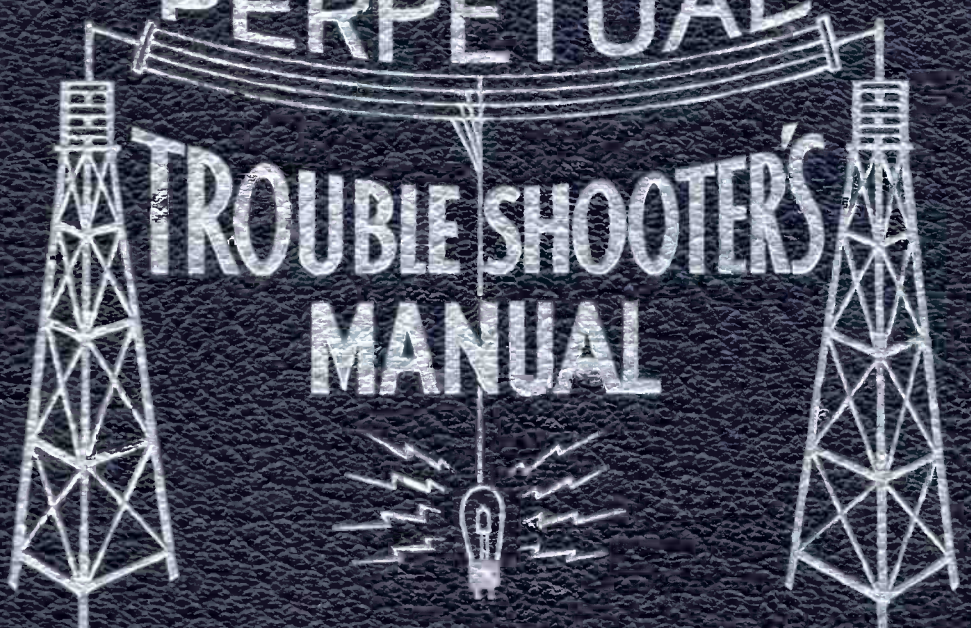
VOLUME V

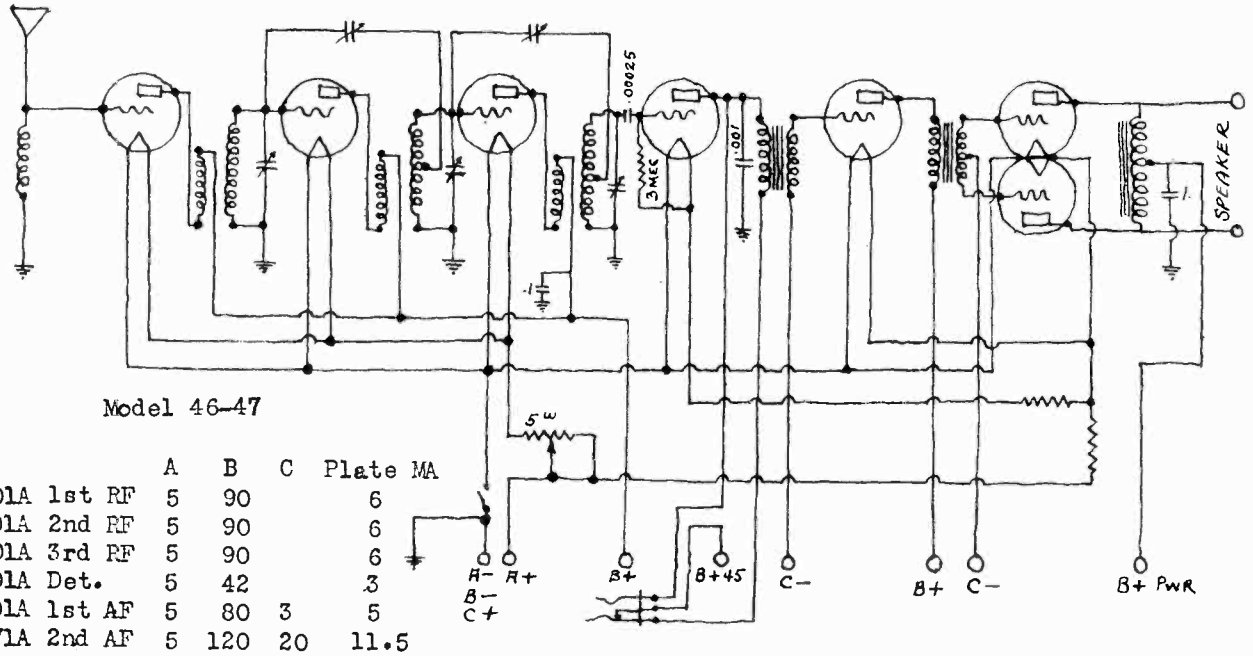
PERPETUAL TROUBLE SHOOTER'S MANUAL



JOHN F. RIDER

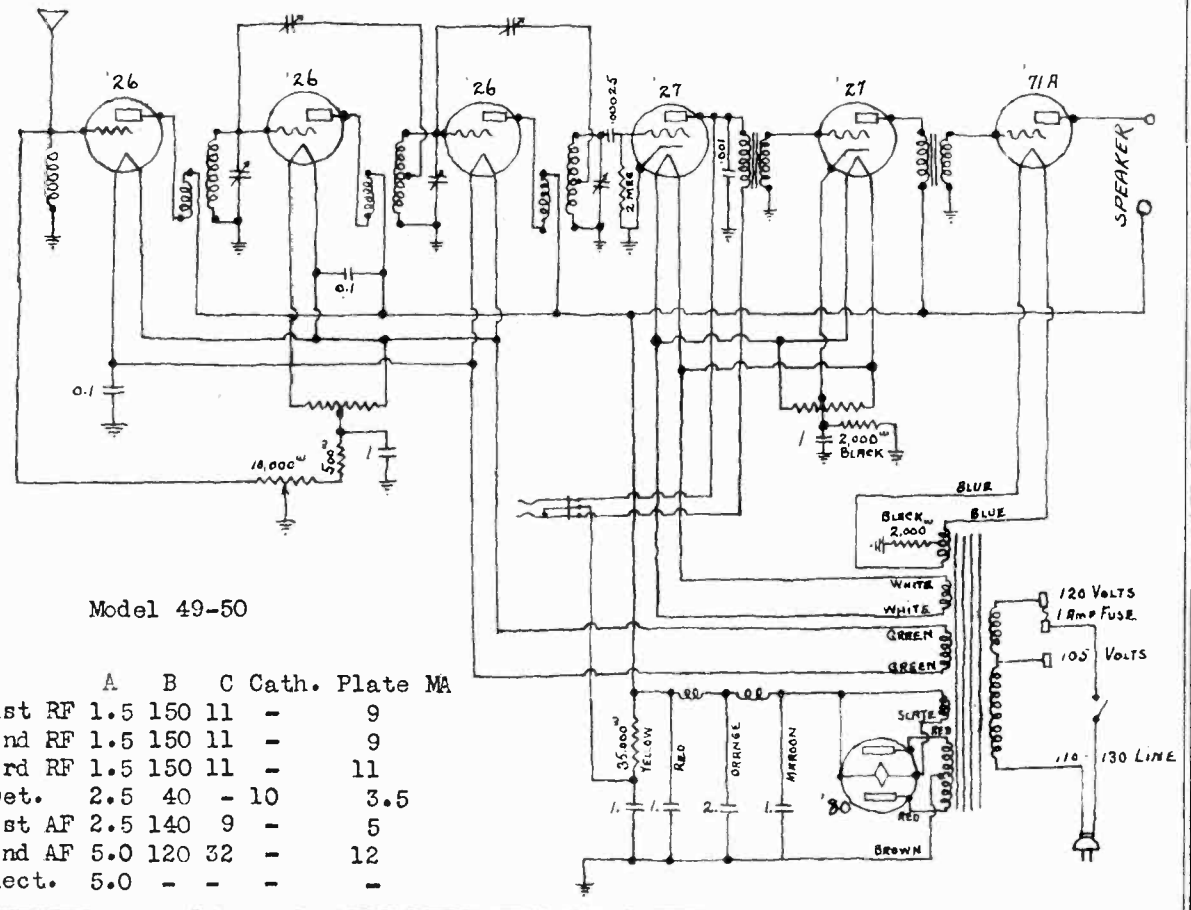
SEARS-ROEBUCK & CO.

MODEL 46-47
MODEL 49-50
Schematic
Voltage



Model 46-47

	A	B	C	Plate MA
201A 1st RF	5	90		6
201A 2nd RF	5	90		6
201A 3rd RF	5	90		6
201A Det.	5	42		3
201A 1st AF	5	80	3	5
171A 2nd AF	5	120	20	11.5
171A 2nd AF	5	120	20	11.5



Model 49-50

	A	B	C	Cath.	Plate MA
226 1st RF	1.5	150	11	-	9
226 2nd RF	1.5	150	11	-	9
226 3rd RF	1.5	150	11	-	11
227 Det.	2.5	40	-	10	3.5
227 1st AF	2.5	140	9	-	5
171A 2nd AF	5.0	120	32	-	12
280 Rect.	5.0	-	-	-	-

GENERAL NOTES ON ALIGNMENT

In the service notes on ALIGNMENT PROCEDURE, directions are to couple the test oscillator to the receiver. Since test oscillators of different makes vary considerably in their design and construction, it is not possible to give specific instructions for coupling any particular test oscillator to the receiver. However, the following general method can be applied with practically any test oscillator.

Most test oscillators have two output leads. One of them is the "hot" lead and the other the ground lead. The ground lead should be connected directly to the receiver chassis, except in the case of AC-DC receivers. The connection then should be made through a .1 mfd condenser since the chassis of such receivers is above ground potential. If the test oscillator has only one lead, this information about the ground lead may be disregarded.

As mentioned in all of the service notes, for IF alignment the test oscillator should be connected through a .1 mfd. condenser directly to the control grid cap of the IF or Translator tubes. It is important to leave the grid clip attached to the cap and to leave the tube shields in place. The oscillator tube of the receiver also should be in its socket.

For RF alignment, whether broadcast or short wave, the "hot" lead of the test oscillator should be coupled to the antenna lead of the receiver. The exact means of coupling will depend upon several factors. Among them are the power of the test oscillator, the sensitivity of the receiver, and the extent to which the receiver is out of alignment. If the test oscillator is quite powerful and the receiver one of high sensitivity, merely placing the test oscillator lead parallel to, and several inches away from the receiver's antenna lead may provide sufficient coupling. In some cases it may be necessary to bring the leads very close to each other, or it may even be necessary to twist the antenna lead and the oscillator lead together for several inches. (Of course, the two leads must be separated by their insulation and not make metallic contact.) As the receiver is brought into alignment, thereby increasing its sensitivity, it will be possible to decrease the amount of coupling between the test oscillator lead and the antenna lead. (Move the leads further apart.) Always use the lowest amount of coupling that still will provide a signal strong enough for working purposes. If the test oscillator has a variable control for its power output, it is better to turn this control to its high position and decrease the signal input to the receiver by decreasing the amount of coupling between the test oscillator and the receiver's antenna lead. This procedure will insure the greatest possible accuracy in alignment.

When adjusting the oscillator trimmer condenser, set the variable condenser to the frequency or condenser position indicated in the service notes. Do not change this position while adjusting the trimmer. However, when adjusting the antenna or translator trimmers, the proper method is to continually "rock" the variable condenser a degree or two both sides of the alignment frequency and, at the same time, adjust the trimmer.

PREVENTING ADJUSTMENT AT THE IMAGE FREQUENCY

When adjusting trimmers for short wave alignment, it sometimes will be found that a peak can be obtained at two different positions of the trimmer. Only one of these peaks is the correct one to use. The other is the image response. The proper procedure follows:

Oscillator Trimmer:

Screw the oscillator trimmer all the way in (maximum capacity). Then reduce the capacity until a peak is reached. Now continue to reduce the capacity until a second peak is reached. Almost always, this second peak is considerably louder than the first one. The first peak is the image frequency adjustment, and must be avoided.

Antenna and Translator Trimmers:

Screw the trimmers all the way in and then reduce capacity until a peak is reached. If the capacity is reduced still further, a second peak will be obtained. However, the correct setting is the first one, the one using the greater amount of capacity. Note that this is exactly opposite to the procedure for the oscillator trimmer.

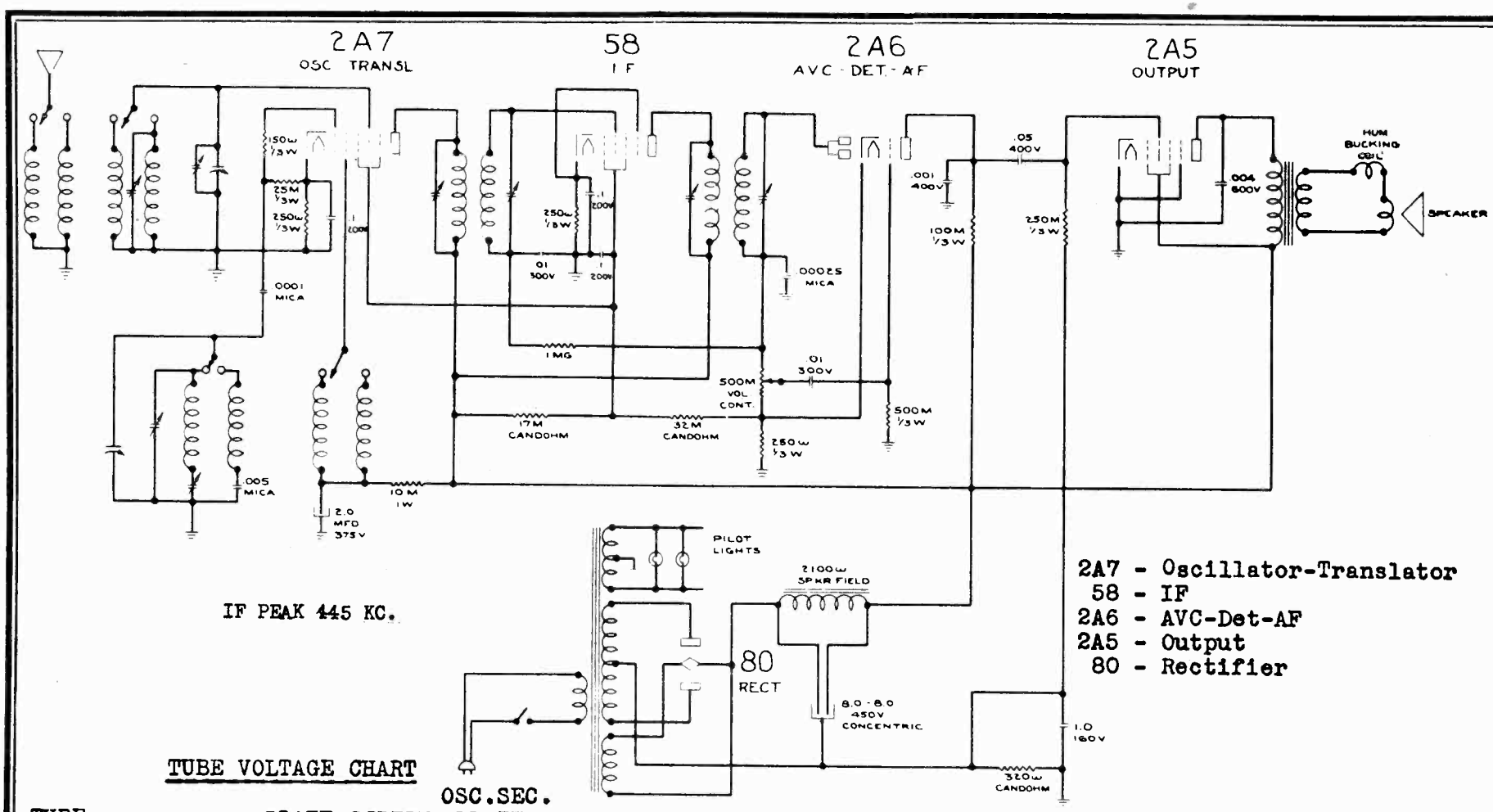
ALIGNMENT PROCEDURE FOR RECEIVERS USING A WAVE TRAP

If a wave trap is used in Models 1821, 1827, 1828, 1804, 1805, 1820, 1826 or 1840, it must be disconnected before making any RF alignment adjustments on the receiver. This can be done as follows:

1. Connect a jumper between the yellow and blue leads of the wave trap.

2. Disconnect the white lead of the trap. IN SOME TRAPS A GREEN LEAD IS USED INSTEAD OF A WHITE ONE.

After the receiver has been aligned as instructed in the Service Manual for the particular model, reconnect the wave trap. Do not touch the alignment of the receiver after the trap has been reconnected.



IF PEAK 445 KC.

2A7 - Oscillator-Translator
58 - IF
2A6 - AVC-Det-AF
2A5 - Output
80 - Rectifier

SEARS-ROEBUCK & CO.

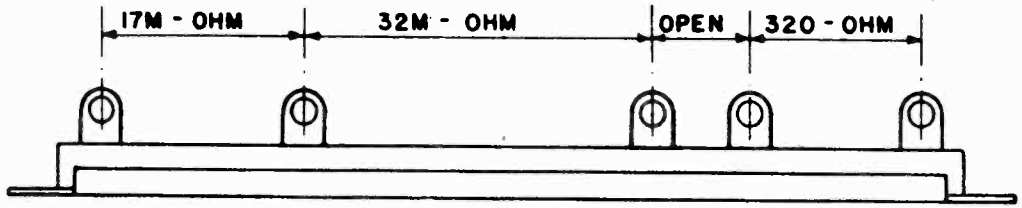
MODEL 1802,1803
Schematic
Voltage

SEARS PAGE 5-3

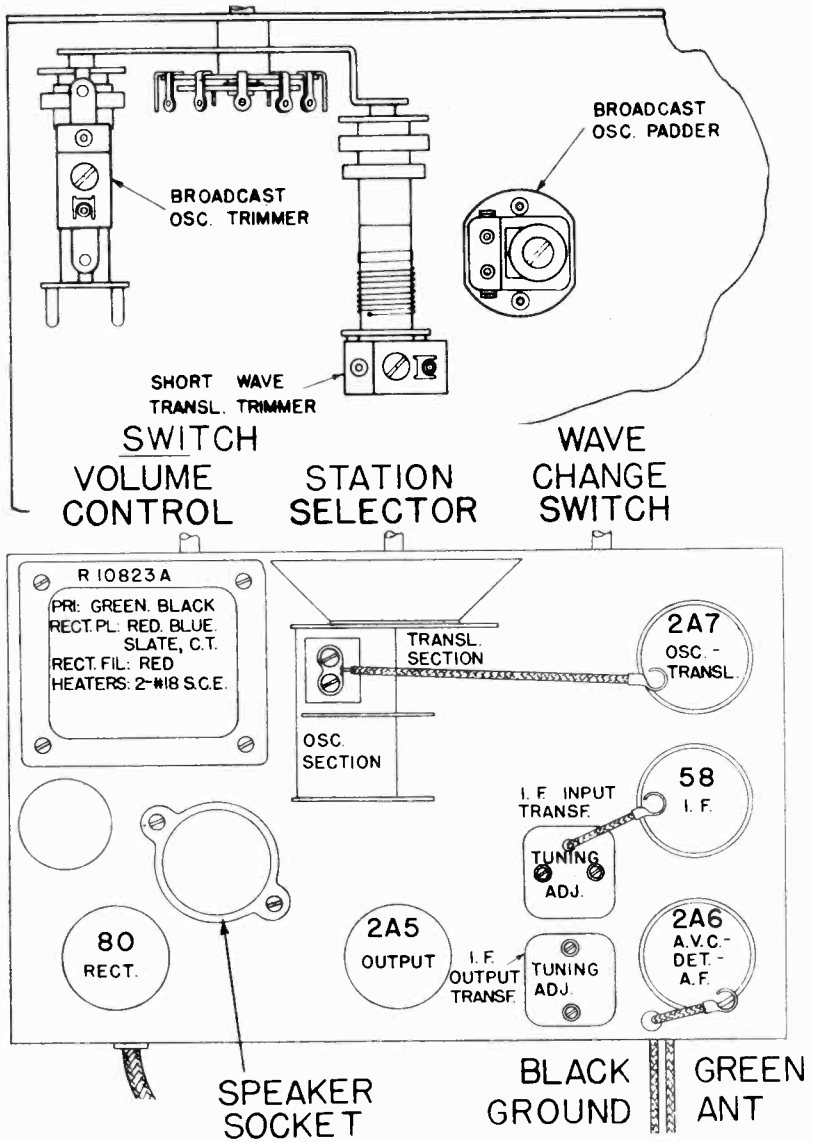
TUBE VOLTAGE CHART

TUBE	PLATE	SCREEN	OSC.SEC. PLATE
2A7 - Osc-Transl	195	90	155
58 - IF	195	90	
2A6 - AVC-Det-AF	115		
2A5 - Output	185	195	

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



CANDOHM RESISTOR



ALIGNMENT PROCEDURE

The IF Stages:

1. Connect the low voltage 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, in series with a .1 mfd. condenser, to the control grid cap of the 58 IF tube. Leave the clip attached to the cap and the tube shield 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 2A7 and tune the IF input transformer.

6. Repeat the adjustments in order to secure greater accuracy. Always use as low an output as possible from the test oscillator, in order to render the AVC action of the receiver inoperative.

RF Alignment (Broadcast):

1. Screw the padding condenser to about three quarters of its maximum capacity.

2. Set the test oscillator to 1700 kc and couple its output to the green antenna lead of the receiver.

3. Open the variable condenser plates all the way and adjust the broadcast oscillator coil trimmer for maximum output meter reading.

4. Set the test oscillator to 1400 kc and tune in its signal. Then adjust the trimmer on the translator section of the variable condenser for maximum output. The translator section is the one nearest the dial, 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 padding condenser for maximum output.

6. Repeat the 1700 kc and 1400 kc adjustments. Always use a low enough output from the test oscillator to render the AVC ineffective.

Short Wave Alignment:

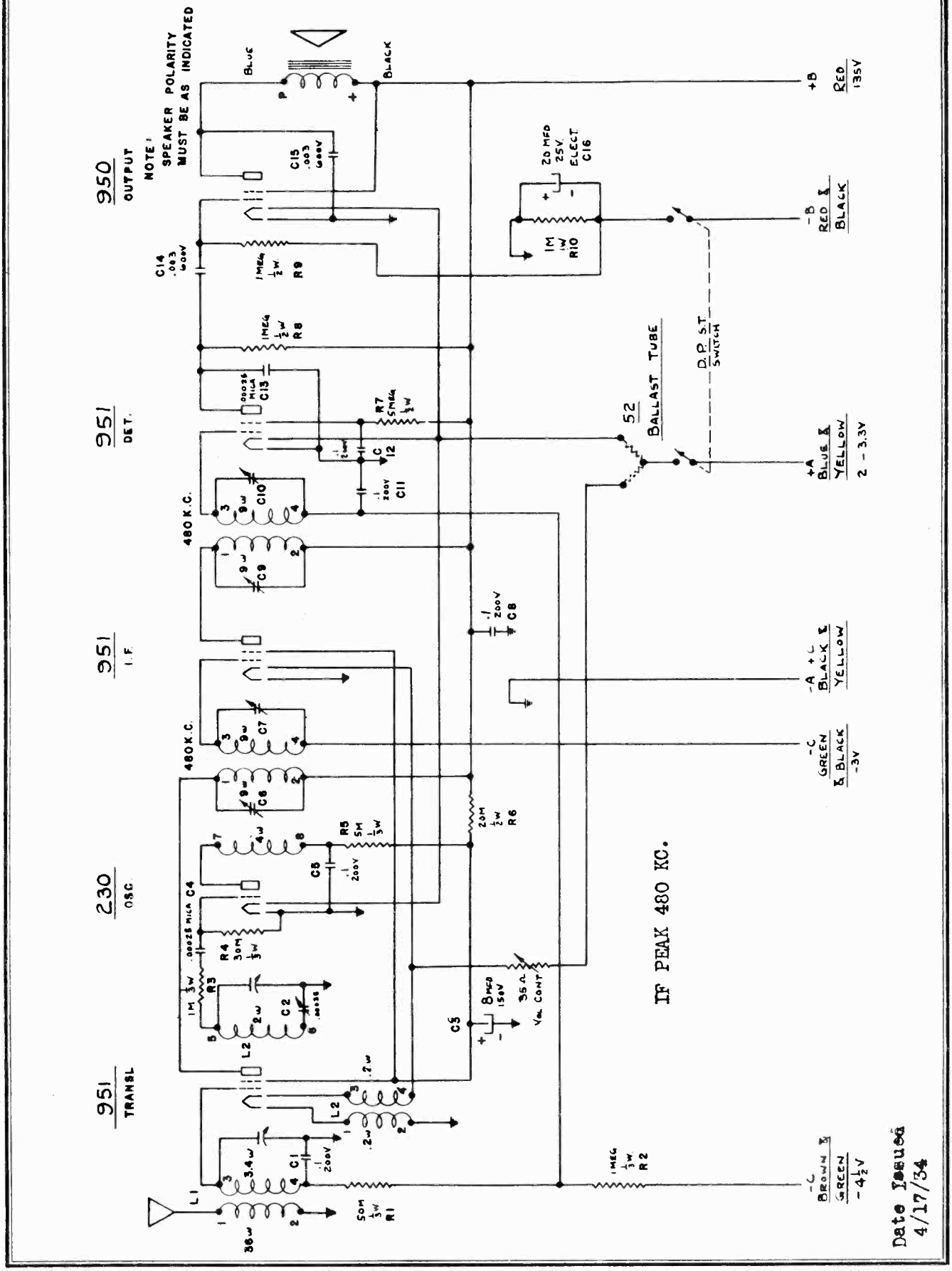
1. Leave the test oscillator loosely coupled to the green antenna lead as for broadcast alignment.

2. Set the test oscillator to 16,400 kc. Its signal should be heard when the condenser plates are all the way out. If the test oscillator cannot be tuned in, wires must be moved to reduce the capacity in the oscillator circuit until this frequency can be reached.

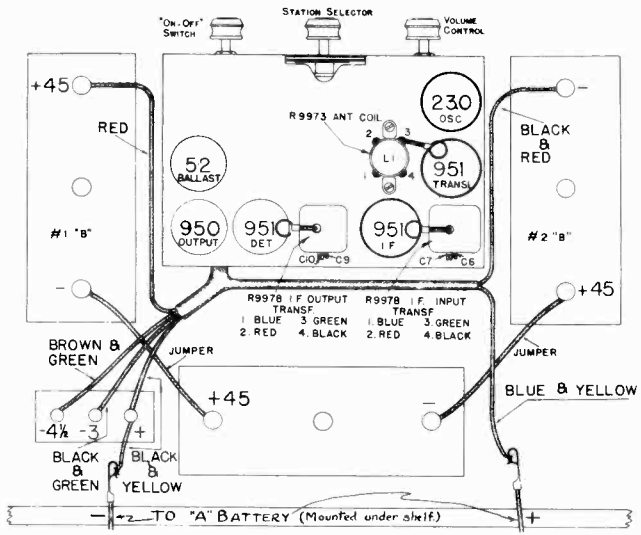
3. Set the test oscillator to 14,000 kc and tune in its signal. Then adjust the short wave translator trimmer for maximum output.

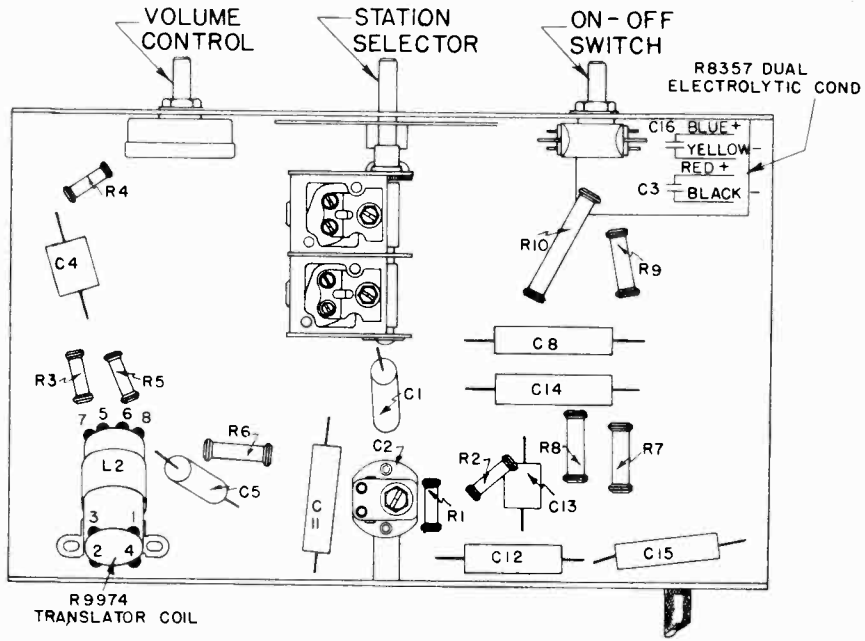
MODEL 1711-A, 7090-A
Schematic

SEARS-ROEBUCK & CO.



SEARS-ROEBUCK & CO.





SILVERTONE Models 1711A and 7090A are battery operated, automatic filament control superheterodynes. The circuit is shown in lock form in Fig. 1 and schematically in Fig. 2.

A type 951 translator tube creates a 480 kc signal in its plate circuit by mixing the incoming broadcast signal with the signal created by the type 230 oscillator. This 480 kc signal is amplified by the 951 IF stage and coupled to the 951 detector. The audio output of the detector is fed to the 950 output tube and then to the magnetic loudspeaker.

Volume is controlled by a 35 ohm rheostat in the IF and translator filament circuit. A type 52 ballast tube automatically adjusts the filament voltage to the proper value (2 volts) even though the A supply has a value anywhere between two and three volts. Always turn the set off before removing or inserting tubes.

When peaking the oscillator and translator stage, procede as follows:

1. Set the test oscillator to 1600 kc and adjust the two trimmers on the variable condenser.

2. Re-set the test oscillator to 1400 kc, retune the variable condenser to this frequency, and adjust the translator trimmer.

3. Tune to 600 kc and adjust the isolantite base padding condenser.

Since these adjustments interact on each other, it is advisable to repeat the complete operation two or three times.

Part No.	Description
R-8308-A	Board - Terminal, triple
R-8350	Cable - Battery
R-9388	Cable - Battery
R-4715	Clamp - Ant'. & Gnd. leads
R-8718	Clamp - Cable
R-6381	Clip - Grid
R-9973	Coil - Antenna
R-9974	Coil - Oscillator
R-9985	Condenser - Variable
R-8357	Condenser - Dual electrolytic
R-9975	Condenser - Padding
R-6444	Condenser - .1 Mfd, 200 volt
R-7681	Condenser - .003 Mfd. 600 volt
R-4592	Condenser - .00025 Mfd. Mica
R-10097-A	Dial and Indicator
R-9981	Escutcheon
R-9993	Instruction
R-8896	Knob
R-9982	Knob with pointer
R-8363	Resistor - 5 megohms, 1/2 watt
R-8823	Resistor - 1 megohm, 1/2 watt
R-7585	Resistor - 1 megohm, 1/3 watt
R-6637	Resistor - 50 M ohms, 1/3 watt
R-6110	Resistor - 30 M ohms, 1/3 watt
R-5821	Resistor - 20 M ohms, 1/2 watt
R-7226	Resistor - 5 M ohms, 1/2 watt
R-6793	Resistor - 1 M ohms, 1 watt
R-6636	Resistor - 1 M ohms, 1/3 watt
R-8366	Socket - 4 prong
R-8367	Socket - 5 prong
S-9989	Speaker - 6" Utah
S-10120	Speaker - 6" Best
S-10001	Speaker - 8" Utah
R-9978-A	Transformer - IF

TUBE VOLTAGE & CURRENT CHART

Models 1711A and 7090A

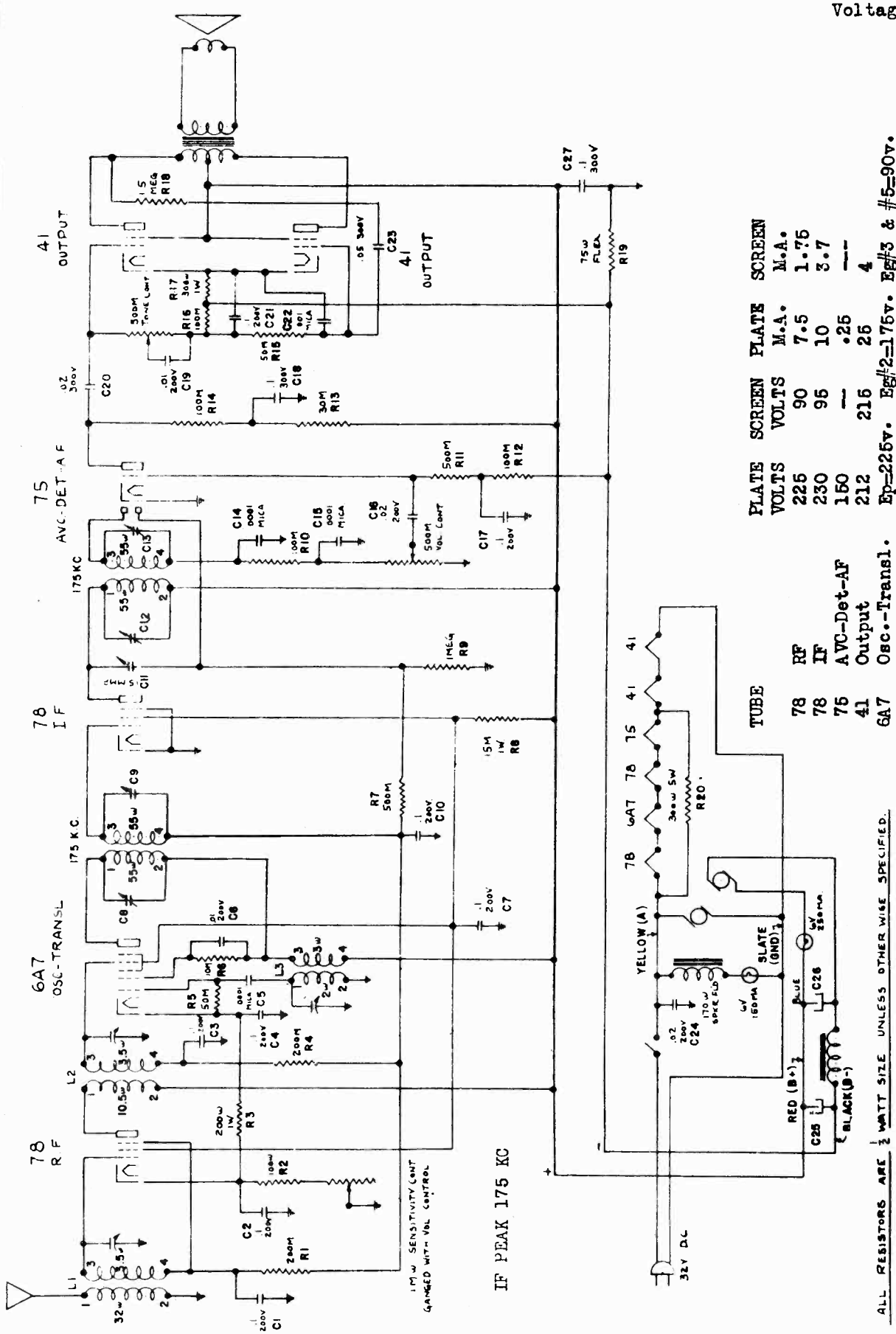
TUBE	PLATE VOLTAGE	SCREEN VOLTAGE	PLATE M. A.	SCREEN M. A.
230 - Osc.	50		2.8	
951 - Transl.	135	65	1.25	1.5
951 - IF	135	65	1.5	2
951 - Det.	25*	5*	.03	.01
950 - Output	135	135	5	1

* Indicates high series resistor

Readings taken with 1000 ohms, per voltmeter. Care must be used if measurements are made with an analyzer since the capacity of the cables may cause circuits to oscillate giving rise to erratic readings. Usually, touching the finger to grid or plate is sufficient to stop oscillation. If an analyzer is not used, voltage readings can be made from cathode to the respective elements of each tube. Ordinarily, a 20% deviation from the chart value may be allowed.

SEARS-ROEBUCK & CO.

MODEL 1715
Schematic
Voltage



TUBE		PLATE VOLTS	SCREEN VOLTS	PLATE M.A.	SCREEN M.A.
78	RF	225	90	7.5	1.75
78	IF	230	95	10	3.7
75	AVC-Det-AF	150	—	.25	—
41	Output	212	216	26	4
6A7	Osc.-Transl.	Ep=226v. Eg#2=175v. Eg#3 & #5=90v. Ip=4.5 ma. Ig#2=3 ma. Ig#3 & #5=2.6 ma.			

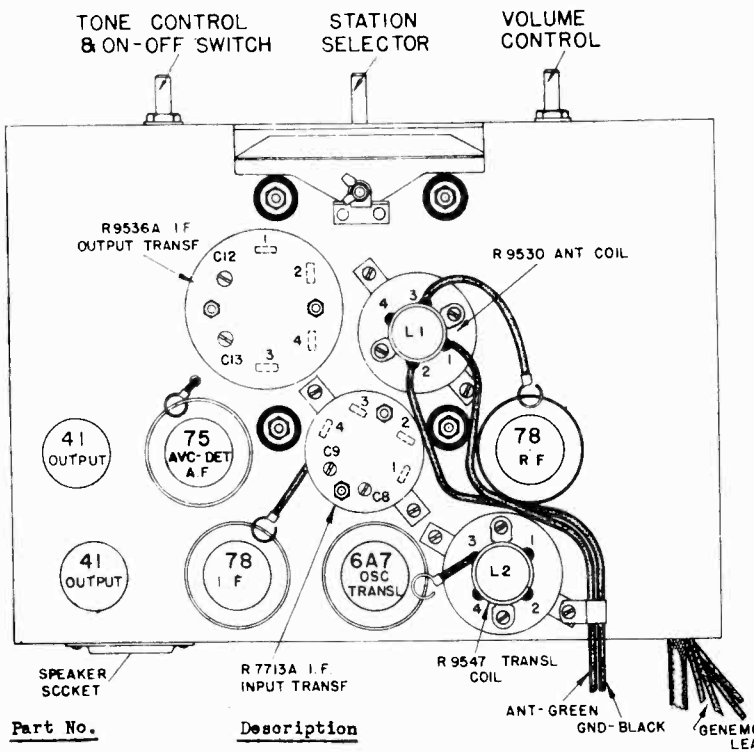
Total B drain=90 ma. Input voltage=37v.

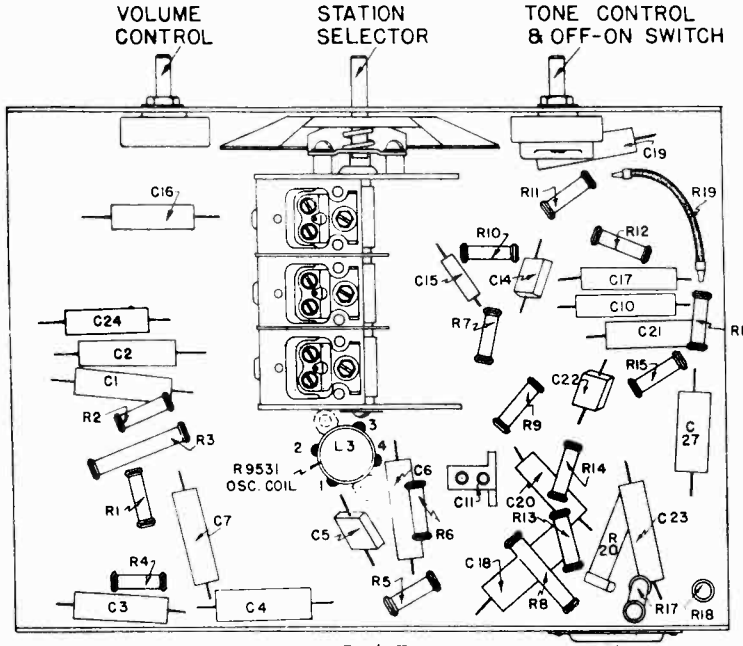
ALL RESISTORS ARE ½ WATT SIZE UNLESS OTHER WISE SPECIFIED.

THE SCHEMATIC MODEL 1715

MODEL 1715
Socket Layout
Trimmers Locations
Parts List

SEARS-ROEBUCK & CO.





Part No.	Description
R-5509A	Board - Terminal
R-8297A	Board - Terminal, double
R-8308A	Board - Terminal, triple
R-7409	Card - Operating
R-7011A	Clip - Antenna lead
R-6381	Clip - Grid
R-7031	Clip - Pilot light
R-9530	Coil - Antenna
R-9531	Coil - Oscillator
R-9547A	Coil - Translator
R-7833	Condenser - Variable
R-6565	Condenser - Tuning, IF input
R-9532	Condenser - Tuning, IF output
R-6138	Condenser - .1 mfd., 300 volt
R-6444	Condenser - .1 mfd., 200 volt
R-7857	Condenser - .05 mfd., 300 volt
R-7680	Condenser - .02 mfd., 300 volt
R-6629	Condenser - .02 mfd., 200 volt
R-8432	Condenser - .01 mfd., 200 volt
R-6759	Condenser - .001 mfd., mica
R-4303	Condenser - .0001 mica
R-8042	Condenser - .000015 mfd. mica
R-8679	Control - Volume
R-6571	Control - Tone
R-6989	Cord - Extension
R-6003G	Dial and indicator
R-8923	Escutcheon
R-9537	Instructions
R-8893	Knob - Large
R-8896	Knob - Medium
R-9769	Lamp - Genemotor "Tell-tale"
R-2288	Lamp - Pilot
R-6324	Pin - Escutcheon
R-7074	Resistor - 1.5 megohms, 1/2 watt carbon
R-5823	Resistor - 1 megohms, 1/2 watt carbon
R-6179	Resistor - 500 M ohms, 1/2 watt carbon
R-5830	Resistor - 200 M ohms, 1/2 watt carbon
R-5819	Resistor - 100 M ohms, 1/2 watt carbon
R-6445	Resistor - 50 M ohms. 1/2 watt carbon
R-7707A	Shield - Oscillator

Part No.	Description
S-9568	Speaker - Complete
S-7776B	Speaker - cone and voice coil
S-9566	Speaker - field coil
S-9567AS	Speaker - transformer
S-7415	Speaker - plug, 5 prong
R-7713	Transformer - IF input, coils and core only
R-7713A	Transformer - IF input complete, less shield
R-9536	Transformer - IF output, coils and core only
R-9536A	Transformer - IF output complete, less shield
R-6235	Tube - Rubber, Genemotor mtg.
R-6156	Resistor - 30 M ohms, 1/2 watt
R-6504	Resistor - 15 M ohms, 1 watt
R-9533	Resistor - 300 ohms, 1 watt
R-7273	Resistor - 200 ohms, 1 watt
R-5830	Resistor - 200 ohms, 1/2 watt
R-6976	Resistor - 100 ohms, 1/2 watt
R-9534	Resistor - 75 ohms, flexible
R-9160	Resistor - 300 ohms, 5 watt
R-6006B	Shaft - Dial drive
R-6018A	Shield - Antenna coil
R-8687A	Shield - Translator coil

MODEL 1722,1732 Revised
Schematic

SEARS-ROEBUCK & CO.

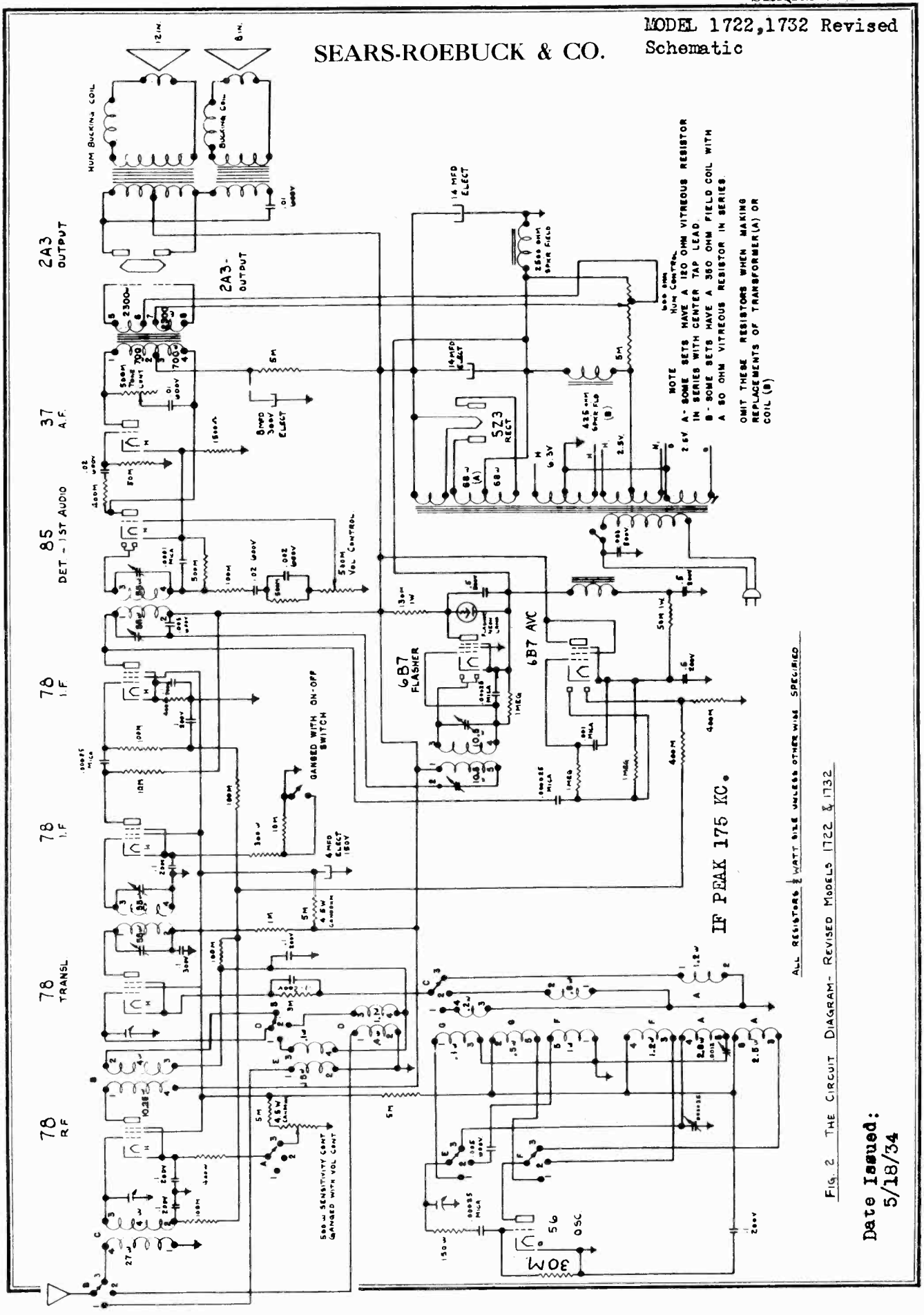


FIG. 2 THE CIRCUIT DIAGRAM- REVISED MODELS 1722 & 1732

Date Issued:
5/18/34

MODEL 1722,1732 Revised
Voltage, Socket
Changes in Circuit

SEARS-ROEBUCK & CO.

TUBE VOLTAGE AND CURRENT CHART

REVISED MODELS 1722 and 1732

TUBE	PLATE VOLTAGE	SCREEN VOLTAGE	PLATE M. A.	SCREEN M. A.
78 - RF	200	75	6.5	1.5
56 - Osc	60		4.5	
78 - Transl	200 180 - BC	75	2 .6-BC	.2 .1 - BC
78 - 1st IF	140 - SW	75	5 - SW	1.5 - SW
78 - 2nd IF	200	75	6	1.25
85 - Det - AF	150		5	
37 - AF	150		2.75	
6B7 - AVC	60	60	4	1
6B7 - Flasher	7-No signal 90-With signal			
83V - Rect	DC voltage = 350 V. Plate current = 85 m.a. per plate			

Fig. 3 Service Illustration Revised Models 1722 and 1732

In order to increase the short wave sensitivity of the 1722 and 1732 receivers, certain changes were incorporated in the chassis.

1. A 78 resistance-capacity coupled IF stage was added. However, this stage is used on the short wave bands only.

2. The off-on switch was replaced with a duplex switch combining the functions of off-on switch and the switch to short out the added IF stage on the broadcast band. This shorting out of the stage is accomplished by biasing the 78 IF tube so far negative by means of a 30 M ohm cathode resistor that the amplification of the stage is reduced to a 1:1 ratio. For short wave reception, this duplex control is turned all the way on, shorting out the 30 M ohm cathode resistor, leaving only a 300 ohm bias resistor in the circuit.

3. The 37 detector and 37 first audio tubes are replaced by an 85 tube which fills the same functions.

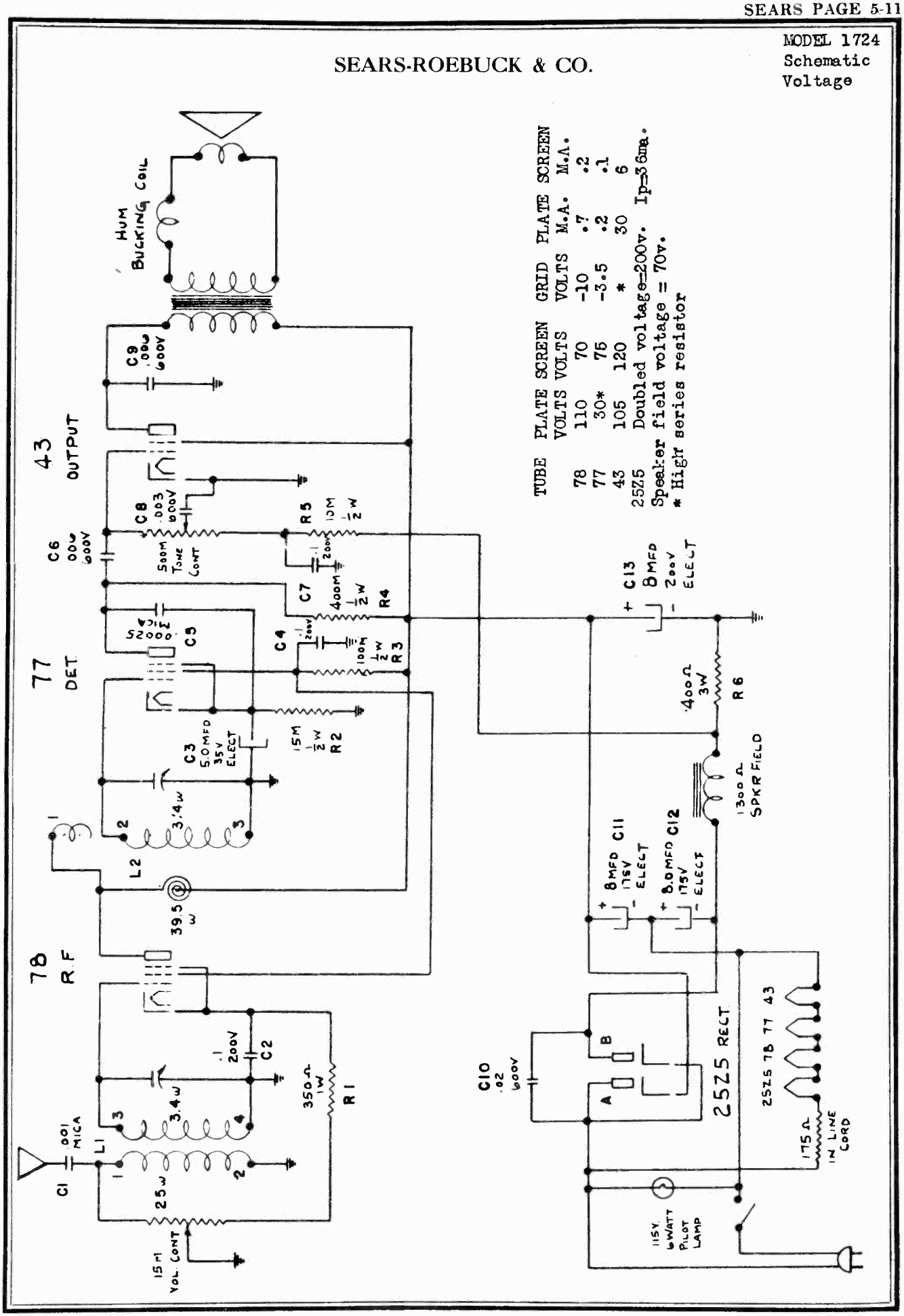
The new block diagram is shown in Fig. 1, the revised schematic in Fig. 2, and the changed top view of the chassis layout in Fig. 3. The rest of the description, explanations, and illustrations given in the original 1722 and 1732 manual, supplement #2, are correct for the revised models.

ADDITIONS TO THE REPLACEMENT PARTS LIST ARE:

PART NO.	DESCRIPTIONS
R-6138	Condenser - .1 mfd. 300 volts
R-6152	Resistor - 10 M ohms - 1/2 watt carbon
R-6154	Resistor - 1 M ohm - 1/2 watt carbon
R-6447	Resistor - 300 ohms - 1/2 watt carbon
R-6571	Switch - off-on - short wave sensitivity

SEARS-ROEBUCK & CO.

MODEL 1724
Schematic
Voltage

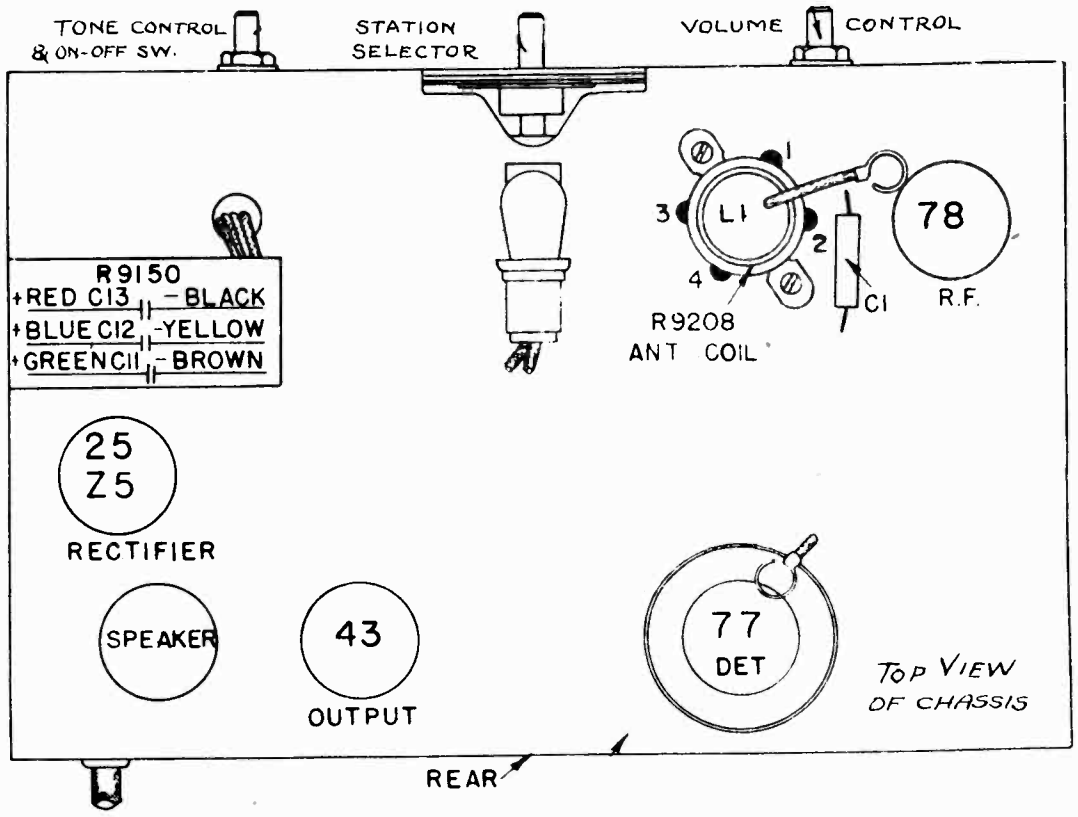


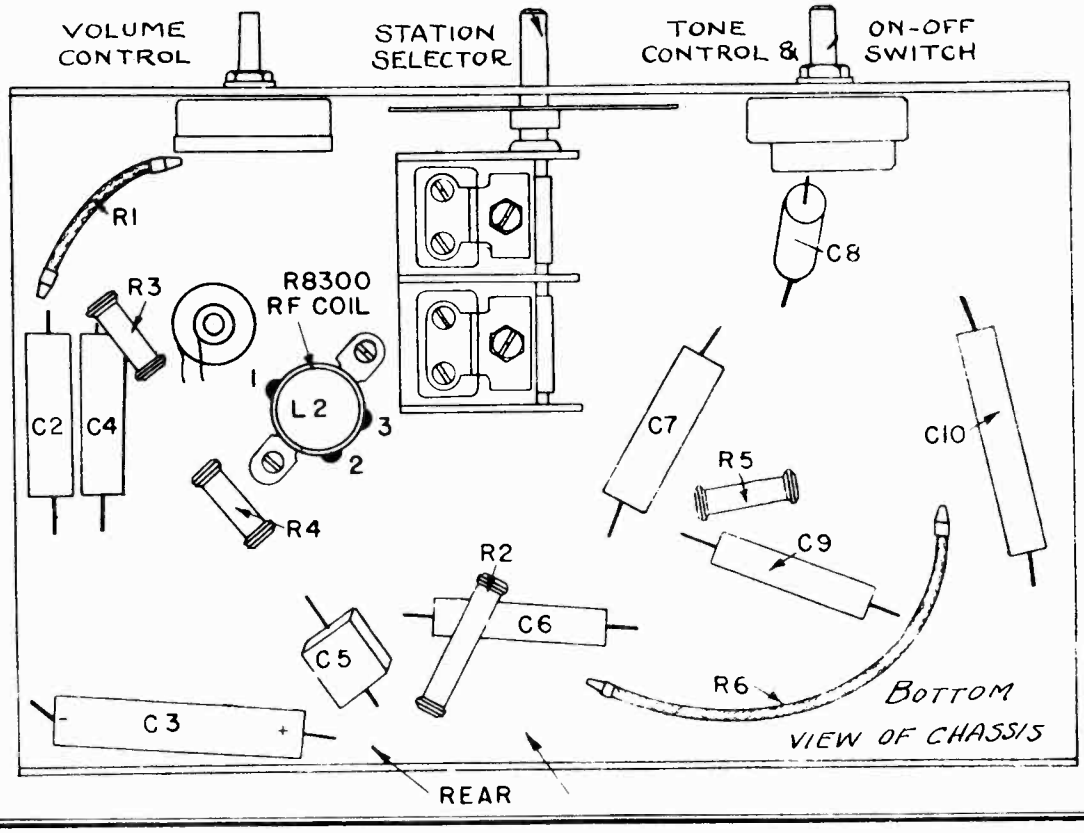
TUBE	PLATE VOLTS	SCREEN VOLTS	GRID VOLTS	PLATE M.A.	SCREEN M.A.
78	110	70	-10	.7	.2
77	30*	75	-3.5	.2	.1
43	105	120	*	30	6
2525	Doubled voltage=200v. Ip=36ma.				

Speaker field voltage = 70v.
* High series resistor

MODEL 1724
Socket Layout
Chassis

SEARS-ROEBUCK & CO.





ELIMINATION OF HUM

in

MODELS 1720, 1725 and 7065

Any trouble due to hum in these models can be eliminated by performing the following operations. The purpose is to add an additional section of filtering to the power supply.

1. Enlarge the hole in the chassis near the power transformer to about 1/4" diameter, as indicated in the illustration.

2. Remove the cover of the power transformer. To do so, it is necessary first to remove the four nuts on the under side of the chassis and then to unscrew the bolts that pass through the laminations. The tone control and switch will have to be demounted in order to get at one of the power transformer nuts.

3. Mount a Part #R10793A choke on top of the power transformer in place of the original transformer cover. Be sure to mount the choke so that its leads can come down through the enlarged hole in the chassis. Also be sure to tighten the bolts well, in order to prevent hum. Then remount the transformer and choke assembly on the chassis and remount the tone control.

4. Make the wiring changes indicated in the illustration. The dotted lines represent the original wiring which is to be changed. The solid lines show the new connections. Note that a new part, a 2 mfd., 440 volt, dry electrolytic condenser, Part #R11114, is added.

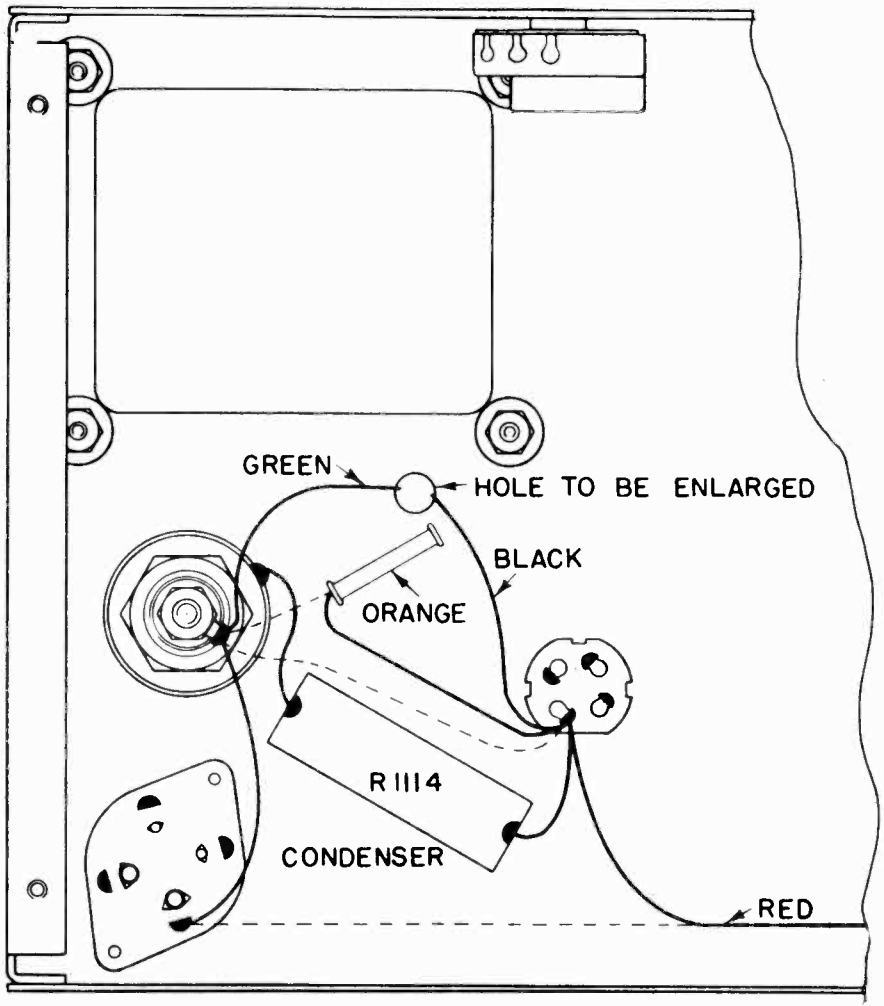
PARTS NEEDED

1 - R10793A - Audio Choke

1 - R11114 - 2 mfd. 440 volt, dry electrolytic condenser.

SPECIAL NOTICE: - The filter system outlined above should be necessary in only a small percentage of the Model #1725 in which the hum condition cannot be corrected by matching the output tubes. Where the condition exists, the trouble is caused by the center tap of the transformer being off. Only in these cases should the filter system be necessary. Dept. 657, Chicago, will ship this filter system out "No Charge", providing the quantity ordered is reasonable.

In ordering, use F-#14326 and mail to Dept. 657, Chicago.



DOTTED LINES INDICATE ORIGINAL WIRING, TO BE REMOVED.

SOLID LINES INDICATE CHANGED WIRING.

RADIO SERVICE MANUAL

Date Issued
1/4/34

SPEAKER REPAIRS

Speaker repairs fall into two general classifications; those involving replacement of the cone and voice coil assembly and those involving replacement of the field or hum bucking coil. Although there are many models of speakers, all fall into one of four types.

1. INSIDE suspension of voice coil and cone, and pole plate RIVETED to yoke.

2. INSIDE suspension of voice coil and cone, and cone plate WELDED to yoke.

3. OUTSIDE suspension of voice coil and cone, and pole plate BOLTED to yoke.

4. OUTSIDE suspension of voice coil and cone, and pole plate RIVETED to yoke.

CONE REPLACEMENT OF INSIDE SUSPENSION TYPE SPEAKERS (see Fig. 1)

1. Unsolder the voice coil leads from their terminals.

2. Remove the cone mounting screw.

3. Drill out the cone mounting eyelets or cut off the small head ends with a cold chisel and hammer. If care is used the cardboard mounting rings will not be damaged.

(The 5" Speakers have the cone glued in place instead of being fastened with eyelets. They will have to be torn out).

4. Remove the cone and blow out any dirt or metal chips from the air gap.

5. Replace the new cone and the cardboard mounting rings in their original order.

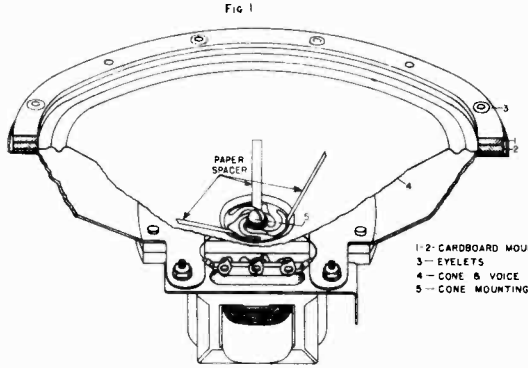
6. Insert three strips about 3" long, 1/8" wide and .01" thick (cut from a calling card) between the voice coil and the pole stem. They should be spaced evenly around the pole stem. Spacers can be obtained from the factory; part No. S-9177 .0075" thick for 5" and 6" speakers; part No. S-7391 - .01" thick for all other speakers.

7. Replace and tighten the cone mounting screw.

8. Replace the eyelets around the edge of the cone, leaving blank any holes that were originally left blank for speaker to baffle mounting screws. The eyeleting tool illustrated is recommended. (Part No. R-8033).

9. Remove the three inserted spacer strips.
10. Solder the voice coil leads to their terminals.
11. If it should happen that the cone is not properly centered after completing the replacement, loosen the cone mounting screw and move the cone around until proper centering is secured. Then re-tighten the screw. Sometimes several attempts are necessary before proper centering can be had.

Fig 1



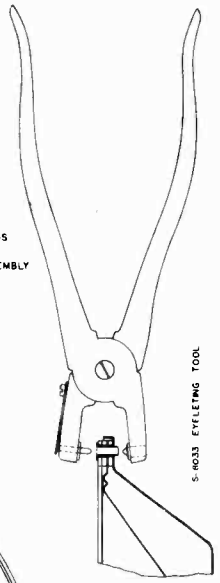
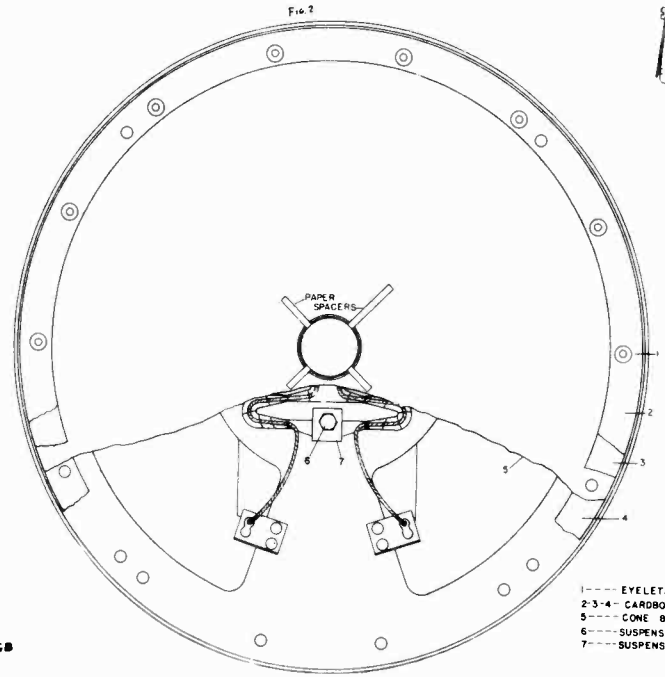


Fig 2



SEARS-ROEBUCK & CO.

MODEL 1726-X
Schematic

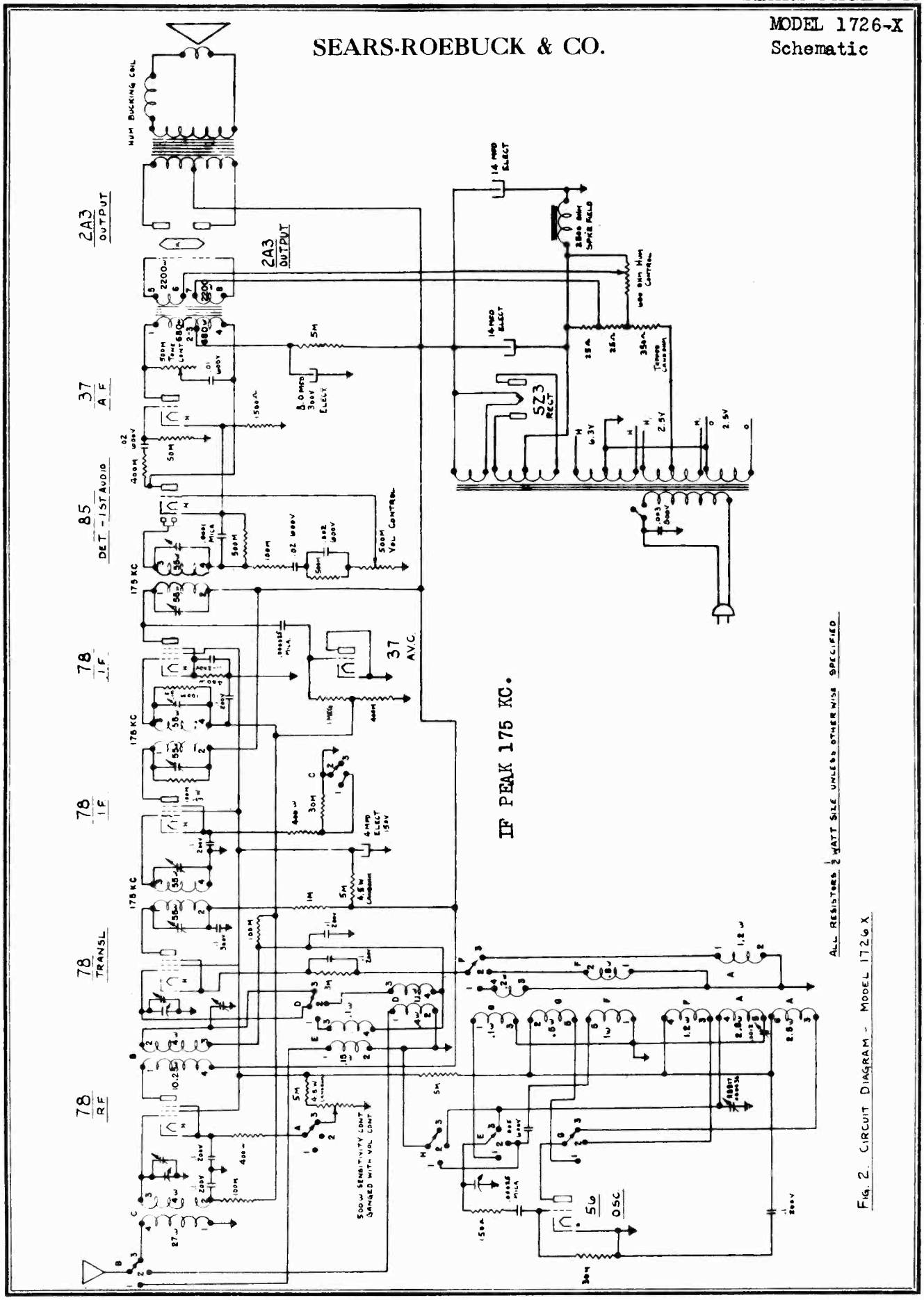


FIG. 2. CIRCUIT DIAGRAM - MODEL 1726 X

MODEL 1726-X
Voltage
Alignment Data
Parts List

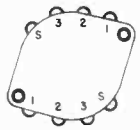
SEARS-ROEBUCK & CO.

When peaking the IF stages, use a signal from the test oscillator just strong enough to give an audible response from the speaker or readable deflection on an output meter.

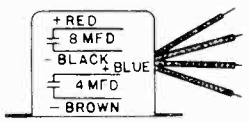
The sensitivity control is connected only in the broadcast position. Current is bled through it and the movable arm picks off a portion of the voltage to bias the cathode of the 78 RF tube. The sensitivity control is mounted on the volume control shaft so that sensitivity is decreased at the same time volume is decreased. Without this dual control, the AVC action would make the receiver sensitivity increase to its maximum value when no station was tuned in. By reducing the sensitivity as well as the volume, this dual control keeps between-station-noise at a minimum.

There is a hum control on the rear of the chassis, under the 2A3 tubes. It should be adjusted to the point of minimum hum with the volume control off. In the event that the point for minimum hum appears to be beyond the limit of movement of the control, the 2A3 tubes should be interchanged. If a balance still can not be had, the 2A3 tubes must be replaced by a pair more nearly matched in their characteristics.

In the event that coil replacement makes it necessary to readjust the trimmer condensers, proceed as follows: Tune in a high frequency station (broadcast) of known frequency. Set the dial very accurately to the station's frequency and adjust the isolantite base oscillator trimmer condenser, mounted on the frequency selecting switch assembly, for maximum volume. Greater accuracy can be had if a weak station is selected, or use only a few feet of wire as the antenna with a .00025 mfd. condenser connected between the antenna and ground clips to take the place of the normal antenna capacity. Then tune in a short wave station at about 14,000 kc and adjust the trimmer of the translator section of the ganged tuning condenser (the middle section). Next, tune in the broadcast station used previously and adjust the antenna trimmer on the ganged tuning condenser and the small bakelite base trimmer mounted on the frequency selecting switch. Then tune in a broadcast station at the low frequency end of the dial and adjust the .0012 oscillator padding condenser for maximum volume. Follow this procedure exactly and, having made the adjustment, do not readjust when changing from the broadcast to the short wave station or vice versa.



POSITION OF LUGS AS VIEWED FROM REAR
FREQUENCY SELECTING SWITCH R9505

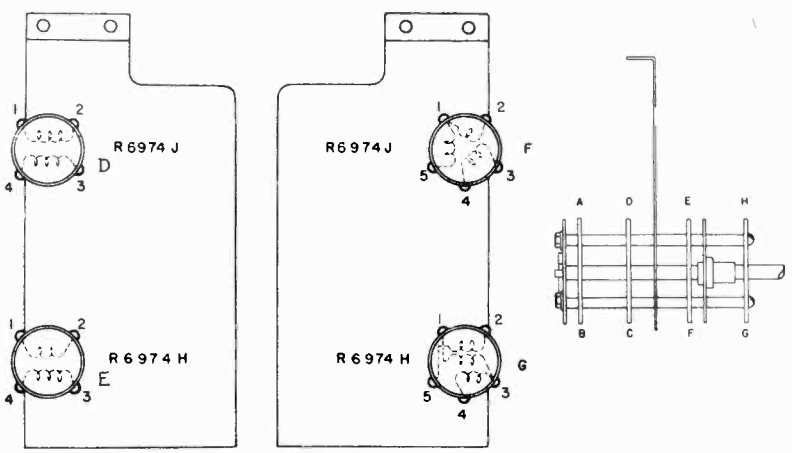


R 8780
ELECTROLYTIC COND.

R-8446	Coil - Antenna
R-8888	Coil - Oscillator
R-8882	Coil - Translator
R-6974H	Coil - Antenna - Oscillator, high range
R-6974J	Coil - Antenna - Oscillator, intermediate
R-2288	Lamp - Pilot
R-8448	Condenser - Variable tuning
R-8448B	Condenser - Variable tuning, complete with drive and dial assembly
R-9513	Condenser - Trimmer, 12 mmf.
R-8817	Condenser - Padding, 35 mmf.
R-7137	Condenser - Padding, .012 mfd.
R-6565	Condenser - IF tuning
R-7236	Condenser - Electrolytic, 14 mfd.
R-8780	Condenser - Electrolytic, dual
R-6138	Condenser - .1 mfd. 300 volts
R-6444	Condenser - .1 mfd. 200 volts
R-6761	Condenser - .02 mfd. 600 volts
R-7070	Condenser - .01 mfd. 600 volts
R-6954	Condenser - .005 mfd. 600 volts
R-6461	Condenser - .003 mfd. 800 volts
R-6933	Condenser - .002 mfd. 600 volts
R-4592	Condenser - .00025 mfd. mica
R-4303	Condenser - .0001 mfd. mica
R-8711	Condenser - .000025 mfd. mica
R-6570	Control - Tone, 500 M ohms
R-9255	Control - Volume and sensitivity
R-5823	Resistor - 1 megohm - 1/2 watt carbon
R-6179	Resistor - 500 M ohms - 1/2 watt carbon
R-5822	Resistor - 400 M ohms - 1/2 watt carbon
R-5819	Resistor - 100 M ohms - 1/2 watt carbon
R-7586	Resistor - 100 M ohms - 1/3 watt carbon
R-6445	Resistor - 50 M ohms - 1/2 watt carbon
R-6156	Resistor - 30 M ohms - 1/2 watt carbon
R-6510	Resistor - 5 M ohms - 1/2 watt carbon
R-6153	Resistor - 3 M ohms - 1/2 watt carbon
R-6154	Resistor - 1 M ohms - 1/2 watt carbon
R-8829	Resistor - 1500 ohms - 1/2 watt carbon
R-6436	Resistor - 400 ohms - 1/2 watt carbon
R-6155	Resistor - 150 ohms - 1/2 watt carbon
R-9081	Resistor - 50 ohms - 1 watt carbon
R-8886	Resistor - Candohm
R-8901	Resistor - Candohm
R-8801	Transformer - IF input and interstage, coils and core only
R-8802	Transformer - IF output, coils and core only
R-8801A	Transformer - IF input - complete less shield
R-8801J	Transformer - IF interstage - complete less shield
R-8802L	Transformer - IF output - complete less shield
R-9494A	Transformer - Audio interstage
R-9498A-	Transformer - 60 cycle power
R-8779A	Transformer - 25 cycle power
R-6235	Tube-Cushion rubber, variable condenser mounting

VOLTAGE AND CURRENT CHART - MODEL 1726X

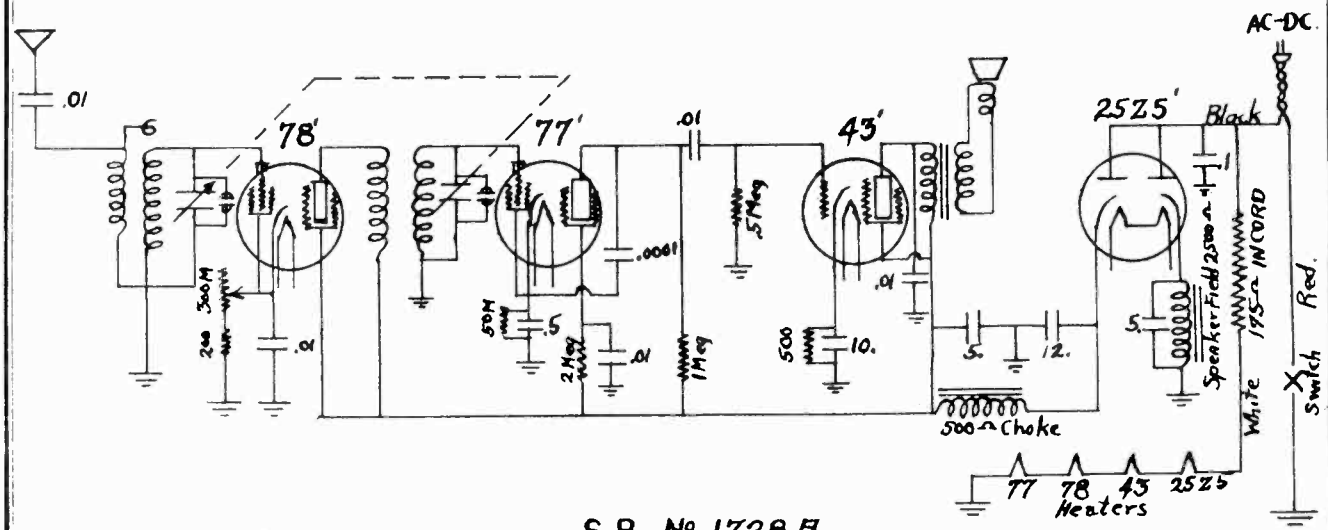
TUBE	PLATE VOLTAGE	SCREEN VOLTAGE	PLATE M. A. 6-Vol. on 1-Vol. off	SCREEN M. A. 6-Vol. on 1.5-Vol. off
78 - RF	225	85	2	.2
78 - Transl	220	85	2	.2
56 - Osc	70		5	
78 - 1st IF	200	75	.4	.2
78 - 2nd IF	225	85	1.25	1
85 - Det - AF	155		5	
37 - AF	155		3	
2A3 - Output	260		60	
523 - Rect	Max. R.C. voltage = 315V.		Plate Current = 80 m.a. per plate	



SHORT WAVE ANTENNA-OSCILLATOR COILS MOUNTED UNDER CHASSIS.
COIL NUMBERING & LETTERING CORRESPONDS TO SCHEMATIC.

SEARS-ROEBUCK & CO.

MODEL 1728-A
Schematic
Parts List



4-20-34

S.R. № 1728 A

GENERAL INFORMATION

This set is of the conventional tuned radio frequency type so designed to operate on 105-120 volts of either AC or DC.

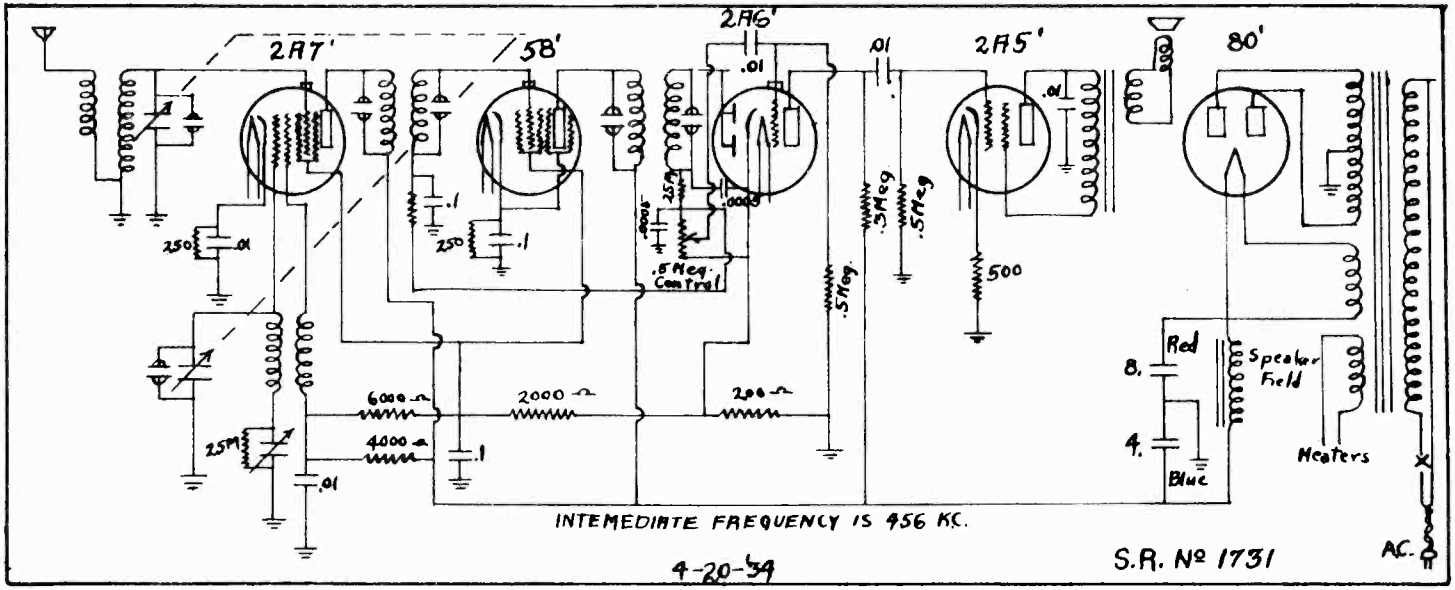
To operate unreel built-in-antenna and lay on floor or throw out window, turn volume all the way up, if on DC reverse plug if set does not start playing in one minute.

The cord of this set, at normal operation of receiver, becomes quite warm which is a natural condition, as there is a rapid heat dissipating resistance in same.

To balance set, first remove chassis from cabinet; second, tune condenser to about 1720 kc and align trimmer condenser on detector stage, then do same to antenna stage until loudest noise level is obtained.

PARTS LIST

No.	
60	Volume control
201	Cabinet
202	Dynamic Speaker
203	Variable condenser
204	Set of coils - complete
204a	Antenna coil - only
204b	R F coil - only
205	Electrolytic condenser
206	AC DC choke
207	Cord ohm 175 ohm
61	Antenna cord
208	Escutcheon- Silvertone or Selector
73	Terminal strip- 3 lug
71	Knob
	Any tube socket (state no. of prongs)
	Any resistor (state ohms and watts)
	Any bypass condenser (state capacity)



GENERAL INFORMATION

This set is a superheterodyne designed to give maximum output of good quality which can be obtained from 5 tubes - and can be operated on 105-120 volt AC at 50-60 cycles only.

To operate, plug in AC and connect colored flexible wire out rear of chassis to approximately 50' of antenna, preferably outside; next, turn on switch and turn volume control nearly up and tune to desired station.

To balance set, first align the IF transformers at 456 kc with gang condenser closed, next turn condenser all way open and align at 1720 kc, then adjust padder condenser at 600 kc, then go back and check at 1720 kc.

PARTS LIST

NO.	
250	Cabinet
251	Dynamic Speaker
253	Variable condenser-2 gang
254	Set of coils- complete
254a	Oscillator coil - only
254b	Antenna coil - only
254c	IF coil - top grid only
254d	IF coil -bottom " "
255	Power transformer
156	8&4 electrolytic condenser
256	Volume control
257	Dial unit complete
258	Candohms
108	Padder condenser 7 plate
261	A C switch
158	Power cord and plug
73	Terminal strip- 3 lug

SEARS-ROEBUCK & CO.

MODEL 1729
Schematic
Voltage Data

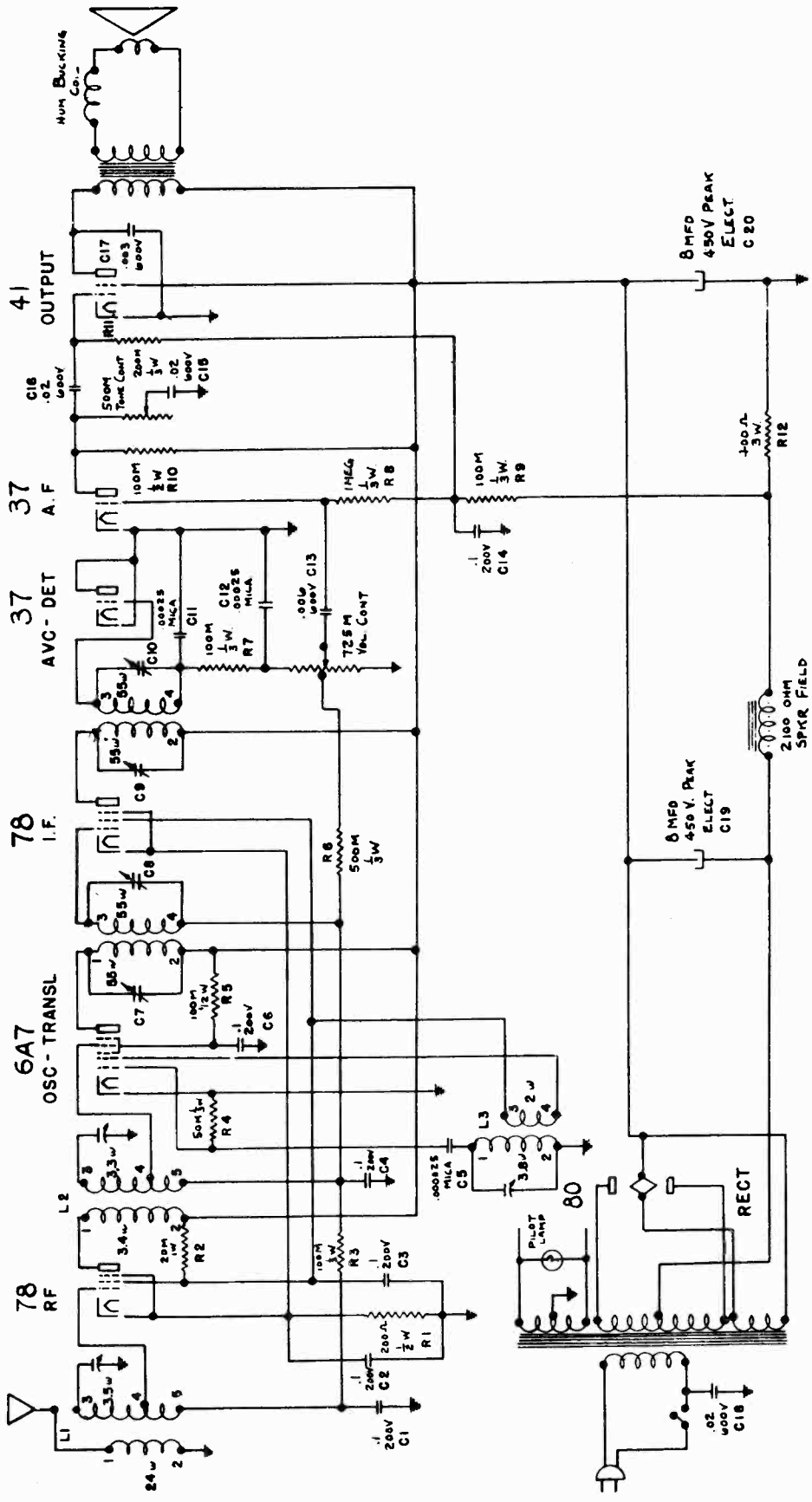
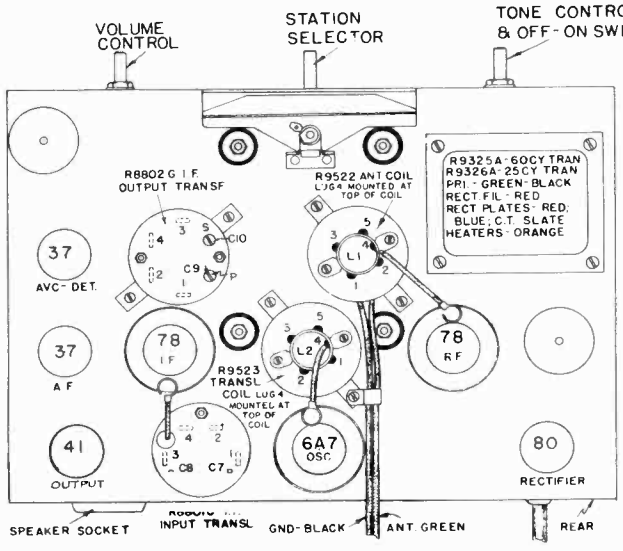


FIG. 2

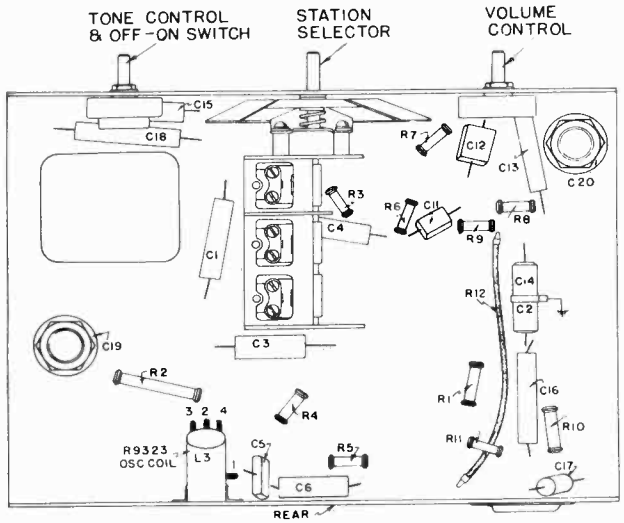
TUBE		PLATE VOLTS	SCREEN VOLTS	PLATE M.A.	SCREEN M.A.
78	RF	225	105	7	1.6
78	IF	225	105	7	1.6
37	AF	165		3.5	
41	Output	220	230	21	3.5
6A7	Osc-Transl.	Ep=225v	Eg2=105v	Eg3&5=70v	
		Ip=2ma	Ig2=2ma	Ig3&5=2ma	
80	Rect.	Max.D-C = 370v. Plate current= 28 ma per plate			

MODEL 1729
Socket Layout
Chassis View
Parts List

SEARS-ROEBUCK & CO.



TOP VIEW OF CHASSIS



UNDER VIEW OF CHASSIS

PART NO.	DESCRIPTION
R-8297A	Board - Terminal, double
R-8308A	Board - Terminal, triple
R-8900B	Board - Terminal, five terminal
R-8725	Card - Operating
R-4715	Clamp - Ant. & Gnd. leads
R-7011A	Clip - Ant. lead
R-6381	Clip - Grid
R-7031	Clip - Pilot Light
R-9522	Coil - Antenna
R-9323	Coil - Oscillator
R-9523	Coil - Translator
R-9546	Condenser - Variable
R-9546A	Condenser - Variable, with dial and drive assembly
R-6565	Condenser - IF
D-4758P	Condenser - 8 Mfd. Electrolytic
R-6444	Condenser - .1 Mfd. 200 volt
R-8301	Condenser - .1 Mfd. 200 volt, dual
R-6761	Condenser - .02 Mfd. 600 volt
R-7244	Condenser - .006 Mfd. 600 volt
R-7681	Condenser - .003 Mfd. 600 volt
R-4592	Condenser - .00025 Mfd. Mica
R-8711	Condenser - .000025 Mfd. Mica
R-6571	Control - Tone
R-9296	Control - Volume
R-6989	Cord - Power Supply
R-9333A	Dial and Indicator
R-6923	Escutcheon
R-9528	Instructions
R-8896	Knob - Medium
R-8895	Knob - Small
R-2288	Lamp - Pilot
R-5346B	Lead - Antenna
R-5345D	Lead - Ground
R-5321	Pin - Escutcheon
R-7585	Resistor - 1 megohm, 1/3 watt
R-7228	Resistor - 500 M ohms, 1/3 watt
R-6638	Resistor - 200 M ohms, 1/3 watt
R-7586	Resistor - 100 M ohms, 1/3 watt
R-5819	Resistor - 100 M ohms, 1/2 watt
R-6637	Resistor - 50 M ohms, 1/3 watt
R-5095	Resistor - 20 M ohms, 1 watt
R-6276	Resistor - 200 ohms, 1/2 watt
R-8562	Resistor - 400 ohms, flexible
R-6006B	Shaft - Dial Drive
R-6018A	Shield - Coil
R-8803A	Shield - IF transf.
R-6450	Shield - Electrolytic cond
R-8366	Socket - 4 prong
R-8367	Socket - 5 prong
R-8368	Socket - 6 prong
R-8369	Socket - 7 prong

PART NO.	DESCRIPTION
S-9549A	Speaker - 2250 ohm, 6" dynamic
R-9526	Sticker - Tube layout & license - 60 cycle
R-9527	Sticker - Tube layout & license - 25 cycle
R-9182	Sticker - NRA
R-8801	Transformer - IF input
R-8801G	Transformer - IF input complete, less shield
R-8802	Transformer - IF output
R-8802G	Transformer - IF output complete, less shield
R-9325A	Transformer - 60 cycle power
R-9526A	Transformer - 25 cycle power

SEARS-ROEBUCK & CO.

MODEL 1730
Schematic
Voltage

TUBE		PLATE VOLTS	SCREEN VOLTS	PLATE M.A.	SCREEN M.A.
78	RF	190	95	7	2.5
78	IF	190	95	6	4
85	AVC-Det-AF	30*		2	
41	Output	200	205	15	2.25
6A7	Osc-Transl	Ep=190v.	Eg#2=130v.	Eg#3&#5=95v.	
		Ip=4.75ma.	Ig#2=2.5ma.		
		Ig#3&#5=3.5ma.			

* indicates high series resistance

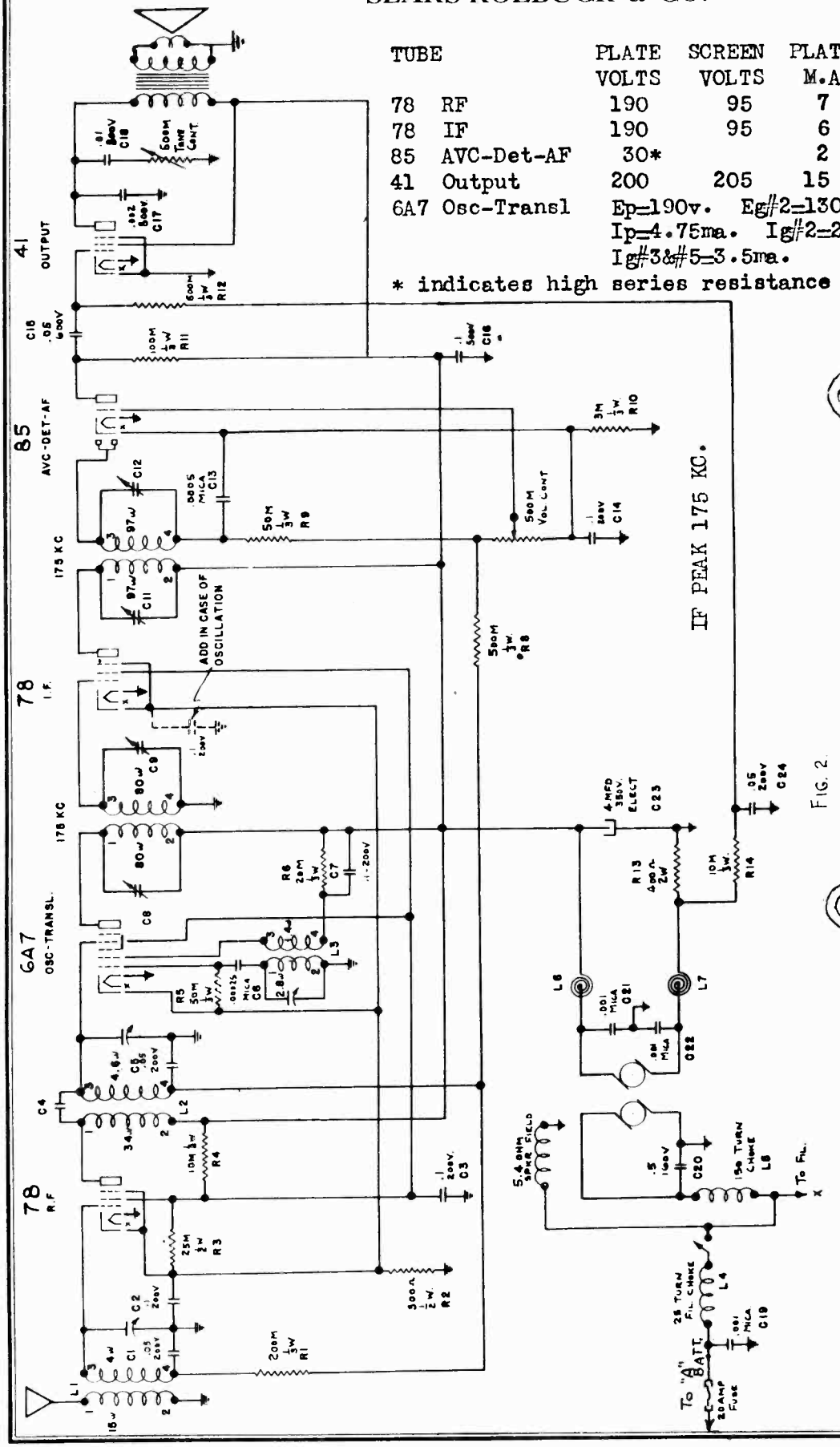


FIG. 2

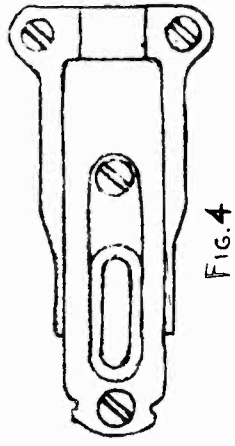


FIG. 4 R10190

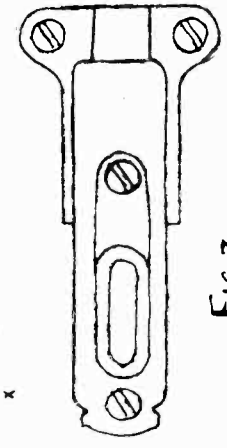


FIG. 3 R10189

MODEL 1730
Socket, Trimmers
Adjustments
Parts List

SEARS-ROEBUCK & CO.

SPECIAL NOTE

When peaking the IF transformers, use a low enough output from the test oscillator to render the AVC action inoperative.

THE RF TUNING ADJUSTMENTS

There are three holes at the back of the chassis, giving access to the variable condenser trimmers. The hole nearest the drive end of the condenser is for the MF section trimmer. The next hole is for the translator, and the third one is for the oscillator.

OSCILLATION

Any trouble from oscillation can be cured by connecting a .1 Mfd. 200 volt condenser,(Part #R-8286), from the IF cathode to ground.

THE REMOTE CONTROL UNIT

A few of the first production remote control units used the type clamp shown in Fig. 3. Later production used the type illustrated in Fig. 4. Should trouble be experienced with controls having the type clamp shown in Fig. 3, due to the volume control cable's jumping out of the control head, the type of clamp shown in Fig. 4 should be substituted, (Part #R-10190).

The following procedure will improve the action of the on-off switch, where necessary.

Remove the volume control drum and turn the volume control counter clockwise to its off position. Then turn it clockwise just enough to take up all of the play, so that any further rotation would tend to turn the switch on. Remove the key from the remote control unit and turn the volume control knurled ring to its locked position. Then turn it, as though to switch it on, the slight amount necessary to take up the play. Then replace the volume control drum on the volume control shaft, maintaining a clockwise tension on the rotatable portion of the drum and tighten the set screws. Study of this operation will reveal that its purpose is to take advantage of all of the play in the mechanism in such a way that an increased length of movement is provided for turning the switch off.

It is of vital importance that no twists occur in the cable during the installation. Careful inspection for this point is necessary because in a cable of this type twists are not very obvious. Also, bends should be as gradual as practicable. Sharp bends greatly increase the stiffness of operation.

If, having followed the foregoing suggestions, trouble still is experienced with the remote control, the unit should be considered defective. Return the entire remote control unit, including the cables and the chassis pulleys, for replacement, to the Colonial Radio Corp., 254 Reno St., Buffalo, N.Y.

ADJUSTING THE STATION SELECTOR DRIVE DRUM

1. Fully mesh the variable condenser plates.

2. Turn the Station Selector knurled ring to its low frequency limit.

3. Place the condenser drive drum on the variable condenser shaft and screw the binding strip to the condenser end plate. If necessary, bend the binding strip in such a way that the drive cable runs in as straight a line as possible from the drum to the point where it emerges from the chassis. However, care must be taken that the cable clamp does not touch any part of the chassis. Should it do so, it would render the rubber mounting of the variable condenser ineffective and microphonics would result. Then tighten the drum set screws.

4. After the set has been installed, and the remote control mounted, the calibration can be set more accurately in the following manner. Tune in a station of known frequency. Remove the dial glass retaining spring and set the dial pointer to the station's frequency. Then replace the retaining spring, making sure that the glass does not shift during the operation.

THE GEN-E-MOTOR

The plate and screen voltages for the receiver, are supplied by a Gen-E-Motor. No attempt should be made to repair this unit. It should be returned to the Pioneer Gen-E-Motor Corp., 466 West Superior St., Chicago, Ill. Return only the unit itself. Do not return the complete housing assembly. To remove the Gen-E-Motor from its housing, proceed as follows.

1. Remove the two screws under the chassis, that mount the loud speaker.

2. Remove the three Parker-Kalon screws from the bottom of the Gen-E-Motor housing, and the two screws that hold the electrolytic condenser can to the housing. The Gen-E-Motor and its housing can then be tipped back from the chassis.

3. Unsolder the leads at the base of the housing, so that the Gen-E-Motor and housing can be completely removed from the chassis.

4. Removal of the two screws in each side of the housing, and unsoldering of the Gen-E-Motor leads under the housing, will permit the Gen-E-Motor to be taken from its housing.

POLARITY CHANGING

The receivers are shipped with the polarity changing screws in the proper position for cars having the negative battery terminal grounded. If the car is one with a grounded positive terminal, the positions of the two screws must be changed, as indicated by the sticker on the case, and as shown in Fig. 5.

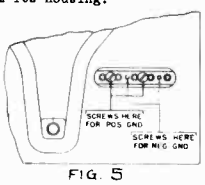
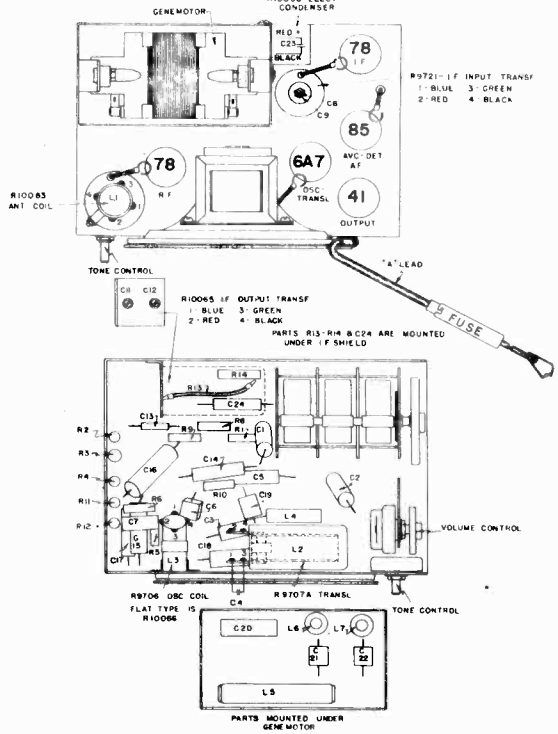


FIG. 5

Part No.	Description
R-8297A	Board - Terminal, double
R-8308A	Board - Terminal, triple
R-8900A	Board - Terminal, 5 terminals
R-9753A	Board - Terminal, 6 terminals
R-6552E	Board - Resistor
R-9754A	Board - Polarity Changing
R-10089	Book - Instruction
R-9588	Bushing - Rubber, Genemotor Mounting
R-9044A	Choke - L4
R-10116A	Choke - L5 & L7
R-9787	Clip - Grid Lead
R-6581	Clip - "A" Lead
R-10083	Coil - Antenna
R-10066	Coil - Oscillator
R-9707	Coil - Translator
R-9990	Condenser - Variable
R-10086	Condenser - Electrolytic
R-8030	Condenser - 1 Mfd. Generator
R-10025	Condenser - .5 Mfd - Ammeter
R-9032	Condenser - .5 Mfd 160 volt
R-10164	Condenser - .1 Mfd 500 volt
R-8286	Condenser - .1 Mfd 200 volt
R-6145	Condenser - .06 Mfd 600 volt
R-6920	Condenser - .05 Mfd 200 volt
R-7354	Condenser - .05 Mfd 200 volt
R-10093	Condenser - .02 Mfd 600 volt
R-6759	Condenser - .001 Mfd Mica
R-6780	Condenser - .0005 Mfd Mica
R-4592	Condenser - .00025 Mfd Mica
R-10091	Control - Remote, Complete with Pulleys and Cables
R-9711	Control - Tone (500 M ohms)
R-10172	Control - Volume (500 M ohms)
R-9717	Connector - "A" lead & fuse container
R-9751	Fuse - 20 amp
R-9687	Genemotor - "A" lead
R-9744	Grommet
R-8870A	Lead- Antenna
R-9579B	Lead - "A" Ammeter end
R-9578A	Lead - "A" Chassis end
R-10153	Nut - cheek

Part No.	Description
R-7085	Resistor - 25 M ohms, 1/2 watt carbon
R-6640	Resistor - 20 M ohms, 1/2 watt carbon
R-6152	Resistor - 10 M ohms, 1/2 watt carbon
R-7587	Resistor - 10 M ohms, 1/2 watt carbon
R-8972	Resistor - 3 M ohms, 1/2 watt carbon
R-10078	Resistor - 400 ohms, 1/2 watt carbon
R-6447	Resistor - 300 ohms, 1/2 watt carbon
R-8419	Resistor - 400 ohms, flexible
R-10056	Screw - Polarity changer
R-10084A	Shield - Antenna Coil
R-9591	Shield - Translator Coil
R-9590	Shield - Tube
R-9592	Socket - 6 Prong
R-8072	Socket - 7 Prong
S-9967	Speaker - Complete
S-9986A	Speaker - Cone & Voice Coil Assembly
S-9994	Speaker - Clamping ring
S-10152	Speaker - Field Coil
S-9966	Speaker - eyelets
S-9959	Speaker - Felt ring
S-10144A	Speaker - Transformer
R-9960	Sticker - Polarity Changer
R1-10032	Suppressor - Spark Plug
R2-10032	Suppressor - Distributor
R-9729	Stud - Set Mounting
R-9786	Template - set mounting
R-10064A	Transformer - I F input
R-10065A	Transformer - I F output
R-9739	Washer - Lock set mounting
R-9740	Washer - Flat, set mounting
A-9719	Nut - Set Mounting
R-9723	Wire, Aerial
R-6538	Resistor - 500 M ohms, 1/3 watt carbon
R-6638	Resistor - 200 M ohms, 1/3 watt carbon
R-6588	Resistor - 100 M ohms, 1/3 watt carbon
R-6637	Resistor - 50 M ohms, 1/3 watt carbon



MODEL 1733
Schematic

SEARS-ROEBUCK & CO.

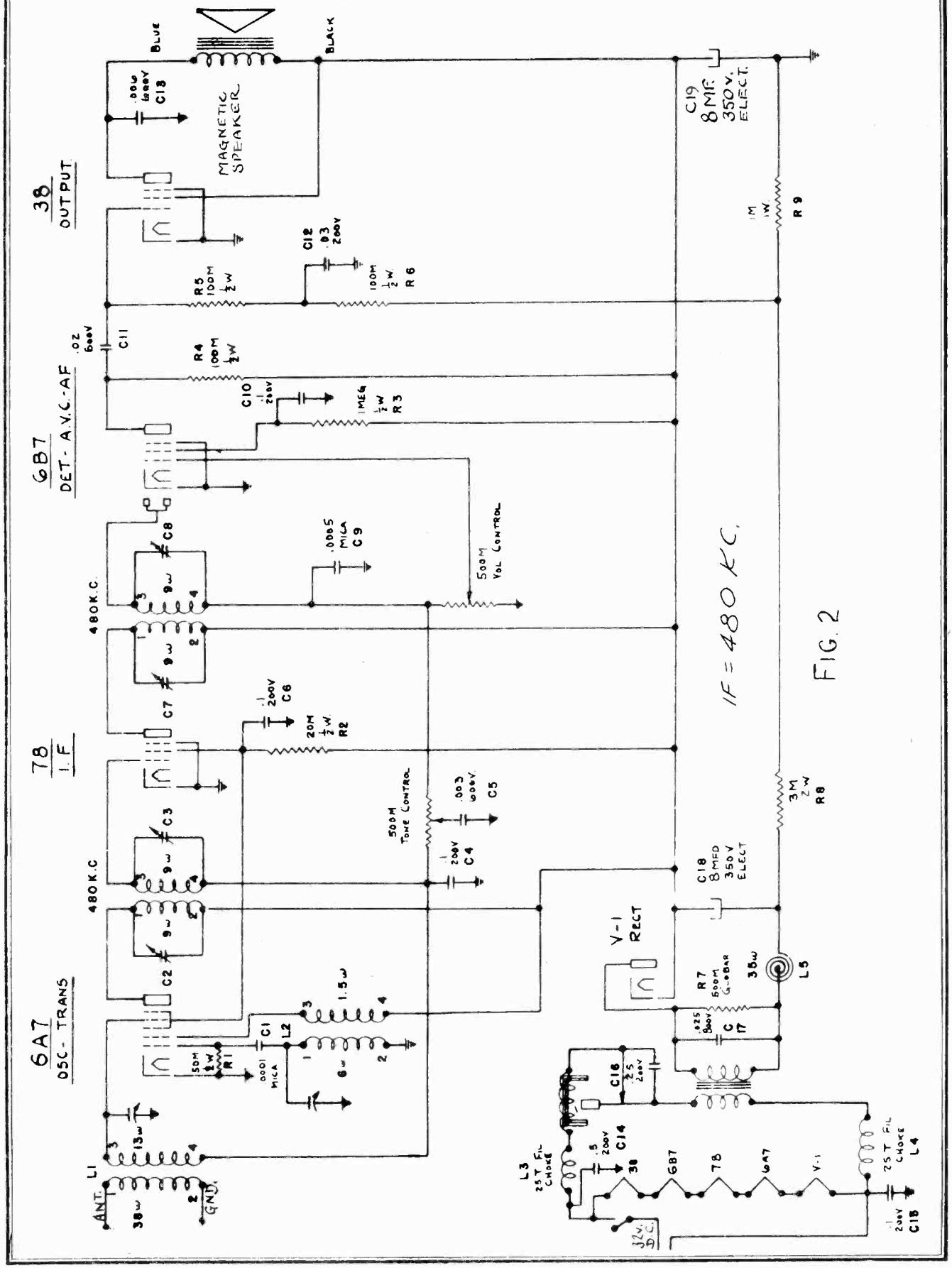
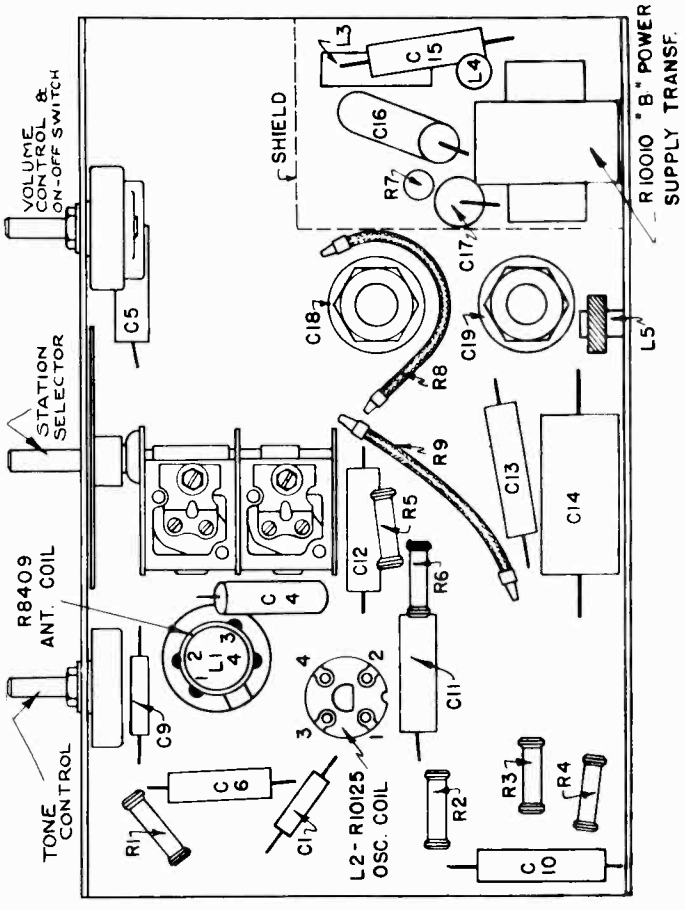


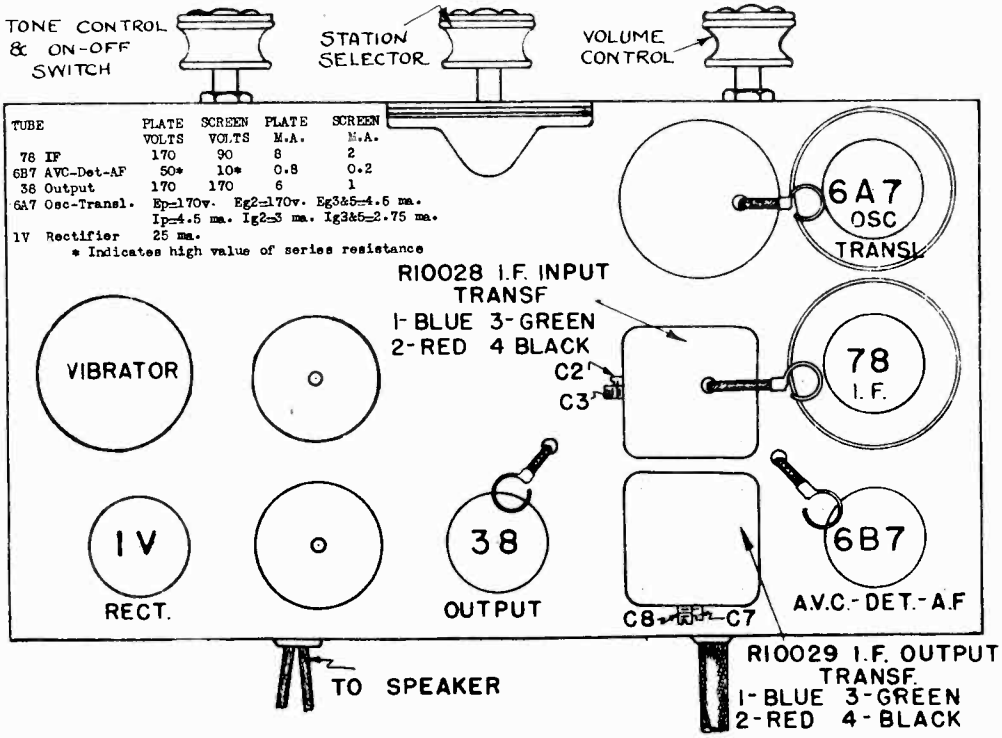
FIG. 2

MODEL 1733
Voltage, Socket
Chassis, Parts List

SEARS-ROEBUCK & CO.

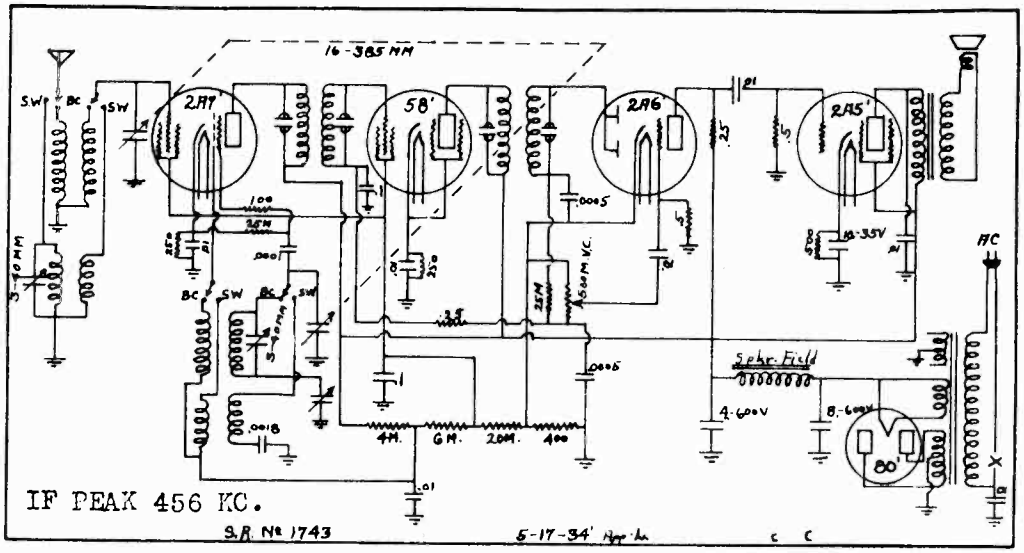
PART NO.	DESCRIPTION
R-7901-A	Board - Fuse
R-5509-A	Board - Terminal
R-8297-A	Board - Terminal, double
R-8308-A	Board - Terminal, triple
R-8900-D	Board - Terminal, 5 terminals
R-9044-A	Choke (L3 & L4)
R-9757	Choke (L5)
R-6381	Clip - Grid
R-8409	Coil - Antenna
R-10125	Coil - Oscillator
R-8412	Condenser - Variable
R-8488	Condenser - 8 Mfd. electrolytic
R-6451	Condenser - .5 Mfd. 200 volt
R-9817	Condenser - .25 Mfd. 200 volt
R-6444	Condenser - .1 Mfd. 200 volt
R-6630	Condenser - .03 Mfd. 200 volt
R-10018	Condenser - .025 Mfd. 800 volt
R-6761	Condenser - .02 Mfd. 600 volt
R-7244	Condenser - .006 Mfd. 600 volt
R-7681	Condenser - .003 Mfd. 600 volt
R-6760	Condenser - .0005 Mfd. Mica
R-4303	Condenser - .0001 Mfd. Mica
R-6571	Control - Tone
R-6570	Control - Volume
R-6989	Cord - Power
R-10012-A	Dial and Indicator
R-8406	Escutcheon
R-7688	Fuse - 10 Amp.
R-8895	Knob - Small
R-8896	Knob - Medium
R-10012	Indicator
R-10020	Instructions
R-5823	Resistor - 1 Megohm, 1/2 watt carbon
R-5819	Resistor - 100 M ohms, 1/2 watt carbon
R-6445	Resistor - 50 M ohms, 1/2 watt carbon
R-5821	Resistor - 20M ohms, 1/2 watt carbon
R-9745	Resistor - Globar (R7)
R-9254	Resistor - 1 M ohms, flexible
R-10016	Resistor - 3 M ohms, flexible
R-6450	Shield - Electrolytic cond.
R-7615-A	Shield - Coil
R-10011-A	Shield - Power Transf.
R-8366	Socket - 4 Prong
R-8367	Socket - 5 prong
R-8368	Socket - 6 prong
R-8369	Socket - 7 prong
R-10009	Socket - Vibrator
S-9969	Speaker - 6" Magnetic
R-10028-A	Transformer - IF input
R-10029	Transformer - IF output
R-10010	Transformer - Power
R-10008	Tubes - Rubber, vibrator mounting
R-10014	Vibrator
R-10007	Washer - Rubber vibrator mounting





SEARS-ROEBUCK & CO.

MODEL 1743
Schematic
Alignment, Parts



GENERAL INFORMATION

Silvertone Model 1743A is a set so designed to get maximum efficiency from five tubes, and minimum trouble.

Model 1743A is a superheterodyne operating from 105-120 volts AC - 60 cycles only- Also furnished for 25 cycle.

This set covers from 1720 KC to 540 KC regular broadcast including 1712 KC police and 15 - 55 meters short wave which covers major foreign stations.

The circuit uses 1-2A7 1st detector and oscillator; 1-58 IF; 1-2A6 second detector and first audio; 1-2A5 power output and 1-80 rectifier

To align receiver proceed as follows:

1. Peak the two IF transformers, applying a 456 note at the 2A7 grid.
2. Turn variable condenser wide open, peaking oscillator stage at 1712 KC- then peak RF and antenna stage.
3. Adjust low frequency with gang tuned to 600 KC, to maximum peak.
4. Go back and check trimmers on gang condenser at 1400 KC.

PARTS LIST-MODEL 1743A

No.	
450	Dynamic Speaker
451	Variable condenser
452	Volume control w/switch
453	Short wave switch
454	Airplane Dial complete
455	Power Transformer
456	Set of coils-complete
456a	RFE Antenna coil-S.W.
456b	RFE Oscillator "
456c	RF Antenna BC
457D	456 KC IF units
156	8&4 mfd condenser
307	10 mfd 25v electrolytic
308	Terminal strip - 5 lug
310	.0018 Mica condenser
309	.01 mfd 800v cond. in can
108	Padder condenser 7 plate
158	Power cord & plug
	Any tube socket (state no.of prongs)
	Any resistor (state ohms & watts)
	Any by pass-not listed above(state capacity)

MODEL 1760 (Type 1)
Schematic

SEARS-ROEBUCK & CO.

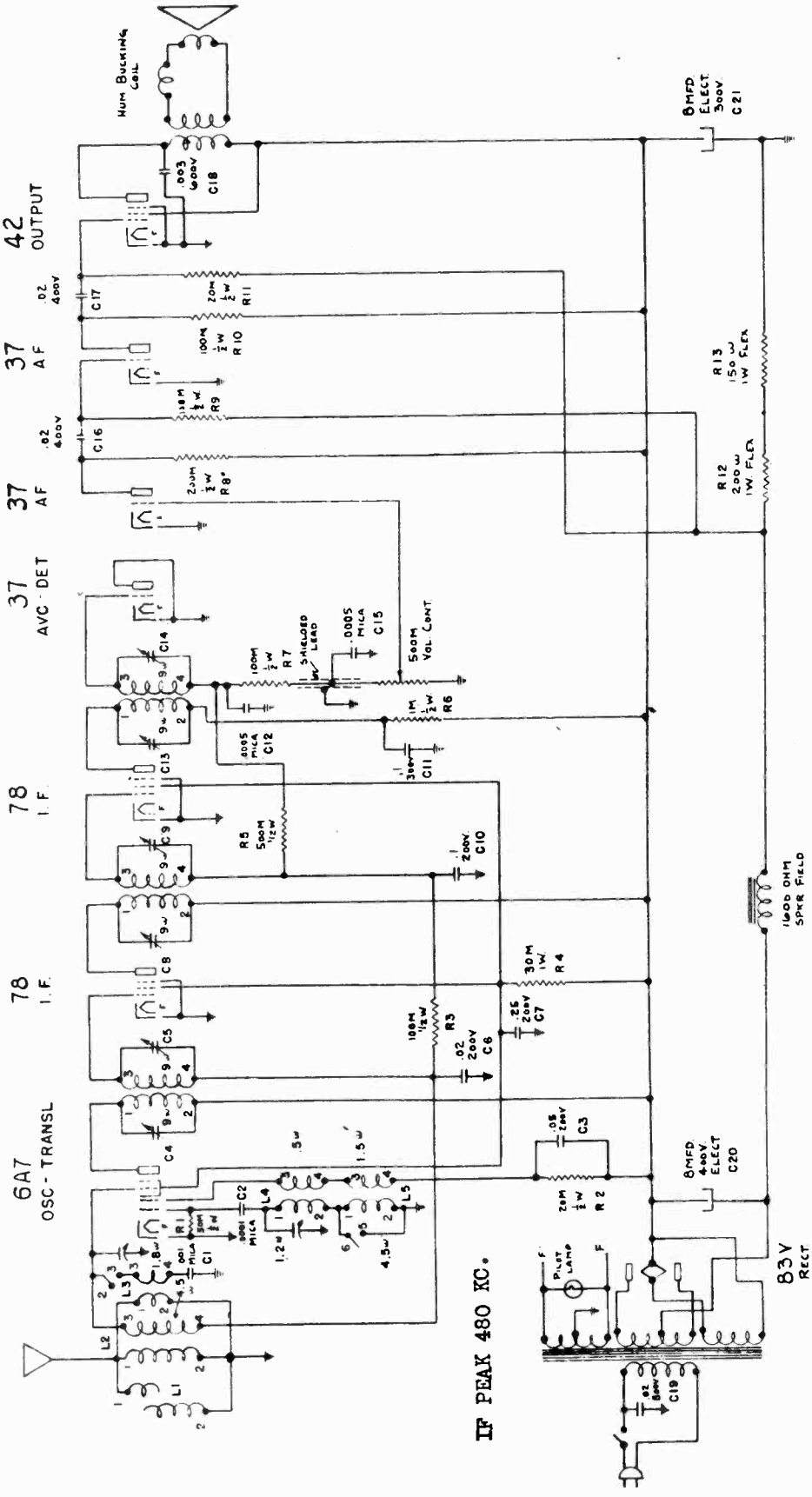


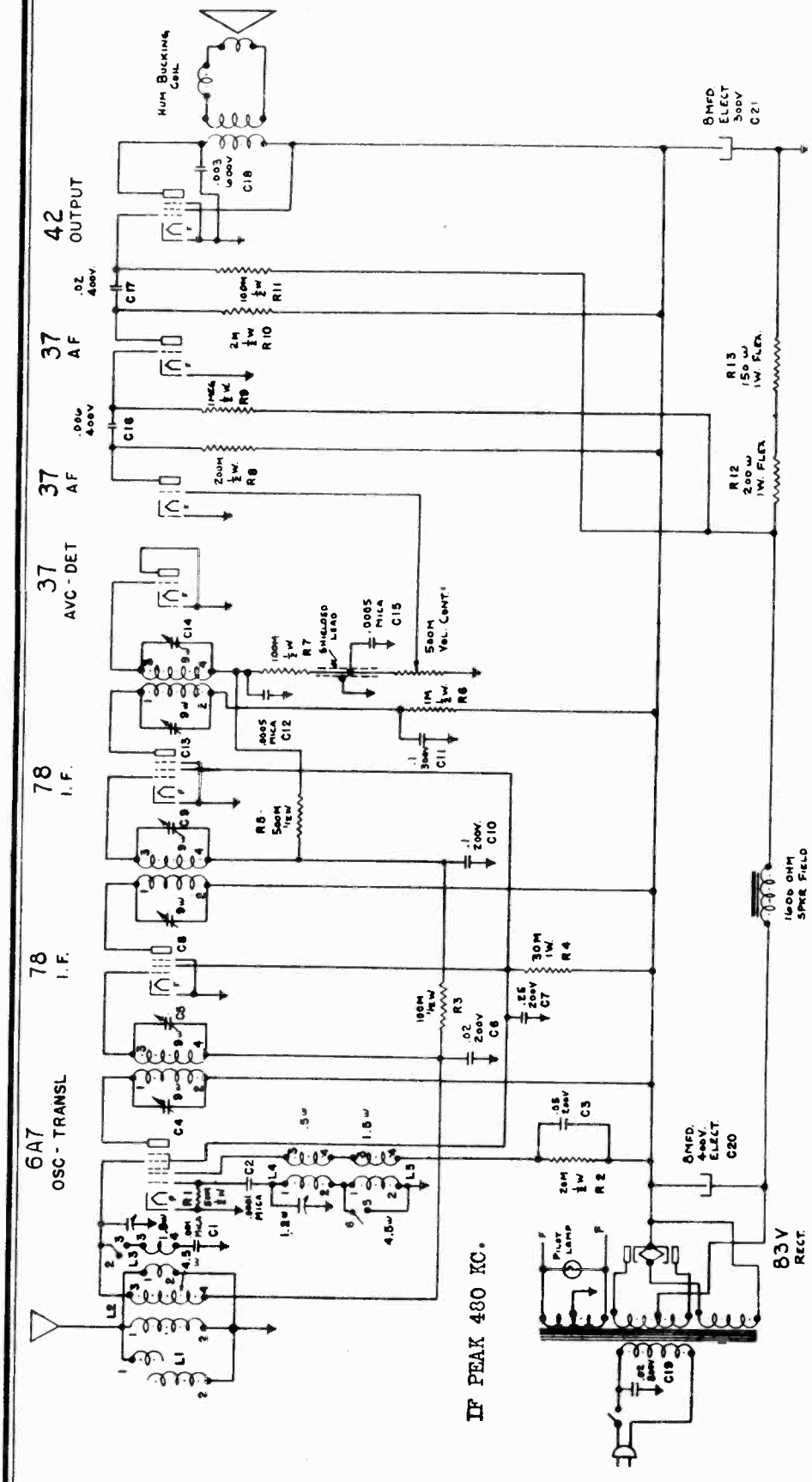
FIG. 2.

Chassis using this circuit are rubber-stamped 206. If trouble from hum be encountered in this type chassis, it can be converted to the other circuit by changing C-16, R-9, R-10 and R-11.

For Voltage Data for both types, see next page

SEARS-ROEBUCK & CO.

MODEL 1760 (Type 2)
Schematic
Voltage

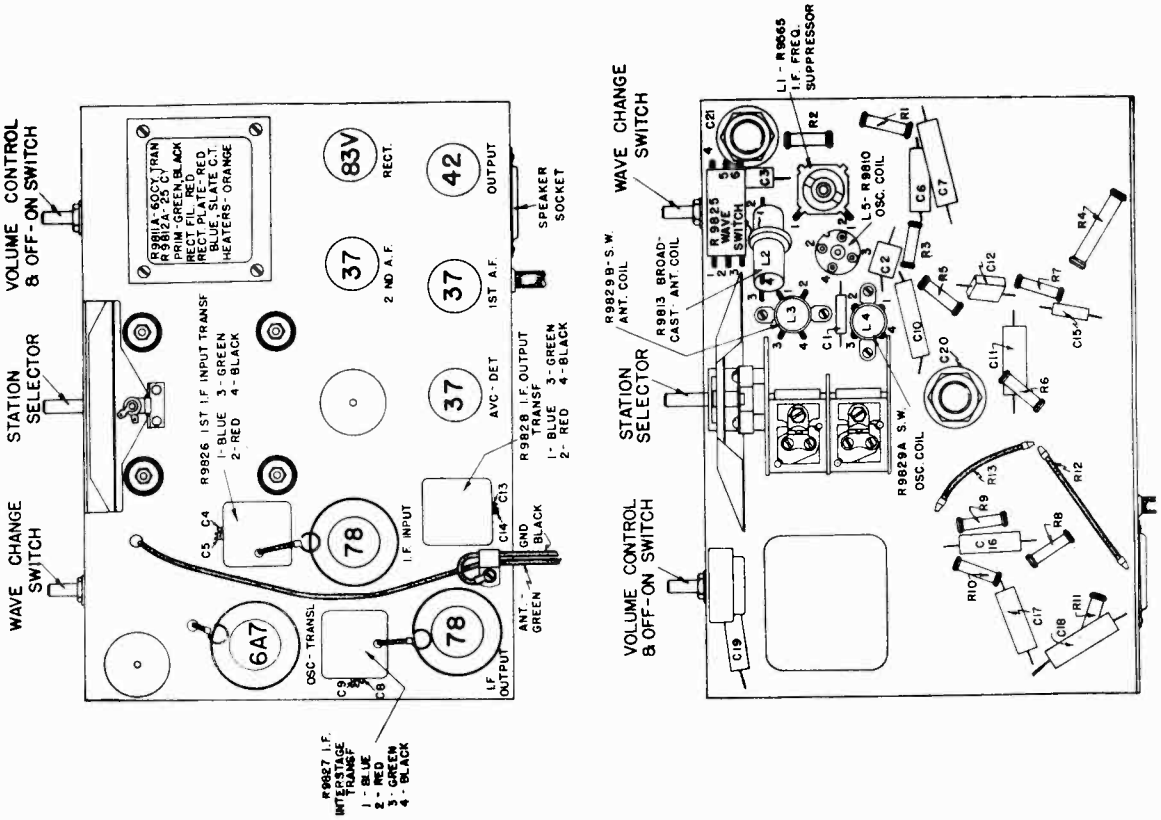


Chassis using this circuit are rubber-stamped 206A or 206B FIG. 3

TUBE		PLATE VOLTS	SCREEN VOLTS	PLATE M.A.	SCREEN M.A.
78	1st IF	245	100	6.5	2
78	2nd IF	240	100	6.5	2
37	1st AF	20		1.25	
37	2nd AF	235		3.5	
42	Output	235	245	23.0	5
6A7	Osc-Transl.	Ep=245v Eg2=175v Eg3&5=80v. Ip=4.25ma Ig2=2.5ma. Ig3&5=1.75ma.			
83V	Rectifier	Max.D-C=360v. Plate current=29ma per plate			

MODEL 1760
Socket Layout
Chassis
Parts List

SEARS-ROEBUCK & CO.

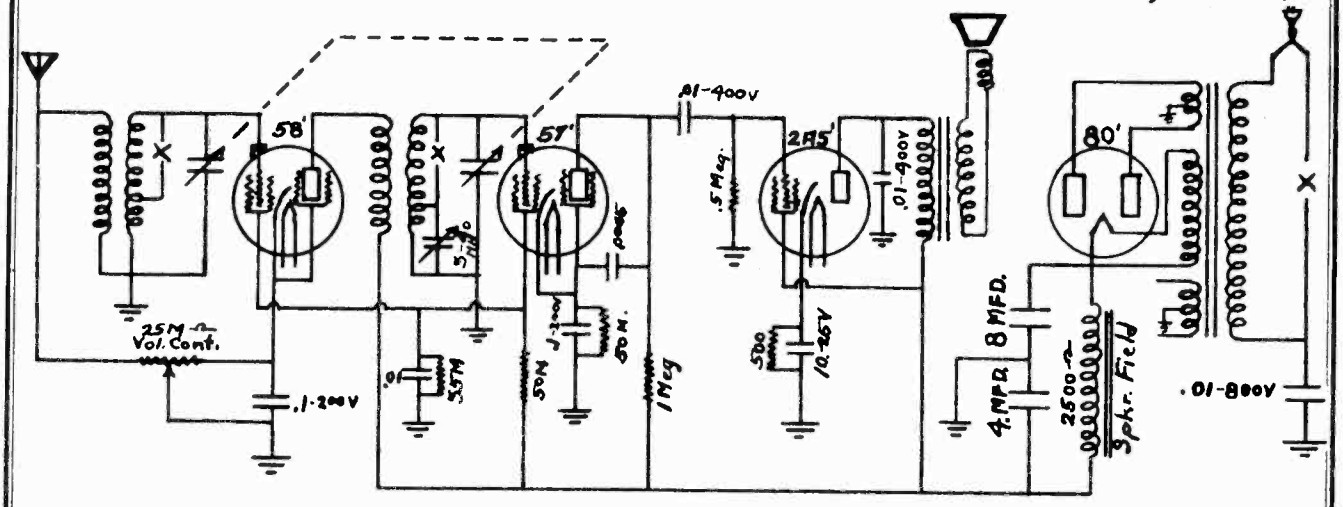


PART NO.	DESCRIPTION
R-8297A	Board - Terminal, double
R-8308A	Board - Terminal, triple
R-9832	Card - Operating
R-4715	Clamp - Ant. & Gnd. leads
R-6381	Clip - Grid
R-6381M	Clip - Grid with 7" lead
R-9810	Coil - Oscillator
R-9829A	Coil - Oscillator, short wave
R-9813	Coil - Antenna
R-9829B	Coil - Antenna, short wave
R-9565	Coil - Ant. Wave trap
R-9816	Condenser - Variable
R-9816A	Condenser - Variable with Drive and Dial Assembly
D-4758P	Condenser - 8 mfd. electrolytic
R-9817	Condenser - .25 mfd. 200v.
R-6444	Condenser - .1 mfd. 200v.
R-6138	Condenser - .1 mfd. 300v.
R-7354	Condenser - .05 mfd. 200v.
R-9899	Condenser - .02 mfd. 800v.
R-9818	Condenser - .02 mfd. 400v.
R-6629	Condenser - .02 mfd. 200v.
R-7244	Condenser - .006 mfd. 600v.
R-6571	Control - Volume
R-6989	Cord - Power Supply
R-9819A	Dial and Indicator
R-8889	Escutcheon
R-9831	Instructions
R-8893	Knob - Large
R-8896	Knob - Medium
R-2288	Lamp - Pilot
R-5346B	Lead - Antenna
R-5345D	Lead - Ground
R-5823	Resistor - 1 megohm, 1/2 watt carbon
R-6179	Resistor - 500M ohms, 1/2 watt carbon
R-5830	Resistor - 200M ohms, 1/2 watt carbon
R-5819	Resistor - 100M ohms, 1/2 watt carbon
R-6445	Resistor - 50M ohms, 1/2 watt carbon

PART NO.	DESCRIPTION
S-9814	Speaker - 8", 1600 ohm
S-7776B	Speaker - Cone & Voice Coil
S-9846	Speaker - field coil
S-7893	Speaker - hum bucking coil
S9840A	Speaker - Transformer
R-7414	Speaker - plug, 4 prong
R-9825	Switch - Wave
R-9826	Transformer - IF input
R-9827	Transformer - Interstage
R-9828	Transformer - IF output
R-9811A	Transformer - 60 cycle power
R-9812A	Transformer - 25 cycle power
R-6689	Resistor - 30M ohms, 1 watt
R-5821	Resistor - 20M ohms, 1/2 watt
R-6073	Resistor - 2M ohms, 1/2 watt
R-6154	Resistor - 1M ohms, 1/2 watt
R-9822	Resistor - 200 ohms, flexible
R-9823	Resistor - 150 ohms, flexible
R-6652A	Shaft assembly
R-6450	Shield - Electrolytic
R-6749	Shield - Tube, top
R-8366	Socket - 4 prong
R-8367	Socket - 5 prong
R-8368	Socket - 6 prong
R-8569	Socket - 7 prong

SEARS-ROEBUCK & CO.

MODEL 1800
Schematic
Notes, Parts List



6-4-34'

S.R. Model Nº 1800

GENERAL INFORMATION

This set is designed to operate on 105 to 120 volts AC - 50-60 cycles - also furnished in 25 cycles.

The circuit is of the conventional TRF type, covering the regular broadcast band including police, and short wave from 70 to 200 meters.

An antenna approximately 40' long outside is recommended, but very good results may be obtained with 20' to 25' inside.

Below are listed a few suggestions as to service -

A - to align set, proceed as follows-

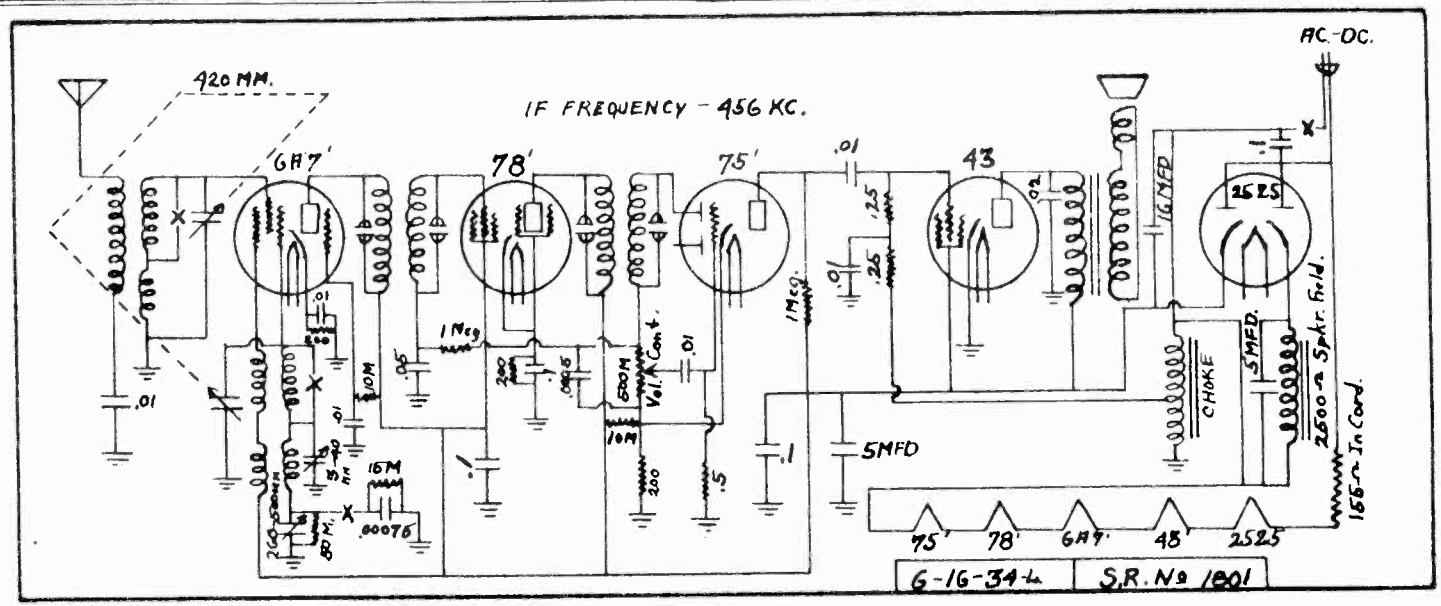
1- Tune gang condenser way open and turn compensator adjustment screws to maximum noise level or loudest police signal - 1712 KC.

2- Check again with condenser tuned to 1400 KC.

3- Short Wave - open variable condenser about half way and tune small padder condenser to maximum noise level-rocking variable condenser across midpoint while doing so.

PARTS LIST - S.R.#1800

No.	
73	Terminal strip -3 lug
105	Volume control
152	Dynamic Speaker
153	Variable condenser-2 gang
154	Power transformer
155	Dial scale unit
156	8&4 mfd electrolytic cond.
158	Power cord and plug
159	Knobs
160	Escutcheon plates
165	Set of coils complete
165a	Antenna coil
165b	Interstage coil
307	10 mfd-25v electrolytic
312	4 pole 2 position short wave switch
	Any tube socket (state no. of prongs)
	Any resistor (state ohms & watts)
	Any bypass condenser (state capacity)



GENERAL INFORMATION

This set is a superheterodyne designed to operate on AC - DC - 110 volts, 25 to 60 cycles.

To operate, unreel antenna and lay along floor or drop out of window. Turn volume control all the way up and tune in signals. If set does not start operating in two minutes, reverse the plug in wall receptacle.

To rebalance set, proceed as follows:

1 - Align IF transformers at 456 KC, applying 456 note at 6A7 control grid.

2 - Turn variable condenser all the way open - adjust compensators on variable condenser to 1712 KC.

3 - Tune to some weak signal about 1400 KC and readjust the Detector Section only.

4 - Tune set to some signal at 600 KC and while rocking condenser across 600 KC signal, adjust the BC low frequency padder.

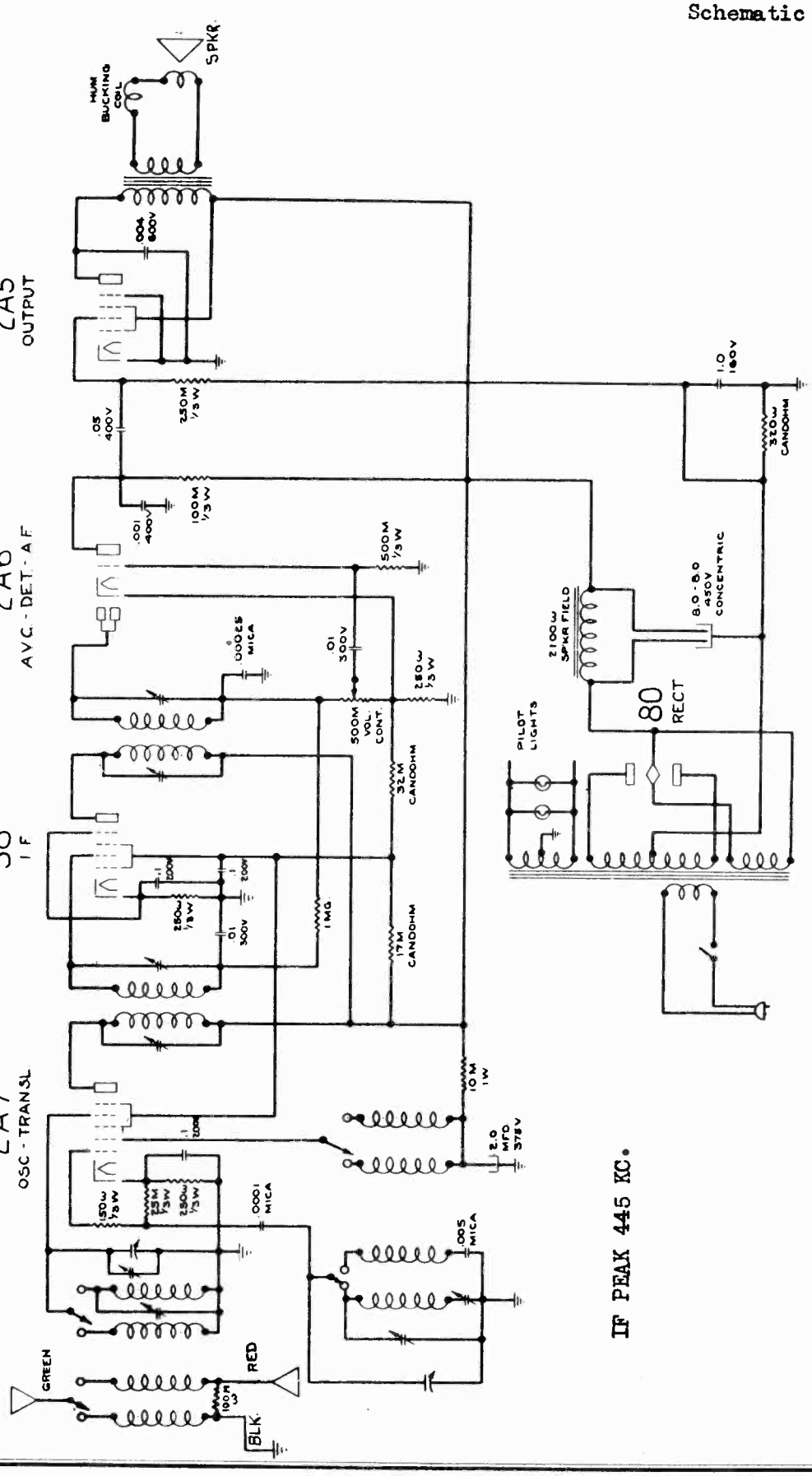
To rebalance Short Wave - tune to some signal about center of dial and while rocking variable condenser back and forth adjust 3-40 mm condenser to loudest peak.

PARTS LIST - S.R.# 1801

No.	
52	Variable condenser-2 gang
61	Antenna cord
74	Terminal strip- 7 lug
101	Dynamic speaker
103	Choke
104	155 ohm Cordohm
106	Electrolytic condenser
108	Padder condenser
256	500 ohm Volume control
312	4 Pole 2 position short wave switch
350	Set of coils - complete

SEARS-ROEBUCK & CO.

MODEL 1802-A, 1803-A, 1807
Schematic



MODEL 1802-A,1803-A, 1807 Voltage,Alignment, Socket Layout

SEARS-ROEBUCK & CO.

ALIGNMENT PROCEDURE

The IF Stages:

1. Connect the low voltage 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, in series with a .1 mfd. condenser, to the control grid cap of the 58 IF tube. Leave the clip attached to the cap and the tube shield 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 2A7 and tune the IF input transformer.

6. Repeat the adjustments in order to secure greater accuracy. Always use as low an output as possible from the test oscillator, in order to render the AVC action of the receiver inoperative.

RF Alignment (Broadcast):

1. Screw the padding condenser to about three quarters of its maximum capacity.

2. Set the test oscillator to 1750 kc and couple its output to the green antenna lead of the receiver.

3. Open the variable condenser plates all the way and adjust the broadcast oscillator coil trimmer for maximum output meter reading.

4. Set the test oscillator to 1400 kc and tune in its signal. Then adjust the trimmer on the translator section of the variable condenser for maximum output. The translator section is the one nearer the dial, 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 padding condenser for maximum output.

6. Repeat the 1750 kc and 1400 kc adjustments. Always use a low enough output from the test oscillator to render the AVC ineffective.

Short Wave Alignment:

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

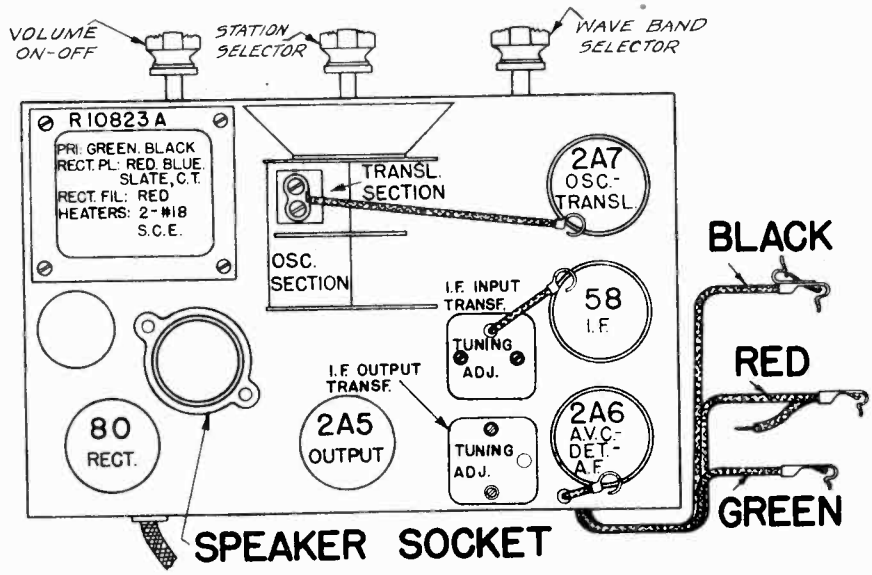
2. Set the test oscillator to 16000 kc. Its signal should be heard when the variable condenser plates are all the way out. If the test oscillator cannot be tuned in, the grid and plate wires to the short wave oscillator coil and to the oscillator socket should be moved as far away as possible from the metal of the chassis to reduce distributed capacity.

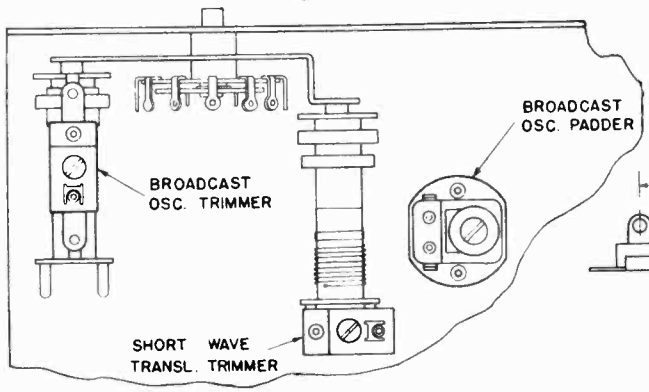
3. Set the test oscillator to 14000 kc and tune in its signal. Then adjust the short wave translator trimmer for maximum output.

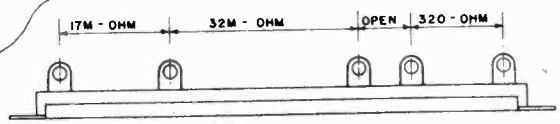
TUBE VOLTAGE CHART

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

TUBE	PLATE	SCREEN	OSC.SECTION PLATE
2A7 - Osc-Transl	- 195	90	155
58 - IF	- 195	90	
2A6 - AVC-Det-AF	- 115		
2A5 - Output	- 185	195	







R 10861
CANDOHM RESISTOR

SEARS-ROEBUCK & CO.

MODEL 1804,1805, 1820,1826
Schematic
Circuit Changes

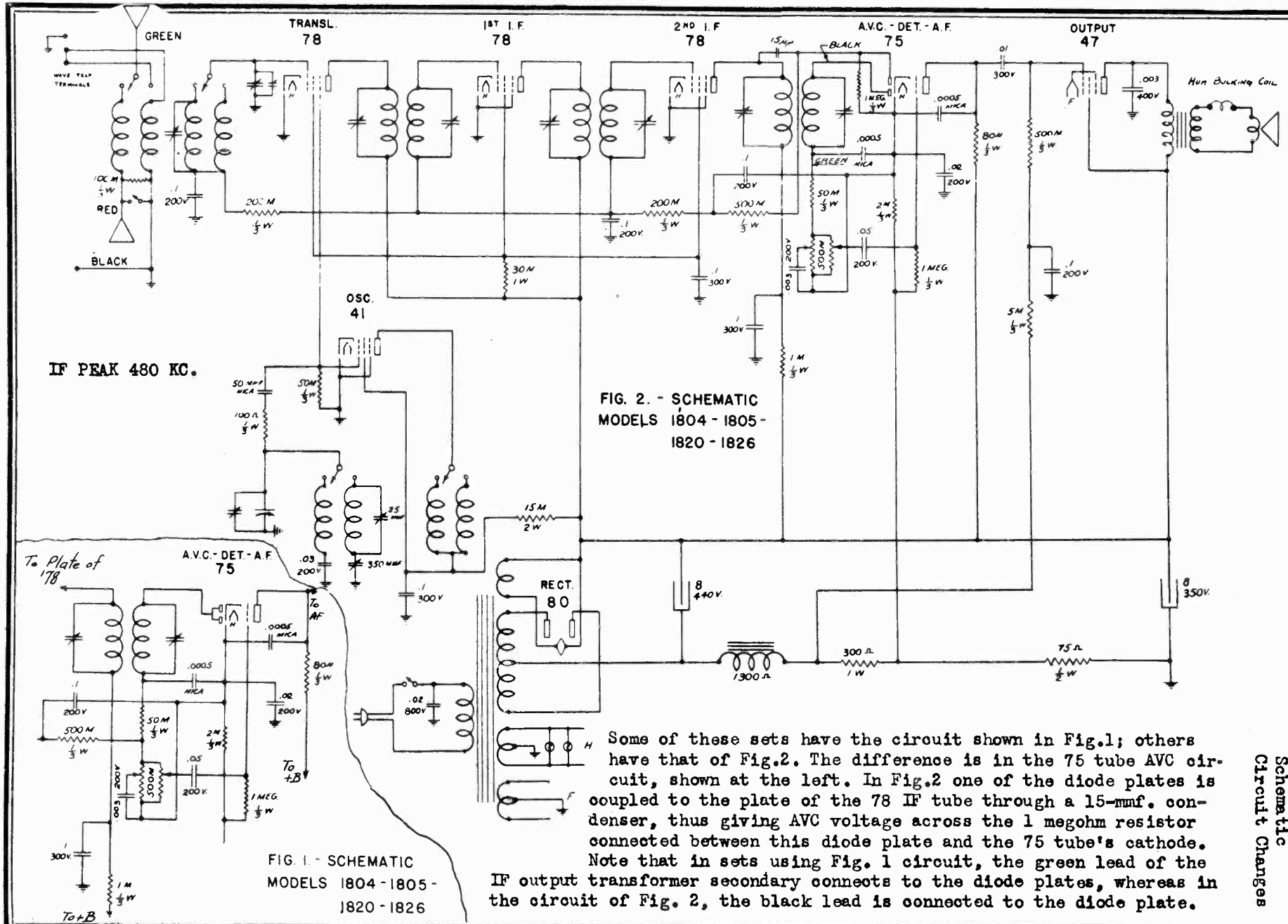


FIG. 2. - SCHEMATIC MODELS 1804 - 1805 - 1820 - 1826

FIG. 1. - SCHEMATIC MODELS 1804 - 1805 - 1820 - 1826

Some of these sets have the circuit shown in Fig.1; others have that of Fig.2. The difference is in the 75 tube AVC circuit, shown at the left. In Fig.2 one of the diode plates is coupled to the plate of the 78 IF tube through a 15-mmf. condenser, thus giving AVC voltage across the 1 megohm resistor connected between this diode plate and the 75 tube's cathode. Note that in sets using Fig. 1 circuit, the green lead of the IF output transformer secondary connects to the diode plates, whereas in the circuit of Fig. 2, the black lead is connected to the diode plate.

MODEL 1804,1805,1820, 1826

SEARS-ROEBUCK & CO.

Wavetrap Data, Voltage Alignment, Socket Layout Parts List

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 have the terminal board shown in Fig. 3 mounted at the rear of the chassis. The wave trap, which may be mounted on the side of the cabinet, should be connected as shown in Fig. 3. In receivers not having this terminal board provided, the wave trap may be added as follows:

1. Unsolder both ends of the green wire which runs from the Wave Switch to one of the lugs on the broadcast antenna coil.

2. Solder the yellow wire of the wave trap to the switch lug in place of the original green wire.

3. Connect the blue wire of the wave trap to the lug of the broadcast antenna coil in place of the original green wire.

4. Connect the white wire of the wave trap to the chassis.

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 78 second IF tube. The grid clip should be left attached to the cap.

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 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.

RF Alignment (Broadcast):

1. Set the test oscillator to 1785 kc.

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

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

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. The location of this padding condenser is shown in the Service Illustrations.

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

6. Set the test oscillator to 1500 kc and tune in its signal. Then adjust the trimmer on the antenna 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 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 on this frequency. Should it become necessary to shift turns, the translator 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	-	270	110
41 - Oscillator	-	100	100
78 - First IF	-	270	110
78 - Second IF	-	260	110
75 - AVC-Det-AF	-	185	
47 - Output	-	280	270

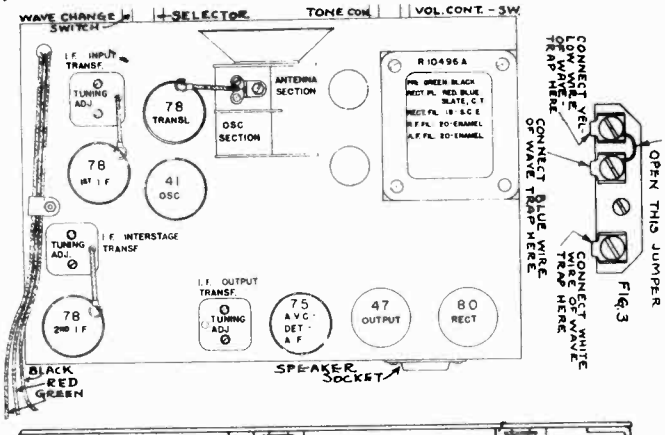
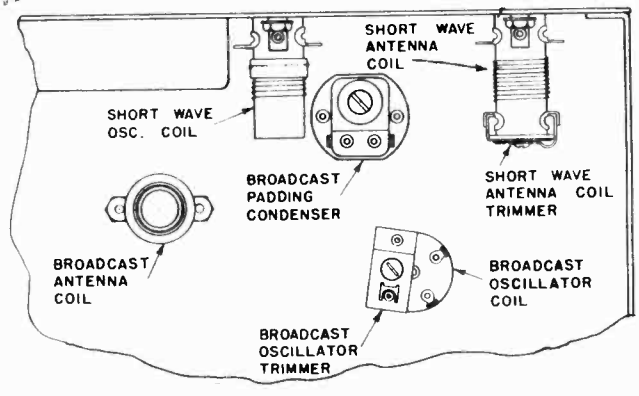


Fig. 3



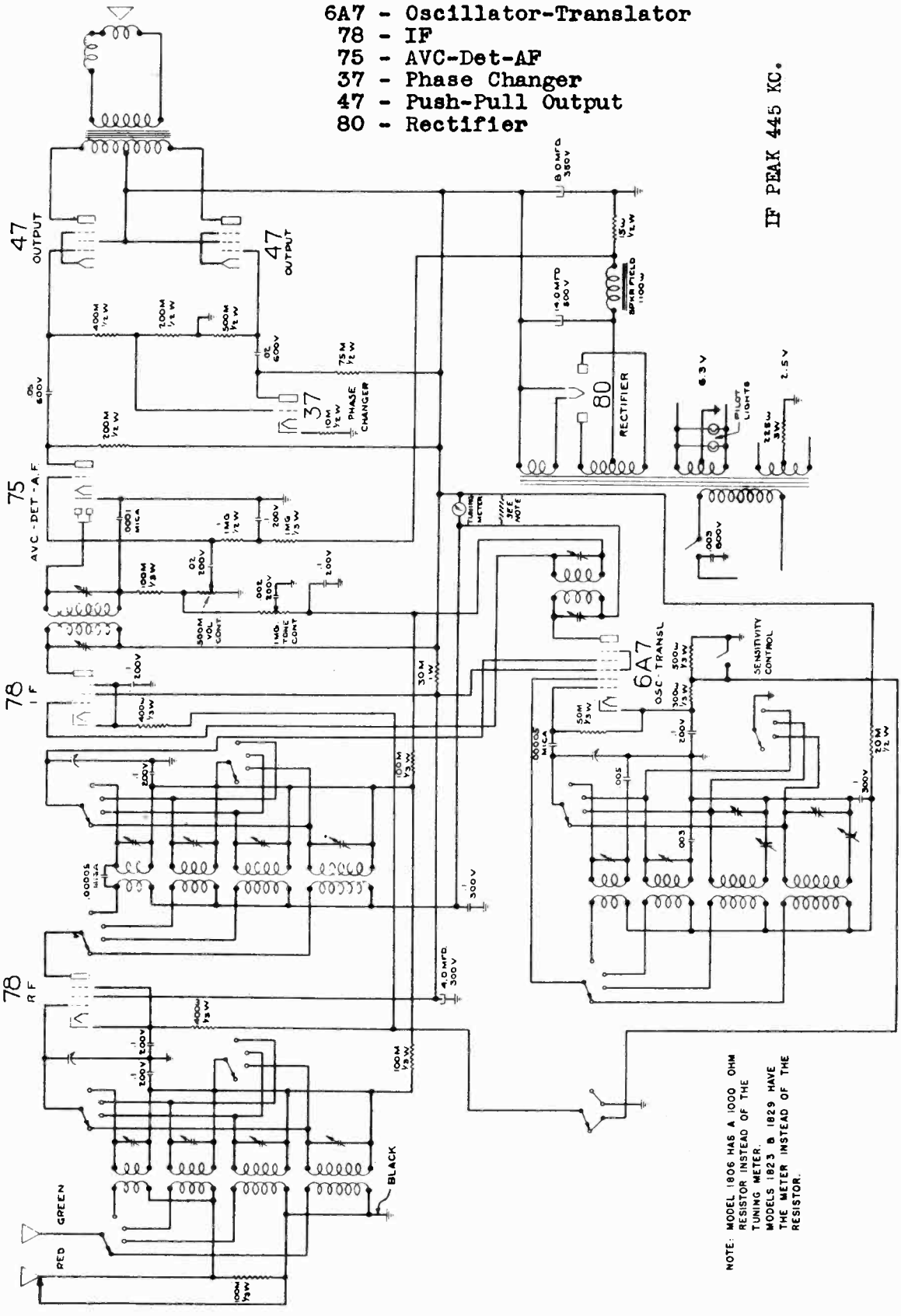
R10446	Coil - Antenna
R10399	Coil - Oscillator
R9829F	Coil - Antenna, short wave
R9829E	Coil - Oscillator, short wave
R10453	Condenser - Variable
R10453A	Condenser - Variable, complete with drive assembly and dial for models 1820 and 1826
R10453B	Condenser - Variable, complete with drive assembly and dial for models 1804 and 1805
D4758F	Condenser - Electrolytic, 8 mfd.
R8488	Condenser - Electrolytic, 8 mfd.
R10197	Condenser - Trimmer, 25 mmf.
R9975	Condenser - Padding, 350 mmf.
R6138	Condenser - .1 mfd. 300 volts
R6444	Condenser - .1 mfd. 200 volts
R7354	Condenser - .05 mfd. 200 volts
R6630	Condenser - .03 mfd. 200 volts
R6629	Condenser - .02 mfd. 200 volts
R10456	Condenser - .02 mfd. 800 volts in metal case
R6462	Condenser - .01 mfd. 300 volts
R10478	Condenser - .003 mfd. 400 volts
R10495	Condenser - .003 mfd. 200 volts
R6760	Condenser - .0005 mfd. mica
R8621	Condenser - .00005 mfd. mica
R10457	Control - Tone, 500 M ohms
R10458	Control - Volume, 500 M ohms
R7585	Resistor - 1 megohm, 1/3 watt carbon
R7228	Resistor - 500 M ohm, 1/3 watt carbon
R6638	Resistor - 200 M ohm, 1/3 watt carbon
R7586	Resistor - 100 M ohm, 1/3 watt carbon
R10920	Resistor - 80 M ohm, 1/3 watt carbon
R6637	Resistor - 50 M ohm, 1/3 watt carbon
R6689	Resistor - 30 M ohm, 1 watt carbon
R7884	Resistor - 15 M ohm, 2 watt carbon
R7226	Resistor - 5 M ohm, 1/3 watt carbon
R6634	Resistor - 2 M ohm, 1/3 watt carbon
R6636	Resistor - 1 M ohm, 1/3 watt carbon
R9533	Resistor - 300 ohms, 1 watt carbon
R8922	Resistor - 100 ohms, 1/3 watt carbon
R10500	Resistor - 75 ohms, 1/2 watt carbon
S10566	Speaker - Model 1804
S10509	Speaker - Model 1805, 1820, 1826
R10467	Switch - Wave
R10501B	Transformer - IF input
R10469B	Transformer - IF interstage
R10470A	Transformer - IF output
R10496A	Transformer - Power, 60 cycle
R10497A	Transformer - Power, 25 cycle

SEARS-ROEBUCK & CO.

MODEL 1806,1823,1829
Schematic

78 - RF
6A7 - Oscillator-Translator
78 - IF
75 - AVC-Det-AF
37 - Phase Changer
47 - Push-Pull Output
80 - Rectifier

IF PEAK 445 KC.



NOTE: MODEL 1806 HAS A 1000 OHM RESISTOR INSTEAD OF THE TUNING METER.
MODELS 1823 & 1829 HAVE THE METER INSTEAD OF THE RESISTOR.

MODEL 1806,1823,1829
Alignment, Voltage
Socket Layout

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 6A7 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.

TUBE VOLTAGE CHART

TUBE		PLATE	SCREEN	OSC.SECTION PLATE	CATHODE
78 - RF	-	220	90		3.1
6A7 - Osc-Transl	-	220	90	160	2.6
78 - IF	-	235	90		3
75 - AVC-Det-AF	-	75			0
37 - Phase Changer	-	125			9
47 - Output	-	230	235		16

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

#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.

6. Repeat the 4250 kc and 4000 kc adjustments for greater accuracy.

#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:

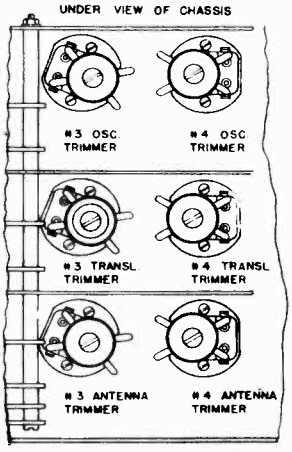
1. Set the test oscillator to 19 megacycles.

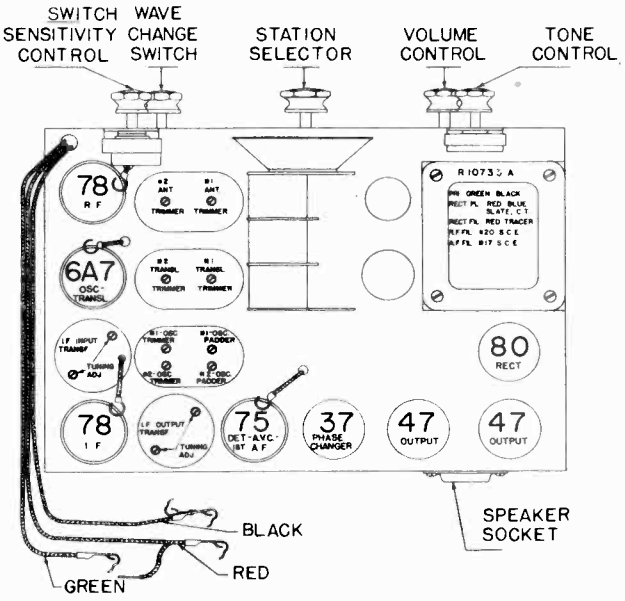
2. Turn the variable condenser plates all the way out. Then adjust the #4 oscillator trimmer for maximum output.

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.

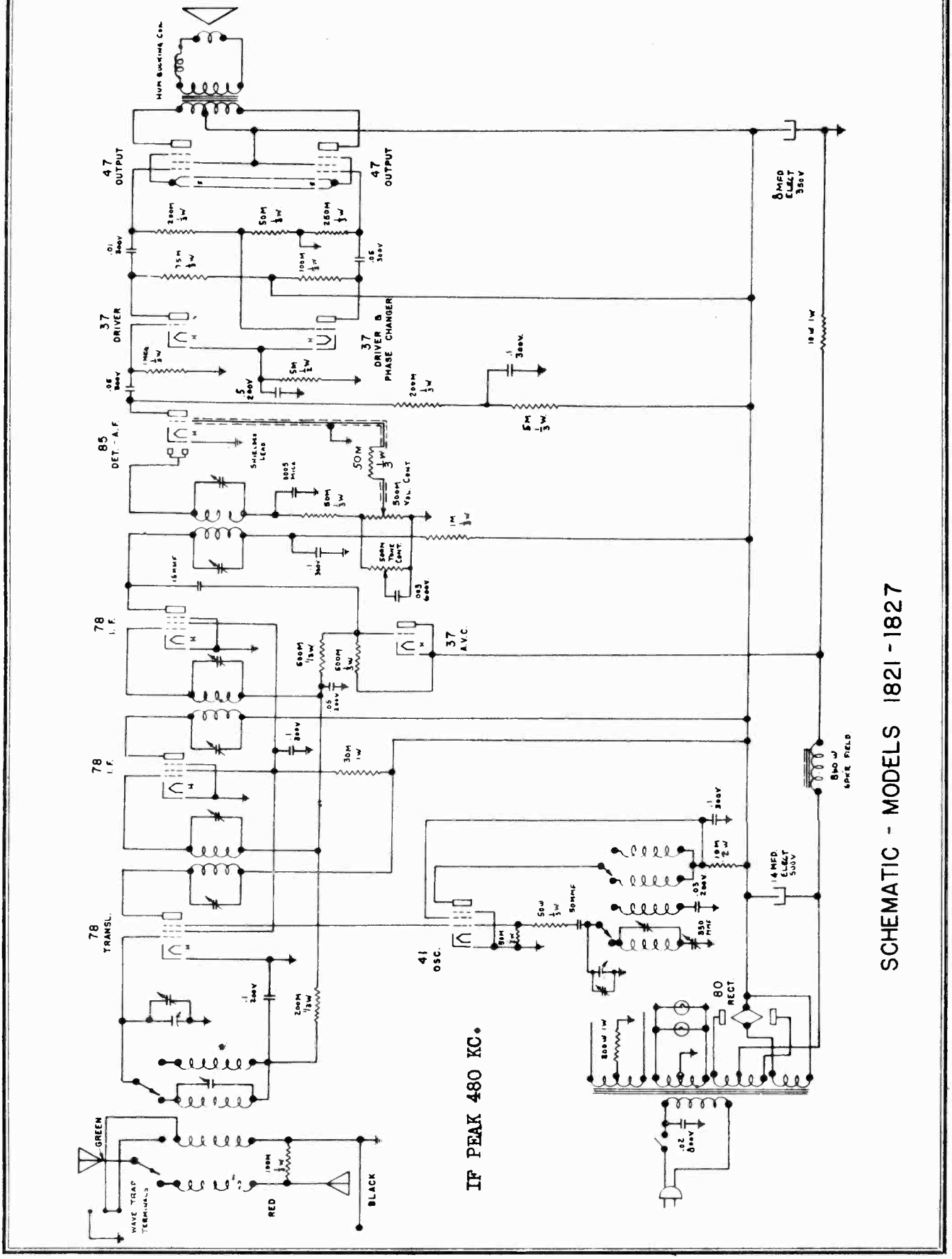
5. If turns have been shifted, repeat the 19 megacycle and 18 megacycle adjustments since they will have been affected by shifting of the turns.





SEARS-ROEBUCK & CO.

MODEL 1821,1827
Schematic



MODEL 1821,1827
Alignment, Voltage
Socket, Parts List

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 480 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.

RF Alignment (Broadcast):

1. Set the test oscillator to 1785 kc.

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

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

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. The location of this padding condenser is shown in the Service Illustrations.

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

6. Set the test oscillator to 1500 kc and tune in its signal. Then adjust the trimmer on the antenna 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.

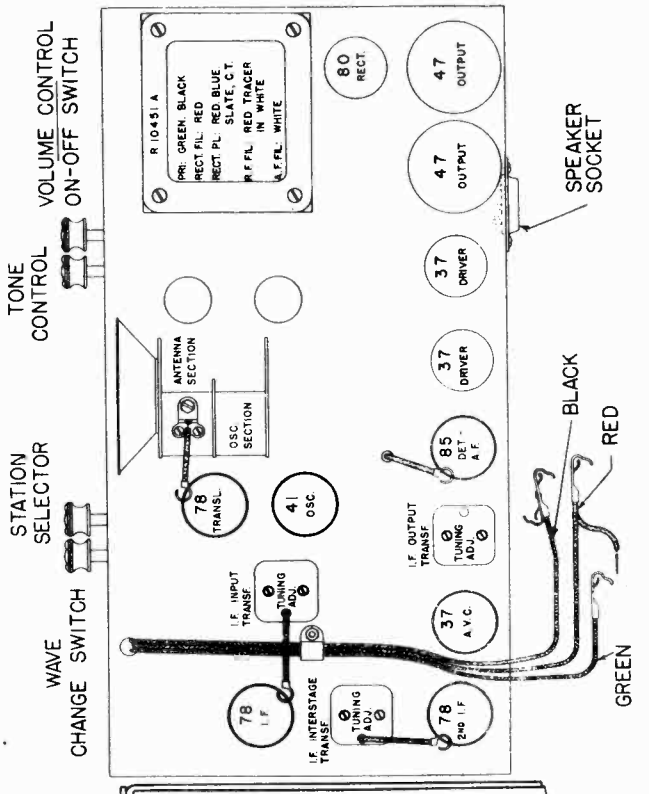
2. Turn the wave band switch to the short wave position and tune in the test oscillator signal. Then adjust the trimmer on the short wave antenna coil for maximum output.

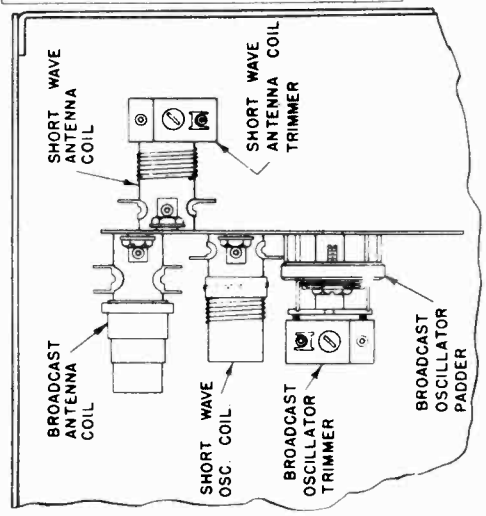
3. Set the test oscillator to 6 megacycles and tune in its signal. If necessary, turns may be shifted on the short wave antenna coil to secure accurate alignment on this frequency. Should it become necessary to shift turns, the translator trimmer will have to be readjusted at 16 megacycles after the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

TUBE VOLTAGE CHART

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

TUBES	PLATE VOLTAGE	SCREEN VOLTAGE
78 - Translator -	245	85
41 - Oscillator -	115	115
78 - First IF -	245	85
78 - Second IF -	235	85
37 - AVC -	Used as diode with no applied DC voltage	
85 - Det-AF -	20	
37 - Driver -	140	
37 - Driver and Phase Changer -	110	
47 - Output -	240	245



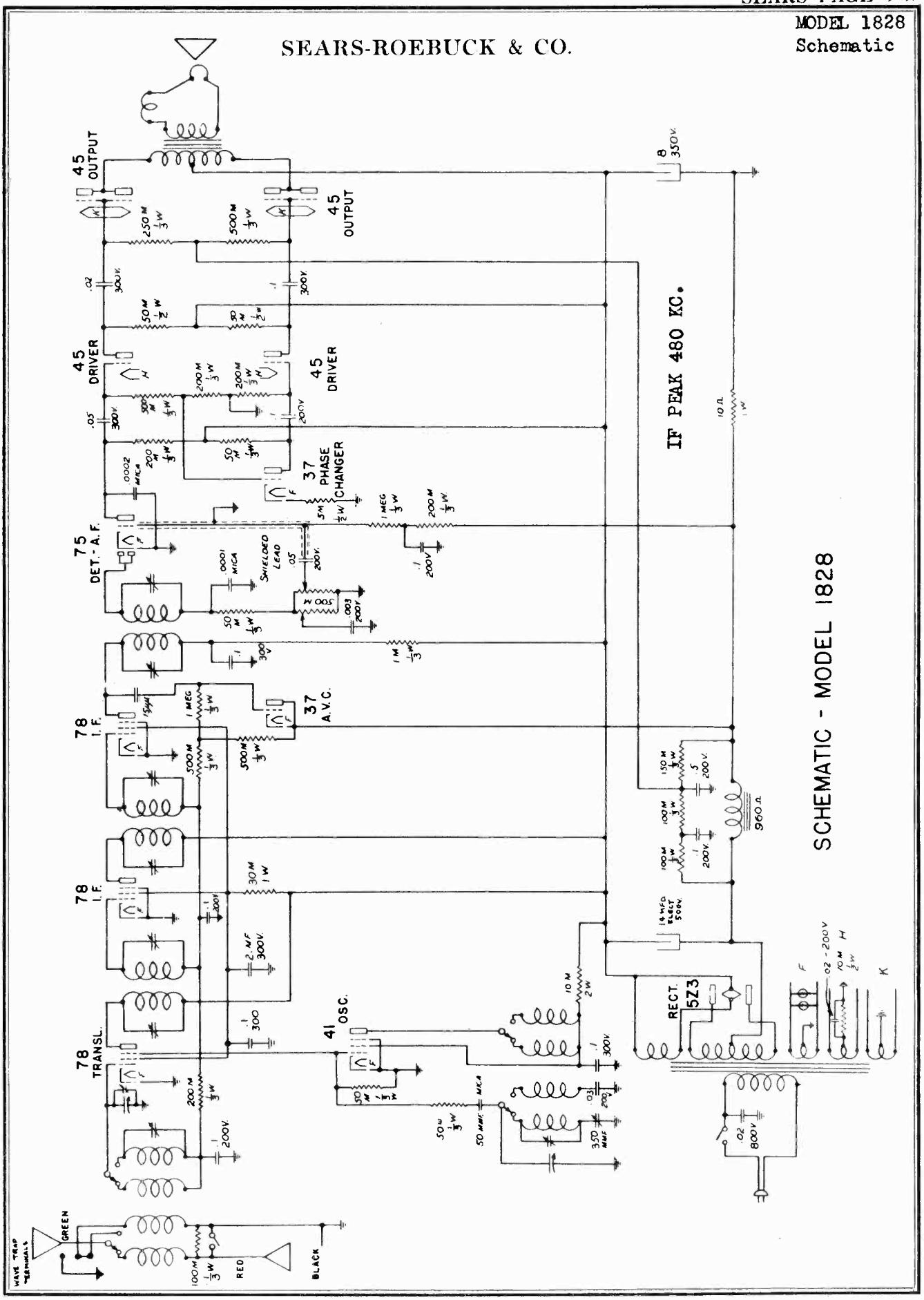


SILVERTONE - - MODELS 1821, 1827

Part No.	Description	Price per 100
R8297A	Board - Terminal, double	1.34
R8308A	Board - Terminal, triple	1.78
R9446A	Board - Terminal, 4 terminals	2.15
R10468B	Transformer - IF input	47.61
R10469B	Transformer - IF interstage	47.70
R10470A	Transformer - IF output	46.44
R10451A	Transformer - Power, 60 cycles	223.86
R10452A	Transformer - Power, 25 cycles	359.69
R10446	Coil - Antenna	15.80
R10399	Coil - Oscillator	9.29
R9829F	Coil - Antenna, short wave	25.29
R9829G	Coil - Oscillator, short wave	20.70
R10453	Condenser - Variable	81.85
R10453A	Condenser - Variable with dial and drive assembly	170.49
R7236	Condenser - Electrolytic, 14 mfd.	40.63
R8488	Condenser - Electrolytic, 8 mfd.	28.00
R10197	Condenser - Trimmer, 25 mmf.	3.59
R9975	Condenser - Padding, 350 mmf.	10.55
R6451	Condenser - .5 mfd. 200 volts	10.24
R6138	Condenser - .1 mfd. 300 volts	10.95
R6444	Condenser - .1 mfd. 200 volts	5.74
R7857	Condenser - .05 mfd. 300 volts	4.74
R7354	Condenser - .05 mfd. 200 volts	4.65
R6630	Condenser - .03 mfd. 200 volts	4.49
R10456	Condenser - .02 mfd. 800 volts	5.81
R6462	Condenser - .01 mfd. 300 volts	4.52
R10455	Condenser - .003 mfd. 300 volts	3.44
R6760	Condenser - .0005 mfd. mica	4.56
R8621	Condenser - .00005 mfd. mica	4.60
R8042	Condenser - .000015 mfd. mica	4.56
R10457	Control - Tone, 500 M ohms	20.69
R10458	Control - Volume, 500 M ohms	28.01
R7585	Resistor - 1 megohm, 1/3 watt carbon	5.91
R7228	Resistor - 500 M ohms, 1/3 watt carbon	5.25
R7584	Resistor - 250 M ohms, 1/3 watt carbon	5.25
R6638	Resistor - 200 M ohms, 1/3 watt carbon	5.91
R7586	Resistor - 100 M ohms, 1/3 watt carbon	5.91
R10464	Resistor - 75 M ohms, 1/3 watt carbon	5.25
R6637	Resistor - 50 M ohms, 1/3 watt carbon	5.25
R6689	Resistor - 20 M ohms, 1 watt carbon	6.58
R10465	Resistor - 10 M ohms, 2 watt carbon	7.23
R7226	Resistor - 5 M ohms, 1/3 watt carbon	5.25
R6510	Resistor - 5 M ohms, 1/2 watt carbon	6.58
R6636	Resistor - 1 M ohms, 1/3 watt carbon	5.25
R9533	Resistor - 300 ohms, 1 watt carbon	5.91
R6632	Resistor - 50 ohms, 1/3 watt carbon	6.05
R8739	Resistor - 10 ohms, 1 watt.flexible	5.25

MODEL 1828
Schematic

SEARS-ROEBUCK & CO.



MODEL 1828
Voltage, Alignment
Socket, Parts List

SEARS-ROEBUCK & CO.

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 78 seoond IF tube. The grid clip should be left attached to the cap.

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 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.

RF Alignment (Broadcast):

1. Set the test oscillator to 1785 kc.

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

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

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. The location of this padding condenser is shown in the Service Illustration.

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

6. Set the test oscillator to 1500 kc and tune in its signal. Then adjust the trimmer on the antenna 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.

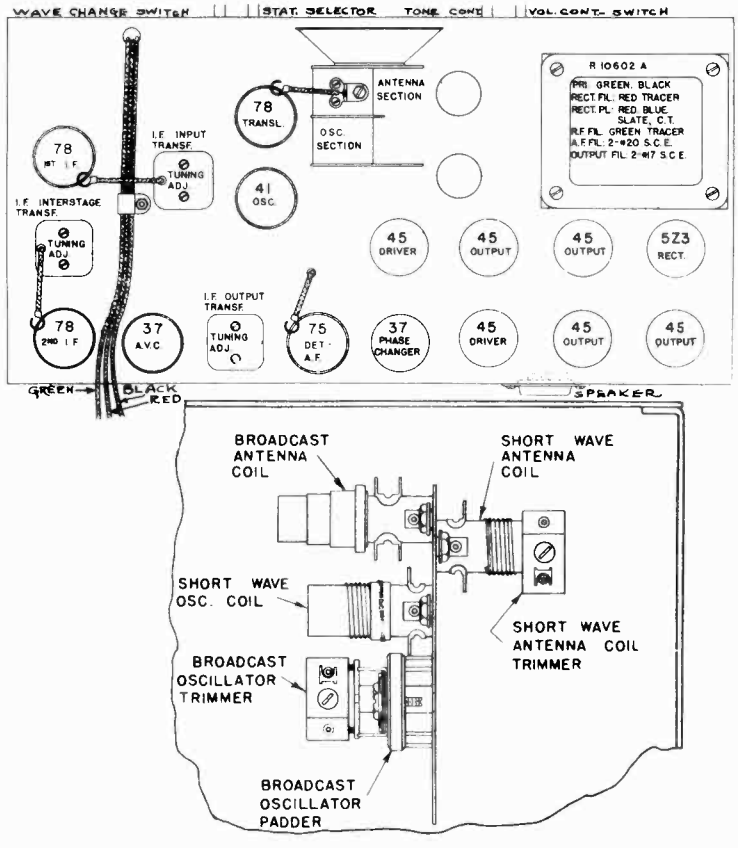
2. Turn the wave band switch to the short wave position and tune in the test oscillator signal. Then adjust the trimmer on the short wave antenna coil for maximum output.

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 on this frequency. Should it become necessary to shift turns, the translator 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.

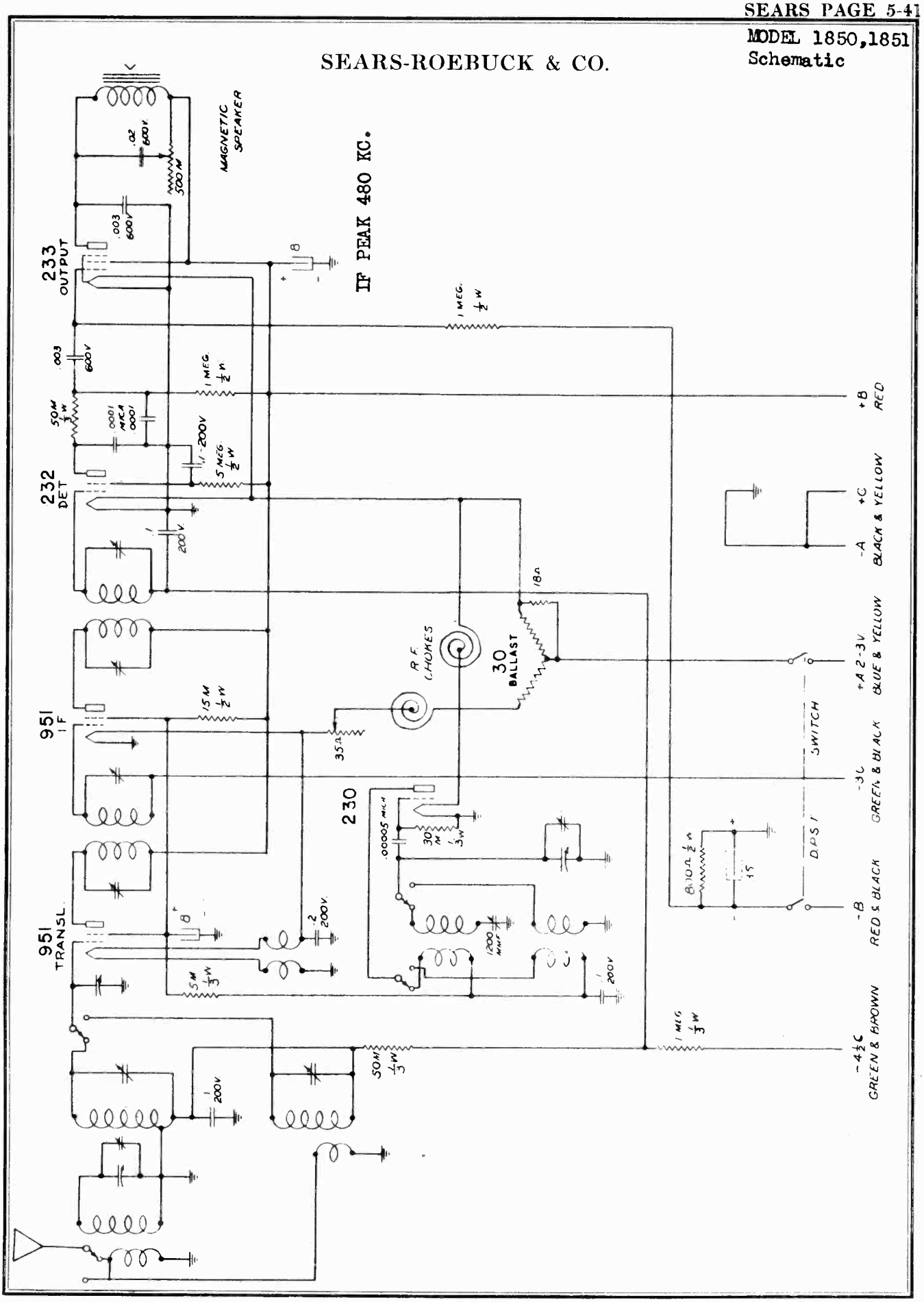
TUBE		PLATE VOLTAGE	SCREEN VOLTAGE
78 - Translator	-	255	80
41 - Oscillator	-	120	120
78 - First IF	-	255	80
78 - Second IF	-	250	80
37 - AVC	-	Used as diode with no applied DC voltage.	
75 - Det-AF	-	105	
37 - Phase Changer	-	130	
45 - Drivers	-	150	
45 - Output	-	250	



R10446	Coil - Antenna
R10399	Coil - Oscillator
R9829F	Coil - Antenna, short wave
R9829G	Coil - Oscillator, short wave
R10453	Condenser - Variable
R10453A	Condenser - Variable, with drive assembly
R7236	Condenser - Electrolytic, 14 mfd.
R8488	Condenser - Electrolytic, 8 mfd.
R10197	Condenser - Trimmer, 25 mmf.
R9975	Condenser - Padding, 350 mmf.
R8217	Condenser - Electrolytic, 2 mfd.
R6451	Condenser - .5 mfd. 200 volts
R6138	Condenser - .1 mfd. 300 volts
R6444	Condenser - .1 mfd. 200 volts
R7354	Condenser - .05 mfd. 200 volts
R7857	Condenser - .05 mfd. 300 volts
R6630	Condenser - .03 mfd. 200 volts
R6629	Condenser - .02 mfd. 200 volts
R7680	Condenser - .02 mfd. 300 volts
R10456	Condenser - .02 mfd. 800 volts,
R10495	Condenser - .003 mfd. 200 volts
R7139	Condenser - .0002 mfd. mica
R4303	Condenser - .0001 mfd. mica
R8621	Condenser - .00005 mfd. mica
R8042	Condenser - .000015 mfd. mica
R10457	Control - Tone, 500 M ohms
R10458	Control - Volume, 500 M ohms
R6989	Cord - AC line
R10429A	Dial diffusing disk
R10476	Escutcheon
R10982	Folder - Short wave
R7585	Resistor - 1 megohm, 1/3 watt carbon
R7228	Resistor - 500 M ohms, 1/3 watt carbon
R7584	Resistor - 250 M ohms, 1/3 watt carbon
R6638	Resistor - 200 M ohms, 1/3 watt carbon
R9778	Resistor - 150 M ohms, 1/3 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
R10465	Resistor - 10 M ohms, 2 watt carbon
R6510	Resistor - 5 M ohms, 1/2 watt carbon
R6636	Resistor - 1 M ohms, 1/3 watt carbon
R6632	Resistor - 50 ohms, 1/3 watt carbon
R8739	Resistor - 10 ohms, 1 watt flexible
S10590S	Speaker
R10467	Switch - Wave
R10468B	Transformer - IF input
R10469B	Transformer - IF interstage
R10470A	Transformer - IF output
R10602A	Transformer - Power, 60 cycle
R10603A	Transformer - Power, 25 cycle
R10441	Shield - Tube, cap
R8315	Socket - 4 prong
R8253	Socket - 5 prong
R8367	Socket - 5 prong, speaker
R8092	Socket - 6 prong
R10549	Socket - Pilot light

MODEL 1850,1851
Schematic

SEARS-ROEBUCK & CO.



MODEL 1850,1851
Voltage,Alignment
Socket,Parts List

SEARS-ROEBUCK & CO.

ALIGNMENT PROCEDURE

The IF Stages:

1. Connect the output meter across the loud speaker terminals. The high scale (about 100 volts) of the meter should be used.

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 control grid of the IF tube, leaving the grid clip attached to the cap.

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

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. Set the test oscillator to exactly 1600 kc.

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

3. Turn the dial pointer to exactly 1600 kc. and adjust the oscillator trimmer for maximum output. The oscillator trimmer is on the variable condenser section furthest from the dial.

4. Set the test oscillator to 1400 kc. and tune in its signal. Then adjust the translator and antenna trimmers for maximum output. The translator trimmer is accessible through the hole in the top of the translator coil shield as shown in the Service Illustration. The antenna trimmer is the one on the variable condenser section nearest the dial.

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 padder until maximum output is obtained.

6. Repeat the 1600 kc. and 1400 kc. adjustments.

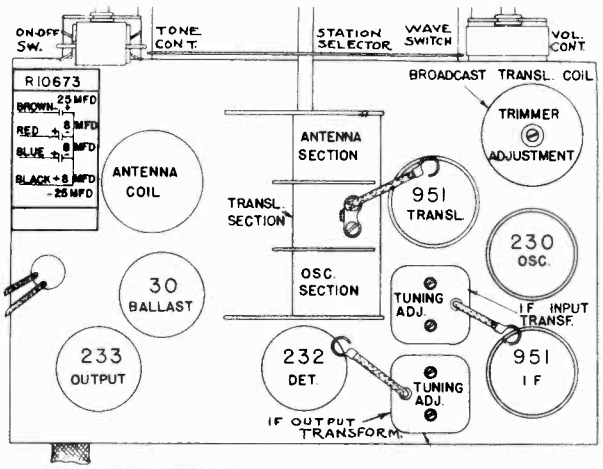
Short Wave Alignment:

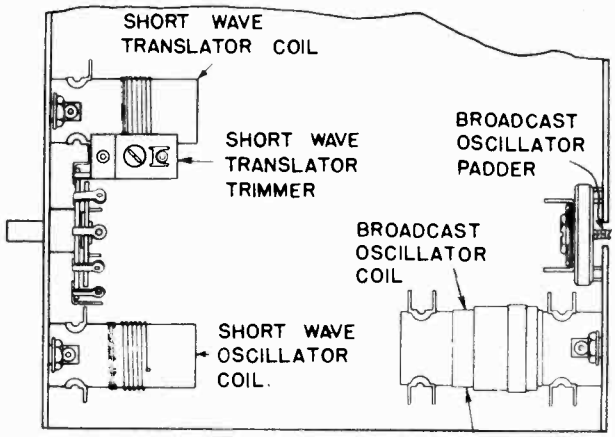
1. Set the test oscillator to 15 megacycles and tune in its signal.

2. Adjust the short wave translator trimmer for maximum output.

3. If necessary, shift the end turns (enamelled wire) of the short wave translator coil to secure accurate alignment and maximum output.

4. Re-adjust the translator trimmer at 15 megacycles.





TUBE VOLTAGE CHART

TUBE	PLATE VOLTAGE	SCREEN VOLTAGE	CONTROL GRID VOLTAGE
951 - Translator	122	70	-.1
230 - Oscillator	60		-.6
951 - IF	122	70	-.8
232 - Dete tor	22.5*	5*	-.1
233 - Output	115	122	-.1

NOTE: All control grid readings are lower than the actual applied voltage due to high series resistance in the circuit.

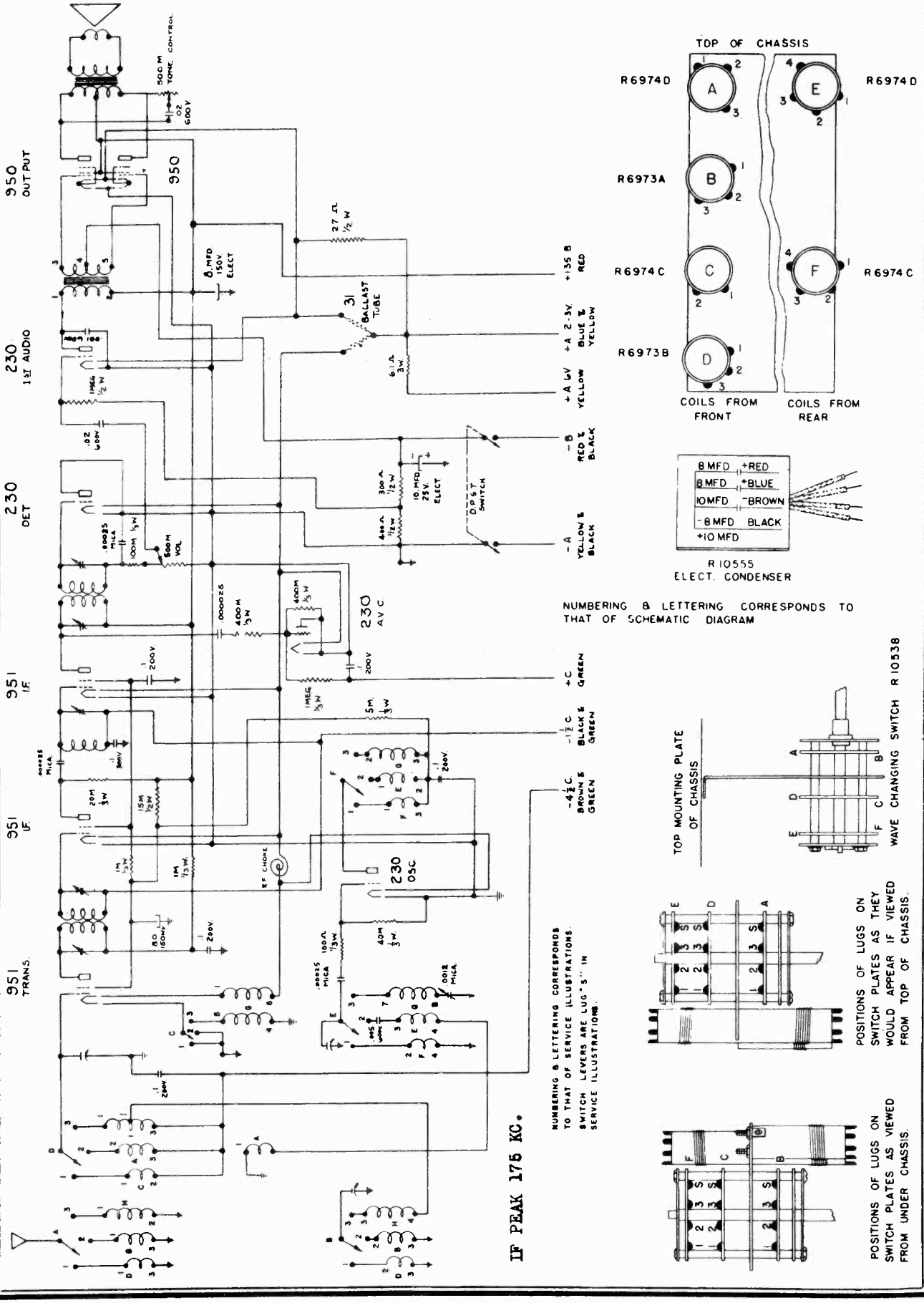
* - Indicates low reading due to high series resistance in circuit.

SILVERTONE MODELS 1850 and 1851

Part No.	Description
R5509A	Board - Terminal, double
R8308A	Board - Terminal, triple
R9446A	Board - Terminal, 4 terminals
R10562	Bushing - Rubber, chassis mounting
R10719	Cable - Battery, model 1850
R10720	Cable - Battery, model 1851
R10770	Card - Operating
R8352	Choke - RF
R5941	Clamp - Battery cable
R4715	Clamp - Antenna and ground leads
R7011A	Clip - Antenna and ground leads
R11043	Clip - Grid
R10670	Coil - Antenna, broadcast
R10674	Coil - Oscillator, broadcast
R10671	Coil - Translator, broadcast
R10931A	Coil - Antenna, short wave
R10931B	Coil - Oscillator, short wave
R10672	Condenser - Variable
R10672A	Condenser - Variable, complete with dial and drive assembly
R10673	Condenser - Electrolytic, block
R9426	Condenser - Padding
R10197	Condenser - Trimmer
R6380	Condenser - .2 mfd. 200 volts
R6444	Condenser - .1 mfd. 200 volts
R6761	Condenser - .02 mfd. 600 volts
R7681	Condenser - .003 mfd. 600 volts
R6110	Resistor - 30 M ohms, 1/3 watt carbon
R7291	Resistor - 15 M ohms, 1/2 watt carbon
R7226	Resistor - 5 M ohms, 1/3 watt carbon
R7441	Resistor - 800 ohms, 1/2 watt carbon
R10598	Resistor - 18 ohms, 1/2 watt, flexible
R10505	Ring - Glass clamping
R10445A	Shaft - Dial drive assembly
R8396	Shield - Tube, base
R10440	Shield - Tube, top
R10441	Shield - Tube, cap
R10654	Shield - Coil, base
R10653	Shield - Coil, top
R8315	Socket - 4 prong
R8253	Socket - 5 prong
S10120	Speaker - for model 1850
S10573A	Speaker - for model 1851
R10718	Switch - Filament
R10467	Switch - Wave
R10716A	Transformer - IF input
R10717	Transformer - IF output
R4303	Condenser - .0001 mfd. mica
R8621	Condenser - .00005 mfd. mica
R10648	Control - Tone
R10712	Control - Volume
R10530A	Disk - Drive with bushing
R10503	Escutcheon
R10982	Folder - Short wave
R10504	Glass - Escutcheon
R10635B	Indicator and mounting ring assembly
R10769	Instruction leaflet
R10479	Knob - Station Selector
R10705	Knob
R11027	Knob - With dot
R5346D	Lead - Antenna, green
R5345E	Lead - Ground, black
R10499B	Pointer
R8363	Resistor - 5 megohm, 1/2 watt carbon
R5823	Resistor - 1 megohm, 1/2 watt carbon
R7585	Resistor - 1 megohm, 1/3 watt carbon
R6637	Resistor - 50 M ohms, 1/3 watt carbon

MODEL 1854
Schematic

SEARS-ROEBUCK & CO.



R10555
ELECT. CONDENSER

NUMBERING & LETTERING CORRESPONDS TO THAT OF SCHEMATIC DIAGRAM

WAVE CHANGING SWITCH R10538

POSITIONS OF LUGS ON SWITCH PLATES AS THEY WOULD APPEAR IF VIEWED FROM TOP OF CHASSIS.

POSITIONS OF LUGS ON SWITCH PLATES AS VIEWED FROM UNDER CHASSIS.

MODEL 1854
Alignment, Voltage
Socket Layout

SEARS-ROEBUCK & CO.

The type 31 Ballast tube maintains the filament voltage at its proper value (2 volts). This will be so whether a 2 volt air cell, a dry cell "A" block or a 6 volt storage battery is used. It is important that the receiver be turned off before removing any tubes. Otherwise the voltage across the remaining tubes will rise, with the possibility of damaging them.

Although the receiver will afford good reception after the "B" batteries have fallen to a lower value, for best results they should be replaced when the total voltage, under load, falls to 100 volts.

THE 230 AVC CIRCUIT

A portion of the IF signal at the plate of the second IF tube is impressed through the .000025 mfd. condenser and the 400 M ohm resistor, upon the 230 AVC tube. This tube is used as a rectifier or diode, with plate connected to filament. During the positive half cycles of the signal voltage, diode current flows through the 400 M ohm resistor which is connected between grid and plate of the 230 AVC tube, creating a voltage drop across it. This voltage is effectively in series with the "C" battery, being connected to it through the 1 megohm resistor which is in the circuit between the 230 grid and the "C-" lead. Any increase in signal strength increases the current through the 230 AVC tube, increases the drop across the 400 M ohm resistor and therefore increases the total value of "C" bias. This increased "C" bias is impressed upon the control grids of the translator and IF tubes, decreasing their amplification. Since increases in signal strength are offset by decreases in tube amplification, the output of the second IF tube tends to remain at a constant value.

ALIGNMENT PROCEDURE

The IF Stages:

1. Connect the output meter across the loud speaker terminals. The high scale (about 100 volts) of the meter should be used.

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 second IF tube. Leave the grid clip 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 Illustration.

5. Change the test oscillator connection to the grid of the first IF tube and adjust the inter-stage tuning condenser. This condenser is the Isolantite base one mounted on the back plate of the chassis alongside of the Candohm resistor.

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

7. Repeat all of the adjustments to secure greater accuracy.

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

Broadcast (#1 Band) Alignment:

1. Set the test oscillator to exactly 1600 kc.

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

3. Turn the dial pointer to exactly 1600 kc and adjust the oscillator trimmer for maximum output. The oscillator trimmer is the bakelite base condenser mounted on the back of the variable condenser end plate.

4. Set the test oscillator to 1500 kc and tune in its signal. Then adjust the translator and antenna trimmers for maximum output. The translator trimmer is the one on the middle section of the variable condenser. The antenna trimmer is the one on the variable condenser section nearest the dial.

5. Set the test oscillator to 600 kc. Tune in its signal and 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. The padder is the Isolantite base condenser mounted on the end plate of the variable condenser.

6. Since the adjustments are inter-acting to an extent, it is advisable to repeat the entire operation. Always use as low an output from the test oscillator as possible.

Short Wave (#2 Band) Alignment:

1. Set the test oscillator to 4000 kc and couple it loosely to the set's antenna lead, with the antenna connected.

2. Turn the wave band switch to the #2 position and tune in the oscillator signal.

3. If the calibration is out, shift turns (enamelled wire) on coil "E" until the proper calibration is obtained. The end plate may be removed from the chassis in order to gain access to the coils.

4. The turns of coils "A" and "B" may be shifted, if necessary, to obtain alignment and maximum output.

5. Check the calibration and alignment at 2000 kc. If they are not correct at this frequency, the 4000 kc adjustment should be repeated to obtain a compromise adjustment for the two frequencies.

6. Cement the coil turns in place.

Short Wave (#3 Band) Alignment:

1. Set the test oscillator to 15 megacycles.

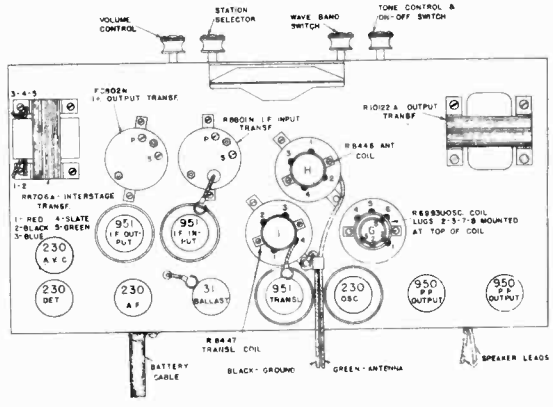
2. Couple its output loosely to the receiver's antenna lead, with the antenna connected. Turn the wave band switch to the #3 position and tune in the oscillator signal.

3. Obtain maximum output and proper calibration by shifting the leads of coils "C", "D" and "F".

4. Tune the test oscillator and the receiver to 6000 kc and shift turns on coils "C", "D" and "F" until maximum sensitivity and proper calibration are obtained.

5. Repeat operation #3 at 15 megacycles.

A loop of #14 wire with its ends soldered together to form a short circuited ring, fastened to a bakelite handle will prove useful for determining whether the end turns of the short wave coils need to be moved toward or away from the other turns. If sensitivity is increased when the loop of wire is slowly inserted inside of a short wave coil, it is an indication that the turns of the coil should be moved apart. If the sensitivity is decreased, it indicates either that the coil adjustment is correct, or that the turns should be moved closer together.



TUBE VOLTAGE CHART

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

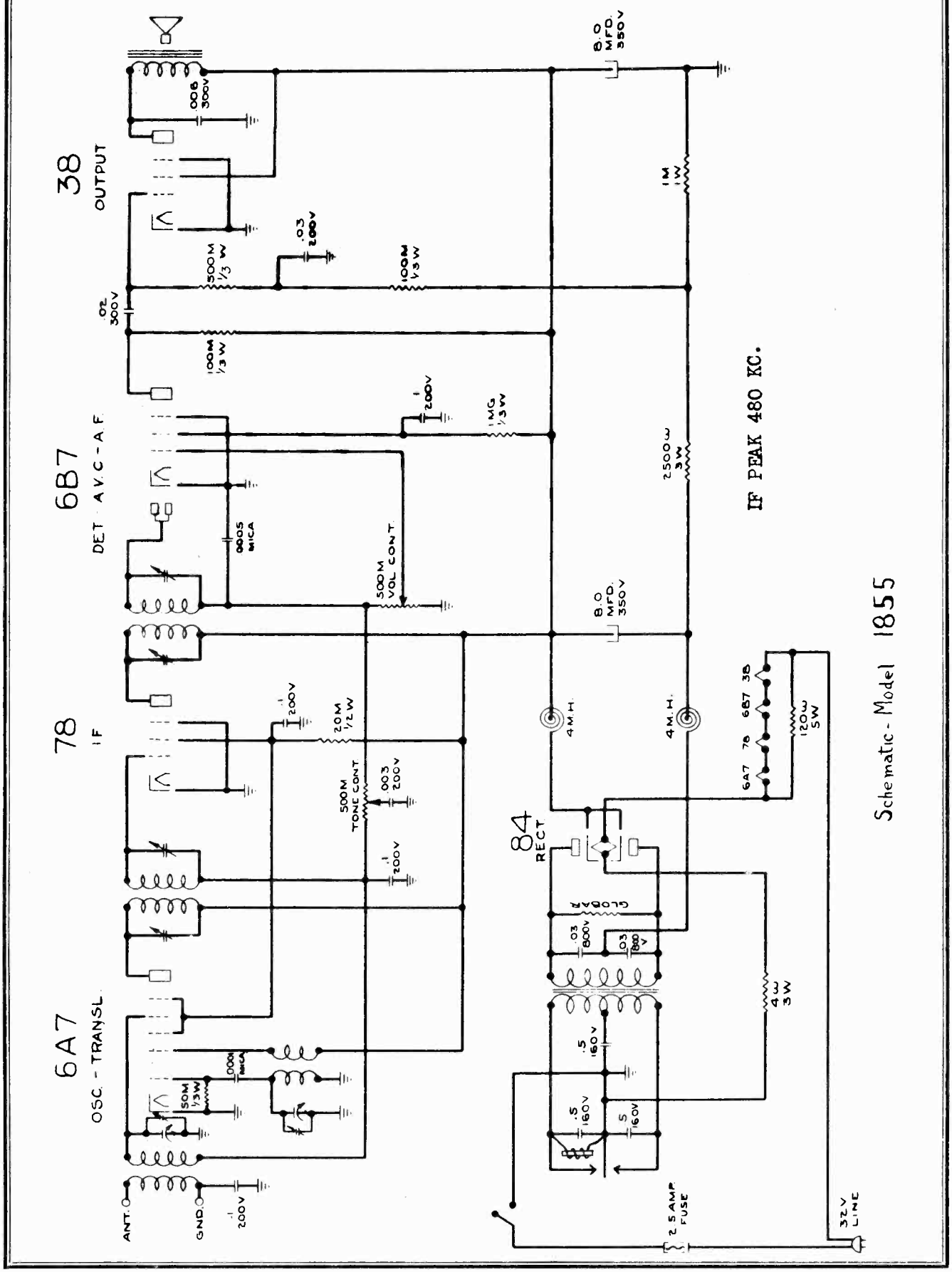
TUBE	PLATE VOLTAGE	SCREEN VOLTAGE	CONTROL GRID VOLTAGE
951 Translator -	120	58.5	-1.2
230 Oscillator -	44		-2.35
951 1st IF -	69	57	- .3
951 2nd IF -	120	57	- .3
230 Detector -	Used as diode with no applied DC voltage.		
230 AVC -	Used as diode with no applied DC voltage.		
230 1st Audio -	120		*
950 Output -	120	120	-15

* - Extremely low readings due to high series resistance in circuit.

Actual Translator control grid voltage is -4.5 volts.
Actual IF control grid voltage is -1.5 volts.

SEARS-ROEBUCK & CO.

MODEL 1855
Schematic



MODEL 1855
Voltage, Alignment
Socket, Parts List

SEARS-ROEBUCK & CO.

ALIGNMENT PROCEDURE

The IF Stages:

1. Connect the output meter across the loud speaker terminals. The high scale (about 100 volts) of the meter should be used.

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 78 IF tube. Leave the grid clip attached to the cap.

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

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. Set the test oscillator to exactly 1750 kc. Couple the output of the oscillator to the antenna lead of the set, with the antenna connected.

2. Turn the dial to exactly 1750 kc. and adjust the oscillator trimmer for maximum output. The oscillator trimmer is the one on the variable condenser section, furthest from the dial.

3. Set the test oscillator to 1500 kc and tune in its signal. Adjust the antenna trimmer for maximum output.

TUBE VOLTAGE CHART

All readings are to be taken between the chassis and the respective element of each tube. Supply voltage 32 volts.

TUBES	PLATE	SCREEN	OSC. PLATE	OSC. GRID	CONTROL GRID
6A7-Osc-Transl -	165	85	165	-3.6	-.4
78-IF -	165	85			-.4
6B7-AVC-Det-AF -	75	20			-.2
38-Output -	165	165			-.6*

* - Extremely low readings due to high series resistance in circuit.

The cover of the power supply unit is fitted with contact fingers to insure good contact with the rest of the power supply case. It is important that this cover makes tight electrical contact with the case to prevent noisy operation due to electrical disturbances from the vibrator.

The resistor marked "Globar", in the schematic, is a special resistor whose value varies with the voltage. 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 these conditions, the Globar resistance 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 Globar resistance increases greatly so that it no longer constitutes a load on the power supply.

Unlike the earlier Model 1733, the polarity of the power cord plug is not of importance.

The antenna coil is not grounded to the chassis, so that the receiver depends entirely upon the installation ground for its ground connection. Accordingly, the best ground possible should be installed.

The polarity of the speaker must be correct. The blue lead connects to the speaker terminal marked "P". The black lead connects to the "4" terminal.

THE 6B7 - AVC-Detector-AF

The 480 kc signal from the IF stage is impressed between the cathode and the diode plates of the 6B7, in series with the 500 M ohms of the volume control. Diode current flows, creating a voltage drop across the control with the grounded end positive with respect to the other end. Since the control grid returns of the 6A7 and 78 tubes are connected to the ungrounded end of the volume control, the negative bias across it is impressed upon the control grids of these tubes. Any increase in signal strength increases the diode current and the drop across the volume control, increases the negative control grid bias and so reduces tube amplification. Since increases in signal strength tend to be offset by decreases in tube amplification, the input to the detector remains substantially at a constant value.

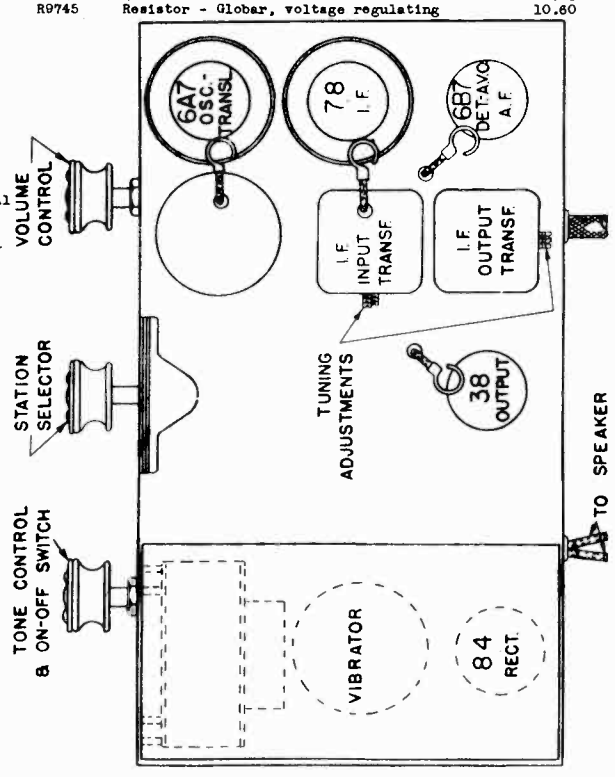
The audio component across the volume control is picked off by the movable arm and fed to the control grid of the pentode portion of the tube. It is there amplified and then coupled to the 38.

REPLACEMENT PARTS AND PRICE LIST

FOR

SILVERTONE MODEL 1855

Part No.	Description	Price per 100
R8297A	Board - Terminal, double	1.34
R8308A	Board - Terminal, triple	1.78
R7901A	Board - Fuse	5.85
R10028A	Transformer - IF input	40.44
R10029	Transformer - IF output	39.80
R10892A	Transformer - Power	100.56
R10125	Coil - Oscillator	9.33
R9757	Coil - Choke	5.74
R8412	Condenser - Variable	73.55
R8488	Condenser - Electrolytic, 8 mfd. 350 volts	28.00
R9032	Condenser - .5 mfd. 160 volts	8.04
R6444	Condenser - .1 mfd. 200 volts	5.74
R10887	Condenser - .03 mfd. 800 volts	5.58
R6630	Condenser - .03 mfd. 200 volts	4.49
R7680	Condenser - .02 mfd. 300 volts	4.46
R10893	Condenser - .006 mfd. 200 volts	3.38
R10495	Condenser - .003 mfd. 200 volts	3.25
R6760	Condenser - .0005 mfd. mica	4.56
R4303	Condenser - .0001 mfd. mica	7.97
R6571	Control - Tone	34.81
R6570	Control - Volume, 500 M ohms	23.60
R6989	Cord - Extension	15.75
R10012A	Dial and indicator	12.87
R8406	Escutcheon	7.69
R10547	Fuse - 2½ amp.	3.04
R10012	Indicator	4.40
R10898	Instruction leaflet	1.55
R10705	Knob - Small	4.65
R10704	Knob - Small with dot	4.90
R10479	Knob - Medium	4.75
R5346D	Lead - Antenna	3.57
R5345A	Lead - Ground	8.78
R8700A	Lead - Speaker, black	3.36
R8809A	Lead - Speaker, blue	2.36
R7585	Resistor - 1 megohm, 1/3 watt carbon	5.91
R7228	Resistor - 500 M ohms, 1/3 watt carbon	5.25
R7586	Resistor - 100 M ohms, 1/3 watt carbon	5.91
R6637	Resistor - 50 M ohms, 1/3 watt carbon	5.25
R5821	Resistor - 20 M ohms, 1/2 watt carbon	8.54
R10896	Resistor - 2500 ohms, 3 watt	8.65
R9254	Resistor - 1000 ohms, flexible	5.25
R10895	Resistor - 120 ohms, 5 watt	8.65
R10295	Resistor - 4 ohms	9.04
R9745	Resistor - Globar, voltage regulating	10.60

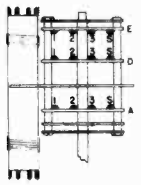


MODEL 1857
Schematic
Socket Layout

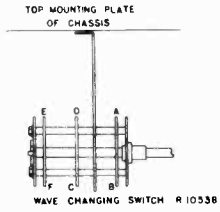
SEARS-ROEBUCK & CO.

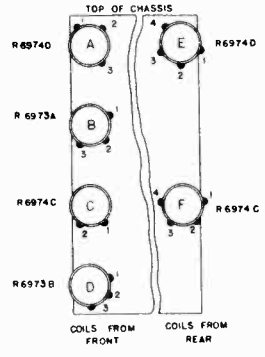
SERVICE ILLUSTRATIONS - MODEL 1857

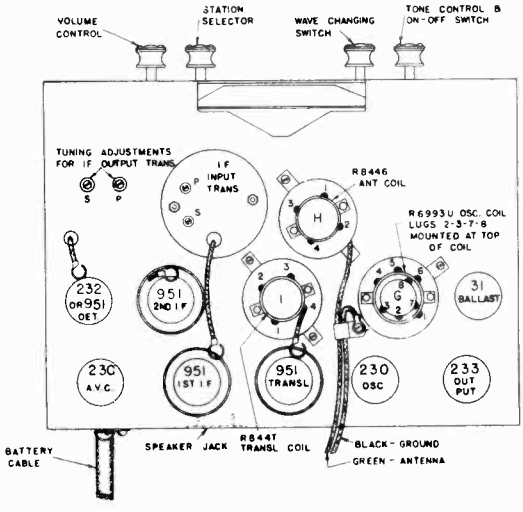
POSITIONS OF LUGS ON SWITCH PLATES AS VIEWED FROM UNDER CHASSIS.

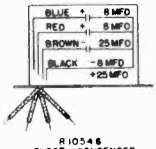


POSITIONS OF LUGS ON SWITCH PLATES AS THEY WOULD APPEAR IF VIEWED FROM TOP OF CHASSIS.

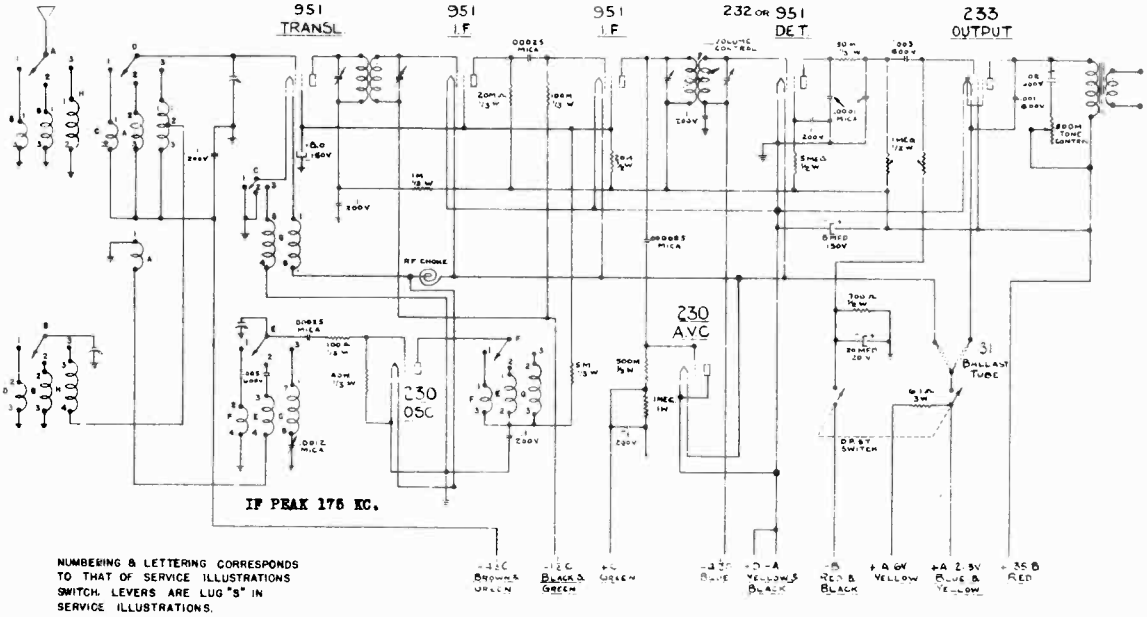








NUMBERING & LETTERING CORESPONDS TO THAT OF SCHEMATIC DIAGRAM



NUMBERING & LETTERING CORRESPONDS TO THAT OF SERVICE ILLUSTRATIONS SWITCH LEVERS ARE LUG "S" IN SERVICE ILLUSTRATIONS.

SCHEMATIC - MODEL 1857

MODEL 1857
Alignment, Voltage
Parts List

SEARS-ROEBUCK & CO.

ALIGNMENT PROCEDURE

The IF Stages:

Connect the output meter across the loud speaker terminals. The high scale (about 100 volts) of the meter should be used.

1. Connect one lead of the test oscillator to the chassis.

2. Connect the other lead of the test oscillator, in series with a .1 mfd. condenser to the grid of the 1st IF tube. Leave the grid clip attached to the cap.

3. Set the oscillator to 175 kc and tune the 2nd IF output transformer. The locations of the tuning adjustments are shown in the illustration.

4. Connect the oscillator, through the .1 mfd. condenser, to the grid of the translator tube and tune the IF input transformer.

5. Repeat the adjustments for the IF output transformer and then for the IF input transformer.

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

Broadcast (#1 Band) Alignment:

1. Set the test oscillator to exactly 1600 kc.

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

3. Turn the dial pointer to exactly 1600 kc and adjust the oscillator trimmer for maximum output. The oscillator trimmer is the bakelite base condenser mounted on the back of the variable condenser end plate.

4. Set the test oscillator to 1500 kc and tune in its signal. Then adjust the translator and antenna trimmers for maximum output. The translator trimmer is the one on the middle section or the variable condenser. The antenna trimmer is the one on the variable condenser section nearest the dial.

5. Set the test oscillator to 600 kc. Tune in its signal and 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. The padder is the Isolantite base condenser mounted on the end plate of the variable condenser.

6. Since the adjustments are inter-acting to an extent, it is advisable to repeat the entire operation. Always use as low an output from the test oscillator as possible.

Short Wave (#2 Band) Alignment:

1. Set the test oscillator to 4000 kc and couple it loosely to the set's antenna lead, with the antenna connected.

2. Turn the wave band switch to the #2 position and tune in the oscillator signal.

3. If the calibration is out, shift turns (enamelled wire) on coil "E" until the proper calibration is obtained. The end plate may be removed from the chassis in order to gain access to the coils.

4. The turns of coils "A" and "B" may be shifted, if necessary, to obtain alignment and maximum output.

5. Repeat operations #3 and #4 at 2000 kc. If the alignment and calibration are not correct at this frequency, the 4000 kc adjustment should be repeated to obtain a compromise adjustment.

6. Cement the coil turns in place.

Short Wave (#3 Band) Alignment:

1. Set the test oscillator to 15 megacycles.

2. Couple its output loosely to the receiver's antenna lead, with the antenna connected. Turn the wave band switch to the #3 position and tune in the oscillator signal.

3. Obtain maximum output and proper calibration by shifting the leads of coils "C", "D" and "F".

4. Tune the test oscillator and the receiver to 6000 kc and shift turns on coils "C", "D" and "F" until maximum sensitivity and proper calibration are obtained.

5. Repeat operation #3 at 15 megacycles.

A loop of #14 wire with its ends soldered together to form a short circuited ring, fastened to a bakelite handle will prove useful for determining whether the end turns of the short wave coils need to be moved toward or away from the other turns. If sensitivity is increased when the loop of wire is slowly inserted inside of a short wave coil, it is an indication that the turns of the coil should be moved apart. If the sensitivity is decreased, it indicates either that the coil adjustment is correct or that the turns should be moved closer together.

TUBE VOLTAGE CHART

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

TUBE	PLATE VOLTAGE	SCREEN VOLTAGE	CONTROL GRID VOLTAGE
951 Translator -	122	55	-1.2
230 Oscillator -	45		-2.75
951 1st. IF -	115	55	- .3
951 2nd. IF -	122	55	- .2
951 Detector -	*	*	-4.5
230 AVC -	No applied DC voltage		
233 Output -	120	122	*

* - Extremely low readings due to high series resistance in circuit

Actual 233 control grid voltage is approximately 13 volts.
Actual IF control grid voltage is -1.5 volts.
Actual Translator control grid voltage is -4.5 volts.

REPLACEMENT PARTS AND PRICE LIST

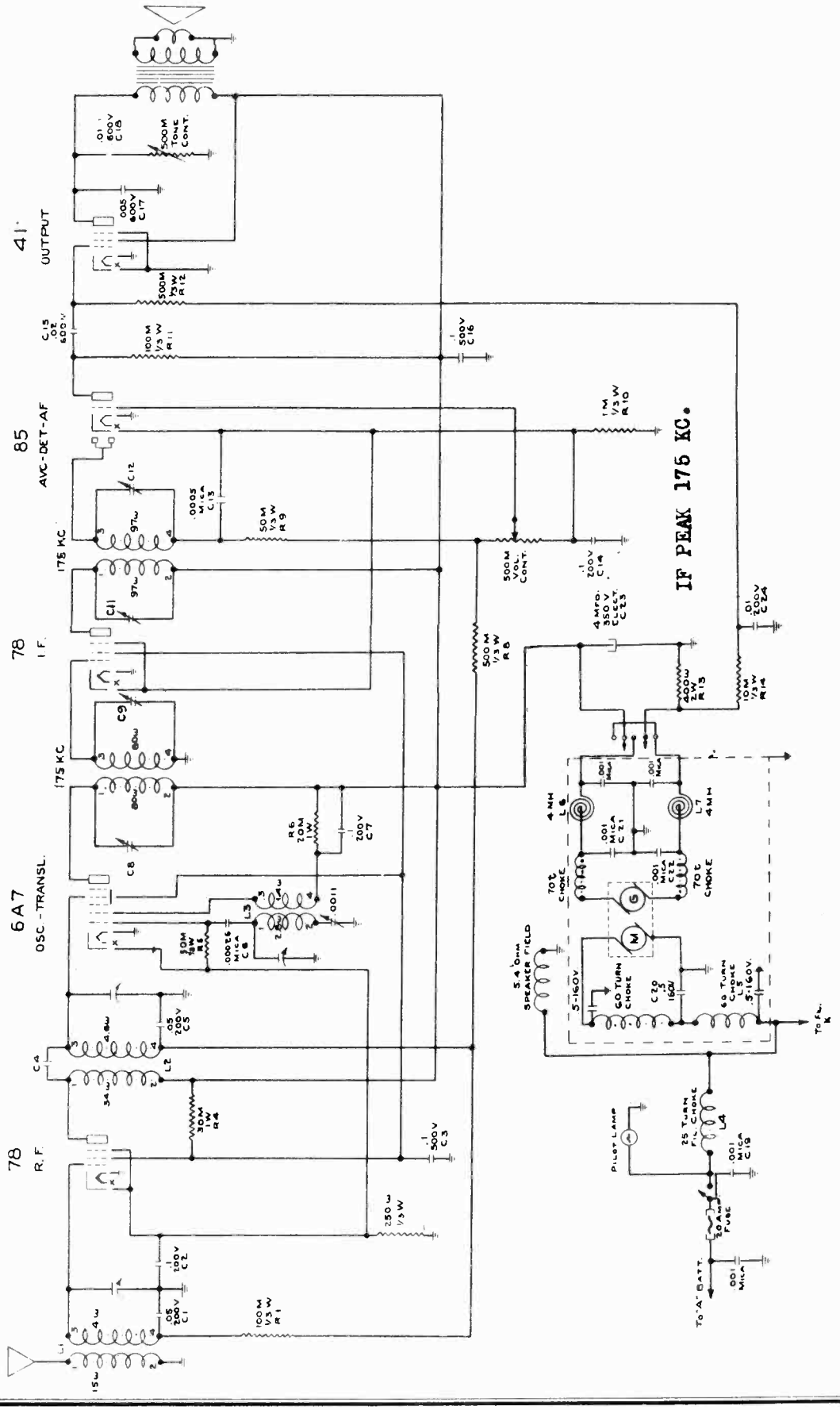
FOR

SILVERTONE MODEL 1857

Part No.	Description	Price per 100
R8297A	Board - Terminal, double	1.34
R8308A	Board - Terminal, triple	1.78
R9446A	Board - Terminal, 4 terminals	2.15
R7243	Bushing - Fibre, wave switch and volume control	1.44
R10562	Bushing - Rubber, chassis mounting	1.71
R7067	Cable - Battery	21.69
R6415	Transformer - IF input	15.75
R6415S	Transformer - IF input, complete less shield	51.83
R6401F	Transformer - IF output, (Volume control)	56.34
R10697A	Transformer - Speaker	46.42
R4794	Washer - Insulating, tone control	.76
R8088	Washer - Insulating, tone control	.19
R8446	Coil - Antenna	19.25
R8447	Coil - Translator	15.44
R6993U	Coil - Oscillator	45.64
R10528	Coil - IF output transformer	10.94
R6973A	Coil - Antenna, intermediate range	16.53
R6973B	Coil - Antenna, high range	16.23
R6974D	Coil - Oscillator-translator, intermediate range	29.98
R6974C	Coil - Oscillator-translator, high range	23.25
R6667	Collar - Stop, volume control	2.13
R11014	Collar - Stop, gang switch	1.71
R10545	Condenser - Variable	140.25
R10545A	Condenser - Variable, complete with dial and drive assembly	233.67
R7137	Condenser - .0012 mfd. padding	16.25
R9513	Condenser - Trimmer, bakelite base, mounted on variable condenser end plate	6.56
R10546	Condenser - Dry electrolytic	71.38
R6565	Condenser - IF input, tuning	17.20
R6139	Condenser - IF output, tuning	21.81
R6444	Condenser - .1 mfd. 200 volts	5.74
R6761	Condenser - .02 mfd. 600 volts	5.06
R6954	Condenser - .005 mfd. 600 volts	5.38
R7681	Condenser - .003 mfd. 600 volts	4.63
R6952	Condenser - .001 mfd. 600 volts	4.38
R4592	Condenser - .00025 mica	8.28
R4303	Condenser - .0001 mica	7.97
R8711	Condenser - .000025 mica	5.60
R10529	Control - Tone, 500 M ohms	37.25
R6401F	Control - Volume, (IF output transformer)	56.34
R7076	Resistor - Candohm	7.75
R8363	Resistor - 5 megohm, 1/2 watt carbon	5.25
R6690	Resistor - 1 megohm, 1 watt carbon	5.90
R5823	Resistor - 1 megohm, 1/2 watt carbon	8.54
R7228	Resistor - 500 M ohms, 1/3 watt carbon	5.25
R7586	Resistor - 100 M ohms, 1/3 watt carbon	5.91
R6637	Resistor - 50 M ohms, 1/3 watt carbon	5.25
R6115	Resistor - 40 M ohms, 1/3 watt carbon	6.57
R6640	Resistor - 20 M ohms, 1/3 watt carbon	5.25
R5821	Resistor - 20 M ohms, 1/2 watt carbon	8.54
R7226	Resistor - 5 M ohms, 1/3 watt carbon	5.25
R6636	Resistor - 1 M ohms, 1/3 watt carbon	5.25
R8364	Resistor - 700 ohms, 1/2 watt carbon	5.25
R8922	Resistor - 100 ohms, 1/3 watt carbon	5.25
R10505	Ring - Glass clamping	.60
R10623	Ring - Felt	.94
R5085	Screw - Escutcheon	.54
R10534A	Shaft - Volume control	2.55
R10535A	Shaft - Dial drive assembly	6.80
R6018A	Shield - Coil	6.05
R6573	Shield - IF transformer	4.24
R10442	Shield - Tube, base	.89
R10440	Shield - Tube, top	2.65
R10441	Shield - Tube, cap	1.50
R11016	Spacer - Wood	.50
R8366	Socket - 4 prong	2.19
R8367	Socket - 5 prong	2.25
S6520B	Speaker	354.89
R10538	Switch - Wave band selector	52.50
R10538B	Switch - Wave band selector, complete with coil assembly	237.78

MODEL 1858
Schematic

SEARS-ROEBUCK & CO.



MODEL 1858
Alignment, Voltage
Socket, Parts List

SEARS-ROEBUCK & CO.

SILVERTONE - - MODEL 1858

* * *

The Silvertone Model 1858 is a five tube automobile radio receiver almost identical with the Model 1730 described in Service Manual Supplement #25. As an examination of the schematic will show, practically the only circuit difference is in the filtering of the Genemotor. The chief mechanical difference is that the pilot light lead of the Model 1858 is contained in the same covering as the drive cables. The mechanical and general information contained in the Model 1730 manual will apply equally as well to the Model 1858.

The tubes and their functions are:

78 - RF
6A7 - Oscillator-Translator
78 - IF
85 - AVC-Detector-AF
41 - Output

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 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. The location of its tuning adjustments is shown 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. 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. Connect the test oscillator to the antenna lead through a .00025 mfd. condenser.

2. Open the variable condenser plates to the point where the rotor plates just mesh with the stator plates.

3. Set the test oscillator to exactly 1500 kc and adjust the oscillator trimmer 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 padder until maximum output is obtained.

5. Repeat operations 1 to 4.

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

7. Adjust the antenna and translator trimmers for maximum output.

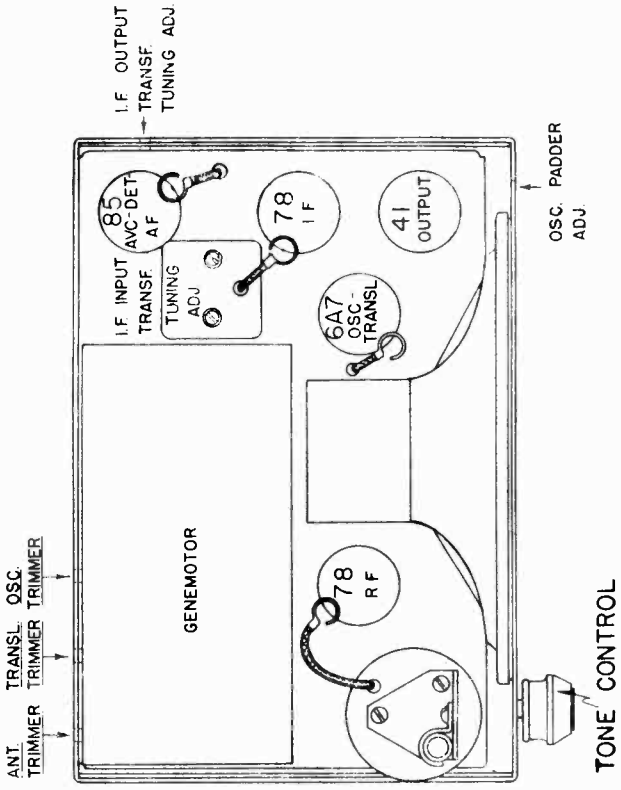
TUBE VOLTAGE CHART

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

TUBE	PLATE	SCREEN	OSC. SECTION GRID	OSC. SECTION PLATE	CONTROL GRID	CATHODE
78 - RF	- 210	77			.1	3.7
6A7- Osc-Transl	- 210	77	-.2	155	.1	3.7
78 - IF	- 210	77			0	4.8
85 - AVC-Det-AF	- 38				.1	4.8
41 - Output	- 200	210			-.5*	

* - Extremely low reading due to high series resistance in circuit.

Part No.	Description	Price per 100
R7587	Resistor - 10 M ohms, 1/3 watt carbon	5.25
R6636	Resistor - 1 M ohms, 1/3 watt carbon	5.25
R10268	Resistor - 250 ohms, 1/3 watt carbon	5.25
R8066	Resistor - 400 ohms, 2 watt, flexible	4.60
R10056	Screw - Polarity changer	.72
R10084A	Shield - Antenna coil	6.89
R9591	Shield - Translator coil	7.70
R9360	Shield - Tube	2.63
R8092	Socket - 6 prong	2.46
R8072	Socket - 7 prong	2.78
S9967A	Speaker - Complete	233.96
S9988A	Speaker cone and voice coil assembly	57.48
S9994	Speaker olamping ring	1.36
S10152	Speaker field coil	56.89
S9968	Speaker eyelets	.09
S9959	Speaker felt ring	.93
S10144A	Speaker transformer	43.17
R9960	Sticker - Polarity changer	.99
R1-10032	Suppressor - Spark plug	9.85
R2-10032	Suppressor - Distributor	9.85
R9729	Stud - Set mounting	1.64
R9786	Template - Set mounting	.99
R10436A	Transformer - IF input	46.01
R10065A	Transformer - IF output	52.53



REPLACEMENT PARTS AND PRICE LIST

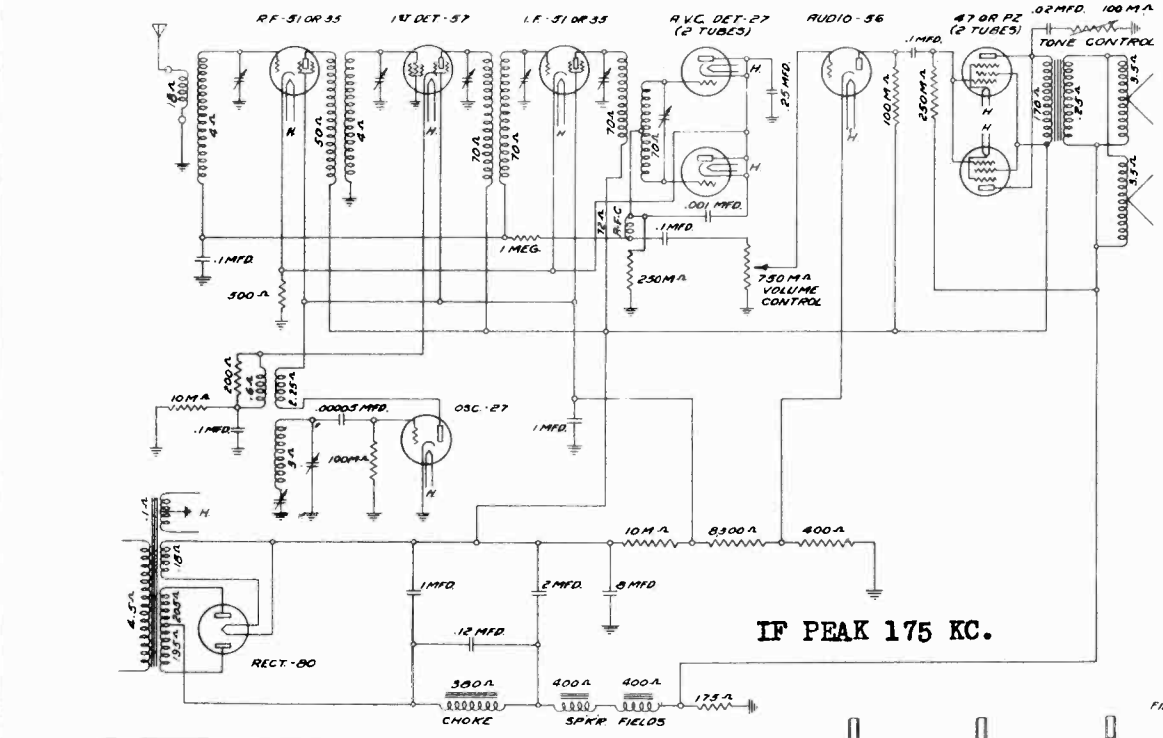
FOR

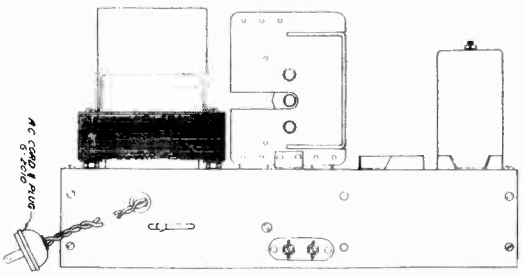
SILVERTONE - MODEL 1858

Part No.	Description	Price per 100
R8297A	Board - Terminal, double	1.34
R10134A	Board - Terminal, 4 terminals	1.70
R9753A	Board - Terminal, 6 terminals	2.70
R9754A	Board - Polarity changing	4.73
R11018	Book - Instruction	9.06
R9588	Bushing - Rubber, Genemotor mounting	1.28
R10862A	Choke - Primary of Genemotor	8.73
R9044A	Choke - Filament circuit	8.93
R9757	Choke - Pancake type, Genemotor secondary	5.74
R2179A	Choke - RF, 70 turn, Genemotor secondary	9.81
R11043	Clip - Grid	.19
R9741	Clip - "A" lead	2.04
R10314	Coil - Antenna	17.30
R10348	Coil - Oscillator	9.33
R10344	Coil - Translator	24.74
R10211	Condenser - Variable	118.55
R10086	Condenser - Electrolytic	32.55
R9426	Condenser - Padding	13.75
R8030	Condenser - 1 mfd. generator	19.90
R10025	Condenser - .5 mfd. ammeter	16.74
R9032	Condenser - .5 mfd. 160 volts	8.04
R10164	Condenser - .1 mfd. 500 volts	5.05
R8286	Condenser - .1 mfd. 200 volts	4.80
R8920	Condenser - .05 mfd. 200 volts	4.50
R6761	Condenser - .02 mfd. 600 volts	5.06
R7070	Condenser - .01 mfd. 600 volts	4.50
R8921	Condenser - .01 mfd. 200 volts	3.38
R10822	Condenser - .005 mfd. 600 volts	3.48
R6759	Condenser - .001 mfd. mica	5.68
R6760	Condenser - .0005 mfd. mica	4.56
R4592	Condenser - .00025 mfd. mica	8.28
R10091	Control - Remote, with 32" cables	200.33
R10680	Control - Remote, with 22" cables	195.05
R9711	Control - Tone, 500 M ohms	19.69
R10172	Control - Volume, 500 M ohms	26.93
R9717	Connector - "A" lead and fuse container	1.74
R10423A	Cover - Power supply case	19.94
R9587	Genemotor	476.76
R9744	Grommet - "A" lead	1.15
R7692	Knob	3.20
R8870A	Lead - Antenna	13.86
R9578B	Lead - "A", ammeter end	12.72
R9578A	Lead - "A", chassis end	25.07
R9719	Nut - Set mounting	.49
R8219	Nut - Acorn	1.45
R7228	Resistor - 500 M ohms, 1/3 watt carbon	5.25
R7586	Resistor - 100 M ohms, 1/3 watt carbon	5.91
R6637	Resistor - 50 M ohms, 1/3 watt carbon	5.25
R6689	Resistor - 30 M ohms, 1 watt carbon	6.58
R5095	Resister - 20 M ohms, 1 watt carbon	6.58
R9739	Washer - Lock, set mounting	.16
R9740	Washer - Flat, set mounting	1.52

SEARS-ROEBUCK & CO.

MODEL 7043, 7044
Schematic, Socket Alignment Data





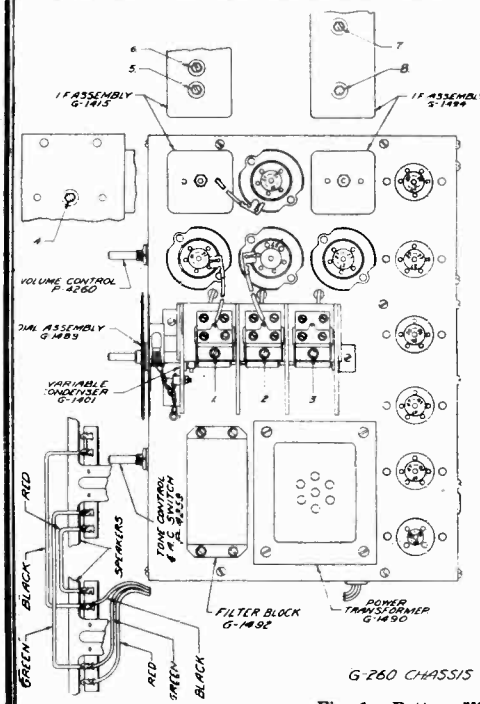


Fig. 1. Bottom View

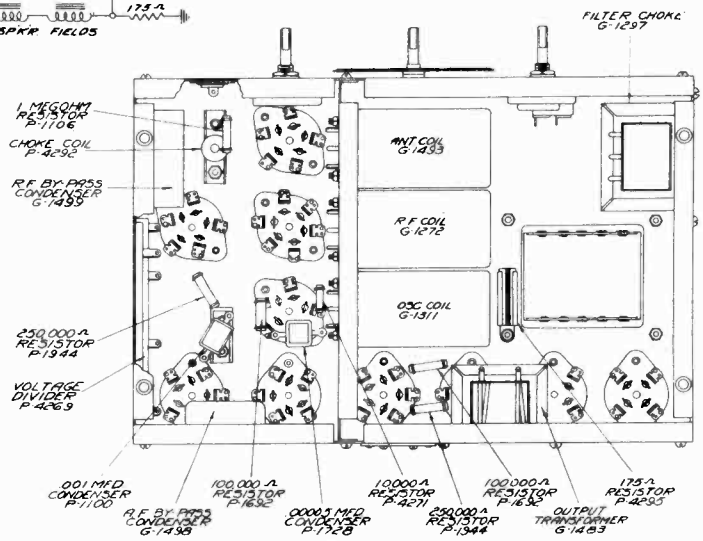


Fig. 3. Top View

First, let us explain the location of the various trimmers. Diagram of the top view, shows each trimmer numbered. You should be acquainted intimately with each adjustment. A Customer would not have to change their settings very much to ruin the sensitivity of the receiver. Further, if a readjustment is going to be necessary, it is imperative to know which circuit is being adjusted when a trimmer is being turned. No. 1 is the antenna trimmer, No. 2 first detector trimmer, No. 3 oscillator gang trimmer, No. 4 oscillator padding trimmer, No. 5 second detector grid trimmer, No. 6 second detector plate trimmer, No. 7 intermediate frequency grid trimmer, No. 8 intermediate frequency plate trimmer.

To readjust the trimmers on these superheterodyne receivers 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 screw driver when making any of these adjustments. First, connect the 175 k.c. oscillator output leads from the con-

MODEL 7043,7044
Voltage,Parts List
Resistance Test

SEARS-ROEBUCK & CO.

trol grid cap of the first detector 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 first detector tube. Reset trimmers No. 5, No. 6, No. 7 and No. 8 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 No. 5, No. 6, No. 7 and No. 8 are set and tuned for maximum output, they will be correctly adjusted.

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 trimmer No. 2 and No. 1, respectively, for maximum output. This adjustment will track the first detector and r.f. stages.

To check the calibration of the receiver, whether it be high or low, trimmer No. 3 (oscillator) should be reset until a station of known high frequency is brought in at 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.

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

CIRCUIT RESISTANCE ANALYSIS

Model 260 Socket to ground

Stage	Grid	Cathode	Heater	Plate	Screen G	Suppr. G	Space G
R. F.	Infinity	500	.1	18,400	8,700	...	.....
1st.Det.	4.0	10,000	.1	18,800	8,700	.08	.....
Oscillator	100,000	.08	.1	8,700	.....	...	.....
I. F.	Infinity	510	.1	18,600	.....	...	.....
A.V.C. Det.	230,000	510	.1	510	.....	...	.....
A.V.C. Det.	230,000	510	.1	510	.....	...	.....
Audio	750,000	422	.1	110,000	.....	...	.....
Output	275,000	.....	.1	19,000	.....	...	18,800
Output	275,000	.....	.1	19,000	.....	...	18,800
Rectifier	.....	.....	18,800	1,580	.....	...	.....

Note: Readings of one megohm and over are given as "infinity". The first three significant figures, only are interpreted from the ohm meter in each reading; the individual resistance in the circuit can be readily checked upon removal of chassis.

P-1038	Dial light . . . . .
P-1106	1,000,000 resistor . . . . .
P-1118	Mounting washers . . . . .
P-1253	Fixed condenser (Green dot). . .
P-1459	Tube shield base . . . . .
P-1472	Tube shield. . . . .
P-1581	Mounting screws. . . . .
P-1595	Tube sockets (type 80) . . . . .
P-1597	Tube sockets (type 27) . . . . .
P-1682	Tube sockets (type 51) . . . . .
P-1683	Tube sockets (type 47) . . . . .
P-1692	100,000 ohm resistor . . . . .
P-1728	Fixed condenser (White dot). . .
P-1944	250,000 ohm resistor . . . . .
P-4037	Knobs (Large). . . . .
P-4047	Knobs (Small). . . . .
P-4229	Antenna ground post. . . . .
P-4246	Spkr. diaphragm. . . . .
P-4256	Escutcheon plate . . . . .
P-4259	Tone control and switch. . . . .
P-4260	Volume control . . . . .
P-4262	Tube sockets (type 56) . . . . .
P-4263	Tube sockets (type 57) . . . . .
P-4269	Voltage dividing resistor. . . .
P-4271	10,000 ohm resistor. . . . .
P-4292	R. F. choke. . . . .
P-4295	Pentode bias resistor. . . . .
G-1269	Ant. Osc. and R. F. coil shields
G-1272	R. F. coil (less shield) . . . .
G-1311	Osc. Coil (less shield). . . . .
G-1415	1st I. F. transformer. . . . .
G-1429	Filter choke . . . . .
G-1483	Output transformer . . . . .
G-1484	Speaker voice coil . . . . .
G-1488	Osc. trimmer condenser . . . . .
G-1489	Dial and scale assembly. . . . .
G-1490	Power trans.,110 V. 60 Cy. . . .
G-1490A	Power trans.,110 V. 25 Cy. . . .
G-1490B	Power trans.,220 V. 60 Cy. . . .
G-1492	Filter pack,110 V. 60 Cy . . . .
G-1492A	Filter pack,110 V. 25 Cy . . . .
G-1493	Ant. coil (less shield). . . . .
G-1494	2nd I. F. transformer. . . . .
G-1498	Bypass condenser (AF). . . . .
G-1499	Bypass condenser (RF). . . . .
G-1501	Speaker complete . . . . .

VOLTAGE ANALYSIS

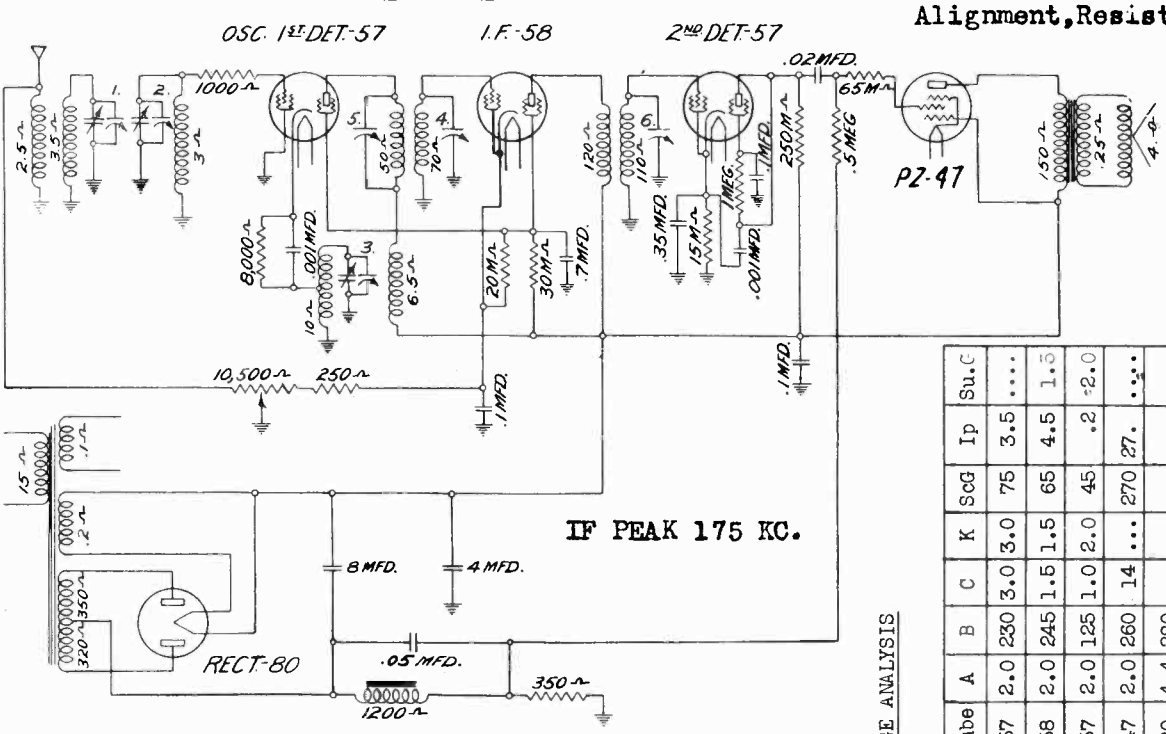
Model 260

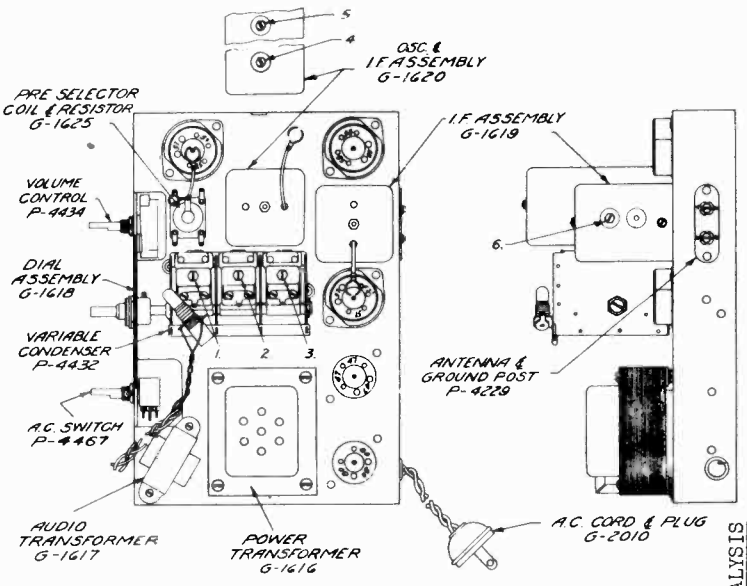
No.	Stage	Type Tube	"A" Volts	"B" Volts	Cont. Grid Volts	Cath. Volts	Screen Volts	Ip Norm.	Misc.
1	R. F.	51 or 35	2.15	250	.4	4.	80	4.	.....
2	1st Det.	57	2.25	137	4.5	5.	83	.5	Suppressor Grid 4.5
3	Osc.	27	2.25	107	0	0	0	8.	.....
4	I.F.	51 or 35	2.25	244	.4	4.	76	1.7	.....
5	AVC Det.	27	2.25	0	2.5	4.5	0	0	.....
6	AVC Det.	27	2.25	0	2.5	4.5	0	0	.....
7	1st Audio	56	2.25	178	2.	4.	0	1.5	.....
8	Pentode.	47	2.25	235	16.	0	0	25.	Pentode Sp. C Grid 245
9	Pentode	47	2.25	235	16.	0	0	25.	Pentode Sp. C Grid 245
10	Rect.	80	4.9	140	0	0	0	98.	.....

Vol. control "full on".
Tested with Weston model 565 analyzer.
Line: 115 Volts.

SEARS-ROEBUCK & CO.

MODEL 7048
Schematic, Voltage Alignment, Resistance





VOLTAGE ANALYSIS

No.	Stage	Tube	A	B	C	K	ScG	Ip	Su.G
1	Autodyne.	57	2.0	230	3.0	3.0	75	3.5	....
2	I.F.	58	2.0	245	1.5	1.5	65	4.5	.2
3	2nd. det.	57	2.0	125	1.0	2.0	45	.2	2.0
4	Output.	47	2.0	260	14	...	270	27.	....
5	Rectifier	80	4.4	280	...	...	...	....	....

Vol. control "full on".
Line: 115 volts.

CIRCUIT RESISTANCE ANALYSIS

Socket to Ground

Stage	Grid	Cathode	Heater	Plate	Screen G	Suppr. G	Space G
Autodyne.	1,000	8,000	.1	50,000	20,000	.1	.....
I.F. .	70	270	.1	50,000	20,000	*270.	.....
2nd.Det	110	15,000	.1	300,000	Infinity	15,000	.....
Output.	570,000	.....	.1	50,000	.....	.....	50,000
Rectifier.	.....	.....	50,000	1,900	.....	.....	.....

Readings of one megohm and over are given as "infinity". The first three significant figures, only are interpreted from the ohmmeter in each reading; the individual resistance in the circuit can be readily checked upon removal of chassis.
*NOTE: On first few thousand sets the 1.f. Suppressor Grid Resistance read .1 ohm and was connected to ground.

First connect the 175 K. C. Oscillator to the first detector grid and adjust trimmers Nos. 4, 5 and 6 for maximum output as indicated by the loud speaker, or preferably by a regular output meter; next hook up the broadcast oscillator to the antenna and ground binding posts of the set and adjust number 3 (oscillator gang trimmer) at 1500 K. C., for calibration. This is accomplished by using a broadcast oscillator at 1500 K. C. if the calibration of the broadcast oscillator is known to be accurate or by tuning in a broadcasting station, using "crystal control" at a known frequency between 1400 and 1500 K. C., then adjust number 3 trimmer until the receiver's dial reading is exactly the same as the frequency of the broadcasting station; next readjust trimmers number 2 and 1 for maximum output at a point between 1400 and 1500 K. C., since adjusting at these high frequencies is more accurate and critical. No oscillator padding trimmer is employed on this receiver. The special shape of the oscillator tuning condenser rotor makes such a padding trimmer unnecessary.

CONE REPLACEMENT OF OUTSIDE TYPE SUSPENSION SPEAKERS (Fig.2).

1. Unsolder the voice coil leads from their terminals.

2. Remove the suspension mounting screws.

3. Drill out the cone mounting eyelets or cut off the small head ends with a cold chisel and hammer. If care is used, the cardboard mounting rings will not be damaged.

4. Remove the cone and blow out any dirt or metal chips from the air gap.

5. Re-assemble the cone, suspension, and cardboard mounting rings in their original order. Leave the suspension mounting screws loose enough so that the suspension can be shifted about.

6. Insert four strips about 3" long, 1/8" wide and .01" thick (cut from a calling card) between the inside of the voice coil and the pole stem. They should be evenly spaced around the pole stem. Spacers can be obtained from the factory. Part No. S-9177 for 5" and 6" speakers. Part No. S-7391 for all other speakers.

7. Replace the eyelets around the edge of the cone, leaving blank any holes that were originally left blank for speaker to baffle mounting screws. The eyeleting tool illustrated is recommended (Part No. R-8033).

8. Solder the voice coil leads to their terminals.

9. Tighten the suspension screws.

10. Remove the four spacer strips.

11. If it should happen that the cone is not properly centered after the replacement, loosen the suspension mounting screws and move the cone around until proper centering is secured. Sometimes several attempts are nesessary before proper centering can be had.

REPLACING THE FIELD COIL IN SPEAKERS HAVING
THE POLE PLATE RIVETED TO THE YOKE (Fig.3).

1. It is always advisable to remove the cone first, as previously outlined, to avoid damaging it and to facilitate the work of field coil replacement.

2. Make a sketch of the coil connections, paying attention to the polarity, i.e.,note whether the start or finish of a winding connects to a particular terminal. This is important since incorrect polarity in speakers with hum bucking coils will increase the hum instead of eliminating it.

3. Drill out the pole-plate-to-yoke-rivets, or cut off the small head ends with a cold chisel and hammer. In some speakers the rivets are aluminum; in others steel. It probably will be easier to drill the steel ones than to cut them off.

4. Dis-assemble the yoke and pole plate and replace the defective coil. Be sure to replace any cardboard spacer rings in their original position.

5. Re-assemble the yoke and pole plate, using nuts and bolts instead of the rivets used originally.

6. Replace the cone and voice coil as outlined previously.

REPLACING THE FIELD COIL IN SPEAKERS HAVING
THE POLE PLATE BOLTED TO THE YOKE. (Fig. 4).

The procedure is the same for this type of speaker as for the type with riveted pole plate and yoke, except that the bolts are unscrewed instead of rivets removed. Be sure to keep the pole plate and yoke in the same relative positions as they were in originally, so that the pole stem will remain properly centered in the pole plate.

REPLACING THE FIELD COIL IN SPEAKERS HAVING
THE POLE PLATE WELDED TO THE YOKE.

1. Remove the cone and voice coil assembly as outlined previously.

2. It will be necessary to break the welds with a cold chisel and hammer, but before doing so, drill four holes through the pole plate and yoke for the bolts and nuts which will replace the welds. Drilling the holes before breaking the welds and making the holes only large enough to pass the bolts will insure proper centering of the pole stem in the pole plate.

FIG. 3.

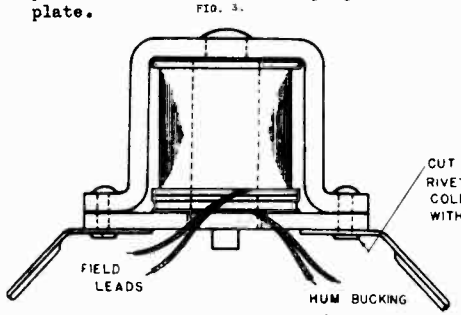
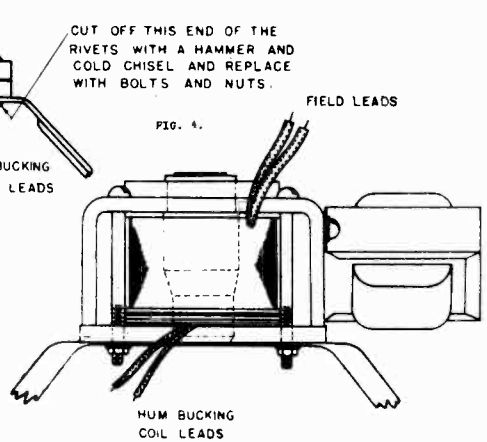
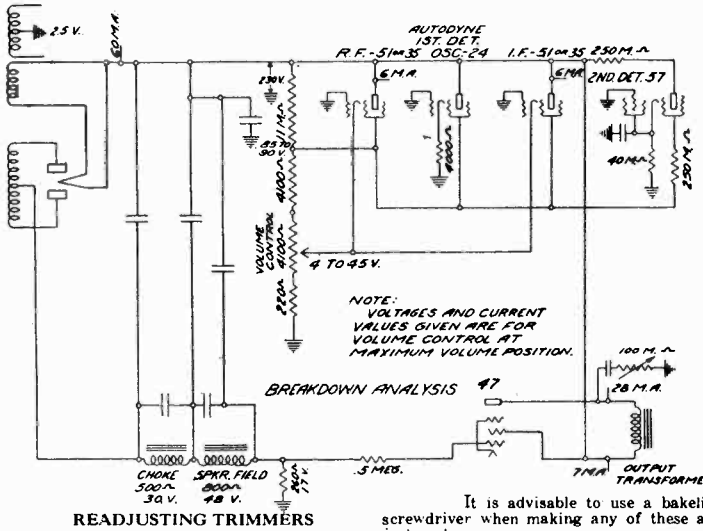


FIG. 4.



SEARS-ROEBUCK & CO.

MODEL 7049
Schematic, Socket
Trimmer Data



READJUSTING TRIMMERS

The most important advice we can give you in regard to the adjustment of trimmers would be "don't make 'em." It has been proven conclusively to us that the Factory adjustment of these trimmers will not vary even when the set is severely jarred or dropped. However, if a customer were to tamper with their settings, a readjustment may have to be made. First, let us explain the location of the various trimmers. Diagram No. 3, top view of the series 220 chassis, shows each trimmer numbered. You should be acquainted intimately with each adjustment. A customer would not have to change the settings very much to ruin the sensitivity of the receiver. Further, if a readjustment appears to be necessary, it is imperative to know which circuit is being adjusted when a trimmer is being turned.

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.

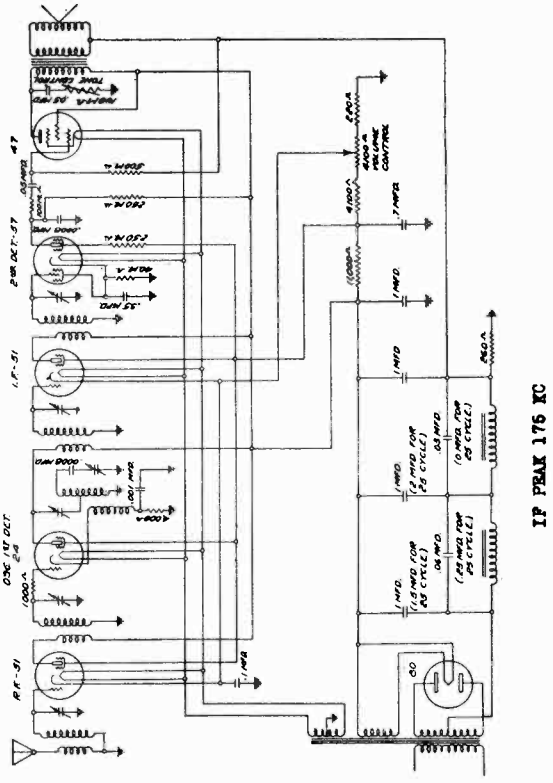
Next, disconnect the 175 k. c. test oscillator and connect to the antenna binding post of the receiver, the output lead from your broadcast test oscillator, or tune in a broadcast signal around 1400 k. c., then reset trimmers numbers 2 and 1 respectively for maximum output. This adjustment will track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

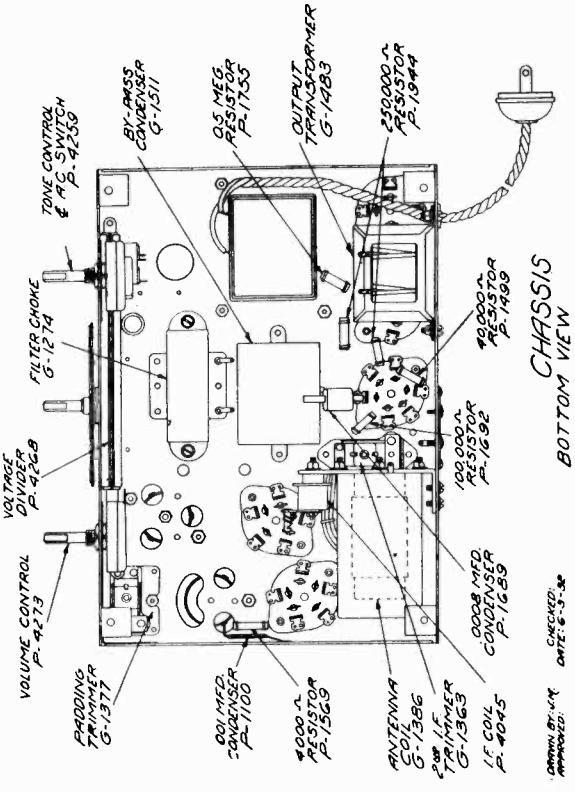
To check the calibration of the receiver, whether it be high or low, trimmer number 3 should be reset until a station of known high frequency is brought in on the correct dial marking with peak volume. If your broadcast test oscillator is accurately calibrated, it might be used in place of the broadcasting 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.





CIRCUIT RESISTANCE ANALYSIS

Socket to ground

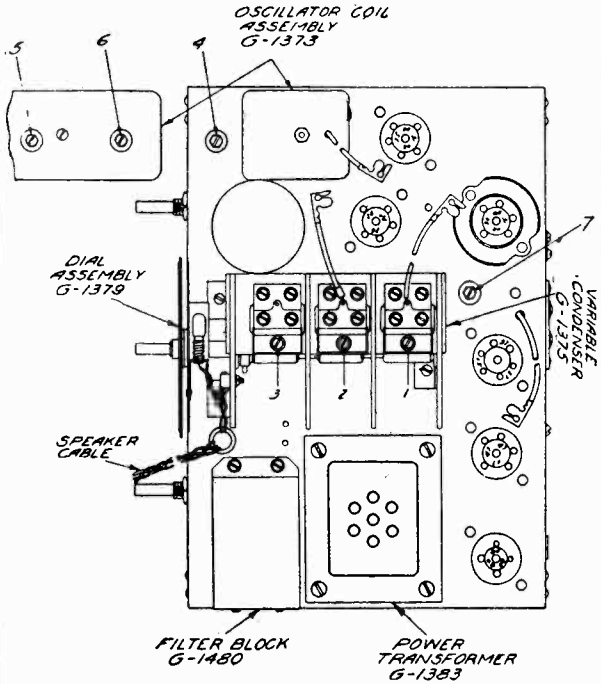
Stage	Grid	Cathode	Heater	Plate	Screen G	Suppr. G	Space G
R.F. .	4.5	220	.1	19,500	8,400	.....	.....
Autodyne.	1,000	5,000	.1	19,500	8,400	.....	.....
I.F. .	60	220	.12	19,500	8,400	.....	.....
2nd. det .	70	40,000	.1	270,000	260,000	40,000	.....
Output	500,000	.....	.1	19,600	.....	.....	19,400
Rectifier.	.....	.....	19,500	..1,870	.....	.....	.....

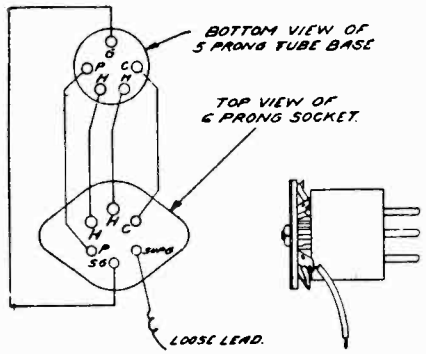
Note: Readings of one megohm and over are given as "infinity". The first three significant figures, only are interpreted from the ohm meter in each reading; the individual resistance in the circuit can be readily checked upon removal of chassis.

VOLTAGE ANALYSIS

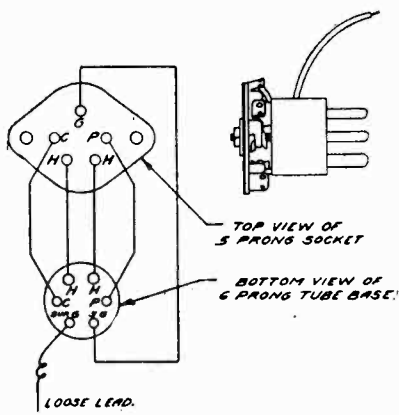
No.	Stage	Type Tube	"A" Volts	"B" Volts	Cont. Grid	Cath. Volts	Screen Volts	Ip. Norm.	Misc.
1	R.F .	51	2.15	245	3.4	3.1	81	5.	
2	Autodyne 1st. Det.	24	2.15	240	4.4	5.0	85	1.6	
3	I.F .	51	2.15	245	4.4	3.5	84	7.	
4	2nd. Det.	57	2.25	106	1.8	3.	43	.1	Suppressor Grid 3
5	Output.	47	2.25	245	15.	0.	0	31.	Pentspace Charge-Grid 250
6	Rect.	80	4.8	300	0.	0.	0	68.	

Vol. control "full on".
Tested with Weston model 565 analyzer.
Line: 115 Volts.





SKETCH OF CONNECTIONS FOR ADAPTER TO PLUG INTO ANALYZER.



SKETCH OF CONNECTIONS FOR ADAPTER TO PLUG INTO SET

Number 1 is the antenna trimmer.

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

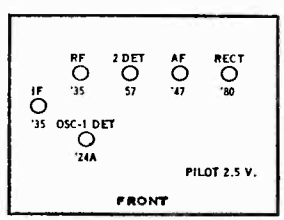
Number 3 is the gang condenser trimmer tuning the plate (or oscillator of the super-autodyne).

Number 4 is the oscillator padding trimmer.

Number 5 is the Super-autodyne plate trimmer.

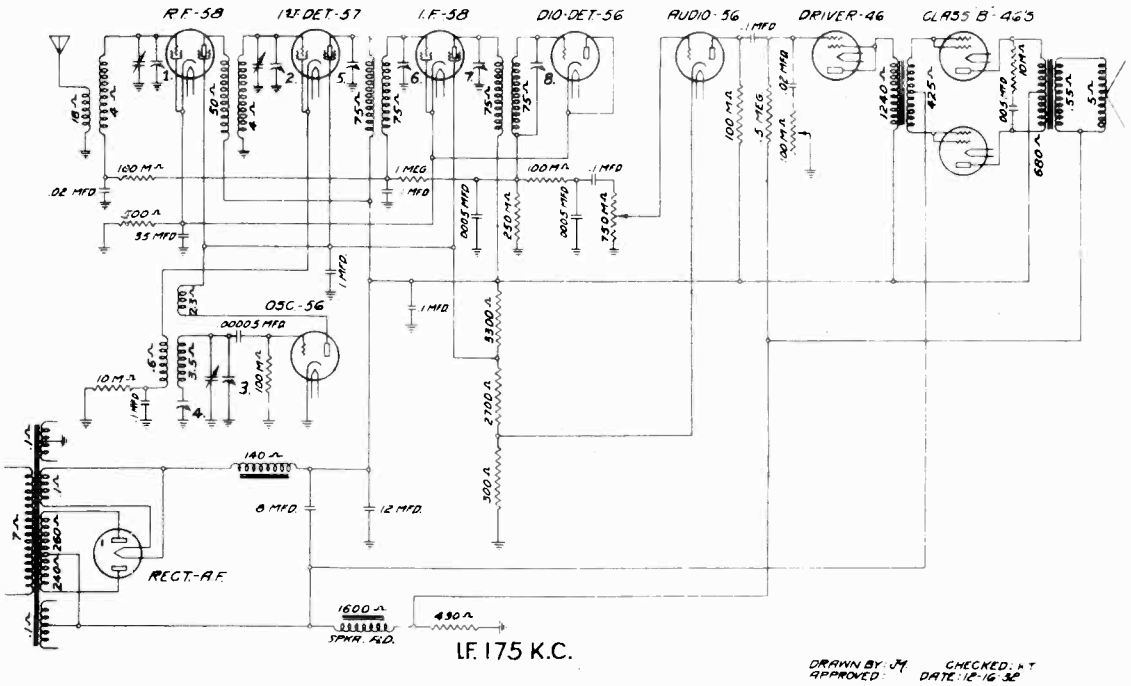
Number 6 is the I. F. grid trimmer.

Number 7 is the second detector grid trimmer.



MODEL 7066
Schematic
Resistance Test

SEARS-ROEBUCK & CO.

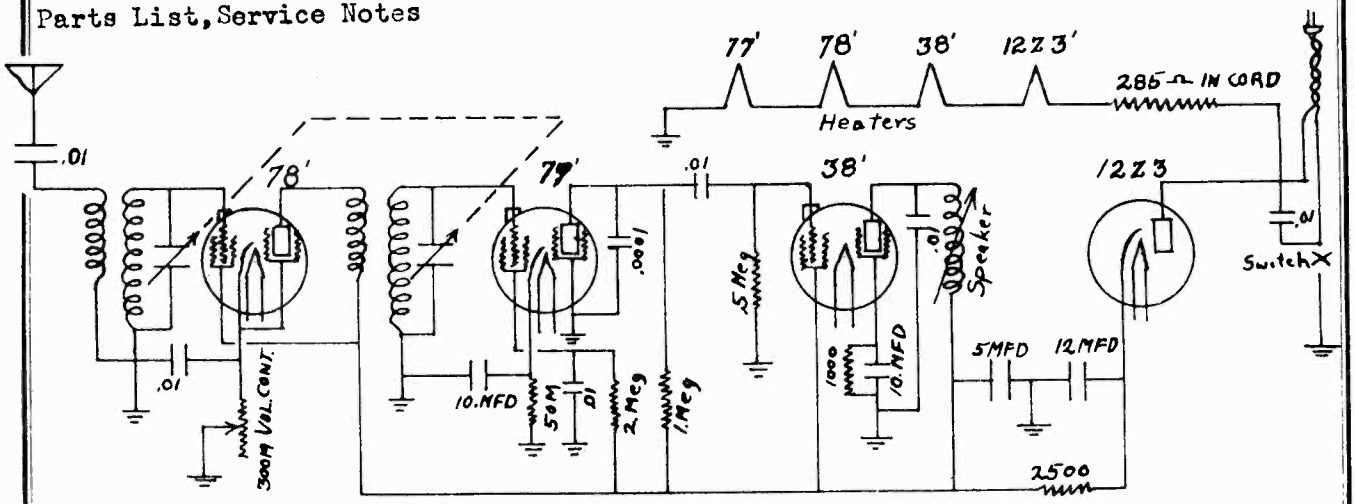


RESISTANCE ANALYSIS

TUBE	STAGE	GRID	CATHODE	HEATER	PLATE	SCREEN	SUPPRESSOR
58	RF	Infinity	500	.1	6300	3000	500
57	1 Det.	4.C	10,000	.1	6300	3000	10,000
56	Oscil.	100,000	0	.1	3000	—	--
58	IF	Infinity	500	.1	6300	3000	500
56	2 Det.AVC	250,000	500	.1	500	--	-
56	AF	750,000	300	.1	100,000	--	-
46	Driver	500,000	-	.1	7600	7600	-
46	Class "B"	2400	-	.1	6700	2400	-
46	Class "B"	2400	-	.1	6700	2400	-
80	Rectifier	---	-	6500	2400	--	-

MODEL 7110
Schematic
Parts List, Service Notes

SEARS-ROEBUCK & CO.



4-20-'34

S.R. Nº 7110

GENERAL INFORMATION

This set is designed to operate on 105-120 volts AC or DC from 25 to 60 cycles. The cord of the set will become quite warm in operation. This is a normal condition, the voltage reducing resistor being an integral part of the line cord for rapid dissipation of heat.

The set is of the conventional tuned radio frequency type and is so developed as to give a minimum of trouble and a maximum of enjoyment.

It is recommended that the aerial be used that is supplied with the set. However, if a longer aerial is used, it is advisable to rebalance the antenna stage of the set to the aerial used. To accomplish this, remove the set from the cabinet and set the dial at about 20 on the scale. Turn the compensator screw on the rear section of the variable condenser back and forth until maximum signal strength is obtained.

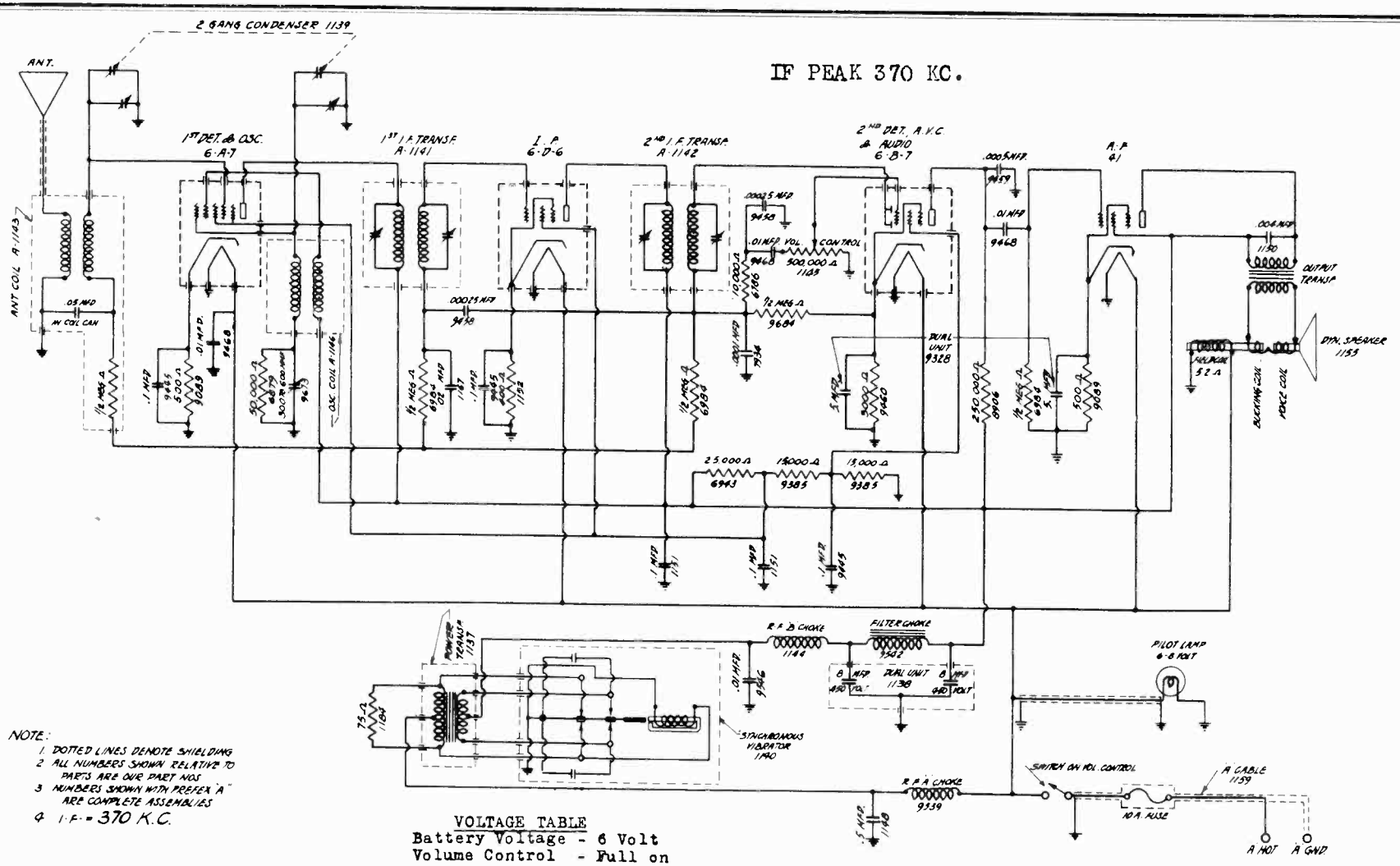
This set is designed to oscillate across a major portion of the broadcast band. This regeneration is controllable by reducing the volume of the set. Oscillation in a set of this type increases the sensitivity from ten to twenty times.

PARTS LIST

No.	
51	Magnetic speaker
52	Variable condenser 2 gang
53	Set of coils - complete
53a	Antenna coil - only
53b	R F Coil - only
54	Cabinet
55	Cordohm 285 ohm
60	Volume control
61	Antenna cords
70	Electrolytic condenser
71	Knob
73	Terminal strip- 3 lug
77	Name Plate - Silvertone or Selector
	Any tube socket (state no. of prongs)
	Any resistor -(state ohms and watts)
	Any bypass condenser (state capacity)

SEARS-ROEBUCK & CO.

MODEL 7117,1859-A
Schematic
Voltage



VOLTAGE TABLE
Battery Voltage - 6 Volt
Volume Control - Full on

TYPE OF TUBE	POSITION OF TUBE	FIL. VOLTS	PLATE VOLTS	CATHODE VOLTS	SCREEN VOLTS	GRID NO.1	GRID NO.2	GRID NO. 3 & 5
6A7	Modulator & Oscillator	6	250	2.5	100	10	250	100
6D6	I. F. Amplifier	6	250	1.	100			
6B7	Second Detector Diode AVC & 1st Audio Triode	6	35##	3	50			
41	Output	6	230	16	250			

##Triode Plate. Comparative Voltage only. Thevoltmeter is in series with a high resistance and is therefore not the true voltage applied. Read all voltages from socket to chassis unless otherwise specified.

MODEL 7117,1859-A
Alignment Data
Parts List,Installation

SEARS-ROEBUCK & CO.

ALIGNMENT PROCEDURE: It should rarely be necessary to realign the intermediate transformers or the variable condenser. As a matter of fact, this should only be necessary when an intermediate transformer, oscillator or R. F. coil has become defective and require replacement. For properly aligning either the intermediate transformer or condenser it is necessary that an 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 tube leaving the control grid cap disconnected. The ground side of the oscillator should be connected to the chassis.

2. Set the oscillator at 370 kilocycles (this must be accurate) and adjust the output of the oscillator so that a convenient reading is obtained on the output meter.

3. Align the first intermediate transformer by turning the brass hex nut of the first intermediate transformer trimmer which is accessible from the top of the I. F. transformer up and down until maximum reading is obtained on the meter, then adjust the trimmer screw located inside of the brass hex nut in the same manner.

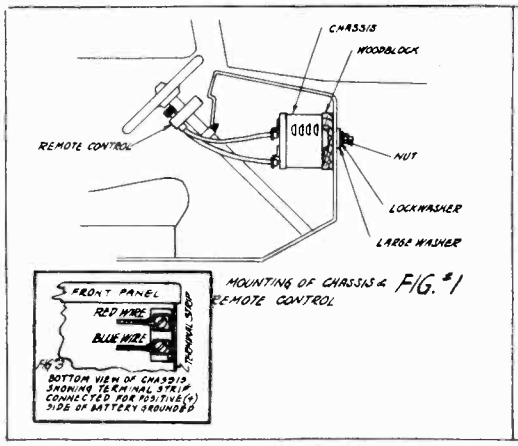
4. The second I. F. transformer should next be adjusted in the same manner as the first I. F. transformer.

TO ALIGN THE VARIABLE CONDENSER: To align the variable condenser and padding condenser it is necessary that the receiver chassis be removed from the set housing. After the receiver chassis has been removed connect the remote control flexible drive shafts in their respective couplers, and set the dial needle on the dial face so that the dial calibration is correct.

1. Connect the high output side of theoscillator to the antenna and the ground to the receiver chassis.

2. Tune the receiver to exactly 1500 kilocycles on the dial and adjust the oscillator to this frequency. BRING IN THE 1500 KILOCYCLE SIGNAL (TO MAXIMUM OUTPUT) BY ADJUSTING THE OSCILLATOR VARIABLE CONDENSER TRIMMER MOUNTED ON TOP OF THE VARIABLE CONDENSER. THEN ADJUST THE OTHER VARIABLE CONDENSER TRIMMER FOR MAXIMUM OUTPUT. Looking at the front of the receiver the first section of the variable condenser is the oscillator section and the other section tunes the antenna coil.

3. Tune the receiver to approximately 600 kilocycles on the dial and set the oscillator to this frequency, then adjust the 600 padding condenser which is located on the right hand side and accessible through the hole in the chassis for maximum output. Always rock the condenser slightly to the right and left when making this adjustment. using the position where greatest output is obtained.



MOUNTING OF CHASSIS & REMOTE CONTROL FIG. #1

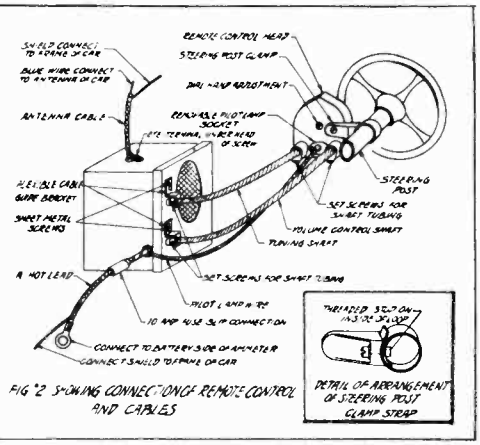
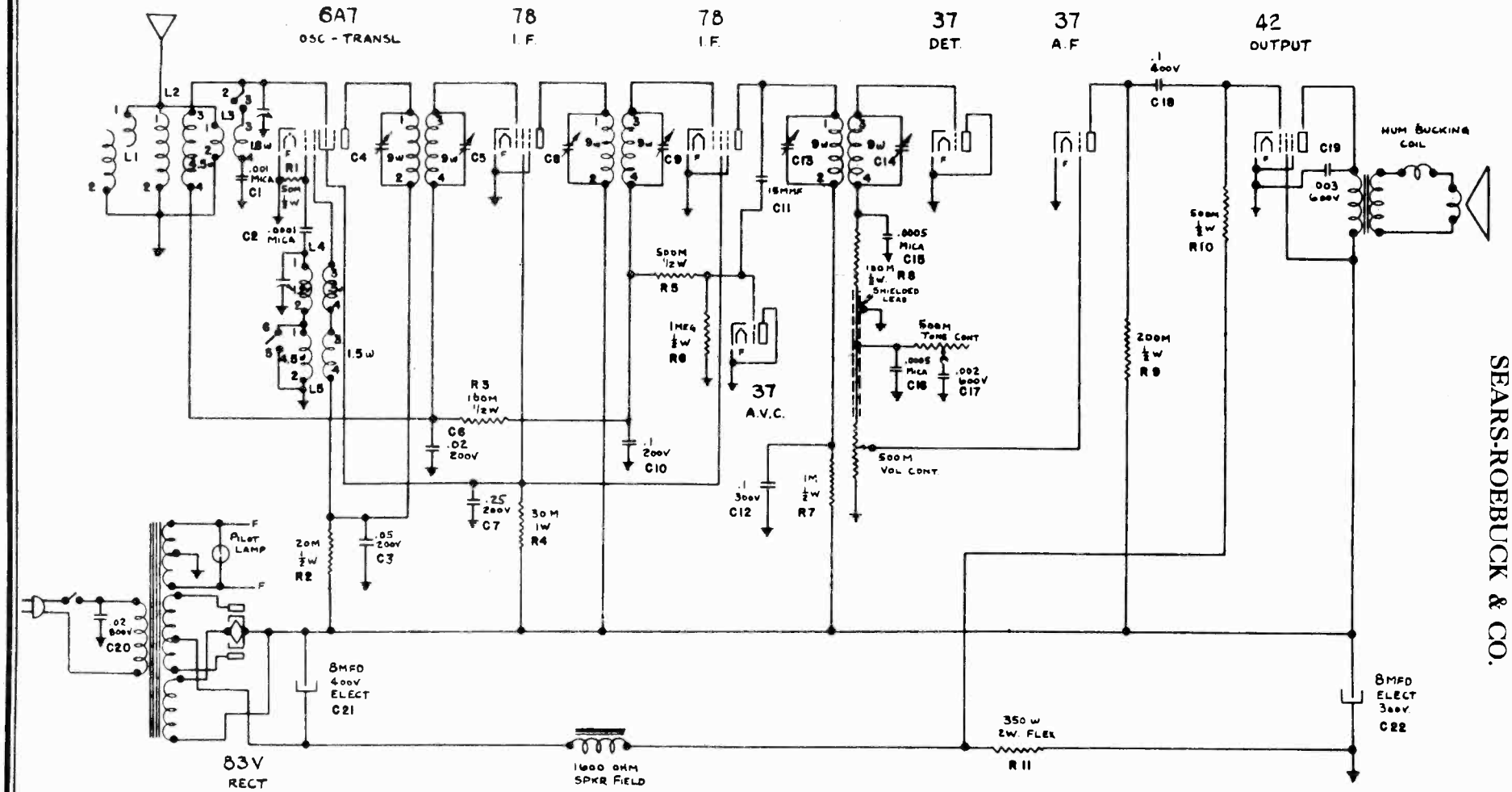


FIG #2 SHOWING CONNECTIONS OF REMOTE CONTROL AND CABLES

Always determine the polarity of the car battery post which is grounded to the automobile chassis before installing the receiver. When shipped from the factory the receiver is properly connected as illustrated (Fig. 3) for installation in automobiles which have the positive (+) battery post grounded to the car frame. If the negative (-) battery post is grounded, the position of the red and blue leads as shown on the terminal strip diagram must be reversed. As the terminal strip is located underneath and toward the right front corner of the receiver chassis it is necessary to remove the chassis from the set housing to make this change. This is accomplished by removing the sheet metal screw that grounds the antenna shield lead to the housing top, the twelve (12) machine screws around the edge of the housing front, the single machine screw on the bottom of the housing and then grasping the front panel of the housing and pulling outward. Using the receiver in an automobile with improper terminal strip polarity connections will result in damage to the vibrator unit, transformer or electrolytic condenser.

PART NUMBER	
1143	Antenna Coil
1146	Oscillator Coil
1141	First I. F. Transformer
1142	Second I. F. Transformer
1155	Dynamic Speaker
9673	Padding Condenser
1139	Two Gang Condenser
1145	Volume Control
9328	Electrolytic Condenser 2 x 5 Mfd.
9458	.00025 Mfd. Moulded Condenser
9459	.0005 Mfd. Moulded Condenser
7934	.0001 Mfd. Moulded Condenser
9445	.1 Mfd. 200 Volt Condenser
1148	.5 Mfd. 200 Volt Condenser
9468	.01 Mfd. 400 Volt Condenser
9546	.01 Mfd. 600 Volt Condenser
1150	.004 Mfd. 600 Volt Condenser
1151	.1 Mfd. 400 Volt Condenser
1167	.02 Mfd. 200 Volt Condenser
1184	75 Ohm Wire Wound 1 Watt Resistor
6943	25,000 Ohm 1 Watt Resistor
6879	50,000 Ohm 1/3 Watt Resistor
9385	15,000 Ohm 1/3 Watt Resistor
9089	500 Ohm 1/3 Watt Resistor
1152	400 Ohm 1/3 Watt Resistor
6875	250 Ohm 1/3 Watt Resistor
9460	3,000 Ohm 1/3 Watt Resistor
6786	10,000 Ohm 1/3 Watt Resistor
6984	500,000 Ohm 1/3 Watt Resistor
8906	250,000 Ohm 1/3 Watt Resistor
9581	10 Ampere Fuse
1159	"A" Battery Cable complete with fuse
1140	Vibrator
1137	Power Transformer
1138	2 x 8 Mfd. Condenser Block
9539	R. F. "A" Choke
1144	R. F. "B" Choke
9598	.5 Mfd. Generator Condenser



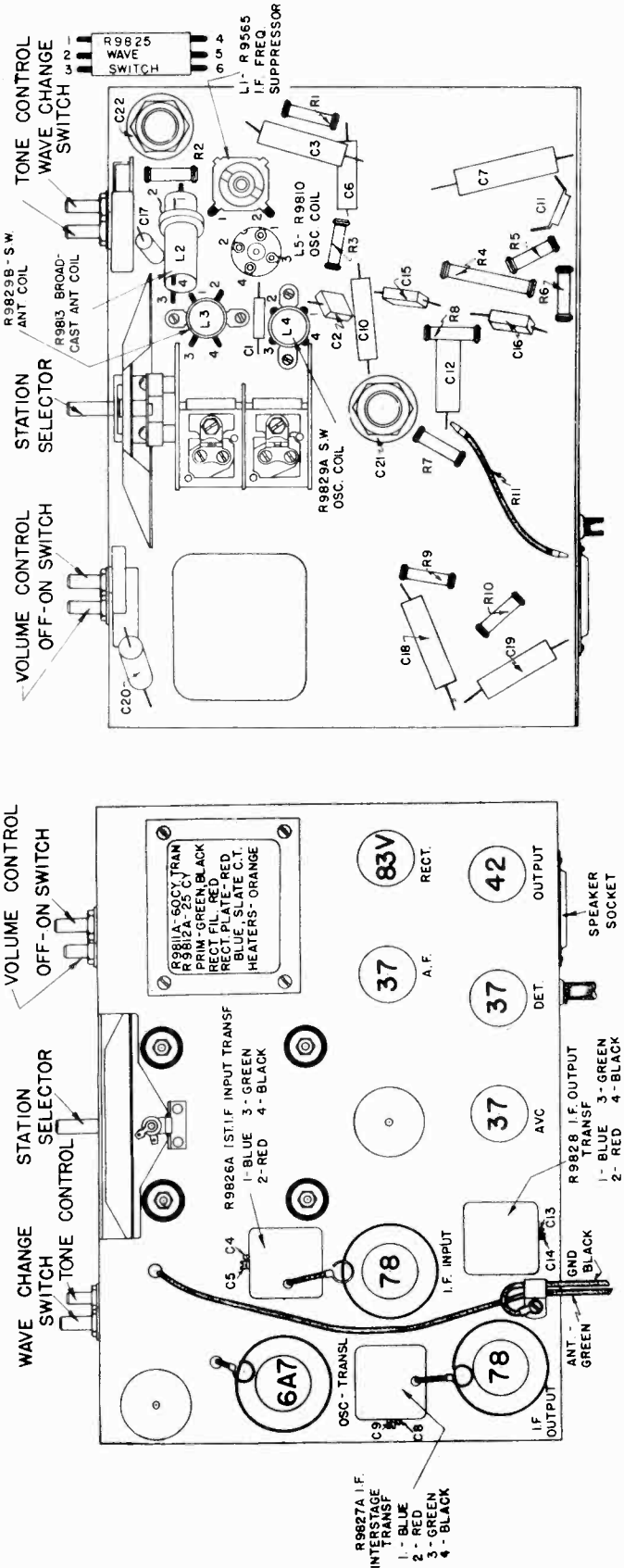
TUBE	PLATE VOLTS	SCREEN VOLTS	PLATE M.A.	SCREEN M.A.
78 1st IF	245	100	6.5	2
78 2nd IF	245	100	6.5	2
37 AF	20		1.25	
42 Output	235	245	23	5
6A7 Osc-Transl.	Ep=245v. Eg2=175v. Eg3&5=80v. Ip=4.25ma. Ig2=2.5ma. Ig3&5=1.75ma.			
83V Rectif.	Max.D-C=360v Ip=29ma per plate			

SEARS-ROEBUCK & CO.

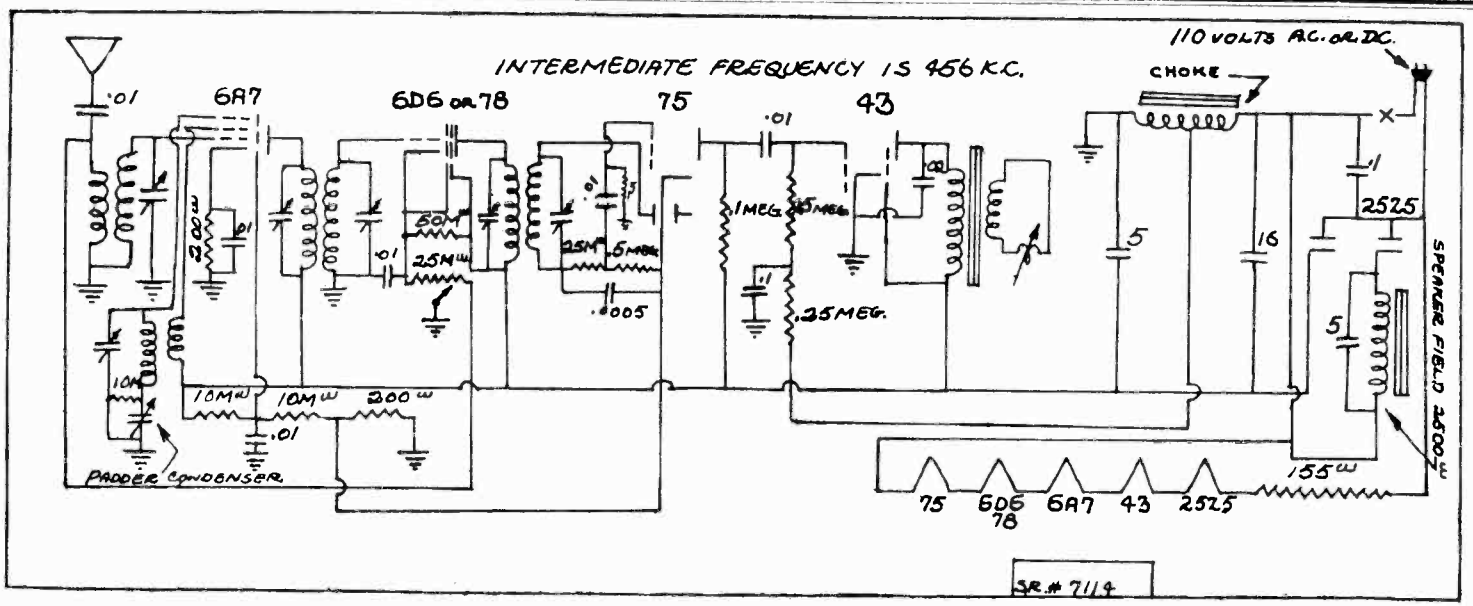
MODEL 7118,1708-A
Schematic
Voltage

MODEL 7118,1708-A
Socket Layout
Chassis,Parts List

SEARS-ROEBUCK & CO.



Part No.	Description
R-8297-A	Board - Terminal, double
R-8308-A	Board - Terminal, triple
R-9949	Card - Operating
R-4715	Clamp - Ant. & gnd. leads
R-7011-A	Clip - Ant. lead
R-6381	Clip - Grid
R-9813	Coil - Antenna
R-9810	Coil - Oscillator
R-9565	Coil - Int. Freq. suppressor
R-9829-B	Coil - Ant. S.W.
R-9829-A	Coil - Osc. S.W.
R-9816	Condenser - Variable
R-9816-A	Condenser - Variable complete with drive assembly and dial
D-4758-P	Condenser - 8 Mfd. electrolytic
R-8483	Condenser - 8 Mfd. electrolytic
R-9817	Condenser - .25 mfd. 200 volt
R-8031	Condenser - .1 Mfd. 400 volt
R-6138	Condenser - .1 Mfd. 300 volt
R-6444	Condenser - .1 Mfd. 200 volt
R-7354	Condenser - .05 Mfd. 200 volt
R-9899	Condenser - .02 Mfd. 800 volt
R-6629	Condenser - .02 Mfd. 200 volt
R-7681	Condenser - .003 Mfd. 600 volt
R-6933	Condenser - .002 Mfd. 600 volt
R-6759	Condenser - .001 Mfd. Mica
R-6760	Condenser - .0005 Mfd. Mica
R-4303	Condenser - .0001 Mfd. Mica
R-8042	Condenser - .000015 Mfd.
R-6570	Control - Tone & Volume
R-6989	Cord - Power
R-9819-A	Dial and Indicator
R-8889	Escutcheon
R-9819	Indicator
R-9948	Instruction leaflet
R-8893	Knob - Large
R-8896	Knob - Medium
R-2288	Lamp - Pilot
R-5346-B	Lead - Antenna
R-5345-D	Lead - Ground
R-5823	Resistor - 1 meg. 1/2 watt carbon
R-6179	Resistor - 500 M ohms 1/2 watt carbon
R-5830	Resistor - 200 M ohms 1/2 watt carbon
R-6064	Shield - Chassis bottom
R-6450	Shield - Elec. Cond.
R-8366	Socket - 4 prong
R-8367	Socket - 5 prong
R-8368	Socket - 6 prong
R-8369	Socket - 7 prong
S-9814	Speaker, complete
S-7776-B	Speaker Cone and Voice Coil
S-7893	Speaker hum bucking coil
S-9846	Speaker field coil
S-7769	Speaker clamping ring
S-7770	Speaker clamping ring
S-9840-AS	Speaker Transformer
S-7414	Speaker plug
R-7609	Switch - Filament
R-9825	Switch - Wave
R-9826-J	Transformer - IF input
R-9827-A	Transformer - IF interstage
R-9828	Transformer - IF output
R-9811-A	Transformer - 60 cycle power
R-9812-A	Transformer - 25 cycle power
R-5819	Resistor - 100 M ohms 1/2 watt
R-6445	Resistor - 50 M ohms 1/2 watt
R-6689	Resistor - 30 M ohms 1 watt
R-5821	Resistor - 20 M ohms 1/2 watt
R-6154	Resistor - 1 M ohms 1/2 watt
R-9947	Resistor - 350 ohms, 2 watt,
R-9882	Screw - Dial pointer
R-7359	Screw - Escutcheon
R-6652-A	Shaft - Dial drive
R-6748-A	Shield - Tube, bottom
R-6749	Shield - Tube, top



GENERAL INFORMATION

This set is a superheterodyne designed to operate on alternating or direct current of any commercial frequency.

To operate, unreel the aerial to its full length and lay on the floor or drop out of a window. Turn the volume control all the way on. If after a few minutes the set does not function, reverse the plug in the wall socket.

The cord of this set becomes quite warm when the set is in operation. This is a natural condition as the voltage reducing resistor is woven in this cord.

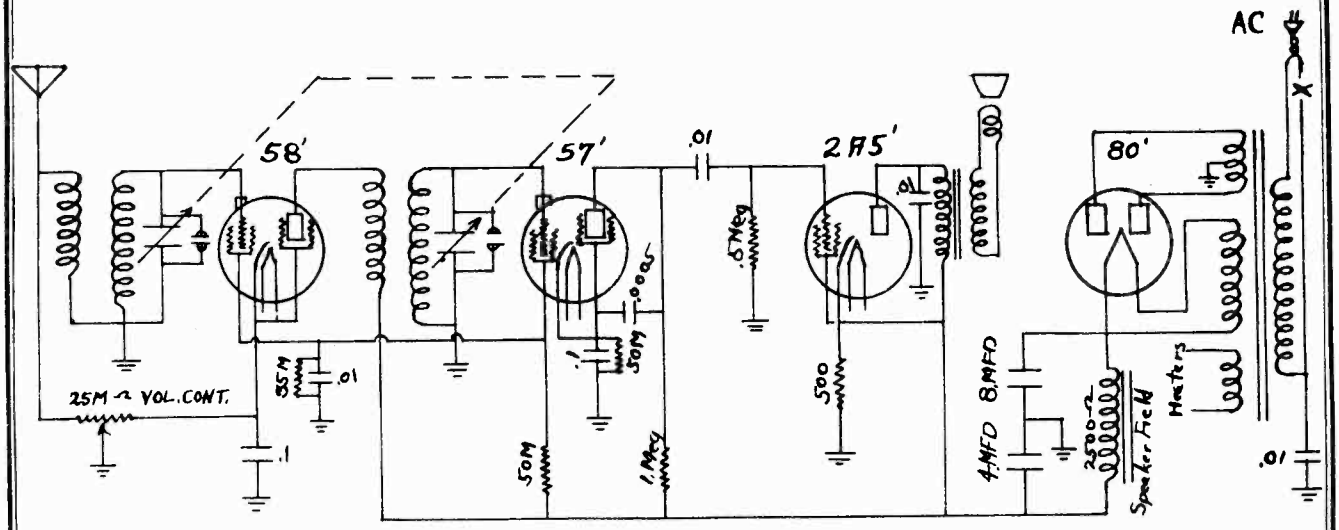
To rebalance the set, first align the I.F. transformers at 456 kc. Then with the variable condenser turned to zero, adjust the trimmers on the variable to 1712 kc. Now tune the set to some frequency around 1400 kc and readjust the detector section only to maximum output. The padder condenser (which is located beneath the chassis) is now readjusted at 600 kc. Tune the set to some signal around 600kc and with a No.4 Spintite adjust the padder condenser for maximum output, at the same time rocking the variable condenser back and forth to follow the signal.

PARTS LIST

No.	
52	Variable condenser 2 gang
61	Antenna Cord
74	Terminal Strip-7lug
101	Dynamic Speaker
102	Set of Coils
102A	Osc. Coil
102B	R.F. Coil
102C	IF Transformer
103	Choke
104	Cordohm -155 ohm
105	Volume Control
106	Electrolytic condenser
107	Cabinet

MODEL 7121
Schematic
Notes, Parts List

SEARS-ROEBUCK & CO.



4-20-'34

S.R. Nº 7121

GENERAL INFORMATION

This set is designed to operate on 105-120 volts, 50-60 cycle, A.C. only.

The set is of conventional tuned radio frequency type, developed to give best results with a minimum of trouble.

An antenna approximately 40' outside is recommended, but it is possible to operate this set on 20-25' inside.

Below are listed a few suggestions as to service:

1. Hum-
   a. Defective filter condenser
   b. Bad tubes
   c. Defective bypass condenser
   d. Open resistor
2. Weak -
   a. Poor tubes
   b. Set out of balance
   c. Shorted bypass condenser
3. Poor tone -
   a. Speaker off center or dirt in voice coil
   b. Defective filter condenser
   c. Poor or defective tubes

This set is designed to oscillate about one-third to half way up the band starting from the police signals - this can be controlled with the volume control.

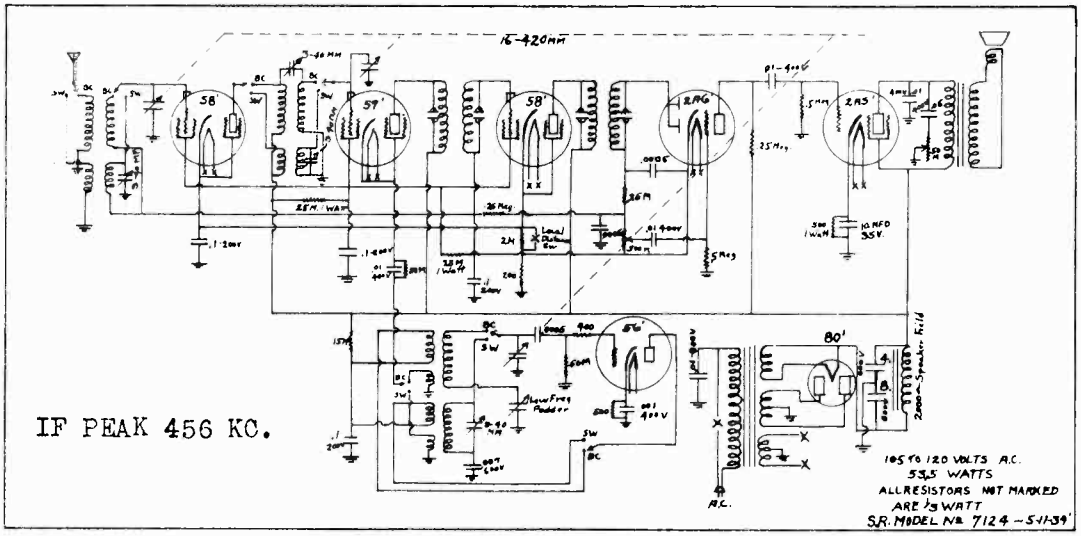
To rebalance set - turn variable condenser all the way open and tune trimming condensers until loudest noise level or if tuned to a police signal at 1720 kc can be heard. Then tune to some weak signal at 1400 k.c. and check trimmers again.

PARTS LIST

No.	
73	Terminal strip-3 lug
150	Cabinet
152	Dynamic Speaker
153	Variable condenser 2 gang
154	Power Transformer
155	Dial scale unit
105	Volume control
156	8&4 electrolytic condenser
157	Set of coils - complete
157a	Antenna coil - only
157b	R.F. coil - only
158	Power cord and plug
159	Knobs
160	Escutcheon plate
	Any tube socket (state number of prongs)
	Any resistor (state ohms and watts)
	Any bypass condenser (state capacity)

SEARS-ROEBUCK & CO.

MODEL 7124
Schematic
Alignment, Parts



GENERAL INFORMATION

This set is designed to operate on 105-120 volts, A.C. The regular band covers from 1712 KC-550 KC and short wave from 15-55 meters.

To align set on broadcast, remove 56 oscillator tube, trim Intermediate Frequency Transformers at 456 KC from an oscillator, feeding same into 57, first detector grid. Secondly, open gang condenser wide open and adjust trimmer condensers on top to maximum noise level, then adjust low frequency padder at approximately 600 KC; after doing this go back and recheck at 1700 KC.

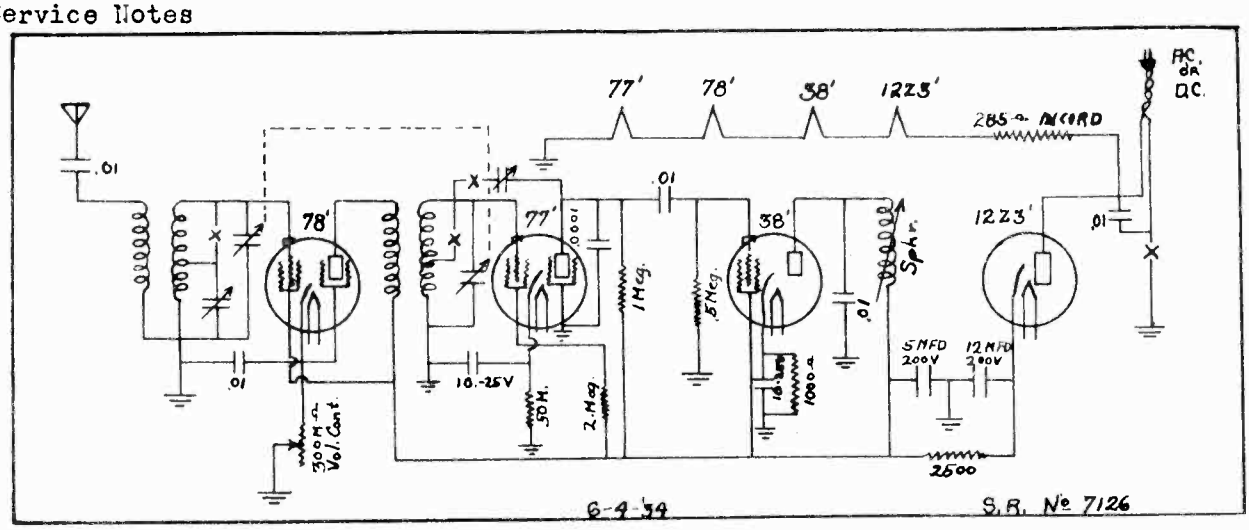
To adjust short wave, turn switch left and tune gang condenser to 31 meters on dial and trim small padders underneath to maximum noise level or some station, checking oscillator coil padder with gang condenser tuned at different points.

PARTS LIST - MODEL SR 7124

No.	
301	Dynamic Speaker 8"
302	Power Transformer
156	8&4 Electrolytic cond.
303	Variable condenser 3 gang
304	Set of coils complete
304a	RF antenna coil only
304b	RF Int. " "
304c	RF Osc. " "
304d	456 KC IF " "
304e	SW & BC Int. " "
304f	" " " Ant. " "
304g	" " " Osc. " "
305	Airplane Dial complete
256	Vol. control-500M ohm
306	Tone control-50M "w/s
261	A.C. Switch
158	Power cord & plug
307	10 mfd 25v Electrolytic
108	Padder condenser 7 plate
308	Short wave switch
73	Terminal strip-3 lug
74	" " 7 "
309	.01 mfd 600v condenser-in can
310	.0018 mica condenser
	Any tube socket (state No. of prongs)
	Any resistor (state ohms & watts)
	Any by pass condenser (state capacity)

MODEL 7126
Schematic, Parts
Service Notes

SEARS-ROEBUCK & CO.



GENERAL INFORMATION

This set is designed to operate on 105-120 volts AC or DC from 25 to 60 cycles. The cord of the set will become quite warm in operation. This is a normal condition, the voltage reducing resistor being an integral part of the line cord for rapid dissipation of heat.

The set is of the conventional tuned radio frequency type and is so developed as to give a minimum of trouble and a maximum of enjoyment.

It is recommended that the aerial be used that is supplied with the set. However, if a longer aerial is used, it is advisable to rebalance the antenna stage of the set to the aerial used. To accomplish this, remove the set from the cabinet and set the dial to about 20 on the scale. Turn the compensator screw on the rear section of the variable condenser back and forth until maximum signal strength is obtained.

To align Short Wave, open variable condenser about half way and adjust the two short wave padders, one underneath and one on top of chassis, to maximum noise level.

This set is designed to oscillate across a major portion of the broadcast band. This regeneration is controllable by reducing the volume of the set. Oscillation in a set of this type increases the sensitivity from ten to twenty times.

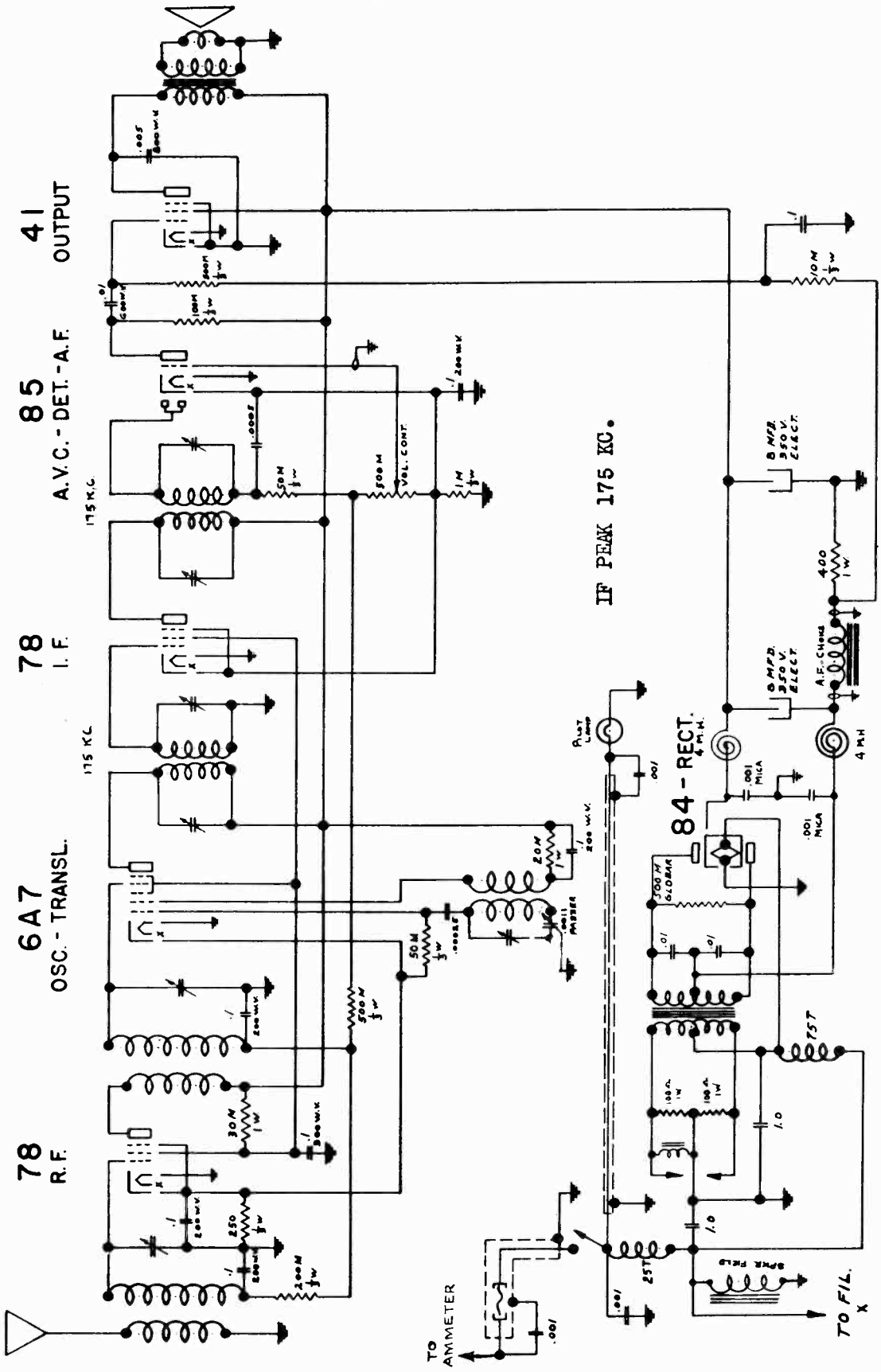
PARTS LIST - S.R.# 7126.

No.		
51	Magnetic speaker	312
52	Variable condenser	
55	Cordohm 285 ohm	
56	Complete set of coils	
56a	Antenna coil - only	
56b	Interstage coil - only	
60	Volume control - 300 ohm	
61	Antenna cord	
70	Electrolytic condenser	
71	Knobs	
72	Short wave switch knob	
73	Terminal strip - 3 lug	
77	Name Plate - Silvertone or Selector	

4 Pole 2 position short wave switch
Any tube socket (state no. of prongs)
Any resistor (state ohms and watts)
Any bypass condenser (state capacity)

SEARS-ROEBUCK & CO.

MODEL 7128
Schematic



MODEL 7128
Alignment, Voltage
Socket, Parts List

SEARS-ROEBUCK & CO.

SILVERTONE - MODEL 7128

The SILVERTONE Model 7128 is a six tube superheterodyne automobile radio receiver. It uses a full wave vibrator and tube rectifier to supply the "B" voltage.

The tubes and their functions are:

78 - RF
6A7 - Oscillator-Translator
78 - IF
85 - AVC-Det-AF
41 - Output
84 - Rectifier

The resistor marked "Globar" in the schematic, is a special voltage regulating resistor. Its value varies with the voltage applied to it. When the receiver is first turned on, the output voltage from the power supply tends to become very high until the tubes heat sufficiently to draw their normal load. Under these conditions, the Globar resistance 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 Globar resistance increases greatly so that it no longer constitutes a load on the power supply.

The voltage drop across the volume control, due to the 85 diode current, is used for AVC voltage.

The general information given in Service Manual Supplement #25, for the Model 1730, will apply as wellfor the Model 7128.

ALIGNMENT PROCEDURE

The IF Stages:

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

2. Conneot 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 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. The location of its tuning adjustments is shown 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. 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. Connect the test oscillator to the antenna lead through a .00025 mfd. condenser.

2. Set the test oscillator to exactly 1500 kc.

3. Turn the variable condenser plates all the way out. Then slip a piece of card about the thickness of a postal card between the stator and the short end of the rotor plates in such a way that the plates cannot be meshed. Turn the rotor plates sufficiently to clamp the piece of paper between them and the stator. With the plates in this position, adjust the oscillator trimmer for maximum output.

4. Adjust the antenna and translator trimmers for maximum output.

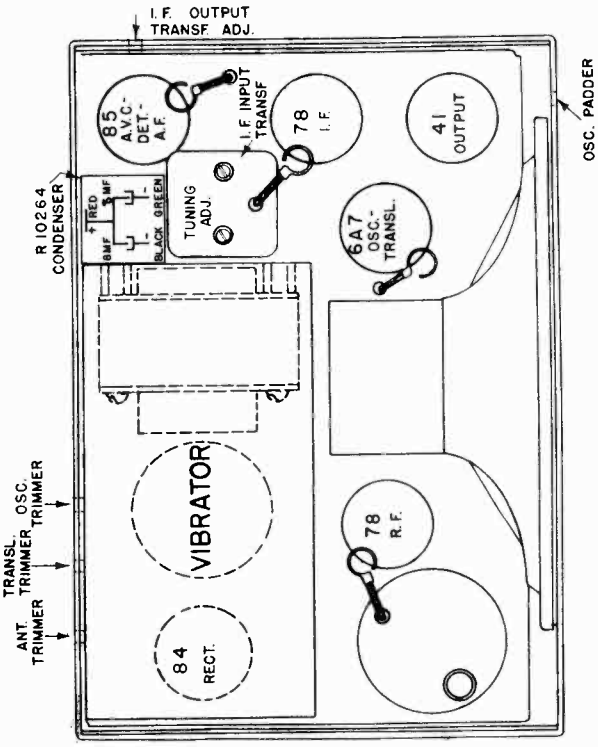
5. Set the test oscillator to 600 kc and tune in its signal. Then slowly rotate the variable condenser back and forth a degree or two and, at the same time, adjust the oscillator padder until maximum output is obtained.

6. Repeat the trimmer adjustments at 1500 kc.

TUBE VOLTAGE CHART

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

TUBE	PLATE	SCREEN	OSC.SEC. PLATE	CATHODE
78 - RF -	205	75		3.7
6A7 - Osc-Transl -	205	75	140	3.7
78 - IF -	205	75		4.5
85 - AVC-Det-AF -	35			
41 - Output -	195	205		
84 - Rectifier -				205

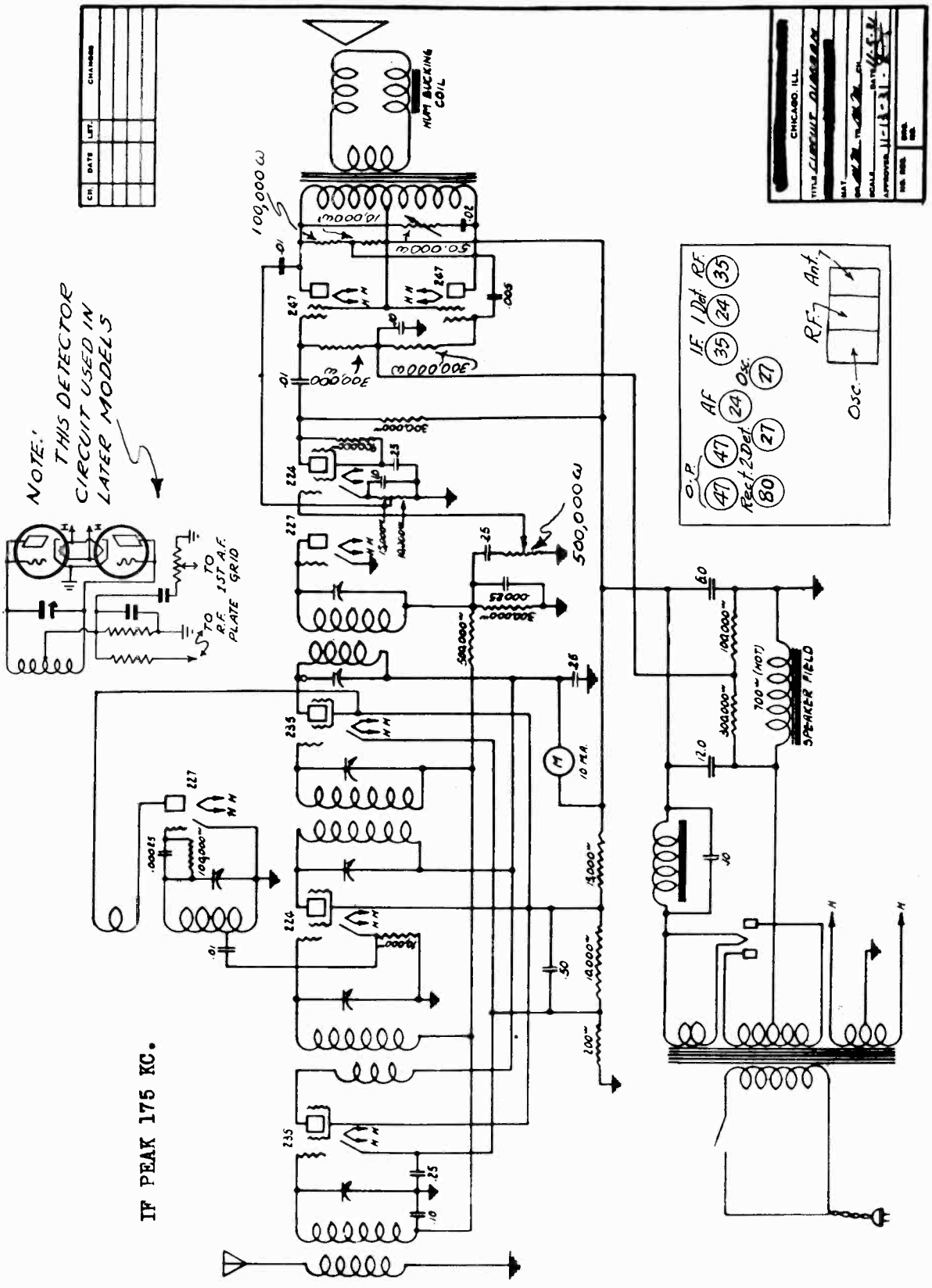


REPLACEMENT PARTS AND PRICE LIST

PART NO.	DESCRIPTION	PRICE PER 100
R8297A	Board - Terminal, double	1.34
R8308B	Board - Terminal, double	1.26
R8308A	Board - Terminal, triple	1.78
R9753B	Board - Terminal, 6 terminals	3.05
R10273	Booklet - Instruction	2.40
R9734A	Cable - Flexible, drive	26.82
R9734E	Cable and casing - Variable condenser drive	71.43
R10064A	Transformer - IF input	44.27
R10065A	Transformer - IF output	52.53
R10263A	Transformer - Power supply	116.31
R9044A	Choke - Single layer	8.93
R10095B	Choke - Triple layer	10.41
R11043	Clip - Grid	.19
R9741	Clip - "A" lead	2.04
R10314	Coil - Antenna	17.30
R10348	Coil - Oscillator	9.33
R10344	Coil - Translator	24.74
R9757	Coil - Choke, pancake type	5.74
R10272A	Coil - Choke, audio	24.90
R10349A	Condenser - Variable, assembly	153.57
R10264	Condenser - 8 mfd. dual, electrolytic	68.25
R10069	Condenser - 1 mfd. 25 volts	13.34
R8030	Condenser - 1 mfd. Generator	19.90
R10025	Condenser - .5 mfd. Ammeter	16.74
R6444	Condenser - .1 mfd. 200 volts	5.74
R8286	Condenser - .1 mfd. 200 volts	4.80
R8581	Condenser - .1 mfd. 300 volts	4.40
R7070	Condenser - .01 mfd. 600 volts	4.50
R9776	Condenser - .01 mfd. 800 volts	4.46
R10431	Condenser - .005 mfd. 800 volts	3.73
R6759	Condenser - .001 mfd. mica	5.68
R6760	Condenser - .0005 mfd. mica	4.56
R4592	Condenser - .00025 mfd. mica	8.28
R9426	Condenser - Padding	13.75
R9710	Control - Volume, 500 M ohms	30.19
R10274	Control - Remoto, head	119.46
R7228	Resistor - 500 M ohms, 1/3 watt carbon	5.25
R6638	Resistor - 200 M ohms, 1/3 watt carbon	5.91
R7586	Resistor - 100 M ohms, 1/3 watt carbon	5.91
R6637	Resistor - 50 M ohms, 1/3 watt carbon	5.25
R6689	Resistor - 30 M ohms, 1 watt carbon	6.58
R6095	Resistor - 20 M ohms, 1 watt carbon	6.58
R7587	Resistor - 10 M ohms, 1/3 watt carbon	5.25
R6636	Resistor - 1 M ohms, 1/3 watt carbon	5.25
R8522	Resistor - 400 ohms, 1 watt carbon	5.25
R10268	Resistor - 250 ohms, 1/3 watt carbon	5.25
R8436	Resistor - 100 ohms, 1 watt, flexible	5.25
R9745	Resistor - 500 M ohms, Globar, voltage regulating	10.60

SENTINEL RADIO CORP.

MODEL 114
Schematic
Circuit Change
Socket Layout



MODEL 114
Alignment Data
Voltage, Parts List

SENTINEL RADIO CORP.

VOLTAGE TABLE

Never check voltages until all tubes are fully warmed up to proper operating condition. The voltage table given below is taken at 115 volts line with a Model 547 Weston set checker. It must be remembered that the voltage readings taken vary directly as the line voltage and also with the accuracy of the meters used. A variation of 10% plus or minus is permissible.

Tube Voltages

Type of tube	Position of Tube	Filament Volts	B Volts	C Volts	Normal Plate M.A.	Screen Volts
227	Oscillator	2.4	62.5		4.75	
235	Radio Frequency	2.4	240	2.15	2.75	27
224	1st Detector	2.4	230	4,35	.5	65
235	Intermediate	2.4	237	2.15	2.75	72
227	2nd Detector	2.4				
247	Pentode	2.4	220	8.**	32.5	250
247	Pentode	2.4	220	8.**	32.5	250
280	Rectifier	4.9			47.5 ea.plate	
224	1st Audio	2.4	100	2.1*	.5	35*

115 V. line Volume Control Full On

*These readings are only comparative and are not true voltages applied. The volt meter, when the readings are taken at these points, is in series with a very high resistance.

**To read the 247 bias, read between 247 grid and ground.

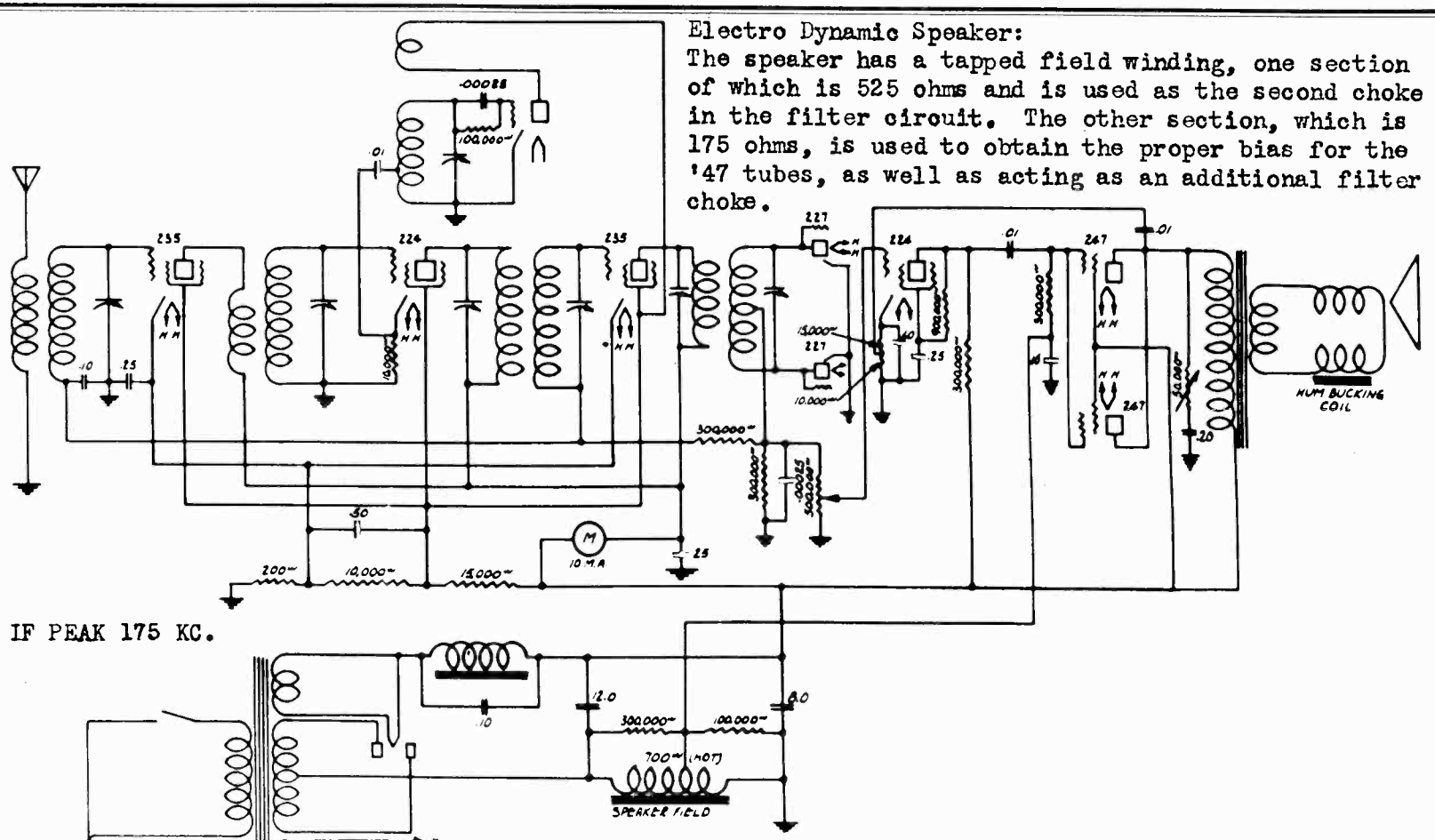
ALIGNMENT OF RECEIVER:

Because of the construction and thorough impregnation of the intermediate coils, the intermediate stages should rarely need retracking. Only when an intermediate coil has become defective due to an open or burned out winding, should it be necessary to readjust the intermediate trimmers. Should this occur, it is necessary that an oscillator be used and the intermediate trimmers be adjusted at 175 kilocycles. To align the intermediate stages, connect the high side of the oscillator output to the grid circuit of the first detector, which is done by disconnecting the grid cap of the 224 first detector and connecting the high side of the test oscillator to the control grid of this tube. The ground side of the test oscillator should be connected to the ground post on the chassis. Set the oscillator at 175 kilocycles and adjust the output of the oscillator so that a convenient reading is obtained on the output meter. Be sure that the output from the oscillator is not so large that it will overload the second detector. If during the alignment the meter goes off scale, reduce the output of the test oscillator or adjust the receiver volume control.

The trimmers of the intermediate coils are accessible through the small holes in the bottom of the chassis. There are two trimmers to each intermediate coil. Align the grid trimmer of the first intermediate coil. After a maximum reading is obtained by adjusting the grid trimmer on the first intermediate, adjust the primary for maximum reading and then recheck the grid side to make certain the alignment of the secondary has not been changed by the adjustment of the primary. The same procedure is followed in aligning the second intermediate coils. After both intermediate coils are properly aligned the adjustment of the intermediate stage is complete and they should not be further disturbed.

Replace the grid cap on the first detector and connect the oscillator output leads to the antenna and ground posts of the receiver and set the oscillator at 1435 kilocycles. Then tune the receiver to 1435 kilocycles on the dial. It is important that the receiver be tuned to this point. If the receiver is out of the cabinet it will be necessary to use some temporary indicator so that the position 1435 kilocycles on the the dial may be accurately located. (This indicator should be set so that when the variable condensers are at the maximum capacity stop the indicator points to the last line on the dial at the low frequency end.) Then track the variable condensers by adjusting the trimmer condensers in the following order: Oscillator, antenna and radio frequency - (reading from the front of the receiver toward the back, the variable condenser sections are: Oscillator, antenna and radio frequency). After the variable condensers have been properly tracked at 1435 kilocycles, adjust the oscillator to 1295 kilocycles. Tune the receiver to this frequency. Check alignment of the condensers at this point by bending the end plate of the rotors in and out, noting the change in reading on the output meter. If when the plates are bent in the reading is increased, it is an indication that that particular section requires more capacity and the end plate should be permanently bent in at this point; or, if when the end plate is bent away the reading is increased, the end plate should be bent away permanently, as it is an indication that that particular section requires less capacity at that particular point. The variable condensers should be checked in this manner at 1295, 880, 650 and 550 kilocycles. These points have been chosen so as to take advantage of the slots in the end plates of the variable condensers. This procedure of bending plates should rarely be necessary on the oscillator section, as the plates of the oscillator section are especially designed to properly track over the broadcast spectrum, providing the antenna and radio frequency stages are correctly aligned.

7269	200 ohm bias resistor	7457	Dynamic speaker
7038	10,000 ohms 1st detector cathode, 247 plate and 1st audio cathode resistor	7534	Power transformer for 110 V. 25 cycle
7040	100,000 ohms osc. grid, 247 plate, and field shunt resistor	7880	Meter
7178	15,000 ohms series screen resistor	7501	Power transformer
7042	900,000 ohms 2nd detector screen resistor	7051	8 mfd. elec. condenser
7187	500,000 ohms series bias resistor	7078	12 mfd. elec. condenser
7310	300,000 ohms field shunt, 247 grid and 224 plate resistors	7445	Filter choke
7864	Volume control and switch	7620	.1 mfd. condenser
7037	Tone control resistor	7255	Bypass condenser block
7351	Tone control condenser .05 mfd.	7422	Variable condenser
7618	.01 mfd. condenser		
7029	.00025 mfd. osc. grid cond. & 2nd detector grid bias resistor bypass		



Tube Voltages

Type of tube	Position of tube	Filament Volts	B Volts	C Volts	Normal Plate M.A.	Screen Volts
227	Oscillator	2.4	62.5	----	4.75	---
235	Radio Frequency	2.4	240	2.15	2.75	27
224	1st Detector	2.4	230	4.35	.5	65
235	Intermediate	2.4	237	2.15	2.75	72
227	2nd Detector	2.4	---	----	----	--
227	2nd Detector	2.4	---	----	----	--
247	Pentode	2.4	220	8.**	32.5	250
247	Pentode	2.4	220	8.**	32.5	250
280	Rectifier	4.9	---	----	47.5 ea.plate	---
224	1st Audio	2.4	100	2.1*	.5	35*

115 V. line Volume Control Full On

*These readings are only comparative and are not true voltages applied. The volt meter, when the readings are taken at these points, is in series with a very high resistance.

**To read the 247 bias, read between 247 grid and ground.

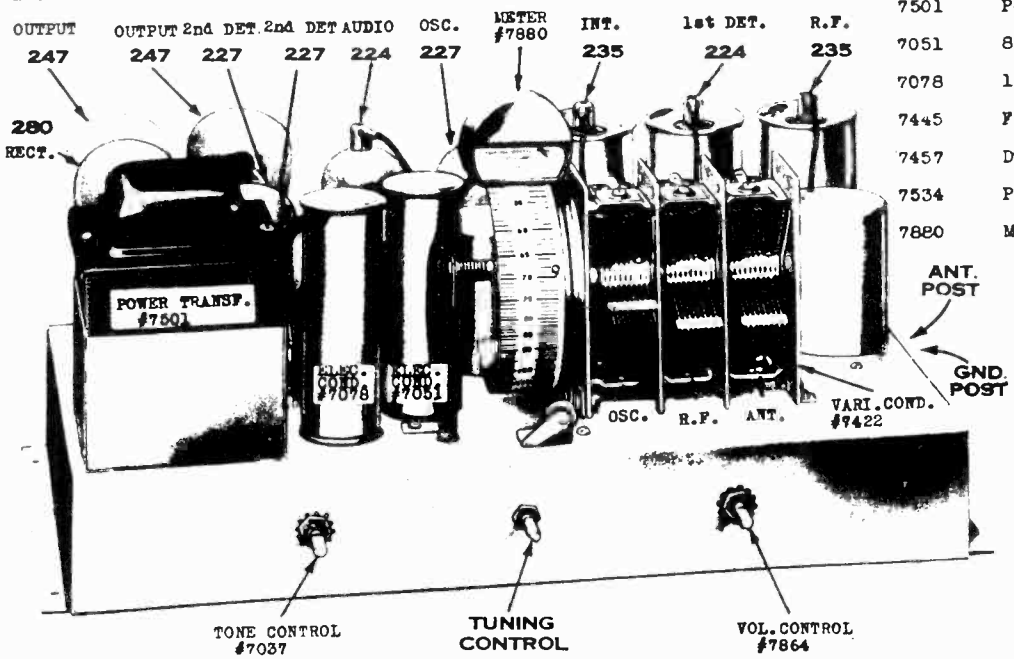
MODEL 118
Alignment Data
Socket,Parts List

SENTINEL RADIO CORP.

ALIGNMENT OF RECEIVER:
Because of the construction and thorough impregnation of the intermediate coils, the intermediate stages should rarely need retracking. Only when an intermediate coil has become defective due to an open or burned out winding, should it be necessary to readjust the intermediate trimmers. Should this occur, it is necessary that an oscillator be used and the intermediate trimmers be adjusted at 175 kilocycles. To align the intermediate stages, connect the high side of the oscillator output to the grid circuit of the first detector, which is done by disconnecting the grid cap of the 224 first detector and connecting the high side of the test oscillator to the control grid of this tube. The ground side of the test oscillator should be connected to the ground post on the chassis. Set the oscillator at 175 kilocycles and adjust the output of the oscillator so that a convenient reading is obtained on the output meter. Be sure that the output from the oscillator is not so large that it will overload the second detector. If during the alignment the meter goes off scale, reduce the output of the test oscillator or adjust the receiver volume control.

The trimmers of the intermediate coils are accessible through the small holes in the bottom of the chassis. There are two trimmers to each intermediate coil. Align the grid trimmer of the first intermediate coil. After a maximum reading is obtained by adjusting the grid trimmer on the first intermediate, adjust the primary for maximum reading and then recheck the grid side to make certain the alignment of the secondary has not been changed by the adjustment of the primary. The same procedure is followed in aligning the second intermediate coils. After both intermediate coils are properly aligned the adjustment of the intermediate stage is complete and they should not be further disturbed.

Replace the grid cap on the first detector and connect the oscillator output leads to the antenna and ground posts of the receiver and set the oscillator at 1435 kilocycles. Then tune the receiver to 1435 kilocycles on the dial. It is important that the receiver be tuned to this point. If the receiver is out of the cabinet it will be necessary to use some temporary indicator so that the position 1435 kilocycles on the dial may be accurately located. (This indicator should be set so that when the variable condensers are at the maximum capacity stop the indicator points to the last line on the dial at the low frequency end.) Then track the variable condensers by adjusting the trimmer condensers in the following order: Oscillator, antenna and radio frequency - (reading from right to left the variable condenser sections are: Oscillator, radio frequency and antenna). After the variable condensers have been properly tracked at 1435 kilocycles, adjust the oscillator to 1295 kilocycles. Tune the receiver to this frequency. Check alignment of the condensers at this point by bending the end plate of the rotors in and out, noting the change in reading on the output meter. If when the plates are bent in the reading is increased, it is an indication that that particular section requires more capacity and the end plate should be permanently bent in at this point; or, if when the end plate is bent away the reading is increased, the end plate should be bent away permanently, as it is an indication that that particular section requires less capacity at that particular point. The variable condensers should be checked in this manner at 1295, 800, 650 and 550 kilocycles. These points have been chosen so as to take advantage of the slots in the end plates of the variable condensers. This procedure of bending plates should rarely be necessary on the oscillator section, as the plates of the oscillator section are especially designed to properly track over the broadcast spectrum, providing the antenna and radio frequency stages are correctly aligned.



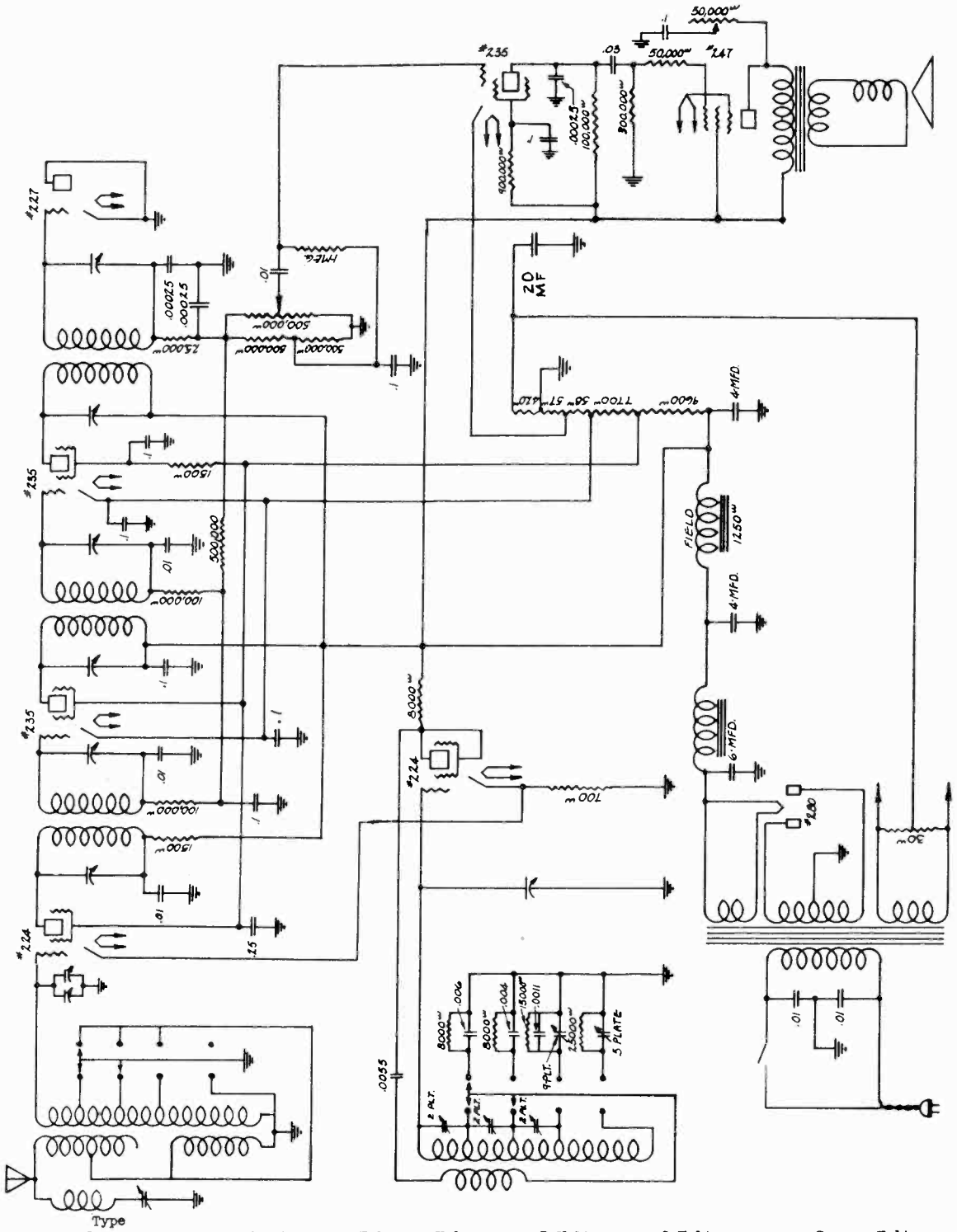
7501	Power transformer
7051	8 mfd. elec. condenser
7078	12 mfd. elec. condenser
7445	Filter choke
7457	Dynamic speaker
7534	Power transformer for 110 V. 25 cycle
7880	Meter

7269	200 ohm bias resistor
7038	10,000 ohms 1st detector cathode, 247 plate and 1st audio cathode resistor
7040	100,000 ohms osc. grid, 247 plate, and field shunt resistor
7178	15,000 ohms series screen resistor
7042	900,000 ohms 2nd detector screen resistor
7187	500,000 ohms series bias resistor
7255	Bypass condenser block
7422	Variable condenser

7310	300,000 ohms field shunt,
7864	Volume control and switch
7037	Tone control resistor
7331	Tone control condenser .05 mfd.
7618	.01 mfd. condenser
7029	.00025 mfd. osc. grid cond.
7620	.1 mfd. condenser
SE-269	Pilot light

SENTINEL RADIO CORP.

MODEL 125
Schematic
Voltage



Type of Tube	Position of Tube	Filament Volts	B Volts	C Volts	Screen Volts
224	Modulator	2.35	250	10	100
224	Oscillator	2.35	160	12.5	160
235	First I. F.	2.35	250	7	100
235	Second I. F.	2.35	250	7	100
227	Detector	2.35	---	----	---
235	First Audio	2.35	125*	5	25*
247	Audio	2.35	230	16.5	250
280	Rectifier	4.85	34 MA each plate		

These readings are only comparative and are not true voltages applied. The voltmeter, when the readings are taken at these points, is in series with a very high resistance.

MODEL 261,521
Battery Data
Parts List

SENTINEL RADIO CORP.

In the first models of the automobile radio the B- and hot "A" leads were connected as shown in diagram "A". In the present model these leads are as shown in diagram "B". All other connections are identical, as shown on the schematic drawing. Connecting the black lead in the cable, designated as B- in the instruction sheet, to the hot 6 volt post of the eliminator will supply the hot 6 volts and provide an "off and on" switch for the B eliminator as well as the receiver itself In this way no other connection between the hot 6 volt lead of the eliminater and battery should be made and no switch for the hot lead to the eliminator is necessary; the set switch controlling both the B eliminator and receiver.

When using B batteries, the black lead should be connected to the B- of the batteries but under no circumstance should a separate lead from the B- terminal of the batteries be run to the chassis of the car or the shielded cable. In other words, do not ground the B- terminal of the B batteries.

The only difference in the tube equipment between the early and present models is the output tube. The first model utizized a #41 output tube and the present model a #89 tube. Complete complement of tubes is:

One (1) Type 36	One (1) Type 85
Two (2) Type 39	One (1) Type 89

DIAGRAM "A"

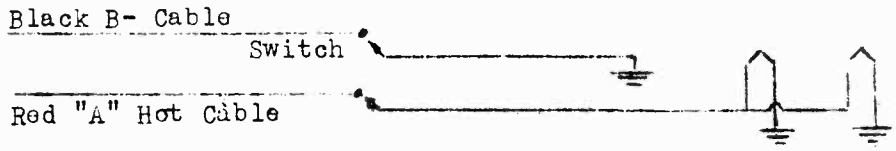
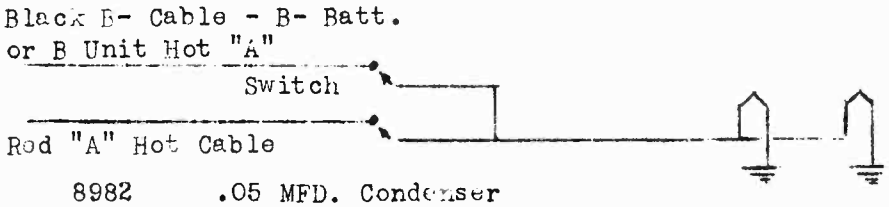


DIAGRAM "B"



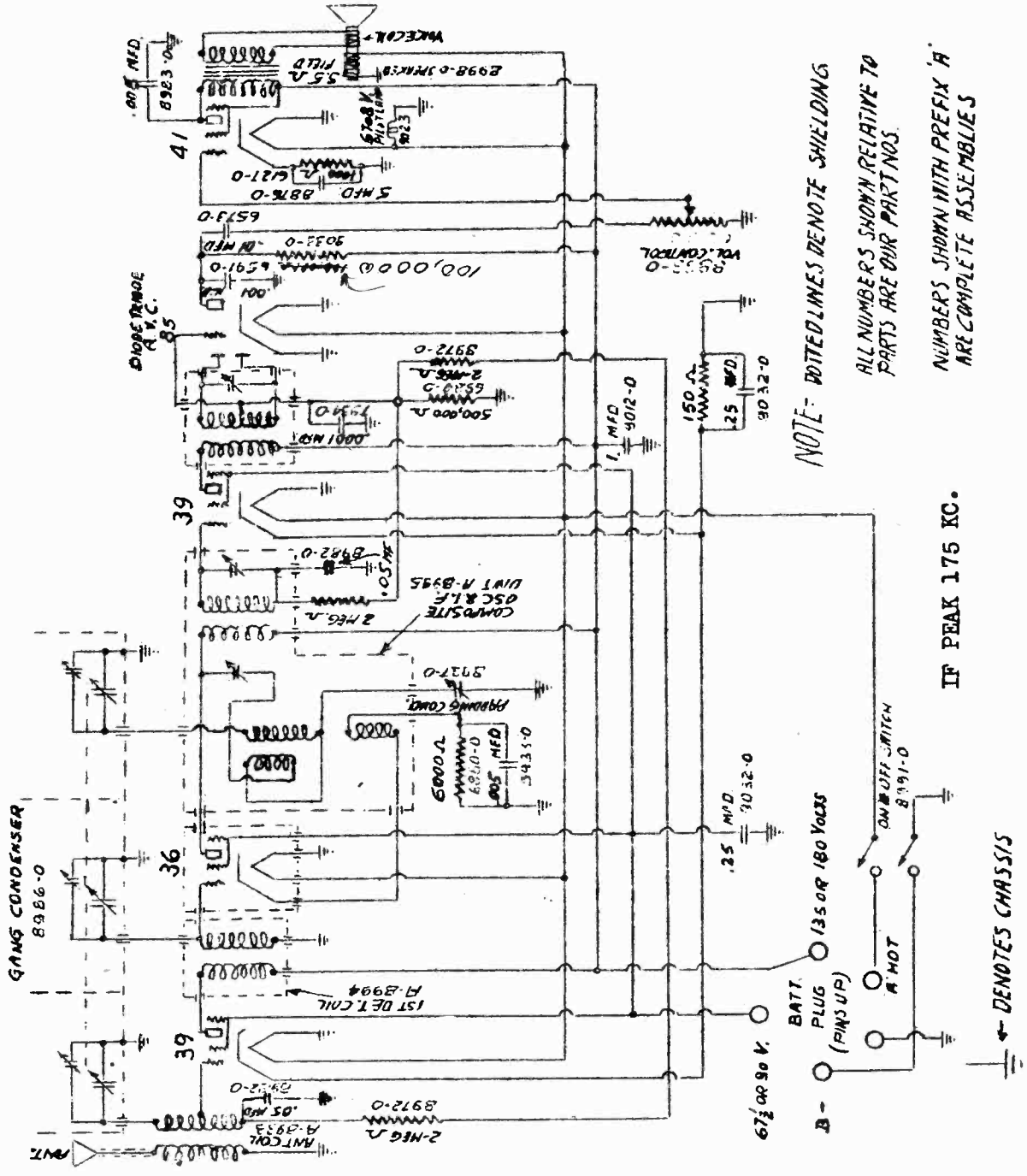
8982	.05 MFD. Condenser
8933	.005 MFD. 400 volt condenser
8927	Padding condenser
8961	.05 MFD. 400 volt condenser
7934	.0001 MFD. moulded condenser
6591	.0001 MFD. condenser 85 plate bypass
7860	.01 MFD. 400 volt coupling condenser
8876	5 MFD. dry electrolytic cathode bypass
9032	.25 MFD. 200 volt cathode 7 screen bypass
9012	1 MFD. condenser
8983	.003 MFD. plate bypass condenser
8972	2 megohm resistor
6880	6000 ohm resistor
9033	100,000 ohm 85 tube plate resistor
8065	1,000 ohm 41 tube cathode resistor
6924	500,000 ohm resistor
9018	150 ohm cathode resistor 1/3 watt

MODEL 261,521
Schematic

SENTINEL RADIO CORP.

WIRING DIAGRAM

PART # 20040



MODEL 261,521
Alignment Data

SENTINEL RADIO CORP.

The intermediate frequency transformers are tuned to 175 kilocyles. An oscillator which is accurately set to this frequency and which has an attenuator in its output to control the output can be used. It is of course best to start by retuning the intermediate stage before touching other adjustments. The outpnt of the intermediate frequency generator is connected one side to the grid of the 1st detector (236 tube) after removing the grid cap from this tube. The ground of the oscillator is connected to the chassis base. With the frequency set at 175 K.C. (accurately) the tuning adjustments of the 1st and 2nd I.F. transformers are adjusted to peak resonance. It is very important to use a long bakelite screw-driver for these adjustments. In adjusting, the successive tuning condensers are gone-over several times readjusting the output of the oscillator or the receiver's volume control as required. With the I.F. transformers properly tuned and scaled, the R.F. and oscillator circuits may next be adjusted.

The grid cap of the 1st detector is replaced and a generator or oscillator having frequencies of 1400 and 600 kilocyles is set up and connected to the aerial and ground of the receiver.

Do not attempt to align condenser without a shield. It is extremely important that a shield corresponding to the can be placed around the antenna coil and gang condenser in making adjustments on the r.f. and oscillator circuits, otherwise due to the change in these circuits caused by this shielding a very inaccurate adjustment will be obtained. This shielding may consist of a piece of steel bent to the shape of the corner of the can fitting around the edge of the base from the speaker to the rear right hand corner and extending as high as the speaker with holes in it corresponding to the condenser trimmer locations or a regular can and cover with such holes provided. This shield or can and cover must be in secure and in proper location and not disturbed during these adjustments From this it is easily seen why if an attempt is made to check the alignment out of the can on this receiver a different or changed adjustment will be had as against the factory setting, which is made with the shielding in place.

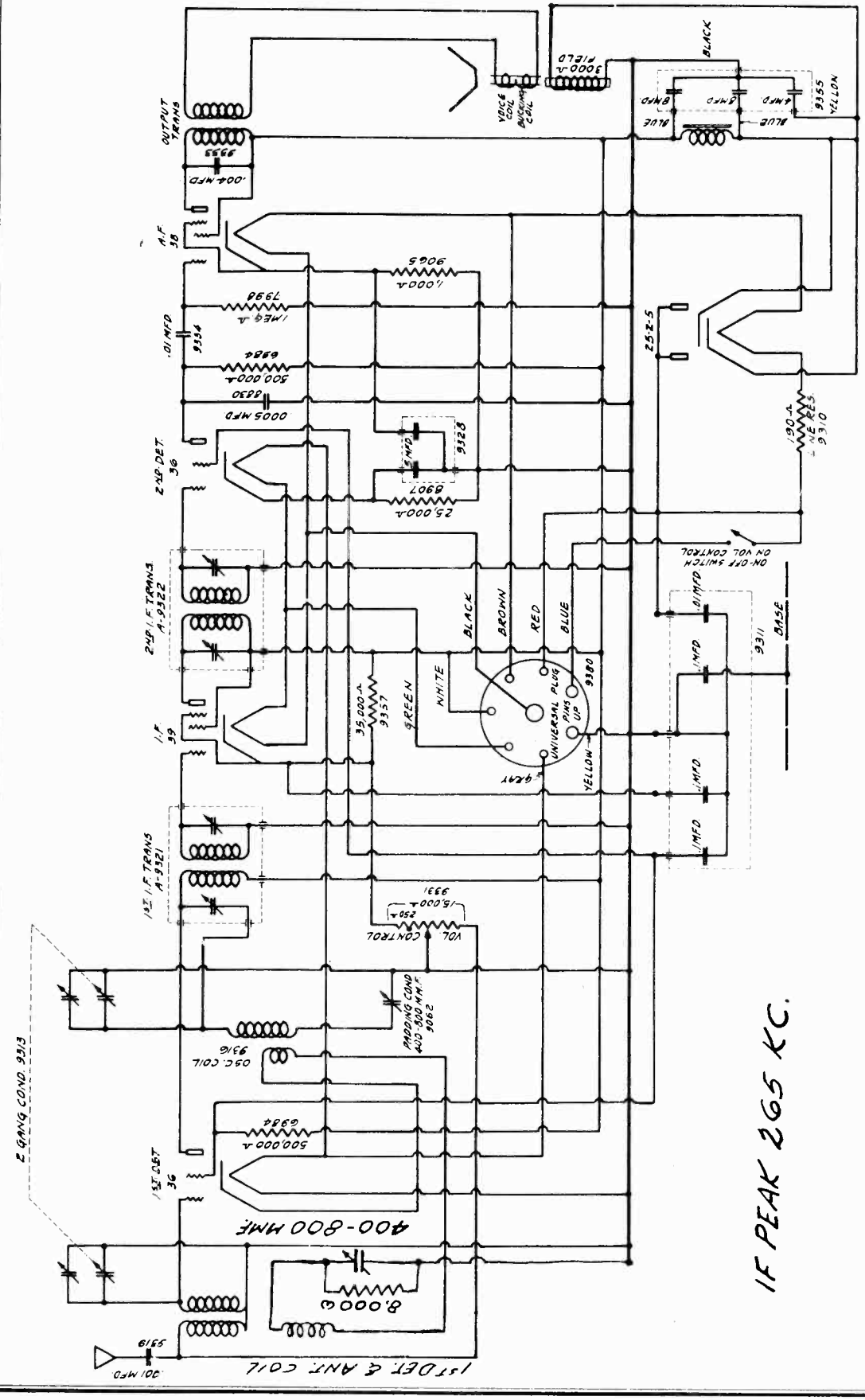
With the above shielding in place and tubes which are to be used in chassis, the procedure of circuit alignment is as follows:

Set the generator frequency at 1400 K.C. Set the tuning dial to 15 on the scale, open trimmers slightly on antenna (top) and 1st detector (middle) sections of gang condenser. Then without disturbing dial setting adjust oscillator (bottom) trimmer on gang to greatest signal. After this has been properly set adjust one at a time the antenna and 1st detector trimmers for maximum signals. If these operations are properly set as above, the receiver circuits are correct for the high frequency adjustment. Next change the generator frequency to 600 kilocycles and turn the tuning dial of the receiver to resonate with this signal.. This will come in around 82 on the dial. When the 600 kilocycle point is located on the dial next adjust the oscillator low frequency padding condenser, which is at the bottom rear edge of chassis base in right corner. The screw on this condenser is adjusted in and out as the receiver dial is slowly moved across the 600 K.C. resonant point until greatest signal strength is obtained. The combination of the best padding condenser setting with the dial setting giving the greatest signal output is the correct padding condenser adjustment. No change in the gang condenser trimmers adjustment should be made during the 600 K.C. adjustment.

DIAL LIGHT. If the dial light burns out be sure and replace with one of same type 6.3 volts 1000 hrs.

SENTINEL RADIO CORP.

MODEL 550
Schematic



ELECTRO DYNAMIC SPEAKER: The speaker has a DC field resistance of 3000 ohms.

MODEL 550
Voltage
Alignment Data

SENTINEL RADIO CORP.

FIVE TUBE AC-DC SUPERHETERODYNE
(110 V. AC-DC, 6 V. Storage Batteries & 32 V. DC)

VOLTAGE TABLE: Never check voltages until all tubes are fully warmed up to proper operating condition. The voltage table #1 is taken at 115 volts (AC) line with the volume control in the full on position. It must be remembered that the voltage readings vary directly as the line voltage and also with the accuracy of the meters used. A variation of 10% plus or minus is permissible. THE VOLTAGES WILL BE APPROXIMATELY AS GIVEN FOR EITHER DC OR AC OPERATION.

TUBE VOLTAGES — Table #1

Type of Tube	Position of Tube	Filament Volts	Plate Volts	Screen Volts	C Volts
36	Composite Oscillator & Modulator	5.5	108	21*	2.5
39	Intermediate Frequency	5.6	108	108	2.5
36	Detector	5.7	27*	21*	2.5
38	Output	5.8	103	108	1.5*
25z5	Rectifier	29.0	52.5 MA		

The voltage table #2 is for 6 volt battery operation with a B eliminator which is especially designed for the model #561 receiver. The voltages as given will be correct for 32 volt DC operation in conjunction with a B eliminator of the recommended factory type. It will be found that on certain types of eliminators which do not have sufficient output or a low 6 volt battery, the readings will be lower than that given in the voltage table.

TUBE VOLTAGES — Table #2

Type of Tube	Position of Tube	Filament Volts	Plate Volts	Screen Volts	C Volts
36	Composite Oscillator & Modulator	5.8	112	25*	2.5
39	Intermediate Frequency	5.8	112	112	2.9
36	Detector	5.8	28*	25*	2.0
38	Output	5.8	108	112	1.5*
25z5	Rectifier	52.5 MA			

* These readings for both Table #1 and #2 are only comparative and are not true voltages applied. The voltmeter, when readings are taken at these points, is in series with a very high resistance.

IMAGE SUPPRESSION: Occasionally in some locations interference in the form of whistles or stations which are tuned in on dial settings other than the station's frequency may be encountered. This is a rare occurrence and is called image interference caused by two signals whose frequencies differ by twice the intermediate frequency. This should not be confused with heterodyne whistles which are caused by two stations being received whose frequencies are the same nor by local stations whose frequencies are close to some out-of-town stations frequency which might result in reception from both stations. To overcome this possibility of image interference an image suppression circuit is incorporated in the receiver. The image adjusting condenser is mounted on the back of the chassis below the first IF transformer shield and is accessible through the hole in the chassis. If a whistle or interfering station is received on a frequency other than its fundamental, tune the receiver to this interference and adjust the image suppression condenser until the interference disappears or until the interference is at the minimum point. UNLESS THERE IS AN ACTUAL IMAGE INTERFERENCE DO NOT ATTEMPT TO ADJUST THE IMAGE SUPPRESSION CIRCUIT.

INTERMEDIATE FREQUENCY ALIGNMENT: Only when an intermediate transformer has become defective, due to an open or burned out winding, should it be necessary to readjust the intermediate stages. Should this occur it is necessary that an oscillator be used with some type of output measuring device so as to correctly tune the transformers. To align the intermediate transformers connect the high side of the oscillator output to the control grid of the 36 oscillator modulator tube leaving the grid cap disconnected from the tube. The ground side of the test oscillator should be connected to the gang condenser frame and MUST NOT OTHERWISE BE GROUNDED. Set the oscillator at 265 kilocycles (this must be accurate) and adjust the output of the oscillator so that a convenient reading is obtained on the output meter. BE SURE THAT OUTPUT OF THE OSCILLATOR IS NOT SO HIGH AS TO OVERLOAD THE DETECTOR. IF DURING THE ALIGNMENT THE DETECTOR OVERLOADS REDUCE THE OUTPUT OF THE OSCILLATOR. Align the first intermediate transformer by turning the intermediate frequency trimmer screw up and down until maximum reading is obtained on the output motor. Both the primary and secondary trimmer screws should be adjusted in this manner. It is always best to recheck the grid side of the intermediate frequency transformer adjustment to make certain the alignment of the secondary has not been changed by the adjustment of the primary. The same procedure is followed in aligning the second intermediate transformer. After both intermediate transformers are adjusted the alignment of the intermediate stage is complete and the trimmer should not be further disturbed, and the grid cap should be connected to the grid of the 36 tube.

VARIABLE CONDENSER ALIGNMENT: If the intermediate frequency stage has been realigned or if an antenna or oscillator coil requires replacement it will be necessary to realign the variable condenser. The front section of the variable condenser (looking at the front of the receiver) is the oscillator section, the other section tunes the antenna stage. Tune the receiver to 1720 kilocycles on the dial and set the oscillator at this frequency. BE SURE THAT OUTPUT OF THE OSCILLATOR IS NOT SO HIGH AS TO OVERLOAD THE DETECTOR. IF DURING THE ALIGNMENT THE DETECTOR OVERLOADS REDUCE THE OUTPUT OF THE OSCILLATOR. Next ad-

just the trimmer screws of the oscillator and antenna sections which are mounted on top of the variable condensers so as to obtain maximum output reading. It will be found that the oscillator section trimmer condenser will in most cases have to be adjusted to minimum capacity and in some instances it may be necessary to remove the trimmer screw entirely. After the trimmers have been correctly adjusted, at this frequency, tune the receiver to 600 kilocycles and adjust the oscillator to 600 K.C. Next, adjust the oscillator padding condenser (which is located directly below the variable condenser and accessible through the hole in the front of the chassis) to obtain maximum reading on the output meter. If the above is correctly followed the receiver will now track correctly over the entire band from 1720 KC to 550 KC. It is always advisable to align the receiver, whenever possible, with the tubes that are to be used in the set.

32 VOLT FARM LIGHTING SYSTEMS: When the current supply is DC, the 32 volt mains plug must be inserted correctly into the 32 volt DC mains receptacle, otherwise the set will not operate because of reversed polarity. If, after inserting the mains plug into the receptacle, the receiver does not operate for approximately one minute or one and a half minutes, remove the mains plug and turn it half way around and insert it into the receptacle. When operating the receiver on DC it will be found that in most instances the noise interference is greater than when the receiver is used on AC current. DC appliances such as motors, fans, etc., as a general rule cause more interference than similar AC equipment. Unfortunately this interference can only be eliminated at the source of the interference. When operating the receiver on 32 volt DC and using a B eliminator, be sure to keep the set aerial wire as far away from the DC line as possible, to avoid noise pick up from the 32 volt DC line. By connecting the antenna wire to an outside aerial in the event the noise interference is excessive, the interference can generally be minimized, as the increased volume obtained with the longer aerial permits lower minimum volume control setting and a consequent apparent reduction in noise interference. It is not recommended that the 6 volt cable and 6 volt B eliminator be used on the 32 volt system by tapping in at 6 volt as the current consumption will be too large, nor is it recommended that B batteries be used as the life of the battery will be limited. To reduce the drain on the batteries if they are used, it is recommended that only 90 volts of battery be connected to the receiver.

PARTS PRICE LIST

FOR THE

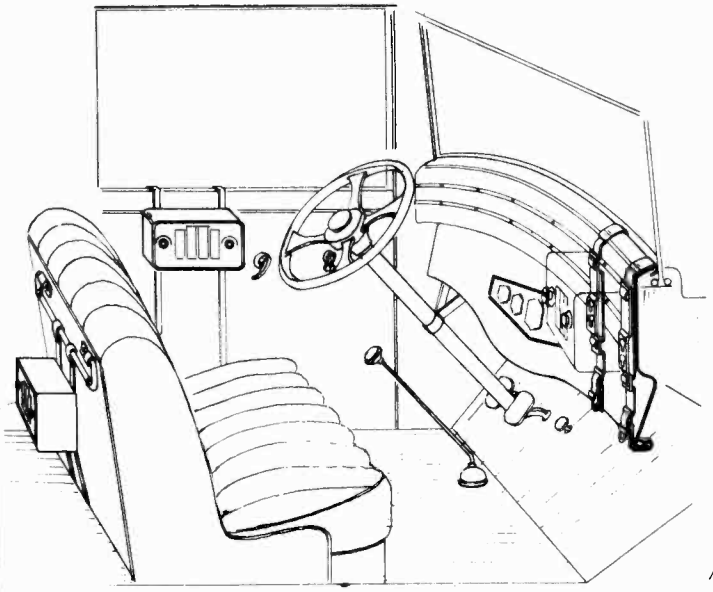
AC-DC FIVE TUBE SUPERHETERODYNE

PART NUMBER		PART NUMBER	
8923	39 Tube Socket	9357	35,000 " "
8922	36 " "	7998	1 Meg. Ohm Resistor
9307	38 " "	9337	8,000 Ohm Resistor
9308	Rectifier Tube Socket	9405	110-V Cable
9313	Gang Condenser	9342	Knobs
9062	Padding Condenser	9340	Cabinet less back
9316	Oscillator Coil	9423	Wood Cabinet
9317	Antenna and 1st Detector Coil	9369	Cabinet Back
9321	1st IF Transformer	9411	Antenna Wire and Spool
9322	2nd IF Transformer	7690	Rubber Feet Pads
9310	Wire Wound Resistance Strip 190 ohms	9399	6 Volt B Battery Eliminator
9312	Filter Choke	9408	32 Volt B Battery Eliminator
9315	Dynamic Speaker	9420	220 Volt Line Adapter
9311	By-pass Condenser Block (.1-.1-.1-01 M.F.D.)	9153	Car Antenna
9355	Elec. Condenser Block (8 x 8 & 4 M.F.D.)	9131	Spark Plug Suppressor
9328	" " " (5 x 5 M.F.D.)	9132	Generator Suppressor
9333	.004 M.F.D. Condenser	9133	Generator By-pass Condenser
9334	.01 M.F.D. Condenser	9412	23 Ohm Resistor for 32-Volt Cable
8830	.0005 M.F.D. Mica Condenser	9408	32 Volt Adapter Cable Complete
9319	.001 M.F.D. Mica Condenser	9397	6-Volt Adapter Cable Complete
9331	Volume Control	9380	Set Cable Plug
8907	25,000 Ohm Resistor	9402	Bkt. Assem. Complete
9065	1,000 " "	9393	Web Strap Buckle
8984	500,000 " "	9390	Long Web Strap Only

MODEL 550

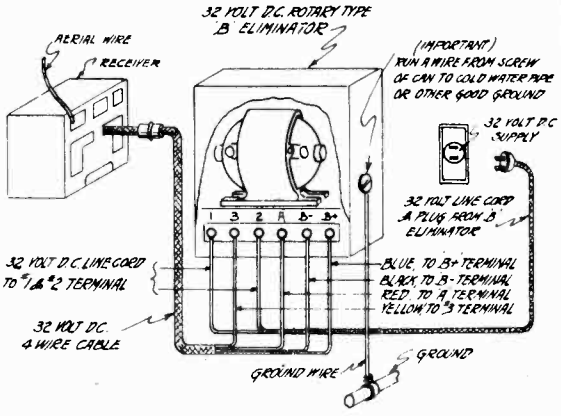
Installation and Connection Details

SENTINEL RADIO CORP.



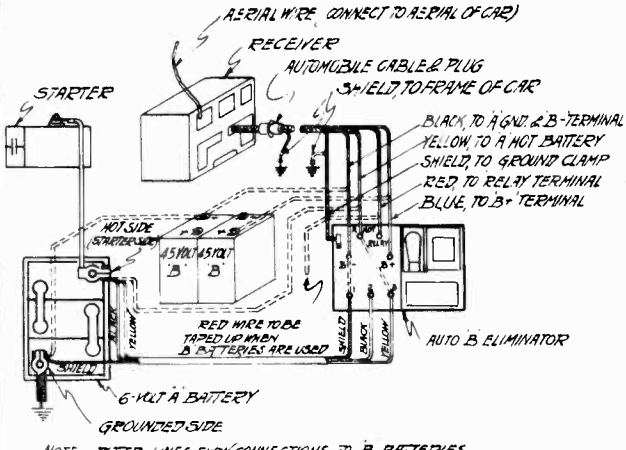
SKETCH SHOWING VARIOUS MOUNTING OF RECEIVER

FIG. 1



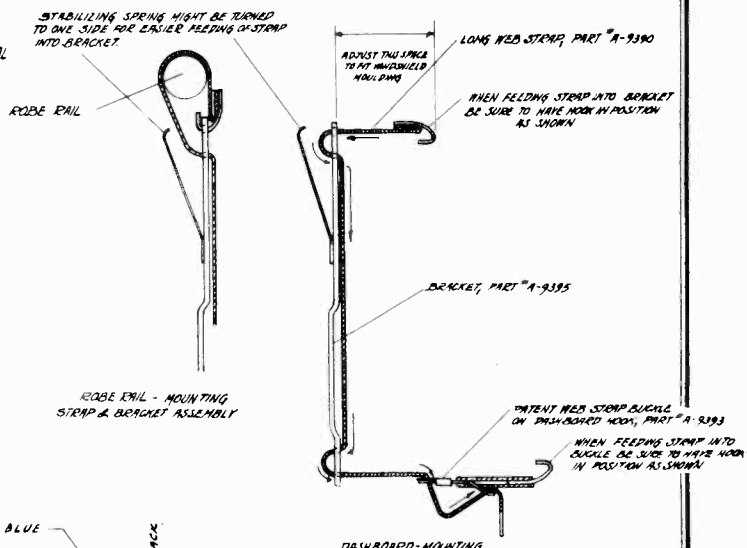
NOTE - IF B BATTERIES ARE USED INSTEAD OF B ELIMINATOR CONNECT THEM TO SET CABLE WIRES AS SHOWN IN DOTTED LINES IN FIG. 2. THE YELLOW AND BLACK CABLE WIRES ARE CONNECTED TO LINE CORD & PLUG FOR 32 VOLT SOCKET CONNECTION.

FIG #3 SKETCH SHOWING CABLE CONNECTIONS TO 'B' ELIMINATOR FOR 32 VOLT D.C. OPERATION



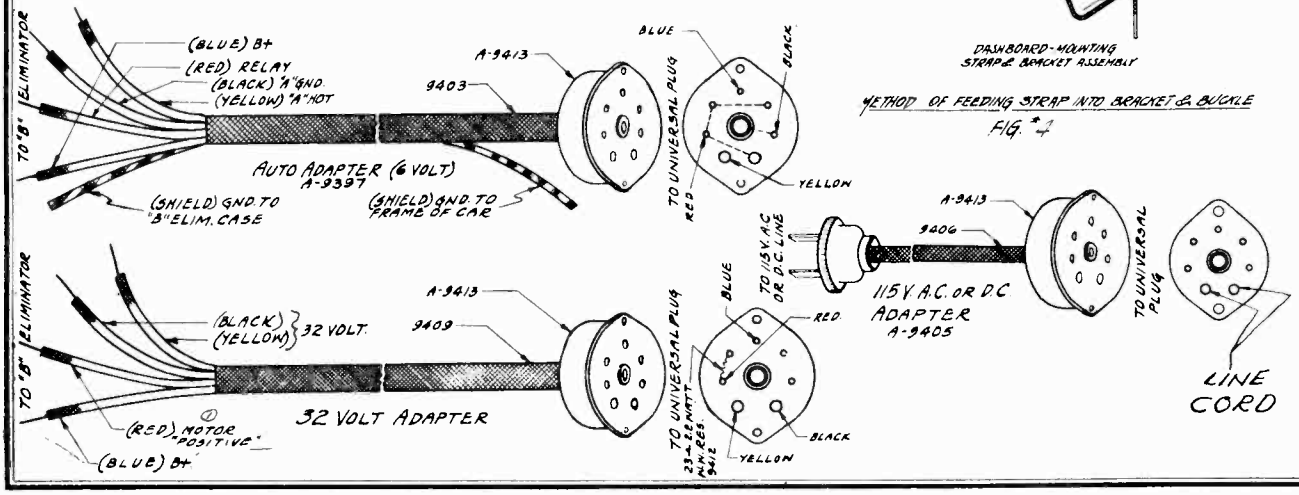
NOTE - DOTTED LINES SHOW CONNECTIONS TO B BATTERIES WHEN B ELIMINATOR IS NOT USED

FIG. #2 SKETCH SHOWING CABLE CONNECTIONS TO B ELIMINATOR OR B BATTERIES FOR 6 VOLT A AUTO OPERATION



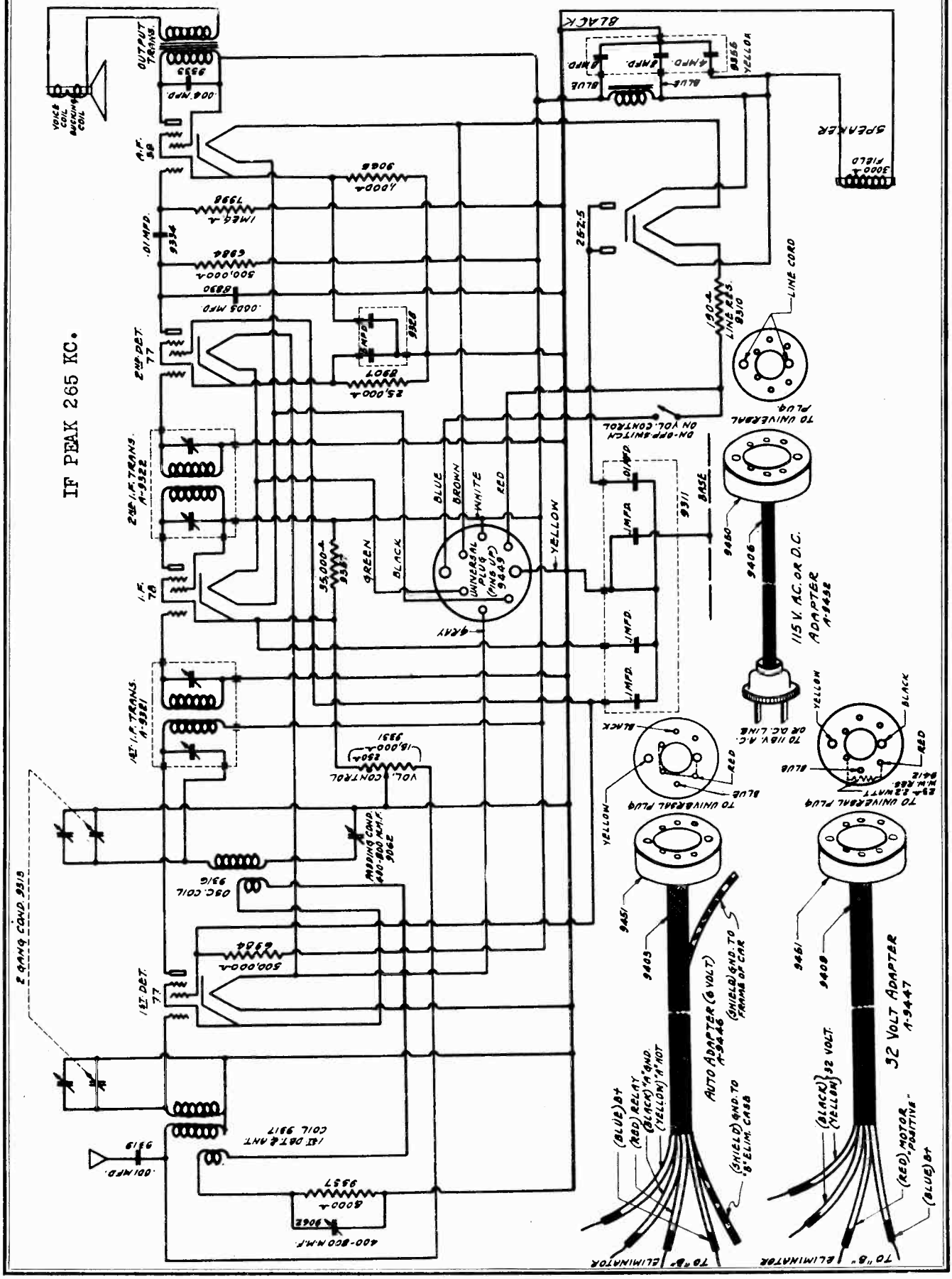
METHOD OF FEEDING STRAP INTO BRACKET & BUCKLE

FIG. #4



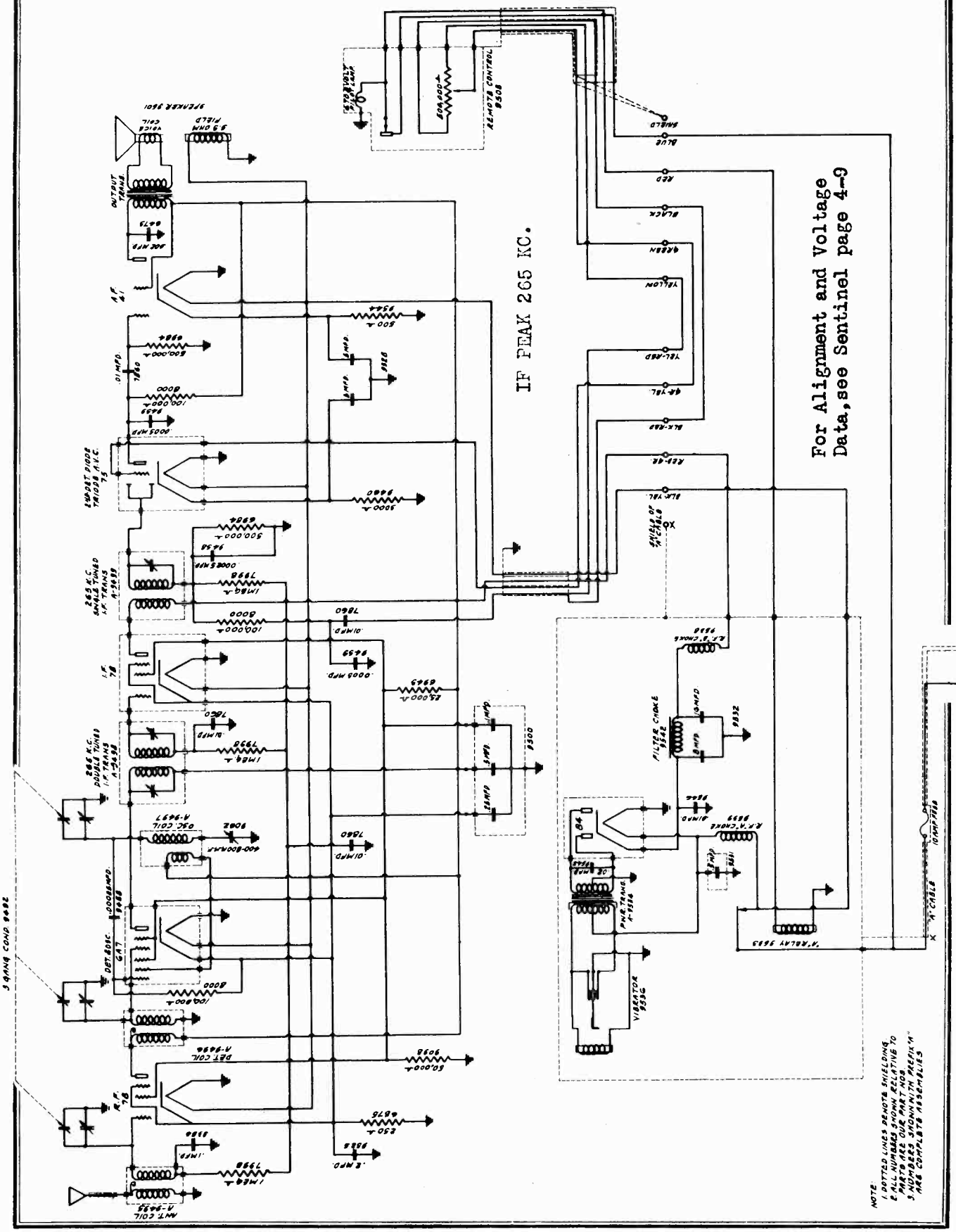
SENTINEL RADIO CORP.

MODEL 560 (2nd Type)
Schematic



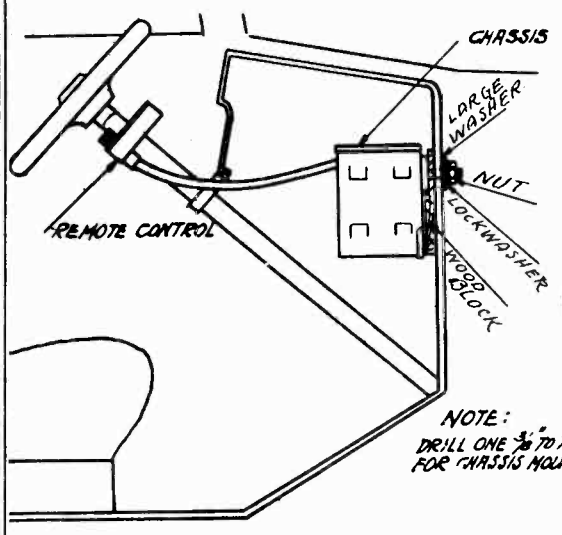
MODEL 600 Auto
Schematic

SENTINEL RADIO CORP.



SENTINEL RADIO CORP.

MODEL 602
Installation Notes



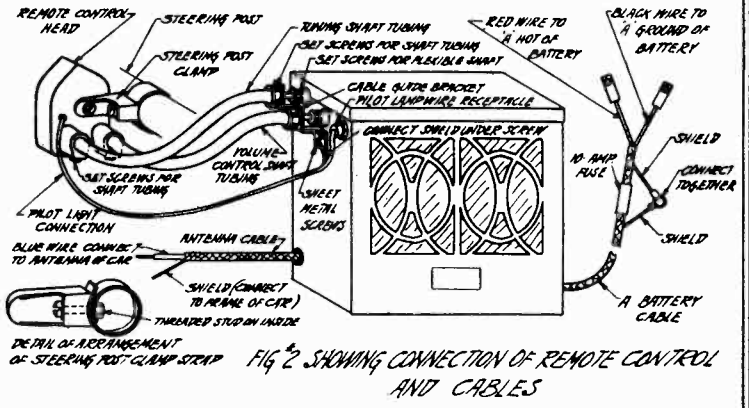


FIG 2 SHOWING CONNECTION OF REMOTE CONTROL AND CABLES

RECEIVER MOUNTING: The receiver, speaker and "B" eliminator are all contained in a single unit in one steel housing and requires the drilling of but one hole in the bulkhead for mounting. The receiver should be so mounted that the remote control shaft will reach the steering post in as straight a line as possible so as to eliminate any unnecessary bend in the cable. Care should be exercised in choosing the receiver location to avoid interference with the foot pedal, hand brake, clutch pedal and possible interference with the legs of the driver or passenger. A paper drilling template is provided to aid in finding the best location. When the location has been decided on, drill a 3/8" to 7/16" diameter hole in the motor bulkhead after which the wooden spacer block should be placed on the set mounting bolt and the bolt pushed through the hole in the bulkhead with the wooden spacer block on the driving compartment side. (Fig. No. 1). Place the steel washer, lockwasher and mounting bolt nut (in the order named) on the mounting bolt drawing up the nut loosely. Next, lift the receiver in position so that the square head of the mounting bolt will slip into the lower slotted end of the set mounting plate. Gently lowering the receiver will force the mounting bolt head to the top of the mounting plate slot. The receiver and the mounting bolt will be rigidly locked in position by drawing the mounting bolt up tight. On some installations because of insufficient room under the bulkhead it may be necessary to push the square head of the mounting bolt to the top of the mounting plate and then push the bolt through the hole drilled in the bulkhead.

REMOTE CONTROL: The remote control head, the steering post strap and clamp, the volume control and tuning control shaft tubing and the cable guide brackets are shipped unassembled. No difficulty will be had in properly assembling if the proper procedure is followed in the order given.

1. Mount the two cable guide brackets which are held in position with the two self tapping sheet metal screws, placing the pilot light shield lead under the head of one of these screws (see Fig. 2).

Push the flexible shaft of the volume control tubing through the volume control guide bracket into the volume control coupler mounted on the set until it touches the stop.

Then tighten the two flexible shaft set screws in the volume control coupler firmly.

Next, place the volume control shaft tubing so that it extends about 1/4" beyond the guide bracket. Do not permit tubing to touch the coupler. After correctly locating, screw the two guide bracket coupler set screws firmly, but do not force these set screws too tightly otherwise the drive shaft will bind. The tuning control flexible shaft should be mounted in the tuning coupler and the tuning control shaft tubing in the guide bracket in the same manner. Do not put the tuning control flexible shaft in the volume control coupler and vice-versa. Looking at the back of the remote control head the lefthand shaft tubing is the tuning control and the right hand one the volume control (Fig. 2). Looking at the side of the receiver the righthand coupler is the volume control and the lefthand coupler is the tuning control.

2. Loosen the two shaft tubing screws (Fig. 2) underneath the remote control head and insert the slotted end of each shaft tubing in their proper place in the remote control head, after which the set screw should be firmly tightened. If the shaft tubing is properly spaced from

MODEL 602
Installation Notes
Part 2.

SENTINEL RADIO CORP.

the couplers, the volume control and tuning control will move freely. If improperly spaced the shaft tubing may rub on the couplers or may rub in the remote control head thereby making the volume control and tuning control work hard.

3. The steering post clamp strap and clamp bracket should now be mounted on the steering post. The steering post clamp strap has four holes, one of which is threaded. The other three holes are provided so that the clamp may be used on any of the various size steering posts.

The remote control head may be located on the left or righthand side of the steering post column or on the dashboard by using the proper one of the three threaded clamp screw holes on the back of the remote control head. To mount on the lefthand side of the steering post use the lefthand threaded hole, for righthand mounting use the righthand threaded hole and for dashboard mounting the top threaded hole.

Form the clamp with the threaded stud on the inside by placing it around the steering post. Place the slotted end of the clamp against the clamp strap so that the hole in the clamp lines up with the two holes in the strap (Fig. 2.) Push the clamp strap through the hole in the clamp and screw the clamp screw into the threaded strap stud sufficiently tight so that it will be locked firmly in position. The remote control head may now be mounted on the steering post clamp by pushing the machine screw through the hole at the end of the clamp and screwing this machine screw through the threaded hole in the back of the remote control head.

4. The remote control drive is now completely mounted. It is possible that the dial calibration will not be correct. To properly align the dial turn the tuning control knob in the counter clockwise direction until the stop on the variable condenser is reached. This will be indicated by increased tension on the knob. Do not force the dial otherwise the dial needle will jump and the dial calibration will be inaccurate.

PILOT LIGHT: A six to eight volt Mazda type miniature size pilot light is used in the remote control head. The pilot light lead from the remote control head must be inserted in the pilot light receptacle located on the side of the set housing adjacent to the volume control shaft tubing guide bracket. The shielded lead of the pilot light lead should be connected underneath the head of one of the guide bracket mounting screws. To replace the pilot light remove the two control knobs by pulling outward on the knobs. Next, the three small head machine screws on the front of the remote control which hold the front cover of the control box in place should be removed. The cover of the remote control head may now be lifted off the control box and the pilot light socket then becomes accessible.

ANTENNA: A good antenna is very important. An inefficient or insufficient aerial will result in unsatisfactory reception. Most late model cars are factory equipped with an antenna built in the roof of the car. This is generally the most satisfactory type of aerial. If the car is not equipped with a roof type aerial, one may be installed or use may be made of the various aerial kits now available such as plates that are mounted underneath the running board or the strap type aerial which can be fastened between the front and rear axles. THE CLOSER TO THE GROUND THE STRAP OR PLATE TYPE ANTENNA IS SUSPENDED THE GREATER ITS EFFICIENCY.

"B" ELIMINATOR: The "B" eliminator unit which contains the No. 84 rectifier tube is mounted below the receiver and is held in position in the set housing by three machine screws which are accessible from the bottom of the set housing. To replace the rectifier tube it is necessary that the "B" unit be removed from the set housing. To do this unscrew the three "B" unit machine screws in the bottom and the six screws that hold the small detachable plate on the lower back of the set housing. After this plate is removed, the set cable wires which are now accessible should be disconnected from the "B" eliminator terminal strip mounted on the eliminator unit, after which the eliminator may be pulled out of the set housing. Next, remove the cover of the eliminator by unscrewing the six machine screws which hold this in place. After the cover has been taken from the top of the "B" unit the complete mechanism of the "B" eliminator can be lifted out of the eliminator housing and the "B" eliminator tube replaced. Care should be taken when reinstalling the "B" unit in the set housing so that the set cable wires are properly connected to the "B" eliminator terminal strip. Excessive vibration of the "B" unit may be corrected by substituting a new vibrator rubber cover. When changing the rubber cover be sure to place the vibrator unit back in the "B" unit with the vibrator leads toward the "B" eliminator transformer. Continuous blowing of the fuse is indicative of a possible defective "B" unit transformer, a defective vibrator or a defective No. 84 tube. UNDER NO CIRCUMSTANCES ATTEMPT TO ADJUST THE VIBRATOR UNIT. IF THE UNIT BECOMES DEFECTIVE IT SHOULD BE REPLACED WITH A GOOD ONE ONLY. R.F. hash indicated by a constant static-like background noise, which is apparent over the entire tuning range (with the set aerial disconnected) may be due to a defective No. 84 tube or a loose "B" unit cover. If the set antenna lead is run in close proximity with the set "A" leads or the battery "A" hot lead, it is possible to pick up this form of interference. Rerouting the set antenna lead will correct this.

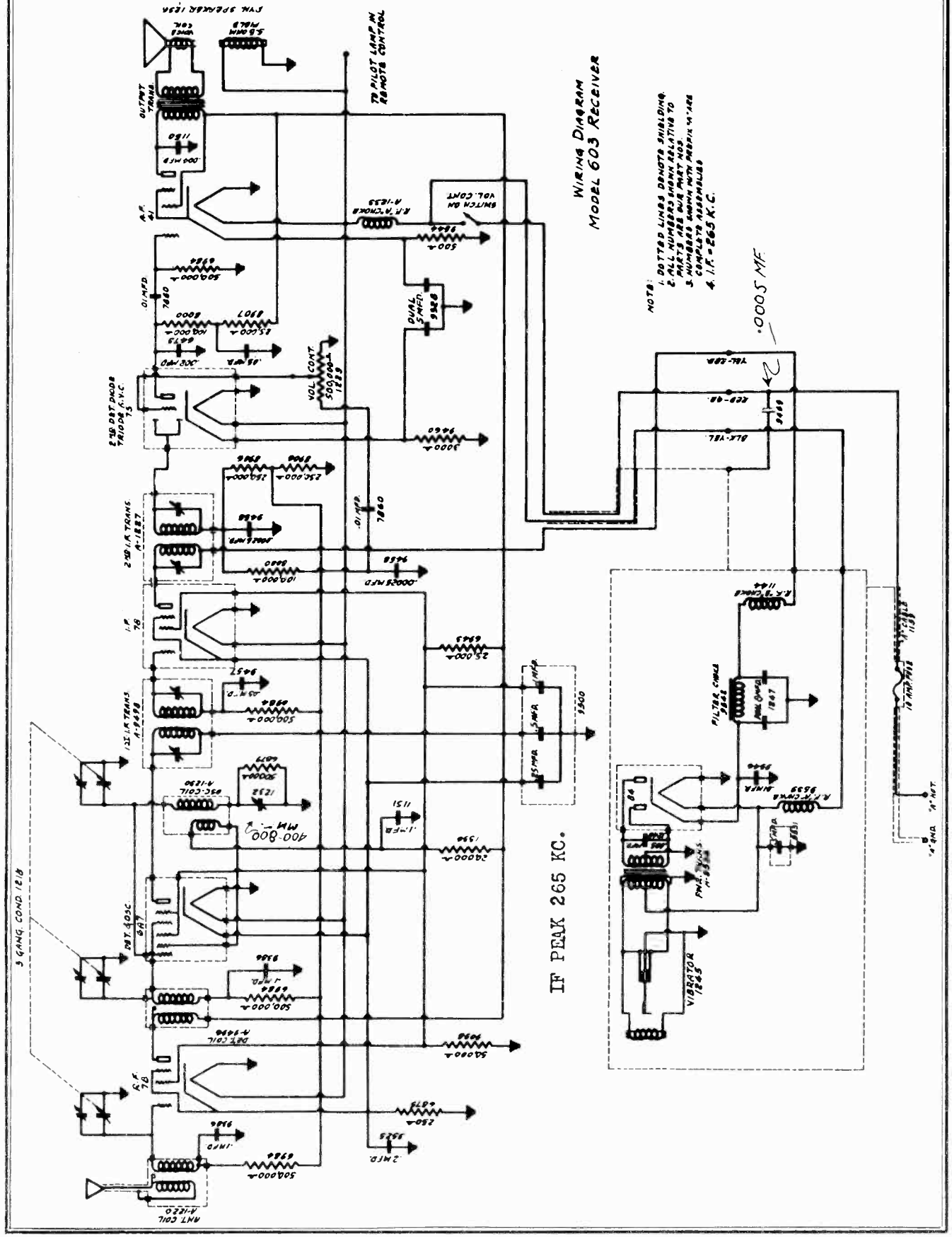
TUBES: The receiver utilizes the following tubes:

One (1) Type 78 - Amplifier Tube
One (1) Type 6A7 - Detector & Oscillator Tube
One (1) Type 78 - I. F. Tube
One (1) Type 75 - Second Detector Diode & AVC Tube
One (1) Type 41 - Output Tube
One (1) Type 84 - Rectifier Tube

The tube locations are shown in the diagram attached to the set housing cover. Always be sure that the tubes and their tube shields are firmly pressed down in their sockets. The tubes are readily accessible for removal or for checking by taking off the cover of the metal cabinet. To do this it is only necessary to unscrew the six machine screws which hold the cover to the cabinet and lift the cover off the cabinet. NOTE: In some installations, because of the location of the receiver it may be necessary to remove the set from the motor bulkhead to check the tubes. The tubes used are sturdily constructed and especially designed for use in automobile receivers and under normal conditions will give satisfactory service for a long period of time. Occasionally a tube may become faulty shortly after being placed in service and is generally indicated by low volume or distorted tone. Whenever this condition exists the tubes should be tested and the defective tubes or tube replaced. If the receiver becomes microphonic it can generally be traced to the 6A7, 75 or 41 tube.

MODEL 603
Schematic

SENTINEL RADIO CORP.



MODEL 603

Alignment, Voltage

SENTINEL RADIO CORP.

Parts List

1. Connect the high side of the oscillator output to the control grid of the 6A7 tube leaving the control grid cap disconnected. Connect the ground side of the oscillator to the receiver chassis.

2. Set the oscillator frequency at 265 kilocycles (this must be accurate) and adjust the output of the oscillator so that a convenient reading is obtained on the output meter.

3. Align the first intermediate transformer by turning one of the trimmer screws up and down until maximum reading is obtained on the output meter, and then adjust the other trimmer screw of the intermediate transformer for maximum sensitivity.

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

NOTE: Two types of intermediate transformer trimmers have been used in this model 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 intermediate 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: It is not necessary to remove the receiver chassis from the set housing to align the gang condenser. Regardless of whether or not the receiver is or is not mounted in the set housing the alignment procedure is the same. Three holes are provided in the left hand side of the set housing for the gang condenser trimmers and one in the front of the set housing for the 600 kilocycle padding condenser.

1. Properly connect the remote control head and shafts and adjust the dial needle on the dial face so that the dial calibration is correct.

2. Connect the high output side of the oscillator to the antenna and the ground to the receiver chassis.

3. Tune the receiver to exactly 1400 kilocycles on the dial and adjust the oscillator to this frequency. BRING IN THE 1400 KILOCYCLE SIGNAL TO MAXIMUM OUTPUT BY ADJUSTING THE OSCILLATOR GANG CONDENSER TRIMMER. Looking at the side of the receiver and reading from top to bottom the trimmer condensers are the antenna, R. F. and oscillator sections. Next, adjust the R. F. and antenna sections of the gang condenser for maximum sensitivity

4. Tune the receiver to approximately 600 kilocycles on the dial and set the oscillator to this frequency. Then adjust the 600 kilocycle padding condenser, which is located on and accessible through the hole in the front of the chassis for maximum output. Always rock the condenser slightly to the right and left when making this adjustment using the position of greatest output.

TYPE OF TUBE	POSITION OF TUBE	FILAMENT VOLTS	TUBE VOLTAGES PLATE VOLTS	CATHODE VOLTS	SCREEN VOLTS	GRID NO.1	GRID NO.2	GRID NO.3	GRID No.5
78	Radio Frequency	6	210	4	80				
6A7	Oscillator & Modulator	6	210	4		35	140	80	80
78	Intermediate Frequency	6	210	4	80				
75	2nd Detector Diode & AVC	6	100	1.5					
41	Output	6	200	8	210				
84	Rectifier	6	260##	235					

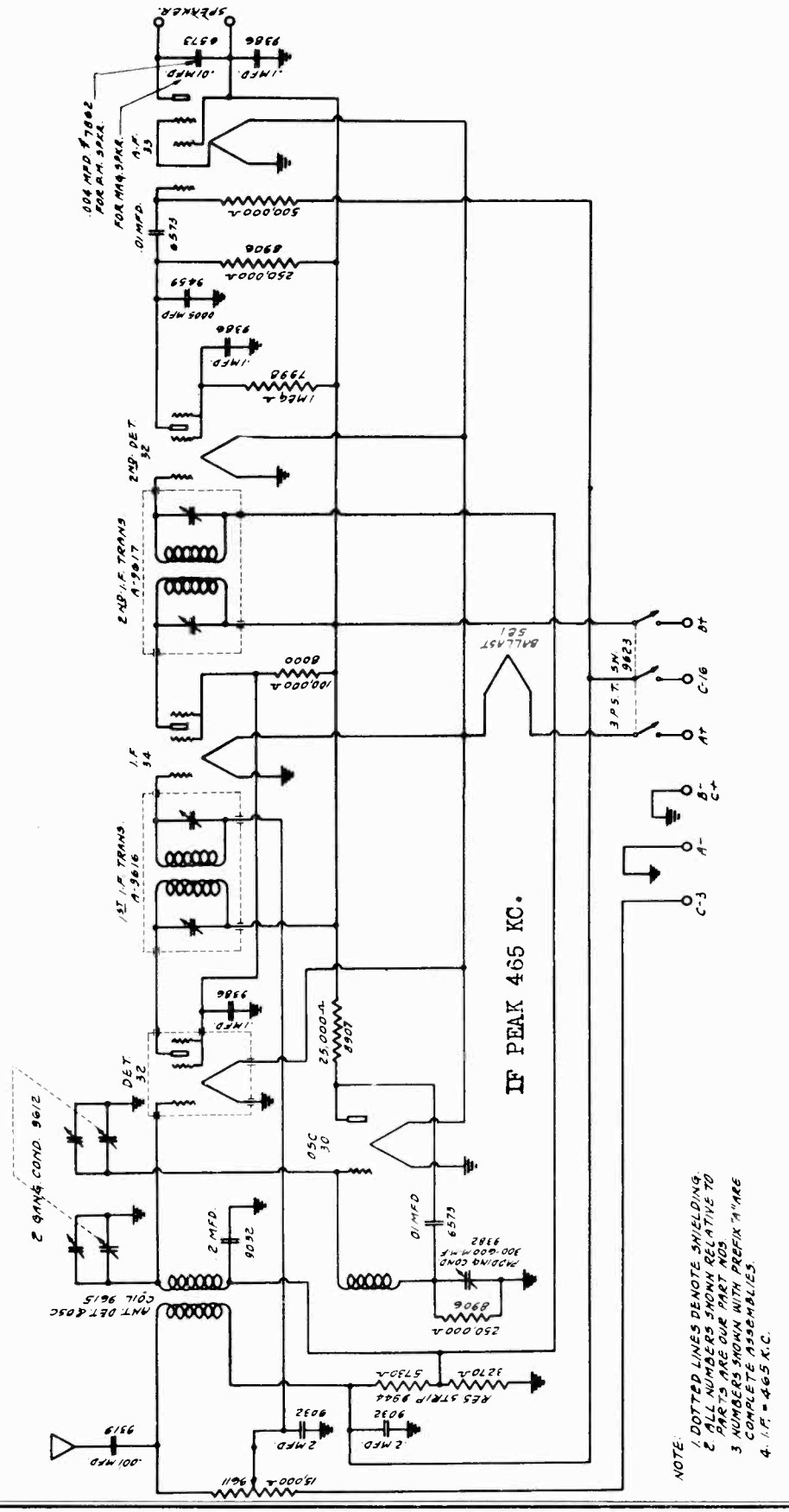
A. C. each plate
Total "A" current - 6.0 amperes
Read all voltages from socket to chassis

PART NUMBER		LIST PRICE
1226	Antenna Coil	$1.77
9496	Detector Coil	.99
1230	Oscillator	1.01
9498	1st I. F. Transformer	1.49
1227	2nd I. F. Transformer	2.03
1236	Dynamic Speaker	7.00
1158	Antenna Lead	.34
1244	Set Cable	.60
9098	50,000 Ohm 1/2 Watt Resistor	.19
6943	25,000 Ohm 1 Watt Resistor	.21
6984	500,000 Ohm 1/3 Watt Resistor	.19
8000	100,000 Ohm 1/3 Watt Resistor	.19
9460	3,000 Ohm 1/3 Watt Resistor	.19
9544	500 Ohm 1 Watt Resistor	.21
6875	250 Ohm 1/3 Watt Resistor	.19
8906	250,000 Ohm 1/3 Watt Resistor	.19
8907	25,000 Ohm 1/3 Watt Resistor	.19
1336	20,000 Ohm 1/2 Watt Resistor	.19
1232	Padding Condenser	.55
1218	Three Gang Condenser	4.10
9500	Bypass Condenser (1-.1,1-.25, 1-.5 Mfd.)	1.29
7860	.01 Mfd. 400 Volt Condenser	.17
9386	.1 Mfd. 200 Volt Condenser	.18
6473	.002 Mfd. 400 Volt Condenser	.17
9525	.2 Mfd. 200 Volt Condenser	.24
9203	.1 Mfd. 400 Volt Condenser	.20
1150	.004 Mfd. 400 Volt Condenser	.18
9328	Dry Electrolytic Condenser (2-5 Mfd.)	1.15
9133	Generator .5 Mfd. Condenser	.55
9597	Spark Plug Suppressor	.55
9598	Distributor Suppressor	.55
9600	Wood Mounting Block	.16
7717	Housing Carriage Bolt 3/8" x 3"	.10
7718	Hex Nut for 3/8" Carriage Bolt	.05

PART NUMBER		LIST PRICE
9453	6A7 Tube Socket	$ .13
1255	Set Housing Back	.25
1284	Set Housing Cover	.55
1223	Set Housing	3.52
9581	10 Ampere Fuse	.06
1159	"A" Battery complete with Fuse and Receptacle	.90
9063	Tube Shield Retainer Base	.05
1361	Tube Shield	.11
1253	R. F. "A" Choke	.28
1229	Volume Control with Switch	1.22
109	"B" Eliminator	15.00
1246	Vibrator Rubber Case	.40
1245	Vibrator	5.50
9534	Power Transformer	2.75
9542	Filter Choke	.85
9539	R. F. "A" Choke	.40
1144	R. F. "B" Choke	.32
1247	2x 8 Mfd. Condenser Block	2.75
9531	.5 Mfd. Bypass Condenser	.58
9546	.01 Mfd. 600 Volt Condenser	.18
1248	.005 Mfd. 1000 Volt Condenser	.23
9559	.0005 Mfd. Moulded Condenser	.21
9529	No. 84 Tube Socket	.13
9513	"B" Eliminator Housing Case	.55
9514	"B" Eliminator Housing Case Cover	.35
1249	"B" Terminal Strip with Screws	.60
1240	Remote Control Complete	9.00
1458	Tuning Control Ring	.77
1459	Volume Control Ring	.77
1460	Dial Light Assembly	.44
1460A	Pilot Light Bulb	.44
1461	Condenser Pulley Assembly	1.20
1462	Vol. Control Pulley Assembly	1.00
1463	Drive Cable Assembly	2.30

MODEL 660
Schematic

SENTINEL RADIO CORP.



MODEL 660
Alignment Data
Parts List

SENTINEL RADIO CORP.

Whenever this condition is encountered be sure to try other 32 and 34 tubes. Oscillation may also be encountered when the speaker leads come too close to the first detector tube or the antenna, or if the shielding on the I.F. grid leads is loose or pushed back. Sometimes with some tubes oscillation may occur if the pad condenser across the speaker is removed or open. Low battery voltages will be indicated by low volume, signal fading and also motorboating may occur. Motorboating may be corrected by bypassing the "B" batteries from B plus to B minus with a .5 or 1 Mfd. condenser. Be sure to use a condenser that has a DC continuous working rating of not less than 200 volts. An insufficient aerial will reduce the volume and range of the receiver materially. If reception is weak and the tubes and batteries are good, try increasing the overall antenna length. Always keep the aerial as short as possible consistent with satisfactory reception.

INTERMEDIATE ALIGNMENT: Only when an intermediate transformer has become defective due to an open or burned out winding should it be necessary to readjust the intermediate transformer. For aligning either the intermediate transformer or the variable condenser it is necessary that an oscillator be used with some type of output measuring device. To align the intermediate transformer:

1. Connect the high side of the oscillator output to the control grid of the No. 30 Modulator tube. The ground side of the oscillator should be connected to the chassis.

2. Set the oscillator at 465 kilocycles (this must be accurate) and adjust the output of the oscillator so that a convenient reading is obtained on the output meter.

3. Align the first intermediate transformer by turning one of the intermediate transformer trimmer screws up and down until maximum reading is obtained on the output meter. Then adjust the other trimmer screw in the same manner.

4. The second I.F. transformer should next be adjusted in the same manner. The intermediate transformer trimmer screws are accessible through the small hole in the top of the intermediate transformer shields.

To align the variable condenser:

1. Connect the high output side of the oscillator to the set antenna lead and the ground side of the oscillator to the chassis.

2. Tune the receiver to 1400 kilocycles on the dial and set the oscillator to this frequency.

3. Adjust the variable condenser trimmer screws for maximum output reading.

4. Tune the set to approximately 600 kilocycles on the dial and adjust the oscillator frequency to 600 kilocycles. Adjust the padding condenser located on the rear of the chassis adjacent to the antenna and ground leads and accessible through the hole in the chassis for maximum output reading.

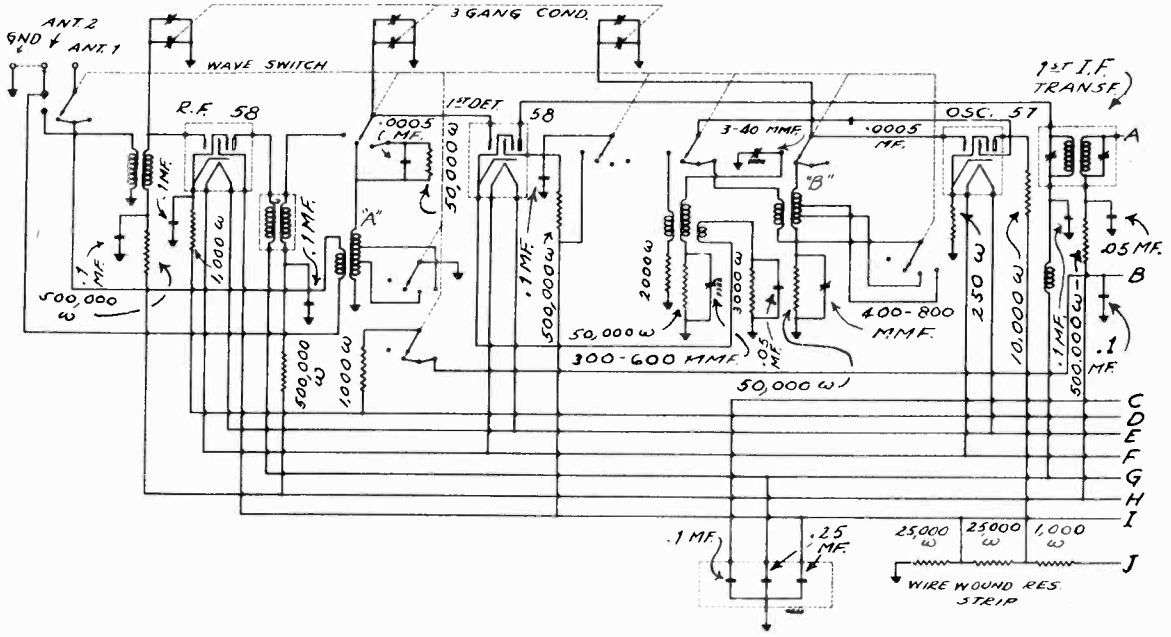
When making this adjustment be sure to rock the variable condenser slightly to the right and left using the position where the greatest output reading is obtained.

PARTS AND PRICE LIST

PART NUMBER		LIST PRICE
9870	No. 5E1 Tube Socket	$ .11
9619	No. 30 Tube Socket	.11
9620	No. 32 Tube Socket	.11
9621	No. 34 Tube Socket	.11
9622	No. 33 Tube Socket	.11
9221	Tube Shield Base	.20
9222	Tube Shield	.19
9612	Two Gang Condenser	2.54
9615	Antenna, Detector & Oscillator Coil	1.38
9616	1st I. F. Transformer	1.90
9617	2nd I. F. Transformer	1.90
9382	Padding Condenser	.50
9614	Tuning Dial	.55
9611	Volume Control	.91
9623	3 P. S. T. Switch	1.40
9613	Battery Cable	1.02
9625	Wire Wound Resistor Strip	.36
8906	250,000 Ohm 1/3 Watt Resistor	.19
8907	25,000 Ohm 1/3 Watt Resistor	.19
8000	100,000 Ohm 1/3 Watt Resistor	.19
7998	1 Meg Ohm 1/3 Watt Resistor	.19
6984	500,000 Ohm 1/3 Watt Resistor	.19
9319	.001 Mfd. Moulded Condenser	.22
9459	.0005 Mfd. Moulded Condenser	.21
9386	.1 Mfd. 200 Volt Condenser	.18
6573	.01 Mfd. 200 Volt Condenser	.17
9032	.2 Mfd. 200 Volt Condenser	.23
7862	.004 Mfd. 400 Volt Condenser	.17
9718	Knob	.14
9717	Knob with arrow	.14

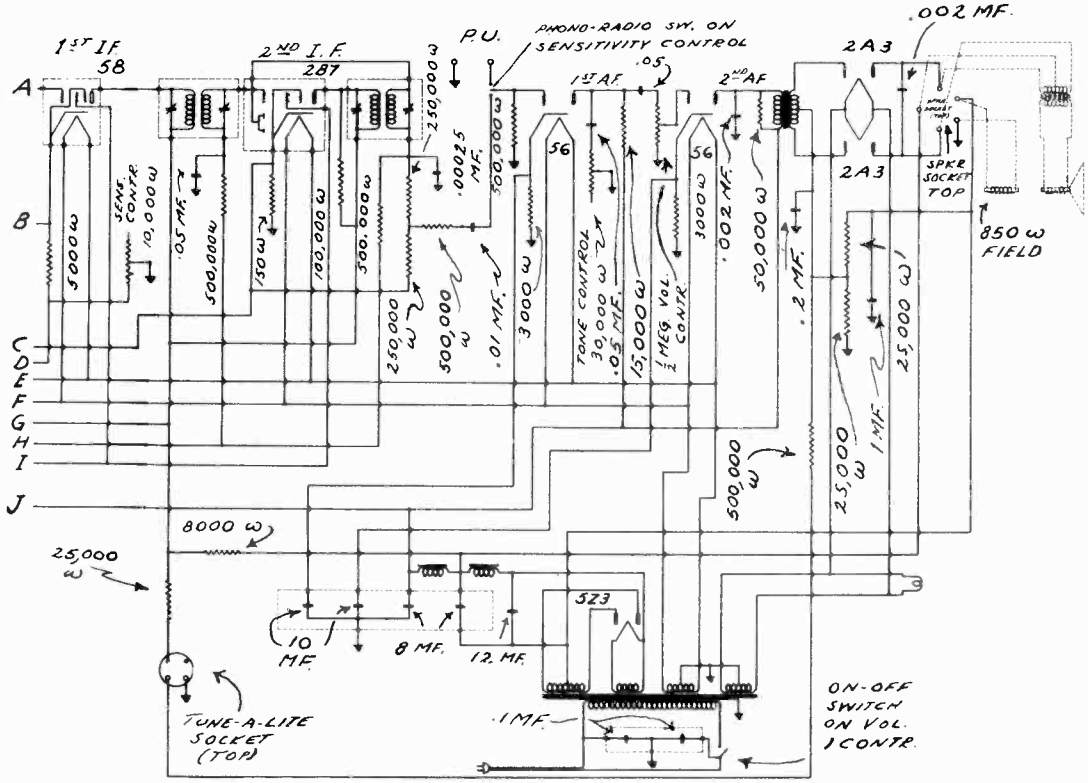
SENTINEL RADIO CORP.

MODEL 1040
Schematic



NOTE:

1. DOTTED LINES DENOTE SHIELDING
2. COIL "A" COUPLED TO COIL "B"
3. IF PEAK = 465 KC.



MODEL 1040
Voltage
Alignment Data

SENTINEL RADIO CORP.

Line Voltage : 115
Volume Control : Full on
Sensitivity : Maximum Sensitivity
Band Selector Switch : 1500 KC-540 KC Band

TUBE		FIL.	PLATE	SCREEN	CATHODE
58	RF	2.2	155*	80	4
58	1st Detector	2.2	155*	80	6
58	1st IF	2.2	155*	80	7
2B7	2nd IF	2.25	155*	80	1
57	Oscillator	2.3	150	150	
56	1st AF	2.3	185*		12
56	2nd AF	2.4	235		12
2A3	Push-Pull Output	2.4	245		45**
2A3	Push-Pull Output	2.4	245		45**
5Z3	Rectifier	5	5Z3		

* Comparative voltage only. The voltmeter, when readings are taken at this point, is in series with a high resistance and is therefore not the true voltage applied. Read all voltages from socket to chassis, unless otherwise specified.

** Read from grid to chassis.

INTERMEDIATE ALIGNMENT:

1. Connect the high side of the oscillator output to the control grid of the 58 first detector leaving the grid clip disconnected. The ground side of the oscillator should be connected to the chassis.

2. Set the oscillator at 465 kilocycles (this must be accurate) and adjust the output of the oscillator so that a convenient reading is obtained on the output meter.

3. Align the first intermediate transformer by turning the brass hex nut (accessible through the hole in top of IF transformer shield) of the first intermediate transformer trimmer screw up and down until maximum reading is obtained on the output meter. The adjust the trimmer screw located inside of the brass hex nut in the same manner.

NOTE: Some receivers utilize the brass hex trimmer nut and inside trimmer screw whereas other receivers of the same type have two parallel trimmer screws accessible through the two small holes in the top of the IF shields. In either case the procedure is the same. The second and third IF transformers are adjusted in the same manner as the first IF transformer.

TO ALIGN THE VARIABLE CONDENSER: It is important when aligning the variable condenser and padding condensers to follow the procedure given carefully, otherwise the receiver will be insensitive and the dial calibration will be incorrect. The variable condenser sections reading from front to rear are: Antenna, RF & Oscillator.

1. Connect the high output side of the oscillator to the antenna and the ground to the chassis.

2. Place the band selector switch for operation on the 1.5 to 4 megacycle band. Tune the receiver to 3.4 megacycles on the dial and adjust the oscillator to this frequency. Bring the 3.4 aligning signal in (maximum output) by adjusting the oscillator section variable condenser trimmer.

3. Tune the receiver to exactly 1.7 on the dial and set the oscillator at this frequency. THE 1.7 MEGACYCLE SIGNAL MUST BE BROUGHT IN (TO MAXIMUM OUTPUT) BY ADJUSTING THE 1.7 MEGACYCLE PADDING CONDENSER WHICH IS LOCATED ON THE FRONT OF THE CHASSIS BELOW THE DIAL. After making the 1.7 megacycle adjustment be sure to recheck the 3.4 megacycle adjustment. It is suggested that the 1.7 and 3.4 adjustments be rechecked several times.

NOTE: This completes the short wave adjustments. Should the dial calibration be too far off, the cause may be due to using the wrong oscillator frequency or dial setting.

4. Set the oscillator to 1400 kilocycles, tune the receiver to 1400 kilocycles on the dial and place the band selector switch for operation on the 1500-540 kilocycle band. Turn the receiver on its right side with the power transformer down and BRING IN (to maximum output) the 1400 kilocycle signal by adjusting the 1400 kilocycle trimmer which is mounted below the chassis on the short wave switch assembly. Next, adjust the antenna and RF variable condenser trimmers located on the top of the variable condenser for maximum output.

5. Leave the band selector switch for operation on the 1500 to 540 kilocycle band and set the oscillator frequency and tuning dial to approximately 600 kilocycles. Then while rocking the variable condenser slightly to the right and left adjust the 600 kilocycle padding condenser located towards the front on the left hand side of the chassis for maximum output. after which recheck the alignment at 1400 kilocycles and then the alignment at 600 kilocycles.

SENTINEL RADIO CORP.

MODEL 1040
Parts List

BANDS: The frequency range of the four available bands are:

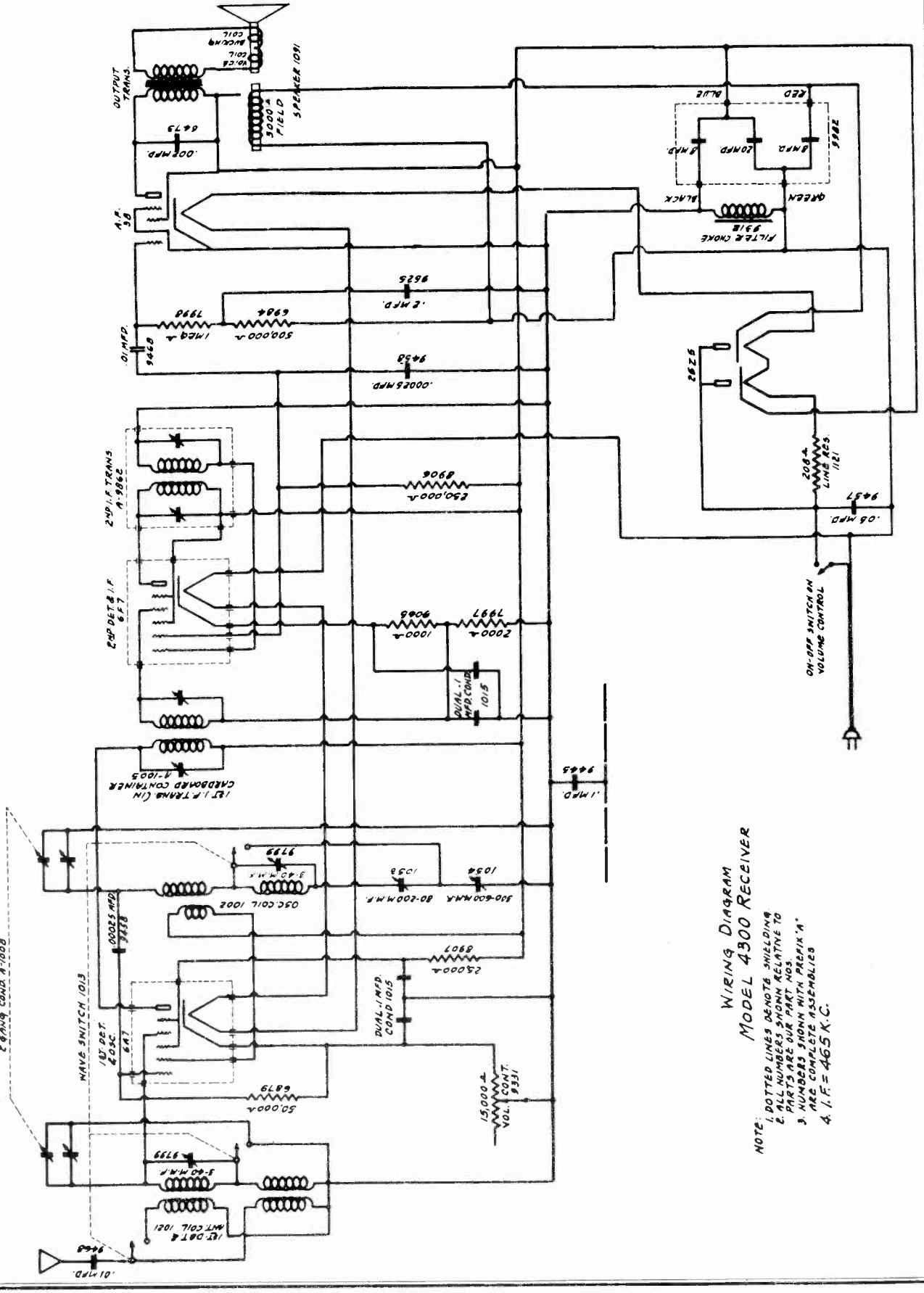
Band #1 - from 24 Megacycles to 9.8 Megacycles
Band #2 - from 9.8 Megacycles to 4 Megacycles
Band #3 - from 4 Megacycles to 1.5 Megacycles
Band #4 - from 1500 Kilocycles to 540 Kilocycles

PARTS & PRICE LIST

PART NUMBER	
9839	BC Antenna Coil
9838	BC R.F. Coil
9840	BC Oscillator Coil
9842	SW Oscillator Coil
9843	SW Antenna & 1st Detector Coil
9835	1st & 2nd IF Transformer
9662	Third IF Transformer
9800	R.F. Choke
9812	Gang Condenser
9275	Tuning Dial & Drive Complete
9986	Tuning Dial Wave Band Screen Disc Assembly
9806	Tuning Dial Wave Band Clock Spring
9688	Tuning Dial Wave Band Bronze Cord
9687	Tuning Dial Wave Band Drive Pulley (on band selector)
9710	110 Volt 50-60 Cycle Power Transformer
9747	Universal 115 to 230, 25-60 Cycle Power Transformer
9709	Choke
9312	Choke
9748	Audio Transformer
9746	Wire Wound Resistor Strip
9195	Bypass Condenser (2-.1 Mfd.)
7843	Bypass Condenser (2-.25-.1 Mfd.)
9382	Padding Condenser
9062	Padding Condenser
9799	Trimmer Condsnser
8979	Tube Shield Base
8980	Tube Shield
9080	Tube Shield Caps
9290	SW Trimmer Wor, Drive Tuning Rod
9287	SW Trimmer Disc Assembly
9279	Wave Switch
9296	Volume Control
9295	Tone Control
9834	Sensitivity Control
9845	Tune-A-Lite
9846	Tune-A-Lite Socket
6916	Pilot Lamp Socket
9738	Electrolytic Condenser (2-8 & 2-10 Mfd.
9739	Wet Electrolytic Condenser (12 Mfd.)
9970	8000 Ohm Wire Wound Resistor
9459	.0005 Moulded Condenser
9458	.00025 Moulded Condenser
9698	1 Mfd. 100 Volt Condenser
9032	.2 Mfd. 200 Volt Condenser
9386	.1 Mfd. 200 Volt Condenser
8961	.05 Mfd. 400 Volt Condenser
6590	.002 Mfd. 200 Volt Condenser
9203	.1 Mfd. 400 Volt Condenser
7860	.01 Mfd. 400 Volt Condenser
6979	10,000 Ohm 1 Watt Resistor
9460	3,000 Ohm 1/3 Watt Resistor
9346	25,000 Ohm 1/2 Watt Resistor
8906	250,000 Ohm 1/3 Watt Resistor
6879	50,000 Ohm 1/3 Watt Resistor
6984	500,000 Ohm 1/3 Watt Resistor
6769	15,000 Ohm 1/2 Watt Resistor
9018	150 Ohm 1/3 Watt Resistor
9065	1,000 Ohm 1/3 Watt Resistor
9693	5,000 Ohm 1/3 Watt Resistor
6875	250 Ohm 1/3 Watt Resistor
8000	100,000 Ohm 1/3 Watt Resistor
7997	2,000 Ohm 1/3 Watt Resistor
9117	Knobs
9113	Knobs
9768	Triple Binding Post Strip (A-1, A-2, Gnd.)
6576	Phono Tip Jacks

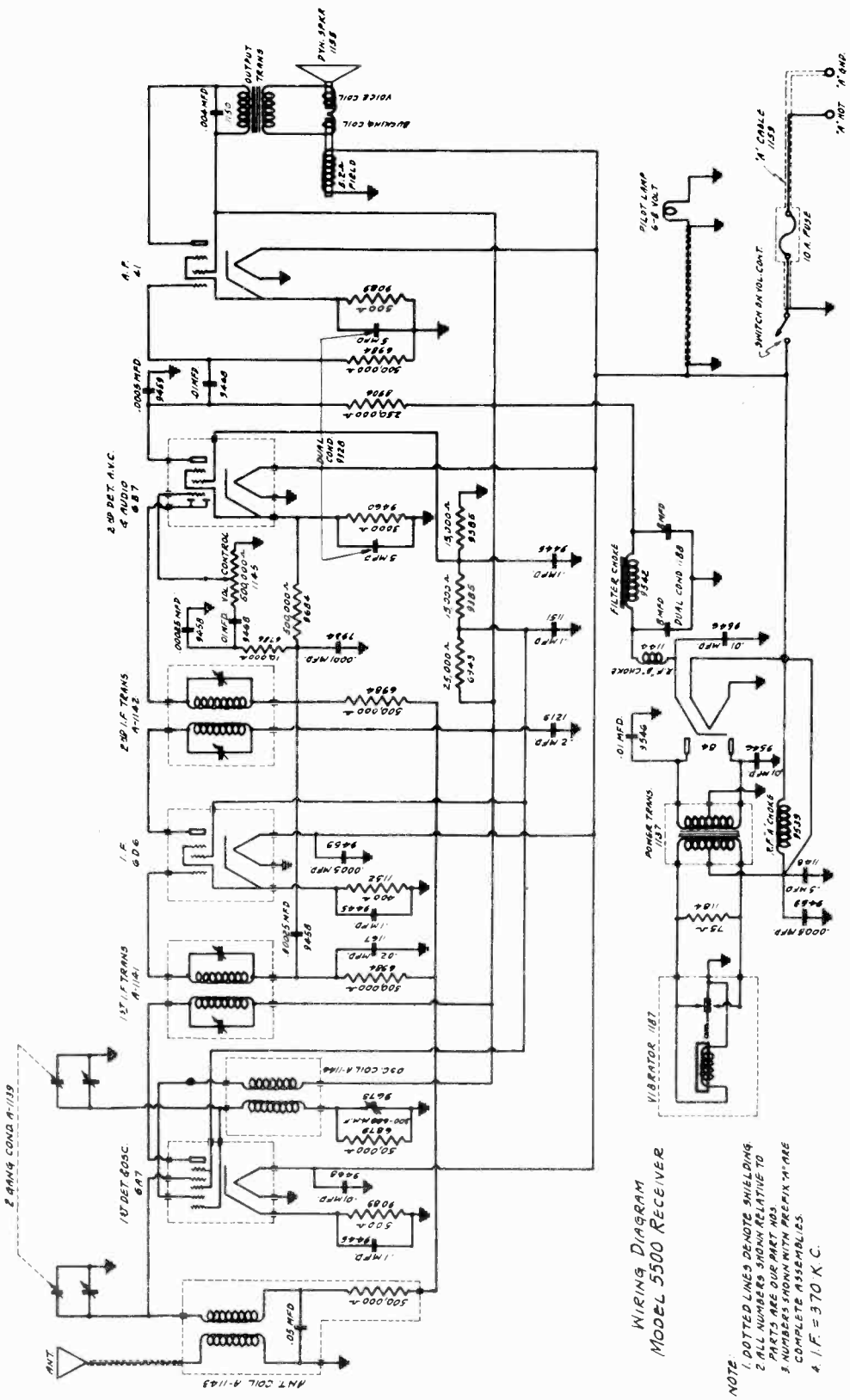
MODEL 4300
Schematic

SENTINEL RADIO CORP.



MODEL 5500
Schematic

SENTINEL RADIO CORP.



MODEL 5500
Voltage
Alignment Data
Parts List

SENTINEL RADIO CORP.

VOLTAGE TABLE
Battery Voltage - 6 Volt
Volume Control - Full on

TYPE OF TUBE	POSITION OF TUBE	FIL. VOLTS	PLATE VOLTS	CATHODE VOLTS	SCREEN VOLTS	GRID NO.1	GRID NO. 2.	GRID NO. 3 & 5
6A7	Modulator & Oscillator	6	220	3	80	5	220	80
6D6	I. F. Amplifier	6	220	2.5	80			
6B7	Second Detector Diode AVC & 1st Audio Triode	6	35#	3.	40			
41	Output	6	215	13	220			
84	Rectifier	6	460-AC	230				

Triode Plate. Comparative voltage only . The voltmeter is in series with a high resistance and is therefore not the true voltage applied. Read all voltages from socket to chassis unless otherwise specified.

ALIGNMENT PROCEDURE: It should rarely be necessary to realign the intermediate transformers or the variable condenser. As a matter of fact, this should only be necessary when an intermediate transformer, oscillator or R. F. coil has become defective and require replacement. For properly aligning either the intermediate transformer or condenser it is necessary that an 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 tube leaving the control grid cap disconnected. The ground side of the oscillator should be connected to the chassis.
2. Set the oscillator at 370 kilocycles (this must be accurate) and adjust the output of the oscillator so that a convenient reading is obtained on the output meter.

3. Align the first intermediate transformer by turning the brass hex nut of the first intermediate transformer trimmer which is accessible from the top of the I. F. transformer up and down until maximum reading is obtained on the meter, then adjust the trimmer screw located inside of the brass hex nut in the same manner.

4. The second I. F. transformer should next be adjusted in the same manner as the first I. F. transformer.

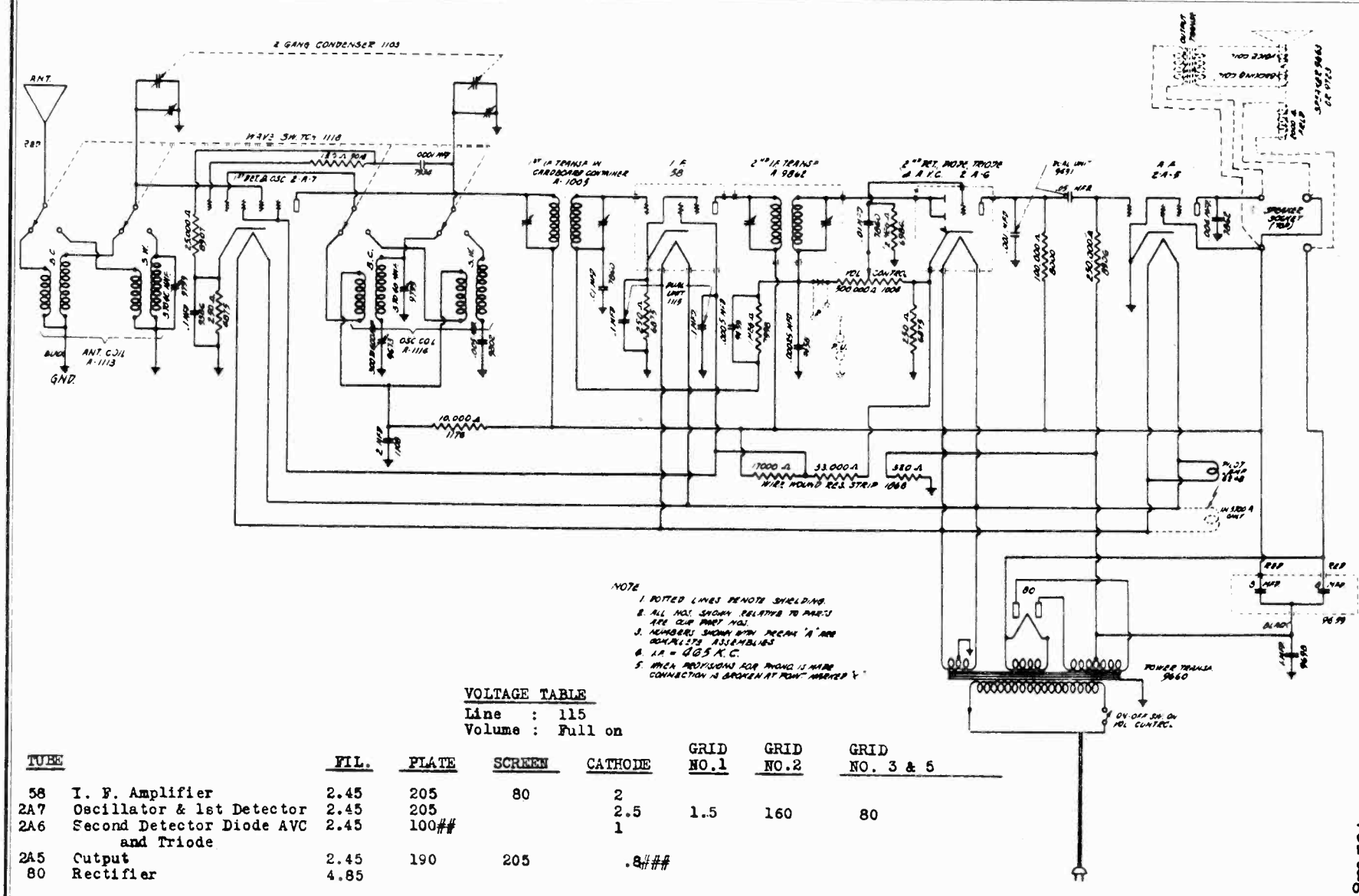
TO ALIGN THE VARIABLE CONDENSER: To align the variable condenser and padding condenser it is necessary that the receiver chassis be removed from the set housing. After the receiver chassis has been removed connect the remote control flexible drive shafts in their respective couplers, and set the dial needle on the dial face so that the dial calibration is correct.

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

2. Tune the receiver to exactly 1500 kilocycles on the dial and adjust the oscillator to this frequency. BRING IN THE 1500 KILOCYCLE SIGNAL (TO MAXIMUM OUTPUT) BY ADJUSTING THE OSCILLATOR VARIABLE CONDENSER TRIMMER MOUNTED ON TOP OF THE VARIABLE CONDENSER. THEN ADJUST THE OTHER VARIABLE CONDENSER TRIMMER FOR MAXIMUM OUTPUT. Looking at the front of the receiver the first section of the variable condenser is the oscillator section and the other section tunes the antenna coil.

3. Tune the receiver to approximately 600 kilocycles on the dial and set the oscillator to this frequency, then adjust the 600 padding condenser which is located on the right hand side and accessible through the hole in the chassis for maximum output. Always rock the condenser slightly to the right and left when making this adjustment, using the position where greatest output is obtained.

1143	Antenna Coil
1146	Oscillator Coil
1141	First I. F. Transformer
1142	Second I. F. Transformer
1277	Dynamic Speaker
9673	Padding Condenser
1139	Two Gang Condenser
1145	Volume Control
1128	Set Housing
1127	Set Housing Front Cover
1156	Set Housing Front Cover Grille
1163	Wood Mounting Block
7717	Carriage Bolt 3/8"
7708	Carriage Bolt Steel Washer
7716	Carriage Bolt Lock Washer
1171	Cable Guide Bracket Assembly
1158	Antenna Lead
1166	Tube Shield
9581	10 Ampere Fuse
1159	"A" Battery Cable compete with fuse
1187	Vibrator
1137	Power Transformer
1188	2 x 8 Mfd. Condenser Block
1276	R. F. "A" Choke
9598	.5 Mfd. Generator Condenser
1212	Spark Plug Suppressor
1214	Distributor Suppressor
1213	Six Cylinder Suppression Kit
1278	Remote Control Head Complete Assembly
9959	Remote Control Tuning Knob with Key
9958	Remote Control Volume Knob
9954	Remote Control Head Clamp
9955	Remote Control Clamp Strap
1210	Remote Control Tuning Shaft Tubing 18"
1209	Remote Control Tubing Flexible Drive Shaft 18"
1210	Remote Control Volume Shaft Tubing 18"
1211	Remote Control Volume Flexible Drive Shaft 18"
9961	Remote Control Head Glass
9328	Electrolytic Condenser 2 x 5 Mfd.
9456	.00025 Mfd. Moulded Condenser
9459	.0005 Mfd. Moulded Condenser
7934	.0001 Mfd. Moulded Condenser
9445	.1 Mfd. 200 Volt Condenser
1148	.5 Mfd. 200 Volt Condenser
9468	.01 Mfd. 400 Volt Condenser
1150	.004 Mfd. 600 Volt Condenser
1151	.1 Mfd. 400 Volt Condenser
1167	.02 Mfd. 400 Volt Condenser
1219	.2 Mfd. 400 Volt Condenser
1248	.005 Mfd. 1000 Volt Condenser
1184	75 Ohm Wire Wound 1 Watt Resistor
6943	25,000 Ohm 1 Watt Resistor
8000	100,000 Ohm 1/3 Watt Resistor
1280	35,000 Ohm 1/3 Watt Resistor
9089	500 Ohm 1/3 Watt Resistor
1152	400 Ohm 1/3 Watt Resistor
8907	25,000 Ohm 1/3 Watt Resistor
9460	3,000 Ohm 1/3 Watt Resistor
6786	10,000 Ohm 1/3 Watt Resistor
6984	500,000 Ohm 1/3 Watt Resistor
6943	25,000 Ohm 1 Watt Resistor



VOLTAGE TABLE
Line : 115
Volume : Full on

TUBE		FIL.	PLATE	SCREEN	CATHODE	GRID NO.1	GRID NO.2	GRID NO. 3 & 5
58	I. F. Amplifier	2.45	205	80	2			
2A7	Oscillator & 1st Detector	2.45	205		2.5	1.5	160	80
2A6	Second Detector Diode AVC and Triode	2.45	100##		1			
2A5	Output	2.45	190	205	.8###			
80	Rectifier	4.85						

Triode Plate. Comparative voltage only. The voltmeter is in series with a high resistance and is therefore not the true voltage applied.

Read all voltages from socket to chassis unless otherwise specified.

Read from grid to chassis.

MODEL 5700,5721
Alignment Data
Parts List

SENTINEL RADIO CORP.

ALIGNMENT PROCEDURE: Only when an IF transformer, antenna or oscillator coil is replaced should it ever be necessary to realign the receiver. For aligning either the intermediate transformer or the variable condenser it is absolutely necessary that a good accurate 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 2A7 tube leaving the grid cap disconnected. The ground side of the oscillator should be connected to the receiver chassis.

2. Set the oscillator at 465 kilocycles (this must be accurate) and adjust the output of the oscillator so that a convenient reading is obtained on the output meter.

3. Align the first intermediate transformer by turning the intermediate transformer brass hext adjusting nut located on top of the intermediate transformer can up and down until maximum reading is obtained on the output meter. Then adjust the trimmer screw located inside the brass hex nut for maximum output.

4. Adjust the second I. F. transformer in the same manner as the first I. F. transformer.

VARIABLE CONDENSER ALIGNMENT: It is essential that the following instructions be carefully adhered to in the order given otherwise the receiver will be insensitive and the dial calibration will be inaccurate.

1. Connect the high side of the oscillator output to the set antenna lead and the oscillator ground to the receiver chassis.

2. Place the band selector switch for operation on the 16 to 5.2 megacycle band.

3. Set the oscillator frequency to exactly 15 megacycles and adjust the receiver dial to exactly 15 megacycles. Then BRING IN THE 15 MEGACYCLE SIGNAL TO MAXIMUM OUTPUT BY ADJUSTING THE trimmer condenser of the oscillator gang condenser section. The oscillator trimmer condenser is mounted on top of the rear section of the variable condenser. The front section of the variable condenser tunes the antenna stage.

4. 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 1400 kilocycles. BRING IN THIS 1400 KILOCYCLE SIGNAL BY ADJUSTING THE SMALL TRIMMER CONDENSER which is located underneath near the center and towards the front of the chassis.

5. Next adjust the antenna variable gang condenser section trimmer condenser for maximum output (front section).

6. Leave the receiver operating on the same band and set the oscillator frequency to approximately 600 kilocycles and adjust the 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 front of the chassis for maximum output.

7. Recheck the 1400 kilocycle adjustment.

8. Place the band selector switch for operation on the 16 to 5.2 megacycle band and tune the dial to exactly 15 megacycles and set the oscillator frequency to 15 megacycles. Then adjust the trimmer condenser which is located underneath and toward the center of the right hand side of the chassis for maximum output.

This completes the alignment procedure and it is suggested that all the adjustments be rechecked.

BAND SELECTOR SWITCH: Two different frequency bands are available, the frequency range being:

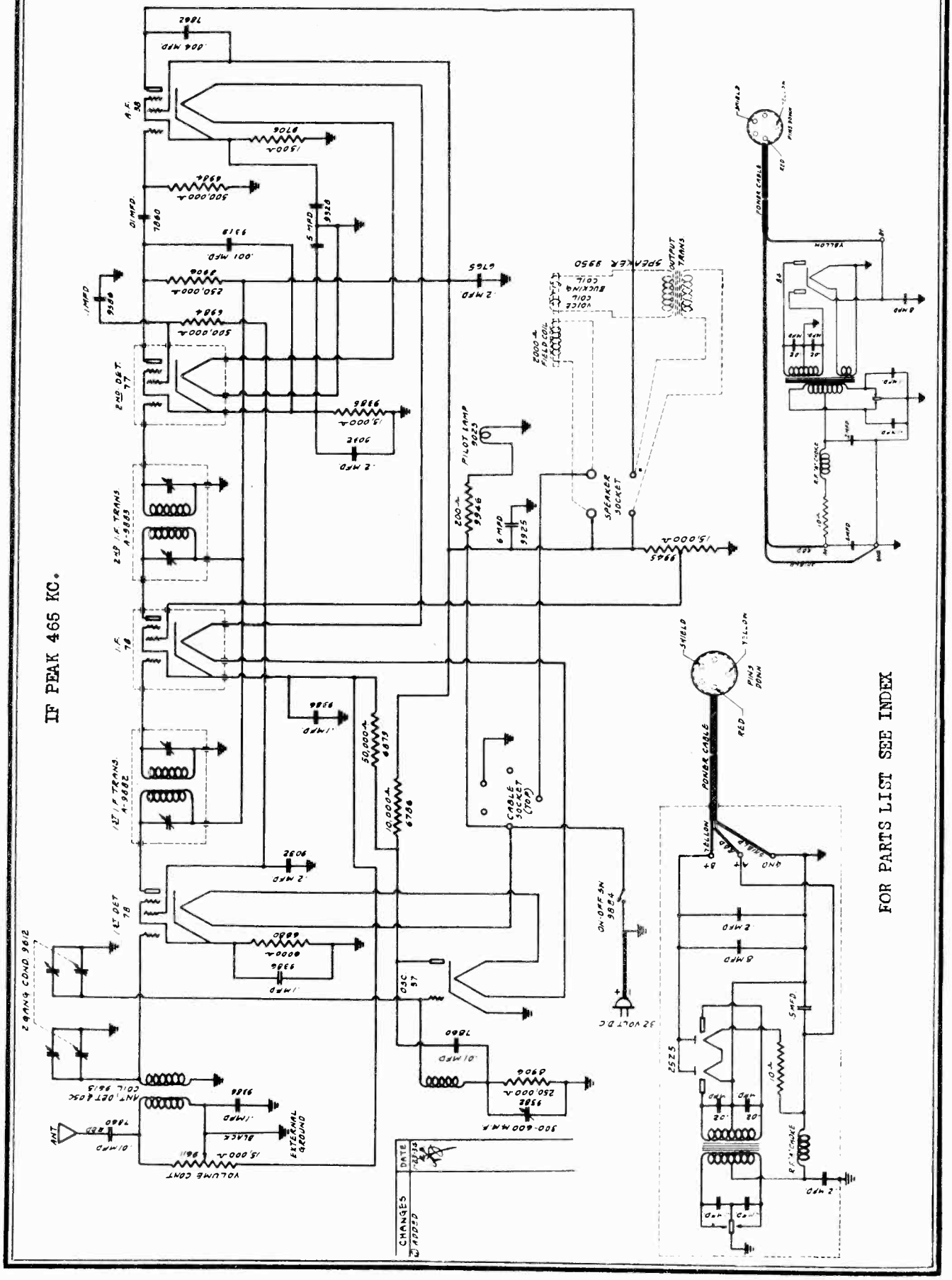
1715 to 535 Kilocycles- 175 to 560.75 Meters
16 to 5.2 Megacycles- 18.7 to 57.7 Meters

PARTS & PRICE LIST

PART NUMBER			
1113	Antenna Coil	6875	250 Ohm 1/3 Watt Resistor
1114	Oscillator Coil	9018	150 Ohm 1/3 Watt Resistor
1005	First I. F. Transformer	8907	25,000 Ohm 1/3 Watt Resistor
9862	Second I. F. Transformer	1176	10,000 Ohm 1/3 Watt Resistor
1118	Wave Switch	9698	1 Mfd. 100 Volt Condenser
1103	Gang Condenser	9386	.1 Mfd. 200 Volt Condenser
1104	Volume Control	7862	.004 Mfd. 400 Volt Condenser
9660	Power Transformer	7860	.01 Mfd. 400 Volt Condenser
9659	2-8 Mfd. Electrolytic Condenser	1115	2x.1 Mfd. 200 Volt Condenser
9673	Padding Condenser	9691	.05 Mfd. & .001 Mfd, 400 Volt Condenser
9799	Trimmer Condenser	1108	2 Mfd. Dry Electrolytic Condenser
9671	Pilot Light Socket	9307	.005 Mfd. Moulded Condenser
6248	2.5 Volt Pilot Light Socket	9458	.00025 Mfd. Moulded Condenser
1104	Tuning Dial	7934	.0001 Mfd. Moulded Condenser
1068	Wire Wound Resistor Strip	9459	.0005 Mfd. Moulded Condenser
6984	500,000 Ohm 1/3 Watt Resistor	8980	Tube Shield
7997	1 Meg Ohm 1/3 Watt Resistor	1179	Large Knob
8000	100,000 Ohm 1/3 Watt Resistor	1180	Knob with dot
8906	250,000 Ohm 1/3 Watt Resistor	9759	Small Knob

SENTINEL RADIO CORP.

MODEL 6101, 6102
Schematic



MODEL 6101,6102
Service Notes
Voltage
Alignment Data

SENTINEL RADIO CORP.

This receiver is designed to operate on 32 volt battery plants only and must not be used on 36 volt battery plants without a voltage regulator. Generally, it is not advisable to operate the receiver while the generator is charging the battery due to the fact that considerable radio interference (static noise) may be encountered. This is not a reflection on the receiver, but is due to interference caused by the power plant generator, itself. Some generators have built-in traps to eliminate this interference and when so constructed this particular type of plant generator will not cause interference. If excessive static noise is encountered be sure that it is not caused by the 32 volt plant generator.

THIRTY-TWO VOLT POWER UNIT: Two power units have been furnished with the six tube 32 volt receiver, one unit utilizes a 25Z5 tube and the other an 84 tube. Diagrams for both of these units are shown on the receiver circuit diagram. It will be noted from the parts and price list that all parts with the exception of the power transformer and tube sockets are interchangeable. When ordering these parts be sure to order by part number.

NOTE: The dynamotor type unit supplied with the five tube 32 volt receiver cannot be used with the six tube receiver nor can the power units (utilizing the 84 or 25Z5 tube) furnished with the six tube receiver be used with the five tube 32 volt set.

The 32 volt power unit is shipped unmounted and must be placed in the sound-proof celotex compartment. In the console models this is located below the receiver mounting board and in the table models it is located above the chassis. To install the power unit in the sound-proof box remove the wood screws which hold the celotex back to the box, then place the power unit on the rubber mounting blocks provided inside of this box so that the unit is floating free on these rubber insulators. It is very important that the unit does not touch the side of the box. If excessive vibration is noticed be sure to check the power unit installation, as excessive vibration will result if it is not properly mounted on all of the rubber supports or if it is permitted to touch the side of the celotex housing.

PILOT LIGHT: A type T-3¼ #40 6.3 volt pilot light is used. The pilot light is readily accessible for removal from the rear of the cabinet.

ANTENNA AND GROUND: Under ordinary conditions an aerial from twenty-five to seventy-five feet in length including lead-in will prove ample. In some locations which are located a considerable distance from broadcast stations it may be necessary to use a longer aerial than this to obtain satisfactory daylight reception. Never place the aerial lead-in in close proximity to the 32 volt lighting lines, as considerable static noise may be picked up if the antenna lead-in is run parallel to the 32 volt power lines for any distance.

INTERMEDIATE ALIGNMENT: Only when an intermediate transformer has become defective due to an open or burned out winding should it be necessary to readjust the intermediate transformer. For aligning either the intermediate transformer or the variable condenser it is necessary that an oscillator be used with some type of output measuring device. To align the intermediate transformer:

1. Connect the high side of the oscillator output to the control grid of the #36 modulator tube. The ground side of the oscillator should be connected to the ground lead.
2. Set the oscillator at 465 kilocycles (this must be accurate) and adjust the output of the oscillator so that a convenient reading is obtained on the output meter.
3. Align the first intermediate transformer by turning one of the intermediate transformer trimmer screws up and down until maximum reading is obtained on the output meter. Then adjust the other trimmer screw in the same manner.
4. The second I. F. transformer should next be adjusted in the same manner. The intermediate transformer trimmer screws are accessible through the small hole in the top of the intermediate transformer shields.

To align the variable condenser:

1. Connect the high output side of the oscillator to the set antenna lead and the ground side of the oscillator to the ground lead.
2. Tune the receiver to 1400 kilocycles on the dial and set the oscillator to this frequency.
3. Adjust the variable condenser trimmer screws for maximum output reading.
4. Tune the set to approximately 600 kilocycles on the dial and adjust the oscillator frequency to 600 kilocycles. Adjust the padding condenser located on the rear of the chassis adjacent to the antenna and ground leads and accessible through the hole in the chassis for maximum output reading.

When making this adjustment be sure to rock the variable condenser to the right and left using the position where the greatest reading is obtained.

VOLTAGE TABLE

Line Voltage : 32 Volts
Volume Control: Full On

TUBE		FIL.	PLATE	SCREEN	CATHODE
78	1st Detector	6.5	160	70	5
37	Oscillator	6.5	100		20
78	I.F.	6.5	160	70	25
77	2nd Detector	6.5	65*	25*	25
38	Output	6.5	150	160	15
25Z5	Rectifier or 84 Rectifier				

* Comparative voltage only.
Read voltage from socket to receiver chassis.

SENTINEL RADIO CORP.

MODEL 6101, 6102
MODEL 6315, 6317, 6321
Parts Lists

PARTS LIST FOR MODEL 6101

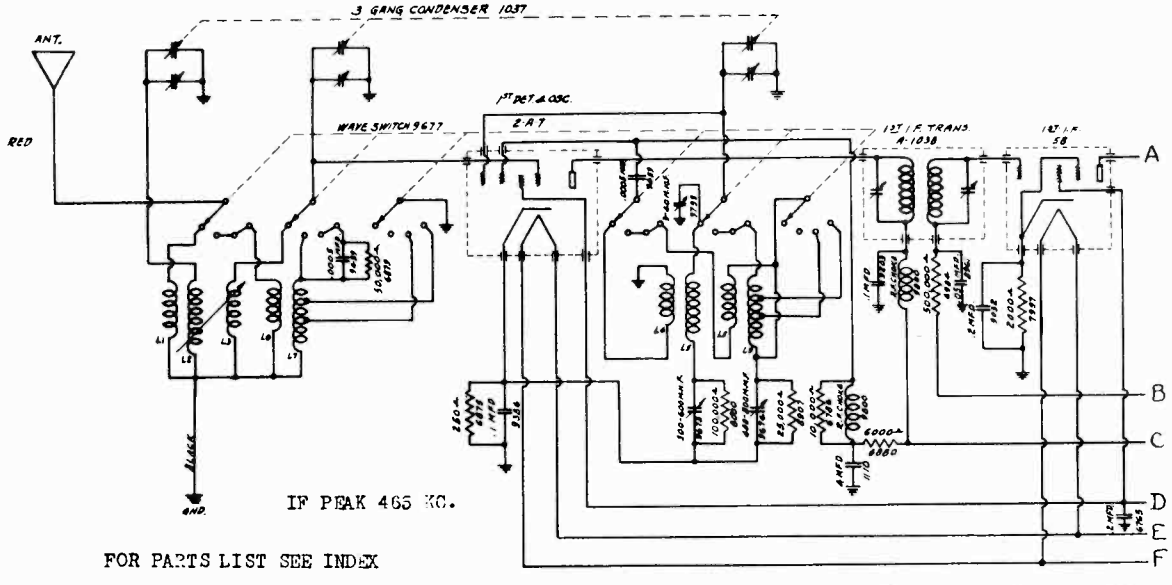
PART NUMBER		LIST PRICE
9422	78 Tube Socket	$ .13
9421	77 Tube Socket	.13
9519	37 Tube Socket	.13
9307	38 Tube Socket	.13
9872	Cable Socket	.13
9557	Speaker Socket	.13
9612	Two Gang Condenser	2.75
9880	Tuning Dial	.55
9881	Pilot Light Socket	.11
9023	Pilot Light	.39
9946	Wire Wound Resistor Strip 15,000 Ohms	.39
9945	Wire Wound Resistor Strip 200 Ohms	.55
9884	Off and On Switch	.61
9611	Volume Control	.91
9382	Padding Condenser	.50
8980	Tube Shield	.11
9082	Tube Shield Cap	.04
9925	6 Mfd. Electrolytic Condenser	1.43
9328	Dual 5 Mfd. Electrolytic Condenser	.72
9882	First I. F. Transformer	1.98
9883	Second I. F. Transformer	1.98
9615	Antenna, Detector & Oscillator Coil	1.43
6765	.2 Mfd. 400 Volt Condenser	.30
9032	.2 Mfd. 200 Volt Condenser	.23
9386	.1 Mfd. 200 Volt Condenser	.18
7860	.01 Mfd. 400 Volt Condenser	.17
7862	.004 Mfd. 400 Volt Condenser	.17
9319	.001 Mfd. Moulded Condenser	.21
8906	250,000 Ohm 1/3 Watt Resistor	.19
6984	500,000 Ohm 1/3 Watt Resistor	.19
6786	10,000 Ohm 1/3 Watt Resistor	.19
9706	1,500 Ohm 1/3 Watt Resistor	.19
6880	6,000 Ohm 1/3 Watt Resistor	.19
9385	15,000 Ohm 1/3 Watt Resistor	.19
107	32 Volt Power Unit complete with 25Z5 Tube	22.50
107A	32 Volt Power Unit complete with 84 Tube	22.50
9907	Three Conductor Power Cable with Plug	1.10
9918	Bottom Rubber Cushion	.08
9919	Side Rubber Cushion	.17
9895	Celotex Housing	2.20
8701	Vibrator	8.25
8702	.5 Mfd. Condenser	.98
8703	.02-.02 Mfd. Condenser	.83
8704	.1-.1 Mfd. Condenser	1.38
8705	8 Mfd. Condenser	2.25
8706	1 Mfd. Condenser	.55
8707	Cord & Plug	2.35
8708	RF A Choke	.66
8709	Transformer used with 25Z5 Tube	6.00
8710	Transformer used with 84 Tube	7.00
8711	5 Ohm Resistor	.83

PARTS LIST FOR MODEL 6317

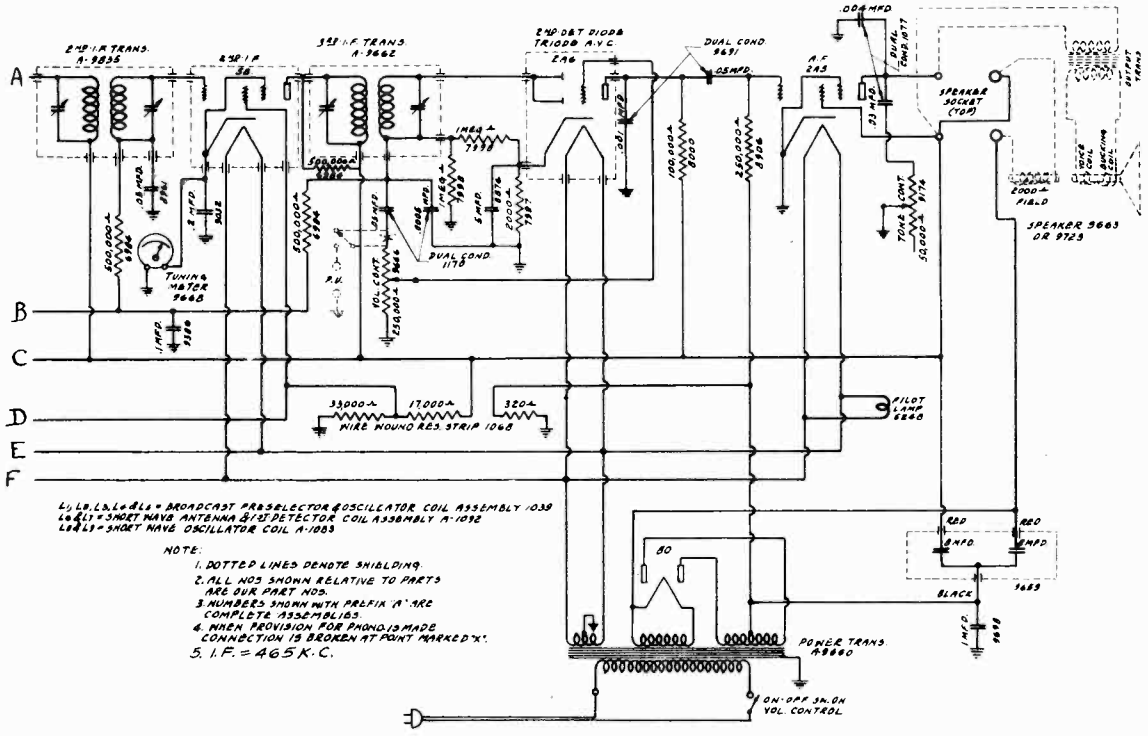
PART NUMBER		LIST PRICE
1039	Broadcast, Anterna, Preselector & Oscillator Coil	$ 2.75
1083	Short Wave Oscillator Coil	.73
1092	Short Wave Antenna & First Detector Coil	.75
1038	First I. F. Transformer	2.20
9835	Second I. F. Transformer	2.20
9662	Third I. F. Transformer	2.05
9800	R. F. Choke	.83
1037	Three Gang Condenser	4.25
1079	Dial	.61
9677	Wave Band Switch	3.58
9651	Wave Band Indicator Assembly	1.10
9287	Short Wave Trimmer Disc. Assembly	.39
9682	Short Wave Trimmer Worm Tuning Rod	.88
9673	Padding Condenser	.50
9674	Padding Condenser	.50
9799	Trimmer Condenser	.15
9659	Electrolytic Condenser Dual 8 Mfd.	2.80
8876	Electrolytic Condenser 5 Mfd.	.72
1110	Electrolytic Condenser 4 Mfd.	1.14
9660	Power Transformer	4.02
9663	Dynamic Speaker 6"	9.79
9723	Dynamic Speaker 8"	12.00
9666	Volume Control	1.27
9174	Tone Control	.94
9668	Tuning Meter	2.75
1068	Wire Wound Resistor Strip	.96
9671	Pilot Lamp Socket	.09
6248	2.5 Volt Pilot Lamp Bulb	.17
8980	Tube Shield	.11
9082	Tube Shield Cap	.04
9459	.0005 Mfd. Moulded Condenser	.21
9698	1 Mfd. 100 Volt Condenser	.56
9203	.1 Mfd. 400 Volt Condenser	.21
9386	.1 Mfd. 200 Volt Condenser	.19
8961	.05 Mfd. 400 Volt Condenser	.18
1077	.03 Mfd. & .004 Mfd. 400 Volt Condenser	.62
1170	.0005 Mfd. & .05 Mfd. 400 Volt Condenser	.34
9691	.001 Mfd. & .05 Mfd. 400 Volt Condenser	.39
6765	.2 Mfd. 400 Volt Condenser	.26
9032	.2 Mfd. 200 Volt Condenser	.25
6984	500,000 Ohm 1/3 Watt Resistor	.19
8000	100,000 Ohm 1/3 Watt Resistor	.19
6879	50,000 Ohm 1/3 Watt Resistor	.19
8907	25,000 Ohm 1/3 Watt Resistor	.19
6875	250 Ohm 1/3 Watt Resistor	.19
7997	2,000 Ohm 1/3 Watt Resistor	.19
6786	10,000 Ohm 1/3 Watt Resistor	.19
7998	1 Meg Ohm 1/3 Watt Resistor	.19
8906	250,000 Ohm 1/3 Watt Resistor	.19
6880	6,000 Ohm 1/3 Watt Resistor	.19
6576	Phono Jacks	.14
6123	S.P.D.T. Phono-Radio Switch	.55
9889	Tuning Control Knob	.22
9889	Tone Control Knob	.22
9887	Short Wave Switch Control Knob	.22
9886	Volume Control Knob	.22
9888	Short Wave Trimmer Knob	.22

MODEL 6315,6317,6321
Schematic

SENTINEL RADIO CORP.



FOR PARTS LIST SEE INDEX



L1, L2, L3, L4 & L5 = BROADCAST PRESELECTOR & OSCILLATOR COIL ASSEMBLY 1039
L6 & L7 = SHORT WAVE ANTENNA & 1ST DETECTOR COIL ASSEMBLY A-1092
L8 & L9 = SHORT WAVE OSCILLATOR COIL A-1083

NOTE:
1. DOTTED LINES DENOTE SHIELDING.
2. ALL NOS SHOWN RELATIVE TO PARTS ARE OUR PART NOS.
3. NUMBERS SHOWN WITH PREFIX 'A' ARE COMPLETE ASSEMBLIES.
4. WHEN PROVISION FOR PHONO IS MADE CONNECTION IS BROKEN AT POINT MARKED 'X'.
5. I.F. = 465 K.C.

SENTINEL RADIO CORP.

MODEL 6315,6317,6321
Voltage
Alignment Data

BAND SELECTOR SWITCH: The receiver is designed for operation onfour different frequency bands. The frequency range of these bands are:

Band No. 1 - from 10 Megacycles to 24 Megacycles
Band No. 2 - from 4 Megacycles to 10 Megacycles
Band No. 3 - from 1.5 Megacycles to 4 Megacycles
Band No. 4 - from 1500 Kilocycles to 540 Kilocycles

VOLTAGE TABLE

Line Voltage : 115
Volume Control: Full on
Wave Band : Broadcast

TUBE	Fil.	Plate	Screen	Cathode Volts	Grid No.1	Grid No.2	Grid No. 3 & 5
2A7 Oscillator 1st Detector	2.45	220		2.2	3.5	200	90
58 First I. F. Amplifier	2.45	220	90	6			
58 Second I. F. Amplifier	2.45	220	90	3.5			
2A6 Second Detector	2.45	120##		1			
2A5 Output	2.45	210	220				
80 Rectifier	4.89						

Triode Plate. Comparative voltage only. The voltmeter is in series with a high resistance and is therefore not the true voltage applied. Read all voltages from socket to chassis unless otherwise specified.

ALIGNMENT PROCEDURE: Only when an antenna, oscillator or I. F. transformer has become defective due to an open or shorted winding should it be necessary to realign the receiver. For aligning either the intermediate transformer or variable condenser it is necessary that an 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 2A7 First Detector tube, leaving the grid clip disconnected. The ground side of the oscillator should be connected to the chassis.

2. Set the oscillator at 465 kilocycles (this must be accurate) and adjust the output of the oscillator so that a convenient reading is obtained on the output meter.

3. Align the first intermediate transformer by turning the brass hex nut of the first intermediate transformer trimmer up and down until maximum reading is obtained on the output meter, then adjust the trimmer screw located inside of the brass hex nut in the same manner. The intermediate transformer trimmer screws are accessible through the small hole in the top of the intermediate transformer shields.

4. The second and third I. F. transformers should next be adjusted in the same manner as the first I.F. transformer.

TO ALIGN THE VARIABLE CONDENSER: It is important when aligning the variable condenser and padding condensers to follow the procedure given carefully, otherwise the receiver will be insensitive and the dial calibration will be incorrect.

1. Connect the high output side of the oscillator to the antenna and the ground to the chassis.

2. Place the band selector switch for operation on the 1.5 to 4 megacycle band. Tune the receiver to exactly 1.7 megacycles onthe dial, set the short wave trimmer about half the distance between maximum clockwise and counter-clockwise rotation and adjust the oscillator frequency to exactly 1.7 megacycles.

Next, bring this 1.7 megacycle signal in to maximum output by adjusting the padding condenser accessible through the hole in the right hand side and closest to the rear of the chassis.

3. Leave the band selector switch for operation on the 1.5 to 4 megacycle band and tune the receiver to exactly 3.4 megacycles on the dial.

Next, set the test oscillator to exactly 3.4 megacycles and tune the signal in by adjusting the oscillator variable condenser trimmer mounted on top of the variable condenser. The middle section of the variable condenser is the oscillator section. Recheck the 1.7 megacycle adjustment after making the adjustment at 4 megacycles. For best results it is always advisable to check each adjustment several times. NOTE: This completes the short wave adjustment.

4. Adjust the band selector switch for operation on the broadcast band (1500 to 540 kilocycles) and tune the receiver to exactly 1400 kilocycles on the dial and set the oscillator to this frequency. Turn the receiver on end and bring this 1400 kilocycle signal in to maximum output by adjusting the trimmer screw on the small trimmer,which is located adjacent to the short wave switch underneath the chassis.

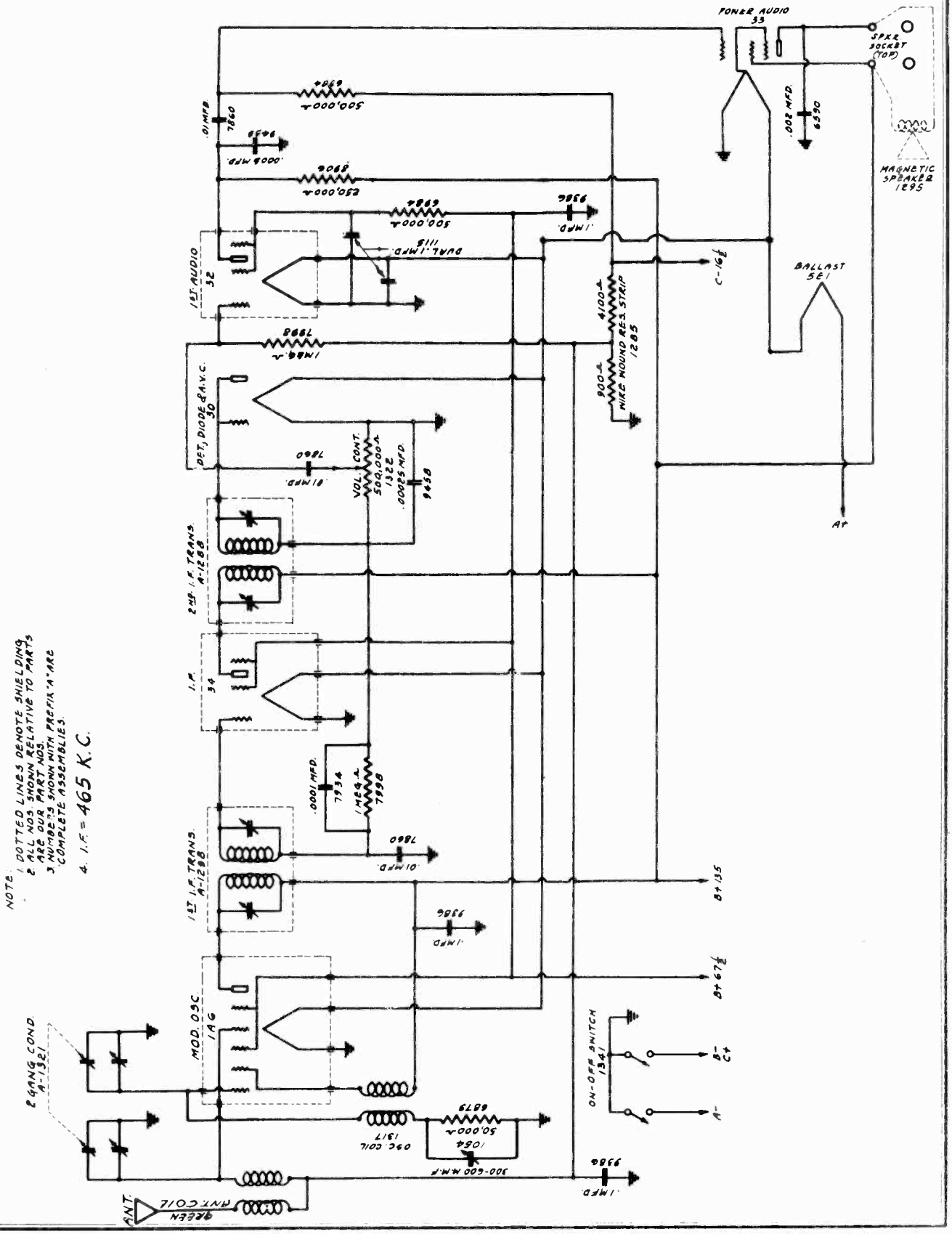
Next, adjust the antenna and preselector variable condenser section trimmers mounted on top of the variable condenser for maximum signal output. (These are the front and rear gang sections).

5. Leave the band selector switch for operation on the broadcast band (1500 to 540 kilocycles) and tune the receiver and oscillator to approximately 600 kilocycles. Then adjust the 600 kilocycle padding condenser which is located on the right hand side and towards the front of the chassis for maximum output reading. This adjustment is quite critical and it is necessary to rock the condenser slightly to the right and left to obtain maximum sensitivity.

Always recheck the 1400 kilocycle alignment after making the adjustment at 600 kilocycles.

MODEL 6200, 6234, 6241
Schematic

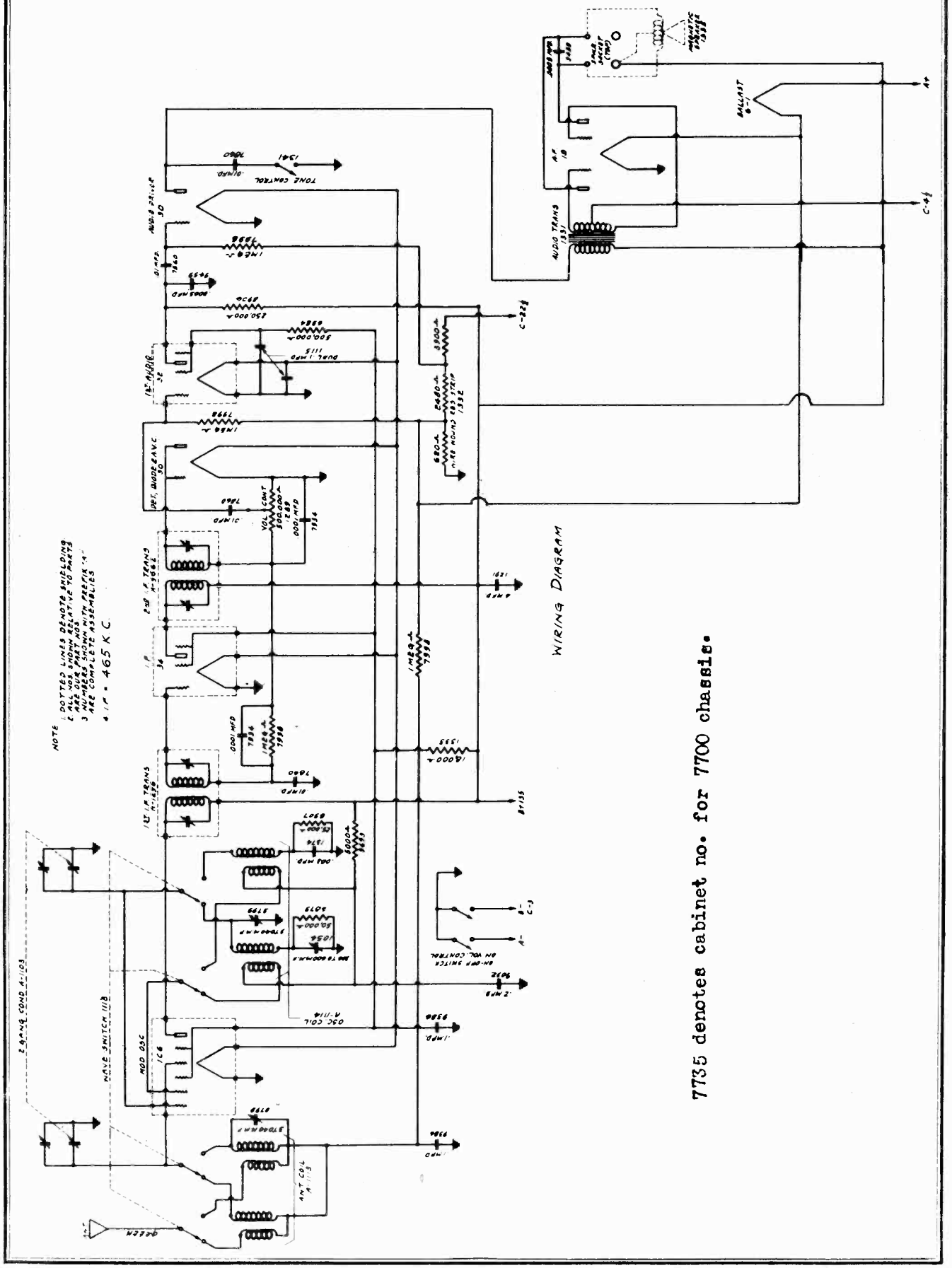
SENTINEL RADIO CORP.



NOTE.
1. DOTTED LINES DENOTE SHIELDING
2. ALL NOS. SHOWN RELATIVE TO PARTS ARE OUR PART NOS.
3. NUMBERS SHOWN WITH PREFIX 'A' ARE COMPLETE ASSEMBLIES.
4. I.F. = 465 K.C.

MODEL 7700,7732,7741
Schematic

SENTINEL RADIO CORP.



WIRING DIAGRAM

7735 denotes cabinet no. for 7700 chassis.

MODEL 7700,7732,7741
Voltage, Parts List
Alignment Data

SENTINEL RADIO CORP.

1. Connect the high side of the oscillator output to the control grid of the 1C6 tube leaving the grid cap disconnected. Connect the ground side of the oscillator to the receiver chassis.

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 up and down until maximum reading is obtained on the output meter, and then adjust the other trimmer screw of the same transformer for maximum sensitivity.

4. Adjust the second 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: It is important when aligning to follow the procedure carefully, otherwise the receiver will lack sensitivity and the dial calibration will be incorrect.

1. Connect the high output side of the oscillator to the receiver antenna lead and the ground to the chassis.

2. Place the band selector switch for operation on the short wave band, tune the receiver to exactly 15 megacycles on the dial and set the test oscillator frequency to exactly 15 megacycles. THEN TUNE IN THE 15 MEGACYCLE SIGNAL BY ADJUSTING THE TRIMMER MOUNTED ON TOP OF THE OSCILLATOR SECTION OF THE GANG CONDENSER TO MAXIMUM OUTPUT.

Looking at the front of the receiver the oscillator section is the rear section of the gang condenser.

3. Set the band selector switch for operation on the broadcast band, adjust the test oscillator frequency to 1400 kilocycles and set the receiver dial to exactly 1400 kilocycles. NEXT, BRING IN THE 1400 KILOCYCLE SIGNAL TO MAXIMUM OUTPUT BY ADJUSTING THE TRIMMER LOCATED UNDERNEATH AND NEAR THE CENTER FRONT OF THE CHASSIS.

4. After making this adjustment tune the dial to 1720 kilocycles and set theoscillator frequency to 1720 kilocycles. If the 1720 kilocycle signal cannot be received reduce the 1400 kilocycle trimmer capacity until the 1720 kilocycle signal is brought in.

5. Next, set the receiver dial and test oscillator to exactly 1400 kilocycles, and adjust the trimmer located on the front section of the gang condenser for maximum sensitivity.

6. Leave the band selector switch for operation on the broadcast band, tune the receiver and set the oscillator to approximately 600 kilocycles. Then adjust the 600 kilocycle padding condenser,which is located on and accessible through the small hole in the front of the chassis, for maximum sensitivity. As this adjustment is quite critical it is necessary to rock the condenser slightly to the right and left to find the point of greatest sensitivity.

7. Place the band selector switch for operation on the short wave band, adjust the test oscillator frequency to exactly 15 megacycles and set the receiver dial to 15 megacycles. Turn the receiver on its back with the dial up and adjust the trimmer, which is mounted on the top of the coil underneath and near the right hand side of the chassis, for maximum output. Be sure to rock the condenser slightly to the right and left when making this adjustment.

This completes the alignment procedure. 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.

VOLTAGE TABLE
"A" Battery - 3 Volt Dry Cell
"B" Battery - 3 45 Volt "B" Batteries
"C" Battery - 1 22½ Volt Battery

TUBE		FIL.	PLATE	SCREEN	GRID NO.2	GRID NO 3 & 5
1C6	Oscillator & 1st Detector	2.1	135		115	67½
30	Second Detector	2.1				
34	I. F.	2.1	135	67½		
32	1st Audio	2.1	37.5##	20##		
30	Driver	2.1	135			
19	Output	2.1	135 each plate			

Comparative voltage only
Read all voltages from socket to chassis

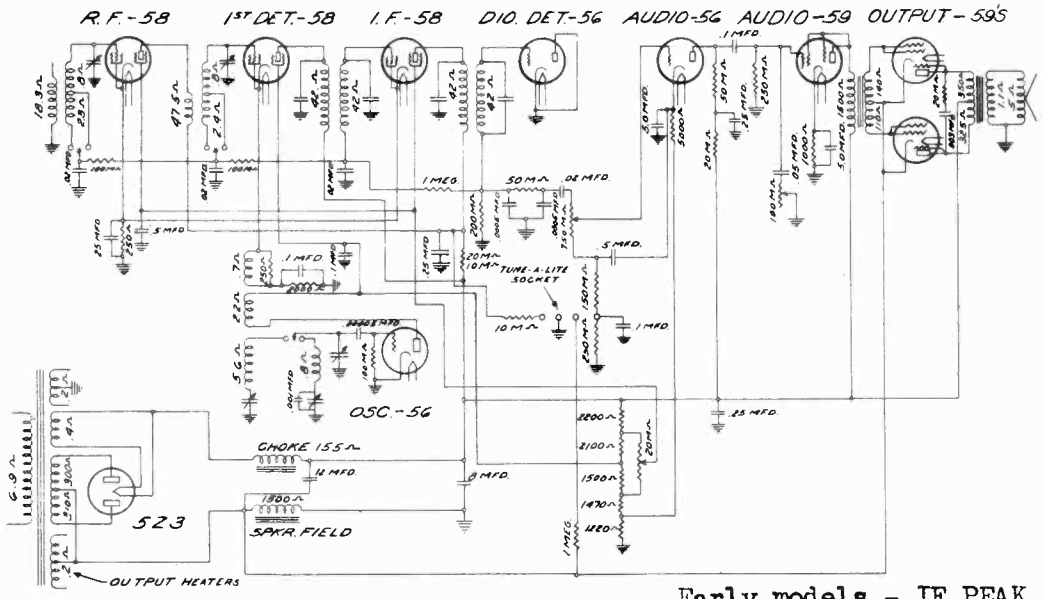
Total "B" Drain - .023 Amperes
Total "A" Drain - .620 Amperes

When making tube voltage checks use batteries that deliver full voltage with the receiver turned on.

PART NUMBER		LIST PRICE	PART NUMBER		LIST PRICE
1113	Antenna Coil	$1.63	1333	18,000 Ohm 1/2 Watt Resistor	$ .19
1114	Oscillator Coil	1.63	9693	5,000 Ohm 1/3 Watt Resistor	.19
1298	1st I. F Transformer	2.05	8907	25,000 Ohm 1/3 Watt Resistor	.19
9662	2nd I. F. Transformer	2.05	1292	6 Conductor Battery Cable	.68
1331	Audio Transformer	1.40	1289	Volume Control with D.P.S.T. Switch	1.24
1291	4 Mfd. Wet Electrolytic Condenser	.85	1341	Tone Control Switch	.40
1115	Dual .1 Mfd. 200 Volt Condenser	.35	1370	One Color Tuning Dial	.30
7860	.01 Mfd. 400 Volt Condenser	.17	1338	Two Color Tuning Dial	.35
9032	.2 Mfd. 200 Volt Condenser	.23	1103	Two Gang Condenser	3.93
9459	.0005 Mfd. Mica Mould Condenser	.21	1361	Tube Shield	.15
7934	.0001 Mfd. Mica Mould Condenser	.21	9988	Tube Shield	.11
1374	.003 Mfd. Mica Mould Condenser	.21	1053	Padding Condenser	.50
1332	Wire Wound Resistor Strip	.35	1054	Padding Condenser	.55
7998	1 Meg Ohm 1/3 Watt Resistor	.19	9799	Trimmer Condenser	.15
6984	500,000 Ohm 1/3 Watt Resistor	.19	6-1	Voltage Regulator Tube	3.00
8906	250,000 Ohm 1/3 Watt Resistor	.19	1179	Knob, Large	.15
6879	50,000 Ohm 1/3 Watt Resistor	.19	1180	Knob, Small with Dot	.17

SILVER - MARSHALL MFG. CO.

MODEL 4801,4802
Schematic, Voltage
Parts List



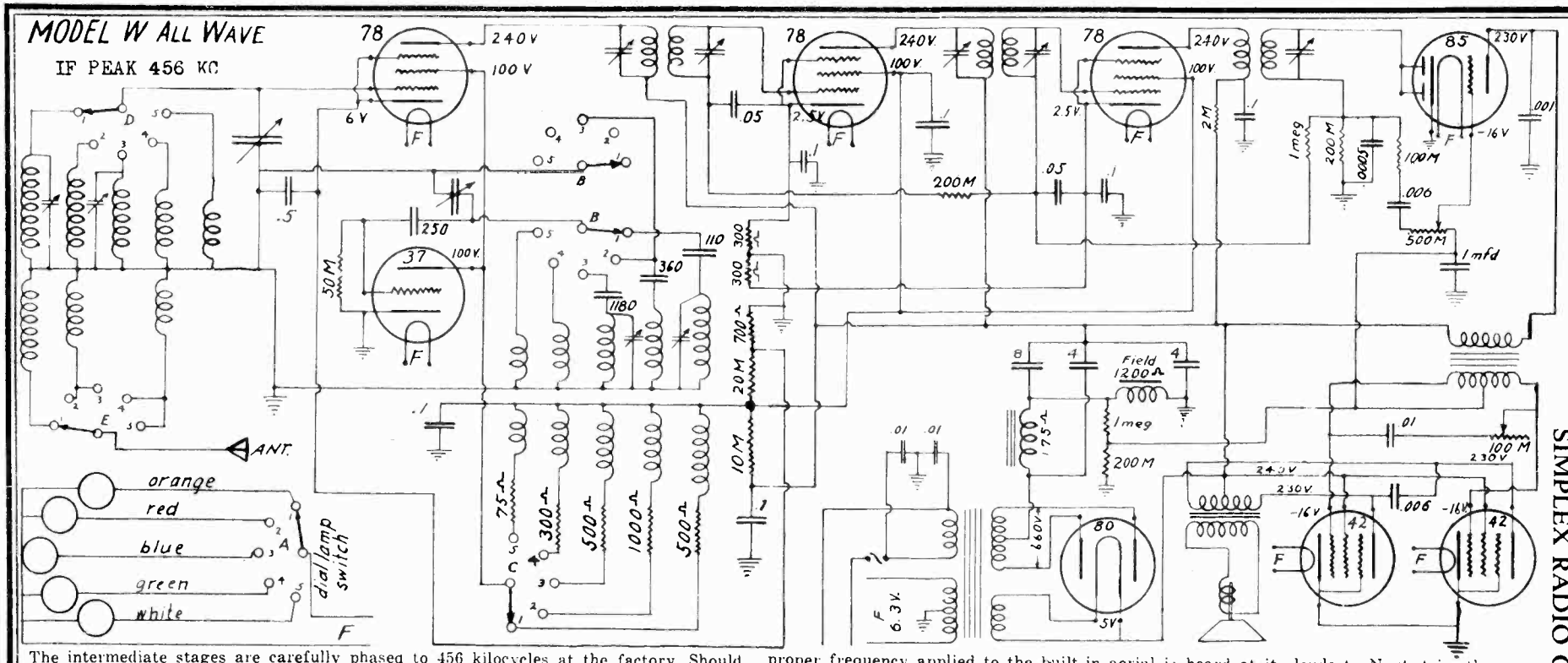
Early models - IF PEAK 465 KC.
Later models - IF PEAK 175 KC.

		Ef	Ep	Eg	Ek	Esg	Esug	Ip
58	RF	1.9	180	.2	2	72	0	3.7
58	1st Det	1.9	230	1.2	6.5	100	0	2.6
56	Osc.	1.9	105	.1	0			5.5
58	IF	1.9	180	.2	2	72	0	3.5
56	Diode Det.	1.9	0	.3	0			0
56	1st AF	1.9	103	.1	42			1.3
59	2nd AF	2.1	190	3.5	19	190	190	16.5
59	Class B1	2.1	350	0	108	350	0	7
59	Class B2	2.1	350	0	108	350	0	7
5Z3	Rect.	4.5	390*					43*

* - per plae
* - Per Plate
Vol.Cont. - Full On
Line - 110 volts

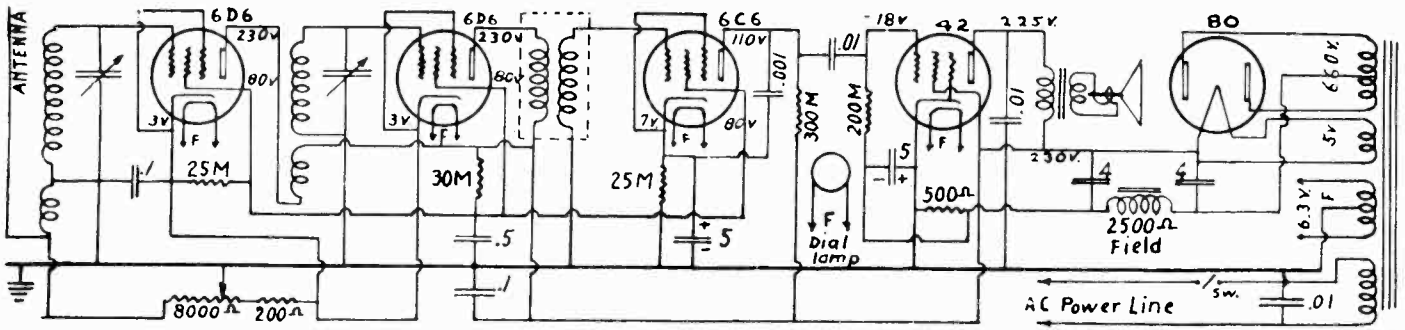
PART NUMBER	DESCRIPTION	LIST PRICE
P-1038	Pilot Light	$ .45
P-1100-A	.001 Mfd. Condenser	.25
P-1108	10,000 Resistor, 1 Watt	.25
P-1381	.0005 Mfd. Condenser	.50
P-1685	2,000 Ohm Resistor	.25
P-1728	.00005 Mfd. Condenser	.40
P-1999	10,000 Ohm Resistor	.25
P-4168	Blinder	.10
P-4182	Felt Washer	.05
P-4200	5,000 Ohm Resistor	.30
P-4259	Tone Control and Switch	1.75
P-4260	Volume Control	1.25
P-4262	56 Sockets	.25
P-4264	58 Sockets	.25
P-4391	Field Coil	2.50
P-4485	Tube Shield	.15
P-4486	Tube Shield Caps	.10
P-4487	Tube Shield Case	.10
P-4514	12 Mfd. - 8 Mfd. Dual Electrolytic	2.85
P-4585	Dual 5 Mfd. Condenser	1.50
P-4595	1 Meg. Resistor	.25
P-4597	250 Ohm Resistor	.25
P-4640	.25 Mfd. Condenser	.20
P-4644	.05 Mfd. Condenser	.20
P-4646	.02 Mfd. Condenser	.25
P-4659	50,000 Ohm Resistor	.25
P-4662	100,000 Ohm Resistor	.25
P-4664	200,000 Ohm Resistor	.25
P-4701	.10 Mfd. Condenser	.30
P-4761	.5 Mfd. Condenser	.40
P-4890	Small Knobs	.25
P-4891	Large Knobs	.25
P-4894	Escutcheon Plate	.80
P-4905	59 Sockets	.15
P-4909	20,000 Ohm Resistors	.25
P-4911	.25 Mfd. Condensers	.35
P-4914	5Z3 Socket	.15
P-4915	Tune-A-Lite	3.00
P-4917	Tune-A-Lite Socket	.25
P-4919	Switch - Wave Change	1.00
P-4923	Noise Control	1.00
P-4924	Tune-A-Lite Bracket	.15
P-4925	Canopy Mtg. Studs	.10
P-4929	Tune-A-Lite Blinder	.15
P-4930	20,000 Ohm Resistor	.25
P-4931	250,000 Ohm Resistor	.25
P-4932	150,000 Ohm Resistor	.25
P-4933	1,000 Ohm Resistor	.25
P-4934	.003 Mfd. Condenser	.25
P-4937	Wing Bolts	.10
P-4952	Wing Nuts	.05
P-4957	Diaphragm	.50
G-1281	Primary Coil Assembly (R.F. Coil)	.75
G-1282	Primary Coil Assembly (Ant. Coil)	.40
G-1378	Single Insulated Trimmer	.75
G-1401	Gang Condenser	5.00
G-1403	Trimmer Assembly	.75
G-1488	Padding Condenser	.75
G-1600	Voice Coil and Spider	.65
G-1669	Filter Choke Assembly	1.75
G-1708	10" Speaker	6.00
G-1776	Power Transformer Assembly	4.50
G-1776-A	Power Transformer 25 Cycle	6.25
G-1776-B	Power Transformer 220 Volt	5.00
G-1777	Output Transformer Assembly	2.00
G-1778	Input Transformer	2.50
G-1779	R.F. Units	4.00
G-1792	1st.I.F. Transformer	2.50
G-1793	I.F. Coil and Dowel Assembly (G-1792)	1.25
G-1794	2nd. I.F. Transformer	2.00
G-1795	Dial Assembly	.90
G-1797	Canopy	1.00
G-1803	R.F. Coil Assembly	.80
G-1804	Oscillator Coil Assembly	.90

SIMPLEX RADIO CO.



The intermediate stages are carefully phased to 456 kilocycles at the factory. Should rephasing be necessary, feed a 456 kilocycle signal from a test oscillator to the grid cap of the tube marked "78," located at the rear end of the tuning condenser, then adjust the double trimmers in the top of the coil cans nearest this tube, also the single trimmer in the top of the coil can near the "85" tube, to loudest volume, being sure to keep the oscillator signal at a low volume level. In trimming the frequency bands, first set the dial to the third group of figures from the right-hand end. Trim the "red" band first by adjusting the trimmers on the top of the tuning condenser until a signal of the proper frequency applied to the built-in aerial is heard at its loudest. Next, trim the "orange" band by adjusting the three-plate trimmers, located on the underside of the chassis, to loudest volume with proper signal frequency applied to the antenna. Next, trim the "blue" band by adjusting the two-plate trimmers located adjacent to the three-plate trimmers, to loudest volume with the proper signal frequency applied to the antenna. In trimming the various bands be sure that the band switch is set to the proper band as indicated by the color of the dial lamp. Also, keep the oscillator signal to as low volume level as possible for accuracy.

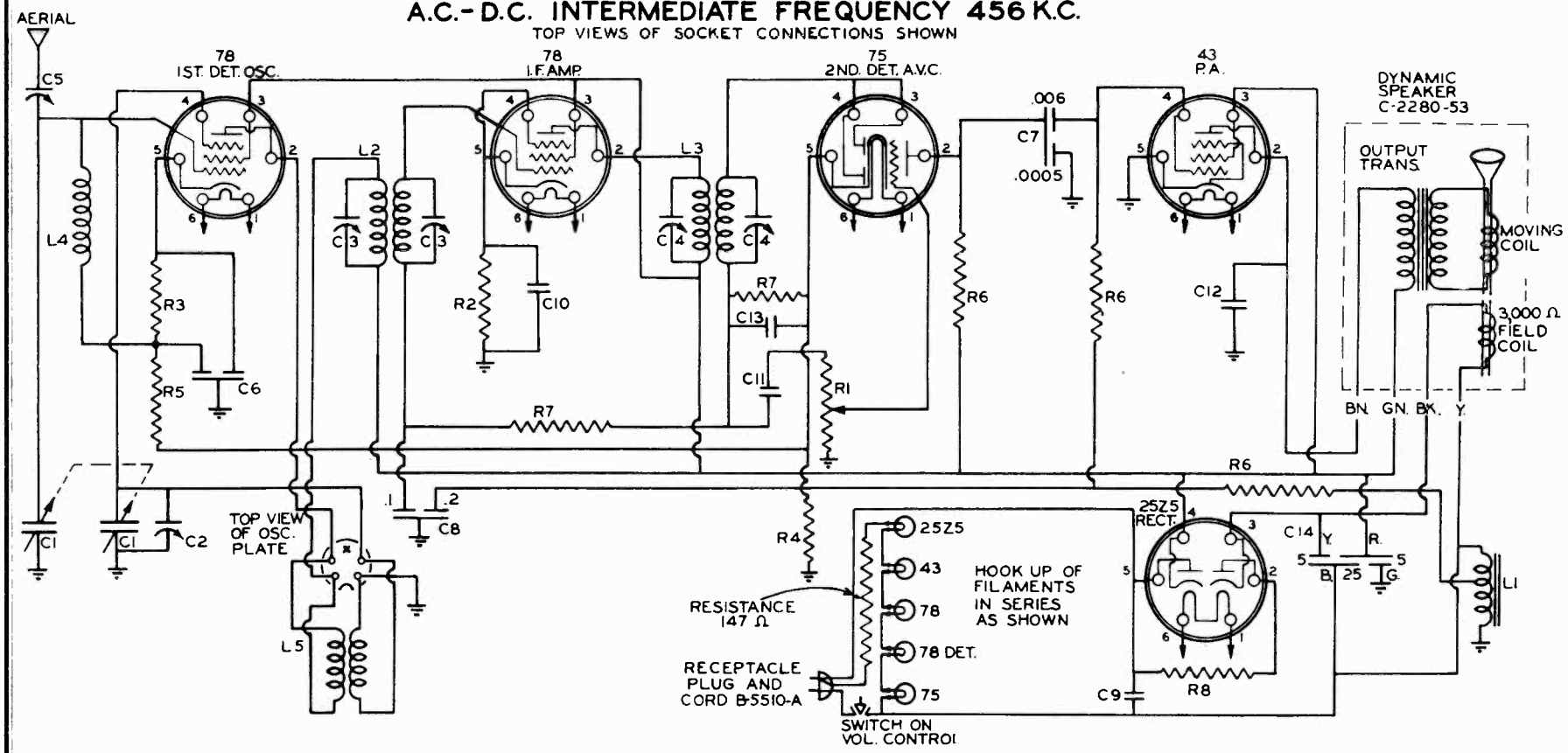
Model X



PHONOGRAPH: Mount single pole toggle switch at any convenient point on rear flange of chassis, disconnect 5 mfd. condenser from "cathode" of 6C6 socket and connect it to one side of switch, connect other side of switch to "cathode" of socket and connect phonograph across switch.

SCHEMATIC DIAGRAM
SPARTON MODEL 53 SUPERHETERODYNE
A.C.-D.C. INTERMEDIATE FREQUENCY 456 K.C.

TOP VIEWS OF SOCKET CONNECTIONS SHOWN



C1	VARIABLE CONDENSER	B-5509	C8	.1-.2 MFD. 100 V.	A-11092-6	R1	500,000 Ω VOL. CONTROL	A-11480
C2	ADJUSTABLE CONDENSER		C9	.025 MFD. 400 V.	A-11086-4	R2	400 Ω WIREWOUND	B-5243-30
C3	NO. 1 I.F. TRIMMER	A-11474	C10	.1 MFD. 100 V.	A-11130-1	R3	290 Ω WIREWOUND	B-5243-36
C4	NO. 2 I.F. TRIMMER	A-9553	C11	.006 MFD. 400 V.	A-11130-4	R4	100 Ω WIREWOUND	B-5243-37
C5	ANTENNA TRIMMER	A-11484	C12	.01 MFD. 200 V.	A-11130-7	R5	2,200 Ω WIREWOUND	B-5243-13
C6	.05-.05 MFD. 100 V.	A-11092-1	C13	.0005 MFD. MOLDED	A-9578-14	R6	300,000 Ω .25 W.	B-5737-3
C7	.006-.0005 MFD. 400 V.	A-11092-2	C14	5-25-5 MFD. ELECTROLYTIC	A-11093-1	R7	500,000 Ω .25 W.	B-5737-5
						R8	50 Ω WIREWOUND	B-6061-1

NOTE: Part No. of Condenser C13 in late Model 53 Chassis is changed from A-9578-14 to A-9578.

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-11486
L5	OSCILLATOR COIL	A-11475

SPARKS-WITHINGTON CO.

MODEL 53 AC-DC
Schematic

MODEL 53 AC-DC
Voltage
Chassis View

SPARKS-WITHINGTON CO.

(ORIGINAL) EFFECTIVE AUGUST 28, 1934

Sparton Model 53 A. C.-D. C. Superheterodyne Schematic Diagram and Voltage Resistance Chart

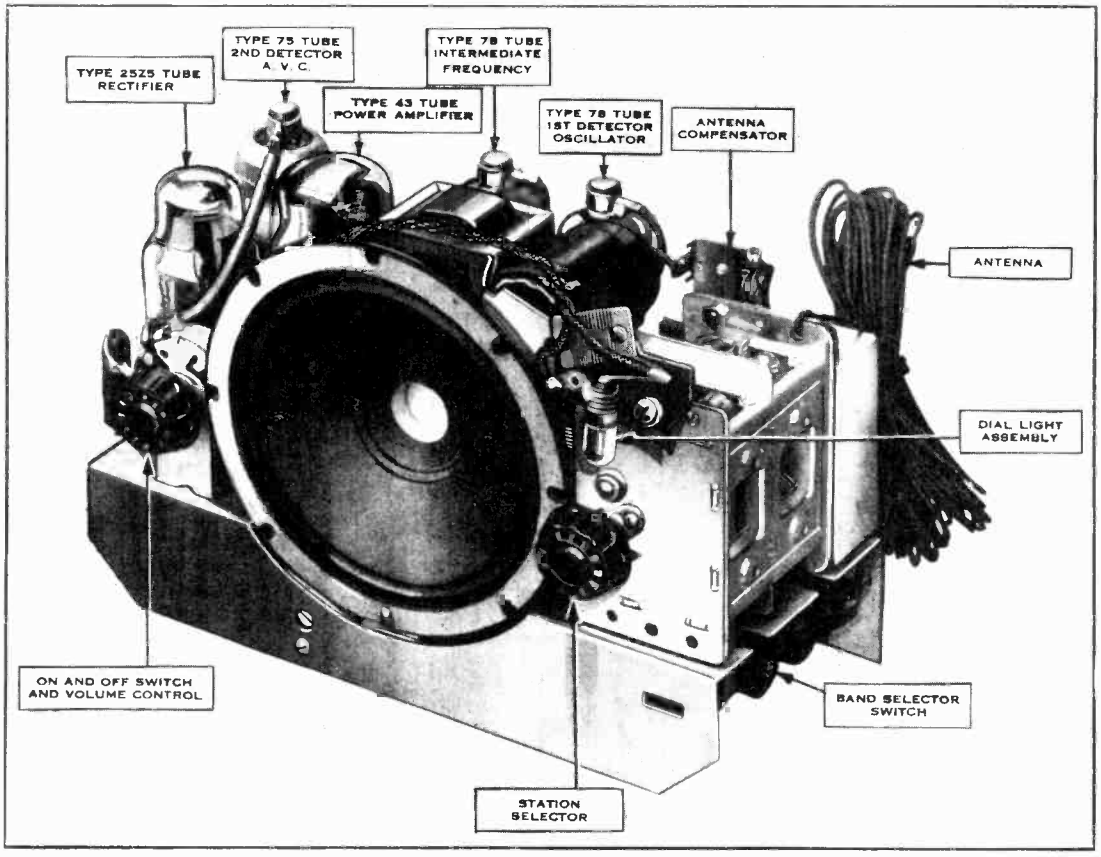
VOLTAGE-RESISTANCE CHART

Line Supply — A. C.
Line Voltage — 119

Position of Volume Control — Full with Antenna Disconnected

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	28	105	105	**	18	28	15
		Ohms	700	30,000	30,000	**	2500	700	2100
78	I-F Amplifier	Volts	28	105	105	3.7	3.7	28	**
		Ohms	700	30,000	30,000	350	350	700	1,000,000
75	2d Detector-A.V.C.	Volts	28	**	**	**	**	28	**
		Ohms	700	450,000	500,000	500,000	100	700	500,000
43	Power Amplifier	Volts	28	98	105	**	**	28	—
		Ohms	700	25,000	25,000	500 000	0	700	—
25Z5	Rectifier	Volts	28	118	105	70	118	28	—
		Ohms	700	800	25,000	3500	750	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.



MODELS 53 AND 57 CHASSIS

Note: Model 53 Chassis is not equipped with dial light assembly or band selector switch.

(Original) Effective September 28, 1934

Detailed Alignment Instructions for SPARTON Models 53 and 57

Foreword: Before attempting to realign the circuits of the above SPARTON models, the service man should read carefully the information contained in the preceding pages of Bulletin No. 3-E, especially the paragraphs pertaining to the use of a test oscillator, output meter, method of adjusting the various trimming and padding condensers, and the bending of split condenser plate sections.

The use of quality test equipment is highly recommended, and a good test oscillator becomes a virtual necessity when aligning the all-wave or short-wave type of receiver. Due to the fact that the ear cannot distinguish small changes in sound intensity, an output meter is essential to the proper adjustment of the various condensers.

Unless otherwise specified, the adjusting of any condenser consists of turning the adjusting screw or nut to the right or left until the output meter registers the greatest deflection.

1. EQUIPMENT NEEDED.

A. Modulated test oscillator (crystal controlled or accurately calibrated) capable of generating frequencies from 172.5 to 1710 kilocycles.
B. Output meter.
C. Part A-9631 adjusting wrench.

2. STEP BY STEP PROCEDURE FOR COMPLETE ALIGNMENT OF MODELS.

Note: For proper alignment of these chassis, the procedure should be followed in the same order as given.

A. **Alignment of Model 53.**

(1) Turn on receiver and test oscillator, and allow both to operate several minutes before attempting to adjust any condensers.

(2) Connect "antenna" of test oscillator to grid cap of Type 78 First Detector-Oscillator Tube, and "ground" of test oscillator to chassis frame of receiver. Connect output meter (condenser in series) from plate of Type 43 Tube to ground. (See Fig. 1, Page 1, Bulletin No. 3-E.)

Note: It is advisable to read carefully the operating instructions included with test oscillator. A blocking condenser must be in series with the test oscillator antenna lead to prevent damage to the oscillator. If the oscillator construction or equipment does not include this, use a .1 MFD or .2 MFD fixed condenser.

(3) Tune test oscillator to obtain a signal of 456 kilocycles.

(4) Turn the Station Selector of the receiver so that the condenser plates are all of the way out.

(5) Retard the volume control of the receiver as much as possible and still obtain a ½ to ¾ full scale deflection of the output meter. The gain control of the test oscillator should be advanced to obtain sufficiently strong signals.

(6) Adjust condensers C_1 (reached from the bottom of the chassis) and C_2 (reached from the back of the chassis). These are the first and second intermediate frequency adjustable condensers, respectively.

(7) Set the Station Selector Knob pointer at 540 kilocycles with the variable condenser rotor plates flush with the stator plates.

(8) Disconnect "antenna" lead of test oscillator from grid cap of first detector oscillator tube and connect to the antenna terminal of the chassis.

(9) Tune test oscillator to obtain a signal of 1500 kilocycles.

(10) Tune the station selector of the receiver to 1500 kilocycles.

(11) Without disturbing the 1500 kilocycles setting of either the test oscillator or the receiver, adjust condenser C_3 and the antenna compensator C_4 for a maximum deflection of the output meter.

(12) Tune the test oscillator and receiver to 900 kilocycles for calibration check.

(13) Tune test oscillator and receiver to 600 kilocycles, and again check the calibration.

(14) Operation of the receiver should also be checked at 1710 kilocycles and 550 kilocycles.

Note: If the test oscillator is crystal-controlled for a frequency of 172.5 kilocycles, harmonics of this frequency may be used to check the dial calibrations at the following readings: 690, 862.5, 1035, 1207.5, 1380, and 1552.5 kilocycles. The end plates of the oscillator section of the two-gang condenser may be bent if necessary to correct dial readings.

(15) The condenser C_4 (antenna compensator) may require readjustment to permit best performance of the receiver after it has been connected to the antenna with which it will be used.

B. **Alignment of Model 57.**

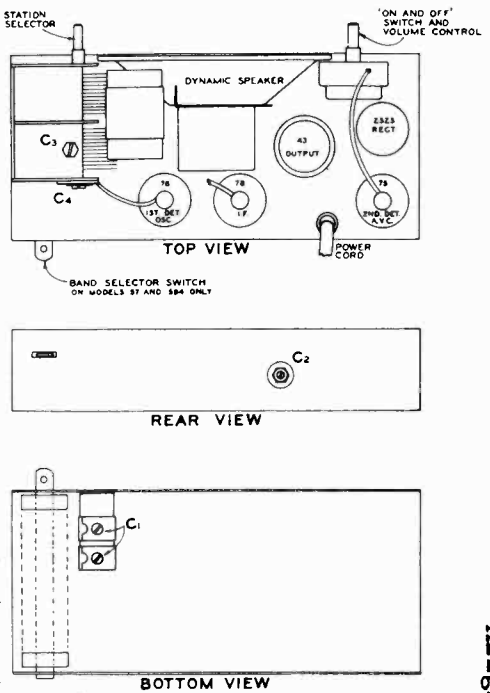
Note: The Model 57 is similar to the Model 53 with the exception that it is equipped with the band selector switch and dial light assembly. The alignment procedure for this model is the same as that for the 53 with the following exceptions:

(1) The band selector switch should be moved to the broadcast position (pushed in) when the intermediate frequency adjustable condenser C_1 and C_2 are adjusted.

(2) When the rotor plates of the two-gang condenser are flush with the stator plates, the station selector knob pointer should be on the right-hand edge of the symbol "S".

(3) After the alignment procedure has been completed, the band selector switch should be moved to the short-wave position (pulled out). With the band selector switch in this position, a test oscillator frequency of 1500 kilocycles should be heard through the receiver when the station selector dial knob is turned to the low-frequency end of the dial between 540 and 600 kilocycles (between 54 and 60).

Note: All adjustments should be rechecked to assure accuracy and stability of adjustment and calibration. The condenser C_4 of the Model 57 will also have to be readjusted after the receiver is connected to the regular antenna.



C1 — FIRST INTERMEDIATE FREQUENCY ADJUSTABLE CONDENSER.
C2 — SECOND INTERMEDIATE FREQUENCY ADJUSTABLE CONDENSER.
C3 — OSCILLATOR TRIMMING CONDENSER.
C4 — ANTENNA COMPENSATING CONDENSER.

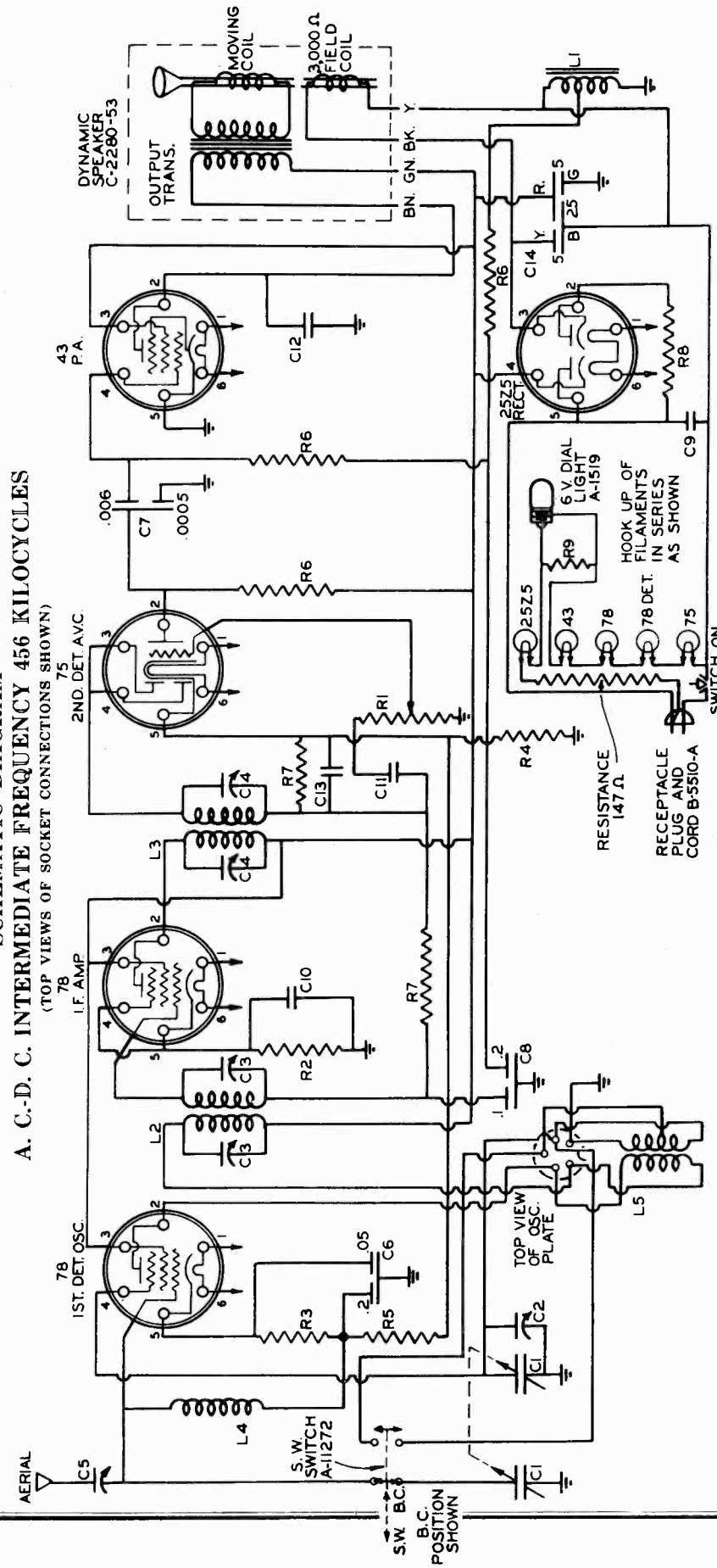
FIG. 5. CHASSIS DIAGRAM FOR SPARTON MODELS 53 AND 57.

MODEL 57 AC-DC
Schematic

SPARKS-WITHINGTON CO.

SPARTON MODEL 57 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.	
C9	.025 MFD. 400 V.	A-11092-6
C10	.1 MFD. 100 V.	A-11086-4
C11	.006 MFD. 400 V.	A-11130-1
C12	.01 MFD. 200 V.	A-11130-4
C13	.0005 MFD. MOLDED	A-11130-7
C14	5-25-5 MFD. ELECTROLYTIC	A-9578-14
		A-11093-1

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

NOTE: Part No. of Condenser C-13 in late Models 57 chassis is changed from A-9578-14 to A-9578.

SPARKS-WITHINGTON CO.

MODEL 57 AC-DC
Voltage
Chassis View

(ORIGINAL) EFFECTIVE AUGUST 30, 1934

Sparton Model 57 A. C.-D. C. Superheterodyne Schematic Drawing and Voltage-Resistance Chart

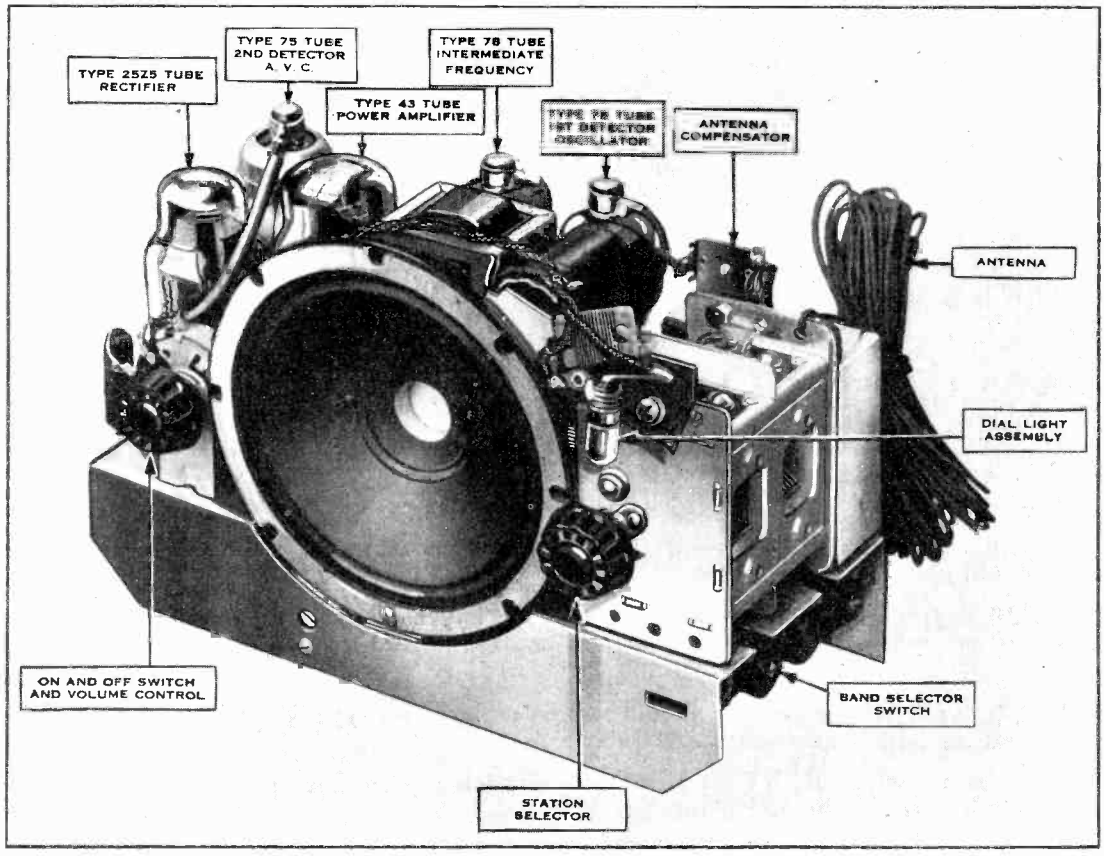
VOLTAGE-RESISTANCE CHART

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 57 CHASSIS

Vacuum Tubes
Chart and Data

SPARKS-WITHINGTON CO.

(First Revision) Effective August 24, 1934

Chart of Special SPARTON Radio Tubes

Present Type Number	Replaces Discontinued Types or Type Numbers	USED IN SPARTON MODELS
181	C-171 C-181	AC-7 AC-62 AC-63
401	C-373 C-401 Kellogg-401	AC-5 AC-7 AC-62 AC-63
482-A	C-182-A	AC-7 AC-63 600-DC 620-DC 750-DC AC-62 301-DC 610-DC 740-DC 931-DC
482-B	182-B C-182	591 593 930 931
483	C-183	235 420 591 600 620 930 410 589 593 610 737 931
484-A	C-484-A	301-DC 610-DC 740-DC 931-DC 600-DC 620-DC 750-DC
485	484 C-484 C-485	69 89 101 110 235 570 591 610 740 930 79 89-A 103 111 301 574 593 620 750 931 79-A 99 109 111-A 564 589 600 737 870
486	C-686	39 49
50 (Standard Type)	250 450 585 586 C-585 C-586	35 89 103 111-A 574 69 89-A 109 301 740 79 99 110 564 750 79-A 101 111 570 870

IMPORTANT

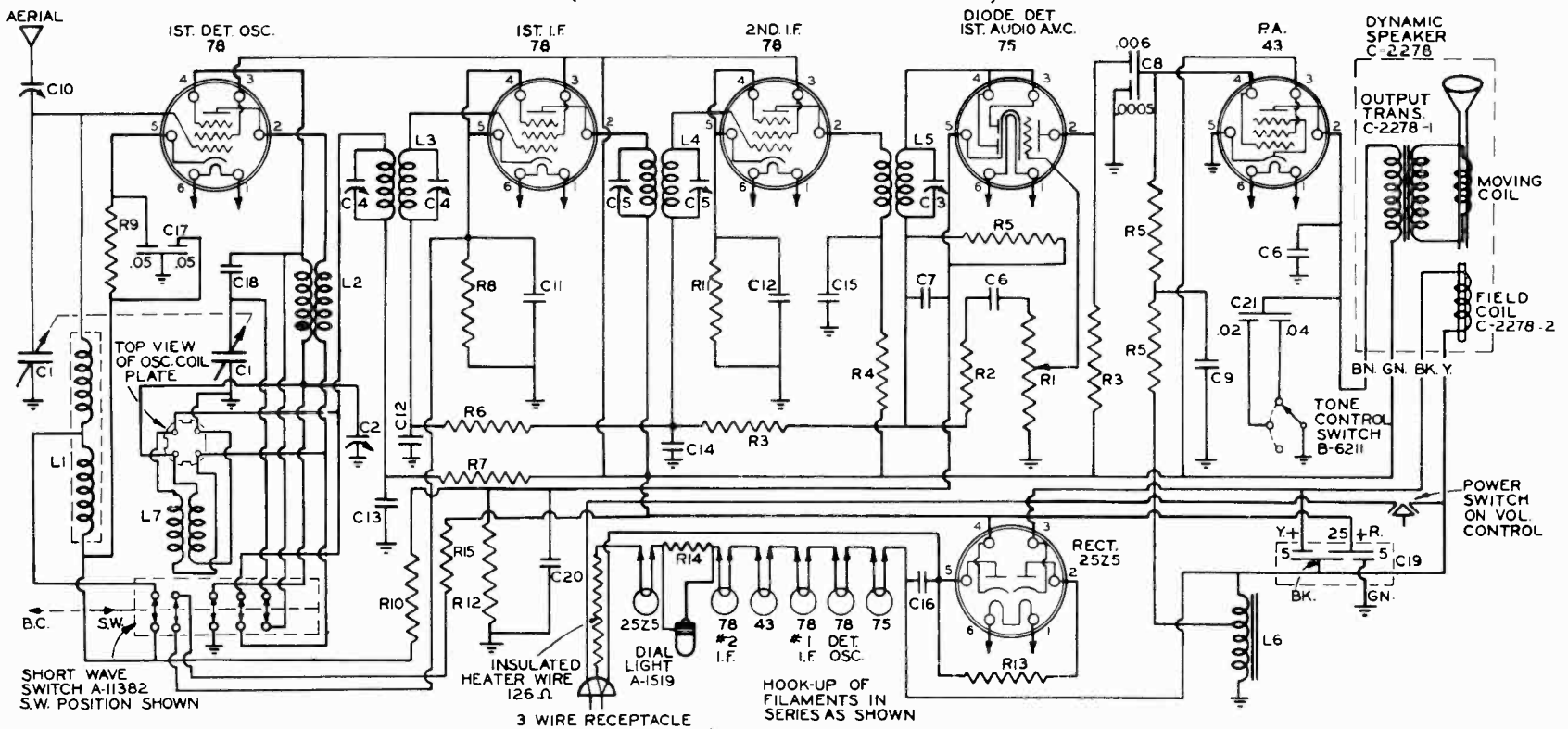
SPARTON types 482-A, 482-B and 483 should not be replaced by type '45. Difference in filament voltage will burn out type '45.

SPARTON types 482-B and 483 should never be mixed in a power amplifier. Always use two type 482-B or two type 483. These tubes should be used in SPARTON Models as listed in the above chart.

SPARTON types 484-A and 485 should not be replaced by type '27. Difference in characteristics causes overload on both transformer and tube.

NOTE: Best results with SPARTON Equasonne Models are obtained by mixing high and low reading type 485 tubes in the R-F Amplifier unit.

SCHEMATIC DIAGRAM
SPARTON MODELS 65 AND 66 SUPERHETERODYNE
A.C.-D.C. INTERMEDIATE FREQUENCY 456 K.C.
(TOP VIEWS OF SOCKET CONNECTIONS SHOWN)



C1	VARIABLE CONDENSER	B-6153
C2	B.C. OSCILLATOR TRIMMER	A-10972
C3	ADJUSTABLE CONDENSER	A-10973
C4	ADJUSTABLE CONDENSER	A-10977
C5	ADJUSTABLE CONDENSER	A-11034
C6	.006 MFD. 400 V.	A-11130-4
C7	.0005 MFD. MOLDED	A-11095-1
C8	.006-.0005 MFD. 400 V.	A-11092-2
C9	.5 MFD. 100 V.	A-11130-2
C10	ANTENNA TRIMMER	A-11071

C11	.1 MFD. 100 V.	A-11086-1
C12	.05 MFD. 100 V.	A-11086-2
C13	.05 MFD. 200 V.	A-11087-1
C14	.1 MFD. 100 V.	A-11089-1
C15	.05 MFD. 200 V.	A-11086-3
C16	.025 MFD. 400 V.	A-11086-4
C17	.05-.05 MFD. 100 V.	A-11092-1
C18	.0005 MFD. MOLDED	A-9578-14
C19	5-25-5 MFD. ELECTROLYTIC	A-11093
C20	.1 MFD. 100 V.	A-11130-1
C21	.04-.02 MFD 200 V.	A-9612-1

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	1,700 Ω	.25 W.	B-5458-15
R9	290 Ω	WIREWOUND	B-5243-36
R10	2,200 Ω	WIREWOUND	B-5243-13
R11	230 Ω	WIREWOUND	B-5243-34
R12	100 Ω	WIREWOUND	B-5243-37
R13	50 Ω	2 W.	B-6061-2
R14	25 Ω	WIREWOUND	A-9647
R15	60,000 Ω	.25 W.	B-5458-33

L1	PRE-SELECTOR COIL	A-11045
L2	FOREIGN BAND OSC. COIL	A-11047
L3	#1 I.F. TRANSFORMER	A-11039
L4	#2 I.F. TRANSFORMER	A-11040
L5	#3 I.F. TRANSFORMER	A-11041
L6	CHOKE COIL	A-11038
L7	BROADCAST OSC. COIL	A-11068

Models 65T and 66T are equipped with a power transformer and must be used ONLY on A.C.

NOTE: Late Model 65 and 66 chassis have an adjustable condenser C3 connected across the primary of No. 3 I. F. Transformer L5. Part No. of C3 Adjustable Condenser is changed from A-10973 to A-11474. Also Resistor R11 is changed to .25 watt 2200 ohms (B-5458-1) and Resistor R15 is changed to .25 watt 50,000 ohms (B-5458-31). Also Part No. of No. 3 I. F. Transformer L5 is changed from A-11041 to A-11535.

SPARKS-WITHINGTON CO.

MODEL 65, 66
Schematic
MODEL 65T, 66T
Note

MODEL 65,66
Voltage
Chassis View

SPARKS-WITHINGTON CO.

Sparton Models 65 and 66 A. C.-D. C. Superheterodyne Schematic Diagram and Voltage-Resistance Chart

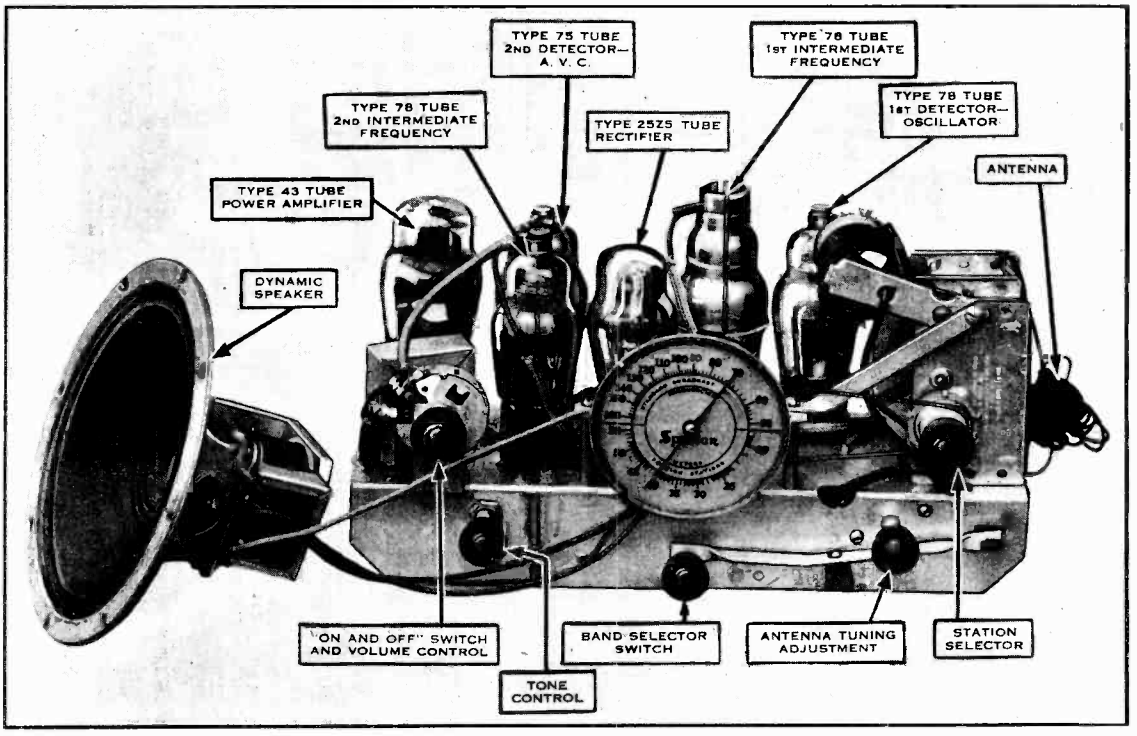
VOLTAGE-RESISTANCE CHART

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	*	*	0	2500	700	2400
78	1st I-F Amplifier	Volts	29	105	105	7.5	7.5	29	0
		Ohms	700	*	*	1700	1700	700	800,000
78	2nd I-F Amplifier	Volts	29	75	105	2.7	2.7	29	0
		Ohms	700	*	350,000	250	250	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	*	*	750,000	0	700	—
25Z5	Rectifier	Volts	29	28	105	74	30	29	—
		Ohms	700	800	*	3000	800	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.
*Zero, provided correct meter polarity is used. **Cannot be measured with Weston No. 665, Type 1.



MODELS 65 AND 66 CHASSIS

(ORIGINAL) EFFECTIVE AUGUST 1, 1934

(Original) Effective August 14, 1934

Detailed Alignment Instructions for SPARTON Models 65, 65-T, 66 and 66-T

Note: Models 65 and 66 are A. C.-D. C. receivers; Models 65-T and 66-T are equipped with a power transformer and must be used on A. C. only.

Foreword: Before attempting to realign the circuits of the above SPARTON models, the service man should read carefully the information contained in the preceding pages of this bulletin, especially the paragraph pertaining to the use of a test oscillator, an output meter, method of adjusting the various trimming and padding condensers, and the bending of split condenser plate sections.

The use of quality test equipment is highly recommended, and a good test oscillator becomes a virtual necessity when aligning the all-wave type of receiver. Due to the fact that the ear cannot distinguish small changes in sound intensity, an output meter is essential to the proper adjustment of the various condensers.

Unless otherwise specified, the adjusting of any condenser consists of turning the adjusting screw or nut to the right or left until the output meter registers the greatest deflection.

1. EQUIPMENT REQUIRED.

A. Modulated test oscillator (crystal controlled or accurately calibrated) capable of generating frequencies from 172.5 to 15,000 kilocycles.

B. Output meter.

C. Sparton Part A-9631 Adjusting Wrench.

2. STEP BY STEP PROCEDURE FOR COMPLETE ALIGNMENT OF MODELS.

Note: For proper alignment of these chassis, the procedure should be followed in the same order as given.

A. Alignment of Broadcast Band.

(1) The dial pointer should be exactly parallel with the horizontal lines on the scale when the selector rotor plates are completely in mesh with the stator plates. The pointer may be reset, if necessary, by first loosening the nut on the planetary drive and drum, then resetting the pointer, and then tightening the nut.

(2) Turn on receiver and test oscillator, and allow both to operate several minutes before attempting to align any condensers.

(3) **Warning:** Before connecting test oscillator to receiver, be sure to read carefully the operating instructions included with the test oscillator.

Connect "antenna" of test oscillator to grid cap of type 78 first detector oscillator tube, and "ground" of test oscillator to chassis frame of receiver.

(4) Tune test oscillator to obtain signal of 456 kilocycles.

(5) Turn volume control of receiver on full, and place Band Selector Switch in Broadcast Position. Make sure condenser plates are turned all the way out.

(6) Adjust I-F condensers (C_1, C_2, and C_3). See Fig. 6.

(7) Disconnect "antenna" leads of test oscillator tube and connect to the antenna terminal of the chassis.

(8) Tune test oscillator to obtain a signal of 1500 kilocycles.

(9) Tune station selector of receiver to 1500 kilocycles. Also adjust antenna tuning condenser (C_A).

Note: Do not disturb the 1500 kilocycle setting of either the test oscillator or the receiver.

(10) Adjust oscillator trimmer condenser (C_O).

(11) Check calibration of receiver by setting the test oscillator to obtain a signal of 172.5 kilocycles. Harmonics of this frequency should be picked up at the following readings on the dial: 690, 862.5, 1035, 1207.5, 1380 and 1552.5 kilocycles.

The end plates of the oscillator section of the two gang condenser may be bent if necessary to correct dial readings.

Note: An allowance of 20 kilocycles at 900 kilocycles and 15 kilocycles at 600 kilocycles is permitted.

B. Alignment of Short-Wave Band.

(1) Adjust Band Selector Switch to Short Wave Position.

(2) Adjust test oscillator to obtain a wave length of 20 meters (15 megacycles) and tune receiver to this wave length. Adjust for resonance with antenna tuning condenser (C_A). Calibration should check within 1½ meters. Push or pull the wires that are near the oscillator coil to correct any greater variation in calibration.

(3) Adjust test oscillator to obtain a wave length of 50 meters (6 megacycles) and tune receiver to this wave length. Adjust for resonance with antenna tuning condenser (C_A). Calibration should check within 1½ meters. If the error in calbration exceeds this amount, recheck the preceding adjustments.

Note: All adjustments should be re-checked to assure accuracy and stability of adjustment and calibration.

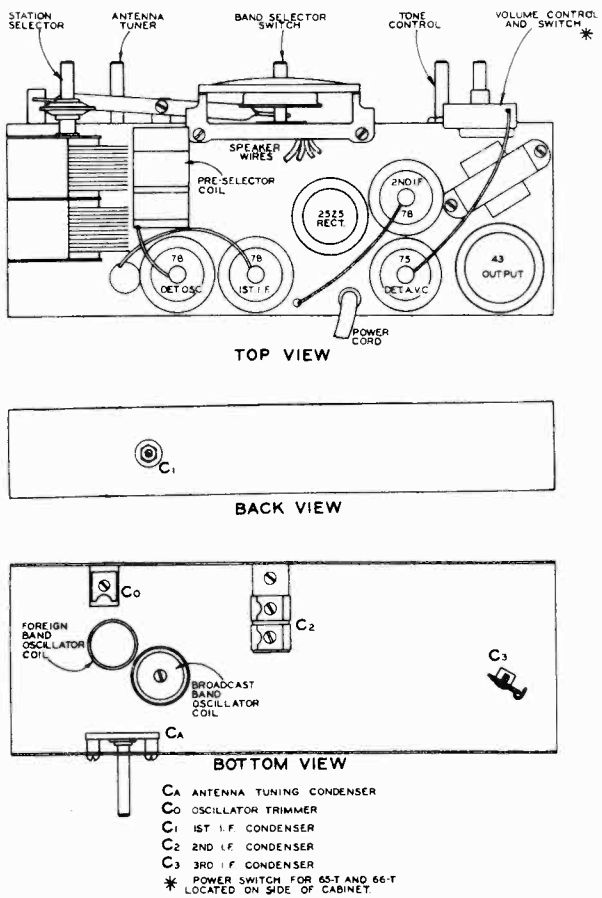


Fig. 6. CHASSIS DIAGRAM FOR SPARTON MODELS 65, 65-T, 66 AND 66-T

(Original) Effective August 29, 1934

Detailed Alignment Instructions for SPARTON Models 67, 68 and 691

Foreword: Before attempting to realign the circuits of the above SPARTON models, the service man should read carefully the information contained in the preceding pages of this bulletin, especially the paragraphs pertaining to the use of a test oscillator, an output meter, method of adjusting the various trimming and padding condensers, and the bending of split condenser plate sections.

The use of quality test equipment is highly recommended, and a good test oscillator becomes a virtual necessity when aligning the all-wave or short-wave type of receiver. Due to the fact that the ear cannot distinguish small changes in sound intensity, an output meter is essential to the proper adjustment of the various condensers.

Unless otherwise specified, the adjusting of any condenser consists of turning the adjusting screw or nut to the right or left until the output meter registers the greatest deflection.

1. EQUIPMENT REQUIRED.

A. Modulated test oscillator (crystal controlled or accurately calibrated) capable of generating frequencies from 172.5 to 15,000 kilocycles.

B. Output meter.

C. Sparton Part A-5732 or A-8737 adjusting wrench.

2. STEP BY STEP PROCEDURE FOR COMPLETE ALIGNMENT OF MODELS.

Note: For proper alignment of these chassis, the procedure should be followed in the same order as given.

A. Alignment of Intermediate-Frequency Stages.

(1) Turn on receiver and test oscillator, and allow both to operate several minutes before attempting to align any condensers.

(2) Connect "antenna" of test oscillator to grid cap of type 6A7 first detector-oscillator tube, and "ground" of test oscillator to chassis frame of receiver. Connect output meter as in Fig. 1, page 1, Bulletin No. 3-E.

Note: It is advisable to read carefully the operating instructions included with test oscillator.

(3) Tune test oscillator to obtain a signal of 345 kilocycles.

(4) Turn the volume control of receiver on full, and place Band Selector Switch in Broadcast Position.

(5) Adjust I. F. condensers C_7 and C_8. (See Fig. 7.)

(6) The dial pointer should point to the lowest calibrated frequency mark on the broadcast section of the kilocycle scale (dial division between 55 and horizontal line). **If the dial pointer reads incorrectly, it may be reset by first loosening the nut on the planetary drive and drum (back of the Station Selector knob), then resetting the pointer while holding the rotor plates completely in mesh with the stator plates, and then tightening the nut.**

B. Alignment of Broadcast Band.

(1) Disconnect "antenna" lead of test oscillator from grid cap of first detector-oscillator tube and connect to the antenna terminal of the chassis.

(2) Tune test oscillator and receiver to frequency of 1500 kilocycles.

(3) Adjust Condenser C_6.

(4) Adjust Condensers C_2 and C_4.

(5) Tune test oscillator and receiver to 600 kilocycles.

(6) Adjust condenser C_9 for maximum output.

Note: Slight readjustments of the station selector and condenser C_9 may be required to obtain the greatest deflection on the output meter. A variation of 5 kilocycles from the value of 600 kilocycles is permitted in this procedure.

(7) Check calibration of receiver by tuning the test oscillator to obtain a signal of 172.5 kilocycles. Harmonics of this frequency should be picked up at the following readings of the dial: 690, 862.5, 1035, 1207.5, 1380, and 1552.5 kilocycles.

The end plates of the oscillator section of the two gang condenser may be bent if necessary to correct dial readings.

C. Alignment of Short-Wave Band.

(1) Turn the Band Selector Switch to the Short-Wave Position.

(2) Tune the station selector to 1500 kilocycles in the broadcast band.

(3) Tune test oscillator to obtain a signal of 20 meters wave length (15 megacycles.

(4) Without changing the station selector setting of 1500 kilocycles, adjust condenser C_5. The station selector should show the same reading of 1500 kilocycles when the receiver is tuned to signals of 1500 kilocycles or 20 meters (15000 kilocycles.)

(5) With the test oscillator tuned to 20 meters, adjust condensers C_1 and C_3.

(6) Tune the test oscillator to obtain a wave length of 50 meters (6 megacycles) and tune receiver to this wave length for calibration check.

(7) Tune test oscillator to obtain a wave length of 33.3 meters (9 megacycles) and tune receiver to this wave length for calibration check.

(3) Tune test oscillator to obtain a wave length of 20 meters (15 megacycles) and tune receiver to this wave length for calibration check.

Note: All adjustments should be re-checked to assure accuracy and stability of adjustment and calibration.

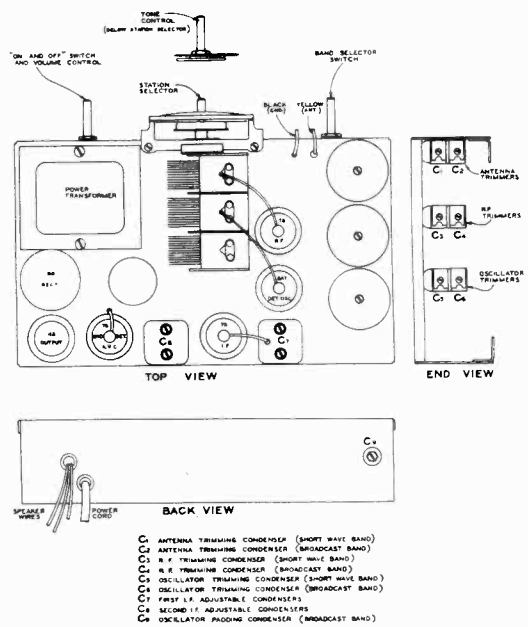
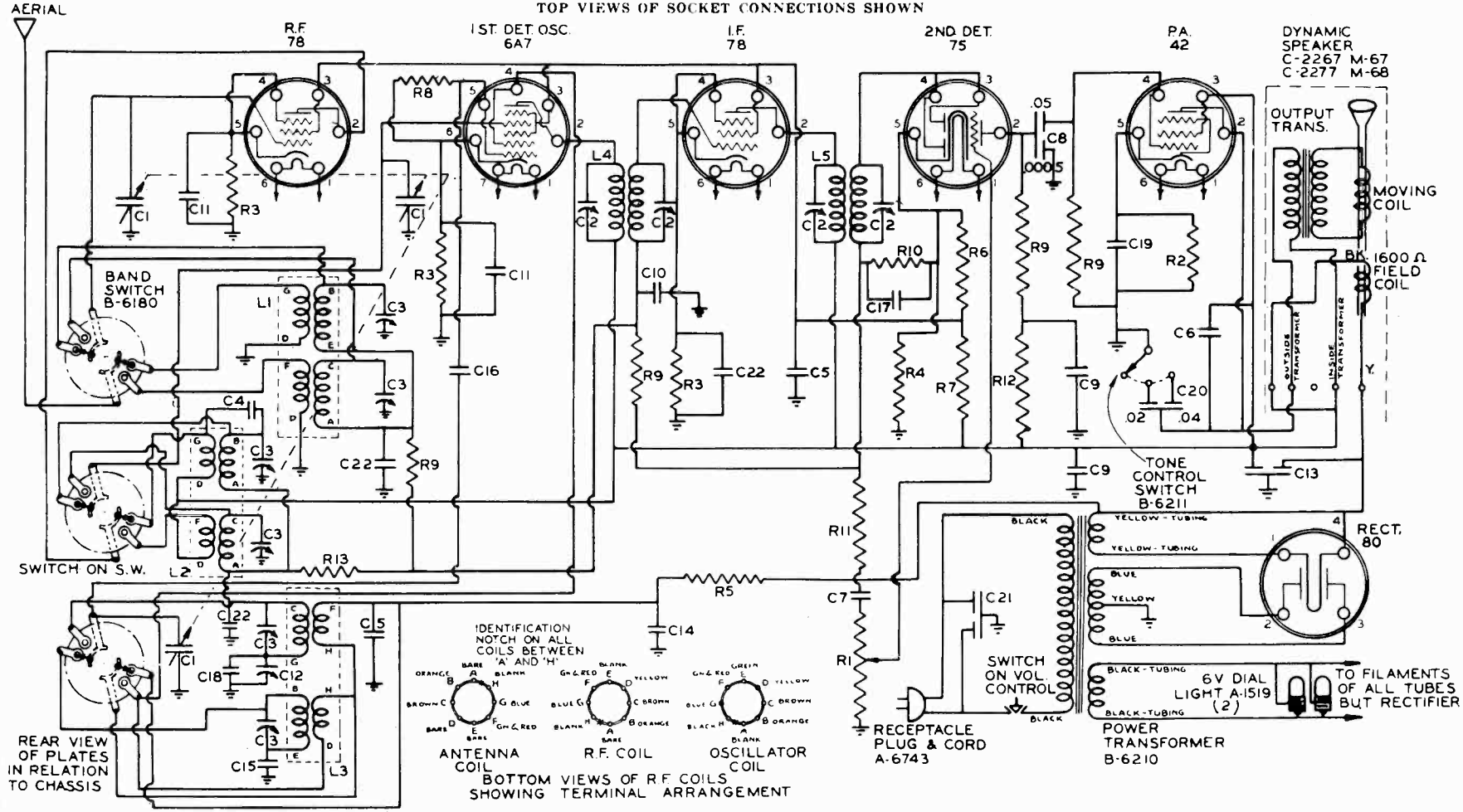


FIG. 7. CHASSIS DIAGRAM FOR SPARTON MODELS 67, 68, AND 691

SPARTON MODELS 67, 68 AND 691 SUPERHETERODYNE
INTERMEDIATE FREQUENCY 345 K. C.

TOP VIEWS OF SOCKET CONNECTIONS SHOWN



C1	VARIABLE CONDENSER	B-6212
C2	I.F. TRIMMERS (WITH COILS)	
C3	R.F. TRIMMERS (DOUBLE)	A-11455
C4	8-9 MMF.	A-11261
C5	.01 MFD. 400 V.	A-11130-5
C6	.006 MFD. 400 V.	A-9916
C7	.025 MFD. 400 V.	A-11409
C8	.05-.0005 400 V.	A-11408
C9	.2 MFD. 600 V.	A-11473-4
C10	.2 MFD. 200 V.	A-11473-2
C11	.1 MFD. 200 V.	A-11473-1
C12	100-300 MMF. PADDER	A-7809-5
C13	8-8 MFD. ELECTROLYTIC	A-11223-1
C14	4 MFD. ELECTROLYTIC	A-11224-1
C15	.0032 MFD. MOLDED	A-7038-8
C16	.00005 MFD. MOLDED	A-5175-1
C17	.0005 MFD. MOLDED	A-5175-2
C18	.00025 MFD. MOLDED	A-9578-5
C19	10 MFD. 25 V.	A-10377
C20	.04-.02 MFD. 400 V.	A-11407
C21	.006-.006 MFD.	A-7878
C22	.05 MFD. 200 V.	A-11410
C23	R.F. TRIMMER	A-11289

R1	250,000 Ω VOL. CONTROL & SWITCH	A-11245
R2	500 Ω WIREWOUND	B-5243-38
R3	600 Ω WIREWOUND	B-5243-19
R4	230 Ω WIREWOUND	B-5243-21
R5	30,000 Ω 1 W.	B-4540-12
R6	20,000 Ω 1 W.	B-4540-5
R7	10,000 Ω 3 W.	B-4539-3
R8	50,000 Ω .25 W. (CARBON)	B-5458-31
R9	250,000 Ω .25 W.	B-5737-1
R10	500,000 Ω .25 W.	B-5737-5
R11	50,000 Ω .25 W.	B-5737-4
R12	100,000 Ω .25 W.	B-5737-2
R13	4,000 Ω .25 W.	B-5737-7

L1	NO. 1 R.F. COIL	A-11231
L2	NO. 2 R.F. COIL	A-11232
L3	OSCILLATOR COIL	A-11233
L4	NO. 1 I.F. TRANSFORMER	A-6314-1
L5	NO. 2 I.F. TRANSFORMER	A-6314-2

SPARKS-WITHINGTON CO.

MODEL 67, 68, 691
Schematic

MODEL 67,68,691
Voltage
Chassis View

SPARKS-WITHINGTON CO.

(ORIGINAL) EFFECTIVE AUGUST 1, 1934

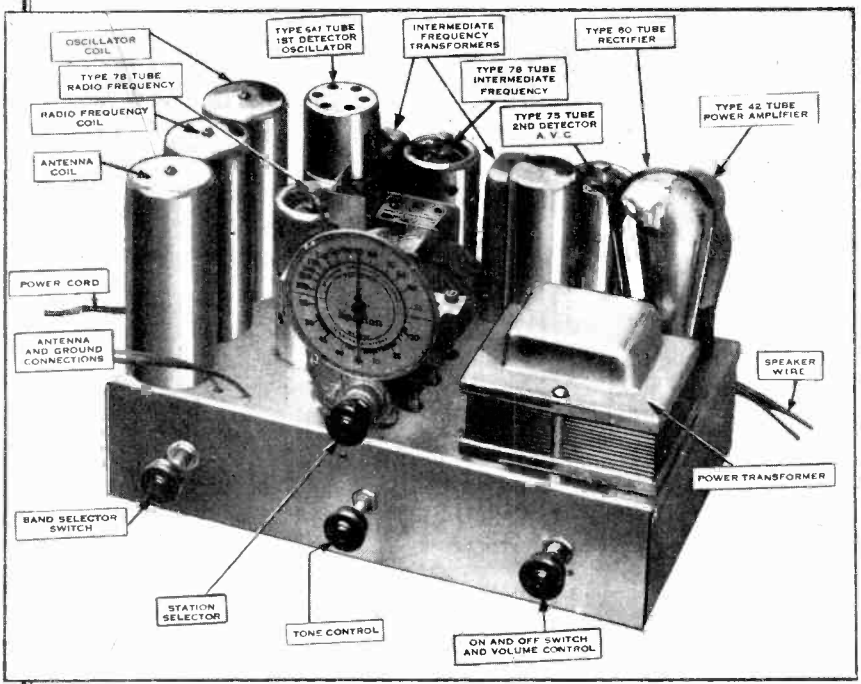
Sparton Models 67, 68, and 691 A. C. Superheterodyne Schematic Diagram and Voltage-Resistance Chart

VOLTAGE-RESISTANCE CHART

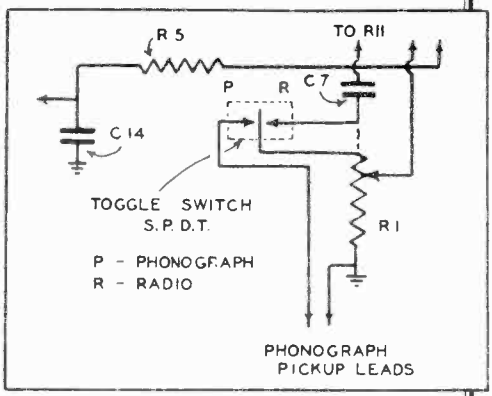
Line Voltage — 119
Position of Tone Control — Full
Position of Volume Control — Full with Antenna Disconnected
Position of Band Selector Switch — Short-Wave

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	6.1	275	135	6.3	6.3	0	—	**
		Ohms	0	29,000	20,000	650	650	0	—	1,000,000
6A7	1st Detector-Oscillator	Volts	6.1	275	135	135	**	6.4	0	**
		Ohms	0	28,000	20,000	60,000	55,000	650	0	1,000,000
78	I-F Amplifier	Volts	6.1	275	135	6.3	6.3	0	—	**
		Ohms	0	29,000	20,000	650	650	0	—	1,000,000
75	2d Detector-A.V.C.	Volts	6.1	120	0	0	1.6	0	—	**
		Ohms	0	500 000	600,000	600,000	270	0	—	250,000
42	Power Amplifier	Volts	6.1	260	280	0	19.5	0	—	—
		Ohms	0	27,000	27,000	250,000	500	0	—	—
80	Rectifier	Volts	440	405	410	440	—	—	—	—
		Ohms	28,000	1,250	1,350	28,000	—	—	—	—

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



MODELS 67, 68, AND 691 CHASSIS



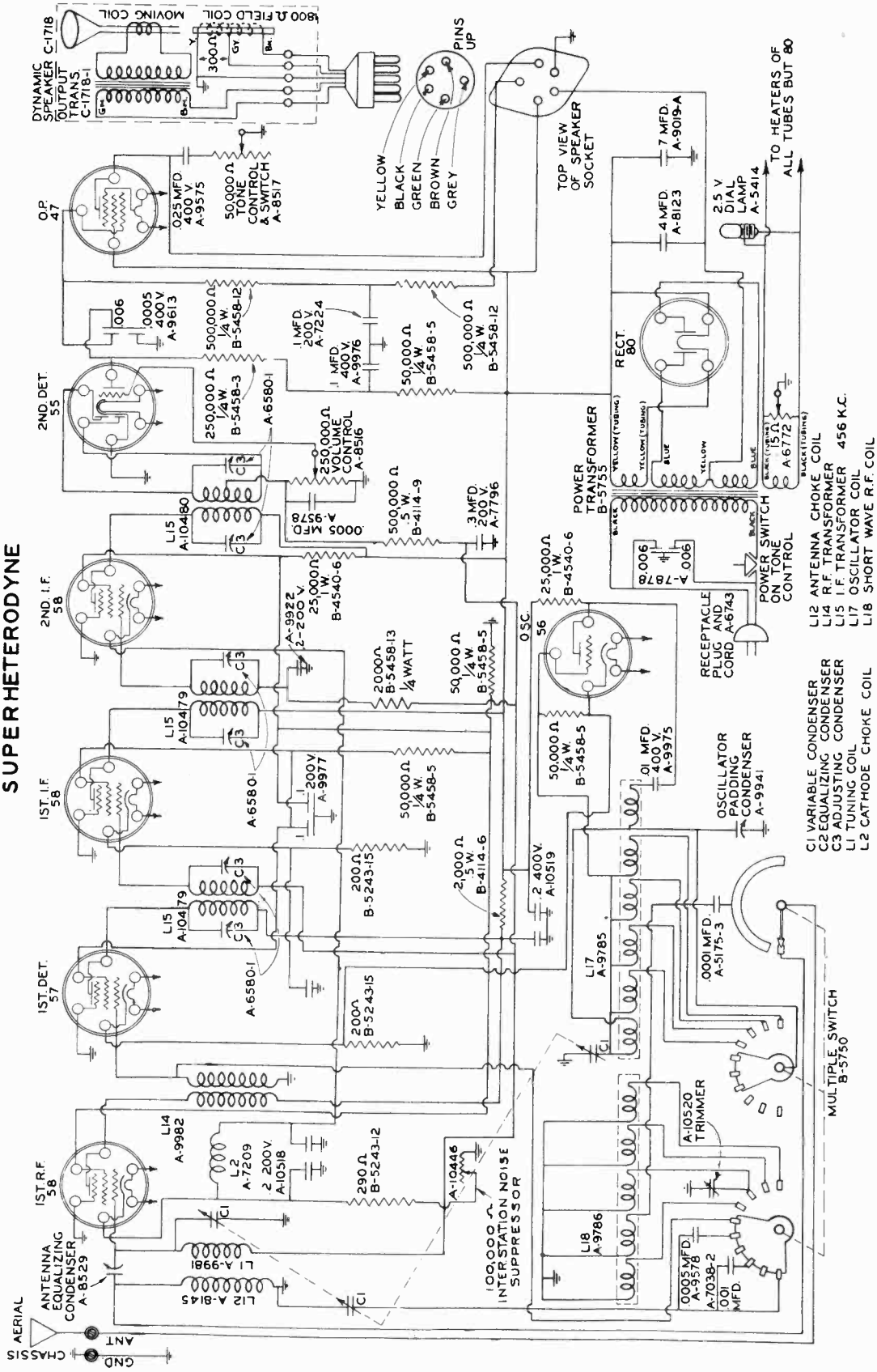
CIRCUIT FOR PHONOGRAPH PICK-UP

Break connection between Condenser C7 and Volume Control R1 (see Schematic Diagram) and install toggle switch (SPARTON Part A-11561 may be used). Toggle switch may be mounted by drilling a ½" hole in the back of the chassis, 4 inches from the right hand side and 1 inch up from the bottom.

SPARKS-WITHINGTON CO.

MODEL 75A, 475A, 478A
Schematic

SCHEMATIC DIAGRAM
SPARTON MODELS 75A - 475A - 478A
SUPERHETERODYNE



L12 ANTENNA CHOKE COIL
L14 R.F. TRANSFORMER
L15 I.F. TRANSFORMER 456 K.C.
L17 OSCILLATOR COIL
L18 SHORT WAVE R.F. COIL

C1 VARIABLE CONDENSER
C2 EQUALIZING CONDENSER
C3 ADJUSTING CONDENSER
L1 TUNING COIL
L2 CATHODE CHOKE COIL

IF PEAK 456 KC.

CHANGES IN MODELS 75-A, 475-A and 478-A SCHEMATIC DIAGRAM

Effective March 27, 1934

Resistor 8,000 ohms, B-5458-23 and condenser .006 mfd., A-9916, added to cathode circuit of Type 57 1st Detector tube. See diagram under Voltage Analysis and Continuity Chart.

MODEL 75A,475A,478A
Voltage
Notes

SPARKS-WITHINGTON CO.

(ORIGINAL) EFFECTIVE FEBRUARY 15, 1934

Sparton Models 75-A, 475-A and 478-A Superheterodyne Schematic Diagram, Voltage Analysis and Continuity Chart

VOLTAGE ANALYSIS AND CONTINUITY CHART

Line Voltage 120

Position of Volume Control—Full with Antenna Disconnected

Position of Inter-Station Noise Suppressor—Full

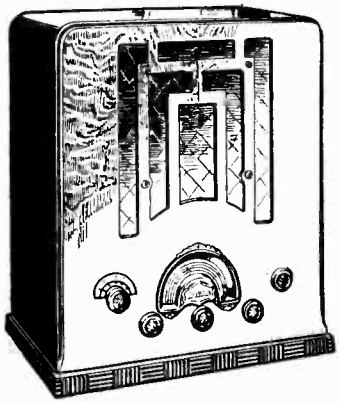
Position of Band Selector Switch—Broadcast

Position of Tone Control—Full

Tube	Location	PLATE		Screen Grid Volts	Control Grid Volts	RESISTANCE TO GROUND (OHMS)			
		Volts	Ma.			Plate	Screen	C. Grid	Cathode
58	R-F Stage	245.	6.5	120.	—4.9	77,000	50,000	750,000	290
57	1st Detector	245.	—	52.	—1.9	77,000	100,000	12	200
56	Oscillator	105.	—	--	—1.9	100,000	—	50,000	200
58	1st I-F Stage	255.	5.0	52.	—1.0	75,000	100,000	750,000	200
58	2nd I-F Stage	255.	6.0	120.	—4.5	75,000	50,000	750,000	290
55	Diode Det.-A.V. C.	—	—	—	—	250,000	—	—	0
	Triode Audio	15.	0.75	—	—	375,000	—	250,000	
47	Power Stage	245.	21.0	255.	—20.0	75,000	75,000	1,000,000	7.5
80	Rectifier	355†	—	—	—	—	—	—	—

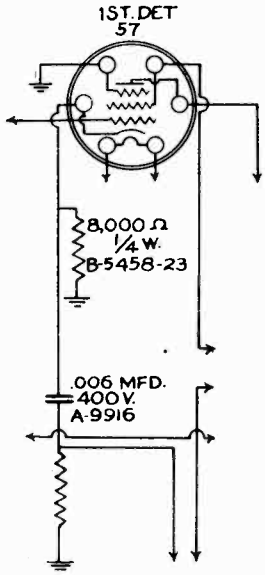
NOTES: Allow 15% + or — on all measurements.
All heater voltages: 2.5, except 80 Rectifier filament: 5.0 volts.

†As read on 800 volt scale of A-C meter in Jewell 444 Set Analyzer.



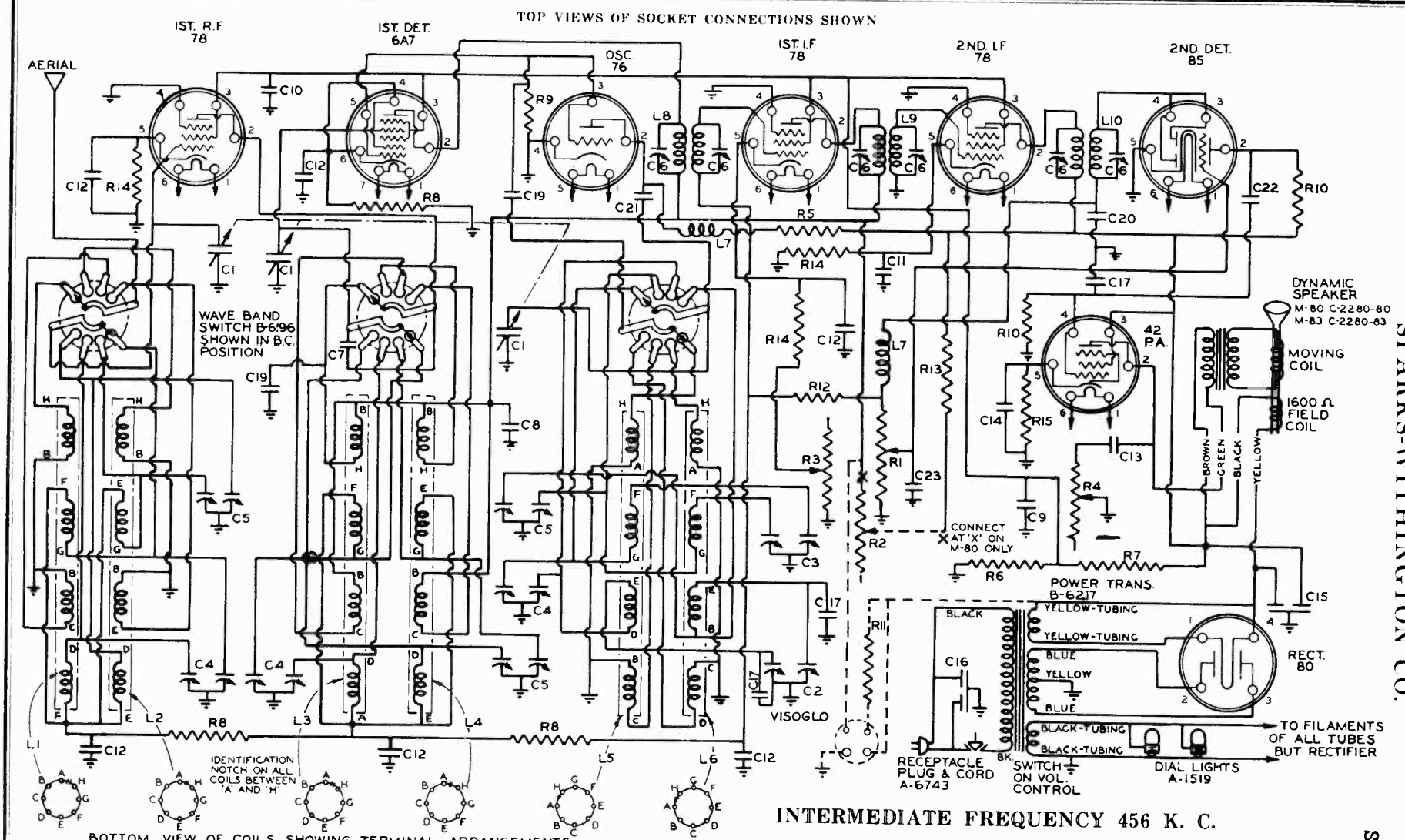
SPARTON MODEL 75-A

NOTE: SPARTON MODEL 475-A has Model 75-A chassis and Model 74 cabinet.
SPARTON MODEL 478-A has Model 75-A chassis and Model 478 cabinet.



NOTE: The 8,000 ohm Resistor (B-5458-23) and .006 mfd. condenser (A-9916) are included in the Type 57 1st Detector circuit as above in all chassis having light brown color tuning scales.
These receivers will have —3.0 volts on Type 57 Control Grid instead of —1.9 and 8,000 ohms cathode resistance to ground instead of 200 ohms as shown in the above table.

MODEL 80, 83, 84, 85X, 86X
Schematic



INTERMEDIATE FREQUENCY 456 K. C.

BOTTOM VIEW OF COILS SHOWING TERMINAL ARRANGEMENTS

C1	VARIABLE CONDENSER	B-6218	C11	.1 MFD. 100 V.	A-11089-1	C21	.00005 MFD. MOLDED	A-11095-2	R1	250,000 Ω VOL. CONTROL	A-11297
C2	OSC. PADDER 10 PLATE	A-10846-1	C12	.1 MFD. 100 V.	A-11130-1	C22	.01 MFD. 400 V.	A-11130-5	R2	5,000 Ω VOLT. REGULA.	A-11381
C3	OSC. PADDER 7 PLATE	A-10846-2	C13	.025 MFD. 600 V	A-11130-8	C23	.00025 MFD. MOLDED	A-11095-4	R3	100,000 Ω I.N. SUPPRESS	A-10446
C4	R.H. TRIMMER	A-11454	C14	.10 MFD. 25 V.	A-10377				R4	100,000 Ω TONE CONTROL	A-11334
C5	L.H. TRIMMER	A-11455	C15	.8 - 8 MFD.	A-11223-1				R5	20,000 Ω 1 W	B-4540-14
C6	I.F. TRIMMER IN COILS		C16	.006-.006 MFD.	A-7878				R6	25,000 Ω 10 W.	B-5029-1
C7	.8 TO 9 MFD.	A-11261	C17	.001 MFD MOLDED	A-9578-10				R7	15,000 Ω 10 W.	B-5029-2
C8	.2 MFD. 400 V.	A-11473-3							R8	1,000 Ω .25 W.	B-5458-11
C9	.2 MFD. 200 V.	A-11130-6	C19	.0001 MFD MOLDED	A-11095-3				R9	50,000 Ω .25 W.	B-6458-5
C10	.1 MFD. 200 V.	A-11089-2	C20	.0005 MFD MOLDED	A-9578				R10	500 000 Ω .25 W	B-5737-5

R11	1,000,000 Ω .25 W.	B-5737-6	L1	NO. 1 ANTENNA COIL	A-11211						
R12	250,000 Ω .25 W.	B-5737-1	L2	NO. 2 ANTENNA COIL	A-11212						
R13	5,000 Ω WIREWOUND	B-6061-5	L3	NO. 1 R.F. COIL	A-11213						
R14	400 Ω WIREWOUND	B-5243-41	L4	NO. 2 R.F. COIL	A-11214						
R15	500 Ω WIREWOUND	B-5243-42	L5	NO. 1 OSCILLATOR COIL	A-11215						
			L6	NO. 2 OSCILLATOR COIL	A-11216						
			L7	16 M.H. CHOKE	A-3506						
			L8	NO. 1 I.F. TRANSFORMER	A-6313-3						
			L9	NO. 2 I.F. TRANSFORMER	A-6313-4						
			L10	NO. 3 I.F. TRANSFORMER	A-6313-5						

NOTE: Export Model 86-X has Power Transformer (Part B-6271), equipped with primary voltage taps for operation at 125, 150 and 250 volts A. C. line. See schematic diagram and notes (Fig. 1) for Model 85-X.

SPARKS-WITHINGTON CO.

SPARKS-WITHINGTON CO.

(ORIGINAL) EFFECTIVE AUGUST 10, 1934

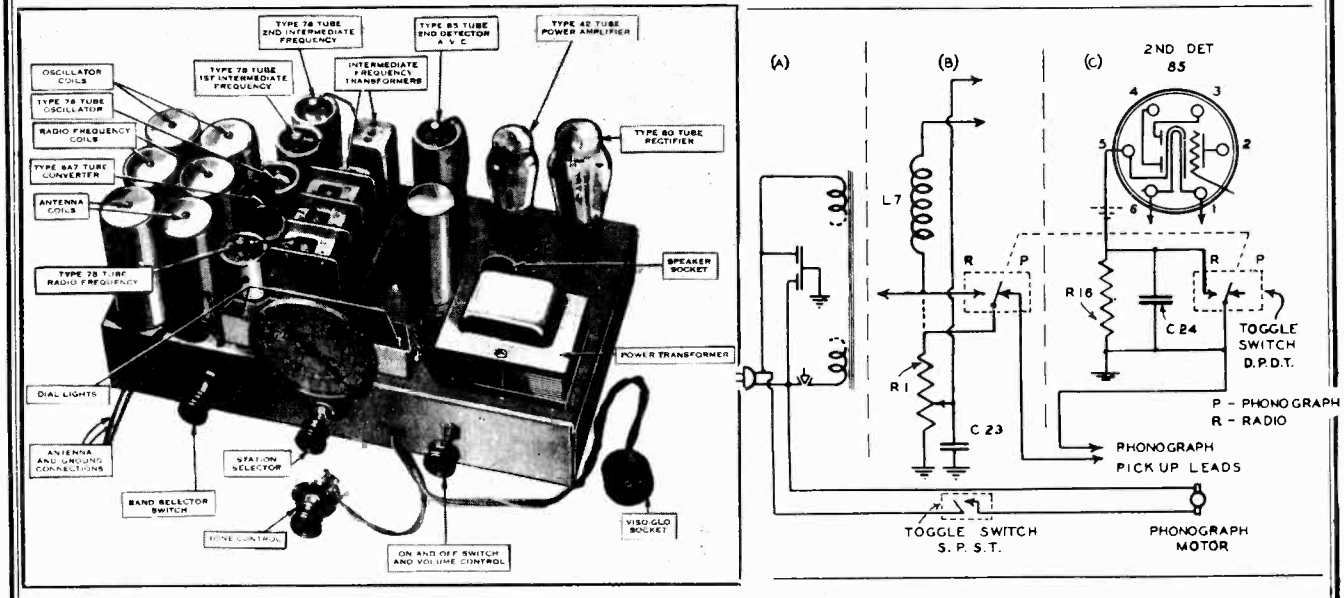
Sparton Models 80, 83, 84, 85-X and 86-X Superheterodyne Schematic Diagram and Voltage-Resistance Chart

VOLTAGE-RESISTANCE CHART

Line Voltage — 120
Position of Tone Control — Full
Position of Viso-Glo Regulator — 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
78	R-F Amplifier	Volts	*	220	110	0	2.5	*	—	0
		Ohms	0	40,000	25,000	0	400	0	—	500,000
6A7	Converter	Volts	*	220	110	3.8	**	3.8	*	0
		Ohms	0	40,000	25,000	45,000	45,000	900	0	500,000
76	Oscillator	Volts	*	175	**	0	6	*	—	—
		Ohms	0	55,000	45,000	0	0	0	—	—
78	1st I-F Amplifier	Volts	*	220	110	0	3.8	*	—	0
		Ohms	0	40,000	25,000	0	400	0	—	500,000
78	2d I-F Amplifier	Volts	*	280	110	0	3.3	*	—	0
		Ohms	0	40,000	25,000	0	400	0	—	0
85	2d Detector-A.V.C.	Volts	*	**	**	**	0	*	—	0
		Ohms	0	500,000	250,000	250,000	0	0	—	0
42	Power Amplifier	Volts	*	270	285	0	20	*	—	—
		Ohms	0	40,000	40,000	500,000	450	0	—	—
80	Rectifier	Volts	450	400	400	450	—	—	—	—
		Ohms	40,000	100	100	40,000	—	—	—	—

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.
*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.



MODELS 80, 83, 84, 85-X, AND 86-X CHASSIS — FIG. 1

THE MODEL 85-X PHONOGRAPH COMBINATION has the circuit changes shown in Fig. 1 in addition to the regular schematic diagram. The dotted lines in Sections (B) and (C) are shown solid in the regular schematic diagram and toggle switch (D. P. D. T.), condenser C24 and resistor R16 are added. Section (A) shows connections of toggle switch, Part A-5905, and phonograph motor on Model 85-X.

A PHONOGRAPH PICK-UP may be used with the Models 80, 83, 84 and 85-X by incorporating the toggle switch (D.P.D.T.), Part A-11561, condenser C24 (10 MFD., Part A-10377), resistor R-16 (5,000 ohms, ¼ watt, Part B-5458-16), and the circuit changes shown in Fig. 1, Sections (B) and (C) only. The toggle switch may be mounted by drilling a ½-inch hole in the back of the chassis, 4 inches from the left hand side and 1 inch up from the bottom.

(Original) Effective September 28, 1931

Detailed Alignment Instructions for SPARTON All-Wave Models 80, 83, 84, 85-X, 86-X, and 104

Note: The Models 80, 83, 84, 85-X and 86-X employ an eight-tube chassis. The Model 104 employs a ten-tube chassis.

The Model 85-X is a radio-phonograph combination and the Model 86-X is an export receiver equipped with a special power transformer permitting operation on line voltages of 125, 150, and 250 volts A. C.

The alignment procedure is the same for all of the above models.

Foreword: Before attempting to realign the circuits of the above SPARTON models, the service man should read carefully the information contained in the preceding pages of Bulletin No. 3-E, especially the paragraphs pertaining to the use of a test oscillator, output meter, method of adjusting the various trimming and padding condensers, and the bending of split condenser plate sections.

The use of quality test equipment is highly recommended and a good test oscillator becomes a virtual necessity when aligning the all-wave type of receiver. Due to the fact that the ear cannot distinguish small changes in sound intensity, an output meter is essential to the proper adjustment of the various condensers.

Unless otherwise specified, the adjusting of any condenser consists of turning the adjusting screw or nut to the right or left until the output meter registers the greatest deflection.

1. EQUIPMENT REQUIRED

A. Modulated test oscillator (crystal controlled or accurately calibrated) capable of generating frequencies from 172.5 to 20,000 kilocycles.

B. Output meter.

C. Part A-7613 adjusting wrench.

2. STEP BY STEP PROCEDURE FOR COMPLETE ALIGNMENT OF MODELS

Note: For proper alignment of these chassis, the procedure should be followed in the same order as given.

In the following procedure, the broadcast band will be termed Band No. 1; the first short-wave band (green section of the dial), Band No. 2; the second short-wave band (red section of the dial), Band No. 3; the third short-wave band (blue section of the dial), Band No. 4. The dial pointer should be exactly parallel with the horizontal lines of the kilocycle scale when the condenser plates are fully meshed. If the pointer does not read correctly, loosen the two set screws which hold the dial drum to the condenser shaft, hold the rotor plates fully meshed with the stator plates and set the pointer so that it is parallel with the horizontal lines on the kilocycle scale. Then tighten set screws.

A. Alignment of Intermediate-Frequency Stages.

(1) Turn on receiver and test oscillator and allow both to operate several minutes before attempting to adjust any condensers.

(2) Connect "antenna" of test oscillator to grid cap of Type 6A7 First Detector (Converter) Tube, and "ground" of test oscillator to chassis frame of receiver. Connect output meter "low tap" across voice coil of speaker. (See Fig. 1, Page 1, Bulletin No. 3-E).

Note: It is advisable to read carefully the operating instructions included with the test oscillator.

(3) Tune test oscillator to obtain a signal of 456 kilocycles.

(4) Turn the volume control of receiver on full, retard inter-station noise suppressor so that the receiver will be least sensitive, and place band selector switch in broadcast position (Band No. 1).

(5) Adjust I. F. Condensers C_3, C_2, and C_1, in the order given (see Fig. 8).

B. Alignment of Broadcast Band.

(1) Disconnect "antenna" leads of test oscillator from grid cap of first detector (converter) tube and connect to the antenna terminal of the chassis.

(2) Tune test oscillator to obtain a signal of 1350 kilocycles.

(3) Tune the station selector of the receiver to 1350 kilocycles, and without disturbing the setting of the test oscillator or the station selector, adjust condensers C_{12}, C_8, and C_4, in the order given.

(4) Tune test oscillator and receiver to 600 kilocycles and adjust condenser C_{16}.

(5) Retune test oscillator and receiver to 1350 kilocycles and check the adjustments of condensers C_{12}, C_8, and C_4.

(6) Calibration of the broadcast band should also be checked at 900 kilocycles and 600 kilocycles.

C. Alignment of Band No. 2 (1.2 to 3.6 Megacycles).

(1) Turn the band selector switch to the first short-wave band (green section of the dial).

(2) Tune test oscillator and receiver to 3,000 kilocycles and adjust Condensers C_{13}, C_9, and C_5, in the order give.

(3) Tune test oscillator and receiver to 1650 kilocycles and adjust condenser C_{17}.

(4) Retune the test oscillator and receiver to 3,000 kilocycles and check the adjustments of Condensers C_{13}, C_9, and C_5.

D. Alignment of Band No. 3 (3.1 to 8.0 Megacycles).

Caution: On the third and fourth bands (second and third short-wave bands) care must be taken to adjust the various condensers to the **fundamental** of the signal and not to the **image**. The image frequency is equal to the fundamental minus twice the intermediate frequency of the receiver. A set that is adjusted to the image frequency instead of to the fundamental may be detected by tuning over the band with the Inter-station Noise Suppressor turned full on, allowing maximum sensitivity of the receiver. If a "dead spot" appears near the center of the band, the adjustable condensers for that band have probably been adjusted to the image instead of the fundamental.

On Band No. 4 this type of misalignment may be more easily detect by turning the set to full sensitivity and with the test oscillator generating a frequency of 15,000 kilocycles, tune the dial to approximately 15,900 kilocycles. If a strong signal is found at approximately this frequency, it indicates that the band has been adjusted to the image frequency. The normal image frequency for 1500 kilocycles would be 1500 kilocycles minus twice 456 kilocycles or approximately 14,100 kilocycles. Therefore a signal on this frequency may be found with the test oscillator generating a 15,000 kilocycle signal.

(1) Turn band selector switch to the second short-wave position (red section of the dial).

(2) Tune test oscillator and receiver to 7,200 kilocycles and adjust condensers C_{14}, C_{10}, and C_6, in the order given.

(3) Tune test oscillator and receiver to 3,600 kilocycles and adjust condenser C_{18}.

(4) Retune test oscillator and receiver to 7,200 kilocycles and check the adjustments of condensers C_{14}, C_{10}, and C_6.

D. Alignment of Band No. 4 (7.5 to 20 Megacycles).

(1) Turn the band selector switch to the third short-wave position (blue section of the dial).

(2) Tune the test oscillator and receiver to 15,000 kilocycles and adjust condensers C_{15}, C_{11}, and C_7 in the order given.

(3) Tune test oscillator and receiver to 9,000 kilocycles and adjust condenser C_{19}.

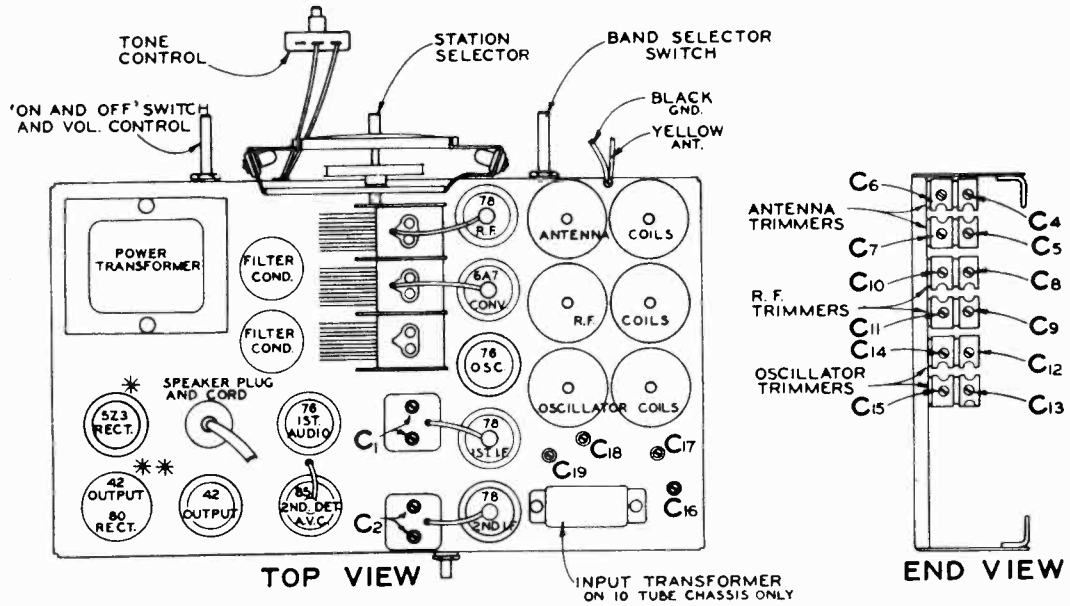
(4) Retune test oscillator and receiver to 15,000 kilocycles and check the adjustments of condensers C_{15}, C_{11}, and C_7.

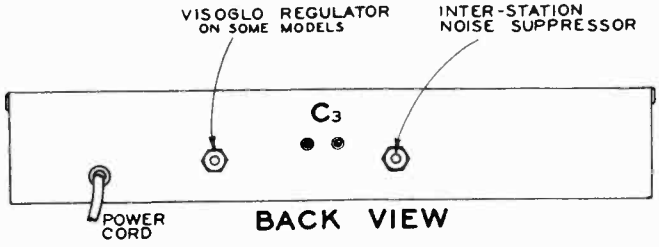
(5) The calibration of the receiver should also be checked at a frequency of 12,000 kilocycles.

Note: All adjustments should be rechecked to assure accuracy and stability of adjustment and calibration.

MODELS 80,83,84,85X, 86X,104
Trimmer Locations
Frequency Tables

SPARKS-WITHINGTON CO.





*Type 76 First Audio and Type 523 Rectifier are used on the ten-tube chassis (Model 104) only.

**Type 42 output tube is used in this position on the Model 104 only, and the type 80 rectifier is used on the eight-tube chassis Models 80, 83, 84, 85-X and 86-X only.

INTERMEDIATE-FREQUENCY ADJUSTABLE CONDENSERS

C1 — FIRST I. F. (ADJUST AT 456 K. C.)
C2 — SECOND I. F. (ADJUST AT 456 K. C.)
C3 — THIRD I. F. (ADJUST AT 456 K. C.)

RADIO FREQUENCY INPUT TRIMMERS (ANTENNA TRIMMERS)

C4 — BAND NO. 1. (ADJUST AT 1350 K. C.)
C5 — BAND NO. 2. (ADJUST AT 3000 K. C.)
C6 — BAND NO. 3. (ADJUST AT 7200 K. C.)
C7 — BAND NO. 4. (ADJUST AT 15000 K. C.)

RADIO-FREQUENCY OUTPUT TRIMMERS (R. F. TRIMMERS)

C8 — BAND NO. 1. (ADJUST AT 1350 K. C.)
C9 — BAND NO. 2. (ADJUST AT 3000 K. C.)
C10 — BAND NO. 3. (ADJUST AT 7200 K. C.)
C11 — BAND NO. 4. (ADJUST AT 15000 K. C.)

OSCILLATOR TRIMMING CONDENSERS

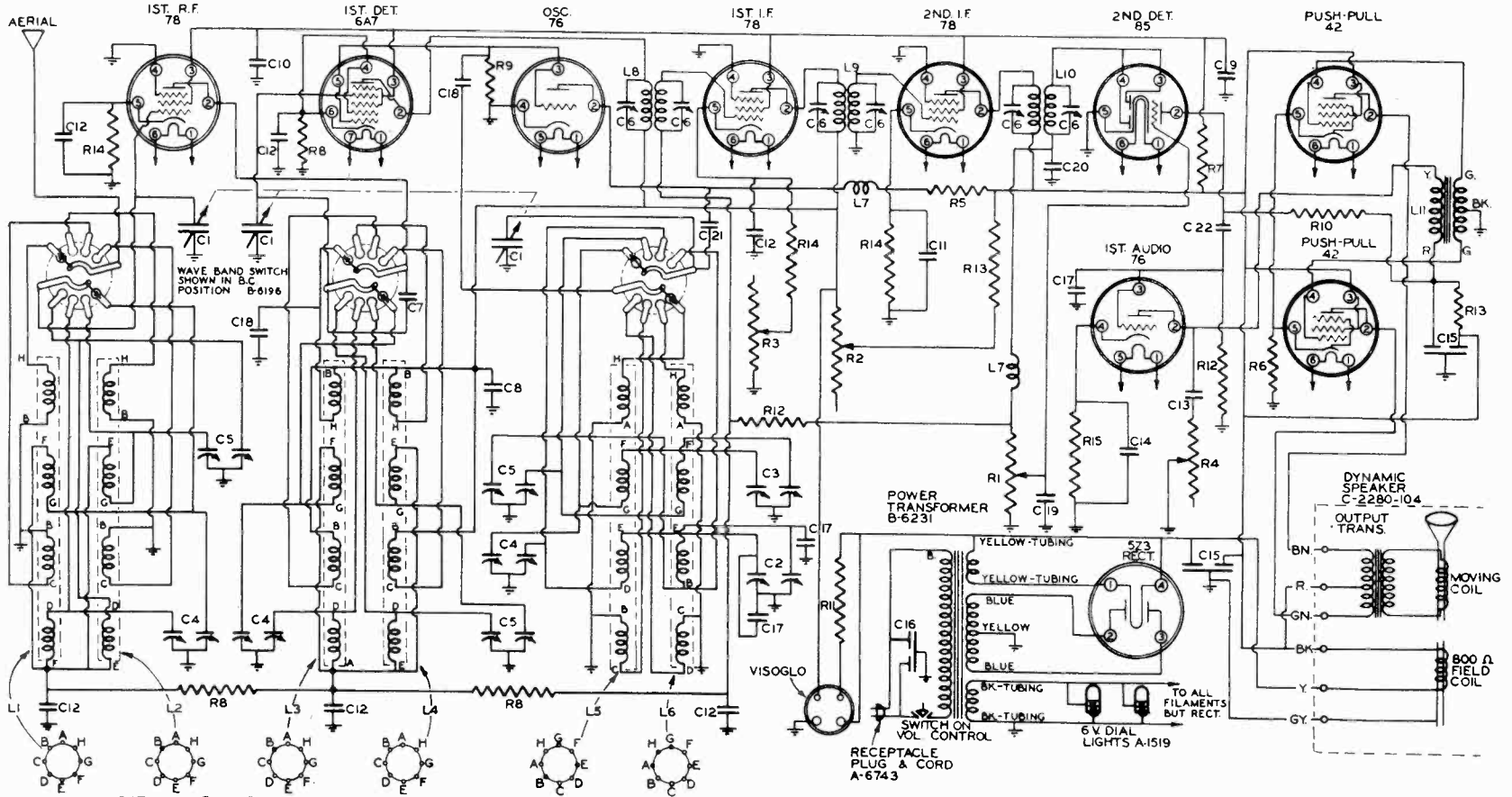
C12 — BAND NO. 1. (ADJUST AT 1350 K. C.)
C13 — BAND NO. 2. (ADJUST AT 3000 K. C.)
C14 — BAND NO. 3. (ADJUST AT 7200 K. C.)
C15 — BAND NO. 4. (ADJUST AT 15000 K. C.)

OSCILLATOR PADDING CONDENSERS

C16 — BAND NO. 1. (ADJUST AT 600 K. C.)
C17 — BAND NO. 2. (ADJUST AT 1650 K. C.)
C18 — BAND NO. 3. (ADJUST AT 3600 K. C.)
C19 — BAND NO. 4. (ADJUST AT 9000 K. C.)

FIG. 8 CHASSIS DIAGRAM FOR SPARTON MODELS 80, 83, 84, 85-X, 86-X AND 104

SPARTON MODEL 104 SUPERHETERODYNE
SCHEMATIC DIAGRAM
INTERMEDIATE FREQUENCY 456 KILOCYCLES
(TOP VIEWS OF SOCKET CONNECTIONS SHOWN)



BOTTOM VIEW OF COILS SHOWING TERMINAL ARRANGEMENT

C1 VARIABLE CONDENSER	B-6218	C11 .1 MFD. 100 V.	A-11089-1	C21 .00005 MFD. MOLDED	A-11095-2	R1 250,000 Ω VOL. CONTROL	A-11297
C2 OSC. PADDER 10 PLATE	A-10846-1	C12 .1 MFD. 100 V.	A-11130-1	C22 .01 MFD. 400 V.	A-11130-5	R2 5,000 Ω VOLT. REGULA.	A-11381
C3 OSC. PADDER 7 PLATE	A-10846-2	C13 .025 MFD. 600 V.	A-11130-8			R3 100,000 Ω NOISE SUPP.	A-10446
C4 R.H. TRIMMER	A-11454	C14 .10 MFD. 25 V.	A-10377			R4 100,000 Ω TONE CONT.	A-11334
C5 L.H. TRIMMER	A-11455	C15 .8-8 MFD.	A-11223-1			R5 10,000 Ω 1 W.	B-4540-9
C6 I.F. TRIMMER IN COILS		C16 .006-.006 MFD.	A-7878			R6 250 Ω WIREWOUND	B-6061-4
C7 8 TO 9 MFD.	A-11261	C17 .001 MFD. MOLDED	A-9576-10			R7 15,000 Ω 10 W.	B-5029-2
C8 .2 MFD. 400 V.	A-11473-3	C18 .0001 MFD. MOLDED	A-11095-3			R8 1,000 Ω .25 W.	B-5458-11
C9 .2 MFD. 200 V.	A-11130-6	C19 .00025 MFD. MOLDED	A-11095-4			R9 50,000 Ω .25 W.	B-5458-5
C10 .1 MFD. 200 V.	A-11089-2	C20 .0005 MFD. MOLDED	A-9578			R10 500,000 Ω .25 W.	B-5737-5

R11 1,000,000 Ω .25 W.	B-5737-6	L1 NO. 1 ANTENNA COIL	A-11211		
R12 250,000 Ω .25 W.	B-5737-1	L2 NO. 2 ANTENNA COIL	A-11212		
R13 3,000 Ω WIREWOUND	B-6061-3	L3 NO. 1 R.F. COIL	A-11213		
R14 400 Ω WIREWOUND	B-5243-41	L4 NO. 2 R.F. COIL	A-11214		
R15 2,000 Ω .25 W.	B-5458-32	L5 NO. 1 OSC. COIL	A-11215		
		L6 NO. 2 OSC. COIL	A-11216		
		L7 16 M.H. CHOKE	A-3506		
		L8 NO. 1 I.F. TRANSFORMER	A-6313-3		
		L9 NO. 2 I.F. TRANSFORMER	A-6313-4		
		L10 NO. 3 I.F. TRANSFORMER	A-6313-5		
		L11 AUDIO TRANSFORMER	A-11434-1		

MODEL 104
Voltage
Chassis View, Notes

SPARKS-WITHINGTON CO.

(ORIGINAL) EFFECTIVE SEPTEMBER 11, 1934

Sparton Model 104 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

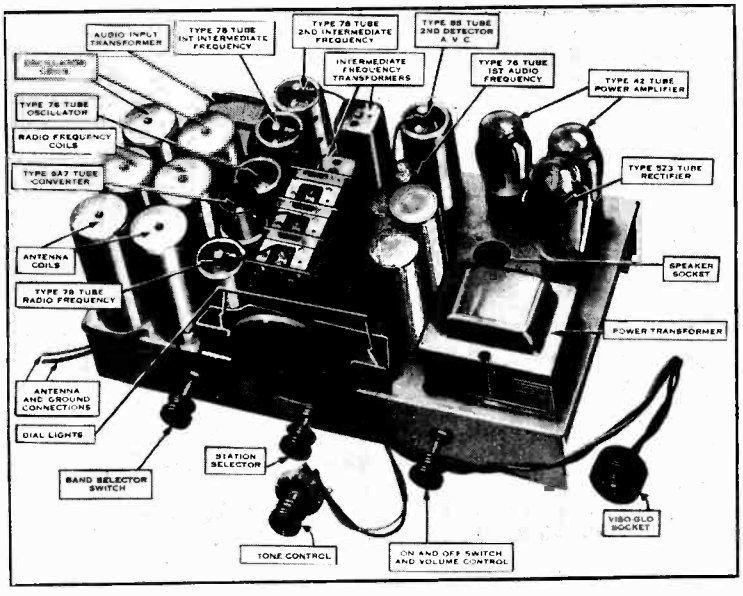
Position of Volume Control — Full with Antenna Disconnected
Position of Band Selector Switch — Broadcast
Position of Inter-Station Noise Suppressor — Full

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
78	R. F. Amplifier	Volts	*	195	95	0	3.2	*	—	0
		Ohms	0	45,000	25,000	0	400	0	—	500,000
6A7	Converter	Volts	*	195	95	3.8	**	3.8	*	0
		Ohms	0	45,000	25,000	900	45,000	900	0	500,000
76	Oscillator	Volts	*	150	**	0	*	—	—	—
		Ohms	0	50,000	45,000	0	0	—	—	—
78	1st I. F. Amplifier	Volts	*	195	95	0	3.2	*	—	0
		Ohms	0	45,000	25,000	0	400	0	—	500,000
78	2nd I. F. Amplifier	Volts	*	250	95	0	3.2	*	—	0
		Ohms	0	35,000	25,000	0	0	0	—	0
85	2nd Detector-A. V. C.	Volts	*	**	**	**	0	*	—	0
		Ohms	0	500,000	250,000	250,000	0	0	—	250,000
76	1st A. F. Amplifier	Volts	*	**	8.8	0	*	—	—	—
		Ohms	0	40,000	250,000	1,750	0	—	—	—
42	Power Amplifier	Volts	*	245	250	0	18	*	—	—
		Ohms	0	35,000	38,000	1200	250	0	—	—
42	Power Amplifier	Volts	*	245	250	0	18	*	—	—
		Ohms	0	35,000	38,000	1200	250	0	—	—
5Z3	Rectifier	Volts	365	330	330	365	—	—	—	—
		Ohms	3800	50	50	3800	—	—	—	—

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.

*Zero or 5.8 volts, depending on twist of filament hook-up wire. If Prong No. 1 reads zero, Prong No. 6 (Prong No. 7 of Type 6A7 or Prong No. 5 of Type 76) should read 5.8 volts, and vice versa.

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



MODEL 104 CHASSIS

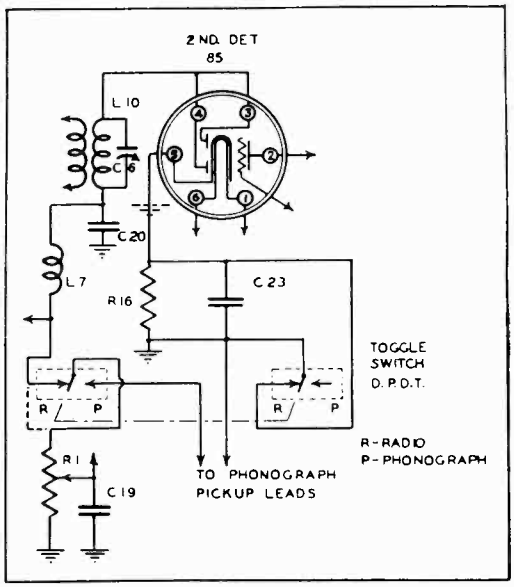


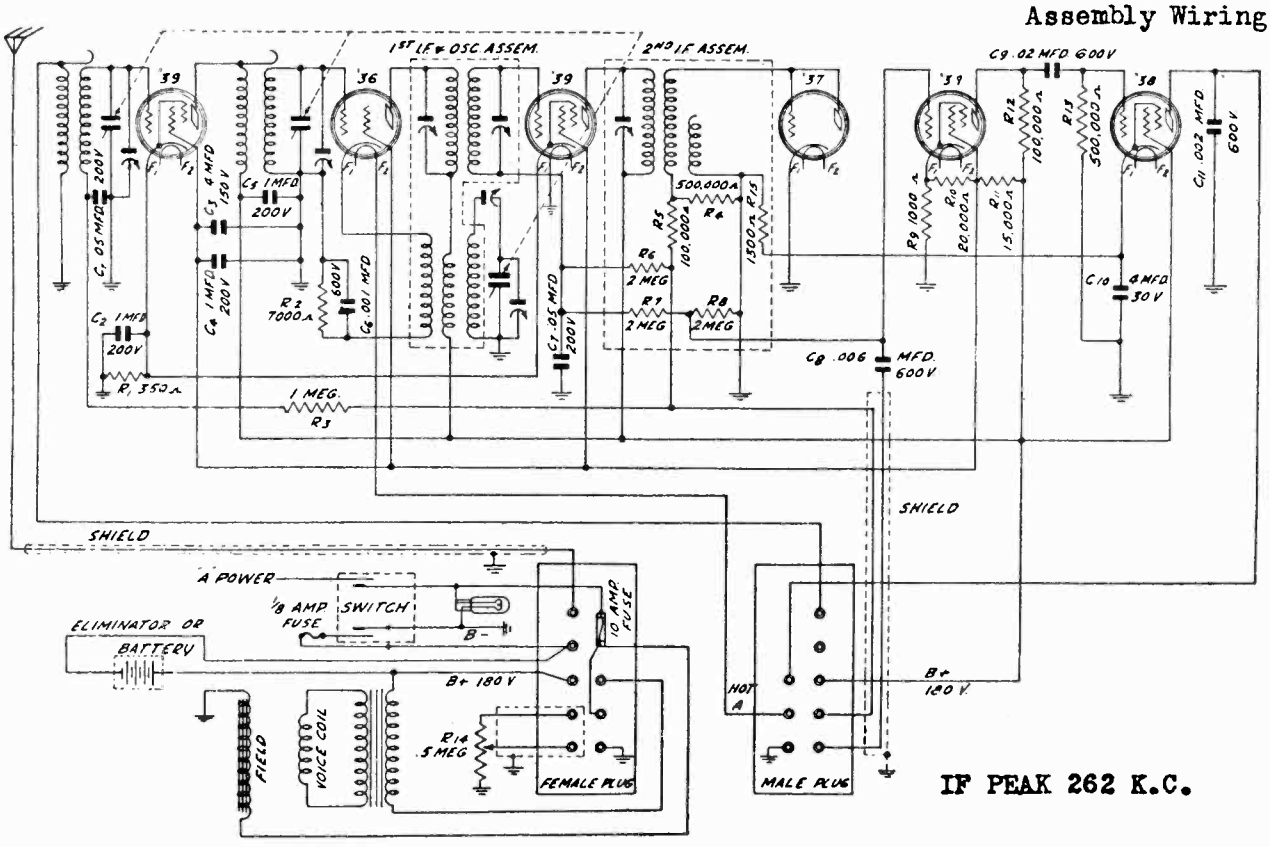
DIAGRAM OF CONNECTIONS FOR PHONOGRAPH PICKUP

Parts required: 1 Toggle Switch (D. P. D. T.), Part A-11561; 1 Condenser (C23), Part A-10377, 10 MFD., 25 V.; 1 Resistor (R-16), Part B-5458-16, 5000 ohms, ¼ watt.

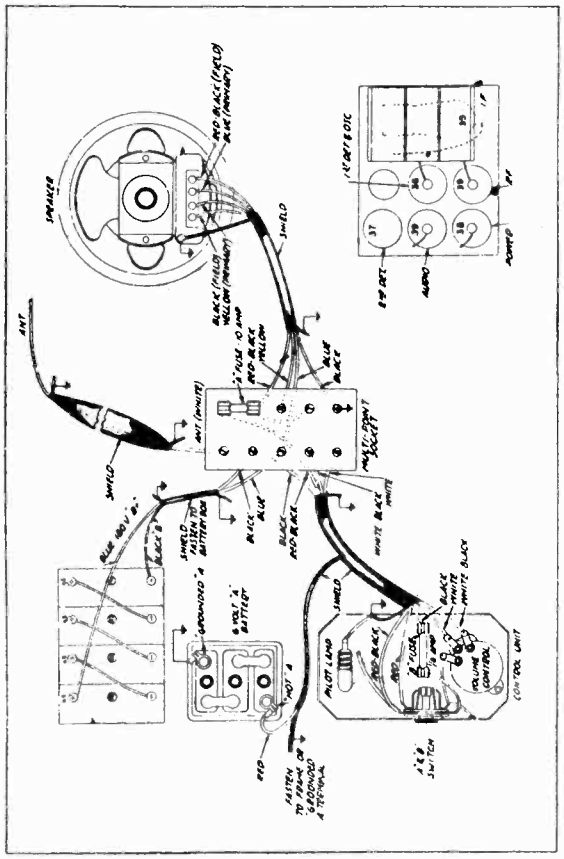
Dotted line between R1 and L7 and dotted ground at Prong No. 5 of Type 85 tube indicate original connections. See schematic diagram on back of sheet. Toggle switch may be mounted by drilling ½" hole in back of chassis 4 inches from left hand side and 1 inch up from bottom.

STAR

MODEL 062
Schematic
Voltage
Assembly Wiring



IF PEAK 262 K.C.



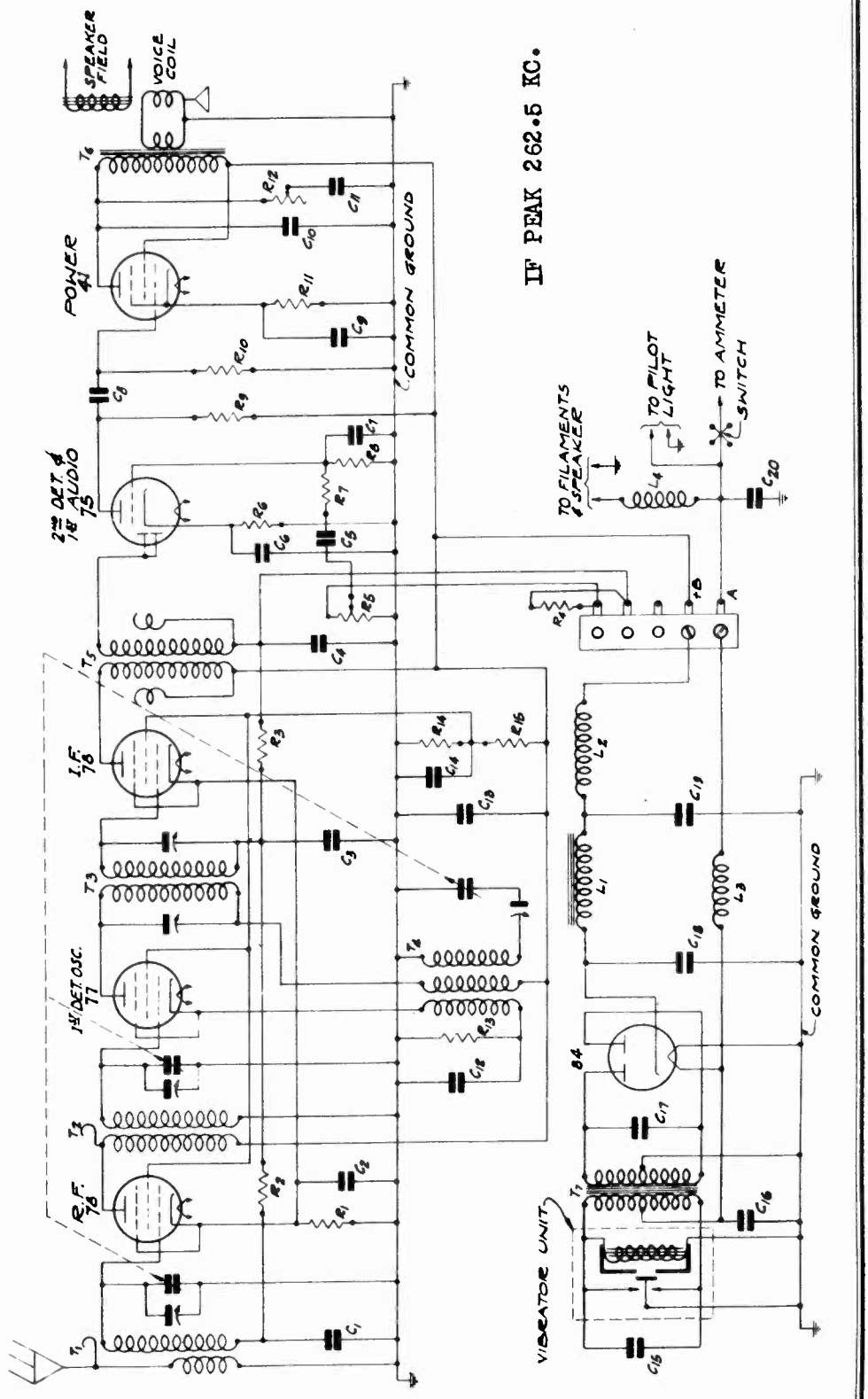
VOLTAGE DATA

Tube	*Plate*	*Screen*	*Grid*	*Plate MA.*
R.F.	177	80	3	3.6
1st Det.	173	76	7*	.9*
I-F.	177	80	3	3.6
2nd Det.	0	0	0	0
1st A.F.	54	77	6	1.2
Output	159	165	15.5	10.0

* Will vary with dial setting.

MODEL 6-U
Schematic

STAR



T1 ANTENNA COIL (P-5039)
T2 R.F. INTERSTAGE COIL (P-5040)
T3 1ST R.F. & OSCILLATOR
T4 } COIL (P-5063)
T5 2ND I.F. COIL (P-5032)
T6 OUTPUT TRANS. (P-50632)
T7 POWER TRANS. (P-50633)

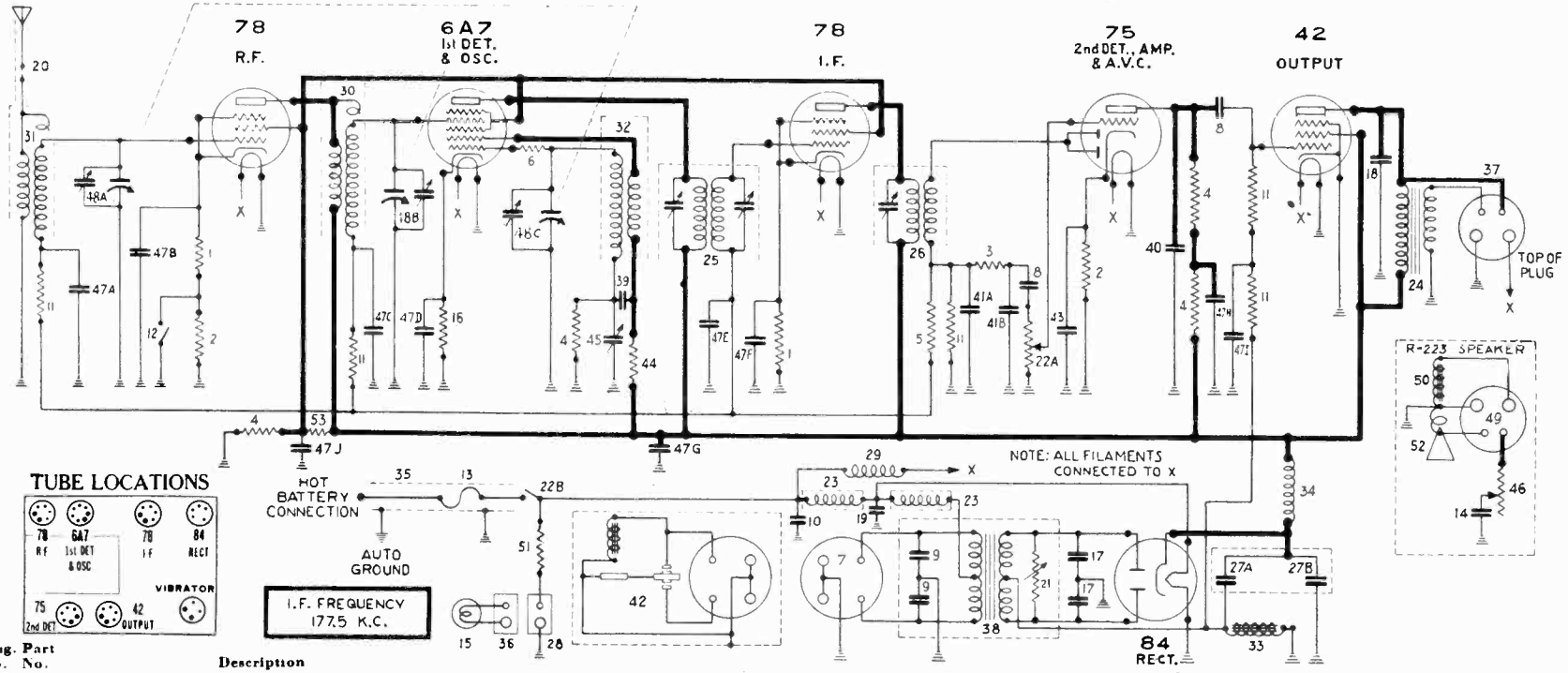
L1 FILTER CHOKE (P-50637)
L2 R.F. "B" CHOKE (P-5174)
L3 ELIMINATOR "B" CHOKE (P-5175)
L4 R.F. "B" CHOKE (P-5161)

R1 260 OHMS
R2 1.0 MEGOHM
R3 2.0 "
R4 200,000 OHM
R5 250,000 OHM VOL. CONTROL
R6 6,000 OHM
R7 100,000 OHM
R8 1.0 MEG OHM
R9 250,000 OHM
R10 250000 OHM
R11 800 OHM
R12 150,000 OHM TONE CONTROL
R13 4,000 OHM
R14 20,000 OHM
R15 15,000 OHM

C1 0.050 MF 1200V. TUBULAR
C2 0.500 MF (BLOCK RED-WH)
C3 0.050 MF (BLOCK GR-WH)
C4 0.00025 MF MICA
C5 0.050 MF. 200V. TUBULAR
C6 12,000 MF ELECTROLYTIC IN BLOCK WITH C9
C7 0.00025 MF. MICA
C8 0.050 MF (BLOCK GR)
C9 12,000 MF ELECTROLYTIC IN BLOCK WITH C6
C10 0.003 MF (BLOCK YELLOW)
C11 0.020 MF 600 V. TUBULAR
C12 0.001 MF. MICA
C13 0.300 MF. (BLOCK BLUE)
C14 0.100 MF (BLOCK BROWN)
C15 0.500 MF 180V. TUBULAR
C16 1.000 MF. 120V. TUBULAR
C17 0.010 MF 1500V. TUBULAR
C18 10,000 MF. BLOCK WITH C19
C19 10,000 MF BLOCK WITH C18
C20 0.500 MF 120V. TUBULAR

COLOR CODE DESIGNATES CONDENSERS IN BY PASS BLOCK

STEWART-WARNER 1171 & 1172 AUTO RADIO (R-117 CHASSIS)



TUBE LOCATIONS

Diag. No.	Part No.	Description
1	67257	500 ohm ¼ watt carbon resistor
2	67580	6000 ohm ¼ watt carbon resistor
3	81152	10,000 ohm ¼ watt carbon resistor
4	81645	50,000 ohm ¼ watt carbon resistor
5	81682	1.1 megohm ¼ watt carbon resistor
6	81727	1000 ohm ¼ watt carbon resistor
7	81837	Vibrator socket (Standard 4 prong)
8	83007	.02 Mfd. 600 volt paper condenser
9	83058	.25 Mfd. 100 volt paper condenser
10	83063	.5 Mfd. 100 volt paper condenser
11	83082	260,000 ohm ¼ watt carbon resistor
12	83179	Local-distance switch (SPST)
13	83207	15 ampere fuse
14	83217	.04 Mfd. 600 volt paper condenser
15	83278	6 volt pilot light bulb (1171 only) (See No. 84058 for Model 1172)
16	83293	300 ohm ¼ watt carbon resistor
17	83352	.015 Mfd. 600 volt paper condenser
18	83706	.006 Mfd. 600 volt paper condenser
19	83714	1.5 Mfd. 100 V. shielded paper condenser
20	83723	Antenna lead and plug
21	83725	0-500,000 ohm special Globar resistor
22-A, 22-B	83728	500,000 ohm volume control with On-Off Switch — In one unit.
23	83730	Vibrator R.F. Choke
24	83731	Output Transformer
25	83732	First I.F. Transformer
26	83733	Second I.F. Transformer
27-A, 27-B	83734	Dual 8 Mfd. 350 Volt Dry Electrolytic Condenser
28	83739	2 prong Pilot Light Socket
29	83742	Filament R.F. Choke
30	83746	R.F. (B) Coil and shield
31	83747	Antenna (A) coil and shield
32	83748	Oscillator (O) coil and shield
33	83760	Filter Choke
34	83770	B supply R.F. Choke
35	83777	Battery Lead and Fuse Housing
36	83778	Pilot Light Cable and Plug
37	83779	Speaker Cable and Plug
38	83780	Power Transformer
39	83783	.00011 mfd. Molded Mica Cond...
40	83784	.0011 mfd. Molded Mica Condenser
41A, 41B	83785	Dual .0005 mfd. Molded Mica Condenser
42	83800	Plug-in Vibrator
43	83803	12 mfd. 25 V. Dry Electrolytic Condenser
44	83804	40,000 ohm, ¼ watt Carbon Resistor
45	83805	Oscillator Padding Trimmer
46	83812	35,000 ohm Tone Control Variable Resistor
47A	83831	.05 mfd. 100 volt Paper Condenser (In one terminal grounded to can.)
47B		.05 mfd. 100 volt Paper Condenser
47C		.05 mfd. 100 volt Paper Condenser
47D		.05 mfd. 100 volt Paper Condenser
47E		.05 mfd. 100 volt Paper Condenser
47F		.05 mfd. 100 volt Paper Condenser
47G		.1 mfd. 400 volt Paper Condenser
47H		.1 mfd. 400 volt Paper Condenser
47I		.25 mfd. 100 volt Paper Condenser
47J		.25 mfd. 300 volt Paper Condenser
48A, 48B, 48C	83834	Three gang Variable Condenser with mtg. Plate and Shaft Coupling
49	83845	Male Speaker Plug and Bracket
50	83850	Speaker Field Coil and Housing (5.5 ohms)
51	84175	35 ohm Flexible Resistor. Note: Early Model 1171 sets used 15 ohm Resistor. No Resistor used in Model 1171
52	84021	Diaphragm & Shell Assem. (R-223 Spkr.)
53	84058	6 to 8 volt Dial Light Bulb (1172 only)
	84095	15,000 ohm, 2 watt Carbon Resistor (See other side for other parts)

MISCELLANEOUS PARTS NOT SHOWN ON DIAGRAM

Part No.	Description
83144	Spark Plug Suppressor
83145	Distributor Suppressor
83242	Back Cover and Casing Bracket Screws
83727	Back Cover
83836	Front Cover and Speaker Grill Cloth
83838	Case Assembly, less Covers
83861	Tuning Knob (1171 only)
83862	Volume Control Key (1171 only)
83904	Generator and Ammeter Condenser
84106	Volume Control Knob (1172 only)

STEWART - WARNER CORP.

MODEL 1171, 1172
Chassis R-117
Schematic, Socket
Parts List

S-WARNER PAGE 5-1

MODEL 1171,1172
Voltage Data
Alignment Data

STEWART-WARNER CORP.

The Stewart-Warner 6 Tube Superheterodyne Model No. R-117 Chassis is used in the Model 1171 and 1172 Auto Radio receivers. These two sets are identical with the exception of the remote control head and the flexible shafts.

The Model 1171 remote control uses a key to operate the volume control and a knob for tuning while the 1172 control uses a different type of head with knobs for both the volume control and tuning. Sets with serial numbers below 15000 are Models 1171's, while those above 15000 are 1172's.

The only difference in the chassis used is the omission of the dial light dimming resistor (diagram No. 51) in the 1172 sets.

DIAL CALIBRATION

In the Model 1171, the dial can be calibrated by tuning in a station of known frequency and then setting the pointer to give the correct reading by turning the adjusting screw which is located on the middle of the back of the remote control head. In the Model 1172, the dial is calibrated by turning the tuning knob after the pointer has stopped at the last dial division. Turning the knob in a clockwise direction, after the pointer reaches 15.4, will lower the dial reading, while turning it counter clockwise after the pointer is at 5.3, will increase the dial reading.

CIRCUIT DESCRIPTION

In the R-117 Chassis, the incoming signal is tuned and amplified by the 78 R. F. amplifier tube and then it is further amplified and its frequency is converted to 177.5 K. C. in the 6A7 combination first detector and oscillator tube.

The 177.5 K. C. signal is amplified by the I. F. stage, using a 78 type tube and is then rectified by the diodes of the 75 second detector tube. The rectified current produces a modulated D. C. voltage drop across the diode load resistor No. 11. The audio frequency modulation is impressed across the 500,000 ohm volume control from where is goes to the triode section of the 75 which acts as an audio amplifier.

The modulated drop across resistor No. 11 is filtered and applied to the grids of the 78 and 6-A-7 tubes to provide A.V.C. action.

LOCAL-DISTANCE SWITCH

A local-distance switch is provided in the R. F. stage to reduce the sensitivity in locations where there is excessive noise in tuning between stations. When this switch is in the open or "local" position, a high bias is placed on the 78 R. F. tube by means of the 6000 ohm resistor No. 2. This resistor is shorted out when the switch is thrown to the distance position (with white dot showing) thus reducing the bias to its normal value.

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. 21 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 and keeps the voltage below the danger point until the tubes warm up 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.

ALIGNMENT

A good modulated oscillator and a sensitive output meter are necessary for proper 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 42 plate to ground through a .25 mfd. condenser or across the voice coil, depending upon its sensitivity. A convenient point to connect to the 42 plate is the terminal of the tone control which is wired to the speaker plug.

During all alignment adjustments, keep the volume control full on and the local-distance switch in the "distance" position.

I. F. ALIGNMENT

The I. F. trimmers are located on the top of the I. F. transformers which may be reached by removing the front cover. The modulated oscillator should be set to exactly 177.5 K. C. and connected from the 6-A-7 control grid to ground. Adjust the oscillator output to give about half-scale reading of the output meter. Adjust all three I. F. trimmers to give maximum output reading.

The first I. F. transformer has a double trimmer consisting of a slotted screw for one trimmer and a hex nut around it for the other. In adjusting the second I. F. transformer single trimmer, it is desirable to use a bakelite screwdriver 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.

R. F. ALIGNMENT

The gang condenser trimmers can be reached by removing the back cover. Connect a .00025 mfd. mica condenser in series with the output of the test oscillator and the aerial lead of the receiver. This condenser is absolutely necessary to secure proper alignment of the antenna stage. Adjust the receiver to approximately 1400 K. C. and carefully tune the service oscillator to give maximum receiver 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. The trimmer on the other condenser section (oscillator section) should not be touched unless the set does not calibrate properly.

ALIGNING THE PADDING CIRCUIT

The low-frequency oscillator padding trimmer located on the side of the chassis does not require adjustment in most cases. However, if the set does not align properly at the low frequency end proceed as follows: Remove the chassis from the case. To do this it is necessary to unsolder the braided shield from the outside of the case at the antenna plug opening and then remove the screws holding the chassis to the case. Set the test oscillator to exactly 600 K. C. and tune the set **to the signal.** Adjust the padding trimmer which is mounted on the side of the chassis **while turning the gang condenser back and forth** over a small range. The correct setting is the one which gives maximum output. If the pointer is not exactly at 6.0 (600 K. C.) for maximum output, re-adjust the pointer calibration to get the proper reading. After adjusting the padding trimmer check up the alignment and calibration at 1400 K. C.

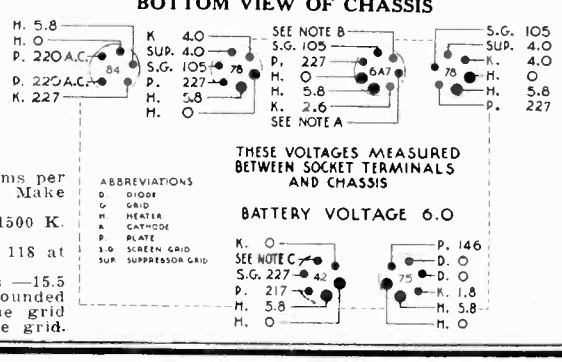
ADJUSTMENT OF OSCILLATOR TRIMMER

If the receiver is badly out of calibration, particularly at the high frequency end, the following procedure should be followed.

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 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.

SOCKET VOLTAGES

LOCAL-DISTANCE SWITCH IN DISTANCE POSITION
BOTTOM VIEW OF CHASSIS



7-18-34

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

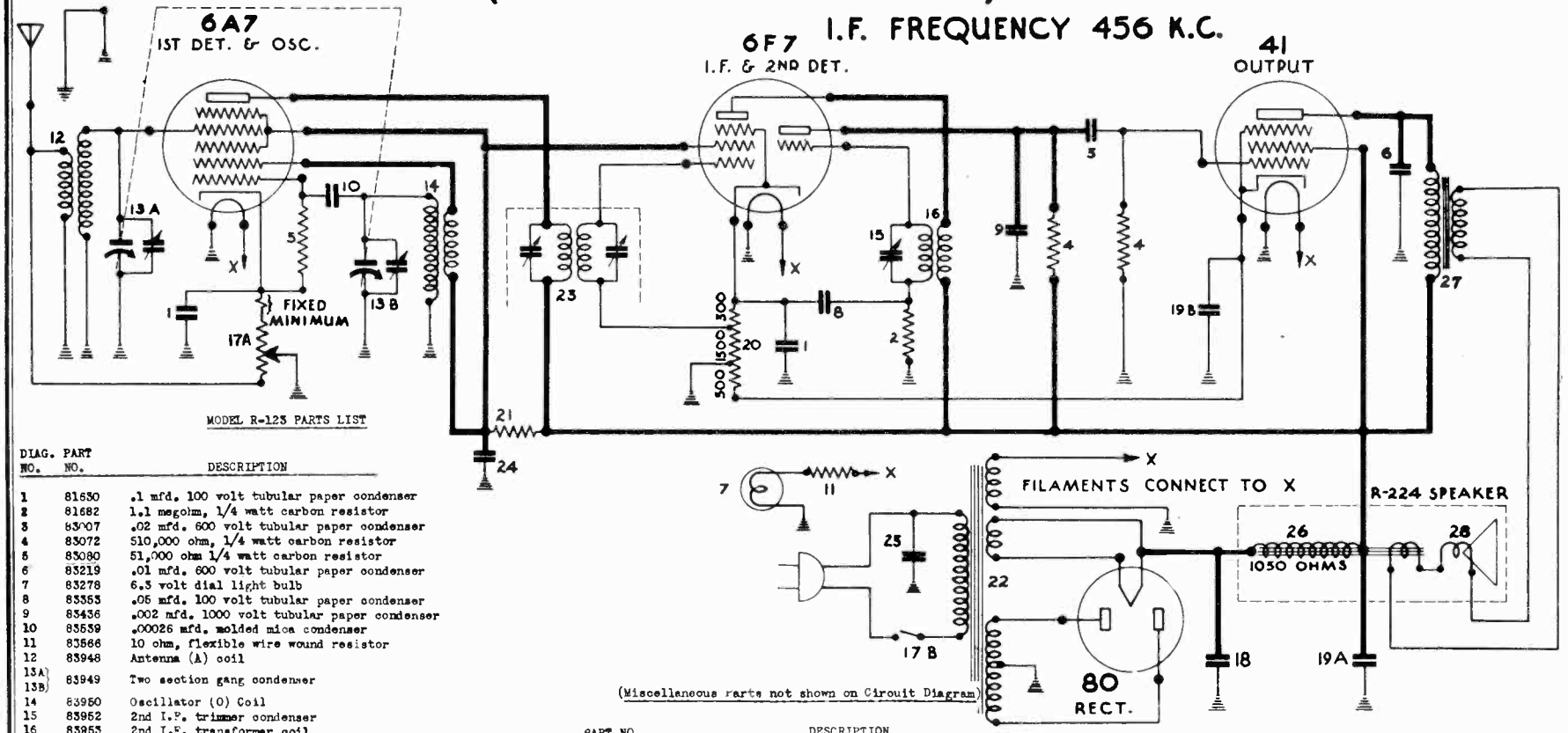
NOTE A: The oscillator grid voltage varies from 0 at 1500 K. C. to —5.0 at 530 K. C.

NOTE B: The oscillator anode voltage may vary from 118 at 1500 K. C. to 128 at 530 K. C.

NOTE C: The actual bias on the grid of the 42 tube is —15.5 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.

STEWART-WARNER MODEL R-123 CHASSIS (RECEIVER MODELS 1231 to 1239)

(TEMPORARY CIRCUIT DIAGRAM)



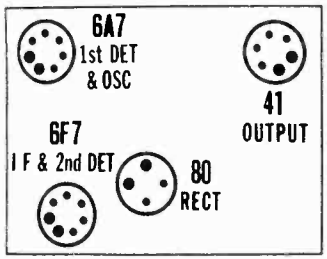
MODEL R-123 PARTS LIST

DIAG. NO.	PART NO.	DESCRIPTION
1	81630	.1 mfd. 100 volt tubular paper condenser
2	81682	1.1 megohm, 1/4 watt carbon resistor
3	83007	.02 mfd. 600 volt tubular paper condenser
4	83072	510,000 ohm, 1/4 watt carbon resistor
5	83080	51,000 ohm 1/4 watt carbon resistor
6	83219	.01 mfd. 600 volt tubular paper condenser
7	83278	6.3 volt dial light bulb
8	83353	.05 mfd. 100 volt tubular paper condenser
9	83436	.002 mfd. 1000 volt tubular paper condenser
10	83539	.00026 mfd. molded mica condenser
11	83566	10 ohm, flexible wire wound resistor
12	83948	Antenna (A) coil
13A, 13B	83949	Two section gang condenser
14	83950	Oscillator (O) Coil
15	83952	2nd I.F. trimmer condenser
16	83953	2nd I.F. transformer coil
17A, 17B	83969	{7500 ohm volume control with 350 ohm fixed minimum, line switch} In one unit
18	83960	6 mfd. 400 volt wet electrolytic condenser
19A, 19B	83962	{5 mfd. 350 V. dry electro.cond., 10 mfd. 25 V. dry electro.cond.} In one unit (Model R-123-A only. Also see No. 84399)
20	83963	300, 1500 and 500 ohm tapped bias resistor
21	83964	25,000 ohm, 2 watt carbon resistor
22	83966	Power transformer, 115 volts, 60 cycles (Model R-123-A) (See No. 84400 & 84402 for other voltages and frequencies)
23	83973	1st I.F. transformer
24	83974	.1 mfd. 200 volt tubular paper condenser
25	83976	.02 mfd. 1000 volt shielded paper condenser
26	83987	Field coil and housing (1050 ohms)
27	84009	Output transformer
28	84010	Diaphragm & Shell assembly
	84400	Power transformer, 115 volts, 25 to 133 cycles (Model R-123-B)
	84402	Power trans. 100 to 240 volts, 40 to 133 cycles (Model R-123-W)
	84399	{5 mfd. 350 V. Dry Electro.Cond., 10 mfd. 25 V. Dry Electro.Cond.} In one shielded unit. For R-123-B & W only.

PART NO.	DESCRIPTION
17615	Volume Control Mtg. Lock Washer (3/8")
31502	Tuning Dial set screw
67034	Volume Control Mtg. Nut (3/8"-32)
67263	#6 x 1/4" Self Tapping Screw
81834	Six prong tube socket
81837	Four prong tube socket
81949	Seven prong tube socket
83552	Chassis Mtg. Screw (#10 x 7/8" Self Tapping)
83574	Dial Light Socket and Bracket
83576	Escutcheon Mtg. Wood Screw (#1 x 1/4" R.H.)
83587	Front Plate Mtg. Screw (#8 x 1-1/4" Ornamental Head)
83624	#8 x 1/4 Self Tapping Screw
83941	Tuning Dial and Bushing
83945	Volume Control Dial & Bracket
83970	Escutcheon Plate
84015	Knob Washer (paper 5/8" O.D.)
84016	Rubber Washer (3/4" O.D.)
84017	Knob (Model 1231)
84130	Metal Front Grill (Model 1235 only)
84343	Knob (Model 1235 & 1236)
84541	Wave trap (to eliminate code interference)

TUBE LOCATIONS

FRONT OF SET



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STEWART - WARNER CORP.

MODELS 1231 to 1239
Chassis R-123
Schematic, Socket
Parts List

S-WARNER PAGE 5-3

Wave Trap Installation Data

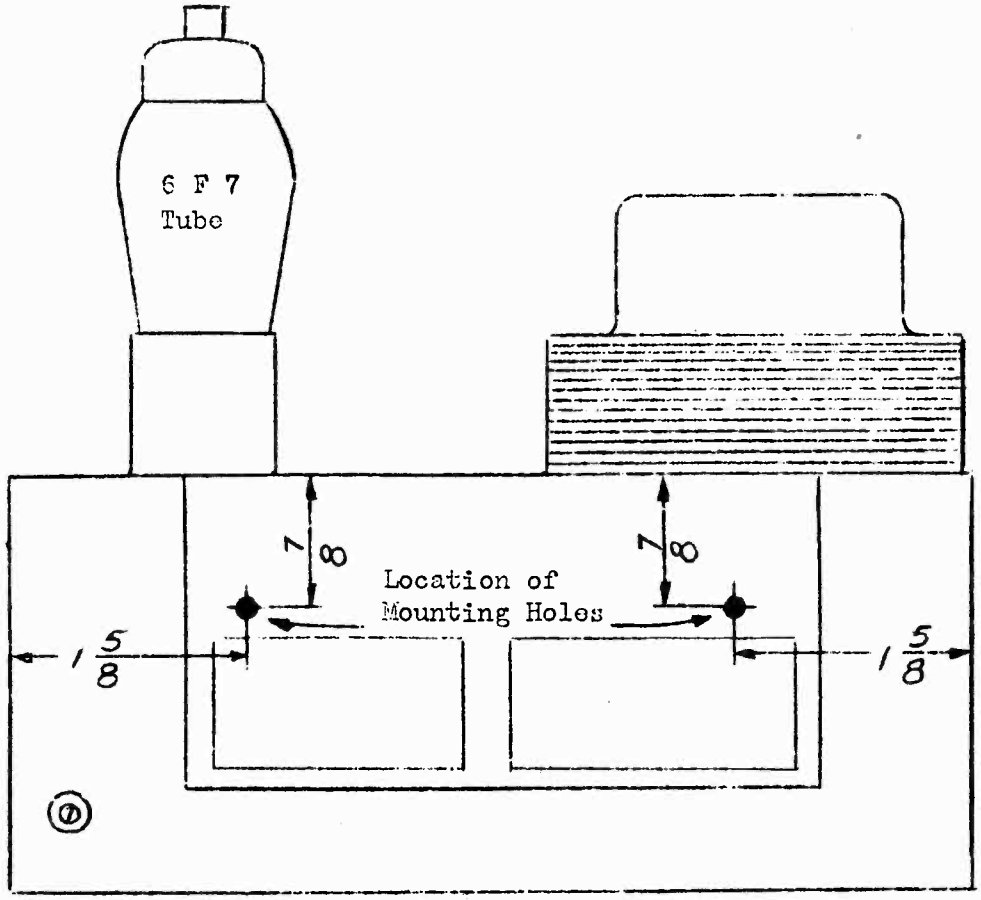
STEWART WARNER CORP.

INSTRUCTIONS FOR INSTALLATION OF WAVE TRAP

This wave trap is designed to be used with any Stewart-Warner chassis using an intermediate frequency of 456 kilocycles. The trap will reduce or prevent code interference caused by powerful code stations which operate at or near this frequency.

It is made for easy installation by any service man. In the Model R-123, two holes for mounting it are provided on the rear of the chassis so that the wave trap may be attached by means of the two self-tapping screws which are included in the kit. These holes are normally covered by the paper name plate, but they can easily be found by punching through the paper sticker with a point at the positions shown on the diagram.

On all other models, the trap should be screwed to the inside of the cabinet near the receiver antenna lead.

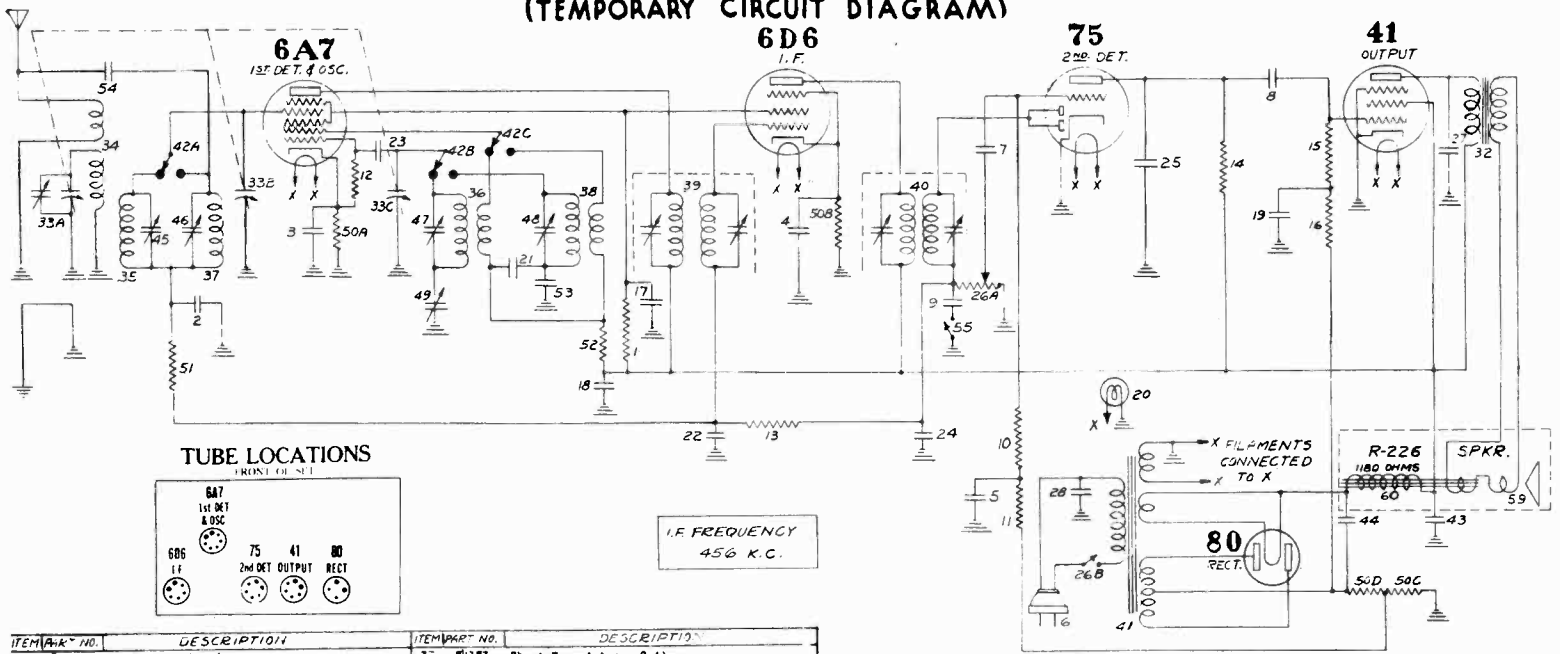


After mounting the trap, connect the blue antenna wire from the set to one of the wave trap leads and connect the antonna lead-in to the other wave trap lead.

Usually the wave trap will not require adjustment, but if some particular code station continues to cause excessive interference after installing the trap, it can be adjusted to diminish the unwanted signal. To make this adjustment, turn the slotted screw extending from the back of the wave trap with a screwdriver. Turn it slowly, first in one direction and then in the other, until the interfering signal disappears or has minimum volume.

STEWART-WARNER MODEL R-125 CHASSIS (RECEIVER MODELS 1251 to 1259)

(TEMPORARY CIRCUIT DIAGRAM)

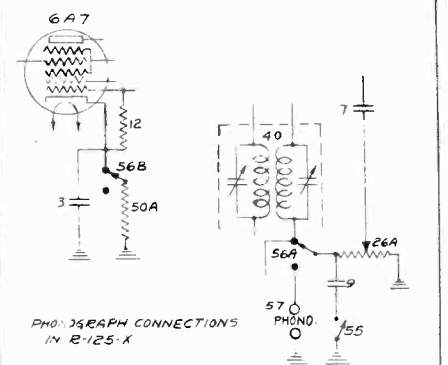


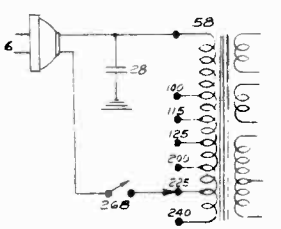
TUBE LOCATIONS

FRONT OF SET

I.F. FREQUENCY
456 K.C.

ITEM	PART NO.	DESCRIPTION
1	82183	30,000 ohm, ± 10% 1 W. Carbon resistor
2	81630	.1 mfd. 100 volt paper condenser
3	81630	.1 mfd. 100 volt paper condenser
4	81630	.1 mfd. 100 volt paper condenser
5	81630	.1 mfd. 100 volt paper condenser
6	81974	Line Cord and plug
7	83007	.02 mfd. 600 volt paper condenser
8	83007	.02 mfd. 600 volt paper condenser
9	83011	.004 mfd. 600 volt paper condenser
10	83072	510,000 ohm, ± 20% ½ watt carbon resistor
11	83072	510,000 ohm, ± 20% ½ watt carbon resistor
12	83080	51,000 ohm, ± 20% ½ watt carbon resistor
13	83082	260,000 ohm, ± 20% ½ watt carbon resistor
14	83082	260,000 ohm, ± 20% ½ watt carbon resistor
15	83082	260,000 ohm, ± 20% ½ watt carbon resistor
16	83082	260,000 ohm, ± 20% ½ watt carbon resistor
17	83214	.25 mfd. 250 volt paper condenser
18	83214	.25 mfd. 250 volt paper condenser
19	83219	.01 mfd. 600 volt paper condenser
20	83278	6.3 volt dial light bulb
21	83352	.015 mfd. ± 10% 600 volt paper condenser
22	83353	.05 mfd. 100 volt paper condenser
23	83559	.00026 mfd. ± 2½% molded mica condenser
24	83539	.00026 mfd. ± 2½% molded mica condenser
25	83539	.00026 mfd. ± 2½% molded mica condenser
26A) 26B)	83551	500,000 ohm volume control) in one unit Line switch)
27	83706	.006 mfd. 600 volt paper condenser
28	83976	.02 mfd. 1000 volt paper condenser
32	84153	Output transformer (Part of R-226 Speaker)
33A) 33B) 33C)	84174	Three gang variable condenser
34	84175	Broadcast Antenna coil (also see No. 84229)
35	84178	Broadcast detector coil (also see No. 84229)
36	84180	Broadcast oscillator coil
37	84183	Short Wave Antenna Coil
38	84185	Short wave oscillator coil
39	84187	1st I.F. Transformer
40	84188	2nd I.F. Transformer
41	84189	Power Transformer (115 volts 60 cycles) (R-125-A only) (also see item 58)
42A) 42B) 42C)	84191	Range Switch
43	84192	16 mfd. 350 volt wet Electrolytic condenser
44	84193	16 mfd. 350 volt wet Electrolytic condenser
45	84194	R.F. trimmer condenser (5 to 23 mmfd.)
46	84194	R.F. trimmer condenser (3 to 23 mmfd.)
47	84194	R.F. trimmer condenser (3 to 23 mmfd.)
48	84194	R.F. trimmer condenser (3 to 23 mmfd)
49	84195	Oscillator Padding trimmer (300-600 mmfd.)
50A) 50B) 50C) 50D)	84196	(300 ohm ± 10% resistor) (300 ohm ± 10% resistor) (25 ohm ± 10% resistor) (275 ohm ± 10% resistor) in one unit
51	84198	110,000 ohm, ± 20% ½ watt carbon resistor
52	84199	16,000 ohm, ± 20% ½ watt carbon resistor
53	84200	.004 mfd. ± 5% molded mica condenser
54	84220	Antenna Coupling condenser (20 mmfd.)
	84229	Broadcast Pre-Selector Coil Assembly (consists of No. 84175 and 84178 coils)
55	84420	Tone Control Switch
56A) 56B)	84404	Phonograph Switch (D.P.D.T.) (R-125-X only)
57	84407	Phonograph terminal strip (R-125-X only)
58	84408	Power Transformer (100 to 240 volts) 25 to 133 cycles) (R-125-X only)





ITEM	PART NO.	DESCRIPTION
59	84504	Diaphragm & Shell Assem.-for R-226 Speaker) for service
60	84505	Field Coil & Housing Assem-for R-226 Speaker) only

USED ON	NO.
PURCHASE OR MADE	NAME: CIRCUIT DIAGRAM (R-125-A & X)
HEAT TREATMENT	SCALE
	DATE ISSUED: 6-19-34
MATERIAL	DRAWN BY: R.M.K. TRACED BY: CHECKED BY: APPROVED BY:

Stewart-Warner R-125

Form 6233 7-16-34 Printed in U. S. A.

STEWART-WARNER CORPORATION CHICAGO U. S. A.

STEWART WARNER CORP.

MODELS 1251 to 1259
Chassis R-125 Series
Chassis R-125A & 125X
Schematic, Parts List
Circuit Changes

MODELS 1251 to 1259
Chassis R-125 Series
Alignment Data

STEWART WARNER CORP.

RADIO SERVICE NOTES - MODEL R-125 CHASSIS (RECEIVER MODELS 1251 TO 1259)

NO. 3 - ALIGNMENT OF MODEL R-125 CHASSIS

Experience has definitely shown that a selective radio chassis such as the Stewart-Warner Model R-125 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 are used.

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 R-125 chassis, proceed as follows:

1. Remove the chassis from the cabinet.

2. Connect the output metal across the primary of the output transformer on the dynamic speaker. (Center and blue terminals)

3. Turn the volume control to maximum volume position.

4. For all adjustments use an all-bakelite aligning tool which has only a small meter screwdriver tip.

5. At all times during 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.

6. Refer to the diagram for the location of trimmer condensers.

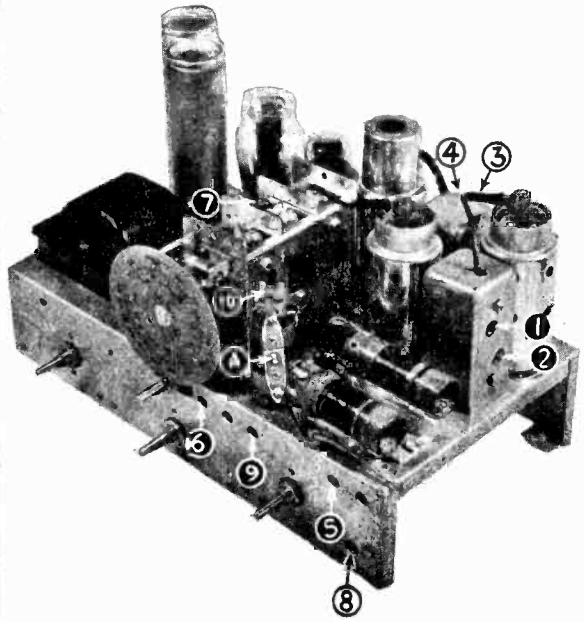
VERY IMPORTANT: In aligning all but the I.F. stages it is absolutely necessary to have a 400 to 500 ohm resistor in series with the antenna lead to the oscillator. Do not omit this resistor or the alignment will be incorrect!

I.F. ALIGNMENT

1. Set the test oscillator to exactly 456 K.C. Connect the output leads of oscillator from the 6A7 control grid to ground and set the range switch (right hand knob) to the broadcast position (clockwise). Carefully adjust the I.F. transformer trimmers No. 1,2,3, and 4 for maximum output meter deflection. Repeat the four adjustments since the adjustment of each trimmer has some effect on the others.

STEWART WARNER CORP.

MODELS 1251 to 1259
Chassis R-125 Series
Trimmer Locations
Alignment Data, Part 2



LOCATION OF MODEL R-125 ALIGNING TRIMMERS

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

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

5 Broadcast oscillator shunt trimmer
6 Broadcast detector shunt trimmer
7 Broadcast Pre-selector shunt trimmer
8 Broadcast oscillator padding trimmer
9 Short Wave oscillator shunt trimmer
10 Short Wave detector shunt trimmer

BROADCAST BAND ALIGNMENT

1. Check the position of the dial on the condenser shaft by pushing the rotor plates of the gang condonser to full mesh. The dial should then read 530 K.C. Please note that the plates should be pushed with the fingers and not turned by means of the dial for this check.

2. Turn the range switch (right hand knob) to the maximum clockwise position, which is the broadcast setting.

3. Whenever possible, use a broadcast station signal between 1300 and 1420 K.C. to calibrate the receiver dial. If no such station can be heard, you can use a 1400 K.C. signal from your oscillator provided that it is properly calibrated. To calibrate the set turn its dial to the exact frequency setting of the signal (either a station or the oscillator) then carefully adjust trimmer No. 5 (broadcast oscillator shunt trimmer) until the signal is tuned in with maximum volume at its correct frequency setting.

4. Connect a 400 or 500 ohm, 1 watt carbon resistor in series with the test oscillator output and the receiver antenna lead. This resistor must remain connected for all broadcast and short wave adjustments in order to secure proper alignment of the antenna stage. Ground the receiver chassis and connect the oscillator ground lead to the chassis.

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

6. Set the test oscillator to approximately 600 K.C. and tune the receiver to the signal. Adjust trimmer No. 8 (broadcast oscillator padding

trimmer) to get maximum output meter deflection. Retune the receiver dial to a peak and readjust the trimmer. Continue this procedure of adjusting the trimmer and retuning the set until the output meter reading cannot be increased. This procedure must be followed or the receiver will not be properly aligned.

7. With a 1400 K.C. test oscillator signal, check alignment of trimmers No. 6 and 7.

SHORT WAVE BAND ALIGNMENT.

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

2. Set the test oscillator to give a 16,000 K.C. signal. If your oscillator cannot reach this frequency, use the 2nd harmonic of 8,000 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. To calibrate this point turn the receiver dial to 16 M.C. on the inner dial scale and adjust Trimmer No. 9 (shortwave oscillator shunt trimmer) to give maximum output. Generally two peaks will be found. Align on the peak secured with the trimmer screw farthest out. Then adjust trimmer No. 10 (shortwave detector shunt trimmer) to a peak. After this is done, try detuning No. 10 in either direction and retune the receiver dial. If this gives a higher output, continue detuning No. 10 and retuning the dial until the maximum output meter reading is reached. If this procedure results in a lower output, detune the trimmer in the opposite direction and retune the dial, etc.

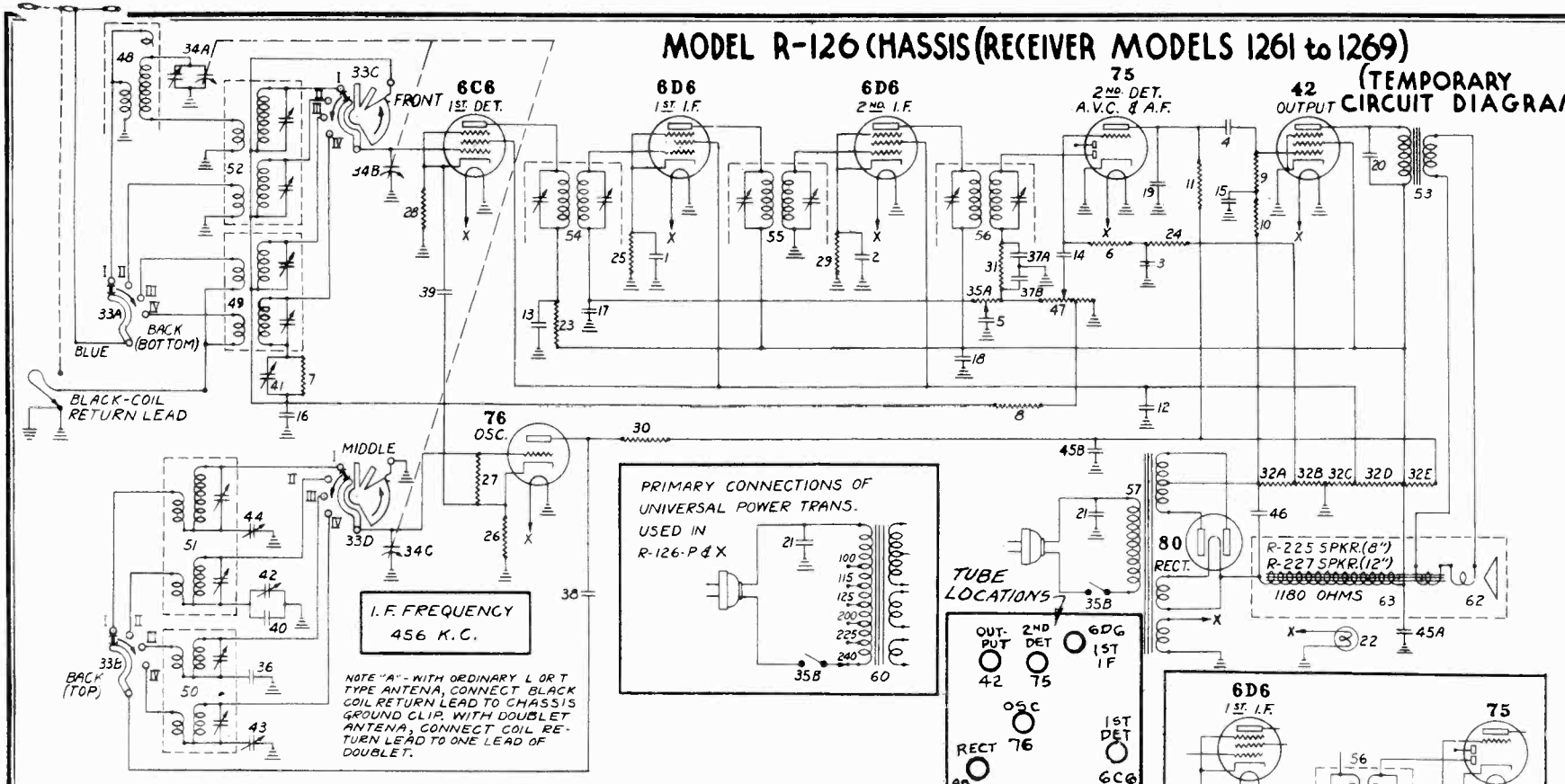
IMPORTANT: The antenna coupling condenser marked "A" in the diagram is adjusted to a definite capacity at the factory and should not require any further adjustment. Therefore do not adjust trimmer "A" unless it is found that trimmer No. 10 will not peak or if maximum output is obtained with No. 10 either 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".

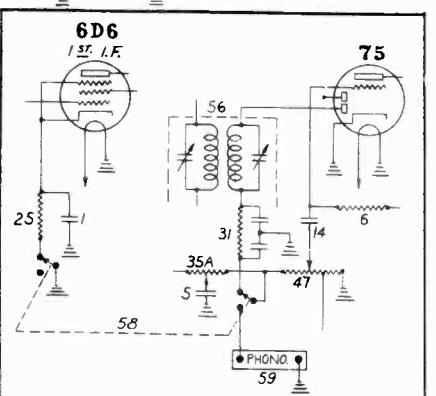
4. Tune the receiver to about 15.1 M.C. and check for the image signal which should be weaker than the 16.0 M.C. signal. If the image is as strong as the signal it shows that trimmer No. 10 is not properly adjusted. No signal at 15.1 M.C. but one at 16.9 M.C. shows that trimmer No. 9 is aligned on the image frequency and thus both No. 9 and 10 must be readjusted at the proper frequency.

Note: After completing the alignment, all of the trimmers except the padding and I.F. trimmers should be locked in place with Ambroid or some similar type cement in order that they will not be jarred out of adjustment.

MODEL R-126 CHASSIS (RECEIVER MODELS 1261 to 1269) (TEMPORARY CIRCUIT DIAGRAM)



ITEM NO.	PART NO.	DESCRIPTION
1	81630	.1 mfd. 100 volt paper condenser
2	81630	.1 mfd. 100 volt paper condenser
3	81630	.1 mfd. 100 volt paper condenser
4	83007	.02 mfd. 600 volt paper condenser
5	83011	.004 mfd. 600 volt paper condenser
6	83072	510,000 ohm ±20%, ½ watt carbon resistor
7	83082	260,000 ohm ±20%, ½ watt carbon resistor
8	83082	260,000 ohm ±20%, ½ watt carbon resistor
9	83082	260,000 ohm ±20%, ½ watt carbon resistor
10	83082	260,000 ohm ±20%, ½ watt carbon resistor
11	83082	260,000 ohm ±20%, ½ watt carbon resistor
12	83214	.25 mfd. 250 volt paper condenser
13	83219	.01 mfd. 600 volt paper condenser
14	83219	.01 mfd. 600 volt paper condenser
15	83352	.015 mfd. 600 volt paper condenser
16	83353	.05 mfd. 100 volt paper condenser
17	83353	.05 mfd. 100 volt paper condenser
18	83440	.1 mfd. 400 volt paper condenser
19	83539	.00026 mfd. molded mica condenser
20	83706	.006 mfd. 600 volt paper condenser
21	83976	.02 mfd. 1000 volt shielded paper cond.
22	84058	Dial Light bulb (6 to 8 volt)
23	84199	16,000 ohm ± 20%, ½ watt carbon resistor
24	84235	1.1 megohm ±20%, 1/4 watt carbon resistor
25	84236	2,500 ohm, ±10%, 1/4 watt carbon resistor
26	84237	510 ohm ± 20%, 1/4 watt carbon resistor
27	84238	11,000 ohm ±20%, 1/4 watt carbon resistor
28	84239	6,100 ohm ±20%, 1/4 watt carbon resistor
29	84240	4,000 ohm ±10% 1/4 watt carbon resistor
30	84241	31,000 ohm ±20%, 1/2 watt carbon resistor
31	84242	31,000 ohm ±20%, 1/4 watt carbon resistor
32A, 32B, 32C, 32D	84273	225 ohm ±10%, resistor; 20 ohm ±10%, resistor; 10,000 ohm ±10%, resistor; 13,500 ohm ±10%, resistor; 8000 ohm ± 10%, resistor — Tapped Voltage Divider
33A, 33B, 33C, 33D	84274	Range Switch
34A, 34B, 34C	84275	3 gang variable condenser
35A, 35B	84279	300,000 ohm variable tone control; Line switch — In one unit
36	84280	.006 mfd. ± 10% molded Mica condenser
37A, 37B	84281	Dual .00026 mfd. molded mica condenser
38	84282	.001 mfd. ±10% molded mica condenser
39	84282	.001 mfd. ±10% molded mica condenser
40	84282	.001 mfd. ±10% molded mica condenser
41	84283	Short wave padding trimmer condenser
42	84283	Short wave padding trimmer condenser
43	84283	Short wave padding trimmer condenser
44	84284	Broadcast padding trimmer condenser
45A, 45B	84286	8 mfd. 450 volt dry electrolytic cond.; 2 mfd. 400 volt dry electrolytic cond. — In one unit
46	84288	14 mfd. 475 volt wet electrolytic condenser
47	84289	500,000 ohm volume control (Tap at 125,000 ohms from ground)
48	84290	Broadcast Antenna Coil
	84295	Dual coil trimmer condenser (part of coil assembly)
49	84298	Band #3 Antenna Coil and trimmer cond.; Band #4 Antenna Coil and trimmer cond. — In one unit; See #84295
50	84302	Band #3 Oscillator Coil and trimmer; Band #4 Oscillator Coil and trimmer — In one unit; See #84295
51	84305	Broadcast Oscillator Coil and trimmer; Band #2 Oscillator Coil and trimmer — In one unit; See #84295
52	84308	Broadcast detector coil and trimmer; Band #2 Antenna Coil and trimmer — In one unit; See #84295
53	84312	Output transformer (on R-225 & R-227 Speakers)
54	84320	1st I.F. Transformer
55	84321	2nd I.F. Transformer
56	84322	3rd I.F. Transformer
57	84324	Power transformer (115 volts 60 cycle) (R-126-A only) See 84410 for 100-240 volts Used in R-126 P & X
58	84404	Phonograph toggle switch (R-126-X only)
59	84407	Phonograph terminal strip (R-126X only)
60	84410	Power transformer (100 to 240 volts, 25 to 133 cycles Used on R-126P & X only
61	84412	Phonograph terminal strip (R-126P only)
62	84504	Diaphragm shell assembly — For R-225
63	84505	Field coil and housing — 8 inch speaker
62	84506	Diaphragm shell assembly — For R-227
63	84507	Field coil and housing — 12 inch speaker — For service only



CIRCUIT DIAGRAM (R-126-A, P & X)

DATE ISSUED 6-30-34

Stewart Warner

MODELS 1261 to 1269
Chassis 126 Series
Alignment Data

STEWART WARNER CORP.

RADIO SERVICE NOTES - MODEL R-126 CHASSIS (RECEIVER MODELS 1261 TO 1269)

NO. 3 - ALIGNMENT OF MODEL R-126 CHASSIS

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". 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 short wave alignment where harmonics are used.

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 R-126 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 terminals)

3. Turn the volume control to maximum volume position.

4. For all adjustments use an all-bakelite aligning tool which has only a small metal screw driver tip.

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

6. Refer to the diagram for location of trimmer condensers.

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

I.F. ALIGNMENT

1. Set the test oscillator to exactly 456 K.C. Connect the output leads of oscillator from the 6C6 control grid to ground and set the range switch (lower center knob) to the broadcast position (dial pointer on black dial scale). Carefully adjust the I.F. transformer trimmers No. 1,2,3,4,5 and 6 for maximum output meter deflection. Repeat the six adjustments since the adjustment of each trimmer has some effect on the others.

BROADCAST BAND ALIGNMENT

1. Check the position of the dial on the condenser shaft by pushing the rotor plates of the gang condenser to full mesh. The dial should then read 530 K.C. Please note that the plates should be pushed with the fingers and not turned by means of the dial for this check.

STEWART WARNER CORP.

MODELS 1261 to 1269
Chassis R-126 Series
Alignment Data, Part 2

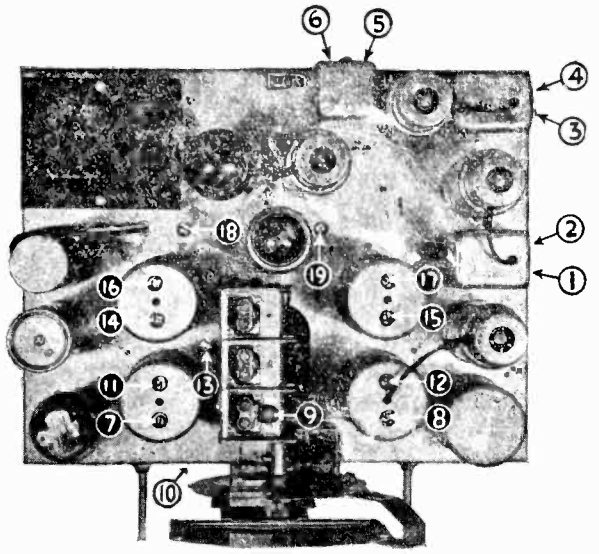
LOCATIONS OF MODEL R-126

ALIGNING TRIMMERS

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

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

5) 6) 3rd. I.F. transformer trimmers



7 Broadcast oscillator shunt trimmer
8 Broadcast detector shunt trimmer
9 Broadcast pre-selector shunt trimmer
10 Broadcast oscillator padding trimmer
11 1st. Shortwave Band oscillator shunt trimmer
12 1st. Shortwave Band detector shunt trimmer
13 1st. Shortwave Band oscillator padding trimmer
14 2nd. Shortwave Band oscillator shunt trimmer
15 2nd. Shortwave Band detector shunt trimmer
16 3rd. Shortwave Band oscillator shunt trimmer
17 3rd. Shortwave Band detector shunt trimmer
18 3rd. Shortwave Band oscillator padding trimmer
19 3rd. Shortwave Band detector padding trimmer

2. Turn the range switch (lower center knob) to the maximum counter-clockwise position, which is the broadcast setting.

3. Whenever possible, use a broadcast station signal between 1300 and 1420 K.C. to calibrate the receiver dial. If no such station can be heard, you can use a 1400 K.C. signal from your oscillator provided that it is properly calibrated. To calibrate the set, turn its dial pointer to the exact frequency setting of the signal (either a station or the oscillator). Carefully adjust trimmer No. 7 (broadcast oscillator shunt trimmer) until the signal is tuned in with maximum volume at its correct frequency setting.

4. Connect a 400 or 500 ohm, 1 watt carbon resistor in series with the test oscillator output and the receiver antenna lead. This resistor must remain connected for all broadcast and short wave adjustments in order to secure proper alignment of the antenna stage. Ground the receiver chassis and connect the oscillator ground lead to the chassis.

5. With the test oscillator adjusted to approximately 1400 K.C. carefully tune the receiver to the signal. Adjust trimmer No. 8 (broadcast detector shunt trimmer) and No. 9 (broadcast pre-selector shunt trimmer) for maximum output meter reading. Retune the receiver and check the adjustments. Do not touch trimmer No. 7 since this will change the calibration.

6. Set the test oscillator to approximately 600 K.C. and tune the receiver to the signal. Adjust the broadcast oscillator padding trimmer No. 10 to get maximum output meter deflection. Then retune the receiver dial to a peak and readjust the trimmer. Continue this procedure of adjusting the trimmer and retuning the set until the output meter reading cannot be increased. This procedure must be followed or the receiver will not be properly aligned.

7. With a 1400 K.C. test oscillator signal, check alignment of trimmers No. 8 and 9.

MODELS 1261 to 1269
Chassis R-126 Series STEWART WARNER CORP.
Alignment Data, Part 3

FIRST SHORT WAVE BAND ALIGNMENT

1. Turn receiver range switch to the first short wave band position (dial pointer on red dial scale).

2. Adjust the oscillator to exactly 4000 K.C.

3. To calibrate this point set the receiver dial pointer to 4000 K.C. on the red dial scale and adjust trimmer No. 11 (first shortwave band oscillator shunt trimmer) to a peak. If there are two peaks, the proper one is the one with the trimmer screw farthest out. Then tune trimmer No. 12 (first short wave band detector shunt trimmer) to a peak. Try detuning No. 12 in either direction and retune the receiver dial. If this gives a higher output meter reading, continue detuning No. 12 and retuning the dial until the maximum output meter reading is reached. If this procedure results in a lower output detune the trimmer in the opposite direction, retune the receiver, etc.

4. To check the above adjustment, leave the test oscillator set at 4.0 M.C. and increase its output. Then tune in the image signal at about 3.1 M.C. on the receiver dial. This image signal should be weak compared to the correct signal at 4.0 M.C. If it is almost as strong as the 4.0 M.C. signal, it is a sign that trimmer No. 12 is not properly adjusted and it will be necessary to repeat the procedure for aligning this trimmer. If no signal can be heard at 3.1 M.C. even with greatly increased oscillator output, tune the set at 4.9 M.C. A signal heard at this point shows that trimmer No. 11 is aligned on the image frequency and so both No. 11 and 12 must be readjusted at the proper signal frequency.

5. Set the test oscillator to about 1750 K.C. and tune the receiver to the signal. Adjust trimmer No. 13 (first shortwave band oscillator padding trimmer) for maximum output. Then retune the receiver dial to a peak and again adjust the trimmer. Continue this procedure of adjusting the trimmer and retuning the set until the output meter reading cannot be increased.

6. Check the alignment of trimmer 12 with a 4000 K.C. signal.

SECOND SHORT WAVE BAND ALIGNMENT

1. Turn the receiver range switch to the second short wave band position (dial pointer on green dial scale).

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. To calibrate, set the receiver dial pointer to 12 M.C. on the green dial scale and then adjust trimmer No. 14 (second shortwave band oscillator shunt trimmer) for maximum output. Generally two peaks will be found. Align on the one with the trimmer screw farthest out. Adjust trimmer No. 15 (second shortwave band detector trimmer) to a peak. After this is done, try to increase the output meter reading by detuning trimmer No. 15 and retuning the dial.

4. Tune the receiver to about 11.1 M.C. and check for reception of the image which should be weaker than the 12.0 M.C. signal. If the image is almost as strong as the correct signal, it shows that trimmer No. 15 has not been properly adjusted. If the signal cannot be heard at 11.1 M.C., but can be received at 12.9 M.C., then trimmer No. 14 is aligned on the image frequency and No. 14 and 15 must be realigned at the proper signal frequency.

THIRD SHORT WAVE BAND ALIGNMENT

1. Turn the receiver range switch to the third short wave band (pointer on purple dial scale).

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. To calibrate this point, turn the receiver dial pointer to 20 M.C. on the purple dial scale and adjust trimmer No. 16 (third shortwave band oscillaton shunt trimmer) to give maximum output. If there are two peaks, align on the one with the trimmer screw farthest out. Then adjust trimmer No. 17 (third shortwave band detector shunt trimmer) to a peak. After this is done, try to increase the output meter reading by detuning No. 17 and retuning the receiver dial.

4. Tune the receiver to about 19.1 M.C. and check for the image signal which should be weaker than the 20.0 M.C. signal. If the image is almost as strong as the signal, it indicates that trimmer No. 17 has not been properly adjusted. No signal at 19.1 M.C. but one at 20.9 M.C. shows that trimmer No. 16 is aligned on the image frequency and thus both No. 16 and 17 must be readjusted.

5. Adjust 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 12000 K.C. signal.

Calibrate this point by setting the dial pointer to 12.0 M.C. on the purple scale and adjusting trimmer No. 18 (third shortwave band oscillator padding trimmer) to give maximum output. Retune the dial and then adjust trimmer No. 19 (third shortwave band detector padding trimmer) to a peak. Retune the dial and readjust No. 19. Repeat this procedure of adjusting No. 19 and retuning the dial until it does not increase the output meter reading.

6. Check the reception of the image signal at 11.1 M.C. If the image is almost as strong as the 12 M.C. signal but was found to be satisfactory at 19.1 M.C. with a 20,000 K.C. signal, No. 18 or 19 are aligned on the wrong peak and should be readjusted.

7. Check adjustment of No. 17 with a 20,000 K.C. signal.

NOTE: To prevent the trimmers from being jarred out of adjustment, use Ambroid or some similar cement to fasten the trimmer screws in position after completing the alignment. This should be done to all adjusting screws except the padding and I.F. trimmers.

MODELS 1271 to 1279
Chassis 127 Series
Alignment Data,Part 1

STEWART WARNER CORP.

RADIO SERVICE NOTES - MODEL R-127 CHASSIS (RECEIVER MODELS 1271 TO 1279)

NO. 3 - ALIGNMENT OF MODEL R-127 CHASSIS

Experience has definitely shown that a selective radio chassis such as the Stewart-Warner Model R-127 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 are used.

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 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 terminals)

3. Turn the volume control to maximum volume position.

4. For all adjustments use an all-bakelite aligning tool which has only a small metal screw driver tip.

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

6. Refer to the diagram for the location of the trimmer condensers.

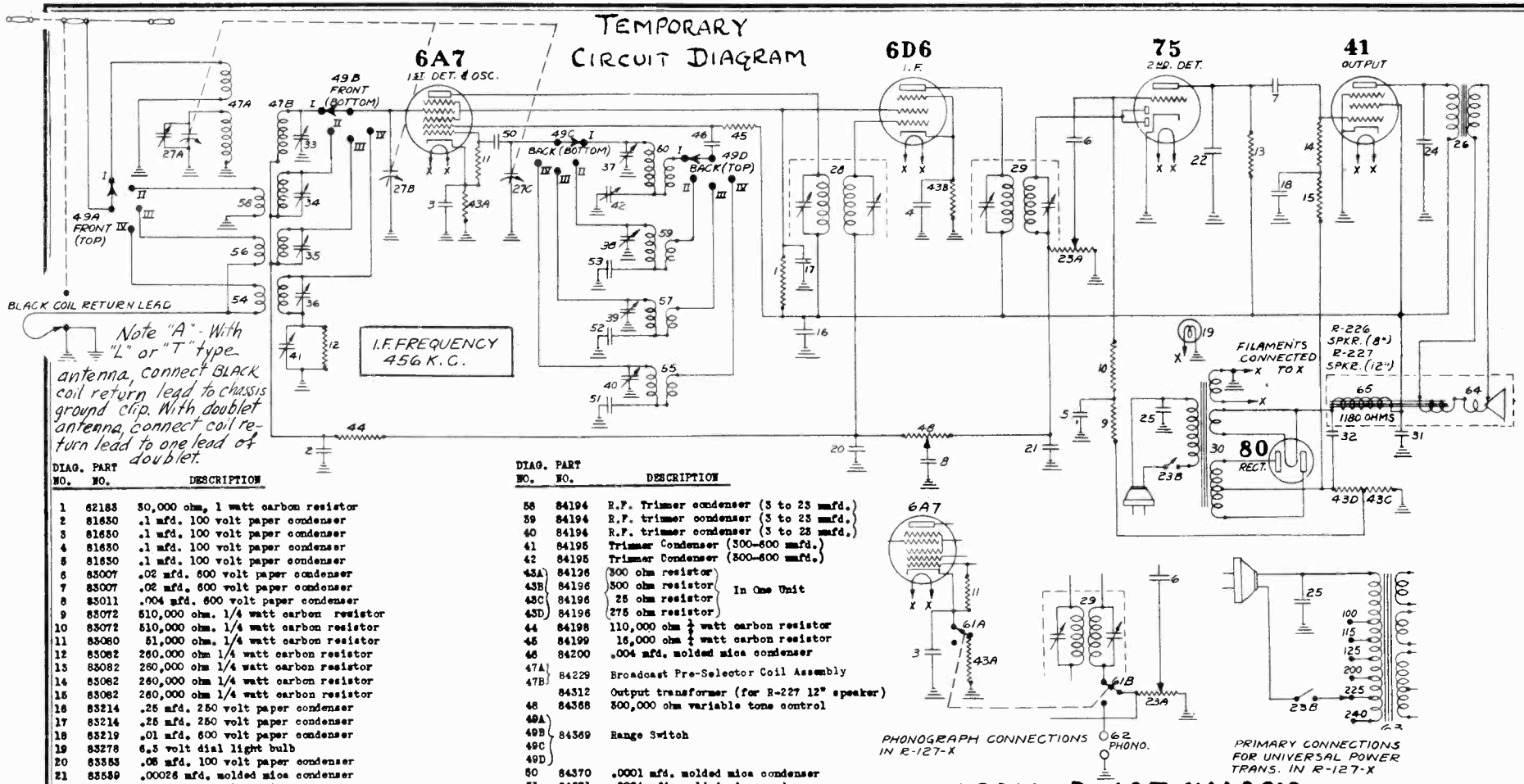
VERY IMPORTANT: In aligning all but the I.F. stages it is absolutely necessary to have a 400 to 500 ohm resistor in series with the antenna lead to the oscillator. Do not omit this resistor or the alignment will be incorrect!

I.F. ALIGNMENT

1. Set the test oscillator to exactly 456 K.C. Connect the output leads of oscillator from the 6A7 control grid to ground and set the range switch (right hand knob) to the broadcast position (fully clockwise). Carefully adjust the I.F. transformer trimmers No. 1,2,3, and 4 for maximum output meter deflection. Repeat the four adjustments since the adjustment of each trimmer has some effect on the others.

STEWART WARNER CORP.

MODELS 1271 to 1279
Chassis R-127 Series
Chassis R-127-X
Schematic, Socket
Circuit Changes
Parts List

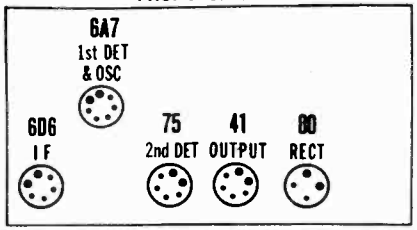


DIAG. NO.	PART NO.	DESCRIPTION
1	62183	30,000 ohm, 1 watt carbon resistor
2	81650	.1 mfd. 100 volt paper condenser
3	81650	.1 mfd. 100 volt paper condenser
4	81650	.1 mfd. 100 volt paper condenser
5	81650	.1 mfd. 100 volt paper condenser
6	83007	.02 mfd. 600 volt paper condenser
7	83007	.02 mfd. 600 volt paper condenser
8	83011	.004 mfd. 600 volt paper condenser
9	83072	510,000 ohm. 1/4 watt carbon resistor
10	83072	510,000 ohm. 1/4 watt carbon resistor
11	83080	51,000 ohm. 1/4 watt carbon resistor
12	83082	260,000 ohm 1/4 watt carbon resistor
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	83214	.25 mfd. 250 volt paper condenser
17	83214	.25 mfd. 250 volt paper condenser
18	83219	.01 mfd. 600 volt paper condenser
19	83278	6.3 volt dial light bulb
20	83353	.05 mfd. 100 volt paper condenser
21	83539	.00026 mfd. molded mica condenser
22	83539	.00026 mfd. molded mica condenser
23A, 23B	83561	500,000 ohm volume control, Line Switch — In one Unit
24	83706	.006 mfd. 600 volt paper condenser
25	83976	.02 mfd. 1000 volt shielded paper condenser
26	84163	Output transformer (for R-226, 8 inch speaker) (see No. 84312 for 12" speaker)
27A, 27B, 27C	84174	3-gang variable condenser
28	84187	1st I.F transformer
29	84188	2nd I.F transformer
30	84189	Power transformer (110 volts 60 cycle) (R-127-A only) (see No. 84406 for Universal transformer)
31	84192	16 mfd. 350 volt wet electrolytic condenser
32	84193	16 mfd. 350 volt wet electrolytic condenser
33	84194	R.F. trimmer condenser (3 to 23 mmfd.)
34	84194	R.F. trimmer condenser (3 to 23 mmfd.)
35	84194	R.F. trimmer condenser (3 to 23 mmfd.)
36	84194	R.F. trimmer condenser (3 to 23 mmfd.)
37	84194	R.F. trimmer condenser (3 to 23 mmfd.)
38	84194	R.F. trimmer condenser (3 to 23 mmfd.)
39	84194	R.F. trimmer condenser (3 to 23 mmfd.)
40	84194	R.F. trimmer condenser (3 to 23 mmfd.)
41	84195	Trimmer Condenser (300-600 mmfd.)
42	84195	Trimmer Condenser (300-600 mmfd.)
43A, 43B, 43C, 43D	84196	300 ohm resistor, 300 ohm resistor, 25 ohm resistor, 275 ohm resistor — In One Unit
44	84198	110,000 ohm 1 watt carbon resistor
45	84199	16,000 ohm 1 watt carbon resistor
46	84200	.004 mfd. molded mica condenser
47A, 47B	84229	Broadcast Pre-Selector Coil Assembly
	84312	Output transformer (for R-227 12" speaker)
48	84368	500,000 ohm variable tone control
49A, 49B, 49C, 49D	84369	Range Switch
50	84370	.0001 mfd. molded mica condenser
51	84371	.0004 mfd. molded mica condenser
52	84372	.006 mfd. molded mica condenser
53	84373	.0015 mfd. molded mica condenser
54	84377	#4 band antenna coil
55	84380	#4 band oscillator coil
56	84381	#3 band antenna coil
57	84383	#3 band oscillator coil
58	84385	#2 band antenna coil
59	84387	#2 band oscillator coil
60	84389	Broadcast oscillator coil
61A, 61B	84404	Phonograph Switch (D.P. D.T.) (R-127-X only)
62	84407	Phonograph Terminal Strip (R-127-X only)
63	84408	Power Transformer (100 to 240 Volts, 25 to 133 Cycles) (R-127-X only)
64	84504	Diaphragm & Shell assembly — For R-226 - 8" speaker
65	84506	Field Coil & Housing — For R-226 - 8" speaker
64	84506	Diaphragm & Shell Assembly — For R-227 - 12" speaker
65	84507	Field Coil and housing — For R-227 - 12" speaker

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

TUBE LOCATIONS

FRONT OF SET



Form 6240 7-18-34 Printed in U.S.A.

MODELS 1271 to 1279
Chassis R-127 Series
Alignment Data, Part 2

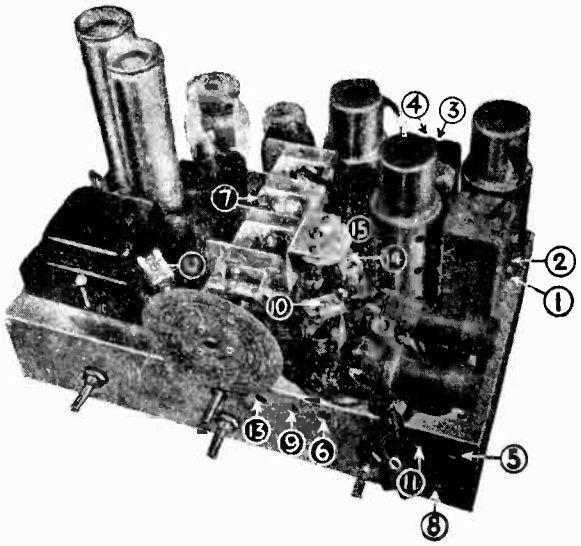
STEWART WARNER CORP.

LOCATION OF MODEL R-127 ALIGNING TRIMMERS

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

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

5 Broadcast oscillator shunt trimmer
6 Broadcast detector shunt trimmer
7 Broadcast Pre-selector shunt trimmer
8 Broadcast oscillator padding trimmer
9 1st Short wave band oscillator shunt trimmer
10 1st Short wave band detector shunt trimmer
11 2nd Short wave band oscillator shunt trimmer
12 2nd Short wave band detector shunt trimmer
13 3rd Short wave band oscillator shunt trimmer
14 3rd Short wave band detector shunt trimmer
15 3rd Short wave band detector padding trimmer



BROADCAST BAND ALIGNMENT

1. Check the position of the dial on the condenser shaft by pushing the rotor plates of the gang condenser to full mesh. The dial should then read 5.3 (530 K.C.). Please note that the plates should be pushed with the fingers and not turned by means of the dial for this chock.

2. Turn the range switch (right hand knob) to the maximum clockwise position, which is the broadcast setting.

3. Whenever possible, use a broadcast station signal between 1300 and 1420 K.C. to calibrate the receiver dial. If no such station can be heard, you can use a 1400 K.C. signal from your oscillator provided it is accurately calibrated. To calibrate the set, turn its dial to the exact frequency setting of the signal (either a station or the oscillator). Then carefully adjust trimmer No. 5 (broadcast oscillator shunt trimmer) until the signal is tuned in with maximum volume at its correct frequency setting.

4. Connect a 400 or 500 ohm, 1 watt carbon resistor in series with the test oscillator output and the receiver antenna lead. This resistor must remain connected for all broadcast and short wave adjustments in order to secure proper alignment of the antenna stage. Ground the receiver chassis and connect the oscillator ground lead to the chassis.

5. With the test oscillator adjusted to approximately 1400 K.C., carefully tune the receiver to the signal. Adjust trimmer No. 6 (broadcast detector shunt trimmer) and No. 7 (broadcast pre-selector shunt trimmer) for maximum output meter reading. Retune the receiver and check the adjustments. Do not touch trimmer No. 5 since this will change the calibration.

6. Set the test oscillator to approximately 600 K.C. and tune the receiver to the signal. Adjust trimmer No. 8 (broadcast oscillator padding trimmer) to get maximum output meter deflection. Then retune the receiver dial to a peak and readjust the trimmer. Continue this procedure of adjusting the trimmer and retuning the set until the output meter reading cannot be increased. This procedure must be followed or the receiver will not be properly aligned.

7. With a 1400 K.C. test oscillator signal, check alignment of trimmers No. 6 and 7.

FIRST SHORT WAVE BAND ALIGNMENT

1. Turn receiver range switch to the first short wave band 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. To calibrate this point set the receiver dial to 4.0 megacycles on the red dial scale and adjust trimmer No. 9 (first shortwave band oscillator shunt trimmer) to a peak. If there are two peaks, the proper one is the one with the trimmer screw farthest out. Then tune No. 10 (first shortwave band detector shunt trimmer) to a peak. Try detuning No. 10 in either direction and retune the receiver dial. If this gives a higher output meter reading, continue detuning No. 10 and retuning the dial until the maximum output meter reading is reached. If this procedure results in a lower output detune the trimmer in the opposite direction and retune the receiver to secure the maximum output.

4. To check the above adjustment, leave the test oscillator set at 4.0 M.C. and increase its output. Then tune in the image signal at about 3.1 M.C. on the receiver dial. This image signal should be weak compared to the correct signal at 4.0 M.C. If it is almost as strong as the 4.0 M.C. signal, it is a sign that trimmer No. 10 is not properly adjusted and it will be necessary to repeat the procedure for aligning this trimmer. If no signal can be heard at 3.1 M.C. even with greatly increased oscillator output, tune the set to 4.9 M.C. A signal heard at this point, shows that trimmer No. 9 is aligned on the image frequency and so both No. 9 and 10 must be readjusted at the proper signal frequency.

SECOND SHORT WAVE BAND ALIGNMENT

1. Turn the receiver range switch to the second short wave band 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. To calibrate this point turn the receiver dial to 12 M.C. on the green dial scale and then adjust trimmer No. 11 (second short wave band oscillator shunt trimmer). Generally, there will be two peaks, so align on the one with the trimmer screw farthest out. Adjust trimmer No. 12 (second shortwave detector shunt trimmer) to a peak. After this is done, try to increase the output meter deflection by detuning trimmer No. 12 and retuning the receiver dial. Continue detuning No. 12 and retuning the dial until the maximum output meter reading is reached.

MODELS 1271 to 1279
Chassis R-127 Series
Alignment Data, Part 4

STEWART WARNER CORP.

4. Tune the receiver to about 11.1 M.C. and check for reception of the image signal which should be weaker than the 12.0 M.C. signal. If the image is almost as strong as the 12 M.C. signal, it shows that No. 12 is not adjusted properly. If the signal cannot be heard at 11.1 M.C., but can be received at 12.9 M.C., then trimmer No. 11 is aligned on the image frequency and No. 11 and 12 must be realigned at the proper signal frequency.

THIRD SHORT WAVE BAND ALIGNMENT

1. Turn the receiver range switch to the third shortwave band position, which is the furthest 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. To calibrate this point turn the receiver dial to 20 M.C. on the purple dial scale and adjust Trimmer No. 13 (third shortwave band oscillator shunt trimmer) to give maximum output. Generally there will be two peaks, so align on the one with the trimmer screw farthest out. Then adjust trimmer No. 14 (third short wave band detector shunt trimmer) to a peak. After this is done, try to increase the output meter deflection by detuning No. 14 and retuning the receiver dial. Continue dotuning No. 14 and retuning the dial until the maximum output meter reading is reached.

4. Tune the receiver to about 19.1 M.C. and check for the image signal which should be weaker than the 20.0 M.C. Signal. If the image is almost as strong as the 20 M.C. signal, it shows that No. 14 is not adjusted correctly. No signal at 19.1 M.C. but one at 20.9 M.C. shows that trimmer No. 13 is aligned on the image frequency and thus both No. 13 and 14 must be readjusted.

5. Adjust 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. Adjust trimmer No. 15 (third shortwave band detector padding trimmer) for maximum output meter reading and then retune the dial. Repeat this procedure of adjusting the trimmer and retuning the dial until it does not increase the output meter reading.

6. Check reception of the image signal at 11.1 M.C. If the image is almost as strong as the 12 M.C. signal, but was found to be satisfactory at 19.1 M.C. with a 20,000 K.C. signal, No. 15 should be readjusted.

7. Check the adjustment of No. 14 with a 20,000 K.C. signal.

NOTE: To prevent the trimmers from being jarred out of adjustment use Ambroid or some similar cement to fasten the trimmer screws in position after completing the alignment. This should be done to all trimmers except the padding and I.F. trimmers.

STROMBERG-CARLSON TEL. MFG. CO.

MODEL 60
Specifications
Schematic

Stromberg-Carlson No. 60 Type Radio Receivers

ELECTRICAL SPECIFICATIONS

Type of Circuit	Superheterodyne
Tuning Ranges	540—1570 k. c. and 5.5 to 15.5 mc.
Type and Number of Tubes	1 No. 6D6, 1 No. 6A7, 1 No. 6B7, 1 No. 37, 2 No. 41, 1 No. 80
Voltage Rating	105-125 volts
Frequency Rating	50-60 Cycles
Power Consumption Rating	80 Watts

CIRCUIT DESCRIPTION

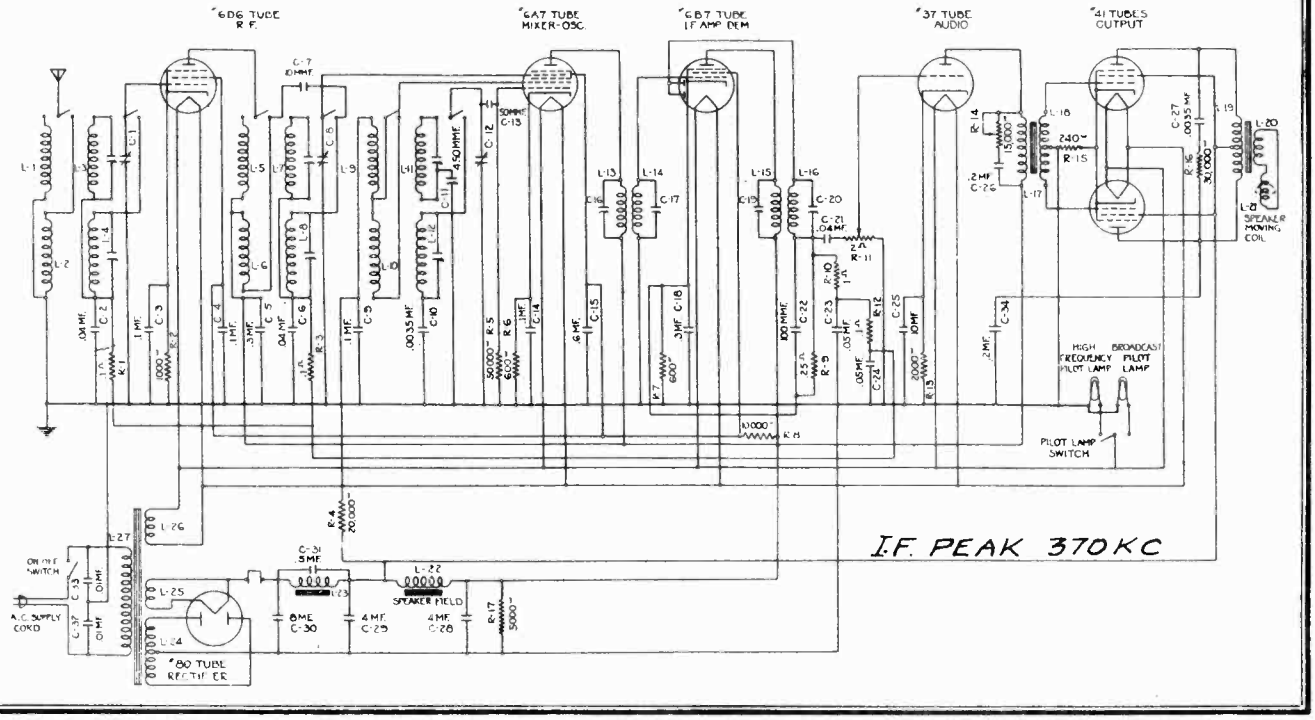
These receivers are seven tube A. C. operated Superheterodynes with two tuning ranges; standard broadcast and short-wave broadcast. See P-24418 Instructions for Installation and Operation to details of controls, installation and operating procedure.

The No. 6D6 tube is used as the R. F. amplifier. The No. 6A7 tube is used for the oscillator-mixer. The No. 6B7 tube serves as the I. F. amplifier, A. V. C., and demodulator. The No. 37 tube is the first audio amplifier and the two No. 41 tubes function as the power output stage. The No. 80 is the rectifier in the power supply circuit.

NORMAL VOLTAGE READINGS

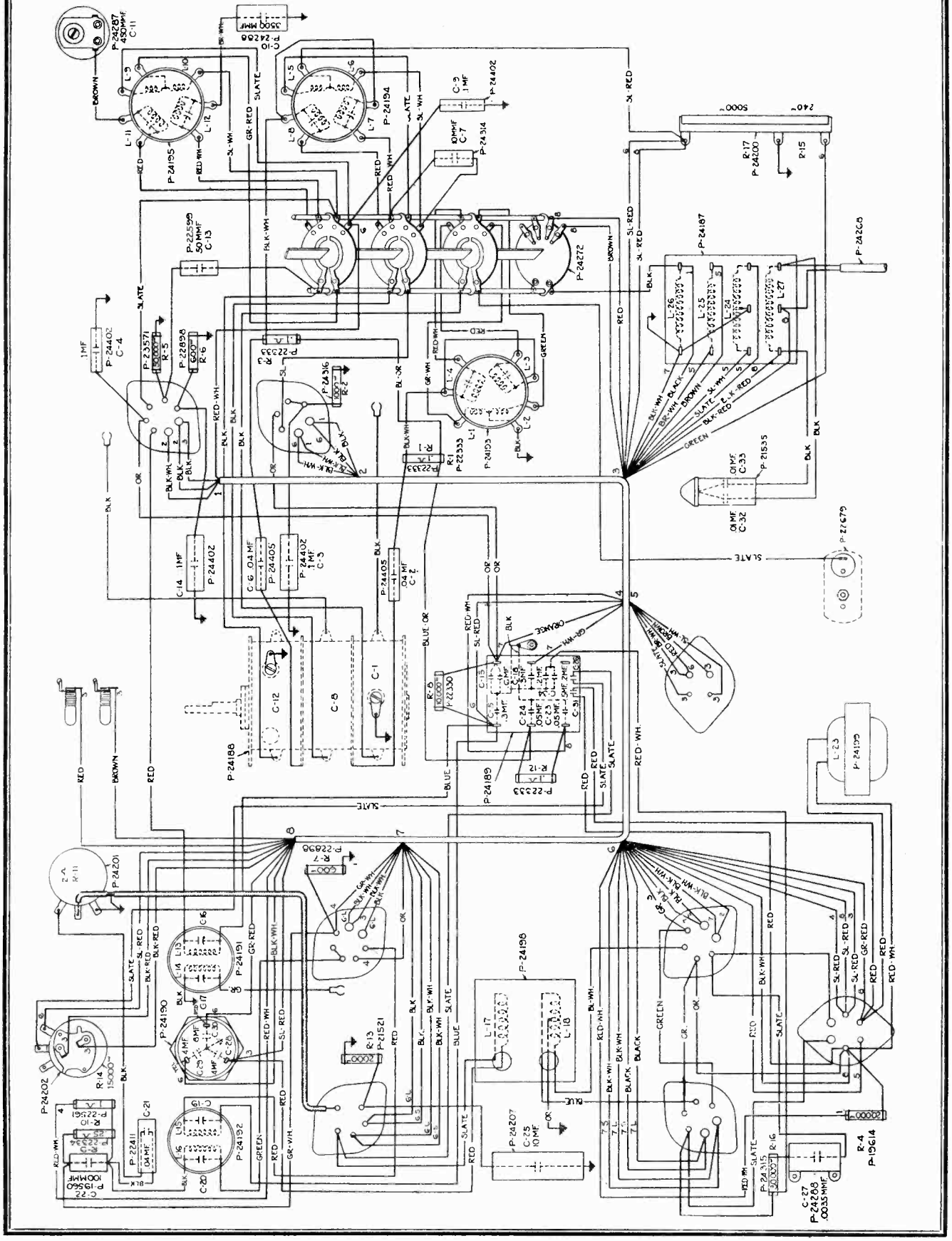
These voltage readings are obtained by measuring between the various tube socket contacts and the bases with the tubes and speaker plug in place. The set is therefore in operation when the measurements are made. Fig. 2 shows the terminal layout of the sockets with the proper terminal numbers. The terminals 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. Tune Receiver to 1500 k. c.

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. The Volume Control should be set all "On" (clockwise) before measuring voltages. See page 2.



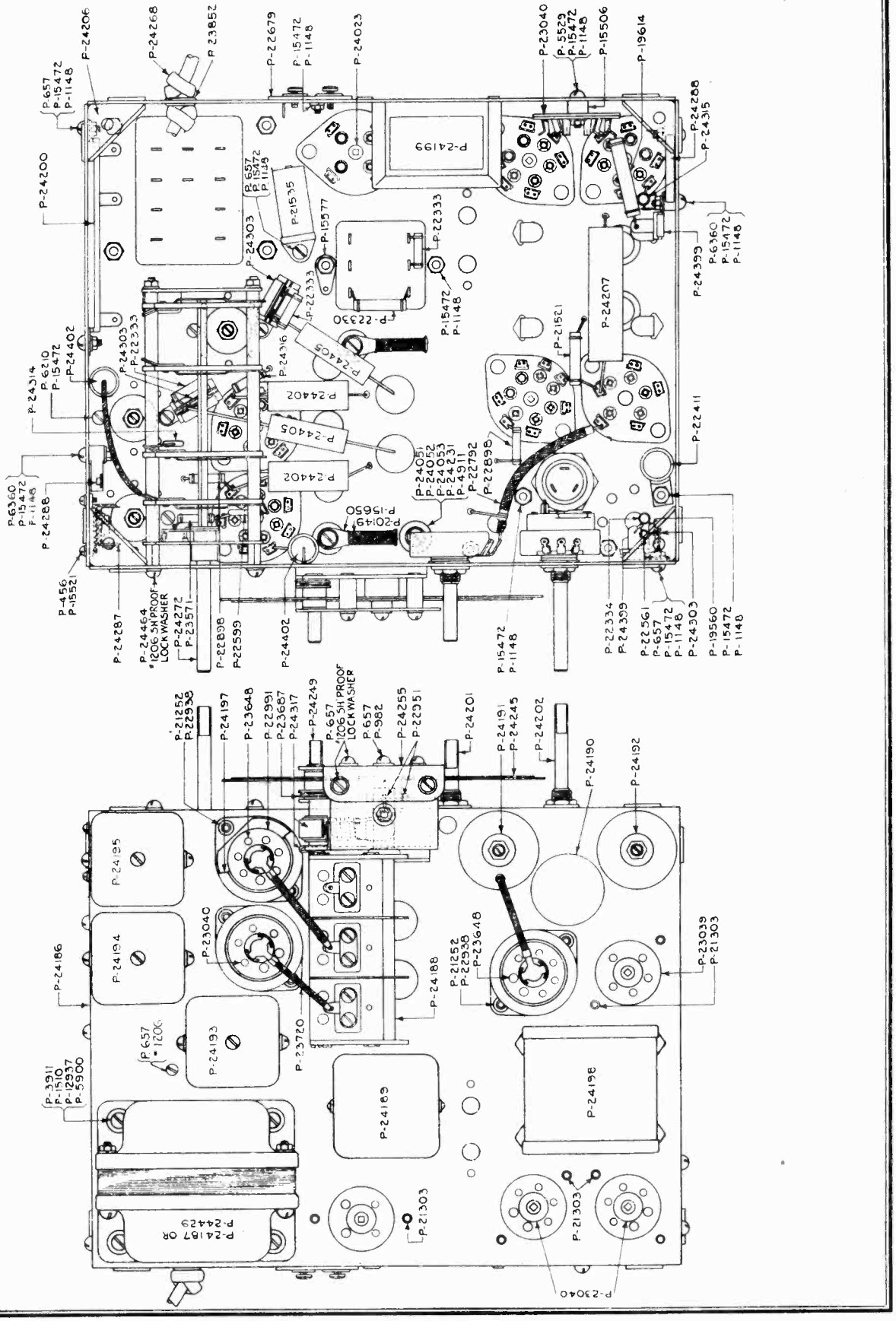
MODEL 60
Chassis Wiring

STROMBERG-CARLSON TEL. MFG. CO.



STROMBERG-CARLSON TEL. MFG. CO.

MODEL 60
Chassis Views



MODEL 60
Socket Layout
Voltage
Parts List

STROMBERG-CARLSON TEL. MFG. CO.

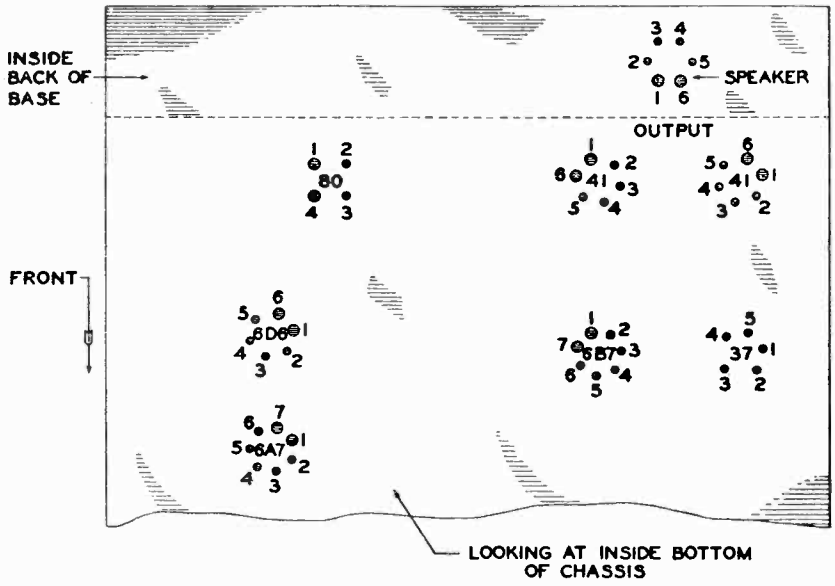


Fig. 2. Terminal Layout for Voltage Measurement Chart.

Tube	Circuit	Cap.	Terminals of Sockets 1	2	3	4	5	6	7	Heater Voltages Between Terminal Nos.
		G	H	P	S	Sup.	K	H	—	
6D6	R. F. Amp.	0	0	145	85	5.5	5.5	0		1–6—*6.5* volts
		Mix. G	H	Mix. P	S	Osc. P.	Osc. G	K	H	
6A7	Mixer-Osc.	0	0	145	85	175	—20	5.5	0	1–7—*6.5* volts
		G	H	P	S	D	D	K	H	
6B7	I. F., Dem.	0	0	145	85	0	0	3	0	1–7—*6.5* volts
			H	P	G	K	H	—	—	
37	1st Audio	—	0	140	0	8	0			1–5—*6.5* volts
			H	P	S	G	K	H	—	
41's	Output	—	0	250	250	0	16	0		1–6—*6.5* volts
			F	P	P	F	—	—	—	
80	Rectifier	—	270	*298*	*298*	270				1–4—*4.9* volts
Speaker Socket			245	145	270	270	250	245		

A. C. voltages are indicated by italics

REPLACEMENT PARTS

Piece Number		List Prices
P-24187	Power Transformer, 105-125 volts, 50-60 cycles	$ 6.35
P-24429	Power Transformer, 210-250 volts, 50-60 cycles	10.00
P-24245	Dial Assembly	1.00
P-24249	Drive Assembly	.15
P-23687	Washer	.01
P-24255	Escutcheon Assembly	1.20
P-24189	By-Pass Capacitor Assembly	3.55
P-24191	Transformer Assembly, 1st I. F.	2.15
P-24192	Transformer Assembly, 2nd I. F.	2.15
P-22679	Ant. and Ground Binding Post Assembly	.15
P-24268	Power Cord	.75
P-22991	Tube Shield Base	.05
P-24197	Tube Shield	.17
P-24023	Tube Socket, 4 Pin	.17
P-23039	Tube Socket, 5 Pin	.17
P-23040	Tube Socket, 6 pin	.17
P-23648	Tube Socket, 7 pin	.17
P-24198	Audio Transformer Assembly	3.70
P-24199	Choke Coil Assembly	1.80
P-24200	Voltage Divider Resistor	.60

Piece Number		List Prices
P-24201	Volume Control Potentiometer	.85
P-24202	Treble Control and On-Off Switch	1.15
P-24317	Pilot Lamp Socket	.15
P-24272	Range Switch Assembly	4.15
P-21535	Capacitor Assembly, 2–.01 Mfd.	.80
P-22111	Capacitor Assembly, .04 Mfd.	.80
P-24402	Capacitor, .1 Mfd.	.45
P-24405	Capacitor, .04 Mfd.	.45
P-24190	Electrolytic Capacitor, 8 Mfd., 4 Mfd., 4 Mfd.	3.40
P-24207	Electrolytic Capacitor, 10 Mfd.	.80
P-22898	Resistor, 600 Ohms, Type D	.37
P-24316	Resistor, 1,000 Ohms, Type D	.37
P-23571	Resistor, 50,000 Ohms, Type D	.37
P-22333	Resistor, .1 Megohm, Type D	.37
P-22334	Resistor, .25 Megohm, Type D	.37
P-22561	Resistor, 1 Megohm, Type D	.37
P-21521	Resistor, 2,000 Ohms, Type C	.37
P-22330	Resistor, 10,000 Ohms, Type C	.37
P-24315	Resistor, 30,000 Ohms, Type C	4.75
P-19614	Resistor, 20,000 Ohms, Type B	.55
P-24288	Moulded Capacitor, 3,500 MMFD	4.75
P-24416	Knob (Large)	.30
P-24417	Knob (Small)	.20

STROMBERG-CARLSON TEL. MFG. CO.

MODEL 68
Specifications
List of Parts

Engineering Data
Stromberg-Carlson No. 68 All-Wave Radio Receiver

STROMBERG-CARLSON TELEPHONE MANUFACTURING COMPANY
Rochester, New York

ELECTRICAL SPECIFICATIONS

Type of Circuit	Superheterodyne
Tuning Ranges	A—520 to 1500 kc.; B—1400 to 4200 kc.; C—3.7 to 10.5 mc.; D—8.9 to 25 mc.
Type and Number of Tubes	2 No. 6D6, 1 No. 6A7, 1 No. 6B7, 1 No. 5Z3, 3 No. 42, 1 No. 76, 1 No. 85
Voltage Rating	105-125 Volts
Frequency Rating	50-60 Cycles
Power Consumption Rating (Maximum line voltage)	160 Watts
Intermediate Frequency	370 kc.

CIRCUIT DESCRIPTION

This receiver is a ten tube A. C. operated all-wave superheterodyne having four tuning ranges. See P-24689, Installation and Operating Instructions, for installation and operating procedure.

One No. 6D6 tube is used as an R. F. amplifier, the No. 6A7 tube is used as a modulator, and the No. 76 acts as the oscillator in the Tuner Unit. In the Amplifier Chassis the other No. 6D6 acts as the I. F. amplifier. The No. 6B7 is in the A. V. C. circuit, while the No. 85 acts as demodulator and first audio amplifier. One No. 42 operates as a second or driver audio stage and the other two constitute the power output stage. The No. 5Z3 is the rectifier in the power supply.

NORMAL VOLTAGE READINGS

These voltage readings are obtained by measuring between the various tube socket contacts and the bases 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 119 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. See page 2.

REPLACEMENT PARTS

Piece Number	Description of Part	Required Per Receiver	List Price Each
24685	Capacitor Assembly (25 to 60 cycle)	1	$15.00
24558	Capacitor Assembly (50 to 60 cycle)	1	10.00
24676	Capacitor Assembly (By-Pass)	1	5.00
23970	Capacitor Assembly	1	1.60
23965	Transformer Assembly (Audio)	1	4.55
24687	Power Transformer (25 to 60 cycle)	1	15.00
24422	Power Transformer (50 to 60 cycle)	1	10.00
24424	Transformer Assembly (IF)	1	4.00
24425	Transformer Assembly (IF)	1	4.00
24426	Transformer Assembly (IF)	1	4.00
24677	Transformer Assembly (IF)	1	4.00
23959	Choke Assembly	1	2.50
24025	Transformer Assembly (Audio)	1	2.40
23967	Transformer Assembly (Audio Output)	1	2.20
23649	Tube Socket (8 Prong)	2	.17
23648	Tube Socket (7 Prong)	2	.17
23040	Tube Socket (6 Prong)	7	.17
23039	Tube Socket (5 Prong)	1	.17
23038	Tube Socket (4 Prong)	1	.17
21984	Fuse Block	1	.20
23150	Fuse 2- Ampere	1	.12
24574	Condenser (Illini) .0095 M. F.	1	1.00
21334	Condenser (Illini) .001 M. F.	1	.60
22411	Capacitor Assembly .04 M. F.	1	.80
21535	Capacitor Assembly .01 M. F.	1	.80
23819	Coil Assembly .9 M. H.	3	.60
17350	Switch (Base Control)	1	.75
24268	Cord (Power)	1	.75
19259	Cord (Power receptacle to tuner)	1	1.30
24674	Cable (Output)	1	1.75
22329	Resistor 6,500 Ohm	1	.37
18704	Resistor 15,000 Ohm	1	.37
22334	Resistor .25 Meg.	1	.37
23571	Resistor 50,000 Ohm	1	.37
24073	Resistor 25,000 Ohm	1	.37
22333	Resistor—Type D, .1 Meg.	5	.37
22335	Resistor—Type D, .5 Meg.	1	.37
24316	Resistor—Type D, .1000 Ohm	1	.37
22871	Resistor—Type D, 2 Meg.	1	$ .37
18696	Resistor—Type B, 1,000 Ohm	1	.55
19614	Resistor—Type B, 2,000 Ohm	1	.55
22328	Resistor—Type C, 4,000 Ohm	1	.37
21521	Resistor—Type C, 2,000 Ohm	2	.37
22330	Resistor—Type C, 10,000 Ohm	1	.37
23568	Resistor—Type D, 450 Ohm	1	.37
23844	Resistor—Type D, 300 Ohm	3	.37
23966	Resistor—Voltage Divider	1	1.85
24340	Switch (Range)	1	7.00
24561	Capacitor 5 MMF	2	.20
24402	Capacitor .1 M. F.	4	.45
24668	Coil Assembly .115 M. H.	1	.60
24460	Capacitor .0025 M. F.	1	3.75
24579	Cable (Output)	1	4.00
24465	Binding Post (Antenna and Ground)	1	.40
24423	Coil Assembly 1.5 M. H.	1	1.15
24575	Capacitor .015 M. F.	1	1.25
24402	Capacitor .1 M. F.	4	.45
24166	Capacitor 25 MMF	1	.25
24560	Capacitor 50 MMF	1	.25
24352	Capacitor (IF Tuning Condenser)	1	.40
24580	Capacitor (Electrolytic)	1	1.40
24346	Potentiometer (Volume Control)	1	1.40
22593	Potentiometer (Tone Control)	1	1.85
24358	Bracket Assembly	1	.20
24362	Dial Disc. Assembly	1	.40
24366	Dial Plate	1	.45
24290	Bearing	1	.03
24372	Shaft Assembly	1	.25
24371	Dial	1	.75
24375	Dial Thrust Bearing	1	.04
24376	Tuning Meter	1	2.75
24317	Pilot Lamp Sockets	7	.15
24505	Front Dial Lens (Glass)	1	.25
24380	Dial Lens Clips	4	.02
24388	Dial Pointer	1	.05
24773	Loud Speaker	1	13.50

MODEL 68
Schematic
Voltage

STROMBERG-CARLSON TEL. MFG. CO.

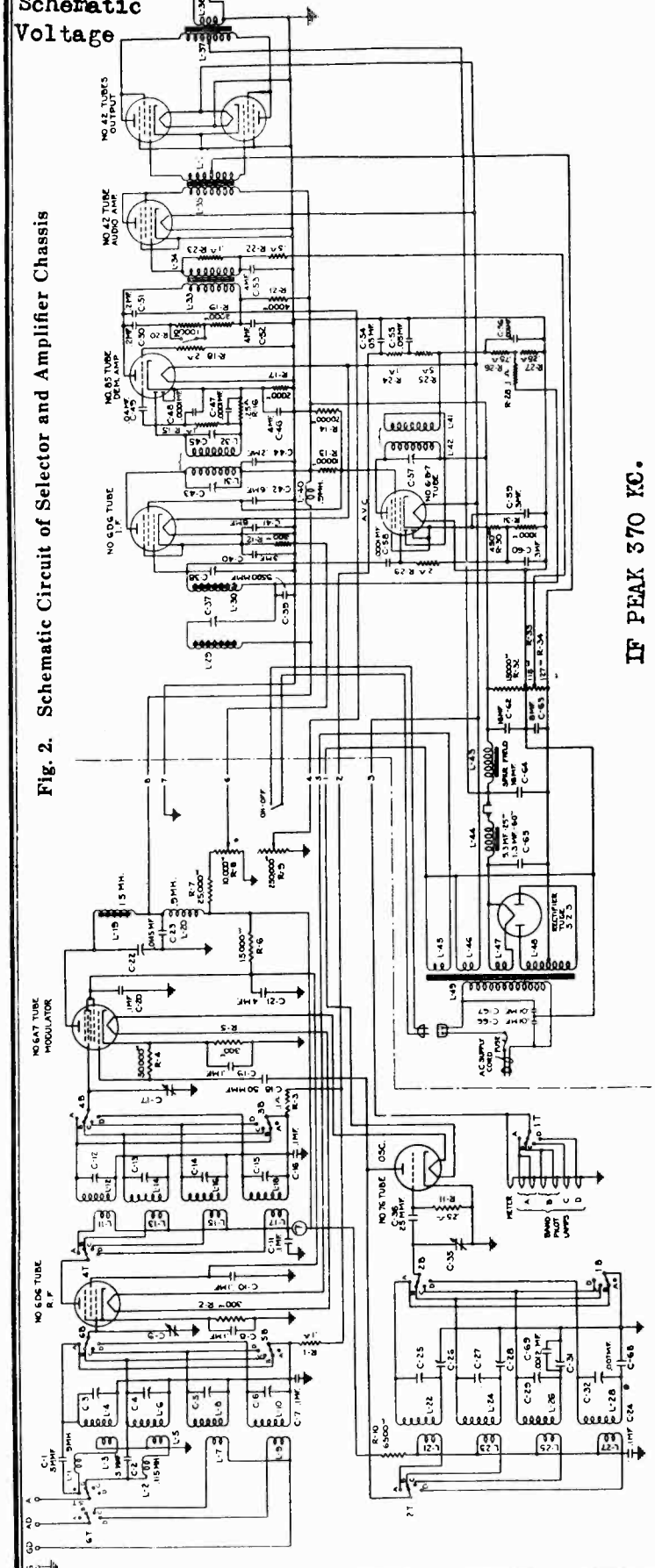


Fig. 2. Schematic Circuit of Selector and Amplifier Chassis

IF PEAK 370 KC.

Heater Voltages
Between Terminal
Nos.at 119 volts

		Terminals of Sockets								
		2	3	4	5	6	7	8	Nos.at 119 volts	
6D6	RF	+175	+89	+2.33	+2.38		---	---	1-6	6.4*
6A7	Mod.	+180	+89	+89	-8.6	+2.0	---	---	1-7	6.4*
76	Osc.	+152	-25	0		---	---	---	1-5	6.4*
6D6	IF	+181	+100	+2.6	+2.6		---	---	1-6	6.3*
6B7	AVC	+181	+100	0	+8.65	+8.65	---	---	1-7	6.3*
85	1 AF	+150	+0.1	+10	+10		---	---	1-6	6.35*
42	2 AF	+170	+170	-.22	0		---	---	1-6	6.3*
42	Output	+378	+378	-37	0		---	---	1-6	6.3*
5Z3	Rect.	484	484		---	---	---	---	1-4	4.8*
Speaker Socket Connector		+181	+382	+382	+382	---	---	---	---	*=A-C voltages
Socket		0	6.3*	0	19.2*	0	0	0	+180	

Set tuned to 1000 kc., "A" band. Volume Control on full

STROMBERG-CARLSON TEL. MFG. CO.

MODEL 68
Socket Layout
Chassis Views

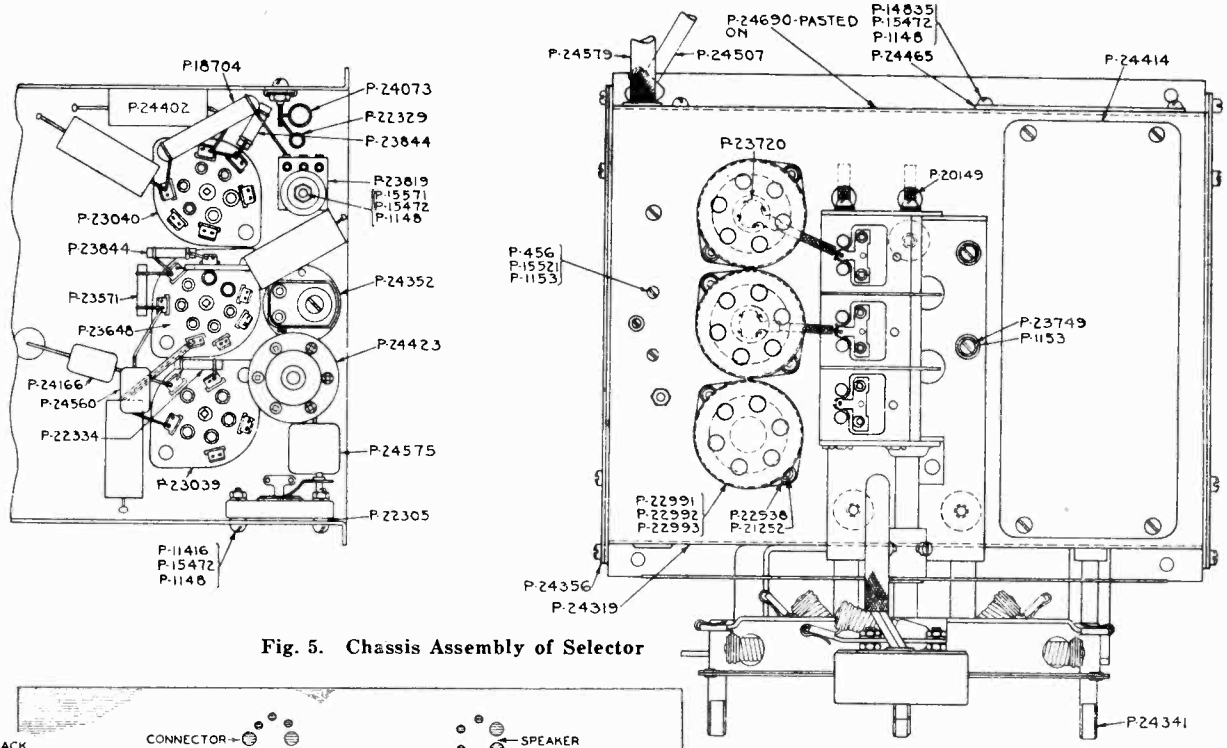
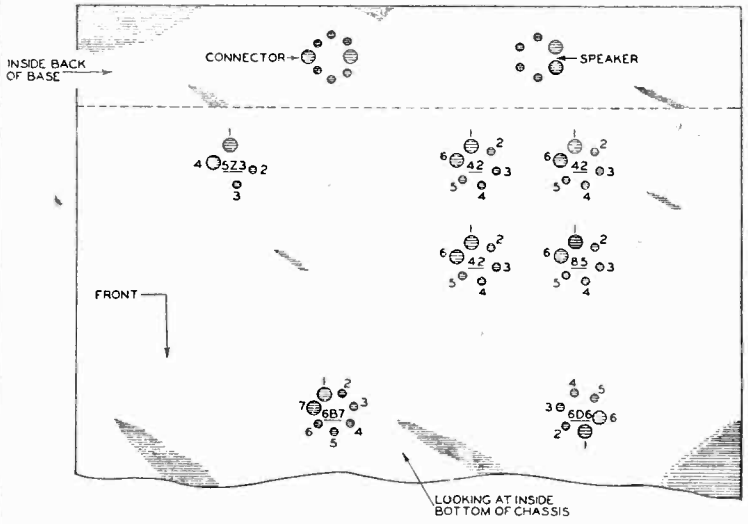


Fig. 5. Chassis Assembly of Selector



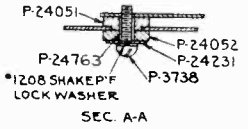
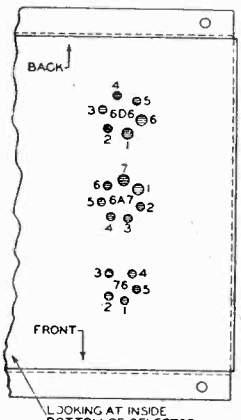
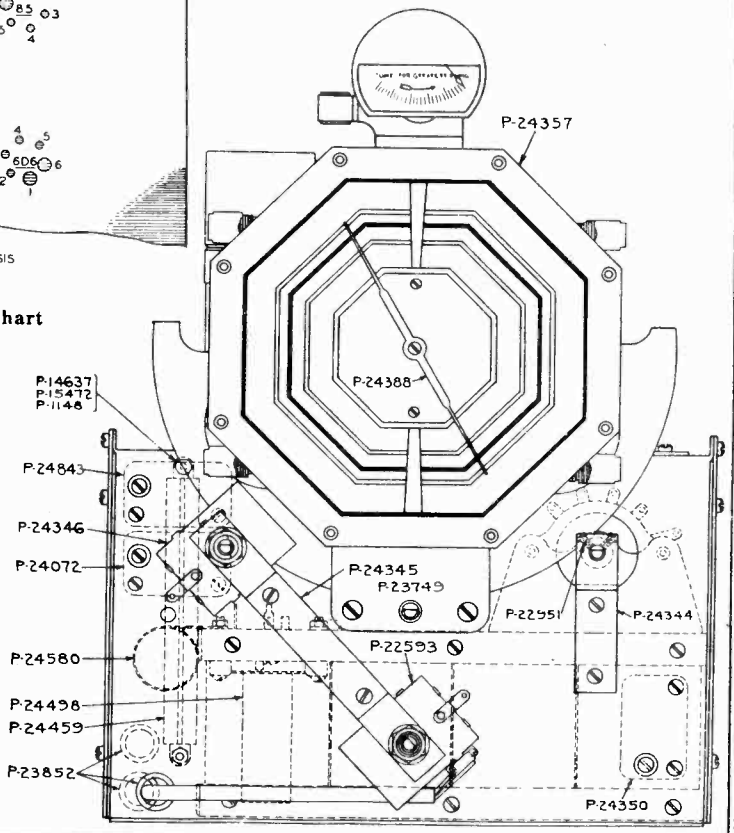


Fig. 1. Terminal Layout for Voltage Measurement Chart





MODEL 68
Chassis Wiring
of Selector

STROMBERG-CARLSON TEL. MFG. CO.

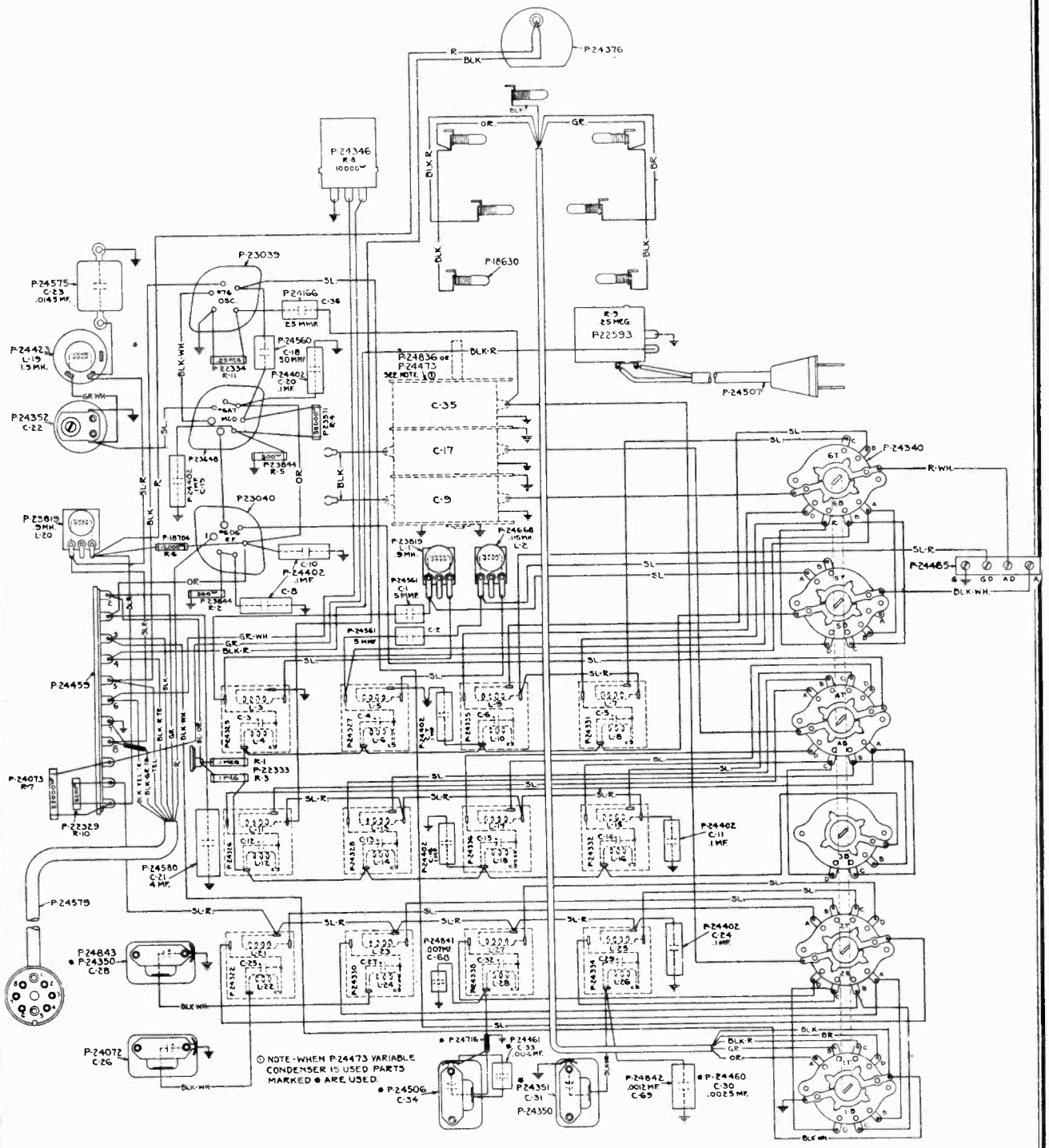


Fig. 3. Wiring Diagram of Selector

STROMBERG-CARLSON TEL. MFG. CO.

MODEL 68
Chassis Wiring
of Amplifier

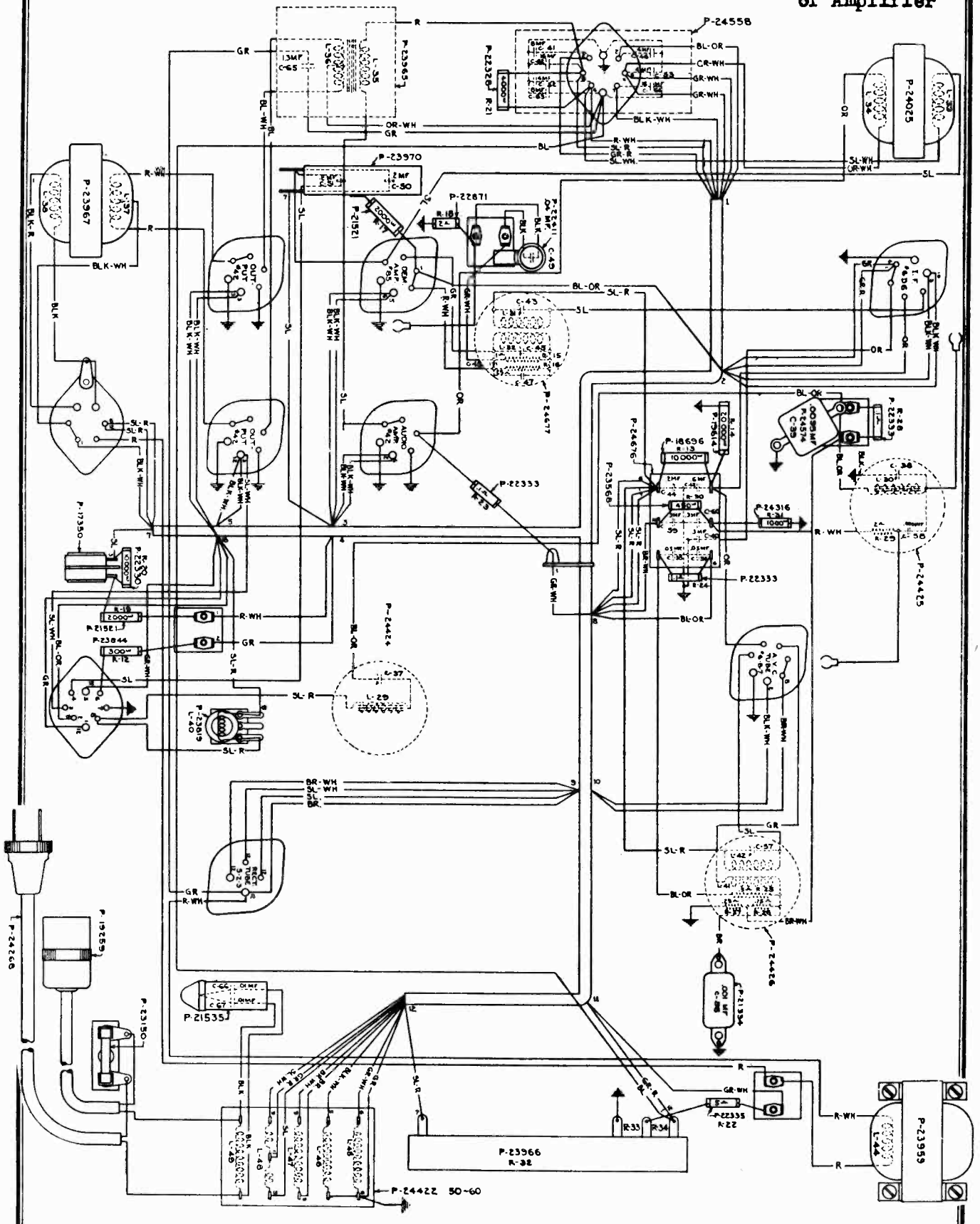


Fig. 4. Wiring Diagram of Amplifier Chassis

MODEL 68
Amplifier
Chassis Views

STROMBERG-CARLSON TEL. MFG. CO.

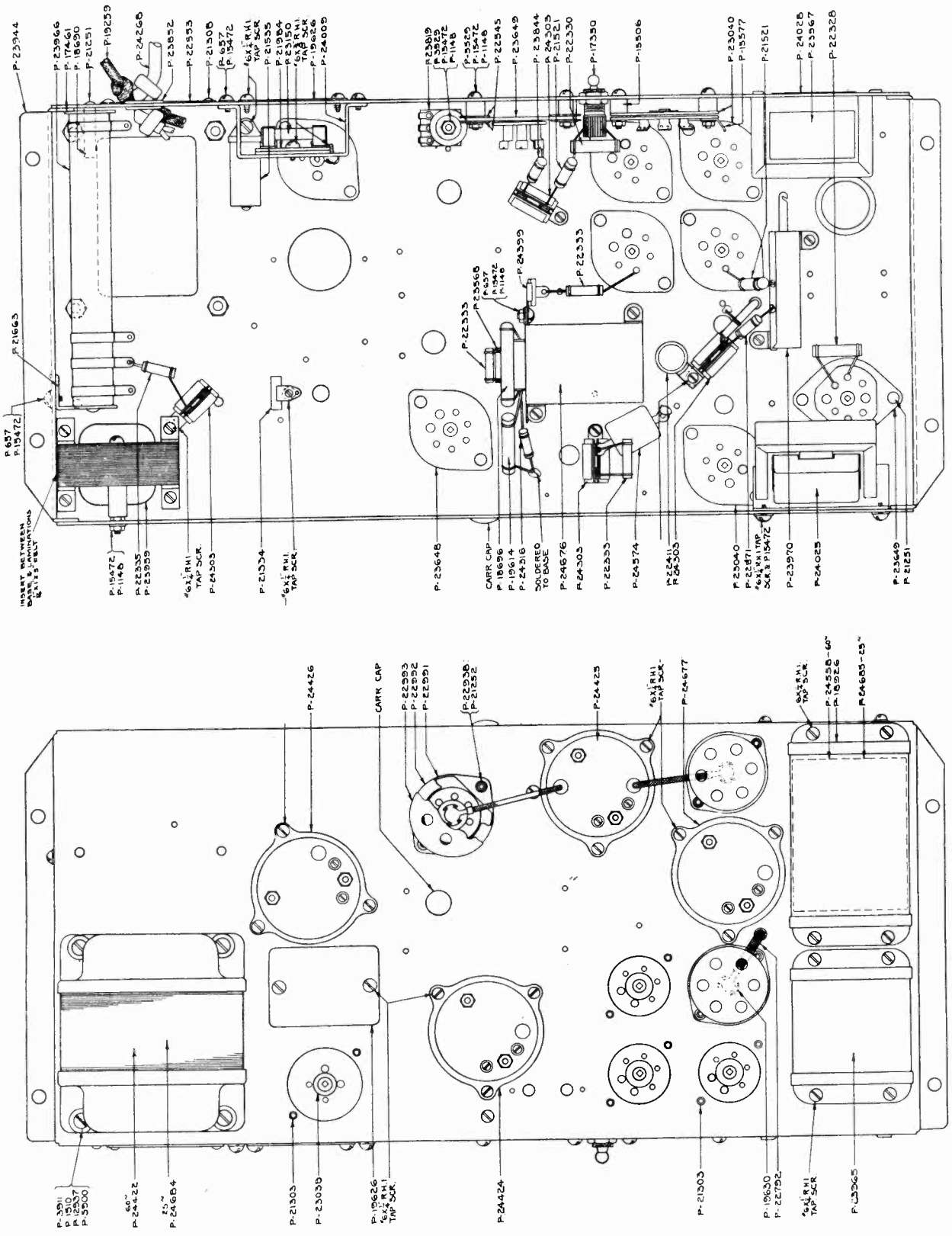


Fig. 6. Chassis Assembly of Amplifier

STROMBERG-CARLSON TEL. MFG. CO.

MODEL 69
All-Wave Selector
Schematic, Notes

Stromberg-Carlson No. 69 All-Wave Selector

ELECTRICAL SPECIFICATIONS

Type of Circuit	Superheterodyne Frequency Changer
Tuning Ranges (in Selector)	B—1430 to 4200 kc.; C—3.7 to 10.5 mc.; D—9 to 25 mc.
Type and Number of Tubes	1 No. 6D6 1 No. 6A7, 1 No. 76, 1 No. 84
Voltage Rating	105-125 Volts
Frequency Rating	50-60 Cycles
Power Consumption Rating	28 Watts
Frequency of Signal Output to Receiver	545 Kc.

CIRCUIT DESCRIPTION

The No. 69 All-Wave Selector contains the frequency changer circuits of a superheterodyne system which connected to the input (Ant. and Gnd. connections) of a good standard broadcast receiver gives an extension of the tuning range from 1500 kilocycles to 25 megacycles. Thus all frequencies between 550 kilocycles and 25 megacycles can be readily tuned. See P-24692 Installation and Operating Instructions for details of controls, installation and operating procedures.

The No. 6D6 tube is used as the R. F. Amplifier. The No. 6A7 tube is used as the Modulator. The No. 76 tube is used as the Oscillator. The No. 84 tube is the Rectifier in the self-contained power supply.

NORMAL VOLTAGE READINGS

These voltage readings are obtained by measuring between the various tube socket contacts and the bases with the tubes in place. The Selector is therefore in operation when the measurements are made. Fig. 2 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. See page 2.

IF PEAK 545 KC.

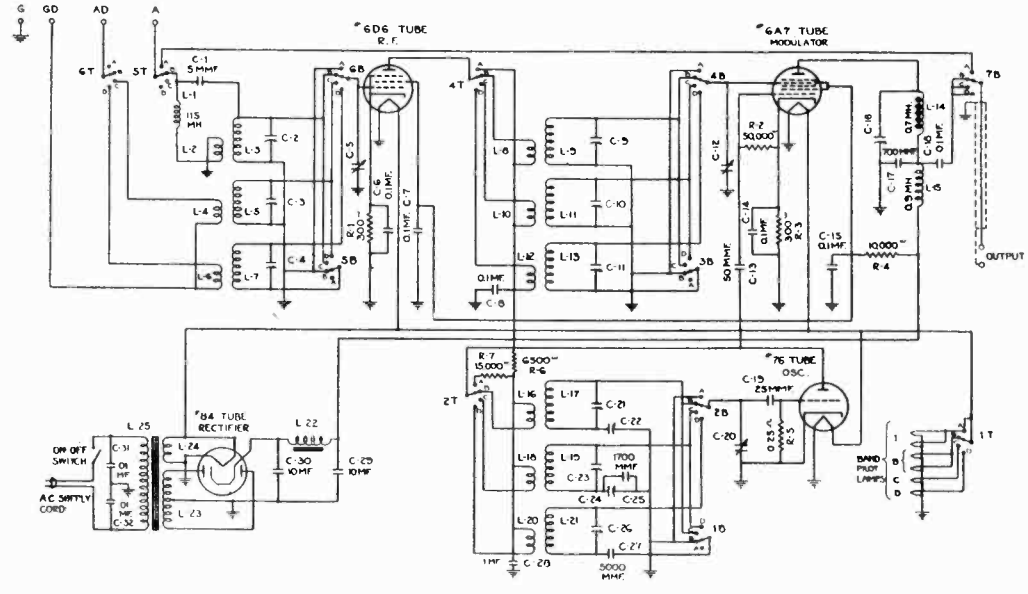


Fig. 1. Schematic Circuit

MODEL 69
Chassis Wiring

STROMBERG-CARLSON TEL. MFG. CO.

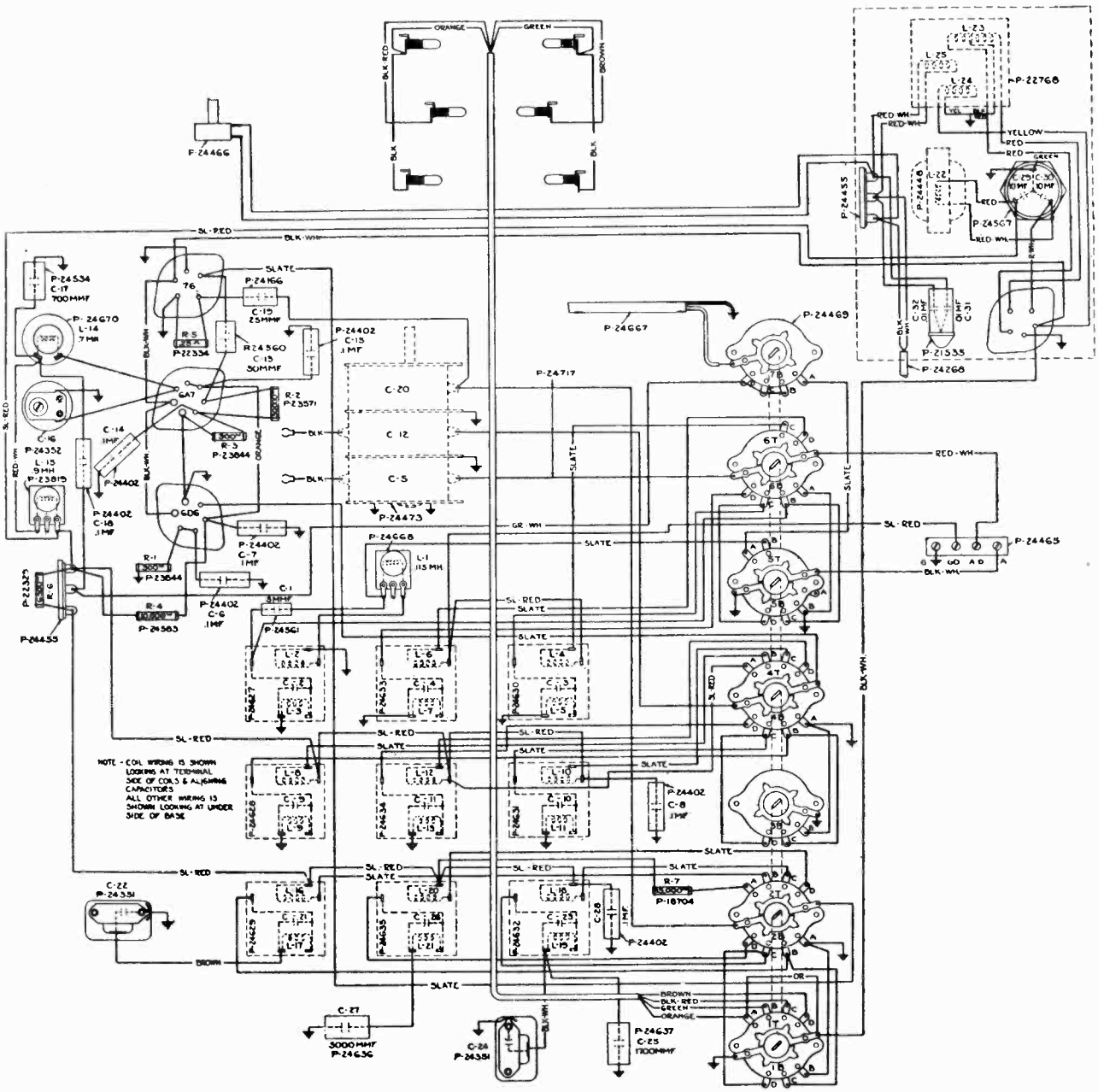


Fig. 3. Wiring Diagram.

STROMBERG-CARLSON TEL. MFG. CO.

MODEL 69
Socket Layout
Voltage
Parts List

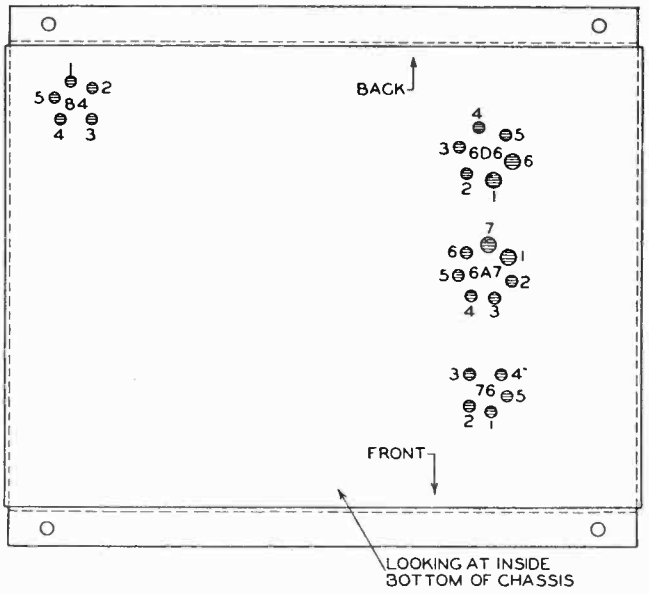


Fig. 2. Terminal Layout for Voltage Measurement Chart.

Tube	*Circuit*	*Cap.*	*Terminals of Socket*						
			1	2	3	4	5	6	7
6D6	R. F. Amp.	G	H	P	S	Sup.	K	H	
		0	0	191	103	2.9	2.9	A. C. 6.3	—
6A7	Modulator	Mod. G	H	Mod. P	S	G2	G1	K	H
		0	A. C. 6.3	191	103	103	Approx. —1	3.1	0
76	Oscillator	—	H	P	G	K	H		
			0	160	—14	0	A. C. 6.3	—	—
84	Rectifier	—	H	P	P	K	H		
			0	A. C. 178	A. C. 178	207	A. C. 6.3	—	—

Measured on Range B at 2400 Kc.—Line voltage 120 volts A. C.

REPLACEMENT PARTS

Piece Number	Part	Required Per Receiver	List Price Each
24469	Switch Range	1	$ 7.75
24627	Coil Assembly (Antenna Range B)	1	2.00
24628	Coil Assembly (R. F. Range B)	1	2.00
24629	Coil Assembly (Oscillator Range B)	1	2.00
24630	Coil Assembly (Antenna Range C)	1	2.00
24631	Coil Assembly (R. F. Range C)	1	2.00
24632	Coil Assembly (Oscillator Range C)	1	2.00
24633	Coil Assembly (Antenna Range D)	1	2.00
24634	Coil Assembly (R. F. Range D)	1	2.00
24635	Coil Assembly (Oscillator Range D)	1	2.00
24637	Capacitor .0017 MF	1	.35
24561	Capacitor 5 MMF	1	.20
24636	Capacitor .005 MF	1	.60
24402	Capacitor .1 MF	2	.45
24668	Coil Assembly .115 MH	1	.60
18704	Resistor 15,000 Ohms	1	.52
24361	Variable Condenser (Only)	1	4.00
24362	Dial Disc Assembly	1	.40
24366	Dial Plate	1	.45
24367	Dial Reflector Assembly	1	2.00
24669	Dial	1	.75
24290	Bearing	1	.03
24474	Shaft Assembly	1	.25
24317	Pilot Lamp Sockets	6	.15
15602	Dial Eyelets	8	.01
24388	Dial Pointer	1	.05
24505	Lenses (Glass)	1	.25

Piece Number	Part	Required per Receiver	List Price Each
24380	Clips (Lens)	4	$ .02
3x¾"	Screws (R. H. Br. Wood) (Clips)	4	.01
22768	Transformer (Power) 60-cycle	1	4.25
24567	Capacitor Electrolytic	1	3.00
24448	Choke Assembly	1	2.00
21535	Capacitor Assembly	1	.80
22973	Tube Sockets (5 prong) Rectifier Tube	1	.15
23039	Tube Socket (5 prong) Oscillator Tube	1	.17
23040	Tube Socket (6 prong) Amplifier Tube	1	.17
23648	Tube Socket (7 prong) Modulator Tube	1	.17
24466	Switch (On-Off)	1	.60
24465	Binding Post (Antenna and Ground)	1	.40
24670	Coil Assembly .7 MH	1	1.25
23819	Coil Assembly .9 MH	1	.60
24667	Cord Output	1	2.50
22329	Resistor 6,500 Ohm	1	.37
22334	Resistor .25 Megohm	1	.37
23571	Resistor 50,000 Ohm	1	.35
23844	Resistor 300 Ohm	2	.37
24583	Resistor 10,000 Ohm	1	.35
24402	Capacitor .1 MF	5	.45
24560	Capacitor 50 MMF	1	.25
24166	Capacitor 25 MMF	1	.25
24351	Capacitor Aligner	2	1.00
24352	Capacitor Aligner	1	.40
24534	Capacitor 700 MMF	1	.35

MODEL 69
Chassis Views

STROMBERG-CARLSON TEL. MFG. CO.

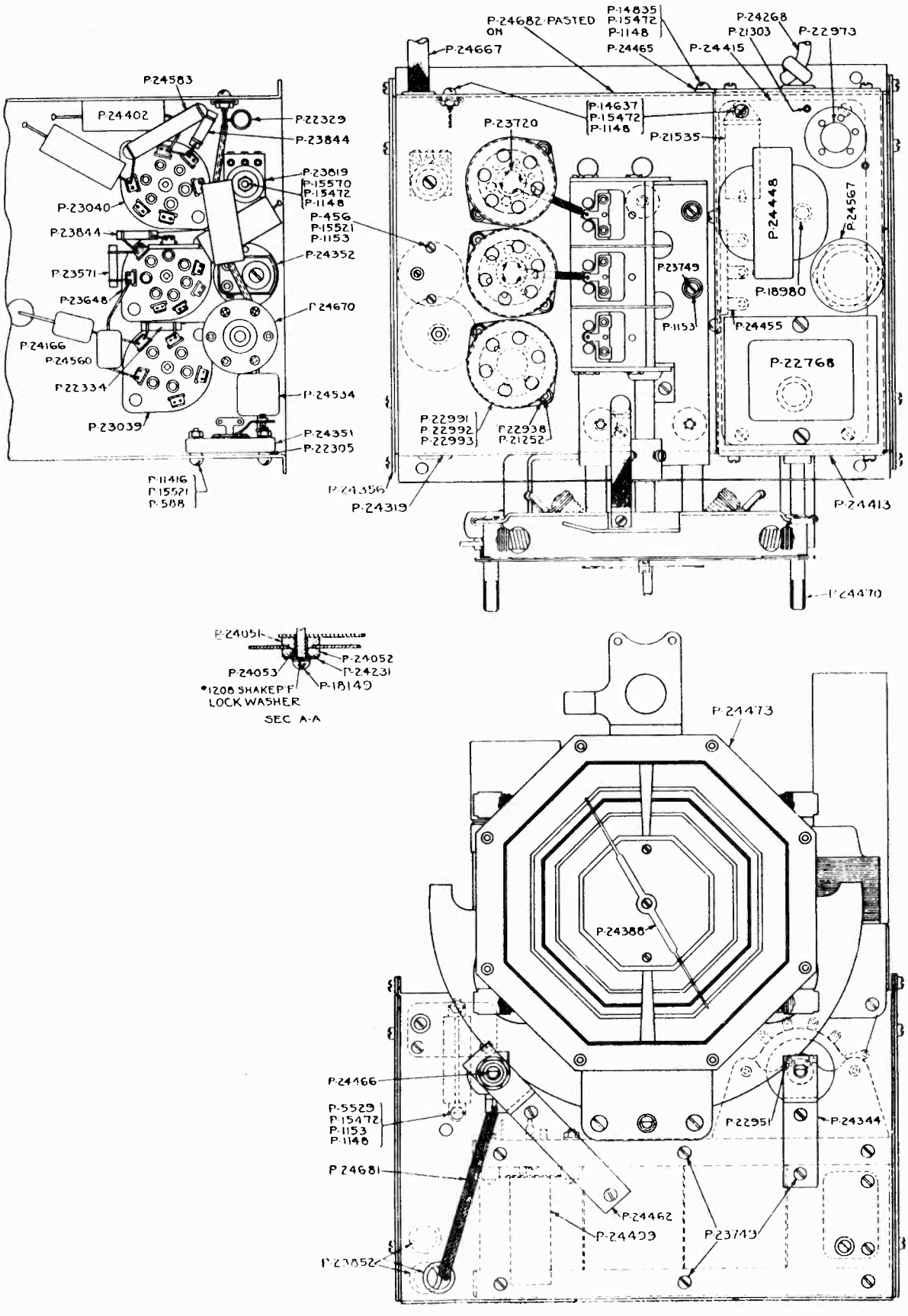
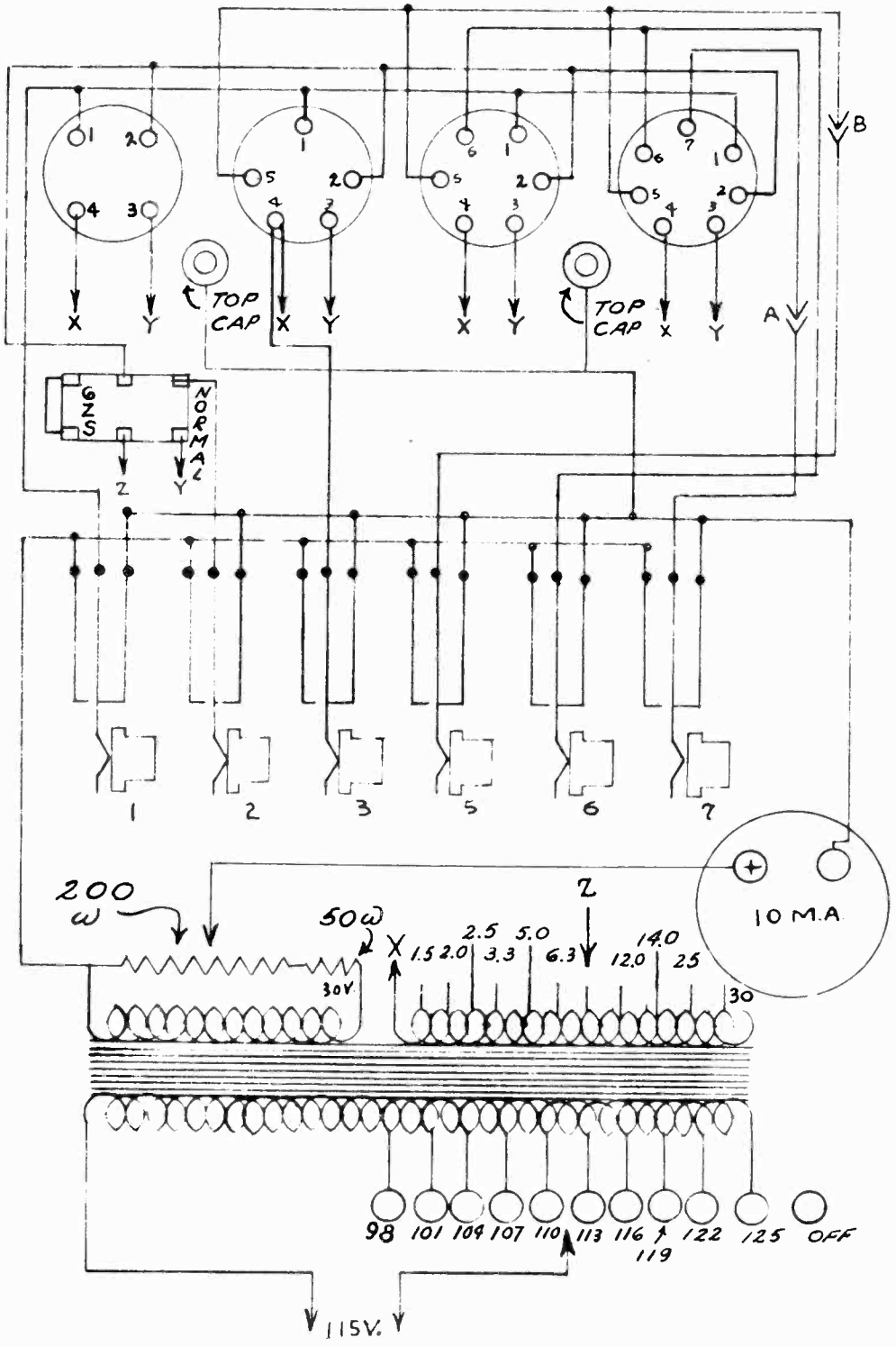


Fig. 1. Chassis Assembly.

MODEL 35
Schematic

SUPREME INSTRUMENTS CORP.

Switch A Normally closed, open for 12 25 Tube
Switch B Normally closed, open for 12 A5 Tube



SUPREME INSTRUMENTS CORP.
GREENWOOD, MISS

May 21st, 1934

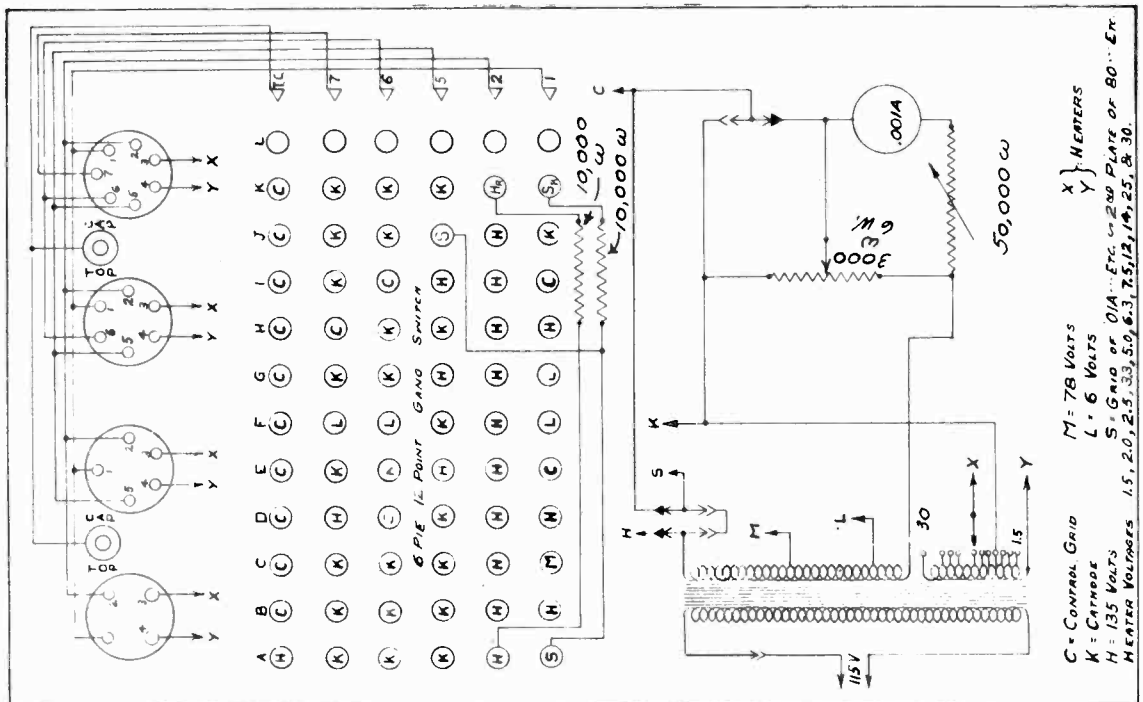
782A

Schematic Diagram
Model 35

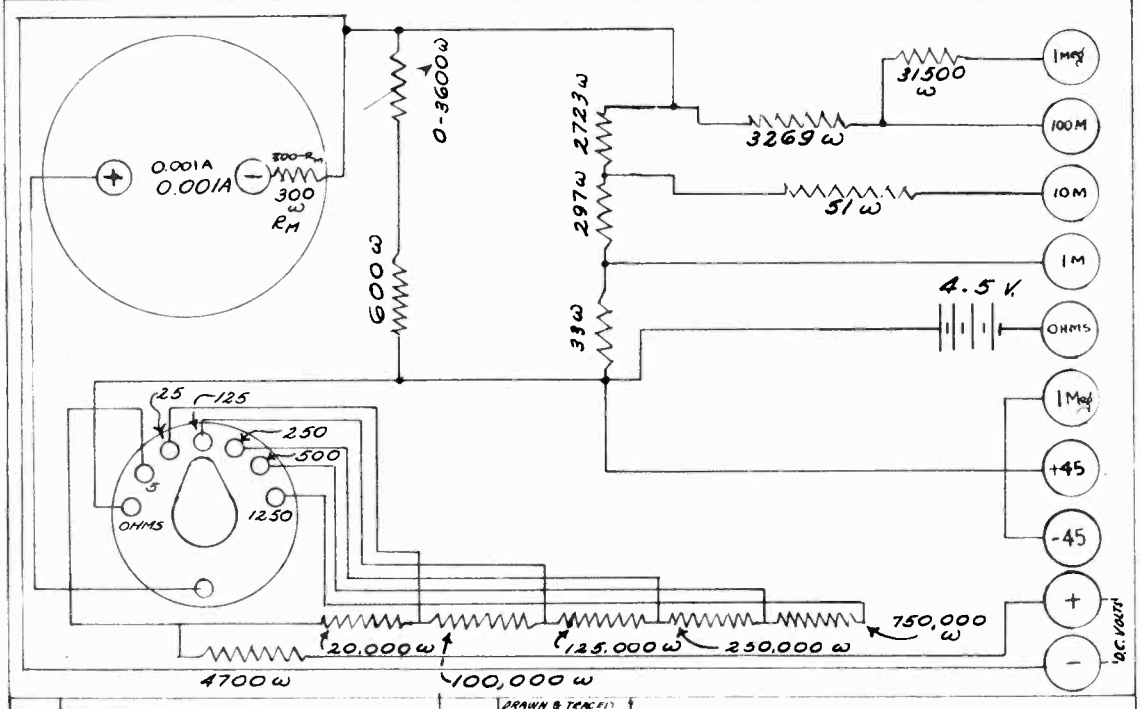
DRAWN & TRACED
CHECKED
APPROVED

MODEL 55
MODEL 111
Schematics

SUPREME INSTRUMENTS CORP.



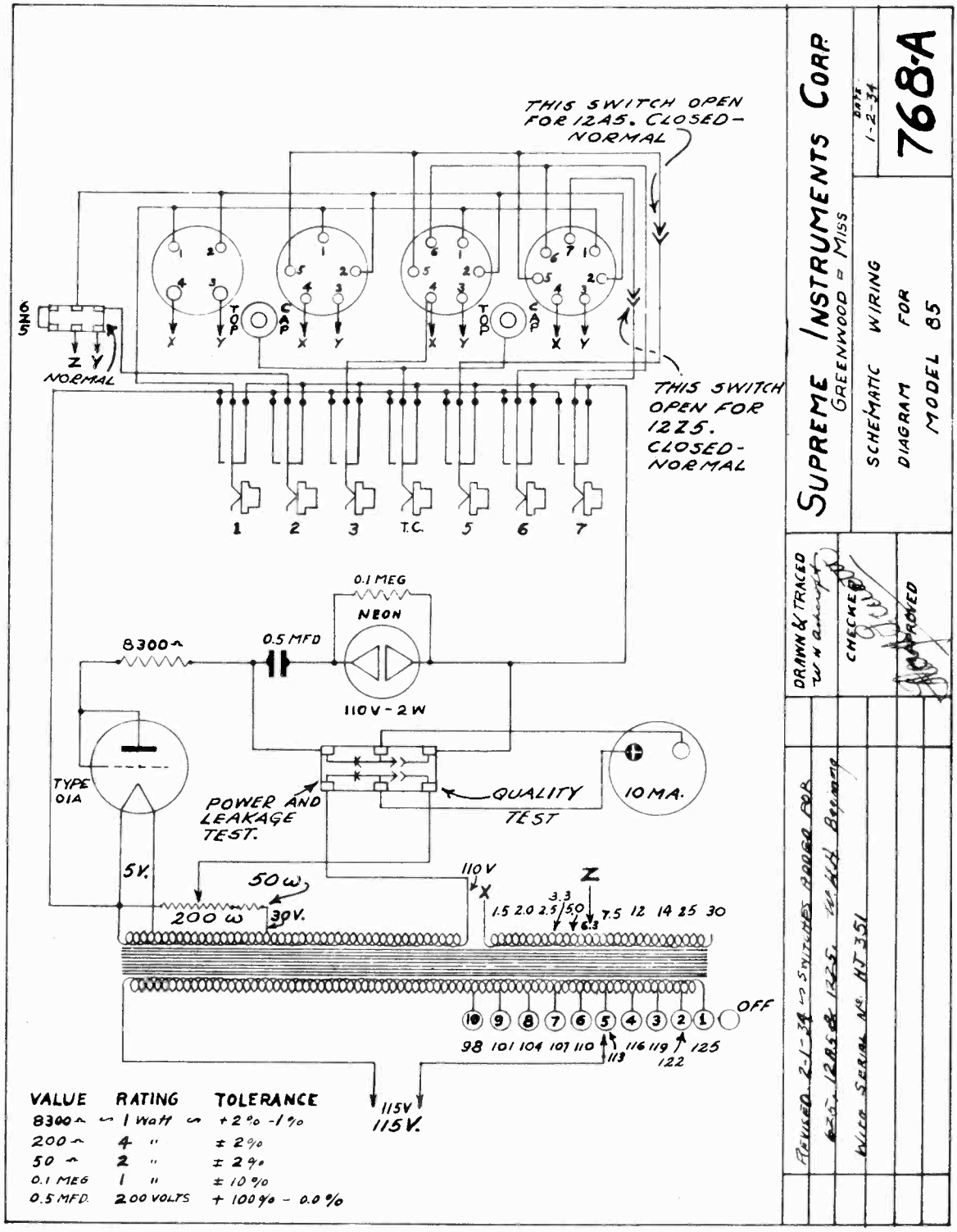
	DRAWN & TRACED	SUPREME INSTRUMENTS CORP. GREENWOOD o MISS
	CHECKED	SCHEMATIC WIRING DIAGRAM FOR MODEL 55
	APPROVED	DATE 1-16-34
		772-A



	DRAWN & TRACED	SUPREME INSTRUMENTS CORP. GREENWOOD, MISS
	CHECKED by	Schematic Wiring Diagram Model 111
	APPROVED	Oct 25, 1933
		733A

MODEL 85
Schematic

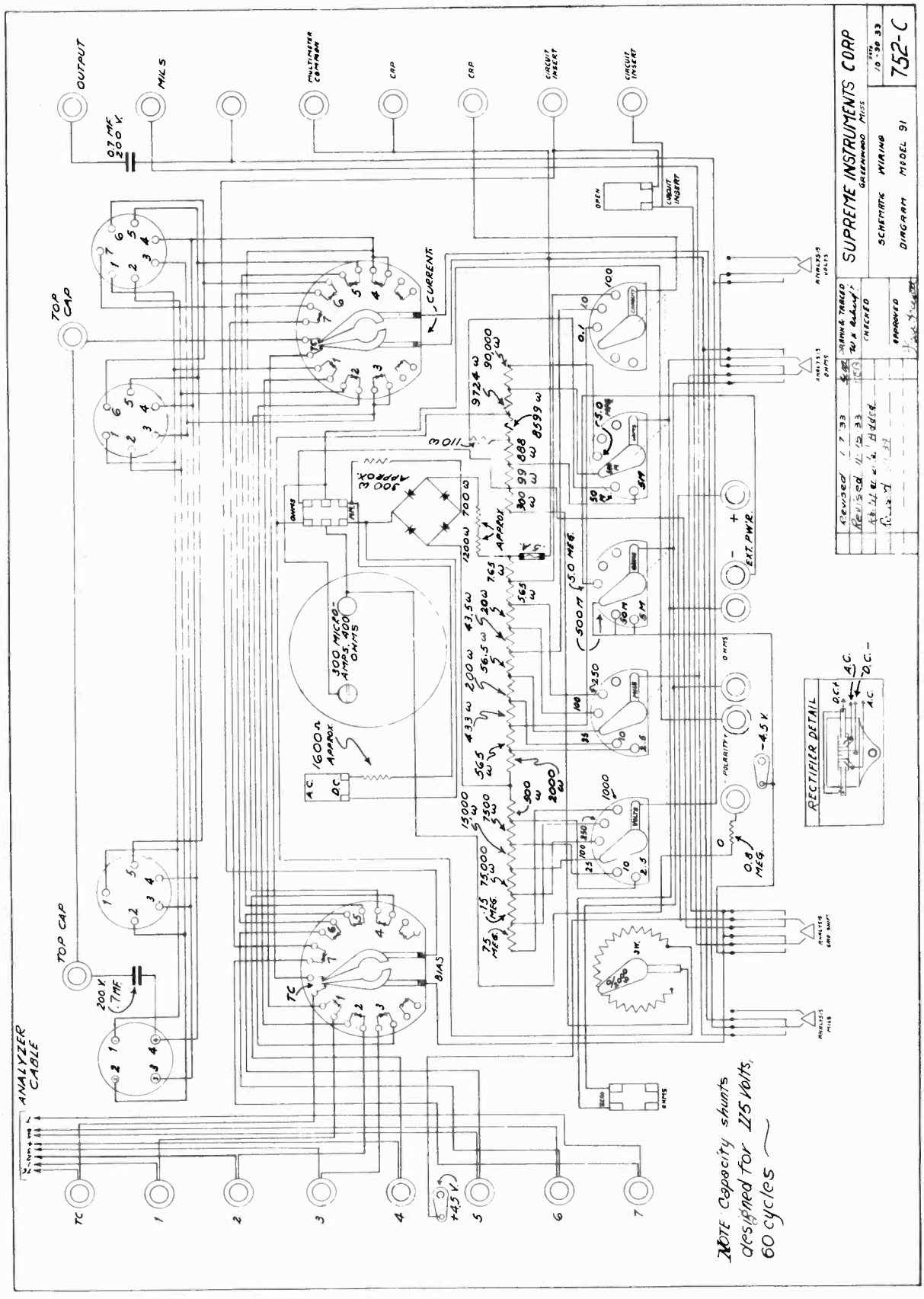
SUPREME INSTRUMENTS CORP.



VALUE	RATING	TOLERANCE
8300Ω	1 Watt	+2% -1%
200Ω	4 "	± 2%
50Ω	2 "	± 2%
0.1 MEG	1 "	± 10%
0.5 MFD.	200 VOLTS	+ 100% - 0.0%

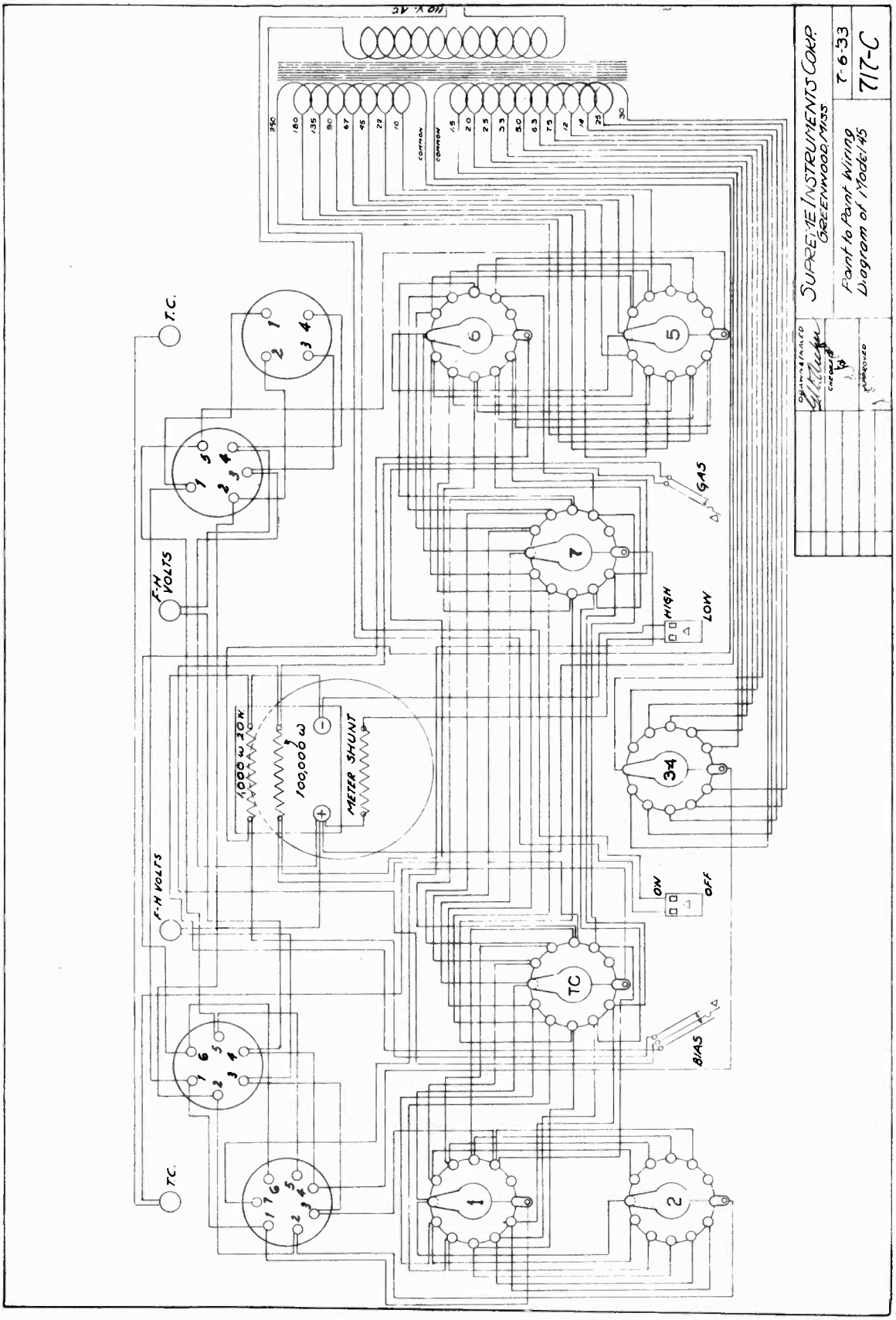
MODEL 91
Schematic

SUPREME INSTRUMENTS CORP.



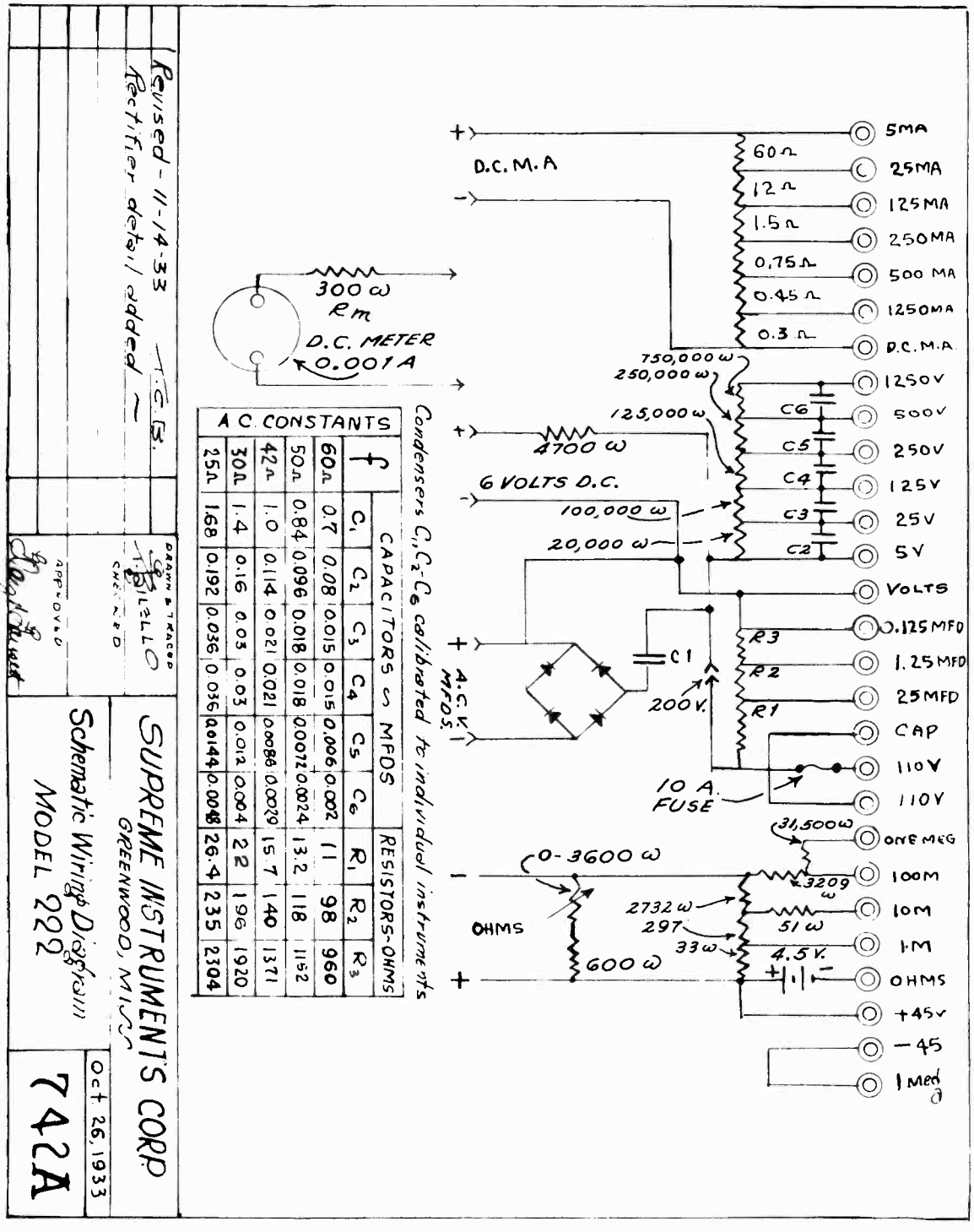
MODEL 145
Schematic

SUPREME INSTRUMENTS CORP.



MODEL 222
Schematic

SUPREME INSTRUMENTS CORP.



Condensers C_1, C_2-C_6 calibrated to individual instruments

A.C. CONSTANTS										
f	CAPACITORS in MFDS							RESISTORS-OHMS		
	C_1	C_2	C_3	C_4	C_5	C_6	R_1	R_2	R_3
60Ω	0.7	0.08	0.015	0.015	0.006	0.002	11	98	960
50Ω	0.84	0.096	0.018	0.018	0.0072	0.0024	13.2	118	1152
42Ω	1.0	0.114	0.021	0.021	0.0086	0.0029	15.7	140	1371
30Ω	1.4	0.16	0.03	0.03	0.012	0.004	22	196	1920
25Ω	1.68	0.192	0.036	0.036	0.0144	0.0048	26.4	235	2304

Revised - 11-14-33
Rectifier detail added ~ T.C.B.

DRAWN & TRACED
T. BELLO
CHECKED
APPROVED

SUPREME INSTRUMENTS CORP.
GREENWOOD, MICH.

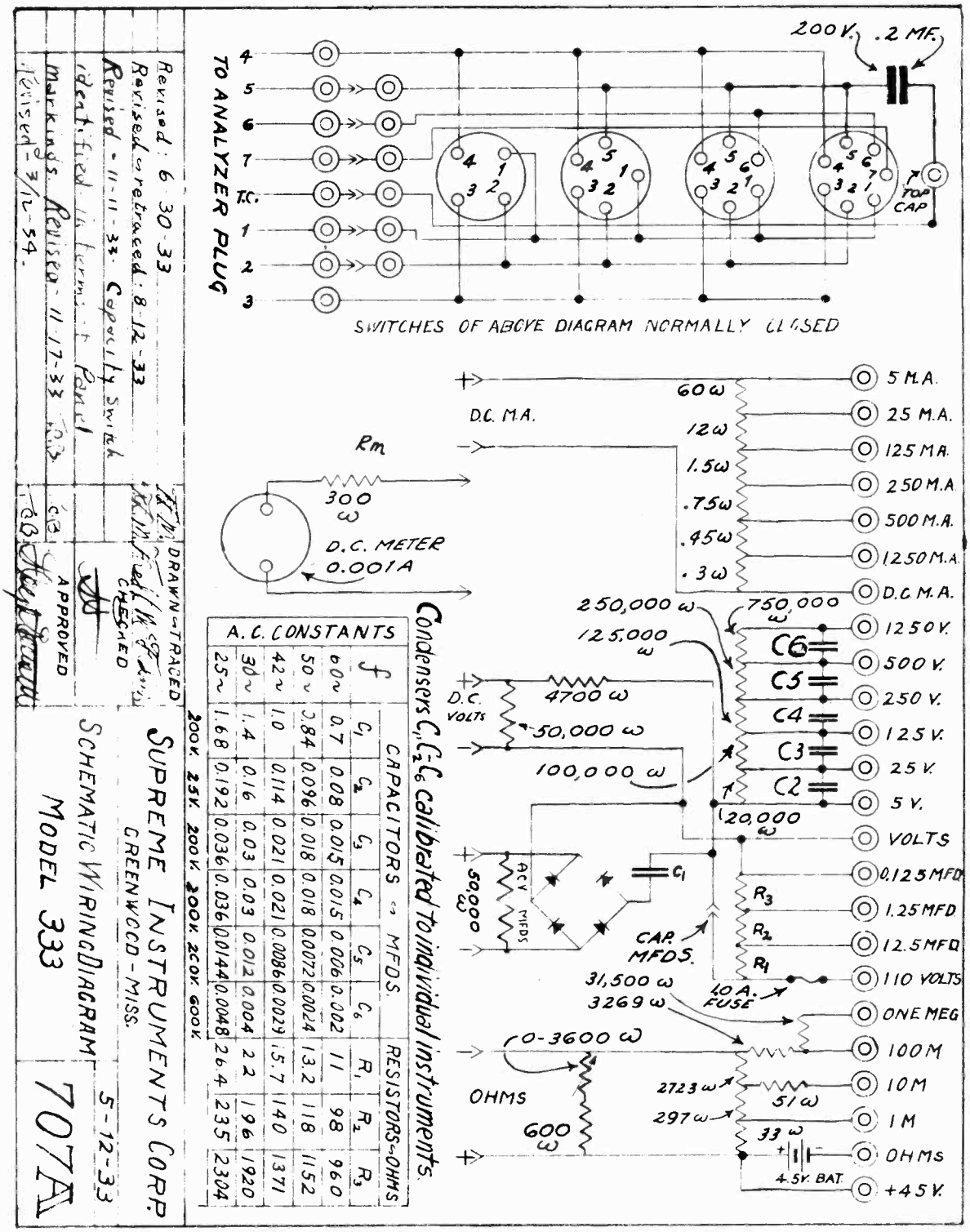
Schematic Wiring Diagram
MODEL 222

Oct 26, 1933

742A

MODEL 333 Revised
Schematic

SUPREME INSTRUMENTS CORP.



Condensers C_1, C_2-C_6 calibrated to individual instruments.

A.C. CONSTANTS		CAPACITORS = MFDS.						RESISTORS-OHMS		
f		C_1	C_2	C_3	C_4	C_5	C_6	R_1	R_2	R_3
60 ~		0.7	0.08	0.015	0.015	0.006	0.002	11	98	960
50 ~		3.84	0.096	0.018	0.018	0.0072	0.0024	13.2	118	1152
42 ~		10	0.114	0.021	0.021	0.0086	0.0029	15.7	140	1371
30 ~		1.4	0.16	0.03	0.03	0.012	0.004	22	196	1920
25 ~		1.68	0.192	0.036	0.036	0.0144	0.0048	264	235	2304

200 V. 25 V. 200 V. 200 V. 200 V. 600 V.

Revised: 6-30-33
Revised & retraced: 8-12-33
Revised - 11-11-33 Capacity Switch
Identified terminals Panel
Markings Revised - 11-17-33
Revised - 3/12-54.

DRAWN & TRACED
CHECKED
APPROVED

SUPREME INSTRUMENTS CORP.
GREENWOOD - MISS.

SCHEMATIC WIRING DIAGRAM

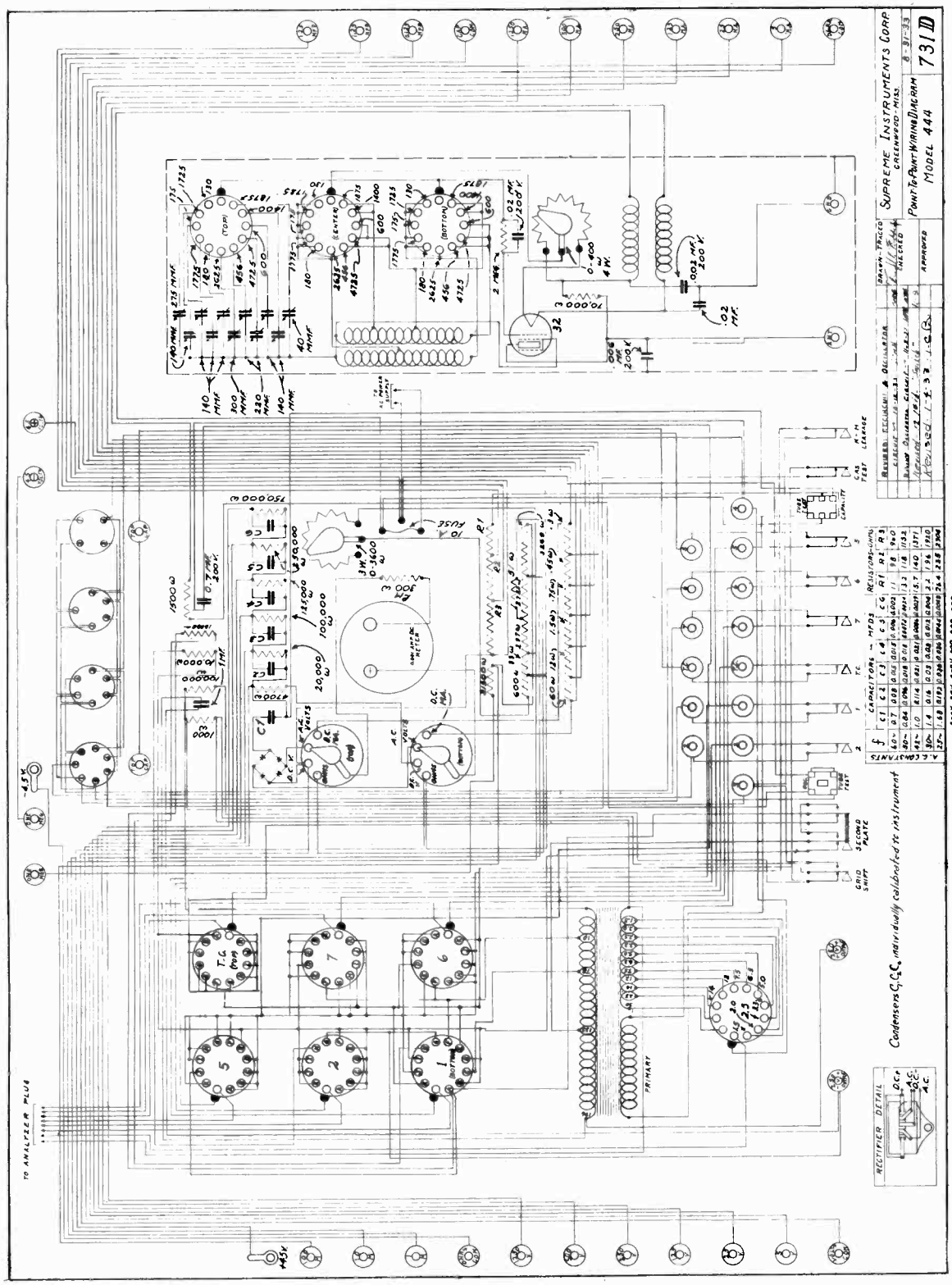
MODEL 333

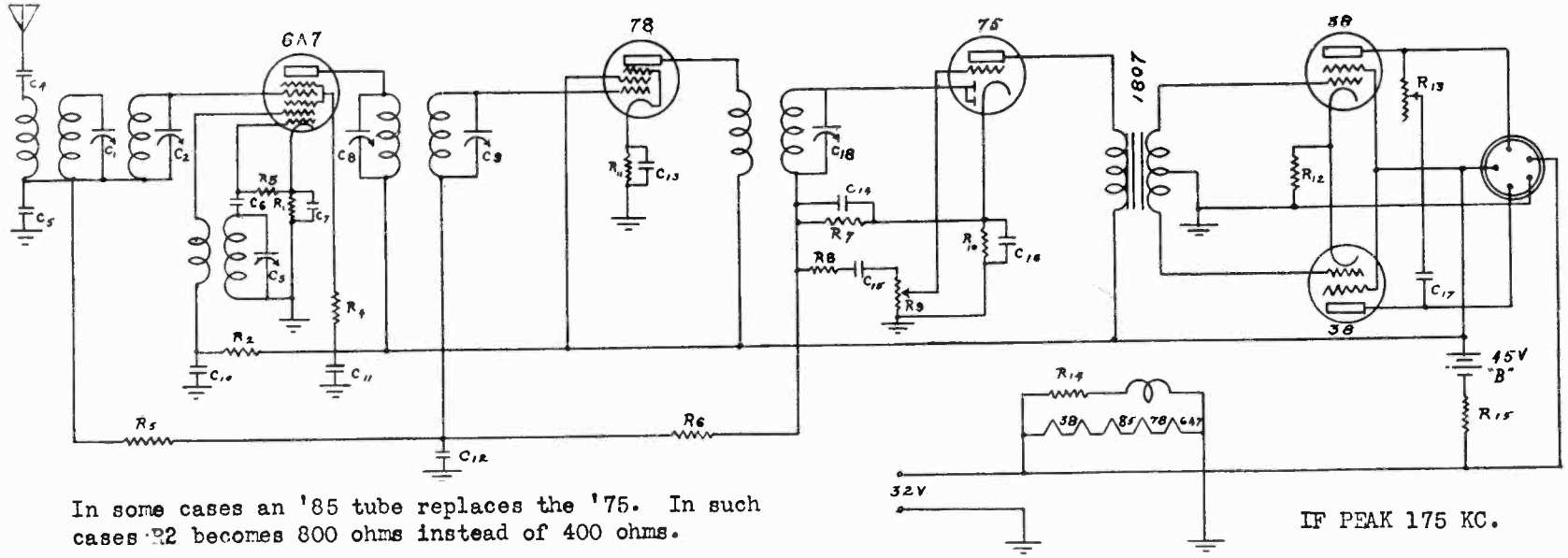
5-12-33

707A

MODEL 444
Schematic

SUPREME INSTRUMENTS CORP.





In some cases an '85 tube replaces the '75. In such cases R2 becomes 800 ohms instead of 400 ohms.

Circuit Diagram "L'Tatro" Radio

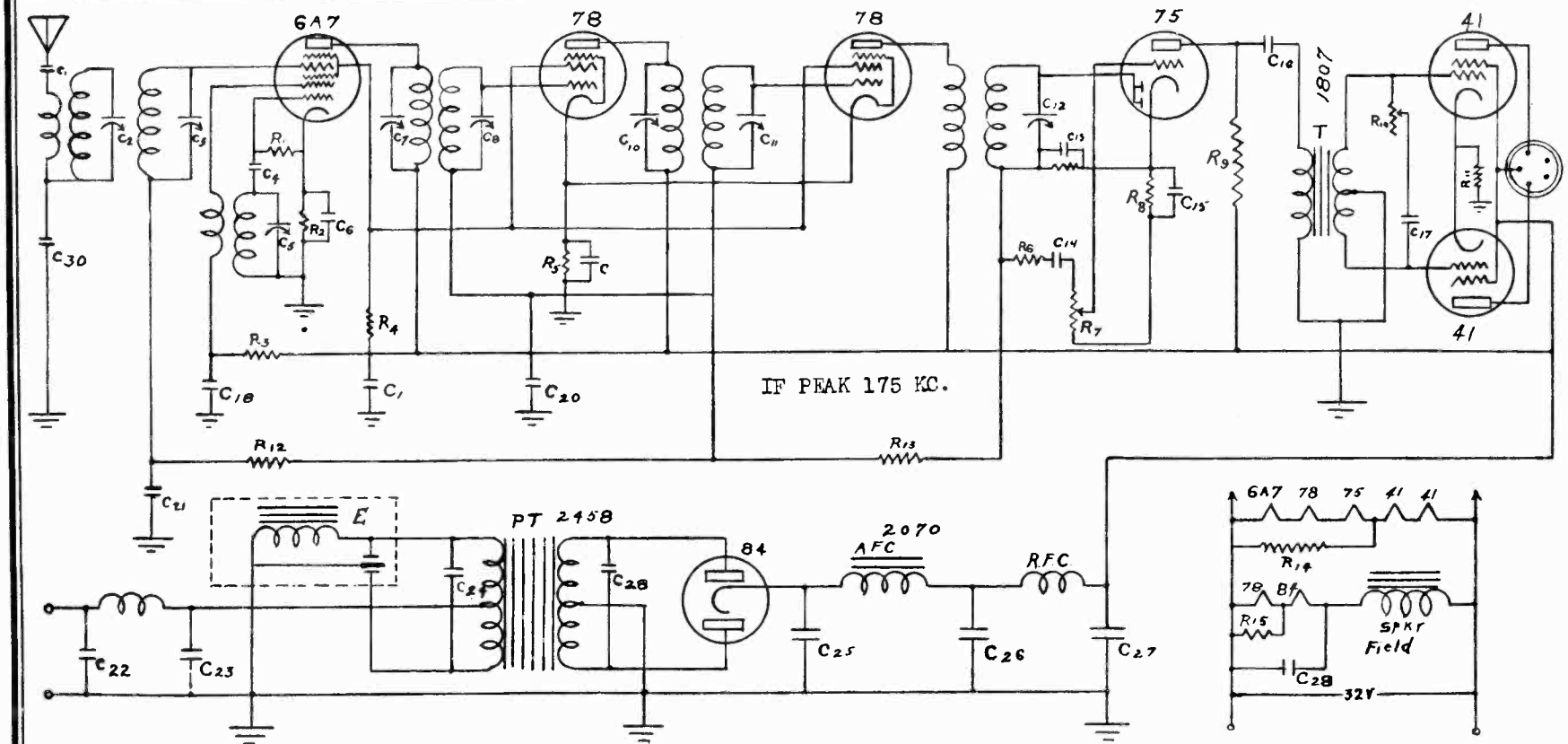
Models AK54 - - AM54 [Mayor and Senator]

C1, C2 and C3 tuning condensers; C8, C9 and C18 I. F. trimmers; C4 .0025 Mfd; C5, C12 .05 Mfd; C6 100 MMfd; C7, C10, C11, C13 .1 Mfd.; C14 .0005 Mfd; C15 .025 Mfd; C16 10 Mfd 6 volt electrolytic; C17 .005 Mfd.

R1 250 ohms; R2 20,000 ohms; R3 50,000 ohms; R4 38,000 ohms; R5 and R6 1 meg; R7 250,000 ohms; R8 30,000 ohms; R9 ½ meg volume control; R10 5000 ohms; R11 400 ohms; R12 800 ohms; R13 ½ meg tone control; R14 200 ohms (10 watt); R15 25 ohms (10 watt).

MODEL L-74, N-74
(Lieut. Governor & Governor)
Schematic, Voltage

L. TATRO PRODUCTS CORP.



Tube	Plate	Screen	Cathode	Anode Grid
6A7	198	80	2.4	140
78*	198	80	7.0	...
75	194	..	1.5	...
41*	193	198	16.5	...

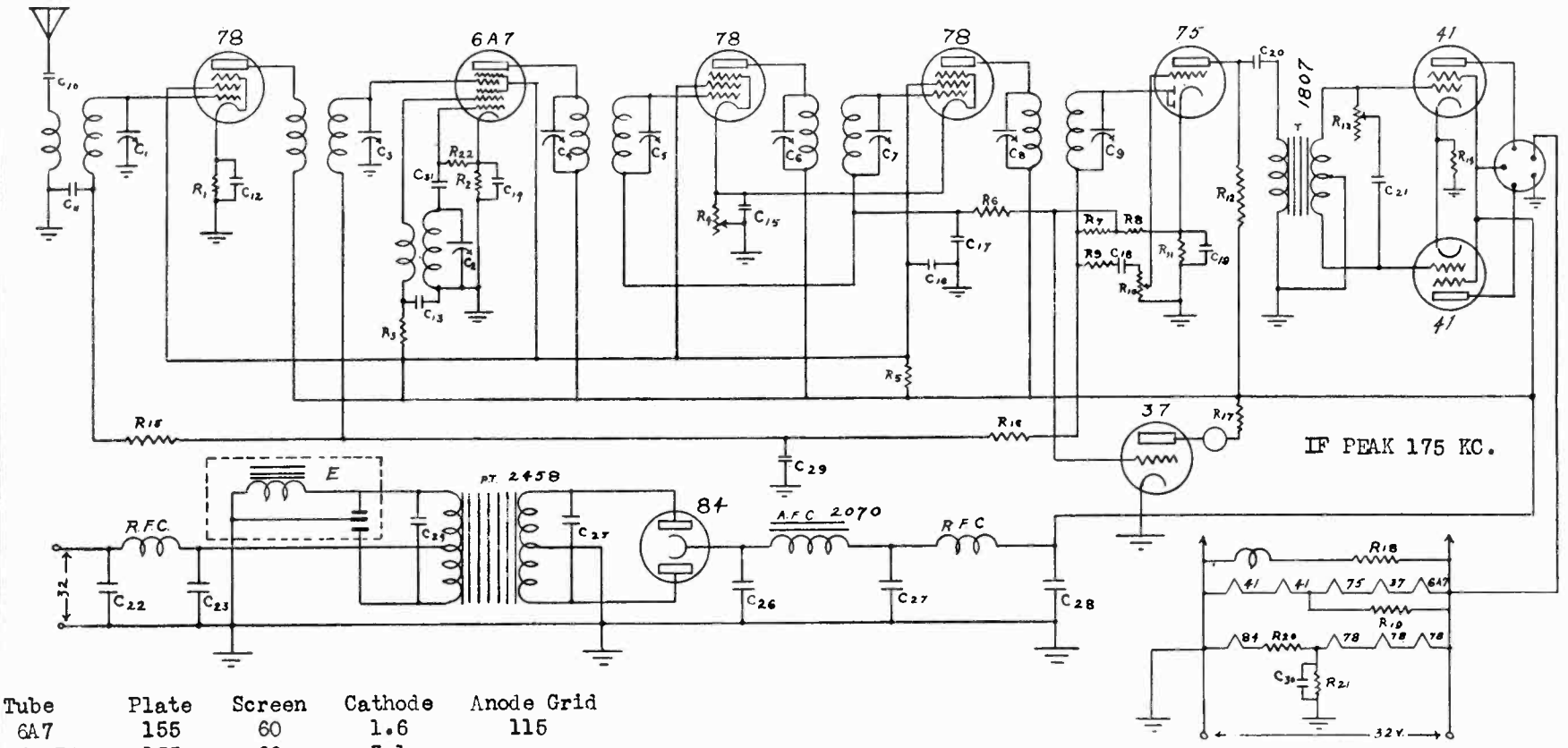
Circuit Diagram "L'Tatro Radio

Models L74 - - N74 [Lieut. Governor and Governor]

*Two tubes used; same reading on both.

C2, C3 and C5 tuning condensers; C7, C8, C10, C11 and C12 I. F. trimmers; C1, C17 .0025 Mfd; C4 100 Mmfd; C13 .0005 Mfd; C14 .015; C15 10 Mfd · C16, C18, C19 .1 Mfd; C20, C21 .05 Mfd; C22 20 Mfd. 40 volt non-polarized; C23 1 Mfd. special high frequency; C24, C28 special high frequency condensers; C25 8 Mfd; C26 16 Mfd; C27 .1 special; C28 10 Mfd. 14 volt non-polarized; C30 .1 omitted on late models. Note: C19 in above diagram is located between C18 and C20 and should be connected above R4.

R1 50,000 ohms; R2 250 ohms; R3 20,000 ohms; R4 38,000 ohms; R5 2500 ohms; R6 100,000 ohms; R7 ½ meg volume control; R8 5000 ohms; R9 100,000 ohms; R10 ½ meg tone control; R11 450 ohms; R12 250,000 ohms; R13 1 meg; R14 200 ohms 10 watt; R15 30 ohms 10 watt. R9 and C10 are omitted on late models, with primary of transformer to high potential. Resistor parallel to C13 is ¼ meg.



Tube	Plate	Screen	Cathode	Anode Grid
6A7	155	60	1.6	115
78 IF *	155	60	3.1	...
78 RF °	155	60	3.0	...
75	198	..	1.6	...
37	65	..	0	...
41*	198	204	20.0	...

* Two tubes used; 78's in IF ° 78 in RF

Diagram "L'Tatro" Radio

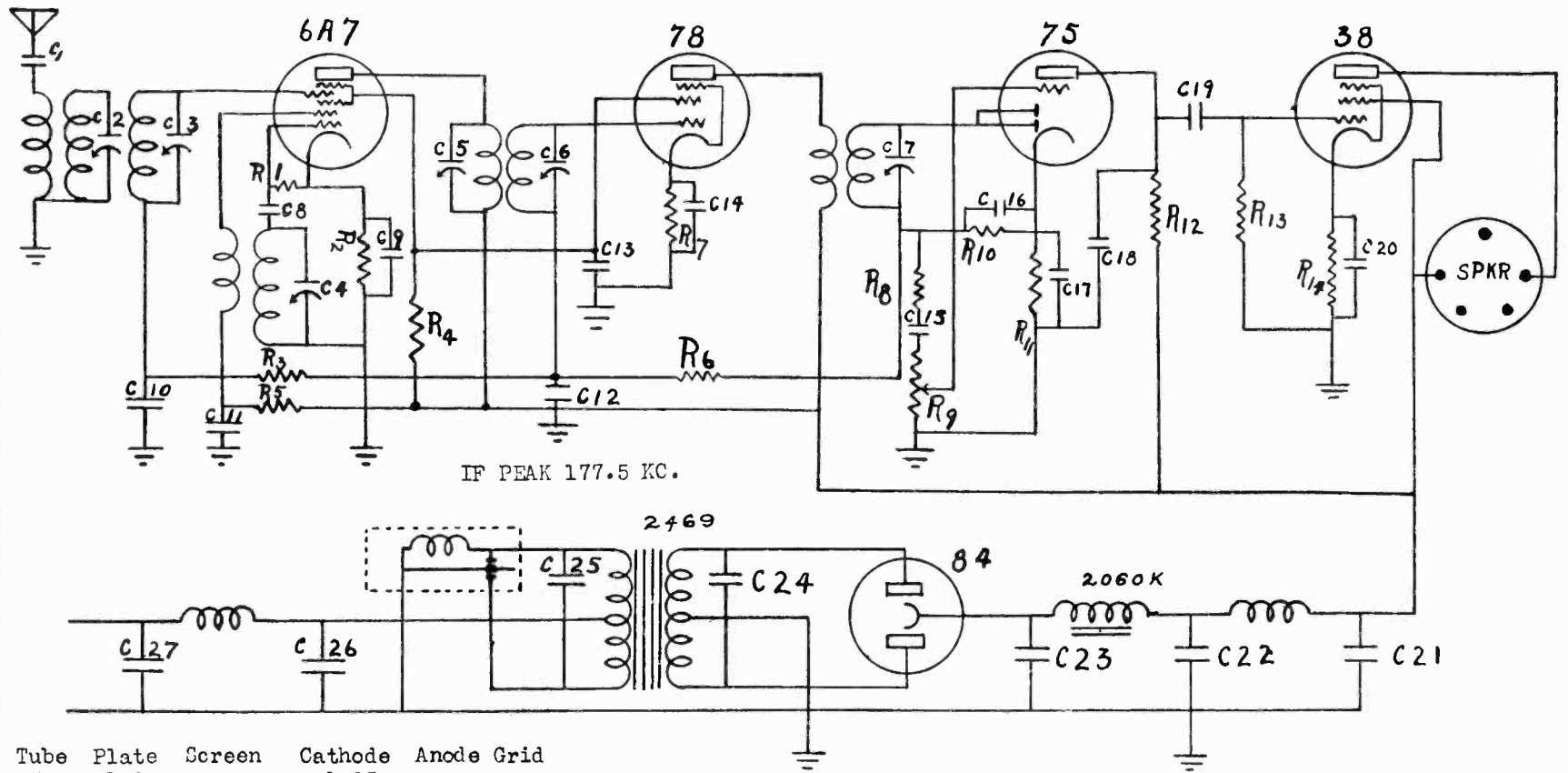
Model 094 [President]

C1, C2 and C3 tuning condensers; C4, C5, C6, C7, C8 and C9 I. F. trimmers; C10 and C21 .0025 Mfd; C11, C13, C17 .05 Mfd. condensers; C12, C14, C15, C16, C20 .1 Mfd; C18 .015 Mfd; C19 10 Mfd. 6 volt; C22 20 Mfd. 40 volt non-polarized; C23 special high frequency 1 Mfd; C24, C25 special high frequency condensers; C26 8 Mfd; C27 16 Mfd; C28 special .1 Mfd; C30 high frequency .1 Mfd; C31 100 Mfd.

R1 1500 ohms; R2 250 ohms; R3 20,000 ohms; R4 20,000 ohms with 800 ohms limiting section; R5 38,000 ohms; R6, R7, R8, R15, R16 250,000 ohms; R9, R12 100,000 ohms; R10 ½ meg volume control; R11 5000 ohms; R13 ½ meg tone control; R14 450 ohms; R18, R19 200 ohms; R20 25 ohms; R21 125 ohms. R 21 should parallel the three 78 tubes in above diagram.

L. TATRO PRODUCTS CORP.

MODEL 094
(President)
Schematic, Voltage



Tube	Plate	Screen	Cathode	Anode Grid
75	108	...	1.05	...
38	158	165	15.5	...
78	163	100	3.0	...
6A7	163	100	2.9	120

Readings taken between chassis and points indicated with 1000-ohm-per-volt meter. Filament, 6.3-6.4 volts.

Circuit Diagram "L'Tatro" Radio

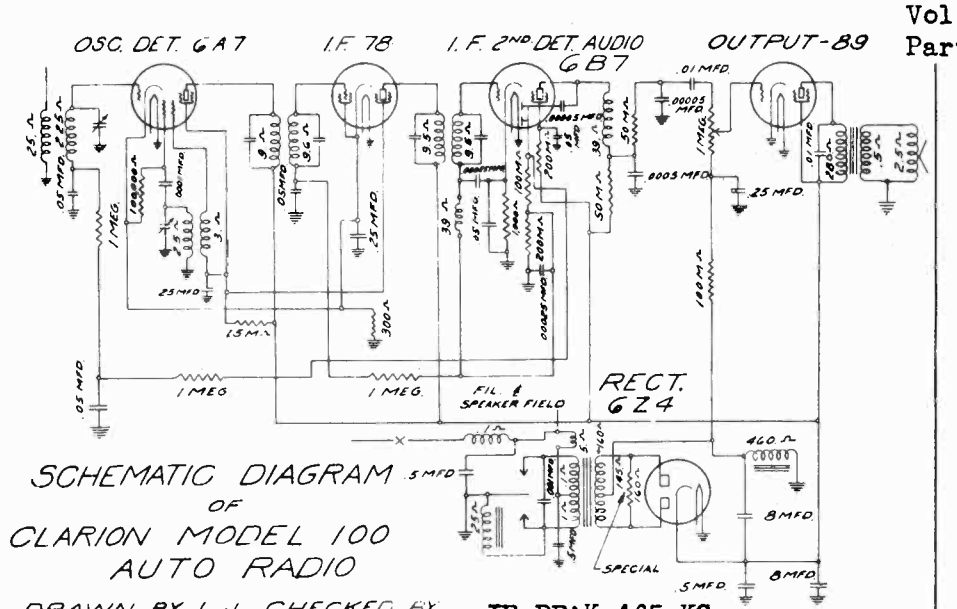
Model P54 [Recorder]

C2, C3 and C4 are tuning condensers; C5, C6 and C7 I. F. trimmers; C1 .0025 Mfd; C8 100 MMfd; C9, C11, C12, C13, C14 and C21 .1 Mfd; C10 and C19 .05 Mfd; C15 .015 Mfd; C16 and C18 .0005 Mfd; C17 and C20 10 Mfd. electrolytic; C22 and C23 8 Mfd. electrolytic; C24 and C25 special buffer condensers; C26 1 Mfd. high frequency; C27 10 Mfd. non-polarized electrolytic.

R1 50,000 ohms; R2 250 ohms; R3 1 meg; R4 38,000 ohms; R5 20,000 ohms; R6 ¼ meg; R7 450 ohms; R8 100,000 ohms; R9 ½ meg volume control; R10 ¼ meg; R11 5000 ohms; R12 500.000 ohms; R13 1 meg; R14 1250 ohms.

TRANSFORMER CORP. OF AMERICA

MODEL 100-AR
Schematic
Voltage
Parts List



SCHEMATIC DIAGRAM
OF
CLARION MODEL 100
AUTO RADIO

DRAWN BY L. J CHECKED BY
APPROVED DATE: 7-11-33

IF PEAK 465 KC.

No.	Stage	Tube	Ef	Ep	Eg	Ek	Esg	Esug	Ip	Ep-0	Eg-0	Ip-0
1	Osc.- Det . .	6A7	6	185	.1	3	83		4.6	81	.05	1.7
2	I. F.	78	6	185	.1	3	102	0	7.5			
3	I. F. 2nd Det. Audio .	6B7	6	58	.05	2.3	45		2.2	d .1		
4	Output. . . .	89	6	190	.05	0	194	0	18			
5	Rectifier . .	6Z4	6	p 208		185			p 18			

0 - Oscillator.
Volume Control - Full On.
Battery Voltage - 6 Volts.

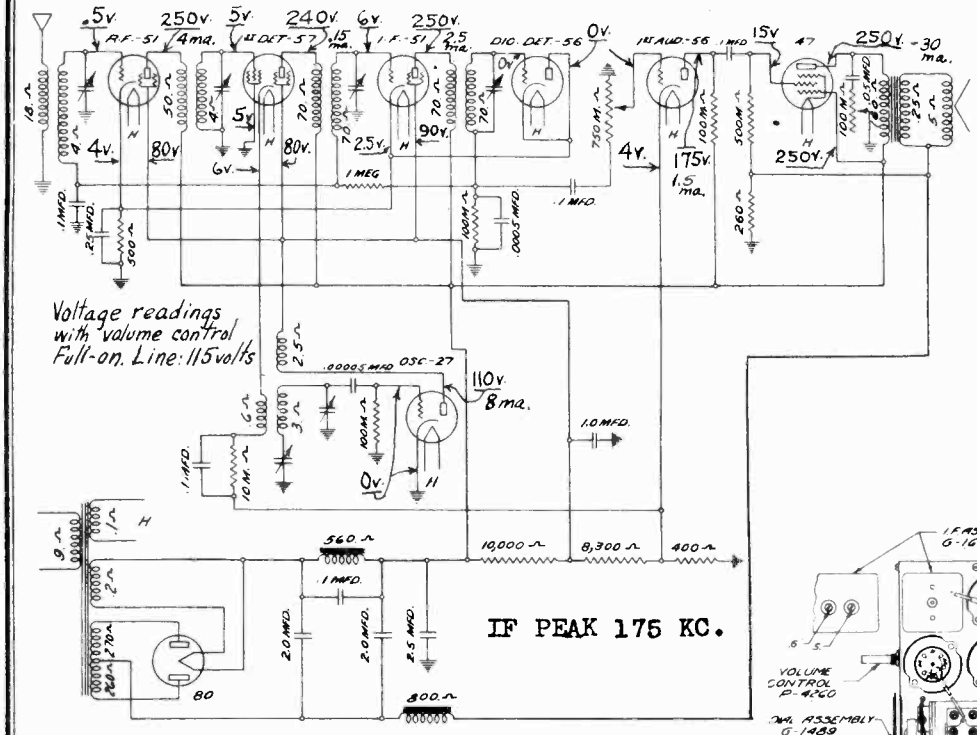
p - Per Plate.
d - Diode Plate.

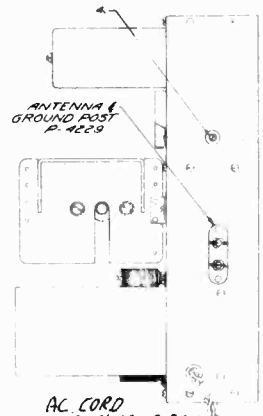
G-1705	Speaker Complete
G-1727	"B" Choke.
G-1746	Vibrator Complete.
G-1748	Output Transformer
G-1751	Voice Coil and Cone.
G-1753	Dial Drive and Head.
G-1754	Male Cable Tuning.
G-1755	Female Cable Tuning.
G-1756	Perforated Mtg. Strap for Control Head
G-1756-C	Threaded Mtg. Strap for Control Head
G-1763	I. F. Transformer (1st and 2nd).
G-1788	Key Knob and Shaft
P-1083	Lock Washer, Small
P-1381	.0005 Condenser.
P-1728	.00005 Mfd. Condenser.
P-1756	Threaded Mounting Strap.
P-4372	.00025 Condenser
P-4446	.001 Mfg. Condenser.
P-4504	1,000 Ohm Resistor
P-4590	.0001 Condenser.
P-4595	1 Megohm Resistor.
P-4602	Grommet, Small
P-4640	.25 Mfd. Condenser
P-4644	.05 Mfd. Condenser
P-4645	.01 Mfd. Condenser
P-4659	50,000 Ohm Resistor.
P-4662	100,000 Ohm Resistor
P-4664	200,000 Ohm Resistor
P-4713	15,000 Ohm Resistor.
P-4732	Socket 6A7
P-4733	Socket 78.
P-4744	Tuning Condenser
P-4761	.5 Mfd. Condenser.
P-4763	Vibrator - Unit only
P-4764	Rubber Vibrator Box and Cover.
P-4765	Vibrator, Special Resistor
P-4767	Electrolytic Condenser
P-4769	Volume Control
P-4771	Socket 6B7
P-4772	Socket 89.
P-4773	Socket 6Z4
P-4774	Generator Condenser.
P-4775	Spark Plug Suppressor.
P-4776	Distributor Suppressor
P-4777	Mounting Studs
P-4778	Mounting Nuts.
P-4787	Bushing and Drive Set Screws
P-4788	Shaft Bushings
P-4791	Wing Nuts.
P-4792	Chassis Mounting Screw
P-4793	Grommet, Large
P-4795	Fuse Assembly.
P-4796	Fuse - 10 Ampere
P-4797	Mounting Washers
P-4799	"A" Choke.
P-4804	Untuned Choke.
P-4807	Terminal Strip
P-4811	Vibrator Transformer
P-4812	Choke (Unshielded)
P-4822	Dial Bezel
P-4823	Dial Pointer
P-4826	Dial Light Bracket
P-4829	Dial Scale
P-4832	Knob Tuning.
P-4833	Knob Springs
P-4835	Dial Glass
P-4843	Antenna Oscillator Coil.
P-4849	Mounting Strap Nuts.
P-4855	150 Ohm Resistor

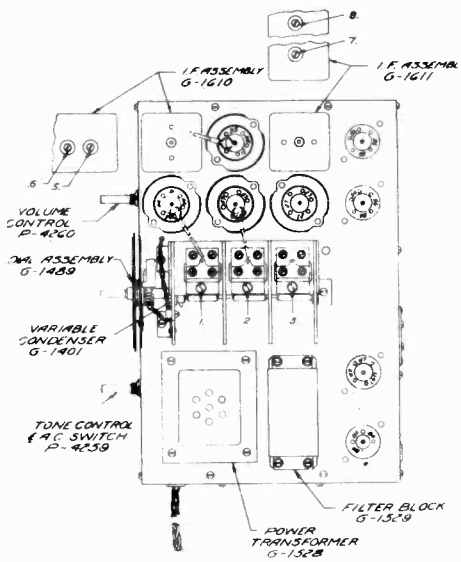
MODEL 241
Schematic, Socket

TRANSFORMER CORP. OF AMERICA

Alignment Data
Point-to-Point







To adjust the trimmers, connect your 175 K. C. oscillator to the first detector type 57 grid cap, and in the following order: Readjust trimmers numbers, five, six, seven and eight for maximum output, next, disconnect the 175 K.C. 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 from a known frequency crystal controlled station at 1400 K. C., then reset trimmers, two and one respectively for maximum output. This adjustment will track the first detector and r. f. stage.

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

The next adjustment is important and not easily explained in writing, so pay close attention to the following instructions: We 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 recheck 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.

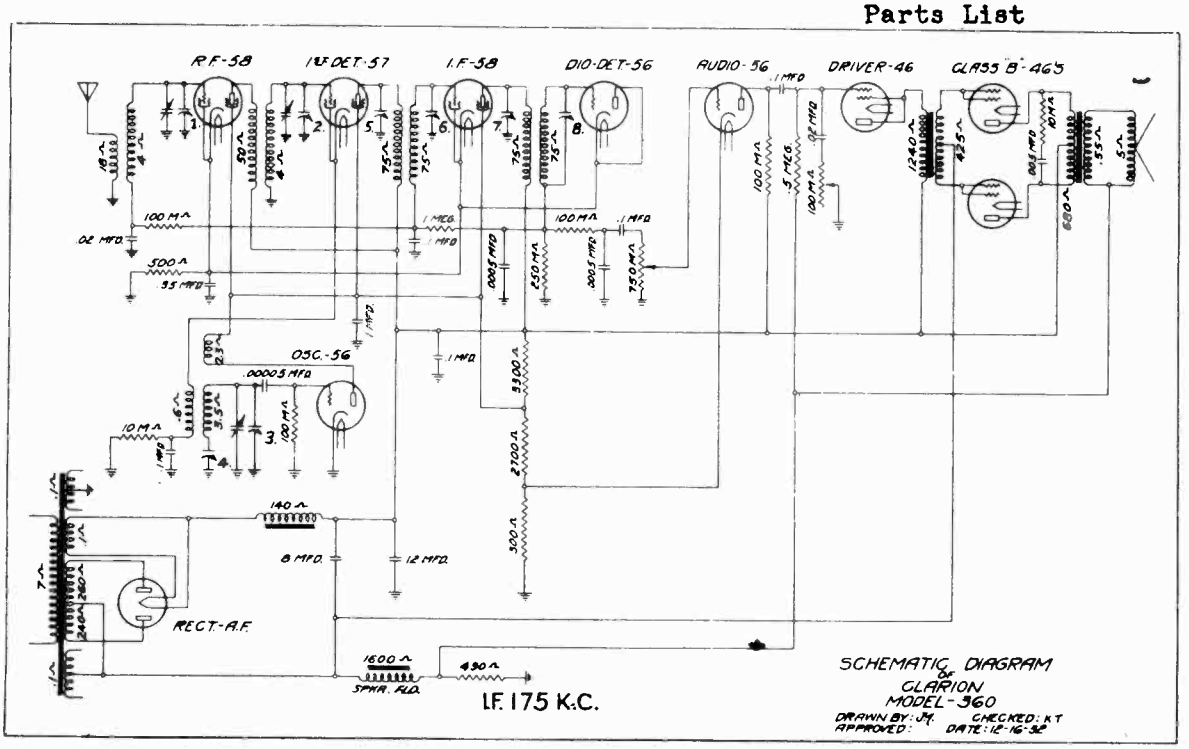
CIRCUIT RESISTANCE ANALYSIS
Model 241 Socket to ground

Stage	Grid	Cathode	Heater	Plate	Screen G	Suppr. G	Space G
51 R.F.	Infinity	500	.08	18,700	8,700	....	.....
57 1st.det.	4.2	10,000	.08	18,700	8,700	.06	.....
51 I.F.	Infinity	500	.07	18,700	8,700	...	.....
27 Oscillator	100,000	.06	.07	8,750	.....	...	.....
56 Dio det.	100,000	500	.07	500	.....	...	.....
56 A.F.	750,000	400	.07	118,000	.....	...	.....
47 Pentode.	750,000	.....	.07	18,800	.....	...	18,700
80 Rectifier.	.....	.....	18,800	1,320	.....	...	.....

Note: Readings of one megohm and over are given as "Infinity". The first three significant figures, only are interpreted from the ohmmeter in each reading; the individual resistance in the circuit can be readily checked upon removal of chassis.

TRANSFORMER CORP. OF AMERICA

MODEL 360
Schematic, Point-to-Point
Parts List



P-1038	Pilot Light. . . . .
P-1106	1 Megohm Resistor. . . . .
P-1381	.0005 MFD. Cond. . . . .
P-1459	Tube Shield Base . . . . .
P-1472	Tube Shield. . . . .
P-1692	100,000 Ohm Resistor . . . .
P-1728	.00005 MFD. Cond . . . . .
P-1755	.5 Megohm Resistor . . . . .
P-1944	250,000 Ohm Resistor . . . .
P-4168	Blinder. . . . .
P-4229	Ant. Grnd. Post. . . . .
P-4256	Escutcheon . . . . .
P-4259	Tone Control and Switch. . .
P-4260	Volume Control . . . . .
P-4262	#56 Socket . . . . .
P-4263	#57 Socket . . . . .
P-4264	#58 Socket . . . . .
P-4271	10,000 Ohm Resistor. . . . .
P-4297	#46 Socket . . . . .
P-4368	10,000 Ohm Resistor (1 Watt)
P-4370	.005 MFD. Cond . . . . .
P-4373	Speaker Diaphragm. . . . .
P-4393	Large Knob . . . . .
P-4394	Small Knob . . . . .
P-4398	.1 MFD. Cond . . . . .
P-4447	.02 MFD. Cond. . . . .
P-4485	Tube Shield. . . . .
P-4486	Tube Shield Cap. . . . .
P-4487	Tube Shield Base . . . . .
P-4514	Electrolytic Cond. . . . .
P-4519	A.F. Socket. . . . .
P-4526	490 Ohm Resistor . . . . .
P-4533	Voltage Divider. . . . .
P-4534	Voltage Divider. . . . .
G-1272	R.F. Coil. . . . .
G-1401	Variable Cond. . . . .
G-1415	I.F. Transformer (1st) . . .
G-1488	Trimmer Condenser. . . . .
G-1489	Dial and Scale Assembly. . .
G-1493	Antenna Coil . . . . .
G-1508	Speaker. . . . .
G-1562	Oscillator Coil. . . . .
G-1600	Voice Coil . . . . .
G-1660	Output Transformer . . . . .
G-1661	I.F. Transformer (2nd) . . .
G-1662	Power Transformer. . . . .
G-1662A	Power Transformer (25 cycle)
G-1662B	Power Transformer (220 volt)
G-1664	Input Transformer. . . . .
G-1669	Filter Choke . . . . .
G-1671	Bypass Pack. . . . .

CIRCUIT RESISTANCE ANALYSIS

Model 360 Socket to ground.

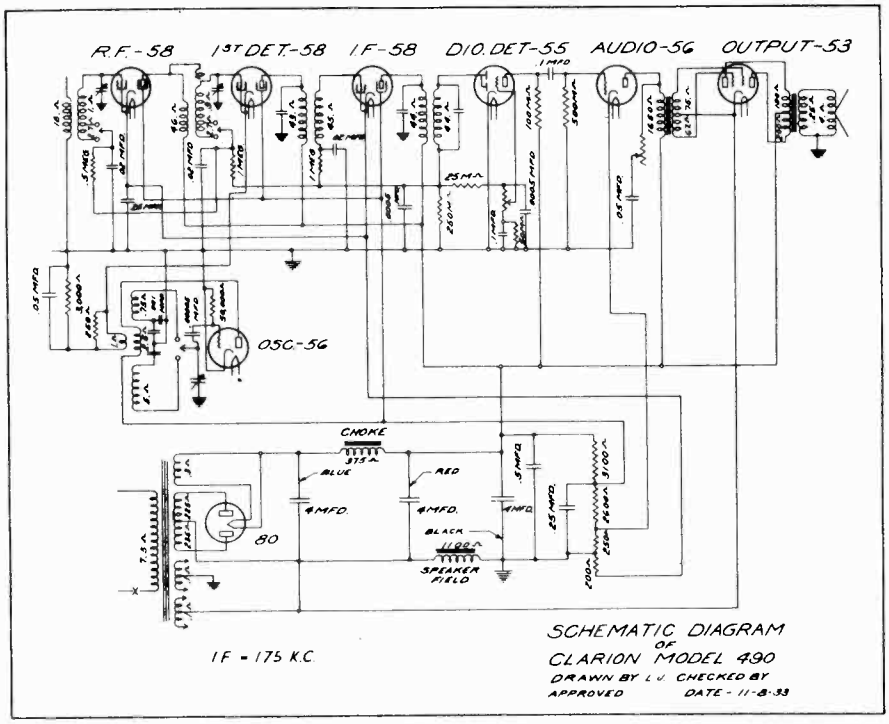
STAGE	GRID	CATH-ODE	HEATER	PLATE	SCREEN G	SUPPR. G
R.F.	Infinity	500	.1	6,300	3,000	500
1st Det. . .	4.0	10,000	.1	6,300	3,000	10,000
Oscillator .	100,000	0	.1	3,000	.....	.....
I.F.	Infinity	500	.1	6,300	3,000	500
A.V.C. Det .	250,000	500	.1	500	.....	.....
Audio. . . .	*750,000	300	.1	100,000	.....	.....
Driver . . .	500,000	.....	.1	7,600	7,600	.....
Class "B". .	2,400	.....	.1	6,700	2,400	.....
Class "B". .	2,400	.....	.1	6,700	2,400	.....
Rectifier. .	.....	.....	6,500	2,400	.....	.....

* VOLUME CONTROL FULL ON.

NOTE: Readings of one megohm and over are given as "infinity". The first three significant figures only, are interpreted from the ohmmeter in each reading; the individual resistance in the circuit can be readily checked upon removal of chassis.

MODEL 490
Schematic
Voltage, Parts List

TRANSFORMER CORP. OF AMERICA



VOLTAGE ANALYSIS OF MODEL 490 USING A 1000 OHM PER VOLTMETER

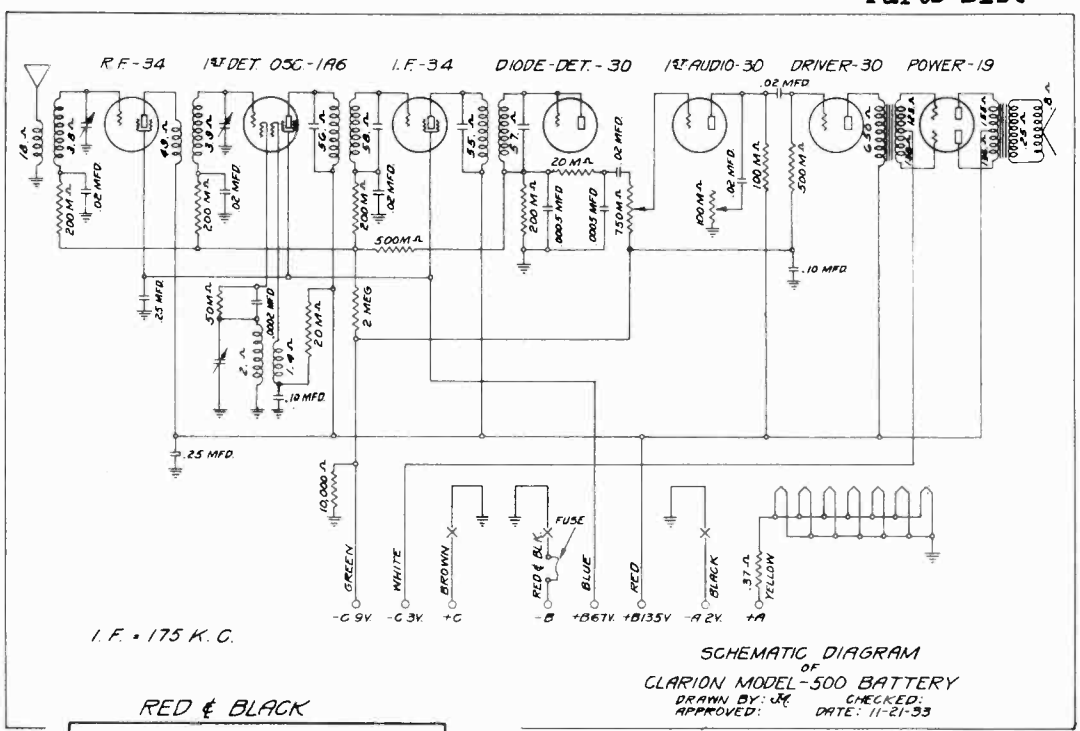
TUBE	STAGE	Ef	Ep	Eg	Ek	Esg	Esug	Ip	
58	R.F.	2.3	190	.3	2.9	83	0	6.	
58	1st DET.	2.3	190	.3	7.	78	0	2.	
56	OSCILL.	2.3	83	.3	0			4.5	
58	I.F.	2.3	190	.3	2.9	83	0	5.5	*Per Plate
55	DIODE	2.3	36	.2	0	.2**		2.	** Diode
56	A.F.	2.3	198	.2	10			5.	Voltage
53	OUTPUT	2.5	292*	0	0			12.*	
80	RECT.	4.5	292*					37.*	

LINE VOLTAGE 107 VOLUME CONTROL - FULL ON

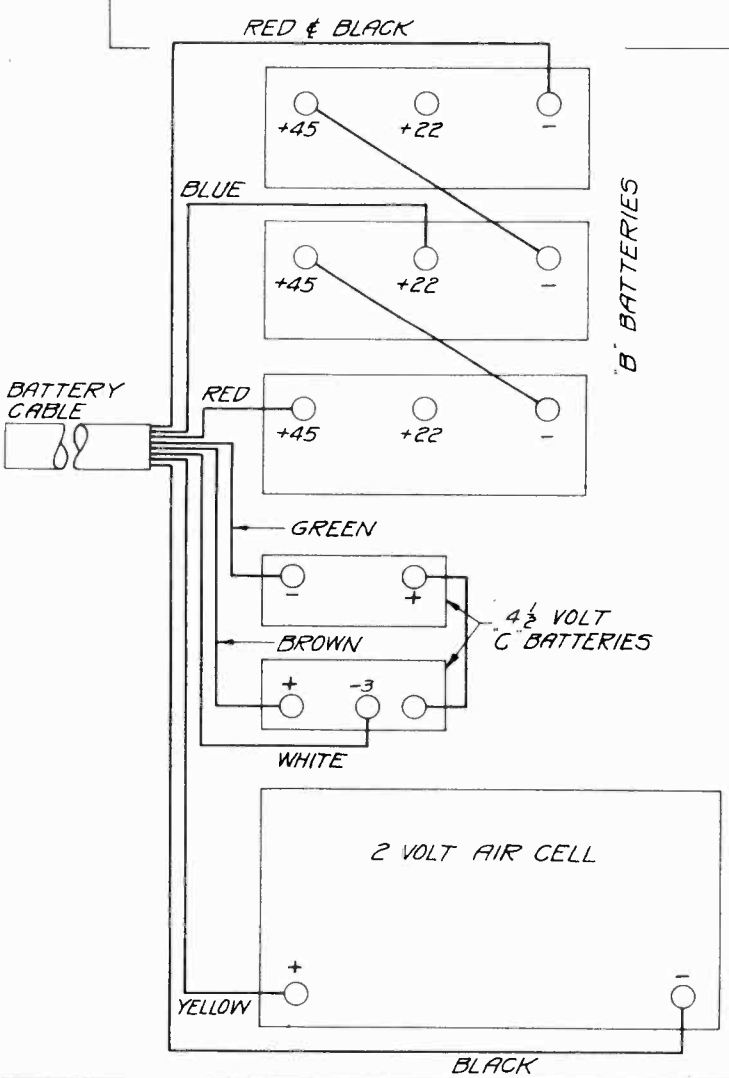
P-1015	Contact spring. . . . .
P-1038	Pilot light . . . . .
P-1100A	.001 mfd. . . . .
P-1381	.0005 mfd. condenser. . . . .
P-1595	Socket #80. . . . .
P-1728	.00005 mfd. condenser . . . . .
P-1860	Pilot light bracket . . . . .
P-14229	Antenna and ground post . . . .
P-4262	#56 socket. . . . .
P-4264	#58 socket. . . . .
P-4400	Grid clips. . . . .
P-4485	Tube shield . . . . .
P-4486	Tube shield cap . . . . .
P-4488	Escutcheon plate. . . . .
P-4595	1 meg.resistor. . . . .
P-4597	250 ohm resistor. . . . .
P-4640	.25 mfd. condenser. . . . .
P-4644	.05 mfd. condenser. . . . .
P-4646	.02 mfd. condenser. . . . .
P-4659	50,000 ohm resistor . . . . .
P-4662	100,000 ohm resistor. . . . .
P-4663	500,000 ohm resistor. . . . .
P-4701	.1 mfd. condenser . . . . .
P-4869	25,000 ohm resistor . . . . .
P-4910	3,000 ohm resistor. . . . .
P-4935	Field coil. . . . .
P-4961	8-4 mfd. electrolytic . . . . .
P-4965	Voltage divider . . . . .
P-4969	.5 mfd. condenser . . . . .
P-4970	100 Ohm resistor. . . . .
P-4971	Diaphragm . . . . .
P-4972	Knobs . . . . .
P-4975	Short wave switch . . . . .
P-4976	55 socket . . . . .
P-4977	53 socket . . . . .
P-4978	Tone control. . . . .
P-4979	Volume control. . . . .
G-1274	Choke assembly. . . . .
G-1281	Coil and dowel (used in G-1803)
G-1282	Coil and dowel (used in G-1826)
G-1488	Padding condenser . . . . .
G-1600	Voice coil and spider . . . . .
G-1709	10" speaker . . . . .
G-1793	I. F. coils (used in G-1843). .
G-1794	Large I. F. transformer . . . .
G-1803	R. F. coil. . . . .
G-1805	Variable condenser. . . . .
G-1806	Dial assembly . . . . .
G-1807	Power transformer . . . . .
G-1812	Input audio transformer . . . .
G-1813	Output audio transformer. . . .
G-1843	Small I. F. transformer . . . .
G-1844	Oscillator coil . . . . .
G-1846	Antenna coil. . . . .
G-1847	I. F. coils (used in G-1794). .

TRANSFORMER CORP. OF AMERICA

MODEL 500
Schematic, Batt. Data
Parts List



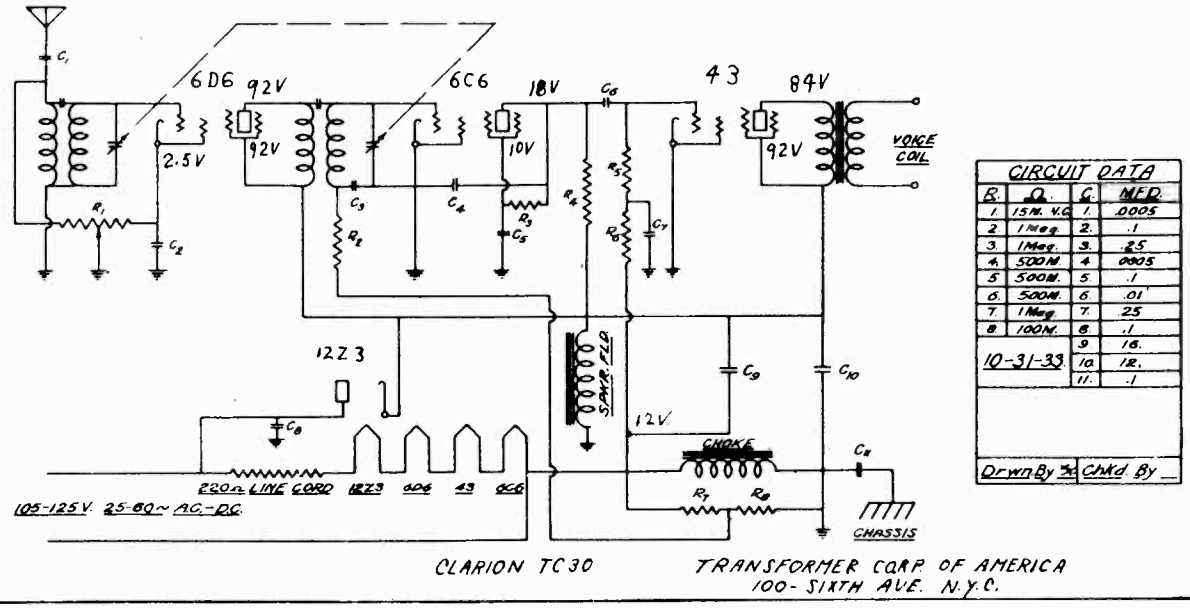
SCHEMATIC DIAGRAM
OF
CLARION MODEL-500 BATTERY
DRAWN BY: JR. CHECKED:
APPROVED: DATE: 11-21-33



1	P-1381	.0005 Condenser . . . .
1	P-1802	Ornamental Head Screw .
1	P-1886	Hex. Head Cap Screws. .
1	P-4486	Tube Shield Cap . . . . .
1	P-4640	.25 Mfd. Condenser. . .
1	P-4646	.02 Mfd. Condenser. . .
1	P-4659	50,000 Ohm Resistor . .
1	P-4661	10,000 Ohm Resistor . .
1	P-4662	100,000 Ohm Resistor. .
1	P-4663	500,000 Ohm Resistor. .
1	P-4664	200,000 Ohm Resistor. .
1	P-4701	.10 Mfd. Condenser. . .
1	P-4728	Tube Shield . . . . .
1	P-4729	Tube Shield Base. . . .
1	P-4730	I.F. Unit . . . . .
1	P-4731	I.F. Unit . . . . .
1	P-4853	Escutcheon Plate. . . .
1	P-4890	Small Knob. . . . .
1	P-4891	Large Knob. . . . .
1	P-4909	20,000 Ohm Resistor . .
1	P-4998	Gang Condenser. . . . .
1	P-4999	Volume Control. . . . .
1	P-5000	Tone Control. . . . .
1	P-5001	3 Point Switch. . . . .
1	P-5004	Speaker . . . . .
1	P-5014	Fuse Base . . . . .
1	P-5015	Battery Cable . . . . .
1	P-5016	#34 Socket. . . . .
1	P-5017	#1A6 Socket . . . . .
1	P-5018	#30 Socket. . . . .
1	P-5019	#19 Socket. . . . .
1	P-5020	2 Meg. Resistor . . . .
1	P-5021	.0002 Condenser . . . .
1	P-5022	Dial. . . . .
1	P-5037	1/4 Amp. Fuse . . . . .
1	G-1835	Oscillator Coil . . . .
1	G-1836	Antenna Coil. . . . .
1	G-1837	R.F. Coil . . . . .
1	G-1838	Driver Transformer. . .
1	G-1839	Output Audio. . . . .

MODEL TC-30
Schematic
Parts List

TRANSFORMER CORP. OF AMER. (New Co.)



CIRCUIT DATA

R.	Ω	C.	MFD.
1.	15M. V.C.	1.	.0005
2.	1 Meg.	2.	.1
3.	1 Meg.	3.	.25
4.	500M.	4.	.0005
5.	500M.	5.	.1
6.	500M.	6.	.01
7.	1 Meg.	7.	.25
8.	100M.	8.	.1
		9.	16.
10-31-33		10.	12.
		11.	.1

Drwn By JC Chkd By

CLARION TC 30

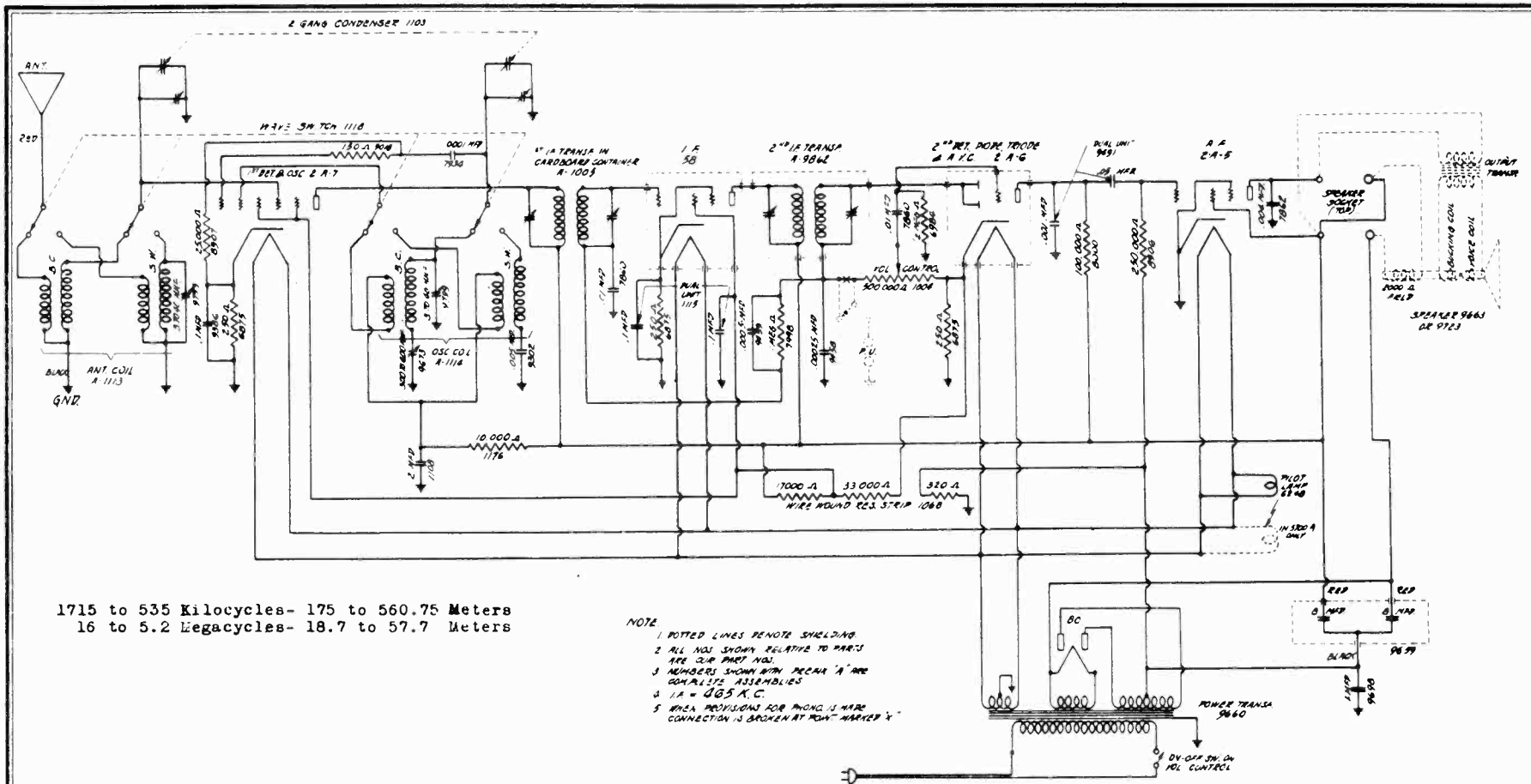
REPLACEMENT PARTS

Stock No.	Part No.	Description of part	List price
TWR50010	R2-3-7	1 megohm resistor	.12
TWR50020	R4-5-6	500,000 resistor.....	.12
TWR50030	R8	100,000 resistor.....	.12
Twr50050	C1-4	.0005 Fixed condenser	.16
TWR50060	C2-5-8-11	.1 - 200 volt condensor	.12
TWR50070	C3-7	.25 - 200 volt condensor	.16
TWR50080	C6	.01 - 400 volt condensor	.12
TWR50090	C9-10	12 x 16 filter condenser	1.20
Twr50100		220 ohm line cord	.68
TWR50110		Two gang condenser	2.00
TWR50130		Antenna coil	.40
TWR50120		R.F. coil	.40
TWR50140		Speaker	4.20
TWR50150		Knobs	.20
TWR50160	R1	Volume control	.96

ALIGNMENT- Connect a test oscillator to the antenna wire of the receiver and set the oscillator and receiver to 1400 K.C. Adjust either trimmer on the tuning condenser for maximum output.

TRANSFORMER CORP. OF AMER. (New Co. Schematic, Voltage

MODEL TC-20, TC-21



1715 to 535 Kilocycles- 175 to 560.75 Meters
16 to 5.2 Megacycles- 18.7 to 57.7 Meters

NOTE
1. DOTTED LINES DENOTE SHIELDING
2. ALL NOS. SHOWN RELATIVE TO PARTS ARE OUR PART NOS.
3. NUMBERS SHOWN WITH PREFIX 'A' ARE COMPLETE ASSEMBLIES
4. I.F. = 465 K.C.
5. WHEN PROVISIONS FOR PHONO IS MADE CONNECTION IS BROKEN AT POINT MARKED 'X'

VOLTAGE TABLE
Line : 115
Volume : Full on

TUBE		FIL.	PLATE	SCREEN	CATHODE	GRID NO.1	GRID NO.2	GRID NO. 3 & 5
58	I. F. Amplifier	2.45	205	80	2			
2A7	Oscillator & 1st Detector	2.45	205		2.5	1.5	160	80
2A6	Second Detector Diode AVC and Triode	2.45	100##		1			
2A5	Output	2.45	190	205	.8###			
80	Rectifier	4.85						

Triode Plate. Comparative voltage only. The voltmeter is in series with a high resistance and is therefore not the true voltage applied.

Read all voltages from socket to chassis unless otherwise specified.

Read from grid to chassis.

TRANSFORMER CORPORATION OF AMERICA
100 SIXTH AVE N.Y.C.

MODEL TC-20, TC-21
Alignment Data
Parts List

TRANSFORMER CORP. OF AMER. (New Co.)

ALIGNMENT PROCEDURE: Only when an IF transformer, antenna or oscillator coil is replaced should it ever be necessary to realign the receiver. For aligning either the intermediate transformer or the variable condenser it is absolutely necessary that a good accurate 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 2A7 tube leaving the grid cap disconnected. The ground side of the oscillator should be connected to the receiver chassis.

2. Set the oscillator at 465 kilocycles (this must be accurate) and adjust the output of the oscillator so that a convenient reading is obtained on the output meter.

3. Align the first intermediate transformer by turning the intermediate transformer brass hext adjusting nut located on top of the intermediate transformer can up and down until maximum reading is obtained on the output meter. Then adjust the trimmer screw located inside the brass hex nut for maximum output.

4. Adjust the second I. F. transformer in the same manner as the first I. F. transformer.

VARIABLE CONDENSER ALIGNMENT: It is essential that the following instructions be carefully adhered to in the order given otherwise the receiver will be insensitive and the dial calibration will be inaccurate.

1. Connect the high side of the oscillator output to the set antenna lead and the oscillator ground to the receiver chassis.

2. Place the band selector switch for operation on the 16 to 5.2 megacycle band.

3. Set the oscillator frequency to exactly 15 megacycles and adjust the receiver dial to exactly 15 megacycles. Then BRING IN THE 15 MEGACYCLE SIGNAL TO MAXIMUM OUTPUT BY ADJUSTING THE trimmer condenser of the oscillator gang condenser section. The oscillator trimmer condenser is mounted on top of the rear section of the variable condenser. The front section of the variable condenser tunes the antenna stage.

4. 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 1400 kilocycles. BRING IN THIS 1400 KILOCYCLE SIGNAL BY ADJUSTING THE SMALL TRIMMER CONDENSER which is located underneath near the center and towards the front of the chassis.

5. Next adjust the antenna variable gang condenser section trimmer condenser for maximum output (front section).

6. Leave the receiver operating on the same band and set the oscillator frequency to approximately 600 kilocycles and adjust the 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 front of the chassis for maximum output.

7. Recheck the 1400 kilocycle adjustment.

8. Place the band selector switch for operation on the 16 to 5.2 megacycle band and tune the dial to exactly 15 megacycles and set the oscillator frequency to 15 megacycles. Then adjust the trimmer condenser which is located underneath and toward the center of the right hand side of the chassis for maximum output.

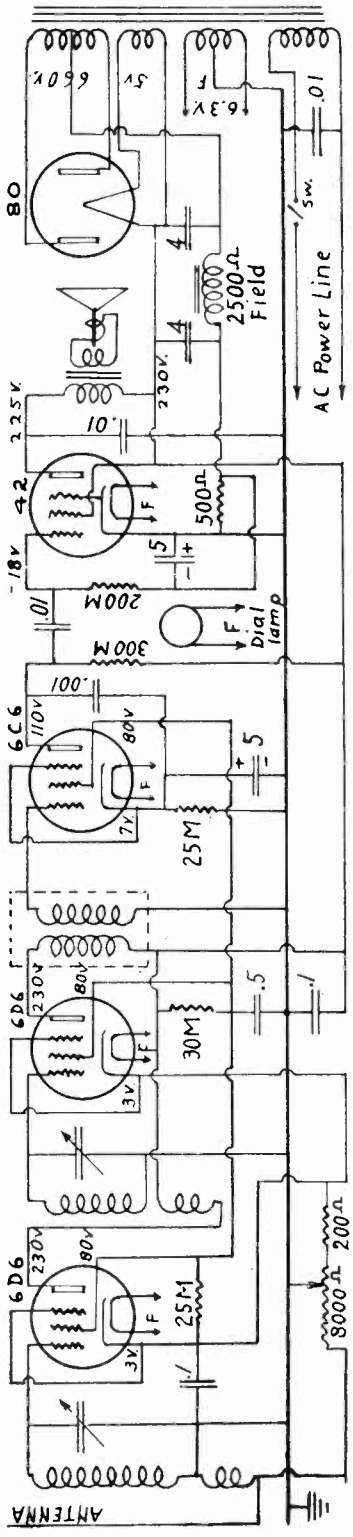
This completes the alignment procedure and it is suggested that all the adjustments be rechecked.

PARTS & PRICE LIST

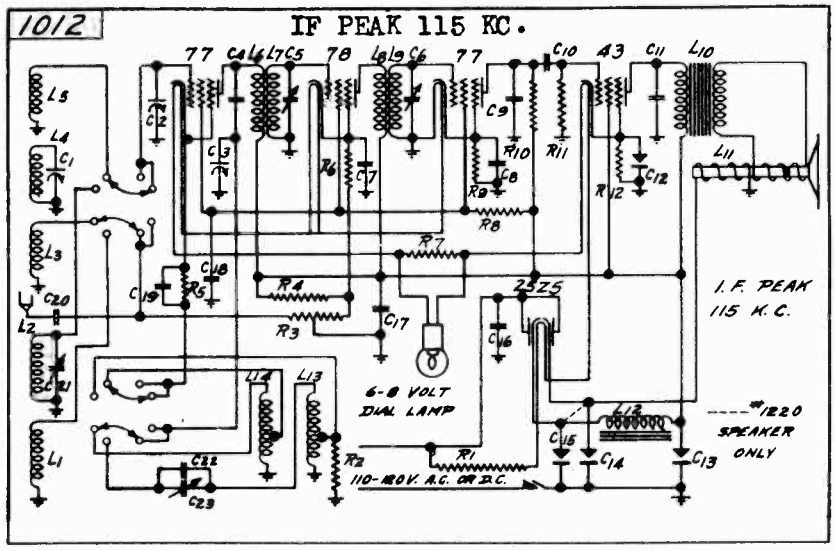
PART NUMBER		LIST PRICE
1113	Antenna Coil	$ 1.63
1114	Oscillator Coil	1.63
1005	First I. F. Transformer	2.10
9862	Second I. F. Transformer	2.10
1118	Wave Switch	.75
1103	Gang Condenser	3.02
1104	Volume Control	1.24
9660	Power Transformer	4.02
9659	2-8 Mfd. Electrolytic Condenser	2.80
9673	Padding Condenser	.50
9799	Trimmer Condenser	.15
9671	Pilot Light Socket	.09
6248	2.5 Volt Pilot Light Socket	.17
1104	Tuning Dial	.28
1068	Wire Wound Resistor Strip	.96
6984	500,000 Ohm 1/3 Watt Resistor	.19
7997	1 Meg Ohm 1/3 Watt Resistor	.19
8000	100,000 Ohm 1/3 Watt Resistor	.19
8906	250,000 Ohm 1/3 Watt Resistor	.19
6875	250 Ohm 1/3 Watt Resistor	.19
9018	150 Ohm 1/3 Watt Resistor	.19
8907	25,000 Ohm 1/3 Watt Resistor	.19
1176	10,000 Ohm 1/3 Watt Resistor	.19
9698	1 Mfd. 100 Volt Condenser	.56
9386	.1 Mfd. 200 Volt Condenser	.19
7862	.004 Mfd. 400 Volt Condenser	.17
7860	.01 Mfd. 400 Volt Condenser	.17
1115	2x.1 Mfd. 200 Volt Condenser	.35
9691	.05 Mfd. & .001 Mfd, 400 Volt Condenser	.39
1108	2 Mfd. Dry Electrolytic Condenser	.99
9307	.005 Mfd. Moulded Condenser	.55
9458	.00025 Mfd. Moulded Condenser	.21
7934	.0001 Mfd. Moulded Condenser	.21
9459	.0005 Mfd. Moulded Condenser	.21
8980	Tube Shield	.11
1179	Large Knob	.15
1180	Knob with dot	.17
9759	Small Knob	.14

TRANSFORMER CORP. OF AMER. (New Co.)

MODEL TC-40
Schematic
MODEL TC-52
Schematic
Parts List



Model TC-40

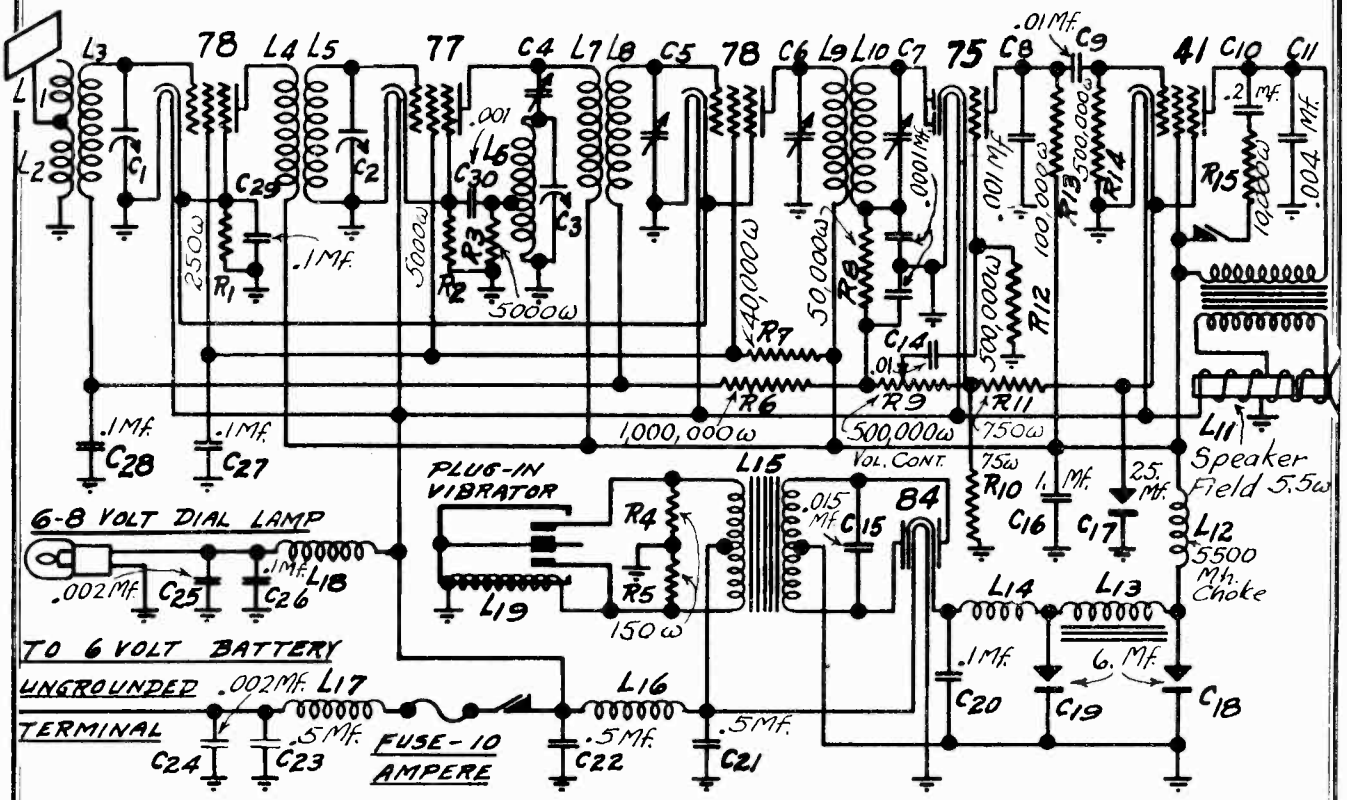


CODE	PART NO.		
			RESISTORS
R1	1125	130	Ohm Resistor in Power Cord A.P.
R2	1065	500	Ohm Long Wave Oscillator Resistor
R3	1296	10,000	Ohm Volume Control & Switch
R4	922	75,000	Ohm I.F. Cathode Resistor
R5	919	5,000	Ohm Oscillator Feed Resistor
R6	1065	500	Ohm I.F. Cathode Bias Resistor
R7	1308	20	Ohm Pilot Light Shunt Resistor
R8	921	40,000	Ohm R.F. & I.F. Screen Feed Resistor
R9	941	20,000	Ohm Second Detector Cathode Bias Resistor
R10	924	250,000	Ohm Second Detector Plate Load Resistor
R11	925	500,000	Ohm 43 Grid Bias Resistor
R12	1065	500	Ohm 43 Cathode Bias Resistor
			CONDENSERS
C1	833	371	MMFD. First Preselector Section of 3 Gang
C2	833	371	MMFD. Second Preselector Section of 3 Gang
C3	833	336	MMFD. Oscillator Section of 3 Gang
C4	264	.00005	MFD. Oscillator Plate Feed Condenser
C5	1521	75-150	MMFD. First I.F. Trimmer
C6	1523	75-150	MMFD. Second I.F. Trimmer
C7	272A	.1	MFD. 200 Volt I.F. Cathode By-Pass
C8	165A	.2	MFD. 200 Volt Second Detector Cathode By-Pass
C9	662	.002	MFD. Mica Second Detector Plate Filter
C10	269A	.01	MFD. 400 Audio Feed Condenser
C11	269A	.01	MFD. 400 Volt Output Plate Filter
C12	928	25	MFD. 25 Volt 43 Cathode By-Pass
C13	1295	4	MFD. 150 W.V. Dry Electrolytic
C14	1295	4	MFD. 150 W.V. Dry Electrolytic
C15	1295	10	MFD. 150 W.V. Dry Electrolytic
C16	272A	.1	MFD. 200 Volt Line By-Pass Condenser
C17	267A	.5	MFD. 200 Volt B. Supply By-Pass Condenser
C18	272A	.1	MFD. 200 Volt R.F. & I.F. Screen By-Pass
C19	265	.001	MFD. Mica Oscillator Coupling Condenser
C20	265	.001	MFD. Mica Antenna Series Condenser
C21	972	2	Plate L.W. Preselector Trimmer
C22	339	2-.0001	MFD. Mica L.W. Oscillator Series Condenser
C23	1522	75-100	MMFD. L.W. Oscillator Series Trimmer
			INDUCTANCES
L1	1475		L.W. Preselector Primary 800 Turns #36 S.S.E.
L2	1475		Long-Wave Preselector Secondary 490 Turns #36 S.S.E.
L3	847		Broadcast Preselector Primary 178 Turns #36 S.S.E.
L4	847		Broadcast First Secondary 133 Turns #36 S.S.E.
L5	847		Broadcast Second Secondary 128 Turns #36 S.S.E.
L6	1470		Microhenry First I.F. Primary
L7	1470		25,000 Microhenry First I.F. Secondary
L8	1475		25,000 Microhenry Second I.F. Primary
L9	1475		25,000 Microhenry Second I.F. Secondary
L10			#43 Output Transformer 917 Rola 1220 Quam
L11			3000 Ohm Speaker Field 917 Rola 1220 Quam
L12	940		20 Henry Choke
L13	1476		L.W. Oscillator 390 Turns #36 S.S.E. Tapped 20 Turns
L14	1470		Broadcast Oscillator 106 Turns #36 S.S.E. Tapped 30 Turns

Model TC-52

MODEL TC-50
Schematic
Voltage
Alignment Data

TRANSFORMER CORP. OF AMER. (New Co.)



IF PEAK 175 KC.

R-F. ADJUSTMENT: Remove chassis from case, couple the output of a modulated oscill ator from antenna to ground, set the dial at 1400 and the oscillator at 1400 KC.

Place the oscillator and receiver in operation and adjust the oscillator output so that a weak signal is heard in the loudspeaker when the volume control is at its maximum position.

Adjust trimming condensers, starting with C3, C2 and then C1, until maximum output is obtained. Readjust a second time as there is a slight interlocking of adjustments. Greater accuracy can be obtained with an output meter.

I-F. ADJUSTMENT: The four I-F. trimming condensers are adjusted at 175 KC.

Connect a modulated oscillator set at 175 KC. between the first detector grid and ground. Connect output meter.

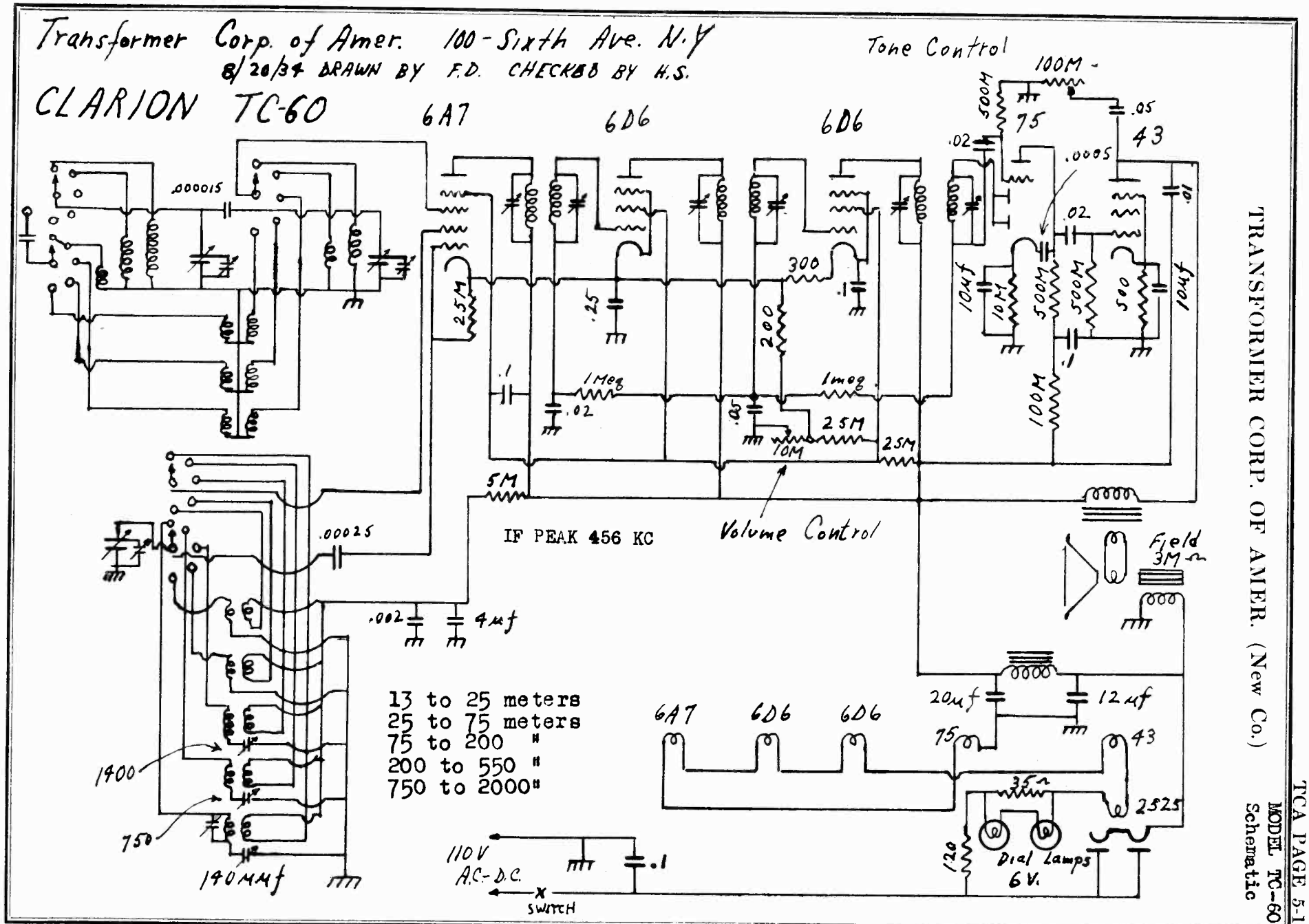
Adjust the tuning condenser so that no signal except the I-F. oscillator is heard at maximum volume, With the volume control set at maximum, reduce the output of the oscillator until a small deflection is obtained. Unless this is done, the AVC action will make correct adjustments impossible.

Trim in order C4, C5, C6 and C7. Repeat adjustments and then follow with the R-F. adjustments.

		SOCKET VOLTAGES			
	TUBE	CATHODE-PLATE	CATHODE-SCREEN	CATHODE-GRND.	PLATE CUR.
R-F.	78	180	85	2	4 MA.
Det-Osc.	77	180	85	4	6.3 "
I-F.	78	180	85	2	4
2Det.AVC.	75	125	—	2	1
Output	41	175	180	15	17

Heater Voltage 5.5 volts.

TRANSFORMER CORP. OF AMER. (New Co.)



MODEL TC-60
Alignment Data
Parts List

TRANSFORMER CORP. OF AMER. (New Co.)

The action of the A.V.C. will defeat the purpose of an output meter if used in the normal manner. To obviate this, the oscillator output should be turned to as low a setting as will cause a reading on the output meter with the volume control on the set turned to maximum. This will allow the out meter to function correctly. Adjust the test oscillator to 456 K.C. and connect to the grid cap of the 6A7 tube and adjust the trimmers on the three I.F. stages. (There are two adjustments in each coil; a screw and a nut.)

R.F. ALIGNMENT-Connect oscillator to antenna wire on set and adjust oscillator to 1400 K.C. Set receiver dial to 1400 K.C. and wave band switch to the broadcast position. Adjust output of oscillator as outlined under I.F. alignment. Adjust trimmers on sections 1 and 2 for maximum output. Then adjust section 3 of the variable condenser for maximum output. The oscillator padder condenser is the center one of three located on the back of the chassis. In the event that the oscillator section does not track through the broadcast band; this trimmer should be adjusted.

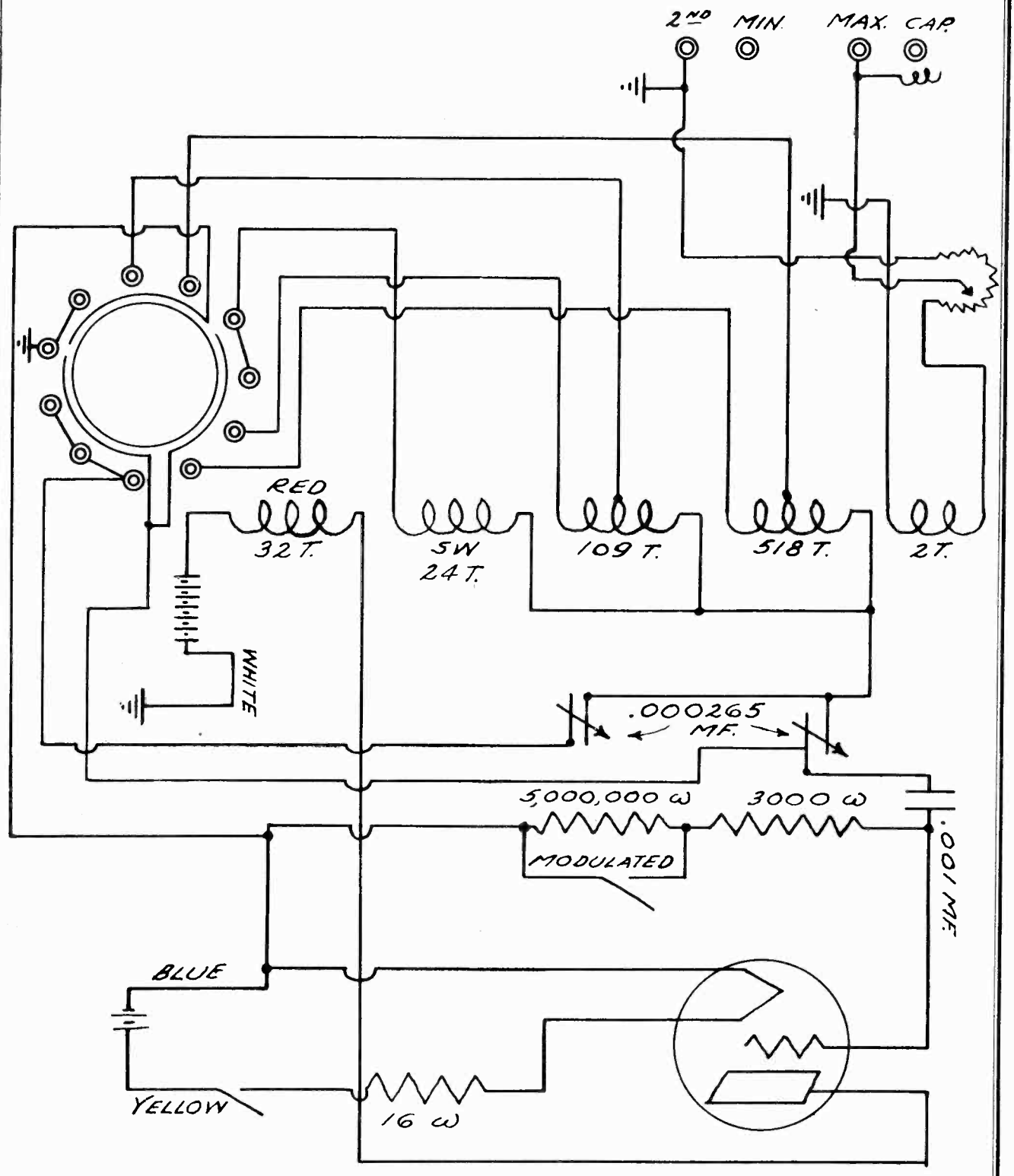
No adjustments are necessary on the other wave bands. All the coils are correctly matched so that they will be in alignment if the above adjustments are correctly made.

LIST PRICE PARTS LIST

PART NO.		PRICE
TCG-1001	3000 ohm 5" speaker single 43 trans	$ 5.20
TCG-1002	BROADCAST Oscillator and I st I.F. coil	2.95
TCG-1003	Second I.F. Transformer	1.95
TCG-1004	Third I.F. Transformer	1.95
TCG-1005	LONG wave oscillator loading coil	.70
TCG-1006	Broadcast and long wave preselector	2.50
TCG-1007	S.W. antenna Coil 13-25 Meter band	.55
TCG-1008	S.W. " " 25-75 " "	.55
TCG-1009	S.W. " " 75-200 " "	.55
TCG-1010	S.W. Oscilator " 13-25 " "	.55
TCG-1011	S.W. " " 25-75 " "	.55
TCG-1012	S.W. " " 75-200 " "	.55
TCG-1013	200 Filter choke	1.20
TCG-1014	3 gang variable condenser	3.60
TCG-1015	3000 ohm vol. cont. with switch	1.10
TCG-1016	100,000 tone control	.75
TCG-1017	3 gang 6 circuit 5 position wave change switch	2.10
TCG-1018	20-12 mfd. 100 w.v. filter cond.	1.95
TCG-1019	4 mfd. 100 wv Filter cond.	.80
TCG-1020	Dual 10 mfd. By-pass cond.	1.20
TCG-1021	.25 mfd. 200V Tubular cond.	.24
TCG-1022	.1 mfd. 200V Tubular Cond.	.16
TCG-1023	.05 " " " "	.14
TCG-1024	.02 " " " "	.13
TCG-1025	.01 " " " "	.13
TCG-1026	.006 " 400V " "	.13
TCG-1027	Moulded Mica cond. 000015,002, and .0005 mfd.	..20
TCG-1028	Trimmer cond. 3-30 mmf.	.20
TCG-1029	Triple Padding cond. strip, 140-600-1500 mmf.	1.60
TCG-1030	Line resistor 155 ohms tapped at 20 ohms	1.20
TCG-1031	500 ohm 1/2 watt Carbon Resistor	.25
TCG-1032	1/3 Watt carbon resistor any value	.19

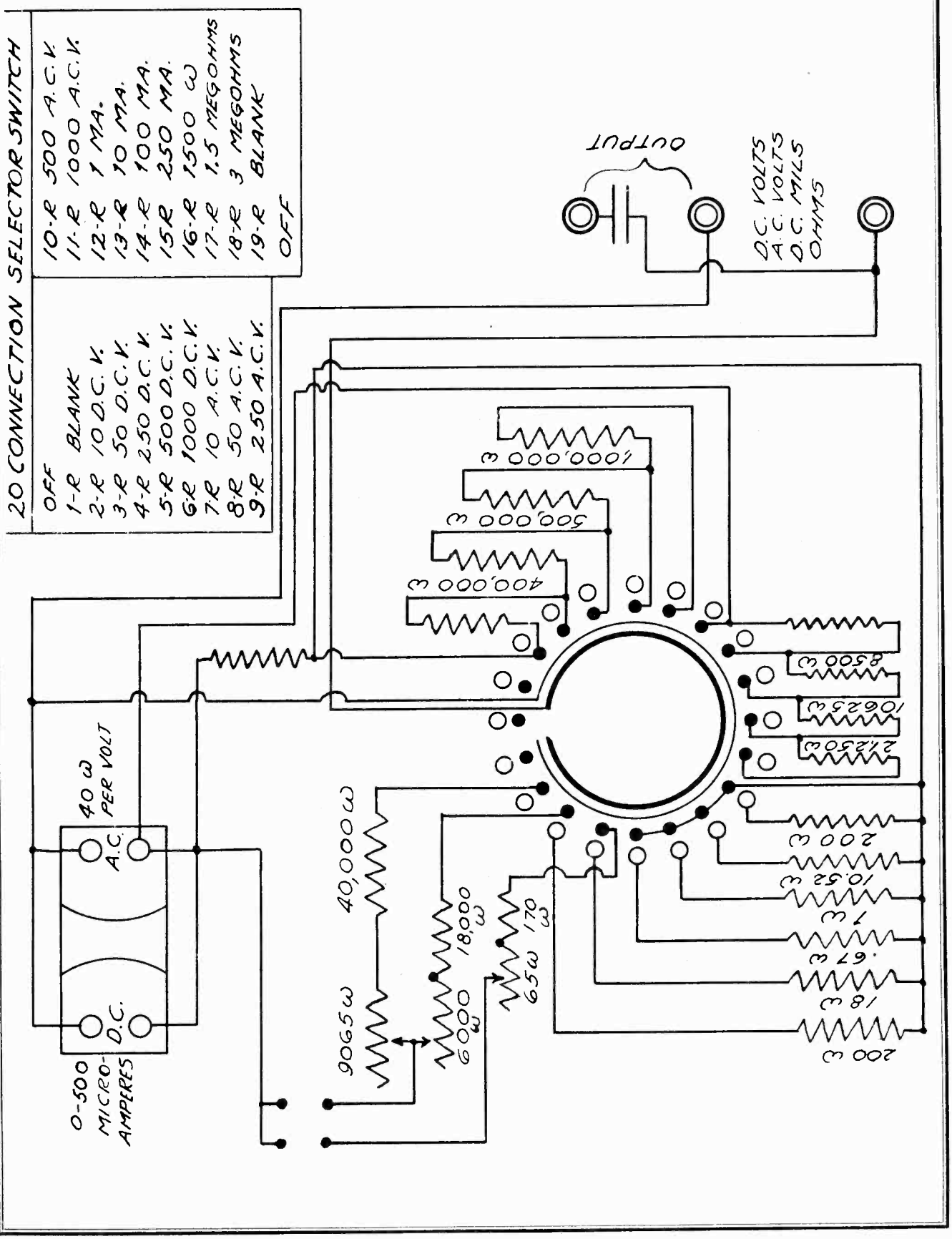
TRIPLETT ELECTRICAL INSTRUMENT CO.

MODEL 1151
Oscillator
Schematic



MODEL 1200
Tester
Schematic

TRIPLETT ELECTRICAL INSTRUMENT CO.

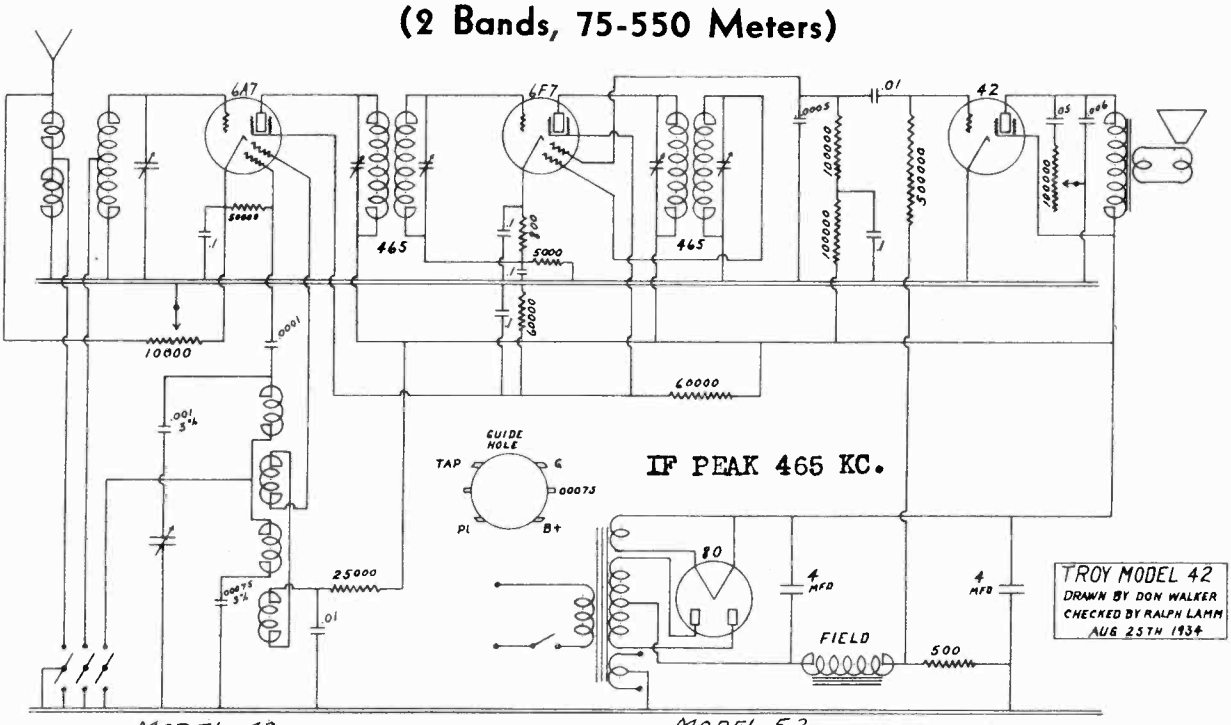


MODEL 42
MODEL 52
Schematics
Socket Layouts

TROY RADIO MFG. CO.

TROY 4 and 5 TUBE SUPERS

(2 Bands, 75-550 Meters)



TROY MODEL 42
DRAWN BY DON WALKER
CHECKED BY RALPH LAMM
AUG 25TH 1934

MODEL 42

80	42	6F7	6A7
RECT.	PWR	I.F. 2ND DET.	DET. OSC.

PILOT LITE 6V

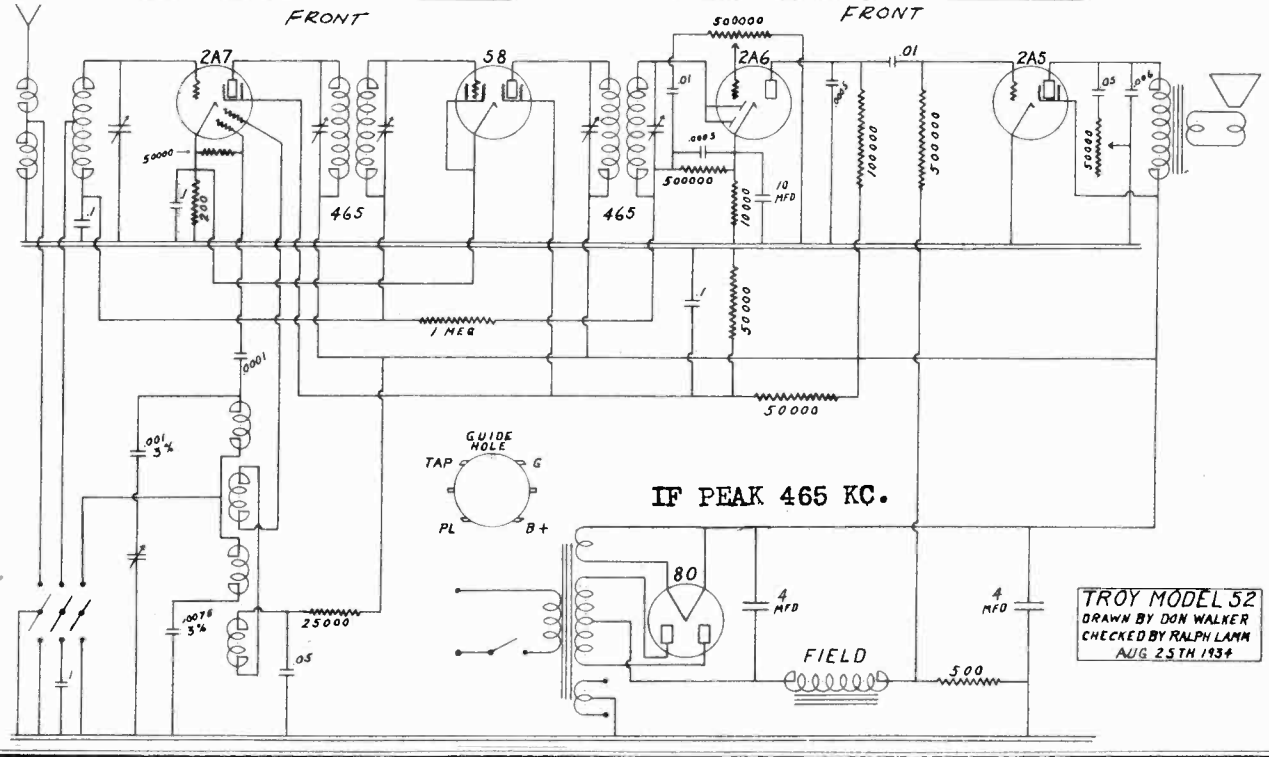
FRONT

MODEL 52

80	2A5	2A6	58	2A7
RECT.	PWR.	DET. AUD.	I.F.	DET. OSC.

PILOT LITE 2.5V

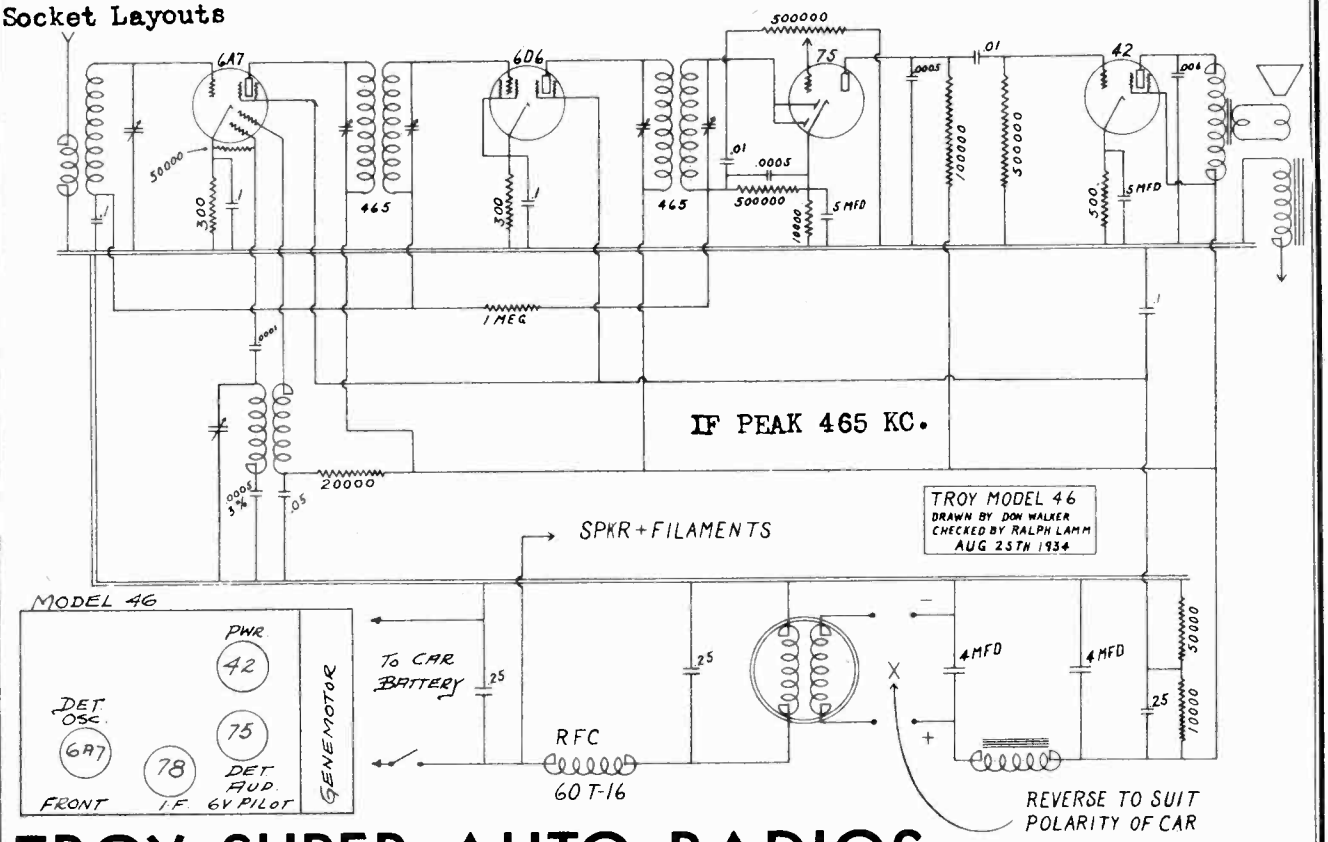
FRONT



TROY MODEL 52
DRAWN BY DON WALKER
CHECKED BY RALPH LAMM
AUG 25TH 1934

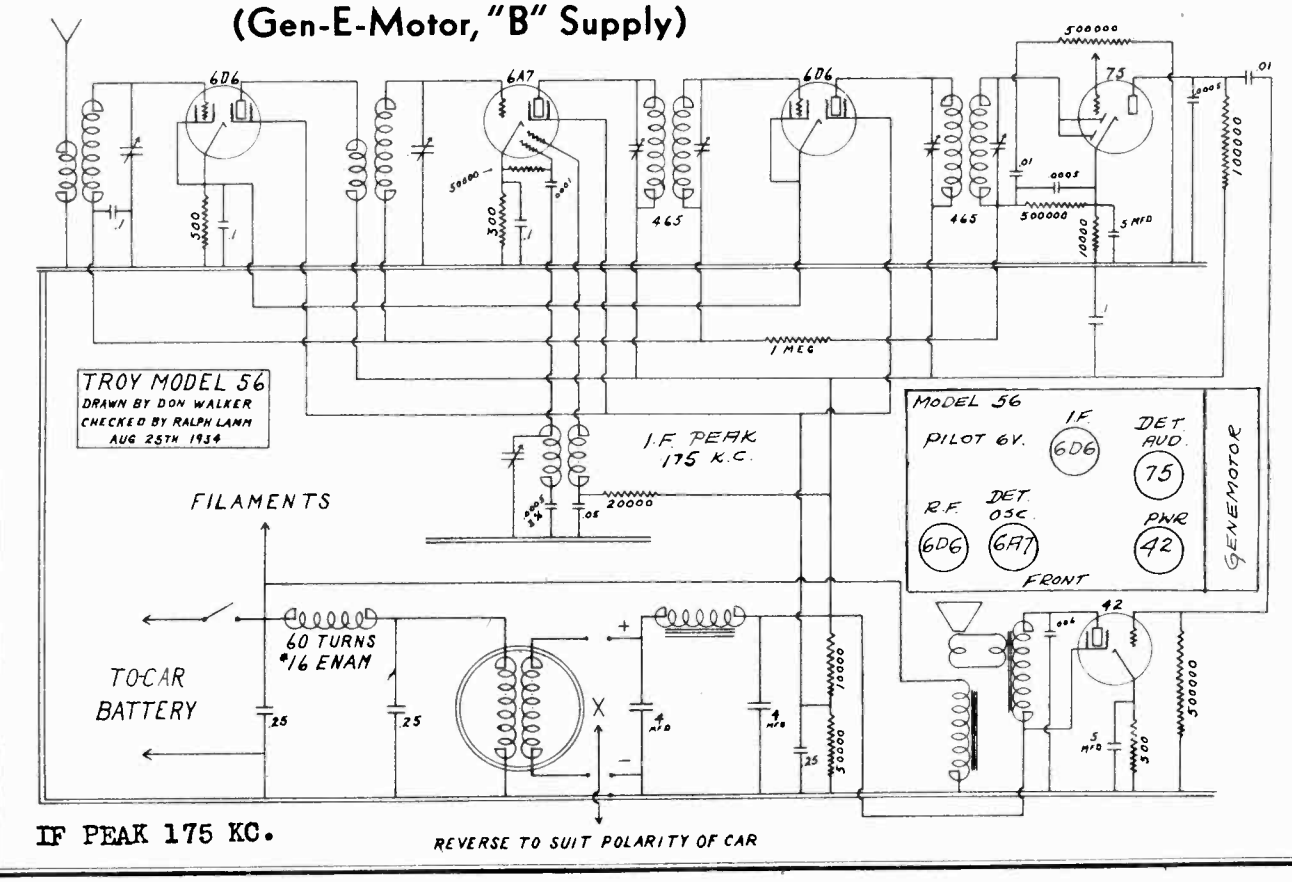
MODEL 46
MODEL 56
Schematics
Socket Layouts

TROY RADIO MFG. CO.



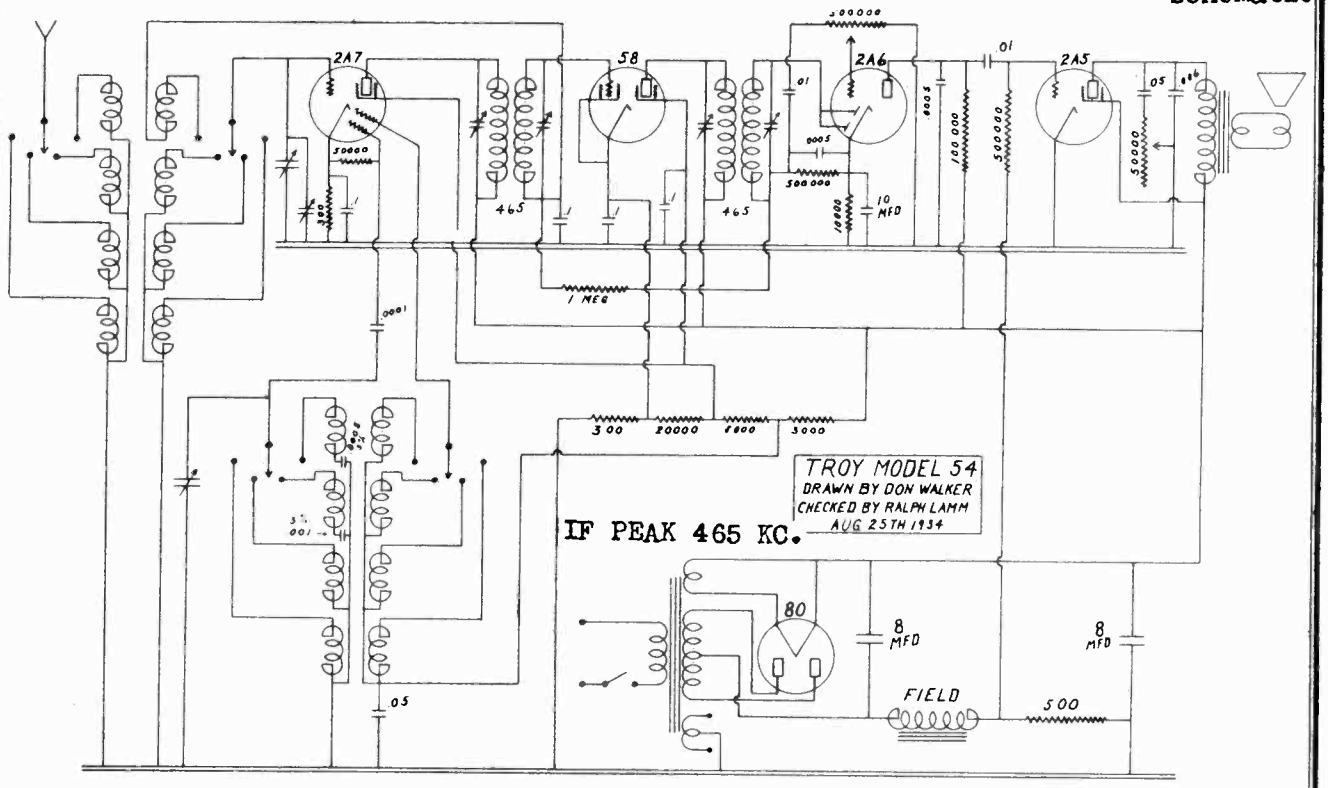
TROY SUPER AUTO RADIOS

(Gen-E-Motor, "B" Supply)



MODEL 54
MODEL 84
Schematic

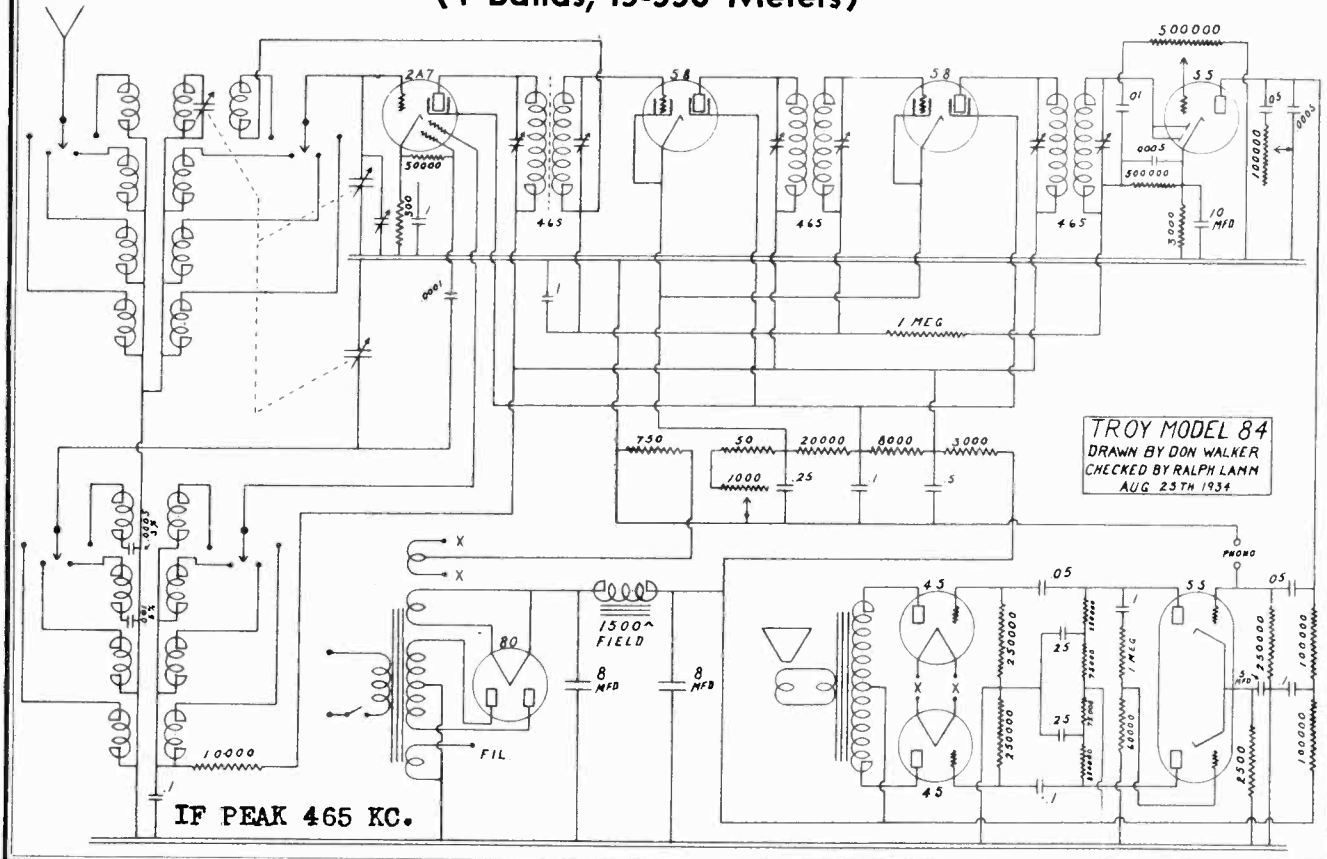
TROY RADIO MFG. CO.



TROY ALL WAVE SUPERS

(4 Bands, 15-550 Meters)

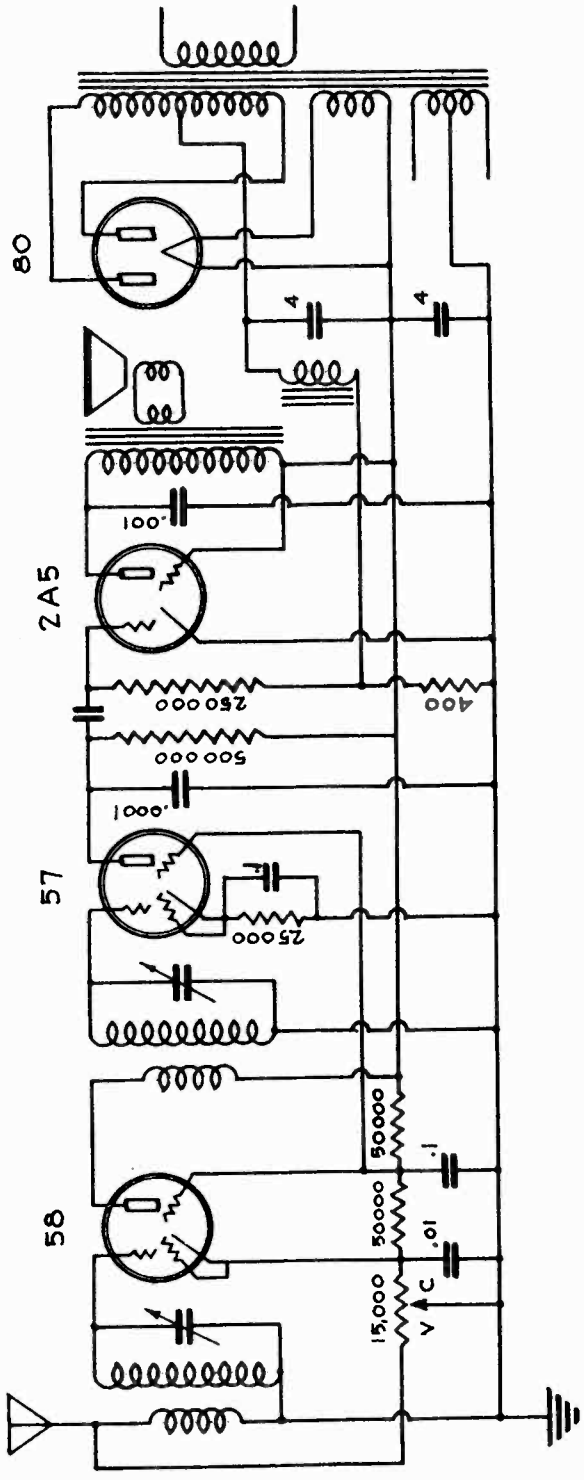
For Socket Layout, see Index

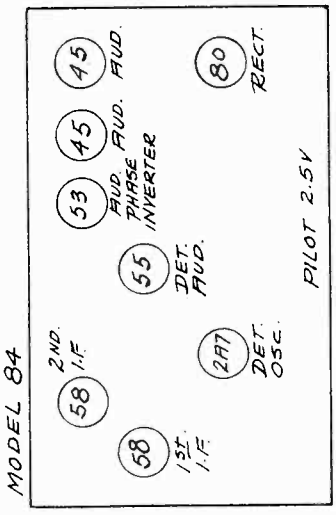


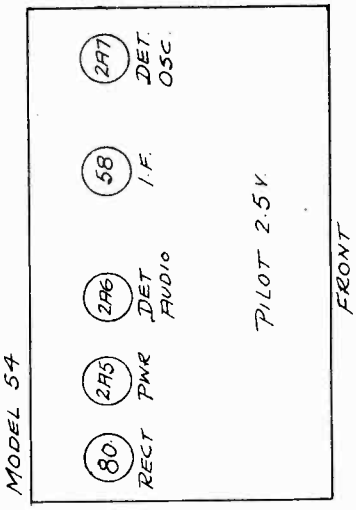
MODEL 4-Tube TRF
Schematic
MODELS 54,84
Socket Layouts

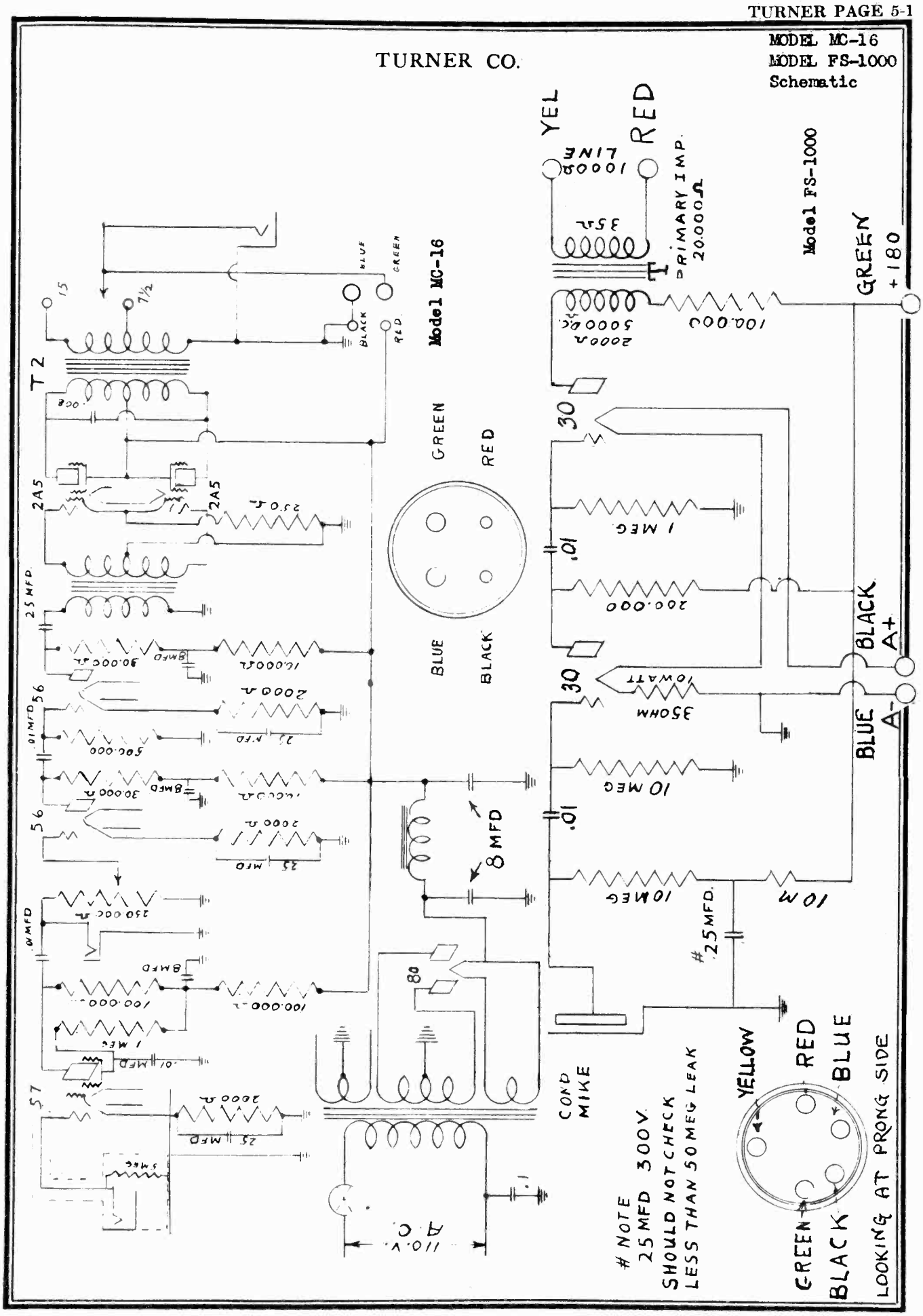
TROY RADIO MFG. CO.

4 TUBE T. R. F.



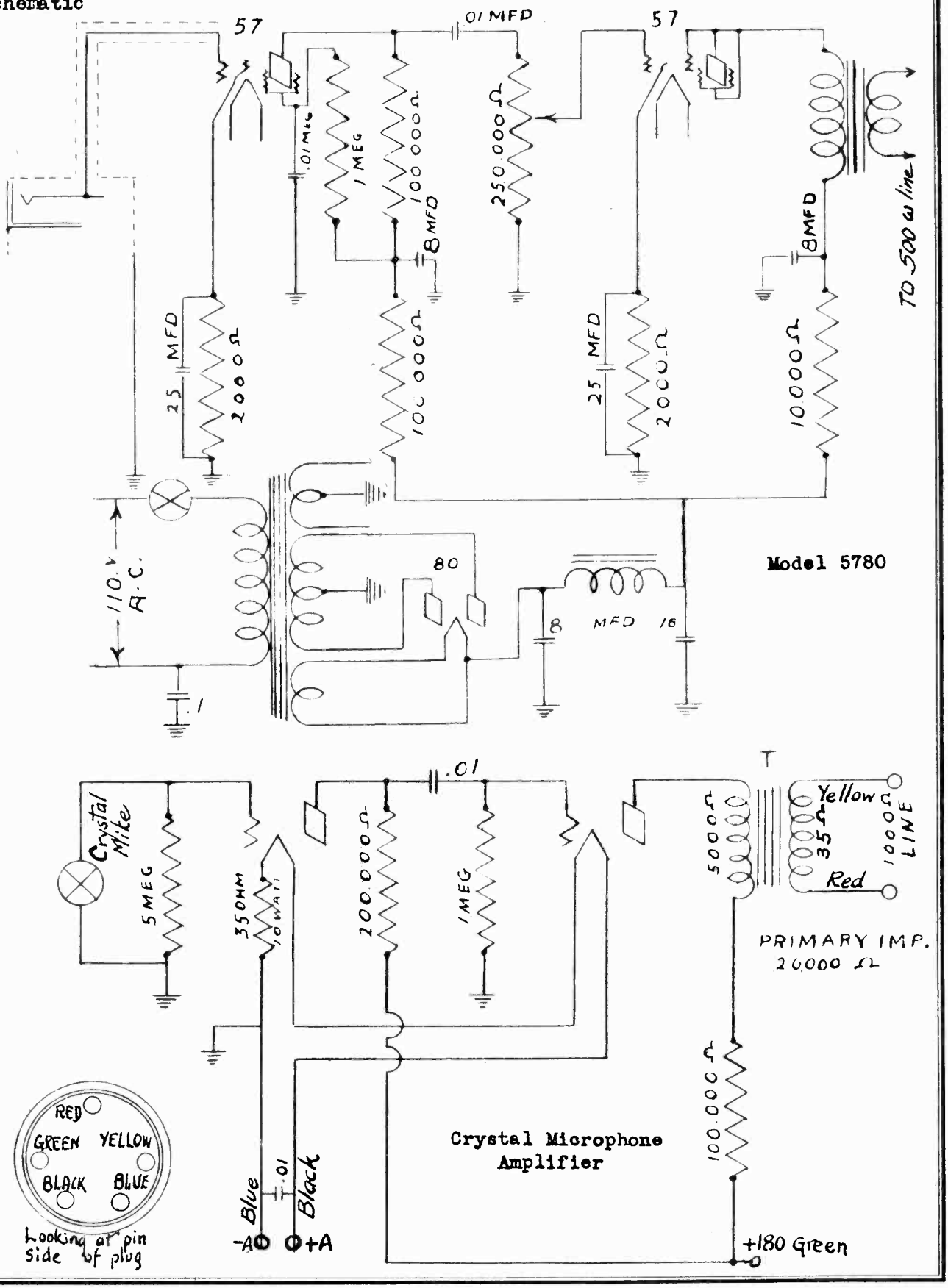






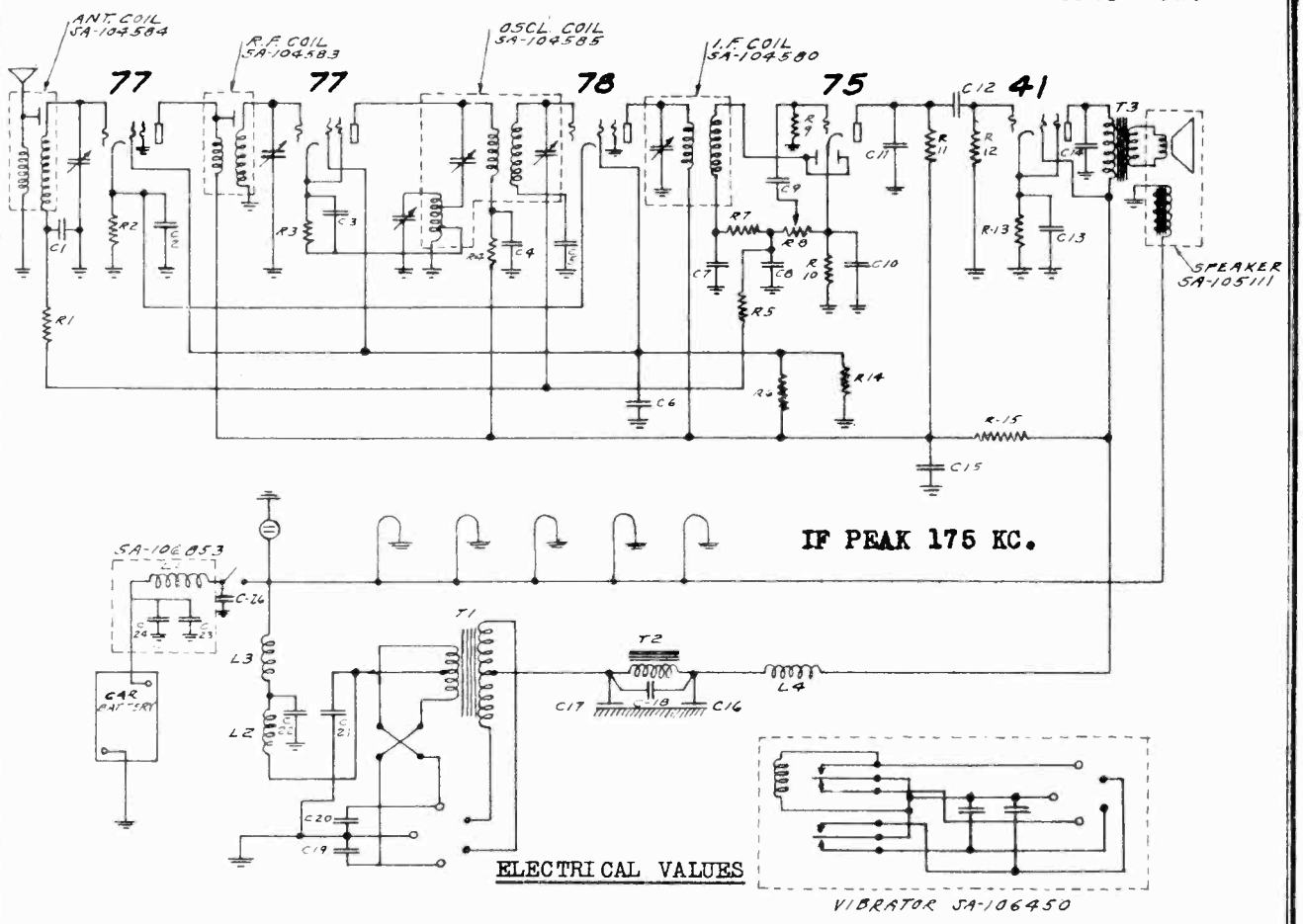
MODEL 5780
MODEL Crystal-
Microphone Amplifier
Schematic

TURNER CO



UNITED AMERICAN BOSCH CORP.

MODEL 45-A, 45-C
Schematic
Color Code



ELECTRICAL VALUES

R-1	100,000 ohms 1/4 watt	R-19	---	C-16	8 mfd. electrolytic
R-2	750 ohms 1/4 watt	R-20	---	C-17	8 mfd. electrolytic
R-3	7500 ohms 1/4 watt	C-1	.05 - 2 ply	C-18	.1 mfd. - 2 ply
R-4	2000 ohms 1/4 watt	C-2	.25 - 2 ply	C-19	.05 mfd. - 2 ply
R-5	1/2 meg. 1/4 watt	C-3	.002 - 4 ply	C-20	.05 mfd. - 2 ply
R-6	40,000 ohms 1/4 watt	C-4	.05 - 3 ply	C-21	.5 mfd. 200 V. in can
R-7	50,000 ohms 1/4 watt	C-5	.05 - 2 ply	C-22	.5 mfd. 200 V. in can
R-8	1/2 meg. Volume Control	C-6	.05 - 3 ply	C-23	.5 mfd. mica
R-9	1 meg. 1/4 watt	C-7	.0001 mfd. mica	C-24	.001 mfd. mica
R-10	5,000 ohms 1/4 watt	C-8	.0001 mfd. mica	C-25	---
R-11	1/4 meg. 1/4 watt	C-9	.005 - 3 ply	C-26	.0001 mica
R-12	1/2 meg. 1/4 watt	C-10	.25 - 2 ply	L-1	R.F. Choke coil
R-13	600 ohms 1/2 watt	C-11	.003 - 4 ply	L-2	Choke coil
R-14	75,000 ohms 1/4 watt	C-12	.005 - 3 ply	L-3	R.F. Choke coil
R-15	4,000 ohms 1 watt	C-13	10 mfd. electrolytic	L-4	R.F. Choke coil
R-16	---	C-14	.005 - 3 ply	T-1	Power Transformer
R-17	---	C-15	.05 - 3 ply	T-2	Choke coil
R-18	---			T-3	Output Transformer

STANDARD WIRE COLOR CODE

Plate	Blue
"B" plus	Red
Grid	Green
Screen	Green and White
Cathode	Black
A.V.C.	Red & Yellow or White
"B" minus	Black and White
Ground	Black and Red
Overhead grid	Green rubber

STANDARD VOLUME CONTROL WIRING

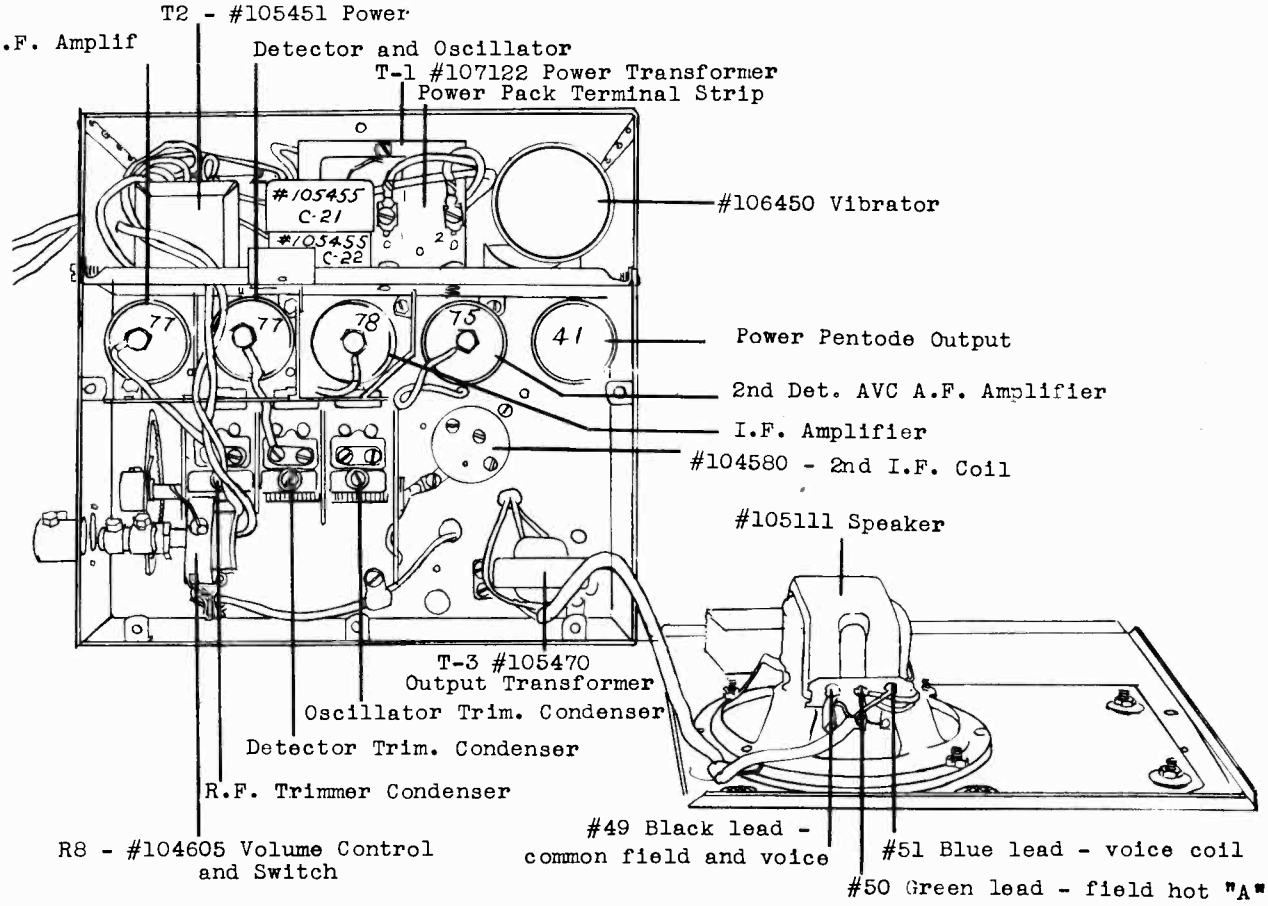
Arm	Green
Low Side	Black
High	Red and White

R.M.A. RESISTOR COLOR CODE

BODY	TIP	DOT
0 - BLACK	0 - BLACK	.0 - BLACK
1 - BROWN	1 - BROWN	0 - BROWN
2 - RED	2 - RED	00 - RED
3 - ORANGE	3 - ORANGE	000 - ORANGE
4 - YELLOW	4 - YELLOW	0000 - YELLOW
5 - GREEN	5 - GREEN	00000 - GREEN
6 - BLUE	6 - BLUE	000000 - BLUE
7 - PURPLE	7 - PURPLE	
8 - GREY	8 - GREY	
9 - WHITE	9 - WHITE	

MODEL 45-A,45-C
Alignment Data

UNITED AMERICAN BOSCH CORP.



ADJUSTING AND ALIGNING INSTRUCTIONS

All of the adjustable condensers, commonly called trimmer condensers, are very accurately adjusted at the factory and will not need any further adjustments 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 test oscillator is available, then proceed as follows:

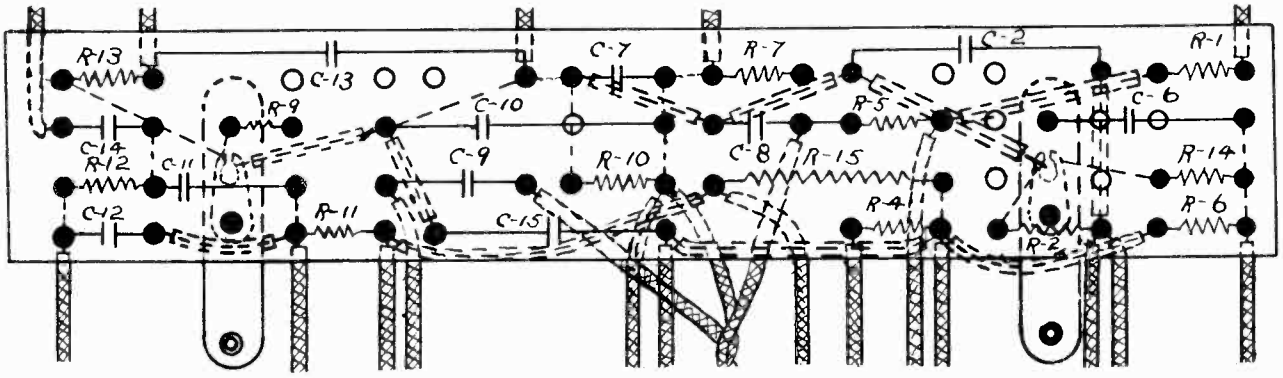
1. Connect output meter across voice coil of speaker terminals #49 and #51 (Fig. #1).
2. Set test oscillator at 175 kilocycles (using .1 mfd. antenna condenser).
3. Connect test oscillator lead to grid of the first I. F. tube.
4. Adjust condenser on primary of second I. F. transformer on top of set to peak on output meter.
5. Connect test oscillator lead to grid of first detector tube.
6. Adjust condenser on primary of first I. F. transformer (under set) to peak.
7. Adjust condenser on secondary of first I.F. transformer to peak. (There are two small holes on side of housing for adjustment #6 and #7.)

The above procedure lines up the I. F. stages properly and our attention can now be turned to the oscillator and R. F. adjustments, which are made as follows:

1. Set test-oscillator at 1500 kilocycles (using .1 mfd. antenna condenser).
2. Connect test-oscillator lead to grid of first detector.
3. Set gang condenser at 1500 kilocycles as follows:
   (a) Open gang to fullest extent.
   (b) Close slowly to thickness of approximately .015".
4. Peak oscillator trimmer on end of condenser gang.
5. Set test-oscillator at 1400 kilocycles.
6. Connect test-oscillator to antenna lead (using .0002 mfd. antenna condenser).
7. Peak other two condensers on gang.
8. Do not touch oscillator trimmer at 1400 kilocycles setting of gang.

This set should now be fully aligned and normal sensitivity prevail.

UNITED AMERICAN BOSCH CORP.



TESTING

(d) SPEAKER: Check field supply with voltohmmeter at speaker, reading between points #49 and #50 (Fig. #1) on speaker terminals (5.8 volts or over). Unsolder blue lead from speaker (#51) and test across terminals #49 and #51 for continuity of voice coil. (Reading full scale ohmmeter.)

(e) SECONDARY OUTPUT TRANSFORMER: After unsoldering blue lead from terminal (#51 Fig. #1), test with ohmmeter between blue lead and terminal #49 (full scale reading - ohmmeter).

(f) CHASSIS: After checking the components listed above, test the voltages as they appear on voltage chart and Fig. #4. The resistance measurements as found in "Resistance Chart" and Fig. #5. If any particular reading obtained is very different from the chart reading, the trouble is located in the portion of the circuit associated with the points at which this discrepancy occurs. Referring to circuit diagram and location drawings (Figs. #1, #2, #3), each part making up the circuit may be individually tested until the faulty part is specifically located.

RESISTORS

	Ohms	Body	Tip	Dot
106879	Resistor strip assembly			
105247	7,500	Purple	Green	Red
105265	750	Purple	Green	Brown
101211	600	Blue	Black	Brown
105249	5,000	Green	Black	Red
105278	100,000	Brown	Black	Yellow
105245	2,000	Red	Black	Red
105246	1/2 meg.	Green	Black	Yellow
105251	40,000	Yellow	Black	Orange
105276	50,000	Green	Black	Orange
105281	1 meg.	Brown	Black	Green
105279	1/4 meg.	Red	Green	Orange
105277	75,000	Purple	Green	Orange
106531	4,000	Yellow	Black	Red
104605	Volume control with switch			

CONDENSERS

105300	Suppressor condenser for generator
102495	Condenser .1 mfd - 2 ply
106386	Condenser .05 mfd - 2 ply, short
106844	Variable condenser, complete
103852	Condenser .002 - 4 ply
102493	Condenser .05 - 2 ply
102492	Condenser .05 - 3 ply
106917	Condenser assembly
106878	Electrolytic condenser
106853	Condenser and choke coil assembly
105455	Condenser for assembly 106853
103775	Condenser .001 mica
105568	Condenser .5 - 2 ply
105000	Variable condenser
102497	Condenser .25 - 2 ply
102492	Condenser .05 - 3 ply
106417	Condenser .001 mica
103659	Condenser .005 - 3 ply
105743	Condenser .003 - 4 ply
105741	Electrolytic condenser 10 mfd.

MAIN ASSEMBLIES

106836	Chassis and power pack assembly
106891	Control unit for Model 45A

CONTROL UNIT PARTS (45A)

104986	Dial plate
105090	Knob (volume control)
104977	Knob (tuning)
105088	Frame assembly
106893	Flexible shaft (volume control)
106892	Flexible shaft (tuning)
104892	Thumb screw - dial light assembly
104997	Dial scale
105114	Set screw - flexible cable
105151	Spring
78692	Felt washer
105179	Stud - dial scale and bracket
108	Lock washer for thumb screw
104337	Screw - mounting
81809	Nut - mounting
104392	Washer - mounting
62872	Lock washer - mounting
105958	Dial light cable assembly
106809	Lamp

COILS

105452	R.F. Choke coil (power pack)
105854	R.F. Choke coil (power pack)
104580	I.F. Coil complete (chassis)
104583	R.F. Coil complete (chassis)
104584	Antenna coil
104585	Detector and oscillator coil complete
105451	Choke coil assembly
106853	Condenser and choke coil assembly
105824	Choke coil for condenser and choke assembly

CABLES AND CABLE ASSEMBLIES

106544	Dial light cable assembly
105432	Antenna cable
106543	Battery cable assembly
105160	Speaker cable

TRANSFORMERS

105470	Output transformer
107122	Power transformer

MODEL 45-A,45-C
Chassis View
Data

UNITED AMERICAN BOSCH CORP.

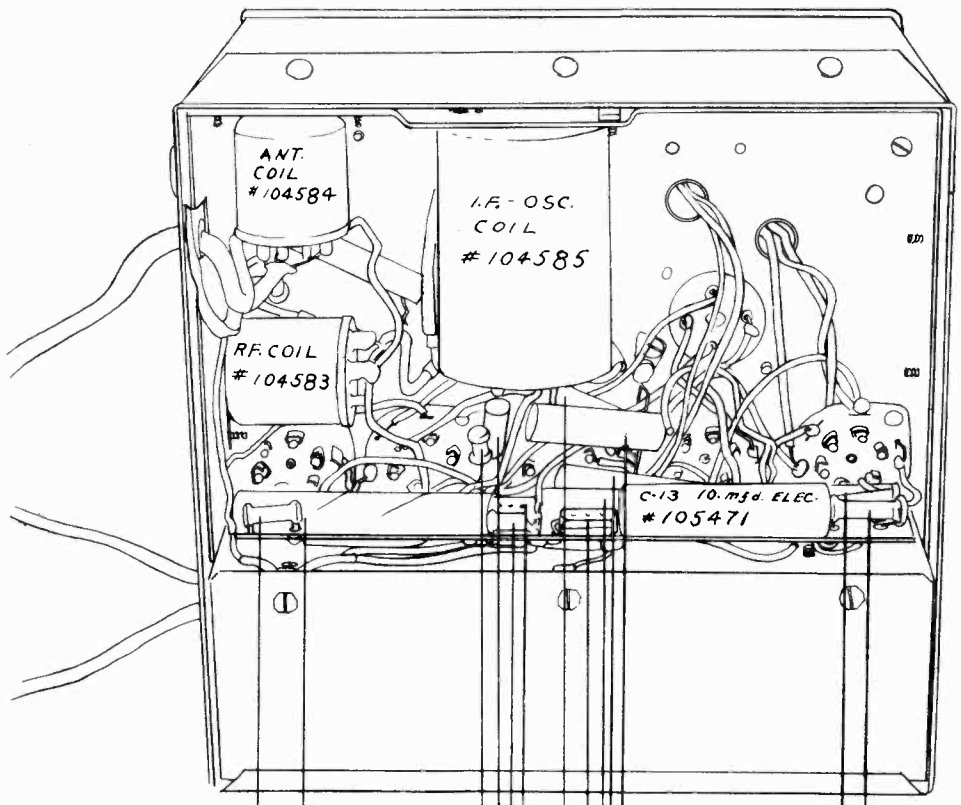
The tubes employed in this circuit are as follows:

1 type 77 radio frequency amplifier.
1 type 77 detector oscillator.
1 type 78 intermediate frequency amplifier.
1 type 75 second detector, A.V.C. and audio amplifier.
1 type 41 output tube.

The antenna is coupled to the first stage by means of a transformer. The R.F. stage is coupled to the oscillator by means of a transformer. Resistance coupling is employed between the audio portion of the type 75 tube and the output tube. The first I.F. transformer is doubly tuned and the second I.F. transformer has a tuned primary.

Automatic volume control is provided by utilizing the potential drop in the collector circuit of the type 75 tube. The A.V.C. is made a part of the D.C. grid circuits of the R.F. amplifier and the I.F. amplifier. The intermediate frequency employed is 175 kilocycles.

An electro-dynamic speaker is used with this set. This speaker has a field resistance of 4 ohms and a voice coil resistance of 3.9 ohms.



R-1 - 100,000 ohms #105278
C2 - .25 mfd. #102497
R3 - 7500 ohms #105247
C3 - .002 mfa. #103852
R7 - 50,000 ohms #105276
C8 - .0001 mfd, #106417
C5 - .05 mfd. #102493
C4 - .05 mfd. #102492
C-15 - .05 mfd. #192492
C-10 - .25 mfd. #102497
C7 - .0001 mfd. #106417
R-13 - 600 ohms #101211
C-14 - .005 mfd. #103659

Figure #2

UNITED AMERICAN BOSCH CORP.

MODEL 45-A, 45-C
Voltage
Resistance Chart

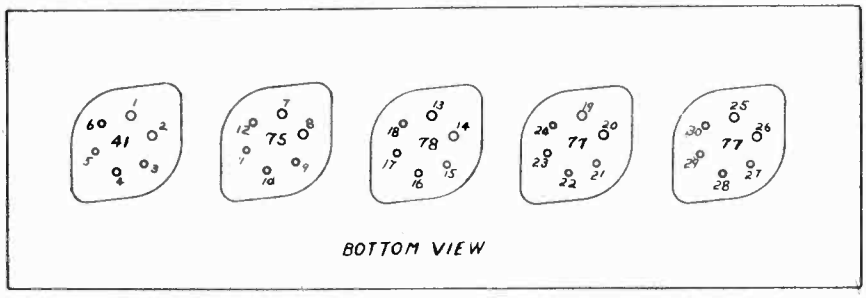


Figure #4

41 Power	75 2nd Det. Audio Amplifier & AVC.	78 IF Amplifier	77 Det. Osc.	77 RF Amplifier
1 - Fil.	7 - Fil.	13 - Fil.	19 - Fil.	25 - Fil.
2 - Fil.	8 - Fil.	14 - Fil.	20 - Fil.	26 - Fil.
3 - Plate	9 - Plate	15 - Plate	21 - Plate	27 - Plate
4 - Screen	10 - Di Plate	16 - Screen	22 - Screen	28 - Screen
5 - Grid	11 - Di Plate	17 - Suppressor	23 - Suppressor	29 - Suppressor
6 - Cathode	12 - Cathode	18 - Cathode	24 - Cathode	30 - Cathode

VOLTAGE CHART

Voltages read from ground to following points with Weston Model 564 Voltohmmeter (six volt storage battery used).

2 - 5.5 V.	8 - 5.5 V.	14 - 5.5 V.	20 - 5.5 V.	26 - 5.5 V.
3 - 178 V.	9 - 112 V.	15 - 155 V.	21 - 155 V.	27 - 155 V.
4 - 187 V.	12 - 1.1 V.	16 - 62 V.	22 - 62 V.	28 - 62 V.
6 - 1.3 V.		18 - 3.5 V.	24 - 42 V.	30 - 3.5 V.

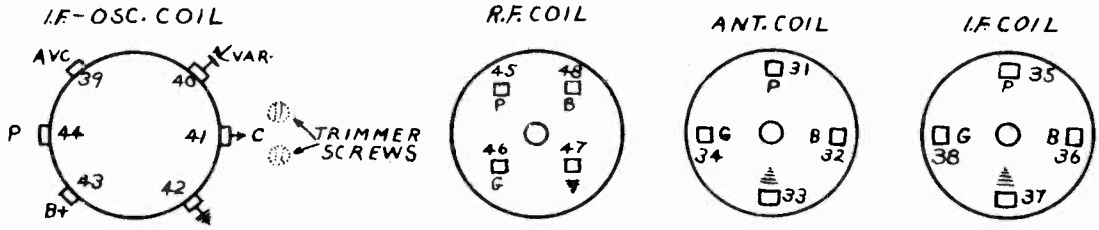


Figure #5

RESISTANCE CHART

Antenna Coil

#31 - 32 Primary - 22 ohms
#33 - 34 Secondary- 3 ohms

Output Transformer

Primary - 400 ohms

I. F. Coil

#35 - 36 Primary - 95 ohms
#37 - 38 Secondary- 85 ohms

R. F. Coil

#45 - 48 Primary - 70 ohms
#46 - 47 Secondary- Full scale

Socket Readings to Ground

6 - 600 ohms
12 - 5400 ohms
24 - 8000 ohms
30 - 750 ohms

"B" Plus Terminal

#4 to ground about 100,000 ohms (shows kick of cond. discharge on contact).

Det. Osc. Coil

(#39 to grid cap 78) I.F. Primary - 75 ohms
(#43 - #44) I.F. Secondary - 70 ohms
(40-42) Oscillator

"B" voltage 185 under set load (with 6 V. storage battery).
Total drain on car battery 4.5 amps.
Output 2.5 watts.
Intermediate frequency 175 K.C.

MODEL 79-C
Chassis View

UNITED AMERICAN BOSCH CORP.

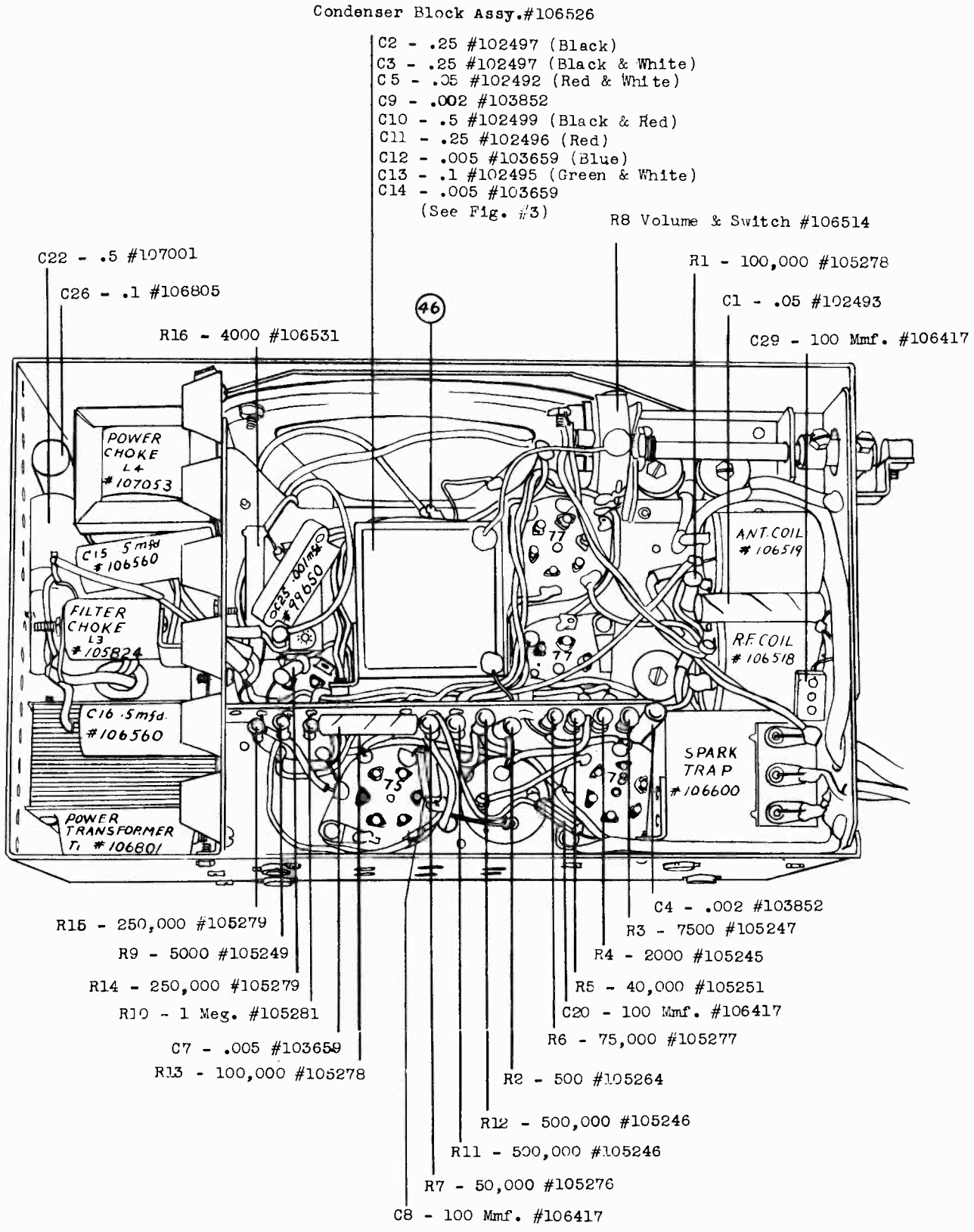
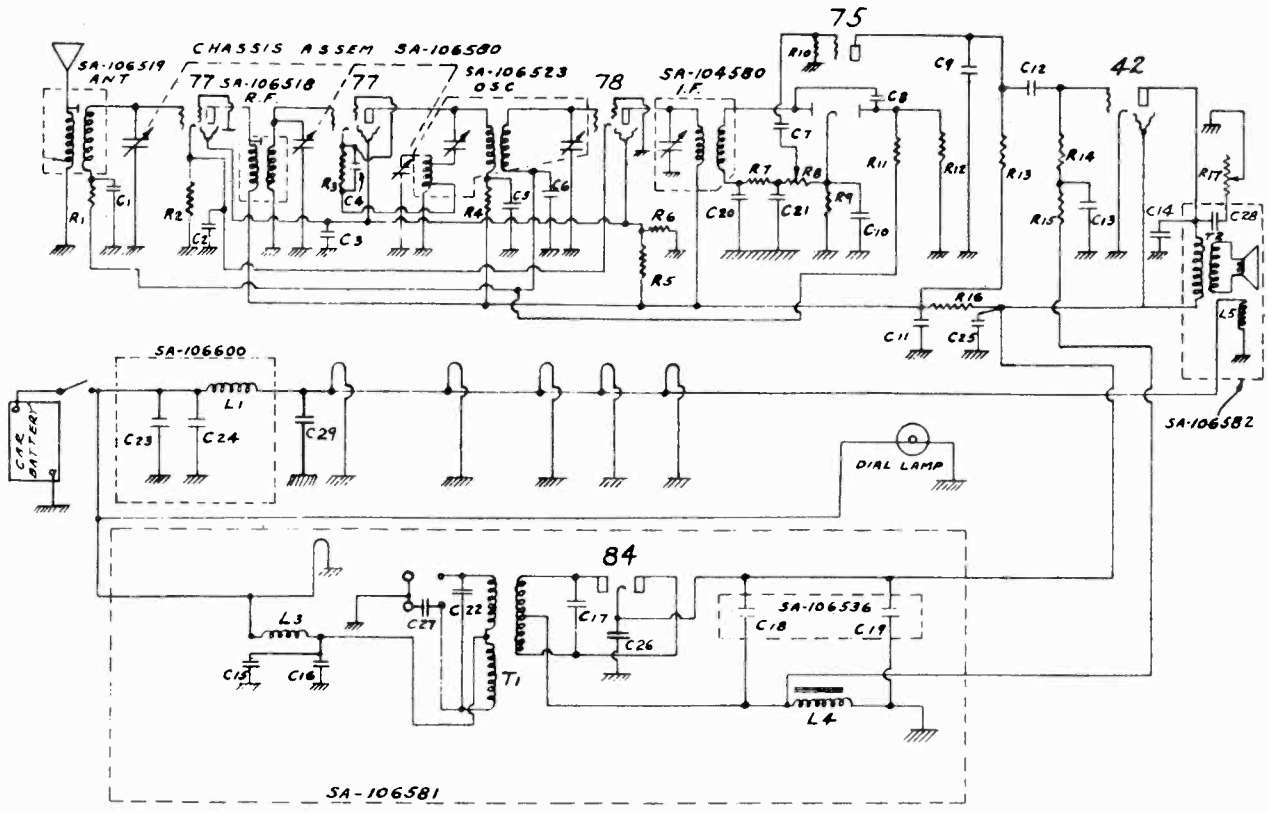


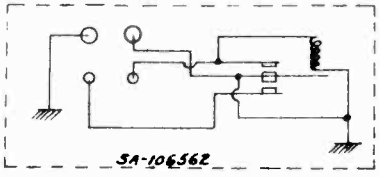
Fig. #2

UNITED AMERICAN BOSCH CORP.

MODEL 79-C
Schematic
Notes



IF PEAK 175 KC.



ELECTRICAL VALUES

R-1	100,000 ohms 1/4 watt	C-1	.05 - 2 ply	C-19	10 mf. (450)
R-2	500 ohms 1/4 watt	C-2	.25 - 2 ply	C-20	100 mmf. mica
R-3	7500 ohms 1/4 watt	C-3	.25 - 2 ply	C-21	100 mmf. mica
R-4	2000 ohms 1/4 watt	C-4	.002 - 4 ply	C-22	.5 - 2 ply
R-5	40,000 ohms 1/4 watt	C-5	.05 - 3 ply	C-23	.001 mica
R-6	75,000 ohms 1/4 watt	C-6	.05 - 2 ply	C-24	.5 - 2 ply
R-7	50,000 ohms 1/4 watt	C-7	.005 - 3 ply	C-25	.001 mica
R-8	.5 M. volume control	C-8	100 mmf. mica	C-26	.1 - 3 ply
R-9	5000 ohms 1/4 watt	C-9	.002 - 4 ply	C-27	.001 mica
R-10	1 meg. 1/4 watt	C-10	.5 - 2 ply	C-28	.05 - 3 ply
R-11	.5 meg. 1/4 watt	C-11	.25 - 3 ply	C-29	100 mmf. mica
R-12	.5 meg. 1/4 watt	C-12	.005 - 3 ply	T-1	Power Transformer
R-13	100,000 ohms 1/4 watt	C-13	.1 - 2 ply	T-2	Output Transformer
R-14	1/4 meg. 1/4 watt	C-14	.005 - 3 ply	L-1	Filter Choke
R-15	1/4 meg. 1/4 watt	C-15	.5 - 2 ply	L-3	Filter Choke
R-16	4000 ohms 1 watt	C-16	.5 - 2 ply	L-4	Power Choke
R-17	500,000 ohms Tone Control	C-17	.008 - 1600 V.	L-5	Field Coil
		C-18	6 mf. (450)		

Automatic volume control is provided by utilizing the potential drop in the collector circuit of the type 75 tube. The A.V.C. is made a part of the D.C. grid circuits of the R.F. and I.F. amplifiers.

An electro-dynamic speaker is used with this set. This speaker has a field resistance of 5.6 ohms and a voice coil resistance of approximately 3 ohms.

A tone control is provided in the plate circuit of the output tube. This consists of a condenser and variable resistor in series.

MODEL 79-C
Voltage
Resistance Chart

UNITED AMERICAN BOSCH CORP.

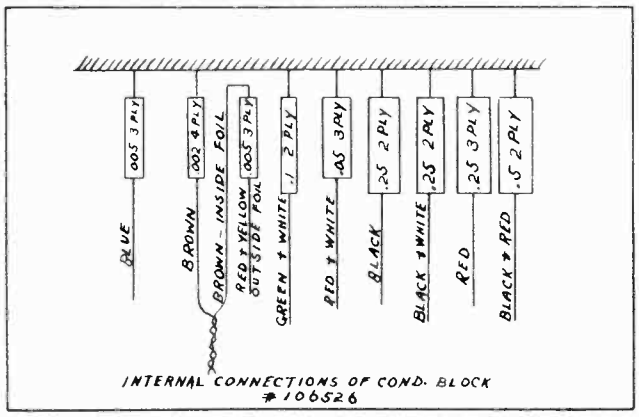


Fig. #3

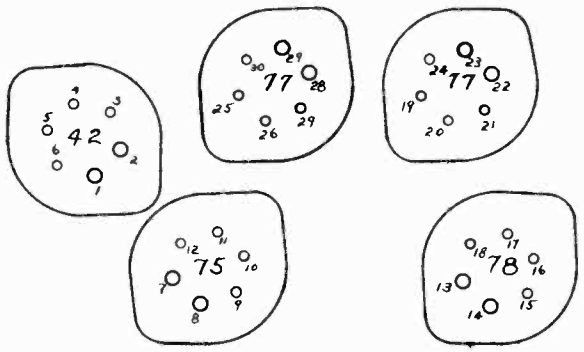


Fig. #4

42 Power	75 2nd Det. AVC	78 I. F.	77 Det. Osc.	77 R. F.
#1 - Fil.	#7 - Fil.	#13 - Fil.	#19 - Suppressor	#25 - Suppressor
#2 - Fil.	#8 - Fil.	#14 - Fil.	#20 - Screen	#26 - Screen
#3 - Cathode	#9 - Cathode	#15 - Cathode	#21 - Plate	#27 - Plate
#4 - Grid	#10 - Di Plate	#16 - Suppressor	#22 - Fil.	#28) - Fil.
#5 - Screen	#11 - Di Plate	#17 - Screen	#23 - Fil.	#29)
#6 - Plate	#12 - Plate	#18 - Plate	#24 - Cathode	#30 - Cathode

VOLTAGE CHART

Voltage readings from ground to following points with Weston Model 564 Voltohmmeter (.6 volt storage battery used).

42 A.F.	75 2nd Det.	78 I. F.	77 Det. Osc.	77 R.F.
#1 - 5.5 V.	#7 - 5.5	#13 - 5.5	#20 - 81	#26 - 81
#5 - 225	#9 - 1.3	#15 - 3.0	#21 - 183	#27 - 185
#6 - 205	#12 - 116	#17 - 81.	#23 - 5.5	#29 - 5.5
"B" - 12.5		#18 - 187	#24 - 4 to 6	#30 - 3.1

RESISTANCE CHART

(All measurements made with ohmmeter)

Antenna Coil

42-44 Primary - 21 ohms
43-45 Secondary- 2.5 ohms

I. F. Coil

31-34 Primary - 100 ohms
32-33 Secondary- 85 ohms

R. F. Coil

49-50 Primary - 80 ohms
51-52 Secondary- Full scale

"B" Plug Terminal to Ground

About 130,000 ohms (shows kick of condenser discharge on contact).

Output Transformer

Primary -- 500 ohms

Detector Osc. Coil

(37-39) - Osc. grid coil - 5 ohms
(40 to grid cap of 78) - Primary I.F. - 70 ohms
(35 to 36) - Secondary I. F. - 70 ohms

Sockets (All readings to ground)

9 - 5500 ohms
24 - 7500 ohms
30 - 550 ohms

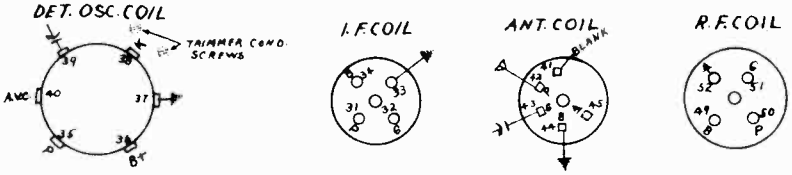


Fig. #5

UNITED AMERICAN BOSCH CORP.

MODEL 79-C
Alignment Data
Socket Layout

ALIGNMENT INSTRUCTIONS

All the adjustable condensers, 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 test oscillator is available, then proceed as follows and refer to Fig. #1.

(A) I.F. ADJUSTMENT

(Use .1 mfd. antenna condenser)

1. Connect test oscillator to grid of 1st I.F. (78) tube.
2. Adjust small I.F. coil (between 78 and 75 tube) to maximum output.
3. Connect test oscillator to grid of 1st detector (77) tube.
4. Adjust condensers on coil in left hand corner of receiver for maximum output.
5. Repeat the above operations for accuracy.

(B) OSCILLATOR ADJUSTMENT

(Use .1 mfd. condenser on grid - .002 mfd. on antenna)

1. Connect test oscillator to grid of 1st detector (77) tube. Set at 1500 K.C.
2. Set gang to 1500 K.C. as follows:
   (a) Open gang to fullest extent.
   (b) Close slowly to thickness of approximately .015 of an inch.
3. Peak oscillator condenser on end of gang.
4. Connect test oscillator to antenna lead.
5. Peak other two condensers on gang.
6. Check sensitivity at several points on dial scale.

The set is now fully aligned and normal sensitivity prevails.

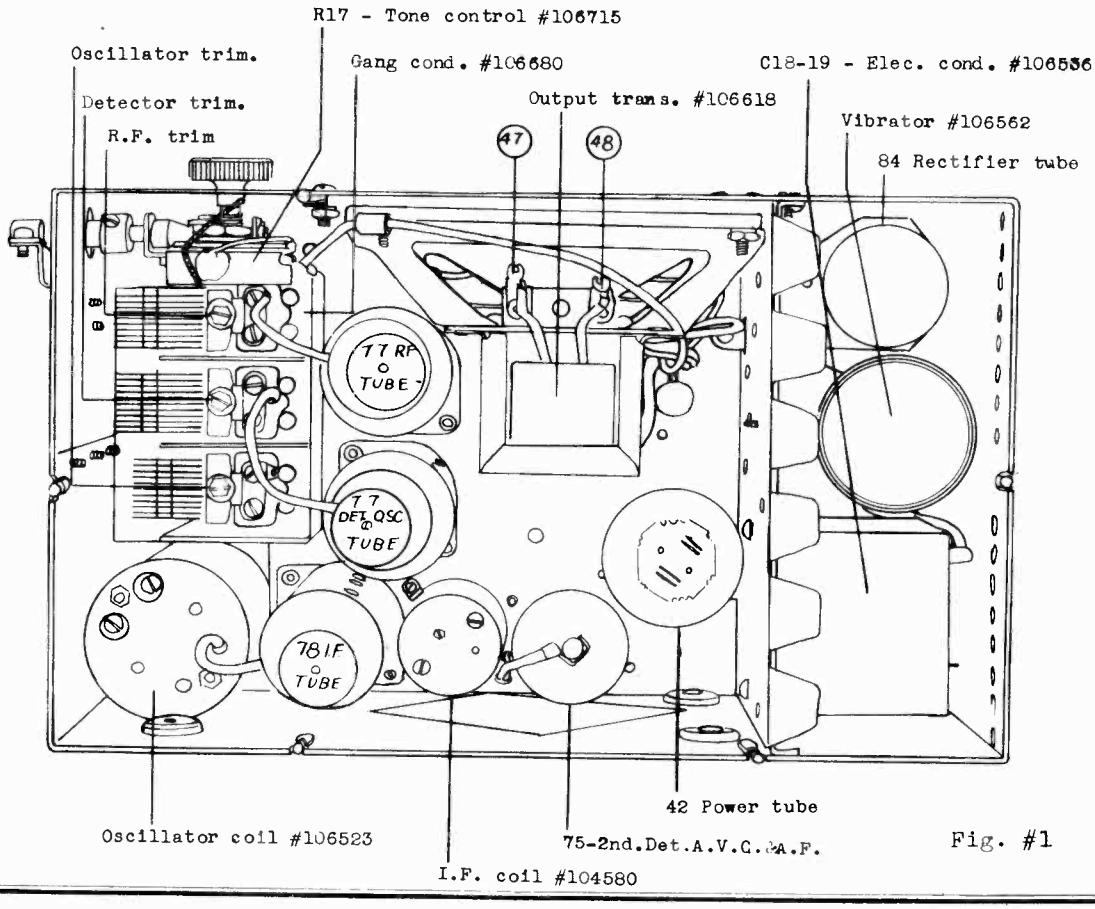


Fig. #1

MODEL 79-C
Parts List

UNITED AMERICAN BOSCH CORP.

Part No.	Description
	CONTROL UNIT PARTS
106541	Flexible volume control shaft
106542	Flexible tuning shaft
107433	Knob for tuning
107268	Control unit knob with key (volume control)
106797	Control unit dial scale
105627	Control unit dial glass
107470	Control unit dial indicator
107333	Control unit dial frame
105597	Control unit mounting bracket
106809	Dial lamp
107424	Dial light cable assembly (barrel type)
107550	Dial light cable assembly (spring type)
105608	Spare key
105607	Control unit mounting strap assembly
	CABLE ASSEMBLIES
107317	Battery cable assembly
106544	Dial light cable assembly
105432	Antenna cable assembly
107320	Battery cable
107318	Battery cable (chassis end)
	RESISTORS

	Ohms	Body	Tip	Dot
106531	4,000	Yellow	Black	Red
105278	100,000	Brown	Black	Yellow
105264	500	Green	Black	Brown
105246	.5 meg.	Green	Black	Yellow
105276	50,000	Green	Black	Orange
105281	1 meg.	Brown	Black	Green
105249	5,000	Green	Black	Red
105279	1/4 meg.	Red	Green	Orange
105247	7,500	Purple	Green	Red
105245	2,000	Red	Black	Brown
105251	40,000	Yellow	Black	Orange
105277	75,000	Purple	Green	Orange

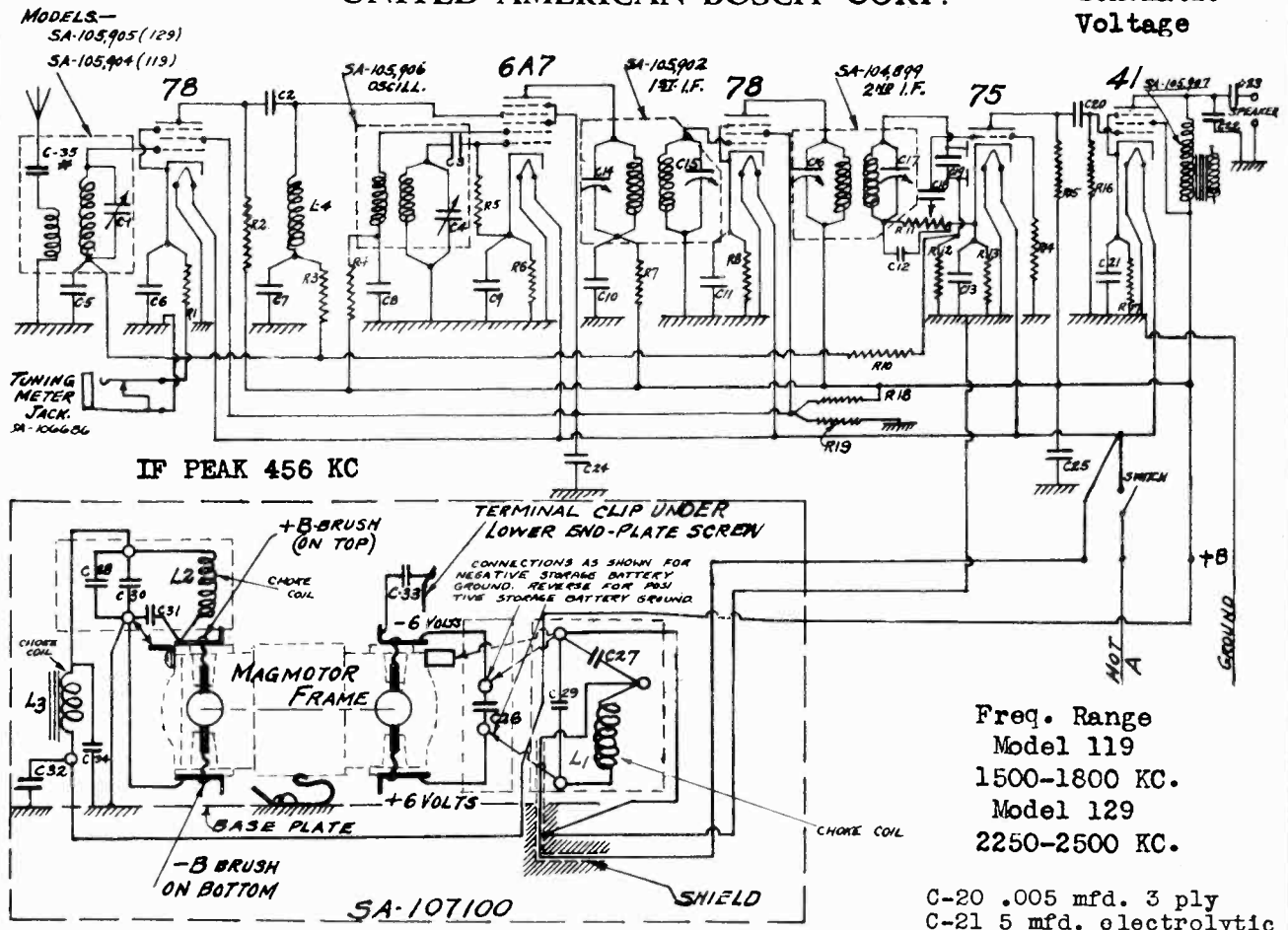
	SUPPRESSORS
106755	Spark plug suppressor
106754	Coil suppressor
105300	Suppressor condenser for generator
	TRANSFORMERS
106801	Power transformer
106618	Speaker transformer
	TUBE SOCKETS & TUBE SHIELDS
103424	Tube shield
104615	Tube socket
104616	Tube socket - 5 prong
103513	Tube socket - 6 prong
	TUBES
ER 75	2nd Det., A.V.C. and A.F. amplifier
ER 77	Detector and oscillator
ER 42	Power output tube
ER 78	I.F. amplifier
ER 84	Rectifier
	BRACKETS, CLIPS AND CLAMPS
100644	Cable clamp
106564	Drive shaft bracket
106565	Drive shaft casing clamp
79381	Clamp for power transformer leads
99623	Terminal clip
100263	Grid clip
100478	Terminal clip

Part No.	Description
	COILS
105824	Choke coil
106523	Oscillator coil assembly
104580	I.F. coil assembly
107053	Choke coil on base assembly
106519	Antenna coil assembly
106518	R.F. coil assembly
106713	Speaker field coil
	CONDENSERS
105300	Suppressor condenser for generator
106804	Condenser (.008 plus or minus 10%)
106805	Condenser - .1 - 3 ply
103775	Condenser - mica .001
102493	Condenser .05 - 2 ply
106417	Condenser .0001 mica
106600	Condenser and choke assembly
99650	Condenser .001 mica
106536	Electrolytic condenser
107001	Condenser and clip assembly
102499	Condenser for above .5 - 2 ply
106526	Condenser assembly (block)
102497	Condenser .25 - 2 ply
102492	Condenser .05 - 3 ply
103852	Condenser .002 - 4 ply
102499	Condenser .5 - 2 ply
102496	Condenser .25 - 3 ply
103659	Condenser .005 - 3 ply
102495	Condenser .1 - 2 ply
102402	Condenser on speaker .05 - 3 ply
106417	Condenser .001 mfd. mica
	MISCELLANEOUS
105363	Spark plug nipple
106807	Paper template (drilling)
107271	Housing assembly (front half)
106671	Bottom cover assembly
106546	Top cover and nameplate assembly
107205	Screen and baffle assembly
106517	Pin for variable condenser insulation bushing
106715	Tone control
106716	Tone control knob
106510	Dust shield
107060	Housing assembly (rear half)
106573	Base assembly (power pack)
106562	Vibrator unit
101856	Insulation plate assembly
106545	Base assembly (chassis)
106680	Variable condenser assembly
106514	Volume control
106524	Tube shield cap assembly
106728	Insulation between oscillator coil and base
93965	Cover assembly (chassis end) insulation strip
107181	Speaker screen
106513	Speaker baffle
103423	Tube shield base
106617	Diaphragm assembly, complete
106498	Speaker housing
101856	Speaker insulation plate assembly
106492	Speaker core and frame assembly
106508	Variable condenser gear
106509	Variable condenser bracket assembly for drive
106983	Fuse (25 amperes) in battery cable
100730	Antenna plate
105429	Battery cable fuse body
105425	Battery cable fuse body cap
105430	Fuse body insulator - battery cable
105427	Battery cable fuse body spring
106506	Volume control bracket
106495	Speaker transformer bracket
106684	Tone control bracket

Police Motorcycle Radio

MODEL 119,129
Schematic
Voltage

UNITED AMERICAN BOSCH CORP.



Freq. Range
Model 119
1500-1800 KC.
Model 129
2250-2500 KC.

R-1	300 ohms 1/4 watt	C-1	70-140 mmf air	C-20	.005 mfd. 3 ply
R-2	20,000 ohms 1/2 watt	C-2	.0001 mfd. mica	C-21	5 mfd. electrolytic
R-3	100,000 ohms 1/4 watt	C-3	.0001 mfd. mica	C-22	.005 - 3 ply
R-4	20,000 ohms 1/4 watt	C-4	70-140 mmf air	C-23	.25 mfd. 3 ply
R-5	100,000 ohms 1/4 watt	C-5	.05 - 2 ply	C-24	.25 mfd. 2 ply
R-6	300 ohms 1/4 watt	C-6	.05 - 2 ply	C-25	.25 mfd. 3 ply
R-7	2000 ohms 1/4 watt	C-7	.05 - 2 ply	C-26	.0001 mfd.
R-8	300 ohms 1/4 watt	C-8	.05 - 2 ply	C-27	.001 mfd.
R-9	-----	C-9	.05 - 2 ply	C-28	.05 mfd. 3 ply
R-10	.5 meg. 1/4 watt	C-10	.05 - 2 ply	C-29	.1 mfd. 2 ply
R-11	.5 meg. volume control	C-11	.05 - 2 ply	C-30	.001 mfd.
R-12	2 meg. 1/4 watt	C-12	.0001 mfd mica	C-31	.001 mfd.
R-13	5000 ohms 1/4 watt	C-13	5 mfd electrolytic	C-32	4.0 mfd.
R-14	1 meg. 1/4 watt	C-14	7-80 mmf mica	C-33	.001 mfd.
R-15	.25 meg. 1/4 watt	C-15	7-80 mmf mica	C-34	4.0 mfd.
R-16	.5 meg. 1/4 watt	C-16	7-80 mmf mica	C-35	.0004 mfd. mica
R-17	750 ohms 1/4 watt	C-17	7-80 mmf mica	L-1	-----
R-18	10,000 ohms 1/2 watt	C-18	.005 mfd. 3 ply	L-2	.15 milli-henry
R-19	100,000 ohms 1/2 watt	C-19	.0001 mfd. mica	L-3	200 ohms D.C.
				L-4	Choke coil

OPERATING VOLTAGES AND TUBE COMPLEMENT

Tube Type	Tube Function	Plate Voltage	Screen Voltage	Voltage Cathode to Ground	Heater Voltage
78	R.F. Amp.	45	95	2.3	6.0
6A7	Det., Osc.	170	95	2.3	6.0
78	I.F. Amp.	175	95	2.3	6.0
75	Det., A.V.C., A.F. Amp.	73		0.6	6.0
41	A.F. Amp.	165	175	13	6.0

NOTE: The above readings were taken from the various socket points to ground using a Weston Model 663 volt-ohmmeter which has a resistance as a voltmeter of 1000 ohms per volt full scale. For meters of other ratings, these voltages may not be as indicated.

MODEL 119,129
Installation Data

UNITED AMERICAN BOSCH CORP.

INSTALLATION

In order to mount this receiver on a motorcycle, certain fittings are required. The fittings recommended are contained in a kit supplied by the Indian Motorcycle Company and known as the "Indian Radio Support and Antenna Kit Assembly" (#92344).

Contained in this kit are complete instructions covering the mounting of this receiver on a motorcycle, using the parts in the kit.

When installing the receiver, the shielded cable must be passed in front of the handlebars, (this is very important), then downward past the front head lug and along the frame front tube under the tank to the battery. The cable should be attached to the tubes of the frame by clips.

CONNECTIONS

The power supply unit contained in the receiver is arranged for operation on a motorcycle where the negative side of the battery is grounded. In cases where the receiver is to be used on a motorcycle where the positive side of the battery is grounded, it will be necessary to reverse the red and black wires inside of the power supply unit.

With the negative side of the storage battery grounded, the red wire should be connected to the "+" terminal and the black wire should be connected to the "-" terminal. With the positive side of the storage battery grounded, the red wire should be connected to the "-" terminal and the black wire should be connected to the "+" terminal.

The terminal of the battery cable marked "hot" should be connected to the ungrounded side of the storage battery. The other terminal should be connected to the grounded side of the storage battery. A fuse is contained in a spring-bayonet cartridge located in the battery cable near the receiver. The fuse is the standard type used for automotive purposes and is rated at 10 amperes. To replace the fuse, force the rubber tube covering the fuse container along the cable toward the receiver until the end of the fuse cartridge can be grasped and removed. The rubber tube should be held firmly to keep the cartridge from receding into the tube while the fuse is being replaced so that the two halves of the cartridge can be conveniently refitted.

All screws, nuts, and washers must be firmly set and all electrical connections are to be tight and clean even to the possible necesitty of removing a slight amount of paint to accomplish this.

"B" POWER SUPPLY UNIT

The "B" power for operation of the receiver is supplied by the American-Bosch magmotor. This magmotor unit is turned on and off simultaneously with the receiver and receives its energy from the storage battery of the motorcycle.

The magmotor is essentially a dynamotor, the armature having two windings, one to supply the driving force for rotating the armature and the other for generating the desired "B" power. The armature is fitted with a commutator at each end. The brushes which contact the commutators look alike, but the material of those operating at the 6-volt end is quite different from that of those operating at the high voltage end. If, for any reason, the brush holders are removed from the frame, they must be returned to their original positions when re-assembled. Failure to do this will cause shortened commutator life and improper operation of the magmotor unit.

The magmotor is provided with a permanent magnet, rather than field coils, for excitation. This makes possible the extreme compactness of the unit and also conserves the battery energy. Should it be necessary to remove the magnet during service operations, some marking should be made on adjacent sides of the frame and magnet so that the magnet can be returned to its original position and not inverted. If it is assembled in an inverted position, the polarity of the output will be reversed and the radio receiver will not function. A large soft iron "keeper" should be placed across the poles of the magnet when it is removed in order to conserve the magnetism. It is well to remagnetize the magnet after re-assembling the magmotor in order that it may give completely satisfactory service. If the magnet is not remagnetized, the output of the magmotor will be reduced.

The armature shaft rotates in ball bearings which are carried in the endplates. An oil cup is provided in the top edge of each of the endplates. Six (6) drops of Bosch Oil US-506, or a light mineral oil should be put in each cup at the expiration of each 1000 hours use. The term "light mineral oil" applies to the so-called household oils sold in small spout cans by the large refiners of petroleum products. This light mineral oil should not be confused with the light household oils of the "sperm" variety so widely advertised. These "sperm" oils must not be used on the light ball bearings of the magmotor - to do so will gum the bearings and cause unsatisfactory operation.

TUNING

The receiver as delivered will be tuned to the station frequency requested. Due to unavoidable differences between the frequency adjustment made at the factory and that of the station, it will be necessary to re-align the tuning condensers slightly. One of the following methods of procedure should be followed depending on whether or not a tuning meter is available. The method of tuning using a tuning meter is preferable since more accurate adjustment is possible.

A. With Tuning Meter: With the receiver installed on the motorcycle and turned on, plug the tuning meter into the jack provided for the purpose. If the station desired is not heard, drive the motorcycle (with the radio set in operation), toward the broadcasting station. When the station is heard stop the motorcycle and proceed as follows:

(1) Remove both small circular cover plates from the top of the receiver housing, thus exposing the tuning adjustment screws.

(2) Loosen the brass lock nuts (which can be seen through the two holes), using a 7/16" socket wrench. This operation must be observed or damage will be done to the tuning condensers when alignment is attempted with a screw driver.

(3) Insert a screw driver into the slot in the shaft of the left hand condenser (when the receiver is in such a position that the volume control is toward the operator), and adjust this condenser until maximum deflection of the tuning meter in the direction indicated by the arrow on the dial is obtained for the station being heard.

(4) Repeat operation "3" with the right hand condenser.

(5) Lock the condensers with the 7/16" socket wrench and replace the circular cover plates.

B. Without Tuning Meter: With the receiver installed on the motorcycle and turned on, drive the machine toward the broadcasting station. When the station is heard faintly, stop the motorcycle and proceed as follows:

(1) Remove both small circular cover plates from the top of the receiver housing, thus exposing the tuning adjustment screws.

(2) Loosen the brass lock nuts (which can be seen through the two holes), using a 7/16" socket wrench. This operation must be observed or damage will be done to the tuning condensers when alignment is attempted with a screw driver.

(3) Insert a screw driver into the slot in the shaft of the left hand condenser (when the receiver is in such a position that the volume control knob is toward the operator), and adjust this condenser until the station is heard loudest.

(4) Reduce the volume with the volume control.

(5) Repeat operations "3" and "4" with the right hand condenser.

(6) Lock the condensers with the 7/16" socket wrench and replace the circular cover plates.

Alignment by the above operations will be approximate only. To obtain the exact alignment required for successful operation, proceed as follows:

Drive the motorcycle with the receiver operating at maximum volume to a "dead" spot, or to a place sufficiently remote from the transmitter to produce a weak signal. In such a location repeat operations "1", "2", "3", "5" and "6" under "B". Under no circumstances should the volume of the signal be reduced by adjusting the volume control knob. Keep the volume control in its maximum position. Do not neglect to lock the condensers with the socket wrench after alignment and before replacing the cover plates.

When these tuning operations have been properly executed, the receiver installation on the motorcycle is then ready for suppression of ignition interference and subsequently ready for service.

IGNITION NOISE SUPPRESSION

Shielded ignition cable, spark plug suppressors, spark plug shields, and bypass condensers are furnished as auxiliary equipment with the Models 119 and 129 receivers. These items are necessary for the suppression of ignition interference.

In attempting to suppress ignition interference, the following must be observed:

(1) Damp the oscillations at the spark plugs and across distributor caps by putting resistors (suppressors) in the cables at these points.

(2) Prevent the cables, spark plugs, etc., from radiating to the antenna by enclosing them in grounded metal shields.

(3) Minimize the effect of auxiliary or secondary radiating systems by a judicious choice of grounding points and by making ground connections in the proper way. A ground connection for high frequency currents cannot be made by running wires between the cable shield to be grounded and the engine block or the frame of the machine. The cable shield to be grounded must be brought down against the surfaces of the frame and clamped or soldered in place as required by the circumstances. The choice of ground points is commonly accomplished by trial and error-experience with the phenomena governing such circuits being extremely helpful.

Before proceeding with the work of suppressing ignition noise, the ignition system of the motorcycle should be checked thoroughly to make certain that all high-tension leads make good connections at their terminals, that the spacing of the spark plug electrodes is the minimum amount consistent with good motor performance, that the gap between the distributor electrode and the rotor electrode is a minimum, that all leaky high-tension cables are replaced, etc.

The specific procedure for suppressing ignition noise with either two or four cylinder motorcycles and with either battery or magneto ignition is as stated below:

A. Two-Cylinder Motorcycle - Battery Ignition:

(1) Install suppressor in series with each spark plug lead as close as possible to the spark plug.

(2) Replace each spark plug lead with a shielded cable.

(3) Connect .5 mfd. bypass condenser from the generator to ground.

(4) Disconnect the lead between coil and breaker and replace with a shielded lead running directly from the coil to the breaker (length approximately 10").

(5) Ground the housing of the ignition coil to the frame.

(6) Install a spark plug shield on each spark plug whenever possible.

B. Two-Cylinder Motorcycle - Magneto Ignition:

(1) Install suppressor in series with each spark plug lead as close as possible to the spark plug.

(2) Replace each spark plug lead with a shielded cable.

(3) Connect .5 mfd. bypass condenser from the generator to ground.

(4) Install a spark plug shield on each spark plug whenever possible.

C. Four-Cylinder Motorcycle - Battery Ignition:

(1) Install suppressor in series with each spark plug lead as close as possible to the spark plug.

(2) Install suppressor in series with the lead to the center contact of the distributor as close as possible to the distributor.

(3) Replace each spark plug lead with a shielded cable.

(4) Ground the spark plug cables in the tube which carries them over the motor.

(5) Connect .5 mfd. bypass condenser from the generator to ground.

(6) Install a spark plug shield on each spark plug.

(7) Connect .5 mfd. bypass condenser from the "hot" side of the ignition coil to ground.

D. Four-Cylinder Motorcycle - Magneto Ignition:

(1) Install suppressor in series with each spark plug lead as close as possible to the spark plug.

(2) Replace each spark plug lead with a shielded cable.

(3) Ground the spark plug cables in the tube which carries them over the motor.

(4) Connect .5 mfd. bypass condenser from the generator to ground.

(5) Install a spark plug shield on each spark plug.

MODEL 139,149
Installation Data

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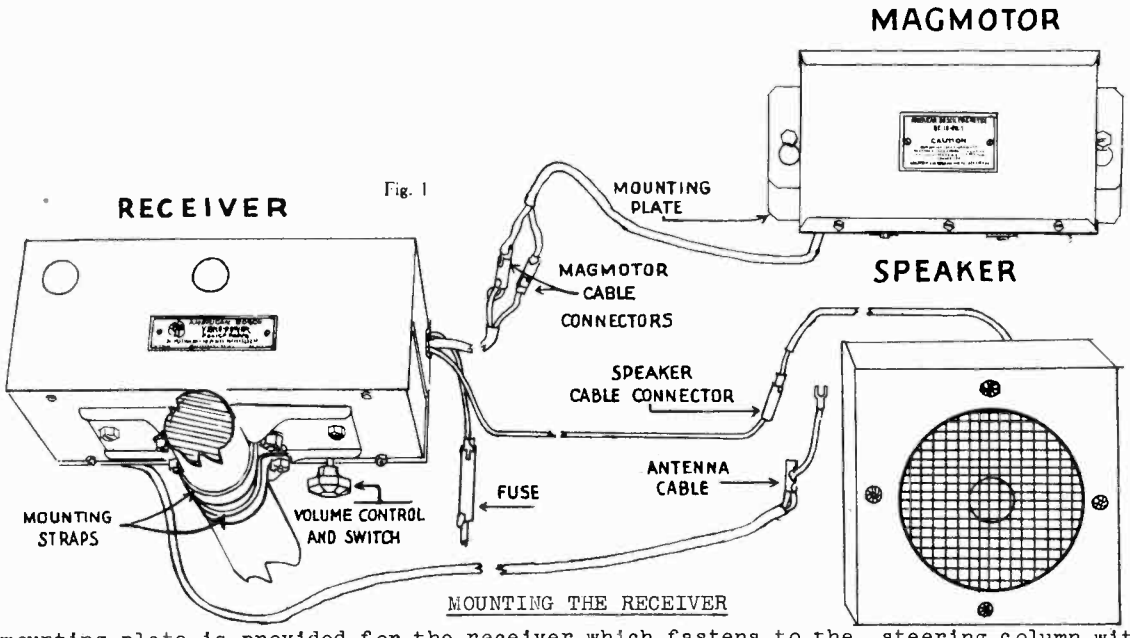

Fig. 1

MOUNTING THE RECEIVER

A mounting plate is provided for the receiver which fastens to the steering column with two large straps. This plate should be placed on the upper side of the steering column below the instrument panel with the large ends of the keyhole slots at the top. The nuts on the small carriage bolts fastening the straps to the mounting plate should be securely tightened so that the mounting plate will not slip on the steering column. The two screws in the bushings in the receiver housing should then be loosened and the receiver placed on top of the mounting plate with the heads of the screws entering the keyhole slots in the mounting plate. The screws should be allowed to engage the narrow portions of the keyhole slots and the screws should then be tightened securely so that the receiver is held rigidly in place. (See Figure #1).

For cases where mounting on the steering column is not feasible, a bulkhead mounting plate has been provided which is fastened to the bulkhead with three carriage bolts. The adapter plate which is provided for use in conjunction with the mounting plate should be attached with screws to the opposite side of the receiver housing from that through which the volume control shaft projects. It should be placed so that the small ends of the keyhole slots are at the top. The receiver should then be placed on the mounting plate so that the screws in the bushings on the mounting plate enter the keyhole slots in the adapter plate. When the screws engage the small portions of the keyhole slots they should be tightened so that the receiver unit will be held securely

MOUNTING THE MAGMOTOR

The magmotor or the "B" power supply unit is provided with a mounting plate which is fastened to the operator's side of the bulkhead with three carriage bolts. The two screws in the bushings in the mounting plate should be loosened and the power supply unit placed so that these screws enter the keyhole slots in the bracket fastened to the back of the housing. When the screws engage the small portions of the keyhole slots, they should be tightened so that the unit will be held securely in place.

MOUNTING THE SPEAKER

Two studs are provided on the speaker unit which fasten it to the bulkhead in a position where it will not interfere with the operation of the vehicle but where it will permit a good signal to be heard.

CONNECTIONS

The power supply unit, as provided, is arranged for operation in a motor car where the negative side of the battery is grounded. In cases where this unit is to be used in a motor car where the positive side of the battery is grounded, it will be necessary to reverse the red and black wires inside of the unit. With the negative side of the storage battery grounded, the red wire should be connected to the "+" terminal and the black wire should be connected to the "-" terminal. With the positive side of the storage battery grounded, the red wire should be connected to the "-" terminal and the black wire should be connected to the "+" terminal.

A duplex cable is provided between the receiver and the power supply unit. The two sections of this cable should be connected together. A battery cable containing a fuse is provided. The terminal marked "hot" should be connected to the ungrounded side of the storage battery. The other terminal should be connected to the grounded side of the storage battery. The other shielded cable which enters the receiver housing at the same point as the battery cable and the power supply cable should be connected to the loud speaker. At the other end of the receiver housing a black cotton covered cable is provided which should be connected to the antenna lead-in. Refer to Figure #1 for these cable connections. The antenna lead-in should be shielded and the shield soldered to the bayonet connection beyond the junction.

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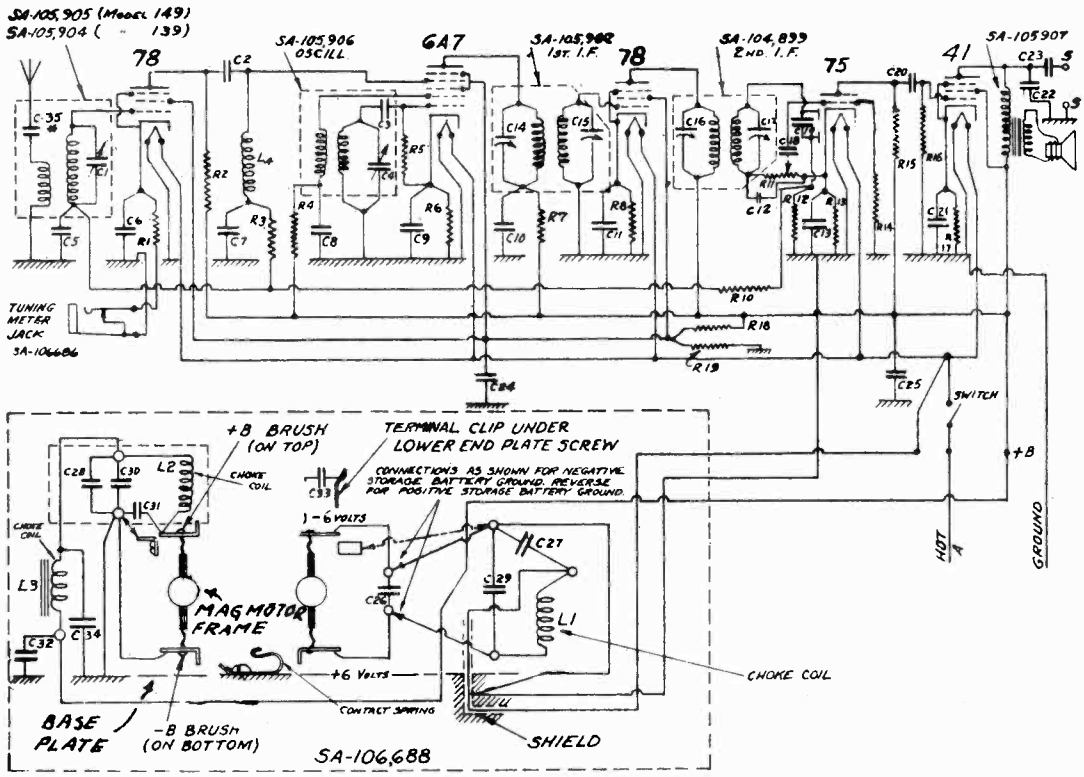
MODEL 139,149
Schematic
Voltage



Frequency range:

Model 139 - 1500 to 1800 kilocycles
Model 149 - 2250 to 2500 kilocycles

IF PEAK 456 KC

ELECTRICAL VALUES

C-1	70-140 mmf. air	C-21	5 mfd. electrolytic	R-1	300 ohms 1/4 watt
C-2	.0001 mfd. mica	C-22	.005 mfd. 3 ply	R-2	20,000 ohms 1/2 watt
C-3	.0001 mfd. mica	C-23	.25 mfd. 3 ply	R-3	100,000 ohms 1/4 watt
C-4	70-140 mmf. air	C-24	.25 mfd. 2 ply	R-4	20,000 ohms 1/4 watt
C-5	.05 mfd. 2 ply	C-25	.25 mfd. 3 ply	R-5	100,000 ohms 1/4 watt
C-6	.05 mfd. 2 ply	C-26	.0001 mfd.	R-6	300 ohms 1/4 watt
C-7	.05 mfd. 2 ply	C-27	.001 mfd.	R-7	2,000 ohms 1/4 watt
C-8	.05 mfd. 2 ply	C-28	.05 mfd. 3 ply	R-8	300 ohms 1/4 watt
C-9	.05 mfd. 2 ply	C-29	.1 mfd. 2 ply	R-9	----
C-10	.05 mfd. 2 ply	C-31	.001 mfd.	R-10	.5 meg. 1/4 watt
C-11	.05 mfd. 2 ply	C-32	4 mfd.	R-11	.5 meg. volume control
C-12	.0001 mfd. mica	C-33	.001 mfd.	R-12	2 meg. 1/4 watt
C-13	5 mfd. electrolytic	C-34	4 mfd.	R-13	5,000 ohms 1/4 watt
C-14	7-80 mmf. mica	C-35	.0004 mfd. mica	R-14	1 meg. 1/4 watt
C-15	7-80 mmf. mica	C-38	.001 mfd.	R-15	.25 meg. 1/4 watt
C-16	7-80 mmf. mica			R-16	.5 meg. 1/4 watt
C-17	7-80 mmf. mica	L-1	Magmotor choke coil	R-17	750 ohms 1/4 watt
C-18	.005 mfd. 3 ply	L-2	.15 milli-henry	R-18	10,000 ohms 1/2 watt
C-19	.0001 mfd. mica	L-3	200 ohms D.C.	R-19	100,000 ohms 1/2 watt
C-20	.005 mfd. 3 ply	L-4	Choke coil		

SOCKET VOLTAGES

Tube Type	Tube Function	Plate Voltage	Screen Voltage	Voltage Cathode to Ground	Heater Voltage
78	R.F. Amp.	45	95	2.3	6.0
6A7	Det., Osc.	170	95	2.3	6.0
78	I.F. Amp.	175	95	2.3	6.0
75	Det., A.V.C., A.F. Amp.	73		0.6	6.0
41	A.F. Amp.	165	175	13	6.0

NOTE:- These readings were taken from the various socket points to ground using a Weston Model 663 volt-ohmmeter which has a resistance as a voltmeter of 1000 ohms per volt full scale. For meters of other ratings, these voltages may not be as indicated.

MODEL 139,149
Testing Data

UNITED AMERICAN BOSCH CORP.

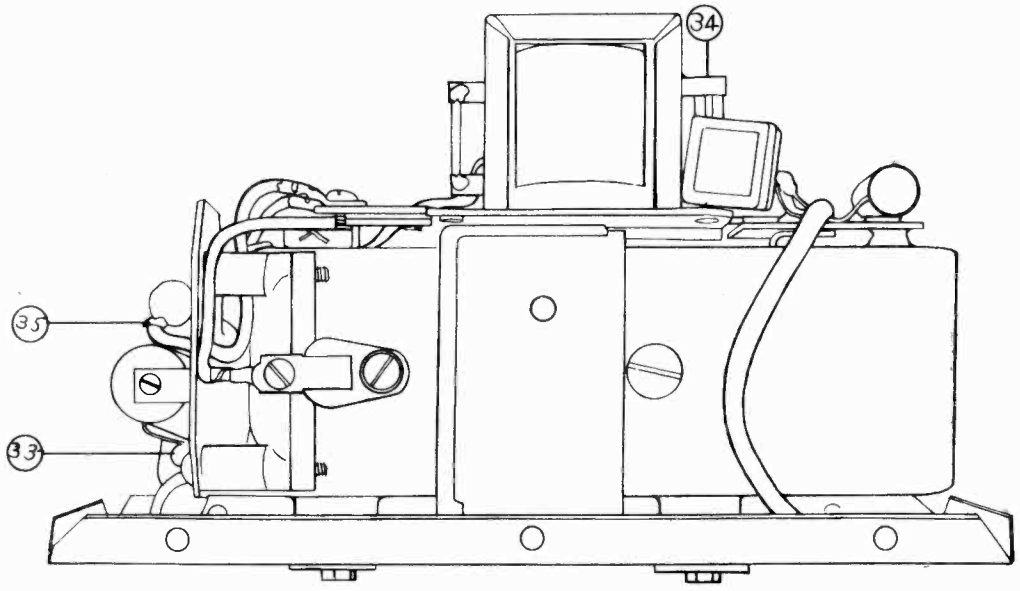


Fig. 4

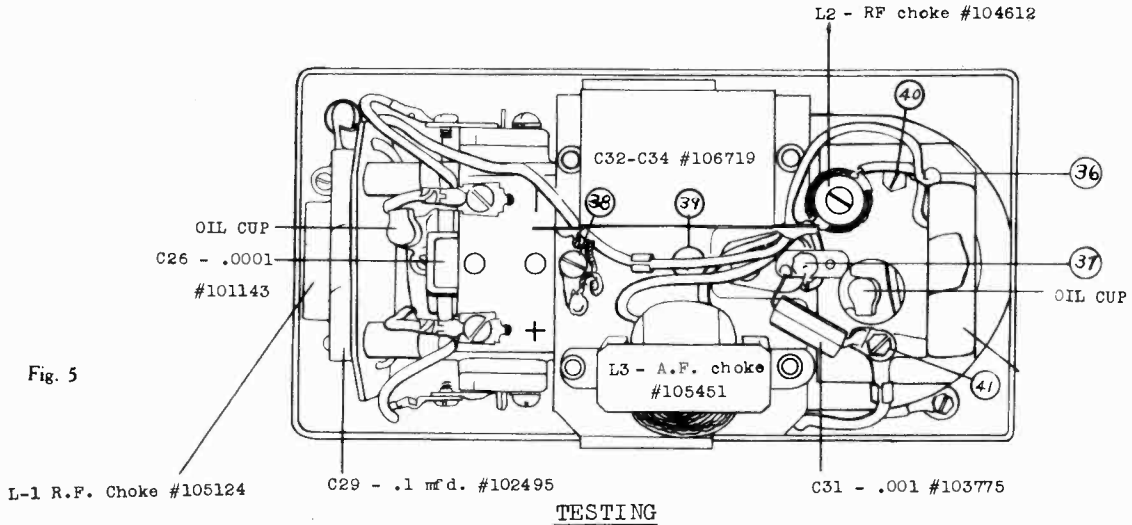


Fig. 5

TESTING

(a) ANTENNA: Substitute a piece of insulated wire 6 to 8 feet long and lay on ground; if reception is normal, the regular antenna is at fault and should be checked for grounds, opens, etc. (Somewhat better reception should be expected with wire antenna than with car antenna.)

(b) TUBES: Remove and test, or substitute known good tubes, one at a time.

(c) SPEAKER: Disconnect speaker cable from chassis by means of bayonet connector. Test across terminals of speaker with volt-ohmmeter for continuity of voice coil. Reading of 4.5 ohms should be obtained on ohmmeter.

(d) SECONDARY OF OUTPUT TRANSFORMER: With speaker cable disconnected, test with ohmmeter between terminal #1 and ground. Reading of 0.5 ohms should be obtained on ohmmeter.

(e) CHASSIS: After checking the components listed above, test the voltages as they appear on voltage chart and the resistance measurements as found in "Chassis Resistance Chart". If any particular reading obtained is very different from the chart reading, the trouble is located in the portion of the circuit associated with the points at which this discrepancy occurs. Referring to the circuit diagram and location drawings, each part making up the circuit may be individually tested until the faulty part is specifically located.

f) MAGMOTOR: See section giving complete magmotor service information.

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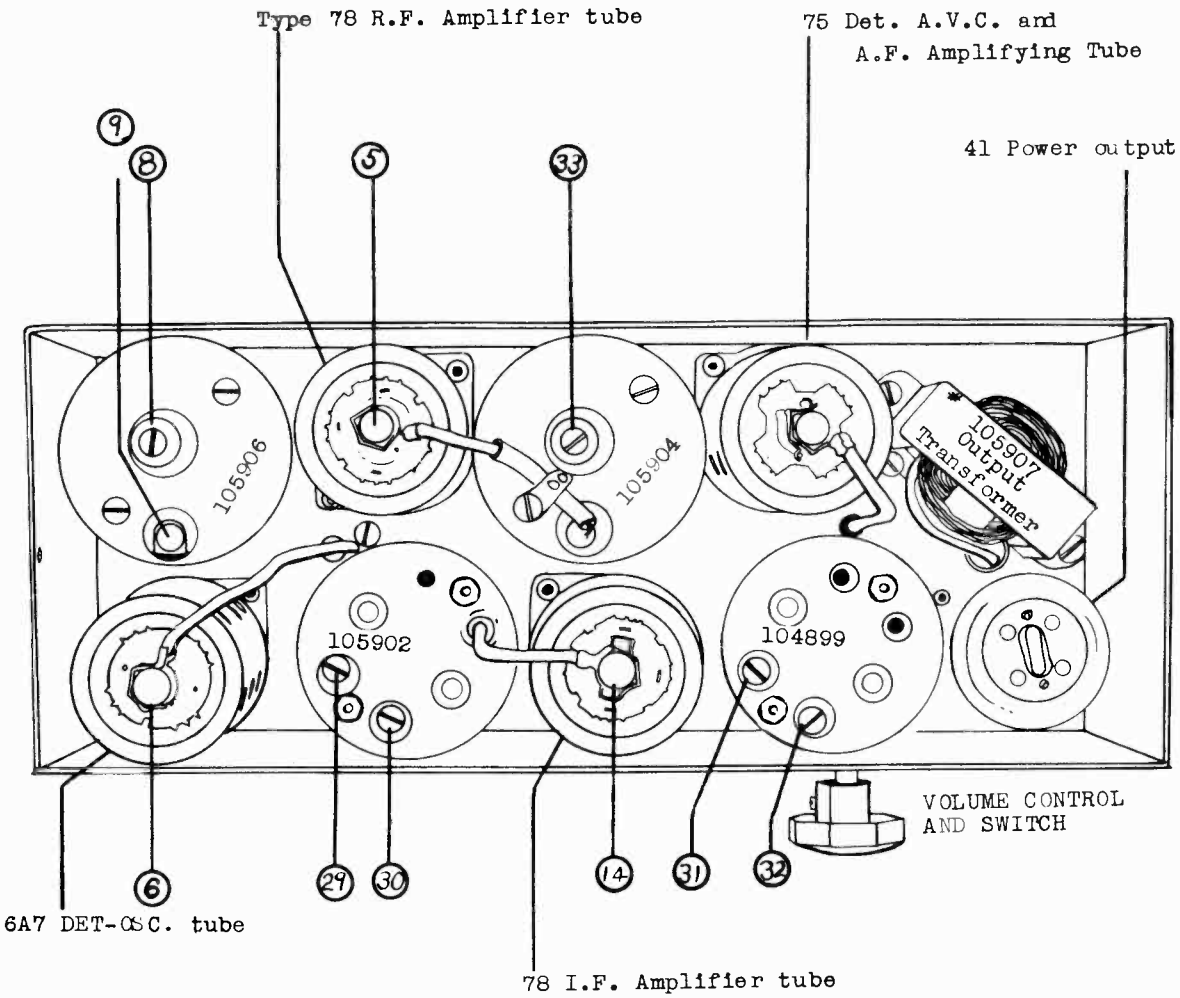

Fig. 2

ALIGNMENT INSTRUCTIONS

All of the adjustable condensers, commonly called trimmer condensers, are very accurately adjusted at the factory and will not need any further adjustments unless an 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 test oscillator is available, then proceed as follows: See Fig. #2.

1. Connect output meter across terminals of speaker voice coil.
2. Set test oscillator at 456 kilocycles.
3. Connect test oscillator lead to grid of I.F. amplifier tube, type 78. (Point #14).
4. Adjust condenser on primary of second I.F. transformer, (Point #31) to peak on output meter.
5. Adjust condenser on secondary of second I.F. transformer, (Point #32) to peak on output meter.
6. Connect test oscillator lead to grid of detector-oscillator tube, type 6A7 (Point #6)
7. Adjust condenser on primary of first I. F. transformer (Point #29) to peak on output meter.
8. Adjust condenser on secondary of first I. F. transformer, (Point #30) to peak on output meter.

The above procedure lines up the I. F. stages properly, so that all that remains is to tune the oscillator and preselector circuits to the frequency of the station it is desired to receive. This has been covered in the section headed - TUNING

MODEL 139,149
Tuning Data

UNITED AMERICAN BOSCH CORP.

TUNING

The radio receiver as delivered will be tuned to the station frequency requested. Due to unavoidable differences between the frequency adjustment made at the factory and that of the station, it will be necessary to realign the tuning condensers slightly. One of the following methods of procedure should be followed depending upon whether or not a tuning meter is available. The method of tuning using a tuning meter is preferable since more accurate adjustment is possible.

A. With Tuning Meter.

With the receiver in the motor car, and connected to the car antenna and battery, turn the receiver fully on and allow it to get into operation which will be indicated by a slight hum heard in the speaker. Plug the tuning meter into the jack in the receiver housing. If the station desired is not heard, drive the machine (with the radio set in operation), toward the broadcasting station. When the station is heard, stop the motor car and proceed as follows:

(a) Loosen the brass condenser lock nuts (which can be seen through the two holes in the top cover of the housing) using a 7/16" socket wrench. This operation must be observed or damage will be done to the tuning condensers when alignment is attempted with a screw driver.

(b) With a screw driver inserted into the slot in the shaft of the left hand condenser (when the receiver is in such a position that the volume control is toward the operator), adjust this condenser until maximum deflection of the tuning meter in the direction indicated by the arrow on the dial is obtained on the station being heard.

(c) Repeat operation "b" with the right hand condenser.

(d) Lock the condensers with the 7/16" socket wrench.

B. Without Tuning Meter.

With the receiver in the motor car, and connected to the car antenna and battery, turn the receiver fully on and allow it to get into operation which will be indicated by a slight hum heard in the speaker.

If the station desired is not heard, drive the machine (with radio set in operation) toward the broadcasting station. When the station is heard faintly, stop the motor car and proceed as follows:

(a) Loosen the brass condenser lock nuts (which can be seen through the two holes in the top cover of the housing) using a 7/16" socket wrench. This operation must be observed or damage will be done to the tuning condensers when alignment is attempted with a screw driver.

(b) With a screw driver inserted into the slot in the shaft of the left hand condenser, when the receiver is in a position such that the volume control knob is toward the operator, adjust this condenser until the station is heard loudest.

(c) Reduce the volume by rotating the volume control knob on the face of the receiver housing counter-clockwise.

(d) Repeat operations (b) and (c) with the right hand condenser.

(e) Lock the condensers with the 7/16" socket wrench.

Alignment by the above operations will be only approximate. To attain the exact alignment required for successful operation proceed as follows:

(a) Drive the motor car (with radio operating with volume control on full) to a "dead" spot or to a place sufficiently remote from the transmitter to produce a weak signal. In such a location repeat operations "a", "b", "d" and "e". In this case under no circumstances should the volume of the signal be reduced by adjusting the volume control knob. Keep the volume control in its maximum position. Do not neglect to lock the condensers with the socket wrench after alignment and before replacing cover plates.

MODEL 139,149
Resistance Test

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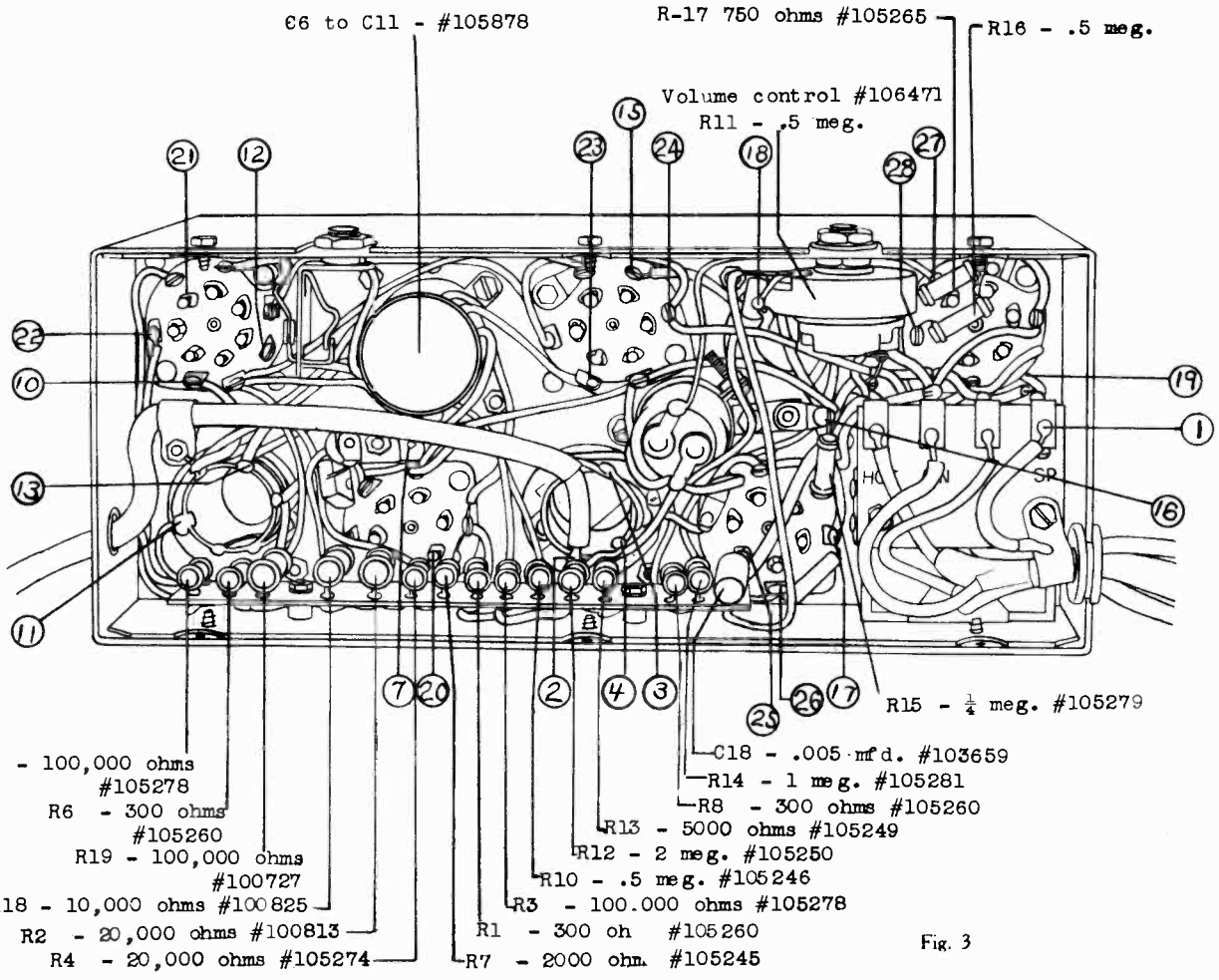


Fig. 3

CHASSIS RESISTANCE CHART

All measurements made with Weston Model 663 volt-ohmmeter.

(Refer to Figs. 2 and 3)

SECTION OF CIRCUIT	MEASURE BETWEEN POINTS	OHMMETER READING
Antenna Coil - Primary	#2 & #3	0.5 ohms
Antenna Coil - Secondary	#4 & #5	2 ohms
R.F. Choke Coil	#6 & #7	3 ohms
Oscillator Coil - Primary (Grid)	#9 & GND	1 ohms
Oscillator Coil - Secondary (Plate)	#10 & #11	2 ohms
First I.F. Transformer - Primary	#12 & #13	23 ohms
First I.F. Transformer - Secondary	#14 & GND	23 ohms
Second I.F. Transformer - Primary	#15 & #16	23 ohms
Second I.F. Transformer - Secondary	#17 & #18	23 ohms
Output Transformer - Primary	#19 & #16	580 ohms
*R.F. Amplifier - Type 78 - Cathode to Ground	#20 & GND	300 ohms
Det.-Oscillator - Type 6A7 - Cathode to Ground	#21 & GND	300 ohms
Det.-Oscillator - Type 6A7 - Osc. Grid to Ground	#22 & GND	100,000 ohms
I.F. Amplifier - Type 78 - Cathode to Ground	#23 & GND	300 ohms
I.F. Amplifier - Type 78 - Screen Grid to Ground	#24 & GND	100,000 ohms
Second Det. & Amp. - Type 75 - Cathode to Ground	#25 & GND	5,000 ohms
Second Det., & Amp.-Type 75-A.V.C. Collector to Ground.	#26 & GND	2,000,000 ohms
Second Det., & Amp.- Type 75 - Collector to Ground	#17 & GND	500,000 ohms
Power Amplifier - Type 41 - Cathode to Ground	#27 & GND	750 ohms
Power Amplifier - Type 41 - Grid to Ground	#28 & GND	500,000 ohms
B+ Terminal to Ground	#16 & GND	110,000 ohms

* This measurement should not be made with the tuning meter connected in the circuit.

MAGMOTOR SERVICE INFORMATION

LUBRICATION

The armature shaft rotates in ball bearings which are carried in the end plates. An oil cup is provided in the top edge of each of the end plates. Six drops of Bosch oil US-506, or a light mineral oil should be put in each cup at the expiration of each 1000 hours of use. See Fig. 5 for the location of the oil cups. The term "light mineral oil" applies to the so-called household oils sold in small spout cans by the large refiners of petroleum products. This light mineral oil should not be confused with the light household oils of the "sperm" variety so widely advertised. These "sperm" oils must not be used on the light ball bearings of the magmotor - to do so will gum the bearings and cause unsatisfactory operation.

BALL BEARINGS

The ball bearings are held in place by means of set screws located in the top of each end plate. There are two set screws in each end plate, the top one locking the lower one in place. Extreme care must be observed when these set screws are tightened since screwing them down too tightly will distort the ball bearings sufficiently to increase the friction in the bearings with a resultant increase in current drain from the storage battery. The set screws should be carefully tightened while the magmotor is connected to the receiver and while the armature is rotating. An ammeter should be inserted in the battery circuit so that the current drain may be observed. When the set screws have been properly tightened with the magmotor connected to the receiver, the current drain should be approximately 3.0 amperes. Both of the set screws must be removed when dismantling the unit.

BRUSHES

The magmotor has four brushes, two in the input or motor end and two in the output or generator end. The brushes in the input or motor end are made of copper graphite and can be distinguished by their copper color from the brushes in the output or generator end which are made of pure carbon. Under no circumstances must these brushes be interchanged. The brushes should be replaced after 3000 hours of operation. To use the brushes more than 3000 hours will result in their wearing down so that they make intermittent contact with the commutators, producing excessive sparking and resulting in damage to the commutators. To remove the brushes, first remove the brush holder by removing the screws which fasten the holders to the magmotor frame. Then melt the solder on the brush holder terminal clip so that the flexible wire connection to the brush is loosened and while the solder is molten pull the brush out of the holder. It is very important that the proper grade of brushes are used and no brushes should be used except those furnished by the United American Bosch Corporation.

DISMANTLING AND ASSEMBLING THE MAGMOTOR

In order to inspect and service the armature it is necessary to remove the armature from the magmotor frame. To do this the following procedure should be observed:

(a) Disconnect the red and black wires connected to the polarity terminal plate and also the two green wires connected to the brushes on the sides of the magmotor.

(b) Remove the filter assembly mounted on the brass plate fastened to the top of the magmotor by removing the two screws #38 and #39 in Fig. #5.

(c) Remove the other filter assembly fastened to the top of the magmotor by removing the two self-tapping screws #40 and #41 shown in Fig. #5.

(d) Remove the filter assembly on the end of the magmotor by removing the four end plate fastening screws.

(e) Remove the two upper ball bearing set screws and loosen the two lower set screws in the end plates.

(f) Remove the end plate to which the filter assembly is attached.

(g) Withdraw the armature.

All parts of the power unit are now available for inspection.

To assemble the unit, reverse the sequence of operations given above. Make certain that the wires to the low voltage side are connected as they were originally and use extreme care in tightening the ball bearing set screws (see the special instructions for adjusting the ball bearing set screws).

MAGNETIZING

The magnet should retain its original magnetic strength for an indefinite period but there are factors that may cause dissipation of the magnetism as, for example, the removal of the armature. A reduction in the magnetism will cause the magmotor to operate at a higher speed to deliver the same voltage which will result in a greatly reduced life. For this reason it is well to remagnetize the magnet after any work has been done on the power unit especially if the armature has been removed.

The unit should be completely assembled when the magnetizing is done in order to obtain the proper field excitation. This can be done on a standard Bosch or American-Bosch magnetizing stand.

Should it be necessary to remove the magnet during the service operations, some marking should be made on adjacent sides of the frame and magnet so that the magnet can be returned to its original position and not inverted. If it is assembled in an inverted position, the polarity of the output will be reversed and the receiver will not function.

CONDENSERS AND CHOKE COILS

The position in which the condensers and choke coils are placed has a direct bearing on the efficiency of the magmotor and if it is necessary to replace any of these parts, it is of the utmost importance that they be placed in exactly the same positions as the parts removed. The leads must also be of the same length and gauge, or larger and must be placed in the same position as the ones removed.

COMMUTATORS

When the armature has been removed for inspection, and the commutators are found to be dirty, they may be cleaned by using a clean cloth saturated with gasoline or if necessary, by using very fine sandpaper. If the commutators are badly worn and pitted, it will be necessary to turn them down in a lathe. Extreme care should be observed in performing this operation, removing only enough material to provide a good surface.

TESTING

(Refer to Figs. 4 and 5)

With voltage of 6.0 volts measured between point #33 and ground, the "B" voltage, measured between Point #34 and ground with the receiver connected, should be approximately 175 volts.

If the magmotor armature fails to rotate when the cable connections have been made properly and the switch in the chassis has been turned on, the continuity of the circuit through the motor portion of the magmotor should be checked with an ohmmeter in accordance with the following resistance chart:

If the magmotor armature rotates but no "B" voltage is obtained between #34 and ground, the continuity of the circuit through the generator portion of the magmotor and the associated filters, should be checked with an ohmmeter in accordance with the following resistance chart:

MAGMOTOR RESISTANCE CHART

All measurements made with Weston Model 663 Volt-ohmmeter. (Refer to Figs. 4 & 5)

SECTION OF CIRCUIT	MEASURE BETWEEN POINTS	OHMMETER READING
Complete Motor Circuit	#33 and GND	1 ohm
"A" circuit R.F. choke	#33 and #35	Full scale
Complete Generator Circuit	#34 and GND	800 ohms
"B" Circuit A.F. Choke	#34 and #36	220 ohms
"B" Circuit R.F. Choke	#36 and #37	Full scale

Whenever possible, a direct comparison should be made with a magmotor which is definitely known to be in good operating condition in order to avoid the misinterpretation of variations of readings due to variations in storage battery voltages, load conditions, meter accuracies. etc.

MODEL 260
Alignment Data

UNITED AMERICAN BOSCH CORP.

ADJUSTMENT INSTRUCTIONS OF MODEL 260

I. F. Adjustment - The intermediate frequency amplifier is tuned to 517.5 K. C. With this frequency supplied from an approved standard signal generator, place the output terminals of the generator on the input to the 3rd I. F. amplifier tube, i. e. high side on the grid cap and low side on metal frame of receiver. Tune the adjustment screw of the diode transformer for maximum deflection of the output meter (connected across the voice coil terminals of the loud speakers). A sensitivity of approximately 50,000 microvolts should be indicated. Next, connect the signal generator terminals to the 2nd I. F. tube. Tune the adjustment screws of the 3rd I. F. transformer for maximum deflection of the output meter. A sensitivity of 3,000 microvolts should be indicated. Next, connect the signal generator to the 1st I. F. tube and tune the adjustments of the 2nd I. F. transformer for maximum. A sensitivity of 100 microvolts should be indicated. Next, connect the signal generator to the 1st detector tube and tune the first I. F. transformer. A sensitivity of 10 microvolts should be indicated. Leaving signal generator on 1st detector, recheck all the I. F. stages.

R. F. Adjustment - (a) Broadcast Band

Check position of pointer to make sure it is at the marking line just beyond the 540 K. C. calibration mark when variable condenser plates are fully engaged. Then adjust set to the 1400 K. C. marking on scale. Adjust signal generator to 1400 K. C. and connect its output terminals through a dummy antenna to antenna and ground connections. With about 1,000 microvolts from signal generator (to make for ease of finding signal) adjust the broadcast oscillator trim condenser (B. C. Osc. Coil - Trimmer) as indicated in Figure #1. Reduce signal generator input as signal is tuned in so as to keep within a useful deflection of the output meter. When signal is tuned in, adjust the screws marked R. F. TRIMMER and ANT-TRIMMER in Figure #1. These last two need not be touched throughout further adjustments of the radio set. Next, place the set at the 600 K. C. marking with signal generator likewise and adjust the screw of the B. C. OSC. COIL LAGGING condenser until the signal is tuned in. Return the pointer to 1400 K. C., the signal generator likewise, and make the slight readjustment of the B. C. OSC. TRIM condenser for good accuracy of calibration.

When all the adjustments as described are correctly made, the following sensitivity should be maintained for a standard output of 100 milliwatts on a carrier input modulated 30% at 400 cycles.

Frequency	(KC)	1400	1000	600
Sensitivity	(MV)	3	5	7

(b) Green Band (1600 - 3500 K. C.)

By means of wavechange switch, place pointer on this band. Place pointer on 3.5 mark, set the signal generator to 3500 K. C. and with sufficient input to receiver from standard signal generator, tune the screw adjustment labelled GREEN BAND TRIMMER until the signal is a maximum. Then place pointer to the 1.6MC mark, adjust signal generator to 1600 K. C. and tune the screw marked GREEN BAND LAGGING CONDENSER until the signal output is a maximum.

Return set and signal generator to 3.5MC and readjust GREEN BAND TRIMMER the slight amount necessary. Check the sensitivity. The following readings should obtain for 100 milliwatts output.

Frequency	(KC)	3500	2400	1600
Sensitivity	(MV)	5	5	5

NOTE: Each oscillator coil is provided with means of adjusting its inductance. This comprises a copper vane placed in the field of the coil and made movable by means of a screw adjustment. On the green, red and blue bands, the adjustment may be made through holes in the side plate adjacent to the oscillator trimmer condensers. While primarily a factory adjustment, these vanes may be used for adjustment in the field where it has been found necessary to make repairs to an oscillator coil. The method is as follows: Having gone through the adjustment of the GREEN BAND as described above, it is found that the sensitivity, particularly in mid-scale (2.4 megacycles) is not up to standard; say, for example, it indicates a sensitivity of 20 microvolts.

MODEL 260
Alignment Data
Socket and
Trimmer Layout

UNITED AMERICAN BOSCH CORP.

Give the vane adjustment screw two turns in a clockwise direction and repeat the adjustments given above at 3.5MC, 1.6MC, and back to 3.5MC. Then tune set and signal generator to 2400 K.C. and observe sensitivity. If this has improved, the adjustment is in the correct direction and a few more trials should be made exactly as described until the correct sensitivity is obtained. If on the other hand a poorer sensitivity is obtained at 2400 K. C., return setting two turns to its original position and repeat procedure making vane adjust in counterclockwise direction, until correct sensitivity is obtained.

It should be mentioned again that this tedious procedure is never necessary unless an oscillator coil has in some way become damaged. In the factory, special test equipment is provided which makes for quick adjustment of inductances to the correct value before the coil is mounted in the radio set.

(c) Red Band (4000 - 9000 K. C.)

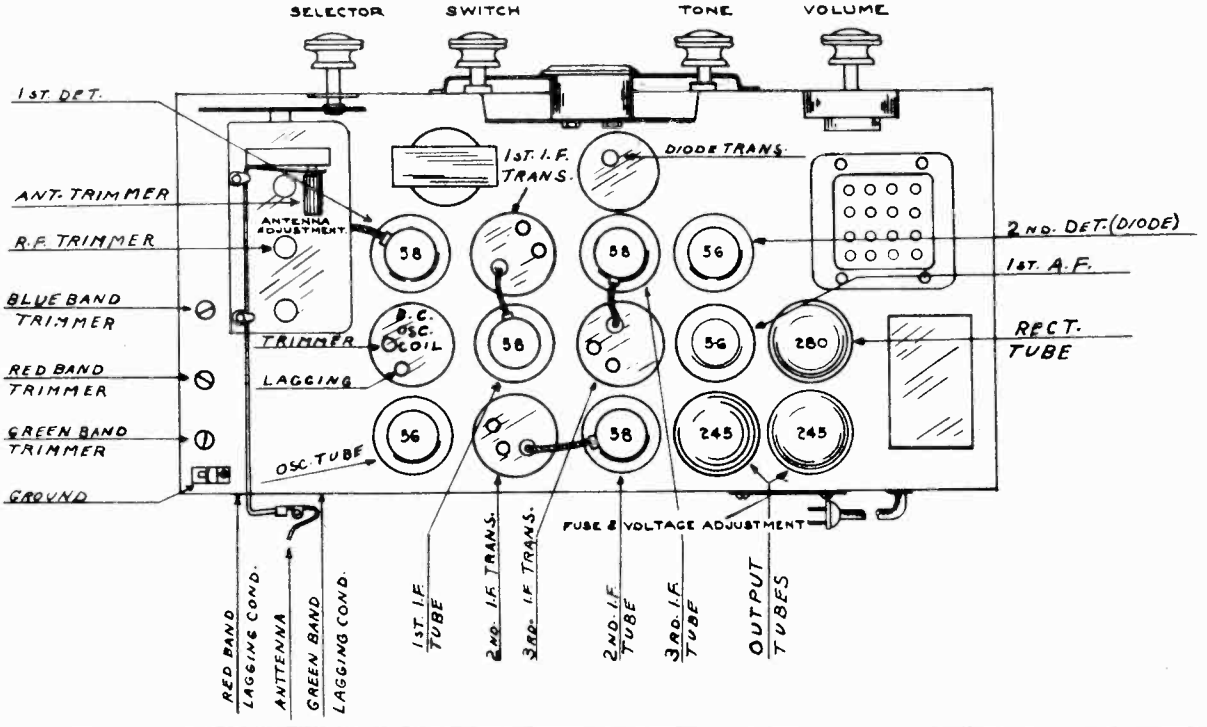
Adjustments in this band are made exactly as described for the green band except that the appropriate trimmer and lagging condensers are used. In Figure #1, reference is made to RED BAND TRIMMER and RED BAND LAGGING CONDENSER. Sensitivity should be in the neighborhood of 5 microvolts across the scale.

(d) Blue Band (10,000 - 20,000 K. C.)

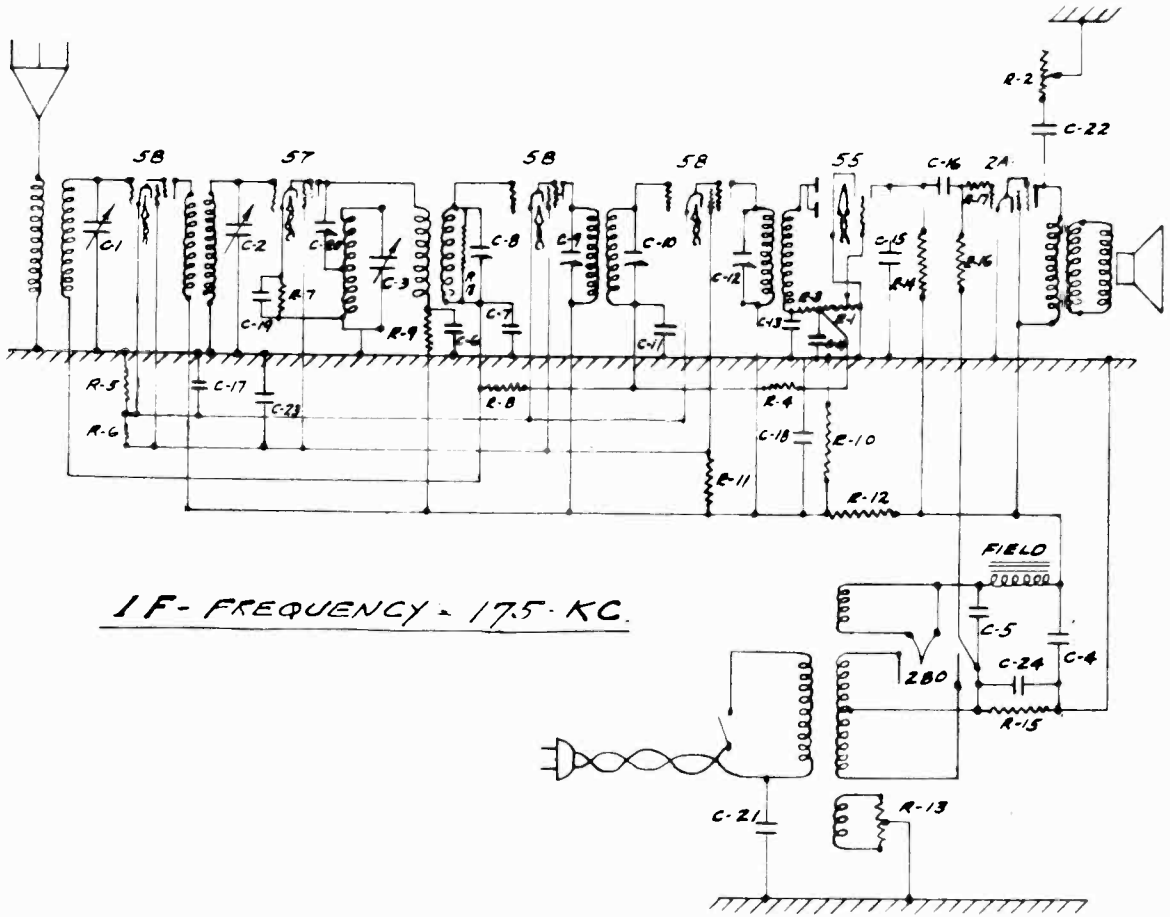
Adjustments in this band should be made starting at the highest frequency end, say 18 MC if obtainable on signal generator. A frequency not lower than 15 MC is desirable. At this highest frequency, set pointer on radio set to calibration and tune BLUE BAND TRIMMER until signal is correctly received. Then place the signal generator at 10 MC and tune radio set until signal is received. If this tuning point deviates from the correct calibration point, the vane regulating the oscillator coil inductance may be reset and the tuning process repeated until scale is adjusted to calibration and the correct sensitivity is obtained. Care should be taken to see that the adjustment is made for the signal itself and not the image. That is, a 15 MC signal should be tuned in at 15 on dial and its image, with more input from standard signal generator, at 14 MC. Five microvolts across scale corresponds to the correct sensitivity.

MODEL 260 FIG. 1

I.F. 517.5 KC



IMPORTANT UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND MUST BE ACCURATE WITHIN ± .010" ± .010" WORK TO DIMENSIONS DO NOT SCALE DRAWING FINISH WHERE INDICATED NO BURRS



IF - FREQUENCY = 175 KC.

R-1	500,000 VARIABLE	SA-104,437
R-2	550,000 "	SA-104,443
R-3	50,000 OHMS	SA-100,512
R-4	500,000 "	SA-100,194
R-5	500 "	SA-99,583
R-6	30,000 "	SA-101,722
R-7	7500	SA-104,824
R-8	1 MEG.	SA-100,815
R-9	2000 OHMS	SA-100,826
R-10	40,000 "	SA-99,957
R-11	15,000 "	SA-101,404
R-12	3500 "	SA-105,161
R-13	5 "	SA-99,412
R-14	100,000 OHMS	SA-100,727
R-15	350 "	SA-102,564
R-16	500,000 "	SA-100,194
R-17	100,000 "	SA-100,727
R-18	20,000 "	SA-105,274
C-1		
C-2	VAR. COND	SA-105,134
C-3		
C-4	4 MFD.	SA-105,166
C-5	8 MFD.	
C-6	.01 - 3 PLY	SA-104,459
C-7	.05-2 PLY	SA-104,459
C-8	140-220 MMF	SA-105,108
C-9	140-220 MMF	SA-105,109
C-10	140-220 MMF	SA-105,109
C-11	.05-2 PLY	SA-104,459
C-12	7-80 MMF.	SA-105,126
C-13	.0001 MICA.	SA-101,143
C-14	.0001 MICA.	SA-101,143
C-15	.00025 MICA	SA-99,781
C-16	.005 - 3 PLY	SA-104,459
C-17	.25 - 2 PLY	SA-104,459
C-18	.25 - 3 PLY	SA-102,492
C-19	.002 - MICA	SA-100,198
C-20	140-220 MMF	SA-105,108
C-21	.01 - 4 PLY	SA-103,695
C-22	.05 - 3 PLY	SA-102,492
C-23	.25 - 2 PLY	SA-104,459
C-24	20 MFD	SA-105,165

			MOD. 307
			SA-105,110
MATERIAL AND SPECIFICATION	LENGTH PER 1000 PCS.	WEIGHT PER 1000 PCS.	FIRST MADE FOR

WIRING DIAGRAM

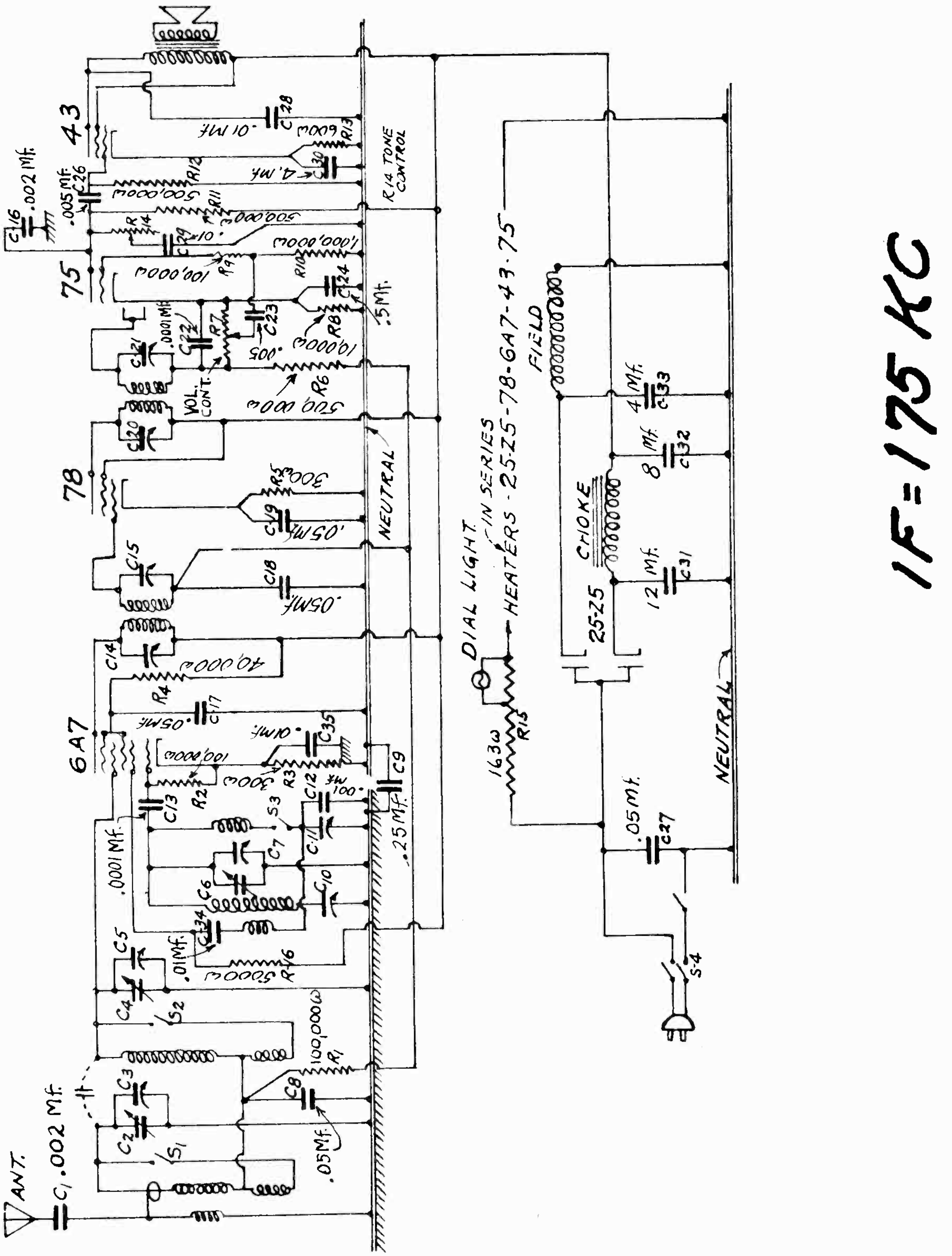
UNITED AMERICAN BOSCH CORPORATION FACTORY: SPRINGFIELD, MASS.				SCALE	THE SERVICE STAGE FOR THIS PART IS SERVICE No.	01-105,164
DATE	DR BY	CH BY	APPROVED BY EG		NOT A WORKING DRAWING UNTIL APPROVED BY EG	ED. 1
5-3-33	E.E.S.		AHF			

UNITED AMERICAN BOSCH CORP.

MODEL 307 Schematic

MODEL 357
Schematic

UNITED AMERICAN BOSCH CORP



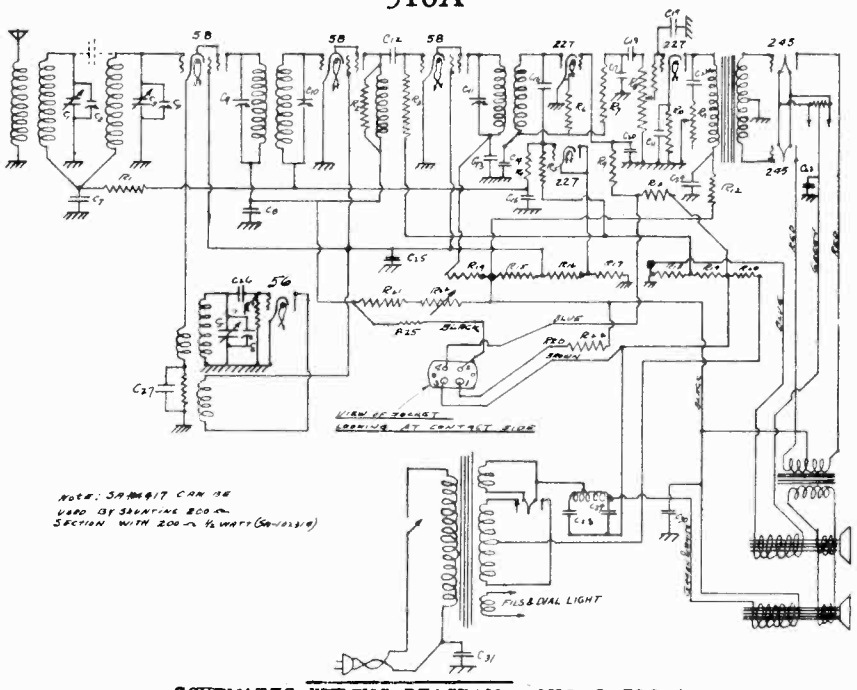
SCHEMATIC DIAGRAM OF MODEL 357

MODEL 310-A
Schematic

UNITED AMERICAN BOSCH CORP.

SERVICE INSTRUCTIONS FOR MODEL

310A



SCHEMATIC WIRING DIAGRAM - MODEL 310-A

ELECTRICAL VALUES

R1 - 100,000 ohms
R2 - 20,000 ohms
R3 - 100,000 ohms
R4 - 1/2 megohm
R5 - 1 megohm
R6 - 1/2 megohm
R7 - 20,000 ohms
R8 - 1/2 meg.
Volume control
R9 - 1/4 megohm
R10 - 3,000 ohms
R11 - 1/2 meg.
Tone control
R12 - 10,000 ohms
R13 - 1/4 megohm
R14 - 1,000 ohms
R15 - 12,000 ohms
R16 - 8,000 ohms
R17 - 6,000 ohms
R18 - 30 ohms
R19 - 70 ohms
R20 - 300 ohms
R21 - 10,000 ohms
R22 - 10,000 ohms (vari.)
R23 - 2 megohms
R24 - 100,000 ohms
R25 - 20,000 ohms
C1)
C2) Variable
C3) gang
C4) with
C5) trimmers
C6)
C7 - .04 - 3 ply
C8 - .05 - 3 ply
C9 - 7 - 70 mmf
C10- 7 - 70 mmf
C11- 7 - 70 mmf
C12- 500 mmf
C13- .05 - 3ply
C14 - 100 mmf
C15 - .05 - 2 ply
C16 - 100 mmf
C17 - 100 mmf
C18 - .05 - 2 ply
C19 - 100 mmf
C20 - .25 2 ply
C21 - 8 mf - 200 V
C22 - .05 - 3 ply
C23 - .05 - 3 ply
C24 - 1 mf - 450 V
C25 - .5 - 3 ply
C26 - 100 mmf
C27 - .05 - 2 ply
C28 - 8 mfd)
C29 - 8 mfd)
C30 - 4 mfd)
C31 - .01 - 4 ply

RESISTOR COLOR CODE

1,000 ohms	Brown	Black	Red
20,000 ohms	Red	Black	Orange
100,000 ohms	Brown	Black	Yellow

3,000 ohms	Orange	Black	Red	10,000 ohms	Brown	Black	Orange
300 ohms	Orange	Black	Brown	12,000 ohms	Brown	Red	Orange
8,000 ohms	Gray	Black	Brown	6,000 ohms	Blue	Black	Red

MODEL 310-A
Socket, Voltage
Parts List

UNITED AMERICAN BOSCH CORP.

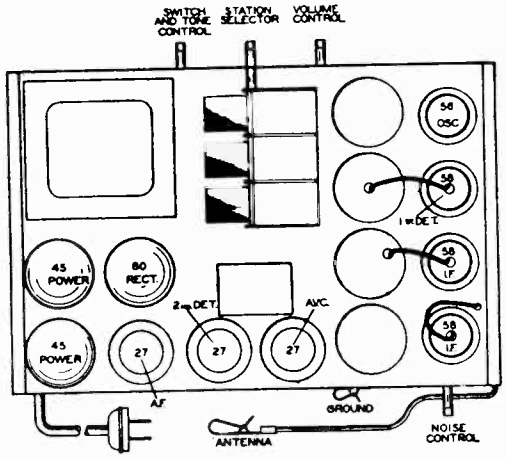
SOCKET VOLTAGES

	Osc. 56	1st Det. 58	1st IF 58	2nd IF 58	AVC 27	2nd Det. 27	AF 27	AF 2-45	Rect. 80
Filament	2.48	2.49	2.50	2.50	2.50	2.50	2.52	2.52	5.1
Plate	100	#110-180	#110-180	280	44	-	210	290	-
Screen	-	100	100	100	-	-	-	-	-
Cathode	-	4.2	-	-	-	-	18	49	-
# Bias	-	3	3	3	-	* 0-12	-	-	-

* Depending upon setting of noise control.

Due to high resistance in grid circuit, this voltage cannot be measured at the socket therefore, readings shown here were taken at "C Stick."

NOTE: These values are readings of a high resistance volt meter from each socket terminal to ground. The filament voltages are, of course, an exception. Cathode readings are given for those tubes having the grid at ground. The valves are only approximate and will vary with the line voltage and type of meter employed.



RESISTORS

100196 2 meg. ohms
100815 1 meg. ohms
100194 500,000 ohms
100195 250,000 ohms
100813 20,000 ohms
100727 100,000 ohms
100825 10,000 ohms
102821 3000 ohms
100823 2000 ohms
99412 Mid Tap
104437 Volume control
104443 Tone control with switch
105054 Var. resistance (noise adjustment)
104418 Tapped resistor
104417 Tapped resistor

MAIN ASSEMBLIES

105043 Chassis complete with tubes and shields
105072 Twin speakers with baffle board
105071 Speaker with output transformer
103731 Speaker only
105075 Cabinet

MISC. PARTS

104421 Power transformer
105055 Cable (speaker to chassis)
104402 Knob
105074 Tuning lamp
104948 Dial plate
105985 Tuning light plate

COILS

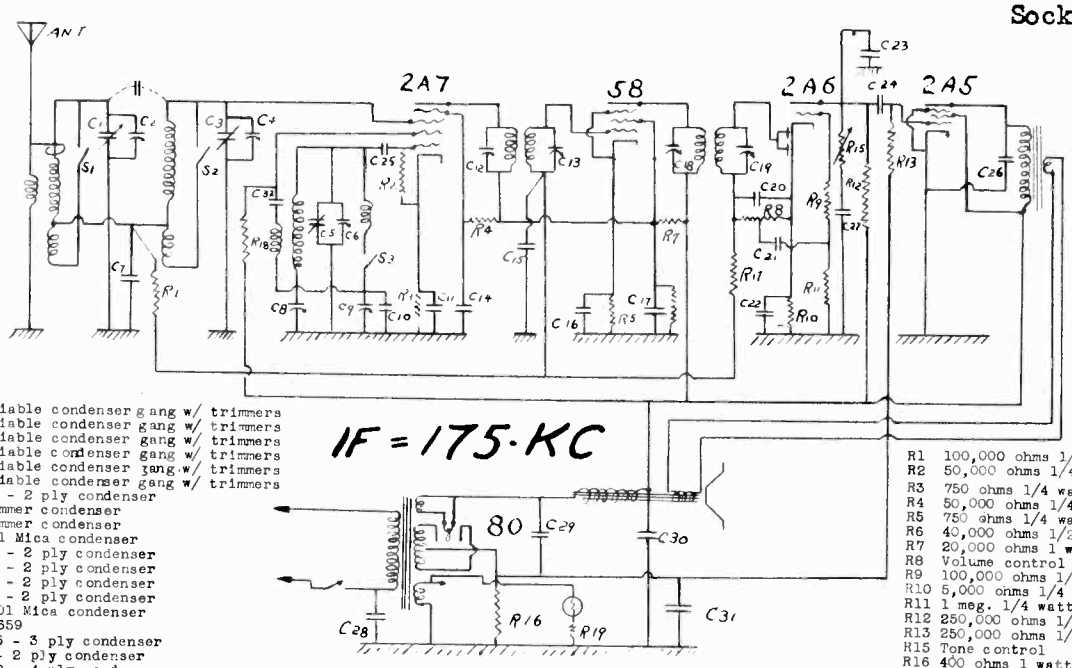
104439 2nd. I. F. coil
104438 1st I. F. coil
104440 Oscillator coil
104429 Ant. coil
104441 Pre. Selector coil
103584 Choke coil (small)
105053 Choke coil (large)
105061 Input transformer
104442 Output transformer

CONDENSERS

104422 Filter condenser
105046 1 mfd. 450 V
103037 8 mfd. 200 V
102498 .5 mfd. 3-ply
102949 .04 mfd. 3-ply
102493 .05 mfd. 2-ply
102492 .05 mfd. 3-ply
103695 .01 mfd. 4-ply
100880 .0005 Mica
101143 .0001 Mica
102497 .25 2-ply

MODEL 352
Schematic
Socket, Voltage

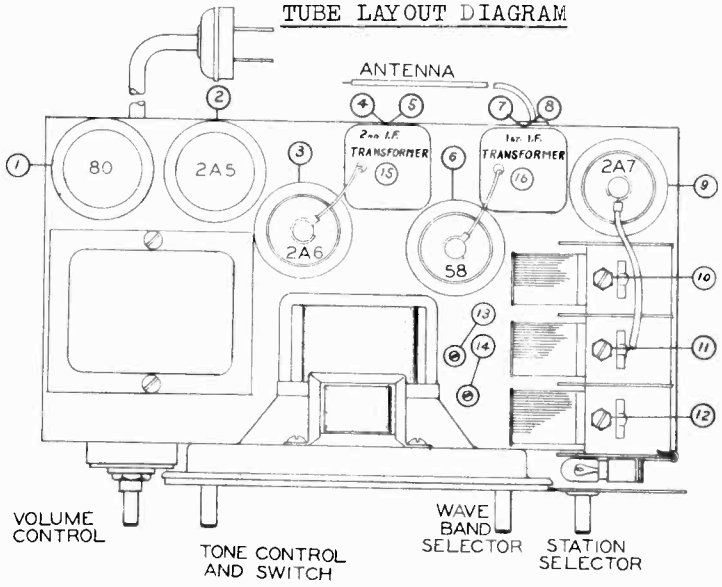
UNITED AMERICAN BOSCH CORP.



NOMENCLATURE

#1 Rectifier tube
#2 Power pentode tube
#3 2nd det. AVC & AF 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 Det. osc. tube
#10 Osc. trimmer condenser
#11 Preselector trim con.
#12 Antenna trim condenser
#13 S. W. osc. lag cond.
#14 B. C. osc. lag cond.
#15 2nd I. F. transformer
#16 1st I. F. transformer

TUBE LAYOUT DIAGRAM



SOCKET VOLTAGES

Tube	Stage	Fil.	Plate	Screen	Cathode	Grid	
2A7	1st Det.	2.4	75	30	0.8		Line voltage 115
	Osc.		60				Power in watts 50
58	I. F.	2.4	250	75	2.0		Bias 2A5 (across resistor) 15 volts
2A6	2nd Det.	2.4	95		1.5		
2A5	Pentode	2.5	235	250	0	7.5	
80	Rectifier	4.7					

GENERAL DESCRIPTION

The American-Bosch Model 352 is a five-tube superheterodyne dual wave receiver. This model is for 110 volt, 60 cycle operation.

The tuning of this receiver is divided between two illuminated scales. The BLACK scale covers the standard broadcast band (550 to 1600 kilocycles) and the RED scale covers the short wave band including the frequencies between 1600 kilocycles and 4200 kilocycles.

ALIGNING

To align the 352 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 on page R100b and should be carefully studied before the actual work is started.

ALIGNING THE I. F. (175 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 interferring 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 175 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 58 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 2A7 (#9) and adjust #7 and #8 to maximum output.

ALIGNING B.C. OSC. AND R.F.

1. Set wave change switch to broadcast or BLACK scale position.
2. Connect test oscillator to grid of first detector tube 2A7 (#9) and adjust test oscillator to 1400 KC.
3. Set dial scale to maximum mark beyond 550 KC calibration point when gang is entirely closed.
4. Set scale at 1400 KC and adjust #10 to maximum output. NOTE: Two peaks will be heard as trimmer condenser is tuned. The second peak from maximum capacity should be used.
5. Connect test oscillator to antenna through 100. mmf. condenser and with scale still set at 1400 KC adjust condensers #10, 11 and 12 to maximum output.
6. Set scale and test oscillator to 600 KC and adjust #14 simultaneously changing this adjustment and the tuning control of 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 #14 in either direction and then without changing it, tune the receiver through a maximum, noting the value of output meter reading. Change #14 further in same direction, retune receiver and note reading. If output drops with second adjustment, reverse direction of the adjustment of #14, continue this type of trial and error adjustment until no further improvement can be made when either tuning control or #14 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 1400 KC readjust #10, 11 and 12, since previous operation may have altered oscillator trimmer setting.
8. Check sensitivity across band.

ALIGNING S. W. OSC.

1. Set wave change switch to short wave or RED band position.
2. Set test oscillator to 1800 KC and adjust #13 and tuning control to a "max-max" as per instructions given under Broadcast Band Alignment.
3. Check sensitivity across band.

PARTS LIST RS 352

Part No.	Description of Parts
	RESISTORS
105278	100,000 ohms 1/4 watt
105276	50,000 ohms 1/4 watt
105265	750 ohms 1/4 watt
103410	40,000 ohms 1/2 watt
102345	20,000 ohms 1 watt
105249	5,000 ohms 1/4 watt
105281	1 meg. 1/4 watt
105279	250,000 ohms 1/4 watt
103062	400 ohms 1 watt
105246	1/2 meg. 1/4 watt
105274	20,000 ohms 1/4 watt
	MAIN AND SMALL ASSEMBLIES
105711	Speaker complete
106452	Chassis complete with tubes and tube shields
105676	Dial scale assembly
106384	Resistor strip assembly
105708	1st I. F. coil assembly
105709	2nd I. F. assembly
105791	Antenna coil assembly
105755	Preselector coil assembly
105753	Oscillator coil assembly
106170	Speaker field coil assembly
	MISCELLANEOUS PARTS
98713	Dial lamp
105702	Speaker bracket
103257	Shield
97906	Plug for line cable
105648	Knobs
101869	Felt foot
105317	Name plate
105316	Dial plate
106303	Cabinet
105162	Grid lead assembly
106242	Switch (dual wave)
105144	Rubber bushing for condenser gang mounting
105947	Spring ring
105936	Tube shield for 58 tube
100377	Spacer for insulation plate assembly
104249	Insulation plate assembly on transformer
106349	Dial lamp bracket assembly
106392	Spacer for resistor strip
106134	Plug button for I. F. coils
105563	Volume control
105560	Tone control
	TRANSFORMERS
105659	Power transformer
106171	Speaker output transformer
	CONDENSERS
105771	Variable condenser gang with trimmers
106386	.05 - 2 ply condenser
105704	Trimmer condenser
101775	.001 Mica condenser
102493	.05 - 2 ply condenser
101143	.0001 Mica condenser
103659	.005 - 3 ply condenser
102499	.5 - 2 ply condenser
103852	.002 - 4 ply condenser
106279	.01 - 3 ply condenser
105931	.01 - 4 ply condenser
106340	Filter condenser assembly 8, 6 and 20 mfd.
106277	.01 - 3 ply condenser
	WASHERS
99545	Insulation washer for antenna cable
108	Lock washer for power transformer
80589	Volume control lock washer
105145	Condenser mounting rubber washer
95702	Condenser mounting plain washer
53544	#6 Shakeproof lock washer
	SCREWS
97704	Trimmer condenser fastening screw
104387	Fastening screw for speaker coil and condenser assemblies
95988	Screw for oscillator coil
101951	Name plate fastening screw
101700	Speaker bracket fastening screw
101865	Condenser mounting fastening screw
102441	Set screw for dial scale assembly
95996	Resistor strip fastening screw
	NUTS
103039	Nut for volume control and dual wave switch
105795	Nut for power transformer
68226	Hex nut for screw 104387

PARTS LIST RS 354

5 tube dual wave - 220 volts, 25 cycles

106489	Chassis assembly complete
106061	Power transformer

All other parts are the same as RS 352.

MODEL 360
Alignment Data

UNITED AMERICAN BOSCH CORP.

The adjustment of the receiver may be divided into five divisions: (1) adjustment of the I. F. amplifier (2) adjustment of the broadcast band (black) (3) adjustment of the 1500-4000 K. C. band (green) (4) adjustment of the 3500-9000 K. C. band (red) and (5) adjustment of the 8000-20,000 band (blue).

The procedure is as follows:

(A) I. F. Adjustment

(1) Set signal generator to 476 K. C. with attenuator well ahead (20,000mv).

(2) Introduce signal to grid of second I. F. amplifier (see diagram).

(3) Adjust small screws in front side of third I. F. transformer for loudest signal, reducing attentuator as required. Final sensitivity about 5000 microvolts.

(4) Decrease signal generator attenuator to about 1000mv and introduce signal to grid of first I. F. amplifier.

(5) Adjust alignment screws of second I. F. transformer for loudest signal, reducing attenuator as stage is brought into resonance. Final sensitivity about 300 microvolts.

(6) Decrease signal generator attenuator to about 50 microvolt setting, and introduce signal to grid of first detector.

(7) Repeat alignment procedure on 1st I. F. transformer (see diagram) until best adjustment is obtained. Sensitivity about 20 microvolts.

(B) R. F. Adjustment

(1) Set signal generator to 1500 K. C. with input from signal generator to grid of first detector. Place pointer of radio set to 1.5 mark on dial. Adjust screw of trim condenser in top of right rear shield container until signal is tuned in. This screw is usually designated by a red color code. Having obtained tune at this point set signal generator to 600 K. C. and set pointer to .6 mark on station indicator and adjust other screw in the shield container until the signal is tuned in. Now return to the 1500 K. C. point with set and signal generator and make the slight resetting of the first named screw to obtain accurate adjustment to scale reading.

(2) Connect signal generator to antenna lead, making sure the antenna equivalent (200 mmf) is in the circuit.

(3) Continue setting of 1500 K. C. Adjust alignment condensers on variable condenser gang (1st and 2nd sections from front of set) for loudest signal. Check sensitivity, and calibration at several points on dial. Set should come correctly to kilocycles settings of important broadcasting stations, and its sensitivity on the signal generator should be within the limits specified here.

K. C. - - -	1500	1000	600
M. V. - - -	5	5	10

MODEL 360
Alignment Data

UNITED AMERICAN BOSCH CORP.

Having placed the broadcast band in correct setting, we are now ready to adjust the short wave bands. In order to attempt this a reliable signal generator is required Examples are the Ferris Instrument Co. type 10B, General Radio 603-A, R. C. A. type TMV-18. Do not try to make adjustments on the short wave bands by means of harmonic obtained from a set tester designed for use only on 500 to 1500 K. C. band. Such a procedure will usually end in getting so far off correct adjustment as to require factory service.

(C) Adjustment of the Green Band

Place signal generator on 3600 K. C. and pointer of radio set at the 3.6 mark on the dial.

Adjust trim condenser in right hand front shield container until signal is tuned in. This trim condenser is usually red color coded. Place signal generator on 1600 K.C. and adjust dial scale pointer of set to 1.6 mark. Adjust opposite condenser in shield container to best signal. Return to 3600 K. C. and repeat adjustment. In adjusting to the 3600 K. C. point it is possible to obtain two settings for different positions of the trim condenser in the shield container. This denotes merely the plus and minus frequency between oscillator and signal generator 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 signal generator are tuned to 2500 K. C. (mid-band). This check is usually quite valuable. The sensitivities should be as follows:

K. C. - - -	3600	2400	1600
M. V. - - -	10	10	5

(D) Adjustment of the Red Band

Place signal generator on 8000 K. C. marking and tune receiver in region of 8.0 on scale. Note where signal is received. Next place signal generator on its 4000 K. C. setting and tune set to 4.0 on scale. Adjust oscillator lag condenser (rear unit on right hand side plate) until signal is received. Return set and signal generator 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 the switch.

(E) Adjustment of the Blue Band

Place signal generator at 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 signal generator is received on the dial scale. Then place signal generator on 10,000 K. C. and adjust oscillator lag condenser (front unit on side plate) until signal generator is tuned in at 10 on dial scale. Now return both signal generator and radio set to the high frequency setting. Located on the under side of the base and adjacent to the switch and high frequency selector coils are two trim condensers which are used for correct adjustment at this high frequency. Increase setting of attenuator until signal generator can be tuned in at two points on dial (say 20 and 19). Then with set pointer at 20 adjust these trim condensers for best signal decreasing signal generator attenuator as signal becomes better tuned. At correct adjustment a very loud signal will be obtained at 20 while a feeble signal or none at all is observed at 19. This is a practical illustration of the effectiveness of pre-selection as outlined in the first part of this description.

The adjustment instructions just given apply to a Model 360 receiver which is in reasonable operating condition, but in some manner has been thrown out of adjustment. Obviously, before the radio technician can go thru 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.

SERVICE INSTRUCTIONS FOR ADJUSTMENT OF MODEL 370

The Model 370 is a dual band receiver with the following frequency coverages: On the broadcast band, printed in black, 540 to 1712 kc.; this includes not only the American broadcast band but also certain of the police transmitters. On the short-wave police band, ship to shore transmitters, and the short-wave broadcast at 6000 kc.

The Model 370 is a 7-tube superheterodyne receiver comprising a combination first detector oscillator, two stages of intermediate frequency amplification, diode rectification and automatic volume control, an audio amplifier tube on control by the signal, an audio frequency driver stage, and a push pull power output stage. Selectivity is provided by a double tuned antenna selector and three double tuned intermediate frequency transformers, comprising a total of eight selective circuits.

The tube complement of the Model 370 follows:

1 Type 2A7, oscillator and first detector
1 Type 58, first intermediate frequency amplifier
1 Type 2B7, second intermediate frequency amplifier, detector and a.v.c.
1 Type 58, controlled audio amplifier
1 Type 53, driver stage
1 Type 53, push pull output stage
1 Type 83V, rectifier

The adjustment of the receiver will be described under three headings - (A) intermediate frequency amplifier, (B) broadcast band (black), (C) short wave band (red).

Alignment procedure should always be in the order given below:

(A) INTERMEDIATE FREQUENCY AMPLIFIER ADJUSTMENT

(1) Set signal generator or alignment oscillator to 265 kc. and adjust its output to produce a measurable signal on the output meter when the generator is connected to the control grid cap of the second i.f. (2B7).

(2) Set volume control at maximum volume position, tone control at bass and wave change switch so that the black scale or broadcast band is in operation.

(3) With signal generator connected between frame of the receiver and grid cap of the second i.f. amplifier, adjust small screws in front side of their i.f. transformer for loudest signal, adjusting attenuator of signal generator as required. Note: If calibrated output meter and accurate signal generator are being used, the sensitivity should be approximately 8000 microvolts for an output voltage of .6 volts measured across the moving coil of the speaker. This corresponds to 100 milliwatt standard output.

Note: Signal generators may vary as much as 50% in accuracy of attenuation and for this reason, the sensitivity data should be regarded as an approximate guide to correct performance.

(4) Decrease signal generator output to about 500 microvolts and connect signal generator to control grid cap of first i.f. amplifier tube (58).

(5) Adjust alignment screws of second i.f. transformer for loudest signal, reducing output of signal generator as stage is brought into resonance. This adjustment is made by using a small screw driver inserted thru the hole provided in the dial scale. Final sensitivity should be about 300 microvolts.

(6) Decrease signal generator output to about 50 microvolts and connect signal generator to control grid cap of first detector tube (2A7).

(7) Adjust alignment screws of first i.f. transformer until loudest signal is obtained, reducing attenuator as stage is brought into resonance. Readjust second and third i.f. transformer alignment screws to assure perfect alignment of the entire amplifier. This should be done without removing signal generator lead from first detector. Over-all sensitivity of the i.f. amplifier should be approximately 51 microvolts.

(B) BROADCAST BAND ADJUSTMENT

(1) Rotate tuning control until gang condenser is fully closed. The pointer should now be in line with the fine black mark approximately 1/8" beyond the 550 kc. calibration mark (5.5 on dial). The travel of the pointer from this mark to the position which it occupies when the condenser is fully open, should be 3-1/16 inches. When the indicator mechanism is so adjusted that this travel is obtained alignment of preselector and oscillator circuits will then assure the best calibration.

(2) Set signal generator to 1400 kc. with input connected to grid cathode of first detector tube (2A7).

(3) Adjust tuning control until point is at 1400 kc. calibration mark. Adjust screw of the oscillator section of the gang condenser (see diagram), until maximum output is obtained. Sensitivity should be about 50 microvolts.

(4) Connect signal generator to antenna ground terminal using an antenna equivalent of 200 mmf. condenser in series with antenna lead to signal generator.

(5) Adjust all trimmer screws of the gang condenser to a maximum. Sensitivity should be approximately 10 microvolts.

(6) Set signal generator to 600 kc. with connections made to antenna and ground terminals.

(7) Tune in signal by means of tuning control and then adjust both tuning control and broadcast band oscillator legging adjustment simultaneously for a maximum. Note: This type of adjustment is known as "max-max" and is obtained in the following manner:

MODEL 370
Alignment Data

UNITED AMERICAN BOSCH CORP.

Tune receiver with left hand by means of tuning knob and adjust oscillator lag condenser with right hand. Make slight change in oscillator lag condenser in either direction and then, without changing it, tune the receiver thru a maximum noting the value of output meter reading obtained. Change oscillator lag condenser further in the same direction, retune receiver and note reading. If output drops with second adjustment, reverse direction of the adjustment of the oscillator lag condenser. Continue this type of trial and error adjustment until no improvement can be made when either tuning control or oscillator lag condenser are changed. While this procedure may appear difficult, facility can be easily acquired by practice and the operation required only a few moments.

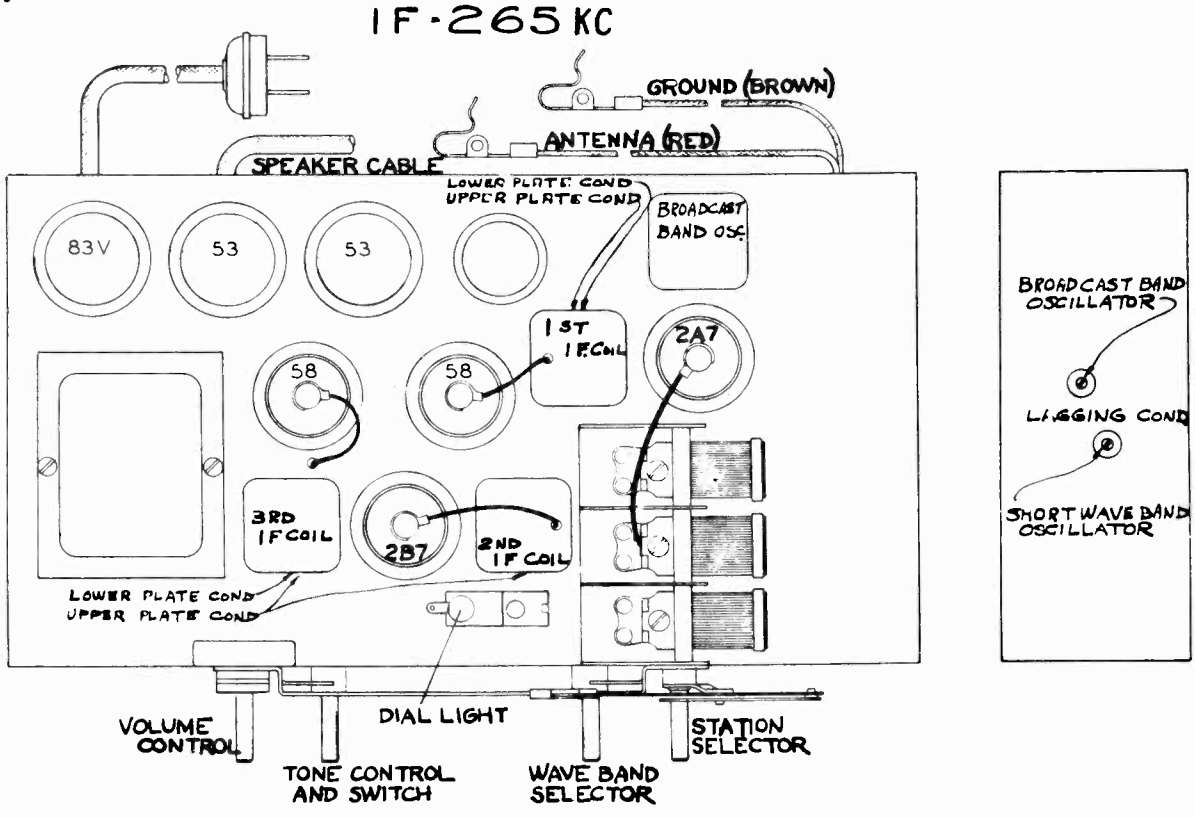
(8) Recheck 1400 kc. adjustment since oscillator lagging procedure may have slightly detuned oscillator. Check sensitivity at various settings along broadcast band. Sensitivity should be approximately 10 microvolts or less.

(C) SHORT WAVE ADJUSTMENT

(1) Set signal generator at 2400 kc. with output connected to antenna and ground terminals.

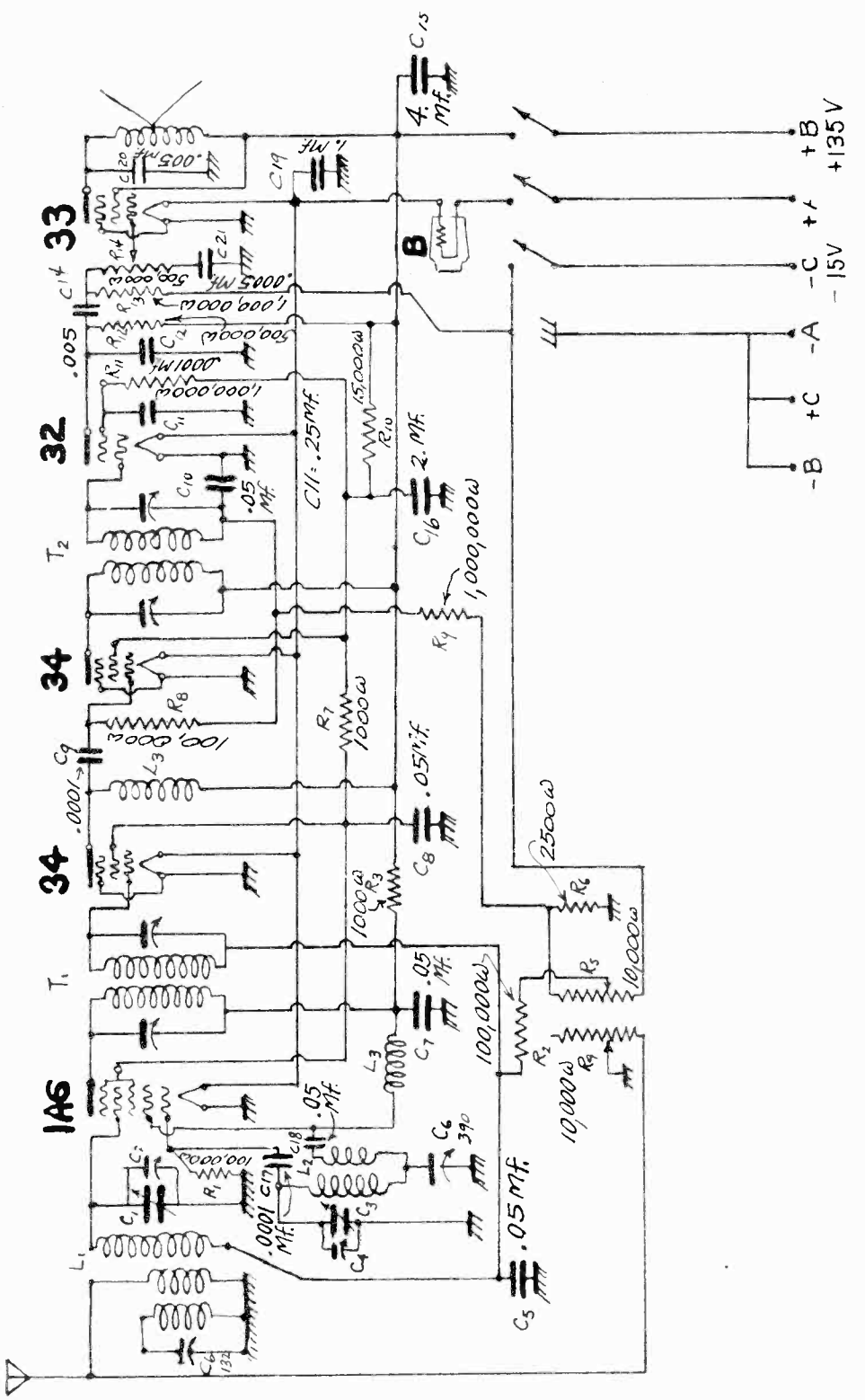
(2) Change wave band switch to red band, tune in signal at 2400 kc. and "max-max" oscillator as described above, using short-wave oscillator lagging condensers as shown on diagram.

(3) Check sensitivity of entire short-wave band which should be 50 microvolts or less.



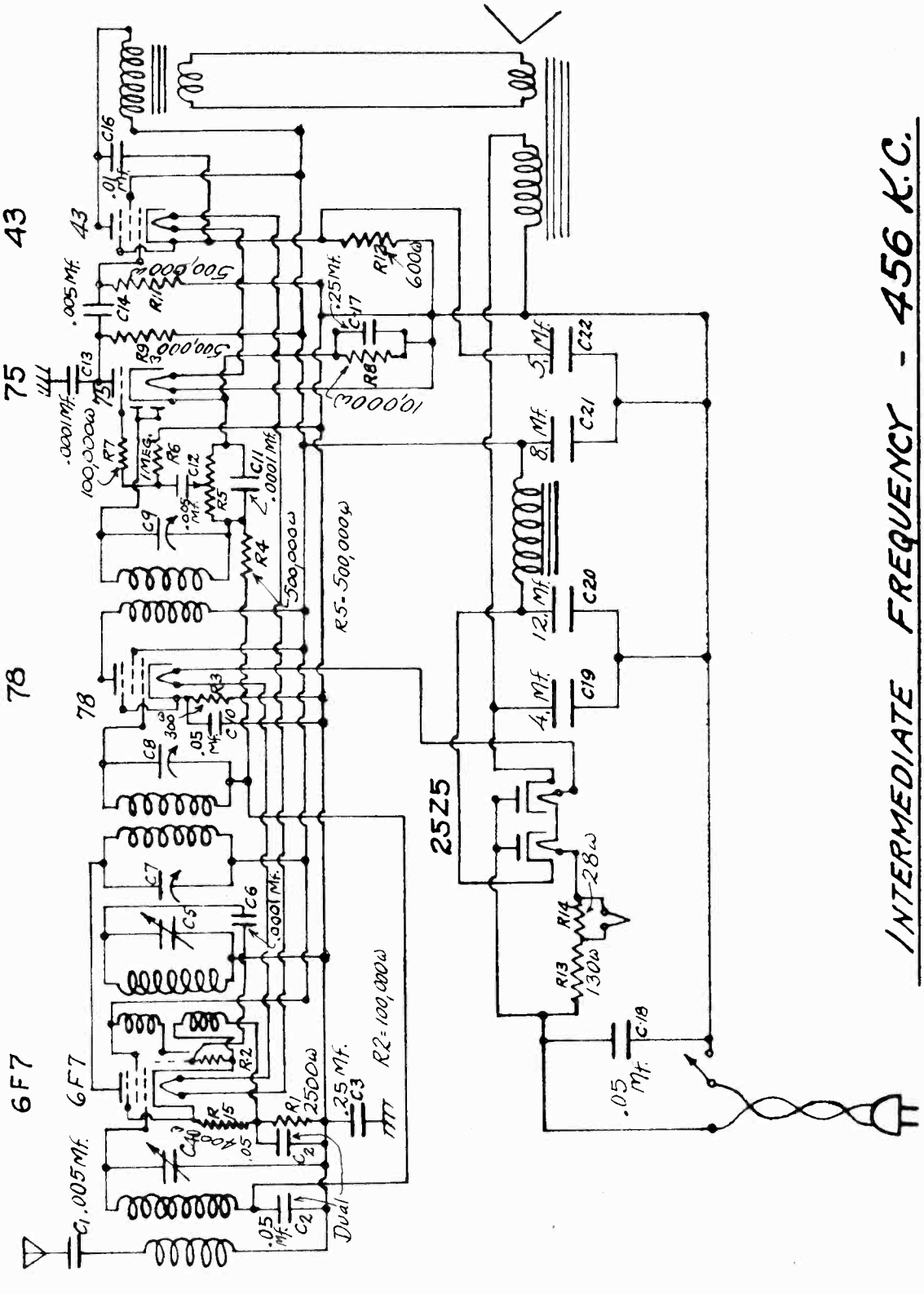
UNITED AMERICAN BOSCH CORP

MODEL 376
Schematic



MODEL 402
Schematic

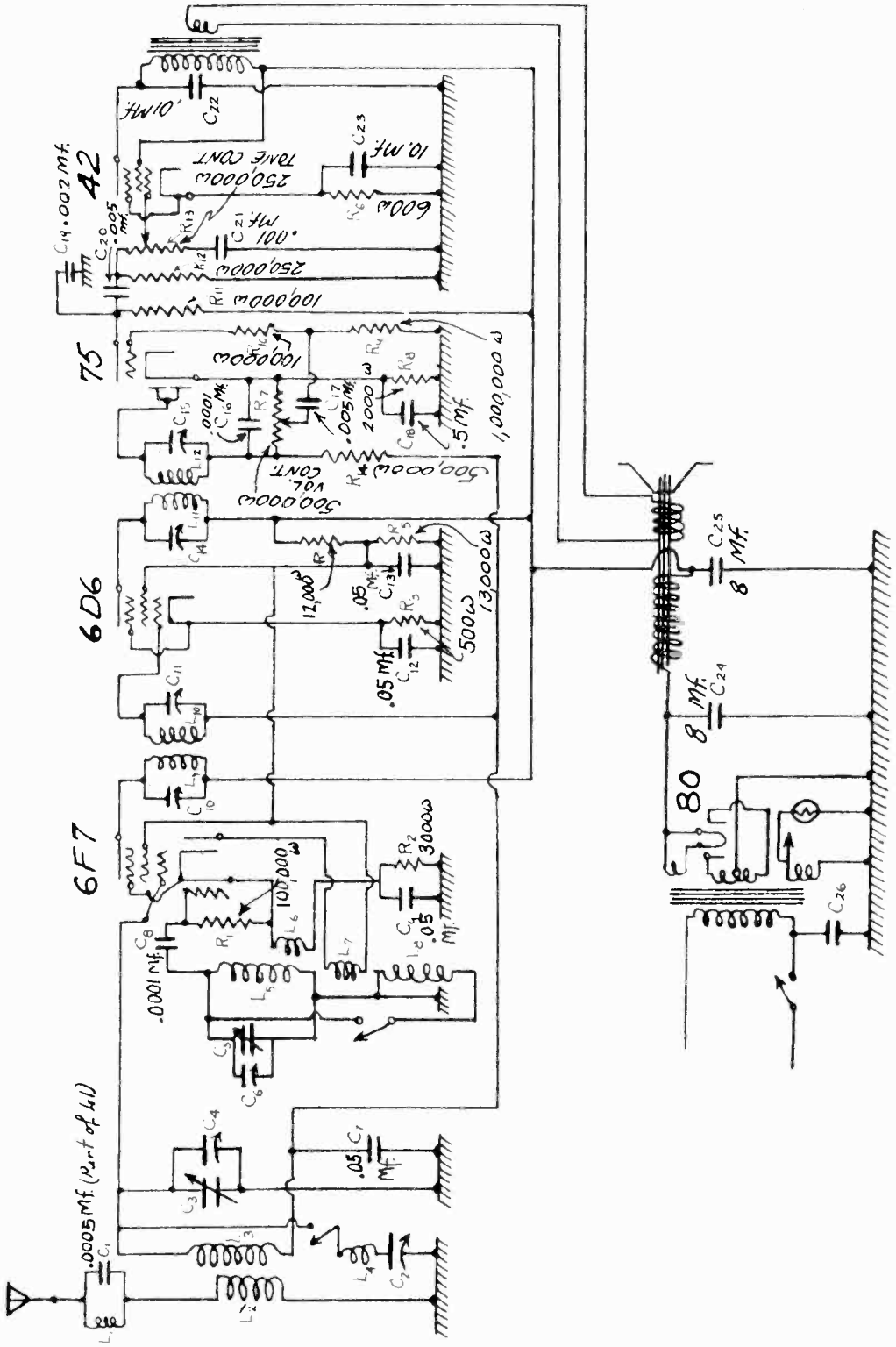
UNITED AMERICAN BOSCH CORP



MODEL 420
Schematic

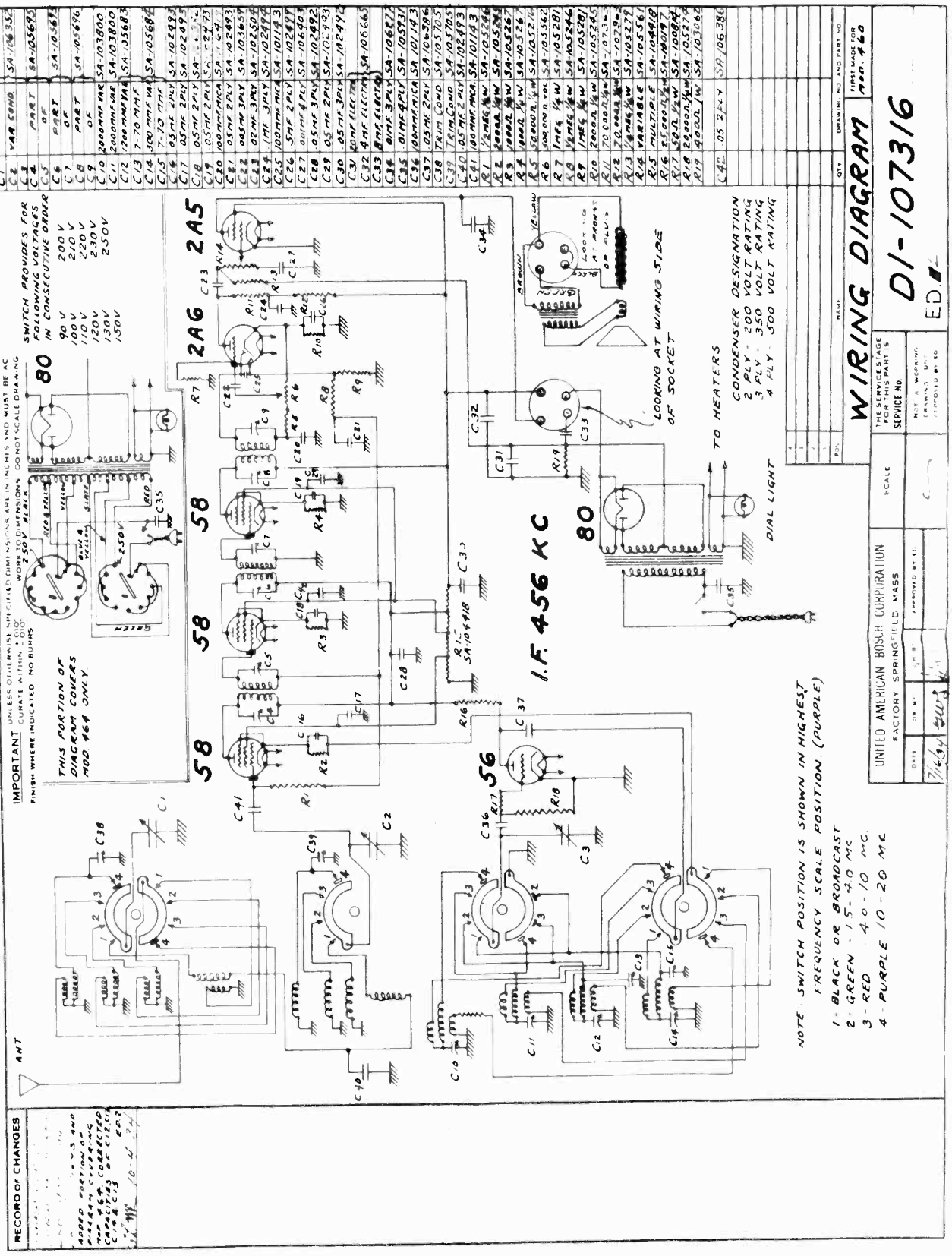
UNITED AMERICAN BOSCH CORP

SCHEMATIC DIAGRAM OF MODEL 420



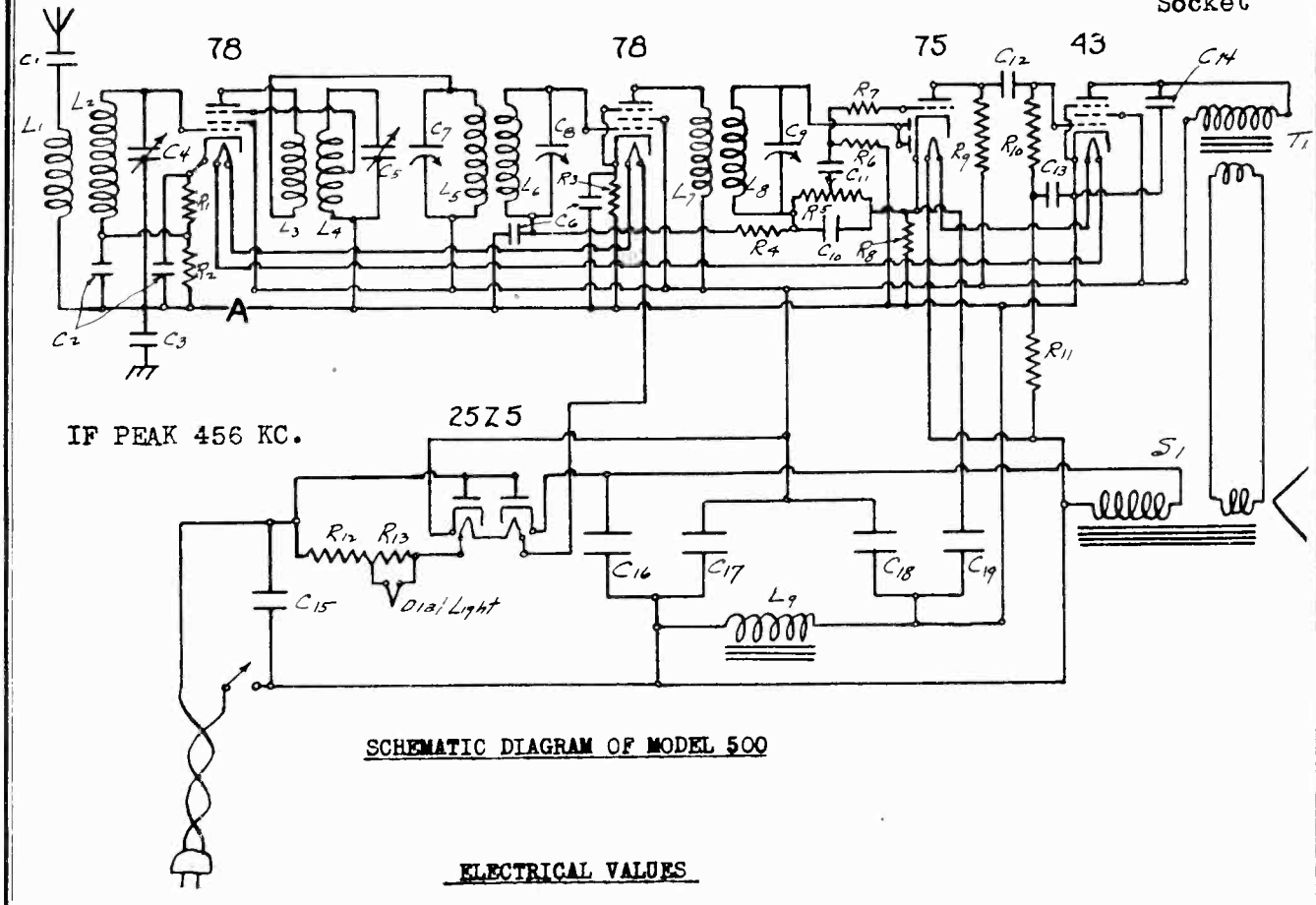
MODEL 460
Schematic

UNITED AMERICAN BOSCH CORP



MODEL 500
Schematic
Socket

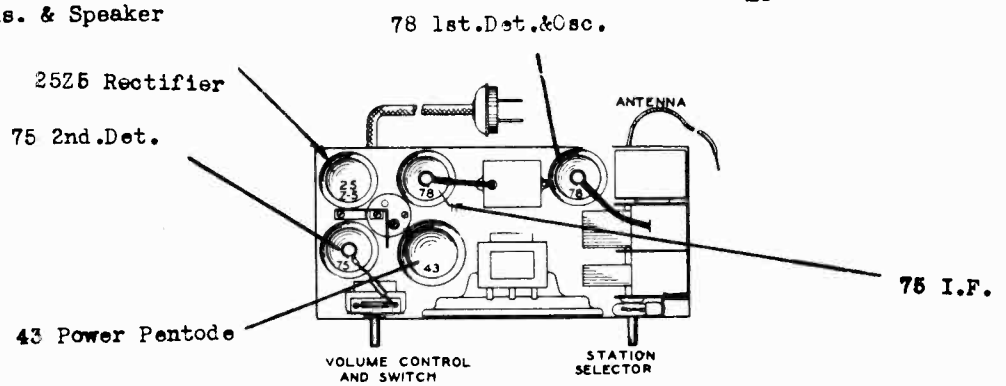
UNITED AMERICAN BOSCH CORP.



SCHEMATIC DIAGRAM OF MODEL 500

ELECTRICAL VALUES

R1	500	C1	.005 - 3 ply	C14	.01 - 4 ply
R2	2500	C2	.05 Dual	C15	.01 - 4 ply
R3	100	C3	.25 - 2 ply	C16	4 mf. 150V
R4	500,000	C4	(2-gang cond.	C17	16 mf. 150V
R5	500,000 var.	C5	(with trimmers	C18	4 mf. 150V
R6	1 meg.	C6	.05 Dual	C19	5 mf. 150V
R7	100,000	C7	(Mica I.F.	L1)	Ant. Coil
R8	5000	C8	(Trimmers	L2)	
R9	250,000	C9	Mica Trimmers	L3)	
R10	500,000	C10	.0001 Mica	L4)	v Det. Osc. Assy.
R11	250,000	C11	.005 - 3 ply	L5)	
R12	130	C12	.005 - 3 ply	L6)	
R13	35	C13	.25 - 2 ply	L7)	2nd I.F. Assy.
T1	Output trans.			L8)	
S1	Trans. & Speaker			L9	Choke



MODEL 500
Voltage
Alignment Data

UNITED AMERICAN BOSCH CORP.

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.

1. (Rectifier 2525)	Voltage across C16	120 V
	" " C12	120 V
	" " Heater	25 V
2. (Power tube 43)	" Screw to point A	105 V
	" Plate " " "	96 V
	" Bias across L9	15 V
	" Heater	25 V
3. (Second Detector 75)	" Plate to point A	37 V
	" Bias cathode to A	.5 V
	" Heater	6 V
4. (Intermediate 78)	" Screen to point A	105V
	" Plate to point A	105V
	" Bias Cathode point A	1.3V
	" Heater	6V
5. (Osc. Det. 78)	" Screen to point A	105 V
	" Plate " " A	105 V
	" Grid bias Cathode to coil lug across R.	2.8 V
	" Suppressor bias cathode to pointA	16.5 V
	Heater	6 V

The heater voltages may vary considerably because the series connection maintains constant current rather than constant voltage.

Alignment Instructions - Model 500

I. F. Adjustment 456 K. C.

Note: The signal generator or alignment oscillator should have no external ground connection of 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.

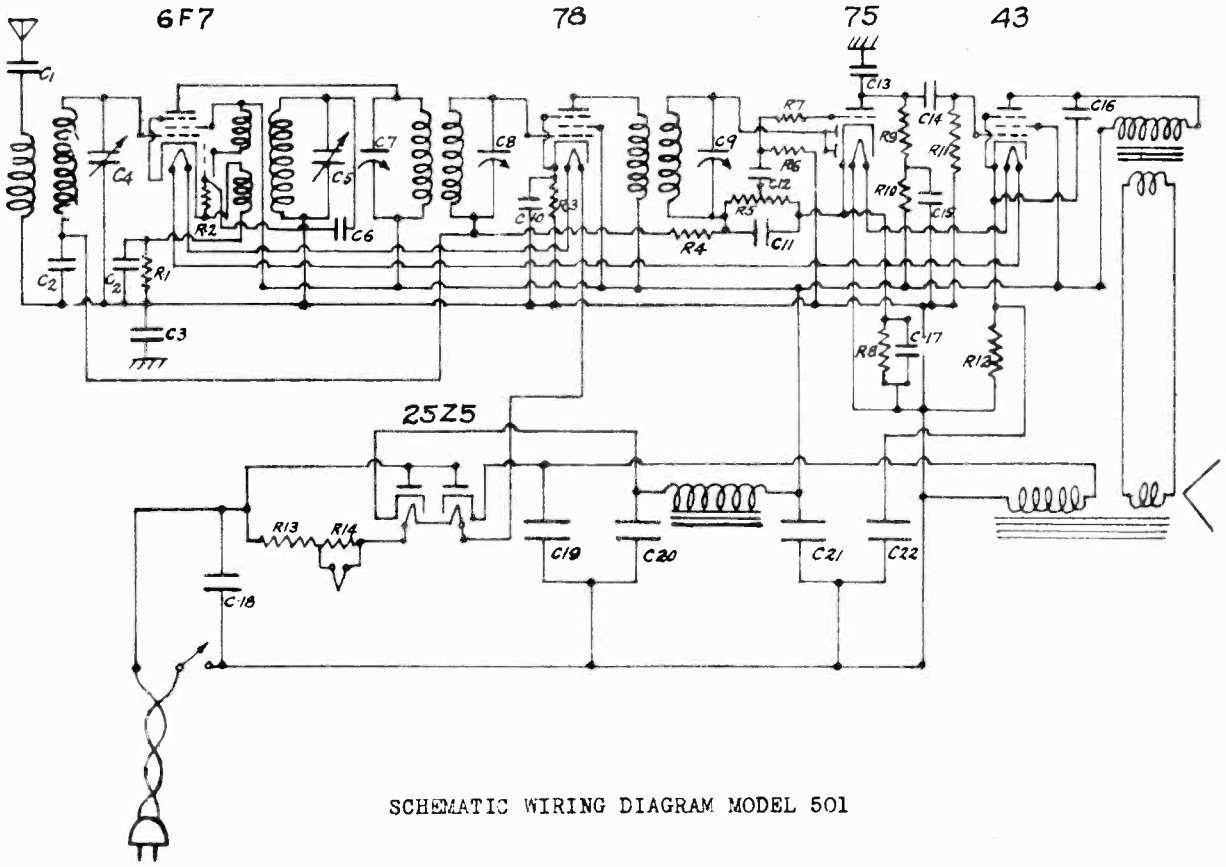
1. Connect volume indicator across moving coil of speaker (speaker impedance is 4.5 ohms)
2. Set volume control at maximum
3. Connect signal generator to grid of I. F. tube (78) and adjust the trim condenser in the top of the small I. F. housing which is located above the chassis between the tubes, to maximum output.
4. Connect signal generator to grid of 1st detector and adjust both condensers to a maximum output. These adjustments are made by means of slotted screws at the rear of the housing.at center of set.

Oscillator and R. F. Adjustment

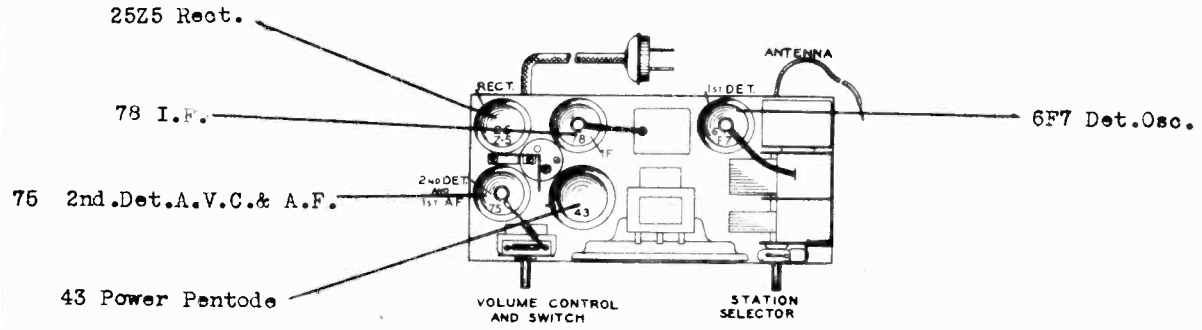
1. Connect R. F. signal generator to antenna wire thru 100 mf mica condenser. Antenna should be hanked.
2. Set dial scale to maximum mark beyond the 550 kilocycle calibration point when gang is entirely closed.
3. Trim both condenser sections to a maximum with the signal generator and scale set at 1500 kilocycles.

MODEL 501 AC-DC
Schematic
Socket

UNITED AMERICAN BOSCH CORP.



SCHEMATIC WIRING DIAGRAM MODEL 501



ELECTRICAL VALUES

R1	1500	¼ W	R13	130	C11 .0001 Mica.
R2	100000	"	R14	28	C12 .005 - 3 Ply
R3	300	"	C1	.005 - 3 Ply	C13 .0001 Mica.
R4	500000	"	C2	.05 Dual	C14 .005 - 3 Ply
R5	500000	Var.	C3	.25 - 2 Ply	C15 .25 - 2 Ply
R6	1 Meg.	¼ W	C4)	2 gang cond.	C16 .01 - 4 Ply
R7	100000	"	C5)	With trim.	C17 .25 - 2 Ply
R8	10000	"	C6	.0001 Mica.	C18 .01 - 4 Ply
R9	500000	"	C7	Mica. I. F.	C19 4 Mfd. 150 V
R10	50000	"	C8	Trimmers	C20 12 " "
R11	500000	"	C9	"	C21 8 " "
R12	600	½ W	C10	.05 - 2 Ply	C22 5 " 25 V

MODEL 501 AC-DC
Voltage
Parts List

UNITED AMERICAN BOSCH CORP.

MODEL 501

I - A.C.MEASUREMENT

Stage	Tube	Fil	Plate	Screen	Cathode
1 Det.	6.F7	6.0	115	115	12
Osc.			115		
I.F.	78	6.0	115	115	2.8
2 Det.	75	5.9	30	-	0.7
Amp.					
Power	43	22	115	115	17
Rect.	25Z5	25	125	-	-

Line Voltage	115	Dynamic Field	108 Volts
Power in Watts	47	Filter Choke Drop	8.8 Volts
Dial Lamp Volts	6.0		
Res. Strip Volts	47		

II - D.C.MEASUREMENT

Stage	Tube	Fil	Plate	Screen	Cathode
1 Det.	6.F7	6.2	102	102	8.7
Osc.			102		
I.F.	78	5.9	102	102	2.5
2 Det.	75	5.8	27	-	0.6
Amp.					
Power	43	24	102	102	13
Rect.	25Z5	27	110	-	-

Line Volts	115	Resistance Strip Volts	47
Dial Lamp Volts	6	Dynamic Field Volts	115

ESSENTIAL PARTS LIST

RESISTORS

105260	300 Ohm.	1/4 Watt
101211	600 "	1/4 "
105268	1500 "	1/4 "
105272	10,000 "	1/4 "
105278	100,000 "	1/4 "
105246	500,000 "	1/4 "
105281	1 Meg "	1/4 "
105308	Volume Control	
105319	Power Resistor Strip	

CONDENSERS

101143	.0001 Mica
103659	.005 MF 3 Ply
103695	.01 MF 4 Ply
102493	.05 MF 2 Ply
105327	.05 MF Dual
102497	.25 MF 2 Ply
105728	Variable Condenser
105722	Filter Condenser

COILS

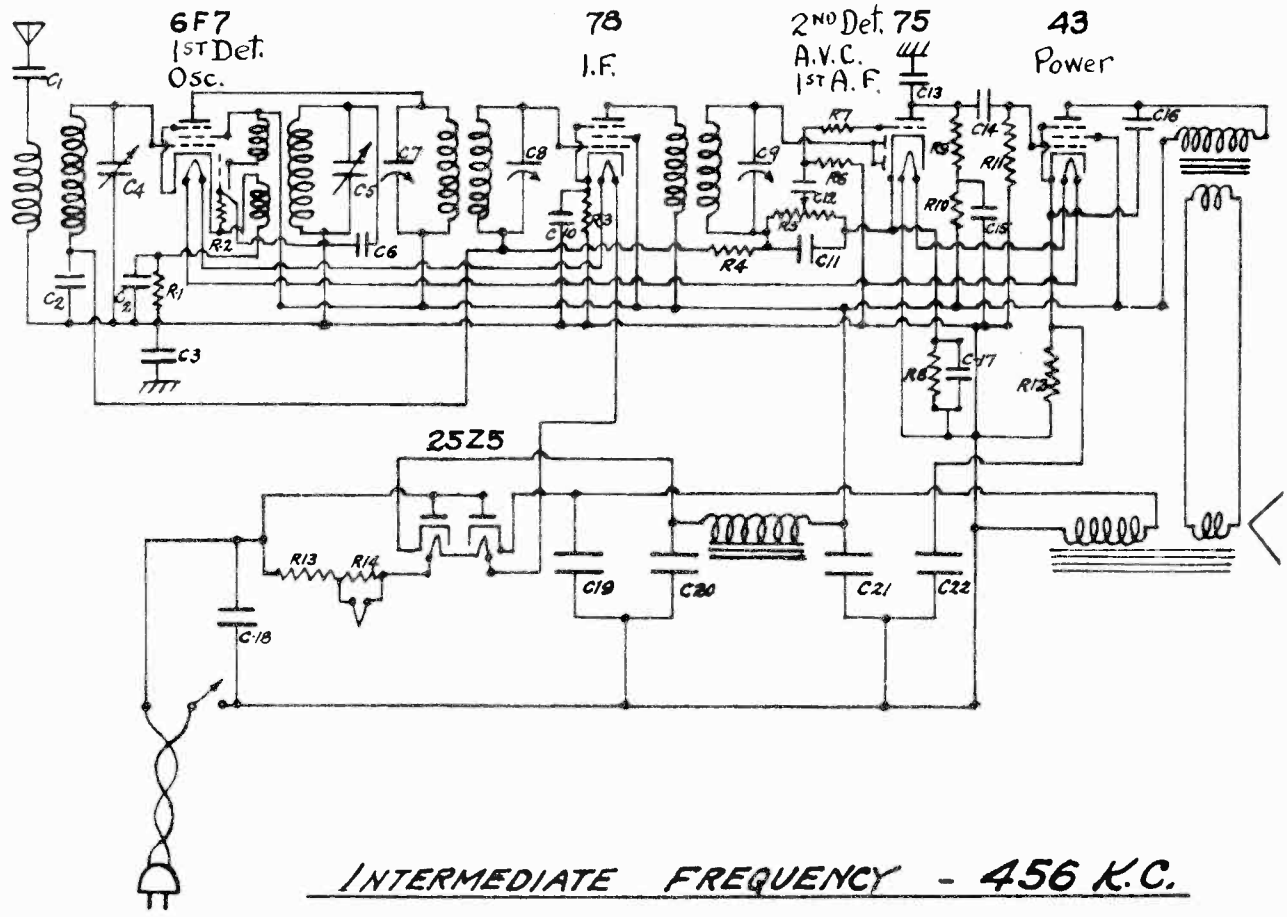
105725	Antenna Coil
105721	Oscillator Coil
105721	First I.F. Coil
105318	Second I.F. Coil
105724	Choke Coil

MISC. PARTS

105726	Speaker Assembly
105343	Line Cable
105732	Dial Scale Assembly
105336	Dial Lamp Socket
95572	Dial Lamp
105344	Antenna Cable

MODEL 502
Schematic
Socket

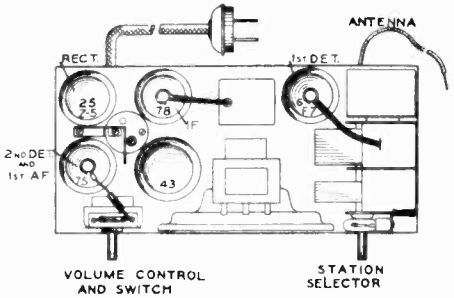
UNITED AMERICAN BOSCH CORP.



INTERMEDIATE FREQUENCY - 456 K.C.

ELECTRICAL VALUES

R1 1500 ohms ¼ watt
R2 100000 " " "
R3 300 " " "
R4 500000 " " "
R5 500000 variable
R6 1 meg ohms ¼ watt
R7 100000 " " "
R8 10000 " " "
R9 500000 " " "
R10 50000 " " "
R11 500000 " " "
R12 600 " ½ "
R13 130
R14 28
C1 .005 3 Ply
C2 .05 Dual
C3 .25 2 Ply
C4) Two gang cond.
C5) with trimmers
C6 .0001 mica
C7)
C8) Mica I.F.
C9) Trimmers
C10 .05 2 Ply
C11 .0001 Mica
C12 .005 3 Ply
C13 .0001 Mica
C14 .005 3 Ply
C15 .25 2 Ply
C16 .01 4 Ply
C17 .25 2 Ply
C18 .01 4 Ply
C19 4 M.F. 150 V.
C20 12 M.F. 150 V.
C21 8 M.F. 150 V.
C22 5 M.F. 25 V.



MODEL 502
Voltage
Parts List

UNITED AMERICAN BOSCH CORP.

I - A.C. MEASUREMENT

Stage	Tube	Fil	Plate	Screen	Cathode
1 Det.	6.F7	6.0	115	115	12
Osc.			115		
I.F.	78	6.0	115	115	2.8
2 Det.	75	5.9	30	-	0.7
Amp.					
Power	43	22	115	115	17
Rect.	25Z5	25	125	-	-

Line Voltage	115	Dynamic Field	108 Volts
Power in Watts	47	Filter Choke Drop	8.8 Volts
Dial Lamp Volts	6.0		
Res. Strip Volts	47		

II - D.C. MEASUREMENT

Stage	Tube	Fil	Plate	Screen	Cathode
1 Det.	6.F7	6.2	102	102	8.7
Osc.			102		
I.F.	78	5.9	102	102	2.5
2 Det.	75	5.8	27	-	0.6
Amp.					
Power	43	24	102	102	13
Rect.	25Z5	27	110	-	-

Line Volts	115	Resistance Strip Volts	47
Dial Lamp Volts	6	Dynamic Field Volts	115

To replace tubes it is necessary to remove the chassis from the cabinet. Remove the screws which fasten the back. Remove the knobs and the screws holding the bottom of the chassis in place. The chassis may then be moved back from the front of the cabinet until the tubes are accessible.

CAUTION: Disconnect the receiver from the power supply before touching the chassis, tubes, or any metal parts inside the cabinet.

Resistors

105260 300 ohms ½ Watt
101211 600 ohms ½ Watt
105272 10,000 ohms ½ Watt
105276 50,000 ohms ½ Watt
105278 100,000 ohms
105268 1,500 ohms ½ Watt
105246 ½ meg. ohms
105281 1 meg. ohms
105308 Vol. Control & Switch

Condensers

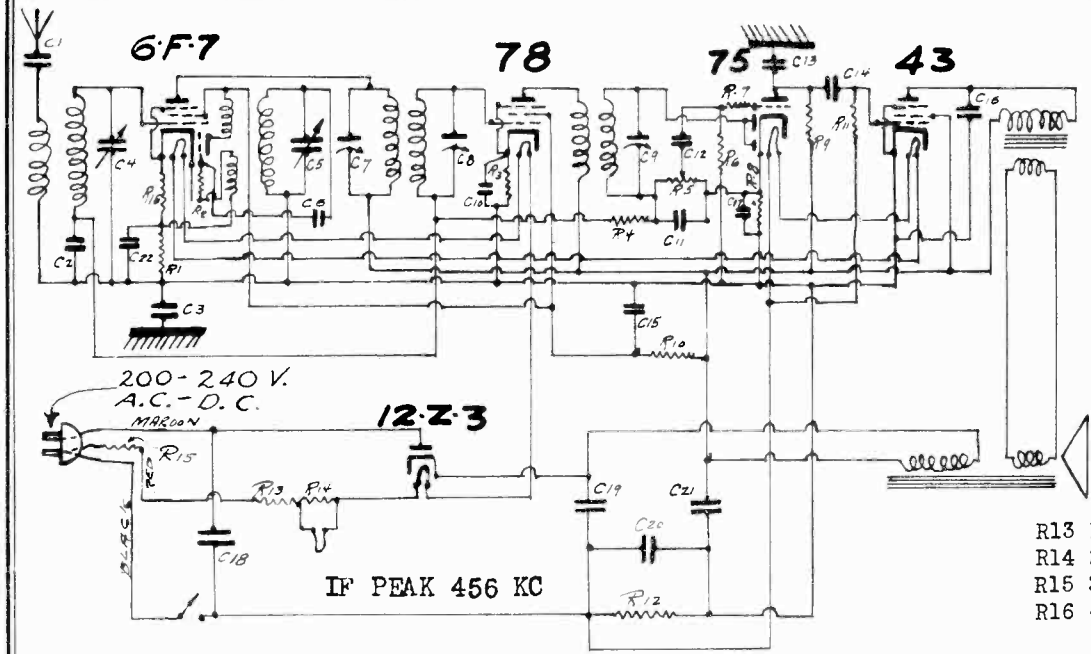
102493 .05 - 2 Ply
105327 .05 Dual
101143 .0001 Mica
103659 .005
103695 .01 - 4 Ply
102497 .25 - 2 Ply
105722 (Electrolytic)

Coils

105725 Antenna Coil
105721 I.F., Det., & Osc. Coil
105318 2nd I.F. Coil
105724 Choke Coil Assy.

Misc. Parts

105335 Knob
105321 Speaker Baffle
101869 Felt Feet
105334 Name Plate
106318 Dial Plate
105729 Chassis Assy.
106307 Cabinet
105726 Speaker
105732 Dial Scale Assy.
95572 Dial Lamp
105336 Dial Lamp Socket Assy.
105723 Condenser Gang



ELECTRICAL VALUES

R1	2500 ohms $\frac{1}{4}$ watt	C10	.05 mfd. 2-ply
R2	100000 " " "	C11	.0001 mfd. mica
R3	500 " " "	C12	.005 mfd. 3-ply
R4	500000 " " "	C13	.0001 mfd. mica
R5	500000 " variable	C14	.005 mfd. 3-ply
R6	1 megohm $\frac{1}{4}$ watt	C15	.05 " 2-ply
R7	100000 ohms $\frac{1}{2}$ watt	C16	.005 " 3-ply
R8	10000 " " "	C17	.25 " 2-ply
R9	500000 " " "	C18	.01 " 4-ply
R10	3000 " $\frac{1}{2}$ "	C19	8 mfd. 300 volts
R11	250000 " $\frac{1}{2}$ "	C20	20 " 25 volts
R12	400 " 2 "	C21	8 mfd. 300 volts
		C22	.05 mfd. 2-ply
		C1	.005 mfd. 3-ply
		C2	.05 " 2-ply
R13	130)	C3	.25 mfd. 2-ply
R14	28) metal clad resis.	C4)	Two gang cond.
R15	390 " line cord	C5)	with trimmers.
R16	4000 ohms $\frac{1}{4}$ watt	C6	.0001 mfd. mica
		C7)	Mica
		C8)	I. F.
		C9)	Trimmers

Resistors

Part No.

102177 400 ohms 2 watts
105264 500 " $\frac{1}{4}$ "
105283 4000 " $\frac{1}{4}$ "
105270 2500 " $\frac{1}{4}$ "
102821 3000 " $\frac{1}{4}$ "
105277 10000 " $\frac{1}{4}$ "
105278 100000" $\frac{1}{4}$ "
105279 250000" $\frac{1}{4}$ "
105246 500000" $\frac{1}{4}$ "
105281 1 megohm $\frac{1}{4}$ "
105308 Vol. Control and switch

Condensers

103695 .01 mfd. 4-ply paper
106386 .05 " 2-ply "
102497 .25 " 2-ply "
103659 .005 " 3-ply "
101143 .0001 " mica
106487 electrolytic filter
106621 variable condenser assembly

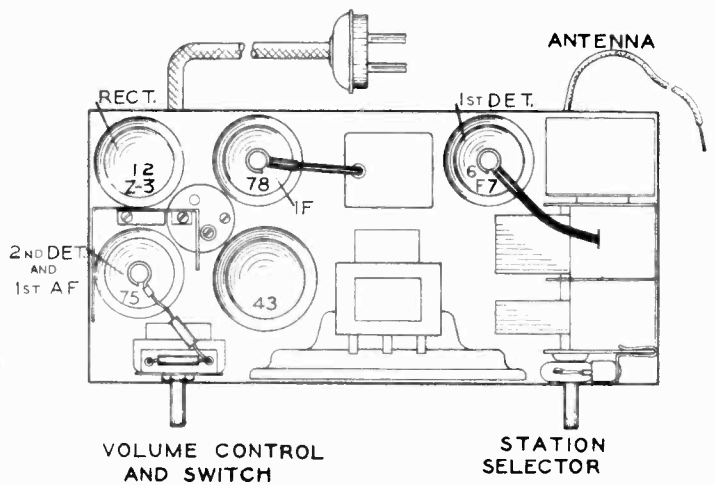
Coils

Part No.

105725 Antenna coil assembly
106484 I.F., Det., and osc. coil
105318 2nd I. F. coil

Misc. Parts

105335 Knob
105321 Speaker Baffle
101869 Felt Foot
105334 Nameplate
106318 Dial-plate
106623 Chassis Assembly
106307 Cabinet
106485 Speaker
106381 Dial scale assembly
104916 Dial Lamp
105336 Dial Lamp Socket Assembly



UNITED AMERICAN BOSCH CORP.

MODEL 503
Schematic
Socket

BOSCH PAGE 5-43

SERVICE INSTRUCTIONS FOR AMERICAN-BOSCH VIBRO-POWER RECEIVER

MODEL 503

INTRODUCTION

The Model 503 is an extremely compact five-tube, automatic volume control superheterodyne which may be operated from any (200 to 240 Volt) A.C. or D.C. supply service.

An important feature of this receiver is its extended tuning range (540 to 1,650 kilocycles). This range includes not only the complete broadcast band, but also many of the important state and city police assignments.

INSTALLATION

The Model 503 is supplied with an attached antenna of the proper length which when fully extended, will provide adequate pick-up unless the receiver is operated in a shielded building.

No ground connection is provided and an external ground from the chassis must not be used, as this may result in damage to the receiver.

If insufficient signal is received with the aerial indoors it may be connected to a conventional single-wire outdoor antenna of from 40 to 100 feet in length. The latter should be as high as possible, and not too close to other aerials or to electric light or power wires.

A lightning arrester is usually required by the electrical code on an outdoor antenna. This arrester may be connected between any point on the "lead-in" and any grounded object, such as a water pipe or a length of pipe driven into moist earth. The connection is best made with a standard copper ground clamp.

When used with alternating current, to complete the installation it is only necessary to insert the attachment plug in any convenient electric light socket or outlet.

When used with direct current the attachment plug must be inserted in the outlet in a definite manner. If after the receiver has been connected to a direct current source, it fails to function and its loud speaker has absolutely no background of sound, reverse the attachment plug in the outlet.

Information regarding your power supply may be obtained from your local electric light company.

OPERATION

VOLUME CONTROL AND SWITCH: Two operating controls appear on the front panel. The left-hand knob is the combination switch and volume control. In the extreme counter-clockwise position of the knob (turned to the left) the receiver is "off". When the control is turned in a clockwise direction (to the right) the receiver is switched "on" and the scale is illuminated.

Further movement of the knob increases the volume to any desired point. When locating weak or distant stations it is advisable to advance the control to the "fully on" position.

Automatic Volume Control is provided within the receiver and prevents any noticeable change in volume from fading signals. All stations are tuned in with practically the same room volume. "Blasting" from powerful locals is eliminated when tuning, and the operation of the receiver is greatly simplified.

STATION SELECTOR: The right-hand knob is the tuning control. It operates the illuminated tuning dial which is calibrated in channel markings and corresponds to the kilocycle markings given for stations in newspapers and log books, except that for convenience in tuning and conservation of space on the dial, the last cypher has been dropped. For example, a station on 700 kilocycles is received at 70 on the scale.

I. VOLTAGE MEASUREMENTS WHEN USING 220 VOLT A. C. LINE

Stage	Tube	Fil.	Plate	Screen	Cathode
1st Det.	6F7	6.0	130	112	12.5
Osc.			112		
I. F.	78	6.0	130	112	3.6
2nd Det.					
Amp.	75	6.0	50*	-	.5
Power	43	25	112	130	x21 (bias across 400 ohms)
Rectifier	12Z3	12	Voltage across plate to cathode 248 volts		

Line Voltage	220	Resistor Strip Volts	40
Power in Watts	80	Resistor Cord Volts	117
Dial Lamp Volts	6.0	Dynamic Field	95

All above voltage measurements taken with reference to "neutral" line marked "AA" on diagram. *Voltmeter of 1000 ohms per volt must be used especially for type 75 tube plate. This bias measured from junction R12, C22 and junction R11, R12. Since filaments in series run constant current, filament voltages may vary considerably from those given above without affecting receiver operation.

II. VOLTAGE MEASUREMENTS WHEN USING 220 VOLT D. C. LINE

Stage	Tube	Fil.	Plate	Screen	Cathode
1st Det.	6F7	6.0	108	95	9.9
Osc.			95		
I. F.	78	6.0	108	95	2.8
2nd Det.					
Amp.	75	6.0	*45		
Power	43	25	96	108	17.5
Rectifier	12Z3	12	Voltage across plate to cathode 221 volts		

Line Voltage	220	Resistor Strip Volts	43
Power in Watts	80	Resistor Cord Volts	120
Dial Lamp Volts	6.0	Dynamic Field	81

TUBES

The receiver employs five tubes of the following types:

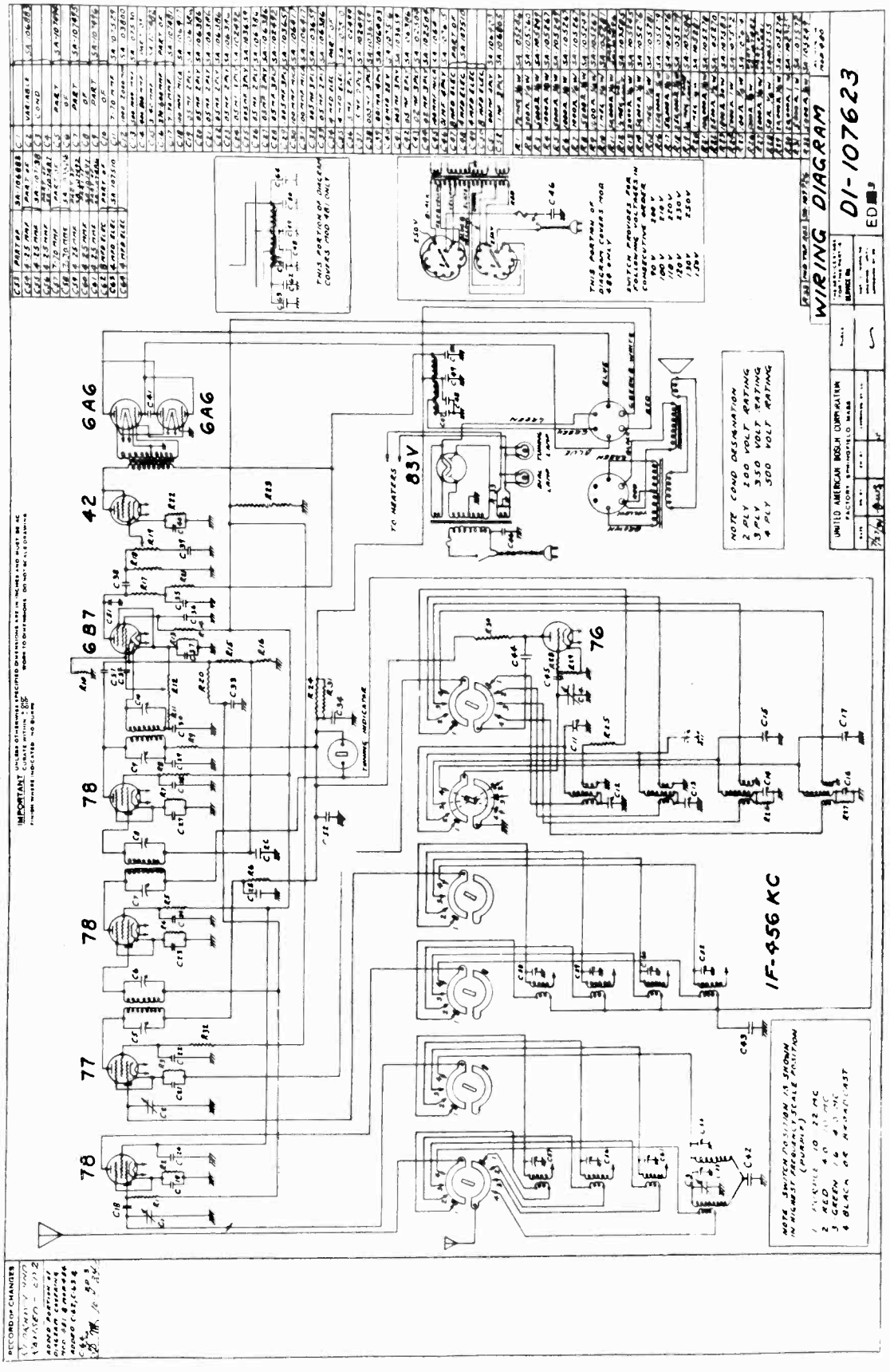
1 type 6F7 detector oscillator
1 type 78 intermediate frequency amplifier
1 type 75 second detector, A. V. C., and audio amplifier
1 type 43 power pentode
1 type 12Z3 rectifier

To replace tubes it is necessary to remove the chassis from the cabinet. Remove the screws which fasten the back. Remove the knobs and the screws holding the bottom of the chassis in place. The chassis may then be moved back from the front of the cabinet until the tubes are accessible.

CAUTION: Disconnect the receiver from the power supply before touching the chassis, tubes, or any metal parts inside the cabinet.

MODEL 480
Schematic

UNITED AMERICAN BOSCH CORP



UNITED MOTORS SERVICE

MODEL 4054
Schematic
Socket

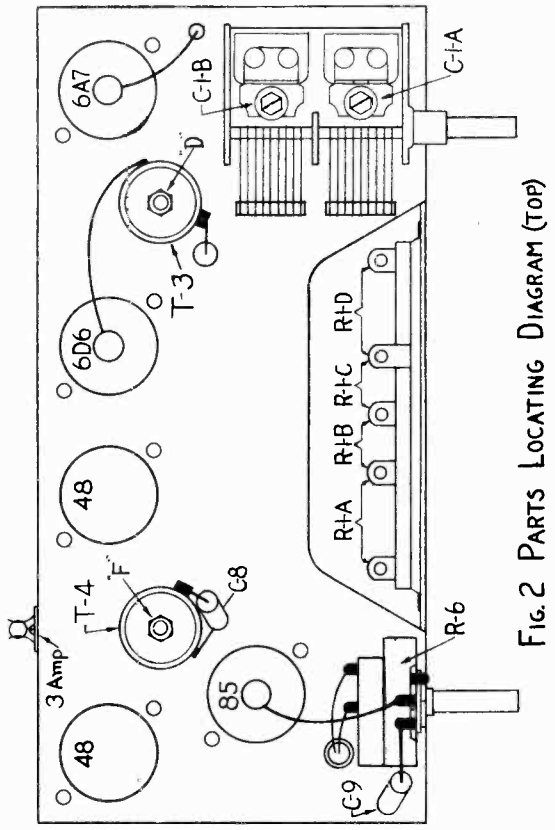


FIG. 2 PARTS LOCATING DIAGRAM (TOP)

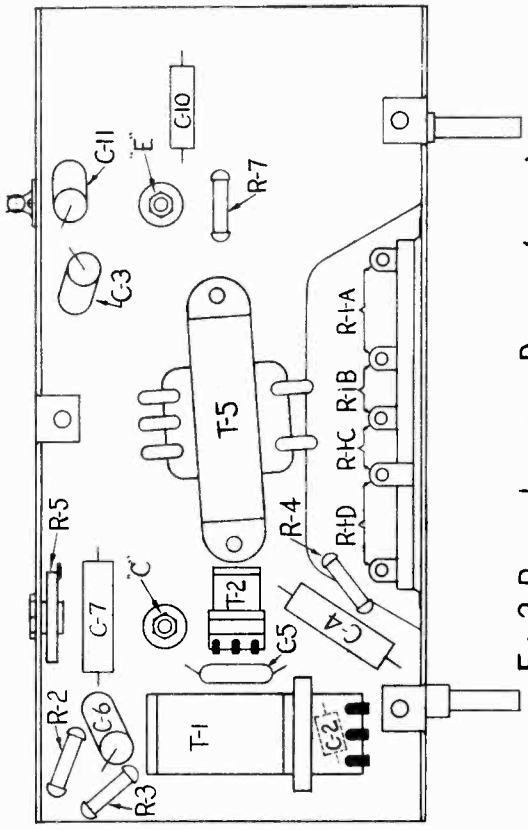


FIG. 3 PARTS LOCATING DIAGRAM (BOTTOM)

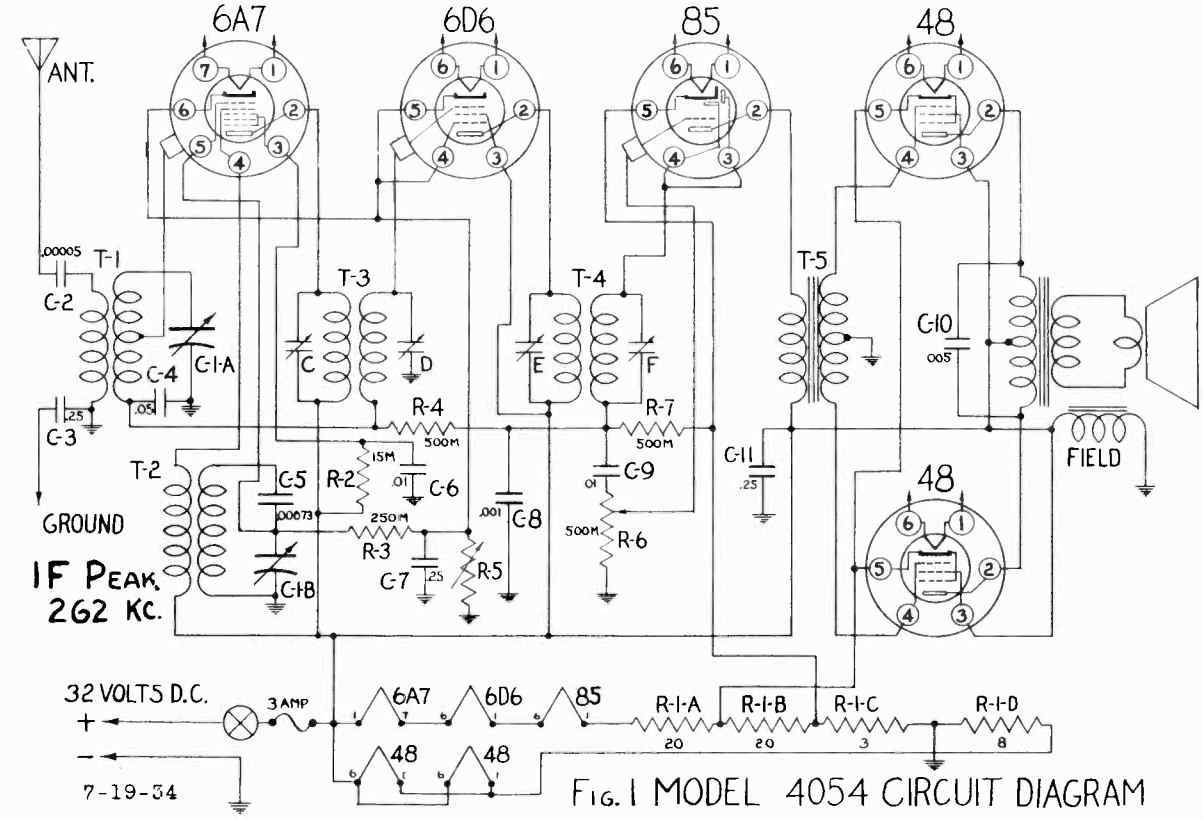


FIG. 1 MODEL 4054 CIRCUIT DIAGRAM

R-5 RESISTOR ADJUSTMENT

The R-5 resistor shown on figure 3 is a cathode bias resistor variable from 50 to 200 ohms. This resistor controls the residual bias on the 6A7 and 6D6 tubes and must be carefully adjusted. This may be accomplished by tuning the set to an extremely weak station and adjusting R-5 for maximum volume in the speaker.

CIRCUIT GROUND

If an external ground is used it must be connected to the green wire on chassis to guard against short circuits when used on 32 Volt systems with positive grounds.

PEAKING

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 re-alignment is found necessary, the only way the circuits can be properly adjusted is with the use of an oscillator and output meter. Connect the output meter to the plate prong of one of the type 48 output tubes and to the 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 1/10 mfd. condenser in series with the lead to the chassis frame.

PEAKING I.F. STAGES AT 262 K.C.

(a) Connect the output of the oscillator to the grid cap of the 6A7 tube (leave 6A7 grid lead clip in place) and to the chassis frame.

(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 located on the top of the 1st I.F. Coil, designated as "D" on figure 3. Then peak the trimmer located on the bottom of the same coil designated as "C" on figure 2. Due to the detuning effect the primary winding exerts over the secondary, it will then be necessary to reset trimmer "D" for maximum output.

(e) Peak the I.F. trimmer located on the top of the 2nd I.F. coil, designated as "F" on figure 3. Then peak the trimmer located on the bottom of the same coil designated as "E" on figure 2. Then reset trimmer "F" on top of the coil making all adjustments for maximum output.

NOTE: In the event that the I.F. stages are badly out of alignment at 262 K.C. the operation outlined in paragraphs (d) and (e) should be repeated.

Peaking Gang Condenser at 1400 K.C.

(a) In order that the 1400 K.C. position of the condenser plates can be accurately determined the chassis must be placed back in the cabinet. The dial pointer should be placed on the sleeve of the condenser gang and the condenser plates turned until they are entirely out of mesh. The pointer should then be moved to the 1750 K.C. position approximately 1/8" below bottom of the numerals "170" (which is slightly off the end of the dial) care being taken to see that the condenser plates are not moved. The tuning knob should be turned until the dial pointer sets on 1400 K.C. This will set the condenser plates in the proper position for aligning at 1400 K.C.

(b) Coil up the antenna lead to within a foot of the chassis and set the oscillator at 1400 K.C. Feed the oscillator output into the antenna wire. This may be done by connecting the shielding on the oscillator output lead to the chassis frame and by simply wrapping a few turns of the portion of the antenna wire nearest the chassis around the oscillator output lead. This will ordinarily provide sufficient coupling between the test oscillator 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.

(c) Peak the oscillator trimmer condenser shown as C-1-B on figure 2 until the oscillator output can be heard in the speaker. Then the trimmer C-1-A located on the adjacent section of the gang condenser, making all adjustments for maximum deflection on the output meter scale.

NOTE: To avoid A.V.C. action and 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.

VOLTAGE CHART

All readings are taken from each of the tube socket connections to the chassis frame. The socket contact numbers are in accordance with those found on the circuit diagram.

TUBE	#1	#2	#3	#4	#5	#6	#7	Cap
6A7	32	32	18.5	32	0	.5	26	0
6D6	19.5	32	32	.5	.5	26	--	0
85	13.5	29	0	0	.9	19.7	--	0
48	6	31.5	32	0	6.5	32	--	--
48	6	31.5	32	0	6.5	32	--	--

MODEL 3092
Chassis 513
Schematic

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