

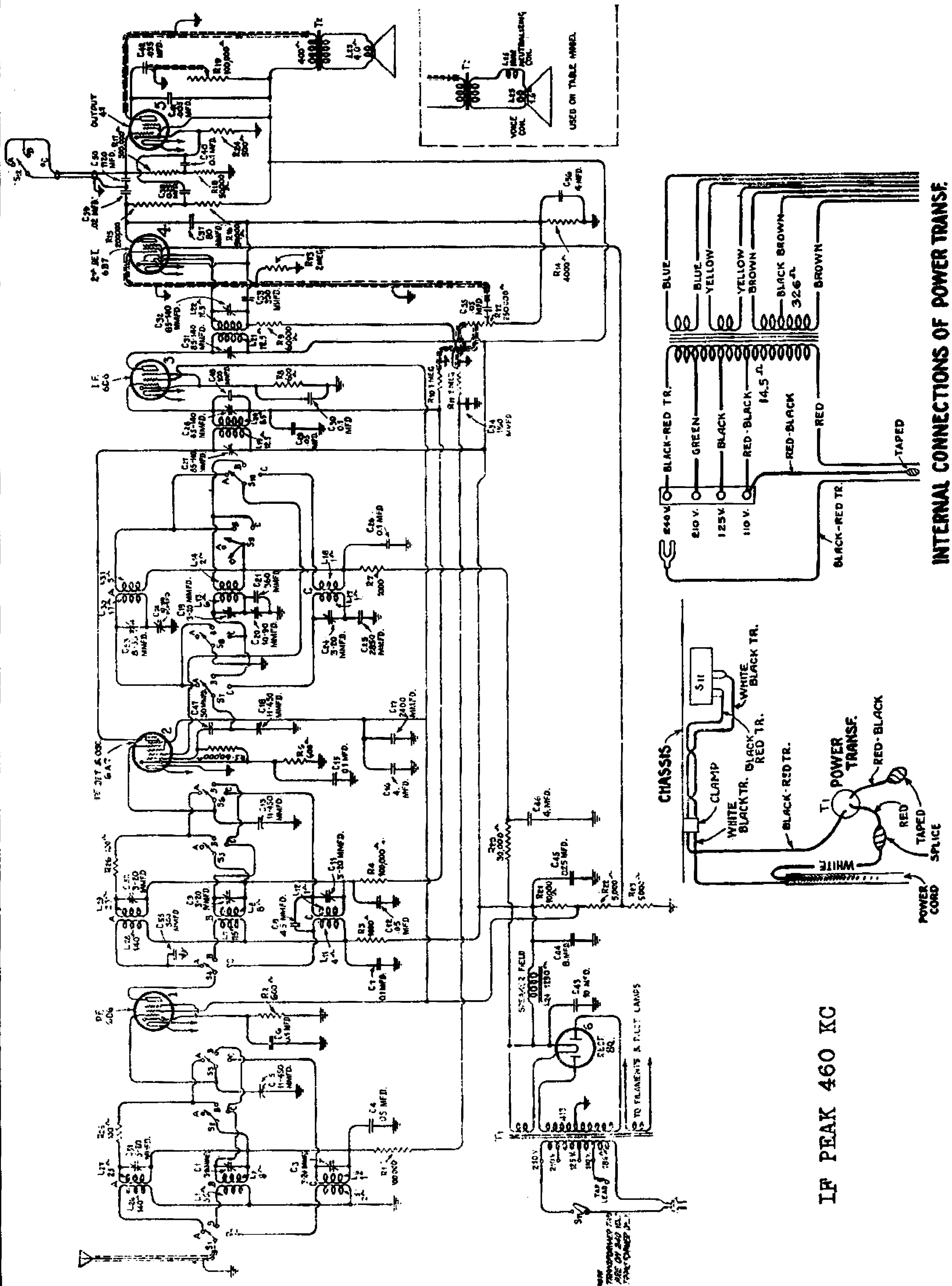
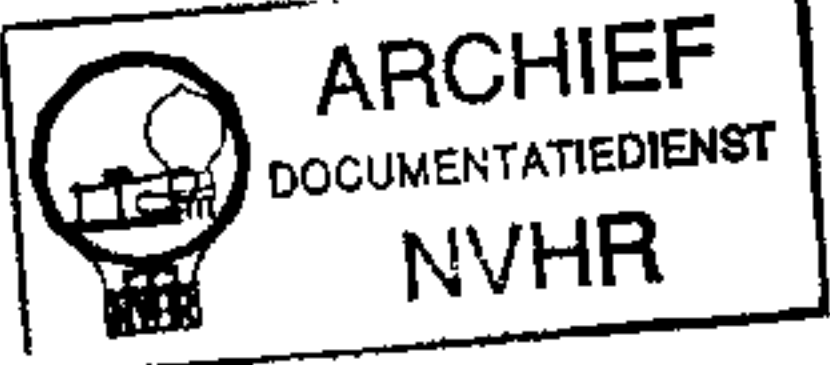


Figure 5—Universal Transformer Connections

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MODELS 128E, 224E
Trimmers, Socket
Voltage, Speakers

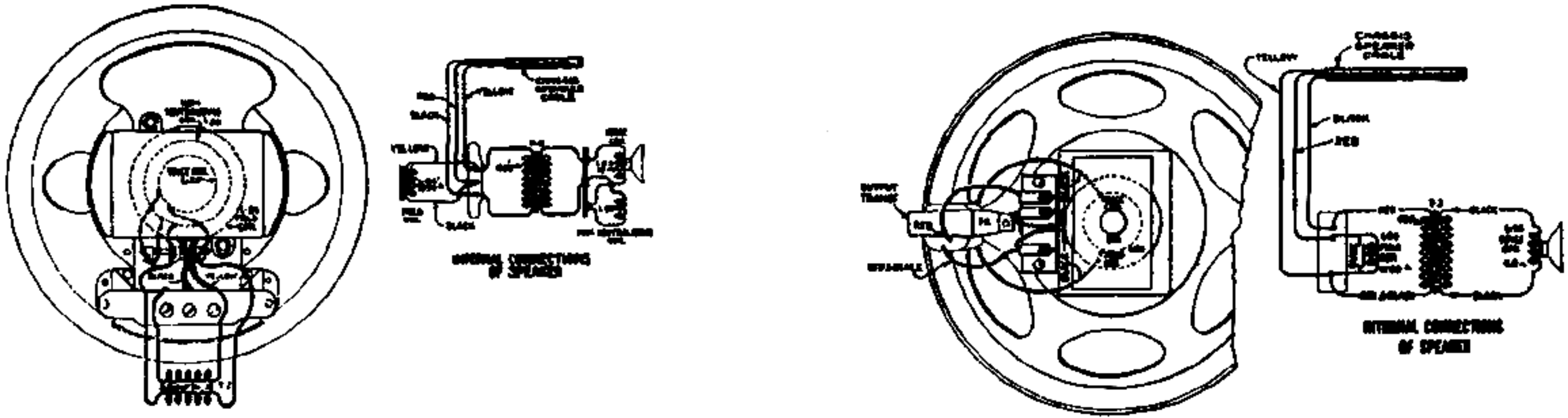


Figure 3—Table Loudspeaker Wiring

600 K.C. TRIMMER → ①

175 K.C. TRIMMER → ②

Figure 4—Console Loudspeaker Wiring

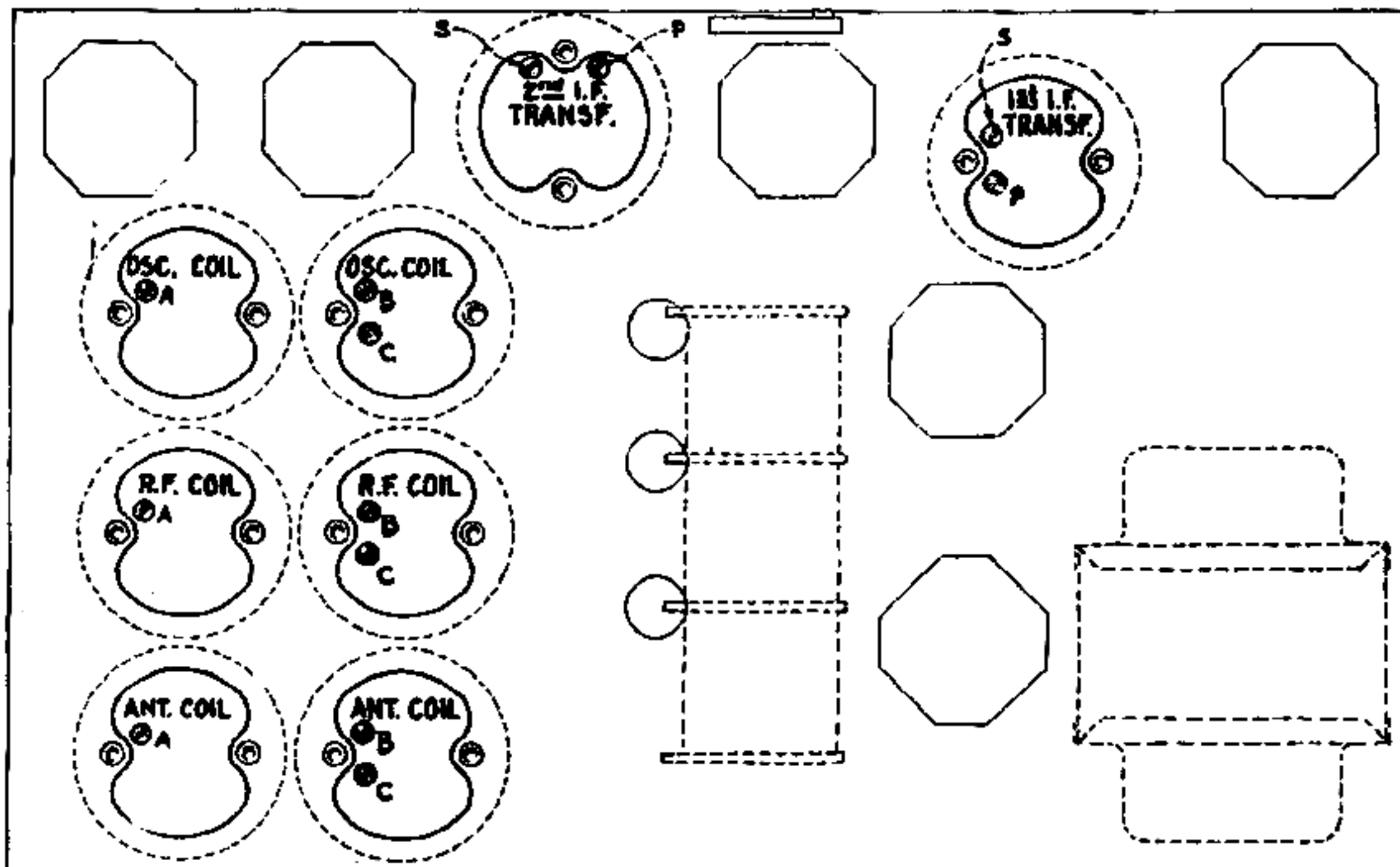
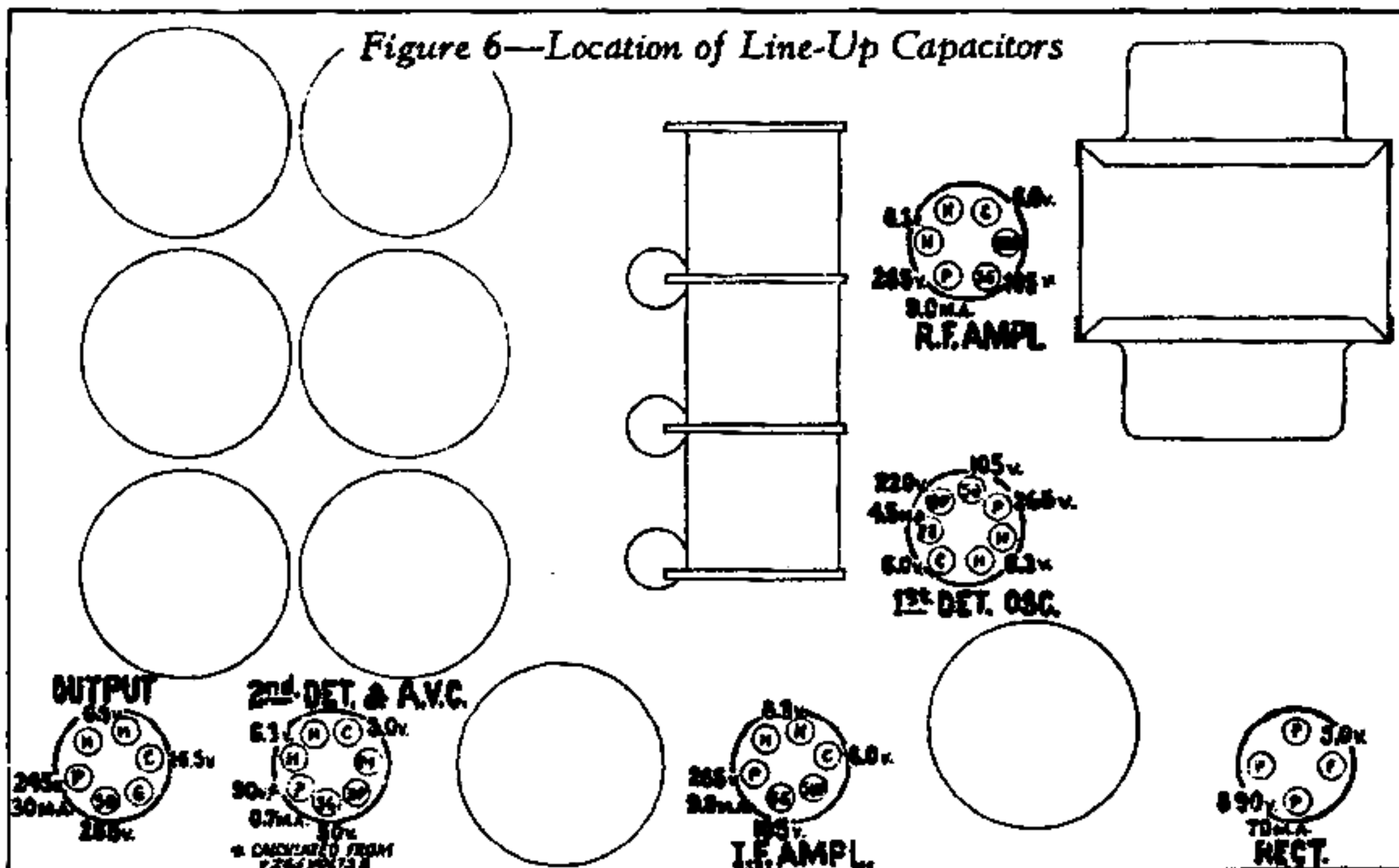


Figure 6—Location of Line-Up Capacitors



ALL VOLTAGES ARE TO GROUND

Figure 7—Tube Socket Voltages

MODELS 128E, 224E
Alignment, Voltage

RCA MFG. CO., INC.

(c) Check for the image signal, which should be received at approximately 17,080 K. C. on the dial. It may be necessary to increase the external oscillator output for this check.

(d) Reduce the capacity of the detector trimmer, while rocking the tuning capacitor, until the signal disappears. The first detector circuit is then aligned with the oscillator circuit and the RCA-6A7 tube is blocked. Then increase the capacity of the detector trimmer, while rocking the tuning capacitor, until the signal is peaked for maximum output.

(e) The antenna trimmer should now be peaked for maximum output. It is not necessary to rock the main tuning capacitor while making this adjustment.

(4) POWER TRANSFORMER CONNECTIONS

The 220-volt power transformer furnished with some instruments includes taps for operating on 110-volt lines. Figure 5 shows the schematic circuit of the transformer and the proper voltage to be applied to the various taps. The taps are located on the power transformer assembly and are accessible without removing the chassis from the cabinet.

(5) VOLTAGE READINGS

The following voltages are those at the various tube sockets while the receiver is in operating condition. No allowance has been made for currents drawn by the meter, and if low-resistance meters are used, such allowances must be made:

RADIOTRON SOCKET VOLTAGES
115-Volt A. C. Line—No Signal—Volume Control Maximum

RADIOTRON NUMBER	CATHODE TO GROUND, VOLTS, D. C.	SCREEN GRID TO GROUND, VOLTS, D. C.	PLATE TO GROUND, VOLTS, D. C.	PLATE CURRENT, M. A.	HEATER VOLTS, A. C.
RCA-6D6—R. F.	6.0	105	265	9.0	6.3
RCA-6A7	6.0	105	265	3.5	6.3
	—	—	220	4.5	
RCA-6D6—I. F.	6.0	105	265	9.0	6.3
RCA-6B7—2nd Detector	3.0	50	90*	0.7	6.3
RCA-41—Power	16.5	265	245	30.0	6.3
RCA-80—Rectifier	—	—	690 (RMS)	70.0	5.0

* Voltage calculated from 265 V. + B.

Band "A"

- (a) Set the Band Switch at "A."
- (b) Tune the external oscillator to 410 K. C., set the dial pointer at 410 K. C. and adjust the oscillator detector and R. F. trimmers for maximum output.
- (c) Shift the external oscillator frequency to 175 K. C. Tune in the 175 K. C. signal irrespective of scale calibration and adjust the series trimmer, marked 175 K. C. on Figure 6, for maximum output, at the same time rocking the variable tuning capacitor. Then readjust at 410 K. C. as described in (b).

Band "B"

- (a) Set the Band Switch at "B."
- (b) Tune the external oscillator to 1720 K. C., set the pointer at 1720 K. C. and adjust the oscillator detector and R. F. trimmers for maximum output.
- (c) Shift the external oscillator frequency to 600 K. C. Tune in the 600 K. C. signal, irrespective of scale calibration, and adjust the series trimmers, located on rear apron of chassis, for maximum output, at the same time rocking the variable tuning capacitor. Then readjust at 1720 K. C. as described in (b).

Band "C"

- (a) Set the Band Switch at "C."
- (b) Tune the external oscillator to 18,000 K. C., set the pointer at 18 M. C. Adjust the oscillator trimmer for maximum output. The trimmer should be set at the first peak obtained when increasing the trimmer capacitor from minimum to maximum.

(3) R. F. OSCILLATOR AND FIRST DETECTOR ADJUSTMENTS

Four R. F., oscillator and first detector adjustments are required in Bands "A" and "B." Three are required in Band "C."

To properly align the various bands, each band must be aligned individually in the order given. This is scale calibration and is done by adjusting the "A," "B," and "C." The preliminary set-up requires the external oscillator to be connected between the antenna and ground terminals of the receiver and the output indicator must be connected across the voice coil of the loudspeaker. The volume control must be at its maximum position and the input from the oscillator must be at the minimum value possible to get an output indication under these conditions. In the high frequency bands, it may be necessary to disconnect the oscillator from the receiver and place it at a distance in order to get a sufficiently low input to the receiver.

The dial pointer must be properly set before starting any actual adjustments. This is done by turning the variable capacitor until it is at its maximum capacity position. One end of the pointer should point exactly at the horizontal line at the lowest frequency end of Band "A," while the other end should point to within 1/4 inch of the horizontal line at the highest frequency end of Band "A."

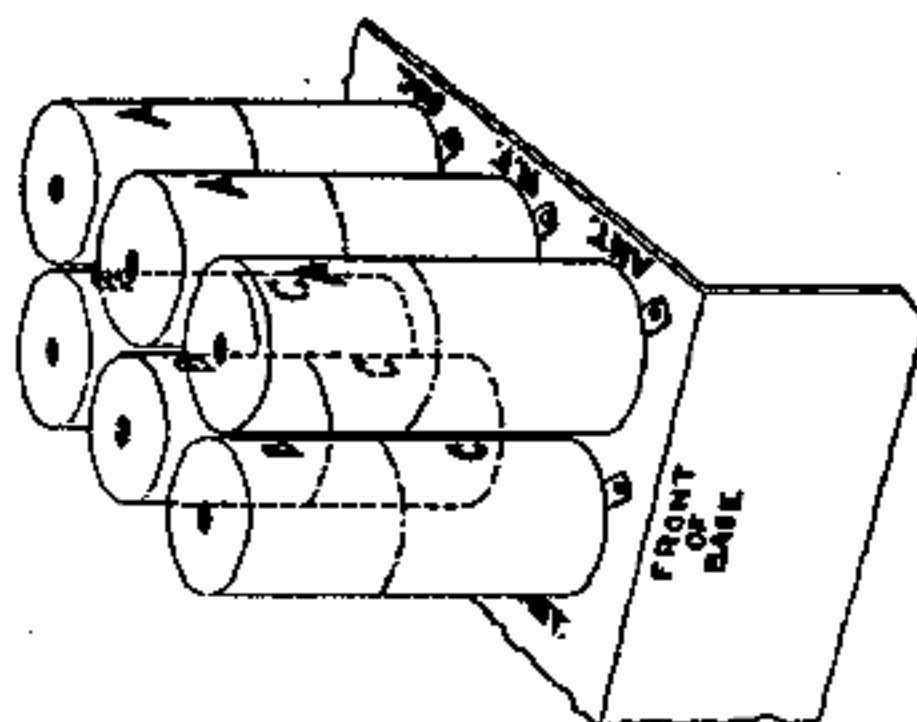


Figure 8—Location of Coils in Shields

Figure 6 shows the location of the trimmers for each band. Care must be exercised to merely adjust the trimmers of the band under test.

Checking with Tuning Wand

Before making any R. F., oscillator or first detector adjustments, the accuracy of the present adjustments may be checked by means of the tuning wand (Stock No. 6679). The tuning wand consists of a bakelite rod having a brass cylinder at one end and a special finely divided iron insert at the other end. Inserting the cylinder into the center of a coil lowers its inductance, while inserting the iron end increases its inductance. From this, it is seen that unless the trimmer adjustment for a particular coil is perfect at alignment frequencies, inserting one end of the wand may increase the output of a particular signal. A perfect adjustment is evidenced by a lowering of output when either end of the wand is inserted into a coil.

The shields over the R. F. coil assembly have a hole at their top for entrance of the tuning wand. The location of the various coils inside of the shield is shown in Figure 8. An example of the proper manner of using the tuning wand would be to assume the external oscillator were set at 1720 and the signal tuned in, and the output indicator should be connected across the voice coil of the loudspeaker. Then the tuning wand would be inserted, first one end and then the other end, into the top of the three transformers at the left of the R. F. assembly, facing the front of the chassis. A perfect adjustment of the trimmer would be evidenced by a reduction in output when each end of the wand is inserted in each of the three transformers. If one end—for example, the iron end—when inserted in one coil caused an increase in output, then that circuit is low. An increase in the trimmer capacitance would be the proper remedy.

(2) I. F. TUNING CAPACITOR ADJUSTMENTS

This receiver has one I. F. stage that employs two transformers in conjunction with four adjustable capacitors. These capacitors may require adjustment, being tuned to 460 K. C.

A detailed procedure for making this adjustment follows:

- (a) Connect the output of an external oscillator tuned to 460 K. C. between the first detector grid and ground. Connect the output indicator across the voice coil of the loudspeaker.
- (b) Place the oscillator in operation at 460 K. C. Place the receiver in operation and adjust the station selector until a point is reached (Band B) where no signals are heard and turn the volume control to its maximum position. Reduce the oscillator input until a slight indication is obtained in the output indicator.
- (c) Refer to Figure 6. Adjust each trimmer of the I. F. transformers until a maximum output is obtained. Go over the adjustments a second time.

RCA MFG. CO., INC.

MODELS 128E, 224E
Parts List

REPLACEMENT PARTS

Stock No.	Description	List Price	Stock No.	Description	List Price	Stock No.	Description	List Price
4427	Bracket—Volume control or tone control mounting bracket.	\$0.18	3218	Resistor—600 ohms—Carbon type— $\frac{1}{4}$ watt (R2, R6, R8)—Package of 5.	\$1.00	9511	Transformer—Power transformer—105-125 volts—50-60 cycles (T1).	\$4.78
2747	Cap—Control cap—Package of 5.	.50	4370	Resistor—1000 ohms—Carbon type— $\frac{1}{4}$ watt (R3, R7)—Package of 10.	2.00	9512	Transformer—Power transformer—105-115 volts—25-40 cycles.	6.58
3861	Capacitor—Adjustable trimmer capacitor (C20).	.78	3997	Resistor—4000 ohms—Carbon type— $\frac{1}{4}$ watt (R14)—Package of 5.	1.00	9513	Transformer—Power transformer—105-250 volts—40-60 cycles.	4.85
4442	Capacitor—50 mmfd. (C47).	.22	6318	Resistor—10,000 ohms (R21).	.80	4519	Volume control (R12).	1.25
4662	Capacitor—80 mmfd. (C37).	.28	3114	Resistor—50,000 ohms—Carbon type— $\frac{1}{4}$ watt (R16, R18)—Package of 5.	1.00	DRIVE ASSEMBLIES		
4413	Capacitor—360 mmfd. (C21).	.22	3602	Resistor—50,000 ohms—Carbon type— $\frac{1}{4}$ watt (R5)—Package of 5.	1.00	4362	Arm—Band indicator operating arm.	.28
4634	Capacitor—1120 mmfd. (C50).	.35	3118	Resistor—100,000 ohms—Carbon type— $\frac{1}{4}$ watt (R1, R4)—Package of 5.	1.00	10194	Ball—Steel ball for condenser drive assembly—Package of 20.	.25
4515	Capacitor—1160 mmfd. (C34).	.22	3116	Resistor—200,000 ohms—Carbon type— $\frac{1}{4}$ watt (R15)—Package of 5.	1.00	4422	Clutch—Clutch drive assembly for variable condenser drive.	.88
4670	Capacitor—2250 mmfd. (C14).	.30	6186	Resistor—500,000 ohms—Carbon type— $\frac{1}{4}$ watt (R17)—Package of 5.	1.00	4510	Drive—Tuning condenser drive assembly.	2.42
4523	Capacitor—2400 mmfd. (C17).	.26	3033	Resistor—1 megohm—Carbon type— $\frac{1}{4}$ watt (R10)—Package of 5.	1.00	4361	Indicator—Band indicator (celluloid).	.12
4524	Capacitor—2850 mmfd. (C25).	.35	6242	Resistor—2 megohms—Carbon type— $\frac{1}{4}$ watt (R11, R13)—Package of 5.	1.00	4732	Scale—Station selector dial scale.	.40
4435	Capacitor—0.02 mfd. (C39).	.25	3413	Resistor—5000 ohms—Carbon type— $\frac{1}{4}$ watt (R22, R23)—Package of 5.	1.00	3943	Screw—Dial light screen (celluloid)—Package of 2.	.18
4518	Capacitor—0.05 mfd. (C35).	.52	4513	Resistor—30,000 ohms—Carbon type—3 watts (R20).	1.00	3993	Screw—Number 6-32-5/32 square head set screws for band indicator operating arm—Package of 10.	.25
4417	Capacitor—0.05 mfd. (C4, C12, C29).	.32	4521	Shield—Antenna R. F. or oscillator coil shield.	.70	4669	Screw—Number 8-32-5/32 set screw for variable condenser drive assembly—Package of 10.	.25
3877	Capacitor—0.1 mfd. (C40).	.30	4145	Shield—Fire detector or output Radiotron shield.	1.05	4377	Spring—Band indicator and arm tension spring—Package of 5.	.25
4415	Capacitor—0.1 mfd. (C6, C15, C30).	.30	4103	Shield—1 P. amplifier Radiotron shield.	1.05	4378	Screw—Band indicator operating arm stud—Package of 5.	.25
4645	Capacitor—0.1 mfd. (C7, C26).	.25	6955	Shield—R. F. amplifier Radiotron shield.	.30			
3597	Capacitor—0.25 mfd. (C38, C45).	.40	3782	Shield—Second detector Radiotron shield.	1.64			
4525	Capacitor—4.0 mfd. (C36).	.70	3529	Socket—Dial lamp socket.	.32			
4428	Capacitor—8.0 mfd. (C44).	1.05	3859	Socket—4-contact Radiotron socket.	.30			
7790	Capacitor—10.0 mfd. (C43).	1.05	6676	Socket—6-contact output Radiotron socket.	.40			
4692	Capacitor pack—Comprising one 0.035 mfd. and one 0.005 mfd. capacitors (C41, C42).	.30	7485	Socket—6-contact Radiotron socket.	.40			
7589	Capacitor pack—Comprising two 4.0 mfd. capacitors (C16, C46).	1.64	3572	Socket—7-contact Radiotron socket.	.38			
4358	Clamp—Electrolytic capacitor mounting clamp.	.15	4379	Strip—Antenna terminal engraved "ANT-GND".	.20			
4734	Coil—Antenna coil "A" (L26, L27, C51).	3.05	4684	Switch—Operating switch (S11).	.45			
7803	Coil—Antenna coil "B & C" (L1, L2, L5, L6, C1, C5).	1.82	4728	Switch—Range switch (S1, S2, S3, S4, S5, S6, S7, S8, S9, S10).	4.32			
4751	Coil—Detector coil "A" (L28, L29, C52).	2.58	4517	Tone control (R19).	.90			
7805	Coil—Detector coil "B & C" (L7, L8, L11, L12, C8, C9, C11).	2.15	4431	Transformer—Five intermediate frequency transformer (L19, L20, C27, C28, C48).	2.28			
7807	Coil—Oscillator coil "B & C" (L13, L14, L17, L18, C19, C24).	1.62	4433	Transformer—Second intermediate frequency transformer (L21, L22, C31, C32, C33, R9).	2.15			
4733	Coil—Oscillator coil "A" (L30, L31, C53).	3.05						
7801	Condenser—3 gang variable tuning condenser (C5, C13, C18).	4.42						
4340	Lamp—Dial lamp—Package of 5.	.60						
3632	Resistor—500 ohms—Carbon type—1 watt (R24)—Package of 5.	1.10						

REPRODUCER ASSEMBLY
TABLE MODELCable—3-conductor—Reproducer cable.
Reproducer complete.REPRODUCER ASSEMBLY
CONSOLE MODELBoard—Terminal board assembly.
Coil—Field coil, magnet and cone support (L24).Cone—Reproducer cone (L23)—Package of 5.
Reproducer—Complete.

Transformer—Output transformer (T2).

MISCELLANEOUS ASSEMBLY

Bezel—Station selector dial (acrylic) bezel.
Glass—Station selector dial glass.Indicator—Station selector indicator pointer.
Knob—Station selector, volume control, tone control, range switch or operating switch knob—Package of 5.

Ring—Dial glass retaining ring—Package of 5.

Screw—Chassis mounting screw assembly comprising 4 spacers, 4 screws, 4 lock washers, 4 washers, 8 cushions—For table model.

Screw—Chassis mounting screw assembly—Comprising 4 spacers, 4 screws, 4 lock washers, 4 washers and 8 cushions—For console model.

Screw—Number 8-32-7/16 headless set screw for knobs—Package of 10.