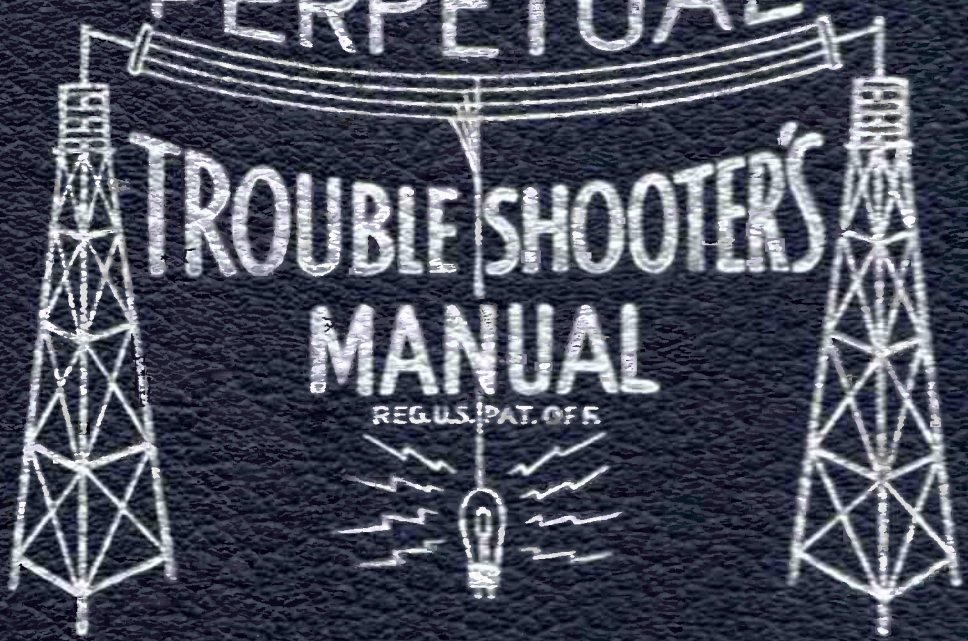
VOLUME XV

PERPETUAL TROUBLE SHOOTER'S MANUAL

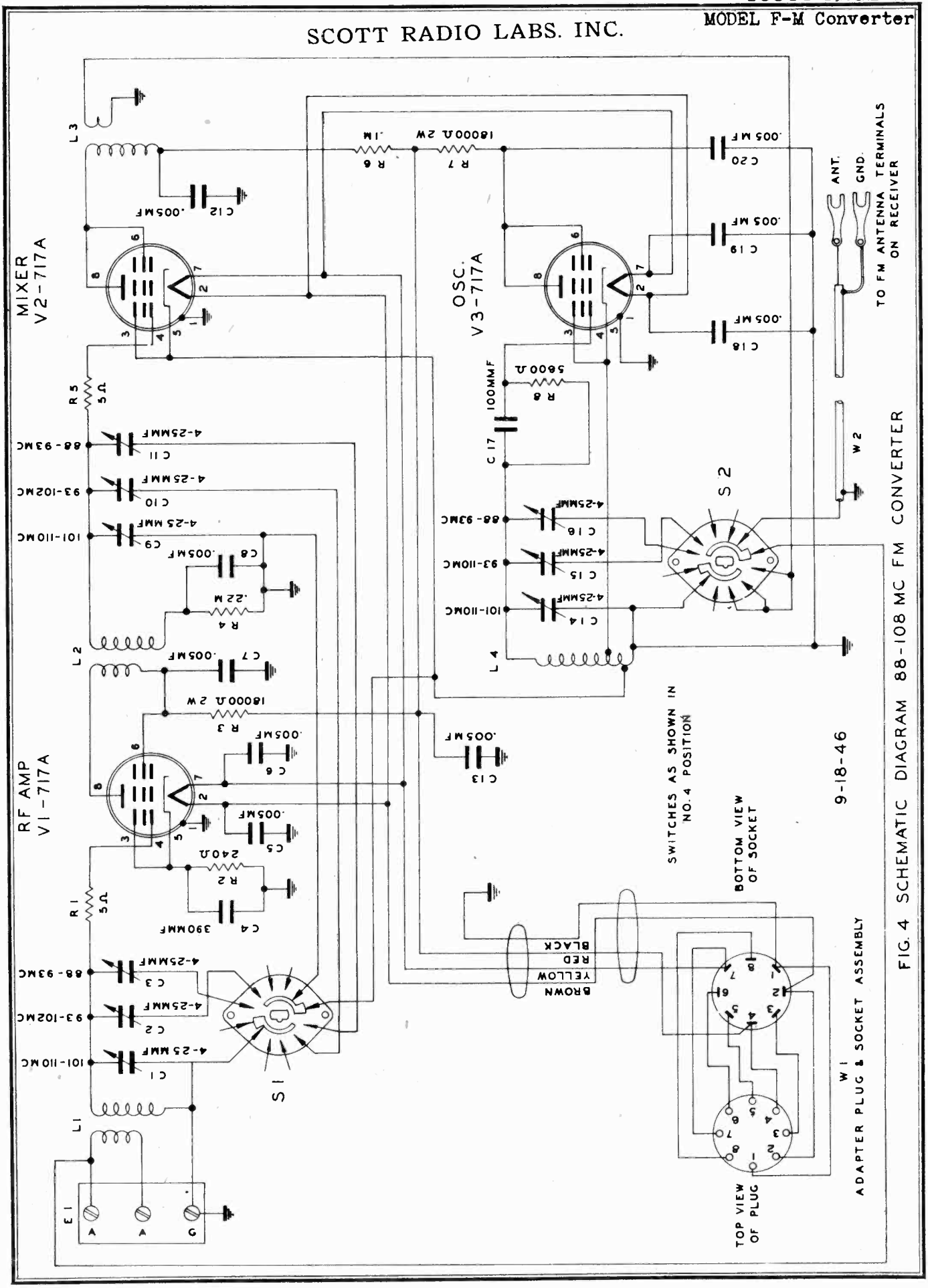
REG. U.S. PAT. OFF.



JOHN F. RIDER

SCOTT RADIO LABS. INC.

MODEL F-M Converter



MODEL F-M Converter

SCOTT RADIO LABS. INC.

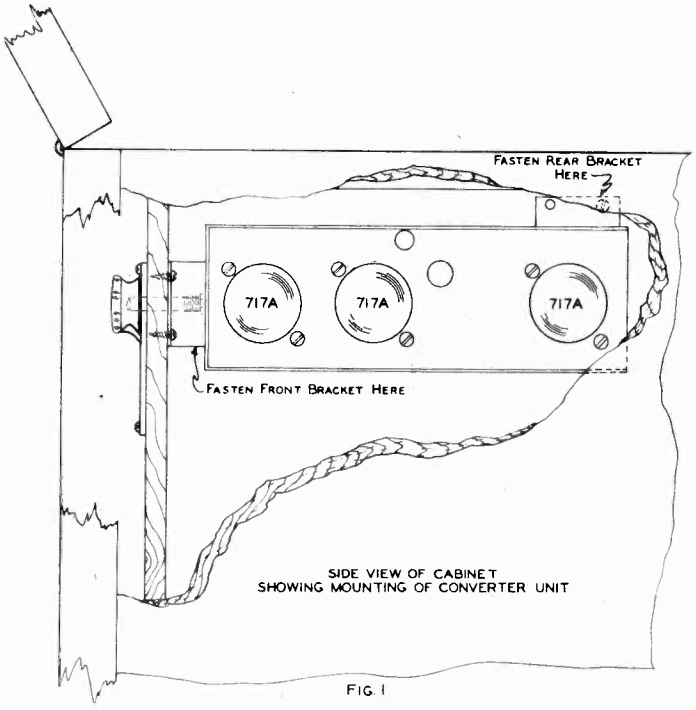


FIG. 1

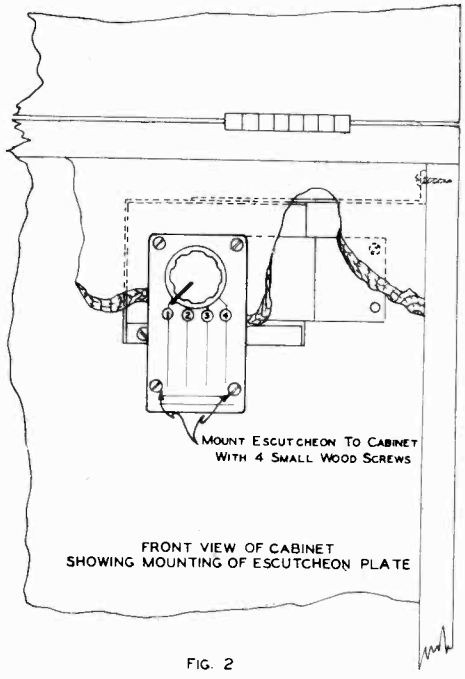
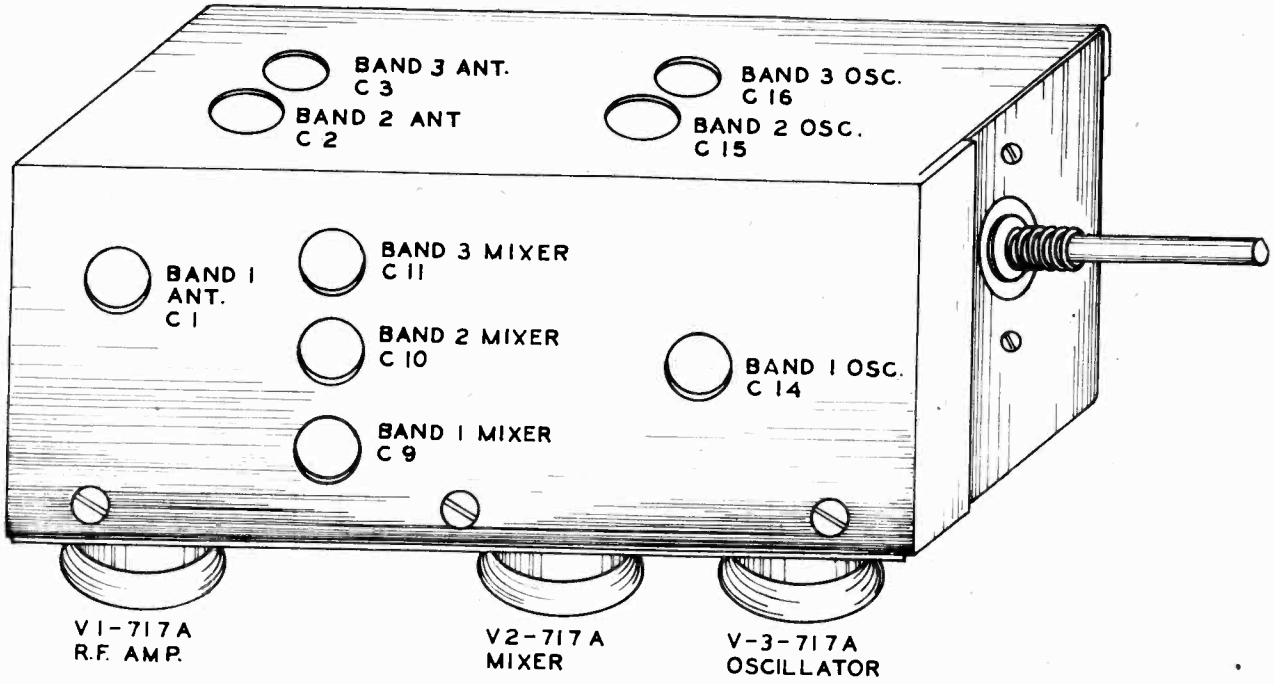


FIG. 2



TRIMMER LOCATIONS. F M CONVERTER

FIG. 3

SCOTT FM CONVERTER

Description

The Scott FM Converter is provided to enable the listener, with an FM Receiver having the old FM band of 41-50 megacycles, to tune in stations on the new FM band of 88-108 megacycles. The FM Converter is provided with a single control consisting of a four position switch which should be located on the front of the cabinet as outlined under INSTALLATION. The first three positions of this control are used for tuning in FM stations on the 88-108 megacycle band while the fourth position is used for tuning on the 41-50 megacycle band.

The FM Converter utilizes three type 717A high frequency pentode vacuum tubes in a circuit which consists of a tuned RF amplifier, mixer and H.F. oscillator.

An adapter plug is provided with the converter in order that power for the tubes can be obtained without having to make connections inside the receiver. One of the power output tubes of the receiver is removed and the adapter plugged into this socket, the tube is then inserted into the adapter.

Terminals are provided on the FM Converter for connection of an antenna, and a shielded high frequency cable is provided for connection of the converter to the FM antenna terminals of the receiver.

The FM Converter unit is 7 3/4 inches long with a 1/4 inch diameter shaft extending 2 inches at the front end. The unit is 4 3/4 inches wide and 2 3/4 inches deep. The power adapter cable extends approximately 4 1/2 feet from the unit while the antenna cable extends 3 feet from the unit.

Installation

The FM Converter Kit contains all the items necessary for complete installation of the converter in the cabinet housing the radio receiver. The installation should be made as follows:

1. Select the location in which the converter is to be mounted, in most cabinets the upper right hand corner will be found most convenient, but any location which is accessible will do. Any number of mounting arrangements can be worked out with the two brackets furnished using the two sets of mounting holes and the switch shaft bushing. The arrangement shown in Figures 1 & 2 can be used in most installations. Screws are furnished, in the kit, for fastening the brackets to the converter and wood screws are furnished to fasten the brackets to the cabinet.

2. After selecting the position in which the converter is to be mounted, mark the location of the hole for the switch shaft and carefully drill a 1/2 inch clearance hole. Then fasten the brackets to the cabinet letting the switch shaft extend approximately 1/2 inch out of the front of the cabinet.

3. Fasten the escutcheon plate to the front of the cabinet using the four small block screws provided and fasten the knob on the switch shaft so that the pointer is set at No. 4 position when the switch is set in the extreme counter-clockwise position.

4. Remove one of the power output tubes (6V6G or 6L6G) and insert this tube into the converter adapter socket. Then insert the adapter plug into the socket of the receiver from which this tube was removed.

5. Remove the antenna lead-in from the FM antenna terminal strip of the receiver, connect the center terminal of this strip to the ground terminal with a short piece of wire and then connect the insulated center wire of the converter antenna cable to the open antenna terminal and the shield braid of this cable to the ground terminal of the receiver FM antenna strip.

Antenna Installation

In order to obtain the best results when using this converter on the 88-108 megacycle band, a dipole antenna cut to the proper length with a 300 ohm low-loss lead-in should be used. This antenna may be one of several designs as follows:

a. When the receiver is located 30 or more miles from the transmitter it is recommended that a dipole antenna with reflector be installed outside and as high as possible. The Scott Type 1B887 FM Dipole Antenna Kit will fulfill all requirements for such an installation. It is supplied with antenna and reflector elements cut to the proper length for the 88-108 megacycle band, a molded bakelite block for mounting these elements, a steel support mast with universal mounting bracket and 75 feet of 300 ohm high frequency lead-in cable. This antenna should be installed with the elements broadside to the transmitter with the reflector element in back of the dipole elements.

b. For installations within a 30 mile radius of the transmitter a straight dipole antenna without the reflector can be used, however if an outside dipole antenna is to be used the dipole antenna with reflector will give best reception.

c. For installations where an outside antenna cannot be installed a very simple antenna, that will give good results when the receiver is located within a 30 mile radius of the transmitter, can be constructed from 300 ohm twin-lead. This antenna can be mounted on the rafters of the attic or fastened around the back of the receiver cabinet. This antenna is constructed as follows:

   1. Cut a piece of 300 ohm twin-lead 59 inches long, skin back the wires at both ends approximately 3/8 inch and solder the two wires together at each end. You will then have a flat piece of cable approximately 58¼ inches long shorted at both ends.

   2. Measure off the exact center of the cable and cut through one of the wires only. Skin back the two wires approximately 1/4 inch, then solder on a length of 300 ohm twin-lead long enough to reach from the antenna to the receiver. This lead-in may be any length depending upon where the antenna proper is to be installed.

MODEL F-M Converter

SCOTT RADIO LABS. INC.

3. After the antenna has been installed the two wires of the lead-in should be connected to the two terminals of the strip at the rear of the converter marked "ANT.". The ground terminal need not be used.

Operation

Since power will be applied to the converter at all times when the receiver is turned ON, all that is necessary to put the converter in operation is to set the receiver controls for FM reception. With the converter control set at Position 4 the receiver will tune in FM stations between 41-50 megacycles as it normally would. To tune in any FM station on the 88-108 megacycle band, set the converter control to the position under which the frequency of the station is listed and then tune the dial of the receiver to the frequencies listed under column 4. For example: If it is desired to tune in a station at 98.9 megacycles the converter control should be set at position 2 since this frequency lies between 98 and 99 megacycles, the receiver dial should then be tuned between 46 and 47 megacycles as indicated in column 4. If the station desired operates on 102.5 megacycles the converter control should be set at position 1 and the receiver dial tuned between 42 and 43 megacycles as indicated in column 4. It will be found very helpful if a chart is made listing the reading on the dial logging scale for each FM station in the location where the converter is being operated.

Maintenance and Repairs

Since there are no moving parts in the FM Converter outside of the switch control, it will require little maintenance. Tube replacement is minimized by using the same type of tube in all three positions.

The schematic circuit diagram, Figure 4 and the list of replaceable parts, Table 1 will help in making any repairs necessary.

Alignment

The following alignment instructions are provided in order that the FM Converter may be correctly realigned in case it is necessary to replace any part that will affect alignment.

Before realigning the FM Converter the calibration of the 41-50 megacycle band on the receiver must be checked since the accuracy of this calibration will affect the calibration of the FM Converter as listed on the converter control escutcheon.

Align the FM Converter as follows:

Connect a signal generator, capable of covering the 88-108 megacycle band, to the antenna and ground terminals of the FM Converter using a 50 ohm composition resistor in series with the high potential lead of the signal generator and connect an output meter across the voice coil of the speaker to be used as an indicator.

CAUTION: The trimmer adjustments must be aligned in the sequence outlined below as trimmer capacitors C1, C9 and C14 are used as part of the capacity required for alignment on positions 2 and 3.

1. Set the controls on the receiver for FM reception with the tuning dial set at 47 megacycles.

2. With the signal generator adjusted to 107 megacycles, set the switch control of the FM Converter to position No. 1 and adjust trimmer capacitor C14 until the signal is tuned to resonance, then adjust trimmer capacitor C9 and C1 for maximum indication on the output meter.

3. Set the signal generator to 99 megacycles and the converter control to position No. 2. Adjust trimmer capacitor C15 for resonance; then adjust trimmer capacitors C10 and C2 for maximum indication on the output meter.

4. Set the signal generator to 90 megacycles and the converter control to position No. 3. Adjust trimmer capacitor C16 for resonance; then adjust trimmer capacitors C11 and C3 for maximum indication on the output meter.

NOTE: When making the above adjustments the receiver dial must be set at 47 megacycles at all times.

Do not readjust trimmer capacitors C1, C9 and C14 after positions No. 2 and 3 have been aligned as the initial setting of these trimmers will affect the alignment of these two positions.

Table 1
Parts List By Symbol Designation

Symbol Desig.	Function	Description	Part Number
C1	Band 1 Antenna trimmer 101-110 Mc.	Capacitor, silver ceramic, 4-25 MMF, screwdriver adj.	15A21
C2	Band 2 Antenna trimmer 93-102 Mc.	Same as C1	
C3	Band 3 Antenna trimmer 88-93 Mc.	Same as C1	
C4	V1-RF amp. cathode bypass	Capacitor, mica, 390 MMF, 10% 500 V DC wkg., CM20 case	15B799
C5	V1 heater bypass #2 contact	Capacitor, mica, 5000 MMF, 10%, 300 V DC wkg., CM35 case	15E1263
C6	V1 heater bypass #7 contact	Same as C5	
C7	V1 plate and screen bypass	Same as C5	
C8	V2 mixer grid return	Same as C5	
C9	Band 1 mixer trimmer	Same as C1	
C10	Band 2 mixer trimmer	Same as C1	
C11	Band 3 mixer trimmer	Same as C1	
C12	V2 mixer plate bypass	Same as C5	
C13	+B bypass	Same as C5	
C14	Band 1 oscillator trimmer	Same as C1	
C15	Band 2 oscillator trimmer	Same as C1	
C16	Band 3 oscillator trimmer	Same as C1	
C17	V3 oscillator grid coupling	Capacitor, silver mica, 100 MMF, 5%, 500 V DC wkg., CM20 case	15A428
C18	V3 heater bypass contact #2	Same as C5	
C19	V3 heater bypass contact #7	Same as C5	
C20	V3 oscillator plate bypass	Same as C5	
E1	Antenna terminal strip	Terminal strip, 3 terminals mounted on 3/4" W x 2" L bakelite strip marked ANT-GND.	87E1411
L1	FM converter antenna coil	RF coil, Pri: 5½T, 3 strands #28 DSC wire interwound with secondary Sec: 3T #16 E wire spacewound Form: ½" dia. x 2 1/8" long	20F2280
L2	FM converter mixer coil	RF coil, Pri: 5½T #28 DSC wire interwound with secondary Sec: 2T #16 E wire spacewound Form: ½" dia. x 2 1/8" long	20F2281
L3	FM converter output coil	RF coil, Pri: 15T #24 E wire closewound Sec: 2½T #28 DSC wire Form: ½" dia. x 2 1/8" long	20F2283

Table 1 (Continued)
Parts List By Symbol Designation

Symbol Desig.	Function	Description	Part Number
L4	FM converter oscillator coil	RF coil, 7T #24 E wire space-wound tapped at 1½T and 3½T from bottom Form: ½" dia. x 2 1/8" long	20F2282
R1	V1 grid series resistor	Resistor, composition, 5 ohms 10%, ½ watt, wire leads	70B860
R2	V1 cathode bias	Resistor, composition, 240 ohms, 5%, ½ watt, wire leads	70A45
R3	V1 screen filter	Resistor, composition, 18000 ohms, 10%, 2 watt, wire leads	70A68
R4	V2 grid leak	Resistor, composition, .22 megs, 10%, ½ watt, wire leads	70A59
R5	V2 grid series	Same as R1	
R6	V2 plate filter	Resistor, composition, 0.1 meg, 10%, ½ watt, wire leads	70A65
R7	V3 plate load	Same as R3	
R8	V3 grid leak	Resistor, composition, 5600 ohms, 10%, ½ watt, wire leads	70A50
S1	Antenna and mixer band selector switch section	Switch section, 2 pole, 4 position, rotary type, wafer section	89E1292-1
S2	Oscillator and output selector switch section	Same as S1	
V1	RF amplifier tube	Vacuum tube, 717A, high frequency pentode, octal base. Heater: 6.3 V @ .15 amp.	9SE1420
V2	Mixer tube	Same as V1	
V3	Oscillator tube	Same as V1	
W1	Adapter plug and cable assembly	Cable, 4 wire, 5 ft. long, attached to octal socket and octal plug adapter	96F2286
W2	Antenna output cable	Cable, single conductor, shielded, type RG58/u - 3 feet long	96F2357
X1	Socket for V1	Socket, 8 contact octal, ceramic, tapped mounting plate, key 45° left of mounting centers	82E1721
X2	Socket for V2	Same as X1	
X3	Socket for V3	Socket, 8 contact octal, ceramic, tapped mounting plate, key 90° off mounting center	82E1708

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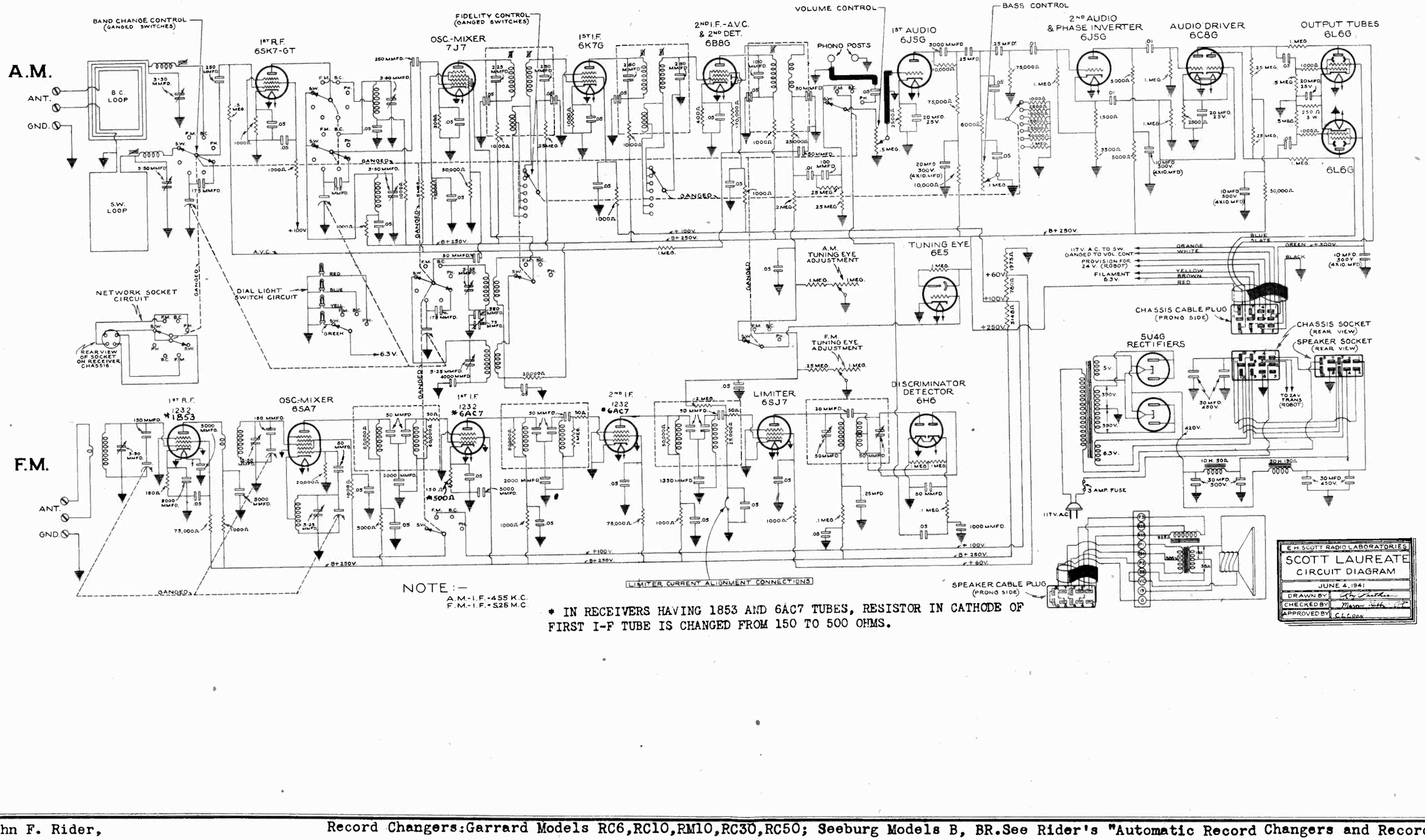

NOTE:—
A.M.-I.F.-455 K.C.
F.M.-I.F.-5.25 M.C.

* IN RECEIVERS HAVING 1853 AND 6AC7 TUBES, RESISTOR IN CATHODE OF FIRST I-F TUBE IS CHANGED FROM 150 TO 500 OHMS.

Record Changers:Garrard Models RC6,RC10,RM10,RC30,RC50; Seeburg Models B, BR.See Rider's "Automatic Record Changers and Recorders"

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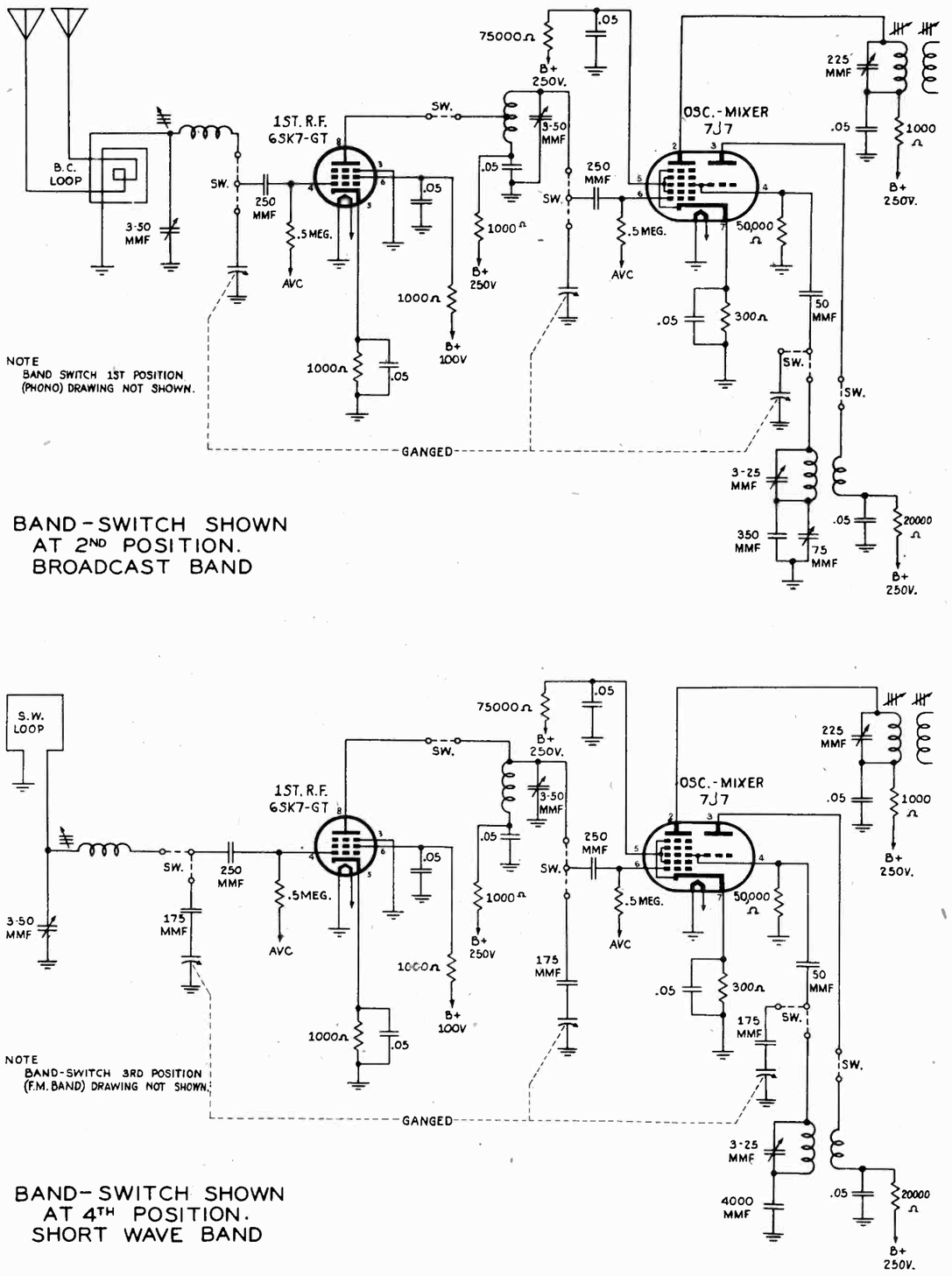
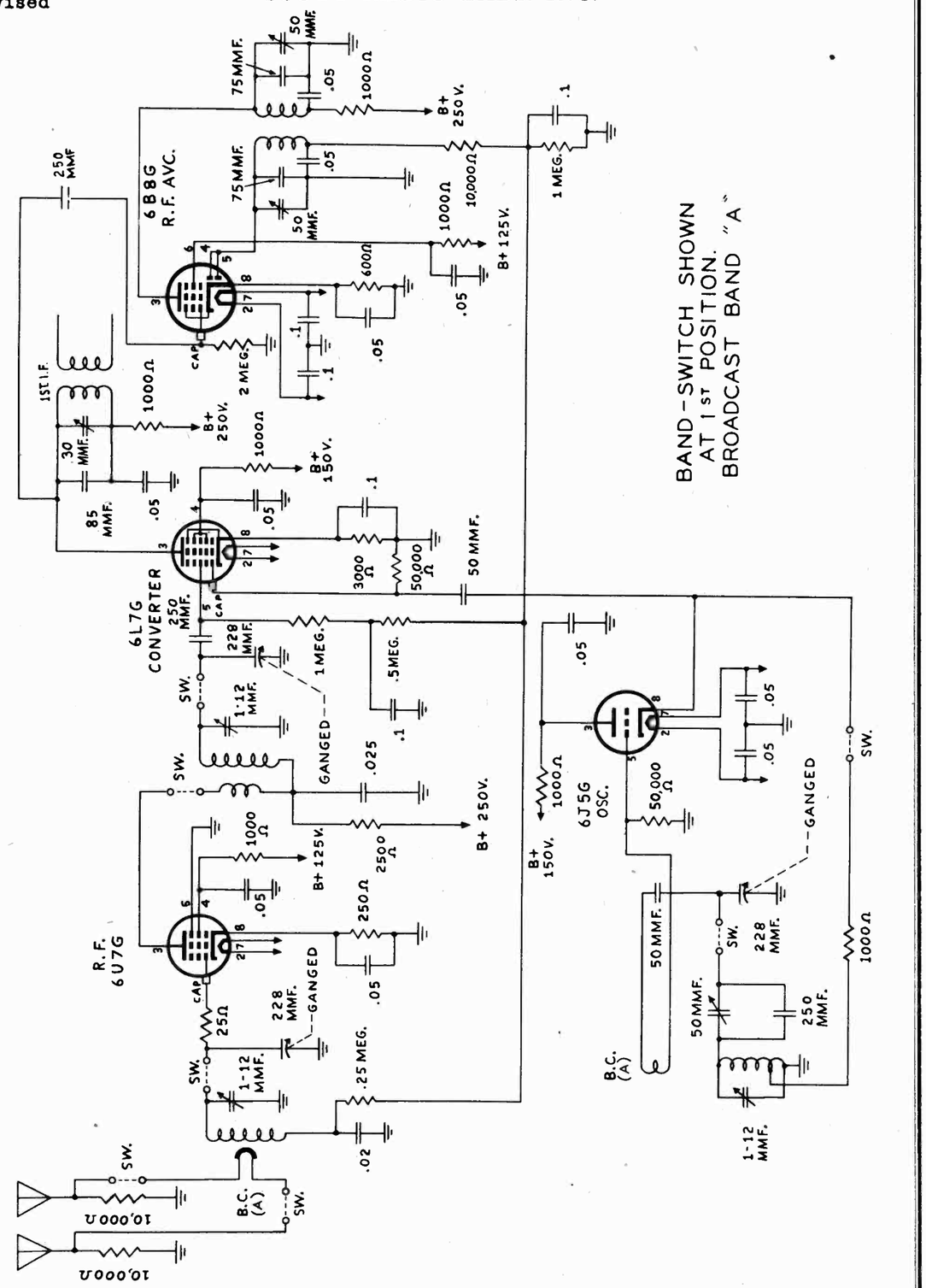
MODEL Laureate
Revised



MODEL Phantom
Revised

SCOTT RADIO LABS. INC.



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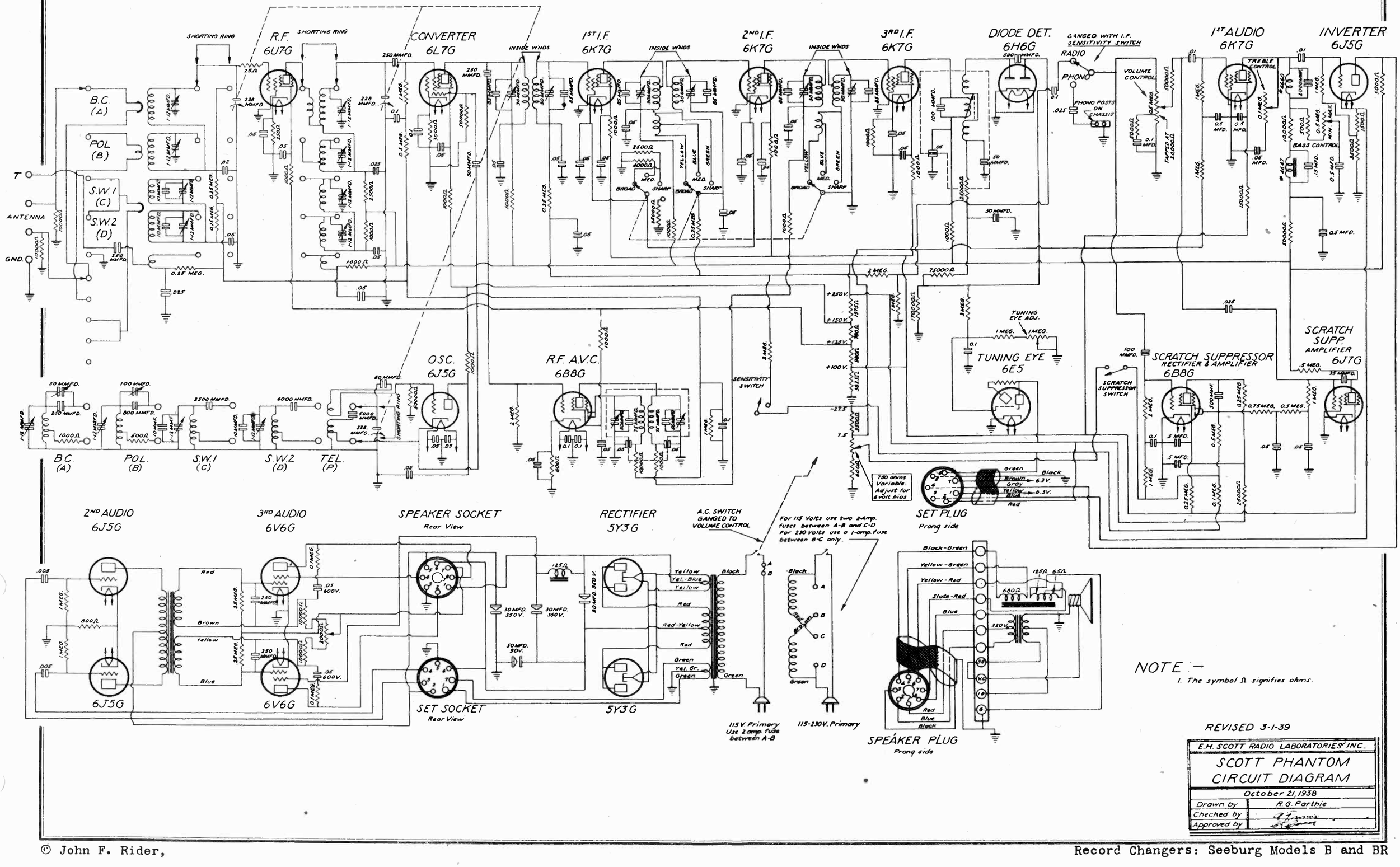


NOTE —

1. The symbol Ω signifies ohms.

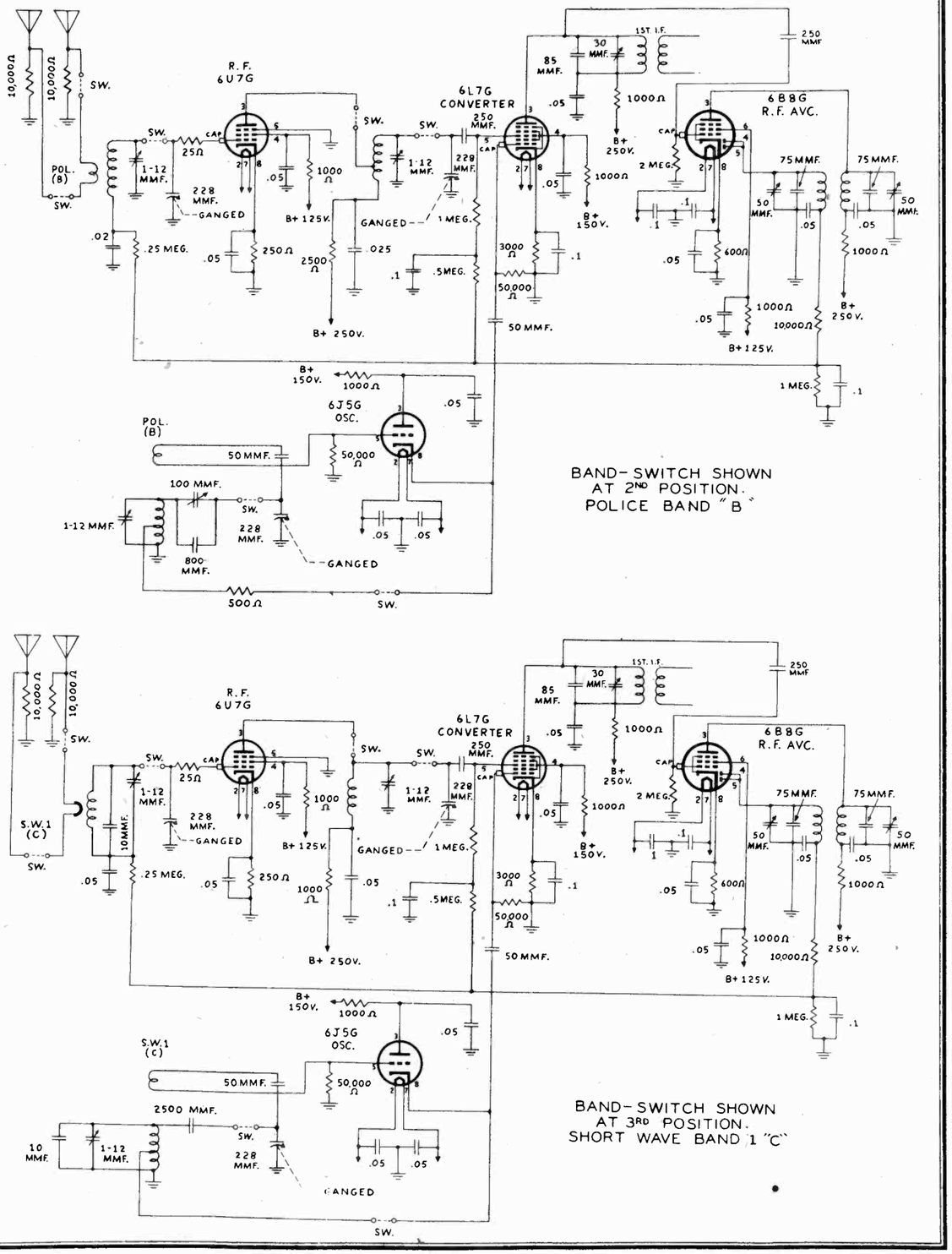
REVISED 3-1-39

E.H. SCOTT RADIO LABORATORIES INC.	
SCOTT PHANTOM CIRCUIT DIAGRAM	
October 21, 1938	
Drawn by	R.G. Parthie
Checked by	
Approved by	

Record Changers: Seeburg Models B and BR

SCOTT RADIO LABS. INC.

MODEL Phantom
Revised



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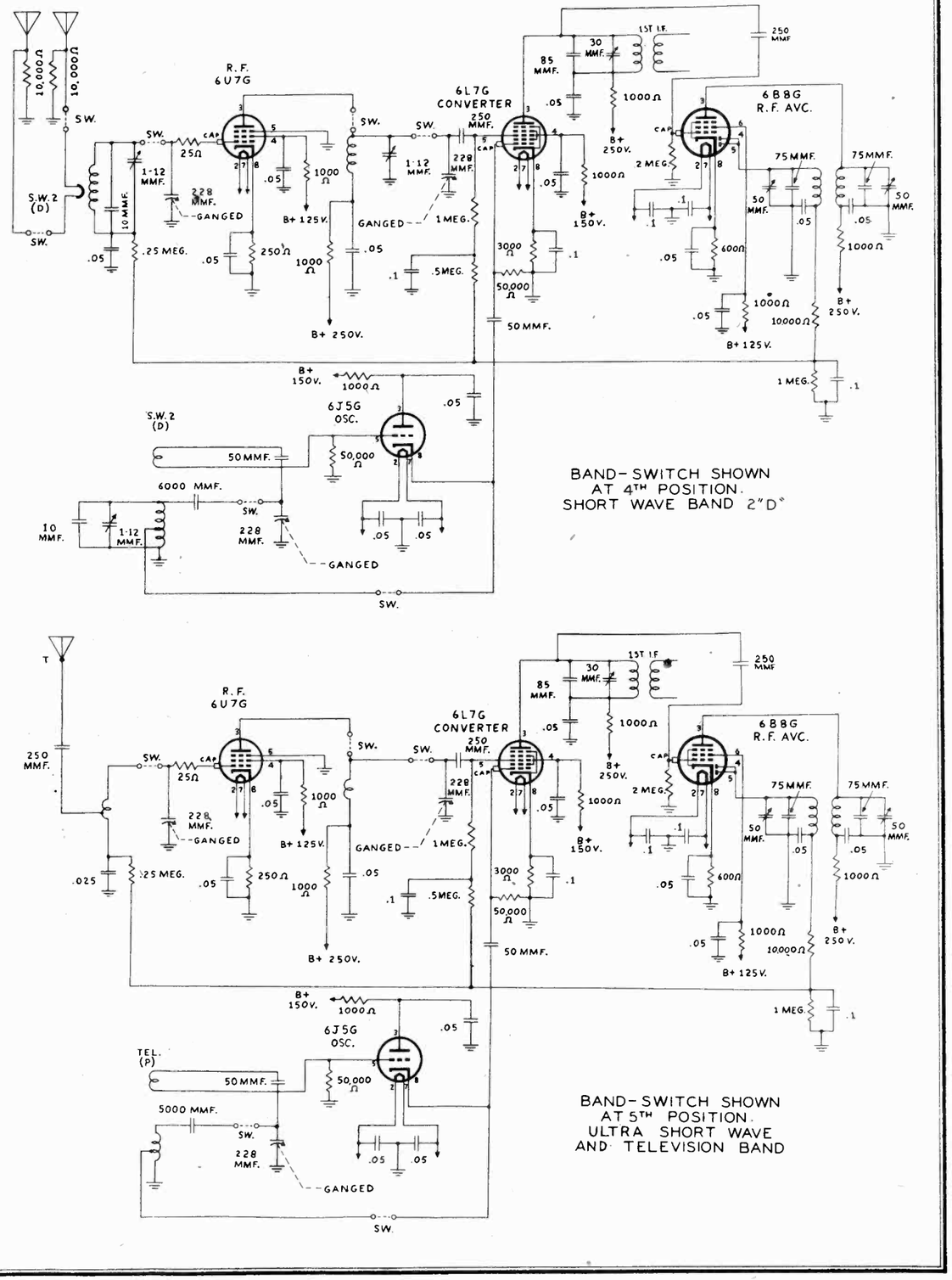
MODEL Phantom
Revised

SCOTT RADIO LABS. INC.



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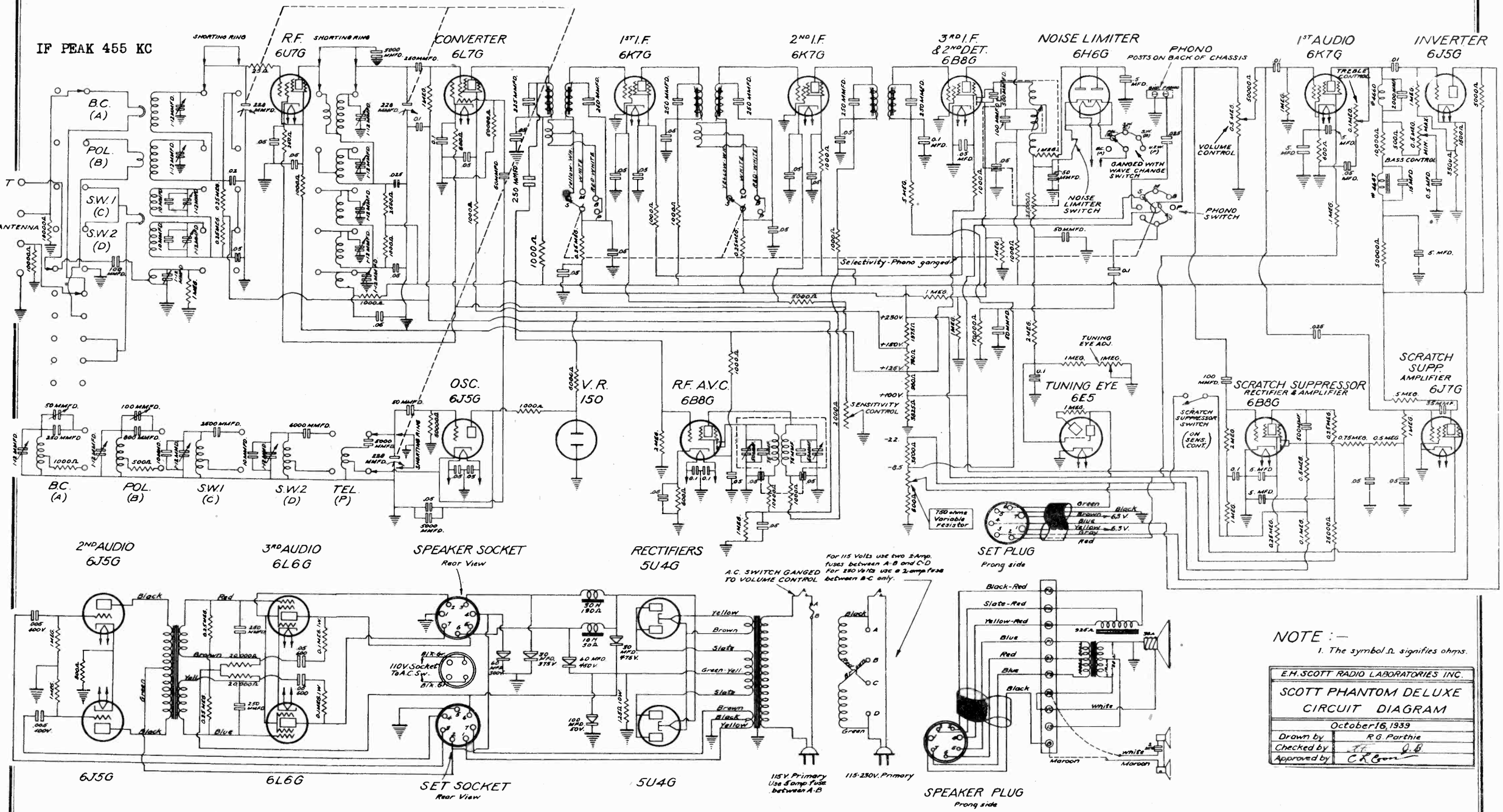

NOTE :—
1. The symbol Ω. signifies ohms.

E.H. SCOTT RADIO LABORATORIES INC.	
SCOTT PHANTOM DELUXE CIRCUIT DIAGRAM	
October 16, 1939	
Drawn by	R.G. Porthie
Checked by	J.B
Approved by	C.R. Cron

Voltage Rating	117 volts
Frequency Rating	60 cycles
Power Consumption	200 watts
Audio Power Output	35 watts undistorted 40 watts peak
Audio Frequency Range	30 - 8,500 cycles
Radio Frequency Coverage	550 Kc. to 60 megacycles

NOTE: Power transformers can be furnished for any special frequency or voltage range.

Record Changers: Seeburg Models B and BR

MODEL Phantom
Deluxe Revised

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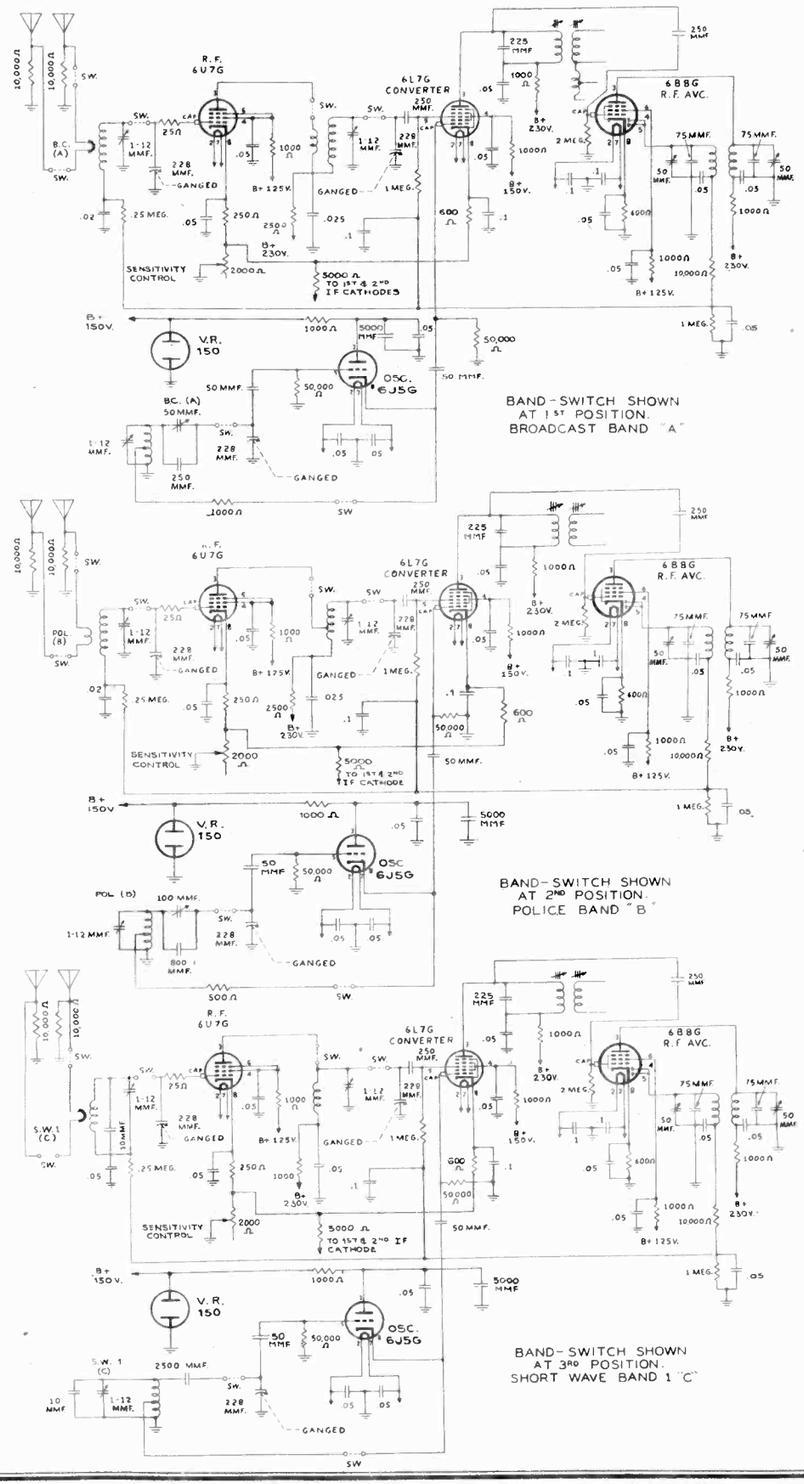
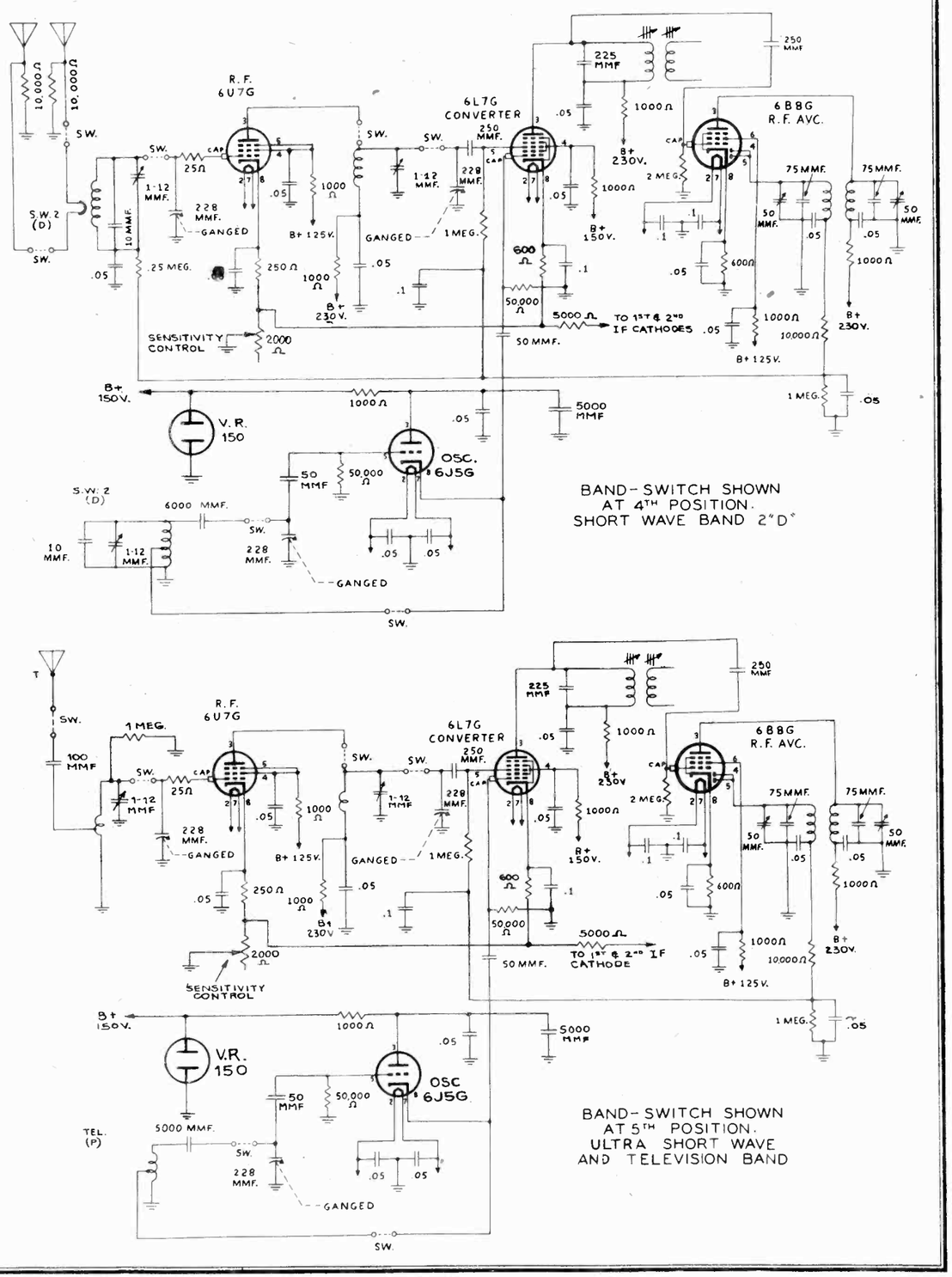


MODEL Phantom
Deluxe Revised

SCOTT RADIO LABS. INC.



ELECTRICAL DESCRIPTION OF THE CIRCUIT

R.F. SECTION

The antenna input circuit is arranged so that when operating on the two short-wave bands and broadcast band, the signal picked up on the flat top portion of the doublet antenna is transferred to the R.F. tube grid by means of the special shielded ring coupling system, achieving a high degree of noise reduction. Noise reduction is also achieved on all bands due to the use of a special filter at the antenna. On the police band the signal is fed directly into the primary coil to minimize circuit loss. The first tuned circuit resonates and amplifies the desired signal. On shortwave and police the second tuned circuit operates directly from the plate of the R.F. tube and feeds directly into the converter grid reducing losses to a minimum. A 6U7G tube, having high mutual conductance is used in the R.F. stage which gives high sensitivity on all bands.

CONVERTER SECTION

The amplified signal from the R.F. amplifier is applied to the 6L7G converter control grid and the oscillator output is coupled to grid No. 3 These two input signals now both modulate the converter cathode emission and the result will be a difference in frequency component in the plate circuit of the converter which represents the I.F. frequency.

OSCILLATOR SECTION

The proper combination of series padders, shunt trimmers, and coils in the oscillator circuit provide a signal frequency 455 Kc. higher than that to which the R.F. section is tuned. (in special cases individual I.F, frequencies are used.) The efficient 6J5G type oscillator tube is used in an electron coupled circuit. Oscillator potentials are carefully by-passed and filtered, and the circuit is made extremely stable by the use of Silver Cap condensers and a special metalized resistor.

I.F. SECTION

The I.F. amplifier consists of three stages employing two 6K7G tubes and one 6B8G tube. the I.F. transformers are wound in single pi sections in both primary and secondary coils, and are permanently tuned by a combination Silver cap fixed condenser and an iron core giving a micrometer adjustment. In addition, each stage is arranged with resistance capacity filters for each circuit. The I F. system is arranged for three degrees of selectivity by means of a small tapped coil connected to the grid return o f the I.F. secondary and closely coupled to the primary in the 2nd and 3rd stage. The degree of coupling is then controlled by varying the selectivity switch. The signal developed in the converter plate circuit is highly amplified in the I.F. amplifier at 455 Kc. and i s passed to the second detector.

R.F. and I.F. AVC SYSTEMS

The Scott Phantom Deluxe employs two separate AVC systems. In the R.F AVC circuit the control grid of the 6B8G tube is capacitively coupled to the plate of the 6L7G converter tube I.F. and signal frequency are amplified and rectified by this tube and applied as control on the 1st R.F. grid and converter tube. This prevents overload in the R.F stage and helps to reduce the effects of noise and distortion when tuned to powerful locals and also protects the first tube from these effects when the set is tuned to a weak distant station that is near in frequency to a powerful local. This AVC action operates only when the input signals exceeds about 1,000 microvolts.

In the I F. AVC circuit the 6B8G tube acts as I.F. amplifier and diode detector and supplies AVC voltage for control on the 1st and 2nd I F. tube grids and prevents overload and distortion in this part of the circiut.

Just below the Selectivity Control is the sensitivity Control w hic h will decrease the maximum sensitivity of the receiver, when to extreme left, by increasing the minimum bias of the I.F. tubes. This provides silent tuning between stations but in no way effects the normel AVC action on the stations which are well above the noise level.

DETECTOR

As mentioned above, the 6B8G tube acts as a second detector in addition to its other functions, and handles high percentage modulation signals with a minimum of distortion

RECORD SCRATCH SUPPRESSION

The Scott Phantom DeLuxe employs the feature of automatic scratch suppression using a 6B8G and a 6J7G in a special circuit which attenuates the higher audio frequencies (corresponding to record scratvh) when they are very weak, but passes unattenuated the stronger high frequencies (corresponding to useful high fidelity reproduction).

The 6B8G tube operates as an amplifier and diode to supply rectified bias voltages (proportional to input signal amplitude for frequencies above 1,500 cycles) to the control grid of a 6J7G tube The circuit is arranged so that the effective capacity of a 35 mmd. condenser, amplified to a maximum of approximately 3,000 mmf. by the gain of the 6J7G tube, is in shunt with the first A.F. 6K7G tube grid at audio frequencies.

When the highew audio frequencies are weak no rectified bias is developed by the 6B8G tube allowing the 6J7G tube to operate at maximum gain, shunting a high capacity from the grid of the first AF tube to ground, thus practically eliminating record scratch. However, when the higher audio frequencies are strong, considerable rectified bias is developed in the 6B8G tube and applied to greatly reduce the gain of the 6J7G tube, thus reducing the effective capacity, shunting the input to the first A.F. tube and allowing all frequencies to pass unattenuated.

AUDIO AMPLIFIER

When the selectivity switch is set to position "P" the input to the three stage audio system is automatically connected to the phonograph input terminals on the rear of the chassis. The volume control regulates the input to the 6K7G first audio tube and in the plate circuit of this tube the variable bass and treble control circuits are connected. The bass circuit utilizes a high "Q" resonator choke system and provides a boost of about 15 db. at 75 cycles in the maximum position.

The first audio tube is followed by the 6J5G phase inverter tube. This circuit is self balancing and couples into the grids of the 6J5G pushpull 2nd audio tubes which operates into the balanced primary of a special driver transformer, the secondaries of which in turn apply the signal to the 6L6G beam power output stage.

The power output stage incorporates inverse feed back which helps to flatten loudspeaker response and improves reproduction.

NOISE LIMITER CIRCUIT

A 6H6G tube is utilized as a noise limiter device so that peaks of local electrical interference may be "chopped" off resulting in reduction of peak noises of continuous amplitude. You will find this especially effective when the receiver is tuned to a weak signal on shortwaves.

POWER SUPPLY

The power supply used is of the heavy duty type employing two of the new 5U4G rectifier tubes. The primary of the power transformer is arranged for standard 117 volts on the domestic model. On the foreign model it is designed to accomodate either 117 volts or 230 volts AC by proper placement of the fuses. This is clearly shown on the schematic diagram. The rectified plate voltages are filtered by the use of three high capacity electrolytics, a choke and the speaker field employed as another choke. In addition, the bias voltage is further filtered by the use of a 100 mfd. condenser at 50 volts.

LOUD SPEAKER

The loud speaker employed is arranged to provide connections for an external speaker. It is necessary to disconnect the jumper wire between terminals V.C. and 38, and connect it between V.C. and 19 instead Now connect a 38 ohm speaker to the terminals marked 19 and G. "T" pads may be added by reference to the diagram showing these connections.

TESTING THE SCOTT PHANTOM DELUXE

In order to properly align and service the Scott Phantom DeLuxe receiver, the serviceman must have the following equipment.

Signal Generator (90 Kc. to 60 Megacycles)
Output Meter (such as Weston or Triplett)
Voltmeter and Ohmmeter (Sensitivity 1,000 ohms per volt or better.)
Microammeter (Weston model 600)
Tuning Wand (Alladdin)
Audio Oscillator (30 to 10,000 cycles)

HUM TESTS ON RECEIVER

Make certain that there are no soldering irons near the chassis and that the power transformer end of the amplifier is as far away as possible. Connect a good output meter, having a resistance of 3,000 ohms or more to the 6L6 plates (No. 3 prong) and have a 1 to 2 mfd. condenser in series with one lead to another.

With bass full on, treble full, and volume off, the hum should not exceed .1 of a volt. To make overall tests, remove the 2nd audio 6J5G tubes. The hum should now drop to less than 0.1 volt. If it does not, the amount of hum read on the meter is the hum in the amplifier itself. Leave the tubes just removed out and change the 6L6 tubes in the amplifier, at the same time adjusting the hum control on the amplifier until the hum is reduced to a minimum. There may be a filament short also. Check the circuit and connections to get the hum out of the amplifier before proceeding with the rest of the test.

NOTE: It is highly important, in minimizing hum to use the Spiral Heater type 6K7G and 6J5G tubes in the audio system since while considerable bass boost is available, tubes are the sole source of hum, there being no hum pickup whatsoever in chokes, transformers, etc.

After the amplifier is found to be OK replace the 2nd audio tubes and remove the inverter and 1st audio, substituting a new tube for the 2nd audio tube to heat up properly. Next try the inverter tube in the same manner and follow with the 1st audio 6K7J; also, the dial light circuit may be shorted against the dial frame. All these points should be checked along with the trying of new tubes.

AUDIO GAIN TESTS

With an audio input signal of 0.5 volt at 400 cycles an output reading of between 22-24 volts should be obtained on the output meter which is connected across the voice coil. Make this test with volume full, bass control full, selectivity in phono position. If this gain is low it may be due to defective tubes, wrong voltages, shorts or open circuits, either in the set or power amplifier. Both should be checked.

AUDIO FIDELITY TESTS

For correct high fidelity reproduction it is important that the electrical frequency response of the audio system, from the phono posts to a 38 or 40 ohm dummy voice coil resistor approximate 2 2.4 volts at 75 cycles and a 3-3.5 volts at 6,250 cycles with the bass and fidelity controls on full, after the output has been carefully adjusted, by means of the volume control, to 1 volt at 400 cycles with an input of 1 volt at each frequency. Failure of the system to approximate this response (if you are certain that your meters are accurate and that no series meter condenser which would "cut" low frequencies, is being used) should lead to analysis of the low or high frequency circuit involved to determine and eliminate the trouble.

HOW TO ADJUST THE AUTOMATIC RECORD SCRATCH SUPPRESSION CIRCUIT ON THE SCOTT PHANTOM DELUXE

Connect an output meter across the voice coil circuit (V.C. to G.) Connect an audio oscillator and a sensitive output meter to the phono posts, and turn the selectivity to position "P" (all way to right). With the bass control set to minimum treble control full on, and scratch suppressor switch off, apply 0.2 volt at 3,500 cycles to the phono posts. The scratch suppressor switch is ganged with the sensitivity control. Set the volume control so that 1 volt is obtained on the output meter across the voice coil. Turn on (to right) the suppressor switch and the 1 volt reading should just start to drop (say to .9v.). Now turn the suppressor switch off and reduce the audio oscillator input to 0.05 volts, reset the volume control to obtain a 1 volt reading again on the voice coil output meter and now turn on the suppressor switch. The 1 volt reading should now drop to a level of 0.3 of a volt or slightly under. This gives a reduction ratio of 5 to 1 and this is the proper ratio to mamtain. If this 5 to 1 reduction is not obtained the 6 volt bias should be reduced slightly by varying the small slider arm in the C divider network. If too much control is obtained, the 6 volt bias may be raised by adjusting the slider arm.

The 6B8G tube determines the level at which the circuit starts to cut high frequencies and the 6J7G tube determines the amount of this out.

ALIGNMENT OF I.F. SECTION

Connect a good signal generator to the input of the I.F. system. Turn the wave band switch to the broadcast band; have sensitivity control to maximum position (to right); turn tuning dial pointer to hi-freq. end of dial. Ground the I.F. AVC line by connecting a jumper wire from it to Gnd. Now set the the selectivity switch in the sharp position (all the way to the left).

Connect the negative terminal of a 20,000 ohm per volt DC voltmeter using the 25 volt scale, (or a sensitive microammeter with a 0.5 meg. resistor connected in series with its negative terminal) to the "I.F. Diode Output Point", and connect the positive terminal to the chassis.

Apply an unmodulated 455 Kc. signal of sufficient strength to produce a diode output voltage reading of approximately 10 v. (or 20 microamperes for the microammeter) and very carefully adjust the 1st, 2nd, 3rd, I.F. transformer and I.F. diode trimmers for maximum meter reading, reducing the input, if necessary, to avoid exceeding the above figures.

Adjust the R.F. diode transformer for maximum output after the I.F. stages are aligned. Remove the 1 meg. resistor from ground that is connected to the R.F. diode output point (10,000 Ohm) and put the high resistance DC meter in series with the 1 meg resistor to groond, the positive side of the meter going to ground. If there is sufficient signal from the generator it will be OK to merely connect the negative terminal of the microammeter to the R.F. diode output point. Put in a strong signal until a variation is noticed and adjust the R.F. diode for maximum output. Adjust the diode trimmers very carefully. Also shunt out the coil you are not adjusting, with a 10,000 ohm resistor while trimming the other circuit; namely, put 10,000 ohms from B. to the 6B8G plate then trim the secondary. Shift the resistor to diode plates and 10,000 ohm diode output point and trim the primaries.

ALIGNMENT OF R.F. SECTIONS

Before starting on this portion of the set, it is important to understand how the tuning wand works. One end of this device has a core of material such as polyiron while the other end is brass. When the inductance of a coil is high, insertion of the brass end will decrease it to the proper resonant value; whereas, insertion of the other end will increase the effective inductance.

This gives a very conveinient means of determining whether or not it is necessary to add or remove turns from the coil. In the following instructions only a slight adjustment of trimmers and padders should be necessary where original coils are used. Full instructions however, are given to cover the case where new coile are to be used

BROADCAST BAND ALIGNMENT

First turn the dial pointer completely to the low frequency dial stop and see that the pointer reaches 1/16" beyond the lowest frequency mark. Turn the wave band switch to the broadcast "A" position, set the bass control to minimum, treble control to maximum and sensitivity control to minimum and connect an output meter across the voice

coil. Adjust oscillator trimmer C1, until a 1,400 Kc. signal is set on the dial is tuned in from the generator. Rotate the dial to 600 Kc. and tune in a 600 Kc. signal from the generator by adjusting the padding condenser C3. Check the dial at 950 Kc. and if it tunes high in frequecny spread turns on the oscillator secondary, if it is low in frequency push the turns together **and then readjust trimmer condenser C1, and** padder condenser C3 as before.

With the oscillator circuit correctly spotted, tune in a signal from the generator at 1,400 Kc. and use the output meter as indicated.

Have as weak a signal as possible and adjust trimmers C4 and C6 for maximum output Turn the dial to 600 Kc. and check the alignment of the R.F. antenna and preselector stages with a tuning wand, spreading turns on the coil where less inductance is needed and pushing turns together if more inductance is required. Readjust the trimmer condenser C4 and C6 for maximum at 1,400 Kc. Turn the dial to 950 Kc. and check the alignment of the R.F. and antenna stages.

POLICE BAND

Set the wave band switch to the police "B" band position and turn the dial to 3.7 megacycles. Tune in a signal from the generator by adjusting trimmer C2, then turn the dial to 1.8 megacycles and tune in a signal from the generator by adjusting the padder C10. Check the alignment at 2.5 megacycles and if off, either push together or spread turns on the oscillator secondary as described under "Broadcast Band Alignment". Readjust trimmer C2 and padder C10 until correctly aligned. Tune in a signal at 3.7 megacycles and adjust trimmers C5 and C7 to maximum output. Now check the alignment on 1.8 megacycles with a tuning wand and make any necessary corrections by pushing or spreading turns on the coils and readjusting trimmers C5 and C7. Re check the alignment at 2.5 megacycles.

FOREIGN S.W. C (SW 1)

Set the wave band switch to the "C" position and tune in a signal at **9 megacycles** by adjusting trimmer condenser C9. Turn the dial to 5 megacycles and if necessary to correct the calibration do so by spreading or pushing turns on the coil and readjusting the trimmer condenser C9. Check the calibration at 6.0 megacycles.

With the oscillator calibrated, tune in a signal at 9 megacycles and adjust trimmer condensers C12 and C14 for maximum output. Check the alignment at 5 and 9 megacycles and make any necessary corrections by pushing or spreading turns on the coils and readjusting trimmers C12 and C14

FOREIGN S.W. -D- (SW 2)

Set the wave band switch to "D" position and tune in a signal at 20 megacycles by adjusting trimmers C8. Check and if necessary correct the calibration at 12 megacycles by pushing or spreading the turns on the oscillator coil Check the calibration at 15 megacycles.

With the oscillator correctly aligned tune in a signal at 20 megacycles and adjust trimmers C1 and C13 for maximum output. Check the alignment at 12 and 15 megacycles and make necessary corrections by pushing or spreading turns on the coils. Now, re adjust trimmers C11 and C13.

FOREIGN S.W. D- (SW 2)

ULTRA SHORT WAVE AND TELEVISION BAND

Set the wave band switch to "P" position and tune in a signal at 48 megacycles by adjusting trimmers C15 Check and if necessary correct the calibration at 32 megacycles by pushing or spreading the turns on the oscillator coil. Check the calibration at 32 and 48 megacycles

With the oscillator correctly aligned tune in a signal at 32 and 48 megacycles and adjust trimmers C16 and C17 for maximum output. Check the alignment at 32 and 48 megacycles and make necessary corrections by pushing or spreading turns on the coils. Now, readjust trimmers C16 and C17.

The trimmer is used at the high frequency side of the band at 48 megacycles. The coil is pushed or spread for 32 megacycles for the low frequency side of the band

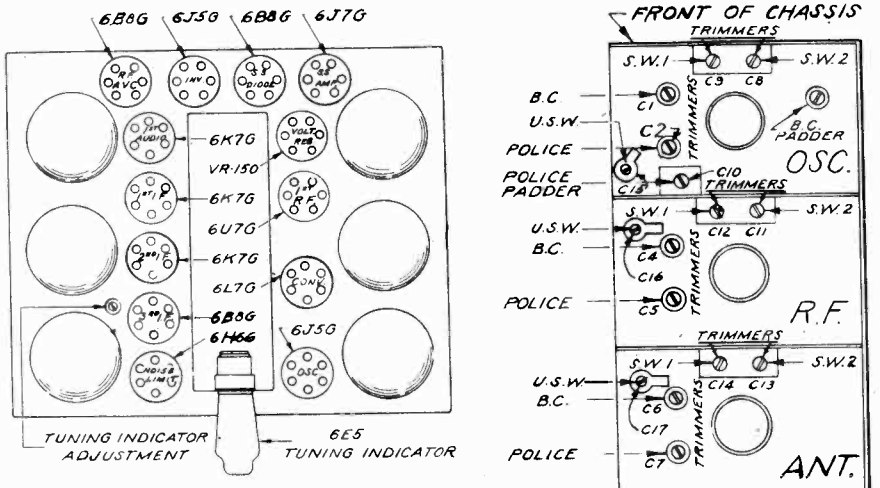
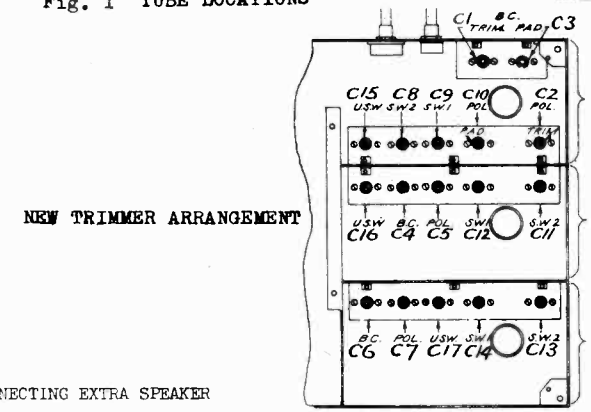


Fig. 1 TUBE LOCATIONS

OLD TRIMMER ARRANGEMENT



NEW TRIMMER ARRANGEMENT

CONNECTING EXTRA SPEAKER

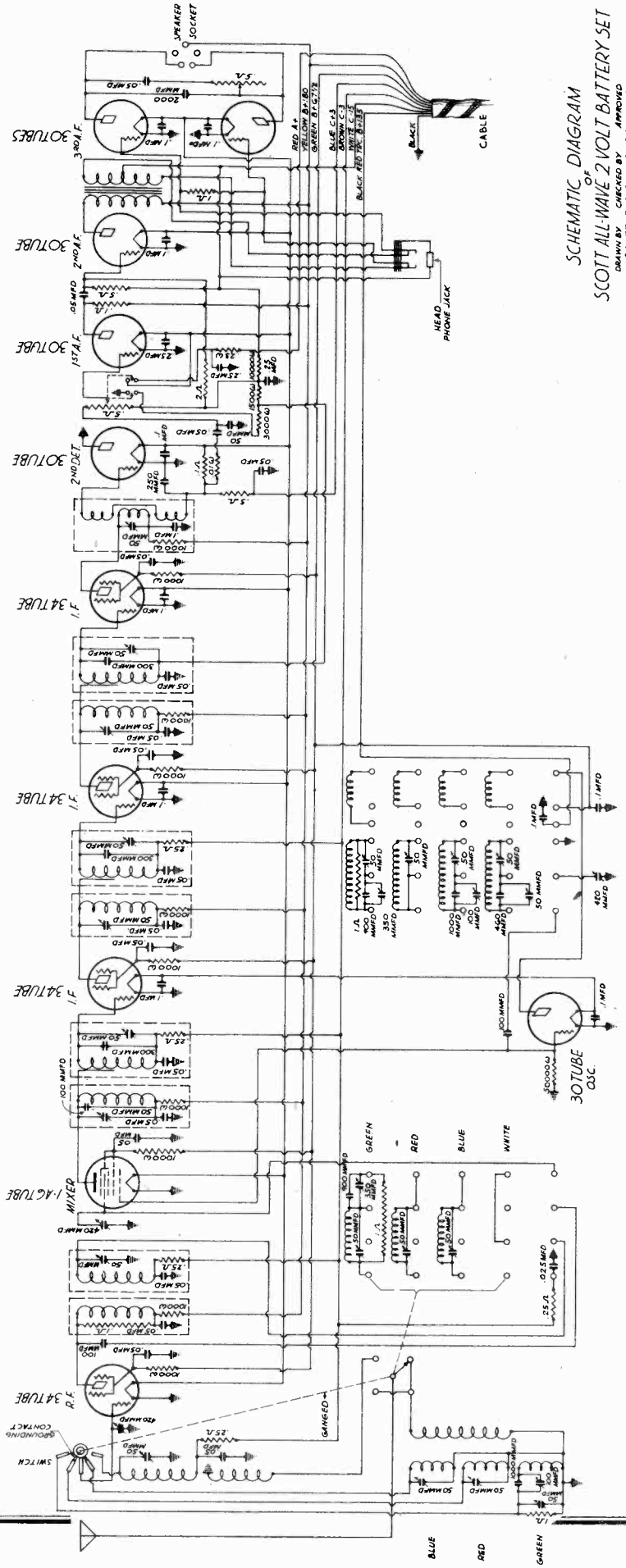
The new type high fidelity Scott permanent magnet 38 ohm voice coil speaker maybe readily connected to a Scott Receiver with the optional "T" pad inserted in the voice coil leads where separate control of the extension speaker volume is desired. In case the extension speaker is disconnected the jumper might be changed to connect terminals "V.C" and "38" together.

WAVE CHANGE SWITCH TROUBLE

Poor contact in the wave change switch can generally be corrected by slightly bending the contacts involved. However, in case a switch section is accidentally damaged beyond repair, this section can be replaced by removing the two screws which support the wave change detent plate and very carefully pulling out the wave change switch shaft. The damaged section can then be unsoldered, removed, and replaced with a new unit which should be obtained from the Scott Laboratories in Chicago before the change is made in order to assure exact duplication of switch position and connections. Note particularly that the small notch near the center of the switch rotor must be in the same position in each switch section.

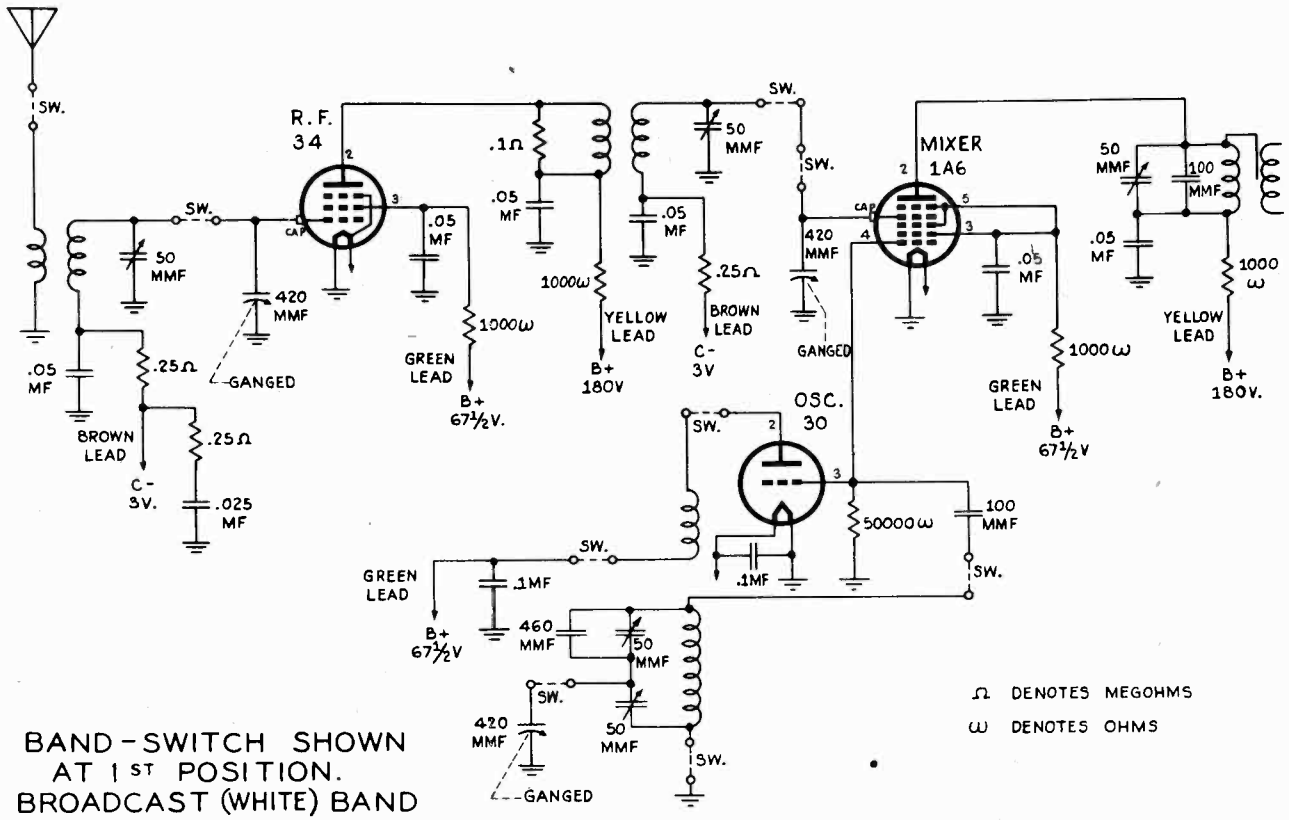
MODEL All-Wave
2-Volt Battery

SCOTT RADIO LABS. INC.



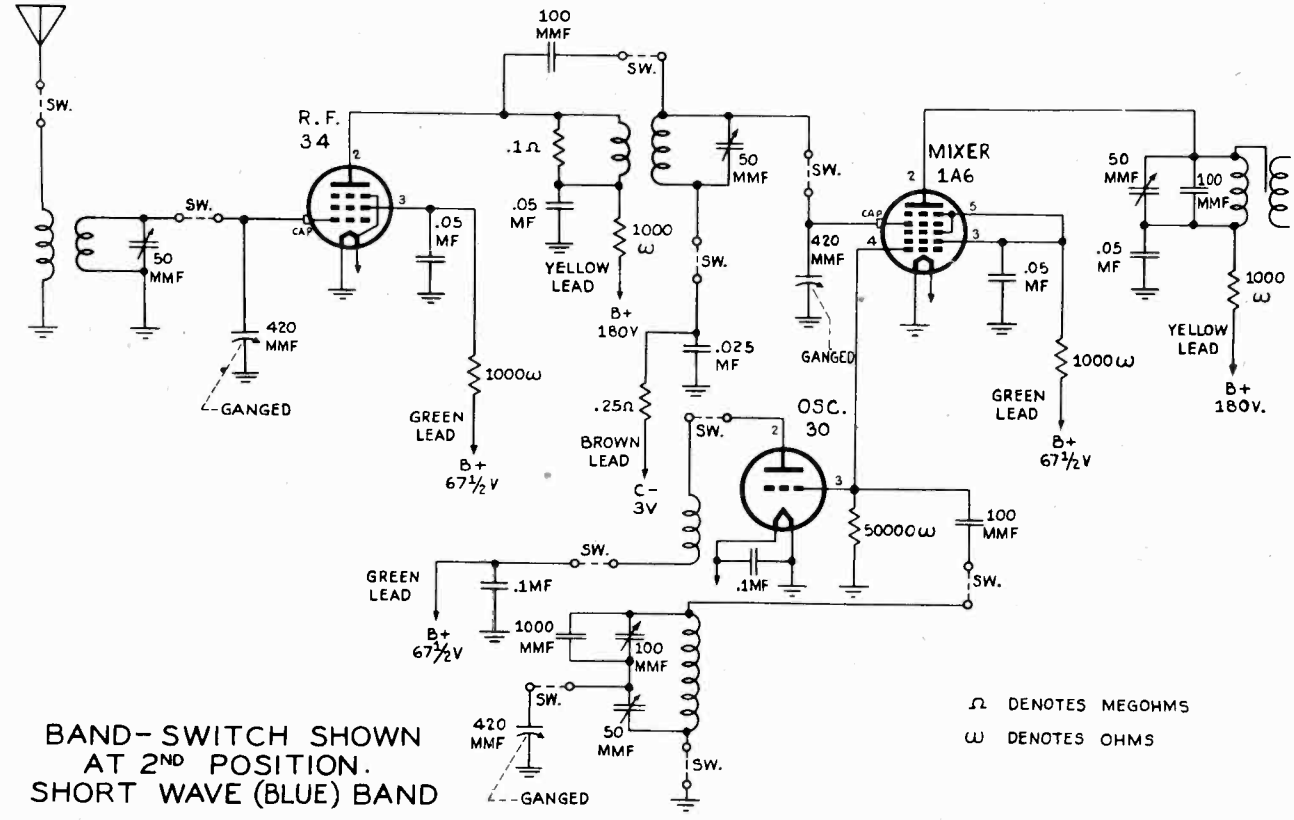
SCOTT RADIO LABS. INC.

MODEL All-Wave
2-Volt Battery



BAND-SWITCH SHOWN
AT 1ST POSITION.
BROADCAST (WHITE) BAND

Ω DENOTES MEGOHMS
ω DENOTES OHMS



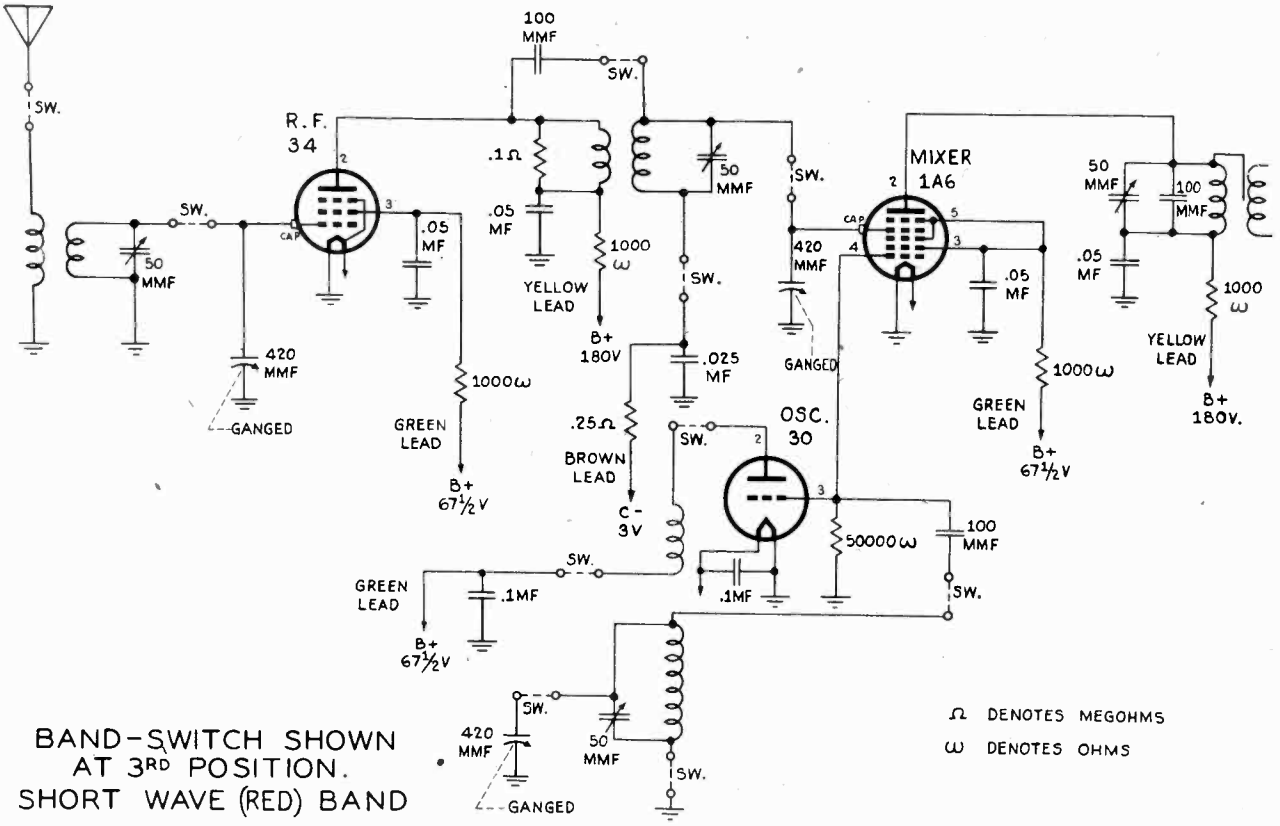
BAND-SWITCH SHOWN
AT 2ND POSITION.
SHORT WAVE (BLUE) BAND

Ω DENOTES MEGOHMS
ω DENOTES OHMS

"clarified schematics"

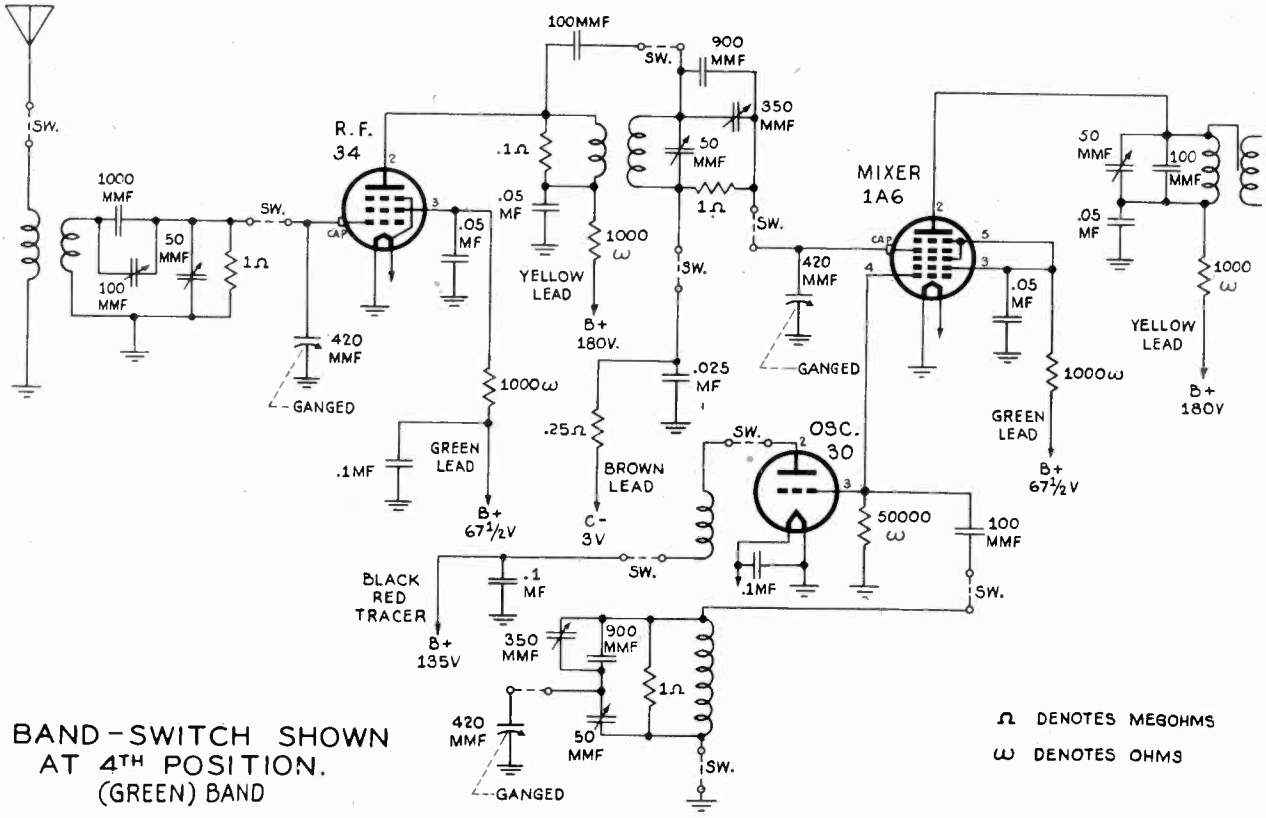
MODEL All-Wave
2-Volt Battery

SCOTT RADIO LABS. INC.



BAND-SWITCH SHOWN AT 3RD POSITION. SHORT WAVE (RED) BAND

Ω DENOTES MEGOHMS
ω DENOTES OHMS

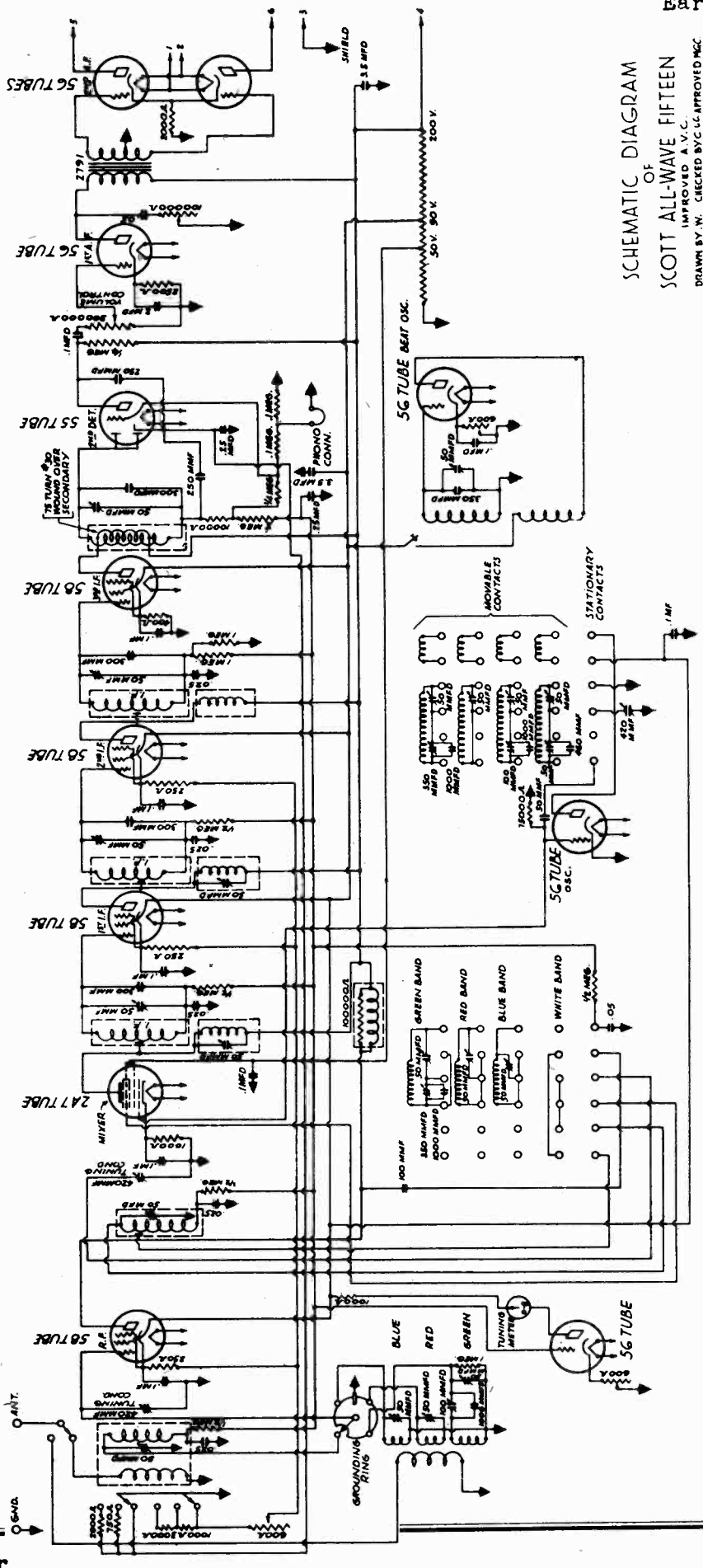


BAND-SWITCH SHOWN AT 4TH POSITION. (GREEN) BAND

Ω DENOTES MEGOHMS
ω DENOTES OHMS

SCOTT RADIO LABS. INC.

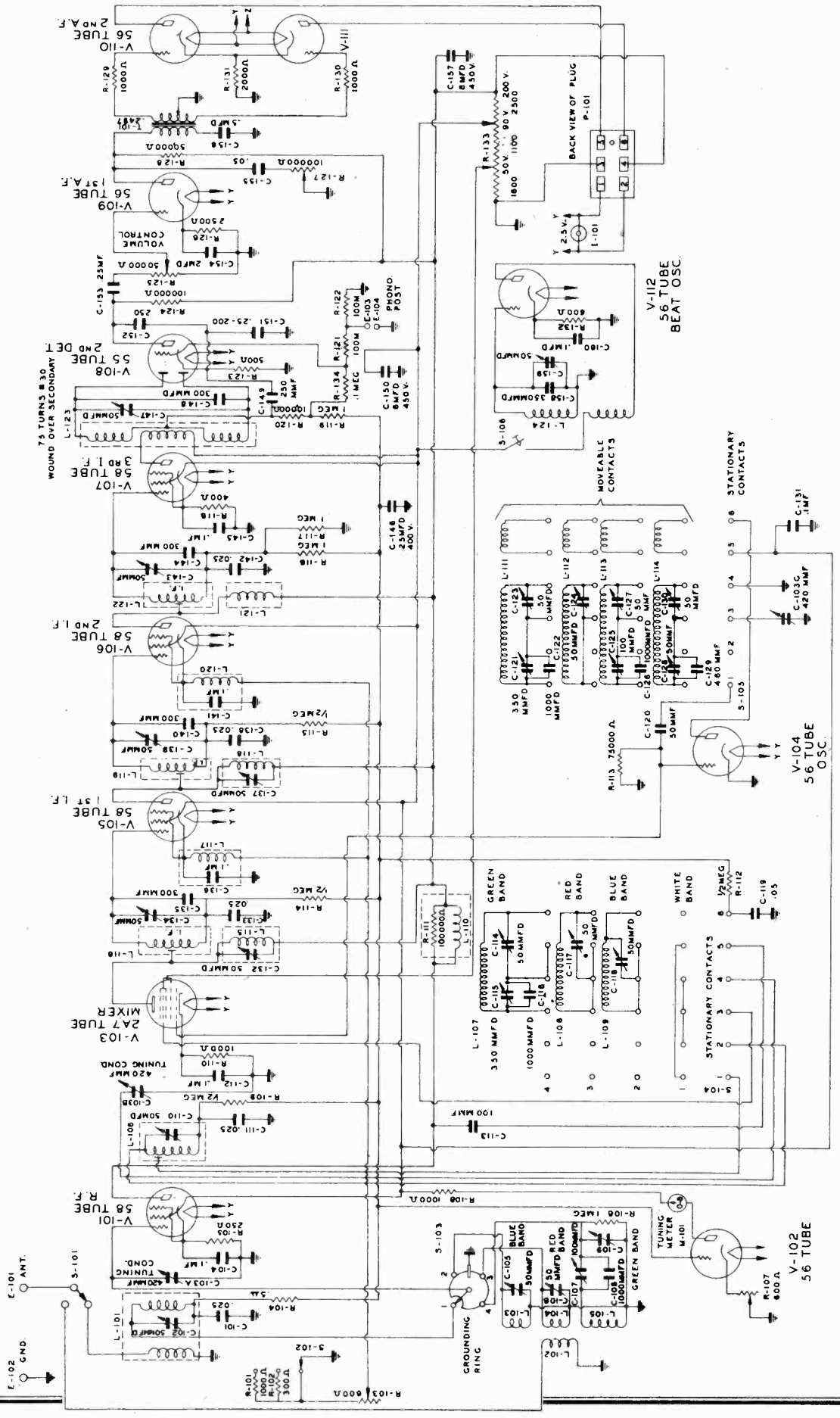
MODEL All-Wave 15
Early



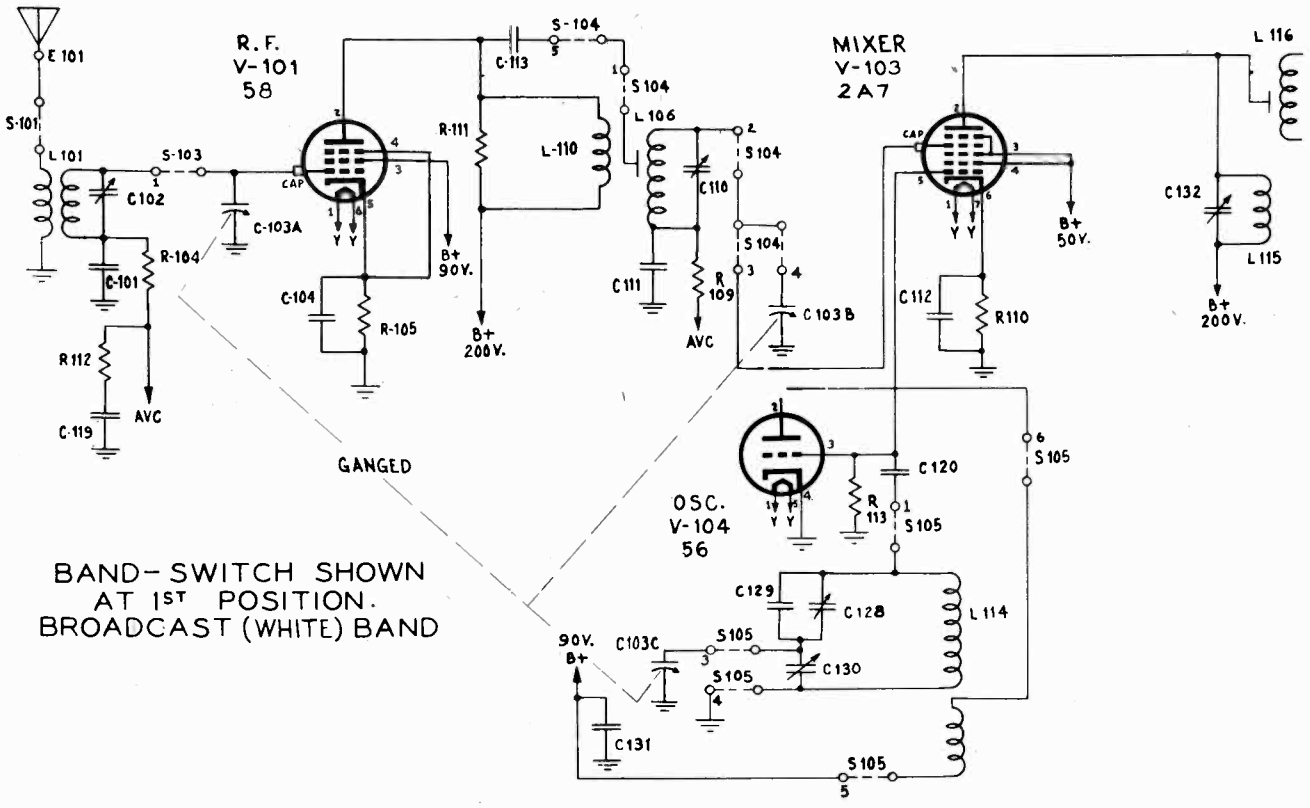
Record Changers:Garrard Models RC6,RC10,RM10,RC30,RC50;Seeburg Models B,ER. See Rider's "Automatic Record Changers and Recorders".

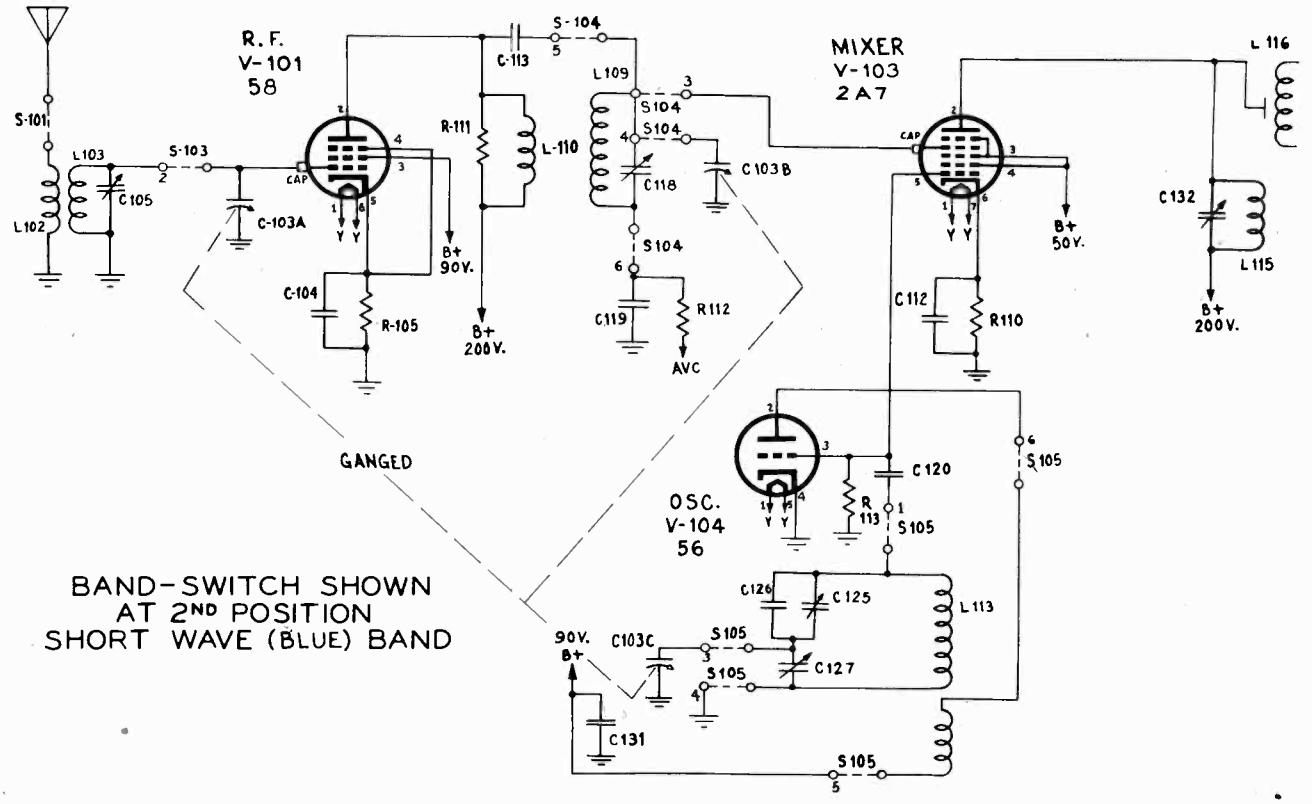
MODEL All-Wave 15
Late

SCOTT RADIO LABS. INC.



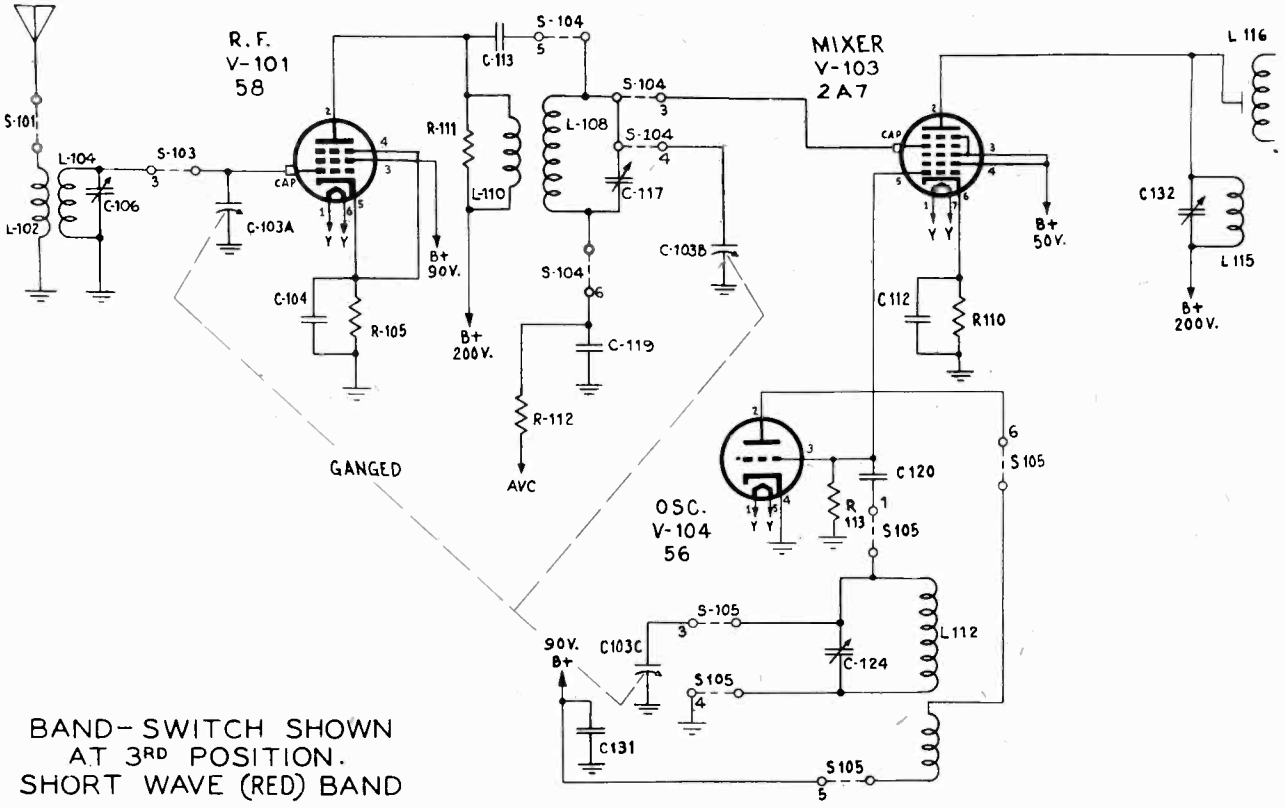
SCOTT RADIO LABS. INC.



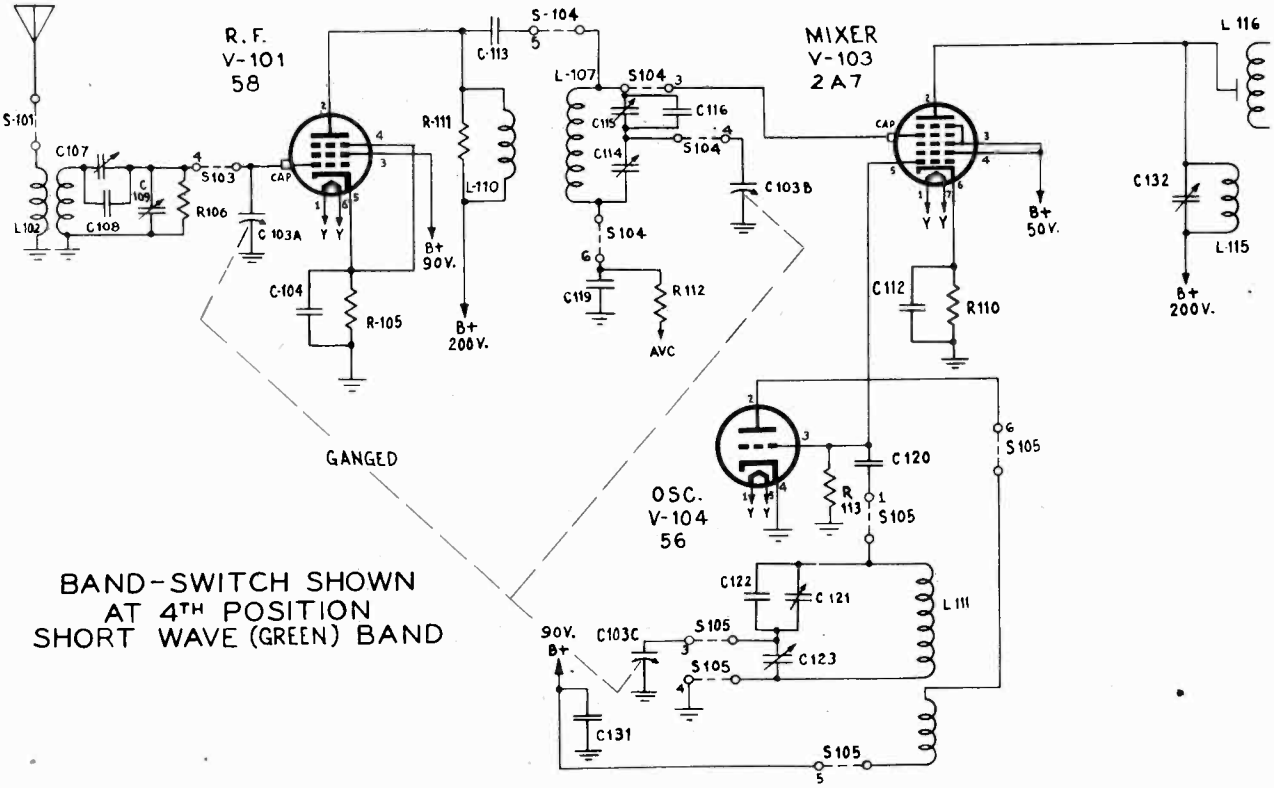


MODEL All-Wave 15
Early, Late

SCOTT RADIO LABS. INC.



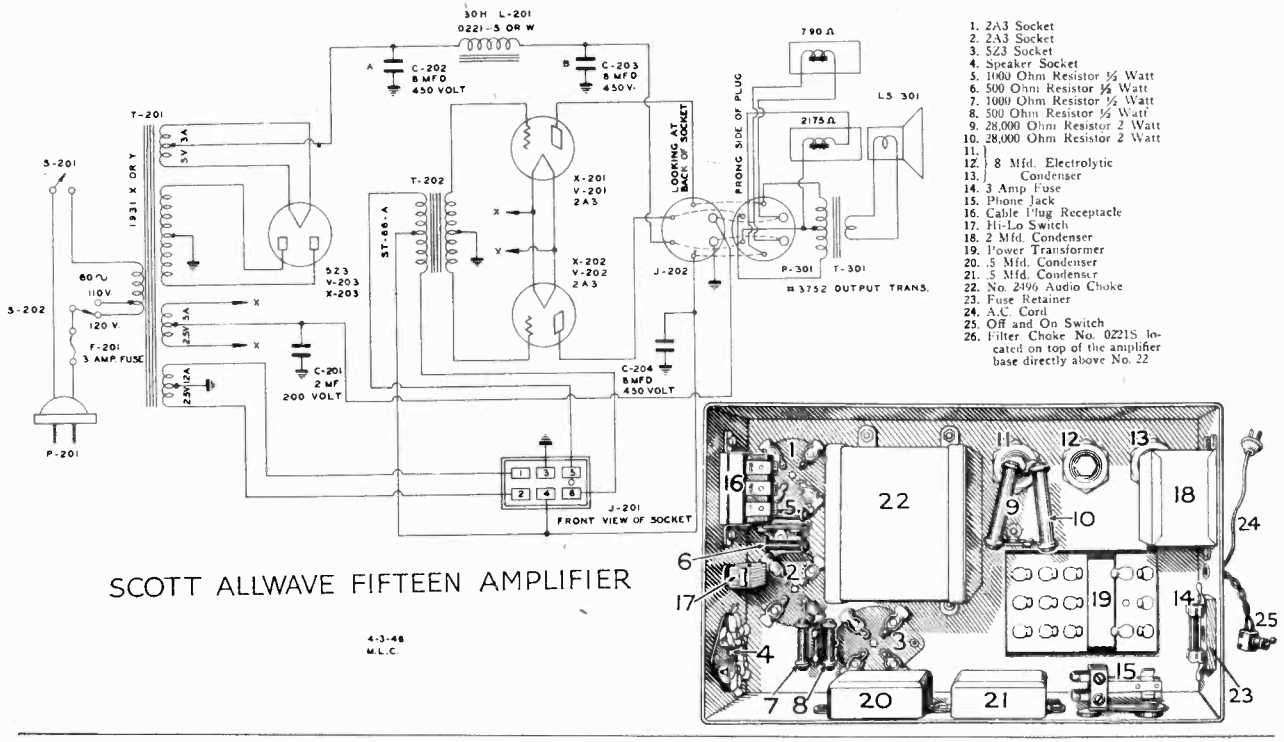
BAND-SWITCH SHOWN
AT 3RD POSITION.
SHORT WAVE (RED) BAND



BAND-SWITCH SHOWN
AT 4TH POSITION
SHORT WAVE (GREEN) BAND

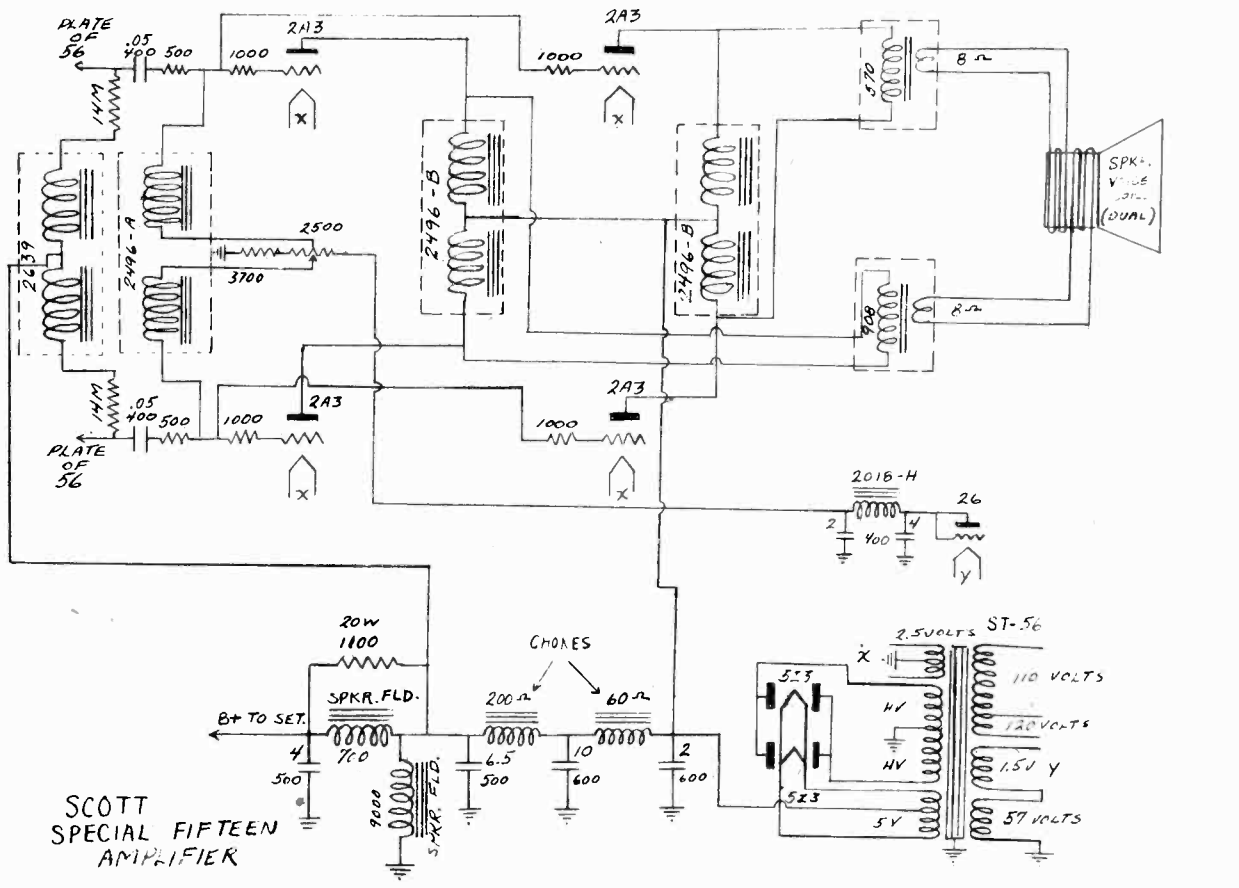
MODEL All-Wave 15
Early, Late

SCOTT RADIO LABS. INC.



SCOTT ALLWAVE FIFTEEN AMPLIFIER

4-3-46
M.L.C.



SCOTT
SPECIAL FIFTEEN
AMPLIFIER

SCOTT RADIO LABS. INC.

Adjustment of Beat Frequency Oscillator

You will find on the back of the chassis at the right hand end looking at it from the rear, a small hole thru which can be seen a hexagon shaped nut. See Fig. 22. This can be adjusted either with a screw driver or a No. 6 spintite wrench.

To adjust, tune in a short wave station, then press in the small black button on the front of the panel just below the Wave Change Switch, and hold it in this position. Now adjust the small nut in the rear of the chassis by turning to the right or left until a whistle is heard with the station to which you have the receiver tuned. After you hear the whistle turn the nut slightly first one way then the other until the pitch of the note suits your ear.

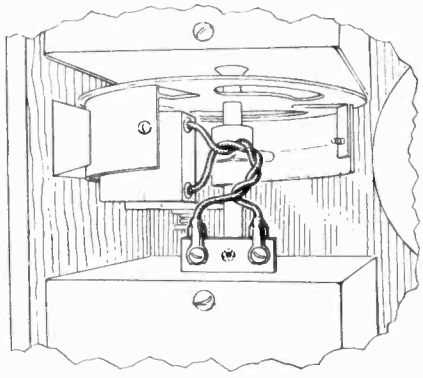


Fig. 19

How to Change Visual Tuning Meter

If the visual tuning meter stops indicating on the face of dial, lightly tap the top of meter noting if the needle releases and comes into view. If it does not, or if needle simply stays in one position on dial and does not move when tuning in stations, follow instructions given on Page 14, under heading "Tuning Meter Sticks Or Indicator Fails To Show On Dial." If these instructions have been followed with no result, the tuning meter is possibly defective.

Figure 19 shows tuning meter connected to terminal block on end of small shield can. Disconnect meter wires by loosening the two screws holding the lugs on the wires leading to meter. Now connect a short piece of wire between the two screws, as shown in Fig. 19. This will remove the visual tuner from the circuit and receiver can now be operated. *Leave tuning meter in place* and advise us at once, and a new tuning meter will be sent to replace the defective one. To remove the old meter, loosen screw holding tuning meter bracket to base of chassis, then it can be lifted out.

To install new meter, first fasten tuning meter bracket to base, making sure that it is centrally located in front of the dial strip, then replace dial light.

The connecting wire should now be removed and the two lugs on wires from tuning meter should be fastened to the terminal strip, making sure that red wire is connected to the red wire leading up from chassis, and black wire to the black wire.

Switch on receiver and with no signal tuned in, the shadow from the needle should just appear on white side of dial. If needle does not show, slide tuning meter bracket over until needle shows. Be careful not to push it over so far that it hits dial.

Final adjustment can be made by moving dial light to left or right in rubber socket.

How to Change Fuse in Power Amplifier

Your receiver is protected from serious damage by a 4 amp. automobile type fuse which is located under the base of the amplifier. This fuse should last indefinitely. However, if the fuse should burn out and the tubes refuse to light, the trouble will probably be due to a defective 5Z3 tube. In this case, of course, it will be necessary to put a new 5Z3 tube and a new fuse in your receiver and it will then be ready to operate again.

If your fuse should burn out from any other reason it will undoubtedly be due to one of the other tubes being defective or short circuited, a defective filter or bypass condenser or a broken wire or short circuit in some part of the set. In a case like this the condensers should all be checked for short circuits. After this any other trouble will be found by inspecting the wiring of the receiver.

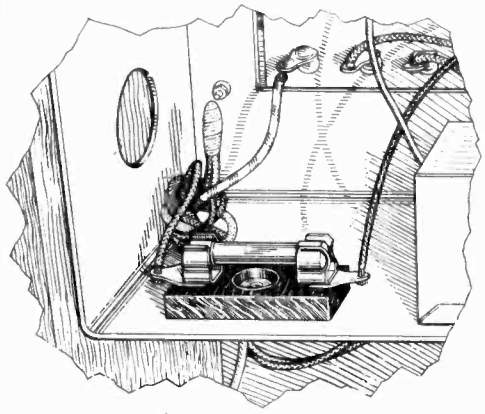


Fig. 20. Fuse Block Located Under Amplifier.

Do not, on any account, replace this fuse with a solid connection such as a piece of tin foil or the various expedients tried by amateur electricians to get things going again, for if you do, serious damage will be caused and if repairs are necessary you will be charged for them under these circumstances. If you do not have a spare fuse exactly like the one supplied, then you can temporarily use one of 3 amps. but we will be glad if you will write us immediately, to send you some additional fuses, free of charge.

How to Change Dial Light

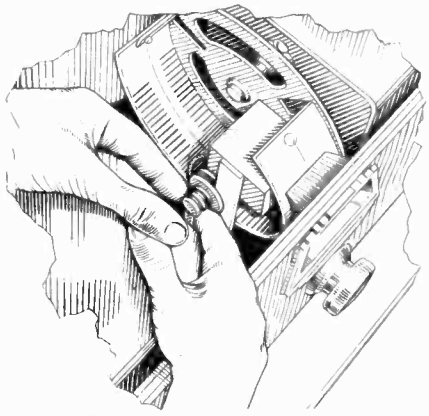


Fig. 21. Changing Dial Light.

When changing the dial light, first turn the tuning dial to meg-kil, slip dial light socket and rubber bushing out of notch in tuning meter bracket. See Fig. 21.

NOTE: When removing the dial light you first slip down the spring clip that holds it in place. The clip is used principally to keep dial light in place during shipment, and need not be replaced, as rubber socket has sufficient grip.

Bring the dial light socket under the shaft of the tuning condenser and up in back of the shaft. The dial light bulb can then be easily screwed out of the socket and another replaced. The entire socket assembly can then be placed back under the tuning condenser shaft and slipped back into place.

After changing the dial light the pointer of the visual tuning meter may be too far to the right so that it cannot be seen unless a station is tuned in. In this case, the dial light socket should be slipped back and forth in the rubber bushing until the shadow of the tuning meter just shows on the right hand side of the dial when no station is tuned in.

Phonograph Pick-Up

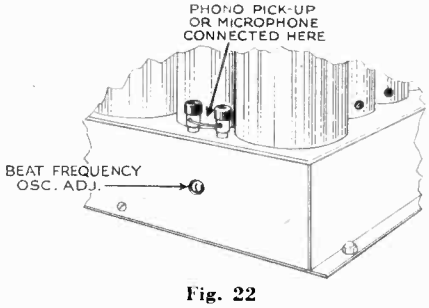
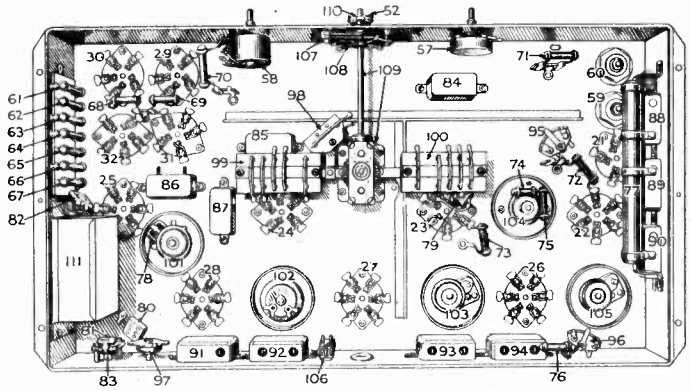


Fig. 22

The SCOTT ALLWAVE FIFTEEN RECEIVER is equipped with two binding posts on the rear of the chassis located on the right end, looking at the chassis from the rear. See Fig. 22. When shipped these two posts are connected together with a short piece of wire. When it is desired to hook up the receiver to a phonograph, remove this wire and connect the two wires from the phonograph pick-up

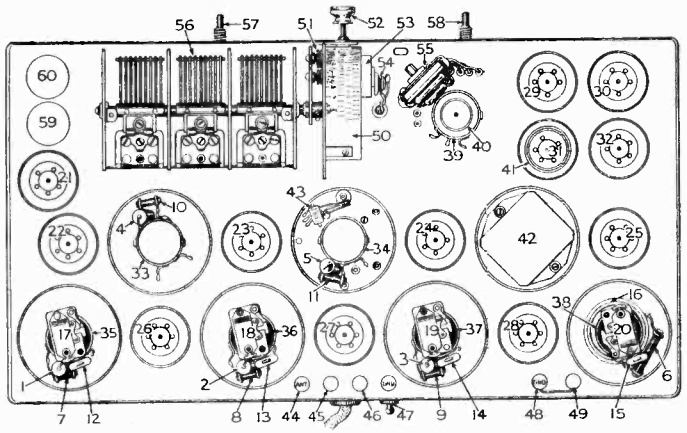
MODEL All-Wave 15
Early, Late

SCOTT RADIO LABS. INC.



SCOTT ALLWAVE FIFTEEN

IF NECESSARY TO WRITE FOR REPLACEMENT OF ANY PART, GIVE SERIAL NUMBER _____ TOGETHER WITH THE NO. SHOWN ON PART.

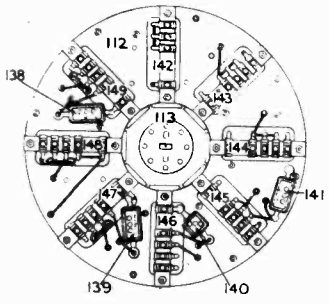


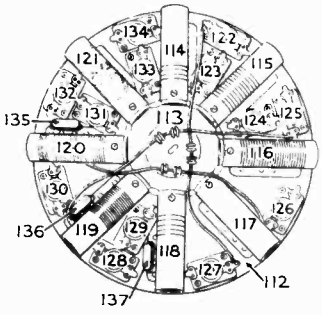
TOP VIEW OF CHASSIS WITH SHIELD CANS REMOVED

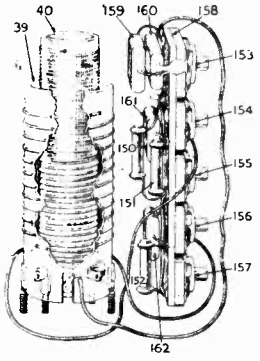
PARTS LIST

SCOTT ALLWAVE FIFTEEN

1. .025 Mfd. Condenser
2. .025 Mfd. Condenser
3. .025 Mfd. Condenser
4. .025 Mfd. Condenser
5. .025 Mfd. Condenser
6. 250,000 Ohm Resistor
7. 500,000 Ohm Resistor
8. 500,000 Ohm Resistor
9. 500,000 Ohm Resistor
10. 500,000 Ohm Resistor
11. 500,000 Ohm Resistor
12. 300 Mmfd. Condenser
13. 300 Mmfd. Condenser
14. 300 Mmfd. Condenser
15. 300 Mmfd. Condenser
16. Last I.F. Transformer Primary Coil
17. 50 Mmfd. Balancing Condenser
18. 50 Mmfd. Balancing Condenser
19. 50 Mmfd. Balancing Condenser
20. 50 Mmfd. Balancing Condenser
21. 56 Tube Socket
22. 58 Tube Socket
23. 58 Tube Socket
24. 56 Tube Socket
25. Wunderlich Socket
26. 58 Tube Socket
27. 58 Tube Socket
28. 58 Tube Socket
29. 56 Tube Socket
30. 56 Tube Socket
31. 56 Tube Socket
32. 56 Tube Socket
33. Broadcast Mixer Coil
34. Broadcast Antenna Coil
35. I.F. Coils
36. I.F. Coils
37. I.F. Coils
38. I.F. Coils
39. S.W. Antenna Primary Coil
40. S.W. Preselector Coil
41. Beat Oscillator Coil
42. Audio Transformer No. 2497
43. B.C.-S.W. Antenna Changing Switch
44. Antenna Binding Post (Black)
45. S.W. Doublet Binding Post (Red)
46. S.W. Doublet Binding Post (Red)
47. Antenna Toggle Switch Mounting Nut
48. GND Binding Posts (Black)
49. Plain Binding Post (Black)
50. Dial Strip
51. Dial Assembly
52. Dial Knob
53. Tuning Meter
54. Dial Light Socket
55. S.W. Preselector Pad Assembly
56. 3 Gang Condenser
57. Static Control
58. Volume Control
59. 3½ Mfd. Condenser
60. 3½ Mfd. Condenser
61. 2000 Ohm Resistor
62. 50,000 Ohm Resistor
63. 400 Ohm Resistor
64. 2500 Ohm Resistor
65. 75,000 Ohm Resistor
66. 250 Ohm Resistor
67. 1 Megohm Resistor
68. 1000 Ohm Resistor
69. 1000 Ohm Resistor
70. 50,000 Ohm Resistor
71. 1000 Ohm Resistor
72. 1000 Ohm Resistor
73. 750 Ohm Resistor
74. 100,000 Ohm Resistor
75. 500 Ohm Resistor
76. 500 Ohm Resistor
77. 5500 Ohm Voltage Divider
78. 500 Mmfd. Condenser
79. 100 Mmfd. Condenser
80. 2000 Mmfd. Condenser
81. 350 Mmfd. Condenser
82. 10 Mmfd. Condenser
83. 50 Mmfd. Balancing Condenser
84. .05 Mfd. Condenser
85. .1 Mfd. Condenser
86. ¼ Mfd. Condenser
87. .1 Mfd. Condenser
88. .1 Mfd. Condenser
89. .1 Mfd. Condenser
90. .1 Mfd. Condenser
91. ½ Mfd. Condenser
92. Choke and Condenser Assembly
93. Choke and Condenser Assembly
94. Choke and Condenser Assembly
95. 600 Ohm Adjustable Resistor
96. 600 Ohm Adjustable Resistor
97. 4½ M.H. R.F. Filter Choke
98. Coil Switch Grounding Contact
99. Oscillator Switch Contact Assembly
100. Mixer Switch Contact Assembly
101. 4½ M.H. Choke
102. 13 M.H. Choke
103. 1st I.F. Stage Tuned 1½ M.H. Choke
104. 2½ M.H. Choke
105. Mixer Stage Tuned 1½ M.H. Choke
106. Antenna Toggle Switch
107. Beat Oscillator Switch
108. 4 Pole S.W. Preselector Coil Switch
109. Wave Change Switch Gear Assembly
110. Push Button
111. Double 2 Mfd. Condenser
112. Bakelite Vanes
113. Coil Mounting Spider
114. Green Band Mixer Coil
115. Red Band Mixer Coil
116. Blue Band Mixer Coil
117. Blank Coil Form
118. Green Band Oscillator Coil
119. Red Band Oscillator Coil
120. Blue Band Oscillator Coil
121. White Band Oscillator Coil
122. 350 Mmfd. Balancing Condenser
123. 50 Mmfd. Balancing Condenser
124. 50 Mmfd. Balancing Condenser
125. 50 Mmfd. Balancing Condenser
126. 50 Mmfd. Balancing Condenser
127. 50 Mmfd. Balancing Condenser
128. 50 Mmfd. Balancing Condenser
129. 350 Mmfd. Balancing Condenser
130. 50 Mmfd. Balancing Condenser
131. 350 Mmfd. Balancing Condenser
132. 50 Mmfd. Balancing Condenser
133. 50 Mmfd. Balancing Condenser
134. 50 Mmfd. Balancing Condenser
135. 2000 Mmfd. Condenser
136. 2000 Mmfd. Condenser
137. 2000 Mmfd. Condenser
138. 1200 Mmfd. Condenser
139. 1000 Mmfd. Condenser
140. 460 Mmfd. Condenser
141. 800 Mmfd. Condenser
142. Coil Contact Assembly
143. Coil Contact Assembly
144. Coil Contact Assembly
145. Coil Contact Assembly
146. Coil Contact Assembly
147. Coil Contact Assembly
148. Coil Contact Assembly
149. Coil Contact Assembly
150. 1 Megohm Resistor
151. 1 Megohm Resistor
152. 1 Megohm Resistor
153. 350 Mmf. Balancing Condenser
154. 350 Mmf. Balancing Condenser
155. 50 Mmf. Balancing Condenser
156. 100 Mmf. Balancing Condenser
157. 50 Mmf. Balancing Condenser
158. Preselector Pad Assembly Panel
159. 4000 Mmfd. Total (May Be Single Condenser)
160. 4000 Mmfd. Total (May Be Single Condenser)
161. 1800 Mmfd. Condenser
162. 600 Mmf. Condenser







Section IV CIRCUIT DESCRIPTION

4.1 General

The schematic diagram of the receiver chassis is shown in Figures 25 and 26 and the schematic diagram of the power supply chassis is shown in Figures 27 and 28. For purposes of illustration it will be assumed that the circuits are set up for reception on the Broadcast (BC) Band for AM reception.

4.2 AM-RF and Mixer Circuits

Signal input to the receiver through AM antenna connector strip E1 is connected to the primary winding of BC band antenna primary coil L1 through switch SW2A. An electrostatic shield, at ground potential, separates the secondary winding from the primary. The secondary coil L2, together with variable air capacitor C5A1 constitutes the first tuned circuit. Transfer of RF signal at the resonant frequency of this tuned circuit, from the antenna to the control grid of RF amplifier tube V1, is accomplished by inductive coupling through the antenna transformer L1, L2. Variable capacitor C5 is a three unit capacitor, each unit being split into two sections. The larger sections C5A1, C5B1 and C5C1 being used for tuning the AM-RF and oscillator circuits and the small sections C5A2, C5B2 and C5C2 being used for tuning the FM-RF and oscillator circuits. The secondary winding L2 is provided with an adjustable powdered iron core E3 for inductance trimming and a shunt connected variable capacity trimmer C1. These trimmers allow accurate alignment of the tuned circuit at both ends of the frequency band and are accessible for adjustment at the bottom of the receiver as shown in Figure 14. The high potential end of the tuned circuit is connected to the control grid of RF amplifier tube V1 through switch SW2A, switch SW1 and through coupling capacitor C3. The low potential end of the circuit is returned to chassis ground. The DC bias return from the control grid of RF amplifier tube V1 to the AVC line is closed through resistor R1. Switch SW1 located at the rear of the receiver chassis is provided so that a loop antenna, connected through loop receptacle J7, may be used in place of an outside antenna as outlined under Antenna Requirements, Paragraph 1.5.

Plate potential from the high voltage DC line is applied to the plate of RF amplifier tube V1 through filter resistor R11, bypassed to ground by capacitor C18A. One section of switch SW3A is used to cut off DC voltage from the plate and screen of RF amplifier tube V1 and the screen of mixer tube V3 when the Selectivity control is set at PHONO or TELEVISION positions in order to keep any RF signal from leaking through when using the audio amplifier of the receiver for record player reproduction or television sound broadcasts.

Screen potential is applied to RF amplifier tube V1 through filter resistor R4 bypassed to ground by capacitor C4B. Resistor R3 is connected from screen to ground to provide more stable screen potential with fluctuations in AVC voltage, this providing better AVC characteristics on strong signals. The suppressor of V1 is connected to ground. Initial grid bias is obtained by means of cathode resistor R2 bypassed by capacitor C4A. Grid bias on V1 can be increased when full sensitivity is not required, by means of Sensitivity control R5 which also controls the bias on first IF amplifier tube V4. One side of the heater circuit of V1 is grounded at the socket.

The amplified signal from the plate of RF amplifier tube V1, is transferred to the signal grid of mixer tube V3 through RF transformer L7. The primary of L7 is untuned. The secondary winding together with variable capacitor C5C1 constitutes the second and final tuned circuit operating at signal frequency. The high potential end of the tuned circuit is connected to the signal grid of mixer tube V3 by switch SW2C, through coupling capacitor C17. The low potential end of the tuned circuit connects to ground. Adjustable iron core E7 and parallel connected trimmer capacitor C15 are provided for circuit alignment. The DC bias return from the control grid of mixer tube V3 to the AVC line is closed through resistor R8. Screen potential from the high voltage DC line is applied through resistor R12 bypassed to ground by capacitor C18B. The suppressor is internally connected to the shell of the tube. Initial bias is obtained by cathode resistor R10 bypassed by C18C.

4.3 AM-Oscillator Circuit

The AM-oscillator circuit is of the electron coupled type. The tuned circuit consists of tapped inductor L5 shunted with variable trimmer capacitor C6 and is tuned by variable capacitor C5B1 which is shunted by fixed capacitor C13 provided to increase the fixed minimum capacity of the circuit. The inductor L5 is provided with a variable iron core for inductance adjustment. Fixed capacitor C7 shunted by variable padder capacitor C8 is provided to modify the tuning of the oscillator circuit so that it will maintain a fixed frequency difference of 455 kilocycles with respect to the signal frequency circuits when the main tuning capacitor C5A1, C5B1 and C5C1 are varied from minimum to maximum capacity. On both the BC and SW-AM bands the oscillator frequency is maintained 455 kilocycles higher in frequency than the signal frequency.

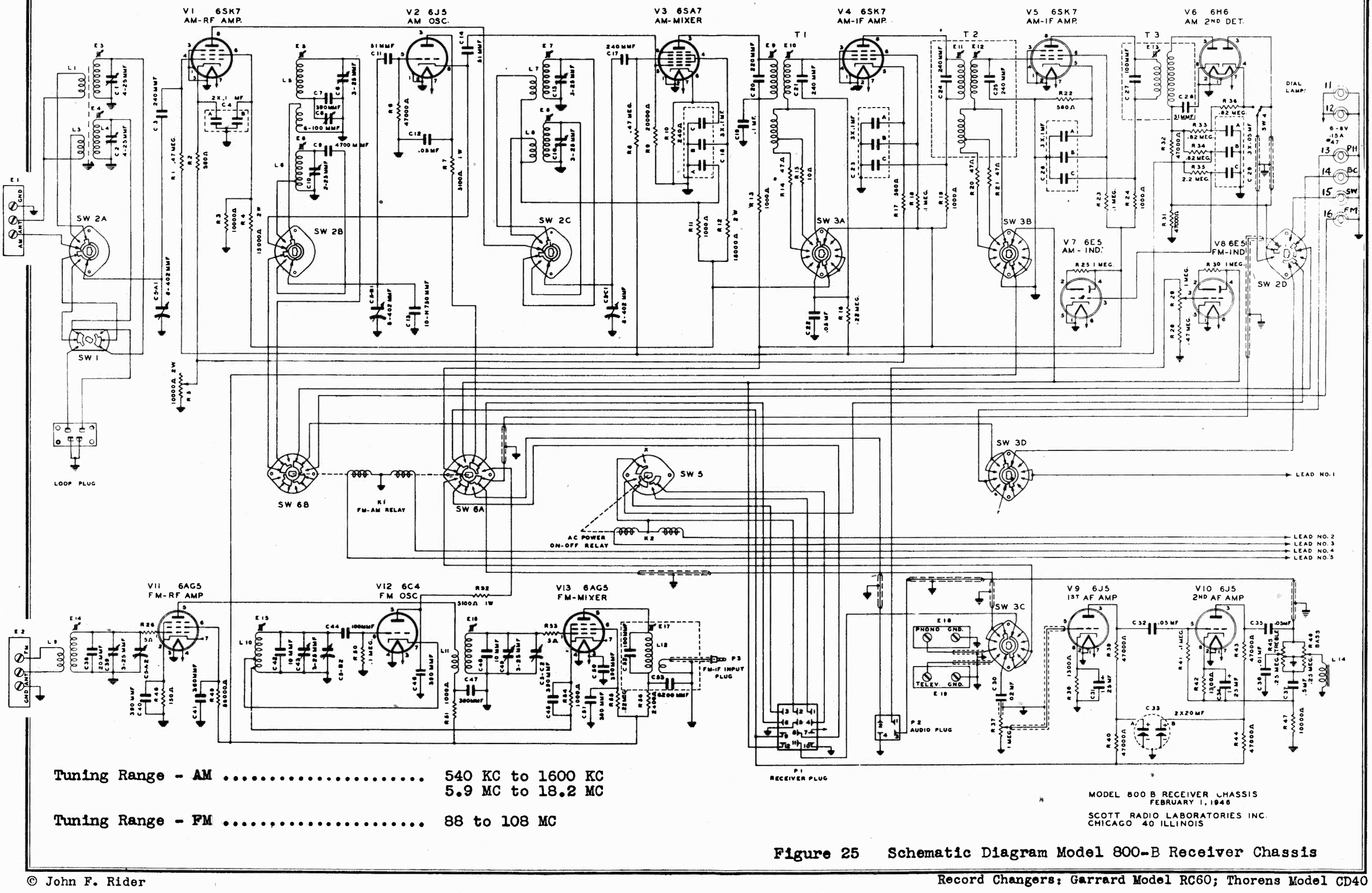
The high potential end of the tuned circuit is connected to the control grid of AM oscillator tube V2, through switch SW6B mounted on the FM-AM relay K1, and through switch SW2B and fixed capacity C11. The low potential end of the coil returns to ground. The grid of V2 is returned to ground through resistor R6. The cathode of V2 is connected to the tap on inductor L5 through switch SW2B and through capacitor C14 to oscillator injector grid (Pin #5) of mixer tube V3. This grid is returned to ground through resistor R9. The plate of the oscillator tube V2 is connected to the 150 volt regulated high voltage DC line through resistor R7, bypassed by capacitor C12, and through switch SW6A on the FM-AM relay K1. This switch removes voltage from the plate of oscillator tube V2 when the receiver is adjusted for FM reception. One side of the heater of V2 is grounded at the socket.

4.4 AM-IF Amplifier Circuits - 455 Kilocycles

The signal frequency arriving at the control grid of mixer tube V3 and the oscillator frequency fed to the injector grid of this tube or mixed (or heterodyned) and the resultant difference frequency (455 kilocycles) is fed to the input of the IF amplifier.

SCOTT RADIO LABS. INC.

MODEL 800-B Early
Below Serial No.2000



Tuning Range - AM ..... 540 KC to 1600 KC
5.9 MC to 18.2 MC

Tuning Range - FM ..... 88 to 108 MC

MODEL 800 B RECEIVER CHASSIS
FEBRUARY 1, 1946

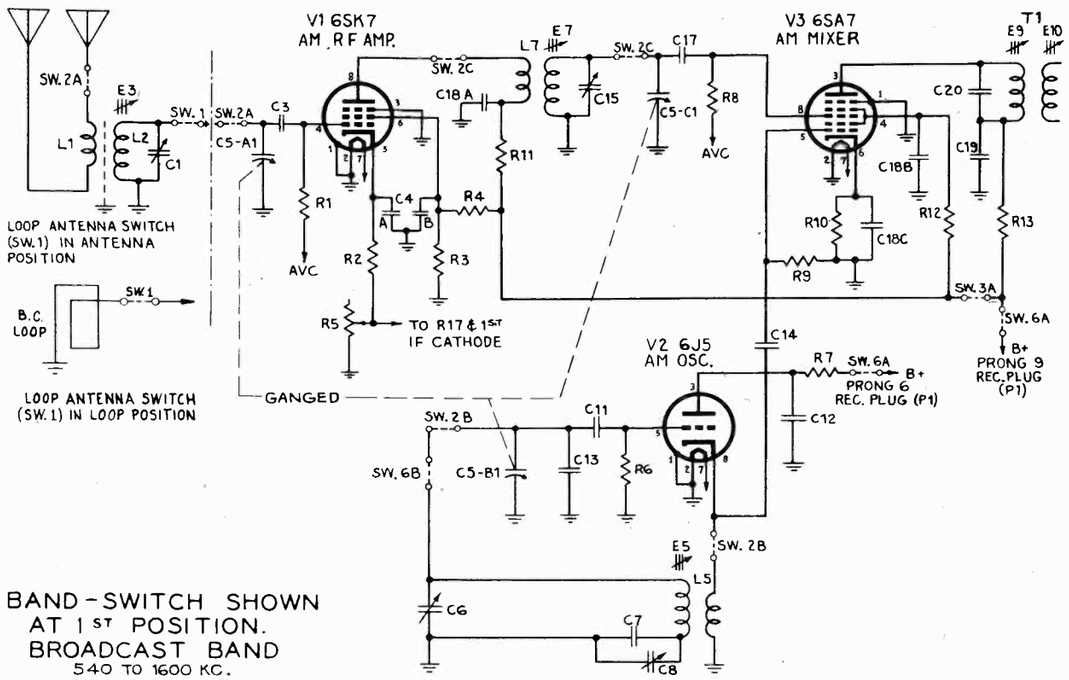
SCOTT RADIO LABORATORIES INC.
CHICAGO 40 ILLINOIS

Figure 25 Schematic Diagram Model 800-B Receiver Chassis

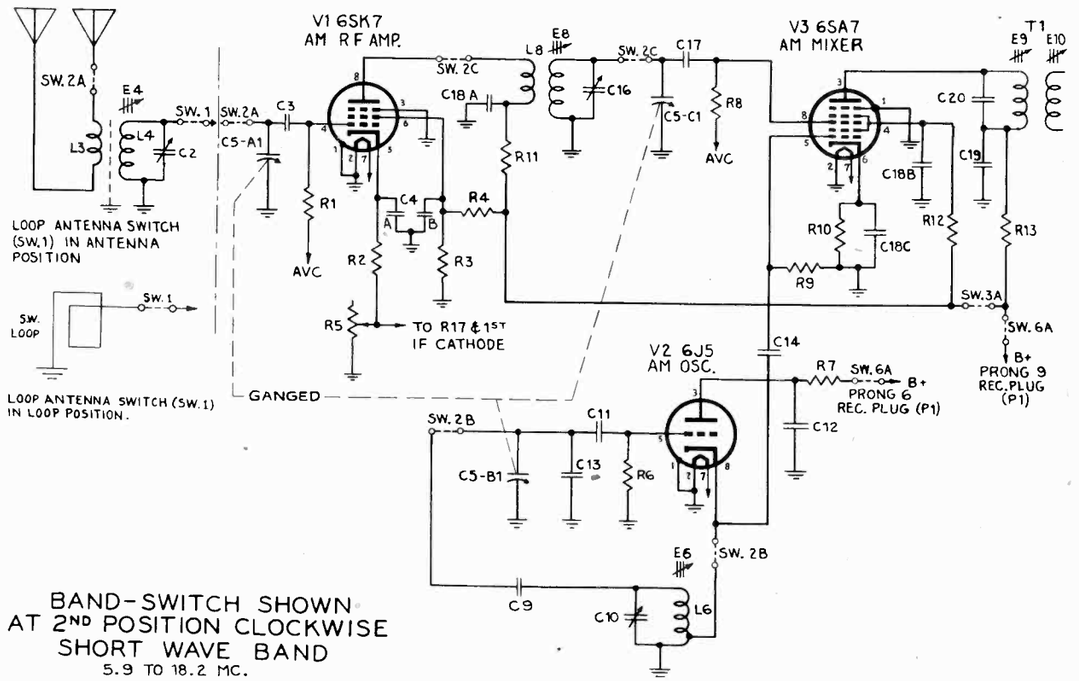
Record Changers: Garrard Model RC60; Thorens Model CD40

SCOTT RADIO LABS. INC.

MODEL 800-B Early



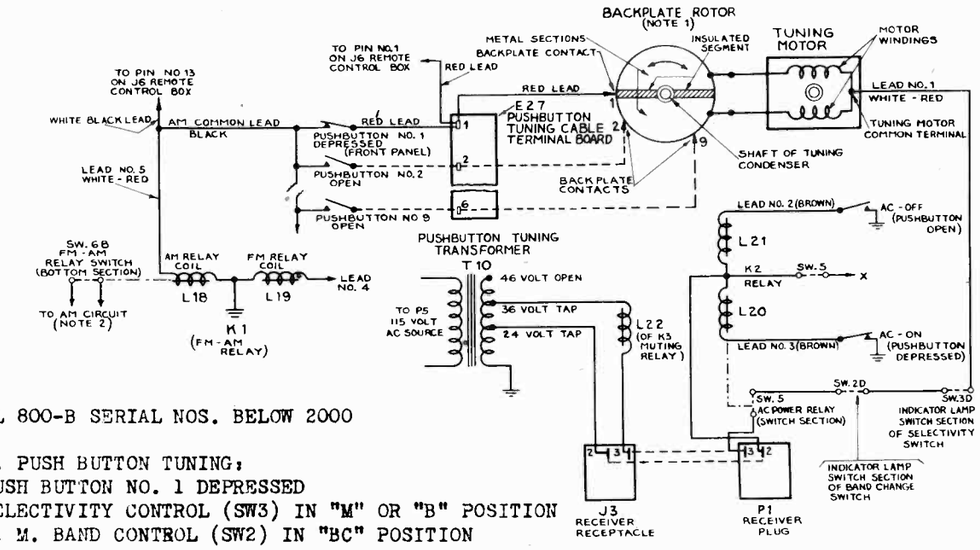
BAND-SWITCH SHOWN AT 1ST POSITION. BROADCAST BAND
540 TO 1600 KC.



BAND-SWITCH SHOWN AT 2ND POSITION CLOCKWISE SHORT WAVE BAND
5.9 TO 18.2 MC.

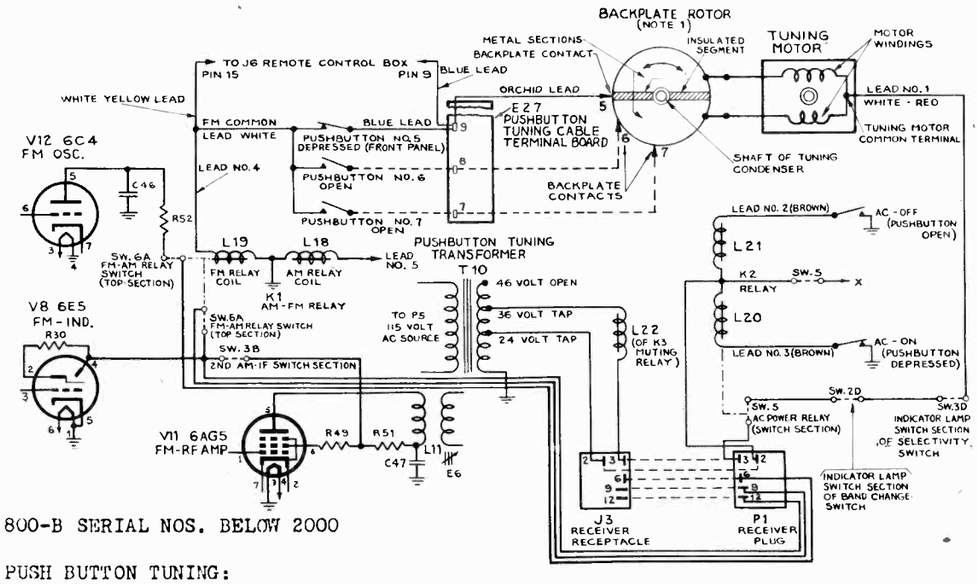
MODEL 800-B Early

SCOTT RADIO LABS. INC.



MODEL 800-B SERIAL NOS. BELOW 2000

A. M. PUSH BUTTON TUNING:
1. PUSH BUTTON NO. 1 DEPRESSED
2. SELECTIVITY CONTROL (SW3) IN "M" OR "B" POSITION
3. A. M. BAND CONTROL (SW2) IN "BC" POSITION



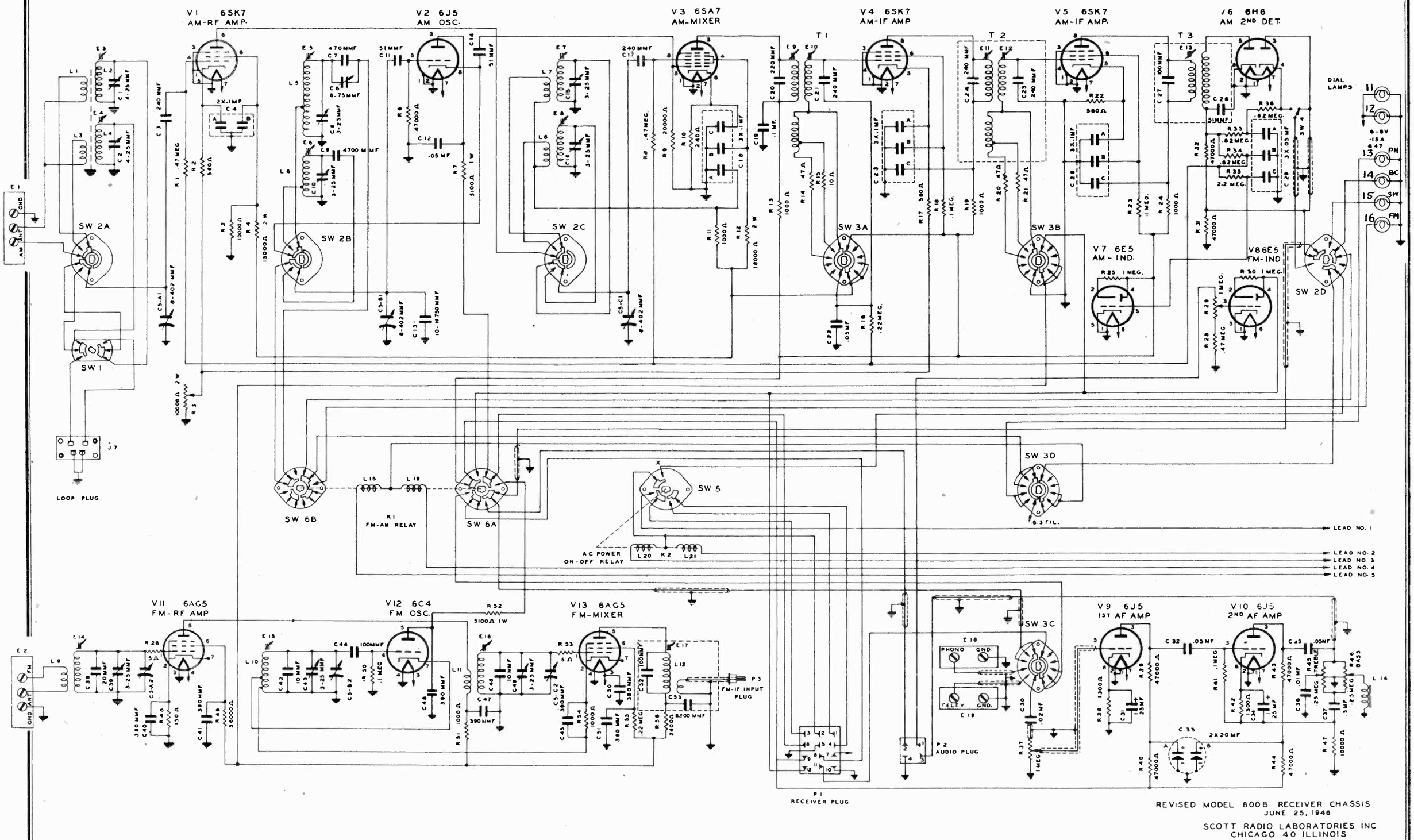
MODEL 800-B SERIAL NOS. BELOW 2000

F. M. PUSH BUTTON TUNING:
1. PUSH BUTTON NO. 5 DEPRESSED
2. SELECTIVITY CONTROL (SW3) IN "M" OR "B" POSITION
3. A. M. HAND CONTROL (SW2) IN "BC" POSITION

Note 1: When a station push button is depressed, current flows through the circuit to the common terminal of the tuning motor. The current will then flow through that winding of the motor which connects that half of the back plate rotor to which the depressed push button makes contact. The current flowing through the motor winding causes the motor to rotate, activating the dial mechanism and turning the back plate rotor, until the insulated segment rides under the active contact, opening the circuit and stopping the motor. The tuning condenser is thus automatically rotated to the desired point previously set up by the depressed push button.
Note 2: SW.6B shown in oscillator circuit on simplified drawing (P.15-33) is driven by K1 to close A. M. circuits.

SCOTT RADIO LABS. INC.

MODEL 800-B Revised
Above Serial No. 2000



REVISED MODEL 800B RECEIVER CHASSIS
JUNE 25, 1948

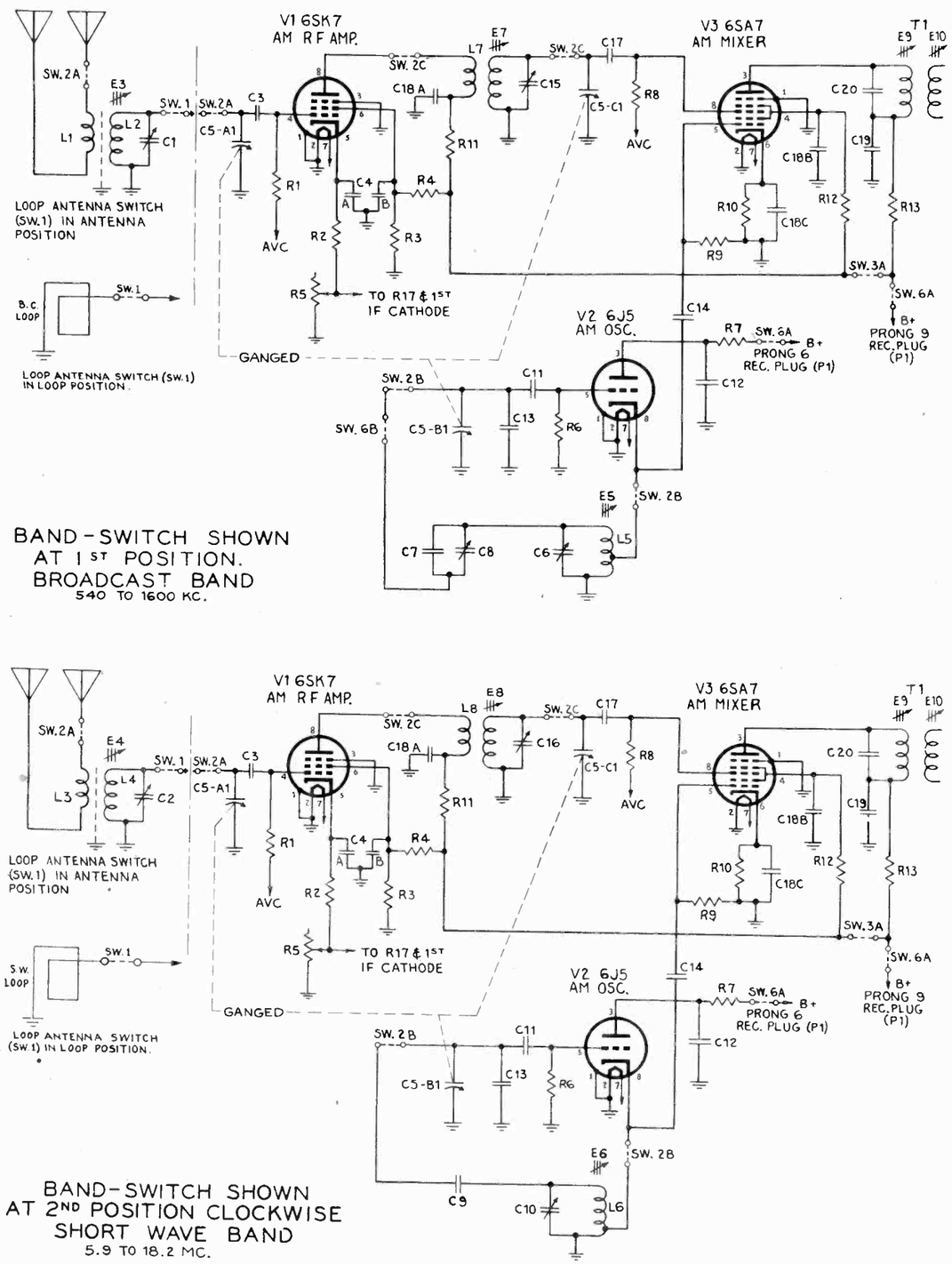
SCOTT RADIO LABORATORIES INC.
CHICAGO 40 ILLINOIS

Figure 26 Revised Schematic Diagram Model 800-B Receiver Chassis

Record Changers: Garrard Model RC60; Thorens Model CD40

SCOTT RADIO LABS. INC.

MODEL 800-B Revised

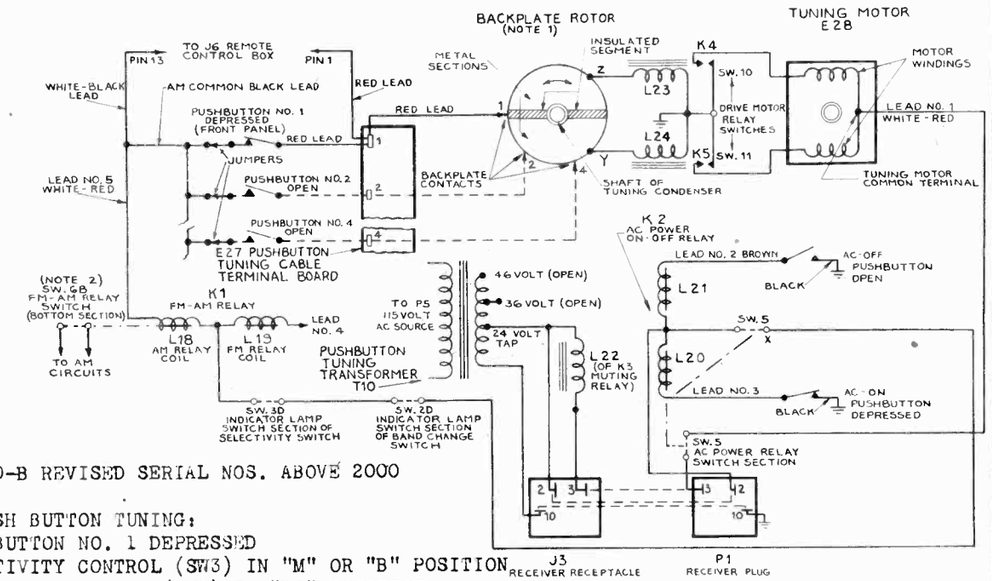


BAND-SWITCH SHOWN AT 1ST POSITION. BROADCAST BAND
540 TO 1600 KC.

BAND-SWITCH SHOWN AT 2ND POSITION CLOCKWISE SHORT WAVE BAND
5.9 TO 18.2 MC.

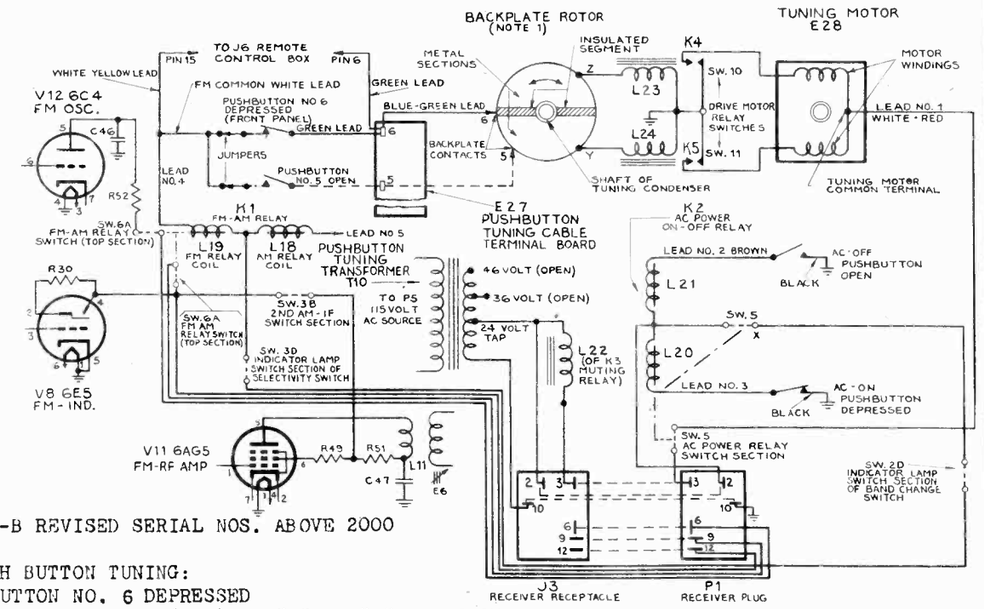
MODEL 800-B Revised

SCOTT RADIO LABS. INC.



MODEL 800-B REVISED SERIAL NOS. ABOVE 2000

A. M. PUSH BUTTON TUNING:
1. PUSH BUTTON NO. 1 DEPRESSED
2. SELECTIVITY CONTROL (SW3) IN "M" OR "B" POSITION
3. A. M. BAND CONTROL (SW2) IN "BC" POSITION



MODEL 800-B REVISED SERIAL NOS. ABOVE 2000

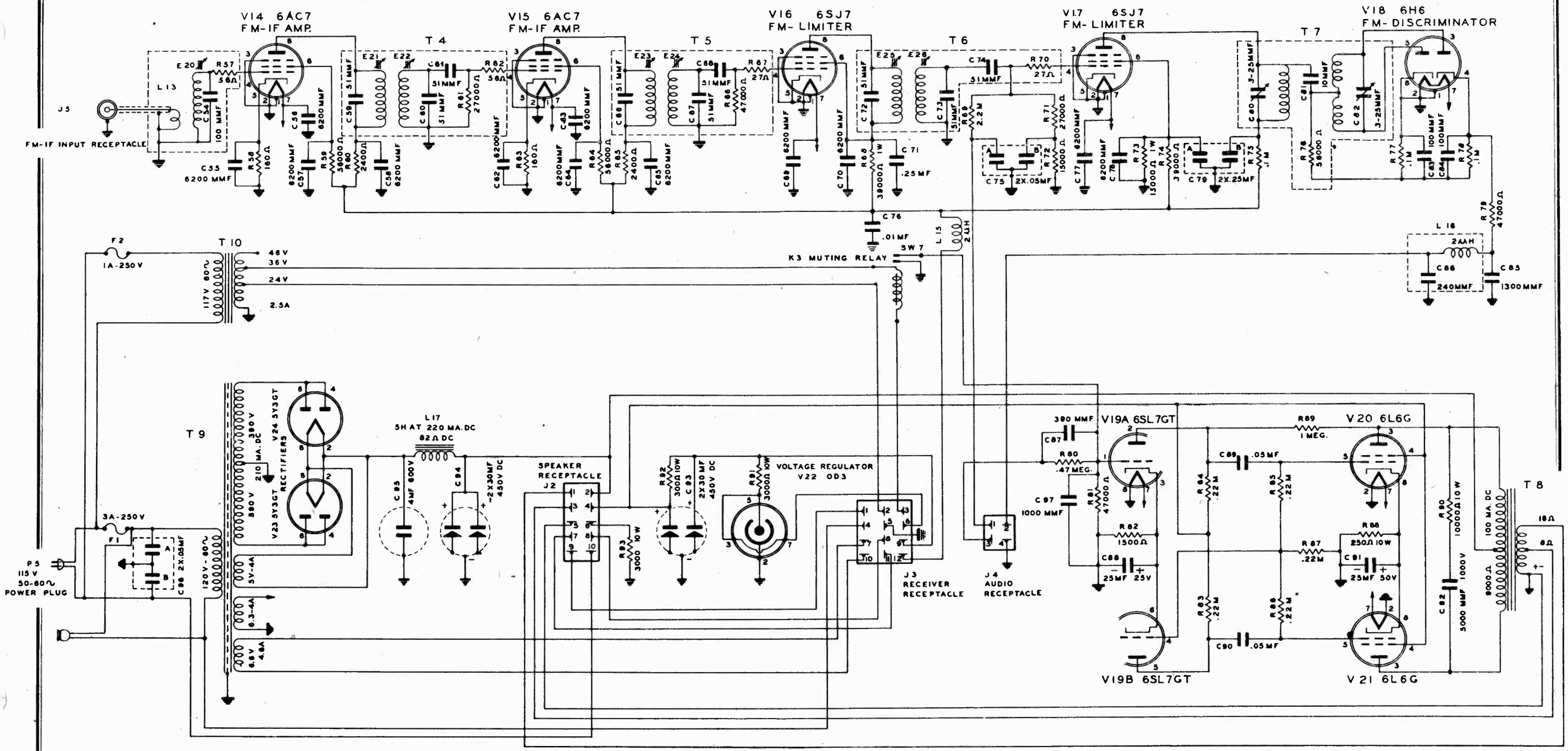
F. M. PUSH BUTTON TUNING:
1. PUSH BUTTON NO. 6 DEPRESSED
2. SELECTIVITY CONTROL (SW3) IN "M" OR "B" POSITION
3. A. M. BAND CONTROL (SW2) IN "BC" POSITION

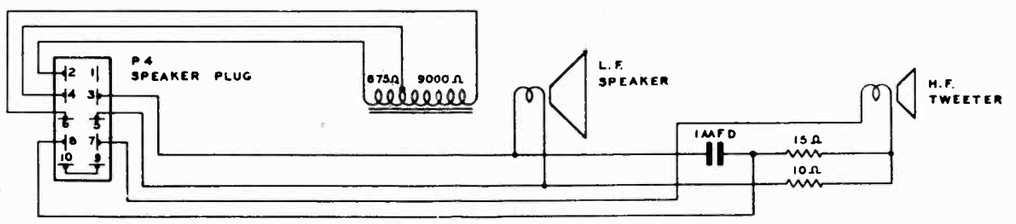
Note 1. When a station push button is depressed, current flows through the circuit to the common terminal of the tuning motor. The current will then flow through that winding of the motor which connects that half of the back plate rotor to which the depressed push button makes contact. The current flowing through the motor winding causes the motor to rotate, activating the dial mechanism and turning the back plate rotor, until the insulated segment rides under the active contact, opening the circuit and stopping the motor. The tuning condenser is thus automatically rotated to the desired point previously set up by the depressed push button.

Note. 2. SW.6B shown in oscillator circuit on simplified drawing (P.15-37) is driven by K1 to close A. M. circuits.

SCOTT RADIO LABS. INC.

MODEL 800-B Early





MODEL 800B POWER SUPPLY
FEBRUARY 1, 1946

SCOTT RADIO LABORATORIES INC.
CHICAGO 40 ILLINOIS

Power Requirements ... 117 volts AC
60 Cycles
Current Consumption
197 Watts Normal-310 Watts Maximum

Audio Power Output .... 25 watts undistorted
40 watts maximum

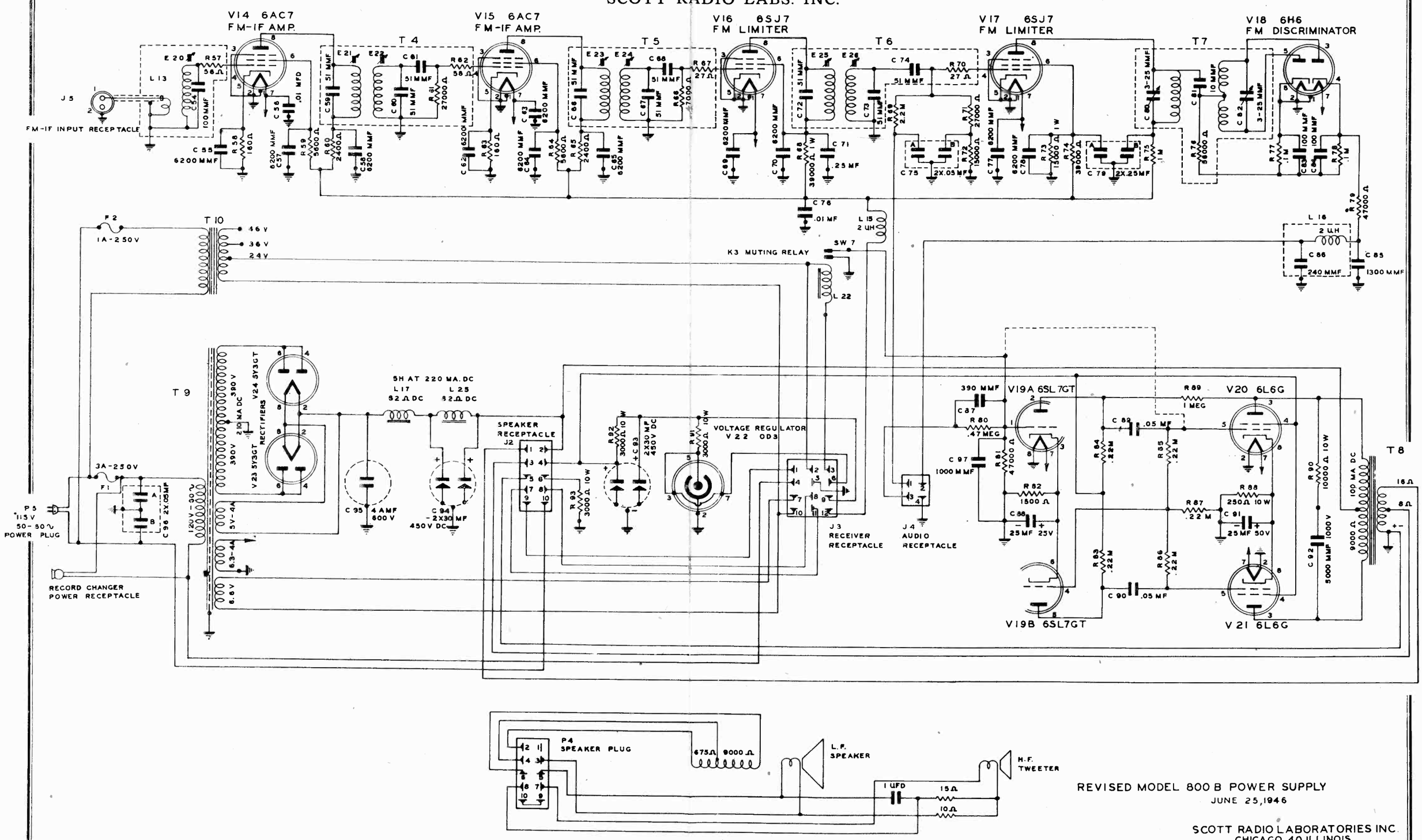
Audio Frequency Range . 35 to 20,000 cycles

Overall Frequency Range - AM ..... 35 to 8,500 cycles

Overall Frequency Range - FM ..... 35 to 15,000 cycles

Figure 27 Schematic Diagram Model 800-B Power Supply

SCOTT RADIO LABS. INC.



REVISED MODEL 800 B POWER SUPPLY
JUNE 25,1946

SCOTT RADIO LABORATORIES INC.
CHICAGO 40 ILLINOIS

Figure 28 Revised Schematic Diagram Model 800-B Power Supply

Transfer of IF signal from the plate of the mixer tube V3 to second detector tube V9 is accomplished by inductive coupling through IF transformers T1, T2 and T3 and amplified by tube V4 and V5. The first IF transformer T1 consists of two tuned circuits, primary and secondary with the secondary circuit operating in conjunction with switch SW3A and a tapped tertiary winding to provide three degrees of selectivity by changing the co-efficient of coupling with the primary circuit. The primary and secondary windings are each tuned to 455 kilocycles by fixed capacitors C20 and C21 and adjustable iron cores E9 and E10. These iron cores are accessible for adjustment through the top of the shield can for E10 and at the bottom of the receiver for E9. The high potential end of the primary tuned circuit connects to the plate of mixer tube V3 through a shielded conductor while the low potential end connects to the high voltage DC line through resistor R13 bypassed to ground by C19. The high potential end of the secondary tuned circuit is connected to the grid of first IF amplifier tube V4 while the low potential end is connected to the AVC line through switch SW3A and resistor R16, bypassed to ground by C22. DC potential from the high voltage DC line is applied to the screen of V4 through resistor R18 bypassed to ground by C23B. Plate potential is applied through the primary tuned circuit of second IF transformer T2 and through resistor R19 bypassed to ground by C23C. Initial grid bias is obtained through resistor R17, bypassed to ground by capacitor C23A. Resistor R17 is returned to ground through sensitivity control R5 so that the bias on V4 may be increased when maximum sensitivity is not desired.

Second IF transformer T2 is similar to first IF transformer T1 in respect to design, construction and operating characteristics. Therefore except for differences in symbol designations the circuit description of first IF transformer T1 is applicable to this transformer. The low potential end of the secondary tuned circuit of T1 is returned to ground through switch SW3B. Grid bias for second IF amplifier tube V5 is obtained through resistor R22, bypassed to ground by C26A. Screen potential is applied through resistor R23, bypassed by C26B. Plate potential is applied through the primary winding of third IF transformer T3 and resistor R24, bypassed to ground by C26C.

Third IF transformer T3 consists of a tuned primary circuit and an untuned secondary. The primary circuit consists of the primary winding shunted by fixed capacitor C27 and adjustable iron core E13 which is accessible for adjustment at the bottom of the receiver. The high potential end of the secondary winding feeds the second detector diode, while the low potential end returns to ground through diode load resistors R31 and R32.

4.5 AM Second Detector Circuits

The second detector tube V6 is a twin diode tube, one section being used as a second detector diode the plate of which is connected to the high potential end of the secondary winding of T3. The cathode is connected to ground, thus the tube acts as a half wave rectifier. The voltage developed across diode load resistors R31 and R32 is filtered by resistor R34 and capacitor C29B to remove all audio components, and the resultant direct current AVC voltage is used to control the gain of amplifier tube V1, V3 and V4; the degree of control being dependent on the strength of the incoming signal.

The second section of the twin diode tube V6 is utilized as a peak noise limiter which is effective only on the AM shortwave band where interference from ignition or similar peak noise may be encountered. The audio voltage appearing at the junction of R31 and R32 as a result of the demodulating action of the second detector diode, is normally coupled to the input of the audio amplifier. When the Sensitivity control is advanced to maximum rotation, switch SW4 connects the audio input to the cathode of V6 and the noise limiter circuit is in operation.

DC potential from the AVC line is further filtered by resistor R35 and capacitor C29C and applied to the control grid of tuning eye tube V7-6E5. This DC voltage regulates the shadow angle of the tube to indicate when the receiver is tuned to resonance with the received signal.

4.6 Audio Amplifier Circuits

The 1st and 2nd audio amplifier circuits are located on the receiver chassis while the phase inverter and output amplifier are on the power supply chassis. The audio voltage developed across the diode load resistors R31 and R32 is applied to the control grid of first AF amplifier tube V9-6J5, through capacitor C30 and volume control R37.

Switch section SW6A on the FM-AM relay actuates to connect the output of either the AM detector or the FM discriminator to the audio input switch section SW3C. This switch connects the input circuit of 1st audio amplifier V9-6J5 to radio input. Phono input or television sound input, depending on the setting of the Selectivity control.

Initial bias for 1st audio amplifier V9-6J5 is obtained through resistor R38 bypassed by C31. Plate potential is applied through filter resistor R40, bypassed by 1 section of dual capacitor C33, and through load resistor R39.

Audio signal from the plate of V9 is fed through capacitor C32 to the grid of 2nd audio amplifier tube V10-6J5. The grid of V10 is returned to ground through resistor R41 and R47. Initial bias is obtained through resistor R42 bypassed by C34. Plate potential is applied through filter resistor R44, bypassed by the second section of C33; and through load resistor R43.

Signal from the plate of V10 is coupled to the grid of 3rd audio amplifier tube V19-6SL7GT, located on the power supply chassis, through capacitor C35, to terminal #3 of audio plug P2, through terminal 3 of audio receptacle J4 and through audio compensating network R80, C87.

The tone control circuit consisting of treble control R45 and associated capacitor C36; bass control R46 and associated audio choke L14, and capacitor C37. Both R45 and R46 are centertapped controls and when the controls are both set at the position of the tap the audio response curve is flat. By tuning the treble control clockwise the high frequency response is boosted and when turned counterclockwise the high frequency response is cut. When the bass control is turned clockwise the low frequency response is boosted and when turned counter clockwise it is cut; thus the frequency response of the audio amplifier can be controlled over a wide range.

The grid of 3rd audio amplifier V19A which is one section of a dual triode tube 6SL7GT, is returned to ground through R81. Capacitor C97 is used in conjunction with audio compensating network R80, C87 which is provided to compensate for loss of high frequency response in the long connecting lead from the plate of V10 to the grid of V19A. Initial bias for both sections of V19 is obtained through resistor R82 bypassed by capacitor C88. Plate potential is applied to V19A through R84 and to V19B through R83.

Audio signal from the plate of V19A is fed to the grid of audio output amplifier V20, through capacitor C89; this grid is returned to ground through R85 and R87.

Audio signal from the plate of V19B is fed to the grid of audio output amplifier V21 through capacitor C90; this grid is returned to ground through R86 and R87.

Audio voltage appearing at the junction of resistors R85, R86 and R87 is fed to the grid of V19B. Since this voltage is 180 degrees out of phase with that appearing at the grid of V19A the audio voltages appearing at the plates of V19A and V19B will be 180 degrees out of phase, thus providing push pull amplification.

Initial grid bias for V20 and V21 is obtained through resistor R88 bypassed by C91. Screen potential for V20 and V21 is applied direct from the power supply. Plate potential is applied through the centertapped primary of output transformer T8. Capacitor C92 and resistor R90 are connected in series across the plates of V20 and V21 to prevent parasitic oscillation in the output amplifier circuit.

4.7 FM-RF Oscillator and Mixer Circuits

The FM-RF amplifier, mixer and oscillator circuits are located on the receiver chassis, the FM-IF amplifier and discriminator circuits are located on the power supply chassis. Input signal from the antenna is fed through FM-antenna terminal strip E2, located at the rear of the receiver, through antenna coil L9 to the grid of FM-RF amplifier V11-6AG5 which is a miniature type tube. The secondary of antenna coil L9 is connected to the grid of V11 through a parasitic suppressor R26, the low potential end of the coil being grounded. It is tuned by variable air capacitor C5-A2. Variable trimmer capacitor C39 and adjustable iron core E14 are provided as trimmer adjustments. Shunt connected capacitor C38 is provided to increase the minimum capacity of the tuned circuit. Initial grid bias is obtained through R48 bypassed by C40. Screen potential is applied through resistor R49 bypassed by C41. Plate potential is applied through the primary of mixer coil L11 and resistor R51 which is bypassed by C47.

Signal from the plate of V11 is fed to the grid of FM-mixer tube V13-6AG5, through mixer coil L11 and parasitic suppressor R53. The secondary tuned circuit of L11 is tuned by variable air capacitor C5 and C2. Air trimmer C49 and adjustable iron core E16 are provided as trimmer adjustments while fixed capacitor C48 is provided to increase the minimum capacity of the tuned circuit. Initial bias for V13 is obtained through R54 bypassed by C45. This circuit is returned to ground through a small portion of the secondary winding of FM oscillator coil L10. This impressing a voltage on the cathode of V13 at the frequency to which the oscillator circuit is tuned. This signal which is always 10.7 megacycles lower in frequency than the signal frequency, is heterodyned or mixed with the signal frequency appearing on the grid of mixer tube V13 and the resultant frequency 10.7 megacycles appears at the plate of FM mixer tube V13.

Screen potential is applied to V13 through R55 bypassed by C51. Plate potential is applied through IF primary coil L12 and resistor R56 bypassed by C53. One side of the heater of V13 is bypassed to ground by C50.

FM oscillator tube V12-6C4 is a miniature type triode. The tuned circuit consists of FM oscillator coil L10 and variable air capacitor C5B2; variable trimmer capacitor C43 and adjustable iron core E15 are provided as trimmer adjustments. Fixed capacitor C42 is provided to increase the minimum capacity of the tuned circuit. The high potential end of L10 connects to the grid of V12 through coupling capacitor C44. The grid is returned to ground through R50. The cathode of V12 is connected to a tap on coil L10. Plate potential is applied through R52 bypassed by C46.

4.8 FM-IF Circuits

The IF signal appearing at the plate of FM mixer tube V12 is fed to the primary of 1st FM-IF transformer L12. This coil is tuned to 10.7 megacycles by capacitor C52 and adjustable iron core E17. The primary winding is then link coupled to the secondary winding, located on the power supply chassis, through FM-IF input plug P3 and jack J5 and through another small winding coupled to the secondary coil L13. The 1st FM-IF secondary coil L13 is tuned to 10.7 megacycles by capacitor C54 and adjustable iron core E20 and is connected to the grid of 1st FM-IF amplifier V14-6AC7 through parasitic suppressor R57.

Bias is obtained through R58, bypassed by C55. Screen potential is applied through R59 bypassed by C57. Plate potential is applied through the primary winding of 2nd FM-IF transformer T4 and resistor R60 bypassed by C58. One side of the heater of V14 is bypassed to ground by C56.

The primary of T4 is tuned to 10.7 megacycles by capacitor C59 and adjustable iron core E21. The primary is inductively coupled to the secondary which is tuned by capacitor C60 and iron core E22. The high potential end of the secondary connects to grid of 2nd FM-IF amplifier V15-6AC7 through capacitor C61 and parasitic suppressor R62. The low potential end returns to ground. The grid of V15 returns to ground through R61. Through the use of coupling capacitor C61 and grid leak R61 second FM-IF amplifier tube V15 will act as a limiter on extremely strong signals.

Second FM-IF amplifier V15-6AC7 is identical to first FM-IF amplifier tube; therefore except for symbol designations the circuit description is the same.

Third and fourth FM-IF transformer T5 and T6 are similar to second FM-IF transformer T4 and except for symbol designations the circuit description is the same.

The third and fourth FM-IF tubes are used as limiter amplifiers. By employing the proper plate and screen voltages and correct values of grid leak and coupling capacitors these tubes will reach full limiting action with approximately 10 microvolts input signal, effectively shunting any amplitude signals such as ignition noise or impulse interference signals. The values of grid leak and coupling capacitor used were chosen to insure fast limiting action on noises possessing a steep wave front.

4.9 FM Discriminator Circuit

The fifth FM-IF transformer or discriminator transformer is provided to couple the second limiter tube V17 to the discriminator diode V18. A phase bridge type of discriminator circuit is used with both primary and secondary circuits being tuned by air dielectric trimmers C80 and C82. The primary and secondary windings are inductively coupled so that the peaks of the discriminator are approximately 300 kilocycles apart. The discriminator is linear up to plus or minus 100 kilocycles from the IF frequency of 10.7 megacycles, in order that over-modulation beyond plus or minus 75 KC at the transmitter will not cause distortion in the receiver.

The balanced detector action of the discriminator tube diode acts to cancel any amplitude modulation present on weak signals. Signal voltage appearing across the primary of T7 is induced into the secondary of this transformer which reacts with the voltage coupled from the primary through capacitor C81 to produce frequency discriminating action. When the frequency of the signal flowing through T7 is exactly 10.7 megacycles the voltage across resistors R77 and R78 are equal and opposite. A change in the frequency in one direction produces a positive difference between the voltages across R77 and R78; a frequency change in the opposite direction produces a negative voltage difference. In this way frequency modulation of the carrier signal produces a similar audio frequency voltage across resistors R77 and R78. This audio voltage is fed to the audio amplifier input through a de-emphasis network consisting of resistor R7 and capacitor C85. RF choke L16 and capacitor C86 are provided to filter out any RF components which may be picked up in the audio input lead.

4.10 Rectifier Power Supply Circuits

The rectifier power supply of the Model 800-B Radio-Phonograph is designed to operate from a 115-120 volt 50-60 cycle AC source. The power supply chassis is provided with a 6 foot two conductor cord with plug for connection to the AC source.

One side of the primary circuit of power transformer T9 is fused with a 3 amp fuse and one side of the primary circuit of the pushbutton tuning transformer T10 is fused with a 1 amp fuse. The primary of T10 is connected across the AC line at all times so that voltage is always available to operate the AC-ON-OFF relay.

The primary circuit of the power transformer T9 is closed when the power ON-OFF relay K2 is thrown to the ON position by pushing the ON button at the front panel. One side of this primary circuit connects to terminal 10 of speaker receptacle J2. When the speaker plug P4 is inserted into the receptacle, the jumper wire between terminals 9 and 10 of the speaker plug completes the AC circuit to terminal 1 of the receiver receptacle J3 through the switch on relay K2 then back through terminal 4 of receiver receptacle J3 to the power transformer. The AC power circuit is fed through the speaker receptacle J2 so that if the speaker plug is removed when the power is on, the primary circuit is automatically broken and no damage can be done to the high voltage rectifiers. Capacitor C96 is provided to filter out any noise entering through the primary circuit of the power transformer. Receptacle J1 is provided for connection of the AC plug on the record changer. This receptacle is connected across the primary circuit of the power transformer and is active only when the receiver is turned ON.

One secondary of the power transformer furnishes high voltage for the full wave rectifier plates. Another winding furnishes filament voltage for the rectifier tubes V23 and V24. A third winding furnishes heater voltage for all tubes in the power supply chassis except the rectifiers. A fourth winding furnishes heater voltage for all tubes on the receiver chassis.

The rectified voltage from the rectifier tubes V23 and V24 is filtered by a two section filter and fed to the plate of the power output tubes V20 and V21 through the primary of output transformer T8. This voltage is also fed through terminal 2 of speaker receptacle J2 and plug P4 to the 675 ohm field of the loudspeaker; from the field it feeds back through the speaker plug and receptacle terminal 4 and fed to the plates of V19A and V19B and the screens of V20 and V21. From this point a dropping resistor R92 reduces the voltage to the proper potential for all other tubes in the receiver.

The voltage regulator tube V22-OD3 (VR-150) is included in the power supply circuit to provide stabalized voltage for the AM and FM oscillator tubes so that variations in line voltage will not affect the frequency setting of the oscillator circuits.

4.11 Loudspeaker Circuits

The loudspeaker used with the Model 800-B Radio-Phonograph may be either a coaxial type or an extended range single speaker. Both speakers have the same field characteristics. A 675 ohm series field connected to terminals 2 and 4 of speaker plug P4 and a 9000 ohm shunt field connected to terminals 4 and 6. The coaxial speaker consists of a 15 inch low frequency speaker with a 5 inch PM tweeter mounted in the center. A network is used with the high frequency tweeter so that it will reproduce only the higher frequencies. The voice coil impedance of the coaxial speaker is 8 ohms and is connected to terminals 3 and 5 of speaker plug P4. One side of the tweeter circuit is connected to terminals 7 and 8 of the speaker plug which feed through the speaker receptacle J2 to terminals 8 and 11 of the receiver power receptacle J3; then through the cable to switch SW6A on the FM-AM relay. When the switch is thrown to FM position this circuit is closed and the tweeter is effective but when the relay is thrown to AM position the tweeter circuit is open and only the 15 inch low frequency is effective. Since the low frequency speaker will reproduce all frequencies desired for AM broadcasts or record reproduction the tweeter is not used to prevent reproduction of undesirable back ground noise. The 15 inch extended range single speaker has a voice coil impedance of 16 ohms and is connected to terminals 1 and 5 of speaker plug P4, since no tweeter is used, terminals 7 and 8 are open.

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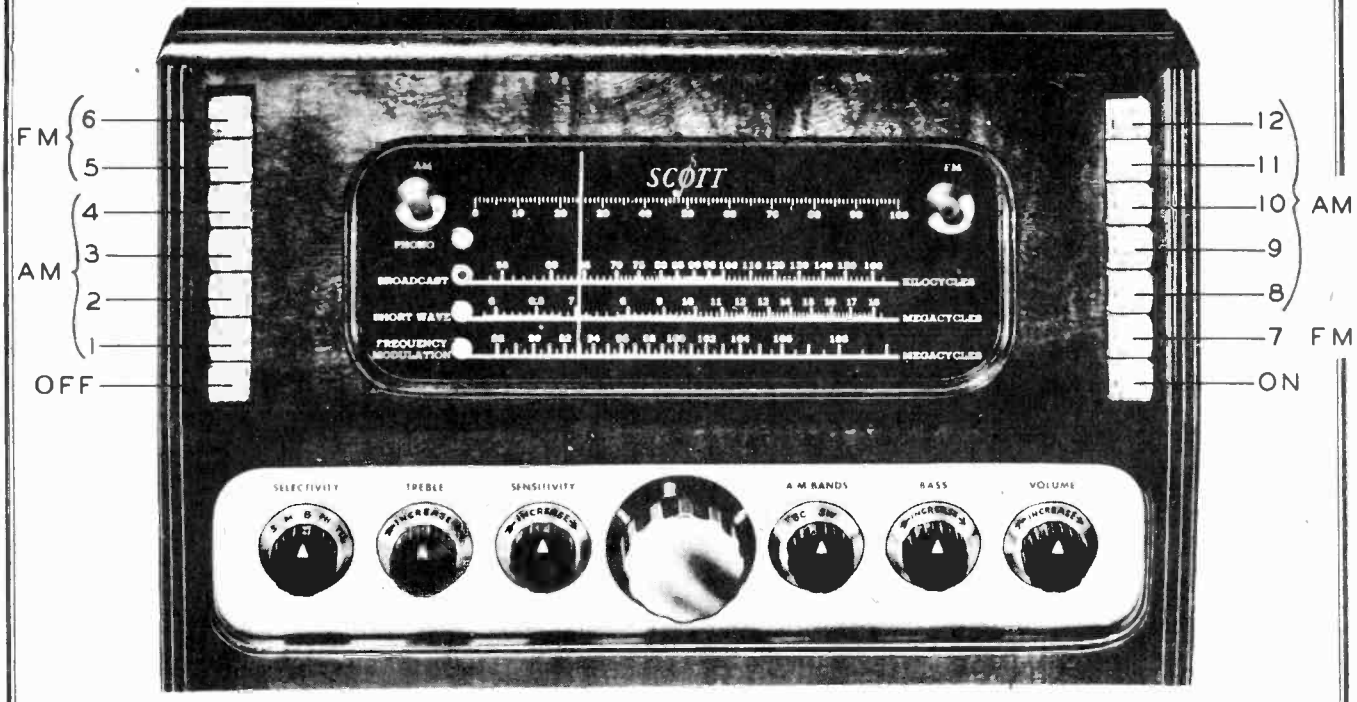

Figure 9 Front View 800-B Receiver Showing Pushbutton Sequence

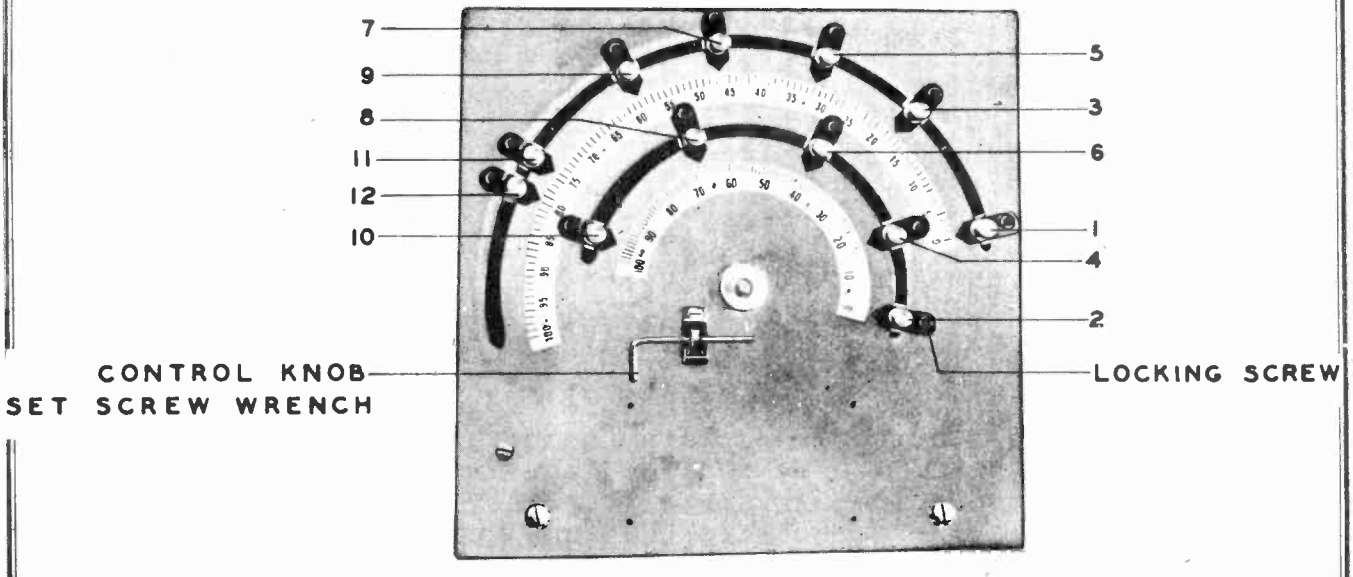

Figure 10 Back View of Pushbutton Tuning System Backplate

4.12 Pushbutton Tuning System Circuits

The pushbutton tuning system in the Model 800-B Radio-Phonograph utilizes 14 pushbuttons, 12 of which are used for station selection and 2 being used to turn the receiver ON and OFF. Figures 29 and 30 depict the circuit diagrams of the systems used in the early models and the present models. The switches used are all single pole single throw, momentary contact pushbutton type. Seven switches are used in each gang located at the right and left side of the panel. Details on setting up and adjusting the pushbutton system are explained in Section V - Adjustments.

Each of the twelve pushbutton switches is connected by a color-coded lead to a terminal board E27 mounted on the under side of the receiver chassis. This terminal board is used as a common tie-point for wires leading to the switches, the backplate contacts and the remote box receptacle.

The backplate is the nerve center of the pushbutton tuning system. It consists of two semi-circular disks insulated from each other by a bakelite strip which has a narrow protrusion rising above the contact surfaces of the disks. The two disks are connected to the two windings of a reversible type motor which is coupled directly to the tuning shaft of the dial. The two disks which form the backplate rotor are coupled directly to the shaft of the main tuning capacitor. On the stator of the backplate are mounted twelve contact fingers with numbered, adjustable knobs. Each of these contacts are connected to a switch on the front panel as shown in Figure 9. On the early Model 800-B Receiver the backplate operates as follows, taking contact No.1 as an example. When pushbutton No. 1 is pushed the switch contacts close and potential from the 36 volt tap of pushbutton tuning transformer T10 is fed through the coil of muting relay K3 to terminal 3 of receiver power receptacle J3, then through receiver plug P1, terminal 3 to switch SW5 on the power ON-OFF relay, then to switch section SW2D of the band change control, to switch section SW3D of the selectivity control, then through lead No. 1 to the common terminal of the tuning motor. The voltage could then flow through either winding of the motor but since contact No. 1 is on the left side of the backplate rotor the voltage will be applied only to that side of the rotor through contact No. 1 to switch No. 1 then through lead No.5 and through coil L18 of the FM-AM relay to chassis ground. It is then returned to the other side of the 36 volt winding of the transformer through chassis ground. When the circuit is energized by closing a pushbutton switch as above the voltage across the coil L22 of muting relay K3 will energize the relay, closing the contacts and muting the audio circuit so that signals are not audible as the dial tunes across them. The voltage flowing through the motor winding causes it to rotate, actuating the dial mechanism and turning the backplate rotor, until the insulated segment rides under the active contact, at this instant the voltage in the circuit is interrupted and the motor stops running releasing the contacts on the muting relay. Since pushbutton No. 1 is connected to the AM common lead, the AM coil of the FM-AM relay would be energized when the circuit was closed thereby switching the AM circuits ON and making the FM circuits ineffective. If pushbutton switches 5, 6 or 7 or any switch which may be connected to the FM common lead were energized, the relay would automatically switch over as the FM coil of the relay would then be energized.

Figure 30 depicts the pushbutton tuning system used in the later model 800-B Receivers. The pushbutton switches are provided with two rows of dummy lugs, one row connected to the AM common lead, the other row connected to the FM common lead, and all that is necessary to use any pushbutton for FM or AM is to connect that switch to the corresponding common lead. It will be observed that the numbers opposite the pushbuttons have been rearranged so that they are in sequence - 1 to 12. Pushbuttons 5, 6 and 7 are still wired for FM when the receivers leave the factory as most of the FM stations are located in the center of the tuning scale but in locations where a frequency at some other part of the dial has been allocated, another pushbutton may be used by disconnecting the jumper wire of that particular switch from the AM common lead and connecting it to the FM common lead. The next item to be observed is the addition of two relays in series with the backplate rotor disk. When either of these relays are energized by voltage applied through the rotor disk, switches SW10 or SW11 are closed completing the motor circuit and turning the dial mechanism. By means of this arrangement very little current is required to pass through the backplate movable contacts thus prolonging their life. It will be noted also that the 36 volt tap of the pushbutton tuning transformer T10 is no longer required, all necessary potential being supplied from the 24 volt tap.

The pushbutton system drive motor is a 24 volt reversible type motor geared directly to the dial drive mechanism.

The power ON-OFF relay is a double solenoid relay with 1 rotary type switch section. When one of the solenoid coils is energized by pushing the ON pushbutton the relay actuates the switch to close the AC primary circuit of the power transformer and also closes the 24 volt circuit to the drive motor. When the other solenoid coil is energized by closing the OFF pushbutton, both of the above circuits are opened. Both solenoid coils operate at 24 volts AC.

The FM-AM relay is a double solenoid relay with 2 rotary type switch sections that operate 6 circuits. When one coil is energized by closing any AM pushbutton switch all circuits close to operate for AM reception, when the other solenoid coil is energized by closing any FM pushbutton switch, the circuits close to operate for FM reception. Both solenoid coils operate at 10 volts AC on the early model receivers and on all late model receivers with the relays in the drive motor circuit. The solenoid coils of the FM-AM relay operate at 22 volts AC.

The muting relay used in the 800-B Receiver is actuated by the voltage used to run the drive motor. The switch is a S.P.S.T. with contacts normally open. The coil operates on 2.4 volts AC.

The drive motor relays are identical in electrical characteristics to the muting relay although in some receivers the mechanical conetruction will be different.

The remote keyboard receptacle J6 is a 21 contact receptacle provided for the connection of a remote keyboard when it is desired to tune the receiver from a remote position. By means of this remote keyboard it is possible to tune in up to 12 stations, control the volume and turn the receiver ON and OFF. When the remote keyboard is to be used, a motorized volume control with the necessary connections is installed in the 800-B Receiver.

MODEL 800-B Early

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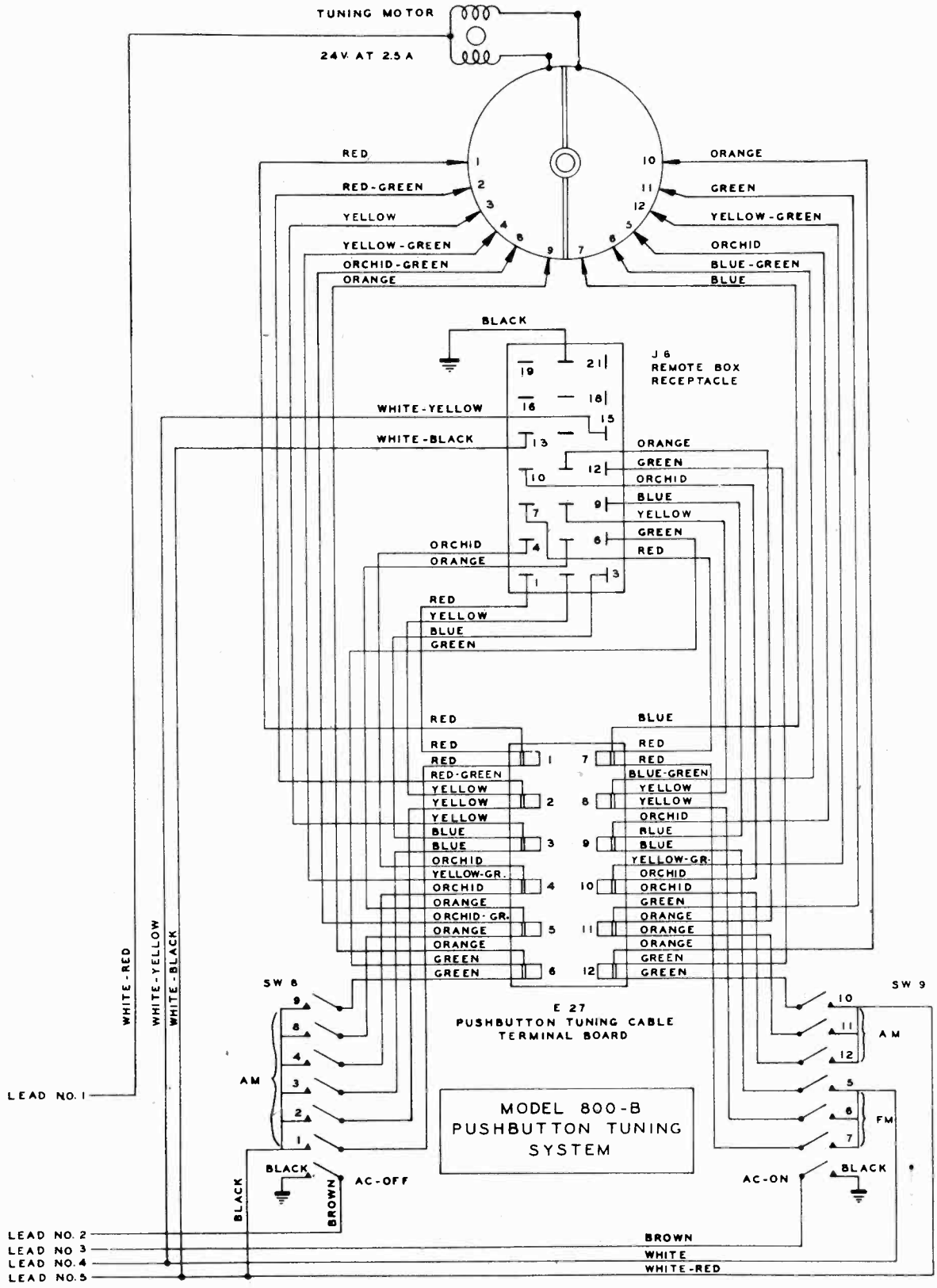

Figure 29 Schematic Diagram Pushbutton Tuning System

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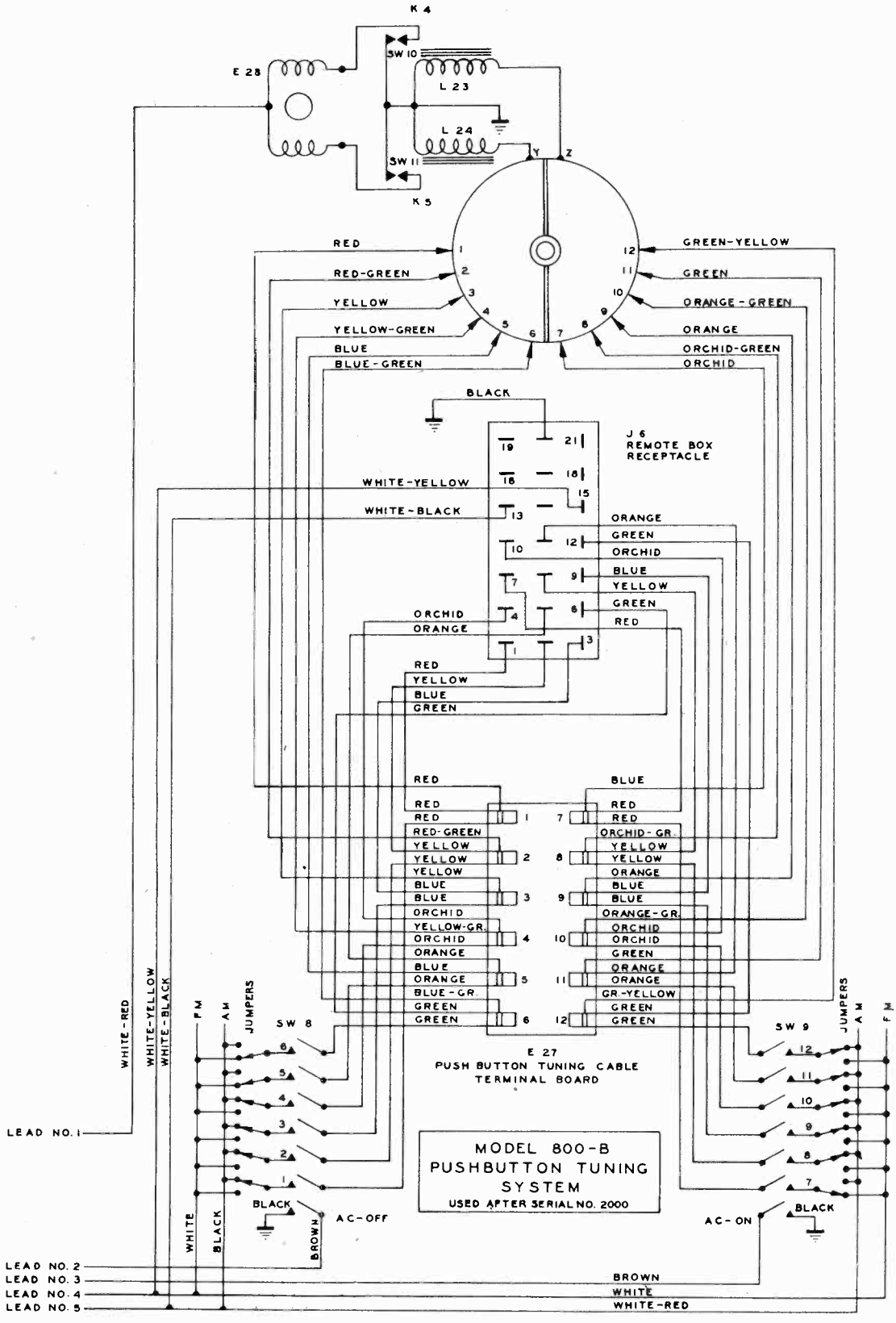

Figure 30 Revised Schematic Diagram Pushbutton Tuning System

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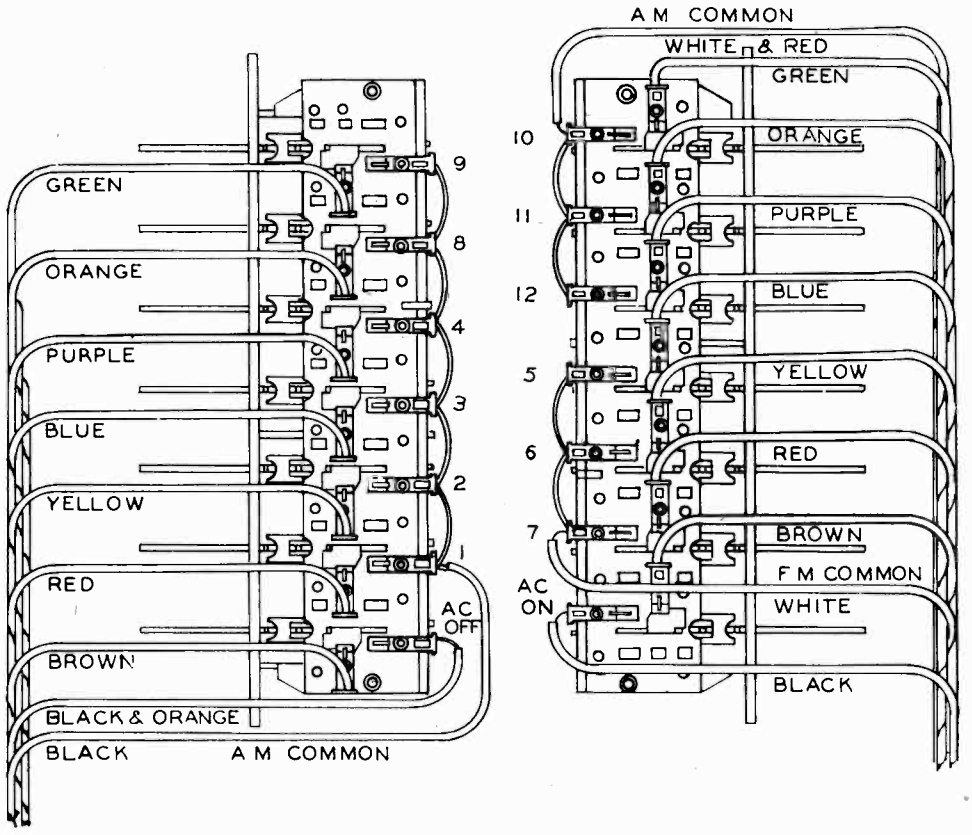


Figure 11 Pushbutton Switch Detail

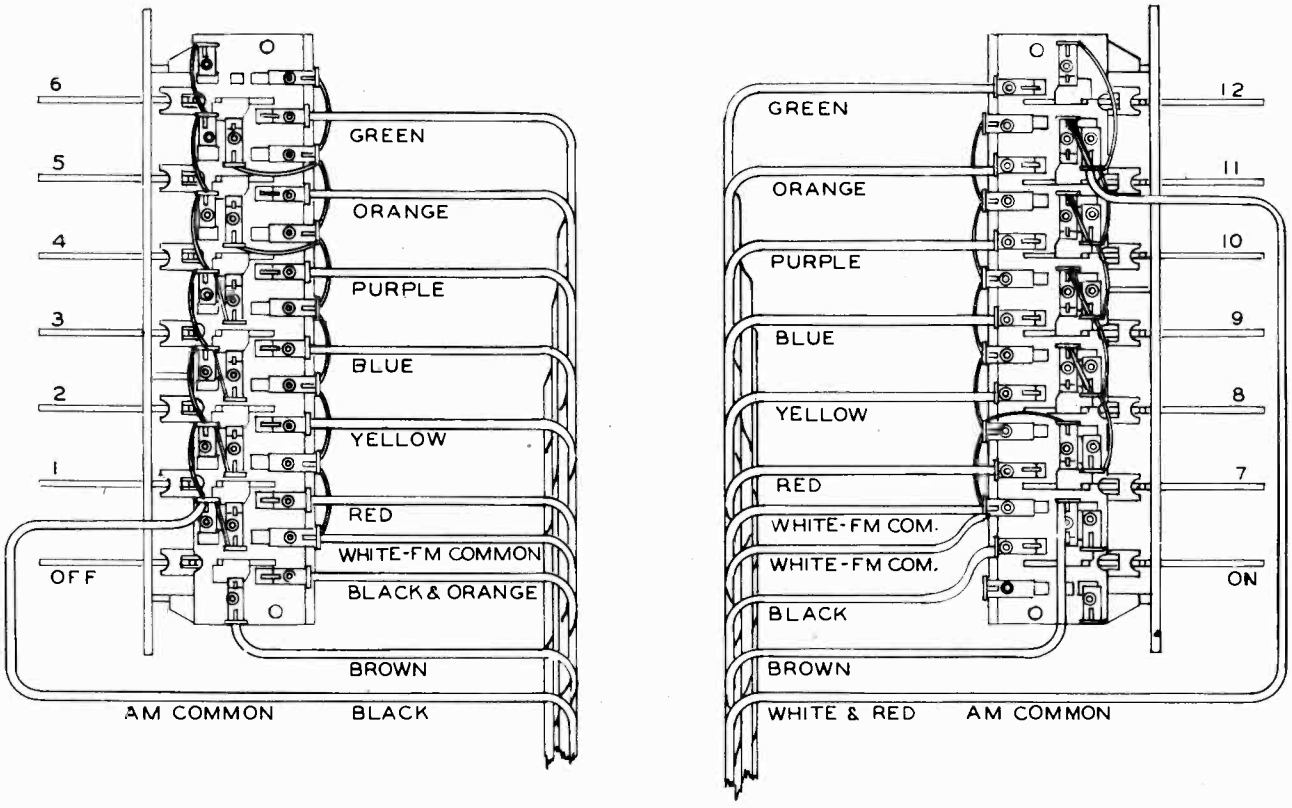


Figure 12 Pushbutton Switch Detail Modified

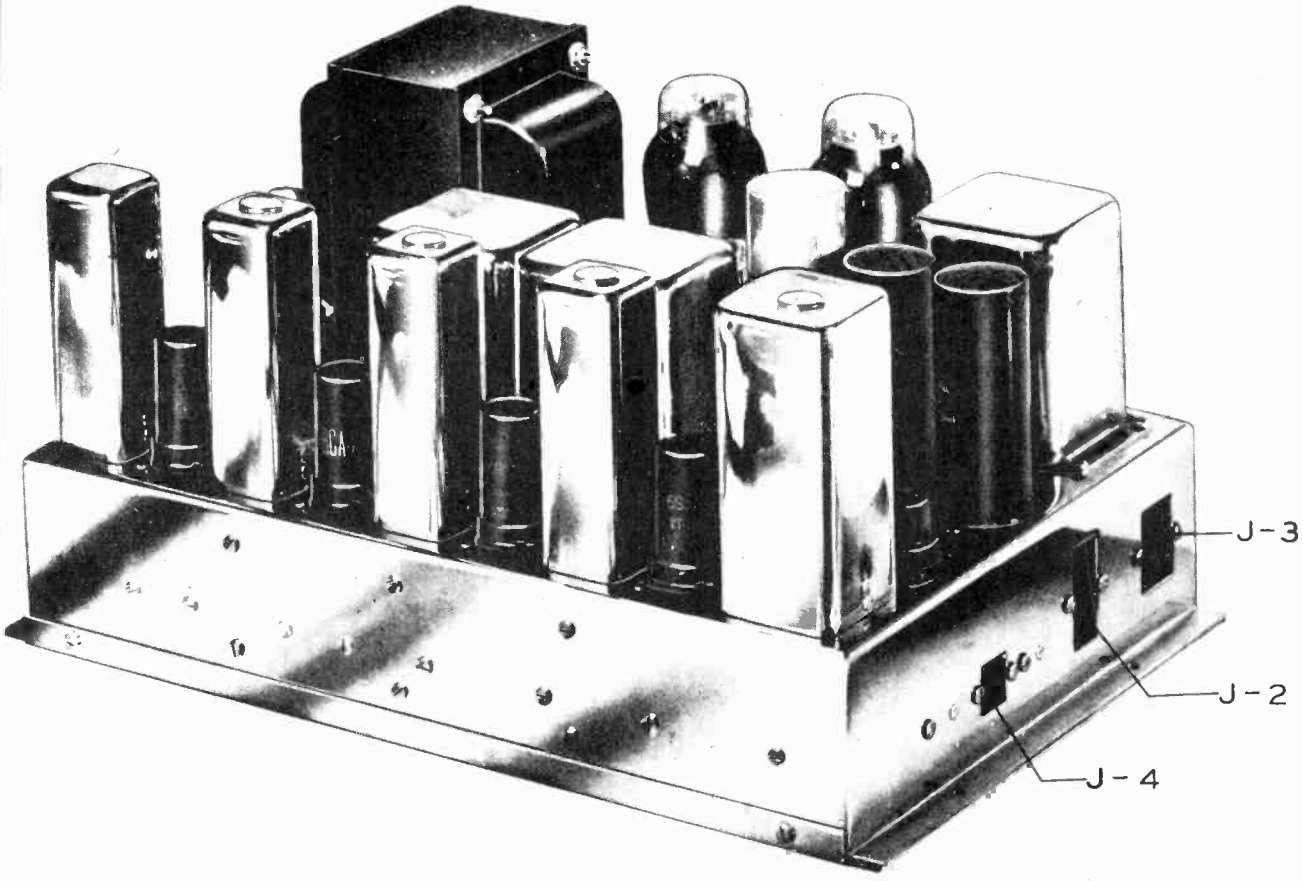


Figure 20 End View Model 800-B Power Supply Chassis

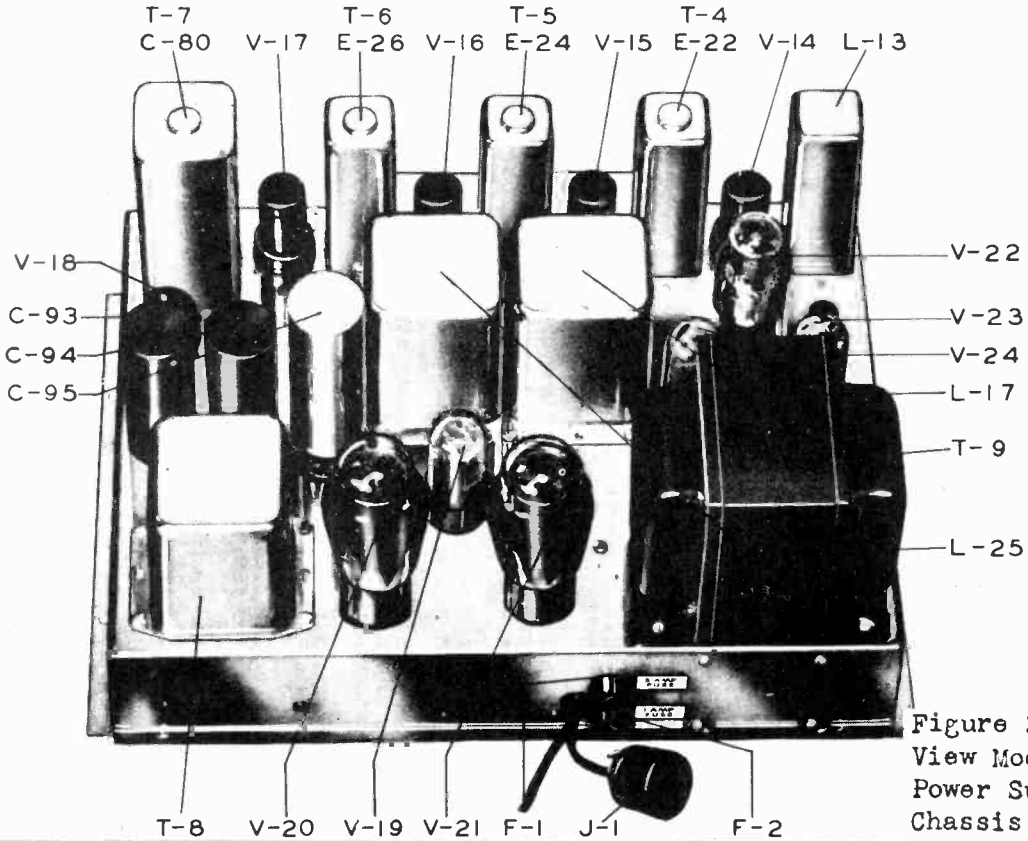


Figure 21. Top View Model 800-B Power Supply Chassis

Section V ADJUSTMENTS

5.1 Setting up Pushbutton Tuning System

The pushbutton tuning system in the 800-B Receiver has been designed to provide maximum flexibility in order to permit setting up for 6 or more AM stations and 1 to 6 FM stations, the only limitations being the spacing of the stations on the tuning dial or the setting for an AM station falling on the same spot as that for an FM station. At the factory the receivers are wired so that 4 buttons on the left side of the panel and the 5 top buttons on the right side are wired for AM stations and the lower button on the right side with the two top buttons on the left side are wired for FM stations as shown in Figure 9. No attempt should be made to set up the pushbutton tuning system for weak distant stations as poor results will be obtained because of background noise.

The switch over from AM to FM reception is done automatically in the receiver, that is, with the receiver adjusted for pushbutton tuning, when any AM button is pushed the receiver is automatically set for AM reception and when any FM button is pushed the receiver is automatically switched for FM reception.

The pushbutton tuning drive unit is located at the rear of the receiver chassis. This unit has 12 adjustable knobs which are numbered 1 to 12. These knobs are set to the desired position by turning them clockwise or counter-clockwise with a rotary motion. They are locked in position by means of a small screw, adjacent to the knob. These small lock screws should never be tightened more than one turn past the point where the screw touches the backplate. If tightened more the setting of the knob will be changed. Two calibrated scales located below the two rows of knobs, are provided to enable setting the knobs in conjunction with the logging scale at the top of the front dial scale. Each of the pushbuttons on the front panel is wired to the corresponding knob on the backplate in the sequence shown in Figure 9. The following procedure should be followed in setting up the pushbutton tuning system.

1. Set the Selectivity control to "M" position and the AM-Band control to "BC" position.

2. Select the lowest frequency AM station to be set up and insert the tab for this station in pushbutton No. 1.

3. Tune in the desired station manually and note the setting of the dial pointer on the logging scale at the top of the dial.

4. Set knob No. 1 on the backplate to the corresponding number noted on the logging scale, and lock the knob in place by means of the small screw directly above it. CAUTION: Never tighten the small locking screw more than one turn past the point where it touches the backplate; if tightened more the setting of the knob will be changed.

5. As a check to ascertain that the knob is set correctly, manually set the dial pointer to a higher frequency, then push button No. 1 until the pointer stops and check this setting against the original reading on the log scale. Repeat this operation after setting the dial to a lower frequency. If the both readings are higher or both readings lower than the original log scale reading for this station then the No. 1 knob must be moved slightly to correct for the error in reading. If the two readings are spaced equally one-half a division or less on both sides of the original station setting, as read on the log scale, the adjustment has been correctly made.

6. The above operation should be repeated for each pushbutton to be set up, starting with button No. 1 for the lowest frequency station and working up consecutively to button No. 12 for the highest frequency station. Pushbuttons 5, 6 and 7 can be used only for FM reception and when any of these buttons are pushed the receiver will automatically switch over to FM reception.

NOTE: The pushbutton tuning system will work only when the Selectivity control is set at "M" or "B" positions and the AM-Band control is set at "BC" position. If the pushbutton system does not work when the controls are set as above, replace the 1 amp fuse in the power supply. Refer to Figure 21 for location.

5.2 Connecting Pushbutton Switches for AM or FM Operation

When more than 3 FM stations or more than 9 AM stations are desired, by connecting the pushbutton switches as outlined below, any of the 12 pushbuttons may be set up for either an AM or FM station.

On the first Model 800-B Radio-Phonographs produced, the pushbutton switches were connected as shown in Figure 11. It will be noted that on the left hand switch gang, one side of switches 1-2-3-4-8-9 are all connected to the black AM common lead, therefore, all these switches will operate on AM stations. If it is desired to connect one or more of the switches on the left hand side for FM stations, it will be necessary to disconnect the switch or switches required from the black AM common lead and connect them over to the white FM common lead on the right hand switch.

On the right hand switch gang, one side of switches 5-6-7 are connected to the white FM common lead, therefore, these three switches are used to set up FM stations. One side of switches 10-11-12 are connected to the white-red dot AM common lead and are used to set up AM stations. In order to use anyone of these switches for an FM station, disconnect that switch from the AM common lead and connect it to the FM common lead. In this manner any one of the twelve pushbutton switches may be connected for operation on either AM or FM.

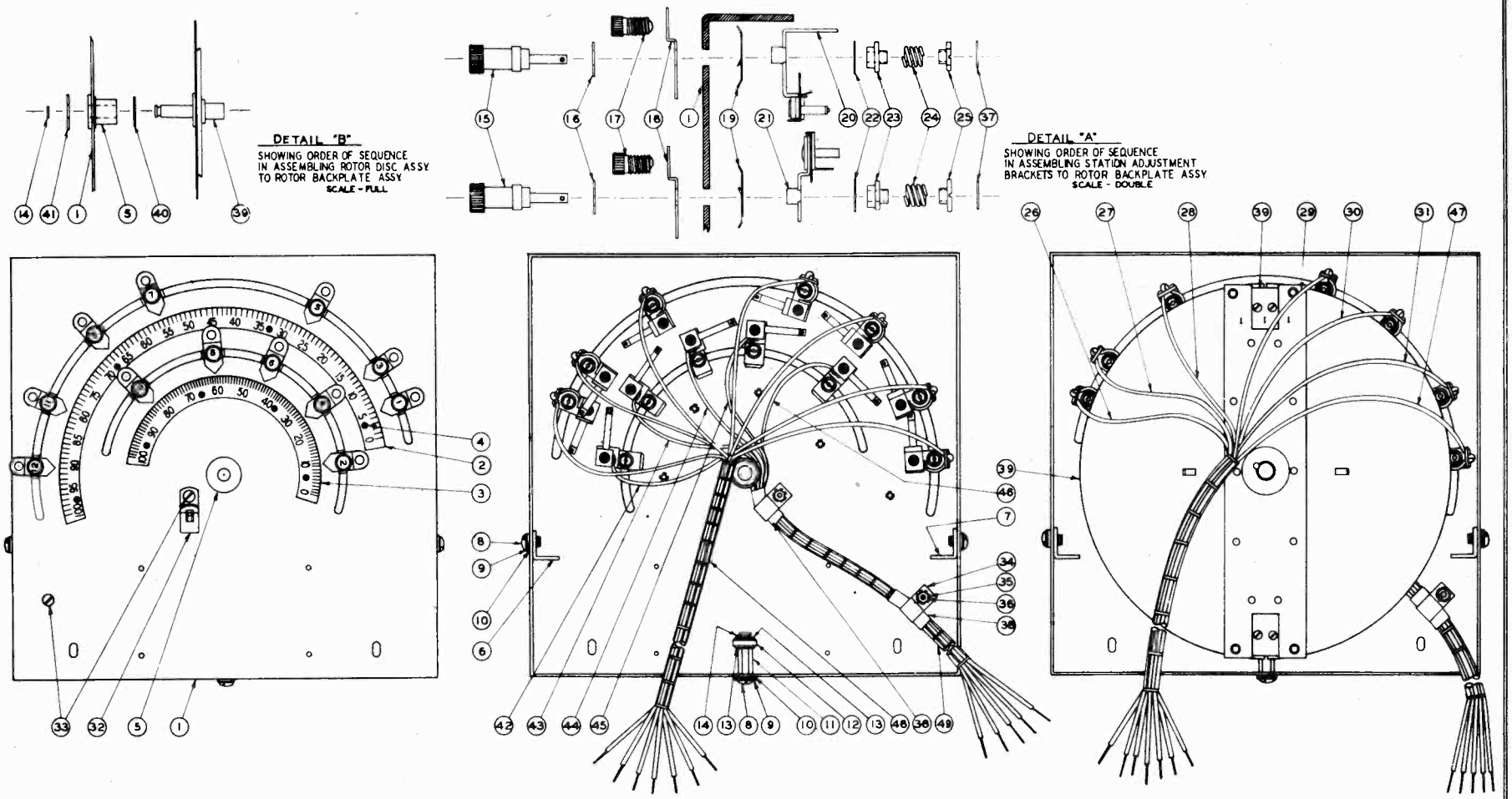
On the later Model 800-B Radio-Phonograph, the switch gangs have been provided with 2 dummy lugs on each section; one row of dummy lugs are connected to the AM common lead, the other row of dummy lugs are connected to the FM common lead and all that is necessary to connect any pushbutton for operation on AM, is to connect that switch to the AM common lug and for FM operation connect it to the FM lug. It will be noted by observing Figure 12 that the pushbuttons are now numbered in sequence 1 to 12 starting at the bottom pushbutton on the left side of the panel.

Table 1 Trouble Location Chart

Symptom	Cause	Remedy
Set fails to switch ON or OFF	Blown 1 amp or 3 amp fuse	Replace defective fuse
	Defective switch contacts on ON-OFF relay	Adjust contacts on switch or replace switch section
	AC ON-OFF relay inoperative	Check relay connections
		Put drop of light oil on rotor shaft bearing
Set operates but pushbutton system fails to operate	Blown 1 amp fuse	Replace defective fuse
	Defective switch contacts on ON-OFF relay	Adjust contacts on switch or replace switch section
Set weak or dead on all bands	Blown 3 amp fuse	Replace defective fuse
	Defective tube in audio amplifier or rectifier	Replace with good tube
	Defective speaker	Check continuity of voice coil
		Check continuity of field coils
		Check components and connections of network on coaxial speakers
	Socket voltages wrong	Check associated bypass capacitors
		Check associated resistors
		Check continuity of associated wiring
	Defective switch contact	Clean and adjust defective switch or replace switch section
Set weak or dead on one band only	No signal	Check all coils on specific band
		Check switch contacts on specific band
		Check all tubes used for specific band
		Check FM-AM relay

Table 1 Trouble Location Chart (Continued)

Symptom	Cause	Remedy
Noisy reception	Defective tube	Tap all tubes lightly and replace any that are noisy
	Defective component	Tap all components lightly with insulated rod. Check carefully suspected parts
	Defective antenna	Check antenna installation, lead-in and connections
Oscillation	Defective tube	Replace tubes one at a time
	Open bypass capacitor	Connect good capacitor across suspected unit temporarily Replace defective unit
Hum	Defective tube	Replace tubes one at a time
	Defective electrolytic filter capacitor	Replace defective unit
	Defective bypass capacitor	
	Transformer lamination buzz	Tighten screws on power transformer and 46 volt transformer
		Insulate 46 volt transformer from bottom cover plate with tape
		Mount power supply on rubber or felt



BILL OF MATERIAL

No.	Part No.	Req'd	Description
1	64-B-482	1	PLATE-REMOTE TUNING BACK
2	76-B-628	1	SCALE, ROBOT (LARGE)
3	76-B-630	1	SCALE, ROBOT (SMALL)
4	33-B-662	8	EYELET (.085 DIA. X .119 X .153)
5	5-B-676	1	BEARING-BACK PLATE ROTOR
6	8-B-529	1	BRACKET-LEFT BACKPLATE MTG.
7	8-B-530	1	BRACKET-RIGHT BACKPLATE MTG
8	77-A-450	3	SCREW 8-32 X 1/4 B.H.
9	95-A-281	3	LOCKWASHER #8 EXT. TOOTH
10	95-A-393	4	WASHER #8 FLAT
11	66-B-882	1	STUD - BACKPLATE ROLLER
12	8-B-883	1	ROLLER BACKPLATE BUSHING
13	29-A-142	2	WASHER .015"
14	95-A-261	2	WASHER - CLAMP
15	10-B-577-A	12	BUTTON-STATION LOCATING
16	95-B-583-A	12	WASHER - SPRING
17	77-B-579	12	SCREW-REMOTE LOCK
18	66-B-903	12	POINTER - STATION INDICATING
19	95-B-585-A	12	WASHER STABILIZING
20	8-B-503-A	7	BRACKET ASSY. STAT'N ADJ. (LONG)
21	8-B-504-A	5	BRACKET ASSY STAT'N ADJ. (SMALL)
22	95-B-363	12	WASHER - SPRING
23	5-B-578	12	BUSHING-BUTTON CLUTCH
24	66-B-562	12	SPRING
25	95-B-586	12	WASHER - SLOTTED
CABLE		1	RED WIRE
CABLE		1	YELLOW WIRE
CABLE		1	PURPLE WIRE
CABLE		1	ORANGE WIRE
31	CABLE	1	GREEN WIRE
32	119-B-809	1	CLIP
33	77-A-374	2	SCREW 6-32 X 5/16"
34	18-A-312	2	CLAMP
35	95-A-253	2	#6 LOCKWASHER EXT. TOOTH
36	59-A-177	2	NUT 6-32 X 1/8" HEX.
37	98-B-574	3"	WIRE .025 MUSIC
38	97-B-868	3"	TAPE 1 INCH SCOTCH MASK TAPE
39	2-B-880	1	ROTOR DISC ASSY.
40	95-B-754	1	WASHER, PHOS. BRONZE
41	95-B-555	1	WASHER 1/4" DIA. X .230 X .090
42	CABLE	1	RED WIRE WITH GREEN MARKER
43	CABLE	1	YELLOW WIRE WITH GREEN MARKER
44	CABLE	1	BLUE WIRE WITH GREEN MARKER
45	CABLE	1	PURPLE WIRE WITH GREEN MARKER
46	CABLE	1	ORANGE WIRE WITH GREEN MARKER
47	CABLE	1	GREEN WIRE WITH YELLOW MARKER
48	98-B-838	1	CABLE - 7 WIRES PC. 28-34 &47
49	98-B-839	1	CABLE - 3 WIRES PC. 42-48
50	83-B-835	1-OZ	SOLDER-.062 - 50 CORE 50-50

SCOTT RADIO LABORATORIES INC. CHICAGO ILL.
REMOTE TUNING BACKPLATE ASSY.
MATERIAL | SCALE FULL
DATE 4-22-48 CHECKED BY | ISSUE NO. 1
DRAWN BY Powell APPROVED BY | PART NO. 2-B-780

Figure 24 Pushbutton Tuning Backplate Detail Drawing

Section VI MAINTENANCE AND REPAIRS

Lubrication

There are very few moving parts on the Model 800-B Radio-Phonograph that will require lubrication more often than once a year with the possible exception of the record changer and this will depend on the amount of use the record changer receives. The manufacturers recommendations on lubrication as outlined in the instruction book packed with each record changer should be followed. A drop or two of #10 oil on the receiver slide rails and record changer compartment once a year will keep these parts working smoothly. In addition a drop of #10 oil should be applied to the dial tuning shaft bearing and the FM-AM relay and power ON-OFF relay bearings.

6.4 Pushbutton Tuning System Maintenance

Although there are very few moving parts in the pushbutton tuning system which will require frequent adjustment or maintenance the following information is outlined to assist in keeping the system in good working condition.

1. Pushbutton switches

A little carbon-tetrachloride, applied with a clean cloth or a small brush while the switch is worked back and forth, will keep the contacts clean.

2. Drive motor and remote volume motor

The clutch release spring on the back of these motors at the end of the rotor shaft may need adjusting to keep the clutch from chattering. A pair of long nose pliers should be used for this adjustment. If the clutch chatters when the motor is driving the dial, apply more pressure by bending the spring in toward the motor frame. If the clutch fails to release soon enough when the backplate insulator segment reaches the contact, the disk may override the contact and start to reverse. To remedy this fault pressure on the clutch release spring should be loosened by bending the spring out slightly. These same adjustments apply to the remote volume control motor on receivers which have this motor installed.

3. FM-AM relay and power ON-OFF relay

The switch contacts on these relays should be cleaned by applying carbon-tetrachloride with a clean cloth or small brush. The contacts may need slight adjustment at times for if they are too loose, poor contact will result and some of the circuits will not work or if they are too tight the relay may stick and refuse to throw to the proper position. Caution should be exercised when adjusting these contacts in order to maintain proper contact.

4. Muting relay and motor control relays

Since these relays are of very simple construction no adjustment should ever be necessary on them, however the switch contacts may need cleaning at times and the best method of doing this is to use a narrow strip of clean cloth with a little carbon-tetrachloride, burnishing the contacts with a back and forth motion.

5. Backplate contacts and rotor disk

The backplate contacts and rotor disk will be subjected to more wear than any other part of the tuning system. Maintenance will consist essentially in keeping the contacts and rotor disk surfaces clean and maintaining proper contact between the rotor disk and the movable contacts.

In order to clean or adjust the backplate contacts it is necessary to remove the backplate and the rotor disk from the receiver as follows:

1. Remove the horseshoe clamp washer from the end of the rotor disk shaft.
2. Remove the two screws holding the bottom of the backplate to the chassis and the two screws holding the brackets of the backplate to the top of the chassis base.
3. Loosen the two set screws which hold the rotor disk to the flexible coupling.
4. Pull the backplate away from the receiver chassis and remove the rotor disk.
5. The contacts and rotor disk can be cleaned by wiping them with a clean cloth using carbon-tetrachloride. The contacts should then be adjusted so that the tip of the contact is 11/16" from the inside surface of the backplate.

   If the insulating segment is badly worn it can be easily replaced by removing the segment at the end of the insulating strip marked with the Figure 1 and replacing with a new segment.
6. The rotor disk can now be reinserted into the backplate bearing and the flexible coupling, and the backplate fastened back onto the receiver chassis. Then insert the clamp washer back onto the rotor shaft.
7. In order to properly position the rotor disk so that the original setting of the contact knobs will still be the same, proceed as follows:
   1. Set the No. 1 contact knob at the extreme end of the top slot in the backplate.
   2. Set the dial at approximately 600 kilocycles or 20 on the logging scale.
   3. Set the rotor disk so that the end with the insulated segment marked 1 is slightly above center and tighten down one of the set screws in the flexible coupling.
   4. With the receiver turned ON, press pushbutton No. 1 and run until the backplate rotor disk stops.
   5. Loosen up the set screw in the coupling being careful not to change the position of the rotor disk, then while holding the rotor disk firmly so that it will not move, turn the dial tuning knob until the dial pointer is at the extreme left side of the scale.
   6. Tighten down both set screws in the flexible coupling. The backplate will now be in the original position as set at the factory and if the contacts have not been moved all the previous contact knob settings should remain the same.

6.5 Record Changer Maintenance

For information on adjustments and lubrication the instruction manual furnished with the record changer should be consulted.

On most of the pickup cartridges furnished with the record changers, the needle is held in place by means of a set screw. If this set screw becomes loose the needle may turn sideways in the cartridge and will not seat properly in the needle groove or will sound distorted. The needle furnished is of the precious metal, long life type and if it is found necessary to replace it or if it becomes loose in the cartridge, remove the two screws holding the cartridge in the pickup arm and drop the cartridge out of the arm. The set screw can be loosened and the needle either replaced or set at the proper position again. The bent shank portion of the needle should face straight out from the pickup cartridge. Caution should be used in replacing the needle not to apply too much pressure on the set screw as this may cut through the plastic shank of the needle and ruin the reproduction.

6.6 Voltage and resistance tests

Table 2 lists the tube socket voltages for various settings of the controls. All voltages are measured between the chassis and socket terminals. Voltage measurements listed are made with a DC voltmeter of 1000 ohms per volt using the highest range scale that can be easily read. The receiver should be connected for normal operation and the controls adjusted as listed in Table 2. Line voltage should be 115 volts 50-60 cycles. Resistance measurements are listed in Table 3. All resistance measurements are made between chassis and terminals listed. The most suitable scale for the measurement being taken should be used. The receiver should be disconnected from the power source with controls adjusted as follows: Selectivity - sharp, Treble - max., Sensitivity - as listed, AM Band-as listed, Bass - max., Volume - as listed.

Table 2 Tube Socket Voltages

Terminal	Pin	Variable		Voltage DC Volts
		Symbol	Setting	
V1 Grid	4			0
Cathode	5	R5	Max.	3
	5	R5	Min.	21
Screen	6	SW6A	AM Position	85
Plate	8	SW6A	AM Position	240
V2 Grid	5			0
Cathode	8			0
Plate	3	SW6A	AM Position	130
V3 Grid #1	5			0
Cathode	6			2.5
Grid #3	8			0
Grid 2 & 4	4	SW6A	AM Position	100
Plate	3	SW6A	AM Position	240
V4 Grid	4			0
Cathode	5	R5	Max.	3.5
	5	R5	Min.	21
Screen	6	SW6A	AM Position	80
Plate	8	SW6A	AM Position	240

Table 2 Tube Socket Voltages (Continued)

Terminal	Pin	Variable		Voltage DC Volts
		Symbol	Setting	
V5 Grid	4			
Cathode	5			3.5
Screen	6	SW6A	AM Position	75
Plate	8	SW6A	AM Position	240
V6 Cathode #1	8			0
Plate #1	5			0
Cathode #2	4			0
Plate #2	3			0
V7 Grid	3			0
Cathode	5			0
Target	4	SW6A	AM Position	240
Plate	2	SW6A	AM Position	20 *
V8 Grid	3			0
Cathode	5			0
Target	4	SW6A	FM Position	240
Plate	2	SW6A	FM Position	10 *
V9 Grid	5			0
Cathode	8			2.5
Plate	3			58
			* Measured on 500 volt scale	
V10 Grid	5			0
Cathode	8			18
Plate	3			64
V11 Grid	1			0
Cathode	2-7			1.5
Screen	6	SW6A	FM Position	125
Plate	5	SW6A	FM Position	235
V12 Grid	6			0
Cathode	7			0
Plate	5	SW6A	FM Position	120
V13 Grid	1			0
Cathode	2-7			2.5
Screen	6	SW6A	FM Position	90
Plate	5	SW6A	FM Position	235
V14 Grid	4			0
Cathode	5			1.5
Screen	6	SW6A	FM Position	110
Plate	8	SW6A	FM Position	220
V15 Grid	4			0
Cathode	5			1.5
Screen	6	SW6A	FM Position	120
Plate	8	SW6A	FM Position	220
V16 Grid	4			0
Cathode	5			0
Screen	6	SW6A	FM Position	55
Plate	8	SW6A	FM Position	60

Table 2 Tube Socket Voltages (Continued)

Terminal	Pin	Variable		Voltage DC Volts
		Symbol	Setting	
V17 Grid	4			0
Cathode	5			0
Screen	6	SW6A	FM Position	52
Plate	8	SW6A	FM Position	45
V18 Cathode#1	8			0
Plate #1	5			0
Cathode #2	4			0
Plate #2	3			0
V19A Grid	1			0
Cathode	3			2
Plate	2			130
V19B Grid	4			0
Cathode	6			2
Plate	5			105
V20 Grid	5			0
Cathode	8			20
Screen	4			270
Plate	3			340
V21 Grid	5			0
Cathode	8			20
Screen	4			270
Plate	3			340
V22 Cathode	2			0
Anode	5			150
V23 Filament	2-8			370
Plate	4-6			370 AC
V24 Filament	2-8			370
Plate	4-6			370 AC

Table 3 Point to Point Resistance
Terminal to Chassis

Terminal	Pin	Variable		Resistance Ohms Plus or Minus 10%
		Symbol	Setting	
V1 Grid	4			1.39 megohms
Cathode	5	R5	Min.	10,560 ohms
		R5	Max.	560 ohms
Suppressor	3			0.0 ohms
Screen	6	SW6A	AM Position	7,300 ohms
	6	SW6A	FM Position	10,000 ohms
Plate	8	SW6A	AM Position	9,250 ohms
	8	SW3A	PH or Tel.	26,000 ohms
V2 Grid	5			47,000 ohms
Cathode	8	SW2B	BC Band	1 ohm
	8	SW2B	SW Band	.4 ohm
Plate	3	SW6A	AM Position	17,400 ohms
	3	SW6A	FM Position	Infinite

Table 3 Point to Point Resistance (Continued)
Terminal to Chassis

Terminal	Pin	Variable		Resistance Ohms Plus or Minus 10%
		Symbol	Setting	
V3 Grid #1	5			20,000 ohms
Cathode	6			240 ohms
Grid #3	8			1.39 megohms
Grid 2 & 4	4	SW6A	AM Position	26,250 ohms
	4	SW6A	FM Position	43,000 ohms
Plate	3	SW6A	AM Position	9,250 ohms
		SW6A	FM Position	26,000 ohms
V4 Grid	4			1.134 megohms
Cathode	5	R5	Min.	10,560 ohms
	5	R5	Max.	560 ohms
Suppressor	3			0.0 ohms
Screen	6	SW6A	AM Position	108,250 ohms
	6	SW6A	FM Position	125,000 ohms
Plate	8	SW6A	AM Position	9,250 ohms
	8	SW6A	FM Position	26,000 ohms
V5 Grid	4	SW3B	Sharp (S)	0.0 ohms
		SW3B	Medium (M)	47 ohms
		SW3B	Broad (B)	47 ohms
		SW3B	PH or Tel.	Infinite
Cathode	5			560 ohms
Suppressor	3			0.0 ohms
Screen	6	SW6A	AM Position	108,250 ohms
	6	SW6A	FM Position	125,000 ohms
Plate	8	SW6A	AM Position	9,250 ohms
	8	SW6A	FM Position	26,000 ohms
V6 Cathode #1	8			0.0 ohms
Plate #1	5			9,400 ohms
Cathode #2	4			1.734 megohms
Plate #2	3			47,000 ohms
V7 Grid	3			3.114 megohms
Cathode	5			0.0 ohms
Target	4	SW6A	AM Position	8,250 ohms
	4	SW6A	FM Position	25,000 ohms
Plate	2	SW6A	AM Position	1 megohm
	2	SW6A	FM Position	1 megohm
V8 Grid	3	R29	Min.	.47 megohms
	3	R29	Max.	.88 megohms
Cathode	5			0.0 ohms
Target	4	SW6A	AM Position	54,000 ohms
	4	SW6A	FM Position	10,000 ohms
Plate	2	SW6A	AM Position	1.054 megohms
	2	SW6A	FM Position	1.010 megohms
V9 Grid	5	R37	Min.	0.0 ohms
	5	R37	Max.	1 megohm
Cathode	8			1,300 ohms
Plate	3	SW6A	AM Position	102,250 ohms
	3	SW6A	FM Position	104,000 ohms
V10 Grid	5			110,000 ohms
Cathode	8			11,300 ohms
Plate	3	SW6A	AM Position	102,250 ohms
	3	SW6A	FM Position	104,000 ohms

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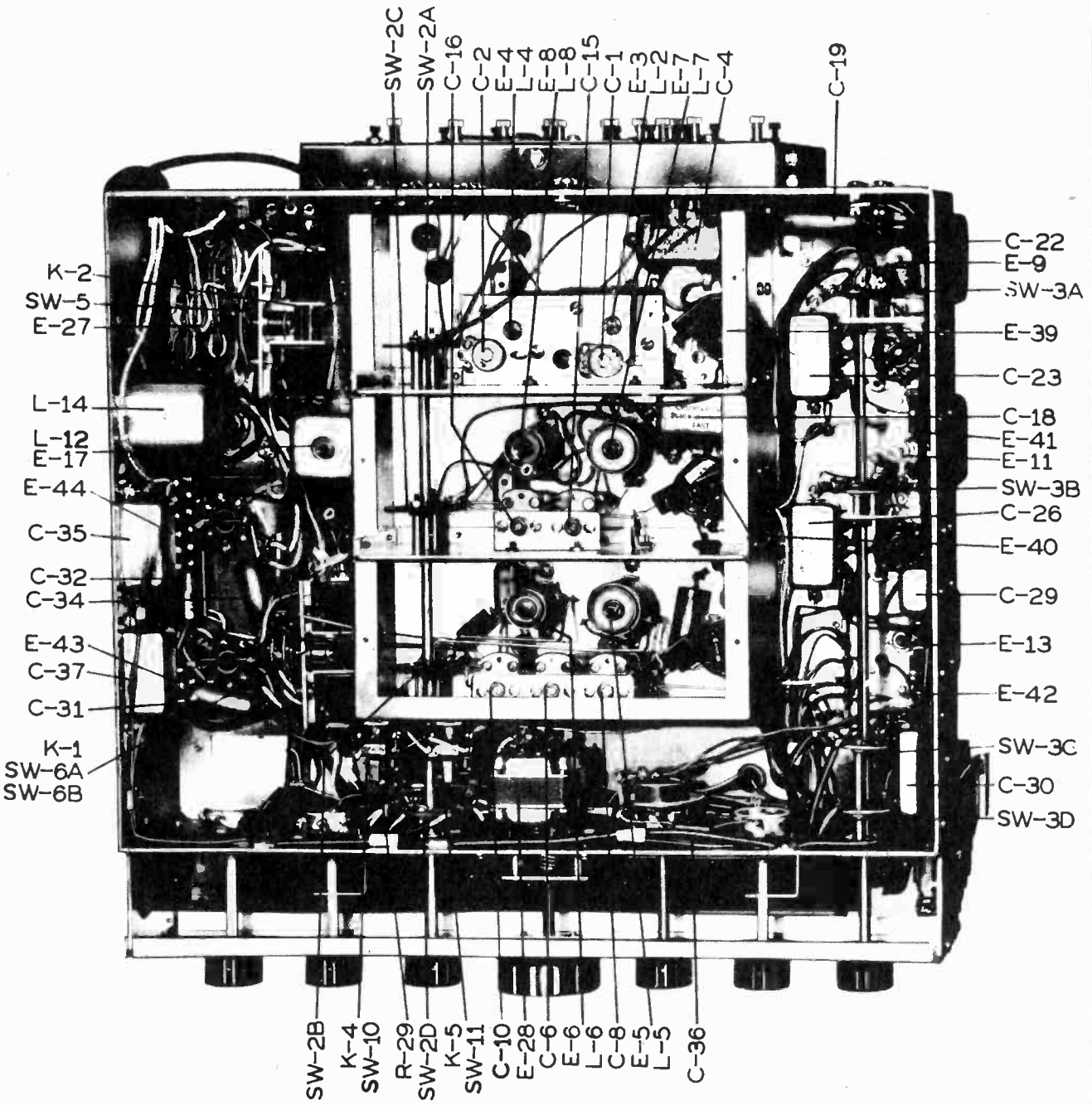

Figure 19 Bottom View Model 800-B Receiver Chassis

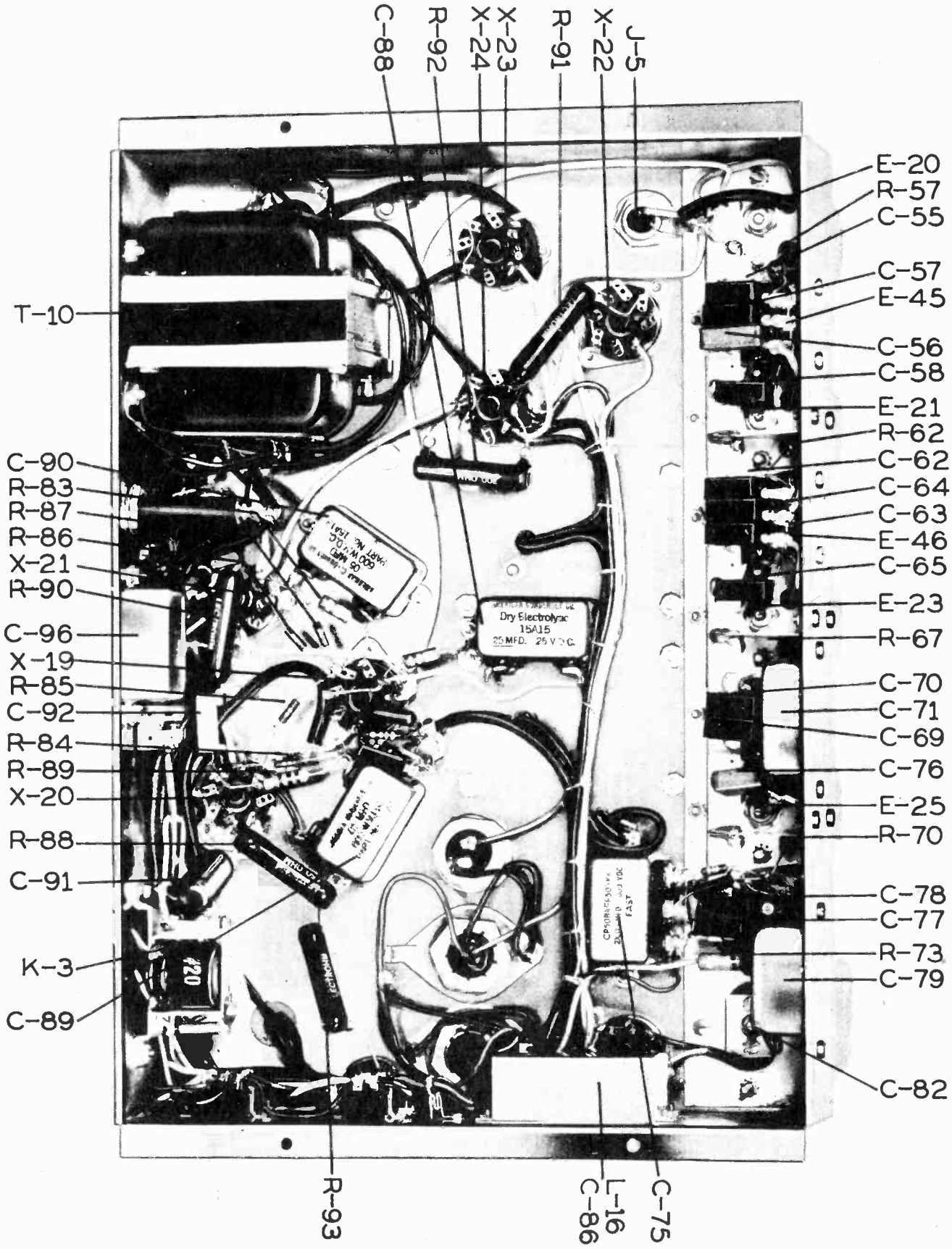

Figure 22 Bottom View Model 800-B Power Supply Chassis

Table 3 Point to Point Resistance (Continued)
Terminal to Chassis

Terminal	Pin	Variable		Resistance Ohms Plus or Minus 10%
		Symbol	Setting	
V11 Grid	1			5 ohms
Cathode	2-7			150 ohms
Screen	6	SW6A	AM Position	110,000 ohms
	6	SW6A	FM Position	66,000 ohms
Plate	5	SW6A	AM Position	55,000 ohms
	5	SW6A	FM Position	11,000 ohms
V12 Grid	6			.1 megohm
Cathode	7			0.0 ohms
Plate	5	SW6A	AM Position	Infinite
	5	SW6A	FM Position	20,400 ohms
V13 Grid	1			5 ohms
Cathode	2-7			1,000 ohms
Screen	6	SW6A	AM Position	274,000 ohms
	6	SW6A	FM Position	230,000 ohms
Plate	5	SW6A	AM Position	56,400 ohms
	5	SW6A	FM Position	12,400 ohms
V14 Grid	4			56 ohms
Cathode	5			160 ohms
Suppressor	3			0.0 ohms
Screen	6	SW6A	AM Position	110,000 ohms
	6	SW6A	FM Position	66,000 ohms
Plate	8	SW6A	AM Position	56,400 ohms
	8	SW6A	FM Position	12,400 ohms
V15 Grid	4			56 ohms
Cathode	5			160 ohms
Suppressor	3			0.0 ohms
Screen	6	SW6A	AM Position	110,000 ohms
	6	SW6A	FM Position	66,000 ohms
Plate	8	SW6A	AM Position	56,400 ohms
	8	SW6A	FM Position	12,400 ohms
V16 Grid	4			27 ohms
Cathode	5			0.0 ohms
Suppressor	3			0.0 ohms
Screen	6	SW6A	AM Position	93,000 ohms
	6	SW6A	FM Position	49,000 ohms
Plate	8	SW6A	AM Position	93,000 ohms
	8	SW6A	FM Position	49,000 ohms
V17 Grid	4			42,027 ohms
Cathode	5			0.0 ohms
Suppressor	3			0.0 ohms
Screen	6	SW6A	AM Position	15,000 ohms
	6	SW6A	FM Position	11,600 ohms
Plate	8	SW6A	AM Position	154,000 ohms
	8	SW6A	FM Position	115,000 ohms
V18 Cathode#1	8			0.0 ohms
Plate #1	5			.156 megohms
Cathode#2	4			.2 megohms
Plate #2	3			.156 megohms
V19A Grid	1			44,000 ohms
Cathode	3			1,500 ohms
Plate	2			.232 megohms

Table 3 Point to Point Resistance (Continued)
Terminal to Chassis

Terminal	Pin	Variable		Resistance Ohms Plus or Minus 10%
		Symbol	Setting	
V19B Grid	4			.22 megohms
Cathode	6			1,500 ohms
Plate	5			.232 megohms
V20 Grid	5			.44 megohms
Cathode	8			250 ohms
Screen	4			12,000 ohms
Plate	3			12,680 ohms
V21 Grid	5			.44 megohms
Cathode	8			250 ohms
Screen	4			12,000 ohms
Plate	3			12,680 ohms
V22 Cathode	2			0.0 ohms
Anode	5			15,300 ohms
V23 Filament	2-8			12,800 ohms
Plates	4-6			32 ohms
V24 Filament	2-8			12,800 ohms
Plates	4-6			35 ohms

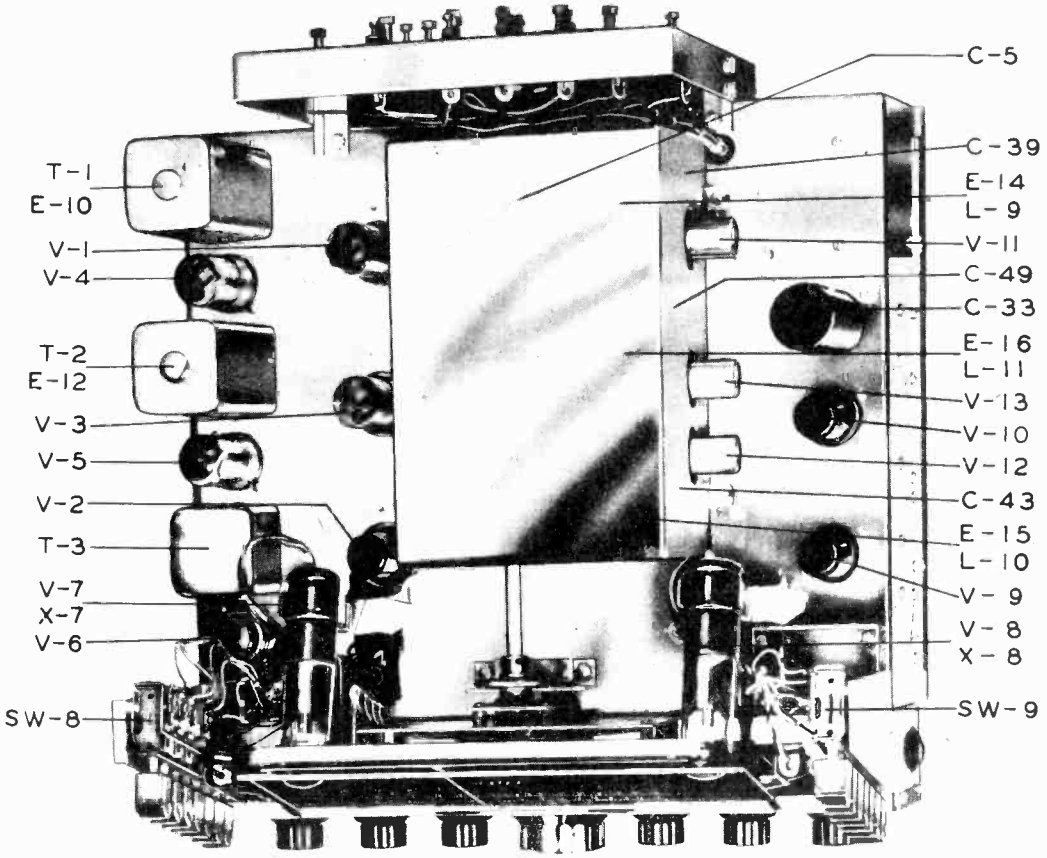

Figure 17 Top View Model 800-B Receiver Chassis

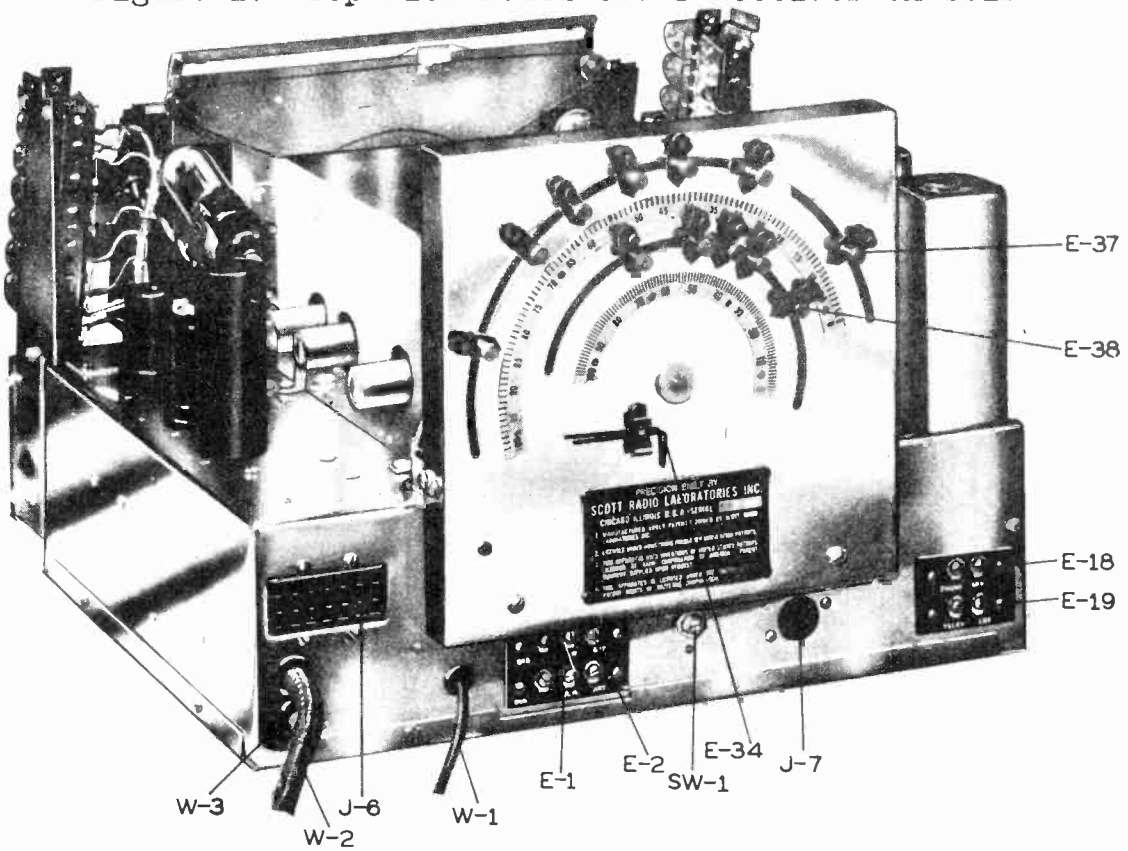

Figure 18 Rear View Model 800-B Receiver Chassis

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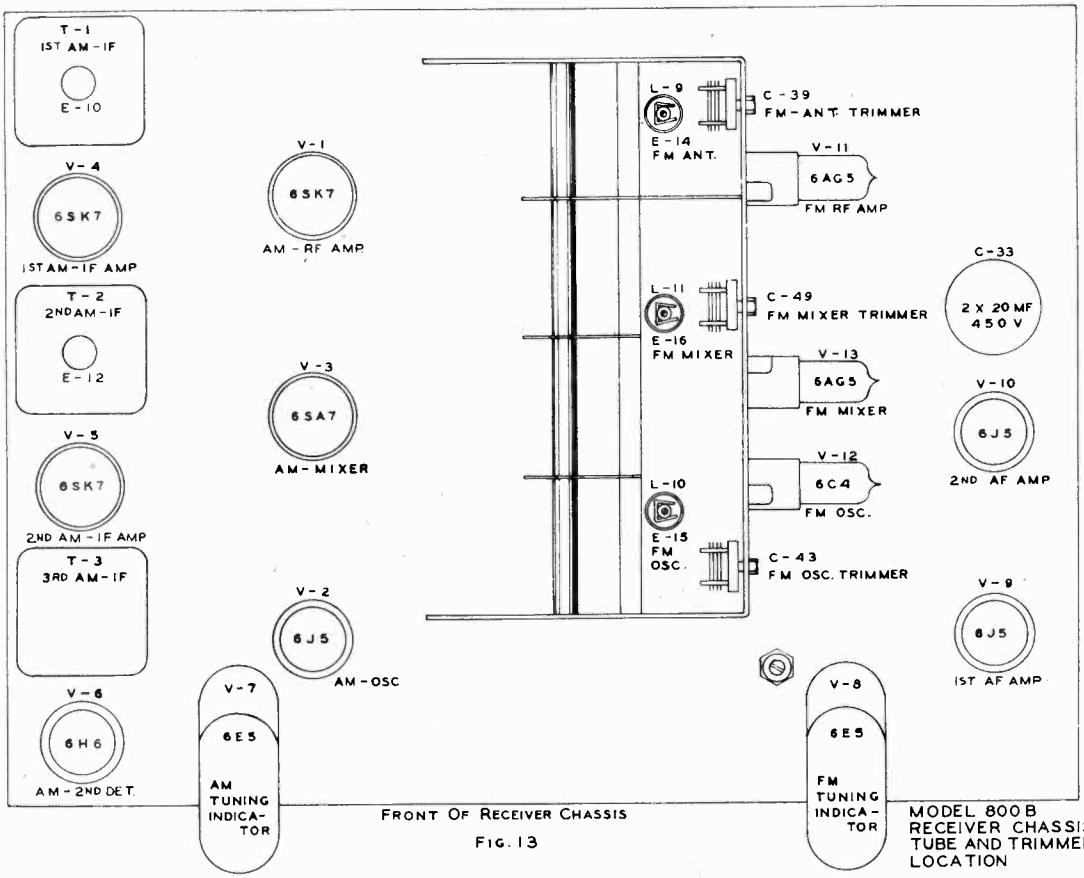

FRONT OF RECEIVER CHASSIS

FIG. 13

MODEL 800 B
RECEIVER CHASSIS
TUBE AND TRIMMER
LOCATION

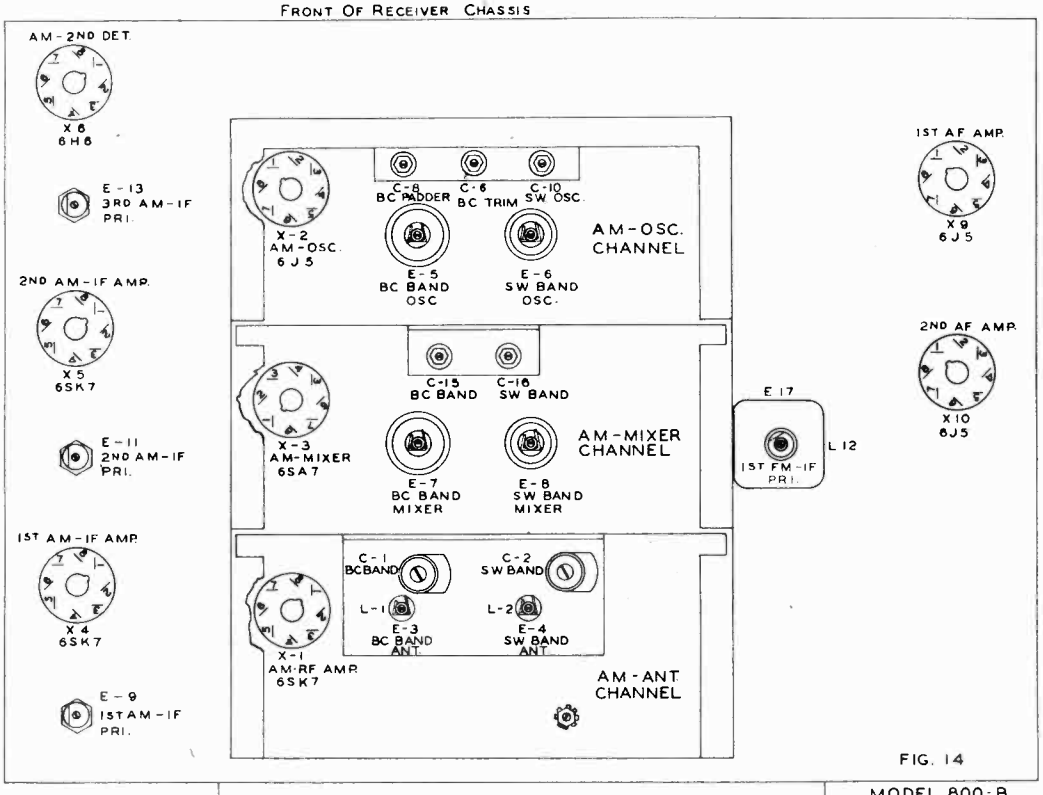

FIG. 14

BOTTOM VIEW OF RECEIVER CHASSIS

MODEL 800-B
SOCKET & TRIMMER
LOCATION
RECEIVER CHASSIS

Section VII ALIGNMENT DATA

7.1 General

Should realignment of the receiver become necessary the following data should be carefully studied before making any circuit adjustments so that correct alignment may be made quickly and accurately.

The complete alignment of the radio receiver may be divided into the following steps. The circuits should be checked in the order listed.

Amplitude Modulation Channel

1. AM-IF amplifier alignment
2. AM oscillator alignment
3. AM-RF amplifier alignment

Frequency Modulation Channel

1. FM-IF amplifier alignment
2. FM discriminator alignment
3. FM oscillator alignment
4. FM-RF amplifier alignment

The receiver must be removed from the cabinet and connected as for normal operation on the power source specified for the receiver. The bottom plates must be removed from the receiver and power supply chassis and for realignment of the FM-RF circuits, the cover over the main tuning capacitor must be removed.

7.2 AM Circuit Alignment

For alignment of the AM circuits the controls should be adjusted as follows:

1. Selectivity control set at "S" Sharp position.
2. Sensitivity control advanced to maximum point just before the noise limiter switch throws.
3. Band change control set to "BC" or "SW" band as noted.
4. Bass and treble controls set at maximum position.
5. Volume control set as noted.

7.21 AM-IF Amplifier Alignment

The intermediate frequency of the AM-IF channel is 455 kilocycles.

Tuning adjustments are provided in each transformer. These adjustments consist of adjustable powdered iron cores and are designated on the circuit diagram by symbols E9 to E13 inclusive. All adjustments for the AM-IF channel are on the receiver chassis.

An output meter must be connected across the voice coil leads of the speaker on terminals 3 and 5 of the speaker receptacle in the power supply chassis when the 15 inch Jensen coaxial speaker is used or across terminals 1 and 5 when the 15 inch Tru-sonic single speaker is used. This connection is changed for different speakers because of the difference in voice coil impedance which is 8 ohms for the Jensen coaxial speaker and 16 ohms for the Tru-sonic speaker.

The high potential lead of the signal generator should be connected to the control grid (terminal #8) of the AM mixer, tube V3-6SA7 through a .005 to .05 mfd capacitor and the ground lead of the signal generator connected to any metal part of the chassis. The volume control should be advanced to a point where the noise level of the receiver starts to indicate on the output meter.

The frequency of the signal generator should be carefully adjusted to 455 kilocycles, modulated 30% at 400 or 1000 cycles and the signal input to the mixer tube adjusted to provide a reading on the output meter. The signal input should be kept at a low level so as not to overload the second detector or audio circuits and to keep the AVC voltage as low as possible. If a high signal level is used the AVC voltage developed by the second detector may become so high as to cause the trimmer adjustments on the IF transformer to appear very broad in tuning and a false indication of true resonance will result.

Starting with the 3rd IF transformer the adjustments should be set for maximum output in the following order E13, E12, E11, E10 and E9.

The sensitivity of the IF amplifier can be checked against the following figures to ascertain that each stage is in proper working order.

Input Terminal	Signal Input Microvolts	Output Mod. On	Output Mod. Off
2nd IF V5 Grid	6000	1 volt	.1 volt or less
1st IF V4 Grid	200	1 volt	.1 volt or less
Mixer V3 Grid	35	1 volt	.1 volt or less

The above measurements are made at a 10 db signal to noise ratio with the output voltage shown measured across an 8 ohm voice coil. If the speaker has a 16 ohm voice coil the voltage with Mod. ON will be 1.4 volts and with Mod. OFF .14 volts.

The selectivity control should be set at "S" (Sharp) position, Sensitivity control at maximum with noise limiter switch off and Volume control at maximum. The oscillator tube V2-6J5 should be removed.

MODEL 800-B

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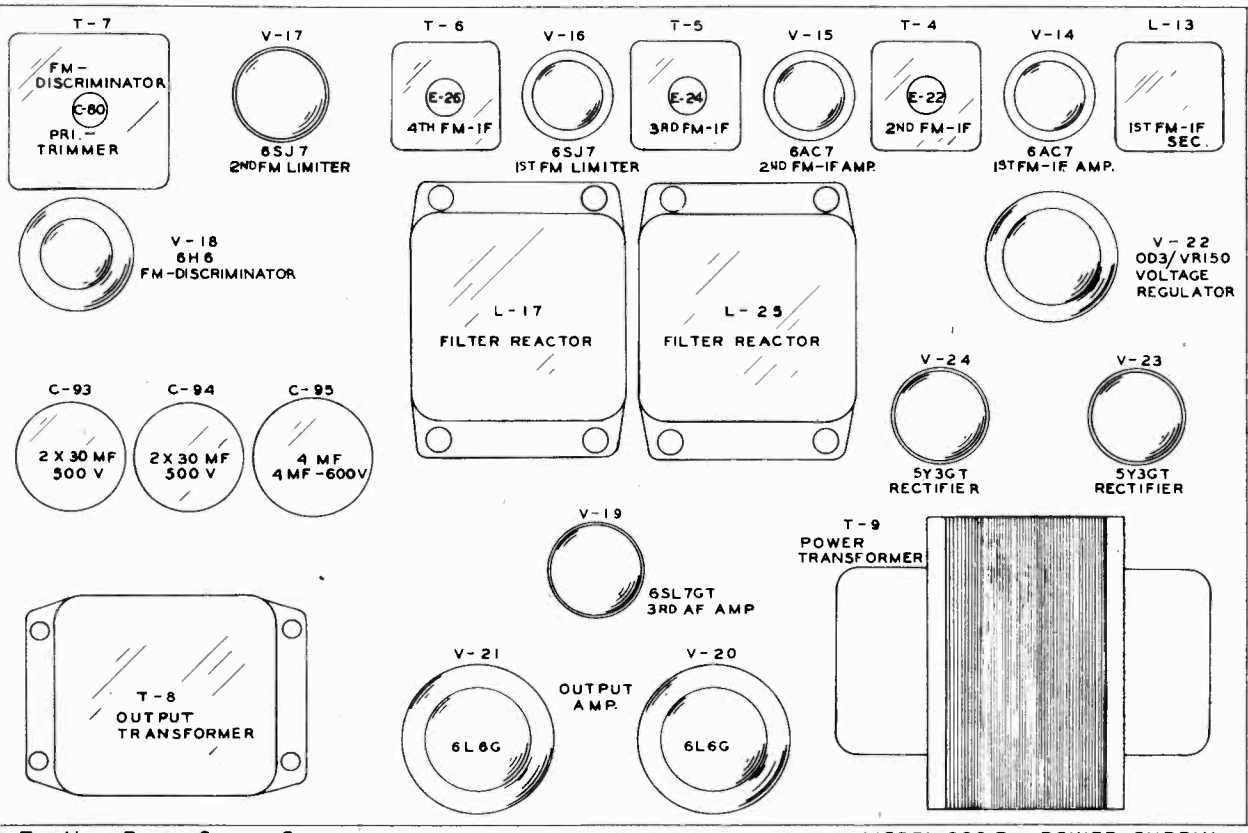
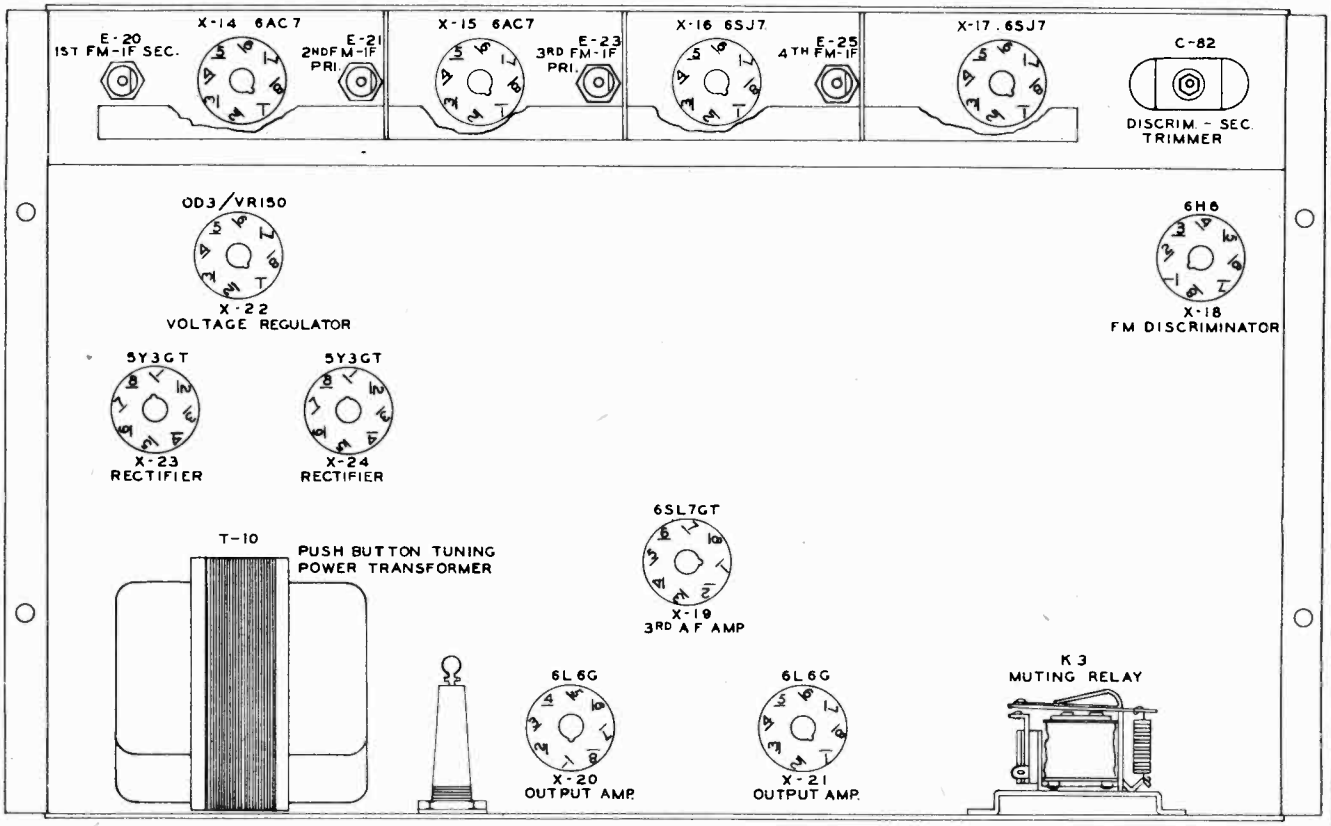


TOP VIEW POWER SUPPLY CHASSIS

FIG. 15

MODEL 800 B - POWER SUPPLY TUBE AND TRIMMER LOCATION



BOTTOM VIEW POWER SUPPLY CHASSIS

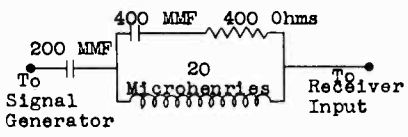
FIG. 16

MODEL 800 B - POWER SUPPLY SOCKET & TRIMMER LOCATION

7.22 AM-RF and Oscillator Alignment

Caution: Readjustment of the oscillator circuit trimmers should not be attempted until after the need for such readjustment has been positively established. The following table gives the alignment frequency, trimmer adjustments and nominal sensitivity for the "BC" and "SW" bands. Sensitivity measurements are for a 6 db signal to noise ratio.

Band	Freq.	Adjustment Osc.	Mixer	Ant.	Signal Input	Output Mod.ON	Output Mod. OFF
BC	1500 KC	C6	C15	C1	5 uv	1 Volt	.5 V or less
	1000 KC	E5			5 uv	1 Volt	.5 V or less
	600 KC	C8	E7	E3	5 uv	1 Volt	.5 V or less
SW	16 MC	C10	C16	C2	8 uv	1 Volt	.5 V or less
	6.5 MC	E6	E8	E4	8 uv	1 Volt	.5 V or less



The signal generator should be connected through a standard RMA dummy antenna to the AM antenna input terminal E1. The center terminal of E1 should be connected to the ground terminal with a short jumper wire. The controls should be set as follows:

1. Selectivity control set to "S" (Sharp) position.
2. Sensitivity control set at maximum position with noise limiter switch off.
3. Bass and treble controls set at maximum.
4. AM Band control set to band desired.
5. Volume control set as noted.

It is important that the oscillator circuits operate on the high frequency side of the signal circuits, particularly on the SW Band where the trimmer will allow the oscillator circuit to be resonated on either the high or low side of the signal circuits. When properly aligned the image will appear 910 KC lower in frequency than the signal being received and it will be considerably weaker than the signal, therefore, it will be necessary to increase the output of the signal generator in order to check the image.

The following general procedure should be employed in the alignment of the AM oscillator and RF amplifier circuits.

1. Turn dial to extreme left side of scale and make certain that the pointer lines up with the zero designation on the top logging scale
2. Set the signal generator to the high frequency alignment point of the desired band.
3. Set the dial pointer of the receiver to the high frequency alignment point of the desired band.
4. Adjust the oscillator trimmer capacitor until the signal is tuned in to resonance, then adjust the mixer and antenna circuit trimmer capacitors for maximum reading on the output meter.
5. Set the signal generator and receiver dial pointer to the low frequency alignment point.
6. Set the low frequency oscillator trimmer adjustments outlined in chart ~~on Page 42~~ until the signal is tuned to resonance, then adjust the mixer and antenna adjustments for maximum output.
7. Repeat this entire alignment procedure as a final adjustment.

On the BC band an adjustment E5 is provided for alignment of the oscillator circuit at 1000 KC. This adjustment should not be altered unless the calibration of the BC Band is still off frequency after the trimmer adjustments for the high and low frequency ends of the band have been adjusted.

7.3 Frequency Modulation Circuit Alignment

7.31 FM-IF Circuit Alignment

For alignment of the FM circuits the controls should be adjusted as follows:

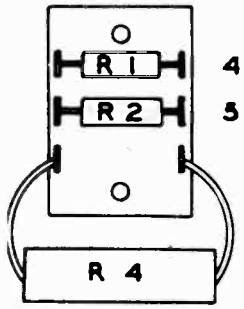
1. Turn receiver on and push one of the FM pushbuttons to switch the receiver over to FM reception.
2. Set bass and treble controls at maximum position.
3. Adjust volume control as noted.

7.32 FM-IF Amplifier Alignment

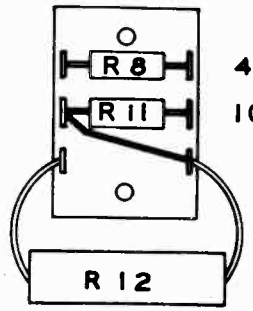
The intermediate frequency of the FM channel is 10.7 megacycles. Tuning adjustments are provided in each IF transformer. These adjustments consist of powdered iron cores in the IF transformer and variable air capacitors in the discriminator transformer. These adjustments are designated by symbols E17 to E26 inclusive for the IF transformers and C80 and C82 for the discriminator transformer. The 1st FM-IF transformer primary adjustment E17 is located on the receiver chassis. The other adjustments are located on the power supply chassis.

The high potential lead of the signal generator should be connected to the control grid (Pin #4) of FM mixer tube V13-6AG5 through a .01 mfd capacitor, and the ground lead connected to the chassis frame. A high resistance DC voltmeter such as the RCA Volt-ohmyst should be connected across the second limiter filter resistor R72.

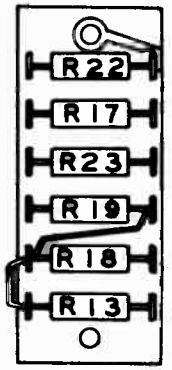
Set the signal generator to 10.7 megacycles and feed in a signal with modulation OFF until the meter reads 1.5 volts.



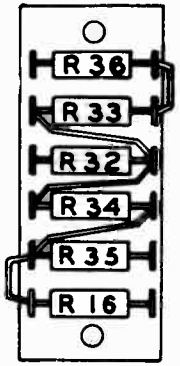
470000Ω
560Ω
5000Ω 2 WATTS
E 39



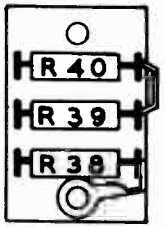
470000Ω ½ WATT
1000Ω ½ WATT
18000Ω 2 WATTS
E 40



560Ω ½ WATT
560Ω ½ WATT
100000Ω ½ WATT
1000Ω ½ WATT
100000Ω ½ WATT
1000Ω ½ WATT
E 41

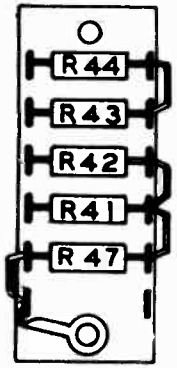


.82 MEG. ½ WATT
.82 MEG. ½ WATT
47000Ω ½ WATT
.82 MEG. ½ WATT
2.2 MEG. ½ WATT
220000Ω ½ WATT
E 42

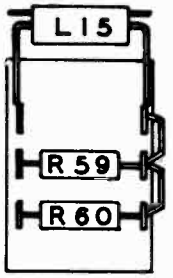


47000Ω ½ WATT
47000Ω ½ WATT
1300Ω ½ WATT
E 43

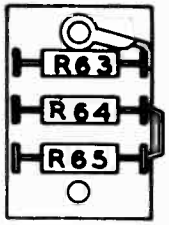
Figure 23 Resistor Terminal Strip Detail Drawings



47000Ω ½ WATT
47000Ω ½ WATT
1300Ω ½ WATT
100000Ω ½ WATT
10000Ω ½ WATT
E 44



R.F. CHOKE
56000Ω ½ WATT
2400Ω ½ WATT
E 45



160Ω ½ WATT
56000Ω ½ WATT
2400Ω ½ WATT
E 46

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Starting with the 4th IF transformer T6, adjust the trimmers in the following order: E26, E25, E24, E23, E22, E21, E20 and E17. Each trimmer should be adjusted for maximum meter reading, keeping the input from the signal generator at a point where not more than 1.5 volts output is obtained on the meter. It is important to keep the signal input down so that meter does not read more than 1.5 volts as above this the limiters start to level off and the IF adjustments will act very broad and cannot be set to the true resonant position.

7.33 FM Discriminator Circuit Alignment

Set the signal generator at 10.7 megacycles and connect to the grid (Pin #4) of mixer tube V13-6AG5 through a .01 mfd capacitor. Connect the Volt-ohmyst or equivalent meter to the discriminator diode output at the junction of R78 and C84 to ground. If a volt-ohmyst or equivalent meter with polarity reversing switch is not available a zero center 50-0-50 microammeter can be used.

If the discriminator is correctly aligned the meter will read zero when the signal generator is set to 10.7 megacycles. If the meter reads either plus or minus realignment is necessary. The secondary trimmer C82 at the bottom of the discriminator transformer should be detuned so that the meter reads either plus or minus. The primary trimmer C80 at the top of the transformer should then be realigned for maximum output. The secondary trimmer C82 should now be carefully adjusted for zero reading on the meter.

Next adjust the signal generator 75 KC higher in frequency or 10.775 MC and record the reading of the meter. Then set the signal generator 75 KC lower in frequency or 10.625 MC and record this reading of the meter. These two readings should be identical, if they are not a slight readjustment of the primary trimmer C80 should be made to coincide these readings at plus and minus 75 KC from 10.7 megacycles. The zero voltage setting of the secondary trimmer C82 should then be rechecked for if this adjustment is not correctly made distortion on FM signals will result.

7.34 FM-RF and Oscillator Circuit Alignment

All the trimmer adjustments for the FM-RF and oscillator circuits are located on the top of the receiver chassis and it is necessary to remove the cover over the main tuning capacitor for access to these trimmer adjustments.

The signal generator should be connected to the FM antenna terminal E2 with a 50 ohm carbon resistor in series with the high potential lead of the generator and the center antenna terminal of E2 shorted to the ground terminal.

The FM oscillator circuit operates on the low side of the signal circuits and no trouble with aligning the oscillator circuit on the image should be encountered since it will be twice the IF frequency or 21.4 megacycles away from the signal frequency and the trimmer capacitor will not allow this much variation. The following chart lists the trimmer adjustments.

The high resistance DC voltmeter should be connected across the second limiter grid filter resistor R72. The sensitivity measurement given in the chart below is for 1.8 volts output as read on the high resistance DC voltmeter.

Band	Freq. MC	Adjustment			Sensitivity
		Osc.	Mixer	Ant.	
FM	106	C43	C49	C39	15 microvolts for 1.8 volts
	90	E15	E16	E14	Across limiter resistor R72

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Table 4 Coil Data

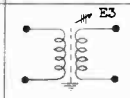
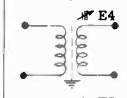
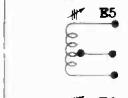
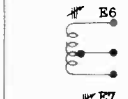
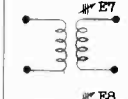
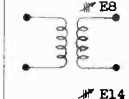
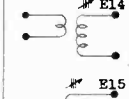
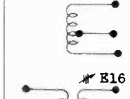
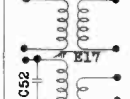
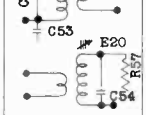
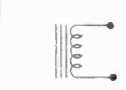
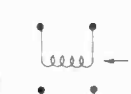
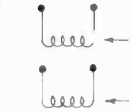
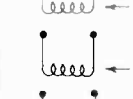
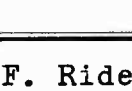
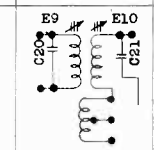
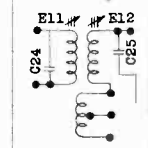
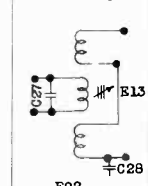
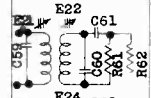
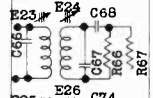
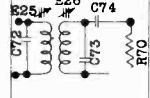
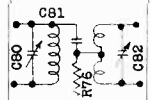
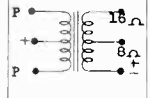
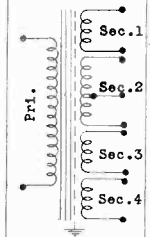
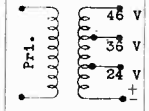
Symbol Desig.	Diagram	Description	DC Resis. Ohms
L1 L2		AM Broadcast band antenna primary coil. Part No. 20B604 AM Broadcast band antenna secondary coil. Part No. 20B605 Electrostatic shield is separate unit.	14.5 7.5
L3 L4		AM Shortwave band antenna primary coil. Part No. 20B608 AM Shortwave band antenna secondary coil. Part No. 20B609 Electrostatic shield is separate unit.	.45 .07
L5		AM Broadcast band oscillator coil Part No. 20B607	Start to tap .6 Total 3
L6		AM Shortwave band oscillator coil Part No. 20B611	Start to tap .03 Total .07
L7		AM Broadcast band mixer coil Part No. 20B606	Pri. 2.5 Sec. 7.5
L8		AM Shortwave band mixer coil Part No. 20B610	Pri. .1 Sec. .07
L9		FM Antenna coil Part No. 20B612	Pri. .04 Sec. .015
L10		FM Oscillator coil Part No. 20B614	Total.017
L11		FM Mixer coil Part No. 20B613	Pri. .07 Sec. .015
L12		1st FM-IF primary coil Part No. 20B618	Pri. .18 Sec. .06
L13		1st FM-IF secondary coil Part No. 20B619	Pri. .06 Sec. .18
L14		Bass boost choke 11 H @ 1000 CPS no DC. Laminated iron core - potted Part No. 17B591	230
L15 L16		RF choke, 2 uH @ 1000 CPS, no DC Part No. 17B761	.15
L17 L25		Filter reactor, 5 H @ 10 V 60 CPS with 220 MA DC, laminated iron core, potted. Part No. 17B492	82
L18 L19		FM-AM relay coil - operates on 10 V 60 CPS, used on all receivers to Serial 2000. Part No. 20B707	2
L18 L19		FM-AM relay coil - operates on 24 V 60 CPS, used on receivers after Serial 2000. Part No. 20B982	14
L20 L21		AC power ON-OFF relay, operates on 24 V 60 CPS, used on receivers to Serial 2000. Part No. 20B719	16
L20 L21		AC power ON-OFF relay, operates on 22 V 60 CPS, used on receivers after Serial 2000. Part No. 20B977	23
L22 L23 L24		Muting relay coil, operates on 2.4 V 60 CPS. Relay assembly Part No. 69B958	

Table 4 Coil Data (Continued)

Symbol Desig.	Diagram	Description	DC Resis. Ohms
T1		1st AM-IF transformer, 455 KC, adjustable iron core on primary and secondary. Part No. 20B615	Pri. 5 Sec. 4.8 Ter. .3
T2		2nd AM-IF transformer, 455 KC, adjustable iron core on primary and secondary. Part No. 20B616	Pri. 5.2 Sec. 4.8 Ter. .3
T3		3rd AM-IF transformer, 455 KC, diode coupling transformer, adjustable iron core for primary. Part No. 20B617	Pri. 11.5 Sec. 16.5
T4		2nd FM-IF transformer, 10.7 MC, adjustable iron core primary and secondary. Part No. 20B620	Pri. .26 Sec. .26
T5		3rd FM-IF transformer, 10.7 MC adjustable iron core primary and secondary. Part No. 20B621	Pri. .26 Sec. .26
T6		4th FM-IF transformer, 10.7 MC adjustable iron core primary and secondary. Part No. 20B622	Pri. .26 Sec. .26
T7		FM discriminator transformer, 10.7 MC adjustable air trimmers primary and secondary. Part No. 20B623	Pri. .7 Sec. 1.3
T8		Output transformer, primary 9000 ohms @ 1000 CPS, 100 MA DC, Brown-red-brown Secondary, 16 ohms tapped at 8 ohms, 25 watts, common-black, 8 ohm black-yellow, 16 ohm yellow. Part No. 91B664	Pri. 300 Total Sec. Total .85 Sec. Tap .5
T9		Power transformer, primary - 120 V, 50-60 CPS, white and black Sec.1 - 5 V @ 4 A, blue and blue Sec.2 - 390-390 V @ 210 MA, red-red yellow-red Sec.3 - 6.3 V @ 4 A, yellow and yellow Sec.4 - 6.6 V @ 4.6 A, green and green Electrostatic shield between primary and secondaries. Part No. 91B429	Pri. 1.0 Sec.1 .7 Sec.2 68 Sec.3 .8 Sec.4 .8
T10		Pushbutton tuning system transformer Primary - 117 V 50-60 CPS, for intermittent duty Secondary - 46 V @ 2 A tapped at 36 V and 24 V Part No. 91B694	Pri. 8.2 Sec. Total 2.5 36 V Tap 2.1 24 V Tap 1.25

INSTALLATION AND SERVICE DATA ON REMOTE CONTROL KEYBOARD FOR USE WITH MODEL 800-BR RADIO-PHONOGRAPH

Remote Keyboard

The remote control keyboard is provided in order that the Model 800-BR Radio-Phonograph may be controlled from remote points in the same room or in other rooms of the house. It is provided with 16 pushbuttons, 12 of which are used to tune in stations exactly the same as the push-buttons on the front panel of the receiver. Two buttons are used to turn the receiver ON and OFF and the two remaining pushbuttons are used to raise and lower the volume of the receiver as shown in Figure 1.

The remote keyboard was designed for use with the Model 800-BR Receiver which is the same as the Model 800-B with the addition of a motor driven volume control. The keyboard will however, work with the standard Model 800-B Receiver chassis without any changes having to be made in wiring. However, the volume cannot be controlled from a remote point. The receiver cannot be turned ON or OFF from the keyboard and the indicator lamp in the keyboard will not light.

The keyboard is provided with 20 feet of flat cable and a 21 contact plug which inserts into the 21 contact receptacle at the rear of the receiver. Any length of cable can be furnished upon request.

For installations where the keyboard is to be located in one or more positions remote from the room where the radio-phonograph is placed, an outlet box with a 21 contact receptacle should be mounted in the wall behind the radio-phonograph. This receptacle can then be connected to one or more receptacles located in different parts of the house by means of a round multi-conductor cable, all receptacles being wired in parallel. If more than one remote outlet box is used, a junction box should be used to terminate the cables from all outlets to facilitate wiring and servicing. A short piece of flat cable with 21 contact plugs on both ends is then inserted between the receptacle on the chassis and the receptacle in the wall at the rear of the radio-phonograph. A keyboard may then be inserted in any of these receptacles and the receiver operated from any point.

The pictorial diagram of the keyboard is shown in Figure 2 which shows the contact layout with the connections numbered to correspond with the numbers of the connections on the 21 contact plug. The schematic diagram of the keyboard is shown in Figure 3.

The keyboards are wired at the factory so that buttons 5, 6 and 7 are used to select FM stations while buttons 1, 2, 3, 4, 8, 9, 10, 11 and 12 are used to select AM stations. Any of the buttons now wired for FM may be used for AM station selection by disconnecting the jumper wire for that particular button from the FM common lead No. 15 and connecting the jumper wire to the AM common lead No. 13 and by reversing this procedure any of the buttons now used for AM can be used for FM. If the pushbuttons on the receiver have been changed so that more AM or FM stations can be tuned in, after the set has been received from the factory, it will be necessary to make the same changes on the keyboard pushbuttons as the receiver will not operate properly, for example:

If button No. 5 has been changed to tune in an AM station on the receiver push-button switch gang, when the keyboard is plugged in and button No. 5 is pushed the set will switch over to FM reception and if no FM station happens to be located at the point on the dial scale where button No. 5 contact is set nothing will be heard but background noise, therefore, it is necessary to change the wiring of No. 5 switch in the keyboard from the FM common lead over to the Am common lead, then button No. 5 on the keyboard will tune in exactly the same station as button No. 5 on the receiver chassis.

The two buttons marked ON and OFF are provided to control the volume of the receiver without having to go all the way back to where the receiver is located. The two buttons on either side of the lamp bezel are used to turn the receiver ON and OFF. The button on the right side turns the set ON while the button on the left side turns it OFF. When the receiver is turned ON, the indicator in the keyboard will glow.

The lamp used for the indicator is a standard 30 volt switchboard lamp which has a very long life. It can easily be replaced when necessary by removing the four screws on the bottom of the keyboard, removing the bottom plate then sliding out the old lamp and inserting the new one.

REMOTE VOLUME CONTROL MOTOR

The remote volume control motor consists of a reversible type motor operating on 24 volts 60 cycle AC. This motor drives the volume control through a gear train and a clutch. The shaft of the intermediate gear is extended in order that the volume control may be manually operated at the front of the receiver. The clutch is provided in order that damage will not be incurred if the motor is kept running momentarily after the volume control has reached the end of its travel.

The schematic diagram shown in Figure 4 and the pictorial diagram shown in Figure 5 depict the changes in wiring necessary when the remote volume control motor is added to the standard 800-B Radio Receiver chassis.

INSTRUCTIONS FOR INSTALLING REMOTE VOLUME CONTROL MOTOR IN 800-B RADIO RECEIVER CHASSIS

By utilizing the following instructions and the pictorial diagram of Figure 5 the remote volume control may be easily installed in a standard Model 800-B Receiver chassis. It is necessary to remove the panel and knob escutcheon plate before proceding with the installation.

1. Remove the angle cover plate over the cutout used for mounting the volume control motor.

2. Disconnect the three leads from the volume control and remove it from the chassis.

3. Fasten the volume control bearing plate on the inside of the chassis using two 6-32 x 5/16 screws and two nuts. Center the 1/4 inch hole in the bearing plate in the 3/8 inch hole used to mount the old volume control.

4. Remove the screws fastening capacitor C37 and resistor strip E43 to the side of the chassis and push these two items toward the rear of the chassis as far as the connecting leads will allow.

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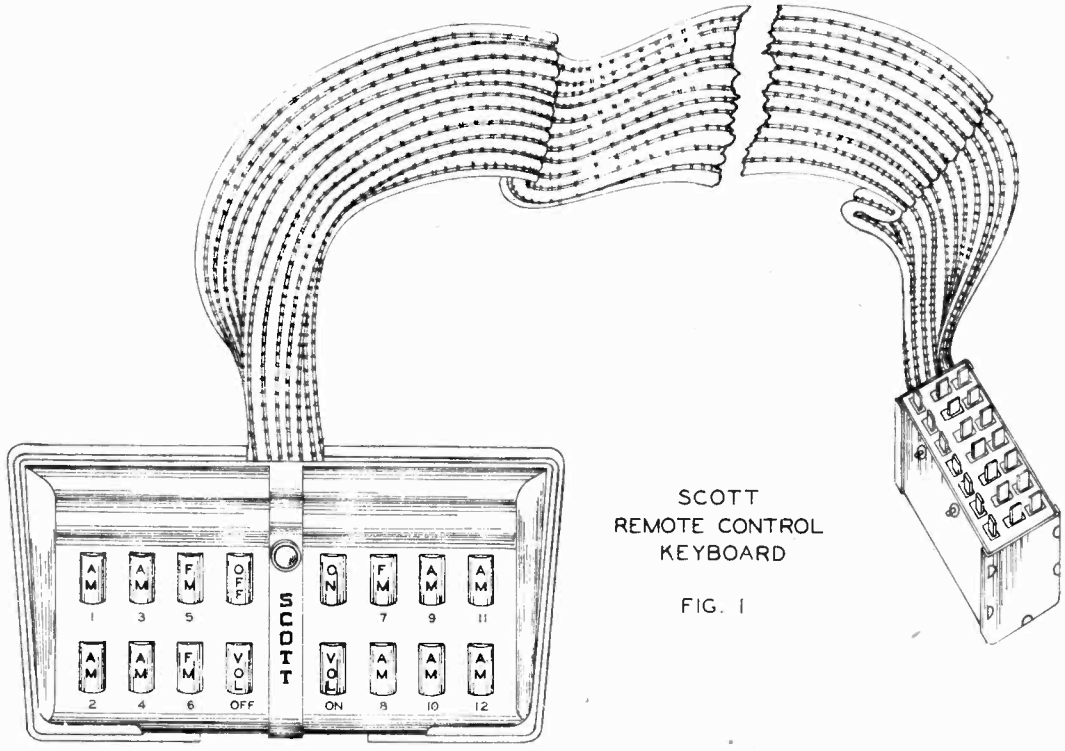

SCOTT
REMOTE CONTROL
KEYBOARD

FIG. 1

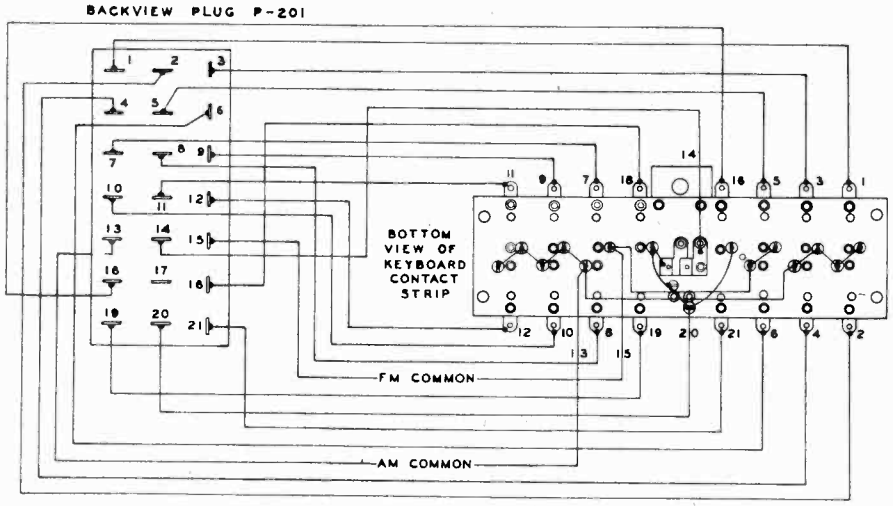

FIG. 2 PICTORIAL DIAGRAM OF KEYBOARD WIRING

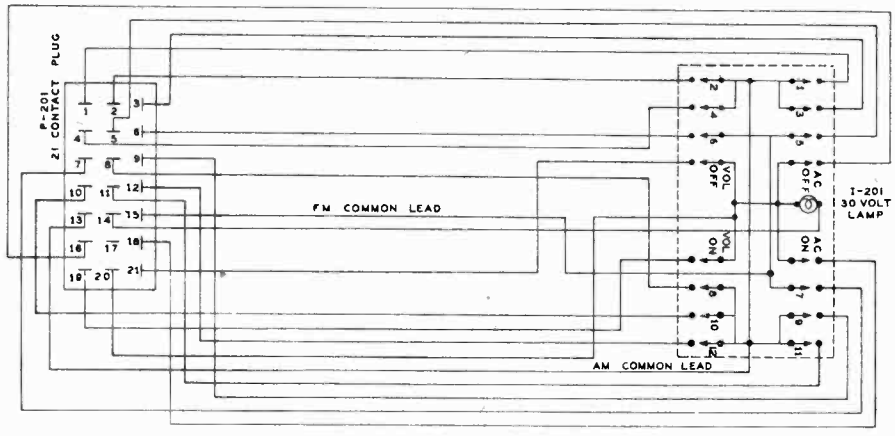

FIG. 3
SCHEMATIC DIAGRAM KEYBOARD ASSEMBLY 2B945

5. Insert the tuning motor assembly in place and fasten down with two 5-40 x 1/4 BH screws and two 6-32 x 1/4 BH screws as shown in Figure 5. The two 5-40 x 1/4 BH screws are used to mount the motor assembly spacers to the chassis while the two 6-32 x 1/4 BH screws are used to mount the motor assembly bracket to the chassis. Make certain that the manual drive shaft rotates freely in the bearing plate. If not, loosen the bearing plate mounting screws and center it properly over the shaft, then tighten down again.

6. Reconnect the volume control leads as shown in Figure 5 using the tie point mounted on the motor frame for connecting the shield braids of the two shielded leads. The off terminal of the volume control should then be connected to this tie point by a short piece of wire.

7. Connect wire W201 as shown in Figure 5 from contact No. 16 of the 21 contact receptacle J6 to one terminal of the AC relay coil L21.

8. Connect wire W202 from contact No. 18 of receptacle J6 to one terminal of AC relay coil L20.

9. Connect wire W203 from contact No. 19 of receptacle J6 to terminal No. 1 of the volume control motor as shown in Figure 5.

10. Connect wire W204 from contact No. 21 of receptacle J6 to terminal No. 2 of the volume control motor.

11. Connect wire W205 from terminal X of AC relay switch SW5 to terminal No. 3 of volume control motor as shown in Figure 5.

12. Connect resistor R201 between contact No. 14 of receptacle J6 and contact X of AC relay switch SW5 as shown in Figure 5.

13. Check the wiring of the common terminal of the pushbutton system transformer in the power supply. In the older sets this terminal was grounded to a soldering lug fastened under one of the transformer mounting screws. It will be necessary to remove this short lead and run a wire from the common terminal of the transformer over to No. 10 contact of the 12 contact receptacle J3. This change is necessary in order to eliminate hum when operating the volume control motor.

14. When connecting in the wires outlined above, they should be run in under the present cables in order to hold them in place and present a neater appearance.

After the wiring has been completed, connect the set for normal operation, plug in the keyboard and with the controls on the receiver set the same as for pushbutton tuning operation, operate all the buttons on the keyboard to make sure the installation has been correctly made. Then reassemble the knob escutcheon plate and panel. It will be noted that when the volume control is now operated manually that seven complete revolutions will be necessary to turn it from minimum to maximum.

If the motor clutch chatters while running or if the clutch does not release immediately when either of the volume control pushbuttons are released, it will be necessary to adjust the clutch release spring on the back of the motor. If the clutch chatters, release pressure on the spring and if the clutch fails to release immediately apply more pressure on the spring.

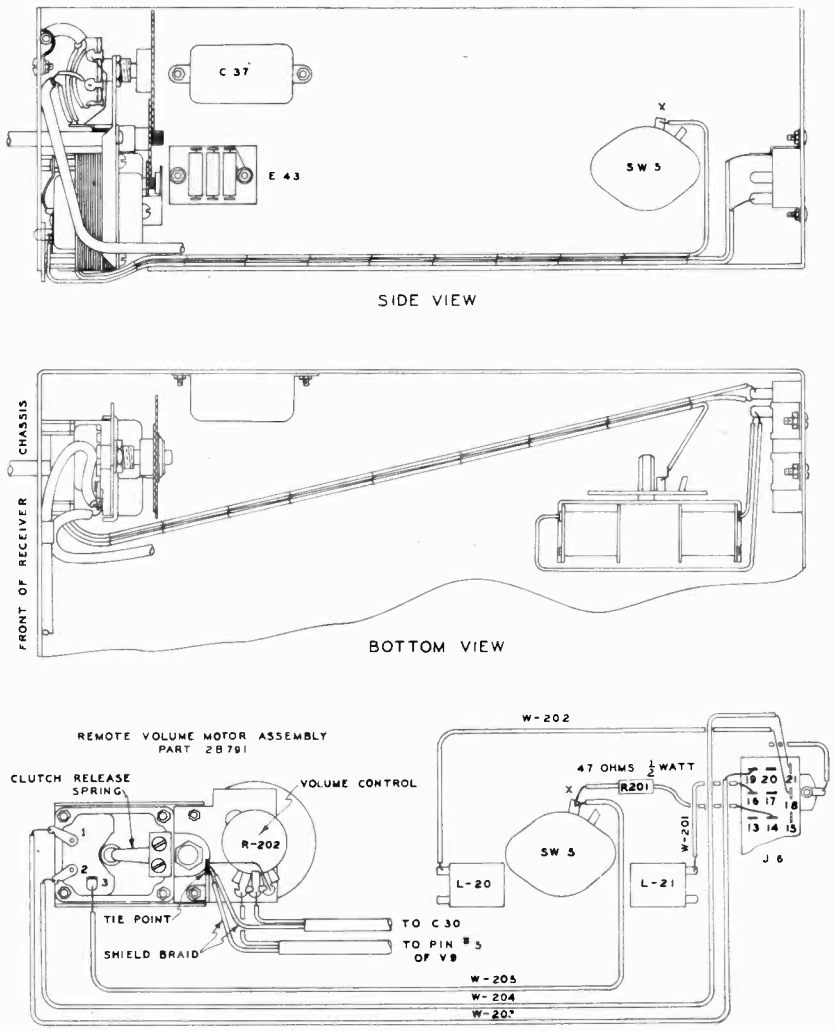

FIG. 5 PICTORIAL DIAGRAM OF CHANGES NECESSARY TO ADD REMOTE VOLUME CONTROL IN STANDARD 800 B RECEIVER CHASSIS

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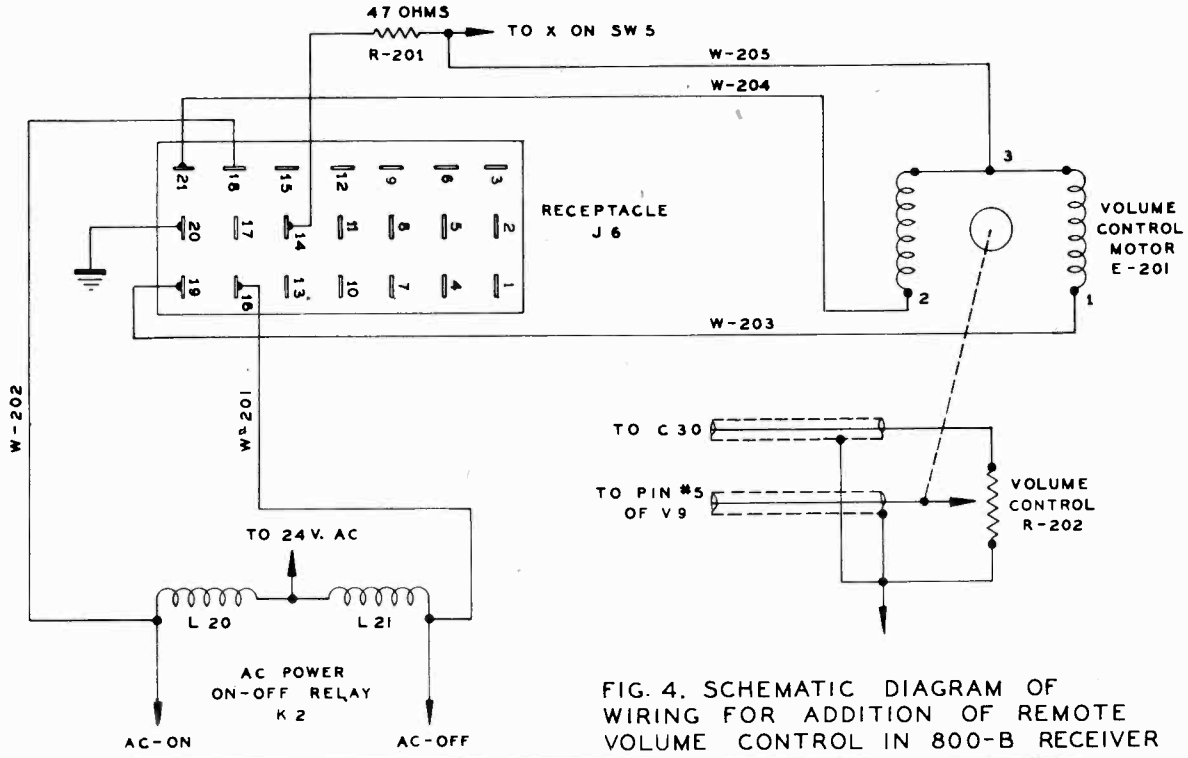


FIG. 4. SCHEMATIC DIAGRAM OF WIRING FOR ADDITION OF REMOTE VOLUME CONTROL IN 800-B RECEIVER

Parts List by Symbol Designation For
Model 800-BR Remote Volume Control Kit

Symbol Desig.	Function	Description	Part Number
		Miscellaneous Electrical Parts	
E-201	Remote volume motor assembly	Motor assembly with gears, drive shaft clutch and volume control	2B791
E-202	Volume control drive motor	Motor, shaded pole reversible type operates on 24 volts 60 cycles, Part of E-201 assembly	58B446
E-203	Clutch assembly	Clutch for remote volume control drive complete with gear, bushing and set screw. Part of E-201 assembly	2B2332
E-204	Drive shaft assembly	Manual drive shaft for volume control motor consists of shaft with gears attached. Part of E-201 assembly	2B2333
		Resistors	
R-201	Pilot lamp current limiting resistor	Resistor, composition, 47 ohms 10% ½ watt, wire leads	70A420
R-202	Remote volume control	Potentiometer, composition, 1 meg 20% .4 watt clockwise audio taper, shaft: 1/4" dia. x 1" long	70B571
		Wire	
W-201	Relay coil L-21 to Pin 16 of J6 connecting lead	Wire- #20 stranded, tinned copper, cotton braid covered, yellow tracer 9 1/4" long, stripped 3/8" each end	96B743
W-202	Relay coil L-20 to Pin 18 of J6 connecting lead	Wire- #20 stranded, tinned copper, cotton braid covered, orange tracer 6" long, stripped 3/8" each end	96B741
W-203	Drive motor to Pin 19 of J6 connecting lead	Wire- #20 stranded, tinned copper, cotton braid covered, brown tracer 18" long, stripped 3/8" each end	96B740
W-204	Drive motor to Pin 21 of J6 connecting lead	Wire- #20 stranded, tinned copper, cotton braid covered, brown tracer, 17 3/4" long, stripped 3/8" each end	96B740
W-205	Common of drive motor to SW5 connecting lead	Wire- #20 stranded, tinned copper, cotton braid covered, blue tracer, 14" long, stripped 3/8" each end	96B678

Technical Data

Power Requirements	117 volts AC 60 Cycles Current Consumption 197 Watts Normal-310 Watts Maximum
Audio Power Output	25 watts undistorted 40 watts maximum
Audio Frequency Range	35 to 20,000 cycles
Overall Frequency Range - AM	35 to 8,500 cycles
Overall Frequency Range - FM	35 to 15,000 cycles
Tuning Range - AM	540 KC to 1600 KC 5.9 MC to 18.2 MC
Tuning Range - FM	88 to 108 MC

Installing Loudspeaker

The loudspeaker baffle is provided with four small holes provided as pilot holes for the wood screws used to fasten the speaker to the baffle. The loudspeaker may easily be located over the baffle opening by first centering the speaker over the opening with connecting cable at the bottom. The speaker should then be fastened down with the wood screws provided. The speaker should be fastened down firmly but DO NOT tighten the screws so as to warp or pull the edge of the speaker frame as this will throw the voice coil out of alignment and cause the speaker to distort.

Installing Power Supply Chassis

The power supply chassis should be fastened to the lower shelf of the cabinet by means of four wood screws provided. It should be fastened down in a position where the fuse receptacles and connecting cable receptacles are readily accessible.

Installing Receiver Chassis

The receiver chassis has been designed so that it can be rolled in or out of the front of the cabinet with a spring latch arrangement which holds the receiver at a position where the front of the panel extrudes out approximately 2 inches for ease in tuning. By releasing the spring latches on both sides of the panel the receiver may be rolled out approximately 10 inches for inspection of the receiver or tube replacement.

The receiver should be installed in the cabinet using the following procedure:

1. The front panel is mounted on the chassis as shown in Figure 1 using the hardware furnished.
2. Next mount the latch springs on the sides of the receiver chassis as shown in Figure 1. The retaining screw which is used to center the latch spring in the slot on the side of the panel should be screwed in far enough to bring the latch spring flush with the outside of the panel. It may be necessary to adjust the screw on the latch spring further in to make the latch catch smoothly when the set is pulled out. However, DO NOT leave the latch adjustment screws sticking out beyond the sides of the panel as they may catch in the latch spring plate when the set is pushed into the cabinet.

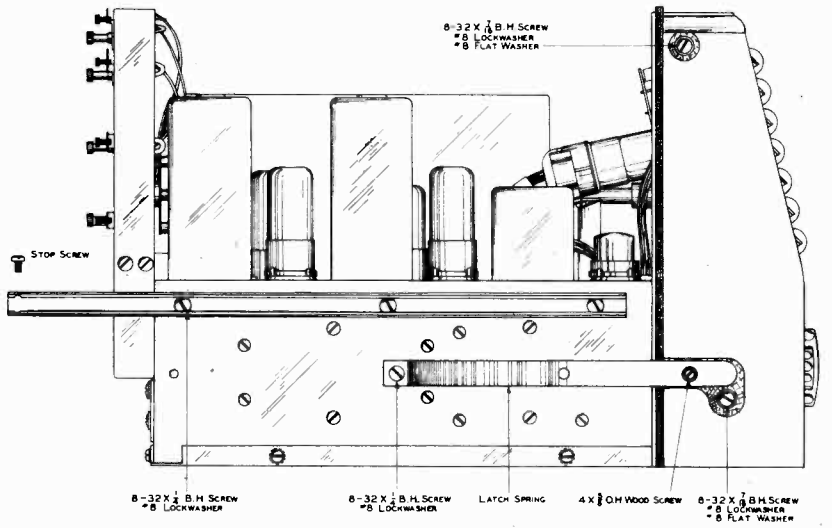


Figure 1 800-B Radio Receiver - Side View

3. Mount the slide rails on the sides of the receiver chassis as shown in Figure 1 using the hardware provided for this purpose. Remove the stop screws from the ends of the rails as shown.
4. Open the door of the cabinet and slide it back inside as far as it will go.
5. Fasten the slide rail hanger brackets, which are packed with the receiver, onto the support brackets which are mounted in the cabinet using the rubber grommets, screws and flat washers furnished with the receiver, as shown in detail drawing Figure 2.
6. Insert the rails on the receiver into the slides which are mounted in the cabinet and slide the receiver back into the cabinet.
7. Insert the stop screws in the ends of the slide rails.
8. Open the cable hole clamp at the back of the cabinet and lay the cables in the slot provided. The cables may then be inserted in their respective receptacles in the power supply. DO NOT force the plugs as they are polarized and will enter the receptacle in only one position.

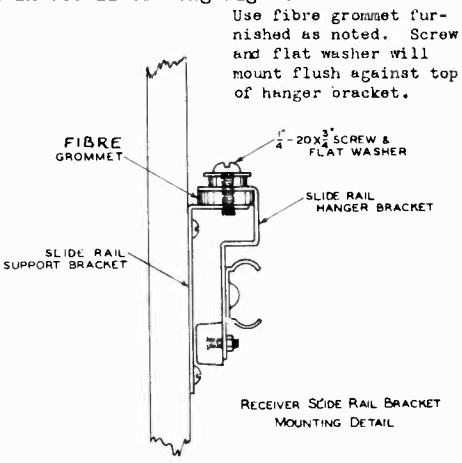


Figure 2

9. Insert the screw eye furnished, under the top at the rear of the cabinet in the center of the receiver compartment and tie the connecting cables to the screw eye leaving enough slack so that the receiver will pull all the way out without pulling the cables tight. This will allow the cables to loop when the receiver is run in and out of the cabinet.

Installing the Record Changer

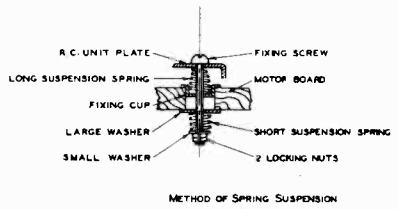
The record changer furnished with the receiver is designed for floating spring mounting. Although it is not necessary to remove the drawer to install the changer, it will be much more convenient to do so. The back of the compartment should be removed; then remove the slide rail stop screws, the drawer can then be removed from the cabinet.

Remove the spindle and turntable. Then mount the changer with the hardware provided, following the method shown in Figure 3.

CAUTION: DO NOT LIFT THE RECORD CHANGER BY THE PICKUP ARM OR THE OVER-ARM AS UNDUE STRAIN ON THESE PARTS WILL PUT THE CHANGER OUT OF WORKING ORDER.

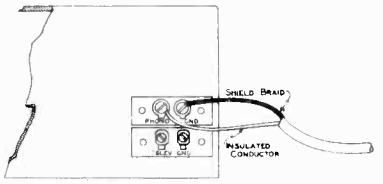
The drawer can now be reinserted in the cabinet, feeding the record changer power cord and pickup leads through the hole in the center of the shelf. Put the stop screws back in the slide rails and fasten the back of the cabinet on.

The power cord for the record changer should be inserted in the power receptacle which is fastensd to the power chassis by a short cord, and the pickup cord connected to the PHONO-GND terminals at the rear of the receiver; connect the shield braid to the GND terminal, and the insulated conductor to the PHONO terminal as shown in Figure 4.



METHOD OF SPRING SUSPENSION

Figure 3



RECORD PLAYER PICK-UP CONNECTIONS

Figure 4

Antenna Connections

The Model 800-B Radio Receiver is designed to be used with either a straight antenna with single conductor lead-in or a doublet type antenna with 2 conductor lead-in. Separate connections are provided for antenna on AM and FM bands and for best reception a doublet type antenna should be used on the AM bands with a separate dipole antenna for the FM band as shown in Figure 5.

A double doublet antenna with pretuned matching transformer such as the SCOTT Double Doublet Antenna system will give maximum transfer of signal energy with greatest noise reduction on both broadcast and shortwave bands and a horizontal dipole with the flat top legs cut to the correct length for operation in the 88-108 megacycle band used with a two conductor lead-in with low-loss properties will give maximum results on the FM band.

In installations where it is not possible to install a doublet antenna system, a single wire antenna with the flat top 60 to 75 ft long and the lead-in as short and direct as possible, should be used. For FM reception a small mica capacitor of 51 MMF may be connected between the AM antenna connection and the FM antenna connection as shown in Figure 7.

A four contact receptacle is provided, at the rear of the receiver chassis for using a loop antenna on the "BC" and "SW" bands in metropolitan areas where a number of powerful stations may be located. It is not recommended that a loop antenna be used for receiving distant stations. Directions for installing the loop antenna are furnished with each antenna.

A two position switch with a screwdriver slot located at the left of the loop receptacle is provided so that the input circuits of the receiver may be connected to the loop antenna or an outside antenna. This switch should be set in the counter-clockwise position for use with an outside antenna and set to the clockwise position for use with the loop antenna.

TUNING THE RECEIVER

After the receiver has been installed in the cabinet and the antenna connections, record changer connections and power line connections are made, the receiver is ready for operation. Push the "ON" button to turn the receiver on, then for initial operation set the controls as follows:

Pushbutton Operation

1. Set SELECTIVITY control to "M" or "B" position.
2. Set AM-BAND control to "BC" position.
3. The SENSITIVITY control should be set at approximately vertical position or half rotation but it can be adjusted to suit receiving conditions, however, it is effective only on the "BC" and "SW" bands.
4. Press the button which is marked with the desired station call letters, holding the button down until the dial mechanism stops.
5. Adjust the VOLUME control to the desired level and the BASS and TREBLE controls for the tone quality desired.

In order to change from AM reception to FM reception the SELECTIVITY control must be set at "M" or "B" position and the AM BAND control set at "BC" position then by pushing any AM button the set automatically switches to AM reception and if any FM button is pushed the receiver automatically switches to FM reception. The indicator lamps behind the colored dots at the end of the frequency scale are also automatically switched with the above procedure.

Manual Operation in the AM-Broadcast Band

1. Set receiver for AM reception as outlined above.
2. Set SELECTIVITY control to "S" (sharp) position.
3. Set TREBLE control to approximately vertical position.
4. Set SENSITIVITY control to approximately vertical position.

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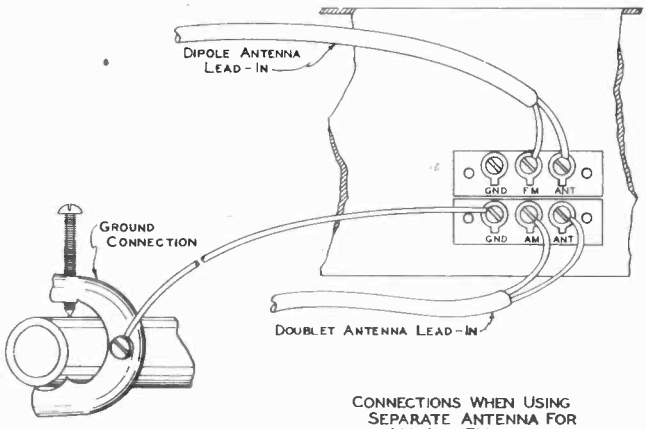
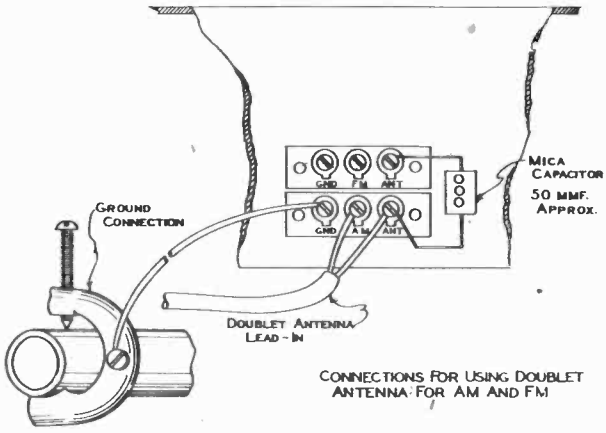


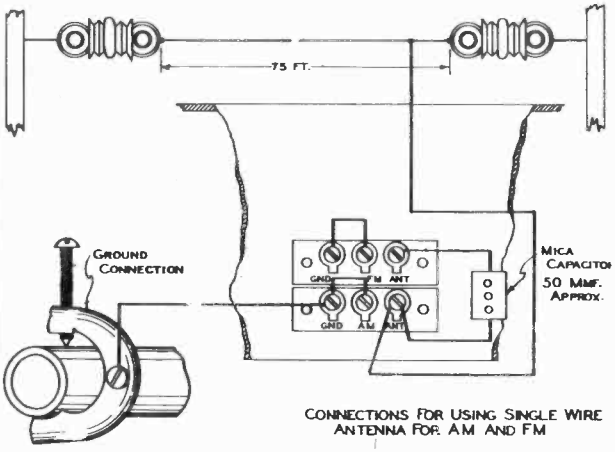
CONNECTIONS WHEN USING SEPARATE ANTENNA FOR AM AND FM

Figure 5



CONNECTIONS FOR USING DOUBLET ANTENNA FOR AM AND FM

Figure 6



CONNECTIONS FOR USING SINGLE WIRE ANTENNA FOR AM AND FM

Figure 7

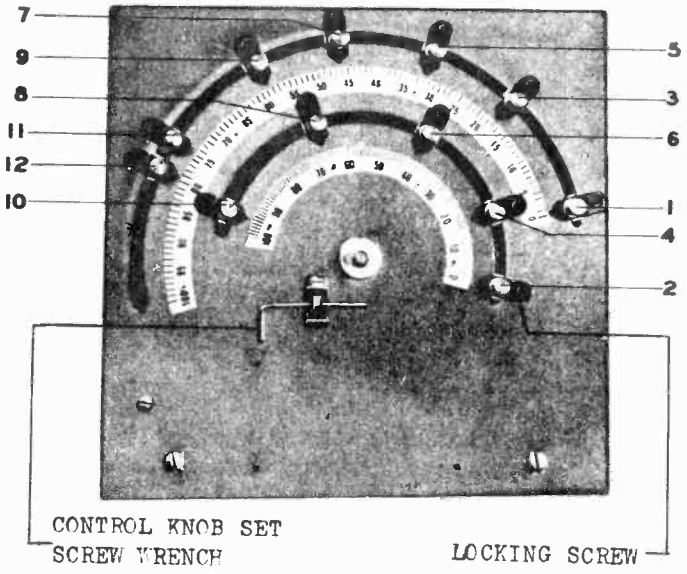


Figure 9 Pushbutton Tuning Backplate

Figure 8 Front View Radio Receiver

5. Set AM BAND control to "BC" position.

6. Set BASS control to approximately vertical position.

7. Tune in a station with the MAIN TUNING control using the AM tuning eye to indicate when the set is properly tuned, then adjust the VOLUME control for desired volume level.

8. Advance SELECTIVITY control to "M" or "B" position for desired fidelity, then adjust the TREBLE and BASS controls for desired tone.

9. When tuning for weak distant stations, advance the SENSITIVITY control and when tuning strong local stations turn back the control to eliminate noise between stations.

Manual Operation in the AM-Shortwave Band

1. Set controls as above except the AM-BAND control set to "SW" position.

2. When tuning on the Shortwave Band the SENSITIVITY control should be advanced to near maximum position. If automobile ignition noise or other noise with decided peaks is encountered, the SENSITIVITY control should be advanced to maximum until the switch mounted on this control clicks. This will put the noise limiter circuit into operation and will reduce the noise so that weak stations can be heard.

Manual Operation on the FM Band

1. With the SELECTIVITY control set at "M" position and AM-BAND control set at "BC" position, push any of the pushbuttons which are set up for FM reception. The set will automatically switch to FM reception and the lamp behind the colored dot marking the FM Band will be illuminated.

2. Tune in an FM station noting carefully that the dial is tuned to the point where maximum closure is obtained on the FM tuning eye.

OPERATION OF CONTROLS

All operating positions of the controls of the Model 800-B Radio Receiver, with the exception of the Main Tuning Control, are marked, and indicator markings on the knobs are provided so that adjustment of the controls for various operating conditions is easily accomplished.

Six variable controls plus the main tuning control are provided so that maximum efficiency may be obtained at any operating condition. The functions and settings of the operating controls are listed below.

1. SELECTIVITY Control

The SELECTIVITY control located at the left side of the panel has five positions marked S-M-B-PH-Tel. The S-M-B positions are effective only for AM (amplitude modulation) reception on the "BC" and "SW" Bands. They designate the "Sharp", "Medium" and "Broad" condition of the AM-IF amplifier. The "S" position should be used at all times when manually tuning in stations as the IF amplifier is so broad in the "M" and "B" positions that a true resonant point cannot be obtained with the tuning eye. After the station has been tuned in properly in the "S" position the control may be advanced to the "M" or "B" position to obtain better fidelity.

When the SELECTIVITY control is set at "PH" position it connects the record changer pickup into the audio circuit of the receiver and provides for record reproduction.

With the SELECTIVITY control set at "TEL" position, the audio amplifier of the receiver is connected to the television input terminals at the rear of the receiver. These terminals are provided so that a television tuner may be connected to the 800-B Receiver and the audio amplifier of the receiver used for reproduction of television sound broadcasts, while the picture will be reproduced at the television tuner.

2. TREBLE Control

The TREBLE control is located at the right of the selectivity control and is provided in order that the high frequency response of the audio amplifier in the receiver may be changed to suit operating conditions and program material. Maximum high frequency response is obtained with this control set at maximum clockwise position.

3. SENSITIVITY Control

The SENSITIVITY control is located at the right of the treble control. This control is effective only on the AM broadcast and shortwave bands and is provided to vary the sensitivity of the receiver. When manually tuning the receiver the control should be set to the position where the AM tuning eye shadow just closes or on weak stations to the point where maximum closure of the tuning eye is obtained. For maximum sensitivity when tuning in weak distant stations the control should be advanced to the point where the switch incorporated on this control just starts to throw. The switch mentioned above which is incorporated in the SENSITIVITY control is provided to switch the Noise Limiter Circuit on and off. When the control is advanced to maximum clockwise rotation, the switch will throw on. The Noise Limiter Circuit with which this switch is associated, is effective on noises which have definite peaks, such as automobile ignition, it will have very little effect on noise which is of constant amplitude. Although the switch may be turned on or off when the set is tuned to any frequency band, it is effective only on the AM shortwave band.

4. MAIN TUNING Control

The MAIN TUNING control is the large knob in the center of the panel. This control is provided for tuning the receiver to the station frequency desired.

5. AM-BAND SELECTOR Control

The AM-Band switch is located at the right of the main tuning control. This control is provided in order that either the broadcast or shortwave bands may be selected for AM reception. This control is effective only for AM reception.

6. BASS Control

The BASS control is located at the right of the AM-Band control. This control is provided to enable the listener to raise or lower the bass response of the receiver to suit operating conditions and program material. Maximum bass response is obtained when this control is rotated to maximum clockwise position. Turning the control counter-clockwise will reduce the bass response.

7. VOLUME Control

The VOLUME control is located at the right side of the panel. This control is provided to regulate the audio output or "Volume" of the receiver. Maximum volume is obtained when this control is rotated to maximum clockwise position; zero output is obtained when the control is rotated to maximum counter-clockwise rotation. On standard 800-B Receivers this control will operate from minimum to maximum through an arc of 270 degrees. On receivers where remote volume control has been incorporated, the control will rotate seven complete revolutions from minimum to maximum since this control is driven by a motor controlled from the remote position, therefore when manually tuning the set it will be necessary to turn the control considerably more than is the case on the standard receiver.

8. PUSHBUTTON OPERATION

Fourteen pushbuttons are provided on the panel of the receiver. The bottom button on the right side is provided to turn the receiver "ON" when this button is pushed in. The bottom button on the left side shuts the receiver "OFF" when pushed in. The other twelve buttons are provided for selecting stations. These twelve station selector buttons are effective only when the SELECTIVITY control is set at "M" or "B" positions and the AM band controls set at "BC" position. A set of insert tabs listing all North American stations is included with each receiver. The sequence in which the inserts should be placed and the method of setting up the tuning system for pushbutton control is described above.

After the pushbutton tuning system has been set up for operation , when any pushbutton which has been set for an AM station is pushed the receiver will automatically switch over for reception of AM broadcast stations. When any pushbutton which has been set up for an FM station is pushed, the receiver will automatically switch over for reception of FM stations. When manually tuning the receiver, in order to switch from AM to FM or vice-versa, it is only necessary to push any AM or FM button momentarily and the circuits will be switched automatically.

9. TUNING INDICATORS

In the upper right and left hand corners of the dial scale are located two tuning indicators which are provided to enable the operator to properly tune the receiver to resonance with the station when manually tuning. The indicator in the left hand corner is marked AM and is used only when tuning in stations on the broadcast or short-wave bands. The indicator in the right hand corner is marked FM and is used only when tuning in stations on the FM band. A control, with a screwdriver adjustment slot, located on the top of the chassis directly under the FM tuning eye, is provided so that the tuning eye shadow may be made to close on the strongest FM signal for the particular location. This adjustment will then enable the listener to accurately tune the receiver to all FM stations by watching for maximum closure of the FM tuning eye.

10. TUNING DIAL

The three frequency bands are individually calibrated on the edge lighted glass scale. The BC band is calibrated in kilocycles with the last zero omitted on the numeral markings because of space limitations.

The SW band is calibrated in megacycles and the important bands are marked off for ease in tuning.

The FM band is calibrated in megacycles and divided in one-half megacycle divisions for help in tuning.

A scale marked off in 100 divisions located at the top of the dial face, is provided to enable the listener to log stations which may be tuned in on any of the three frequency bands and also permits setting up the pushbutton system.

At the left side of the dial face are located four colored dots which are provided to indicate which frequency band the receiver is operating on and when the receiver is adjusted for record player reproduction. Each dot is illuminated by a small lamp located at the back of the dial mechanism and are automatically turned on with the setting of the controls for changing frequency bands.

TUBE REPLACEMENT

The tube complement of the Model 800-B Radio Receiver is as follows:

Symbol	Type	Application
V1	6SK7	AM-RF Amplifier
V2	6J5	AM Oscillator
V3	6SA7	AM Mixer
V4	6SK7	AM-1st IF Amplifier
V5	6SK7	AM-2nd IF Amplifier
V6	6H6	AM-2nd Detector
V7	6E5	AM-Indicator
V8	6E5	FM-Indicator
V9	6J5	1st Audio Amplifier
V10	6J5	2nd Audio Amplifier
V11	6AG5	FM-RF Amplifier
V12	6C4	FM Oscillator
V13	6AG5	FM Mixer
V14	6AC7	FM-1st IF Amplifier
V15	6AC7	FM-2nd IF Amplifier
V16	6SJ7	FM-1st Limiter
V17	6SJ7	FM-2nd Limiter
V18	6H6	FM-Discriminator
V19	6SL7GT	3rd Audio Amplifier
V20	6L6G	Audio Power Output
V21	6L6G	Audio Power Output
V22	OD3	Voltage Regulator
V23	5Y3GT	Rectifier
V24	5Y3GT	Rectifier

When it is found necessary to replace any tube, by referring to Figures 10 and 11 the location and tube type can very easily be identified.

INSTRUCTIONS FOR INSTALLING LOOP ANTENNA

SYSTEM IN MODEL 800-B RADIO-PHONOGRAPH

The loop antenna system is provided for installations in locations where it is found impossible to erect an outside antenna for AM and FM reception. It consists of separate loops for the broadcast and shortwave bands for AM reception, these two loops being coupled to the antenna input circuit of the receiver through a matching transformer which has adjustments for each band in order to insure maximum signal input. A separate folded dipole antenna is provided for FM reception, this antenna being connected directly to the FM antenna terminals.

Figure 1 depicts the manner in which the loop antennas are fastened in the radio-phonograph cabinet, and by using the following instructions, step by step, the installation and adjustment of the antennas may be easily made and maximum results obtained.

1. First install the FM antenna which is a two wire flat cable which has been cut to the proper length and terminals attached. This antenna should be installed around the inside of the receiver compartment of the cabinet, at the rear, as follows:

   a. Place the junction of the antenna proper and the lead-in approximately 2 inches to the left of center and at the extreme outer edge of the back of the compartment with the lead-in facing toward the receiver chassis. Tack the antenna down with the staples furnished, following the contour of the cabinet, inserting a staple at each bend, the ends of the antenna will terminate approximately 8 inches apart at the top inside of the cabinet.

2. The broadcast band loop is installed around the bottom of the cabinet shelf on the Chippendale and Modern style cabinets as shown in Figure 1. On the Regency cabinet it is necessary to install it around the left side of the speaker compartment and under the shelf of the receiver compartment as shown in Figure 2. Although this loop can be installed in other ways, it is best to install it as shown in order to prevent the loop from being too directional. This loop consists of a 5 wire flat cable cut to the correct length, with a two wire flat lead-in attached. To install the BC band loop in the Chippendale and Modern Cabinets, place the junction of the loop and the lead-in under the shelf approximately $\frac{1}{2}$ inch in from the back and 2 inches to the right of the center of the radio compartment, with the lead-in cable facing out from the cabinet. Tack the loop down at this point with the staples furnished and follow around the inside of the cabinet with the rest of the loop fastening it to the bottom side of the shelf. When going around the corner of the cabinet it will be necessary to fold over the loop in orde to keep the corners flat as shown in Figure 1. Loop the lead-in up over the edge of the shelf and fasten down at one point to relieve any strain on the junction point of the loop and lead-in. To install the BC band loop in the Regency cabinet, start by fastening the junction of the loop and lead-in the same as in the Chippendale or Modern cabinets but since the Regency cabinets have a record storage compartment it is necessary to fasten the loop around the left side of the cabinet and under the shelf of the radio compartment only, with a small section in back of the record storage compartment as shown in Figure 2. This will apply to any cabinet with a record storage compartment.

3. The shortwave loop consists of a formed copper tubing fastened to the loop coupler coil shield can. This unit is assembled at the factory ready to mount to the chassis. This assembly is mounted under the two screws used to hold the backplate to the chassis as shown in Figure 1. The procedure is as follows:

   a. Remove the screw on the right side of the backplate and loosen the screw on the left side sufficient to allow the long mounting bracket of the loop coupler to slide under. Then reinsert the screw on the right side through the short bracket of the coupler and tighten down both screws.

   b. Insert the loop coupler plug P-301 into the loop receptacle at the rear of the chassis. This plug is polarized and can be inserted only one way.

   c. Connect the broadcast band loop lead-in as shown in the detail in Figure 1.

4. Connect the FM loop antenna to the two terminals marked ANT on the FM antenna terminal strip as shown in the detail of Figure 1.

5. Turn the loop selector switch SW1, which is located directly under the loop coupler on the rear of the receiver chassis, to the clockwise position. The slot will then be in the position shown in Figure 1.

6. After the loop has been installed and connected the receiver should be put in operation and the loop coupler adjusted for maximum signal on the broadcast and shortwave bands. The FM band loop requires no adjustment.

   If a fairly strong signal can be tuned in so that the tuning eye will show deflection at approximately 1500 K C and 600 KC on the broadcast band or 16 MC and 6.5 MC on the shortwave band, the adjustments on the coupler can be made using these signals with the tuning eye as an indicator as follows:

   a. Remove the AM tuning eye from the bracket and face the front of the tube toward the rear of the set so that it can be easily seen when adjusting the loop coupler.

   b. Set the receiver for operation in the AM band and with the selectivity control in the "Sharp" position, make the adjustments outlined below, setting each adjustment for maximum closure of the tuning eye. Figure 3 shows the location of the four adjustments on the loop coupler.

Band	Freq.	Adj.
BC	1500 KC	C-301
BC	600 KC	E-301
SW	16 MC	C-302
SW	6.5 MC	E-302

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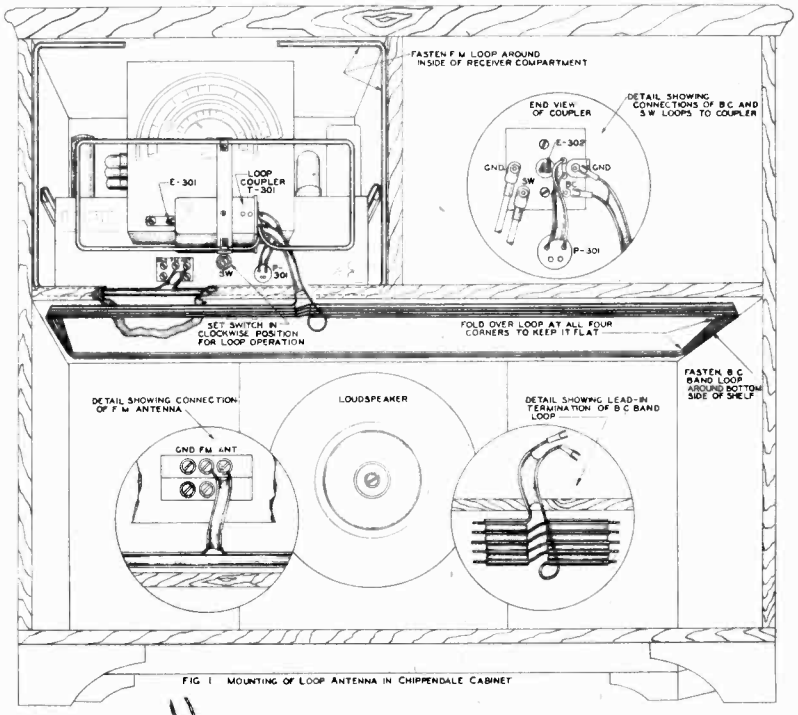

FIG. 1 MOUNTING OF LOOP ANTENNA IN CHIPPENDALE CABINET

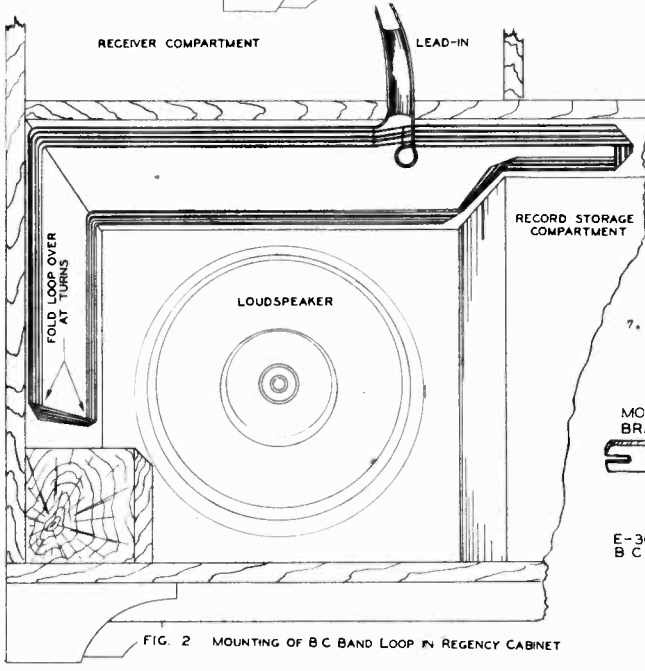

FIG. 2 MOUNTING OF B.C. BAND LOOP IN REGENCY CABINET

If a strong steady signal is not available for setting the adjustments on the coupler a signal generator must be used with either the tuning eye or an output meter as a signal indicator. The signal generator output terminals are connected to a single turn loop of wire placed adjacent to the loop in the set, the adjustments are made as in the table above keeping the output of the signal generator as low as possible and still maintain a clear signal. In noisy locations it may be necessary to set up a screened booth to do this alignment although this is seldom necessary as the adjustments on the coupler are not critical and with a signal generator a sufficiently strong signal to override the noise level can be obtained so that the adjustments can be made to obtain maximum signal input to the receiver.

7. In the Regency cabinet caution should be taken to mount the power supply chassis as far away from the BC band loop as possible to prevent detuning the loop.

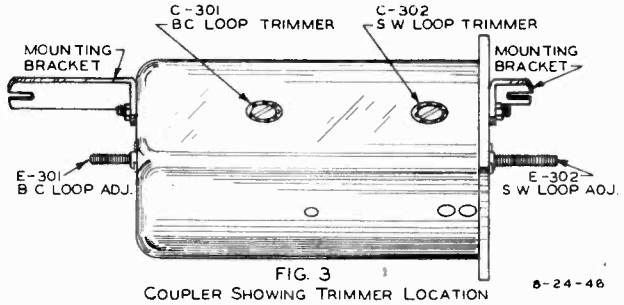

FIG. 3
COUPLER SHOWING TRIMMER LOCATION

8-24-48

MODEL 800-B

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In a high fidelity instrument such as the Model 800-B a very wide range of audio frequencies are reproduced and the hum problem is of special significance. Any hum voltages which reach the loudspeaker will be reproduced to a considerably greater degree than in the case of ordinary receivers having only a limited bass response. Thus, it becomes quite important that every effort be made to keep this hum at an absolute minimum. The several possibilities for hum pickup are treated in these notes. When customer complaints of an excessive hum level are experienced the following corrective measures are suggested. If the service man does not have an adequate stock of parts to make the changes which may be required, the additional parts may be procured from the Service Department, Scott Radio Laboratories, Inc., 4541 N. Ravenswood Avenue, Chicago, Ill.

Before taking any corrective measures check the wiring of the power supply, particularly the receiver receptacle J-3, to make sure that it conforms fully with the circuit diagram.

CONDITIONS FOR ELECTRICAL HUM AND SUGGESTED MEASURES

A. Hum present when receiver is switched on but Volume Control is adjusted for minimum output.

Elimination of Defective Components

The first step in locating the cause of hum under these conditions is to remove the 3rd audio amplifier tube V-19 (6SL7GT, located in the power supply chassis). If the hum disappears or is greatly reduced, the indicated fault lies in or ahead of this tube. If ahead of this tube it is, undoubtedly, caused by the 1st or 2nd audio amplifier tubes, V-9 (6J5) or V-10 (6J5), or their associated circuits located on the receiver chassis. If this source of hum is indicated, replace these tubes one at a time with a tube of known good quality, preferably one with a reversed coil heater which has the lowest hum pickup. If these tube replacements do not reduce the hum the 6L6 output tubes should also be replaced. If none of these tube replacements affect the hum the electrolytic capacitor C-33 which is used as a filter for the plate supply of the 1st and 2nd audio stages should be checked. It may be checked in a simple manner by bridging it temporarily with another 20 mfd., 300 to 450 volt rated capacitor, making certain that the correct polarity is observed.

If the hum is still present when the 3rd audio amplifier tube, V-19 (6SL7GT), is removed the fault may lie in a defective electrolytic filter capacitor in the high voltage supply, that is C-93 or C-94. By shunting each capacitor with another unit of the same capacity and voltage rating, the defective unit can be easily located.

Also check the d.c. potential on each audio grid to determine whether it is excessive. A high d.c. voltage at any grid point indicates a leaky coupling condenser.

IMPROVEMENT OF FILTERING ACTION IN POWER SUPPLY

If the occasion arises where the above measures fail to improve the hum situation sufficiently to satisfy the customer, the only alternative is to provide additional filtering in the power supply. Such filtering may be essential in those localities where the A.C. power supply has a bad waveform. If the 60 cycle supply is distorted, the higher harmonics will appear particularly objectionable and may demand a greater degree of filtering. The circuit is arranged so that the additional choke serves to filter the entire supply and therfore, reduces hum from the output tubes as well as the other points of the audio amplifier. In the new arrangement two chokes part no. 17B492 are used instead of one as used in earlier layout. This additional filtering may be installed by relocating L-17 on the power supply chassis and mounting the second choke adjacent to it. The suggested arrangement and wiring diagram are shown on an attached sheet.

The following additional components are required for making this installation.

1 - Insulated wire - 4 1/4" long
1 - Single lug terminal - Part No. 90B711
1 - Filter choke - Part No. 17B492
4 - Screws - 8/32 x 3/8" long - Part No. 77A382
4 - Lockwashers - #8 - Part No. 95A251
4 - Nuts - #8 - Part No. 59A178
1 - Screw - 6/32 x 1/8" long - Part No. 77A202

The following steps may be taken for ease of installation. (Refer to Diagrams on Wiring and Schematic for Installation of Additional Filter Reactor - Model 800-B).

1. Remove 6/32 mounting screws of C-88 and R-82.
2. Remount terminal strip holding C-87 and R-80 under mounting foot of C-89.
3. Unsolder leads of L-17 and remove choke.
4. Remove one of the red leads of C-94 from #2 terminal point and connect this lead to the new single terminal point #3.
5. Drill 11 holes.
   - 8 - Clearance holes, #22 drill, for choke mtg.
   - 1 - Tapped hole for 6/32 screw.
   - 2 - 3/8" clearance holes for choke leads.
6. Mount chokes (L-17 and additional one).
7. Mount C-88 using 1/8" 6/32 screw and one of the old 6/32 screws, securing the ground lug under the unit.

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8. Wire new yellow cathode lead from point #4, (the positive terminal) on C-88 to #6 pin on 6SL7 tube socket.

9. Wire short lead from 1st choke to #2 pin on 5Y3 socket. Wire long lead on 1st choke to #3 lug - also short lead from 2nd choke to #3 lug

10. Wire long lead from 2nd choke to #2 terminal lug.

B. Excessive hum with Volume Control in an advanced position and receiver switched into "Phono" or "Television" position.

A considerable improvement in the higher pitched hum level will be realized by rearranging the wiring of the "phono" and "television" input circuits and the high level audio lead running to the volume control. These leads are placed in cables in the wiring of earlier receivers, and have to be routed separately and generally isolated from other circuits to achieve the desired result. However, to avoid excessive dismantling of the receiver in the field the leads now running in the cables should be cut off and may be left in the cable while additional isolated leads are connected between the points concerned.

The following additional components are required for making this installation:

3 - Cable Clamps	- Part No.	18A312
3 - Shielded leads	- Part No.	96B962
1 - Screw - 6/32 x 1/8" long	- Part No.	77A202
3 - Lockwashers - #6	- Part No.	95A255
2 - Screws - 6/32 x 5/16" long	- Part No.	77A374
2 - Spacers - 1 1/8"	- Part No.	84A211
2 - Screws - 5/40 x 1 3/4" long	- Part No.	77B957
1 - Single lug terminal	- Part No.	90B711
2 - Nuts - 6/32	- Part No.	59A177

The following steps should be taken:

1. Disconnect ground braids and wires leading to the "phono" and "television" terminals.
2. Disconnect the other ends of these two shielded leads from switch C-3.
3. Disconnect shielded lead from C-30 coupling condenser.
4. Disconnect shielded lead from the high potential terminal of the volume control.
5. Remove short spacers from switch C-3 and substitute long spacers and screws. Reassemble using all washers and lockwashers which were used previously.
6. Add terminal #1 to chassis, mounting it under one foot of condenser C-30, or if possible drill #22 hole under C-30 as this will make wiring simpler as per diagram.
7. Add shielded lead to connect from volume control to C-30, connecting shields together at the volume control. Route lead across chassis toward the bottom edge which adjoins the bottom plates. Fasten lead under new cables clamps instead of the ones used previously. Insert one cable clamp with a short mounting screw on the left side of the chassis near the treble control.
8. Do not ground shield braid at terminal of C-30. Connect it to the added ground terminal mounted under one foot of C-30. Use this point also for connecting shields of leads coming from "phono" and "television" terminals.
9. Add new shielded leads from "phono and "television" terminals. Connect shield braids of these leads to the "ground" terminals at these points, but do not make a connection between either of these "ground" terminals and the chassis. Route leads along the lower edge of the chassis to switch C-3 using a cable clamp, fastened under one foot of the bathtub condenser C-29 to secure the cable.

C. Hum present only when a station carrier is tuned in and volume advanced.

Hum present under these conditions is generally caused by a defective tube. The most common fault being found in the second detector V-6 (6H6) when AM signals are being received or the discriminator V-18 (6H6) when FM signals are being received. The fault can be easily corrected by replacing these tubes with tubes of known good quality preferably of the metal type.

In some cases hum may be induced into the receiver from the power line. This form of pickup can usually be eliminated by employing a good ground connection between the receiver chassis and a cold water pipe or a pipe driven into the ground. Do not attempt to use the house wiring conduit or BX as a ground connection. Such an arrangement usually results in increased noise or hum pickup.

CONDITIONS FOR VIBRATIONAL OR MECHANICAL HUM AND SUGGESTED REMEDIES

A. Receiver hums when power is switched off.

In the 800-B, push-button tuning is accomplished by means of a motor driven mechanism. The transformer supplying the power for the drive motor, FM-AM changeover relay and the "power on-off" relay, is connected to the power circuit at all times. Therefore, a mechanical vibration may be heard even though the receiver is switched off. This form of hum is caused by transformer laminations vibrating against the bottom cover plate of the power amplifier.

To remedy this condition, remove the bottom plate of the power supply and apply strips of masking or adhesive tape along the bottom edge of the transformer so that the bottom plate cannot make metal to metal contact with the transformer case. In some extreme cases it may be necessary to mount the power supply on sponge rubber strips or felt bumpers in order to entirely eliminate this trouble.

May 13, 1946

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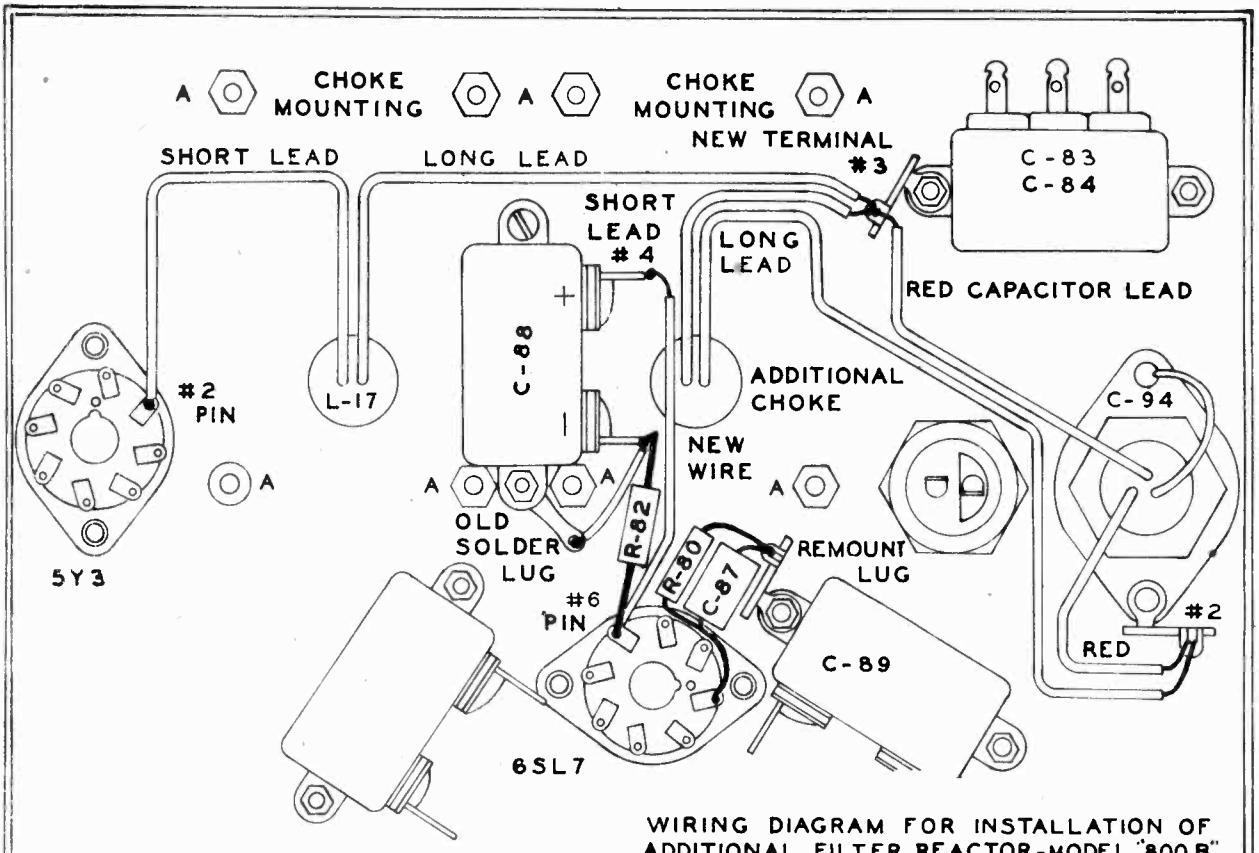
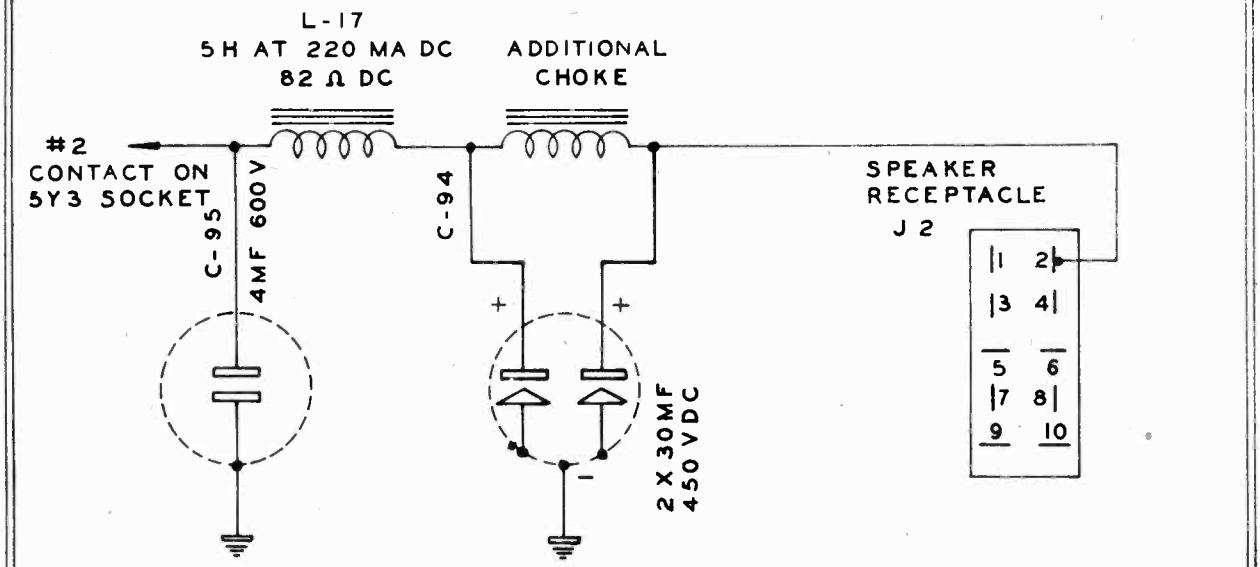


WIRING DIAGRAM FOR INSTALLATION OF ADDITIONAL FILTER REACTOR-MODEL "800 B"



SCHEMATIC DIAGRAM FOR INSTALLATION OF ADDITIONAL FILTER REACTOR-MODEL 800 B

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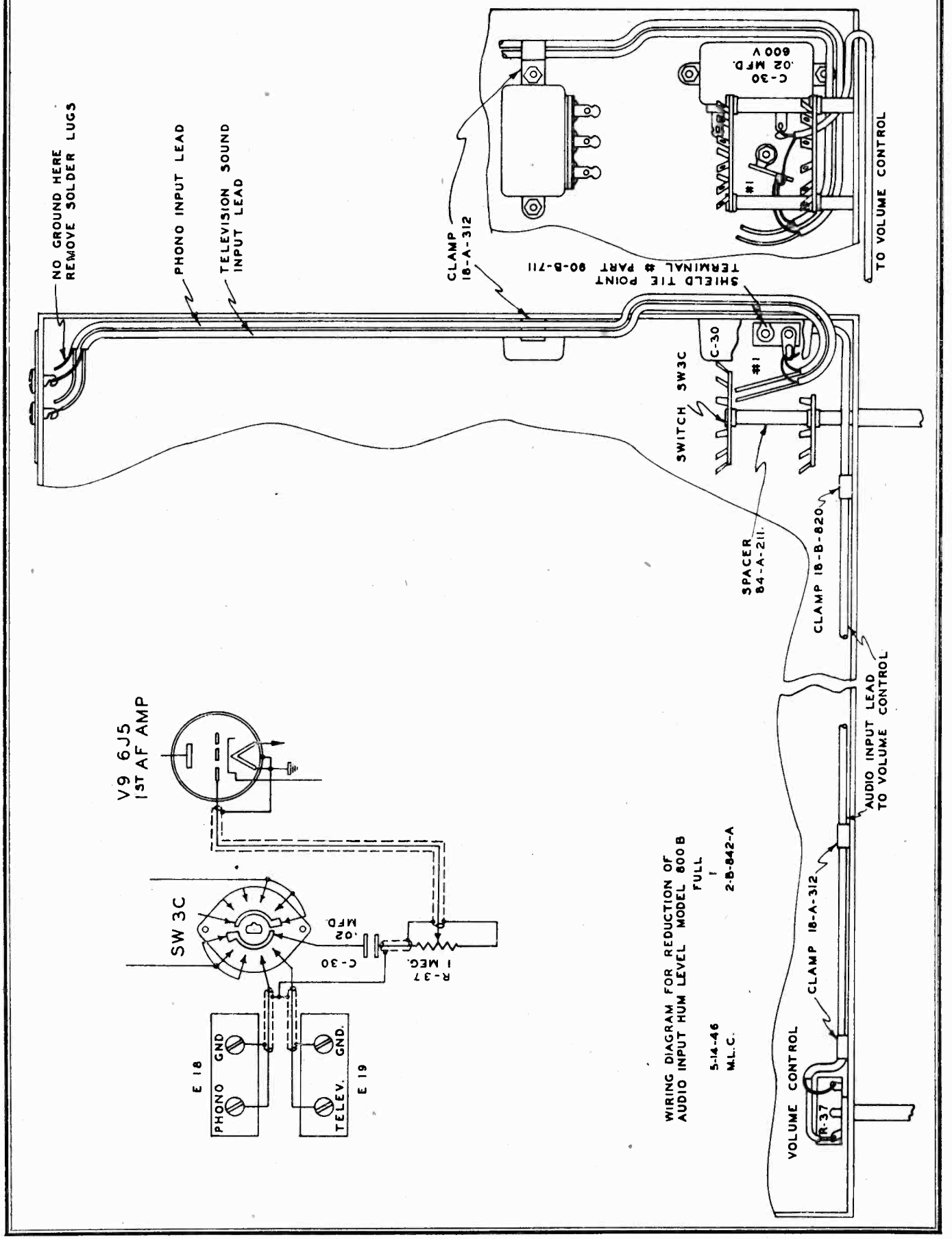


MODEL 800-B

SCOTT RADIO LABS. INC.

SERVICE NOTES FOR MODEL 800-B

CONTINUED NOTES ON REDUCTION
OF HUM OUTPUT AND AUDIO NOISES

(a) Add a 5600 ohm resistor (our Part No. 70A50, or equivalent) to the bass control circuit between the yellow leads and their terminal of the control R46. This resistor may be supported by a single lug terminal strip (our Part No. 90B711 or equivalent.) which can be mounted by a screw and nut already available near the bass control. The new resistor will be designated by the symbol R94.

(b) Remove the direct ground lug connection from contact #2 of the 1st audio socket X9 and add a 6¼" insulated wire between the common connection of pins #1 and #2 on the 1st audio socket and the same points on the 2nd audio socket X10. This change simply grounds the 1st audio shield and filament at the 2nd audio socket instead of at the 1st audio socket.

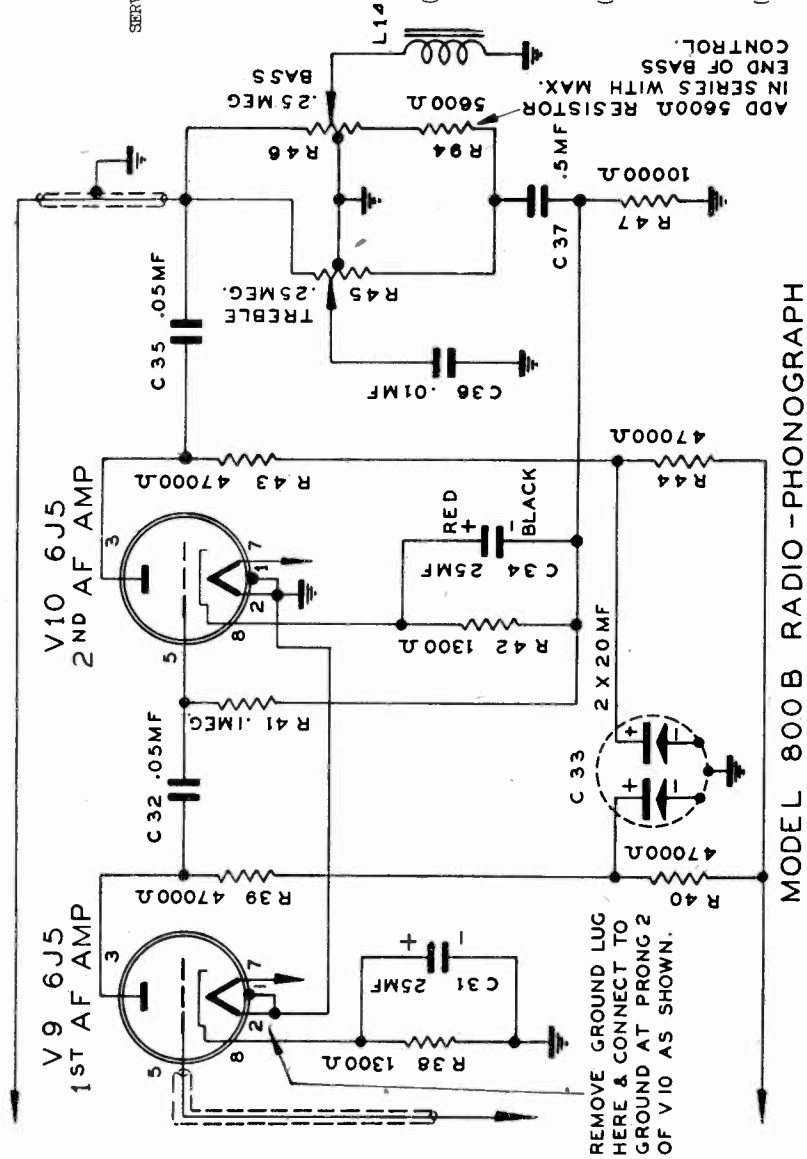
(c) The 1st audio shielded grid lead may be shortened from 10½" to 7" and run directly across the sockets to the volume control, instead of routing it around the chassis.

(d) Dress R80 and C87 as far as possible from heater pin #7 of the 6SL7 socket to prevent hum pickup in these components.

(3) Check the wiring of capacitor (C34), 25 mfd 25 volt electrolytic condenser, to determine whether it is connected correctly. The positive end of this capacitor should be connected to the cathode of the 6J5 and the negative end to the junction of R42 and R47. Some sets may have gone through our inspection with this capacitor wired backwards. An incorrect connection will not show initially on electrical tests, but some hum and noise may develop from it after a period of a few weeks operation.

Items Nos. 1 and 2 will be incorporated in sets numbering Serial 3,000 up to eliminate possible trouble from these sources.

AUGUST 9, 1946



MODEL 800B RADIO-PHONOGRAPH

CIRCUIT REVISION OF CHANGES OUTLINED IN SERVICE NOTES DATED AUGUST 9 1946

Further investigations of hum problems have revealed that additional steps can be taken if satisfactory hum level is not accomplished by changes recommended in previous Service Notes.

We wish to repeat that tubes are often the cause of hum. Here at the laboratory individual tubes have developed excessive hum output after the sets passed all our tests. Therefore, be sure to select tubes having the lowest hum level by trying several 6J5 and 6SL7 tubes. Carry spare tubes with you when installing the set as some may go bad from jolting received during delivery. If the receiver has incorporated the changes covered in previous Service Notes the following additional steps may be taken:

(1) Check to determine whether the lead from muting relay K3 is connected to the 6SL7 grid pin No. 1 or the 6L6-V20 grid. If it is connected to the 6SL7 input grid, move it to the 6L6-V20 input grid. This change prevents hum in the relay lead from being amplified by the 6SL7 tube.

(2) To reduce hum to the lowest possible level the following steps may be taken:

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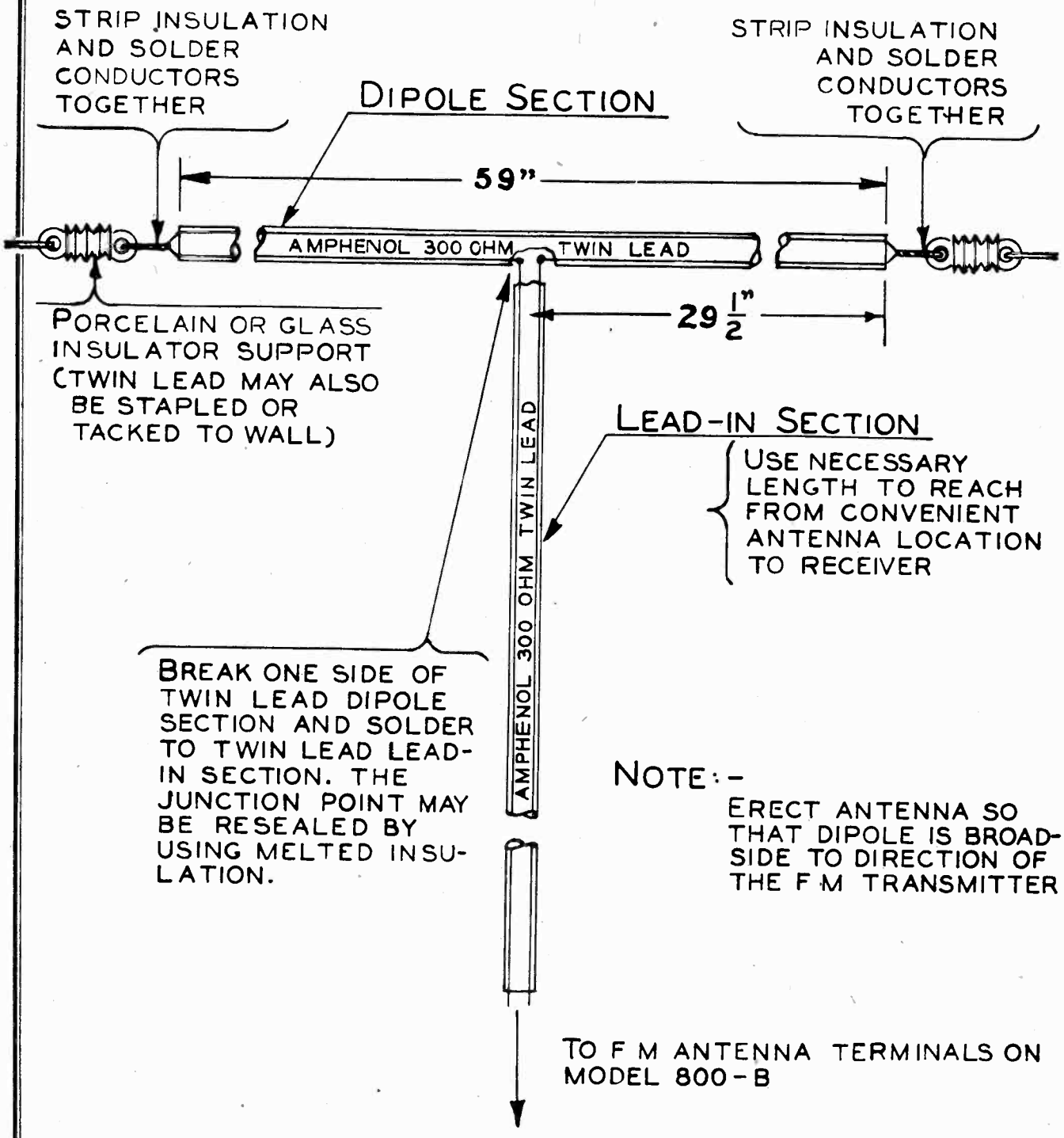

DIAGRAM 1. INSTALLATION OF 300 OHM FOLDED F M DIPOLE INDOOR OR OUTDOOR ANTENNA.

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Table 5
Parts List By Symbol Designation

Symbol Desig.	Function	Description	Part Number
	CAPACITORS		
C1	BC Band ant. sec. trimmer	Capacitor, ceramic trimmer, 4-25 MMF, screwdriver adj.	15A21
C2	SW Band ant. sec. trimmer	Same as C1	
C3	V1, AM-RF amp. grid coupling	Capacitor, mica, 240 MMF, 10%, 500 V DC wkg., CM20 case, wire leads	15A31
C4		Capacitor, paper, .1/.1 MFD	15B796
C4A	V1, AM-RF amp. cathode bypass	20%, 600 V DC wkg., bathtub can, 2 lugs, can common	
C4B	V1, AM-RF amp. screen bypass		
C5	Main tuning capacitor	Capacitor, variable air, 3	15B475
C5A1	AM-RF amp. tuning	gang in 4 gang frame, 2 sec-	
C5A2	FM-RF amp. tuning	tions per gang. Section 1:	
C5B1	AM-Osc. tuning	21 plates, min.cap. 8.5 MMF,	
C5B2	FM-Osc. tuning	max. cap. 410.5 MMF. Section	
C5C1	AM-mixer tuning	2: 5 plates, min. cap. 6 MMF,	
C5C2	FM-mixer tuning	max. cap. 26.4 MMF. Shaft: 3/8" dia. x 2 5/8" L at front - 3/8" dia. x 9/16" at rear	
C6	BC Band osc. trimmer	Capacitor, variable air trimmer, 3-25 MMF 7 plates, 1/4" hex shaft 1/8" L with screwdriver adj. slot	15A18
*C7	BC Band osc. fixed padder	Capacitor, silver mica, 390 MMF 5%, 500 V DC wkg., CM20 case, wire leads	15B861
C8	BC Band osc. variable padder	Capacitor, variable air trimmer, 6-75 MMF, 19 plates, 1/4" hex shaft 1/8" L with screwdriver adj.slot	15A20
C9	SW Band osc. fixed padder	Capacitor, silver mica, 4700 MMF 5%, 500 V DC wkg., CM 35 case, wire leads	15B798
C10	SW Band osc. trimmer	Same as C6	
C11	V2, AM osc. grid coupling	Capacitor, silver mica, 51 MMF 5%, 500 V DC wkg, CM20 case, wire leads	15A28
C12	V2, AM osc. plate bypass	Capacitor, paper, .05 MFD +30-10%, 600 V DC wkg., metal tubular can, insulated wire leads	15B639
C13	AM-osc. temp. compensating	Capacitor, silver ceramic, 10 MMF plus or minus 1 MMF 500 V DC wkg., temp. coeff N-750	15B804
C14	V2 cathode to V3 osc. input grid	Same as C11	
C15	BC Band mixer trimmer	Same as C6	
C16	SW Band mixer trimmer	Same as C6	
C17	V3 grid coupling	Same as C3	
C18		Capacitor, paper, .1/.1/.1	15A10
C18A	V1 plate filter	MFD 20%, 600 V DC wkg.,	
C18B	V3 screen filter	bathtub can, 3 lugs, can	
C18C	V3 cathode bypass	common	
C19	V3 plate bypass	Capacitor, paper, .1 MFD +30-10%, 600 V DC wkg., metal tubular case, mtg. strap, insulated wire leads both ends	15A409
C20	T1 - 1st AM-IF primary tuning	Capacitor, silver mica, 220 MMF 5%, 500 V DC wkg., CM20 case, wire leads	15A30
C21	T1 - 1st AM-IF secondary tuning	Capacitor, silver mica, 240 MMF 5%, 500 V DC wkg., CM20 case, wire leads	15B602
C22	V4 grid return filter	Same as C12	
C23		Same as C18	
C23A	V4 cathode bypass		
C23B	V4 screen bypass		
C23C	V4 plate filter		
C24	T2 - 2nd AM-IF primary tuning	Same as C21	
C25	T2 - 2nd AM-IF secondary tuning	Same as C21	
C26		Same as C18	
C26A	V5 cathode bypass		
C26B	V5 screen bypass		
C26C	V5 plate filter		
C27	T3 - 3rd AM-IF primary tuning	Capacitor, silver mica, 100 MMF 5%, 500 V DC wkg., CM20 case, wire leads	15A428
C28	V6 diode return bypass	Capacitor, mica, 51 MMF 20% 500 V DC wkg., CM20 case, wire leads	15A27
C29		Capacitor, paper, .05/.05/.05	15B599
C29A	V6 - N.L. cathode filter	MFD 20%, 600 V DC wkg., bath-	
C29B	AVC bypass	tub can, 3 lugs, can common	
C29C	AM tuning eye bypass		
C30	Volume control input coupling	Capacitor, paper, .02 MFD 20%, 600 V DC wkg., bathtub can, 2 lugs	15A12
C31	V9 - 1st AF amp. cathode bypass	Capacitor, electrolytic, 25 MFD, 25 V DC wkg., paper tubular case, wire leads	15B795
C32	V9 plate to V10 grid coupling	Same as C12	

* 470 MMF Part 15A32 after Serial 1500

Table 5
Parts List By Symbol Designation

Symbol Desig.	Function	Description	Part Number
	CAPACITORS (Continued)		
C33		Capacitor, electrolytic,	15B745
C33A	V9 plate filter	20/20 MFD, 450 V DC wkg.,	
C33B	V10 plate filter	bakelite case 1 3/8" dia. x 3 1/2" long, 3 wire leads, black common, mounts by 3/4-16 threaded bushing	
C34	V10 cathode bypass	Same as C31	
C35	V10 plate coupling	Capacitor, paper, .05 MFD 20%, 600 V DC wkg., bathtub can, 2 lugs	15A13
C36	Treble control series	Capacitor, mica, .01 MFD 20%, 500 V DC wkg., CM35 case, wire leads	15A41
C37	Tone control circuit series	Capacitor, paper, .5 MF 20%, 600 V DC wkg., bathtub can, 2 lugs	15B636
C38	L9 - FM ant. secondary shunt	Capacitor, silver ceramic, 20 MMF 10%, 500 V DC wkg., insulated, wire leads	15B864
C39	L9 - FM ant. secondary trimmer	Same as C6	
C40	V11 - FM-RF amp. cathode bypass	Capacitor, mica, 390 MMF 10%, 500 V DC wkg., CM20 case, wire leads	15B799
C41	V11 - FM-RF amp. screen bypass	Same as C40	
C42	L10 - FM osc. coil shunt	Capacitor, silver ceramic, 10 MMF plus or minus 1 MMF 500 V DC wkg., insulated, wire leads	15A22
C43	L10 - FM osc. coil trimmer	Same as C6	
C44	V12 - FM osc. grid coupling	Same as C27	
C45	V13 - FM mixer cathode bypass	Same as C40	
C46	V12 - FM osc. plate bypass	Same as C40	
C47	V11 - FM-RF amp. plate filter	Same as C40	
C48	L11 - FM mixer coil shunt	Same as C42	
C49	L11 - FM mixer coil trimmer	Same as C6	
C50	V13 heater bypass	Same as C40	
C51	V13 screen bypass	Same as C40	
C52	L12 - 1st FM-IF primary tuning	Same as C27	
C53	V13 plate filter	Capacitor, mica, 6200 MMF 20%, 500 V DC wkg., CM35 case, wire leads	15A40
C54	L13 - 1st FM-IF secondary tuning	Same as C27	
C55	V14 cathode bypass	Same as C53	
C56	V14 heater bypass	Capacitor, mica .01 MFD 20% 300 V DC wkg., CM40 case, wire leads	15A427
C57	V14 screen bypass	Same as C53	
C58	V14 plate filter	Same as C53	
C59	T4 - 2nd FM-IF primary tuning	Same as C11	
C60	T4 - 2nd FM-IF secondary tuning	Same as C11	
C61	V15 grid coupling	Same as C11	
C62	V15 cathode bypass	Same as C53	
C63	V15 heater bypass	Same as C53	
C64	V15 screen bypass	Same as C53	
C65	V15 plate filter	Same as C53	
C66	T5 - 3rd FM-IF primary tuning	Same as C11	
C67	T5 - 3rd FM-IF secondary tuning	Same as C11	
C68	V16 grid coupling	Same as C11	
C69	V16 heater bypass	Same as C53	
C70	V16 screen bypass	Same as C53	
C71	V16 plate filter	Capacitor, paper, .25 MFD 20%, 600 V DC wkg., bathtub can, 2 lugs	15A14
C72	T6 - 4th FM-IF primary tuning	Same as C11	
C73	T6 - 4th FM-IF secondary tuning	Same as C11	
C74	V17 grid coupling	Same as C11	
C75		Capacitor, paper, .05/.05 MF	15A11
C75A	FM tuning eye bypass	20%, 600 V DC wkg.,bathtub	
C75B	V17 grid return bypass	can, 3 lug	
C76	B + bypass at V16 plate return	Same as C36	
C77	V17 heater bypass	Same as C53	
C78	V17 screen bypass	Same as C53	
C79		Capacitor, paper, .25/.25	15A425
C79A	V17 screen bypass	MFD, 20% 600 V DC wkg.,	
C79B	V17 plate filter	bathtub can, 2 lugs, can common	
C80	T7 primary trimmer	Same as C6	
C81	T7 primary to secondary coupling	Same as C42	

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Table 5
Parts List By Symbol Designation

Symbol Desig.	Function	Description	Part Number
	CAPACITORS (Continued)		
C82	T7 secondary trimmer	Same as C6	
C83	Discriminator diode filter	Same as C27	
C84	Discriminator diode filter	Same as C27	
C85	Discriminator output de-emphasis network	Capacitor, silver mica, 1300 MMF 5%, 500 V DC wkg., CM30 case, wire leads	15A415
C86	Audio input bypass at power supply	Same as C3	
C87	Audio compensating network at V19A grid	Same as C40	
C88	V19 cathode bypass	Capacitor, electrolytic, 25 MFD, 25 V DC wkg., bathtub can, 2 lugs, black negative	15A15
C89	V19A plate to V20 grid coupling	Same as C35	
C90	V19B plate to V21 grid coupling	Same as C35	
C91	V20, V21 cathode bypass	Capacitor, electrolytic, 25 MFD, 50 V DC wkg., paper tubular case, wire leads	15B638
C92	Audio output shunt	Capacitor, mica, 5000 MMF 20%, 1000 V DC wkg., bakelite case, tab terminals	15B763
C93	High voltage output filter	Capacitor, electrolytic, 30/30 MFD 450 V DC wkg., bakelite case 1 3/8" dia. x 3 1/2" long, 3 wire leads, black common, mounts by 3/4-16 threaded bushing	15B744
C94	Filter reactor output bypass	Same as C93	
C95	Filter reactor input bypass	Capacitor, paper, 4 MFD, 600 V DC wkg., metal can 1⅛" dia. x 4⅛" long, mounts by 3/4-16 threaded bushing, 2 lugs	15B481
C96	AC power input bypass	Same as C75	
C97	V19A input compensating	Capacitor, mica, 1000 MMF 10%, 500 V DC wkg., CM30 case, wire leads	15A35
	MISCELLANEOUS ELECTRICAL PARTS		
E1	AM-antenna terminal strip	Terminal strip, 3 terminals mounted on 3/4" W x 2" L bakelite strip, marked AM-ANT-GND	87B644
E2	FM-antenna terminal strip	Terminal strip, 3 terminals mounted on 3/4" W x 2" L bakelite strip, marked FM-ANT-GND	87B643
E3	BC Band ant. sec., L2 inductance adj.	Powdered iron core 5/16" dia. x 1/2" L, adj. screw 6-32 x 1" L slotted at end	24A99
E4	SW Band ant. sec., L4 inductance adj.	Powdered iron core 5/16" dia. x 1/2"L, adj. screw 6-32 x 1¼" L, slotted at end	24A98
E5	BC Band oscillator, L5 inductance adj.	Same as E3	
E6	SW Band oscillator, L6 inductance adj.	Same as E3	
E7	BC Band mixer, L7 inductance adj.	Same as E4	
E8	SW Band mixer, L8 inductance adj.	Same as E3	
E9	1st AM-IF primary inductance adj.	Same as E4	
E10	1st AM-IF secondary inductance adj.	Same as E4	
E11	2nd AM-IF primary inductance adj.	Same as E4	
E12	2nd AM-IF secondary inductance adj.	Same as E4	
E13	3rd AM-IF primary inductance adj.	Same as E4	
E14	FM antenna secondary inductance adj.	Powdered iron core .274"dia. x 9/16" L, adj. screw 6-32 x 1¼"L slotted at end, iron core insulated from screw	24B758
E15	FM oscillator inductance adj.	Same as E14	
E16	FM mixer secondary inductance adj.	Same as E14	
E17	1st FM-IF primary inductance adj.	Same as E3	
E18	Phono-input terminal strip	Terminal strip, 2 terminals mounted on 3/4" W x 2 1/8"L bakelite strip, marked PHONO-GND	87A220
E19	Television input terminal strip	Terminal strip, 2 terminals mounted on 3/4"W x 2 1/8" L bakelite strip, marked TELEV-GND	87B642
E20	1st FM-IF secondary inductance adj.	Same as E3	

Table 5
Parts List By Symbol Designation

Symbol Desig.	Function	Description	Part Number
	MISCELLANEOUS ELECTRICAL PARTS (Continued)		
E21	2nd FM-IF primary inductance adj.	Same as E4	
E22	2nd FM-IF secondary inductance adj.	Same as E4	
E23	3rd FM-IF primary inductance adj.	Same as E4	
E24	3rd FM-IF secondary inductance adj.	Same as E4	
E25	4th FM-IF primary inductance adj.	Same as E4	
E26	4th FM-IF secondary inductance adj.	Same as E4	
E27	Pushbutton switch cable terminal board	Terminal strip with 12 solder lugs, 1" W x2 17/32" long bakelite strip	87B546A
E28	Dial drive motor	Motor, reversible type shaded pole, operates on 24 volts 50-60 CPS	58B447
E29	Dial pointer assembly	Dial indicator pointer with guide	29B749
E30	Dial calibration scale	Calibration scale on glass plate 4⅛" x 11 7/32"	29B637
E31	Control knob	Plastic knob 1 1/8" dia. black with red arrow 1/4" bushing, 8-32 set screw	47B659
E32	Main tuning knob	Plastic knob 2" dia. Polished chrome finish ¼" bushing - 8-32 set screw	47B660
E33	Pushbutton	Clear plastic pushbutton 11/16" sq. with slot for station indicator tab, fits .050 x .312 flat shaft	10B735
E34	Knob set screw wrench	Wrench for #8 hollow head set screws 5/64" hex x 1 7/8" long	94B810
E35	Backplate rotor disk insulator strip	Strip, bakelite 27/32" x 9/16" x 3/16" with .040 W x .058 H, rib in center	87B560
E36	Backplate rotor disk assembly	Rotor disk assembly for pushbutton tuning system backplate	2B890
E37	Backplate contact assembly (long bracket)	Contact assembly for pushbutton tuning system backplate - long bracket	8B503A
E38	Backplate contact assembly(short bracket)	Contact assembly for pushbutton tuning system backplate - short bracket	8B504A
E39	AM-RF resistor strip assembly	Strip, bakelite 6 lugs with resistors R1, R2 and R4	87B547B
E40	Converter channel resistor strip assembly	Strip, bakelite 6 lugs with resistors R8, R11 and R12	87B547C
E41	AM-IF resistor strip assembly	Strip, bakelite 12 lugs with resistors R22, R17, R23, R19, R18 and R13	87B546C
E42	AM diode resistor strip assembly	Strip, bakelite 12 lugs with resistors R36, R33, R32, R34, R35 and R16	87B546B
E43	1st audio amp. resistor strip assembly	Strip, bakelite 6 lug with resistors R40, R39 and R38	87B547D
E44	2nd audio amp. resistor strip assembly	Strip, bakelite 12 lugs with resistors R44, R43, R42, R41 and R47	87B546D
E45	1st FM-IF resistor strip assembly	Strip, bakelite 6 lugs with resistors R59, R6 and R F choke L15	87B547E
E46	2nd FM-IF resistor strip assembly	Strip, bakelite 6 lugs with resistors R63, R64 and R65	87B547F
	FUSES		
F1	Power transformer primary fuse	Fuse, miniature cartridge, 3A, 250 V, 1/4" dia. x 1¼"L Type 3AG	37A162
F2	Pushbutton tuning transformer primary fuse	Fuse, miniature cartridge, 1A, 250 V, ¼" dia. x 1¼" L Type 3AG	37B655
	DIAL LAMPS		
I1	Dial lighting lamp	Lamp, miniature bayonet base, 6-8 V @ .150 amp. #47, brown bead	49A168
I2	Dial lighting lamp	Same as I1	
I3	Phono indicator lamp	Same as I1	
I4	BC Band indicator lamp	Same as I1	
I5	SW Band indicator lamp	Same as I1	
I6	FM Band indicator lamp	Same as I1	
	JACKS & RECEPTACLES		
J1	Record changer power receptacle	2 contact female plug with metal shield cap and cable clamp	65B840
J2	Speaker receptacle	10 contact female receptacle, 11/16" W x 1 9/16"L H.B.Jones type S-310-AB	67B542
J3	Receiver power receptacle	12 contact female receptacle, 15/16" W x 1¼" L, H.B.Jones type S-312-AB	67B541

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Table 5
Parts List By Symbol Designation

Symbol Desig.	Function	Description	Part Number
	JACKS & RECEPTACLES (Continued)		
J4	Audio input receptacle	4 contact female receptacle 11/16" W x 3/4" L, H. B. Jones type S-304-AB	67B543
J5	FM-IF input receptacle	Single contact female receptacle, mounts in 5/8"dia. hole, Amphenol type 80C Used on early model sets	67B634
J5	FM-IF input receptacle	Receptacle, 2 contact female mounts in 5/8" dia. hole, type PC2F. Used on late model sets	67B960
J6	Remote keyboard receptacle	21 contact female receptacle 1" W x 2[illegible] L, H.B. Jones type S-321-AB	67B786
J7	Loop antenna receptacle	4 contact female receptacle 13/16" W x 1½" L	67B645
	RELAYS		
K1	FM-AM changeover relay	Relay, 2 position with 2 rotary type wafer switches SW6A and SW6B, 2 coils L18 and L19, operates on 10 V AC. Used before Serial 2000	69B733
K1	FM-AM changeover relay	Relay, 2 position with 2 rotary type wafer switches SW6A and SW6B, 2 coils L18 and L19, operates on 24 V AC. Used after Serial 2000	69B983
K2	AC power ON-OFF relay	Relay, 2 position with 1 rotary switch section SW5, 2 coils L20 and L21,operates on 24 V AC. Used before Serial 2000	69B734
K2	AC power ON-OFF relay	Relay, 2 position with 1 rotary switch section.SW5, 2 coils L20 and L21,operates on 22 V AC. Used after Serial 2000	69B984
K3	Audio muting relay	Relay, S.P.S.T. contacts normally open operates on 2.4 V AC	69B507
K4	Relay for dial drive motor	Same as K3. Added after Serial 2000	
K5	Relay for dial drive motor	Same as K3. Added after Serial 2000	
	INDUCTORS & CHOKES		
L1	BC Band antenna primary coil	RF inductor, universal wound on 1" dia. x 7/8" L form	20B604
L2	BC Band antenna secondary coil	RF inductor, universal progressive wound on 1" dia. x 1½" L form, adjustable iron core	20B605
L3	SW Band antenna primary coil	RF inductor, solenoid wound on 3/4" dia. x 7/8"L form	20B608
L4	SW Band antenna secondary coil	RF inductor, solenoid wound on 3/4" dia. x 1½" L form, adjustable iron core	20B609
L5	BC Band oscillator coil	RF inductor, solenoid wound on 1" dia. x 2¼" L form, adjustable iron core	20B607
L6	SW Band oscillator coil	RF inductor, solenoid wound on 3/4" dia. x 2¼" L form, adjustable iron core	20B611
L7	BC Band mixer coil	RF transformer, primary universal wound, secondary progressive universal wound on 1" dia. x 2¼" L form, adjustable iron core	20B606
L8	SW Band mixer coil	RF transformer, primary and secondary solenoid wound on 3/4" dia. x 2¼" L form, adjustable iron core	20B610
L9	FM antenna coil	RF transformer, primary and secondary solenoid wound on ⅜" dia. x 2 1/8" L form, adjustable iron core	20B612
L10	FM oscillator coil	RF inductor, solenoid wound on ⅜" dia. x 2 1/8" L form, adjustable iron core	20B614
L11	FM mixer coil	RF transformer, primary and secondary solenoid wound on ⅜" dia. x 2 1/8" L form, adjustable iron core	20B613
L12	1st FM-IF primary coil	RF inductor, solenoid wound on ⅜" dia. x 2 1/8" L form, adjustable iron core	20B618
L13	1st FM-IF secondary coil	RF inductor, solenoid wound on 7/16" dia. x 1 3/8" L form, adjustable iron core	20B619
L14	Bass boost choke	Audio reactor, 11 H @ 1000 CPS, no DC, laminated iron core, potted	17B591
L15	V14 plate filter choke	RF choke, 40 T #26 SSE wire on 9/32" dia. x 7/8" L form wire leads	17B761

Table 5
Parts List By Symbol Designation

Symbol Desig.	Function	Description	Part Number
	INDUCTORS AND CHOKES (Continued)		
L16	FM discriminator audio filter	Same as L15	
L17	High voltage filter choke	Filter reactor, 5 H @ 200 MA DC, laminated iron core, potted in chrome plated case	17B492
L18	FM-AM relay coil	Relay coil, wound on insulated copper sleeve, two terminals, 425 T #24 E wire DC resistance 2 ohm or 350 T #22 E wire, DC resistance 1 ohm, operates on 10 volts 60 CPS. Used on receivers before Serial 2000	20B707
L19	FM-AM relay coil	Same as L18	20B707
*L18	FM-AM relay coil	Relay coil, wound on insulated copper sleeve, two terminals, 800 T #30 E wire DC resistance 13 ohms, operates on 24 volts 60 CPS Used on receivers after Serial 2000	20B982
*L19	FM-AM relay coil	Same as L18	20B982
L20	AC power ON-OFF relay coil	Relay coil wound on insulated copper sleeve, two terminals, 1200 T #28 E wire, DC resistance 20 ohms or 1100 T #29 E wire, DC resistance 16 ohms,operates on 24 volts 60 CPS. Used on receivers before Serial 2000	20B719
L21	AC power ON-OFF relay coil	Same as L20	20B719
*L20	AC power ON-OFF relay coil	Relay coil wound on insulated copper sleeve, two terminals, 900 T #32 E wire, DC resistance 23 ohms operates on 24 volts, 60 CPS. Used on receivers after Serial 2000	20B977
*L21	AC power ON-OFF relay coil	Same as L20	20B977
L22	Muting relay coil	Audio muting relay coil, part of K3 assembly, operates on 2.4 volts 60 CPS	
L23	Drive motor relay coil	Same as L22. See relay K4	
L24	Drive motor relay coil	Same as L22. See relay K5	
L25	High voltage filter choke	Same as L17	
	LOUDSPEAKERS		
LS1	Loudspeaker for 800-B	Loudspeaker,coaxial type,15 inch low frequency with 5 inch PM tweeter mounted axially, complete with crossover network and cable with 10 contact plug P-310-CCT. Field for 15 inch speaker 675 ohms series and 9000 ohms shunt. Input impedance 8 ohms	85B490
LS2	Loudspeaker for 800-B	Loudspeaker, 15" dynamic extended range. Field 675 ohm series and 9000 ohms shunt. Input impedance 16 ohms	85B909
	PLUGS		
P1	Receiver chassis power plug	Plug, 12 contact, male,metal cover with cable clamp,Type P-312-CCT	65A184
P2	Receiver chassis audio plug	Plug, 4 contact, male, metal cover with cable clamp,Type P-304-CCT complete with 4 wire cable	963677
P3	FM-IF input plug	Plug, single contact, male Type 80M. Used on early model sets	65B656
P3	FM-IF input plug	Plug, 2 contact, male,Type MC2M. Used on later model sets	65B959
P4	Loudspeaker plug	Plug, 10 contact, male, metal cover with cable clamp, Type P-310-CCT	65A186
P5	AC power input plug	Plug, 2 contact, male, plastic shell	65B679
	RESISTORS		
R1	V1 - AM-RF grid return	Resistor, composition, .47 meg 10%, ½ watt, wire leads	70A61
R2	V1 - cathode bias	Resistor, composition, 560 ohms 10%,½ watt, wire leads	70A46
R3	V1 - screen bleeder	Resistor, composition, 10,000 ohms 10%, ½ watt, wire leads	70A419

* These coils used on FM-AM and AC relays after Serial 2000.

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Table 5
Parts List By Symbol Designation

Symbol Desig.	Function	Description	Part Number
	RESISTORS (Continued)		
R4	V1 - Screen filter	Resistor, composition, 15,000 ohms 10%, 2 watt, wire leads	70B818
R5	Sensitivity control	Potentiometer, wire wound, 10,000 ohms 10%, 2 watt, linear taper, shaft: ¼" dia. x 3" L, complete with SPDT switch SW4 for N.L. circuit	70B569
R6	V2 - AM osc. grid leak	Resistor, composition, 47,000 ohms 10% ½ watt, wire leads	70A54
R7	V2 plate filter	Resistor, composition, 5100 ohms 10%, 1 watt, wire leads	70B648
R8	V3 - AM mixer grid return	Same as R1	
R9	V3 - injector grid return	Resistor, composition, 20,000 ohms 5%, ½ watt, wire leads	70A52
R10	V3 cathode bias	Resistor, composition, 240 ohms 5%, ½ watt, wire leads	70A45
R11	V1 - RF amp. plate filter	Resistor, composition, 1000 ohms 10%, ½ watt, wire leads	70A47
R12	V3 screen filter	Resistor, composition, 18,000 ohms 10%, 2 watt, wire leads	70A68
R13	V3 plate filter	Same as R11	
R14	1st AM-IF secondary series	Resistor, composition, 47 ohms 10%,½ watt, wire leads	70A420
R15	1st AM-IF secondary series	Resistor, composition, 10 ohms 10%,½ watt, wire leads	70A42
R16	V4 - 1st AM-IF amp. grid return	Resistor, composition, .22 meg 10%, ½ watt, wire leads	70A59
R17	V4 cathode bias	Same as R2	
R18	V4 screen filter	Resistor, composition, .1 meg 10%, ½ watt, wire leads	70A58
R19	V4 plate filter	Same as R11	
R20	2nd AM-IF secondary series	Same as R14	
R21	2nd AM-IF secondary series	Same as R14	
R22	V5 - 2nd AM-IF amp. cathode bias	Same as R2	
R23	V5 screen filter	Same as R18	
R24	V5 plate filter	Same as R11	
R25	AM tuning eye target series	Resistor, composition, 1 meg 20%, ½ watt, wire leade	70A63
R26	V11 - FM-RF amp. grid series	Resistor, composition, 5 ohms 10%,½ watt, wire leads	70B860
R27	Not used		
R28	V8 FM tuning eye grid return	Same as R1	
R29	V8 FM tuning eye adj.	Potentiometer, composition, 1 meg 20%, .4 watt, shaft: ¼" dia. x 11/32" L, screwdriver slot adj. linear taper	70B568
R30	V8 FM tuning eye target series	Same as R25	
R31	AM diode load	Same as R6	
R32	AM diode filter	Same as R6	
R33	V6 noise limiter cathode filter	Resistor, composition, .82 meg 10%,½ watt, wire leads	70B649
R34	AVC line filter	Same as R33	
R35	V7 AM tuning eye filter	Resistor, composition, 2.2 meg 20%,½ watt,wire leads	70A64
R36	V6 noise limiter cathode bias	Same as R33	
R37	Volume control	Potentiometer, composition, 1 meg 20%, .4 watt, clockwise audio taper, shaft: ¼" dia. x 3" long	70B570
R38	V9 1st AF amp. cathode bias	Resistor, composition, 1300 ohms 5%, ½ watt, wire leads	70B650
R39	V9 plate load	Same as R6	
R40	V9 plate filter	Same as R6	
R41	V10 2nd AF amp. grid return	Same as R18	
R42	V10 cathode bias	Same as R38	
R43	V10 plate load	Same as R6	
R44	V10 plate filter	Same as R6	
R45	Treble control	Potentiometer, composition, .25 meg 20%, .4 watt,clockwise audio taper, tapped at .125 meg 20%, shaft: ¼" dia. x 3" L.	70B540
R46	Bass control	Same as R45	
R47	Tone control circuit return	Same as R3	
R48	V11 FM-RF amp. cathode bias	Resistor, composition, 150 ohms 10%, ½ watt,wire leads	70A44
R49	V11 screen filter	Resistor, composition, 56,000 ohms 10%, ½ watt, wire leads	70A55
R50	V12 FM oscillator grid return	Same as R18	
R51	V11 plate filter	Same as R11	
R52	V12 plate filter	Same as R7	

Table 5
Parts List By Symbol Designation

Symbol Desig.	Function	Description	Part Number
	RESISTORS (Continued)		
R53	V13 FM mixer grid series	Same as R26	
R54	V13 cathode bias	Same as R11	
R55	V13 screen filter	Same as R16	
R56	V13 plate filter	Resistor, composition, 2400 ohms 5%, ½ watt, wire leads	70A49
R57	V14 1st FM-IF amp. grid series	Resistor, composition, 56 ohms 10%,½ watt, wire leads	70A43
R58	V14 cathode bias	Resistor, composition, 160 ohms 5%, ½ watt, wire leads	70B654
R59	V14 screen filter	Same as R49	
R60	V14 plate filter	Same as R56	
R61	T4 secondary shunt	Resistor, composition, 27,000 ohms 10%, ½ watt, wire leads	70A418
R62	V15 2nd FM-IF amp. grid series	Same as R57	
R63	V15 cathode bias	Same as R58	
R64	V15 screen filter	Same as R49	
R65	V15 plate filter	Same as R56	
R66	T5 secondary shunt	Same as R6	
R67	V16 1st FM limiter grid series	Resistor, composition, 27 ohms 10%,½ watt, wire leads	70B666
R68	V16 plate and screen filter	Resistor, composition, 39,000 ohms 10%, 1 watt, wire leads	70B653
R69	V8 FM tuning eye grid filter	Same as R35	
R70	V17 2nd FM limiter grid series	Same as R67	
R71	V17 grid leak	Same as R61	
R72	V17 grid return filter	Resistor, composition, 15,000 ohms 10%, ½ watt, wire leads	70A51
R73	V17 screen bleeder	Resistor, composition, 15,000 ohms 10%, 1 watt, wire leads	70B683
R74	V17 screen filter	Same as R68	
R75	V17 plate filter	Same as R18	
R76	V18 FM discriminator filter	Same as R49	
R77	V18 diode load	Same as R18	
R78	V18 diode load	Same as R18	
R79	FM de-emphasis network	Same as R6	
R80	V19A grid series	Same as R1	
R81	V19A grid return	Same as R6	
R82	V19A, V19B cathode bias	Resistor, composition, 1500 ohms 10%,½ watt,wire leads	70A48
R83	V19B plate load	Same as R16	
R84	V19A plate load	Same as R16	
R85	V20 grid return	Same as R16	
R86	V21 grid return	Same as R16	
R87	V19B grid return	Same as R16	
R88	V20,V21 cathode bias	Resistor, wirewound, 250 ohms 5%, 10 watt, vitreous enamel, wire leads	70A70
R89	V20 plate to V19A plate feedback	Same as R25	
R90	Audio output filter	Resistor, wirewound, 10,000 ohms 10%, 10 watt, vitreous enamel, wire leads	70B760
R91	V22 anode, dropping resistor	Resistor, wirewound, 3000 ohms 10%, 10 watt, vitreous enamel, wire leads	70B681
R92	Receiver high voltage dropping resistor	Resistor, wirewound, 300 ohms 10%, 10 watt, vitreous enamel, wire leads	70B682
R93	Speaker series field dropping resistor	Same as R91	
	SWITCHES		
SW1	Loop antenna switch	Switch, rotary, D.P.D.T., shaft: ¼" dia. x 11/32"long screwdriver slot	89B628
SW2	AM Band change switch	Switch, 4 section rotary, 2 position indent, front shaft ¼" x 2 13/16" long, shaft at rear 10½" long, ¼" dia. flat on 2 sides	89B508
SW2A	Antenna channel switch section	Switch section, 2 pole, 2 position, bakelite wafer, rotary type	89B508-2
SW2B	Oscillator channel switch section	Same as SW2A	
SW2C	Mixer channel switch section	Same as SW2A	
SW2D	Indicator lamp switch section	Switch section, 3 pole, 2 position, bakelite wafer, rotary type	89B508-1
SW3	Selectivity switch	Switch, 4 section rotary, 5 position indent, front shaft ¼" dia. x 2 13/16" long, shaft at rear 11½" long, ¼" dia. flat on two sides	89B509
SW3A	1st AM-IF Switch section	Switch section, 2 pole, 5 position, rotary type, bakelite wafer	89B509-1
SW3B	2nd AM-IF switch section	Same as SW3A	

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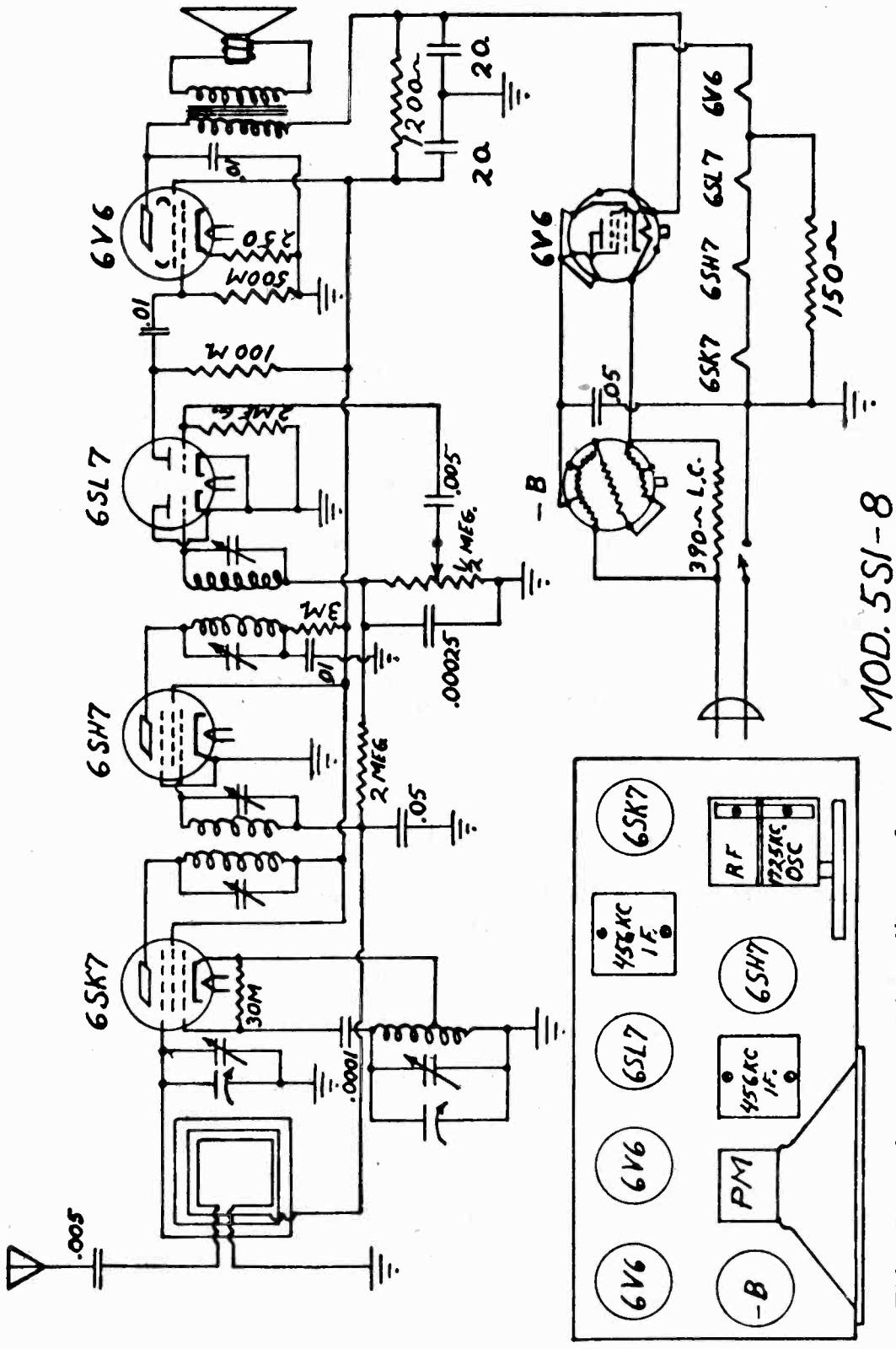
Table 5
Parts List By Symbol Designation

Symbol Desig.	Function	Description	Part Number
	SWITCHES (Continued)		
SW3C	Phono-Radio switch section	Same as SW3A	
SW3D	Indicator lamp switch section	Same as SW3A	
SW4	Noise limiter switch	Switch, S.P.D.T. mounted on rear of sensitivity control R5, throws at maximum rotation of control	
SW5	AC power relay switch section	Switch section, 3 pole, 2 position, rotary type, bakelite wafer	89B626-1
SW6A	FM-AM relay switch top section	Switch section, 4 pole, 2 position, rotary type, bakelite wafer	89B625-1
SW6B	FM-AM relay switch bottom section	Switch section, 2 pole, 2 position, rotary type, bakelite wafer	89B625-2
SW7	Muting relay switch	Switch, S.P.S.T. mounted on relay K3	
SW8	Pushbutton switch gang	Switch, gang consisting of 7, S.P.S.T. momentary contact switches actuated by push levers	89B478
SW9	Pushbutton switch gang	Same as SW8	
SW10	Drive motor relay switch	Same as SW7. See relay K4	
SW11	Drive motor relay switch	Same as SW7. See relay K5	
	TRANSFORMERS, RF, AUDIO, POWER		
T1	1st AM-IF transformer	IF transformer, 455 KC, adjustable iron cores on primary and secondary	20B615
T2	2nd AM-IF transformer	IF transformer, 455 KC, adjustable iron cores on primary and secondary	20B616
T3	3rd AM-IF transformer	IF transformer, 455 KC, adjustable iron core on primary, secondary untuned	20B617
T4	2nd FM-IF transformer	IF transformer, 10.7 MC adjustable iron cores on primary and secondary	20B620
T5	3rd FM-IF transformer	IF transformer, 10.7 MC adjustable iron cores on primary and secondary	20B621
T6	4th FM-IF transformer	IF transformer, 10.7 MC adjustable iron cores on primary and secondary	20B622
T7	FM discriminator transformer	IF transformer, 10.7 MC, primary and secondary tuned by variable air trimmers	20B623
T8	Audio output transformer	Output transformer, primary 9000 ohms @ 1000 CPS, 100 MA DC, secondary 16 ohms tapped at 8 ohms, 25 watts	91B664
T9	Power transformer	Transformer, primary 120 V 50-60 CPS. Sec. 1-5 V @ 4A. Sec.-2-390-390 V @ 210 MA. Sec. 3-6.3 V @ 4 A. Sec. 4 6.6 V @ 4.6 A. Electrostatic shield between primary and secondaries	91B429
T10	Pushbutton tuning system transformer	Transformer, primary 117 volts 50-60 CPS. Sec. 46 V @ 2.5 A, tapped at 36 V and 24 V, primary designed for intermittent duty	91B694
	VACUUM TUBES		
V1	AM-RF amplifier	Vacuum tube, 6SK7, octal base, remote cutoff pentode Heater: 6.3 V @ .3 amp	92A226
V2	AM oscillator	Vacuum tube, 6J5, octal base triode, Heater: 6.3 V @ .3 amp	92A228
V3	AM mixer	Vacuum tube, 6SA7, octal base, pentagrid converter, Heater: 6.3 V @ .3 amp	92A227
V4	1st AM-IF amp.	Same as V1	
V5	2nd AM-IF amp.	Same as V1	
V6	AM 2nd detector AVC, noise limiter	Vacuum tube, 6H6, octal base, twin diode, Heater: 6.3 V @ .3 amp.	92A229
V7	AM tuning indicator	Vacuum tube, 6E5, 6 prong base, cathode ray indicator, Heater: 6.3 V @.3 amp	92B479
V8	FM tuning indicator	Same as V7	
V9	1st audio amp.	Same as V2	
V10	2nd audio amp.	Same as V2	
V11	FM-RF amp.	Vacuum tube, 6A05, miniature type, RF amplifier pentode, Heater: 6.3 V @ .3 amp	92B598
V12	FM oscillator	Vacuum tube, 6C4, miniature type, H.F. triode, Heater: 6.3 V @ .15 amp	92B597
V13	FM mixer	Same as V11	

Table 5
Parts List By Symbol Designation

Symbol Desig.	Function	Description	Part Number
	VACUUM TUBES (Continued)		
V14	1st FM-IF amp.	Vacuum tube, 6AC7, octal base, amplifier pentode, Heater: 6.3 V @ .45 amp	92A235
V15	2nd FM-IF amp.	Same as V14	
V16	1st FM-IF limiter	Vacuum tube, 6SJ7, octal base, sharp cutoff pentode, Heater: 6.3 V @ .3 amp	92A236
V17	2nd FM-IF limiter	Same as V16	
V18	FM discriminator	Same as V6	
V19	3rd audio amp. Phase inverter	Vacuum tube, 6SL7GT, octal base, twin triode, Heater: 6.3 V @ .3 amp	92B669
V20	Power output audio amp.	Vacuum tube, 6L6G, octal base, beam power amp., Heater: 6.3 V @ .9 amp	92A233
V21	Power output audio amp.	Same as V20	
V22	Voltage regulator	Vacuum tube, OD3-VR150/30, octal base, glow discharge voltage regulator	92A237
V23	High voltage rectifier	Vacuum tube, 5Y3GT, octal base, full wave high vacuum rectifier, filament 5 V @ 2 amp	92B480
V24	High voltage rectifier	Same as V23	
	WIRES AND CABLES		
W1	FM-IF lead	Shielded lead consisting of 7 ft RG58/u concentric line with single contact plug P3 type 80M attached. Used on early model sets.	65B656A
W1	FM-IF lead	Same as W1 above except plug is 2 contact type MC2M	65B959A
W2	Receiver power cable	Cable, 12 conductor, 2 shielded, with 12 contact plug P-312-CCT attached	96B676
W3	Audio connecting cable	Cable, 4 conductor, 2 shielded, with 4 contact P-304-CCT plug attached	96B677
	SOCKETS		
X1	Socket for V1	Socket, 8 contact octal, black bakelite type MIP-8, marked 6SK7	82B431
X2	Socket for V2	Socket, 8 contact octal, black bakelite type MIP-8, marked 6J5	82B433
X3	Socket for V3	Socket, 8 contact octal, black bakelite type MIP-8, marked 6SA7	82B432
X4	Socket for V4	Same as X1	
X5	Socket for V5	Same as X1	
X6	Socket for V6	Socket, 8 contact octal, black bakelite type MIP-8, marked 6H6	82B434
X7	Socket for V7	Socket, 6 contact, black bakelite PF-6 with metal cap	82B708
X8	Socket for V8	Same as X7	
X9	Socket for V9	Same as X2	
X10	Socket for V10	Same as X2	
X11	Socket for V11	Socket, 7 contact, miniature type with tube shield	82B663
X12	Socket for V12	Same as X11	
X13	Socket for V13	Same as X11	
X14	Socket for V14	Socket, 8 contact octal, black bakelite type MIP-8, marked 6AC7	82B438
X15	Socket for V15	Same as X14	
X16	Socket for V16	Socket, 8 contact octal, black bakelite type MIP-8, marked 6SJ7	82B439
X17	Socket for V17	Same as X16	
X18	Socket for V18	Same as X6	
X19	Socket for V19	Socket, 8 contact octal, black bakelite type MIP-8, marked 6SL7GT	82B687
X20	Socket for V20	Socket, 8 contact octal, black bakelite type MIP-8, marked 6L6G	82B436
X21	Socket for V21	Same as X2	
X22	Socket for V22	Socket, 8 contact octal, black bakelite type MIP-8, marked VR-150	82B440
X23	Socket for V23	Socket, 8 contact octal, black bakelite type MIP-8 marked 5Y3-GT	82B437
X24	Socket for V24	Same as X23	

SEARLE AERO INDUSTRIES INC.



This apparatus uses inventions of United States patents licensed by Radio Corporation of America. Patent numbers supplied upon request.

This apparatus is licensed under the patent rights of Hazeltine Corporation.

MODEL 5S1-8

SEARLE AERO INDUSTRIES INC.

LIST OF MOST COMMON TROUBLES - SEARLE MOD.5S1-8 CLIPPER

A - SET DEAD

1. Tubes don't light up right.

IF nothing lights up - 6V6 Line Cord or Switch is open.

IF 150 OHM Resistor is too hot - 6SK7, 6SH7 or 6SL7 is open.

IF Tubes glow dull Red inside cathodes - Ballast is open or line cord resistor is open.

IF Tubes light too bright - Ballast or Line Cord is low.

2. If Tubes light up properly.

IF Voltage at V5 #8 is below 90 and Voltage is over 15 volt lower DN V4 #4 Circuit is shorted probably if trans or filter condenser.

IF Voltage is below 90 at V5 #8 and Voltage at V4 #4 is nearly same 6V6 rectifier is bad.

IF Voltage is low with hum Filter condenser is bad.

IF Voltages to above points are OK Check to V1 #6 and #8 V2 #6 and #8 - Low V on #6 pins - bad solder, Low V on #8 pins - bad IF Trans.

IF Set hums when finger is touched to hot side of pot Audio is OK.

IF Set is still dead, try new 6SL7 and 6SH7 then K7.

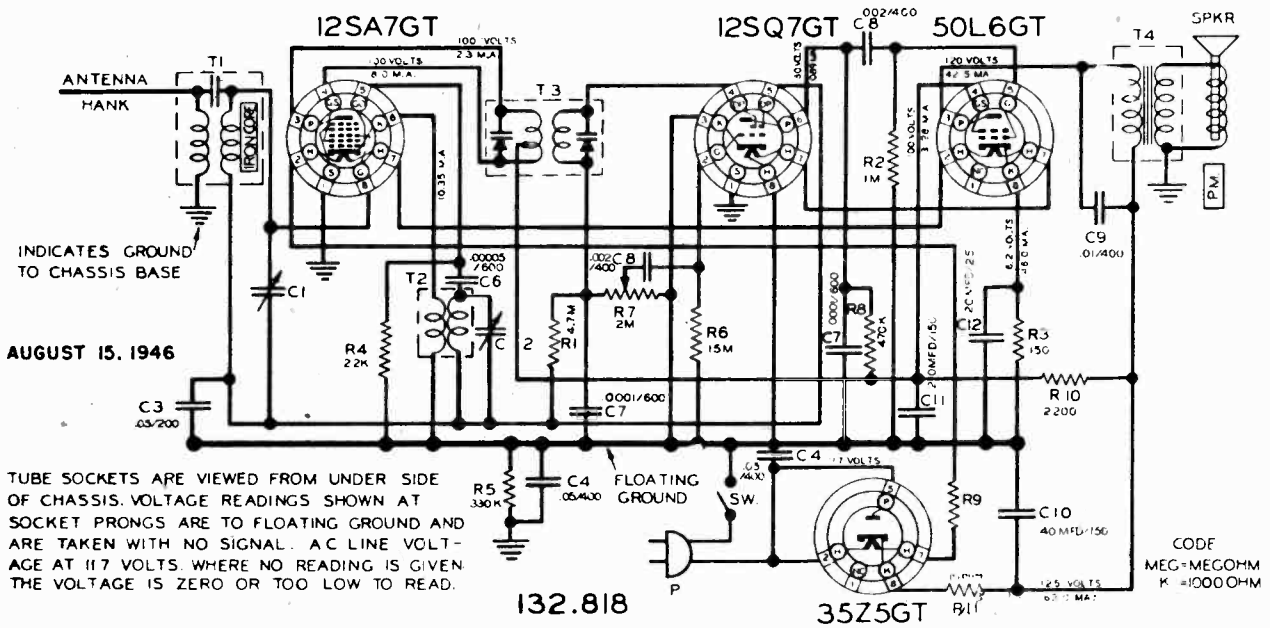
IF 456 KC comes through with tuning cond. open but not when closed - condenser is shorted.

IF A.V.C. is shorted to ground 1st IF trans. is shorted.

IF Set plays good, test OKsbut hums little try new 6SL7.

SEARS ROEBUCK & CO.

MODEL 6002
Ch.132.818



PRELIMINARY:

Output meter connection	Across loud speaker voice coil
Output meter reading to indicate 200 milliwatts	.8 volts
Connection of generator ground lead	Floating ground
Generator Modulation	30%, 400 cycles
Position of Volume Control	Fully clockwise
Position of Dial Pointer with Variable fully closed	54 on dial

POSITION OF VARIABLE	FREQUENCY GENERATOR	DUMMY ANTENNA	GENERATOR CONNECTION (high)	TRIMMERS ADJUSTED (In order shown)	TRIMMER FUNCTION
Open	455 kc.	.05 mfd.	12SA7GT grid	Top of T3	IF
1400 kc.	1400 kc.	.00005 mfd.	**Ant.	*C2	Osc.
600 kc.	600 kc.	.00005 mfd.	**Ant.	Check point	----

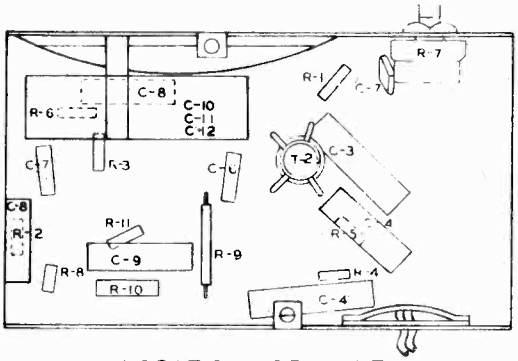
IMPORTANT ALIGNMENT NOTES

*Since the antenna stator section of the variable has no trimmer, the rotor is rocked back and forth while adjusting oscillator trimmer, to obtain maximum output.

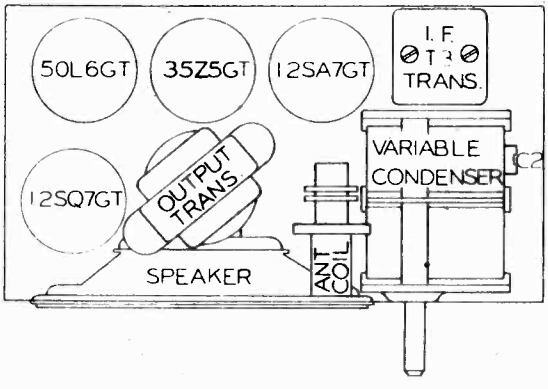
Check the sensitivity at 600 kc, if weak adjust antenna section plates for maximum output at 600 kc, tracking is accomplished by adjusting plates of rotor.

**Unsolder 20' antenna lead from lug on antenna coil, and connect signal generator lead to lug through .00005 uuf Dummy Antenna.

Approximate stage by stage sensitivities are: Mixer - 455 kc - 2600 uv; Mixer 1000 kc - 2600 uv; Antenna - 1000 kc - 180 uv.



LOCATION OF PARTS UNDER CHASSIS



MODEL 6002
MCDEL 6100

SEARS ROEBUCK & CO.

MODEL 6200
MODEL 6220

MODEL 6100
Ch.101.660-1A

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
	R13961	Button-Snap,Dial Mounting
	R17915	Cell-Bias
	R46116	Clip-Dial Light Socket
L1	R45439	Coil-Antenna Loading
L2	R45453	Coil-Oscillator
C11,C13,C14	R45421	Capacitor-Elect. 10 mfd. 25 V. 16 mfd. 300 V. 16 mfd. 375 V.
VC,C1,C4	R45409	Capacitor-Variable
C7		Capacitor-.05 mfd. 200 V.
C5,C6		Capacitor-.1 mfd. 400 V.
C2		Capacitor-.1 mfd. 200 V.
C10,C12		Capacitor-.01 mfd. 400 V.
C16		Capacitor-.01 mfd. 600 V.
C15		Capacitor-.008 mfd. 600 V.
C3		Capacitor-.00023 mfd. mica
C9		Capacitor-.0001 mfd. mica
C17		Capacitor-.00005 mfd. mica
R7	R45414	Control-On-Off & Vol.
	R18395	Cord-Line
	R57175	Dial-Station
	R57164	Escutcheon-Dial
	R49936	Knob-On-Off & Vol.
	R49935	Knob-Phono-Radio
	R49937	Knob-Tone
	R49938	Knob-Tuning
		Lamp-Pilot-Mazda #44
	R59036	Leaflet-Instruction
	R18112	Mounting-Bias Cell
	R57176	Pointer-Dial
R9		Resistor-10 meg. 1/3 W.
R3,R6		Resistor-2.2 meg. 1/3 W.
R8,R10		Resistor-470M ohms 1/3 W.
R1		Resistor-22M ohms 1/3 W.
R2		Resistor-15M ohms 2 W.
R11		Resistor-390 ohms 1 W.
R12		Resistor-68 ohms 1/3 W.
	R45598	Shaft-Drive
	R44897	Socket-Phono
	R17982	Socket-Speaker
	R17987	Socket-Tube
		WHEN ORDERING SPEAKER PARTS, ALWAYS GIVE THE PART NUMBER APPEARING ON THE SPEAKER.
	R57103	Speaker-8" Dynamic
	R45475	Cone & Voice Coil
T3	R45476	Output Transf.
	R45477	Field Coil
	R19735	Spring-Drive String Tension
	R40241	String-Drive
	R57286	Switch-Phono-Radio
	R45438	Switch-Tone
T1	R57276	Transformer-#1 I.F.
T2	R57277	Transformer-#2 I.F.
T4	R45417	Transformer-Power 60 and 50 cycle

MODEL 6200
Ch.101.800

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
	R57145	Antenna-Stratobeam Receptor Kit Complete
	R57037	Board-Antenna
	R13961	Button-Snap
	R57149	Cabinet
	R57045	Cable-Battery
C6,C12,C16		Capacitor-.01 mfd. 400 V.
C3		Capacitor-.05 mfd. 200 V.
C15,C10		Capacitor-.001 mfd. 600 V.
C17		Capacitor-.005 mfd. 400 V.
C9,C18		Capacitor-Mica-50 mmfd.
C1		Capacitor-Mica-150 mmfd.
C19		Capacitor-Mica-250 mmfd.
C2	R46799	Capacitor-Silver Mica 250 mmfd. 500 V.
C20	R57054	Capacitor-Dry. Elect. 10 mfd. 150 V.
C4,C8	R57096	Capacitor-Trimmer-2 Gang
	R57010	Clip-Drive Cord Anchor
	R57035	Cloth-Grille
L1	R45255	Coil-Choke-Antenna
R10	R57072	Control-On-Off & Volume
	R57132	Cover-Dial
	R57084	Dial-Station
	R57168	Knob-On-Off & Volume
	R57169	Knob-Tuning
	R59015	Leaflet-Instruction
	R57155	Pointer-Dial
	R57017	Pulley-Drive Shaft
	R43416	Pulley-Wood
R14		Resistor-1200 ohm 1/3 W.
R15		Resistor-4700 ohm 1/3 W.
R4		Resistor-22000 ohm 1/3 W.
R2		Resistor-47000 ohm 1/3 W.
R5		Resistor-180000 ohm 1/3 W.
R7		Resistor-220000 ohm 1/3 W.
R1,R12		Resistor-1 megohm 1/3 W.
R13		Resistor-2.2 megohm 1/3 W.
R3		Resistor-3.3 megohm 1/3 W.
R11		Resistor-6.8 megohm 1/3 W.
R9		Resistor-15 megohm 1/3 W.
	R57008	Shaft-Drive
	R57049	Socket-Tube-8 Prong Lock-in
	R57034	Speaker-5-1/4" P.M.
	R57118	Spring-Extension
	R40241	String-Drive
T1	R57094	Transformer-I.F. #1
T2	R57116	Transformer-I.F. #2
T3	R57076	Transformer-Output
L2,L3	R57087	Tuner-Permeability Coil Unit

MODEL 6220
Ch.101.801

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
	R57145	Antenna-Stratobeam Receptor Kit Complete
	R57037	Board-Antenna
	R13961	Button-Snap
	R57045	Cable-Battery
C22,C17		Capacitor-.001 mfd. 600 V.
C20		Capacitor-.005 mfd. 400 V.
C4,C5,C8 C12,C18		Capacitor-.01 mfd. 200 V.
C10,C14		Capacitor-.05 mfd. 200 V.
C19,C11		Capacitor-Mica-50 mmfd.
C7		Capacitor-Mica-100 mmfd.
C1		Capacitor-Mica-150 mmfd.
C21		Capacitor-Mica-250 mmfd.
C3	R46799	Capacitor-Silver Mica 250 mmfd. 5% 500 V.
C13,C23	R57128	Capacitor-Dry. Elect.
C2,C6,C9	R57081	Capacitor-Trim.3 Gang
	R57010	Clip-Drive Cord Anchor
L4	R45255	Coil-Choke-Antenna
R12	R57071	Control,On-Off Vol.& Tone
	R45218	Cover-Dial
	R57085	Dial-Station
	R57130	Knob-On-Off Ind. & Vol.
	R57151	Knob-Tuning
	R57153	Knob-Tone Control
	R59019	Leaflet-Instructions
	R57156	Pointer Dial
	R18245	Pulley-Wood
	R43416	Pulley-Wood
	R57017	Pulley-Drive Shaft
R20		Resistor-680 ohms 1/3 W.
R17	R45254	Resistor-Flexohm 0.72 ohm 1.2 W.
R1,R2,R15		Resistor-1 meg. 1/3 W.
R16,R10		Resistor-2.2 meg. 1/3 W.
R3		Resistor-3.3 meg. 1/3 W.
R14		Resistor-6.8 meg. 1/3 W.
R13		Resistor-15 meg. 1/3 W.
R7		Resistor-680 ohm 1/3 W.
R19		Resistor-820 ohm 1/3 W.
R18		Resistor-1800 ohm 1/3 W.
R6		Resistor-33000 ohm 1/3 W.
R4		Resistor-68000 ohm 1/3 W.
R8		Resistor-68000 ohm 1/3 W.
R5		Resistor-180000 ohm 1/3 W.
	R57032	Shaft-Drive
	R57049	Socket-Tube-8 Prong Lock-in
	R57061	Speaker-5-1/4" P.M.
	R57118	Spring-Extension
	R40241	String-Drive
	R57038	Switch Slide-D.P.S.T.
T3	R57075	Transformer-Output
T2	R57095	Transformer-I.F. #2
T1	R57120	Transformer-I.F. #1
L1,L2,L3	R57102	Unit-Perm. Tuning Coil

MODEL 6002, Chassis 132.818

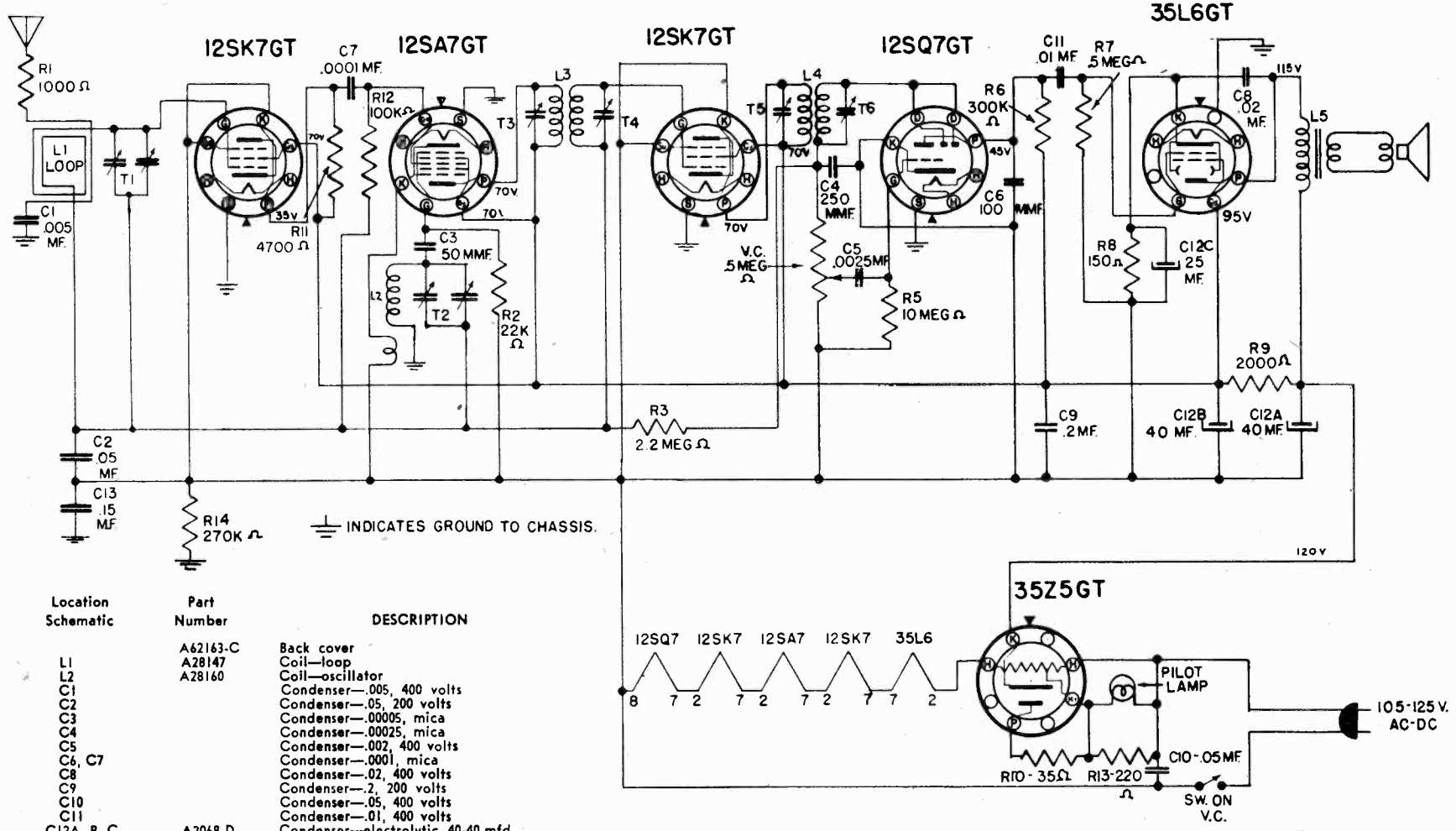
SCH. LOC.	PART NO.	DESCRIPTION
R1		Resistor, 4.7 Megohms, ½ watt
R2		Resistor, 1 Megohm, ½ watt
R3		Resistor, 150 ohms ½ watt
R4		Resistor, 22,000 ohms, ½ watt
R5		Resistor, 330,000 ohms, ½ watt
R6		Resistor, 15 Megohms, ½ watt
R7	N18587	Resistor, 2 Megohm Volume Control & Switch
R8		Resistor, 470,000 ohms, ½ watt
R9	N19177	Resistor, 47 ohms, 1 watt
R10		Resistor, 2,200 ohms, 1 watt
R11		Resistor, 15 ohms, ½ watt
C1,C2	N17115	Condenser, Variable 2-gang
C3		Condenser, .05 mfd., 200 volts
C4		Condenser, .05 mfd., 400 volts
C6		Condenser, .00005 mfd., 500 volts
C7		Condenser, .0001 mfd., 500 volts
C8		Condenser, .002 mfd., 500 volts
C9		Condenser, .01 mfd., 400 volts
C10		Condenser, 40 mfd., 150 volts
C11	N19176	Condenser, 20 mfd., 150 volts
C12		Condenser, 20 mfd., 25 volts
	N19212	Cabinet rear cover assembly
T1	N18255	Coil, antenna
T2	N18256	Coil, oscillator
T3	N19649	Transformer, I.F.
Spk.	N17209	Speaker less output transformer
T4	N18258	Transformer output
	N19937	Speaker & output transformer ass'y.
	N19122	Dial scale emblem
	N19936	Cabinet, ivory
	N19120	Knob, tuning, ivory
	N18673	Knob, volume, ivory
	N20064	Line Cord
	N20040	Washer - White Felt
	N18254	Socket - Tube
	N19292	Antenna Wire
	N19215	Instruction Sheet
	N19119	Wood Insulator, Rear Cover

Power Supply -- 105-125 Volts AC-DC, 35 Watts
Power Output
Undistorted .8 Watts, Maximum - 2.5 Watts

Tuning Range Broadcast Band 540-1600 Kc
Speaker
Voice Coil Impedance 3.2 Ohms

GENERAL INFORMATION & SERVICE HINTS

Due to a wide variation in characteristics of 12SA7 tubes the set may have a tendency to oscillate when tube replacements are made. A 1 megohm resistor placed across the I F coil from B- to plate will usually correct this condition. Some sets already have this resistor installed.



IF PEAK 455 KC

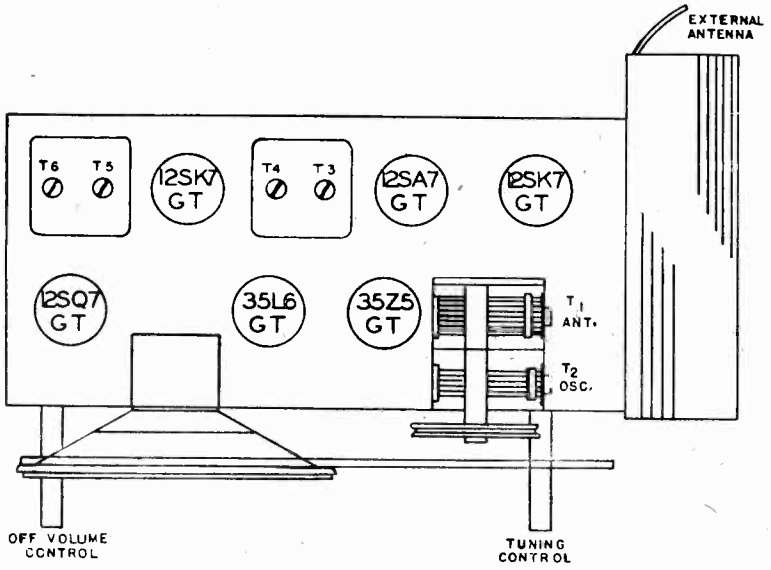
Location Schematic	Part Number	DESCRIPTION
	A62163-C	Back cover
L1	A28147	Coil—loop
L2	A28160	Coil—oscillator
C1		Condenser—.005, 400 volts
C2		Condenser—.05, 200 volts
C3		Condenser—.00005, mica
C4		Condenser—.00025, mica
C5		Condenser—.002, 400 volts
C6, C7		Condenser—.0001, mica
C8		Condenser—.02, 400 volts
C9		Condenser—.2, 200 volts
C10		Condenser—.05, 400 volts
C11		Condenser—.01, 400 volts
C12A, B, C	A2068-D	Condenser—electrolytic, 40-40 mfd, 150 volts; 25 mfd, 25 volts
C13		Condenser—.15, 400 volts
R4	A2463	Control—volume, with switch (S.P.S.T.) .5 megohm
	A5559	Cord—power
	A4640	Dial—drive assembly
	A1851	Dial—lamp socket
	A4137	Dial—pointer
	A4574	Dial—pointer drive cord
	A4633	Dial—pointer drive spring
	A40112	Dial—scale (glass)
	A39125	Knob—off-volume
	A39126	Knob—tune
	A59259	Leaflet—instruction
R1		Resistor—1000 ohms, 1/4 watt
R2		Resistor—22,000 ohms, 1/4 watt
R3		Resistor—2.2 megohms, 1/4 watt
R5		Resistor—10 megohms, 1/4 watt
R6		Resistor—330,000 ohms, 1/4 watt
R7		Resistor—500,000 ohms, 1/4 watt
R8		Resistor—150 ohms, 1/2 watt
R9		Resistor—2000 ohms, 2 watt, carbon
R10		Resistor—33 ohms, 1/4 watt
R11		Resistor—4700 ohms, 1/4 watt
R12		Resistor—100,000 ohms, 1/4 watt
R13		Resistor—200-400 ohms, 1/2 watt
R14		Resistor—270,000 ohms, 1/4 watt
	A5871	Speaker—5"
L5	A1330	Transformer—audio output
L3	A3329	Transformer—I.F. input
L4	A3529	Transformer—I.F. output
	A1652	Variable Condenser

SEARS ROEBUCK & CO.

SEARS PAGE 15-3
MODEL 6052
Ch.110.452

MODEL 6052
Ch.110.452

SEARS ROEBUCK & CO.



Output meter connections	Across primary output transformer
Connection of generator ground	Floating Ground
Generator modulation	App. 30% @ 400 cycles
Position of volume control	Fully Clockwise

POSITION OF DIAL POINTER	GENERATOR FREQUENCY	GENERATOR CONNECTION	TRIMMERS ADJUSTED	TRIMMER FUNCTION
540 kc	455 kc	12SA7GT	T3, T4, T5, T6	I. F.
1500 kc	1500 kc	* * *	T2, T1	Osc., R. F.

See Note Below

IMPORTANT ALIGNMENT NOTES

It is advisable to repeat the entire alignment procedure in the original order to insure greater accuracy.

Always keep the output from the test oscillator at its lowest possible value. As the sensitivity is increased by alignment, the generator output should be reduced correspondingly.

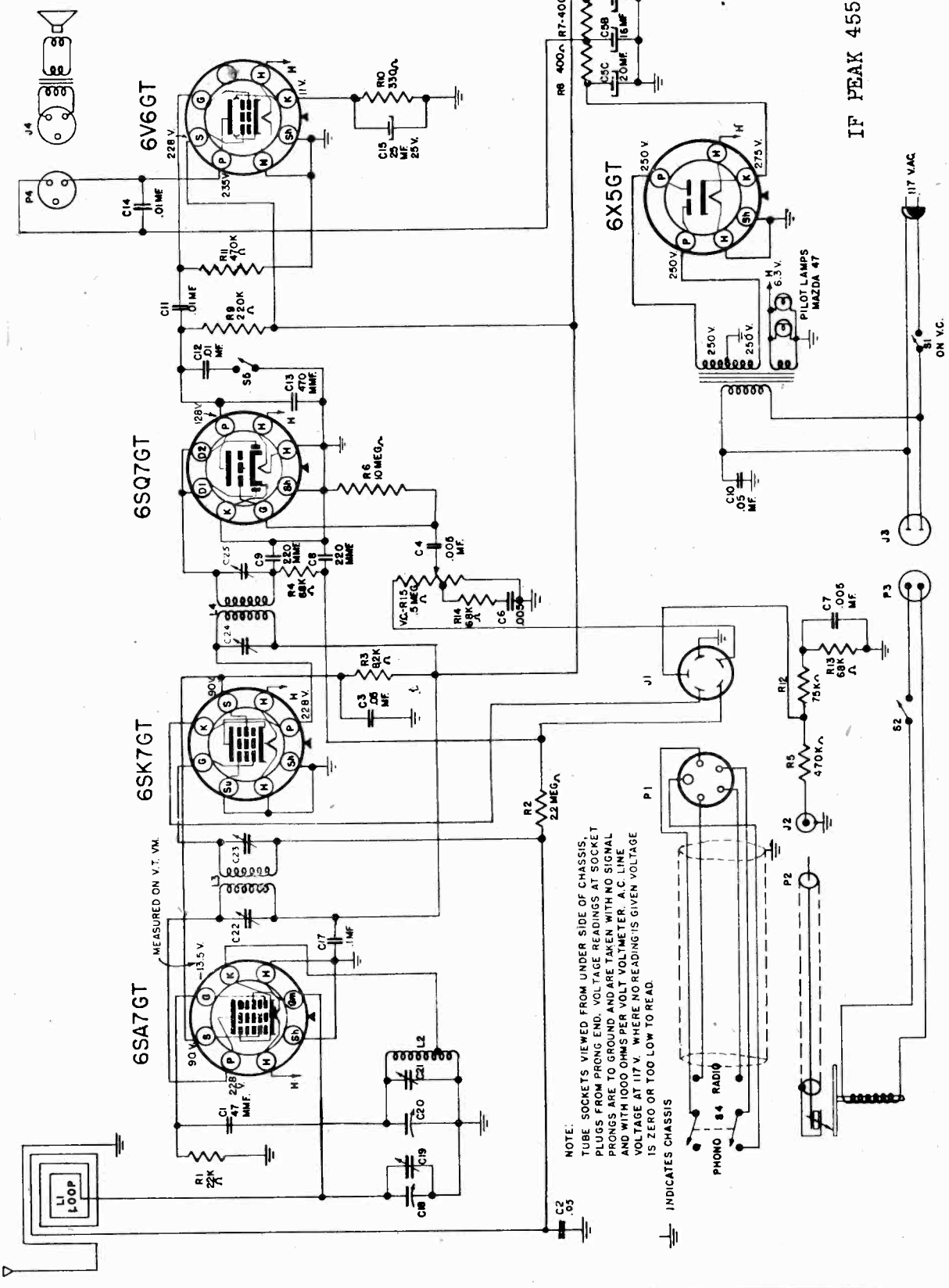
***Run a wire from the output terminal of the generator near the receiver. However, no connection is made between the signal generator and the receiver.

DIAL LAMP:

A six volt bayonet dial lamp No. 47 is used in this receiver. The dial lamp may be removed for replacement by gently squeezing the dial lamp socket mounting bracket and withdrawing from the dial assembly. Replace the lamp with another of the same type. DISCONNECT THE RECEIVER FROM THE ELECTRICAL OUTLET BEFORE REPLACING THE LAMP.

SEARS ROEBUCK & CO.

MODEL 6072
Ch.110.454



ALIGNMENT PROCEDURE

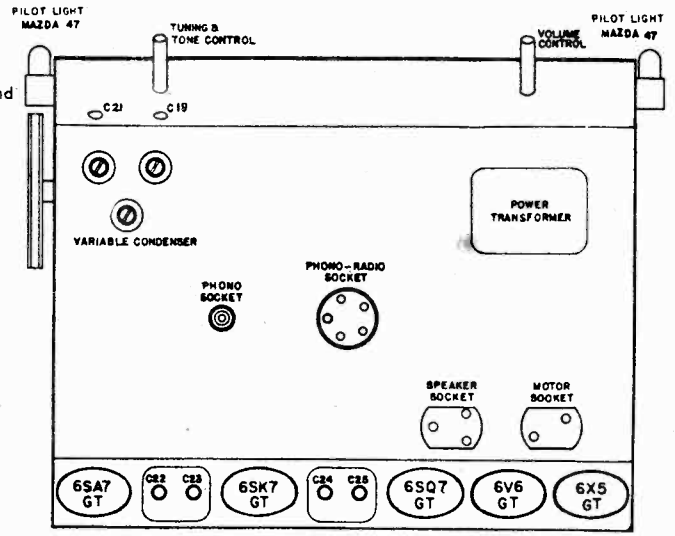
Output meter connections.....Across voice coil (3.2 ohms)
Output meter reading for 1/2 watt output.....1.25 volts
Connection of generator ground.....to chassis
Generator modulation.....Approx. 30% at 400 cycles
Position of volume control.....Full clockwise
Position of tone control.....High (In)
Position of dial pointer with variable cond. fully closed.....First mark to left of "55" on dial scale

POSITION OF DIAL POINTER	GENERATOR FREQUENCY	GENERATOR CONNECTION	DUMMY ANTENNA	TRIMMERS ADJUSTED IN ORDER SHOWN	TRIMMER FUNCTION
540 kc	455 kc	6SA7GT Grid	.1 μfd	C25, C24, C23, C22	I.F.
High end of scale	1720 kc	Radiated Signal		C21	Osc.
1500 kc	1500 kc	Radiated Signal		C19	Ant.

The alignment procedure should be repeated stage by stage to obtain greatest accuracy. Always keep the output from the test oscillator at its lowest possible value. As the sensitivity is increased by alignment, the generator output should be reduced correspondingly so as to minimize the effect of the automatic volume control.

Schematic Location	Number Part	DESCRIPTION
	A62187	Back Cover
L1	A28148	Coil—Loop
L2	A28158	Coil—Oscillator
C1		Condenser—47 mmfd, mica
C8, C9		Condenser—220 mmfd, mica
C13		Condenser—470 mmfd, 500 volts, mica
C2, C3		Condenser—.05 mfd, 400 volts
C4, C6, C7		Condenser—.005 mfd, 400 volts
C11, C12, C14		Condenser—.01 mfd, 400 volts
C10		Condenser—.05 mfd, 600 volts
C17		Condenser—.1 mfd, 400 volts
C18, C19, C20, C21	A1693	Condenser—Variable
C5A, B, C	A20102	Condenser—Electrolytic 16-16-20 mfd, 350 volts
C15	A20108	Condenser—Electrolytic 25 mfd, 25 volts
C16	A20109	Condenser—Electrolytic, 16 mfd, 450 volts
R15	A2466	Control—Volume and Switch
	A5578	Line Cord with Plug
	A4633	Spring, Dial Cord
	A4674	Dial—Drive Tone Control Assy.
	A18114	Socket—Dial Light
	A4149	Pointer—Dial
	A40103	Dial—Scale (glass)
	A4673	Cord—Dial
	A39131	Knob—Tone-Tuning
	A39132	Knob—On-Off
	A59276	Leaflet—Instruction

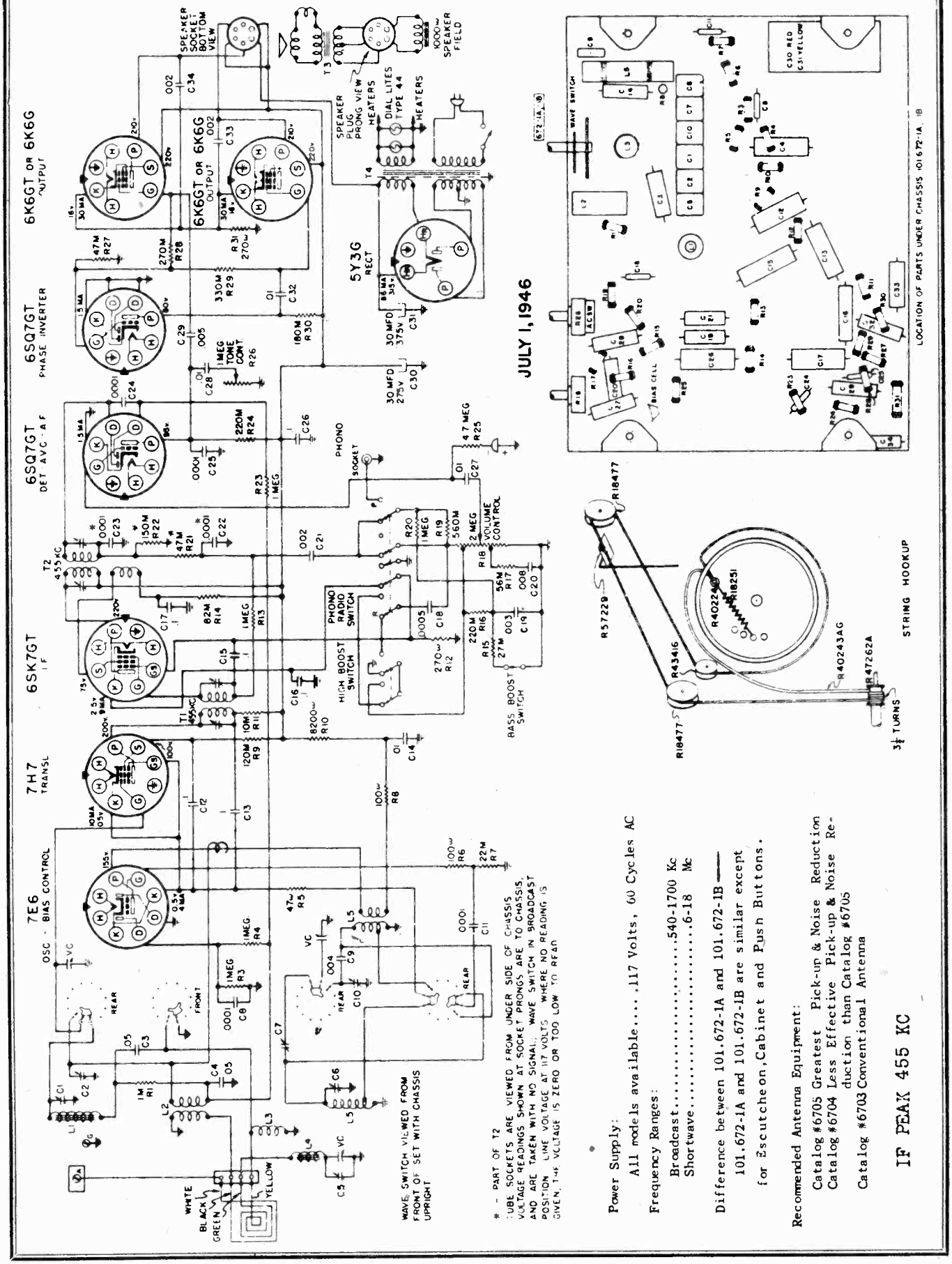
Schematic Location	Part Number	DESCRIPTION
		Pilot Light #47
R7, R8		Resistor—400 ohms, 2W, wire wound
R5, R11		Resistor—470K ohms, 1/2W
R6		Resistor—10 Megohms, 1/2W
R12		Resistor—75K ohms, 1/2W
R2		Resistor—2.2 Megohms, 1/2W
R9		Resistor—220K ohms, 1/2W
R3		Resistor—8200 ohms, 2W
R1		Resistor—22K ohms, 1/2W
R10		Resistor—330 ohms, 1W
R4, R13, R14		Resistor—68K ohms, 1/2W
	A5866	Speaker—5" PM and Output Transformer
S5	A3822	Switch—Tone Control
S4	A3824	Switch—Radio-Phono
S2	A3825	Switch—Phono-Motor
	A1020	Transformer—Power
L3, C22, C23	A3360	Transformer—First I. F.
L4, C24, C25	A3530	Transformer—Second I. F.
	A18102	Socket—A.C. for Phono-Motor
	A18104	Socket for Phono Input
	A6414	Motor, Phono with 9" Turntable
	A6342	Rest, Pick-up Arm
	A4441	Escutcheon, Phono-Radio-Motor, "on-off"
	A18103	Plug—A.C. Phono-Motor
	A1861	Plug—Phono-Input
	A18117	Plug, Phono-Radio
	A18116	Socket, Phono-Radio



SEARS ROEBUCK & CO.

MODELS 6092,Ch.101.672-1B
6093,Ch.101.672-1A

JULY 1, 1946



* - PART OF T2

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS
VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL. WAVE SWITCH IN BROADCAST POSITION. LINE VOLTAGE AT 117 VOLTS. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

Power Supply:

All models available.....117 Volts, 60 Cycles AC

Frequency Ranges:

Broadcast.....540-1700 Kc
Shortwave.....6-18 Mc

Difference between 101.672-1A and 101.672-1B —

101.672-1A and 101.672-1B are similar except for Escutcheon, Cabinet and Push Buttons.

Recommended Antenna Equipment:

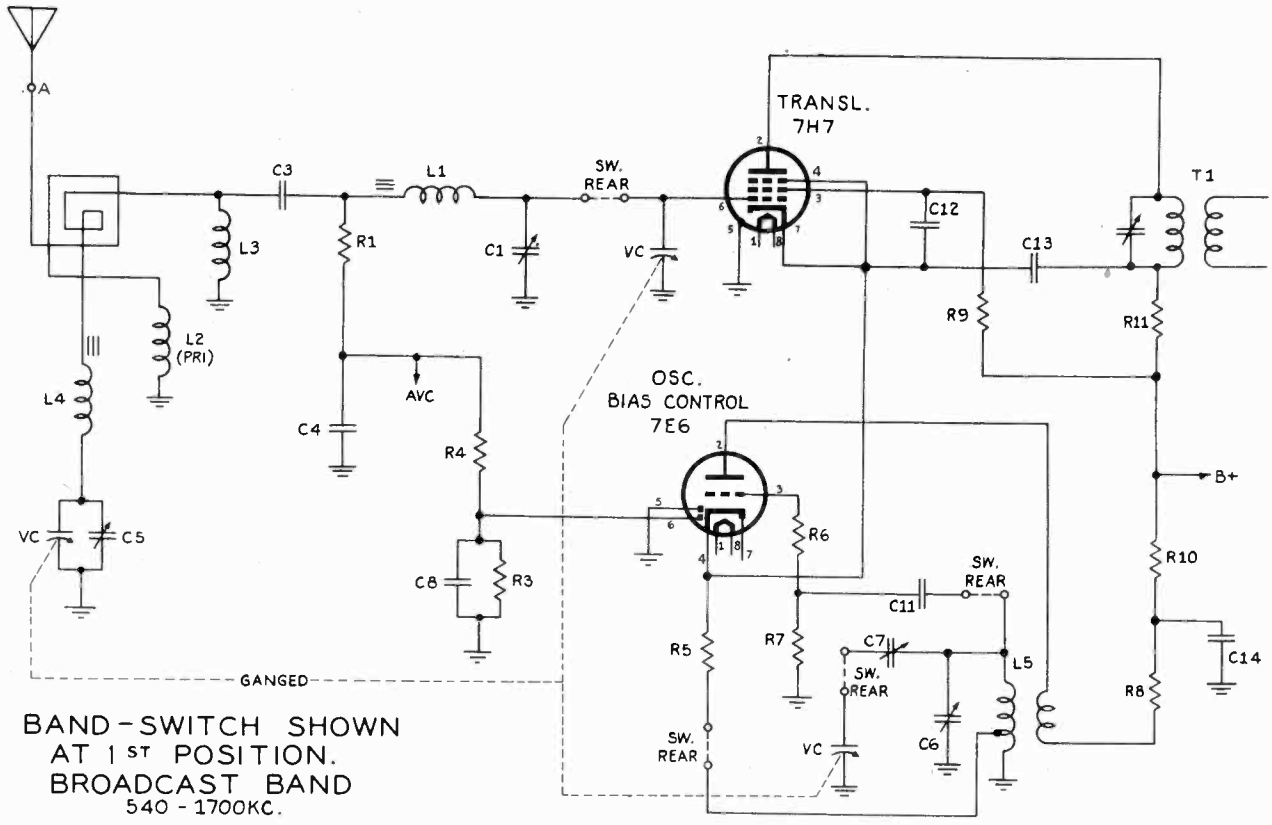
Catalog #6705 Greatest Pick-up & Noise Reduction
Catalog #6704 Less Effective Pick-up & Noise Reduction than Catalog #6705
Catalog #6703 Conventional Antenna

IF PEAK 455 KC

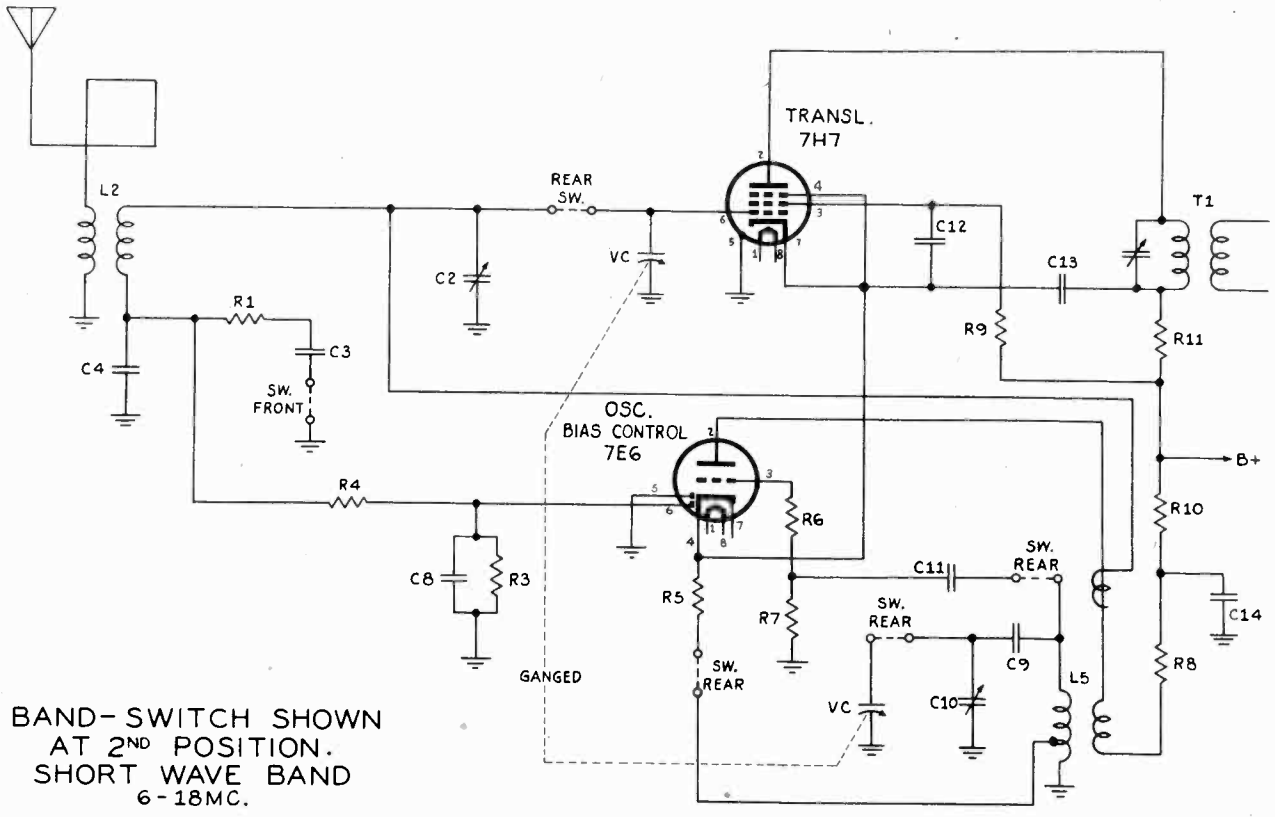
"clarified schematics"

MODELS 6092,6093
MODELS 6104A,-B,
6105A,-B

SEARS ROEBUCK & CO.



BAND-SWITCH SHOWN
AT 1ST POSITION.
BROADCAST BAND
540 - 1700KC.



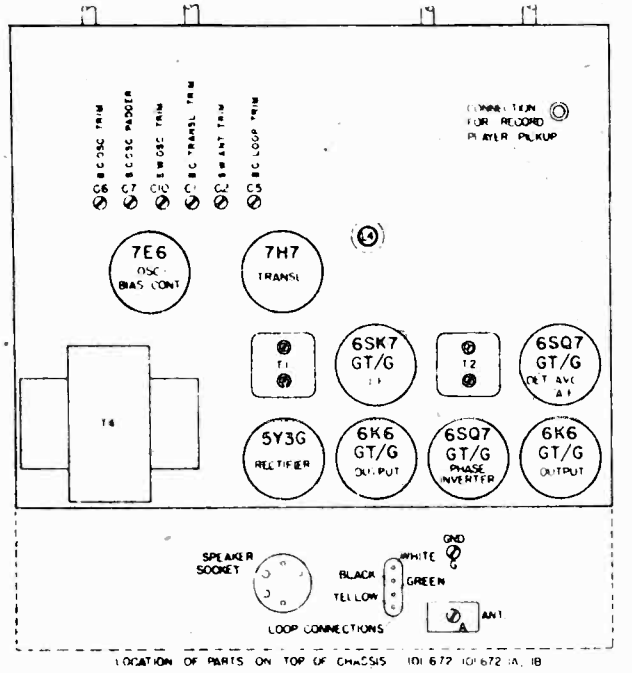
BAND-SWITCH SHOWN
AT 2ND POSITION.
SHORT WAVE BAND
6 - 18MC.

ALIGNMENT PROCEDURE

PRELIMINARY:

Output Meter Connection.....Across loud speaker voice coil
Output meter reading to indicate 50 Milliwatts (Standard Output).....1.2 Volts
Generator ground lead connection.....Receiver chassis
Dummy Antenna value to be in series with generator output.....See chart below
Connection of generator output lead.....See chart below
Generator Modulation.....30%, 400 cycles
Position of Volume Control.....Fully on
Position of Tone Control.....Treble
Position of pointer with tuner fully closed.....Last line below 540 calibration mark

WAVE BAND SWITCH POSITION	POSITION OF TUNER	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	ADJUSTMENTS (IN ORDER SHOWN)	FUNCTION
BC	Closed	455 KC	.1 mfd.	7H7 Transl. grid	T2, T1	IF
BC	Open	1750 KC	.0002 mfd.	Ant. Terminal	C6	Oscillator
BC	1410	1410 KC	.0002 mfd.	Ant. Terminal	C5, C1	Ant.,Transl.
BC	600 (rock)	600 KC	.0002 mfd.	Ant. Terminal	C7	Padder
SW	Open	18.3 MC	400 ohms	Ant. Terminal	C10	Oscillator
SW	15 (rock)	15 MC	400 ohms	Ant. Terminal	C2	Transl.



LOCATION OF PARTS ON TOP OF CHASSIS 101.672 101.672-A, -B

IMPORTANT ALIGNMENT NOTES

The Alignment must be done in the order given.

The Antenna Alignment Procedure should be repeated step by step in the original order for greatest accuracy.

Always keep the output power from the generator at its lowest possible value to prevent the AVC of the receiver from interfering with accurate alignment.

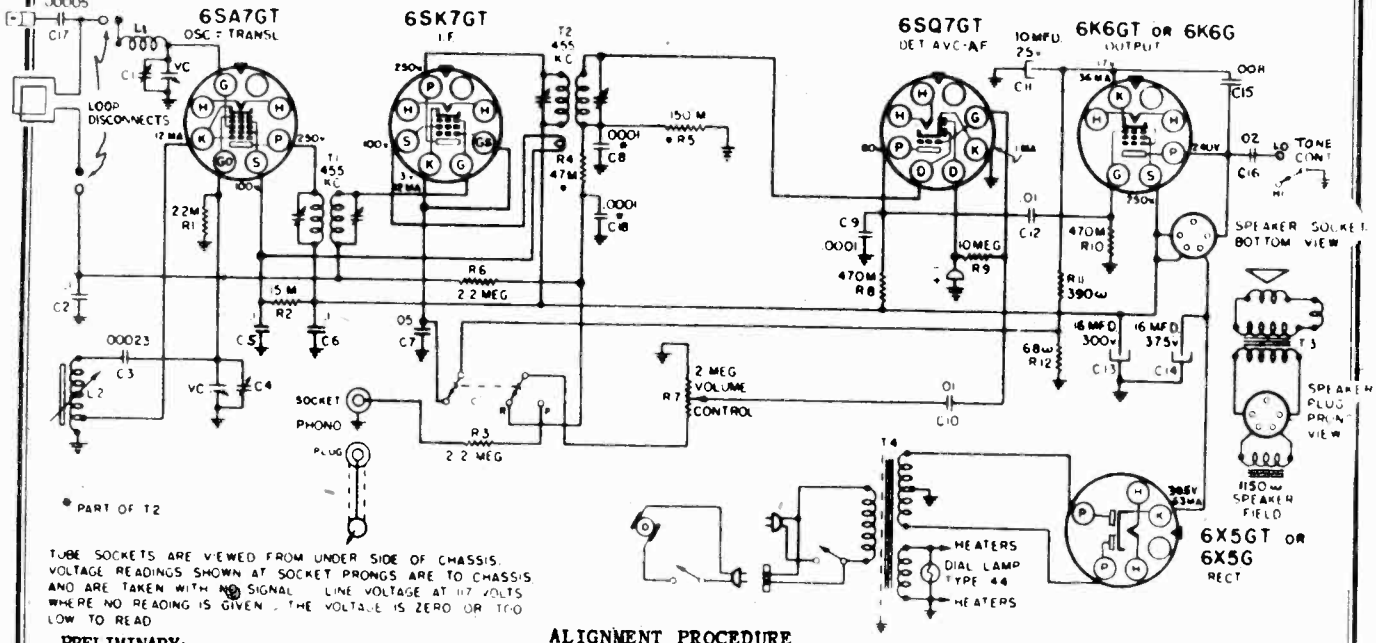
During alignment of the 'BC' Band Padder and the 'SW' Band Translator Trimmers, the Tuner should be rocked through resonance to assure alignment.

Power Output — Undistorted 3.6 Watts — Maximum 6.5 Watts

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
	R18112	Mounting-Bias Cell
	R16039	Pin-Loop Lead
	R57229	Pointer-Dial
	R18477	Pulley-Wood, large
	R43416	Pulley-Wood, small
R3,R4,R13 R20,R23		Resistor - 1 megohm, 1/3 W.
R25		Resistor - 4.7 megohm, 1/3 W.
R1		Resistor - 1M ohms, 1/3 W.
R11		Resistor - 10M ohms, 1/3 W.
R7		Resistor - 22M ohms, 1/3 W.
R15		Resistor - 27M ohms, 1/3 W. T3
R21,R27		Resistor - 47M ohms, 1/3 W.
R17		Resistor - 56M ohms, 1/3 W.
R14		Resistor - 82M ohms, 1/3 W.
R9		Resistor - 120M ohms, 1/3 W.
R30		Resistor - 180M ohms, 1/3 W.
R16,R24		Resistor - 220M ohms, 1/3 W.
R28		Resistor - 270M ohms, 1/3 W.
R29		Resistor - 330M ohms, 1/3 W. T1
R19		Resistor - 560M ohms, 1/3 W. T2
R5		Resistor - 47 ohms, 1/3 W. T4
R6,R8		Resistor - 100 ohms, 1/3 W. VC
R12		Resistor - 270 ohms, 1/3 W.
R31		Resistor - 270 ohms, 2 W
R10		Resistor - 8200 ohms, 1 W.
	R47262A	Shaft-Drive Assy.
	R44897	Socket-Phono.-Tel.-Freq. Mod.
	R16958	Socket-Rectifier
	R17983	Socket-Speaker
	R17987	Socket-Tube
		WHEN ORDERING SPEAKER PARTS, ALWAYS GIVE THE PART NUMBER APPEARING ON THE SPEAKER
	R57221	Speaker-10" Dynamic
	R45836	Cone & Voice Coil
	R45838	Field Coil
	R45837	Output Transformer
	R18251	Spring-Drive Tension
	R45844	Switch-Tone & Phono.-Tel.-Freq. Mod.
	R47191	Switch-Wave
	R45995	Tab-Bass Boost
	R45994	Tab-High Boost
	R45996	Tab-Phono.-Tel.-Freq. Mod.
	R42879	Tabs-Call Letter
	R45305	Transformer - #1 I.F.
	R45306	Transformer - #2 I.F.
	R45953	Transformer - Power - 60 cycle
	R45259	Tuner -Push Button with Var.Capacitor
C8,C11		Capacitor- .0001 mfd. Mica
C24,C25		Capacitor- .0005 mfd. Mica
C18	R17915	Cell-Bias
	R57203	Clip-Pilot Light
L4	R47193	Coil-Ant. Loop Loading
L5	R47192	Coil-BC. & S.W. Oscillator
L1	R47194	Coil-BC. Translator
L3	R47187	Coil-Preselector Coupling C30,C31
L2	R47195	Coil-S.W. Antenna
R26	R47235	Control-On-Off & Tone - 1 meg. C1,C2,C5
R18	R47240	Control-Volume - 2 meg. C6,C7,C10
	R18395	Cord-Line C15,C16
	R42673	Cover-Push Button Tabs C12,C13
	R57234	Dial-Station C17,C26
	R57271	Escutcheon-Dial (Cat. #6092) C14,C28
	R57231	Escutcheon-Dial (Cat. #6093) C27,C32
	R49940	Knob-On-Off & Tone C3,C4
	R49939	Knob-Tuning C21,C33,C34
	R49941	Knob-Volume C19
	R49943	Knob-Wave Switch C29
		Lamp-Pilot-Mazda #44 C20
	R59042	Leaflet- Instruction C9
	R57216	Loop-Complete
	R17998	Board-Antenna
	R45512	Board-Terminal-Loop
	R57285	Buttons-Push (High Boost,Bass Boost, Phono.-Tel.-Freq. Mod.)(Cat. #6092)
	R57205	Buttons-Push (High Boost,Bass Boost, Phono.-Tel.-Freq. Mod.)(Cat. #6093)
	R57284	Buttons-Push Stations (Cat. #6092)
	R57204	Buttons-Push Stations (Cat. #6093)
	R45829	Capacitor-Elect. 30 mfd. 275 V; 30 mfd. 375 V.
	R47199	Capacitor-Trimmer-6 Gang
		Capacitor- .1 mfd. 200 V.
		Capacitor- .1 mfd. 400 V.
		Capacitor- .01 mfd. 400 V.
		Capacitor- .01 mfd. 600 V.
		Capacitor- .05 mfd. 200 V.
		Capacitor- .002 mfd. 600 V.
		Capacitor- .003 mfd. 400 V.
		Capacitor- .005 mfd. 400 V.
		Capacitor- .008 mfd. 400 V.
		Capacitor- .004 mfd. Mica

MODEL 6100, Ch. 101, 660-1A

SEARS ROEBUCK & CO.



TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS AND ARE TAKEN WITH NO SIGNAL. LINE VOLTAGE AT 117 VOLTS WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connection.....Across loudspeaker voice coil
Output meter reading to indicate 500 milliwatts.....1.25 volts
Dummy antenna value to be in series with generator output.....See chart below
Connection of generator output lead.....See chart below
Connection of generator ground lead.....Receiver chassis
Generator modulation.....30%, 400 cycles
Position of Volume Control.....Fully clockwise
Position of Tone Control.....Counterclockwise (HI)
Position of Dial Pointer with variable fully closed.....On mark below 540 Kc Calibration mark

POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	ADJUSTMENTS (IN ORDER SHOWN)	FUNCTION
Closed	455 Kc	.1 mfd.	6SA7 Grid	T2, T1	I.F.
Fully open	1620 Kc	.00005 mfd.	Ant. Clip	C4	Oscillator
1410 Kc	1410 Kc	.00005 mfd.	Ant. Clip	C1	Translator
600 Kc (rock)	600 Kc	.00005 mfd.	Ant. Clip	L2	Padder
Fully open	1620 Kc	.00005 mfd.	Ant. Clip	C4	Oscillator

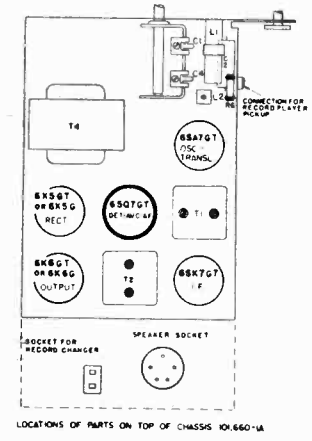
IMPORTANT ALIGNMENT NOTES

Where indicated by the word "Rock", the variable should be rocked back and forth a degree or two while making the adjustment.

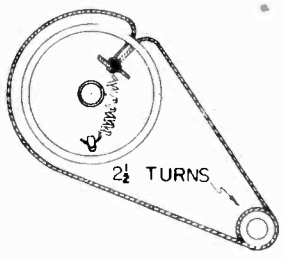
The alignment procedure should be repeated stage by stage, in the original order for greatest accuracy. Always keep the output from the test oscillator at its lowest possible value to make the AVC action of the receiver ineffective.

POWER OUTPUT

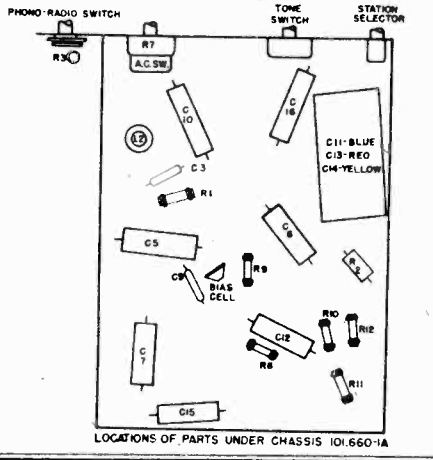
Undistorted.....2.5 watts
Maximum.....6 watts



LOCATIONS OF PARTS ON TOP OF CHASSIS 101,660-1A



CONDENSER DRIVE HOOKUP

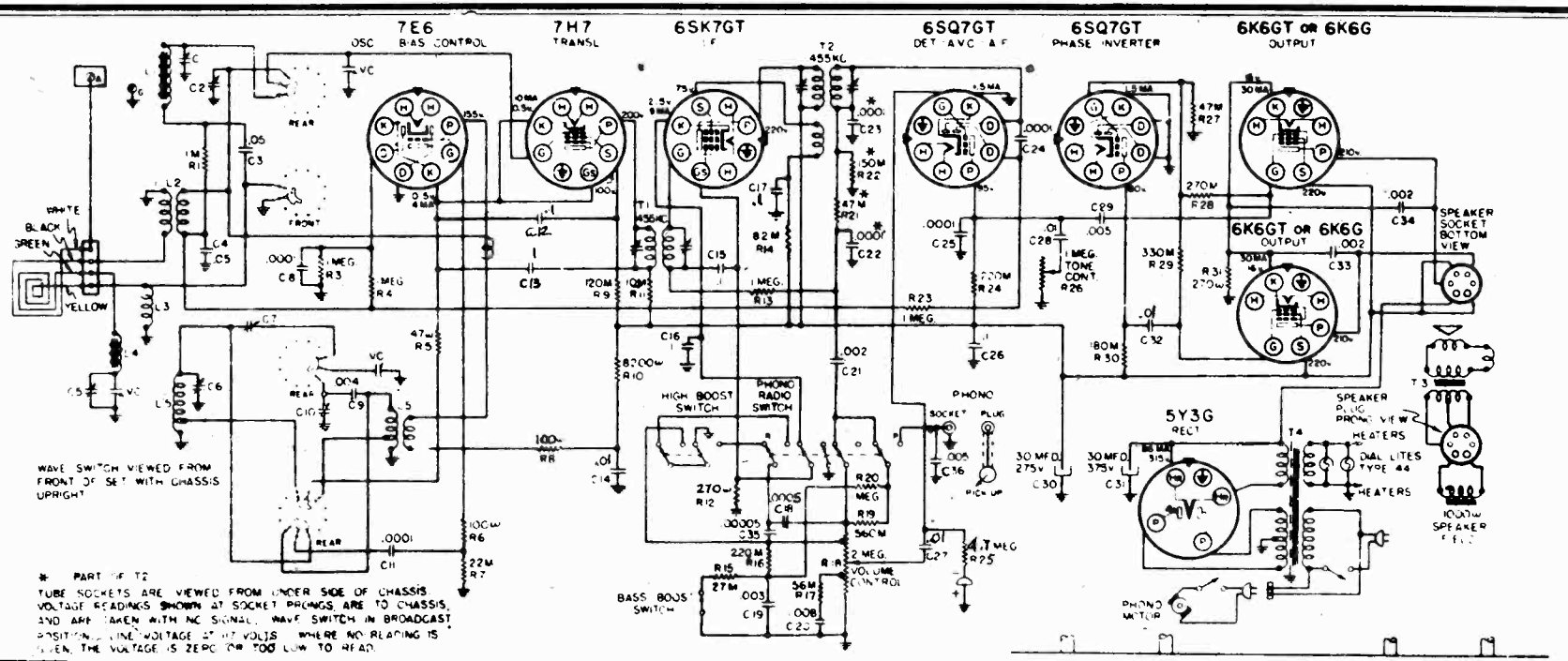


LOCATIONS OF PARTS UNDER CHASSIS 101,660-1A

For Parts list, see P.15-2

SEARS ROEBUCK & CO.

MODELS 6104A,6104B, Ch.101.662-2D;6105A, 6105B,Ch.101.662-2B



PRELIMINARY:

Output Meter Connection.....Across loud speaker voice coil
Output meter reading to indicate 50 Milliwatts(Standard Output)..... 1.2 Volts
Generator ground lead connection.....Receiver chassis
Dummy Antenna value to be in series with generator output.....See chart below
Connection of generator output lead.....See chart below
Generator Modulation.....30%, 400 cycles
Position of Volume Control.....Fully on
Position of Tone Control.....Treble
Position of pointer with tuner fully closed..... Last line below 540 calibration mark

ALIGNMENT PROCEDURE

WAVE BAND SWITCH POSITION	POSITION OF TUNER	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	ADJUSTMENTS (IN ORDER SHOWN)	FUNCTION
BC	Closed	455 KC	.1 mfd.	7H7 Transl. grid	T2, T1	IF
BC	Open	1759 KC	.0002 mfd.	Ant. Terminal	C6	Oscillator
BC	1410	1410 KC	.0002 mfd.	Ant. Terminal	C5, C1	Ant.,Transl.
BC	600 (rock)	600 KC	.0002 mfd.	Ant. Terminal	C7	Padder
SW	Open	18.3 MC	400 ohms	Ant. Terminal	C10	Oscillator
SW	15 (rock)	15 MC	400 ohms	Ant. Terminal	C2	Transl.

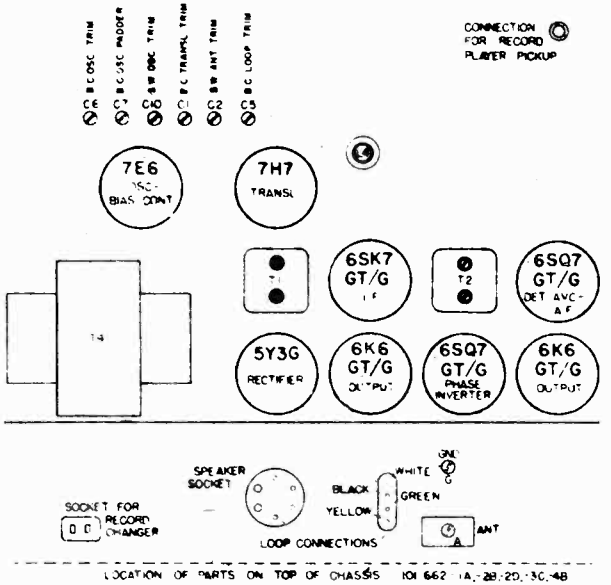
IMPORTANT ALIGNMENT NOTES

The Alignment must be done in the order given.

The Antenna Alignment Procedure should be repeated step by step in the original order for greatest accuracy.

Always keep the output power from the generator at its lowest possible value to prevent the AVC of the receiver from interfering with accurate alignment.

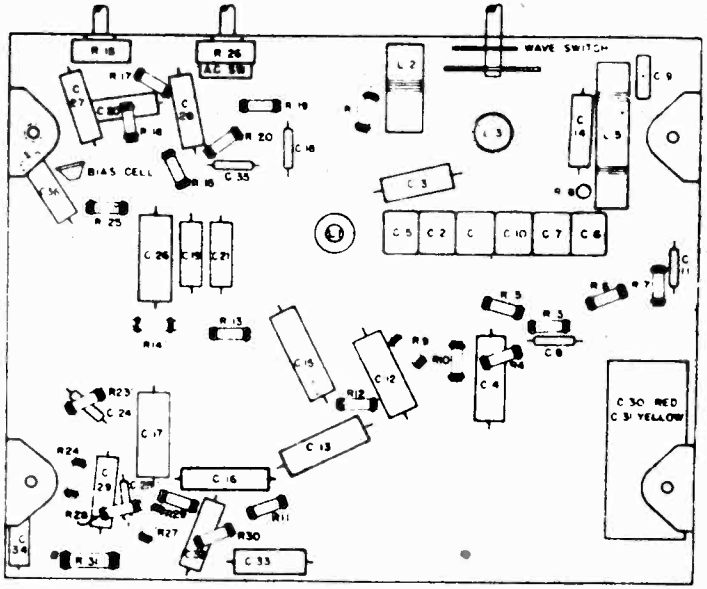
During alignment of the 'BC' Band Padder and the 'SW' Band Translator Trimmers, the Tuner should be rocked through resonance to assure alignment.



For Clarified schematics, see P.15-8

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
	R17998	Board-Antenna
	R45512	Board-Terminal-Loop
	R57285	Buttons-Push (High Boost,Bass Boost, Phono.-Tel.-Freq. Mod.)(Cat. 6104A & B)
	R57205	Buttons-Push (High Boost,Bass Boost, Phono-Tel.-Freq. Mod.)(Cat. #6105A & B)
	R57284	Buttons-Push Stations (Cat. #6104A & B)
	R57204	Buttons-Push Stations (Cat. #6105A & B)
C30,C31	R45829	Capacitor-Elect. 30 mfd. 275 V; 30 mfd. 375 V.
C1,C2,C5	R47199	Capacitor-Trimmer-6 Gang
C6,C7,C10		
C15,C16		Capacitor- .1 mfd. 200 V.
C12,C13		
C17,C26		Capacitor- .1 mfd. 400 V.
C14,C28		Capacitor- .01 mfd. 400 V.
C27,C32		Capacitor- .01 mfd. 600 V.
C3,C4		Capacitor- .05 mfd. 200 V.
C21,C33,C34		Capacitor- .002 mfd. 600 V.
C19		Capacitor- .003 mfd. 400 V.
C29		Capacitor- .005 mfd. 400 V.
C20		Capacitor- .008 mfd. 400 V.
C9		Capacitor- .004 mfd. Mica
C8,C11,C24		Capacitor- .0001 mfd. Mica
C25		
C18		Capacitor- .0005 mfd. Mica
C35		Capacitor- .00005 mfd. Mica
	R17915	Cell-Bias
	R57203	Clip-Pilot Light
L4	R47193	Coil-Ant. Loop Loading
L5	R47192	Coil-BC. & S.W. Oscillator
L1	R47194	Coil-BC. Translator
L3	R57187	Coil-Preselector Coupling
L2	R47195	Coil-S.W. Antenna
R26	R47235	Control-On-Off & Tone - 1 meg.
R18	R47240	Control-Volume - 2 meg.
	R57273	Cord-Line (Phono)
	R18395	Cord-Line (Power)
	R42673	Cover-Push Button Tabs
	R57206	Dial-Station
	R57271	Escutcheon-Dial (Cat. #6104A & B)
	R57231	Escutcheon-Dial (Cat. #6105A & B)
	R49940	Knob-On-Off & Tone
	R49939	Knob-Tuning
	R49941	Knob-Volume
	R49943	Knob-Wave Sw.
		Lamp-Pilot-Mazda #44
	R57221	Speaker-10" Dynamic
	R45836	Cone & Voice Coil
	R45838	Field Coil
T3	R45837	Output Transformer
	R18251	Spring-Drive Tension
	R45844	Sw.-Tone & Phono.-Tel.-Freq. Mod.
	R47191	Switch-Wave
	R45995	Tab-Bass Boost
	R45994	Tab-High Boost
	R45998	Tab-Phono.-Tel.-Freq. Mod.
	R42879	Tabs-Call Letter
T1	R45305	Transformer - #1 I.F.
T2	R45306	Transformer - #2 I.F.
T4	R45853	Transformer - Power - 60 cycle
W	R47259	Tuner-Push Button with Var. Capacitor

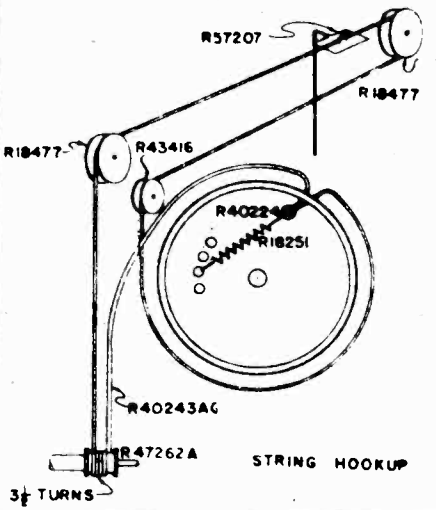
SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
	R57216	Loop-Complete
	R18112	Mounting-Bias Cell
	R57192	Needle-Phono
	R16039	Pin-Loop Lead
	R57207	Pointer-Dial
	R18477	Pulley-Wood, large
	R43416	Pulley-Wood, small
R3,R4,R13		Resistor - 1 megohm, 1/3 W.
R20,R23		
R25		Resistor - 4.7 megohm, 1/3 W.
R1		Resistor - 1M ohms, 1/3 W.
R11		Resistor - 10M ohms, 1/3 W.
R7		Resistor - 22M ohms, 1/3 W.
R15		Resistor - 27M ohms, 1/3 W.
R21,R27		Resistor - 47M ohms, 1/3 W.
R17		Resistor - 56M ohms, 1/3 W.
R14		Resistor - 82M ohms, 1/3 W.
R9		Resistor -120M ohms, 1/3 W.
R30		Resistor -180M ohms, 1/3 W.
R16,R24		Resistor -220M ohms, 1/3 W.
R28		Resistor -270M ohms, 1/3 W.
R29		Resistor -330M ohms, 1/3 W.
R19		Resistor -560M ohms, 1/3 W.
R5		Resistor - 47 ohms, 1/3 W.
R6,R8		Resistor -100 ohms, 1/3 W.
R12		Resistor -270 ohms, 1/3 W.
R31		Resistor -270 ohms, 2 W.
R10		Resistor -8200 ohms, 1 W.
	R47262A	Shaft-Drive Assy.
	R44897	Socket-Phono.-Tel.-Freq. Mod.
	R16958	Socket-Rectifier
	R17983	Socket-Speaker
	R17987	Socket-Tube



LOCATION OF PARTS UNDER CHASSIS (01662-28, -20, -3C, -4B)

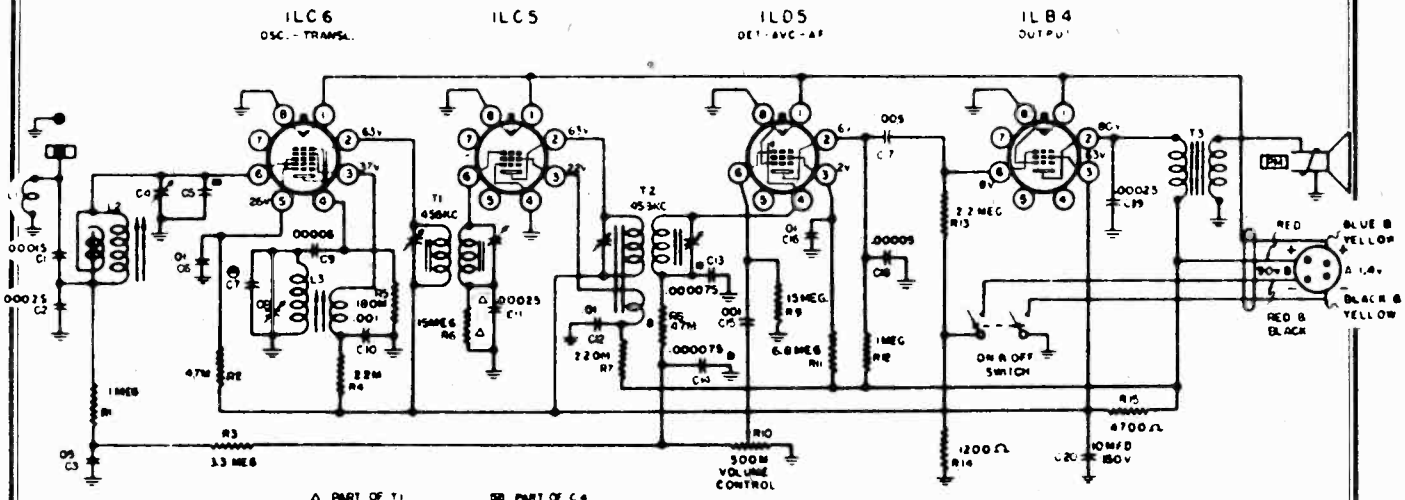
Frequency Ranges:

Broadcast.....540-1700 KC
Shortwave.....6-18 MC



SEARS ROEBUCK & CO.

MODEL 6200, Ch. 101.800



Δ PART OF T1 — ⊡ PART OF C4
◎ PART OF T2 — ⊕ PART OF C8

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

Frequency Ranges:

Broadcast	550-1700 Kc

PRELIMINARY:

ALIGNMENT PROCEDURE

Output meter connection	Across loud speaker voice coil
Output meter reading to indicate 50 Milliwatts (Standard Output)	0.4 Volts
Generator ground lead connection	Receiver chassis
Dummy antenna value to be in series with generator output	See chart below
Connection of generator output lead	See chart below
Generator Modulation	30%, 400 cycles
Position of Volume Control	Fully on
Position of pointer with tuner fully closed	Last mark to the left of 540 Kc calibration mark

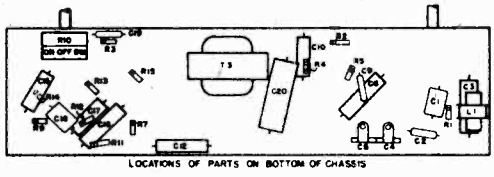
POSITION OF TUNER	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	ADJUSTMENTS (IN ORDER SHOWN)	FUNCTION
Closed	455 Kc.	.1 mfd.	1LC6 Transl. grid	T2, T1	I.F.
1725	1725 Kc.	.000075 mfd	Ant. Terminal	C8	Oscillator
1725	1725 Kc.	.000075 mfd.	Ant. Terminal	C4	Antenna
1500	1500 Kc.	.000075 mfd.	Ant. Terminal	L3	Oscillator Core
1500	1500 Kc.	.000075 mfd.	Ant. Terminal	L2	Antenna Core
1725	1725 Kc.	.000075 mfd.	Ant. Terminal	C8, C4	Osc. & Ant. Recheck

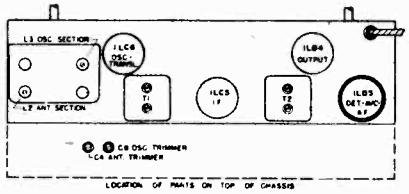
IMPORTANT ALIGNMENT NOTES

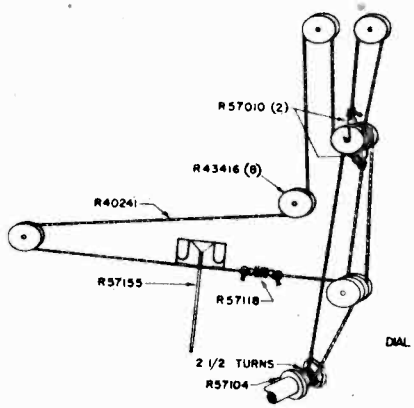
The alignment must be done in the order given.

Always keep the output power from the generator at its lowest possible value to prevent the AVC of the receiver from interfering with accurate alignment.

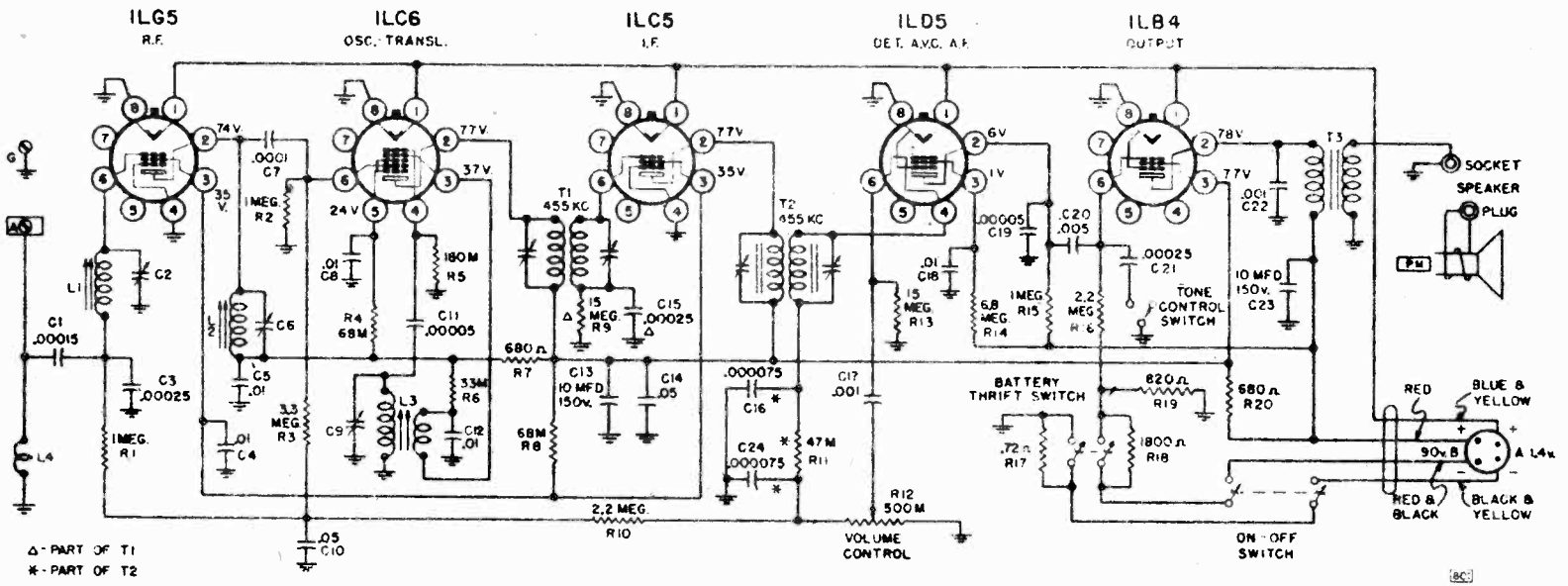
Power Output — Undistorted 0.080 Watts — Maximum 0.150 Watts





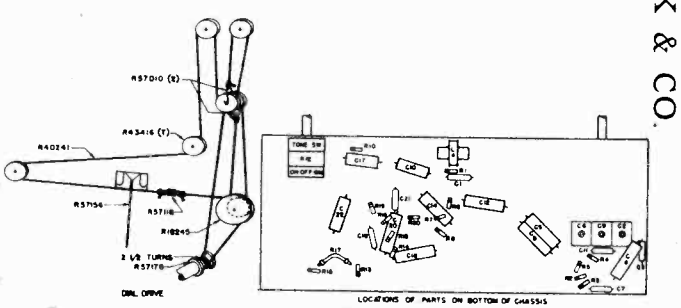


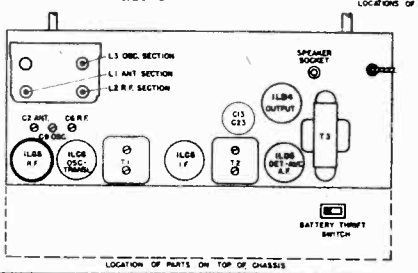
For Parts list, see P.15-2



Output meter connections	Across loud speaker voice coil
Output meter reading to indicate 50 milliwatts (Standard Output)	.0.4 volts
Generator ground lead connection	Receiver chassis
Dummy antenna value to be in series with generator output	See chart below
Connection of generator output lead	See chart below
Generator modulation	30%, 400 cycles
Position of Volume Control	Fully on
Position of Tone Control	HI
Position of pointer with tuner fully closed	Last mark to the left of 540 Kc calibration mark.

POSITION OF TUNER	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	ADJUSTMENTS (IN ORDER SHOWN)	FUNCTION
Closed	455 Kc.	.1 mfd.	1LC6 Transl. Grid	T2, T1	I.F.
1725	1725 Kc.	.000075 mfd.	Ant. Terminal	C9	Oscillator
1725	1725 Kc.	.000075 mfd.	Ant. Terminal	C2, C6	Ant., Transl.
1500	1500 Kc.	.000075 mfd.	Ant. Terminal	L3	Oscillator Core
1500	1500 Kc.	.000075 mfd.	Ant. Terminal	L1, L2	Ant., Transl. Cores
1725	1725 Kc.	.000075 mfd.	Ant. Terminal	C9, C2, C6	Oscillator, Ant., & Transl. Recheck

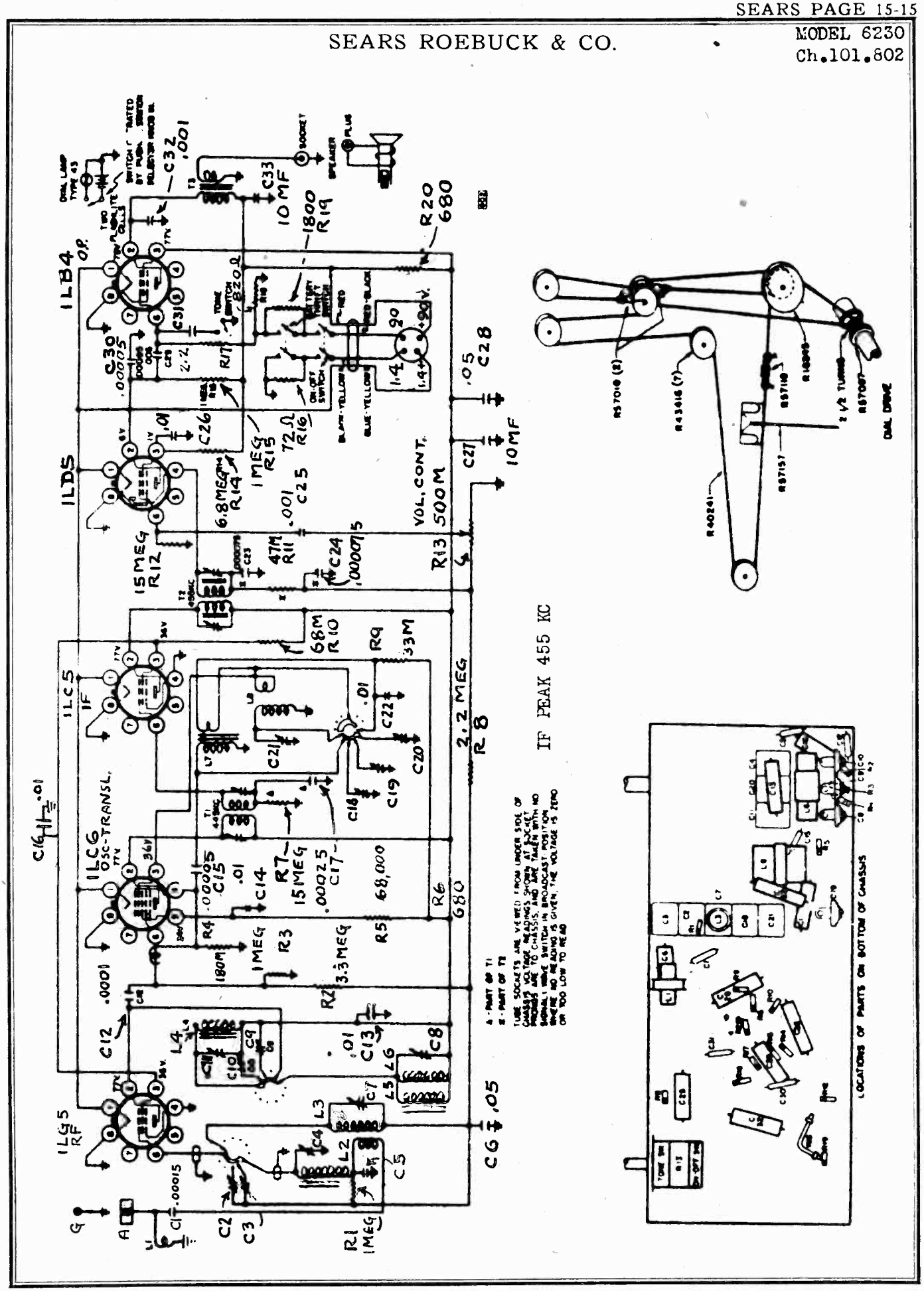




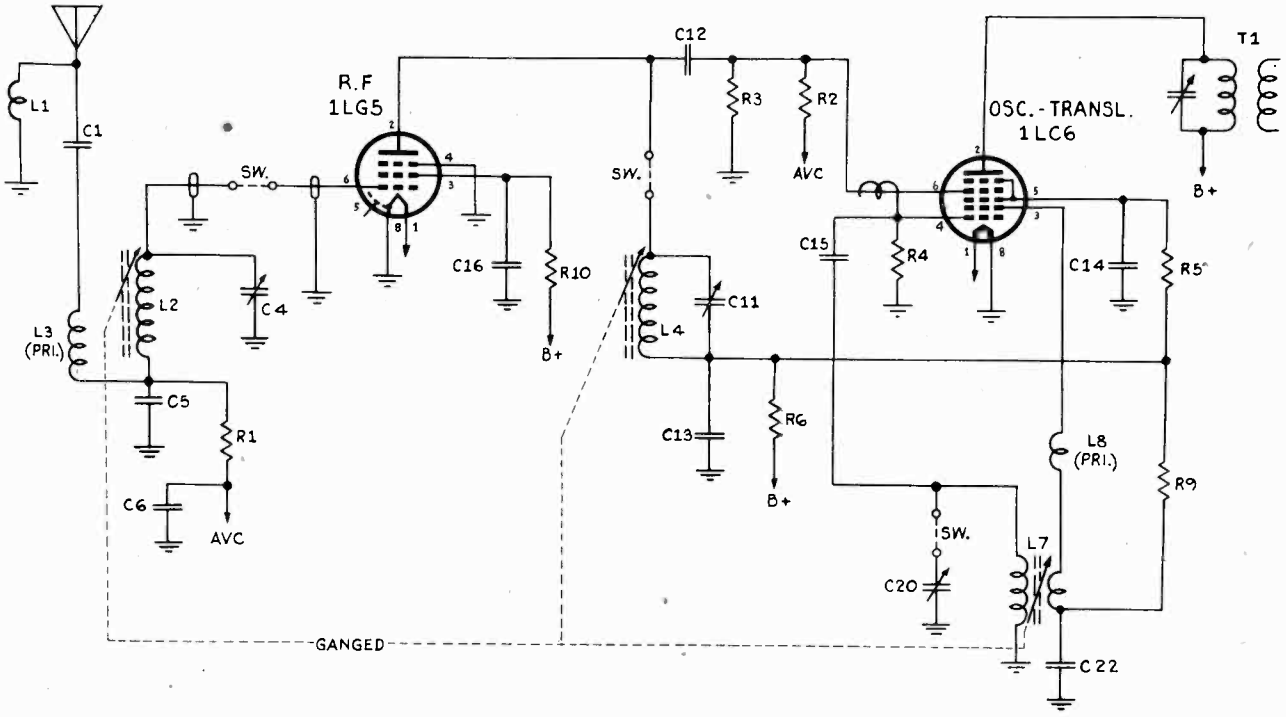
For Parts list, see P.15-2

SEARS ROEBUCK & CO.

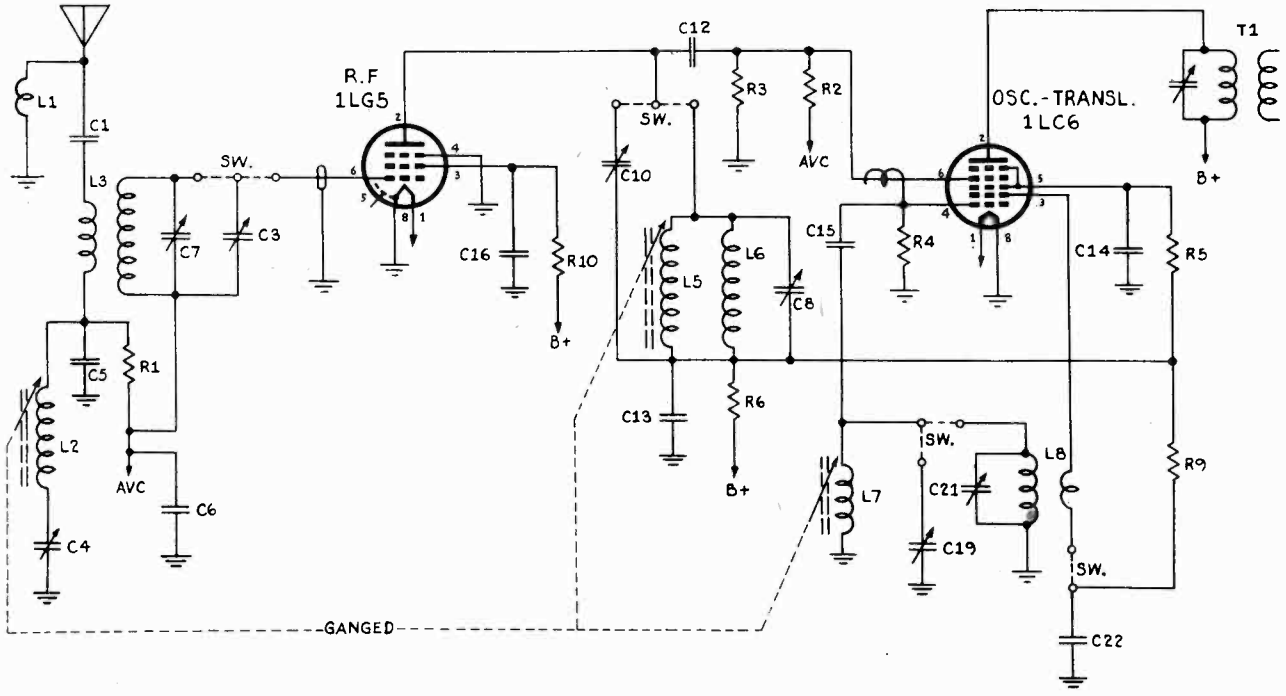
MODEL 6230
Ch.101.802



SEARS ROEBUCK & CO.



BAND-SWITCH SHOWN
AT 1ST POSITION.
BROADCAST BAND
540 - 1700 KC.



BAND-SWITCH SHOWN
AT 2ND POSITION.
9 MC. SPREAD BAND
9.4 - 9.7 MC.

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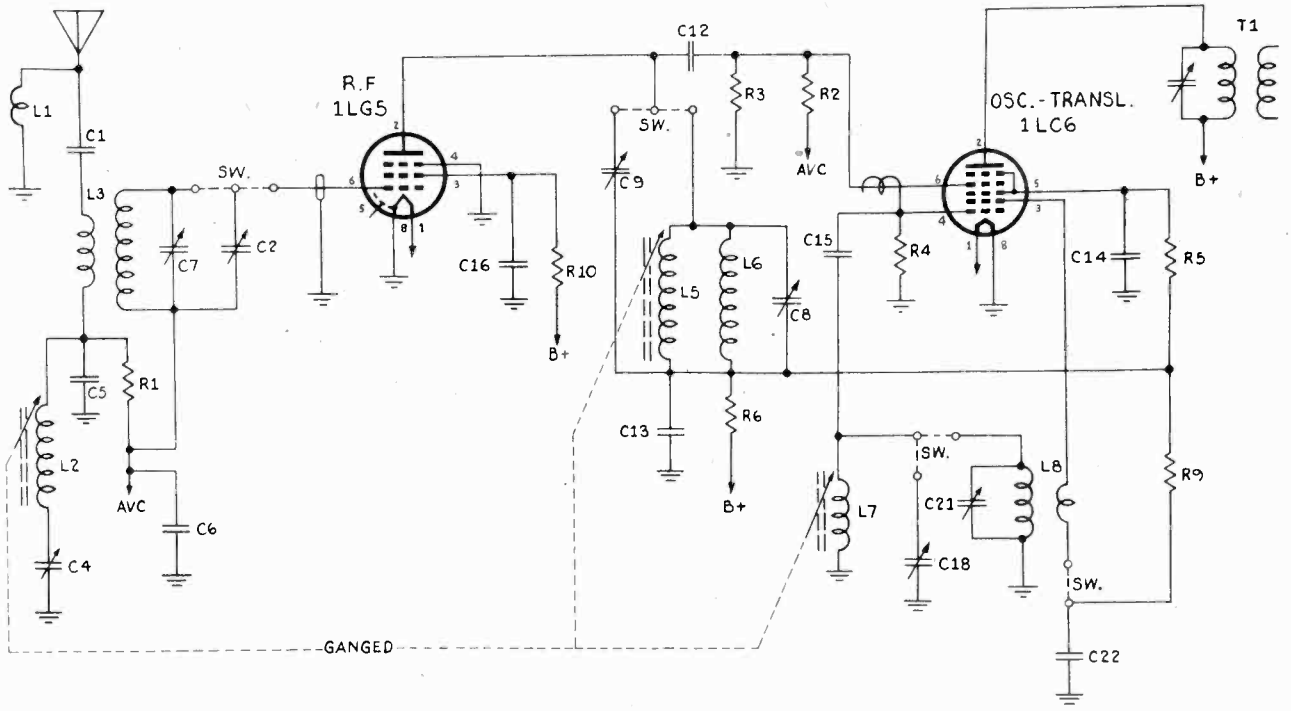
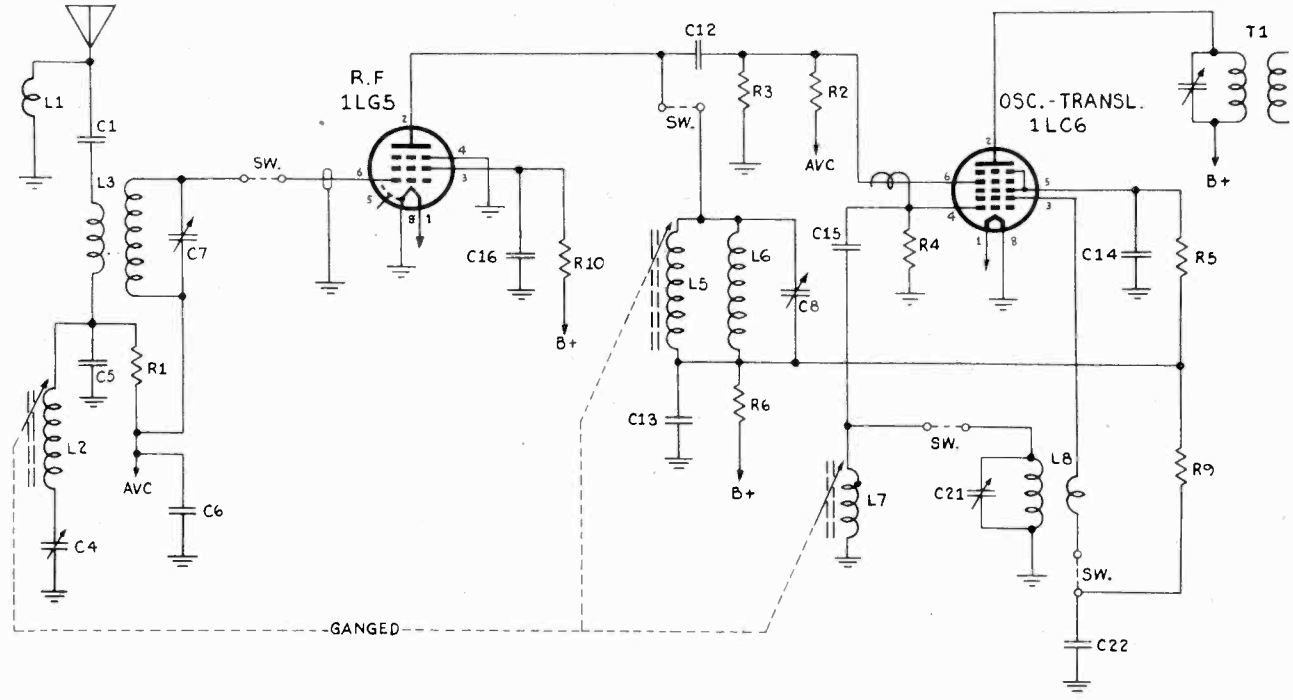


BAND-SWITCH SHOWN
AT 3RD POSITION
11 MC. SPREAD BAND
11.6 - 12.0 MC.



BAND-SWITCH SHOWN
AT 4TH POSITION
15 MC. SPREAD BAND
15.0 - 15.5 MC.

MODEL 6230
Ch.101.802

SEARS ROEBUCK & CO.

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connection.....Across loud speaker voice coil
Output meter reading to indicate 50 milliwatts (standard output).....0.4 Volts
Generator ground lead connection.....Receiver chassis
Dummy antenna value to be in series with generator output.....See chart below
Connection of generator output lead.....See chart below
Generator Modulation.....30%, 400 cycles
Position of Volume Control.....Fully on (Clockwise)
Position of Tone Control.....Hi (Counter-clockwise)
Position of dial pointer with tuner fully closed.....Last line to the left of the 540 Kc. calibration mark

Last line to the right of the 1700 Kc. calibration mark shall be considered 1725 Kc.

BAND SWITCH POSITION	POSITION OF TUNER	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	ADJUSTMENTS (IN ORDER SHOWN)	FUNCTION
BC	Closed	455 Kc	0.1 mfd.	1LC6 Transl. Grid	T2, T1	IF
BC	1725	1725 Kc	.000075 mfd.	Ant. Terminal	C20	Oscillator
BC	1725	1725 Kc	.000075 mfd.	Ant. Terminal	C4, C11	Ant., RF
BC	1500	1500 Kc	.000075 mfd.	Ant. Terminal	L7	Oscillator Core
BC	1500	1500 Kc	.000075 mfd.	Ant. Terminal	L2, L4	Ant., RF Cores
15 Mc	15.2	15.2 Mc	400 ohms	Ant. Terminal	C21	Oscillator
15 Mc	15.2	15.2 Mc	400 ohms	Ant. Terminal	C7, C8	Ant., RF
11 Mc	11.8	11.8 Mc	400 ohms	Ant. Terminal	C18	Oscillator
11 Mc	11.8	11.8 Mc	400 ohms	Ant. Terminal	C2, C9	Ant., RF
9 Mc	9.6	9.6 Mc	400 ohms	Ant. Terminal	C19	Oscillator
9 Mc	9.6	9.6 Mc	400 ohms	Ant. Terminal	C3, C10	Ant., RF

IMPORTANT ALIGNMENT NOTES

Before attempting short-wave alignment the L5 core should be adjusted to a dimension of approximately 1-21/32" from the top core to the top turn of the winding. This should be done with the tuner in the 1725 Kc. position.

During alignment of the Antenna and RF trimmers on the shortwave spread bands the tuner should be rocked through resonance to assure alignment.

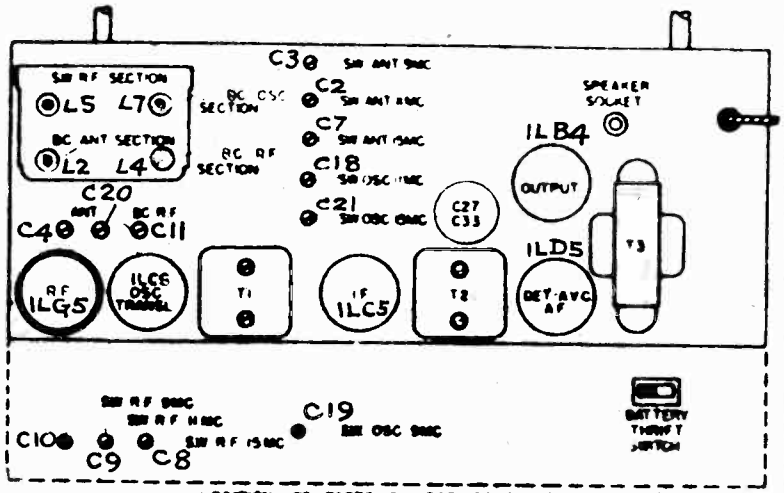
The alignment must be done in the order given. Adjust all trimmers and cores for maximum output.

The antenna alignment procedure should be repeated step by step in the original order for greatest accuracy.

Always keep the output power rrom the generator at its lowest possible value to prevent the AVC action of the receiver from interfering with accurate alignment.

Power Output — Undistorted 0.125 Watts — Maximum 0.250 Watts

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
	RS7145	Antenna-Stratobeam Receptor Kit Complete
	RS7037	Board-Antenna
	R13961	Button-Snap
	RS7045	Cable-Battery
C13,C14,C16 C22,C26		Capacitor-.01 mfd. 200 V.
C6,C28		Capacitor-.05 mfd. 200 V.
C25,C32		Capacitor-.001 mfd. 600 V.
C29		Capacitor-.005 mfd. 400 V.
C15,C30		Capacitor-Mica-50 mmfd.
C12		Capacitor-Mica-100 mmfd.
C1		Capacitor-Mica-150 mmfd.
C31		Capacitor-Mica-250 mmfd.
C5		Capacitor-Silver Mica 250 mmfd.-500 V.
C27,C33	RS7128	Capacitor-Dry. Elect. 10X10 mfd. 150 V.
C19 C8,C9	RS7080	Capacitor-Trim.-Single
C10 C4,C11	RS7020	Capacitor-Trim.-3 Gang
C20	Rs7081	Capacitor-Trim.-3 Gang
C2,C3,C7 C18,C21	RS7082	Capacitor-Trim.-5 Gang
	RS7010	Clip-Drive Cord Anchor
L3	R45074	Coil-Antenna-S.W. Shunt
L1	R45255	Coil-Choke-Antenna
L8	RS7078	Coil-Osc.-S.W. Shunt
L6	R45077	Coil-R.F.-S.W. Shunt
R13	RS7071	Control-On-Off, Vol. & Tone
	R45218	Cover-Dial
	RS7086	Dial-Station
	RS7150	Knob-On-Off Ind. & Vol.
	RS7153	Knob-Tone Control
	RS7028	Shaft-Pointer Drive
	RS7049	Socket-Tube-8 Prong Lock-in
	RS7062	Speaker-5-1/4" P.M.
	RS7116	Spring-Extension
	R40241	String-Drive
	RS7038	Switch-Slide Type D.P.S.T.
	RS7064	Switch-Wave
T1	Rs7120	Transformer - I.F. #1
T2	RS7095	Transformer - I.F. #2
T3	Rs7075	Transformer - Output
L2,L4	RS7089	Tuner-Permeability Coil Unit
L5,L7		



LOCATION OF PARTS ON TOP OF CHASSIS

R20		Resistor 680 ohms 1/3 W.
R6		Resistor 680 ohms 1/3 W.
R18		Resistor 820 ohms 1/3 W.
R19		Resistor 1800 ohms 1/3 W.
R9		Resistor 33000 ohms 1/3 W.
R5		Resistor 68000 ohms 1/3 W.
R10		Resistor 68000 ohms 1/3 W.
R4		Resistor 180000 ohms 1/3 W.
R1,R3,R15		Resistor 1.0 meg. 1/3 W.
R8,R17		Resistor 2.2 meg. 1/3 W.
R2		Resistor 3.3 meg. 1/3 W.
R14		Resistor 6.8 meg. 1/3 W.
R12		Resistor 15 meg. 1/3 W.
R16	R45254	Resistor-Flexohm-0.72 ohm 1/2 W.

MODEL 6685
Ch.139.150

SEARS ROEBUCK & CO.

Power Shifter

"A" SUPPLY

The "A" supply is obtained from a full wave copper sulphide rectifier filtered by a condenser input filter consisting of three condensers and two low resistance chokes. A tap on the power transformer allows the voltage on the rectifier to be changed giving two "A" load voltages. Terminal voltages for various loads are indicated on the wiring diagram.

"B" SUPPLY

The "B" supply employs a 6J5GT tube operated as a half wave rectifier operating into a condenser input filter of one choke followed by another condenser.

The "A" and "B" circuits are not common to each other or to the chassis. Different tube biasing methods make this necessary.

POWER DRAIN

When the "A" voltage is excessively low the rectifier, condensers or transformer may be defective. To check the transformer remove one lead of transformer winding from the rectifier and measure for A.C. voltage indicated on the wiring diagram. To check the rectifier remove the plus lead from the choke L2 and condenser C2. Also disconnect one side of jumper wire and measure D.C. voltage across the rectifier. This should be 1.4 to 1.5 volts with the tap changer tie block in the 4-5 tube position.

"B" SUPPLY FAILS

The 6J5GT tube should be tested with a standard tube tester. The transformer may be tested by measuring the A.C. voltage across the secondary plate winding with the tube removed.

EXCESSIVE HUM

When excessive hum is noticed in the radio it may be due to the "A" supply or the "B" supply. The hum will be very loud when the input condenser C2 opens in service and this open condenser will cause the output voltage to drop to 1.35 volts without load (4-5 tube position). The hum will be somewhat less in volume if the second section or output condenser has opened and this will not change the output voltage.

When the hum is caused by the "B" supply, the condensers of this filter circuit have probably opened. If the input condenser has opened the output voltage will drop to approximately 110 volts without load. Less hum is caused when the output condenser opens and the output voltage is not changed.

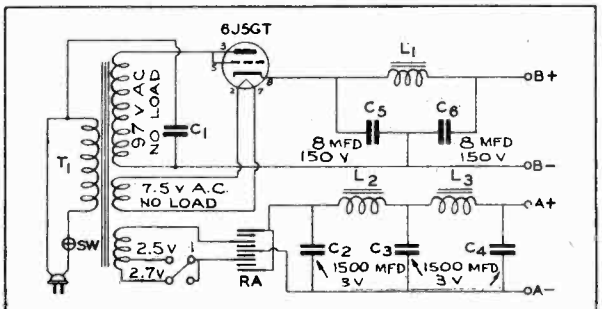
To determine whether the hum is introduced by the "A" supply or the "B" supply, batteries may be substituted for each separate supply while one circuit is being tested.

IMPORTANT - READ CAREFULLY

The "A" supply of this power unit is supplied through a dry disc rectifier. If the radio ceases to operate or drops off in performance, it may be due to a chemical change in this rectifier. This may cause the "A" voltage to drop low enough to affect the performance of the receiver.

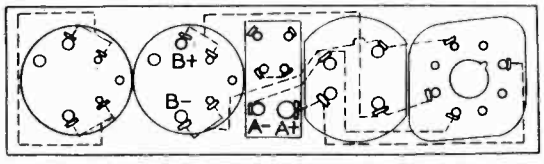
To reactivate the rectifier it is only necessary to short (connect together) the "A" plus and "A" minus of plug or terminals of socket for a period of 4 minutes. The high temperature developed in the rectifier during this period has the tendency to restore the discs to their normal rectifying capacity. The unit will not be harmed by this process.

This deactivated condition is more likely to occur in the rectifier when the power unit has been out of service for some length of time (4 months or more).



	"A" OUTPUT	"B" OUTPUT
4-5 Tube	1.50 V at 200 Ma. 1.35 V at 250 Ma.	90 V at 13 Ma. 101 V at 8.5Ma.
6 Tube	1.55 V at 300 Ma. 1.35 V at 350 Ma.	138 V at 0 Ma.

CIRCUIT DIAGRAM



WIRING DIAGRAM OF SOCKET ASSEMBLY (Back)

Schematic Location	Part No.	Description
C1	J 1060	Line Condenser .01 mfd 400 volt
C2 C3 C4	J 2036	"A" Filter Condenser 1500 mfd 3 Volt
C5 C6	J 2037	"B" Filter Condenser 8 X 8 mfd 150 volt
L1	J 1061	"B" Choke
L2 L3	J 1435	"A" Choke
RA	J 2933	Rectifier
SW	J 5538	Line Cord, Switch and Plug
T1	J 1059	Power Transformer
–	J 1841	Combination Panel Socket
–	J 1062	Tube Socket
–	J 5442	Tap Changer Plug

JUNE 17, 1946

CHASSIS 110.451

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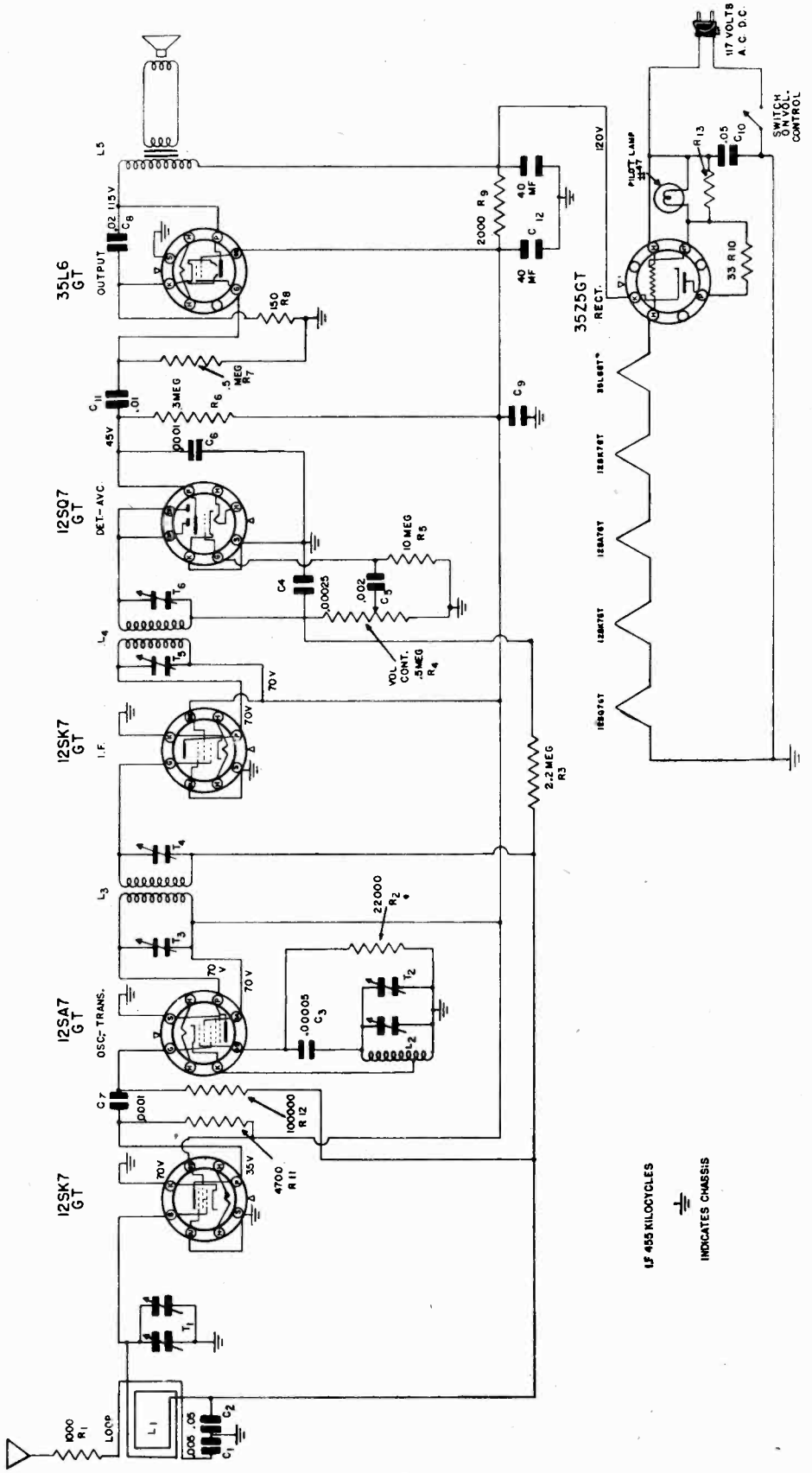
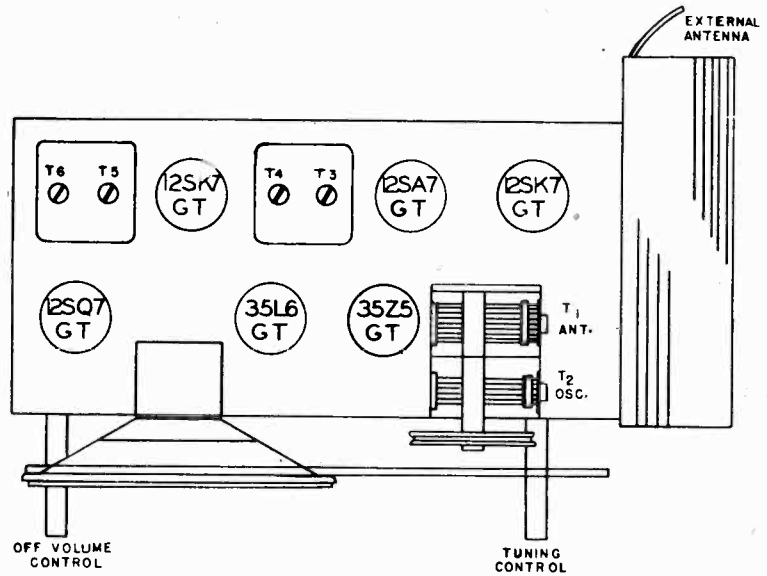


DIAL LAMP:

A six volt bayonet dial lamp No. 47 is used in this receiver. The dial lamp may be removed for replacement by gently squeezing the dial lamp socket mounting bracket and withdrawing from the dial assembly. Replace the lamp with another of the same type. DISCONNECT THE RECEIVER FROM THE ELECTRICAL OUTLET BEFORE REPLACING THE LAMP.

Location Schematic	Part Number	DESCRIPTION
	A62163	Back cover
L1	A28147	Coil—loop
L2	A28133	Coil—oscillator
C1		Condenser—.005, .01, 400 volts
C2		Condenser—.05, 200 volts
C3		Condenser—.00005, mica
C4		Condenser—.00025, mica
C5		Condenser—.002, 400 volts
C6, C7		Condenser—.0001, mica
C8		Condenser—.02, 400 volts
C9		Condenser—.2-.3, 200 volts
C10		Condenser—.05, 400 volts
C11		Condenser—.01, 400 volts
C12	A2065	Condenser—electrolytic, 40 mfd. 40 mfd, 150 volts
R4	A2463	Control—volume, with switch (S.P.S.T.) .5 megohm
	A5559	Cord—power
	A4640	Dial—drive assembly
	A1851	Dial—lamp socket
	A4137	Dial—pointer
	A4574	Dial—pointer drive cord
	A4633	Dial—pointer drive spring
	A4087-A	Dial—scale (glass)
	A39125	Knob—off-volume
	A39126	Knob—tune
	A59235	Leaflet—instruction
R1		Resistor—1000 ohms, 1/4 watt
R2		Resistor—22,000 ohms, 1/4 watt
R3		Resistor—2.2 megohms, 1/4 watt
R5		Resistor—10 megohms, 1/4 watt
R6		Resistor—330,000 ohms, 1/4 watt
R7		Resistor—500,000 ohms, 1/4 watt
R8		Resistor—150 ohms, 1/2 watt
R9		Resistor—2000 ohms, 2 watt, carbon
R10		Resistor—33 ohms, 1/4 watt
R11		Resistor—4700 ohms, 1/4 watt
R12		Resistor—100,000 ohms, 1/4 watt
R13		Resistor—200-400 ohms, 1/2 watt
	A5855	Speaker—5"
L5	A1322	Transformer—audio output
L3	A3329	Transformer—I.F. input
L4	A3529	Transformer—I.F. output
		Variable Condenser



Output meter connections ..... Across primary output transformer

Connection of generator ground ..... Chassis

Generator modulation ..... App. 30% @ 400 cycles

Position of volume control ..... Fully Clockwise

POSITION OF DIAL POINTER	GENERATOR FREQUENCY	GENERATOR CONNECTION	TRIMMERS ADJUSTED	TRIMMER FUNCTION
540 kc	455 kc	12SA7GT	T3, T4, T5, T6	I. F.
1500 kc	1500 kc	* * *	T2, T1	Osc., R. F.

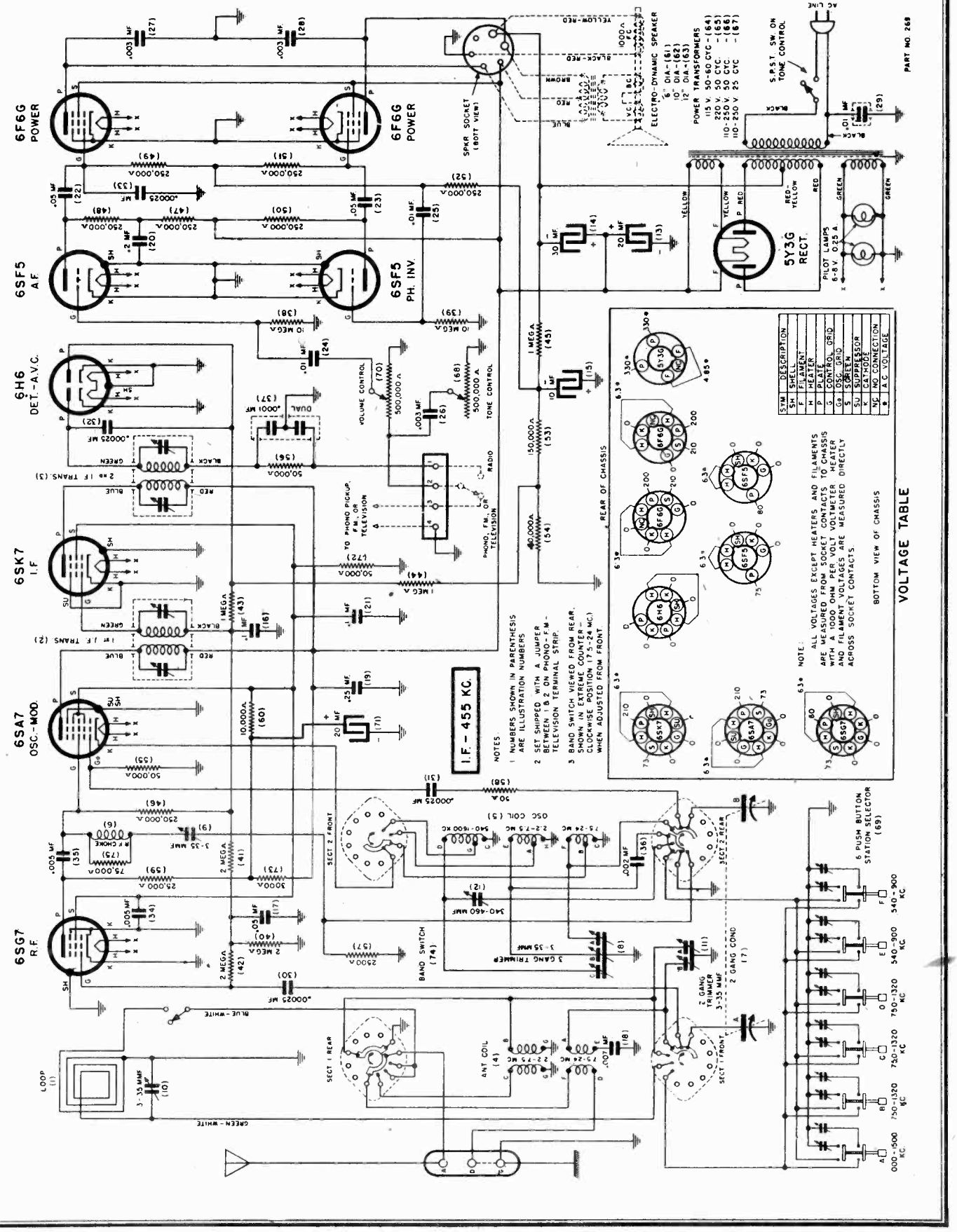
It is advisable to repeat the entire alignment procedure in the original order to insure greater accuracy.

Always keep the output from the test oscillator at its lowest possible value. As the sensitivity is increased by alignment, the generator output should be reduced correspondingly.

***Run a wire from the output terminal of the generator near the receiver. However, no connection is made between the signal generator and the receiver.

MODELS 269T, 269C, 269F

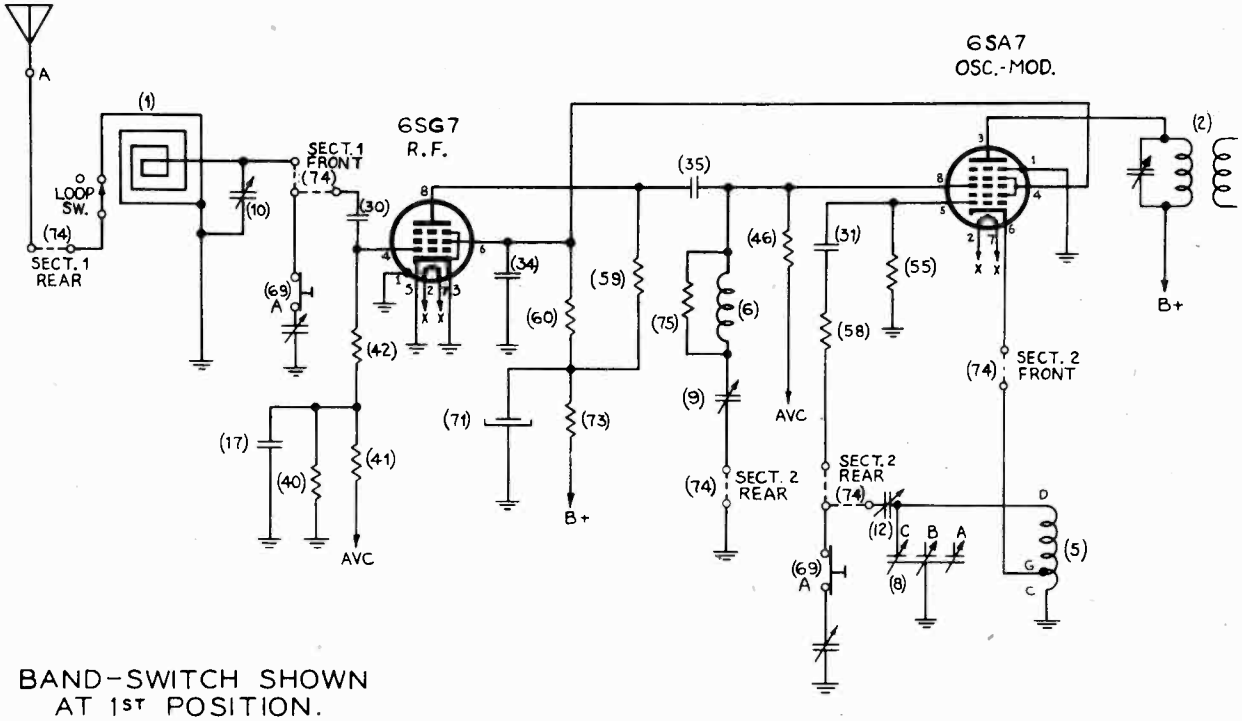
SENTINEL RADIO CORP.



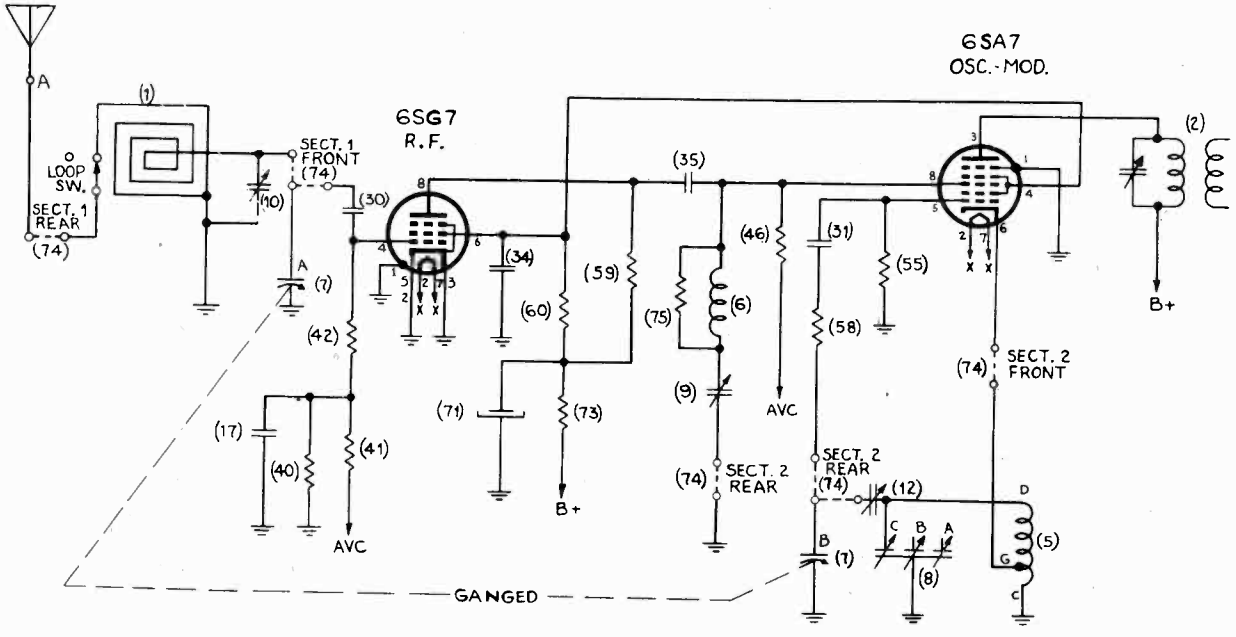
"clarified schematics"

MODELS 269T, 269C, 269F

SENTINEL RADIO CORP.



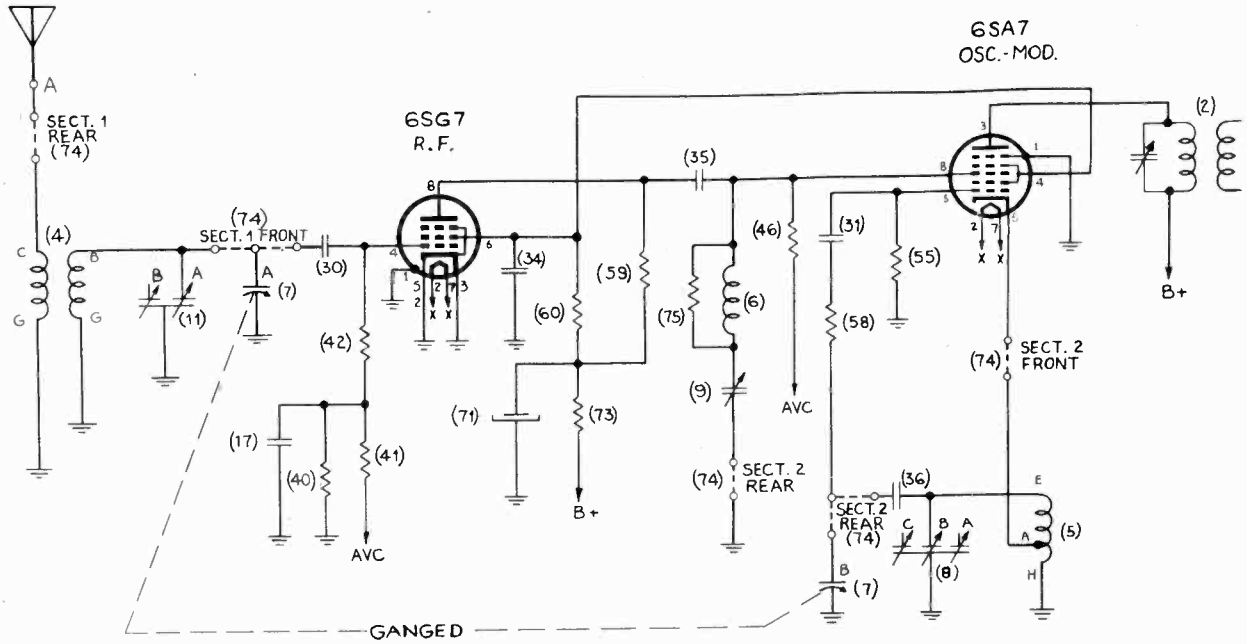
BAND-SWITCH SHOWN
AT 1ST POSITION.
PUSH BUTTON TUNING
BUTTON 'A' DEPRESSED
1000-1500KC



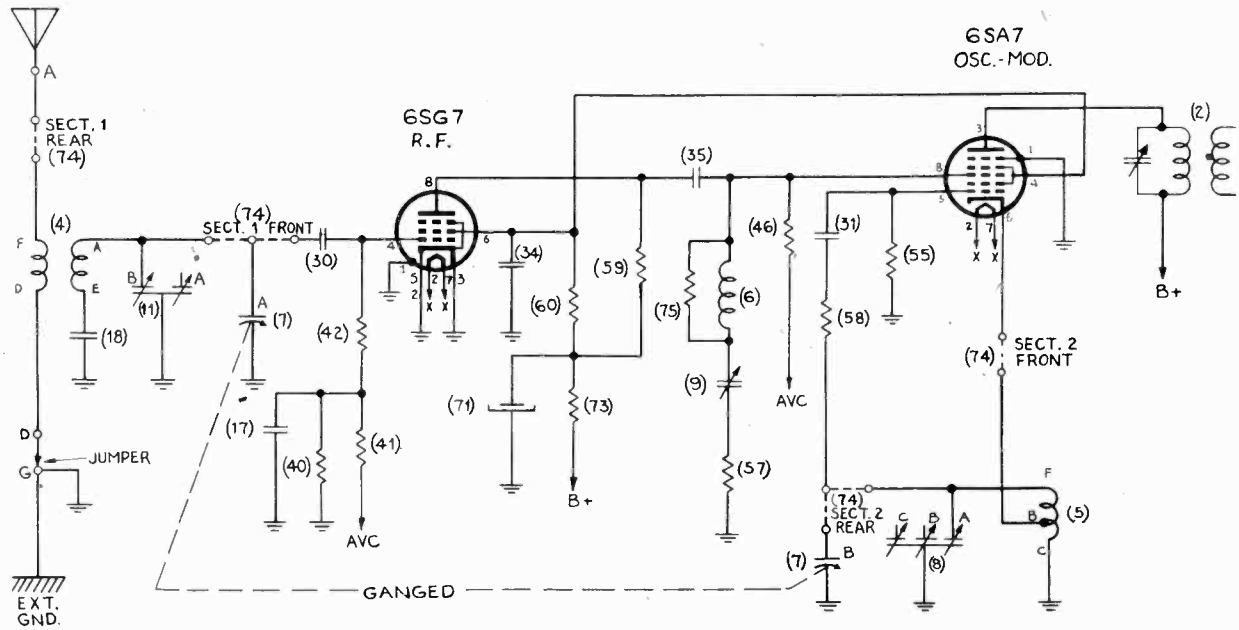
BAND-SWITCH SHOWN
AT 2ND POSITION COUNTERCLOCKWISE
BROADCAST BAND
540-1600 KC.

MODELS 269T, 269C, 269F

SENTINEL RADIO CORP.



BAND-SWITCH SHOWN
AT 3RD POSITION COUNTERCLOCKWISE
SHORT WAVE BAND
2.2 - 7.5 MC.



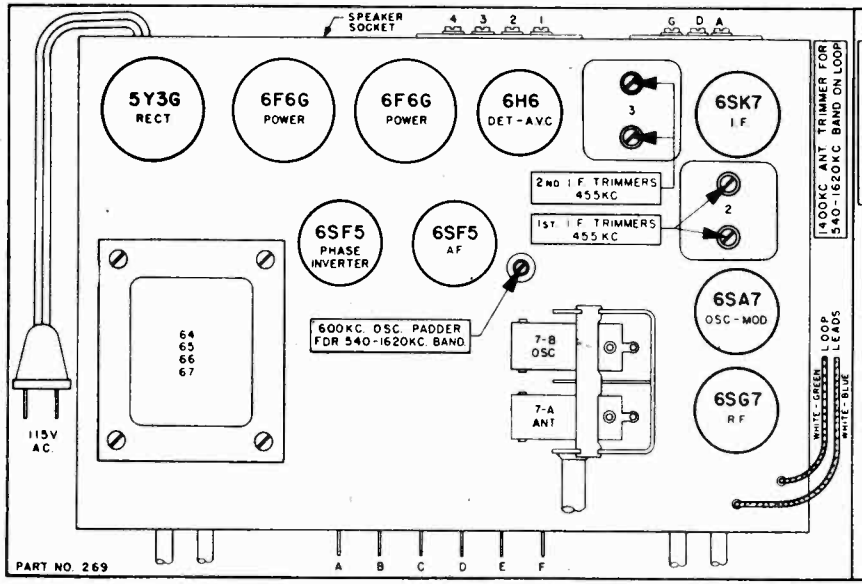
BAND-SWITCH SHOWN
AT 4TH POSITION COUNTERCLOCKWISE
SHORT WAVE BAND
7.5 - 24 MC.

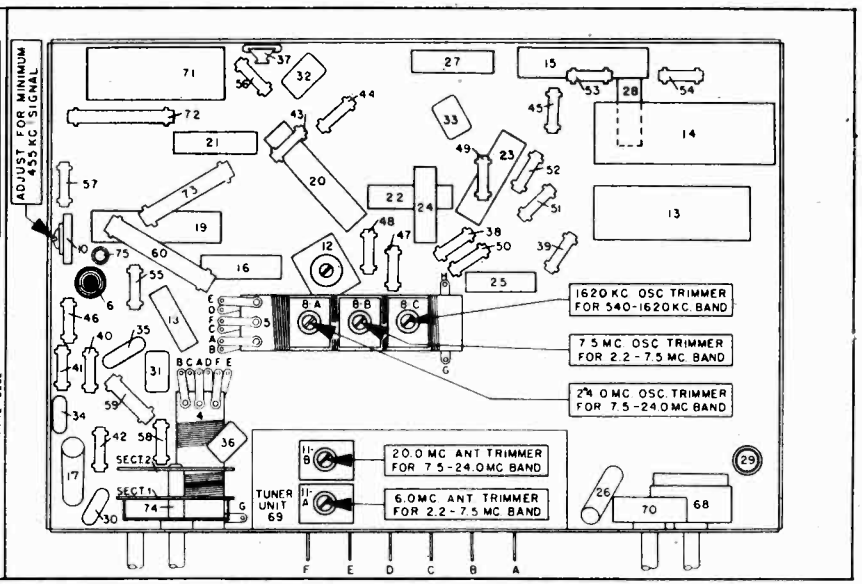
ALIGNMENT PROCEDURE

For alignment procedure read tabulations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, (3) third. IMPORTANT: BEFORE ALIGNING, PLACE LOOP ANTENNA IN THE SAME POSITION IT WILL BE IN WHEN THE SET IS IN THE CABINET.

When adjusting 1620 kilocycle oscillator trimmer 600 K.C. padder, 455 K.C. R.F. trimmer and 1400 kilocycle antenna trimmer, do not connect test oscillator to loop. Couple test oscillator to receiver loop by: (a) Make a loop consisting of five to ten turns of No. 20 to 30 size wire wound on a three inch form and attach across output of test oscillator. (b) Place test oscillator loop near set loop—BE SURE THAT NEITHER MOVES WHILE ALIGNING.

Place band switch for operation on:	Set receiver dial to:	TEST OSCILLATOR: Adjust test oscillator frequency to:	TEST OSCILLATOR: Use dummy antenna in series with output of test oscillator consisting of:	TEST OSCILLATOR: Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
I. F. alignment use any band position.	Any point where no interfering signal is received	Exactly 455 K.C.	0.2 Mfd. condenser	High side to grid of 6SA7 tube. Low side to frame of gang condenser.	Adjust each of the second I.F. transformer trimmers for maximum output, then adjust each of the first I.F. transformer trimmers for maximum output.
1620 to 540 K.C. Band	1 Rotate gang condenser to Maximum Capacity	Exactly 455 K.C.	None	Use Small Loop to couple test oscillator to receiver loop. Low side to frame of condenser.	Adjust R.F. coil for minimum 455 K.C. signal.
	2 Exactly 1620 K.C.	Exactly 1620 K.C.	None	Use Small Loop to couple test oscillator to receiver loop. Low side to frame of condenser.	Adjust 1620 K. C. oscillator trimmer for maximum output.
	3 Approx. 1400 K.C.	Approx. 1400 K.C.	None	Use Small Loop to couple test oscillator to receiver loop. Low side to frame of condenser.	While rocking gang condenser adjust 1400 K. C. loop trimmer for maximum output.
	4 Approx. 600 K.C.	Approx. 600 K.C.	None	Use Small Loop to couple test oscillator to receiver loop. Low side to frame of condenser.	While rocking gang condenser adjust 600 K. C. oscillator padder for maximum output.
2.2 to 7.5 M.C. Band	1 Exactly 7.5 M.C.	Exactly 7.5 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	Adjust 7.5 M. C. oscillator trimmer for maximum output.
	2 Approx. 6. M.C.	Approx. 6. M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	While rocking gang condenser adjust 6 M. C. antenna trimmer for maximum output.
7.5 to 24 M.C. Band	1 Exactly 24 M.C.	Exactly 24 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	Adjust 24 M. C. oscillator trimmer for maximum output.
	2 Approx. 20 M.C.	Approx. 20 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	While rocking gang condenser adjust 20 M. C. antenna trimmer for maximum output.





The loop aerial cannot be used for short wave reception. WHEN TUNING FOR SHORT WAVE 2.2-7.5 AND 7.5-24 M.C. BAND STATIONS, CONNECT A 25-50 FOOT OUTDOOR AERIAL TO THE RADIO.

THERE ARE THREE AERIAL & GROUND POSTS marked "A," "D," and "G" on the rear of the chassis. When the receiver is shipped from the factory a flexible wire is connected to post "D" and "G." When a straight aerial is used this wire should be left in this position and the aerial lead-in connected to the post marked "A."

When a doublet type antenna is used, remove the small piece of wire connecting "G" and "D" posts together and attach one of the doublet antenna lead-ins to "A" post and the other to "D" post.

The metal arm on loop need not be moved to "Ant" position as arm is inoperative when band selector switch is in 2.2-7.5 and 7.5-24 M.C. bands position.

REGARDLESS OF THE TYPE OF AERIAL USED ALWAYS HAVE A GOOD GROUND ATTACHED TO THE POST MARKED "G" ON REAR OF CHASSIS. A cold water pipe, steam radiator or an iron rod driven 3 or 4 feet into moist ground will provide a suitable ground.

PUSH BUTTON TUNING

SIX STATIONS OPERATING IN THE 1620-540 K.C. BAND MAY BE "AUTOMATIC PUSH BUTTON" TUNED BY PROPERLY SETTING THE 6 SETS OF TRIMMER SCREWS LOCATED UNDERNEATH PUSH BUTTON ESCUTCHEON ON FRONT OF CABINET.

As the push buttons are not preset at the factory for any definite stations, be sure to set them by:

(a) It is important to have the aerial, if an outdoor antenna is to be used, attached to the radio when adjusting the trimmers.

(b) BE SURE TO OPERATE THE RADIO AT LEAST ONE-HALF HOUR BEFORE ADJUSTING TRIMMERS. If set is not thoroughly warmed up when trimmers are adjusted, the trimmers may shift position after they do become warm, resulting in poor tone, weak signals and excessive background noise.

(c) Obtain the transmitter frequency—number of kilocycles—and call letters of the six stations you wish to "Push Button" tune. FOR BEST RESULTS SET PUSH BUTTONS FOR LOCAL OR STRONG NEAR-BY STATIONS ONLY.

(d) Remove push button escutcheon from front of cabinet by unscrewing small wood screws that hold this in place.

(e) Rotate band switch to the next to the maximum right hand position.

(f) Using manual tuning knob, carefully tune in to the point of clearest tone, one of the selected stations whose transmitter frequency is somewhere between 540 and 900 kilocycles.

(g) Rotate band switch knob to the maximum right hand position.

(h) Press in either one of the two push buttons indicated on label adjacent to trimmers marked 540 to 900 K.C. Note: Station signal will disappear, or may be distorted and in some instances another station may be heard.

(i) Using a screwdriver ADJUST THE LARGE 540 to 900 KILOCYCLE ADJUSTING SCREW, LOCATED ABOVE THE PUSH BUTTON THAT IS PUSHED IN—until the 540 to 900 kilocycle station that had been previously tuned in with the manual tuning knob, is heard with maximum volume and clearest tone. AFTER ADJUSTING THE LARGE SCREW CAREFULLY ADJUST THE SMALL SCREW DIRECTLY BELOW THE LARGE ONE FOR CLEAREST TONE AND MAXIMUM VOLUME.

(j) Remove the printed tab, having the call letters of the station tuned in, from the paper call letter sheet. Press this into the depression in the push button escutcheon that will be adjacent to the push button just adjusted when the escutcheon is remounted in place on the cabinet.

(k) Set other trimmers for selected stations operating between the frequency range of the trimmers, as indicated on the label.

IMPORTANT: THE WAVE SWITCH KNOB MUST BE IN THE MAXIMUM RIGHT HAND POSITION FOR PUSH BUTTON TUNING.

In some instances it may be necessary, after the set is operated for a period of time, to reset the trimmers as they may drift due to heat, humidity, etc.

THE FOLLOWING PARTS LIST, WIRING DIAGRAM AND ALIGNMENT CHARTS ARE INTENDED FOR USE BY PROFESSIONAL SERVICE MEN

If your radio should ever require attention, show this data to your service man . . . it will help him to make a faster and better adjustment.

PARTS LIST

Illus. No.	Part No.	Part Name	Description	List Price
1	13503	Antenna	Loop used with Table Model Cabinet	$1.25
1	13505	Antenna	Loop used with Console Model Cabinet	2.00
2	4404	Coil	First I.F. Transformer	1.20
3	13510	Coil	Second I.F. Transformer	1.00
4	13511	Coil	Antenna for 2.2-7.5 & 7.5-24 MC Band	.90
5	13513	Coil	Oscillator	.80
6	13370	Coil	R.F. Choke	.50
7	12392	Condenser	Tuning Two Gang with Pulley	2.00
8	3762	Condenser	Trimmer Three Gang	.47
9	11636	Condenser	Trimmer 3-35 MMF Working Range	.20
10	1597	Condenser	Trimmer 3-35 MMF Working Range	.21
11	13512	Condenser	Trimmer Two Gang	.30
12	3596	Condenser	Padding 340-460 Working Range	.44
13	13493	Condenser	Tubular Dry Elec. 20 Mfd. 450 Volt	.80
14	13494	Condenser	Tubular Dry Elec. 30 Mfd. 450 Volt	.90
15	1693	Condenser	Tubular Dry Elec. 10 Mfd. 25 Volt	.75
16	10076	Condenser	Tubular .1 Mfd. 200 Volt	.20
17	10077	Condenser	Tubular .05 Mfd. 200 Volt	.19
18	10078	Condenser	Tubular .007 Mfd. 200 Volt + or — 10%	.19
19	11766	Condenser	Tubular .25 Mfd. 400 Volt	.25
20	10098	Condenser	Tubular .2 Mfd. 400 Volt	.19
21	10082	Condenser	Tubular .1 Mfd. 400 Volt	.20
22	10083	Condenser	Tubular .05 Mfd. 400 Volt	.18
23	10083	Condenser	Tubular .05 Mfd. 400 Volt	.18
24	10088	Condenser	Tubular .01 Mfd. 400 Volt	.17
25	10088	Condenser	Tubular .01 Mfd. 400 Volt	.17
26	10084	Condenser	Tubular .003 Mfd. 400 Volt	.17
27	10085	Condenser	Tubular .003 Mfd. 600 Volt	.21
28	10085	Condenser	Tubular .003 Mfd. 600 Volt	.21
29	4305	Condenser	Tubular .01 Mfd. 220 Volt	.30
30	9458	Condenser	Mica .00025 Mfd.	.21
31	9458	Condenser	Mica .00025 Mfd.	.21
32	9458	Condenser	Mica .00025 Mfd.	.21
33	9458	Condenser	Mica .00025 Mfd.	.21
34	10892	Condenser	Mica .005 Mfd. + or — 3%	.30
35	10892	Condenser	Mica .005 Mfd. + or — 3%	.30
36	1440	Condenser	Mica .002 Mfd. + or — 3%	.30
37	10217	Condenser	Mica Dual .0001 Mfd.	.21
38	4804	Resistor	Carbon 10 Meg Ohm 1/3 Watt	.19
39	4804	Resistor	Carbon 10 Meg Ohm 1/3 Watt	.19
40	2705	Resistor	Carbon 2 Meg Ohm 1/3 Watt	.19
41	2705	Resistor	Carbon 2 Meg Ohm 1/3 Watt	.19
42	2705	Resistor	Carbon 2 Meg Ohm 1/3 Watt	.19
43	7998	Resistor	Carbon 1 Meg Ohm 1/3 Watt	.19
44	7998	Resistor	Carbon 1 Meg Ohm 1/3 Watt	.19
45	7998	Resistor	Carbon 1 Meg Ohm 1/3 Watt	.19
46	8906	Resistor	Carbon 250,000 Ohm 1/3 Watt	.19
47	8906	Resistor	Carbon 250,000 Ohm 1/3 Watt	.19
48	8906	Resistor	Carbon 250,000 Ohm 1/3 Watt	.19
49	8906	Resistor	Carbon 250,000 Ohm 1/3 Watt	.19
50	8906	Resistor	Carbon 250,000 Ohm 1/3 Watt	.19
51	8906	Resistor	Carbon 250,000 Ohm 1/3 Watt	.19
52	8906	Resistor	Carbon 250,000 Ohm 1/3 Watt	.19
53	3418	Resistor	Carbon 150,000 Ohm 1/3 Watt	.19
54	10992	Resistor	Carbon 60,000 Ohm 1/3 Watt	.19
55	6879	Resistor	Carbon 50,000 Ohm 1/3 Watt	.19
56	6879	Resistor	Carbon 50,000 Ohm 1/3 Watt	.19
57	2437	Resistor	Carbon 2500 Ohm 1/3 Watt	.19
58	3706	Resistor	Carbon 50 Ohm 1/3 Watt	.19
59	9346	Resistor	Carbon 25,000 Ohm ½ Watt	.19
60	13532	Resistor	Carbon 10,000 Ohm 3 Watt	.25
61	13498	Speaker	E.D. 6" used with Table Model Cabinet	4.50
62	13499	Speaker	E.D. 10" used with Console Model Cabinet	6.75
63	13578	Speaker	E.D. 12" used with Console Combination Model	
64	11436	Transformer	Power 115 Volt 50/60 Cycle	3.50
65	11437	Transformer	Power 220 Volt 50 Cycle	4.25
66	11438	Transformer	Power 110-250 Volt 50 Cycle	6.75
67	11439	Transformer	Power 110-250 Volt 25 Cycle	8.75
68	12350	Tone Control	With S.P.S.T. Switch	.75
69	13560	Tuning Unit	Six Button Trimmer Assembly	4.00
70	12132	Volume Control		.55
71	13491	Condenser	Tubular Dry Elec. 20 Mfd. 350 Volt	.70
72	6787	Resistor	Carbon 50,000 Ohm 1 Watt	.19
73	13593	Resistor	Carbon 3,000 Ohm 1½ Watt	.22
74	13531	Switch	Wave	1.10
75	3524	Resistor	Carbon 75,000 Ohm 1/3 Watt	.19

MISCELLANEOUS PARTS

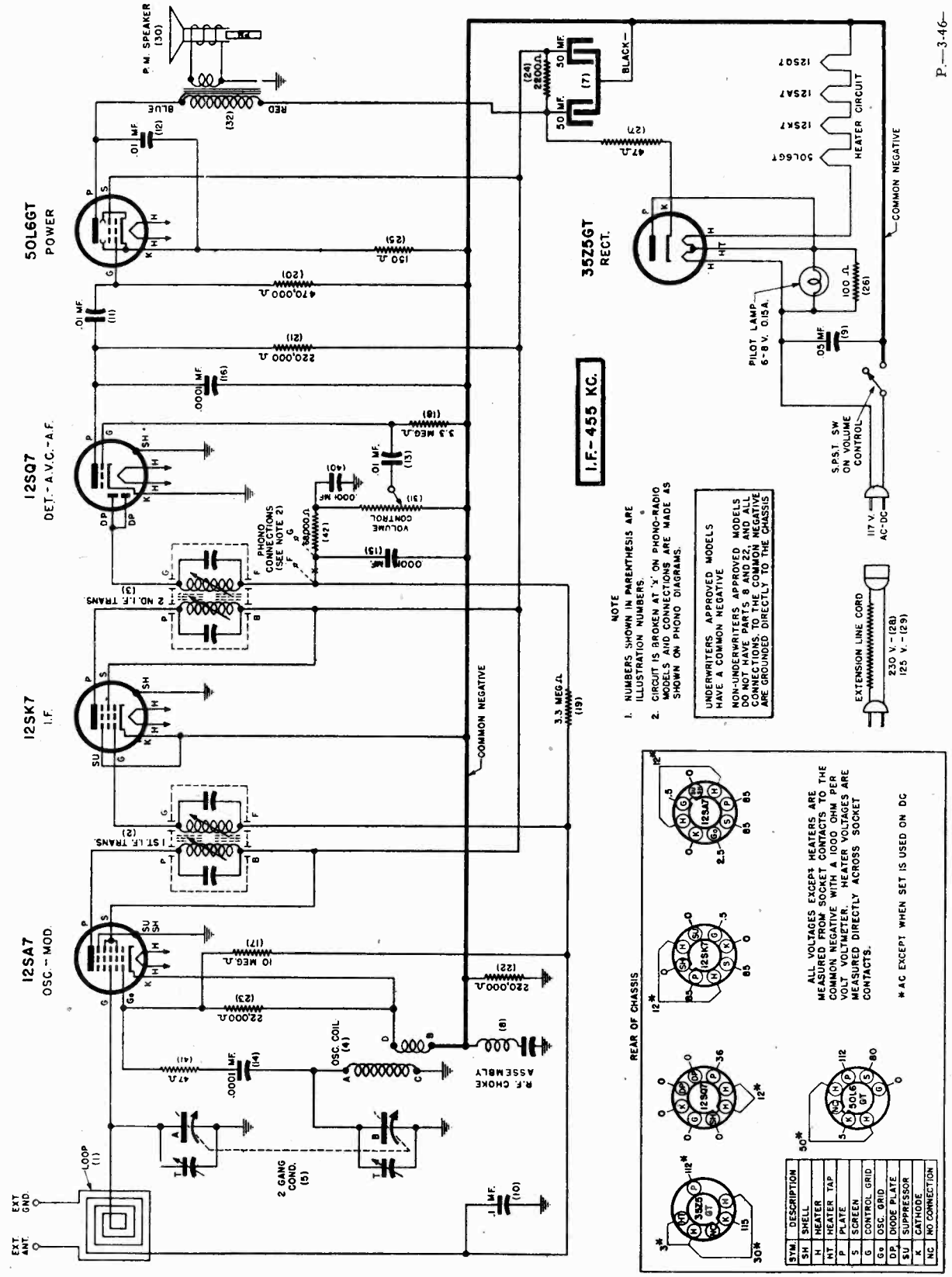
10292	Bulb	Dial Light 6.8 Volt 250 Amp. No. 44	$0.10
8184	Dial Cord	32" of 18 lb. Drive Cord	.20
13476	Dial Shaft	Drive Shaft Assembly with Bearing	.35
11693	Dial Spring	Cord Tension Spring	.04
13516	Dial Scale	Calibrated Glass Scale	.75
12647	Dial Pointer	Slide Rule for Dial	.15
13520	Escutcheon	Less Clear Glass for Dial	1.25
13521	Escutcheon	For Pushbuttons	.50
13533	Escutcheon Glass	Clear Glass for Dial Escutcheon	.15
12764	Knob	Marked "Band Switch"	.15
12760	Knob	Marked "Tuning"	.15
12763	Knob	Marked "Off-on-Tone"	.15
12761	Knob	Marked "Volume"	.15
12854	Knob	Pushbutton	.08

PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE

When ordering parts be sure to mention part number.

MODELS 284W,284I,284NI,284NA,
1U-284W,1U-284I,1U-284NI,
1U-284NA

SENTINEL RADIO CORP.



P.—3-46—

For alignment procedure read tabulations from left to right, and make the adjustment marked (1) first, (2) next, (3) third.

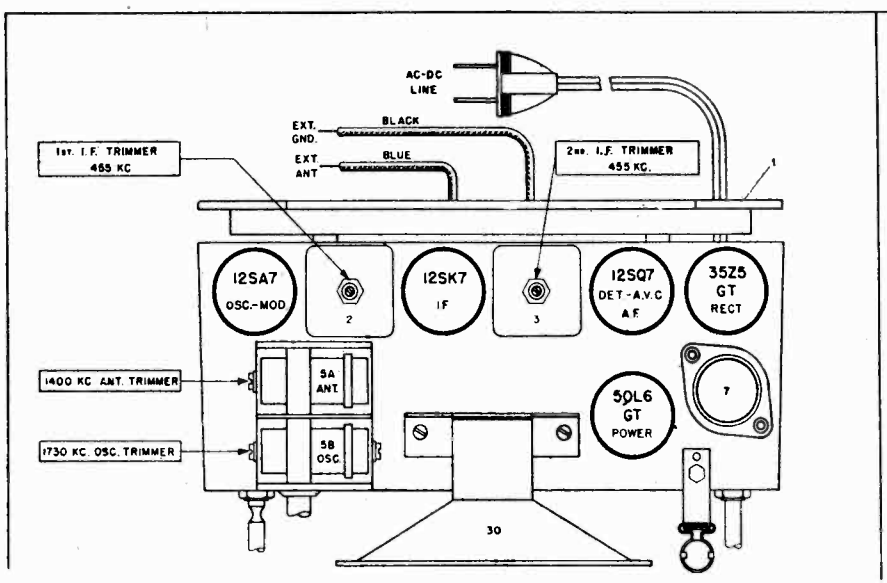
Before starting alignment:

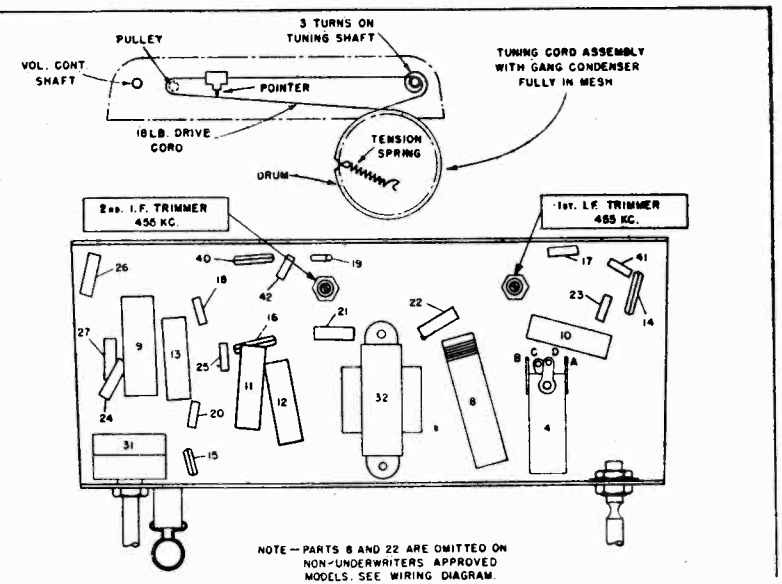
(a) Check tuning dial adjustment by tuning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move to correct position.

(b) Use an accurately calibrated test oscillator with some type of output measuring device.

(c) PLACE LOOP ANTENNA IN THE SAME POSITION IT WILL BE IN WHEN THE SET IS IN THE CABINET.

Steps	Set receiver dial to:	TEST OSCILLATOR: Adjust test oscillator frequency to:	TEST OSCILLATOR: Use dummy antenna in series with output of test oscillator consisting of:	TEST OSCILLATOR: Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
1	Any point where no interfering signal is received.	455 K. C.	.02 MFD. condenser	High side to rear stator plates of tuning condenser. Low side to frame of condenser through a .02 Mfd. blocking condenser.	Adjust each of the second I. F. transformer trimmers for maximum output—then adjust each of the first I. F. trimmers for maximum output.
2	Exactly 1730 K. C.	Exactly 1730 K. C.	.00025 MFD. condenser	Receiver blue antenna lead Receiver black ground lead	Adjust 1730 K. C. oscillator trimmer for maximum output.
3	Approx. 1400 K. C.	Exactly 1400 K. C.	.00025 MFD. condenser	Receiver blue antenna lead Receiver black ground lead	While rocking gang condenser adjust 1400 K. C. antenna trimmer for maximum output.





MODELS 284W,284I,284NI,
284NA,1U-284W,1U-284I,
1U-284NI,1U-284NA
MODEL 289T

SENTINEL RADIO CORP.

MODELS 284W, 284I, 284NI, 284NA, 1U-284W, 1U-284I, 1U-284NI, 1U-284NA,

PARTS LIST

Ill. No.	Part No.	Part Name	Description
1	20E24	Antenna	Loop
2	20E21	Coil	1st I.F. Transformer
3	20E22	Coil	2nd I.F. Transformer
*4	20E13	Coil	Oscillator See *Note
	or		
*4	20E162	Coil	Oscillator See *Note
5	24E2	Condenser	Tuning, 2 Gang (3 Hole Mtg.)
5	24E18	Condenser	Tuning, 2 Gang (2 Hole Mtg.)
7	25E1	Condenser	Dry Electrolytic, 50-50 Mfd. 150 V.
8	20E75	Choke	R.F. Choke Assembly (Und. Appd. Only)
9	23E416	Condenser	Tubular, .05 Mfd. 400 Volts
10	23E218	Condenser	Tubular, .1 Mfd. 200 Volts
11	23E211	Condenser	Tubular, .01 Mfd. 200 Volts
12	23E211	Condenser	Tubular, .01 Mfd. 200 Volts
13	23E211	Condenser	Tubular, .01 Mfd. 200 Volts
14	23E39	Condenser	Mica, .0001 Mfd.
15	23E39	Condenser	Mica, .0001 Mfd.
16	23E39	Condenser	Mica, .0001 Mfd.
17	27E106	Resistor	Carbon, 10 Megohm 1/3 Watt
18	27E335	Resistor	Carbon, 3.3 Megohm 1/3 Watt
19	27E335	Resistor	Carbon, 3.3 Megohm 1/3 Watt

Ill. No.	Part No.	Part Name	Description
20	27E474	Resistor	Carbon, 470,000 Ohm 1/3 Watt
21	27E224	Resistor	Carbon, 220,000 Ohm 1/3 Watt
22	29E224	Resistor	Carbon, 220,000 Ohm 1/3 Watt (Und. Appd. Only)
*23	27E223	Resistor	Carbon, 22,000 Ohm 1/3 Watt See *Note
	or		
*23	27E473	Resistor	Carbon, 47,000 Ohm See *Note
24	27E222-2	Resistor	Carbon, 2,200 Ohm 1 Watt
25	27E151	Resistor	Carbon, 150 Ohm 1/3 Watt
26	27E101	Resistor	Carbon, 100 Ohm 1/3 Watt
27	27E470-2	Resistor	Carbon, 47 Ohm 1/2 Watt
28		Resistor	230 Volt Extension Line Cord Used in models not Underwriters Apprd.
29		Resistor	125 Volt Extension Line Cord Used in models not Underwriters Apprd.
30	1E9	Speaker	5" PM
31	28E1	Volume Control	With S.P.S.T. Switch
32	22E2	Transformer	Output for Speaker
40	23E39	Condenser	Mica, .001 Mfd.
*41	27E470	Resistor	Carbon, 47 Ohm 1/3 W. See *Note
42	27E683	Resistor	Carbon, 68,000 Ohm, 1/3 W.

MISCELLANEOUS PARTS

Part No.	Part Name	Description
7E31-1	Cabinet	Walnut Plastic
7E31-2	Cabinet	Ivory Plastic
7E1-1	Cabinet	Catalin Plastic
7E70	Cabinet Back	For Catalin Cabinet
7E32	Cabinet Back	For Walnut & Ivory Plastic Cabinets
41E1	Cord	6 Ft. Rubber Line Cord
20E12	Dial Plate Assem.	Dial Back Plate Assem. Less Scale
4E1	Dial Cord	30" of 18 Lb. Dial Drive Cord
9E2	Dial Crystal	Acetate Dial Crystal
36E10	Dial Scale	Calibrated Scale

Part No.	Part Name	Description
68E1	Dial Shaft	Drive Shaft
19E3	Dial Shaft Bearing	Bearing For Drive Shaft
35E8	Dial Pointer	Dial Indicator
65E2	Dial Spring	Tension Spring For Drive Cord
37E17-1	Knob	For Walnut Cabinet
37E17-3	Knob	For Ivory Cabinet
37E29-1	Knob	For Catalin Cabinet
20E43	Pilot Lamp Socket	Pilot Lamp Socket Assembly
40E1	Pilot Lamp	6-8 Volt .150 Amp. Type 47 Lamp

*NOTE: First production run of this model used Oscillator Coil Part Number 20E13, Illus. No. 4, with the 47 Ohm Resistor, Illus. No. 41, and the value of the 12SA7 grid leak Resistor, Illus. No. 23, was 47,000 Ohms.
In later production, Part Number 20E13, Oscillator Coil, was replaced with Part Number 20E162; also the 47 Ohm Resistor, Illus. No. 41, was eliminated and the value of Resistor, Illus. No. 23, was changed to 22,000 Ohms.
BECAUSE PERFORMANCE OF THE SET WILL BE SOMEWHAT IMPROVED BY USING OSCILLATOR COIL Part Number 20E162, WE RECOMMEND THAT WHENEVER IT IS NECESSARY TO REPLACE THE OSCILLATOR COIL, THAT ONLY Part Number 20E162 BE USED FOR THIS PURPOSE.

MODEL 289-T

PARTS LIST

Illus. No.	Part No.	Part Name	Description
1	20E58	Cable	Battery with 4 Prong Plug
2	20E32	Coil	Antenna
3	20E21	Coil	1st I.F. Transformer
4	20E35	Coil	2nd I.F. Transformer
5	20E77	Coil	Oscillator
6	24E4	Condenser	Tuning 2 Gang, 3-hole mounting
6	24E19	Condenser	Tuning 2 Gang, 2-hole mounting
7	25E9	Condenser	Tubular Dry Elect. 10 Mfd. 100 V.
8	23E224	Condenser	Tubular .5 Mfd. 200 Volt
9	23E224	Condenser	Tubular .5 Mfd. 200 Volt
10	23E216	Condenser	Tubular .05 Mfd. 200 Volt
11	23E216	Condenser	Tubular .05 Mfd. 200 Volt
12	23E151	Condenser	Tubular .01 Mfd. 120 Volt
13	23E151	Condenser	Tubular .01 Mfd. 120 Volt
14	23E204	Condenser	Tubular .001 Mfd. 200 Volt

Illus. No.	Part No.	Part Name	Description
15	23E42	Condenser	Mica, .00025
16	23E3	Condenser	Fixed Ceramic .0001 Mfd.
17	23E3	Condenser	Fixed Ceramic .0001 Mfd.
18	27E475	Resistor	Carbon, 4.7 Megohm, 1/3 W.
19	27E335	Resistor	Carbon, 3.3 Megohm, 1/3 W.
20	27E106	Resistor	Carbon, 10 Megohm, 1/3 W.
21	27E335	Resistor	Carbon, 3.3 Megohm, 1/3 W.
22	27E105	Resistor	Carbon, 1 Megohm, 1/3 W.
23	27E224	Resistor	Carbon, 220,000 Ohm, 1/3 W.
24	27E223	Resistor	Carbon, 22,000 Ohm, 1/3 W.
25	27E561	Resistor	Carbon, 560 Ohm, 1/3 W.
26	1E15	Speaker	6" PM
27	28E2	Volume Control	With D.P.S.T. Switch
28	22E4	Transformer	Output

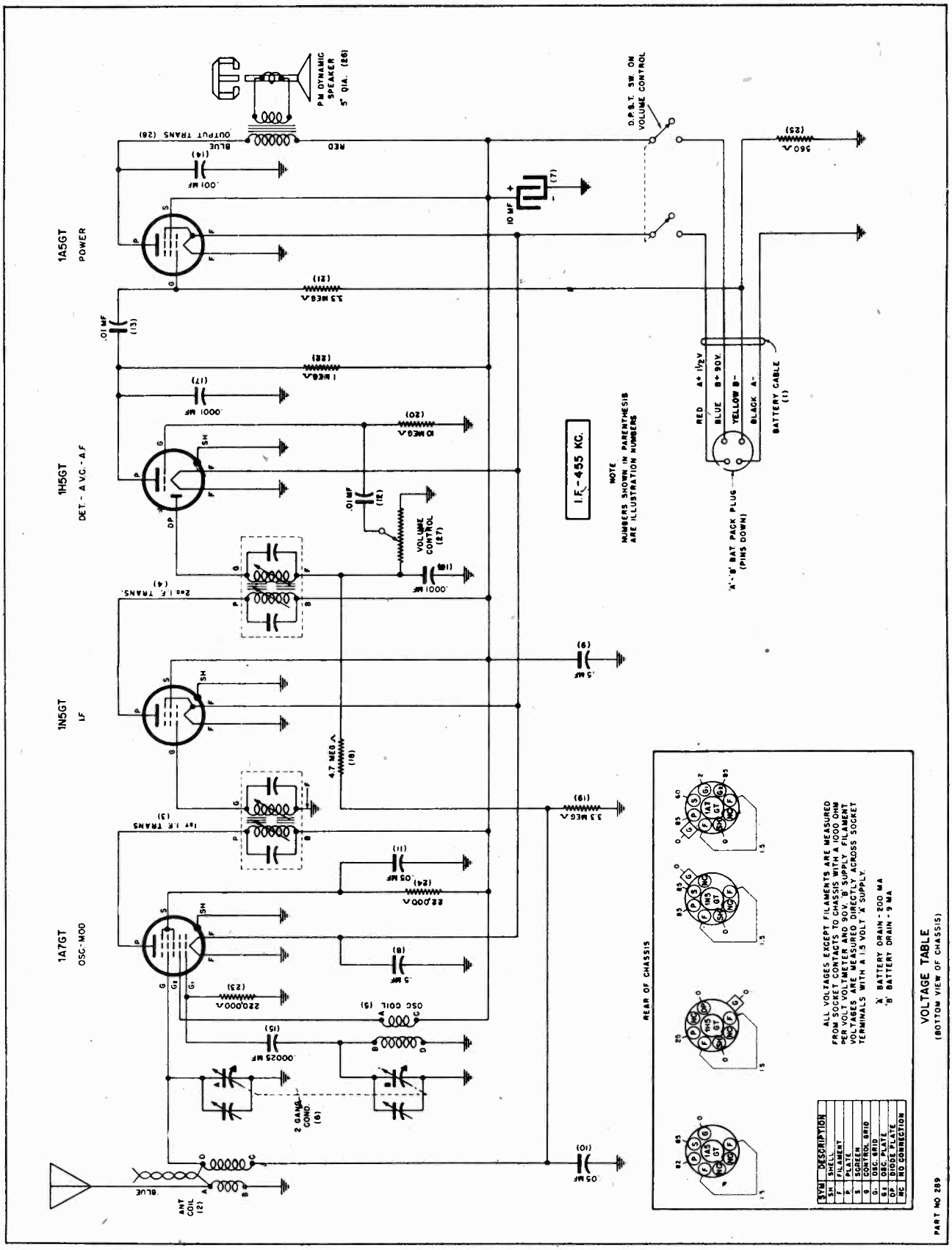
MISCELLANEOUS PARTS

Part No.	Part Name	Description
7E50	Cabinet	Wood Table Model
4E1	Dial Cord	18 Lb. Drive Cord
65E2	Dial Cord Spring	Dial Cord Tension Spring
68E2	Dial Shaft	Drive Shaft
36E11	Dial Scale	Calibrated Scale
35E9	Dial Pointer	Dial Needle
36E14	Dial Indicator	"On-Off" Indicator

Part No.	Part Name	Description
19E3	Dial Shaft Bearing	Bearing for Drive Shaft
65E3	Dial Indicator Spring	Tension Spring for "On-Off" Indicator
12E103-F10	Dial Shaft Washer	"C" Retainer Washer for Drive Shaft
37E25-1	Knob	
17E3-4	Plug	4-Prong Battery Plug
46E1-1	Throw Arm	Operates On-Off Indicator

MODEL 289T

SENTINEL RADIO CORP.



For Parts list, see P.15-8

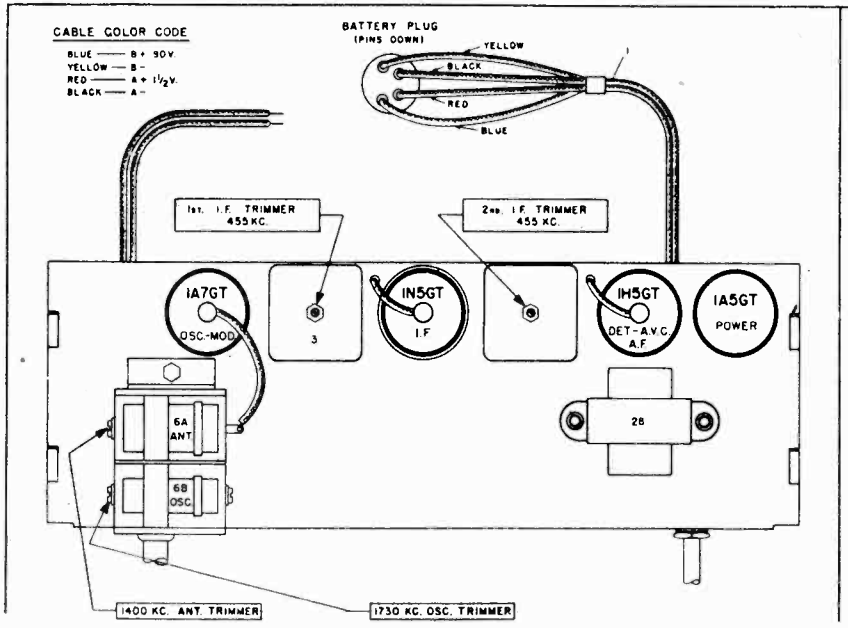
Be sure to follow procedure carefully and in the order given—otherwise the receiver will be insensitive and the dial calibration incorrect. For alignment procedure read tabulations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, etc.

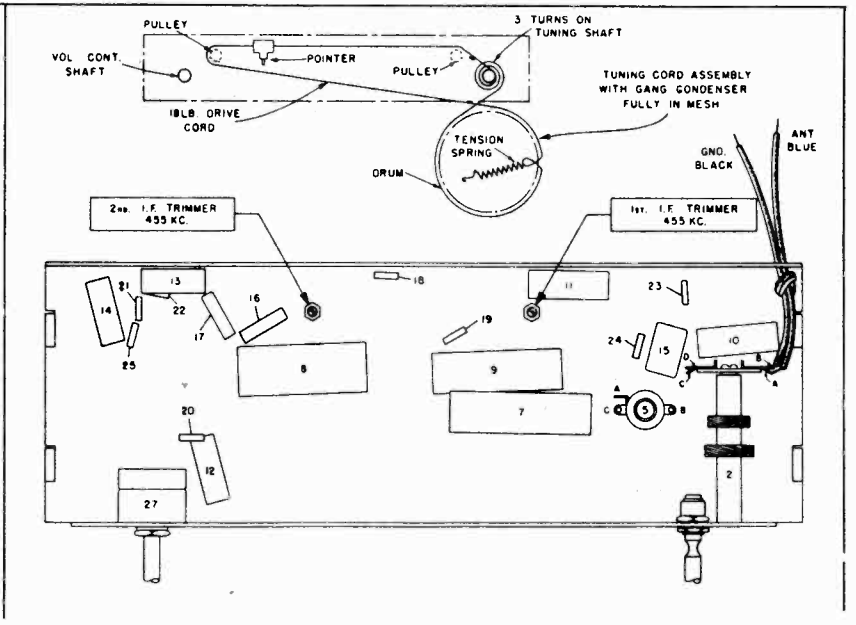
Before starting alignment:

(a) Check tuning dial adjustment by tuning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move to correct position.

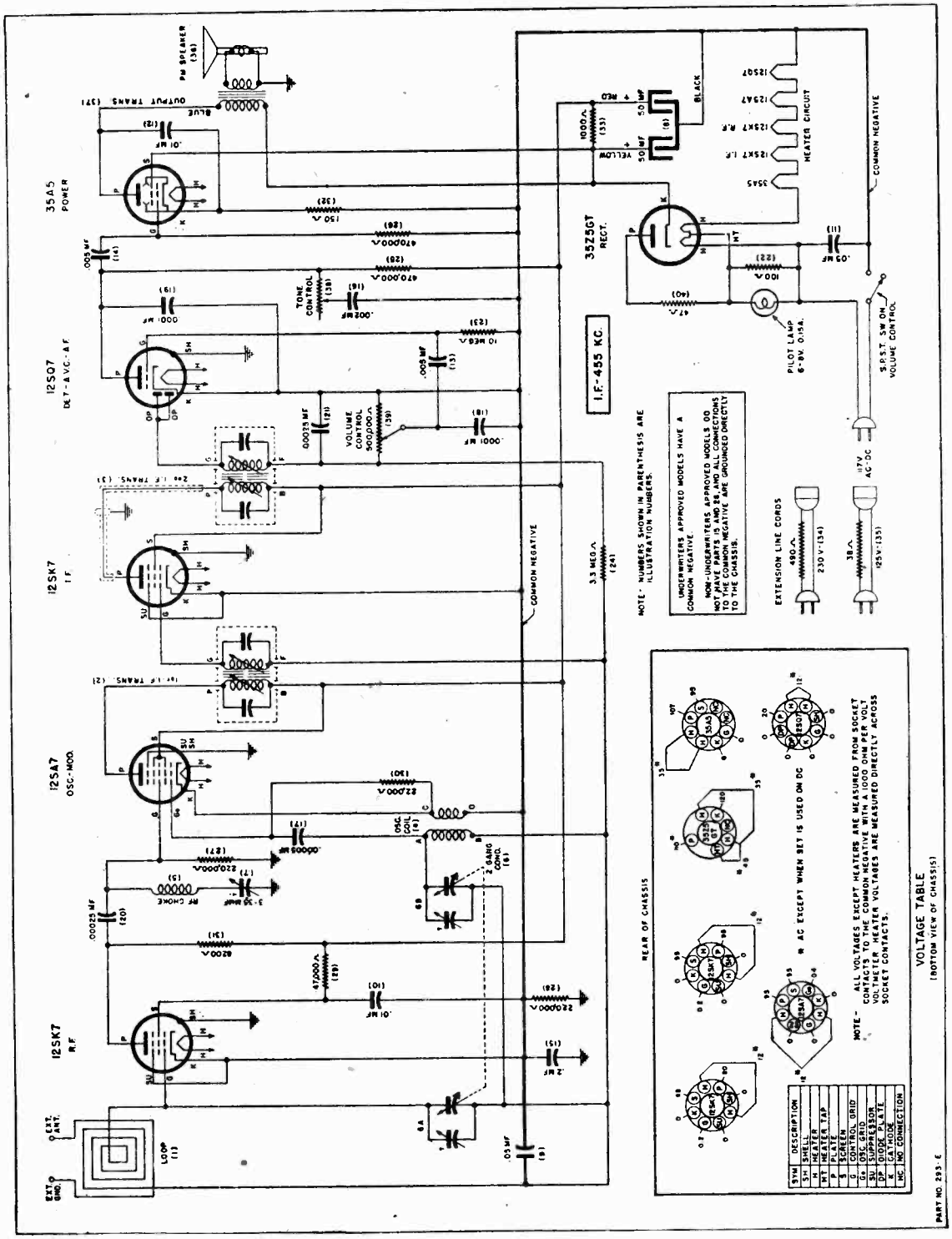
(b) Use an accurately calibrated test oscillator with some type of output measuring device.

Steps	Set receiver dial to:	TEST OSCILLATOR			Refer to parts layout diagram for location of trimmers mentioned below:
		Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator consisting of:	Attach output of test oscillator to:	
1	I.F. Any point where no interfering signal is received	455 K. C.	.02 MFD. condenser	High side to grid terminal of 1A7GT tube DO NOT REMOVE CAP. Low side to receiver black ground lead.	Adjust each of the second I. F. transformer trimmers for maximum output—then adjust each of the first I. F. trimmers for maximum output.
2	Exactly 1730 K. C.	Exactly 1730 K. C.	.00025 MFD. condenser	Receiver blue antenna lead Receiver black ground lead	Adjust 1730 K. C. oscillator trimmer for maximum output.
3	Exactly 1400 K. C.	Exactly 1400 K. C.	.00025 MFD. condenser	Receiver blue antenna lead Receiver black ground lead	While rocking gang condenser adjust 1400 K. C. antenna trimmer for maximum output.





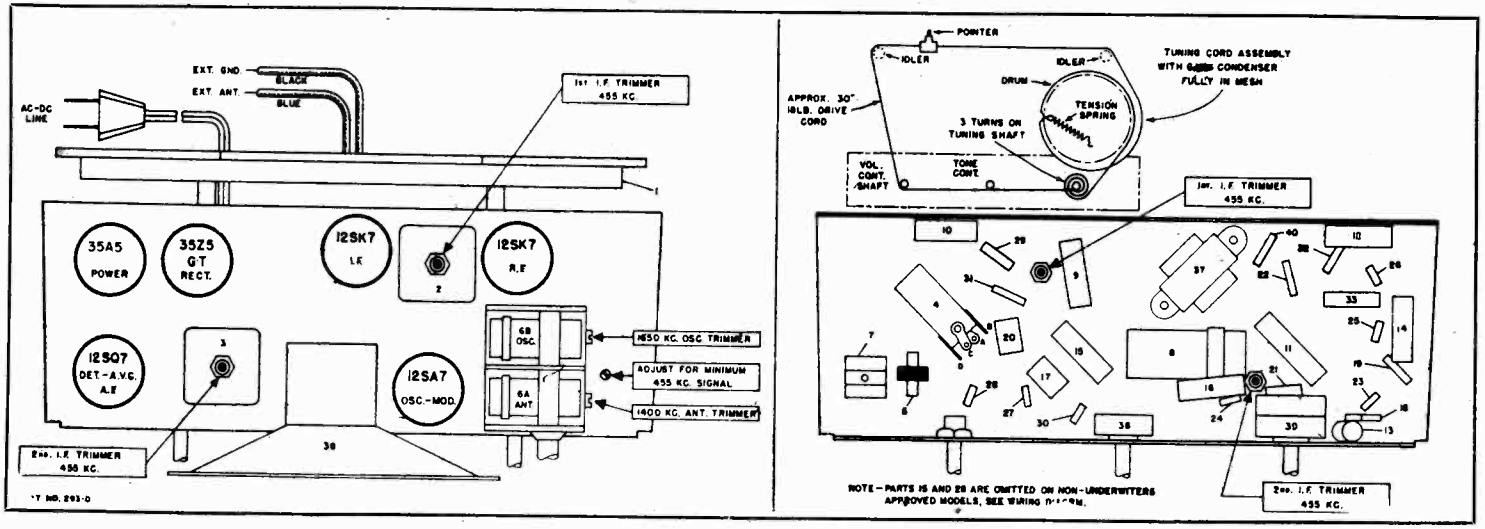
SENTINEL RADIO CORP. MODELS 293W, 293I, 293T, 1U-293W, 1U-293I, 1U-293T



For Alignment procedure read tabulations from left to right, and make the adjustment marked (1) first, (2) next, (3) third.
IMPORTANT: BEFORE ALIGNING, PLACE LOOP ANTENNA IN THE SAME POSITION IT WILL BE IN WHEN THE SET IS IN THE CABINET. BE SURE THAT IT DOES NOT MOVE WHILE ALIGNING.

When adjusting 1650 kilocycle oscillator trimmer, 455 K.C. R.F. trimmer and 1400 kilocycle antenna trimmer, connect test oscillator to loop external antenna and ground connections with a .0002 Mfd. capacitor in series with antenna lead.

Steps	Set receiver dial to:	TEST OSCILLATOR			Refer to parts layout diagram for location of trimmers mentioned below:
		Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator consisting of:	Attach output of test oscillator to	
	Any point where no interfering signal is received	Exactly 455 K. C.	0.2 Mfd. Condenser	High side to grid of 12SA7 tube, Low side to chassis (if non-Underwriter Approved) or Common Negative (if Underwriter Approved).	Adjust each of the 2nd I.F. transformer trimmer adjustment screws for maximum output, then adjust each of the 1st I.F. transformer trimmer adjustment screws for maximum output.
1	Rotate gang condenser to maximum capacity	Exactly 455 K. C.	.0002 Mfd. Condenser	To loop external antenna and ground connections	Adjust R. F. coil trimmer for <u>minimum</u> 455 K. C. signal.
2	Rotate gang condenser to minimum capacity	Exactly 1650 K. C.	.0002 Mfd. Condenser	To loop external antenna and ground connections	Adjust 1650 K. C. oscillator trimmer for maximum output.
3	Approximately 1400 K. C.	Approx. 1400 K. C.	.0002 Mfd. Condenser	To loop external antenna and ground connections	Adjust 1400 K. C. antenna trimmer for maximum output.



SENTINEL RADIO CORP.

MODELS 293W,293I,293T,
1U-293W,1U-293I,1U-293T
MODELS 294N,294I,294T,
1U-294W,1U-294I,1U-294T

MODELS 293W, 293I, 293T 1U-293W, 1U-293I, 1U-293T

PARTS LIST

Illus. No.	Part No.	Part Name	Description	List Price
1	64E3	Antenna	Loop	
2	20E21	Coil	1st I. F. Transformer	
3	20E22	Coil	2nd I. F. Transformer	
4	20E64	Coil	Oscillator	
5	2E19	Coil	R. F. Choke	
6	24E8	Condenser	Tuning, 2 Gang	
7	24E3	Condenser	Trimmer (3-35 MMF Working)	
8	25E6	Condenser	Tubular, Dry Elect. 50-50 Mfd.—150 V.	
9	23E216	Condenser	Tubular, .05 Mfd.—200 V.	
10	23E211	Condenser	Tubular, .01 Mfd.—200 V.	
11	23E416	Condenser	Tubular, .05 Mfd.—400 V.	
12	23E411	Condenser	Tubular, .01 Mfd.—400 V.	
13	23E408	Condenser	Tubular, .005 Mfd.—400 V.	
14	23E408	Condenser	Tubular, .005 Mfd.—400 V.	
15	23E421	Condenser	Tubular, .2 Mfd.—400 V.	
16	23E405	Condenser	Tubular, .002 Mfd. — 400 V.	
17	23E37	Condenser	Mica, .00005 Mfd.	
18	23E39	Condenser	Mica, .0001 Mfd.	
19	23E39	Condenser	Mica, .0001 Mfd.	
20	23E42	Condenser	Mica, .00025 Mfd.	
21	23E42	Condenser	Mica, .00025 Mfd.	
22	27E101-2	Resistor	Carbon, 100 Ohm, 1/2 W.	
23	27E106	Resistor	Carbon, 10 Megohm, 1/3 W.	
24	27E335	Resistor	Carbon, 3.3 Megohm, 1/3 W.	
25	27E474	Resistor	Carbon, 470,000 Ohm, 1/3 W.	
26	27E474	Resistor	Carbon, 470,000 Ohm, 1/3 W.	
27	27E224	Resistor	Carbon, 220,000 Ohm, 1/3 W.	
28	27E224	Resistor	Carbon, 220,000 Ohm, 1/3 W.	
29	27E473	Resistor	Carbon, 47,000 Ohm, 1/3 W.	
30	27E223	Resistor	Carbon, 22,000 Ohm, 1/3 W.	
31	27E822	Resistor	Carbon, 8,200 Ohm, 1/3 W.	
32	27E151	Resistor	Carbon, 150 Ohm, 1/3 W.	
33	27E102-3	Resistor	Carbon, 1,000 Ohm, 1 W.	
34		Resistor Line Cord	230 Volt Extension Line Cord—Used in Models not having Common Ground	
35		Resistor Line Cord	125 Volt Extension Line Cord—Used in Models not having Common Ground	
36	1E1	Speaker	4"x6" Elliptical P.M., less Transformer	
37	22E8	Transformer	Output for Speaker	
38	28E8	Tone Control		
39	28E7	Volume Control	With S. P. S. T. Switch	
40	27E470-2	Resistor	Carbon, 47 Ohm, 1/3 W.	

MISCELLANEOUS PARTS

Part No.	Part Name	Description	List Price
40E1	Bulb	6-8 Volt, 150 Amp. Dial Light Mazda No. 47, Bayonet Base	
7E48	Cabinet Back	For Walnut and Ivory Plastic Cabinets	
7E33	Cabinet Back	For Wood Cabinet	
7E46-1	Cabinet	Walnut Plastic	
7E46-2	Cabinet	Ivory Plastic	
7E3	Cabinet	Wood Table Model	
65E2	Dial Cord Spring	Tension Spring	
4E1	Dial Cord	30" of 18 lb. Drive Cord	
68E1	Dial Shaft	Drive Shaft	
19E3	Dial Shaft Bearing	Drive Shaft Bushing	
12E103F10	Dial Shaft Washer	"C" Retainer Washer for Drive Shaft	
20E65	Dial Back Plate	Backplate Assembly less Calibrated Scale	
36E16	Dial Scale	Calibrated Glass Scale	
35E13	Dial Pointer	Dial Indicator	
37E27-11	Knob	Walnut, for Walnut Plastic Cabinet	
37E27-15	Knob	Ivory, for Ivory Plastic Cabinet	
37E21-7	Knob	For Wood Cabinet	

MODELS 294N, 294I, 294T, 1U-294W, 1U-294I, 1U-294T,

PARTS LIST

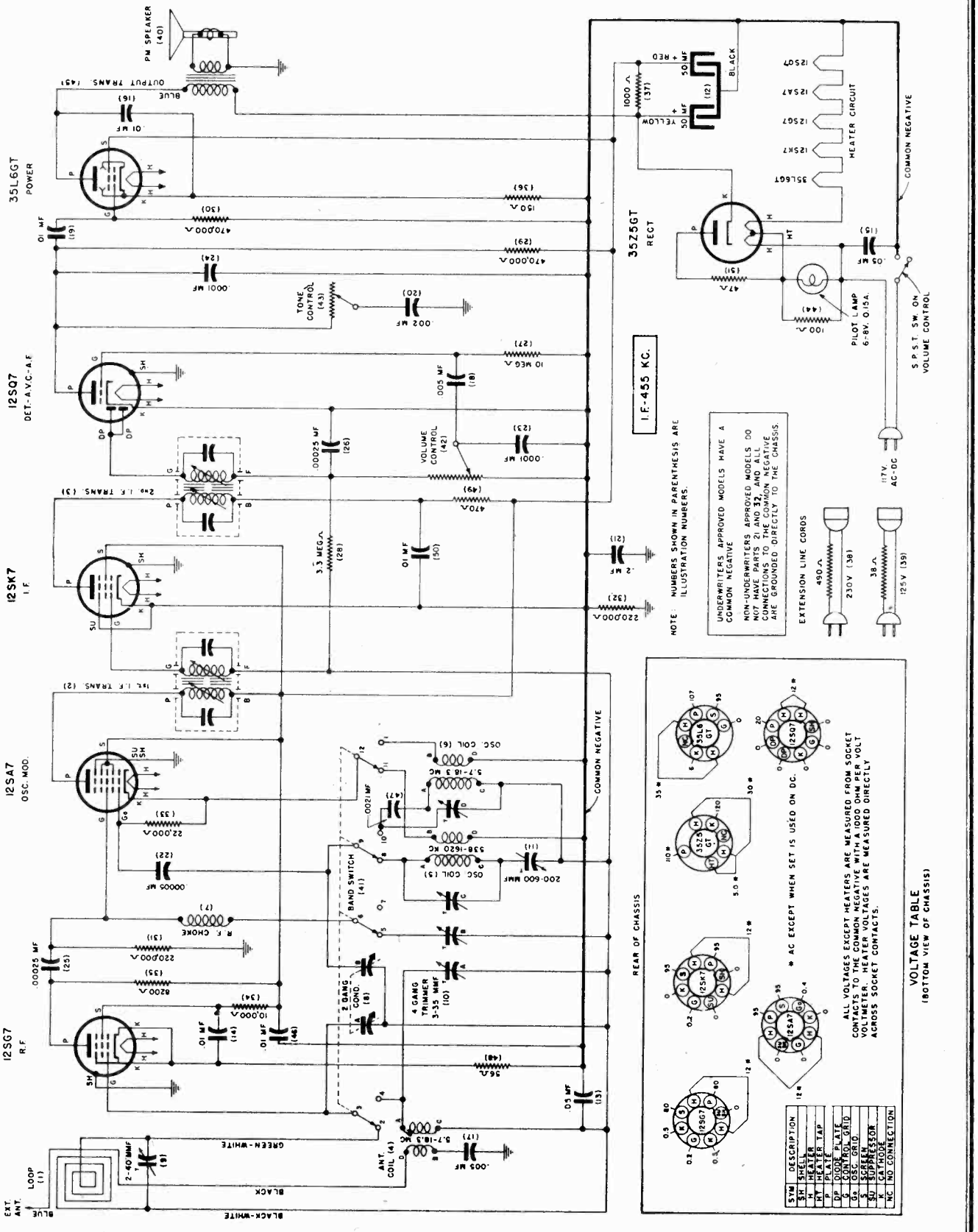
Illus. No.	Part No.	Part Name	Description	List Price
1	64E5	Coil	Antenna Loop	
2	20E21	Coil	1st I. F. Transformer	
3	20E22	Coil	2nd I. F. Transformer	
4	20E72	Coil	Antenna	
5	20E102*	Coil	Oscillator, Broadcast Band	
6	20E103	Coil	Oscillator, Short Wave Band	
7	2E19	Coil	R. F. Choke	
8	24E9	Condenser	Tuning, 2 gang with pulley	
9	24E3	Capacitor	Trimmer, 2-40 MMF (On Loop)	
10	24E15	Capacitor	Trimmer, 4 Gang Strip	
11	24E16	Capacitor	Padder, 200-600 MMF	
12	25E6	Capacitor	50-50 Mfd. 150 Volt Dry Electrolytic	
13	23E216	Capacitor	Tubular, .05 Mfd.—200 Volt	
14	23E211	Capacitor	Tubular, .01 Mfd.—200 Volt	
15	23E416	Capacitor	Tubular, .05 Mfd.—400 Volt	
16	23E411	Capacitor	Tubular, .01 Mfd.—400 Volt	
17	23E408	Capacitor	Tubular, .005 Mfd.—400 Volt	
18	23E208	Capacitor	Tubular, .005 Mfd.—200 Volt	
19	23E411	Capacitor	Tubular, .01 Mfd.—400 Volt	
20	23E205	Capacitor	Tubular, .002 Mfd.—200 Volt	
21	23E421	Capacitor	Tubular, .2 Mfd. 400 Volt (Und. App'd Only)	
22	23E37	Capacitor	Mica, .00005 Mfd.	
23	23E39	Capacitor	Mica, .0001 Mfd.	
24	23E39	Capacitor	Mica, .0001 Mfd.	
25	23E42	Capacitor	Mica, .00025 Mfd.	
26	23E42	Capacitor	Mica, .00025 Mfd.	
27	27E106	Resistor	Carbon, 10 Megohm, 1/3 Watt	
28	27E335	Resistor	Carbon, 3.3 Megohm, 1/3 Watt	
29	27E474	Resistor	Carbon, 470,000 Ohm, 1/3 Watt	
30	27E474	Resistor	Carbon, 470,000 Ohm, 1/3 Watt	
31	27E224	Resistor	Carbon, 220,000 Ohm, 1/3 Watt	
32	27E224	Resistor	Carbon, 22,000 Ohm, 1/3 Watt (Und. App'd Only)	
33	27E223	Resistor	Carbon, 22,000 Ohm, 1/3 Watt	
34	27E103	Resistor	Carbon, 10,000 Ohm, 1/3 Watt	
35	27E822	Resistor	Carbon, 8,200 Ohm, 1/3 Watt	
36	27E151	Resistor	Carbon, 150 Ohm, 1/3 Watt	
37	27E102-3	Resistor	Carbon, 1,000 Ohm, 1 Watt	
38		Resistor	230 Volt Extension Line Cord Used Only in in Models Not Having Common Ground	
39		Resistor	125 Volt Extension Line Cord Used Only in Models Not Having Common Ground	
40	1E1	Speaker	Elliptical Shape 4" x 6"	
41	29E8	Switch	Band	
42	28E7	Resistor	Volume Control with S.P.S.T. Switch	
43	28E8	Resistor	Tone Control	
44	27E101-2	Resistor	Carbon, 100 Ohm, 1/2 Watt	
45	22E8	Transformer	Output, Speaker	
46	23E211	Capacitor	Tubular, .01 Mfd., 200 Volt	
47	23E2000	Capacitor	Mica, .0021 Mfd.	
48	27E560	Resistor	Carbon, 56 Ohm, 1/3 Watt	
49	27E471	Resistor	Carbon, 470 Ohm 1/3 Watt	
50	23E211	Capacitor	Tubular, .01 Mfd. 200 Volt	
51	27E470-2	Resistor	Carbon 47 Ohm, 1/2 Watt	

MISCELLANEOUS PARTS

Part No.	Part Name	Description	List Price
40E1	Bulb	6-8 Volt .150 Amp. Dial light, No. 47	
7E52-1	Cabinet	Walnut Plastic	
7E52-2	Cabinet	Ivory Plastic	
7E60	Cabinet	Wood Table Model	
7E54-1	Cabinet Back	For Walnut and Ivory Plastic Cabinet	
7E61	Cabinet Back	For Wood Table Model	
65E2	Dial Cord Spring	Tension Spring	
4E1	Dial Cord	36" of 18 lb. Drive Cord	
68E1	Dial Shaft	Drive Shaft	
19E3	Dial Shaft Bearing	Bearing for Drive Shaft	
12E103-F10	Dial Shaft Washer	"C" Retainer Washer for Drive Shaft	
20E65	Dial Back Plate	Back Plate Assem. less Calibrated Scale	
36E19	Dial Scale	Calibrated Glass Scale	
32E4	Dial Scale Clip	For Mounting Dial Scale	
35E13	Dial Pointer	Dial Indicator	
9E5	Dial Crystal		
37E27-2	Knob	Marked "ON-OFF-VOLUME" for Walnut Cabt.	
37E27-3	Knob	Marked "TONE" for Walnut Cabt.	
37E27-4	Knob	Marked "TUNING" for Walnut Cabt.	
37E27-5	Knob	Marked "SW-BC" for Walnut Cabt.	
37E27-7	Knob	Marked "OFF-ON-VOLUME" for Ivory Cabt.	
37E27-8	Knob	Marked "TONE" for Ivory Cabt.	
37E27-9	Knob	Marked "TUNING" for Ivory Cabt.	
37E27-10	Knob	Marked "SW-BC" for Ivory Cabt.	
37E21-10	Knob	Marked "OFF-ON-VOLUME" for Wood Table Cabt.	
37E21-11	Knob	Marked "TONE" for Wood Table Cabt.	
37E21-12	Knob	Marked "TUNING" for Wood Table Cabt.	
37E21-13	Knob	Marked "SW-BC" for Wood Table Cabt.	

MODELS 294N,294I,294T,
1U-294W,1U-294I,1U-294T

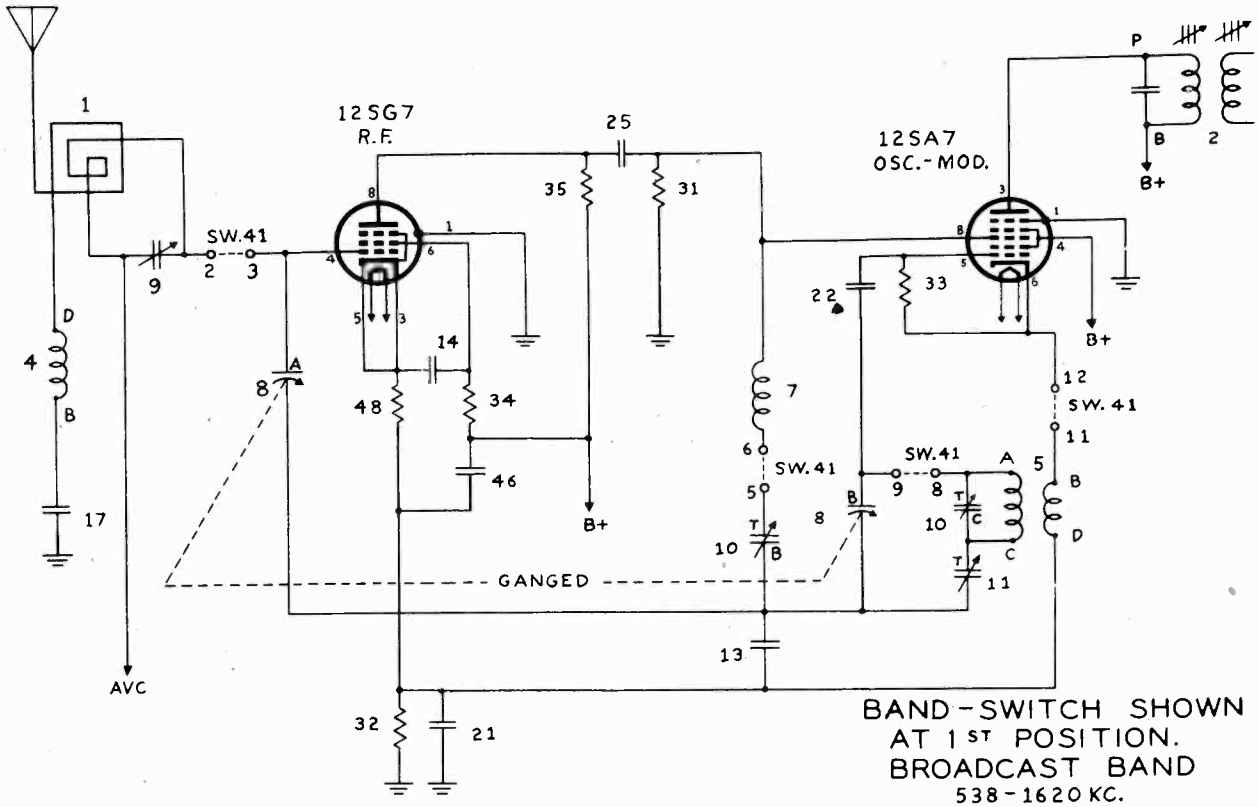
SENTINEL RADIO CORP.



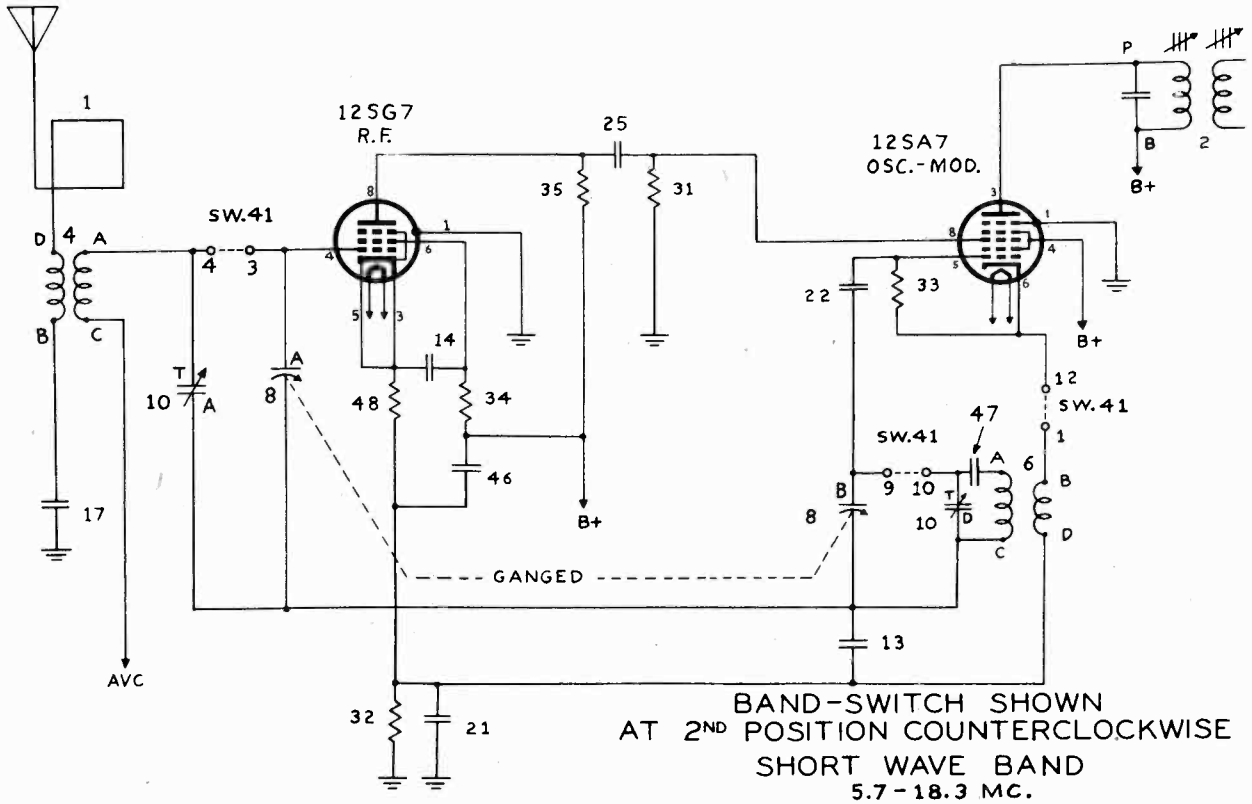
For Parts list, see P.15-13

SENTINEL RADIO CORP.

MODELS 294N, 294I, 294T,
1U-294W, 1U-294I, 1U-294T



BAND-SWITCH SHOWN
AT 1ST POSITION.
BROADCAST BAND
538-1620 KC.



BAND-SWITCH SHOWN
AT 2ND POSITION COUNTERCLOCKWISE
SHORT WAVE BAND
5.7-18.3 MC.

Be sure to follow procedure carefully and in the order given—otherwise the receiver will be insensitive and the dial calibration incorrect. For alignment procedure read tabulations from left to right. Make the adjustment marked (1) first, (2) next, (3) third, etc.

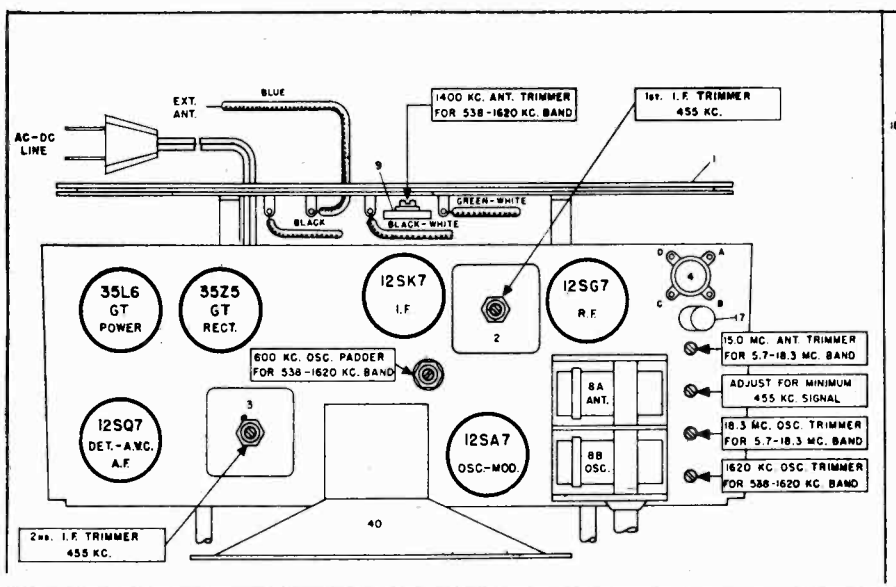
Before starting alignment:

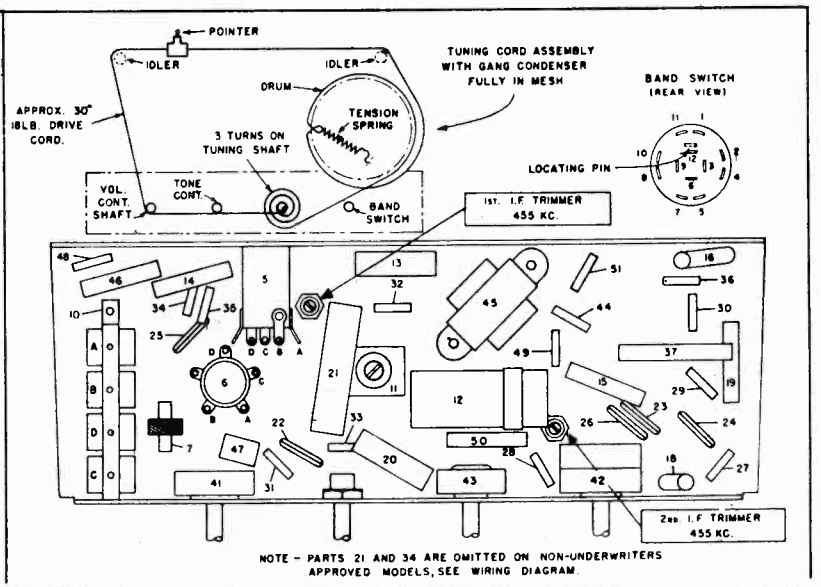
(a) Check tuning dial adjustment by tuning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move to correct position.

(b) Use an accurately calibrated test oscillator with some type of output measuring device.

(c) Place loop antenna in the same position it will be in when set is in the cabinet.

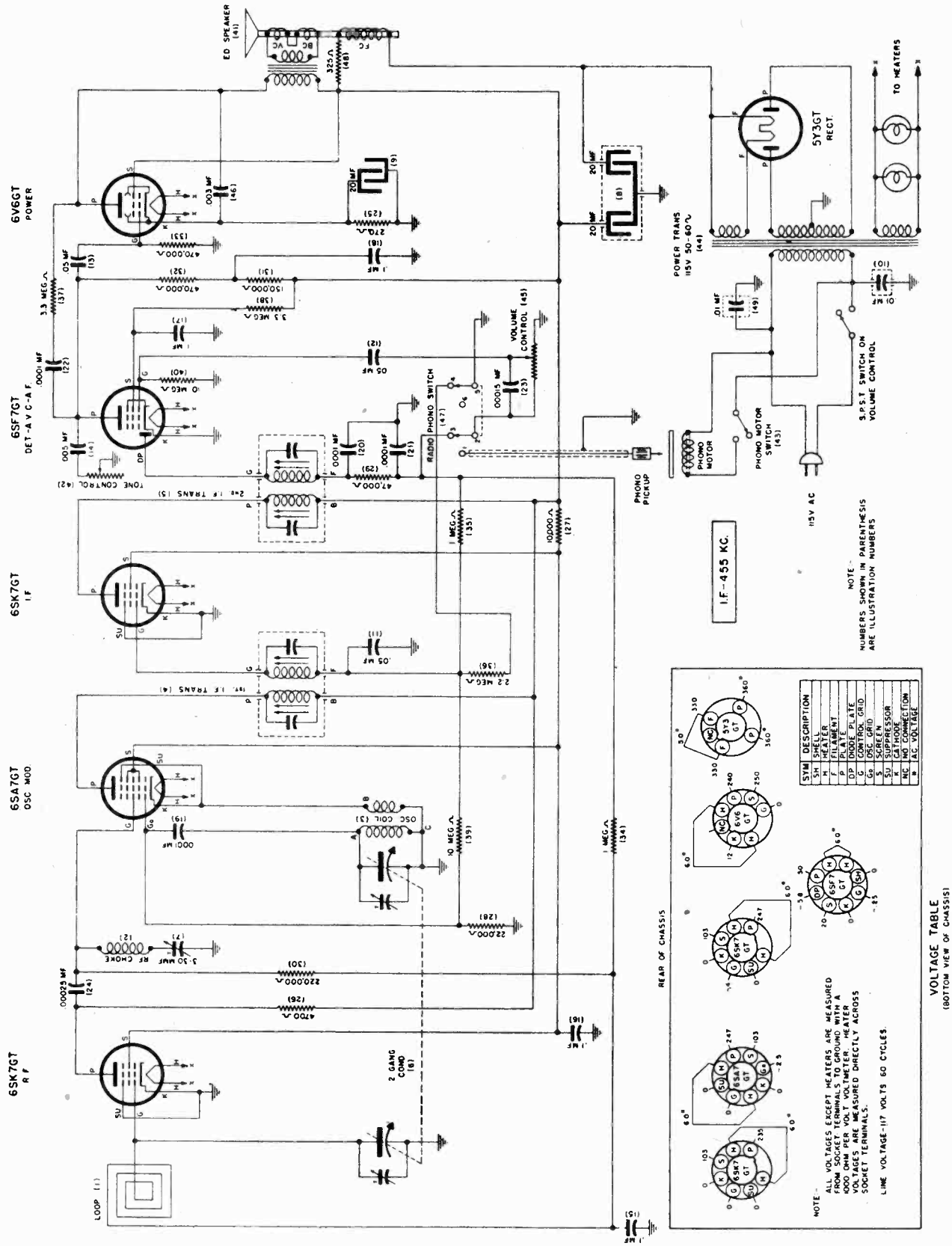
Steps	Place band switch for operation on:	Set receiver dial to:	TEST OSCILLATOR: Adjust test oscillator frequency to:	TEST OSCILLATOR: Use dummy antenna in series with output of test oscillator consisting of	TEST OSCILLATOR: Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
1	I.F. alignment use any band position.	Any point where no interfering signal is received	Exactly 455 K.C.	0.2 Mfd. condenser	High side to rear stator plates of tuning condenser. Low side to frame of condenser through .01 Mfd. condenser.	Adjust each of the second I.F. transformer trimmers for maximum output, then adjust each of the first I.F. transformer trimmers for maximum output.
2	1620 to 538 K.C. Band	Rotate gang condenser to Maximum Capacity	Exactly 455 K.C.	.00025 Condenser	High side to BLUE Antenna Lead. Low side to chassis through a .01 mfd. condenser.	Adjust R.F. coil trimmer for minimum 455 K.C. signal.
		Exactly 1620 K.C.	Exactly 1620 K.C.			Adjust 1620 K.C. oscillator trimmer for maximum output.
		Approx. 1400 K.C.	Approx. 1400 K.C.			While rocking gang condenser adjust 1400 K.C. loop trimmer for maximum output.
		Approx. 600 K.C.	Approx. 600 K.C.			While rocking gang condenser adjust 600 K.C. oscillator padder for maximum output.
3	5.7 to 18.3 M.C. Band	Exactly 18.3 M.C.	Exactly 18.3 M.C.	400 Ohm carbon resistor		Adjust 18.3 M.C. oscillator trimmer for maximum output.
		Approx. 15 M.C.	Approx. 15 M.C.	400 Ohm carbon resistor		While rocking gang condenser adjust 15 M.C. antenna trimmer for maximum output.





NOTE – PARTS 21 AND 34 ARE OMITTED ON NON-UNDERWRITERS APPROVED MODELS, SEE WIRING DIAGRAM.

SENTINEL RADIO CORP.

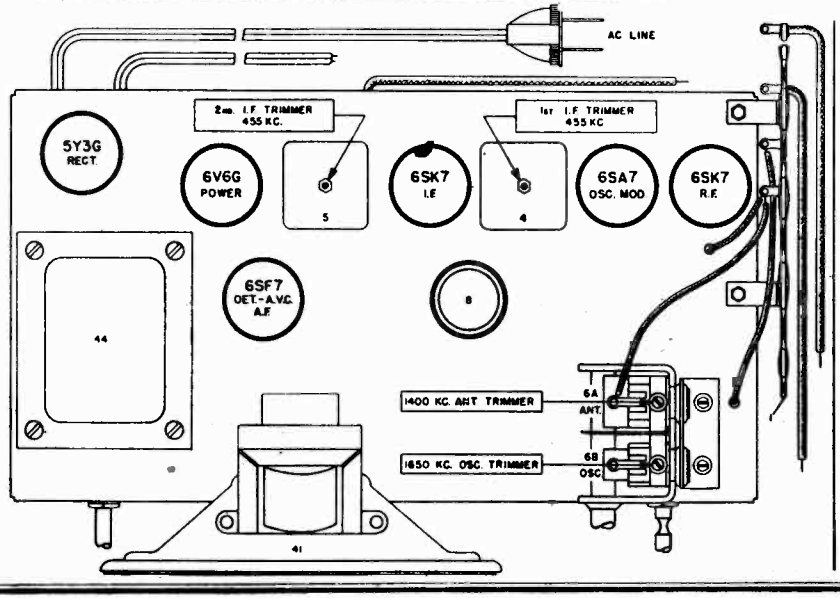


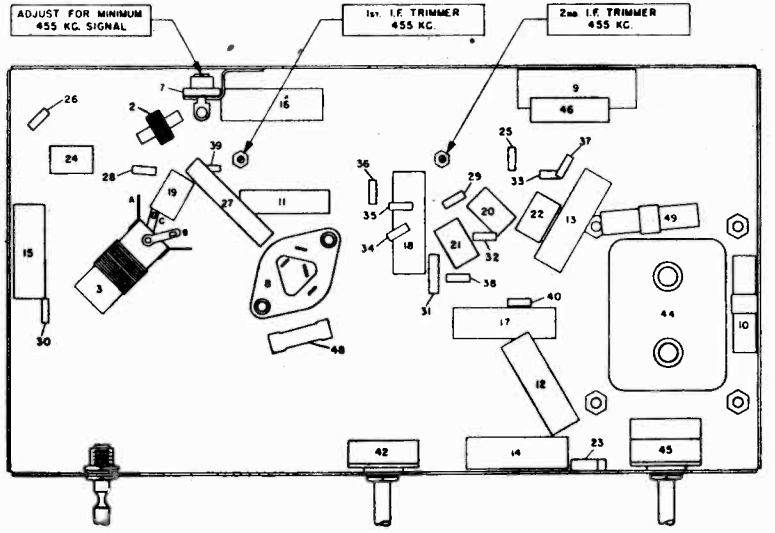
ALIGNMENT PROCEDURE

For Alignment procedure read tabulations from left to right, and make the adjustment marked (1) first, (2) next, (3) third.
IMPORTANT: BEFORE ALIGNING, HAVE LOOP ANTENNA IN THE SAME POSITION IT WILL BE IN WHEN THE SET IS IN THE CABINET. BE SURE THAT IT DOES NOT MOVE WHILE ALIGNING.

When adjusting 1650 kilocycle oscillator trimmer, 455 K.C. R.F. trimmer and 1400 kilocycle antenna trimmer, connect test oscillator to loop external antenna and ground connections with a .0002 Mfd. capacitor in series with antenna lead.

Steps	Set receiver dial to:	TEST OSCILLATOR			Refer to parts layout diagram for location of trimmers mentioned below:
		Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator consisting of:	Attach output of test oscillator to	
	Any point where no interfering signal is received	Exactly 455 K. C.	0.2 Mfd. Condenser	High side to grid of 6SA7 Tube. Low side to chassis.	Adjust each of the 2nd I.F. transformer trimmer adjustment screws for maximum output, then adjust each of the 1st I.F. transformer trimmer adjustment screws for maximum output.
1	Rotate gang condenser to maximum capacity	Exactly 455 K. C.	.0002 Mfd. Condenser	To loop external antenna and ground connections	Adjust R.F. coil trimmer for **minimum** 455 K. C. signal.
2	Rotate gang condenser to minimum capacity	Exactly 1650 K. C.	.0002 Mfd. Condenser	To loop external antenna and ground connections	Adjust 1650 K. C. oscillator trimmer for maximum output.
3	Approximately 1400 K. C.	Approx. 1400 K. C.	.0002 Mfd. Condenser	To loop external antenna and ground connections	Adjust 1400 K. C. antenna trimmer for maximum output.





PARTS LIST

Illus. No.	Part No.	Part Name	Description
1	20E51	Antenna	Loop
2	2E19	Coil	R. F. Choke
3	20E38	Coil	Oscillator
4	20E41	Coil	1st I. F. Transformer
5	20E42	Coil	2nd I F. Transformer
6	24E6	Condenser	2 Gang Tuning
7	24E30	Condenser	Trimmer 3-30 MMF
8	25E2	Condenser	Dry Electrolytic 20-20 Mfd. 450 V.
9	25E3	Condenser	Dry Electrolytic 20 Mfd. 25 V.
10	23E250	Condenser	.01 Mfd. 220 V. In Metal Can
11	23E216	Condenser	Tubular .05 Mfd. 200 V.
12	23E416	Condenser	Tubular .05 Mfd. 400 V.
13	23E416	Condenser	Tubular .05 Mfd. 400 V.
14	23E408	Condenser	Tubular .005 Mfd. 400 V.
15	23E218	Condenser	Tubular .1 Mfd. 200 V.
16	23E418	Condenser	Tubular .1 Mfd. 400 V.
17	23E418	Condenser	Tubular .1 Mfd. 400 V.
18	23E418	Condenser	Tubular .1 Mfd. 400 V.
19	23E39	Condenser	Mica .0001 Mfd.
20	23E39	Condenser	Mica .0001 Mfd.
21	23E39	Condenser	Mica .0001 Mfd.
22	23E39	Condenser	Mica .0001 Mfd.
23	23E40	Condenser	Mica .00015 Mfd.
24	23E42	Condenser	Mica .00025 Mfd.

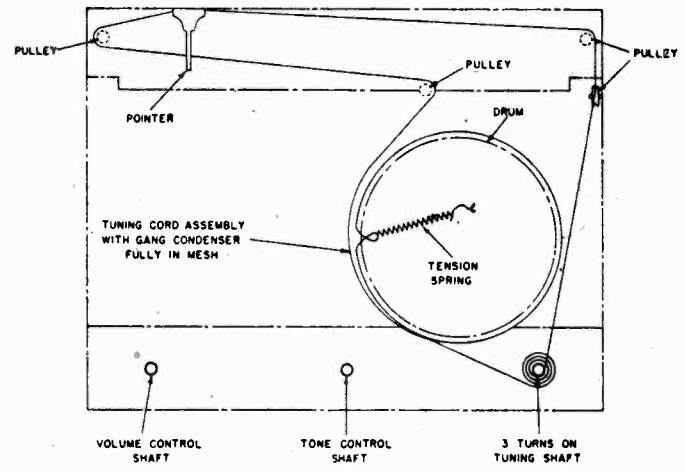
Illus. No.	Part No.	Part Name	Description
25	27E271-2	Resistor	Carbon 270 Ohm, 1/2 W.
26	27E472	Resistor	Carbon 4700 Ohm, 1/3 W.
27	27E103-3	Resistor	Carbon, 10.000 Ohm, 1 W.
28	27E223	Resistor	Carbon, 22.000 Ohm, 1/3 W.
29	27E473	Resistor	Carbon, 47.000 Ohm, 1/3 W.
30	27E224	Resistor	Carbon, 220.000 Ohm, 1/3 W.
31	27E154	Resistor	Carbon, 150.000 Ohm, 1/3 W.
32	27E474	Resistor	Carbon, 470.000 Ohm, 1/3 W.
33	27E474	Resistor	Carbon, 470.000 Ohm, 1/3 W.
34	27E105	Resistor	Carbon, 1 Megohm, 1/3 W.
35	27E105	Resistor	Carbon, 1 Megohm, 1/3 W.
36	27E225	Resistor	Carbon, 2.2 Megohm, 1/3 W.
37	27E335	Resistor	Carbon, 3.3 Megohm, 1/3 W.
38	27E335	Resistor	Carbon, 3.3 Megohm, 1/3 W.
39	27E106	Resistor	Carbon, 10 Megohm, 1/3 W.
40	27E106	Resistor	Carbon, 10 Megohm, 1/3 W.
41	1E10	Speaker	6" Electro Dynamic
42	28E18	Tone Control	500,000 Ohm
44	22E5	Transformer	Power 115 Volt, 50-60 Cycles
45	28E4	Volume Control	500,000 Ohm with S.P.S.T. Switch
46	23E606	Condenser	Tubular, .003 Mfd. 600 Volt
47	20E203	Switch Assembly	D.P.D.T. (Radio-Phono)
48	27E1004	Resistor	Wire Wound 325 Ohm 5 Watt

MISCELLANEOUS PARTS

Part No.	Part Name	Description
7E39	Cabinet	Complete Cabinet and Lid
7E103	Cabinet Back	Back for Cabinet
7E104	Cabinet Bottom	Bottom for Cabinet
36E12	Dial Scale	Calibrated Glass Scale
4E1	Dial Cord	18 Lb. Drive Cord
35E8-2	Dial Pointer	Dial Indicator

Part No.	Part Name	Description
65E2	Dial Spring	Tension Spring for Dial Cord
68E3	Dial Shaft	Drive Shaft Assembly
87E25-5	Knob	Walnut
40E2	Pilot Lamp	6-8 Volt, .250 Amp. Type No. 47
17E5	Plug	2 Prong for Motor
17E7	Plug	4 Prong for Phono

MODEL NO. 292-K
DIAL CORD AND POINTER ARRANGEMENT



PART NO. 292-K

VOLTAGE RATING

THIS RADIO IS DESIGNED FOR USE ON 110-120 VOLT 60 CYCLE ALTERNATING CURRENT (AC).

OUTSIDE AERIAL

If the radio is used in shielded areas or located a great distance from broadcast stations, the volume of some or all stations may not be ample, in which case it would be necessary to ATTACH a 25-50 ft. OUTDOOR AERIAL TO THE BLUE LEAD COMING OUT OF THE REAR OF THE CHASSIS.

GROUND

When a regular aerial is used, best results will be obtained with a ground attached to the black lead coming out of the rear of the chassis.

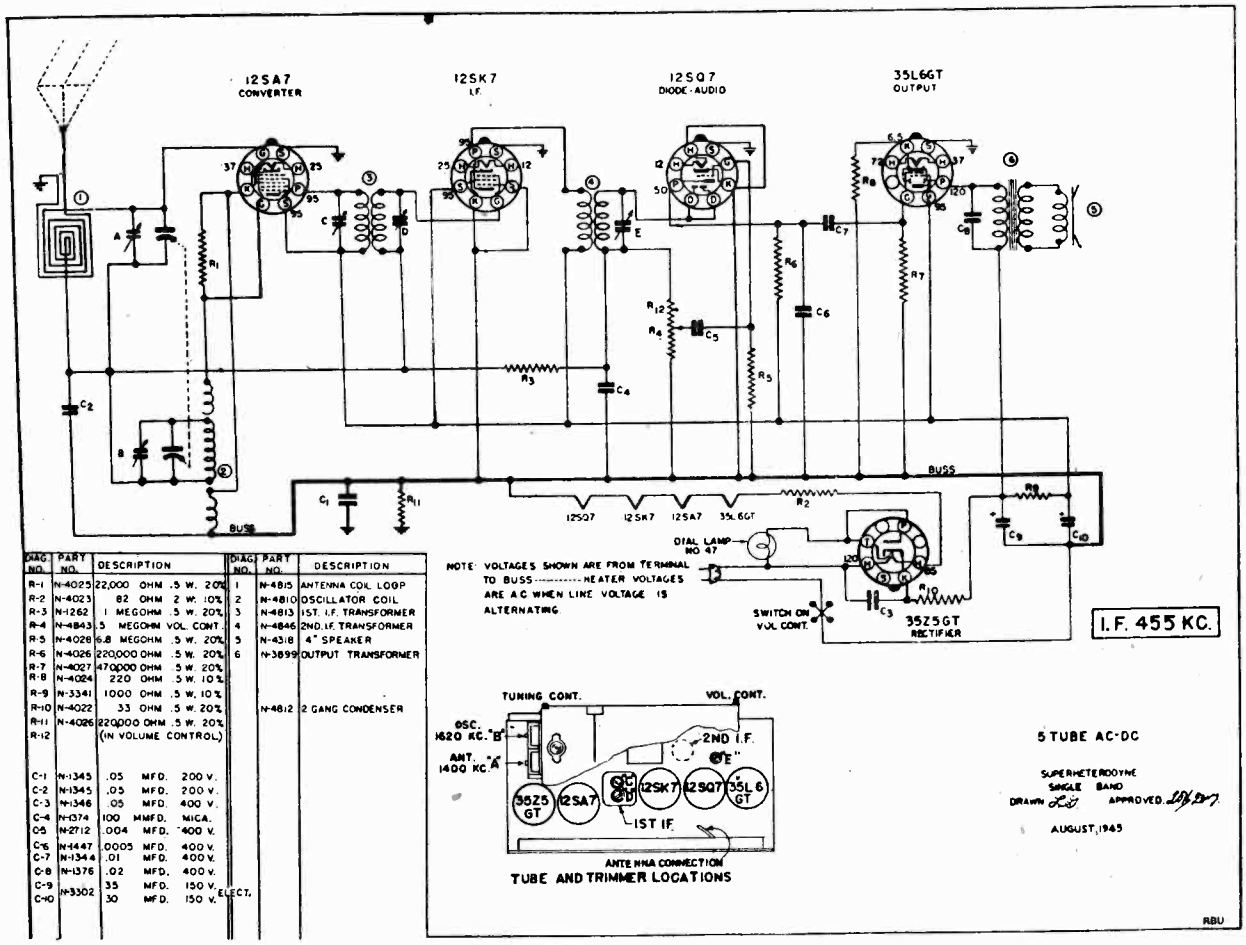
FUNCTION OF CONTROLS ON RADIO

THE LEFT HAND KNOB controls the volume control and Off-On switch.

THE CENTER KNOB is the tone control.

THE RIGHT HAND KNOB is the station selector.

SONORA RADIO & TELEV. CORP.



DIAG. NO.	PART NO.	DESCRIPTION
R-1	N-4025	22,000 OHM .5 W. 20%
R-2	N-4023	82 OHM 2 W. 10%
R-3	N-1262	1 MEGOHM .5 W. 20%
R-4	N-4843	.5 MEGOHM VOL. CONT.
R-5	N-4028	6.8 MEGOHM .5 W. 20%
R-6	N-4026	220,000 OHM .5 W. 20%
R-7	N-4027	470,000 OHM .5 W. 20%
R-8	N-4024	220 OHM .5 W. 10%
R-9	N-3341	1000 OHM .5 W. 10%
R-10	N-4022	33 OHM .5 W. 20%
R-11	N-4026	220,000 OHM .5 W. 20%
R-12		(IN VOLUME CONTROL)
C-1	N-1345	.05 MFD. 200 V.
C-2	N-1345	.05 MFD. 200 V.
C-3	N-1346	.05 MFD. 400 V.
C-4	N-1374	100 MMFD. MICA.
C-5	N-2712	.004 MFD. 400 V.
C-6	N-1447	.0005 MFD. 400 V.
C-7	N-1344	.01 MFD. 400 V.
C-8	N-1376	.02 MFD. 400 V.
C-9	N-3302	35 MFD. 150 V. ELECT.
C-10		30 MFD. 150 V.

DIAG. NO.	PART NO.	DESCRIPTION
1	N-4815	ANTENNA COIL LOOP
2	N-4810	OSCILLATOR COIL
3	N-4813	1ST I.F. TRANSFORMER
4	N-4846	2ND I.F. TRANSFORMER
5	N-4318	4" SPEAKER
6	N-3899	OUTPUT TRANSFORMER
	N-4812	2 GANG CONDENSER

ALIGNMENT PROCEDURE

GENERAL DATA. The alignment of this receiver requires the use of a test oscillator that will cover the frequencies of 455, 600, 1400 and 1620 KC and an output meter to be connected across the primary or secondary of the output transformer. If possible, all alignments should be made with the volume control on maximum and the test oscillator output as low as possible to prevent the AVC from operating and giving false readings.

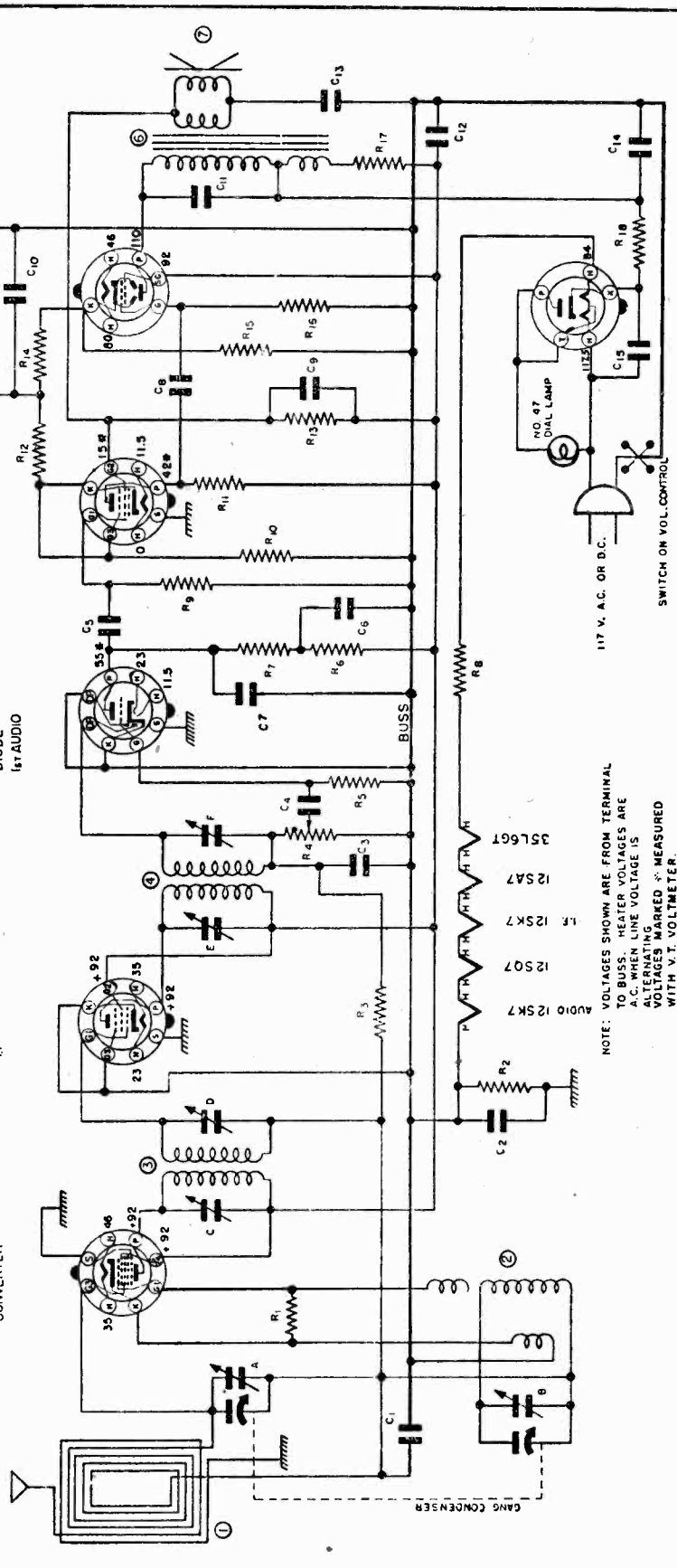
CORRECT ALIGNMENT PROCEDURE. The intermediate frequency (I.F.) stages should be aligned properly, as the first step. After the I.F. transformers have been properly adjusted and peaked, the broadcast band should be adjusted.

I. F. ALIGNMENT. Remove the chassis and loop antenna from the cabinet and set them up on the bench so that they occupy exactly the same respective position on the bench as they did in the cabinet. Care should be taken to have no iron or other metal near the loop. Do not make this set-up on a metal bench. With the gang condenser set at minimum, adjust the test oscillator to 455 KC and connect the output to the grid of the first detector tube (12SA7) through a .05 or .1 mfd. condenser. The ground on the test oscillator should be connected to the ground buss, indicated on the circuit diagram. Align all three I.F. trimmers to peak or maximum reading on the output meter.

BROADCAST BAND ALIGNMENT. Connect the test oscillator to the antenna of the set through a 100 mmfd. (.0001) condenser. With the gang condenser set at minimum capacity, set the test oscillator at 1620 KC, and adjust the oscillator (or 1620 KC trimmer) on the gang condenser. Next—set the test oscillator at 1400 KC, and tune in the signal on the gang condenser. Adjust the antenna trimmer (or 1400 KC trimmer) for maximum signal. Next set the test oscillator at 600 KC, and tune in signal on condenser to check alignment of coils.

MODEL RCU
MODEL RDU

SONORA RADIO & TELEV. CORP.



NOTE: VOLTAGES SHOWN ARE FROM TERMINAL TO BUSS. HEATER VOLTAGES ARE A.C. WHEN LINE VOLTAGE IS ALTERNATING VOLTAGES MARKED * MEASURED WITH V.T. VOLTMETER.

MODEL RDU

DIAG. NO.	PART NO.	DESCRIPTION	DIAG. NO.	PART NO.	DESCRIPTION
C1	N-1345	.05 MFD. 200 V. 20%	R8	N-4068	33 OHM 1.0 W. 20%
C2	N-4957	.09 MFD. 200 V. -10%+10%	R9	N-4061	4.7 MEGOHM .5 W. 20%
C3	N-1374	100 MMFD. MICA 500 V. 20%	R10	N-4896	2200 OHM .5 W. 10%
C4	N-4894	.005 MFD. 600 V. -15%+40%	R11	N-4899	220,000 OHM .5 W. 10%
C5	N-2063	.003 MFD. 600 V. -15%+10%	R12	N-5029	22,000 OHM .5 W. 5%
C6	N-1367	6. MFD. 150 W.V. ELECTROLYTIC	R13	N-4470	1.2 MEGOHM .5 W. 10%
C7	N-4890	.0005 MFD. 600 V. -25%+60%	R14	N-4897	8,200 OHM .5 W. 10%
C8	N-1344	.01 MFD. 400 V. 20%	R15	N-4067	180 OHM .5 W. 10%
C9	N-1376	.02 MFD. 400 V. 20%	R16	N-4027	470,000 OHM .5 W. 20%
C10	N-1351	.1 MFD. 200 V. -10%+20%	R17	N-4900	1200 OHM 1. W. 10%
C11	N-1376	.02 MFD. 400 V. 20%	R18	N-4068	33 OHM 1. W. 20%
C12	N-3658	40 MFD. 150 W.V. ELECTROLYTIC			
C13	N-1345	.05 MFD. 200 V. 20%	1	N-4877	LOOP COIL
C14	N-3658	40 MFD. 150 W.V. ELECTROLYTIC	2	N-4880	OSCILLATOR COIL
C15	N-1346	.05 MFD. 400 V. 20%	3	N-4872	1ST. I.F. COIL
			4	N-4873	2ND I.F. COIL
R1	N-4025	22,000 OHM .5 W. 20%	5	N-4634	TONE SWITCH
R2	N-4026	220,000 OHM .5 W. 20	6	N-4875	OUTPUT TRANSFORMER
R3	N-4062	3.3 MEGOHM .5 W 20%	7	N-4869	5 PM DYNAMIC SPEAKER
R4	N-4889	0.5 MEGOHM VOLUME CONTROL		N-4907	2 GANG CONDENSER
R5	N-4061	4.7 MEGOHM .5 W 20%		N-4976	2 GANG CONDENSER
R6	N-1778	100,000 OHM .5 W 20%			
R7	N-4895	10,000 OHM .5 W. 10%			

MODEL RCU

DIAG. NO.	PART NO.	DESCRIPTION	DIAG. NO.	PART NO.	DESCRIPTION
C1	N-1345	.05 MFD. 200 V. 20%	R8	N-4068	33 OHM 1.0 W. 20%
C2	N-4957	.09 MFD. 200 V. -10%+10%	R9	N-4061	4.7 MEGOHM .5 W. 20%
C3	N-1374	100 MMFD. MICA 500 V. 20%	R10	N-4896	2200 OHM .5 W. 10%
C4	N-4894	.005 MFD. 600 V. -15%+40%	R11	N-4899	220,000 OHM .5 W. 10%
C5	N-2063	.003 MFD. 600 V. -15%+10%	R12	N-5029	22,000 OHM .5 W. 5%
C6	N-1367	6. MFD. 150 W.V. ELECTROLYTIC	R13	N-4470	1.2 MEGOHM .5 W. 10%
C7	N-4890	.0005 MFD. 600 V. -25%+60%	R14	N-4897	8,200 OHM .5 W. 10%
C8	N-1903	.01 MFD. 400 V. 20%	R15	N-4067	180 OHM .5 W. 10%
C9	N-4927	.015 MFD. 400 V. 20%	R16	N-4027	470,000 OHM .5 W. 20%
C10	N-1351	.1 MFD. 200 V. -10%+20%	R17	N-4900	1200 OHM 1. W. 10%
C11	N-1376	.02 MFD. 400 V. 20%	R18	N-4068	33 OHM 1. W. 20%
C12	N-3658	40 MFD. 150 W.V. ELECTROLYTIC			
C13	N-1345	.05 MFD. 200 V. 20%	1	N-4877	LOOP COIL
C14	N-3658	40 MFD. 150 W.V. ELECTROLYTIC	2	N-4880	OSCILLATOR COIL
C15	N-1346	.05 MFD. 400 V. 20%	3	N-4872	1ST. I.F. COIL
			4	N-4873	2ND I.F. COIL
R1	N-4025	22,000 OHM .5 W. 20%	5	N-4634	TONE SWITCH
R2	N-4026	220,000 OHM .5 W. 20	6	N-4875	OUTPUT TRANSFORMER
R3	N-4062	3.3 MEGOHM .5 W 20%	7	N-4869	5 PM DYNAMIC SPEAKER
R4	N-4889	0.5 MEGOHM VOLUME CONTROL			
R5	N-4061	4.7 MEGOHM .5 W 20%		N-4976	2 GANG CONDENSER
R6	N-1778	100,000 OHM .5 W 20%			
R7	N-4895	10,000 OHM .5 W. 10%			

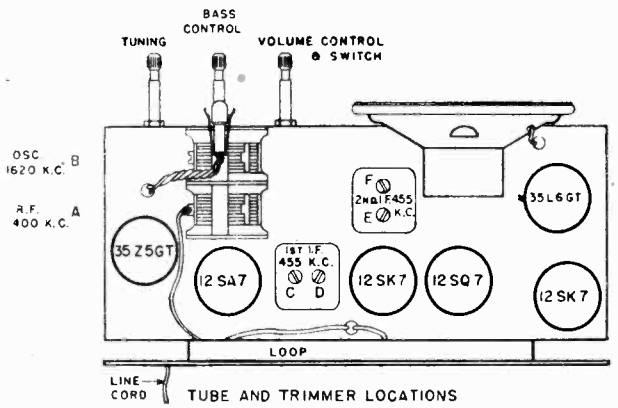
I.F.—455 K.C.

6 TUBE A.C.—D.C.
SUPERHETERODYNE
SINGLE BAND

DRAWN A.B. APPROVED

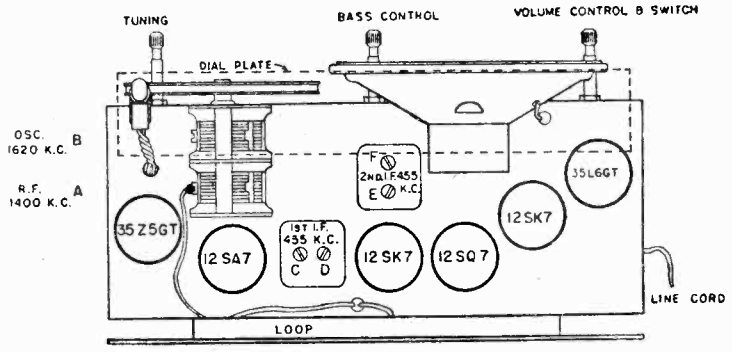
DATE-9-27-1945

MODEL RCU



TUBE AND TRIMMER LOCATIONS

MODEL RDU



TUBE AND TRIMMER LOCATIONS

MODELS RCU AND RDU

Lack of sensitivity and poor tone quality may be due to any one or a combination of causes such as weak or defective tubes or speaker, open or grounded bias resistor, bypass condenser, etc. Never attempt to realign set until all other possible sources of trouble have been first thoroughly investigated and definitely proved not to be the cause.

NOTE: IT IS ABSOLUTELY NECESSARY THAT AN ACCURATELY CALIBRATED TEST OSCILLATOR WITH SOME TYPE OF OUTPUT MEASURING DEVICE BE USED WHEN ALIGNING THE RECEIVER AND THAT THE PROCEDURE BE CAREFULLY FOLLOWED. OTHERWISE THE RECEIVER WILL BE INSENSITIVE AND THE DIAL CALIBRATION WILL BE INCORRECT. THE TRIMMERS WILL BE REFERRED TO BY THEIR FUNCTION AS INDICATED ON THE PARTS DIAGRAM.

ALIGNMENT PROCEDURE

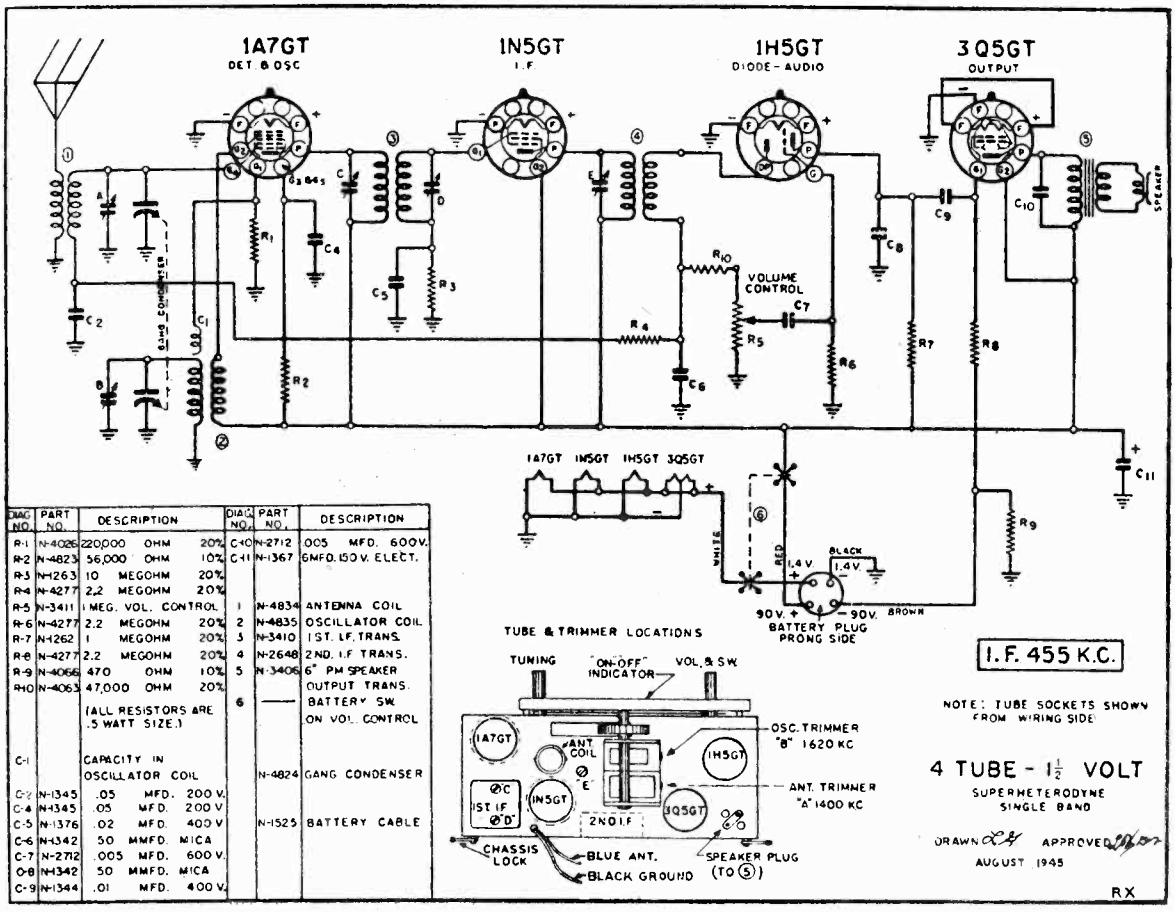
GENERAL DATA. The alignment of this receiver requires the use of a test oscillator that will cover the frequencies of 455, 600, 1400 and 1620 KC and an output meter to be connected across the primary or secondary of the output transformer. If possible, all alignments should be made with the volume control on maximum and the test oscillator output as low as possible to prevent the AVC from operating and giving false readings.

CORRECT ALIGNMENT PROCEDURE. The intermediate frequency (I.F.) stages should be aligned properly as the first step. After the I.F. transformers have been properly adjusted and peaked, the broadcast band should be adjusted.

I. F. ALIGNMENT. Remove the chassis and loop antenna from the cabinet and set them up on the bench so that they occupy exactly the same respective positions on the bench as they did in the cabinet. Care should be taken to have no iron or other meal near the loop. Do not make this set-up on a metal bench. With the gang condenser set at minimum, adjust the test oscillator to 455 KC and connect the output to the grid of the first detector tube (12SA7) through a .05 or .1 mfd. condenser. The ground on the test oscillator should be connected to the ground buss, indicated on the circuit diagram. Align all four I.F. trimmers to peak or maximum reading on the output meter.

BROADCAST BAND ALIGNMENT. Connect the test oscillator to the antenna of the set through a 100 mmfd. (.0001) condenser. With the gang condenser set at minimum capacity, set the test oscillator at 1620 KC, and adjust the oscillator (or 1620 KC trimmer) on gang condenser. Next—set the test oscillator at 1400 KC, and tune in the signal on the gang condenser. Adjust the antenna trimmer (or 1400 KC trimmer) for maximum signal. Next set the test oscillator at 600 KC, and tune in signal on condenser to check alignment of coils.

SONORA RADIO & TELEV. CORP.



DIAG. NO.	PART NO.	DESCRIPTION	DIAG. NO.	PART NO.	DESCRIPTION
R-1	N-4026	220,000 OHM 20%	C-10	N-2712	.005 MFD. 600V.
R-2	N-4823	56,000 OHM 10%	C-11	N-1367	6MFD. 150 V. ELECT.
R-3	N-1263	10 MEGOHM 20%			
R-4	N-4277	2.2 MEGOHM 20%			
R-5	N-3411	1 MEG. VOL. CONTROL	1	N-4834	ANTENNA COIL
R-6	N-4277	2.2 MEGOHM 20%	2	N-4835	OSCILLATOR COIL
R-7	N-1262	1 MEGOHM 20%	3	N-3410	1ST. I.F. TRANS.
R-8	N-4277	2.2 MEGOHM 20%	4	N-2648	2ND. I.F. TRANS.
R-9	N-4066	470 OHM 10%	5	N-3406	6" P.M. SPEAKER
R-10	N-4063	47,000 OHM 20%			OUTPUT TRANS.
		(ALL RESISTORS ARE .5 WATT SIZE.)	6	——	BATTERY SW. ON VOL. CONTROL
C-1		CAPACITY IN OSCILLATOR COIL		N-4824	GANG CONDENSER
C-2	N-1345	.05 MFD. 200 V.			
C-4	N-1345	.05 MFD. 200 V.			
C-5	N-1376	.02 MFD. 400 V.		N-1525	BATTERY CABLE
C-6	N-1342	50 MMFD. MICA			
C-7	N-2712	.005 MFD. 600 V.			
C-8	N-1342	50 MMFD. MICA			
C-9	N-1344	.01 MFD. 400 V.			

ALIGNMENT PROCEDURE

GENERAL DATA. The alignment of this receiver requires the use of a test oscillator that will cover the frequencies of 455, 600, 1400 and 1620 KC and an output meter to be connected across the primary or secondary of the output transformer. If possible, all alignments should be made with the volume control on maximum and the test oscillator output as low as possible to prevent the AVC from operating and giving false readings.

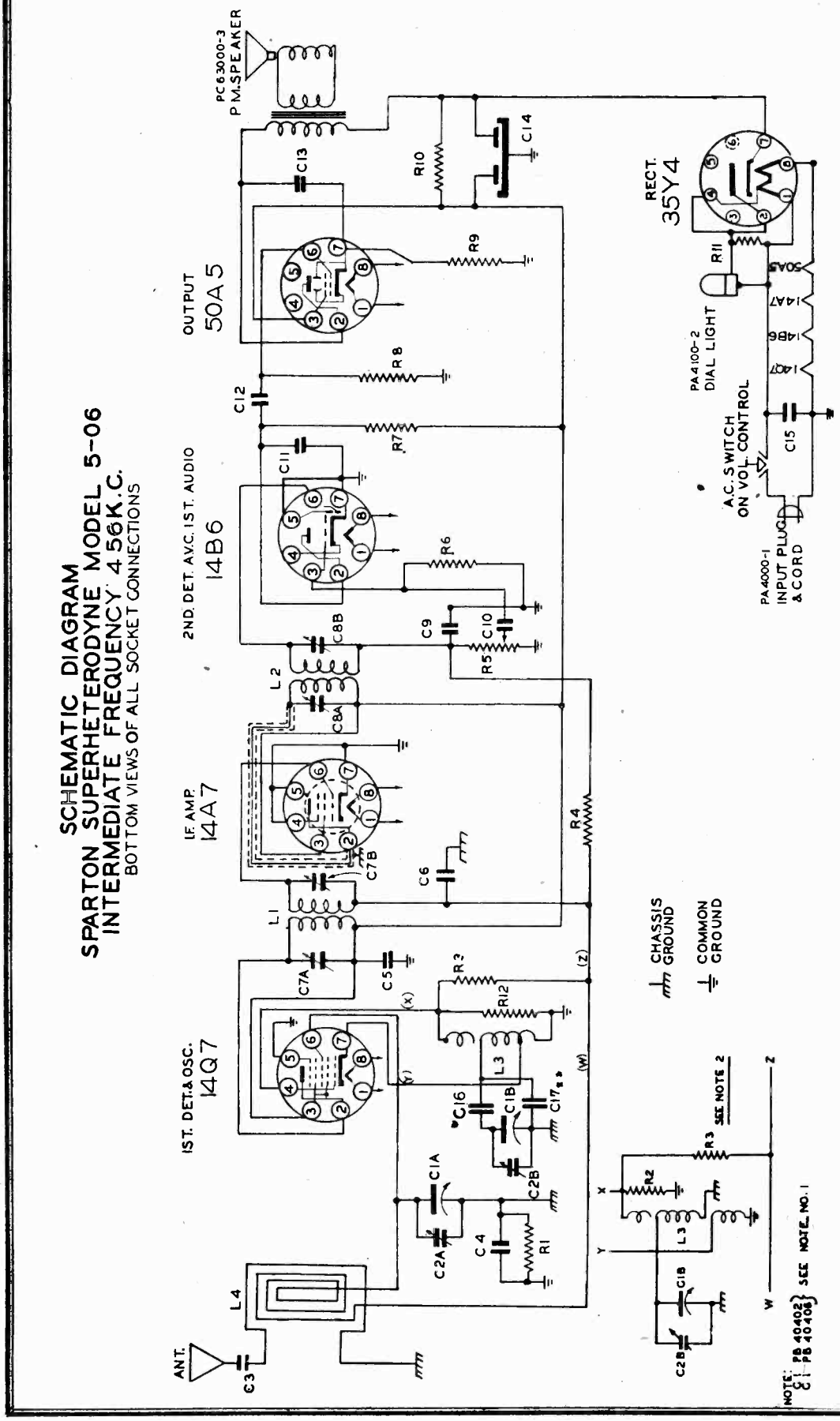
CORRECT ALIGNMENT PROCEDURE. The intermediate frequency (I.F.) stages should be aligned properly as the first step. After the I.F. transformers have been properly adjusted and peaked, the broadcast band should be adjusted.

I. F. ALIGNMENT. Remove the chassis and speaker from the cabinet and connect output meter across primary or secondary of output transformer. With the gang condenser set at minimum, adjust the test oscillator to 455 KC, connect its output to the grid of the first detector tube (1A7GT) through a .05 or .1 mfd. condenser. The ground on the test oscillator should be connected to the chassis ground. Align all three I.F. trimmers to peak or maximum reading on the output meter.

BROADCAST BAND ALIGNMENT. Connect the test oscillator to the antenna lead through a 200 mmfd. (.0002) condenser. With the gang condenser set at minimum capacity, set the test oscillator at 1620 KC, and adjust the oscillator (or 1620 KC trimmer) on gang condenser. Next—set the test oscillator at 1400 KC, and tune in the signal on the gang condenser. Adjust the antenna trimmer (or 1400 KC trimmer) for maximum signal. Next set the test oscillator at 600 KC, and tune in signal on condenser to check alignment of coils.

THE SPARKS WITHINGTON CO.

SCHEMATIC DIAGRAM
SPARTON SUPERHETERODYNE MODEL 5-06
INTERMEDIATE FREQUENCY 456K.C.
BOTTOM VIEWS OF ALL SOCKET CONNECTIONS



C1A&B	VARIABLE CONDENSER (SEE NOTE)			
C2A&B	TRIMMERS ON VARIABLE			
C3	.001 MFD. 400 V.	PC 40GL-102		
C4	.15 MFD. 400 V.	PC 40GL-154		
C5	.002 MFD. 200 V.	PC 40GK-503		
C6	.05 MFD. 200 V.	PC 40GK-503		
C7A&B	NO.1 I.F. TRIMMERS	AB 43500-1		
C8A&B	NO.2 I.F. TRIMMERS	AB 43500-2		
C9	270 MMF. MICA	MC 60G-271		
C10	.01 MFD. 400V.	PC 40GL-103		
C11	510 MMF. MICA	MC 60G-511		
C12	.002 MFD. 400 V.	PC 40GL-202		
C13	.01 MFD. 400 V.	PC 40GL-103		
C14	ELECT. CONDENSER	PA 4301		
	RED 30 MFD. YELLOW 40 MFD.			
C15	.05 MFD. 400 V.	PC 40GL-503		
*C16	.05 MFD. 200 V.	PC 40FK-503		
‡ & C17	15 MMF.	PA 4328-1		
* SEE NOTE NOTE NO. 2				
‡ & SEE NOTE NOTE NO. 1				

R1	150,000 Ω	.5W.	BR12N-154
R2	22,000 Ω	.5W.	BR12S-223
R3	15 MEGOHM	.5W.	BR12S-156
R4	2.2 MEGOHM	.5W.	BR12N-225
R5	.5 MEG.-VOL. CONT. & SW.		PA 4400-2
R6	5.6 MEGOHM	.5W.	BR12S-565
R7	220,000 Ω	.5W.	BR12N-224
R8	470,000 Ω	.5W.	BR12N-474
R9	150 Ω	.5W.	BR12S-151
R10	1200 Ω	1W.	CR12S-122
R11	82 Ω	.5W.	BR12S-820
R12	47,000Ω	.5W.	BR12S-473

L1 NO.1 I.F. COIL ASSEMBLY AA6800-1
L2 NO.2 I.F. COIL ASSEMBLY AA6800-2
L3 B.C. OSCILLATOR COIL ASSEMBLY AB4 2200-1 (SEE NOTE NO. 2)
L4 LOOP ASSEMBLY AB43015-1 } SEE NOTE NO. 1
L4 LOOP ASSEMBLY AB4302 4-1 }

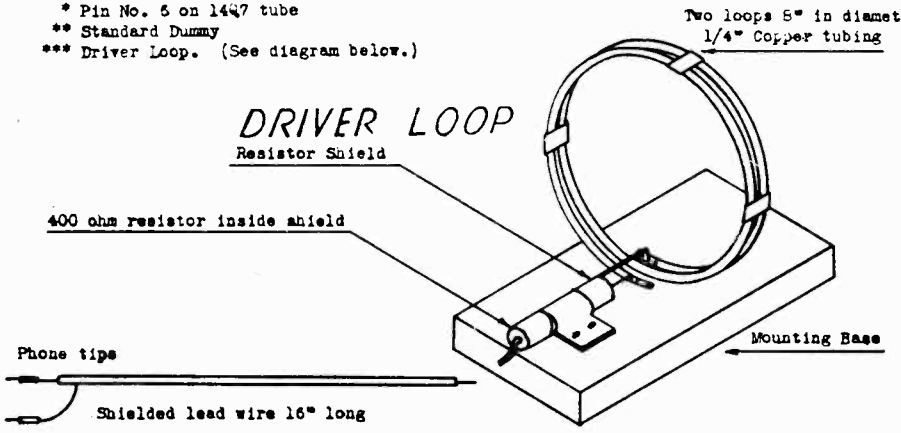
NOTE NO. 1. THE FIRST 4,000 UNITS WILL BE ASSEMBLED USING C1 AS PB 40402 AND L4 AS AB 43015-1. AFTER FIRST 4000, C1 WILL BE PB 40406 MOUNTED ON SPECIAL BRACKET PB41013 AND USING L4 AS AB 43024-1 ELIMINATING USE OF C17 (15 MMF. CONDENSER.)
NOTE NO. 2 AFTER 15,000 UNITS USE L3 AS AA 6752-3 AND HOOK UP AS SHOWN IN SECTIONAL DRAWING ELIMINATING C16 CONDENSER.

(Original) June 1, 1946

ALIGNMENT DATA

OPER-ATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	TUNING COND. SETTING	TRIMMER	REMARKS
1	Set dial pointer with left hand stop line and with condenser closed.						
2	I.F.	*	* *	456 KC	Open	C8A&B	Peak accurately
						C7A&B	Peak accurately
3	B.C.	* * *	Dummy Loop	1500 KC	1500 KC	C2B Osc Trim	Peak accurately
						C2A RF Trim	Peak accurately
4	(Repeat operation 2 and 3)						
5	(Check calibration at 600 KC, 1000 KC and 1500 KC)						
6	(Check operations 1 to 5 inclusive.)						

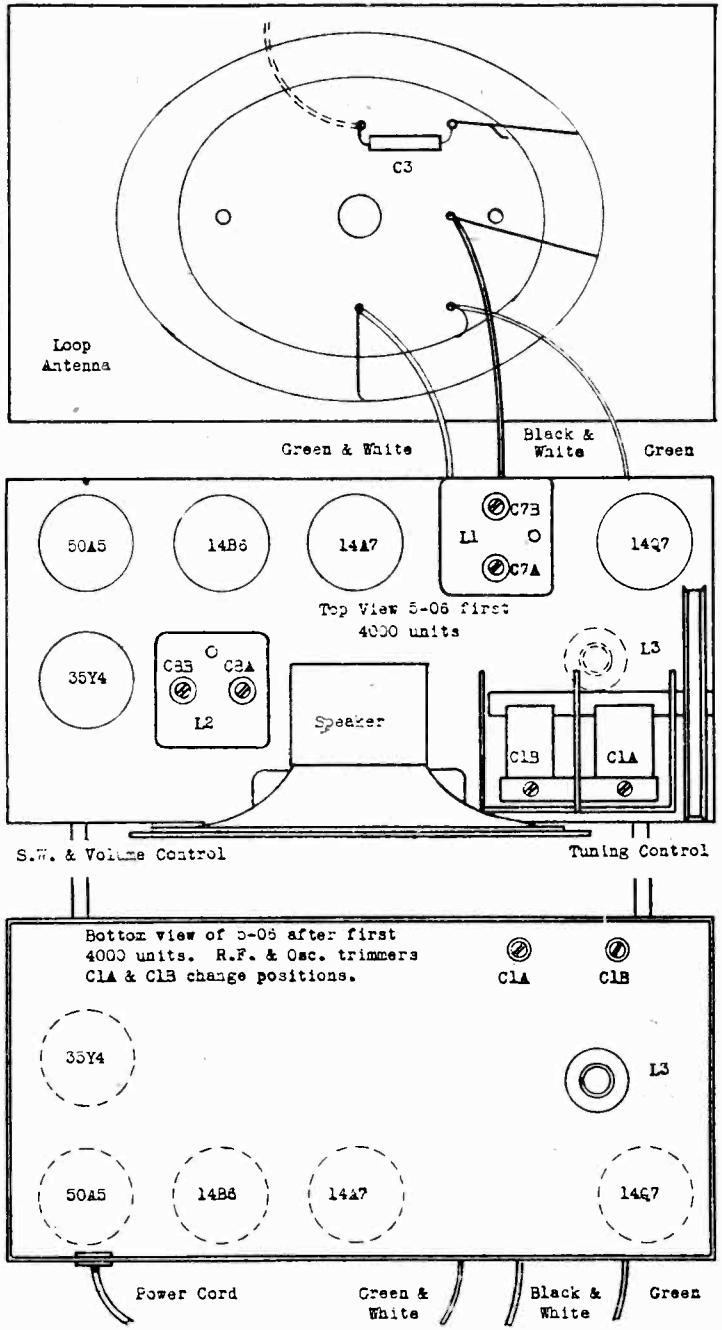
* Pin No. 5 on 14Q7 tube
** Standard Dummy
*** Driver Loop. (See diagram below.)



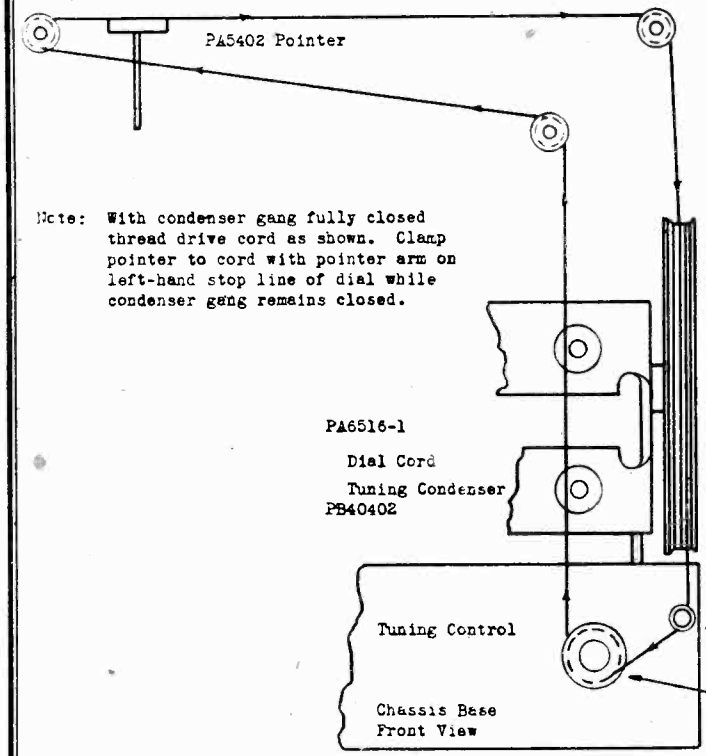
SPECIFICATIONS

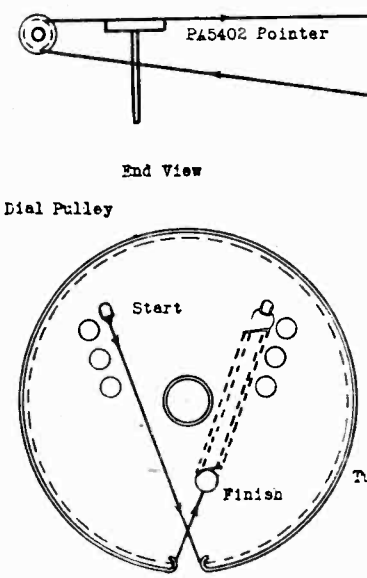
Two loops of 1/4" copper tubing 8" in diameter spaced 1/4" apart with 400 ohms resistor in series. Connecting cable and resistor must be shielded.
The loop should be spaced twice the diameter of the loop from the receiver being aligned to prevent an over modulated signal and poor alignment of the receiver.

Special Note: The first 4,000 units will be assembled using C1 as PB40402 and L4 as AB43015-1. After first 4,000 units C1 will be PB40406 mounted on a special bracket PB41913 and using L4 as AB43024-1. On part No. PB40402 trimmers C1A and C1B are located on top of the tuning condenser, while on PB40406 condenser C1A and C1B are on the bottom of the condenser and must be adjusted from chassis bottom side.

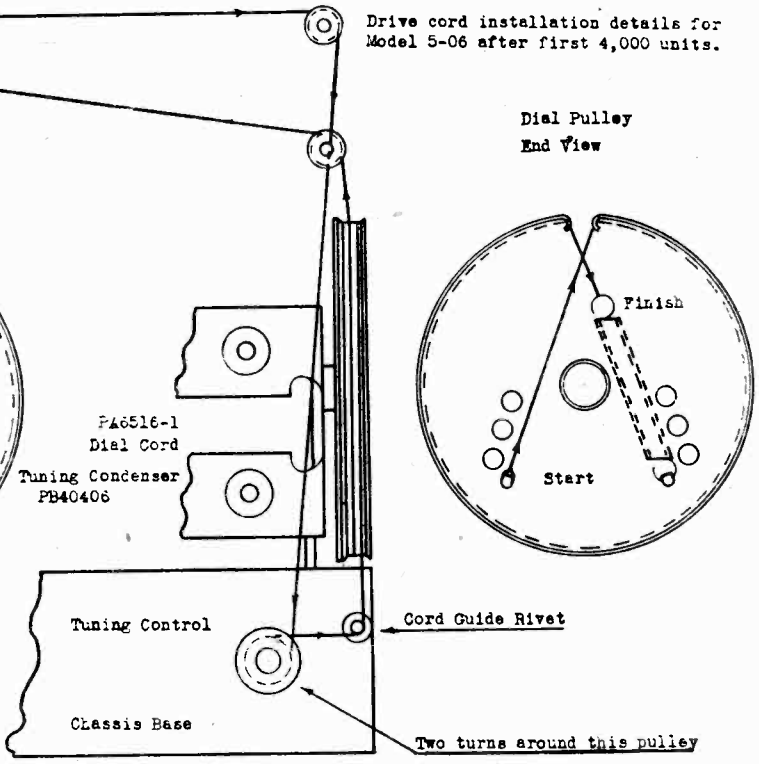


DRIVE CORD INSTALLATION DETAILS FOR MODEL 5-06
FIRST 4,000 UNITS





Drive cord installation details for Model 5-06 after first 4,000 units.



VOLTAGE CHART

Line Voltage: 117 Volts A.C. — Position of Volume Control: Full with set tunned to quiet channel.

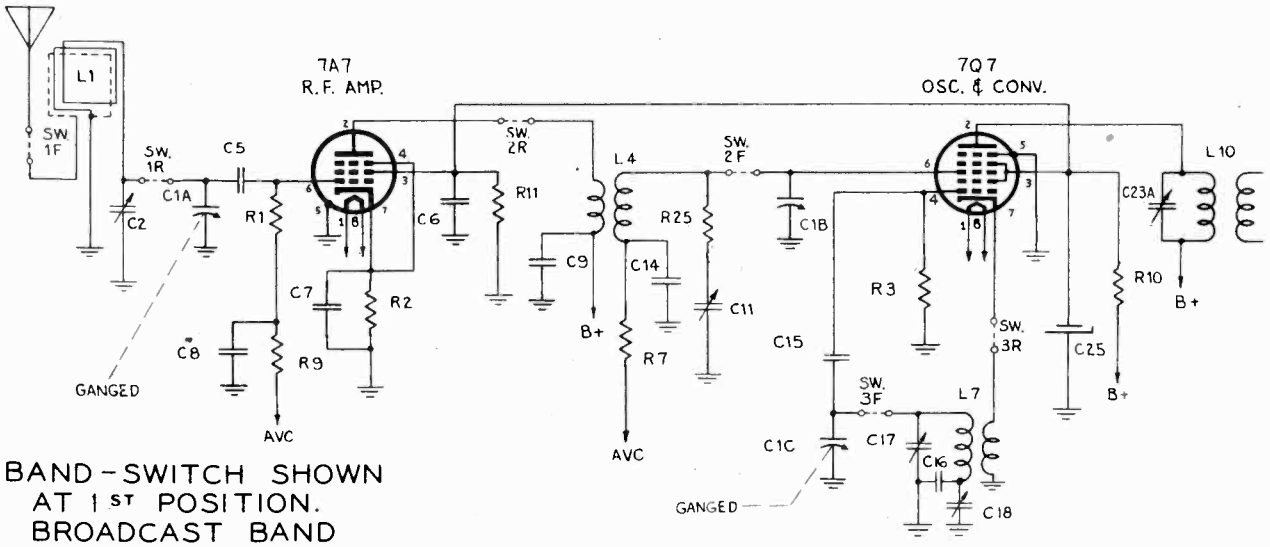
TUBE	FUNCTION	Voltage of Socket Prong to Gnd. (See Prong Nos. on Schematic Dia.							
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
14Q7	1st Det. & Osc.	12*	80	80	**	0	**	**	0
14A7	I.F. Amp.	24*	80	80	0	0	**	0	36*
14B6	2nd. Det. A.V.C. & 1st audio	24*	55	-.35	0	0	-.55	0	12*
50A5	Power Output	85*	110	85	0	0	**	5.4	36*
35Y4	Rectifier	117*	110*	0	110*	0	0	115	85*

Notes: Voltage readings are for schematic diagram on back of sheet. Allow 15% + or - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 20,000 ohms per volt voltmeter. All AC voltages made with rectifier type voltmeter. Unless designated otherwise, voltages in table are + DC voltages.
*AC volts.
**Cannot be measured with 20,000 ohms per volt voltmeter.

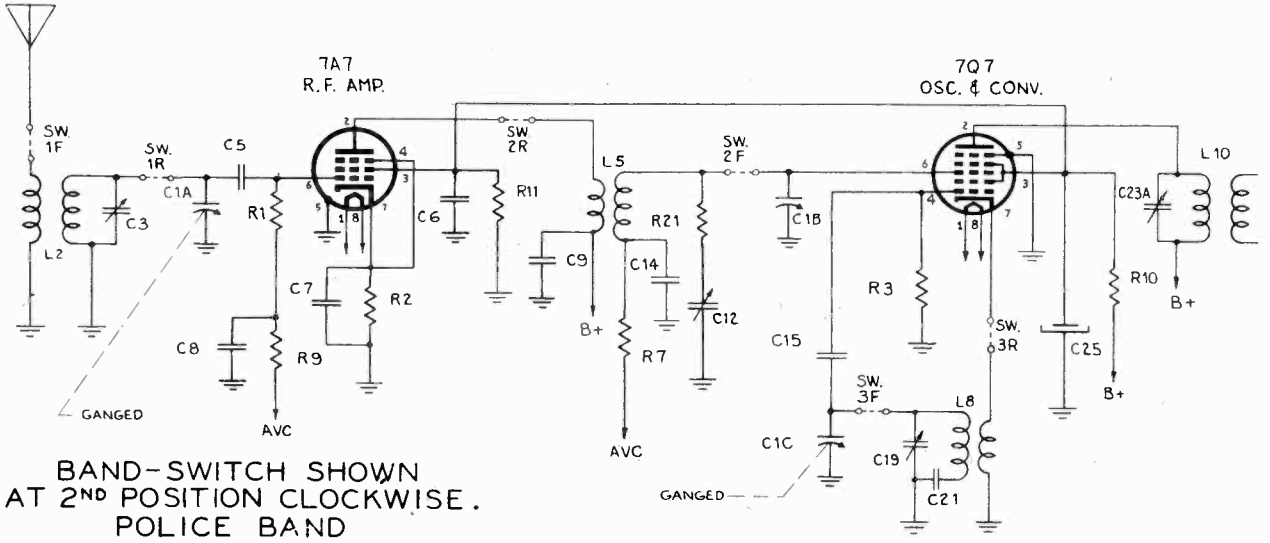
"clarified schematics"

MODEL 7-46, 7-46-PA, 846, 846-PA

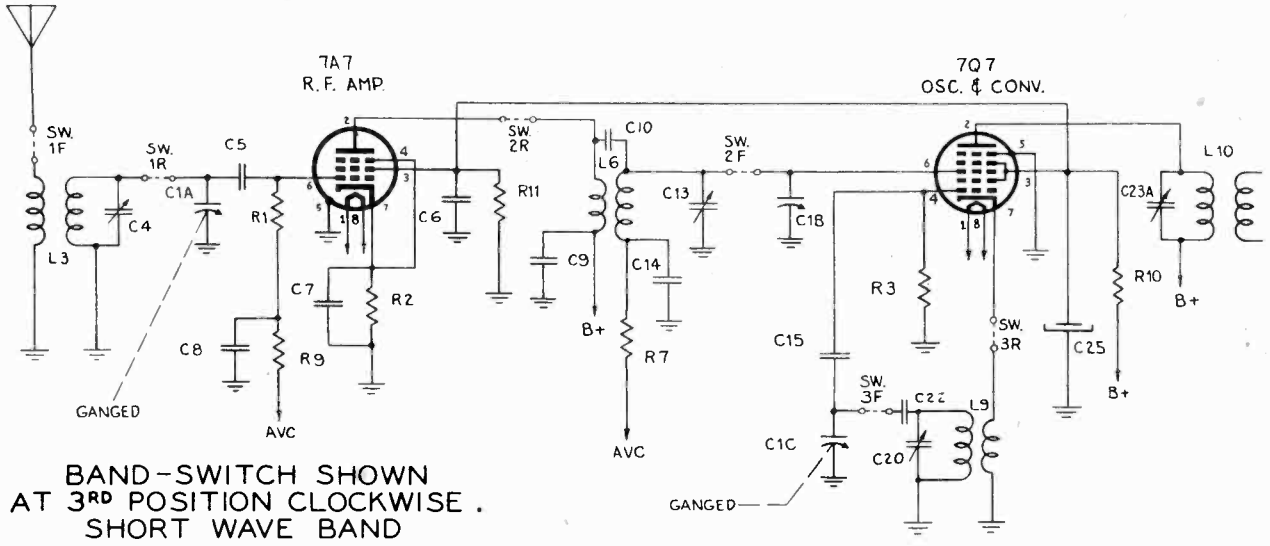
THE SPARKS WITHINGTON CO.



BAND-SWITCH SHOWN AT 1ST POSITION. BROADCAST BAND



BAND-SWITCH SHOWN AT 2ND POSITION CLOCKWISE. POLICE BAND

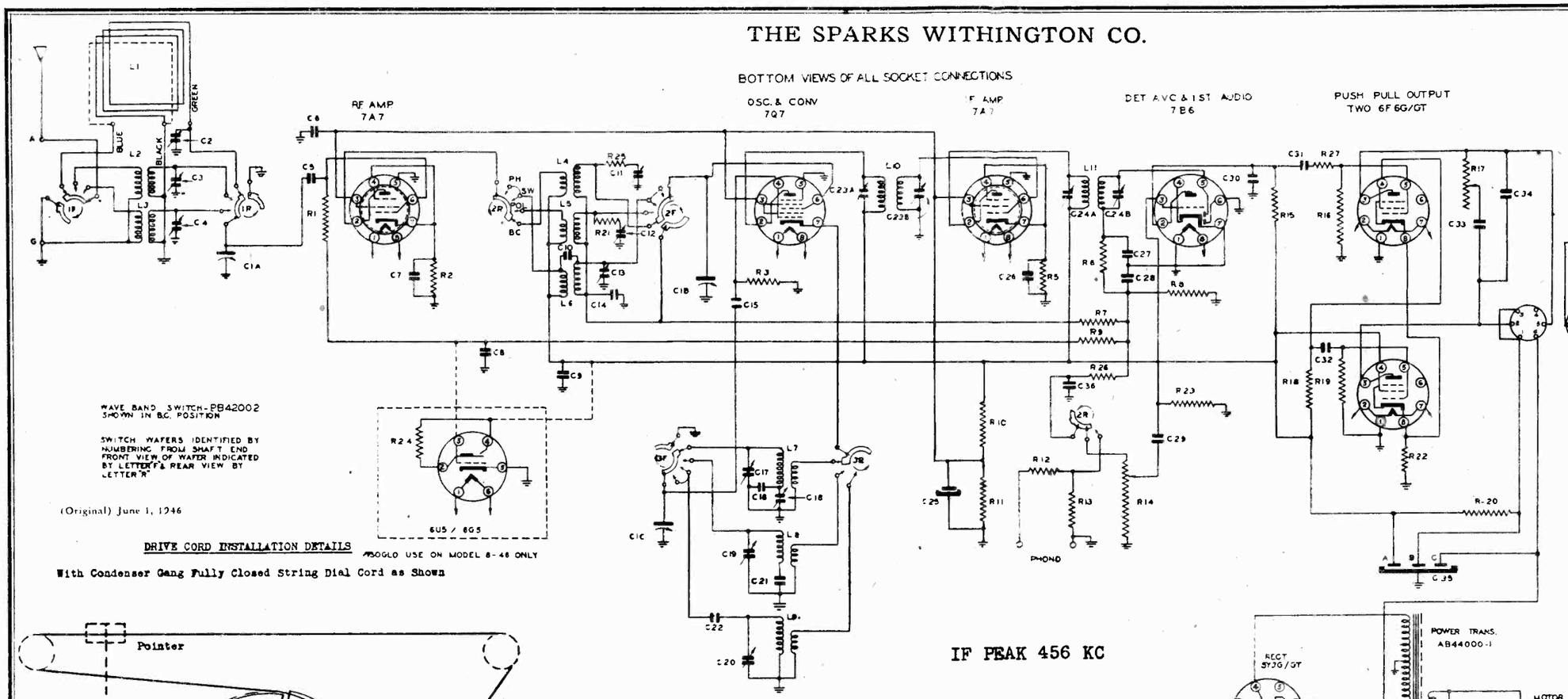


BAND-SWITCH SHOWN AT 3RD POSITION CLOCKWISE. SHORT WAVE BAND

THE SPARKS WITHINGTON CO.

MODELS 7-46, 7-46-PA, 846, 846-PA

BOTTOM VIEWS OF ALL SOCKET CONNECTIONS



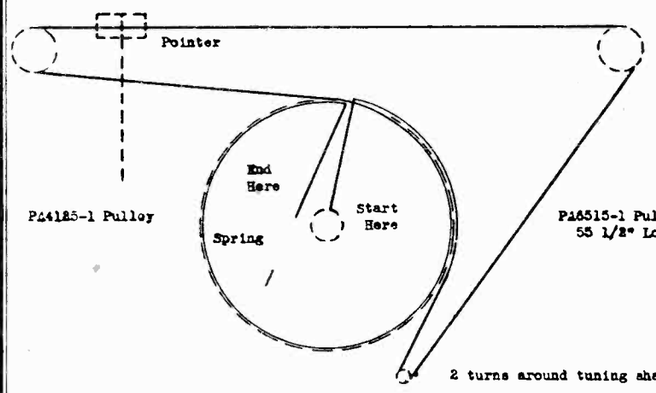
WAVE BAND SWITCH-PB42002 SHOWN IN B.C. POSITION

SWITCH WAFERS IDENTIFIED BY NUMBERING FROM SHAFT END FRONT VIEW OF WAFER INDICATED BY LETTER F & REAR VIEW BY LETTER R

(Original) June 1, 1946

DRIVE CORD INSTALLATION DETAILS *ABOGLO USE ON MODEL 8-46 ONLY

With Condenser Gang Fully Closed String Dial Cord as Shown



IF PEAK 456 KC

Description	
Coil - Ant. (Pol.)	AA6754-1
Coil - Ant. (S.W.)	AA6758-1
Coil - Det. (B.C.)	AA6756-1
Coil - Det. (Pol.)	AA6757-1
Coil - Det. (S.W.)	AA6760-1
Coil - Osc. (B.C.)	AA6759-1
Coil - Osc. (Pol.)	AA6755-1
Coil - Osc. (S.W.)	AA6753-2
Coil - No. 1 I.F. (with trimmer, less shield)	AB43501-5
Coil - No. 2 I.F. (with trimmer, less shield)	AB43501-6
Condenser - Electrolytic	PA4300-1
Condenser - Padder 3330 MMF	PA4354-1
Condenser - Padder 1660 MMF	PA4354-2
Condenser - Trimmer Padder (Osc. - B.C.)	AB43503-36
Condenser - Variable	PB40400-1
Control - Tone & A.C. Sw.	PA4404-1
Control - Volume	PA4401-2
Dial Chart - Horizontal Reading	PC60001
Dial Chart - Vertical Reading	PC60006

Description	Part Number
Model "K" Automatic Record Changer	PD93100
Dial Glass - Cabinet	PB41909
Fly Wheel & Shaft Assy. Tuning	AA6735-1
Knob - Control (3) Walnut	PA5602-1
Knob - Control (3) Mahog.	PA5602-2
Knob - Wave Band Sw. (1) Walnut	PA5603-1
Knob - Wave Band Sw. (1) Mahogany	PA5603-2
Loop - Ant.	AB43011-1
Pointer & Slide Assy.	AA6700-1
Speaker - Complete (10")	PC63000-1
Switch - Wave Band	PB42002
Transformer - Power (60 cy.)	AB44000-1
Transformer - Speaker	PC63000-1-3

* Complete speakers may be returned to factory Service Dept for repair or replacement.

C1 A&C	VARIABLE CONDENSER	PB40400-1
C2	BC ANT. TRIMMER	PA4356-1
C3	POL ANT TRIMMER	
C4	SW ANT TRIMMER	
C5	340 MMF. MICA	MC60G-241
C6	.05 MFD. 400V	PC40HL-503
C7	.05 MFD. 200V	PC40HK-503
C8	.05 MFD. 200V	PC40HK-503
C9	.05 MFD. 400V	PC40HL-503
C10	5 MMF. MICA	MC60G-050
C11	BC DET. TRIMMER	PA4358-2
C12	POL DET. TRIMMER	
C13	SW DET. TRIMMER	
C14	.05 MFD. 200V	PC40HK-503
C15	51 MMF. MICA	MC60F-510
C16	240 MMF. MICA	MC60G-241
C17	BC OSC TRIMMER	AB43503-36
C18	BC OSC PADDER	
C19	POL OSC TRIMMER	PA4357-1
C20	SW OSC TRIMMER	
C21	1680 MMF. MICA	PA4354-2
C22	3330 MMF. MICA	PA4354-1
C23 A&B	NO.1 I.F. TRIMMER	AB43500-44
C24 A&B	NO.2 I.F. TRIMMER	AB43500-50
C25	4 MFD. 400V ELECT	PA4303-1
C26	.05 MFD. 200V	PC40HK-503
C27	100 MMF. MICA	MC60F-101
C28	100 MMF. MICA	MC60F-101
C29	.02 MFD. 200V.	PC40GK-203
C30	100 MMF. MICA.	MC60F-101
C31	.05 MFD. 400V.	PC40GL-503
C32	.05 MFD. 400V.	PC40GL-503
C33	.02 MFD. 600V.	PC40GM-203
C34	.002 MFD. 600V.	PC40GM-202
A	15 MFD. 450V.	PA4300-1
B 350	10 MFD. 450V.	
C	15 MFD. 450V.	
C36	100 MFD. MICA.	MC60F-101
R1	1 MEGOHM 5W	BR12S-105
R2	820 Ω 5W	BR12S-821
R3	20000 Ω 5W	BR12S-203
	DELETE	
R5	580 Ω 5W	BR12S-561
R6	18000 Ω 5W	BR12S-183
R7	3.3MEGOHM 5W	BR12S-335
R8	180000 Ω 5W	BR12S-184
R9	3.3 MEGOHM 5W	BR12S-335
R10	16000 Ω 2W	DR12G-163
R11	22000 Ω 1W	CP12G-223
R12	270000 Ω .5W	BR12S-274
R13	270000 Ω .5W	BR12S-274
R14	2 MEGOHM VOL CONT.	PA4401-2
R15	270000 Ω .5W	BR12S-274
R16	470000 Ω .5W	BR12S-474
R17	25 MEG TONE CONT. & SW	PA4404-1
R18	2000 Ω .5W	BR12S-202
R19	470000 Ω .5W	BR12S-474
R20	1000 Ω .5W	DR12S-102
R21	150 Ω .5W	BR12S-151
R22	240 Ω 2W	DR12S-241
R23	10 MEGOHM .5W	BR12S-106
R25	330 Ω .5W	BR12S-331
R26	18000 Ω .5W	
R27	1000 Ω .5W	BR12S-102
FOR 8-46	ADD	
R24	1 MEGOHM .5W	BR12S-105

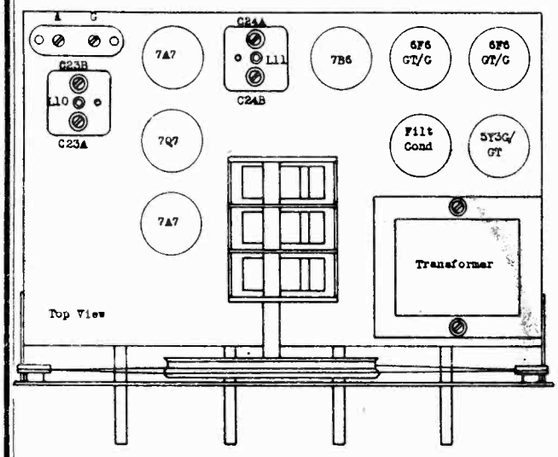
VOLTAGE CHART

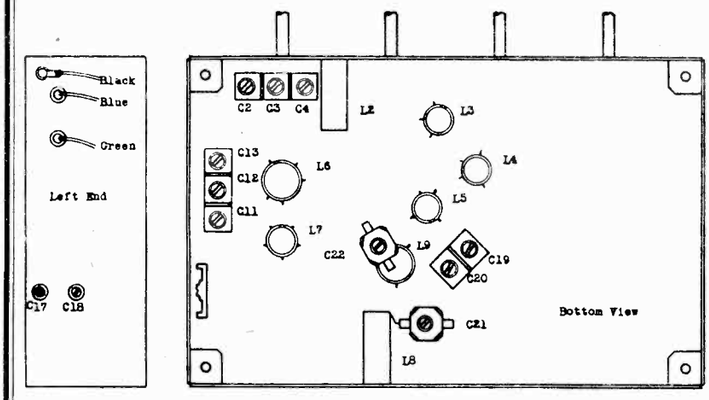
Line Voltage: 117 Volts A.C.		Position of Volume Control: Full with dial tuned to Quiet Channel. Position of Band Switch: Broadcast. Voltage of socket pronge to Gnd, See prong on schematic dia.							
TUBE	FUNCTION	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
7A7	R. F. Amp.	0	230	63	2.8	0	**	2.8	6*
7Q7	Osc-Conv.	0	230	63	-6	0	-.6	*	6*
7A7	I. F. Amp.	0	230	63	2.3	0	**	2.3	6*
7B6	Det-AVC-1st Audio	0	100	**	0	**	0	0	6*
6F6	Push Pull Output	0	0	247	220	**	**	6*	14
6F6	Push Pull Output	0	0	247	227	**	0	6*	14
5Y3	Rectifier	0	325	0	330*	0	320*	0	325

NOTES: Voltage readings are for schematic diagram in this bulletin. Allow 15% + or - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 20,000 ohms per volt voltmeter. All AC voltages made with rectifier type voltmeter.
* AC Volts.
** Cannot be measured with 20,000 Ohms per volt voltmeter.

Record Changer: Seeburg Model K

CHASSIS DIAGRAM

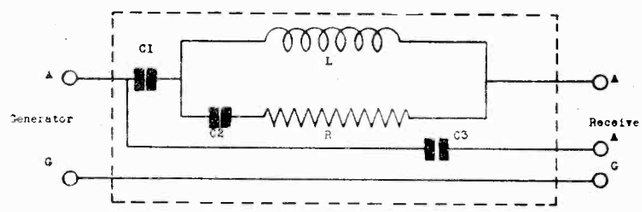




OPER-ATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING CONDENSER SETTING	TRIMMERS	REMARKS
1	Set dial pointer even with stop line when condenser gang is fully meshed.							
2	I.F.	*	1.mf cond.	456KC	BC	Open	C24 A&B	Peak Accurately
							C23 A&B	" "
3	Broadcast Band	Ant.	See note	1500KC	BC	1500KC	C17 Osc.Trim	" "
							C11 Det.Trim	" "
							C2 Ant.Trim	" "
4				600KC	BC	600KC	C18 Osc. Pad.	Rock **
5	(Repeat operation 3).							
6	Check Calibration at 600 KC, 1000 KC and 1500 KC.							
7	Police Band	Ant.	See note	5 MC	Police Band	5 MC	C19 Osc.Trim	Peak Accurately
							C12 Det.Trim	Rock **
							C3 Ant.Trim	Rock **
							C21 Osc.Pad	See operation #8
8	Oscillator Padder C21 is precision set at the factory and should not be readjusted in the field.							
9	(Repeat operation 7).							
10	Check Calibration at 1.8 MC and 5 MC.							
11	SW Band	Ant.	See note	18 MC	SW Band	18 MC	C20 Osc.Trim	Peak Accurately
							C13 Det.Trim	Rock **
							C4 Ant.Trim	Rock **
							C22 Osc.Pad	See operation #12
12	Oscillator Padder C22 is precision set at the factory and should not be readjusted in the field.							
13	(Repeat operation 11).							
14	Check Calibration and at 6 MC and 18 MC.							
15	Check operations 1 to 11 inclusive.							

NOTES: Use Dummy Antenna as described on page No. 1 of this bulletin.
* Connect generator to pin #6 on 7Q7 Osc-conv. tube.
** Rock dial while adjusting for maximum output.

DUMMY ANTENNA



Note: When using this dummy antenna the generator output impedance should be 10 Ohms or lower.

C1 - 200 mmf. Condenser 400 V.D.C.
C2 - 400 mmf. Condenser 400 V.D.C.
C3 - .02 mmf. Condenser 400 V.D.C.
R - 100 Ohms Resistor 1/4 Watt
L - 20 Microhenryies Choke

---- Case Soield
Choke Coil Specifications
Tubing - 3/8" diameter bakelite
Wire - No. 38 Enameled
Turns - 50 closely wound (Impregnated)

SPIEGEL

MODEL F Compact
MODEL P Compact
Battery Eliminators

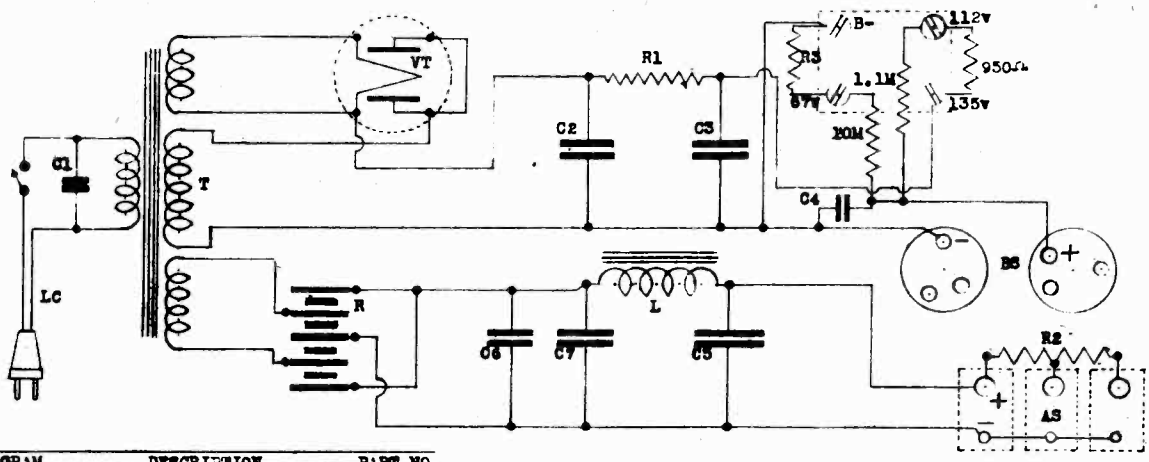


DIAGRAM	DESCRIPTION	PART NO.
LC	Line cord and switch	1601
C1	Condenser .05 mfd 400v	1602
C2,C3,C4	Condenser 20-10-10- 150v	1603
C5	Condenser 1000 mfd 2v	1605
C6	Condenser .25 mfd 150v	1612
C7	Condenser 1000 mfd 3v	1604
R1	Resistor 1600 ohms 1w	1606
R2	Resistor 1.5 ohms tapped	1618
R3	Resistor, voltage divider	1613
R	Rectifier	1608
T	Transformer	1609
VT	Tube 5Y3 GT	1610
L	Filter choke	1611
AS	"A" socket	1614
BH	Battery plug harness	1615
BS	"B" socket	1616
S	Tube socket	1617

MODEL "F" COMPACT

Operates any 2 Volt—4, 5, 6 or 7 tube battery radio from 115 v. 60 cy. source.

For use in receivers employing 1A4, 1C7, 1D5, 1E5 1F5, 1F7, 1H4G, etc., tubes to change radio into an all-electric set giving maximum performance at all times. Inexpensive to operate. Excellent to use when AC current is available and save batteries for occasions when used as portable.

TECHNICAL DATA

Primary
115 Volts A.C. @ 60 cycles.

Specifications
6 foot cord and plug—switch in cord.
Size: 2⅜" x 4½" x 8¼".
Weight packed—5½ pounds.

"A" Supply Output
7 tubes . . . . . 2V. @ 480ma.
6 tubes . . . . . 2V. @ 420ma.
4-5 tubes (average) . . . . . 2V. @ 325ma.

"B" Supply Output
67, 90, 112, 135 Volts D.C. @ 18ma.

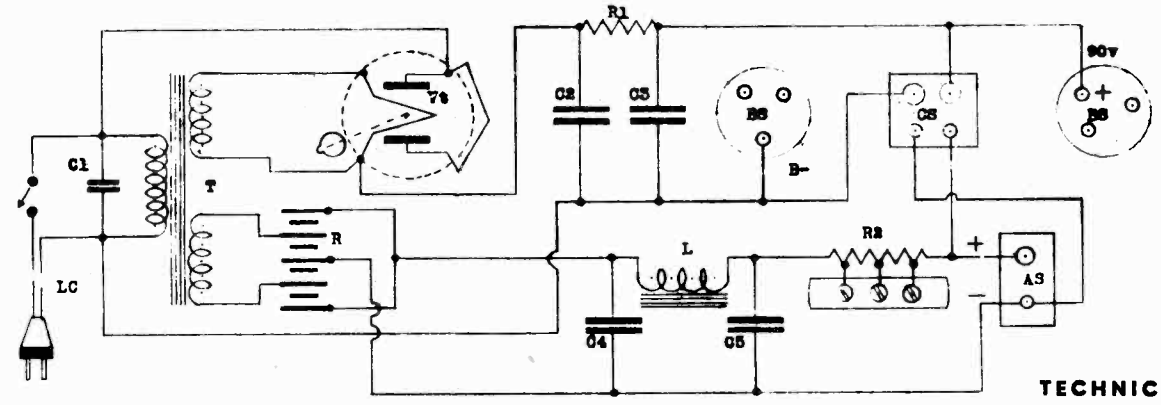


DIAGRAM	DESCRIPTION	PART NO.
LC	Line cord and switch	1501
C1	Condenser .05 mfd 400v	1502
C2, C3	Condenser 20-10 mfd 150v	1516
C4, C5	Condenser 2x1000 mfd 6-3v	1504
R1	Resistor 2500 ohms 1w	1505
R2	Resistor 3.8 ohms tapped	1517
T	Transformer	1506
R	Rectifier	1507
VT	Tube 5Y3 GT	1509
L	Filter choke	1510
AS	"A" socket	1511
BH	Battery plug harness	1512
BS	"B" socket	1513
S	Tube socket	1514
CS	"AB" socket	1515

MODEL "P" COMPACT

Operates any 1.4 volt—4, 5 or 6 tube battery radio from 115 v. 60 cy. source.

Designed for sets using 1A7, 1E4, 1N5G, 1Q5G, etc., tubes to convert battery radio to an efficient AC receiver with low operating cost. Fits in battery compartment of most radios. Ideal for use in home, hotel, camp or any place where normal AC is available.

TECHNICAL DATA

"A" Supply Output
5-6 tubes (average) . 1.4V. @ 275ma
4 tubes . . . . . 1.4V. @ 250ma
4 tubes . . . . . 1.4V. @ 200ma

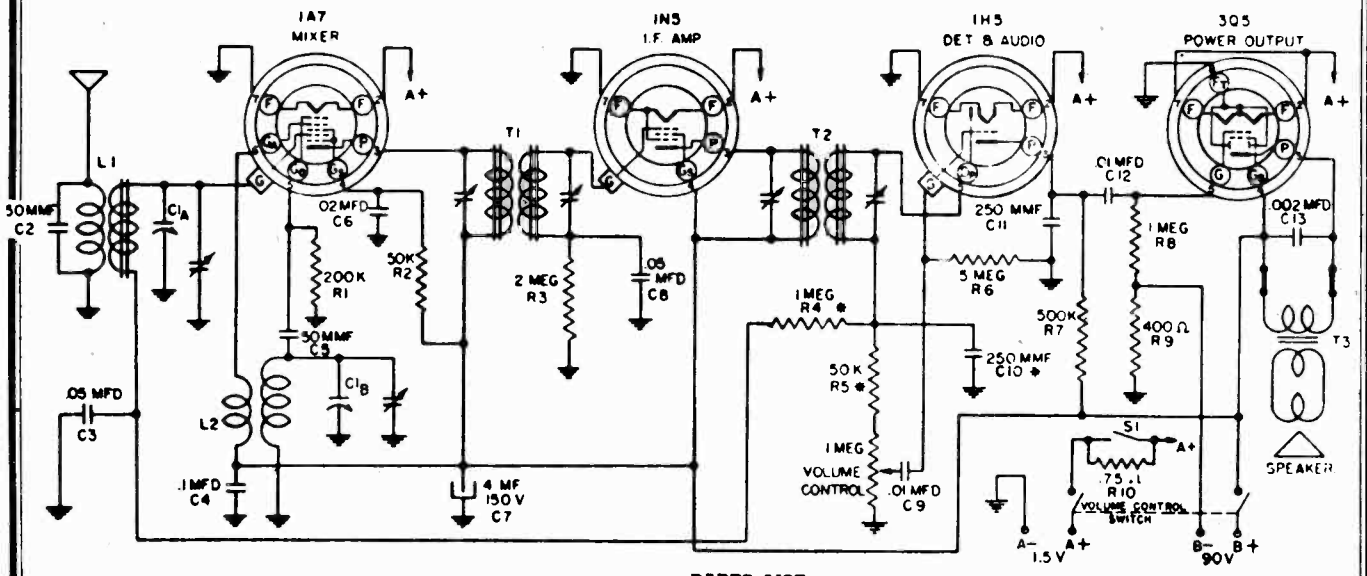
"B" Supply Output
90 Volts D.C. @ 12 ma. max.

Primary
115 Volts A.C. @ 60 cycles.

Specifications:
Six foot cord and plug—switch in cord.
Size: 2⅜" x 3½" x 6¾".
Weight packed—3½ pounds.

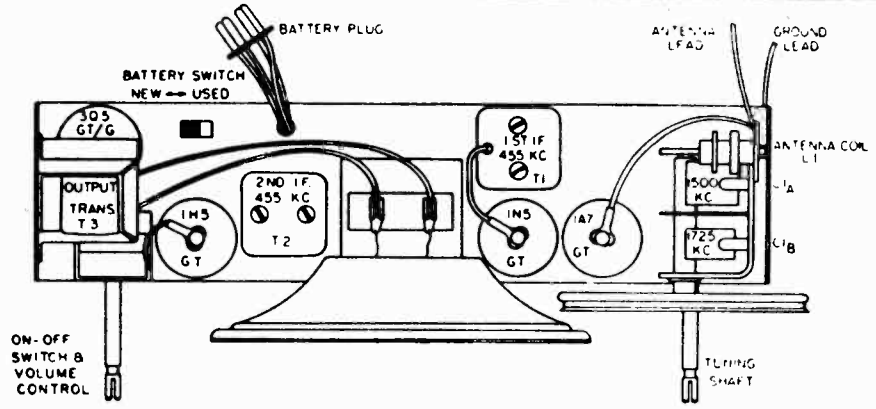
MODEL PX

SPIEGEL



PARTS LIST

Code	Part No.	DESCRIPTION	Code	Part No.	DESCRIPTION	Code	Part No.	DESCRIPTION
C1A C1B	B19-185	Variable Condenser	R1		200 K Ohm 1/3 Watt Carbon Resistor	L1	A10-414	Antenna Coil
C2		50 MMFD Mica Condenser (Part of L-1)	R2		50 K Ohm 1/3 Watt Carbon Resistor	L2	A10-415	Oscillator Coil
C3 C8		.05 MFD 200 V Tubular Condenser	R3		2 Megohm 1/3 Watt Carbon Resistor	T1	B10-416	1st I.F. Transformer
C4		.1 MFD 200 V Tubular Condenser	R4		1 Megohm 1/3 Watt Carbon Resistor (Part of T-2)	T2	B10-417	2nd I.F. Transformer
C5		50 MMFD Mica Condenser	R5		50 K Ohm 1/3 Watt Carbon Resistor (Part of T-2)	T3	A80-218	Speaker Output Transformer
C6		.02 MFD 400 V Tubular Condenser	R6		5 Megohm 1/3 Watt Carbon Resistor	S1	A69-164	Battery Switch
C7	A18-273	4 MFD 150 V Electrolytic Condenser	R7		500 K Ohm 1/3 Watt Carbon Resistor		A24-165	Volume Control and Switch
C9 C12		.01 MFD 400 V Tubular Condenser	R8		1 Megohm 1/3 Watt Carbon Resistor		B79-335	Speaker
C10		250 MMFD Mica Condenser (Part of T-2)	R9		400 Ohm 1/3 Watt Carbon Resistor			
C11		250 MMFD Mica Condenser	R10	A60-691	75 Ohm 1 Watt Resistor			
C13		.002 MFD 600 V Tubular Condenser						



ALIGNMENT PROCEDURE

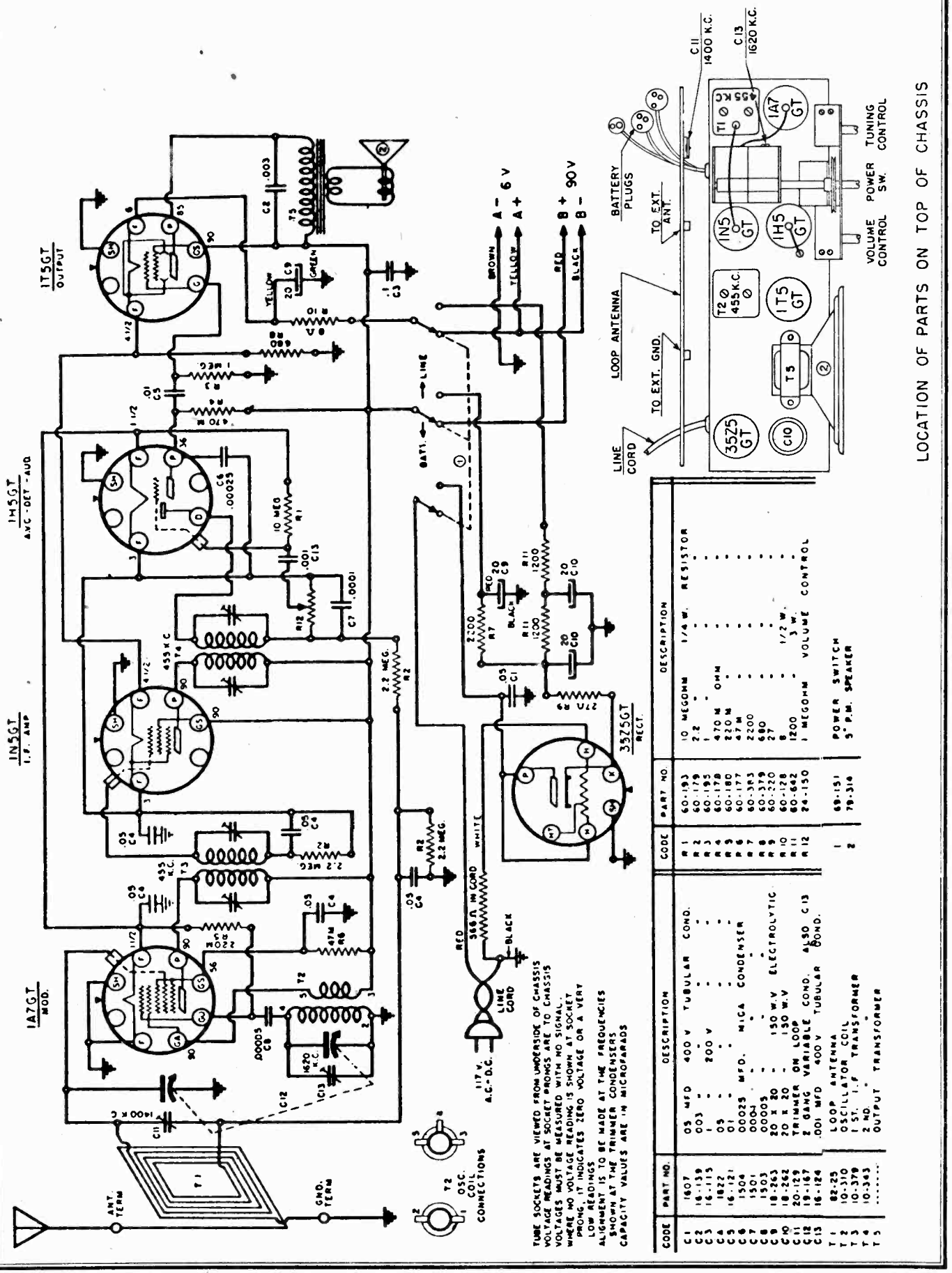
With an output meter connected across the voice coil of the speaker, the output meter reading for 50 milliwatts is .4 volts using a signal which is modulated 30% at 400 c.p.s. Follow through the procedure as outlined below for proper alignment.

Connect the signal generator to the grid cap of the 1A7 GT Tube through a .1 MFD. Condenser. Connect the ground lead of the generator to the chassis. Adjust the signal generator to 455 K.C. and set the variable condenser of the receiver to minimum capacity (fully opened). With the volume control full on and minimum output from the signal generator adjust the two trimmers on top of the first and second I.F. transformers for maximum output.

Now connect the signal generator to the antenna connection of the receiver through a .00025 condenser. Adjust the signal generator frequency to 1725 K. C. and set the variable condenser to minimum capacity (fully opened), and adjust the oscillator trimmer (C1B) for maximum output. Set signal generator to 1500 K. C. and tune receiver to signal. Adjust the antenna trimmer (C1A) on the variable condenser for maximum output.

MODEL 1-53

SPIEGEL



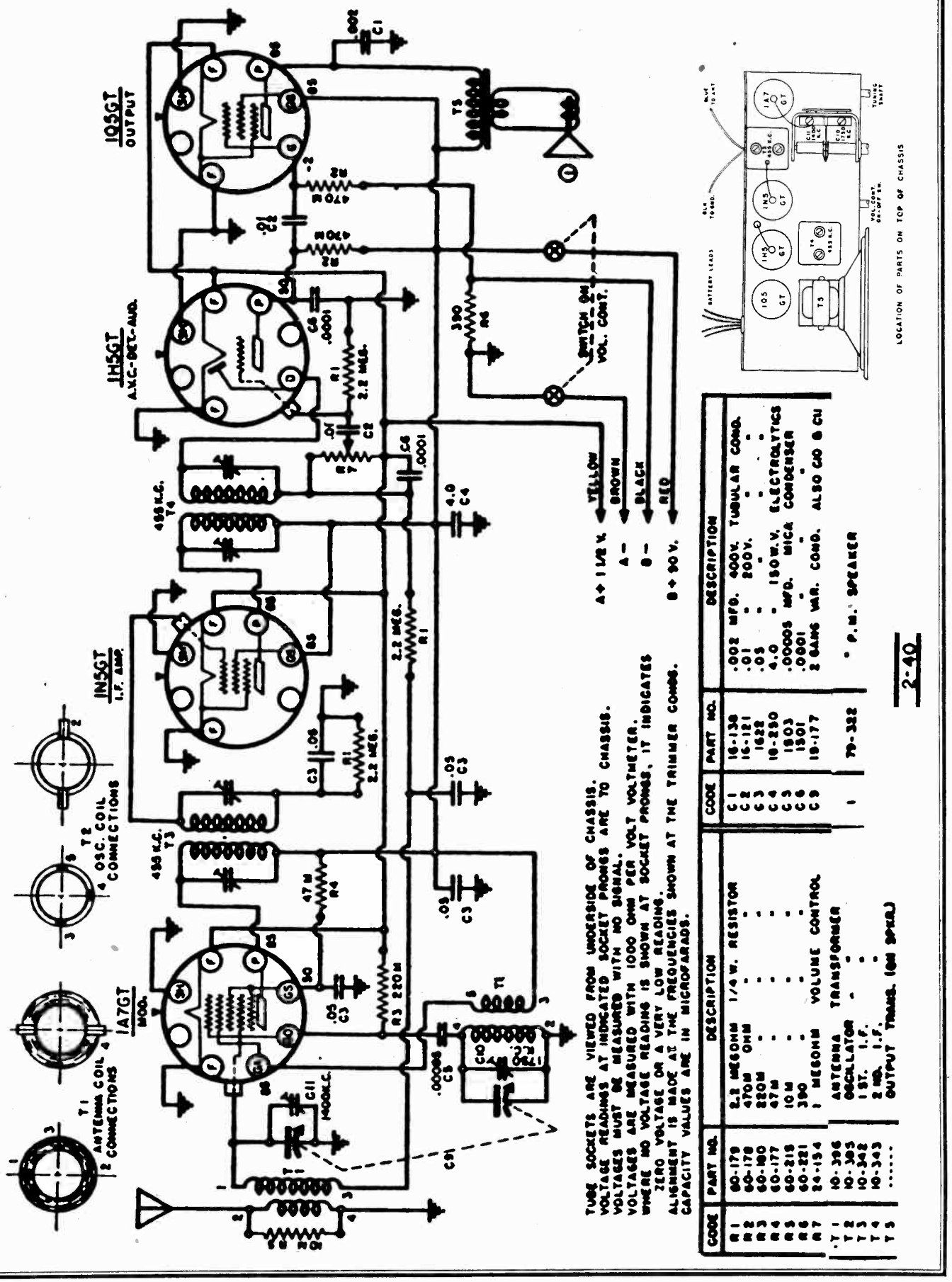
CODE	PART NO.	DESCRIPTION
C1	1807	.05 MFD 400 V TUBULAR COND.
C2	18-139	.003 " " " "
C3	18-115	.1 " 200 V " "
C4	1822	.05 " " " "
C5	18-121	.01 " " " "
C6	1504	.00025 MFD. MICA CONDENSER
C7	1501	.0001 " " "
C8	1503	.00005 " " "
C9	18-263	20 x 20 " 150 W.V ELECTROLYTIC
C10	18-262	20 x 20 " 150 W.V " "
C11	20-129	TRIMMER ON LOOP
C12	19-167	2 GANG VARIABLE COND. ALSO C13
C13	18-124	.001 MFD 400 V TUBULAR COND.
T1	82-25	LOOP ANTENNA
T2	10-310	OSCILLATOR COIL
T3	10-379	1 ST. I.F. TRANSFORMER
T4	10-363	2 ND. " "
T5	.....	OUTPUT TRANSFORMER

CODE	PART NO.	DESCRIPTION
R1	60-193	10 MEGOHM 1/4 W. RESISTOR
R2	60-179	2.2 " " "
R3	60-195	1 " " "
R4	60-178	470 M OHM "
R5	60-180	220 M " "
R6	60-177	47 M " "
R7	60-383	2200 " "
R8	60-379	680 " "
R9	60-220	27 " "
R10	60-128	8 " 1/2 W.
R11	60-642	1200 " 3 W.
R12	24-130	1 MEGOHM VOLUME CONTROL
1	69-151	POWER SWITCH
2	78-316	5" P.M. SPEAKER

TUBE SOCKETS ARE VIEWED FROM UNDERSIDE OF CHASSIS
VOLTAGE READINGS AT SOCKET PROMGS ARE TO CHASSIS
VOLTAGES MUST BE MEASURED WITH NO SIGNAL.
WHERE NO VOLTAGE READING IS SHOWN AT SOCKET PRONG, IT INDICATES ZERO VOLTAGE OR A VERY LOW READINGS
ALIGNMENT IS TO BE MADE AT THE FREQUENCIES SHOWN AT THE TRIMMER CONDENSERS
CAPACITY VALUES ARE IN MICROFARADS

MODEL 1-421

SPIEGEL



LOCATION OF PARTS ON TOP OF CHASSIS

TUBE SOCKETS ARE VIEWED FROM UNDERSIDE OF CHASSIS.
VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS.
VOLTAGES MUST BE MEASURED WITH NO SIGNAL.
VOLTAGES ARE MEASURED WITH 1000 OHM PER VOLT VOLTMETER.
WHERE NO VOLTAGE READING IS SHOWN AT SOCKET PRONGS, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING.
ALIGNMENT IS MADE AT THE FREQUENCIES SHOWN AT THE TRIMMER CONDS.
CAPACITY VALUES ARE IN MICROFARADS.

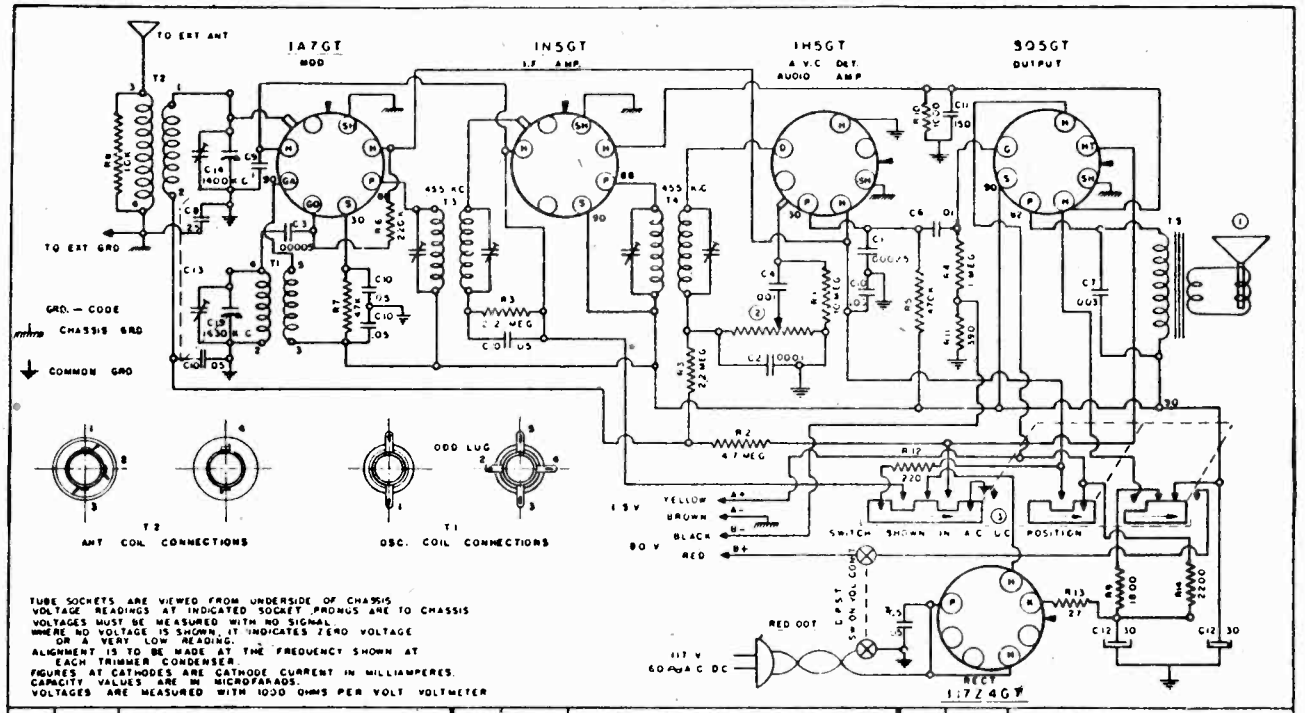
CODE	PART NO.	DESCRIPTION
R1	60-179	2.2 MEGOHM 1/4 W. RESISTOR
R2	60-178	470M OHM " " "
R3	60-180	220M " " "
R4	60-177	47M " " "
R5	60-215	10M " " "
R6	60-221	390 " " "
R7	24-134	1 MEGOHM VOLUME CONTROL
T1 - T2	10-396	ANTENNA TRANSFORMER
T3	10-385	OSCILLATOR "
T4	10-342	1ST. I.F. "
T5	10-343	2 ND. I.F. "
T6	.....	OUTPUT TRANS. (ON SPKR.)

CODE	PART NO.	DESCRIPTION
C1	16-138	.002 MFD. 400V. TUBULAR COND.
C2	16-121	.01 " 200V. " "
C3	1622	.05 " " " "
C4	16-230	4.0 " 150 W.V. ELECTROLYTICS
C5	1803	.00005 MFD. MICA CONDENSER
C6	1501	.0001 " "
C9	19-177	2 GANG VAR. COND. ALSO C10 & C11
-	79-382	* P.M. SPEAKER

2-40

SPIEGEL

MODELS 2-560 to 2-569 inclusive



CODE	PART NO.	DESCRIPTION
R1	60-193	10 MEGOHM 1/2 WATT RESISTOR
R2	60-269	4.7 " " "
R3	60-178	2.2 " " "
R4	60-195	1 " " "
R5	60-178	470M OHM " "
R6	60-180	220M " " "
R7	60-177	47M " " "
R8	60-215	10M " " "
R9	60-257	1500 " " "
R10	60-381	1000 " " "
R11	60-221	390 " " "
R12	60-190	220 " " "
R13	60-651	27 " " "
R14	60-652	2200 OHM 1 WATT RESISTOR

CODE	PART NO	DESCRIPTION
C1	1504	.00025 MFD MICA CONDENSER
C2	1501	.0001 " " "
C3	1503	.00005 " " "
C4	16-106	.001 MFD 600V. TUBULAR CONDENSER
C5	1607	.05 " 400V " "
C6	16-119	.01 " " " "
C7	16-139	.003 " " " "
C8	16-120	.25 " 200V " "
C9	16-115	.1 " " " "
C10	1622	.05 " " " "
C11	18-271	150 MFD 25 W.V. ELECTROLYTIC
C12	18-266	30 X 30 " 150 W.V. ELECTROLYTIC
C13	19-178	2 GANG VARIABLE CONDENSER (ALSO C14 & C15)

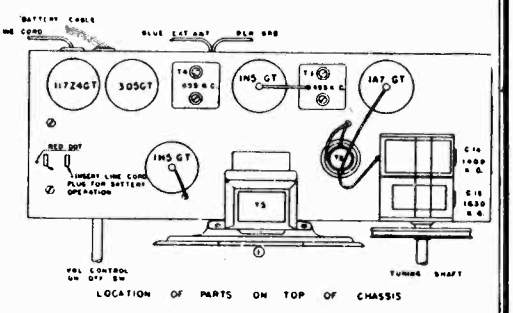
CODE	PART NO	DESCRIPTION
T1	10-395	OSCILLATOR COIL
T2	10-396	ANTENNA COIL
T3	10-342	1ST I.F. TRANSFORMER
T4	10-405	2ND I.F. TRANSFORMER
T5		OUTPUT TRANSFORMER (ON SPKR.)
1	79-326	5" P.M. SPEAKER
2	24-162	1 MEGOHM VOLUME CONTROL (WITH SW.)
3	69-158	SWITCH (A.C.-D.C. BATTERY)

2-56

PARTS PRICE LIST

Part No.	Description	Price
18-266	30 & 30 mfd. 150 w.v. Elec.	$1.50
18-271	150 mfd. 25 w.v. Elec.	1.25
24-162	Volume Control	.88
69-158	A.C.-D.C. Battery Switch	1.25
10-395	Osc. Coil	.75
10-396	Ant. Coil	.75
10-342	1st I.F. Transformer	1.25
10-405	2nd I.F. Transformer	1.25
79-326	5" P.M. Speaker	4.00
19-178	Variable Condenser	3.00

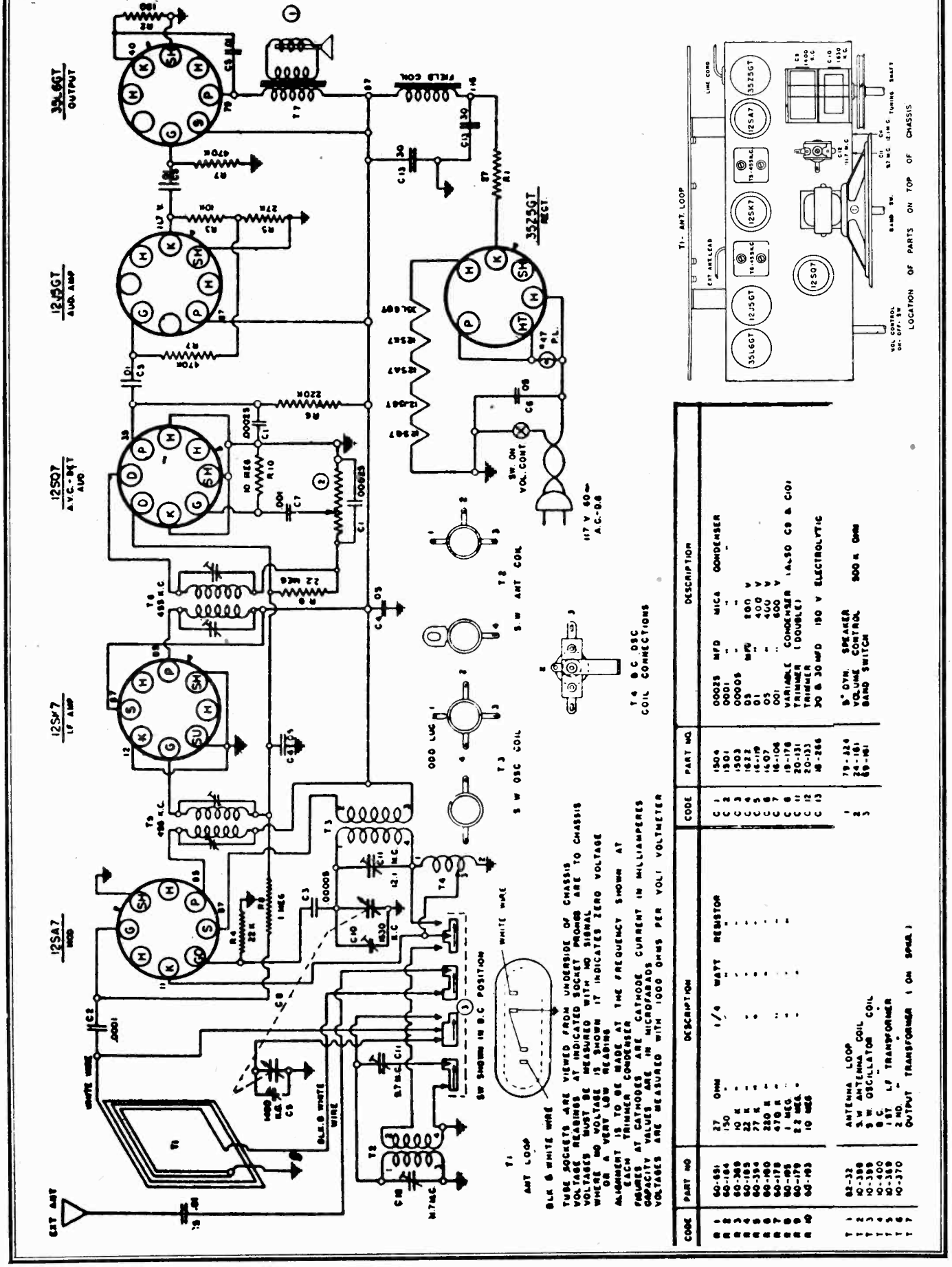
Prices subject to change without notice.



LOCATION OF PARTS ON TOP OF CHASSIS

MODELS 2-610 to 2-619 inclusive

SPIEGEL

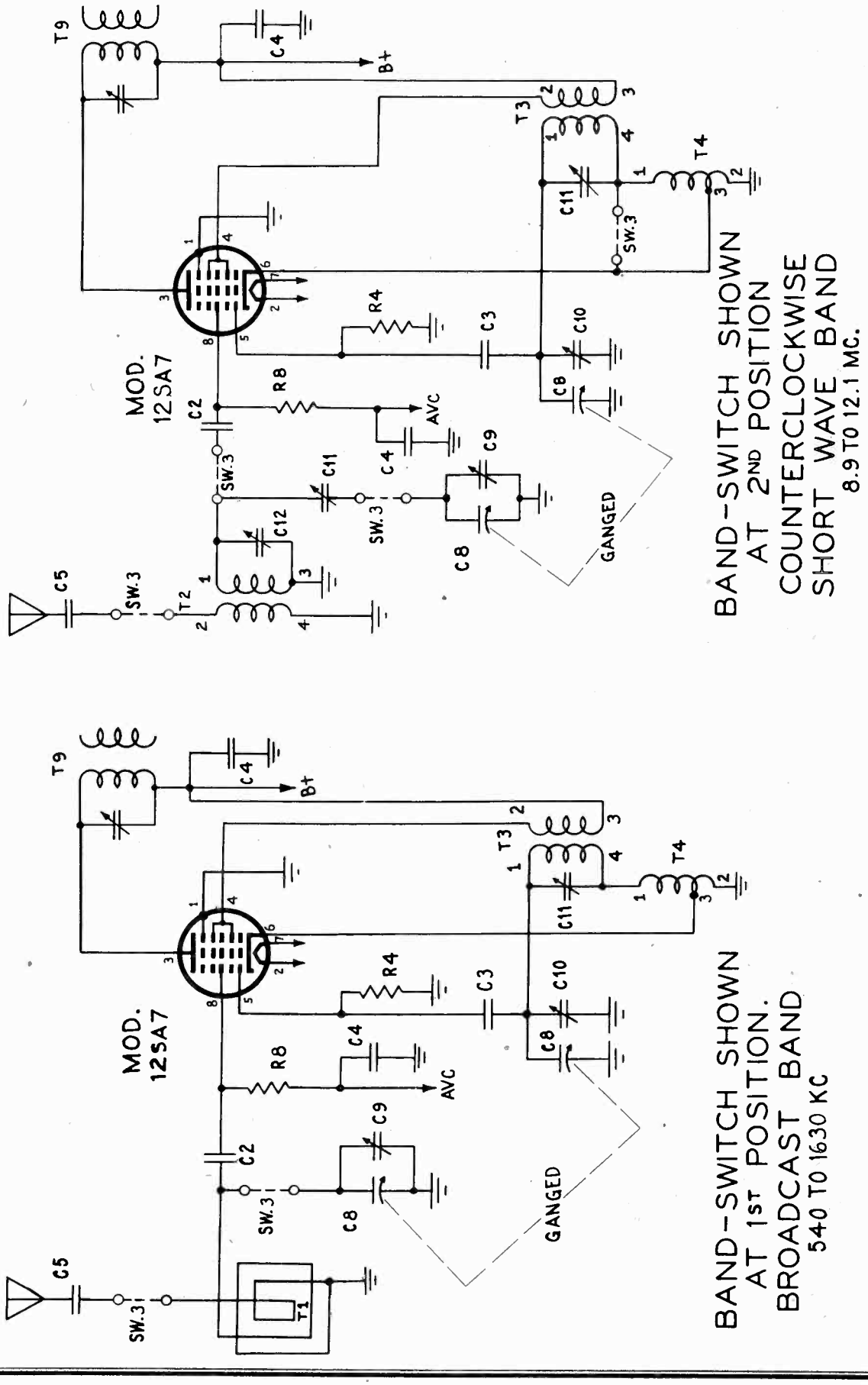


CODE	PART NO	DESCRIPTION
R 1	60-151	27 OHM 1/4 WATT RESISTOR
R 2	60-164	150 " " " "
R 3	60-368	10 K " " " "
R 4	60-185	22 K " " " "
R 5	60-354	27 K " " " "
R 6	60-190	220 K " " " "
R 7	60-178	470 K " " " "
R 8	60-195	1 MEG " " " "
R 9	60-179	2.2 MEG " " " "
R 10	60-193	10 MEG " " " "
T 1	82-32	ANTENNA LOOP
T 2	10-398	S.W. ANTENNA COIL
T 3	10-399	S.W. OSCILLATOR COIL
T 4	10-400	B.C. " "
T 5	10-369	1ST I.F. TRANSFORMER
T 6	10-369	2 ND. " " "
T 7	10-370	OUTPUT TRANSFORMER (ON SPKR.)

CODE	PART NO	DESCRIPTION
C 1	1304	.00025 MFD MICA CONDENSER
C 2	1301	.0001 " " "
C 3	1303	.00005 " " "
C 4	1622	.05 " 600 V
C 5	16-119	.05 " 400 V
C 6	1607	.05 " 400 V
C 7	16-106	.001 " 600 V
C 8	19-178	VARIABLE CONDENSER 14-50 C9 & C10
C 11	20-131	TRIMMER (DOUBLE)
C 12	20-133	TRIMMER
C 13	40-266	20 & 30 MFD 150 V ELECTROLYTIC
	79-326	5" DYN. SPEAKER
	24-181	VOLUME CONTROL 500 K OHMS
	69-961	BAND SWITCH

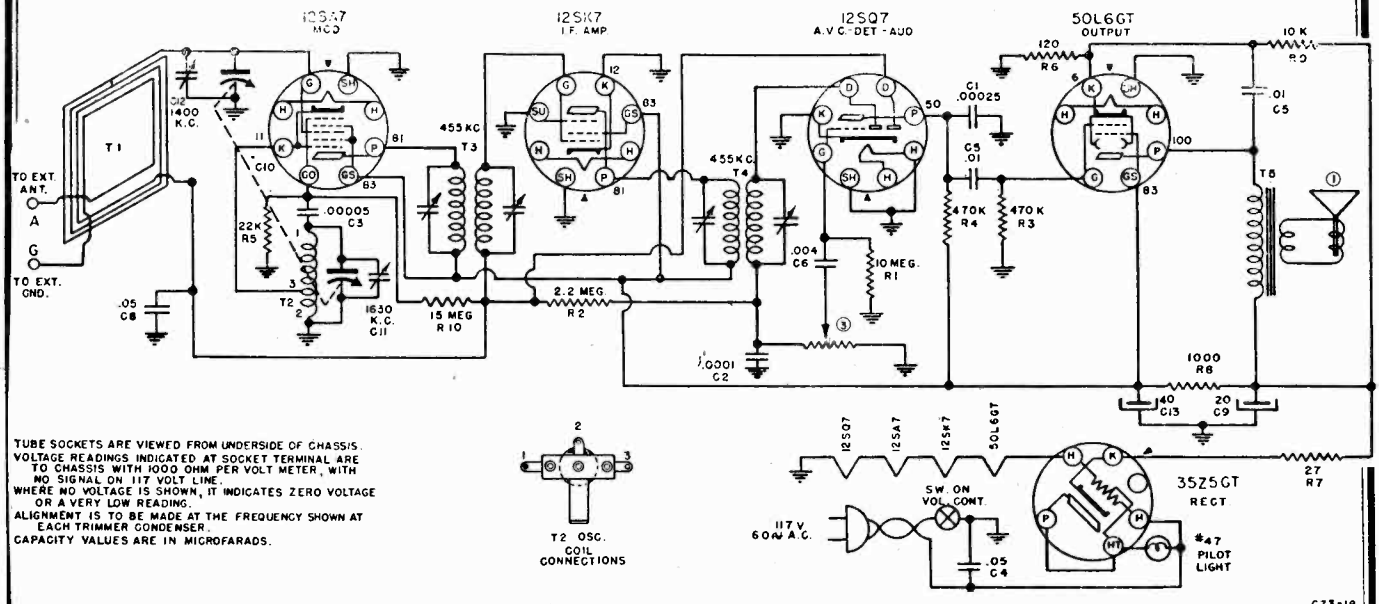
MODELS 2-610 to 2-619 inclusive

SPIEGEL



MODEL 1063

SPIEGEL



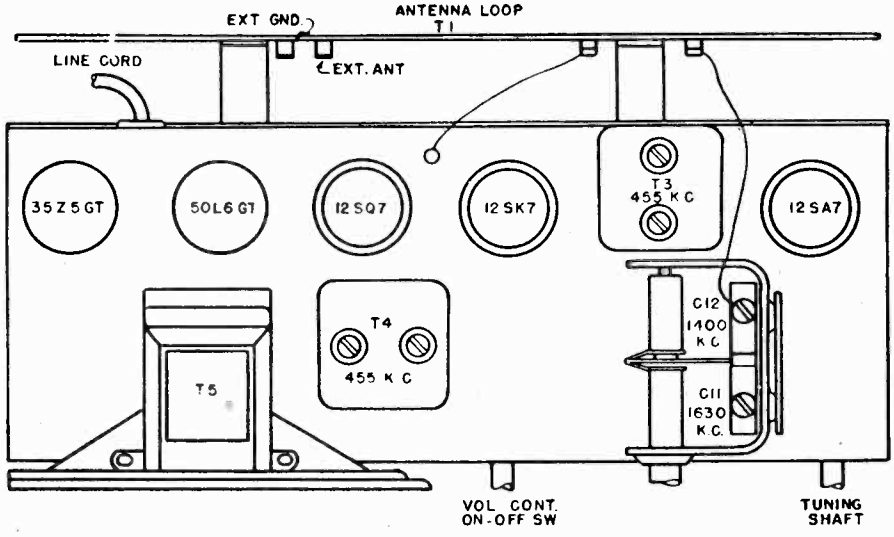
TUBE SOCKETS ARE VIEWED FROM UNDERSIDE OF CHASSIS.
VOLTAGE READINGS INDICATED AT SOCKET TERMINAL ARE TO CHASSIS WITH 1000 OHM PER VOLT METER, WITH NO SIGNAL ON 117 VOLT LINE.
WHERE NO VOLTAGE IS SHOWN, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING.
ALIGNMENT IS TO BE MADE AT THE FREQUENCY SHOWN AT EACH TRIMMER CONDENSER.
CAPACITY VALUES ARE IN MICROFARADS.

C73-18

CODE	PART NO.	DESCRIPTION
R1		10 MEGOHM 1/4 WATT RESISTOR
R2		2.2 " " "
R3		470K " "
R4		470K " "
R5		22 K " "
R6		120 " "
R7		27 " "
R8		1000 1/2 WATT "
R9		10 K 1 WATT "
R10		15 MEG 1/3 WATT "

CODE	PART NO.	* DESCRIPTION
C1		.00025 MFD. MICA CONDENSER
C2		.0001 " " "
C3		.00005 " " "
C4		.05 MFD. 400V. TUBULAR CONDENSER
C5		.01 " " "
C6		.004 " " "
C7		
C8		.05 " 200 V. " "
C9	18-272	20 MFD. 150 W.V. ELECTROLYTIC
C10	19-177	2 GANG VARIABLE CONDENSER (ALSO C11 & C12)
C13	18-280	40 MFD. 150 W.V. ELECTROLYTIC

CODE	PART NO	DESCRIPTION
T1	82-30	LOOP ANTENNA
T2	10-394	OSCILLATOR COIL
T3	10-369	1ST. I.F. TRANSFORMER
T4	10-370	2 ND I.F. TRANSFORMER
T5	80-212	OUTPUT TRANSFORMER USED WITH 79-307A SPR.
①	B 79-339	5" P.M. SPEAKER WITH A80-224 OUTPUT TRANS.
	79-307A	5" P.M. SPEAKER
③	24-153	500K OHM VOLUME CONTROL (WITH SW.)

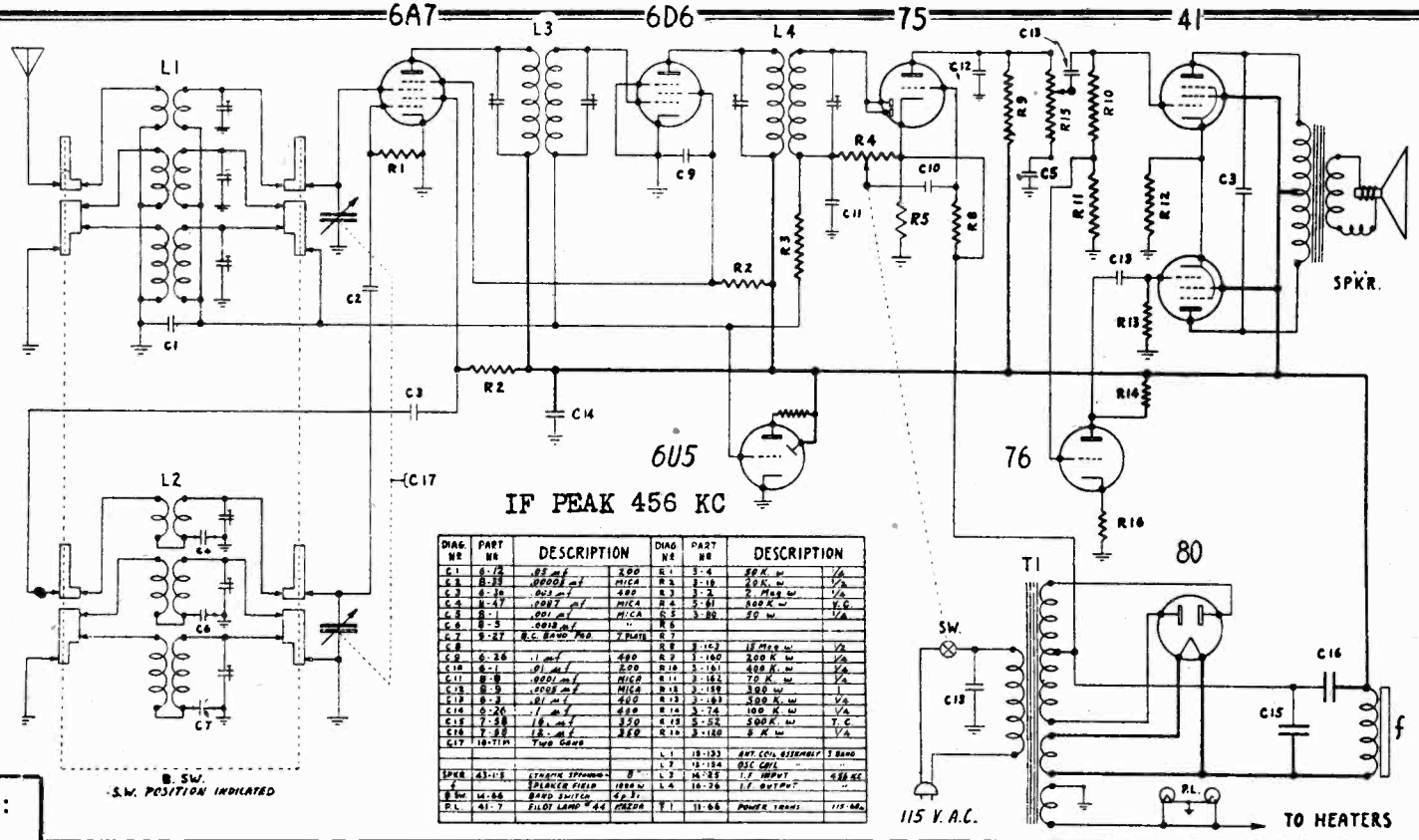


B73-19

ALIGNMENT PROCEDURE

CAUTION: This is an A.C./D. C. receiver and when aligning the set it is necessary to isolate the Signal Generator or the receiver from the line by use of a transformer, or place a .2 MFD. condenser in both test leads of the Signal Generator.

Connect the Signal Generator through a .1 MFD. condenser to the variable condenser side of the loop. Connect the ground side of the Signal Generator to the chassis. Adjust the Signal Generator to 455 Kilocycles and set the variable condenser of the receiver to minimum capacity (fully opened). With volume control full on and minimum output from the Signal Generator adjust the two trimmers on top of the 1st and 2nd I.F. transformers (T3-T4) for maximum output. Now connect the Signal Generator through a .00025 condenser to the external antenna connection on the back of the loop. Connect ground side of Signal Generator to terminal marked "G" on back of loop. Adjust frequency to 1630 K. C., set variable condenser at minimum capacity (fully opened) and adjust the oscillator trimmer (C11) for maximum output. Set Signal Generator to 1400 K.C., tune receiver to signal and adjust the Antenna trimmer (C12) on top of the variable condenser for maximum output.



MODELS
W-106
Z-7004
Z-7052

DIAG. NR	PART NR	DESCRIPTION		DIAG NR	PART NR	DESCRIPTION	
C-1	6-12	.02 mf	400	R-1	3-4	22K w	1/4
C-2	6-37	.00025 mf	MICA	R-2	3-19	10K w	1/4
C-3	6-36	.02 mf	400	R-3	3-2	3 Meg w	1/4
C-4	M-47	.00025 mf	MICA	R-4	5-61	500K w	V.C.
C-5	6-1	.005 mf	MICA	R-5	3-80	50 w	1/4
C-6	6-5	.005 mf	"	R-6			
C-7	9-27	R.C. Band Mtd.	7 PLATE	R-7			
C-8				R-8	3-163	10 Meg w	1/2
C-9	6-26	.1 mf	400	R-9	3-100	200 K w	1/4
C-10	6-1	.01 mf	600	R-10	3-161	400 K w	1/4
C-11	6-8	.0001 mf	MICA	R-11	3-162	70 K w	1/4
C-12	6-9	.00005 mf	MICA	R-12	3-159	300 w	1
C-13	6-3	.01 mf	400	R-13	3-163	500 K w	1/4
C-14	6-26	.1 mf	400	R-14	3-74	100 K w	1/4
C-15	7-58	.15 mf	350	R-15	5-52	500 K w	T.C.
C-16	7-58	.15 mf	350	R-16	3-180	8 K w	1/4
C-17	10-TIM	Two Gang					
				L-1	10-133	ANT. COIL ASSEMBLY	3 Band
				L-2	10-134	OSC COIL	
SPKR	43-115	Dynamic Speaker	5"	L-3	14-25	I.F. INPUT	456 KC
		Speaker Field	1850 w	L-4	10-26	I.F. OUTPUT	"
B SW	M-66	Band Switch	4p 3t				
P.L.	41-7	Pilot Lamp #44	FROZO	T-1	11-66	POWER TRANS	115 VAC

Parts List:

C —Two gang variable cond. with trimmers. C-6.032
C 1—.002 Mfd., 200V paper
C 2—.02 Mfd., 400V paper
C 3—.02 Mfd., 400V paper
C 4—.00025 Mfd., mica
C 5—.005 Mfd., 600V paper
C 6—.005 Mfd., 400V (or 600V) paper
C 7—.00025 Mfd., mica
C 8—.25 Mfd. (or .20 Mfd.), 200V paper
C 9—.05 Mfd., 400V, molded bakelite
C10, 11—Dual 40 Mfd., 150V A-25.019
*C12—50 Mmf., 20%

R 1—22K, ¼W, 20%
R 2—10 meg, ¼W, 20%
R 3—3.3 meg, ¼W, 20%
R 4—500K variable, audio taper, with SPST A-9.066
R 5—470K, ¼W, 20%
R 6—470K, ¼W, 20%
R 7—150 ohms, ½W, 10%
R 8—10 meg, ¼W, 20%
R 9—220K, ¼W, 20%
R10—1000 ohms, 2W (or 1W), 20%
*R11—2.2 meg, ¼W, 20%
*R12—220K, ¼W, 20%

MODELS 651, 6514, 6541, 6547
CHASSIS FJ-97

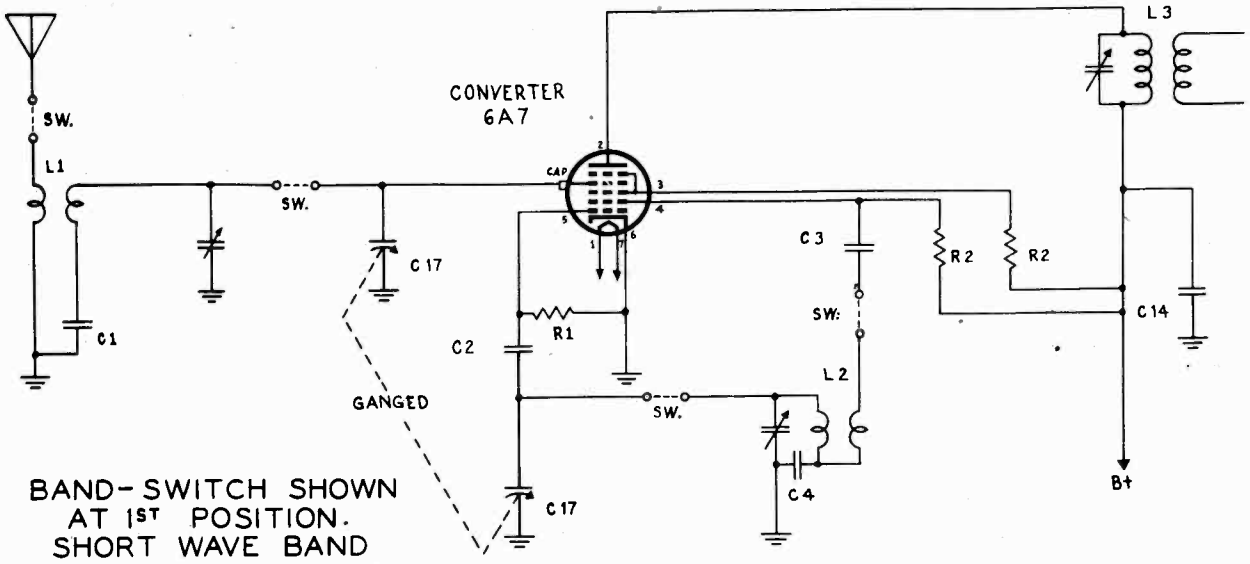
L 1—Transformer, IF input, 455KC C-2.191-1
L 2—Transformer, IF output, 455KC C-2.191-2
L 3—Coil, oscillator B-2.192
Antenna, loop B-5.006
Loudspeaker, PM, 5", Transformer to match 50A5 B-11.037
Pilot light, Mazda No. 47, 150 Ma.

* Used in phono combinations only.

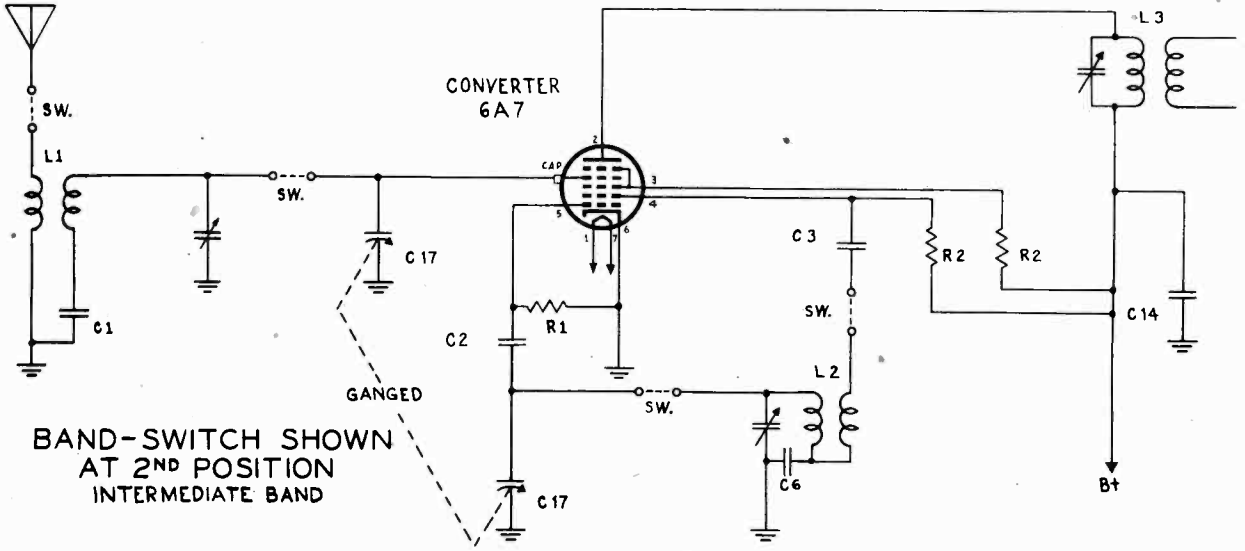
MODELS W-106, Z7004, Z-7052
MODELS 651, 6514, 6541, 6547 (Chassis FJ-97)

MODELS W-106, Z7004, Z-7052

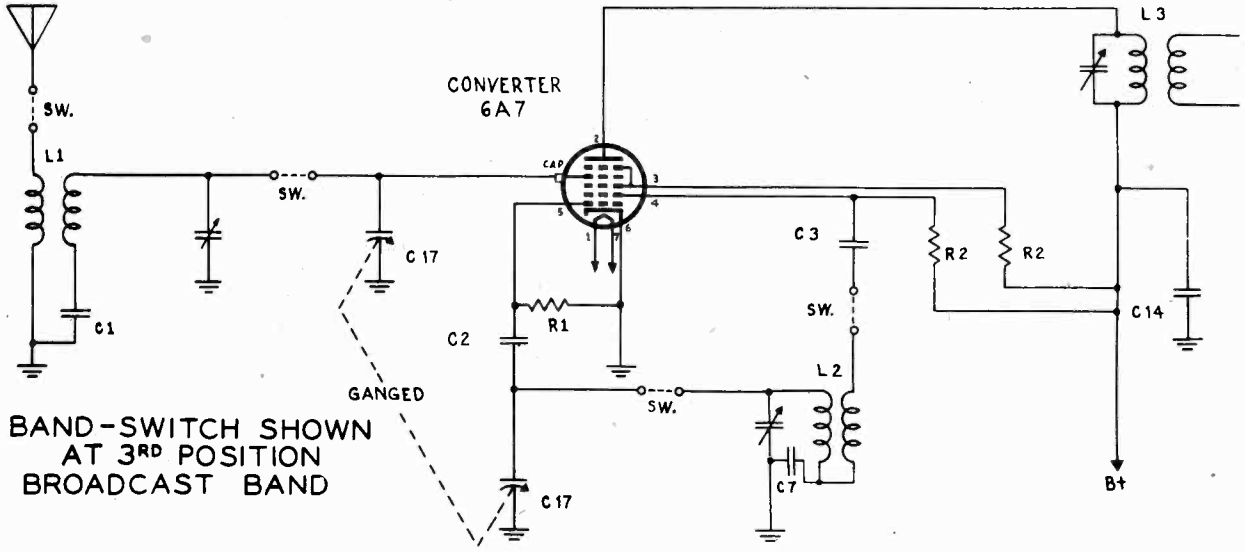
SPIEGEL



BAND-SWITCH SHOWN AT 1ST POSITION. SHORT WAVE BAND

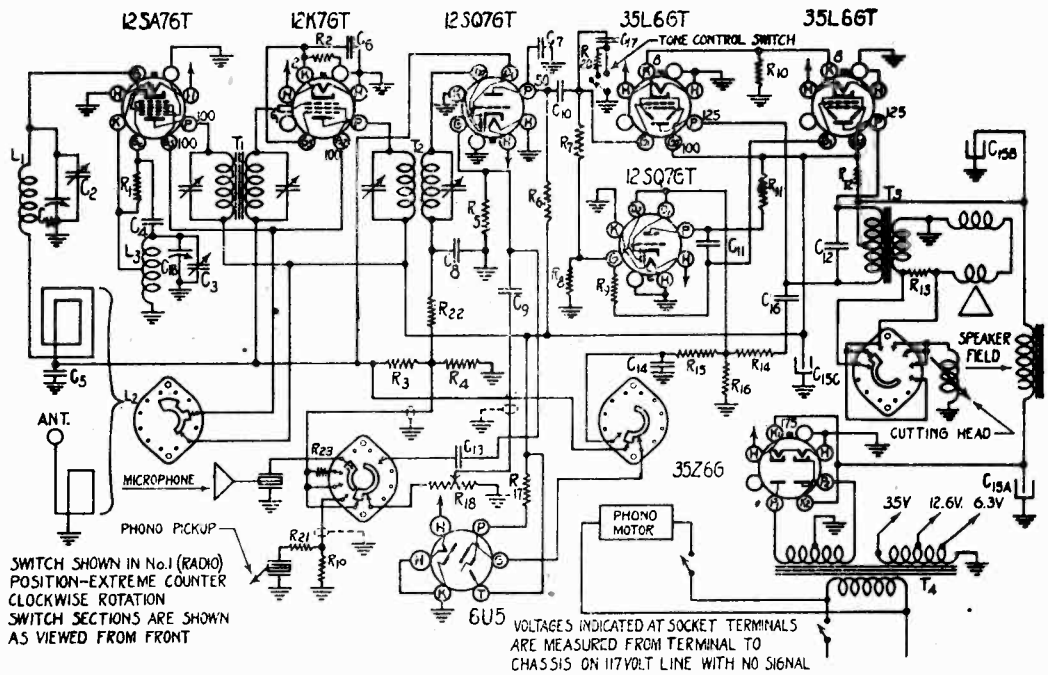


BAND-SWITCH SHOWN AT 2ND POSITION INTERMEDIATE BAND



BAND-SWITCH SHOWN AT 3RD POSITION BROADCAST BAND

SPIEGEL



IF PEAK 455 KC

Schematic Location	Part Number	Description
		CHASSIS PARTS
	4417	Button, Snap (Dial Mounting)
	8931	Cable, Tuning Tube
	2163	Cable, drive
	3227	Cap, Grid
R18	8910	Control, Volume and Switch
	1732	Cord, Line
	6424	Clamp, Linecord
	4314	Clamp, Tapped—For Tuning Tube
	4315	Clamp, Plain—For Tuning Tube
L3	8422	Coil, Oscillator
L1	8423	Coil, Tracking
C1a,b	8911	Condenser, Variable (with Pulley)
C2,3	8504	Condenser, Dual Trimmer
C15a,b,c	8425	Condenser, Electrolytic (20-250)—(20-150)—(20-150)
C4		Condenser, 100 Mmf. Mica
C5,14		Condenser, 1 Mfd. 200 v.
C6		Condenser, .05 Mfd. 200 v.
C7		Condenser, 250 Mmf. Mica
C8		Condenser, 100 Mmf. Mica
C9		Condenser, .002 Mfd. 600 v.
C10,16		Condenser, .01 Mfd. 400 v.
C11		Condenser, .05 Mfd. 400 v.
C12,13		Condenser, .001 Mfd. 600 v.
C17		Condenser, .005 Mfd. 600 v.
	7209	Grommet, Tuner Assembly Mtg.
	9121	Dial Chart
	8941	Microphone Socket Assembly
	6244	Pulley, Idler
	5026	Pointer
	6158	Pilot Lite
	1207	Retainer, "C" Washer (Holds Tuning Shaft)
R1		Resistor, 20M, 1/3 Watt
R2		Resistor, 200 Ohm, 1/3 Watt
R3,4,14,16		Resistor, 1 Meg. 1/3 Watt
R5		Resistor, 10 Meg. 1/3 Watt
R6,7,8,9,11		Resistor, 200M. 1/3 Watt
R10		Resistor, 120 Ohm, 1/2 Watt
R12		Resistor, 1000 Ohm, 1 Watt
R13		Resistor, 35 Ohm, 1/2 Watt
R15		Resistor, 2 Meg. 1/3 Watt
R17		Resistor, 1 Meg (in Tuning Tube Socket)
R19,20,21,22		Resistor, 50M, 1/3 Watt
R23		Resistor, 4 Meg. 1/3 Watt
	8440	Socket, Dual Dial Lamp
	8648	Spring, Drive Cable
	8427	Shaft, Drive
	8428	Switch, Tone Control
	8932	Switch, Master Control
	8919	Speaker, 6½" Dynamic
T4	8918	Transformer, Power, 60 cycle
T4	8933	Transformer, Power, 50 cycle
T3	89191	Transformer, Output
T1	8434	Transformer, 1st IF
T2	8435	Transformer, 2nd IF
		CABINET ASSEMBLY PARTS
		Back for Cabinet
		Book, Instruction
	8462	Bushing, Rubber (Recorder Unit Mtg.)
	9205	Carton, Shipping
	9210	Cabinet
	9206	Escutcheon
	2750	Knob, Motor Switch
	8487	Knob, Tuning
	8488	Knob, Tone
	8489	Knob, Volume
	8925	Knob, Master Control Switch
	8491	Loop Antenna Assembly

cont'd

MODEL 390

SPIEGEL

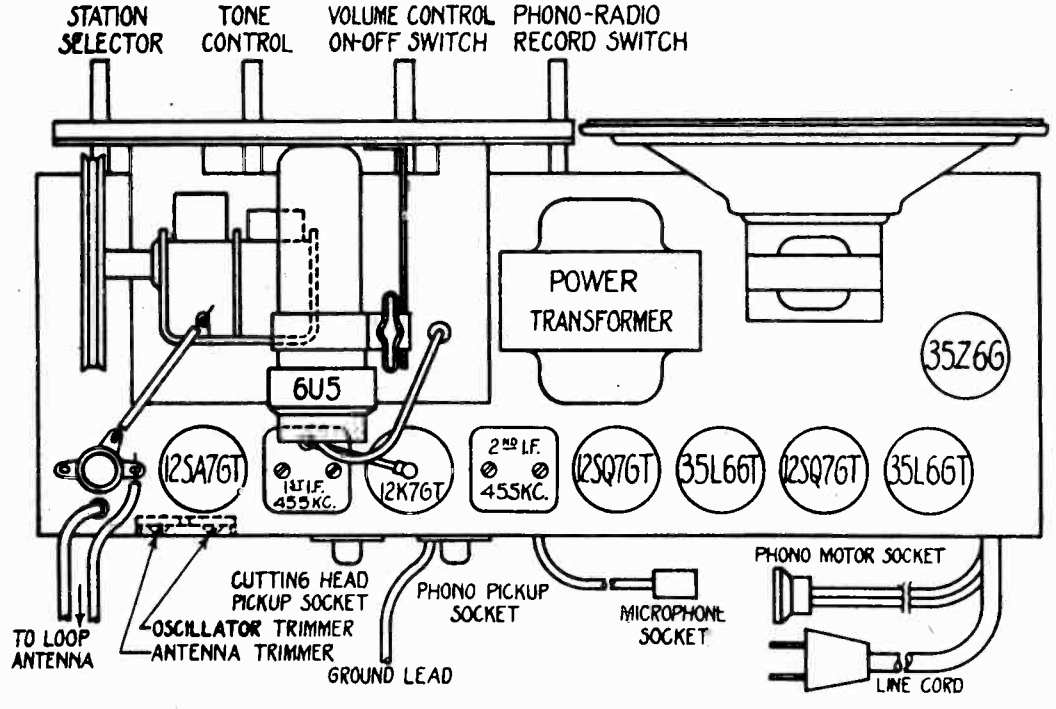
Schematic Location	Part Number	Description
	9208	Plate, Instruction
	8477	Plate, Motor-on-off
	8287	Plug, 1 Prong (for Cutter Leads)
	3288	Plug, 1 Prong (for Phono Pickup Leads)
	8493	Plug, 2 Prong (for Motor Leads)
	8454	Switch, Motor
	2997	Washer, Rubber (for Recorder Mtg.)
		RECORDER UNIT PARTS
	6943	Hex Nut for Pivot Post
	6947	Motor Mounting Screw
	6948	Adjusting Screw (Follower Arm)
	9413	Turntable Shaft Locking Screw
	9417	Recorder Arm Rest
	9418	Follower Arm Complete
	9424	Pickup Cartridge
	9426	Pickup Arm Complete
	9428	Cutter Head Tension Spring
	9484	Magnetic Cutter Head with Leads
	9434	Recorder Arm Complete
	9438	Pivot Post Return Spring
	9450	10" One-piece Turntable
	9456	Turntable Drive Disc Stud Clip
	9458	Lead Screw and Pinion Assembly
	9463	Turntable Drive Disc Tension Spring
	9464	Turntable Shaft
	9466	Turntable Drive Disc
	9467	Turntable Drive Disc Mounting Bracket Assembly
		The following parts are for models with ONE-PIECE TURNTABLE ONLY
	9469	Retractable Pin Spring
	9470	Retractable Pin
	9472	Rotor Shaft Pulley
	9474	Rotor Shaft Pulley Set-Screw
	9481	Motor 60 Cycle
	9482	Motor 50 Cycle

ALIGNMENT PROCEDURE

Output meter connection . . . . . Across speaker voice coil
Connection of generator ground lead . . . . . To Chassis
Connection of generator output lead . . . . . See chart below
Dummy antenna value to be used in series with generator . . . See chart
Position of volume control . . . . . Full on (Clockwise)

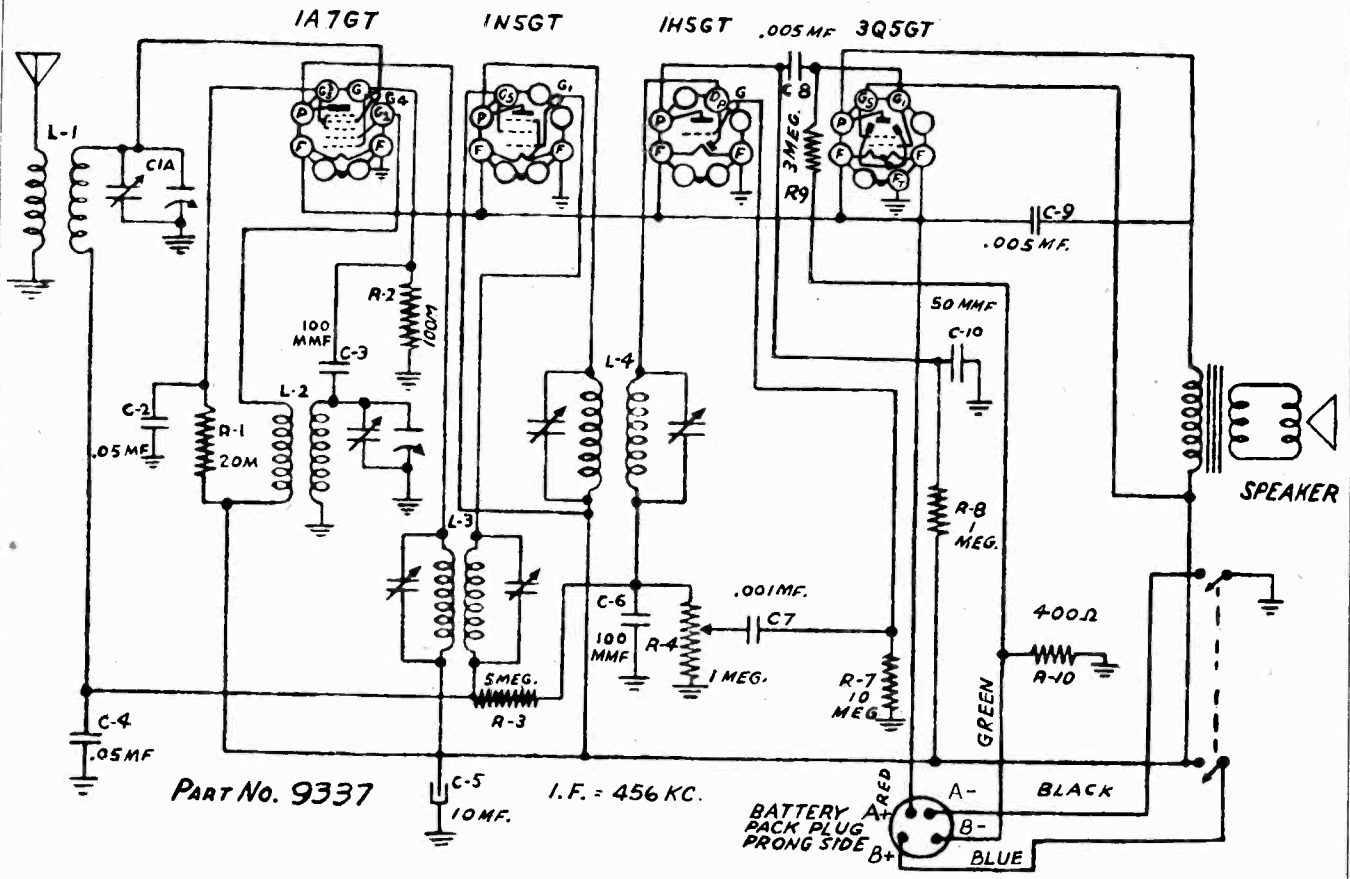
POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)
Open (Min. capacity)	455 kc.	.1 mfd.	Ant. section of variable	T2, T1.
Min. capacity	1720 kc.	50 mmf.	Ant. Terminal	Oscillator Trimmer
Tune in signal from generator	1400 kc.	50 mmf.	Ant. Terminal	Antenna Trimmer

ALL ALIGNMENT OPERATIONS MUST BE DONE WITH THE MASTER CONTROL SWITCH IN THE NO. 1 (RADIO) POSITION.



SPIEGEL

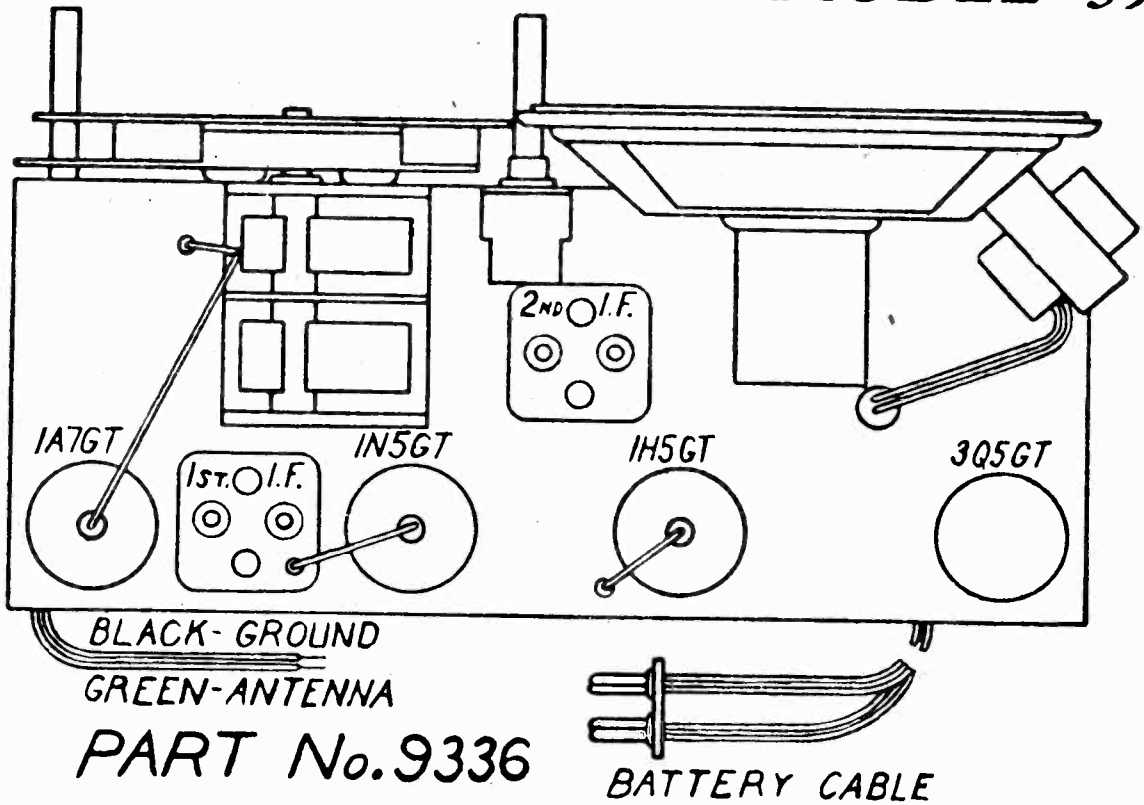
MODEL 397



STATION SELECTOR

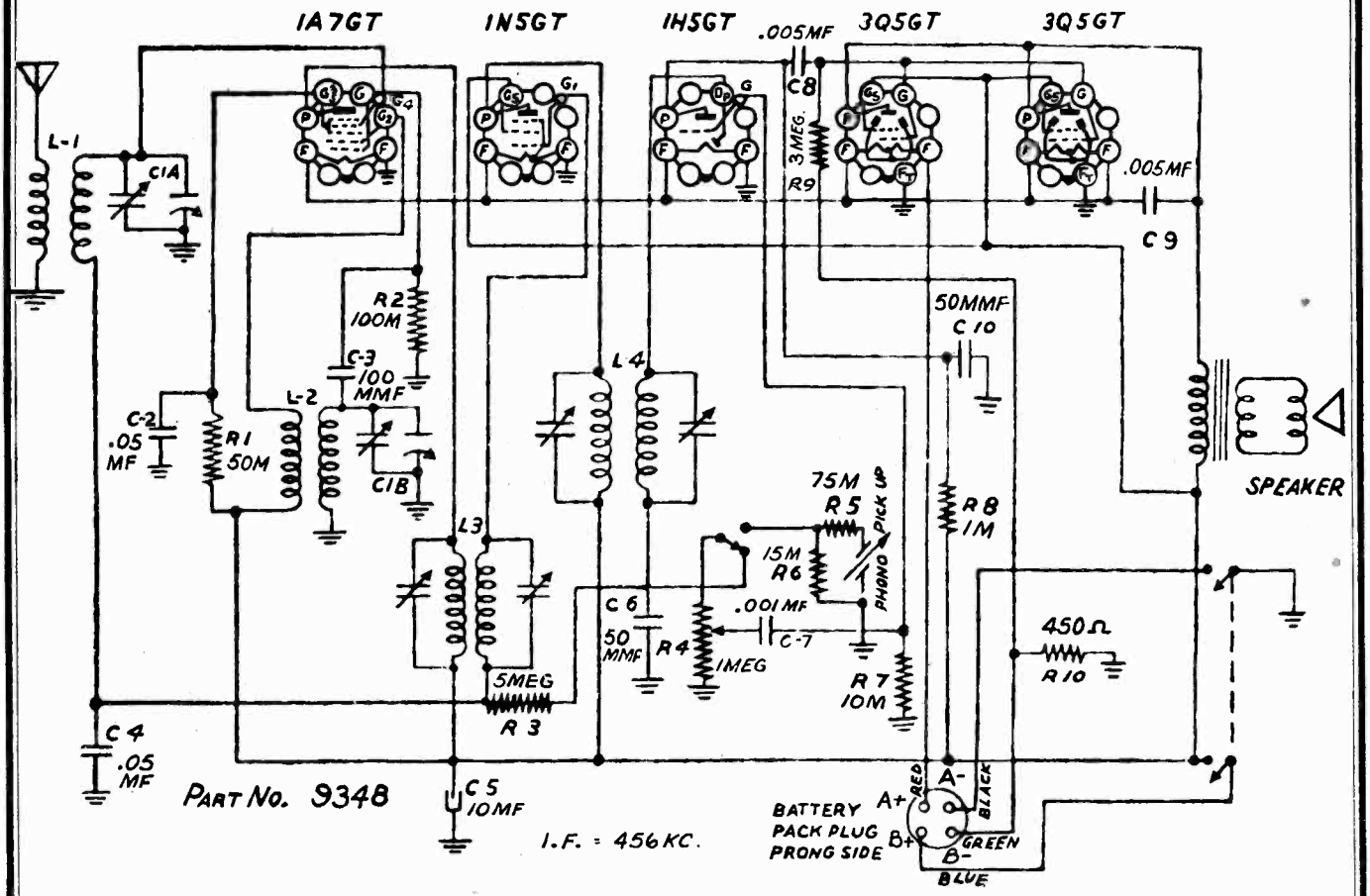
VOLUME CONTROL & ON OFF SWITCH

MODEL 397



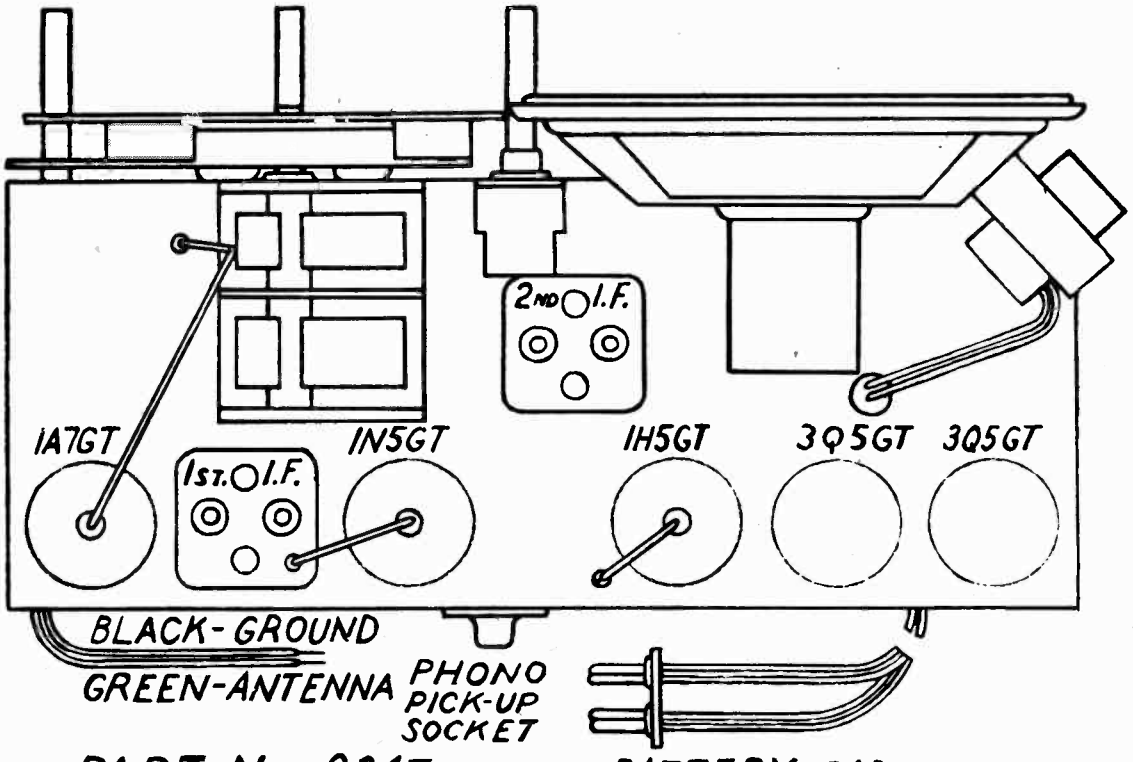
MODEL 408

SPIEGEL



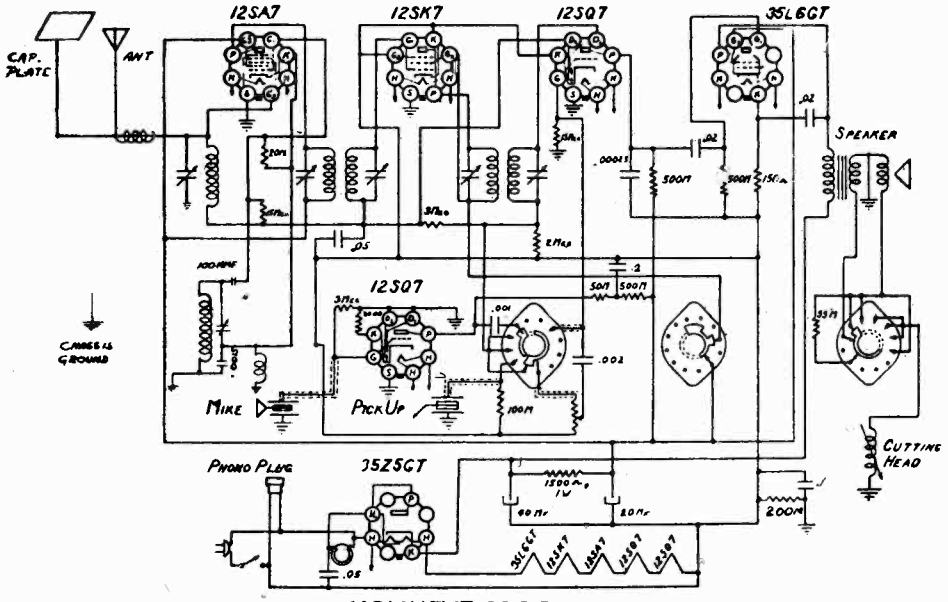
STATION SELECTOR | PHONO-RADIO SWITCH | VOLUME CONTROL & ON-OFF SWITCH

MODEL 408



SPIEGEL

MODEL 433



ALIGNMENT PROCEDURE

Output meter connection . . . . . Across speaker voice coil

Connection of generator ground lead . . . . . To Chassis

Connection of generator output lead . . . . . See chart below

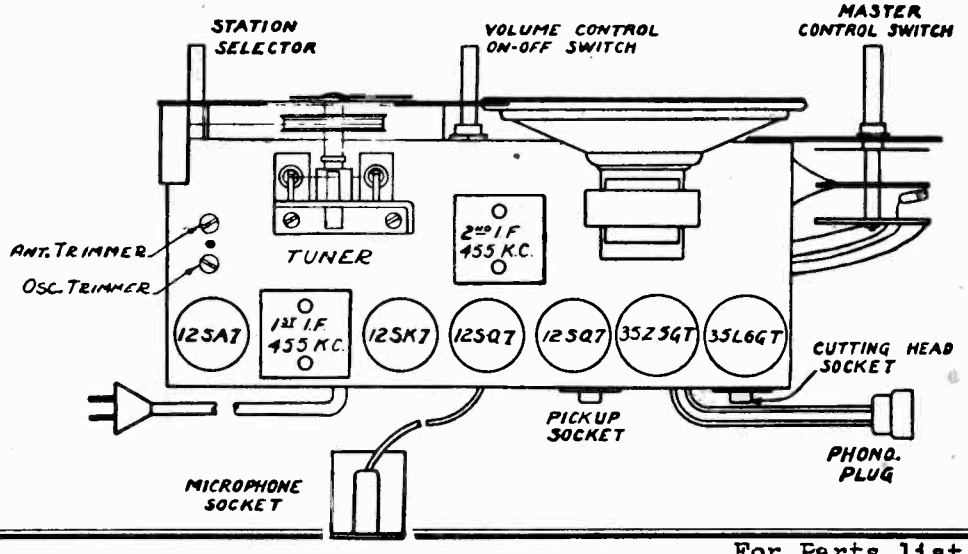
Dummy antenna value to be used in series with generator . . . . . See chart

Position of volume control . . . . . Full on (Clockwise)

ALL ALIGNMENT OPERATIONS MUST BE DONE WITH THE MASTER CONTROL SWITCH IN THE NO. 1 (RADIO) POSITION.

GENERATOR	CONNECTION AT RADIO	DUMMY ANTENNA	DIAL	TRIMMERS TO TUNE	REMARKS
IF 455 KC	12SA7 Grid	.1 mfd.	H. F. End	IF Transformers 4 Trimmers	Tune to Max.
1720 KC	Antenna	200 mmf.	H. F. End (1720)	Oscillator Trimmer	Set Limit Of Band
1400 KC	"	"	1400	Antenna Trimmer	Tune to Max.

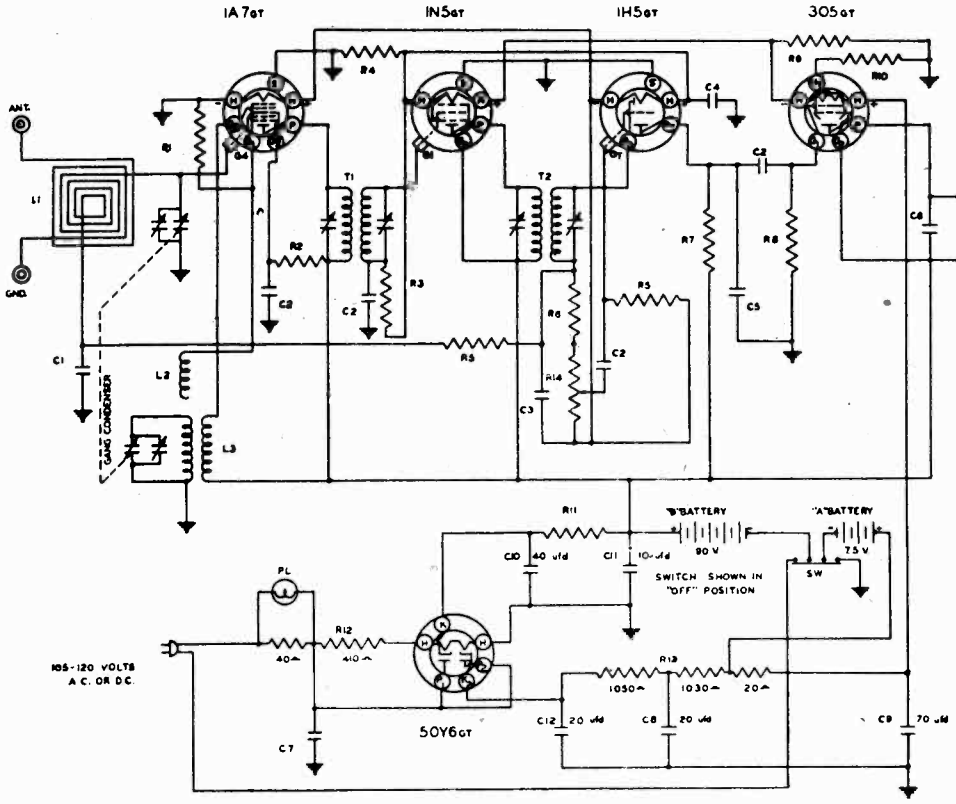
Repeat Above Alignment Procedure at least once more.



For Parts list, see P.15-17

MODEL TB-503

SPIEGEL



PART NO.	SCHEMATIC LOCATION		DESCRIPTION
3-135	R1	100,000Ω	½W ±20% RESISTOR
3-27	R2	40,000Ω	" " "
3-8	R3	4 MEG. Ω	" " "
3-314	R4	2000Ω	" 10% "
3-141	R5	6 MEG. Ω	" 20% "
3-157	R6	60,000Ω	" " "
3-308	R7	500,000Ω	" " "
3-2	R8	2 MEG. Ω	" " "
3-315	R9	800Ω	" 10% "
3-150	R10	1000Ω	" " "
3-318	R11	2200Ω	" " "
4-304	R12	450Ω	10.5-1W-10% WIRE "
4-303	R13	2100Ω	5.5-1W-5% WIRE "
5-305	R14	1 MEG. VOLUME CONTROL & SW	SWITCH
6-12	C1	.05 MFD.	200V CONDENSER
6-3	C2	.01 "	400V "
6-46	C3	.00025 "	600V "
6-70	C4	.1 "	200V "
6-69	C5	.0005 "	600V "
6-68	C6	.001 "	" "
6-14	C7	.05 "	400V "
7-306	C8	20 "	180V ELECTROLYTIC CONDENSER
7-305	C9	70 "	7V " "
7-304	C10, C11, C12	40 " 10 " 20 "	150V " "
15-311	L1	LOOP	
15-310	L2, L3	OSCILLATOR COIL	
16-306	T1	INPUT I.F. TRANSFORMER	
16-303	T2	OUTPUT I.F. "	
43-306	T3	" "	ON
	SPKR	P.M. SPEAKER	
41-308	PL	PILOT LIGHT #47	
40-305	1A7 GT	OSCILLATOR-MIXER	
	1N5 GT	I.F. AMPLIFIER	
	1H5 GT	DETECTOR-AUDIO	
	30S GT	POWER AMPLIFIER	
	50Y6 GT	RECTIFIER	

ALIGNMENT AND SERVICE DATA

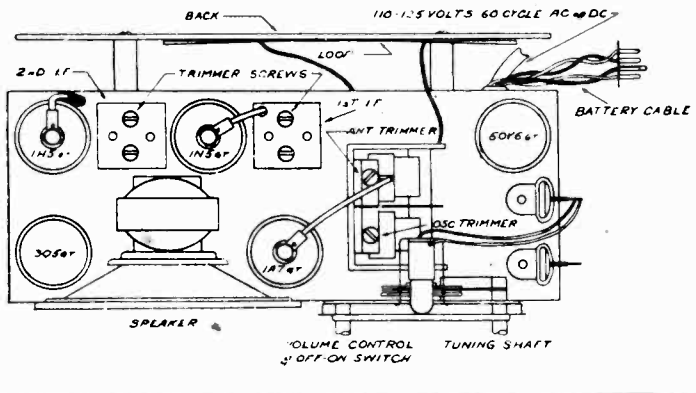
(For Professional Service Men Only)

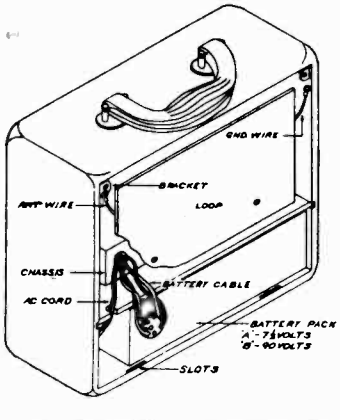
Remove chassis from cabinet for alignment.

A signal generator is required having the following frequencies: 456KC, 1400KC, 1720KC.

First Step: Connect the generator lead through a .1 mfd. condenser to the terminal lug next to the Antenna trimmer on top of the tuning condenser. The ground lead from the generator may be connected to any convenient spot on the metal chassis. Adjust generator to 456KC and adjust IF trimmer screws until a maximum reading is noted on the output meter which has been connected across the speaker. The tuning condenser should be turned out to complete minimum capacity when aligning the IF. With generator lead still connected to antenna trimmer terminal, adjust generator frequency to 1720KC, and with tuning condenser still at minimum, adjust oscillator trimmer till the 1720KC signal is tuned in. Next, remove generator leads from set and connect both to a transmitting loop. This loop can be made with 2 turns of wire about 6 inches in diameter and placed about one foot away from the loop antenna of the receiver. Adjust generator frequency to 1400KC. Turn tuning condenser until the signal is tuned in and adjust antenna trimmer until a maximum reading is noted. No further adjustment should be necessary, unless the set has been damaged, as the coils and condenser in this receiver have been specially handled at the factory so as to insure proper alignment at the lower frequency end of the dial.

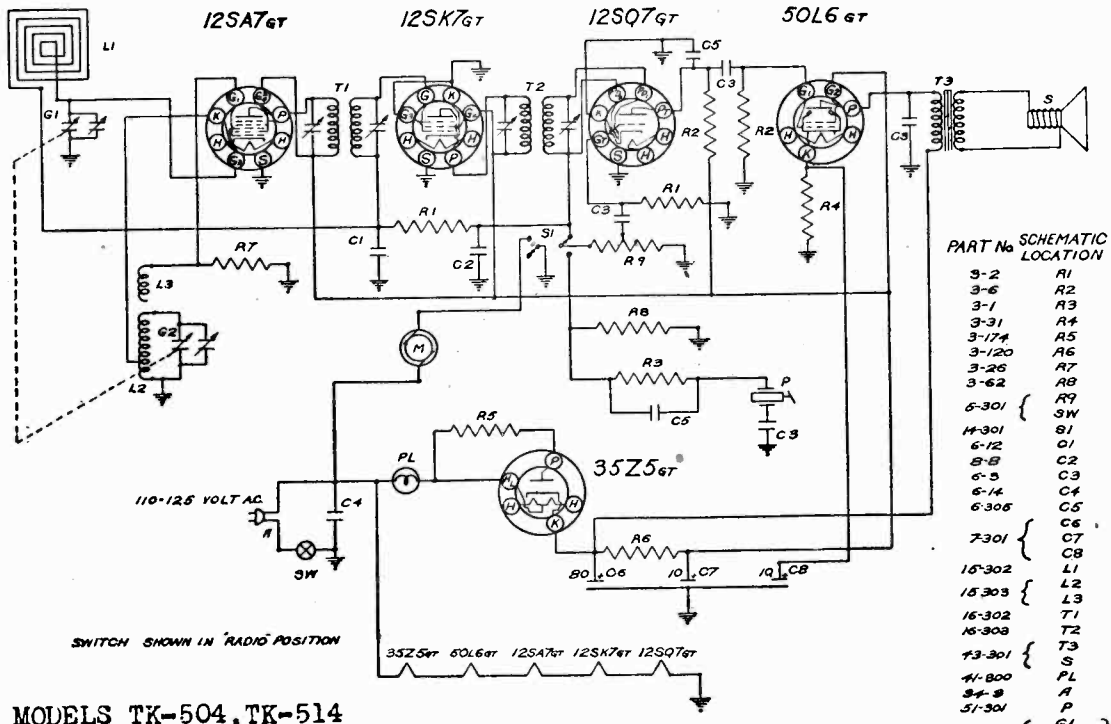
TUBE AND TRIMMER LOCATION





SPIEGEL

MODEL 433
MODELS TK-504, TK-514



PART No	SCHEMATIC LOCATION	DESCRIPTION
3-2	R1	2 MEG. ± 1/4 W 20% RESISTOR
3-6	R2	1 MEG. ± " " "
3-1	R3	.5 MEG. ± " " "
3-31	R4	100 ± " " "
3-174	R5	50 ± " " "
3-120	R6	2500 ± " " "
3-26	R7	25000 ± " " "
3-62	R8	200000 ± " " "
6-301	R9	1 MEGOHM VOL. CONTROL
	SW	SWITCH
14-301	S1	CHANGEOVER SWITCH
6-12	C1	.05 MFD. 200V CONDENSER
8-8	C2	.0001 MFD MICA "
6-5	C3	.01 MFD. 400V. "
6-14	C4	.05 MFD 400V "
6-306	C5	.0005 MFD 400V "
7-301	C6	80 MFD. 150V. ELECTROLYTIC
	C7	10 MFD. 150V. ELECTROLYTIC
	C8	10 MFD. 25V. ELECTROLYTIC
15-302	L1	LOOP
15-303	L2	OSCILLATOR COIL
	L3	GRID COUPLING COIL
15-302	T1	INPUT I.F. TRANSFORMER
15-303	T2	OUTPUT I.F. "
13-301	T3	OUTPUT TRANSFORMER
	S	8" P.M. SPEAKER
41-800	PL	PILOT LIGHT #47
34-8	A	POWER CORD
51-301	P	CRYSTAL PICKUP L-26A
10-301	G1	GANG CONDENSER
	G2	GANG CONDENSER
65-300	M	PHONO MOTOR
40-801	12SA7GT	OSCILLATOR-MIXER
	12SK7GT	I.F. AMPLIFIER
	12SQ7GT	DETECTOR-AUDIO
	50L6GT	AUDIO AMPLIFIER
	35Z5GT	RECTIFIER

MODELS TK-504, TK-514

IF PEAK 456 KC

3-11-41 DRAWN BY EAK APPROVED BY RCA

MODEL 433

Part No.	Description
9811	Book—Instruction
8462	Bushing-Stem—Motor Mounting
9813	Cabinet
2163	Cable—Drive
9724	Capacity Plate
8031	Coil—Oscilator
9221	Control—Volume and Switch
8036	Cord—AC Line
5562	Condenser—Antenna Trimmer
8525	Condenser—Electrolytic 40-20-150 V
3352	Condenser—Paper .2-400 V
563	Condenser—Paper .05-400 V
576	Condenser—Paper .02-400 V
3137	Condenser—Paper .001-400 V
824	Condenser—Paper .002-600 V
572	Condenser—Paper .1-200 V
580	Condenser—Paper .05-200 V
1286	Condenser—Mica 250 mmfd
7799	Connector—Microphone—with bracket and lead
7084	Crystal—Dial
9548	Indicator
9545	Indicator—Back Plate
9247	Knob—Master Control
2750	Knob—Motor Switch
9246	Knob—Tuning
9248	Knob—Volume
6158	Lamp—Pilot No. 47 Mazda
8285	Microphone No. X-20
9211	Needles—Cutting
9207	Needles—Playing
9439	Plate—Instruction
8477	Plate—Motor on-off
8287	Plug—1 Prong Large (Play)
8288	Plug—1 Prong Small (Cut)
8493	Plug—Phono Motor
9547	Pointer
9209	Records—Blank
8929	Recorder Unit—Complete
7326	Resistor—150 ohm 1/2 W
3807	Resistor—35 ohm 1/2 W Flexohm
9093	Resistor—1500 ohm 1 W
9225	Resistor—2 M 1/3 W
8580	Resistor—50 M 1/3 W
7122	Resistor—100 M 1/3 W
6722	Resistor—500 M 1/3 W
6721	Resistor—200 M 1/3 W
8970	Resistor—2 Meg 1/3 W
8062	Resistor—3 Meg. 1/3 W
8039	Resistor—15 Meg. 1/3 W
7121	Resistor—20 M 1/3 W
9228	Shaft—Drive
9230	Speaker—5" P.M.
2908	Spring—Pointer Drive
8430	Socket—Phono Motor
6267	Socket—1 Prong—Large (Playing)
8266	Socket—1 Prong—Small (Cutting)
7573	Socket—Dial Lamp
9226	Switch—Master Control
8454	Switch—Motor
8042	Transformer—1st I.F.
8043	Transformer—2nd I.F.
9581	Tuner—Permeability

ALIGNMENT AND SERVICE DATA

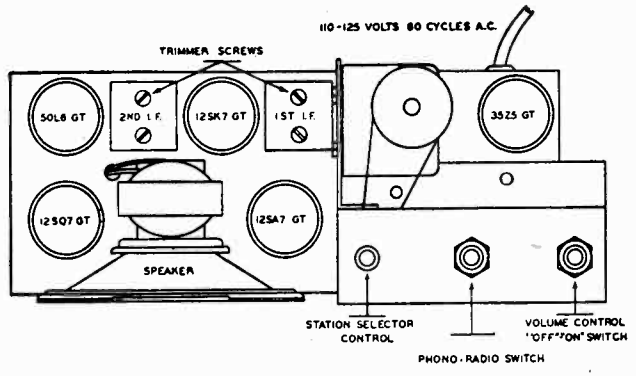
(For Professional Service Men Only)

Remove chassis from cabinet for alignment.

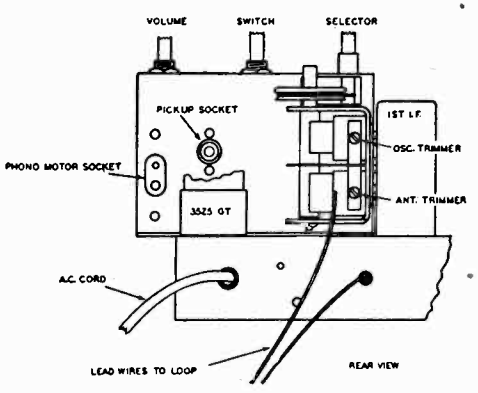
A signal generator is required having the following frequencies: 456KC, 1400KC, 1720KC.

First Step: Connect the generator lead through a .1 mfd. condenser to the terminal lug next to the Antenna trimmer on top of the tuning condenser. The ground lead from the generator may be connected to any convenient spot on the metal chassis. Adjust generator to 456KC and adjust IF trimmer screws until a maximum reading is noted on the output meter which has been connected across the speaker. The tuning condenser should be turned out to complete minimum capacity when aligning the IF. With generator lead still connected to antenna trimmer terminal, adjust generator frequency to 1720KC, and with tuning condenser still at minimum, adjust oscillator trimmer till the 1720KC signal is tuned in. Next, remove generator leads from set and connect both to a transmitting loop. This loop can be made with 2 turns of wire about 6 inches in diameter. Adjust generator frequency to 1400KC. Turn tuning condenser until the signal is tuned in and adjust antenna trimmer until a maximum reading is noted. No further adjustment should be necessary, unless the set has been damaged, as the coils and condenser in this receiver have been specially handled at the factory so as to insure proper alignment at the lower frequency end of the dial.

TUBE AND TRIMMER LOCATION



TRIMMER AND CONNECTOR SOCKET LOCATION



MODELS TK-504, TK-514

Remove the chassis from the cabinet for alignment.

A signal generator is required having the following frequencies: 456KC, 1400KC, 1720KC, 6MC, 16MC, 18.3MC. An output meter should be connected across the speaker.

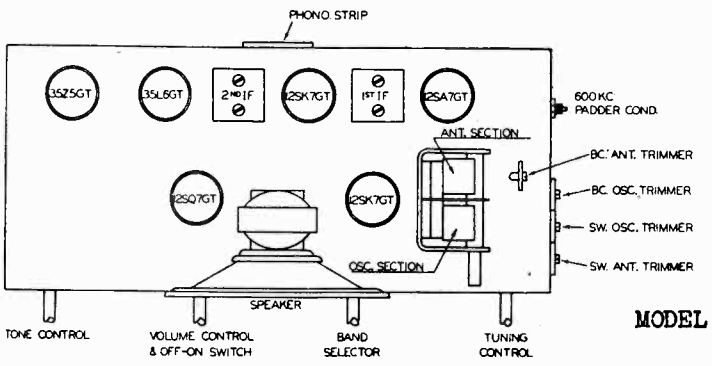
I. F. Alignment: Connect the generator lead through a .1MFD condenser to the terminal lug on the "Antenna" section of the gang condenser. The ground lead from the generator should be connected to the chassis base. Set the generator at 456KC. Adjust the trimmer screws in the 1st and 2nd I. F. cans (see Fig. No. 1) until a maximum reading is noted on the output meter.

The receiver volume control should be turned to maximum during the I F and all subsequent alignments, to keep the AVC from working and giving false readings. Keep the generator output as low as possible to prevent overloading.

BC or Broadcast Alignment: With the generator leads still connected as in I. F. Alignment, rotate the tuning condenser to complete minimum capacity. Set the generator to 1720KC. Adjust the BC oscillator trimmer until the signal is tuned in. Next, remove the generator leads and connect them to the antenna lead of the loop antenna, through a 100 MMFD condenser. Set the generator to 1400KC and rotate the tuning condenser until the signal is tuned in. Adjust the BC antenna trimmer until a maximum reading is noted on the output meter. Set the generator to 600KC and turn the tuning condenser until the signal is tuned in. Rock the tuning control back and forth slowly until a maximum reading is noted on the output meter. It is advisable to return to the 1720KC adjustment and recheck that setting to make sure it has not changed while padding at 600KC.

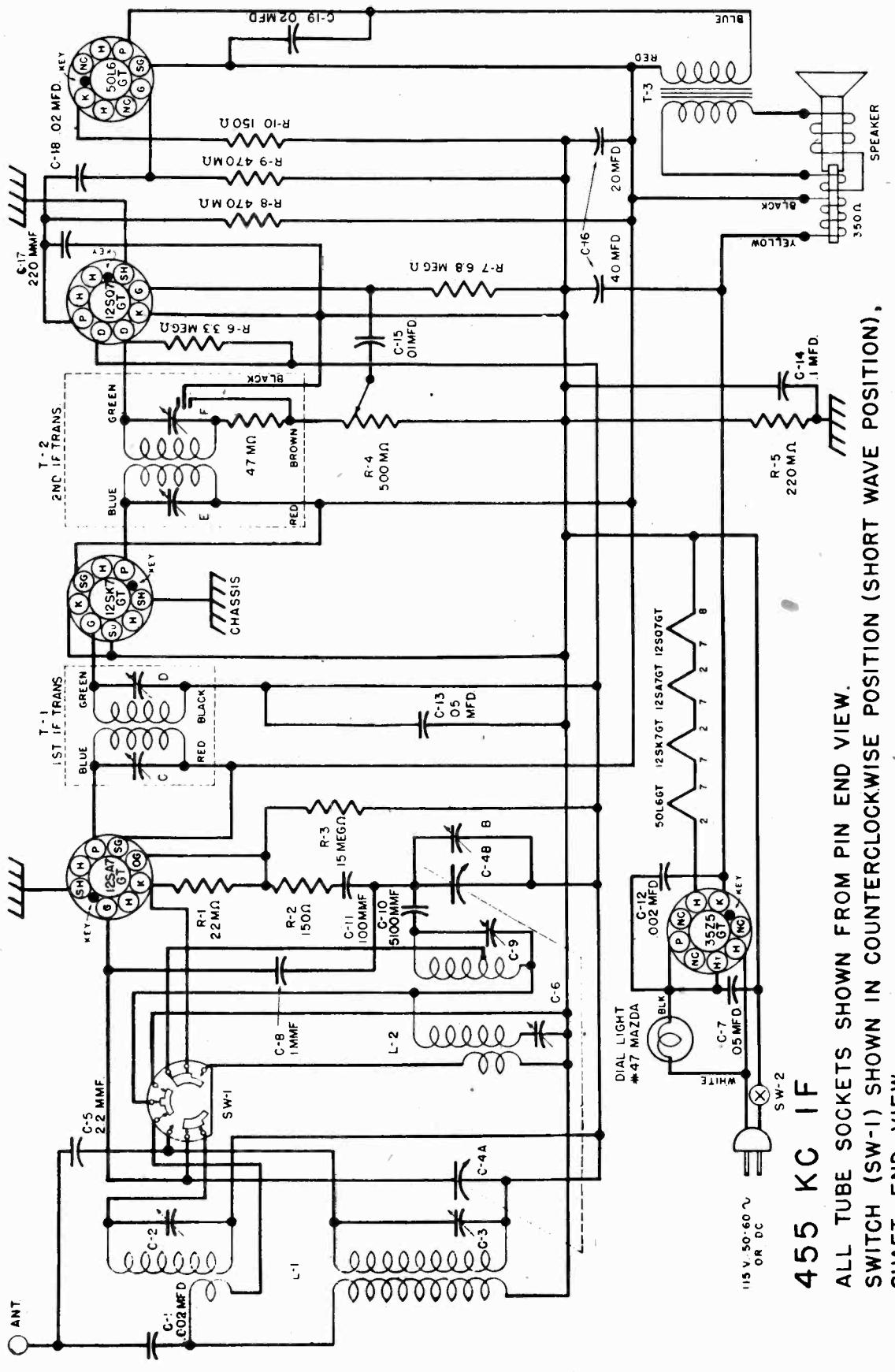
SW or Short Wave Alignment: Set the generator at 18.3MC. Turn the receiver band switch to short wave position. Turn the tuning condenser to complete minimum capacity. The generator leads should be connected to the antenna lead of the loop through a 400 Ohm resistor. Adjust the S. W. oscillator trimmer slowly until the 18.3MC signal is tuned in. At this point, it will be well to make sure that the fundamental signal is tuned in. Turn up the generator output and tune the receiver to approximately 17.3MC. At this point, the 18.3MC signal will be heard again but much weaker. This is the image frequency. If the image is not heard, then turn the tuning condenser back to complete minimum and readjust the SW oscillator trimmer. Remember the image must always be heard (at 2 times the IF frequency in KC) lower in frequency than the fundamental signal. After the oscillator has been properly set, tune the signal generator to 16MC and rotate the tuning control until the signal is tuned in. Adjust the SW antenna trimmer until a maximum reading is noted on the output meter. It is advisable to rock the gang slowly while adjusting the antenna trimmer. Set the generator to 6MC and tune the signal in on the receiver. Check the alignment at this frequency. No adjustment should be necessary, as the coils have been carefully checked before leaving the factory. A fixed oscillator padding condenser is used at 6MC.

TUBE AND TRIMMER LOCATION
110-125 VOLTS 60 CYCLE AC OR DC



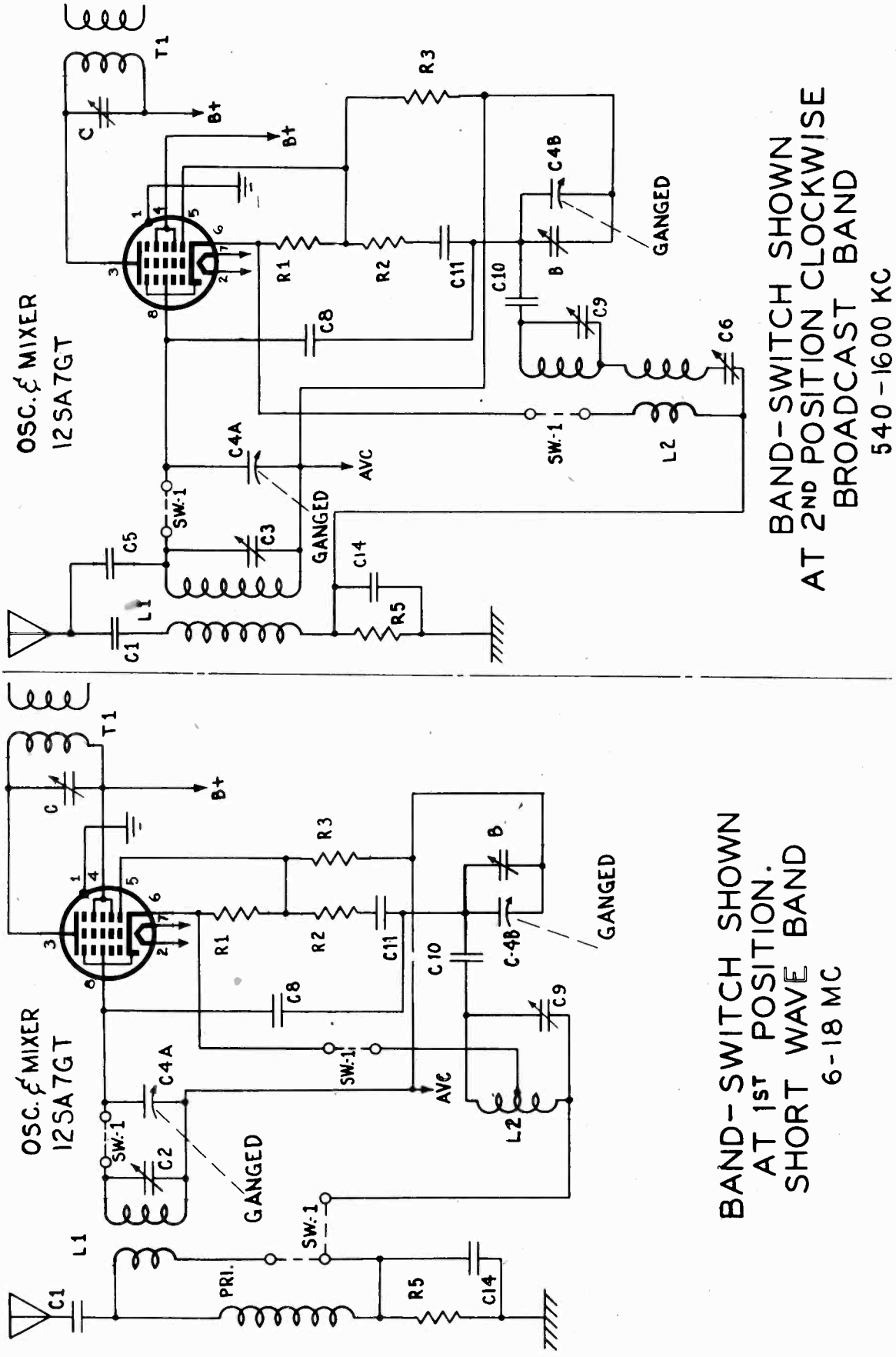
MODEL T-2625

SPIEGEL



MODEL 568

SPIEGEL



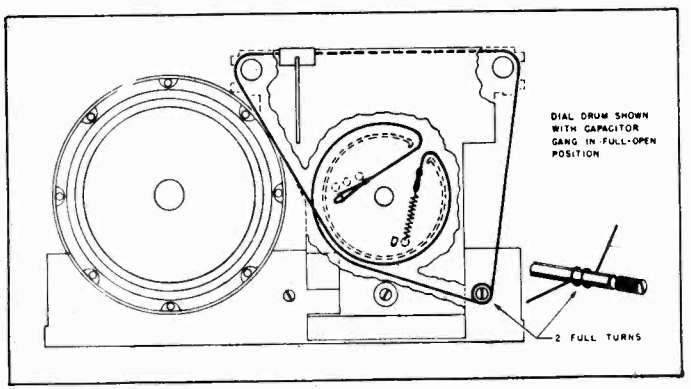
ALIGNMENT PROCEDURE

The following equipment is necessary to properly align this chassis:

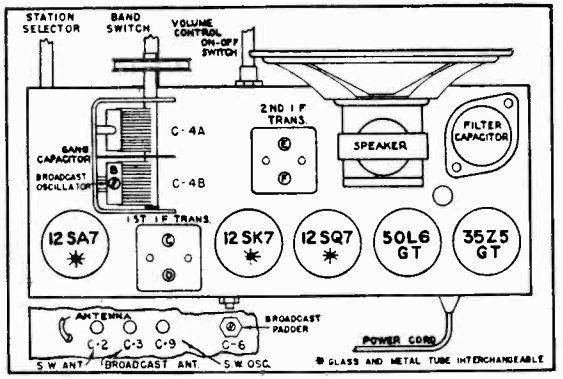
1. A signal generator which will provide an accurately calibrated signal at the frequencies listed.
2. An output meter.
3. A non-metallic screwdriver.
4. Dummy antenna: — .1 mfd. — 200 mmf. — 400 ohms

CONNECT TEST OSCILLATOR TO	DUMMY ANTENNA	INPUT SIGNAL FREQUENCY	BAND	SET DIAL AT	TRIMMERS	PURPOSE
12SA7GT grid	.1 mfd.	455 kc.	Broadcast	HF end	C D E F	Align IF
12SA7GT grid	.1 mfd.	1620 kc.	Broadcast	HF end	B	Set limit of band
Ant. terminal	400 ohms	18.3 mc.	Short Wave	HF end	C-9	Set limit of band
Ant. terminal	400 ohms	18.0 mc.	Short Wave	18 mc.	C-2	Align antenna
Ant. terminal	200 mmf.	1400 kc.	Broadcast	1400 kc.	C-3	Align antenna
Ant. terminal	200 mmf.	600 kc.	Broadcast	600 kc.	C-6	Rock gang and adjust to max.

NOTE: Recheck alignment of trimmers B and C-3 after adjusting C-6.



Dial Mechanism



e Layout

Electrical and Mechanical Specifications

Frequency Range	540-1600 kc., 6-18 mc.
Intermediate Frequency	455 kc.
Power Supply	105-125 volts, 50-60 cycle AC or DC
Loudspeaker	Dynamic
V.C. Impedance	3.5 ohms at 400 cycles
Power Output (Undistorted)	.75 watt
Power Output (Maximum)	1.5 watts
Tuning Drive Ratio	5-1

TUBE COMPLEMENT

1-12SA7GT
Osc. & Mixer tube

1-12SK7GT
IF Amplifier tube

1-12SQ7GT
2nd Det. & 1st Audio tube

1-50L6GT
Power Output tube

1-35Z5GT
Rectifier tube

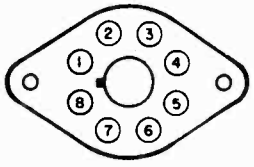
NOTE: The above glass tubes are interchangeable with their metal equivalent.

MODEL 568

SPIEGEL

SOCKET VOLTAGES

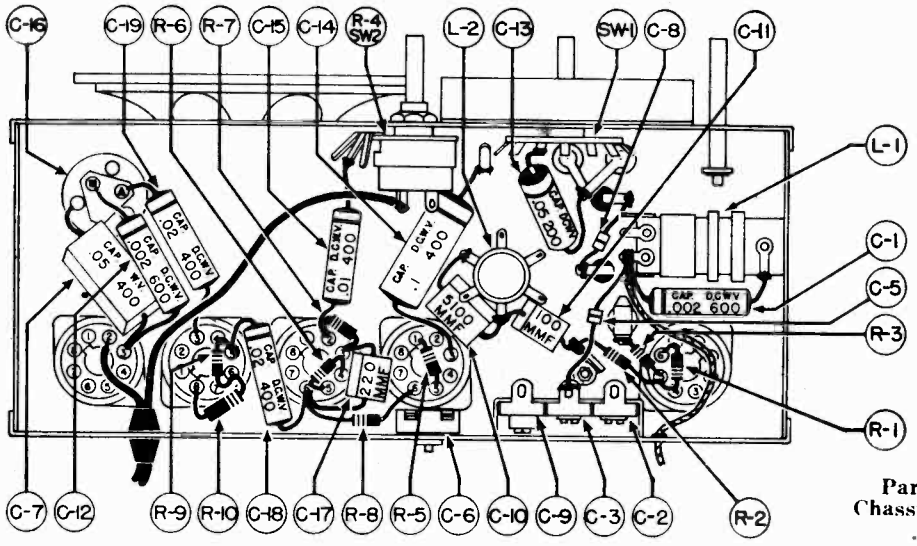
TUBE	POSITION	1	2	3	4	5	6	7	8
12SA7GT	Oscillator and Mixer	0	37.5 AC	99	99	–4.2	0	24.5 AC	0
12SK7GT	IF Amplifier	0	24.5 AC	0	0	0	99	12.5 AC	99
12SQ7GT	2nd Det.—1st Audio	0	0	0	0	0	16	12.5 AC	0
50L6GT	Power Output	0	85 AC	91.5	99	0	0	37.5 AC	5.9
35Z5GT	Rectifier	0	117 AC	112 AC	0	112 AC	0	85 AC	112



NOTE: All DC voltages measured with a 1000 ohm-per-volt meter from ON-OFF switch (—B) to socket contact indicated. All voltages are positive DC unless otherwise marked.

Volume control full on. No signal.

Line Voltage 117 volts AC.



Parts Layout
Chassis Model 568

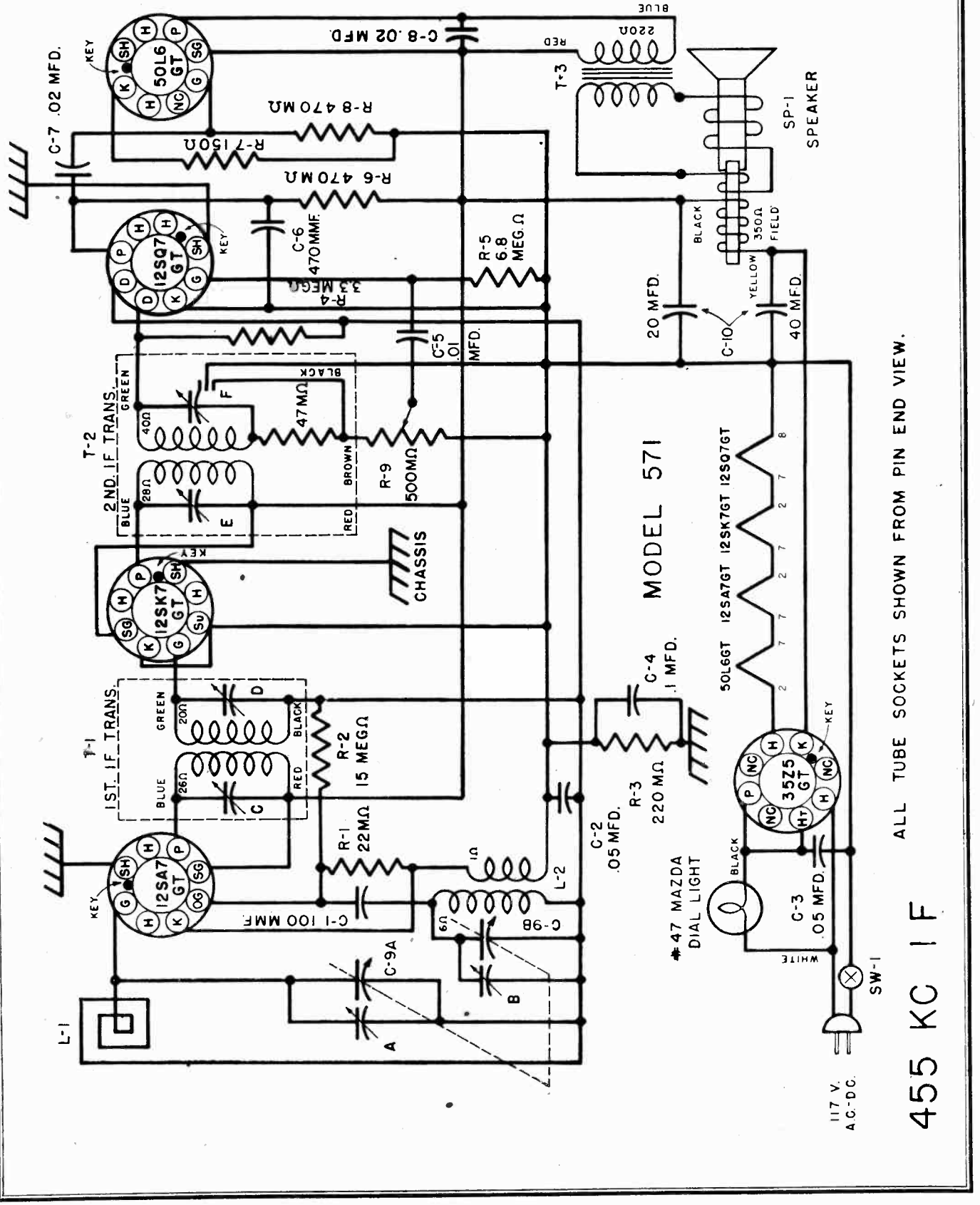
SERVICE PARTS LIST

Symbol	Part No.	Description
C-7	BC31B503	Cap., Molded Paper, .05 mfd.
C-13	BD210503	Cap., Paper, .05 mfd., 200 v.
C-15	BD410103	Cap., Paper, .01 mfd., 400 v.
C-14	BD410104	Cap., Paper, .1 mfd., 400 v.
C-18, 19	BD410203	Cap., Paper, .02 mfd., 400 v.
C-1, 12	BD610202	Cap., Paper, .002 mfd., 600 v.
C-10	BM58D512	Cap., Mica, 5100 mmf.
C-11	BM78A101	Cap., Mica, 100 mmf.
C-17	BM78A221	Cap., Mica, 220 mmf.
R-10	BR16C151	Resistor, 150 ohm, ½ w.
R-2	BR17B151	Resistor, 150 ohm, ⅓ w.
R-3	BR17B156	Resistor, 15 meg., ⅓ w.
R-1	BR17B223	Resistor, 22,000 ohm, ⅓ w.
R-5	BR17B224	Resistor, 220,000 ohm, ⅓ w.
R-6	BR17B335	Resistor, 3.3 meg., ⅓ w.
R-8, 9	BR17B474	Resistor, 470,000 ohm, ⅓ w.
R-7	BR17B685	Resistor, 6.8 meg., ⅓ w.
	A-2163	Cable, Drive
	A-6158	Lamp, Pilot, No. 47, Mazda, 6.3 v.

Symbol	Part No.	Description
C-16	A-8948	Cap., Electrolytic, 40-20 mfd.
R-4	R-9051-5	Control, Vol & Sw. 500,000 ohm
T-1	B-51010-1	Transformer Assembly, 1st IF
T-2	B-51011-1	Transformer Assembly, 2nd IF
	C-51014	Speaker, 5-inch Dynamic
	A-51160-1	Cord, Power, 6 ft.
	A-51163	Clip, Spring
C-6	B-51428-5	Capacitor, Padder
	B-51591	Spring, Dial Bracket
SW-1	B-51764-1	Switch, Band
	A-51787	Spring, Cable, Music Wire
L-1	B-51828	Coil Assembly, BC & SW Ant.
C-2, 3, 9	A-51834	Capacitor, Trimmer, 3-section
L-2	B-51836	Coil Assembly, Osc.
C-4	C-51837-1	Capacitor, Variable
C-8	B-51839-2	Capacitor, 1 mmf.
C-5	B-51839-4	Capacitor, 2.2 mmf.
	A-51869	Antenna Reel Assembly

Order parts not listed by specifying (1) Part Name and (2) Model Number (include number following dash)

SPIEGEL



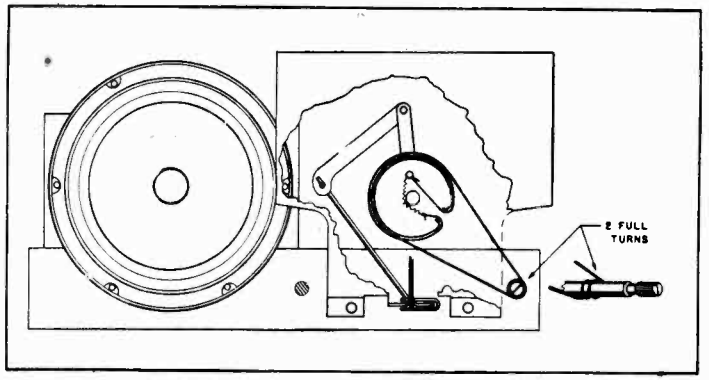
ALIGNMENT PROCEDURE

The following equipment is necessary to properly align this chassis:

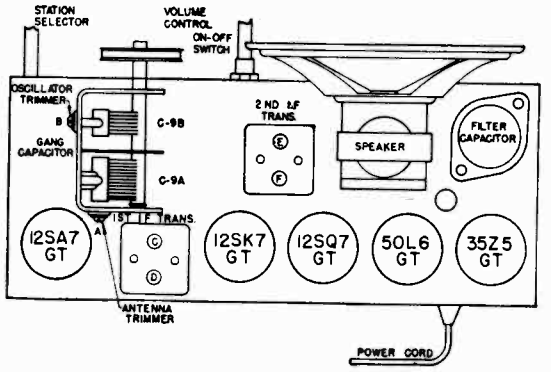
1. A signal generator which will provide an accurately calibrated signal at the frequencies listed.
2. An output meter.
3. A non-metallic screwdriver.
4. Dummy antenna: — .1 mfd., — RMA loop.

NOTE: Intermediate Frequency and Oscillator adjustments may be made with the loop disconnected provided a resistor of 10,000 to 50,000 ohms is substituted to close the 12SA7GT grid circuit. The loop alignment must be done with the loop and chassis mounted in operating position in the cabinet. A single turn loosely coupled to loop may be substituted for RMA loop.

GENERATOR	CONNECTION AT RADIO	DUMMY ANTENNA	DIAL	TO TUNE TRIMMERS	REMARKS
IF 455 kc.	12SA7GT grid	.1 mfd.	HF end	IF trimmers C D E F	Tune to max.
1620 kc.	Through loop	RMA loop	HF end	Osc. trimmer B	Set limit of band
1400 kc.	Through loop	RMA loop	1400 kc.	Ant. trimmer A	Tune to max.



Dial Mechanism



Tube Layout

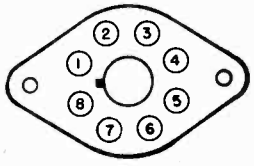
Electrical and Mechanical Specifications

Frequency Range	540-1600 kc.
Intermediate Frequency	455 kc.
Power Supply	105-125 volts AC-DC
Loudspeaker	Dynamic
V.C. Impedance	3.5 ohms at 400 cycles
Power Output (Undistorted)	.75 watts
Power Output (Maximum)	1.5 watts
Tuning Drive Ratio	3 to 1

SPIEGEL

SOCKET VOLTAGES

TUBE	POSITION	1	2	3	4	5	6	7	8
12SA7GT	Osc. and Mixer	0	37.5 AC	99	99	–4.2	0	24.5 AC	0
12SK7GT	IF Amplifier	0	24.5 AC	0	0	0	99	12.5 AC	99
12SQ7GT	2nd Det.—1st Audio	0	0	0	0	0	16	12.5 AC	0
50L6GT	Power Output	0	85 AC	91.5	99	0	0	37.5 AC	5.9
35Z5GT	Rectifier	0	117 AC	112 AC	0	112 AC	0	85 AC	112

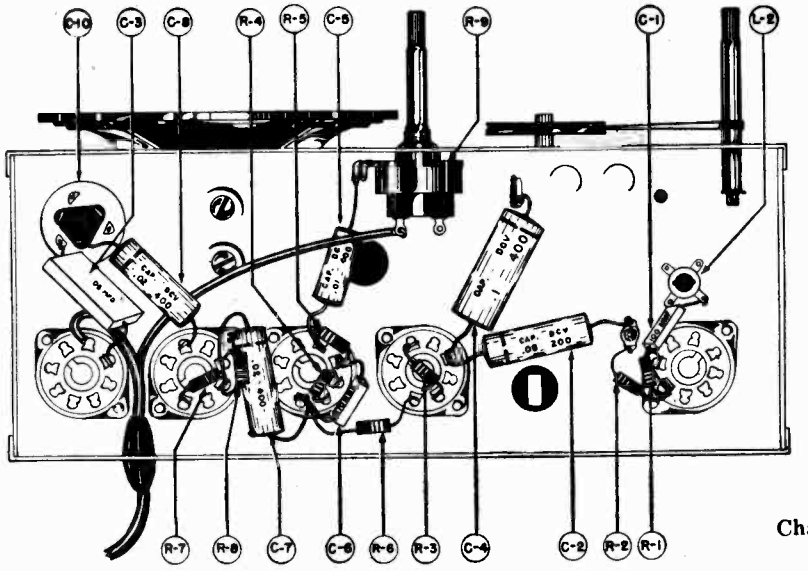


NOTE: All DC voltages measured with a 1000 ohm per volt meter from ON-OFF switch (—B) to socket contact indicated. All AC voltages are measured from ON-OFF switch (—B) to socket contact indicated.

All voltages are positive DC unless otherwise marked.

Volume control full on.

Line voltage 117 volts AC.



Parts Layout
Chassis Model 571

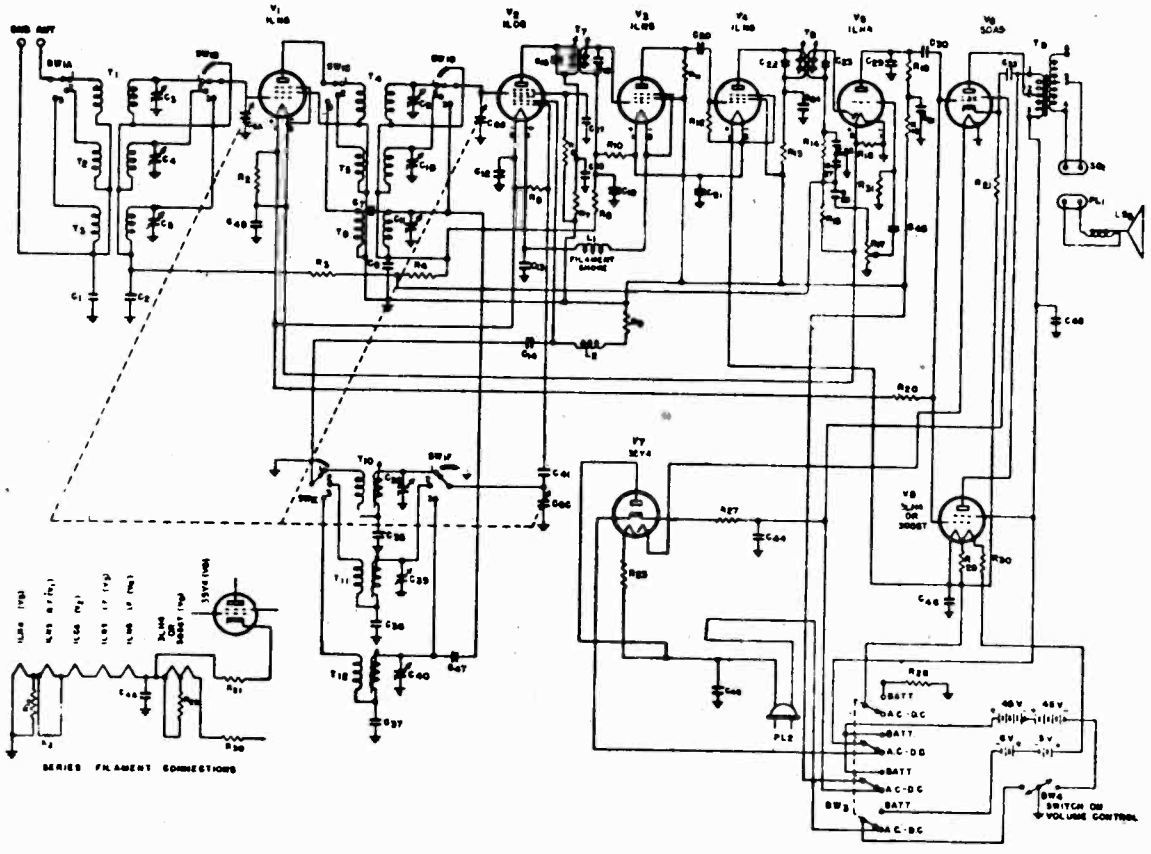
SERVICE PARTS LIST

Symbol	Part No.	Description
C-1	BM78A101	Cap., Mica, 100 mmf.
C-2	BD210503	Cap., Paper, .05 mfd., 200 v.
C-3	BC31B503	Cap., Mold., Paper, .05 mfd.
C-4	BD410104	Cap., Paper, .1 mfd., 400 v.
C-5	BD410103	Cap., Paper, .01 mfd., 400 v.
C-6	BM78A471	Cap., Mica, 470 mmf.
C-7, 8	BD410203	Cap., Paper, .02 mfd., 400 v.
C-9	C-51155-1	Cap., Variable, 2 Section
C-10	A-8948	Cap., Electro., 40-20 mfd., 150 v.
L-2	B-51159	Coil, Osc. Assembly
R-1	BR17B223	Resistor, 22M ohm 1/3 w.
R-2	BR17B156	Resistor, 15 meg. 1/3 w.
R-3	BR17B224	Resistor, 220M ohm 1/3 w.
R-4	BR17B335	Resistor, 3.3 meg. 1/3 w.
R-5	BR17B685	Resistor, 6.8 meg. 1/3 w.
R-6, 8	BR17B474	Resistor, 470M ohm 1/3 w.
R-7	BR16C151	Resistor, 150 ohm. 1/2 w.
R-9	B-9051-1	Control, Vol. & Sw. 500M ohm.
T-1	B-51010-1	Trans., Assembly, 1st IF
T-2	B-51011-1	Trans., Assembly, 2nd IF
SP-1	C-51014	Speaker, 5" Dynamic, 350 ohm.
	A-2163	Cable, Drive
	A-6158	Lamp, Pilot No. 47 Mazda 6.3 v.
	A-51160-1	Cord, AC-DC Line, 6 ft.
	B-51162-1	Shaft, Drive
	A-51163	Clip, Spring
	B-51177	Brkt. Assy., Dial (571A-571B only)
	A-51202	Link, Insulating
	A-51206	Arm, Dial Drive
	B-51330-1	Channel, Rubber (571 only)
	A-51331	Spring, Dial Bracket
	C-51335	Bracket, Dial (571 only)
	A-51787	Spring, Cable

Order parts not listed by specifying (1) Part Name and (2) Model Number (include number following dash)

MODEL 581

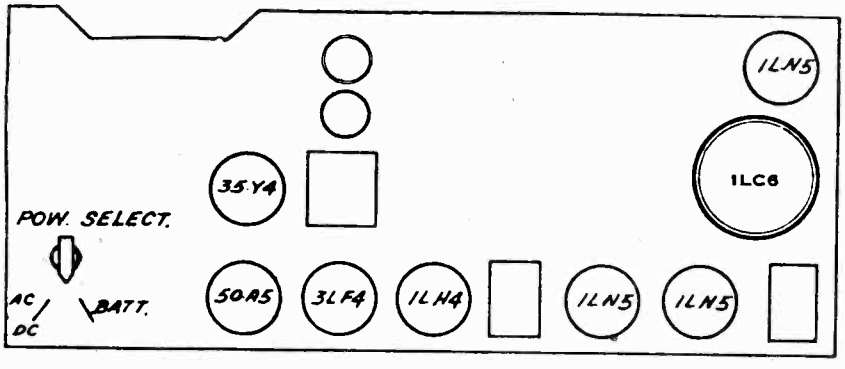
SPIEGEL



Batteries:

Two six (6) volt "A" batteries and two forty five (45) volt batteries are required for self-contained operation. These batteries are located under the chassis and may be inserted or replaced by removing the machine screw on either side of the cabinet holding the battery plate in place. The "A" batteries will provide approximately 30 hours of normal operation allowing the batteries to recuperate after several hours use. The "B" batteries will normally outlast two sets of "A" batteries. Batteries should be removed if radio set is to be stored for more than sixty (60) days.

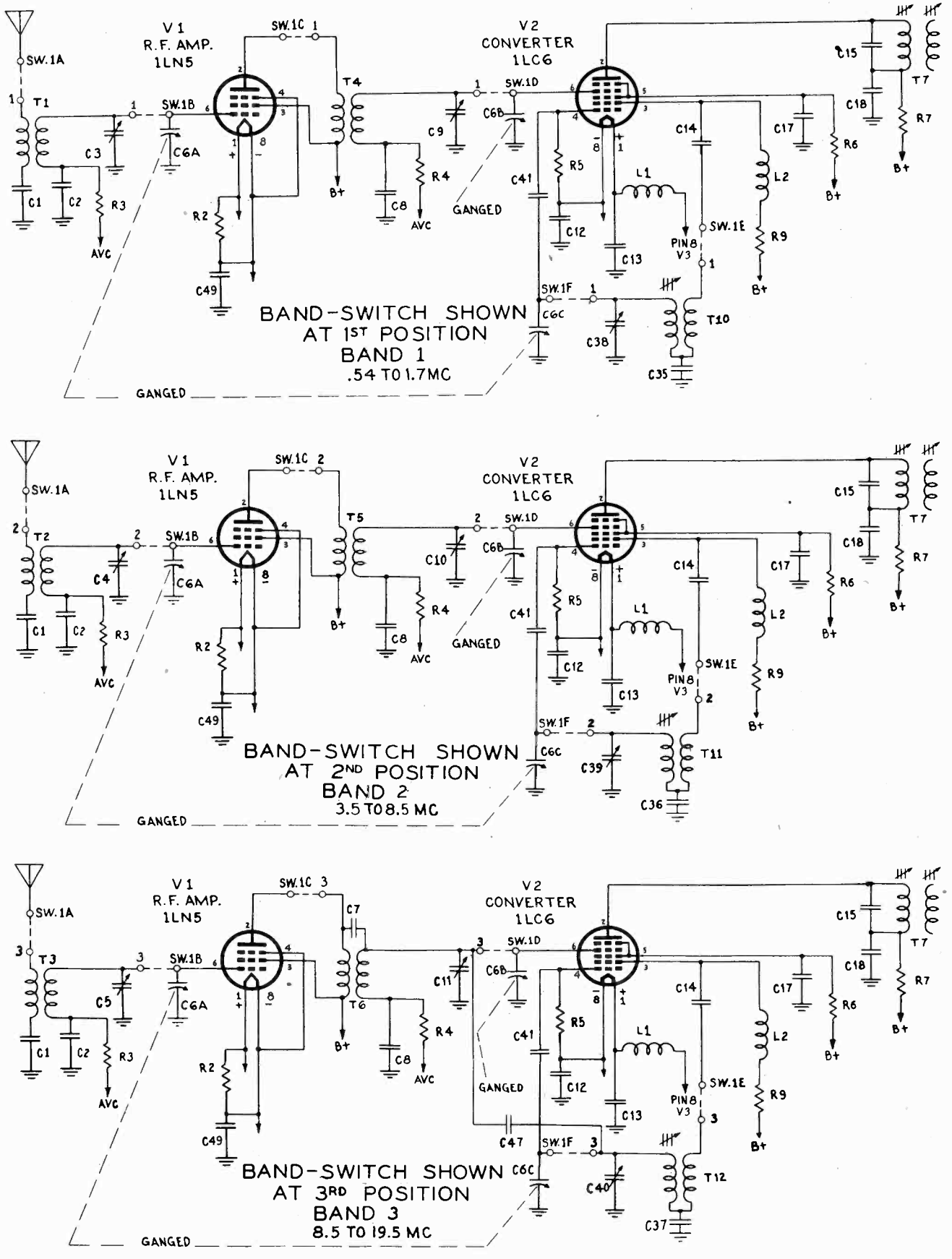
Tube Location:



Batteries:

Suitable batteries for use with this Receiver are:
"A" Batteries: 6 Volt; Length, $3\frac{15}{16}$"; Width, $2\frac{3}{4}$"; Height, $5\frac{1}{2}$"; such as: Ever-Ready #718 or equivalent.
"B" Batteries: 45 Volt; Length, $4\frac{3}{16}$"; Width, $2\frac{19}{32}$"; Height, $5\frac{3}{8}$": such as: Ever-Ready #762-S, Burgess #5308, or equivalent.

SPIEGEL



Location of Parts:

C1—.006 mfd., ±20%, 600v., paper
C2—.01 mfd., +20 —10%, 200v., paper
C3—Ceramic trimmer (7-35-mmf.)
C4—Ceramic trimmer (35-55-mmf.)
C5—Ceramic trimmer (35-55-mmf.)
C6A—Variable 3 gang
C6B—Variable 3 gang
C6C—Variable 3 gang
C7—15 mmf., 20%, 500v., ceramic
C8—.05 mfd., +20 —10%, 200v., paper
C9—Ceramic trimmer (7-35-mmf.)
C10—Ceramic trimmer (7-35-mmf.)
C11—Ceramic trimmer (35-55 mmf.)
C12—.1 mfd., +40 —10%, 400v., paper
C13—.1 mfd., +40 —10%, 400v., paper
C14—.0022 mfd., 10%, 500v., mica
C15—150 mmf., 5%, 500v., mica
C16—82 mmf., 5%, 500v., mica
C17—.02 mfd., +40 —10%, 200v., paper
C18—.05 mfd., ±20%, 600v., paper
C19—.02 mfd., +40 —10%, 200v., paper
C20—220 mmf., 20%, 500v., mica
C21—.1 mfd., +40 —10%, 400v., paper
C22—51 mmf., 5%, 500v., mica
C23—82 mmf., 5%, 500v., mica
C24—.05 mfd., +40 —10%, 600v., paper
C26—100 mmf., 20%, 500v., mica
C27—100 mmf., 20%, 500v., mica
C28—.006 mfd., ±20%, 600v., paper
C29—100 mmf., 20%, 400v., mica
C30—.006 mfd., ±20%, 600v., paper
C31—.1 mfd., +40 —10%, 400v., paper
C33—.01 mfd., +40 —10%, 600v., paper
C35—430 mmf., 2%, 500v., mica
C36—2,200 mmf., 5%, 500v., mica
C37—4,300 mmf., 5%, 500v., mica
C38—Ceramic trimmer (7-35-mmf.)
C39—Ceramic trimmer (7-35-mmf.)
C40—Ceramic trimmer (7-35-mmf.)
C41—100 mmf., 20%, 500v., mica
C42 & C44—40 mfd., 250v. (dual electrolytic)
C45—.05 mfd., ±20%, 600v., paper
C46—1000 mfd., 15wv. (electrolytic)
C47—2 mmf., ±15%, 500v., bakelite
C48—.006 mfd., ±20%, 600v., paper
C49—.1 mfd., +40 —10%, 400v., paper

R2—270 ohms, 10%, ¼w.
R3—3.3 megohms, 10%, ¼w.
R4—3.9 megohms, 10%, ¼w.
R5—220,000 ohms, 20%, ¼w.
R6—68,000 ohms, 10%, ¼w.
R7—1,000 ohms, 20%, ¼w.
R8—3.3 megohms, 10%, ¼w.
R9—22,000 ohms, 10%, ¼w.
R10—3.3 megohms, 10%, ¼w.
R11—22,000 ohms, 10%, ¼w.
R12—470,000 ohms, 20%, ¼w.
R13—1,000 ohms, 20%, ¼w.
R14—47,000 ohms, 20%, ¼w.
R15—470,000 ohms, 20%, ¼w.
R16—330 ohms, 10%, ¼w.
R17—1 megohm, 20%—volume control
R18—470,000 ohms, 20%, ¼w.
R19—100,000 ohms, 20%, ¼w.
R20—470,000 ohms, 10%, ¼w.
R21—50 ohms, 5%, ½w.
R23—220 ohms, 5%, 30w.
R27—500 ohms, 10%, 1w.
R28—820 ohms, 10%, ¼w.
R29—330 ohms, 10%, ¼w.
R30—27 ohms, 10%, ¼w.
R31—12 megohms, 10%, ¼w.

SO1—Receptacle speaker
SW1A & B—C & D—Switch wafer
SW1E & F—Switch wafer
SW3—Switch AC-DC battery
SW4—Switch D.P.S.T.

T1—Transformer, band 1 Ant.
T2—Transformer, band 2 Ant.
T3—Transformer, band 3 Ant.
T4—Transformer, band 1 R.F.
T5—Transformer, band 2 R.F.
T6—Transformer, band 3 R.F.
T7—Transformer, 1st I.F.
T8—Transformer, 2nd I.F.
T9—Transformer, speaker output
T10—Transformer, band 1 osc.
T11—Transformer, band 2 osc.
T12—Transformer, band 3 osc.

V1, 3 & 4—R.F., 1st & 2nd I.F. 1LN5
V2—Converter 1LC6
V5—2nd Detector—1st audio 1LH4
V6—Output (power line) 50A5
V7—Rectifier 35Y4
V8—Output (batt.) 3LH4 or 3Q5GT

L1—Choke coil, line filter
L2—Choke, R. F.
LS3—Speaker, 6" P. M. dynamic

PL1—Plug, speaker
PL2—Plug, line cord

Operate on:

(a) 105-125 Volts A.C., 60 cycle.
(b) 105-125 Volts D.C.
(c) Self contained batteries.

The instrument provides for commercial broadcast and short wave reception in the following frequency ranges:

(a) .54-1.7 M.C.
(b) 3.5-8.5 M.C.
(c) 8.5-19.5 M.C.

Electric Operation:

Set the power selector switch mounted on the rear left hand side of the chassis to "A.C.-D.C." for electric operation.

Battery Operation:

For battery operation, the power selector switch is set to the position marked "Batt". This switch is easily accessible through a door in the rear of the cabinet.

Unwind the hank antenna, connect to Antenna Binding Post and extend to full length along floor or window ledge.

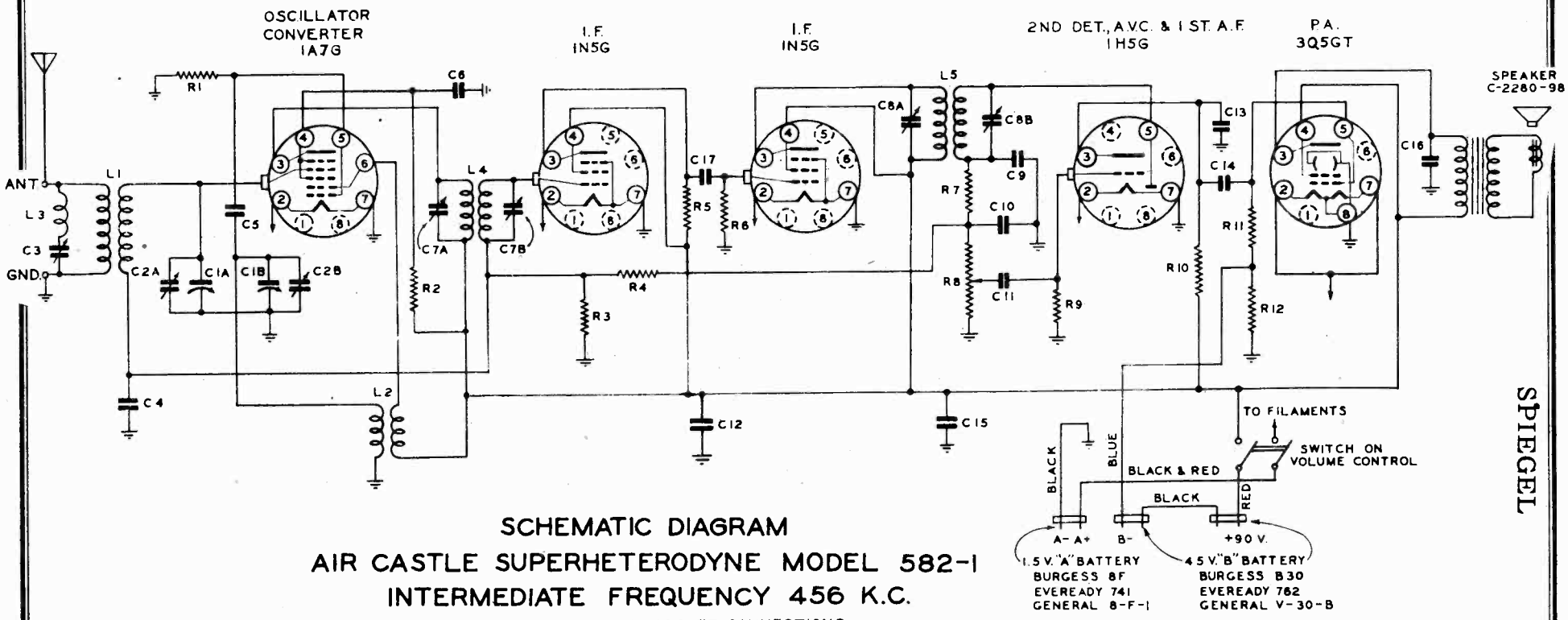
Rotate control marked "ON-OFF-VOLUME in a clockwise position. This control turns the set on and permits the operator to adjust the output to the desired volume.

Select the desired frequency range by means of the control marked "Band Switch". Tuning is accomplished by rotating the control marked "Station Selector".

In locations where weak signals prevail, reception may be improved by connecting an additional outside antenna to the binding post marked "Ant". Where a ground is used, it must be connected to the binding post marked "Gnd" and NOT to the chassis directly.

Failure of the Radio Receiver to operate may be due to:

1. Incorrect setting of power selector switch.
2. Weak batteries or no current at power outlet.
3. With D.C. power — reverse position of power plug in power outlet.
4. Tubes not firmly locked in socket.
5. Defective tubes.
6. Weak reception in particular location (use longer aerial).



SCHEMATIC DIAGRAM
AIR CASTLE SUPERHETERODYNE MODEL 582-1
INTERMEDIATE FREQUENCY 456 K.C.

BOTTOM VIEWS OF ALL SOCKET CONNECTIONS

C1A&B	VARIABLE CONDENSER	B-8204-1
C2A&B	TRIMMERS ON VAR. COND.	
C3	I.F. REJECTOR TRIMMER	A-14088-2
C4	.05 MFD. 200 V.	C-3202-140C
C5	100 MMF. MICA	C-720-325
C6	.05 MFD. 200 V.	C-3202-28C
C7A&B	NO. 1 I.F. TRIMMER	B-7200-GG
C8A&B	NO. 2 I.F. TRIMMER	B-7200-GG
C9	100 MMF.	A-15697-1
C10	100 MMF.	
C11	.01 MFD. 200 V.	C-3202-132C
C12	.05 MFD. 200 V.	C-3202-140C
C13	100 MMF. MICA	C-720-325
C14	.01 MFD. 400 V.	C-3204-132C
C15	8 MFD. 150 V. ELECT.	A-14958
C16	.001 MFD. 1000 V.	C-3210-114C
C17	250 MMF. MICA	C-720-324

R1	180,000 Ω	.25 W.	C-2795-39B
R2	68,000 Ω	.25 W.	C-2795-84B
R3	2.2 MEGOHMS	.25 W.	C-2795-102B
R4	3.3 MEGOHMS	.25 W.	C-2795-104B
R5	22,000 Ω	.25 W.	C-2795-191B
R6	3.3 MEGOHMS	.25 W.	C-2795-104B
R7	56,000 Ω	.25 W.	C-2795-83B
R8	500,000 Ω VOL. CONT.		A-15132-2
R9	10 MEGOHM	.25 W.	C-2795-110B
R10	1 MEGOHM	.25 W.	C-2795-98B
R11	2.2 MEGOHMS	.25 W.	C-2795-102B
R12	470 Ω	.25 W.	C-2795-151B

L1	B.C. ANT. COIL	A-14974-8
L2	B.C. OSC. COIL	A-15232-8
L3	I.F. REJECTOR COIL	A-14718-1
L4	NO. 1 I.F. COIL	A-12064-40
L5	NO. 2 I.F. COIL	A-12064-40

SPIEGEL

Superheterodyne Model 582-1

VOLTAGE CHART

"A" Battery Voltage 1½ Volts
"B" Battery Voltage 90 Volts
Position of Volume Control: Full with antenna disconnected

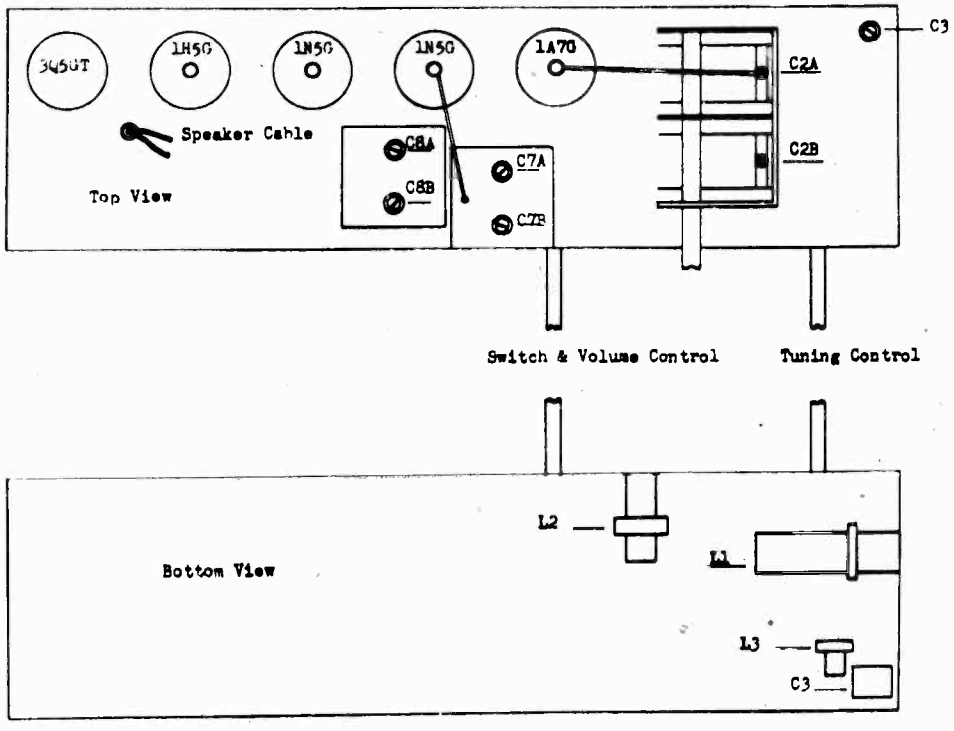
TUBE	FUNCTION	Voltage of Socket Prongs to Gnd. See Nos. on Schematic Diagram							
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
1A7G	Osc - Converter	0	1.5	83	42	-5	82	0	0
1N5G	I-F Amplifier	0	1.5	62	82	0	0	0	0
1N5G	I-F Amplifier	0	1.5	82	82	0	0	0	0
1H5G	Det - AVC - AF	0	1.5	57	82	0	0	0	0
3Q5GT	Power Amplifier	0	1.5	82	83	-4	-6	1.5	0

Notes: Voltage readings are for schematic diagram on back of sheet. Allow 15% + or - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 20,000 ohms per volt voltmeter.

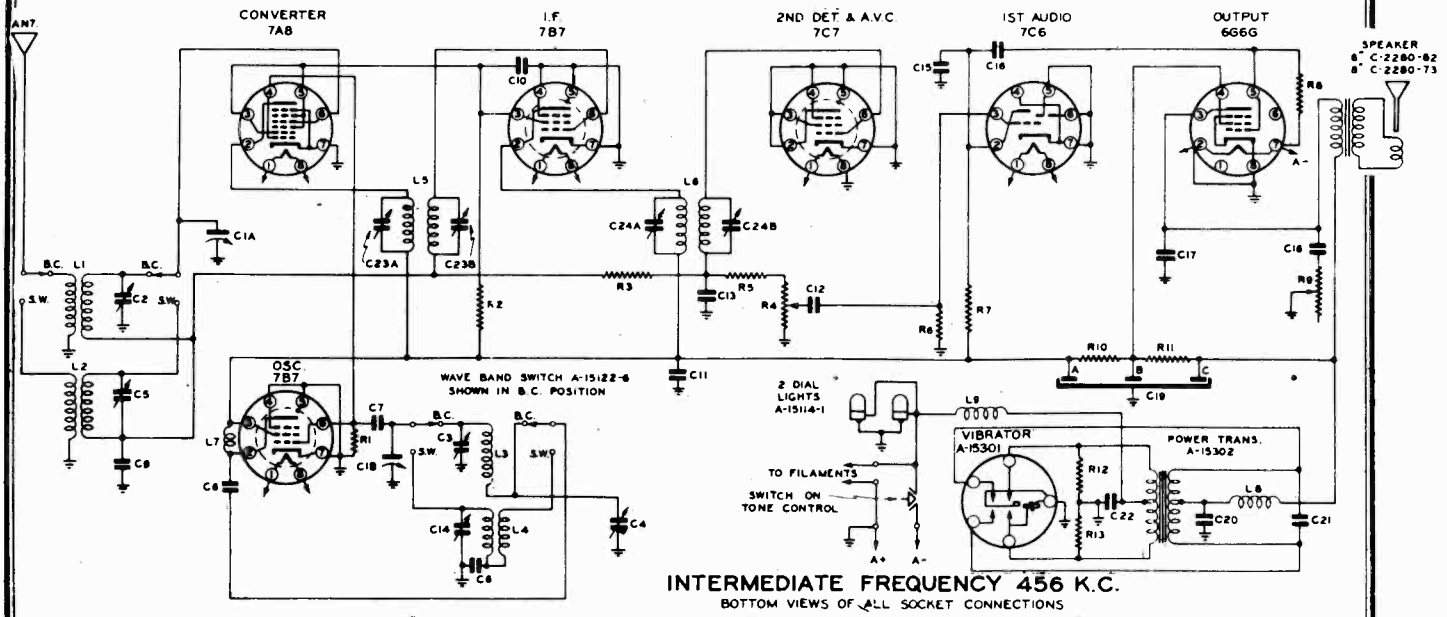
ALIGNMENT CHART

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	TUNING COND. SETTING	TRIMMER	REMARKS
1	Set dial pointer even with last calibration mark when condenser gang is fully meshed.						
2	I.F.	1A7G Grid.	.1 mf. Cond.	456 KC	Open	C8 A&B	Peak accurately
						C7 A&B	Peak accurately
3	I.F. Rej.	Ant.	200 mf.	456 KC	Closed	C3	Adjust to minimum
4	Broad cast	Ant.	200 mf.	1500 KC	1500 KC	C2B Osc. Trim	Peak accurately
						C2A Ant. "	Peak accurately
5	Repeat operation 4.						
6	Check operations 1 to 4 inclusive.						

CHASSIS DIAGRAM



SPIEGEL



INTERMEDIATE FREQUENCY 456 K.C.

BOTTOM VIEWS OF ALL SOCKET CONNECTIONS

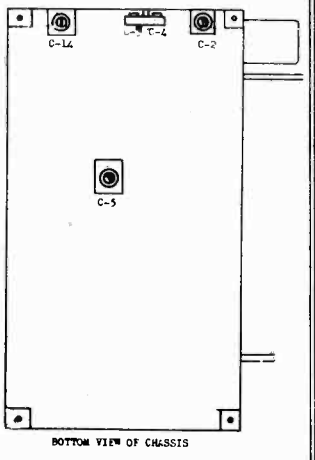
C1A&B	VARIABLE CONDENSER	B-7229	C13	250 MMF. MICA	C-720-324	R1	56,000 Ω	.25W	C-2795-83B	L1	B.C. ANT. COIL	A-15349-1
C2	B.C. ANT. TRIMMER	A-14088-8	C14	S.W. OSC. TRIMMER	A-14088-8	R2	18,000 Ω	.5W.	C-2798-77C	L2	S.W. ANT. COIL	A-14882-3
C3	B.C. OSC. TRIMMER	B-7198-EY	C15	250 MMF. MICA	C-720-324	R3	1 MEGOHM	.25W.	C-2795-98B	L3	B.C. OSC. COIL	A-15352-1
C4	B.C. OSC. PADDER		C16	.05 MFD 200V.	C-3202-28C	R4	500,000 Ω VOLUME CONT.		A-15130-3	L4	S.W. OSC. COIL	A-15233-5
C5	S.W. ANT. TRIMMER	A-14088-5	C17	.031 MFD. 400V.	C-3204-58C	R5	47,000 Ω	.25W.	C-2795-23B	L5	NO. 1 I.F. COIL	A-12064-39
C6	2700 MMF. MICA	A-15451	C18	.02 MFD. 400V.	C-3204-78C	R6	4.7 MEGOHM	.25W.	C-2795-35B	L6	NO. 2 I.F. COIL	A-12064-17
C7	50 MMF. MICA	C-720-315	C19&20	20-20-20 MFD. 150V. ELECT.	A-14884-8	R7	220,000 Ω	.25W.	C-2795-27B	L7	B+ PLATE CHOKE	A-14881-1
C8	250 MMF. MICA	C-720-324	C20	1000 MMF. MICA	C-720-297	R8	1 MEGOHM	.25W.	C-2795-98B	L8	B+ HASH CHOKE	A-14718-2
C9	.05 MFD. 200V.	C-3202-84C	C21	.01 MFD. 600V.	C-3206-132C	R9	TONE CONTROL & SWITCH		A-15128-2	L9	A LEAD HASH CHOKE	A-14944
C10	.1 MFD. 200V.	C-3202-38C	C22	.5 MFD. 120V.	C-3203-46B	R10	330 Ω	.5 W.	C-2798-10C			
C11	.1 MFD. 200V.	C-3202-38C	C23	NO.1 I.F. TRIMMER	B-7200-GN	R11	68 Ω	.5 W.	C-2798-48C			
C12	.02 MFD. 200V.	C-3202-22C	C24	NO.2 I.F. TRIMMER	B-7200-GN	R12	68 Ω	.5 W.	C-2798-6C			
						R13	68 Ω	.5 W.	C-2798-6C			

VOLTAGE CHART

Condition of Storage Battery Good (6 Volts) Position of Volume Control: Full with Antenna Disconnected
Band Switch - Broadcast

Tube	Function	Voltage of Socket Prongs to Gnd. (See Nos. on Schematic Diagram)							
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
7A8	Converter	6	110	45	-20	45	0	0	0
7B7	Oscillator	6	110	110	0	0	-20	0	0
7B7	I. F. Amp.	6	110	45	0	0	0	0	0
7C7	2 Det. AVC	6	0	0	0	0	0	0	0
7C6	1st Aud. Amp.	6	16	0	--	0	0	0	0
6G6G	Power Amp.	0	0	110	115	0	--	6	0

Notes: Voltage readings are for schematic diagram on back of sheet. Allow 15% + or - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 1000 ohms per volt voltmeter.

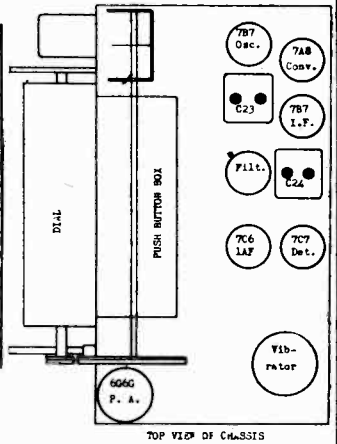


BOTTOM VIEW OF CHASSIS

ALIGNMENT CHART

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
1	(Set dial drum so that indicator points to last dial mark when gang is fully closed.)							
2	I.F.	Ant.	.1 mf.	456 KC	BC	Open	C24 A&B	2nd I-F
							C23 A&B	1st I-F
3	Broadcast Band	Ant.	200 mmf.	1500 KC	BC	1500 KC	C3 (Osc.)	Peak accurately
							C2 (Ant.)	Peak accurately
4				600 KC	BC	600 KC	C4 (Pad.)	Peak accurately
5	(Repeat operation 3)							
6	(Check calibration and sensitivity at 600 KC, 900 KC and 1500 KC)							
7	SW Band	Ant.	*	18 MC.	SW	18 MC	C14 (Osc.)	**
							C5 (Ant.)	**
8	(Check calibration and sensitivity at 6 MC and 18 MC)							
9	(Check operations 1 to 8 inclusive.)							

*100 ohms non-inductive resistor and 200 mmf. condenser in series.
**Rock dial while making this adjustment. Make certain that adjustment is made on fundamental signal and not on image. Peak accurately.

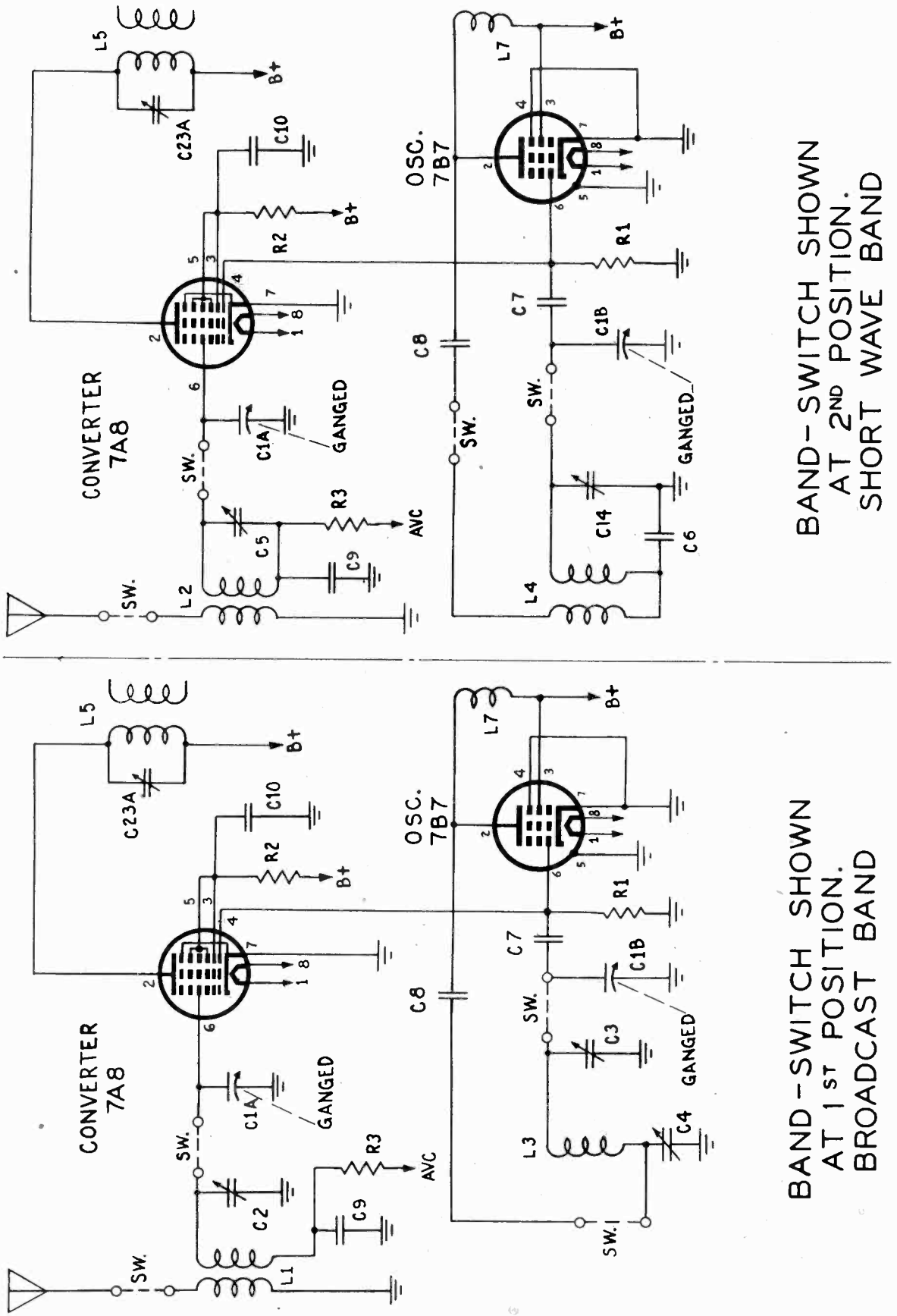


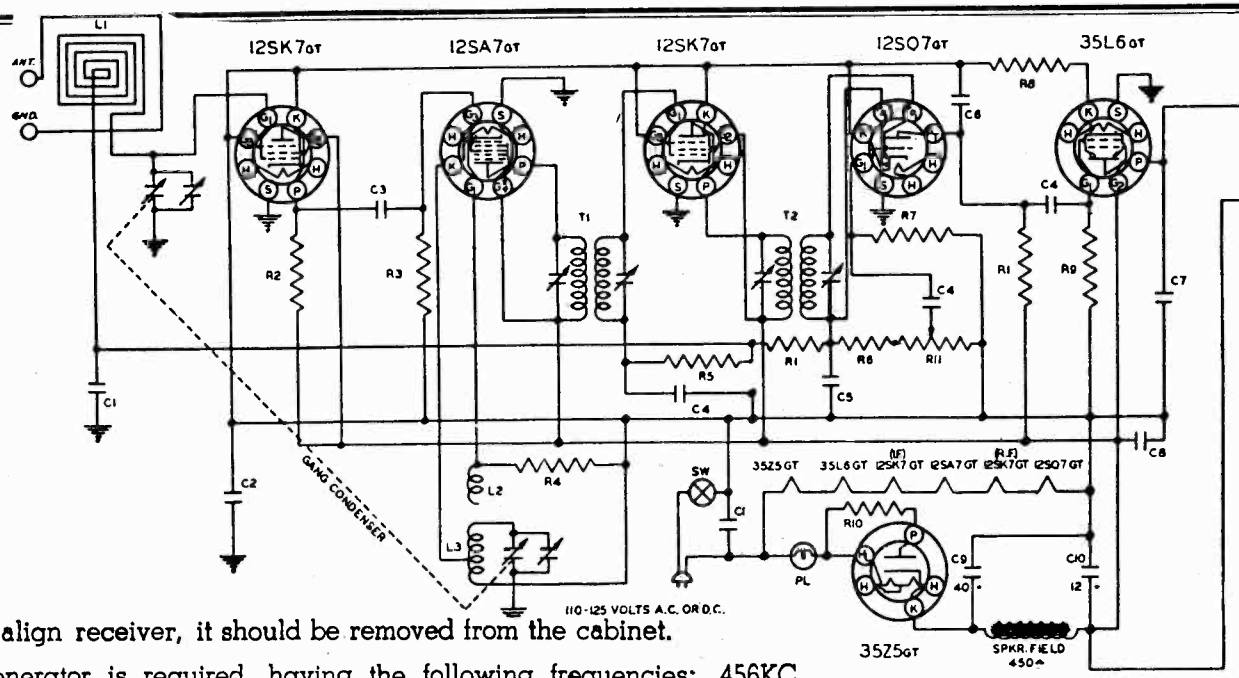
TOP VIEW OF CHASSIS

"clarified schematics"

MODEL 630

SPIEGEL





To properly align receiver, it should be removed from the cabinet.

A signal generator is required, having the following frequencies: 456KC, 1400KC, 1720KC. An output meter of some kind is also necessary. (See figure No. 1 for trimmer locations).

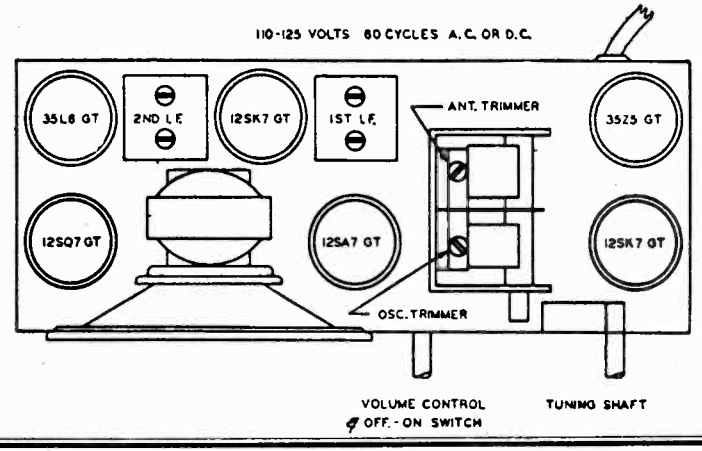
All adjustments in aligning this receiver should be made with the volume control fully turned on, so as to prevent the A. V. C. from working and giving false readings. It is also advisable to keep the gang condenser turned all the way out to complete minimum capacity and keep the signal from the generator down as low as possible so as to prevent false peaks when aligning the I. F. transformers.

FIRST STEP: Connect the generator lead through a .1 condenser to the No. 8 pin at the 12SA7GT socket base (this is the control grid) and connect the generator ground lead to some point on the floating ground, above the .25 MFD floating ground condenser. Adjust the signal generator to 456KC and adjust the I. F. trimmer screws till a maximum reading is noted on the output meter which has been connected across the speaker leads. With the generator leads still connected to the 12SA7GT grid, adjust the generator frequency to 1720KC and adjust the oscillator trimmer till the signal is tuned in, with the gang condenser still at complete minimum.

SECOND STEP: Disconnect the generator leads from the receiver and connect both to a transmitting loop which may be made with two turns of wire about six inches in diameter and placed about one foot from the receiver loop. Adjust the generator frequency to 1400KC and turn the tuning condenser till this signal is tuned in. Adjust the antenna trimmer on the gang till a maximum reading is noted on the output meter.

PART NO.	SCHEMATIC LOCATION	DESCRIPTION
3-6	R1	1 MEG. ½ WATT 20% RESISTOR
3-36	R2	1500 " " " "
3-17	R3	100000 " " " "
3-26	R4	30000 " " " "
3-141	R5	6 MEG. " " " "
3-4	R6	50000 " " " "
3-2	R7	2 MEG " " " "
3-34	R8	100 " " " "
3-1	R9	500000 " " " "
3-313	R10	50 " " " "
5-301	R11	1 MEGOHM VOLUME CONTROL
	SW	SWITCH
6-14	C1	.05 MFD. 400 VOLTS CONDENSER
6-30	C2	.25 " 200 " "
6-8	C3	.0001 " MICA "
6-3	C4	.01 " 400 VOLTS "
6-10	C5	.00025 " MICA "
6-305	C6	.0005 " 600 VOLTS "
6-306	C7	.005 " " " "
6-26	C8	.1 " 400 " "
7-301	C9	40 " 150 " ELECTROLYTIC
	C10	12 " 150 "
15-302	L1	LOOP
15-309	L2, L3	OSCILLATOR COIL
16-302	T1	INPUT I.F. TRANSFORMER
16-303	T2	OUTPUT I.F. "
43-307	T3	OUTPUT " ON
	S	SPEAKER (ELECTRODYNAMIC)
41-300	PL	PILOT LIGHT #47
40-306	12SK7 GT	R.F. AMPLIFIER
	12SA7 GT	CONVERTER
	12SK7 GT	I.F. AMPLIFIER
	12SQ7 GT	DETECTOR - AUDIO
	35L6 GT	AUDIO AMPLIFIER
	35Z5 GT	RECTIFIER
40-301		GANG CONDENSER

TUBE AND TRIMMER LOCATION



SPIEGEL

SPIEGEL PAGE 15-33
MODEL T-630

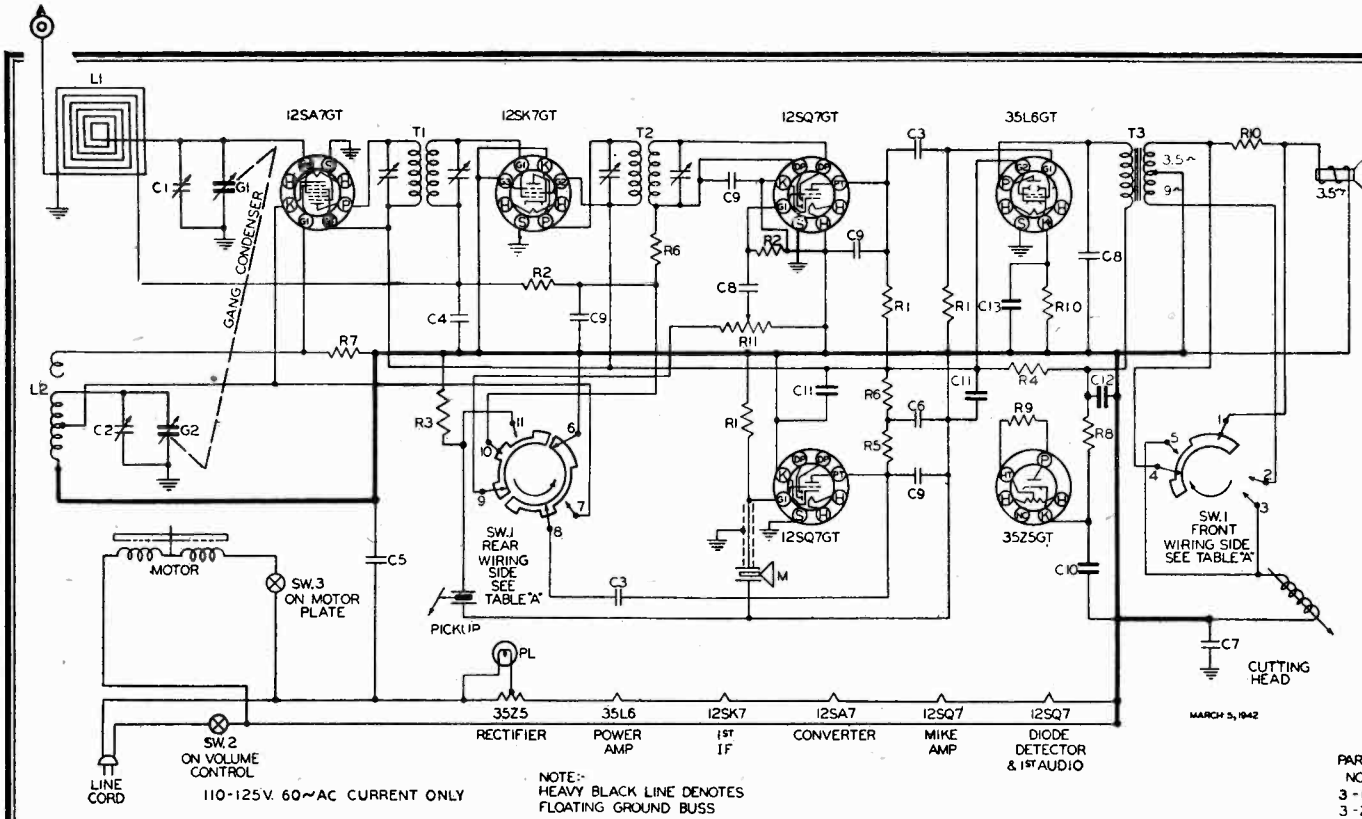


TABLE A

SELECTOR SWITCH CONTACTS	
POSITION	CONTACTS CLOSED
RADIO #1	1-4 6-8 9-10
PHONO #2	1-4 6-7-8 9-11
RADIO RECORDING #3	2-5 6-8-11 9-10
MIKE RECORDING #4	2-3 6-7-10-11 8-9

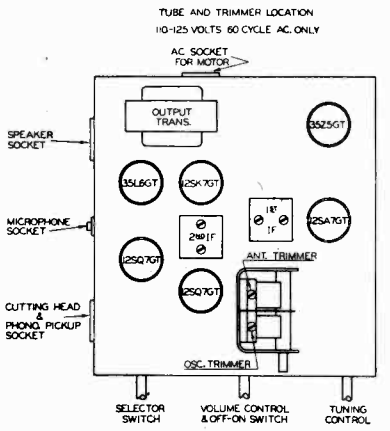


FIG. 3

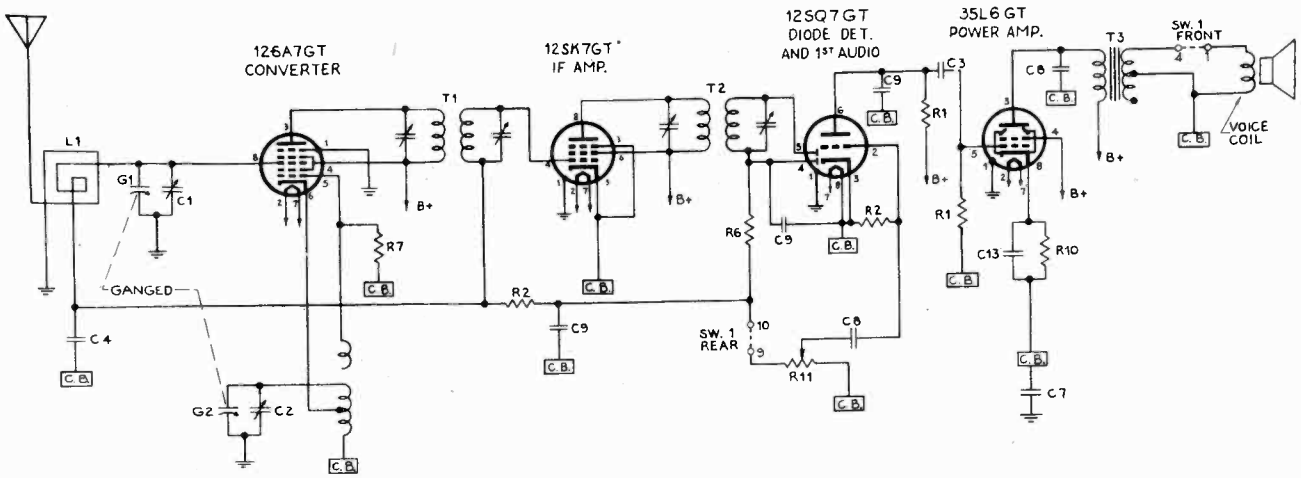
Remove chassis from cabinet for alignment.

A signal generator is required having the following frequencies: 456KC, 1400KC, 1720KC. Also an output meter of some type.

First Step: Connect the generator lead through a .1 mfd. condenser to the terminal lug next to the Antenna trimmer on top of the tuning condenser. The ground lead from the generator, must be connected to the floating ground buss underneath the chassis. Adjust generator to 456KC and adjust IF trimmer screws until a maximum reading is noted on the output meter which has been connected across the speaker. The tuning condenser should be turned out to complete minimum capacity when aligning the IF. With generator lead still connected to antenna trimmer terminal, adjust generator frequency to 1720KC, and with tuning condenser still at minimum, adjust oscillator trimmer till the 1720KC signal is tuned in. Next remove generator leads from set and connect both to a transmitting loop. This loop can be made with 2 turns of wire about 6 inches in diameter and placed about one foot away from the loop antenna of the receiver. Adjust generator frequency to 1400KC. Turn tuning condenser until the signal is tuned in and adjust antenna trimmer until a maximum reading is noted. No further adjustment should be necessary, unless the set has been damaged, as the coils and condenser in this receiver have been specially handled at the factory so as to insure proper alignment at the lower frequency end of the dial.

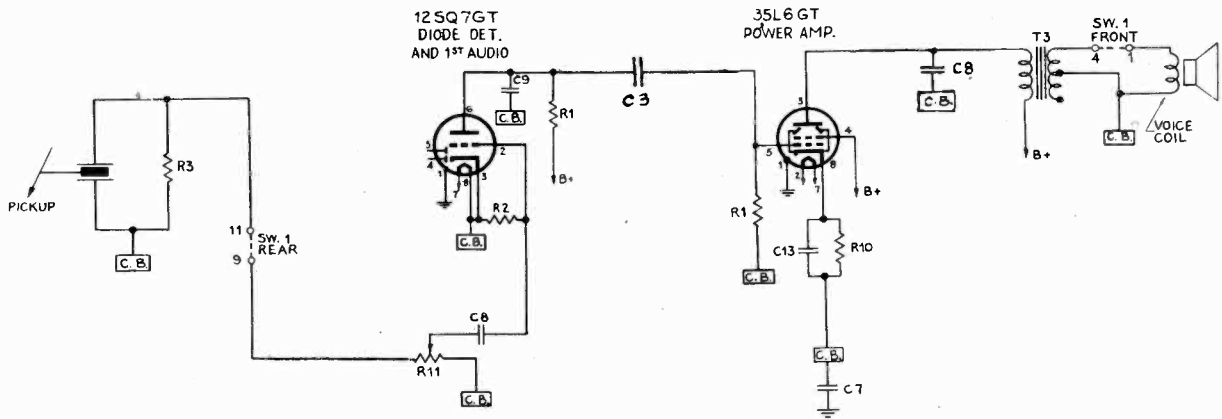
PART NO.	SCHEMATIC LOCATION	DESCRIPTION
3-6	R1	1MEG.-½-W.-20%-RESISTOR
3-2	R2	2 " " " " " "
3-62	R3	200M " " " " "
3-53	R4	2000Ω " " " " "
3-5	R5	250M " " " " "
3-4	R6	50 M " " " " "
3-29	R7	25 M " " " " "
3-11	R8	500Ω " " " " "
3-313	R9	50Ω " " " " "
3-20	R10	100Ω " " " " "
5-310	R11	1 MEG. VOLUME CONTROL
6-17	C3	.002-600V. PAPER CONDENSER
6-12	C4	.05 -200V " " " " "
6-14	C5	.05 -400V " " " " "
6-30	C6	.25 - 200V " " " " "
6-32	C7	.25 - 400V. " " " " "
6-3	C8	.01 - " " " " "
8-8	C9	.0001-MOLDED MICA " " "
7-304	C10	20MFD. ELECTROLYTIC 150W.V.
	C11	40 " " " " " "
	C12	10 " " " " " "
7-308	C13	10 " " " " 35W.V.
10-301	G1	ANT. SECTION-GANG CONDENSER
	G2	OSC. " " " " "
	C1	ANT. TRIMMER ON " " "
	C2	OSC. " " " " "
14-302	SW1	SELECTOR SWITCH
	SW2	POWER SWITCH ON VOL. CONTROL
	SW3	MOTOR " " MOTOR PLATE
16-39	T1	INPUT I.F. TRANSFORMER 456 KC.
16-40	T2	OUTPUT " " " " "
12-300	T3	AUDIO OUTPUT " " ON CHASSIS
43-305	S	6" P.M. SPEAKER [WITHOUT OUTPUT TRANSFORMER]
MOTR PLATE		PICKUP & ARM CUTTING HEAD & ARM 117V.-60~AC MOTOR & TURNTABLE
	M	CRYSTAL MICROPHONE

SPIEGEL



SELECTOR SWITCH SHOWN
AT 1ST POSITION.
RADIO

C.B. - DENOTES COMMON BUS, FLOATING GROUND



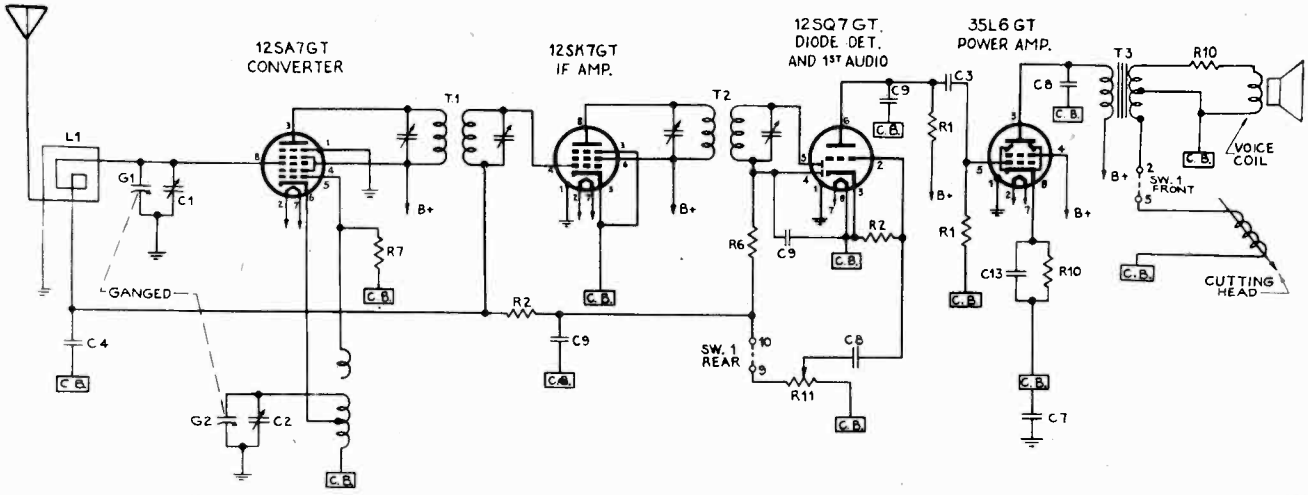
SELECTOR SWITCH SHOWN
AT 2ND POSITION
PHONO

C.B. - DENOTES COMMON BUS, FLOATING GROUND

"clarified schematics"

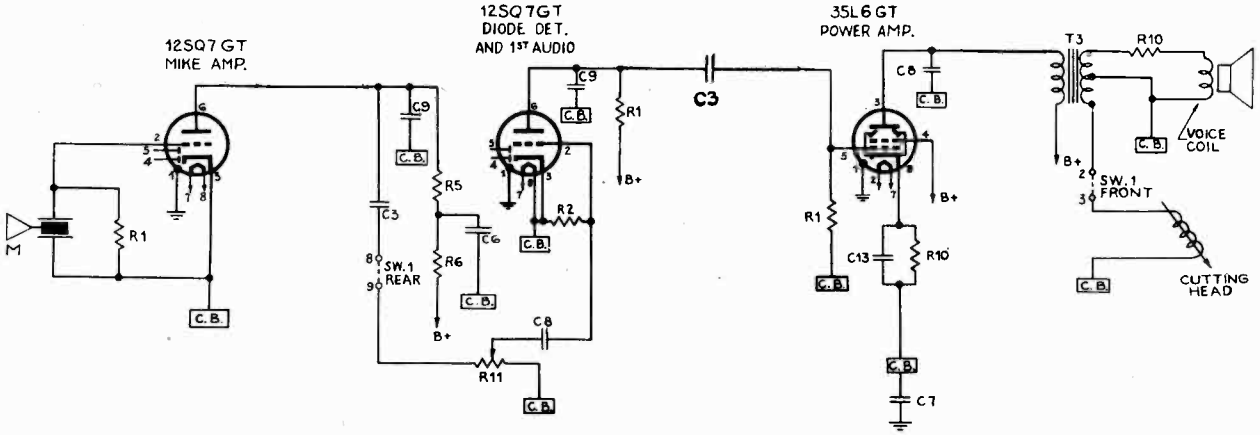
MODEL TR-640

SPIEGEL



SELECTOR SWITCH SHOWN
AT 3RD POSITION
RADIO RECORDING

C.B. DENOTES COMMON BUS, FLOATING GROUND

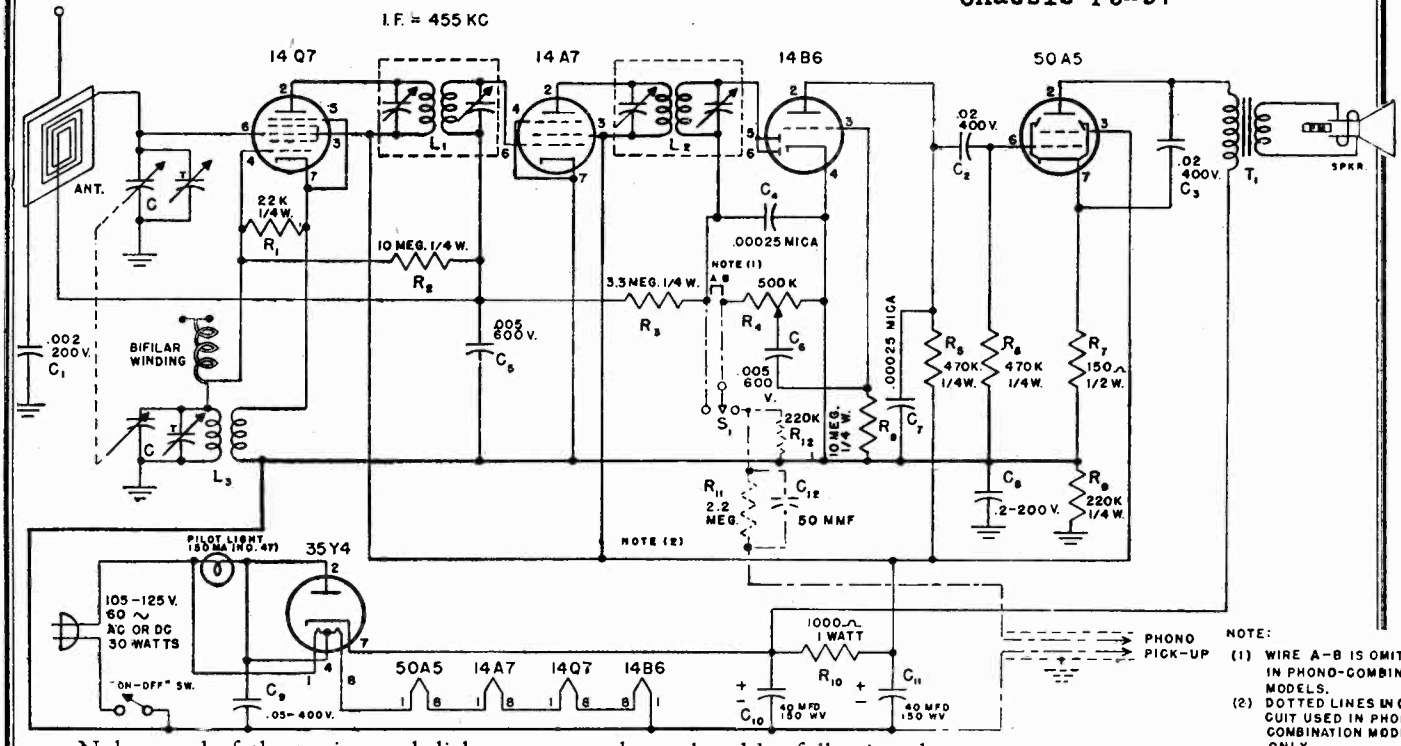


SELECTOR SWITCH SHOWN
AT 4TH POSITION
MIKE RECORDING

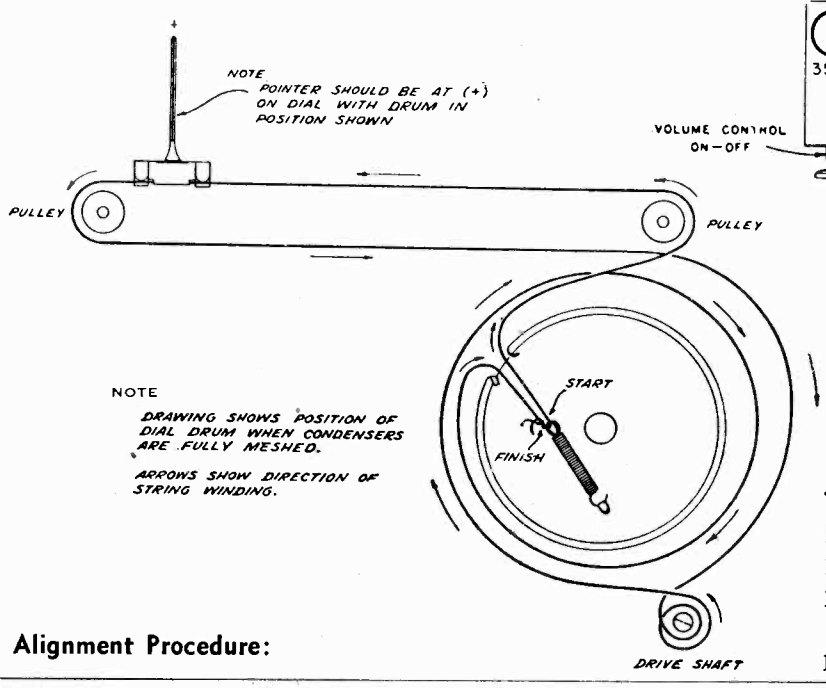
C.B. - DENOTES COMMON BUS, FLOATING GROUND

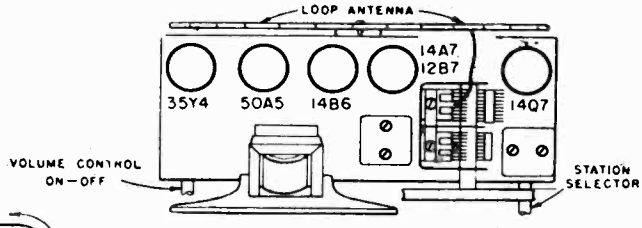
SPIEGEL

MODELS 651,6514,6541,6547
Chassis FJ-97



Nylon cord of the tuning and dial system may be replaced by following the diagram below.





Note: Trimmers may be located on either long or short side of variable condenser.

Tube Complement:

1 Type 14Q7—Oscillator—Converter.
1 Type 14A7—I. F. Amplifier.
1 Type 14B6—Det. A.V.C. and Amp.
1 Type 50A5—Power Amp.
1 Type 35Y4—Rectifier.

Alignment Procedure:

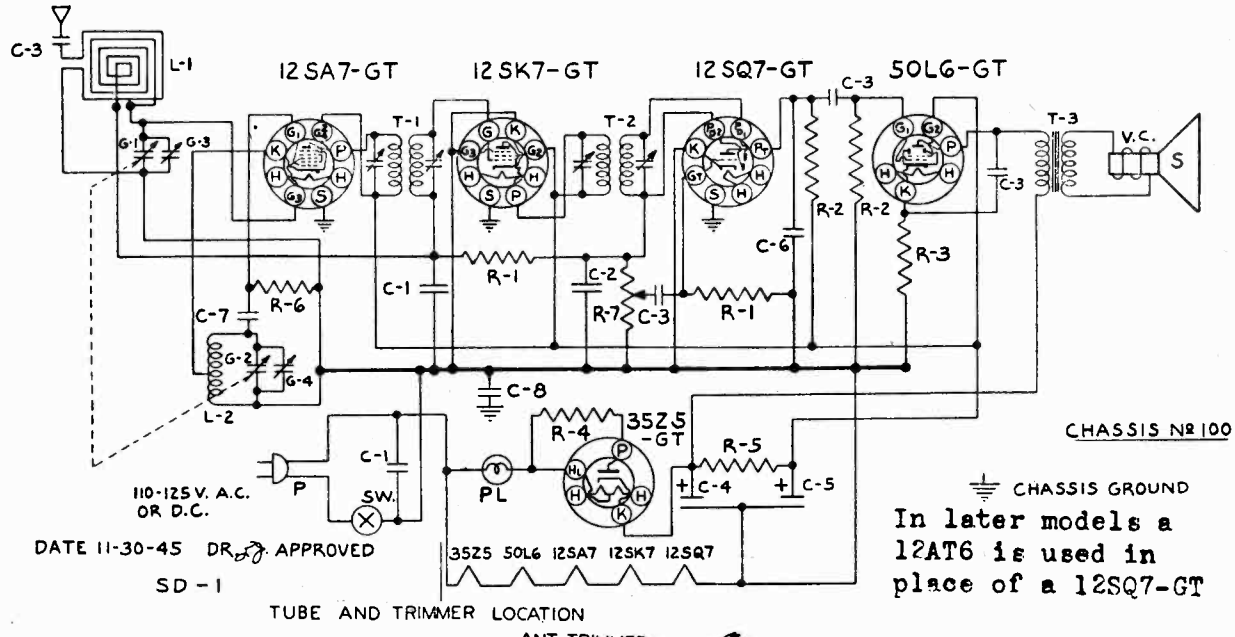
Steps	Connect output of oscillator to	Tune osc. to	Tune radio dial to	Adjust the following for max. peak output
1.	Tuning condenser stator (ant.) in series with .01 mfd.	455	Quiet point at high frequency end of dial.	1st and 2nd I. F. Transformers
2.	Antenna term. of Ant. loop in series with 100 mmf.	1720	Full clockwise (out of mesh)	Osc. trimmer
3.	Antenna term. of Ant. loop in series with 100 mmf.	1500	1500	Ant. trimmer

Output meter is connected across voice coil. Receiver volume is turned to maximum.

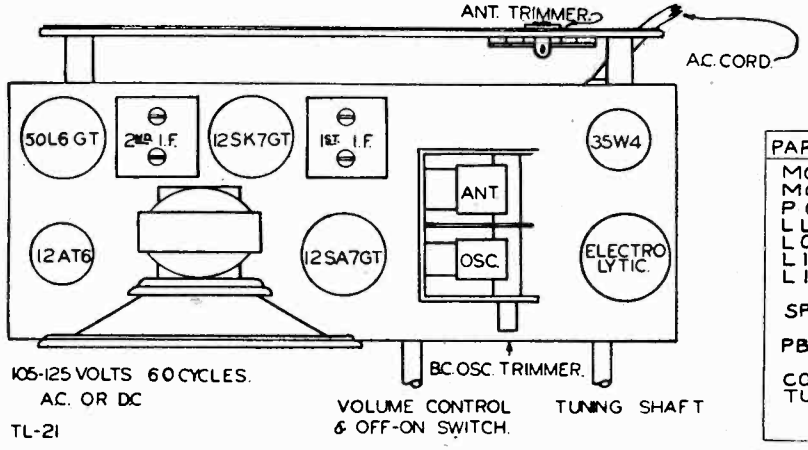
For Parts list, see P. 15-9. For Record Changer: Seeburg Model K

MODEL 5001

SPIEGEL



In later models a 12AT6 is used in place of a 12SQ7-GT



TL-21

PART NO		DESCRIPTION
MC-5	C-6	.0005 MFD. COND. 20%
MC-4	C-7	.000056 MFD. MICA 20%
PC-9	C-8	.1 MFD COND. 400 V.
LL-1	L-1	LOOP ANTENNA
LO-2	L-2	OSC. COIL
LI-1	T-1	INPUT I.F. TRANSFORMER
LI-2	T-2	OUTPUT I.F. TRANSFORMER
SPK-4	T-3	OUTPUT SPK. TRANSFORMER
	V.C.	VOICE COIL
	S	P.M. SPEAKER
PB-1	PL	#47 PILOT BULB
	SW	A.C. SWITCH ON VOL. CONTROL
CO-1	P	LINE CORD
TU-3		12SA7 GT 12SK7 GT 12SQ7 GT 50L6 GT 35Z5 GT

Remove chassis from cabinet for alignment.

A Signal Generator is required having the following frequencies: 455 KC, 1400 KC, 1720 KC. An output meter should be connected across the speaker.

The receiver volume control should be turned to maximum during the I.F. and all subsequent alignments to keep the AVC from working and giving false readings. Keep the generator output as low as possible to prevent overloading.

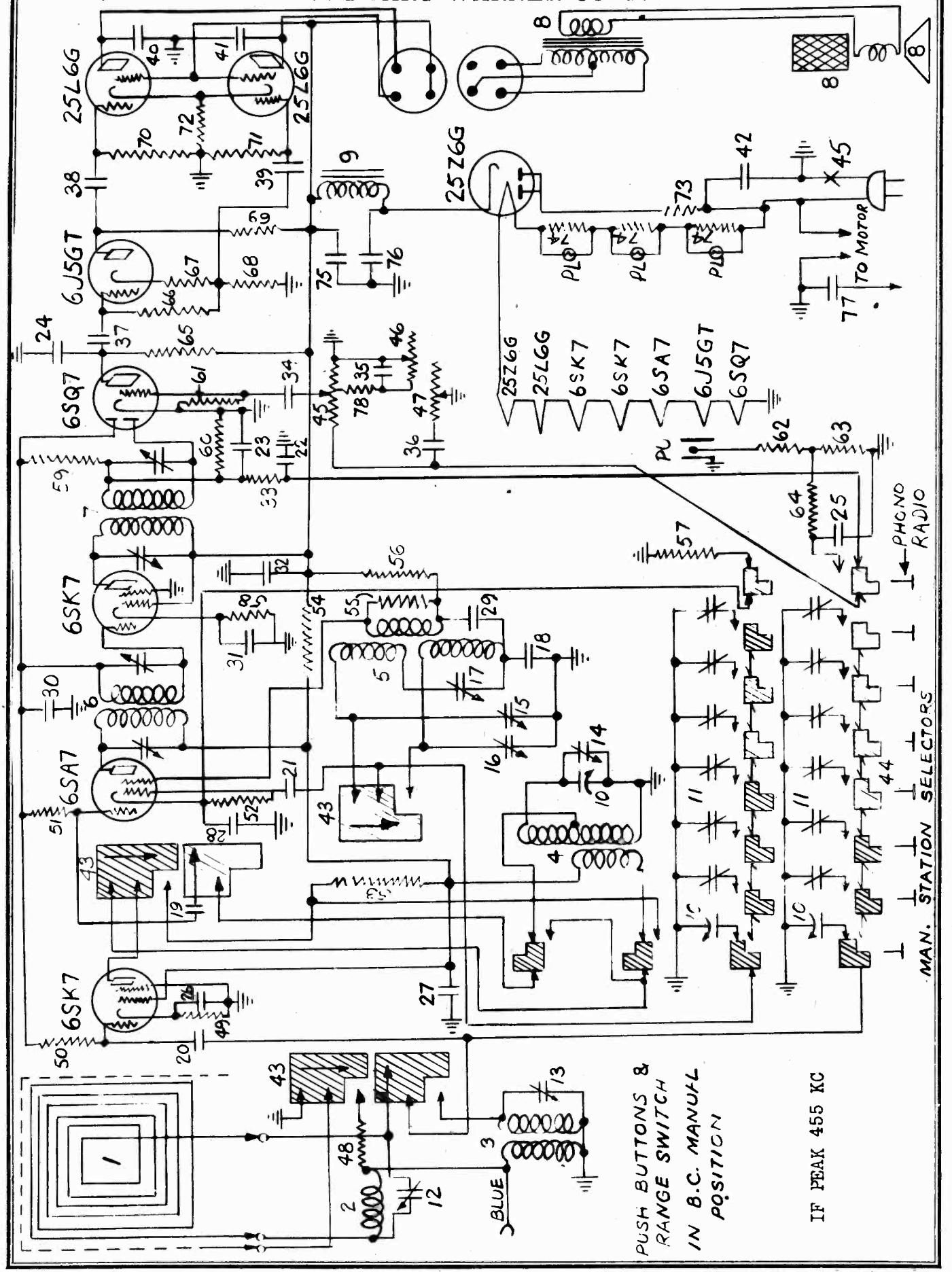
FIRST STEP: Connect the hot lead from the generator to the ANT. section of the gang condenser, through a .1 MFD condenser. The ground lead from the generator must be connected to the metal frame of the gang condenser. Turn the gang condenser to complete minimum capacity. Adjust the generator to 455 KC and adjust the trimmers of the 1st and 2nd I.F. transformers until a maximum reading is noted on the output meter.

SECOND STEP: With the leads from the generator still connected in the same manner, adjust the Signal Generator to 1720 KC. The OSC. trimmer is located on the front of the chassis between the volume and tuning controls. Adjust this trimmer until the 1720 KC signal is tuned in.

THIRD STEP: Remove the hot lead of the generator from the ANT. section of the gang condenser. Connect this lead to the antenna lead wire that projects from the back of the loop antenna through a 200 MMFD condenser. Adjust the Signal Generator to 1400 KC. Rotate the tuning control until this signal is tuned in. The ANT. trimmer is located on the back of the loop antenna. Adjust this trimmer until a maximum reading is noted on the output meter. No further adjustment should be necessary, unless the set has been damaged, as the coils and condenser in this receiver have been specially handled at the factory to insure proper alignment at the lower frequencies.

PART NO.		DESCRIPTION
IR-13	R-1	2 MEG. RESISTOR ½W 20%
IR-11	R-2	470M Ω " " "
IR-14	R-3	150 Ω " " "
IR-4	R-4	47 Ω " " "
IR-15	R-5	2200 Ω " " "
IR-16	R-6	33000 Ω " " "
V.C.-3	R-7	1 MEG. VOLUME CONTROL
GC-2	G-1, G-2	GANG COND.
TC-7	G-3	ANT. TRIMMER COND.
TC-6	G-4	OSC. TRIMMER COND.
PC-5	C-1	.05 MFD. COND. 400 V.
MC-2	C-2	.0001 MFD. MICA 20%
PC-7	C-3	.01 MFD. COND. 400 V.
EC-3	C-4	40 MFD. 150 V.
	C-5	20 MFD. ELECTROLYTIC

17-8E12, 17-8E9Z STEWART WARNER CORP. MODELS 17-8E1, 17-8E9,

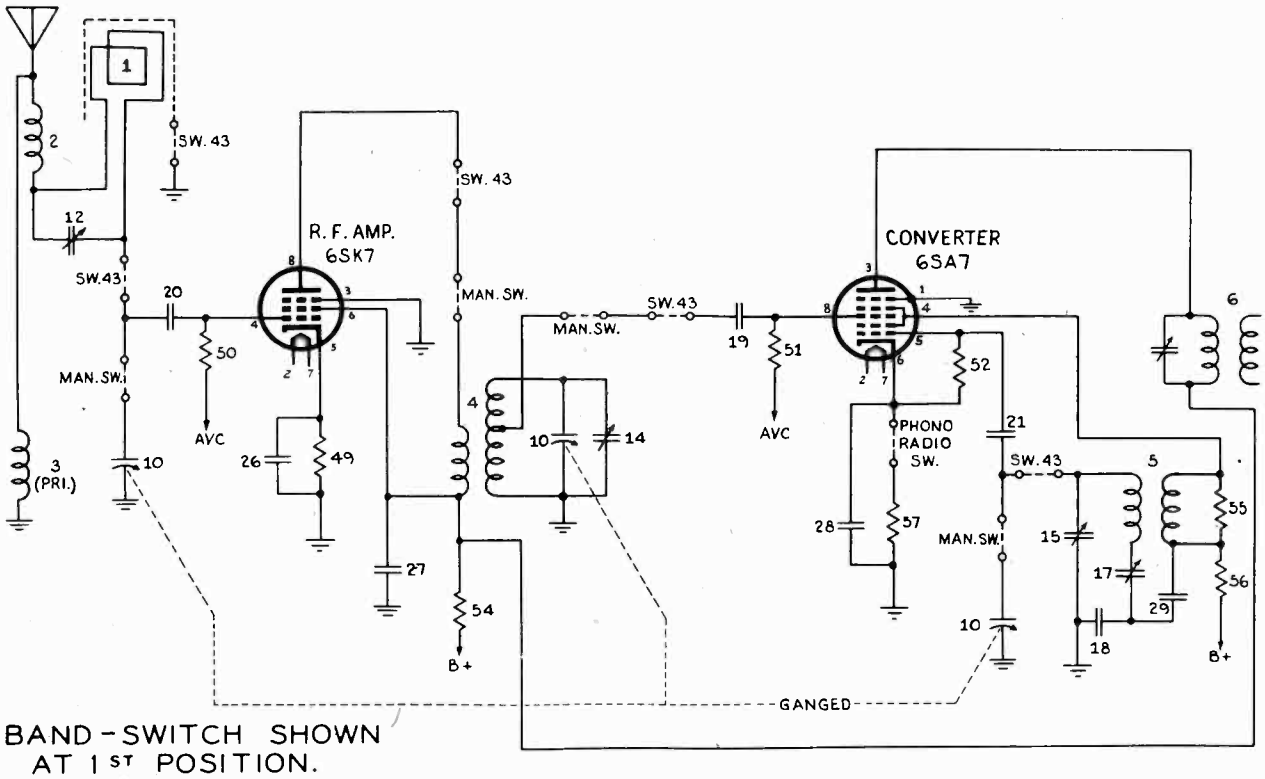


Record Changer: General Industries Model GI-C120. See Rider's "Automatic Record Changer" book p. 248

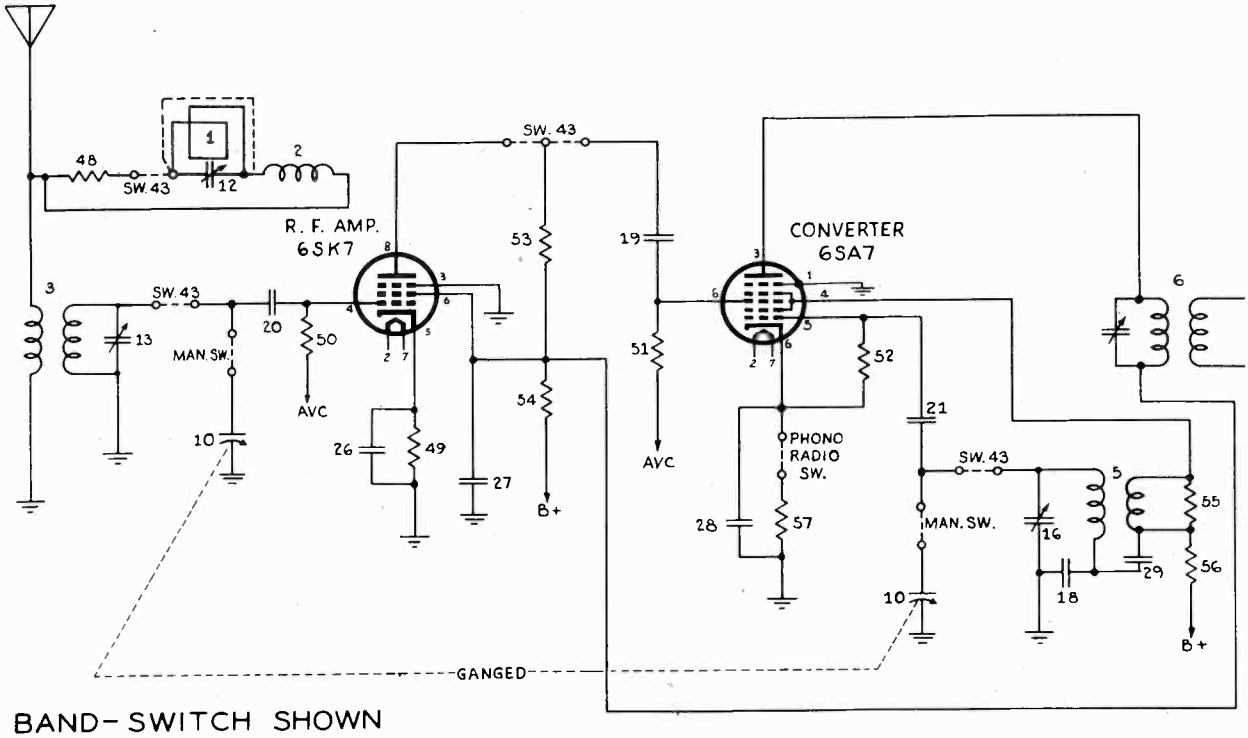
"clarified schematics"

MODELS 17-8E1,17-8E9,
17-8E12,17-8E9Z

STEWART WARNER CORP.



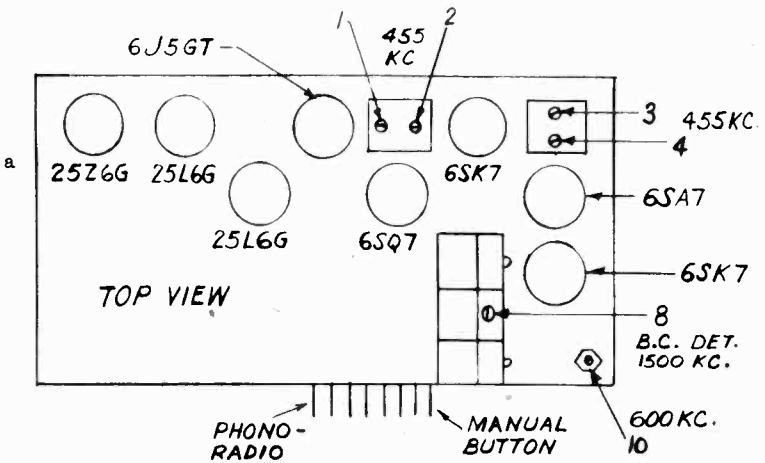
BAND-SWITCH SHOWN
AT 1ST POSITION.
BROADCAST BAND

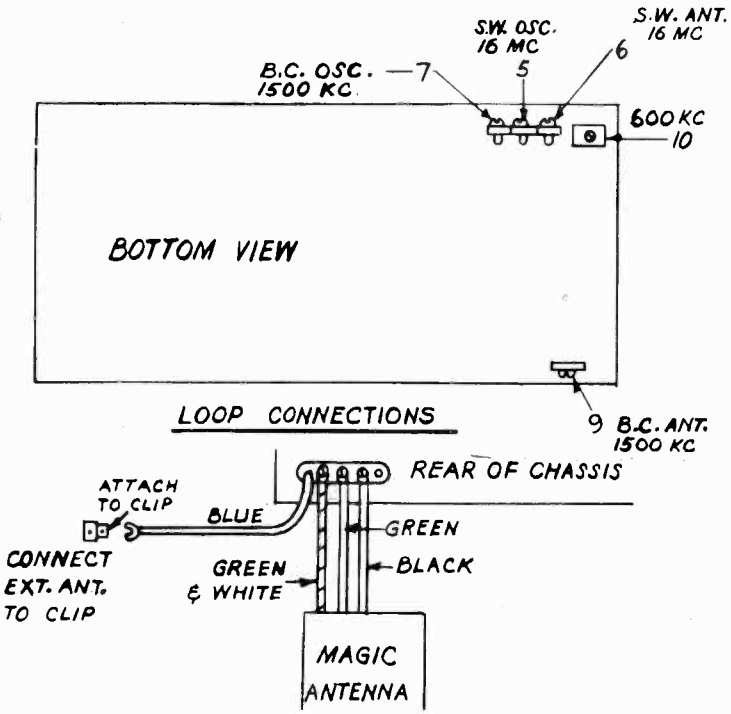


BAND-SWITCH SHOWN
AT 2ND POSITION.
SHORT WAVE BAND

ALIGNMENT PROCEDURE FOR 17-8E & 17-8E-Z CHASSIS

1. Connect the output meter in the conventional manner.
2. Connect the ground lead of the signal generator to the receiver chassis through a .25 mfd. condenser.
3. Turn the volume control to maximum volume position and turn both tone controls to the position giving highest tone.
4. PUSH THE MANUAL BUTTON IN AND KEEP IT PUSHED IN. Turn the BAND SWITCH to the BROADCAST position.
5. Connect the loop as shown under "LOOP CONNECTIONS". Try to keep the loop in the same relative position to the chassis as when in the cabinet.
6. Connect the signal generator antenna lead to the lug on the middle section of the gang condenser, using a .1 mfd. condenser in series with the lead.
7. Set the signal generator to 455 KC. and adjust trimmers 1, 2, 3 and 4 for maximum output.
8. Connect the signal generator antenna lead through a 400 ohm carbon resistor to the blue wire coming from the chassis, and turn the BAND SWITCH to the SHORT WAVE position.
9. With the signal generator and receiver dial set to 16 MC. adjust trimmer 5 to bring in signal. Check to see if image appears at 15.1 MC. on receiver dial, if it does not, realign at 16 MC with trimmer screw farther out. Recheck image.
10. Adjust trimmer 6 for maximum output at 16 MC. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.
11. Place the signal generator antenna lead near the loop and turn the BAND SWITCH to the BROADCAST position.
12. With signal generator and receiver dial set at 1500 KC. adjust trimmer 7 for maximum output.
13. Now install the chassis in the cabinet.
14. Adjust trimmers 8 and 9 for maximum output at 1500 KC. as before.
15. Set signal generator to 600 KC and tune rec3iver dial to 600 KC signal. Adjust trimmer 10 for maximum output. Try to increase output by detuning the trimmer and retuning the receiver dial until maximum output is obtained.





MODELS 17-8E1,17-8E9,
17-8E12,17-8E9Z

STEWART WARNER CORP.

DIA. NO.	PART NO.	DESCRIPTION	LIST PRICE
1	160572	Loop antenna complete-	3.60
2	161228	Coil-loop compensating	.25
3	160444	Coil-short wave antenna	.54
4	160478	Coil - R. F.----------	.60
5	160128	Coil - oscillator------	.70
6	119042	Transformer-Ist I.F.---1.10	
7	119024	Transformer-2nd I.F.---1.15	
8	U115125	Speaker-P.M. (12") with transformer---13.50	
8	U161361	Transformer-output for U115125 speaker------.95	
8	U161362	Cone & Voice coil for U115125 speaker-----1.60	
9	161266	Filter choke----------	.90
10	160373	Condenser-var. tuning-	3.20
11	119662	Condenser-push button trimmers(low freq.)	.24
11	119663	Condenser-push botton trimmers(med.freq.)	.24
11	119664	Condenser-push button trimmers(high freq)	.24
12	160449	Condenser-trimmer-----	.18
13-15 16	160415	Condenser-trim(3 sec.)	.48
17	119934	Condenser-padder------	.36
18	88587	Condenser-mica .0042 mfd.----------	.35
19	83783	Condenser-mica 110 mmfd.----------	.20
20	83539	Condenser-mica 260 mmfd.----------	.20
21	85061	Condenser-mica 51mmfd.	.15
22	83783	Condenser-mica110mmfd.	.20
23 24-25	83539	Condenser-mica 260 mmfd.----------	.20
26-27 28	116819	Condenser-.05 mfd. 600 volt----------	.20
29	119417	Condenser-.006 mfd. 600 volt----------	.15
30-31	116819	Condenser-.05 mfd. 600 volt----------	.20
32	116625	Condenser-.1 mfd. 600V	.25
33	110552	Resistor-carbon 47000 ohms 1/4 watt--	.12
34	119875	Conden.-.002 mfd. 600V	.15
35	119193	Conden.-.01 mfd. 600 V	.15
36	119875	Conden.-.002 mfd. 600V	.15
37-38 39	119193	Conden.-.01 mfd. 600 V	.15
40-41	119415	Conden.-.015 mfd. 600V	.15
42	116819	Conden.-.05 mfd. 600V.	.20
43	160371	Switch-band----------	1.00
44	160369	Switch-push button----	3.00

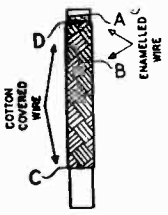
ALL PRICES SUBJECT TO CHANGE

WITHOUT NOTICE

DIA. NO.	PART NO.	DESCRIPTION	LIST PRICE
45	160412	Vol.Cont.-2 meg. & switch----	1.40
46	160414	Tone Control(1 meg.)(bass)---	.95
47	160413	Tone Control(5 meg)(treble)--	.85
48	118804	Res.-carb. 400 ohms 1/4 watt-	.10
49	110556	Res.-carb. 330 ohms 1/4 watt-	.12
50	110554	Res.-carb. 1 meg. 1/4 watt---	.12
51	110578	Res.-carb. 68000 ohm 1/4 watt--	.12
52	110552	Res.-carb. 47000 ohm 1/4 watt--	.12
53	110557	Res.-carb. 4700 ohm 1/4 watt---	.12
54	118824	Res.-carb. 1500 ohm 1/2 watt---	.12
55	116068	Res.-carb. 680 ohms 1/4 watt-	.10
56	118824	Res.-carb. 1500 ohms 1/2 watt--	.12
57	110560	Res.-carb. 100 ohms 1/4 watt-	.12
58	112963	Res.-ins. 330 ohm 1/4 watt---	.15
59	110570	Res.-carb. 2.2 meg. 1/4 watt-	.15
60	110584	Res.-carb. 330000 ohm 1/4 watt-	.12
61	112975	Res.-carb. 10 meg. 1/4 watt--	.12
62	110554	Res.-carb. 1 meg. 1/4 watt---	.12
63-64 65	110553	Res.-carb. 220000 ohm 1/4 watt-	.12
66	110559	Res.-carb. 470000 ohm 1/4 watt-	.12
67	110586	Res.-carb. 2200 ohm 1/4 watt---	.12
68-69	110565	Res.-carb. 22000 ohm 1/4 watt--	.12
70-71	110559	Res.-carb. 470000 ohm 1/4 watt-	.12
72	111514	Res.-W.W. 170 ohm 2 watts----	.15
73	88465	Res.-W.W. 25 ohms 1/2 watt-----	.15
74	161313	Res.-bleeder 30-30-30 ohms---	.75
75	160095	Condenser-40 mfd. 300 volts--	.90
76	116470	Condenser-elect. 20-20 mfd. 150 volt----------	.95
77	116819	Condenser-.05 mfd. 600 volt--	.20
78	110566	Res.-carb. 33000 ohm 1/4 watt--	.12
	112636	Lamp-dial-Mazda #44(frosted)-	.25
	110629	Record changer lamp-Mazda #44 (unfrosted)----------	.15

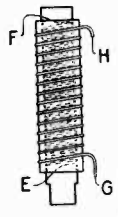
MISCELLANEOUS PARTS

PART NO.	DESCRIPTION	LIST PRICE
117117	Cable-motor----------	.38
161304	Call Tabs & Instructions---------	.50
114955	Clamp-for dial cord----------	.01
117057	Cord-drive (3 ft. lengths)-------	.16
160480	Dial scale----------	.35
113402	Drum-dial cord drive----------	.56
160182	Escutcheon-dial----------	2.10
160184	Escutcheon-push button----------	.50
160186	Push button assembly----------	1.15
160219	Knob----------	.06
160560	Loop drive shaft & cable---------	.54
160033	Needle cup----------	.08
160520	Pointer----------	.16
160185	Push button----------	.06
119791	Socket-8 prong (7 used)---------	.12
114876	Socket-octal (1 used)----------	.15
500035	Crystal Cartridge for pickup-----	



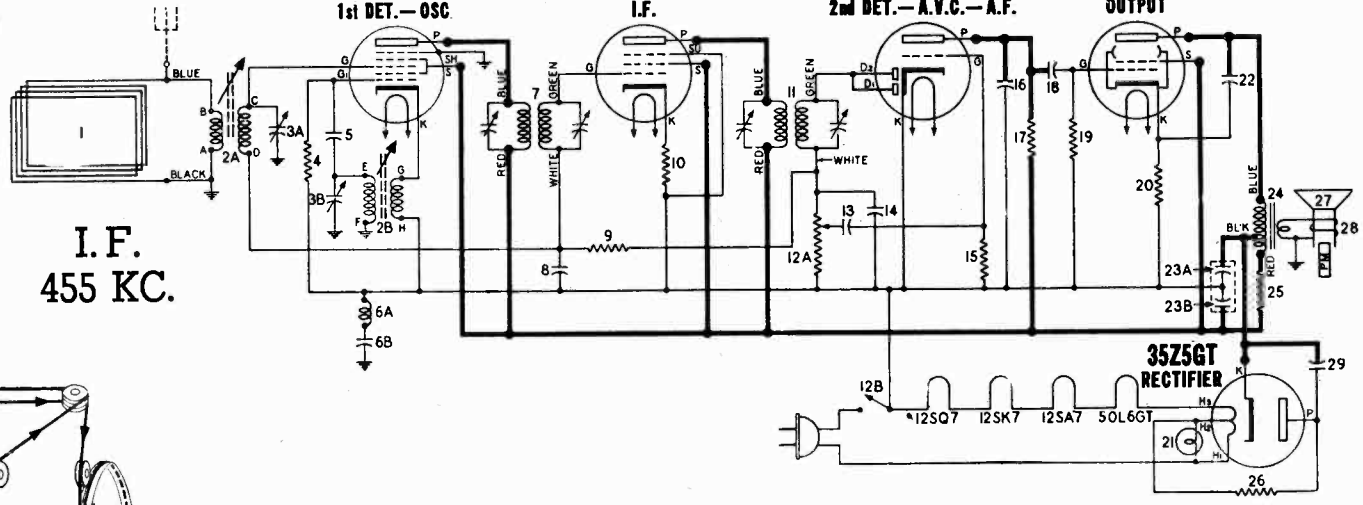
ANTENNA COUPLING COIL
504760

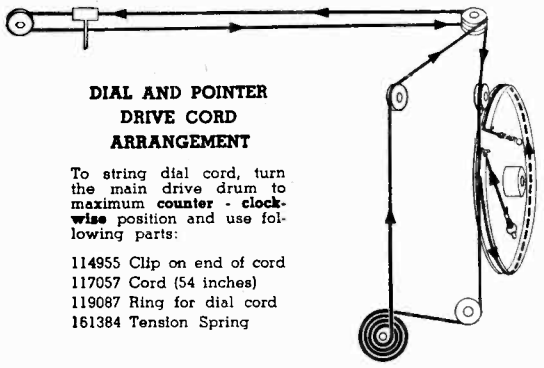
SLUG CORES FOR COILS
ANT.—504211
OSC.—504213



OSCILLATOR COIL
504212

Lettered terminals in illustrations correspond to similarly lettered terminals on the circuit diagram.





DIAL AND POINTER DRIVE CORD ARRANGEMENT

To string dial cord, turn the main drive drum to maximum **counter - clockwise** position and use following parts:

114955 Clip on end of cord
117057 Cord (54 inches)
119087 Ring for dial cord
161384 Tension Spring

SOCKET VOLTAGES

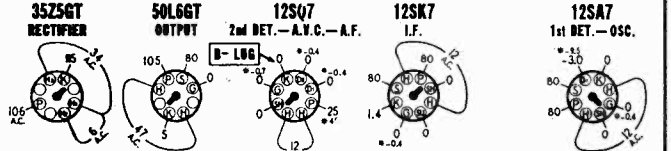
Measured with voltmeter having sensitivity of 1000 ohms per volt except where indicated by (*).

VOLUME ON FULL WITH NO SIGNAL **DIAL TUNED TO 540 KC.**

BOTTOM VIEW OF CHASSIS

HEATER VOLTAGES MEASURED ACROSS SOCKET TERMINALS. ALL OTHER VOLTAGES MEASURED BETWEEN SOCKET TERMINALS AND B- LUG.

117 VOLT 60 CYCLE A.C. POWER SUPPLY USED FOR THESE MEASUREMENTS.



REAR OF CHASSIS

*—Measured with vacuum tube voltmeter

DIAGRAM NO.	PART NO.	DESCRIPTION	LIST PRICE
		CONDENSERS	
3A, B	504330	Condenser—trimmer assembly A-20 to 270 Mmfd. B-40 to 370 Mmfd.	$1.10
5	502931	Condenser—100 Mmfd. 500 volt	.24
6B	502158	Condenser—.2 Mfd. 400 volt	.36
8	502153	Condenser—.05 Mfd. 200 volt	.24
13	502156	Condenser—.004 Mfd. 400 volt	.20
14	502882	Condenser—220 Mmfd. 500 volt	.40
16	502470	Condenser—.0008 Mfd. 400 volt	.20
18	502156	Condenser—.004 Mfd. 400 volt	.20
22	502152	Condenser—.02 Mfd. 400 volt	.24
23-A, B	500256	Condenser—electrolytic A-40 Mfd. 150 volt B-20 Mfd. 150 volt	1.50
29	502157	Condenser—.05 Mfd. 400 volt	.24
		RESISTORS	
4	502130	Resistor—carbon 22,000 ohms ¼ watt	.12
9	502135	Resistor—carbon 2.2 Meg. ¼ watt	.12
10	502264	Resistor—carbon 47 ohms ¼ watt	.12
12A, B	502928	Volume control—with switch; 1 Meg.	1.25
15	502136	Resistor—carbon 10 Meg. ¼ watt	.12
17	502134	Resistor—carbon 470,000 ohms ¼ watt	.12
19	502134	Resistor—carbon 470,000 ohms ¼ watt	.12
20	502932	Resistor—carbon 150 ohms 1 watt	.16
25	502933	Resistor—carbon 1,500 ohms 1 watt	.16
26	502574	Resistor—carbon 33 ohms ½ watt	.12
		COILS AND TRANSFORMERS	
1	504348	Loop antenna	2.50
2-A, B	504335	Tuning unit; complete assembly	8.70
2A	504760	Coil—antenna (less slug)	
2-B	504212	Coil—oscillator (less slug)	1.05
	504211	Slug for Ant. coil (yellow end)	.45
	504213	Slug for Osc. coil (white end)	.45
6A		Choke: three turns of #22 insulated wire closely wound on condenser 6B.	
7	502926	Transformer—1st I.F.	2.30
11	502927	Transformer—2nd I.F.	2.30
24	502817	Transformer—output for C-502816 speaker.	2.00
	504583	Transformer—output for W-502816 speaker.	2.00

DIAGRAM NO.	PART NO.	DESCRIPTION	LIST PRICE
		OTHER ELECTRICAL PARTS	
21	118921	Lamp—dial (Mazda 47) 6-8V. 150 Ma.	$0.15
27	502818	Cone and voice coil for C-502816 speaker.	
	504584	Cone and voice coil for W-502816 speaker.	
28	502816	Speaker—P.M. dynamic (4 inch)	7.00
		MISCELLANEOUS PARTS	
	502940	Back for cabinet (Model 51T46)	.20
	504556	Back for cabinet (Model 51T56)	.20
	116467	Base for mtg. electrolytic condenser	.04
	500383	Cabinet—ivory (Model 51T46)	5.10
	500261	Clamp—dial scale mounting (Model 51T46)	.02
	114955	Clip—retainer on end of dial cord	.01
	500497	Clip—retainer for cabinet back	.02
	117057	Cord—dial drive (54" required), per ft.	.05
	500324	Cover—cardboard, for elect. condenser	.04
	504347	Dial scale—glass (Model 51T46)	.70
	504558	Dial scale—glass (Model 51T56)	.70
	502564	Knob—ivory (Models 51T46, 51T56)	.08
	502367	Pointer *	.16
	81145	Retaining ring for tuning shaft	.01
	119087	Ring for dial cord	.01
	85078	Rubber grommet; Ant. coil mtg.	.03
	504045	Rubber grommet; Osc. coil mtg.	.04
	17064	Screw No. 4 x 7/32	.02
	83047	Screw No. 8 x ⅞; chassis mtg.	.02
	114628	Screw No. 8 x ½; chassis mtg.	.01
	501777	Screw No. 4 x ½; for mtg. cabinet back	.02
	502173	Shaft—tuning control	.15
	116690	Socket—octal base	.12
	160392	Socket—octal (rectifier)	.16
	500499	Socket—dial lamp (with leads)	.44
	161384	Spring—dial cord tension	.06
	504012	Spring for tuning slug drive cord	.05
	111456	Washer—spring, for tuning shaft	.005

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

MODELS 51T46, 51T56

STEWART WARNER CORP.

ALIGNMENT PROCEDURE

1. Turn the tuning control knob clockwise as far as it will go (tuner mechanism is now in maximum open position with tuning slugs almost completely withdrawn from coils). Dial pointer should then point to 1600 Kc mark on scale. If it is set incorrectly, release pointer clip on dial cord and reposition pointer.
2. Remove chassis and loop from cabinet by taking out two screws which hold chassis to bottom of cabinet. Solder approximately 8" of insulated wire to any B— connection (see voltage chart on opposite side for convenient B— location).
3. During the alignment of this receiver it will be necessary to set the dial pointer to the following frequencies: 1500 Kc., 1400 Kc. In order to avoid replacing the chassis in the cabinet each time a dial setting is required, it will be found more convenient to mark the required frequency points on the white dial background plate before starting the alignment.
4. Connect ground lead of signal generator to B— lead through a 0.25Mfd. condenser.
5. Connect output meter across the speaker voice coil (terminals at back of speaker) or from plate of 50L6GT tube to B—through a 0.1 Mfd. condenser.
6. Set volume control at maximum volume position and use a weak signal from the signal generator.

DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECT HIGH SIDE OF GENERATOR TO	SIGNAL GENERATOR FREQUENCY	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
Set tuner mechanism to maximum open position by turning the tuning control knob clockwise as far as it will go. Then check whether the positions of the tuning slugs correspond to the positions shown in Fig. 1 below. If settings are incorrect, rotate the individual core and threaded stem until desired position is reached. Note that threaded stem is prevented from moving by a dab of speaker cement at top and that this seal must be removed before stem can be rotated.						
200 MMFD. Mica Condenser	Control Grid of 12SA7	455 KC	Any point where it does not affect the signal.	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
				3-4	1st I.F.	
200 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1600 KC	1600 KC	5	Broadcast Oscillator (Shunt)	Adjust for maximum output.
			Tune to 1600 KC generator signal	6	Broadcast Antenna	Adjust for maximum output.
200 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1400 KC	Set pointer to 1400 KC mark on dial scale. Do not attempt to tune to generator signal.	Osc. coil tuning slug		Adjust position of slug for maximum output.
				Ant. coil tuning slug		Adjust position of slug for maximum output.
200 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1600 KC	Set pointer to 1600 KC mark on dial scale. Do not attempt to tune to generator signal.	5	Broadcast Oscillator (Shunt)	Adjust for maximum output.
			Tune to 1600 KC generator signal	6	Broadcast Antenna	Adjust for maximum output.
200 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1400 KC	Tune to 1400 KC generator signal	Ant. coil tuning slug		Adjust position of slug for maximum output.
Apply a coating of speaker cement at top of each tuning core stem to prevent movement.						

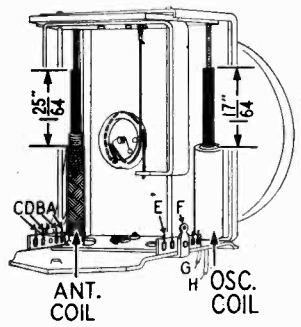


FIG. 1

SLUG TUNER ASSEMBLY
(Drive Parts)

117057 Cord (8")
114955 Clip on cord
504012 Spring

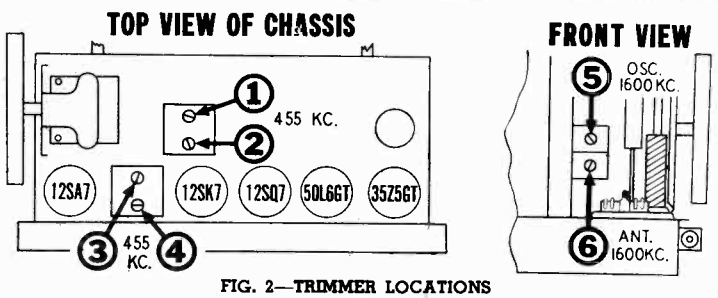


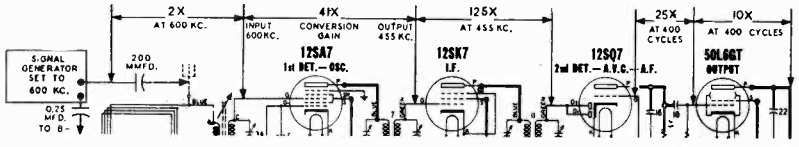
FIG. 2—TRIMMER LOCATIONS

APPROXIMATE STAGE GAIN DATA

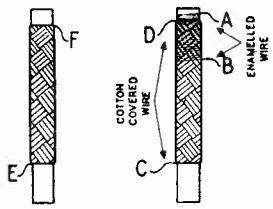
Be sure R.F. and I.F. stages are accurately aligned before measuring gain. R.F. gains can be measured with a "channel" type instrument containing a tuned and calibrated R.F. amplifier. A vacuum tube voltmeter may be used for audio gain measurements. Observe following precautions:

1. For all gain measurements connect signal generator as shown. Use 600 KC. signal with 400 cycle modulation (use nearby frequency if local station interferes.)
2. For R.F. and I.F. measurements connect negative terminal of a 3 volt battery (two 1½ volt cells in series) to A.V.C. lead at terminal "D" of antenna coil; then connect positive battery lead to B—. This provides a definite operating point.
3. Be sure radio is carefully tuned to generator signal (use weak signal for sharp tuning.)
4. When using a "channel" type instrument carefully tune it for maximum output at desired frequency before making measurements.

The R.F. and I.F. stage gains shown below are less than under normal operating conditions due to the use of 3 volts fixed bias in order to establish a definite operating point. Therefore, these values are not intended to indicate the full capability of a stage.

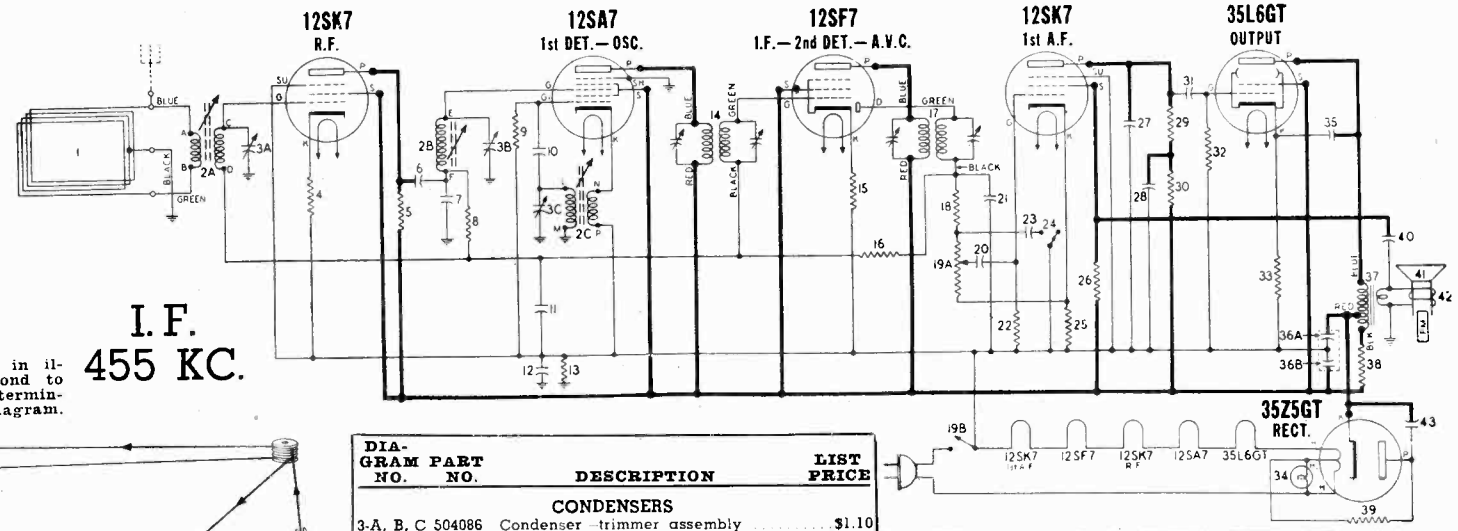


Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain. Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create considerable variation in gain measurements.

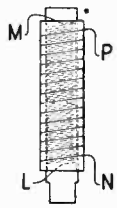


R.F. COIL 504214 — **ANTENNA COUPLING COIL 504210**

I.F. 455 KC.



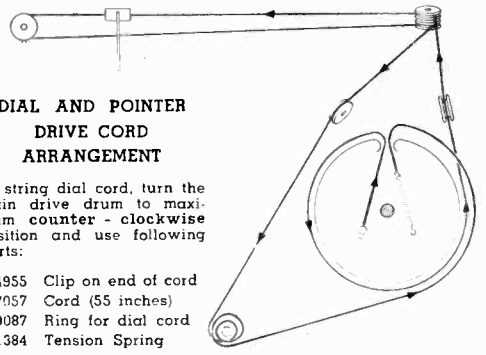
Lettered terminals in illustrations correspond to similarly lettered terminals on the circuit diagram.



OSCILLATOR COIL 504212

SLUG CORES FOR COILS

ANT.—504211	117057 Cord (55 inches)
R.F.—504215	119087 Ring for dial cord
OSC.—504213	161384 Tension Spring



DIAL AND POINTER DRIVE CORD ARRANGEMENT

To string dial cord, turn the main drive drum to maximum counter - clockwise position and use following parts:

SOCKET VOLTAGES

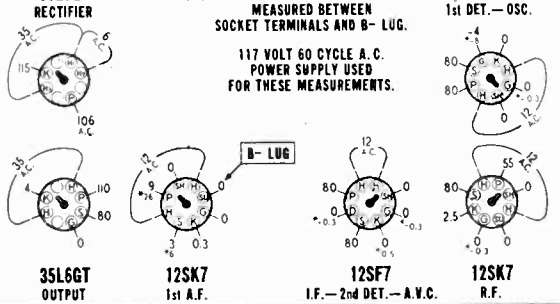
Measured with voltmeter having sensitivity of 1000 ohms per volt except where indicated by (*).

VOLUME ON FULL WITH NO SIGNAL — DIAL TUNED TO 540 KC.

BOTTOM VIEW OF CHASSIS

HEATER VOLTAGES MEASURED ACROSS SOCKET TERMINALS. ALL OTHER VOLTAGES MEASURED BETWEEN SOCKET TERMINALS AND B- LUG.

117 VOLT 60 CYCLE A.C. POWER SUPPLY USED FOR THESE MEASUREMENTS.



REAR OF CHASSIS

*—Measured with vacuum tube voltmeter

DIAGRAM NO.	PART NO.	DESCRIPTION	LIST PRICE
		CONDENSERS	
3-A, B, C	504086	Condenser—trimmer assembly A—20 to 270 Mmfd. B—40 to 370 Mmfd. C—40 to 370 Mmfd.	$1.10
6	502271	Condenser—mica 260 Mmfd. 500 volt	.30
7	502165	Condenser—mica 1,000 Mmfd. 500 volt	.45
10	502159	Condenser—mica 50 Mmfd. 500 volt	.24
11	502155	Condenser .1 Mfd. 200 volt	.30
12	502158	Condenser .2 Mfd. 400 volt	.36
20	502453	Condenser .002 Mfd. 400 volt	.20
21	502160	Condenser—mica 110 Mmfd. 500 volt	.24
23	502470	Condenser .0008 Mfd. 400 volt	.20
27	502160	Condenser—mica 110 Mmfd. 500 volt	.24
28	502153	Condenser—.05 Mfd. 200 volt	.24
31	502156	Condenser—.004 Mfd. 400 volt	.20
35	502151	Condenser—.01 Mfd. 400 volt	.20
36-A, B.	500256	Condenser—electrolytic A—40 Mfd. 150 volt B—20 Mfd. 150 volt	1.50
40	502152	Condenser—.02 Mfd. 400 volt	.24
43	502157	Condenser—.05 Mfd. 400 volt	.24
		RESISTORS	
4	502140	Resistor—carbon 390 ohms ¼ watt	.12
5	502291	Resistor—carbon 4700 ohms ¼ watt	.12
8	502134	Resistor—carbon 470,000 ohms ¼ watt	.12
9	502130	Resistor—carbon 22,000 ohms ¼ watt	.12
13	502133	Resistor—carbon 220,000 ohms ¼ watt	.12
15	502264	Resistor—carbon 47 ohms ¼ watt	.12
16	502269	Resistor—carbon 3.3 Meg. ¼ watt	.12
18	502131	Resistor—carbon 47,000 ohms ¼ watt	.12
19-A, B.	502145	Volume control 500,000 ohms (with switch)	1.25
22	502136	Resistor—carbon 10 Meg. ¼ watt	.12
25	502128	Resistor—carbon 2200 ohms ¼ watt	.12
26	502135	Resistor—carbon 2.2 Meg. ¼ watt	.12
29, 30	502133	Resistor—carbon 220,000 ohms ¼ watt	.12
32	502134	Resistor—carbon 470,000 ohms ¼ watt	.12
33	502138	Resistor—carbon 130 ohms ¼ watt	.12
38	502469	Resistor—carbon 1500 ohms 1 watt	.16
39	502574	Resistor—carbon 33 ohms ½ watt	.12
		COILS & TRANSFORMERS	
1	502246	Loop antenna	2.90
2-A, B, C	504096	Tuning unit; complete assembly	10.80
2-A	504210	Coil—antenna (less slug)	1.20
2-B	504214	Coil—R.F. (less slug)	.85
2-C	504212	Coil—oscillator (less slug)	1.05
	504211	Slug core for Ant. coil (yellow end)	.45
	504213	Slug core for Osc. coil (white end)	.45
	504215	Slug core for R.F. coil (purple end)	.45

DIAGRAM NO.	PART NO.	DESCRIPTION	LIST PRICE
14	502102	Transformer—1st I.F.	$2.30
17	502103	Transformer—2nd I.F.	2.30
37	502213	Transformer—output (for R-502998 spkr.)	2.50
	502904	Transformer—output (for A-502998 spkr.)	2.50
	504244	Transformer—output (for W-502998 spkr.)	2.50
		OTHER ELECTRICAL PARTS	
24	500546	Switch—tone control	.84
34	502473	Lamp—dial (Mazda 47) 6-8V. 150 Ma.	.22
41	502214	Cone & voice coil for R-502998 spkr.	2.00
	502903	Cone & voice coil for A-502998 spkr.	2.00
	504245	Cone & voice coil for W-502998 spkr.	2.00
42	502998	Speaker P.M. dynamic (5 inch)	6.60
		MISCELLANEOUS PARTS	
	502185	Back for Cabinet	.30
	116467	Base for mtg. electrolytic condenser	.04
	500384	Cabinet ivory (Model 61T26)	5.00
	502244	Cabinet mahogany (Model 61T16)	4.30
	500261	Clamp dial scale mtg.	.02
	504084	Clip—holds tuning slugs to frame	.01
	500497	Clip retainer for cabinet back	.02
	114955	Clip—retainer on end of dial cord	.01
	116563	Connector—for antenna leads	.01
	117057	Cord—dial drive (55 in. required) per ft.	.05
	500324	Cover cardboard, for elect. cond.	.04
	504142	Dial scale—glass	.80
	501186	Grounding plate (under I.F. trans. can)	.10
	502552	Knob maroon (Model 61T26)	.10
	502551	Knob—mahogany (Model 61T16)	.10
	502367	Pointer	.16
	81145	Retaining ring for tuning shaft	.01
	119087	Ring for dial cord	.01
	85078	Rubber grommet; Ant. & R.F. coil mtg.	.03
	504045	Rubber grommet; Osc. coil mtg.	.04
	17063	Screw—No. 6 x ¼	.01
	17064	Screw—No. 4 x 7/32	.02
	114628	Screw—No. 8 x ½ chassis mtg.	.01
	502173	Shaft—tuning control	.15
	116690	Socket—octal base	.12
	160392	Socket—octal (rectifier)	.16
	500499	Socket—dial lamp (with leads)	.44
	504012	Spring for tuning slug drive cord	.05
	161384	Spring—dial cord tension	.06
	111456	Washer—spring washer for tuning shaft	.005

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

MODELS 61T16, 61T26

STEWART WARNER CORP.

ALIGNMENT PROCEDURE

1. Remove chassis and loop from cabinet. Solder approximately 8" of insulated wire to any B— connection (see voltage chart on opposite side for convenient B— location). Then reinstall chassis and loop in cabinet. The B lead should extend from under the chassis at the back.
2. Connect ground lead of signal generator to B— lead.
3. Connect output meter across the speaker voice coil (terminals at back of speaker.)
4. Turn the tuning control knob clockwise as far as it will go (tuner mechanism is now in maximum open position with tuning slugs almost completely withdrawn from coils). Dial pointer should then point to 1600 Kc mark on scale. If it is set incorrectly, release pointer clip on dial cord and reposition pointer.
5. Set volume control at maximum volume position and use a weak signal from the signal generator.

DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECT HIGH SIDE OF GENERATOR TO	SIGNAL GENERATOR FREQUENCY	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
Set tuner mechanism to maximum open position by turning the tuning control knob clockwise as far as it will go (Dial pointer at 1600 Kc). Then check whether the positions of the tuning slugs correspond to the positions shown in Fig. 1 below. If settings are incorrect, rotate the individual core and threaded stem until desired position is reached. Note that threaded stem is prevented from moving by a dab of speaker cement at top.						
.1 MFD. Condenser	Ungrounded terminal of trimmer No. 6 (see Fig. 2 below for location of trimmer.)	455 KC	Any point where it does not affect the signal.	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
				3-4	1st I.F.	
300 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1600 KC	1600 KC	5	Broadcast Oscillator (Shunt)	Adjust for maximum output.
300 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1600 KC	Tune to 1600 KC generator signal	6	Broadcast R.F.	Adjust for maximum output.
				7	Broadcast Antenna	Adjust for maximum output.
300 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1400 KC	Tune to 1400 KC generator signal	Ant. coil tuning slug		Adjust position of slug for maximum output.
				R.F. coil tuning slug		Adjust position of slug for maximum output.
300 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1600 KC	Tune to 1600 KC generator signal	6	Broadcast R.F.	Recheck adjustment for maximum output.
				7	Broadcast Antenna	Recheck adjustment for maximum output.
Apply a coating of speaker cement at top of each tuning core stem to prevent movement.						

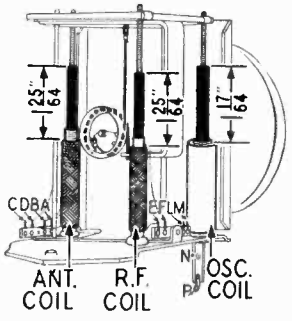


FIG. 1

SLUG TUNER ASSEMBLY
(Drive Parts)

117057 Cord (8")
114955 Clip on cord
504012 Spring

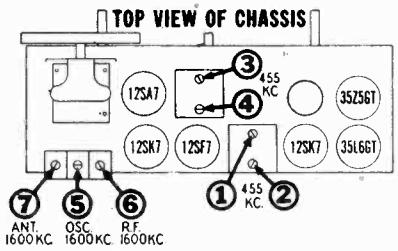


FIG. 2

AUDIO OSCILLATION

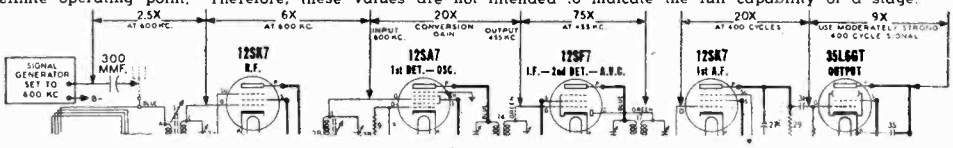
The audio system of this receiver utilizes a two stage type of inverse feed-back arrangement and, should it ever be necessary to replace the speaker or output transformer, it is important to maintain a definite phase relationship in the feed-back circuit. If the connections to the output transformer are reversed or if the feed-back connection is made to the wrong side of the output transformer secondary, the system will become regenerative instead of degenerative. Under those conditions audio oscillation may result. If that occurs, oscillation may be prevented by reversing the connections to the secondary of the output transformer.

APPROXIMATE STAGE GAIN DATA

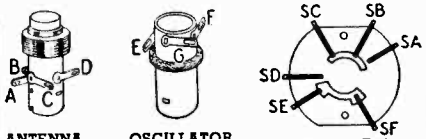
Be sure R.F. and I.F. stages are accurately aligned before measuring gain. R.F. gains can be measured with a "channel" type instrument containing a tuned and calibrated R.F. amplifier. A vacuum tube voltmeter may be used for audio gain measurements. Observe following precautions:

1. For all gain measurements connect signal generator as shown. Use 600 KC. signal with 400 cycle modulation (use nearby frequency if local station interferes.)
2. For R.F. and I.F. measurements connect negative terminal of a 3 volt battery (two 1½ volt cells in series) to A.V.C. lead and positive terminal to B—. This provides a definite operating point. IMPORTANT: Disconnect battery when measuring audio stage gains.
3. Be sure radio is carefully tuned to generator signal (use weak signal for sharp tuning.)
4. When using a "channel" type instrument carefully tune it for maximum output at desired frequency before making measurements.

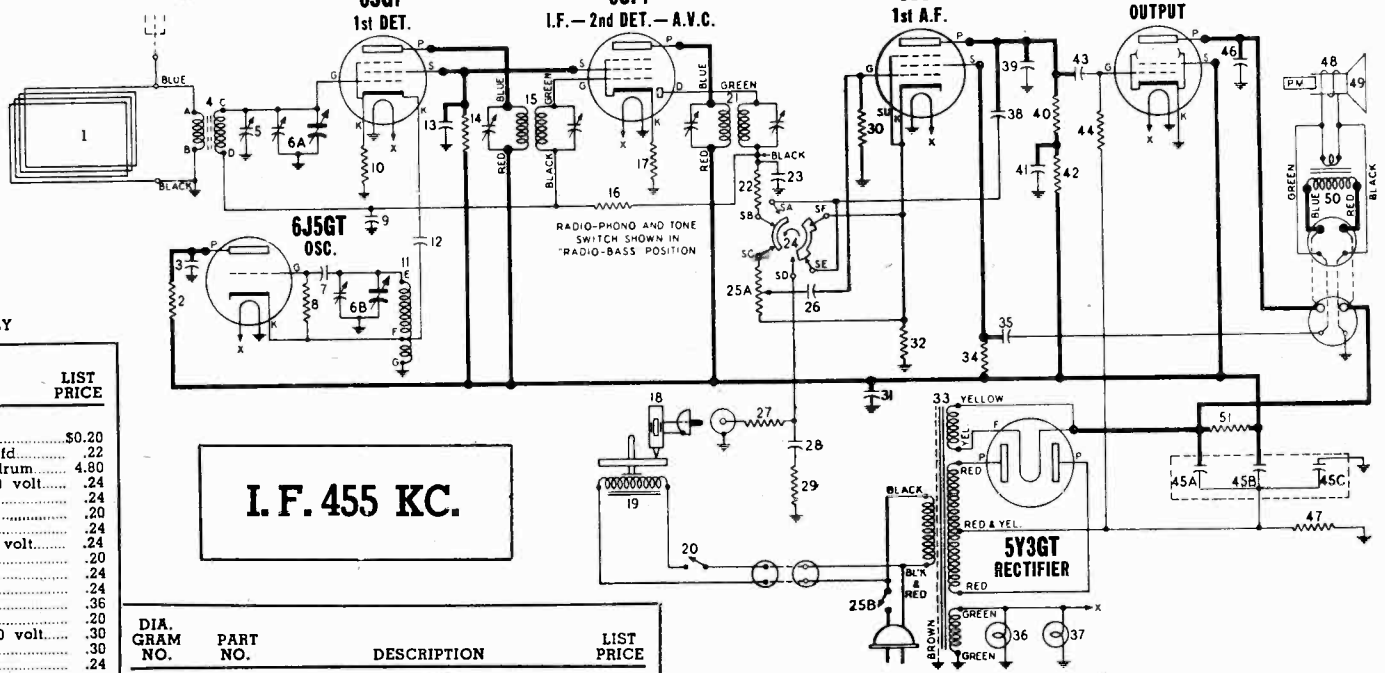
The R.F. and I.F. stage gains shown below are less than under normal operating conditions due to the use of 3 volts fixed bias in order to establish a definite operating point. Therefore, these values are not intended to indicate the full capability of a stage.



Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain. Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create considerable variation in gain measurements.



Lettered terminals in illustrations correspond to similarly lettered terminals on the circuit diagram.



PARTS LIST

ORDER PARTS FROM YOUR STEWART-WARNER DISTRIBUTOR ONLY

DIA-GRAM NO.	PART NO.	DESCRIPTION	LIST PRICE
		CONDENSERS	
3	502151	Condenser—.01 Mfd. 400 volt	$0.20
5	502651	Condenser—trimmer 12 to 18 Mmfd.	.22
6A, B	502652	Condenser—variable gang and drum	4.80
7	502160	Condenser—mica—110 Mmfd. 500 volt	.24
9	502153	Condenser—.05 Mfd. 200 volt	.24
12	502151	Condenser—.01 Mfd. 400 volt	.20
13	502157	Condenser—.05 Mfd. 400 volt	.24
23	502160	Condenser—mica 110 Mmfd. 500 volt	.24
26	502156	Condenser—.004 Mfd. 400 volt	.20
28	502479	Condenser—.006 Mfd. 600 volt	.24
31	502157	Condenser—.05 Mfd. 400 volt	.24
35	502405	Condenser—.25 Mfd. 400 volt	.36
38	502150	Condenser—.004 Mfd. 600 volt	.20
39	502271	Condenser—mica—260 Mmfd. 500 volt	.30
41	502410	Condenser—.1 Mfd. 400 volt	.30
43	502152	Condenser—.02 Mfd. 400 volt	.24
45A, B, C	502207	Condenser—electrolytic A — 20 Mfd. 400 volt; B — 10 Mfd. 400 volt; C — 20 Mfd. 25 volt	2.20
46	502156	Condenser—.004 Mfd. 400 volt	.20
		RESISTORS	
2	502466	Resistor—carbon—33,000 ohms 1 watt	.16
8	502131	Resistor—carbon—47,000 ohms ¼ watt	.12
10	502514	Resistor—carbon—3,300 ohms ¼ watt	.12
14	502288	Resistor—carbon—47,000 ohms 1 watt	.16
16	502269	Resistor—carbon—3.3 Meg. ¼ watt	.12
17	502264	Resistor—carbon—47 ohms ¼ watt	.12
22	502131	Resistor—carbon—47,000 ohms ¼ watt	.12
25A, B	502654	Volume control—with switch; 1 Meg.	1.25
27	502133	Resistor—carbon—220,000 ohms ¼ watt	.12
29	502408	Resistor—carbon—68,000 ohms ¼ watt	.12
30	502468	Resistor—carbon—4.7 Meg. ¼ watt	.12
32	502406	Resistor—carbon—1,500 ohms ¼ watt	.12
34	502135	Resistor—carbon—2.2 Meg. ¼ watt	.12
40	502133	Resistor—carbon—220,000 ohms ¼ watt	.12
42	502133	Resistor—carbon—220,000 ohms ¼ watt	.12
44	502134	Resistor—carbon—470,000 ohms ¼ watt	.12
47	502293	Resistor—wire wound—200 ohms 2 watt	.25
51	504771	Resistor—carbon—3,300 ohms 2 watt	.25
		COILS AND TRANSFORMERS	
1	502697	Loop antenna and cabinet back	3.25
4	502649	Coil—antenna	1.45
11	502650	Coil—oscillator	1.00
15	502657	Transformer—1st I.F.	2.30
21	502658	Transformer—2nd I.F.	2.30
33	502174	Transformer—power	7.50
50	504892	Transformer—output for X-504744 spkr.	2.50
		OTHER ELECTRICAL PARTS	
18	502461	Crystal cartridge (Astatic L-71)	6.10
19	502846	Motor—type "G.I."-502584 record changer; 115 Volt 50 cycle	12.00
	502847	Motor—type "G.I."-502584 record changer; 115 Volt 60 cycle	10.00

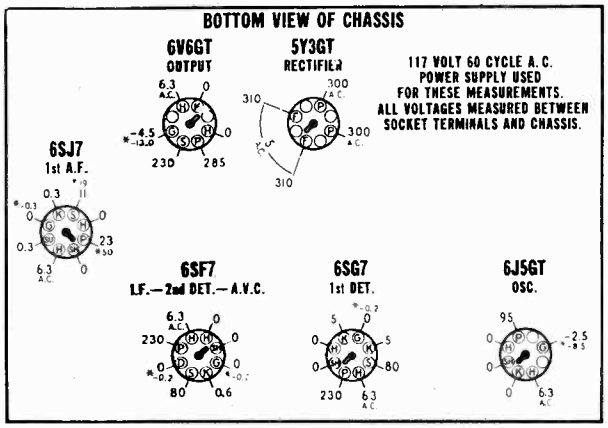
DIA. GRAM NO.	PART NO.	DESCRIPTION	LIST PRICE
20	502979	Switch—on-off; type "G.I."-502584 record changer	$ .48
24	502653	Switch—Radio-Phono and Tone	1.30
36, 37	110629	Lamp—dial (Mazda No. 44) 6.3V 0.25 Amps	.15
48	504744	Speaker—P.M. dynamic (6 inch)	9.50
49	504893	Cone and voice coil for X-504744 spkr.	2.50
		MISCELLANEOUS PARTS	
116467		Base for mtg. electrolytic condenser	.04
504768		Background plate for dial	.20
119559		Clamp—dial glass	.08
112745		Clip—coil mtg.	.01
114955		Clip—retainer on end of dial cord	.01
117057		Cord—dial drive (4 ft. required) per ft.	.05
504765		Dial scale—glass	.80
502564		Knob—ivory, volume or tuning (Model 61TR46)	.08
502698		Knob—Volume or tuning (Model 61TR36)	.08
502701		Knob—Phono-Radio (Model 61TR36)	.10
504698		Knob—Phono-Radio (Model 61TR46)	.12
502460		Needle—phonograph	1.50
500966		Plug—phono. pick-up cable	.10
501031		Plug—phono. motor cable	.15
504108		Plug—speaker	.25
502644		Pointer	.16
81145		Retaining ring for tuning shaft	.01
119087		Ring for dial cord	.01
113463		Rubber pad for mtg. chassis	.03
116584		Rubber spacer for mtg. dial scale	.02
112874		Screw—No. 10 x 1⅛ for mtg. chassis	.03
501777		Screw—No. 4 x ½ for mtg. loop and back	.02
592173		Shaft—tuning control	.15
110501		Socket—speaker	.16
116690		Socket—octal base	.12
160039		Socket—phono. plug	.08
160392		Socket—octal rectifier	.16
501182		Socket—phono. motor cable	.45
502662		Socket—dial lamp	.16
161384		Spring—dial cord tension	.06
119885		Washer—felt; for mtg. rec. changer	.01

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

SOCKET VOLTAGES

Measured with voltmeter having sensitivity of **1000 ohms** per volt except where indicated by (*).

RADIO-PHONO-TONE SWITCH IN "RADIO-BASS" POSITION
VOLUME ON FULL WITH NO SIGNAL DIAL TUNED TO 540 KC.



*—Measured **with** vacuum tube voltmeter.

NOTE:—The **6V6GT** grid bias of—13 volts can be measured across resistor **No. 47.**

MODELS 61TR36, 61TR46

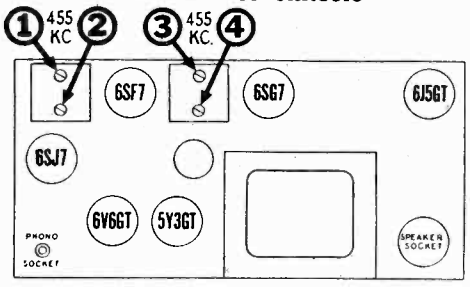
STEWART WARNER CORP.

ALIGNMENT PROCEDURE

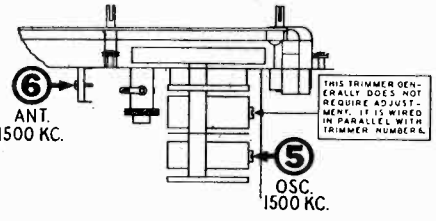
1. Remove chassis and loop antenna (cabinet back) from cabinet. Reconnect loop to chassis and space it approximately same distance from chassis as when installed in cabinet.
2. With the gang condenser fully meshed, the dial pointer should be in the position indicated by the last mark below 55 on the dial. If it is set incorrectly, release the pointer clip on the dial cord and reposition pointer.
3. Connect an output meter across the speaker voice coil or from the plate of the 6V6GT tube to chassis through a .1 Mfd. condenser.
4. Connect the ground lead of signal generator to the receiver chassis.
5. Set volume control at maximum volume position and use a weak signal from the signal generator.

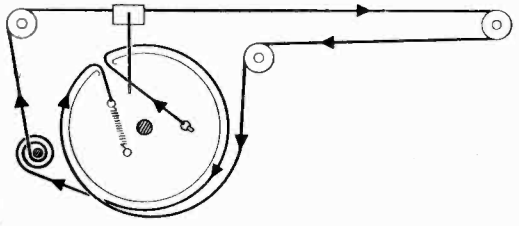
DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECT HIGH SIDE OF SIG. GENERATOR TO	SIGNAL GENERATOR FREQUENCY	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
.1 MFD. Condenser	Trimmer on top section of gang.	455 KC	Any point where it does not affect the signal	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
				3-4	1st I.F.	
200 MMFD. Mica Condenser	External Antenna Clip on Loop Antenna	1500 KC	1500 KC	5	Broadcast Oscillator	Adjust for maximum output.
200 MMFD Mica Condenser	External Antenna Clip on Loop Antenna	1500 KC	Tune to 1500 KC generator signal	6	Broadcast Antenna	Adjust for maximum output.

TOP VIEW OF CHASSIS



SIDE VIEW OF CHASSIS





DIAL AND POINTER DRIVE CORD ARRANGEMENT

Top view
Dial plate removed

To string dial cord, set gang condenser to fully meshed position and use following parts:

114955 Clip on end of cord
117057 Cord (4 feet)
119087 Ring for dial cord
161384 Tension Spring

IMPORTANCE OF MAINTAINING FIXED POSITIONS FOR LEADS AT TOP OF CHASSIS

The shielded leads which are routed to the "Radio-Phono" switch and volume control should be tied to the upright bracket which supports the dial assembly. Grounded shields on these leads must not be allowed to contact electrolytic condenser case. If case of condenser is grounded it will short out bias voltage for 6V6GT tube.

AUDIO OSCILLATION

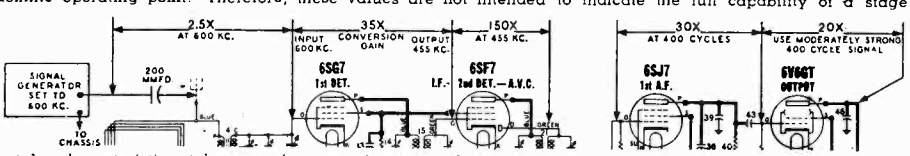
The audio system of this receiver utilizes a two stage type of inverse feed-back arrangement and should it ever be necessary to replace the speaker or output transformer it is important to maintain a definite phase relationship in the feed-back circuit. If the connections to the output transformer are reversed or if the feed-back connection is made to the wrong side of the output transformer secondary, the system will become regenerative instead of degenerative. Under those conditions audio oscillation may result. If that occurs, oscillation may be prevented by reversing the connections to the primary of the output transformer.

APPROXIMATE STAGE GAIN DATA

Be sure R.F. and I.F. stages are accurately aligned before measuring gain. R.F. gains can be measured with a "channel" type instrument containing a tuned and calibrated R.F. amplifier. A vacuum tube voltmeter may be used for audio gain measurements. Observe following precautions:

1. For all gain measurements connect signal generator as shown. Use 600 K.C. signal with 400 cycle modulation (use nearby frequency if local station interferes.)
2. For R.F. and I.F. measurements connect negative terminal of a 3 volt battery (two 1½ volt cells in series) to A.V.C. lead at terminal "D" of antenna coil; then connect positive battery lead to chassis. This provides a definite operating point. IMPORTANT: Disconnect battery when measuring audio stage gains.
3. Be sure radio is carefully tuned to generator signal (use weak signal for sharp tuning.)
4. When using a "channel" type instrument carefully tune it for maximum output at desired frequency before making measurements.

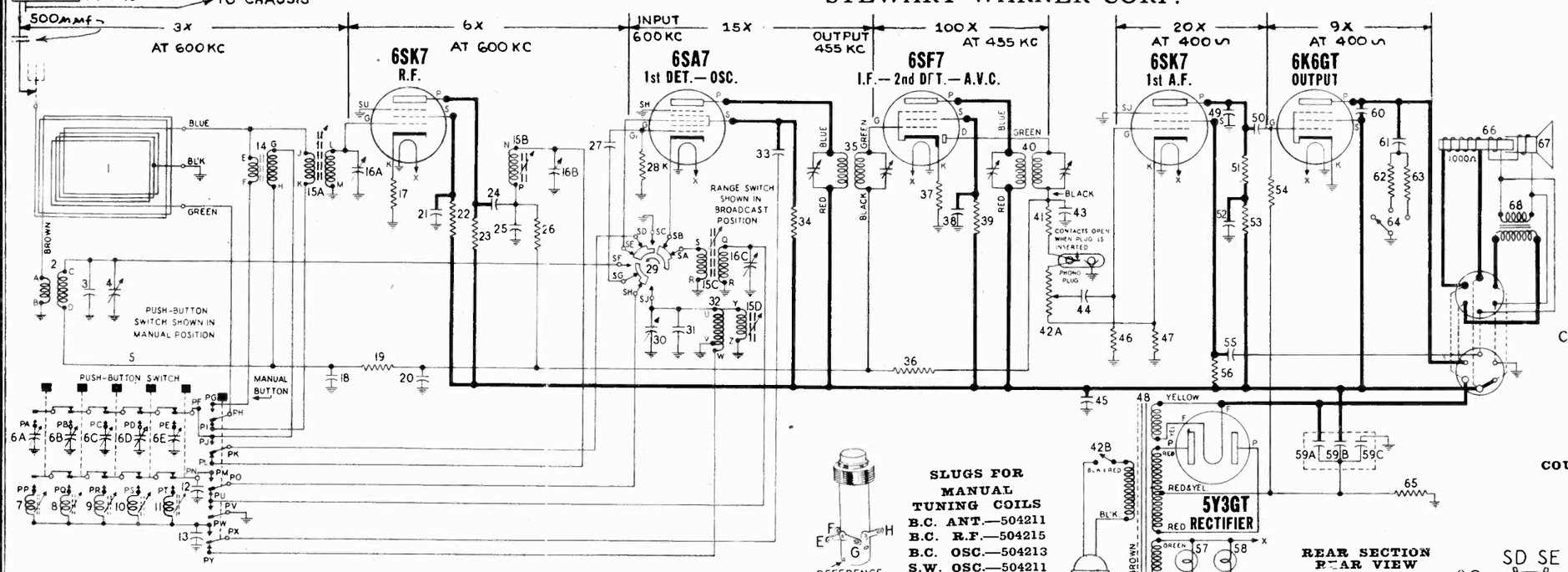
The R.F. and I.F. stage gains shown below are less than under normal operating conditions due to the use of 3 volts fixed bias in order to establish a definite operating point. Therefore, these values are not intended to indicate the full capability of a stage.



Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain. Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create considerable variation in gain measurements.

STEWART WARNER CORP.

**MODELS 62T16(9023-C), 62TC16(9023-D)
62TC26(9023-E), 62TC36(9023-F)**



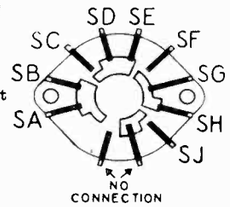
B.C. ANT. COUPLING COIL (PUSH-BUTTON) 502112

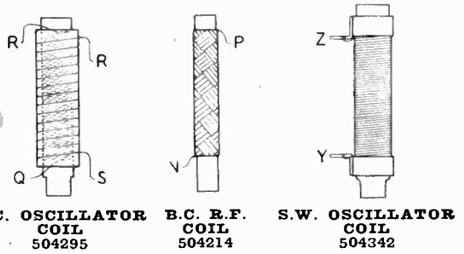
SLUGS FOR MANUAL TUNING COILS
B.C. ANT.—504211
B.C. R.F.—504215
B.C. OSC.—504213
S.W. OSC.—504211

REAR SECTION REAR VIEW

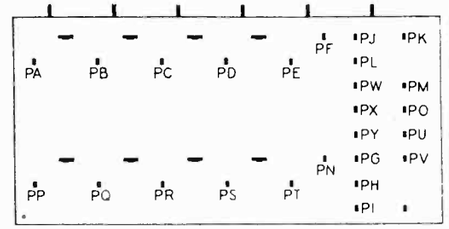
BAND SWITCH 502147

(Front section not used as switch)





B.C. OSCILLATOR COIL 504295
B.C. R.F. COIL 504214
S.W. OSCILLATOR COIL 504342
S.W. ANT. COUPLING COIL 504296
B.C. ANTENNA COUPLING COIL 504210
S.W. OSCILLATOR COIL 502111



PUSH-BUTTON SWITCH 502177

LETTERED TERMINALS IN ILLUSTRATIONS CORRESPOND TO SIMILARLY LETTERED TERMINALS ON THE CIRCUIT DIAGRAM.

I.F. 455 KC.

DIAGRAM NO.	PART NO.	DESCRIPTION	LIST PRICE
		CONDENSERS	
3	502884	Condenser—mica 120 Mmfd. 500 volt	$0.24
4	502171	Condenser—trimmer; 5 to 35 Mmfd.	.24
6A to E	502910	Condenser—trimmer assem. for A-B tuner	3.00
12	502161	Condenser—mica 270 Mmfd. 500 volt	.45
13	502165	Condenser—mica 1,000 Mmfd. 500 volt	.45
16A, B, C	504086	Condenser—trimmer assembly A—20 to 270 Mmfd. B—40 to 370 Mmfd. C—40 to 370 Mmfd.	1.10
18	502153	Condenser—.05 Mfd. 200 volt	.24
20	502155	Condenser—.1 Mfd. 200 volt	.30
21	502157	Condenser—.05 Mfd. 400 volt	.24
24	502271	Condenser—mica 260 Mmfd. 500 volt	.30
25	502165	Condenser—mica 1,000 Mmfd. 500 volt	.45
27	502159	Condenser—mica 50 Mmfd. 500 volt	.24
30	502172	Condenser—trimmer; 25 to 100 Mmfd.	.36
31	502159	Condenser—mica 50 Mmfd. 500 volt	.24
33	502151	Condenser—.01 Mfd. 400 volt	.20
38	502157	Condenser—.05 Mfd. 400 volt	.24
43	502271	Condenser—mica 260 Mmfd. 500 volt	.30
44	502150	Condenser—.004 Mfd. 600 volt	.20
45	502157	Condenser—.05 Mfd. 400 volt	.24
49	502160	Condenser—mica 110 Mmfd. 500 volt	.24
50	502152	Condenser—.02 Mfd. 400 volt	.24
52	502410	Condenser—.1 Mfd. 400 volt	.30
55	502405	Condenser—.25 Mfd. 400 volt	.36
59A, B, C	502207	Condenser—electrolytic A—20 Mfd. 400 volt B—10 Mfd. 400 volt C—20 Mfd. 25 volt	2.20
60	502150	Condenser—.004 Mfd. 600 volt	.20
61	502154	Condenser—.05 Mfd. 600 volt	.24
		RESISTORS	
17	502127	Resistor—carbon 560 ohms ¼ watt	$0.12
19	502134	Resistor—carbon 470,000 ohms ¼ watt	.12
22	502132	Resistor—carbon 100,000 ohms ¼ watt	.12
23	502291	Resistor—carbon 4700 ohms ½ watt	.12
26	502134	Resistor—carbon 470,000 ohms ¼ watt	.12
28	502130	Resistor—carbon 22,000 ohms ¼ watt	.12
34	502466	Resistor—carbon 33,000 ohms 1 watt	.16
36	502135	Resistor—carbon 2.2 Meg. ¼ watt	.12
37	502264	Resistor—carbon 47 ohms ¼ watt	.12
39	502467	Resistor—carbon 68,000 ohms ½ watt	.12
41	502131	Resistor—carbon 47,000 ohms ¼ watt	.12
42A, B	502148	Volume control 500,000 ohms (with switch)	1.25
46	502468	Resistor—carbon 4.7 Meg. ¼ watt	.12
47	502128	Resistor—carbon 2200 ohms ¼ watt	.12
51	502133	Resistor—carbon 220,000 ohms ¼ watt	.12
53	502132	Resistor—carbon 100,000 ohms ¼ watt	.12
54	502134	Resistor—carbon 470,000 ohms ¼ watt	.12
56	502135	Resistor—carbon 2.2 Meg. ¼ watt	.12
62	502291	Resistor—carbon 4700 ohms ¼ watt	.12
63	502127	Resistor—carbon 560 ohms ¼ watt	.12
65	502137	Resistor—wire wound 330 ohms 2 watt	.25
		COILS & TRANSFORMERS	
1	502436	Loop antenna (Models 62TC16, 26, 36)	$3.00
	502247	Loop antenna (Model 62T16)	4.15
2	504296	Coil—S.W. antenna	1.35
	502025	Complete coil and trimmer assembly for push-button tuner	8.80
7	502907	Coil less slug (540-1000 Kc.)	1.50
8, 9	502908	Coil less slug (650-1300 Kc.)	1.50
10, 11	502909	Coil less slug (975-1600 Kc.)	1.50
	502911	Slugs for coils 502907, 502908, 502909	.25
	501151	Clip—for mtg. push-button coils	.08
14	502112	Coil—B.C. antenna (for push-button)	1.70
15 A,B / C,D	504294	Tuning unit; complete assembly	10.60
15A	504210	Coil—B.C. antenna coupling (less slug)	1.20
15B	504214	Coil—B.C. R.F. (less slug)	.85
15C	504295	Coil—B.C. oscillator (less slug)	1.00
15D	504342	Coil—S.W. oscillator (less slug)	.75
	504211	Tuning slug for B.C. antenna and S.W. osc. coils (yellow end)	.45
	504213	Tuning slug for B.C. oscillator coil (white end)	.45
	504215	Tuning slug for B.C. R.F. coil (purple end)	.45
32	502111	Coil—S.W. oscillator	1.10
35	502102	Transformer—1st I.F.	2.30
40	502103	Transformer—2nd I.F.	2.30
48	502174	Transformer—power	7.50
68	502170	Transformer—output for R-502168 spkr.	2.00
	504061	Transformer—output for M-502168 spkr.	2.00
	504122	Transformer—output for D-502168 spkr.	2.00
		OTHER ELECTRICAL PARTS	
5	502177	Switch—push button	$4.10
29	502147	Switch—band	2.00
57, 58	110629	Lamp—dial (Mazda No. 44) 6.3 V 0.25 Amps.	.15
64	502146	Switch—tone control	.70
66	502168	Speaker—Electro-Dynamic (6 inch)	9.50
	502169	Cone & voice coil for R-502168 spkr.	2.75
67	504062	Cone & voice coil for M-502168 spkr.	2.75
	504123	Cone & voice coil for D-502168 spkr.	2.75
		MISCELLANEOUS PARTS	
	502437	Back for cabinet (Model 62TC16)	$0.70
	502438	Back for cabinet (Model 62TC26)	.45
	502439	Back for cabinet (Model 62TC36)	.60
	502471	Back for cabinet (Model 62T16)	.85
	119694	Background for dial	.06
	116467	Base for mtg. electrolytic condenser	.04
	119739	Call letter tabs for push-buttons	.48
	119559	Clamp—dial glass	.08
	112745	Clip—coil mtg.	.01
	114955	Clip—retainer on end of dial cord	.01
	116563	Connector—antenna leads	.01
	117057	Cord—dial drive (40 in. required) per ft.	.05
	504293	Dial scale—glass	1.00
	502550	Escutcheon—(Model 62T16)	2.40
	502819	Escutcheon (Models 62TC16, 26, 36)	2.40
	501449	Knob—volume or tuning (Model 62T16)	.15
	501458	Knob—tone or band switch (Model 62T16)	.16
	501498	Knob—volume or tuning (Models 62TC16, 62TC26, 62TC36)	.20
	501499	Knob—tone or band switch (Models 62TC16, 62TC26, 62TC36)	.18
	504097	Plug—speaker	.25
	502601	Pointer	.18
	501497	Push-button (Model 62T16)	.15
	501651	Push-button (Models 62TC16, 26, 36)	.15
	81145	Retaining ring for tuning shaft	.01
	119087	Ring for dial cord	.01
	85078	Rubber grommet for mtg. B.C. Ant. and B.C. R.F. coils	.03
	116584	Rubber spacer for mtg. dial scale	.02
	504045	Rubber grommet for mtg S.W. osc. and B.C. osc. coils	.04
	83552	Screw—No. 10x7/8"; for mtg. chassis	.03
	114914	Screw—No. 2x3/8"; for mtg. escutcheon	.02
	501777	Screw—No. 4x1/2"; for mtg. loop & back	.02
	118606	Shaft—tuning control	.18
	112818	Socket—dial lamp with lead	.10
	116690	Socket—octal base	.12
	160392	Socket—octal (rectifier)	.16
	502210	Socket—speaker	.25
	161384	Spring—dial cord tension	.06
	504012	Spring—tuning slug drive cord	.05
	119911	Terminal strip—phono	.16
	111456	Washer—spring washer for tuning shaft	.005
	500487	Washer—felt; for knobs	.01

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

SOCKET VOLTAGES

Measured with voltmeter having sensitivity of 1000 ohms per volt except where indicated by (*).

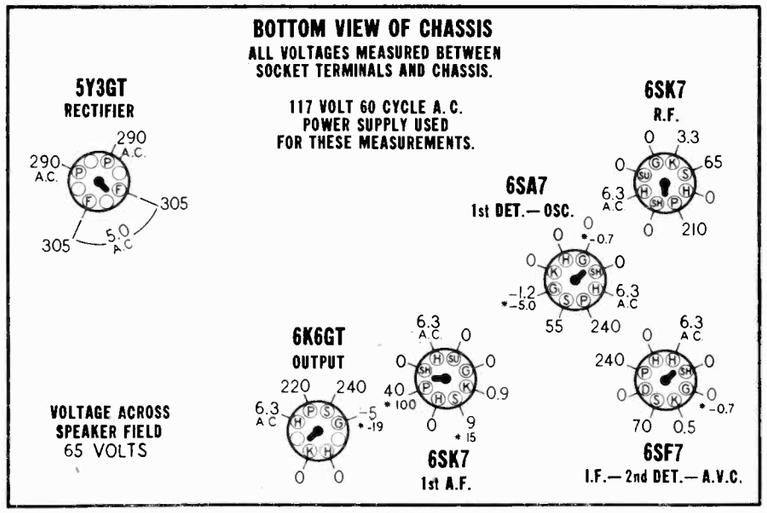
VOLUME ON FULL WITH NO SIGNAL
BAND SWITCH IN BROADCAST POSITION

DIAL TUNED TO 540 KC.
MANUAL BUTTON PUSHED IN

BOTTOM VIEW OF CHASSIS

ALL VOLTAGES MEASURED BETWEEN SOCKET TERMINALS AND CHASSIS.

117 VOLT 60 CYCLE A.C. POWER SUPPLY USED FOR THESE MEASUREMENTS.



VOLTAGE ACROSS SPEAKER FIELD 65 VOLTS

REAR OF CHASSIS

*—Measured with vacuum tube voltmeter.

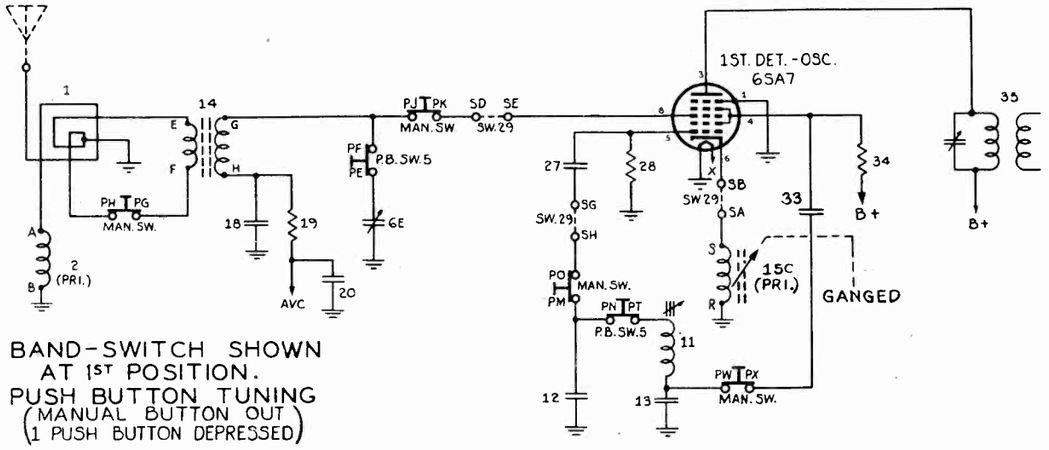
NOTE:—The 6K6GT grid bias of —19 volts can be measured across resistor No. 65.

For Dial Cord data, see P.15-15

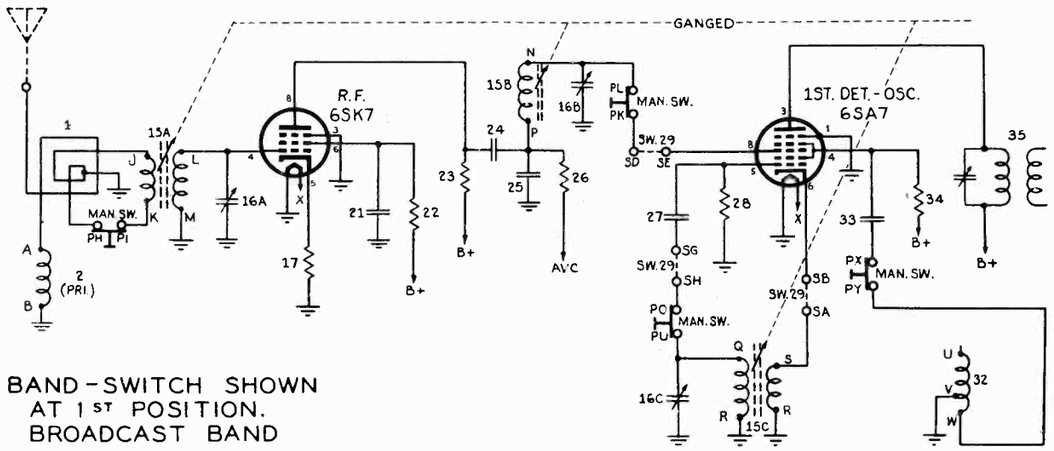
"clarified schematics"

STEWART WARNER CORP.

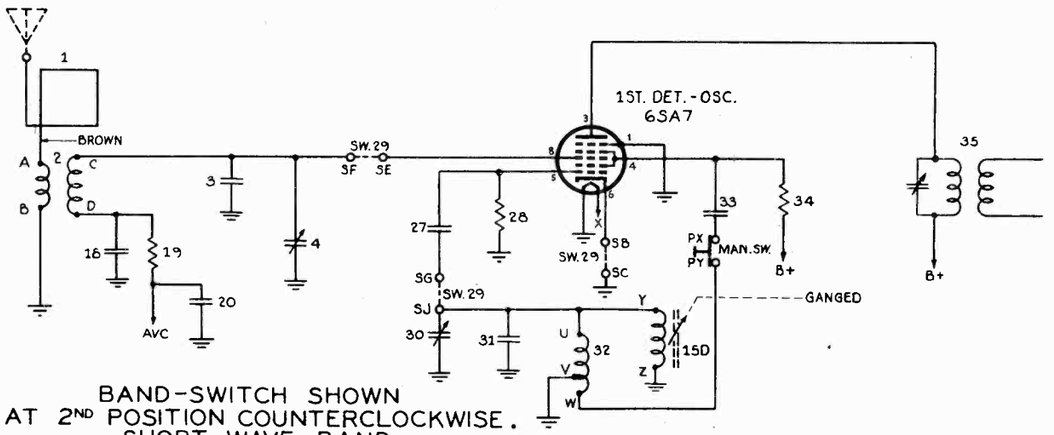
MODELS 62T16, 62TC16, 62TC26, 62TC36



BAND-SWITCH SHOWN AT 1ST POSITION. PUSH BUTTON TUNING (MANUAL BUTTON OUT) (1 PUSH BUTTON DEPRESSED)



BAND-SWITCH SHOWN AT 1ST POSITION. BROADCAST BAND



BAND-SWITCH SHOWN AT 2ND POSITION COUNTERCLOCKWISE. SHORT WAVE BAND

MODELS 62T16, 62TC16, 62TC26, 62TC36

STEWART WARNER CORP.

ALIGNMENT PROCEDURE

1. Remove chassis and loop antenna from cabinet (do not remove loop of wire stapled to cabinet). After chassis has been removed, replace loop antenna in cabinet. Stand the chassis on one end and space it approximately same distance from loop as when installed in cabinet. Then reconnect all leads to loop antenna and to loop of wire stapled on cabinet.
2. Turn the tuning control knob clockwise as far as it will go (tuner mechanism is now in maximum open position with tuning slugs almost completely withdrawn from coils). Dial pointer should then point to 1600 KC mark on scale. If it is set incorrectly, release pointer clip on dial cord and reposition pointer.
3. Connect output meter across speaker voice coil or from 6K6GT plate to chassis through a .1 Mfd. condenser.
4. Connect the ground lead of the signal generator to the receiver chassis.
5. Set volume control at maximum volume position and use a weak signal from the signal generator.
6. Push in the manual button and leave it in that position throughout the alignment procedure.

IMPORTANT:—Align this receiver in exactly the order shown below.

DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECT HIGH SIDE OF SIGNAL GENERATOR TO	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POSITION	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
Set tuner mechanism to maximum open position by turning the tuning control knob clockwise as far as it will go (Dial pointer at 1600 KC). Then check whether the positions of the tuning slugs correspond to the positions shown in Fig. 2. If settings are incorrect, rotate the individual core and threaded stem until desired position is reached. Note that threaded stem is prevented from moving by a dab of speaker cement on top and this seal must be removed before stem can be rotated.							
.1 MFD. Condenser	Terminal "N" on Tuner Unit (See Fig. 2).	455 KC	Broadcast (Clockwise)	Any point where it does not affect the signal.	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
					3-4	1st I.F.	
500 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1600 KC	Broadcast (Clockwise)	1600 Kc.	5	Broadcast Oscillator	Adjust for maximum output.
				Tune to 1600 Kc. generator signal.	6	Broadcast R.F.	Adjust for maximum output.
					7	Broadcast Ant.	Adjust for maximum output.
500 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1400 KC	Broadcast (Clockwise)	Set pointer to 1400 Kc. mark on dial scale. **Do not** attempt to tune to generator signal.	BC. Osc. coil tuning slug		Adjust position of slug for maximum output.
					BC. R.F. coil tuning slug		Adjust position of slug for maximum output.
					BC. Ant. coil tuning slug		Adjust position of slug for maximum output.
500 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1600 KC	Broadcast (Clockwise)	Set pointer to 1600 Kc. mark on dial scale. **Do not** attempt to tune to generator signal.	5	Broadcast Oscillator	Adjust for maximum output.
				Tune to 1600 Kc. generator signal.	6	Broadcast R.F.	Adjust for maximum output.
					7	Broadcast Antenna	Adjust for maximum output.
500 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1400 KC	Broadcast (Clockwise)	Tune to 1400 Kc. generator signal.	BC. R.F. coil tuning slug		Adjust position of slug for maximum output.
					BC. Ant. coil tuning slug		Adjust position of slug for maximum output.
400 OHM Carbon Resistor	External Antenna Clip on Loop Frame	9.6 MC	Short wave (Counter-Clockwise)	9.6 Mc.	8	S.W. Oscillator	Adjust for maximum output. Check to see if proper peak was obtained by setting the signal generator to 10.5 Mc. and then tune radio in vicinity of 9.6 Mc. If image signal is not heard, realign at 9.6 Mc. with trimmer screw farther out. Recheck image.
400 OHM Carbon Resistor	External Antenna Clip on Loop Frame	9.6 MC	Short wave (Counter-Clockwise)	Tune to 9.6 Mc. generator signal.	9	S.W. Antenna	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.

Apply a coating of speaker cement at top of each tuning core stem to prevent movement.

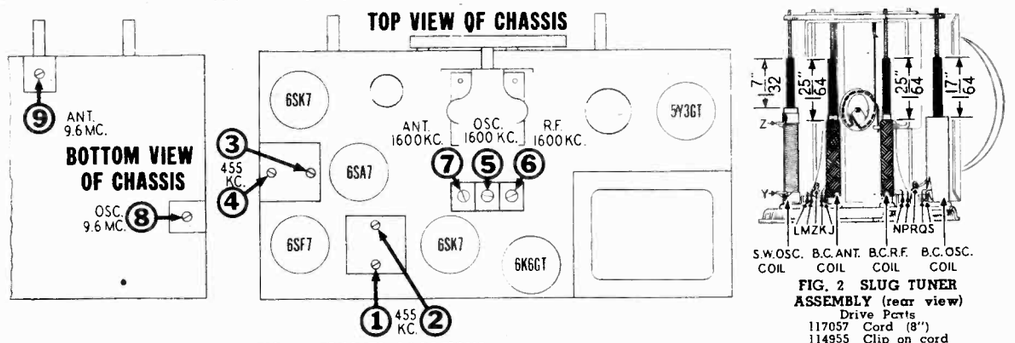


FIG. 1 TRIMMER LOCATIONS

FIG. 2 SLUG TUNER ASSEMBLY (rear view)

Drive Parts
117057 Cord (8")
114955 Clip on cord
504012 Spring

STEWART WARNER CORP.

MODELS 62T16, 62TC16, 62TC26, 62TC36
MODELS 9001-C, -D, -E, 9001-F

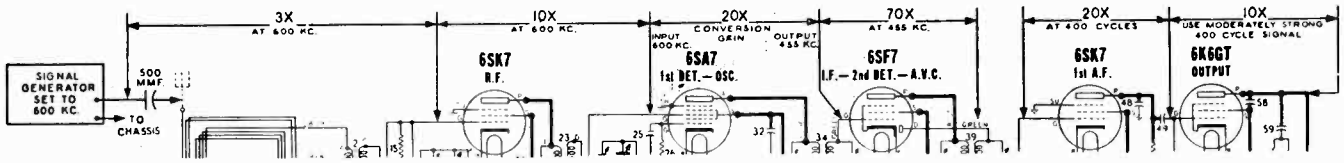
(MODELS 9001-C, D, E, F)

APPROXIMATE STAGE GAIN DATA

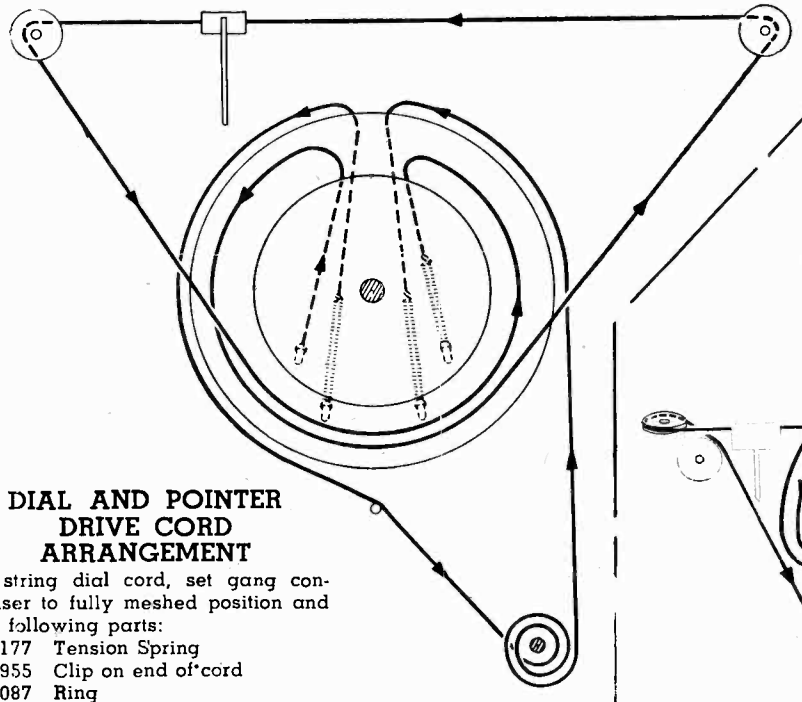
A vacuum tube voltmeter may be used for audio gain measurements. R.F. gains can be measured with a "channel" type instrument containing a tuned and calibrated R.F. amplifier. Observe following precautions:

1. For all gain measurements connect signal generator as shown. Use 600 KC. signal with 400 cycle modulation (use nearby frequency if local station interferes.)
2. For R.F. and I.F. measurements connect negative terminal of a 3 volt battery (two 1½ volt cells in series) to A.V.C. lead and positive terminal to chassis. This provides a definite operating point. IMPORTANT: Disconnect battery when measuring audio stage gains.
3. Be sure radio is carefully tuned to generator signal (use weak signal for sharp tuning.)
4. When using a "channel" type instrument carefully tune it for maximum output at desired frequency before making measurements.

The R.F. and I.F. stage gains shown below are less than under normal operating conditions due to the use of 3 volts fixed bias in order to establish a definite operating point. Therefore, these values are not intended to indicate the full capability of a stage.



Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain. Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create considerable variation in gain measurements.



DIAL AND POINTER DRIVE CORD ARRANGEMENT

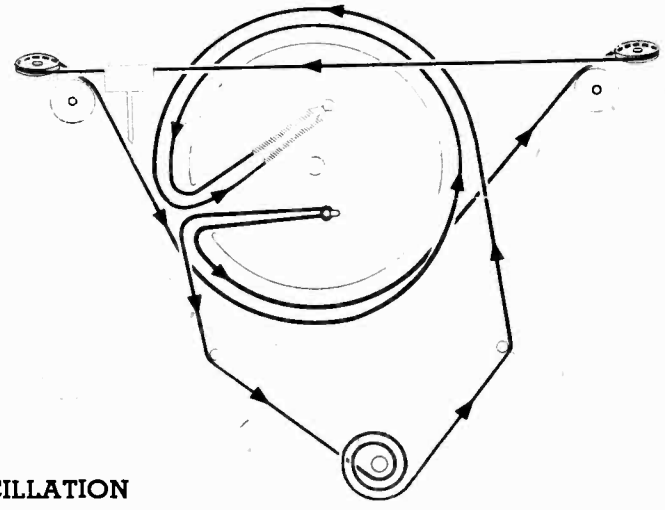
To string dial cord, set gang condenser to fully meshed position and use following parts:

113177 Tension Spring
114955 Clip on end of cord
119087 Ring
117057 Cord (61 inches)
34 inches for pointer drive
27 inches for tuning drive

(MODELS 62T16, 62TC16, 62TC26, 62TC36) DIAL AND POINTER DRIVE CORD ARRANGEMENT

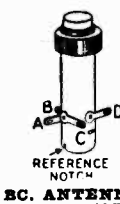
To string dial cord, turn the main drive drum to maximum counter-clockwise position and use following parts:

114955 Clip on end of cord
117057 Cord (40 inches)
119087 Ring for dial cord
161384 Tension Spring



AUDIO OSCILLATION

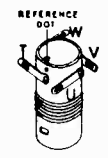
The audio system of this receiver utilizes a two stage type of inverse feed-back arrangement and should it ever be necessary to replace the speaker or output transformer it is important to maintain a definite phase relationship in the feedback circuit. If the connections to the output transformer are reversed or if the feed-back connection is made to the wrong side of the output transformer secondary, the system will become regenerative instead of degenerative. Under those conditions audio oscillation may result. If that occurs, oscillation may be prevented by reversing the connections to the primary of the output transformer.



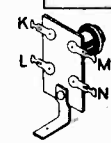
BC. ANTENNA COUPLING COIL 502121

S.W. ANTENNA COIL 502740

R.F. COIL 502142



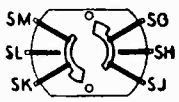
S.W. OSC. COIL 502197



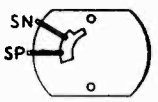
BC. OSC. COIL 502198

Lettered terminals in illustrations correspond to similarly lettered terminals on the circuit diagram.

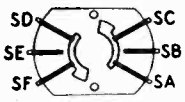
I.F. 455 KC.



FRONT DECK FRONT VIEW



FRONT DECK REAR VIEW



REAR DECK FRONT VIEW

BAND AND TONE SWITCH
502199

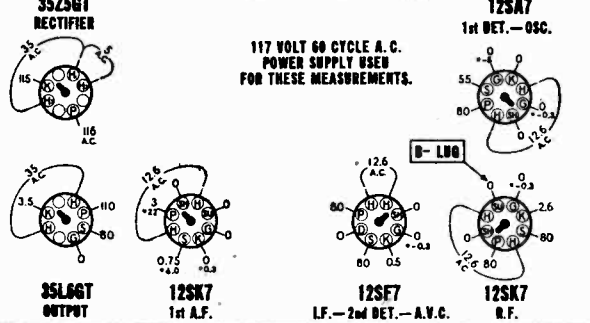
SOCKET VOLTAGES

Measured with voltmeter having sensitivity of 1000 ohms per volt except where indicated by (*).

VOLUME ON FULL WITH NO SIGNAL — DIAL TUNED TO 540 KC

BOTTOM VIEW OF CHASSIS

HEATER VOLTAGES MEASURED ACROSS SOCKET TERMINALS. ALL OTHER VOLTAGES MEASURED BETWEEN SOCKET TERMINALS AND B- LUG.



REAR OF CHASSIS

*—Measured with vacuum tube voltmeter

PARTS LIST

DIAGRAM NO.	PART NO.	DESCRIPTION	LIST PRICE
		CONDENSERS	
3	502172	Condenser—trimmer; 25 to 100 Mmfd.	$0.36
5A-5B-5C	502123	Condenser—variable gang (with drum)	4.60
9	502162	Condenser—.315 Mmfd. 500 volt	.45
11	502159	Condenser—mica—50 Mmfd. 500 volt	.24
12	502155	Condenser—.1 Mfd. 200 volt	.30
13	502158	Condenser—.2 Mfd. 400 volt	.36
14	502172	Condenser—trimmer; 25 to 100 Mmfd.	.36
18	502262	Condenser—.25 Mfd. 200 volt	.36
26	502470	Condenser—.0008 Mfd. 400 volt	.20
27	502453	Condenser—.002 Mfd. 400 volt	.20
28	502160	Condenser—mica—110 Mmfd. 500 volt	.24
32	502160	Condenser—mica—110 Mmfd. 500 volt	.24
33	502153	Condenser—.05 Mfd. 200 volt	.24
34	502156	Condenser—.004 Mfd. 400 volt	.20
39	502151	Condenser—.01 Mfd. 400 volt	.20
40A-40B	500256	Condenser—electrolytic { A-40 Mfd. 150 v. / B-20 Mfd. 150 v. }	1.50
43	502152	Condenser—.02 Mfd. 400 volt	.24
46	502157	Condenser—.05 Mfd. 400 volt	.24
		RESISTORS	
6	502140	Resistor—carbon 390 ohms ¼ watt	.12
10	502130	Resistor—carbon 22,000 ohms ¼ watt	.12
15	502133	Resistor—carbon 220,000 ohms ¼ watt	.12
19	502291	Resistor—carbon 4700 ohms ¼ watt	.12
21	502269	Resistor—carbon 3.3 Meg. ¼ watt	.12
22	502264	Resistor—carbon 47 ohms ¼ watt	.12
24	502131	Resistor—carbon 47,000 ohms ¼ watt	.12
25A-25B	502145	Volume control 500,000 ohms (with switch)	1.25
29	502136	Resistor—carbon 10 Meg. ¼ watt	.12
30	502128	Resistor—carbon 2200 ohms ¼ watt	.12
31	502135	Resistor—carbon 2.2 Meg. ¼ watt	.12
35-36	502133	Resistor—carbon 220,000 ohms ¼ watt	.12
37	502134	Resistor—carbon 470,000 ohms ¼ watt	.12
38	502138	Resistor—carbon 130 ohms ¼ watt	.12
42	502469	Resistor—carbon 1500 ohms 1 watt	.16
48	502574	Resistor—carbon 33 ohms ½ watt	.12
		COILS & TRANSFORMERS	
1	502503	Loop antenna	3.00
2	502740	Coil—S. W. antenna	1.12
4	502121	Coil—antenna coupling	1.64
7	502142	Coil—BC. R.F.	2.26
16	502198	Coil—BC. oscillator	1.32
17	502197	Coil—S.W. oscillator	1.12
20	502102	Transformer—1st I.F.	2.30
23	502103	Transformer—2nd I.F.	2.30

DIAGRAM NO.	PART NO.	DESCRIPTION	LIST PRICE
41	502213	Trans.—output, speaker with prefix "R"	$2.50
	502904	Trans.—output, speaker with prefix "A"	2.50
	504244	Trans.—output, speaker with prefix "W"	2.50
	504756	Trans.—output, speaker with prefix "Y"	
	504758	Trans.—output, speaker with prefix "Z"	
	504781	Trans.—output, speaker with prefix "C"	
		OTHER ELECTRICAL PARTS	
8A-8B-8C	502199	Switch—tone & band	2.00
44	502214	Cone & voice coil, spkr. with prefix "R"	2.50
	502903	Cone & voice coil, spkr. with prefix "A"	2.50
	504245	Cone & voice coil, spkr. with prefix "W"	2.50
	504757	Cone & voice coil, spkr. with prefix "Y"	
	504759	Cone & voice coil, spkr. with prefix "Z"	
	504782	Cone & voice coil, spkr. with prefix "C"	
45	502208	Speaker—P.M. dynamic (5 inch)	6.90
	502998	Speaker—P.M. dynamic (5 inch)	6.60
47	502473	Lamp—dial (Mazda 47) 6-8V. 150 Ma.	.22
		MISCELLANEOUS PARTS	
	502501	Back for cabinet	.20
	116467	Base for mtg. electrolytic condenser	.04
	502500	Cabinet	19.00
	502506	Clamp—dial scale mtg.	.04
	112745	Clip—coil mtg.	.01
	114955	Clip—retainer on end of dial cord	.01
	500497	Clip—retainer for cabinet back	.02
	116563	Connector—for antenna leads	.01
	117057	Cord—dial drive (55 in. required), per ft.	.05
	500324	Cover—cardboard, for elect. cond.	.04
	502505	Dial scale—glass	1.60
	501186	Grounding plate (under I.F. trans. can.)	.10
	502531	Knob—volume or tuning	.35
	502532	Knob—tone & range switch	.44
	502367	Pointer	.16
	81145	Retaining ring for tuning shaft	.01
	119087	Spring for dial cord	.01
	17063	Screw—No. 6x1¼; holds clamps to cab.	.01
	114628	Screw—No. 8x½; chassis mtg.	.01
	502173	Shaft—tuning control	.15
	116690	Socket—octal base	.12
	160392	Socket—octal (rectifier)	.16
	500499	Socket—dial lamp (with leads)	.44
	161384	Spring—dial cord tension	.06
	111456	Washer—spring washer for tuning shaft	.005

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

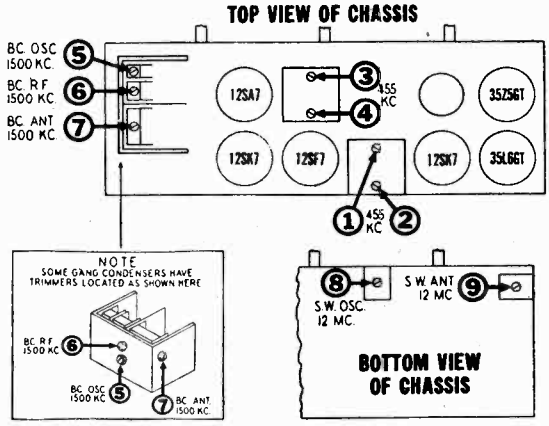
STEWART WARNER CORP.

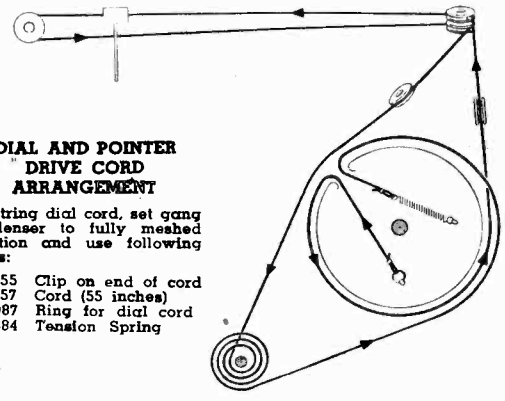
ALIGNMENT PROCEDURE

1. **Remove chassis and loop antenna from cabinet. Reconnect loop to chassis and space it approximately same distance from chassis as when installed in cabinet.**
2. Note that there are four calibrating lines stamped into the metal dial frame. When gang condenser is fully meshed, dial pointer should be in the position indicated by first line at the left. If it is set incorrectly, release pointer clip on dial cord and reposition pointer.
3. Connect an output meter across the speaker voice coil or from plate of 35L6GT tube to B— through a .1 Mfd. condenser (see voltage chart for convenient B— connection).
4. Connect ground lead from signal generator to B— through a .25 Mfd. condenser.
5. Set volume control at maximum volume position and use a weak signal from the signal generator.

IMPORTANT:—Align this receiver in exactly the order shown below. Broadcast band must be aligned before short wave band.

DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECT HIGH SIDE OF GENERATOR TO	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POSITION	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
200 MMFD. Mica Condenser	Control Grid of 12SA7	455 KC	Broadcast	Any point where it does not affect the signal	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
					3-4	1st I.F.	
200 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1500 KC	Broadcast	Set pointer to 1500 KC reference line stamped into metal dial plate (first line at the right)	5	Broadcast Oscillator (Shunt)	Adjust for maximum output.
200 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1500 KC	Broadcast	Tune to 1500 KC generator signal	6	Broadcast R.F.	Adjust for maximum output.
200 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1500 KC	Broadcast	Tune to 1500 KC generator signal	7	Broadcast Antenna	Adjust for maximum output.
400 OHM Resistor	External Antenna Clip on Loop Frame	12 MC	Short Wave	Set pointer to 12 MC. Reference line stamped into metal dial plate (second line from the right)	8	Short Wave Oscillator	Adjust to bring in signal. Check to see if proper peak was obtained by tuning in image at approx. 11.1 MC. If image does not appear, realign at 12 MC. with trimmer screw farther out. Recheck image.
400 OHM Resistor	External Antenna Clip on Loop Frame	12 MC	Short Wave	Tune to 12 MC generator signal	9	Short Wave Antenna	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.





DIAL AND POINTER "DRIVE CORD ARRANGEMENT

To string dial cord, set gang condenser to fully meshed position and use following parts:

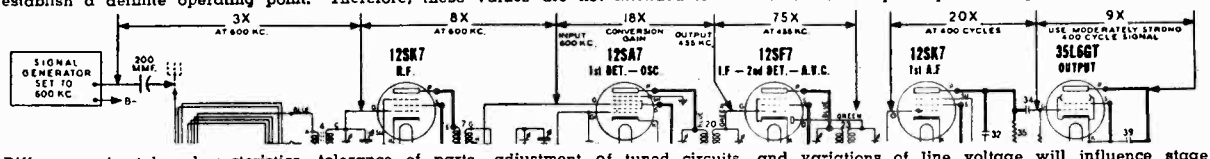
114955 Clip on end of cord
117057 Cord (55 inches)
119087 Ring for dial cord
161384 Tension Spring

APPROXIMATE STAGE GAIN DATA

Be sure R.F. and I.F. stages are accurately aligned before measuring gain. R.F. gains can be measured with a "channel" type instrument containing a tuned and calibrated R.F. amplifier. A vacuum tube voltmeter may be used for audio gain measurements. Observe following precautions:

1. For all gain measurements connect signal generator as shown. Use 600 KC. signal with 400 cycle modulation (use nearby frequency if local station interferes.)
2. For R.F. and I.F. measurements connect negative terminal of a 3 volt battery (two 1½ volt cells in series) to A.V.C. lead and positive terminal to B—. This provides a definite operating point. **IMPORTANT:** Disconnect battery when measuring audio stage gains.
3. Be sure radio is carefully tuned to generator signal (use weak signal for sharp tuning.)
4. When using a "channel" type instrument carefully tune it for maximum output at desired frequency before making measurements.

The R.F. and I.F. stage gains shown below are less than under normal operating conditions due to the use of 3 volts fixed bias in order to establish a definite operating point. Therefore, these values are not intended to indicate the full capability of a stage.



Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain. Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create considerable variation in gain measurements.

Record Changer: Webster Model 50; General Instruments Model 205
For Clarified schematics, see P.15-37

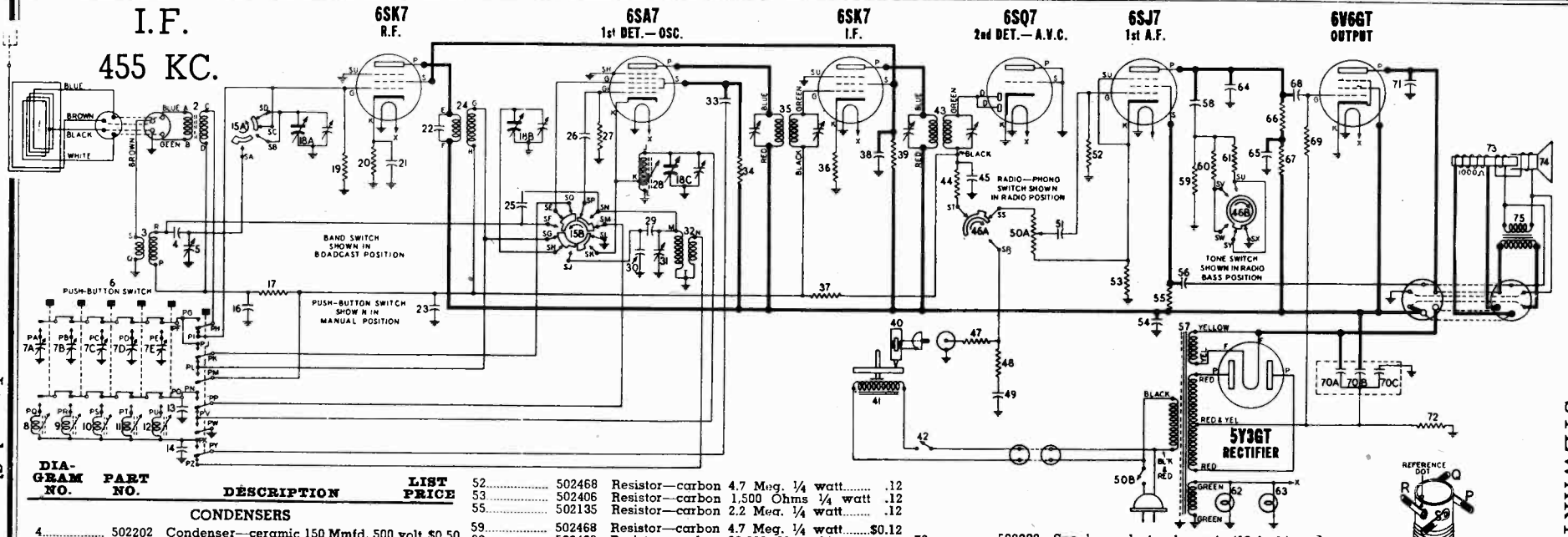
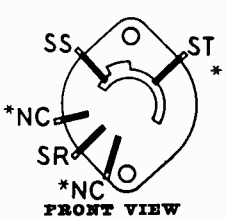
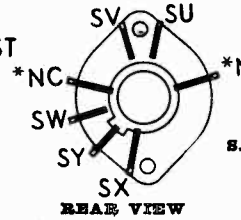


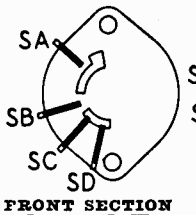
DIAGRAM NO.	PART NO.	DESCRIPTION	LIST PRICE
		CONDENSERS	
4	502202	Condenser—ceramic 150 Mmfd. 500 volt	$0.50
5	502172	Condenser—trimmer 25 to 100 Mmfd.	.36
7-A to E	502910	Condenser—trimmer assembly for P-B tuner	3.00
13	502161	Condenser—mica 270 Mmfd. 500 volt	.45
14	502165	Condenser—mica 1,000 Mmfd. 500 volt	.45
16	502153	Condenser—.05 Mfd. 200 volt	.24
18-A, B, C	502122	Condenser—variable gang	6.60
21	502155	Condenser—.1 Mfd. 200 volt	.30
22	502295	Condenser—ceramic 10 Mmfd. 500 volt	.30
23	502153	Condenser—.05 Mfd. 200 volt	.24
25	502411	Condenser—2 Mmfd. 500 volt	.10
26	502159	Condenser—mica 50 Mmfd. 500 volt	.24
29	502201	Condenser—ceramic 130 Mmfd. 500 volt	.50
30	502182	Condenser—ceramic 39 Mmfd. 500 volt	.40
31	502171	Condenser—trimmer 5 to 35 Mmfd.	.24
33	502152	Condenser—.02 Mfd. 400 volt	.24
38	502154	Condenser—.05 Mfd. 600 volt	.24
45	502160	Condenser—mica 110 Mmfd. 500 volt	.24
49	502151	Condenser—.01 Mfd. 400 volt	.20
51	502150	Condenser—.004 Mfd. 600 volt	.20
54	502154	Condenser—.05 Mfd. 600 volt	.24
56	502405	Condenser—.25 Mfd. 400 volt	.36
58	502151	Condenser—.01 Mfd. 400 volt	.20
64	502271	Condenser—mica 260 Mmfd. 500 volt	.30
65	502157	Condenser—.05 Mfd. 400 volt	.24
68	502152	Condenser—.02 Mfd. 400 volt	.24
70-A, B, C	502207	Condenser—electrolytic A—20 Mfd. 400 volt B—10 Mfd. 400 volt C—20 Mfd. 25 volt	2.20
71	502479	Condenser—.006 Mfd. 600 volt	.24
		RESISTORS	
17	502134	Resistor—carbon 470,000 Ohms ¼ watt	$0.12
19	502468	Resistor—carbon 4.7 Meg. ¼ watt	.12
20	502478	Resistor—carbon 1,000 Ohms ¼ watt	.12
27	502130	Resistor—carbon 22,000 Ohms ¼ watt	.12
34	502466	Resistor—carbon 33,000 Ohms 1 watt	.16
36	502457	Resistor—carbon 330 Ohms ¼ watt	.12
37	502135	Resistor—carbon 2.2 Meg. ¼ watt	.12
39	502292	Resistor—carbon 68,000 Ohms 1 watt	.16
44	502131	Resistor—carbon 47,000 Ohms ¼ watt	.12
47	502132	Resistor—carbon 100,000 Ohms ¼ watt	.12
48	502131	Resistor—carbon 47,000 Ohms ¼ watt	.12
50-A, B	502148	Volume control—with switch; 500,000 Ohms	1.25
52	502468	Resistor—carbon 4.7 Meg. ¼ watt	.12
53	502406	Resistor—carbon 1,500 Ohms ¼ watt	.12
55	502135	Resistor—carbon 2.2 Meg. ¼ watt	.12
59	502468	Resistor—carbon 4.7 Meg. ¼ watt	$0.12
60	502408	Resistor—carbon 68,000 Ohms ¼ watt	.12
61	502291	Resistor—carbon 4,700 Ohms ¼ watt	.12
66, 67	502133	Resistor—carbon 220,000 Ohms ¼ watt	.12
69	502134	Resistor—carbon 470,000 Ohms ¼ watt	.12
72	502293	Resistor—wire wound 200 Ohms 2 watt	.25
		COILS AND TRANSFORMERS	
1	502282	Loop antenna	$5.00
2	502112	Coil—BC. antenna	1.70
3	502110	Coil—S.W. antenna	1.10
	502025	Complete coil—trimmer assembly for P-B tuner	8.80
8	502907	Coil less slug (540-1000 Kc.)	1.50
9, 10	502908	Coil less slug (650-1300 Kc.)	1.50
11, 12	502909	Coil less slug (975-1600 Kc.)	1.50
	502911	Slug for coils 502907, 502908, 502909	.25
	501151	Clip—for mtg. push button coils	.08
24	502113	Coil—BC. R.F.	1.85
28	502114	Coil—BC. oscillator	1.45
32	502111	Coil—S.W. oscillator	1.10
35	502102	Transformer—1st I.F.	2.30
43	502103	Transformer—2nd I.F.	2.30
57	502174	Transformer—power	7.50
75	502303	Transformer—output for R-502302 speaker	3.60
	502994	Transformer—output for M-502302 speaker	3.60
		OTHER ELECTRICAL PARTS	
6	502369	Switch—push-button	$4.10
15-A, B	502368	Switch—band	2.50
40	502461	Crystal cartridge (Astatic L-71)	6.10
41	502846	Motor—for type GI-502444 record changer; 115 volt 50 cycle	12.00
	502847	Motor—for type GI-502444 record changer; 115 volt 60 cycle	10.00
	504201	Motor—for type W-504138 record changer; 115 volt 60 cycle	8.30
42	504883	Switch—on-off; for type GI-502444 record changer	2.25
	504203	Switch—on-off; for type W-504138 record changer	.80
46-A, B	502370	Switch—tone and radio-phono	1.30
62, 63	110629	Lamp—dial (Mazda No. 44) 6.3 V. 0.25 Amps.	.15
73	502302	Speaker—electro-dynamic (10 inch)	14.00
74	502304	Cone and voice coil for R-502302 speaker	3.60
	502995	Cone and voice coil for M-502302 speaker	3.60

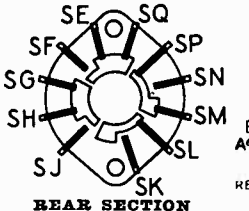
Lettered terminals in illustrations correspond to similarly lettered terminals on the circuit diagram.



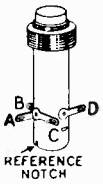


RADIO-PHONO AND TONE SWITCH
502370
*NC—NO CONNECTION

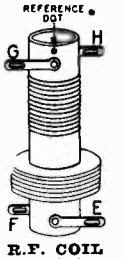




BAND SWITCH
502368

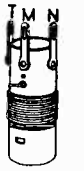


BC. ANTENNA COUPLING COIL 502112



R.F. COIL
502113

S.W. ANTENNA COIL
502110



S.W. OSCILLATOR COIL
502111

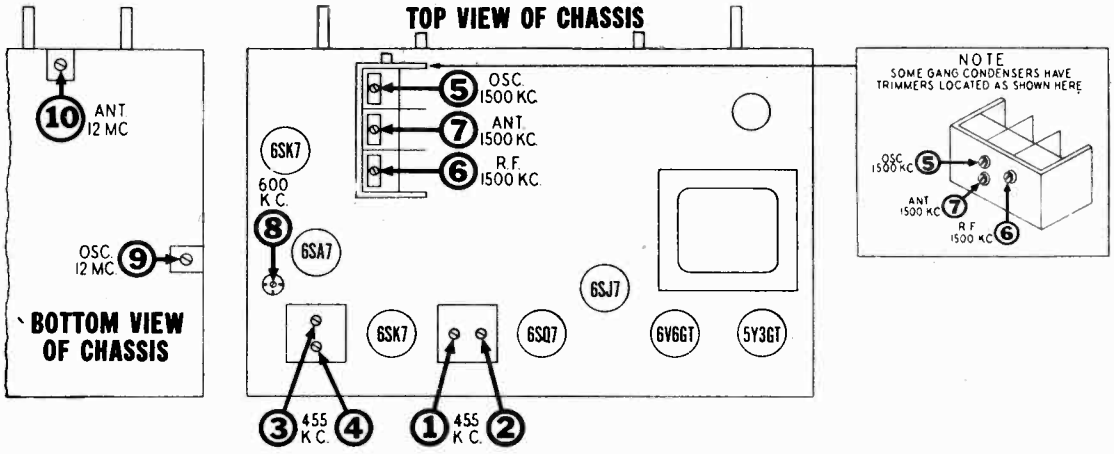
BC. OSCILLATOR COIL
502114

ALIGNMENT PROCEDURE

1. Remove chassis and loop antenna from cabinet (do not remove loop of wire stapled to cabinet). Wind one turn of insulated wire around frame of antenna so as to provide a means of coupling it to the signal generator. Stand chassis on one end and space it approximately same distance from loop as when installed in cabinet. Connect plug on loop antenna cable to socket at rear of chassis. Brown lead in antenna cable (which was connected to loop of wire stapled to cabinet) should now be connected to one end of new coupling turn on frame of loop.
2. Connect the ground lead of the signal generator to the receiver chassis.
3. With the gang condenser fully meshed, dial pointer should be in the position indicated by the last division below 55 on the dial. If it is set incorrectly, release pointer clip on dial cord and reposition pointer.
4. Connect output meter across speaker voice coil or from plate of 6V6GT to chassis through a .1 Mfd. condenser.
5. Set volume control at maximum volume position and use a weak signal from the signal generator.
6. Push in the manual button and leave it in that position throughout the alignment procedure.

IMPORTANT:—Align this receiver in exactly the order shown below. Broadcast band must be aligned before short wave band.

DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECT HIGH SIDE OF SIGNAL GENERATOR TO	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POSITION	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
.1 MFD. Condenser	Trimmer on rear section of gang	455 KC	Broadcast (counter-clockwise)	Any point where it does not affect the signal.	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
					3-4	1st I.F.	
500 MMFD. Mica Condenser	Coupling turn on Loop Frame	1500 KC	Broadcast (counter-clockwise)	1500 KC	5	Broadcast Oscillator (Shunt)	Adjust for maximum output.
500 MMFD. Mica Condenser	Coupling turn on Loop Frame	1500 KC	Broadcast (counter-clockwise)	Tune to 1500 Kc. generator signal.	6	Broadcast R.F.	Adjust for maximum output.
500 MMFD. Mica Condenser	Coupling turn on Loop Frame	1500 KC	Broadcast (counter-clockwise)	Tune to 1500 Kc. generator signal.	7	Broadcast Antenna	Adjust for maximum output.
500 MMFD. Mica Condenser	Coupling turn on Loop Frame	600 KC	Broadcast (counter-clockwise)	Tune to 600 Kc. generator signal.	8	Adjustable core of Broadcast Oscillator Coil	Adjust for maximum output. Try to increase output by rotating core in and out and retuning receiver dial until maximum output is obtained.
500 MFD. Mica Condenser	Coupling turn on Loop Frame	Repeat adjustment of trimmers 5, 6 and 7 at 1500 Kc. Then re-check adjustment of trimmer 8 at 600 Kc.					
400 OHM Carbon Resistor	Coupling turn on Loop Frame	12 MC	Short wave (Clockwise)	12 MC	9	S.W. Oscillator	Adjust for maximum output. Check to see if proper peak was obtained by tuning in image at approx. 11.1 MC. If image does not appear, realign at 12 MC, with trimmer screw farther out. Recheck image.
400 OHM Carbon Resistor	Coupling turn on Loop Frame	12 MC	Short wave (Clockwise)	Tune to 12 MC. generator signal.	10	S.W. Antenna	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.



AUDIO OSCILLATION

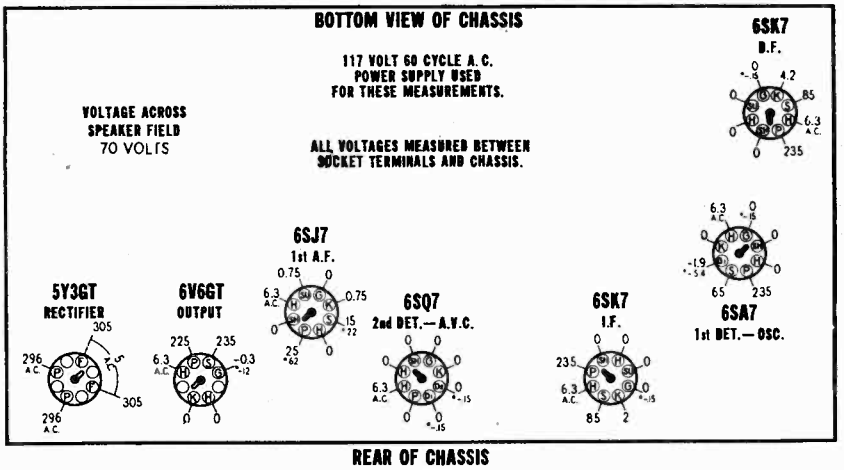
The audio system of this receiver utilizes a two stage type of inverse feed-back arrangement and should it ever be necessary to replace the speaker or output transformer it is important to maintain a definite phase relationship in the feed-back circuit. If the connections to the output transformer are reversed or if the feed-back connection is made to the wrong side of the output transformer secondary, the system will become regenerative instead of degenerative. Under those conditions audio oscillation may result. If that occurs, oscillation may be prevented by reversing the connections to the primary of the output transformer.

MODELS 72CR16, 72CR26

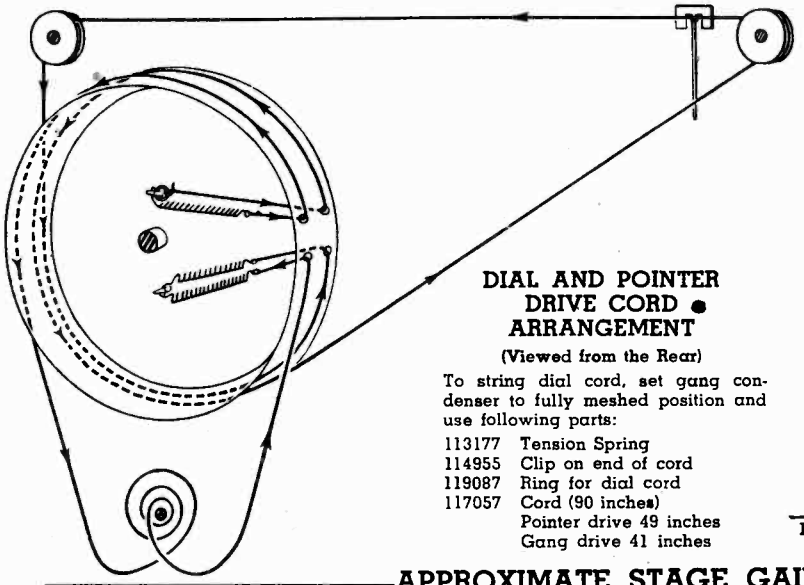
STEWART WARNER CORP.

Measured with voltmeter having sensitivity of 1000 ohms per volt except where indicated by (*).

RANGE SWITCH IN BROADCAST POSITION — DIAL TUNED TO 540 KC.
VOLUME ON FULL WITH NO SIGNAL — MANUAL BUTTON PUSHED IN
RADIO-PHONO-TONE SWITCH IN "RADIO-SPEECH" POSITION



*—Measured with vacuum tube voltmeter.
NOTE:—The 6V6GT grid bias of —12 volts can be measured across resistor No. 72.

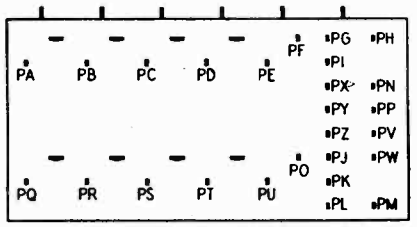


DIAL AND POINTER DRIVE CORD ARRANGEMENT

(Viewed from the Rear)

To string dial cord, set gang condenser to fully meshed position and use following parts:

113177 Tension Spring
114955 Clip on end of cord
119087 Ring for dial cord
117057 Cord (90 inches)
Pointer drive 49 inches
Gang drive 41 inches



PUSH-BUTTON SWITCH
502369

MISCELLANEOUS PARTS

119993	Background for dial	$0.22
116467	Base for mtg. electrolytic condenser	.04
117315	Call letter tabs for push-button	.55
119989	Clamp for dial glass	.10
112745	Clip—coil mtg.	.01
114955	Clip—retainer on end of dial cord	.01
501151	Clip—for mtg. push button coils	.08
117057	Cord—dial drive (90" required) per ft.	.05
502227	Dial scale—glass	1.50
113402	Drum—for dial drive	.70
502428	Escutcheon for push-button (Model 72CR16)	1.00
502429	Escutcheon for push-button (Model 72CR26)	1.00
501449	Knob—volume or tuning (Model 72CR16)	.15
501458	Knob—tone or band switch (Model 72CR16)	.16
501498	Knob—volume or tuning (Model 72CR26)	.20
501499	Knob—tone or band switch (Model 72CR26)	.18
502460	Needle—phonograph	1.50
500966	Plug—phonograph pick-up cable	.10
501031	Plug—phonograph motor cable	.15
502281	Plug—loop antenna cable	.36
504097	Plug—speaker	.25
502496	Pointer	.16
501495	Push-Button (Model 72CR16)	.15
502452	Push-Button (Model 72CR26)	.15
81145	Retaining ring for tuning shaft	.01
119087	Ring for dial cord	.01
113463	Rubber pad—chassis mtg.	.03
116584	Rubber spacer for mtg. dial scale	.02
112874	Screw—No. 10 x 1⅛"; for mtg. chassis	.03
114914	Screw—No. 2 x ⅜". for mtg. escutcheon	.02
502399	Shaft—tuning control	.15
114876	Socket—octal base (rectifier)	.15
119791	Socket—octal base	.12
118617	Socket—dial lamp	.15
160039	Socket—phonograph plug	.08
500051	Socket—loop antenna plug	.15
501182	Socket—phonograph motor cable	.45
502210	Socket—speaker	.25
113177	Spring—dial cord tension	.09
111456	Washer—spring washer for tuning shaft	.005
500487	Washer—felt for knobs	.01

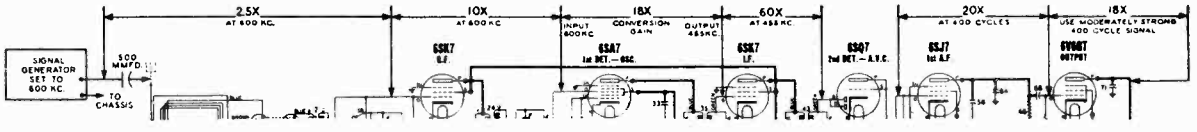
PRICES SUBJECT TO CHANGE WITHOUT NOTICE

APPROXIMATE STAGE GAIN DATA

Be sure R.F. and I.F. stages are accurately aligned before measuring gain. R.F. gains can be measured with a "channel" type instrument containing a tuned and calibrated R.F. amplifier. A vacuum tube voltmeter may be used for audio gain measurements. Observe following precautions:

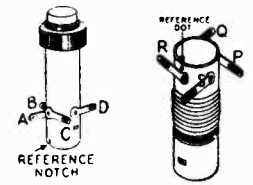
1. For all gain measurements connect signal generator as shown. Use 600 KC. signal with 400 cycle modulation (use nearby frequency if local station interferes.)
2. For R.F. and I.F. measurements connect negative terminal of a 3 volt battery (two 1½ volt cells in series) to A.V.C. lead at terminal "D" of antenna coil; then connect positive battery lead to chassis. This provides a definite operating point.
   IMPORTANT: Disconnect battery when measuring audio stage gains.
3. Be sure radio is carefully tuned to generator signal (use weak signal for sharp tuning.)
4. When using a "channel" type instrument carefully tune it for maximum output at desired frequency before making measurements.

The R.F. and I.F. stage gains shown below are less than under normal operating conditions due to the use of 3 volts fixed bias in order to establish a definite operating point. Therefore, these values are not intended to indicate the full capability of a stage.



Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain. Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create considerable variation in gain measurements.

For Clarified schematics, see P.15-47



BC. ANTENNA COUPLING COIL 502121

S.W. ANTENNA COIL 502740

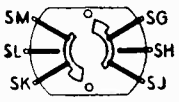
R.F. COIL 502142

S.W. OSC. COIL 502197

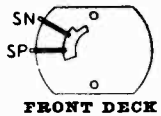
BC. OSC. COIL 502198

Lettered terminals in illustrations correspond to similarly lettered terminals on the circuit diagram.

I.F. 455 KC.



FRONT DECK FRONT VIEW



FRONT DECK REAR VIEW

REAR DECK FRONT VIEW

RANGE AND TONE SWITCH 502199

SOCKET VOLTAGES

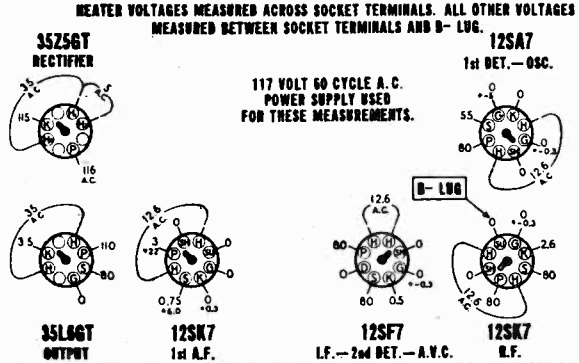
Measured with voltmeter having sensitivity of 1000 ohms per volt except where indicated by (*).

VOLUME ON FULL WITH NO SIGNAL — DIAL TUNED TO 540 KC.

BOTTOM VIEW OF CHASSIS

HEATER VOLTAGES MEASURED ACROSS SOCKET TERMINALS. ALL OTHER VOLTAGES MEASURED BETWEEN SOCKET TERMINALS AND B- LUG.

117 VOLT 60 CYCLE A.C. POWER SUPPLY USED FOR THESE MEASUREMENTS.



REAR OF CHASSIS

*—Measured with vacuum tube voltmeter

PARTS LIST

DIAGRAM NO.	PART NO.	DESCRIPTION	LIST PRICE
		CONDENSERS	
3	502172	Condenser -trimmer; 25 to 100 Mmfd.	$0.36
5A-5B-5C	502123	Condenser—variable gang (with drum)	4.60
9	502162	Condenser—315 Mmfd. 500 volt	.45
11	502159	Condenser—mica—50 Mmfd. 500 volt	.24
12	502155	Condenser—.1 Mfd. 200 volt	.30
13	502158	Condenser—.2 Mfd. 400 volt	.36
14	502172	Condenser—trimmer; 25 to 100 Mmfd.	.36
18	502262	Condenser—.25 Mfd. 200 volt	.36
26	502470	Condenser—.0008 Mfd. 400 volt	.20
27	502453	Condenser—.002 Mfd. 400 volt	.20
28	502160	Condenser—mica—110 Mmfd. 500 volt	.24
32	502160	Condenser—mica—110 Mmfd. 500 volt	.24
33	502153	Condenser—.05 Mfd. 200 volt	.24
34	502156	Condenser—.004 Mfd. 400 volt	.20
39	502151	Condenser—.01 Mfd. 400 volt	.20
40A-40B	500256	Condenser—electrolytic A-40 Mfd. 150 volt / B-20 Mfd. 150 volt	1.50
43	502152	Condenser—.02 Mfd. 400 volt	.24
46	502157	Condenser—.05 Mfd. 400 volt	.24
		RESISTORS	
6	502140	Resistor—carbon 390 ohms ¼ watt	.12
10	502130	Resistor—carbon 22,000 ohms ¼ watt	.12
15	502133	Resistor—carbon 220,000 ohms ¼ watt	.12
19	502291	Resistor—carbon 4700 ohms ¼ watt	.12
21	502269	Resistor—carbon 3.3 Meg. ¼ watt	.12
22	502264	Resistor—carbon 47 ohms ¼ watt	.12
24	502131	Resistor—carbon 47,000 ohms ¼ watt	.12
25A-25B	502145	Volume control 500,000 ohms (with switch)	1.25
29	502136	Resistor—carbon 10 Meg. ¼ watt	.12
30	502128	Resistor—carbon 2200 ohms ¼ watt	.12
31	502135	Resistor—carbon 2.2 Meg. ¼ watt	.12
35-36	502133	Resistor—carbon 220,000 ohms ¼ watt	.12
37	502134	Resistor—carbon 470,000 ohms ¼ watt	.12
38	502138	Resistor—carbon 130 ohms ¼ watt	.12
42	502469	Resistor—carbon 1500 ohms 1 watt	.16
48	502574	Resistor—carbon 33 ohms ½ watt	.12
		COILS & TRANSFORMERS	
1	502196	Loop antenna	3.95
2	502740	Coil—S. W. antenna	1.12
4	502121	Coil—antenna coupling	$1.64
7	502142	Coil—BC. R.F.	2.26
16	502198	Coil—BC. oscillator	1.32
17	502197	Coil—S.W. oscillator	1.12
20	502102	Transformer—1st I.F.	2.30
23	502103	Transformer—2nd I.F.	2.30
41	500617	Transformer—output for R-500616 spkr.	2.50
	502906	Transformer—output for A-500616 spkr.	2.50
		OTHER ELECTRICAL PARTS	
8A-8B-8C	502199	Switch-tone & range	2.00
44	500587	Cone and voice coil for R-500616 spkr.	2.00
	502905	Cone and voice coil for A-500616 spkr.	2.00
45	500616	Speaker—P.M. dynamic (5 inch)	8.40
47	502473	Lamp-dial (Mazda 47) 6-8V. 150 Ma.	.22
		MISCELLANEOUS PARTS	
	116467	Base for mtg. electrolytic condenser	.04
	502431	Back for cabinet	.60
	501732	Clamp—dial scale mtg.	.05
	112745	Clip—coil mtg.	.01
	114955	Clip—retainer on end of dial cord	.01
	116563	Connector—for antenna leads	.01
	117057	Cord—dial drive (57 in. required) . . per ft.	.05
	500324	Cover—cardboard, for elect. cond.	.04
	502221	Dial scale—glass	1.00
	502700	Grille—metal; for cabinet	3.40
	501186	Grounding plate (under I.F. trans. can)	.10
	501778	Knob—volume or tuning	.12
	501779	Knob—tone & band switch	.14
	502367	Pointer	.16
	81145	Retaining ring for tuning shaft	.01
	14771	Screw—No. 6x3/8; holds frame to cab.	.02
	83047	Screw—No. 8x7/8; chassis mtg.	.02
	500734	Screw—No. 4x5/16; holds clamps to cab.	.02
	501777	Screw—No. 4x1½; for mtg. loop & back.	.02
	502173	Shaft—tuning control	.15
	116690	Socket—octal base	.12
	160392	Socket—octal (rectifier)	.16
	500499	Socket—dial lamp (with leads)	.44
	161384	Spring—dial cord tension	.06
	111456	Washer—spring washer for tuning shaft	.005
	500487	Washer—felt; for knobs	.01

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

MODEL 9000-B

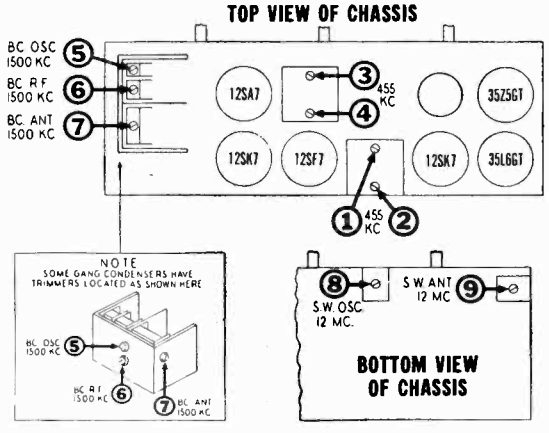
STEWART WARNER CORP.

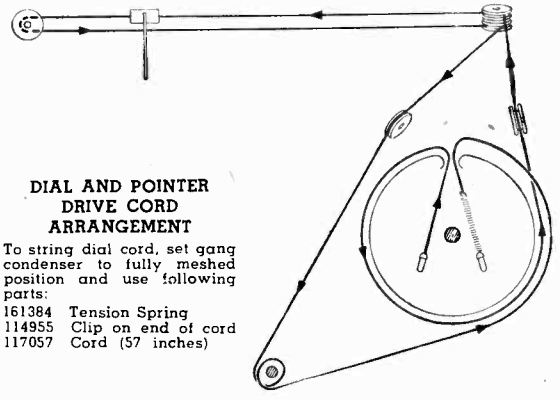
ALIGNMENT PROCEDURE

1. Remove chassis and loop antenna from cabinet (do not remove loop of wire stapled to cabinet). After chassis has been removed, replace loop antenna in cabinet. Stand the chassis on one end and space it approximately same distance from loop as when installed in cabinet. Then reconnect all leads to loop antenna and to loop of wire stapled on cabinet.
2. Note that there are four calibrating lines stamped into the metal dial frame. When gang condenser is fully meshed, dial pointer should be in the position indicated by first line at the left. If it is set incorrectly, release pointer clip on dial cord and reposition pointer.
3. Connect an output meter across the speaker voice coil or from plate of 35L6GT tube to B— through a .1 Mfd. condenser (see voltage chart for convenient B— connection).
4. Connect ground lead from signal generator to B— through a .25 Mfd. condenser.
5. Set volume control at maximum volume position and use a weak signal from the signal generator.

IMPORTANT:—Align this receiver in exactly the order shown below. Broadcast band must be aligned before short wave band.

DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECT HIGH SIDE OF GENERATOR TO	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POSITION	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
200 MMFD. Mica Condenser	Control Grid of 12SA7	455 KC	Broadcast	Any point where it does not affect the signal	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
					3-4	1st I.F.	
200 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1500 KC	Broadcast	Set pointer to 1500 KC reference line stamped into metal dial plate (first line at the right)	5	Broadcast Oscillator (Shunt)	Adjust for maximum output.
200 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1500 KC	Broadcast	Tune to 1500 KC generator signal	6	Broadcast R.F.	Adjust for maximum output.
200 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1500 KC	Broadcast	Tune to 1500 KC generator signal	7	Broadcast Antenna	Adjust for maximum output.
400 OHM Resistor	External Antenna Clip on Loop Frame	12 MC	Short Wave	Set pointer to 12 MC. Reference line stamped into metal dial plate (second line from the right)	8	Short Wave Oscillator	Adjust to bring in signal. Check to see if proper peak was obtained by tuning in image at approx. 11.1 MC. If image does not appear, realign at 12 MC. with trimmer screw farther out. Recheck image.
400 OHM Resistor	External Antenna Clip on Loop Frame	12 MC	Short Wave	Tune to 12 MC generator signal	9	Short Wave Antenna	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.





DIAL AND POINTER DRIVE CORD ARRANGEMENT

To string dial cord, set gang condenser to fully meshed position and use following parts:

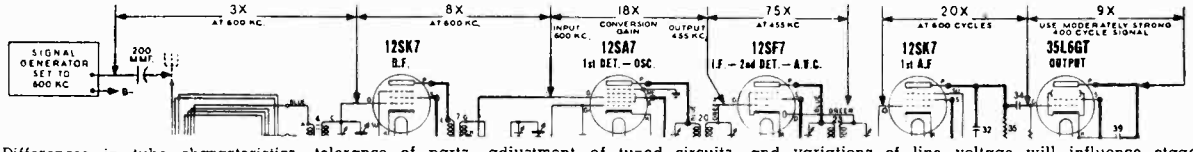
161384 Tension Spring
114955 Clip on end of cord
117057 Cord (57 inches)

APPROXIMATE STAGE GAIN DATA

Be sure R.F. and I.F. stages are accurately aligned before measuring gain. R.F. gains can be measured with a "channel" type instrument containing a tuned and calibrated R.F. amplifier. A vacuum tube voltmeter may be used for audio gain measurements. Observe following precautions:

1. For all gain measurements connect signal generator as shown. Use 600 KC. signal with 400 cycle modulation (use nearby frequency if local station interferes.)
2. For R.F. and I.F. measurements connect negative terminal of a 3 volt battery (two 1½ volt cells in series) to A.V.C. lead and positive terminal to B—. This provides a definite operating point. IMPORTANT: Disconnect battery when measuring audio stage gains.
3. Be sure radio is carefully tuned to generator signal (use weak signal for sharp tuning.)
4. When using a "channel" type instrument carefully tune it for maximum output at desired frequency before making measurements.

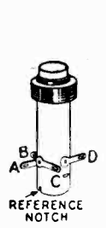
The R.F. and I.F. stage gains shown below are less than under normal operating conditions due to the use of 3 volts fixed bias in order to establish a definite operating point. Therefore, these values are not intended to indicate the full capability of a stage.



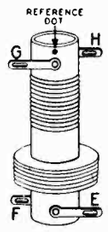
Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain. Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create considerable variation in gain measurements.

STEWART WARNER CORP.

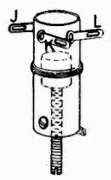
MODELS 9001-C, 9001-D, 9001-E, 9001-F



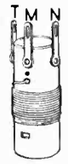
BC. ANTENNA COUPLING COIL 502112



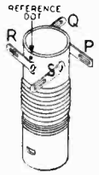
R.F. COIL 502113



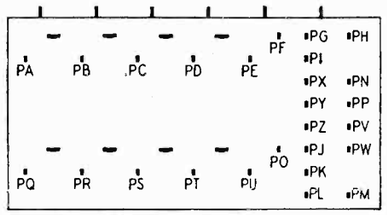
BC. OSCILLATOR COIL 502114



S.W. OSCILLATOR COIL 502111

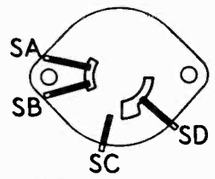


S.W. ANTENNA COIL 502110

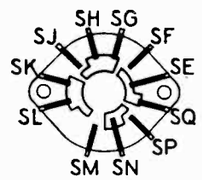


PUSH-BUTTON SWITCH 502177

Lettered terminals in illustrations correspond to similarly lettered terminals on the circuit diagram.

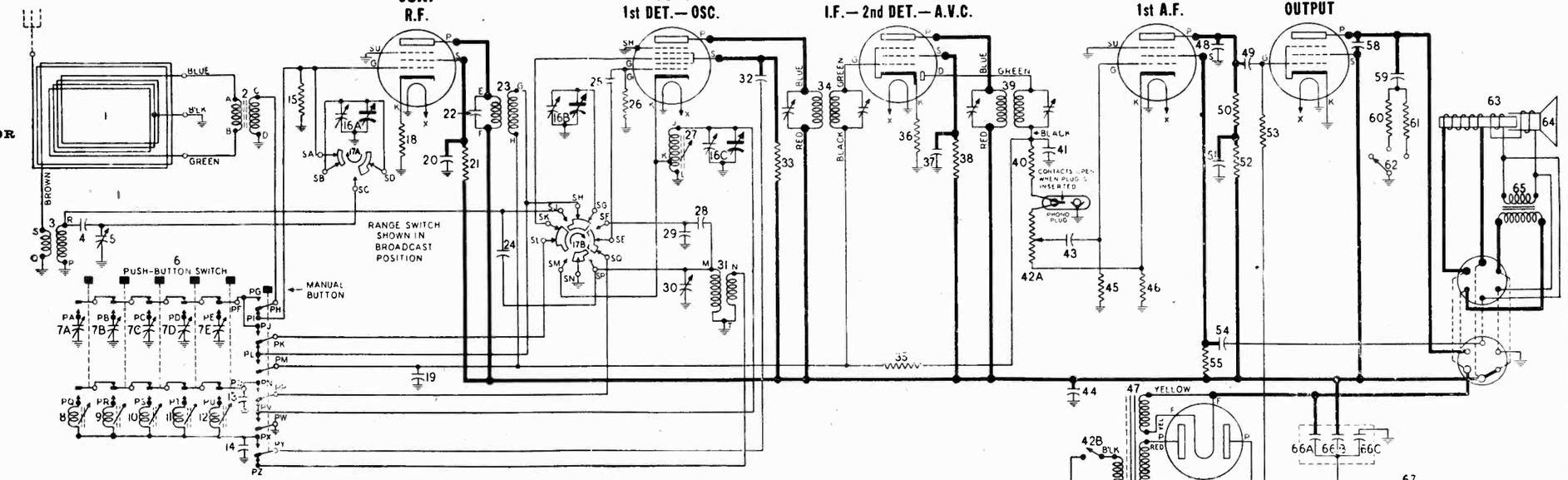


FRONT SECTION REAR VIEW



REAR SECTION REAR VIEW

BAND SWITCH 502147



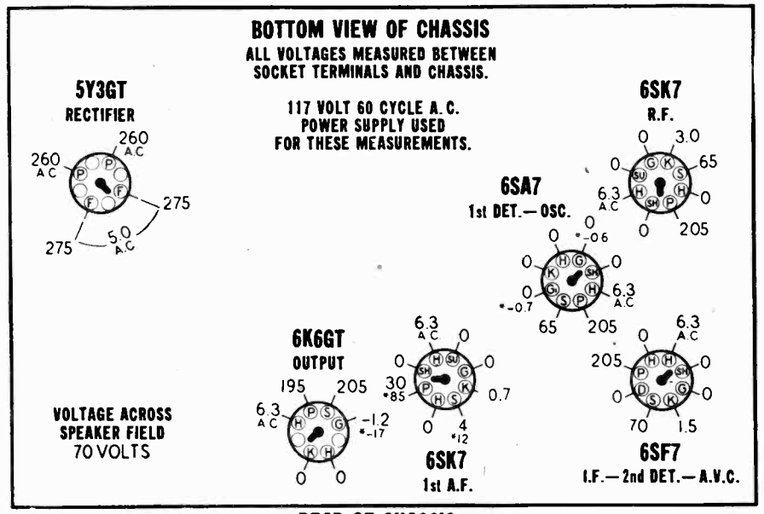
I.F. 455 KC.

SOCKET VOLTAGES

Measured with voltmeter having sensitivity of 1000 ohms per volt except where indicated by (*).

VOLUME ON FULL WITH NO SIGNAL
BAND SWITCH IN BROADCAST POSITION

DIAL TUNED TO 540 KC.
MANUAL BUTTON PUSHED IN



REAR OF CHASSIS

*—Measured with vacuum tube voltmeter.

NOTE:—The 6K6GT grid bias of —17 volts can be measured across resistor No. 67.

PARTS LIST

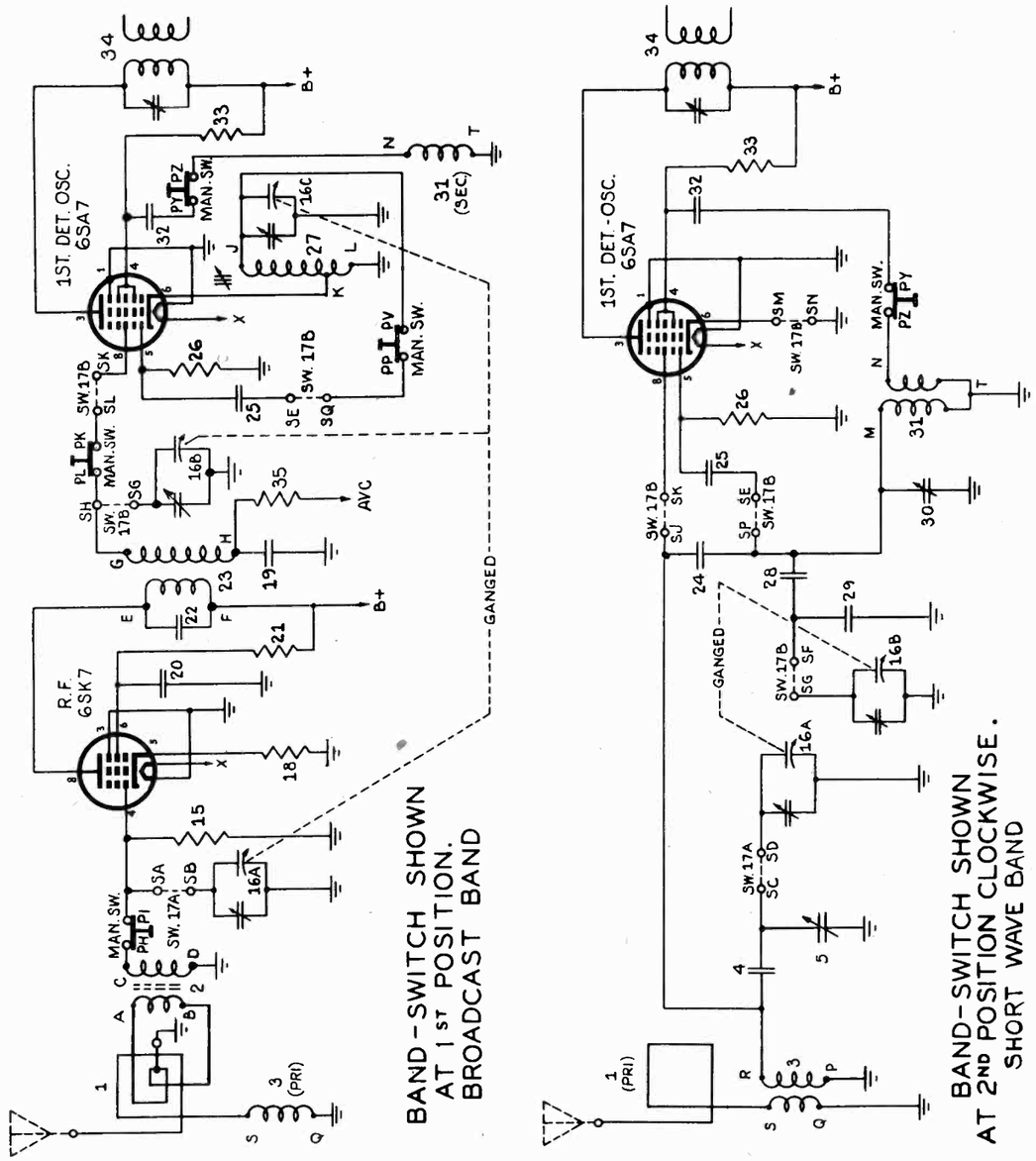
DIAGRAM NO.	PART NO.	DESCRIPTION	LIST PRICE
		CONDENSERS	
4	502202	Condenser—ceramic 150 Mmfd. 500 volt	$
5	502172	Condenser—trimmer; 25 to 100 Mmfd.	
7A to E	502910	Condenser—trimmer assem. for P-B tuner	
13	502161	Condenser—mica 270 Mmfd. 500 volt	
14	502165	Condenser—mica 1,000 Mmfd. 500 volt	
16A, B, C	502122	Condenser—variable gang	
19	502155	Condenser—.1 Mfd. 200 volt	
20	502157	Condenser—.05 Mfd. 400 volt	
22	502295	Condenser—ceramic 10 Mmfd. 500 volt	
24	502411	Condenser—2 Mmfd. 500 volt	
25	502159	Condenser—mica 50 Mmfd. 500 volt	
28	502201	Condenser—ceramic 130 Mmfd. 500 volt	
29	502182	Condenser—ceramic 39 Mmfd. 500 volt	
30	502171	Condenser—trimmer; 5 to 35 Mmfd.	
32	502151	Condenser—.01 Mfd. 400 volt	
37	502157	Condenser—.05 Mfd. 400 volt	
41	502271	Condenser—mica 260 Mmfd. 500 volt	
43	502150	Condenser—.004 Mfd. 600 volt	
44	502157	Condenser—.05 Mfd. 400 volt	
48	502160	Condenser—mica 110 Mmfd. 500 volt	
49	502152	Condenser—.02 Mfd. 400 volt	
51	502410	Condenser—.1 Mfd. 400 volt	
54	502405	Condenser—.25 Mfd. 400 volt	
58	502150	Condenser—.004 Mfd. 600 volt	
59	502154	Condenser—.05 Mfd. 600 volt	
66A, B, C	502207	Condenser—electrolytic A—20 Mfd. 400 volt; B—10 Mfd. 400 volt; C—20 Mfd. 25 volt	
		RESISTORS	
15	502468	Resistor—carbon 4.7 Meg. ¼ watt	
18	502127	Resistor—carbon 560 ohms ¼ watt	
21	502132	Resistor—carbon 100,000 ohms ¼ watt	
26	502130	Resistor—carbon 22,000 ohms ¼ watt	
33	502466	Resistor—carbon 33,000 ohms 1 watt	
35	502135	Resistor—carbon 2.2 Meg. ¼ watt	
36	502264	Resistor—carbon 47 ohms ¼ watt	
38	502467	Resistor—carbon 68,000 ohms ½ watt	
40	502131	Resistor—carbon 47,000 ohms ¼ watt	

DIAGRAM NO.	PART NO.	DESCRIPTION	LIST PRICE
42A, B	502148	Volume control 500,000 ohms (with switch)	$
45	502468	Resistor—carbon 4.7 Meg. ¼ watt	
46	502128	Resistor—carbon 2200 ohms ¼ watt	
50	502133	Resistor—carbon 220,000 ohms ¼ watt	
52	502132	Resistor—carbon 100,000 ohms ¼ watt	
53	502134	Resistor—carbon 470,000 ohms ¼ watt	
55	502135	Resistor—carbon 2.2 Meg. ¼ watt	
60	502291	Resistor—carbon 4700 ohms ¼ watt	
61	502127	Resistor—carbon 560 ohms ¼ watt	
67	502137	Resistor—wire wound 330 ohms 2 watt	
		COILS & TRANSFORMERS	
1	502247	Loop antenna (Model 9001-C)	
	502436	Loop antenna (Models 9001-D, E, F)	
2	502112	Coil—B.C. antenna	
3	502110	Coil—S.W. antenna	
	502025	Complete coil and trimmer assembly for push-button tuner	
8	502907	Coil less slug (540-1000 Kc.)	
9, 10	502908	Coil less slug (650-1300 Kc.)	
11, 12	502909	Coil less slug (975-1600 Kc.)	
	502911	Tuning slug for coils, 502907, 502908, 502909	
	501151	Clip—for mtg. push-button coils	
23	502113	Coil—B.C. R.F.	
27	502114	Coil—B.C. oscillator	
31	502111	Coil—S.W. oscillator	
34	502102	Transformer—1st I.F.	
39	502103	Transformer—2nd I.F.	
47	502174	Transformer—power	
65	502170	Transformer—output for R-502168 spkr.	
	504061	Transformer—output for M-502168 spkr.	
		OTHER ELECTRICAL PARTS	
6	502177	Switch—push-button	
17A, B	502147	Switch—band	
56, 57	110629	Lamp—(Mazda No. 44) 6.3 V. 0.25 Amps.	
62	502146	Switch—tone control	
63	502168	Speaker—Electro-Dynamic (6 inch); field resistance 1000 ohms	
64	502169	Cone & voice coil for R-502168 spkr.	
	504062	Cone & voice coil for M-502168 spkr.	

PART NO.	DESCRIPTION	LIST PRICE
	MISCELLANEOUS PARTS	
116467	Base for mtg. Electrolytic Condenser	$
502437	Back for cabinet (Model 9001-D)	
502438	Back for cabinet (Model 9001-E)	
502439	Back for cabinet (Model 9001-F)	
502471	Back for cabinet (Model 9001-C)	
119694	Background for dial	
119559	Clamp—for dial glass	
112745	Clip—coil mtg.	
114955	Clip—retainer on end of dial cord	
501151	Clip—for mtg. push-button coils	
116563	Connector—for antenna lead	
117057	Cord—dial (61 in. required)	
502219	Dial scale—glass	
117029	Drum—for dial drive	
502550	Escutcheon (Model 9001-C)	
502819	Escutcheon (Models 9001-D, E, F)	
501449	Knob—volume or tuning (Model 9001-C)	
501458	Knob—tone or band switch (Model 9001-C)	
501498	Knob—volume or tuning (9001-D, E, F)	
501499	Knob—tone or band switch (9001-D, E, F)	
504097	Plug for speaker	
502601	Pointer	
501497	Push button (Model 9001-C)	
501651	Push button (Models 9001-D, E, F)	
81145	Retaining ring for tuning shaft	
119087	Ring for dial cord	
116584	Rubber spacer for mtg. dial scale	
85832	Screw—No. 8-32 for dial drum	
83552	Screw—No. 10x7/8"; for mtg. chassis	
114914	Screw—No. 2x3/8"; for mtg. escutcheon	
501777	Screw—No. 4x1/2"; for mtg. loop & back	
118606	Shaft—tuning control	
112818	Socket—dial lamp with lead	
116690	Socket—octal base	
160392	Socket—octal (rectifier)	
502210	Socket for speaker	
113177	Spring—dial cord tension	
119911	Terminal strip-phono.	
111456	Washer—spring washer for tuning shaft	
500487	Washer—felt; for knobs	

STEWART WARNER CORP.

MODELS 9001-C,9001-D,
9001-E,9001-F



MODELS 9001-C,9001-D,
9001-E,9001-F

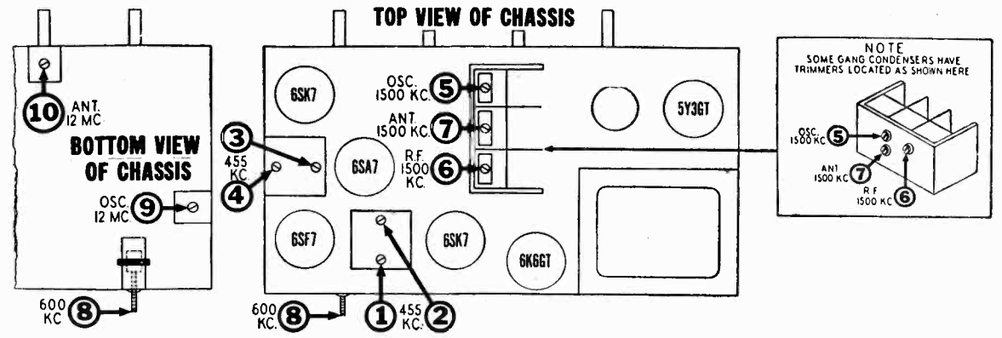
STEWART WARNER CORP.

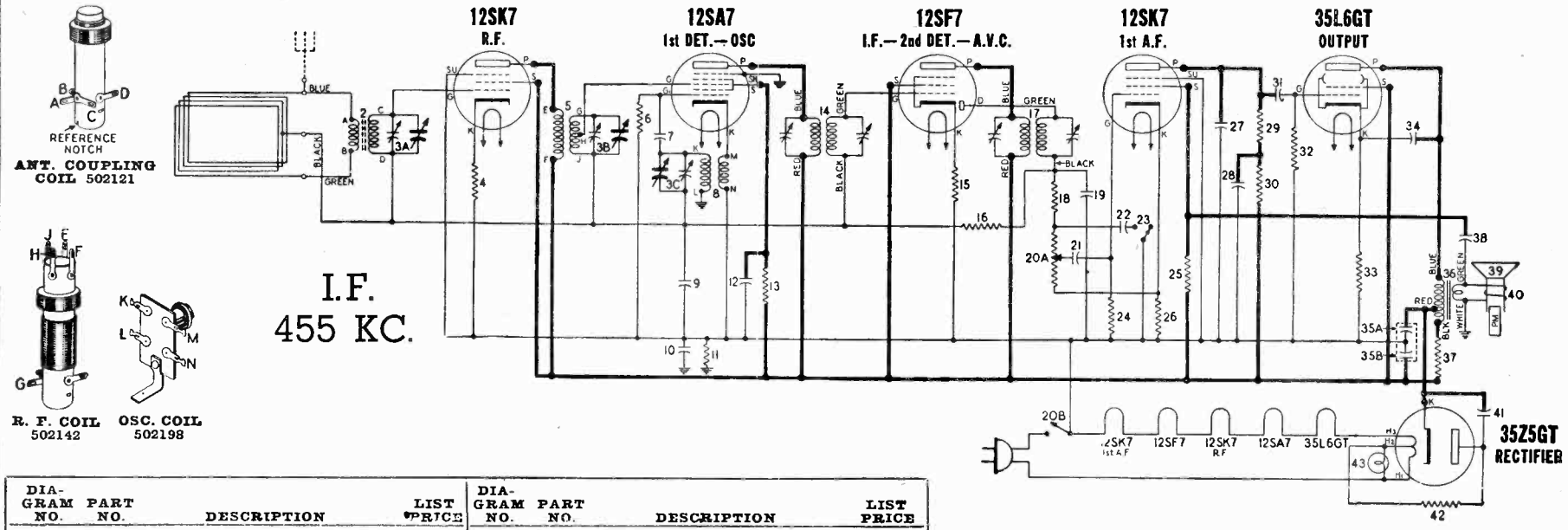
ALIGNMENT PROCEDURE

1. Remove chassis and loop antenna from cabinet (do not remove loop of wire stapled to cabinet). After chassis has been removed, replace loop antenna in cabinet. Stand the chassis on one end and space it approximately same distance from loop as when installed in cabinet. Then reconnect all leads to loop antenna and to loop of wire stapled on cabinet.
2. With the gang condenser fully meshed, dial pointer should be in the position indicated by the last division below 55 on the dial. If it is set incorrectly, release pointer clip on dial cord and reposition pointer.
3. Connect output meter across speaker voice coil or from plate to chassis through a .1 Mfd. condenser.
4. Connect the ground lead of the signal generator to the receiver chassis.
5. Set volume control at maximum volume position and use a weak signal from the signal generator.
6. Push in the manual button and leave it in that position throughout the alignment procedure.

IMPORTANT:—Align this receiver in exactly the order shown below. Broadcast band must be aligned before short wave band.

DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECT HIGH SIDE OF SIGNAL GENERATOR TO	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POSITION	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
.1 MFD. Condenser	Trimmer on rear section of gang	455 KC	Broadcast (Clockwise)	Any point where it does not affect the signal.	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
					3-4	1st I.F.	
500 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1500 KC	Broadcast (Clockwise)	1500 KC	5	Broadcast Oscillator (Shunt)	Adjust for maximum output.
500 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1500 KC	Broadcast (Clockwise)	Tune to 1500 Kc. generator signal.	6	Broadcast R.F.	Adjust for maximum output.
500 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1500 KC	Broadcast (Clockwise)	Tune to 1500 Kc. generator signal.	7	Broadcast Antenna	Adjust for maximum output.
500 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	600 KC	Broadcast (Clockwise)	Tune to 600 Kc. generator signal.	8	Adiustable core of Broadcast Oscillator Coil.	Adjust for maximum output. Try to increase output by rotating core in and out and retuning receiver dial until maximum output is obtained.
500 MFD. Mica Condenser	External Antenna Clip on Loop Frame	Repeat adjustment of trimmers 5, 6 and 7 at 1500 Kc. Then re-check adjustment of trimmer 8 at 600 Kc.					
400 OHM Carbon Resistor	External Antenna Clip on Loop Frame	12 MC	Short wave (Counter-Clockwise)	12 MC	9	S.W. Oscillator	Adjust for maximum output. Check to see if proper peak was obtained by tuning in image at approx. 11.1 MC. If image does not appear, realign at 12 MC, with trimmer screw farther out. Recheck image.
400 OHM Carbon Resistor	External Antenna Clip on Loop Frame	12 MC	Short wave (Counter-Clockwise)	Tune to 12 MC. generator signal.	10	S.W. Antenna	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.





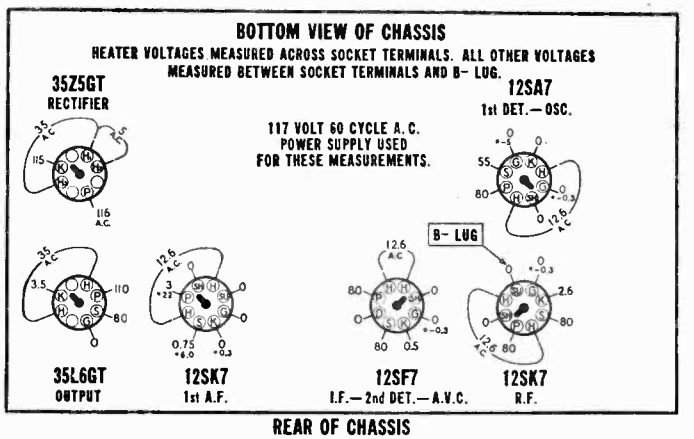
DIA-GRAM NO.	PART NO.	DESCRIPTION	LIST PRICE*
		CONDENSERS	
3A-3B-3C	502123	Condenser—variable gang (with drum)	$
7	502159	Condenser—mica—50 Mmfd. 500 Volt	
9	502155	Condenser—.1 Mfd. 200 Volt	
10	502158	Condenser—.2 Mfd. 200 Volt	
12	502262	Condenser—.25 Mfd. 200 Volt	
19	502160	Condenser—mica—110 Mmfd. 500 Volt	
21	502453	Condenser—.002 Mfd. 400 Volt	
22	502470	Condenser—.0008 Mfd. 400 Volt	
27	502160	Condenser—Mica—110 Mmfd. 500 Volt	
28	502153	Condenser—.05 Mfd. 200 Volt	
31	502156	Condenser—.004 Mfd. 400 Volt	
34	502151	Condenser—.01 Mfd. 400 Volt	
35A-35B	500256	Condenser—electrolytic A-40 Mfd. 150 Volt / B-20 Mfd. 150 Volt	
38	502152	Condenser—.02 Mfd. 400 Volt	
41	502157	Condenser—.05 Mfd. 400 Volt	
		RESISTORS	
4	502140	Resistor—carbon 390 Ohms ¼ Watt	
6	502130	Resistor—carbon 22,000 Ohms ¼ Watt	
11	502133	Resistor—carbon 220,000 Ohms ¼ Watt	
13	502291	Resistor—carbon 4700 Ohms, ¼ Watt	
15	502264	Resistor—carbon 47 Ohms ¼ Watt	
16	502269	Resistor—carbon 3.3 Meg. ¼ Watt	
18	502131	Resistor—carbon 47,000 Ohms ¼ Watt	
20A-20B	502145	Volume control 500,000 Ohms (with switch)	
24	502136	Resistor—carbon 10 Meg. ¼ Watt	
25	502135	Resistor—carbon 2.2 Meg. ¼ Watt	
26	502128	Resistor—carbon 2200 Ohms ¼ Watt	
29-30	502133	Resistor—carbon 220,000 Ohms ¼ Watt	
32	502134	Resistor—carbon 470,000 Ohms ¼ Watt	
33	502138	Resistor—carbon 130 Ohms ¼ Watt	
37	502469	Resistor—carbon 1500 Ohms 1 Watt	
42	502574	Resistor—carbon 33 Ohms ½ Watt	
		COILS & TRANSFORMERS	
1	502246	Loop Antenna	
2	502121	Coil—antenna coupling	
5	502142	Coil—R.F.	
8	502198	Coil—oscillator	
14	502102	Transformer 1st I.F.	
17	502103	Transformer 2nd I.F.	
36	502213 / 502904	Transformer—Output for R-502208 spkr. / Transformer—Output for A-502208 spkr.	

DIA-GRAM NO.	PART NO.	DESCRIPTION	LIST PRICE
		OTHER ELECTRICAL PARTS	
23	500546	Switch-tone control	
39	502214 / 502903	Cone & voice coil for R-502208 spkr. / Cone & voice coil for A-502208 spkr.	
40	R-502208	Speaker—P.M. dynamic (5 inch)	
43	118921	Lamp—dial (Mazda 47) 6-8V. 150 Ma.	
		MISCELLANEOUS PARTS	
	17063	Screw—No. 6 x ¼	
	17064	Screw—No. 4 x 7/32	
	114628	Screw—No. 8 x ½ chassis mtg.	
	81145	Retaining ring for tuning shaft	
	111456	Washer—spring washer for tuning shaft	
	112745	Clip—coil mtg.	
	114955	Clip—retainer on end of dial cord	
	500497	Clip—retainer for cabinet back	
	116467	Base for mtg. electrolytic condenser	
	116563	Connector—for antenna leads	
	116690	Socket—octal base	
	160392	Socket—octal (rectifier)	
	500499	Socket—dial lamp (with leads)	
	117057	Cord—dial drive (55" required)	
	161384	Spring—dial cord tension	
	500261	Clamp—dial scale mtg. (Models 9002-A, B)	
	502506	Clamp—dial scale mtg. (Models 9002-P, R)	
	500324	Cover—cardboard, for elect. cond.	
	501186	Grounding plate (under I.F. transformer)	
	502173	Shaft—tuning control	
	502185	Back for cabinet (Models 9002-A, B)	
	502668	Back for cabinet (Models 9002-P, R)	
	502223	Dial scale—glass (Model 9002-A)	
	502224	Dial scale—glass (Model 9002-B)	
	502691	Dial scale—glass (Models 9002-P, R)	
	500384	Cabinet—ivory (Model 9002-B)	
	502244	Cabinet—mahogany (Model 9002-A)	
	502665	Cabinet—ivory (Model 9002-R)	
	502666	Cabinet—mahogany (Model 9002-P)	
	502367	Pointer (Models 9002-A, B)	
	502690	Pointer (Models 9002-P, R)	
	502551	Knob—mahogany (Model 9002-A)	
	502552	Knob—maroon (Model 9002-B)	
	502563	Knob—mahogany (Model 9002-P)	
	502564	Knob—ivory (Model 9002-R)	

SOCKET VOLTAGES

Measured with voltmeter having sensitivity of 1000 ohms per volt except where indicated by (*).

VOLUME ON FULL WITH NO SIGNAL — DIAL TUNED TO 540 KC.



*—Measured with vacuum tube voltmeter

STEWART WARNER CORP.

MODELS 9002-A, 9002-B, 9002-P, 9002-R

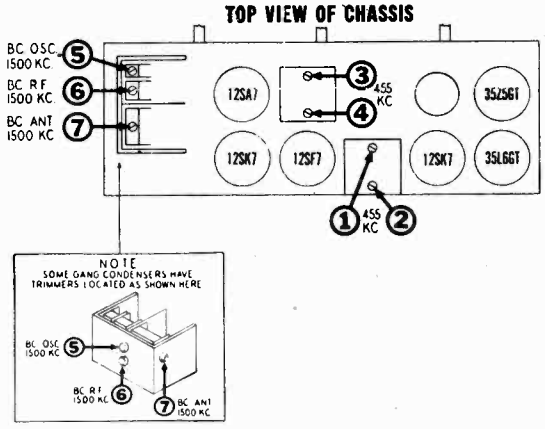
MODELS 9002-A, 9002-B, 9002-P, 9002-R

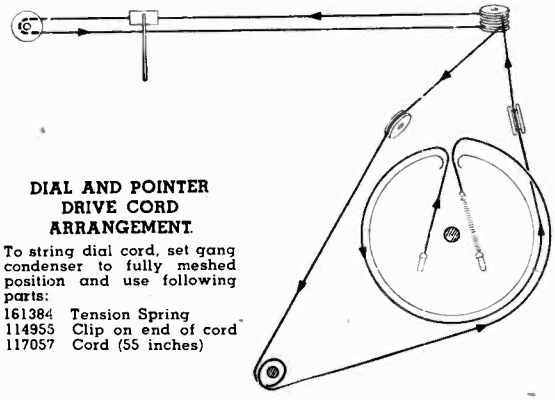
STEWART WARNER CORP.

ALIGNMENT PROCEDURE

1. Remove chassis and loop antenna from cabinet. Reconnect loop to chassis and space it approximately same distance from chassis as when installed in cabinet.
2. Note that there are four calibrating lines stamped into the metal dial frame. When gang condenser is fully meshed, dial pointer should be in the position indicated by first line at the left. If it is set incorrectly, release pointer clip on dial cord and reposition pointer.
3. Connect an output meter across the speaker voice coil or from plate of 35L6GT tube to B— through a .1 Mfd. condenser (see voltage chart for convenient B— connection).
4. Connect ground lead from signal generator to B— through a .25 Mfd. condenser.
5. Set volume control at maximum volume position and use a weak signal from the signal generator.

DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECTION OF SIG. GENERATOR OUTPUT TO RECEIVER	SIGNAL GENERATOR FREQUENCY	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
200 MMFD. Mica Condenser	Control Grid of 12SA7	455 KC	Any point where it does not affect the signal	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
				3-4	1st I.F.	
200 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1500 KC	Set pointer to 1500 KC reference line stamped into metal dial plate (first line at the right)	5	Broadcast Oscillator (Shunt)	Adjust for maximum output.
200 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1500 KC	Tune to 1500 KC generator signal	6	Broadcast R.F.	Adjust for maximum output.
200 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1500 KC	Tune to 1500 KC generator signal	7	Broadcast Antenna	Adjust for maximum output.





DIAL AND POINTER DRIVE CORD ARRANGEMENT.

To string dial cord, set gang condenser to fully meshed position and use following parts:

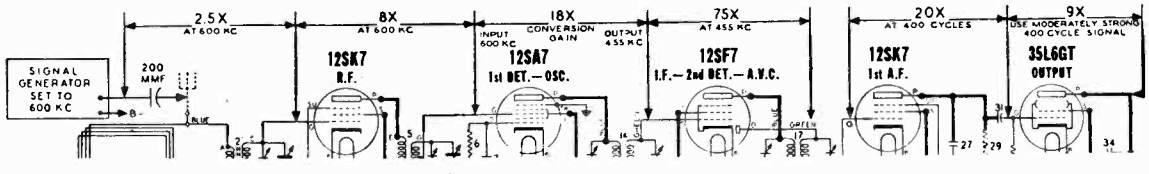
161384 Tension Spring
114955 Clip on end of cord
117057 Cord (55 inches)

APPROXIMATE STAGE GAIN DATA

A vacuum tube voltmeter may be used for audio gain measurements. R.F. gains can be measured with a "channel" type instrument containing a tuned and calibrated R.F. amplifier. Observe following precautions:

1. For all gain measurements connect signal generator as shown. Use 600 KC. signal with 400 cycle modulation (use nearby frequency if local station interferes.)
2. For R.F. and I.F. measurements connect negative terminal of a 3 volt battery (two 1½ volt cells in series) to A.V.C. lead and positive terminal to B—. This provides a definite operating point. IMPORTANT: Disconnect battery when measuring audio stage gains.
3. Be sure radio is carefully tuned to generator signal (use weak signal for sharp tuning.)
4. When using a "channel" type instrument carefully tune it for maximum output at desired frequency before making measurements.

The R.F. and I.F. stage gains shown below are less than under normal operating conditions due to the use of 3 volts fixed bias in order to establish a definite operating point. Therefore, these values are not intended to indicate the full capability of a stage.



Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain. Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create considerable variation in gain measurements.

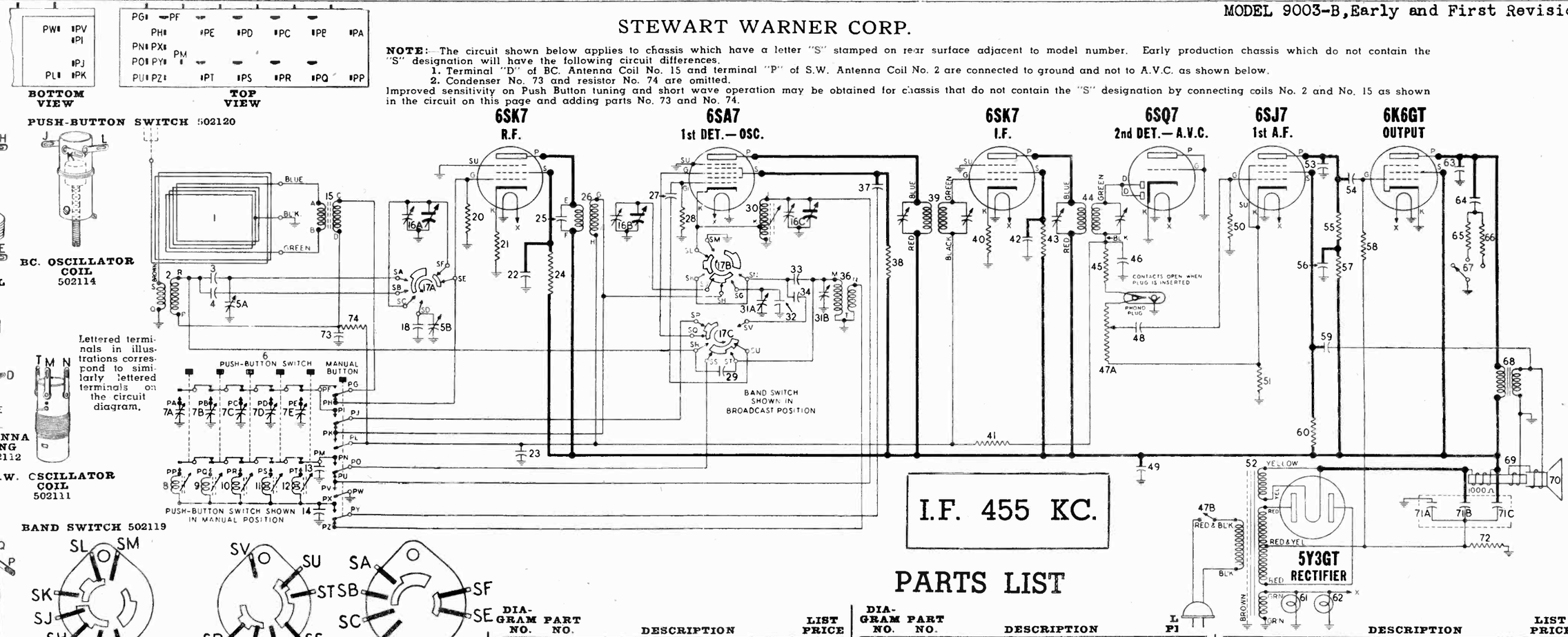
MODEL 9003-B, Early and First Revision

STEWART WARNER CORP.

NOTE:—The circuit shown below applies to chassis which have a letter "S" stamped on rear surface adjacent to model number. Early production chassis which do not contain the "S" designation will have the following circuit differences.

1. Terminal "D" of BC. Antenna Coil No. 15 and terminal "P" of S.W. Antenna Coil No. 2 are connected to ground and not to A.V.C. as shown below.
2. Condenser No. 73 and resistor No. 74 are omitted.

Improved sensitivity on Push Button tuning and short wave operation may be obtained for chassis that do not contain the "S" designation by connecting coils No. 2 and No. 15 as shown in the circuit on this page and adding parts No. 73 and No. 74.

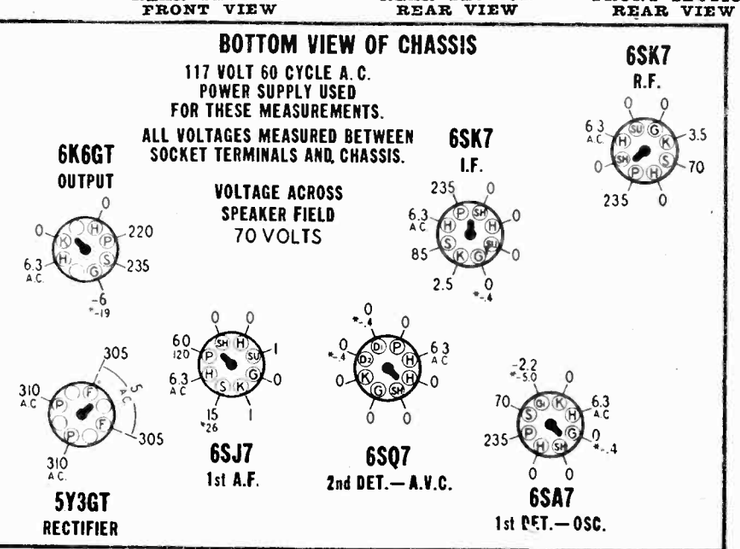


BOTTOM VIEW OF CHASSIS

117 VOLT 60 CYCLE A.C. POWER SUPPLY USED FOR THESE MEASUREMENTS.

ALL VOLTAGES MEASURED BETWEEN SOCKET TERMINALS AND CHASSIS.

VOLTAGE ACROSS SPEAKER FIELD 70 VOLTS



DIAL TUNED TO 540 KC. MANUAL BUTTON PUSHED IN REAR VOLUME ON FULL WITH NO SIGNAL RANGE SWITCH IN BROADCAST POSITION

*—Measured with vacuum tube voltmeter.

NOTE:—The 6K6GT grid bias of —19 volts can be measured across resistor No. 72.

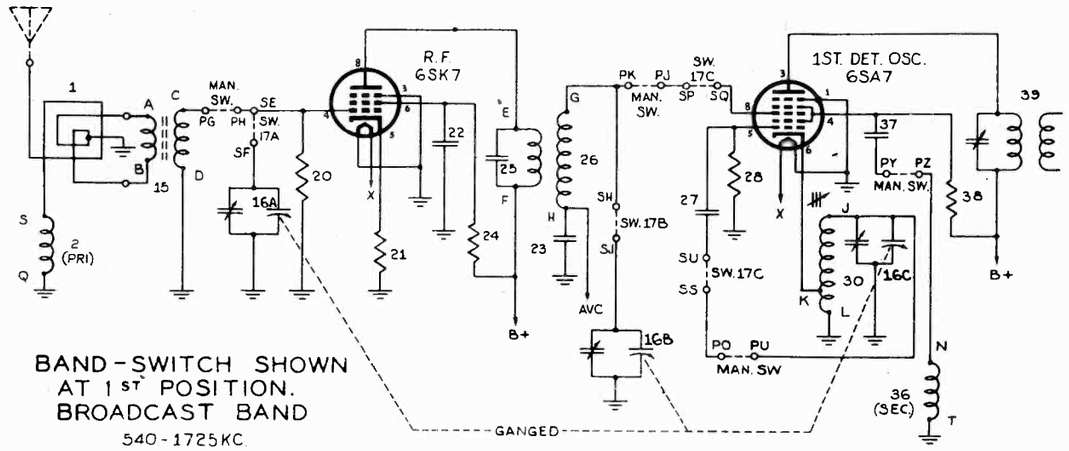
PARTS LIST

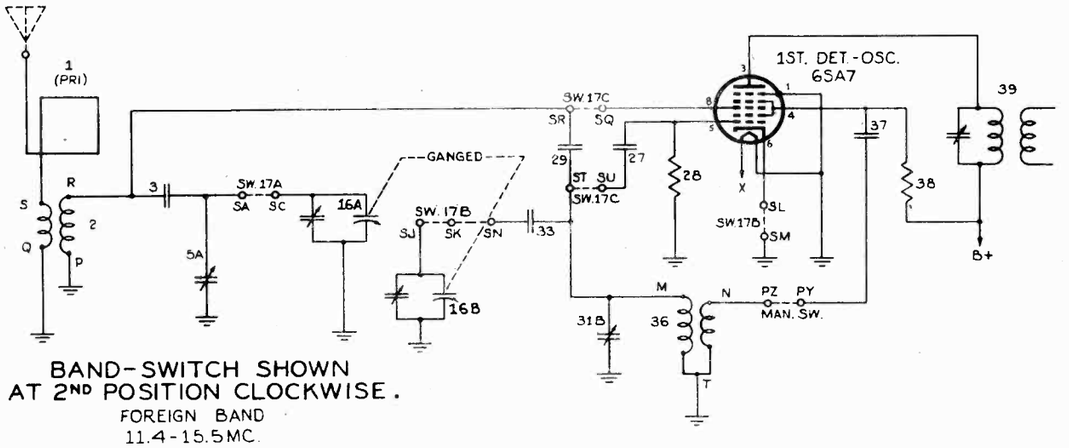
DIAGRAM NO.	PART NO.	DESCRIPTION	LIST PRICE
		CONDENSERS	
3	502166	Condenser—ceramic 82 Mmfd. 500 volt	$0.30
4	502164	Condenser—mica 670 Mmfd. 500 volt	.70
5A, B	502109	Condenser—trimmer assembly Section A 2 to 15 Mmfd. Section B 10 to 40 Mmfd.	.65
7A to E	502910	Condenser—trimmer assem. for P-B tuner	3.00
13	502161	Condenser—mica 270 Mmfd. 500 volt	.45
14	502165	Condenser—mica 1,000 Mmfd. 500 volt	.45
16A, B, C	502122	Condenser—variable gang	6.60
18	502182	Condenser—ceramic 39 Mmfd. 500 volt	.40
22	502157	Condenser—.05 Mfd. 400 volt	.24
23	502155	Condenser—.1 Mfd. 200 volt	.30
25	502295	Condenser—ceramic 10 Mmfd. 500 volt	.30
27	502159	Condenser—mica 50 Mmfd. 500 volt	.24
29	502411	Condenser—2 Mmfd. 500 volt	.10
31A, B	502108	Condenser—trimmer assem. Section A 2 to 15 Mmfd. Section B 2 to 15 Mmfd.	.75
32	502182	Condenser—ceramic 39 Mmfd. 500 volt	.40
33	502167	Condenser—ceramic 68 Mmfd. 500 volt	.40
34	502163	Condenser—mica 430 Mmfd. 500 volt	.60
37	502151	Condenser—.01 Mfd. 400 volt	.20
42	502157	Condenser—.05 Mfd. 400 volt	.24
46	502271	Condenser—mica 260 Mmfd. 500 volt	.30
48	502150	Condenser—.004 Mfd. 600 volt	.20
49	502157	Condenser—.05 Mfd. 400 volt	.24
53	502160	Condenser—mica 110 Mmfd. 500 volt	.24
54	502152	Condenser—.02 Mfd. 400 volt	.24
56	502410	Condenser—.1 Mfd. 400 volt	.30
59	502405	Condenser—.25 Mfd. 400 volt	.36
63	502150	Condenser—.004 Mfd. 600 volt	.20
64	502154	Condenser—.05 Mfd. 600 volt	.24
71A, B, C	502207	Condenser—Electrolytic A—20 Mfd. 25 volt B—20 Mfd. 400 volt C—10 Mfd. 400 volt	2.20
73	502153	Condenser—.05 Mfd. 200 volt	.24
		RESISTORS	
20	502468	Resistor—carbon 4.7 Meg. 1/4 watt	.12
21	502127	Resistor—carbon 560 Ohms 1/4 watt	.12
24	502132	Resistor—carbon 100,000 Ohms 1/4 watt	.12
28	502130	Resistor—carbon 22,000 Ohms 1/4 watt	.12
38	502466	Resistor—carbon 33,000 Ohms 1 watt	.16
40	502125	Resistor—carbon 220 Ohms 1/4 watt	$ .12
41	502135	Resistor—carbon 2.2 Meg. 1/4 watt	.12
43	502467	Resistor—carbon 68,000 Ohms 1/2 watt	.12
45	502131	Resistor—carbon 47,000 Ohms 1/4 watt	.12
47A, B	502117	Volume control 500,000 ohms (with switch	1.25
50	502468	Resistor—carbon 4.7 Meg. 1/4 watt	.12
51	502128	Resistor—carbon 2200 Ohms 1/4 watt	.12
55	502133	Resistor—carbon 220,000 Ohms 1/4 watt	.12
57	502132	Resistor—carbon 100,000 Ohms 1/4 watt	.12
58	502134	Resistor—carbon 470,000 Ohms 1/4 watt	.12
60	502135	Resistor—carbon 2.2 Meg. 1/4 watt	.12
65	502291	Resistor—carbon 4700 Ohms 1/4 watt	.12
66	502127	Resistor—carbon 560 Ohms 1/4 watt	.12
72	502137	Resistor—wire wound 330 Ohms 2 watt	.25
74	502134	Resistor—carbon 470,000 Ohms 1/4 watt	.12
		COILS & TRANSFORMERS	
1	502186	Loop antenna	3.15
2	502110	Coil—S.W. antenna	1.10
	502025	Complete coil—trimmer assem. for P-B tuner	8.80
8	502907	Coil less slug (540-1000 Kc.)	1.50
9, 10	502908	Coil less slug (650-1300 Kc.)	1.50
11, 12	502909	Coil less slug (975-1600 Kc.)	1.50
	502911	Slug for coils 502907, 502908, 502909	.25
	501151	Clip—for mtg. push button coils	.08
15	502112	Coil—BC. antenna	1.70
26	502113	Coil—BC. R.F.	1.85
30	502114	Coil—BC. oscillator	1.45
36	502111	Coil—S.W. oscillator	1.10
39	502102	Transformer—1st I.F.	2.30
44	502103	Transformer—2nd I.F.	2.30
52	502174	Transformer—power	7.50
68	504206	Transformer—output for M-504205 speaker	2.00
	504208	Transformer—output for R-504205 speaker	2.00
	504124	Transformer—output for D-504205 speaker	2.00
		OTHER ELECTRICAL PARTS	
6	502120	Switch—push-button	4.00
17A, B, C	502119	Switch—band	2.80
61, 62	110629	Lamp—dial (Mazda 44) 6.3 V. 250 Ma.	.15
67	502118	Switch—tone control	.70
69	504205	Speaker Electro-dynamic (6 inch)	9.00
70	504209	Cone & Voice coil for R-504205 speaker	3.00
	504207	Cone & Voice coil for M-504205 speaker	3.00
	504125	Cone & Voice coil for D-504205 speaker	3.00

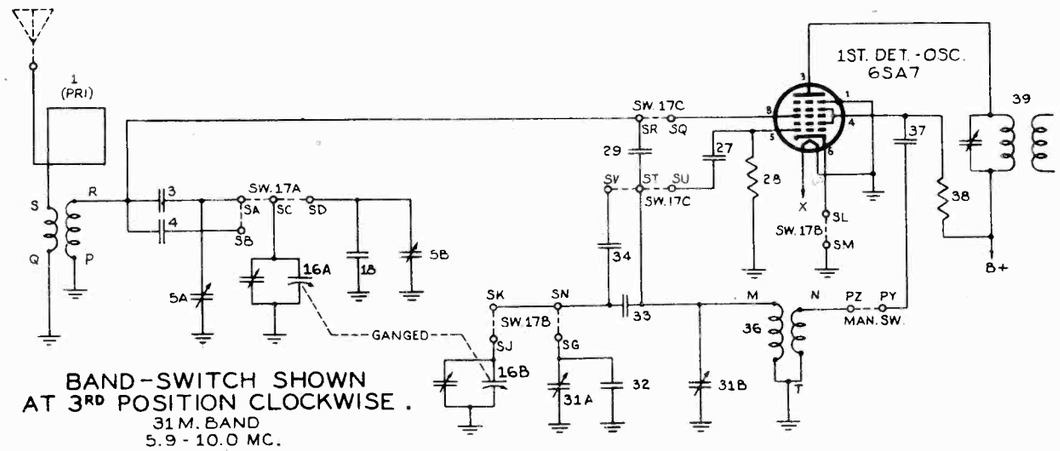
DESCRIPTION	LIST PRICE
MISCELLANEOUS PARTS	
502041 Background for dial	$0.15
116467 Base for mtg. electrolytic condenser	.04
502046 Cabinet back	.70
117315 Call lettter tabs for push-button	.55
500420 Clamp—for dial glass	.15
112745 Clip—coil mtg.	.01
114955 Clip—retainer on end of dial cord	.01
501151 Clip—for mtg. push button coils	.08
116563 Connector—for antenna leads	.01
117057 Cord—dial drive (102 in. required), per ft.	.05
502216 Dial scale—glass	2.50
113402 Drum—for dial drive	.70
502699 Escutcheon for push-buttons	1.70
501449 Knob—volume or tuning	.15
501458 Knob—tone or band switch	.16
160620 Pointer	.22
501495 Push-button	.15
81145 Retaining ring for tuning shaft	.01
119087 Ring for dial cord	.01
116584 Rubber spacer for mtg. dial scale	.02
502702 Rubber spacer on frame behind escutcheon	.04
83552 Screw—No. 10x7/8"; for mtg. chassis	.03
85827 Screw—No. 8-32 for dial drum	.02
501777 Screw—No. 4x1/2; for mtg. loop & back	.02
502116 Shaft—tuning control	.10
114876 Socket—octal base (rectifier)	.15
119791 Socket—octal base	.12
500459 Socket—dial lamp (with mtg. bracket)	.15
502980 Spacer for leads to push-button switch	.10
113177 Spring dial cord tension	.09
119911 Terminal strip phono	.16
111456 Washer spring washer for tuning shaft	.005
500487 Washer felt; for knobs	.01

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

STEWART WARNER CORP.







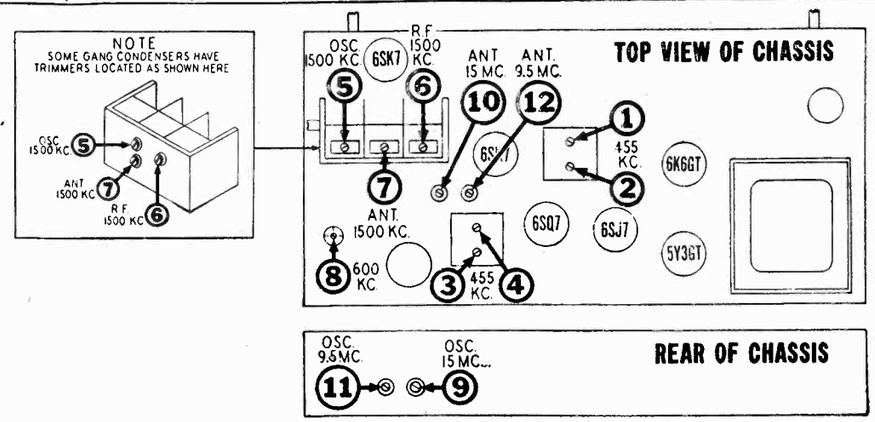
STEWART WARNER CORP.

ALIGNMENT PROCEDURE

1. The chassis and loop antenna should remain in their normal position in the cabinet throughout the following procedure.
2. Check arrangement of leads to push-button switch as shown in illustration on following page.
3. With the gang condenser fully meshed, dial pointer should be in the position indicated by the last division below 55 on the dial. If it is set incorrectly, release pointer clip on dial cord and reposition pointer.
4. Connect output meter across speaker voice coil.
5. Connect the ground lead of the signal generator to the receiver chassis.
6. Set volume control at maximum volume position and use a weak signal from the signal generator.
7. Push in the manual button and leave it in that position throughout the alignment procedure.

IMPORTANT:—Align this receiver in exactly the order shown below. Broadcast band must be aligned before short wave bands.

DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECT HIGH SIDE OF SIGNAL GENERATOR TO	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POSITION	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
.1 MFD. Condenser	Trimmer on rear section of gang	455 KC	Broadcast (counter-clockwise)	Any point where it does not affect the signal.	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
					3-4	1st I.F.	
.003 MFD. Condenser	External Antenna Clip on Loop Frame	1500 KC	Broadcast (counter-clockwise)	1500 KC	5	Broadcast Oscillator (Shunt)	Adjust for maximum output.
.003 MFD. Condenser	External Antenna Clip on Loop Frame	1500 KC	Broadcast (counter-clockwise)	Tune to 1500 KC Generator Signal	6	Broadcast R.F.	Adjust for maximum output.
.003 MFD. Condenser	External Antenna Clip on Loop Frame	1500 KC	Broadcast (counter-clockwise)	Tune to 1500 KC Generator Signal	7	Broadcast Antenna	Adjust for maximum output.
.003 MFD. Condenser	External Antenna Clip on Loop Frame	600 KC	Broadcast (counter-clockwise)	Tune to 600 KC Generator Signal	8	Adjustable core of Broadcast Oscillator Coil.	Adjust for maximum output. Try to increase output by rotating core in and out and retuning receiver dial until maximum output is obtained.
.003 MFD. Condenser	External Antenna Clip on Loop Frame	Repeat adjustments of trimmers 5, 6 and 7 at 1500 Kc. Then re-check adjustment of trimmer 8 at 600 Kc.					
400 OHM Carbon Resistor	External Antenna Clip on Loop Frame	15 MC	Short wave	15 MC	9	S.W. Oscillator	Adjust for maximum output. Check to see if proper peak was obtained by tuning in image at approx. 14.1 MC. If image does not appear, realign at 15 MC, with trimmer screw farther out. Recheck image.
400 OHM Carbon Resistor	External Antenna Clip on Loop Frame	15 MC	Short wave	Tune to 15 MC Generator Signal	10	S.W. Antenna	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.
400 OHM Carbon Resistor	External Antenna Clip on Loop Frame	9.5 MC	31 M (Clockwise)	9.5 MC	11	31 M Oscillator	Adjust for maximum output. Check to see if proper peak was obtained by tuning in image at approx. 8.6 MC. If image does not appear, realign at 9.5 MC. with trimmer screw farther out. Recheck image.
400 OHM Carbon Resistor	External Antenna Clip on Loop Frame	9.5 MC	31 M (Clockwise)	Tune to 9.5 MC Generator Signal	12	31 M Antenna	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.



MODEL 9003-B

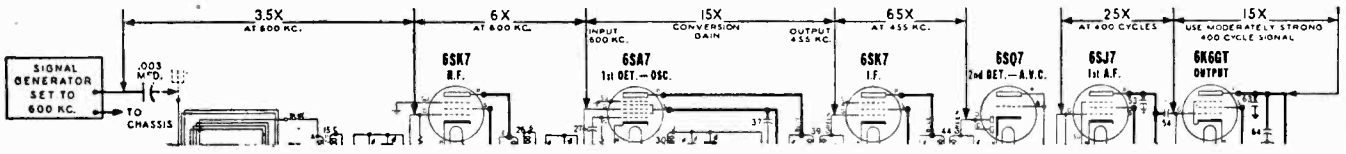
STEWART WARNER CORP.

APPROXIMATE STAGE GAIN DATA

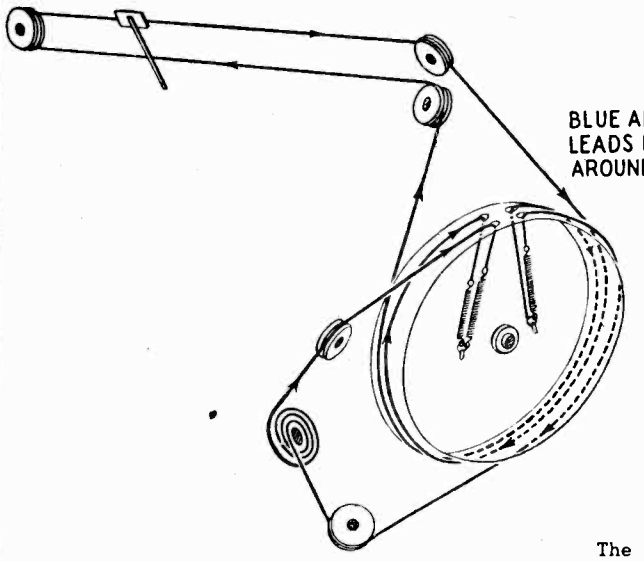
Be sure R.F. and I.F. stages are accurately aligned before measuring gain. R.F. gains can be measured with a "channel" type instrument containing a tuned and calibrated R.F. amplifier. A vacuum tube voltmeter may be used for audio gain measurements. Observe following precautions:

1. For all gain measurements connect signal generator as shown. Use 600 KC. signal with 400 cycle modulation (use nearby frequency if local station interferes.)
2. For R.F. and I.F. measurements connect negative terminal of a 3 volt battery (two 1½ volt cells in series) to A.V.C. lead and positive terminal to chassis. This provides a definite operating point. IMPORTANT: Disconnect battery when measuring audio stage gains.
3. Be sure radio is carefully tuned to generator signal (use weak signal for sharp tuning.)
4. When using a "channel" type instrument carefully tune it for maximum output at desired frequency before making measurements.

The R.F. and I.F. stage gains shown below are less than under normal operating conditions due to the use of 3 volts fixed bias in order to establish a definite operating point. Therefore, these values are not intended to indicate the full capability of a stage.



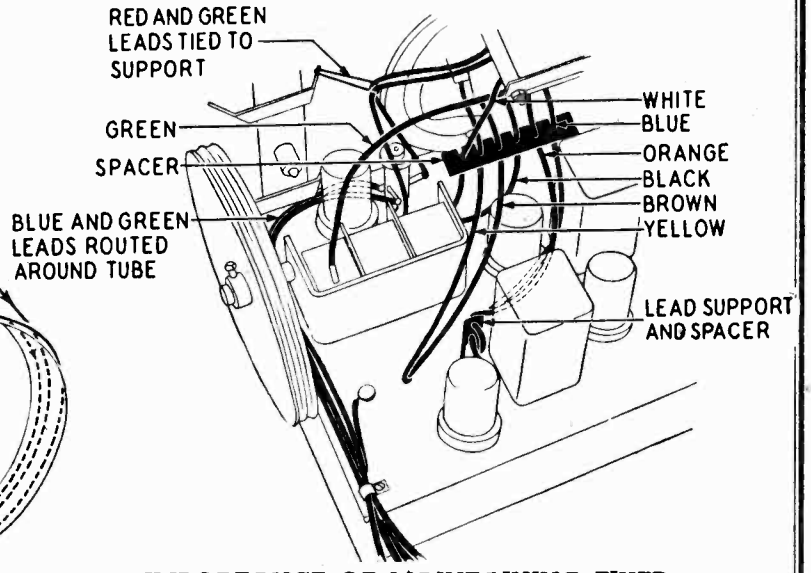
Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain. Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create considerable variation in gain measurements.



DIAL AND POINTER DRIVE CORD ARRANGEMENT

To string dial cord, set gang condenser to fully meshed position and use following parts:

113177 Tension Spring
114955 Clip on end of cord
119087 Ring for dial cord
117057 Cord (102 inches)
Pointer drive 72 inches
Gang drive 30 inches



IMPORTANCE OF MAINTAINING FIXED POSITIONS FOR LEADS AT TOP OF CHASSIS

The wires shown in the above illustration are associated with tuned circuits which carry radio frequency currents. Therefore, care must be exercised to insure that they are properly routed and spaced. Anchoring and fixing spacing of wires minimizes freedom of movement and is utilized to maintain a stable arrangement.

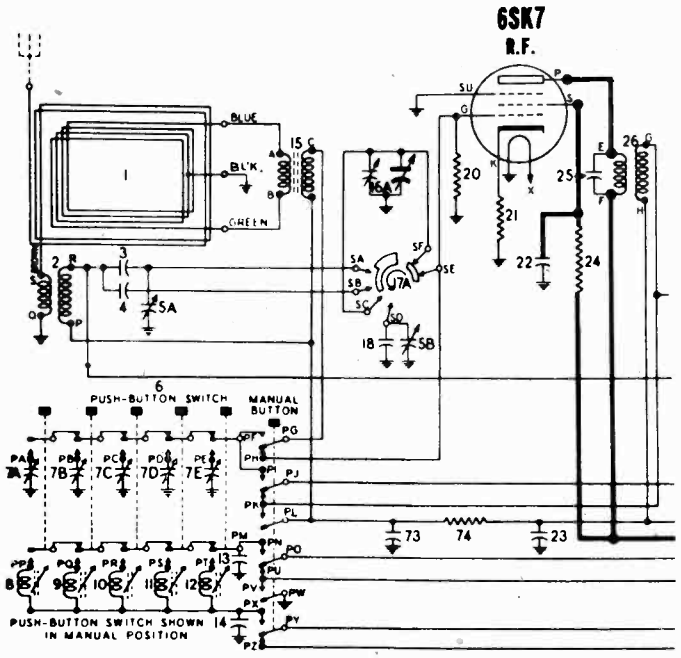
Since the relative positions of these wires may affect tuned circuits it is important to avoid any change in arrangement after the receiver has been aligned. If the position of the wires has been disturbed, it is advisable to re-check alignment (see previous page for alignment procedure).

AUDIO OSCILLATION

The audio system of this receiver utilizes a two stage type of inverse feed-back arrangement and should it ever be necessary to replace the speaker or output transformer it is important to maintain a definite phase relationship in the feedback circuit. If the connections to the output transformer are reversed or if the feed-back connection is made to the wrong side of the output transformer secondary, the system will become regenerative instead of degenerative. Under those conditions audio oscillation may result. If that occurs, oscillation may be prevented by reversing the connections to the primary of the output transformer.

MODEL 9003-B
2nd Revision

STEWART WARNER CORP.



When the model 9003-B is operated on push-button tuning it is possible for a "wide tolerance" 6SA7 tube to cause considerable reduction in sensitivity which may be particularly noticeable when comparison is made to the sensitivity obtained for "manual" tuning. This loss of sensitivity has been traced to a wide variation in one of the characteristics of the 6SA7 tube which permits the flow of a larger than normal grid current. Loss of sensitivity results from the loading effect of grid current flowing through the associated tuned circuit.

Correction of this condition may be accomplished by utilizing one or both of the following remedies.

REMEDY #1: Try replacing the 6SA7 tube; use several different tubes, preferably of different brands, and check the performance of the set with each tube. In event a replacement tube is not available or if changing the tube does not make any improvement, apply remedy #2.

REMEDY #2: The application of this remedy requires that the chassis be removed from the cabinet. After this has been done, you can then make the following changes. These changes make it possible to use the same 6SA7 tube that was supplied with the set and still obtain a considerable improvement in sensitivity when using push-button tuning.

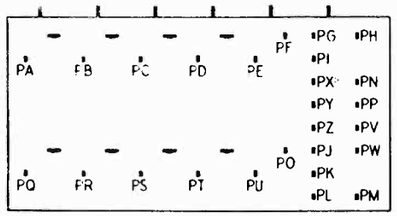
CIRCUIT CHANGES

1. Remove ground connection at terminal "D" of Broadcast Antenna Coil and terminal "P" of Short Wave Antenna Coil and reconnect both coil terminals to the A.V.C. system as indicated in the diagram on next page.
2. Add resistor #74 (470,000 ohms 1/2 watt) and condenser #73 (.05 mfd. 200 volt) by connecting them into the circuit as shown.
3. Check alignment of receiver by adjusting antenna circuit trimmers for maximum output. Broadcast band trimmer (16A) must be adjusted before attempting to peak Short Wave band trimmer (5A).

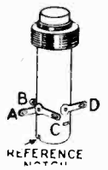
STEWART WARNER CORP.

S.W. OSCILLATOR COIL 502111

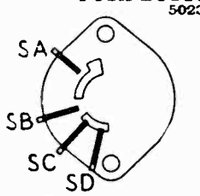
S.W. ANTENNA COIL 502110



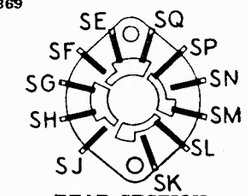
PUSH-BUTTON SWITCH 502369



BC. ANTENNA COUPLING COIL 502112

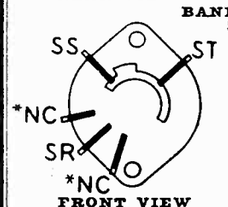


FRONT SECTION REAR VIEW

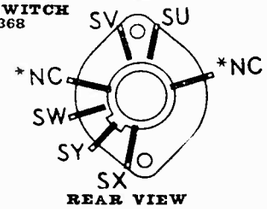


REAR SECTION REAR VIEW

BAND SWITCH 502368



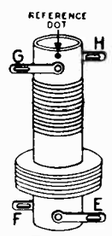
FRONT VIEW



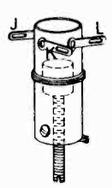
REAR VIEW

RADIO-PHONO AND TONE SWITCH 502370

*NC—NO CONNECTION



R.F. COIL 502113



BC. OSCILLATOR COIL 502114

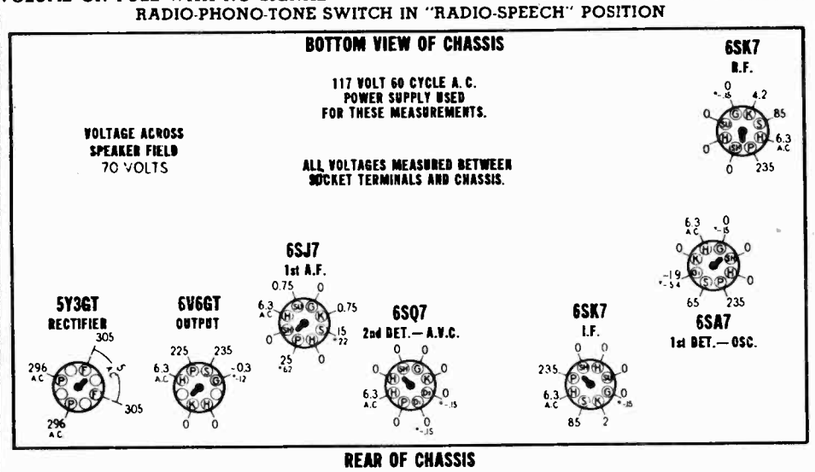
I.F. 455 KC.

Lettered terminals in illustrations correspond to similarly lettered terminals on the circuit diagram.

SOCKET VOLTAGES

Measured with voltmeter having sensitivity of 1000 ohms per volt except where indicated by (*)

RANGE SWITCH IN BROADCAST POSITION — DIAL TUNED TO 540 KC.
VOLUME ON FULL WITH NO SIGNAL — MANUAL BUTTON PUSHED IN
RADIO-PHONO-TONE SWITCH IN "RADIO-SPEECH" POSITION



REAR OF CHASSIS

* Measured with vacuum tube voltmeter.

NOTE: The 6V6GT grid bias of 12 volts can be measured across resistor No. 72.

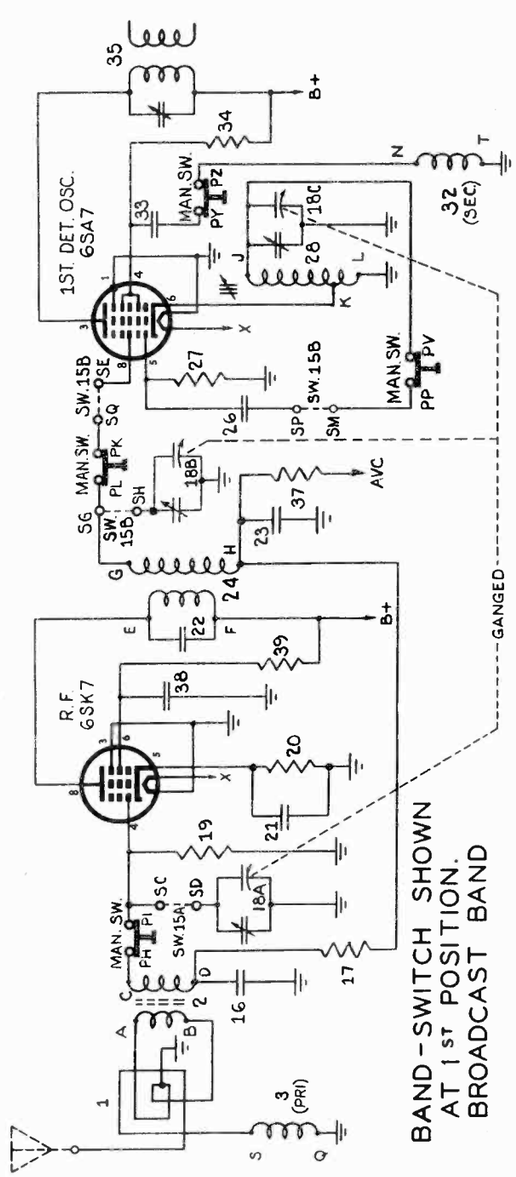
DIAGRAM NO.	PART NO.	DESCRIPTION	LIST PRICE
		CONDENSERS	
4	502202	Condenser—ceramic 150 Mmfd. 500 volt	$
5	502172	Condenser—trimmer 25 to 100 Mmfd.	
7-A to E	502910	Condenser—trimmer assembly for P-B tuner	
13	502161	Condenser—mica 270 Mmfd. 500 volt	
14	502165	Condenser—mica 1,000 Mmfd. 500 volt	
16	502153	Condenser—.05 Mfd. 200 volt	
18-A, B, C	502122	Condenser—variable gang	
21	502155	Condenser—.1 Mfd. 200 volt	
22	502295	Condenser—ceramic 10 Mmfd. 500 volt	
23	502153	Condenser—.05 Mfd. 200 volt	
25	502411	Condenser—2 Mmfd. 500 volt	
26	502159	Condenser—mica 50 Mmfd. 500 volt	
29	502201	Condenser—ceramic 130 Mmfd. 500 volt	
30	502182	Condenser—ceramic 39 Mmfd. 500 volt	
31	502171	Condenser—trimmer 5 to 35 Mmfd.	
33	502152	Condenser—.02 Mfd. 400 volt	
38	502154	Condenser—.05 Mfd. 600 volt	
45	502160	Condenser—mica 110 Mmfd. 500 volt	
49	502151	Condenser—.01 Mfd. 400 volt	
51	502150	Condenser—.004 Mfd. 600 volt	
54	502154	Condenser—.05 Mfd. 600 volt	
56	502405	Condenser—.25 Mfd. 400 volt	
58	502151	Condenser—.01 Mfd. 400 volt	
64	502271	Condenser—mica 260 Mmfd. 500 volt	
65	502157	Condenser—.05 Mfd. 400 volt	
68	502152	Condenser—.02 Mfd. 400 volt	
70-A, B, C	502207	Condenser—electrolytic A—20 Mfd. 400 volt B—10 Mfd. 400 volt C—20 Mfd. 25 volt	
71	502479	Condenser—.006 Mfd. 600 volt	
		RESISTORS	
17	502134	Resistor—carbon 470,000 Ohms 1/4 watt	
19	502468	Resistor—carbon 4.7 Meg. 1/4 watt	
20	502478	Resistor—carbon 1,000 Ohms 1/4 watt	
27	502130	Resistor—carbon 22,000 Ohms 1/4 watt	
34	502466	Resistor—carbon 33,000 Ohms 1 watt	
36	502457	Resistor—carbon 330 Ohms 1/4 watt	
37	502135	Resistor—carbon 2.2 Meg. 1/4 watt	
39	502292	Resistor—carbon 68,000 Ohms 1 watt	
44	502131	Resistor—carbon 47,000 Ohms 1/4 watt	
47	502132	Resistor—carbon 100,000 Ohms 1/4 watt	
48	502131	Resistor—carbon 47,000 Ohms 1/4 watt	
50-A, B	502148	Volume control—with switch; 500,000 Ohms	
52	502468	Resistor—carbon 4.7 Meg. 1/4 watt	
53	502406	Resistor—carbon 1,500 Ohms 1/4 watt	
55	502135	Resistor—carbon 2.2 Meg. 1/4 watt	
59	502468	Resistor—carbon 4.7 Meg. 1/4 watt	
60	502408	Resistor—carbon 68,000 Ohms 1/4 watt	
61	502291	Resistor—carbon 4,700 Ohms 1/4 watt	
66, 67	502133	Resistor—carbon 220,000 Ohms 1/4 watt	
69	502134	Resistor—carbon 470,000 Ohms 1/4 watt	
72	502293	Resistor—wire wound 200 Ohms 2 watt	
		COILS AND TRANSFORMERS	
1	502282	Loop antenna (Models 9004-F, G)	
	502605	Loop antenna (Model 9004-B)	
2	502112	Coil—BC. antenna	
3	502110	Coil—S.W. antenna	
	502025	Complete coil—trimmer assembly for P-B tuner	
8	502907	Coil less slug (540-1000 Kc.)	
9, 10	502908	Coil less slug (650-1300 Kc.)	
11, 12	502909	Coil less slug (975-1600 Kc.)	
	502911	Slug for coils 502907, 502908, 502909	
	501151	Clip—for mtg. push button coils	
24	502113	Coil—BC. R.F.	
28	502114	Coil—BC. oscillator	
32	502111	Coil—S.W. oscillator	
35	502102	Transformer—1st I.F.	
43	502103	Transformer—2nd I.F.	
57	502174	Transformer—power	
75	502303	Transformer—output for R-502302 speaker	
	502994	Transformer—output for M-502302 speaker	
		OTHER ELECTRICAL PARTS	
6	502369	Switch—push-button	
15-A, B	502368	Switch—band	
40	502461	Crystal cartridge (Astatic L-71)	
41	502846	Motor—"G.I." Chgr.; (9004-F, G); 115 V. 50 cyc.	
	502847	Motor—"G.I." Chgr.; (9004-F, G); 115 V. 60 cyc.	
	502990	Motor—"A" Chgr.; (9004-B); 115 V. 60 cyc.	
	504201	Motor—"W" Chgr.; (9004-F, G); 115 V. 60 cyc.	
42	502977	Switch—on-off; "A" Rec. Chgr. (9004-B)	
	502978	Switch—on-off; "G.I." Rec. Chgr. (9004-F, G)	
	504203	Switch—on-off; "W" Rec. Chgr. (9004-F, G)	
46-A, B	502370	Switch—tone and radio-phono	
62, 63	110629	Lamp—dial (Mazda No. 44) 6.3 V. 0.25 Amps.	
73	502302	Speaker—electro-dynamic (10 inch)	
74	502304	Cone and voice coil for R-502302 speaker	$
	502995	Cone and voice coil for M-502302 speaker	
		MISCELLANEOUS PARTS	
	119993	Background for dial	
	116467	Base for mtg. electrolytic condenser	
	119989	Clamp for dial glass	
	112745	Clip—coil mtg.	
	114955	Clip—retainer on end of dial cord	
	501151	Clip—for mtg. push button coils	
	117057	Cord—dial drive (90 in. required)	
	502227	Dial scale—glass	
	115402	Drum—for dial drive	
	502428	Escutcheon for push-button (Models 9004-B, F)	
	502429	Escutcheon for push-button (Model 9004-G)	
	501449	Knob—volume or tuning (Models 9004-B, F)	
	501458	Knob—tone or band switch (Models 9004-B, F)	
	501498	Knob—volume or tuning (Model 9004-G)	
	501499	Knob—tone or band switch (Model 9004-G)	
	502460	Needle—phonograph (Fidelitone Master No. 150)	
	500966	Plug—phonograph pick-up cable	
	501031	Plug—phonograph motor cable	
	502281	Plug—loop antenna cable	
	504097	Plug—speaker	
	502496	Pointer	
	501495	Push-Button (Models 9004-B, F)	
	502452	Push-Button (Model 9004-G)	
	81145	Retaining ring for tuning shaft	
	119087	Ring for dial cord	
	113463	Rubber pad—chassis mtg.	
	116584	Rubber spacer for mtg. dial scale	
	112874	Screw—No. 10 x 1 1/8"; for mtg. chassis	
	114914	Screw—No. 2 x 3/8"; for mtg. escutcheon	
	502399	Shaft—tuning control	
	114876	Socket—octal base (rectifier)	
	119791	Socket—octal base	
	118617	Socket—dial lamp	
	160039	Socket—phonograph plug	
	500051	Socket—loop antenna plug	
	501182	Socket—phonograph motor cable	
	502210	Socket—speaker	
	113177	Spring—dial cord tension	
	111456	Washer—spring washer for tuning shaft	
	500487	Washer—felt for knobs	

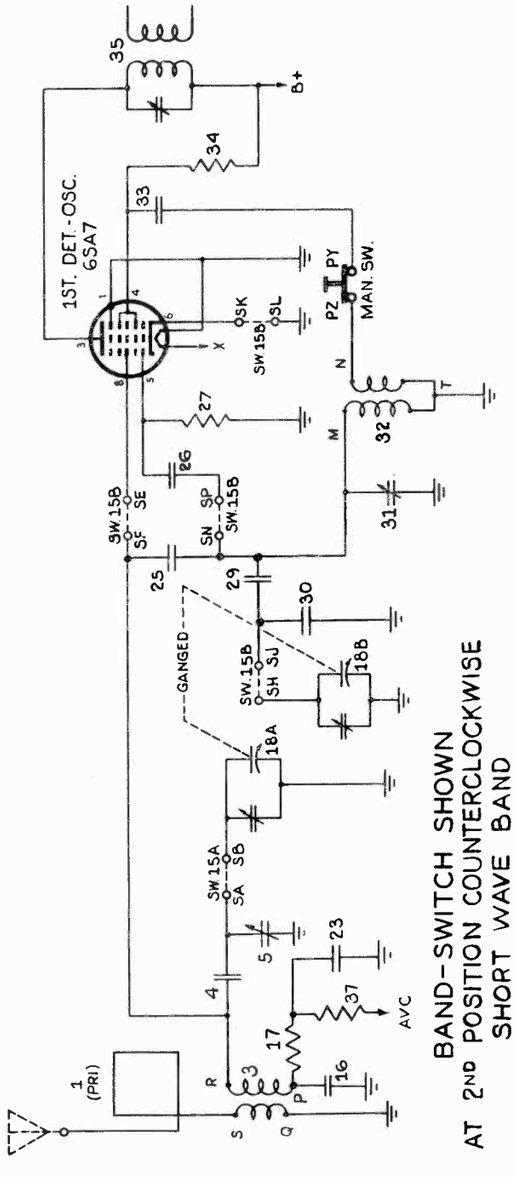
PRICES SUBJECT TO CHANGE WITHOUT NOTICE

Record Changer: Webster Model 50

STEWART WARNER CORP.

MODELS 72CR16, 72CR26
MODELS 9004-B, 9004-F, 9004-G





MODELS 9004-B, 9004-F, 9004-G

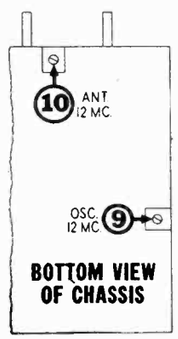
STEWART WARNER CORP.

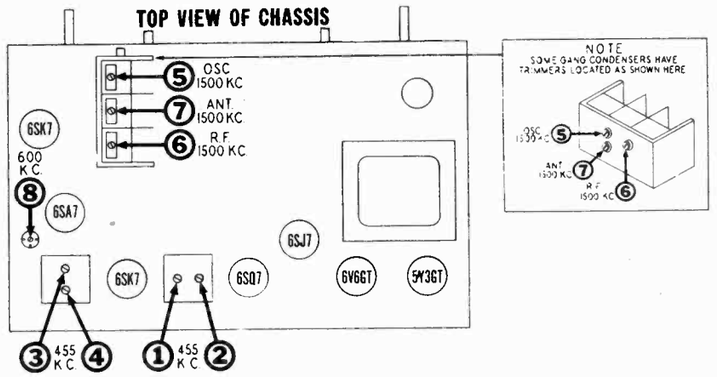
ALIGNMENT PROCEDURE

1. Remove chassis and loop antenna from cabinet (do not remove loop of wire stapled to cabinet). Wind one turn of insulated wire around frame of antenna so as to provide a means of coupling it to the signal generator. Stand chassis on one end and space it approximately same distance from loop as when installed in cabinet. Connect plug on loop antenna cable to socket at rear of chassis. Brown lead in antenna cable (which was connected to loop of wire stapled to cabinet) should now be connected to one end of new coupling turn on frame of loop.
2. Connect the ground lead of the signal generator to the receiver chassis.
3. With the gang condenser fully meshed, dial pointer should be in the position indicated by the last division below 55 on the dial. If it is set incorrectly, release pointer clip on dial cord and reposition pointer.
4. Connect output meter across speaker voice coil or from plate of 6V6GT to chassis through a .1 Mfd. condenser.
5. Set volume control at maximum volume position and use a weak signal from the signal generator.
6. Push in the manual button and leave it in that position throughout the alignment procedure.

IMPORTANT:—Align this receiver in exactly the order shown below. Broadcast band must be aligned before short wave band.

DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECT HIGH SIDE OF SIGNAL GENERATOR TO	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POSITION	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
.1 MFD. Condenser	Trimmer on rear section of gang	455 KC	Broadcast (counter-clockwise)	Any Point where it does not affect the signal.	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
					3-4	1st I.F.	
500 MMFD. Mica Condenser	Coupling turn on Loop Frame	1500 KC	Broadcast (counter-clockwise)	1500 KC	5	Broadcast Oscillator (Shunt)	Adjust for maximum output.
500 MMFD. Mica Condenser	Coupling turn on Loop Frame	1500 KC	Broadcast (counter-clockwise)	Tune to 1500 Kc. generator signal.	6	Broadcast R.F.	Adjust for maximum output.
500 MMFD. Mica Condenser	Coupling turn on Loop Frame	1500 KC	Broadcast (counter-clockwise)	Tune to 1500 Kc. generator signal.	7	Broadcast Antenna	Adjust for maximum output.
500 MMFD. Mica Condenser	Coupling turn on Loop Frame	600 KC	Broadcast (counter-clockwise)	Tune to 600 Kc. generator signal.	8	Adjustable core of Broadcast Oscillator Coil	Adjust for maximum output. Try to increase output by rotating core in and out and retuning receiver dial until maximum output is obtained.
500 MFD. Mica Condenser	Coupling turn on Loop Frame	Repeat adjustment of trimmers 5, 6 and 7 at 1500 Kc. Then re-check adjustment of trimmer 8 at 600 Kc.					
400 OHM Carbon Resistor	Coupling turn on Loop Frame	12 MC	Short wave (Clockwise)	12 MC	9	S.W. Oscillator	Adjust for maximum output. Check to see if proper peak was obtained by tuning in image at approx. 11.1 MC. If image does not appear, realign at 12 MC, with trimmer screw farther out. Recheck image.
400 OHM Carbon Resistor	Coupling turn on Loop Frame	12 MC	Short wave (Clockwise)	Tune to 12 MC. generator signal.	10	S.W. Antenna	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.





STEWART WARNER CORP.

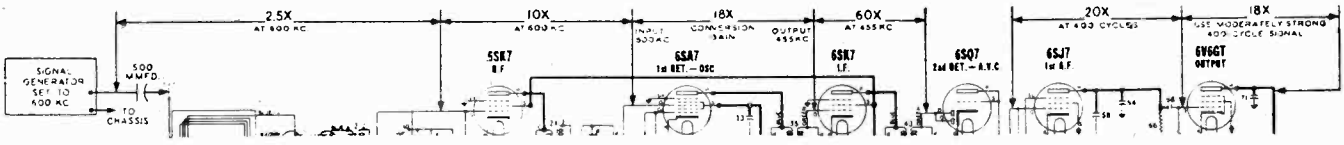
MODELS 9004-B, 9004-F, 9004-G

APPROXIMATE STAGE GAIN DATA

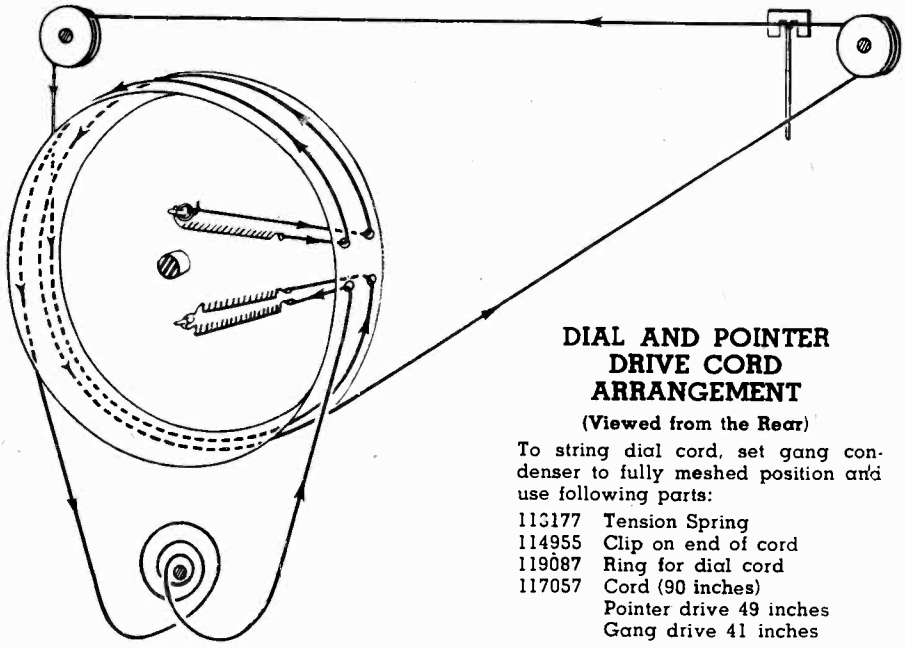
Be sure R.F. and I.F. stages are accurately aligned before measuring gain. R.F. gains can be measured with a "channel" type instrument containing a tuned and calibrated R.F. amplifier. A vacuum tube voltmeter may be used for audio gain measurements. Observe following precautions:

1. For all gain measurements connect signal generator as shown. Use 600 KC. signal with 400 cycle modulation (use nearby frequency if local station interferes.)
2. For R.F. and I.F. measurements connect negative terminal of a 3 volt battery (two 1½ volt cells in series) to A.V.C. lead and positive terminal to chassis. This provides a definite operating point. IMPORTANT: Disconnect battery when measuring audio stage gains.
3. Be sure radio is carefully tuned to generator signal (use weak signal for sharp tuning.)
4. When using a "channel" type instrument carefully tune it for maximum output at desired frequency before making measurements.

The R.F. and I.F. stage gains shown below are less than under normal operating conditions due to the use of 3 volts fixed bias in order to establish a definite operating point. Therefore, these values are not intended to indicate the full capability of a stage.



Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain. Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create considerable variation in gain measurements.



DIAL AND POINTER DRIVE CORD ARRANGEMENT

(Viewed from the Rear)

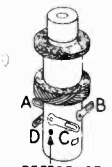
To string dial cord, set gang condenser to fully meshed position and use following parts:

113177	Tension Spring
114955	Clip on end of cord
119087	Ring for dial cord
117057	Cord (90 inches)
	Pointer drive 49 inches
	Gang drive 41 inches

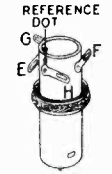
AUDIO OSCILLATION

The audio system of this receiver utilizes a two stage type of inverse feed-back arrangement and should it ever be necessary to replace the speaker or output transformer it is important to maintain a definite phase relationship in the feed-back circuit. If the connections to the output transformer are reversed or if the feed-back connection is made to the wrong side of the output transformer secondary, the system will become regenerative instead of degenerative. Under those conditions audio oscillation may result. If that occurs, oscillation may be prevented by reversing the connections to the primary of the output transformer.

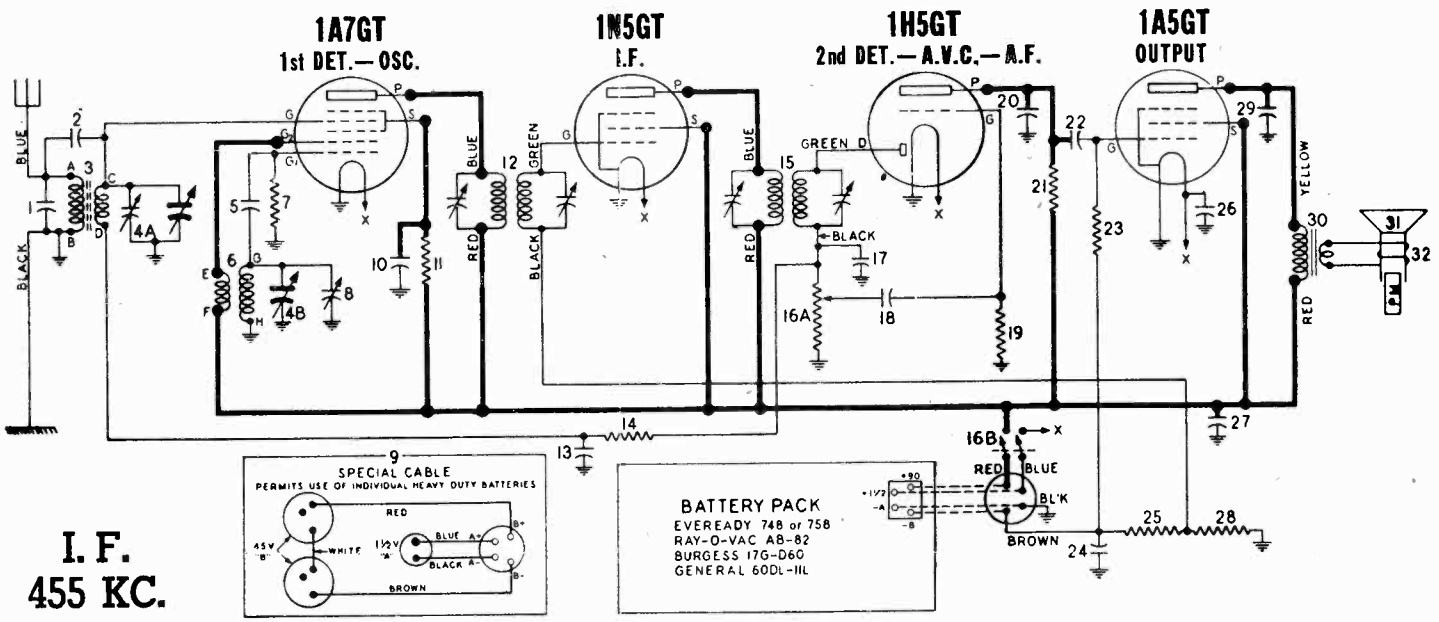
SERVICE DATA FOR STEWART-WARNER MODELS 9005-A, B.



ANTENNA COIL 502277



OSCILLATOR COIL 502278



I. F. 455 KC.

Lettered terminals in illustrations correspond to similarly lettered terminals on the circuit diagram.

SOCKET VOLTAGES

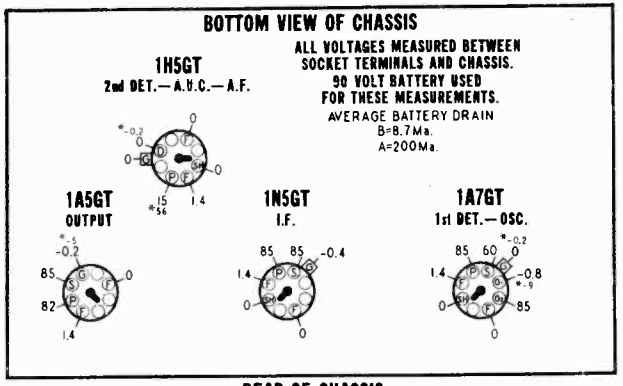
Measured with voltmeter having sensitivity of 1000 ohms per volt except where indicated by (*).

VOLUME ON FULL WITH NO SIGNAL DIAL TUNED TO 540 KC.

BOTTOM VIEW OF CHASSIS

ALL VOLTAGES MEASURED BETWEEN SOCKET TERMINALS AND CHASSIS. 90 VOLT BATTERY USED FOR THESE MEASUREMENTS.

AVERAGE BATTERY DRAIN
B=8.7Ma.
A=200Ma.



*—Measured with vacuum tube voltmeter

PARTS LIST

DIAGRAM NO.	PART NO.	DESCRIPTION	LIST PRICE
		CONDENSERS	
1	502159	Condenser—mica—50 Mmfd. 500 volt	$0.24
2	502411	Condenser—2 Mmfd. 500 volt	.10
4A, B	119528	Condenser—variable gang	4.45
5	502159	Condenser—mica—50 Mmfd. 500 volt	.24
8	119719	Condenser—trimmer 5 to 50 Mmfd.	.36
10	502157	Condenser—.05 Mfd. 400 volt	.24
13	502157	Condenser—.05 Mfd. 400 volt	.24
17	502160	Condenser—mica—110 Mmfd. 500 volt	.24
18	502151	Condenser—.01 Mfd. 400 volt	.20
20	502271	Condenser—mica—260 Mmfd. 500 volt	.30
22	502151	Condenser—.01 Mfd. 400 volt	.20
24	502286	Condenser—electrolytic 10 Mfd. 25 volt	.60
26	502263	Condenser—.5 Mfd. 150 volt	.36
27	502262	Condenser—.25 Mfd. 200 volt	.36
29	502260	Condenser—.002 Mfd. 600 volt	.16
		RESISTORS	
7	502133	Resistor—carbon—220,000 ohms ¼ watt	.12
11	502266	Resistor—carbon—15,000 ohms ¼ watt	.12
14	502269	Resistor—carbon—3.3 Meg. ¼ watt	.12
16A, B	161325	Volume control (with switch) 500,000 ohms	1.50
19	502269	Resistor—carbon—3.3 Meg. ¼ watt	.12
21	502267	Resistor—carbon—680,000 ohms ¼ watt	.12
23	502268	Resistor—carbon—1 Meg. ¼ watt	.12
25	502127	Resistor—carbon—560 ohms ¼ watt	.12
28	502264	Resistor—carbon—47 ohms ¼ watt	.12
		COILS & TRANSFORMERS	
3	502277	Coil—antenna coupling	1.80
6	502278	Coil—oscillator	1.05
12	502279	Transformer—1st I.F.	2.30
15	502280	Transformer—2nd I.F.	2.30
30	119749	Transformer—output for M-115095 Spkr.	3.40
		OTHER ELECTRICAL PARTS	
9	116566	Battery cable for use with indiv. batt.	$1.60
31	119748	Cone & voice coil for M-115095 spkr.	2.85
32	115095	Speaker—P.M. dynamic (6 inch)	10.00
		MISCELLANEOUS PARTS	
	502575	Background (foil) around indicator hole	.05
	112745	Clip—coil mtg.	.01
	114955	Clip—retainer on end of dial cord	.01
	117057	Cord—dial drive (36 in. required), per ft.	.05
	502226	Dial scale	.16
	501449	Knob	.15
	111372	Lever for OFF-ON indicator	.04
	119518	OFF-ON indicator plate (less foil tab)	.10
	502576	OFF-ON indicator tab (with red dot)	.42
	502281	Plug for battery cable	.36
	502602	Pointer	.08
	81145	Retaining ring for tuning shaft	.01
	119087	Ring—dial cord	.01
	83047	Screw—No. 8 x ⅞; chassis mtg.	.02
	85827	Screw—No. 8-32 for indicator lever	.02
	161327	Shaft—tuning control	.18
	113169	Spring—OFF-ON indicator	.05
	114968	Spring—dial cord tension	.03
	116690	Socket—octal base	.12
	111456	Washer—spring washer for tuning shaft	.005
	500487	Washer—felt; for knobs	.01
	502397	Window—dial, celluloid	.30
	502398	Window—OFF-ON indicator, celluloid	.07

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

STEWART WARNER CORP.

ALIGNMENT PROCEDURE

1. When gang condenser is fully meshed, dial pointer should be in the position indicated by the 54 mark on the dial. If it is set incorrectly, release the pointer clip on the dial cord and reposition pointer.

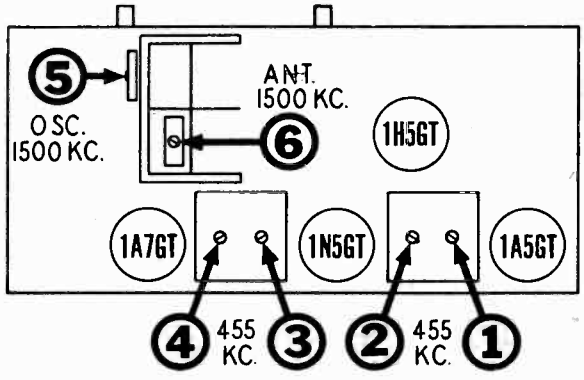
2. Connect an output meter across speaker voice coil or from the plate of the 1A5GT tube to chassis through a 0.1 Mfd. condenser.

3. Connect the ground lead of the signal generator to the receiver ground lead (black) or to the chassis.

4. Set volume control to maximum volume position and use a weak signal from the signal generator.

DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECT HIGH SIDE OF SIG. GENERATOR TO	SIGNAL GENERATOR FREQUENCY	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
.1 MFD. Condenser	Grid cap on 1A7GT tube	455 KC	Any point where it does not affect the signal	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
				3-4	1st I.F.	
200 MMFD. Mica Condenser	External antenna lead (blue)	1500 KC	1500 KC	5	Broadcast Oscillator	Adjust for maximum output.
200 MMFD. Mica Condenser	External antenna lead (blue)	1500 KC	Tune to 1500 KC generator signal	6	Broadcast Antenna	Adjust for maximum output.

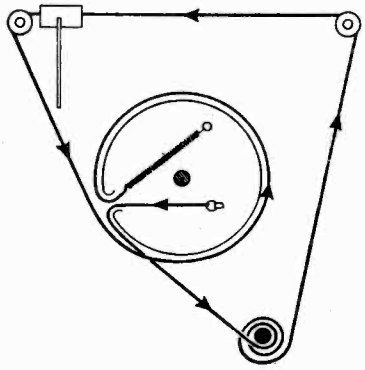
TOP VIEW OF CHASSIS



DIAL AND POINTER DRIVE CORD ARRANGEMENT

To string dial cord, set gang condenser to fully meshed position and use following parts:

114955 Clip on end of cord
117057 Cord (36 inches)
119087 Ring for dial cord
114968 Tension Spring



POWER LINE OPERATION

The following power pack may be used to operate this set on 110 volt 50-60 cycle A.C. power lines.

Porta-Power Model "H"

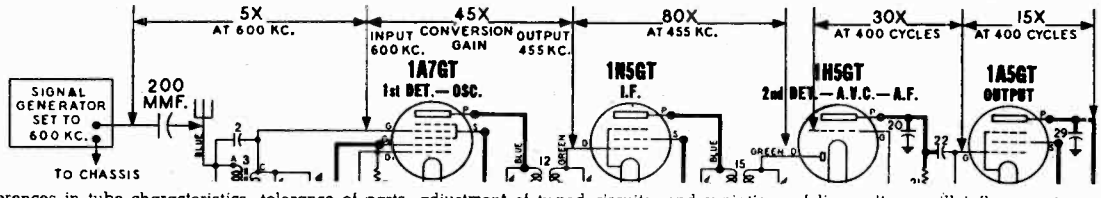
This unit is manufactured by the General Transformer Corp., 1250 W. Van Buren St., Chicago, Ill.

APPROXIMATE STAGE GAIN DATA

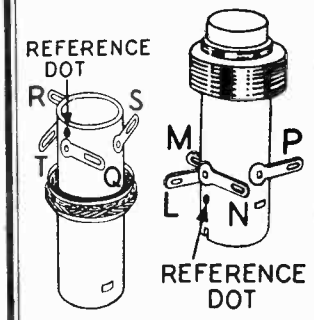
Be sure R.F. and I.F. stages are accurately aligned before measuring gain. R.F. gains can be measured with a "channel" type instrument containing a tuned and calibrated R.F. amplifier. A vacuum tube voltmeter may be used for audio gain measurements. Observe following precautions.

1. For all gain measurements connect signal generator as shown. Use 600 KC signal with 400 cycles modulation (use nearby frequency if local station interferes.)
2. For R.F. and I.F. measurements connect negative terminal of a 1½-volt battery to A.V.C. lead and positive terminal to chassis. This provides a definite operating point.
3. Be sure radio is carefully tuned to generator signal (use weak signal for sharp tuning.)
4. When using a "channel" type instrument carefully tune it for maximum output at desired frequency before making measurements.

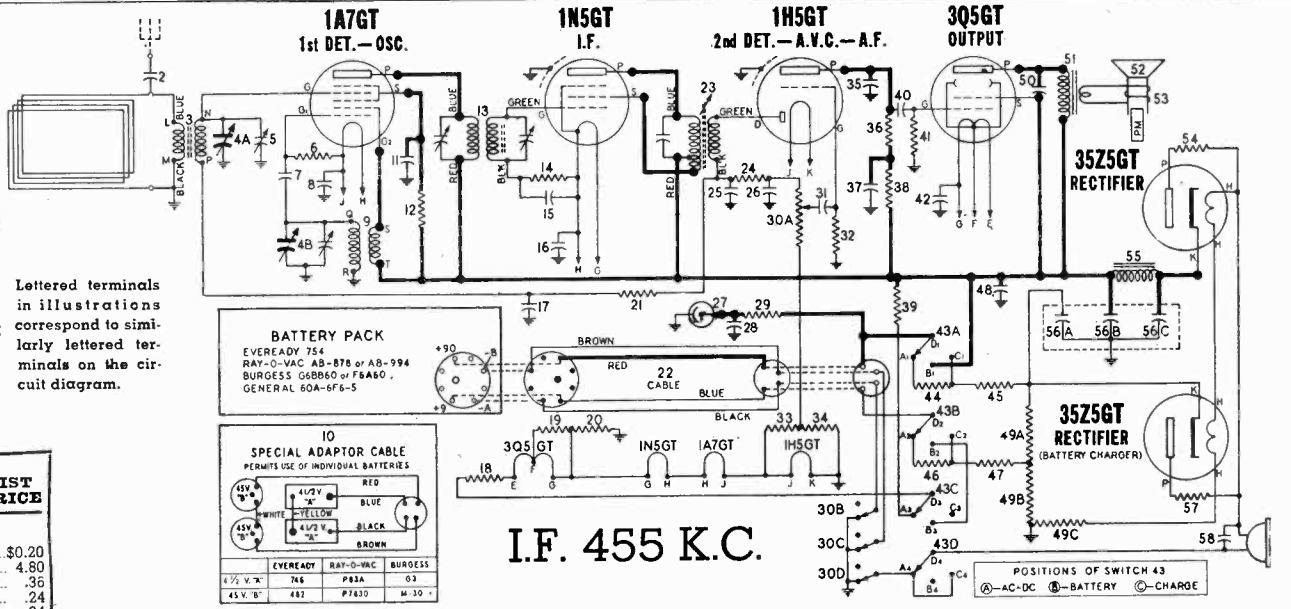
The R.F. and I.F. stage gains shown below are less than under normal operating conditions due to the use of 1½ volts fixed bias in order to establish a definite operating point. Therefore, these values are not intended to indicate the full capability of a stage.



Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain. Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create considerable variation in gain measurements.



Lettered terminals in illustrations correspond to similarly lettered terminals on the circuit diagram.



PARTS LIST

DIAGRAM NO.	PART NO.	DESCRIPTION	LIST PRICE
		CONDENSERS	
2	502150	Condenser—.004 Mfd. 600 volt	$0.20
4-A, B	502494	Condenser—variable gang	4.80
5	119132	Condenser—trimmer 2 to 15 Mmfd.	.36
7	502159	Condenser—mica 50 Mmfd. 500 volt	.24
8	502153	Condenser—.05 Mfd. 200 volt	.24
11	502547	Condenser—electrolytic 4 Mfd. 150 volt	.75
15	502153	Condenser—.05 Mfd. 200 volt	.24
16	502155	Condenser—.1 Mfd. 200 volt	.30
17	502153	Condenser—.05 Mfd. 200 volt	.24
25, 26	502159	Condenser—mica 50 Mmfd. 500 volt	.24
28	502155	Condenser—.1 Mfd. 200 volt	.30
31	502156	Condenser—.004 Mfd. 400 volt	.20
35	502160	Condenser—mica 110 Mmfd. 500 volt	.24
37	502155	Condenser—.1 Mfd. 200 volt	.30
40	502151	Condenser—.01 Mfd. 400 volt	.20
42	502527	Condenser—electrolytic 50 Mfd. 25 volt	1.10
48	502155	Condenser—.1 Mfd. 200 volt	.30
50	502453	Condenser—.002 Mfd. 400 volt	.20
56-A,B,C	500714	Condenser—electrolytic A—20 Mfd. 150 volt; B—20 Mfd. 200 volt; C—20 Mfd. 200 volt	1.70
58	502153	Condenser—.05 Mfd. 200 volt	*.24
		RESISTORS	
6	502133	Resistor—carbon 220,000 ohms ¼ watt	.12
12	502131	Resistor—carbon 47,000 ohms ¼ watt	.12
14	502136	Resistor—carbon 10 Meg. ¼ watt	.12
18	502455	Resistor—carbon 27 ohms ¼ watt	.12
19	502457	Resistor—carbon 330 ohms ¼ watt	.12
20	502458	Resistor—carbon 430 ohms ¼ watt	.12
21	502269	Resistor—carbon 3.3 Meg. ¼ watt	.12
24	502132	Resistor—carbon 100,000 ohms ¼ watt	.12
29	502269	Resistor—carbon 3.3 Meg. ¼ watt	.12
30-A,B,C,D	502525	Volume control (with switch) 1 Meg.	1.25
32	502269	Resistor—carbon 3.3 Meg. ¼ watt	.12
33, 34	502456	Resistor—carbon 220 ohms ¼ watt	.12
36	502268	Resistor—carbon 1 Meg. ¼ watt	.12
38	502134	Resistor—carbon 470,000 ohms ¼ watt	.12
39	500712	Resistor—wire wound 1830 ohms 5 watt	.55
41	502135	Resistor—carbon 2.2 Meg. ¼ watt	.12
44	502266	Resistor—carbon 15,000 ohms ¼ watt	.12
45	502459	Resistor—carbon 6800 ohms ¼ watt	.12
46	502457	Resistor—carbon 330 ohms ¼ watt	.12
47	502455	Resistor—carbon 27 ohms ¼ watt	.12
49-A,B,C	500715	Resistor—wire wound A—1460 ohms 10 watt; B—155 ohms 1 watt; C—310 ohms 10 watt	1.65
54	502454	Resistor—wire wound 47 ohms 1 watt	.16
57	502454	Resistor—wire wound 47 ohms 1 watt	.16

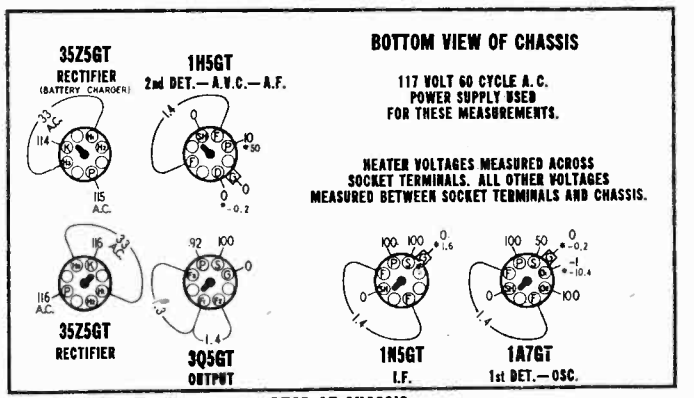
DIAGRAM NO.	PART NO.	DESCRIPTION	LIST PRICE
		COILS AND TRANSFORMERS	
3	502499	Coil—antenna coupling	$1.70
9	502498	Coil—oscillator	1.05
13	502495	Transformer—1st I.F.	2.30
23	500749	Transformer—2nd I.F.	2.30
51	502902 / 502492	Trans.—output for A-502491 speaker / Trans.—output for R-502491 speaker	2.50
55	502528	Filter choke	2.35
		OTHER ELECTRICAL PARTS	
10	500746	Cable—for use with individ. batteries	1.60
22	502536	Cable—for use with battery pack	.85
27	500713	Neon indicator lamp	.75
43-A,B,C,D	502526	Switch—"AC-DC—BAT.—CHARGE"	1.50
52	502901 / 502493	Cone & voice coil for A-502491 speaker / Cone & voice coil for R-502491 speaker	2.00
53	502491	Speaker—P.M. dynamic (5 inch)	7.70
		MISCELLANEOUS PARTS	
	160026	Base for mtg. electrolytic condenser	.04
	112745	Clip—coil mtg.	.01
	114955	Clip—retainer on end of dial cord	.01
	117057	Cord—dial drive (28" required) per ft.	.05
	502535	Escutcheon plate	2.40
	502544	Knob—volume or tuning	.10
	502545	Knob—"AC-DC—BAT.—CHARGE"	.12
	500747	Plug for battery cable (fits chassis)	.10
	502537	Plug for battery cable (fits batt. pack)	.16
	502546	Pointer	.16
	81145	Retaining ring for tuning shaft	.01
	119087	Ring for dial cord	.01
	79894	Screw—No. 8x⅝"; for mtg. chassis	.01
	502524	Shaft—tuning control	.10
	117716	Shield—tube	.07
	116690	Socket—octal base	.12
	500681	Socket—for battery cable	.10
	161384	Spring—dial cord tension	.06
	502533	Terminal strip for antenna	.20
	111456	Washer—spring washer for tuning shaft	.005
	502534	Washer—felt; for knobs	.01

SOCKET VOLTAGES

Measured with voltmeter having sensitivity of 1000 ohms per volt except where indicated by (*).

VOLUME ON FULL WITH NO SIGNAL — **DIAL TUNED TO 540 KC.**

"AC-DC—BAT.—CHARGE" SWITCH IN "AC-DC" POSITION



REAR OF CHASSIS

*—Measured with vacuum tube voltmeter.

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

STEWART WARNER CORP.

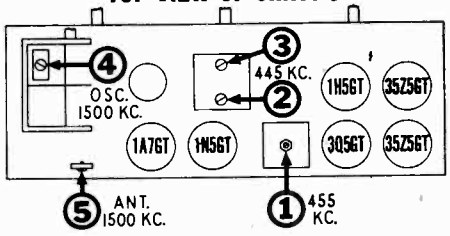
MODELS 9007-A, 9007-F, 9007-G

ALIGNMENT PROCEDURE

1. Slide chassis partially out of cabinet by removing staples at each side of wood shelf and pulling entire shelf back about 2 inches. Do not disturb connections to loop antenna.
2. Connect an output meter across the voice coil of the speaker or between the plate of the 3Q5GT output tube and chassis through a .1 mfd. condenser.
3. Connect the ground lead of the signal generator to chassis through a .25 mfd. condenser.
4. Set the volume control in the maximum position and use a weak signal from the generator.
5. Set "AC-DC—BAT.—CHARGE" Switch in "AC-DC" position.

DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECT HIGH SIDE OF SIG. GENERATOR TO	SIGNAL GENERATOR FREQUENCY	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
300 MMFD. Condenser	Grid Cap of 1A7GT Tube	455 KC.	Any Point Where It Does Not Affect Signal	1	2nd I.F.	Loosen lock nut. Adjust screw for maximum output.
				2-3	1st I.F.	Adjust for maximum output. Recheck 1, 2 and 3 for maximum output and tighten lock nut on 1.
300 MMFD. Condenser	Center Terminal on Antenna Terminal Strip at bottom of cabinet.	1500 KC.	1500 KC. (Slide set into cabinet and replace pointer to set dial.)	4	Broadcast Oscillator (Shunt)	Adjust trimmer for maximum output.
300 MMFD. Condense	Center Terminal on Antenna Terminal Strip at bottom of cabinet.	1500 KC.	Tune to 1500 KC. Generator Signal	5	Broadcast Antenna	Adjust for maximum output. Slide chassis all the way into cabinet when making this adjustment.

TOP VIEW OF CHASSIS



INDICATOR LAMP

The flashing neon lamp on the dial face indicates condition of batteries. This lamp is included in an oscillating (R-C) circuit which is designed to oscillate at approximately 3 pulses per second when batteries are in a fully charged condition. As the battery voltage decreases with use, number of pulses per second decreases.

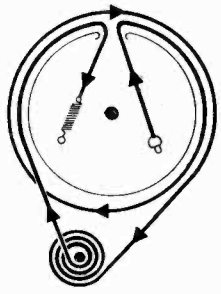
This lamp will only show the true condition of the batteries when the Selector Switch is in the "Battery" position. Lamp flashes more rapidly during charging or "AC-DC" operation.

When battery voltage is low (approximately 72 volts) the lamp flashes more slowly (about once per second). The set should not be operated from battery power after this point is reached and batteries should be recharged immediately. Charge for at least twice the time they were used and as soon as possible after they are run down. As batteries age it is necessary to charge for a longer period. For longest battery life, charge immediately after using.

IMPORTANT:
1. Completely dead batteries cannot be recharged.
2. When set is connected to a DC line, check for correct polarity by operating it before attempting to charge the batteries.
3. Batteries will be discharged if ON-OFF switch is left ON when power cord is not connected to wall outlet.

CHARGING CIRCUIT

The battery charging circuit consists of a 35Z5GT rectifier and a suitable resistor voltage dividing network. This circuit provides a very low charging current when the receiver is operated on AC-DC and is just enough to maintain the batteries but will not charge them. A separate charging position is provided for the regular charging operation. A charging rate of approximately ⅓ the discharge rate is used to give best results.



DIAL DRIVE CORD ARRANGEMENT

To string dial cord, set gang condenser to fully meshed position and use following parts:

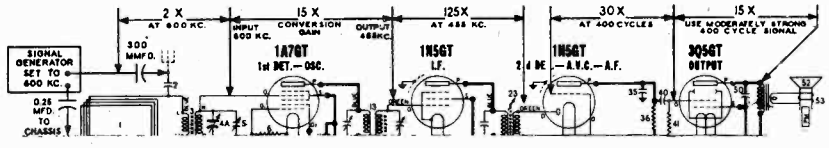
114955	Clip on end of cord
117057	Cord (28 inches)
119087	Ring for dial cord
161384	Tension Spring

APPROXIMATE STAGE GAIN DATA

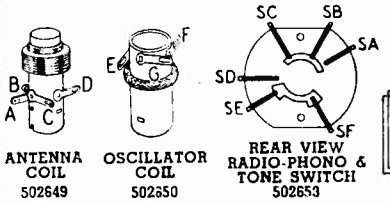
Be sure R.F. and I.F. stages are accurately aligned before measuring gain. R.F. gains can be measured with a "channel" type instrument containing a tuned and calibrated R.F. amplifier. A vacuum tube voltmeter may be used for audio gain measurements.

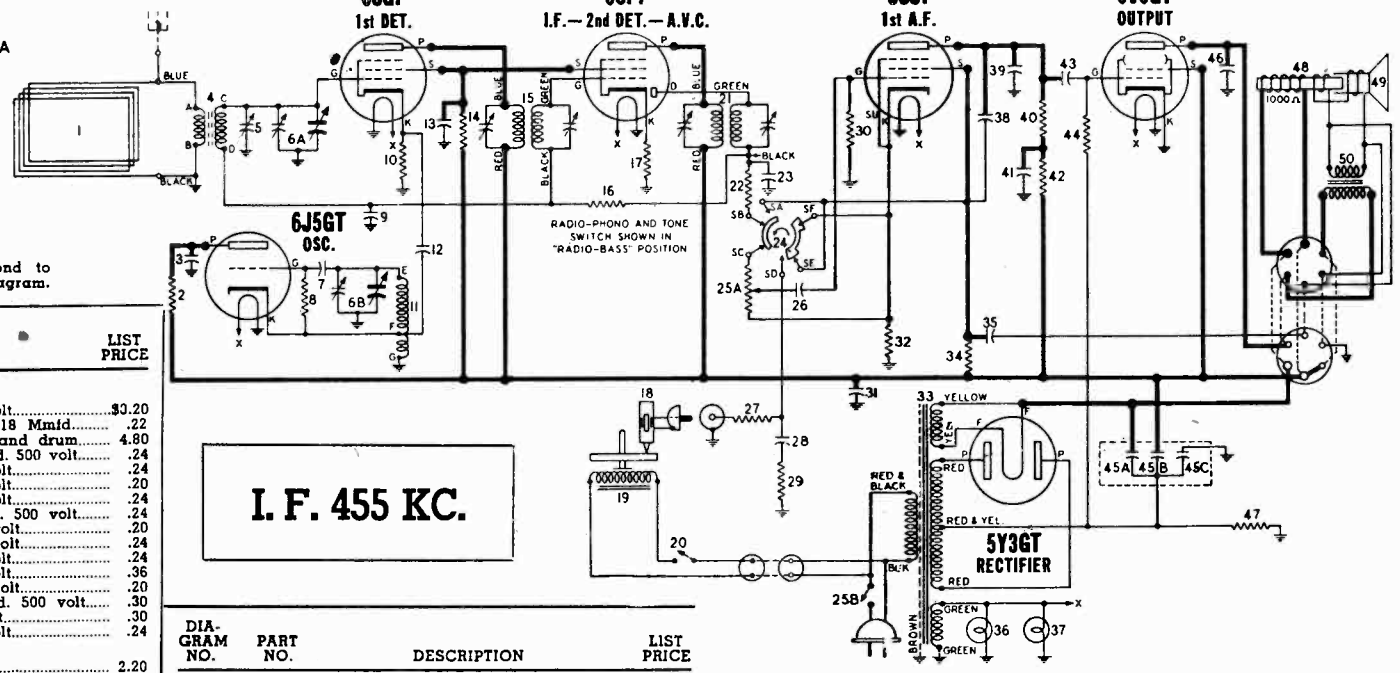
1. For all gain measurements connect signal generator as shown. Use 600 KC. signal with 400 cycle modulation (use nearby frequency if local station interferes).
2. For R.F. and I.F. measurements connect negative terminal of a 1½-volt battery to A.V.C. lead and positive terminal to chassis. This provides a definite operating point.
3. Be sure radio is carefully tuned to generator signal (use weak signal for sharp tuning).
4. When using a "channel" type instrument carefully tune it for maximum output at desired frequency before making measurements.

The R.F. and I.F. stage gains shown below are less than under normal operating conditions due to the use of 1½ volts fixed bias in order to establish a definite operating point. Therefore, these values are not intended to indicate the full capability of a stage.



Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain. Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create considerable variation in gain measurements.

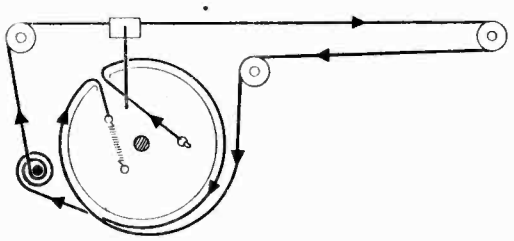




Lettered terminals in illustrations correspond to similarly lettered terminals on the circuit diagram.

DIA-GRAM NO.	PART NO.	DESCRIPTION	LIST PRICE
		CONDENSERS	
3	502151	Condenser—.01 Mfd. 400 volt	$0.20
5	502651	Condenser—trimmer 12 to 18 Mmfd.	.22
6A, B	502652	Condenser—variable gang and drum	4.80
7	502160	Condenser—mica—110 Mmfd. 500 volt	.24
9	502153	Condenser—.05 Mfd. 200 volt	.24
12	502151	Condenser—.01 Mfd. 400 volt	.20
13	502157	Condenser—.05 Mfd. 400 volt	.24
23	502160	Condenser—mica 110 Mmfd. 500 volt	.24
26	502156	Condenser—.004 Mfd. 400 volt	.20
28	502479	Condenser—.006 Mfd. 600 volt	.24
31	502157	Condenser—.05 Mfd. 400 volt	.24
35	502405	Condenser—.25 Mfd. 400 volt	.36
38	502150	Condenser—.004 Mfd. 600 volt	.20
39	502271	Condenser—mica—260 Mmfd. 500 volt	.30
41	502410	Condenser—.1 Mfd. 400 volt	.30
43	502152	Condenser—.02 Mfd. 400 volt	.24
45A, B, C	502207	Condenser—electrolytic: A — 20 Mfd. 400 volt; B — 10 Mfd. 400 volt; C — 20 Mfd. 25 volt	2.20
46	502156	Condenser—.004 Mfd. 400 volt	.20
		RESISTORS	
2	502466	Resistor—carbon—33,000 ohms 1 watt	.16
8	502131	Resistor—carbon—47,000 ohms ¼ watt	.12
10	502514	Resistor—carbon—3,300 ohms ¼ watt	.12
14	502288	Resistor—carbon—47,000 ohms 1 watt	.16
16	502269	Resistor—carbon—3.3 Meg. ¼ watt	.12
17	502264	Resistor—carbon—47 ohms ¼ watt	.12
22	502131	Resistor—carbon—47,000 ohms ¼ watt	.12
25A, B	502654	Volume control—with switch; 1 Meg.	1.25
27	502133	Resistor—carbon—220,000 ohms ¼ watt	.12
29	502408	Resistor—carbon—68,000 ohms ¼ watt	.12
30	502468	Resistor—carbon—4.7 Meg. ¼ watt	.12
32	502406	Resistor—carbon—1,500 ohms ¼ watt	.12
34	502135	Resistor—carbon—2.2 Meg. ¼ watt	.12
40	502133	Resistor—carbon—220,000 ohms ¼ watt	.12
42	502133	Resistor—carbon—220,000 ohms ¼ watt	.12
44	502134	Resistor—carbon—470,000 ohms ¼ watt	.12
47	502293	Resistor—wire wound—200 ohms 2 watt	.25
		COILS & TRANSFORMERS	
1	502697	Loop antenna and cabinet back	3.25
4	502649	Coil—antenna	1.45
11	502650	Coil—oscillator	1.00
15	502657	Transformer—1st I.F.	2.30
21	502658	Transformer—2nd I.F.	2.30
33	502174	Transformer—power	7.50
50	502170	Transformer—output for R-502168 spkr.	2.00
	504061	Transformer—output for M-502168 spkr.	2.00
	504122	Transformer—output for D-502168 spkr.	2.00
		OTHER ELECTRICAL PARTS	
18	502461	Crystal cartridge (Astatic L-71)	6.10
19	502846	Motor—type "GI"-502584 record changer 115 volt 50 cycle	12.00
	502847	Motor—type "GI-502584 record changer 115 volt 60 cycle	10.00
20	502979	Switch-on-off; type "GI"-502584 record changer	.48
24	502653	Switch—Radio-Phono and Tone	$1.30
36, 37	110629	Lamp—dial (Mazda No. 44) 6.3 V. 0.25 Amps.	.15
48	502168	Speaker—electro-dynamic (6 inch)	9.50
49	502169	Cone & Voice coil for R-502168 spkr.	2.75
	504062	Cone & Voice coil for M-502168 spkr.	2.75
	504123	Cone & Voice coil for D-502168 spkr.	2.75
		MISCELLANEOUS PARTS	
	116467	Base for mtg. electrolytic condenser	.04
	119559	Clamp—dial glass	.08
	112745	Clip—coil mounting	.01
	114955	Clip—retainer on end of dial cord	.01
	117057	Cord—dial drive (40 in. required) per ft.	.05
	502672	Dial scale—glass	1.05
	502564	Knob—volume or tuning (Model 9009-H)	.08
	502698	Knob—volume or tuning (Model 9009-B)	.08
	502701	Knob—"Phono-Radio" (Model 9009-B)	.10
	504698	Knob—"Phono-Radio" (Model 9009-H)	.12
	502460	Needle—phonograph	1.50
	500969	Plug—phono. pick-up cable	.10
	501031	Plug—phono. motor cable	.15
	504097	Plug—speaker	.25
	502664	Pointer	.16
	81145	Retaining ring for tuning shaft	.01
	119087	Ring for dial cord	.01
	113463	Rubber pad—chassis mtg.	.03
	116584	Rubber spacer for mtg. dial scale	.02
	112874	Screw—No. 10 x 1⅛; chassis mtg.	.03
	501777	Screw—No. 4 x ½; for mtg. loop & back	.02
	502173	Shaft—tuning control	.15
	116690	Socket—octal base	.12
	160039	Socket—phono. pick-up plug	.08
	160392	Socket—octal (rectifier)	.16
	501182	Socket—phono. motor cable	.45
	502210	Socket—speaker	.25
	502662	Socket—dial lamp	.16
	161384	Spring—dial cord tension	.06
	111456	Washer—spring washer for tuning shaft	.005
	500487	Washer—felt; for knobs	.01
	119985	Washer—felt for phono. mtg.	.01

PRICES SUBJECT TO CHANGE WITHOUT NOTICE



DIAL AND POINTER DRIVE CORD ARRANGEMENT

Top view
Dial plate removed

To string dial cord, set gang condenser to fully meshed position and use following parts:

114955 Clip on end of cord
117057 Cord (40 inches)
119087 Ring for dial cord
161384 Tension Spring

IMPORTANCE OF MAINTAINING FIXED POSITIONS FOR LEADS AT TOP OF CHASSIS

The shielded leads which are routed to the "Radio-Phono" switch and volume control should be tied to the upright bracket which supports the dial assembly. Grounded shields on these leads must not be allowed to contact electrolytic condenser case. If case of condenser is grounded it will short out bias voltage for 6V6GT tube.

AUDIO OSCILLATION

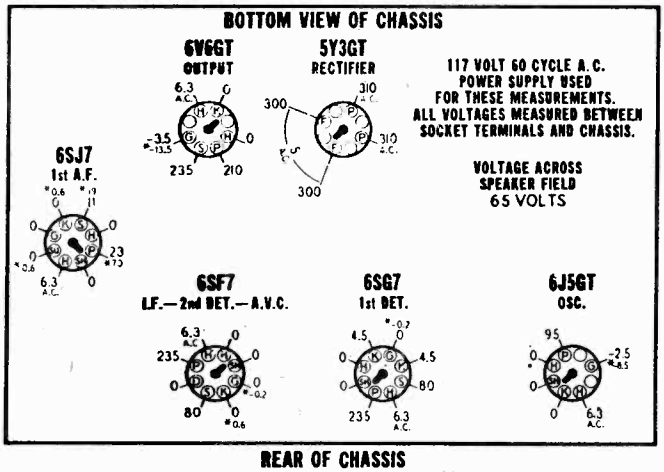
The audio system of this receiver utilizes a two stage type of inverse feed-back arrangement and should it ever be necessary to replace the speaker or output transformer it is important to maintain a definite phase relationship in the feed-back circuit. If the connections to the output transformer are reversed or if the feed-back connection is made to the wrong side of the output transformer secondary, the system will become regenerative instead of degenerative. Under those conditions audio oscillation may result. If that occurs, oscillation may be prevented by reversing the connections to the primary of the output transformer.

MODELS 9009-B, 9009-H

STEWART WARNER CORP.

Measured with voltmeter having sensitivity of 1000 ohms per volt except where indicated by (*).

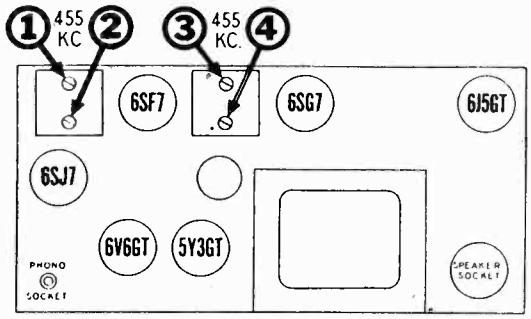
RADIO-PHONO-TONE SWITCH IN "RADIO-BASS" POSITION
VOLUME ON FULL WITH NO SIGNAL DIAL TUNED TO 540 KC.



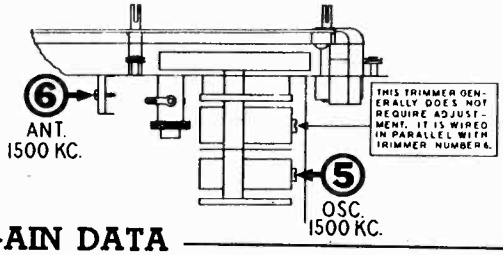
*—Measured with vacuum tube voltmeter.

NOTE:—The 6V6GT grid bias of —13½ volts can be measured across resistor No. 47.

TOP VIEW OF CHASSIS



SIDE VIEW OF CHASSIS

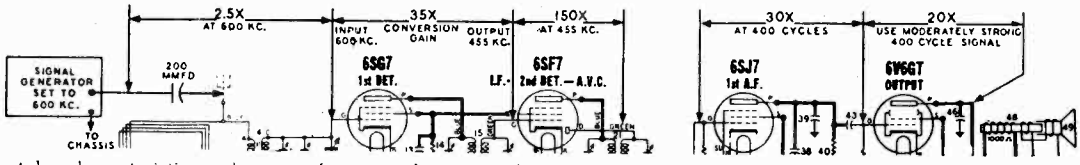


APPROXIMATE STAGE GAIN DATA

Be sure R.F. and I.F. stages are accurately aligned before measuring gain. R.F. gains can be measured with a "channel" type instrument containing a tuned and calibrated R.F. amplifier. A vacuum tube voltmeter may be used for audio gain measurements. Observe following precautions:

1. For all gain measurements connect signal generator as shown. Use 600 K.C. signal with 400 cycle modulation (use nearby frequency if local station interferes.)
2. For R.F. and I.F. measurements connect negative terminal of a 3 volt battery (two 1½ volt cells in series) to A.V.C. lead at terminal "D" of antenna coil; then connect positive battery lead to chassis. This provides a definite operating point. IMPORTANT: Disconnect battery when measuring audio stage gains.
3. Be sure radio is carefully tuned to generator signal (use weak signal for sharp tuning.)
4. When using a "channel" type instrument carefully tune it for maximum output at desired frequency before making measurements.

The R.F. and I.F. stage gains shown below are less than under normal operating conditions due to the use of 3 volts fixed bias in order to establish a definite operating point. Therefore, these values are not intended to indicate the full capability of a stage.



Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create considerable variation in gain measurements.

Remove chassis and loop antenna (cabinet back) from cabinet. Reconnect loop to chassis and space it approximately same distance from chassis as when installed in cabinet.

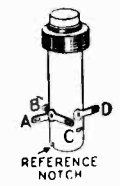
With the gang condenser fully meshed, the dial pointer should be in the position indicated by the last mark below 55 on the dial. If it is set incorrectly, release the pointer clip on the dial cord and reposition pointer.

Connect an output meter across the speaker voice coil or from the plate of the 6V6GT tube to chassis through a .1 Mfd. condenser.

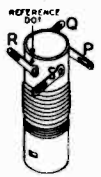
Connect the ground lead of signal generator to the receiver chassis.

Set volume control at maximum volume position and use a weak signal from the signal generator.

DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECT HIGH SIDE OF SIG. GENERATOR TO	SIGNAL GENERATOR FREQUENCY	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
.1 MFD. Condenser	Trimmer on top section of gang.	455 KC	Any point where it does not affect the signal	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
				3-4	1st I.F.	
200 MMFD. Mica Condenser	External Antenna Clip on Loop Antenna	1500 KC	1500 KC	5	Broadcast Oscillator	Adjust for maximum output.
200 MMFD. Mica Condenser	External Antenna Clip on Loop Antenna	1500 KC	Tune to 1500 KC generator signal	6	Broadcast Antenna	Adjust for maximum output.

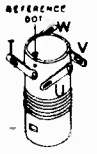


BC. ANTENNA COUPLING COIL 502121

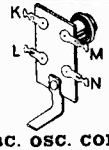


S.W. ANTENNA COIL 502740

R.F. COIL 502142



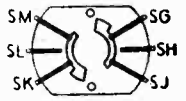
S.W. OSC. COIL 502197



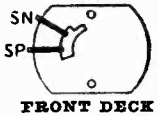
BC. OSC. COIL 502198

Lettered terminals in illustrations correspond to similarly lettered terminals on the circuit diagram.

I.F. 455 KC.



FRONT DECK FRONT VIEW



FRONT DECK REAR VIEW

REAR DECK FRONT VIEW

BAND AND TONE SWITCH 502199

SOCKET VOLTAGES

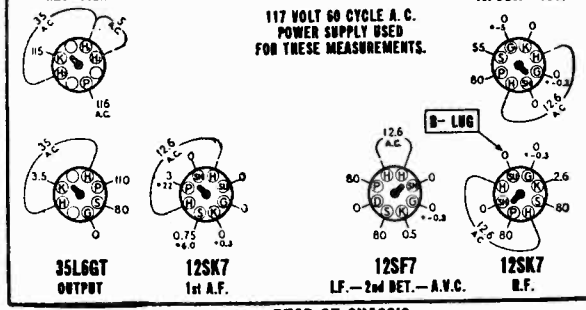
Measured with voltmeter having sensitivity of 1000 ohms per volt except where indicated by (*).

VOLUME ON FULL WITH NO SIGNAL — DIAL TUNED TO 540 KC.

BOTTOM VIEW OF CHASSIS

HEATER VOLTAGES MEASURED ACROSS SOCKET TERMINALS. ALL OTHER VOLTAGES MEASURED BETWEEN SOCKET TERMINALS AND B- LUG.

117 VOLT 60 CYCLE A.C. POWER SUPPLY USED FOR THESE MEASUREMENTS.



REAR OF CHASSIS

*—Measured with vacuum tube voltmeter

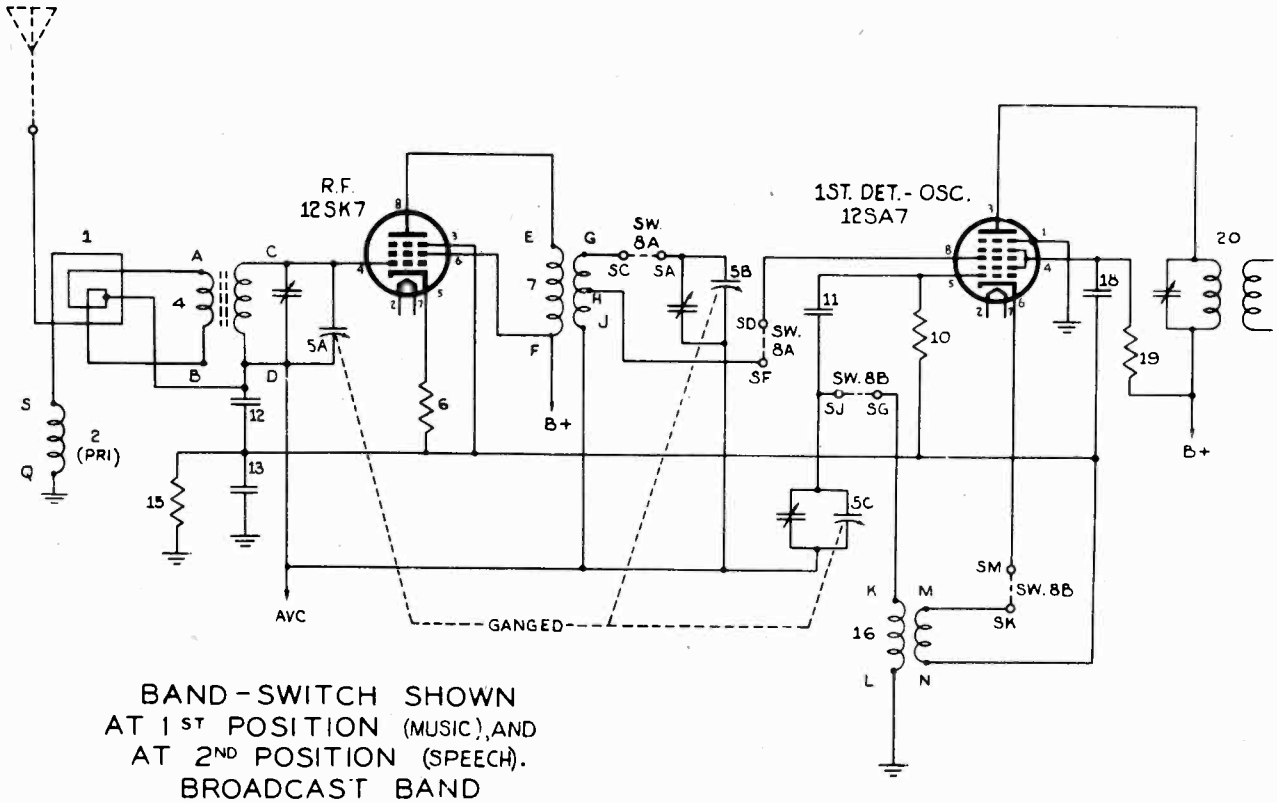
PARTS LIST

DIAGRAM NO.	PART NO.	DESCRIPTION	LIST PRICE
		CONDENSERS	
3	502172	Condenser—trimmer; 25 to 100 Mmfd.	$0.36
5A-5B-5C	502123	Condenser—variable gang (with drum)	4.60
9	502162	Condenser—315 Mmfd. 500 volt	.45
11	502159	Condenser—mica—50 Mmfd. 500 volt	.24
12	502155	Condenser—.1 Mfd. 200 volt	.30
13	502158	Condenser—.2 Mfd. 400 volt	.36
14	502172	Condenser—trimmer; 25 to 100 Mmfd.	.36
18	502262	Condenser—.25 Mfd. 200 volt	.36
26	502470	Condenser—.0008 Mfd. 400 volt	.20
27	502453	Condenser—.002 Mfd. 400 volt	.20
28	502160	Condenser—mica—110 Mmfd. 500 volt	.24
32	502160	Condenser—mica—110 Mmfd. 500 volt	.24
33	502153	Condenser—.05 Mfd. 200 volt	.24
34	502156	Condenser—.004 Mfd. 400 volt	.20
39	502151	Condenser—.01 Mfd. 400 volt	.20
40A-40B	500256	Condenser—electrolytic A-40 Mfd. 150 volt B-20 Mfd. 150 volt	1.50
43	502152	Condenser—.02 Mfd. 400 volt	.24
46	502157	Condenser—.05 Mfd. 400 volt	.24
		RESISTORS	
6	502140	Resistor—carbon 390 ohms ¼ watt	.12
10	502130	Resistor—carbon 22,000 ohms ¼ watt	.12
15	502133	Resistor—carbon 220,000 ohms ¼ watt	.12
19	502291	Resistor—carbon 4700 ohms ¼ watt	.12
21	502269	Resistor—carbon 3.3 Meg. ¼ watt	.12
22	502264	Resistor—carbon 47 ohms ¼ watt	.12
24	502131	Resistor—carbon 47,000 ohms ¼ watt	.12
25A-25B	502145	Volume control 500,000 ohms (with switch)	1.25
29	502136	Resistor—carbon 10 Meg. ¼ watt	.12
30	502128	Resistor—carbon 2200 ohms ¼ watt	.12
31	502135	Resistor—carbon 2.2 Meg. ¼ watt	.12
35-36	502133	Resistor—carbon 220,000 ohms ¼ watt	.12
37	502134	Resistor—carbon 470,000 ohms ¼ watt	.12
38	502138	Resistor—carbon 130 ohms ¼ watt	.12
42	502469	Resistor—carbon 1500 ohms 1 watt	.16
48	502574	Resistor—carbon 33 ohms ½ watt	.12
		COILS & TRANSFORMERS	
1	502503	Loop antenna	3.00
2	502740	Coil—S. W. antenna	1.12
4	502121	Coil—antenna coupling	$1.64
7	502142	Coil—BC. R.F.	2.26
16	502198	Coil—BC. oscillator	1.32
17	502197	Coil—S.W. oscillator	1.12
20	502102	Transformer—1st I.F.	2.30
23	502103	Transformer—2nd I.F.	2.30
41	502213	Transformer—output for R-502998 spkr.	2.50
	502904	Transformer—output for A-502998 spkr.	2.50
	504244	Transformer—output for W-502998 spkr.	2.50
		OTHER ELECTRICAL PARTS	
8A-8B-8C	502199	Switch—tone & band	2.00
44	502214	Cone and voice coil for R-502998 spkr.	2.00
	502903	Cone and voice coil for A-502998 spkr.	2.00
	504245	Cone & voice coil for W-502998 spkr.	2.00
45	502998	Speaker—P.M. dynamic (5 inch)	6.60
47	502473	Lamp—dial (Mazda 47) 6.8V. 150 Ma.	.22
		MISCELLANEOUS PARTS	
	502501	Back for cabinet	.20
	116467	Base for mtg. electrolytic condenser	.04
	502500	Cabinet	19.00
	502506	Clamp—dial scale mtg.	.04
	112745	Clip—coil mtg.	.01
	114955	Clip—retainer on end of dial cord	.01
	500497	Clip—retainer for cabinet back	.02
	116563	Connector—for antenna leads	.01
	117057	Cord—dial drive (55 in. required), per ft.	.05
	500324	Cover—cardboard, for elect. cond.	.04
	502505	Dial scale—glass	1.60
	501186	Grounding plate (under I.F. trans. can.)	.10
	502531	Knob—volume or tuning	.35
	502532	Knob—tone & range sw.	.44
	502367	Pointer	.16
	81145	Retaining ring for tuning shaft	.01
	119087	Ring for dial cord	.01
	17063	Screw—No. 6x¼; holds clamps to cab.	.01
	114628	Screw—No. 8x½; chassis mtg.	.01
	502173	Shaft—tuning control	.15
	116690	Socket—octal base	.12
	160392	Socket—octal (rectifier)	.16
	500499	Socket—dial lamp (with leads)	.44
	161384	Spring—dial cord tension	.06
	111456	Washer—spring washer for tuning shaft	.005

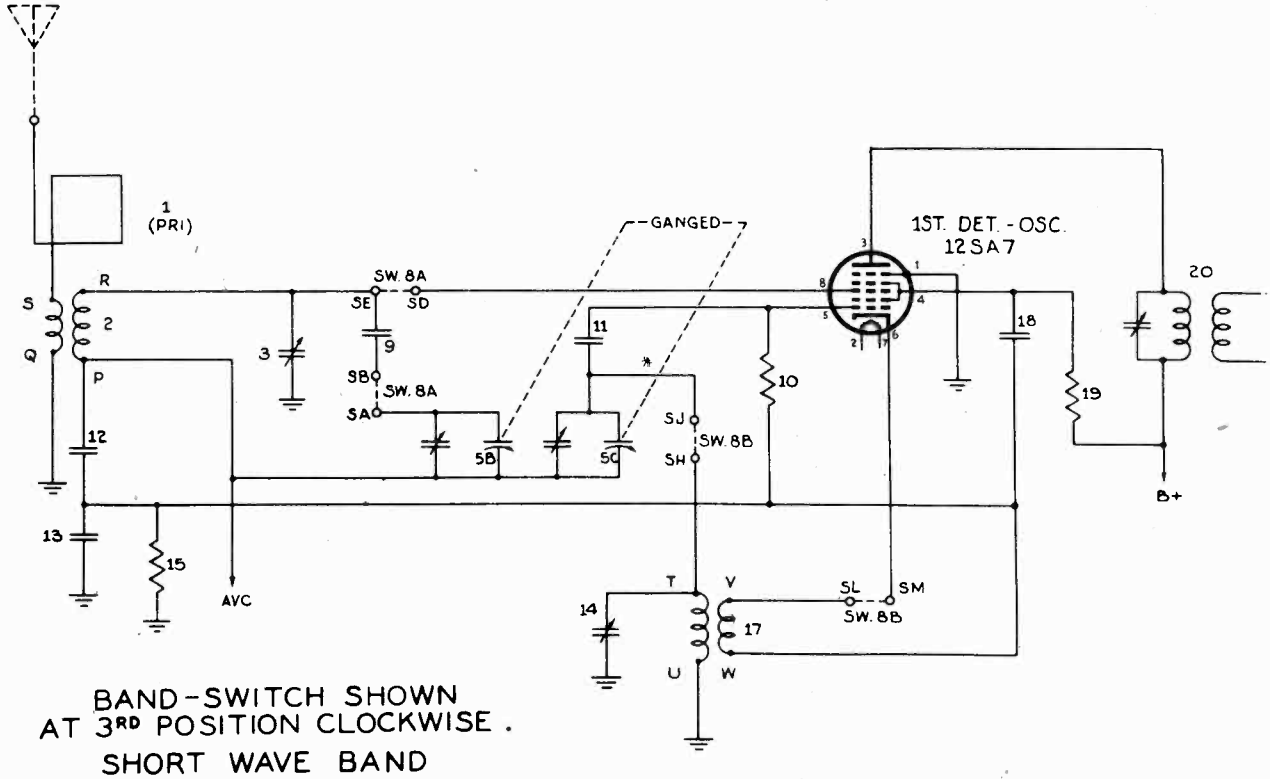
PRICES SUBJECT TO CHANGE WITHOUT NOTICE

STEWART WARNER CORP.

MODEL 62T36
MODEL 9000-B
MODEL 9014-E



BAND-SWITCH SHOWN
AT 1ST POSITION (MUSIC), AND
AT 2ND POSITION (SPEECH).
BROADCAST BAND
540-1650KC.



BAND-SWITCH SHOWN
AT 3RD POSITION CLOCKWISE.
SHORT WAVE BAND
9-12 MC

MODEL 9014-E

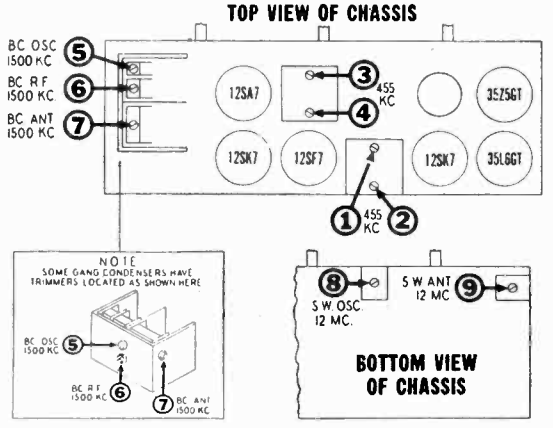
STEWART WARNER CORP.

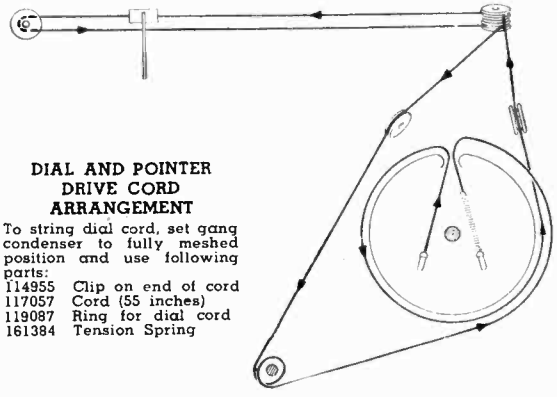
ALIGNMENT PROCEDURE

1. Remove chassis and loop antenna from cabinet. Reconnect loop to chassis and space it approximately same distance from chassis as when installed in cabinet.
2. Note that there are four calibrating lines stamped into the metal dial frame. When gang condenser is fully meshed, dial pointer should be in the position indicated by first line at the left. If it is set incorrectly, release pointer clip on dial cord and reposition pointer.
3. Connect an output meter across the speaker voice coil or from plate of 35L6GT tube to B— through a .1 Mfd. condenser (see voltage chart for convenient B— connection).
4. Connect ground lead from signal generator to B— through a .25 Mfd. condenser.
5. Set volume control at maximum volume position and use a weak signal from the signal generator.

IMPORTANT:—Align this receiver in exactly the order shown below. Broadcast band must be aligned before short wave band.

DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECT HIGH SIDE OF GENERATOR TO	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POSITION	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
200 MMFD. Mica Condenser	Control Grid of 12SA7	455 KC	Broadcast	Any point where it does not affect the signal	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
					3-4	1st I.F.	
200 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1500 KC	Broadcast	Set pointer to 1500 KC reference line stamped into metal dial plate (first line at the right)	5	Broadcast Oscillator (Shunt)	Adjust for maximum output.
200 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1500 KC	Broadcast	Tune to 1500 KC generator signal	6	Broadcast R.F.	Adjust for maximum output.
200 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1500 KC	Broadcast	Tune to 1500 KC generator signal	7	Broadcast Antenna	Adjust for maximum output.
400 OHM Resistor	External Antenna Clip on Loop Frame	12 MC	Short Wave	Set pointer to 12 MC. Reference line stamped into metal dial plate (second line from the right)	8	Short Wave Oscillator	Adjust to bring in signal. Check to see if proper peak was obtained by tuning in image at approx. 11.1 MC. If image does not appear, realign at 12 MC. with trimmer screw farther out. Recheck image.
400 OHM Resistor	External Antenna Clip on Loop Frame	12 MC	Short Wave	Tune to 12 MC generator signal	9	Short Wave Antenna	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.





DIAL AND POINTER DRIVE CORD ARRANGEMENT

To string dial cord, set gang condenser to fully meshed position and use following parts:

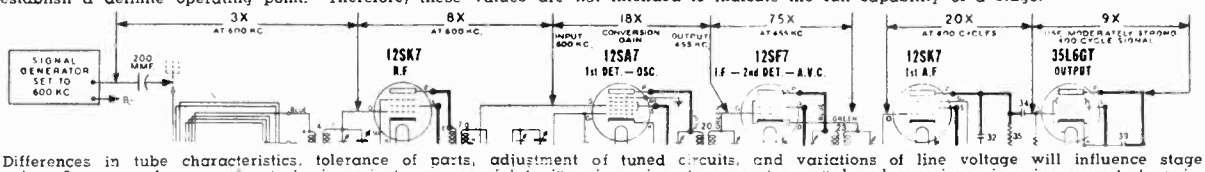
114955	Clip on end of cord
117057	Cord (55 inches)
119087	Ring for dial cord
161384	Tension Spring

APPROXIMATE STAGE GAIN DATA

Be sure R.F. and I.F. stages are accurately aligned before measuring gain. R.F. gains can be measured with a "channel" type instrument containing a tuned and calibrated R.F. amplifier. A vacuum tube voltmeter may be used for audio gain measurements. Observe following precautions:

1. For all gain measurements connect signal generator as shown. Use 600 KC. signal with 400 cycle modulation (use nearby frequency if local station interferes.)
2. For R.F. and I.F. measurements connect negative terminal of a 3 volt battery (two 1½ volt cells in series) to A.V.C. lead and positive terminal to B—. This provides a definite operating point. IMPORTANT: Disconnect battery when measuring audio stage gains.
3. Be sure radio is carefully tuned to generator signal (use weak signal for sharp tuning.)
4. When using a "channel" type instrument carefully tune it for maximum output at desired frequency before making measurements.

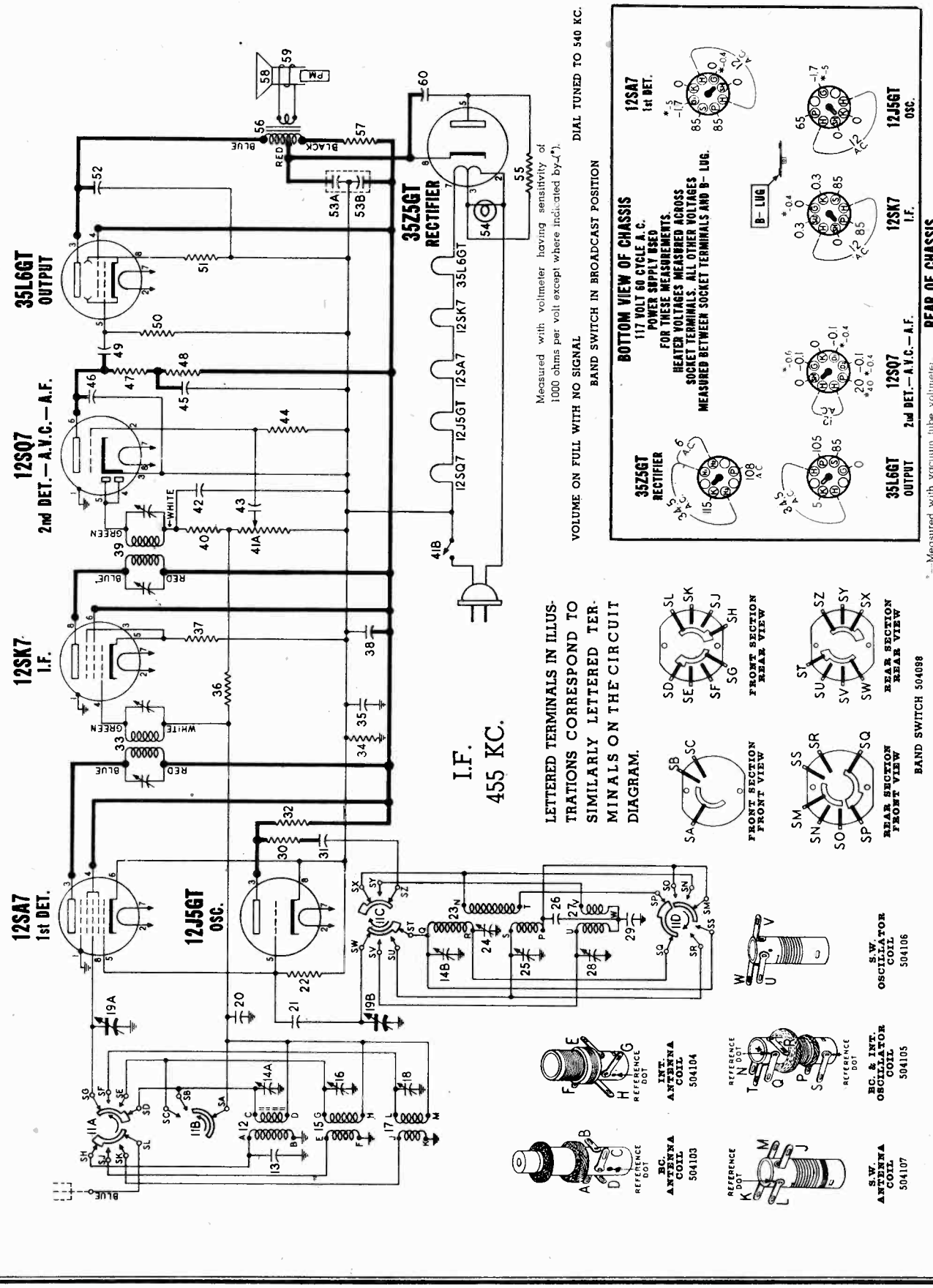
The R.F. and I.F. stage gains shown below are less than under normal operating conditions due to the use of 3 volts fixed bias in order to establish a definite operating point. Therefore, these values are not intended to indicate the full capability of a stage.



Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain. Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create considerable variation in gain measurements.

MODEL 9017-A

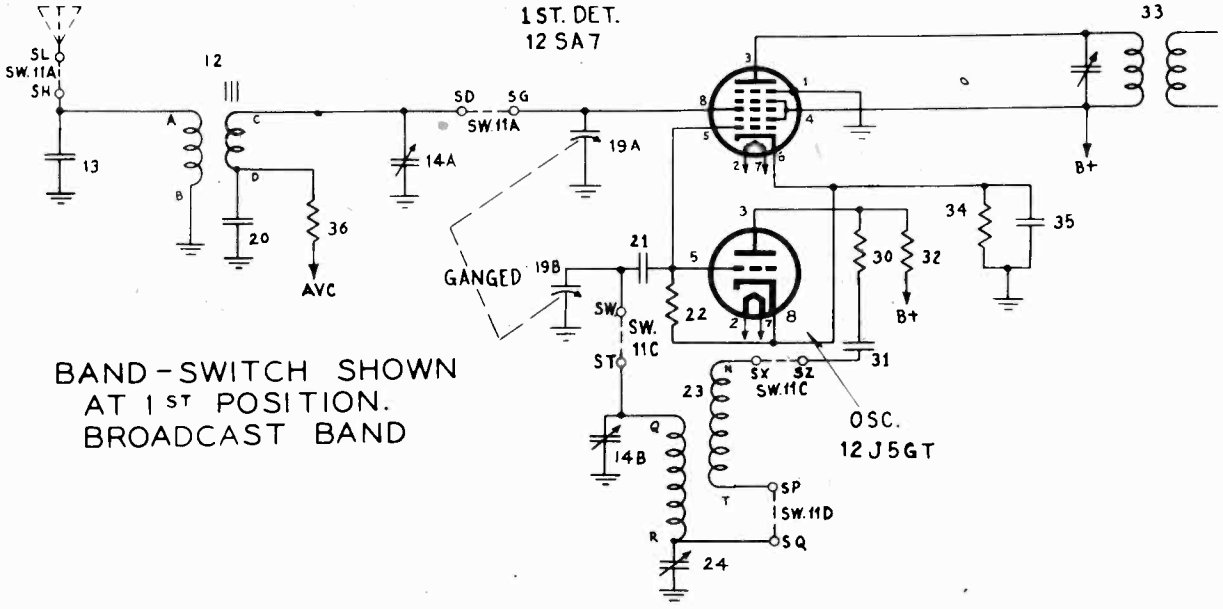
STEWART WARNER CORP.

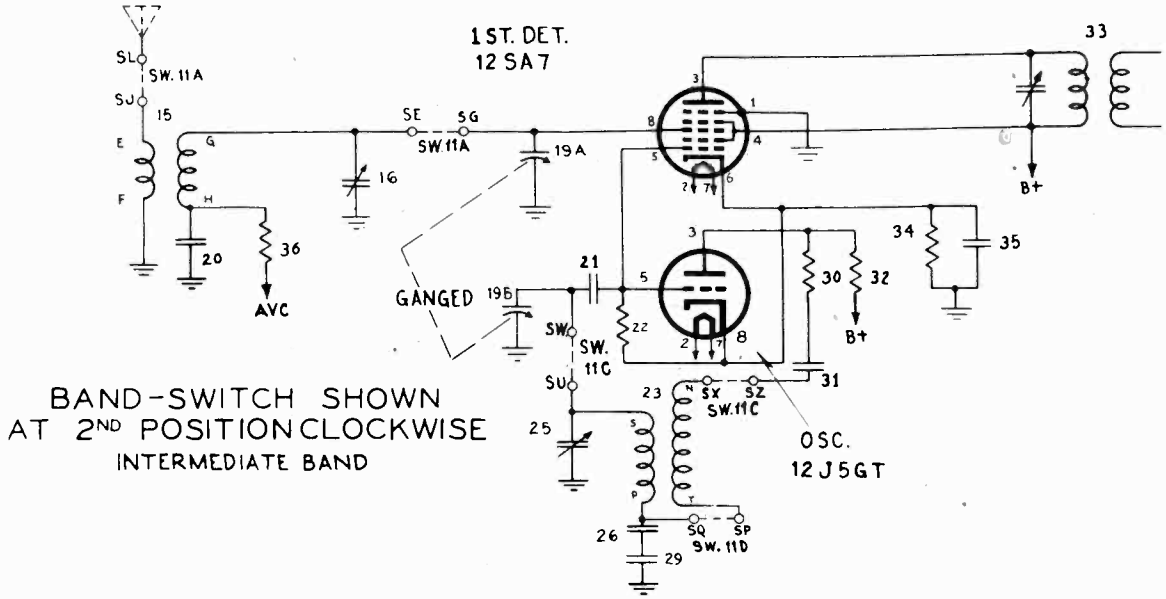


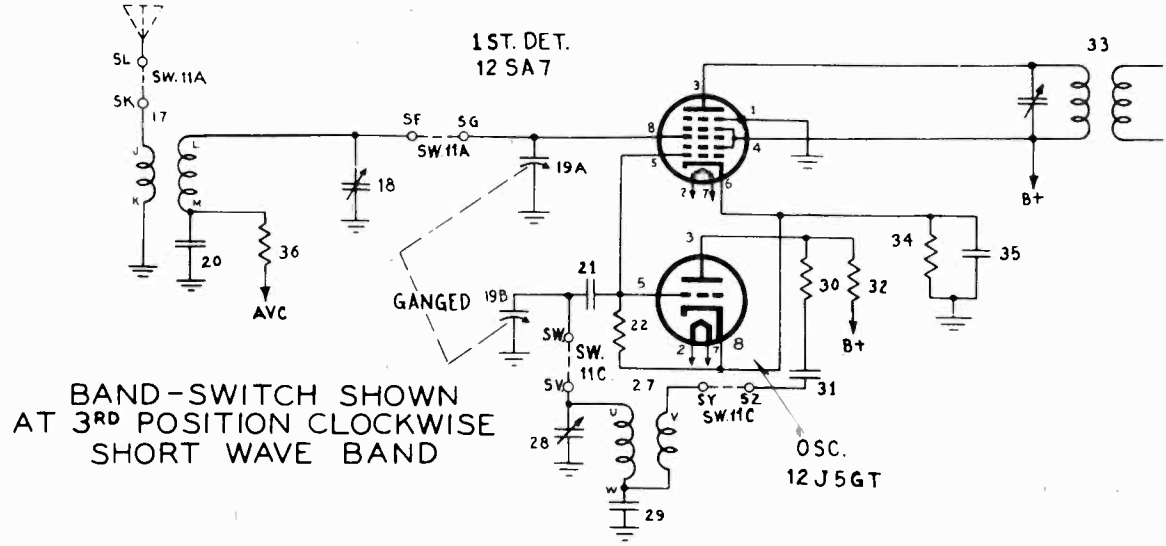
"clarified schematics"

MODEL 9017-A

STEWART WARNER CORP.







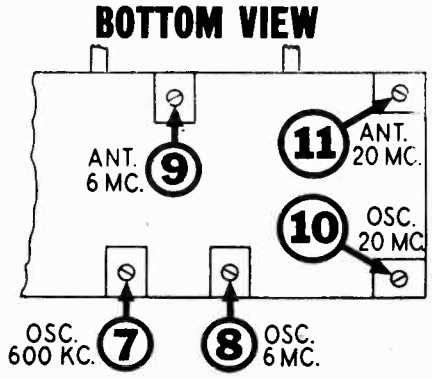
STEWART WARNER CORP.

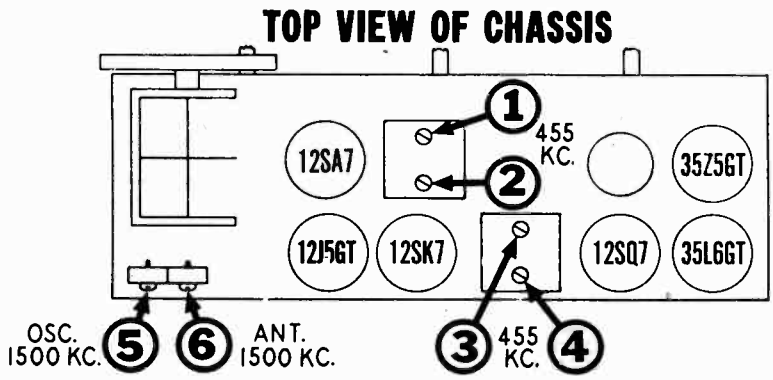
ALIGNMENT PROCEDURE

1. With the gang condenser fully meshed, the dial pointer should be in the position indicated by the last mark below 55 on the dial. If it is set incorrectly, release the pointer clip on the dial cord and reposition pointer.
2. During the alignment of this receiver it will be necessary to set the dial pointer to the following frequencies: 1500 Kc., 600 Kc., 6 Mc., 5.1 Mc., 20 Mc., and 19.1 Mc. In order to avoid replacing the chassis in the cabinet each time a dial setting is required, it will be found more convenient to mark the required frequency points on the white dial background plate before starting the alignment.
3. Connect an output meter across the speaker voice coil or from plate of 35L6GT tube to B— lug through a .1 Mfd. condenser (see voltage chart for convenient B— connection).
4. Connect ground lead of signal generator to B— lug.
   CAUTION: If your test oscillator is designed with an AC-DC power supply, connect ground lead of signal generator to B— lug through a .25 mfd. condenser.
5. Set volume control at maximum volume position and use a weak signal from the signal generator.

IMPORTANT: Align this receiver in exactly the order shown below. Broadcast band should be aligned before short wave bands.

DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECT HIGH SIDE OF SIGNAL GENERATOR TO	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POSITION	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
200 MMFD. Mica Condenser	Lug on front section of gang.	455 KC	Broadcast (counter-clockwise)	Any point where it does not affect the signal.	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
					3-4	1st I.F.	
200 MMFD. Mica Condenser	External antenna lead (blue)	1500 KC	Broadcast (counter-clockwise)	1500 KC	5	Broadcast Oscillator (Shunt)	Adjust for maximum output.
200 MMFD. Mica Condenser	External antenna lead (blue)	1500 KC	Broadcast (counter-clockwise)	Tune to 1500 KC Generator Signal	6	Broadcast Antenna	Adjust for maximum output.
200 MMFD. Mica Condenser	External antenna lead (blue)	600 KC	Broadcast (counter-clockwise)	Tune to 600 KC Generator Signal	7	Broadcast Oscillator (Series Pad)	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.
200 MMFD. Mica Condenser	External antenna lead (blue)	Repeat adjustment of trimmers 5 and 6 at 1500 Kc. Then re-check adjustment of trimmer 7 at 600 Kc.					
400 OHM Carbon Resistor	External antenna lead (blue)	6 MC	Intermediate (middle)	6 MC	8	Intermediate Oscillator	Adjust for maximum output. Check to see if proper peak was obtained by tuning in image at approx. 3.1 MC. If image does not appear, realign at 6 MC. with trimmer screw farther out. Recheck image.
400 OHM Carbon Resistor	External antenna lead (blue)	6 MC	Intermediate (middle)	Tune to 6 MC Generator Signal	9	Intermediate Antenna	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.
400 OHM Carbon Resistor	External antenna lead (blue)	20 MC	Short wave (Clockwise)	20 MC	10	S.W. Oscillator	Adjust for maximum output. Check to see if proper peak was obtained by tuning in image at approx. 19.1 MC. If image does not appear, realign at 20 MC. with trimmer screw farther out. Recheck image.
400 OHM Carbon Resistor	External antenna lead (blue)	20 MC	Short wave (Clockwise)	Tune to 20 MC Generator Signal	11	S.W. Antenna	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.

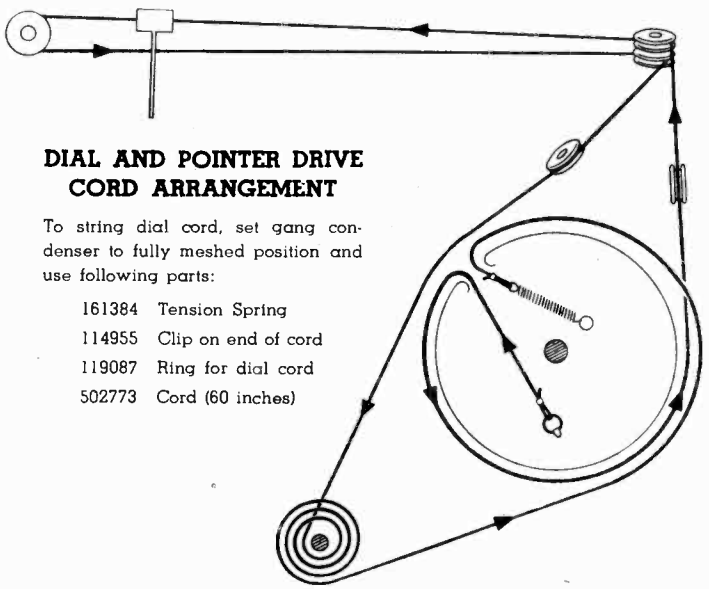




MODEL 9017-A

STEWART WARNER CORP.

DIAGRAM NO.	PART NO.	DESCRIPTION	LIST PRICE
		CONDENSERS	
13	502931	Condenser—Mica 100 mmfd. 500 volt	$ .24
14-A, B	504067	Condenser—trimmer assembly A-1.6 to 18 Mmfd. B-3 to 35 Mmfd.	.65
16	504069	Condenser—trimmer; 3 to 35 Mmfd.	.25
18	504069	Condenser—trimmer; 3 to 35 Mmfd.	.25
19-A, B	504064	Condenser—variable gang with drum	4.80
20	502806	Condenser—.05 Mfd. 200 volt	.36
21	502929	Condenser—mica 47 Mmfd. 500 volt	.24
24	504068	Condenser—trimmer; 300 to 600 Mmfd.	.50
25	502758	Condenser—trimmer; 1.6 to 18 Mmfd.	.35
26	504049	Condenser—mica 4,300 Mmfd. 500 volt	1.30
28	502758	Condenser—trimmer; 1.6 to 18 Mmfd.	.35
29	504049	Condenser—mica 4,300 Mmfd. 500 volt	1.30
31	502804	Condenser—.01 Mfd. 400 volt	.30
35	502809	Condenser—.25 Mfd. 400 volt	36
38	502807	Condenser—.05 Mfd. 400 volt	.37
42	502931	Condenser—mica 100 Mmfd. 500 volt	.24
43	504051	Condenser—.004 Mfd. 400 volt	.24
45	502807	Condenser—.05 Mfd. 400 volt	.37
46	502931	Condenser—mica 100 Mmfd. 500 volt	.24
49	504051	Condenser—.004 Mfd. 400 volt	.24
52	502804	Condenser—.04 Mfd. 400 volt	.30
53-A, B	500256	Condenser—electrolytic A-40 Mfd. 150 Volt B-20 Mfd. 150 volt	1.50
60	502807	Condenser—.05 Mfd. 400 volt	.37
		RESISTORS	
22	502130	Resistor—carbon 22,000 Ohms ¼ watt	.12
30	504111	Resistor—carbon 56 Ohms ¼ watt	.12
32	504114	Resistor—carbon 6,800 Ohms ½ watt	.12
34	502133	Resistor—carbon 220,000 Ohms ¼ watt	.12
36	502135	Resistor—carbon 2.2 Meg. ¼ watt	.12
37	504109	Resistor—carbon 27 Ohms ¼ watt	.12
40	502131	Resistor—carbon 47,000 Ohms ¼ watt	.12
41-A, B	502145	Volume control—500,000 Ohms (with switch)	1.25
44	502269	Resistor—carbon 3.3 Meg. ¼ watt	.12
47, 48	502133	Resistor—carbon 220,000 Ohms ¼ watt	.12
50	502134	Resistor—carbon 470,000 Ohms ¼ watt	.12
51	504112	Resistor—carbon 130 Ohms ½ watt	.12
55	504110	Resistor—carbon 33 Ohms ½ watt	.12
57	504113	Resistor—carbon 1,000 Ohms 1 watt	.16
		COILS AND TRANSFORMERS	
12	504103	Coil—B.C. antenna	2.00
15	504104	Coil—Int. Band antenna	1.50
17	504107	Coil—S.W. antenna	1.25
23	504105	Coil—B.C. and Int. Band oscillator	2.10
27	504106	Coil—S.W. oscillator	1.20
33	504065	Transformer—1st I.F.	2.50
39	504066	Transformer—2nd I.F.	2.50
56	504101	Transformer—output for R-504100 speaker	2.75
	504102	Transformer—output for A-504100 speaker	2.75
		OTHER ELECTRICAL PARTS	
11	A,B, C,D	Switch-band	3.00
54	118921	Lamp-dial (Mazda 47) 6-8 V. 150 Ma.	.15
58	502214	Cone & voice coil for R-504100 spkr.	2.00
	502903	Cone & voice coil for A-504100 spkr.	2.00
59	504100	Speaker—P.M. dynamic (5 inch)	7.50



DIAL AND POINTER DRIVE CORD ARRANGEMENT

To string dial cord, set gang condenser to fully meshed position and use following parts:

161384	Tension Spring
114955	Clip on end of cord
119087	Ring for dial cord
502773	Cord (60 inches)

MISCELLANEOUS PARTS

504118	Back for cabinet	.45
504034	Base for mtg. electrolytic condenser	.04
502666	Cabinet—mahogany	5.40
502773	Cord—dial drive (60 in. required) per ft.	.05
500324	Cover—cardboard for elect. cond.	.04
502506	Clamp—dial scale mtg.	.04
112745	Clip—coal mtg.	.01
114955	Clip—retainer on end of dial cord	.01
500497	Clip—retainer for cabinet back	.02
504134	Dial scale—glass	3.00
502563	Knob—volume or tuning	.08
504117	Knob—band switch	.08
502690	Pointer	.16
81145	Retaining ring for tuning shaft	.01
119087	Ring for dial cord	.01
17063	Screw—# 6 x ¼ holds dial clamp	.01
114628	Screw—# 8 x ½ chasis mtg.	.01
502173	Shaft—tuning control	.15
160392	Socket—octal	.16
504099	Socket—dial lamp with leads	.44
161384	Spring—dial cord tension	.06
111456	Washer—spring washer for tuning shaft	.005

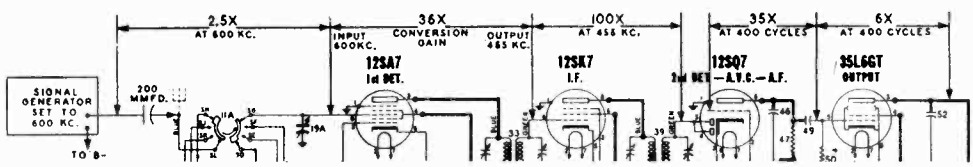
PRICES SUBJECT TO CHANGE WITHOUT NOTICE

APPROXIMATE STAGE GAIN DATA

Be sure R.F. and I.F. stages are accurately aligned before measuring gain. R.F. gains can be measured with a "channel" type instrument containing a tuned and calibrated R.F. amplifier. A vacuum tube voltmeter may be used for audio gain measurements. Observe following precautions:

1. For all gain measurements connect signal generator as shown. Use 600 KC. signal with 400 cycle modulation (use nearby frequency if local station interferes.)
2. For R.F. and I.F. measurements connect negative terminal of a 3 volt battery (two 1½ volt cells in series) to A.V.C. lead at terminal "H" of Intermediate band antenna coil (15); then connect positive battery lead to chassis. This provides a definite operating point.
3. Be sure radio is carefully tuned to generator signal (use weak signal for sharp tuning.)
4. When using a "channel" type instrument carefully tune it for maximum output at desired frequency before making measurements.

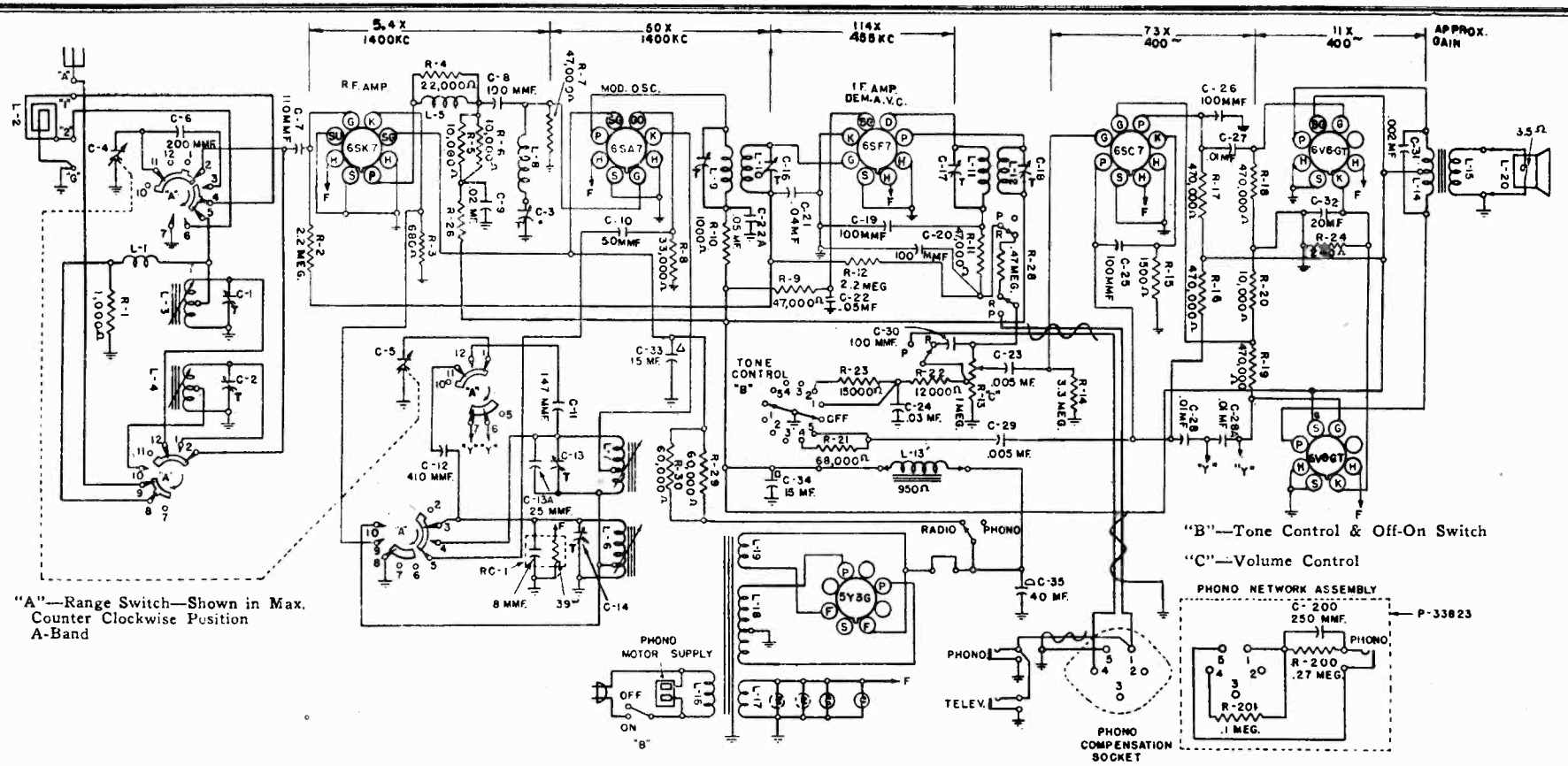
The R.F. and I.F. stage gains shown below are less than under normal operating conditions due to the use of 3 volts fixed bias in order to establish a definite operating point. Therefore, these values are not intended to indicate the full capability of a stage.



Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain. Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create considerable variation in gain measurements.

STROMBERG CARLSON CO. 1120LW, 1120PL, 1020PL, 1020PLW, 1120PLM, 1120PM

MODELS 1020PL, 1020PLM,



SPECIFICATIONS

Voltage Rating ..... A.C. 105 to 130 Volts
Type of Circuit ..... Superheterodyne with Push Button Tuning
Tuning Ranges ..... A—540 to 1600 Kc., C—8.8 to 12 Mc.
Number and Type of Tubes—7

1—6SK7 R. F. Amplifier
1—6SA7 Modulator and Oscillator
1—6SF7 I. F. Amplifier, Demodulator and A. V. C.
1—6SC7 Audio Amplifier and Inverter
2—6V6GT Output
1—5Y3G Rectifier

Input Power Rating ..... 96-115 Watts
Intermediate Frequency ..... 455 Kilocycles
Speaker Voice Coil Impedance at 400 Cycles Approximately 3.5 Ohm
Speaker Field Coil Resistance ..... 950 Ohms
Power Output ..... 10 Watts 10% Distortion, 12 Watts Maximum

NORMAL VOLTAGE READINGS

Take all readings with chassis operating and tuned to 1000 kc.—No signal.
Use a line voltage of 117 ±5 volts or make allowance for the variations.
Voltages on location chart are taken with a 1000 ohm per voltmeter.
Voltages on table listed below are taken with an electronic voltmeter.
Read from indicated terminals to chassis base.

VOLTAGE TABLE FOR ELECTRONIC VOLTMETER

Tube		1	2	3	4	5	6	7	8
6V6	Output	0	6.3AC	245	251	0	0	0	16
6V6	Output	0	0	245	251	0	0	6.3AC	16.
6SC7	1st A.F. Conv.	0	93	0	0	93	1.1	0	6.3AC
6SA7	Mod. Osc.	0	0	246	80	7.5	0	6.3AC	0
5Y3	Rect.	0	360		340AC	0	340AC	0	360
6SF7	I.F. Det. A.V.C.	0	.6	0	92	0	250	0	6.3AC
6SK7	R.F. Amp.	0	6.3AC	0	.6	0	80	0	196

MODELS 1020PL, 1020PLM, 1120PLW, 1120PLM, 1120LW, 1120PL, 1120PM

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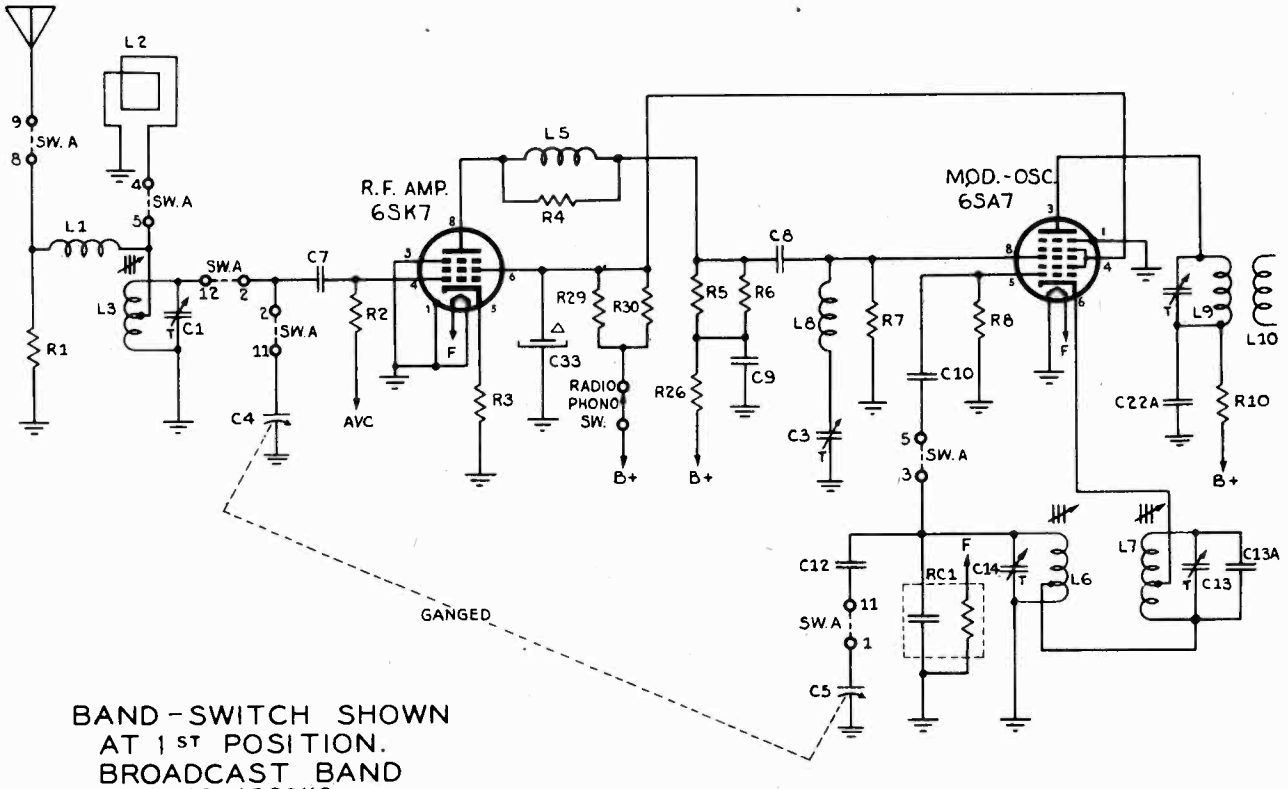
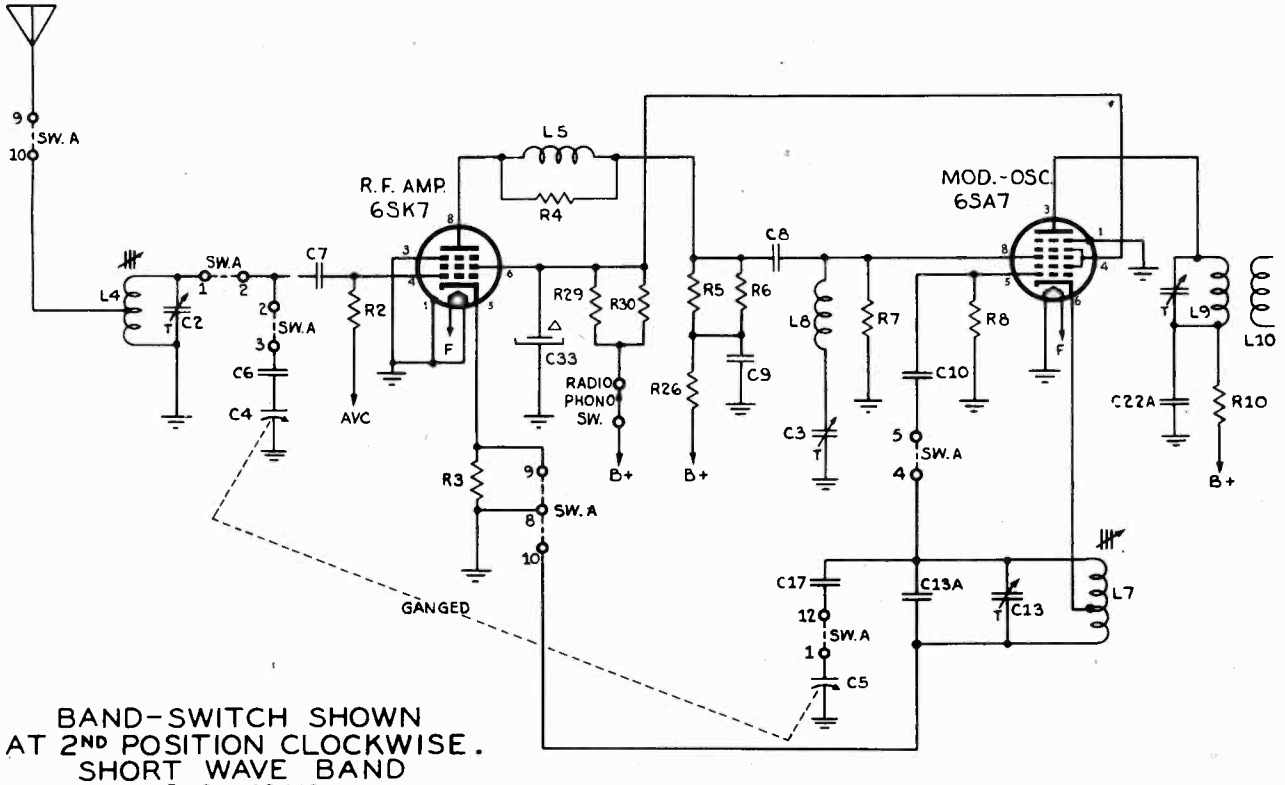


BAND-SWITCH SHOWN AT 1ST POSITION. BROADCAST BAND 540-1600KC.



BAND-SWITCH SHOWN AT 2ND POSITION CLOCKWISE. SHORT WAVE BAND 8.8 - 12 MC.

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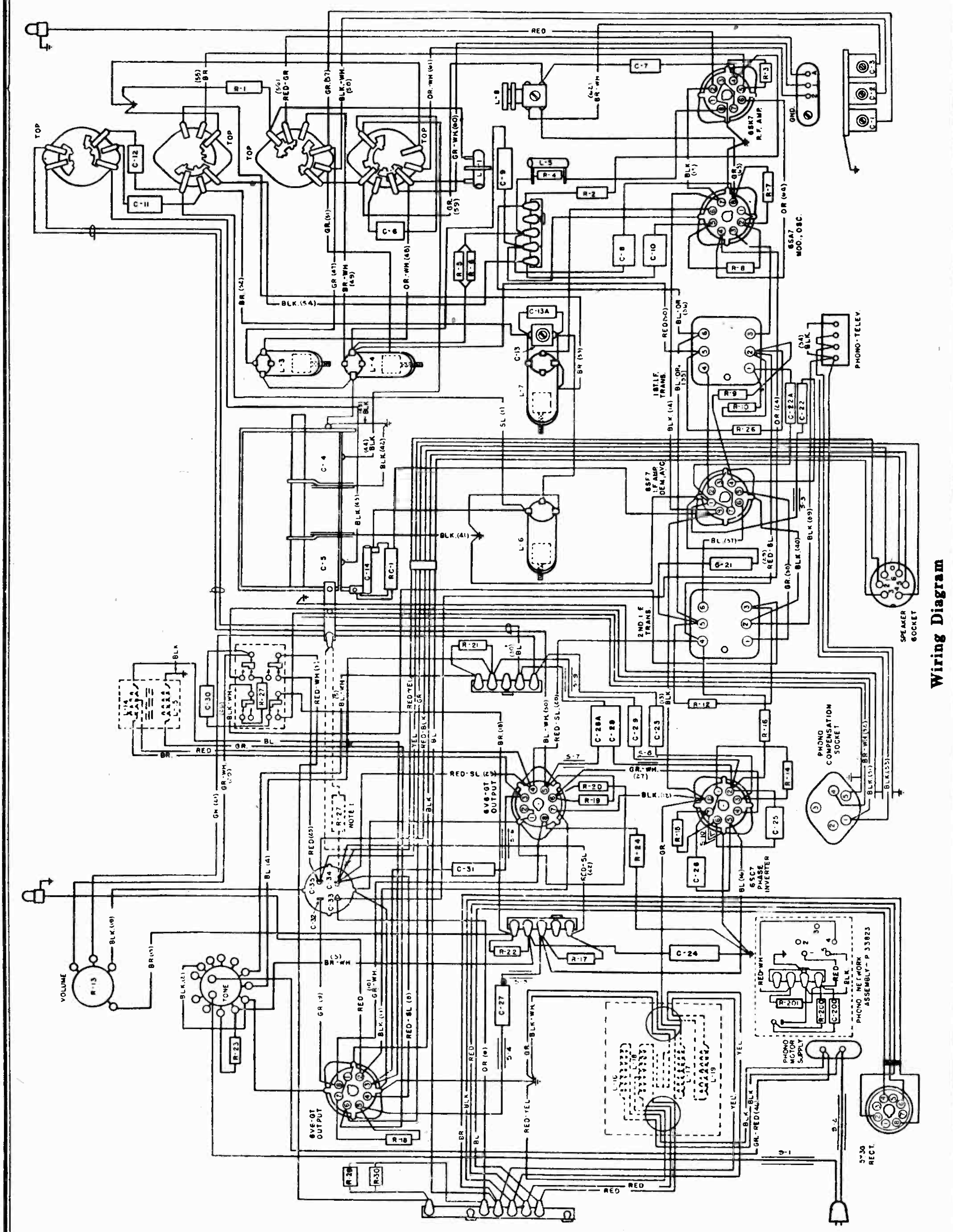
MODELS 1020PL, 1020PLM, 1120LW, 1120PLW, 1120PLM, 1120PL, 1120PM



Wiring Diagram

MODELS 1020PL, 1020PLM, 1120LW, 1120PLW, 1120PLM, 1120PL, 1120PM

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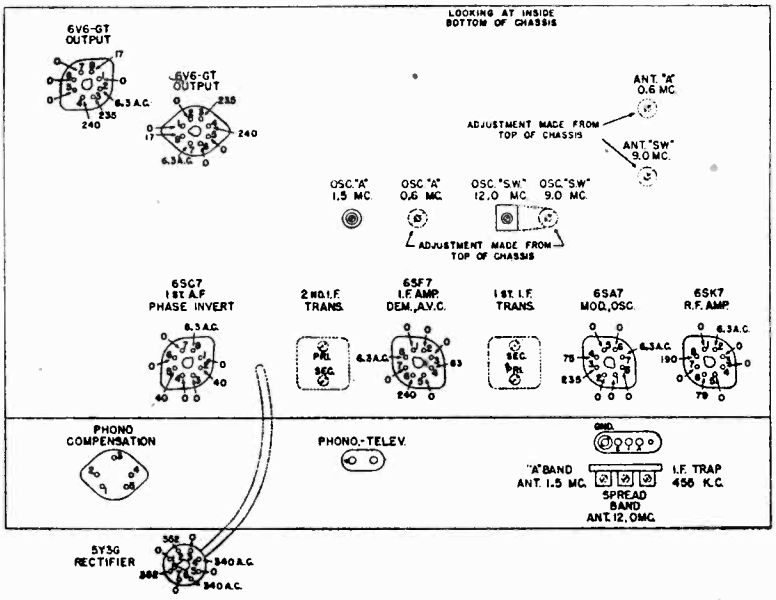
LOCATION CHART



ALIGNING INFORMATION

Never re-align unless absolutely necessary.

Use a good modulated signal generator (test oscillator with variable output voltage and a sensitive output meter across the voice coil of the speaker).

Always align using the smallest possible input from the signal generator. A strong signal makes adjustments inaccurate.

Always have the volume control "full on".

ALIGNING PROCEDURE (follow this order exactly).

I. Intermediate Frequency Adjustments.

1. Set range switch to Standard Broadcast position (loop).
2. Turn the tuning control to extreme low frequency end of dial.
3. Connect the ground terminal of the signal generator to the ground terminal of the chassis.
4. Introduce a modulated signal of 455 kilocycles to the grid of the 6SA7 Modulator and Oscillator tube (terminal No. 8) using a 0.1 microfarad capacitor in series with the output lead of the signal generator.
5. Adjust the I. F. aligners for maximum output in the following order:
   A. Secondary of second I. F. Transformer.
   B. Primary of second I. F. Transformer.
   C. Secondary of first I. F. Transformer.
   D. Primary of first I. F. Transformer.

II. Dial Pointer Adjustment.

With the plates of the gang tuning capacitor fully engaged, check to be sure that the dial pointer is in a vertical position directly on the calibration marks located at the low frequency end of the dial scale. Adjust the dial pointer if necessary.

III. Radio Frequency Adjustments.

Short Wave Range

1. Remove the output lead of the signal generator and the 0.1 microfarad capacitor from the grid of the 6SA7 tube.
2. Disconnect the output lead from the signal generator and replace with a few turns of wire connected to the signal generator output terminals.
3. Place the signal generator two or three feet from the receiver's loop.
4. Set the range switch to the short-wave range position.
5. Set the signal generator frequency and the receiver tuning dial to 9 megacycles.
6. Adjust the 9 megacycle oscillator and loop aligners (iron cores) for maximum signal.
7. Set the signal generator frequency and the receiver tuning dial to 12 megacycles.
8. Adjust the 12 megacycle oscillator aligning capacitors for maximum signal. Then rock the tuning gang capacitor slowly through resonance and adjust the 12 megacycle antennae aligning capacitor for maximum signal.
9. Repeat operations 5 and 6.
10. Repeat operations 7 and 8.

Standard Broadcast Range

1. Set the range switch to the "Loop" position.
2. Set the signal generator frequency and the receiver tuning dial to 600 kilocycles.
3. Adjust the 600 K. C. oscillator and antennae aligner (iron cores) for maximum signal.
4. Set the signal generator frequency and the receiver tuning dial to 1400 kilocycles.
5. Adjust the 1400 K. C. oscillator and antennae aligning capacitors for maximum signal.
6. Repeat operations 2 and 3.
7. Repeat operations 4 and 5.

IV. Wave Trap Adjustment.

1. Tune the receiver to 1000 kc.
2. Set the signal generator frequency to 455 kc. Increase signal generator output until audible in speaker.
3. Adjust the wave trap aligning capacitor for minimum signal.

STROMBERG CARLSON CO.

MODELS 1020PL, 1020PLM, 1120LW, 1120PLW, 1120PLM, 1120PL, 1120PM
MODELS 1100H, 1100HI

Model	Input Power Frequency	Chassis	Cabinet	Speaker	Phonograph Equipment
1020PLM	50-60 Cycles	33449	35924	33435	41650
1120LW	50-60 Cycles	37086	37057	33435	-----
1120PLW	50-60 Cycles	37086	35987	33435	41650
1120PLM	50-60 Cycles	37086	108012	33435	41650

Capacitors

Part No.		
24405	C-21	.04 mf.
25150	C-9	.02 mf.
25481	C-31	.002 mf.
25485	C-27	.01 mf.
27760	C-23, 29	.005 mf.
27782	C-24	.03 mf.
29891	C-22, 22A	.05 mf.
31480	C-28, 28A	.01 mf.
32056	C-13A	25 mmf.
27305	C-10	50 mmf.
24559	C-7, 8, 19, 20, 25, 26, 30	100 mmf.
33907	C-11	.147 mmf.
33909	C-6	200 mmf.
33904	C-12	410 mmf.
33894	C-32, 33, 34, 35	Electrolytic—20-15-15-40
27081	C-13	Aligning Capacitor
33567	C-14	Aligning Capacitor
33885	C-1, 2, 3	Aligning Capacitor
33755	C-4, 5	Variable Condenser and Pulley
33906	RC-1	Compensator

Controls—Switches—Knobs

Part No.		
29560	R-13	Volume Control—1 Meg.
32063		Off-On Tone Switch
32064		Phono-Radio Switch
33893		Range Switch
35725		Knob—Off-On, Range
32224		Knob—Volume, Tone
37093		Knob Selector
32156		Push Buttons
35996		Push Button—Phono
35997		Push Button—Radio

Coils—Transformers

Part No.		
33876	L-3	Antenna Coil, "A" Band
33877	L-6	Oscillator Coil, "A" Band
33878	L-4	Antenna Coil, "SW" Band
33879	L-7	Oscillator Coil, "SW" Band
33880	L-9, 10; C-15, C-16	1st I. F. Transformer
33882	L-11, 12; C-17, C-18	2nd I. F. Transformer
33886	L-5	RF Choke Assembly
33908	L-8	Wave Trap
33910	L-1	Antenna Coupling Coil
33900	L-16, 17, 18, 19	Power Transformer
33853	L-14, 15	Output Transformer
37114	L-2	Loop (1020PL)
33845	L-2	Loop (1120L)
33435		Speaker
33438		Speaker Cone

Resistors

Part No.		
26329	R-26	470 Ohms
26331	R-3	680 Ohms
26333	R-10, R-1	1,000 Ohms
26335	R-15	1,500 Ohms
26345	R-20	10,000 Ohms
26346	R-22	12,000 Ohms
26347	R-23	15,000 Ohms
26349	R-4	22,000 Ohms
26351	R-8	33,000 Ohms
26353	R-7, 9, 11	47,000 Ohms
26355	R-21	68,000 Ohms
26365	R-16, 17, 18, 19, 28	470,000 Ohms
26373	R-2, 12	2.2 Megohms
26375	R-14	3.3 Megohms
30417	R-5, 6	10,000 Ohms
33913	R-24	240 Ohms
149003	R-29-30	60,000 Ohms

Cabinet Parts—Hardware

1020PL—1120PL Part No.			1120L Part No.
38427		Pulls—Ornamental	37147
37084		Key Pull	
37143		Hinge	
37145		Lid Support	
38382		Pussy Foot Glider	
37156		Grille Cloth—Album Door	
37157		Grille Cloth—Baffle	37163
41102		Stop Hinge Door—Lower	
41103		Stop Hinge Door—Upper	
38442		Bullet Catch with Strikes and Nails	
37155		Metal Grille	37162

Miscellaneous

Part No.		
22973		Tube Socket, 5 PT.
30151		Tube Socket, 8 PT. Wafer
33248		Tube Socket, 8 PT. Molded
32048		Socket (AC Outlet)
28694		Socket (Pilot Lamp)
28652		AC Cord
33056		Cable Assembly—Rectifier
33824		Cable Assembly—Speaker
32078		Drive Assembly
35728		Pointer Assembly
33891	(1020)	Dial
37070	(1120)	Dial
29956		Pilot Lamp
32128		Cord Assembly—Pointer Drive
80000		Cord Assembly—Cond. Drive
30224		Phono Plug
33444		Speaker Plug
35866		Station Call Letters—Kit

Model	Input Power Frequency	Chassis	Cabinet	Speaker
1100-H	25-60 Cycles AC (or DC)	35982	33528	34505
1100-HI	25-60 Cycles AC (or DC)	35982	37269	34505

Capacitors

Part No.		
34506	C-1, C-2	Electrolytic Capacitor, 2—40 mfd.
27921	C-28	Aligning Capacitor
24166	C-17	25 mmf.
27101	C-3	200 mmf.
29371	C-5	500 mmf. Capacitor
24560	C-7, C-24	50 mmf. Capacitor
27760	C-25	.005 mfd. Capacitor
27646	C-6	.002 mfd. Capacitor
25485	C-27, C-8	.01 mfd. Capacitor
29891	C-13, C-26	.05 mfd. Capacitor
40632	C-16	.05 mfd. Capacitor
28002	C-29	.25 mfd. Capacitor
31698	C-19, C-22	Variable Capacitor and Pulley

Resistors

Part No.		
26322	R-15	120 Ohm Resistor
26323	R-21, R-3	150 Ohm Resistor
26341	R-14	4700 Ohm Resistor
26349	R-10	22,000 Ohm Resistor
26353	R-8	47,000 Ohm Resistor
26362	R-11, R-5	270,000 Ohm Resistor
26365	R-4	470,000 Ohm Resistor
26369	R-13, R-7	1 Megohm Resistor
26373	R-9	2.2 Megohm Resistor
26381	R-6	10 Megohm Resistor
41580	R-22	22 Ohm Resistor

Coils, Transformers and Speakers

Part No.		
33205	L-10, 11	Loop
33206	L-8, 9	Oscillator Coil
33249	L-12	Wave Trap
31686	L-6, 7; C-14, 15	1st I. F. Transformer
33208	L-4, 5; C-9, 10, 11, 12	2nd I. F. Transformer
34505		Speaker Assembly

Controls and Knobs

Part No.		
31694	R-7	Off-On Switch and Volume Control
42495		Switch
31260		Knob (3)

Miscellaneous Parts

Part No.		
33599		Back Panel
34590		Tube Socket
37125		Dial
33531		Dial Glass
33533		Grill Cloth
31693		Bottom Cover
33211		Pointer
31824		Dial Cord Assembly
30947		Socket (Pilot Lamp)
30933		Pilot Light
33218		Power Supply Cord

MODELS 1100H, 1100HI

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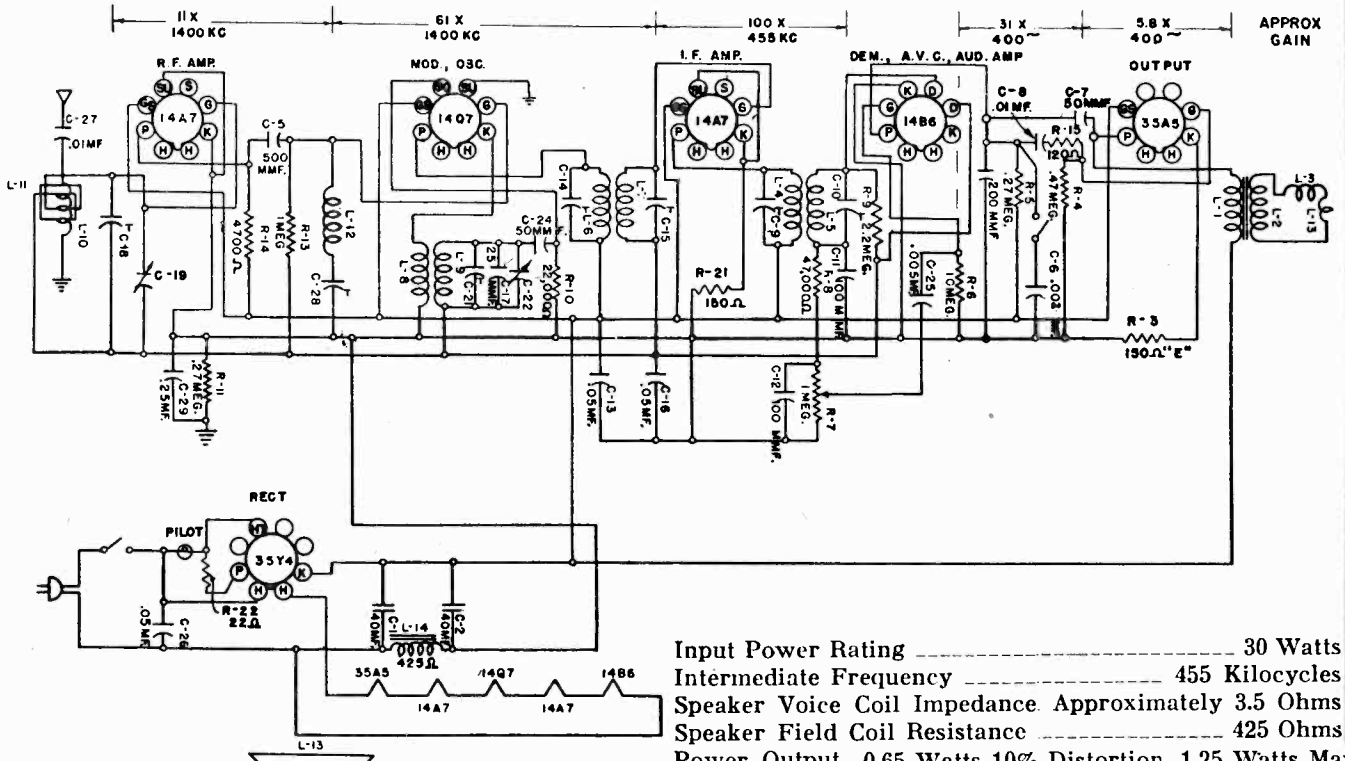
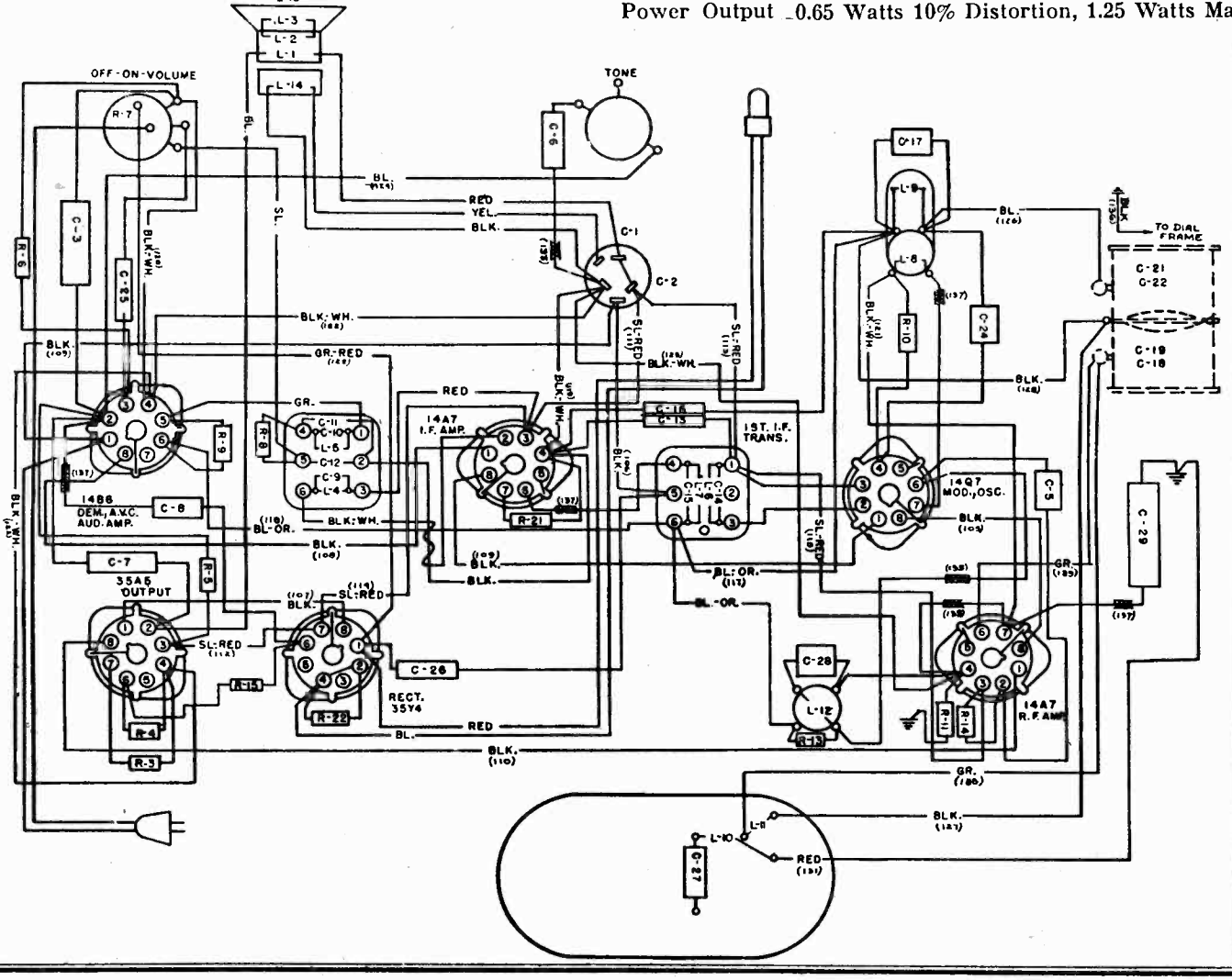


Input Power Rating	30 Watts
Intermediate Frequency	455 Kilocycles
Speaker Voice Coil Impedance	Approximately 3.5 Ohms
Speaker Field Coil Resistance	425 Ohms
Power Output	0.65 Watts 10% Distortion, 1.25 Watts Max



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VOLTAGE CHART FOR ELECTRONIC VOLTMETER

Tube	Circuit	1	2	3	4	5	6	7	8
14B6	Dem. A.V.C. Audio Amp.	—B	81	14	26.5	23.5	18	27	12AC
14A7	I. F. Amp.	11.5AC	105	105	36.5	26	18.4	27.6	24AC
14A7	R. F. Amp.	47AC	69	105	26.7	26	18.4	26.7	35AC
35A5	Output	82.5AC	100	105	26.5	0	25	32	49AC
14Q7	Mod. Osc.	27.5AC	105	105	18	26	17.2	26.5	36AC
35Y4	Rect.	105AC	117AC	0	117AC	0	25.8	105	85AC

NORMAL VOLTAGE READINGS

Use a good voltmeter having a resistance of at least 1000 ohms per volt. See chart below if electronic voltmeter is used.

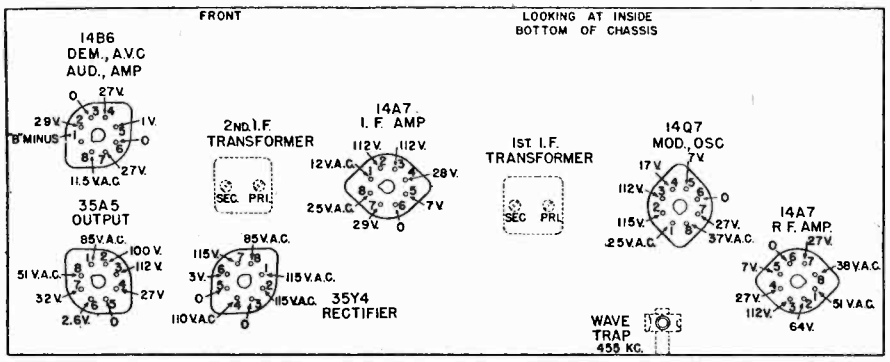
Take all readings with chassis operating and tuned to approximately 1000 Kc.—no input signal.

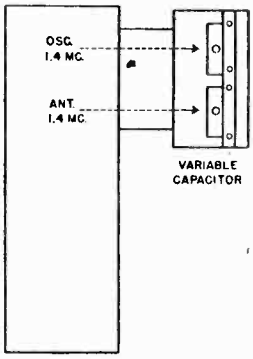
Use a line voltage of 117 volts or make allowance for the variation.

Read from indicated socket terminals to B minus. A convenient point is terminal No. 1 of the 14B6 Dem. A.V.C. Socket.

See Location Chart for position of terminals.

A. C. Voltages are indicated as A. C.; when the receiver is operated from a D. C. power supply, D. C. voltages will be obtained in place of A. C. voltages shown.





ALIGNING INFORMATION

Never realign unless absolutely necessary.

Use a good modulated signal generator (test oscillator) with variable output voltage and a sensitive output meter across the voice coil of the speaker.

Always align using the smallest possible input from the signal generator. A strong signal makes adjustments inaccurate.

Always have the volume control "full on".

Important: Be sure the metal plate is fastened in place on the bottom of the chassis before alignment is attempted.

ALIGNING PROCEDURE (follow this order exactly).

I. Intermediate Frequency Adjustments.

1. Turn the tuning control to the extreme low frequency position. (Variable capacitor plates all the way in.)
2. Connect the ground terminal of the signal generator to the chassis base.
3. Introduce a modulated signal of 455 kilocycles using a .01 mfd. capacitor in series with the lead from the signal generator to the antenna connection located at rear of the pickup loop.
4. Adjust the I. F. aligners for maximum output in the following order:
   - A. Secondary of second I. F. Transformer.
   - B. Primary of second I. F. Transformer.
   - C. Secondary of first I. F. Transformer.
   - D. Primary of first I. F. Transformer.

II. Dial Pointer Adjustment.

With the plates of the gang tuning capacitor fully engaged set the dial pointer in a horizontal position directly on the upper edge of the calibration mark located at 550 Kc. on the dial scale.

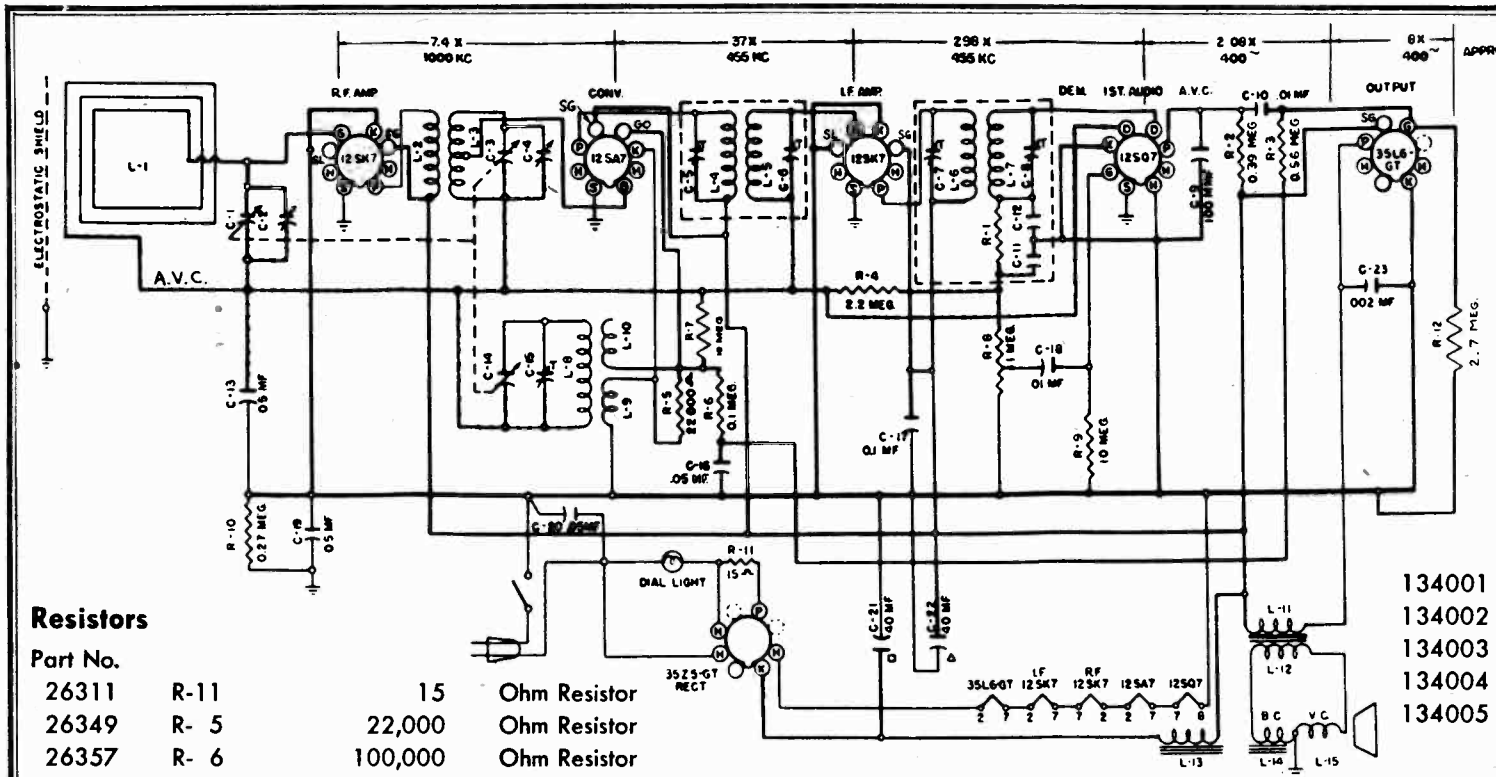
III. Radio Frequency Adjustments.

1. Replace the .01 mfd. capacitor in series with the output lead of the signal generator with a 200 mmf. capacitor and connect to the antenna terminal located on the back of the loop assembly.
2. Set the signal generator's frequency and the receiver's tuning dial to 1.4 megacycles.
3. Adjust the oscillator and antenna aligning capacitors for maximum signal.
4. Set both the signal generator's frequency and the receiver's tuning dial to 0.6 megacycles and check calibration.
   NOTE: If the calibration is too far off at 0.6 megacycles, operations 2 and 3 may be repeated until the best results are obtained.

Wave Trap Adjustment.

(Leave the receiver connected in the same manner as when making the Radio Frequency Adjustments.)

1. Tune set to 1000 K. C.
2. Set the signal generator frequency to 455 K. C. and introduce a fairly strong modulated signal to the receiver.
3. Adjust the wave trap aligner for minimum signal.



Resistors

Part No.			
26311	R-11	15	Ohm Resistor
26349	R- 5	22,000	Ohm Resistor
26357	R- 6	100,000	Ohm Resistor
26362	R-10	270,000	Ohm Resistor
26364	R- 2	390,000	Ohm Resistor
26366	R- 3	560,000	Ohm Resistor
26373	R- 4	2.2	Meg. Resistor
26381	R- 7, 9	10	Meg. Resistor
28196	R-12	2.7	Meg. Resistor
145001	R- 8	Volume Control-off-on-switch	

Capacitors

Part No.		
24559	C- 9	100 mmf. Capacitor
25485	C-10, 18	.01 mfd. Capacitor
40632	C-13, 19, 20-16	.05 mfd. Capacitor
111001	C-21, 22	Electrolytic Capacitor 2-40 mfd.
23483	C-17	0.1 mfd. Capacitor
27646	C-23	.002 mf. Capacitor
110001	C- 1, 2, 3, 4, 14, 15	Variable Capacitor

Miscellaneous

Part No.	
30151	Socket—8 Pt.
152001	Socket, Pilot Light
138008	Dial Lens HB-HI
105048	Bracket, Right Dial
105049	Bracket, Left Dial
122011	Dial HW, HB, HI, HY
122003	Dial—HM
144001	Pointer—1101-HB, HI, HW, HY
144002	Pointer—1101-HM
124001	Drive Cord Assembly
32075	Pulley
40546	Clip
30933	Pilot Light
33218	Power Supply Cord

134001	Knob (1101-HW) (2)
134002	Knob (1101-HY) (2)
134003	Knob (1101-HM) (2)
134004	Knob (1101-HB) (2)
134005	Knob (1101-HI) (2)

Coils—Transformers

Part No.		
114001	L- 2, 3	RF Coil Assembly
114002	L- 4, 5	Osc. Coil Assembly
114301	L- 8, 9, 10, C-14, 15	1st I.F. Transformer
114302	L- 6, 7, C-7, 8, 11, 12, R-1	2nd I.F. Transformer
139005	L- 1	Loop Assembly
151013	Electro Static Shield and Back	HB-HI
151014	Electro Static Shield & Back	HM, HW, HY
155001	L-11, 12, 13, 14, 15	Speaker Assembly

Voltage Rating	105-125 Volts
Type of Circuit	Superheterodyne
Tuning Range	540 Kc. to 1600 Kc.
Input Power Rating	50 Watts
Input Power Frequency	25-60 Cycles AC-DC
Intermediate Frequency	455 Kc.
Speaker Voice Coil Impedance	at 400 Cycles 3.5 Ohms
Speaker Field Coil Resistance	425 Ohms
Power Output	0.65 Watts

MODELS 1101-HB,-HI,
-HM,-HW,-HY

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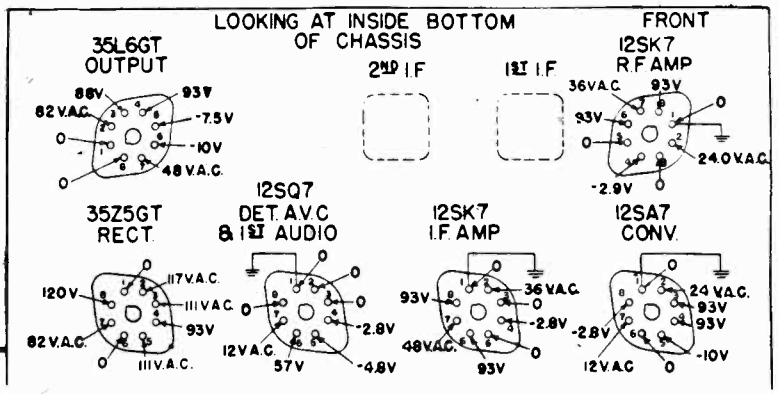
Voltage Chart

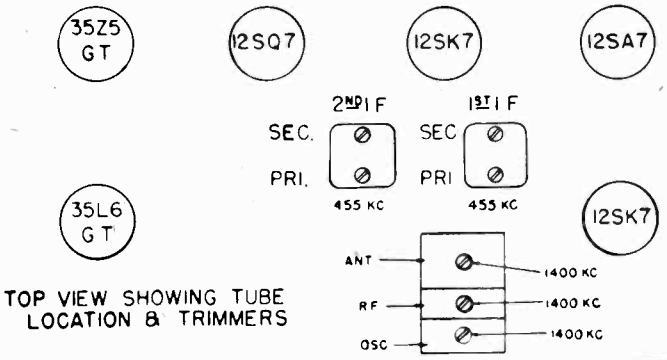
Measurements are made at 117 volt line, using electronic voltmeter.

Except where otherwise indicated, voltages are D.C. and are positive with respect to the reference point which is the minus B or neutral buss, black and white wire.



IDENTIFICATION TABLE

MODEL	CHASSIS	CABINET	SPEAKER	
			SERIES 10	SERIES 11
1101—HB Br. Bakelite	112002	108031	155001	155013
1101—HI Ivy. Bakelite	112002	108032	155001	155013
1101—HM Mahogany	112003	108011	155001	155013
1101—HW Walnut	112001	108001	155001	155013
1101—HY Bleached	112001	108002	155001	155013



TOP VIEW SHOWING TUBE LOCATION & TRIMMERS

ALIGNING

Never realign unless absolutely necessary

Use a good signal generator modulated at 400 or 1000 cycles with variable output voltage and a sensitive output meter across the voice coil of the speaker.

Always align using the smallest possible input from the signal generator. *A strong signal makes adjustments approximate.*

Always have the volume control "full on."

Aligning Procedure *(follow this order exactly)*

Intermediate Frequency Adjustments

1. Turn the tuning control to the extreme low frequency position. (Variable capacitor plates all the way in).
2. Connect the ground terminal of the signal generator to the common buss. (Black and White wire).
3. Introduce a modulated signal of 455 kilocycles using a .01 mfd. capacitor in series with the lead from the signal generator to the modulator grid, terminal No. 8, of the 12SA7 tube.
4. Adjust the I.F. Aligners for maximum output in the following order:
   - A. Secondary of second I.F. Transformer.
   - B. Primary of second I.F. Transformer.
   - C. Secondary of first I.F. Transformer.
   - D. Primary of first I.F. Transformer.

Dial Pointer Adjustments

1. Disconnect the .01 mfd. capacitor in series with the signal generator, disconnect signal generator ground from black and white buss. Connect both signal generator lead and ground lead to an 8 inch radiating loop. *(1 turn).* Place the radiating loop close to the antenna of the receiver.
2. Turn the plates of the gang tuning capacitor full out *(complete clockwise rotation).*
3. Set signal generator to 1580 kilocycles and adjust oscillator trimmer for maximum output. Now set signal generator to 1400 kilocycles and tune set to receive 1400 kilocycle signal. Adjust pointer to center of 1400 kilocycles calibration on dial.

Radio Frequency Adjustments

1. Leave signal generator loop connected in same position as for dial pointer adjustment.
2. Set signal generator and receiver tuning dial to 1400 kilocycles.
3. Adjust the oscillator, radio frequency and antenna trimmers for maximum output.
4. Set both the signal generator's frequency and the receiver's tuning dial to a 600 kilocycles and check calibration.

Note: If the calibration is too far off at 600 kilocycles, operations 2 and 3 may be repeated until the best results are obtained.

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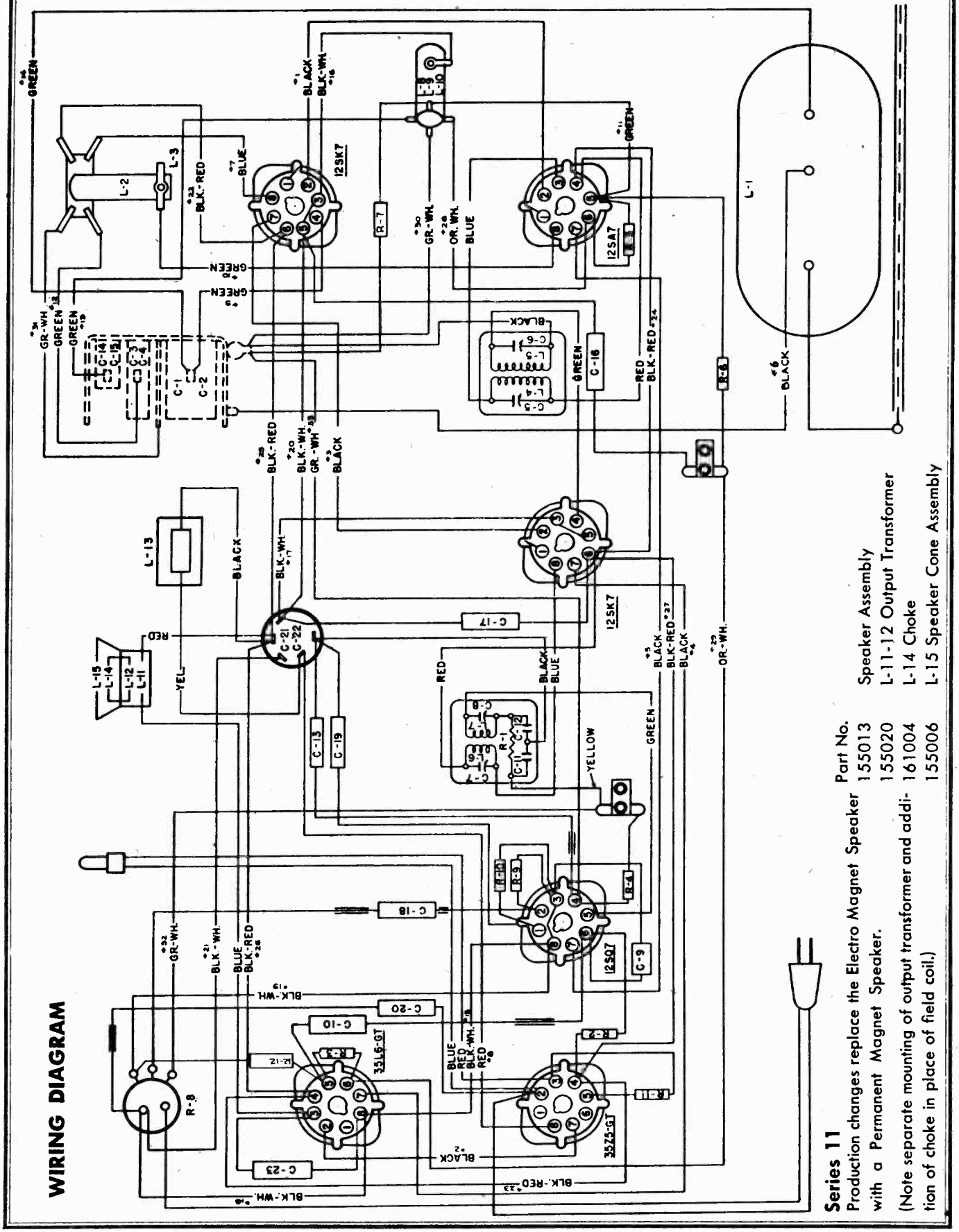
MODELS 1101-HB,-HI, -HM,-HW,-HY



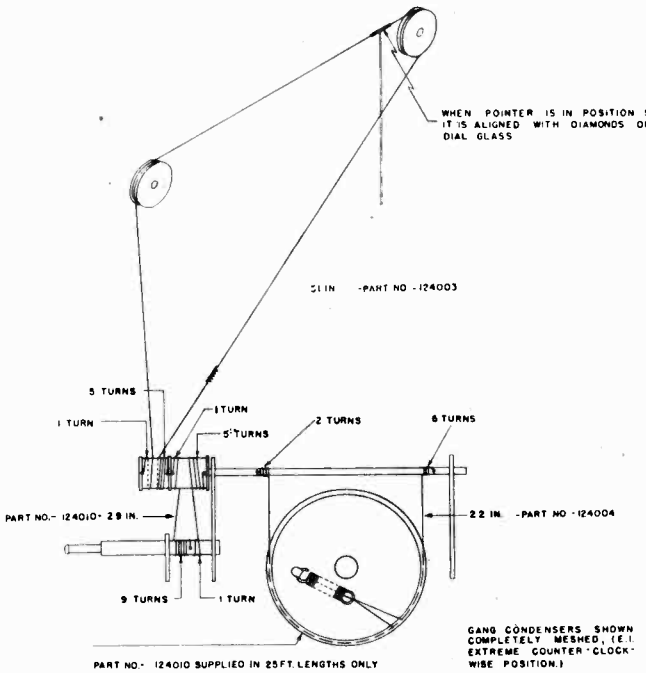
Part No.	
155013	Speaker Assembly
155020	L-11-12 Output Transformer
161004	L-14 Choke
155006	L-15 Speaker Cone Assembly

Series 11
Production changes replace the Electro Magnet Speaker with a Permanent Magnet Speaker.
(Note separate mounting of output transformer and addition of choke in place of field coil.)

MODELS 1121-PFM,-PFW,-PGM,
-PGW,-PLW,-PLM,-M1-O,-PSM,-M2-Y,-M2-W,-LW,-HW

STROMBERG CARLSON CO.

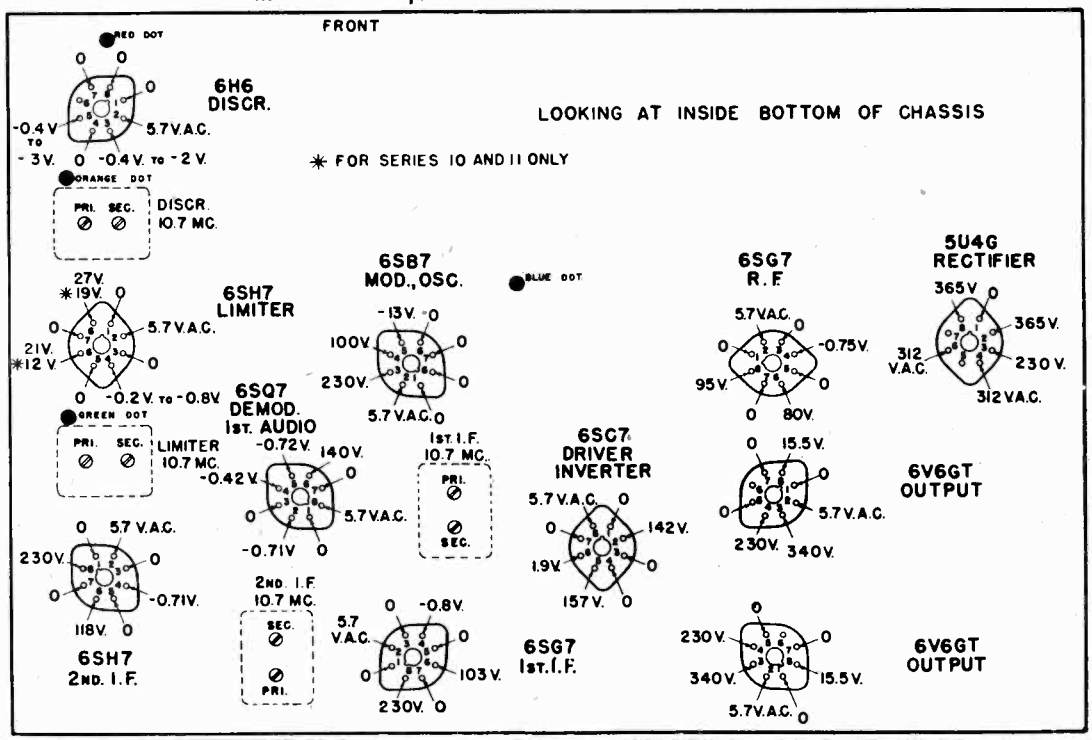
STRINGING CHART



IDENTIFICATION TABLE

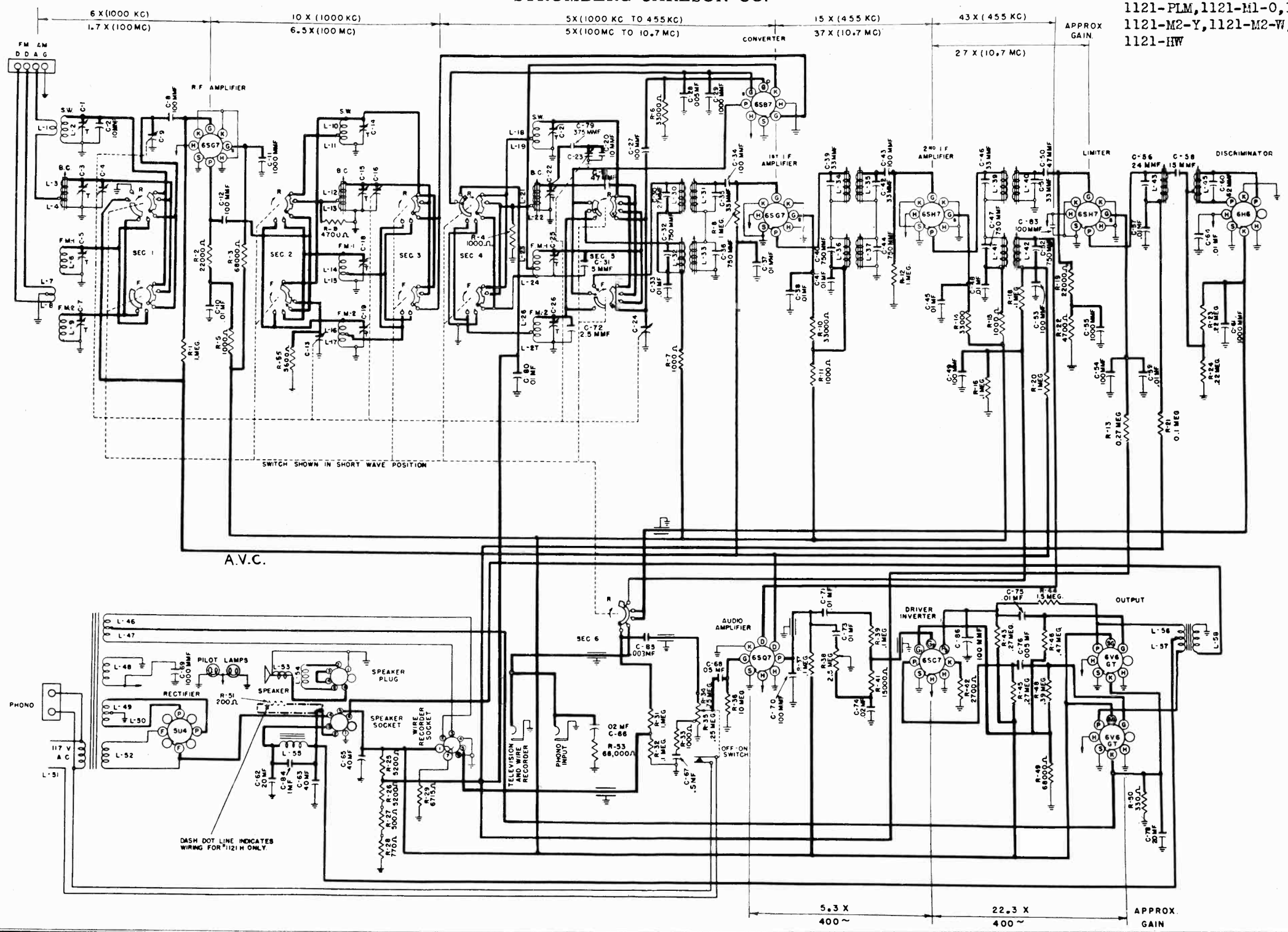
Model	Chassis	Cabinet	Speaker	Phonograph Equipment
PFM	112004	41654	33435	148001
PFW	112004	41653	33435	148001
PGM	112004	35777	33435	41612
PGW	112004	35985	33435	41612
PLW	112004	108015	33435	148001
PLM	112004	108014	33435	148001
M1-0	112004	39213	33435	41612
PSM	112004	108028	33435	41612
M2-Y	112004	108019	33435	41612,
M2-W	112004	45207	33435	41612
LW	112004	47908	33435	———
HW	112004	108020	155012	———

Measurements are made at the 117 volt line, using electronic voltmeter. Except where otherwise indicated, voltages are D. C. and are positive with respect to the reference point which is the chassis.



MODELS 1121-PFM,1121-PFW, 1121-PGM,1121-PGW,1121-PLW, 1121-PLM,1121-M1-0,1121-PSM, 1121-M2-Y,1121-M2-W,1121-LW, 1121-HW

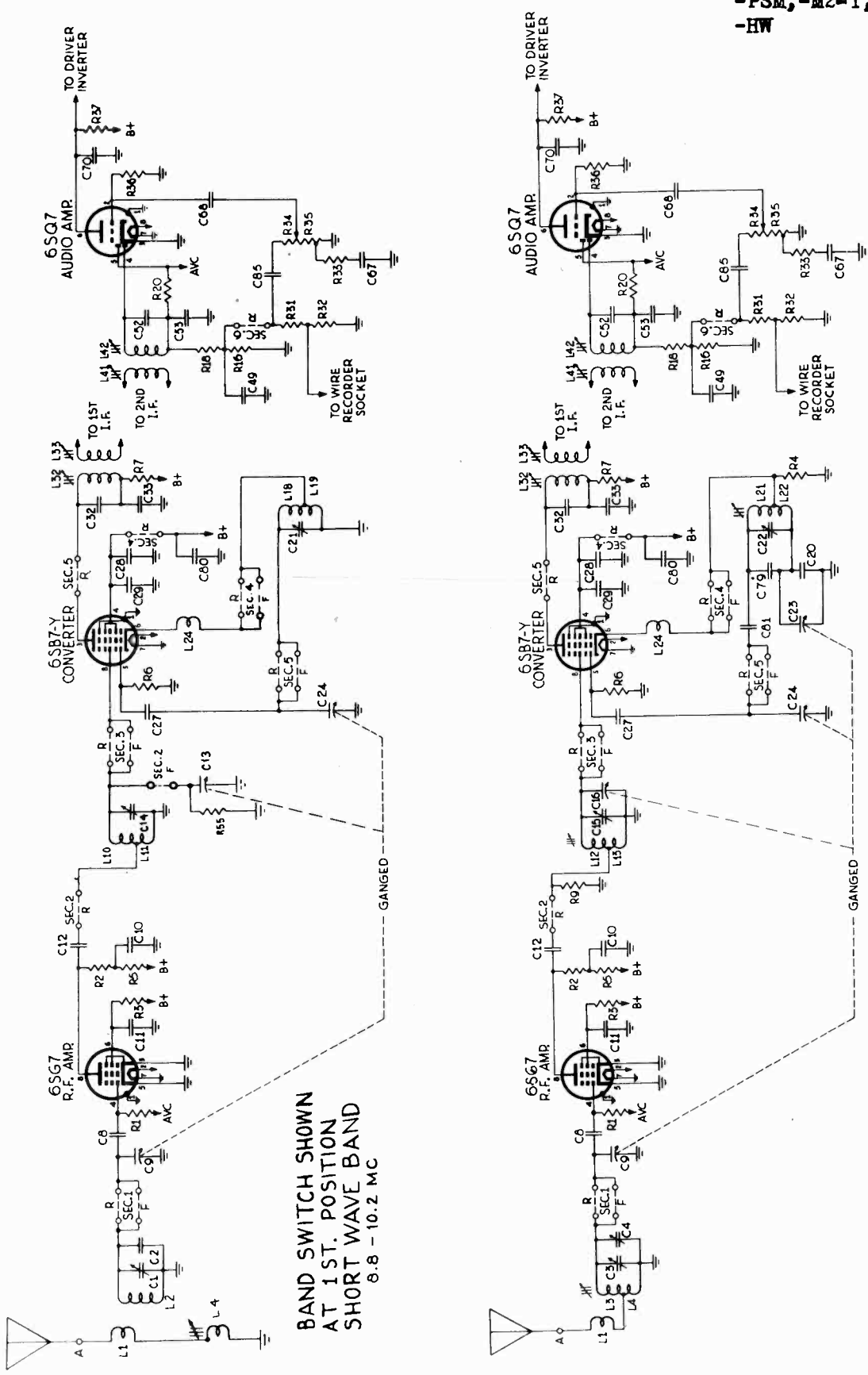
STROMBERG CARLSON CO.



Phonograph equipment 148001 uses Webster Record Changer Model 50; phonograph equipment 41612 uses Seeburg Record Changer Model L. See Table P.15-12

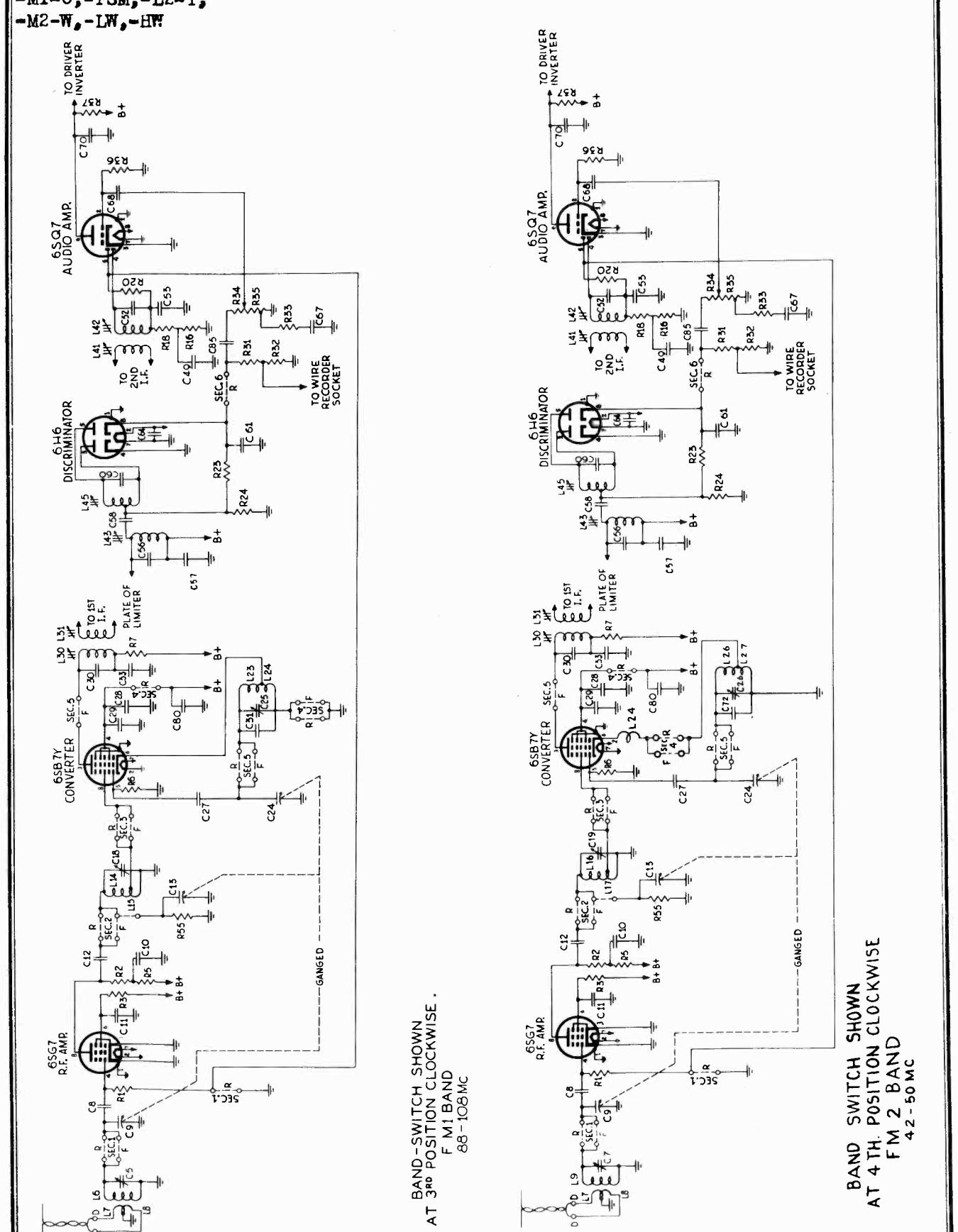
MODELS 1121-PFM,-PFW,
-PGM,-PGW,-PLW,-PLM,-M1-O,
-PSM,-M2-Y,-M2-W,-LW,
-HW

STROMBERG CARLSON CO.



MODELS 1121-PFM,-PFW,
-PGM,-PGW,-PLW,-PLM,
-M1-O,-PSM,-L2-Y,
-M2-W,-LW,-HW

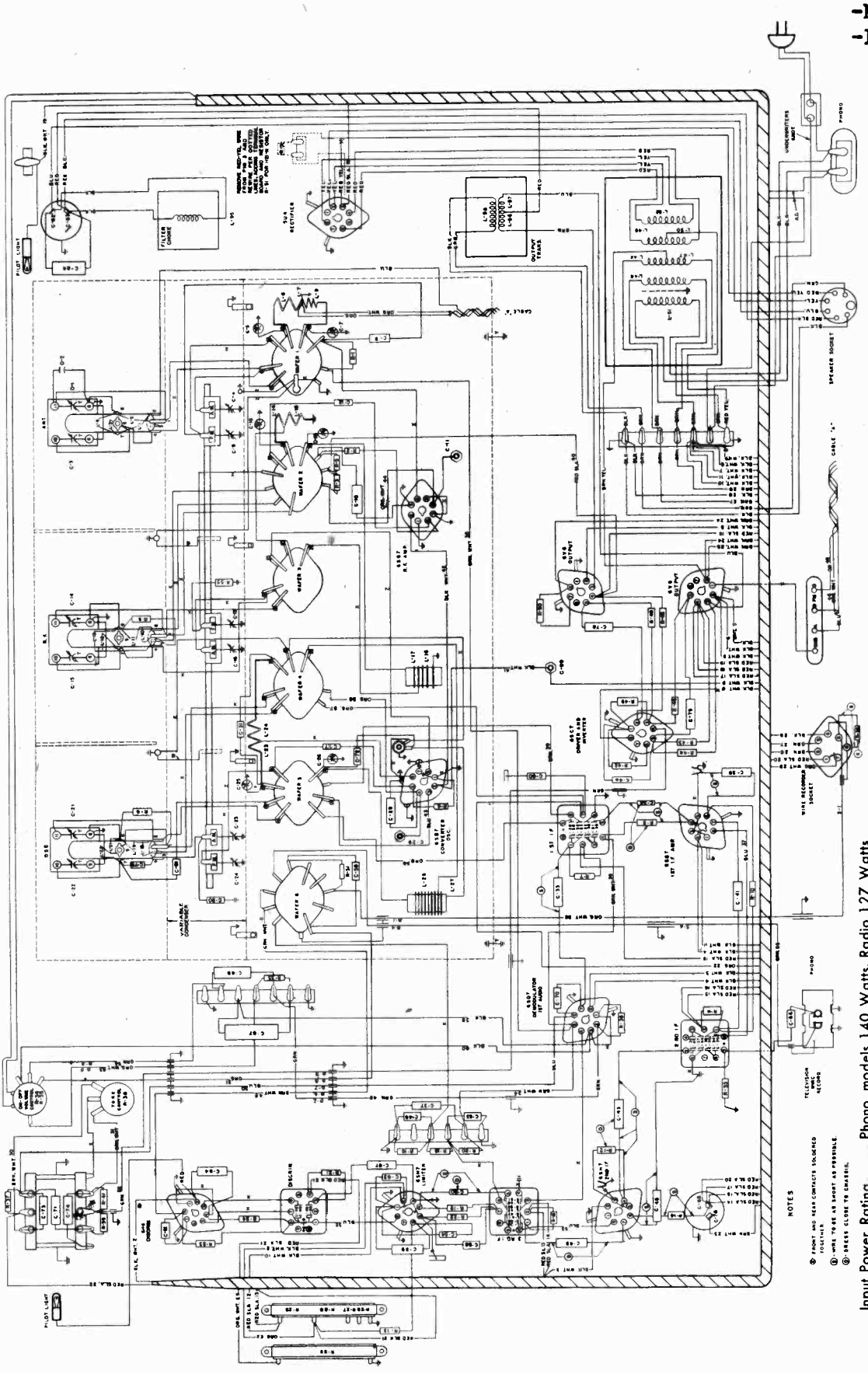
STROMBERG CARLSON CO.



STROMBERG CARLSON CO.

MODELS 1121-PFM,-PFW,
-PGM,-PGW,-PLW,-PLM,
-M1-O,-PSM,-M2-Y,
-M2-W,
-LW,-HW

WIRING DIAGRAM



Input Power Rating..... Phono. models 140 Watts, Radio 127 Watts
Intermediate Frequency ..... A.M. 455 KC, F.M. 10.7 MC.
Speaker Voice Coil Impedance at 400 cycles.....3.5 Ohms
Speaker Field Resistance .....950 ohms, Model HW 800 ohms
Power Output.....8 Watts less than 10% Distortion

Voltage Rating.....105-125 Volts
Type of Circuit.....Superheterodyne
Tuning Range:.....Broadcast—540—1620 KC SW 8.8—10.2 MC
FM 42-50 MC 88-108 MC

STROMBERG CARLSON CO.

ALIGNING

Never realign unless absolutely necessary.

Refer to "Location Chart" for alignment adjusters. Allow set to warm up 10 to 15 minutes before attempting to align.

Always align using the smallest possible input from the signal generator. *A strong signal makes adjustments approximate.*

Always have volume full on.

The alignment of this receiver does not require special equipment or information; however, it is well to adhere to the standard procedure as outlined.

The required equipment is: 1 Electronic Voltmeter, 1 Output Meter, 1 Standard Signal Generator, 1 High Frequency Signal Generator, 1 No. 80777 Aligning Tool.

Aligning Procedure *(follow this order exactly)*

Intermediate Frequency Adjustments Amplitude Modulation

The I.F. aligners that are used to adjust the amplitude modulation (AM) channel are found on the top side of the chassis. They consist of 6 adjustable iron cores used to tune the inductance of the 1st, 2nd & 3rd I.F. transformers (161202, 161200, 161201). These cores are found inside the plastic tubes protruding from the top of the I.F. transformers and are equipped with small screwdriver slots.

Caution: These cores are made of high quality R.F. iron and are fragile; therefore care must be used in adjusting them.

1. Connect the signal generator to the modulator grid, terminal number 8 of the 6SB7 converter tube which is connected to the wave band switch, and is identified by a blue dot.
2. Connect the output meter across the voice coil of the speaker (green and black wires from cable).
3. Adjust the signal generator to 455 KC. Use 30% modulation at 400 cycles.
4. Adjust volume control full on.
5. Adjust tone control to maximum high (counter clockwise).
6. Adjust range switch to standard broadcast band, (second position clockwise.)
7. Adjust the tuning selector to approximately 600 KC.
8. Adjust I.F. cores for maximum output with a reduced signal Input.

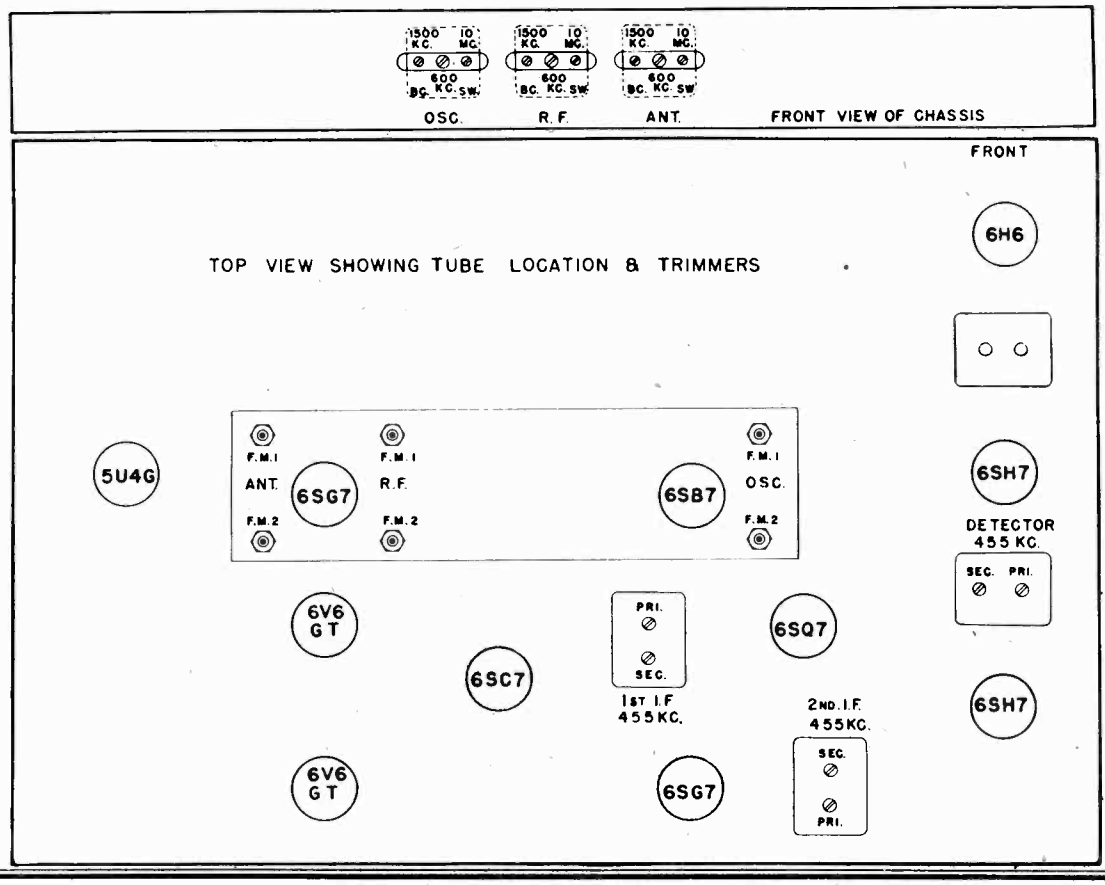
Frequency Modulation

The I.F. Aligners may be found from the underside of the chassis. The adjusters are 6 Iron cores used to tune the inductance of the high frequency coils.

1. Connect the signal generator to the modulator grid, terminal number 8 of the 6SB7 converter tube, which is connected to the wave band switch, and is identified by a blue dot.

LOCATION CHARTS

TUBES, TRIMMERS AND VOLTAGE



STROMBERG CARLSON CO.

2. Connect the electronic voltmeter to the junction of the 22,000 and the 4,700 ohm resistors in the limiter grid circuit, identified by a green dot.
3. Adjust the voltmeter to the lowest negative voltage scale.
4. Turn the range switch to the 2nd F.M. band (fourth position clockwise).
5. Adjust the tuning selector to approximately 21 on this band.
6. Adjust the signal generator to 10.7 megacycles. No modulation is required.
7. Adjust the cores for maximum output of the voltmeter. Reduce the input signal and readjust until the maximum output is secured for minimum input.

Discriminator Alignment (FM)

1. Connect the signal generator to the grid of the second I.F. tube, terminal No. 4 of the 6SH7.
2. Connect the electronic voltmeter to the center of the diode load resistors at the point indicated by the orange dot.
3. Adjust the primary for maximum output with the signal generator set at 10.7 megacycles.
4. Switch the electronic voltmeter to the high side of the diode load resistors, identified by a red dot.
5. Adjust the secondary for zero output.
6. Swing generator to 75 KC higher and 75 KC lower in frequency and note the plus and minus voltage. If these voltage values are not approximately equal, repeat operations 3, 4 and 5.

Dial Pointer Adjustment

Check dial pointer to see that it is aligned through the center of the 2 in the number 201 of FM Band (1) when the variable capacitor plates are completely engaged.

R.F. Adjustment — Amplitude Modulation

The Broadcast band should be adjusted first.

The built-in loop should remain connected to the antenna and ground terminals.

1. Connect the signal generator to the antenna terminal, using a 200 mmf. capacitor. Use 30% modulation at 400 cycles.
2. Adjust the signal generator to 1500 KC.
3. Adjust station selector to 1500 KC.
4. Adjust range switch to AM Broadcast. (Second position clockwise.)
5. Adjust the oscillator, R.F. and antenna trimmer for maximum output.
6. Reduce the input signal and readjust the trimmers until the maximum output is secured for minimum input.
7. Adjust station selector to 600 KC.
8. Set signal generator to 600 KC.
9. Adjust iron cores in oscillator, R.F. and antenna coils for maximum output.
10. Repeat 1500 KC and 600 KC alignments until no further change is required.

R.F. Adjustment — Short Wave

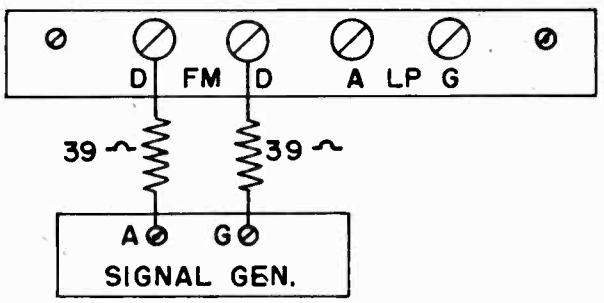
The built-in loop should remain connected to the antenna and ground terminals.

1. Connect the signal generator to the antenna and ground terminals of the receiver using a 400 ohm resistor.
2. Set the dial pointer to 9.5 megacycles.
3. Adjust signal generator to 9.5 megacycles.
4. Adjust range switch to Short Wave (first position clockwise).
5. Adjust oscillator, R.F., and antenna trimmer for maximum output. (No further alignment is required on this band.)

R.F. Adjustments — Frequency Modulation

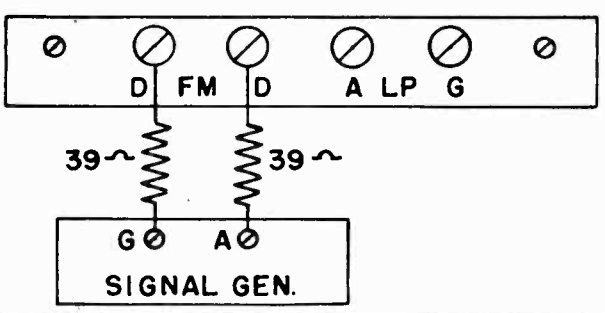
Align the FM (2) Band first.

1. Set the dial pointer to 61.
2. Connect the signal generator to FM dipole terminals using 39 ohm resistors as indicated. (Disconnect dipole antenna.) *Connect Signal Generator ground to chassis ground.*
3. Set signal generator to 46.1 megacycles.
4. Adjust range switch to FM (2) (fourth position clockwise).
5. Connect the electronic voltmeter to the junction of the 22,000 and 4,700 ohm resistors in the limiter grid circuit. (Identified by green dot.)
6. Adjust oscillator R.F. and antenna trimmers for maximum output on electronic voltmeter.



FM (1) Band

Adjust the same as the FM (2) band using 100.1 megacycles, setting the dial pointer to 261. Connect the generator to the dipole input using 39 ohm resistors as indicated. *Connect Signal Generator ground to chassis ground. Note reversed Signal Generator connection.*



REPLACEMENT PARTS

Resistors

Part No.		
28006	R-16, 18, 21, 32, 37, 39	.1 Meg.
28158	R-4, 5, 7, 11, 15, 33	1,000 Ohm
28163	R-42	2,700 Ohm
28167	R-55	5,600 Ohm
28172	R-41	15,000 Ohm
28175	R-10-14	33,000 Ohm
28179	R-3-49-53	68,000 Ohm
28183	R-23-24	.22 Meg.
28184	R-13-43-45	.27 Meg.
28186	R-48	.39 Meg.
28187	R-46	.47 Meg.
28191	R-20-31	1. Meg.
28193	R-44	1.5 Meg.
28203	R-36	10.0 Meg.
69892	R-50	330 Ohm
149001	R-29	Voltage Divider
149002	R-25, 26, 27, 28	Voltage Divider
149004	R-9-22	4,700 Ohm
149005	R-2-19	22,000 Ohm
149006	R-6	33,000 Ohm
149007	R-1-8-12	1.0 Meg.
149008	R-51 (Model H)	200 Ohm 5 W

Controls—Switches

Part No.		
145002	R-34-35	1 Meg. Volume Control & Switch
145003	R-38	2.5 Meg. Tone and Bass Control

Coils—Transformers—Speakers

Part No.		
33435		Speaker Assembly
33437	L-54	Speaker Field Coil
33438	L-53	Speaker Cone
33518	L-53	Model H Speaker Cone
153001	L-54	Model H Field Coil Speaker
155012		Model H Speaker Assembly
114003	L-10-11-12-13	R.F. Coil Broadcast & S.W.
114004	L-18-19-21-22	Osc. Coil Broadcast & S. W.
114005	L-1-2-3-4	Ant. Coil Broadcast & S.W.
161200	L-34-35-36-37	2nd I.F. Transformer
161201	L-39-40-41-42	3rd I.F. Transformer
161202	L-30-31-32-33	1st I.F. Transformer
161203	L-55	Choke, Filter
161204	L-46-47-48-49-50-51-52	Power Transformer 60 Cy.
161205	L-43-45	Discriminator Transformer
161401	L-56-57-58	Output Transformer
*112005		R.F. Chassis Assembly

*Band Switch, Sockets, variable cap., R.F. coils all bands. This is a complete R.F. assembly. Sold as a unit only.

Capacitors

Part No.		
24559	C-49-53-70-86	100 mmf.
25484	C-66-74	.02 mf.
25485	C-10-33-37-38-41-45 -48-57-59-64-71-73-75-80	.01 mf.
25487	C-55-61	.001 mf.
27760	C-28-76	.005 mf.
40632	C-68	.05 mf.
110006	C-5-18-19-25-26	R.F. Trimmer (F.M.)
110007	C-7	R.F. Trimmer Ant. (2) (F.M.)
110201	C-32-36-40-44-47-52	750 mmf.
110202	C-2	10 mmf.
110203	C-79	375 mmf.
110401	C-8-12-27-34-43-54-83	100 mmf.
110402	C-50-81	47 mmf.
110403	C-56	24 mmf.
110405	C-58	15 mmf.
110406	C-60	62 mmf.
110407	C-35-39-42-46-51	33 mmf.
110408	C-11-29	1000 mmf.
110410	C-30	27 mmf.
110411	C-20	10 mmf.
110412	C-72	2.5 mmf.
110413	C-31	5 mmf.
110414	C-67	.5 mf.
110422	C-84	1 mf.
110430	C-85	.003 mf.
111002	C-62-63	20-40 mf. Electrolytic
111003	C-65-78	40-20 mf. Electrolytic

Miscellaneous

Part No.	
28694	Socket, Pilot
29956	Lamp, Pilot
30269	Corner Mtg., Dial Scale
32076	Pulley, Dial Cord
40546	Clip, Pulley
109001	Cable Assembly, Speaker
113002	Ground Clip, Tube
150004	Drive Shaft, Pulley
150005	Drive Shaft, Dial
124010	Drive Cord, 25 ft.
124004	Cord Assembly, Pulley
122006	Dial Scale
124003	Cord Assembly, Pointer
144003	Pointer
151035	Shield, Pilot Lamp
152002	Socket, 8 Point Wafer
152004	Socket, 7 point
33444	Speaker Plug
33218	A.C. Cord
118001	Iron Core (I.F.)
118002	Iron Core (R.F.)
80484	Phono. Cartridge
35866	Coil Letters Kit
31539	Phono & Tele. Jack
32048	Socket A.C., Outlet
159002	Ant. Gnd. Dipole Terminal Strip
80777	Aligning Tool

Knobs

Part No.		
32224	Off-On-Vol., Tone	
35725	Range	
37093	Tuning	
32156	Push Button	
134006	On-Off-Vol., Tone M1, M2, HW	Square Edge
134007	Range M1, M2, HW	Square Edge
134008	Tuning M1, M2, HW	Square Edge
80768	Off-On-Vol., Tone M1, M2, HW	Bevel Edge
80769	Range M1, M2, HW	Bevel Edge
80770	Tuning M1, M2, HW	Bevel Edge

Escutcheons

Part No.	
35792	Dial
125002	Dial M1, M2
125009	Dial HW

Decals

Part No.		
34126	(Off-On-Vol.) Designation Plate	
32262	Stations	
121002	Tone	
121003	Range	
121002	Tone	M1-M2-HW
121004	Range	M1-M2-HW

Series 10 has matching Phono. Network for (L72) 80670 Pickup Cartridge.

Series 11 has matching Phono. Network for (LP6) 80484 Pickup Cartridge.

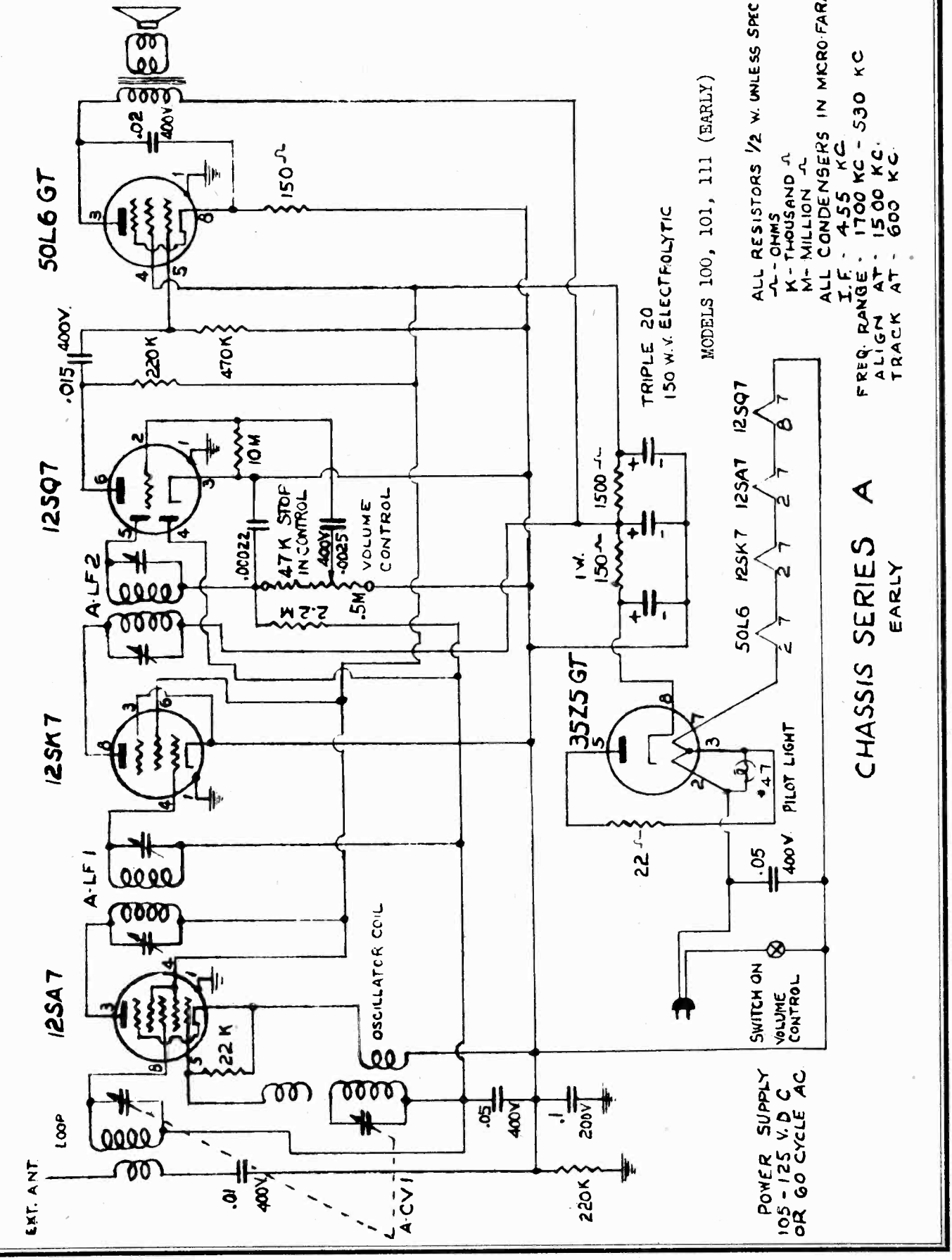
Series 12 R-21 changed from 1000 ohms to .1 Meg.
R-13—.27 Meg. Resistor added.
Leads from R-27, R-28 removed and made common with lead from R-26.
TerminalN umber 4 of wire recorder socket grounded.
Center tap of L-46, L-47 removed from ground, and connected to cathode of 6V6 tube.

Cabinet Parts

Part No.	PFM PFW	PGM PGW	LW	PLM PLW	M1-O M2-Y M2-W	HW	PSM	
80681	X	X		X			X	Stop Hinge
132016				X	X			Bullet Catch
37084				X				Key Pull
39200				X	X			Piano Hinge
130007				X				Grille Cloth
130009				X				Grille, Metal
37145				X	X			Lid Support
37148		X						Door—Pull Inv. Std.
38442	X	X			X		X	Bullet Catch
39350		X						Grille Cloth
130006			X					Grille Cloth
130010			X					Grille, Metal
130015	X							Grille Cloth W Album 130004
130016	X							Grille Cloth W Speaker 130005
132020	X							Door—Pull
132027	X							Piano Hinge
130011						X		Grille Cloth
132001					X			Door Strike Left
132002					X			Door Stop Left
132003					X			Door Rail, Top Left
132045					X			Concealed Hinge Album Door
132040					X			Door Rail & Plate, Lower Right
132007					X			Door Track, Upper Right
132008					X			Wheel Track, Upper Right
132009					X	X		Door Pull, Concealed
130002					X			Grille Cloth
125001					X	X		Speaker Bezel
132035					X			Door Stop, Bottom Right
132037					X			Door Rail, Lower Left
130003						X		Grille Cloth
132012						X		Door Pull
132013						X		Butt Hinge
132014						X		Door Track
132015						X		Semi-Concealed Hinge
37153							X	Door Pull
37167							X	Grille Cloth
132019	X							Knob Door
38382	X	X	X	X	X	X	X	Glider
108016		X				X	X	Phono Drawer Assem. Comp.
132022	X	X				X	X	Phono Drawer Track, Left
132021	X	X				X	X	Phono Drawer Track, Right
108017	X							Phono Drawer Assem. Comp.

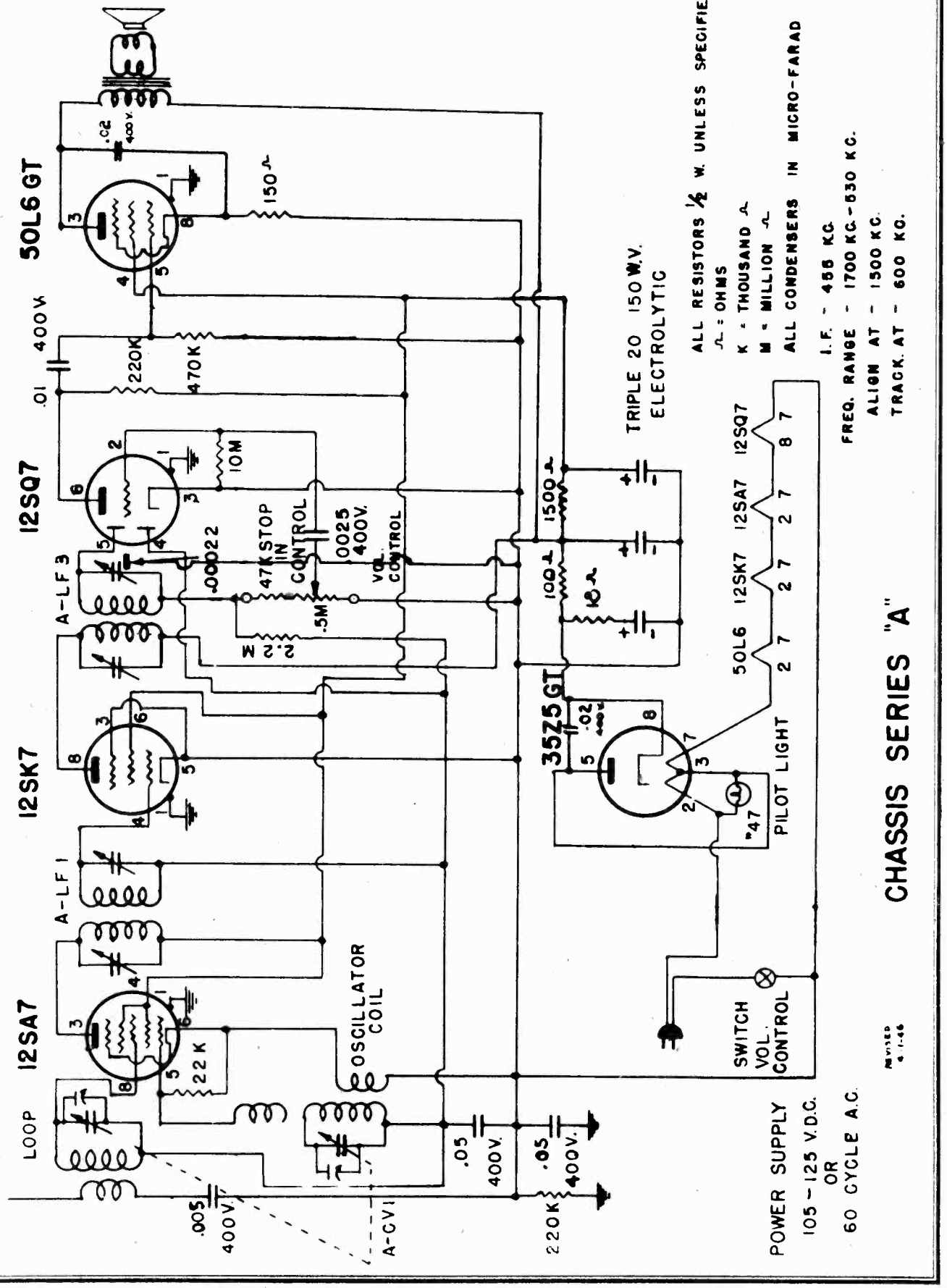
MODELS 100,101,111, 113,Chassis A,Early

TELETONE RADIO CORP.

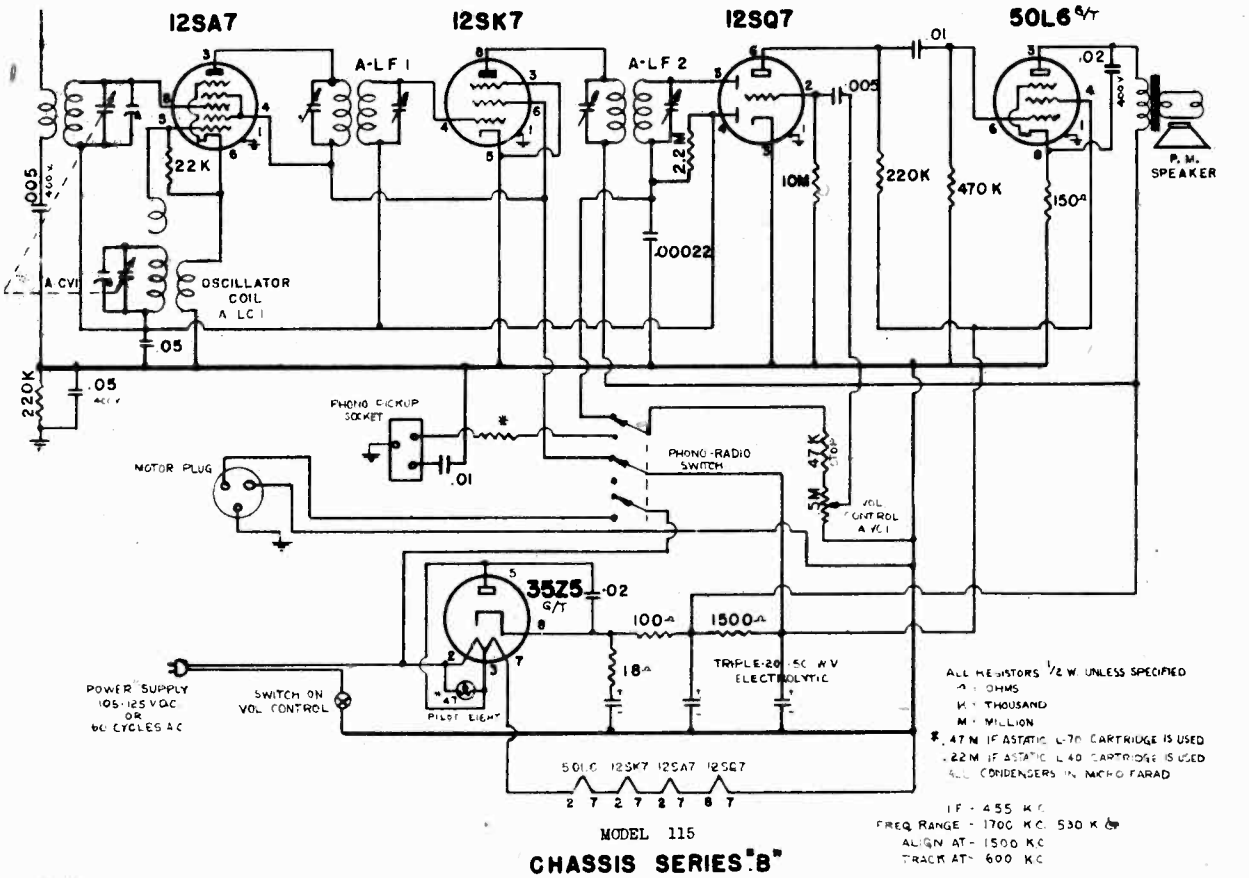


MODELS 100,100A,101,
109,111,122,130
Chassis A, Late

TELETONE RADIO CORP.



MODEL 115, Chassis Series B
TELETONE RADIO CORP. MODEL 134, Chassis Series C

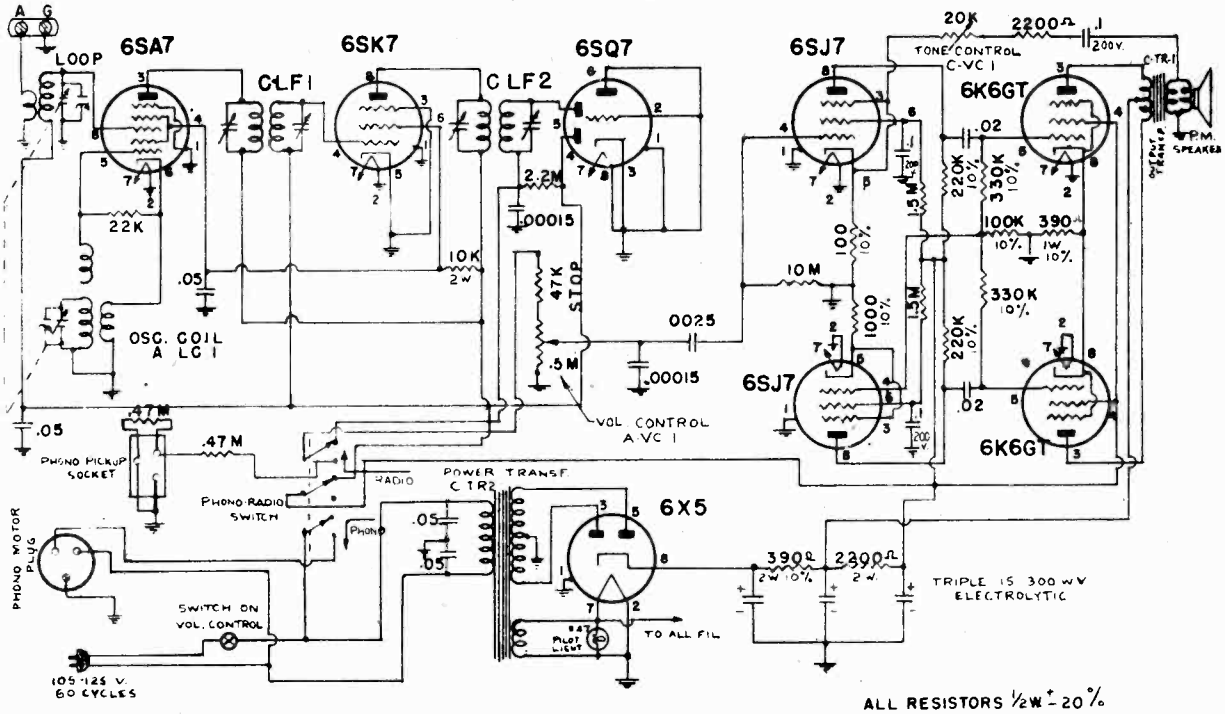


MODEL 115

CHASSIS SERIES "B"

ALL RESISTORS ½ W UNLESS SPECIFIED
Ω : OHMS
K : THOUSAND
M : MILLION
* .47 M IF ASTATIC G-70 CARTRIDGE IS USED
.22 M IF ASTATIC L-40 CARTRIDGE IS USED
ALL CONDENSERS IN MICRO FARAD

I.F. - 455 K.C.
FREQ. RANGE - 1700 K.C. 530 K.C.
ALIGN AT - 1500 K.C.
TRACK AT - 600 K.C.



I.F. - 455 K.C.
FREQ. RANGE - 1700 KC - 530 KC
ALIGN AT - 1500 KC
TRACK AT - 600 & 1000 KC

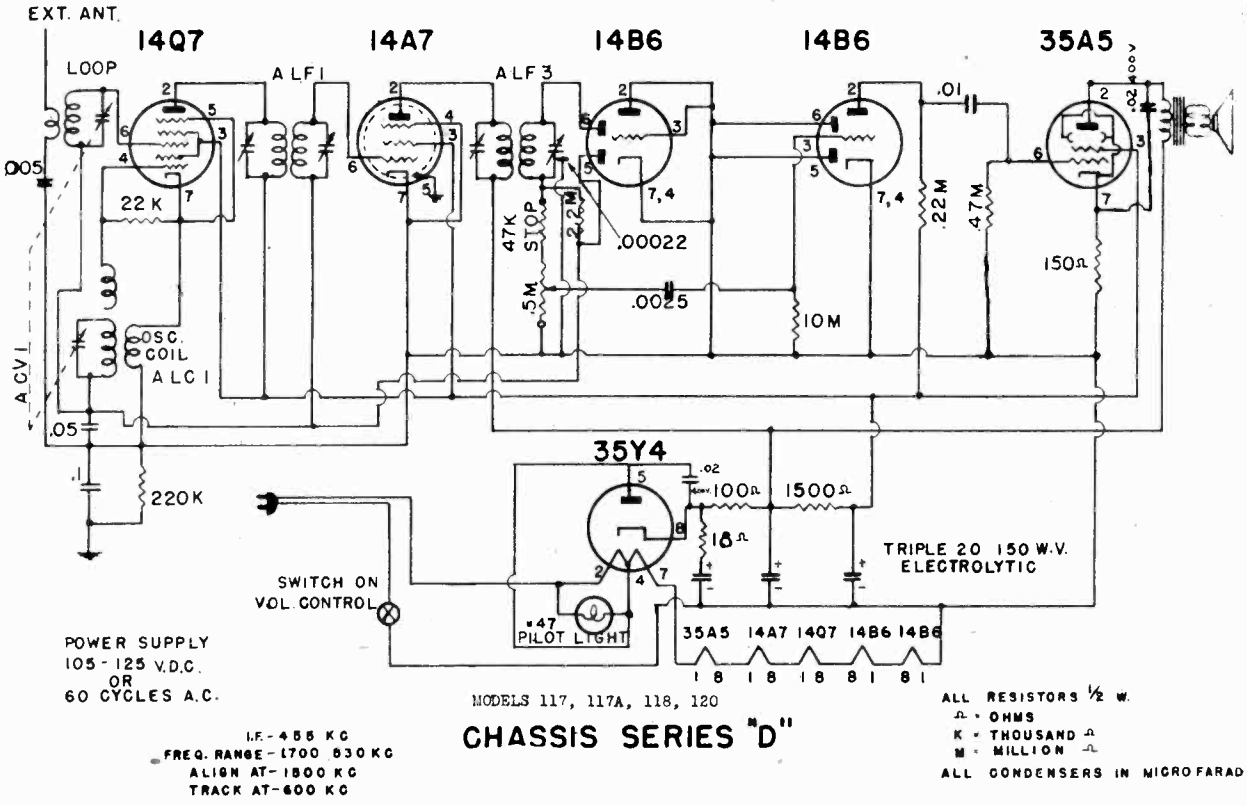
CHASSIS SERIES "C"

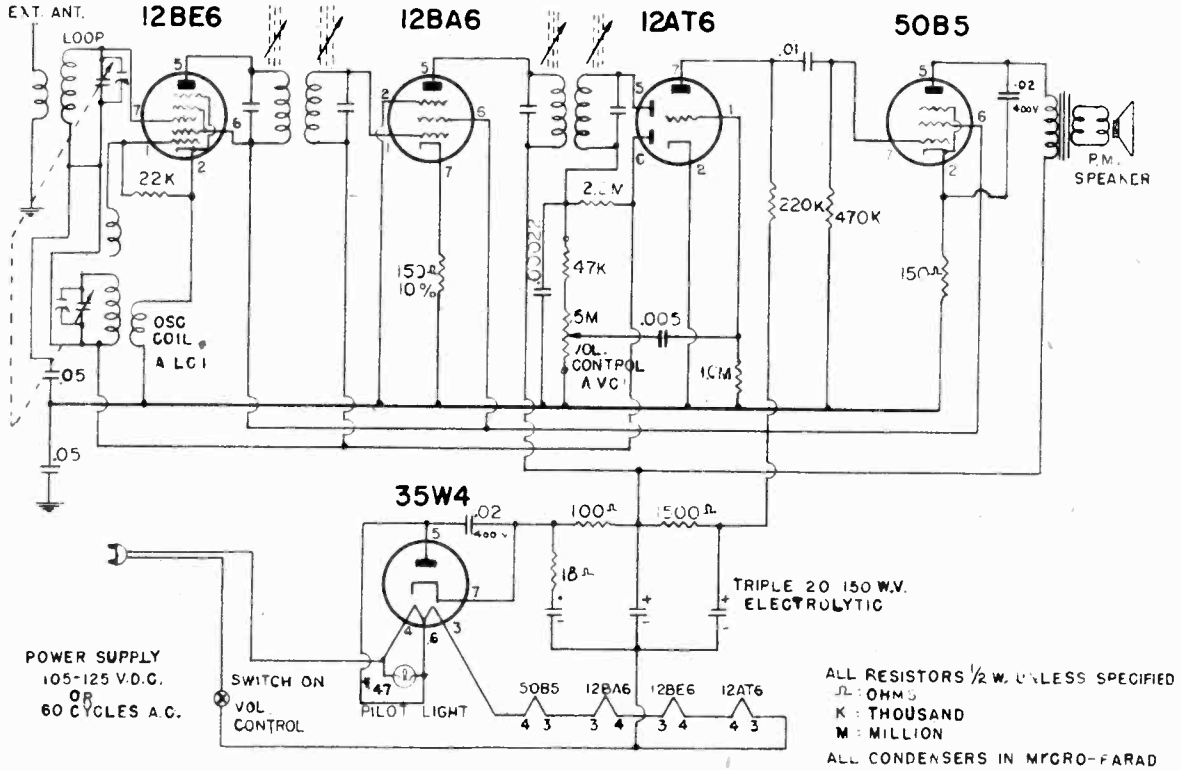
MODEL "134

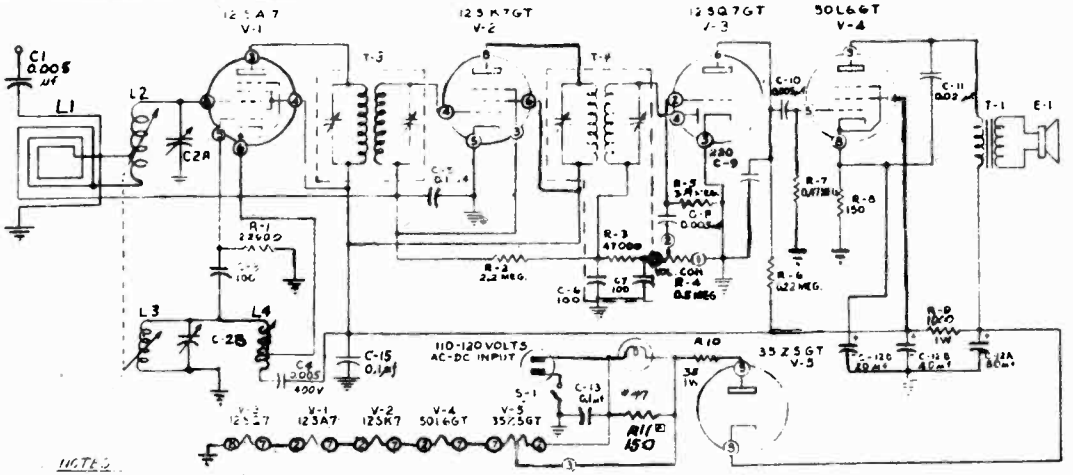
ALL RESISTORS ½W ± 20% UNLESS SPECIFIED
Ω : OHMS
K : THOUSAND Ω
M : MILLION Ω
ALL CONDENSERS IN MICRO FARAD 400 V.D.C. UNLESS SPECIFIED

MODELS 117,117A,118,120
Chassis Series D
MODELS 101J,122J,130J
Chassis Series J

TELETONE RADIO CORP.







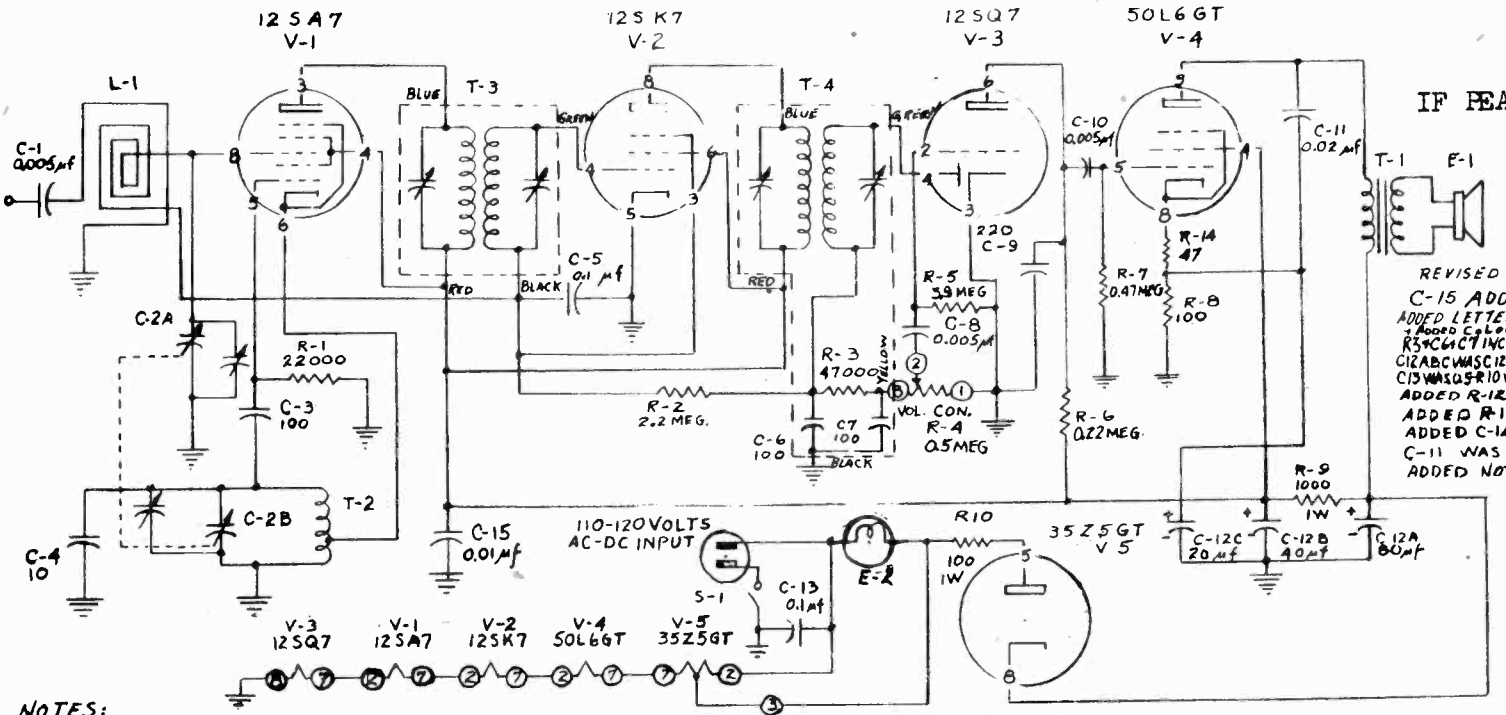
IF PEAK 455 KC

AUG 27 1946

REVISED
ADDED NOTE 4
C-15 WAS ADDED
CHANGE PIN TO R7 WAS 6 B Volts
33 Mas. 8 16 Brown 10 mmf C-14
R9 1000 WAS 1500 CHANGE T2 T3 T3 T4 NOTE 2

MODEL P-2

NOTES:
1 RESISTORS ARE IN OHMS. CAPACITORS ARE IN µµf. INDUCTORS ARE IN µH UNLESS OTHERWISE MARKED.
2 SWITCH S-1 MOUNTED ON REAR OF VOLUME CONTROL.
3 R3, C6, C7 ARE INCLUDED IN T4 SHIELD



IF PEAK 455 KC

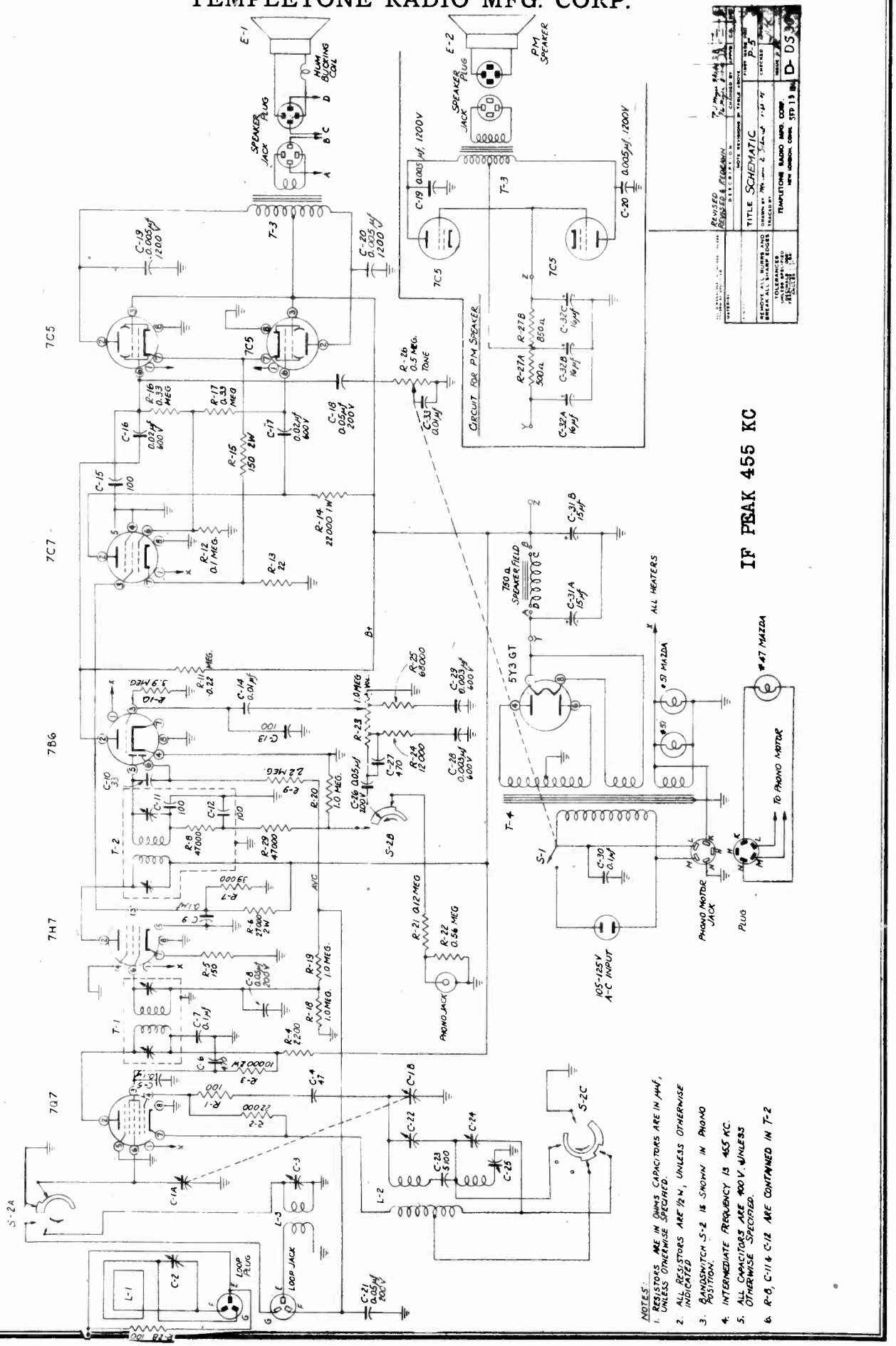
REVISED
C-15 ADDED
ADDED LETTERING E 2, R9 1500 WAS 800
ADDED COLORS
R3 C6 C7 INCLUDED IN T4 SHIELD
C12 ABC WAS C12-ABCD RESPEC-R10 REMOVED
C13 WAS C9-R10 WAS R12 4 VALUE R12 WAS 47-1W-
ADDED R-12
ADDED R-11 AND NOTE #3
ADDED C-14 AND R-10
C-11 WAS 0.005µf
ADDED NOTE #2.

MODEL L-525

NOTES:
1. RESISTORS ARE IN OHMS. CAPACITORS ARE IN µµf. INDUCTORS ARE IN µH UNLESS OTHERWISE MARKED.
2. SWITCH S-1 MOUNTED ON REAR OF VOLUME CONTROL.

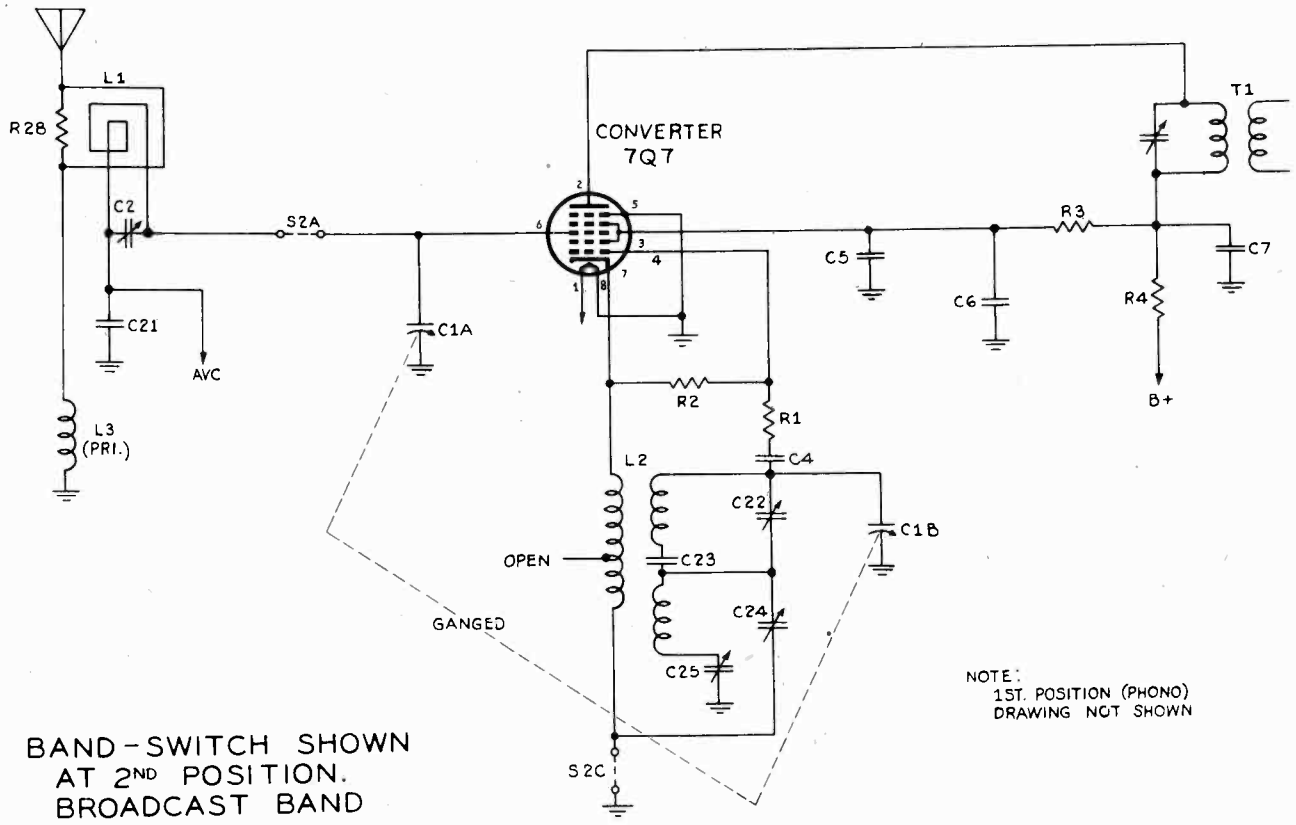
MODEL P-5

TEMPLETONE RADIO MFG. CORP.

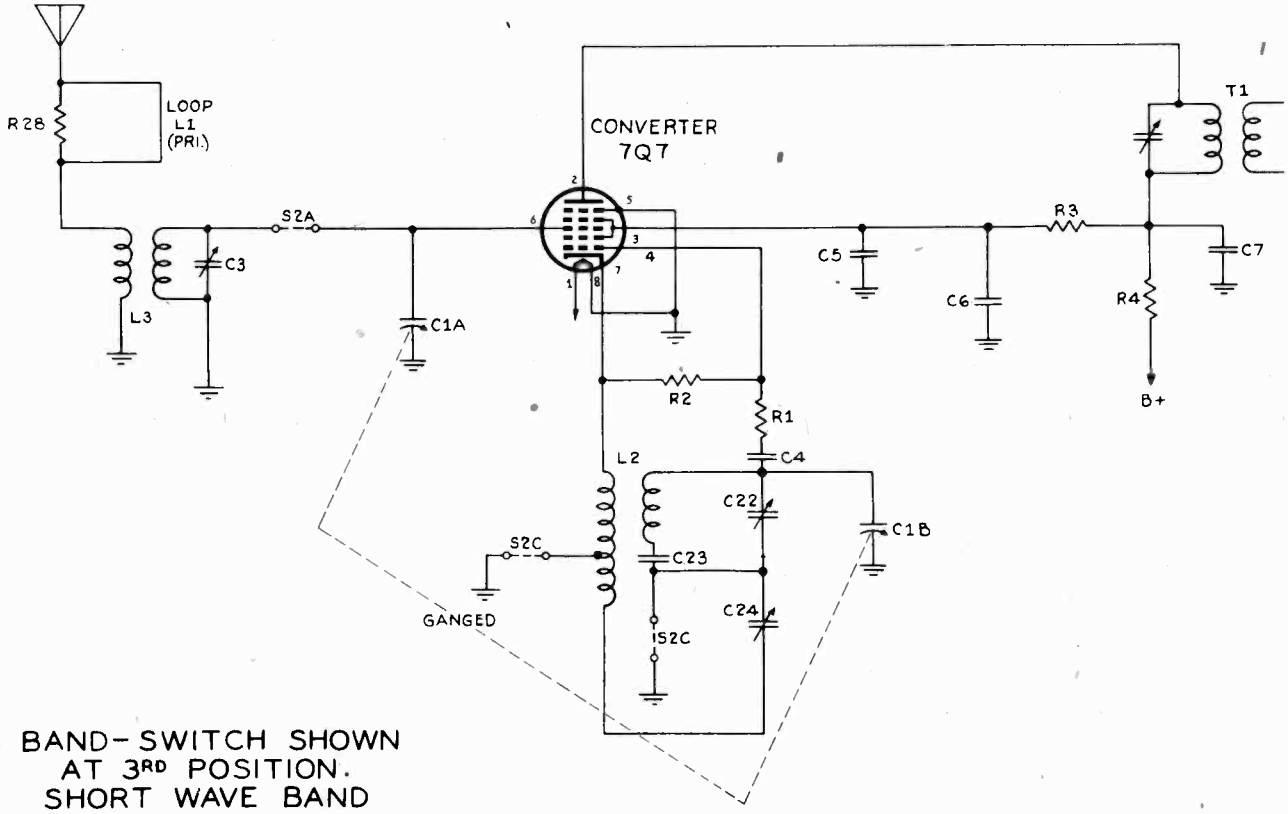


NOTES:
1. RESISTORS ARE IN OHMS, CAPACITORS ARE IN μμf, UNLESS OTHERWISE SPECIFIED.
2. ALL RESISTORS ARE ½ W, UNLESS OTHERWISE INDICATED
3. BANDSWITCH S-2 IS SHOWN IN PHONO POSITION.
4. INTERMEDIATE FREQUENCY IS 455 KC.
5. ALL CAPACITORS ARE 400 V. UNLESS OTHERWISE SPECIFIED.
6. R-8, C-11 & C-12 ARE CONTAINED IN T-2

TEMPLETONE RADIO MFG. CORP.



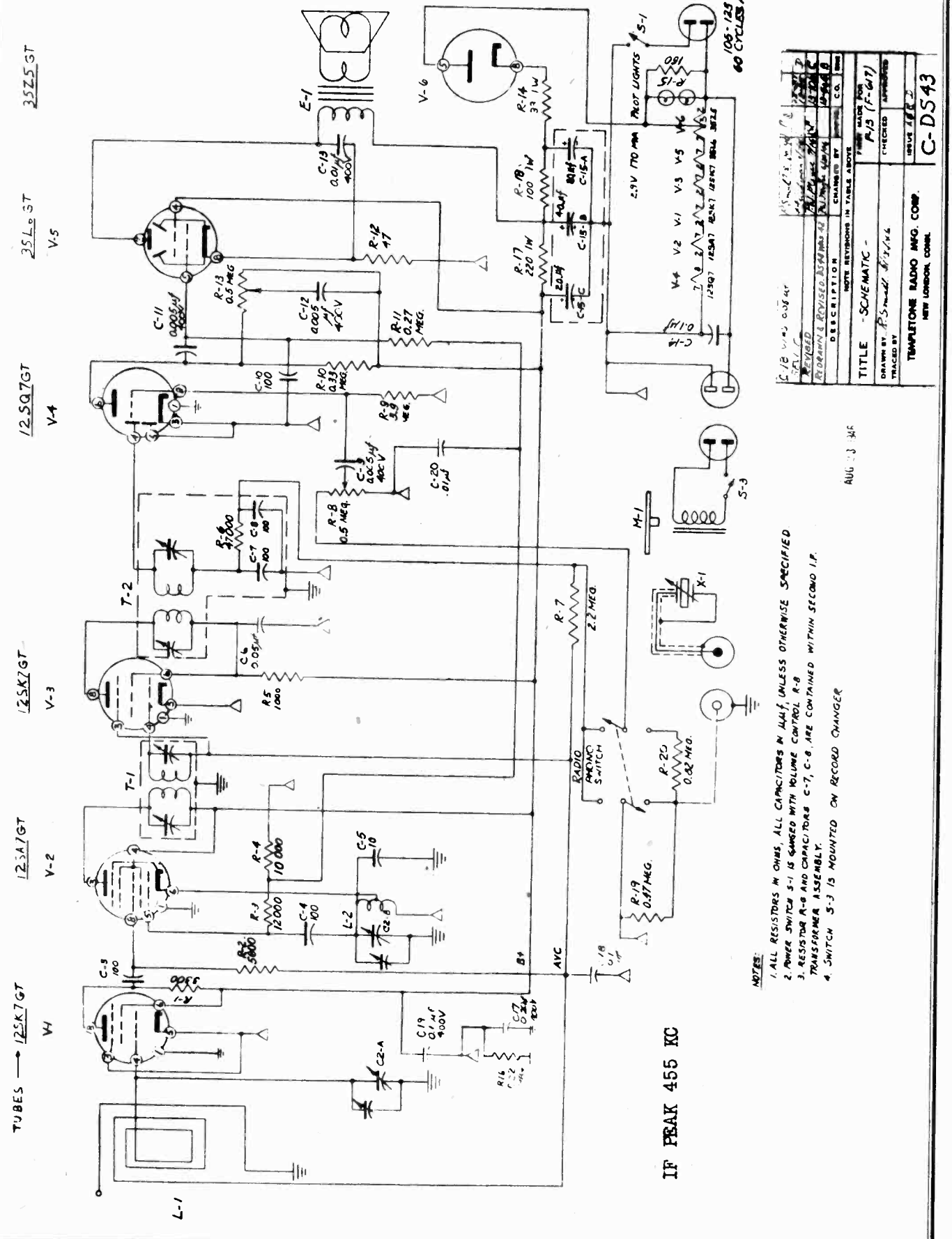
BAND-SWITCH SHOWN AT 2ND POSITION. BROADCAST BAND



BAND-SWITCH SHOWN AT 3RD POSITION. SHORT WAVE BAND

MODEL P-13(F-617)

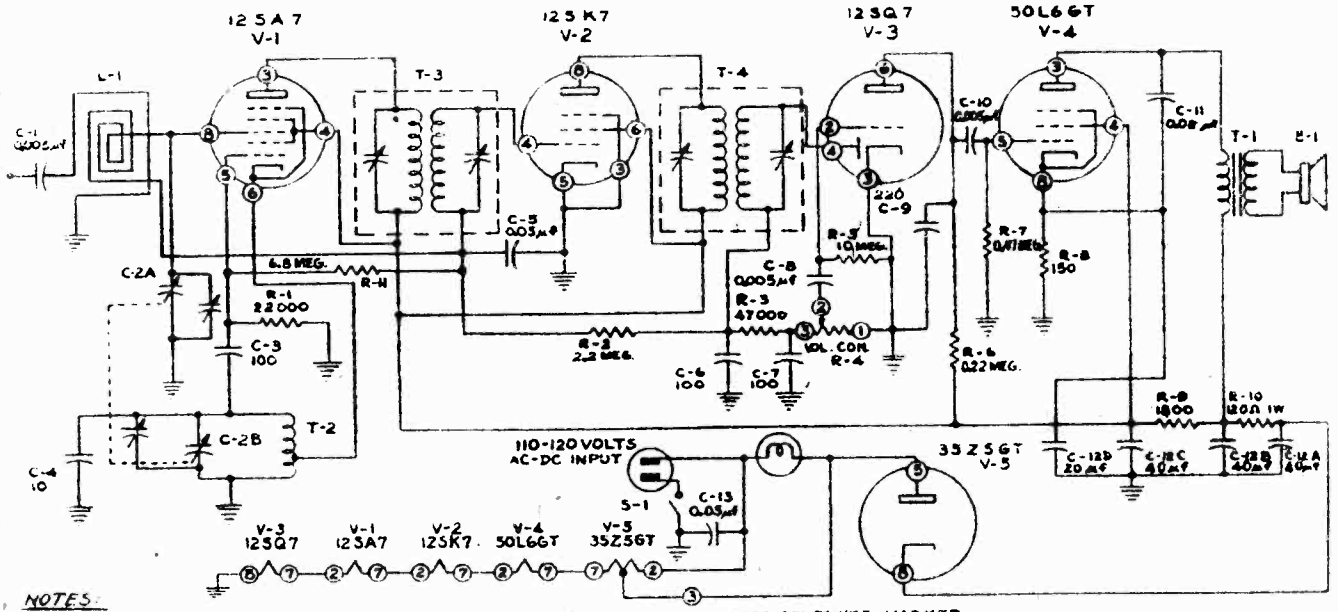
TEMPLETONE RADIO MFG. CORP.



Record Changer: Detrola Model 550

MODELS E-510 to E-519 Inclusive

TEMPLETONE RADIO MFG. CORP.



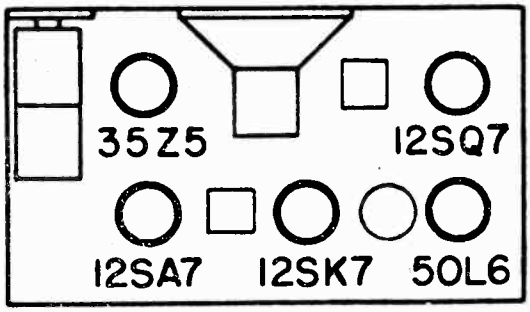
NOTES:
1. RESISTORS ARE IN OHMS, CAPACITORS ARE IN μμf, INDUCTORS ARE IN μH UNLESS OTHERWISE MARKED.
2. VOLUME CONTROL R-4 IS 0.5 MEGOHMS, WITH SWITCH S-1 MOUNTED ON REAR.
3. IN A FEW EARLY MODELS C-12D WAS A SEPARATE 25μf CAPACITOR, C-12A WAS 80μf, C-12C WAS 20μf AND R-11 WAS NOT USED.

IF PEAK 455 KC

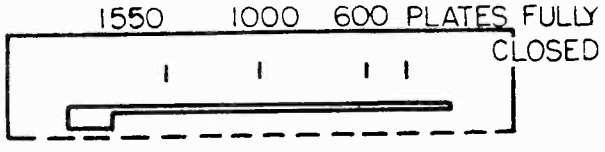
Alignment: No attempt should be made to realign this receiver until it has been determined that a poor tube, or some local condition is not responsible for faulty reception. An output meter may be clipped directly across the voice coil lugs.

The Signal Generator may be connected through a 0.01 mf capacitor (used as dummy antenna) to the lug on RF section (B) of tuning capacitor. Connect ground clip of generator directly to chassis. Align the I. F. trimmers to 455 kc, using least possible input from Signal Generator to avoid developing A.V.C. voltage which would make the tuning adjustments very broad.

To align RF trimmers, remove the 0.01 mf capacitor and connect the Signal Generator leads or two or three turns of heavy wire, forming a self-supporting loop of about 7 or 8 inches diameter, placed about a foot away from the receiver's loop antenna. Again, use the least possible input from the Signal Generator. With the tuning capacitor plates completely out of mesh, and pointer at extreme left end of travel, adjust the oscillator trimmer (A) (on front section of tuning capacitor) to 1700 kc. Readjust both Signal Generator and tuning capacitor to 1550 kc and adjust the RF trimmer (B) (on rear section) for maximum response. With tuning capacitor plates fully meshed, the receiver should tune to 535 kc; however, no adjustment is required at this point. For checking purposes, four fine marks are engraved on the dial plate. These represent, in order, the pointer settings for 1550, 1000, 600 kc, and the pointer position with capacitor plates fully meshed.



LOCATION OF TUBES



DIAL PLATE MARKINGS

MODELS E-510 to E-519 Inclusive
MODEL F-611

TEMPLETONE RADIO MFG. CORP.

Repair Parts List

Circuit Symbol	Part No.	Item	MODELS E-510 TO E-519 INCLUSIVE
E-1	780.008	Speaker	5" P. M. Including T-1
T-1	851.514	O P. Tranformer	(if required separately)
T-2	251.143	Oscillator Coil	
T-3	251.146	I. F. Transformer	Input
T-4	251.147	I. F. Transformer	Output
L-1	251.145	Loop Antenna	
R-1	605.2231	Resistor	22K Ohm, ½ W, 10%
R-2	605.2251	Resistor	2.2 meg. ½ W, 10%
R-3	605.4731	Resistor	47K Ohm ½ W, 10%
R-4	650.504E	Vol. Control	0.5 Meg. with Power Switch
R-5	605.1061	Resistor	10. Meg. ½ W, 10%
R 6	605.2241	Resistor	220 K Ohm ½ W, 10%
R-7	605.4741	Resistor	470 K Ohm ½ W, 10%
R-8	601.1511	Resistor	150 Ohm 1 W, 10%
R-9	602.1821	Resistor	1800 Ohm, 2 W, 10%
C-1	164.009	Capacitor	0.005 MF, 600V, paper
C-2A, C-2B	165.513	Tuning Capacitor	Variable
C-3	162.522	Capacitor	100 MMF, 500V, Mica
C-4	162.580	Capacitor	10 MF, 500V, Mica
C-5	164.004	Capacitor	0.05 MF, 400V. Paper
C-6	162.522	Capacitor	100 MMF, 500V, Mica
C-7	162.522	Capacitor	100 MMF, 500V, Mica
C-8	164.009	Capacitor	0.005 MF, 600V, Paper
C-9	162 556	Capacitor	220 MMF, 500V, Mica
C-10	164.009	Capacitor	0.005 MF, 600V, Paper
C-11	164.003	Capacitor	0.02 MF, 600V, Paper
C-12A, C-12B, C-12C	161.520	Filter Capacitor	40 MF, 150V; 40 MF, 150V; 40 MF, 150V
C-12D	164.004	Capacitor	20 MF, 150V
C-13	311.003	Dial Scale	0.05 MF, 400V, Paper
	591 005	Pointer	
	315.501	Dial Cord	Red
	572.110	Dial Light Socket	Black, 3½-ft.
V-6	No. 51	Dial Lamp	

Operation: The set operates on 110 to 120 volts, 50 or 60 cycles A. C. and 110 to 120 volts D. C. Power drain is approximately 25 watts.

When operated on direct current (D. C.), if no reception is obtained after approximately one minute of warm-up time, reverse the line plug in the power outlet.

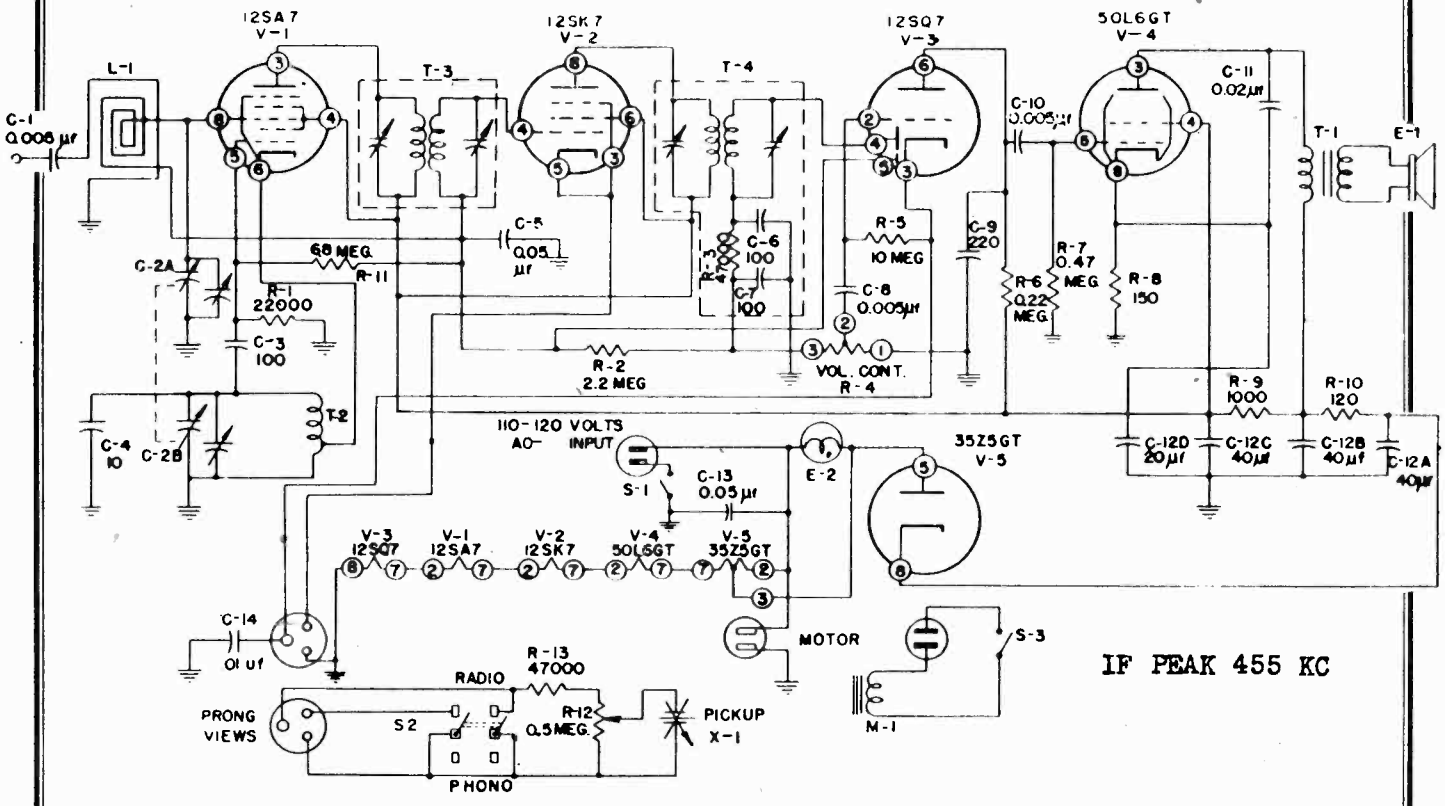
Range: Model E-510 covers the broadcast band from 540 to 1600 kilocycles. Since the scale is calibrated 54 to 160, the actual frequency of the station received is obtained by adding a zero to the dial calibration.

Circuit Symbol	Part No.	Item	Description
E-1	EH-6-8	Speaker	5" P.M. less output transformer
L-1	LL-8	Loop Antenna	
L-2	LO-1	Oscillator Coil	
T-1	TM2-8	Transformer	IF input
T-2	TM2-7	Transformer	IF output
T-3	TA-7-1	Transformer	Speaker Output, for 8Q5
C-1	CV-6	Capacitor	Variable, 2-gang
C-2		Capacitor	Mica, 220 MMF, 500 V
C-3		Capacitor	Paper, 0.01 MF, 400 V
C-4		Capacitor	Mica, 100 MMF, 500 V
C-5		Capacitor	Paper, 0.05 MF, 200 V
C-6		Capacitor	Paper, 0.01 MF, 200 V
C-9		Capacitor	Mica, 100 MMF, 500 V
C-10		Capacitor	Paper, 0.002 MF, 400 V
C-11		Capacitor	Paper, 0.002 MF, 400 V
C-12		Capacitor	Paper, 0.05 MF, 200 V
C-13		Capacitor	Paper, 0.05 MF, 200 V
C-14		Capacitor	Paper, 0.20 MF, 400 V
C-15		Capacitor	Paper, 0.1 MF, 400 V
C-16	CE1-4A81	Capacitor	Electrolytic, 40-40-40-20 MF, 150 WVDC
C-17		Capacitor	Paper, 0.05 MF, 200 V
C-18		Capacitor	Paper, 0.05 MF, 200 V
C-19		Capacitor	Paper, 0.1 MF, 400 V
C-20		Capacitor	Paper, 0.05 MF, 200 V
R-1		Resistor	Carbon, 0.22 Meg., ½ W
R-2		Resistor	Carbon, 47,000, ½ W
R-4		Resistor	Carbon, 10,000, ½ W
R-5		Resistor	Carbon, 15,000, ½ W
R-8		Resistor	Carbon, 2.9 Meg. ½ W
R-9	RP6-2	Volume Control	0.5 Meg with switch
R-10		Resistor	Carbon, 0.47 Meg. ½ W

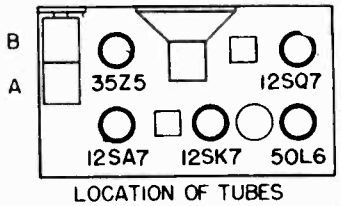
Circuit Symbol	Part No.	Item	Description
R-11		Resistor	Carbon, 1.2 Meg. ½ W
R-12		Resistor	Carbon, 3.9 Meg. ½ W
R-13		Resistor	Carbon, 2200, 1 W
R-14	RW-2	Resistor	Wirewound 2550, 10W, tapped at 1200
R-15		Resistor	Carbon, 820, ½ W
R-16		Resistor	Carbon, 820, ½ W
R-17		Resistor Fuse	15 Ohms
R-18		Resistor	Carbon, 2.2 Meg
R-19		Resistor	Carbon, 2.2 Meg
S-2	SS-1	Switch	Slide, DPDT
		Battery	ER #748, 4.5 Volt "A"
		Battery	ER #482, 45.0 Volt "B"
		Dial Cord	42" long
	HF-88	Dial Cord Spring	
	NP-8	Pointer	
	ND-12	Dial Scale	
	PM2-1	Battery Plug	2 prong, A
	PM2-2	Battery Plug	8 prong, B
	PM1-1	Speaker Plug-Receptacle	
	PM1-2	Speaker Plug	
	HF-85	Grid Cap	
	CCCD-618	Cabinet	
	AP-6	Cabinet Back	
	HK-16	Knob	
	NW-1	Window	
	HK-27	Handle	
	HA-55	Handle Retainer Shell	
	AP-5	Cabinet Front Panel	

MODEL E-511

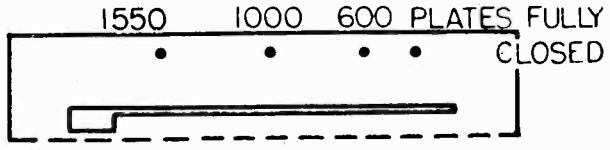
TEMPLETONE RADIO MFG. CORP.



IF PEAK 455 KC



LOCATION OF TUBES



DIAL PLATE MARKINGS

REPLACEMENT PARTS LIST

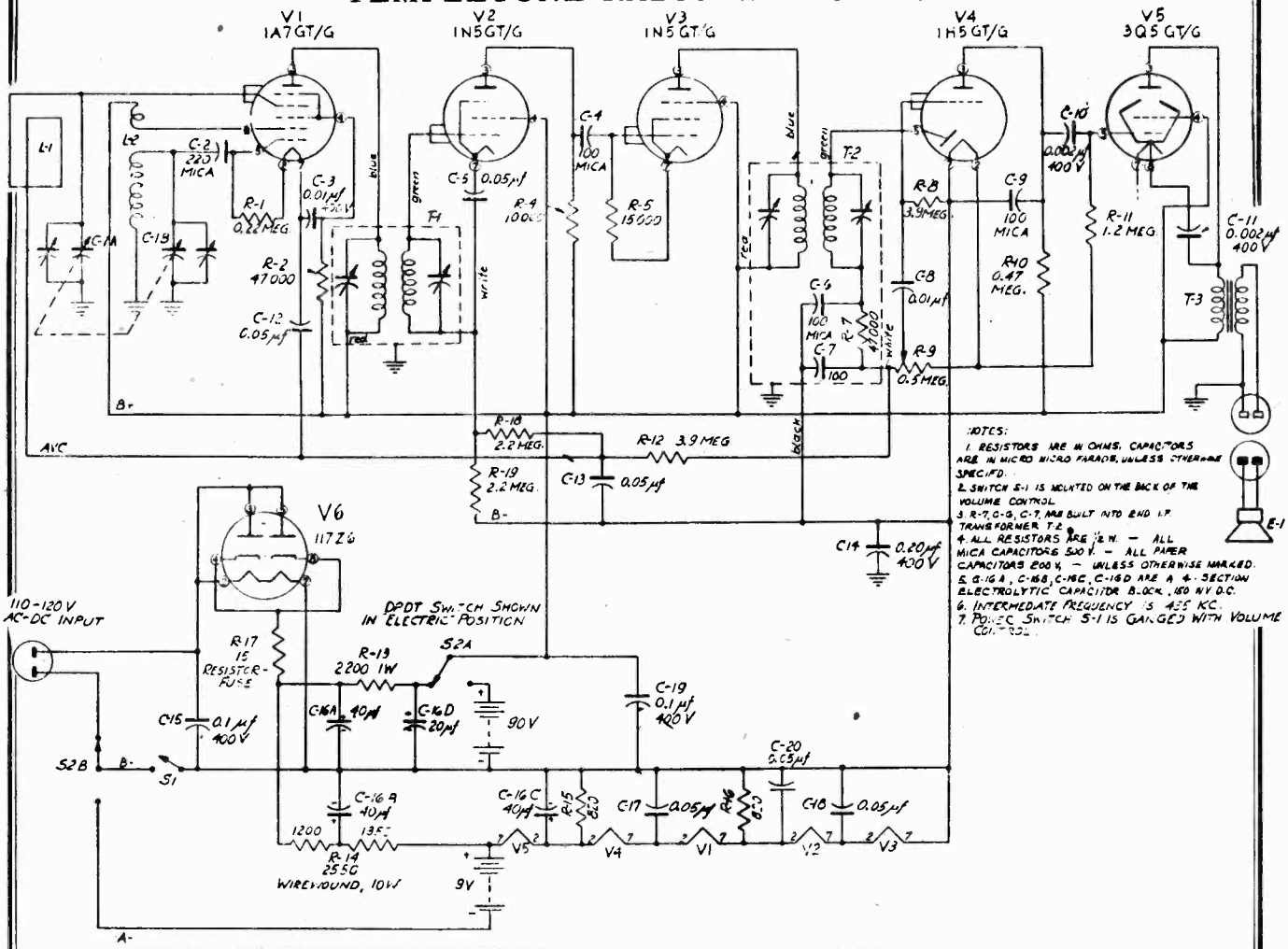
Circuit Symbol	Part No.	Item	Description
E-1	780.008	Speaker	5" P. M. Including T-1
E-2	No. 51	Dial Lamp	
T-1	851.514	O. P. Transformer	(if required separately)
T-2	251.143	Oscillator Coil	
T-3	251.146	I. F. Transformer	Input
T-4	251.147	I. F. Transformer	Output
L-1	251.145	Loop Antenna	
R-1	605.2231	Resistor	22K Ohm, ½ W, 10%
R-2	605.2251	Resistor	2.2 meg. ½ W, 10%
R-4	650.504E	Volume Control	0.5 Meg. with Power Switch
R-5	605.1061	Resistor	10. Meg. ½ W, 10%
R-6	605.2241	Resistor	220 K Ohm, ½ W, 10%
R-7	605.4741	Resistor	470 K Ohm, ½ W, 10%
R-8	601.1511	Resistor	150 Ohm, 1 W, 10%
R-9	601.1021	Resistor	1000 Ohm, 1 W, 10%
R-10	601.1211	Resistor	120 Ohm, 1 W, 10%
R-11	605.6851	Resistor	6.8 Meg., ½ W, 10%
R-12	650.504J	Volume Control	0.5 Meg. with Switch
R-13	605.4731	Resistor	47K Ohm, ½ W, 10%
C-1	164.009	Capacitor	0.005 MF, 600V, paper
C-2A C-2B	165.513	Tuning Capacitor	Variable
C-3	162.522	Capacitor	100 MMF, 500V, Mica
C-4	162.580	Capacitor	10 MMF, 500V, Mica
C-5	164.004	Capacitor	0.05 MF, 400V, Paper
C-8	164.009	Capacitor	0.005 MF, 600V, Paper
C-9	162.556	Capacitor	220 MMF, 500V, Mica
C-10	164.009	Capacitor	0.005 MF, 600V, Paper
C-11	164.003	Capacitor	0.02 MF, 600V, Paper
C-12A	161.520	Filter Capacitor	40 MF, 150V
C-12B			40 MF, 150V
C-12C			40 MF, 150V
C-12D			20 MF, 150V
C-13	164.004	Capacitor	0.05 MF, 400V, Paper
C-14	164.013	Capacitor	0.01 MF, 400V, Paper
M-1	GA-3	Motor	110-120 V, 60 cycles; with 9" turntable
S-2	801.507	Switch	DPDT
X-1	EM-6	Cartridge	For pick-up arm
	ND-11	Dial Scale	
	591.005	Pointer	Red
	315.501	Dial Cord	3½' long
	372.110	Dial Light Socket	

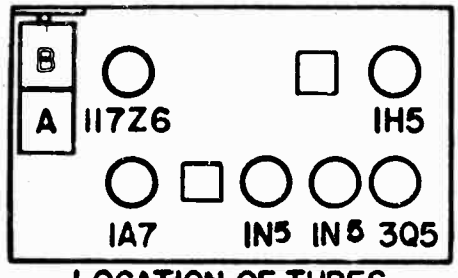
NOTES:

1. Resistors are in ohms; Capacitors are in mmf.
2. Volume control R-4 is 0.5 megohms, with switch S-1mounted on rear.
3. In some production runs C-12D is a seperate 20 mmf. 25V capacitor and C-12A is 6mf., C12B is 40 mf., C12C is 20mf.
4. Phonograph volume control R-12A is 0.5 megohms, with switch S-3 mounted on rear.

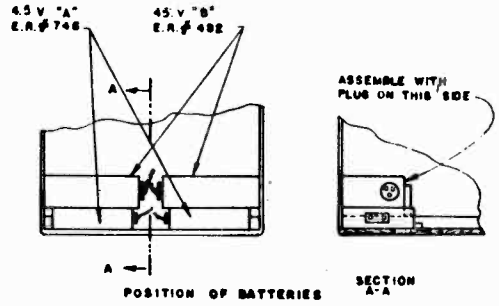
MODEL F-611

TEMPLETONE RADIO MFG. CORP.





LOCATION OF TUBES



Alignment: No attempt should be made to realign this receiver until it has been determined that a poor tube, or some local condition is not responsible for faulty reception.

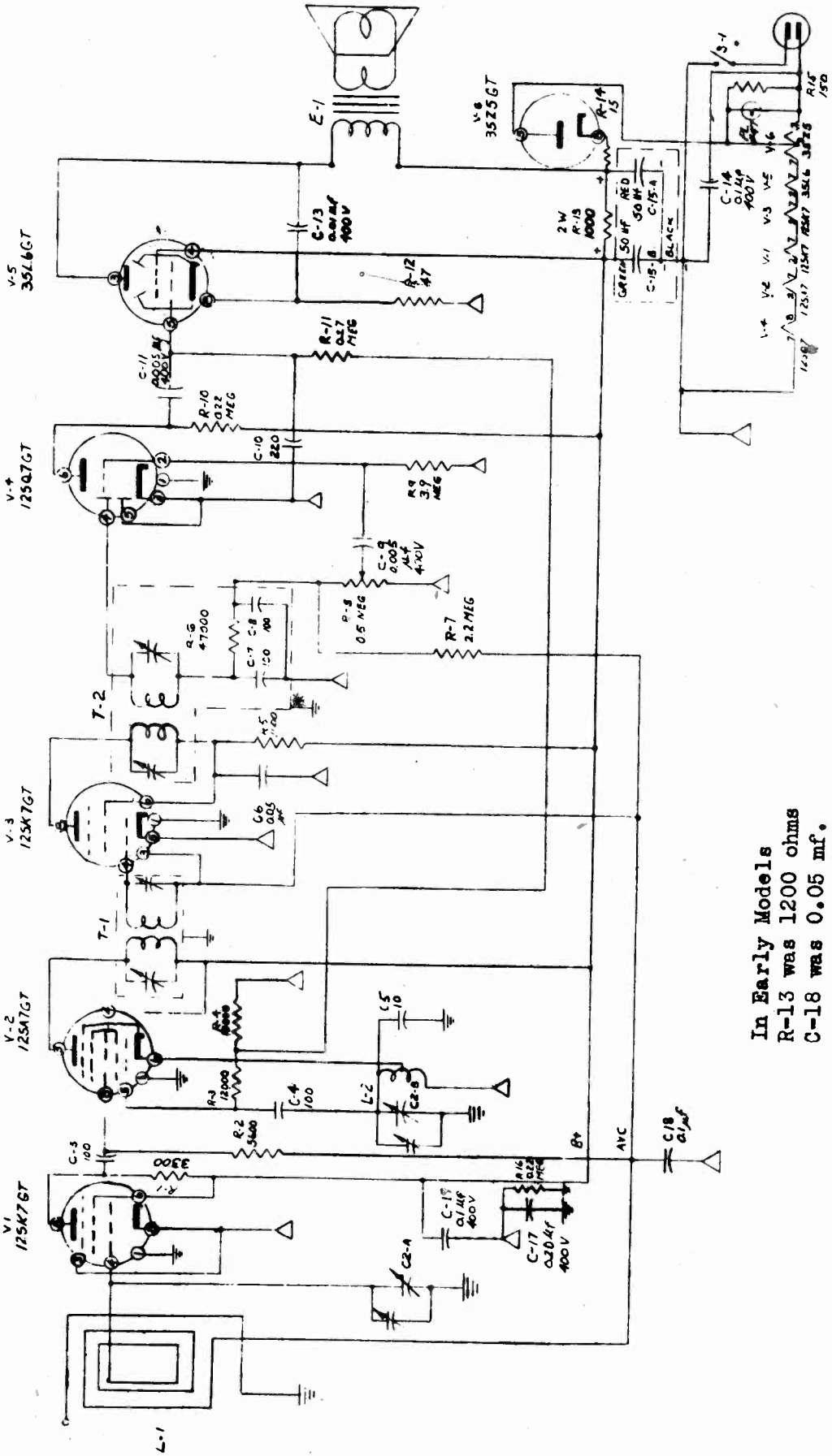
The Signal Generator may be connected through a 0.01 mf capacitor (used as dummy antenna) to the lug on RF section A of tuning capacitor. Connect ground clip of generator to a convenient B-minus point (such as the case of the electrolytic capacitor, or one of the switch terminals on the back of the volume control). An output meter may be clipped directly across the voice coil lugs. Align the I.F. trimmers to 455 kc, using least possible input from Signal Generator to avoid developing A.V.C. voltage which would make the tuning adjustments very broad.

To align RF trimmers, remove the 0.01 mf capacitor and connect the Signal Generator leads to two or three turns of heavy wire, forming a self-supporting loop of about 7 or 8 inches diameter, placed about a foot away from the receiver's loop antenna. Again, use the least possible input from the Signal Generator. With the tuning capacitor plates completely out of mesh, and pointer at extreme right end of travel, adjust the oscillator trimmer (B) (on front section of tuning capacitor) to 1700 kc. Readjust both Signal Generator and tuning capacitor to 1550 kc and adjust the RF trimmer (A) (on rear section) for maximum response.

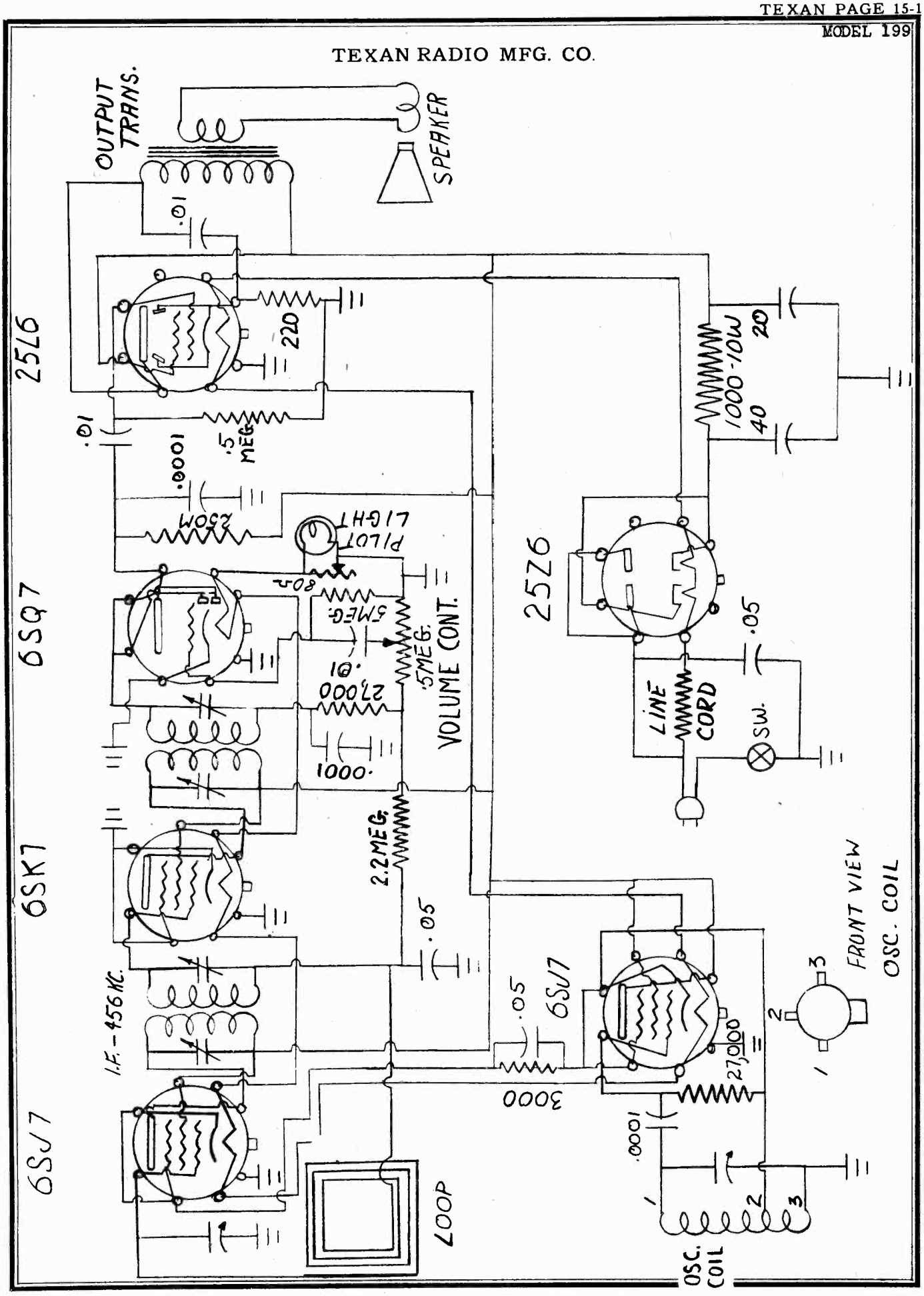
For Parts list, see P.15-6

MODEL G-619

TEMPLETONE RADIO MFG. CORP.



TEXAN RADIO MFG. CO.



MODEL 199

TEXAN RADIO MFG. CO.

TEXAN RADIO, MODEL NO. 199

Type Set - AC-DC, superheterodyne with loop or antenna coil
Tubes - - 6SJ7 Osc., 6SJ7 Mixer, 6SQ7 Det., 6SK7 I.F., 25L6 Output, 25Z6 rectifier
Tuning range - 540-1600 KC Supply voltage - 117 volts, AC or DC

Dummy Ant.	Connect Signal Generator	Signal Gen. Set	Dial Set	Output Meter	Adjust	Remarks
.05	High side to signal grid of 6SJ7 Mixer low side to grid	455 KC	Rotor full open	Across voice coil	IF trimmers	Adjust for maximum output if modulation hum is excessive decrease Dummy Antenna to .001 MFD.
	Loop	1500 KC	1500 KC	"	Osc. trimmers	Adjust for maximum output. Connect signal gen. to loop of few turns of wire and couple loosely to receiver by a pacing.
	"	"	"	"	RF trimmers	Adjust for maximum output.

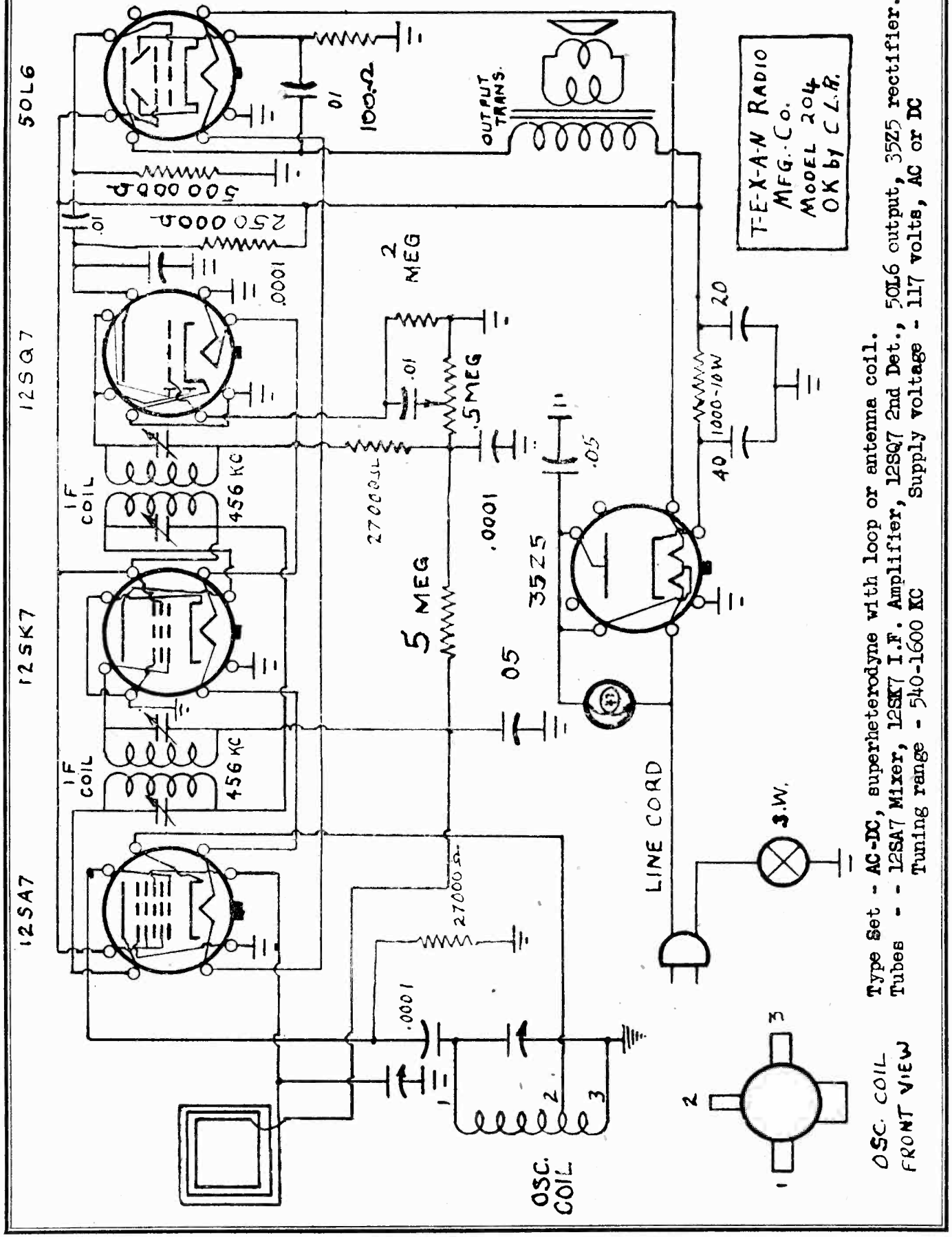
Volumn control at maximum, signal generator as low as possible.

Voltage and Resistance Chart

1. DC voltage measurements are at 20,000 ohms per volt, AC - 1000 ohms per volt.
2. Values are from socket pins to chassis with no signal applied.
3. There may be a possible variation of / - 10% in voltage and resistance readings.

Tubes	Pin #1	Pin #2	Pin #3	Pin #4	Pin #5	Pin #6	Pin #7	Pin #8
6SJ7	0	6 AC	112.5 DC	6.3 DC	0	112.5 DC	12.5 AC	110 DC
6SJ7	0	12.5 AC	0	0	5.5 DC	"	18 AC	112.5 DC
6SQ7	0	.4 DC	0	.4 DC	.4 DC	87.5 DC	6 AC	0
25L6	0	23 AC	132 DC	110 DC	0	0	52 AC	7.75 DC
25Z6	0	56 AC	105 AC	4.2 AC	105 AC	0	56 AC	134 DC
6SK7	0	18 AC	0	.2 DC	0	112.5 DC	23 AC	110 DC

TEXAN RADIO MFG. CO.



Type Set - **AC-DC**, superheterodyne with loop or antenna coil.
Tubes - - 12SA7 Mixer, 12SK7 I.F. Amplifier, 12SQ7 2nd Det., 50L6 output, 35Z5 rectifier.
Tuning range - 540-1600 KC Supply voltage - 117 volts, AC or DC

Dummy Ant.	Connect Signal Generator	Signal Gen. Set	Dial Set	Output Meter	Adjust	Remarks
.05	High side to signal grid of 12SA7 low side to Grd.	455 KC	Rotor full open	Across voice coil	IF trimmers	Adjust for maximum output if modulation hum is excessive decrease Dummy Ant. to .001 MFD.
	Loop	1500 KC	1500 KC	"	Osc. trimmer	Adjust for maximum output. Connect signal gen. to loop of few turns of wire and couple loosely to receiver by a pacing.
	"	"	"	"	RF trimmer	Adjust for maximum output.

Volumn control at maximum, Signal gen. as low as possible.

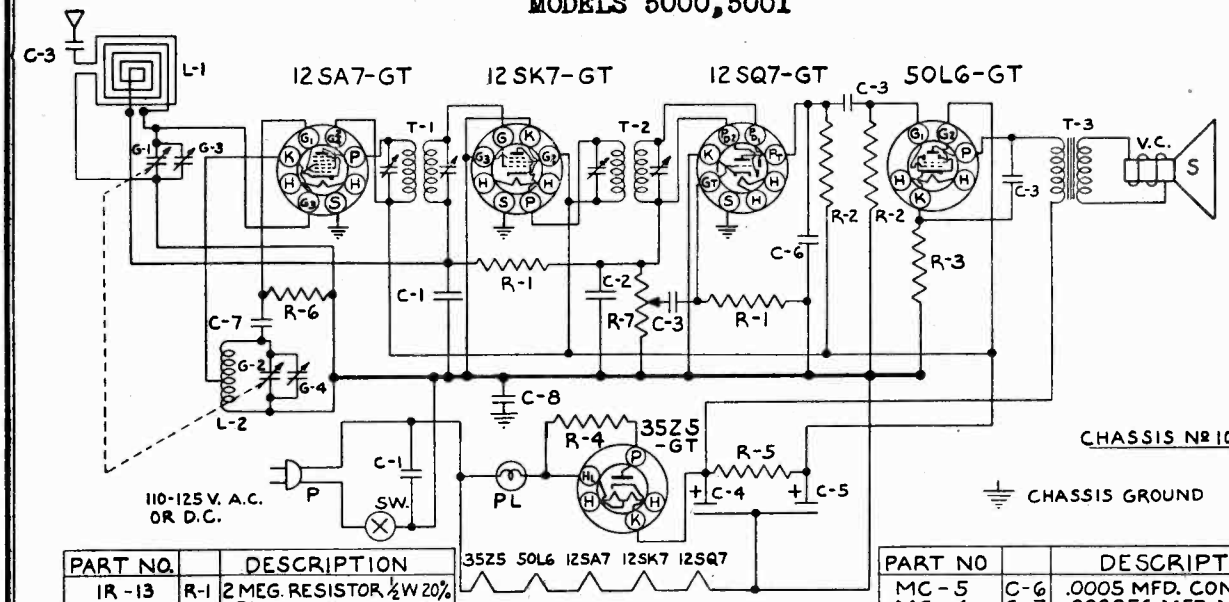
Voltage Chart

Tube	Pin #1	Pin #2	Pin #3	Pin #4	Pin #4	Pin #6	Pin #7	Pin #8
12SA7	0	25V - AC	90V - DC	90V - DC	16.5V - DC	0	12.5V - AC	0
12SK7	0	33V - AC	0	0	0	90V - DC	25V - AC	90V - DC
12SQ7	0	1V - DC	0	3V - DC	3V - DC	60V - DC	12.6V - AC	0
50L6	0	85V - AC	115V - DC	90V - DC	0	0	34V - AC	5.2V - DC
35Z5	0	117V - AC	110V - AC	120V - DC	110V - DC	0	85V - AC	120V - DC

TRAV-LER RADIO CORP.

MODELS 5000,5001
Chassis 100
MODEL 5002,Ch.102

MODELS 5000,5001



PART NO.		DESCRIPTION
IR-13	R-1	2 MEG. RESISTOR ½W 20%
IR-11	R-2	470M " " "
IR-14	R-3	150 " " "
IR-4	R-4	47 " " "
IR-15	R-5	2200 " " "
IR-16	R-6	33,000 " " "
V.C.-3	R-7	1 MEG. VOLUME CONTROL
GC-2	G-1, G-2	GANG COND.
TC-7	G-3	ANT. TRIMMER COND.
TC-6	G-4	OSC. TRIMMER COND.
PC-5	C-1	.05 MFD. COND. 400 V.
MC-2	C-2	.0001 MFD. MICA 20%
PC-7	C-3	.01 MFD. COND. 400 V.
EC-3	C-4	40 MFD. 150 V.
	C-5	20 MFD. ELECTROLYTIC

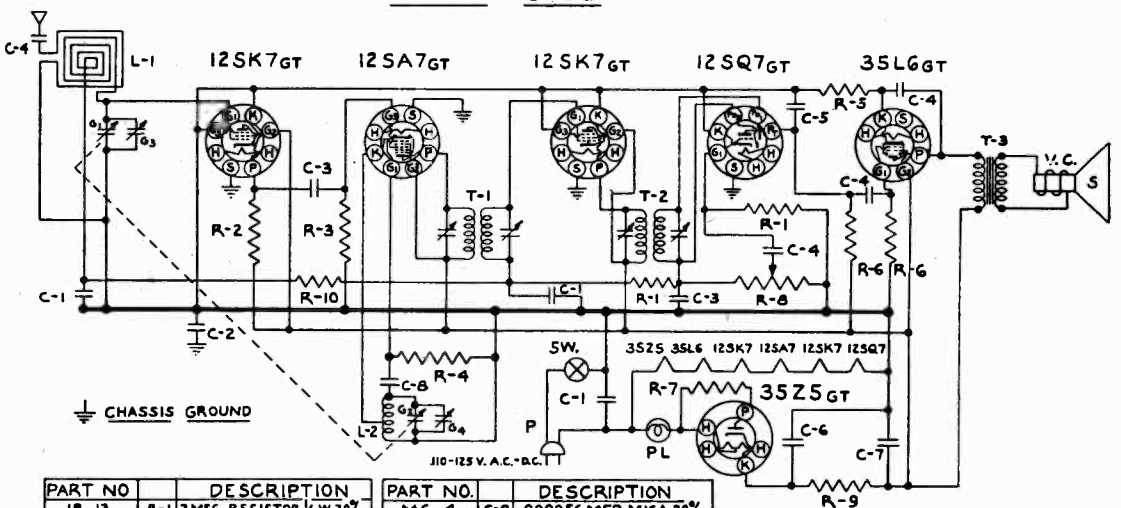
IF PEAK 455 KC

DATE 11-30-45 DR APPROVED

SD-1

PART NO		DESCRIPTION
MC-5	C-6	.0005 MFD. COND. 20%
MC-4	C-7	.000056 MFD. MICA 20%
PC-9	C-8	.1 MFD COND. 400 V.
LL-1	L-1	LOOP ANTENNA
LO-2	L-2	OSC. COIL
LI-1	T-1	INPUT I.F. TRANSFORMER
LI-2	T-2	OUTPUT I.F. TRANSFORMER
	T-3	OUTPUT SPK. TRANSFORMER
SPK-4	V.C.	VOICE COIL
	S	P.M. SPEAKER
PB-1	PL	#47 PILOT BULB
	SW	A.C. SWITCH ON VOL. CONTROL
CO-1	P	LINE CORD
TU-3		12SA7 GT 12SK7 GT 12SQ7 GT 50L6 GT 35Z5 GT

MODEL- 5002



PART NO		DESCRIPTION
IR-13	R-1	2 MEG. RESISTOR ½W 20%
IR-7	R-2	2200 " " 5%
IR-10	R-3	47,000 " " 20%
IR-16	R-4	33,000 " " "
IR-5	R-5	220 " " "
IR-11	R-6	470 M " " "
IR-4	R-7	47 " " "
VC-3	R-8	1 MEG VOLUME CONTROL
IR-15	R-9	2200 RESISTOR ½W 20%
IR-12	R-10	1 MEG. " " "
PC-5	C-1	.05 MFD. COND. 400 V.
PC-8	C-2	.1 MFD. COND. 400 V.
MC-2	C-3	.0001 MFD. MICA 20%
PC-7	C-4	.01 MFD. COND. 400 V.
MC-5	C-5	.0005 MFD. MICA 20%
EC-3	C-6	40 MFD. 150 V. ELECTROLYTIC
	C-7	20 MFD.

PART NO.		DESCRIPTION
MC-4	C-8	.000056 MFD. MICA 20%
LL-1	L-1	LOOP ANTENNA
LO-2	L-2	OSC. COIL
LI-1	T-1	INPUT I.F. TRANSFORMER
LI-2	T-2	OUTPUT I.F. "
	T-3	OUTPUT SPK. "
SPK-4	V.C.	VOICE COIL
	S	P.M. SPEAKER
PB-1	PL	#47 PILOT BULB
GC-2	G-1, G-2	GANG COND.
TC-7	G-3	ANT. TRIMMER COND.
TC-6	G-4	OSC. TRIMMER COND.
CO-1	P	LINE CORD
TU-4	—	12SK7GT 12SA7GT 12SK7GT 12SQ7GT 35L6GT 35Z5GT

DATE: 12-1-45 DR APPROVED

SD-5

IF PEAK 455 KC

ALIGNMENT AND SERVICE DATA

Remove chassis from cabinet for alignment.

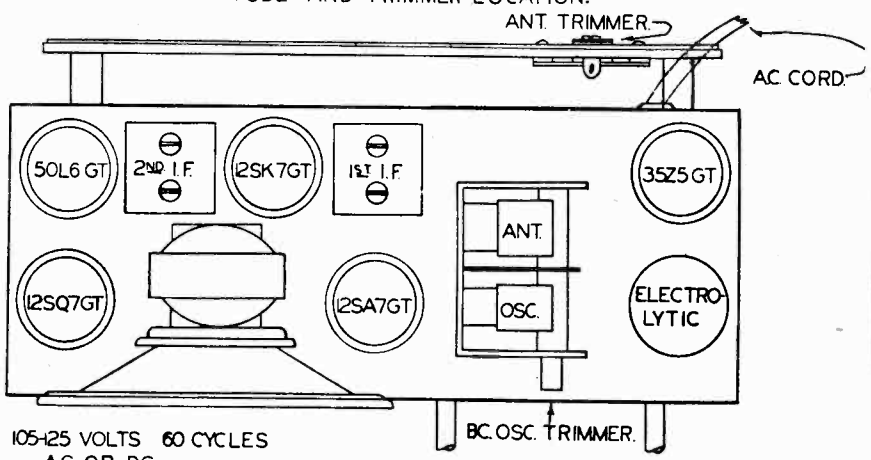
A Signal Generator is required having the following frequencies: 455 KC, 1400 KC, 1720 KC. An output meter should be connected across the speaker.

FIRST STEP: Connect the hot lead from the generator to the ANT. section of the gang condenser, through a .1 MFD condenser. The ground lead from the generator must be connected to the metal frame of the gang condenser. Turn the gang condenser to complete minimum capacity. Adjust the generator to 455KC and adjust the trimmers of the 1st and 2nd I.F. transformers until a maximum reading is noted on the output meter.

SECOND STEP: With the leads from the generator still connected in the same manner, adjust the Signal Generator to 1720 KC. The OSC. trimmer is located on the front of the chassis between the volume and tuning controls. Adjust this trimmer until the 1720 KC signal is tuned in.

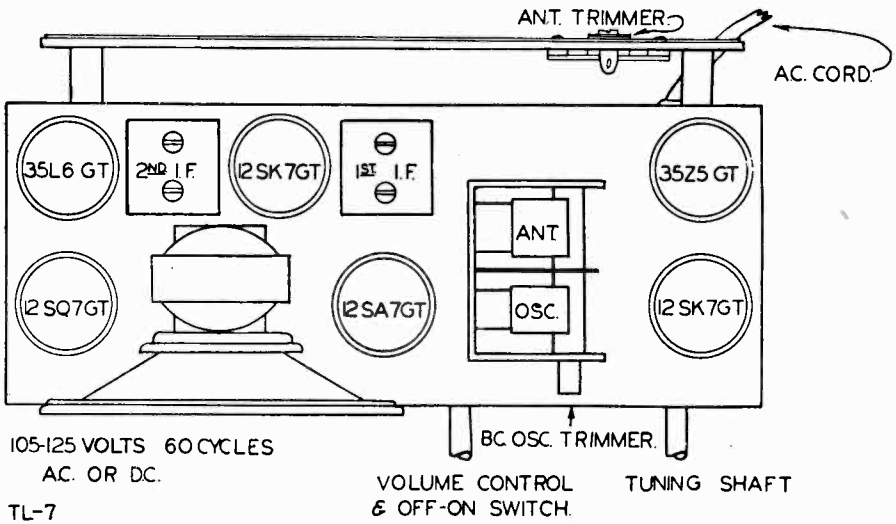
THIRD STEP: Remove the hot lead of the generator from the ANT section of the gang condenser. Connect this lead to the antenna lead wire that projects from the back of the loop antenna through a 200 MMFD condenser. Adjust the Signal Generator to 1400 KC. Rotate the tuning control until this signal is tuned in. The ANT trimmer is located on the back of the loop antenna. Adjust this trimmer until a maximum reading is noted on the output meter. No further adjustment should be necessary, unless the set has been damaged, as the coils and condenser in this receiver have been specially handled at the factory to insure proper alignment at the lower frequencies.

MODEL 5000, 5001
TUBE AND TRIMMER LOCATION.



TL-3.

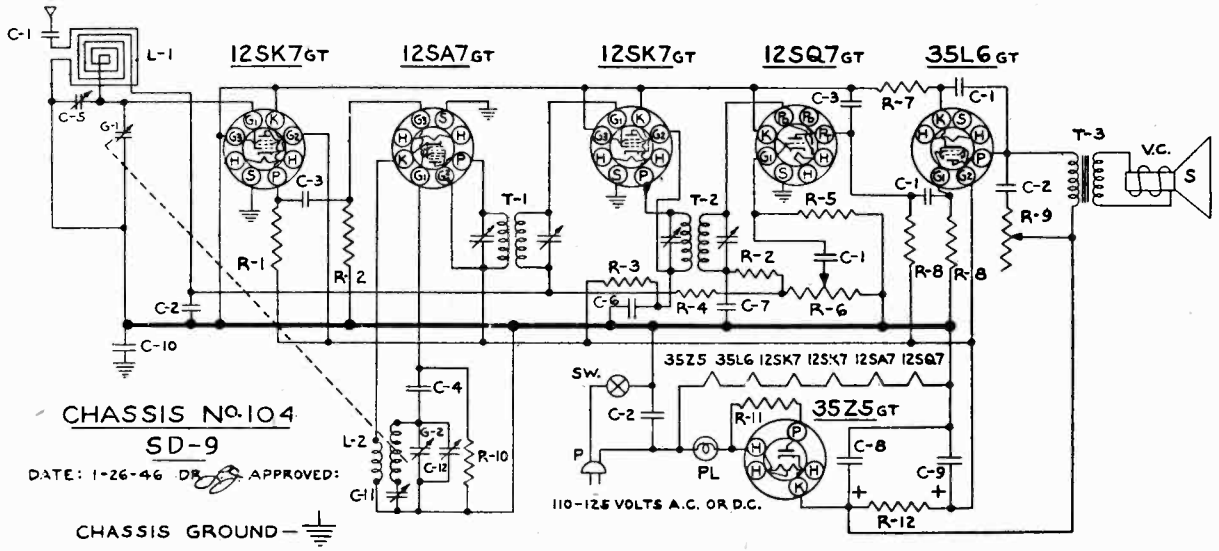
MODEL 5002
TUBE AND TRIMMER LOCATION



TL-7

TRAV-LER RADIO CORP.

MODELS 5007, 5008
5009, Chassis 104



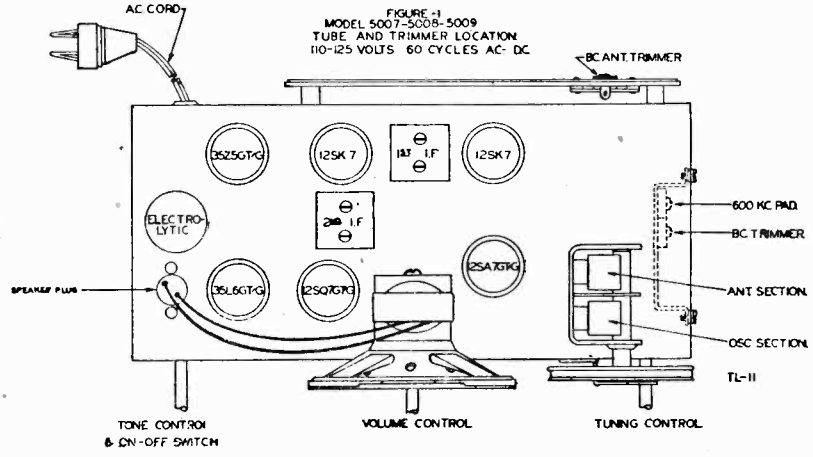


FIGURE 1
MODEL 5007-5008-5009
TUBE AND TRIMMER LOCATION
110-125 VOLTS 60 CYCLES AC-DC

PART NO.		DESCRIPTION
IR-22	R-1	3900Ω RESISTOR 1/2 W 10%
IR-10	R-2	47MΩ RESISTOR 1/2 W-20%
IR-24	R-3	1,000Ω RESISTOR 1/2 W-20%
IR-23	R-4	3.9 MEG. RESISTOR 1/2 W-20%
IR-13	R-5	2 MEG. RESISTOR 1/2 W-20%
VC-3	R-6	1 MEG. VOLUME CONTROL
IR-5	R-7	220Ω RESISTOR 1/2 W-10%
IR-11	R-8	470MΩ RESISTOR 1/2 W-20%
VC-1	R-9	25MΩ TONE CONTROL & SW.
IR-9	R-10	22MΩ RESISTOR 1/2 W-20%
IR-17	R-11	39Ω RESISTOR 1/2 W-20%
IR-25	R-12	2,000Ω RESISTOR — 1 W-10%
PC-7	C-1	.01 MFD. COND. 400 V.
PC-5	C-2	.05 MFD. COND. 400 V.
MC-3	C-3	.00022 MFD. MICA COND.
MC-4	C-4	.000056 MFD. MICA COND.
TC-7	C-5	LOOP ANTENNA TRIMMER
PC-8	C-6	.1 MFD. COND. 400 V.
MC-2	C-7	.0001 MFD. COND. 400 V.
EC-3	C-8	40 MFD.
	C-9	20 MFD. 150 V. ELECTROLYTIC
PC-9	C-10	.25 MFD. COND. 400 V.
GC-1	G-1, G-2	GANG CONDENSER
TC-5	C-11	OSC. PADDING COND.
	C-12	OSC. TRIMMER COND.
LL-2	L-1	LOOP ANTENNA
LO-3	L-2	OSC. COIL
LI-1	T-1	INPUT I.F. TRANSFORMER
LI-2	T-2	OUTPUT I.F. TRANSFORMER
SPK-4	T-3	OUTPUT SPEAKER TRANS.
	V.C.	VOICE COIL
	S	P.M. SPEAKER
PB-1	PL	PILOT BULB #47
CO-1	P	LINE CORD
TU-4		12SK7GT 12SA7GT 12SK7GT 12SQ7GT 35L6GT 35Z5GT

Remove the chassis from the cabinet for alignment.

A signal generator is required, having the following frequencies: 455 KC, 1400 KC, 1730 KC. An output meter should be connected across the speaker.

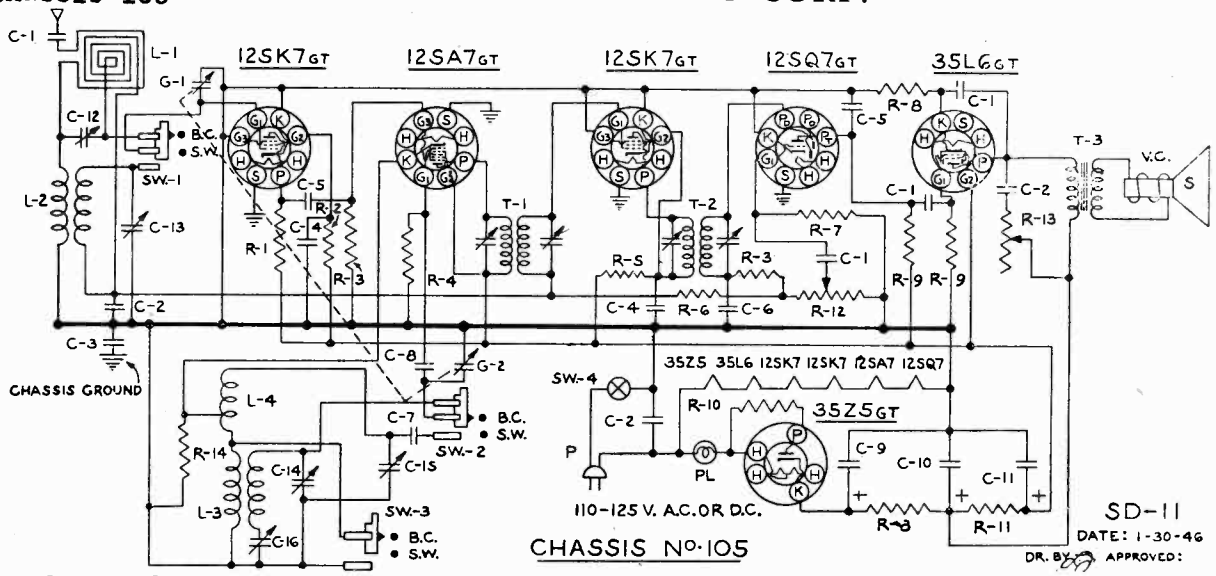
I. F. ALIGNMENT: — Connect the generator lead through a .1 MFD Condenser to the terminal lug on the "Antenna" section of the gang condenser. The ground lead from the generator should be connected to the gang frame. Set the generator at 455 KC. Adjust the trimmer screws in the 1st and 2nd I. F. cans (See Fig. 1) until a maximum reading is noted on the output meter.

The receiver volume control should be turned to maximum during the I. F. and all subsequent alignments, to keep the AVC from working and giving false readings. Keep the generator output as low as possible to prevent overloading.

BC. OR BROADCAST ALIGNMENT: — With the generator leads still connected as in I. F. Alignment, rotate the tuning condenser to complete minimum capacity. Set the generator to 1730 KC. Adjust the BC. oscillator trimmer until the signal is tuned in. Next remove the hot lead of the generator from the "Ant" section of the gang condenser. Connect this lead to the antenna lead wire that projects from the back of the loop antenna through a 200 MMFD condenser. Set the generator to 1400 KC and rotate the tuning condenser until the signal is tuned in. Adjust the BC. antenna trimmer until a maximum reading is noted on the output meter. Set the generator to 600 KC and turn the tuning control until the signal is tuned in. Rock the tuning control back and forth slowly and at the same time adjust the 600 KC pad, slowly to the right or left until a maximum reading is noted on the output meter. It is advisable to return to the 1730 KC adjustment and re-check that setting to make sure it has not changed while padding at 600 KC.

MODELS 5010, 5011, 5012
Chassis 105

TRAV-LER RADIO CORP.



Remove the chassis from the cabinet for alignment.

A signal generator is required, having the following frequencies: 455 KC, 1400 KC, 1730 KC. 6 MC, 16 MC, and 18.3 MC. An output meter should be connected across the speaker.

I. F. ALIGNMENT: — Connect the generator lead through a .1 MFD Condenser to the terminal lug on the "Antenna" section of the gang condenser. The ground lead from the generator should be connected to the gang frame. Set the generator at 455 KC. Adjust the trimmer screws in the 1st and 2nd I. F. cans (See Fig. 1) until a maximum reading is noted on the output meter.

The receiver volume control should be turned to maximum during the I. F. and all subsequent alignments, to keep the AVC from working and giving false readings. Keep the generator output as low as possible to prevent overloading.

BC. OR BROADCAST ALIGNMENT: — With the generator leads still connected as in I. F. Alignment, rotate the tuning condenser to complete minimum capacity. Set the generator to 1730 KC. Adjust the BC. oscillator trimmer until the signal is tuned in. Next remove the hot lead of the generator from the "Ant" section of the gang condenser. Connect this lead to the antenna lead wire that projects from the back of the loop antenna through a 200 MMFD condenser. Set the generator to 1400 KC and rotate the tuning condenser until the signal is tuned in. Adjust the BC. antenna trimmer until a maximum reading is noted on the output meter. Set the generator to 600 KC and turn the tuning control until the signal is tuned in. Rock the tuning control back and forth slowly and at the same time adjust the 600 KC pad, slowly to the right or left until a maximum reading is noted on the output meter. It is advisable to return to the 1730 KC adjustment and re-check that setting to make sure it has not changed while padding at 600 KC.

S. W. OR SHORT WAVE ALIGNMENT: — Set the generator at 18.3 MC. Turn the receiver band switch to short band position. Turn the tuning condenser to complete minimum capacity. The generator leads should be connected to the antenna lead wire that projects from the back of the loop antenna through a 400 Ohm resistor. Adjust the S. W. oscillator trimmer slowly until the 18.3 MC signal is tuned in. At this point, it will be well to make sure that the fundamental signal is turned in. Turn up the generator output and tune the receiver to approximately 17.3 MC. At this point the 18.3 MC signal will be heard again but much weaker. This is the image frequency. If the image is not heard, then turn the tuning condenser back to complete minimum and readjust the S. W. oscillator trimmer. Remember, the image must always be heard (at 2 times the I. F. frequency in KC) lower the frequency than the fundamental signal. After the oscillator has been properly set, tune the signal generator to 16 MC and rotate the tuning control until the signal is tuned in. Adjust the S.W. antenna trimmer until a maximum reading is noted on the output meter. It is advisable to rock the gang slowly while adjusting the antenna trimmer. Set the generator to 6 MC and tune the signal in on the receiver. Check the alignment at this frequency. No adjustment should be necessary as the coils have been carefully checked before leaving the factory. A fixed oscillator padding condenser is used at 6 MC.

PART NO.		DESCRIPTION
IR-22	R-1	3900Ω RESISTOR 1/2 W. 10%
IR-8	R-2	22,000Ω RESISTOR 1/2 W. 10%
IR-10	R-3	47000Ω RESISTOR 1/2 W. 20%
IR-9	R-4	22000Ω RESISTOR 1/2 W. 20%
IR-24	R-5	1000Ω RESISTOR 1/2 W. 20%
IR-23	R-6	3.9 MEG. RESISTOR 1/2 W. 20%
IR-13	R-7	2 MEG. RESISTOR 1/2 W. 20%
IR-5	R-8	220Ω RESISTOR 1/2 W. 10%
IR-11	R-9	470000Ω RESISTOR 1/2 W. 20%
IR-17	R-10	39Ω RESISTOR 1/2 W. 20%
IR-21	R-11	330Ω RESISTOR 1/2 W. 10%
VC-3	R-12	1 MEG. VOLUME CONTROL
VC-1	R-13	25MΩ TONE CONTROL & SW.
IR-6	R-14	470Ω RESISTOR 1/2 W. 10%
PC-7	C-1	.01 MFD. CONDENSER 400 V.
PC-5	C-2	.05 MFD. CONDENSER 400 V.
PC-9	C-3	.25 MFD. CONDENSER 400 V.
PC-8	C-4	.1 MFD. CONDENSER 400 V.
MC-3	C-5	.00022 MFD. MICA COND. 500 V.
MC-2	C-6	.0001 MFD. MICA COND. 500 V.
MC-1	C-7	.00475 MFD. MICA COND. 3%
MC-4	C-8	.00005 MFD. MICA COND. 500 V.
EC-4	C-9	40 MFD.
	C-10	40 MFD. — 150 V. ELECTROLYTIC
	C-11	40 MFD.
TC-7	C-12	LOOP ANTENNA TRIMMER
TC-8	C-13	S.W. ANTENNA TRIMMER
TC-1	C-14	B.C. OSC. TRIMMER
	C-15	S.W. OSC. TRIMMER
	C-16	B.C. OSC. PADDING COND.
GC-1	G-1	GANG CONDENSER
	G-2	
SW-1	SW-1	BAND SWITCH
	SW-2	
	SW-3	
	SW-4	A.C. SW. ON TONE CONTROL
LI-1	T-1	INPUT I.F. TRANSFORMER
LI-2	T-2	OUTPUT I.F. TRANSFORMER
SPK-4	T-3	OUTPUT SPK. TRANSFORMER
	V.C.	VOICE COIL
PB-1	S	P.M. SPEAKER
CO-1	PL	PILOT BULB #47
LL-2	P	LINE CORD
LA-2	L-1	LOOP ANTENNA
LO-3	L-2	S.W. ANTENNA COIL
LO-4	L-3	B.C. OSC. COIL
TU-4	L-4	S.W. OSC. COIL
		12SK7GT 12SA7GT 12SK7GT 12SQ7GT 35L6GT 35Z5GT

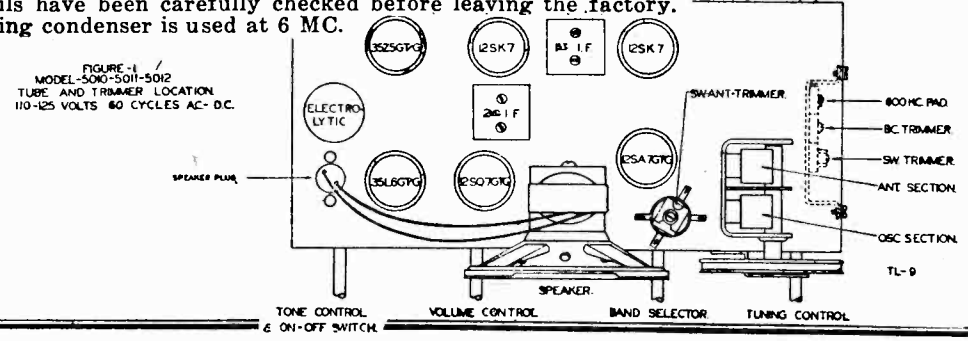
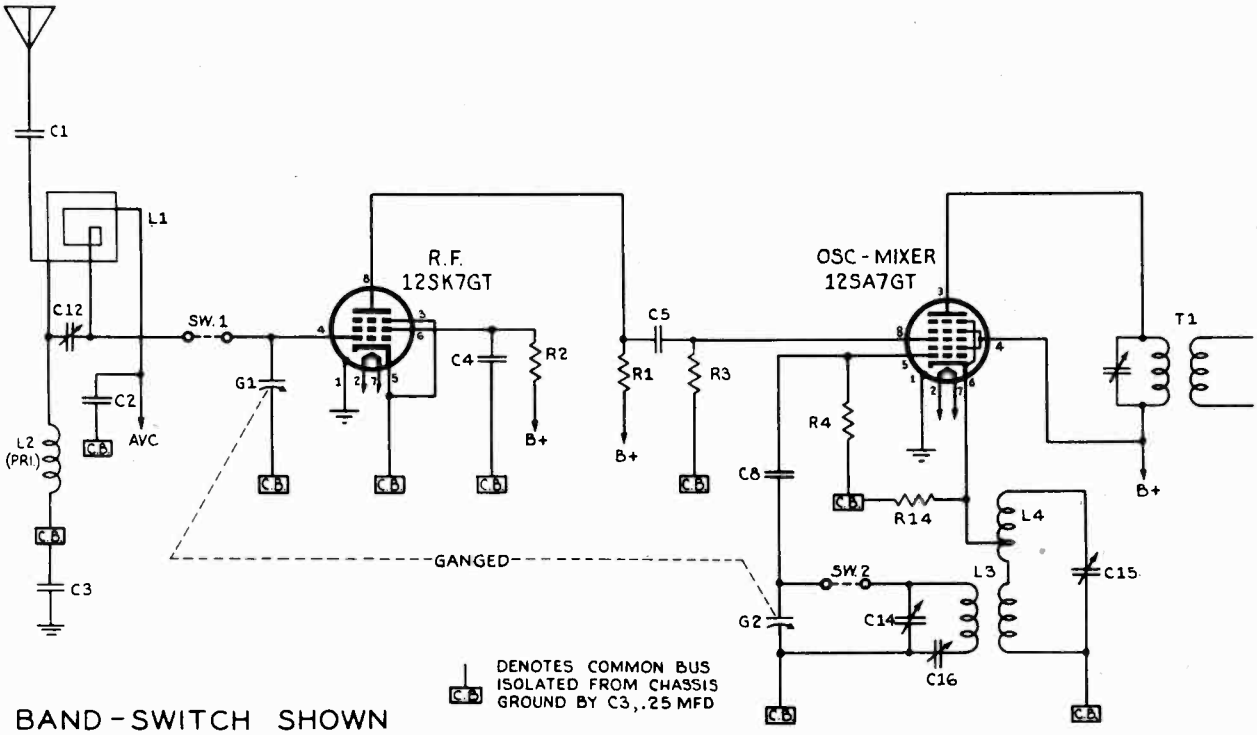


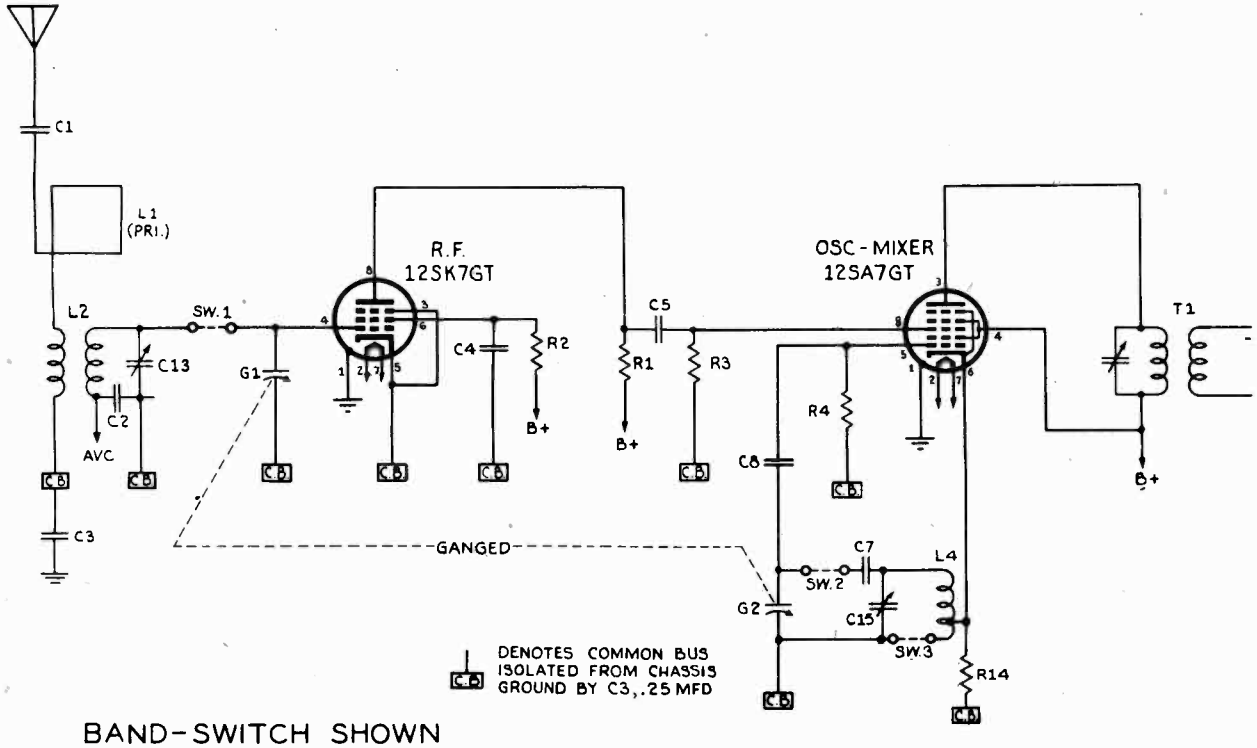
FIGURE-1
MODEL-5010-5011-5012
TUBE AND TRIMMER LOCATION
110-125 VOLTS 60 CYCLES AC-DC.

TRAV-LER RADIO CORP.

MODELS 5010,5011,5012



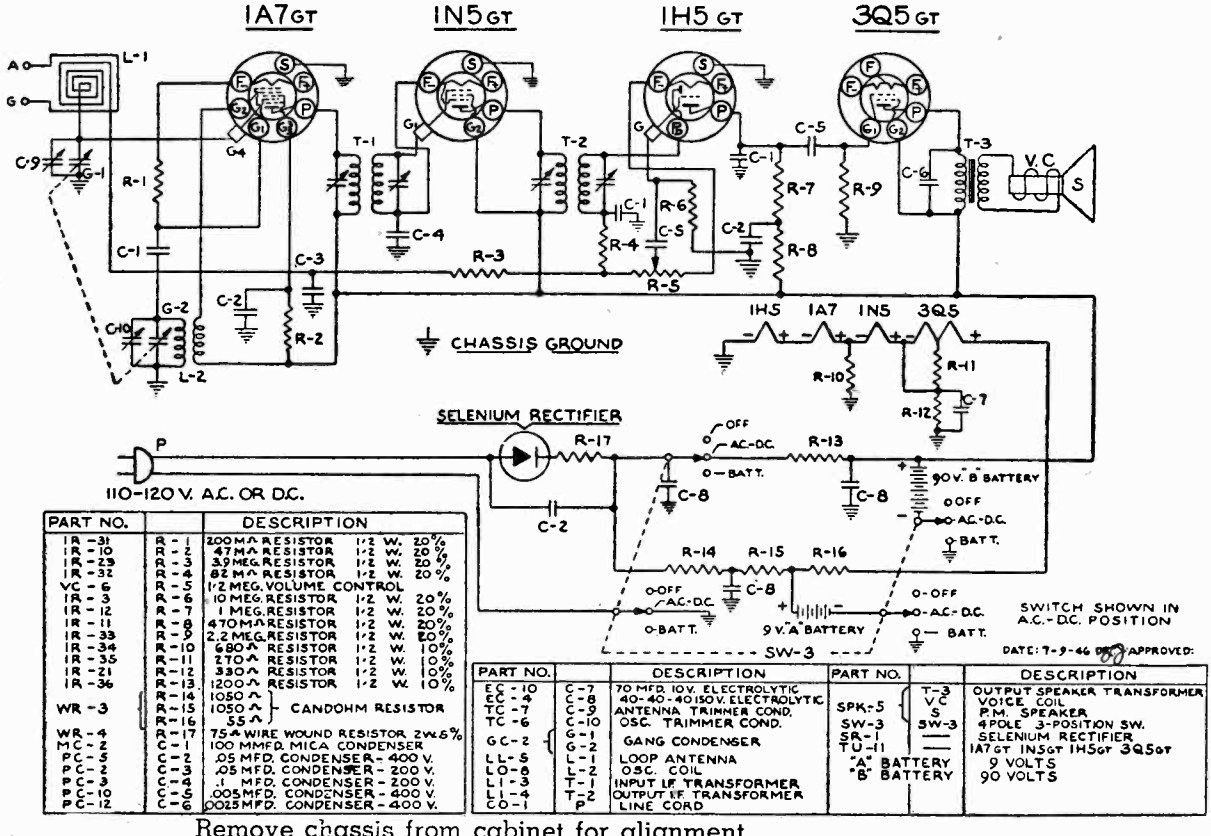
BAND-SWITCH SHOWN
AT 1ST POSITION.
BROADCAST BAND



BAND-SWITCH SHOWN
AT 2ND POSITION CLOCKWISE.
SHORT WAVE BAND

MODEL 5020
Chassis 800

TRAV-LER RADIO CORP.



PART NO.		DESCRIPTION
IR-31	R-1	200 M^ RESISTOR 1/2 W. 20%
IR-10	R-2	47 M^ RESISTOR 1/2 W. 20%
IR-23	R-3	3.9 MEG. RESISTOR 1/2 W. 20%
IR-32	R-4	82 M^ RESISTOR 1/2 W. 20%
VC-6	R-5	1/2 MEG. VOLUME CONTROL
IR-3	R-6	10 MEG. RESISTOR 1/2 W. 20%
IR-12	R-7	1 MEG. RESISTOR 1/2 W. 20%
IR-11	R-8	470 M^ RESISTOR 1/2 W. 20%
IR-33	R-9	2.2 MEG. RESISTOR 1/2 W. 20%
IR-34	R-10	680 ^ RESISTOR 1/2 W. 10%
IR-35	R-11	270 ^ RESISTOR 1/2 W. 10%
IR-21	R-12	330 ^ RESISTOR 1/2 W. 10%
IR-36	R-13	1200 ^ RESISTOR 1/2 W. 10%
WR-3	R-14	1050 ^ CANDOHM RESISTOR
	R-15	1050 ^ CANDOHM RESISTOR
	R-16	55 ^ CANDOHM RESISTOR
WR-4	R-17	75 ^ WIRE WOUND RESISTOR, 2W 6%
MC-2	C-1	100 MMFD. MICA CONDENSER
PC-5	C-2	.05 MFD. CONDENSER - 400 V.
PC-2	C-3	.05 MFD. CONDENSER - 200 V.
PC-3	C-4	.1 MFD. CONDENSER - 200 V.
PC-10	C-5	.005 MFD. CONDENSER - 400 V.
PC-12	C-6	.0025 MFD. CONDENSER - 400 V.

PART NO.		DESCRIPTION
EC-10	C-7	70 MFD. 10 V. ELECTROLYTIC
EC-4	C-8	40-40-40 150 V. ELECTROLYTIC
TC-7	C-9	ANTENNA TRIMMER COND.
TC-6	C-10	OSC. TRIMMER COND.
GC-2	G-1	GANG CONDENSER
	G-2	
LL-5	L-1	LOOP ANTENNA
LO-8	L-2	OSC. COIL
LI-3	T-1	INPUT I.F. TRANSFORMER
LI-4	T-2	OUTPUT I.F. TRANSFORMER
CO-1	P	LINE CORD

PART NO.		DESCRIPTION
	T-3	OUTPUT SPEAKER TRANSFORMER
VC		VOICE COIL
S		P.M. SPEAKER
SPK-5		
SW-3	SW-3	4 POLE 3-POSITION SW.
SR-1		SELENIUM RECTIFIER
TU-11		1A7GT 1N5GT 1H5GT 3Q5GT
"A" BATTERY		9 VOLTS
"B" BATTERY		90 VOLTS

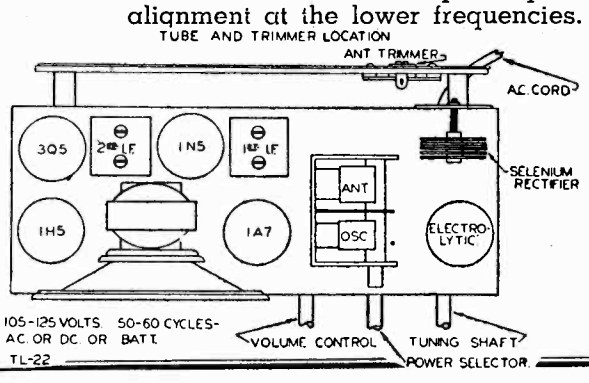
Remove chassis from cabinet for alignment.

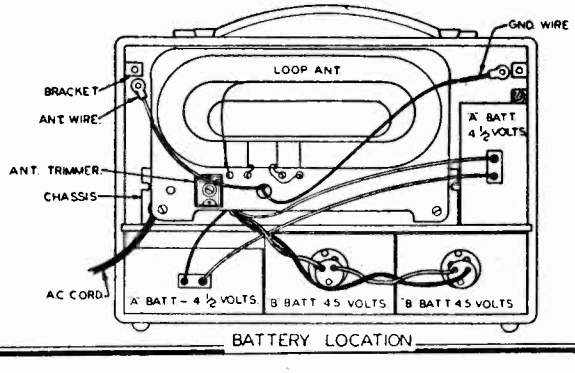
A Signal Generator is required having the following frequencies: 455 KC, 1400 KC, 1720 KC. An output meter should be connected across the speaker.

FIRST STEP: Connect the hot lead from the generator to the ANT. section of the gang condenser, through a .1 MFD condenser. The ground lead from the generator must be connected to the metal frame of the gang condenser. Turn the gang condenser to complete minimum capacity. Adjust the generator to 455KC and adjust the trimmers of the 1st and 2nd I.F. transformers until a maximum reading is noted on the output meter.

SECOND STEP: With the leads from the generator still connected in the same manner, adjust the Signal Generator to 1720 KC. The OSC. trimmer is located on the top of the oscillator section of the gang condenser. Adjust this trimmer until the 1720 KC signal is tuned in.

THIRD STEP: Remove the hot lead of the generator from the ANT section of the gang condenser. Connect this lead to the antenna lead wire that projects from the back of the loop antenna through a 200 MMFD condenser. Adjust the Signal Generator to 1400 KC. Rotate the tuning control until this signal is tuned in. The ANT trimmer is located on the back of the loop antenna. Adjust this trimmer until a maximum reading is noted on the output meter. No further adjustment should be necessary, unless the set has been damaged, as the coils and condenser in this receiver have been specially handled at the factory to insure proper alignment at the lower frequencies.

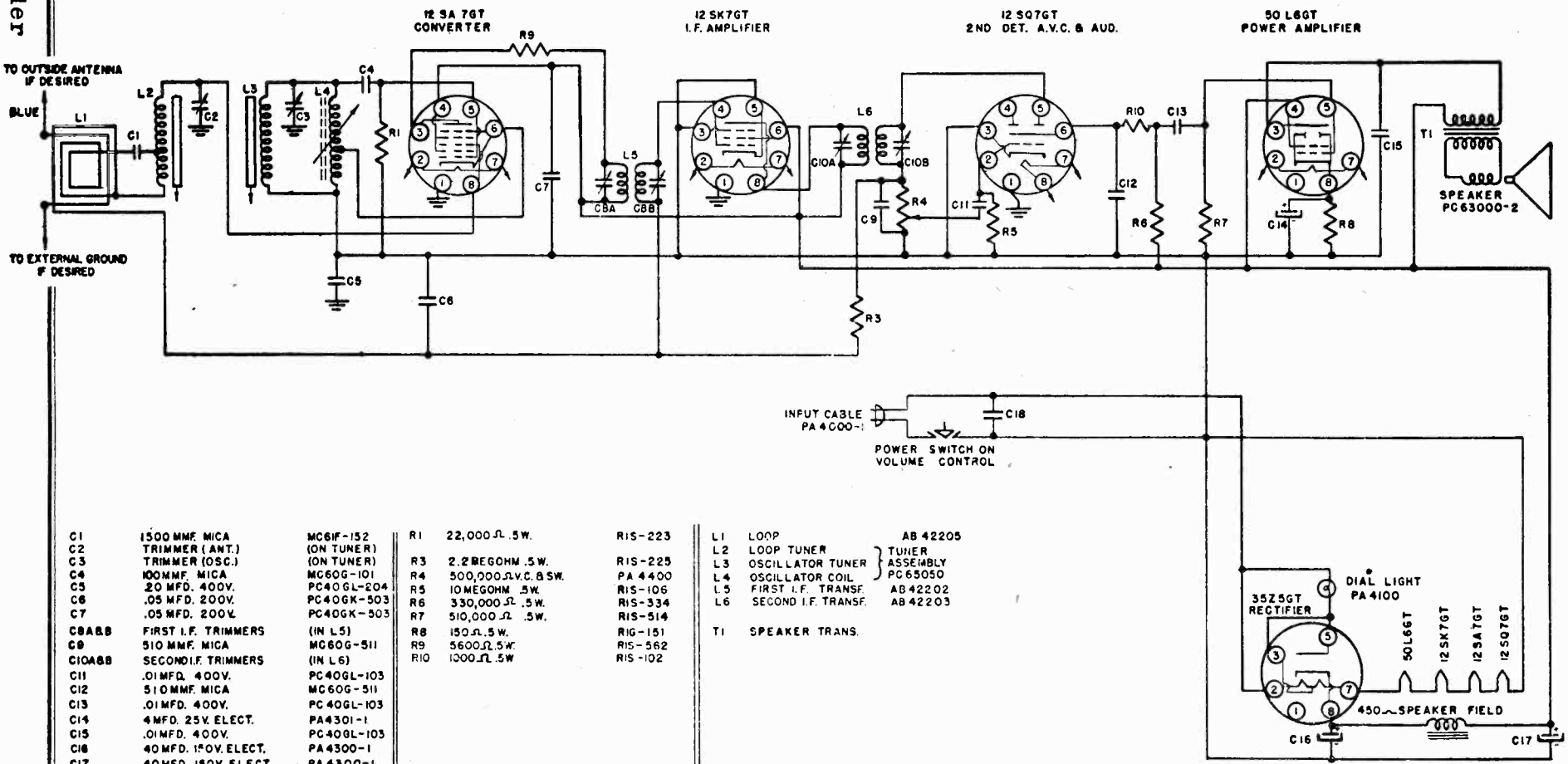




UST SUPERHETERODYNE 5-16 SERIES

INTERMEDIATE FREQUENCY 455 K.C.

BOTTOM VIEWS OF ALL SOCKET CONNECTIONS



C1	1500 MMF. MICA	MC61F-152
C2	TRIMMER (ANT.)	(ON TUNER)
C3	TRIMMER (OSC.)	(ON TUNER)
C4	100MMF. MICA	MC60G-101
C5	.20 MFD. 400V.	PC40GL-204
C6	.05 MFD. 200V.	PC40GK-503
C7	.05 MFD. 200V.	PC40GK-503
C8A&B	FIRST I.F. TRIMMERS	(IN L5)
C9	510 MMF. MICA	MC60G-511
C10A&B	SECOND I.F. TRIMMERS	(IN L6)
C11	.01 MFD. 400V.	PC40GL-103
C12	510 MMF. MICA	MC60G-511
C13	.01 MFD. 400V.	PC40GL-103
C14	4 MFD. 25V. ELECT.	PA4301-1
C15	.01 MFD. 400V.	PC40GL-103
C16	40 MFD. 150V. ELECT.	PA4300-1
C17	40 MFD. 150V. ELECT.	PA4300-1
C18	.05 MFD. 600V.	PC40GM-503

R1	22,000 Ω .5W.	RIS-223
R3	2.2 MEGOHM .5W.	RIS-225
R4	500,000 Ω V.C. & SW.	PA4400
R5	10 MEGOHM .5W.	RIS-106
R6	330,000 Ω .5W.	RIS-334
R7	510,000 Ω .5W.	RIS-514
R8	150 Ω .5W.	RIG-151
R9	5600 Ω .5W.	RIS-562
R10	1000 Ω .5W	RIS-102

L1	LOOP	AB42205
L2	LOOP TUNER	TUNER ASSEMBLY PC65050
L3	OSCILLATOR TUNER	
L4	OSCILLATOR COIL	
L5	FIRST I.F. TRANSF.	AB42202
L6	SECOND I.F. TRANSF.	AB42203
T1	SPEAKER TRANS.	

(ORIGINAL) EFFECTIVE APRIL 22, 1946

U. S. TELEV. MFG. CORP.

UST SUPERHETERODYNE 5-16 SERIES

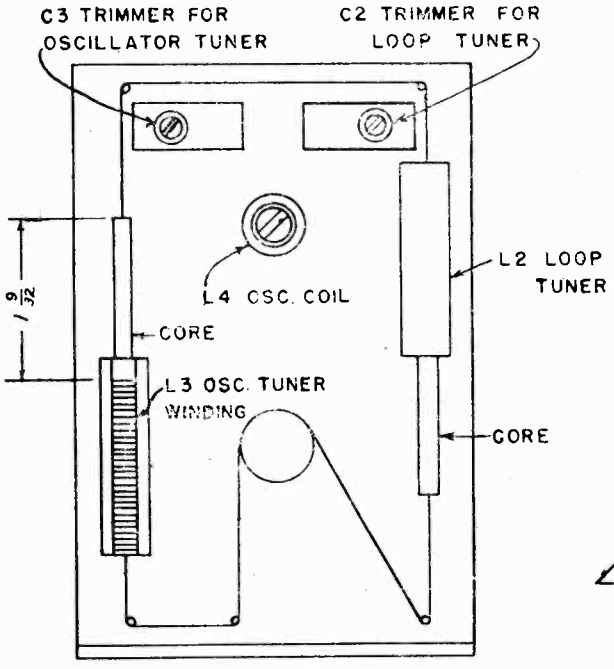
VOLTAGE CHART

LINE VOLTAGE: 117 VOLTS AC		VOLUME CONTROL ON FULL WITH NO SIGNAL							
TUBE	FUNCTION	Voltage of Each Socket Prong to Switch on Volume Control							
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
12SA7GT	Converter	0	24*	82	92	—4.5	0	12*	—.6
12SK7GT	I. F. Amp.	0	36*	0	—.5	0	92	24*	91
12SQ7GT	2nd Det. - AVC - AF	0	—.7	0	0	0	62	12*	0
50L6LGT	Power Amp.	0	36*	86	92	0	—	86*	5.3
35Z5GT	Rectifier	0	117*	112*	—	112*	—	86*	123

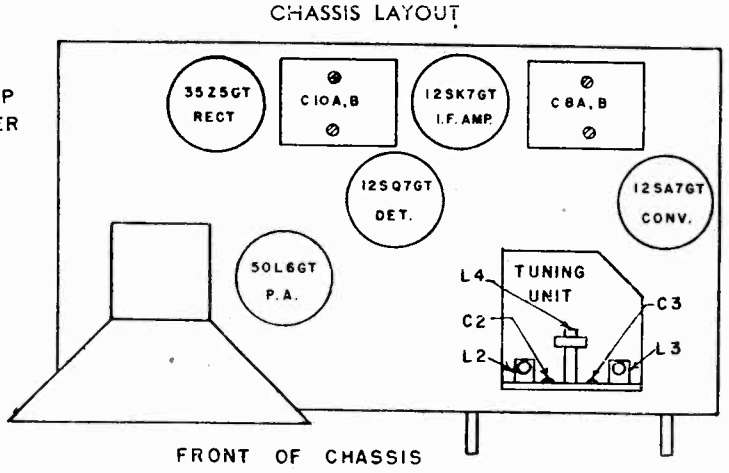
Voltage readings are for schematic diagram shown on back of sheet. Allow 15%+ or — on all measurements. Measurements were made with Weston Model 772 Analyzer.
* AC volts.

ALIGNMENT CHART FOR 5-16 SERIES

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	TUNER SETTING	TRIMMER	REMARKS
1	I.F.	Converter Pin No. 5	.01 mfd.	455 KC	High Freq. End	C10 A&B	2nd I.F.
						C 8. A&B	1st I.F.
2	Osc. Tuner Core	When tuner is against stop at high frequency end, the end of core should be 1-9/32" away from end of winding L3, oscillator tuner					
3	Pointer	Set pointer to coincide with the first horizontal line below 160 on dial					
4	Trimmers	Blue Ant. Lead	200 mmf.	1400 KC	1400 KC	C3 Osc. Tuner Trim.	Peak at max.
						C2 Loop Tuner Trim.	Peak at max.
5	Oscillator	Blue Ant. Lead	200 mmf.	600 KC	Rock Tuner Control	Adjust Iron Core in L4 Osc. Coil	Use short non-metallic screw driver to fit slot of core from back of tuner
6	Repeat operations 4 and 5						
7	Creck operations 1 to 6 inclusive						



BACK VIEW OF TUNING UNIT



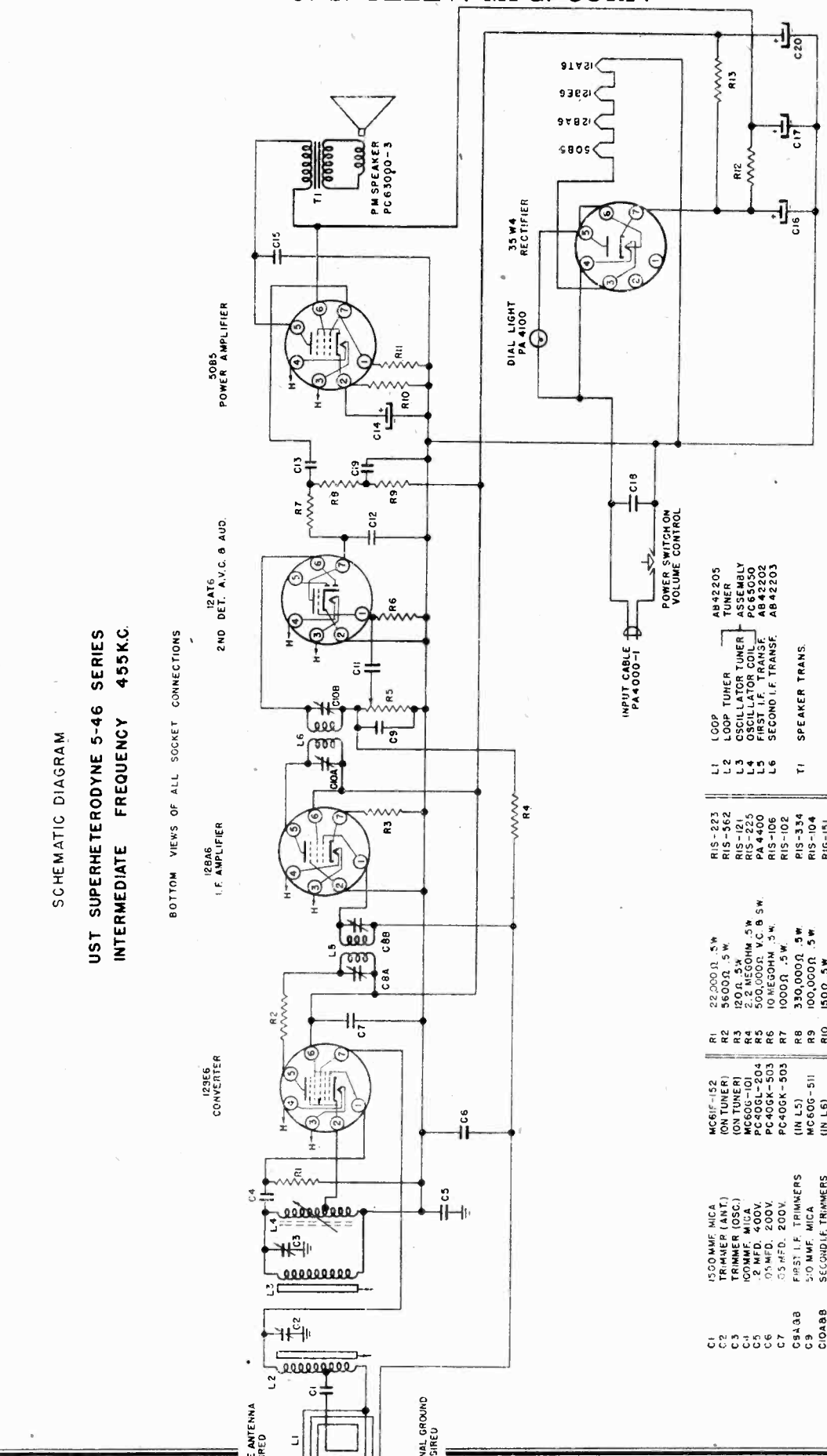
U. S. TELEV. MFG. CORP.

MODEL 5-46
Series

SCHEMATIC DIAGRAM

UST SUPERHETERODYNE 5-46 SERIES
INTERMEDIATE FREQUENCY 455K.C.

BOTTOM VIEWS OF ALL SOCKET CONNECTIONS



C1	150 MMF MICA	MC6SF-152	
C2	TRIMMER (ANT.)	(ON TUNER)	
C3	TRIMMER (OSC.)	(ON TUNER)	
C4	100 MMF. MICA	MC6OG-101	
C5	.2 MFD. 400V.	PC40GL-204	
C6	.05 MFD. 600V.	PC40GK-503	
C7	.05 MFD. 200V.	PC40GK-503	
C8A&B	FIRST I.F. TRIMMERS	(IN L5)	
C9	510 MMF. MICA	MC6OG-511	
C10A&B	SECOND I.F. TRIMMERS	(IN L6)	
C11	.01MFD. 400V.	PC40GL-103	
C12	510 MMF. MICA	MC6OG-511	
C13	.01MFD. 400V.	PC40GL-103	
C14	4MFD. 25V. ELECT.	PA4301-1	
C15	.01MFD. 400V.	PC40GL-103	
C16	40 MFD. 150V. ELECT.	PA4300-1	
C17	40 MFD. 150V. ELECT.	PA4300-1	
C18	.05MFD. 600V.	PC40GM-503	
C19	.05MFD. 200V.	PC40GK-503	
C20	10MFD. 150V. ELECT.	PA4300-5	

R1	22,000Ω .5W	RIS-223
R2	5600Ω .5W.	RIS-562
R3	120Ω .5W	RIS-121
R4	2.2 MEGOHM .5W	RIS-225
R5	500,000Ω V.C. & SW	PA 4400
R6	10 MEGOHM .5W.	RIS-106
R7	1000Ω .5W.	RIS-102
R8	330,000Ω .5W	RIS-334
R9	100,000Ω .5W	RIS-104
R10	150Ω .5W.	RIS-151
R11	510,000 .5W	RIS-514
R12	390Ω 1.W.	R2S-391
R13	2200Ω 1.W.	R2S-222

L1	LOOP	AB42205
L2	LOOP TUNER	TUNER
L3	OSCILLATOR TUNER	ASSEMBLY
L4	OSCILLATOR COIL	PC63050
L5	FIRST I.F. TRANSF.	AB42202
L6	SECOND I.F. TRANSF.	AB42203
T1	SPEAKER TRANS.	

SEPT. 5, 1946

MODEL 5-46
Series

U. S. TELEV. MFG. CORP.

UST SUPERHETERODYNE 5-46 SERIES

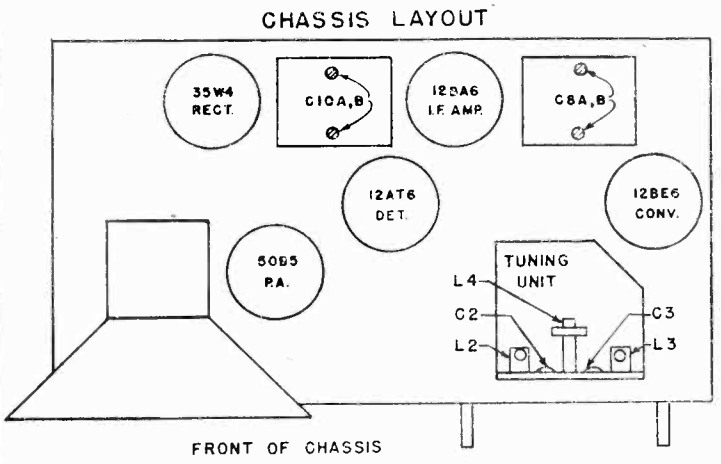
VOLTAGE CHART

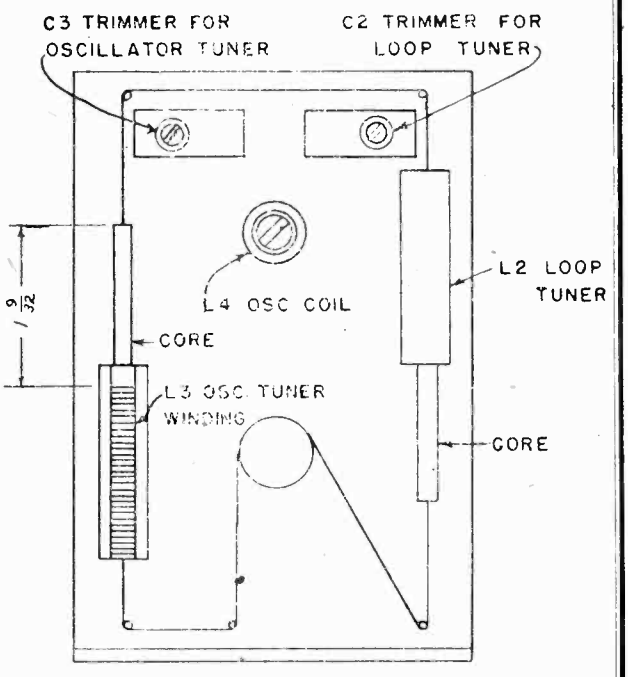
LINE VOLTAGE: 117 VOLTS AC		VOLUME CONTROL ON FULL WITH NO SIGNAL						
TUBE	FUNCTION	Voltage of Each Socket Prong to Switch on Volume Control						
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7
12BE6	Converter	—6.7	0	12.5*	24.3*	69	77	0
12BA6	I. F. Amp.	0	0	24.3*	36 *	75	75	1.1
12AT6	2nd Det. - AVC - AF	—6.5	0	12.5*	0	—	—.4	34
50B5	Power Amp.	0	6.2	36 *	85 *	92	95	0
35W4	Rectifier	—	—	85 *	117*	112*	112*	113

Voltage readings are for schematic diagram shown on back of sheet. Allow 15%+ or — on all measurements. Measurements were made with Simpson Model 260 Meter.
* AC volts.

ALIGNMENT CHART FOR 5-46 SERIES

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	TUNER SETTING	TRIMMER	REMARKS
1	I.F.	Converter Pin No. 7	.01 mfd.	455 KC	High Freq. End	C10 A&B	2nd I.F.
						C 8 A&B	1st I.F.
2	Osc. Tuner Core	When tuner is against stop at high frequency end, the end of core should be 1-9/32" away from end of winding L3, oscillator tuner					
3	Pointer	Set pointer to coincide with the first horizontal line below 160 on dial					
4	Trimmers	Blue Ant. Lead	200 mmf.	1400 KC	1400 KC	C3 Osc. Tuner Trim.	Peak at max.
						C2 Loop Tuner Trim.	Peak at max.
5	Oscillator	Blue Ant. Lead	200 mmf.	600 KC	Rock Tuner Control	Adjust Iron Core in L4 Osc. Coil	Use short non-metallic screw driver to fit slot of core from back of tuner
6	Repeat operations 4 and 5						
7	Check operations 1 to 6 inclusive						





BACK VIEW OF TUNING UNIT