windings are of high impedance and necessitate care in the use of the output meter when aligning the chassis.

When an output meter of low resistance is connected across the windings of this type of speaker, the power output is materially reduced. For this reason, it is necessary to use an output meter of high sensitivity and a resistance of at least 4000 ohms.

Before attempting to align a receiver, the service man should familiarize himself with the general layout of the chassis the location of the tubes and various alignment condensers. Top and bottom views of the chassis are shown in Figures #3 and #4, and should be carefully studied before the actual work is started.

I.F. ADJUSTMENT (463 K.C.)

1. Set volume control on full.

2. Short circuit the antenna and ground leads to prevent local stations from interfering with subsequent aligning operations.

3. Connect output meter across the loud speaker terminals (see note above).

4. Set test oscillator to 463 K.C. and apply test signal to grid of 34 second I.F. tube thru a .25 mfd. blocking condenser and adjust the two trimmers on top of I.F. coil #19 to maximum output reducing output of test oscillator as required.

5. Apply test signal to grid of 1A6 detector-oscillator tube and adjust the two trimmers on top of I.F. coil #6 to maximum output.

OSCILLATOR AND R.F. ADJUSTMENT

1. Set test oscillator and dial scale to 1500 K.C.

2. With test signal still applied to the grid of 1A6 tube, adjust trimmer "A" to maximum output.

3. Apply test signal to antenna lead of chassis thru a .0002 mfd. condenser and with dial scale still set at 1500 K.C. adjust trimmer "B" to maximum output.

4. Check sensitivity and calibration at several points of dial scale.

SPEAKER ADJUSTMENT

The speaker has been carefully adjusted at the factory and should not require any further attention, as this design has been found to be very stable in maintaining its

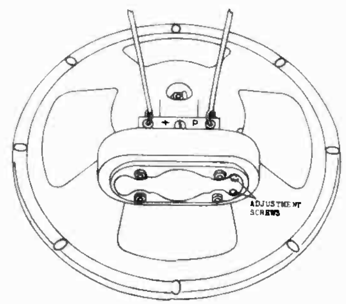


Figure No. 2

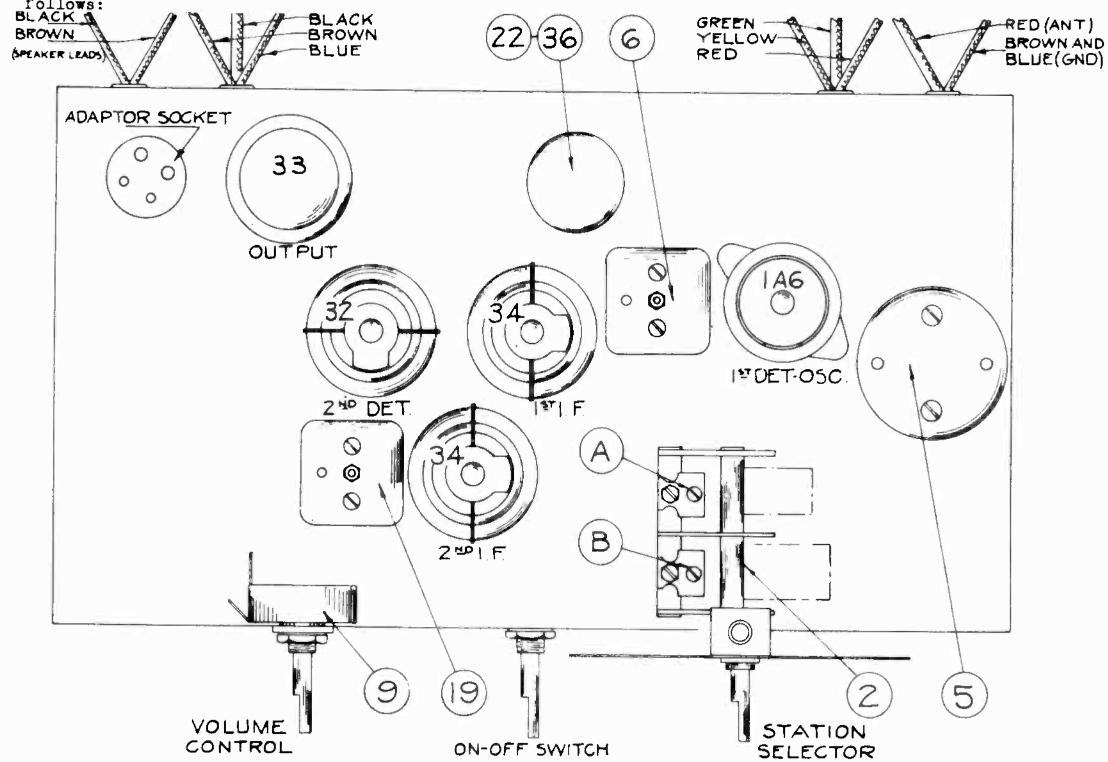
adjustment. However, if for any reason an adjustment is needed, it may be done as follows:

1. With speaker connected to the receiver, tune in a strong signal and advance the volume control until the speaker begins to rattle (armature striking pole pieces).

2. Uncover the two holes shown in Fig. #2 by piercing the paper label.

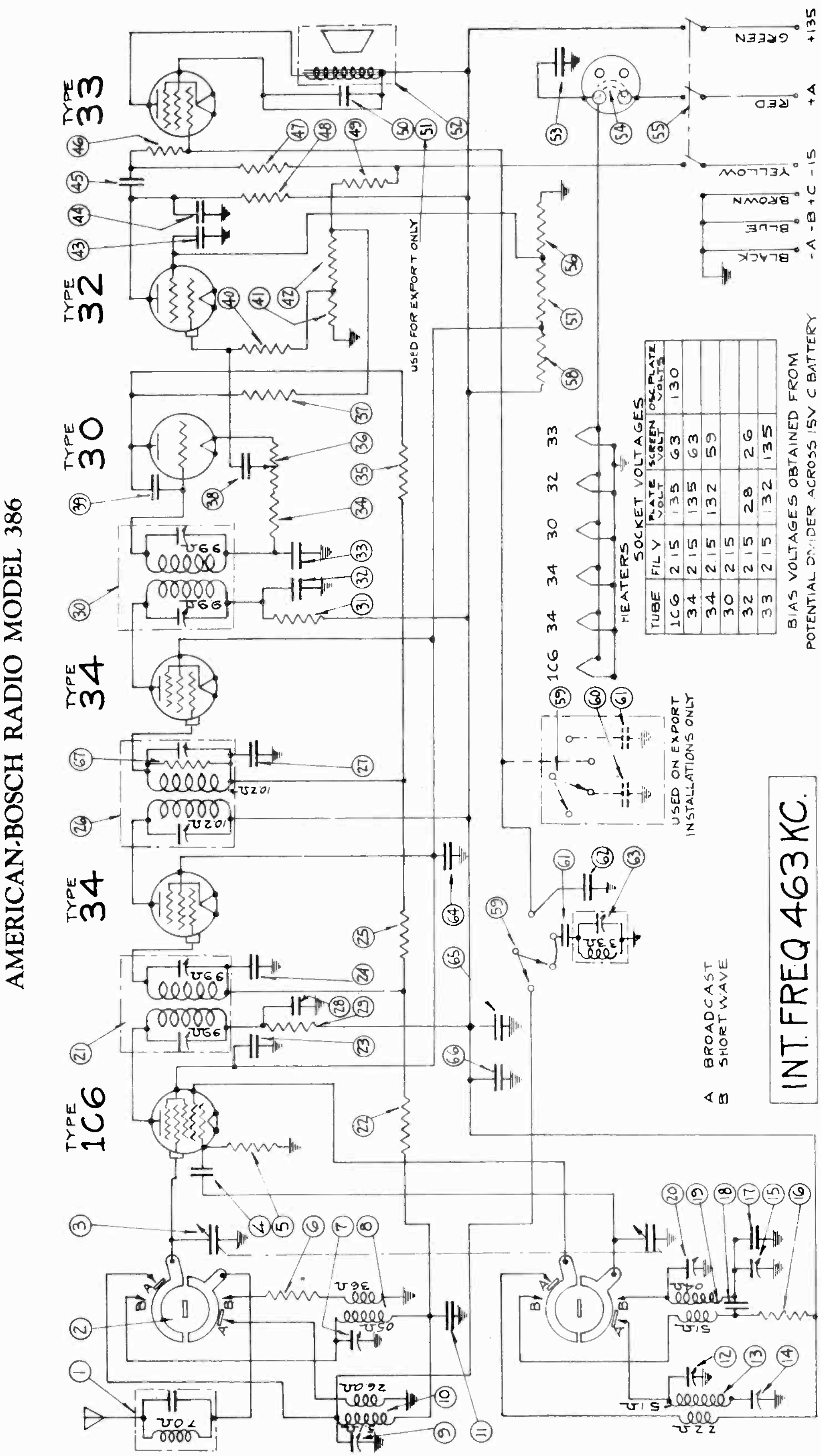
3. This adjustment is of the rocker type and one screw must be loosened and the other tightened to adjust the position of the armature. Adjustment should proceed in quarter turn steps until best position of armature is found. When this condition is obtained, both screws should be tight.

Type and Number of Tubes --1 #1A6, 2 #34, 1 #32, 1 #33 - Total 5
Total "A" Battery Current ---------------------------- .56 Amperes
Maximum "B" Battery Current--------------------------- 29. M. A.
Tuning Range --------------------------------- 540 to 1620 K. C.
Maximum Undistorted Output ---------------------------- .7 Watts
Maximum Output -- .9 Watts
Line-Up Frequencies ---------- 463 K.C., 600 K.C., and 1500 K.C.



MODEL 386
Schematic
Voltage

UNITED AMERICAN BOSCH CORP.



SOCKET VOLTAGES

TUBE	FIL V	PLATE VOLT	SCREEN VOLT	OSC. PLATE VOLTS
1C6	2.15	135	63	130
34	2.15	135	63	
34	2.15	132	59	
30	2.15			
32	2.15	28	26	
33	2.15	132	135	

BIAS VOLTAGES OBTAINED FROM POTENTIAL DIVIDER ACROSS 15V C BATTERY

MODEL 386
Socket, Trimmers
Alignment

UNITED AMERICAN BOSCH CORP.

ADJUSTMENT OF I.F. (463 K.C.)

1. Set volume control on full.
2. Set tone control (center knob) at right hand or bass position.
3. Connect output meter across speaker terminals through a .5 mfd. series condenser.
4. Connect in series with high side of test oscillator leads a .25 mfd. blocking condenser.
5. Set test oscillator at 463 K.C. and adjust its output to produce measureable reading on output meter when test oscillator leads are connected between frame of chassis and grid of 34 second I.F. tube.
6. Adjust trimmers on I.F. coil #30 to maximum output.
7. Connect test oscillator to grid of 34 first I.F. tube and adjust trimmers on I.F. coil #26 to maximum output.
8. Connect test oscillator to grid of 1C6 first detector and adjust trimmers on first I.F. coil #21 to maximum output.
9. With test oscillator still connected to grid of 1C6, readjust trimmers on coils #26 and #30 for greatest sensitivity.

ADJUSTMENT OF BROADCAST BAND

1. With test oscillator on grid of 1C6 tube, set its output to 1500 K.C.
2. With gang condenser in maximum position, adjust dial pointer until either end is directly over the long horizontal lines on the dial scale.
3. Now set dial pointer to 1500 K.C. and adjust #12 (Fig. #4) to maximum output.
4. Connect test oscillator to antenna through a .0002 mfd. condenser and with dial pointer still set at 1500 K.C., adjust #12 and #9 to maximum output.
5. Set dial pointer and test oscillator to 550 K.C. and adjust #14 to maximum output. Reset dial pointer in either direction from the 550 K.C. mark and readjust #14 until greatest sensitivity is obtained.
6. Return to 1500 K.C. setting and readjust #9 and #12 for maximum output. Check sensitivity and calibration across scale.

ADJUSTMENT OF POLICE BAND

1. Set combination tone control-police switch (center knob) on first or left hand position.
2. Leave wave change switch in standard broadcast position.
3. Set test oscillator at 2400 K.C. and tune in signal at approximately 1500 K.C. on dial scale.
4. Adjust trimmer on coil #63 to maximum output.

ADJUSTMENT OF SHORT-WAVE BAND

1. Set tone control to right-hand or bass position and set wave change switch (lower right-hand knob) to left hand position.
2. Set test oscillator and dial pointer to 16 M.C.
3. Connect test oscillator to antenna through a .0002 mfd. condenser and a 400 ohm resistor in series (this condenser-resistor combination is the approximate equivalent of a short-wave antenna).
4. Adjust trimmer #20 until signal is tuned in.
5. Adjust trimmer #7 and station selector alternately until maximum sensitivity is obtained. (This is necessary as the adjustment of #7 affects the oscillator frequency slightly.)
6. Set test oscillator and dial pointer to 6 M.C. and adjust #15 to maximum output.
7. Check sensitivity across scale.

LINE-UP CAPACITOR ADJUSTMENTS

To align the chassis, it is essential to use a high grade modulated oscillator, the output of which can be continuously adjusted to assure freedom from tube overload as individual circuits are brought into alignment.

This model uses an improved type of magnetic speaker, the windings of which are directly in the plate circuit of the output tube. The windings are of high impedance and necessitate care in the use of the output meter when aligning the chassis.

When an output meter of low resistance is connected across the windings of this type of speaker, the power output is materially reduced. For this reason, it is necessary to use an output meter of high sensitivity and a resistance of at least 4000 ohms.

Before attempting to align a receiver, the service man should familiarize himself with the general layout of the chassis, the location of the tubes and various alignment condensers. Top and bottom views of the chassis are shown in Figures #3 and #4, and should be carefully studied before the actual work is started.

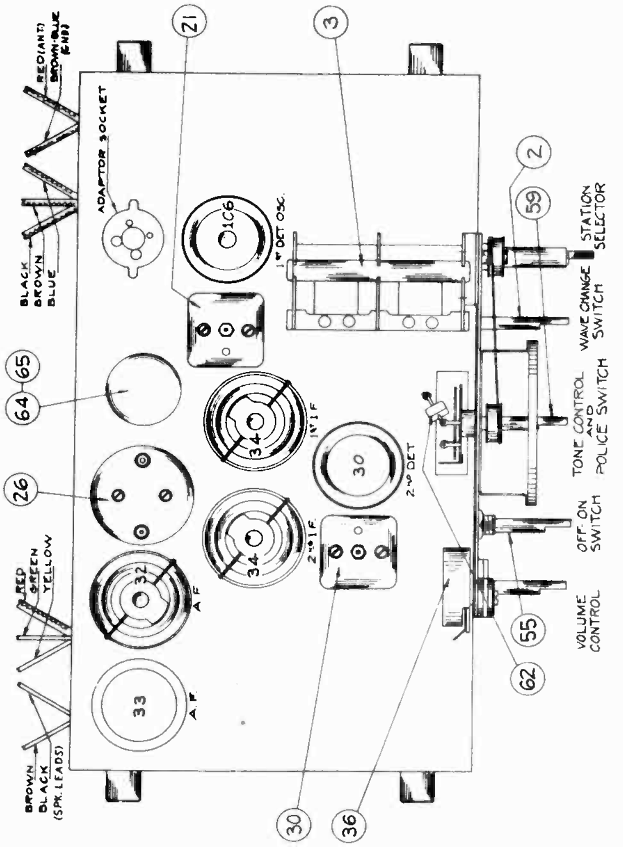
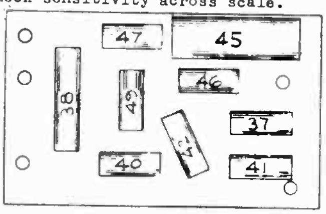
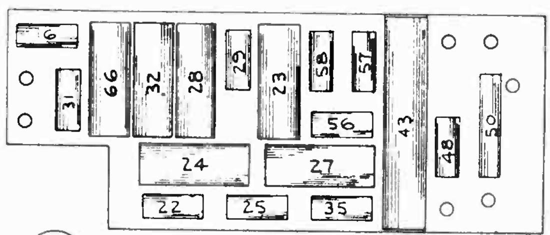


Figure No. 3



71 INSULATION PLATE 15-9548



70 INSULATION PLATE 15-9549

UNITED AMERICAN BOSCH CORP.

LODEL 386
Speaker Data
Trimmers, Parts

Dia. #	Part #	Description of Parts
1	RC 9544	Antenna trap coil assy.
2	SW 9510	Wave switch
3	CG 956	Variable condenser
4	SA 101143	100 mmf. mica condenser
5	SA 105276	50,000 ohms 1/4 W. resistor
6	SA 105255	50 ohms 1/4 W. resistor
7	SA 108080	1.5-10 mmf. condenser
8	RC 9542	S.W. antenna coil
9	CS 9510	1-6 mmf. condenser
10	RC 9540	B.C. antenna coil
11	SA 106386	.05 mfd. 200 V. condenser
12	SA 107503	3-25 mmf. condenser
13	RC 9541	B.C. oscillator coil
14)	SA 108001	300-600 mmf. condenser
15)		750-1500 mmf. condenser
16	SA 105267	1,000 ohms 1/4 W. resistor
17	SA 103775	1,000 mmf. mica condenser
18	SA 106386	.05 mfd. 200 V. condenser
19	RC 9543	S.W. oscillator coil
20	SA 108080	1.5 - 10 mmf. condenser
21	IC 9514	1st I.F. transformer
22	SA 105278	100,000 ohms 1/4 W.resistor
23	SA 106386	.05 mfd. 200 V. condenser
24	SA 106386	.05 mfd. 200 V. condenser
25	SA 105278	100,000 ohms 1/4 W.resistor.
26	IC 9515	2nd I. F. transformer
27	SA 106386	.05 mfd. 200 V. condenser
28	SA 106386	.05 mfd. 200 V. condenser
29	SA 105283	4,000 ohms 1/4 W. resistor
30	IC 9516	Diode transformer
31	SA 105267	1,000 ohms 1/4 W. resistor
32	SA 106386	.05 mfd. 200 V. condenser
33	SA 106417	100 mmf. mica condenser
34	SA 105276	50,000 ohms 1/4 W. resistor
35	SA 105246	0.5 meg. 1/4 W. resistor
36	VR 954	Volume control (500,000 ohms)
37	SA 105281	1 meg. 1/4 W. resistor
38	SA 103659	.005 mmf. 350 V. condenser
39	SA 106417	100 mmf. mica condenser
40	SA 105281	1 meg. 1/4 W. resistor
41	SA 105264	500 ohms 1/4 W. resistor
42	SA 105245	2,000 ohms 1/4 W. resistor
43	SA 102497	.25 mfd. 200 V. condenser
44	SA 106417	100 mmf. mica condenser
45	SA 106386	.05 mfd. 200 V. condenser
46	SA 105246	0.5 meg. 1/4 W. resistor
47	SA 105246	0.5 meg. 1/4 W. resistor
48	SA 105279	250,000 ohms 1/4 W.resistor
49	SA 105249	5,000 ohms 1/4 W. resistor
50	CW 952	.005 mfd. 350 V. condenser
51	SA 105743	.003 mfd. 500 V. condenser
52	SA 106918	Speaker
53	SA 103828	2 mfd. 200 V. condenser
54		Adapter socket jumper
55	SA 106824	Battery switch
56	SA 105275	25,000 ohms 1/4 W. resistor
57	SA 105284	30,000 ohms 1/4 W. resistor
58	SA 105254	15,000 ohms 1/4 W. resistor
59	SW 956	Tone control
60	CM 956	250 mmf. mica condenser
61	CM 954	500 mmf. mica condenser
62	SA 106417	100 mmf. mica condenser
63	RC 9562	Police coil assembly
64)	CE 959	2 mfd. 200 V. condenser
65)		4 mfd. 200 V. condenser
66	SA 106386	.05 mfd. 200 V. condenser
67	RE 9514	350,000 ohms 1/8 W.resistor

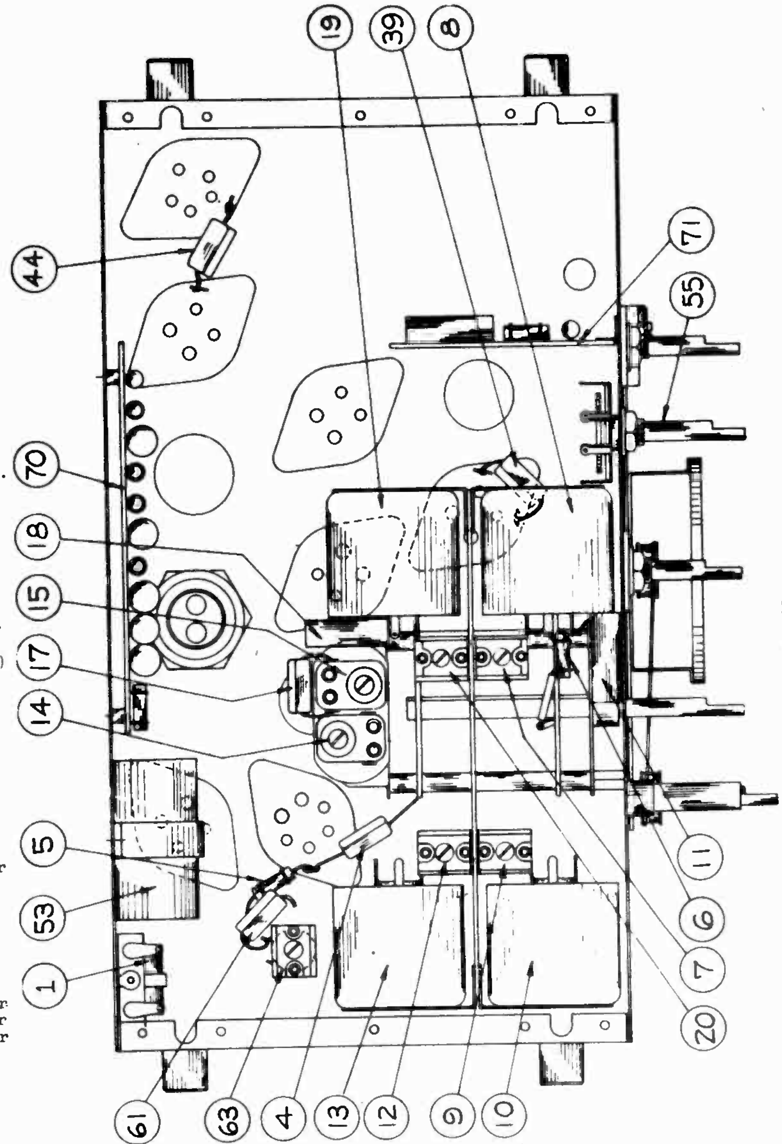


Figure No. 4

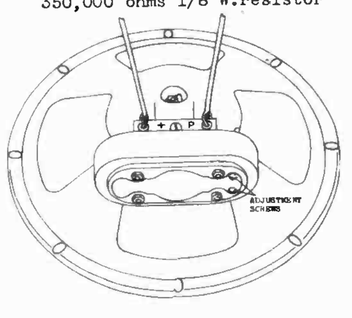


Figure No. 2

SPEAKER ADJUSTMENT

The speaker has been carefully adjusted at the factory and should not require any further attention, as this design has been found to be very stable in maintaining its adjustment. However, if for any reason an adjustment is needed, it may be done as follows:

1. With speaker connected to the receiver, tune in a strong signal and advance the volume control until the speaker begins to rattle (armature striking pole pieces).

2. Uncover the two holes shown in Fig. #2 by piercing the paper label.

3. This adjustment is of the rocker type and one screw must be loosened and the other tightened to adjust the position of the armature. Adjustment should proceed in quarter turn steps until best position of armature is found. When this condition is obtained, both screws should be tight.

ELECTRICAL SPECIFICATIONS

Type and Number of Tubes .... 1 #1C6, 2 #34, 1 #30, 1 #32, 1#33 - Total 6
Total "A" Battery Current .... 620 M.A.
Maximum "B" Battery Current .... 29 M.A.
Tuning Ranges .... 530 to 1720 K.C., 2300 to 2600 K.C., 5800 to 19000 K.C.
Maximum Undistorted Output .... .7 Watts
Maximum Output .... .9 Watts
Line-Up Frequencies .. I.F.463 K.C., 550 K.C., 1500 K.C., 2400 K.C., 6000 K.C., 16000 K.C.

MODEL 04
Schematic
Voltage,Parts

UNITED AMERICAN BOSCH CORP.

AMERICAN-BOSCH RADIO MODEL 04

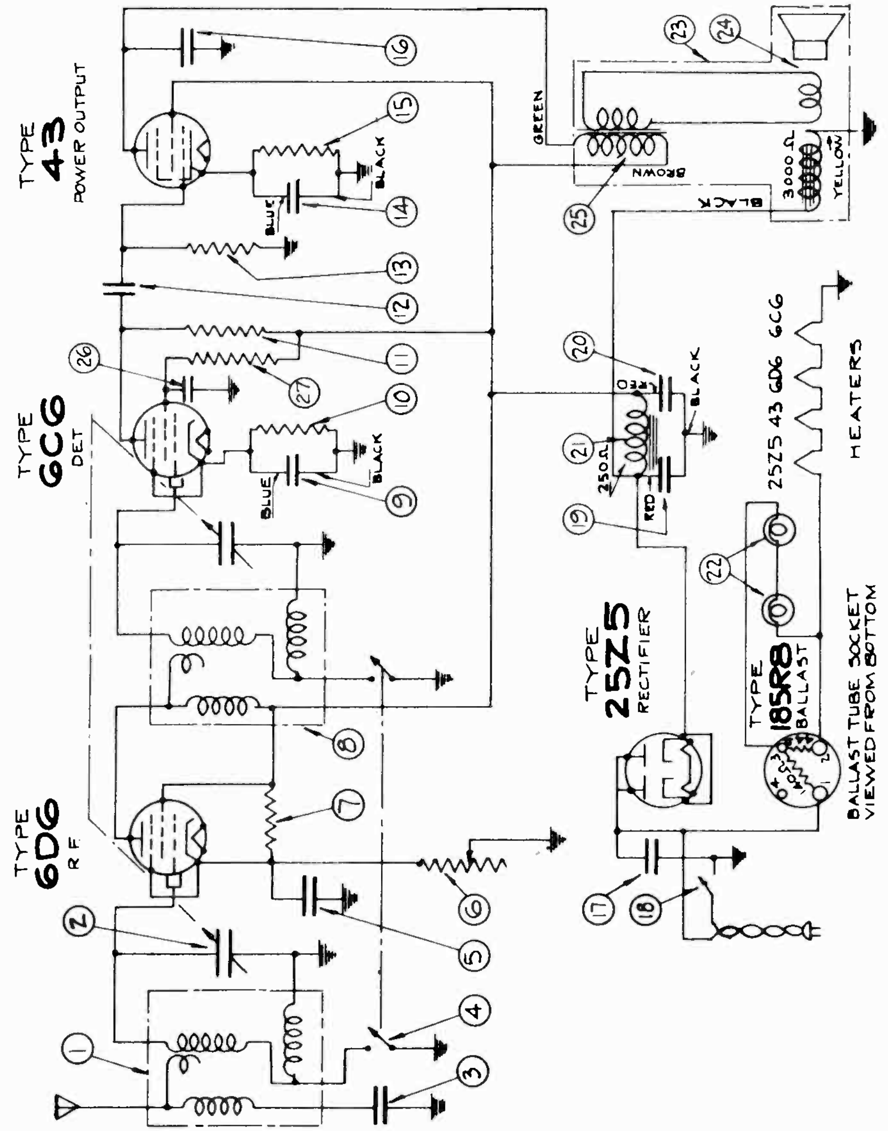
Four-Tube, Two Band, AC-DC, T. R. F. Receiver

1	ANT COIL ASSY	RC 96112
2	VARI COND (2 GANG)	CG 9533
3	COND .01 400V	SA 106277
4	WAVE CHANGE SW	SW 9532
5	COND .1 200V	CW 951 A
6	VOL CONT	VR 9515
7	RES 50,000Ω ½W	SA 100512
8	R F COIL ASSY	RC 95113
9	COND (ELECT) 5MF 35P.V.	PT OF CE 9520
10	RES 25000Ω ¼W	SA 105275
11	RES 500,000Ω ¼W	SA 105246
12	COND .01 400V	SA 106277
13	RES 500,000Ω ¼W	SA 105246
14	COND (ELECT 5MF 35P.V.	PT OF CE 9520
15	RES 600Ω 1W	SA 105004
16	COND .01 400V	SA 06277
17	COND .1 200V	CW 951 A
18	SWITCH (ON-OFF)	PT OF VR 9515
19	COND (ELECT) 12MF 200P.V.	PT OF CE 9520
20	COND (ELECT) 12MF 200P.V.	PT OF CE 9520
21	CHOKE 250Ω	CL 9541
22	LAMPS (2) 6-8V	SA-95572
23	SPEAKER	SK 9516
24	DIAPH'G COIL ASSY	PT OF SK 9516
25	OUTPUT TRANS	PT OF SK 9516
26	COND .1 MF-200V	CW 951 A
27	RES. 500,000Ω ¼W	SA 105246

SOCKET VOLTAGES

TUBE	STAGE	SCREEN	PLATE	CATH □	FIL. △
25Z5	RECTIFIER		117		62
43	POWER OUTPUT	110	100	14	37
6C6	DET	14	50*	1.0	60
6D6	R F	110	110	60	12

ALL VOLTAGES TAKEN TO BASE PLATE.
LINE VOLTAGE = 115V-AC.
* TAKEN WITH 600,000 OHM VOLTMETER.
□ TAKE WITH VOLUME CONTROL FULL ON.
△ FILAMENT VOLTAGES READ TO BASE PLATE.



MODEL 402
Ed.1,2,3
Schematic, Socket
Trimmers

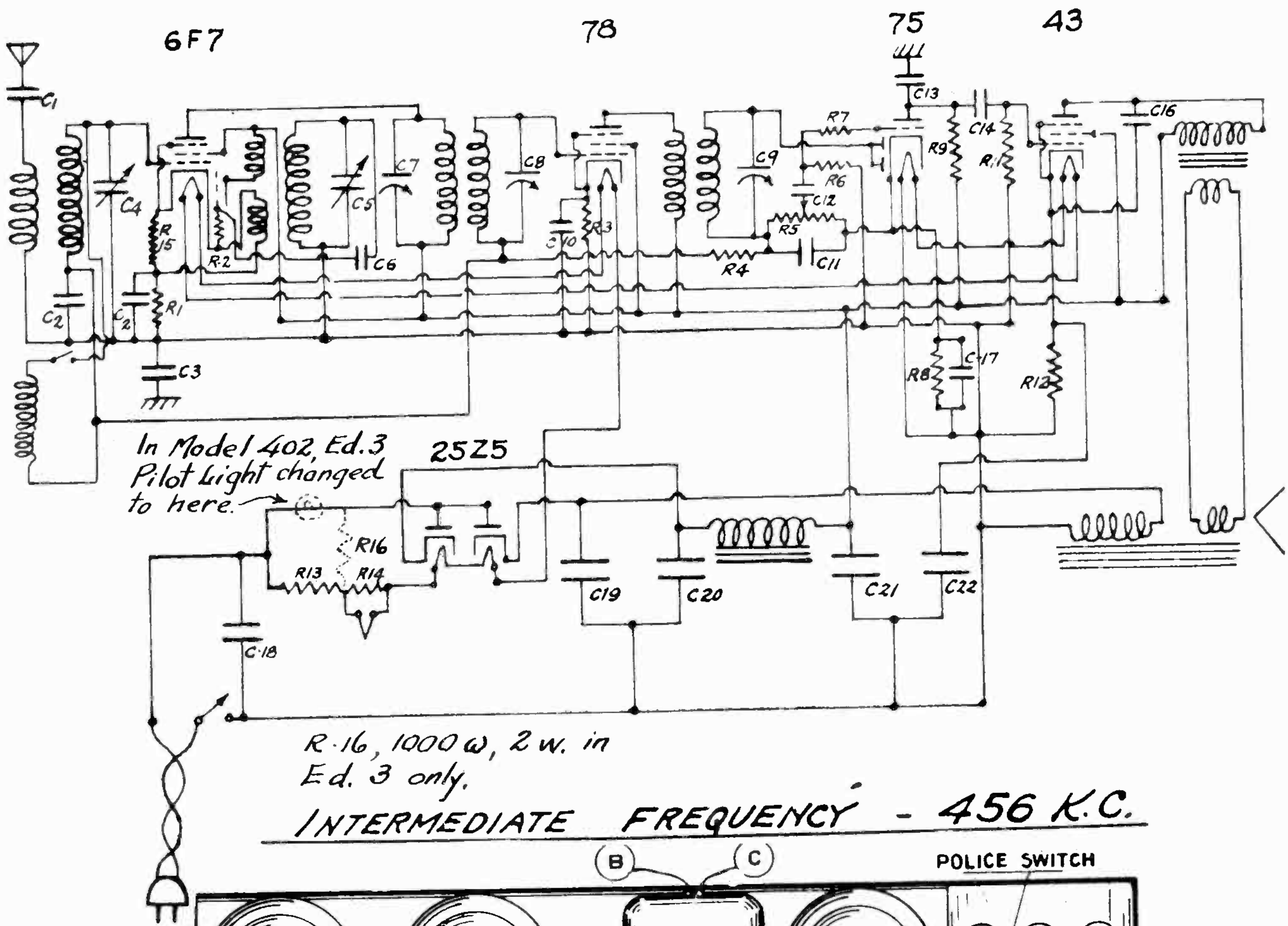
UNITED AMERICAN BOSCH CORP.

SERVICE INSTRUCTIONS

for

AMERICAN-BOSCH MODEL 402 RECEIVER

SCHEMATIC WIRING DIAGRAM



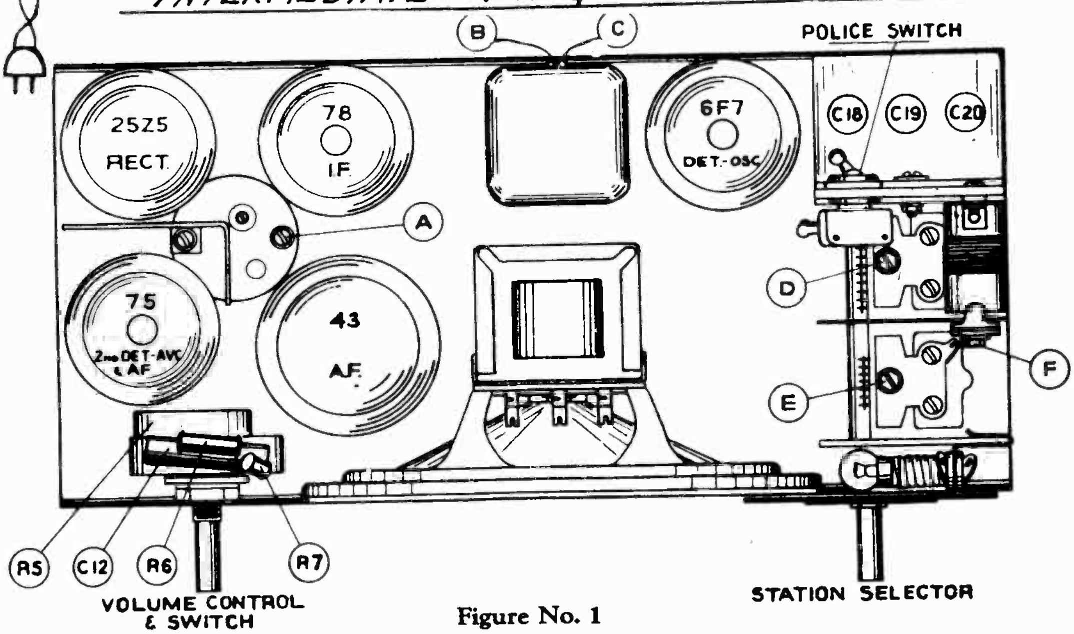


Figure No. 1

MODEL 402
Ed.1,2,3
Alignment,Voltage
Parts, Data

UNITED AMERICAN BOSCH CORP.

SERVICE NOTES

ELECTRICAL SPECIFICATIONS

Type and Number of Tubes	1 #6F7, 1 #78, 1 #75, 1 #43, 1 #25Z5 - Total 5
Power Supply Characteristics	105 to 125 volt, 60 cycle A.C. or D.C.
Power Consumption	45 Watts
Tuning Range	550 to 1750 K.C. and Ed.2 and Ed.3 2400 to 2500 K.C.
Maximum Undistorted Output	1 Watt
Line-Up Frequencies	456 K.C., 1500 K.C., 2400 K.C.

GENERAL DESCRIPTION

The Model 402 is a five tube, A.C. - D.C., superheterodyne receiver whose circuits consist of a combined first detector-oscillator, a stage of intermediate frequency amplification, a combined second detector - automatic volume control and audio amplifier, a power output stage and a rectifier.

Model 402 Ed. 2 varies from Model 402Ed. 1 in that it is equipped with a police band.

Model 402 Ed.3 varies from Model 402 Ed. 2 in that the dial light is connected in the low side of the plate circuit instead of the filiment circuit. This will prevent high voltage on the dial light when the receiver is first turned on, for the dial light will not light until the tubes heat up and start to operate. Should any short occur in the plate circuit the dial light will act as a fuse and burn out thus protecting the rectifier tube.

The Model 402 Ed. 1 is designed to operate on frequencies from 550 to 1750 K.C.

The Models 402 Ed. 2 & 3 are designed to operate on the frequencies from 550 to 1750 K.C. and from 2400 to 2500 K.C.

LINE-UP CAPACITOR ADJUSTMENTS

To align the Model 402 chassis, it is essential to use a high grade modulated oscillator and sensitive output meter. The R.F. signal fed into the receiver must be very weak or it will cause the A.V.C. to function, making correct alignment impossible. The sensitivity of the output meter must be sufficient to give satisfactory reading with a low signal.

Before attempting to align a receiver, the service man should familiarize himself with the general layout of the chassis, the location of the tubes and various alignment condensers. Top and bottom views of the chassis are shown in Figures #1 and #2 and should be carefully studied before the actual work is started.

I. F. ADJUSTMENT 456 K.C.

Note: The signal generator or alignment oscillator should have no external ground connection on the low potential side of its output either to ground or to the power line and the low potential output terminal may be connected to the frame of the receiver. An external ground of the receiver frame will result in a loud hum making alignment impossible.

1. Connect volume indicator across moving coil of speaker (speaker impedance is 4.5 ohms).
2. Set volume control at maximum.
3. Set the test oscillator to 456 K.C. and apply test signal to the grid of the 78 I.F. tube.
4. Adjust second I.F. alignment condenser "A" to maximum output.
5. Apply the test signal to the grid of the 6F7 first detector-oscillator tube.
6. Adjust alignment condensers "B" and "C" to maximum output.

OSCILLATOR AND R.F. ADJUSTMENT

1. Set dial scale to maximum mark beyond the 550 K.C. point with the gang condenser entirely closed.
2. Set the test oscillator and dial scale to 1500 K.C. and apply test signal to the antenna of the receiver.
3. Adjust the oscillator and antenna alignment condensers "D" and "E" to maximum output.
4. Check sensitivity over scale.

POLICE BAND ADJUSTMENT
On Model 402 Ed. 2 and Ed. 3 only

1. Set the test oscillator to 2400 K.C. and turn the switch of receiver to police band.
2. Tune in signal with receiver. (About 1500 K.C.)
3. Adjust alignment condenser "F" for maximum output.

PARTS LIST MODEL 402

R1	2500 - 1/4 watt	105270
R2	100,000 - 1/4 watt	105278
R3	300 - 1/4 watt	105260
R4	500,000 - 1/4 watt	105246
R5	500,000- variable	105308
R6	1 meg. 1/4 watt	105281
R7	100,000 - 1/4 watt	105278
R8	10,000 - 1/4 watt	105272
R9	500,000 - 1/4 watt	105246
R11	500,000 - 1/4 watt	105246
R12	600 - 1/2 watt	101211
R13	130)	
R14	28)	105319
R15	4,000 - 1/4 watt	105283
C1	.005 - 350 V	103659
C2	.05 - dual	105327
C3	.25 - 200 V	102497
C4	Two gang condenser	105728
C5	with trimmers	
C6	.0001 mica	101143
C7)		
C8)	Mica I.F. trimmers	105721
C9	Mica I.F. trimmers	105318
C10	.05 - 200 V	102493
C11	.0001 mica	101143
C12	.005 - 350 V	103659
C13	.0001 mica	101143
C14	.005 - 350 V	103659
C16	.01 - 500 V	103695
C17	.25 - 200 V	102497
C18	.01 - 500 V	103695
C19	4 M.F. 150 V)	
C20	12 M.F. 150 V)	
C21	8 M.F. 150 V)	105722
C22	5 M.F. 25 V)	

COILS AND TRANSFORMERS

SA 105725	Antenna coil assembly
SA 105318	2nd I.F. coil assembly
SA 105721	I.F. detector and oscillator coil assembly
SA 105724	choke coil assembly
SA 107952	Speaker output transformer
SA 107954	Speaker field coil

MAIN ASSEMBLIES

SA 105729	Chassis assembly
RK 107474	Cabinet
SA 105726	Speaker

MODEL 402 Ed. 2

Service parts for Model 402 Ed.2 are the same as for Model 402 except for the following parts:

MAIN ASSEMBLY

SA 108002 Chassis assembly

MISCELLANEOUS

SA 108049	Dial scale assembly
SA 107972	Switch for police band
SA 107963	Coil for police band

VOLTAGE READINGS

Note: Since no circuits are directly connected to the metal chassis as in the usual A.C. radio sets, it is necessary to measure voltages to the negative side of the circuit designated as "A" on the wiring diagram. A high resistance voltmeter must be used or readings will be inaccurate.

The following voltage readings were taken with the receiver supplied by 115 volts 60 cycle alternating current. Voltage readings will be slightly lower when D.C. is used and will vary with the type of meter used.

I. - A.C. MEASUREMENT

Stage	Tube	Filament	Plate	Screen	Cathode
1st Detector	6F7	6.0	115	115	12
Oscillator			115		
I. F.	78	6.0	115	115	2.8
2nd Detector Amplifier	75	5.9	30	-	0.7
Power	43	22	115	115	17
Rectifier	25Z5	25	125	-	-

Line Voltage	115	Dynamic Field	108 Volts
Power in Watts	47	Filter Choke Drop	6.8 Volts
Dial Lamp Volts	6.0		
Resistor Strip Volts	47		

II. - D.C. MEASUREMENT

Stage	Tube	Filament	Plate	Screen	Cathode
1st Detector	6F7	6.2	102	102	8.7
Oscillator			102		
I. F.	78	5.9	102	102	2.5
2nd Detector Amplifier	75	5.8	27	-	0.6
Power	43	24	102	102	13
Rectifier	25Z5	27	110	-	-

Line Volts	115	Resistance Strip Volts	47
Dial Lamp Volts	6	Dynamic Field Volts	115

MODEL 402 Ed. 3

Service parts for Model 402 Ed.3 are the same as for Model 402 except for the following parts:

Dia. #	Part #	Description
R 16	RE 956	1000 ohm 2 W. resistor
C 19)		4 mfd. 150 V. electr.cond.
C 20)	CE 957	12 mfd.150 V. electr.cond.
C 21)		8 mfd. 150 V. electr.cond.
C 22	CE 958	5 mfd. 25 V. electr. cond.

MAIN ASSEMBLY

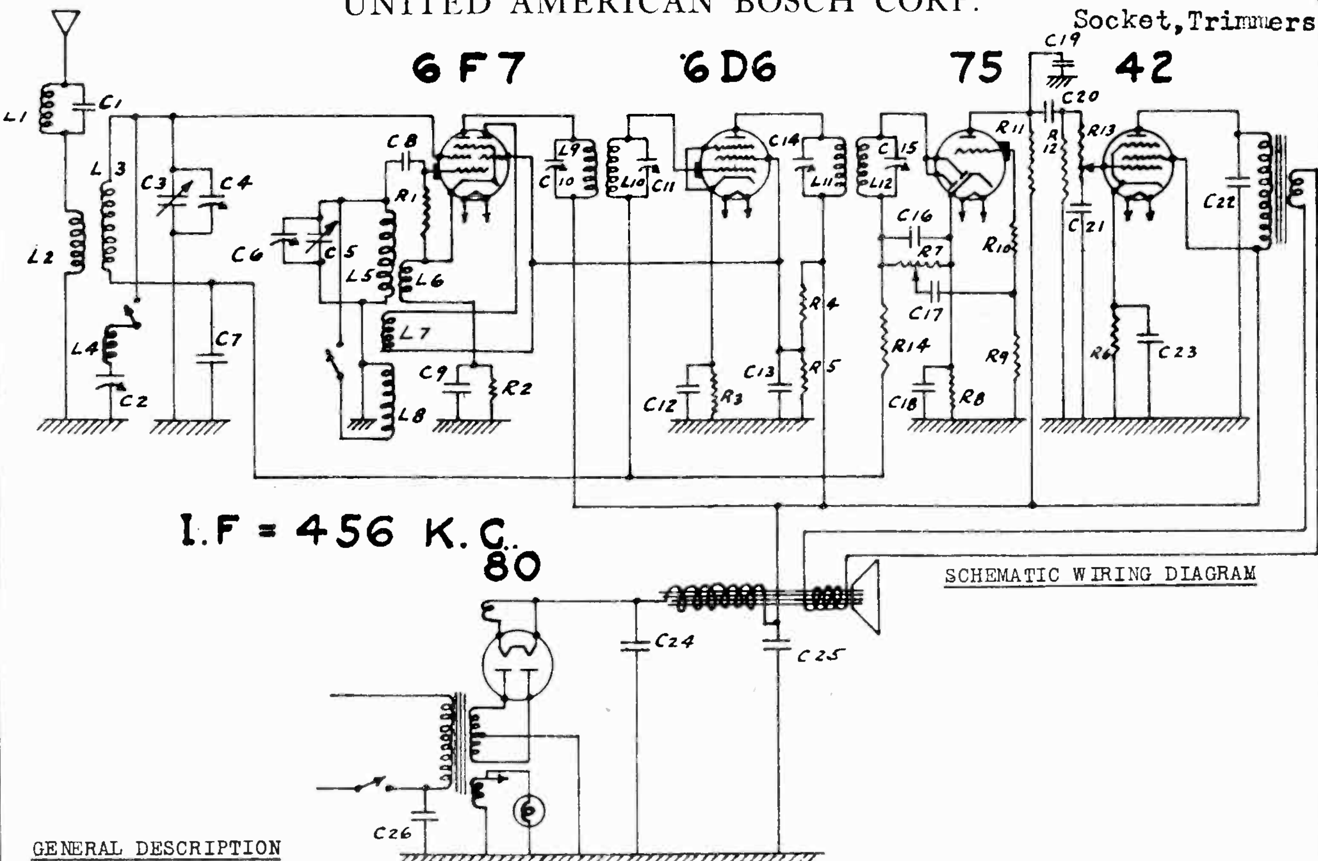
CH 9522 Chassis assembly

MISCELLANEOUS

SA 108049	Dial scale assembly
SA 95572	Dial lamp
SA 107972	Switch for police band
SA 107963	Coil for police band

MODELS 420,421
Schematic,Parts
Socket,Trimmers

UNITED AMERICAN BOSCH CORP.



SCHEMATIC WIRING DIAGRAM

GENERAL DESCRIPTION

The American-Bosch Model 420 is a five-tube dual wave superheterodyne receiver. This model is for 110 volt 60 cycle operation and the Model 421 is for 110 volt 25 cycle operation.

The tuning range of this receiver is from 540 to 1,600 kilocycles as indicated on the lower portion of the dial scale, and from 1600 to 3600 kilocycles as indicated on the upper portion of the scale.

ELECTRICAL VALUES

R1	100,000 - 1/4 W	105278
R2	3,000 - 1/4 W	105271
R3	500 - 1/4 W	105264
R4	12,000)	
R5	13,000)	107291
R6	600)	
R7	500,000 variable	107253
R8	2,000 - 1/4 W	105245
R9	1 meg. 1/4 W	105281
R10	100,000 - 1/4 W	105278
R11	100,000 - 1/4 W	105278
R12	1/4 meg - 1/4 W	105279
R13	1/4 meg - tone cont.	107251
R14	1/2 meg - 1/4 W	105246
C1	.0005 mf. mica- part of	107434
C2	295-525 mmf	107289
C3	Variable gang)	
C4	condenser)	107445
C5	with)	
C6	trimmers)	
C7	.05 mf - 200 V	106386
C8	.0001 mf mica	101143
C9	.05 mf 200 V	106386
C10	Part of	107415
C11	Part of	107415
C12	.05 mf 200 V	106386
C13	.05 mf 200 V	106386
C14	Part of	107416
C15	Part of	107416
C16	.0001 mf. mica	106417
C17	.005 mf 350 V	103659
C18	.5 mf 200 V	102499
C19	.002 mf. 500 V	103852
C20	.005 mf. 350 V	103659
C21	.001 mf 500 V	106403
C22	.01 mf 350 V	102500
C23	10 mfd. 25 V)	
C24	8 mfd. 475 V)	107288
C25	8 mfd. 450 V)	
C26	.01 mf 500 V	107615
L1	Wave trap	107434
L2	Antenna)	
L3	Coil)	107414
L4	assembly)	
L5	Oscillator)	
L6	coil)	107413
L7	assembly)	
L8	)	
L9	1st I. F.)	107415
L10	assembly)	
L11	2nd I.F.)	107416
L12	assembly)	

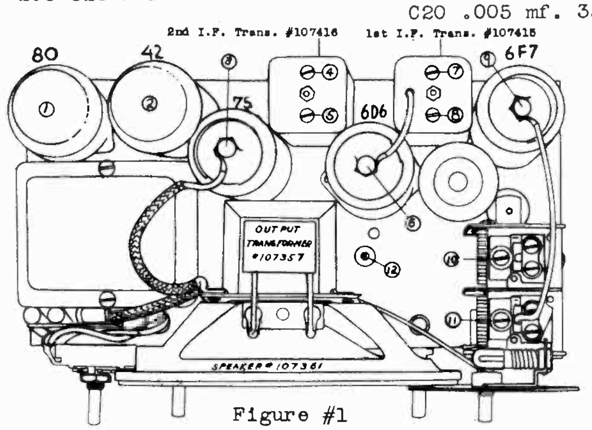


Figure #1

NOMENCLATURE

#1 Rectifier tube
#2 Power Pentode output tube
#3 Second det., A.V.C. and A.F. tube
#4 I.F. trimmer condenser
#5 I.F. trimmer condenser
#6 I.F. tube
#7 I.F. trimmer condenser
#8 I.F. trimmer condenser
#9 Detector oscillator tube
#10 Oscillator trimmer condenser
#11 Antenna trimmer condenser
#12 Police Band Lag. condenser

MODELS 420,421
Trimmers,Voltage
Alignment,Parts

UNITED AMERICAN BOSCH CORP.

ALIGNING

To align the 420 chassis, it is essential to use a high grade modulated oscillator and sensitive output meter. The R. F. signal fed into the receiver must be very weak or it will cause the A.V.C. to function, making correct alignment impossible. The sensitivity of the output meter must be sufficient to give satisfactory reading with a low signal.

Before attempting to align a receiver, the service man should familiarize himself with the general layout of the chassis, the location of the tubes and various alignment condensers. A top view of the chassis is shown in Fig. #1 and should be carefully studied before the actual work is started.

ALIGNING THE I. F. (456 KC)

1. Set volume control on full.
2. Tone control should be on bass position.
3. Short circuit antenna and ground leads to prevent local stations from interfering with subsequent alignment operations.
4. Connect output meter across voice coil of loud speaker (speaker impedence is 3.5 ohms).
5. Set test oscillator to 456 KC and adjust its output to produce measurable reading on output meter when test oscillator is connected between frame of the chassis and the grid of 6D6 I.F. tube #6.
6. Adjust #4 and #5 to maximum output, reducing signal oscillator output as stage is brought into resonance.
7. Connect test oscillator to grid of 6F7 (#9) and adjust #7 and #8 to maximum output.

ALIGNING B.C. OSC. AND R.F.

1. Set wave change switch to broadcast position.
2. Connect test oscillator to grid of first detector tube 6F7 (#9) and adjust test oscillator to 1500 K. C.
3. Set dial scale to maximum mark beyond 540 KC calibration point when gang is entirely closed.
4. Set scale at 1500 KC and adjust #10 to maximum output.
5. Connect test oscillator to antenna through .0002 mfd. condenser and with scale still set at 1500 KC adjust condensers #10 and 11 to maximum output.
6. Check sensitivity across band.

ALIGNING S. W. OSCILLATOR

1. Set wave change switch to short wave position.
2. Set test oscillator to 1700 KC and adjust #12 and tuning control to a "max-max" as follows:

   Tune receiver with left hand by means of tuning knob and adjust #12 in either direction and then without changing it, tune the receiver through a maximum, noting the value of output meter reading. Change #12 further in same direction, retune receiver and note reading. If output drops with second adjustment, reverse direction of the adjustment of #12, continue this type of trial and error adjustment until no further improvement can be made when either tuning control or #12 are changed. While this procedure may appear difficult, facility can be easily acquired by practice and the operation requires only a few moments.

3. Check sensitivity across band.

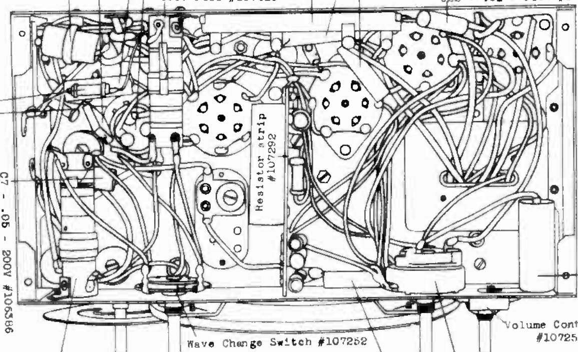


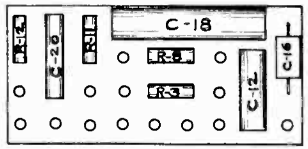
Figure #2

SOCKET VOLTAGES

Tube	Stage	Fil.	Plate	Screen	Cathode
80	Rectifier	4.9	377		
42	Power output	6.2	253	268	19.4
75	2nd det. AVC. & A.F.	6.2	145		1.28
6D6	I. F.	6.2	268	110	4.8
6F7	1st det.	6.2	265	108	12.3
	Oscillator		108		

Line voltage = 111

RESISTOR STRIP



SERVICE PARTS LIST

Model 420 (110 Volt - 60 Cycle AC)
Model 421 (110 Volt - 25 Cycle AC)

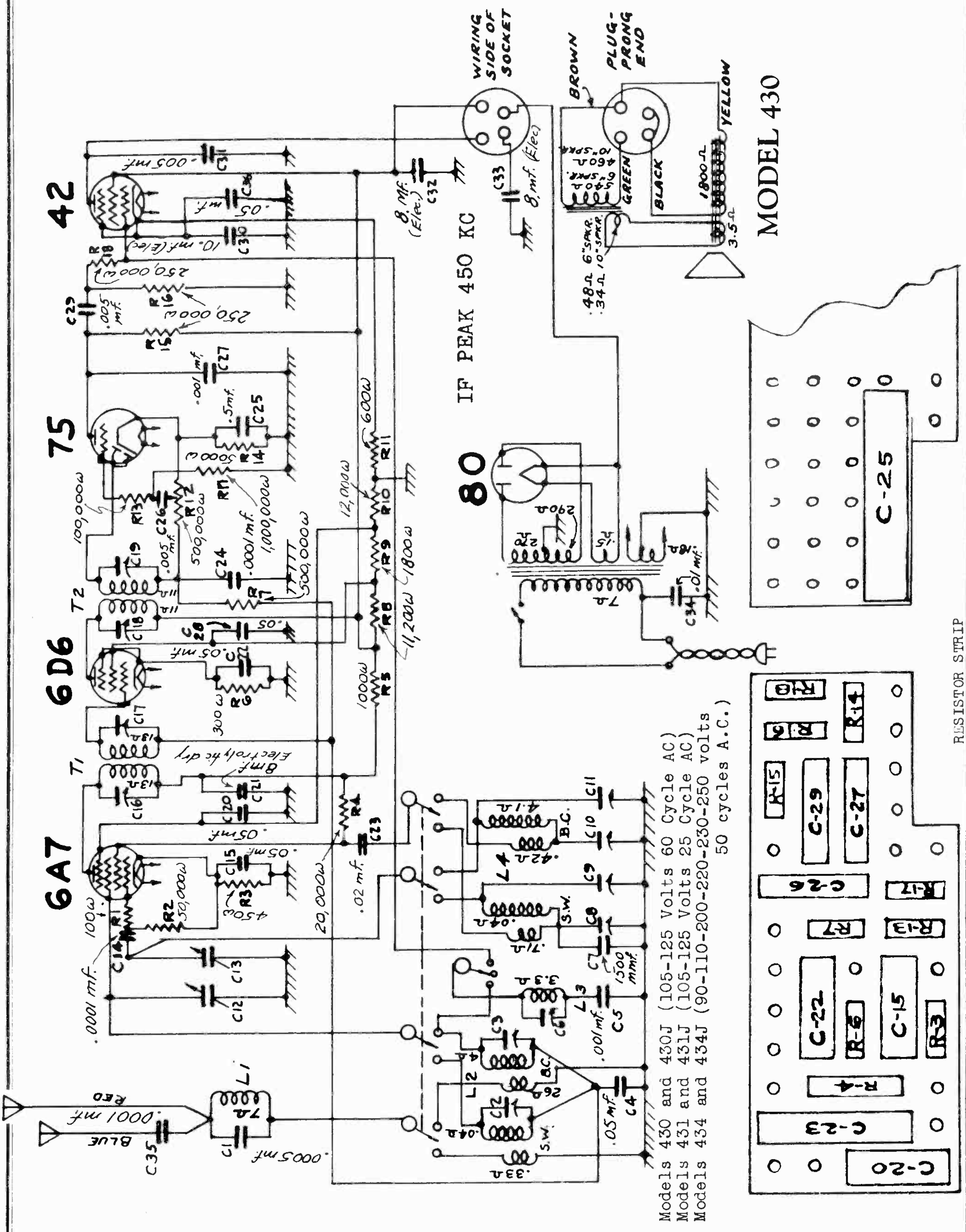
Part No.	Description of Parts
	MAIN ASSEMBLIES
107420	Chassis - Model 420
107711	Chassis - Model 421
107361	Speaker
107375	Cabinet
	BRACKETS, CLIPS AND CLAMPS
107166	Bracket - speaker
	COILS
107414	Antenna coil assembly
107413	Oscillator coil assembly
107415	1st I.F. coil assembly
107416	2nd I.F. coil assembly
107434	Antenna trap coil assembly
	CONDENSERS
107445	Variable condenser assembly, complete
107289	Trimmer condenser assembly
105931	Buffer condenser
107162	Variable condenser only
107288	Electrolytic condenser
103659	Condenser .005 - 350 V
106386	Condenser .05 - 200 V
102499	Condenser .05 - 200 V
106417	Condenser .0001 mica
103852	Condenser .002- 500 V
102500	Condenser .01 - 350 V
106403	Condenser .001 - 500 V
101143	Condenser .0001 mica
	TUBES
6F7	Oscillator first detector
6D6	Intermediate frequency amplifier
75	2nd detector, A.V.C., 1st audio amplifier
42	Power pentode
80	Rectifier
	TUBE SOCKETS & TUBE SHIELDS
104615	Tube socket - 4 prong
104617	Tube socket - 6 prong
103513	Tube socket - 6 prong
105624	Tube socket - 7 prong
103257	Tube shield
	NUTS
105795	Nut - power transformer
103039	Nut - volume, tone, switch
58226	Nut - I.F. Coils, dial lamp bracket
	SCREWS
106283	Fastening screw - dial lamp bracket
101700	Fastening screw - #6 Parker Kalon
104387	Fastening screw - coils, resistor strip
53052	Fastening screw - speaker bracket
97704	Fastening screw - trimmer condenser
102441	Set screw - dial assembly
101865	Fastening screw - variable condenser
95225	Fastening screw - insulation assembly
105642	Fastening screw - speaker
107347	Fastening screw - dial and name plate

Part No.	Description of Parts
	RESISTORS
107292	Resistor strip assembly
107293	Resistor strip assembly
105264	Resistor 500 ohms
105245	Resistor 2,000 ohms
105278	Resistor 100,000 ohms
105279	Resistor 250,000 ohms
105246	Resistor 500,000 ohms
105281	Resistor 1 meg.
105271	Resistor 3,000 ohms
	CABLES AND CABLE ASSEMBLIES
106405	Variable condenser ground cable
104445	Ground cable assembly
107448	Line cable assembly
105952	Antenna cable assembly
	TRANSFORMER
107242	Power transformer - Model 420
107765	Power transformer - Model 421
	MISCELLANEOUS
107291	Muter resistance
107290	Dial scale assembly
107955	Shaft & pinion assembly- var. cond.
107253	Volume control
107251	Tone control
107252	Switch assembly
106349	Dial lamp bracket assembly
106809	Dial lamp
106055	Grid lead assembly (shielded)
104249	Insulation assembly
101856	Insulation assembly
106338	Insulation - coil can
107346	Dial plate
107345	Name plate
101869	Felt foot
107389	Knob
107751	Reinforcement for power trans.-Mdl 421
	WASHERS, BUSHINGS & SPACERS
79304	Plain washer - dial lamp bracket
80589	Lock washer - volume, tone, switch
53544	Lock washer #6
108	Lock washer #8 - power transformer
100377	Spacer - insulation assembly
103996	Washer - tube shield
95702	Washer - variable condenser
105144	Rubber bushing - variable condenser
105145	Rubber washer - variable condenser
108003	Felt washer - under knobs
	SPEAKER PARTS (107361)
106617	Diaphragm and voice coil assembly
95226	Centralizer screw plain washer
107357	Speaker output transformer
99005	Centralizer screw
106498	Diaphragm housing
106496	Steel plate
107358	Speaker field coil
107359	Core and frame assembly
106495	Speaker transformer bracket
101856	Insulation plate assembly
106677	Fastening screw - housing to frame
74084	Fastening screw lock washer
107273	Copper washer assembly

MODELS 430,430J,430T
431,431J,431T
434,434J,434T

UNITED AMERICAN BOSCH CORP

Schematic,Resistors



MODELS 430,430J,430T
431,431J,431T
434,434J,434T

UNITED AMERICAN BOSCH CORP.

Trimmers,Socket,Parts
Aligment

CIRCUIT DESCRIPTION

The American-Bosch Model 430 is a five tube, three band superheterodyne receiver. The tuning range of this receiver covers a broadcast band extending from 540 to 1750 kilo-cycles, which includes one band of police frequencies, a higher frequency police band of 2400 to 2600 k.c. and a short wave broadcast band extending from 5900 to 18,200 kilo-cycles.

The circuit consists of a combined detector oscillator (type 6A7); an intermediate frequency amplifier (type 6D6) including four tuned I. F. circuits of the "High Q" type; a combined second detector, A.V.C. and audio stage (type 75) and a power output pentode (type 42).

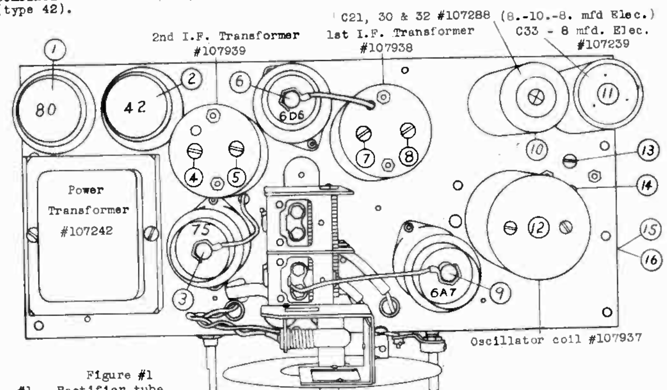


Figure #1

#1 - Rectifier tube
#2 - Power output tube
#3 - 2nd detector A.V.C. and A.P. tube
#4 - 2nd I.F. trimmers
#5 - 2nd I.F. trimmers
#6 - I.F. tube
#7 - 1st I.F. trimmers
#8 - 1st I.F. trimmers
#9 - 1st detector tube
#10- Dry electrolytic condenser
#11- Wet electrolytic condenser
#12- Oscillator coil assembly
#13- B.B. oscillator trimmer
#14- S.W. oscillator trimmer
#15- B.B. oscillator lag. (top)
#16- S.W. oscillator lag. (bottom)
#17- B.B. antenna trimmer (Fig. #2)
#18- S.W. antenna trimmer (Fig. #2)
#19- P.B. trimmer (Fig. #2)

ALIGNING POLICE BAND

1. Set combination tone control - police band - switch (lower center knob) on first or left hand position.

2. Leave wave change switch in standard broadcast position.

3. Set dial scale at 1500 K.C. (this is reception point for 2400 K.C. on range marked "police switch").

4. Set test oscillator to 2400 K.C. and tune in signal with station selector.

5. Adjust trimmer condenser #19 to maximum output. (Continued on page 104d.)

ALIGNING S.W. OSCILLATOR AND R.F.

1. Set wave change switch to short wave or lower dial scale position.

2. Connect test oscillator to antenna through .0002 mf. and 400 ohms resistor in series (this condenser and resistor is the approximate equivalent of a short wave antenna).

3. Set test oscillator and dial scale to 16 M.C. (16000 K.C.) and adjust trimmers #14 and #18 to obtain reading on output meter.

4. Simultaneously adjust station selector and #18 in the same manner as described under operation #6 of B.C. Alignment (this is necessary because sufficient coupling exists in the 6A7 tube to cause a serious shift in the frequency of the oscillator as #18 is adjusted).

5. Set test oscillator and dial scale to 6 M.C. (6000 K.C.) and adjust "max-max" #16.

6. Repeat operation #4 as operation #5 may have disturbed oscillator adjustment.

7. Check sensitivity across band.

ALIGNING INSTRUCTIONS

To align the Model 430 chassis, it is essential to use a high grade modulated test oscillator and a sensitive output meter. The R. F. signal fed into the receiver must be relatively weak or it will cause the A.V.C. to function, making correct alignment impossible. The sensitivity of the output meter must be sufficient to give satisfactory reading with a low signal.

Before attempting to align a receiver, the service man should familiarize himself with the general layout of the chassis, the location of the tubes and various alignment condensers. Top and bottom views of the chassis are shown in Figures #1 and #2 and should be carefully studied before the actual work is started.

ALIGNING THE I.F. 450 K.C.

1. Set volume control on full.

2. Set tone control (lower center knob) at center position or treble.

3. Connect output meter across voice coil of loud speaker (speaker impedance is 3.5 ohms).

4. Connect in series with high side of the test oscillator output leads a blocking condenser of at least .25 mfd. Set test oscillator to 450 kilocycles and adjust its output to produce a measurable reading on output meter when test oscillator is connected between frame of chassis and grid of 6D6 I.F. amplifier tube #6.

5. Adjust #4 and #5 to maximum output, reducing test oscillator output as stage is brought into resonance.

6. Connect test oscillator to grid of 6A7, 1st detector (#9) and adjust #7 and #8 to maximum output.

ALIGNING B.C. OSCILLATOR AND R.F.

1. Set wave change switch to broadcast scale position.

2. Set test oscillator to 1500 K.C. and connect to grid of 1st detector tube 6A7 (#9).

3. Set dial scale to maximum mark beyond 540 K. C. calibration point when the gang is entirely closed.

4. Set dial scale at 1500 K.C. and adjust #13 to maximum output.

5. Connect test oscillator to antenna through a .0002 mfd. condenser and with scale still set at 1500 K.C. adjust condensers #13 and #17 to maximum output.

6. Set scale and test oscillator to 550 K. C. and adjust #15 simultaneously changing this adjustment and the station selector of the chassis for maximum output. This type of adjustment is known as "max-max" and is obtained in the following manner:

Tune receiver with left hand by means of tuning knob and adjust #15 in either direction and then without changing it, tune the receiver through a maximum, noting the value of output meter reading. Change #15 further in same direction, retune receiver and note reading. If output drops with second adjustment, reverse direction of the adjustment of #15, continue this type of trial and error adjustment until no further improvement can be made when either tuning control or #15 are changed. While this procedure may appear difficult, facility can be easily acquired by practice and the operation requires only a few moments.

7. With test oscillator and scale set at 1500 K.C. readjust #13 and #17 since previous operations may have altered oscillator trimmer setting.

8. Check sensitivity across band.

Description of Parts

CONDENSERS

Part No.	Dia.#	
	C1	.0005 mf. (part of 107434)
107995	C2	Trimmer condenser
108080	C3	Trimmer condenser
106386	C4	.05 mf - 2 ply - 200 V.
106403	C5	.001 mf - 4 ply - 500 V.
107995	C6	10-55 mmf
107422	C7	1500 mmf - mica
	C8	1100-2000 mmf (part of 108001)
107237	C9	Trimmer condenser
	C10	300-600 mmf (part of 108001)
107237	C11	Trimmer condenser
107921	C12)	Variable condenser gang
107921	C13)	
106417	C14	.0001 mf - mica
106386	C15	.05 mf - 2 ply - 200 V.
	C16)	Part of 107938
	C17)	
	C18)	Part of 107937
	C19)	
106386	C20	.05 mf - 2 ply - 200 V.
	C21	8 mf elec. dry (part of 107288)
106386	C22	.05 mf - 2 ply - 200 V.
102504	C23	.02 mf - 3 ply - 350 V.
106417	C24	.0001 mf - mica
102499	C25	.5 mf - 2 ply - 200 V.
103659	C26	.005 mf - 3 ply - 350 V.
106403	C27	.001 mf - 4 ply - 500 V.
102493	C28	.05 mf - 2 ply - 200 V.
103659	C29	.005 mf - 3 ply - 350 V.
	C30	10 mf - elec. (part of 107288)
103659	C31	.005 mf - 3 ply - 350 V.
	C32	8 mf elec. dry (part of 107288)
107239	C33	8 mf elec. wet
107615	C34	.01 mf - 4 ply - 500 V.
106417	C35	.0001 mf - mica
106386	C36	.05 - 2 ply - 200 V.

RESISTORS

Part No.	Dia.#	
107614	R1	100 ohms 1/4 watt
105276	R2	50000 ohms 1/4 watt
105262	R3	450 ohms 1/4 watt
100813	R4	20000 ohms 1/2 watt
105267	R5	1000 ohms 1/4 watt
105260	R6	300 ohms 1/4 watt
105246	R7	.5 meg. 1/4 watt
107916	(R8	11200 ohms
	(R9	1800 ohms
	(R10	12000 ohms
	(R11	600 ohms
107951	R12	.5 meg. volume control
105278	R13	.1 meg. 1/4 watt
105249	R14	5000 ohms 1/4 watt
105279	R15	.25 meg. 1/4 watt
105279	R16	.25 meg. 1/4 watt
105281	R17	1 meg. 1/4 watt
105279	R18	.25 meg. 1/4 watt

COILS

107434	L1	Trap coil assembly
107936	L2	Antenna coil assembly
107963	L3	Police coil assembly
107937	L4	Oscillator coil assembly
107938	T1	1st I. F. coil assembly
107939	T2	2nd I. F. coil assembly

MAIN ASSEMBLIES

CH 952	Chassis assembly - Models 431T, 431J
108030	Chassis assembly - Models 430T, 430J
108024	Speaker - Models 430T, 431T, 434T
107369	Speaker - Models 430J, 431J, 434J
108022	Cabinet - Models 430T, 431T, 434T
108033	Cabinet - Models 430J, 431J, 434J
CH 953	Chassis assembly - Models 434T, 434J

TRANSFORMERS

107242	Power transformer assembly - 430T, 430J
107765	Power transformer - 431T, 431J
107912	Power transformer - 434T, 434J

CABLE AND CABLE ASSEMBLIES

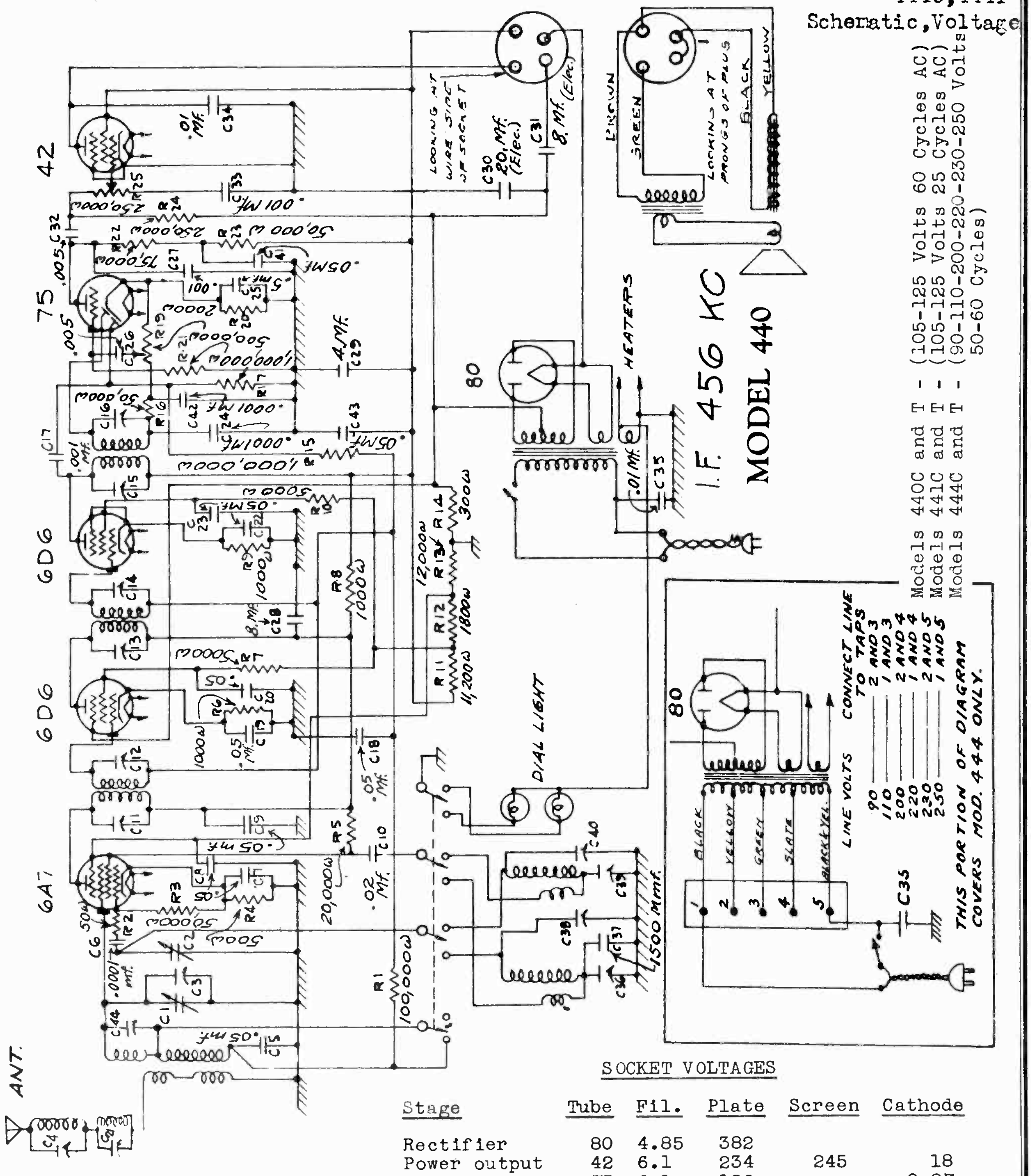
101711	Line cable assembly
105952	Antenna cable assembly (Red)
104445	Ground cable assembly
107768	Antenna cable assembly (Blue)

SPEAKER (108024) PARTS- Models 430T, 431T, 434T

SPEAKER (107369) PARTS- Models 430J, 431J, 434J

MODELS 440C,440T
441C,441T
444C,444T
Scheratic,Voltages

UNITED AMERICAN BOSCH CORP.



SOCKET VOLTAGES

Stage	Tube	Fil.	Plate	Screen	Cathode
Rectifier	80	4.85	382		
Power output	42	6.1	234	245	18
2nd Detector	75	6.1	126		0.87
1st I.F.	6D6	6.1	245	99	5.6
2nd I.F.	6D6	6.1	245	96	5.6
Oscillator	6A7	6.1	236-136	87	4.7

Note: These values are readings of a high resistance voltmeter from each socket terminal to ground, with the exception of the filament voltages. The values are only approximate and will vary with the line voltage and the type of meter employed. Line voltage = 112.

MODELS 440C,440T
441C,441T
444C,444T
Socket,Trimmers
Parts,Alignment

UNITED AMERICAN BOSCH CORP.

CIRCUIT DESCRIPTION

The Model 440 is a six tube, dual wave-band receiver, designed to operate over the frequency ranges from 1,570 to 540 kilocycles and 15,500 to 5,700 kilocycles. The circuits comprise an R. F. selector circuit, a combination first detector oscillator, two stages of intermediate frequency amplification (456 K. C.) with double tuned circuits coupling each stage, a combination second detector, A.V.C., and first audio stage, a power output stage and a rectifier tube.

The wave change switch serves to change the electrical circuits to the wave band desired and in addition operates to illuminate the particular dial scale in use.

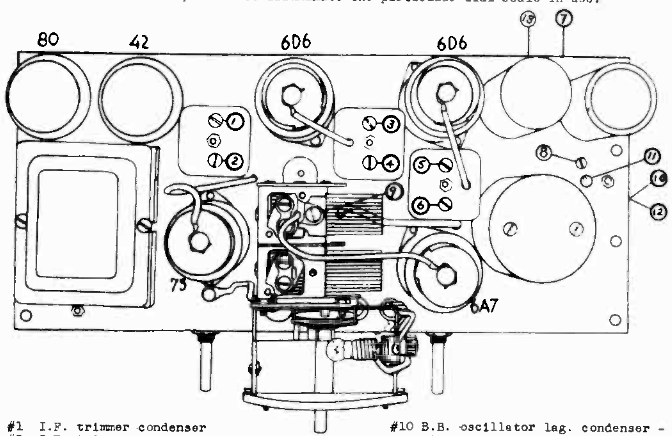


Figure #1

#1 I.F. trimmer condenser
#2 I.F. trimmer condenser
#3 I.F. trimmer condenser
#4 I.F. trimmer condenser
#5 I.F. trimmer condenser
#6 I.F. trimmer condenser
#7 Wave trap tuning cond. (456 K.C.)
#8 B.B. oscillator trim. condenser
#9 Selector trimmer condenser
#10 B.B. oscillator lag. condenser - top screw
#11 S.W.B. oscillator trim condenser
#12 S.W.B. oscillator lag. condenser (bottom screw)
#13 Wave trap tuning condenser (2400 K.C.)
#14 R. F. trimmer condenser - (see Fig. #2)

ALIGNING THE CHASSIS

To properly align the chassis, it is essential to use a high grade modulated 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. to function making correct alignment impossible. The sensitivity of the output meter must be sufficient to give satisfactory reading with a low signal.

Before attempting to align the chassis, the service man should familiarize himself with the general layout of the chassis, the location of the tubes and the various alignment condensers. A top view of the chassis is shown in Fig. #1 and should be carefully studied before the actual work is started.

A- I. F. ADJUSTMENT

1. Set test oscillator to 456 K. C.

2. Connect A.C. voltmeter (output meter) across voice coil of speaker.

3. Connect test oscillator to grid of 2nd I.F. tube (6D6 in rear of condenser gang) and frame of chassis.

4. Adjust #1 and #2 to maximum output on output meter.

5. Connect test oscillator to grid of 1st I.F. tube (6D6 - rear right hand tube).

6. Adjust #3 and #4 to maximum output.

7. Connect test oscillator to grid of 1st detector (6A7).

8. Adjust #5 and #6 to maximum output.

This completes the I. F. adjustment.

B- R. F. ADJUSTMENT (Broadcast Band)

1. Connect test oscillator to antenna and ground leads. Set wave change switch to broadcast band position as indicated by the dial light. Set station selector to 540 K. C.

2. With test oscillator still adjusted to 456 K.C., increase signal strength of test oscillator until signal is heard in loud speaker.

3. Adjust #7 (through small hole in right hand rear panel of chassis) until signal disappears or goes through a null. If signal disappears, increase signal output from test oscillator and readjust #7 until a definite minimum is obtained. The purpose of this adjustment is to correctly adjust a wave trap installed to block direct transmission of 456 K.C. (usually ship telegraph signals) from antenna to first detector.

4. Set test oscillator to 2400 K. C. and adjust #13 in the same manner described above. The purpose of this adjustment is to correctly adjust a second wave trap installed to prevent interference from powerful local police signals.

5. Set test oscillator and station selector to 1400 K.C.

6. Adjust #8 to maximum output.

7. Adjust #9 to maximum output.

8. Set test oscillator and station selector to 600 K. C.

9. Adjust #10 (top screw) to maximum output.

10. Set test oscillator and station selector to 1400 K. C. and readjust #8 and #9 for correct calibration.

C- R.F. ADJUSTMENT (Short Wave Band)

1. Set wave change switch to short wave band position.
2. Set test oscillator and station selector to 15,000 K.C.

3. Adjust #11 until signal is tuned in.

4. Adjust #14 R.F. trimmer condenser (mounted underneath chassis on R.F. coil) to maximum output. (See Fig. #2)

5. Set test oscillator and station selector to 6000 K.C.

6. Adjust #12 (bottom screw) to maximum output.

7. Set test oscillator and station selector to 15,000 K.C. and readjust #11 and #14 trimmer for correct calibration.

This completes the lining up process.

Part No.	Dia. #	Description of Parts
		CONDENSERS
107256	(C1) (C2) (C3)	Variable gang with trimmer
107238	C4	600 mmf. variable
106386	C5	.05 mf. 200 V.
106417	C6	.0001 mf. mica
106386	C7	.05 mf. 200 V.
102493	C8	.05 mf. 200 V.
102492	C9	.05 mf. 350 V.
102504	C10	.02 mf. 350 V.
	C11) C12)	Part of 107247
	C13) C14)	Part of 107248
	C15) C16)	Part of 107249
106417	C17	.001 mica
106386	(C18) (C19) (C20)	.05 mf. 200 V.
	C21	10 to 55- see 107842
106386	(C22) (C23)	.05 mf. 200 V.
	C24	.0001 mica-part of 107249
102499	C25	.5 mf. 200 V.
103659	C26	.005 mf. 350 V.
106403	C27	.001 mf. 500 V.
107239	C28	8 mf - electrolytic
	(C29	4 mf. electrolytic
106665	(C30	20 mf. electrolytic
	(C31	8 mf. electrolytic
103659	C32	.005 mf. 350 V.
106403	C33	.001 mf. 500 V.
103695	C34	.01 mf. 500 V.
105931	C35	.01 mf. 500 V.
107241	C36	425 mmf. variable
107422	C37	1500 mmf. mica
107237	C38	Trimmer condenser
107241	C39	425 mmf. variable
107237	C40	Trimmer condenser
102492	C41	.05 mf. 350 V.
106417	C42	.0001 mica
102492	C43	.05 mf. 350 V.
	C44	4-40 mmf. variable - part of 107246
		RESISTORS
105278	R1	.1 meg. 1/4 W.
105255	R2	50 ohms 1/4 W.
105276	R3	50,000 ohms 1/4 W.
105264	R4	500 ohms 1/4 W.
100813	R5	20,000 ohms 1/2 W.
105267	R6	1,000 ohms 1/4 W.
105249	R7	5,000 ohms 1/4 W.
105267	R8	1,000 ohms 1/4 W.
105267	R9	1,000 ohms 1/4 W.
105249	R10	5,000 ohms 1/4 W.
	(R11	11,200 ohms
107236	(R12	1,800 ohms
	(R13	12,000 ohms
	(R14	300 ohms
105281	R15	1 meg. 1/4 W.
	R16	50,000 1/4 watt - part of 107249
105281	R17	1 meg. 1/4 W.
105562	R19	.5 meg. variable
105245	R20	2,000 ohms 1/4 W.
105281	R21	1 meg. 1/4 W.
105277	R22	75,000 ohms 1/4 W.
105276	R23	50,000 ohms 1/4 W.
105279	R24	.25 meg. 1/4 W.
107250	R25	.25 meg. variable
		MAIN ASSEMBLIES
107440		Chassis assembly- Mdls 440C & T
107744		Chassis assembly- Mdls 444C & T
107741		Chassis assembly- Mdls 441C & T
107369		Speaker - Models 440C,441C,444C
107284		Speaker - Models 440T,441T,444T
107374		Cabinet - Models 440C,441C,444C
107373		Cabinet - Models 440T,441T,444T
101711		Line cable
105952		Antenna cable
104445		Ground cable
		TRANSFORMERS
107242		Power transformer - 440C, 440T
107765		Power transformer - 441C, 441T
107912		Power transformer - 444C, 444T
		COILS
107245		Oscillator coil assembly
107246		Antenna coil assembly
107247		I.F. coil assembly #1
107248		I.F. coil assembly #2
107249		I.F. coil assembly #3
107232		Coil spark trap

SPEAKER (107369) PARTS 440C

SPEAKER (107284) PARTS 440T

MODELS 450L,450H
451L,451H
454L,454H
Schematic,Voltage

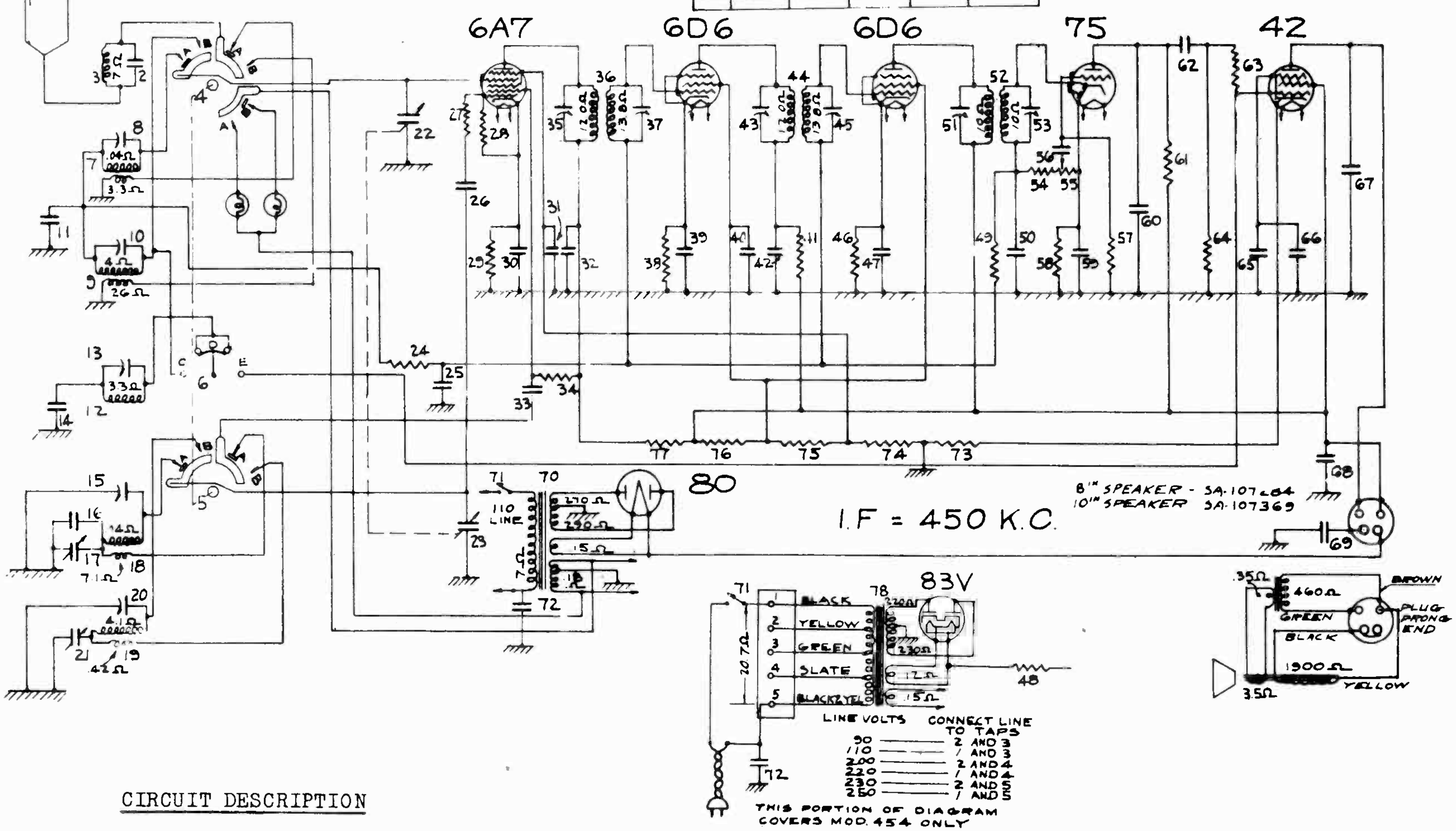
UNITED AMERICAN BOSCH CORP.

PART 4 PRESELECTOR SWITCH NEAREST FRONT PANEL
POS A = HIGH FREQ BAND
POS B = BROADCAST BAND
PART 6 POLICE BAND AND TONE SWITCH
POS C = POLICE BAND 2400 TO 2500 K.C.
POS D = TREBLE
POS E = BASE

SOCKET VOLTAGE

TUBE	FIL AC	CATHODE	OSC PLATE	SCREEN	PLATE
6A7	6	4	135	80	230
6D6	6	58	—	95	230
6D6	6	58	—	95	240
75	6	1.25	—		95
42	6	18	—	240	230

TYPE 80 RECTIFIER FIL. A.C. - 5V
TYPE 80 FILAMENT TO FRAME - 365V
VOLTAGE ACROSS FIELD - 125V
LINE VOLTAGE = 115 V-AC.



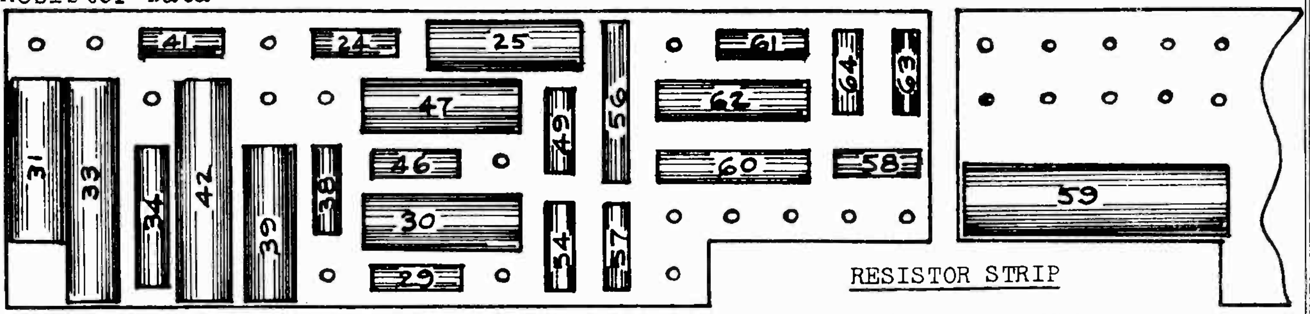
CIRCUIT DESCRIPTION

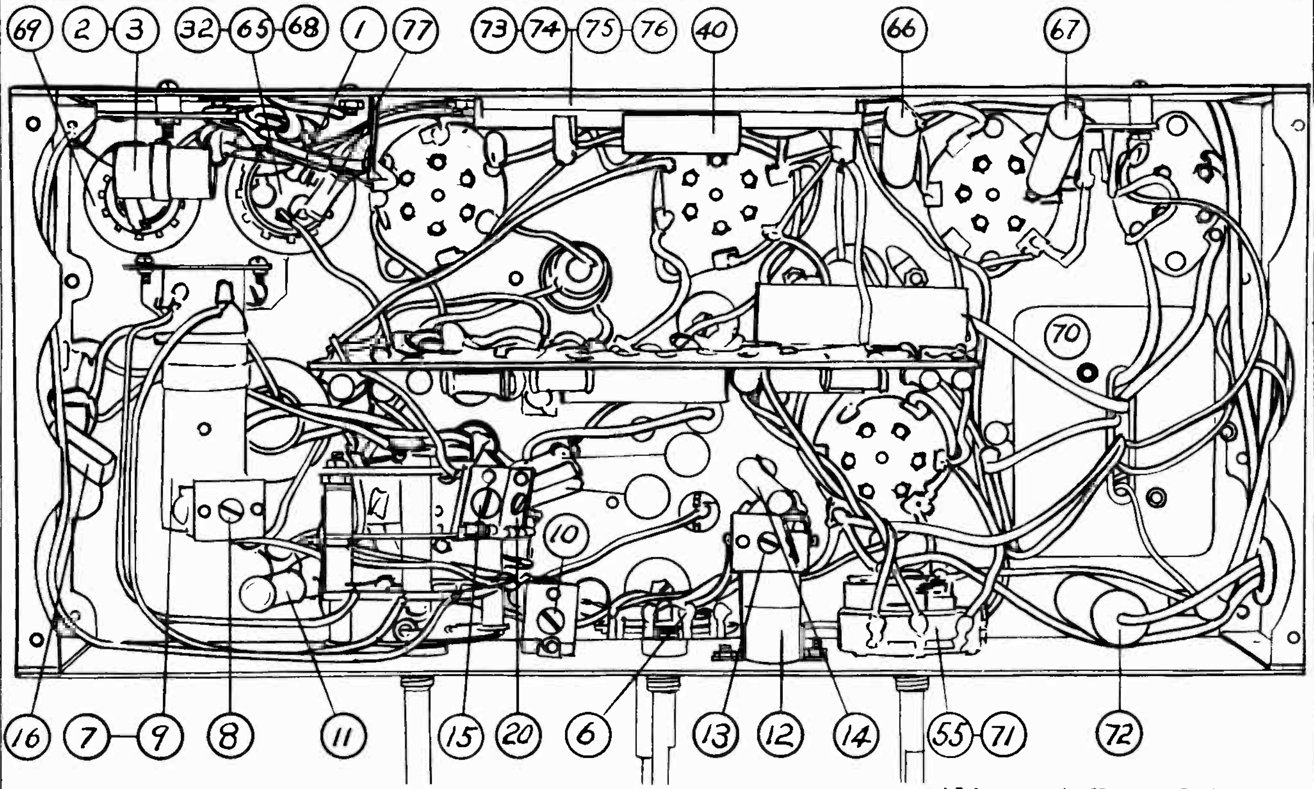
The Model 450 is a six tube, three band superheterodyne receiver. The tuning range of this receiver covers a broadcast band extending from 540 to 1750 kilocycles, which includes one band of police frequencies, a higher frequency police band of 2200 to 2600 kilocycles and a short wave broadcast band extending from 5900 to 18000 kilocycles.

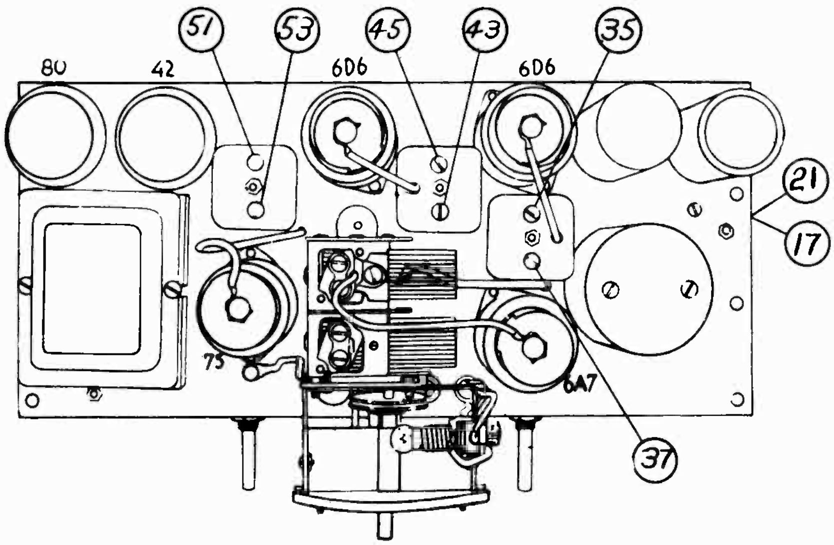
The circuits comprise a R. F. selector circuit, a combination first detector oscillator, two stages of intermediate frequency amplification (450 K.C.) with double tuned circuits coupling each stage, a combination second detector, A.V.C., and first audio stage, a power output stage and a rectifier tube.

MODELS 450L,450H
451L,451H
454L,454H
Socket,Trimmers
Resistor Data

UNITED AMERICAN BOSCH CORP.







Alignment Nomenclature

#8 Short wave preselector trimmer*
#10 Broadcast preselector trimmer*
#13 Police preselector trimmer*
#15 Short wave oscillator trimmer*
#17 Short wave osc. lag (bottom screw)
#20 Broadcast oscillator trimmer*
#21 Broadcast osc. lag (top screw)
#35 First I.F. trimmer
#37 First I.F. trimmer
#43 Second I.F. trimmer
#45 Second I.F. trimmer
#51 Third I.F. trimmer
#53 Third I.F. trimmer
* See Figure #2

Figure #1

UNITED AMERICAN BOSCH CORP.

MODELS 450L, 450H
451L, 451H
454L, 454H
Alignment, Parts

ALIGNMENT PROCEDURE

To properly align the receiver, it is essential to use a high grade modulated test oscillator and a sensitive output meter. The R. F. signal fed into the receiver must be relatively weak or it will cause the A.V.C. to function making correct alignment difficult. The sensitivity of the output meter must be sufficient to give satisfactory reading with a low input signal.

Before attempting to align the receiver, the service man should familiarize himself with the general layout of the location of the tubes and the various alignment condensers. The top and bottom view of the chassis are shown in Figure #1 and #2 and should be carefully studied before the actual work is started.

A - I.F. ADJUSTMENT (450 K.C.)

1. Set test oscillator to 450 K.C.

2. Connect output meter across voice coil of speaker. (Impedance 3.5 ohms.)

3. Connect in series with high side of test oscillator leads a blocking condenser of at least .25 mfd.

4. Connect test oscillator to grid of 1st I. F. tube (6D6 in rear of condenser gang) and adjust #51 and #53 to maximum output reducing test oscillator as required.

5. Connect test oscillator to grid of 1st I. F. tube (6D6 rear right hand tube) and adjust #43 and #45 to maximum output.

6. Connect test oscillator to grid of 1st detector (6A7 and adjust #35 and #37 to maximum output. This completes the I. F. adjustment.

B - ADJUSTMENT OF BROADCAST BAND

1. Set wave change switch to broadcast scale position.

2. Set test oscillator to 1500 K.C. and connect to grid of 1st detector (6A7).

3. Adjust dial scale to maximum mark beyond 540 K.C. calibration point when the gang is entirely closed.

4. Set dial scale at 1500 K.C. and adjust #20 to maximum output.

5. Connect test oscillator to antenna and ground leads of the receiver (red and brown) through a .0002 mfd. condenser and with scale still set at 1500 K. C. adjust #10 and #20 to maximum output.

6. Set dial scale and test oscillator to 600 K. C. and adjust #21 simultaneously changing this adjustment and the station selector for maximum output. This type of adjustment is known as "max-max" and is obtained in the following manner:

Tune the receiver with your left hand by means of tuning knob and adjust #21 in either direction and then without changing it, tune the receiver through a maximum noting the value of output meter reading. If output drops with second adjustment reverse direction of the adjustment of #21. Continue this type of trial and error adjustment until no further improvement can be made when either tuning control or #21 are changed. While this procedure may appear difficult, facility can be easily acquired and the operation requires only a few moments.

7. With test oscillator and scales set at 1500 K. C. readjust #10 and #20 since previous operations may have altered oscillator trimmer setting.

8. Check sensitivity across band.

C - ADJUSTMENT OF POLICE BAND

1. Set combination tone control - police band switch (lower center knob) on first or left-hand position.

2. Leave wave change switch on standard broadcast position.

3. Set dial scale at 1500 K. C. (this is the reception point for 2400 K.C. on range marked "police switch" on dial scale).

4. Set test oscillator to 2400 K. C. and tune in signal with station selector.

5. Adjust #13 to maximum output.

D - ADJUSTMENT OF SHORT-WAVE BAND

1. Set wave change switch to short wave or lower dial scale position.

2. Connect test oscillator to antenna thru a .0002 mfd. condenser and a 400 ohm resistor in series. (This resistor-condenser combination is the approximate equivalent of a short wave antenna.)

3. Set test oscillator and dial to 16 M. C. (16,000 K. C.) and adjust #15 and #9 to obtain reading on output meter.

4. Simultaneously adjust station selector, knob and #8 trim condenser in the same manner as described under operation #6 of broadcast alignment. (This is necessary because sufficient coupling exists in the 6A7 tube to cause a serious shift to the frequency of the oscillator as #8 is adjusted.)

5. Set test oscillator and dial scale to 6 M.C.(6000 K.C.) and adjust "max-max" #16.

6. Repeat operation #4 as operation #5 may have disturbed oscillator adjustment.
7. Check sensitivity across band.

SERVICE PARTS LIST

Models 450L & H (105-125 Volts 60 Cycles AC)
Models 451L & H (105-125 Volts 25 Cycles AC)
Models 454L & H (90-250 Volts 50 Cycles AC)

Part No.	Dia. #	Description of Parts
106417	1	100 Mfd. mica
	2	.005 mfd. mica)part of
	3	Trap coil-)107434
	4	Preselector switch)part of
	5	Osc. switch)SW 954
107904	6	Tone control switch
	7	H.F. pres. coil)part of
	8	0-60 mmf. 107936
	9	B.C. pres. coil - part of 107936
107995	10	0-15 mmf.
106386	11	.05 - 2 ply
	12	Police band coil)part of
	13	10-55 mmf.)RC95248
106403	14	.001 - 4 ply
107995	15	0-15 mmf.
107422	16	1500 mmf. mica
	17	1100-2000 mmf)part of 108001
	18	H.F. osc. coil)part of
	19	B.C. osc. coil)RC9523A
107503	20	0-25 mmf.
	21	300-600 mmf part of 108001
	22	Var. gang part of CG 957
	23	Var. gang part of CG 957
105278	*24	.1 meg. 1/4 W.
106282	*25	.05 - 2 ply
106417	26	100 mmf. mica
107614	27	100 - 1/4 W.
105276	28	50,000 - 1/4 W.
105264	*29	500 - 1/4 W.
106386	*30	.05 - 2 ply
106386	*31	.05 - 2 ply
	32	8 mfd. elec. (dry) part of 107288
102504	33	.02 mfd. - 3 ply
100813	*34	20,000 - 1/2 W.
	35	.30 mmf. part of IC952A
	36	I.F. trans. part of IC952A
	37	35-130 mmf. part of IC952A
105267	*38	1000 - 1/4 W.
106386	*39	.05 - 2 ply
106386	40	.05 - 2 ply
105267	*41	1000 - 1/4 W.
102492	*42	.05 - 3 ply
	43	35-130 mmf.
	44	I.F. trans. coil- part of IS952A
	45	35-130 mmf.- part of IC 952A
105267	*46	1000 - 1/4 W.
106386	*47	.05 - 2 ply
103062	48	400 - 1 W.
105246	*49	5 meg. - 1/4 W.
106417	50	.0001 mmf. mica
	51	30-130 mmf.) part of
	52	3rd IF coil) IC954 A
	53	30-130 mmf.)
105278	*54	.1 meg. 1/4 W.
107951	55	.5 meg. vol. cont.
103659	*56	.005 mfd. - 3 ply
105281	*57	1 meg. 1/4 W.
105249	*58	5000 - 1/4 W
102499	*59	.5 - 2 ply
106403	*60	.001 - 4 ply
105279	*61	.25 meg. 1/4 W.
103659	*62	.005 mfd - 3 ply
105279	*63	.25 meg. 1/4 W.
105279	*64	.25 meg. 1/4 W.
	65	10 mfd. elec. part of 107288
106386	66	.05 - 2 ply
103659	67	.005 - 3 ply
	68	8 mfd. elec. dry - part of 107288
107239	69	8 mfd. elec. wet
107242	70	Power transformer
	71	On-Off switch part of 107951
107615	72	.01 - 4 ply
	(73	600 ohms resistor
	(74	1200 ohms resistor
107916	(75	1800 ohms resistor
	(76	11200 ohms resistor
105267	77	1000 - 1/4 W.
107912	78	Power transformer

MAIN ASSEMBLIES

CH9512A	Chassis assembly- Mdls 454L & H
CH9517A	Chassis assembly- Mdls 451L & H
CH9511A	Chassis assembly- Mdls 450L & H
107369	Speaker - Mdls 450L, 451L, 454L
107284	Speaker - Mdls 450H, 451H, 454H
KA 956	Cabinet - Mdls 450L, 451L, 454L
KA 955	Cabinet - Mdls 450H, 451H, 454H

* These parts are on IS9530A.

TRANSFORMERS

107242	Power trans. assembly - 450 L&H
107765	Power trans. assembly - 451 L&H
107912	Power trans. assembly - '54 L&H

SPEAKER (107369)
(450L, 451L, 454L)

SPEAKER (107284)
(450H, 451H, 454H)

CABLES & CABLE ASSEMBLIES

CB9512	Line cable
105952	Antenna cable - Red
107768	Antenna cable - Blue
CB9510A	Ground cable
98511	Cable for dial pulley

MODEL 05
Schematic, Voltage
Parts

UNITED AMERICAN BOSCH CORP.

AMERICAN-BOSCH RADIO MODEL 05

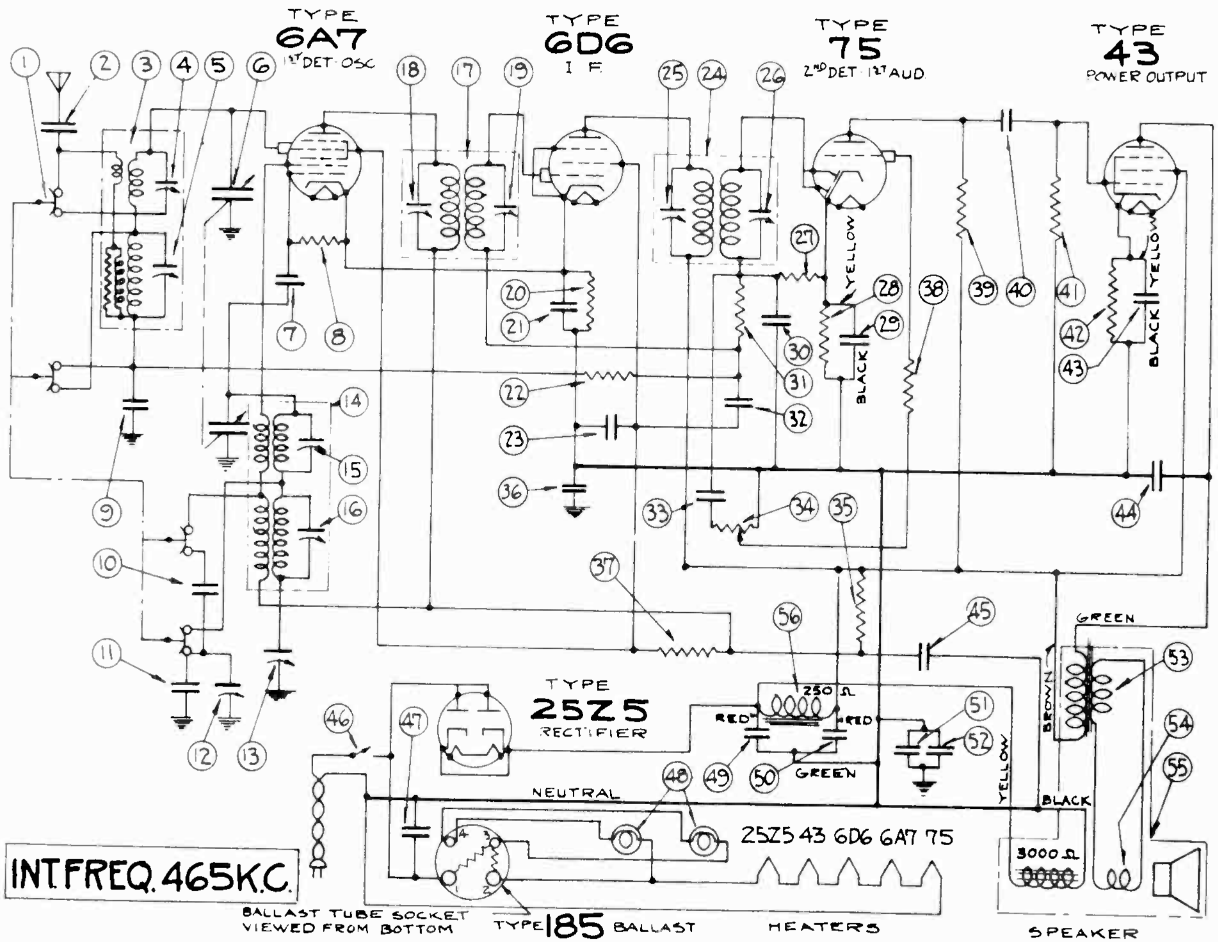
Five-Tube, Two Band, AC-DC, Superheterodyne Receiver

1	WAVE CHANGE SW	SW 9531
2	COND .00025 MICA	CM 956
3	RF COIL ASSY	RC 95110
4	TRIM COND 35 MMF	PT OF RC95110
5	TRIM COND 35 MMF	PT OF RC95110
6	COND (2 GANG)	CG 9534
7	COND .0001 MICA	SA 106417
8	RES 25000Ω 1/4W	SA 105275
9	COND .1 MF 200V	CW 951A
10	COND .01 MF 400V	SA 106277
11	COND .001 MF MICA	SA 103775
12	LAG COND	PT OF CS 9526
13	LAG COND	PT OF CS 9526
14	OSCILL COIL ASSY	RC 95111
15	TRIM COND 35 MMF	PT OF RC95111
16	TRIM COND 35 MMF	PT OF RC95111
17	1ST I F TRANS	IC 9539
18	TRIM COND 35 MMF	PT OF IC 9539
19	TRIM COND 35 MMF	"
20	RES 300Ω 1/4W	SA 105260
21	COND .1 MF 200V	CW 951A
22	RES 500,000Ω 1/4W	SA 105246
23	COND .1 MF 200V	CW 951A
24	2ND I F TRANS	IC 9540
25	TRIM COND 35 MMF	PT OF IC 9540
26	TRIM COND 35 MMF	"
27	RES 500,000Ω 1/4W	SA 105246
28	RES 2,000,000Ω 1/4W	SA 105278
29	COND (ELECT)	PT OF CE 9519
30	COND (MICA) .00025	CM 956
31	RES 500,000Ω 1/4W	SA 105246
32	COND .1 MF 200V	CW 951A
33	COND .01 MF 400V	SA 106277
34	VOL CONT	VR 9514
35	RES 600Ω 1/2W	SA 100824
36	COND .02 600V	CW 9514
37	RES 25,000Ω 1/4W	SA 105275
38	RES 250,000Ω 1/4W	SA 105279
39	RES 500,000Ω 1/4W	SA 105246
40	COND .01 400V	SA 106277
41	RES 500,000Ω 1/4W	SA 105246
42	RES 600Ω 1W	SA 105044
43	COND (ELECT) 10 MF	PT OF CE 9519
44	COND .01 MF 400V	SA 106277
45	COND 200V	CW 951A
46	SWITCH ON-OFF	PT OF VR 9514
47	COND .1 200V	CW 951A
48	LAMPS (2) 6-8	SA 95572
49	COND (ELECT) 20 MF	PT OF CE 9519
50	COND (ELECT) 20 MF	"
51	COND .1 600V	CW 9515
52	COND .1 600V	CW 9515
53	OUTPUT TRANS	PT OF SK 9515
54	FIELD & COIL ASSY	PT OF SK 9515
55	SPEAKER ASSY	SK 9515
56	CHOKE	CL 9541

SOCKET VOLTAGES

TUBE	STAGE	SCREEN	PLATE	CATH.	FIL.
25Z5	RECTIFIER		125		60
43	POWER OUTPUT	117	110	15	38
75	2ND DET 1ST AUD.		27*	10	6
6D6	I F	40	117	25	17
6A7	1ST DET-OSC.	40	[illegible]	25	12

LINE VOLTAGE 115 AC.
VOLTAGES READ TO NEUTRAL
* READ ON 600,000 OHM VOLTMETER



MODELS 460 A,B,R
461 A,B,R
464 A,B,R

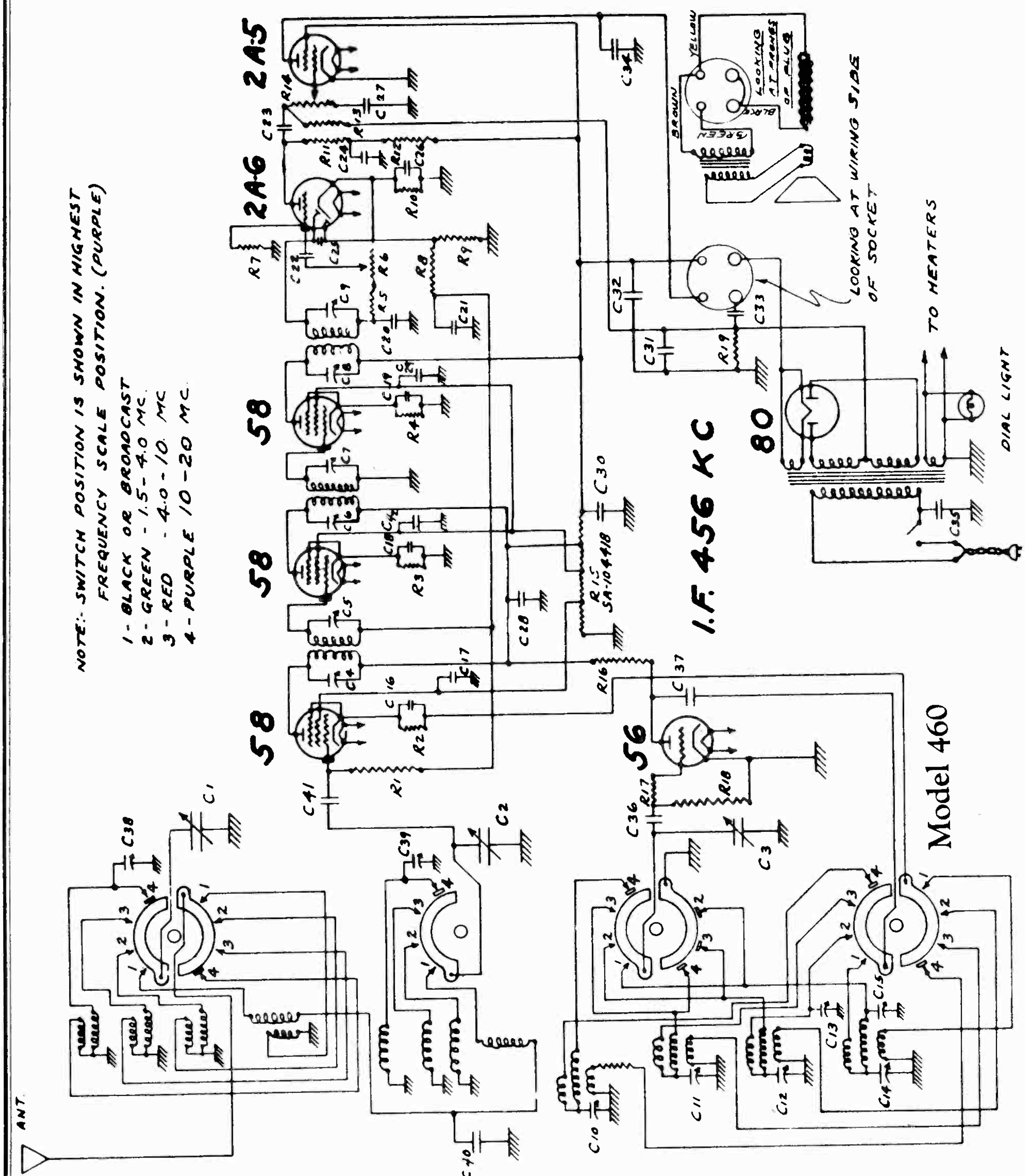
UNITED AMERICAN BOSCH CORP.

Ed.1
Circuit Data,Schematic

CIRCUIT DESCRIPTION

The Model 460 is a seven tube superheterodyne receiver whose circuit comprises a first detector, an oscillator, two stages of I. F. amplification, a combined double diode second detector and first audio amplifier, a power amplifier and rectifier tube.

Selectivity is provided by a double tuned antenna selector and three double tuned I.F. transformers, comprising eight selective circuits in all. The double tuned antenna selector is important in the broadcast band for reasons well known, and is all the more important on the short wave band in order to prevent "repeat points", that is, reception of the same station at two points on the scale.



SCHEMATIC WIRING DIAGRAM

MODELS 460 A,B,R
461 A,B,R
464 A,B,R

Ed.1
Socket, Trimmers, Alignment, Voltage Parts List

UNITED AMERICAN BOSCH CORP.

ALIGNING THE CHASSIS

To properly align the Model 460 chassis, it is essential to use a high grade modulated 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. to function making correct alignment impossible. The sensitivity of the output meter must be sufficient to give satisfactory reading with a low signal.

Before attempting to align a receiver, the service man should familiarize himself with the general layout of the chassis, the location of the tubes and the various alignment condensers. A top view of the chassis is shown in Fig. #1 and should be carefully studied before the actual work is started.

A- ALIGNING THE I.F. (456 K.C.)

1. Set test oscillator to 456 K.C.

2. Connect test oscillator to grid of second I.F. tube #5 and adjust #14 and #15 to maximum output, reducing test oscillator as required.

3. Connect test oscillator to grid of first I.F. amplifier #6 and adjust #16 and #17 to maximum output.

4. Connect test oscillator to grid of first detector #11 and adjust #18 and #19 to maximum output.

5. Recheck the above four operations for accuracy.

B- ALIGNING THE R. F.

1. Set test oscillator to 1500 K. C. and connect to grid of first detector #11. Place pointer of radio to 1.5 mark on dial. Adjust #20 until signal is tuned in. This adjusting screw is usually designated by a Red color dot. Having obtained tune at this point, set test oscillator to 600 K. C. and tune station selector to .6 mark on dial. Adjust #21 until the signal is tuned in. Now return to 1500 K. C. point with set and test oscillator and make the resetting of #20 to obtain accurate adjustment to scale reading.

2. Connect test oscillator to antenna lead, making sure the equivalent (200 mmf.) is in the circuit.

3. Continue setting of 1500 K. C. Adjust #22 and #23 for maximum output. Check sensitivity and calibration at several points on dial. Set should come correctly to kilocycle settings of important broadcasting stations.

C- ALIGNING THE GREEN BAND

1. Set test oscillator to 3600 K.C. and indicator of radio at 3.6 mark on dial.

2. Adjust #24 until signal is tuned in. This trim condenser is usually marked with a Red color dot. Set test oscillator at 1600 K. C. and tune set to 1.6 mark. Adjust #25 to maximum output. Return to 3600 K. C. and repeat adjustment. In adjusting the 3600 K. C. point it is possible to obtain two settings for different position of the trim condenser. This denotes merely the plug and minus frequency between oscillator and test oscillator which will give the correct I. F. frequency. The correct setting of the trim condenser is the one wherein the screw is turned furthest out. In any event, an incorrect setting will always be denoted by lack of sensitivity when the set and test oscillator are tuned to 2500 K.C. (mid-band).

D- ALIGNING THE RED BAND

1. Set test oscillator to 8000 K. C. marking and tune receiver in region of 8.0 on dial scale. Note when signal is received. Next set test oscillator to 4000 K. C. setting and tune set to 4.0 on dial scale. Adjust #26 on right side of chassis until signal is heard.

2. Retune set and test oscillator to 8000 K. C. and observe pointer setting and sensitivity. Slight deviations from calibration can be compensated by manipulating the stiff wires connecting the oscillator coil to switch.

E- ALIGNING THE PURPLE BAND

1. Set test oscillator to 20,000 K. C. or if this is not available, then adjust to highest possible frequency, which preferably should be at least 15,000 K. C. Tune set to this frequency and note where set oscillator is received on dial scale. Then place test oscillator on 10,000 K.C. and adjust #27 on right of chassis until test oscillator is tuned at 10. on dial scale. Now return both test oscillator and radio set to high frequency. Located underneath the base and adjacent to the switch and high frequency selector coils are two trim condensers #28 and #29 which are used for correct adjustment at this high frequency.

Increase setting of test oscillator until signal generator can be tuned in at two points on dial (say 20 and 19). Then with pointer of set at 20 adjust #28 and #29 for maximum output decreasing test signal as signal becomes better tuned. At correct adjustment a very loud signal will be obtained at 20 on dial while a feeble signal or none at all is observed at 19. This is a practical illustration of the effectiveness of preselection as outlined in the first part of this description.

The adjustment instructions just given apply to the Model 460 receiver which is in reasonable operating condition, but in some manner has been thrown out of adjustment. Obviously, before the radio service man can go through with the adjustments given here, he must assure himself that defective tubes, injured parts, such as punctured condensers, shorted variable condensers, open resistors, scratched high frequency coils, etc., are not such as to cause the set to be inoperative on one or more bands of frequencies.

SOCKET VOLTAGES

Tube	Stage	Fil.	Plate	Screen	Cathode	Grid
58	1st Det.	2.65	220	40	2.8	-
58	1st I.F.	2.65	220	95	2.0	-
58	2nd I.F.	2.65	240	95	2.7	-
56	Osc.	2.65	75	-	0	25
2A6	2nd Det.	2.65	90	-	1.4	-
2A5	Output	2.65	235	240	0	-
80	Rectifier	4.8	-	-	-	-

Bias on 2A5 (across 400 ohms) - 22 volts
Output of rectifier - - - - - - 360 volts

Line volts - - - - 115
Power - - - - - - 60 watts

Note: These values are readings of a high resistance voltmeter from each socket terminal to ground, with the exception of the filament voltages. The values are only approximate and will vary with the line voltage and the type of meter employed.

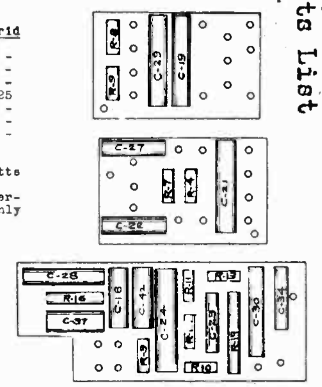
Part No.	Dia. #	Description of Parts
		CONDENSERS
106352	(C1) (C2) (C3)	Variable condenser
	C4) C5) C6)	Part of 105695
	C7) C8)	Part of 105695
	C9)	Part of 105696
103800	(C10) (C11)	2000 mmf. variable
	(C12	7-70 mmf.
105683	(C13	1200 mmf. variable
	(C14	7-70 mmf.
105684	(C15	300 mmf. variable
102493	C16	.05 mf - 200 V.
102493	C17	.05 mf - 200 V.
106386	C18	.05 mf - 200 V.
102493	C19	.05 mf - 200 V.
106417	C20	100 mmf. - mica
102493	C21	.05 mf. 200 V.
103659	C22	.005 mf. 350 V.
102504	C23	.02 mf. 350 V.
102494	C24	.1 mf. 350 V.
101143	C25	100 mmf. mica
102499	C26	.5 mf. 200 V.
106403	C27	.001 mf. 500 V.
102492	C28	.05 mf. 350 V.
102493	C29	.05 mf. 200 V.
102492	C30	.05 mf. 350 V.
	(C31	20 mf. electrolytic
106665	(C32	4 mf. electrolytic
	(C33	8 mf. electrolytic
106277	C34	.01 mf. 350 V.
105931	C35	.01 mf. 500 V.
101143	C36	100 mmf. mica
106386	C37	.05 mf. 200 V.
105705	C38	Trimmer condenser
105705	C39	Trimmer condenser
102493	C40	.05 mf. 200 V.
101143	C41	100 mmf. mica
106386	C42	.05 - 200 V.
		RESISTORS
105246	R1	1/2 meg. 1/4 W.
105245	R2	2000 ohms 1/4 W.
105267	R3	1000 ohms 1/4 W.
105267	R4	1000 ohms 1/4 W.
105276	R5	50,000 ohms - 1/4 W.
105562	R6	500,000 volume
105281	R7	1 meg. 1/4 W.
105246	R8	1/2 meg. 1/4 W.
105281	R9	1 meg. 1/4 W.
105245	R10	2000 - 1/4 W.
107363	R11	70,000 - 1/4 W.
107363	R12	70,000 - 1/4 W.
105279	R13	1/4 meg. 1/4 W.
105561	R14	Variable
104418	R15	Multiple
100197	R16	25,000 - 1/2 W.
100814	R17	50 - 1/2 W.
105274	R18	20,000 - 1/4 W.
103062	R19	400 - 1 W.
		COILS
105684		Oscillator coil - broadcast
105683		Oscillator coil - green band
105689		Oscillator coil - red band
105687		Oscillator coil - purple band

TRANSFORMERS

105781	Power trans. - Mdls. 460A,B,R
106098	Power trans. - Mdls. 461A,B,R
107875	Power trans. - Mdls. 464A,B,R
105690	Preselector coil - broadcast
105691	Preselector coil - broadcast
105685	Preselector coil - green band
105686	Preselector coil - red band
105688	Preselector coil - purple band
105695	Intermediate coil
105696	Intermediate coil

MAIN ASSEMBLIES

107460	Chassis assembly for 460A,B,R
107761	Chassis assembly for 461A,B,R
107878	Chassis assembly for 464A,B,R
107284	Speaker-460A-B,461A0B,461A-B
107369	Speaker-460R,461R,464R
107370	Cabinet - Mod. 460A, 461A, 464A
107371	Cabinet - Mod. 460B, 461B, 464B
107372	Cabinet - Mod. 460R, 461R, 464R



RESISTOR STRIPS

SPEAKER (107369) (460R & 461R)
SPEAKER (107284) (460A & B) (461A & B)

CABLES AND CABLE ASSEMBLIES

101711	Line cable assembly
105952	Antenna cable assembly
104445	Ground cable assembly

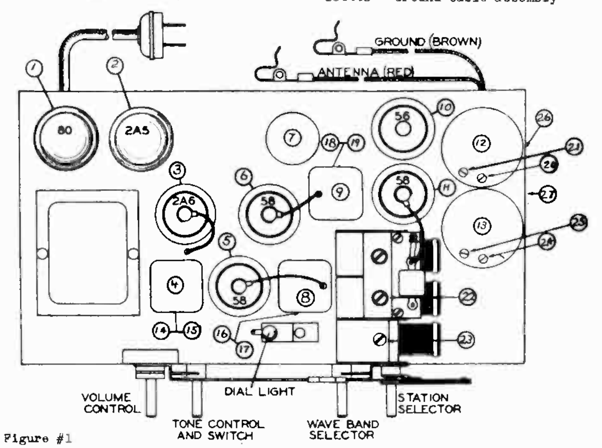
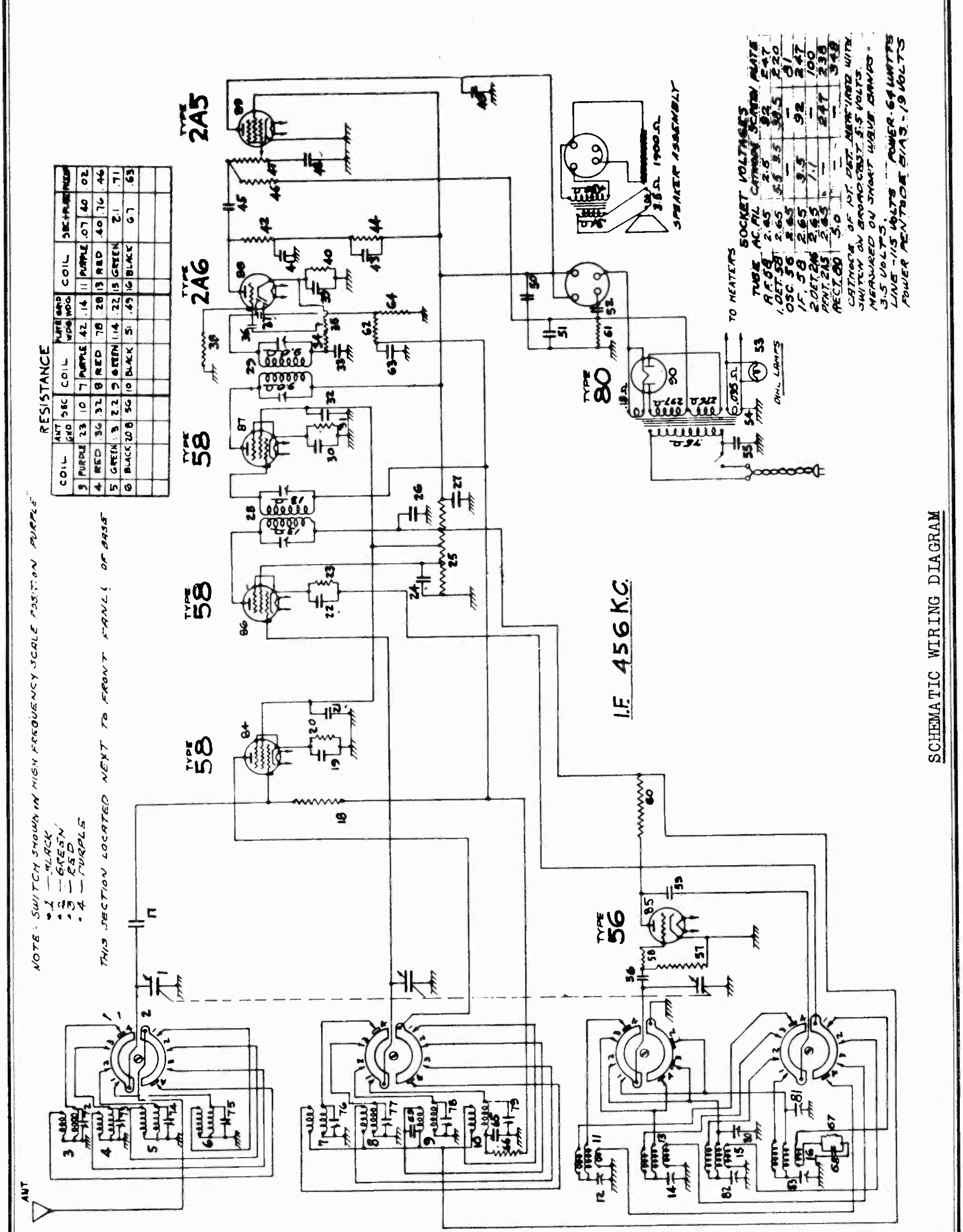


Figure #1

#1 Type 80 rectifier
#2 Type 2A5 output pentode
#3 Type 2A6 2nd det. A.V.C. & 1st A.F.
#4 3rd I.F. transformer
#5 Type 58 I.F. tube
#6 Type 58 I.F. tube
#7 Filter condenser
#8 2nd I.F. transformer
#9 1st I.F. transformer
#10 Type 56 oscillator
#11 Type 58 1st detector
#12 Broadcast oscillator coil
#13 Green band oscillator coil
#14-#15 3rd I.F. trimmer
#16 2nd I.F. trimmer
#17 2nd I.F. trimmer
#18 1st I.F. trimmer
#19 1st I.F. trimmer
#20 Broadcast oscillator trim. cond.
#21 Broadcast oscillator lag. cond.
#22 Preselector trimmer
#23 Preselector trimmer
#24 Green band trimmer
#25 Green band lagging
#26 Red band lagging
#27 Purple band lagging
#28) Purple band trimmers (underneath
#29) chassis) (See Figure #2)

MODELS 460 A,B,R
Ed. 2
Schematic,Resistances

UNITED AMERICAN BOSCH CORP.



MODELS 460 A,B,R
Ed.2
Socket,Trimmers
Alignment,Parts

UNITED AMERICAN BOSCH CORP.

Model 460 Ed2 American-Bosch Radio Receiver

CIRCUIT DESCRIPTION

The Model 460 Ed. 2 is a seven-tube superheterodyne all-wave receiver whose circuit comprises an R. F. amplifier stage, a first detector, an oscillator, a stage of I. F. amplification, a combination second detector, A.V.C. and first A. F. amplifier, a power output stage and a rectifier tube. Selectivity is provided by antenna tuning, R. F. stage tuning and four I.F. tuned circuits.

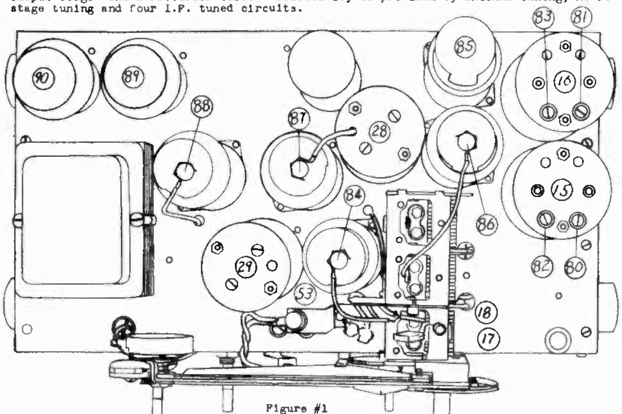


Figure #1

ALIGNMENT NOMENCLATURE

#12 Purple osc. lag condenser*
#14 Red osc. lag condenser*
#15 Green band osc. coil
#16 Broadcast osc. coil
#28 First I.F. transformer
#29 Second I.F. transformer
#72 Purple ant. trim condenser*
#73 Red ant. trim condenser*
#74 Green ant. trim. condenser*
#75 Broadcast ant. trim. condenser*
#76 Purple R.F. trim condenser*
#77 Red R.F. trim condenser*
#78 Green R.F. trim condenser*
#79 Broadcast R.F. trim condenser*
#80 Green osc. trim condenser
#81 Broadcast osc. trim. condenser
#82 Green osc. lag condenser
#83 Broadcast osc. lag condenser
#84 Type 58 R.F. amplifier
#85 Type 56 oscillator
#86 Type 58 first detector
#87 Type 58 I.F. amplifier
#88 Type 2A6 2nd detector, A.V.C., 1st A.F.
#89 Type 2A5 power pentode
#90 Type 80 rectifier
* Trimmers are shown in Fig. #2

ALIGNMENT PROCEDURE

To properly align the Model 460 Ed. 2 receiver, it is essential to use a high grade modulated test oscillator and a sensitive output meter. The R.F. signal fed into the receiver must be relatively weak or it will cause the A.V.C. to function making correct alignment difficult. The sensitivity of the output meter must be sufficient to give satisfactory reading with a low input signal.

Before attempting to align the receiver, the service man should familiarize himself with the general layout of the chassis, the location of the tubes and the various alignment condensers. Top and bottom view of the chassis is shown in the Figures #1 and #2 and should be carefully studied before the actual work is started.

A - ALIGNING THE I.F. (456 K.C.)

1. Set test oscillator to 456 K.C.

2. Connect test oscillator leads through a .25 mfd. condenser between grid of I. F. tube #87 and frame of the chassis.

3. Adjust trimmers on I. F. coil #29 to maximum output, reducing output of test oscillator as required.

4. Connect test oscillator to grid of first detector tube #86 and adjust trimmers on I.F. coil #28 to maximum output.

B - ALIGNING THE R.F.

1. Sot test oscillator to 1500 K. C. and connect to grid of first detector #86. Set station indicator to 1500 K.C.

2. Adjust #81 until signal is tuned in. This adjustment screw is designated by a color dot. Having obtained tune at this point set test oscillator and station selector to 600 K. C. and adjust #83 until the signal is tuned in. Now return to 1600 K.C. point with set and test oscillator and readjust #81 to obtain accurate adjustment to scale reading.

3. Connect test oscillator to antenna lead, making sure the capacity equivalent of .0002 mfd. is in the circuit.

4. Continue setting of 1500 K. C. and adjust #75 and #79 to maximum output. Check sensitivity and calibration at several points on the dial. Receiver should come correctly to kilocycle settings of important broadcasting stations.

C - ALIGNING THE GREEN BAND

1. Set test oscillator and station selector to 3600 K.C.

2. Adjust #80 until signal is tuned in. This adjustment screw is marked with a color dot.

3. Set test oscillator and station selector to 1600 K. C. and adjust #82 to maximum output.

4. Return to 3600 K. C. setting and repeat adjustment of #80. In adjusting the 3600 K.C. point, it is possible to obtain two different positions of the trimmer condenser. This denotes merely the plus and minus frequency between the set oscillator and test oscillator which will give the I. F. frequency. The correct setting of the trimmer condenser is the one wherein the adjustment screw is furthest out. In any event, any incorrect setting will always be denoted by lack of sensitivity and calibration when the receiver and test oscillator are tuned to 2500 K.C. (mid-band).

5. With station selector and test oscillator both adjusted to 3600 K.C., align the antenna and R.F. circuits by adjusting #74 and #78 to maximum output.

D - ALIGNING THE RED BAND

1. Set test oscillator to 8000 K. C. and tune receiver in region of 8000 K. C. on dial scale. Note where signal is tuned in. Next set test oscillator and receiver to 4000 K.C. and adjust #14 (on right side of chassis) until signal is heard.

2. Retune set and test oscillator to 8000 K. C., and observe pointer setting. Slight deviations from calibration can be compensated by manipulating the stiff wires connecting the oscillator coil #13 to the switch.

3. With set and test oscillator both adjusted to 8000 K.C., align the antenna and R.F. circuits by adjusting #73 and #77 to maximum output.

E - ALIGNING THE PURPLE BAND

1. Set test oscillator to 18,000 K.C. or if this is not available then adjust to highest frequency preferably 15,000 K. C. Tune set to this frequency a i observe where signal is received on the dial scale. Then place test oscillator on 10,000 K. C. and adjust #12 (on right side of chassis) until signal is tuned in at 10. on dial scale.

2. Now return both test oscillator and receiver to 18,000 K. C. Increase setting of test oscillator until signal can be turned in at two points on dial (say 18. and 17.), then with pointer of set at 18. adjust #72 and #76 for maximum output decreasing test signal as signal becomes better tuned. At correct adjustment a very loud signal will be obtained at 18 on the dial while a feeble signal will be observed at 17. This is a practical illustration of the effectiveness of preselection.

The adjustment instructions just given apply to the Model 460 Ed-2 receiver which is in reasonable operating condition, but in some manner has been thrown out of adjustment. Obviously, before the radio service man can go through with the instructions given here, he must assure himself that defective tubes, injured parts, such as punctured condensers, shorted variable condensers, opened resistors, damaged high frequency coils, etc., are not such as to cause the set to be inoperative on one or more bands of frequencies.

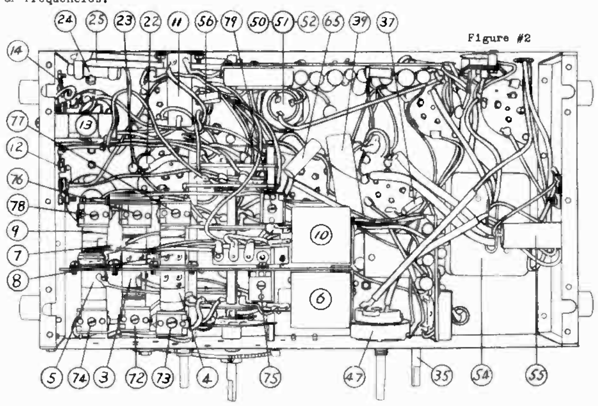


Figure #2

SERVICE PARTS LIST

Model 460 Ed.2

Part No.	Dia. #	Description of Parts
108056	1	Variable condenser
108057	2	Wave switch
108077	3	Ant. Transf. (purple)
108075	4	Ant. Transf. (red)
108073	5	Ant. Transf. (green)
108070	6	Ant. Transf. (black)
108076	7	R.F. Transf. (purple)
108074	8	R.F. Transf. (red)
108072	9	R.F. Transf. (green)
108071	10	R.F. Transf. (black)
105687	11	Osc. coil (purple)
103800	12	Comp. condenser
105689	13	Osc. coil (red)
103800	14	Comp. condenser
105683	15	Osc. assembly (green)
105684	16	Osc. assembly (black)
106417	VC 17	100 mmf. mica
105246	VC 18	.5 megohm
106386	RS 19	.05 mf. 90 V.
105260	RS 20	300 ohms
106386	C 21	.05 mf. 90 V.
106386	C 22	.05 mf. 90 V.
105245	C 23	2000 ohms
106386	C 24	.05 mf. 90 V.
104418	C 25	Tapped resistor
102492	RL 26	.05 mf. 250 V.
102492	RL 27	.05 mf. 250 V.
108063	28	I.F. transformer
108064	29	I.F. transformer
106386	RL 30	.05 mf. 90 V.
105260	RL 31	300 ohms
106386	RS 32	.05 mf. 90 V.
101143	IF 33	100 mmf. mica
105276	IF 34	50,000 ohms
105562	35	Vol. Cont. 5 meg.
103659	RS 36	.005 mf. 250 V.
101143	C 37	100 mf. mica
105281	RS 38	1 megohm
102499	C 39	.5 mf. 90 V.
105249	RL 40	5000 ohms
102494	RL 41	.1 mf. 250 V.
105279	RL 42	.25 megohm
106386	RL 43	.05 mf. 90 V.
107363	RL 44	70,000 ohms
102504	RL [illegible]	.02 mf. 250 V.
105279	RL 46	.25 megohm
107250	47	Tone Cont. .25 meg.
106403	RS 48	.001 mf. 500 V.
106277	RL 49	.01 mf. 450 V.
	(50	4 mf. 450 V.
106665	Ed2(51	20 mf. 25 V.
	(52	8 mf. 475 V.
98713	53	Dial light
105781	54	Power transformer
107615	C 55	.01 mf. 500 V.
101143	C 56	100 mmf. mica
105274	C 57	20,000 ohms
100814	C 58	500 ohms
106386	RL 59	.05 mf. 90 V.
99777	RL 60	25,000 ohms 1 W.
103062	RL 61	400 ohms 1 W.
105246	RS 62	.5 megohm
102493	RS 63	.05 mf. 90 V.
105281	RS 64	1 megohm
106386	C 65	.05 mf. 90 V.
105278	RS 66	100,000 ohms
105272	67	10,000 ohms
106386	68	.05 mf. 90 V.
108043	C 69	.0001 mmf. mica
103062	C 70	400 ohms 1 W.
107875	C 71	Power transformer
107503	72	4-25 mmf.
107503	73	4-25 mmf.
107503	74	4-25 mmf.
107503	75	4-25 mmf.
107503	76	4-25 mmf.
107503	77	4-25 mmf.
107503	78	4-25 mmf.
107503	79	4-25 mmf.
	80	7-70 mmf. part of 106321
	81	7-70 mmf. part of 106333
	82	1500 mmf. part of 106321
	83	270-600 mmf. part of 106333
58	84	R.F. tube
56	85	Oscillator tube
58	86	1st detector tube
58	87	I.F. tube
2A6	88	2nd detector tube
2A5	89	Output tube
80	90	Rectifier tube

CABLES & CABLE ASSEMBLIES

101711	Line cable
105952	Antenna cable assembly
104445	Ground lead assembly

MAIN ASSEMBLIES

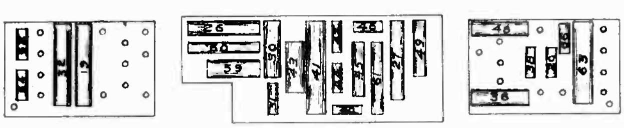
107960	Chassis assembly - 460 Ed-2 A,B,R
107370	Cabinet - Model 460 Ed. 2 A
107371	Cabinet - Model 460 Ed. 2 B
107372	Cabinet - Model 460 Ed. 2 R
107284	Speaker - Model 460 Ed. 2 A & B
107369	Speaker - Model 460 Ed. 2 R

Parts marked "RL" are on Large Resistance Strip.
Parts marked "RS" are on Small Resistance Strip.
Parts marked "C" are on chassis.
Parts marked "VC" are on Variable Condenser.

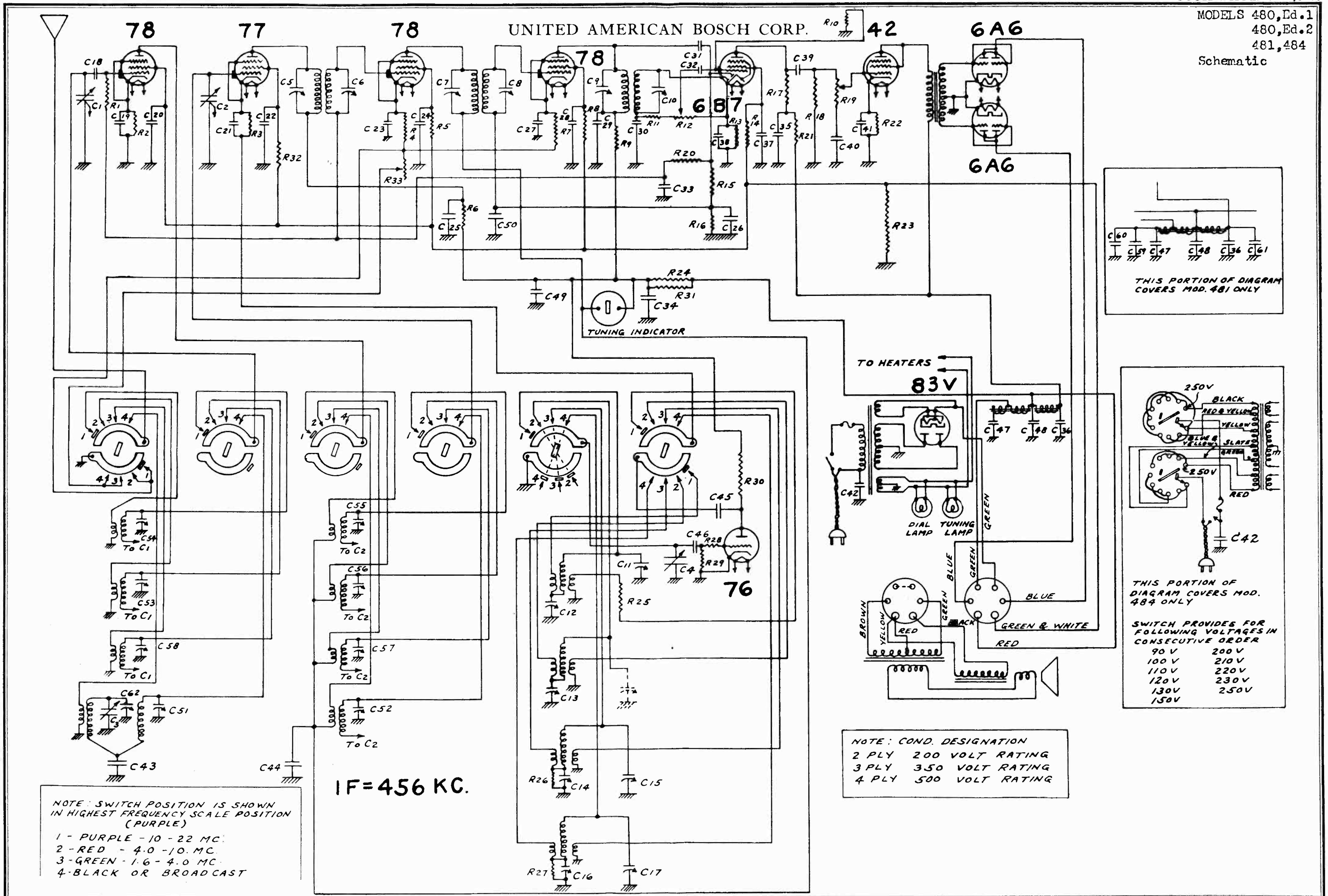
TRANSFORMERS

105781 Power trans. - Model 460 Ed-2

SPEAKER (107284) 460 Ed. 2A
SPEAKER (107369) 460 Ed. 2 R



RESISTOR STRIP



MODELS 480,Ed.1
480,Ed.2
481,484
Schematic
UNITED AMERICAN BOSCH CORP.
78
77
78
78
6B7
42
6A6
6A6
83V
76
TUNING INDICATOR
TO HEATERS
DIAL LAMP
TUNING LAMP
IF=456 KC.
THIS PORTION OF DIAGRAM COVERS MOD. 481 ONLY
THIS PORTION OF DIAGRAM COVERS MOD. 484 ONLY
SWITCH PROVIDES FOR FOLLOWING VOLTAGES IN CONSECUTIVE ORDER
90 V
100 V
110 V
120 V
130 V
150 V
200 V
210 V
220 V
230 V
250 V
NOTE: COND. DESIGNATION
2 PLY 200 VOLT RATING
3 PLY 350 VOLT RATING
4 PLY 500 VOLT RATING
NOTE: SWITCH POSITION IS SHOWN IN HIGHEST FREQUENCY SCALE POSITION (PURPLE)
1 - PURPLE - 10 - 22 MC.
2 - RED - 4.0 - 10. MC.
3 - GREEN - 1.6 - 4.0 MC.
4 - BLACK OR BROADCAST

MODELS 480,Ed.1
480,Ed.2
481,484
Socket,Trimmers
Alignment,Parts

UNITED AMERICAN BOSCH CORP.

Model 480 Ed1 and 2 American-Bosch Radio Receiver

CIRCUIT DESCRIPTION

The Model 480 is a ten-tube all-wave receiver capable of receiving radiophone transmission in the complete frequency range between 540 kilocycles and 22,000 kilocycles. The receiver is designed to have four wave bands, namely, the Black band which covers the frequency range of 540 to 1550 K.C., the Green band, 1550 to 4000 K.C., the Red band, 4,000 to 10,000 K.C., and the Purple band, 10,000 to 22,000 K.C.

The circuit comprises an R. F. stage, a first detector, an oscillator, two stages of I. F. (456 K. C.), a combination second detector, A.V.C., and first audio stage, an audio driver stage and a power output stage of two tubes in parallel push-pull.

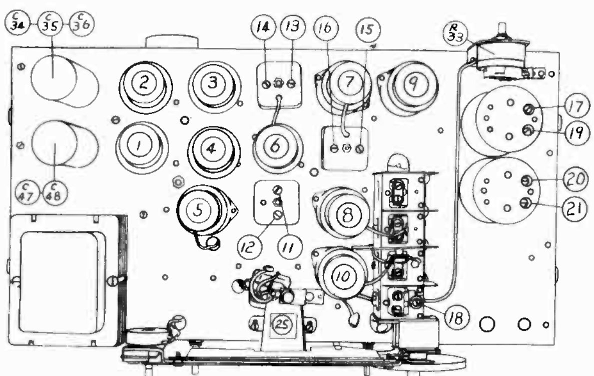


Figure #1

NOMENCLATURE

#1 83V rectifier tube	#11 3rd I.F. trimmer	#21 G.B. Osc. lag. cond.
#2 6D6 Push-pull output tube	#12 3rd I.F. trimmer	C11 P.B. Osc. trimmer *
#3 6D6 Push-pull output tube	#13 2nd I.F. trimmer	C12 P.B. Osc. lag. cond. *
#4 42 driver tube	#14 2nd I.F. trimmer	C13 R.B. Osc. lag. cond. *
#5 6B7 2nd det. A.V.C., 1st A.F. tube	#15 1st I.F. trimmer	C54 B.B. preselector trim.*
#6 78 2nd I.F. tube	#16 1st I.F. trimmer	C55 B.B. R.F. trimmer *
#7 78 1st I.F. tube	#17 B.B. oscillator trim. (color coded)	C56 R.B. antenna trimmer *
#8 77 1st detector tube	#18 B.B. antenna trimmer	C57 P.B. antenna trimmer *
#9 76 Oscillator tube	#19 B.B. Osc. lag. cond.	C58 P.B. R.F. trimmer *
#10 78 R.F. ampl. tube	#20 G.B. Osc. trimmer (color coded)	C59 R.B. R.F. trimmer *
		C60 G.B. R.F. trimmer *
		C61 G.B. antenna trimmer *
		* Trimmers shown in Fig. #2

ALIGNING THE RECEIVER

To properly align the Model 480 chassis, it is essential to use a high grade modulated test oscillator and a sensitive output meter. The R. F. signal fed into the receiver must be relatively weak or it will cause the A.V.C. to function making a correct alignment difficult. The sensitivity of the output meter must be sufficient to give satisfactory reading with a low input signal.

Before attempting to align a receiver, the service man should familiarize himself with the general layout of the chassis, the location of the tubes and the various alignment condensers. Top and bottom views are shown in Fig. #1 and #2 and should be carefully studied before the actual work is started.

A- I.F. ADJUSTMENT (456 K.C.)

1. Set test oscillator to 456 K.C.
2. Adjust sensitivity control (rear right-hand corner of chassis) to maximum sensitivity position.
3. Connect output meter across voice coil of speaker.
4. Connect in series with side of test oscillator leads, a .25 mfd. blocking condenser.
5. Connect test oscillator to grid of 2nd I. F. tube #6 and adjust #11 and #12 to maximum output reducing test oscillator signal as required.
6. Connect test oscillator to grid of 1st I. F. tube #7 and adjust #13 and #14 to maximum output.
7. Connect test oscillator to grid of 1st detector tube #8 and adjust #15 and #16 to maximum output.

B- ADJUSTMENT OF BROADCAST BAND

Note: Because of the sensitivity of the receiver, it is difficult to make an accurate R.F. adjustment unless the set sensitivity is reduced. This is accomplished by turning the sensitivity control (R33) so that the set is in its least sensitive position. This sensitive control is operative on the Broadcast and Green bands and is switched out on the Red and Purple bands.

1. Set test oscillator and station indicator to 1400 K.C.
2. Connect test oscillator to grid of 1st detector tube #8 and adjust #17 (color coded) until signal is tuned in.
3. Connect test oscillator to antenna and ground leads of the chassis making sure that capacity equivalent of .0002 mfd. is in series with high side of test oscillator leads.
4. Adjust #18 and the two trimmers located underneath the chassis C54 and C55 (see Fig. #2) until signal is correctly tuned in.
5. Set test oscillator and station indicator to 600 K.C. and adjust #19 to maximum output.
6. Return to 1400 K.C. setting and readjust #17 for correct calibration.

C- ADJUSTMENT OF GREEN BAND

1. Adjust wave change switch to Green band position and set test oscillator and station indicator to 3600 K.C.
2. Adjust #20 (color coded) until signal is tuned in.

Note: In adjusting the 3600 K.C. point it is possible to obtain two different positions of the trimmer condenser. This denotes, merely, the plus and minus frequency between the set oscillator and test oscillator which will give the I.F. frequency. The correct setting of the trimmer condenser is the one wherein the adjustment screw is furthest out. In any event, an incorrect setting will always be denoted by lack of sensitivity and incorrect calibration when the receiver and test oscillator are tuned to 2500 K. C. (mid-band).

3. Adjust trimmers C60 and C61 to maximum output.
4. Set test oscillator and station indicator to 1800 K.C. and adjust #21 until signal is at maximum.
5. Return to 3600 K.C. setting and readjust #20 for correct calibration.

D- ADJUSTMENT OF RED BAND

1. Adjust wave change switch to Red band position.
2. Set test oscillator and station indicator to 9000 K.C.

Note: Underneath the chassis fastened to the back plate is the Red band oscillator coil assembly #22. A Green wire twisted around a Green and White wire will be noticed. This twist serves to make the slight adjustment necessary to bring this band to correct calibration. If the receiver is not on calibration, an increase or decrease of the twist will serve to readjust the calibration. This adjustment will serve for about one-half a scale division in either way. If the receiver is initially off more than this, it indicates a fault in the oscillator circuit such as a poor or incorrect connection, open resistor, defective oscillator tube or other major fault.

Assuming that the correction can be made, the set is now placed on its proper setting and adjustment is made of the preselector trimmers C56 and C59 for maximum output.

3. Set test oscillator and station selector to 5000 K.C. and adjust C13 to maximum output.
4. Return to 9000 K.C. setting and check calibration.

E- ADJUSTMENT OF PURPLE BAND

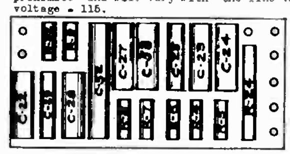
1. Adjust wave change switch to Purple band position.
2. Set test oscillator and station indicator to 20,000 K. C. and adjust C11 to maximum output.
3. Adjust C57 and C58 for maximum output.
4. Set test oscillator and station indicator to 12,000 K.C. and adjust C12 until signal is tuned in.
5. Return to 20,000 K.C. setting and recheck C11, C57 and C58.

Note: Make sure that correct adjustment is made at 20,000 K. C. by observing that the image is received at approximately 19,000 K. C. on the dial when the input signal from the test oscillator is increased to force the signal through the selector circuits.

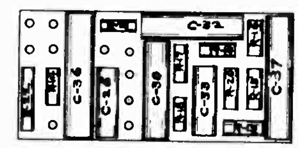
SOCKET VOLTAGES

Tube	Stage	Filament	Plate	Screen	Cathode
83V	Rectifier	5.0			340
6A6	Audio power output	6.0	305		
6A6	Audio power output	6.0	305		
42	Audio driver	6.0	280	280	30
6B7	2nd Det., AVC, 1st audio	6.0	12	55	3.8
78	I.F. amplifier	6.0	240	100	4.5
78	I.F. amplifier	6.0	230	100	4.5
78	I.F. amplifier	6.0	240	100	2.5
77	1st Detector	6.0	240	100	4.5
76	Oscillator	6.0	95		

Note: These values are readings of a high resistance voltmeter from each socket terminal to ground with the exception of the filament voltages. The values are only approximate and will vary with the line voltage and the type of meter employed. Line voltage = 115.



Resistor Strip #107508



Resistor Strip #107509

SERVICE PARTS LIST

Model 480 Ed. 1 (105-125 Volts 60 Cycle AC)
Model 480 Ed. 2 (105-125 Volts 60 Cycle AC)
Model 481 - - - (105-125 Volts 25 Cycle AC)
Model 484 - - - (90-250 Volts 50 Cycle AC)

CONDENSERS

Part No.	Dia. #	Description of Parts
106883	C1, C2, C3, C4	Variable condenser
	C5, C6	Part of 107494
	C7, C8	Part of 107495
	C9, C10	Part of 107496
107529	C11	7-70 mmf.
103800	C12	1000-2000 mmf.
107530	C13	500-1000 mmf.
	C14	400-800 mmf.) Part of
	C15	3-40 mmf.) 107482
	C16	270-600 mmf.) Part of
	C17	7-70 mmf.) 107481
106417	C18	100 mmf. mica
106386	C19	.05 mf. 200 V.
106386	C20	.05 mf. 200 V.
106386	C21	.05 mf. 200 V.
106386	C22	.05 mf. 200 V.
106386	C23	.05 mf. 200 V.
102492	C24	.05 mf. 350 V.
103659	C25	.005 mf. 350 V.
106386	C26	.05 mf. 200 V.
106386	C27	.05 mf. 200 V.
106386	C28	.05 mf. 200 V.
103659	C29	.005 mf. 350 V.
106417	C30	100 mmf. mica
106417	C31	100 mmf. mica
102504	C32	.02 mf. 350 V.
106386	C33	.05 mf. 200 V.
107510	C34	4 mfd. electrolytic
	C35	4 mfd. electrolytic
	C36	8 mfd. electrolytic
102499	C37	.5 mf. 200 V.
102499	C38	.5 mf. 200 V.
102504	C39	.02 mf. 350 V.
106403	C40	.001 mf. 500 V.
107516	C41	10 mfd. 25V.
107615	C42	.01 mf. 500 V.
106386	C43	.05 mf. 200 V.
102504	C44	.02 mf. 350 V.
102504	C45	.02 mf. 350 V.
106417	C46	100 mmf. mica
CE 955	C47	8 mfd. electrolytic
	C48	8 mfd. electrolytic
106805	C49	.1 mfd. 350 V.
106386	C50	.05 mf. 200 V.
	C51	4-25 mmf.) Part of
	C52	4-25 mmf.) 107138
	C53	4-25 mmf. Part of 107487
	C54	7-70 mmf.) Part of
	C55	7-70 mmf.) 107506
	C56	4-25 mmf. Part of 107492
	C57	4-25 mmf. Part of 107491
	C58	4-25 mmf. Part of 107486
	C59	8 mfd. elec.) Mod.481
	C60	4 mfd. elec.) Part of
	C61	4 mfd. elec.) 107510
	C62	Part of 106883

RESISTORS

Part No.	Dia. #	Description of Parts
105246	R1	1/2 meg. 1/4 W.
105260	R2	300 ohms 1/4 W.
105249	R3	5000 ohms 1/4 W.
105267	R4	1000 ohms 1/4 W.
105249	R5	5000 ohms 1/4 W.
105267	R6	1000 ohms 1/4 W.
105267	R7	1000 ohms 1/4 W.
105249	R8	5000 ohms 1/4 W.

RESISTORS (Cont'd)

Part No.	Dia. #	Description of Parts
105267	R9	1000 ohms 1/4 W.
105281	R10	1 meg. 1/4 W.
	R11	50,000 ohms 1/4 W. Part of 107496
107585	R12	1/2 meg. vol. cont.
105245	R13	2000 ohms 1/4 W.
105276	R14	50,000 ohms 1/4 W.
105281	R15	1 meg. 1/4 W.
105279	R16	250,000 ohms 1/4 W.
105276	R17	50,000 ohms 1/4 W.
105279	R18	250,000 ohms 1/4 W.
107584	R19	1/4 meg. tone control
105281	R20	1 meg. 1/4 W.
105278	R21	100,000 ohms 1/4 W.
105270	R22	2500 ohms 1/2 W.
107583	R23	1800 ohms 30 W.
107572	R24	5000 ohms 1 W.
107614	R25	100 ohms 1/4 W.
	R26	5000 ohms 1/4 W. part of 107482
	R27	2000 ohms 1/4 W. part of 107481
105255	R28	50 ohms 1/4 W.
105274	R29	20,000 ohms 1/4 W.
102345	R30	20,000 ohms 1 W.
107572	R31	5,000 ohms 1 W.
105249	R32	5,000 ohms 1/4 W.
VR 953	R33	10,000 ohms variable

MAIN ASSEMBLIES

Part No.	Description of Parts
107780	Chassis assembly - 480D Ed. 2
107480	Chassis assembly - 480
107781	Chassis assembly - 481
107784	Chassis assembly - 484
107377	Cabinet
107594	Speaker assembly

COILS

Part No.	Description of Parts
107488	Antenna coil - purple band
107493	R.F. coil - purple band
107487	Antenna coil - red band
107492	R.F. coil - red band
107486	Antenna coil - green band
107491	R.F. coil - green band
107485	Antenna coil - broadcast band
107489	Preselector coil - broadcast band
107490	R.F. coil - broadcast band
107494	1st I.F. coil assembly
107495	2nd I.F. coil assembly
107496	3rd I.F. coil assembly
107481	Osc. coil assemb.- broadcast band
107482	Osc. coil assembly- green band
107483	Osc. coil assembly- red band
107484	Osc. coil assembly- purple band

TRANSFORMERS

Part No.	Description of Parts
107106	Power transformer - 480
107709	Power transformer - 480 Ed. 2
107870	Power transformer - 484
107719	Power transformer - 481
107504	Iron core filter choke- 3 leads
103554	Iron core filter choke- 2 leads
107564	Input transformer assembly

CABLES & CABLE ASSEMBLIES

Part No.	Description of Parts
105952	Antenna cable assembly
104445	Ground cable assembly
101711	Line cable assembly

SPEAKER (107594) PARTS

MODELS 470 G,U
471 G,U
474 G,U
Schematic,Voltage
Resistor Data

UNITED AMERICAN BOSCH CORP.

MAIN ASSEMBLIES

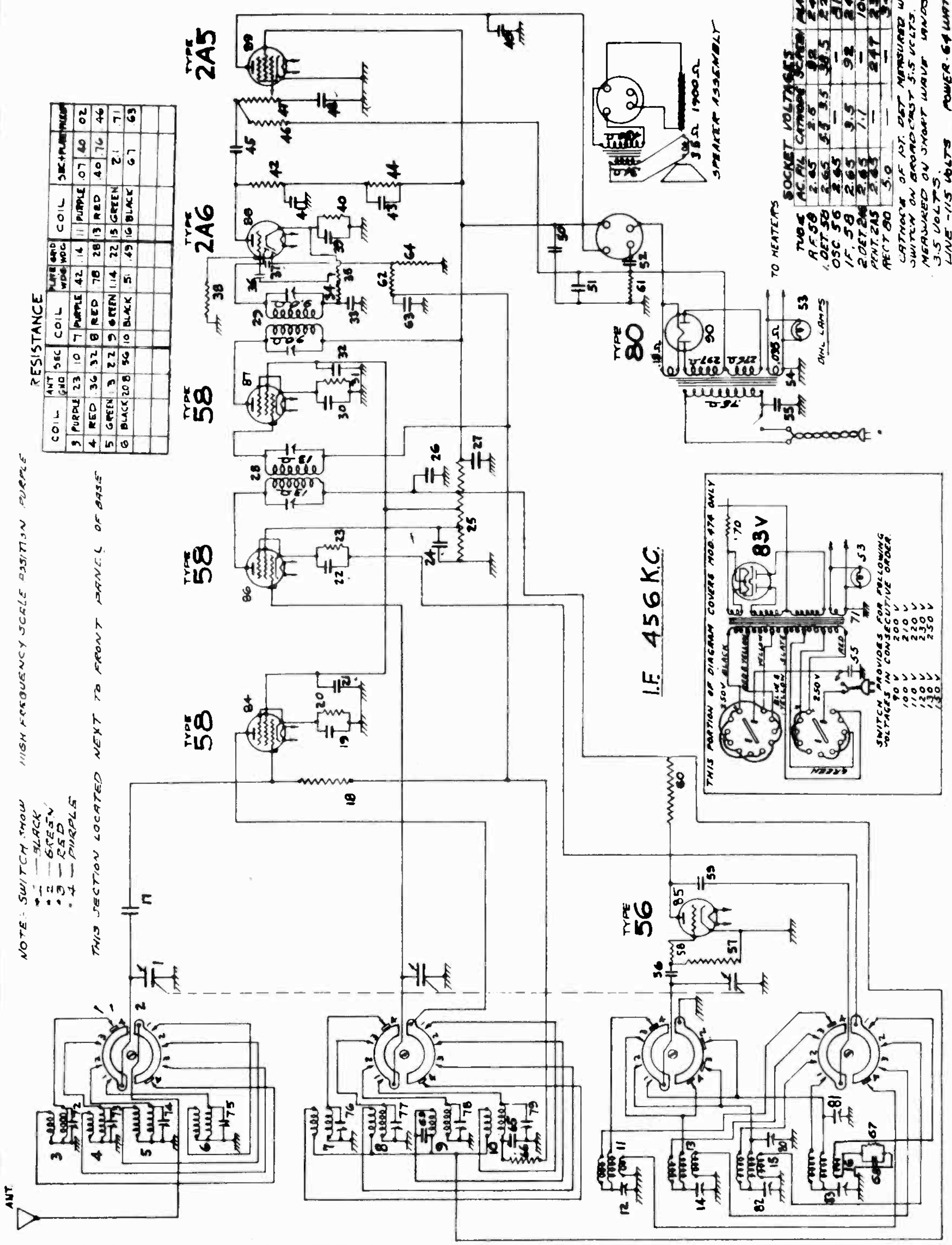
CH9513A	Chassis assembly - 474G & U
CH9516A	Chassis assembly - 471G&U
CH 959A	Chassis assembly - 470G & U
KA 952	Cabinet - Mdls 470U,471U,474U
KA 953	Cabinet - Mdls 470G,471G,474G
107284	Speaker - Mdls 470U,471U,474U
107369	Speaker - Mdls 470G,471G,474G

CABLES & CABLE ASSEMBLIES

CB9512	Line cable

TRANSFORMERS

105781	Power trans.- Mdls 470G & U
106098	Power trans.- Mdls 471G & U
107875	Power trans.- Mdls 474G & U



RESISTANCE

COIL		ANT GND	SEC	COIL		PLATE WDG	GRID WDG	COIL		SEC+PLATE		
3	PURPLE	23	10	7	PURPLE	42	.14	11	PURPLE	.07	.60	.02
4	RED	36	32	8	RED	78	28	13	RED	.40	.76	.46
5	GREEN	3	22	9	GREEN	1.14	22	15	GREEN	2.1		.71
6	BLACK	208	56	10	BLACK	51	49	16	BLACK	6.7		.63

SOCKET VOLTAGES

TUBE	AC FIL	CATHODE	SCREEN	PLATE
RF 58	2.45	3.6	92	247
1 DET 58	2.65	5.5 3.5	30.5	220
OSC 56	2.45	—	—	91
I.F. 58	2.65	3.5	92	247
2 DET 2A6	2.65	1.1	—	100
PENT 2A5	2.45	—	247	238
RECT 80	5.0	—	—	348

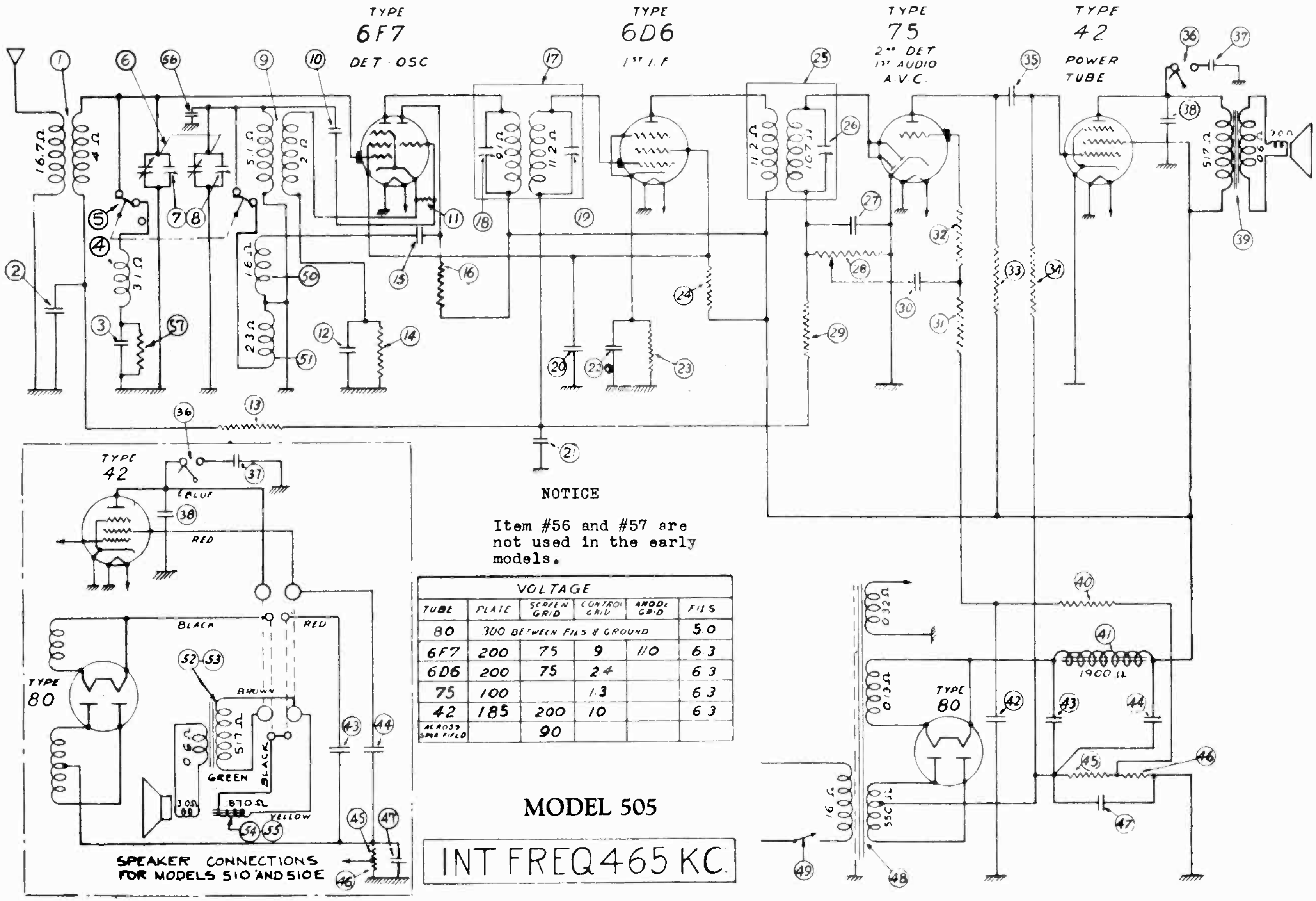
CATHODE OF 1ST DET MEASURED WITH SWITCH ON BROADCAST 5.5 VOLTS. MEASURED ON SHORT WAVE BANDS 3.5 VOLTS.
LINE - 115 VOLTS POWER - 64 WATTS
POWER PENTODE BIAS - 19 VOLTS

FOR OTHER PARTS LISTS
AND ALIGNMENT DATA
SEE MODEL 460 Ed. 2.

470 G&U 105-125 V. 50-60 cy AC
471 G&U 105-125 V. 25 cy AC
474 G&U 90- 250 V. 50 cy AC

MODEL 505
Schematic
Voltage

UNITED AMERICAN BOSCH CORP.



NOTICE

Item #56 and #57 are not used in the early models.

VOLTAGE					
TUBE	PLATE	SCREEN GRID	CONTROL GRID	ANODE GRID	FILS
80	300 BETWEEN FILS & GROUND				5.0
6F7	200	75	9	110	6.3
6D6	200	75	2.4		6.3
75	100		1.3		6.3
42	185	200	10		6.3
ACROSS SPKR FIELD		90			

MODEL 505

INT FREQ 465 KC

MODEL 505
Socket, Trimmers
Alignment, Parts

UNITED AMERICAN BOSCH CORP.

AMERICAN-BOSCH RADIO MODEL 505

Five Tube, Two Band, Superheterodyne Receiver

ELECTRICAL SPECIFICATIONS

Type and Number of Tubes	1 #6F7, 1 #6D6, 1 #75, 1 #42, 1 #80 - Total 5
Power Supply	105 to 125 volts, 50 to 60 cycles A.C.
Power Consumption	46 Watts
Tuning Ranges	530 to 1500 K.C. and 1500 to 3300 K.C.
Maximum Undistorted Output	1.5 Watts
Maximum Output	2.8 Watts
Line-Up Frequencies	I.F. 465 K.C., 1400 K.C.

GENERAL DESCRIPTION

This model is a five-tube, A.C., two-band superheterodyne receiver whose circuit comprises a combined first detector-oscillator an intermediate frequency amplifier, a combined second detector, A.V.C. and first audio amplifier, a power pentode output stage and a rectifier with its associated filter circuit and power transformer.

This model is designed to work over two bands, the broadcast band extending from 530 to 1500 K.C. and a police band which extends from 1500 to 3300 K.C.

LINE-UP CAPACITOR ADJUSTMENTS

To align the circuits of this receiver it is essential to use a high grade modulated test oscillator, the output of which can be continuously varied with absence from overload when the individual circuits of the receiver are brought into alignment.

A onventional output meter can be connected across the terminals of the speaker voice coil to indicate when the circuits are aligned. The sensitivity of the output meter must be sufficient to give satisfactory reading with a low input signal.

Before attempting to align the receiver, the service man should familiarize himself with the general layout of the chassis, the location of the tubes and various alignment condensers. Top and bottom views of the chassis are shown in Fig. #1 and #2 and should be carefully studied before the actual work is started.

ADJUSTMENT OF I.F. (465 K.C.)

1. Set volume control on full and turn tone control knob to the right hand position.
2. Connect output meter across voice coil of speaker.
3. Set test oscillator to 465 K.C. and adjust its output to produce a measurable reading on output meter when test signal is applied to the grid of the 6D6 I.F. tube thru a .25 mfd. blocking condenser.
4. Adjust #26 (see Fig. #2) to maximum output reducing output of test oscillator as required.
5. Apply test signal to grid of 6F7 first detector-oscillator tube and adjust #18 and #19 (Fig. #1) to maximum output.
6. With test signal still on the grid of 6F7 tube, repeat the above adjustments for greatest sensitivity.

ADJUSTMENT OF BROADCAST BAND

1. Leave test signal on grid of 6F7 tube and set the test oscillator to 1400K.C.
2. Turn the gang condenser to its maximum position. Adjust dial indicator until either end is directly over the long horizontal lines on the dial scale. Then set dial indicator to 1400 K.C.
3. Adjust trimmer #8 to maximum output.
4. Apply test signal to antenna of set thru a .0002 mfd. condenser and adjust trimmer #7 to maximum output.

ADJUSTMENT OF POLICE BAND

When adjustments as outlined under the broadcast band are completed, the police band requires no adjustment unless the coil had been changed. In this event, set test oscillator and station indicator to 1700 K.C. and apply test signal to antenna lead. The police band winding is indicated by "A" in Fig. #2. Adjust the position of this winding by sliding it back and forth on the core until maximum output is indicated on the output meter. This winding should then be secured in place by applying a thin coat of coil cement.

SERVICE PARTS LIST MODEL 505

Dia. #	Part #	Description
1	RC 9588	Antenna coil assy.
2		.05 mfd. 200 V. cond. - part of SA 105327
3	CM 958	400 mmfd. mica cond.
4		Police pre-selector coil-part of RC 9588
5	SW 9519	Switch assembly
6	CG 9522	Variable gang condenser
7-8		Trimmer condensers - part of CG 9522
9	RC 9589	Oscillator coil assy.
10	SA 106417	100 mmfd. mica condenser
11	SA 105276	50,000 ohm ½ W. resistor
12	SA 106386	.05 mfd. 200 V. cond.
13	SA 105279	250,000 ohm ½ W. res.
14	SA 105269	1800 ohm ½ W. resistor
15	SA 106277	.01 mfd. 400 V. cond.
16	SA 100197	25,000 ohm ½ W. resistor
17	IC 9532	1st I.F. transformer
18-19		I.F. trimmer condensers - part of IC 9532
20	SA 102494	.1 mfd. 400 V. condenser
21-22		.05 mfd. 200 V. condensers - part of SA 105327
23	SA 105264	500 ohm ½ W. resistor
24	SA 101163	75,000 ohm ½ W. resistor
25	IC 9533	2nd I.F. transformer
26		I.F. trimmer condenser - part of IC 9533
27	SA 106417	100 mmfd. mica condenser
28	VR 957	Volume control and line switch (500,000 ohm)
29	SA 105281	1 meg. ½ W. resistor
30	CW 9512	.02 mfd. 400 V. condenser
31	SA 105281	1. meg. ½ W. resistor
32	SA 105278	100,000 ohm ½ W. resistor
33	SA 105279	250,000 ohm ½ W. resistor
34	SA 100195	250,000 ohm ½ W. resistor
35	CW 9512	.02 mfd. 400 V. condenser
36		Tone control switch - part of SW 9519
37	CW 9512	.02 mfd. 400 V. condenser
38	SA 103695	.01 mfd. 600 V. condenser
39	SA 107357	Speaker output trans.
40	SA 105276	50,000 ohm ½ W. resistor
41	SA 107358	Speaker field coil - (1900 ohm)
42		.05 mfd. 200 V. condenser - part of SA 105327
43	CE 9512	12 mfd. electrolytic cond.
44	CE 9511	8 mfd. electrolytic cond.
45		320 ohm resistor - part of RE 9513
46		30 ohm resistor - part of RE 9513
47	CE 958	10 mfd. electrolytic cond.
48	TR 9511	Power transformer
49		Line switch-part of VR957
50		Oscillator feed back coil - part of RC 9589
51		Police oscillator coil - part of RC 9589
56	SA 108043	.00001 mfd. mica cond.
57	SA 105272	10,000 ohm ½ W. res.

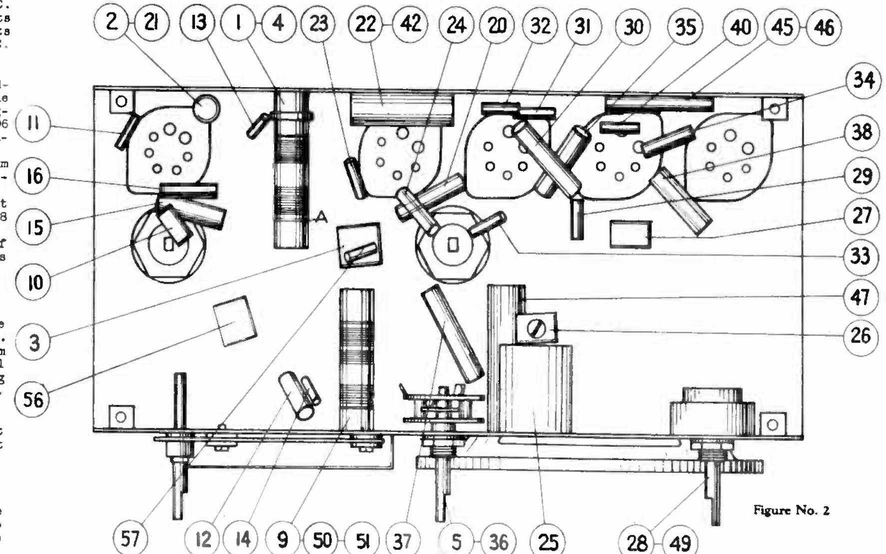


Figure No. 2

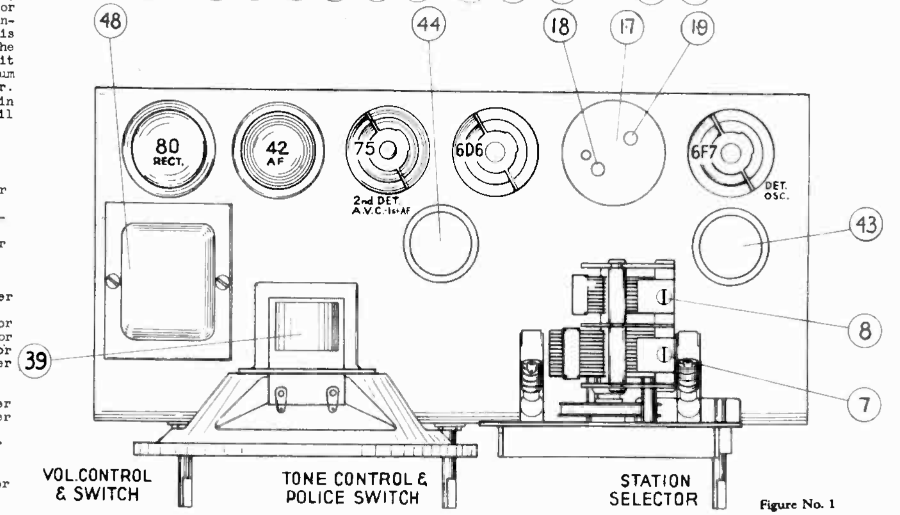
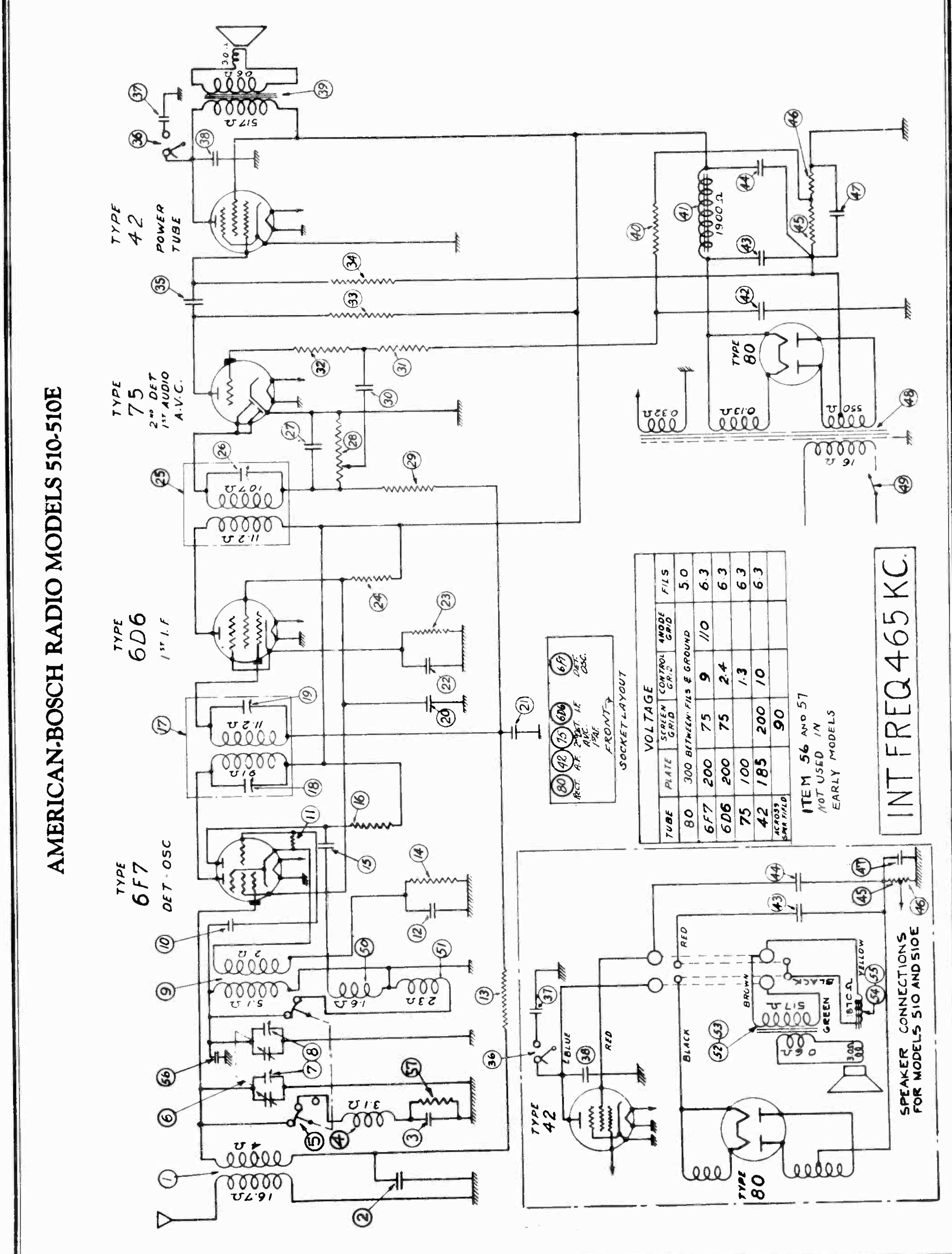


Figure No. 1

UNITED AMERICAN BOSCH CORP.

MODELS 510, 510E
Schematic, Voltage
Socket

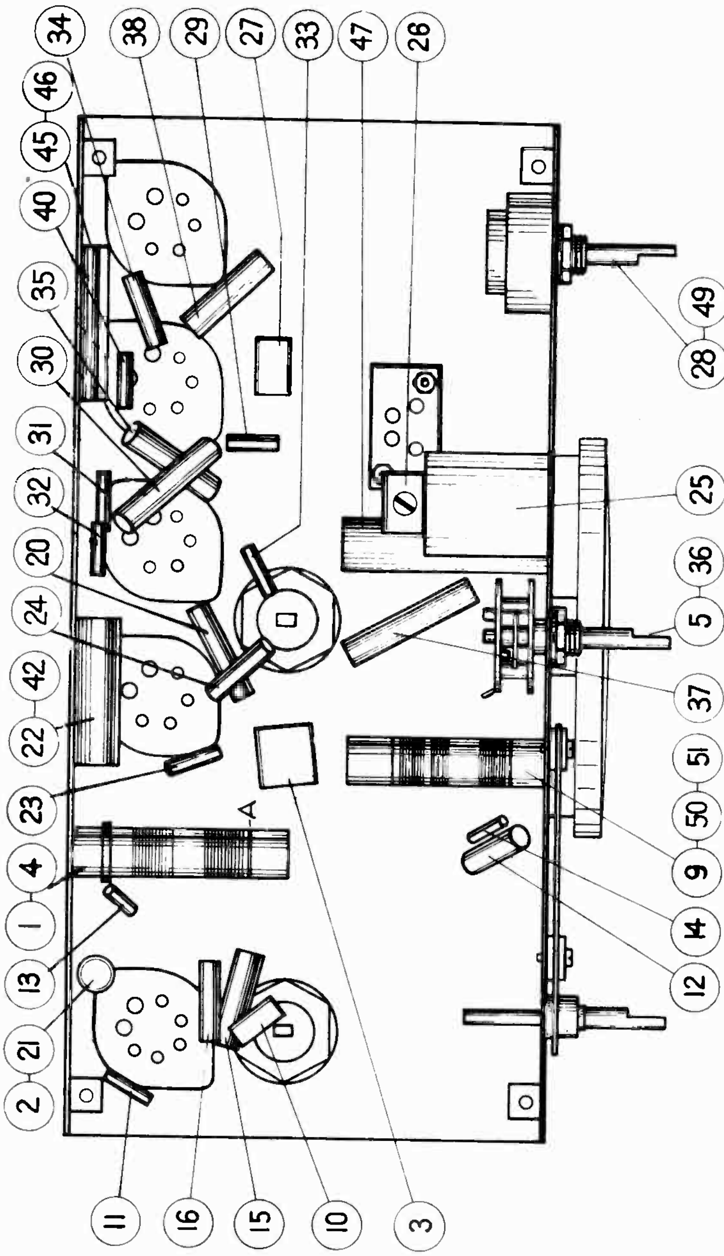


VOLTAGE

TUBE	PLATE	SCREEN GRID	CONTROL GRID	ANODE GRID	FILS
80	300 BETWEEN FILS & GROUND				5.0
6F7	200	75	9	110	6.3
6D6	200	75	2.4		6.3
75	100		1.3		6.3
42	185	200	10		6.3
ACROSS SPKR FIELD		90			

MODELS 510, 510E
Trimmers, Alignment

UNITED AMERICAN BOSCH CORP.



LINE-UP CAPACITOR ADJUSTMENTS

To align the circuits of this receiver it is essential to use a high grade modulated test oscillator, the output of which can be continuously varied with absence from overload when the individual circuits of the receiver are brought into alignment.

A conventional output meter can be connected across the terminals of the speaker voice coil to indicate when the circuits are aligned. The sensitivity of the output meter must be sufficient to give satisfactory reading with a low input signal.

Before attempting to align the receiver, the service man should familiarize himself with the general layout of the chassis, the location of the tubes and various alignment condensers. Top and bottom views of the chassis are shown in figures #1 and #2 and should be carefully studied before the actual work is started.

ADJUSTMENT OF I.F. (465 K.C.)

1. Set volume control on full and turn tone control knob to the right hand position.
2. Connect output meter across voice coil
3. Set test oscillator to 465 K.C. and adjust its output to produce a measurable reading on output meter when test oscillator is applied to the grid of the 6D6 I.F. tube thru a .25 mfd. blocking condenser.
4. Adjust #26 (see Fig. #2) to maximum output reducing output of test oscillator as required.
5. Apply test signal to grid of 6F7 first detector-oscillator tube and adjust #18 and #19 (see Fig.#1) to maximum output.
6. With test signal still on the grid of the 6F7 tube, repeat the above adjustments for greatest sensitivity.

ADJUSTMENT OF BROADCAST BAND

1. Leave test signal on grid of 6F7 tube and set test oscillator to 1400 K.C.
2. Turn the gang condenser to its maximum position. Adjust dial indicator until either end is directly over the long horizontal lines on the dial scale. Then set dial indicator to 1400 K.C.
3. Adjust trimmer #8 to maximum output.
4. Apply test signal to antenna of set thru a .0002 mfd. series condenser and adjust trimmer #7 to maximum output.

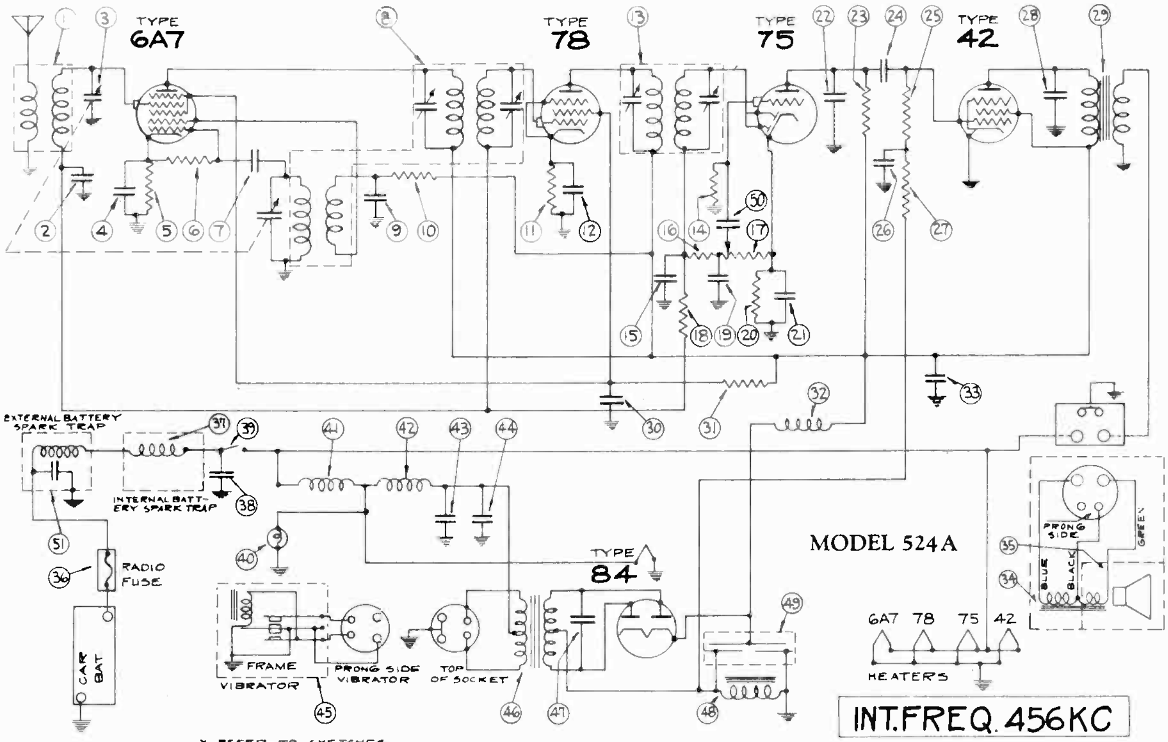
ADJUSTMENT OF POLICE BAND

When adjustments as outlined under the broadcast band are completed, the police band requires no adjustment unless the coil has been changed.
In this event, set test oscillator and station indicator to 1700 K.C. and apply test signal to antenna lead. The police band winding is indicated by "A" in Fig. #2. Adjust the position of this winding by sliding it back and forth on the core until maximum output is indicated on the output meter. This winding should then be secured in place by applying a thin coat of coil cement.

Type and Number of Tubes	1 #6F7, 1 #6D6, 1 #75, 1 #42, 1 #80 - Total 5
Power Supply	105 to 125 volts, 50 to 60 cycles A.C.
Power Consumption	46 Watts
Tuning Ranges	530 to 1500 K.C. and 1500 to 3300 K.C.
Maximum Undistorted Output	1.5 Watts
Maximum Output	2.8 Watts
Line-Up Frequencies	I.F. 465 K.C., 1400 K.C.

UNITED AMERICAN BOSCH CORP.

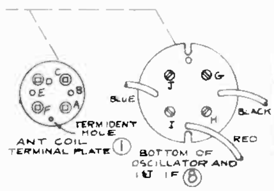
MODEL 524A
Editions 1,2,2D,2G
Schematic, Voltage
Socket, Trimmers
Resistor Data



* REFER TO SKETCHES

WINDING RESISTANCE

PART	FUNCTION	PRIMARY RESIST.	PRIMARY IDENT. *	SECONDARY RESIST.	SECONDARY IDENT. *
1	ANT COIL	2 Ω	C TO D	4 Ω	A TO F
8	OSCILLATOR	3 Ω	G TO I	4 Ω	H TO J
8	1ST I F	13 Ω	RED TO BLUE	13 5 Ω	GREEN TO BLACK
13	2ND I F	14 Ω	RED TO BLUE	13 5 Ω	GREEN TO BLACK
29	OUTPUT	550 Ω	GREEN TO BROWN		
46	POWER	03 Ω	BLACK TO GREEN	860 Ω	RED TO BLUE
48	CHOKE	350 Ω	BLACK TO GND		



SOCKET VOLTAGE

TUBE	STAGE	FIL	PLATE	CATH	SCREEN	TRIODE	OUTPUT GRID BIAS MEASURED ACROSS POWER PACK CHOKE 48
6A7	DET OSC	6 0	235	3.2	97 0	175	
78	I F	6 0	2405	2 5	98 0		
75	2ND DET	6 0	1465	1 5			
84	RECTIFIER	6 0					
42	POWER	6 0	227.5		243		- 16 5

NOTE ALL VOLTAGE READINGS WITH A VOLTMETER HAVE A RESISTANCE OF 1000 Ω PER VOLT

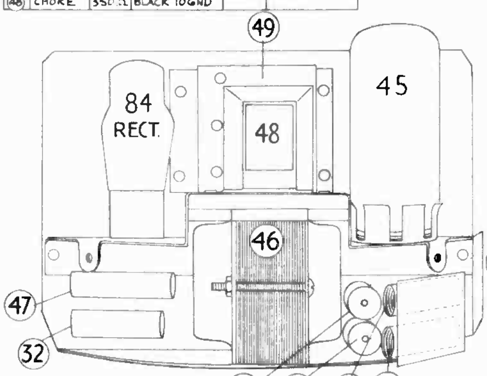


Figure No. 3

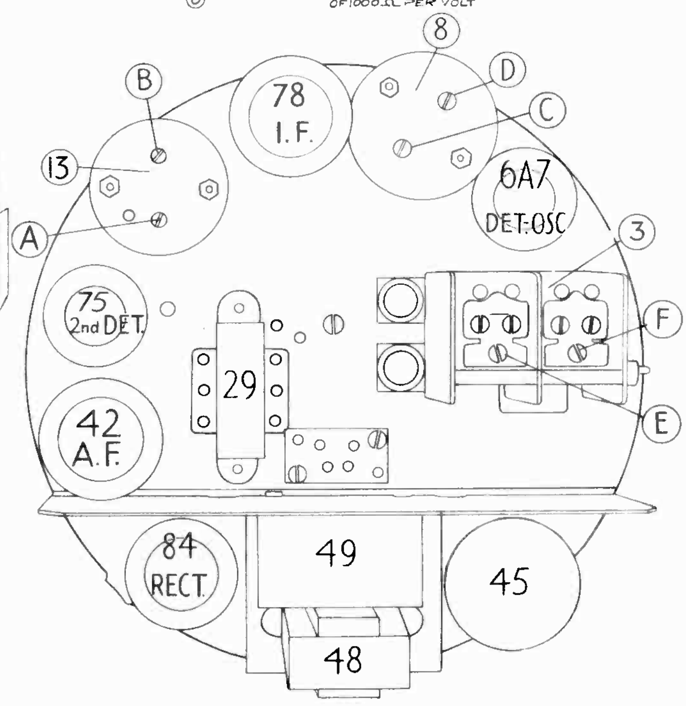


Figure No. 2

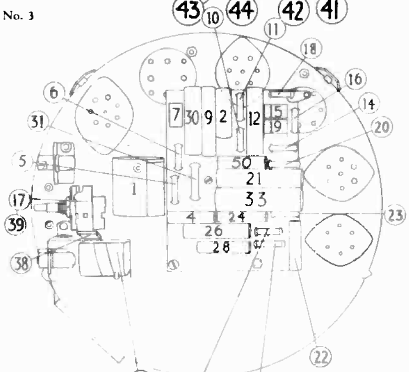


Figure No. 4

MODEL 524A
Editions 1,2,2D,2G
Service Data,Parts
Alignment

UNITED AMERICAN BOSCH CORP.

AMERICAN-BOSCH CAR-RADIO MODEL 524A

Ed 1 Ed 2 Ed 2D Ed 2G

Five-Tube, Superheterodyne Receiver

SERVICE NOTES

ELECTRICAL SPECIFICATIONS

Type and Number of Tubes .... 1 #6A7, 1 #78, 1 #75, 1 #42, 1 #84 - Total 5
Battery Current (6.3 Volt Battery) .... 6.5 Amperes
Tuning Range .... 540 to 1500 K.C.
Maximum Undistorted Output .... 3. Watts
Maximum Output .... 4. Watts
Line-up Frequencies .... I.F. 456 K.C., 1400 K.C., 1500 K.C.

GENERAL DESCRIPTION

The Model 524A Car-Radio has been designed, manufactured and tested with special regard for the requirements of automobile radio. The electrical, mechanical and acoustical features of the set have been decided upon after extensive tests in automobiles to determine the proper requirements for satisfaction. This Car-Radio is a single unit compact radio chassis, power pack, and speaker with a separate remote control. The set is contained in a cylindrical housing and provided with many features which result in improved tone quality, attractive appearance, mechanical stability and desirable service features.

CIRCUIT DESCRIPTION

The circuit is of the superheterodyne type employing five tubes as follows: a type 6A7 as a combined first detector-oscillator, a type 78 as an intermediate frequency amplifier, a type 75 as a combination second detector-A.V.C. and first audio amplifier, a type 42 as a final audio amplifier and a type 84 as a rectifier in the power supply.

The Model 524A Ed. 1 has been designed with an internal tuned spark trap in the battery circuit to assist in suppression of ignition interference.

The Model 524A Ed. 2 has an additional spark trap connected externally in the battery cable. These two spark traps make the use of spark plug suppressors unnecessary in many installations.

SERVICE DATA

COMMON TROUBLES THAT CAN BE EASILY LOCATED AND REMEDIED WITHOUT REMOVING RECEIVER FROM CAR OR FROM ITS HOUSING.

DIAL LIGHT DOES NOT LIGHT

Dial light loose in socket, broken or burnt out.

Socket on end of lead in rear of control head pulls straight out.

SET INOPERATIVE AND TUBES DO NOT LIGHT

Check fuse in container on receiver ammeter lead. Remove speaker cover and disconnect speaker plug. Remove vibrator, all tubes and disconnect dial light cable from set. Check with ohmmeter from Hot A side of battery cable (male bayonet connector inside the housing that the fuse container engages) to ground. Should ohmmeter show an open circuit when line switch is closed, obviously a tube or the vibrator is shorted and these parts can be checked separately to determine the defective one. On the other hand, if ohmmeter shows a short circuit, the chassis should be removed from its housing and checked.

INTENSIVE OR WEAK

Check car antenna for poor connections and grounds. Also check tubes and the receiver alignment.

INTERMITTENT RECEPTION

This is usually caused by a poor connection from the set antenna lead to the car antenna lead-in, and this point should always be checked when intermittent reception occurs.

MICROPHONIC OR INTERMITTENT

Tap each tube lightly with a small piece of wood or an insulated screw driver handle. The offending tube, when tapped, will usually howl very loudly if microphonic, or will give intermittent results if defective.

LOW POWER OUTPUT

Check tubes and vibrator. Usually caused by the latter.

RECEPTION CUTS OFF AT CERTAIN POINTS

OF DIAL SCALE

Usually caused by some foreign metallic substance shorting a section of the condenser gang. These particles are often too small to be seen but can be removed by blowing them out with an air pressure hose or an ordinary hand pump. Great care must be exercised not to destroy the thin mica insulators assembled under the trimmers on top of condenser gang.

POOR TONE QUALITY

Foreign material is apt to become lodged in between the speaker voice coil and the field core. This hampers the movement of the speaker diaphragm. As the rear of the speaker diaphragm is open, it can be blown out clean with an air hose.

BUZZING SOUND IN SPEAKER

This can be remedied in many cases by the method described above, but can also be caused by a loose winding on the voice coil. The turns of the winding should be pushed together and a thin coat of collodion or coil cement should be applied to hold the windings in place.

RATTLES

Check receiver for loose cover thumb screws, tube shield and housing screws. Rattles seemingly in the radio receiver, are often traced to loose parts on the bulkhead or dashboard of the car.

SET INOPERATIVE

TUBES LIGHT AND VIBRATOR BUZZES

A. Check B voltage (approximately 240 volts) from middle terminal of electrolytic filter condenser #49 to ground. This point is easily reached with the speaker cover removed. If no voltage or low voltage is obtained, test the vibrator and 84 tube. If voltage is still incorrect, the receiver should be removed from its housing for further checking.

B. With the speaker plugged in, remove the clip from the grid of the 75 tube and touch the clip to the grid cap of the tube several times in succession. A clicking noise should be heard in the speaker. This is a practical test for the audio amplifier and speaker. If this clicking noise is not heard, the 75 and 42 tubes should be tested and the voltages checked at the plates of these tubes. The speaker should be also checked with an ohmmeter by testing across the prongs of the plug for continuity. While making this test, the cable should be worked back and forth to show up a possible intermittent open circuit in the speaker cable. Check the voice coil and the field coil for continuity.

If the audio and speaker are still dead, the chassis should be removed from its housing.

If the audio and speaker are working correctly, test the remaining tubes and check the voltage at each socket.

In the event the chassis has to be removed from the car for repairs, this can easily be done as follows:

Disconnect all chassis cables and the flexible control shafts from the receiver. Remove the speaker cover and pull out the speaker plug. Remove the screws around the outside of the housing and pull the chassis straight out. Because of this feature, the chassis can be removed in many cars without unbolting the chassis housing from the car.

LOCATING TROUBLE IN CHASSIS

In locating a short, open or defective unit that results in low or no B voltage, disconnect the power pack from the receiver section by removing the Red lead coming from coil #32 (see Fig. #3) and soldered to the terminal at the end of resistor #23 shown in Figure #4. Check the voltage at the free end of this Red lead (should be approximately 250 volts.) If the voltage is incorrect, the trouble is definitely in the power pack and all component parts should then be checked.

Conversely, if the voltage reading proves to be correct, the trouble is in the receiver section and all parts should be checked. In locating a short or open in the filament circuit, the power pack may be disconnected from the filament supply of the receiver section by removing the red wire on the top terminal of the "off" and "on" switch that goes to the 42 tube. This will connect only the power pack in the filament circuit and if the short or open is corrected, it will prove that the trouble is in the receiver section.

WEAK OR INSENSITIVE AFTER REALIGNMENT

Check coils and associated circuits for resistance in deficient stage.

LOW POWER OUTPUT WITH B VOLTAGE CORRECT

Check speaker field coil, voice coil and associated audio circuit for resistance continuity and defective condensers. All riveted component parts can be removed by merely punching out the rivets with a small diameter straight side punch. Replacement parts can be secured with small machine screws and nuts.

In changing the power transformer, it is only necessary to remove the four drive screws, two located directly over the resistor and condenser strip, and the other two in back of the condenser gang on the power pack shield. In replacing the power transformer be sure to tighten the screws securely and replace the shield braid bond or vibrator noise will be present.

INSTRUCTIONS FOR ADJUSTING VIBRATOR

Just like automobile ignition contacts, the Tungsten contact points of vibrators will show evidence of wear after they have been in service for a long period of time. This wear progresses very gradually and, as long as the vibrator is capable of operation, any amount of wear up to this point has no influence whatsoever on the performance of the radio set or on the voltage supplied to the tubes.

After a long period of service, the vibrator may refuse to start and if this point is ever reached in the life history of the radio set, it is indicative of excessively worn Tungsten in the contact points. However, the vibrator has been designed with a generous reserve of Tungsten in the contact points and this reserve is available for giving the vibrator a new lease of life, provided one single adjustment is made. This is done as follows:

1. Remove the vibrator unit from its housing by removing the tension spring with a pair of round nose pliers.

2. Remove the rubber sock, being careful not to bend the wires at the soldered connection.

3. Lay the vibrator on a piece of white paper so that when viewed from above it appears exactly like in the following drawing.

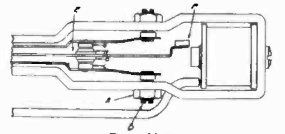


Figure No. 1

4. Loosen lock nut A and turn screw B clockwise until .005" of light can be seen between contacts C and D. If the contact points are somewhat roughened, light cannot be seen across their entire diameter, even though they are correctly re-spaced, that is, within .005" of touching each other.

5. A simple check on the correctness of the spacing adjustment is gotten by pressing lightly against the center of the reed with a small nail in the direction and location shown by arrow "E". When the reed is thus moved so as to close contacts "C" and "D", the weight "F" on the free end of the reed should move 1/64" from its "at rest" position. This check should be made after lock nut "A" has been firmly retightened.

6. Do not readjust the spacing between contacts G and H unless the Tungsten is nearly all worn away. In this case, readjustment may be made the same as for contacts C and D.

7. In re-inserting the vibrator into its rubber sock, be very careful to turn the "flats" of the sock hole so that they are parallel to the flat side of the vibrator frame. This provides ample space in the sock for the free movement of the reed. Make certain that the slot in the prong terminal plate engages the small projection on the inside edge of the housing. Then replace the tension spring.

THESE INSTRUCTIONS DO NOT APPLY TO ANY OTHER TYPES OF VIBRATORS.

LINE-UP CAPACITOR ADJUSTMENTS

All the adjustable capacitors, commonly called trimmer condensers, are very accurately adjusted at the factory and will not need any further adjustment unless a coil or I.F. transformer is changed, or the adjustments tampered with in the field. Therefore, DO NOT attempt to change the setting of any of the trimmer condensers unless it is definitely known that adjustment is necessary and a high grade modulated oscillator is available, then proceed as follows and refer to Fig. #2.

1. Set test oscillator to 456 K.C.

2. Set condenser gang to approximately 600 K.C. This will be at a point where the condenser plates are nearly all in mesh.

3. Connect output meter across voice coil of speaker. This may be done by connecting one lead of the output meter to the blue lead of the speaker terminal strip and the other lead to any metal part of the chassis. (The impedance of the voice coil is 3. ohms.)

4. Apply test signal to grid of 78 I.F. tube through a .5 mfd. blocking condenser and adjust trimmers A and B to maximum output reducing output of test oscillator as required.

5. Apply test signal to grid of 6A7 detector-oscillator tube and adjust trimmers C and D to maximum output.

6. Set test oscillator to 1500 K.C. and turn condenser gang until the rotor plates are wide open. Then place a piece of thin paper (approximately .015 thick) between the rotor and stator at the bottom of the gang, and then close the rotor down to this spacing. This is the exact setting of the condenser gang for the receiver oscillator at 1500 K.C. and should be carefully set as the resultant alignment of the receiver is directly dependent upon it.

7. Adjust trimmer E to maximum output and then remove the paper gauge.

8. Set test oscillator and condenser gang to 1400 K.C.

9. Apply test signal to antenna lead through a .0002 mfd. condenser and adjust trimmer F to maximum output. This completes the adjustment of the receiver.

SERVICE PARTS LIST

Dia. #	Part #	Description of Parts
1	RC 9525	Antenna coil assembly
2	SA 106386	.05 mfd. 200 V. cond.
3	CG 953	Condenser gang assy.
4	SA 106386	.05 mfd. 200 V. cond.
5	SA 105260	300 ohms 1/4 W. resistor
6	SA 105276	50,000 ohms 1/4 W. res.
7	SA 106417	.0001 mfd. mica cond.
8	RC 9526	Composite coil assembly
9	SA 102500	.01 mfd. 350 V. cond.
10	SA 105272	10,000 ohms 1/4 W. res.
11	SA 105258	200 ohms 1/4 W. res.
12	CW 951	.1 mfd. 200 V. cond.
13	IC 955	2nd I.F. coil assy.
14	SA 105281	1 meg. 1/4 W. res.
15	SA 106417	.0001 mfd. mica cond.
16	SA 105276	50,000 ohms 1/4 W. res.
17	VR 951	Vol. control-500000 ohms
18	SA 105246	.5 meg. 1/4 W. resistor
19	SA 106417	.0001 mfd. mica cond.
20	SA 105249	5,000 ohms 1/4 W. res.
21	SA 102497	.25 mfd. 200 V. cond.
22	SA 103852	.002 mfd. 500 V. cond.
23	SA 105278	100,000 ohms 1/4 W. res.
24	SA 103659	.005 mfd. 350 V. cond.
25	SA 105279	.25 meg. 1/4 W. res.
26	CW 951	.1 mfd. 200 V. cond.
27	SA 105279	.25 meg. 1/4 W. res.
28	CW 952	.005 mfd. 500 V. cond.
29	TR 952	Output transformer
30	SA 102492	.05 mfd. 350 V. cond.
31	SA 101471	18,000 ohms 1/2 W. res.
32	RC 9527	Choke coil
33	SA 102496	.25 mfd. 350 V. cond.
34	SK 951	Speaker
35	DM 951	Diaphragm & voice coil assy.
36	FU 951	Fuse - 20 ampere
37	RC 9512	Filter choke
38	CM 953	.00005 mfd. mica cond.
39		Switch - part of VR 951
40	LP 951	Dial light
41	SA 105452	Filter choke
42	SA 105452	Filter choke
43	CW 958	.5 mfd. 200 V. cond.
44	CW 958	.5 mfd. 200 V. cond.
45	VI 951	Vibrator
46	TR 953	Power transformer
47	SA 106804	.008 mfd. 1600 V. cond.
48	TR 951	B choke
49	CE 951	6-10 mfd. electrolytic condenser
50	SA 103659	.005 mfd. 350 V. cond.

MAIN ASSEMBLIES

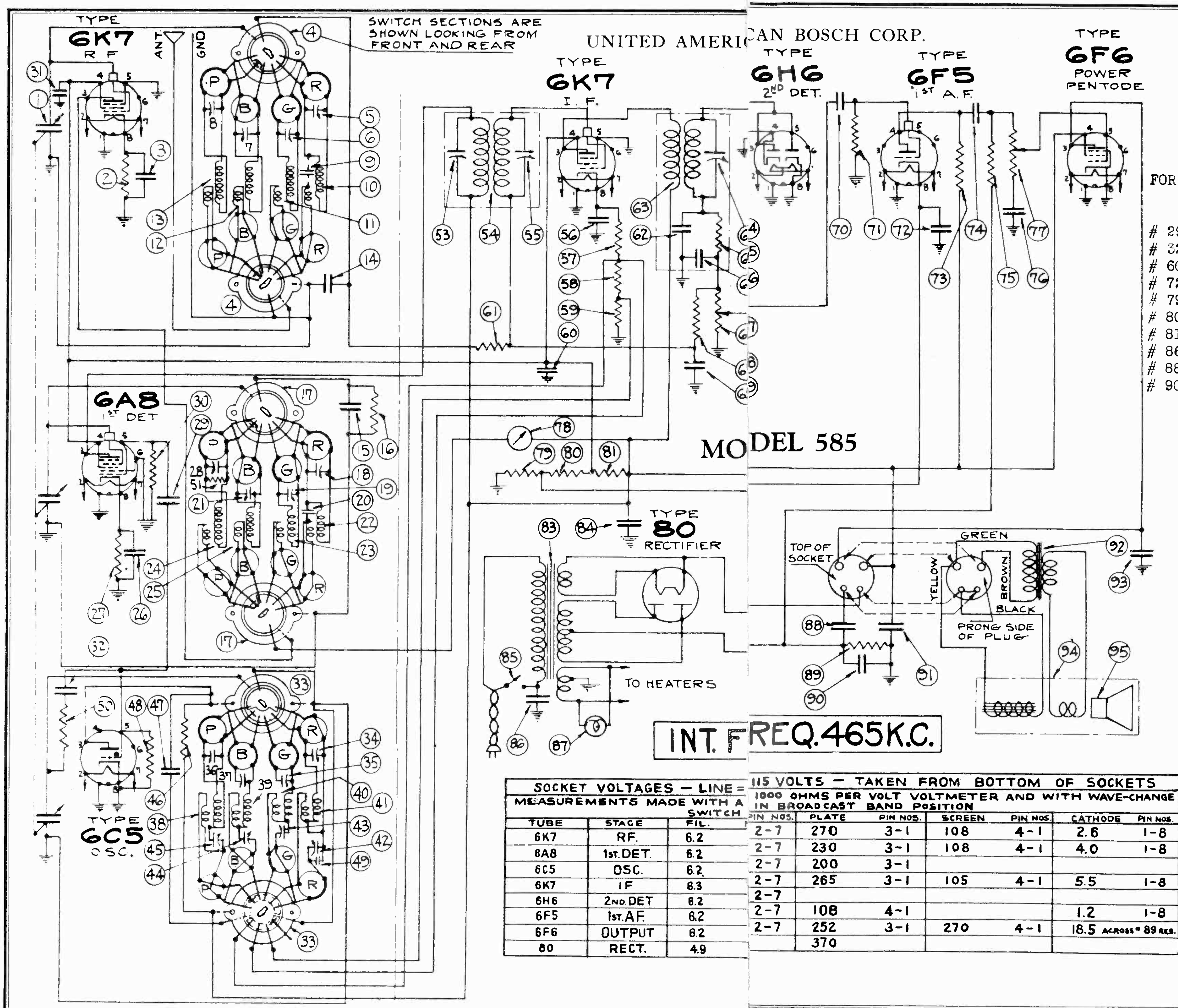
CH 954	Chassis assembly
CU 951	Control unit-less shafts
SK 951	Speaker assembly

CABLES & CABLE ASSEMBLIES

CB 951	Battery cable assembly
CB 958	Antenna cable assembly

MODEL 585
Preliminary
Schematic,Voltage
Resistor Data

UNITED AMERICAN BOSCH CORP.



FOR PARTS LIST SEE MODELS 585-Y, 585-Z and the following differences

# 29	.000065 mfd. mica
# 32	.05 mfd. 200 volt
# 60	.05 mfd. 200 volt
# 72	.05 mfd. 200 volt
# 79	200 ohms 1/4 watt
# 80	20,000 ohms 1. watt
# 81	12,500 ohms 2. watt
# 86	.01 mfd. 600 volt
# 88	12. mfd. 475 volt
# 90	12. mfd. 25. volt

D.C. RESISTANCE
MEASURED WITH WAVE-CHANGE SWITCH IN CORRESPONDING BAND POSITION

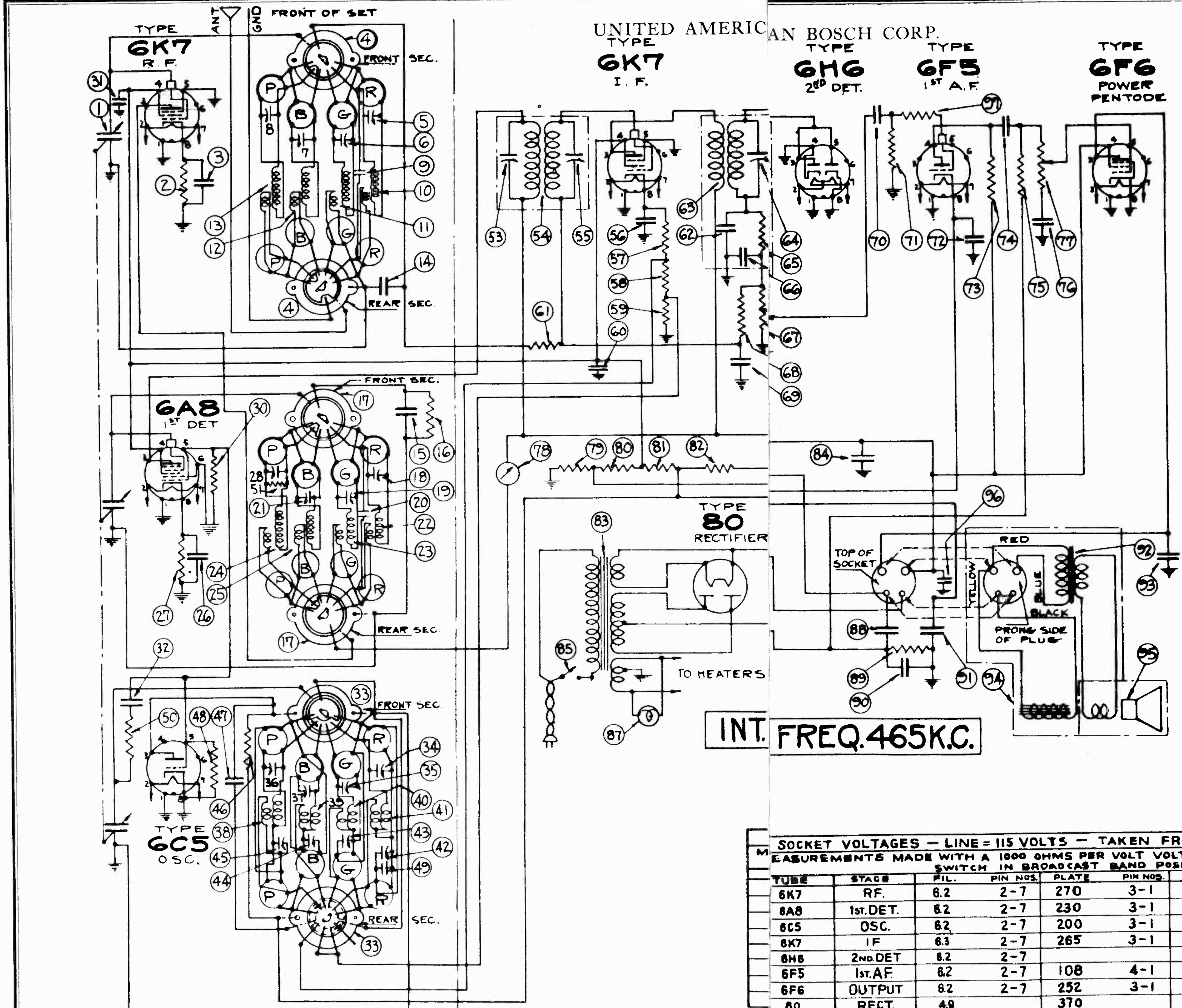
COIL	DIA.Nº	PRIM.	SEC.
P - ANT.	13	130 ohms	25 ohms
P - RF.	24	36 "	25 "
P - OSC.	38	8 "	13.5 "
B - ANT.	12	22 "	4 "
B - RF.	25	.5 "	4.5 "
B - OSC.	39	1.5 "	3 "
G - ANT.	11	3.2 "	1 "
G - RF	23	1.5 "	1 "
G - OSC.	40	.5 "	1 "
R - ANT.	10	1 "	.4 "
R - RF.	22	2 "	.4 "
R - OSC.	41	.5 "	.4 "
1st. IF.	54	13 "	13 "
2nd. IF.	63	11.5 "	11.5 "
OUTPUT TRANS.	92	450 "	.5 "
SPKR. FIELD		1900 "	
VOICE COIL	95	3 "	

SOCKET VOLTAGES — LINE = 115 VOLTS — TAKEN FROM BOTTOM OF SOCKETS
MEASUREMENTS MADE WITH A 1000 OHMS PER VOLT VOLTMETER AND WITH WAVE-CHANGE SWITCH IN BROADCAST BAND POSITION

TUBE	STAGE	FIL.	PIN NOS.	PLATE	PIN NOS.	SCREEN	PIN NOS.	CATHODE	PIN NOS.
6K7	RF.	6.2	2-7	270	3-1	108	4-1	2.6	1-8
6A8	1st. DET.	6.2	2-7	230	3-1	108	4-1	4.0	1-8
6C5	OSC.	6.2	2-7	200	3-1				
6K7	IF	6.3	2-7	265	3-1	105	4-1	5.5	1-8
6H6	2nd. DET	6.2	2-7						
6F5	1st. AF.	6.2	2-7	108	4-1			1.2	1-8
6F6	OUTPUT	6.2	2-7	252	3-1	270	4-1	18.5 ACROSS 89 RES.	
80	RECT.	4.9		370					

MODELS 585Y, 585Z
Schematic, Voltage
Resistor Data

UNITED AMERICAN BOSCH CORP.



D.C. RESISTANCE			
MEASURED WITH WAVE-CHANGE SWITCH IN CORRESPONDING BAND POSITION			
COIL	DIA. Nº	PRIM.	SEC.
P-ANT.	13	130 ohms	25 ohms
P-RF.	24	36 "	25 "
P-OSC.	38	8 "	13.5 "
B-ANT.	12	22 "	4 "
B-RF.	25	.5 "	4.5 "
B-OSC.	39	1.5 "	3 "
G-ANT.	11	32 "	1 "
G-RF.	23	1.5 "	1 "
G-OSC.	40	.5 "	1 "
R-ANT.	10	1 "	.4 "
R-RF.	22	2 "	.4 "
R-OSC.	41	.5 "	.4 "
1st. IF.	54	13 "	13 "
2nd. IF.	63	11.5 "	11.5 "
OUTPUT TRANS.	92	450 "	.5 "
SPKR. FIELD		1900 "	
VOICE COIL	95	3 "	

MODELS
585 Y
585 Z

SOCKET VOLTAGES — LINE = 115 VOLTS — TAKEN FROM BOTTOM OF SOCKETS									
MEASUREMENTS MADE WITH A 1000 OHMS PER VOLT VOLTMETER AND WITH WAVE-CHANGE SWITCH IN BROADCAST BAND POSITION									
TUBE	STAGE	FIL.	PIN NOS.	PLATE	PIN NOS.	SCREEN	PIN NOS.	CATHODE	PIN NOS.
6K7	RF.	6.2	2-7	270	3-1	108	4-1	2.8	1-8
6A8	1st. DET.	6.2	2-7	230	3-1	108	4-1	4.0	1-8
6C5	OSC.	6.2	2-7	200	3-1				
6K7	IF	6.3	2-7	265	3-1	105	4-1	5.5	1-8
6H6	2nd. DET	6.2	2-7						
6F5	1st. AF.	6.2	2-7	108	4-1			1.2	1-8
6F6	OUTPUT	6.2	2-7	252	3-1	270	4-1	18.5 across 89 res.	
80	RECT.	4.9		370					

UNITED AMERICAN BOSCH CORP.

MODELS 585Y, 585Z
Centr-O-Matic Data
Alignment, Trimmers

REMOVING INDIVIDUAL COIL AND SWITCH SECTIONS OF CENTR-O-MATIC UNIT

If a component part located underneath the switch and coil assemblies of the "Centr-O-matic" unit has to be replaced or a section of the unit has to be removed for inspection, each section can easily be removed separately. To do this proceed with care as follows:

1. Remove the three coil shields.
2. Remove the two self-tapping screws which fasten the mounting plate of the wave-change switch shaft to the chassis frame. Pull switch shaft straight out.
3. Unsolder the stator and rotor leads from the gang condenser.
4. The fastening screws for the switch sections are located on top of the "Centr-O-matic" unit and are indicated by X, Y, and Z in figure #3. Remove the corresponding screw.
5. Each individual section can then be pulled out straight.

Note: On the R.F. section, the plate lead from the 6K7 socket will have to be unsoldered from the switch terminal before the section can be removed.

On the oscillator section, the plate lead will have to be unsoldered from the 6C5 socket.

6. After repairs have been made resolder the plate leads mentioned above and replace the section being careful to observe that the slotted holes in the switch bracket line up with the round guide pins on the base plate of the "Centr-O-matic" unit. This is IMPORTANT as the switch shaft cannot be inserted if the switch brackets do not line up.
7. Replace the section fastening screw.
8. Resolder the stator and rotor leads on gang condenser.
9. Replace the switch shaft and the mounting fastening screws. When inserting the switch shaft, be careful that all the switch discs are in the same position. Otherwise the switch shaft will not slide in. NEVER force the shaft into the switch discs. If shaft does not slide in freely, examine the position of the slot in each switch disc.
10. Before replacing the coil shields, it might be adviseable to bend the shields slightly to assure that positive contact is made. To do this hold the shield with your two hands using the thumbs and the first two fingers as shown in Figure #1. Pull out the ends of the shield slightly and at the same time apply a little pressure on the sides of the shield as indicated by the arrows in the drawing. Then replace the shields and observe that they fit tightly. In addition to assuring positive contacts, this will also prevent the shields from rattling.

LINE-UP CAPACITOR ADJUSTMENTS

To align the circuits of this receiver it is essential to use a high grade modulated test oscillator, the output of which can be continuously varied with absence from overload when the individual circuits of the receiver are brought into alignment. A conventional output meter can be connected across the terminals of the speaker voice coil to indicate when the circuits are aligned. The sensitivity of the output meter must be sufficient to give satisfactory reading with a low input signal.

Before attempting to align the receiver, the service man should familiarize himself with the general layout of the chassis, the location of the tubes and various alignment condensers. Top and bottom views of the chassis are shown in Figures #2, #3 and #4 and should be carefully studied before the actual work is started.

ADJUSTMENT OF I.F. (465 K.C.)

1. Set volume control on full and turn tone control to bass position.
2. Connect output meter across voice coil of speaker.
3. Set test oscillator to 465 K.C. and adjust its output to produce a measurable reading on output meter when test signal is applied to the grid of 6K7 I.F. tube thru a .5 mfd. blocking condenser.
4. Adjust trimmer #64 for maximum output reducing output of test oscillator as required.
5. Apply test signal to grid of 6A8 first detector and adjust #53 and #55 for maximum output.

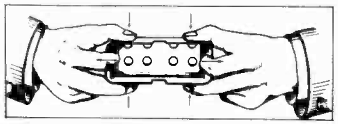


Figure No. 1

ADJUSTMENT OF RED BAND

1. Set wave-change switch to Red Band position.
2. Set test oscillator and dial indicator to 17000 K.C. and adjust #34, #18 and #5 for maximum output.
3. Set test oscillator and dial indicator to 6000 K.C. and adjust #42 for maximum output.
4. Return to 17000 K.C. setting and make readjustment of #34, #18 and #5.

Note: The adjustment of the two short-wave oscillator lag condensers (#42 and #43) is best made by the max-max. method.

ADJUSTMENT OF PURPLE BAND

1. Set wave-change switch to Purple Band position.
2. Set test oscillator and dial indicator to 350 K.C.
3. Apply test signal to antenna terminal of the chassis thru a .0002 mfd. series condenser and adjust #36, #28 and #8 for maximum output.
4. Set test oscillator and dial indicator to 130 K.C. and adjust #45 for maximum output.
5. Return to 350 K.C. setting with both test oscillator and dial indicator and repeat adjustment of #36, #28 and #8 for accuracy.

ADJUSTMENT OF BROADCAST BAND

1. Set wave-change switch to the Black or Broadcast Band position.
2. Set test oscillator and dial indicator to 1600 K.C. and adjust #37, #21 and #7 for maximum output.
3. Set test oscillator and dial indicator to 570 K.C. and adjust #44 for maximum output.
4. Return to 1600 K.C. setting and make readjustment of #37, #21 and #7.

ADJUSTMENT OF GREEN BAND

Note: In adjusting the Green and Red Bands, a .0002 mfd. condenser and a 400 ohm resistor connected in series should be inserted in the high side of the test oscillator leads. This condenser-resistor combination is the approximate equivalent of a short-wave antenna.

1. Set wave change-switch to Green Band position.
2. Set test oscillator and dial indicator to 5500 K.C. and adjust #35, #19 and #6 for maximum output.
3. Set test oscillator and dial indicator to 1900 K.C. and adjust #43 for maximum output.
4. Return to 5500 K.C. setting and make readjustment of #35, #19 and #6.

This is done as follows:

Tune the receiver with the left hand by means of the tuning knob and adjust the lag condenser in either direction and then without changing it, tune the receiver thru a maximum, noting reading of the output meter. Change the lag condenser further in the same direction, retune receiver and note reading. If output drops with second adjustment, reverse direction of the adjustment of lag condenser. Continue this type of trial and error adjustment until no further improvement can be made when either the tuning control or the lag condenser is changed. While this procedure may appear difficult, facility can be easily acquired by practice and the operation requires only a few minutes.

IMPORTANT: While testing or making repairs on this receiver, the chassis should not be turned upside down or on its side for any long period of time while the set is turned on as the chemicals in the electrolytic filter condenser will come out thru the air vents making the condenser appear to be defective. If left in this position too long the condenser may be injured.

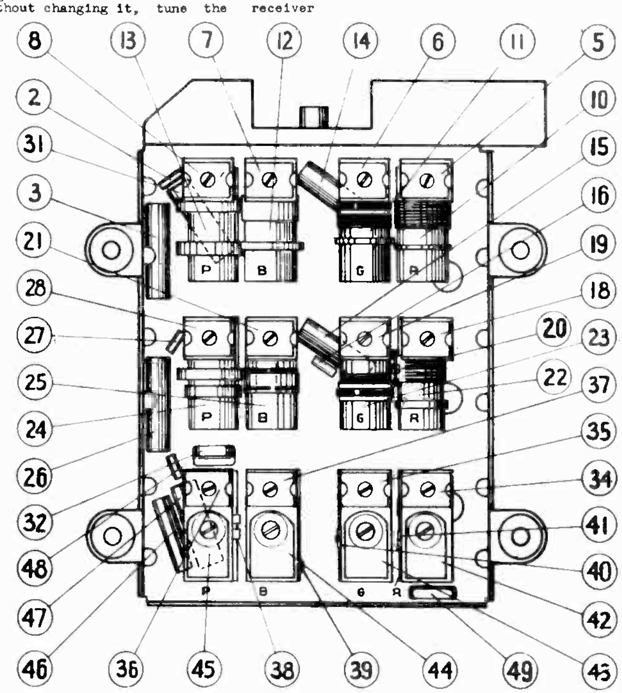


Figure No. 2

Type and Number of Tubes	2 #6K7, 1 #6A8, 1 #6C5, 1 #6H6, 1 #6F5, 1 #6F6, 1 #80-Total 8
Power Supply	105 to 125 volts, 50 to 60 cycles
Power Consumption	65 Watts
Maximum Undistorted Output	2.5 Watts
Maximum Output	3.3 Watts
Tuning Ranges	(Purple Band 120 to 350 K.C. (Black Band 540 to 1800 K.C. (Green Band 1800 to 6000 K.C. (Red Band 6000 to 18500 K.C.
Line-up Frequencies	I.F.465 K.C., 350 K.C., 130 K.C., 1600 K.C., 570 K.C., 5500 K.C., 1900 K.C., 17000 K.C., and 6000 K.C.

MODELS 585Y, 585Z
Socket, Trimmers
Parts List

UNITED AMERICAN BOSCH CORP.

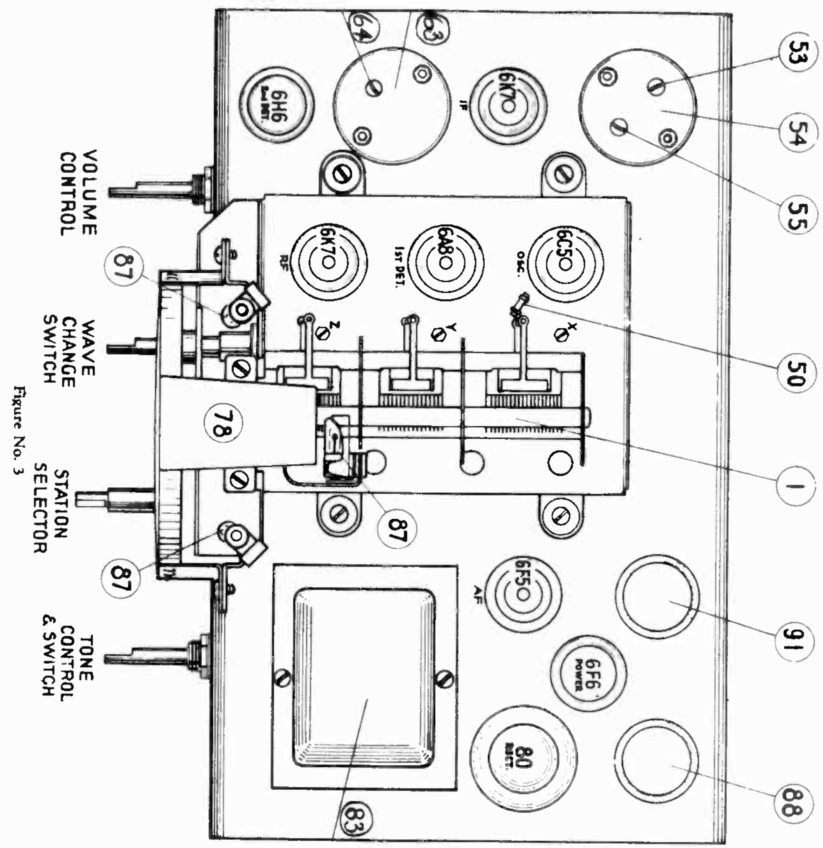


Figure No. 3

SERVICE PARTS LIST MODEL 585 Y

DIA. #	PART #	DESCRIPTION
1	CG 9527	Variable cond. assembly
2	RE 9529	300 ohm $\frac{1}{4}$ W. resistor
3	SA 106386	.05 mfd. 200 V. condenser
4	SW 9524	Antenna "Centr-O-matic" assembly complete with switch, coils and trimmers
5	CS 9511	4 to 25 mmf. antenna trim condenser (Red Band)
6	CS 9511	4 to 25 mmf. antenna trim condenser (Green Band)
7	CS 9511	4 to 25 mmf. antenna trim condenser (Black Band)
8	CS 9511	4 to 25 mmf. antenna trim condenser (Purple Band)
9		Twisted pair of wires-part of RC 9571
10	RC 9571	Antenna coil assembly (Red Band)
11	RC 9574	Antenna coil assembly (Green Band)
12	RC 9577	Antenna coil assembly (Black Band)
13	RC 9580	Antenna coil assembly (Purple Band)
14	CW 9513	.05 mfd. 200 V. condenser
15	CW 9513	.05 mfd. 200 V. condenser
16	RE 9527	5000 ohm $\frac{1}{4}$ W. resistor
17	SW 9525	R.F. "Centr-O-matic" assembly complete with switch, coils and trimmers
18	CS 9511	4 to 25 mmf. R.F. trim condenser (Red Band)
19	CS 9512	1.5 to 10 mmf. R.F. trim condenser (Green Band)
20	CM 9512	6 mmf. mica condenser
21	CS 9512	1.5 to 10 mmf. R.F. trim condenser (Black Band)
22	RC 9572	R.F. coil assembly (Red Band)
23	RC 9575	R.F. coil assembly (Green Band)
24	RC 9581	R.F. coil assembly (Purple Band)
25	RC 9578	R.F. coil assembly (Black Band)
26	SA 106386	.05 mfd. 200 V. condenser
27	RE 9529	300 ohm $\frac{1}{4}$ W. resistor
28	CS 9512	1.5 to 10 mmf. R.F. trim condenser (Purple Band)
30	RE 9534	100,000 ohm $\frac{1}{4}$ W. resistor
31	SA 106386	.05 mfd. 200 V. condenser
32	CM 9511	.000065 mfd. mica cond.
33	SW 9526	Oscillator "Centr-O-matic" assembly complete with switch, coils and trimmers
34		1.5 to 10 mmf. trim condenser-part of CS 9519 (Red Band)
35		3. to 15 mmf. trim condenser-part of CS 9520 (Green Band)
36		10 to 35 mmf. trim condenser-part of CS 9518 (Purple Band)
37		5 to 25 mmf. trim condenser-part of CS 9517 (Black Band)
38	RC 9582	Oscillator coil assembly (Purple Band)
39	RC 9579	Oscillator coil assembly (Black Band)
40	RC 9576	Oscillator coil assembly (Green Band)
41	RC 9573	Oscillator coil assembly (Red Band)
42		800 to 1600 mmf. lag condenser-part of CS 9519 (Red Band)
43		800 to 1600 mmf. lag condenser-part of CS 9520 (Green Band)
44		300 to 600 mmf. lag condenser-part of CS 9517 (Black Band)
45		60 to 150 mmf. lag condenser-part of CS 9518 (Purple Band)
46	RE 9526	5000 ohm 1 W. resistor
47	CW 9513	.05 mfd. 200 V. condenser
48	RE 9524	50,000 ohm $\frac{1}{4}$ W. resistor
49	CM 959	.002 mfd. mica condenser
50	RE 9537	50 ohm $\frac{1}{4}$ W. resistor
51	RE 9534	100,000 ohm $\frac{1}{4}$ W. resistor
53		I.F. trimmer-part of IC 9527
54	IC 9527	1st I.F. transformer
55		I.F. trimmer-part of IC 9527
56	SA 102493	.05 mfd. 200 V. condenser
57	SA 105261	400 ohm $\frac{1}{4}$ W. resistor
58	SA 105267	1000 ohm $\frac{1}{4}$ W. resistor
59	SA 105249	5000 ohm $\frac{1}{4}$ W. resistor
60	SA 102497	.25 mfd. 200 V. condenser
61	SA 105278	100,000 ohm $\frac{1}{4}$ W. resistor
62		50 mmf. mica condenser-part of IC 9537
63	IC 9537	2nd I.F. transformer
64		I.F. trim condenser-part of IC 9537
65		50,000 ohm $\frac{1}{4}$ W. resistor-part of IC 9537
66		100 mmf. mica condenser-part of IC 9537
67	VR 959	Volume control-500,000 ohm
68	RE 9530	1 meg. $\frac{1}{4}$ W. resistor
69	SA 106386	.05 mfd. 200 V. condenser
70	CW 9512	.02 mfd. 400 V. condenser
71	RE 9530	1 meg. $\frac{1}{4}$ W. resistor
72	CE 9515	12 mfd. 25 V. electrolytic condenser
73	SA 105279	250,000 ohm $\frac{1}{4}$ W. resistor
74	CW 9512	.02 mfd. 400 V. condenser
75	RE 9531	250,000 ohm $\frac{1}{4}$ W. resistor
76	SA 106403	.001 mfd. 600 V.condenser
77	VR 9512	Tone control (500,000 ohm) and switch
78	SI 9538	Tuning meter assembly
79	SA 105260	300 ohm $\frac{1}{4}$ W. resistor
80	SA 104966	30,000 ohm $\frac{1}{2}$ W. resistor
81	SA 105815	10,000 ohm 1 W. resistor
82	RE 9540	7000 ohm 2 W. resistor
83	TR 959	Power transformer
84	SA 102492	.05 mfd. 400 V. condenser
85		Line switch - part of VR 9512
87	SA 106809	Dial light (4 used)
88		8 mfd. 475 V.electrolytic condenser-part of CE 954
89	RE 9523	300 ohm muter resistor
90		20 mfd. 25 V.electrolytic condenser-part of CE 954
91	CE 9518	8 mfd. 300 V.electrolytic condenser
92	TR 9515	Speaker output transformer
93	SA 103659	.005 mfd. 400 V.condenser
94	SK 9511	Speaker - complete
95	SA 107282	Diaphragm and coil assy.
96		4 mfd. 450 V.electrolytic condenser-part of CE 954
97	RE 9534	100,000 ohm $\frac{1}{4}$ W. resistor

MODEL 585Z

Service parts list for Model 585Z same as for Model 585Y except for the following parts:

DIA. #	PART #	DESCRIPTION
94	SK 9512	Speaker complete
95	DM 956	Diaphragm and coil assy.
	VR 9512	Tone control (500,000 ohm) and switch
	SI 9538	Tuning meter assembly
	SA 105260	300 ohm $\frac{1}{4}$ W. resistor
	SA 104966	30,000 ohm $\frac{1}{2}$ W. resistor
	SA 105815	10,000 ohm 1 W. resistor
	9540	7000 ohm 2 W. resistor
		Power transformer

MAIN ASSEMBLIES

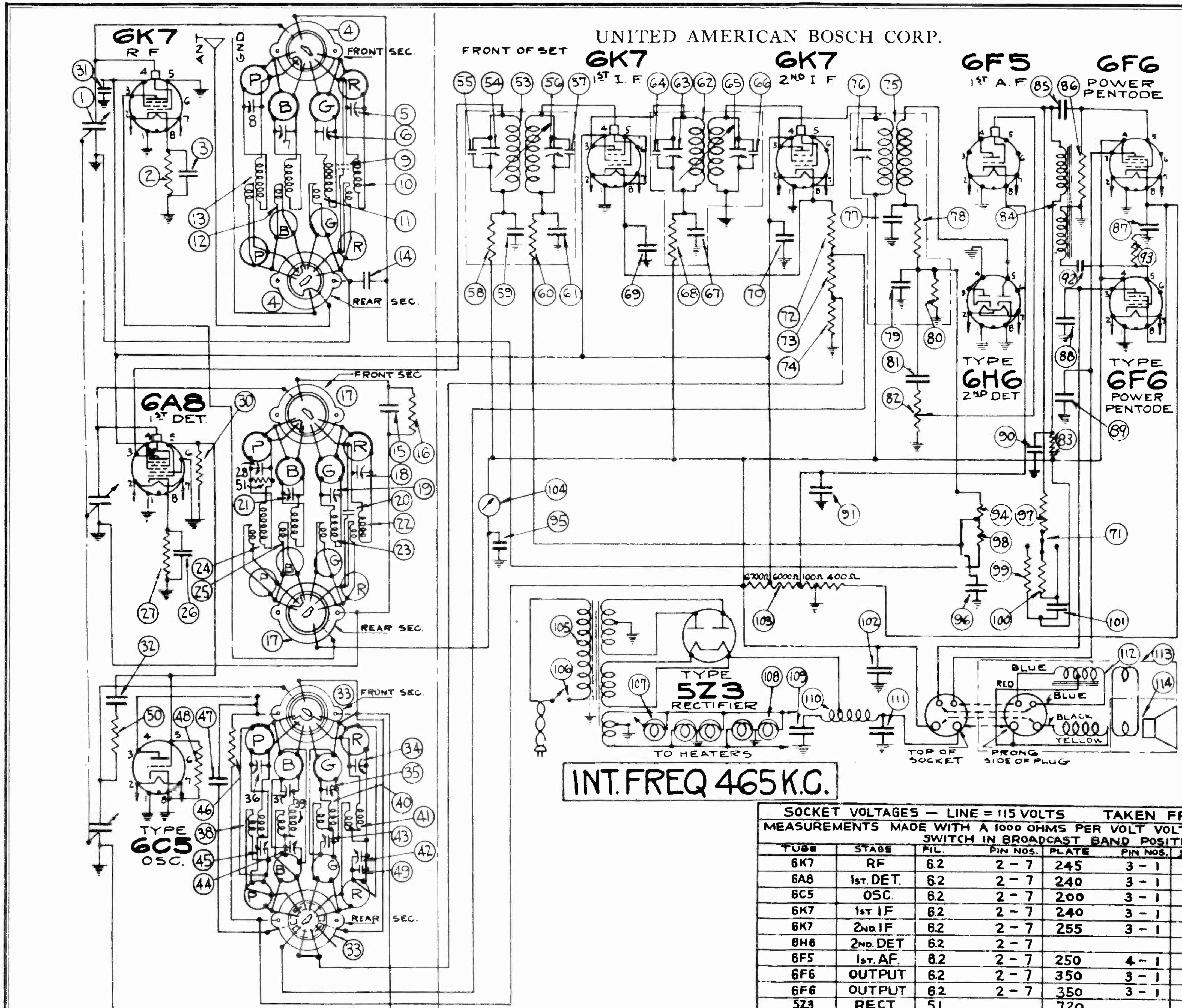
PART #	DESCRIPTION
KA 9524	Cabinet
SK 9512	Speaker assembly

SPEAKER PARTS

DM 956	Diaphragm and coil assembly
FP 101740	Copper ring
FP 102270	Steel plate
FP 101742	Paper washer
CL 9537	Speaker field coil
SA 101733	Core and frame assembly

MODELS 595M,595P
Schematic,Voltage
Resistor Data

UNITED AMERICAN BOSCH CORP.



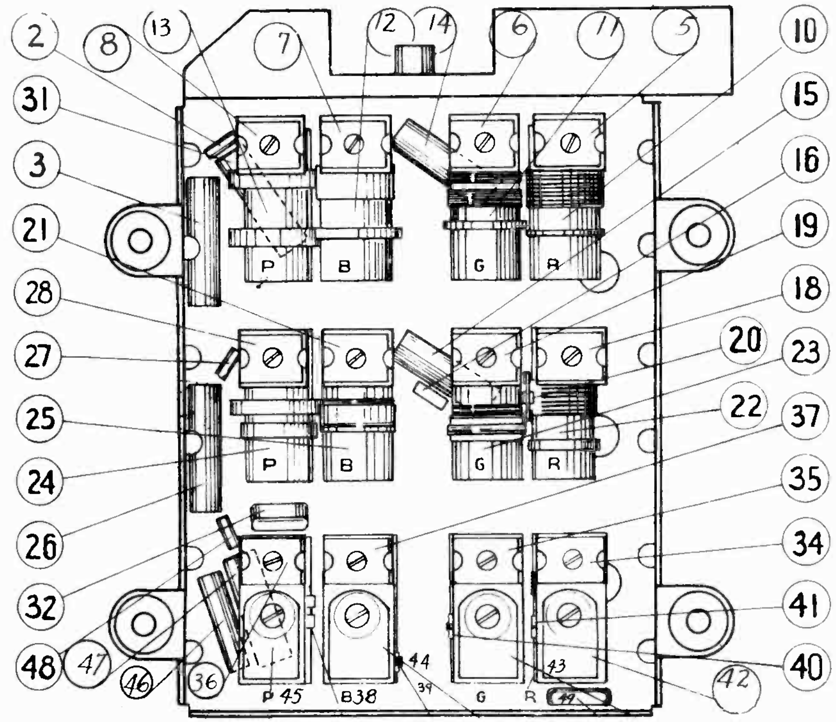
D.C. RESISTANCE MEASURED WITH WAVE-CHANGE SWITCH IN CORRESPONDING BAND POSITION			
COIL	DIA. Nº	PRIM.	SEC.
P-ANT.	13	130 —	25 —
P-RF.	24	38 •	25 •
P-OSC.	38	8.0 •	13.5 •
B-ANT.	12	22 •	4 •
B-RF.	25	.5 •	4.5 •
B-OSC.	39	1.5 •	3 •
G-ANT.	11	3.2 •	1 •
G-RF.	23	1.5 •	1 •
G-OSC.	40	.5 •	1 •
R-ANT.	10	1 •	.4 •
R-RF.	22	2 •	.4 •
R-OSC.	41	.5 •	.4 •
1st. IF.	53	3.5 •	3.5 •
2nd. IF.	82	3.5 •	3.5 •
3rd. IF.	75	11.5 •	11.5 •
CHOKE	110	350 •	
1st. AF. TRANS.	84	3200 •	3800 "
OUTPUT TRANS.	112	265 " 312 "	.03 •
SPKR. FIELD		1900 •	
VOICE COIL	114	2.6 •	

SOCKET VOLTAGES — LINE = 115 VOLTS TAKEN FROM BOTTOM OF SOCKETS MEASUREMENTS MADE WITH A 1000 OHMS PER VOLT VOLTMETER AND WITH WAVE-CHANGE SWITCH IN BROADCAST BAND POSITION									
TUBE	STAGE	FIL.	PIN NOS.	PLATE	PIN NOS.	SCREEN	PIN NOS.	CATHODE	PIN NOS.
6K7	RF	6.2	2 - 7	245	3 - 1	100	4 - 1	2.5	1 - 8
6A8	1st. DET.	6.2	2 - 7	240	3 - 1	100	4 - 1	2.2	1 - 8
6C5	OSC.	6.2	2 - 7	200	3 - 1				
6K7	1st IF	6.2	2 - 7	240	3 - 1	100	4 - 1	8.0	1 - 8
6K7	2nd. IF	6.2	2 - 7	255	3 - 1	100	4 - 1	8.0	1 - 8
6H6	2nd. DET	6.2	2 - 7						
6F5	1st. AF.	6.2	2 - 7	250	4 - 1			1.75	1 - 8
6F6	OUTPUT	6.2	2 - 7	350	3 - 1	255	4 - 1	19.5	1 - 8
6F6	OUTPUT	6.2	2 - 7	350	3 - 1	255	4 - 1	19.5	1 - 8
5Z3	RECT.	5.1		720					

MODELS 595M, 595P
Trimmers, Parts

UNITED AMERICAN BOSCH CORP.

No.	Part No.	Description
1	CG 9527	Variable cond. assy.
2	RE 9529	300 ohm ¼ W. resistor
3	SA 106386	.05 mfd. 200 V. cond.
4	SW 9524	Antenna section of "Centr-O-matic" assembly complete with switch, coils and trimmers
5	CS 9511	4 to 25 mmf. antenna trim cond. (Red Band)
6	CS 9511	4 to 25 mmf. antenna trim condenser (Green Band)
7	CS 9511	4 to 25 mmf. antenna trim condenser (White Band)
8	CS 9511	4 to 25 mmf. antenna trim condenser (Purple Band)
9		Twisted pair of wires - part of RC 9571
10	RC 9571	Antenna coil assembly (Red Band)
11	RC 9574	Antenna coil assembly (Green Band)
12	RC 9577	Antenna coil assembly (White Band)
13	RC 9580	Antenna coil assembly (Purple Band)
14	CW 9513	.05 mfd. 200 V. cond.
15	CW 9513	.05 mfd. 200 V. cond.
16	RE 9527	5000 ohm ¼ W. resistor
17	SW 9525	R.F. section of "Centr-O-matic" assy. complete with switch, coils and trimmers
18	CS 9511	4. to 25 mmf. R.F. trim condenser (Red Band)
19	CS 9512	1.5 to 10 mmf. R.F. trim condenser (Green Band)
20	CM 9512	6. mmf. mica condenser
21	CS 9512	1.5 to 10 mmf. R.F. trim condenser (White Band)
22	RC 9572	R.F. coil assembly (Red Band)
23	RC 9575	R.F. coil assembly (Green Band)
24	RC 9581	R.F. coil assembly (Purple Band)
25	RC 9578	R.F. coil assembly (White Band)
26	SA 106386	.05 mfd. 200 V. cond.
27	RE 9529	300 ohm ¼ W. resistor
28	CS 9512	1.5 to 10 mmf. R.F. trim condenser (Purple Band)
30	RE 9534	100,000 ohm ¼ W. res.
31	SA 106386	.05 mfd. 200 V. cond.
32	CM 9511	.000065 mfd. mica condenser
33	SW 9526	Oscillator section of "Centr-O-matic" assembly complete with switch, coils and trimmers
34		1.5 to 10 mmf. trim condenser - part of CS 9519 (Red Band)
35		3. to 15. mmf. trim condenser - part of CS 9520 (Green Band)
36		10 to 35 mmf. trim condenser - part of CS 9518 (Purple Band)
37		5 to 25 mmf. trim condenser - part of CS 9517 (White Band)
38	RC 9582	Oscillator coil assy. (Purple Band)
39	RC 9579	Oscillator coil assy. (White Band)
40	RC 9576	Oscillator coil assy. (Green Band)
41	RC 9573	Oscillator coil assy. (Red Band)
42		800 to 1600 mmf. lag condenser - part of CS 9519 (Red Band)
43		800 to 1600 mmf. lag condenser - part of CS 9520 (Green Band)
44		300 to 600 mmf. lag condenser - part of CS 9517 (White Band)
45		60 to 150 mmf. lag condenser - part of CS 9518 (Purple Band)
46	RE 9526	5000 ohm 1 W. resistor
47	CW 9513	.05 mfd. 200 V. cond.
48	RE 9524	50,000 ohm ¼ W. res.
49	CM 959	.002 mfd. mica cond.
50	RE 9537	50 ohm ¼ W. resistor
51	RE 9534	100,000 ohm ¼ W. res.
53	IC 9529	1st I.F. transformer assembly
54		250 to 350 mmf. I.F. trim condenser - part of IC 9529
55	SA 106417	.0001 mfd. mica cond.
56		250 to 350 mmf. I.F. trim condenser - part of IC 9529
57	SA 106417	.0001 mfd. mica cond.
58	RE 9527	5000 ohm ¼ W. resistor
59	SA 103659	.005 mfd. 400 V. cond.
60	RE 9534	100,000 ohm ¼ W. res.
61	SA 103659	.005 mfd. 400 V. cond.
62	IC 9530	2nd I.F. transformer assembly
63		250 to 350 mmf. I.F. trim condenser - part of IC 9530
64	SA 106417	.0001 mfd. mica cond.
65		250 to 350 mmf. I.F. trim condenser - part of IC 9530
66	SA 106417	.0001 mfd. mica cond.
67	SA 103659	.005 mfd. 400 V. cond.
68	RE 9527	5000 ohm ¼ W. resistor
69	SA 106386	.05 mfd. 200 V. cond.
70	SA 106386	.05 mfd. 200 V. cond.
71	VR 9511	Tone control switch
72	SA 105267	1000 ohm ¼ W. resistor
73	RE 9528	1000 ohm ¼ W. resistor
74	RE 9538	4000 ohm ¼ W. resistor
75	IC 9526	3rd I.F. transformer
76		25 to 100 mmf. I.F. trim condenser - part of IC 9526
77		.00005 mfd. mica cond. - part of IC 9526
78		100,000 ohm ¼ W. res. - part of IC 9526
79		.0001 mfd. mica cond. - part of IC 9526
80		250,000 ohm ¼ W. res. - part of IC 9526
81	SA 102504	.02 mfd. 200 V. cond.
82	VR 9510	Volume control (1 meg.)
83	SA 105249	5000 ohm ¼ W. resistor
84	TR 9516	Input transformer
85	CW 9512	.02 mfd. 400 V. cond.
86	SA 105246	½ meg. ¼ W. resistor
87		10 mfd. 25 V. electrolytic condenser - part of SA 107913
88	SA 103852	.002 mfd. 600 V. cond.
89	SA 103852	.002 mfd. 600 V. cond.
90	CW 9512	.02 mfd. 400 V. cond.
91		10 mfd. 25 V. electrolytic condenser - part of SA 107913
92	CW 9512	.02 mfd. 400 V. cond.
93	SA 105246	½ meg. ¼ W. resistor
94	SA 105281	1 meg. ¼ W. resistor
95	SA 102492	.05 mfd. 400 V. cond.
96	SA 106386	.05 mfd. 200 V. cond.
97	SA 105274	20,000 ohm ¼ W. res.
98	SA 105279	250,000 ohm ¼ W. res.
99	SA 105277	75,000 ohm ¼ W. res.
100	RE 9536	20,000 ohm ¼ W. res.
101	CW 9512	.02 mfd. 400 V. cond.
102	CE 9517	18. mfd. 300 V. electrolytic condenser
103	RE 9521	Voltage divider res.
104	SI 9532	Tuning meter assembly
105	TR 9517	Power transformer
106		Line switch - part of VR 9511
107	LP 952	Tuning meter light (3.2 V.)
108	LP 952	Dial lights (4 used) (3.2 V.)
109	CE 9516	8. mfd. 450 V. electrolytic condenser
110	SA 101696	Choke coil assembly
111	CE 9516	8. Mfd. 450 V. electrolytic condenser
112	TK 9513	Speaker output trans.
113	SK 959	Speaker
114	DM 956	Diaphragm & voice coil assembly



Type and Number of Tubes -- 3 #6K7, 1 #6A8, 1 #6C5, 1 #6H6, 1 #6F5, 2 #6F6, 1 #5Z3 - Total 10
Power Supply -- 105 to 125 volts, 50 to 60 cycle
Power Consumption -- 90 Watts
Maximum Undistorted Output -- 8 Watts
Maximum Output -- 10 Watts

Tuning Ranges	Band	From		To
	(Purple Band	120 K.C.	to	350 K.C.
	(Broadcast Band	540 K.C.	to	1800 K.C.
	(Green Band	1800 K.C.	to	6000 K.C.
	(Red Band	6000 K.C.	to	18,500 K.C.

Line-Up Frequencies -- I.F. 465K.C., 350K.C., 130K.C., 1600K.C., 570K.C., 5500K.C., 1900K.C., 17,000K.C. and 6000K.C.

UNITED AMERICAN BOSCH CORP.

MODELS 595M, 595P Centr-O-Matic Data Socket, Trimmers Alignment

REMOVING INDIVIDUAL COIL AND SWITCH SECTIONS OF THE CENTR-O-MATIC UNIT.

If a component part located underneath the switch and coil assemblies of the "Centr-O-matic" has to be replaced or a section of the unit has to be removed for inspection, each section can easily be removed separately. To do this proceed with care as follows:

1. Remove the three coil shields.
2. Remove the two self-tapping screws which fasten the mounting plate of the wave-change switch shaft to the chassis frame. Pull switch shaft straight out.
3. Unsolder the stator and rotor leads from the gang condenser.
4. The fastening screws for the switch and coil sections are located on top of the "Centr-O-matic" unit and are indicated by X, Y, and Z in figure #3. Remove the corresponding screw.
5. Each individual section can then be pulled out straight.
   NOTE: On the R.F. section, the plate lead from the 6K7 socket will have to be unsoldered from the switch terminal before the section can be removed. On the oscillator section, the plate lead will have to be unsoldered from the 6C5 socket
6. After repairs have been made resolder the plate leads mentioned above and replace the section being careful to observe that the slotted holes in the switch bracket line up with the round guide pins on the base plate of the "Centr-O-matic" unit. This is IMPORTANT as the switch shaft cannot be inserted if the switch brackets do not line up.
7. Replace the section fastening screw.
8. Resolder the stator and rotor leads on gang condenser.
9. Replace the switch shaft and the mounting plate fastening screws. When inserting the switch shaft, be careful that all the switch discs are in the same position. Otherwise the switch shaft will not slide in. NEVER force the shaft into the switch discs. If shaft does not slide in freely, examine the position of the slot in each switch disc.
10. Before replacing the coil shields, it is advisable to bend the shields slightly to assure that positive contact is made. To do this hold the shield with your two hands using the thumbs and first two fingers as shown in figure #1. Pull out the ends of the shield slightly and at the same time apply a little pressure on the sides as indicated by the arrows in the drawing. Then replace the shields and observe that they fit tightly. In addition to assuring positive contact, this will also prevent the shields from rattling.

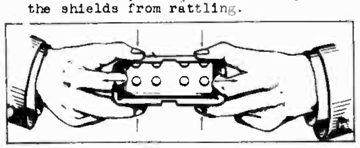


Figure No. 1

LINE-UP CAPACITOR ADJUSTMENTS

To align the circuits of this receiver it is essential to use a high grade modulated test oscillator, the output of which can be continuously varied with absence from overload when the individual circuits of the receiver are brought into alignment. A conventional output meter can be connected across the terminals of the speaker voice coil to indicate when the circuits are aligned. The sensitivity of the output meter must be sufficient to give satisfactory reading with a low input signal.

Before attempting to align the receiver, the service man should familiarize himself with the general layout of the chassis, the location of the tubes and various alignment condensers. Top and bottom views of the chassis are shown in figures #2, #3, and #4, and should be carefully studied before the actual work is started.

ADJUSTMENT OF I.F. (465 K.C.)

CAUTION: DO NOT INTERFERE WITH THE I.F. ALIGNMENT OF THIS RECEIVER EXCEPT WHEN IT HAS BEEN ABSOLUTELY DETERMINED THAT THIS IS THE CAUSE OF THE TROUBLE AND ONLY WHEN HIGH GRADE TESTING EQUIPMENT IS AVAILABLE.

NOTE: Because of the variable selectivity incorporated in this receiver, it is important that the procedure outlined below be followed in order to obtain accurate alignment.

The travel brought about by the expander mechanism is limited by definite stops. To properly set the I.F. transformers, turn the fidelity control to the extreme right or clockwise position. Tighten the drive cords of the variable I.F. transformers until the pulleys on the bottom of the transformers are against the stops in counter-clockwise direction.

The I.F. trimmers are adjusted only when the variable selector coils are placed in a particular mechanical position. In order to align the circuits properly, it is necessary to have less coupling in the individual I.F. transformer than that provided by the maximum selectivity setting.

To obtain this lesser coupling, turn the fidelity control to the extreme left or counter-clockwise position and turn the stop-screw (indicated by "W" in figure #3), which acts as a stop to limit selectivity, out 1/4 inch. With the fidelity control in this position align the I.F. stages as follows:

1. Set volume control on full and connect output meter across voice coil of speaker.
2. Set test oscillator to 465 K.C. and adjust its output to produce a measurable reading on output meter when test signal is applied to the grid of the 2nd I.F. tube (6K7) thru a .5 mfd. blocking condenser.
3. Adjust trimmer #76 for maximum output, reducing output of test oscillator as required.
4. Apply test signal to grid of 1st I.F. tube (6K7) and adjust #63 and #65 for maximum output.
5. Apply test signal to grid of 1st detector (6A8) and adjust #54 and #56 for maximum output.
6. After the above I.F. adjustments have been made, turn the selectivity control (larger of the double lower right-hand knob) to the extreme right or clockwise direction and reset the stop-screw.

ADJUSTMENT OF PURPLE BAND

Note: During all of the subsequent adjustments, the selectivity control should be turned to the left or counter-clockwise direction.

1. Set wave-change switch to the Purple Band position.
2. Set test oscillator and dial indicator to 350 K.C. and apply test signal to antenna terminal of the chassis thru a .0002 mfd. series condenser and adjust #36, #28 and #8 for maximum output.
3. Set test oscillator and dial indicator to 130 K.C. and adjust #45 for maximum output.
4. Return to 350 K.C. setting with both test oscillator and dial indicator and repeat adjustment of #36, #28 and #8 for accuracy.

ADJUSTMENT OF BROADCAST BAND

1. Set wave-change switch to White or Broadcast Band position.
2. Set test oscillator and dial indicator to 1600 K.C. and adjust #37, #21 and #7 for maximum output.
3. Set test oscillator and dial indicator to 570 K.C. and adjust #44 for maximum output.
4. Return to 1600 K.C. setting and make readjustment of #37, #21 and #7.

ADJUSTMENT OF GREEN BAND

Note: In adjusting the Green and Red Bands, a .0002 mfd. condenser and a 400 ohms resistor connected in series should be inserted in the high side of the test oscillator leads. This condenser-resistor combination is the approximate equivalent of a short wave antenna.

1. Set wave-change switch to the Green Band position.
2. Set test oscillator and dial indicator to 5500 K.C. and adjust #35, #19 and #6 for maximum output.
3. Set test oscillator and dial indicator to 1900 K.C. and adjust #43 for maximum output.
4. Return to 5500 K.C. setting and make readjustment of #35, #19 and #6.

ADJUSTMENT OF RED BAND

1. Set wave-change switch to Red Band position.

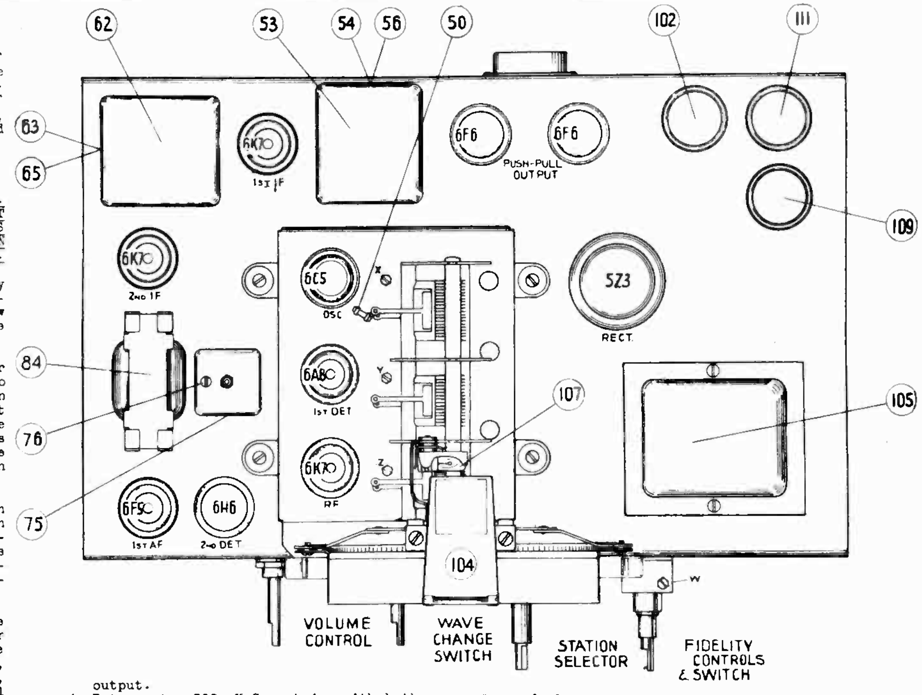


Figure No. 3

2. Set test oscillator and dial indicator to 17000 K.C. and adjust #34, #18 and #5 for maximum output.
3. Set test oscillator and dial indicator to 6000 K.C. and adjust #42 for maximum output.
4. Return to 17000 K.C. setting and make readjustment of #34, #18 and #5.

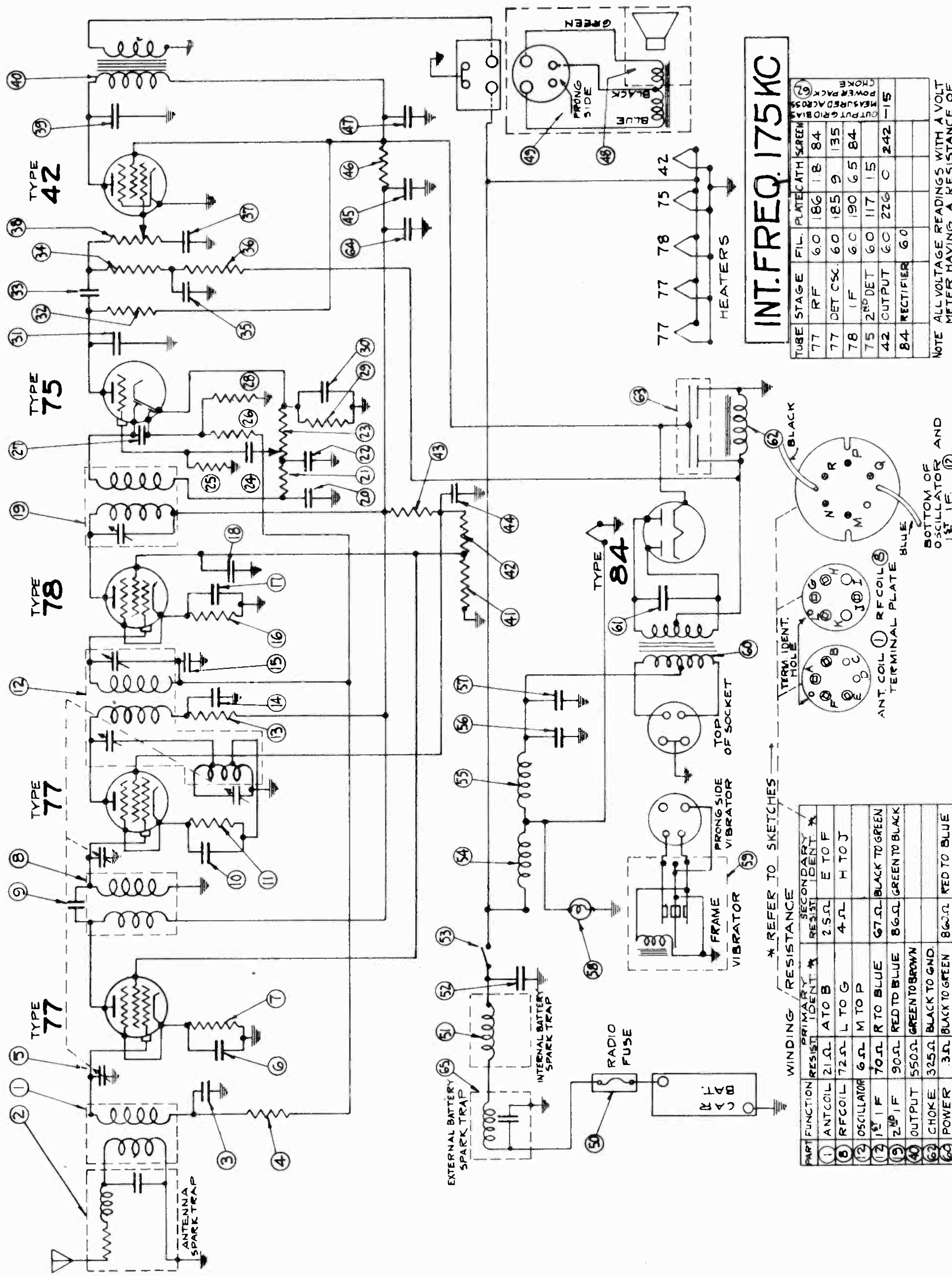
Note: The adjustment of the two short-wave oscillator lag condensers (#42 and #43) is best made by the max-max. method. This is done as follows:

Tune the receiver with the left hand by means of the tuning knob and adjust the lag condenser in either direction and then without changing it, tune the receiver thru a maximum, noting reading of the output meter. Change the lag condenser further in the same direction, retune receiver and note reading. If output drops with second adjustment, reverse direction of the adjustment of lag condenser. Continue this type of trial and error adjustment until no further improvement can be made when either the tuning control or the lag condenser are changed. While this procedure may appear difficult, facility can be easily acquired by practice and the operation requires only a few minutes.

IMPORTANT: While testing or making repairs on this receiver, the chassis should not be turned upside down or on its side for any long period of time while the set is turned on as the chemicals in the electrolytic filter condenser will come out thru the air vents making the condenser appear to be defective. If left in this position too long the condenser may be injured.

UNITED AMERICAN BOSCH CORP

MODEL 634A
Schematic, Voltage
Resistor Data



TUBE	STAGE	FIL.	PLATE	CATH	SCREEN	OUTPUT GRID BIAS MEASURED ACROSS POWER PACK CHOKE (62)
77	RF	6.0	186	1.8	84	
77	DET OSC.	6.0	185	9	135	
78	IF	6.0	190	6.5	84	
75	2ND DET	6.0	117	1.5		
42	OUTPUT	6.0	226	0	242	-15
84	RECTIFIER	6.0				

NOTE ALL VOLTAGE READINGS WITH A VOLT METER HAVING A RESISTANCE OF 1000 Ω PER VOLT

PART	FUNCTION	WINDING RESISTANCE PRIMARY RESIST	PRIMARY IDENT.*	SECONDARY RESIST	SECONDARY IDENT.*
1	ANT COIL	21 Ω	A TO B	2.5 Ω	E TO F
8	RF COIL	72 Ω	L TO G	4 Ω	H TO J
12	OSCILLATOR	6 Ω	M TO P		
12	1ST IF	70 Ω	R TO BLUE	67 Ω	BLACK TO GREEN
19	2ND IF	90 Ω	RED TO BLUE	86 Ω	GREEN TO BLACK
40	OUTPUT	550 Ω	GREEN TO BROWN		
62	CHOKE	325 Ω	BLACK TO GND.		
60	POWER	3 Ω	BLACK TO GREEN	860 Ω	RED TO BLUE

* REFER TO SKETCHES

MODEL 634A
Socket, Trimmers
Alignment, Parts

UNITED AMERICAN BOSCH CORP.

LINE-UP CAPACITOR ADJUSTMENTS

All the adjustable capacitors, commonly called trimmer condensers, are very accurately adjusted at the factory and will not need any further adjustment unless a coil or I.F. transformer is changed or the adjustments tampered with in the field. Therefore, DO NOT attempt to change the setting of any of the trimmer condensers unless it is definitely known that adjustment is necessary, and a high grade modulated test oscillator is available, then proceed as follows and refer to Fig. #2.

1. Set test oscillator to 175 K.C.
2. Set condenser gang to approximately 600 K.C. This will be at a point where the condenser plates are nearly all in mesh.
3. Connect output meter across voice coil of speaker. This may be done by connecting one lead of the output meter to the blue lead of the speaker terminal strip and the other lead to the frame of the chassis. The impedance of the voice coil is 3. ohms.
4. Apply test signal to grid of 78 I.F. tube thru a .5 mfd. blocking condenser and adjust trimmer "A" to maximum output reducing output of test oscillator as required.
5. Apply test signal to grid of 77 first detector-oscillator and adjust trimmers "B" and "C" to maximum output.
6. Set test oscillator to 1500 K.C. and rotate condenser gang until the plates are wide open. Place a piece of paper (approx. .015 thk.) between the rotor and stator plates at the bottom of the gang and close the rotor down to this spacing. This is the exact setting of the condenser gang for the receiver oscillator at 1500 K.C. and should be carefully set as the resultant alignment of the receiver is directly dependant upon it.
7. Adjust trimmer "D" to maximum output and then remove the paper gauge.
8. Set test oscillator and condenser gang to 1400 K.C.
9. Apply test signal to grid of 77 R.F. tube and adjust trimmer "E" to maximum output.
10. Apply test signal to antenna lead thru a .0002 mfd. condenser and adjust trimmer "F" to maximum output.
11. Check sensitivity at several points.

The Model 634A Ed. 1 is designed with an internal tuned spark trap in the battery cable to assist in the suppression of ignition interference.

Dia. #	Part #	Description of Parts
1	RC 956	Antenna coil assembly
2	CM 952	.00001 mfd. mica cond.
3	SA 106386	.05 mfd. 200 V. cond.
4	SA 105278	100,000 ohms 1/4 W. res.
5	CG 954	Variable condenser assy.
6	SA 106386	.05 mfd. 200 V. cond.
7	SA 105264	500 ohms 1/4 W. res.
8	RC 957	R.F. coil assembly
9	CM 952	.00001 mfd. condenser
10	SA 103852	.002 mfd. 500 V. cond.
11	SA 105247	7500 ohms 1/4 W. res.
12	RC 958	Composite coil assy.
13	SA 105245	2000 ohms 1/4 W. res.
14	SA 102492	.05 mfd. 350 V. cond.
15	SA 106386	.05 mfd. 200 V. cond.
16	SA 105270	2,500 ohms 1/4 W. res.
17	SA 102497	.25 mfd. 200 V. cond.
18	CW 951	.1 mfd. 200 V. cond.
19	IC 951	I.F. coil assembly
20	SA 106417	.0001 mfd. mica cond.
21	SA 105276	50,000 ohms 1/4 W. res.
22	SA 106417	.0001 mfd. mica cond.
23	VR 951	Volume control-500,000 ohms
24	SA 103659	.005 mfd. 350 V. cond.
25	SA 105281	1 meg. 1/4 W. res.
26	SA 105246	1/2 meg. 1/4 W. res.
27	SA 106417	.0001 mfd. mica cond.
28	SA 105246	1/2 meg. 1/4 W. res.
29	SA 105249	5,000 ohms 1/4 W. res.
30	SA 102497	.25 mfd. 200 V. cond.
31	SA 103852	.002 mfd. 500 V. cond.
32	SA 105278	100,000 ohms 1/4 W.res.
33	SA 103659	.005 mfd. 350 V. cond.
34	SA 105279	1/4 meg. 1/4 W. res.
35	CW 951	.1 mfd. 200 V. cond.
36	SA 105279	1/4 meg. 1/4 W. res.
37	SA 106403	.001 mfd. 500 V. cond.
38	VR 952	Tone control-250,000 ohms
39	CW 952	.005 mfd. 500 V. cond.
40	TR 952	Output transformer
41	SA 105277	75,000 ohms 1/4 W. res.
42	SA 105274	20,000 ohms 1/4 W. res.
43	SA 105274	20,000 ohms 1/4 W. res.
44	SA 102492	.05 mfd. 350 V. cond.
45	SA 102496	.25 mfd. 350 V. cond.
46	SA 107572	5,000 ohms 1 W. res.
47	CM 951	.001 mfd. mica cond.
48	DM 951	Spkr.dphrgm.& voice coil
49	SK 955	Spkr.with cable & plug
50	FU 951	20 ampere fuse
51	RC 9512	Filter choke coil
52	CM 953	.00005 mfd. mica cond.
53		Switch - part of VR 951
54	SA 105452	Filter choke coil
55	SA 105452	Filter choke coil
56	CW 958	.5 mfd. 200 V. cond.
57	CW 958	.5 mfd. 200 V. cond.
58	SA 106809	Dial light-scr.type base
59	VI 951	Vibrator
60	TR 953	Power transformer
61	SA 106804	.008 mfd. 1600 V. cond.
62	TR 951	B choke
63	CE 951	6 and 10 mfd. elec. cond.
64	CM 951	.001 mfd. mica cond.

The Model 634A Ed. 2 is designed with an additional spark trap connected externally and in series with the battery cable. An antenna spark trap is also provided in the antenna circuit. These two spark traps make the use of spark plug suppressors unnecessary in most installations. The antenna spark trap is mounted inside of the chassis housing and a new R.F. transformer has been provided to match the impedance of this antenna spark trap.

Type and Number of Tubes ....2 #77, 1 #78, 1 #75, 1 #42, 1 #84 - Total 6
Battery Current (6.3 Volt Battery).............. 6.5 Amperes
Tuning Range .... 540 to 1500 K.C.
Maximum Undistorted Output .... 3. Watts
Maximum Output .... 4. Watts
Line-Up Frequencies .... I.F. 175 K.C., 1400 K.C., 1500 K.C.

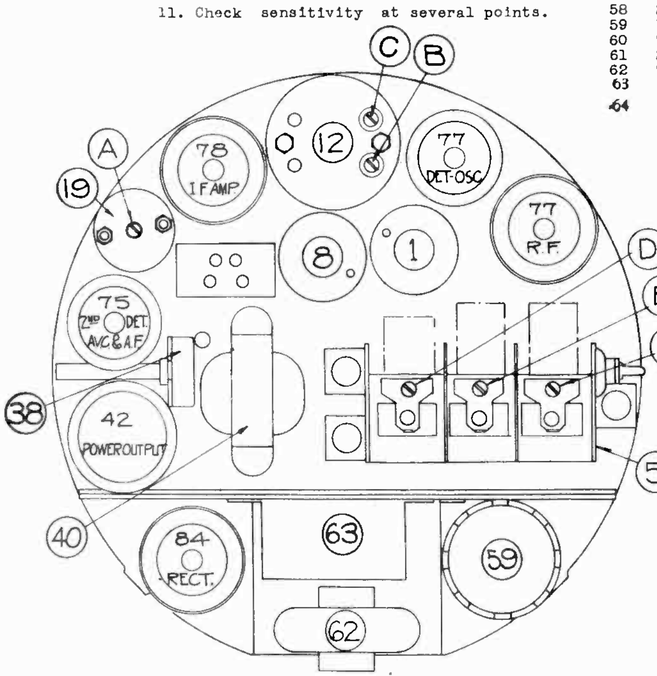


Figure No. 2

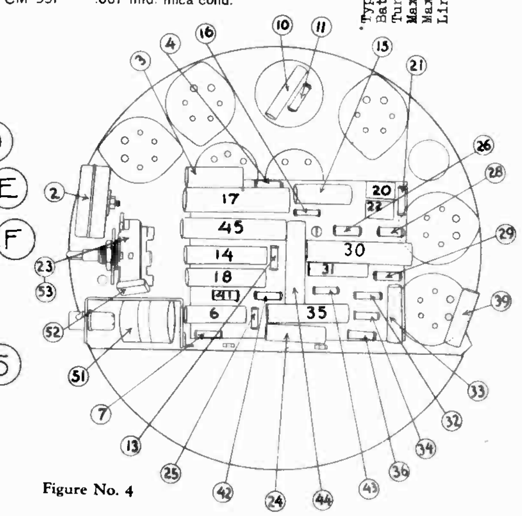


Figure No. 4

MODEL 626 Delco
Schematic
Voltage

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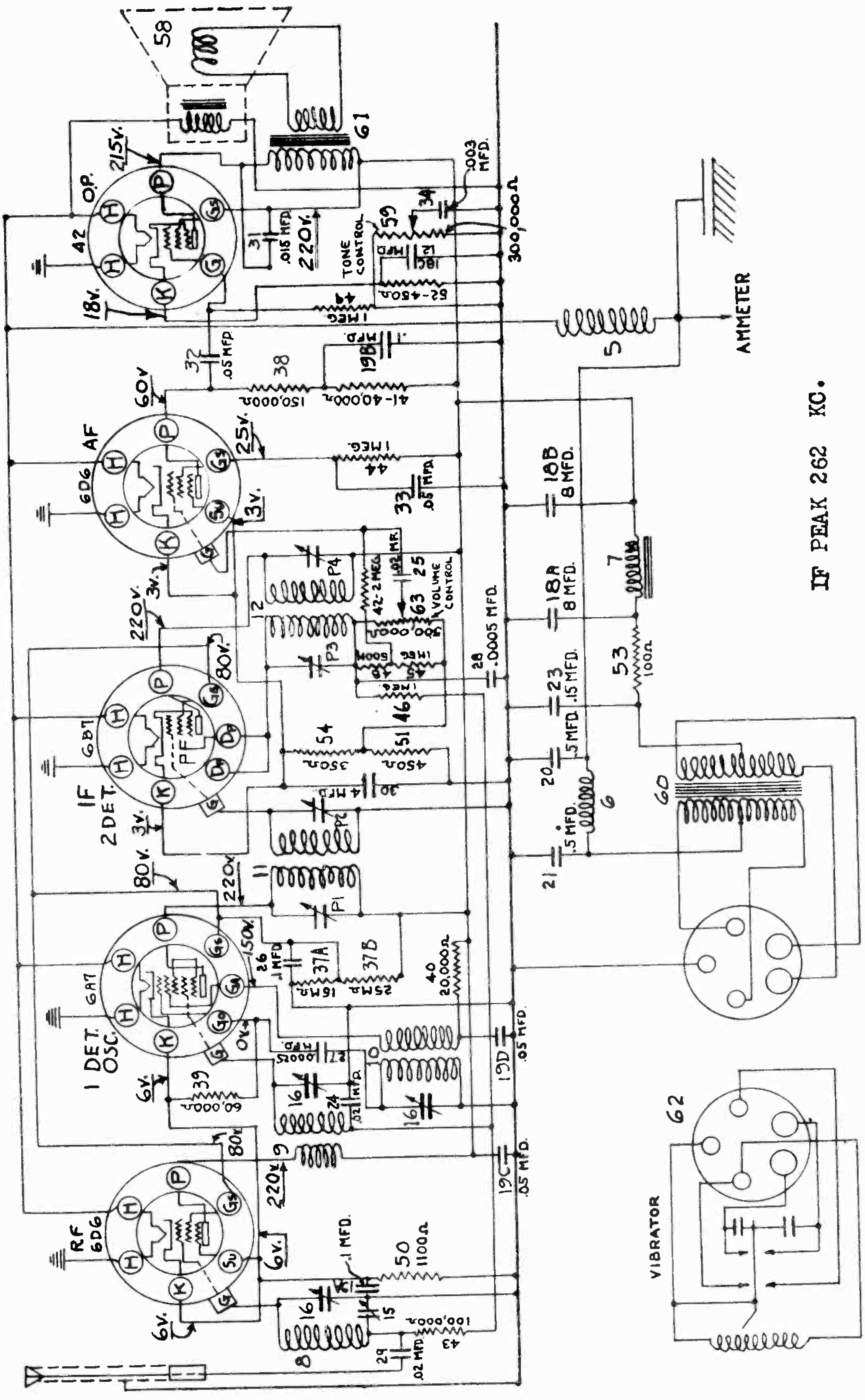


FIG. 1 DELCO MODEL 626 CIRCUIT DIAGRAM

MODEL 626 Delco
Alignment
Circuit Notes

UNITED MOTORS SERVICE

PEAKING PROCEDURE

The only way the circuits of this receiver can be peaked properly is with the use of a calibrated test oscillator and an output meter. The circuits are very carefully adjusted at the factory and do not need any further adjustment unless tampered with in the field or a defective coil has been replaced. It is, therefore, advisable not to attempt any adjustments unless it is definitely known that an adjustment is necessary. This is especially important in connection with the Syncro-Tuning circuit.

Connecting Output Meter

Connect one of the output meter leads to the plate prong of the type 42 output tube. (The plate prong is the first prong to the left of the filament when looking at the bottom of the tube with the filament prongs toward you.) Connect the other output meter lead to the receiver chassis, making sure that the meter is protected with a D.C. blocking condenser connected in series to prevent damage to the meter.

IMPORTANT

Due to the high sensitivity of these receivers, the receiver chassis must be in its case before making any adjustments. This is necessary in order to obtain accurate adjustments and to prevent oscillation due to lack of the shielding effect of the receiver case. Also, the following procedure should be followed closely if the "Syncro-Tuning" circuit is to function properly.

1. Peaking I.F. Stages at 262 K.C.

(a) Connect the ground lead of the test oscillator to the chassis frame. Connect a .5 mfd. condenser in series with the other lead and connect this lead to the grid cap of the 6A7 tube, leaving the tube's grid clip in place. (The .5 mfd. condenser is necessary to prevent the oscillator circuit of the receiver from affecting the I.F. adjustments.)

(b) Set the test oscillator on 262 kilocycles.

(c) Turn the volume control of the receiver on full.

(d) Peak each of the I.F. trimmers on the 2nd I.F. coil, Illustration #12 on Fig. 3.

(e) Then peak each of the trimmers on the 1st I.F. coil, Illustration #11 on Fig. 3.

NOTE: In order to insure accurate settings of the I.F. trimmers the above adjustments should be repeated using the lowest oscillator output that will give a reasonable output meter scale deflection. Make all adjustments for maximum output.

2. Peaking Oscillator Section of Gang Condenser at 1540 K.C.

(a) Connect the output of the test oscillator to the antenna connection of the receiver and to the chassis ground. (Do not use the .5 mfd. condenser that was required in aligning the I.F. stages.)

(b) Turn the rotor plates of the gang condenser until they are COMPLETELY OUT OF MESH.

(c) Set the test oscillator on exactly 1540 kilocycles.

(d) Adjust the parallel trimmer for the "OSC." section (middle section) CAREFULLY for maximum output. Then adjust the trimmers for the other two sections of the gang condenser, also for maximum output.

3. Peaking "ANT". and "R.F." Sections of Gang Condenser at 1400 K.C. and Compensating Condenser at 600 K.C.

(a) Set the test oscillator on 1400 kilocycles.

(b) Turn the condenser rotor plates until the 1400 K.C. signal from the test oscillator is tuned in with maximum output

(c) Readjust the parallel trimmers for the "ANT." and "R.F." sections of the gang condenser (shown on Fig. 2) for maximum output. DO NOT DISTURB the setting of the oscillator trimmer as this is adjusted at 1540 K.C. only and any adjustment at this point will affect both the tuning range of the receiver and the tracking of its circuits.

NOTE: In order to accurately set the "ANT." trimmer of the condenser gang at 1400 K.C. it will be necessary to make a preliminary adjustment of the "antenna compensating condenser" (Illustration #15 on Fig. 3) before installing the receiver on a car.

(d) Set the test oscillator on 600 kilocycles.

(e) Turn the condenser rotor plates until the 600 K.C. signal from the test oscillator is tuned in with maximum output.

(f) Peak the "antenna compensating condenser," (Illustration #15 on Fig. 3) for maximum output, rocking the rotor plates of the condenser gang back and forth and adjusting the "antenna compensating condenser" alternately until no further improvement in output can be obtained.

(g) Reset the test oscillator on 1400 kilocycles.

(h) Turn the condenser rotor plates until the 1400 K.C. signal is tuned in with maximum output.

(i) Adjust the trimmer for the "ANT." section of the gang condenser CAREFULLY for maximum output.

4. Adjusting Compensating Condenser to Car Antenna

After the "ANT." section of the gang condenser has been correctly adjusted according to preceding information it will be necessary to reset the "antenna capacity compensating condenser" to the car antenna when installing the receiver in a car in order to compensate for the wide range of antenna capacities being used. This is done in the following manner:

(a) Tune the receiver to a weak broadcast station between 570 to 640 K.C.

(b) Peak the "antenna capacity compensating condenser" for maximum output, rocking the receiver dial back and forth and adjusting the compensating condenser alternately until no further improvement in output can be obtained.

CAUTION: Do not touch the adjustment of the parallel trimmer for the "ANT." section of the gang condenser after the receiver is installed a car.

Delco Syncro-Tuning

The outstanding circuit feature of this receiver is the specially designed antenna circuit which provides more than four times the stage gain of conventional circuits, making it particularly suitable for under car antenna systems required on several 1935 Model cars. Syncro-Tuning differs from other circuits in that the antenna system is actually tuned to resonance at all frequencies instead of just one point in the broadcast band as is the case in other circuits. This results in a greatly increased efficiency and a lower noise level. Syncro-Tuning is accomplished through the use of specially shaped stator plates in the "ANT." section of the condenser gang in collaboration with a very carefully designed antenna circuit which in reality is very simple. The capacity of the antenna system with which the receiver is to be used is immaterial insofar as the tuning of the antenna circuit is concerned. This is because of the use of an "antenna capacity compensating condenser" that can be adjusted for any deficiency or excess of antenna capacity so that the sum total capacity the receiver works with is always the same. It is therefore important that this condenser be adjusted to the car antenna when installing the receiver in a car.

A spark noise filter is employed to prevent ignition interference from affecting the receiver circuits. The elimination of chassis pickup in this manner should make possible the installation of this receiver in the majority of cars without the use of spark plug suppressors.

The receiver may be connected for operation on a car battery with the positive side grounded by simply reversing the two wires connected to the terminal strip located on top of the power transformer.

The "B" power supply utilizes a full wave self-rectifying vibrator of the plug-in type.

A slight voltage delay is used on the detector circuit to assist materially in reducing background noise.

Circuit Operation

Referring to the circuit diagram Figure 1. The antenna is capacity coupled to the antenna coil, which is tuned by the "ANT." section of the gang condenser, and feeds the grid of the 6D6 R.F. amplifier tube. The plate circuit of this tube is inductively coupled to the grid winding feeding the 6A7 tube and tuned by the "R.F." section of the gang condenser. (The 6A7 tube is used as the conventional detector oscillator or pentagrid converter.) The oscillator frequency which is produced due to the reaction between the oscillator grid, plate, and associated circuit constants is tuned by the "OSC." section of the gang condenser. The incoming station frequency and the oscillator frequency are mixed in the 6A7 tube and the resultant frequency which is 262 kilocycles is transformer coupled to the grid of the pentode section of the 6B7 tube and the output of this section of the tube is impressed on the diode plates of this tube for detection and developing A.V.C. voltage. The A.V.C. voltage controls the grid bias of the 6D6 R.F. tube, the control grid of the 6A7 tube and also a part of the developed voltage is used to control the 6D6 audio tube. The audio output of the detector circuit is coupled to the grid of the 6D6 audio amplifier tube and the grid voltage swing is controlled by the volume control. The output of this audio tube is resistance coupled to the grid of type 42 power output pentode.

MODEL 626 Delco
Socket, Trimmers
Chassis Layout

UNITED MOTORS SERVICE

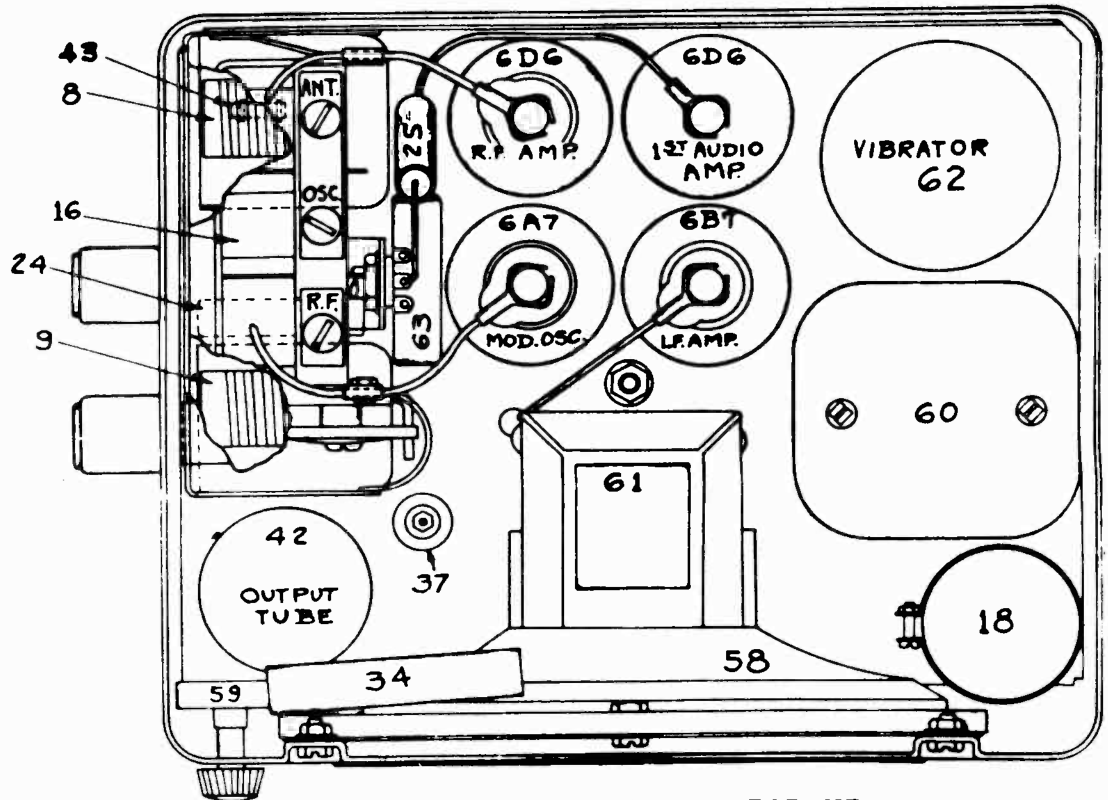


FIG. 2 PARTS LAYOUT--TOP VIEW

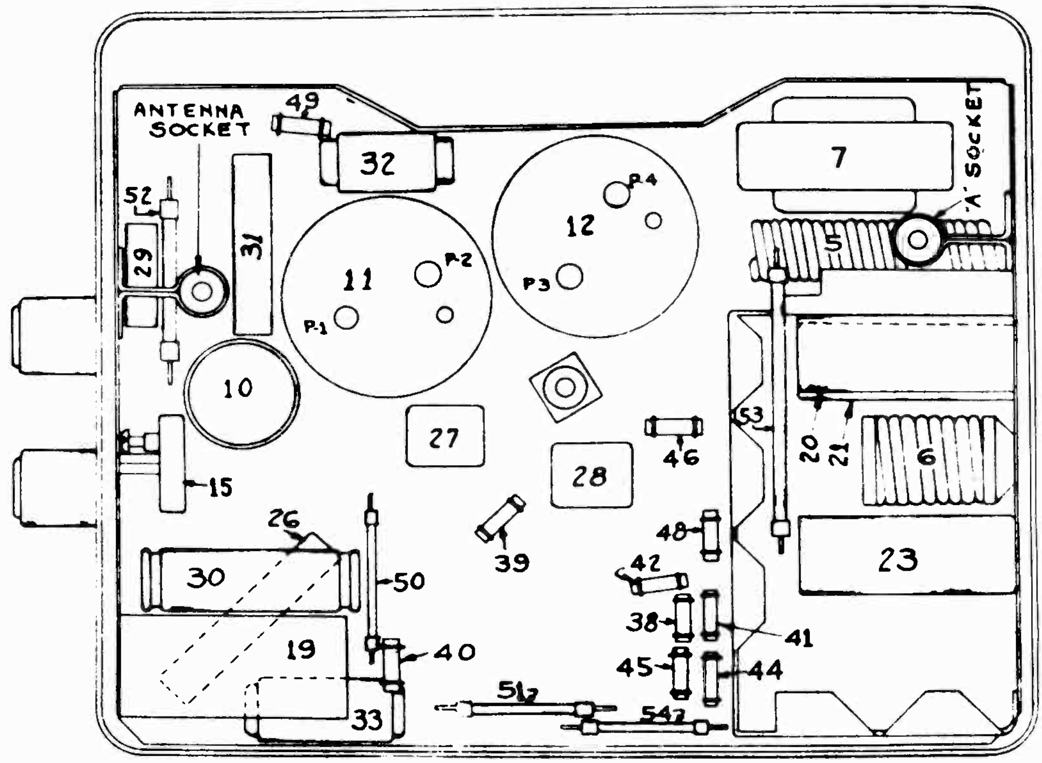


FIG. 3 PARTS LAYOUT--BOTTOM VIEW

MODEL 626 Delco
Parts List

UNITED MOTORS SERVICE

CHASSIS PARTS

Part No.	Part Name	Description	Illus. No.
1208767	Base	Tube shield grounding	
1209334	Bolt	Chassis cover retaining stud	
1209335	Bracket	Volume control mounting	
1209336	Case	Chassis (less covers)	
1209337	Case	Transformer	
1209340	Clamp	Vibrator grounding	
1209341	Clamp	Condenser mtg. (4 mfd.)	
1209342	Clamp	Elect. cond. mtg.	
1209636	Cloth	Speaker grille	
1209338	Coil	"A" supply filter choke	5
1209339	Coil	Vibrator "A" choke	6
1209291	Coil	"B" power filter choke	7
1209343	Coil	Antenna	8
1209344	Coil	R.F.	9
1209345	Coil	Oscillator	10
1209304	Coil assy.	1st I.F.	11
1209305	Coil assy.	2nd I.F.	12
1209633	Condenser	Antenna compensating	15
1209346	Condenser	3 gang tuning	16
	Sec. A	Antenna	
	Sec. B	R.F.	
	Sec. C	Oscillator	
1209285	Condenser	Electrolytic block	18
	Sec. A	8 mfd., 450 volt	
	Sec. B	8 mfd., 450 volt	
	Sec. C	12 mfd., 25 volt	
209321	Condenser By-pass block		19
	Sec. A	.1 mfd., 200 volt	
	Sec. B	.1 mfd., 200 volt	
	Sec. C	.05 mfd. 400 volt	
	Sec. D	.05 mfd. 400 volt	
1209299	Condenser	Metal case .5 mfd. 160 volt	20
1209299	Condenser	Metal case .5 mfd. 160 volt	21
1209300	Condenser	Metal case .15 mfd .400 volt	23
1209307	Condenser	Tubular .02 mfd. 200 volt	24
1209307	Condenser	Tubular .02 mfd. 200 volt	25
1209306	Condenser	Tubular .1 mfd. 200 volt	26
1209220	Condenser	Molded .00025 mfd.	27
1209612	Condenser	Molded .0005 mfd.	28
1209310	Condenser	Tubular .02 mfd. 200 volt	29
1209324	Condenser	Metal case 4 mfd. 10 volt	30
1209325	Condenser	Tubular .015 mfd. 400 volt	31
1209313	Condenser	Tubular .05 mfd. 400 volt	32
1209308	Condenser	Tubular .05 mfd. 400 volt	33
1209627	Condenser	Tubular .003 mfd. 200 volt	34

Part No.	Part Name	Description	Illus. No.
1209726	Connector assy.	"A" power on chassis	
1836869	Cap	Ferrule holder	
1838476	Ferrule	Contact	
1209727	Connector assy.	Antenna on chassis	
1838476	Ferrule	Contact	
1836878	Spring	Tension	
1845713	Washer	Fiber	
1209347	Cord	Speaker	
1209348	Cover	Chassis bottom	
1209349	Cover	Chassis tube lid	
1209350	Cover	Transformer bottom	
1209351	Cover	Transformer top	
1209352	Cover	Vibrator filter shield	
1209639	Grille	Speaker front (nickel ed)	
1209354	Plug	Antenna trimmer cover	
1209355	Resistor	Voltage divider "ohmite"	37
Sec. A		15,000 ohms, 2 watt	
Sec. B		25,000 ohms, 2 watt	
1208292	Resistor	Carbon 150,000 ohms 1/3 watt	38
1208320	Resistor	Carbon 60,000 ohms 1/4 watt	39
1209405	Resistor	Carbon 20,000 ohms 1/3 watt	40
1208296	Resistor	Carbon 40,000 ohms 1/3 watt	41
1209356	Resistor	Carbon 2 megohms, 1/3 watt	42
1208854	Resistor	Carbon 100,000 ohms 1/3 watt	43
1208232	Resistor	Carbon 1 megohm 1/3 watt	44
1208232	Resistor	Carbon 1 megohm 1/3 watt	45
1208232	Resistor	Carbon 1 megohm 1/3 watt	46
1204138	Resistor	Carbon 500,000 ohms 1/3 watt	48
1208232	Resistor	Carbon 1 megohm 1/3 watt	49
1209357	Resistor	Flexible 1100 ohms 1/2 watt	50
1208110	Resistor	Flexible 450 ohms 1/2 watt	51
1209358	Resistor	Flexible 450 ohms $1\frac{1}{2}$ watt	52
1209359	Resistor	Flexible 100 ohms 3 watt	53
1208802	Resistor	Flexible 350 ohms 1/2 watt	54
1209607	Speaker	Complete unit $6\frac{1}{2}$"	58
1209614	Term. assy.	Polarity reversing	
1209217	Term. assy.	Single lug	
1209611	Term. assy.	Fire lug	
1209747	Term. assy.	Four lug-on speaker	
1209628	Tone control	Res. 300,000 ohms	59
1209282	Transformer	Vibrator power	60
1209613	Transformer	Output-speaker	61
5039661	Vibrator	Plug-in synchronous	62
1209330	Volume control	Res. 500,000 ohms	63

MODEL 1101 Delco
Schematic

UNITED MOTORS SERVICE, INC.

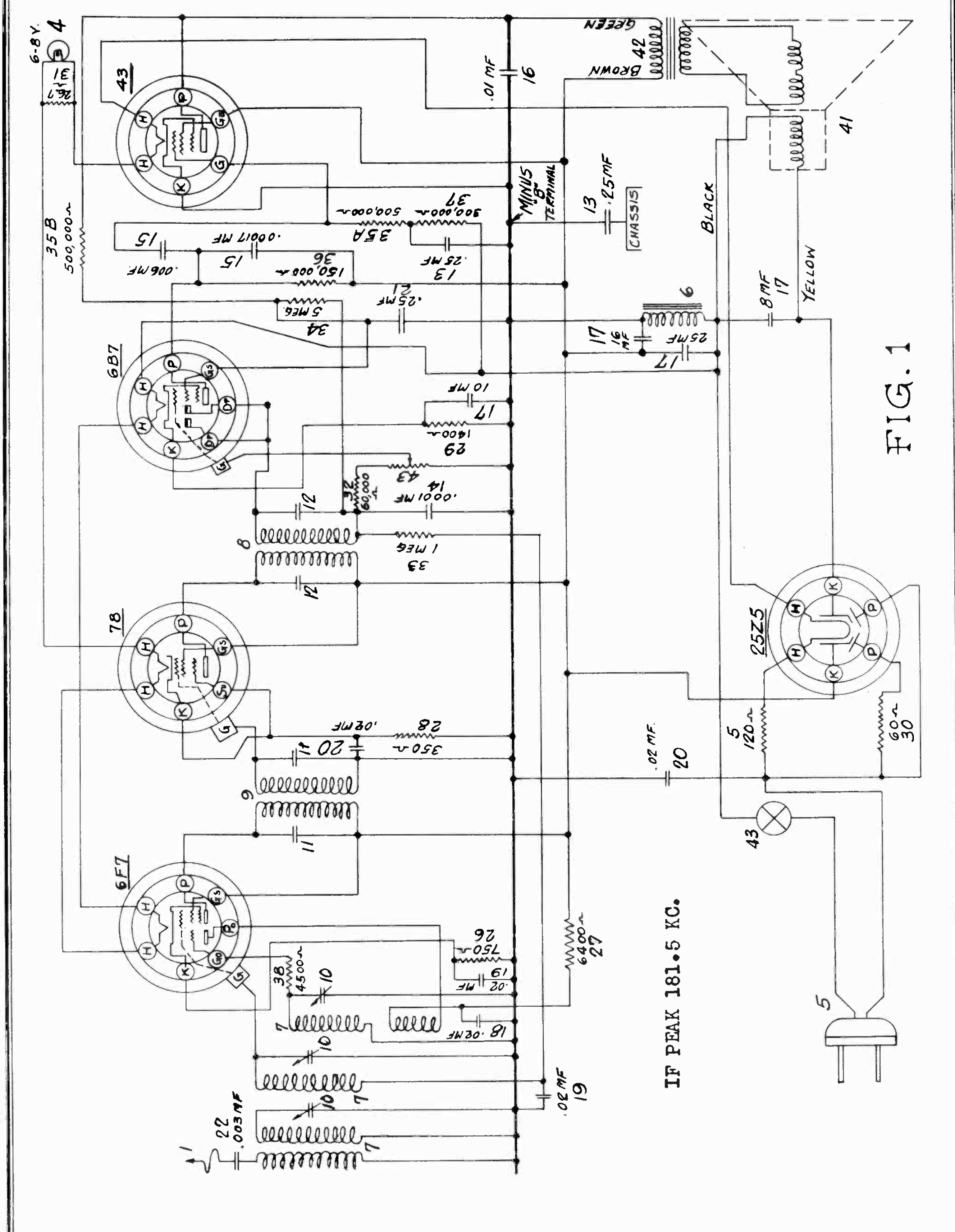


FIG. 1

MODEL 1101 Delco
Alignment, Data
Socket, Trimmers
Voltage, Parts

UNITED MOTORS SERVICE, INC.

The chassis employs a 5 tube AC-DC superheterodyne circuit, automatic volume control and an electro-dynamic speaker.

The frequency range is 535-1720 kilocycles, including the full broadcast range and also the first police channels. The intermediate frequency is 181.5 Kilocycles.

METHOD OF BIASING

Referring to the circuit diagram, it will be seen that the 6F7 tube obtains its bias from the cathode resistor Illus. #26, by-passed by condenser 19, .02 Mfd.

The 78 I.F. amplifier obtains its bias from the cathode resistor 28.

Bias for the 6B7 audio amplifier is obtained from cathode resistor 29. The effect of this circuit is that a slight bucking bias is applied to the diode setcion, but a very weak signal soon overcomes this bias and the diode then acts as though there were no bias resistor. The pentode audio amplifier section, however, makes use of this initial bias in resistor 29 and after signal is applied, depending on the strength of the signal, a varying amount of bias will be applied to accommodate the signal from the AVC circuit.

Bias for the type 43 output tube is obtained from the drop across the filter choke 6 and whatever hum component there is remaining is filtered through resistor 37 and bypass condenser 13.

AUTOMATIC VOLUME CONTROL CIRCUIT

Automatic volume control voltage is developed in the diode circuit across resistor 32 in series with volume control 43. This voltage is fed back through filter resistor 33 to the control grid return of the 6F7 modulator section. No automatic volume control is exerted on the intermediate frequency amplifier, type 78 tube.

Connecting Output Meter

Connect one terminal of the output meter to the plate prong of the type 43 output tube and the other terminal to the radio chassis frame. Make sure that the output meter is protected with a series condenser to prevent the D.C. from flowing through the meter circuit. If the meter is not protected, connect a .1 mfd. condenser in series with the lead to the chassis frame.

Peaking I.F. Stages at 181.5 KC

(a) Connect the antenna of the signal generator to the receiver antenna wire close to where it enters the chassis, through a series condenser, preferably an .02 mfd. The best way to make this connection is with a sharp, pointed prod so that the insulation on the antenna wire is not permanently damaged. The unused dead end of the antenna wire should be rolled up on its reel.

(b) Connect the ground terminal of the signal generator to the radio chassis frame.

(c) Set the Signal Generator to exactly 181.5 KC.

(d) With the Signal Generator set to the lowest useable output level and the radio volume control on full, adjust the four I.F. coil trimmer condenser nuts for maximum signal output. These nuts are accessible through the front flange of the chassis. To make these adjustments a standard 1/4" (across flats) insulated hexagon socket wrench must be used. It may be necessary to move the tuning dial slightly for the best result. Normally the rotor plates should be in mesh with the stator plates. (Approx. 550 KC.) Always make these I.F. adjustments very carefully, going over them several times to insure that the final setting is at resonant frequency.

Peaking Tuning Condenser at 1400 KC

(a) Connect the antenna terminal of the test oscillator to the receiver antenna through a series condenser--a .0001 mfd. condenser is preferable. Again this connection should be made close to where the antenna wire enters the chassis.

(b) Connect the ground terminal of the signal generator to the radio chassis frame.

(c) Set the signal generator to exactly 1720 kilocycles and to the lowest useable volume level, with radio set volume on full.

(d) Turn the tuning condenser on the radio chassis to 1720--rotor plates entirely out of mesh with stator plates--and adjust oscillator trimmer (on rear of cond. gang) for max. signal.

(e) Set signal generator to 1400 KC.

(f) Turn tuning condenser until max. signal is obtained.

(g) Adjust the remaining two trimmers--antenna & R.F. sections--on the tuning condenser to resonant frequency.

NOTE: It is necessary that these adjustments be gone over several times until no further improvement can be made.

TUBE COMPLEMENT & VOLTAGE CHART

The tube voltages shown below are average readings taken from minus "B" terminal to the tube prong, excepting the heater terminals in which case the voltage drop across the two H prongs is measured. This chart was made while using 115 volt, 60 cycle line. Variations in line voltage will cause the readings to vary slightly.

TUBE BASE DIAGRAM SYMBOLS*

TYPE	FUNCTION	H	P	Gs	Su	G	K	P-osc.
6F7	Osc-Mod.	6.5	100	100	-	0	5	100
78	IF	6.5	100	100	3	0	3	- -
6B7	Diode--AF	6.5	15	15	-	0	1	- -
43	Output	27.	96	100	-	-20	0	- -
25Z5	Rectifier	27.	-	- -	-	-	100	- -

*TUBE BASE DIAGRAM SYMBOLS

H - Heater
P - Plate
Gs - Screen Grid
Su - Suppressor Grid
G - Control Grid
K - Cathode
P-Osc - Osc Plate

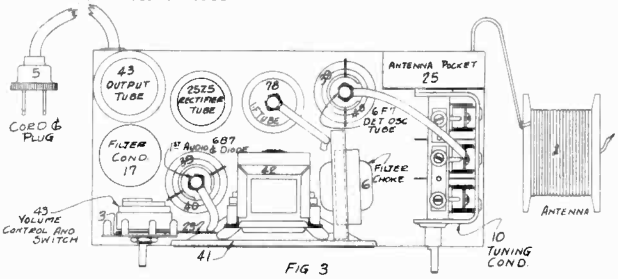
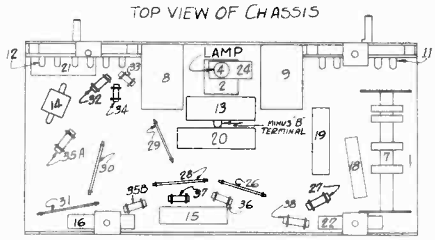


FIG 3
TOP VIEW OF CHASSIS



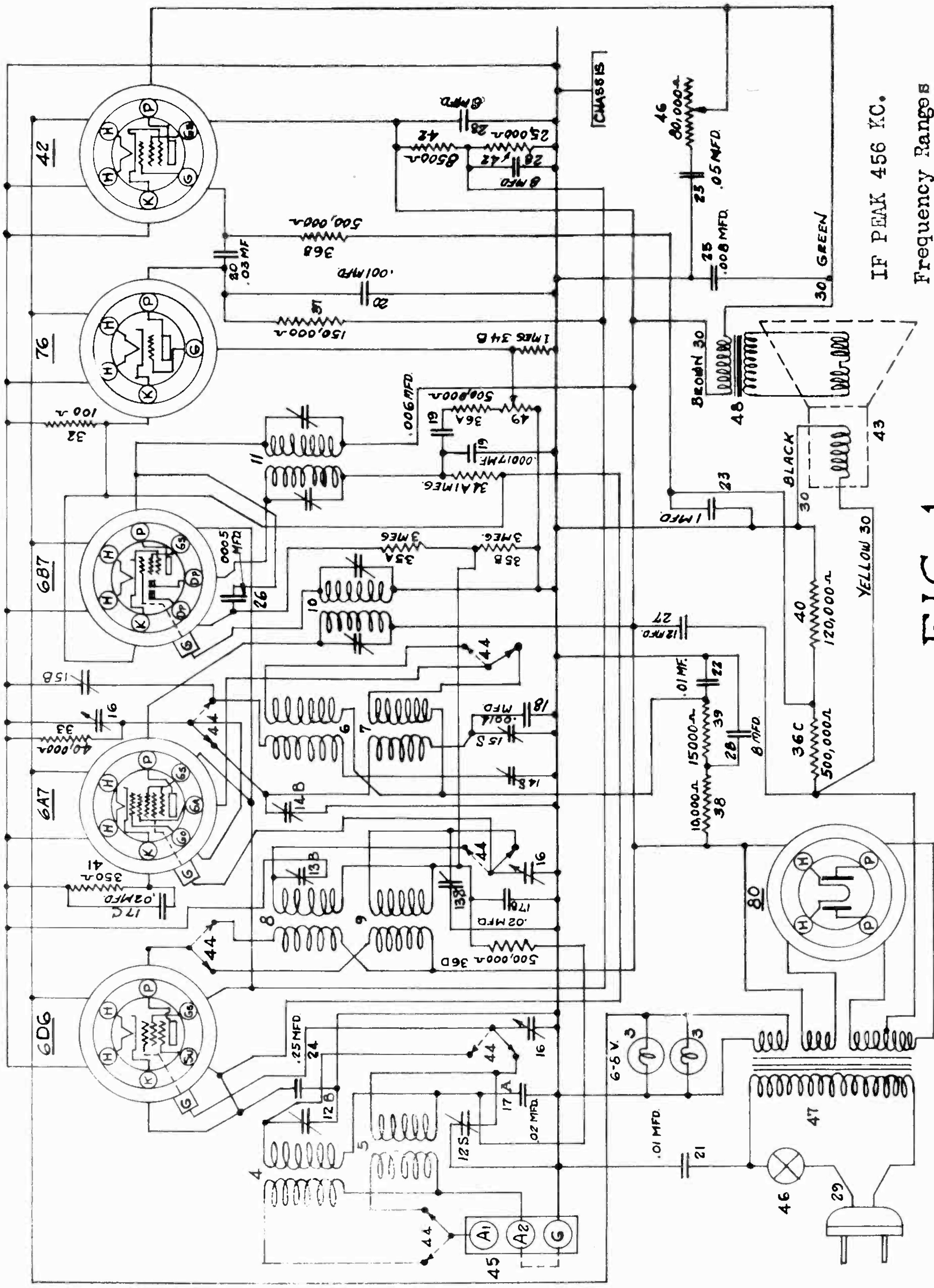
BOTTOM VIEW OF CHASSIS
FIG 2

Part No.	Illus. No.	Part Name	Description
1208766	1	Antenna	15 ft. flexible--coiled
1208767		Base	Tube shield
1208346	2	Bracket	Dial light
1208768	3	Bracket	Volume control
1208769		Bracket	Speaker support
1209000	4	Bulb	Dial light--6-8 volt
1208351	5	Cord & plug	Includes resistor wire
1208775	6	Choke	Filter
1208776		Clamp	Filter condenser
1208777	7	Coil	Antenna
1208778	8	Coil	Diode feeding
1208779	9	Coil	1st I.F.
1208780	10	Condenser	Tuning
1208781	11	Condenser	1st I.F. padding
1208785	12	Condenser	2nd I.F. padding
1208782	13	Condenser	.25 - .25 Mfd. 200 volt
1208783	14	Condenser	.0001 " (Mica)
1208355	15	Condenser	.00017 - .006 Mfd. 200 volt
1208784	16	Condenser	.01 Mfd. 200 volt
1208786	17	Condenser	10. -8. - 25.- 16. " (filter
1208787	18	Condenser	.02 Mfd. 200 volt
1208788	19	Condenser	.02 - .02 Mfd. 200 volt
1208789	20	Condenser	.02 - .02 Mfd. 400 volt
1208790	21	Condenser	.25 Mfd. 200 volt
1208352	22	Condenser	.003 Mfd. 200 volt
1208792		Grommet	Tuning condenser
1208793	23	Insulator	Volume control
1208794	24	Insulator	Dial light & bracket
1208799	25	Pocket	Antenna
1208800	26	Resistor	750 ohms (Flex.)
1209007	27	Resistor	6400 "
1208802	28	Resistor	350 "
1208803	29	Resistor	1400 "
1208804	30	Resistor	60 ohm (Flex.) 1/2 watt
1208360	31	Resistor	26.7 ohm (Flex.)
1208320	32	Resistor	60,000 ohm, 1/3 watt
1208144	33	Resistor	1,000,000 ohm, 1/3 watt
1208805	34	Resistor	5,000,000 ohm, 1/3 watt
1204138	35A,35B	Resistor	500,000 ohms
1207905	36	Resistor	150,000 "
1204139	37	Resistor	300,000 o"
1208905	38	Resistor	4500 ohms
1208810	41	Speaker	Assembly
1209002	42	Transformer	Output
1208812	43	Vol. Control	With switch

1103 Delco
Below Serial 805120
Schematic

UNITED MOTORS SERVICE, INC.

MODELS 1102 Delco
Below Serial 781400



IF PEAK 456 KC.

Frequency Ranges
535 - 1750 KC.
5.5 - 16.0 MC.

FIG. 1

MODELS 1102 Delco
Above Serial 781400

UNITED MOTORS SERVICE, INC.

1103 Delco
Above Serial 805120
Schematic

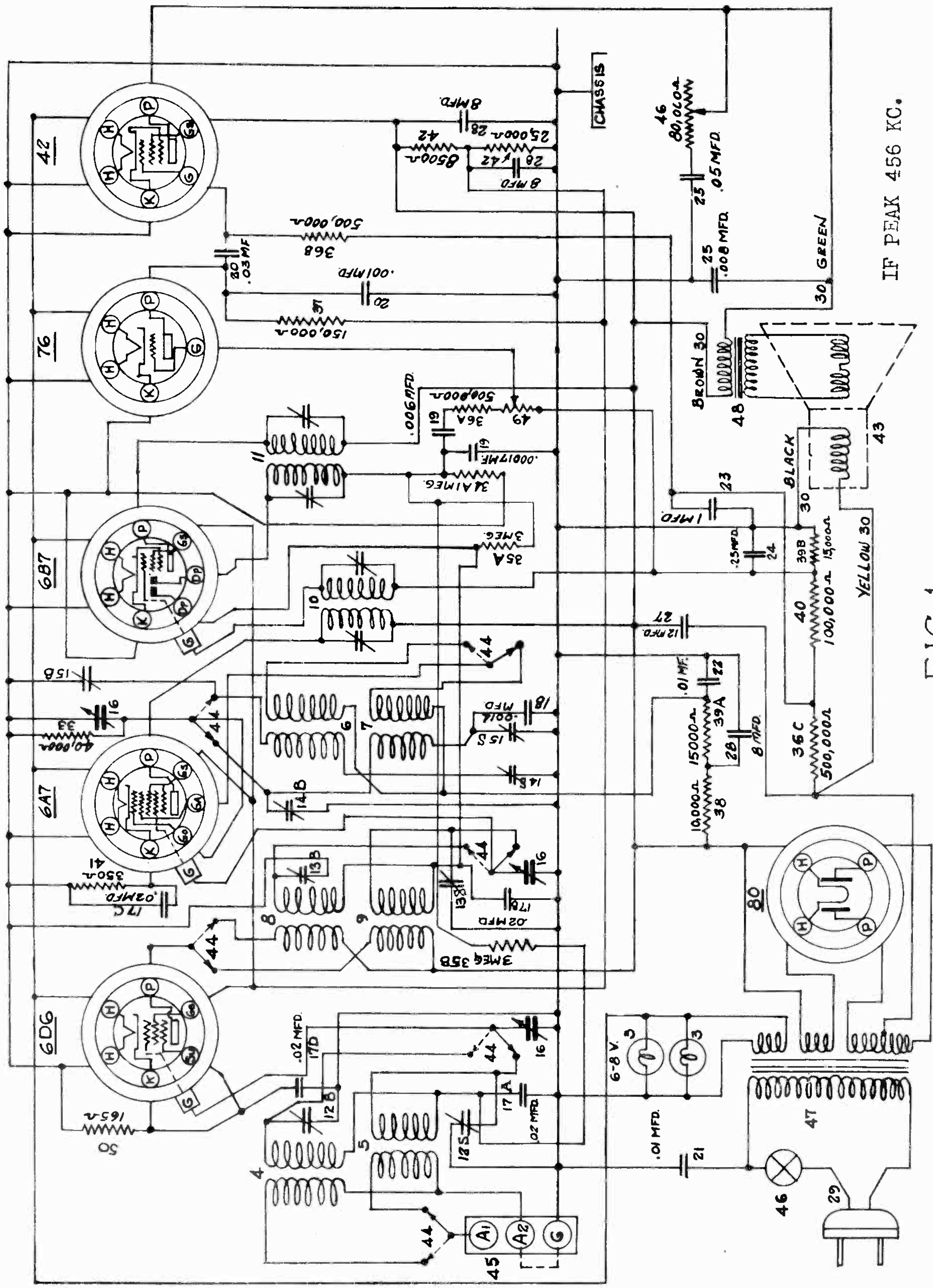
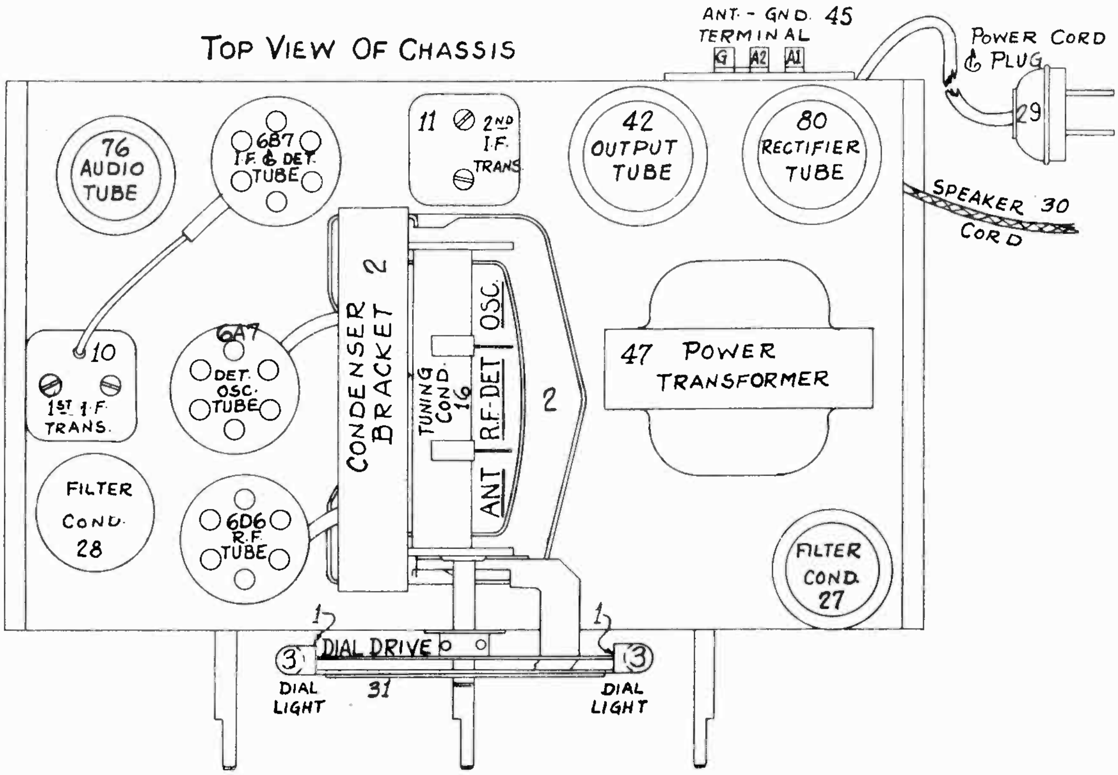
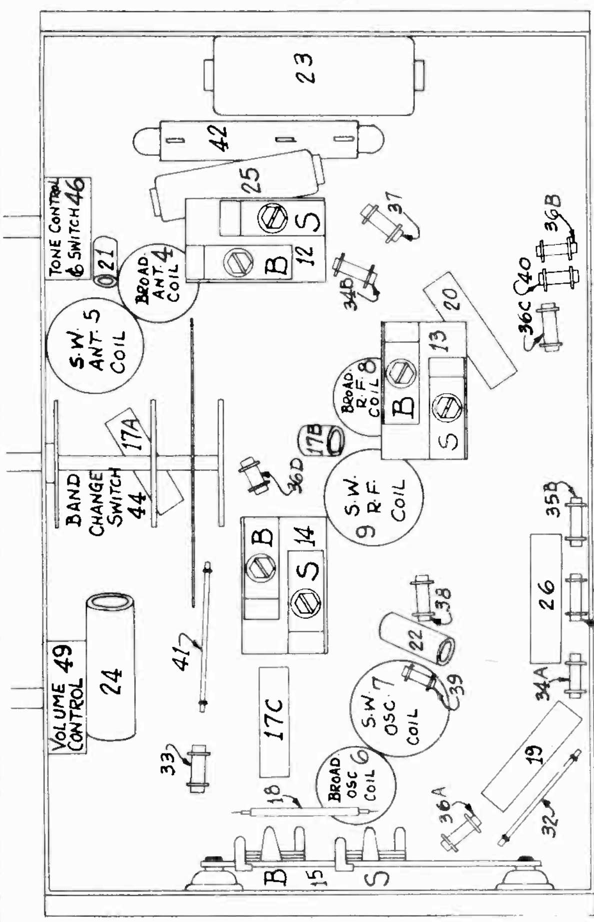


FIG. 1a

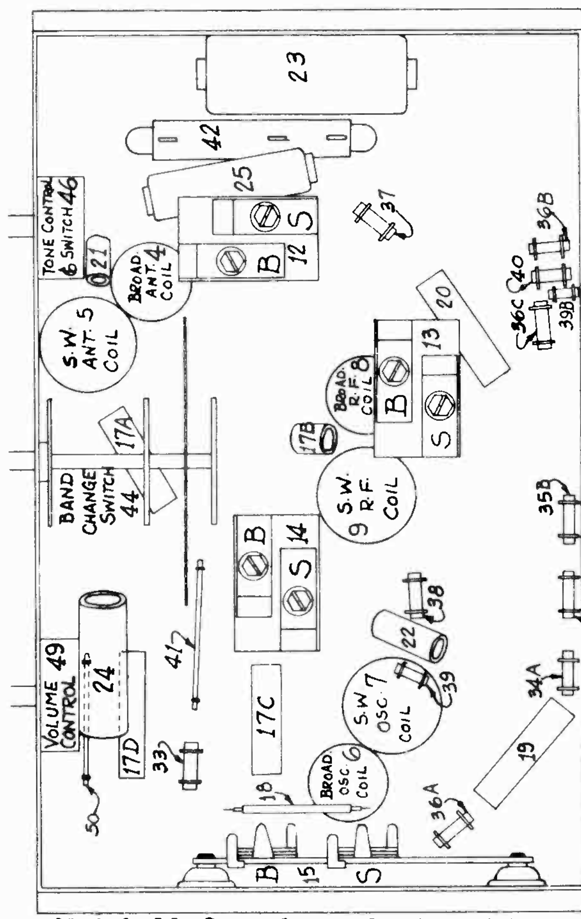
MODELS 1102,1103 Delco
Socket,Trimmers
Chassis Layout

TOP VIEW OF CHASSIS





Model 1102 - Below Serial 781400
Model 1103 - Below Serial 805120



Model 1102 - Above Serial 781400
Model 1103 - Above Serial 805120

MODELS 1102,1103 Delco
Alignment,Voltage Tables
Parts List

UNITED MOTORS SERVICE, INC.

CONNECTING OUTPUT METER

Connect one terminal of the output meter to the plate terminal of the type #42 output tube and the other terminal to the radio chassis frame. Make sure that the output meter is protected with a series condenser to prevent the D.C. from flowing through the meter circuit. If the meter is not protected, connect a .1 mfd. condenser in series with the lead to the chassis frame.

Peaking I.F. Stages at 456 Kilocycles

(a) Connect the antenna of the signal generator to the control grid connection on top of the 6A7 tube, (DO NOT REMOVE grid cap) through a series condenser (.02 mfd.).

b) Connect the ground terminal of the signal generator to the radio chassis frame.

c) Set the signal generator to exactly 456 kilocycles.

d) Set the receiver band change switch to the broadcast (right) position.

e) With the signal generator set to the lowest useable output level, and the receiver volume control on full, adjust the I.F. trimmer condensers for maximum output.

To make this adjustment a small insulated screw-driver is required. Always make the I.F. adjustments very carefully and go over them several times to insure that the final setting is at resonant frequency. Rotate selector dial to insure that the alignment has not been made on a broadcast frequency in which case the signal will disappear as the dial is turned.

PEAKING TUNING CONDENSER AT 1400 KILOCYCLES (Broadcast Band)

a) Close the receiver tuning condenser plates (535 KC) and set the pointer on the horizontal line.

(b) Connect the antenna terminal of the signal generator to the receiver antenna terminal through a series condenser (.0002 mfd.)

(c) Connect the ground terminal of the signal generator to the radio chassis frame.

d) Set the signal generator to exactly 1400 kilocycles and to the lowest useable volume level, with the radio set volume on full.

e) Turn band change switch to the right hand position (broadcast band).

f) Set the tuning control of the receiver to 140 on the dial.

g) Adjust the oscillator broadcast shunt trimmer, Illus. #14-B to resonant frequency (greatest swing on output meter).

(h) Adjust the antenna trimmer, Illus. #12-B, to resonant frequency.

(i) Adjust the radio frequency trimmer, Illus. #13-B, to resonant frequency.

NOTE: It is necessary that these adjustments be gone over several times until no further improvement can be made.

j) Set the signal generator to 600 kilocycles.

(k) Tune the receiver to 60 on the dial and adjust the frequency setting of the signal generator until maximum response is obtained.

l) Adjust the series oscillator trimmer 15-B and vary selector dial slightly, not over an 1/8" simultaneously until maximum output is obtained.

m) Repeat the adjustments at 1400 KC.

PEAKING TUNING CONDENSER AT 15 MEGACYCLES (Short Wave Band)

(a) Connect the antenna terminal of the signal generator to a receiver antenna terminal through a series carbon resistor (approx. 750 ohms).

(b) Connect the ground terminal of the signal generator to the radio chassis frame.

(c) Set the signal generator to exactly 1500 KC (15 megacycles.)

(d) Turn band change switch to the left hand position (short wave band).

e) Set the tuning control of the receiver at 15 on the dial.

f) Adjust the oscillator parallel trimmer 14-S, to resonant frequency.

g) Adjust the antenna trimmer 12-S, to resonant frequency.

h) Adjust the radio frequency trimmer 13-S, and vary selector dial slightly (not over 1/8") simultaneously until maximum output is obtained.

NOTE: It is necessary that these adjustments be gone over very carefully several times until no further improvement can be made. Greater accuracy is required for making short wave adjustments than for the broadcast band.

i) Now set the signal generator to 6000 KC.

j) Set the receiver dial to 6.

k) Adjust the oscillator series trimmer, 15-S, and vary the dial slightly (not over 1/8") simultaneously until maximum output is obtained.

(l) Repeat the adjustments at 15000 KC.

TUBE COMPLEMENT & VOLTAGE CHART

The tube voltages shown below are average readings taken from chassis to the tube prong. This chart was made while using 115 volt line. Variations in line voltage will cause the readings to vary slightly.

TUBE BASE DIAGRAM SYMBOLS"

TYPE	FUNCTION	H	P	Gs	Su	G	Ga	Go	K
6D6	RF Amp.	6.5	250	125	0	0	-	-	3
6A7	Osc-Mod.	6.5	250	125	-	0	140	15	4.2
6B7	IF & Diode	6.5	250	125	-	0	-	-	3
76	AF Amp.	6.5	35	-	-	0	-	-	3
42	Output	6.5	230	250	-	-18	-	-	0
80	Rectifier	5.1	-	-	-	-	-	-	-

VOLTAGE CHART

(Use only for 1102's above #781400 and 1103's above #805120.)

The tube voltages shown below are average readings taken from chassis to the tube prong. This chart was made while using a line voltage of 115 volts. Variations in line voltage will cause the readings to vary slightly.

TUBE BASE DIAGRAM SYMBOLS *

TYPE	FUNCTION	H	P	Gs	Su	G	Ga	Go	K
6D6	R.F. Amp.	6.5	250	110	2	0	-	-	2
6A7	Osc.-Mod.	6.5	250	110	-	0	125	-5	4.0
6B7	IF & Diode	6.5	250	110	-	-3	-	to	0
76	A.F. Amp.	6.5	28	-	-	-3	-	-15	0
42	Output	6.5	230	250	-	18	-	-	0
80	Rectifier	5.1	-	-	-	-	-	-	-

1208828	4	Coil	Broadcast antenna
1208829	5	Coil	S.W. ant.
1209003	6	Coil	Broadcast oscillator
1208829	7	Coil	S. W. oscillator
1208830	8	Coil	Broadcast R.F.
1208831	9	Coil	S.W. R.F.
1208832	10	Coil	1st I.F.
1208834	11	Coil	2nd I.F.
1208835	12	Condenser	Ant. trimmer--broadcast & S.W.
1208835	13	Condenser	R.F. trimmer--broadcast & S.W.
1209017	14	Condenser	Osc. trimmer--broadcast & S.W.
1209018	15	Condenser	Series osc. trimmer--broadcast & S.W.
1208838	16	Condenser	Tuning
1208840	17A,17B,17C	Condenser	.02 Mfd., 200 volt
1208841	18	Condenser	.0014 Mfd., Mica
1208855	19	Condenser	.006-.00017 Mfd., 200 volt
1208288	20	Condenser	.001-.03 Mfd., 400 volt
1208843	21	Condenser	.01 Mfd. (line by-pass), 400 volt
1208844	22	Condenser	.01 Mfd. (osc. plate), 400 volt
1208845	23	Condenser	1. Mfd., 160 volt
1208790	24	Condenser	.25 Mfd., 200 volt
1208126	25	Condenser	.008-.05 Mfd., 400 volt
1208119	26	Condenser	.0005 mf.,400 volt
1208317	27	"	12 mf. 475 volt
1208316	28	"	.8 -8. -8. mf. 200-300-400 volt
1208846	29	Cord & Plug	Receiver
1208325	30	Cord	Speaker
1208847	31	Dial	Complete with drive assembly
1209015	32	Resistor	100 ohms, flexible
1208296	33	"	40,000 ohms
1208144	34	"	1,000,000 ohms
1208123	35A,35B	"	3,000,000 ohms
1204138	36A,36B	"	500,000 ohms
1207905	37	"	150,000 ohms
1208141	38	"	10,000 ohms
1208758	39	"	15,000 ohms
1209016	40	"	120,000 ohms
1208802	41	"	350 ohms,flexible
1208856	42	"	8500-25,000 ohms candohm
1208868	43	Speaker	6" (mantel set)
1208869	43	Speaker	8" (console set)
1208870	44	Switch	Band change
1208871	45	Terminal	Ant. & gnd.
1208872	46	Tone control	With line switch
1208873	47	Transformer	Power
1209004	48	Transformer	Output 6" speaker
1209005	48	Transformer	Output 8" speaker
1208928	49	Volume control	

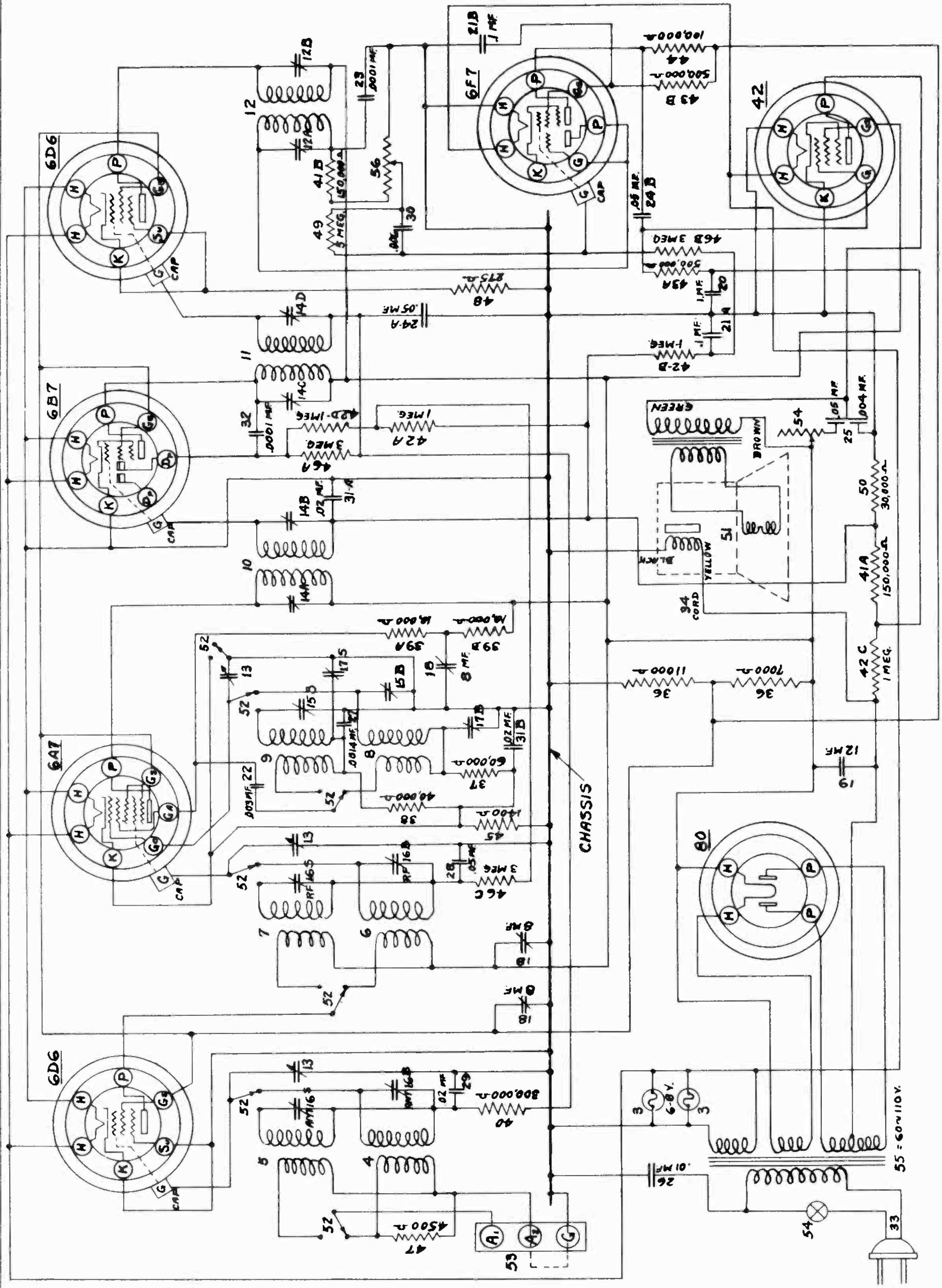
PARTS LIST

The following parts are in Model 1102 - Above Serial 781400,and in Model 1103 - Above Serial 805120.

Part No.	Illus. No.	Part Name	Description
1208840	17D	Condenser	.02 mfd. 200 volt
1208758	39A, 39B	Resistor	15,000 ohm 1/3 watt
1208140	50	Resistor	165 ohm flexible

MODEL 1104 Delco
Schematic

UNITED MOTORS SERVICE, INC.



The frequency ranges covered are 535 to 1735 kilocycles, for the broadcast band and 5.7 to 15.5 megacycles for the short wave band. The intermediate frequency is 456 Kilocycles.

MODEL 1104 Delco
Alignment, Voltage
Socket, Trimmers
Chassis, Parts

UNITED MOTORS SERVICE, INC.

Connecting Output Meter

Connect the two terminals of the output meter to the plates of the two type 42 tubes. Make sure that the output meter is protected with a series condenser to prevent the D.C. from flowing through the meter circuit. If the meter is not protected, connect a .1 mfd. condenser in series with the meter.

Peaking I.F. Stages at 456 KC

(a) Connect the antenna of the signal generator to the receiver control grid connection on top of the 6A7 tube, through a series condenser, (.02 mfd.), leaving the grid cap in place.

(b) Connect the ground terminal of the signal generator to the receiver chassis frame.

(c) Turn volume control to full on position.

(d) Set the Signal Generator to exactly 456 KC and to the lowest useable output with the receiver volume on full.

(e) Set the receiver band change switch to the right--(broadcast).

(f) Adjust I.F. trimmers 12A, 12B, 14D, 14C, 14B and 14A to maximum reading on output meter, in the sequence listed.

(g) Go over the Adjustments several times till no further improvements can be made.

Peaking Tuning Condenser at 1400 Kilocycles (Broadcast Band)

(a) Connect antennna of Signal Generator to the antenna terminal on chassis through a series condenser (.0002 mfd.).

(b) Turn volume control full on, wave change switch to the right (Broadcast).

(c) Set the signal generator to 1400KC.

(d) With receiver condenser blades fully engaged (535 KC) check pointer location. It should be exactly parallel with horizontal line through dial. If it is not, loosen set screws in center of pointer and adjust pointer correctly.

(e) Set receiver dial pointer to 140.

(f) Adjust oscillator shunt trimmer #15-B for maximum reading on output meter.

(g) Now adjust trimmers #Ant. 16B, #RF 16B to maximum output.

(h) Set receiver pointer to 60.

(i) Set signal generator to 600 KC.

(j) Adjust series oscillator trimmer #17B for maximum reading on output meter.

(k) Repeat c, d, e and f at 1400 KC.

Peaking Tuning Condenser at 15 Megacycles (Short Wave Band)

(a) Connect signal generator antenna to the receiver antenna terminal through a series resistor (approx. 750 ohm midget-carbon).

(b) Connect ground terminal of signal generator to the receiver chassis frame.

(c) Set signal generator to 15000 KC with lowest useable output volume level.

(d) Set receiver dial to 15, and turn volume on full.

(e) Change band switch to left--short wave band.

(f) Adjust oscillator shunt trimmer #15S to Maximum output.

(g) Adjust trimmers "ant. 16S" and "RF16S" to maximum output. Repeat these adjustments until no further improvement can be made.

(h) Set signal generator to 6000 KC and the receiver pointer to 6.

(i) Adjust oscillator series trimmer 17S to maximum output.

(j) Repeat c, d, e, f and g.

TUBE COMPLEMENT & VOLTAGE CHART

The tube voltages shown below are average readings taken from chassis frame to the tube prong. The chart was made while using 115 volts. Variations in line voltage will cause the readings to vary slightly.

TUBE BASE DIAGRAM SYMBOLS*

TYPE	FUNCTION	H	P	Gs	Su	G	K	P-osc.
6D6	RF	6.5	225	100	-	-	0	- -
6A7	Osc-Mod.	6.5	225	100	-	-	0	Shortwave 150
							10	Broadcast 150
6B7	1st IF & AVC	6.5	225	100	-	0.3	0	- -
6D6	2nd IF	6.5	225	100	-	-	2	- -
6F7	Diode & AF	6.5	30	22	-	0.5	0	- -
42	Output	6.5	215	25	-	2.	0	- -
80	Rectifier	4.9	0	-	-	-	-	- -

120 Volts across speaker field

***TUBE BASE DIAGRAM SYMBOLS**

H - Heater
P - Plate
Gs - Screen Grid
Su - Suppressor Grid
G - Control Grid
K - Cathode
P-Osc - Osc Plate

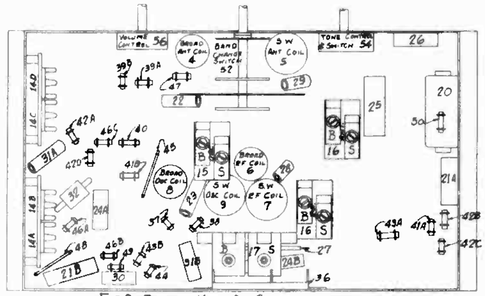


FIG 2 - BOTTOM VIEW OF CHASSIS

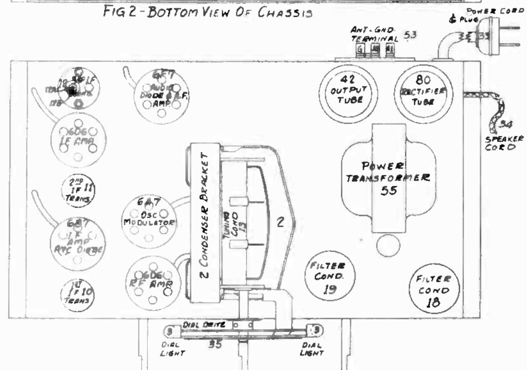


FIG 3 TOP VIEW OF CHASSIS

1208828	4	Coil	Broadcast antenna
1208829	5	Coil	Short wave antenna
1208830	6	Coil	Broadcast R.F.
1208831	7	Coil	Short wave R.F.
1209003	8	Coil	Broadcast Oscillator
1208829	9	Coil	Short wave osc.
1208835	10	Coil	1st I.F. trans.
1208935	11	Coil	2nd I.F. trans.
1208936	12	Coil	3rd I.F.--Includes trimmers
1208838	13	Condenser	Tuning
1209006	14	Condenser	1st & 2nd I.F. trimmer
1208836	15	Condenser	Trimmer--osc., B.C. & S.W.
1208835	16	Condenser	Trimmer--R.F. & Ant., B.C. & S.W.
1208936	17	Condenser	B.C. & S.W. osc. series
1208316	18	Condenser	8.-8.-8. Mfd., 200,300,400 V.
1208317	19	Condenser	12. Mfd., 475 V.
1208845	20	Condenser	1. Mfd., 160 V.
1208131	21	Condenser	0.1 Mfd., 200 V.
1208942	22	Condenser	0.003 Mfd., 400 V.
1208313	23	Condenser	0.001 Mfd., 200 V.
1208944	24A,24B	Condenser	0.05 Mfd., 200 V.
1208315	25	Condenser	0.004-0.05 Mfd., 400 V.
1208843	26	Condenser	0.01 Mfd., 400 V.
1208841	27	Condenser	0.0014 Mfd., Mica
1208839	28	Condenser	0.05 Mfd., 200 Volt
1208840	29	Condenser	0.02 Mfd., 200 Volt
1208946	30	Condenser	0.006 Mfd., 200 Volt
1208787	31A,31B	Condenser	0.02 Mfd., 200 Volt
1208946	32	Condenser	.0001 Mfd., Mica
1208142	33	Cord & plug	A.C.
1208325	34	Cord	Speaker (4 wire)
1208847	35	Dial	Drive assembly
1208848		Dial	Hand or pointer
1208961		Diffuser	Light
1208952		Retainer	Light diffuser
1208849		Knob	Large center
1208850		Knob	Small center
1208861		Knob	Small lower
1208953	36	Resistor	7000-11000 ohm (Candohm)
1208320	37	Resistor	60,000 ohms
1208296	38	"	40,000 "
1208141	39A,39B	"	10,000 "
1204139	40	"	300,000 "
1207906	41A,41B	"	150,000 "
1208144	42A,42B, 42C,42D	"	1 megohm
1204138	43A,43B	"	500,000 ohms
1207903	44	"	100,000 "
1208803	45	"	1400 ohms
1208123	46A,46B	"	3 megohms
1208905	47	"	4500 ohms
1208125	48	"	275 "
1208806	49	"	6 megohms
1208959	50	"	30,000 ohms
1209012	51	Speaker	Assembly
1208973	52	Switch	Band change
1208871	53	Terminal	Antenna & grd.
1208872	54	Tone control	With line switch
1209013		Transformer	Output
1208974	55	Transformer	Power
1208811		Washer	Insulating (coils)
1208975		Washer	Insulating (12. Mfd. cond.)
1208928	56	Volume control	

UNITED MOTORS SERVICE, INC

MODELS 3201,3202 Delco
Below Serial 800,000
Schematic,Voltage

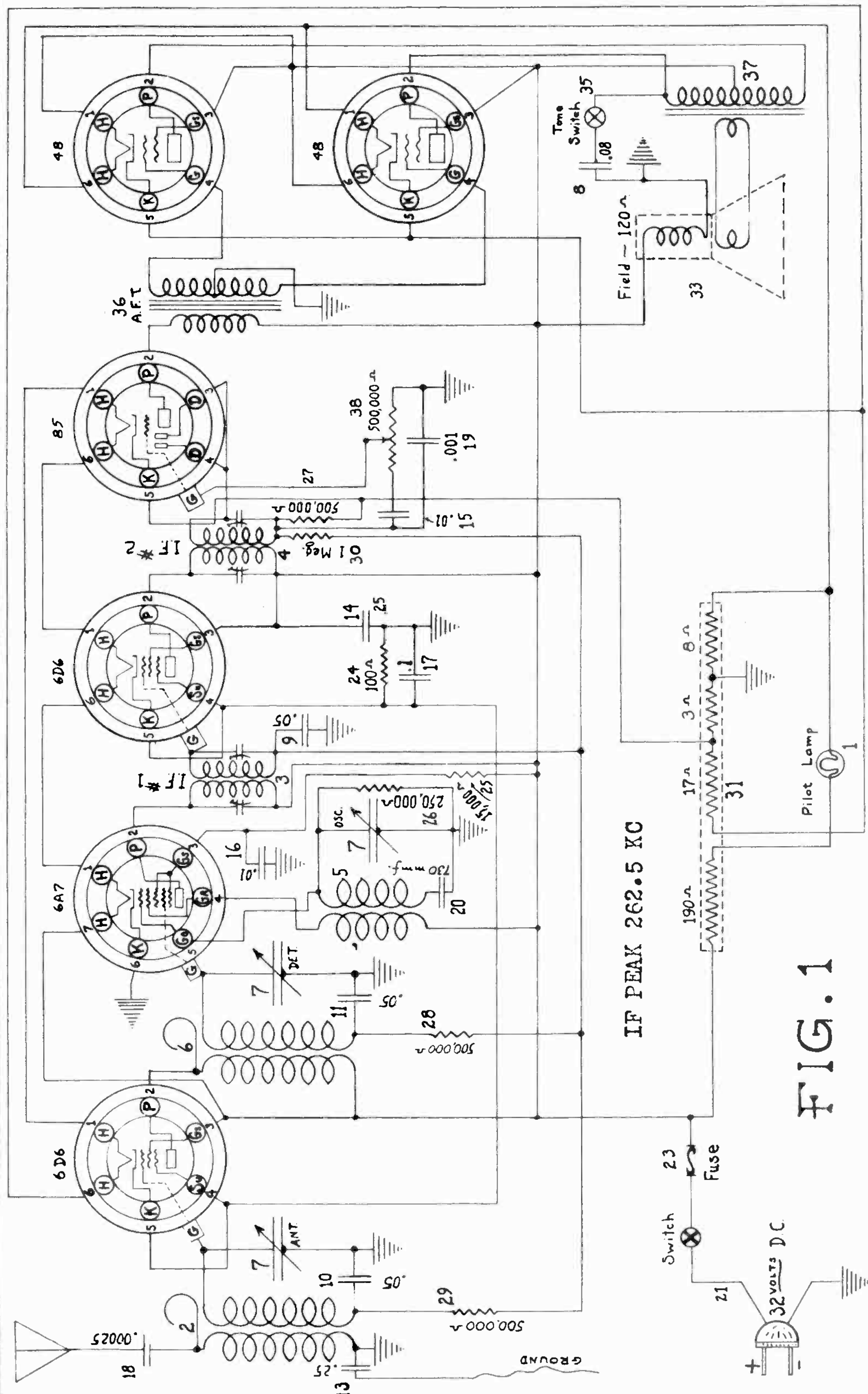


FIG. 1

TYPE	FUNCTION	H	P	Gs	Su	G	K	P-OSC.
6D6	R.F. Amp.	6.3	32	32	.5	0	.5	--
6A7	1st Det.-osc.	6.3	32	20	-	0	0	32
6D6	I.F. Amp.	6.3	32	32	.5	0	.5	--
85	2nd Det.-AVC	6.3	30	-	-	0	1	--
48	Power Amp.	26.0	31.5	32	-	0	7	--
48	Power Amp.	26.0	31.5	32	-	0	7	--

Model 3201, table set with 6" speaker and Model 3202, console with 8" speaker

NOTE: The types 6D6, 6A7 and 85 tubes have the heater elements connected in series. If any one of these tube heaters should burn out, the others will fail to light.

MODELS 3201,3202 Delco
Below Serial 800,000 UNITED MOTORS SERVICE, INC.
Alignment, Socket
Trimmers, Parts

Connecting Output Meter

Connect one terminal of the output meter to the plate prong of one of the 48 tubes and the other to the plate prong of the other 48 tube or to the chassis frame. Make sure that the output meter is protected with a series condenser to prevent D.C. from flowing through the meter circuit. If the meter is not protected, connect a .1 mfd. condenser in series with the lead to the chassis frame.

Peaking I.F. Stages at 262½ KC

(a) Connect the output of the signal generator to the grid cap of the 6A7 tube (leave 6A7 grid lead clip in place) and to the chassis frame.

(b) Turn the tuning condenser until the plates are entirely out of mesh.

(c) Set the signal generator on 262½ KC and feed this signal through the I.F. stages of the set.

(d) Peak the I.F. trimmer located on the top of the 1st I.F. Coil, Fig. 2. Then peak the trimmer located on the bottom of the same coil, Fig. 3. Due to the detuning effect the primary winding exerts over the secondary, it will then be necessary to reset the top trimmer for maximum output.

(e) Peak the I.F. trimmer located on the top of the 2nd I.F. coil, Fig. 2. Then peak the trimmer located on the bottom of the same coil, Fig. 3. Then reset trimmer on top of the 2nd I.F. coil making all adjustments for maximum output.

NOTE: In the event that the I.F. stages are badly out of alignment at 262½ KC the operation outlined in paragraphs (d) and (e) should be repeated.

PEAKING GANG CONDENSER AT 1400 KC

(a) With the condenser plates completely out of mesh, the 1600 KC indicator line should be exactly in the upper vertical position. If it is not, loosen the two set screws in the selector dial hub and make the necessary adjustment. Then rotate the dial until the 1400 KC indicator line is exactly in the upper vertical position.

(b) Coil up the antenna lead to within a foot of the chassis and set the oscillator at 1400 KC. Feed the signal generator output into the antenna wire. This may be done by connecting the shielding on the signal generator output lead to the chassis ground wire (green) and by simply wrapping a few turns of the portion of the antenna wire nearest the chassis around the signal generator output lead. This will ordinarily provide sufficient coupling between the signal generator and the antenna circuit of the set. A direct connection with the antenna wire can be made by inserting a pin into the wire close to the chassis. Care should be taken, however, not to permanently damage the insulation.

(c) Peak the osc. trimmer condenser, Fig. 2, until the oscillator output can be heard in the speaker, then the "Ant." and "Det." trimmers located on the gang tuning condenser, making all adjustments for maximum deflection on the output meter scale. Repeat the adjustment several times until no further improvement can be made.

NOTE: To avoid AVC action and to insure sharp peaking of all trimmers, reduce the signal generator output to the lowest level that will give a reasonable deflection on the output meter scale.

Part No.	Illus. No.	Part Name	Description
1208978		Bracket	Pilot light mounting
1203982	1	Bulb	Dial light 6-8 volt
1208979		Cabinet	Table model #3201
1208980		Cabinet	Console model #3202
1208981	2	Coil	Antenna
1208761	3	Coil	1st I.F.
1208982	4	Coil	2nd I.F.
1203983	5	Coil	Oscillator
1208984	6	Coil	Detector
1208985	7	Condenser	Tuning
1208986	8	Condenser	.08 Mfd., 200 volt
1208748	9,10,11	Condenser	.05 Mfd., 200 volt
1208987	13,14	Condenser	.25 Mfd., 200 volt
1208746	15,16	Condenser	.01 Mfd., 200 volt
1208988	17	Condenser	.1 Mfd., 25 volt
1207760	18	Condenser	.00025 Mfd.
1208744	19	Condenser	.001 Mfd., 400 volt
1208743	20	Condenser	.00073 Mfd.
1208142	21	Cord & plug	Power
1208990	22	Dial	Station selector
106652	23	Fuse	3 ampere
1208579		Knob	All
1208999		Plate	Escutcheon
1209009	24	Resistor	100 ohms, 1/3 watt
1208758	25	Resistor	15,000 ohms, 1/3 watt
1208756	26	Resistor	250,000 ohms, 1/3 watt
1204138	27,28,29	Resistor	500,000 ohms, 1/3 watt
1208144	30	Resistor	1,000,000 ohms, 1/3 watt
1208991	31	Resistor	Tapped candohm
1208994	33	Speaker	6" for Table Model 3201
1208995	33	"	8" for Console Model 3202
1208996	35	Tone Control	Switch
1208997	34	Terminal	Spk'r. Connection on chassis
1208764	36	Transformer	Audio
1208998	38	Vol. Control	Includes switch
1209010	37	Transformer	Output-Model 3201
1209011	37	Transformer	Output-Model 3202

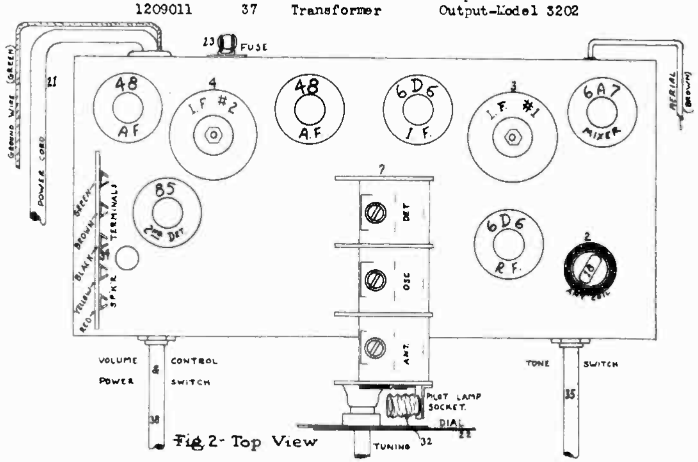


Fig 2- Top View

UNITED MOTORS SERVICE, INC.

MODELS 3201,3202 Delco
Above Serial 800,000
Schematic,Voltage

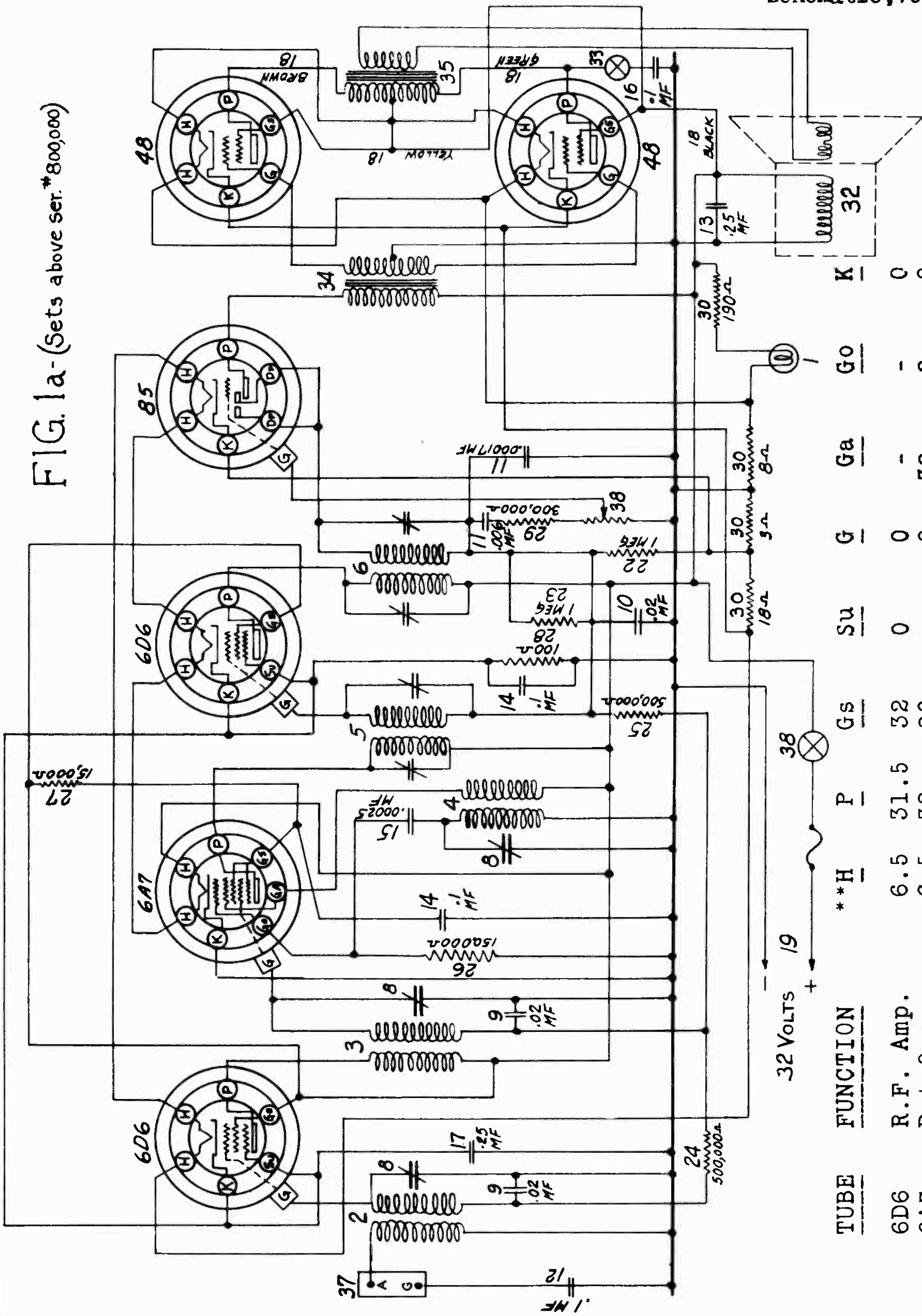


FIG. 1a-(Sets above ser.*800,000)

TUBE	FUNCTION	**H	P	Gs	Su	G	Ga	Go	K
6D6	R.F. Amp.	6.5	31.5	32	0	0	-	-	0
6A7	Det-Osc.	6.5	32	20	-	0	32	2	0
6D6	I.F. Amp.	6.5	32	32	.5	0	-	-	.5
85	A.F. Amp-Det.	6.5	31	-	-	0	-	-	1.2
48	Output	25.0	31.5	32	-	-	-	-	6.5
48	Output	25.0	31.5	32	-	-	-	-	6.5

** The filament voltages shown are measured across the filament prongs of each tube and not from filament to chassis frame.

MODELS 3201,3202 Delco
Above Serial 800,000 UNITED MOTORS SERVICE, INC.
Alignment, Data
Socket,Trimmers,Chassis

GENERAL DESCRIPTION

The Models 3201 and 3202 are both 32 volt 6 tube superheterodyne receivers with A.V.C. The only difference between the two receivers is that the Model 3201 has a table type cabinet and a 6" speaker, while the Model 3202 has a console cabinet and an 8" speaker. The frequency range of these sets is from 540 to 1700 kilocycles.

Power Supply System

The unique feature of these receivers is that the maximum plate or screen voltage used is 32 volts, as the positive lead of the power cord connects directly to the plates and screens of the tubes and the negative lead connects to the chassis.

The filaments of the two type 6D6 tubes, the type 6A7 and the type 85 are connected in series and are lighted by being connected directly across the 32 volt power supply in series with the 18 and 3 ohm sections of the resistor strip (Illus. #30, Fig. 1a). The filaments of the two type 48 output tubes are each connected in parallel across the 32 volt power supply in series with the 8 ohm section of the resistor strip (Illus. #30, Fig. 1a).

METHOD OF BIASING

The 6D6 R.F. and I.F. tubes obtain their residual bias from a common bias resistor of 100 ohms (Illus. #28) and the control grids of both of these tubes receive a negative voltage from the A.V.C. circuit depending on the strength of the signal tuned in. The 6A7 tube has its cathode connected directly to ground and its control grid also receives a negative voltage for grid bias from the A.V.C. circuit when a signal is tuned in. The bias on the 85 tube is obtained by connecting the cathode to a point that is positive with respect to ground and returning the grid circuit to ground through the volume control. The bias on the two type 48 output tubes is also obtained by connecting their cathodes to a positive point with respect to ground and returning the center tap on the input transformer to ground

CIRCUIT GROUND

DO NOT ground the chassis except through the use of the "GND" terminal of the terminal strip located on back of the chassis. This terminal connects to the chassis frame through a series condenser in order to prevent a short circuit when operating the receiver on a 32 volt system with the positive side grounded.

OSCILLATION

A few receivers below Serial No. 866175 may have a tendency to oscillate due to the lack of capacity by-passing the common bias resistor (Illus. #28, Fig. 2a) for the two 6D6 tubes. The majority of these sets were corrected in the field through the use of an additional condenser of a .25 mfd. capacity connected from the 6D6 R.F. tube cathode to the chassis. In cases where this condenser has not been included in the chassis and the receiver oscillates, it will be necessary to connect a part #1208130 condenser from the 6D6 R.F. tube cathode to the chassis. This condenser has been included in production on all sets above Serial #866175 (Illus. #17, Fig. 2a) and should eliminate all cases of oscillation from low capacity.

PEAKING PROCEDURE

All of the adjustable condensers, commonly called "trimmer" condensers, are very accurately adjusted at the factory and will not need any further adjustment unless they are tampered with in the field or a defective coil has been replaced. DO NOT attempt to change the setting of any trimmer condensers unless it is definitely known that the adjustment is necessary. If realignment is found necessary, the circuits can be properly adjusted only with the use of a test oscillator and an output meter.

Connecting Output Meter

Connect one terminal of the output meter to the plate prong of one of the 48 tubes and the other to the plate prong of the other 48 tube or to the chassis frame. Make sure that the output meter is protected with a series condenser to prevent D.C. from flowing through the meter circuit. If the meter is not protected, connect a .1 mfd. condenser in series with the lead to the chassis frame.

Peaking I.F. Stages at 456 K.C.

(a) Connect the output of the test oscillator to the grid cap of the 6A7 tube (leave 6A7 grid lead clip in place) and to the chassis ground.

(b) Turn the tuning condenser rotor plates until they are completely out of mesh.

(c) Set the test oscillator on 456 kilocycles.

(d) Peak the I.F. trimmers located on the top of the 2nd I.F. coil (Illus. #6, Fig. 3a) for maximum output.

(e) Then peak the I.F. trimmers located on the top of the 1st I.F. coil (Illus. #5, Fig. 3a) for maximum output.

(f) In order to insure accurate setting of the I.F. trimmers the above adjustments should be repeated using the lowest test oscillator otuput that will give a reasonable deflection of the output meter pointer. Make all adjustments for maixmum output.

Peaking Gang Condenser at 1400 K.C.

(a) Connect the output of the test oscillator to the "ANT" and "GND" terminals of the receiver chassis with the ground connection of the oscillator connecting to the "GND" terminal of the receiver chassis.

(b) Set the receiver dial on 1400 K.C. This position can be determined with the chassis out of the cabinet by moving the dial so that the 1400 K.C. mark is in a vertical position.

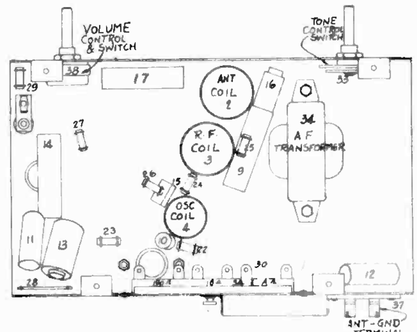
(c) Set the test oscillator on 1400 K.C.

(d) Adjust the parallel trimmer for the oscillator section (3rd section from receiver dial with the small rotor plates) of the condenser gang for maximum output.

(e) Then adjust the parallel trimmers for the other two sections of the gang condenser for maximum output.

(f) To insure accurate setting of the trimmer condensers the above adjustments should be repeated using the lowest test oscillator output that will give a reasonable deflection of the output meter pointed. This is necessary in order to prevent the A.V.C. from leveling out the output as the adjustments are made.

(g) Place a few drops of Duco Cement over the adjusting screws and trimmer blades to prevent the adjustments from shifting. Do not allow any cement to get on the mica insulators.



BOTTOM VIEW OF CHASSIS
FIG 2a

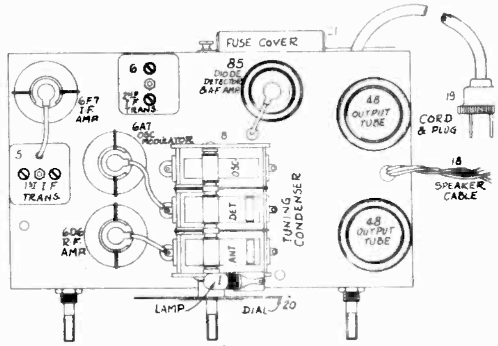
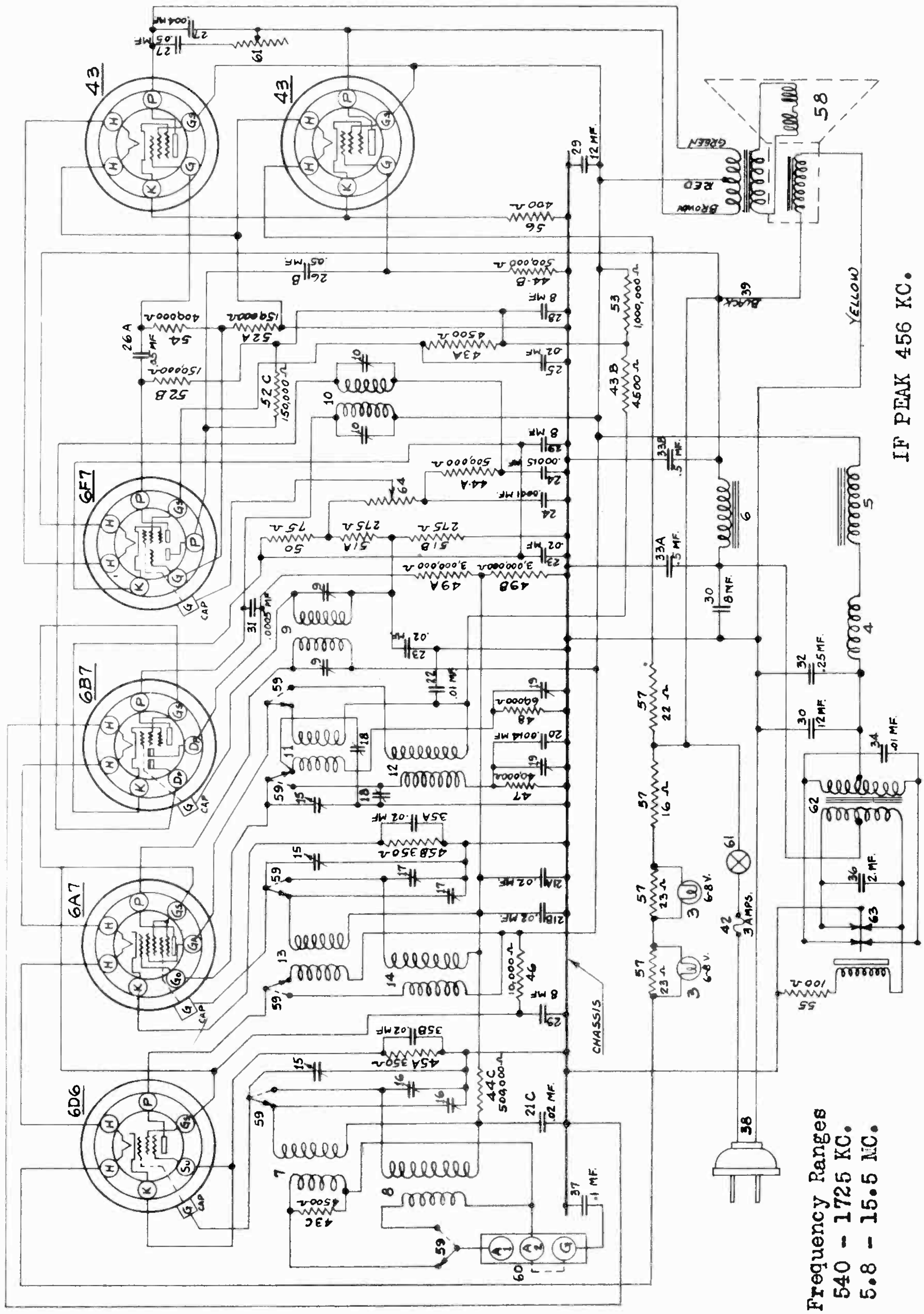


FIG 3a
TOP VIEW OF CHASSIS

MODELS 3203,3204 Delco

UNITED MOTORS SERVICE, INC. Schematic



MODELS 3203,3204 Delco
Alignment,Voltage

UNITED MOTORS SERVICE, INC.

Connecting Output Meter

Connect one terminal of the output meter to the plate terminal of one type 43 output tube and the other to the plate of the other type 43 tube.

Peaking I.F. Stages at 456 KC

(a) Connect the antenna of the signal generator to the control grid connection on top of the 6A7 tube, (DO NOT remove grid clip) through a series condenser, .02 mfd.

(b) Connect the ground terminal of the signal generator to the radio chassis frame.

(c) Set the signal generator to exactly 456 kilocycles.

(d) With the signal generator set to the lowest useable output level, and the receiver volume control on full, adjust the I.F. trimmer condensers for maximum signal output.

NOTE: The I.F. trimmers are located on top of the I.F. coils and may be adjusted with an insulated screw driver. Always make the adjustments very carefully, going over them several times to insure that the final setting is at resonant frequency.

Peaking Tuning Condenser at 1400 Kilocycles (Broadcast

(a) Close the receiver tuning condenser plates (535 KC) and set the selector pointer on the horizontal line.

(b) Connect the antenna terminal of the signal generator to the receiver antenna terminal through a series condenser (.0002 mfd.).

(c) Connect the ground terminal of the signal generator to the radio chassis frame.

(d) Set the signal generator to exactly 1400 KC and to the lowest useable volume level, with the radio set volume on full.

(e) Turn the receiver band change switch to the right hand position (broadcast band).

(f) Set the receiver tuning control to 140.

(g) Adjust the oscillator braodcast shunt trimmer, Illus. 19-B to maximum output.

(h) Adjust the radio frequency trimmer, Illus. 17-B to maximum output.

(i) Adjust the antenna trimmer, Illus. 16-B to maximum output.

NOTE: It is necessary that these adjustments be gone over several times until no further improvement can be made.

(j) Set the signal generator to 600 kilocycles.

(k) Tune the receiver to 60 on the dial and adjust the signal generator until maximum response is obtained.

(l) Adjust the series oscillator trimmer #19-B for resonant frequency. Simultaneously rotate station selector (slightly-approx. 1/8 inch) until maximum signal is obtained.

(m) Repeat the adjustments at 1400 KC.

Peaking Tuning Condenser at 15 Megacycles (Short Wave Band)

(a) Connect the antenna terminal of the signal generator to the receiver antenna terminal through a series carbon resistor (750 ohms $\pm$ 20%).

(b) Connect the ground terminal of the signal generator to the radio chassis frame.

(c) Set the signal generator to exactly 15000 KC (15 megacycles).

(d) Turn band change switoh to the left hand position (short wave band).

(e) Set the tuning control of the receiver to 15 on the dial.

(f) Adjust the oscillator parallel trimmer, Illus. 18-S to maximum output.

(g) Adjust the antenna tirmmer, Illus. 16-S to maximum output.

(h) Adjust the radio frequency trimmer, Illus. 17-S to maximum output.

NOTE: It is necessary that these adjustments be gone over very carefully several times until no further improvement can be made. Greater accuracy is required for making short wave adjustments.

(i) Now set the signal generator to 6000 KC.

(j) Set the receiver dial to 6.

(k) Adjust the oscillator series trimmer, Illus. 19-S to maximum output, simultaneously rotate station selector (slightly-approx. 1/8 inch) until maximum signal is obtained.

(l) Repeat the adjustments at 15000 KC.

TUBE COMPLEMENT & VOLTAGE CHART

The tube voltages shown below are average readings taken from chassis to the tube prong. This chart was made while using 32 volt line. Variations in line voltage will cause the readings to vary slightly.

TUBE BASE DIAGRAM SYMBOLS*

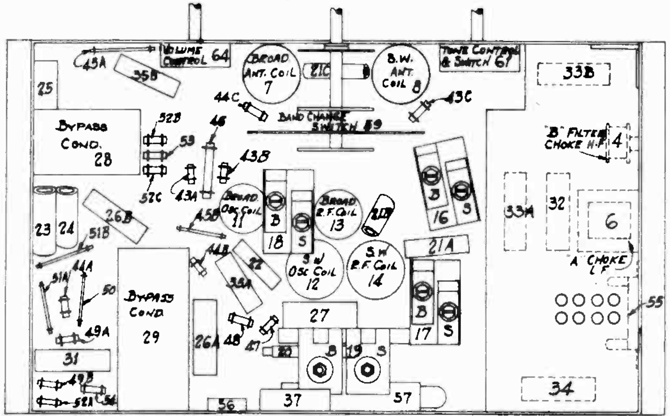
TYPE	FUNCTION	H	P	Gs	Su	G	Ga	K	P-osc.
6D6	RF AMP.	6.25	175	110	3	0.	-	3	- -
6A7	Osc-Mod.	6.25	175	110	-	0.	6 to 12	4	145
6B7	IF Det. AVC	6.25	175	110	-	0.	-	6	- -
6F7	AF Amp. & Inverter	6.25	45	15	-	0.	-	6	60
43	Output	25.75	168	175	-	0.	-	30	- -
43	Output	25.75	168	175	-	0.	-	30	- -

*TUBE BASE DIAGRAM SYMBOLS

H - Heater
P - Plate
Gs - Screen Grid
Su - Suppressor
G - Control Grid
Ga - Anode Grid
K - Cathode
P-Osc - Osc Plate

UNITED MOTORS SERVICE, INC

MODELS 3203,3204 Delco Socket, Trimmers Chassis, Parts



BOTTOM VIEW OF CHASSIS
FIG. 2

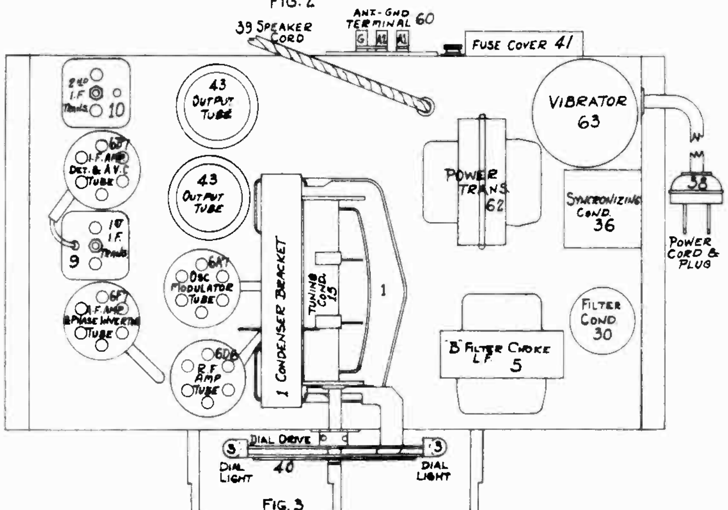


FIG. 3
TOP VIEW OF CHASSIS

1208349	4	Choke	High frequency "B" circuit
1208883	5	Choke	Low frequency "B" circuit
1208884	6	Choke	Low frequency "A" circuit
1208888	7	Coil	Antenna-broadcast
1208829	8	Coil	Antenna-short wave
1208832	9	Coil	1st I.F. assembly
1208834	10	Coil	2nd I.F. assembly
1209003	11	Coil	Oscillator--broadcast
1208828	12	Coil	Oscillator-short wave
1208830	13	Coil	R.F.--broadcast
1208831	14	Coil	R.F.--short wave

1208838	15	Condenser	Tuning--3 gang
1208836	16	Condenser	Ant. trimmer--broadcast & S.W.
1208835	17	Condenser	R.F. trimmer--broadcast & S.W.
1208836	18	Condenser	Osc. trimmer " "
1208837	19	Condenser	Series osc. trimmer " "
1208841	20	Condenser	.0014 mfd.--mica
1208840	21	Condenser	.02 mfd.--200 volt
1208844	22	Condenser	.01 mfd.--400 volt
1208120	23	Condenser	.02-.02 mfd.--200 volt
1208124	24	Condenser	.0001-.00015 mfd.--400 volt
1208136	25	Condenser	.02 mfd.--400 volt
1208135	26	Condenser	.05 mfd.--400 volt
1208315	27	Condenser	.05-.004 mfd.--400 volt
1208890	28	Condenser	8. mfd.--250 volt
1208891	29	Condenser	12.-8.-8. mfd.--250 V., 250 V., 25 V.
1208892	30	Condenser	12. -.8 mf. 250v.,35v.
1208119	31	"	.0005 mf. 400 v.
1208893	32	"	.25 mf. 300 v.
1208894	33	"	.5 mf. 160 v.
1208895	34	"	.01 mf. 2000 v.
1208787	35A,35B	"	.02 mf. 200 v.
1208896	36	"	2. mf. 300 v.
1208139	37	"	.1 mf. 400 v.
1208846	38	Cord & Plug	Receiver
1208897	39	Cord	Speaker
1208905	43A,43B	Resistor	4500 ohms
1204138	44A,44B,44C	"	500,000 ohms
1208802	45A,45B	"	350 ohms
1208322	46	"	10,000 ohms
1208296	47	"	40,000 ohms
1208320	48	"	60,000 ohms
1208123	49A,49B	"	3,000,000 ohms
1208359	50	"	75 ohms
1208125	51A,51B	"	275 ohms,Flexible
1207905	52A,52B,52C	"	150,000 ohms
1208144	53	"	1,000,000 ohms
1208906	54	"	400,000 ohms
1208907	55	"	100 ohms,candohm
1208908	56	"	400 ohms,candohm
1209909	57	"	23-23-16-22 ohms,candohm
1208917	58	Speaker	8"--(Mantel set)
1208918	58	Speaker	10"--(console set)
1208370	59	Switch	Band change
1208871	60	Terminal	Ant. & grd.
1208872	61	Tone control	With on-off switch
1209014		Transformer	Output
1208919	62	Transformer	Power
1208920	63	Vibrator	
1208921		Vibrator case	
1208922		Cap	Screw type--vib. case
1208923		Plug	Socket
1208924		Vibrator cover	
1208925		Vibrator cover base	
1208928	64	Volume control	

MODEL Chevrolet 364441
Alignment, Parts List

UNITED MOTORS SERVICE

Peaking I.F. Stages at 262 KC

The only way the I.F. stages can be peaked properly is with the use of an oscillator and output meter. Connect the output meter to the plate prongs of the type 89 output tubes.

(a) Connect the output of the oscillator to the grid cap of the type 36 Detector--Oscillator tube (leave grid cap in place) and to the chassis ground.

(b) Turn the condenser gang until the plates are entirely out of mesh.

(c) Set the oscillator on 262 KC and feed this signal through the I.F. stages of the set.

(d) Peak the I.F. condenser (C-6 on Fig. 4) which is on the I.F. coil located on the bottom of the chassis. Then peak the two condensers (C-4 and C-5 on Fig. 3) located on front of the Oscillator I.F. coil, peaking the plate coil condenser C-4 first.

(e) Set the oscillator output at the lowest level that will give a reasonable scale deflection on the output meter. It should be less than one third of the maximum output available.

(f) Make all trimmer condenser adjustments for maximum deflection on the output meter scale.

Peaking Gang Condenser at 1400 KC

(a) Set the oscillator on 1400 KC and connect its output to the antenna connection of the set and to the chassis ground.

(b) In order that the position of the condenser plates for 1400 KC can be properly determined a metal aligning strip (part #1206431) should be used. This strip is placed over the top edge of the condenser gang as shown in figure 1.

(c) The condenser plates should be turned until they stop against the aligning strip.

(d) Place the tube shield (part #1206419) in position around the detector-oscillator tube.

(e) Peak the parallel trimmers on the top of the condenser gang. The oscillator section (C-1-C figure 3) located next to the volume control should be peaked first.

(f) To insure sharp peaking of all trimmers reduce the oscillator output to the lowest level that will give a reasonable deflection on the output meter scale, in order to prevent the A.V.C. from leveling out the output.

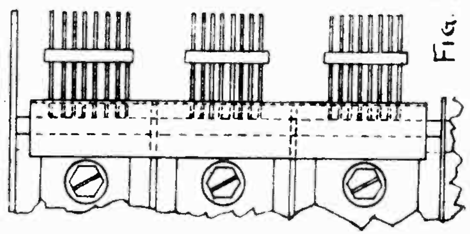


Fig. 1

1207686	Coil	Antenna	T-1
1207496	Coil	RF - 1st Det.	T-2
1207751	Coil	Oscillator--1st I.F.	T-3
1207752	Coil	2nd I.F.	T-4
1207755	Coil (choke)	R.F. choke	L-1
1207687	Coil (choke)	Power filter	L-2
1207688	Condenser	3 Gang tuning	C-1,A,B,C
1207625	Condenser	Molded .00005 Mfd.	C-2
1207626	Condenser	Molded .000735 Mfd.	C-3
1207799	Condenser	Tubular .02 Mfd.	C-7
1207636	Condenser	Molded .0005 Mfd.	C-8
1207628	Condenser	Tubular .01 Mfd.	C-9
1207690	Condenser	Paper .002 Mfd.	C-10
1207893	Condenser	Molded .003 Mfd.	C-11
1207617	Condenser	Molded .003 Mfd.	C-12
1207901	Condenser	By-pass block	C-13 A to G
	Sec. (A) .1 Mfd., (B) .4 Mfd. (C) .25 Mfd. (D) .15 Mfd. (E) .25 Mfd. (F) 4.0 Mfd. (G) 4.0 Mfd.		
*1207689	Condenser	Capacity values same as 1207901	
1207617	Condenser	Molded .003 Mfd.	C-14
1207617	Condenser	Molded .003 Mfd.	C-15
1207617	Condenser	Molded .003 Mfd.	C-16
1207617	Condenser	Molded .003 Mfd.	C-17
1207691	Condenser	Metal case .5 Mfd.	C-18
1207693	Condenser	Metal case .5 Mfd.	C-19

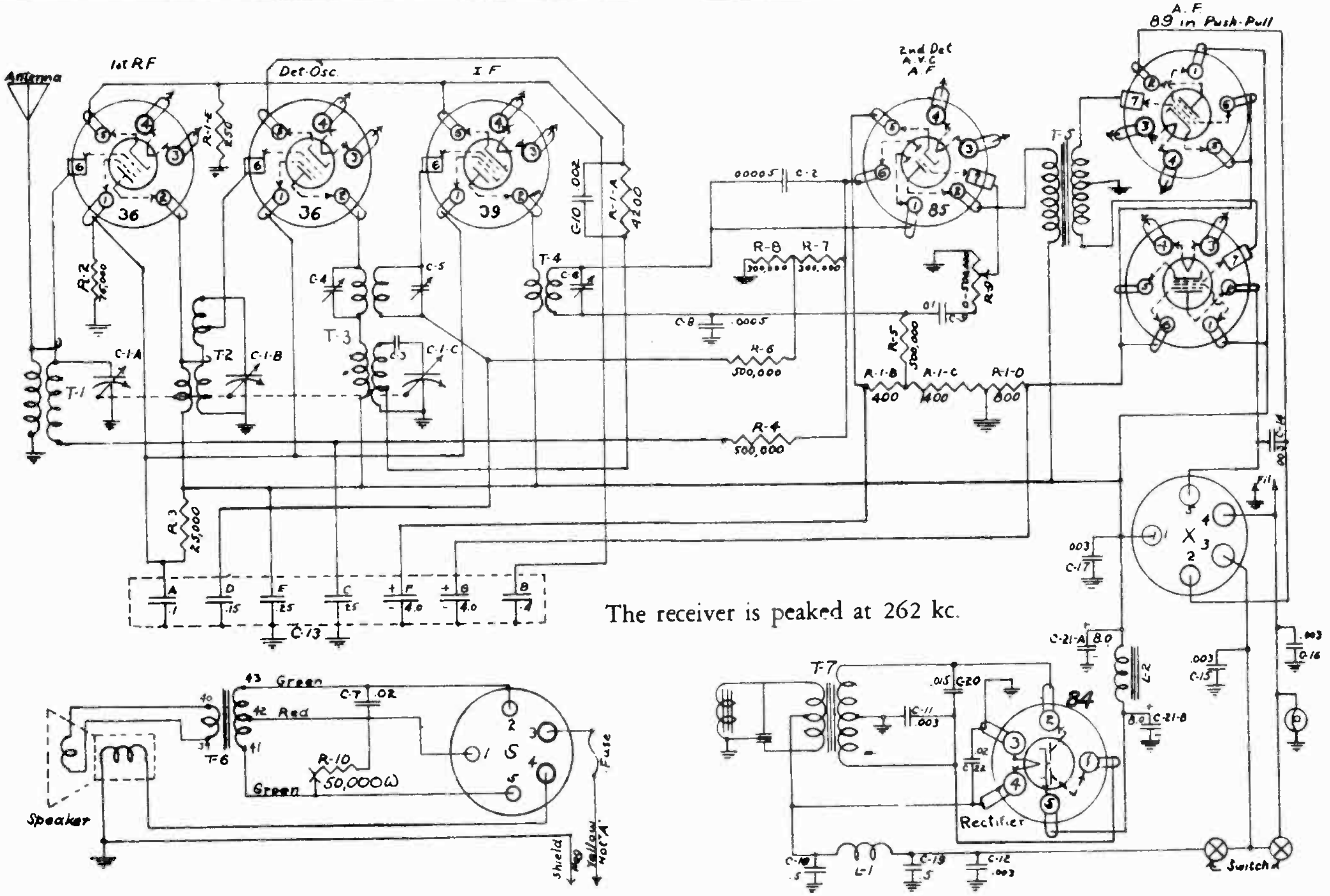
* See paragraph on "CIRCUIT and PART CHANGES"

1207694	Condenser	Metal Case	C-20
1207625	Condenser	Electrolytic block	C-21 A,B
	Sec. (A) 8.0 Mfd., (B) 8.0 Mfd.		
1207692	Condenser	Paper .02 Mfd.	C-22
1849014	Condenser	Generator .5 Mfd.	
1849161	Condenser	Ammeter .5 Mfd.	
1207720	Resistor	Candohm	R-1A,B,C,D,E
	(Sec. (A) 4200, (B) 400, (C) 1400, (D) 800, (E) 250 ohms.		
1208044	Resistor	Res. 75,000 ohms	R-2
1204135	Resistor	Res. 25,000 ohms	R-3
1204138	Resistor	Res. 500,000 ohms	R-4
1204138	Resistor	Res. 500,000 ohms	R-5
1204138	Resistor	Res. 500,000 ohms	R-6
1204139	Resistor	Res. 300,000 ohms	R-7
1204139	Resistor	Res. 300,000 ohms	R-8
1207821	Resistor	Spark plug 20 M ohms	
1201277	Resistor	Distributor 25 M ohms	
1207566	Coil	6 volt field	
1207799	Condenser	Tone control .02 Mfd	C-7
1207567	Cone assembly		
1207744	Cover	Case back	
1207745	Knob	Tone control	
1207682	Plug	Speaker cord	
1208257	Screw	Ornamental head	
1207798	Tone control	0-50,000 ohms	R-10
1207602	Transformer	Output	T-6

UNITED MOTORS SERVICE

MODEL Chevrolet 364441
Schematic, Voltage
Service Notes

OSCILLATOR CIRCUIT. If set fails to oscillate entirely or oscillates on one end of the dial only, a new 36 tube should be tried in the oscillator socket. If this does not remedy the trouble, check resistor R-1-A and condensers C-3, located below section C-1-C of the gang condenser, and C-10, located on the resistor strip. Due to the capacity values of C-3 and C-10 being rather critical, they should be tested by replacement. If the above does not remedy the trouble, it may be necessary to replace the oscillator coil.



The receiver is peaked at 262 kc.

Voltage Chart

The voltage readings given herewith are measured between the respective tube contacts upon the sockets and the chassis.

Tube	Screen #1	Plate #2	Heater #3	Heater #4	Cathode #5	Sup. Grid #6
RF	100	175	0	6	2.5	
Osc.	100	150	0	6	7.5	
I-F	100	175	0	6	2.5	
Det	2 Det	165	6	0	10.5	O-AVC
AF	175	175	0	6	19.5	19.5
AF	175	175	0	6	19.5	19.5
Rect.			0	6	190.0	

It is significant to note the following changes which have been made: In receivers below serial number 1,255,182, either the old or new C-13 condenser block may be used for service; in receivers above serial 1,255,182, condenser block number 1,207,901 MUST be used exclusively. When a new condenser block number 1,207,901 is used for replacement in a receiver below serial 1,255,182, the connecting wire from the cathode of the i-f. tube socket to the cathode of the r-f. tube socket should be removed. The new block has two white leads, both connected to the same section inside the condenser, and one of these leads should be connected to the i-f. cathode and the other to the r-f. cathode. Either lead may be connected to either cathode.

All receivers bearing serial numbers higher than 1,292,774 have a five-ampere fuse in the 6-volt side of the vibrator circuit, between the switch and the L-1 choke. The fuse block is mounted on the trans-vibrator assembly.

MODEL Chevrolet 364441
Socket, Trimmers
Chassis

UNITED MOTORS SERVICE

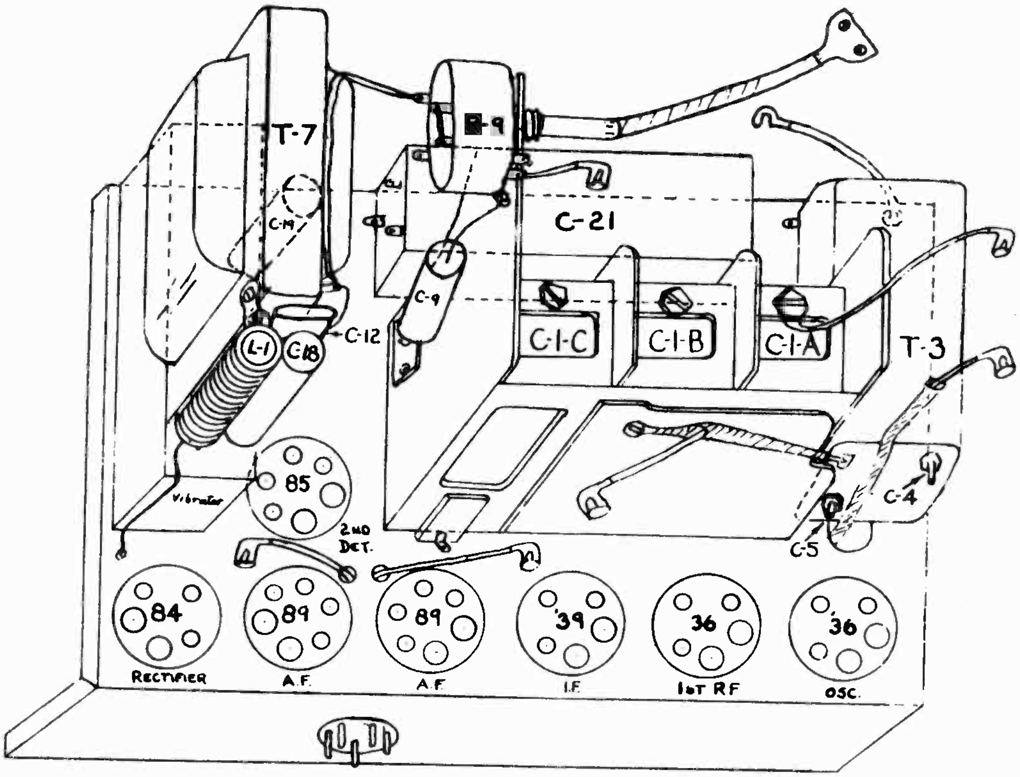


Fig. 3 PARTS LOCATING DIAGRAM

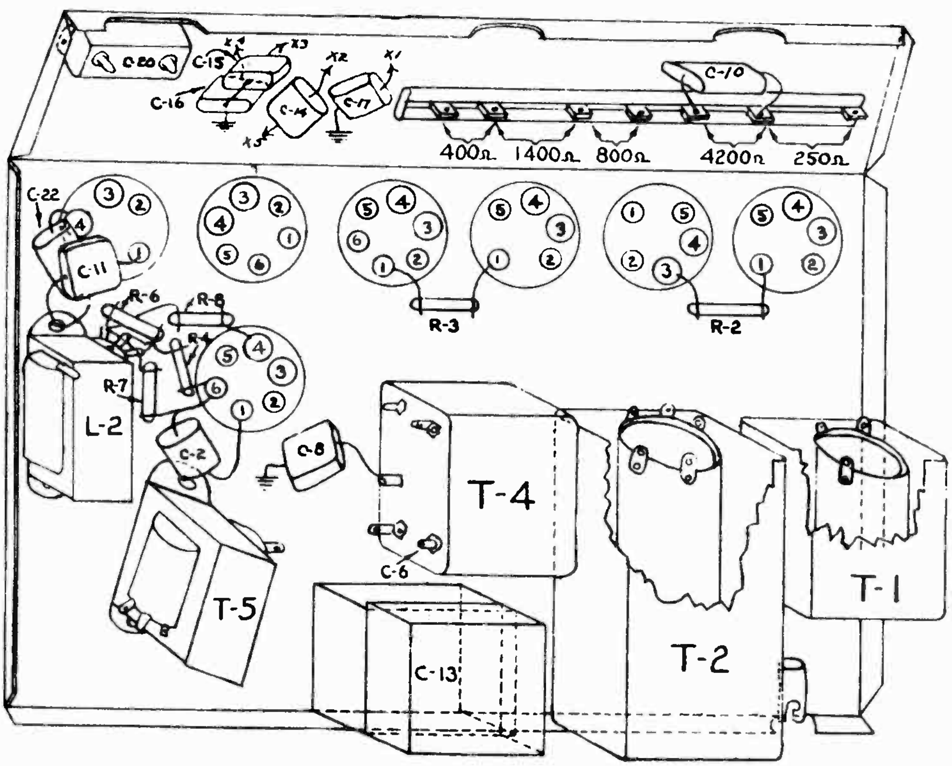


Fig. 4 PARTS LOCATING DIAGRAM

MODEL Buick-Pontiac 544245
Oldsmobile 393884
Below Serial 1748809
Schematic,Voltage

UNITED MOTORS SERVICE

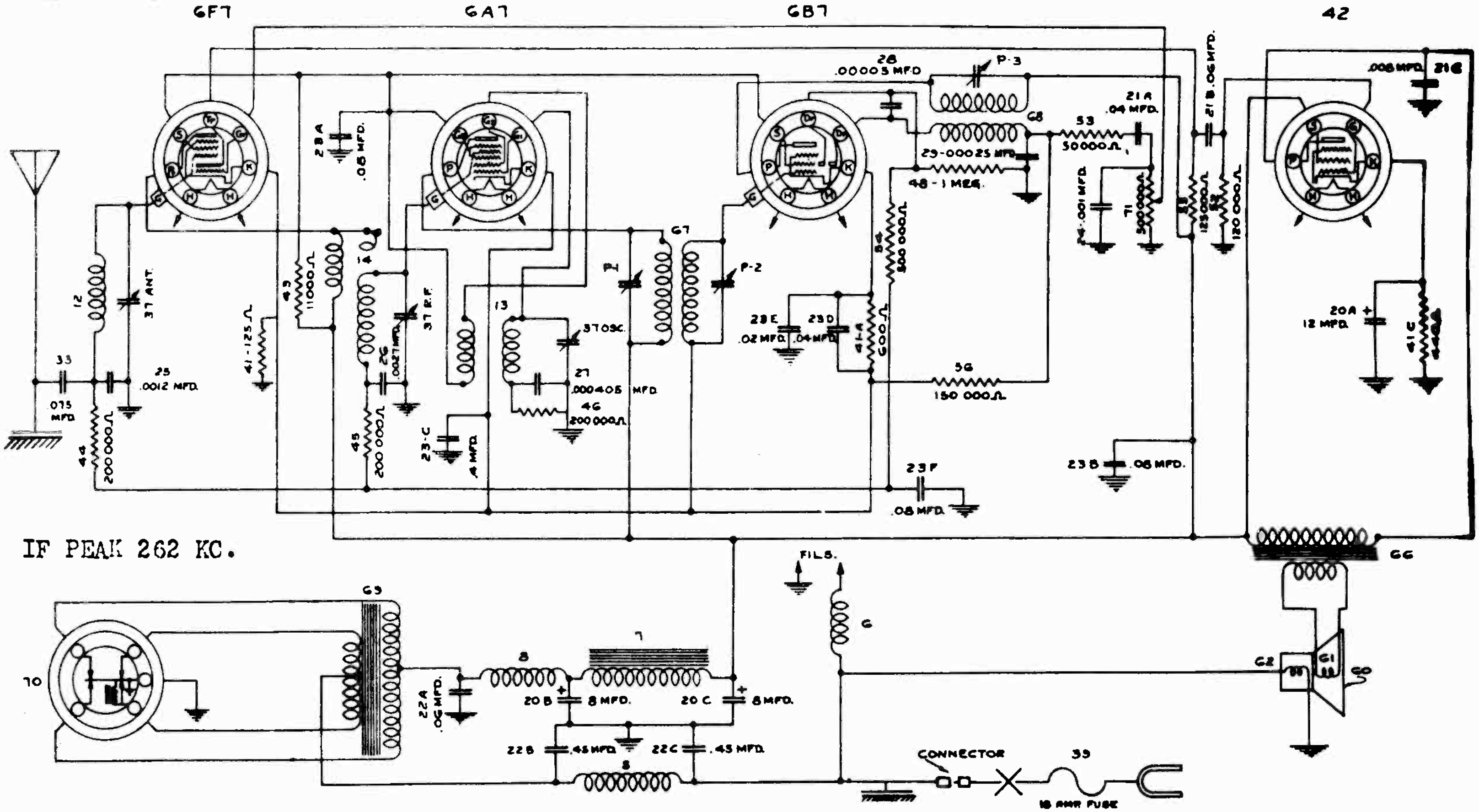


FIG. 1 CIRCUIT DIAGRAM--Below Serial #1748809
(For Buick, Pontiac Model 544245 and Olds Model 393884)

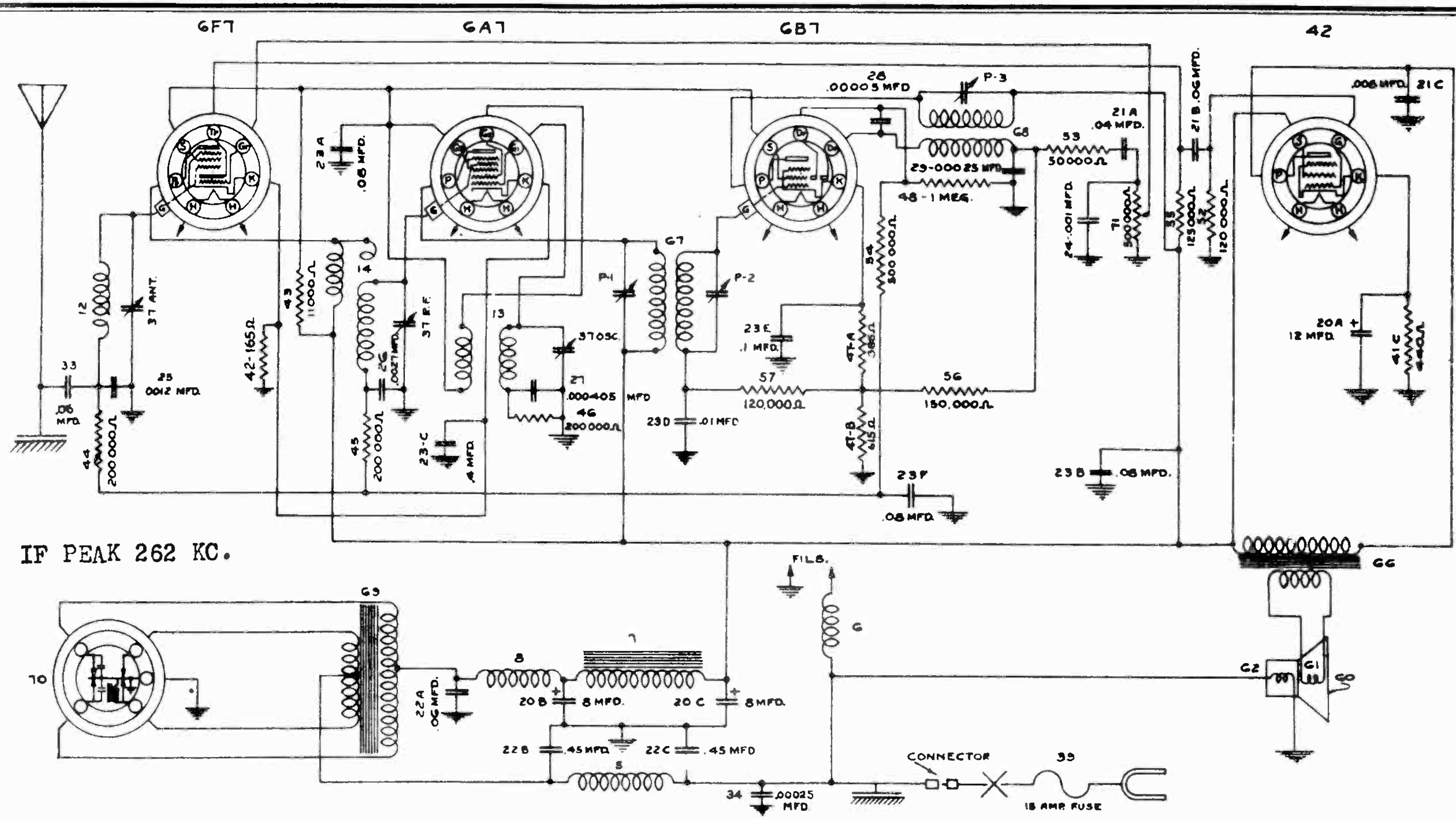
TUBE BASE DIAGRAM SYMBOLS

TYPE	FUNCTION	H	Pp	S	Tp	Gt	G	G1	G2	G3,5	K
6F7	R.F.	6	250	135	80	0	0	-	-	-	6.2
6A7	Det-Osc.	6	250	-	-	-	0	0	120	135	6.2
6B7	2nd Det-AVC	6	250	135	-	-	**0	-	-	-	8.5
42	Output	6	240	250	-	-	0	-	-	-	16.0

** 6.2 Volts for sets below serial No. 1748809

MODEL Buick-Pontiac 544245
Oldsmobile 393884
Above Serial 1748809
Schematic, Changes

UNITED MOTORS SERVICE



IF PEAK 262 KC.

FIG. 1A CIRCUIT DIAGRAM--Above Serial #1748809
(For Buick, Pontiac Model 544245 and Olds Model 393884)

CIRCUIT CHANGES.-- The capacity of two sections of the part #1209050 condenser block (23A to F) were changed at serial #1748809 along with other changes. The "D" section, which was originally .04 mf., was changed to .01 mf. and the "E" section changed from .01 mf. to .1 mf. All the service replacement stock of the part #1209050 condenser blocks are of the new type, incorporating the above changes and should be used in the service replacement of all part #1209050 blocks used below serial #1748809.

UNITED MOTORS SERVICE

MODEL Buick-Pontiac 544245
Oldsmobile 393884
Parts Layouts, Changes

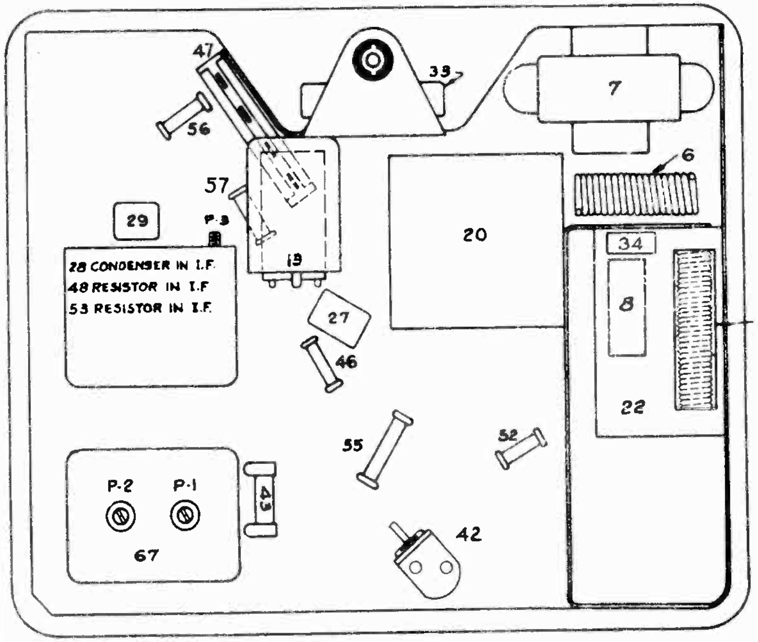


FIG.2 PARTS LAYOUT - Bottom View
For sets above serial #1748809

For sets below serial #1748809, the following changes should be noted:
Parts 34,42 and 57 are omitted;
Part 41 used instead of 47.

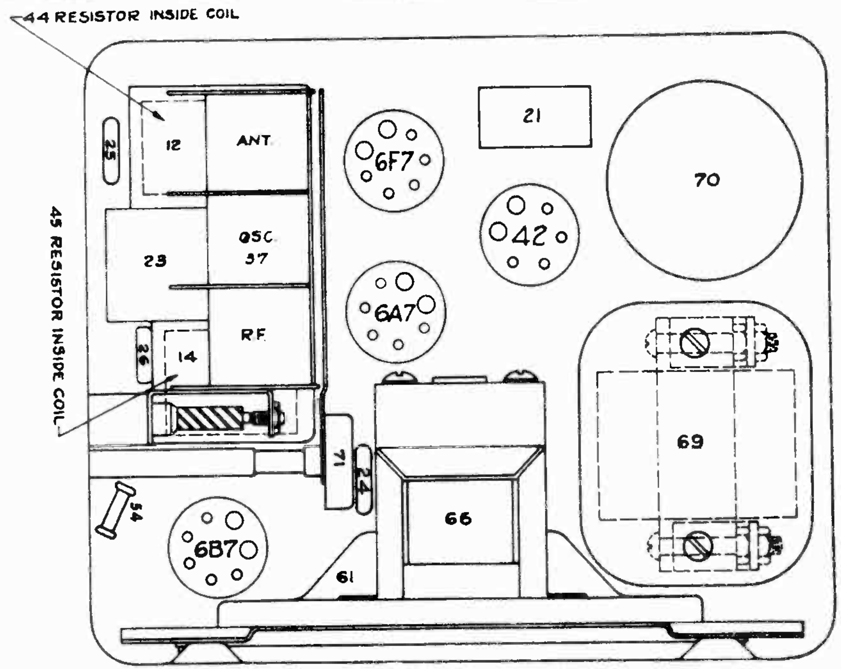


FIG.3 PARTS LAYOUT - Top View
This layout is the same for sets having serial numbers above and below #1748809.

CIRCUIT CHANGES.-- Several circuit changes were made starting at serial #1748809. See Figs.1,1A,2 and 3. It will be noted on some sets that the .008-mf. section (21C) of part #1209048 condenser block has its lead cut off close to the block and a .008-mf. tubular condenser connected from the plate of the 42 tube to ground in its place. This change was made because it was found necessary to change the voltage rating of the .008-mf. section of the condenser block after production started and the tubular condenser used until a new block could be manufactured. The tubular condenser used is part #1209212 and is located beside the filter choke. All the service replacement stock of #1209048 condenser blocks have a .008-mf. section of a higher voltage rating and in installing these blocks in a set where the tubular condenser was used, it will be necessary either to remove the tubular condenser or clip the lead off the .008-mf. section of the block.

MODEL Buick-Pontiac 544245
Oldsmobile 393884 UNITED MOTORS SERVICE
Alignment, Circuit Notes
Parts

Connecting Output Meter

Connect one of the terminals of the output meter to the plate prong of the type 42 output tube which can be determined by looking at the bottom of the tube with the filament prongs toward you. The plate prong is the first prong to the right of the filaments. Connect the other terminal of the output meter to receive chassis, making sure that the meter is protected with a series condenser.

Peaking I.F. Stages at 262 K.C.

(a) Connect the ground lead of the test oscillator to the chassis frame. Connect a 1 mfd. condenser in series with the other lead and connect this lead to the grid cap of the 6A7 tube, leaving the tube's grid clip in place. The 1 mfd. condenser is necessary to prevent the oscillator circuit of the receiver from affecting the I.F. adjustments.

(b) Set the test oscillator on 262 kilocycles.

(c) Turn the volume control of the receiver on full.

(d) Peak the I.F. trimmer P-3 for the 2nd I.F. coil shown on Figure 2.

(e) Then peak trimmers P-2 and P-1 of the first I.F. coil also shown on Figure 2.

(f) In order to insure accurate settings of the I.F. trimmers the above adjustments should be repeated using the lowest oscillator output that will give a reasonable output meter scale deflection. Make all adjustments for maximum output.

Peaking Gang Condenser at 1530 and 1400 K.C.

(a) Connect the output of the test oscillator to the antenna connection of the receiver and to the chassis ground. Do not use the 1 mfd. condenser that was required in aligning the I.F. stages.

(b) Turn the rotor plates of the gang condenser until they are COMPLETELY OUT OF MESH.

(c) Set the test oscillator on 1530 kilocycles.

(d) Adjust the oscillator section (middle section) of the gang condenser CAREFULLY for maximum output. Then adjust the trimmers for the "R.F." and "ANT" sections of the gang condenser.

(e) Set the test oscillator on 1400 kilocycles.

(f) Turn the condenser rotor plates until the 1400 K.C. signal from the test oscillator is tuned in with maximum output. (No calibration blocks should be used as the oscillator circuit is adjusted at 1530 K.C. on this set.)

(g) Readjust the parallel trimmers for the "R.F." and "ANT" sections of the gang condenser (shown on Fig. 2) for maximum output. DO NOT disturb the oscillator trimmer (middle section) as this is adjusted at 1530 K.C. only, and any further adjustments at this point will affect both the tuning range of the receiver and the tracking of its circuits.

CAUTION: Always use the lowest possible test oscillator output that will give a reasonable deflection of the output meter pointer, in order to prevent the A.V.C. from leveling out the output as the adjustments are made.

Parts List

Part No.	Part Name	Description	Illus. No.
1207683	Cap	Grid connector	
1209080	Case	Chassis (Buick-Pontiac)	
1209081	Case	Chassis (Olds)	
1209045	Clamp	Vibrator holding	
1208077	Clip	Tube shield grinding	
1209039	Coil	R.F. "A" choke	5
1209040	Coil	Tube filament choke	6
1207999	Coil	Power filter choke	7
1209041	Coil	R.F. "B" choke	8
1209042	Coil assy.	Antenna	12
1209043	Coil	Oscillator	13
1209044	Coil assy.	R.F.-1st Det.	14
1209047	Condenser	Electrolytic block	20A,B,C
		Sec. (A) 12 mfd., (B) 8 mfd., (C) 8 mfd.,	
1209048	Condenser	By-pass block	21A,B,C
		Sec. (A) .04 mfd., (B) .06 mfd., (C) .008 mfd.	
1209049	Condenser	By-pass block	22A,B,C
		Sec. (A) .06 Mfd., (B) .45 Mfd. (C) .45 Mfd.	
†1209050	Condenser	By-pass block	23AtoF
		Sec. (A), (B), (F), .08 mfd., (C) .4 mfd., (D) .01 mfd., (E) .1 mfd.	
1207904	Condenser	Molded .001 mfd.	24
1209051	Condenser	Molded .00012 Mfd.	25
1209052	Condenser	Molded .0027 Mfd.	26
1209053	Condenser	Molded .000405 Mfd.	27
1209054	Condenser	Molded .00005 Mfd.	28
1209055	Condenser	Molded .00025 Mfd.	29
*1209056	Condenser	Tubular .075 Mfd.	33
‡1209213	Condenser	Tubular .06 Mfd.	33
1209055	Condenser	Molded .00025 Mfd	34
1209058	Condenser	3 Gang tuning	37
1209212	Condenser	Tubular .008 Mfd.	
1209059	Coupling	Condenser drive	
1209090	Cover	Chassis top (Buick-Pontiac)	
1209094	Cover	Chassis top (Olds)	
1209091	Cover	Tube lid (Buick-Pontiac)	
1209095	Cover	Tube lid (Olds)	
1209046	Cover	Vibrator trans.	

* Used below serial #1748809 † See "CIRCUIT CHANGES"
‡ Used above serial #1748809

The "A" supply to the receiver is filtered to prevent any spark interference from affecting the receiver circuits and also makes possible the installation of this receiver without the use of spark plug suppressors.

Delayed automatic volume control is used so that it will not have any effect on the volume of weak stations. A slight delay is also used on the detector circuit to assist materially in reducing background noise.

The vibrator circuit is permanently connected to operate on a car battery with the negative side grounded, as is the case on Buick, Olds and Pontiac automobiles.

The antenna of this receiver is capacity coupled to the grid winding of the antenna coil tuned by the first section of the gang condenser and feeding into the grid of the pentode section of the 6F7 tube, which in this case is used as an R.F. pentode and audio amplifier. The plate circuit of the pentode section of this tube is inductively coupled to the grid winding feeding the 6A7 tube and tuned by the third section of the gang condenser. The 6A7 tube is used as the conventional detector-oscillator. The oscillator frequency which is produced due to the reaction between the oscillator grid and plate and associated circuit constants is tuned by the middle section of the gang condenser. The incoming frequency and the oscillator frequency are mixed in the 6A7 tube and the resultant frequency which is 262 kilocycles is transformer coupled to the grid of the R.F. pentode section of the 6B7 tube and the output of this section of tube is impressed on one of the diode plates of this tube for detection. A.V.C. voltage is produced in the other diode plate circuit and controls the grid bias of the R.F. section of the 6F7 and 6A7 tubes. The audio output of the detector circuit is coupled to the grid of the triode section of the 6F7 tube and the grid voltage swing is controlled by the volume control. The output of this section of the tube is resistance coupled to the grid of the type 42 power output pentode. The plate circuit of this tube is coupled through the output transformer to the speaker voice coil.

*1209062	Resistor	Candohm	41A,B,C
		Sec. (A) 600 ohm, (B) 125 ohms, (C) 440 ohms	
‡1209210	Resistor	Candohm 165 ohms	42
1209063	Resistor	"Ohmite" 11,000 ohms	43
1204136	Resistor	Carbon 200,000 ohms	44,45,46
‡1209211	Resistor	Candohm	47A,B,C
		Sec. (A) 385 ohms, (B) 615 ohms, (C) 440 ohms	
1208144	Resistor	Carbon 1 megohm	48
1209016	Resistor	Carbon 120,000 ohms	52
1204140	Resistor	Carbon 50,000 ohms	53
1204138	Resistor	Carbon 500,000 ohms	54
1209064	Resistor	Carbon 125,000 ohms	55
1207905	Resistor	Carbon 150,000 ohms	56
‡1203016	Resistor	Carbon 120,000 ohms	57
1209071	Speaker assy.	Complete 6 1/2" (G.H.U.)	60
1209072	Speaker assy.	Complete 6 1/2" (Rola)	60
1209073	Transformer	Output (G.H.U.)	66
1209202	Transformer	Output (Rola)	66
1209074	Transformer	1st I.F.	67
1209075	Transformer	2nd I.F.	68
1209076	Transformer	Vibrator	69
5037400	Vibrator	Plug-in type	70
1209078	Volume control	500,000 ohms	71
1209138	Washer	Rubber tuning cond.	
1208515	Washer	Osc. coil mtg.	
1207608	Washer	Rubber I.F. trans. mtg	

BUICK INSTALLATION PARTS (Special)

1209193	Bracket	Control unit (40 Series only)
1208568	Spring	Static collector
1207821	Suppressor	Distributor
1208557	Tube	Brass-ant. lead

PONTIAC INSTALLATION PARTS (Special)

1208562	Shield	Spark coil
1207821	Suppressor	Distributor

* Used below serial #1748809
‡ Used above serial #1748809

OLDS INSTALLATION PARTS (Special)

1208561	Clip	Replacement lead
1856907	Lead	Primary replacement
1208562	Shield	Spark coil
1208576	Spring	Static collector
1208559	Strip	Bonding
1208560	Strip	Bonding
1208544	Suppressor	Distributor
29353	Terminal	Replacement lead

INSTALLATION PARTS--COMMON ALL SETS

1853686	Adapter	Suppressor
1849161	Condenser	Ammeter by-pass
1849014	Condenser	Generator by-pass
1850429	Condenser	Domelight by-pass
120375	Nut	Chassis mtg.
1207790	Screw	Control unit
1208542	Shield assy.	Antenna lead
1208054	Stud	Chassis mtg.
1208565	Washer	Chassis stud
1208566	Washer	Speaker stud

MODEL Chevrolet 600566
Schematic, Voltage

UNITED MOTORS SERVICE, INC.

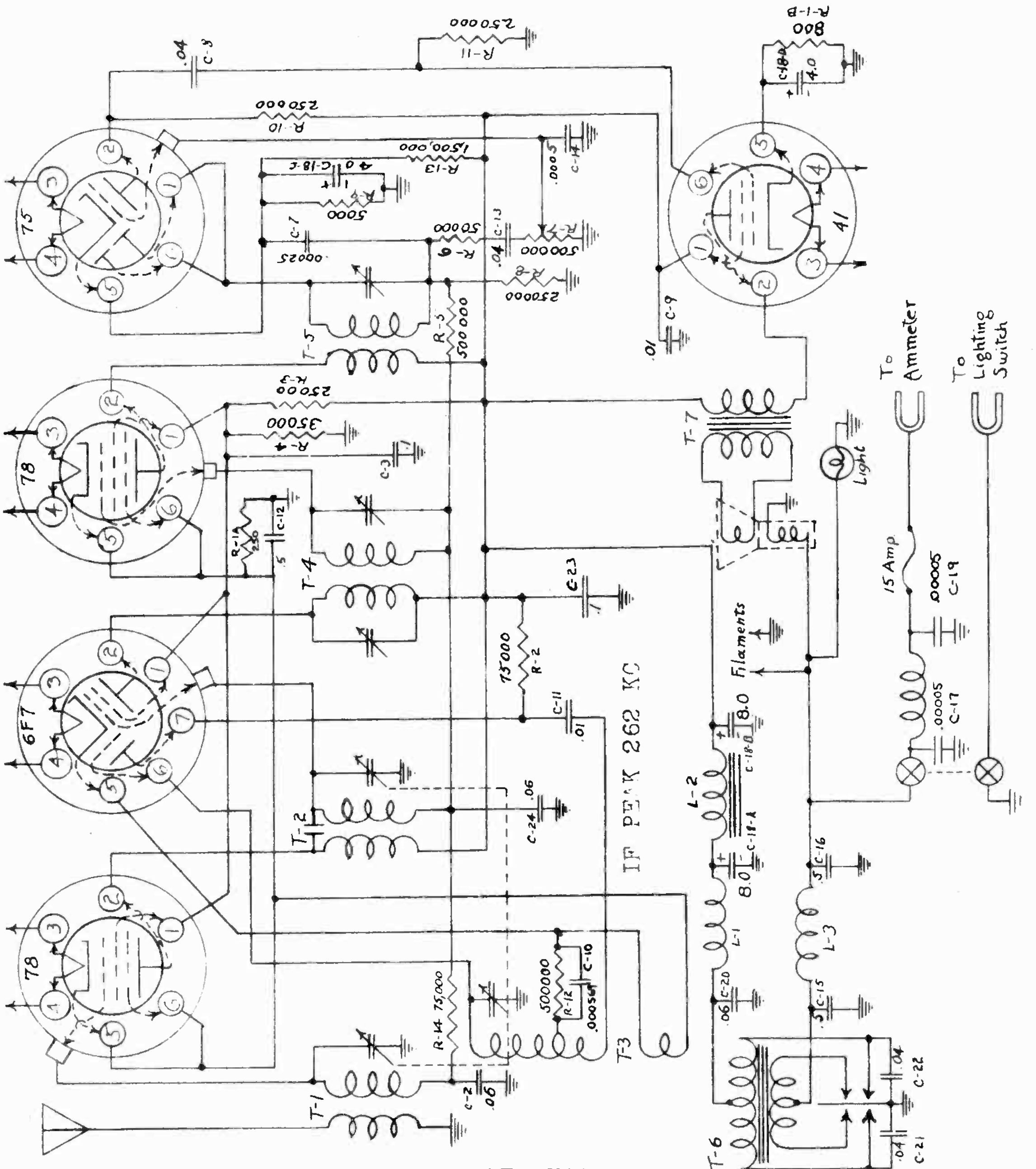


Fig. 2 CHEV. #600566 CIRCUIT DIAGRAM

VOLTAGE CHART

Note: ALL readings are taken from indicated tube prong to chassis frame. Volume control on full.

Tube	#1 Screen	#2 Plate	#3 Fil.	#4 Fil.	#5 Cathode	#6 Grid	#7 Triode Plate
78 R.F.	88	215	6	0	3.4	3.4	
6 F7 (Det.							
(Osc.	88	215	0	6	3.4	-.8	88
78 I.F.	88	215	6	0	3.4	3.4	
75 (2nd Det.							
(AVC	0	90	0	6	1.5	0	
41 A.F.	215	180	6	0	16.3	0	

MODEL Chevrolet 600566
Alignment, Notes

UNITED MOTORS SERVICE, INC.

Peaking I.F. Stages at 262 K.C.

The only way the I.F. stages can be peaked properly is with the use of an oscillator and output meter. Connect the output meter to the plate prongs of the 41 output tube and to the chassis frame. Make sure that the output meter is protected with a series condenser internally: if not, connect a 1/10 mfd. condenser in series with the ground lead to the chassis. The Dayrad #875 Universal Test Meter and Series #51 Volt-Ohmeter have this protective condenser included in them.

(a) Connect the output of the oscillator to the grid cap of the 6F7 tube (leave grid cap in place) and to the chassis ground.

(b) Turn the condenser gang until the plates are entirely out of mesh.

(c) Set the oscillator on 262 K.C. and feed this signal through the I.F. stages of the set.

(d) Peak the I.F. trimmer which is on the I.F. coil having only one adjusting screw first. Then peak the two condensers of the 2nd I.F. coil.

(e) Set the oscillator output at the lowest level that will give a reasonable scale deflection on the output meter. This should be less than half the maximum output available

(f) Make all trimmer adjustments for maximum deflection on the output meter scale.

Peaking Gang Condenser at 1400 K.C.

(a) Connect the output of the oscillator to the antenna connection of the set and to the chassis ground.

(b) In order that the position of the condenser plates for 1400 K.C. may be accurately determined, a wood calibration block (painted red, part number 1208073) should be used. This block may be used also in peaking all of the U.M.S., B-O-P, and Chevrolet radios that use the "tubeless rectifier."

(c) Insert the RED block under the middle section of the gang condenser, so that the largest flat side rests on the chassis base and the square notch stops solidly against the stationary plate support bracket.

NOTE: Always use the red calibration block when aligning the parallel trimmers on the gang condenser. Do not rely on the logging of the dial to determine the 1400 K.C. setting. When the aligning procedure is completed the logging of the dial may be slightly off and should be re-set.

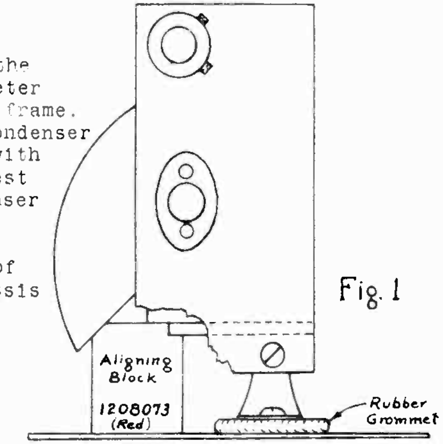


Fig. 1

(d) Open the condenser plates until they stop solidly against the beveled edge of the block as shown in Fig. 1.

(e) Peak the parallel trimmers on top of the condenser gang, the oscillator section first at 1400 K.C. for maximum deflection on the output meter.

(f) To insure sharp peaking of all trimmers reduce the oscillator output to the lowest level that will give a reasonable deflection on the output meter scale.

SERVICE HINTS

The 6F7 tube is a two unit Tube and the oscillator section may cease functioning without affecting the amplifier section of the tube or its reading in a tube checker. If the set does not function, operates weakly or not at all at the 550 end of the dial, remove the grid cap of the 78 I.F. tube and make and break the grid contact several times; if very loud pops occur in the speaker the 6F7 is probably defective and should be replaced.

The paint should be removed from the dash under the chassis mounting washers in order to provide a good ground for the receiver as no other ground is used. R.F. noise due to the vibrator will appear if good ground connections are not made at the dash.

CAUTION: Care should be taken to see that the set is turned off before attempting to replace the dial light because, if the dial light assembly is removed from the bottom of the control unit while the current to the receiver is left turned on, there is the possibility that a short circuit will occur which will blow out the fuse. The dial light assembly is being changed on the later sets to prevent this.

MOTOR NOISE

In order to totally eliminate spark noise picked up by the antenna when this model is installed, it is necessary that a certain procedure be followed. The engine block and the metal bulkhead must be at the same ground potential. It is suggested that a heavy piece of copper braid approximately 1" wide and 1/16" thick and about 3" long be secured. Insert one end of this braid under the rear cylinder head hold down bolt on the left side of the engine block. Attach the other end of this piece of bonding braid to the metal bulkhead of the car by means of two self-threading screws. The paint should be removed from the metal bulkhead in order to secure a good ground connection. A slight amount of slack should be left in this lead to allow movement of the engine block with respect to the bulkhead.

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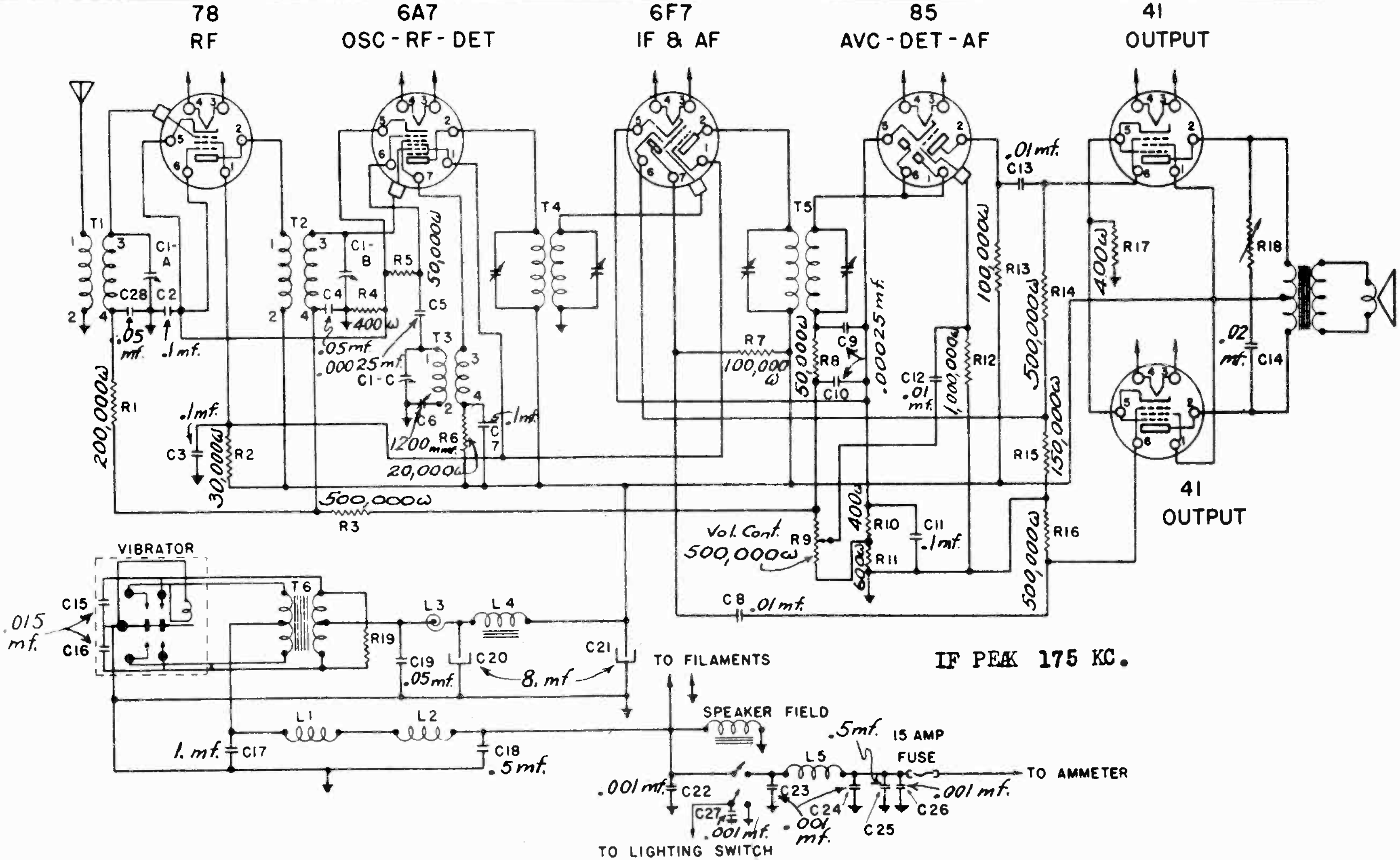

IF PEAK 175 KC.

All voltage readings taken from chassis to indicated tube prong. 6 volts at tube prongs, which usually requires 6.2 volts at ammeter lead clip.

TUBE	PRONG NUMBER #1	#2	#3	#4	#5	#6	#7
78	75	195	6	0	5	5	
6A7	75	195	6	0	5	-2	125
6F7	75	195	6	0	5	0	70
85	0	60	6	0	5	0	
41	195	190	6	0	16	0	

Important: The speaker cable plug plate must be connected to the chassis to complete the circuit.

MODEL Chevrolet 601038
Parts Locations, Data

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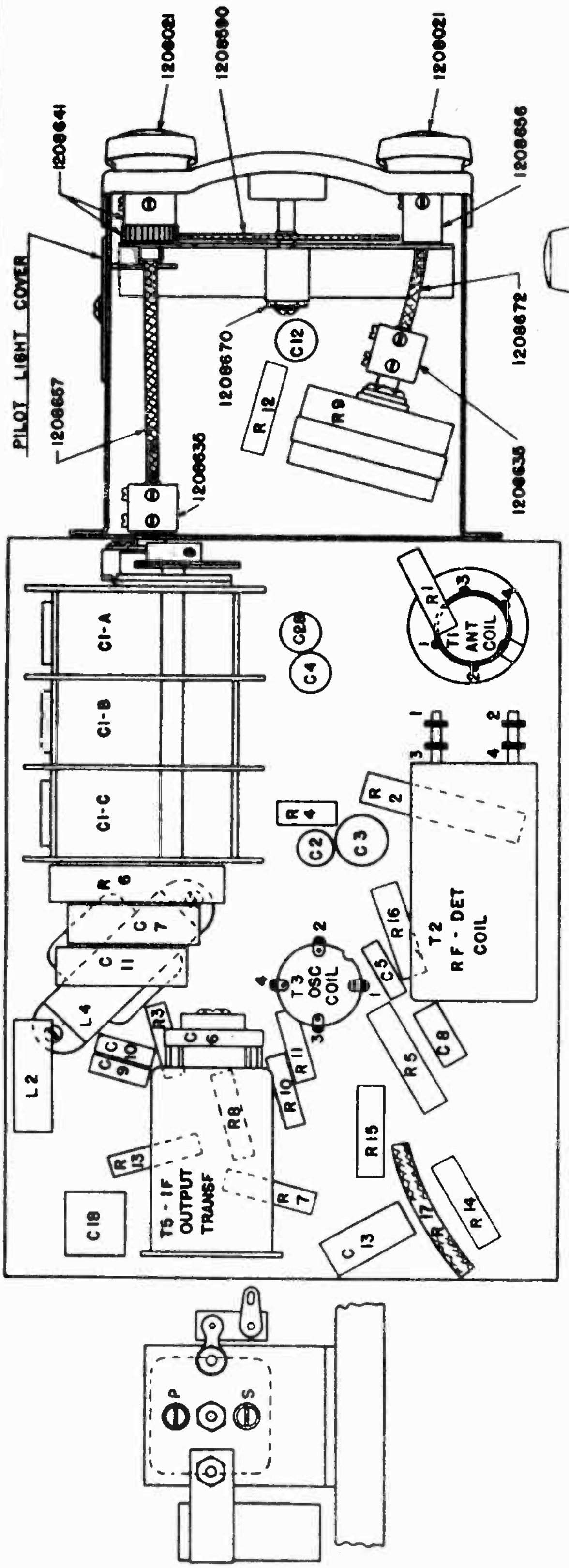

Fig. 7. Location of Parts Under Chassis.

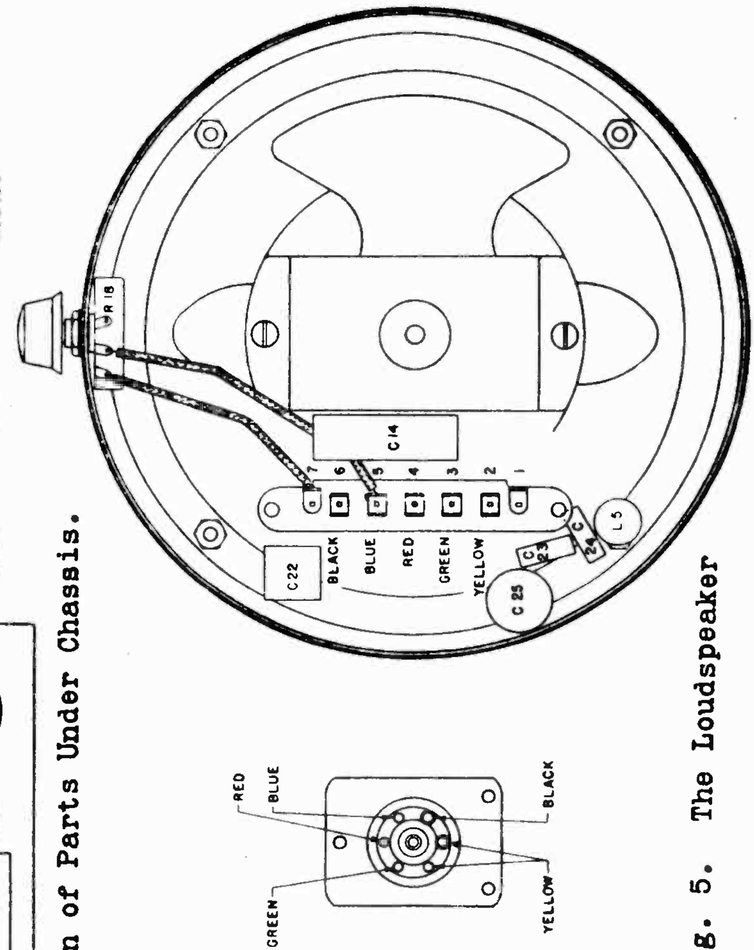

Fig. 5. The Loudspeaker

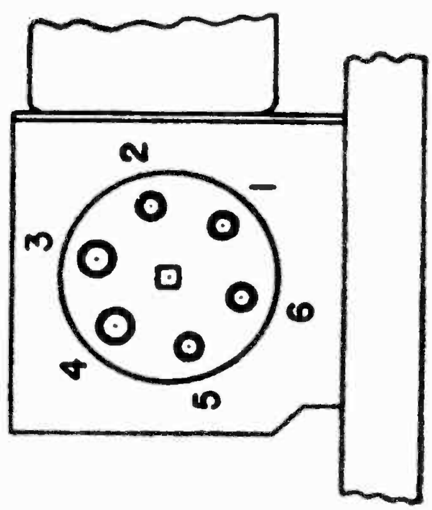

Fig. 4. Speaker Plug in Chassis.

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MODEL Chevrolet 601038
Alignment, Test Data

THE POWER SUPPLY UNIT.

The power supply unit is of the vibrating reed, synchronous mechanical rectifier type. The vibrator is of the plug-in type. It is sealed and no attempt should be made to repair it. Defective ones should be returned for replacement.

To gain access to the vibrator, remove the five Parker Kalon screws from around the power supply unit case top cover. The cover should then be pulled straight up. Do not attempt to pry up one end. Contacting fingers are riveted around the edges of the cover. These fingers must make tight contact with the power supply unit case in order to prevent radiation of interference from the power supply. The Parker Kalon screws in the top and the bottom covers of the case must be tightened securely to prevent noise radiation.

R19 is a special resistor whose value varies with the voltage applied to it. When the receiver is first turned on, the output voltage tends to become very high until the tubes heat sufficiently to draw their normal load. Under this condition, the value of R19 drops to a comparatively low value, loading the transformer sufficiently to prevent damage. As the tubes become heated, tending further to lower the voltage, the resistance of R19 increases greatly so that it no longer constitutes a load on the power supply.

The power supply unit may be removed from the chassis by taking out the four screws that hold it to the chassis plate and unsoldering the red and orange wires that pass through the fibre grommet near the left edge of the set.

The following chart will be helpful in making tests of the power supply unit. A continuity meter or ohmmeter may be used.

Power Supply Unit Test Chart

Note: Tests are to be made with the speaker plugged into the chassis, and the vibrator unit removed. Be sure the speaker plug plate makes contact with the chassis.

TEST (see Fig. 1)	PROPER EFFECT	TROUBLE IF IMPROPER EFFECT IS HAD
#4 to #5	400 ohms.	Defect in power transformer secondary or in R19.
#1 to #3	Very low resistance reading	Defect in power transformer primary
From #1 prong of 41 output tube to #4 or #5 prong of vibrator socket	Approximately 425 ohms.	Defective L3 or L4.
From #1 prong of 41 output to chassis	Open	Shorted C19, C20, or C21.
#2 to chassis	0 resistance	Open ground connection to prong
From #1 or #3 to ground, with speaker plug removed from chassis, tubes removed from sockets, and pilot light removed.	Open	Shorted C17 or C18.

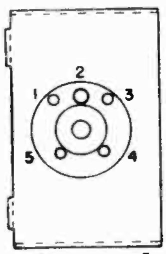

Fig. 1. Vibrator Socket

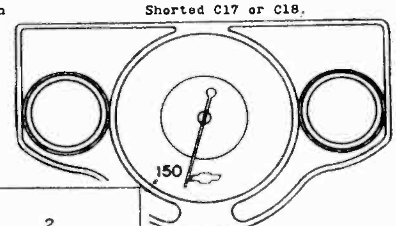

Fig. 3.

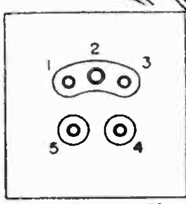

Fig. 2. Vibrator Plug

Vibrator Test Chart

TEST (see Fig. 2)	PROPER EFFECT	TROUBLE IF IMPROPER EFFECT IS HAD
#2 to #4	Open	Shorted C15. Defective vibrator
#2 to #5	Open	Shorted C16. Defective vibrator
#2 to #3	42 ohms	Defective vibrator
#1 to #2	Open	Defective vibrator
#2 to case	Closed	Defective vibrator

PILOT LIGHT REPLACEMENT

The pilot light can be made accessible for replacement by removing the two screws in the left side of the control unit housing. The small plate, with the pilot light socket attached, can then be removed. Be sure to turn the set off before attempting to remove the plate

ALIGNMENT

The IF Stages:

1. Connect a low voltage output meter across the transformer secondary in the speaker, or a high voltage meter between the plate prongs of the 41 tubes.

2. Set the test oscillator at 175 kc and connect its output between the control grid of the 6F7 tube and the chassis. Leave the tube shield in place and the grid connection attached to the cap. Adjust the two adjusting screws in T5 for maximum output meter deflection. The output of the test oscillator should be kept at as low a value as possible, in order to render the AVC action inoperative

3. Connect the test oscillator between the 6A7 control grid and the chassis. Adjust the two screws in T4 for maximum output meter deflection. As the meter reading is brought up due to peaking, reduce the test oscillator output so that it is kept at as low a value as possible.

The RF Stages:

(a) Adjusting the Calibration:

1. Loosen the four set screws in the variable condenser coupling (1208635 in Fig. 7).

2. Fully mesh the condenser plates.

3. Turn the Station Selector knob to its low frequency limit, keeping the condenser fully meshed.

4. Tighten the set screws in the coupling.

5. Turn the Station Selector knob to its high frequency limit. The dial pointer then should barely overlap the lower corner of the Chevrolet insignia on the dial, as shown in Fig. 3. If it does not, remove the knobs and the two bearing inserts that are screwed in the escutcheon. The escutcheon can then be removed, the dial pointer mounting screw loosened and the dial pointer set correctly. In its correct setting, the dial pointer position coincides with the stop on the large gear.

(b) Peaking the Trimmers:

1. Set the test oscillator to exactly 1500 kc and connect its output between the antenna socket contact and the chassis, in series with a .0002 mfd. mica condenser. No other value of condenser should be used.

2. With the Station Selector left at its high frequency limit, adjust the three trimmers on the variable condenser for maximum output meter deflection.

3. Readjust the test oscillator to 600 kc and tune in its signal.

4. Adjust the oscillator padder, C6, by slowly rotating the variable condenser back and forth a degree or two, adjusting the padder at the same time, until maximum output is obtained.

5. Since the adjustments are inter-acting to an extent, it is advisable to repeat the entire operation.

CHASSIS UNIT TEST CHART

Note: Tests are to be made with the speaker plug removed from the chassis, the vibrator removed, the tubes removed, and the pilot light bulb removed.

TEST (see Fig. 4)	PROPER EFFECT	TROUBLE IF IMPROPER EFFECT IS HAD
Lighting switch lead to chassis	Open with set switch off; closed with set switch on.	Defect in connector or switch.
#3 to chassis	Open	Short in filament circuit.
#4 to chassis	Open	Short in filament circuit.
#3 to #4	Open with set switch off; closed with set switch on.	Defect in switch or wiring.
#1 to #1 prong of 41 tubes	Reading	Open circuit
#1 to #2 prong of 6F7	100 ohms	Defective IF output Transformer, T5.
#1 to #2 prong of 6A7	100 ohms	Defective IF input Transformer, T4.
#1 to #2 prong of 78	7 ohms	Defective RF-Detector coil.
#1 to #2 prong of 85 tube	100 M ohms	Defective R13.
#1 to #7 prong of 6F7	100 M ohms	Defective R7.
#1 to #7 prong of 6A7	20 M ohms	Defective R6 or defective oscillator coil. T3.
#1 to #1 prong of 78, 6A7, 6F7	30 M ohms	Defective R2
Antenna socket contact to chassis	18 ohms	Defective antenna coil
Control grid of 78 to ground	Open	Shorted C28 or shorted tuning condenser (C1-A).

MODEL Chevrolet 601038
Socket, Test Data, Parts

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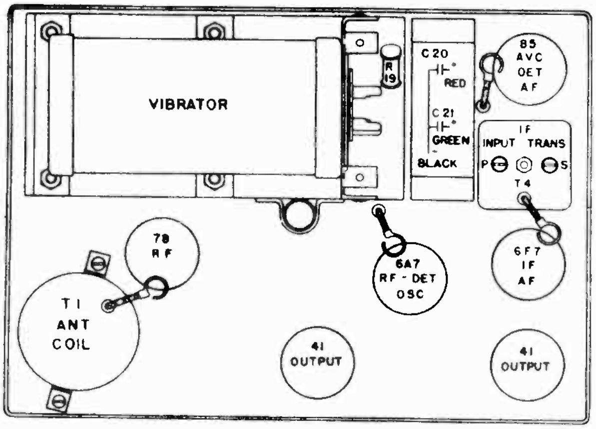

Fig. 8. Tube Positions and Functions.

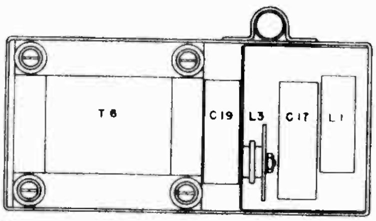

Fig. 9. Location of Parts in Base of Power Supply Unit.

SPEAKER TEST CHART

Note: These tests are to be made with the speaker plug removed from the chassis.

TEST (see Fig. 5).	PROPER EFFECT	TROUBLE IF IMPROPER EFFECT IS HAD
Case to #6	5 ohm reading	Defective field coil
#5 to #7	0-500 M ohms as Tone Control is turned	Defective Tone Control
"A" clip to #2	Reading	Open L5
"A" clip to shield	Open	Shorted C23, C24, C25, or C26.
#3 to #4	300 ohms	Defect in transformer secondary.
#4 to #5	275 ohms	Defect in transformer secondary.
#3 to #7 with Tone Control in "Brilliant" position	500 M ohms	Shorted C14.

1208684	Choke	RF	L-1
1208685	Choke	RF	L-2
1208630	Choke	RF	L-3
1208687	Choke	Audio	L-4
*1208686	Choke	RF	L-5

*Indicates part mounted in speaker.

1208624	Clamp	Instrument panel, removable part	
1208625	Clamp	Lead lighting switch	
1208626	Clamp	To make dual condenser units	
1208629	Clip	Grid connection	
1208585	Coil	Antenna	T-1
1208586	Coil	RF-Detector	T-2
1208631	Coil	Oscillator	T-3
1208583	CONDENSER	Variable tuning	C-1 (A-B-C)
1208675	* Bearing	Drive pinion	
1208678	* Bracket	Drive pinion bearing	
1208676	* Clamp	Drive pinion bearing retaining	
1208679	* Gear assembly	Rotor driving	
1208674	* Pinion and Shaft	Drive	
1208677	* Screws	Drive pinion bearing retaining clamp	
1208680	* Spring	Coil, rotor driving gear	
1208627	SHIELD	Antenna lead-in	
1838476	Ferrule	Antenna contact	
1208592	Shield	RF-Detector coil, includes speaker plug and bracket	
1208658	SHIELD	Tube, both halves	
1208660	Base mounting member	For 1208658	
1208659	Clamping ring	For 1208658	
1208623	SOCKET	Antenna (includes bracket)	
1838476	Ferrule		
1836876	Spring		
1843713	Washer		

PARTS LIST -- Cont'd.

Part No.	Part Name	Description	Code
1208599	Condenser	.1 mfd. 200 volts	C2
1208598	Condenser	.1 mfd. 30 volts	C3
1208673	Condenser	.05 mfd. 200 volts	C4
1208605	Condenser	.00025 mfd. mica	C5
1208597	Condenser	1200 mmf. oscillator padder	C6
1208599	Condenser	.1 mfd. 200 volts	C7
1208600	Condenser	.01 mf. 600 volts	C8
1208605	Condenser	.00025 mfd. mica	C9
1208605	Condenser	.00025 mfd. mica	C10
1208599	Condenser	.1 mfd. 200 volts	C11
1208601	Condenser	.01 mfd. 200 volts	C12
1208600	Condenser	.01 mfd. 600 volts	C13
1208682	Condenser	.02 mfd. 800 volts	C14
	Condenser	.015 mfd. 1200 volts (enclosed in vibrator unit).	C15
	Condenser	.015 mfd. 1200 volts (enclosed in vibrator unit).	C16
1208604	Condenser	1 mfd. 25 volts	C17
1208603	Condenser	.5 mfd. 160 volts	C18
1208602	Condenser	.05 mfd. 600 volts	C19
1208584	Condenser	8 mfd. dual electrolytic	C20
1208584	Condenser	8 mfd. dual electrolytic	C21
*1208683	Condenser	.001 mfd. mica	C22
*1208683	Condenser	.001 mfd. mica	C23
*1208683	Condenser	.001 mfd. mica	C24
*1208669	Condenser	.5 mfd. 200 volts	C25
1208606	Condenser	.001 mfd. mica (built into ammeter lead).	* C26
1208608	Condenser	.001 mfd. mica in metal case	C27
1208673	Condenser	.05 mfd. 200 volts	C28
*1208693	Control	Tone, 500 M ohms, with nut and washer	R18
1208589	Control	Volume	R9
1208635	Coupling	Flexible shaft to volume control and variable condenser	
1208636	Cover	Power supply bottom	
1208637	Cover	Power supply top	
1208632	Dial glass		
1208633	Dial	Station selector	
1208596	Escutcheon		
120151	Fuse	15 amp.	
1208642	Pointer	Dial	
1208634	Power Supply unit	Complete less vibrator	
1208645	Resistor	200 M ohm, 1/3 watt carbon	R1
1208652	Resistor	30 M ohm, 1 watt carbon	R2
1208644	Resistor	500 M ohm, 1/3 watt carbon	R3
1208650	Resistor	400 ohms, 1/3 watt carbon	R4
1208648	Resistor	50 M ohm, 1/3 watt carbon	R5
1208653	Resistor	20 M ohm, 1 watt carbon	R6
1208647	Resistor	100 M ohm, 1/3 watt carbon	R7
1208648	Resistor	50 M ohm, 1/3 watt carbon	R8
1208650	Resistor	400 ohms, 1/3 watt carbon	R10
1208649	Resistor	600 ohms, 1/3 watt carbon	R11
1208651	Resistor	1 megohm, 1/3 watt carbon	R12
1208647	Resistor	100 M ohms, 1/3 watt carbon	R13
1208644	Resistor	500 M ohms, 1/3 watt carbon	R14
1208646	Resistor	150 M ohms, 1/3 watt carbon	R15
1208644	Resistor	500 M ohms 1/3 watt carbon	R16
1208654	Resistor	400 ohms 2 watts, Flexible	R17
1208643	Resistor	Globar, 1 watt, voltage regulator	R19
1208549	Screen	Toe Board	
1208639	Screw	Case clamping	
1208656	Shaft	Volume control, knob end	
1208657	Shaft	Station selector	
1208672	Shaft	Flexible, volume control	
1208591	Shield	Antenna coil	
1208614	Socket and bracket	Vibrator	
1208615	Socket and bracket	Dial light	
1208661	Socket	7 prong	
1208662	Socket	6 prong	
1208663	Socket	Vibrator	
601105	SPEAKER	Complete with case and cable	
1208666	* Cable, plug and plate		
1208689	* Case	Back cover	
1208690	* Case	Less cover	
1208668	* Plug		
1208691	* Screw	Mounting, ornamental head	
1208687	* Speaker only	Less transformer and case	
1208688	* Transformer	Includes mounting bracket	T-7
1208552	Static collector	Universal	
1207900	Suppressor	Distributor	
1208593	Transformer	IF INPUT	T-4
1208594	Transformer	IF output	T-5
1208588	Transformer	Power	T-6
1207424	Lamp	Pilot, 6 to 8 volts	
1208694	LEAD	Lighting switch, complete	
1836869	* Cap	For connector of 1208655	
1838476	* Ferrule	For connector of 1208628 and 1208655	
1208628	* Lead	Chassis end only	
1208655	* Lead	Lighting switch end only	
1208697	* Lead	With lug and rubber sleeve for 1208655	
1836876	* Spring	For connector of 1208628	
1843713	* Washer	For connector of 1208628	

UNITED MOTORS SERVICE

MODEL Chevrolet 601574
Schematic
Voltage

TUBE BASE DIAGRAM SYMBOLS

Type	Function	H	P	S	PT	GT	G1	G2	K
6F7	R.F.	6	245	100	70	-	-	-	2.5
6A7	Det-Osc.	6	245	100	-	-	-0	170	2.5
6B7	I.F.,--2nd Det-AVC	6	245	100	-	-	-	-	10.0
41	Output	6	230	245	-	-	-	-	16.0

NOTE: Ampere drain of set at 6 volts is 6.0 amperes
Milliampere drain from "B" supply is approximately 55 M.A.

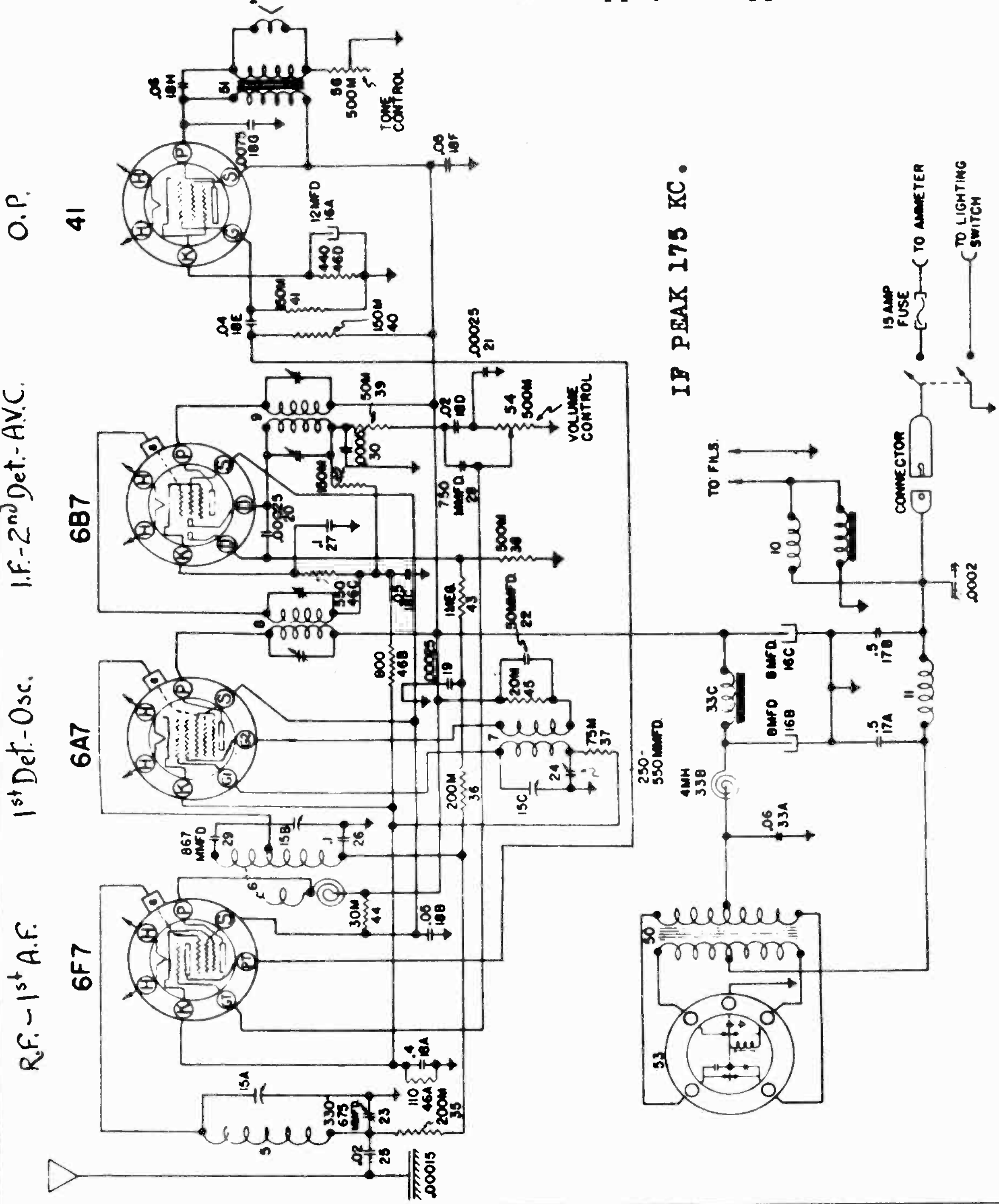

FIG. 1--CHEVROLET 601574 CIRCUIT DIAGRAM

MODEL Chevrolet 601574
Parts Layouts

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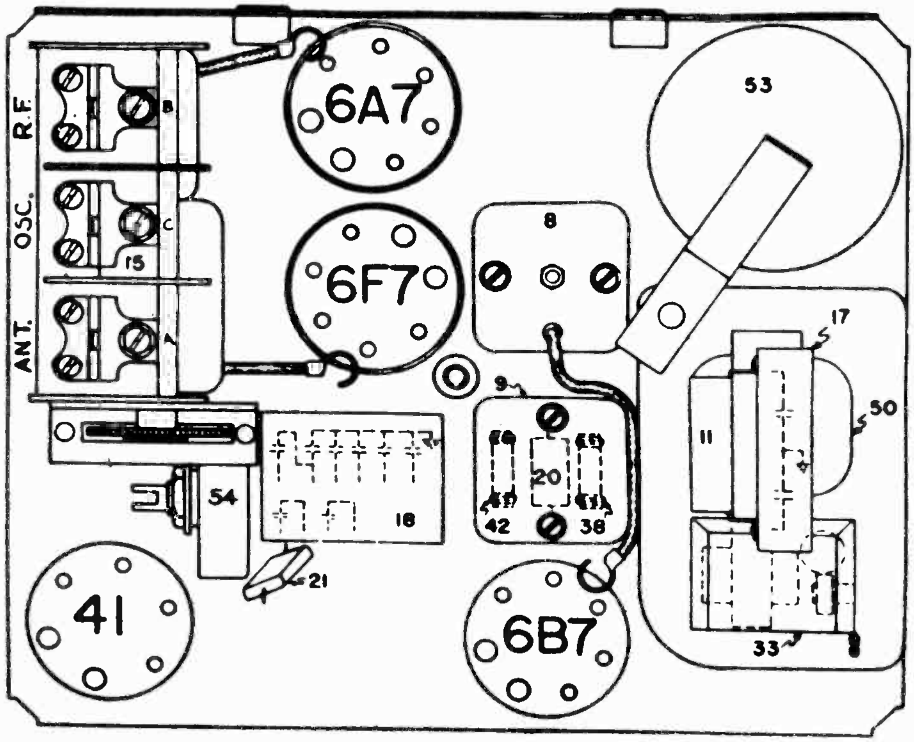


FIG.2--PARTS LAYOUT--Top View

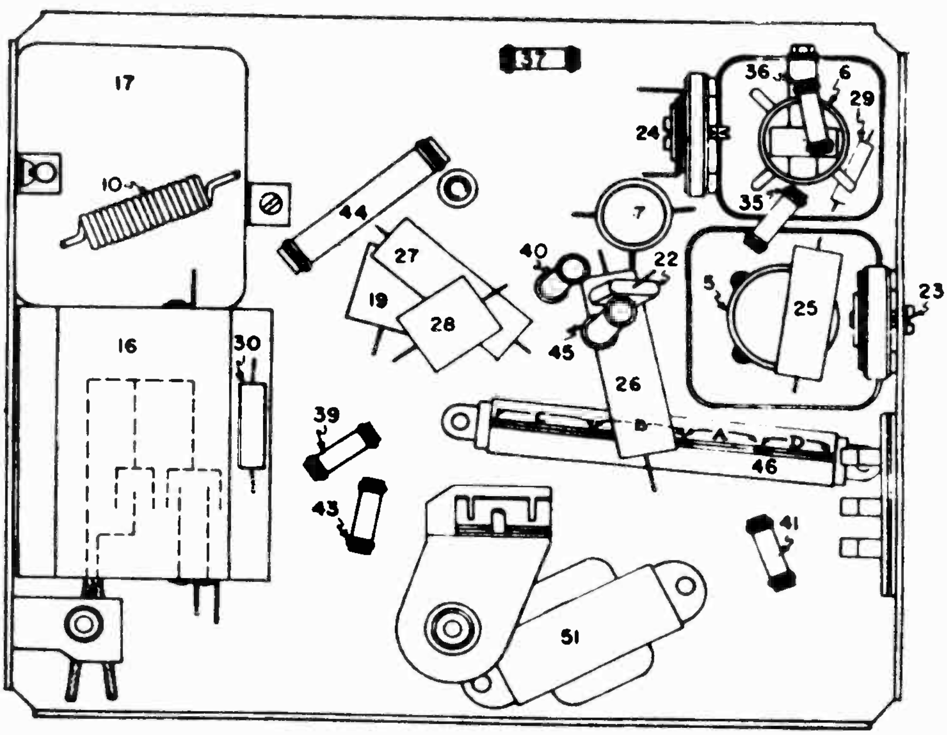


FIG. 3--PARTS LAYOUT--Bottom View

MODEL Chevrolet 601574
Circuit Description

UNITED MOTORS SERVICE

The antenna circuit of this receiver is capacity coupled to the antenna system. This results in exceptionally high gain in the antenna stage and serves to make up for the relative inefficiency of the under-car antennas which are necessary on the all steel top cars. A separate adjustment is provided on the receiver to permit an accurate alignment to the car antenna.

The audio output of the detector circuit is coupled to the triode portion of the 6F7 tube for audio frequency amplification. The pentode section of the same tube is used as a radio frequency amplifier.

The "A" supply to the receiver is filtererd to prevent any spark interference from affecting the receiver circuits and makes possible the installation of this receiver without the use of spark plug suppressors.

A plug-in vibrator is used of the full wave self-rectifying type. Its circuit is permanently connected for operation on a car battery with the negative side grounded as is the case on Chevrolet automobiles.

Tone control action is obtained in a unique manner in that one of the voice coil leads present in the speaker cable is also used as a conductor for the tone control circuit. This is done to reduce the number of wires in the speaker cable and has no effect on the voice coil circuit because of the great differences in impedance between the voice coil circuit and the output tube plate circuit.

The output transformer of this receiver is an integral part of the chassis. This is necessary because of space limitations in a "header" speaker.

Circuit Operation

Referring to the Circuit Diagram Figure 1: The antenna system used with this receiver is capacity coupled to the antenna coil. The antenna capacity is accurately matched to the receiver antenna stage, greatest efficiency through the use of an adjustable padding condenser. The antenna coil is tuned by the "ANT" section of the condenser gang and feeds the pentode grid of the 6F7 tube. The output of the pentode portion of the 6F7 tube is capacity coupled to the grid coil tuned by the "R.F." section of the condenser gang feeding the control grid of the 6F7 detector-oscillator tube. The incoming station frequency is then mixed in this tube with the frequency produced by the receiver oscillator circuit which is tuned by the "OSC." section of the condenser gang. A resultant frequency is produced of 175 kilocycles and is inductively coupled to the pentode grid of the 6B7 tube. The output of the pentode section of the 6B7 tube is then impressed on one of the diode plates of this tube for detection purposes through the 2nd I.F. coil. A.V.C. voltage is produced in the other diode plate circuit and controls the grid bias on both the pentode section of the 6F7 tube and the control grid of the 6A7 tube. The audio output of the detector circuit is coupled to the grid of the triode portion of the 6F7 tube and the grid voltage swing is controlled by the volume control. The plate circuit of this section of the tube is resistance coupled to the grid of the 41 output tube. The output of the 41 tube is coupled to the speaker voice coil through the output transformer. Tone control action is obtained by feeding some of the higher frequencies to ground using the voice coil circuit as a conducting medium.

MODEL Chevrolet 601574
Alignment, Parts List

UNITED MOTORS SERVICE

Connecting Output Meter

Connect one of the output meter leads to the plate prong of the type 41 output tube. The plate prong is the first prong to the left of the filament when looking at the bottom of the tube with the filament prongs toward you. Connect the other output meter lead to the receiver chassis, making sure that the meter is protected with a D.C. blocking condenser connected in series to prevent damage to the meter.

IMPORTANT

Due to the high sensitivity of these receivers, the receiver chassis must be in its case before making any adjustments. This is necessary in order to obtain accurate adjustments and to prevent oscillation due to lack of the shielding effect of the receiver case.

Peaking I.F. Stages at 175 K.C.

(a) Connect the ground lead of the test oscillator to the chassis frame. Connect a .5 mfd. condenser in series with the other lead and connect this lead to the grid cap of the 6A7 tube, leaving the tube's grid clip in place. The .5 mfd. condenser is necessary to prevent the oscillator circuit of the receiver from affecting the I.F. adjustments.

(b) Set the test oscillator on 175 kilocycles.

(c) Turn the volume control of the receiver on full.

(d) Peak each of the I.F. trimmers on the 2nd I.F. coil, Illustration #9 on Fig. 2.

(e) Then peak each of the trimmers on the 1st I.F. coil, Illustration #8 on Fig. 2.

NOTE: In order to insure accurate settings of the I.F. trimmers the above adjustments should be repeated using the lowest oscillator output that will give a reasonable output meter scale deflection. Make all adjustments for maximum output.

Peaking Gang Condenser at 1530 K.C.

(a) Connect the output of the test oscillator to the antenna connection of the receiver and to the chassis ground. (Do not use the .5 mfd. condenser that was required in aligning the I.F. stages.)

(b) Turn the rotor plates of the gang condenser until they are COMPLETELY OUT OF MESH.

(c) Set the test oscillator on 1530 kilocycles.

(d) Adjust the trimmer for the oscillator section of the gang condenser (middle section CAREFULLY for maximum output. Then adjust the trimmers for the "R.F." and "ANT." sections of the gang condenser also for maximum output.

Tracking Oscillator at 540 K.C.

(a) Turn the condenser plates until they are COMPLETELY IN MESH.

(b) Set test oscillator at 540 kilocycles. (Leave test oscillator leads connected to antenna and ground of receiver.)

(c) Adjust the oscillator tracking condenser (Illus. #24 on Fig. 3) located on the bottom of the chassis until the 540 K.C. signal is tuned in with maximum output.

Peaking Gang Condenser at 1400 K.C.

(a) Set the test oscillator at 1400 kilocycles.

(b) Turn the condenser rotor plates until the 1400 K.C. signal from the test osiclllator is tuned in with maximum output.

(c) Readjust the parallel trimmers for the "R.F." and "ANT." sections of the gang condenser (shown on Fig. 2) for maximum output. DO NOT DISTURB the setting of the "OSC." section of the gang condenser as this is adjusted at 1530 K.C. only, and any further adjustments at this point will affect both the tuning range of the receiver and the tracking of its circuits.

Adjusting Receiver to Car Antenna

NOTE: An antenna compensating condenser is provided in the antenna circuit of this receiver that must be adjusted to the particular car antenna the receiver is to be used on. The test oscillator cannot be used for this adjustment due to the fact that capacity of its output circuit will not match the wide range of antenna capacities being used. Therefore, it is necessary that the adjustment be made after the receiver is installed on the car and is done in the following manner:

(a) Tune the receiver to a weak broadcast station on the low frequency end of the dial 550 to 700 K.C.

(b) Adjust the antenna compensating condenser for maximum response from the broadcast station. This condenser is shown as Illustration #23 on Fig. 3 and is located immediately to the rear of the speaker plug on the side of the receiver case.

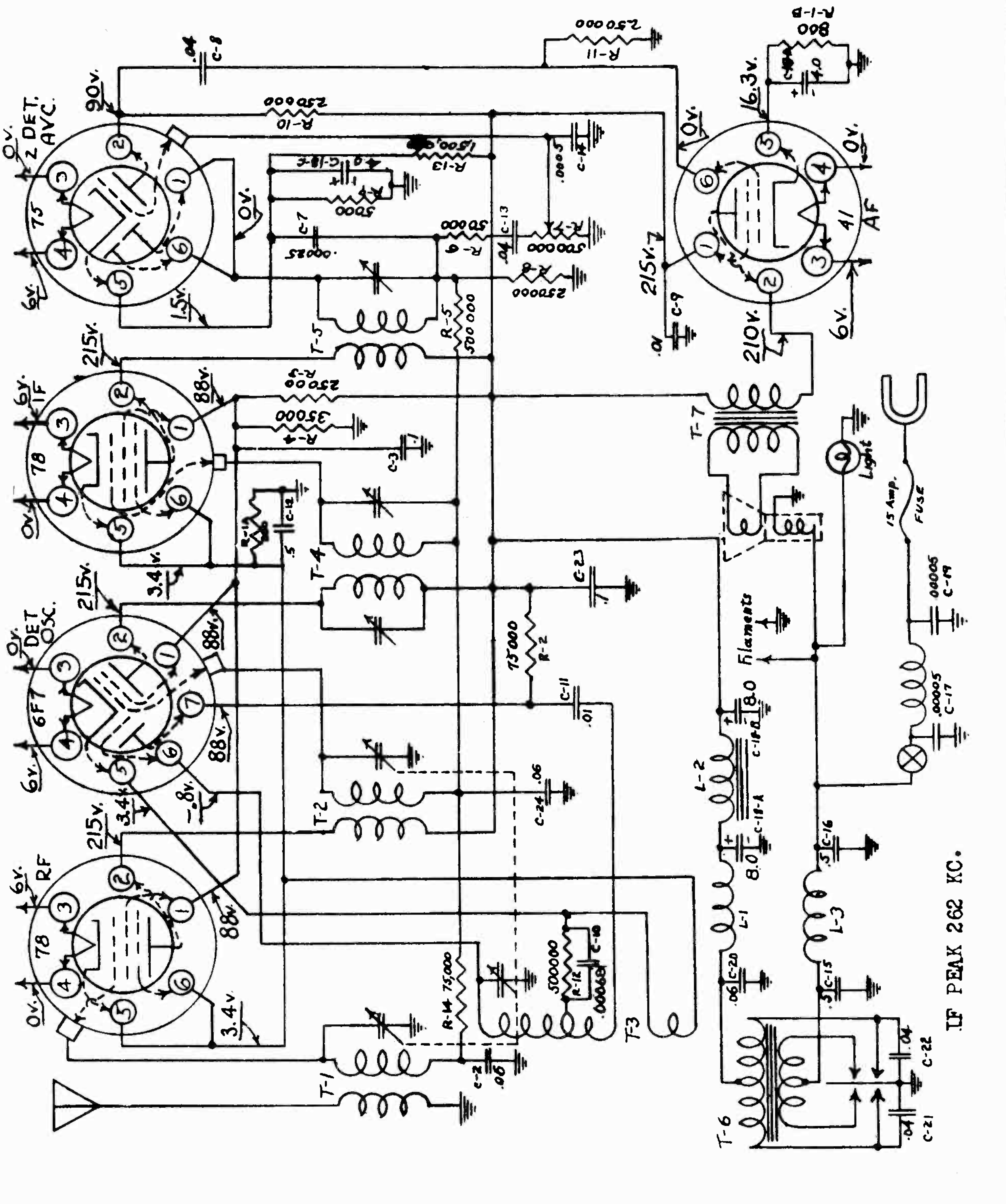
CHASSIS PARTS

Part No.	Part Name	Description	Illus. No.
1209573	Case	Chassis	
1209574	Case	Power transformer	
1207683	Clip	Grid connector	
1209527	Coil	Antenna	5
1209528	Coil	R.F.	6
1209529	Coil	Oscillator	7
1209544	Coil assy.	1st I.F.	8
1209544	Coil assy.	2nd I.F.	9
1209571	Coil	Tube filament choke	10
1209572	Coil	Vibrator "A" choke	11
1209530	Condenser	3 gang tuning	15
	Sec. A	Antenna	
	Sec. B	R.F.	
	Sec. C	Oscillator	
1209531	Condenser	Electrolytic block	16
	Sec. A	16 mfd.	
	Sec. B	8 mfd.	
	Sec. C	8 mfd.	
1209532	Condenser	By-pass block	17
	Sec. A	.5 mfd., 160 volt	
	Sec. B	.5 mfd., 160 volt	
1209533	Condenser	By-pass block	18
	Sec. A	.4 mfd., 160 volt	
	Sec. B	.05 mfd., 200 volt	
	Sec. C	.05 mfd., 160 volt	
	Sec. D	.02 mfd., 160 volt	
	Sec. E	.04 mfd., 200 volt	
	Sec. F	.05 mfd., 400 volt	
	Sec. G	.0075 mfd., 800 volt	
	Sec. H	.06 mfd., 400 volt	
1209065	Condenser	Modled .00025 mfd.	19,20,21
1207625	Condenser	Molded .00005 mfd.	22
1209535	Condenser	Antenna compensating	23
1209536	Condenser	Oscillator tracking	24
1207799	Condenser	Tubular .02 mfd., 200 volt	25
1207908	Condenser	Tubular .1 mfd., 160 volt	26,27
1209537	Condenser	Molded .00075 mfd.	28
1209538	Condenser	Molded .000867 mfd.	29
1209556	Condenser	Molded .0005 mfd.	30
1209577	Connector assy.	"A" power on chassis	
1836869	Cap	Ferrule holder	
1838476	Ferrule	Contact	
1209576	Connector assy.	Antenna on chassis	
1838476	Ferrule	Contact	
1836876	Spring	Antenna connector	
1843713	Washer	Antenna connector	
1209557	Connector	Condenser gang shaft	
1209565	Cup	Cond. gang mounting	
120151	Fuse	15 ampere	
1209525	Filter assy.	"B" power	33
	Sec. A	.06 mfd. condenser	
	Sec. B	R.F. choke	
	Sec. C	Audio choke	
1209568	Grommet	Cond. gang mounting	
1209599	Nut	Hex. #4-36 nickle plated	
110922	Nut	Hex. #8-32 nickle plated	
	Nut	Hex. #6-32 nickle plated	
1209581	Pad	Vibrator clamp	
1204136	Resistor	Carbon 200,000 ohms 1/3 watt	35,36
1207943	Resistor	Carbon 75,000 ohms, 1/3 watt	37
1204138	Resistor	Carbon 500,000 ohms, 1/3 watt	38
1204138	Resistor	Carbon 500,000 ohms, 1/3 watt	39
1207905	Resistor	Carbon 150,000 ohms, 1/3 watt	40,41,42
1208232	Resistor	Carbon 1 megohm, 1/3 watt	43
1208959	Resistor	Carbon 30,000 ohms, 1 watt	44
1209405	Resistor	Carbon 20,000 ohms, 1/3 watt	45
1209542	Resistor	Candohm strip	46
	Sec. A	Res. 110 ohms	
	Sec. B	Res. 800 ohms	
	Sec. C	Res. 550 ohms	
	Sec. D	Res. 440 ohms	
1209570	Transformer	Vibrator power	50
1209546	Transformer	Speaker output	51
5039661	Vibrator	Plug-in synchronous	53
1209540	Volume control	Res. 500,000 ohms	54
1209543	Speaker unit	6" Dynamic	55
1209539	Tone control	Res. 500,000 ohms	56

MODEL B-O-P 980455
Schematic, Voltage

UNITED MOTORS SERVICE

Fig. 2 MODEL 980455 CIRCUIT DIAGRAM
(BUICK, PONTIAC, OLDS.)



MODEL B-O-P 980455
Alignment, Service Notes **UNITED MOTORS SERVICE**
Parts

MOTOR NOISE

In sets of previous designs the use of suppressors was necessary in order to eliminate chassis pickup and had but little effect on the interference picked up by the antenna. The Buick, Pontiac and Olds models 980455 are equipped with special filters for the elimination of chassis pickup, (interference with the antenna disconnected from the set) which makes possible the installation of the set with out the usual spark plug suppressors. Care should be taken to keep the ammeter lead away from any high tension cables because of the intense interference field that exists around them. This lead must be by-passed with a ½ mfd. condenser at the point where it connects to the ammeter.

VIBRATORS

Sometimes a small amount of dirt will lodge between the contacts and result in such high contact resistance that the vibrator will not start. If such is apparently the case, remove the transformer-vibrator from the chassis. Disconnect ONLY the red B plus lead from the iron core choke. Turn the receiver "on" (there must be a connection between the vibrator case and the chassis) and start the vibrator by snapping the reed back and forth with a pencil. If the vibrator starts to function, allow it to run without stopping until the dirt has been burned out as indicated by the cessation of brilliant sparking. The vibrator should now start under its own power and should continue to function properly. If the vibrator still fails to start properly, replace the vibrator unit.

Vibrator Noise

Examination of the mechanical construction of the transformer-vibrator assembly will show that the bottom plate of the vibrator case is riveted to the chassis. The transformer-vibrator assembly is fastened to the bottom plate with two Parker Kalon screws through each end of the lid. For complete elimination of vibrator noise it is necessary that the bottom plate of the vibrator assembly make good contact with the vibrator case at all points. Placing screws on all four sides of the bottom plate would make the servicing of the vibrator rather difficult, consequently screws were placed in the ends only. The press fit of the bottom plate must be depended upon to eliminate the vibrator noise.

Do not change a vibrator that is noisy electrically before checking the grounding of the vibrator assembly to its bottom plate. Use a pair of pliers to bend the longest sides of the bottom plate inward just enough to insure a pressure contact with the vibrator assembly at all points.

FAILURES IN TRANSFORMER-VIBRATOR ASSEMBLY

In addition to the actual failure of the vibrator, due to the shorting of the vibrator condensers, or burned or poorly adjusted contacts, there are several other defects, which may occur in the transformer-vibrator assembly, which may seemingly point toward the vibrator as the seat of the trouble.

Defective Tubes. A tube, which has shorted internally, may draw an abnormal amount of "B" current. This high current drain on the "B" supply will make the vibrator operate irregularly, and may make it spark, eventually damaging the vibrator by burning the points.

Defective Condensers. The .06 mfd. (C-20) condenser, connected between the power transformer side of the "B" R.F. choke and ground, may become shorted and cause a high current drain which will, in time, ruin the vibrator points. High current drain causes irregular operation of the vibrator.

Defective R.F. "B" Choke. The R.F. "B" choke may become grounded to the transformer case causing high current drain. Such a short circuit will cause irregular operation of the vibrator.

Less Apparent Defects. Some defects occur which point toward the vibrator and which may be cleared by changing the vibrator although the vibrator is not defective. Vibrators which are replaced due to such defects may be turned down by the factory for warranty replacement as the points and vibrator may be in perfect condition. If the vibrator is irregular in operation, check the points for abnormal wear or burning. Check for shorts in the "B" circuit if the points do not show abnormal burning.

6 Volt Terminal Screws on the transformer terminal board occasionally short against the sliding cover.

Broken Strands in the vibrator leads sometimes occur and the frayed end may come in contact with ground or some other terminal causing irregular operation of the vibrator or blown fuses.

Peaking I.F. Stages at 262 K.C.

The only way the I.F. stages can be peaked properly is with the use of an oscillator and output meter. Connect the output meter to the plate prong of the 41 output tube and to the chassis frame. Make sure that the output meter is protected with a series condenser internally, if not, connect a 1/10 mfd. condenser in series with the ground lead to the chassis. The Dayrad #875 Universal Test Meter and Series #51 Volt-Ohmeter have this protective condenser included in them.

(a) Connect the output of the oscillator to the grid cap of the 6F7 tube (leave grid cap in place) and to the chassis ground.

(b) Turn the condenser gang until the plates are entirely out of mesh.

(c) Set the oscillator on 262 K.C. and feed this signal through the I.F. stages of the set.

(d) Peak the I.F. trimmer which is on the I.F. coil having only one adjusting screw first. Then peak the two condensers of the 2nd I.F. coil.

(e) Set the oscillator output at the lowest level that will give a reasonable scale deflection on the output meter. This should be less than half the maximum output available.

(f) Make all trimmer adjustments for maximum deflection on the output meter scale.

Peaking Gang Condenser at 1400 K.C.

(a) Connect the output of the oscillator to the antenna connection of the set and to the chassis ground.

(b) In order that the position of the condenser plates for 1400 K.C. may be accurately determined, a wood calibration block (painted red, part number 1208073) should be used. This block may be used also in peaking all of the U.M.S., B-O-P, and Chevrolet radios that use the "tubeless rectifier."

(c) Insert the RED block under the middle section of the gang condenser, so that the largest flat side rests on the chassis base and the square notch stops solidly against the stationary plate support bracket.

(d) Open the condenser plates until they stop solidly against the beveled edge of the block as shown in Figure (1).

(e) Peak the parrallel trimmers on top of the condenser gang, the oscillator section first at 1400 K.C. for maximum deflection on the output meter.

(f) To insure sharp peaking of all trimmers reduce the oscillator output to the lowest level that will give a reasonable deflection on the output meter scale.

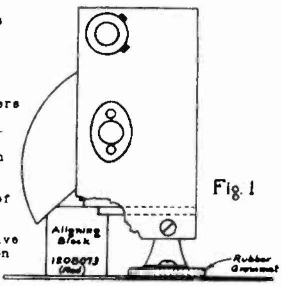


Fig. 1

NOTE--Always use the red calibration block when aligning the parallel trimmers on the gang condenser. Do not rely on the logging of the dial to determine the 1400 K.C. setting. When the aligning procedure is completed the logging of the dial may be slightly off and should be re-set.

SERVICE HINTS

The paint must be removed from the dash under the chassis mounting washers in order to provide a good ground for the receiver as no other ground is used. R. F. noise due to the vibrator will appear if good ground connections are not made at the dash.

The 6F7 tube is a two unit Tube and the oscillator section may cease functioning without affecting the amplifier section of the tube or its reading in a tube checker. If the set does not function, operates weakly or not at all at the 550 end of the dial, remove the grid cap of the 78 I.F. tube and make and break the grid contact several times; if very loud pops occur in the speaker the 6F7 is probably defective and should be replaced.

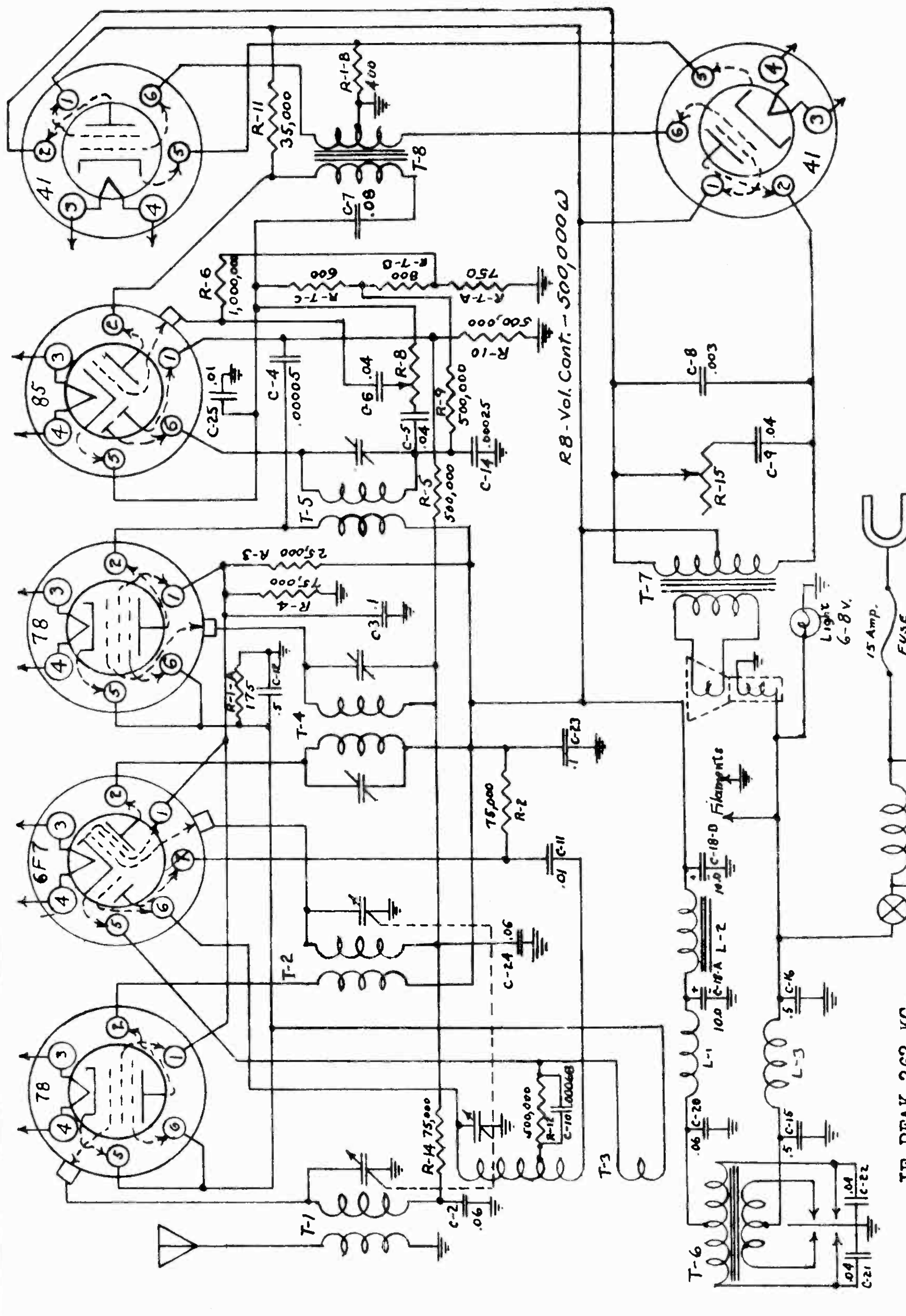
1207990	Antenna	T-1
*1208468	Antenna	T-1
1207989	R.F.--1st Det.	T-2
*1208469	R.F.--1st Det.	T-2
1208023	Oscillator	T-3
*1208470	Oscillator	T-3
1207998	1st I.F.	T-4
1207997	2nd I.F.	T-5
*1208547	2nd I.F.	T-5
1207999	Filter	L-2
1208156	3 Gang tuning	C-1A
1208028	Tubular .06 mfd.	C-2
1207908	Tubular .1 mfd.	C-3
1207760	Tubular .00025 mfd.	C-7
1207930	Molded .04 mfd.	C-8
1207628	Tubular .01 mfd.	C-9
1208026	Molded .00068 mfd.	C-10
*1208472	Molded .000569 mfd.	C-10
1207628	Tubular .01 mfd.	C-11
1208242	Tubular .5 mfd.	C-12
1207930	Tubular .04 mfd.	C-13
1207636	Molded .0005 mfd.	C-14
1853060	Metal case .5 mfd.	C-15
1853060	Metal case .5 mfd.	C-16
1207625	Molded .00005 mfd.	C-17
1207995	Elect. block (Sec. a,b 10 mfd., c,d 4 mfd.)	C-18A,B,C&D
**1207625	Molded .00005 mfd.	C-19
1208028	Tubular .06 mfd.	C-20
1207908	Tubular .1 mfd.	C-23
1208028	Tubular .06 mfd.	C-24
1208550	Molded .0007 mfd.	C-25
1849014	Generator by-pass	
1849161	Ammeter by-pass	
1850429	Dome light	

1207986	(a) 250 ohms (b) 800 ohms	R-1A&B
1208044	75,000 ohms	R-2
1208045	25,000 ohms	R-3
1208046	35,000 ohms	R-4
1204138	500,000 ohms	R-5
1204140	50,000 ohms	R-6
1208047	250,000 ohms	R-8
1208048	5,000 ohms	R-9
1208047	250,000 ohms	R-10
1208047	250,000 ohms	R-11
1204138	500,000 ohms	R-12
1208069	1,500,000 ohms	R-13
1204141	75,000 ohms	R-14
1208557	Tube (brass) Ant. lead shield	
1208157	Volume control Includes switch	
1208204	TRANSFORMER-VIBRATOR ASSEM.	
1208187	Bag (small) Cellophane (to cover vib.)	
1208188	Bag (large) Cellophane (to cover vib.)	
1208484	Case & brkt Vibrator	
1208431	Coil (choke R.F. "A"	L-3
1208058	Coil (choke R.F. "B"	L-1
1853060	Condenser Metal case .5 mfd.	C-15
1853060	Condenser Metal case .5 mfd.	C-16
1208028	Condenser Tubular .06 mfd.	C-20
1208563	Container Vibrator (rubber)	
1208060	Insulator Terminal	
1208064	Terminal Transformer	
1208153	Transformer Vibrator power	
5035120	Vib. (large) Inc. C-21 & C-22	
1208063	Shield assem. Transf (inc. C-15 & C-16,	
*1208522	LEAD ASSEMBLY Ammeter (10 amp. fuse)	
1208151	LEAD ASSEMBLY Ammeter (10 amp. fuse)	
1208441	DRIVE ASSEMBLY Buick (complete)	
1208442	DRIVE ASSEMBLY Pontiac "	
1208443	DRIVE ASSEMBLY. Olds "	

* Used on sets above Serial No. 1557000
** Not required when No. 1208562 coil shield is used

MODEL B-O-P 980459
Schematic

UNITED MOTORS SERVICE



IF PEAK 262 KC.

Fig. 2 MODEL 980459 CIRCUIT DIAGRAM
(BUICK, PONTIAC, OLDS)

MODEL B-O-P 980459
Alignment,Voltage
Parts

UNITED MOTORS SERVICE

Peaking I.F. Stages at 262 K.C.

The only way the I.F. stages can be peaked properly is with the use of an oscillator and output meter. Connect the output meter to the plate prongs of the two 41 output tubes. Make sure that the output meter is protected with a series condenser internally, if not, connect a 1/10 mfd. condenser in series with one of the meter leads. The Dayrad #875 Universal Test Meter and Series #51 Volt-Ohmeter have this protective condenser included in them.

(a) Connect the output of the oscillator to the grid cap of the 6F7 tube (leave grid cap in place) and to the chassi ground.

(b) Turn the condenser gang until the plates are entirely out of mesh.

(c) Set the oscillator on 262 K.C. and feed this signal through the I.F. stages of the set.

(d) Peak the I.F. trimmer which is on the I.F. coil having only one adjusting screw first. Then peak the two condensers of the 2nd I.F. coil.

(e) Set the oscillator output at the lowest level that will give a reasonable scale deflection on the output meter. This should be less than half the maximum output available.

(f) Make all trimmer adjustments for maximum deflection on the output meter scale.

Peaking Gang Condenser at 1400 K.C.

(a) Connect the output of the oscillator to the antenna connetcion of the set and to the chassis ground.

(b) In order that the position of the condenser plates for 1400 K.C. may be accurately determined, a wood calibration block (painted red, part number 1208073) should be used. This block may be used also in peaking all of the U.M.S., B-O-P, and Chevrolet radios that use the "tubeless rectifier."

(c) Insert the RED block under the middle section of the gang condenser, so that the largest flat side rests on the chassis base and the square notch stops solidly against the stationary plate support bracket.

(d) Open the condenser plates until they stop solidly against the beveled edge of the block as shown in Fig. (1).

(e) Peak the parallel trimmers on top of the condenser gang, the oscillator section first at 1400 K.C. for maximum deflection on the output meter.

PEAKING--Cont'd.

(f) To insure sharp peaking of all trimmers reduce the oscillator output to the lowest level that will give a reasonable deflection on the output meter scale.

NOTE: Always use the red calibration block when aligning the parallel trimmers on the gang condenser. Do not rely on the logging of the dial to find the 1400 kc. setting. When the aligning procedure is completed the logging of the dial may be slightly off and should be reset.

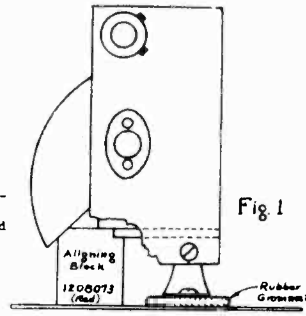


Fig. 1

VOLTAGE CHART

Note. ALL readings are taken from indicated tube prong to chassis frame. Volume control on full. Battery supply voltage at exactly 6 volts.

Tube	#1 Screen	#2 Plate	#3 Fil.	#4 Fil.	#5 Cathode	#6 Cond.	#7 Triode Plate
78	85	210	5.9	0	3.2	3.2	
6F7	85	210	0	5.9	3.2	0	90
78	85	210	5.9	0	3.2	3.2	
85	0	85	0	5.9	8.0	0	
41	210	205	5.9	0	16	0	
41	210	205	5.9	0	16	0	

SERVICE HINTS

The paint must be removed from the dash under the chassis mounting washers in order to provide a good ground for the receiver as no other ground is used. R. F. noise due to the vibrator may result if a good ground of the receiver to the car chassis is not provided.

The 6F7 tube is a two unit Tube and the oscillator section may cease functioning without affecting the amplifier section of the tube or its reading in a tube checker. If the set does not function, operates weakly or not at all at the 550 end of the dial, remove the grid cap of the 78 I.F. tube and make and break the grid contact several times; if very loud pops occur in the speaker the 6F7 is probablv defective and should be replaced.

Part No.	Part Name	Description	Code
1207990	Coil	Antenna	T-1
•1208468	Coil	Antenna	T-1
1207989	Coil	R.F.--1st Det.	T-2
•1208469	Coil	R.F.--1st Det.	T-2
1208023	Coil	Oscillator	T-3
•1208470	Coil	Oscillator	T-3
1207998	Coil	1st I.F.	T-4
1207997	Coil	2nd I.F.	T-5
•1208553	Coil	2nd I.F.	T-5
1207999	Coil (choke)	Filter	L-2
1208156	Condenser	3 Gang tuning	C-1A,B,C
1208028	Condenser	Tubular .06 mfd.	C-2
1207908	Condenser	Tubular .1 mfd.	C-3
1207625	Condenser	Molded .00005 mfd.	C-4
1207930	Condenser	Tubular .04 mfd.	C-5
1207930	Condenser	Tubular .04 mfd.	C-6
1208261	Condenser	Tubular .08 mfd.	C-7
1207893	Condenser	Molded .003 mfd.	C-8
1207930	Condenser	Tubular .04 mfd.	C-9
1208026	Condenser	Molded .00068 mfd.	C-10
•1208472	Condenser	Molded .000569 mfd.	C-10
1207628	Condenser	Tubular .01 mfd.	C-11
1208242	Condenser	Tubular .5 mfd.	C-12
1208550	Condenser	Molded .0007 mfd.	C-13
1207760	Condenser	Molded .00025 mfd.	C-14
1853060	Condenser	Metal case .5 mfd.	C-15
1853060	Condenser	Metal case .5 mfd.	C-16
••1207625	Condenser	Molded .00005 mfd.	C-17
1208241	Condenser	Electrolytic (a) 10 mfd. (b) 10 mfd.	C-18 A C-18 B
1207625	Condenser	Molded .00005 mfd.	C-19
1208028	Condenser	Tubular .06 mfd.	C-20
1207908	Condenser	Tubular .1 mfd.	C-23
1208028	Condenser	Tubular .06 mfd.	C-24
1207628	Condenser	Tubular .01 mfd.	C-25
1849014	Condenser	Generator by-pass	
1849161	Condenser	Ammeter by-pass	
1850429	Condenser	Dome light	

• Used on sets above Serial No. 1557025
•• Not used on sets having No. 1208539 spark filter plate

1208448	SPEAKER ASSEMBLY (complete)		
1208251	Speaker unit	8" dynamic	
1208450	Cardboard ring & grille cloth assem.		
1207930	Condenser	Tone control .04 mfd.	C-9

1208244	Resistor (candohm)	(a) 175 ohms (b) 400 ohms	R-1 A B
1208044	Resistor	75,000 ohms	R-2
1208045	Resistor	25,000 ohms	R-3
1208044	Resistor	75,000 ohms	R-4
1204138	Resistor	500,000 ohms	R-5
1208232	Resistor	1,000,000 ohms	R-6
1208426	Resistor (candohm)	(a) 750 ohms (b) 800 ohms (c) 600 ohms	R-7 A B C
1204138	Resistor	500,000 ohms	R-9
1204138	Resistor	500,000 ohms	R-10
1208046	Resistor	35,000 ohms	R-11
1204138	Resistor	600,000 ohms	R-12
1208044	Resistor	75,000 ohms	R-14
1207821	Resistor	Distributor (Buick,Pontiac)	
1208544	Resistor	Distributor (Olds)	
1208204	TRANSFORMER-VIBRATOR ASSEM.		
1208187	Bag (small)	Cellophane (to cover vib.)	
1208188	Bag (large)	Cellophane (to cover vib.)	
1208484	Case & brkt.	Vibrator	
1208431	Coil (choke)	R.F. "A"	L-3
1208058	Coil (choke)	R.F. "B"	L-1
1208153	Transformer	Vibrator power	T-6
5035120	Vib. (large)	Inc. C-21 & C-22	
1208557	Tube (brass)	Ant. shield (Buick)	
1208157	Volume control	500,000 ohms	R-8
1208441	DRIVE ASSEMBLY	Buick (complete)	
1208442	DRIVE ASSEMBLY	Pontiac "	
1208443	DRIVE ASSEMBLY	Olds "	
1208161	Drive cables, brkt. & shaft assembly--Buick & Olds		
1208447	Drive cables, brkt. & shaft assembly--Pontiac		
1208444	Escutcheon plate	Buick) NOTE: These plates can be	
1208445	Escutcheon plate	Pontiac) supplied only by	
1208446	Escutcheon plate	Olds) B-O-P dealers	

Parts common to Buick, Pontiac & Olds drive assemblies

1208434	Drive case	Includes bracket	
1208537	Dial chart		
1207424	Dial light	6-8 volt	
1208021	Knob	Black bakelite--Buick	
1208250	Knob	Brown bakelite--Olds	
1208546	Knob	Brown bakelite--Pontiac	
1208049	Shield	Ant. coil	
•1208564	Shield	Ant. coil	
1208049	Shield	R.F. coil	

• Used on sets above Serial No. 1557000

1207918	Shield	Osc. coil	
1208227	Shield assembly	High tension (Pontiac)	
••1208535	Shield assembly	High tension (Olds)	
1208562	Shield assembly	Ignition coil (Olds)	
1208534	Shield assembly	Ignition coil (Pontiac)	

Not required when No. 1208562 coil shield is used