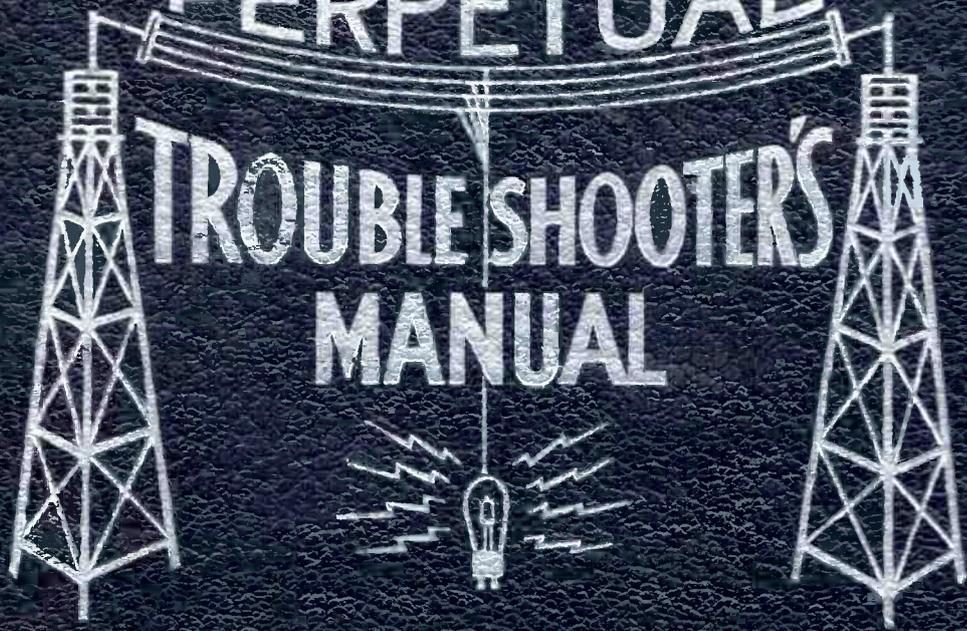


VOLUME III

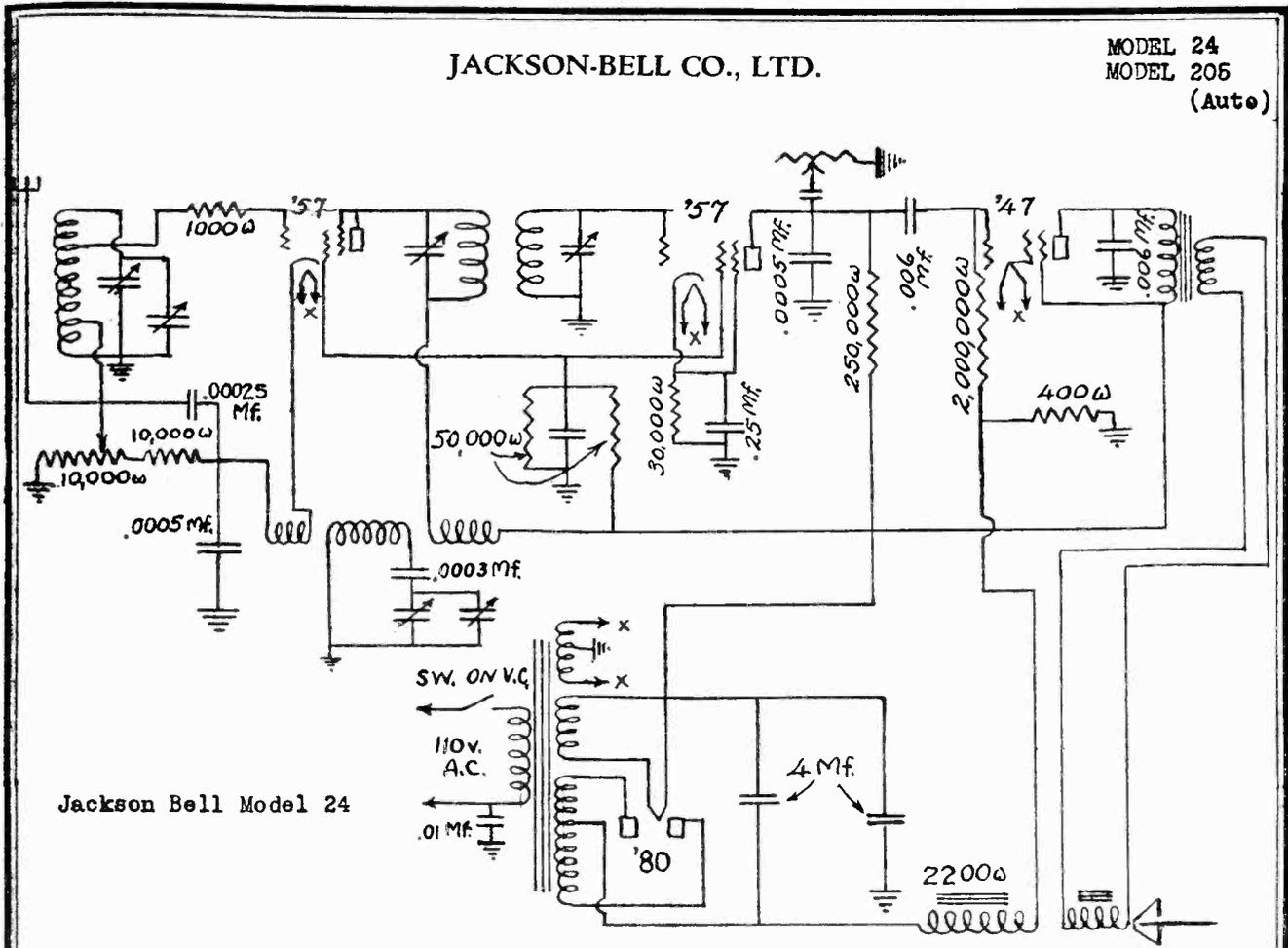
PERPETUAL



JOHN F. RIDER

JACKSON-BELL CO., LTD.

MODEL 24
MODEL 205
(Auto)



Jackson Bell Model 24

Model 205 Data

The tuning range of the receiver is 550 to 1,750 kc., and reception of the 2,480-kc. police signals as an image frequency. The intermediate frequency used is 465 kc.

The most interesting feature of this receiver is the control unit which, instead of merely consisting of the usual remote tuning dial and volume control, actually contains the type '57 combination first detector and oscillator tube together with the associated units. This unit is then coupled to the intermediate-frequency amplifier by an i-f. transmission line contained in a shield along

with the "A" and "B" feed wires, etc. The intermediate frequency and audio units are in a case with an eight-inch Lansing speaker, making the whole a two-unit job with remote control and no flexible shafts.

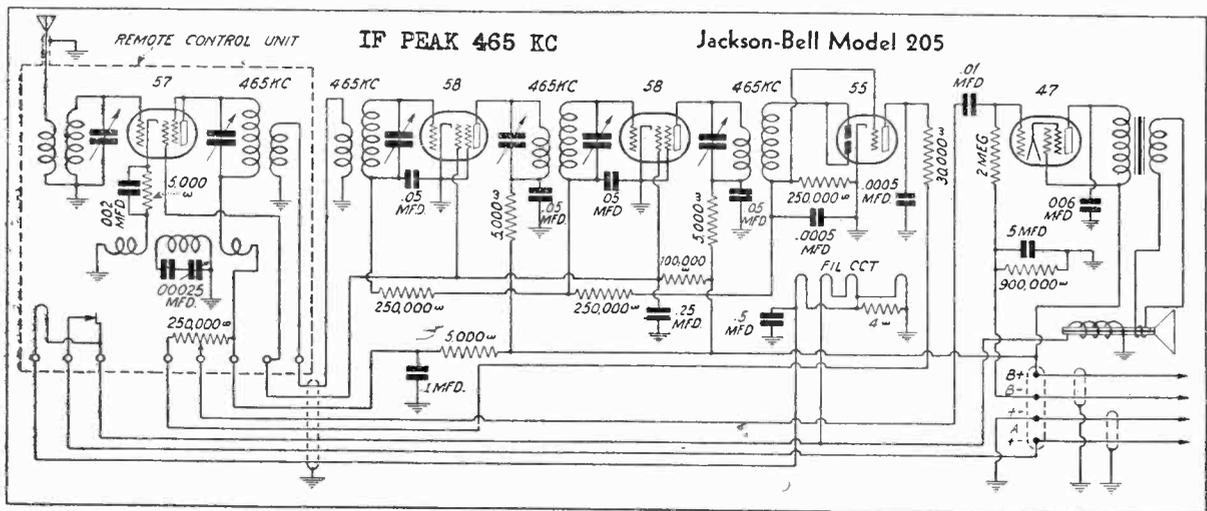
The i-f. feed line has at each end a coil composed of three turns of wire around a standard i-f. bobbin, and the line may be 15 feet long without causing appreciable loss . . . the loss with a 15-foot run being about 5 db.

The two type '58 tubes in the intermediate-frequency stages are used as standard r-f

pentodes. AVC is provided by the type '55 second detector tube which feeds the type '47 output pentode. Total plate current is 18 ma at 180 volts.

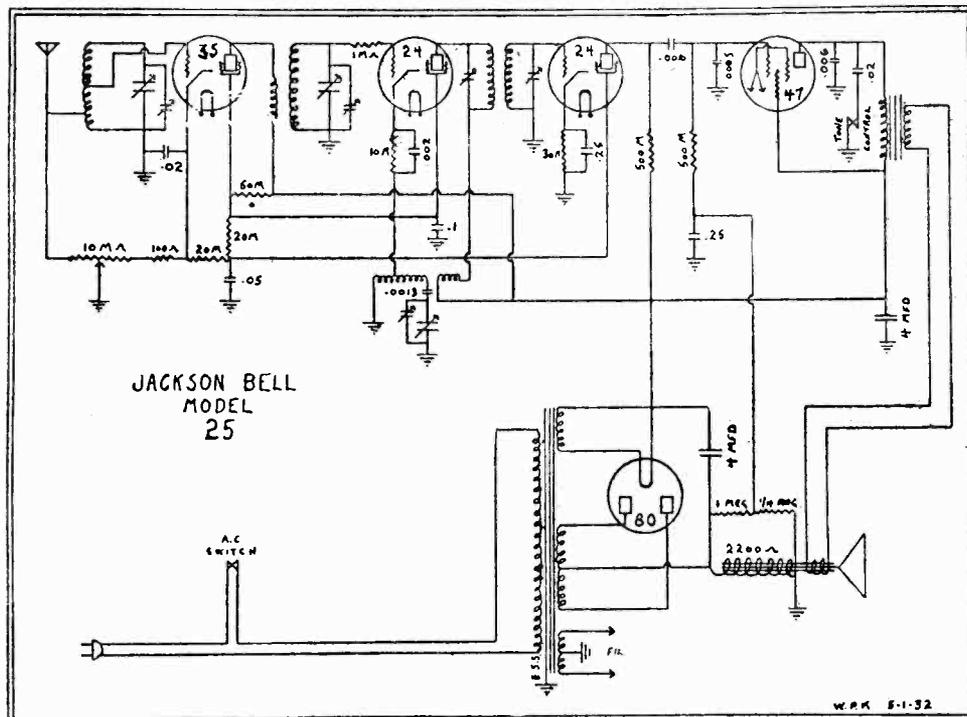
Care should be taken with the B+ terminal as it is inclined to short to the chassis, in which case the 900-ohm bias resistor for the '47 tube will blow, as well as the electrolytic condenser shunting it.

The plate winding on the oscillator coil in the control unit suffers seriously from electrolysis.



MODEL 25
Schematic
Data

JACKSON-BELL CO., LTD.



Make all adjustments with volume control at maximum. Before aligning set make sure all tubes are in correct position and primary on oscillator and R.F. coils are well down towards grid end of coil.

TO ALIGN 175 KC ALIGNMENT.

Put set in operation and set tuning condenser to full 100 degree position. Next, remove the screen grid cap from the autodyne oscillator and apply 175 modulated signal to this tube. (Looking at rear of set this tube is the fourth on the extreme right.) Next, remove license plate and adjust trimmers for maximum out-put.

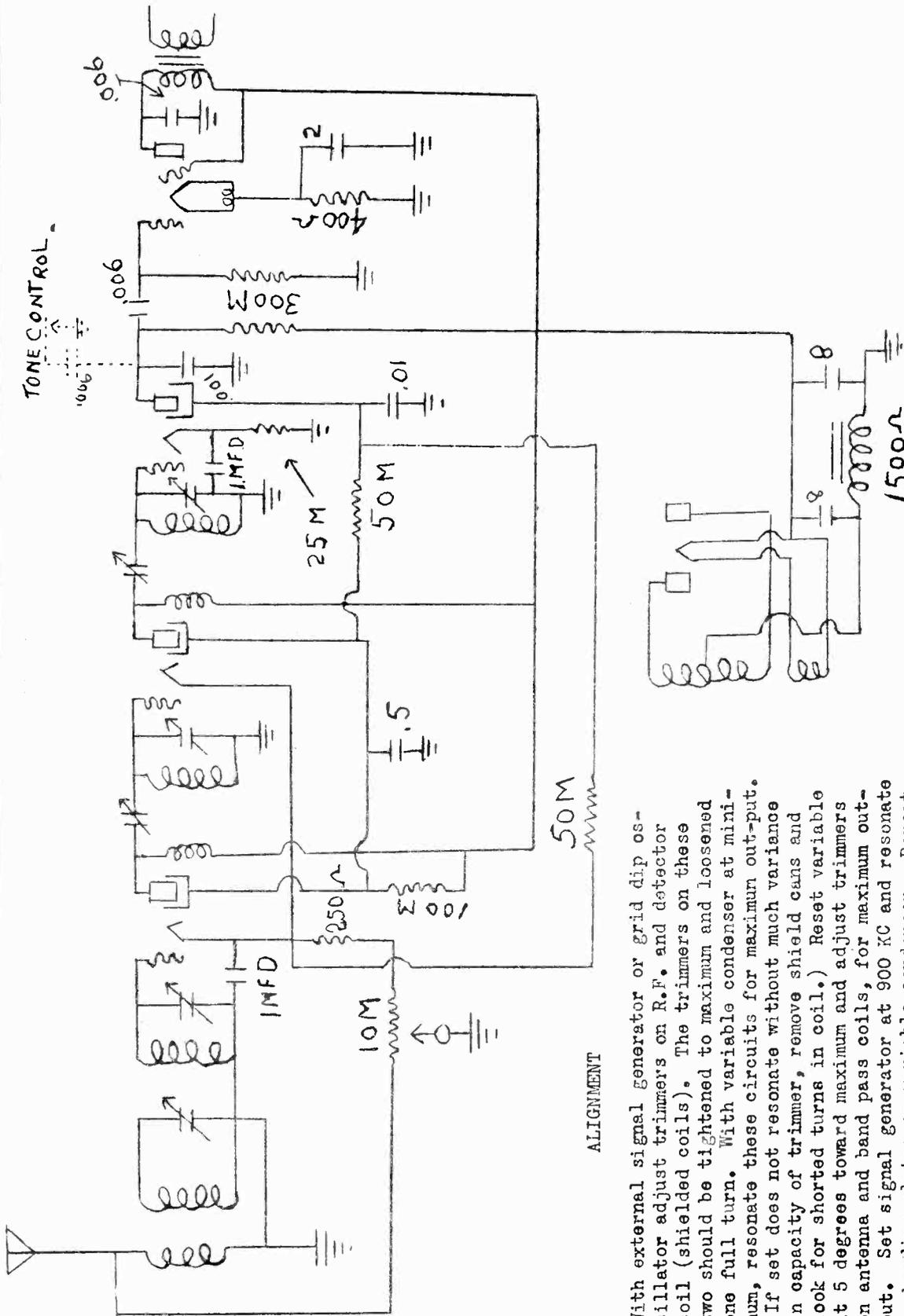
BROADCAST ALIGNMENT.

With external modulated signal generator set at approximately 1710 KC (Police frequency). The dial should be set at approximately 5 degrees past minimum. Adjust oscillator trimmer on variable and resonate the other 2 trimmers from maximum out-put at this position. Apply 855 KC modulated signal and align set at this point by bending plates of variable. Do not readjust trimmers. Repeat this operation at 600 KC.

With set at 600 KC readjust trimmers on I.F. transformers, for maximum output. If set oscillates when properly aligned, shift external ground lead from center section of variable to point where oscillation ceases.

MODEL 26
Schematic
Alignment

JACKSON-BELL CO., LTD.

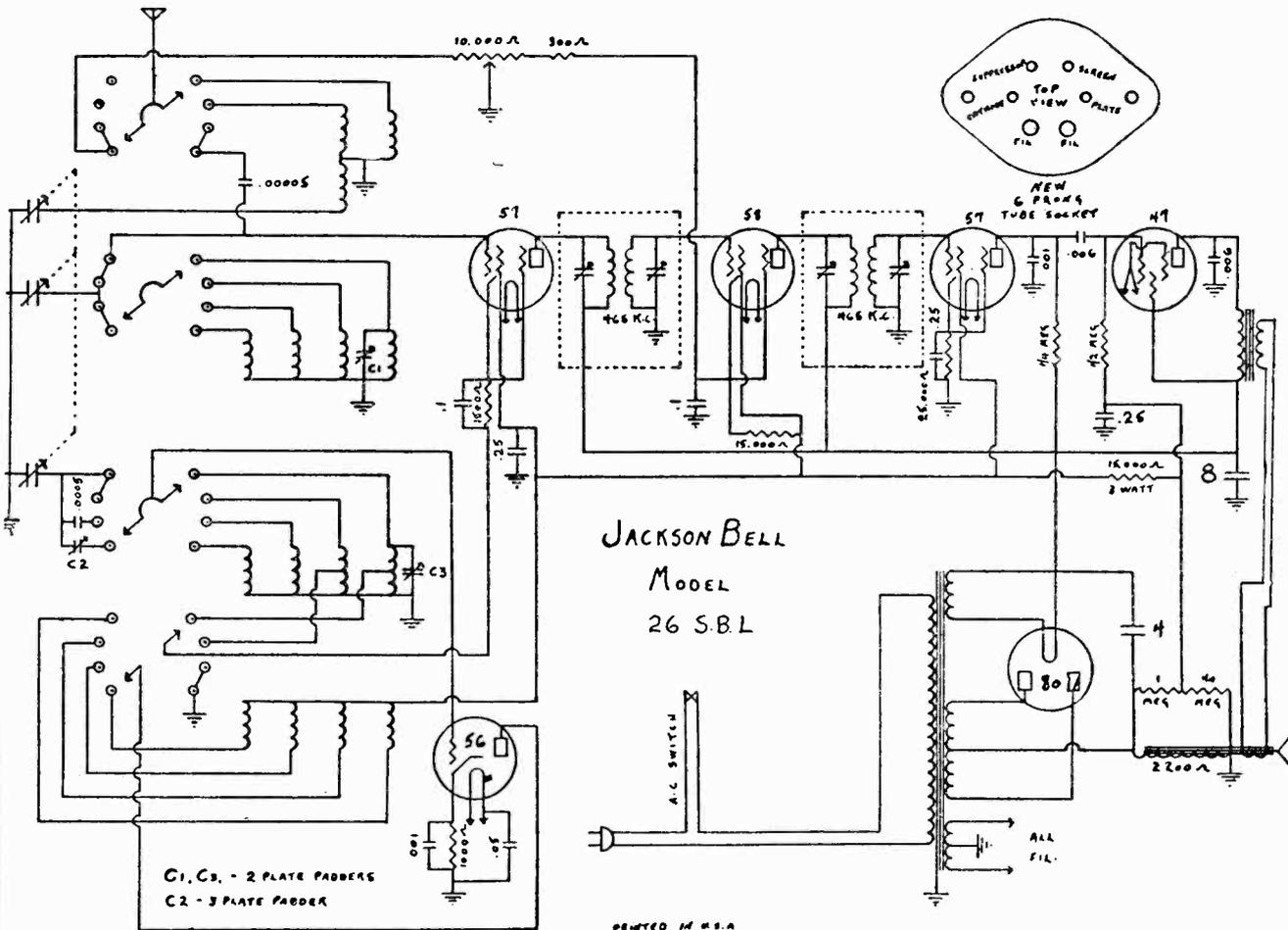
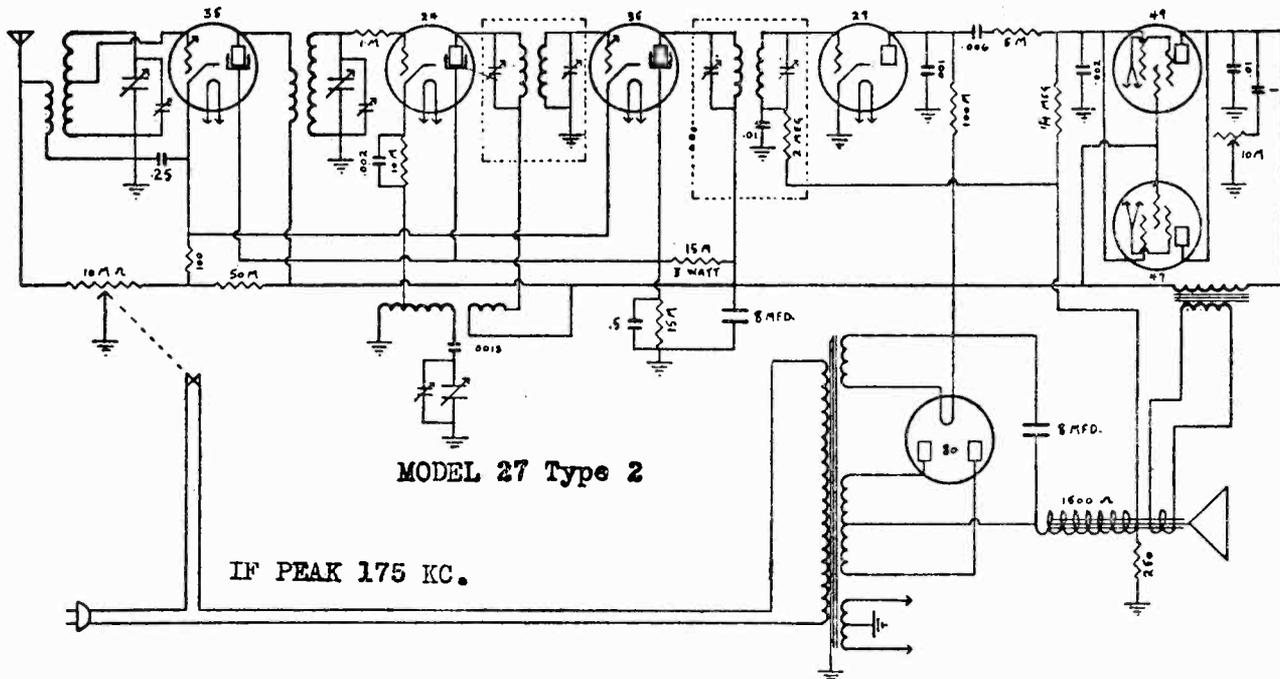


ALIGNMENT

With external signal generator or grid dip oscillator adjust trimmers on R.F. and detector coil (shielded coils). The trimmers on these two should be tightened to maximum and loosened one full turn. With variable condenser at minimum, resonate these circuits for maximum output. (If set does not resonate without much variance in capacity of trimmer, remove shield cans and look for shorted turns in coil.) Reset variable at 5 degrees toward maximum and adjust trimmers on antenna and band pass coils, for maximum output. Set signal generator at 900 KC and resonate by bending plates on variable condenser. Repeat this operation at 655 KC and 550 KC. If set oscillates after balancing loosen gain screws and R.F. and detector coils $1\frac{1}{4}$ turns and repeat above operation.

MODEL 26-SBL
MODEL 27 Type 2

JACKSON-BELL CO., LTD.



MODEL 28
Alignment Data

JACKSON-BELL CO., LTD.

ALIGNMENT AND BALANCE

MODEL 28 ALL-WAVE SUPER-HETERODYNE

1st.

Make all adjustments with volume control at maximum.

To align 175 KC I.F. stage -

Set switch in broadcast position and short out middle, or oscillator section of variable condenser. Apply 175 KC modulated signal to front section of variable condenser or grid cap. Chassis must be grounded to 175 KC oscillator. Remove 27 and 24 short-wave tube beside I.F. transformer and adjust all I.F. trimmers to maximum output. This should be checked by an output meter.

2nd.

To align Broadcast Band.

Close variable condenser and set dial at last division marker past 550 KC. Open variable condenser to 1350 KC and with 1350 KC modulated oscillator signal. Adjust middle or oscillator section trimmer of variable condenser to maximum response. R.F. and antenna section of trimmers are adjusted likewise at this frequency. Signal generator at 850 KC. Set dial at 850 KC and resonate by bending of slit plates on variable condenser. Repeat above at 650 KC and 550 KC.

3rd.

To align 840 KC Short-wave I.F.

Place the type 24 and 27 short-wave tubes back in the chassis, and after they have warmed up, turn wave selector, short-wave, to any one of the short-wave positions. Connect output of 840 KC modulated signal generator to grid cap of short-wave 24 tube. Note:- When short-wave is in short-wave position the variable condenser no longer tunes the broadcast coils. These are tuned to 840 KC by means of large trimmer condensers, adjusted from top of chassis beside variable condenser. Each 840 KC trimmer is beside the section of the variable condenser which it substitutes for. Note:- In location where a broadcast station is on or too close to 840 KC, adjust above or below if interference is encountered.

4th.

To align short-wave oscillator and modulator.

Note:- In the short-wave bands the front and rear of the variable tuning condenser, are connected in series with semi-variable padding condensers. These reduce the effective tuning cap of the tuning condenser to the low value necessary for tuning the short-wave coils.

In the absence of the short-wave signal generator, the broadcast signal generator may be set to 1000 KC. This will give harmonics on short-wave at 150 Meters, 100, 75, 60, 50, 42.8, 37.5, 33.3 and 30 meters. The best harmonic to use is the 75 meter one as it is just below the amateur 85 meters phone band.

Lift front of chassis up until set lays on its back. Three trimmer condensers will be seen in upper left hand corner of chassis. These are reading from top to bottom. The short-wave oscillator padder (in series with front section of tuning condenser). The short-wave modulator padder (in series with the rear section of tuning condenser), and last the trimmer tuning the modulator plate choke to 840 KC.

With the wave selector short-wave in 40 to 80 meters position and signal generator at 1000 KC. Adjust the top or short-wave oscillator padding condenser until the harmonics appear in their proper places at 75, 60 and 50 meters. Note:- Disregard weaker intermediate harmonics. Then adjust the short-wave modulator padder for maximum response. Note:- The tuning condenser must be swung back and forth across the signal when this is being done as it effects the oscillator tuning. The tuned choke trimmer is then packed on any signal.

The harmonics in the 20-40 meter band will be only approximately correct because of extremely high frequencies involved. However, they will be within one meter correct on this band.

MODEL 29

Alignment Data

JACKSON-BELL CO., LTD.

POOR QUALITY. Poor quality may also be due to defective tubes or in case all tubes are O.K. check the $\frac{1}{2}$ meg. ohm resistor in the grid circuit of the 47 tubes, as this value is extremely critical. Check coupling condenser for open short or leakage. If tone is too deep you will find the by-pass condenser on plate of 47 tube will be incorrect. This value should be .002. Check by-pass condenser on plate of first audio tube to ground, which value is .00025. If tone is too deep you will find a .002 in PZ plates to ground either short or leaky. Check .1 condenser from plate of 47 tubes to tone control. This will also cause a lack of bass if condensers are open. Check tone control for short, open or ground.

HOWL. Make sure set is not pushed too far forward in cabinet or resonant howl will occur. Loosen bolts in bottom of cabinet, slide chassis as far back as shaft will permit. If this does not cure trouble, remove chassis and loosen bolts holding variable making sure same is free floating. Make sure shield is not making contact with variable as shield is insulated from variable by rubber grommet. If set has been realigned be sure plates in variable are not too close as a howl will result when volume is turned up.

ALIGNMENT AND BALANCE. Make all adjustments with volume control at maximum. Before aligning set, be sure all tubes are in their correct position, primary on oscillator and R.F. coil are well down towards grid end of coil.

1st. Alignment of intermediate frequency transformer.

Put set in operation, short primary of oscillator coil out. Remove screen grid cap on fourth tube from the right looking at rear of set. Apply at this point 175KC modulated signal. (If other frequencies are desired apply same to this point). Adjust trimmers on I.F. transformers for maximum out-put. Adjust trimmers on second I.F. transformer first.

2nd. Broadcast alignment.

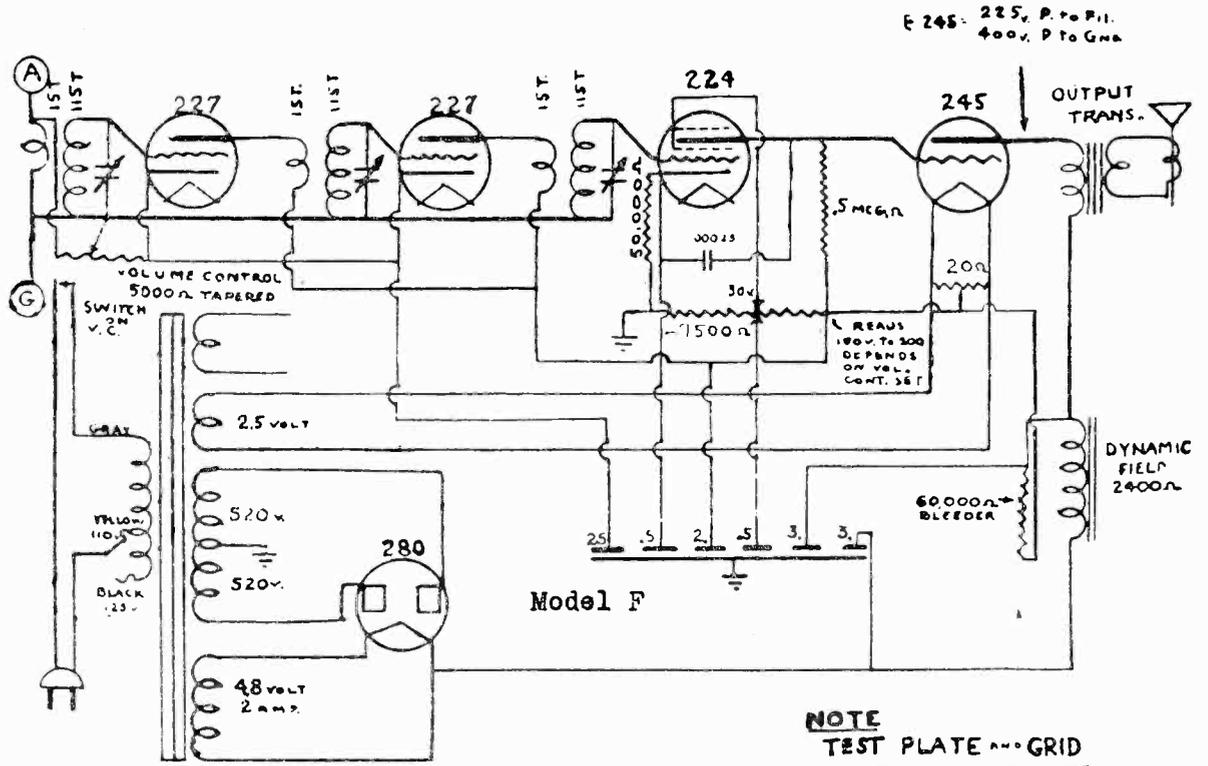
With intermediate aligned to their proper frequency remove wire shorting primary of oscillator coil, placing grid cap back on oscillator tube. Set dial marker at last division on minimum side of scale. With external signal generator adjust trimmers at 1350 KC. Adjust oscillator trimmer first and resonate other two trimmers for maximum out-put. Set signal generator at 850 KC and bend plates of variable to bring set in resonance at this point. Repeat this operation at 700 KC and again at 575 KC.

If set oscillates check all connections, slide primary coil to oscillator towards ground end until oscillation ceases. If this does not cure the trouble, readjust intermediate trimmers with variable set at 600 KC. Also check grid suppressor for open or short in grid lead of R.F. All above adjustments in using a signal generator with meter in out-put should be made with selector switch on distance, or number three position.

In case signal generator is not used place out-put meter from .C as heretofore described to ground and balance set on incoming signals for maximum out-put.

KELLER-FULLER

MODEL F
MODEL M

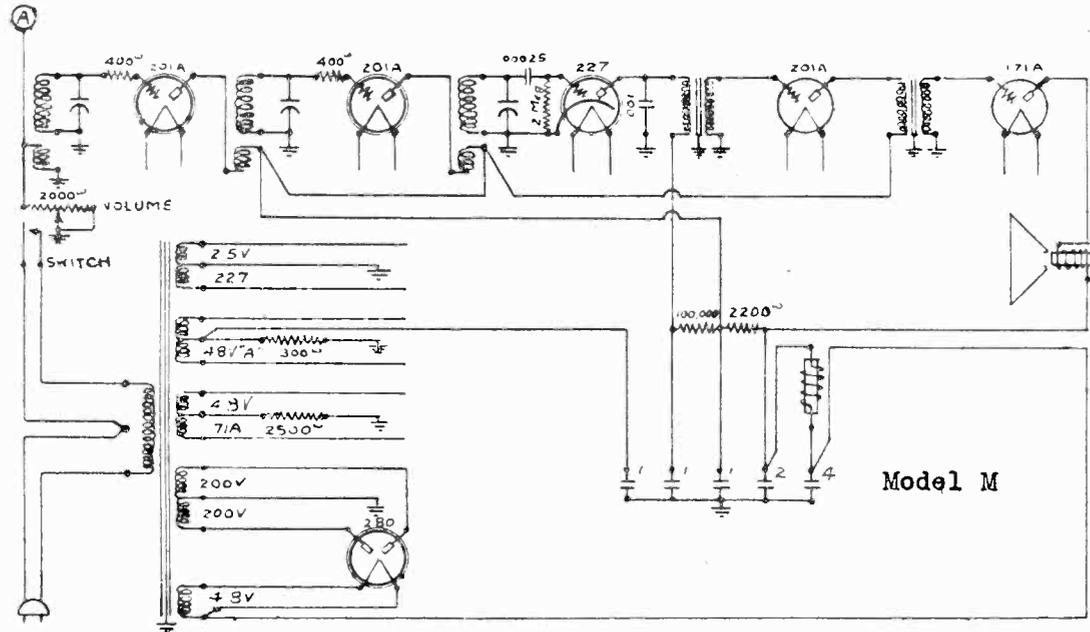


SERIALS # 10000 TO #10998
USE ONE FILAMENT WINDING
10999 UP HAS SEPARATE
WINDING FOR 245

NOTE
TEST PLATE AND GRID
VOLTAGES WHEN SET
IS IN RESONANCE
USE HIGH RESISTANCE VOLTMETER



JUNE 1930



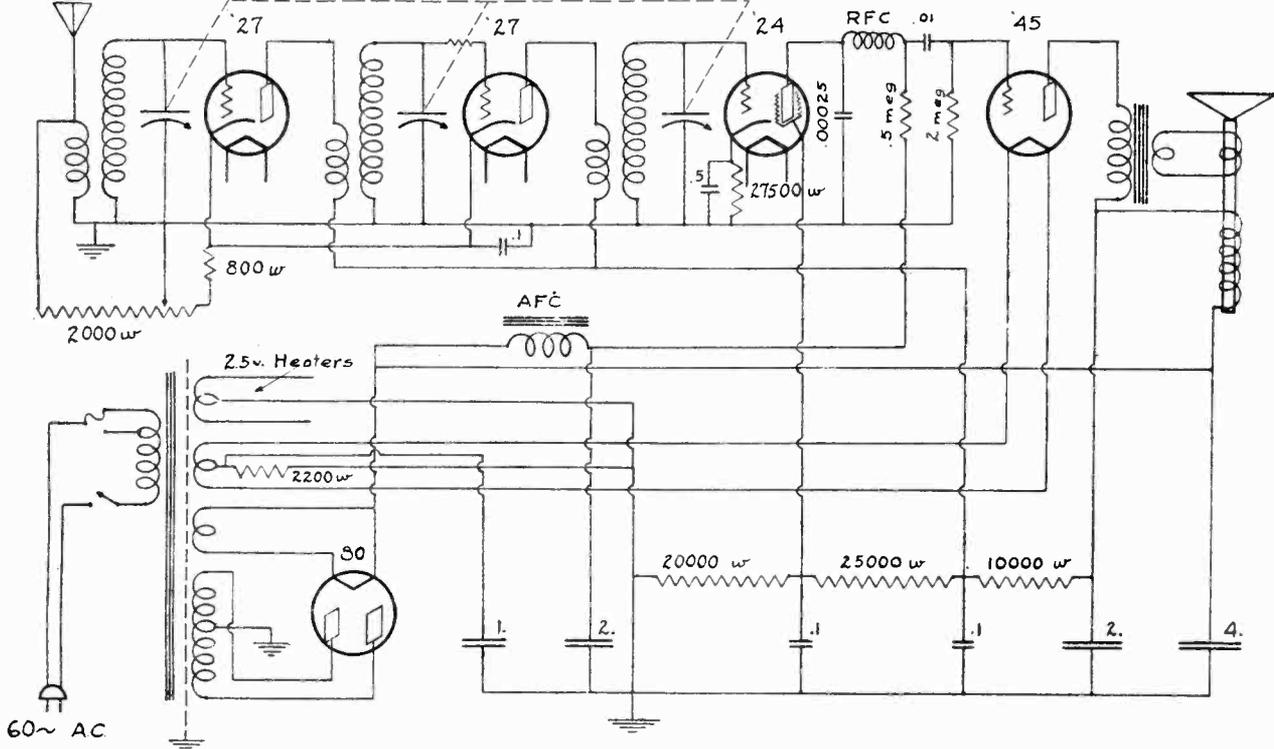
ORIGINAL
MODEL - M

ccc

JAN-1930

MODEL Radiette F-12
MODEL Radiette F-14

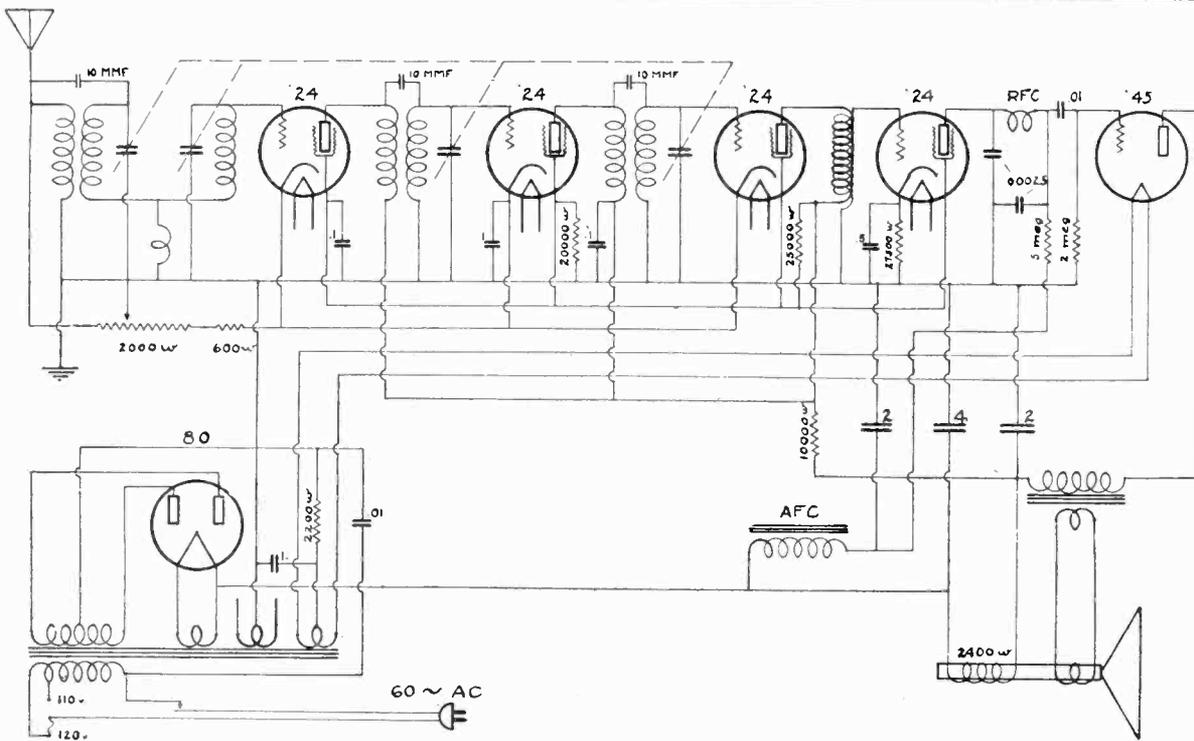
KELLER-FULLER



MODEL
F-12

RADIETTE
KELLER FULLER MFG. CO. LTD.
LOS ANGELES, CALIF.

July 14, 1930
Drawn 7-14 CEM
Checked 7-14 AVO
Traced 7-18 CEM



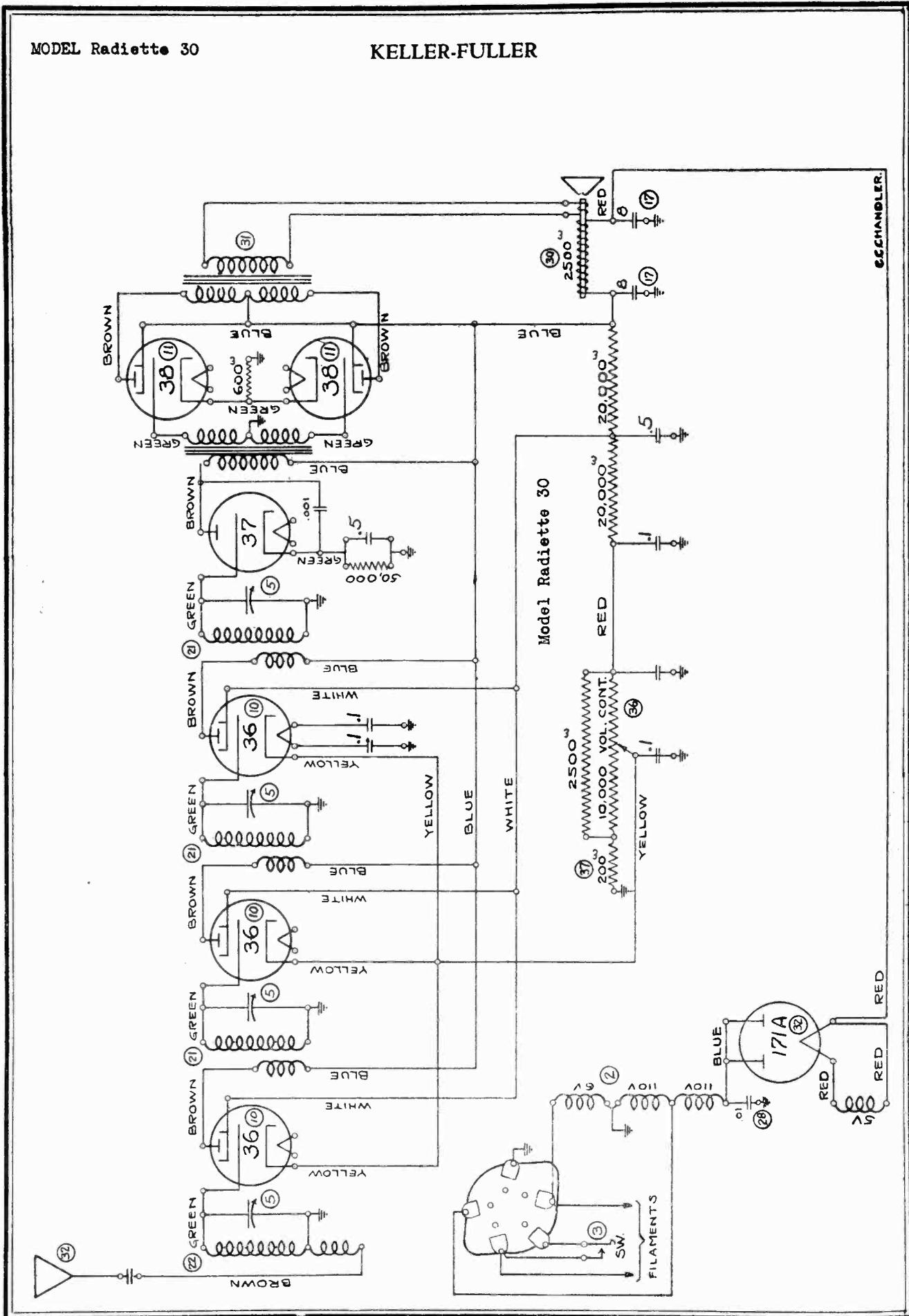
MODEL
F-14

RADIETTE
KELLER FULLER MFG. CO. LTD.
LOS ANGELES, CALIFORNIA.

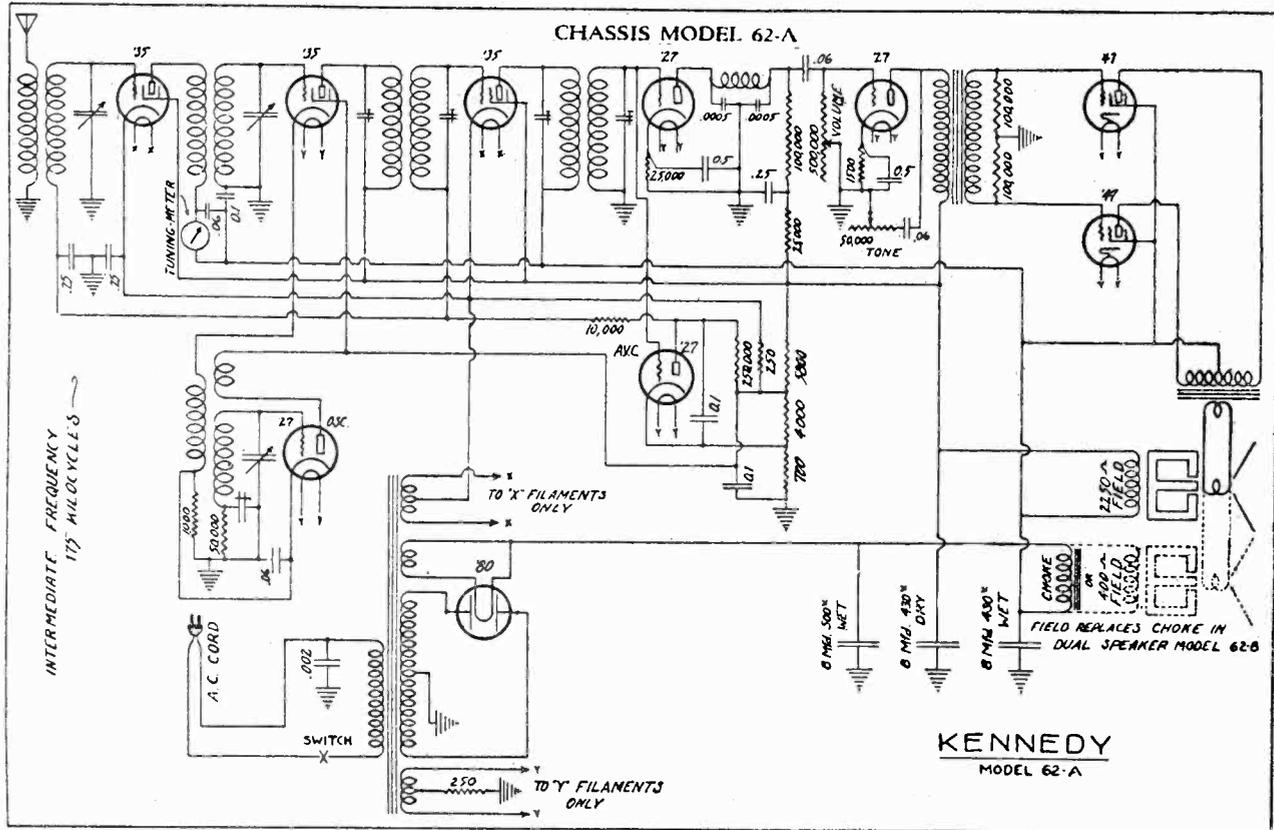
SEPTEMBER 30, 1930
Drawn 9 30 CEM
Checked 9 30 AVO
Traced 10 1 CEM

MODEL Radiette 30

KELLER-FULLER



COLIN B. KENNEDY CORP.

MODEL 62-A
Schematic

The tubes employed are as follows, and are operated at normal voltages and biases:

Radio frequency	235	Second detector	227
Mixer	235	Automatic Vol. Control ..	227
Intermediate frequency	235	First Audio	227
Oscillator	227	Power	247
		Rectifier	280

To accommodate the automatic circuits it will be noted that the long wave R.F. and I.F. tube filaments and cathodes are biased positively about 100 volts above ground. When the AVC tube receives a signal it draws current (being normally biased to cut-off) through the 250,000 ohm resistor. The voltage drop across this resistor is then applied to the automatically controlled grids as additional bias. An inspection of the circuit diagram will clarify this simple and efficient AVC action.

In aligning, it is first desirable to see that the intermediate frequency transformers are properly set. This is most readily accomplished by using an output meter and an accurate source of 175 kilocycle radio frequency, such as an oscillator. The accuracy of this oscillator may be checked by tuning a radio set to a station on 700 kilocycles and placing the oscillator near the antenna. A harmonic of the 175 kilocycle oscillator will "zero beat" with the station if the oscillator is correct. Other "harmonic" points may also be tried.

**MODEL 62-A
Alignment
Socket**

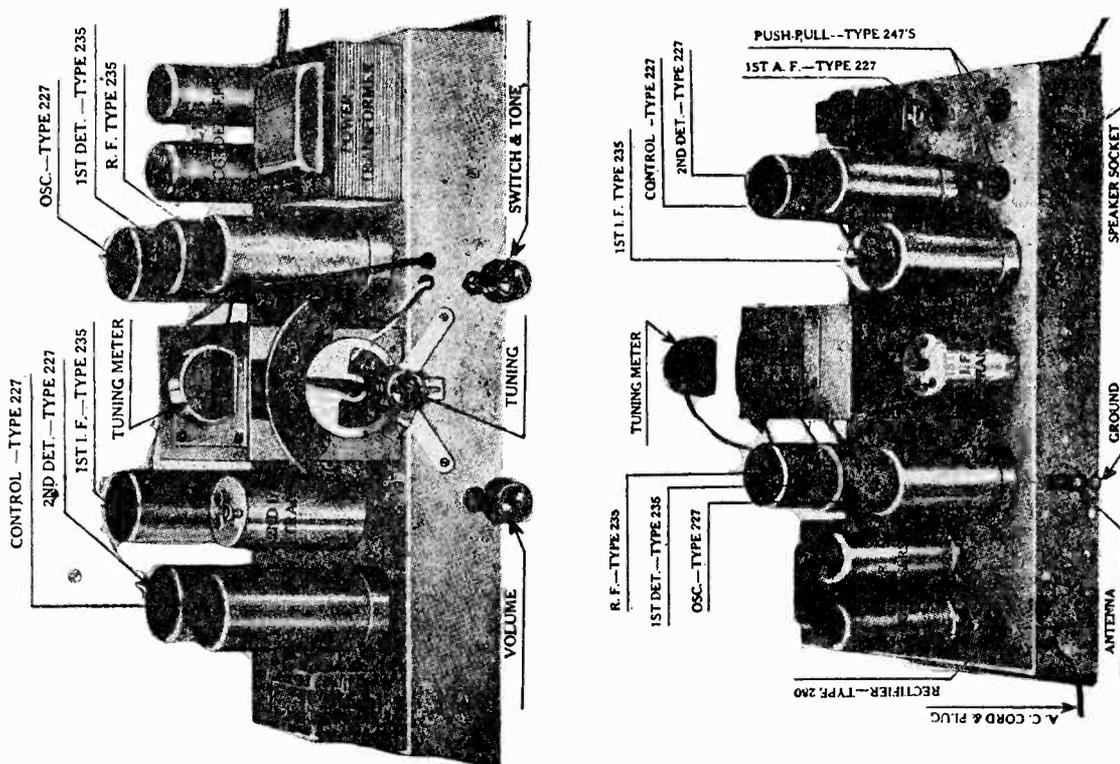
COLIN B. KENNEDY CORP.

Remove the grid clip from the top of the first detector tube and fasten a short length of wire to the grid terminal of this tube. Lay this wire sufficiently near the 175 K.C. oscillator to note the energy from it in the output meter. With the oscillator set on exactly 175 K.C., adjust the trimmers in the tops of the I.F. transformer shields for maximum reading of the output meter. If the meter tends to read "off scale", move oscillator farther from set and wire, thereby reducing input energy. If these I.F. transformers are badly out of alignment, it may be necessary to place the "pick up" wire on the grid of the 1st I.F. tube and adjust the second transformer alone, at first, then moving wire to detector grid and proceed as above.

The tuning condenser may be adjusted for alignment or "tracking" of the tuned circuits by a similar method except that an oscillator covering the broadcast band should be used. The output meter is used as before. The energy from the oscillator, in this case, is coupled weakly into the antenna circuit - a simple means being to place the oscillator near the antenna wire.

The receiver and oscillator are first tuned to approximately 1,500 kilocycles, and by watching the output indicator, the three condenser trimmers (reached through three holes in top-right of condenser shield, or, in some cases, through removable plate) are adjusted for maximum output. These three trimmers must then be left untouched for all further aligning.

The next step is to tune both receiver and oscillator to some point near 550 kilocycles. Here, the alignment is made by adjusting the "padding" condenser (through hole in rear of condenser shield) for maximum response. If necessary to adjust the two R.F. condenser sections, it may be accomplished by bending the condenser end plates. If found necessary to align at other than the ends of the "band", it may be done by bending the slotted end plate of the condenser rotors. Alignment of the two ends of the scale is usually quite sufficient.



MODEL 882-82D
 (Chassis 62-D)
 Alignment
 Socket

COLIN B. KENNEDY CORP.

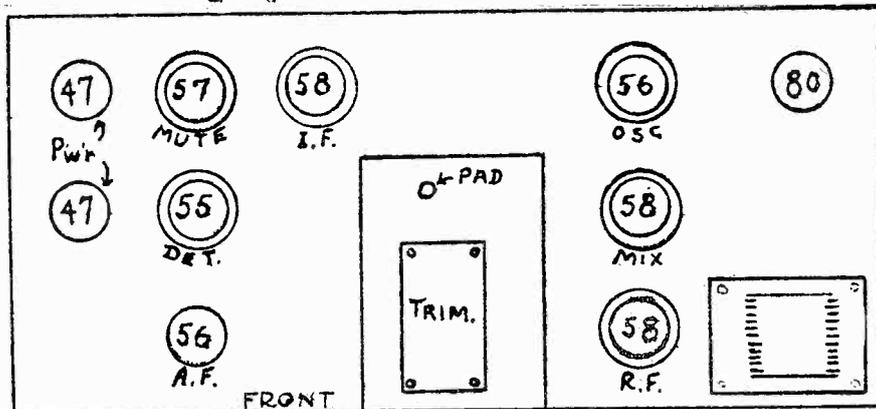
The tubes employed are as follows, and are operated at normal voltages and biases (except the noise suppression, or muting, tube):

Radio frequency	58	Second Detector & A.V.C.	55
Mixer	58	First audio	56
Intermediate frequency ...	58	Power	247
Oscillator	56	Rectifier	280
Noise Suppressor ...		57	

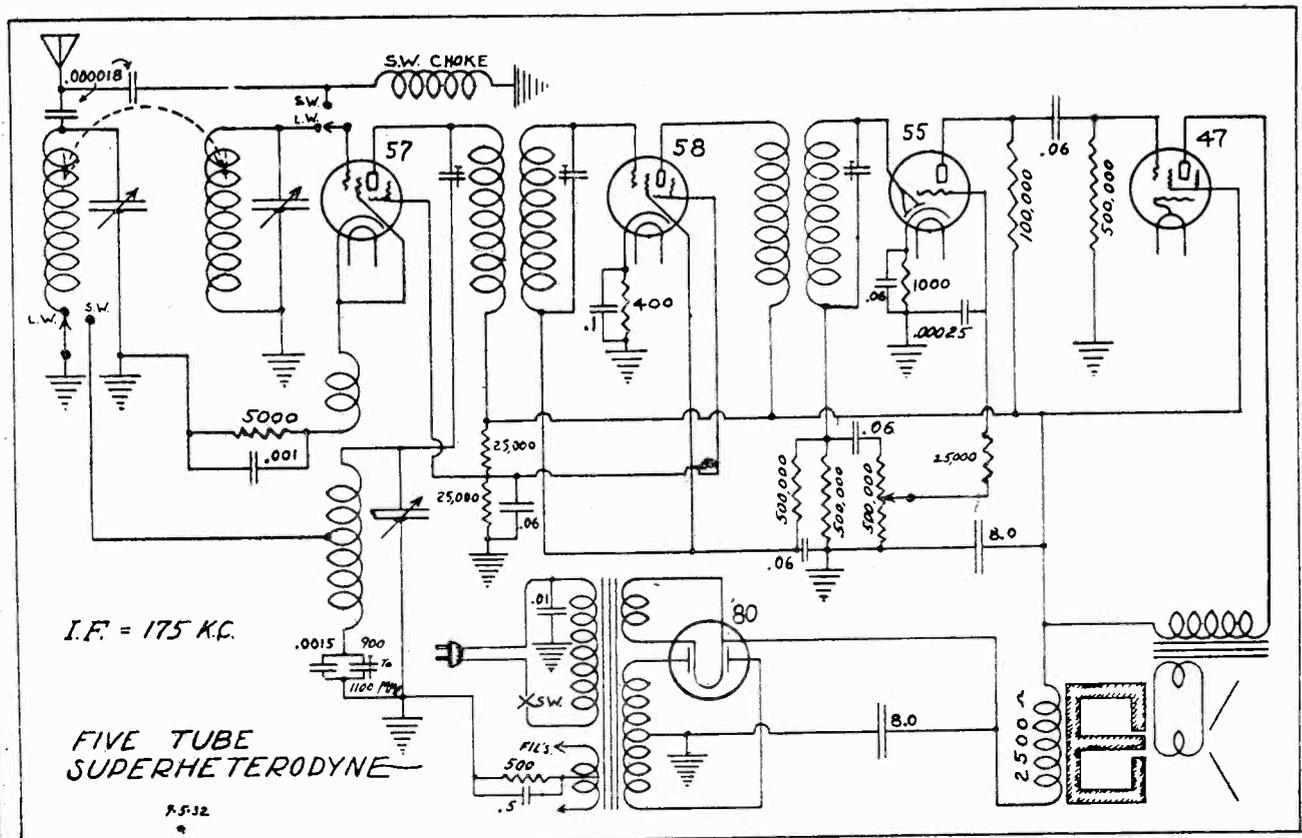
To accommodate the "Hush", or noise suppressor, circuit it will be noted that the filament and cathode of the first audio tube are biased positively about 95 volts above ground. Automatic volume control is obtained from the type 55 second detector, the voltage drop across the 500,000 ohm resistor (between Cath. and I.F. coil secondary) which is caused by the rectified signal being applied, through suitable filtering resistors, to the grids of the R.F., mixer, and I.F. tubes. The A.V.C. voltage generated also actuates the noise suppressor tube. When no signal is tuned in, there is no A.V.C. voltage applied to the grid of the suppressor tube, permitting it to draw plate current. The plate current thus drawn comes from the cathode of the first audio tube (cathode being positively biased) through the 5,000 ohm resistor and 250,000 ohm grid leak, causing a sufficiently high bias to be applied to the grid of the audio tube (voltage drop across grid leak) to completely stop plate current and thus all noise. Variation in the amount of suppression is obtained by manually varying the bias on the suppressor tube.

In aligning, first properly adjust the intermediate frequency transformers - preferably with a 175 K.C. oscillator fed into grid circuit of first detector, or mixer, and adjusting for maximum reading of an output meter. The tuning circuits may next be adjusted, using an oscillator covering the broadcast band (feeding into antenna circuit) and the output meter. Tune receiver and oscillator first to some point near 1,500 K.C., and adjust the three condenser "trimmers" through large hole in condenser shield for maximum reading of output meter. Then retune receiver and oscillator to point near 550 K.C. and adjust oscillator "pad" condenser (through hole in rear of condenser shield) for maximum output. (Do not touch condenser trimmers after first adjustment at 1,500 K.C.) If further adjustment at 550 K.C. is necessary, bend slotted condenser end plates. Alignment at the two ends of the scale is usually sufficient. If desired to align at intermediate points, bend the proper sections of the slotted plates for maximum output reading.

IMPORTANT: It is desirable to move the dial back and forth across the signal while making the above alignments, particularly when altering capacities connected with the oscillator circuit. A bakelite, or non-metallic, screwdriver is advised for making adjustments.



COLIN B. KENNEDY CORP.

MODEL 563-A
(Chassis 63,63-A)
Schematic

The tubes employed are as follows, and are operated at rated voltages and biases:

Oscillator and Mixer	57
Intermediate frequency ...	58
Second Detector	55
Output	247
Rectifier	280

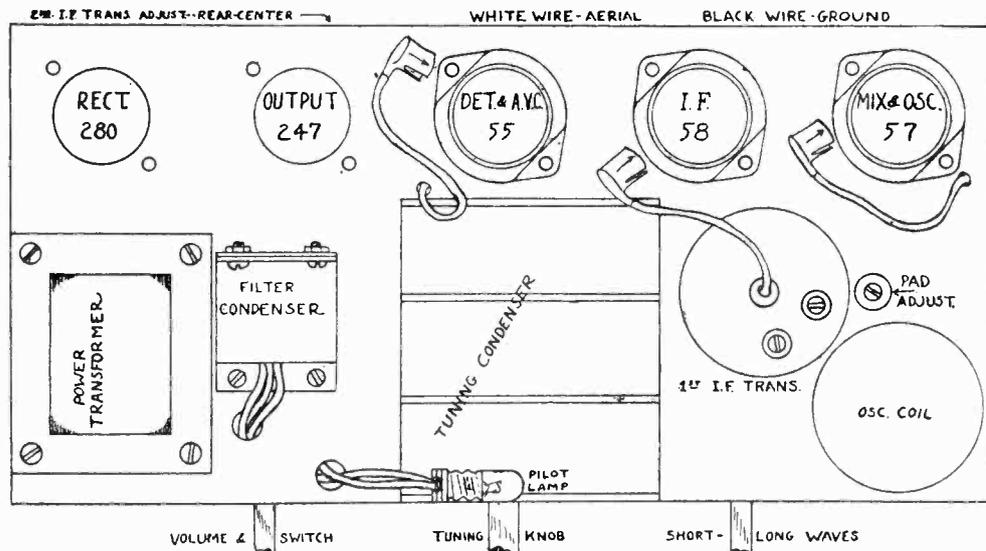
This receiver employs a combination oscillator and first detector, or mixer. The second detector is the new dual diode-triode, the diode portion acting as detector and providing automatic volume control - acting on the grid of the type 58 I.F. tube. The triode portion of the second detector is operated as an individually biased A.F. amplifier.

The first two variable tuned circuits are not electrically coupled. They are mutually coupled by being placed close together and left unshielded. In all other respects the circuits are entirely conventional.

In aligning, it is first desirable to see that the I.F. transformers are properly set. The first I.F. transformer is on top of the base and has two adjustments. The second is inside the base but its single adjustment may be reached through a hole in the rear-center of the base. The intermediate frequency is 175 K.C.

MODEL 563-A
(Chassis 63,63-A)
Alignment
Socket

COLIN B. KENNEDY CORP.



The tuning condenser may be adjusted for alignment or "tracking" of the tuned circuits by means of an oscillator and output meter. The oscillator should cover the band from 550 to 1500 K.C. The energy from the oscillator is coupled weakly into the antenna circuit - a simple means being to place the oscillator near the antenna wire. The receiver and oscillator are first tuned to approximately 1500 K.C., and by watching the output indicator, the three condenser trimmers are adjusted for maximum output. These three trimmers must then be left untouched for all further aligning.

The next step is to tune both receiver and oscillator to some point near 550 K.C. Here the alignment is made by adjusting the oscillator "pad" condenser for maximum response. It may be reached through hole in base near the first I.F. transformer. If necessary to adjust the two R.F. condenser sections, it may be done by bending the condenser end plates. If necessary to align at points other than the ends of the "band" it may be done by bending portions of the slotted end plates of the condenser rotor sections. Alignment of the two ends of the scale is usually quite sufficient.

IMPORTANT: It is desirable to move the dial back and forth across the signal while making the above alignments. This is particularly necessary when altering any capacities connected with the oscillator circuit. Use an insulated or bakelite screw driver. No aligning, other than the I.F. transformers, is necessary for the short wave band (75 to 200 meters) as no attempt has been made to tune more than the oscillator.

Be certain that a good 57 tube is used in the first socket.

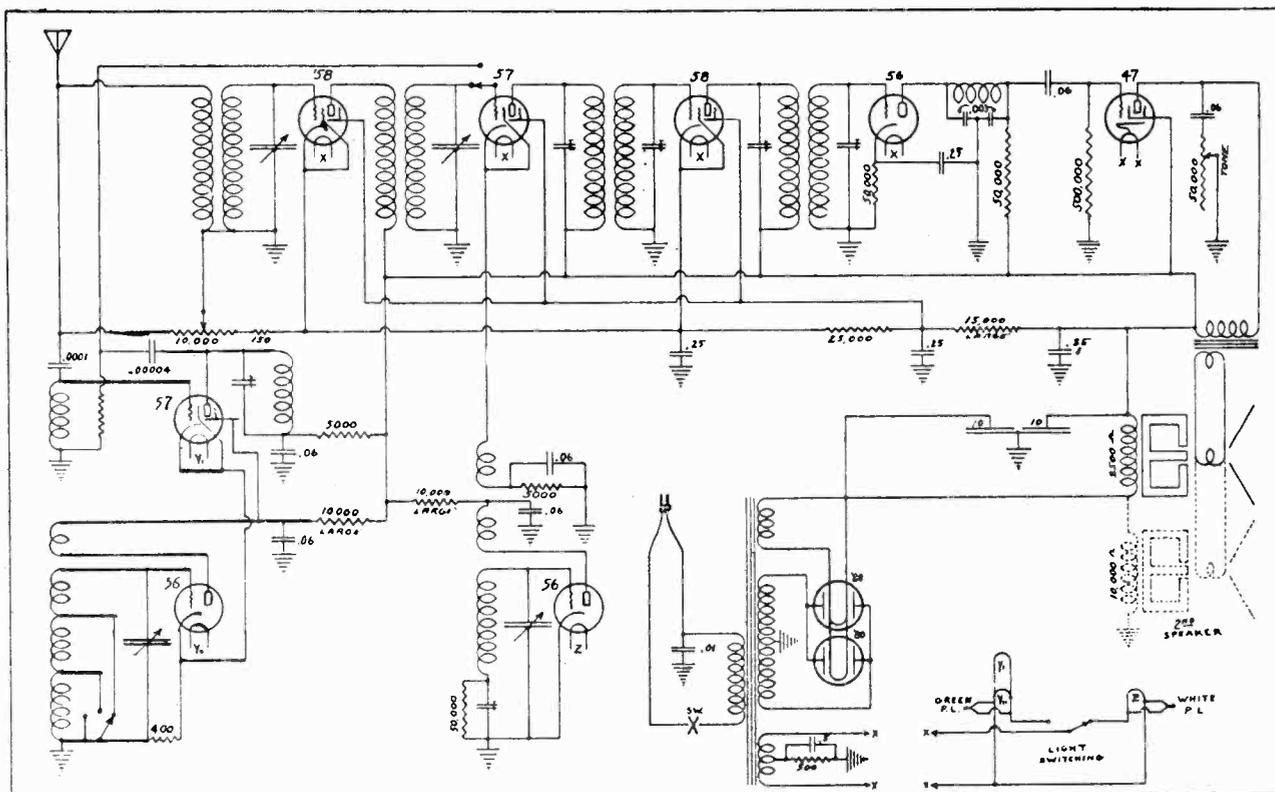
Service parts may be obtained by supplying a description of the part desired, as well as the model and serial numbers of the receiver.

COLIN B. KENNEDY CORP.

MODEL 164-B
(Chassis 64-B)
Schematic

Kennedy 10 Tube Long and Short Wave Receiver

CHASSIS MODEL 64 B



The tubes employed are as follows, and are operated at normal voltages and biases:

Short wave mixer	57	Long wave oscillator	58
Short wave oscillator .	58	Intermediate frequency ..	58
Radio frequency	58	2nd Detector	56
Long wave mixer	57	Output	247
		Rectifier	280's

For short wave reception the long wave mixer becomes an I.F. amplifier, while the long wave oscillator filament goes out. For long wave reception, the short wave oscillator and mixer filaments go out. These circuits are indicated above. The intermediate frequency used throughout is 175 K.C.

In aligning, it is first desirable to see that the intermediate frequency transformers are properly set. This is more readily accomplished by using an output meter and an accurate source of 175 kilocycle radio frequency, such as an oscillator. The accuracy of this oscillator may be checked by tuning a radio set to a station on 700 kilocycles and placing the oscillator near the antenna. A harmonic of the 175 kilocycle oscillator will "zero beat" with the

MODEL 164-B
(Chassis 64-B)

COLIN B. KENNEDY CORP.

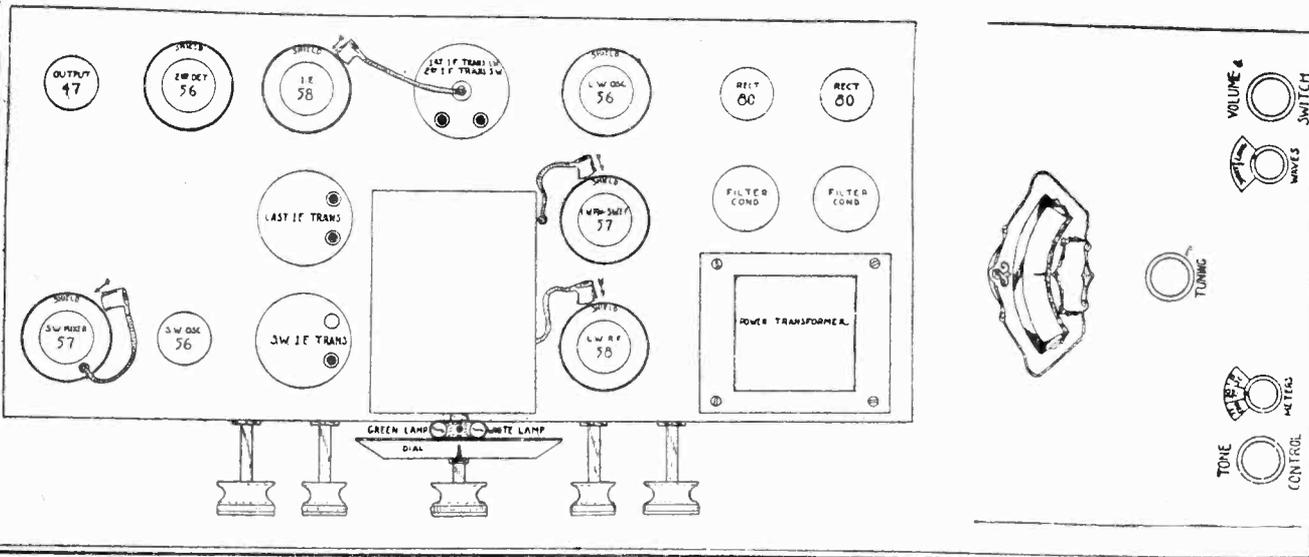
Alignment
Socket

station if the oscillator is correct. Other "harmonic" points may also be tried. With the receiver switched to short wave position, remove the grid clip from the top of the S.W. mixer tube and fasten a short length of wire to the grid terminals of this tube. Lay this wire sufficiently near the 175 K.C. oscillator to note the energy from it in the output meter. With the oscillator set on exactly 175 K.C., adjust the trimmers in the tops of the I.F. transformer shields for maximum reading of the output meter. If the meter tends to read "off scale", move oscillator farther from set and wire, thereby reducing input energy. If these I.F. transformers are badly out of alignment, it may be necessary to place the "pick up" wire on the grid of the long wave mixer and adjust the last two transformers alone, at first, then moving wire back to S.W. mixer and proceed as before. It will be noted that the first I.F. transformer has but one adjustment.

The tuning condenser may be adjusted for alignment or "tracking" of the tuned circuits by a similar method except that an oscillator covering a broadcast band should be used. The output meter is used as before. The energy from the oscillator, in this case, is coupled weakly into the antenna circuit - a simple means being to place the oscillator near the antenna wire. The receiver and oscillator are first tuned to approximately 1500 kilocycles, and by watching the output indicator, the three condenser trimmers, reached through the removable plate, are adjusted for maximum output. These three trimmers must then be left untouched for all further aligning. The next step is to tune both receiver and oscillator to some point near 550 kilocycles. Here, the alignment is made by adjusting the "padding" condenser for maximum response. It may be reached through hole in rear center of chassis base.

If necessary to adjust the two R.F. condenser sections, it may be accomplished by bending the condenser end plates. If found necessary to align at other than the ends of the "band", it may be done by bending the slotted end plate of the condenser rotors. Alignment of the two ends of the scale is usually quite sufficient.

IMPORTANT: It is desirable to move the dial back and forth across the signal while making the above alignments. This is particularly necessary when altering any capacities connected with the oscillator circuit. An insulated or bakelite screw driver (containing little, if any, metal) is advised for use in adjusting "trimmer" or "padding" condensers. The front section of the tuning condenser is for short wave use only. Unless accidentally shorted it requires no adjustment.



MODEL 882- 64C

Alignment

COLIN B. KENNEDY CORP.

The tubes employed are as follows, and are operated at normal voltages and biases (except the noise suppression, or muting, tube):

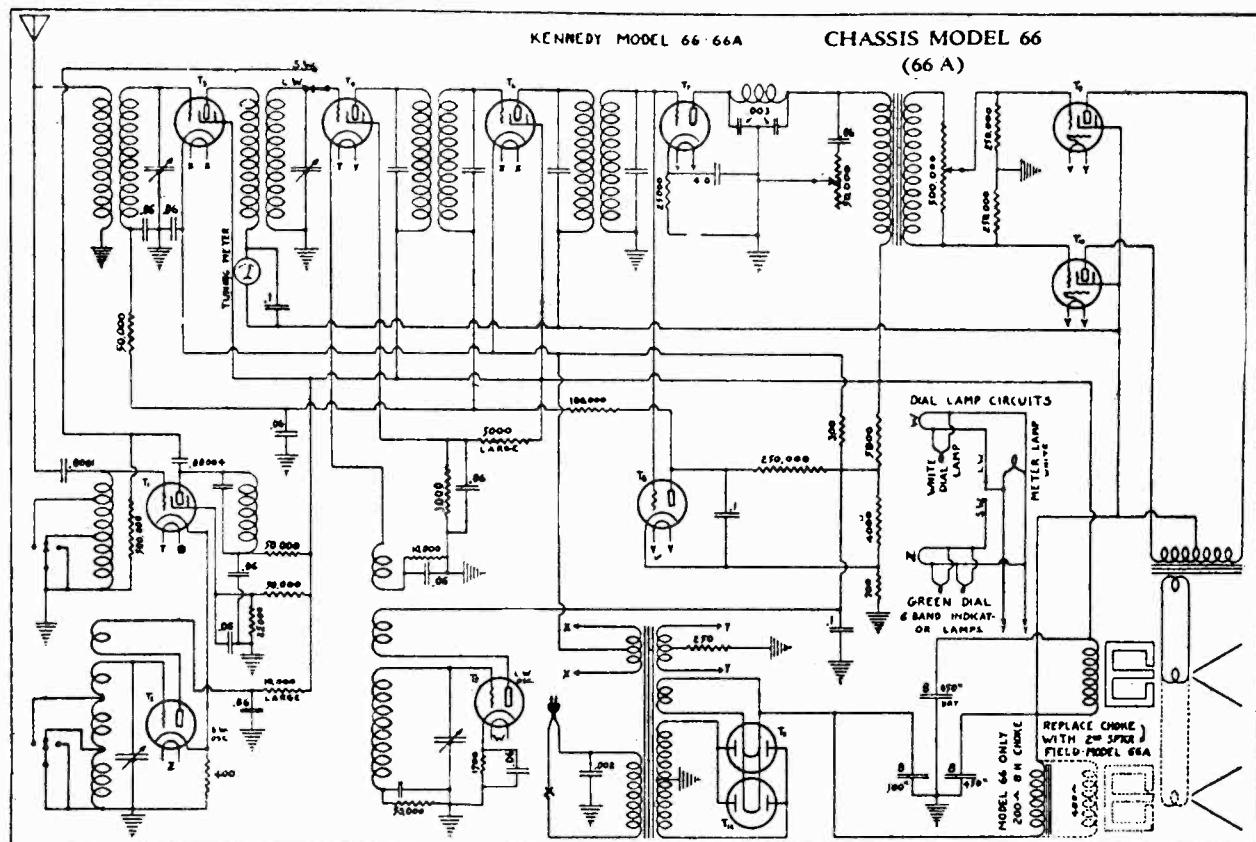
Radio frequency	58	Second Detector & A.V.C.	55
Mixer	57	First Audio	56
Intermediate frequency .	58	Power	247
Oscillator	56	Rectifier	280
		Noise Suppressor ...	57

To accommodate the "Hush", or noise suppressor circuit it will be noted that the filament and cathode of the first audio tube are biased positively about 95 volts above ground. Automatic volume control is obtained from the type 55 second detector, the voltage drop across the 500,000 ohm resistor (between Cath. and I.F. coil secondary) which is caused by the rectified signal being applied, through suitable filtering resistors, to the grids of the R.F. and I.F. tubes. The A.V.C. voltage generated also actuates the noise suppressor tube. When no signal is tuned in, there is no A.V.C. voltage applied to the grid of the suppressor tube, permitting it to draw plate current. The plate current thus drawn comes from the cathode of the first audio tube (cathode being positively biased) through the 5,000 ohm resistor and 250,000 ohm grid leak, causing a sufficiently high bias to be applied to the grid of the audio tube (voltage drop across grid leak) to completely stop plate current and thus all noise. Variation in the amount of suppression is obtained by manually varying the bias on the suppressor tube.

In aligning, first properly adjust the intermediate frequency transformers - preferably with a 175 K.C. oscillator fed into grid circuit of first detector, or mixer, and adjusting for maximum reading of an output meter. The tuning circuits may next be adjusted, using an oscillator covering the broadcast band (feeding into antenna circuit) and the output meter. Tune receiver and oscillator first to some point near 1,500 K.C., and adjust the three condenser "trimmers" through large hole in condenser shield for maximum reading of output meter. Then retune receiver and oscillator to point near 550 K.C. and adjust oscillator "pad" condenser (through hole in rear of condenser shield) for maximum output. (Do not touch condenser trimmers after first adjustment at 1,500 K.C.) If further adjustment at 550 K.C. is necessary, bend slotted condenser end plates. Alignment at the two ends of the scale is usually sufficient. If desired to align at intermediate points, bend the proper sections of the slotted plates for maximum output reading.

IMPORTANT: It is desirable to move the dial back and forth across the signal while making the above alignments, particularly when altering capacities connected with the oscillator circuit. A bakelite, or non-metallic, screw-driver is advised for making adjustments. The short wave police band circuits require no aligning other than the I.F. transformers.

COLIN B. KENNEDY CORP.

MODEL 66,66-A
Schematic

The tubes employed are as follows, and are operated at normal voltages and biases:

T1	Short wave mixer	....	224	T6	Intermediate frequency	235
T2	Short wave oscillator	227		T7	Second Detector	....
T3	Radio frequency	....	235	T8	Automatic Vol. Control	227
T4	Long Wave Mixer	....	224	T9-10	Power tubes	....
T5	Long Wave oscillator.	227		T11-12	Rectifiers	....
						280

To accommodate the automatic circuits it will be noted that the long wave R.F. and I.F. tube filaments and cathodes are biased positively about 100 volts above ground. When the AVC tube receives a signal it draws current (being normally biased to cut-off) through the 250,000 ohm resistor. The voltage drop across this resistor is then applied to the automatically controlled grids as additional bias. An inspection of the circuit diagram will clarify this simple and efficient AVC action.

In aligning, it is first desirable to see that the intermediate frequency transformers are properly set. This is most readily accomplished by using an output meter and an accurate source of 175 kilocycle radio frequency, such as an oscillator. The accuracy of this oscillator may be checked by tuning a radio set to a station on 700 kilocycles and placing the oscillator near the antenna. A harmonic of the 175 kilocycle oscillator will "zero beat" with the station if the oscillator is correct. Other "harmonic" points may also be tried.

With the receiver switched to short wave position, remove the grid clip from the top of the S.W. mixer tube and fasten a short length of wire to the

MODEL 66,66-A

Alignment •

COLIN B. KENNEDY CORP.

Socket

grid terminal of this tube. Lay this wire sufficiently near the 175 K.C. oscillator to note the energy from it in the output meter. With the oscillator set on exactly 175 K.C., adjust the trimmers in the tops of the I.F. transformer shields for maximum reading of the output meter. If the meter tends to read "off scale", move oscillator farther from set and wire, thereby reducing input energy. If these I.F. transformers are badly out of alignment, it may be necessary to place the "pick up" wire on the grid of the long wave mixer and adjust the last two transformers alone, at first, then moving wire back to S.W. mixer and proceed as before. It will be noted that the first I.F. transformer has but one adjustment.

The tuning condenser may be adjusted for alignment or "tracking" of the tuned circuits by a similar method except that an oscillator covering the broadcast band should be used. The output meter is used as before. The energy from the oscillator, in this case, is coupled weakly into the antenna circuit - a simple means being to place the oscillator near the antenna wire.

The receiver and oscillator are first tuned to approximately 1,500 kilocycles, and by watching the output indicator, the three condenser trimmers, reached through the removable plate, are adjusted for maximum output. These three trimmers must then be left untouched for all further aligning.

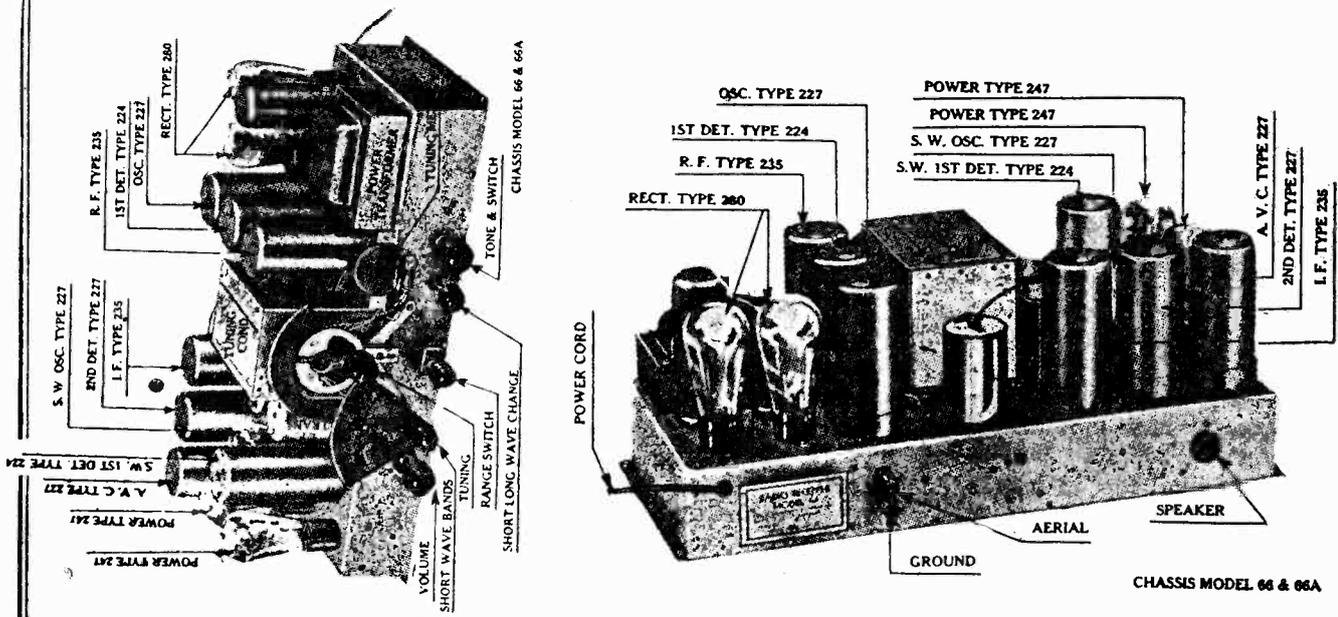
The next step is to tune both receiver and oscillator to some point near 550 kilocycles. Here, the alignment is made by adjusting the "padding" condenser for maximum response. It may be reached through hole in rear center of chassis base.

• If necessary to adjust the two R.F. condenser sections, it may be accomplished by bending the condenser end plates. If found necessary to align at other than the ends of the "band", it may be done by bending the slotted end plate of the condenser rotors. Alignment of the two ends of the scale is usually quite sufficient.

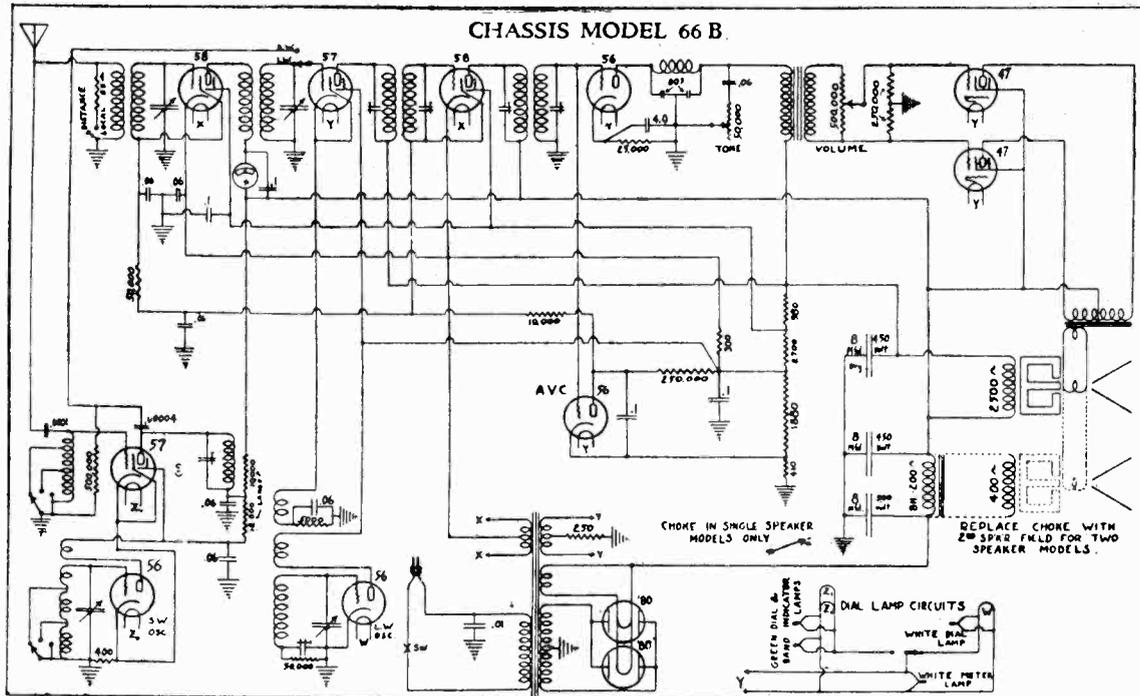
IMPORTANT: It is desirable to move the dial back and forth across the signal while making the above alignments. This is particularly necessary when altering any capacities connected with the oscillator circuit. An insulated or bakelite screw driver (containing little, if any, metal) is advised for use in adjusting "trimmer" or "padding" condensers.

The front section of the tuning condenser is for short wave use only. Unless accidentally shorted it requires no adjustment.

Service parts may be ordered by giving model and serial numbers, and description.



COLIN B. KENNEDY CORP.

MODEL 266-B, 366-B
(Chassis 66-B)
Schematic

The tubes employed are as follows, and are operated at normal voltages and biases:

Short wave mixer	57	Intermediate frequency ...	58
Short wave oscillator .	56	Second detector	56
Radio frequency	58	Automatic Vol. Control ...	56
Long wave mixer	57	Power tubes	247
Long wave oscillator ..	56	Rectifiers	280

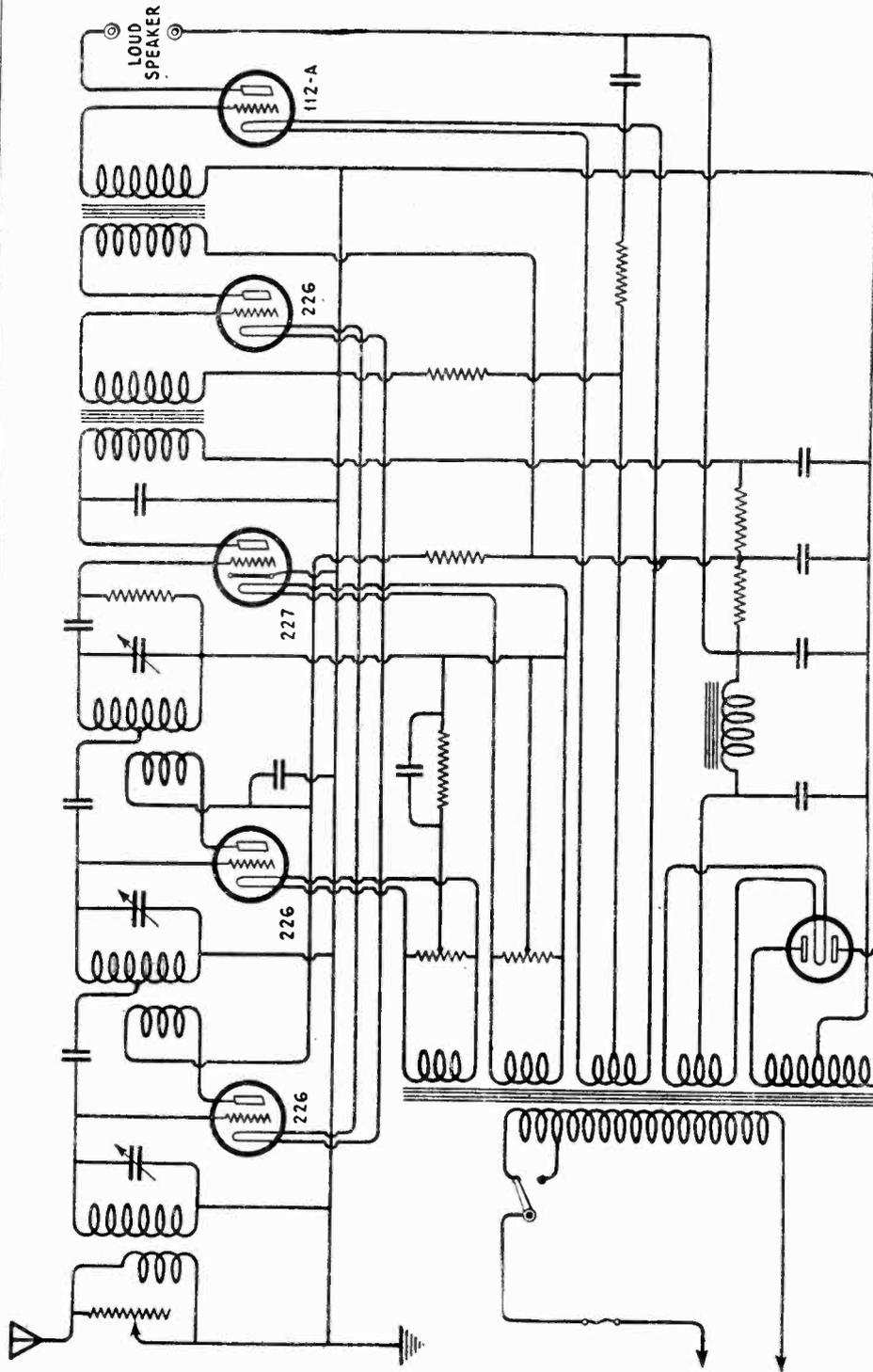
To accommodate the automatic circuits it will be noted that the long wave R. F. and I. F. tube filaments and cathodes are biased positively about 100 volts above ground. When the AVC tube receives a signal it draws current (being normally biased to cut off) through the 250,000 ohm resistor. The voltage drop across this resistor is then applied to the automatically controlled grids as additional bias. An inspection of the circuit diagram will clarify this simple and efficient AVC action.

In aligning, it is first desirable to see that the intermediate frequency transformers are properly set. This is most readily accomplished by using an output meter and an accurate source of 175 kilocycle radio frequency, such as an oscillator. The accuracy of this oscillator may be checked by tuning a radio set to a station on 700 kilocycles and placing the oscillator near the antenna. A harmonic of the 175 kilocycle oscillator will "zero beat" with the station if the oscillator is correct. Other "harmonic" points may also be tried.

With the receiver switched to short wave position, remove the grid clip from the top of the S.W. mixer tube and fasten a short length of wire to the

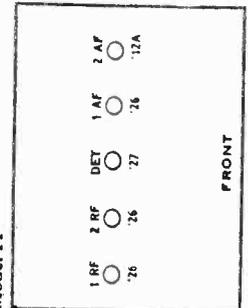
MODEL FF

KING MFG. CORP.



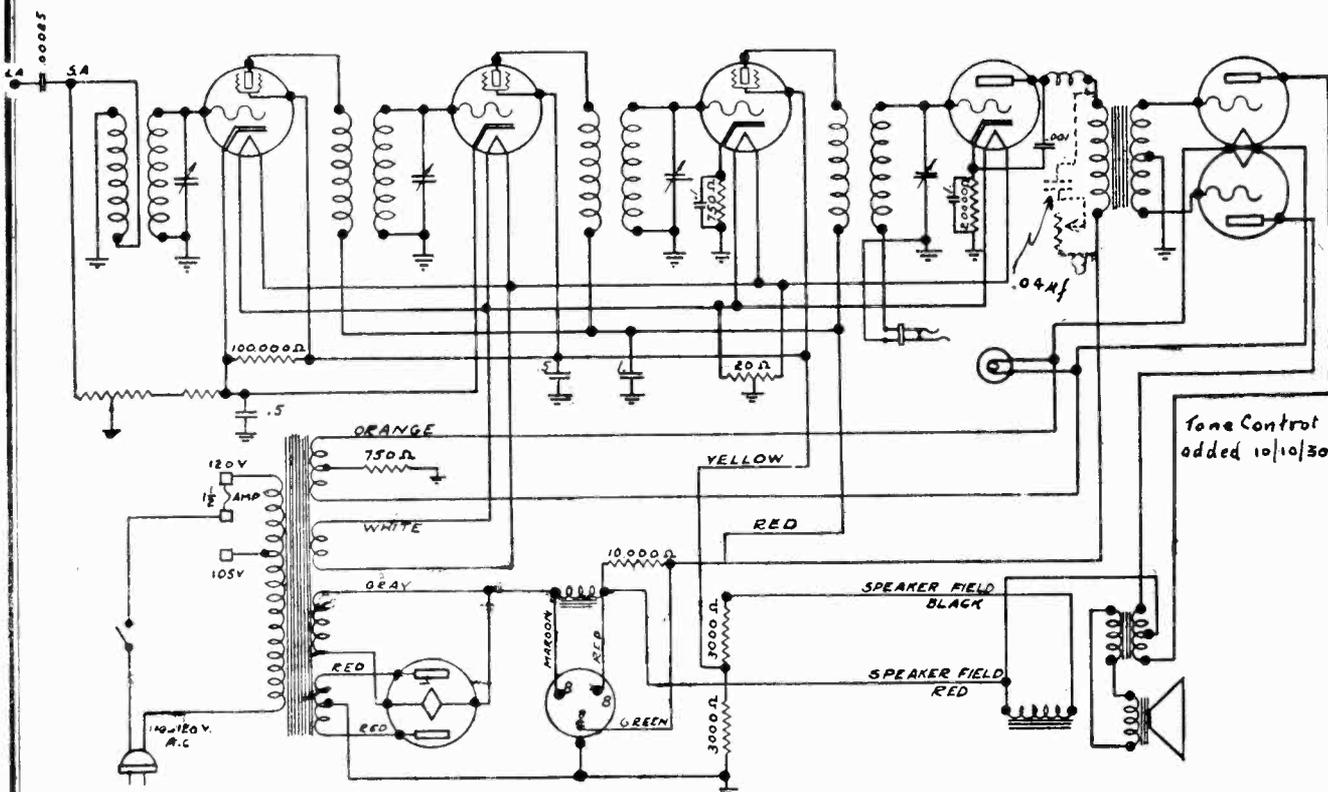
KING—MODEL FF

Model FF



MODEL 218

KING MFG. CORP.



READINGS WITH PLUG IN SET SOCKET AND TUBE IN TESTER SOCKET

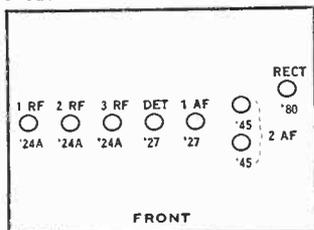
Tube No. in Order	Position of Tube	Type of Tube	A Volts	B Volts	C Volts	Cathode	Plate M.A.	Screen Grid Volts
1	1st R.F.	224	2.4	178	3.4	3.4	3.5	85
2	2nd R.F.	224	2.4	178	3.4	3.4	3.5	85
3	3rd R.F.	224	2.4	178	3.4	3.4	3.5	85
4	DET.	227	2.4	240	23.	2.5	1.1	
5	Push-Pull	245	2.4	235	45		27	
6	Push-Pull	245	2.4	235	45		27	
7	RECT.	280	5.	310				

Line Voltage 120

Set On 120 Volt Tap

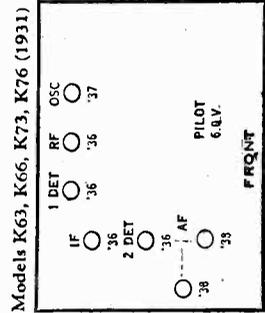
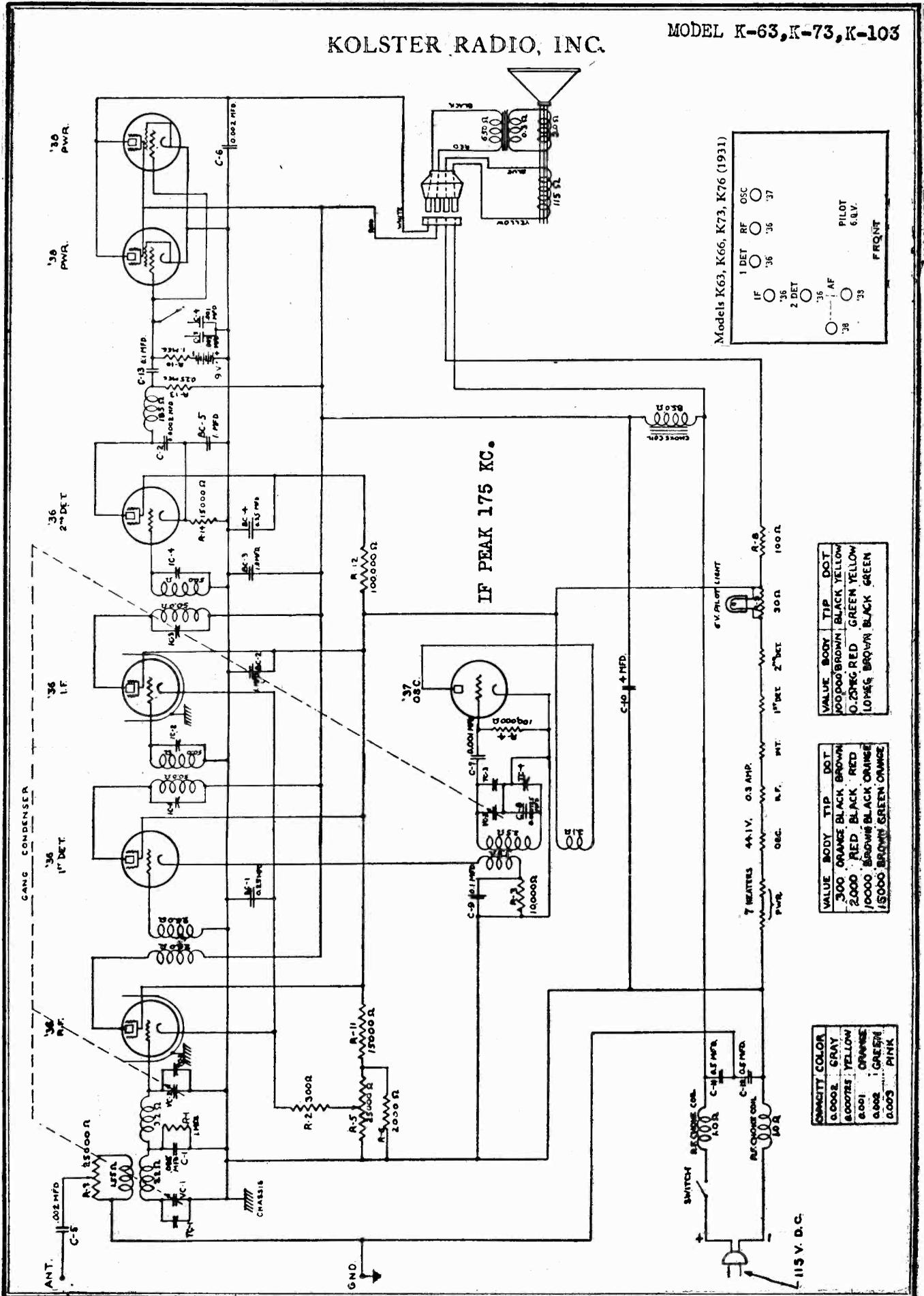
Volume Control FULL ON

Model 218



KOLSTER RADIO, INC.

MODEL K-63, K-73, K-103



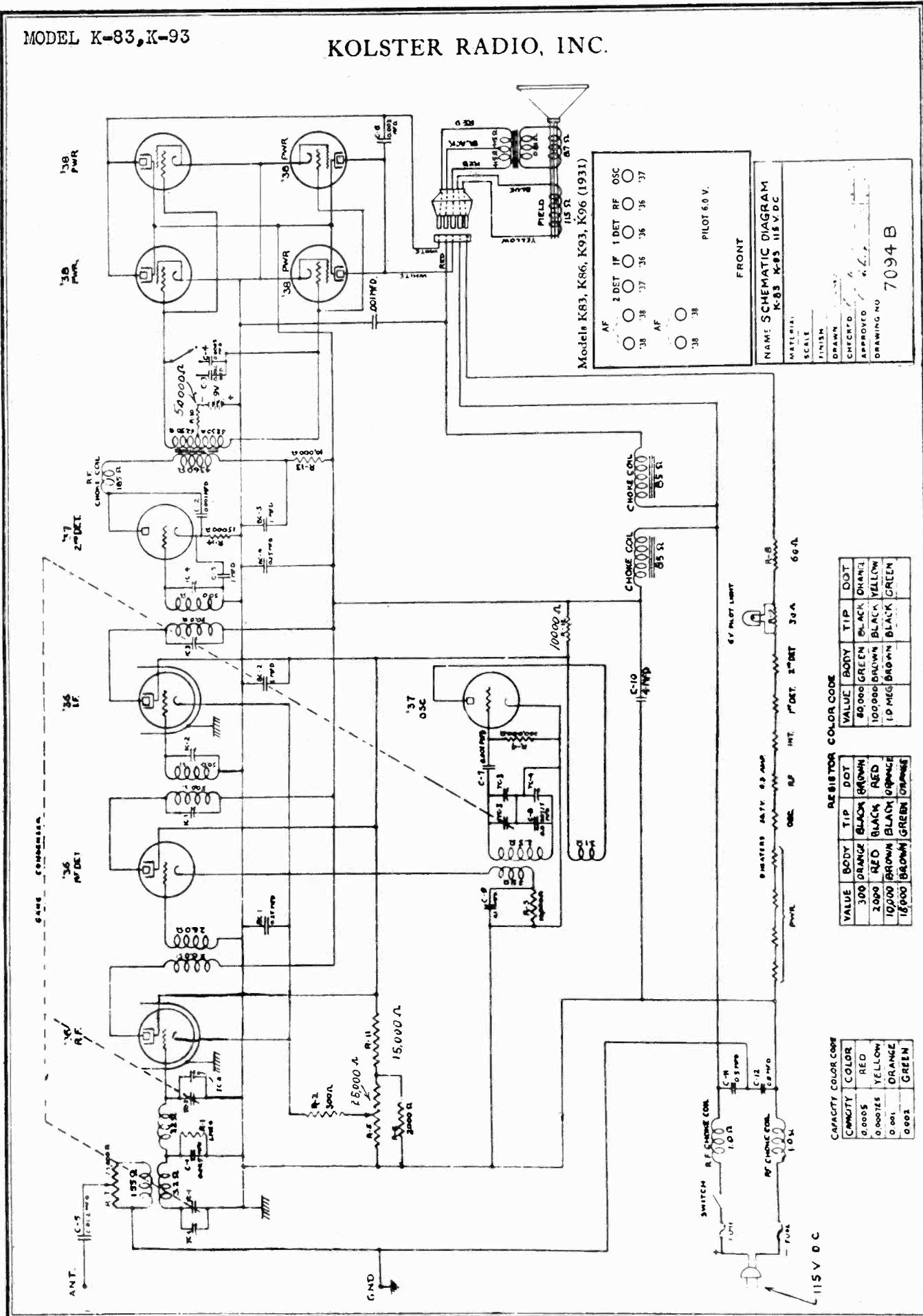
VALUE	BODY	TIP	DOT
100000	BROWN	BLACK	YELLOW
0.25MΩ	RED	GREEN	YELLOW
10MΩ	BROWN	BLACK	GREEN

VALUE	BODY	TIP	DOT
300	ORANGE	BLACK	BROWN
2000	RED	BLACK	RED
10000	BROWN	BLACK	ORANGE
15000	BROWN	GREEN	ORANGE

CAPACITY	COLOR
0.0002	GRAY
0.00075	YELLOW
0.001	ORANGE
0.002	GREEN
0.005	PINK

MODEL K-83, K-93

KOLSTER RADIO, INC.



Models K83, K86, K93, K96 (1931)

AF 2 DET IF 1 DET RF OSC
 ○ '38 '38 '37 '36 '36 '36 '37
 AF ○ '38 '36
 PILOT 6.0 V.

FRONT

NAME SCHEMATIC DIAGRAM
 K-83 K-93 115VDC

MATERIAL
 SCALE
 FINISH
 DRAWN
 CHECKED
 APPROVED
 DRAWING NO 7094 B

RESISTOR COLOR CODE

VALUE	BODY	TIP	DOT
80,000	GREEN	BLACK	BROWN
100,000	BROWN	BLACK	YELLOW
10 MEG	BROWN	BLACK	GREEN

RESISTOR COLOR CODE

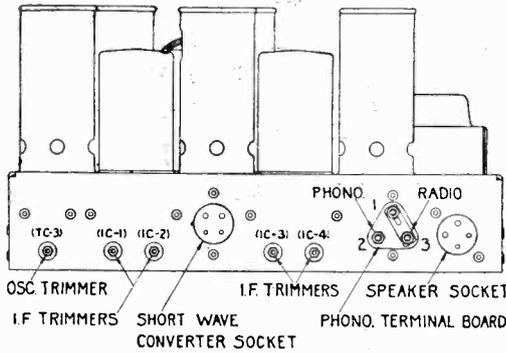
VALUE	BODY	TIP	DOT
300	ORANGE	BLACK	BROWN
2000	RED	BLACK	RED
10,000	BROWN	BLACK	ORANGE
10,000	BROWN	GREEN	BROWN

CAPACITY COLOR CODE

CAPACITY	COLOR
0.0005	RED
0.000125	YELLOW
0.001	ORANGE
0.002	GREEN

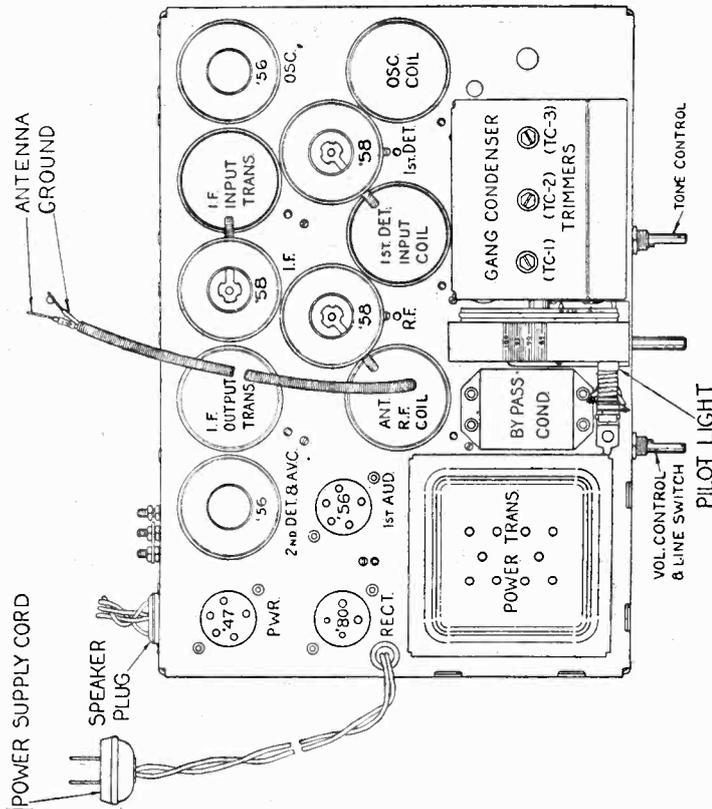
MODEL K-110, K-120, K-122
Chassis, Voltage
Circuit Adjustments

KOLSTER RADIO, INC.



TUBE	KV.	CGV	SGV	FV	PC	SGC
RF	3	-0.2	72	205	2.5	.6
1st Det.	6	-0.8	70	205	1.7	.4
OSO.	0	-2	-	90	5.0	-
I.F.	3	-3	70	205	2.5	.8
1st AF.	0	-1	-	0	0	-
2nd AF.	5	-1**	-	95	1.2	-
Rect.	-	-2	210	190	22	6.5
						27

*Ground Grid to Chassis
**Vol. Cont. maximum. When control is at Minimum reading is -.5.
Line Voltage 115 volts.
All voltages will vary with changes in tubes.
Readings taken with DC meter having a resistance of 1000 ohms per volt.



ADJUSTMENT FOR CALIBRATION ALIGNMENT OF TUNING POINTER

Rotate the tuning knob clockwise to the limit of rotation. Loosen the dial pointer adjustment screw and adjust the dial scale pointer to the stop line beyond the 550 K.C. setting. Tighten adjustment screw. Do not attempt to bend the bracket up or down as this will bend the pointer away from the horizontal. The pointer should press forward against the scale sufficiently to smooth it out, presenting a surface uniformly spaced from the escutcheon when tuned to any station. Make sure that the dial lamp socket is firmly mounted and pressed down into its proper position during these adjustments.

I.F., R.F. AND OSCILLATOR CIRCUIT ADJUSTMENTS

Obviously unsatisfactory performance of this set due to improper adjustment or misadjustment of the I.F., R.F. and oscillator circuits will not be indicated by any readings made with a set analyzer. Although tuning adjustments can be made by utilizing a received signal, such adjustments are at best inaccurate and inefficient. It is imperative that the Service Department of each dealer and distributor be equipped with some form of signal generator and output device which may be either purchased or constructed by the Service Department.

The signal generator consists essentially of a modulated oscillator covering the entire broadcast frequency band with accurate adjustments at 600 kilocycles and 1400 kilocycles. It should also incorporate a 175 kilocycle output capable of accurate adjustment. The output indicating device may be any one of the several standard output meters obtainable, a current squared galvanometer or a low range A.C. voltmeter connected across the secondary of the output transformer.

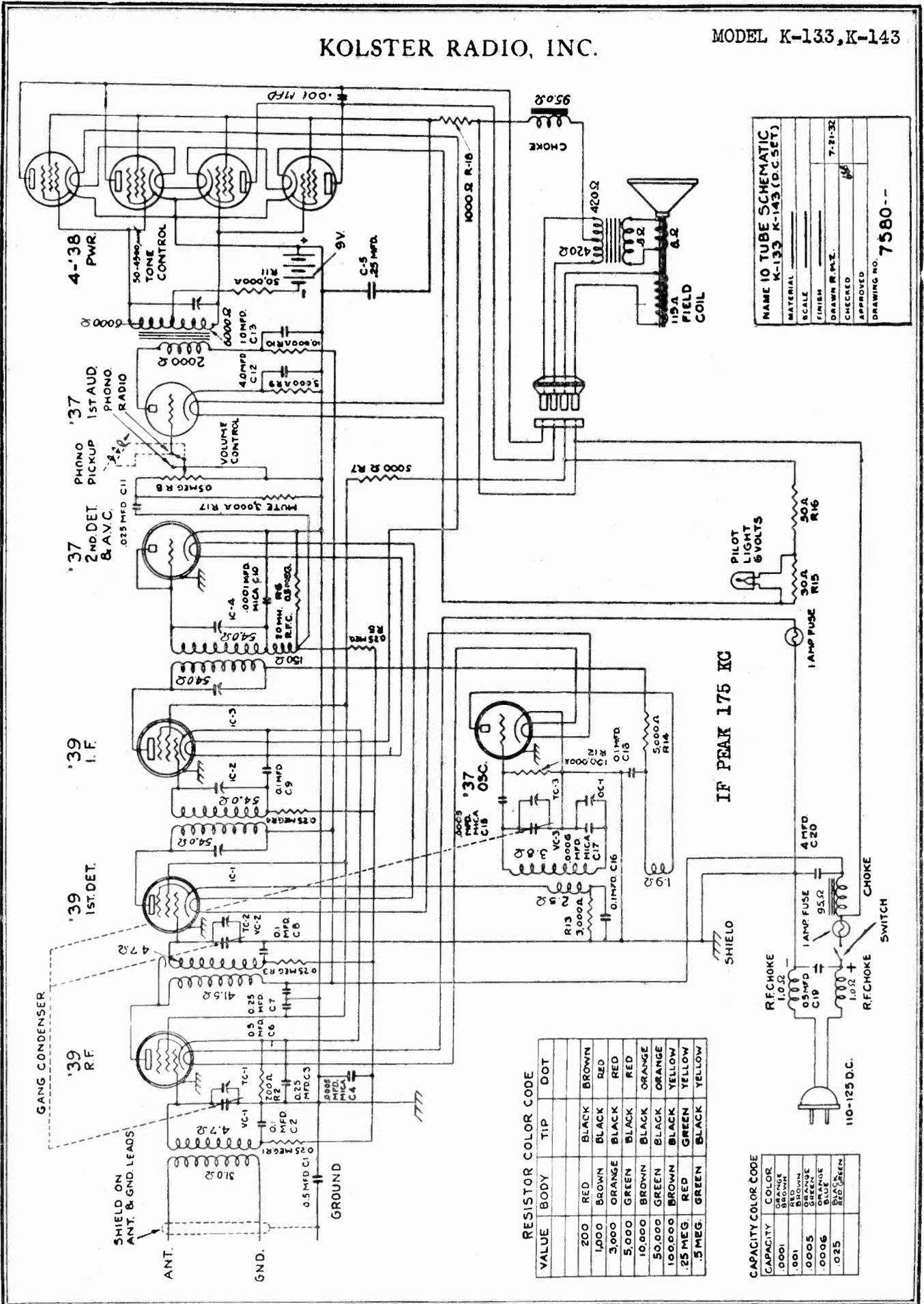
It is impossible to secure satisfactory trimmer adjustments without using a special insulated socket wrench. Proper results cannot be obtained using a metallic socket wrench due to capacity effects and the fact that several of the adjustment nuts are above ground potential. A special combination bakelite socket wrench and screw driver may be obtained from the factory at cost. It is not necessary to remove the chassis from the cabinet to adjust the I.F., R.F. and oscillator circuits, as this set has been designed to make all trimmer adjustments readily accessible.

Turn tuning knob clockwise to its limit of rotation and if necessary adjust the dial scale pointer as previously described. Rotate the tuning knob counter-clockwise to the other extreme limit and leave it in this position during the following I.F. adjustments:

1. Remove the '56 oscillator tube and the tube shield and grid clip from the '58 I.F. tube.
2. Couple the output of a modulated oscillator to the control grid of this tube and clip the other oscillator lead to the chassis frame. Do not connect this lead to either of the antenna coil leads. Set the modulated oscillator to 175 K.C.
3. Adjust IC-3 and IC-4 to maximum output.
4. Replace the I.F. grid clip and tube shield. Remove the first detector tube shield and grid clip and couple the oscillator output to the grid of the '58 first detector tube.
5. Adjust IC-1 and IC-2 for maximum output. It is advisable to recheck the adjustment of IC-3 and IC-4 while the oscillator is coupled to the first detector. Adjust all four condensers several times to assure accuracy.
6. Replace the first detector grid clip and tube shield and oscillator tube and shield.
7. Couple the output of the signal generator to the antenna and ground leads. Do not run a third lead to the chassis frame. Adjust the signal generator to 1400 K.C.
8. Set the tuning dial to 1400 K.C. Adjust the oscillator trimmer TC-3 until the signal generator is picked up in the set. Adjust RC-1 and TC-2 to obtain maximum R.F. amplification. Recheck adjustments of TC-1, TC-2 and TC-3 several times for best results.
9. Reset the signal generator to 600 K.C.
10. Tune the set to 600 K.C. Rock the tuning condenser slowly back and forth either side of this point while adjusting OC-1 for maximum output.
11. It is advisable to recheck 1400 and 600 K.C. settings after the first adjustment to assure accuracy.

KOLSTER RADIO, INC.

MODEL K-133, K-143



NAME 10 TUBE SCHEMATIC K-133 K-143 (P.C. SET)	
MATERIAL	
SCALE	
FINISH	
DRAWN R.M.Z.	7-21-32
CHECKED	
APPROVED	
DRAWING NO.	7580--

RESISTOR COLOR CODE

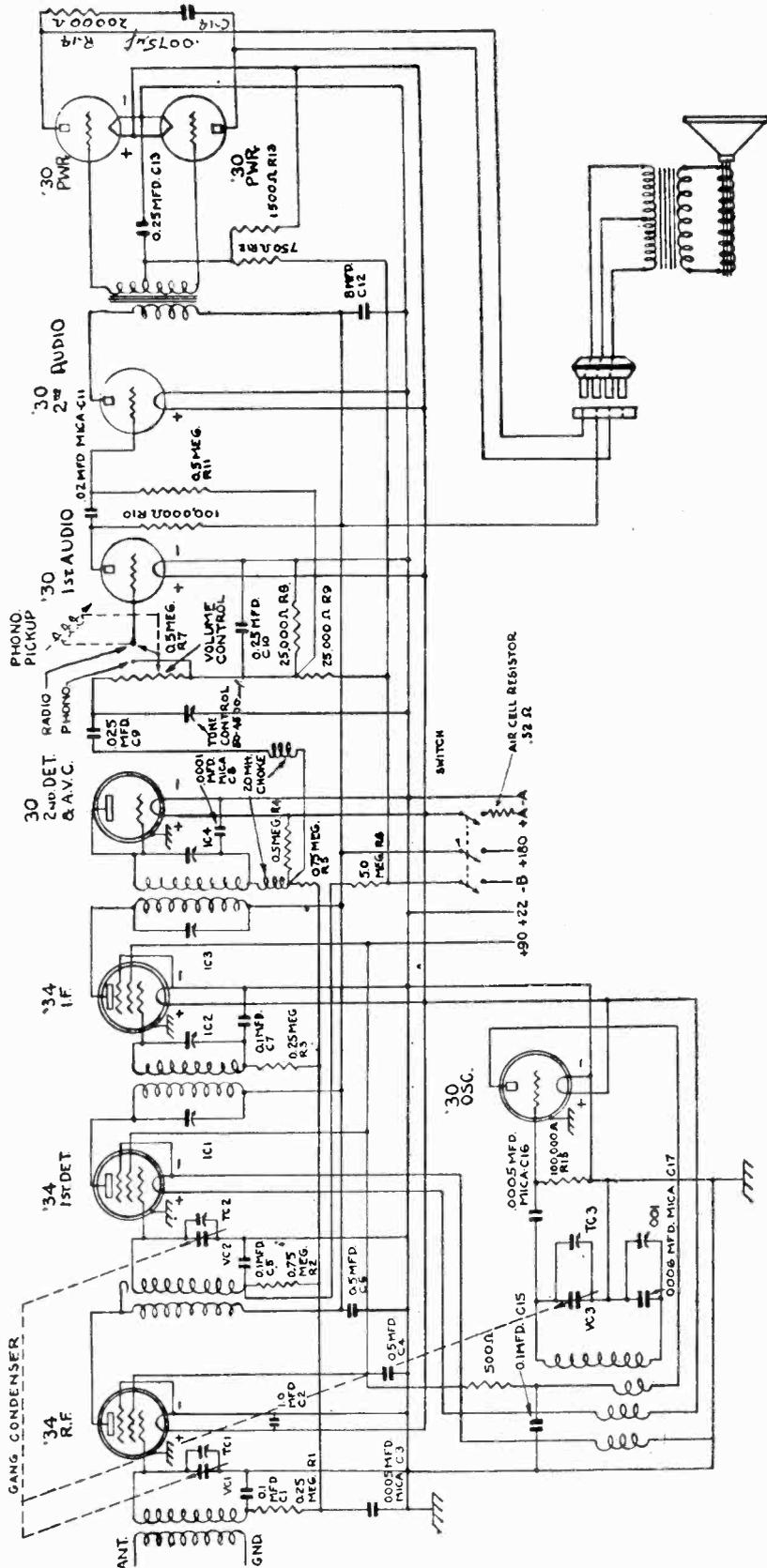
VALUE	BODY	TIP	DOT
200	RED	BLACK	BROWN
1,000	BROWN	BLACK	RED
3,000	ORANGE	BLACK	RED
5,000	GREEN	BLACK	RED
10,000	BROWN	BLACK	ORANGE
50,000	GREEN	BLACK	ORANGE
100,000	BROWN	BLACK	YELLOW
.25 MEG.	RED	GREEN	YELLOW
.5 MEG.	GREEN	BLACK	YELLOW

CAPACITY COLOR CODE

VALUE	COLOR
10.0	ORANGE
.001	BROWN
.001	BROWN
.005	BROWN
.006	ORANGE
.025	BLACK
	RED GREEN

KOLSTER RADIO, INC.

MODEL K-114



CAPACITY COLOR CODE

CAPACITY	COLOR
0.001	BROWN
0.005	ORANGE
0.015	RED
.02	YELLOW
.0006	BLACK

RESISTOR COLOR CODE

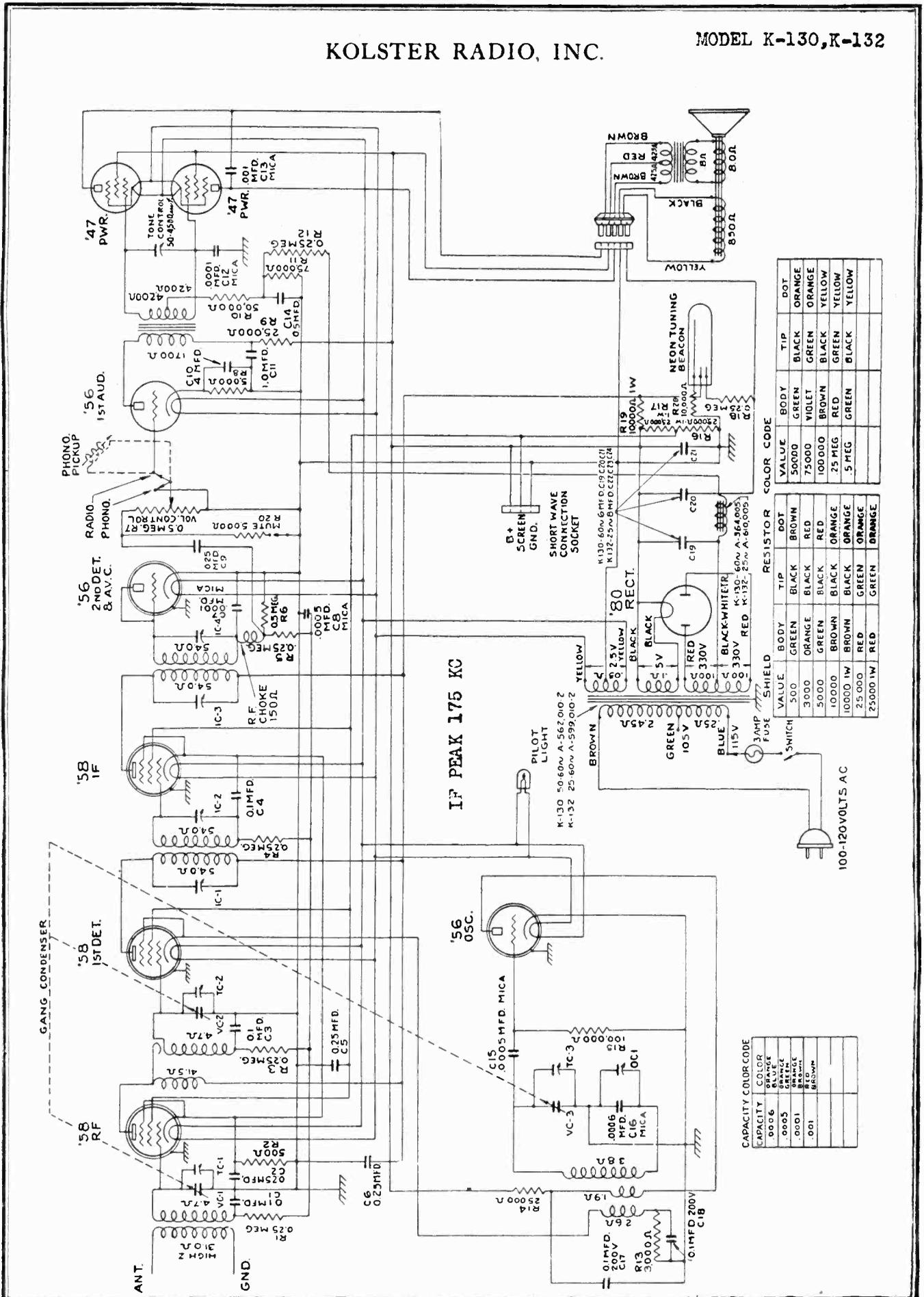
VALUE	BODY	TIP	DOT
50	GREEN	BLACK	BROWN
750	VIOLET	GREEN	BROWN
1500	BROWN	GREEN	RED
20,000	RED	BLACK	ORANGE
25,000	RED	GREEN	ORANGE
100,000	BROWN	BLACK	YELLOW
0.25 MEG	RED	BLACK	YELLOW
0.5 MEG	GREEN	BLACK	YELLOW
0.75 MEG	VIOLET	GREEN	YELLOW
5.0 MEG	GREEN	BLACK	GREEN

NAME 9 TUBE SCHEMATIC
K-114 (BATTERY SET)

MATERIAL	
SCALE	
FINISH	
DESIGNED BY	
CHECKED BY	
APPROVED BY	
DRAWING NO.	7521-A

KOLSTER RADIO, INC.

MODEL K-130, K-132



GANG CONDENSER

IF PEAK 175 KC

VALUE	TIP	BODY	DOT
50000	BLACK	BROWN	ORANGE
75000	GREEN	VIOLET	ORANGE
100000	BLACK	BROWN	YELLOW
25 MEG	RED	RED	YELLOW
5 MEG	GREEN	GREEN	YELLOW

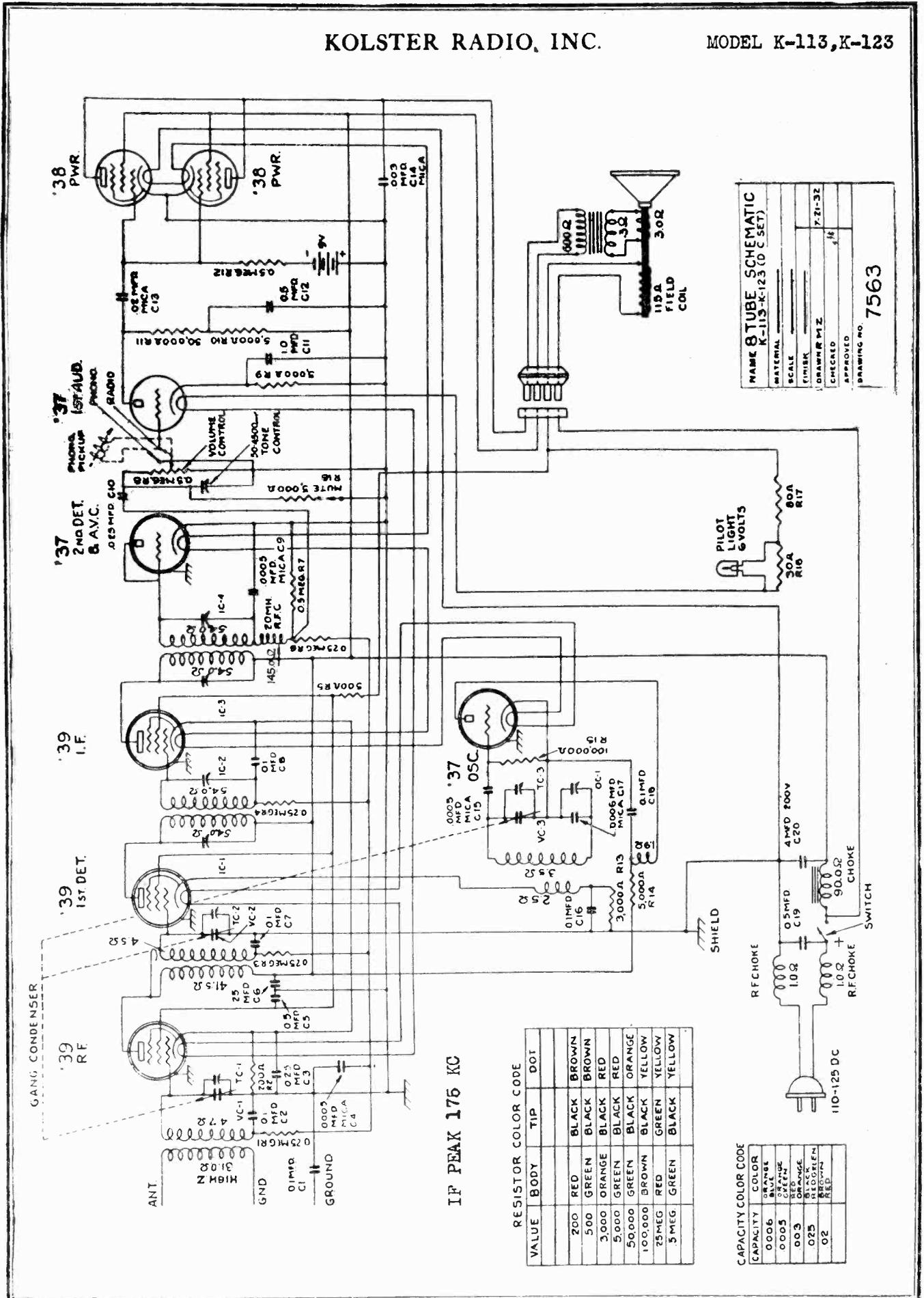
VALUE	TIP	BODY	DOT
500	GREEN	BLACK	BROWN
3000	ORANGE	BLACK	RED
5000	GREEN	BLACK	RED
10000	BROWN	BLACK	ORANGE
10000 IW	BROWN	BLACK	ORANGE
25 000	RED	GREEN	ORANGE
25000 IW	RED	GREEN	ORANGE

CAPACITY	COLOR
.0006	ORANGE
.0005	BLUE
.0001	GREEN
.001	BROWN
.001	RED
	BROWN

100-120VOLTS AC

KOLSTER RADIO, INC.

MODEL K-113, K-123



NAME 8 TUBE SCHEMATIC
K-113-K-123 (C SET)

MATERIAL	
SCALE	
FINISH	
DRAWN BY	7-21-32
CHECKED	
APPROVED	
DRAWING NO.	7563

IF PEAK 176 KC

RESISTOR COLOR CODE

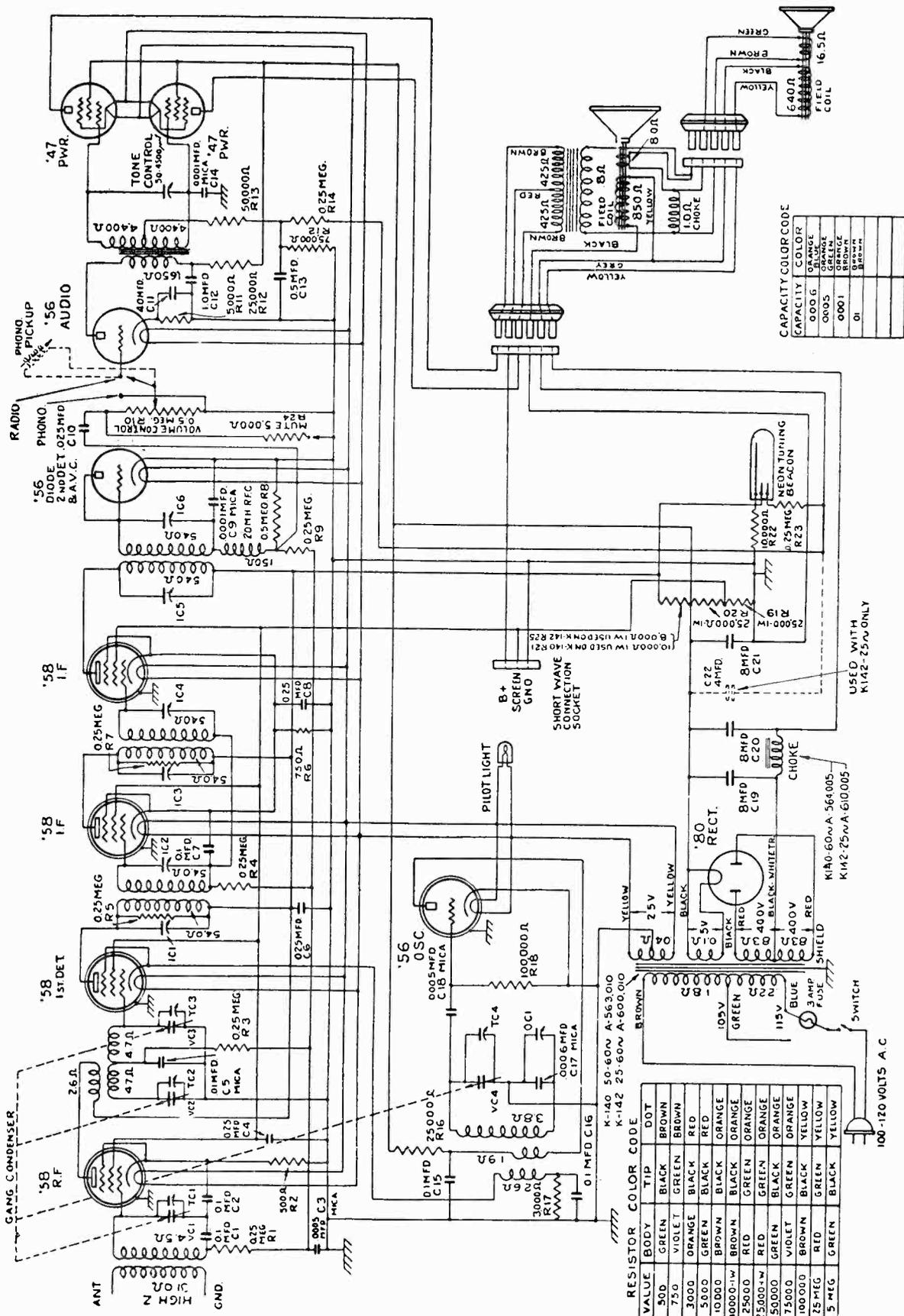
VALUE	BODY	TIP	DOT
200	RED	BLACK	BROWN
500	GREEN	BLACK	BROWN
3,000	ORANGE	BLACK	RED
5,000	GREEN	BLACK	RED
50,000	BROWN	BLACK	ORANGE
100,000	BROWN	BLACK	YELLOW
25 MEG	RED	GREEN	YELLOW
5 MEG	GREEN	BLACK	YELLOW

CAPACITY COLOR CODE

CAPACITY	COLOR
0006	ORANGE
0005	ORANGE
0003	ORANGE
025	BROWN
02	BROWN
	RED

MODEL K-140, K-142

KOLSTER RADIO, INC



RESISTOR COLOR CODE

VALUE	BODY	TIP	DOT
500	GREEN	BLACK	BROWN
750	VIOLET	GREEN	BROWN
3000	ORANGE	BLACK	RED
5000	GREEN	BLACK	RED
10000	BROWN	BLACK	ORANGE
10000-1W	BROWN	BLACK	ORANGE
25000	RED	GREEN	ORANGE
25000-1W	RED	GREEN	ORANGE
50000	GREEN	BLACK	ORANGE
75000	VIOLET	BLACK	ORANGE
100000	BROWN	BLACK	YELLOW
25 MEG	RED	GREEN	YELLOW
5 MEG	GREEN	BLACK	YELLOW

CAPACITY COLOR CODE

CAPACITY	COLOR
000 G	BLACK
000 S	BLUE
000 M	GREEN
000 S	ORANGE
001	BROWN
01	BROWN

USED WITH K142-25V ONLY

IF PEAK 175 KC

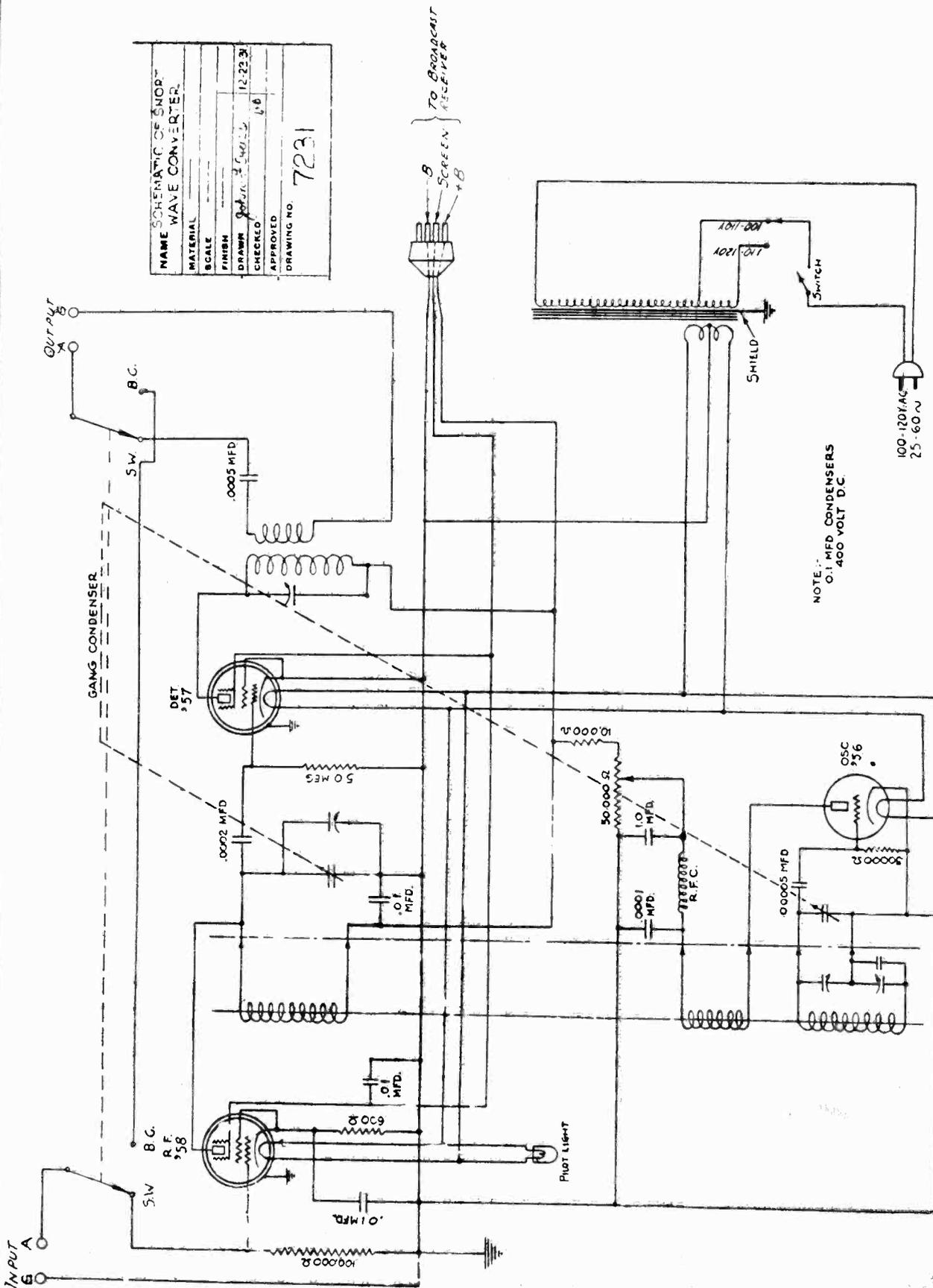
100-170 VOLTS A.C.

K-140 50-60W A-563.010
K-142 25-60W A-600.010

MODEL Short-wave Converter

KOLSTER RADIO, INC.

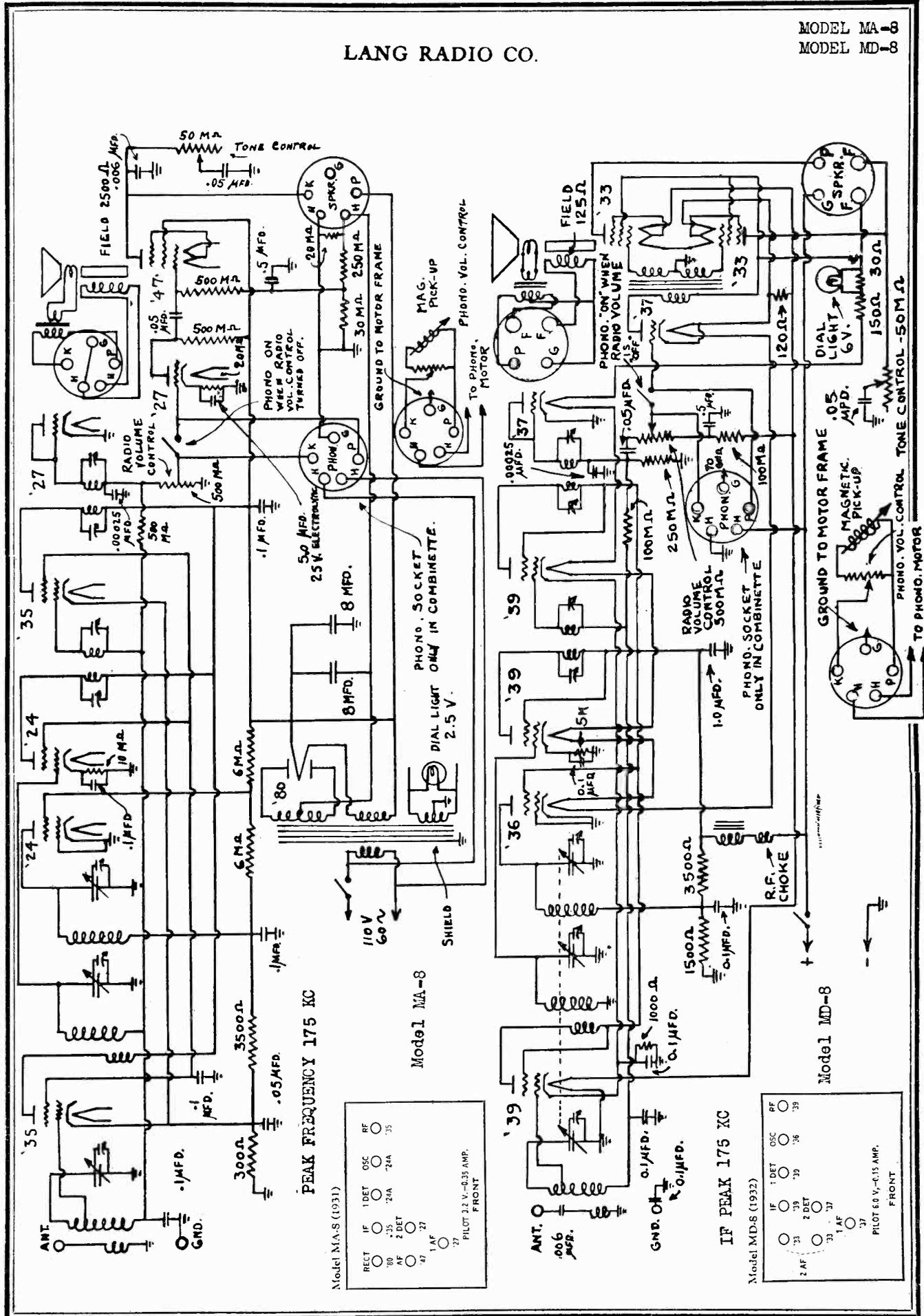
NAME SCHEMATIC OF "SHORT-WAVE CONVERTER"	
MATERIAL	
SCALE	
FINISH	
DRAWN	9/27/36
CHECKED	12-22-36
APPROVED	J.B.
DRAWING NO.	7231



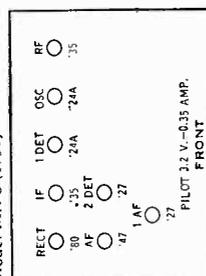
NOTE: 0.1 MFD CONDENSERS
400 VOLT D.C.

LANG RADIO CO.

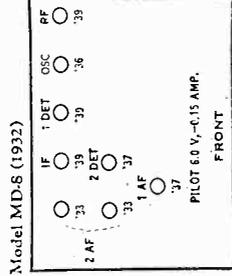
MODEL MA-8
MODEL MD-8



PEAK FREQUENCY 175 KC

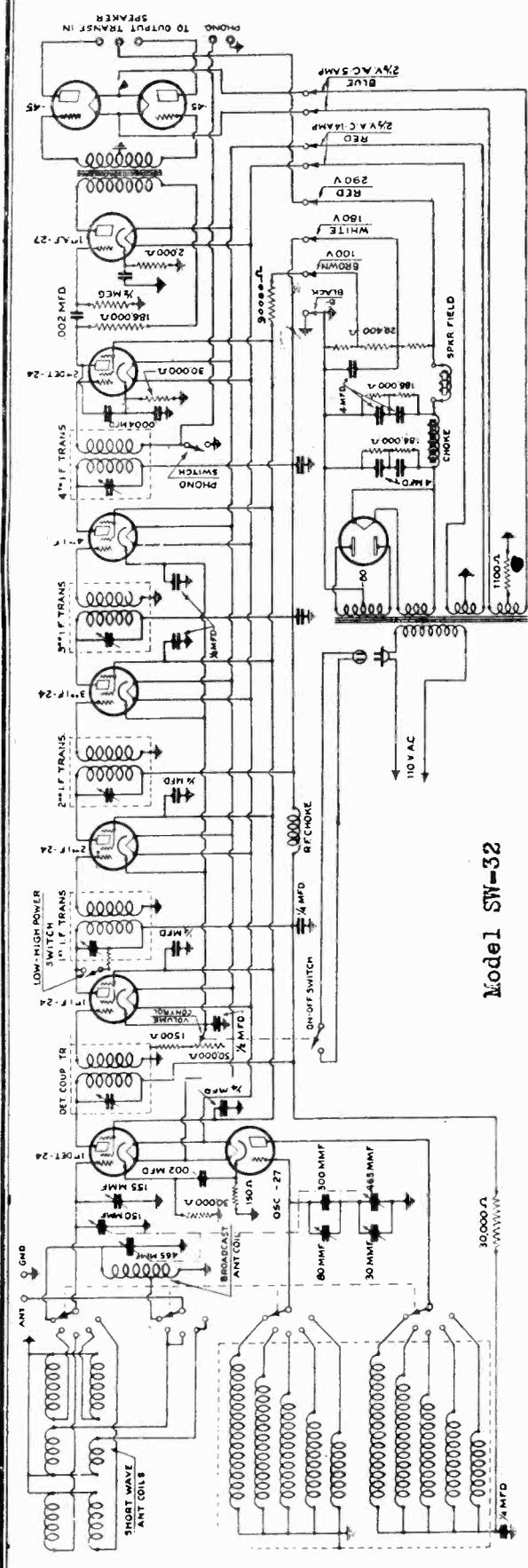


IF PEAK 175 KC

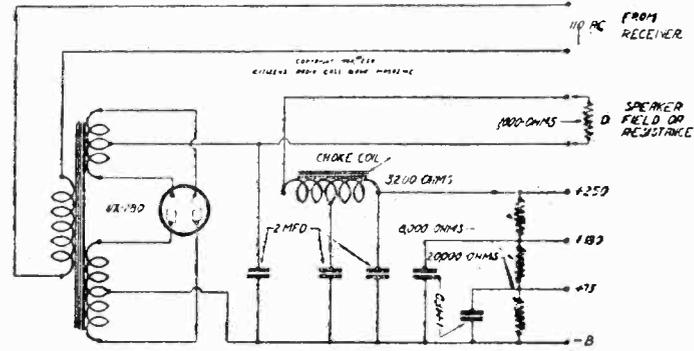


MODEL SW-32
MODEL DeLuxe 10

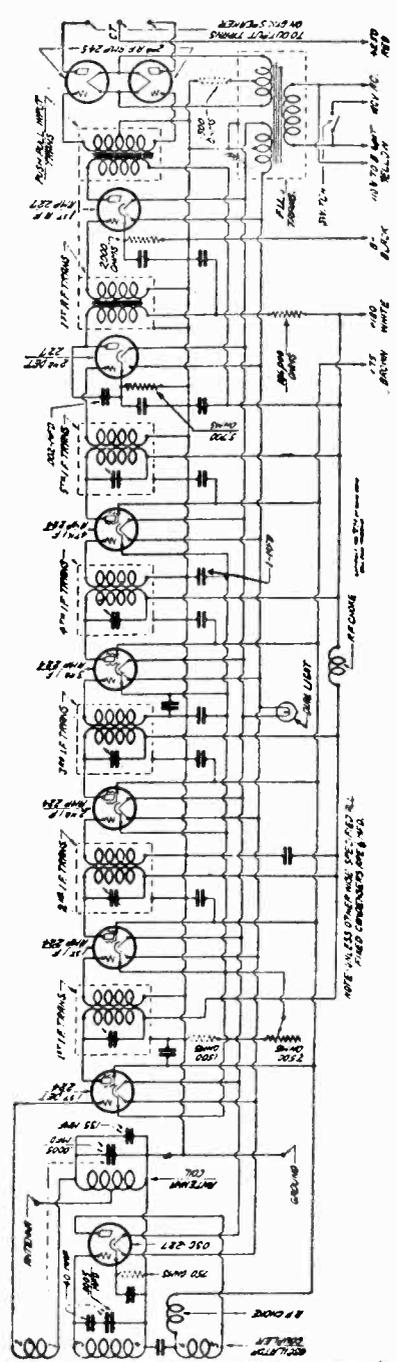
LINCOLN RADIO CORP.



Model SW-32



Model DeLuxe 10 Power Pack



Model DeLuxe 10