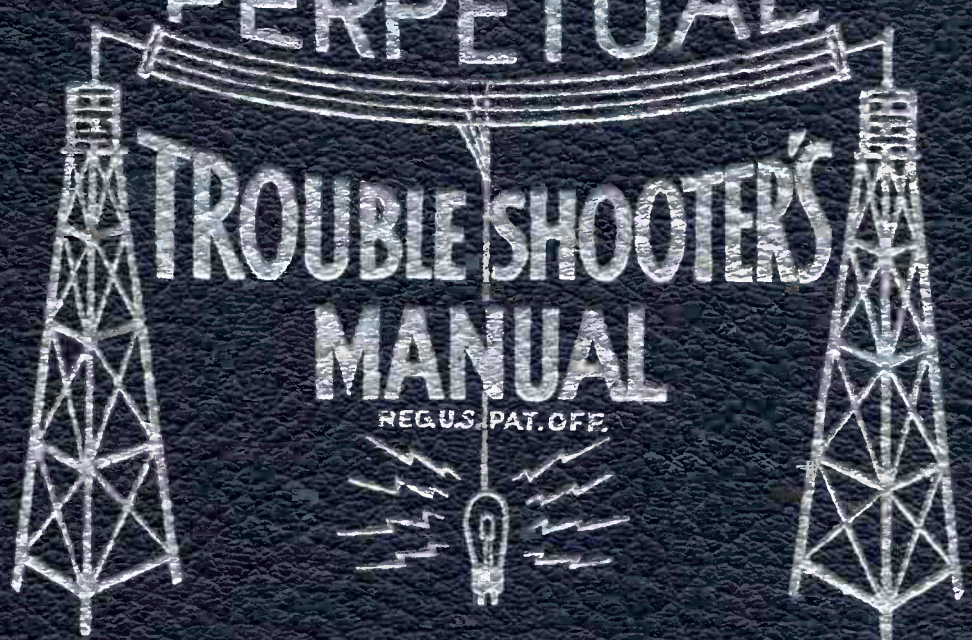
VOLUME X

PERPETUAL TROUBLESHOOTER'S MANUAL

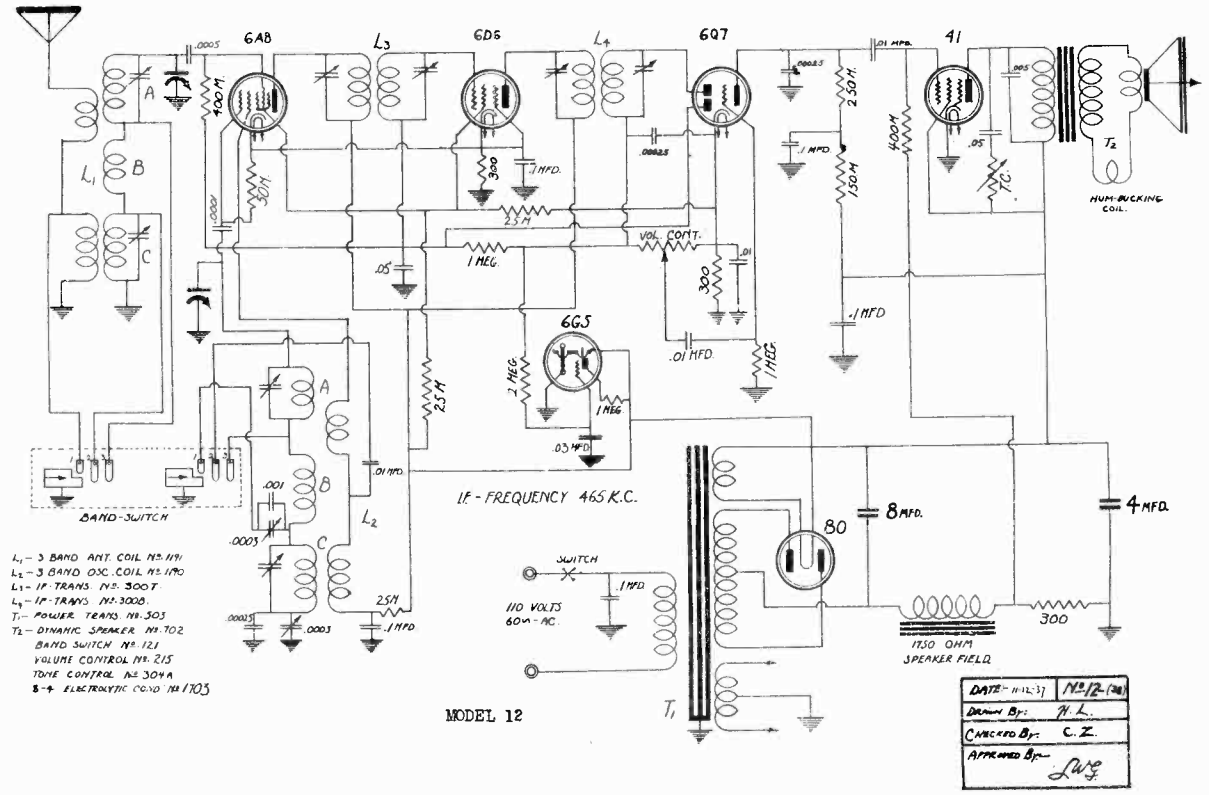
REG. U.S. PAT. OFF.



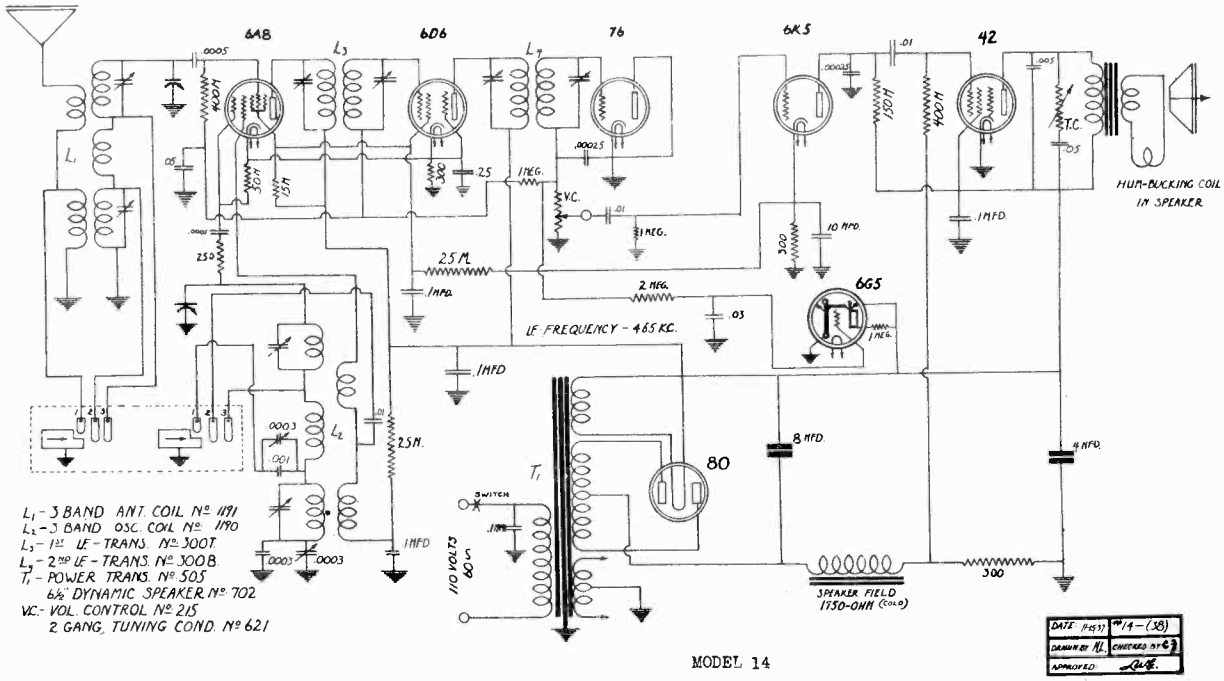
JOHN F. RIDER

PACIFIC RADIO CORP.

MODEL 12
MODEL 14
Schematics



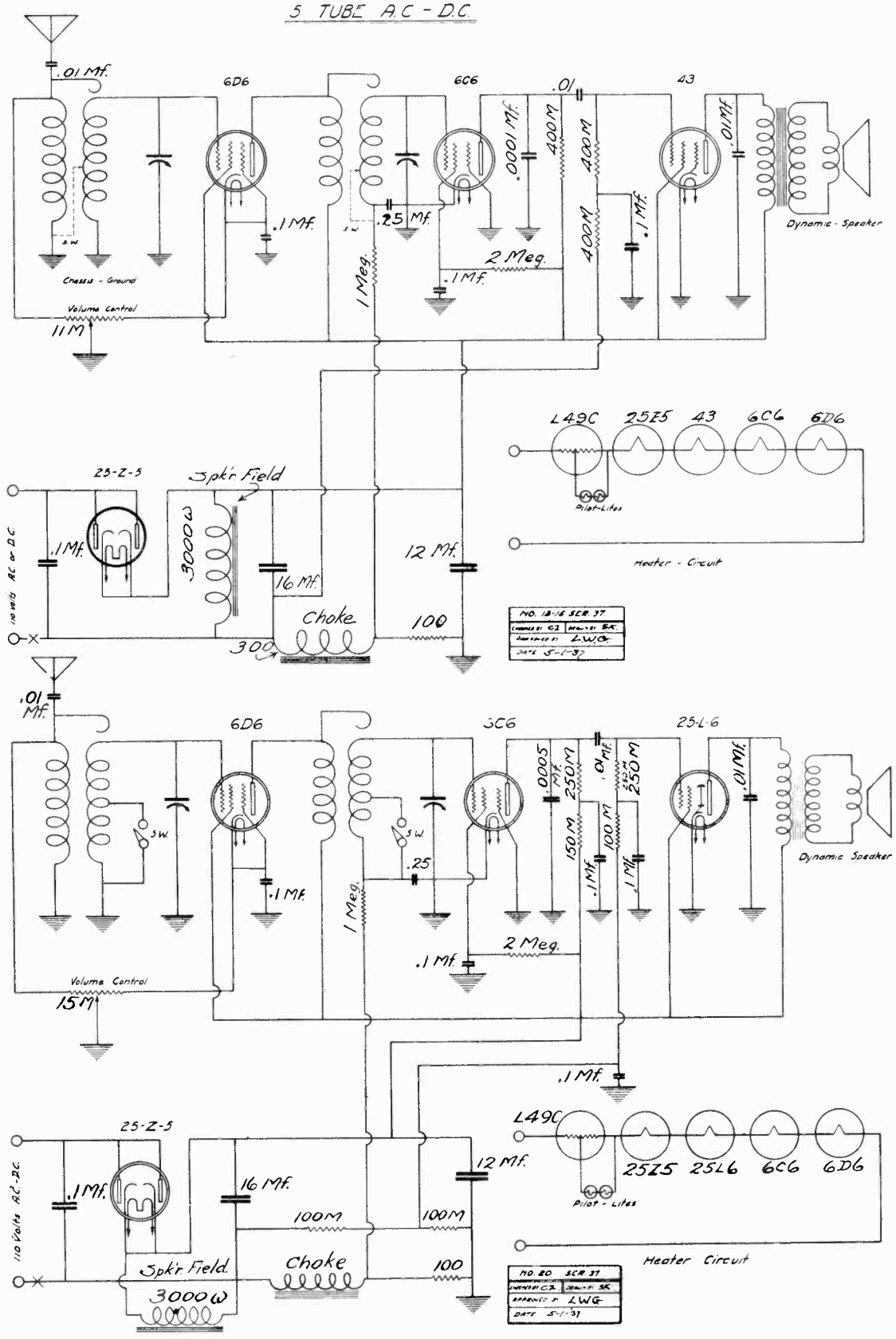
MODEL 12



MODEL 14

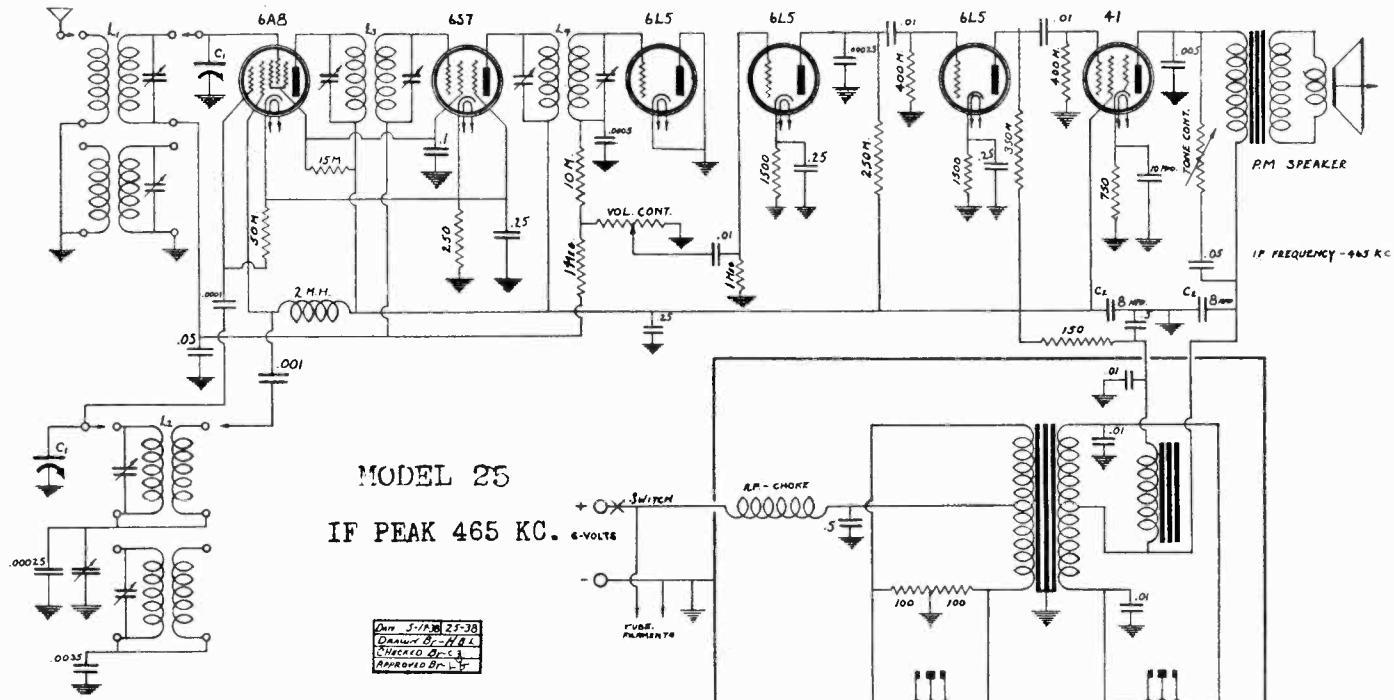
MODELS 15,16 Ser.37
MODEL 20,Ser.37
Schematics

PACIFIC RADIO CORP.



PACIFIC RADIO CORP.

MODEL 25
Schematic
Alignment

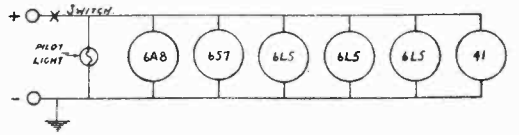


INTERMEDIATE FREQUENCY: Set oscillator to 465 KC. Feed this to the grid of the pentagrid (6A7) converter tube. Adjust trimmers on the intermediate frequency transformers for peak readings as indicated on the output meter which is to be placed across the output transformer.

BROADCAST BAND: Set the band switch for broadcast reception. Adjust oscillator to 1400 KC and connect the output of the generator to the antenna connection at the rear of the chassis through a .0002 mfd. mica condenser. Set the pointer on the dial to 1400 KC making sure that the volume control is set at its maximum position. Adjust the broadcast antenna and broadcast oscillator trimmers for maximum signal (as indicated on the output meter). Re-set the dial pointer on the receiver and on the test oscillator to 600 KC. Slowly increase or decrease the *broadcast padding* condenser while tuning back and forth across the signal with the station selector knob until the maximum reading is obtained on the output meter. Re-check the 1400 KC alignment as the adjustment at 600 KC may have slightly disturbed the original 1400 KC setting.

SHORT WAVE: Set band switch on short wave position. Connect the antenna of the radio receiver to the output of the test oscillator through a 400 ohm carbon resistor. Set oscillator and receiver dial at 15 megacycles. Adjust the short wave antenna and short wave oscillator trimming condensers for maximum output as indicated by readings on the output meter. No other adjustments are necessary for aligning this band.

It is advisable to check the sensitivity at 6000 KC to determine whether the circuits are properly aligned. Should the receiver lack sensitivity at this frequency check the .0035 mica condenser for short circuit.



L_1 - ANT. COIL Nº 430
L_2 - OSC. COIL Nº 431
L_3 - 1ST I.F. TRANSFORMER Nº 1017
L_4 - 2ND I.F. TRANSFORMER Nº 1018
BAND SWITCH Nº 129
TONE CONT. Nº 305
VOL. CONT. & SWITCH Nº 221

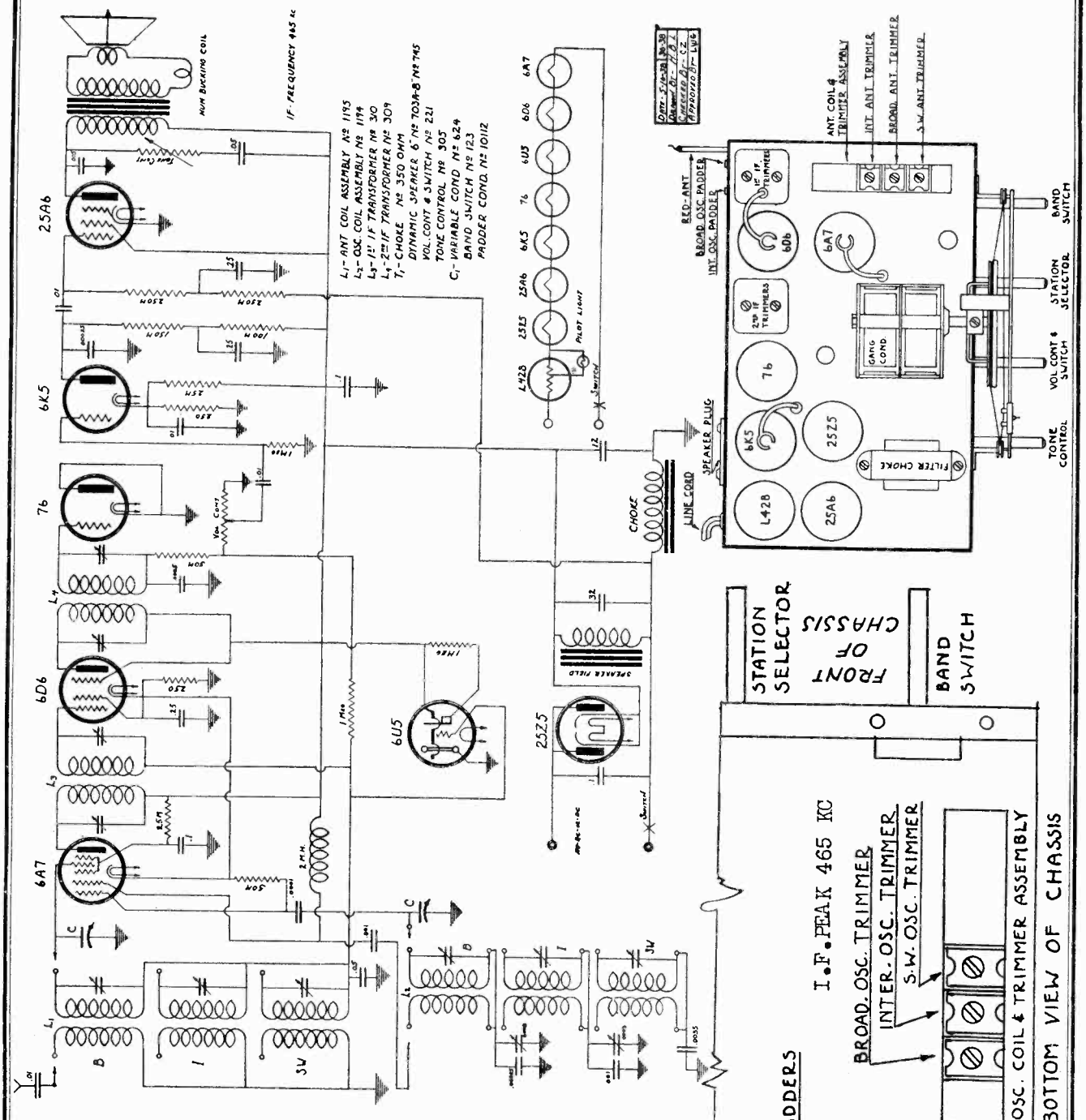
C_1 - TUNING COND. Nº 629
C_2 - FILTER COND. Nº 1720
SPEAKER 6" Nº 722 - 8" Nº 723
OUTPUT TRANSFORMER Nº 524
POWER TRANSFORMER Nº 526
VIBRATOR Nº 480

This receiver is designed to operate over two tuning ranges.

from 540 K.C. to 1730 and
from 5800 K.C. to 18000 K.C.

MODEL 36
Schematic, Socket
Trimmers

PACIFIC RADIO CORP.



MODEL 36 **110-115 volts A.C. or D.C.**

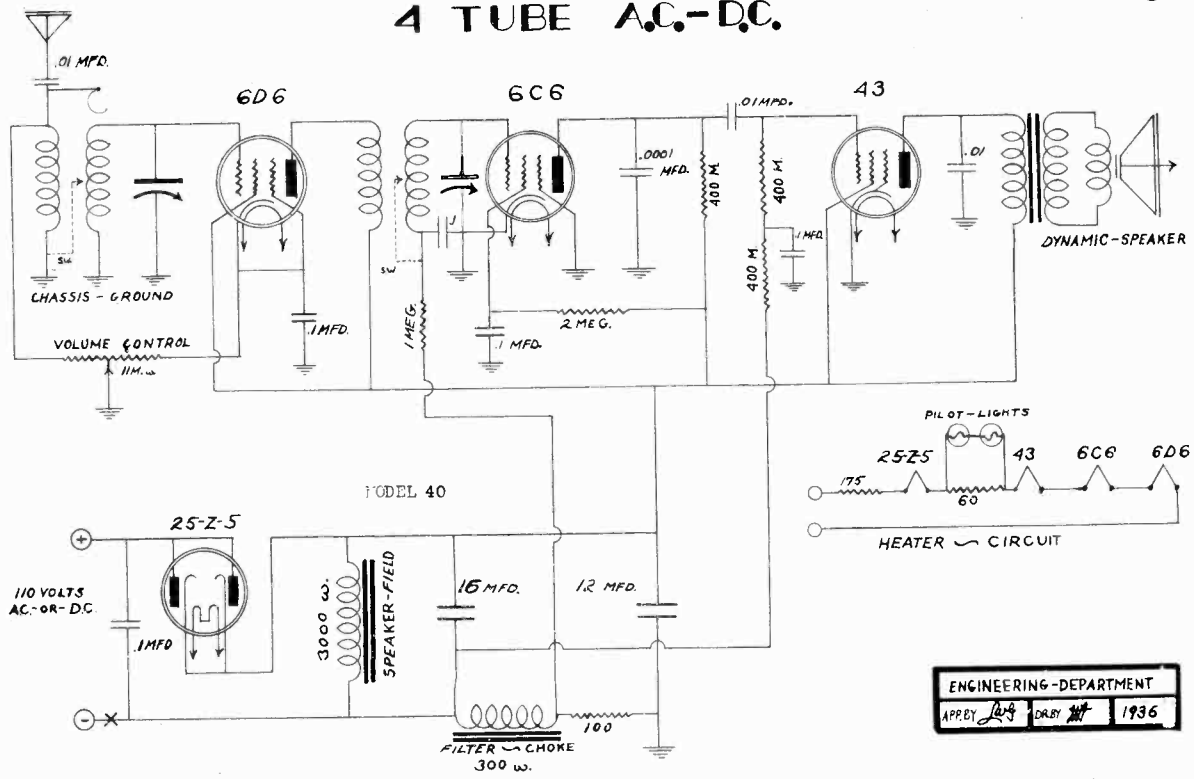
FOR ALIGNMENT, SEE THAT OF MODEL 35
ON PACIFIC PAGE 9-6, RIDER'S VOL. IX

SWITCH POSITION	*BAND*	*RANGE IN KILOCYCLES*
Left	Broadcast	540— 1710 KC
Center	Intermediate	1710— 5800 KC
Right	Short Wave (foreign)	5800—17500 KC

MODEL 40
Schematic
MODEL A60B
Schematic, Alignment

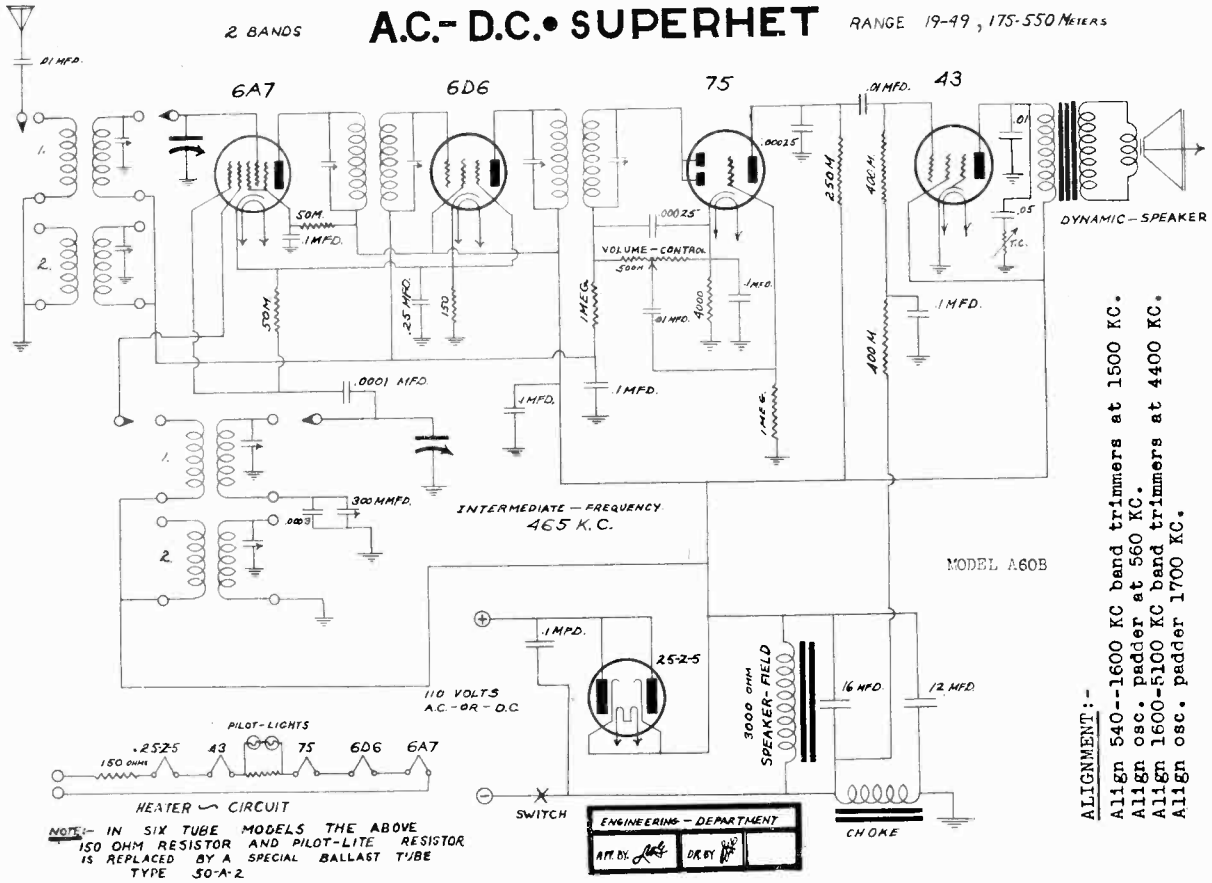
PACIFIC RADIO CORP.

4 TUBE A.C.-D.C.



ENGINEERING-DEPARTMENT
APP'D BY [signature] DR'D BY [signature] 1936

2 BANDS A.C.-D.C. SUPERHET RANGE 19-49, 175-550 METERS



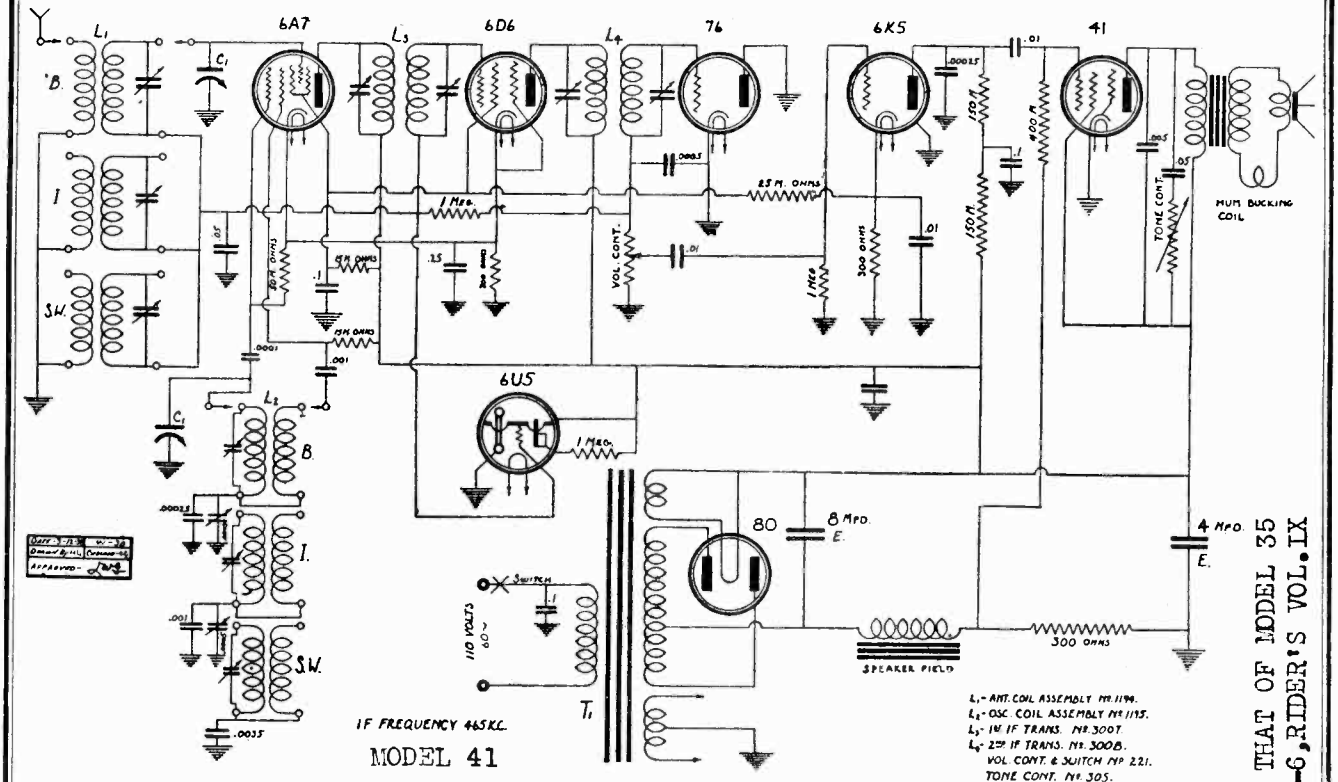
NOTE:- IN SIX TUBE MODELS THE ABOVE 150 OHM RESISTOR AND PILOT-LITE RESISTOR IS REPLACED BY A SPECIAL BALLAST TUBE TYPE 50-A-2

ENGINEERING-DEPARTMENT
APP'D BY [signature] DR'D BY [signature]

ALIGNMENT:-
Align 540--1600 KC band trimmers at 1500 KC.
Align osc. padder at 560 KC.
Align 1600-5100 KC band trimmers at 4400 KC.
Align osc. padder 1700 KC.

MODEL 41
Schematic, Socket
Trimmers

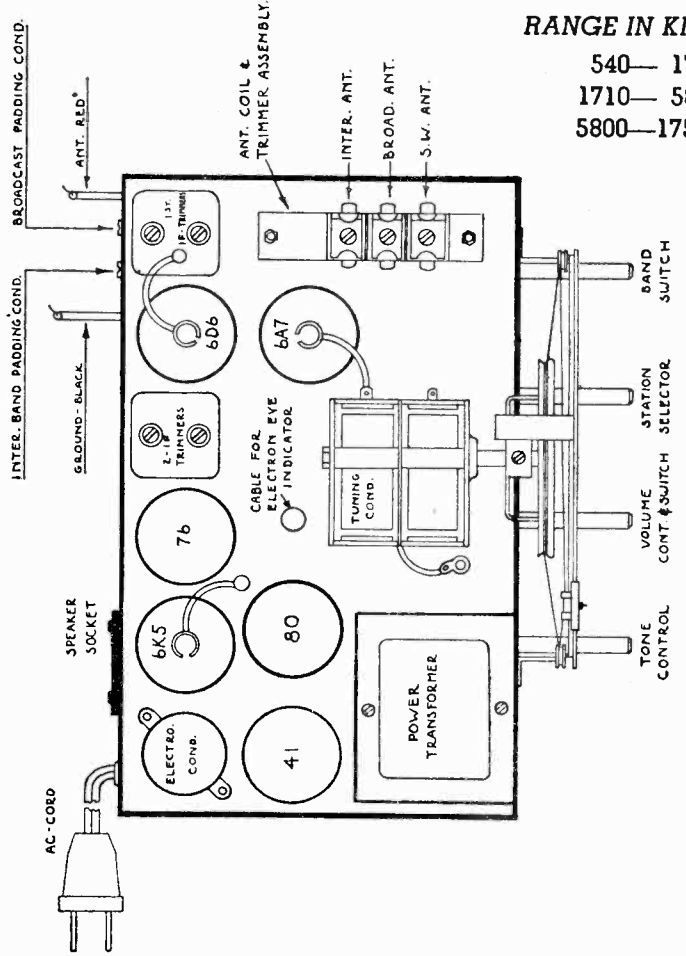
PACIFIC RADIO CORP.

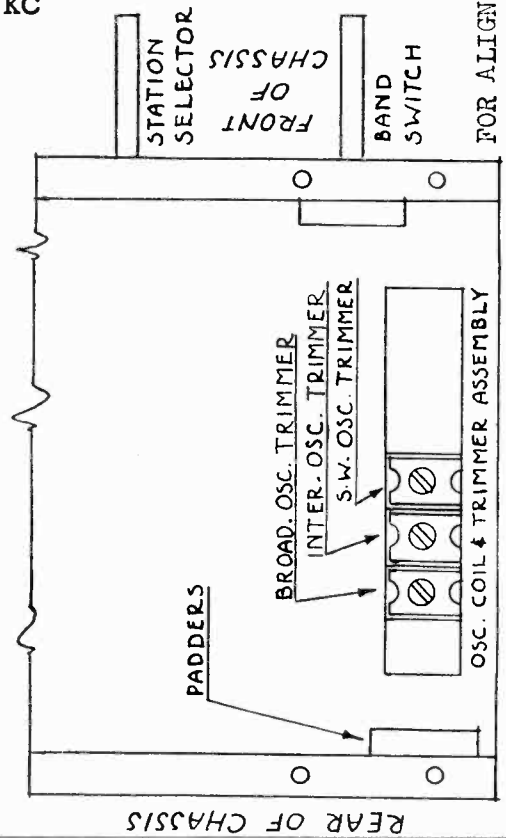


L1 - ANT. COIL ASSEMBLY Nº 1196.
L2 - OSC. COIL ASSEMBLY Nº 1195.
L3 - 1st IF TRANS. Nº 3001.
L4 - 2nd IF TRANS. Nº 3008.
VOL. CONT. & SWITCH Nº 221.
TONE CONT. Nº 305.
T1 - POWER TRANS. Nº 529.
DYNAMIC SPEAKER 6" Nº 702A.
DYNAMIC SPEAKER 8" Nº 703.
E - ELECTROLYTIC FILTER COND. Nº 180.
BAND SWITCH Nº 123.
C1 - GANG COND. Nº 624.

RANGE IN KILOCYCLES

540— 1710 KC
1710— 5800 KC
5800—17500 KC



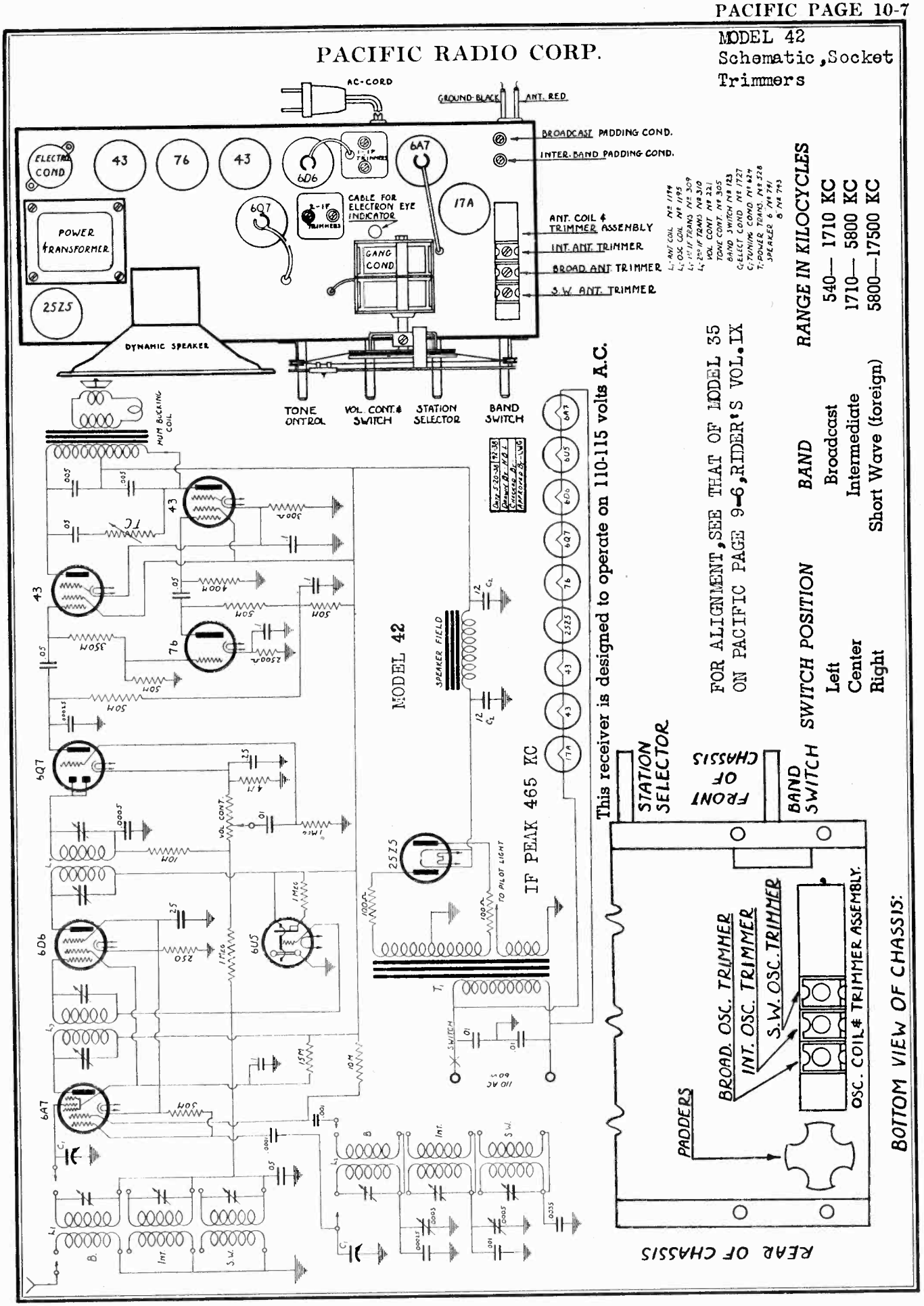


BOTTOM VIEW OF CHASSIS

FOR ALIGNMENT, SEE THAT OF MODEL 35 ON PACIFIC PAGE 9-6, RIDER'S VOL. IX

PACIFIC RADIO CORP.

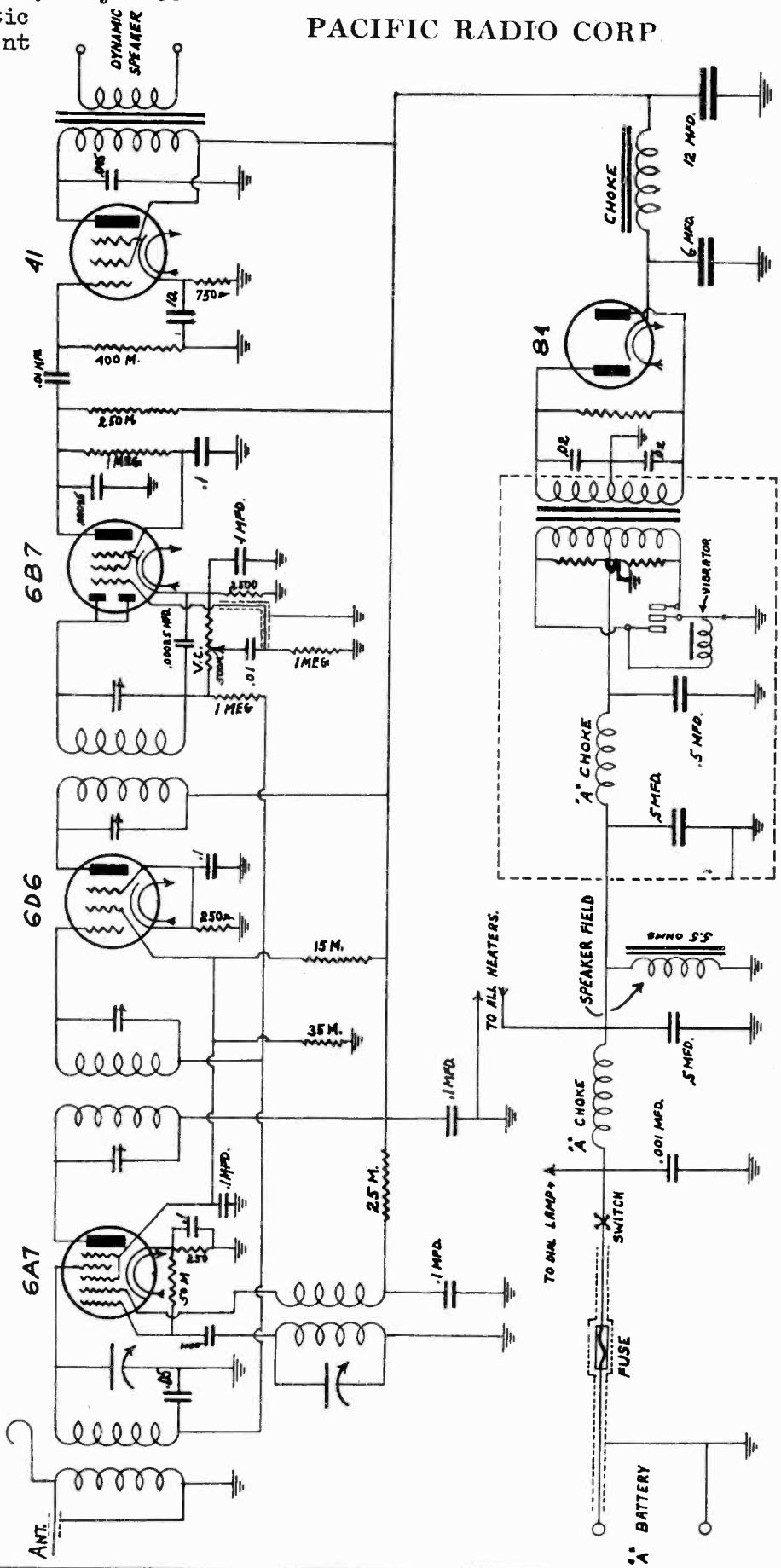
MODEL 42
Schematic, Socket Trimmers



MODEL 101, Early 1935
Schematic
Alignment

PACIFIC RADIO CORP

5 TUBE AUTO RADIO



CONVENTIONAL ALIGNMENT, SEE SPECIAL SECTION VOLUME VIII

ENGINEERING DEPARTMENT		
CIRCUIT — 5 TUBE AUTO SUPERHET		
DRAWN BY	CHK BY	APRIL 1, 1935

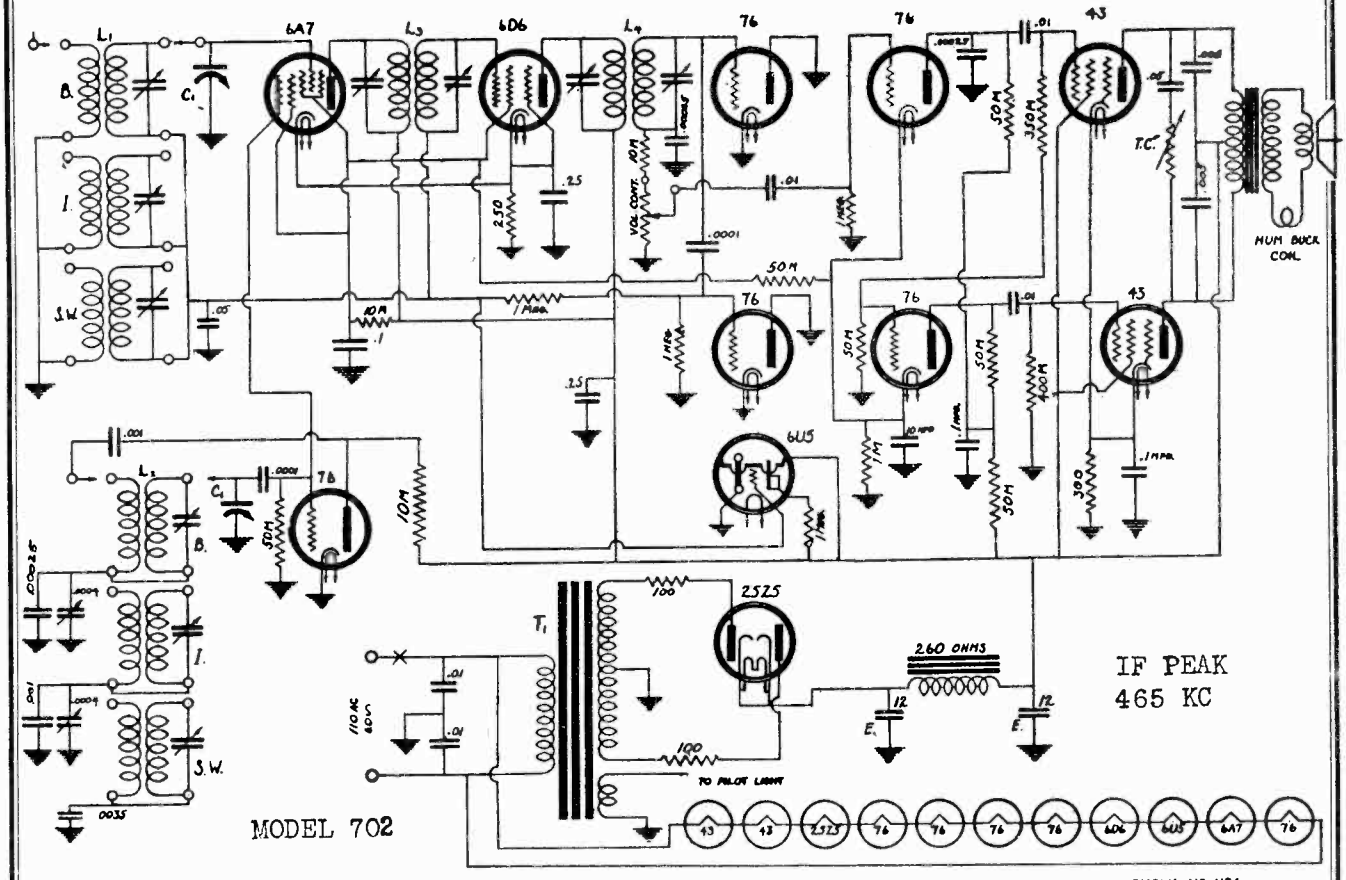
ALIGNMENT

INT. FREQ. PEAK---456 KC

ALIGN TRIMMER CONDENSERS AT 1400 KC

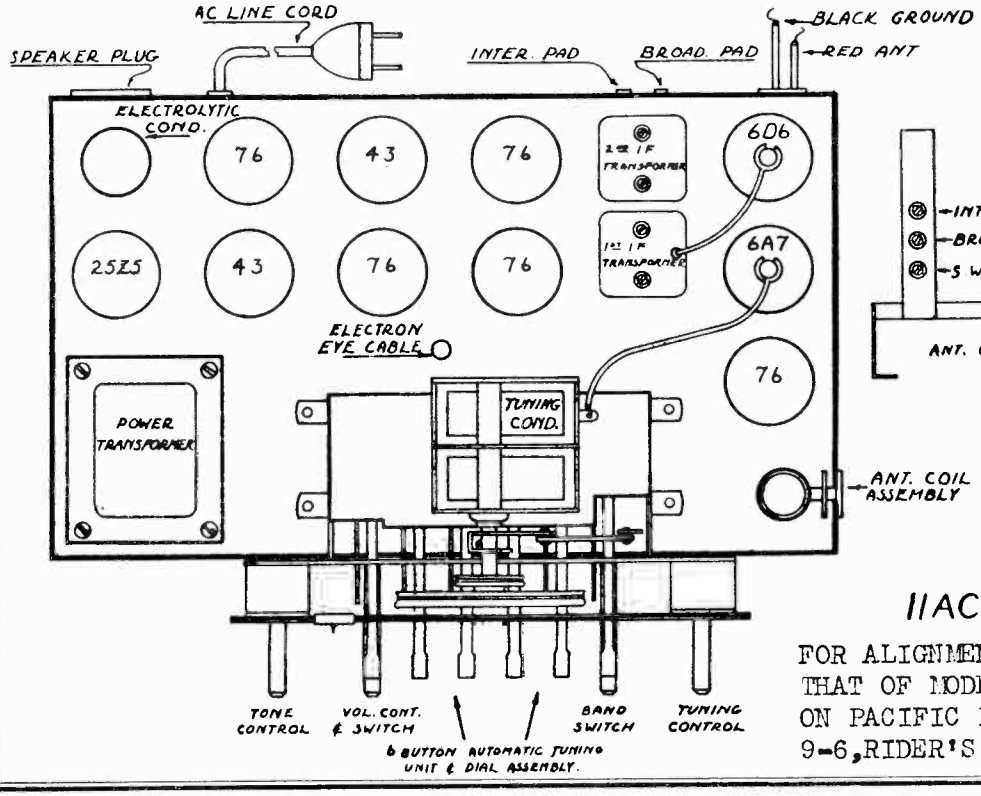
PACIFIC RADIO CORP.

MODEL 702
Schematic, Socket
Trimmers



This receiver is designed to operate on 110-115 volts A.C. 60 cycles.

L_1 - ANT. COIL ASSEMBLY No. 1194.
L_2 - OSC. COIL ASSEMBLY No. 1195.
L_3 - 1st IF TRANSFORMER No. 309.
L_4 - 2nd IF TRANSFORMER No. 310.
T_1 - POWER TRANSFORMER No. 528.
DYNAMIC SPEAKER 6" No. 741 8" No. 742.
VOL. CONT. & SWITCH No. 221.
TONE CONTROL No. 305.
C_1 - VARIABLE COND. No. 624.
E - ELECTROLYTIC FILTER COND. No. 1189.
BAND SWITCH No. 123.
PADDER COND. No. 1012.



RANGE IN KILOCYCLES

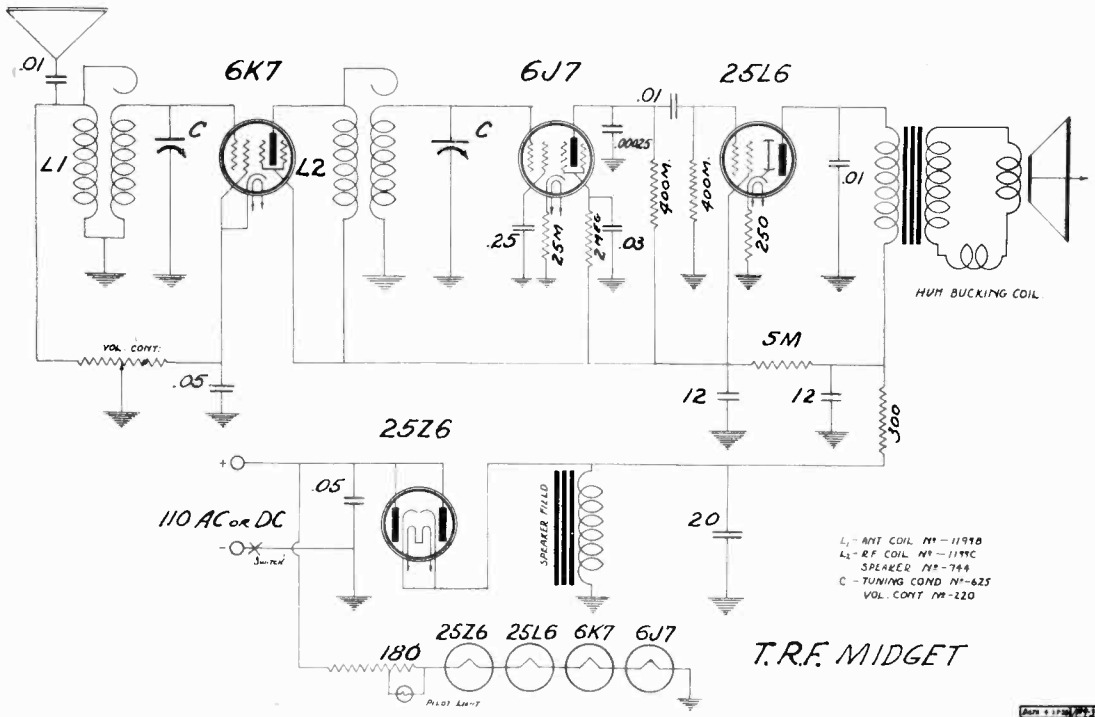
BAND	
Broadcast	540— 1710 KC
Intermediate	1710— 5800 KC
Short Wave (foreign)	5800—17500 KC

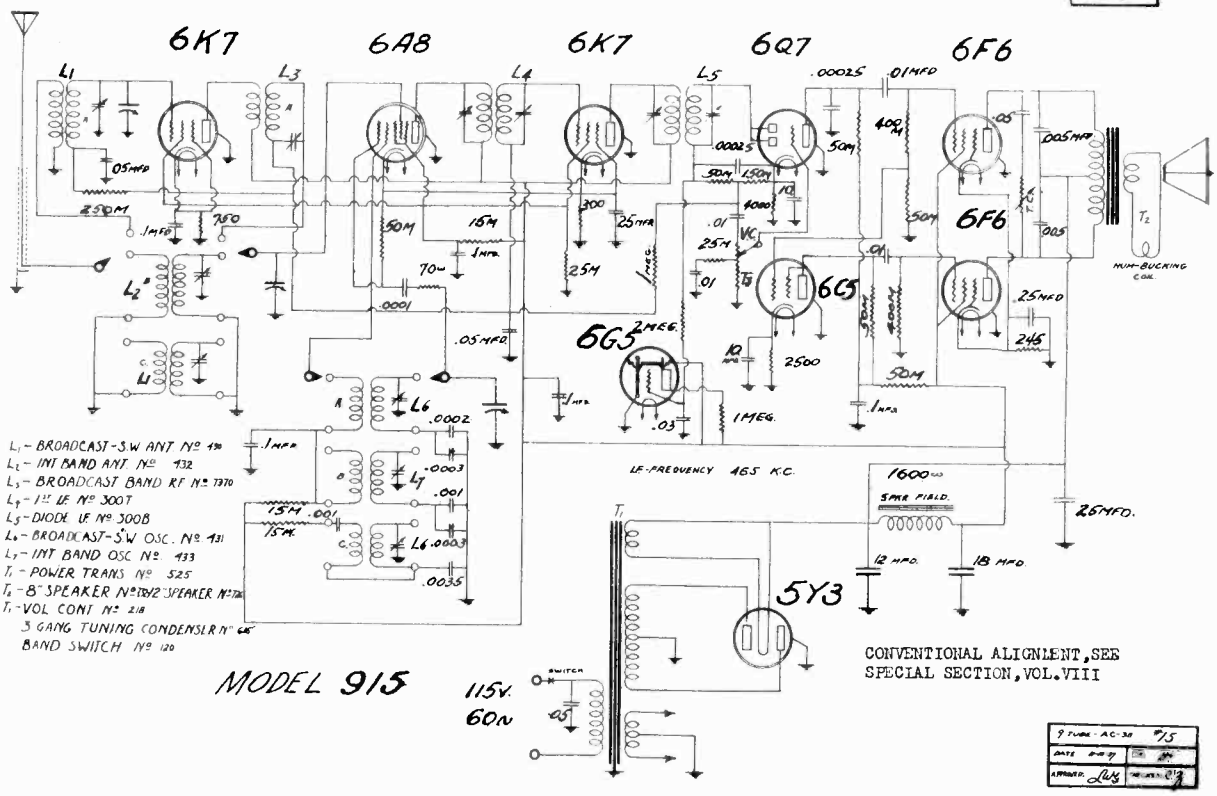
IIAC

FOR ALIGNMENT, SEE THAT OF MODEL 35 ON PACIFIC PAGE 9-6, RIDER'S VOL. IX

MODEL TRF Midget
Schematic
MODEL 915
Schematic, Alignment

PACIFIC RADIO CORP.

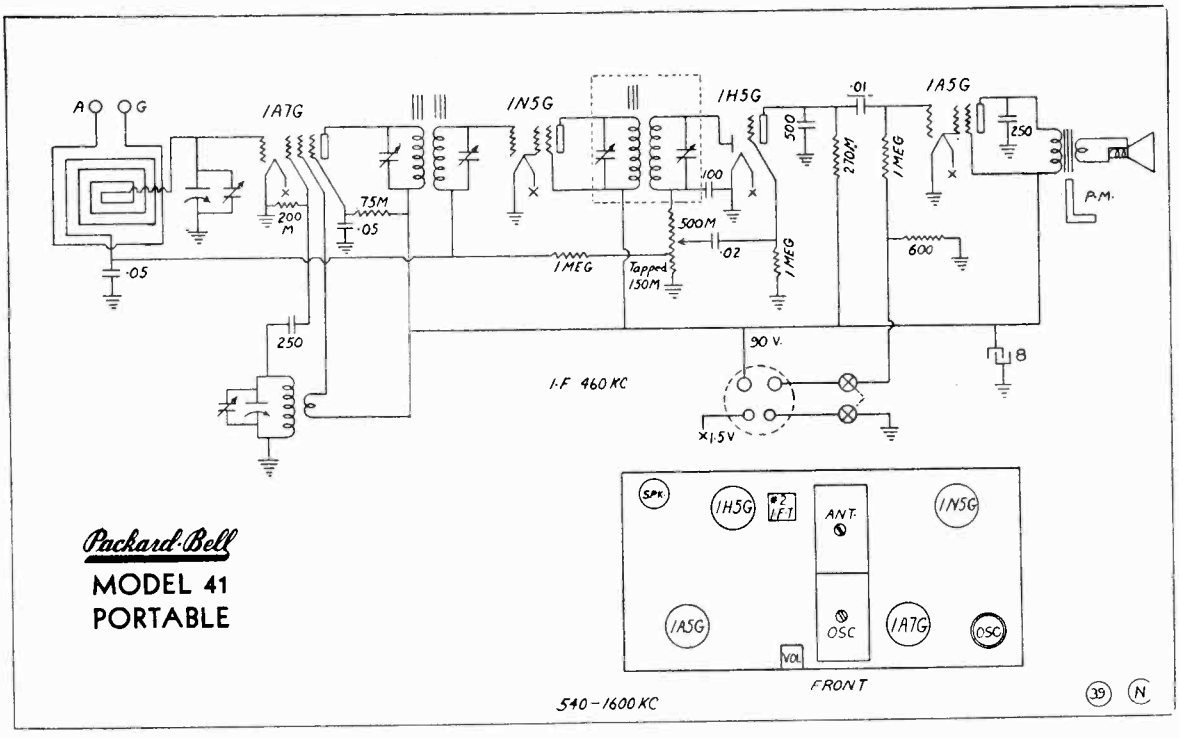


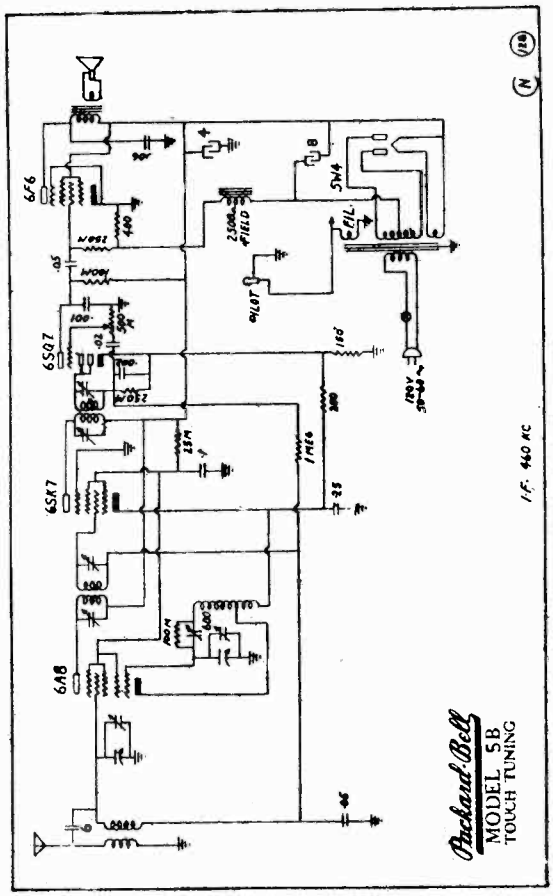


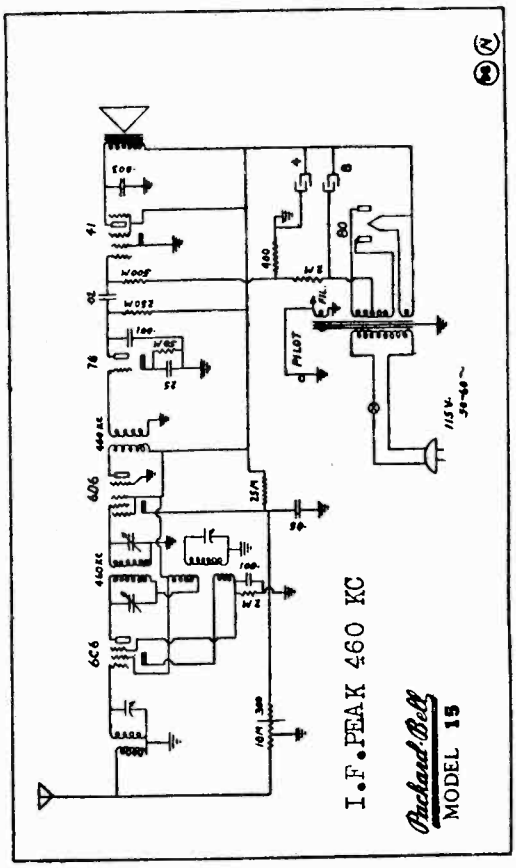
MODEL 41
Schematic, Socket
Trimmers

PACKARD BELL CO.

MODEL 5B
MODEL 15
Schematics





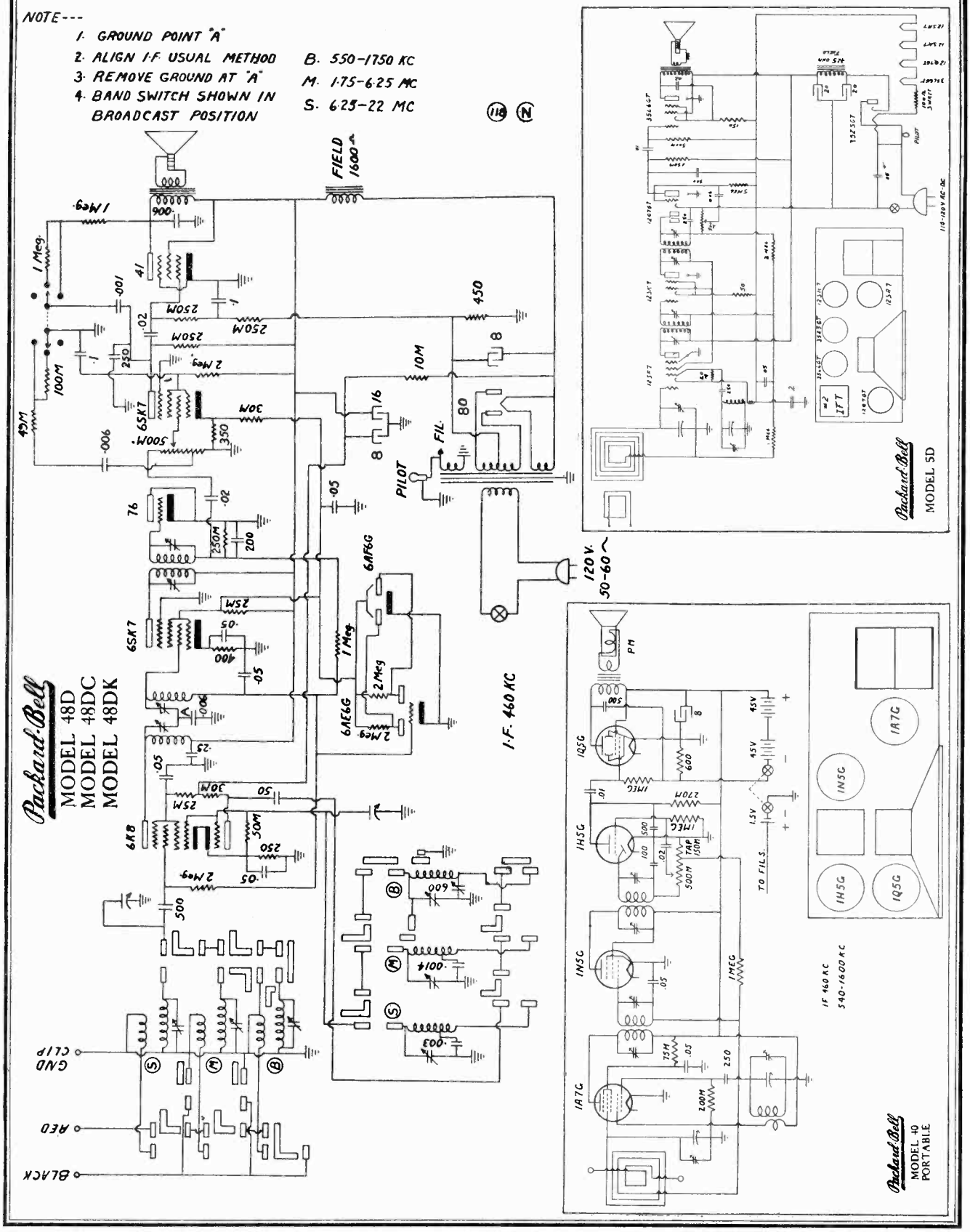


MODEL 5D
MODEL 40 Portable
Schematics, Socket
MODELS 48D, 48DC, 48DK
Schematic

PACKARD BELL CO.

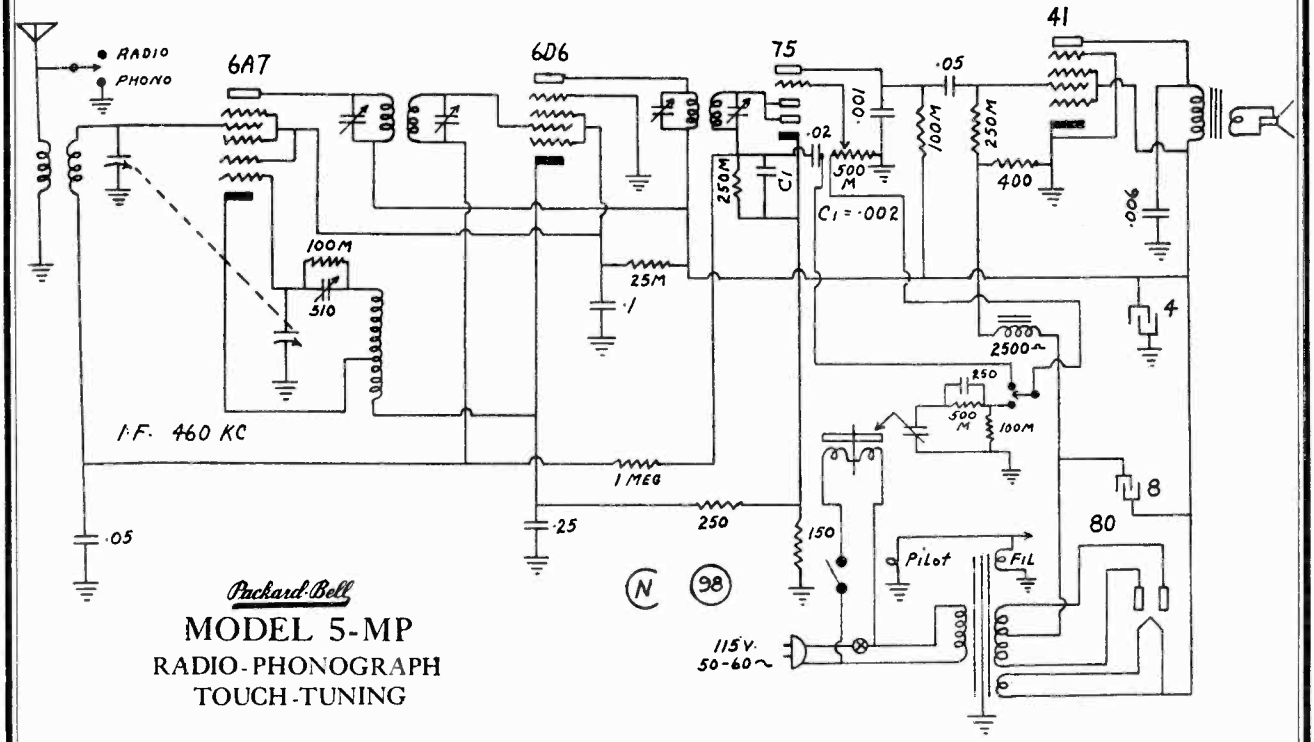
NOTE---
1. GROUND POINT "A"
2. ALIGN I.F. USUAL METHOD
3. REMOVE GROUND AT "A"
4. BAND SWITCH SHOWN IN BROADCAST POSITION

B. 550-1750 KC
M. 1.75-6.25 MC
S. 6.25-22 MC

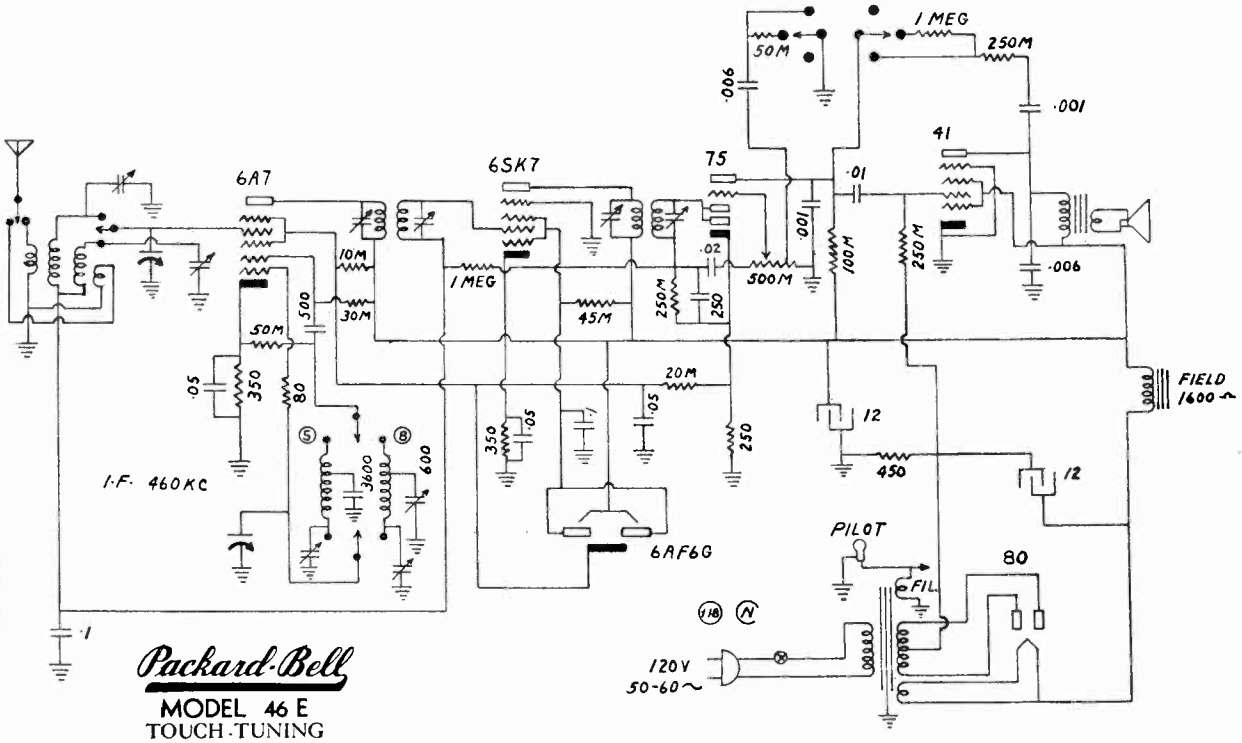


PACKARD BELL CO.

MODEL 5MP
MODEL 46E
Schematics



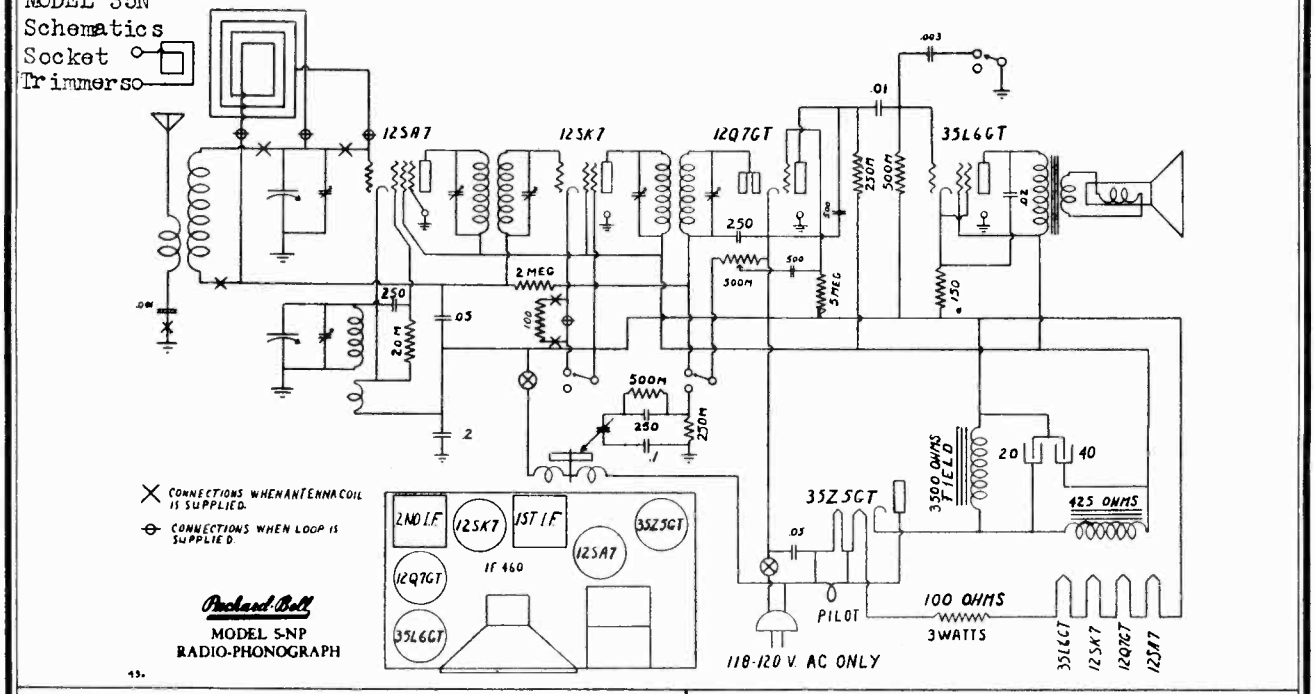
Packard-Bell
MODEL 5-MP
RADIO-PHONOGRAPH
TOUCH-TUNING



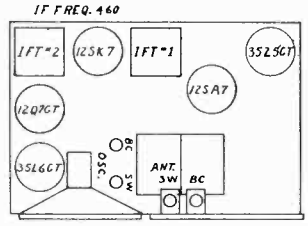
Packard-Bell
MODEL 46 E
TOUCH-TUNING

MODEL 5N
MODEL 5NP
MODEL 35N
Schematics
Socket
Trimmers

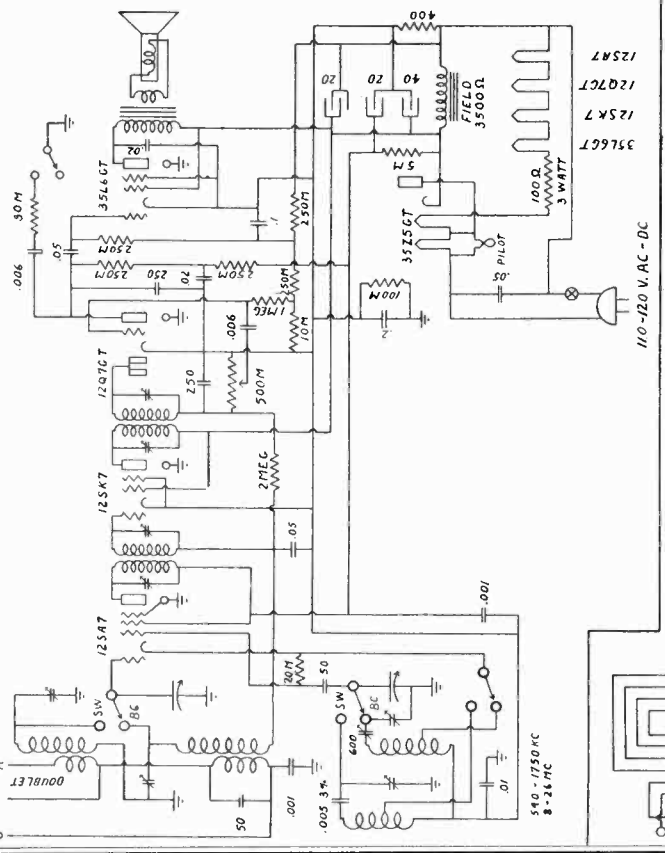
PACKARD BELL CO.

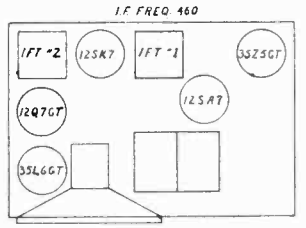


Packard-Bell
MODEL 5-NP
RADIO-PHONOGRAPH

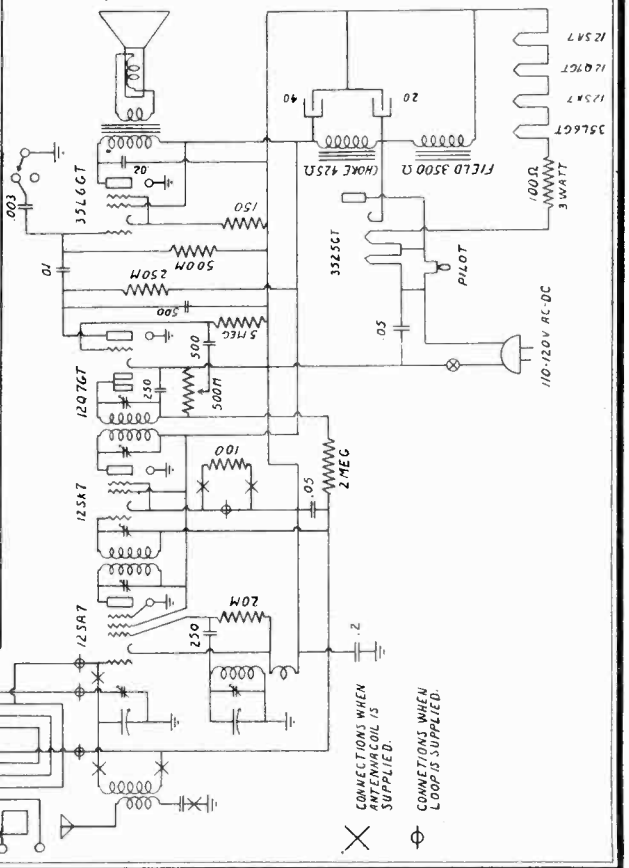


Packard-Bell
MODEL 35-N

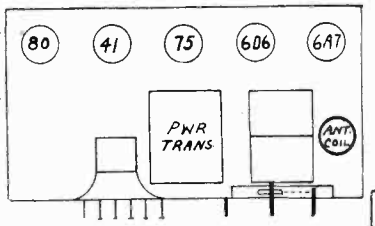




Packard-Bell
MODEL 5-N



TOUCH TUNING PROCEDURE. Station with lowest frequency is assigned to Button No.1. Push this to "IN" position, select station by turning Osc. screw No.1 for maximum volume and adjust further with Ant.Trimmer screw No.1. Set other four buttons in the same way with their respective adjustments. Do not use button marked "Dial" to change from manual tuning; just push button for station desired.



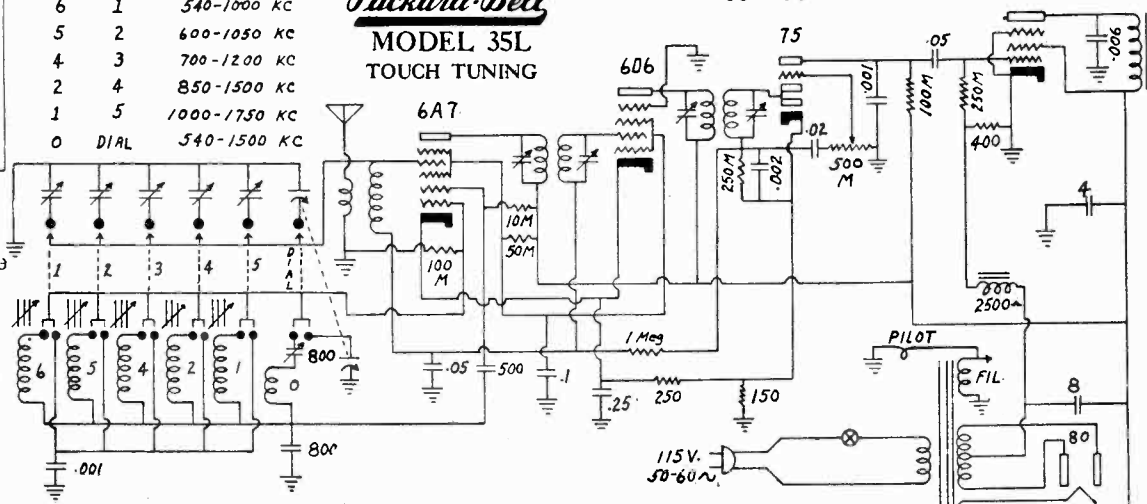
COIL	BUTTON	RANGE
6	1	540-1000 KC
5	2	600-1050 KC
4	3	700-1200 KC
2	4	850-1500 KC
1	5	1000-1750 KC
0	DIAL	540-1500 KC

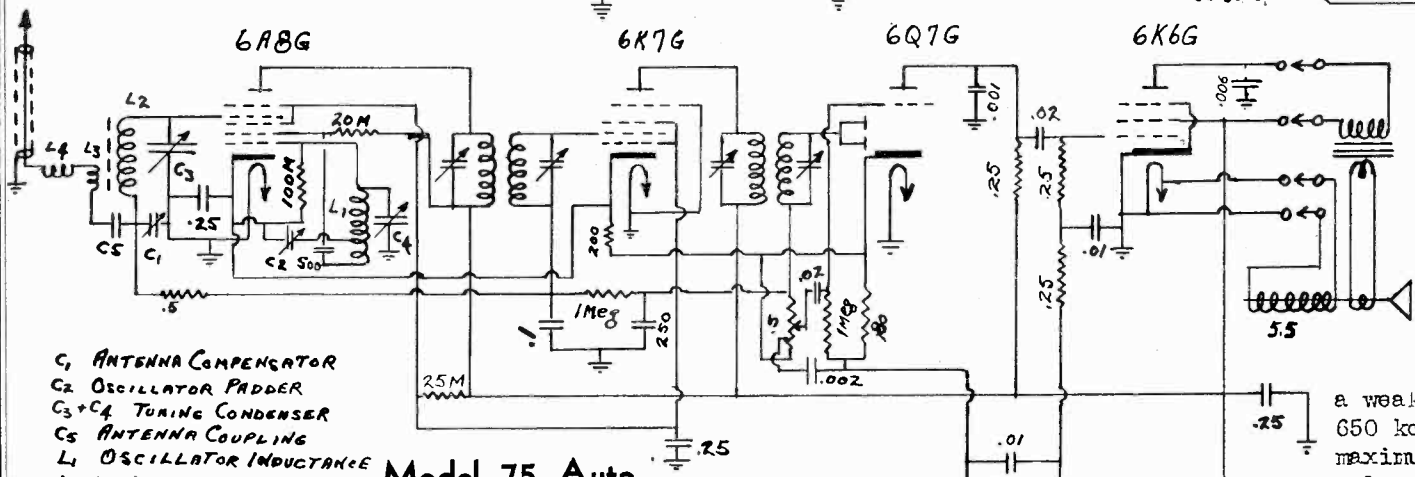
Packard-Bell

MODEL 35L

TOUCH TUNING

IF PEAK 460 KC.

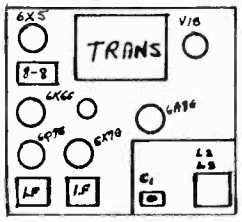


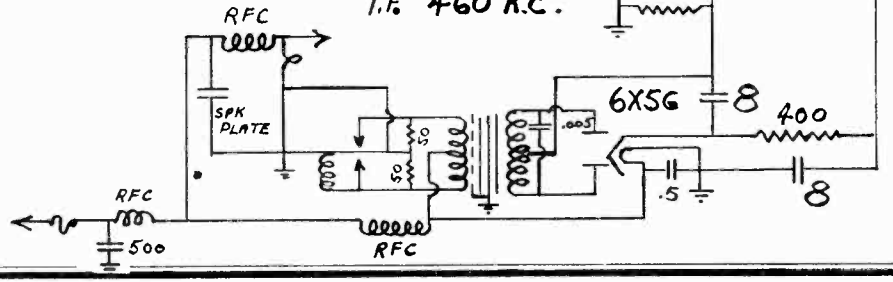


C1 Antenna Compensator
C2 Oscillator Padder
C3+C4 Tuning Condenser
C5 Antenna Coupling
L1 Oscillator Inductance
L2-L3 Iron Core Trans
L4 Spark Filter

Model 75 Auto

I.F. 460 K.C.

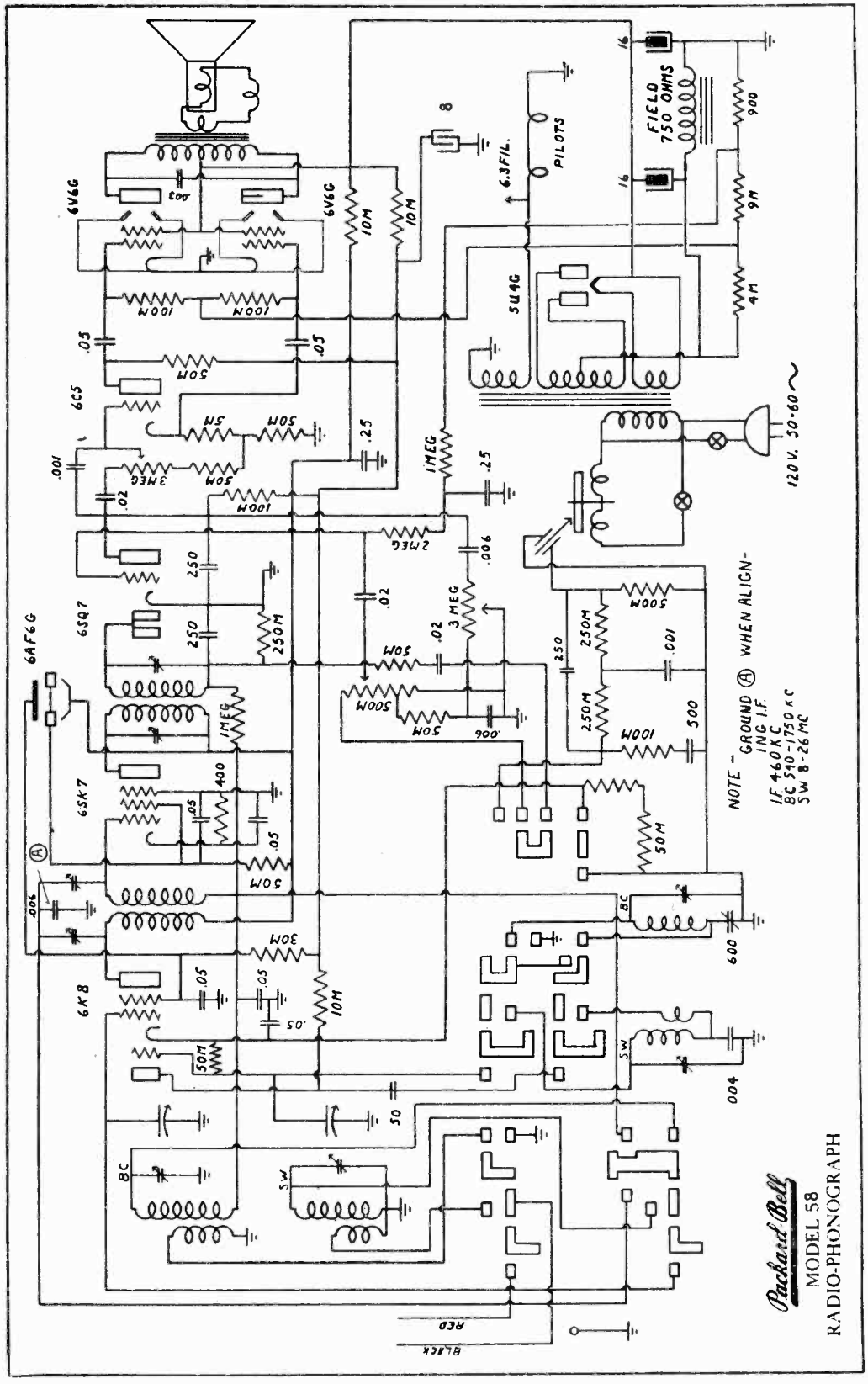




Ant.Trimmer is in front corner of box. To trim remove button in box. Turn station knob until stop is reached; Adjust pointer to the right hand stop line on dial face. Tune in a weak signal between 550 and 650 kc and adjust trimmer for maximum volume. This is the only adjustment to match the receiver to the antenna. If antenna capacity is too high, use a series by-pass condenser, 250-500 mmf at the receiver and shield it. Dial adjustment is made by removing the pilot light in rear of control head and inserting a small screwdriver in slot, turning pointer to desired setting.

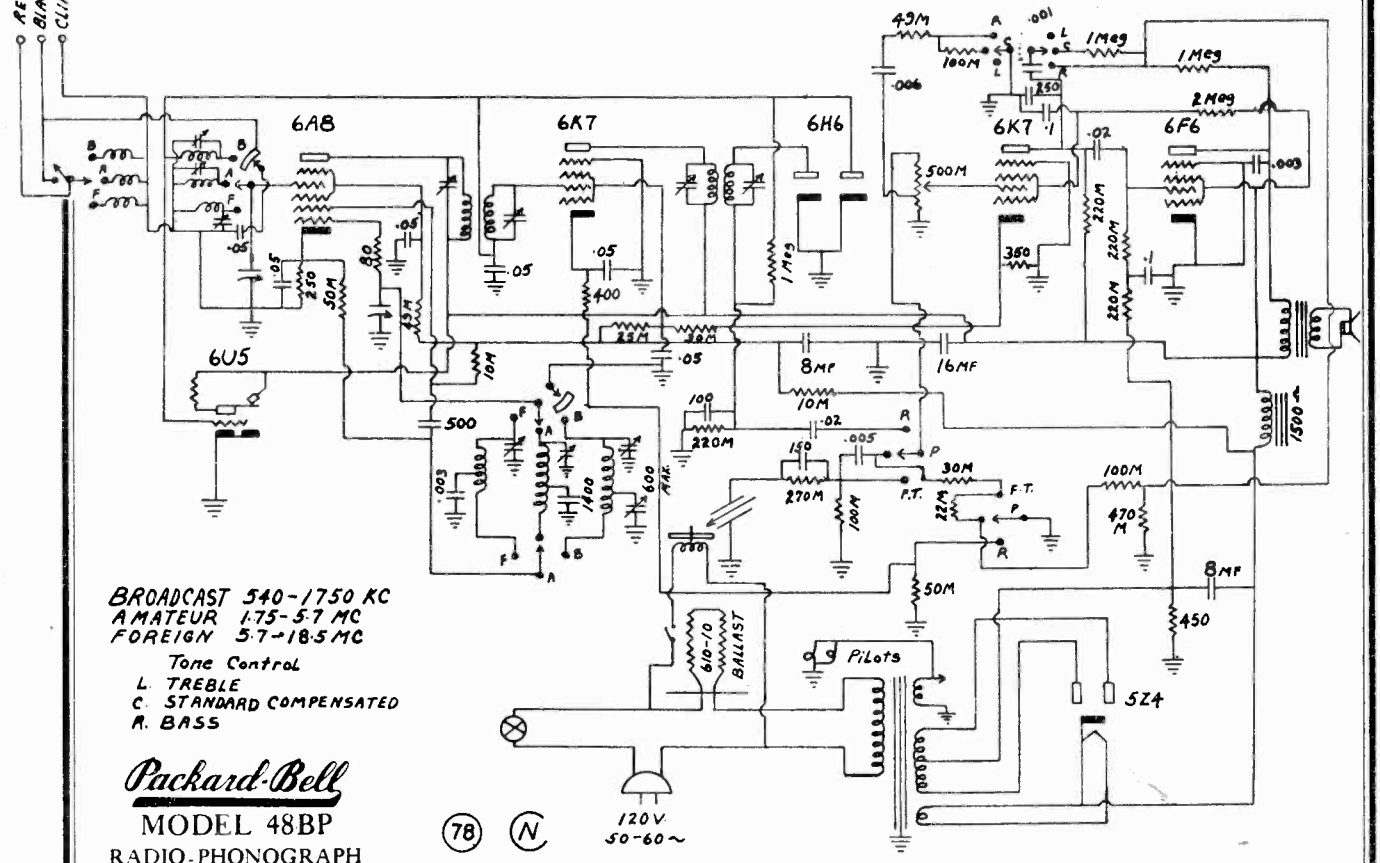
MODEL 58
Schematic

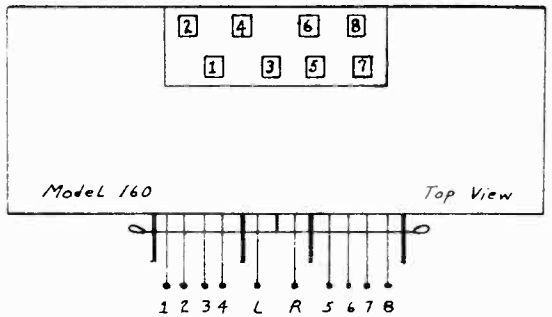
PACKARD BELL CO.

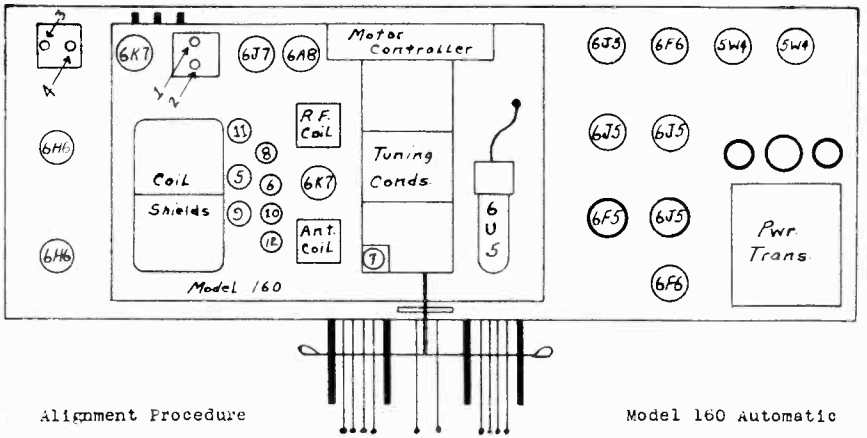


MODEL 48BP
MODEL 160
Schematics

PACKARD BELL CO.







Model 160 Automatic

The automatic frequency control in the Model 160 Packard-Bell radio is so adjusted that it does not interfere with the normal selectivity of the receiver. Any station that can be received without automatic frequency control can also be received with it. The only instances where A.F.C. will give preference to a more powerful station is where the stronger station will be heard in the background of the weaker one. From this it is obvious that an A.F.C. switch is unnecessary. This eliminates a control which would have been confusing to most people.

INSTRUCTION FOR SETTING MARKERS ON CONTROLLER. To begin with, in setting the motor controller (located at center-rear of chassis) one must first determine what stations are desired on the eight station keyboard. To do this examine the stationized dial and determine the location of stations related to each side of dial center. This done, it is then necessary to allot a sufficient number of sliders (station markers) corresponding to push-button switches on station keyboard of receiver panel below large dial.

Let us take for example a choice which would give us 5 stations between center and left hand side of dial, and 3 between center and right hand side of dial. We then consider push-button switches to correlate in numerical order with stations chosen as follows: KECA, KGFJ, KAKD, KNX, KFWB, KHJ, KMPC, and KFI, giving KECA No. 1 position, others following consecutively, completing with KFI as No. 8. Considering push-buttons on panel from left to right as reading from 1 to 8, a correct sequence will result for control sliders at rear of chassis. Control sliders are set up to correspond with buttons in correct numerical order, (that is, on rear slider rail you will find 4 buttons, and on front slider rail 4 buttons). Buttons or sliders on front are odd numbers, i.e., 1-3-5-7, and on rear rail are the even numbers, i.e., 2-4-6-8. Looking from rear the right hand slider corresponds to left front panel push button looking from the front.

OPERATION: Starting with KECA, push button No. 1 until it locks. We then reach back and push slider No. 1 back and forth until dial pointer comes to rest at KECA as marked on dial. Follow this procedure for all other stations.

The buttons marked R and L are used to tune in stations not set up on the keyboard. For example: If one is listening to KHJ and decides to change to KFOX then all that is necessary is to press the button L down until pointer turns to KFOX, then release the button and the pointer will stop. Or if one is listening to KHJ and wants to change to KEHE just press the button R down and hold until the pointer gets to KEHE, then release. In other words button R controls the motor to the right and button L to the left.

Alignment Procedure — Model 160 Automatic

Turn the dial (manually) to 1740 kc position (plates of tuning condenser completely unmeshed) and set the volume control at maximum. Turn the band switch to broadcast position. Short the cathode of 6H6 tube (now connected to 2 meg.resistor) to chassis so that the automatic frequency control action will be nullified during alignment. Connect the output lead of the signal generator to the control grid of the 6A8 tube through a .006 condenser and set dial of generator to 460 kc. Adjust I.F. trimmers 1-2-3 and 4 until maximum output is obtained, meanwhile maintaining as low a value of signal as will allow obtaining of accurate adjustment.

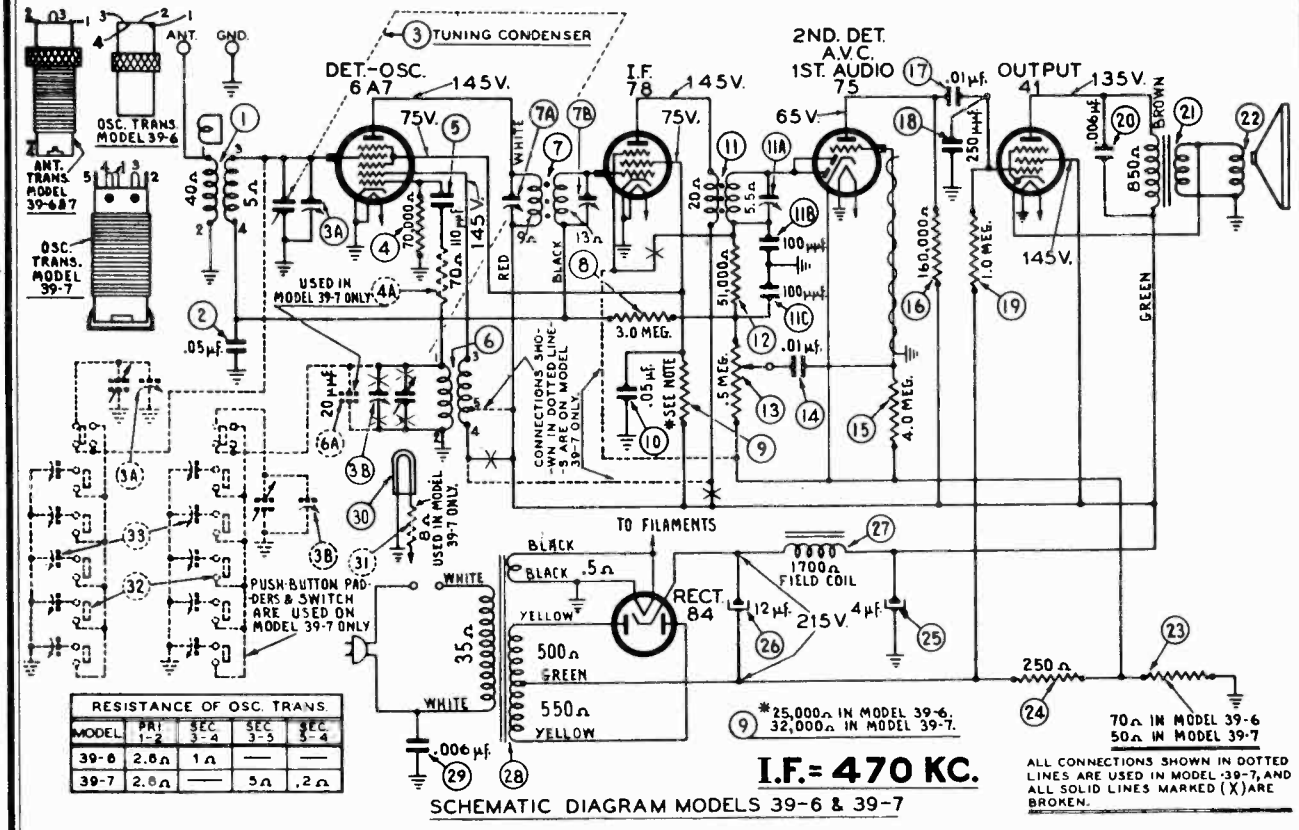
Now tune signal generator to 1740 kc and connect output lead through .006 condenser to antenna post of receiver. Turn dial pointer of receiver to horizontal position and adjust oscillator trimmer 5, antenna trimmer 7 and first detector trimmer 6 for maximum output. Next tune the generator to 600 kc. Turn dial pointer of radio to point of maximum signal and adjust trimmer 8 for increase in signal. At the same time rock the tuning condenser back and forth through resonance while adjusting the padder until maximum output is obtained. This should occur when the receiver dial is set at approximately 600 kc. Now tune back across the dial and if not exactly on kc at the high frequency end readjust trimmers 5-6 and 7 for correction. Do not attempt to play this receiver with only one speaker as there are two audio channels and the tone quality will be very poor unless both speakers are used.

Band Number 2. (1.8 to 5.6 Mc) Turn knob of waveband switch to Amateur position. Tune signal generator to 5.5 mc and set radio dial to 5.5 position. Adjust oscillator trimmer 9 and antenna trimmer 10 for maximum output. There is no R.F. stage on the Amateur and Foreign bands.

Band Number 3. (5.6 to 18.5Mc) Turn knob of waveband switch to Foreign position. Tune signal generator to 18 mc and connect output lead to antenna post through a 200 MMfd condenser and a 400 ohm resistor. Set volume control at maximum. Turn radio dial to 18 mc and adjust oscillator trimmer 11 and first detector trimmer 12 for maximum output. After completing alignment of all bands then disconnect 6H6 cathode jumper so that the AFC will be active again. The discriminator circuit is adjusted at the factory and should not be touched under any circumstances.

MODELS 39-6,39-7,Code 121

PHILCO RADIO & TELEV. CORP. Schematic,Voltage Socket,Trimmers



RESISTANCE OF OSC. TRANS.

MODEL	PRI 1-2	SEC 3-4	SEC 3-5	SEC 5-4
39-6	2.6Ω	1Ω	—	—
39-7	2.6Ω	—	5Ω	.2Ω

SCHEMATIC DIAGRAM MODELS 39-6 & 39-7

Models 39-6, 39-7, Code 121

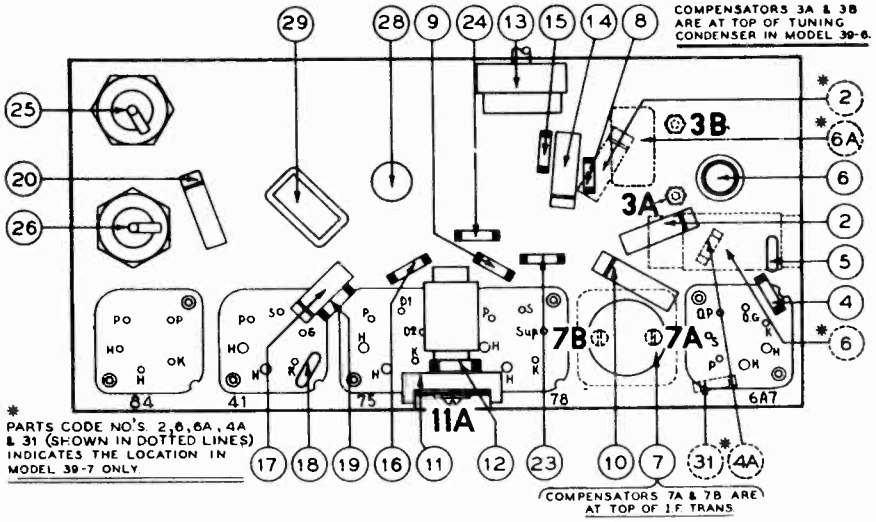


Fig. 2. Part Locations, Underside of Chassis

FREQUENCY RANGE: 530 to 1720 K.C.

INTERMEDIATE FREQUENCY: 470 K.C.

PHILCO TUBES USED: 6A7, First Detector Oscillator; 78, I.F. Amplifier; 75, Second Detector, A.V.C., First Audio; 41, Audio Output and 84, Rectifier.

POWER SUPPLY: 115 V., 50 to 60 cycle A.C.
Power Transformers are available for operation on 115 V., 25 to 40 cycles A.C.

POWER CONSUMPTION: 30 watts.

AUDIO OUTPUT: One (1) watt.

Alignment of Compensators

EQUIPMENT REQUIRED:

(1) Signal Generator; Philco Model 077 Signal Generator which has a fundamental frequency range from 115 to 36,000 K.C. is the correct instrument for this purpose.

(2) Output Meter, Philco Model 027 Circuit Tester, incorporates a sensitive output meter and is recommended.

(3) Philco Fiber Handle Screw Driver, Part No. 27-7059, and Fiber Wrench, Part No. 3164.

OUTPUT METER: The Philco 027 Output Meter is connected to the plate and screen terminals of the type 41 tube and adjusted for the 0 to 30 V.A.C. scale. After connecting the output meter, adjust the compensators in the order as shown in the tabulation below. Locations of the compensators are shown on Fig. 2. If the output meter pointer goes off scale when adjusting the compensators, reduce the strength of the signal from the generator.

Schem. No.	Description	Part No.
6A*	Silver Mica Cond. (20 mfd.) (39-7)	30-1123
7	1st I.F. Trans. Assy. (39-6)	32-3120
	1st I.F. Trans. Assy. (39-7)	32-3121
8	Resistor (3.0 meg., ½ watt)	33-350339
9	Resistor (25,000 ohms, ½ watt) (39-6)	33-325339
	Resistor (32,000 ohms, ½ watt) (39-7)	33-332339
10	Tubular Cond. (.05 mfd.)	30-4444
11	2nd I.F. Trans. Assy.	32-2674
12	Resistor (51,000 ohms, ½ watt)	33-351339
13	Volume Control (.5 meg.)	33-5254
14	Tubular Cond. (.01 mfd.)	30-4479
15	Resistor (4.0 meg., ½ watt)	33-540339
16	Resistor (160,000 ohms, ½ watt)	33-416339
17	Tubular Cond. (.01 mfd.)	30-4169
17	Tubular Cond. (.01 mfd.) (39-7)	30-4572
18	Mica Cond. (250 mmfd.)	30-1032
19	Resistor (1.0 meg., ½ watt)	33-510339
20	Tubular Cond. (.006 mfd.)	30-4125
21	Output Trans. (Speaker 36-1461)	
22	Cone and Voice Coil Assy. (Speaker 36-1461)	36-4095
23	Resistor (70 ohms, ½ watt), Model 39-6	33-070339
	Resistor (50 ohms, ½ watt), Model 39-7	33-050339
24	Resistor (250 ohms, ½ watt)	33-125339
25	Electrolytic Cond. (4 mfd., 300 V.)	30-2327
26	Electrolytic Cond. (12 mfd., 300 V.)	30-2328
27	Field Coil (Replace Speaker 36-1461)	
28	Power Trans. (115 V., 50 to 60 cycles)	32-7979

Schem. No.	Description	Part No.
1	Ant. Trans. (39-6)	32-2583
1	Ant. Trans. (39-7)	32-3039
2	Tubular Cond. (.05 mfd.)	30-4519
3	Tuning Cond. (39-6)	31-2335
3	Tuning Cond. (39-7)	31-2338
4	Resistor (70,000 ohms, ½ watt)	33-370339
4A*	Resistor (70 ohms, ½ watt) (39-7)	33-070339
5	Mica Cond. (110 mfd.)	30-1031
6	Oscillator Trans. (39-6)	32-3021
	Oscillator Trans. (39-7)	32-2122
29	Condenser (.006, moulded)	30-4423
30	Pilot Lamp	34-2064
31*	Pilot Lamp Resistor (8 ohms, ½ watt)	33-980331
32*	Push-Button Switch	42-1477
33*	Padder Strip Assy.	31-6290

* *Indicates parts used on Model 39-7 only.*

TYPE OF CIRCUIT: Models 39-6, code 121; and 39-7, code 121, employ a five-tube A.C. operated superheterodyne circuit, covering standard broadcast frequencies; Automatic Volume Control, and Pentode Audio Output. In general the two models are similar but differ in their tuning mechanisms and cabinets.

Model 39-6 is manually tuned and is assembled in cabinet type C.

Model 39-7, code 121, in addition to being manually tuned, is equipped with six Electric Automatic Push-Buttons. Five push-buttons are used for selecting any one of five stations in the standard broadcast range, and one push-button for changing to manual tuning. The procedure for adjusting the push-buttons for reception of stations will be found in the instructions supplied with each set.

Operation in Order	SIGNAL GENERATOR			RECEIVER			Special Instructions
	Output Connections to Receiver	Dummy Antenna Note A	Dial Setting	Dial Setting	Control Setting	Adjust Compensators in Order	
1	6A7	.1 mf.	470 K.C.	580 K.C.	Vol. Cont. Max.	11A, 7B, 7A	Adjust for max. output
2	Ant. Lead	100 mf.	1550 K.C.	1550 K.C.	Vol. Cont. Max.	3B, 3A	Adjust for max. output Note A, B

NOTE A—The "Dummy Antenna" consists of a condenser connected in series with the signal generator output lead (high side). Use the capacity as specified in each step of the above procedure.

NOTE B—DIAL CALIBRATION: With the tuning condenser in "maximum capacity" position (plates fully meshed), set the dial pointer between the two horizontal lines at the low frequency end of the scale (550 K.C.).

REPLACEMENT PARTS
Model 39-17; Codes 121 & 122

Schem. No.	Description	Part No.
1	Antenna Transformer	32-3039
2	Condenser (.05 mf. tubular)	30-4519
3	Tuning Condenser Assembly	31-2265
4	Resistor (51,000 ohms, ½ watt)	33-351339
5	Condenser (110 mmf. mica)	30-1031
6	Condenser (25 mmf., silver plated mica)	30-1112
7	Oscillator Transformer	32-3040
8	Resistor (3.0 megohm)	33-530339
9	Condenser (.03 mf. tubular)	30-4449
10	Resistor (40,000 ohms, ½ watt)	33-340339
11	1st I. F. Transformer Assembly	32-3075
12	2nd I. F. Transformer Assembly	32-2944
13	Resistor (51,000 ohms, ½ watt)	33-351339
14	Volume Control and On-Off Switch	33-5276
15	Condenser (.01 mf. tubular)	30-4479
16	Condenser (mica), 250 mmf.	30-1032
17	Condenser (.01 mf. tubular)	30-4572
18	Resistor (16,000 ohms, ½ watt)	33-316339
19	Resistor (1.0 megohm, ½ watt)	33-510339
20	Resistor (4.0 megohm, ½ watt)	33-540339
21	Condenser (.01 mf. tubular)	30-4572
22	Output Transformer	32-7980
23	Cone and Voice Coil Assembly for Speaker (Part No. 36-1426-1)	36-4083
	(Part No. 36-1426-3)	36-4085
	Cone and Voice Coil Assembly for Speaker (Part No. 36-1440)	36-4086
24	Resistor (250 ohms, wire wound)	33-125431
25	Resistor (70 ohms, ¼ watt)	33-070339
26	†Field Coil for Speaker (Pt. No. 36-1426)	
	†Field Coil for Speaker (Pt. No. 36-1440)	
27	Condenser (12 mf. electrolytic)	30-2319
28	Condenser (4 mf. electrolytic)	30-2236
29	Condenser (.03 mf. tubular)	30-4449
30	Power Transformer (115 volts, 50-60 cycles)	32-7974
31	Condenser (.01 mf.—.01 mf., bakelite)	3903DG
32	Pilot Lamp	34-2064
33	Pilot Lamp	34-2064

MISCELLANEOUS PARTS

Description	Part No.
Automatic Tuning Unit (complete)	31-2282
Bezel Assembly (dial)	40-6364
Bezel Gasket (dial)	27-9174
Bezel (push buttons)	28-5929
Bezel Gasket (push buttons)	27-9218
Bezel Clamp (dial)	28-5153
Cable and Plug (power)	L-2778
Dial and Frame Assembly	31-2283
Dial Tuning Drum Assembly	31-2281
Dial Tuning Cord Assembly	31-2275
Dial Tuning Spring (cord)	28-8919
Clip (Mtg. R. F. Coils)	28-5002
Clip (Mtg. R. F. Coils)	28-5003
Escutcheon Plate (extension shafts, F cabinet)	56-1051
Escutcheon Pin	W-950
Knob (Tuning)	27-4750
Knob (Volume)	27-4753
Pilot Lamp Socket Assembly	38-9612
Pointer (dial)	28-5934
Push-Buttons	27-4749
Shaft Extension (Volume)	38-9640
Shaft Extension (Tuning)	28-6928
Sleeve-long Tuning Shaft Extension (F Cabinet)	28-6935
Sleeve-short Tuning Shaft (T and F Cabinet)	28-6887
Spring-retaining Volume Shaft	28-8915
Socket (6 prong)	27-6036
Socket (7 prong)	27-6107
Socket (5 prong)	27-6035
Speaker (F Cabinet)	36-1440
*Speaker (T Cabinet) optional	36-1426-1 / 36-1426-3
Tab Kit	40-6391

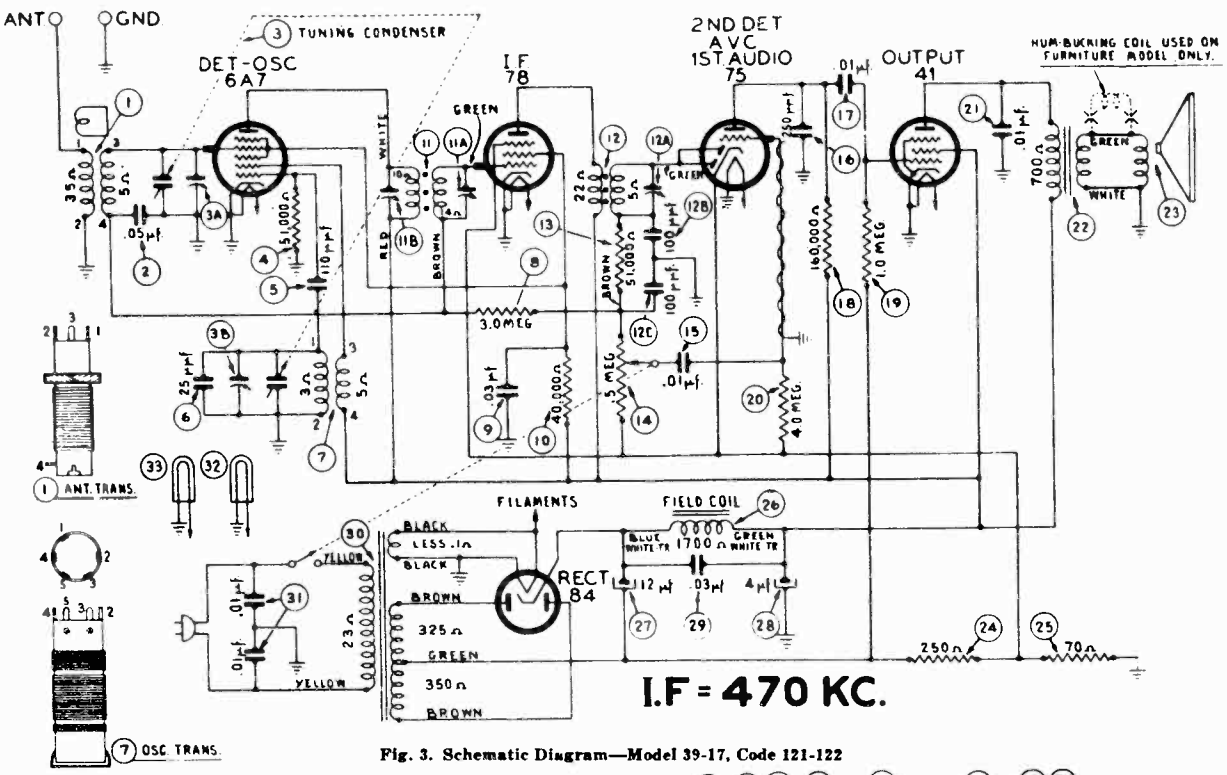


Fig. 3. Schematic Diagram—Model 39-17, Code 121-122

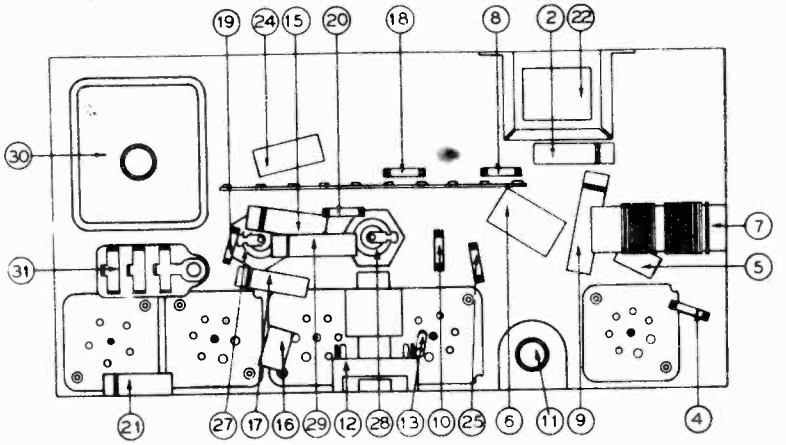


Fig. 4. Part Locations, Underside of Chassis

† Replace Speaker.

* When ordering Speaker or Cone assembly specify which of the small numbers (-1 or -3) following the part number is required.

June 1938

MODEL 39-17
Codes 121,122
Socket,Trimmers,
Alignment,Voltage

PHILCO RADIO & TELEV. CORP.

SPECIFICATIONS

TYPE OF CIRCUIT: A. C. operated; superheterodyne circuit, covering standard broadcast band (540 K. C. to 1720 K. C.); Automatic Volume Control; and pentode output.

Codes 121 and 122 chassis of this model are similar with the exception of Speaker and Cabinet.

The receiver is designed to operate from a "Philco Utility Aerial," part No. 45-2450. This aerial system should be used to obtain maximum performance from the receiver.

POWER SUPPLY: Voltage—115 volts. Frequency—50-60 cycles. Power consumption—40 watts.

INTERMEDIATE FREQUENCY: 470 K. C.

TUNING RANGE: 540 to 1720 K. C.

AUDIO OUTPUT: 2 watts.

PHILCO TUBES USED: Five tubes: 1-6A7, 1st detector and oscillator; 1-78, I. F.; 1-75, 2nd detector, Automatic Volume Control, and 1st audio; 1-41, Output; and 1-84, Rectifier.

TUNING MECHANISM: Pulley and cable drive for Manual tuning. Push-Button for Automatic Tuning. The procedure for adjusting and operating the Automatic Tuning Push-Buttons will be found in the instructions supplied with each set.

CABINETS: Code 121 chassis in type "T" cabinet.
Code 122 chassis in type "F" cabinet.

Fig. 1. Socket Voltage—Underside of Chassis View

The voltages indicated by arrows were measured with a Philco 027 Circuit Tester, which contains a sensitive voltmeter. Volume Control at minimum—Tuning Condenser set for no signal—line voltage 115 A. C

Fig. 2. Locations of Compensators

Alignment of Compensators

EQUIPMENT REQUIRED: (1) Signal Generator: Philco Model 077 Signal Generator which has a fundamental frequency range from 115 to 36,000 K. C. is the correct instrument for this purpose. (2) Output meter, Philco Model 027 Circuit Tester, incorporates a sensitive output meter and is recommended (3) Philco Fiber Handle Screw Driver, part No. 27-7059, and Fiber Wrench, part No. 3164

OUTPUT METER: The Philco 027 Output Meter is connected to the plate and cathode terminals of the type 41 tube Set the meter to use the 0-30 volt scale.

Operations In Order	Signal Generator			Receiver			
	Output Connections To Receiver	Dummy Antenna (Note A)	Dial Setting	Dial Setting	Control Settings	Adjust Compensators In Order	Special Instructions
1	6A7 Grid	.1 mf.	470 K. C.	580 K. C.	Vol. Cont. (Max.)	(12A) (11A) (11B)	
2	Ant. Ter.	100 mmf.	1550 K. C.	1550 K. C.	Vol. Cont. (Max.)	(3B) (3A)	See Note B

NOTE A—The "Dummy Antenna" consists of a condenser connected in series with the signal generator output lead (high side). Use the capacity as specified in each step of the above procedure.

NOTE B—DIAL CALIBRATION: In order to adjust the receiver correctly, the dial must be aligned to track properly with the tuning condenser. To adjust the dial proceed as follows: With the push button unit disconnected from the gang, the pointer is to be set on the extreme left edge of the index line (low frequency end of the scale) with the gang closed. The gang is then opened until the pointer is at the right edge of the index line and, with the push button shaft at its closed stop, the push button coupling is tightened on the gang shaft.

REPLACEMENT PARTS
Model 39-18, Codes 121 & 122

Schem. No.	Description	Part No.
1	Condenser (.001 mfd. tubular)	30-4453
2	Antenna Transformer	32-3039
3	Tuning Condenser Assembly	31-2265
4	Condenser (.15 mfd. tubular)	30-4505
5	Condenser (.05 mfd. tubular)	30-4519
6	Resistor (120,000 ohms, ½ watt)	33-412339
7	Condenser (110 mmf., mica)	30-1031
8	Condenser (25 mmf., silver plated mica)	30-1112
9	Oscillator Transformer	32-3040
10	Condenser (.5 mf., tubular)	30-4551
11	1st I. F. Transformer Assembly	32-3075
12	2nd I. F. Transformer Assembly	32-2944
13	Resistor (51,000 ohms, ½ watt)	33-351339
14	Resistor (2.0 megohms, ½ watt)	33-520339
15	Resistor (2.0 megohms, ½ watt)	33-520339
16	Condenser (.02 mf., tubular)	30-4516
17	Resistor (25,000 ohms, ½ watt)	33-325339
18	Volume Control and On-Off Switch	33-5276
19	Condenser (.1 mf., tubular)	30-4499
20	Condenser (.01 mf., tubular)	30-4572
21	Resistor (4.0 megohms, ½ watt)	33-540339
22	Condenser (.01 mf., tubular)	30-4572
23	Resistor (190,000 ohms, ½ watt)	33-419339
24	Resistor (490,000 ohms, ½ watt)	33-449339
25	Condenser (.1 mf., tubular)	30-4499
26	Resistor (51,000 ohms, ½ watt)	33-351339
27	Resistor (190,000 ohms, ½ watt)	33-419339
28	Condenser (.02 mf.; tubular)	30-4215
29	Output Transformer	32-7986
30	Cone and Voice Coil Assembly (Speaker Part No. 36-1444-1)	36-4083
	(Speaker Part No. 36-1444-3)	36-4085
	Cone and Voice Coil Assembly (Speaker Part No. 36-1445)	36-4086
31	Resistor (1400 ohms, ½ watt)	33-214339
32	Condenser (20 mf., electrolytic)	30-2245
33	Condenser (40 mf., electrolytic)	30-2332
34	Condenser (.05 mf., tubular)	30-4444
35	Resistor (300 ohms, wire wound)	33-130431
36	Resistor (28 ohms, ½ watt)	33-028339
37	†Field Coil for Speaker (Pt. No. 36-1444)	
	†Field Coil for Speaker (Pt. No. 36-1445)	
38	Pilot Lamp	34-2068
39	Pilot Lamp	34-2068
40	Condenser (.03 mf., tubular)	30-4449

* When ordering Speaker or Cone assembly specify which of the small numbers (-1 or -3) following the part number is required.
† Replace Speaker.

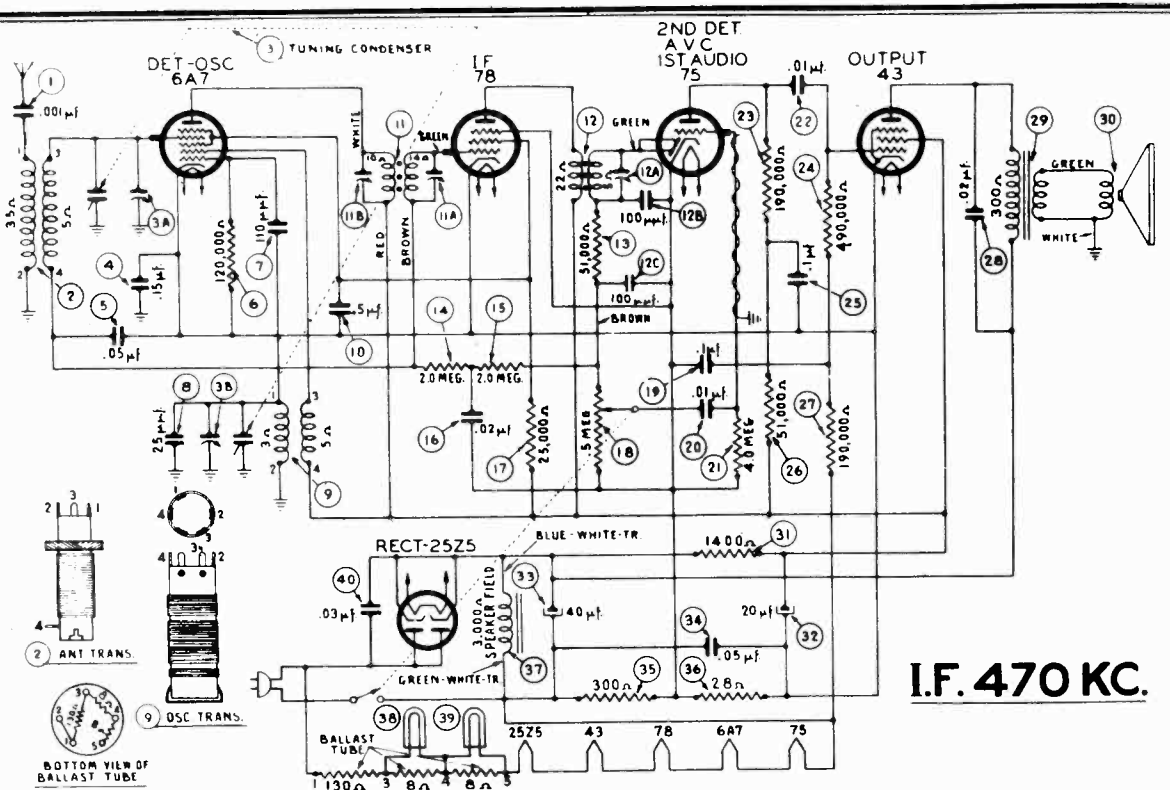


Fig. 3. Schematic Diagram, Model 39-18, Code 121-122

Description	Part No.
Dial Tuning Spring (cord)	28-8919
Clip (Mtg. R. F. Coils)	28-5002
Clip (Mtg. R. F. Coils)	28-5003
Escutcheon Plate (extension shafts, F Cabinet)	56-1051
Escutcheon Pin	W-950
Felt (Dial Lamps)	27-9222
Knob (Tuning)	27-4750
Knob (Volume)	27-4753
Mtg. Rubber (Tuning Condenser)	27-4596
Pilot Lamp Socket Assembly	38-9649
Pointer	28-5934
Push-Button	27-4749
Screw (Tuning Knob)	28-6882
Shaft Extension (Volume, F Cabinet)	38-9640
Shaft Extension (Tuning, F Cabinet)	28-6928
Sleeve-long Tuning Shaft Extension (F Cabinet)	28-6935
Sleeve-short Tuning Shaft (T and F Cabinet)	28-6887
Spring-retaining Volume Ext. Shaft	28-8915
*Speaker (T Cabinet, code 121) optional	36-1444-3 36-1444-1
Speaker (F Cabinet)	36-1445
Socket (5 prong)	27-6035
Socket (6 prong)	27-6036
Socket (7 prong)	27-6107
Tab Kit (Stations)	40-6391

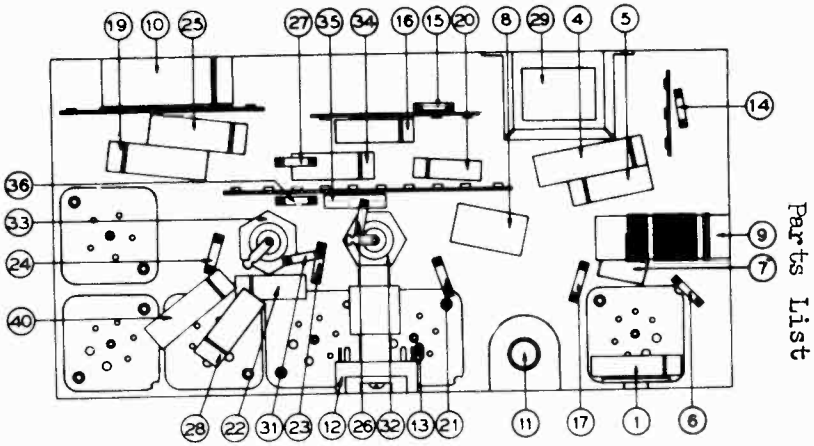


Fig. 4. Part Locations, Underside of Chassis

June 1938

MODEL 39-18
Codes 121,122
Socket,Trimmers

Alignment,Voltage

PHILCO RADIO & TELEV. CORP.
SPECIFICATIONS

TYPE OF CIRCUIT: A. C. - D. C. operated; superhetrodyne circuit, covering standard broadcast (540 K. C. to 1720 K. C.) frequency; Automatic Volume Control; and pentode output.

Codes 121 and 122 chassis of this model are similar with the exception of Speaker and Cabinet.

The receiver is designed to operate from a "Philco Utility Aerial," part No. 45-2450. This aerial system should be used to obtain maximum performance from the receiver.

POWER SUPPLY: Voltage—115 volts A. C. or D. C. Power consumption—55 watts.

INTERMEDIATE FREQUENCY: 470 K. C.

TUNING RANGE: 540 to 1720 K. C.

PHILCO TUBES USED: 1—6A7, 1st detector and oscillator; 1—78, I. F.; 1—75, 2nd detector, Automatic Volume Control, and 1st audio; 1—43, Output; 1—25Z5, Rectifier; and 1—BKV51DJ, ballast tube.

TUNING MECHANISM: Pulley and cable drive for Manual tuning. Push-Button for Automatic Tuning. The procedure for adjusting and operating the Automatic Tuning Push-Buttons will be found in the instructions supplied with each set.

CABINETS: Code 121 chassis in type "T" cabinet.
Code 122 chassis in type "F" cabinet.

Fig. 1. Socket Voltage—Underside of Chassis View

The voltages indicated by arrows were measured with a Philco 027 Circuit Tester, which contains a sensitive voltmeter. Volume Control at minimum—Tuning Condenser set for no signal—line voltage 115 A. C.

Fig. 2. Locations of Compensators

Alignment of Compensators

EQUIPMENT REQUIRED:

(1) Signal Generator; Philco Model 077 Signal Generator, which has a fundamental frequency range from 115 to 36,000 KC., is the correct instrument for this purpose.

(2) Output meter; Philco Model 027 Circuit Tester incorporates a sensitive output meter and is recommended.

(3) Philco Fiber Handle Screw Driver, part No. 27-7059 and Fiber Wrench, part No. 2164.

(4) Philco Set Transformer, part No. 32-2763.

OUTPUT METER:

The Philco 027 Output Meter is connected to the plate and cathode terminals of the Type 43 tube. Set the meter to use the 0-30 volt scale.

Operations in Order	Signal Generator			Receiver			Special Instructions
	Output Connections to Receiver	Dummy Antenna (Note A)	Dial Setting	Dial Setting	Control Settings	Adjust Compensators in Order	
1	6A7 Grid	.1 mf.	470 KC	580 KC	Vol. Cont. Max.	(12A) (11A) (11B)	See Note B
2	Ant. Ter.	100 mmf.	1550 KC	1550 KC	Vol. Cont. Max.	(3B) (3A)	See Note C See Note D

NOTE A—The "Dummy Antenna" consists of a condenser connected in series with the signal generator output lead (high side). Use the capacity as specified in each step of the above procedure.

NOTE B—Insert the signal generator output lead into the "Med" jack and the ground lead into the "Gnd" jack of the signal generator. Connect the other end of the output lead to terminal No. 1 on the Set Transformer, part No. 32-2763, and the cable ground to terminal No. 2. Nos. 3 and 4 terminals of Set Transformer are then connected to the chassis and 6A7 grid respectively of the receiver with short pieces of wire. Insert the 0.1 mf. in series with the No. 4 lead which connects to the grid.

NOTE C—DIAL CALIBRATION: In order to adjust the receiver correctly, the dial must be aligned to track properly with the tuning condenser. To adjust the dial proceed as follows: With the push button unit disconnected from the gang, the pointer is to be set on the extreme left edge of the index line (low frequency end of the scale) with the gang closed. The gang is then opened until the pointer is at the right edge of the index line and, with the push-button shaft at its closed stop, the push-button coupling is tightened on the gang shaft.

NOTE D—Insert the signal generator output lead into the "Med" jack and the ground lead into the "Gnd" jack of the signal generator. Connect the other end of the output lead to terminal No. 1 on the Set Transformer, part No. 32-2763, and the cable ground to terminal No. 2. Nos. 3 and 4 terminals of Set Transformer are then connected to the chassis and antenna lead respectively of the receiver with short pieces of wire. Insert the 100 mmf. in series with the No. 4 lead which connects to the antenna lead.

REPLACEMENT PARTS
Model 39-19, Codes 121 & 122

Schem. No.	Description	Part No.
1	Antenna Transformer (Range 2)	32-2822
2	Antenna Transformer (Range 1)	32-2821
3	Condenser (.05 mf. tubular)	30-4519
4	Tuning Condenser Assembly	31-2273
5	Resistor (51,000 ohms, ½ watt)	33-351339
6	Oscillator Transformer (Ranges 1 and 2)	32-3036
7	Resistor (20 ohms, ½ watt)	33-020339
8	Compensator (two sections)	31-6257
9	Condenser (370 mmf., silver plated mica)	30-1110
10	Condenser (3500 mmf., mica)	30-1094
11	Condenser (250 mmf., mica)	30-1032
12	Resistor (5000 ohms, ½ watt)	33-250339
13	1st I. F. Transformer Assembly	32-3075
14	2nd I. F. Transformer Assembly	32-2944
15	Resistor (51,000 ohms, ½ watt)	33-351339
16	Condenser (.03 mf. tubular)	30-4449
17	Resistor (32,000 ohms, ½ watt)	33-332339
18	Resistor (10,000 ohms, 1 watt)	33-310439
19	Resistor (1.0 meg., 3 watts)	33-510339
20	Volume Control and On-Off Switch	33-5276
21	Resistor (1.0 meg., ½ watt)	33-510339
22	Condenser (110 mmf., mica)	30-1031
23	Condenser (250 mmf., mica)	30-1032
24	Condenser (.01 mf. tubular)	30-4572
25	Resistor (99,000 ohms, ½ watt)	33-399339
26	Resistor (490,000 ohms, ½ watt)	33-449339
27	Resistor (490,000 ohms, ½ watt)	33-449339
28	Condenser (.1 mf., tubular)	30-4499
29	Condenser (.01 mf., tubular)	30-4479
30	Resistor (4.0 meg., ½ watt)	33-540339
31	Condenser (8 mf.-4 mf., electrolytic)	30-2323
32	Condenser (.01 mf., tubular)	30-4572
33	Output Transformer	32-7980
34	Cone and Voice Coil Assembly (Speaker Part No. 36-1426-1)	36-4083
	Part No. 36-1426-3	36-4085
	Cone and Voice Coil Assembly (Speaker Part No. 36-1449)	36-4086
35	†Field Coil for Speaker (Part No. 36-1426)	
	†Field Coil for Speaker (Part No. 36-1449)	
36	Condenser (8 mf. electrolytic)	30-2319
37	Resistor (250 ohms, wire wound)	33-125431
38	Resistor (70 ohms, ½ watt)	33-070339
39	Power Transformer, 115 v., 50-60 cycles	32-7974
40	Condenser (.01 mf.-.01 mf., bakelite)	3903-DG
41	Pilot Lamp	34-2064
42	Pilot Lamp	34-2064
43	Wave Switch	42-1449

† Replace Speaker.

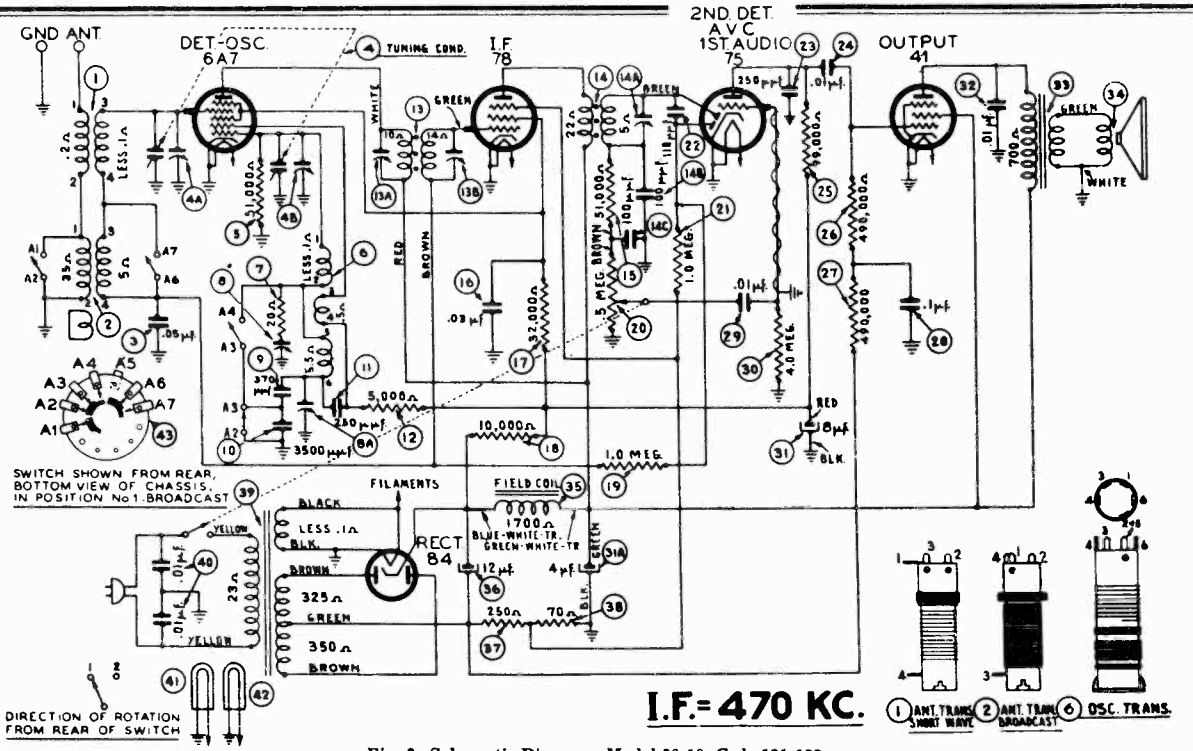
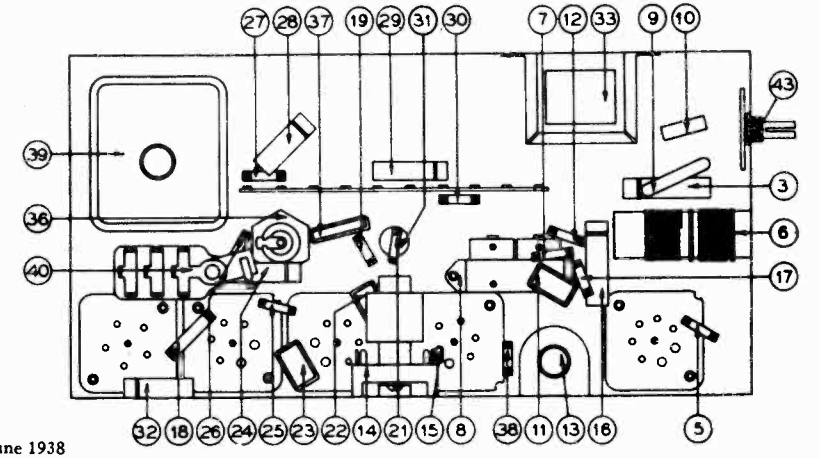


Fig. 3. Schematic Diagram, Model 39-19, Code 121-122

Description	Part No.
Automatic Tuning Unit (complete)	31-2282
Bezel Assembly (dial)	40-6364
Bezel Gasket (dial)	27-9174
Cable and Plug (power)	L 2778
Cable Speaker (F Cabinet)	41-3431
Dial and Frame Assembly	31-2298
Dial Tuning Drum Assembly	31-2281
Dial Tuning Cord Assembly	31-2275
Dial Tuning Spring (cord)	28-8919
Clip (mtg. R. F. coils)	28-5002
Clip (mtg. R. F. coils)	28-5003
Escutcheon Plate (extension shafts, F Cabinet)	56-1051
Escutcheon Pins	W-950
Knob (Tuning)	27-4750
Knob (Volume)	27-4753
Knob (Wave Switch)	27-4754
Pilot Lamp Socket Assembly	38-9612
Pointer (Dial)	28-5934
Push-Button	27-4749
Screw Tuning Knob	28-6882
Shaft Extension (Volume and Wave Switch)	38-9640
Shaft Extension (Tuning)	28-6928
Sleeve-Long-Tuning Shaft Extension (F Cabinet)	28-6935
Sleeve-Short-Tuning Shaft (T and F Cabinet)	28-6887
*Speaker (T Cabinet—code 121)	36-1426-3
optional	36-1426-1
Speaker (F Cabinet—code 122)	36-1449
Spring-Retaining Volume Shaft	28-8915



June 1938

Fig. 4. Part Locations, Underside of Chassis

* When ordering Speaker or Cone assembly specify which of the small numbers (-1 or -3) following the part number is required.

MODEL 39-19
Codes 121,122
Socket,Trimmers

PHILCO RADIO & TELEVISION CORP. Alignment,Voltage

SPECIFICATIONS

TYPE OF CIRCUIT: A. C. operated; superhetrodyne circuit with two tuning ranges, covering standard broadcast (540 K. C. to 1720 K. C.) and short wave (5.6 M. C. to 18.0 M. C.) frequencies; Automatic Volume Control; and pentode output.

Codes 121 and 122 chassis of this model are similar with the exception of Speaker and Cabinet.

The receiver is designed to operate from a "Philco Utility Aerial," part No. 45-2450. This aerial system should be used to obtain maximum performance from the receiver.

POWER SUPPLY: Voltage—115 volts. Frequency—50-60 cycles. Power consumption—40 watts.

INTERMEDIATE FREQUENCY: 470 K. C.

TUNING RANGES: 540 K. C. to 1720 K. C. 5.5 M. C. to M. C. 19.0

AUDIO OUTPUT: 2 watts.

PHILCO TUBES USED: Five tubes: 1-6A7, 1st detector and oscillator; 1-78, I. F.; 1-75, 2nd detector, Automatic Volume Control, and 1st audio; 1-41, Output; and 1-84, Rectifier.

TUNING MECHANISM: Pulley and cable drive for Manual Tuning. Push-Button for Automatic Tuning. The procedure for adjusting and operating the Automatic Tuning Push-Buttons will be found in the instructions supplied with each set

CABINETS: Code 121 chassis in type "T" cabinet
Code 122 chassis in type "F" cabinet

Fig. 1. Socket Voltage—Underside of Chassis View

The voltages indicated by arrows were measured with a Philco 027 Circuit Tester, which contains a sensitive voltmeter. Volume Control at minimum—Tuning Condenser set for no signal—line voltage 115 A. C.

Fig. 2. Locations of Compensators

ALIGNMENT OF COMPENSATORS

EQUIPMENT REQUIRED: (1) Signal Generator. Philco Model 077 Signal Generator which has a fundamental frequency range from 115 to 36,000 K. C. is the correct instrument for this purpose. (2) Output meter: Philco Model 027 Circuit Tester, incorporates a sensitive output meter and is recommended. (3) Philco Fiber Handle Screw Driver, part no. 27-7059 and Fiber Wrench, part no. 3164.

OUTPUT METER: The Philco 027 Output Meter is connected to the plate and cathode terminals of the type 41 tube. Set the meter to use the 0-30 volt scale.

Operations In Order	Signal Generator			Receiver			Special Instructions
	Output Connections To Receiver	Dummy Antenna (Note A)	Dial Setting	Dial Setting	Control Settings	Adjust Compensators In Order	
1	6A7 Grid	.1mf	470 KC	580 KC	Vol. Cont. (max.)	(14A) (13B) (13A)	
2	Ant. Ter.	100mmf	18 MC	18 MC	"	(4B)	Note B
3	"	"	1550 KC	1550 KC	"	(8) (4A)	
4	"	"	580 KC	580 KC	"	(8A)	Roll Tuning Condenser
5	"	"	1550 KC	1550 KC	"	(8)	

NOTE A—The "Dummy Antenna" consists of a condenser connected in series with the signal generator output lead (High side). Use the capacity as specified in each step of the above procedure.

NOTE B—DIAL CALIBRATION: In order to adjust the receiver correctly, the dial must be aligned to track properly with the tuning condenser. To adjust the dial proceed as follows: With the push button unit disconnected from the gang, the pointer is to be set on the extreme left edge of the index line (low frequency end of the scale) with the gang closed. The gang is then opened until the pointer is at the right edge of the index line and, with the push button shaft at its closed stop, the push button coupling is tightened on the gang shaft.

PHILCO RADIO & TELEV. CORP.

MODEL 39-25, Code 121
Schematic

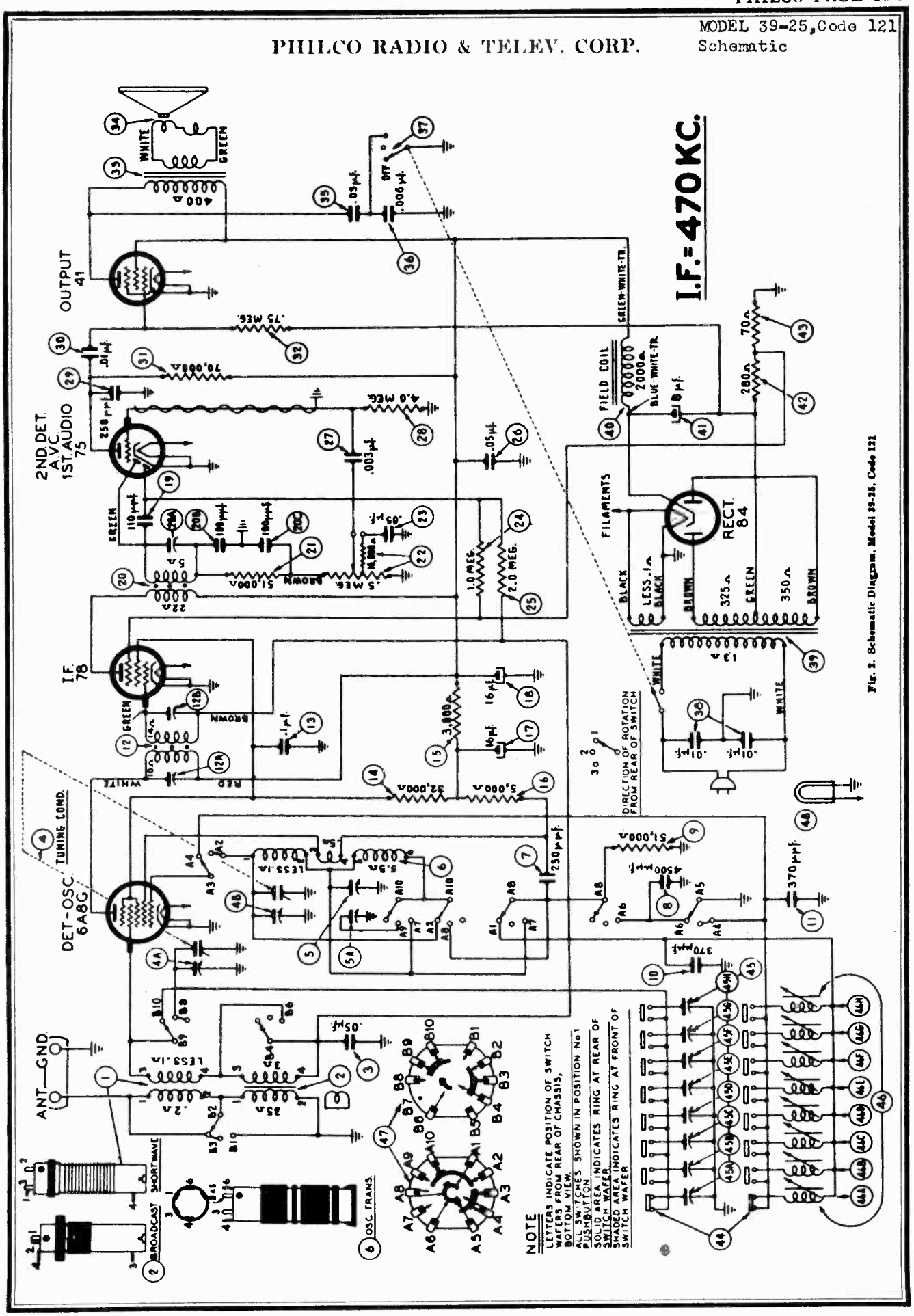


Fig. 2. Schematic Diagram, Model 39-25, Code 121

TYPE OF CIRCUIT: A. C. operated; superheterodyne circuit with two tuning ranges, covering standard broadcast (540 K. C. to 1720 K. C.) and short wave (4.9 M. C. to 18.0 M. C.) frequencies; Automatic Volume Control; and pentode output. The receiver is designed to operate from a "Philco Safety Aerial," part No. 40-6371. This aerial system should be used to obtain maximum performance from the receiver.

POWER SUPPLY: Voltage—115 volts. Frequency 50-60 cycles. Power consumption 45 watts.

INTERMEDIATE FREQUENCY: 470 K. C.

TUNING RANGES: 540 K. C. to 1720 K. C.; 4.9 M. C. to 18.0 M. C.

PHILCO TUBES USED: 1-6A8G, 1st detector and oscillator; 1-78, I. F.; 1-75, 2nd detector, Automatic Volume Control, and 1st audio; 1-41, Output; and 1-84, Rectifier.

TUNING MECHANISM: Pulley and cable drive for Manual tuning. Electric Push-Button for Automatic tuning.

CABINETS: Types "T" and "XF."

Alignment of Compensators

EQUIPMENT REQUIRED: (1) Signal Generator: Philco Model 077 Signal Generator which has a fundamental frequency range from 115 to 30,000 K. C. is the correct instrument for this purpose. (2) Output meter. Philco Model 027 Circuit Tester, incorporates a sensitive output meter and is recommended. (3) Philco Fiber Handle Screw Driver, part No. 27-7059, and Fiber Wrench, part No. 3164.

OUTPUT METER: The Philco 027 Output Meter is connected to the plate and cathode terminals of the Type 41 tube. Set the meter to use the 0-30 volt scale. After connecting the output meter adjust compensators in the order as given below.

Operations in Order	Signal Generator			Receiver			Special Instructions
	Output Connections to Receiver	Dummy Antenna (Note A)	Dial Setting	Dial Setting	Control Settings	Adjust Compensators in Order	
1	6A8G Grid	.1 mf.	470 KC	580 KC	Vol. Cont. max.	(20A) (12B) (12A)	
2	Ant. Ter.	100 mmf.	18.0 MC	18.0 MC	Vol. Cont. max	(4B)	See Note B
3	Ant. Ter.	100 mmf.	1550 KC	1550 KC	Vol. Cont. max	(5) (4A)	
4	Ant. Ter.	100 mmf.	580 KC	580 KC	Vol. Cont. max.	(5A)	
5	Ant. Ter.	100 mmf.	1550 KC	1550 KC	Vol. Cont. max.	(5)	

NOTE A—The "Dummy Antenna" consists of a condenser connected in series with the signal generator output lead (high side). Use the capacity as specified in each step of the above procedure.

NOTE B—DIAL CALIBRATION: In order to adjust the receiver correctly the dial pointer must be aligned to track properly with the tuning condenser. To adjust the dial proceed as follows. With the tuning condenser closed, set the dial pointer on the extreme left index line at the low frequency end of the scale.

These detailed instructions have been prepared to make sure the correct procedure is followed in setting the stations on the Philco Electric Push-Button Tuning models. The work requires the use of a Philco Model 077 Station Setter and a part No. 27-7059 Insulated Screw Driver.

(A) Select eight of the most popular stations received in the locality and remove their call letters from the call letter sheets supplied. Place the call letters in the windows above the buttons, making sure that each respective button covers the frequency of the station for which it is to be used. The frequency range of the circuits are as follows:

Circuits	Frequency Range
1 and 2	540 to 1030 kilocycles
3 and 4	670 to 1160 kilocycles
5 and 6	900 to 1470 kilocycles
7 and 8	1170 to 1600 kilocycles

These numbers are stamped on the unit as seen from the rear. Looking at the front of the cabinet the numbers read from left to right.

(B) Connect the aerial and ground to the "ANT" and "GND" terminals of the receiver.

(C) Turn the receiver Tuning Range Selector to position two ("Manual Tuning") and tune the receiver to the station to be set on the first button.

(D) Plug the output leads of the Station Setter into the "High" and "Gnd" jacks, and turn the output controls to maximum. Turn the modulation control to "Modulation Off." Connect the output lead of the Station Setter to the "ANT" and "GND" terminals of the receiver and tune to the frequency of the station being received. As the indicator is slowly tuned through the frequency of the station there will be two points at which a high pitched swish will be heard, one above and one below the frequency of the station. When the indicator is on the frequency of the station, minimum high pitched swish will be heard.

(E) Set the modulation control of the Station Setter for "Modulation On." The modulated signal of the Station Setter will then be heard through the receiver.

(F) Turn the receiver Tuning Range Selector to position one (Automatic Tuning) and push in the first button. Using the Part No. 27-7059 Insulated Screw Driver, turn the number 1 "OSC" screw until the modulated signal of the Station Setter is tuned in to maximum volume. Then adjust the number 1 "ANT" screw for maximum signal.

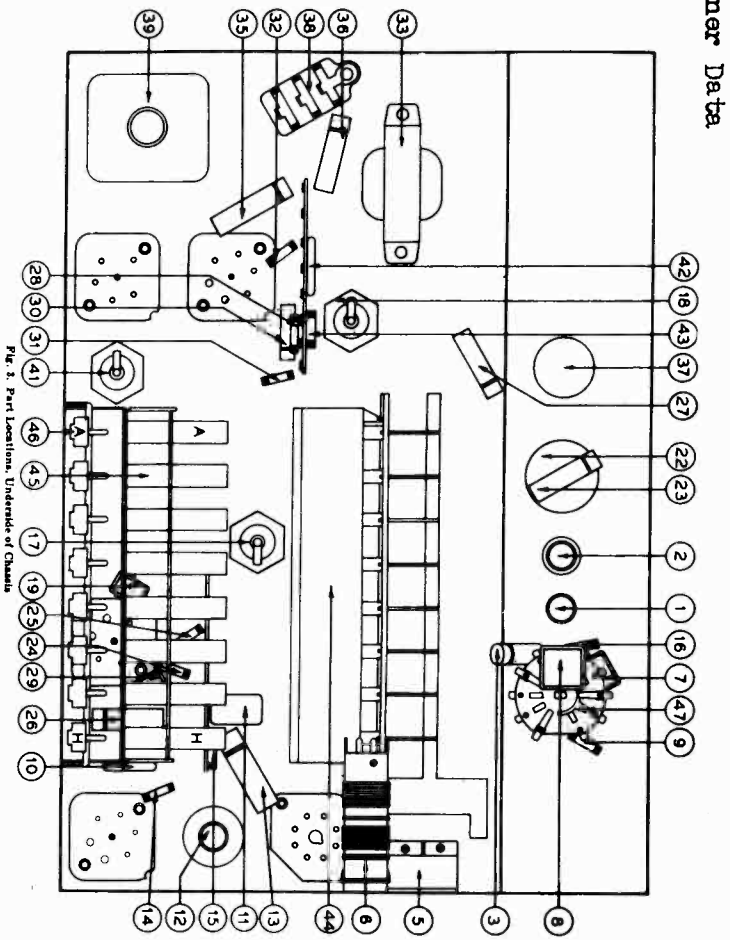


Fig. 3. Part Locations, Underside of Chassis

(G) Remove the output lead of the Philco Station Setter from the "ANT" terminal of the receiver and turn its indicator off the frequency of the station. The program of the desired station will then be heard on the receiver.

(H) With the volume of the receiver low, slowly turn the number 1 "OSC" back and forth until maximum output is received. Repeat the same procedure for the number 1 "ANT" screw.

After setting up the first station, the same procedure given under (C) to (H) is used for the other stations.

PHILCO RADIO & TELEV. CORP.

MODEL 39-25
Code 121
Socket, Trimmers
Voltage, Parts

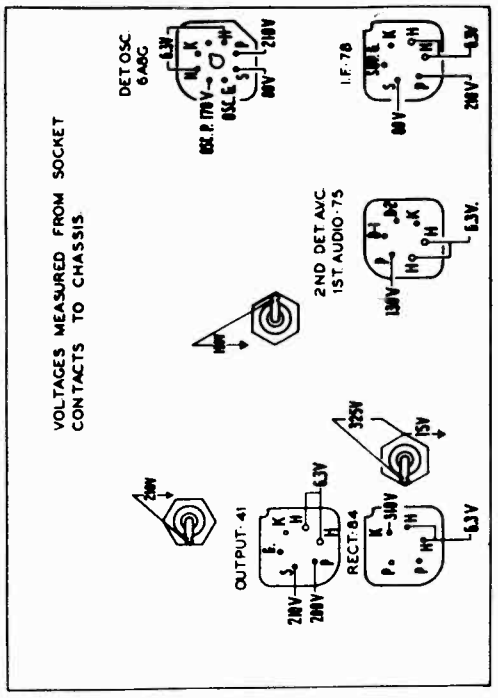


Fig. 1. Socket Voltage—Underside of Chassis
The voltages indicated by arrows were measured with a Philco 027 Circuit Tester, which contains a sensitive voltmeter. Volume Control at minimum—Tuning Condenser set for no signal—line voltage 115 A. C.

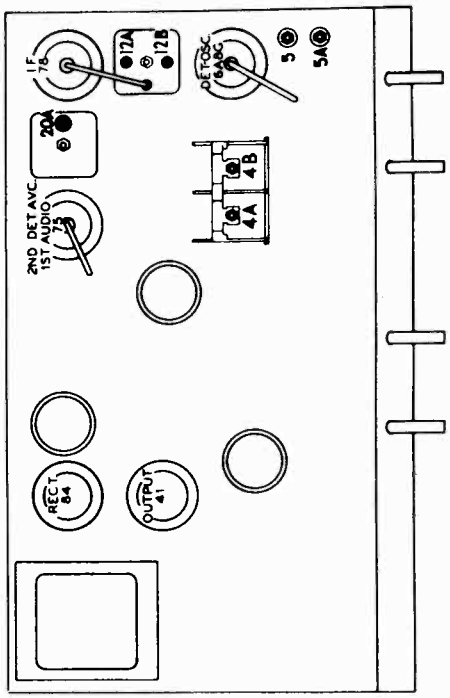


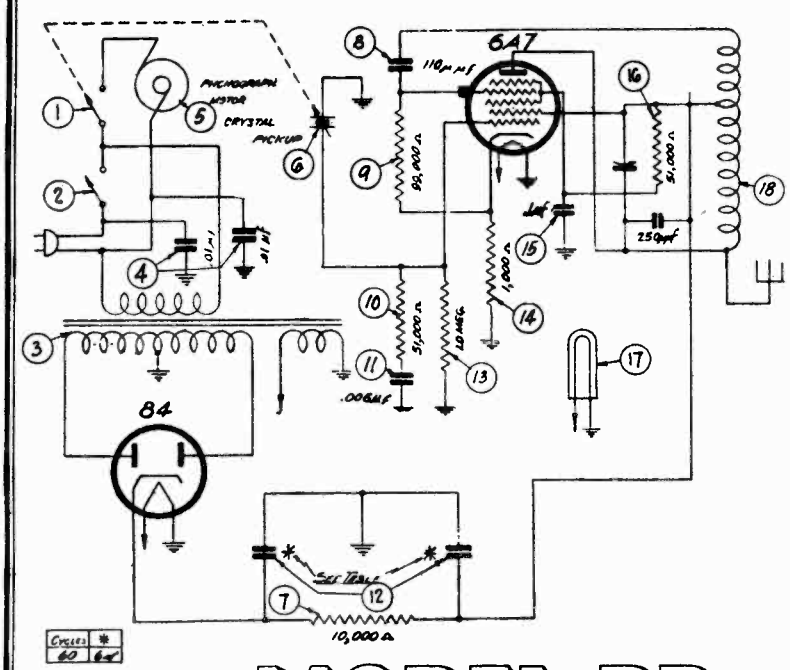
Fig. 4. Locations of Compensators

REPLACEMENT PARTS—MODEL 39-25, CODE 121

Schem. No.	Description	Part No.
1	Antenna Transformer (short wave)	32-3027
2	Antenna Transformer (broadcast)	32-3026
3	Tubular Condenser (.05 mf.)	30-4519
4	Tuning Condenser Assembly	31-2267
5	Dual Padder Unit	31-6255
6	Oscillator Transformer	32-3028
7	Condenser (250 mmf., mica)	30-1032
8	Condenser (4500 mmf., mica)	30-1109
9	Resistor (51,000 ohms, ½ watt)	33-351339
10	Condenser (370 mmf., silver plated mica)	30-1110
11	Condenser (370 mmf., silver plated mica)	30-1110
12	1st I. F. Transformer Assembly	32-3018
13	Condenser (.1 mf., tubular)	30-4455
14	Resistor (32,000 ohms, ½ watt)	33-332339
15	Resistor (3000 ohms, ½ watt)	33-230339
16	Resistor (5000 ohms, ½ watt)	33-250339
17	Electrolytic Condenser (16 mf., 250 V.)	30-2331
18	Electrolytic Condenser (16 mf., 250 V.)	30-2331
19	Condenser (110 mmf., mica)	30-1031
20	2nd I. F. Transformer Assembly	32-3030
21	Resistor (51,000 ohms, ½ watt)	33-351339
22	Volume Control (500,000 ohms)	33-5289
23	Condenser (.05 mf., tubular)	30-4444
24	Resistor (1 meg., ½ watt)	33-510339
25	Resistor (2 megs., ½ watt)	33-520339
26	Condenser (.05 mf., tubular)	30-4518
27	Condenser (.003 mf., tubular)	30-4469
28	Resistor (4.0 megs., ½ watt)	33-540339
29	Condenser (250 mmf., mica)	30-1032
30	Condenser (.01 mf., tubular)	30-4572
31	Resistor (70,000 ohms, ½ watt)	33-370339
32	Resistor (750,000 ohms, ½ watt)	33-475339
33	Output Transformer	32-7978
34	Voice Coil and Cone Assembly (for "T" Speaker, part No. 36-1439)	36-4087
	(for "XF" Speaker, part No. 36-1437)	36-4088
35	Condenser (.03 mf., tubular)	30-4449
36	Condenser (.006 mf., tubular)	30-4445
37	Tone Control and On-Off Switch	42-1443
38	Condenser (.01 mf.-.01 mf., bakelite)	3903-DG
39	Power Transformer	32-7976
40	*Field Coil for Speaker, part No. 36-1439	
	*Field Coil for Speaker, part No. 36-1437	
41	Electrolytic Condenser (8 mf., 400 V.)	30-2330
42	Resistor (280 ohms, wire wound)	33-128431
43	Resistor (70 ohms, ½ watt)	33-070339
44	Push-Button Switch	42-1446
45	Compensator Strip Assembly	31-6256
45A	Compensator, No. 1, 540-1030 K. C.	31-6274
45B	Compensator, No. 2, 540-1030 K. C.	31-6274
45C	Compensator, No. 3, 670-1160 K. C.	31-6276
45D	Compensator, No. 4, 670-1160 K. C.	31-6276
45E	Compensator, No. 5, 900-1470 K. C.	31-6278
45F	Compensator, No. 6, 900-1470 K. C.	31-6278
45G	Compensator, No. 7, 1170-1600 K. C.	31-6280
45H	Compensator, No. 8, 1170-1600 K. C.	31-6280
46	Electric Tuning Coil Assembly (complete)	32-3031
46A	Osc. Coil, No. 1, 540-1030 K. C.	32-3042
46B	Osc. Coil, No. 2, 540-1030 K. C.	32-3042
46C	Osc. Coil, No. 3, 670-1160 K. C.	32-3042
46D	Osc. Coil, No. 4, 670-1160 K. C.	32-3042
46E	Osc. Coil, No. 5, 900-1470 K. C.	32-3041
46F	Osc. Coil, No. 6, 900-1470 K. C.	32-3041
46G	Osc. Coil, No. 7, 1170-1600 K. C.	32-3041
46H	Osc. Coil, No. 8, 1170-1600 K. C.	32-3041
47	Range Switch	42-1445
48	Pilot Lamp	34-2210
	Bezel Assembly	40-6365
	Bezel Gasket	27-9175
	Bezel Screw	W-1834
	Cable (speaker)	41-3443
	Cable (power)	L-2778
	Dial Scale	27-5403
	Dial Spring	28-8908
	Dial Pointer	28-5941
	Dial Drive Cord Assembly	31-2269
	Dial Drive Spring	28-8913
	Dial Tuning Shaft Assembly	31-2260
	Dial Tuning Drum	31-2281
	Knob	27-4332
	Socket (5 Prong)	27-6035
	Socket (6 Prong)	27-6036
	Socket (7 Prong)	27-6099
	Pilot Lamp Socket Assembly	38-9607
	Pushbutton	27-4759
	Speaker (T Cabinet)	36-1439
	Speaker (XF Cabinet)	36-1437

* Replace Speaker.

MODEL RP-1,Code 122
Wireless Record Player PHILCO RADIO & TELEV. CORP.
Schematic,Instructions



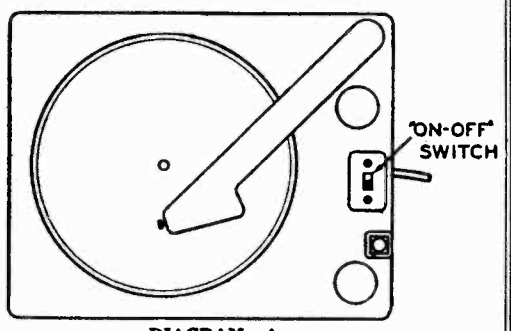


DIAGRAM A

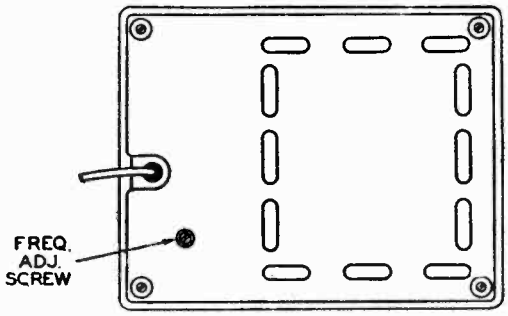


DIAGRAM B

MODEL RP-1

CODE - 122

WIRELESS RECORD PLAYER

The Model RP-1 is a remote type record player which can be used in conjunction with any standard broadcast receiver to reproduce phonograph records.

To place unit in operation:

First. Remove all packing material, being sure to save the small envelope attached to the tone arm. This envelope contains needles, needle screw, and rubber bumper.

Second. Lift off record turn-table and remove motor support tape by carefully pulling out tack and cutting the tape. Replace turn-table.

Third. Disengage tone arm (pickup") by rolling rubber locking ring down along arm rest and pushing sideways on tone arm. **Do not lift arm vertically when locked.**

Fourth. Place rubber bumper (contained in small envelope attached to tone arm) between the jaws of the arm rest, large end up. This forms a suitable rest for tone arm when not in use.

Fifth. Insert needle as far as possible into the tone arm head, and tighten securely with the needle screw, which should be inserted in the head of the tone arm. **A Philco needle (like furnished) is recommended for best results.**

Sixth. Check to make sure your electric supply agrees with that specified on the name label located on under side of cabinet and insert line cord plug into a convenient power outlet.

If in doubt as to the electric supply, check with your local power company.

The unit is now ready for operation. Place record on turn-table and slide "Off-On Switch" (Diagram "A") to "On" position; this will be indicated by pilot light in tone arm.

After allowing sufficient time for tubes to warm up, place tone arm on record; this automatically starts motor.

Next go to your radio and tune to approximately 540 KC (54 on most dials), at which setting the phonograph signal will be picked up. Volume can be regulated by the radio receiver's volume control in the normal way.

At the end of the record, return the tone arm to rest position, which will automatically turn motor off. It is not necessary to slide "Off-On Switch" to the "Off" position between records.

If interference from broadcast stations is encountered the frequency of the unit can be changed to any other frequency between 530 KC and 580 KC by adjusting the small screw indicated in Diagram "B." Turning screw clockwise lowers the frequency, counter-clockwise raises the frequency. **This adjustment is best made while the unit is in operation.**

If hum is experienced it may be necessary to reverse the power plug of the record player, the radio, or both. In some cases it may be advisable to use the same receptacle for record player and radio.

No definite rule can be established for the relative location of the record player to your radio; individual trial will establish best location. However, in general, satisfactory operation may be obtained up to a distance of fifty (50) feet, provided local noise conditions are not too severe.

IMPORTANT . . . **Do not attempt to force tone arm past stops.**

MODEL RP-1-122 WIRELESS RECORD PLAYER

Schem. No.	Description	Philco Part No.
1	Motor Switch and Plate Assembly	42-1486
2	Master Switch	42-1406-2
3	Power Transformer	32-8043
4	Line Condenser (.01-.01 mf., 600 v.)	3903-DG
5	Motor	35-2021
6	Crystal Pickup	35-2022
7	Filter Resistor (10,000 ohms, ½ watt)	33-310344
8	Oscillator Grid Condenser (110 mmf)	30-1031
9	Oscillator Grid Resistor (99,000 ohms, ½ watt)	33-399344
10	Comp. Resistor (51,000 ohms, ½ watt)	33-351344
11	Comp. Condenser (.006 mf., 200 v.)	30-4467
12	Electrolytic Condenser (6 mf.-6 mf., 150 v.)	30-2388
13	Grid Resistor (1 meg., ½ watt)	33-510344
14	Cathode Bias Resistor (1000 ohms, ½ watt)	33-210344
15	Screen By-Pass (.1 mf., 200 v.)	30-4499-S
16	Screen Resistor (51,000 ohms, ½ watt)	33-351344
17	Pilot Light (6.8 v., 250 amp.)	34-2064
18	Oscillator Coil and Padder Assembly	32-3218

PHILCO RADIO & TELEVISION CORP.

MODELS 39-30, 39-35
Code 121
Schematic

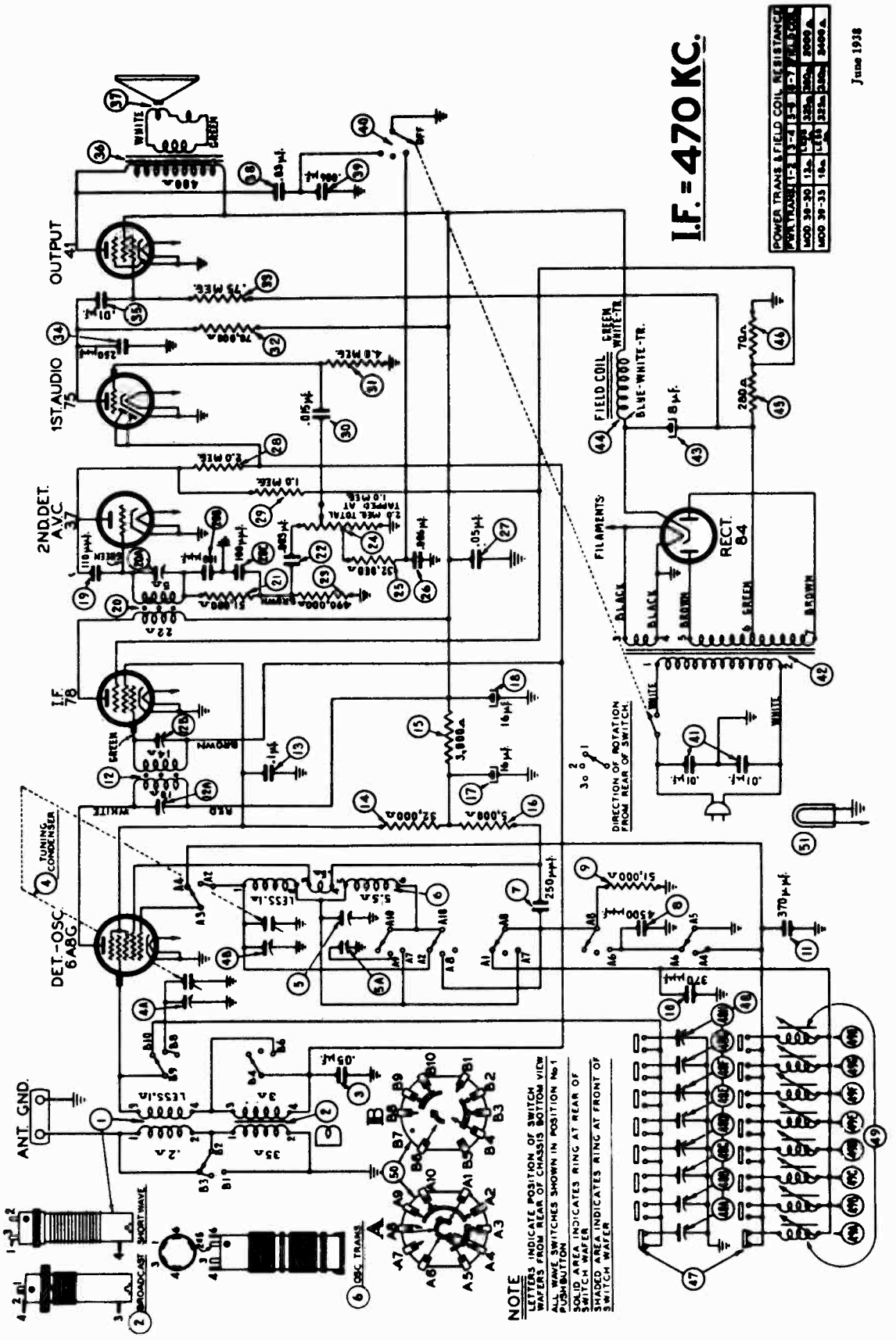
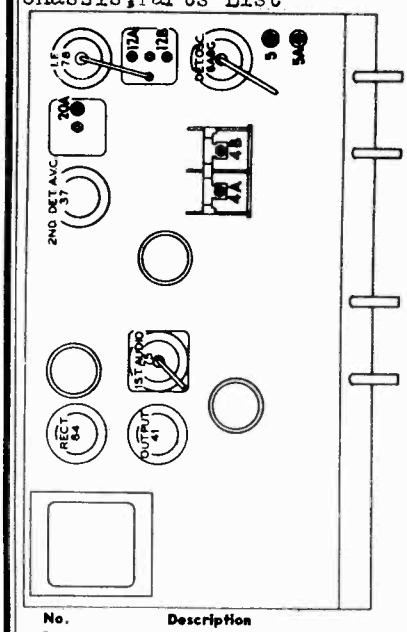
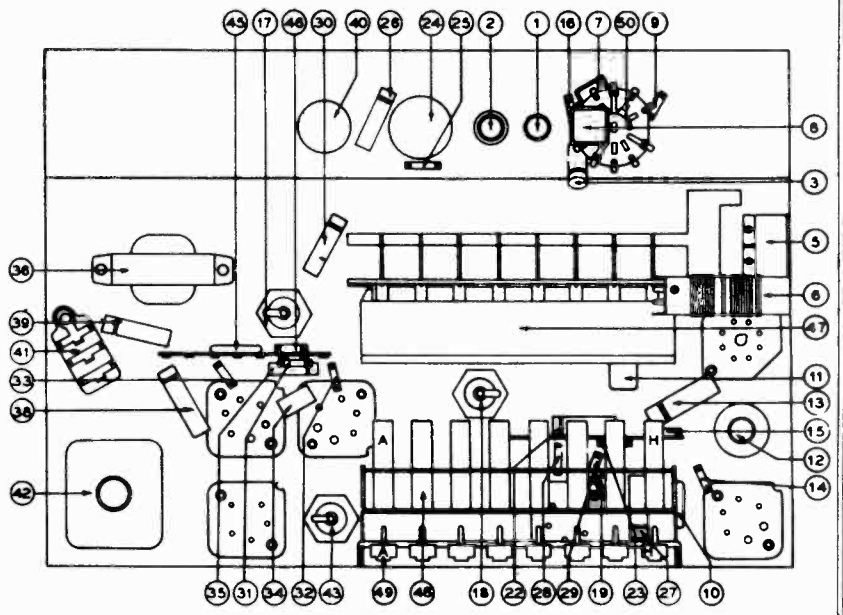


Fig. 2. Schematic Diagram—Models 39-30; 39-35. Code 121

MODELS 39-30, 39-35, Code 121
Voltage, Socket, Trimmers
Chassis, Parts List

PHILCO RADIO & TELEVISION CORP.





No.	Description	Part No.
1	Antenna Transformer (short wave)	32-3027
2	Antenna Transformer (broadcast)	32-3026
3	Condenser (.05 mf., tubular)	30-4519
4	Tuning Condenser Assembly	31-2267
5	Dual Padder Unit	31-6255
6	Oscillator Transformer	32-3028
7	Condenser (250 mmf., mica)	30-1032
8	Condenser (4500 mmf., mica)	30-1109
9	Resistor (51,000 ohms, ½ watt)	33-351339
10	Condenser (370 mmf., silver plated mica)	30-1110
11	Condenser (370 mmf., silver plated mica)	30-1110
12	1st I. F. Transformer Assembly	32-3018
13	Condenser (.1 mf., tubular)	30-4455
14	Resistor (32,000 ohms, ½ watt)	33-332339
15	Resistor (3000 ohms, ½ watt)	33-230339
16	Resistor (5000 ohms, ½ watt)	33-250339
17	Electrolytic Condenser (16 mf., 250 V.)	30-2331
18	Electrolytic Condenser (16 mf., 250 V.)	30-2331
19	Condenser (110 mmf., mica)	30-1031
20	2nd I. F. Transformer Assembly	32-3030
21	Resistor (51,000 ohms, ½ watt)	33-351339
22	Condenser (.003 mf., tubular)	30-4469
23	Resistor (490,000 ohms, ½ watt)	33-449339
24	Volume Control (2.0 megs)	33-5275
25	Resistor (32,000 ohms, ½ watt)	33-332339
26	Condenser (.006 mf., tubular)	30-4467
27	Condenser (.05 mf., tubular)	30-4518
28	Resistor (2.0 meg., ½ watt)	33-520339
29	Resistor (1.0 meg., ½ watt)	33-510339
30	Condenser (.015 mf., tubular)	30-4515
31	Resistor (4.0 megs., ½ watt)	33-540339
32	Resistor (70,000 ohms, ½ watt)	33-370339
33	Resistor (750,000 ohms, ½ watt)	33-475339
34	Condenser (250 mf., mica)	30-1032
35	Condenser (.01 mf., tubular)	30-4572
36	Output Transformer	32-7978
37	†Cone and Voice Coil Assembly	
	for 39-30 T, speaker pt. No. 36-1439-3	36-4091
	for 39-30 T, speaker pt. No. 36-1439-2	36-4087
	for 39-35 XX, speaker pt. No. 36-1438-2	36-4089
38	Condenser (.03 mf., tubular)	30-4449
39	Condenser (.006 mf., tubular)	30-4445
40	Tone Control and On-Off Switch	42-1444
41	Condenser (.01 mf. - .01 mf., bakelite)	3903 DG
42	Power Transformer: 115 V., 60 cycle:	
	for 39-30	32-7976
	for 39-35	32-7977
43	Electrolytic Condenser (8 mf., 400 V.)	30-2330
44	*Field Coil for Speaker, part No. 36-1439	
	*Field Coil for Speaker, part No. 36-1438	
45	Resistor (280 ohms, wire wound)	33-128431
46	Resistor (70 ohms, ½ watt)	33-070339
47	Push-Button Switch	42-1446
48	Padder Strip Assembly	31-6256
48A	Compensator, No. 1, 540 — 1030 KC.	31-6274
48B	Compensator, No. 2, 540 — 1030 KC.	31-6274
48C	Compensator, No. 3, 670 — 1160 KC.	31-6276
48D	Compensator, No. 4, 670 — 1160 KC.	31-6276
48E	Compensator, No. 5, 900 — 1470 KC.	31-6278
48F	Compensator, No. 6, 900 — 1470 KC.	31-6278
48G	Compensator, No. 7, 1170 — 1600 KC.	31-6280
48H	Compensator, No. 8, 1170 — 1600 KC.	31-6280
49	Electric Push-Button Coil Assembly	32-3031
49A	Osc. Coil, No. 1, 540 — 1030 KC.	32-3042
49B	Osc. Coil, No. 2, 540 — 1030 KC.	32-3042
49C	Osc. Coil, No. 3, 670 — 1160 KC.	32-3042
49D	Osc. Coil, No. 4, 670 — 1160 KC.	32-3042
49E	Osc. Coil, No. 5, 900 — 1470 KC.	32-3041
49F	Osc. Coil, No. 6, 900 — 1470 KC.	32-3041
49G	Osc. Coil, No. 7, 1170 — 1600 KC.	32-3041
49H	Osc. Coil, No. 8, 1170 — 1600 KC.	32-3041
50	Wave Switch	42-1445
51	Pilot Lamp	34-2210
	Pilot Lamp Socket Assembly	38-9607
	Push-Button	27-4759
	Speaker (T Cabinet 39-30) optional	36-1439-3 / 36-1439-2
	Speaker (XX Cabinet 39-35)	36-1438
	Socket (5 Prong)	27-6035
	Socket (6 Prong)	27-6036
	Socket (7 Prong)	27-6099
	Tab Kit	40-6392

Fig. 3. Parts Locations—Underside of Chassis

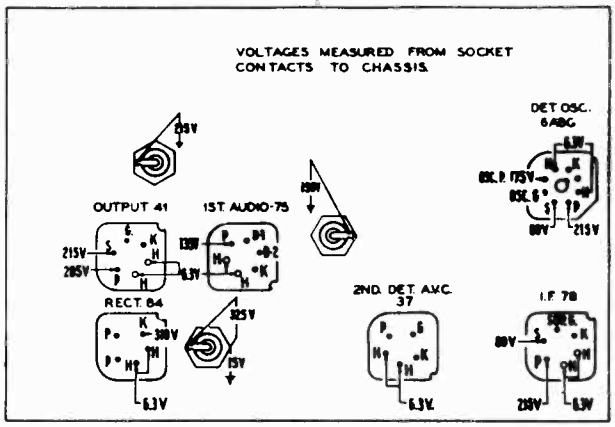


Fig. 1. Socket Voltages—Underside of Chassis

The voltages indicated by arrows were measured with a Philco 027 Circuit Tester which contains an accurate voltmeter. Volume control at minimum, range switch in broadcast position, line voltage 115 A. C.

TYPE OF CIRCUIT: A. C. operated; superheterodyne circuit with two tuning ranges, covering standard broadcast (540 K. C. to 1720 K. C.) and short-wave (4.9 M. C. to 18.0 M. C.) frequencies; Automatic Volume Control; and pentode output.

The receiver is designed to operate from a "Philco Safety Aerial," Part No. 40-6371. This aerial system should be used to obtain maximum performance from the receiver.

POWER SUPPLY: Voltage, 115 volts. Frequency, 50-60 cycles. Power consumption 45 watts.

INTERMEDIATE FREQUENCY: 470 K. C.

TUNING RANGES: 540 K. C. to 1720 K. C.; 4.9 M. C. to 18.0 M. C.

PHILCO TUBES USED: 1-6A8G, 1st detector and oscillator; 1-78, I. F.; 1-37, 2nd detector, Automatic Volume Control; 1-75, first audio; 1-41, output; and 1-84, Rectifier.

TUNING MECHANISM: Pulley and cable drive for Manual tuning. Electric Push-Button for Automatic tuning.

CABINETS: Types: "T" for 39-30 and "XX" for 39-35.

* Replace Speaker
† Model T Cabinet uses two optional speakers. The part numbers of the speakers are the same with the exception of a dash number (-2 or -3) following the part number. When ordering a Cone and Voice Coil Assembly, the part number as indicated must be specified.

MODEL S-1622
Alignment, Socket, Trimmers

PHILCO RADIO & TELEVISION CORP.

MODELS 39-30, 39-35
Code 121
Alignment

ALIGNMENT
MODELS 39-30, 39-35 (CODE 121); S1622.

Equipment — Fully charged heavy duty storage battery or 6-volt power pack, 077 or 177 Philco Set Tester, 27-7159 Padding screw driver.

General — The output meter must be connected by means of an adapter to the plate of the type 41 output tube and to the Radio chassis.

With the Radio and signal generator set up for operation at the prescribed frequency, turn the Radio volume control on full and set the signal generator attenuator so that a half scale reading is obtained on the output meter. The signal in the speaker should be audible but not loud.

The shielding on the generator output lead must be connected to the Radio housing.

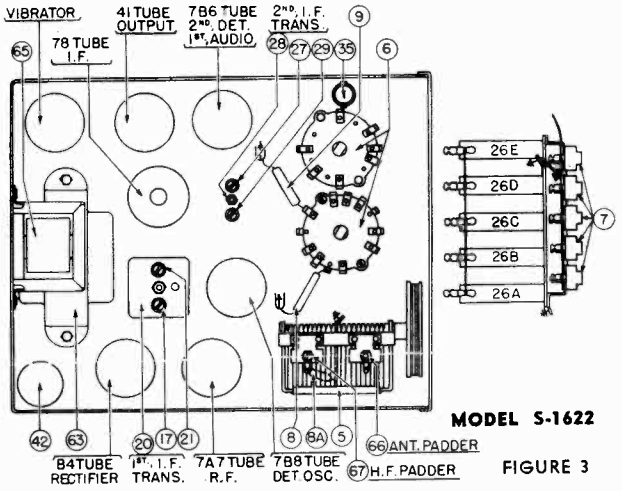


FIGURE 3

MODELS 39-30, 39-35, CODE 121.

Operations	Signal Generator			Receiver			Special Instructions
	Output Connections To Receiver	Dummy Antenna (Note A)	Dial Setting	Dial Setting	Control Settings	Adjust Compensators In Order	
1	6A8G Grid	.1 mf.	470 K. C.	580 K. C.	Vol. Cont. Max.	(20A) (12B) (12A)	
2	Ant. Ter.	100 mmf.	18.0 M. C.	18.0 M. C.	Vol. Cont. Max.	(4B)	See Note B
3	Ant. Ter.	100 mmf.	1550 K. C.	1550 K. C.	Vol. Cont. Max.	(5) (4A)	
4	Ant. Ter.	100 mmf.	580 K. C.	580 K. C.	Vol. Cont. Max.	(5A)	
5	Ant. Ter.	100 mmf.	1550 K. C.	1550 K. C.	Vol. Cont. Max.	(5)	

NOTE A—The "Dummy Antenna" consists of a condenser connected in series with the signal generator output lead (high side). Use the capacity as specified in each step of the above procedure.

NOTE B—DIAL CALIBRATION: In order to adjust the receiver correctly the dial pointer must be aligned to track properly with the tuning condenser. To adjust the dial proceed as follows: With the tuning condenser closed, set the dial pointer on the extreme left index line at the low frequency end of the scale.

MODEL S-1622

OPERATION	SIGNAL GENERATOR		DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
	FREQUENCY	CONNECTION			
1	Press the Automatic Station Selector button until "DIAL" appears in the window and stations can be tuned in by Manual Tuning.				
2	470 K.C.	To Antenna Receptacle on Radio	35 Mmfd. See Note 1	Turn Tuning Condenser Plates Out of Mesh as Far as They Will Go.	(29) (27) (21) (17)
3	1580 K.C.	To Antenna Receptacle on Radio	35 Mmfd. See Note 1	Note 2	(67)
4	1500 K.C.	To Antenna Receptacle on Radio	35 Mmfd. See Note 1	Set Tuning Condenser at 1500 K.C.	(66) Note 3

Make all adjustments for maximum reading on the output meter.

NOTE 1 — Connect the antenna lead, Part No. L-2765, to the antenna receptacle in the radio. Connect a 35 Mmfd. Condenser in series between the signal generator and the antenna lead.

NOTE 2 — Turn the condenser rotor plates completely out of mesh as far as they will go.

NOTE 3 — When the antenna stage adjustment is made with the Radio installed in the car, the Radio antenna lead must be connected to the car antenna in the usual manner. Connect the signal generator output lead to a wire placed near the car antenna but not connected to it.

MODELS 39-30,39-35
MODELS 40-150,40-155
MODEL 40-160
MODELS 40-180,40-185,40-190
MODELS 40-195,40-200

PHILCO RADIO & TELEV. CORP.

MODEL 108
Tuner Data
MODELS 40-120,40-125
Alignment,Trimmers

EQUIPMENT REQUIRED: MODELS 40-120,40-125.

(1) Signal Generator; Philco Model 077 Signal Generator which has a fundamental frequency range from 115 to 36,000 K. C. is the correct instrument for this purpose.

(2) Output Meter; Philco Models 027 or 028 Vacuum Tube Voltmeters and Circuit Testers incorporate a sensitive output meter and are recommended.

(3) Philco Fiber Handle Screw Driver, Part No. 45-2610. Aligning adapter Part No. 45-2767.

OUTPUT METER: The Philco 027 or 028 Output Meter is connected to the plate and screen terminals of the type 35A5 tube and adjusted for the 0 to 30 V. A. C. scales.

VACUUM TUBE VOLTMETER: To use the vacuum tube voltmeter as an alignment indicator make the following connections:

Remove the 7C6 tube from its socket and insert the aligning adapter, Part No. 45-2767, then replace the tube in the adapter. Connect the negative terminal of the vacuum tube voltmeter to the wire which protrudes from the side of the adapter. Attach the positive terminal of the voltmeter to the chassis. The positive terminal is connected to the chassis.

After connecting the output meter, adjust the compensators in the order as shown in the tabulation below. Locations of the compensators are shown on Fig. 2. If the output meter pointer goes off scale when adjusting the compensators, reduce the strength of the signal from the generator.

Operations in Order	SIGNAL GENERATOR			RECEIVER			SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dummy Antenna Note A	Dial Setting	Dial Setting	Control Settings	Adjust Compensators in Order	
1	7C7 See Note C	.1 mf.	455 K. C.	580 K. C.	Vol. Cont. Max.	14A, 14B, 15A	Push "IN" Manual Button Model 40-125
2	Ant. Ter.	10 mmf.	1600 K. C.	1600 K. C.	Vol. Cont. Max.	2B	See Note B See Note C
3	Ant. Ter.	10 mmf.	1400 K. C.	1400 K. C.	Vol. Cont. Max.	2A	

NOTE A — The "Dummy Antenna" consists of a condenser connected in series with the signal generator output lead (High side). Use the capacity or resistance as specified in each step of the above procedure.

NOTE B — DIAL CALIBRATION: In order to adjust the receiver correctly, the dial must be aligned to track properly with the tuning condenser. To do this, proceed as follows: Turn the tuning condenser to the maximum capacity position (plates fully meshed). With the condenser in this position, the tuning pointer is set horizontal at the low frequency end of the scale (540 K. C.).

NOTE C — Compensators 2A and 2B are at the top of the tuning condenser. Compensator 2A is on the front section and compensator 2B on the rear section. When padding the I. F. the signal generator can be attached to the 7C7 grid on the front section of the tuning condenser.

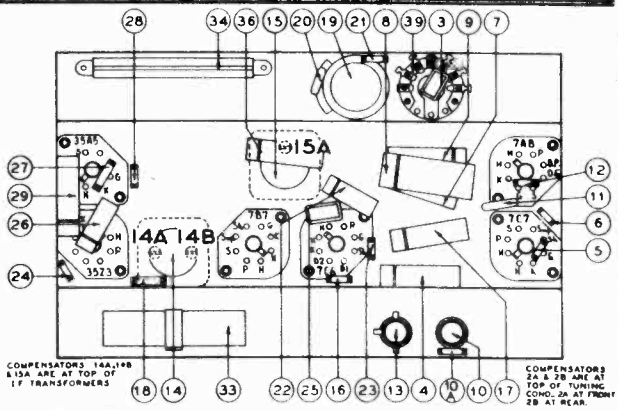


Fig. 1

Adjusting Push Button Tuning - MODELS 39-30,39-35,108 (CODE 121); 40-150,40-155; 40-160; 40-195,40-200;40-180,40-185,40-190.(FOR BUTTON ADJUSTMENT FREQUENCIES FOR MODELS 39-30,39-35, & 108 (CODE 121); SEE PARTS LISTS OF THESE MODELS).

In order to adjust the electric push buttons accurately for reception of broadcast stations, a vacuum tube voltmeter such as Philco Model 027 and 028 should be used. In addition, an insulated padding screw driver part No. 45-2610 and Loktal aligning adapter part No. 45-2767 are required. With this equipment at hand proceed as follows:

Insert the station call letters into the windows above the buttons. The station with the lowest frequency is placed in the first button on the left and the highest frequency is placed in the button on the extreme right. Each push button is adjusted by two set screws located on the rear of the push button unit. Each set of screws is numbered and covers a frequency range as follows:

MODEL 40-160

Push Button	Frequency Range
1	540-1000 K.C.
2	650-1100 K.C.
3	740-1300 K.C.
4	900-1500 K.C.
5	1100-1600 K.C.

MODELS 40-195, 40-200

Push-Button	Frequency Range
1, 2, 3	540-1030 K. C.
4, 5	670-1160 K. C.
6, 7, 8	900-1600 K. C.

MODELS 40-150,40-155,40-180,40-185,40-190.

Push-Button	Frequency Range
1. 2. 3	540-1060 K. C.
4. 5	650-1110 K. C.
6. 7	920-1600 K. C.

Looking at the front of the cabinet, the first button on the left is adjusted by set screw No. 1. The next push button by set screw No. 2 and the remaining push buttons in order.

1. Remove the 7C6 A. F. tube from its socket and insert the aligning adaptor, then replace the tube in the adaptor. Connect the negative terminal of the vacuum tube voltmeter to the wire which protrudes from the side of the adaptor. Attach the positive terminal of the voltmeter to the chassis.

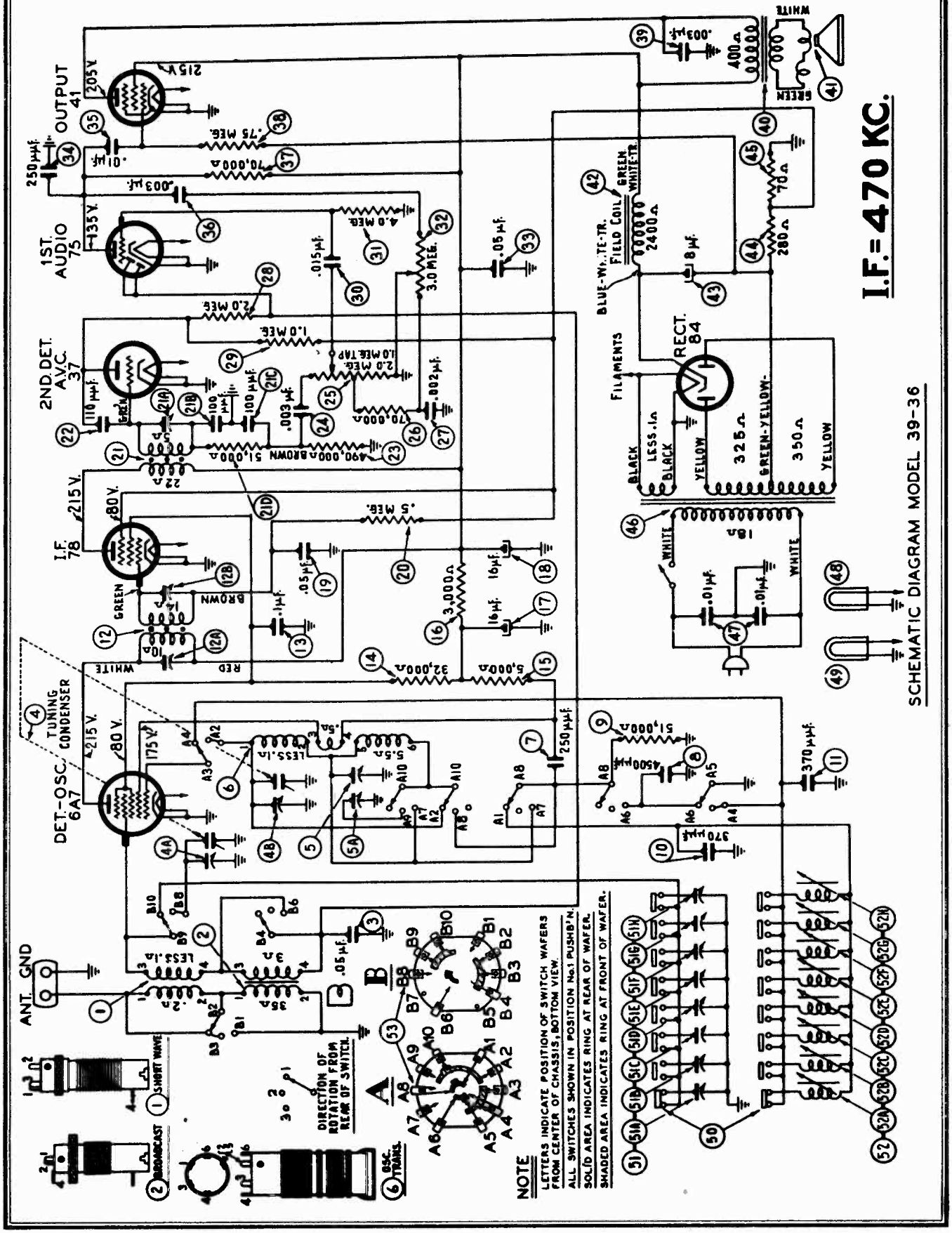
2. Turn the receiver on and set the tuning range disc to "Broadcast" (Manual Tuning).

3. Set up the Model 077 Station Setter about 3 feet from the receiver and connect a loop constructed out of about 6 feet of wire to the high and ground output jacks of the signal generator. Turn the output controls to maximum and set the modulation control to "MOD. ON". Manually tune in the first station to be set up on push button No. 1. After doing this set the indicator of the 077 Signal Generator to the frequency of the station being received. As the indicator approaches the frequency of the station a whistle will be heard; leave the indicator at this point. Turn the receiver tuning range disc to "Push Button" and press in No. 1 button. Using the insulated screw driver turn the No. 1 "Osc." screw until the broadcast station identified by the signal generator is heard; at this point, turn the indicator of the signal generator away from the frequency of the station. Readjust No. 1 "Osc." and "Ant." screws for maximum deflection of the vacuum tube voltmeter pointer. Station No. 1 is now adjusted properly. After setting up the first station the same procedure as outlined above is used for the remaining stations.

When this model is to be set up to receive the sound of a television program tuned in by the special type Philco television sets or when it is to be used in conjunction with a Philco Record Player, push-button No. 1 should be used. To tune in these programs, the same procedure as given for ordinary broadcast stations as outlined above is used.

PHILCO RADIO & TELEV. CORP.

MODEL 39-36
Schematic, Voltage



MODEL 39-36
Alignment, Socket
Trimmers, Chassis
Tuner Chassis, Parts

PHILCO RADIO & TELEV. CORP.

SPECIFICATIONS

TYPE CIRCUIT: Philco Model 39-36, code 121 is a six tube, A.C. operated superheterodyne circuit with two tuning ranges covering standard broadcast (540-1720 K.C.) and shortwave (5 M.C. to 18.0 M.C.) frequencies. In addition, the receiver employs Electric Automatic Push-Button Tuning for automatically selecting any of eight standard broadcast stations, continuously variable tone control, automatic volume control, and pentode audio output.

POWER SUPPLY: 115 V., 60 cycle A.C. 42 watts. For operation on 115V., 25 to 40 cycles, A.C. current or 220 V. 50 to 60 cycles A.C. current, different power transformers are required, and can be obtained from your distributor.

INTERMEDIATE FREQUENCY: 470 K.C.

PHILCO TUBES USED: 6A7, First Detector Oscillator, 78, I.F. Amplifier; 37, Second Detector-A.V.C.; 75, First Audio; 41, Audio Output and 84, Rectifier.

CONTROLS: The new Philco Disc Controls are used on this model for adjusting tuning, volume, tone and frequency range.

CABINETS: Type XX.

Alignment of Compensators

EQUIPMENT REQUIRED:

(1) Signal Generator; Philco Model 077.
(2) Output Meter, Philco 027 Circuit Tester.
(3) Philco Fiber Handle Screw Driver, Part No. 27-7059, and Fiber Wrench, Part No. 3164.

OUTPUT METER: The Philco 027 Output Meter is connected to the plate and cathode terminals of the type 41 tube. After connecting the Output Meter, adjust compensators in the order as given in tabulations below. Locations of the compensators are shown in Fig. 1.

Operations	SIGNAL GENERATOR			RECEIVER			Special Instructions
	Output Connections To Receiver	Dummy Antenna (Note A)	Dial Setting	Dial Setting	Control Settings	Adjust Compensators in Order	
1	6A7 Grid.	.1 mf.	470 K.C.	580 K.C.	Vol Cont. Max. Range Switch (Brdcst.)	(21A) (12B) (12A)	
2	Ant. Ter.	100mmf.	18.0 M.C.	18.0 M.C.	Vol. Cont. Max. Range Switch (S.W.)	(4B)	See Note B, C
3	Ant. Ter.	100mmf.	1550 K.C.	1550 K.C.	Vol. Cont. Max. Range Switch (Brdcst.)	(5) (4A)	
4	Ant. Ter.	100mmf.	580 K.C.	580 K.C.	Vol. Cont Max. Range Switch (Brdcst.)	(5A)	
5	Ant. Ter.	100mmf.	1550 K.C.	1550 K.C.	Vol. Cont. Max.	(5)	

NOTE A—The "Dummy Antenna" consists of a condenser connected in series with the signal generator output lead (high side). Use the capacity as specified in each step of the above procedure.

NOTE B—Dial Calibration: In order to adjust the receiver correctly, the dial must be aligned to track properly with the tuning condenser. To adjust the dial, proceed as follows: With the tuning condenser closed (maximum capacity), set the dial pointer on the extreme left index line at the low frequency end of the broadcast scale. The arrangement of the drive cable is shown in Service Bulletin No. 305.

NOTE C—Compensators (4A) and (4B) are located on top of the tuning condenser. Compensator (4B) is the first one from the tuning drum side.

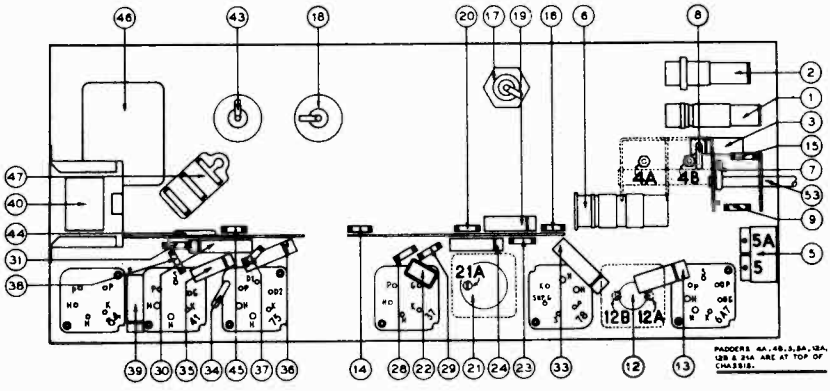


Fig. 1.—Part Locations—Underside of Chassis

Replacement Parts

Reliem. No.	Description	Part No.
1	Ant. Trans. (S.W.)	32-3027
2	Ant. Trans. (B.C.	32-3026
3	Tubular Cond. (.05 mf.)	30-4519
4	Tuning Cond. Assy.	31-2346
5	Dial Padder Unit	31-6255
6	Oscillator Trans.	32-3028
7	Mica Cond. (250 mmf.)	30-1032
8	Mica Cond. (4500 mmf.)	30-1109
9	Resistor (51,000 ohms, ½ watt)	33-351339
10	Condenser (Silver Mica)—370 mmf.	30-1110
11	Condenser (Silver Mica)—370 mmf.	30-1110
12	1st I.F. Trans. Assy.	32-3018
13	Tubular Cond. (.1 mf.)	30-4455
14	Resistor (32,000 ohms) ½ watt	33-332339
15	Resistor (5,000 ohms) ½ watt	33-250339
16	Resistor (3,000 ohms) ½ watt	33-230339
17	Electro. Cond. (16 mf.)—250 Volts	30-2331
18	Electro. Cond. (16 mf.)—250 Volts	30-2370
19	Tubular Cond. (.05 mf.)	30-4519
20	Resistor (490,000 ohms, ½ watt)	33-449339
21	2nd I.F. Trans. Assy.	32-3129
21A	Compensator Part of 21	
21B	Condenser Part of 21A	
21C	Condenser Part of 21A	
21D	Resistor (51,000 ohms—½ watt)	33-351339
22	Mica Cond. (110 mmf.)	30-1031
23	Resistor (490,000 ohms, ½ watt)	33-449339
24	Tubular Cond. (.003 mf.)	30-4580
25	Volume Control (2 meg.)	33-5286
26	Resistor (70,000 ohms)	33-370339
27	Tubular Cond. (.002 mf.)	30-4597
28	Resistor (2.0 meg., ½ watt)	33-520339
29	Resistor (1.0 meg., ½ watt)	33-510339
30	Tubular Cond. (.015 mf.)	30-4515
31	Resistor (4.0 meg., ½ watt)	33-540339
32	Tone Control (8.0 meg.)	33-5287
33	Tubular Cond. (.05 mf.)	30-4518
34	Mica Cond. (250 mmf.)	30-1032
35	Tubular Cond. (.01 mf.)	30-4572
36	Tubular Cond. (.003 mf.)	30-4582
37	Resistor (70,000 ohms, ½ watt)	33-370339
38	Resistor (.75 meg. ½ watt)	33-475339
39	Tubular Cond. (.003 mf.)	30-4469
40	Output Trans. for Speaker Part No. 36-1438	32-7978
41	Cone and Voice Coil Assy. for Speaker Part No. 36-1438-2	36-4089
42	Field Coil, Replace Speaker Part No. 36-1438-2	
43	Electro. Cond. (8 mf.—400 V.)	30-2371
44	Resistor (280 ohms)	33-128431
45	Resistor (70 ohms, ½ watt)	33-070339
46	Power Trans. 115V. (50 to 60 cycles)	32-7977
46A	Power Trans. 115 V. (25 to 40 cycles)	
47	Bakelite Cond. (.01 mf.—.01 mf.)	3903DG
48	Pilot Lamp (Dial)	34-2084
49	Pilot Lamp (Dial)	34-2084
50	Push Button Switch	42-1463
51	Compensator Assy.	31-6256
51A	Compensator No 1 (540-1030 K.C.)	
51B	Compensator No. 2 (540-1030 K.C.)	
51C	Compensator No. 3— 670-1160 K.C.	
51D	Compensator No. 4— 670-1160 K.C.	
51E	Compensator No. 5— 900-1470 K.C.	
51F	Compensator No. 6— 900-1470 K.C.	
51G	Compensator No. 7—1170-1600 K.C.	
51H	Compensator No. 8—1170-1600 K.C.	
52	Electric Push-Button Coil Assy.	32-3031
52A	Osc. Coil No. 1— 540-1030 K.C.	32-3042
52B	Osc. Coil No. 2— 540-1030 K.C.	32-3042
52C	Osc. Coil No. 3— 670-1160 K.C.	32-3042
52D	Osc. Coil No. 4— 670-1160 K.C.	32-3042
52E	Osc. Coil No. 5— 900-1470 K.C.	32-3041
52F	Osc. Coil No. 6— 900-1470 K.C.	32-3041
52G	Osc. Coil No. 7—1170-1600 K.C.	32-3041
52H	Osc. Coil No. 8—1170-1600 K.C.	32-3041
53	Wave Switch	42-1478

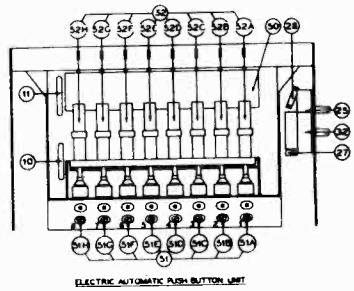
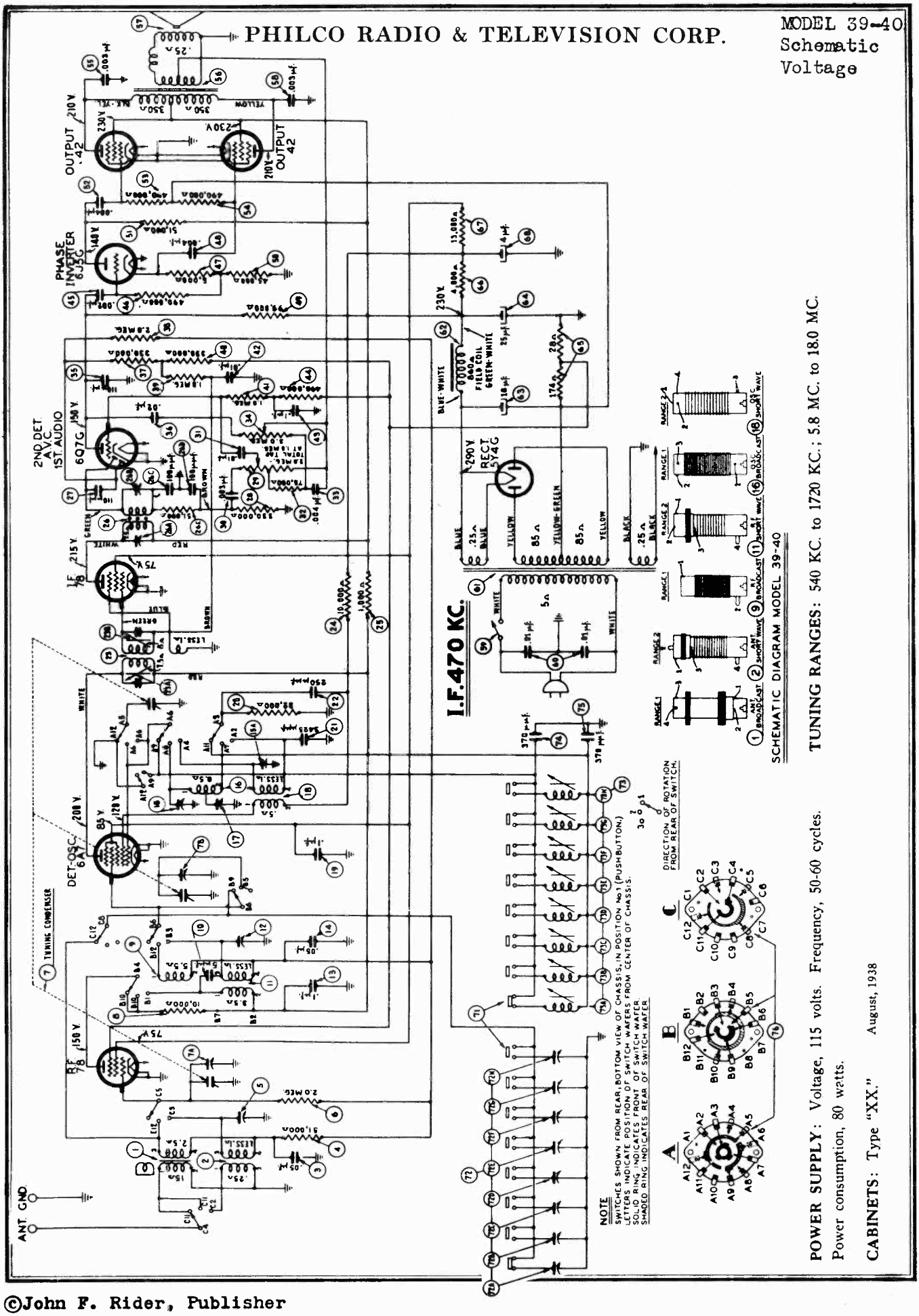


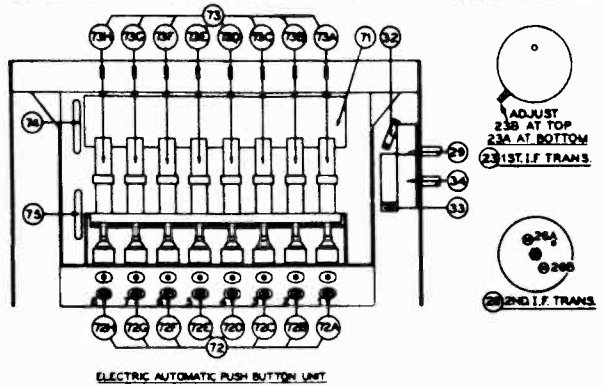
Fig. 2.—Part Locations—Push Button Unit

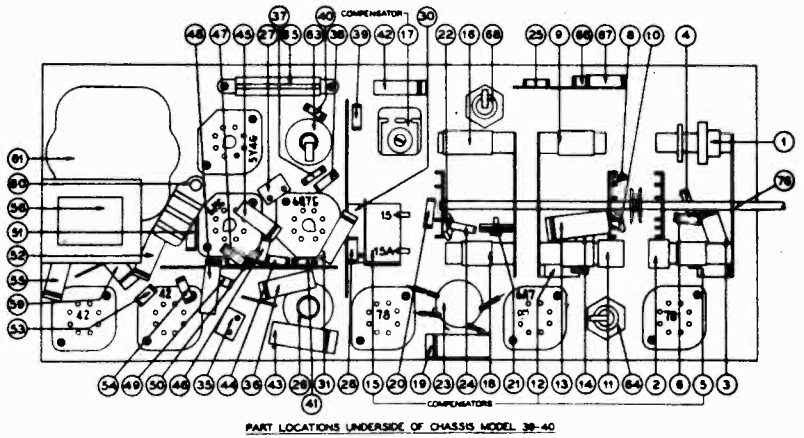
FOR PUSH-BUTTON ADJUSTMENTS SEE INDEX

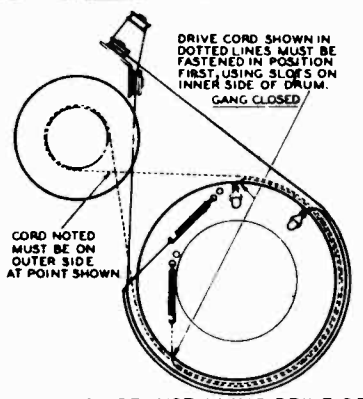
Miscellaneous Parts

Description	Part No.
Bezel	56-1184
Bracket and Bearing (Tuning Drum)	38-9683
Cable (Power)	L-2778
Coupling (Tuning Condenser)	31-2291
Dial	27-5452
Dial Pointer	56-1033
Dial Drive Cord (Tuning)	31-2315
Dial Drive Cord (Pointer)	31-2316
Disc Control (Tuning)	27-4766
Disc Control Range Switch	27-4767
Disc Control (Tone)	27-4764
Disc Control (Volume)	27-4765
Drum (Tuning Condenser)	38-9716
Push-Buttons	27-4759
Socket (5 prong)	27-6035
Socket (6 prong)	27-6036
Socket (7 prong)	27-6099
Spring (Dial Drive Cord)	23-2013
Speaker	36-1438-2









CORRECT METHOD OF INSTALLING DRIVE CORDS ON TUNING CONDENSER DRUM

Replacement Parts
Model 39-40, Code 121

Schem. No.	Description	Part No.
1	Antenna Transformer (Range 1, Brdcst.)	32-3056
2	Antenna Transformer (Range 2)	32-3055
3	Condenser (.05 mf tubular)	30-4519
4	Resistor (51,000 ohms, ½ watt)	33-351339
5	Compensator (Range 2, S. W.)	31-6212
6	Resistor (2.0 megohms, ½ watt)	33-520339
7	Tuning Condenser	31-2296
8	Resistor (10,000 ohms, ½ watt)	33-310339
9	R. F. Transformer (Range 1, Brdcst.)	32-2379
10	Condenser (5 mmf mica)	30-1083
11	R. F. Transformer (Range 2, S. W.)	32-3046
12	Compensator (Range 2, S. W.)	31-6212
13	Condenser (.1 mf tubular)	30-4455
14	Condenser (.05 mf tubular)	30-4519
15	Compensator (two sections)	31-6093
16	Oscillator Transformer (Range 1, Brdcst.)	32-2120
17	Compensator	31-6230
18	Oscillator Transformer (Range 2, S. W.)	32-3051
19	Condenser (.1 mf tubular)	30-4455
20	Resistor (32,000 ohms, ½ watt)	33-332339
21	Condenser (3425 mmf mica)	31-6263
22	Condenser (250 mmf mica)	30-1032
23	1st I. F. Transformer Assembly	32-3079
24	Resistor (10,000 ohms, ½ watt)	33-310339
25	Resistor (1000 ohms, ½ watt)	33-210339
26	2nd I. F. Transformer	32-2582
27	Condenser (110 mmf mica)	30-1031
28	Resistor (330,000 ohms, ½ watt)	33-433339
29	Volume Control (2.0 megohms)	33-5286
30	Condenser (.003 mf tubular)	30-4580
31	Condenser (.01 mf tubular)	30-4581
32	Resistor (70,000 ohms, ½ watt)	33-370339
33	Condenser (.004 mf tubular)	30-4578
34	Tone Control (3.0 megohms)	33-5287
35	Condenser (110 mmf mica)	30-1031
36	Condenser (.02 mf tubular)	30-4481
37	Resistor (330,000 ohms, ½ watt)	33-433339
38	Resistor (2.0 megohms, ½ watt)	33-520339
39	Resistor (1.0 megohm, ½ watt)	33-510339
40	Resistor (330,000 ohms, ½ watt)	33-433339
41	Resistor (1.0 megohm, ½ watt)	33-510339
42	Condenser (.01 mf tubular)	30-4581
43	Condenser (.1 mf tubular)	30-4455
44	Resistor (490,000 ohms, ½ watt)	33-449339
45	Condenser (.002 mf tubular)	30-4579
46	Resistor (490,000 ohms, ½ watt)	33-449339
47	Resistor (5000 ohms, ½ watt)	33-250339
48	Condenser (.004 mf tubular)	30-4578
49	Resistor (99,000 ohms, ½ watt)	33-399339
50	Resistor (45,000 ohms, ½ watt)	33-345339
51	Resistor (51,000 ohms, ½ watt)	33-351339
52	Condenser (.004 mf tubular)	30-4578
53	Resistor (490,000 ohms, ½ watt)	33-449339
54	Resistor (490,000 ohms, ½ watt)	33-449339
55	Condenser (.003 mf tubular)	30-4469
56	Output Transformer	32-7981
57	Cone and Voice Coil Assembly for Speaker (Part No. 36-1450)	36-4089
58	Condenser (.003 mf tubular)	30-4469
59	A. C. Switch	42-1467
60	Condenser (.01 mf to .01 mf bakelite)	3903DG
61	Pwr. Trnsfrmr., 115 v., 60 cycle	32-7998
62	Field Coil, Replace Speaker	36-1450
63	Elect. Condenser (18 mf)	30-2335
64	Elect. Condenser (25 mf), 250	30-2333
65	B. C. Resistor	33-3358
66	Resistor (4000 ohms, ½ watt)	33-240339
67	Resistor (13,000 ohms, ½ watt)	33-313339
68	Elect. Condenser (4 mf), 250	30-2334
69	Pilot Lamp .. Dial	34-2064
70	Pilot Lamp	34-2064
71	Push-Button Switch	42-1462
72	Padder Strip Assem., Complete	31-6259
72A	Compensator No. 1 (540-1030 KC.)	
72B	Compensator No. 2 (540-1030 KC.)	
72C	Compensator No. 3 (670-1160 KC.)	
72D	Compensator No. 4 (670-1160 KC.)	
72E	Compensator No. 5 (900-1470 KC.)	
72F	Compensator No. 6 (900-1470 KC.)	
72G	Compensator No. 7 (1100-1600 KC.)	
72H	Compensator No. 8 (1100-1600 KC.)	
73	Coil Strip Assembly (8 coils)	32-3031
73A	Coil No. 1 (540-1030 KC.)	32-3042
73B	Coil No. 2 (540-1030 KC.)	32-3042
73C	Coil No. 3 (670-1160 KC.)	32-3042
73D	Coil No. 4 (670-1160 KC.)	32-3042
73E	Coil No. 5 (900-1470 KC.)	32-3041
73F	Coil No. 6 (900-1470 KC.)	32-3041
73G	Coil No. 7 (1100-1600 KC.)	32-3041
73H	Coil No. 8 (1100-1600 KC.)	32-3041
74	Condenser (370 mmf silver mica)	30-1110
75	Condenser (370 mmf silver mica)	30-1110
76	Wave Switch	42-1461
	Bezel	56-1104
	Bezel Gasket	27-9245
	Bearing (Drum Shaft)	56-1036
	Cable (Power)	L-2778
	Cable (Speaker)	41-3430
	Coupling (Tuning Condenser)	31-2291
	Dial (Scale)	27-5421
	Dial Clamp	56-1034
	Dial Gasket	27-9224
	Dial Gasket	27-9225
	Dial Pointer	56-1033
	Dial Drive Cord (Tuning)	31-2315
	Dial Drive Cord, Pointer	31-2316
	Dial Drive Cord Spring	28-8913
	Disc Control (Tuning)	27-4766
	Disc Control (Range Switch)	38-9702
	Disc (Tone Control)	27-4764
	Disc (Volume Control)	27-4765
	Drum Assembly (Tuning Condenser)	38-9661
	Drum Bracket and Bearing (Tuning Condenser)	38-9662
	Shaft (Control Drums)	28-6924
	Socket Assembly Dial Lamp	38-9694
	Socket Assembly Dial Lamp	38-9695
	Socket (6-prong), 78-tube	27-6036
	Socket (6-prong), Octal	27-6086
	Socket (7-prong), Octal	27-6053
	Socket (7-prong), 6A7-tube	27-6107
	Speaker	36-1450
	Tab Kit	40-6392

Miscellaneous Parts

Grommet (Mtg. Push-Button Switch)	27-4610
Grommet (Mtg. Tuning Unit Assy.)	3914
Grommet (Mtg. Tuning Unit Assy.)	3915
Nut (A. C. Switch)	W-1757
Nut (Speaker Mtg.)	W-124
Screw (Mtg. Chassis)	W-1345
Screw (Bezel)	W-1834
Washer (Speaker Mtg.)	27-7467
Washer Rubber (Mtg. Chassis)	27-4571
Washer (A. C. Switch)	W-894

PHILCO RADIO & TELEV. CORP.

MODEL 39-40
MODEL 39-45
Alignment, Tuner Data

PHILCO RADIO & TELEVISION CORP.

MODEL 39-36
Tuner Data

ADJUSTING ELECTRIC PUSH-BUTTON TUNING FOR MODELS 39-36, 39-40, AND 39-45

In order to set the Electric Push-Buttons correctly for each station, the procedure as given below should be carefully followed. Accurate adjustment of the buttons requires the use of a Philco Model 077 Station Setter and a part No. 27-7059 insulated screw driver.

(A) Select eight of the most popular stations received in the locality and remove their call letters from the call letter sheets supplied. Place the call letters in the windows above the buttons, making sure that each button covers the frequency of the station for which it is to be used. Two adjustment screws for each button are located on the rear of the push-button unit. Each set of screws is numbered and covers a frequency range as follows:

Push-Button	Frequency Range
1 and 2	540-1030 KC.
3 and 4	670-1160 KC.
5 and 6	900-1470 KC.
7 and 8	1100-1600 KC.

Looking at the front of the cabinet, the first button on the left is adjusted by set screw No. 1, the next button by set screw No. 2, and the remaining buttons in the same order.

(B) Connect the aerial and ground to the "ANT" and "GND" terminals of the receiver.

(C) Turn the receiver Tuning Range Selector to position 2 (Broadcast) and tune the receiver to the station to be set on the first button.

(D) Plug the output leads of the Station Setter into the "High" and "Gnd" jacks, and turn the output controls to maximum.

Turn the modulation control to "Modulation On." Connect the output lead of the station setter to the "ANT" and "GND" terminals of the receiver and tune to the frequency of the station being received. As the indicator is slowly tuned through the frequency of the station, there will be two points at which a whistle will be heard, one above and one below the frequency of the station. When the indicator is on the frequency of the station the whistle will be eliminated and the modulated signal of the station setter will then be clearly heard through the receiver.

(E) Turn the receiver Tuning Range Selector to position 1 (Push-Button) and press in the first button. Using the part No. 27-7059 insulated screw driver, turn the No. 1 "OSC" screw until the broadcast station identified by the station setter signal is tuned to Maximum Volume.

(F) Remove the output lead of the station setter from the "ANT" terminal of the receiver and turn the indicator of the Station Setter off the frequency of the station. The program of the desired station will then be heard in the receiver without the modulated signal.

(G) With the volume of the receiver low, slowly turn the No. 1 "OSC" screw back and forth until maximum output is received. Repeat the same procedure for the No. 1 "ANT" screw.

After setting up the first station, the same procedure given under (C) to (G) is used for the other stations.

ALIGNMENT OF MODEL 39-40

Operations	SIGNAL GENERATOR			RECEIVER			Special Instructions
	Output Connections to Receiver	Dummy Antenna (Note A)	Dial Setting	Dial Setting	Control Setting	Adjust Compensators to Max. Reading	
1	6A7	.1 mf	470 KC.	580 KC.	Vol. Max. Range Switch Broadcast	26B, 26A, 23B, 23A	
2	Ant. Ter.	150 mmf	1550 KC.	1550 KC.	"	15, 7B, 7A	See Note B and C
3	Ant. Ter.	150 mmf	580 KC.	580 KC.	"	17	Roll Tuning Condenser
4	Ant. Ter.	150 mmf	1550 KC.	1550 KC.	"	15	
5	Ant. Ter.	400 ohms	18.0 MC.	18.0 MC.	Range Switch S. W.	15A, 12, 5	

NOTE A—The "Dummy Antenna" consists of a condenser connected in series with the signal generator output lead (high side). Use the capacity as specified in each step of the above procedure.

NOTE B—Dial Calibration. In order to adjust the receiver correctly, the dial must be aligned to track properly with the tuning condenser. To adjust the dial, proceed as follows: With the tuning condenser closed (maximum capacity), set the dial pointer on the extreme left index line at the low frequency end of the broadcast scale. The arrangement of the drive cable is shown on page 3.

NOTE C—Compensators (7A) and (7B) are located on top of the tuning condenser. Compensator (7A) is the first one from the tuning drum side.

ALIGNMENT OF MODEL 39-45

Operation	SIGNAL GENERATOR			RECEIVER			Special Instructions
	Output Connections to Receiver	Dummy Antenna (Note A)	Dial Setting	Dial Setting	Control Setting	Adjust Compensators to Max. Reading	
1	6A7	.1 mf	470 KC.	470 KC.	Vol. Max. Range Switch Broadcast	30B, 30A, 27B, 27A	
2	Antenna	150 mmf	1550 KC.	1550 KC.	"	21, 8B, 8A	See Note B and C
3	Antenna	150 mmf	580 KC.	580 KC.	"	22	Roll Tuning Condenser
4	Antenna	150 mmf	1550 KC.	1550 KC.	"	21	
5	Antenna	400 ohms	5.0 MC.	5.0 MC.	Range Switch Police	21A	
6	Antenna	400 ohms	18.0 MC.	18.0 MC.	Range Switch S. W.	21B, 14, 4	

NOTE A—The "Dummy Antenna" consists of a condenser connected in series with the signal generator output lead (high side). Use the capacity as specified in each step of the above procedure.

NOTE B—Dial Calibration: In order to adjust the receiver correctly the dial must be aligned to track properly with the tuning condenser. To adjust the dial, proceed as follows: With the tuning condenser closed (maximum capacity), set the dial pointer on the extreme left index line at the low frequency end of the broadcast scale. The arrangement of the drive cable is shown on page 3.

NOTE C—Compensators (8A) and (8B) are located on top of the tuning condenser. Compensator (8A) is the first one from the tuning drum side.

MODEL 39-71
Schematic, Voltage, Socket Alignment, Trimmers, Parts
Chassis

PHILCO RADIO & TELEV. CORP.

Operations in Order	SIGNAL GENERATOR			RECEIVER			Special Instructions
	Output Connections to Receiver	Dummy Antenna (Note A)	Dial Setting	Dial Setting	Control Settings	Adjust Compensators in Order	
1	1A7G Grid	.1 mfd.	470 K. C.	580 K. C.	Vol. Cont. Max.	12A, 11B, 11A	Note C
2	Ant. & Grd. Terminals	400 ohms	1550 K. C.	1550 K. C.	Vol. Cont. Max.	2B, 2A	Note B Note C

NOTE A — The "Dummy Antenna" consists of a condenser or resistor connected in series with the signal generator output lead (high side). Use the capacity or resistance as specified in each step of the above procedure.

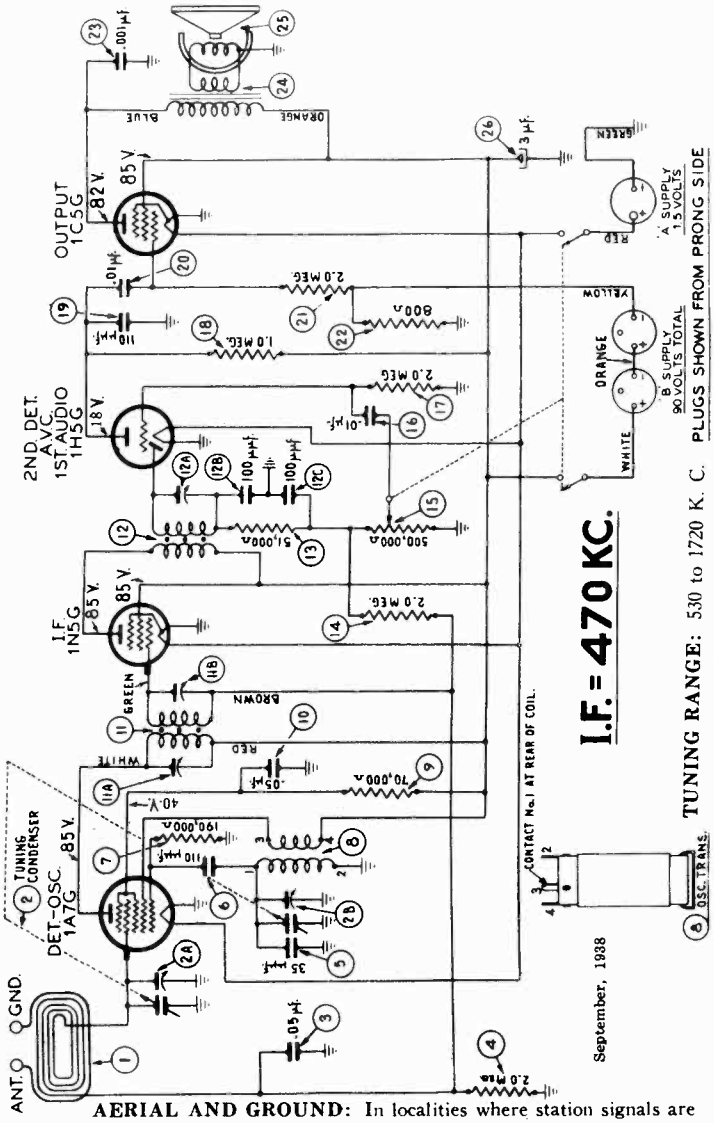
NOTE B — DIAL CALIBRATION: In order to adjust the receiver correctly, the dial must be aligned to track properly with the tuning condenser. To adjust the dial proceed as follows: Turn the tuning condenser to maximum capacity (plates fully meshed). With tuning condenser in this position set the pointer to the small "black dot" at the low frequency end of the dial scale.

NOTE C — To adjust the I. F. compensators, remove the back from the cabinet, which is held in place by four screws. The chassis is then taken out by removing the four screws and two corks underneath the cabinet, and the Tuning and Volume knobs. The I. F. compensators are located on top of the I. F. transformers.

When adjusting the Antenna (2A) and Oscillator (2B) compensators, the chassis must be assembled in the cabinet with the batteries and loop in place. The Signal Generator output lead with the "Dummy Antenna" is then connected to the terminals marked "Ant" and "Grd" underneath the cabinet. The antenna and oscillator compensators are then adjusted through the holes in the bottom of the cabinet.

BATTERIES REQUIRED: One (1) Philco "A" Pack, Part No. 41-8017; two (2) Philco "B" Packs, Part No. 41-8018.

BATTERY DRAIN: "A" — 240 Ma.; "B" 8.5 Ma. Total current with no signal.



AERIAL AND GROUND: In localities where station signals are weak, an aerial and ground may be necessary. A terminal strip will be found underneath the cabinet marked "Ant" "Grd" for this purpose.

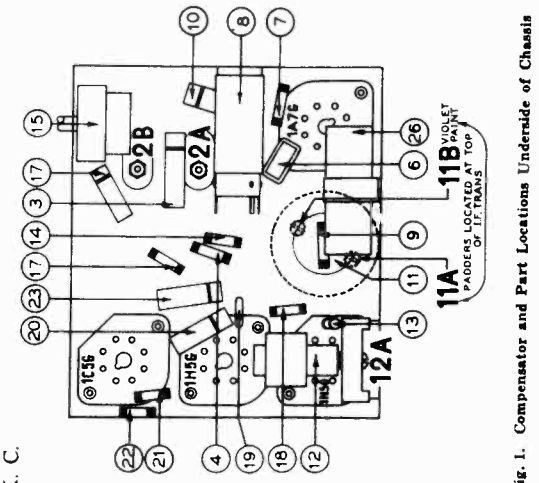


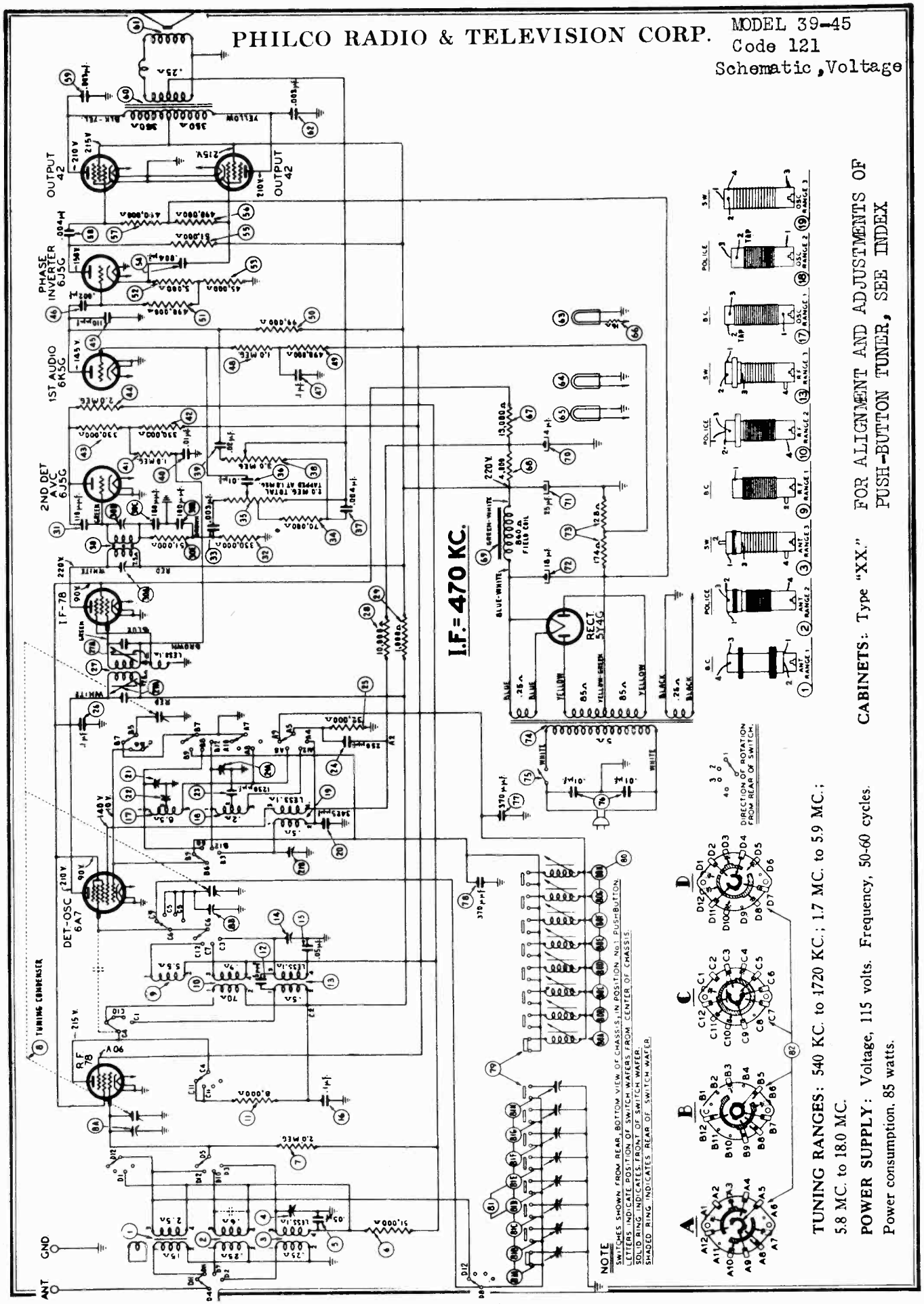
Fig. 1. Compensator and Part Locations Underside of Chassis

Replacement Parts

Code No.	Description	Part No.
1	Loop Assy.	40-6421
2	Tuning Cond.	31-2322
3	Tubular Cond. (.05 mf.)	30-4519
4	Resistor (2 megohm)	33-520339
5	Mica Cond. (35 mmf.)—mounted on top of tuning condenser	30-1095
6	Mica Cond. (110 mmf.)	30-1031
7	Resistor (190,000 ohms)	33-419339
8	Oscillator Trans.	32-3118
9	Resistor (70,000 ohms)	33-370339
10	Tubular Cond. (.05 mf.)	30-4444
11	1st I. F. Trans. Assy.	32-3103
12	2nd I. F. Trans. Assy.	32-3081
13	Resistor (51,000 ohms)	33-351339
14	Resistor (2 megohms)	33-520339
15	Volume Control & Switch	33-5301
16	Tubular Cond. (.01 mf.)	30-4572
17	Resistor (2 megohm)	33-520339
18	Resistor (1 megohm)	33-510339
19	Mica Cond. (110 mmf.)	30-1031
20	Tubular Cond. (.01 mf.)	30-4572
21	Resistor (2 megohm)	33-520339
22	Resistor (800 ohms)	33-180339
23	Tubular Cond. (.001 mf.)	30-4201
24	Output Trans. for Speaker No. 36-1451-3	
25	Voice Coil Assy. for Speaker No. 36-1451-3	36-4090
26	Electrolytic Cond. (3 mf.)	30-2359
	Bezel Window	27-5434
	Dial	31-2321
	Dial Pointer	28-5185
	Dial Drive Cord Assy.	31-2323
	Dial Tuning Shaft & Brkt. Assy.	31-2324
	Escutcheon (knobs)	56-1252
	Escutcheon (screws)	W-2129
	Knob (Tuning, Volume)	27-4331
	Loop Antenna	40-6421
	Pulley (Tuning Condenser)	28-6662
	Socket (6 prong)	27-6086
	Socket (7 prong)	27-6087
	Spring (Dial Cord)	28-8751
	Speaker	36-1451

PHILCO RADIO & TELEVISION CORP.

MODEL 39-45
Code 121
Schematic, Voltage

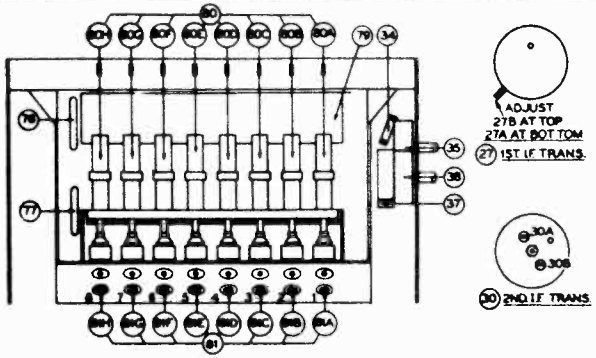


FOR ALIGNMENT AND ADJUSTMENTS OF PUSH-BUTTON TUNER, SEE INDEX.

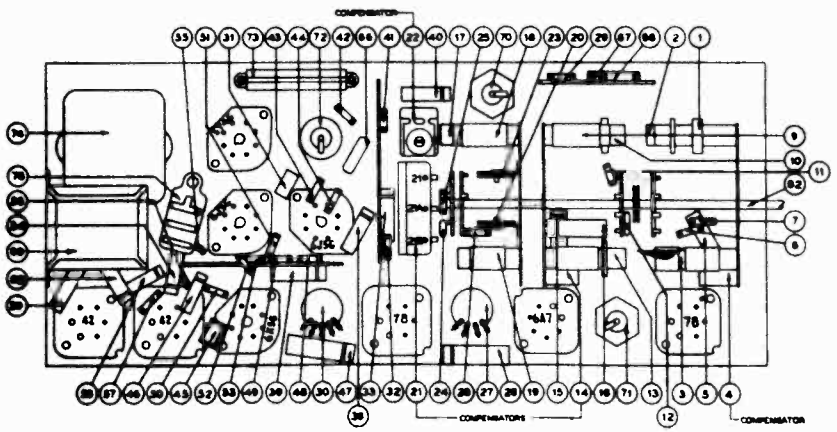
CABINETS: Type "XX."

TUNING RANGES: 540 KC. to 1720 KC.; 1.7 MC. to 5.9 MC.; 5.8 MC. to 18.0 MC.

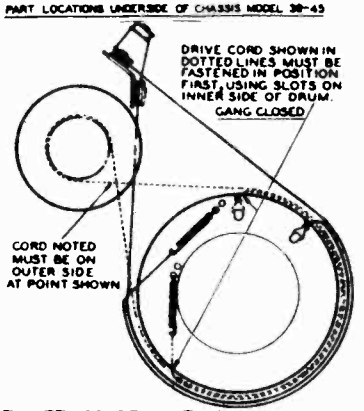
POWER SUPPLY: Voltage, 115 volts. Frequency, 50-60 cycles. Power consumption, 85 watts.



ELECTRIC AUTOMATIC PUSH BUTTON UNIT



PART LOCATIONS UNDERSIDE OF CHASSIS MODEL 39-45



CORRECT METHOD OF INSTALLING DRIVE CORDS ON TUNING CONDENSER DRUM

August, 1938

Replacement Parts
Model 39-45, Code 121

Schem. No.	Description	Part No.
1	Ant. Trans. (Range 1), B. C.	32-3056
2	Ant. Trans. (Range 2), Police	32-3053
3	Ant. Trans. (Range 3), S. W.	32-3055
4	Ant. Compensator (Range 3)	31-6212
5	Tubular Cond. (.05 mf)	30-4519
6	Resistor (51,000 ohms)	33-351339
7	Resistor (2.0 megohms)	33-520339
8	Tuning Cond.	31-2296
9	R. F. Trans. (Range 1), B. C.	32-2379
10	R. F. Trans. (Range 2), Police	32-3054
11	Resistor (8000 ohms)	33-280339
12	Mica Cond. (5 mmf)	30-1083
13	R. F. Trans. (Range 3), S. W.	32-3046
14	R. F. Compensator (Range 3)	31-6212
15	Tubular Cond. (.05 mf)	30-4519
16	Tubular Cond. (.1 mf)	30-4455
17	Osc. Trans. (Range 1), B. C.	32-2120
18	Osc. Trans. (Range 2), Police	32-3052
19	Osc. Trans. (Range 3), S. W.	32-3051
20	Tracking Condenser, Semifixed (3425 mmf)	31-6263
21	Osc. Compensator (Broadcast)	31-6266
21A	Osc. Compensator (Police, Part of 21)	31-6266
21B	Osc. Compensator (s.w. part of 21)	
22	Osc. Compensator	31-6230
23	Tracking Condenser, Semifixed (1230 mmf)	31-6262
24	Mica Cond. (250 mmf)	30-1032
25	Resistor (32,000 ohms)	33-332339
26	Tubular Cond. (.1 mf)	30-4455
27	1st I. F. Trans. Assy.	32-3079
28	Resistor (10,000 ohms)	33-310339
29	Resistor (1000 ohms)	33-210339
30	2nd I. F. Trans. Assy.	32-2582
31	Mica Cond. (110 mmf)	30-1031
32	Resistor (330,000 ohms)	33-433339
33	Tubular Cond. (.003 mf)	30-4580
34	Resistor (70,000 ohms)	33-370339
35	Volume Control	33-5286
36	Tubular Cond. (.01 mf)	30-4169
37	Tubular Cond. (.004 mf)	30-4578
38	Tone Control	33-5287
39	Tubular Cond. (.02 mf)	30-4481
40	Tubular Cond. (.01 mf)	30-4169
41	Resistor (1.0 megohm)	33-510339
42	Resistor (330,000 ohms)	33-433339
43	Resistor (330,000 ohms)	33-433339
44	Resistor (2.0 megohms)	33-520339
45	Mica Cond. (110 mmf)	30-1031
46	Tubular Cond. (.002 mf)	30-4579
47	Tubular Cond. (.1 mf)	30-4455
48	Resistor (1.0 megohm)	33-510339
49	Resistor (490,000 ohms)	33-449339
50	Resistor (99,000 ohms)	33-399339
51	Resistor (490,000 ohms)	33-449339
52	Resistor (5000 ohms)	33-250339
53	Resistor (45,000 ohms)	33 345339
54	Tubular Cond. (.004 mf)	30-4578
55	Resistor (51,000 ohms)	33-351339
56	Resistor (490,000 ohms)	33-449339
57	Resistor (490,000 ohms)	33-449339
58	Tubular Cond. (.004 mf)	30-4578
59	Tubular Cond. (.003 mf)	30-4469
60	Output Trans.	32-7981
61	Cone and Voice Coil Assy. for Speaker (Part No. 36-1450)	36-4089
62	Tubular Cond. (.003 mf)	30-4469
63	Pilot Lamp Dial	34-2210
64	Pilot Lamp Dial	34 2210
65	Pilot Lamp Power	34-2210
66	Resistor (16 ohms)	33-016431
67	Resistor (13,000 ohms)	33-313439
68	Resistor (4000 ohms)	33-240339
69	Field Coil, Replace Speaker (Part No. 36-1450)	
70	Electrolytic Cond. (4 mf)	30-2334
71	Electrolytic Cond. (25 mf)	30-2333
72	Electrolytic Cond. (18 mf)	30-2335
73	B. C. Resistor	33-3358
74	Power Trans. (115v., 60 cycle)	32-7998
75	A. C. Switch	42-1467
76	Bakelite Cond. (.01 to .01 mfd)	3903DG
77	Silver Mica Cond. (370 mmf)	30-1110
78	Silver Mica Cond. (370 mmf)	30-1110
79	Push-Button Switch	42-1462
80	Push-Button Osc. Trans. Assy. (8 coils)	32-3031
80A	Coil No. 1 (540-1030 KC.)	32-3042
80B	Coil No. 2 (540-1030 KC.)	32-3042
80C	Coil No. 3 (670-1160 KC.)	32-3042
80D	Coil No. 4 (670-1160 KC.)	32-3042
80E	Coil No. 5 (900-1470 KC.)	32-3041
80F	Coil No. 6 (900-1470 KC.)	32-3041
80G	Coil No. 7 (1100-1600 KC.)	32-3041
80H	Coil No. 8 (1100-1600 KC.)	32-3041
81	Padder Strip	31-6259
81A	Comp. No. 1 (540-1030 KC.)	
81B	Comp. No. 2 (540-1030 KC.)	
81C	Comp. No. 3 (670-1160 KC.)	
81D	Comp. No. 4 (670-1160 KC.)	
81E	Comp No. 5 (900-1470 KC.)	
81F	Comp. No. 6 (900-1470 KC.)	
81G	Comp. No. 7 (1100-1600 KC.)	
81H	Comp. No. 8 (1100-1600 KC.)	
82	Wave Switch	42-1451

Miscellaneous Parts

Bezel	56-1092
Bezel Gasket	27-9245
Bearing (Drum Shaft)	56-1036
Cable (Power)	L-2778
Cable (Speaker)	41-3430
Coupling (Tuning Condenser)	31-2291
Dial (Scale)	27 5404
Dial Clamp	56-1034
Dial Gasket	27-9224
Dial Gasket	27-9225
Dial Pointer	56-1033
Dial Drive Cord (Tuning)	31-2315
Dial Drive Cord Pointer	31-2316
Dial Drive Cord Spring	28-8913
Disc Control (Tuning)	27-4766
Disc Control (Range Switch)	38-9702
Disc (Tone Control)	27-4764
Disc (Volume Control)	27-4765
Drum Assembly (Tuning Condenser)	38-9661
Drum-Bracket and Bearing (Tuning Condenser)	38-9662
Shaft Control Drums	28-6924
Socket Assembly Dial Lamp	38-9694
Socket Assembly Dial Lamp	38-9695
Socket Pilot Lamp	38-9696
Socket (6-prong) (78-tube)	27-6036
Socket (6-prong) (Octal)	27-6086
Socket (7-prong) (Octal)	27-6053
Socket (7-prong) (6A7-tube)	27-6107
Speaker	36-1450
Tab Kit	40-6392
Mounting Parts Grommet	
(Mtg. Push-Button Switch)	27-4610
(Mtg. Tuning Unit Assy.)	3914
(Mtg. Tuning Unit Assy.)	3915
Nut (A. C. Switch)	W-1757
Nut (Speaker Mtg.)	W-124
Screw (Mtg. Chassis)	W-1345
Screw (Bezel)	W-1834
Washer (Speaker Mtg.)	27-7467
Washer Rubber (Mtg. Chassis)	27-4571
Washer (A. C. Switch)	W-894

PHILCO RADIO & TELEV. CORP.

MODELS 39-70,Code 121,
39-75,Code 121,122
Schematic,Socket,Trimmers
Chassis

Alignment Notes

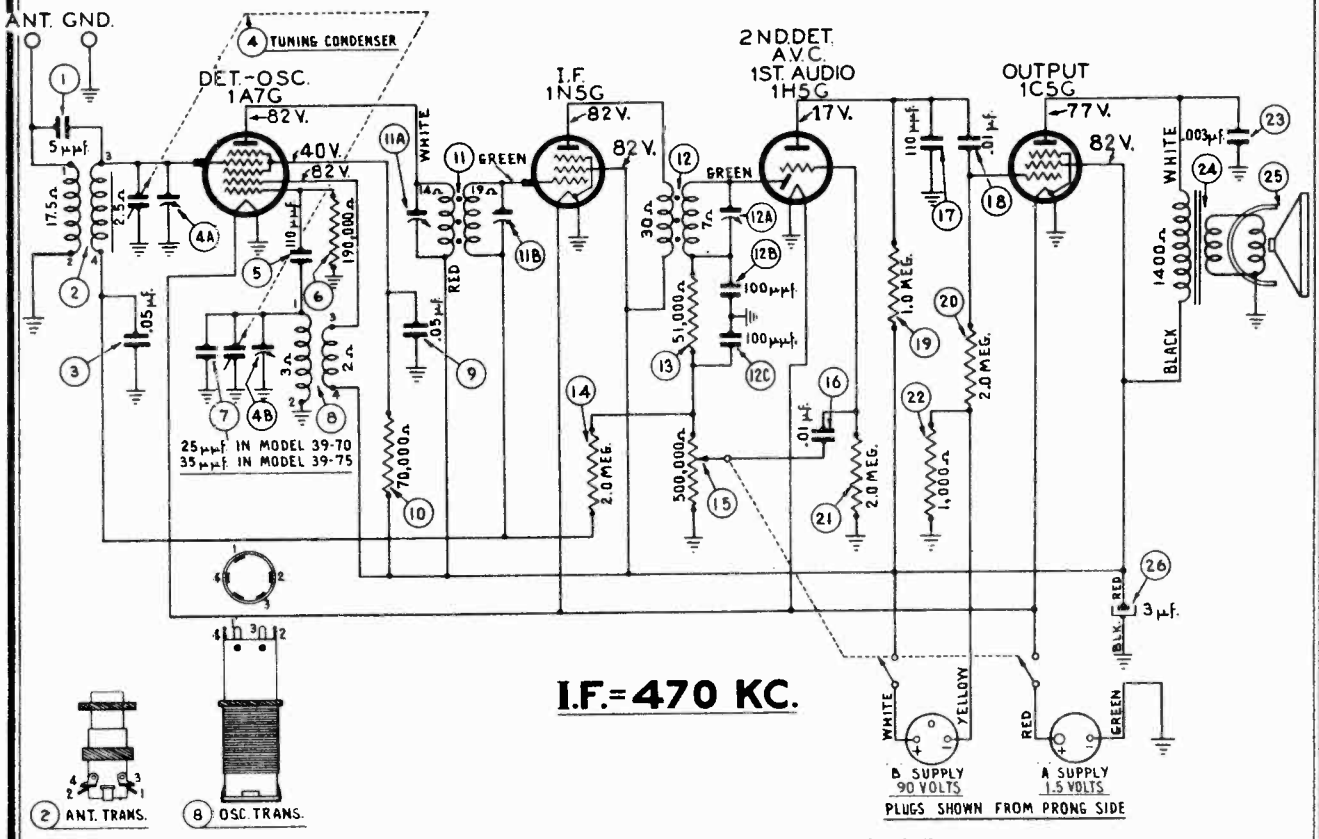
NOTE A—The "Dummy Antenna" consists of a condenser or resistor connected in series with the signal generator output lead (high side). Use the capacity or resistance as specified in each step of the above procedure.

NOTE B—DIAL CALIBRATION: In order to adjust the receiver correctly, the dial must be aligned to track properly with the tuning condenser.

Model 39-70 and 39-80—To adjust the dial proceed as follows: Turn the tuning condenser to maximum capacity (plates fully meshed). With the tuning condenser in this position, set the pointer horizontally across the dial.

Model 39-75—With the tuning condenser in the maximum capacity position (plates fully meshed), loosen the coupling screws connecting the push-button unit to the condenser. The pointer is then set on the extreme left edge of the index line (low frequency end of the scale) with the tuning condenser fully closed. The gang is then opened until the pointer is at the right edge of the index line. The push-button shaft is then turned counter-clockwise to its "stop." With the tuning condenser and push-button shaft in these positions tighten the coupling set screws.

NOTE C—The locations of the compensators in Models 39-70, 39-75 and 39-80 are shown in Figs. (1), (2) and (3) respectively.



SCHEMATIC DIAGRAM MODEL 39-70 & 39-75

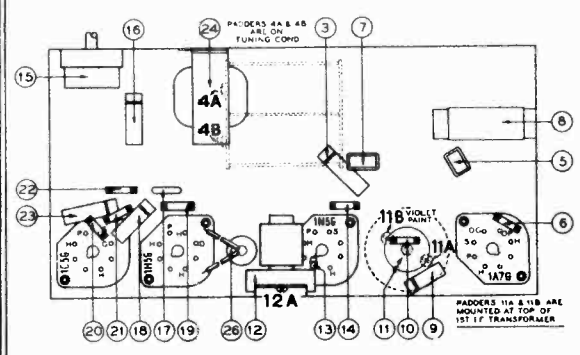


Fig. 1. Compensator and Part Locations
Model 39-70, Code 121
Underside of Chassis

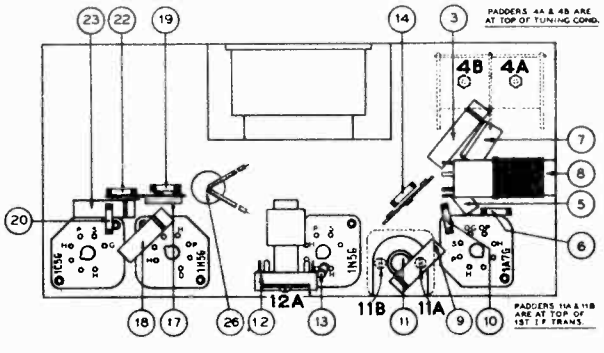


Fig. 2. Compensator and Part Locations
Model 39-75, Code 121-122
Underside of Chassis

MODELS 39-70,Code 121,
39-75,Code 121,122
Alignment,Parts List
MODEL 39-80,Code 121
Alignment

PHILCO RADIO & TELEV. CORP.

REPLACEMENT PARTS

Models 39-70, Code 121, and 39-75, Codes 121-122

Schem. No.	Description	Part No.
1	Condenser (5 mmf. mica) (Part of No. 2)	30-1097
2	Antenna Transformer (Includes No. 1)	32-3080
3	Condenser (.05 mf. tubular)	30-4519
4	Tuning Condenser Assembly, 39-70	31-2300
	Tuning Condenser Assembly, 39-75	31-2265
5	Condenser (110 mmf. mica)	30-1031
6	Resistor (190,000 ohms, ½ watt)	33-419339
7	Condenser (25 mmf. mica), 39-70	30-1067
	Condenser (35 mmf. silver plated mica), 39-75	30-1113
8	Oscillator Transformer, 39-70	32-3019
	Oscillator Transformer, 39-75	32-3083
9	Condenser (.05 mf. tubular)	30-4444
10	Resistor (70,000 ohms, ½ watt)	33-370339
11	1st I. F. Transformer Assembly, 39-70	32-2841
	1st I. F. Transformer Assembly, 39-75	32-3078
12	2nd I. F. Transformer Assembly	32-3081
13	Resistor (51,000 ohms, ½ watt)	33-351339
14	Resistor (2.0 megohms, ½ watt)	33-520339
15	Volume Control and On-Off Switch, 39-70	33-5290
	Volume Control and On-Off Switch, 39-75	33-5291
16	Condenser (.01 mf. tubular)	30-4572
17	Condenser (110 mmf. mica)	30-1031
18	Condenser (.01 mf. tubular)	30-4572
19	Resistor (1.0 megohm, ½ watt)	33-510339
20	Resistor (2.0 megohms, ½ watt)	33-520339
21	Resistor (2.0 megohms, ½ watt)	33-520339
22	Resistor (1000 ohms, ½ watt)	33-210339
23	Condenser (.003 mf. tubular)	30-4469
24	Output Transformer	32-7995
*25	Cone and Voice Coil Assemblies—	
	39-70 "B," Spkr. Pt. No. 36-1435	36-4090
	39-70 "F," Spkr. Pt. No. 36-1447	36-4092
	39-75 "B," Spkr. Pt. No. 36-1442	36-4090
	39-75 "F," Spkr. Pt. No. 36-1447	36-4092
26	Electrolytic Condenser (3 mf.)	30-2346

MISCELLANEOUS PARTS

Model 39-70, Code 121

Bezel Window	27-5417
Cable (Battery)	41-3427
Dial	27-5416
Dial Drive Cord	31-2317
Dial Drive Spring	28-8751
Dial Pointer	28-5468
Knob	27-4332
On-Off Indicator Parts—	
Hub and Lever	38-9658
Toggle Link and Brkt. Assy.	38-9700
Spring (Toggle Link and Brkt. Assy.)	28-8925
Snap Fastener	56-1156
Pulley (Tuning Condenser)	28-6662
Pulley Screw (Tuning Condenser)	W-1400
Shaft Assy. (Tuning)	31-2290
*Speaker ("B" Cabinet)	36-1435
*Speaker ("F" Cabinet)	36-1447

Model 39-75, Code 121-122

Automatic Tuning Unit Complete	31-2282
Bezel (Dial)	40-6364
Bezel Gasket (Dial)	27-9174
Bezel (Push-Button)	28-5929
Bezel Gasket (Push-Button)	27-9218
Dial	27-5420
Dial Pointer	28-5934
Dial Drive Cord	31-2275
Dial Drive Cord Spring	28-8919
Dial Drive Drum (Tuning Condenser)	31-2281
Knob (Volume)	27-4753
Knob (Tuning)	27-4750
Knob Screw (Tuning)	28-6882
Push-Button	27-4749
Push-Button Spring	28-8918
Sleeve—Short (Tuning Shaft, Code 121-122)	28-6887
*Speaker (T Cabinet)	36-1442
Socket (1A7G)	27-6099
Socket (6 prong)	27-6086
Socket (7 prong)	27-6087

Model 39-75, Code 122

Extension Shaft (Volume)	28-9640
Extension Shaft (Tuning)	28-6928
Extension Sleeve—Long (Tuning Shaft)	28-6935
Socket (Speaker)	27-6115
*Speaker (Code 122)	36-1447
Spring (Retaining Vol. Knob)	28-8915

Specifications

TYPE OF CIRCUIT: Models 39-70, 39-75 and 39-80 are four tube battery operated superheterodyne receivers covering standard broadcast and state police stations. The receivers employ the new Philco Farm Radio Tubes, which require exceptionally low current for operation, Automatic Volume Control, and a Philco Speaker designed especially for battery radio. In general these models are similar but differ in their tuning mechanisms, speakers and cabinets.

Model 39-70 is manually tuned and is assembled in cabinet types "F" (floor model) and "B" (table model).

Model 39-75, codes 121 and 122 is equipped with automatic push-button and manual tuning. The automatic tuning mechanism contains six push-buttons for selecting any of six stations in the standard broadcast band. The procedure for adjusting and operating the push-buttons will be found in the instructions supplied with each set.

Code 122 of this model is assembled in cabinet type "F" (floor model); Code 121 in cabinet type "T" (table model).

Model 39-80 is manually tuned and is assembled in cabinet type "B" (table model) and cabinet type "XF" (floor model).

In addition to the new Philco speaker in Model 39-80 a sound chamber is also built into the cabinet. This sound chamber reinforces the sound produced by the speaker and results in greater clarity of tone and intensity of sound output. Bass compensation is also included in the volume control circuit.

TUNING RANGE: 530 to 1720 K. C.

INTERMEDIATE FREQUENCY: 470 K. C.

PHILCO TUBES: One 1A7G, First Detector and Oscillator; one 1N5G, I. F. Amplifier; one 1H5G, Second Detector, First Audio and Automatic Volume Control, and one 1C5G (1A5G Model 39-80) Pentode Output.

BATTERIES REQUIRED: One (1) Philco "A" Pack, Part No. 41-8014; one (1) Philco "B" Pack, Part No. 41-8015.

INSTALLING BATTERIES: The batteries are arranged in the cabinet in such a manner that they form part of the sound chamber air column.

It is very essential, therefore, that the following instructions be carefully observed when installing the batteries. Remove the back from the cabinet after removing the wood screws which hold it in place. Place the small "A" Pack in the left side (looking at the cabinet from the rear) of the cabinet, three inches in from the rear with the slanting portion facing the front of the cabinet. Place the long "B" Pack along the rear of the cabinet with the socket for the battery cable plug at the top towards the front.

Observe the arrangement of pins on the plugs of the battery cable and the corresponding holes in the sockets of the batteries, so you will be sure to insert them correctly. Insert plug with two prongs into the small "A" Pack and the plug with three prongs into the large "B" Pack.

Replace the back on the cabinet with the wood screws, making sure all of them are screwed in tight.

BATTERY DRAIN:
Models 39-70 and 39-75. "A"—(250 M. A.) "B"—(8½ M. A.)
Model 39-80 ..... "A"—(200 M. A.) "B"—(6½ M. A.)

AERIAL AND GROUND: In order to obtain the highest amount of sensitivity from these receivers the Philco Farm Radio Aerial, Part No. 40-6383, should be used. This aerial is accurately designed to match the tuned antenna circuit in the receiver so that maximum performance will be obtained.

A good ground connection to the nearest water pipe or any other good ground source is also required.

CABINET DIMENSIONS:

Model	Height	Width	Depth
39-70B	13⅞"	11⅞"	6¼"
39-70F	37⅛"	23"	9¾"
39-75T	85⅝"	13"	6¾"
39-75F	37⅛"	23"	9¾"
39-80B	17⅛"	17⅛"	9⅛"
39-80XF	39⅛"	24¼"	12½"

Alignment of Compensators

OUTPUT METER: The Philco 027 Output Meter is connected to the plate and screen terminals of the type 1C5G tube in Models 39-70 and 39-75 (1A5G Model 39-80) and adjusted for the 0 to 30 V. A. C. scale. After connecting the output meter, adjust the compensators in the order as shown in the tabulation below. Locations of the compensators are shown on page 2. If the output meter pointer goes off scale when adjusting the compensators, reduce the strength of the signal from the generator

PROCEDURE FOR MODELS 39-70 AND 39-75

Operations in Order	Signal Generator: Output Connections to Receiver	Signal Generator: Dummy Antenna Note A	Signal Generator: Dial Setting	Receiver: Dial Setting	Receiver: Control Setting	Receiver: Adjust Compensators	Special Instructions
1	1A7G Grid	.1 mfd.	470 K. C.	580 K. C.	Vol. Max.	12A, 11B, 11A	
2	Ant. (White)	225 mfd.	1550 K. C.	1550 K. C.	Vol. Max.	4B, 4A	Note B Note C

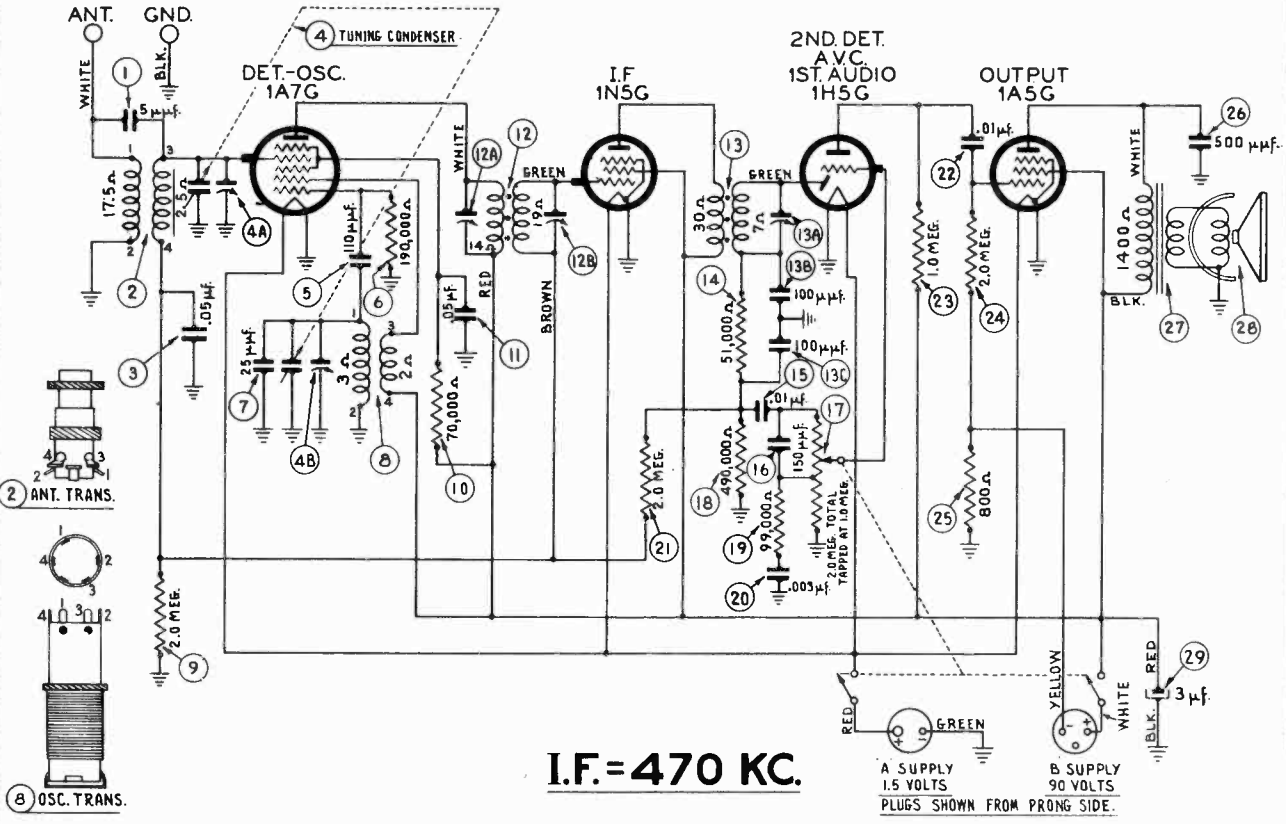
PROCEDURE FOR MODEL 39-80

Operations in Order	Signal Generator: Output Connections to Receiver	Signal Generator: Dummy Antenna Note A	Signal Generator: Dial Setting	Receiver: Dial Setting	Receiver: Control Setting	Receiver: Adjust Compensators	Special Instructions
1	1A7G Grid	.1 mfd.	470 K. C.	580 K. C.	Vol. Max.	13A, 12B, 12A	
2	Ant. (White)	225 mfd.	1550 K. C.	1550 K. C.	Vol. Max.	4B, 4A	Note B Note C

EQUIPMENT REQUIRED:
(1) Signal Generator: Philco Model 077 Signal Generator which has a fundamental frequency range from 115 to 36,000 K. C. is the correct instrument for this purpose.
(2) Output Meter, Philco Model 027 Circuit Tester, incorporates a sensitive output meter and is recommended.
(3) Philco Fiber Handle Screw Driver, Part No. 27-7059, and Fiber Wrench, Part No. 3164.

PHILCO RADIO & TELEV. CORP.

MODEL 39-80, Code 121
Schematic, Socket
Trimmers, Chassis
Parts List



SCHEMATIC DIAGRAM MODEL 39-80

Replacement Parts Model 39-80, Code 121

Schem. No.	Description	Part No.
1	Condenser (mica, 5 mmf.—Part of No. 2)	30-1097
2	Antenna Trans.	32-3080
3	Condenser (tubular, .05 mf.)	30-4519
4	Tuning Cond.	31-2300
5	Condenser (mica, 110 mmf.)	30-1031
6	Resistor (190,000 ohms, ½ watt)	33-419339
7	Condenser (mica, 25 mmfd.)	30-1067
8	Oscillator Trans.	32-3019
9	Resistor (2.0 meg., ½ watt)	33-520339
10	Resistor (70,000 ohms, ½ watt)	33-370339
11	Condenser (tubular, .05 mf.)	30-4444
12	1st I. F. Trans. Assy.	32-2841
13	2nd I. F. Trans. Assy.	32-3081
14	Resistor (51,000 ohms, ½ watt)	33-351339
15	Condenser (tubular, .01 mf.)	30-4572
16	Condenser (mica, 150 mmf.)	30-1033
17	Volume Control and On-Off Switch	33-5238
18	Resistor (490,000 ohms, ½ watt)	33-449339
19	Resistor (99,000 ohms, ½ watt)	33-399339
20	Condenser (tubular, .003 mf.)	30-4580
21	Resistor (2.0 meg., ½ watt)	33-520339
22	Condenser (tubular, .01 mf.)	30-4479
23	Resistor (1.0 meg., ½ watt)	33-510339
24	Resistor (2.0 meg., ½ watt)	33-520339
25	Resistor (800 ohms, ½ watt)	33-180339
26	Condenser (mica, 500 mmf.)	30-1114
27	Output Trans.	32-7984
28	Cone Assy. for Speaker 36-1410	36-4093
	Cone Assy. for Speaker 36-1436	36-4094
29	Electrolytic Condenser (3 mfd.)	30-2346
	Bezel Assy.	40-6374
	Bezel Screw	W-1834
	Brkt. (Mtg. Set in XF Cabinet)	56-1058
	Cable (Battery)	41-3437
	Dial	27-5413
	Dial Pointer	56-1091
	Dial Drive Cord	31-2318
	Dial Drive Cord Spring	28-8751

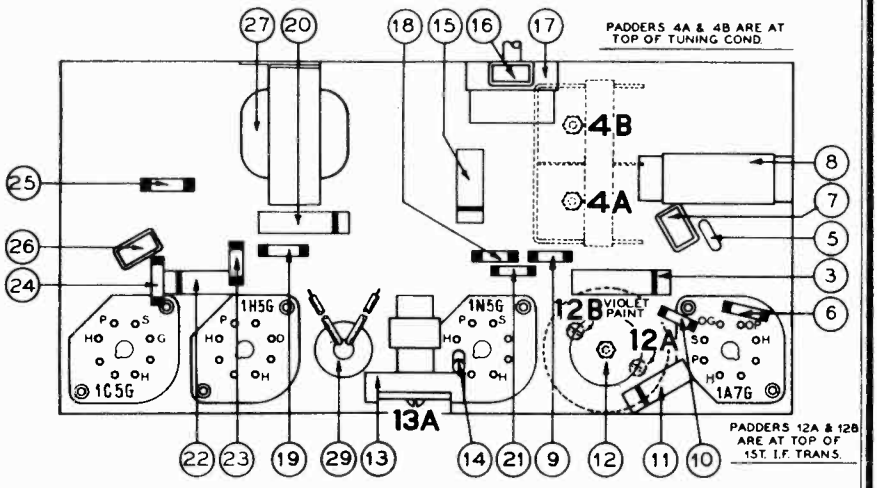


Fig. 3. Compensator and Part Locations Model 39-80, Code 121 Underside of Chassis

Description	Part No.
Knob	27-4604
On-Off Indicator Parts—	
Hub and Lever	38-9658
Toggle Link and Brkt. Assy.	38-9701
Spring (Toggle Assy.)	28-8925
Snap Fastener	56-1156
Pulley (Tuning Condenser)	28-6662
Pulley Screw (Tuning Condenser)	W-1400
Shaft Assy. (Tuning)	31-2290
*Speaker (B Cabinet)	36-1410
*Speaker (XF Cabinet)	36-1436
Socket (6 prong)	27-6086
Socket (7 prong)	27-6087
Socket (Speaker)	27-6115

MODELS 40-120, 40-125
Schematic, Voltage
Parts List

PHILCO RADIO & TELEV. CORP.

May, 1939.

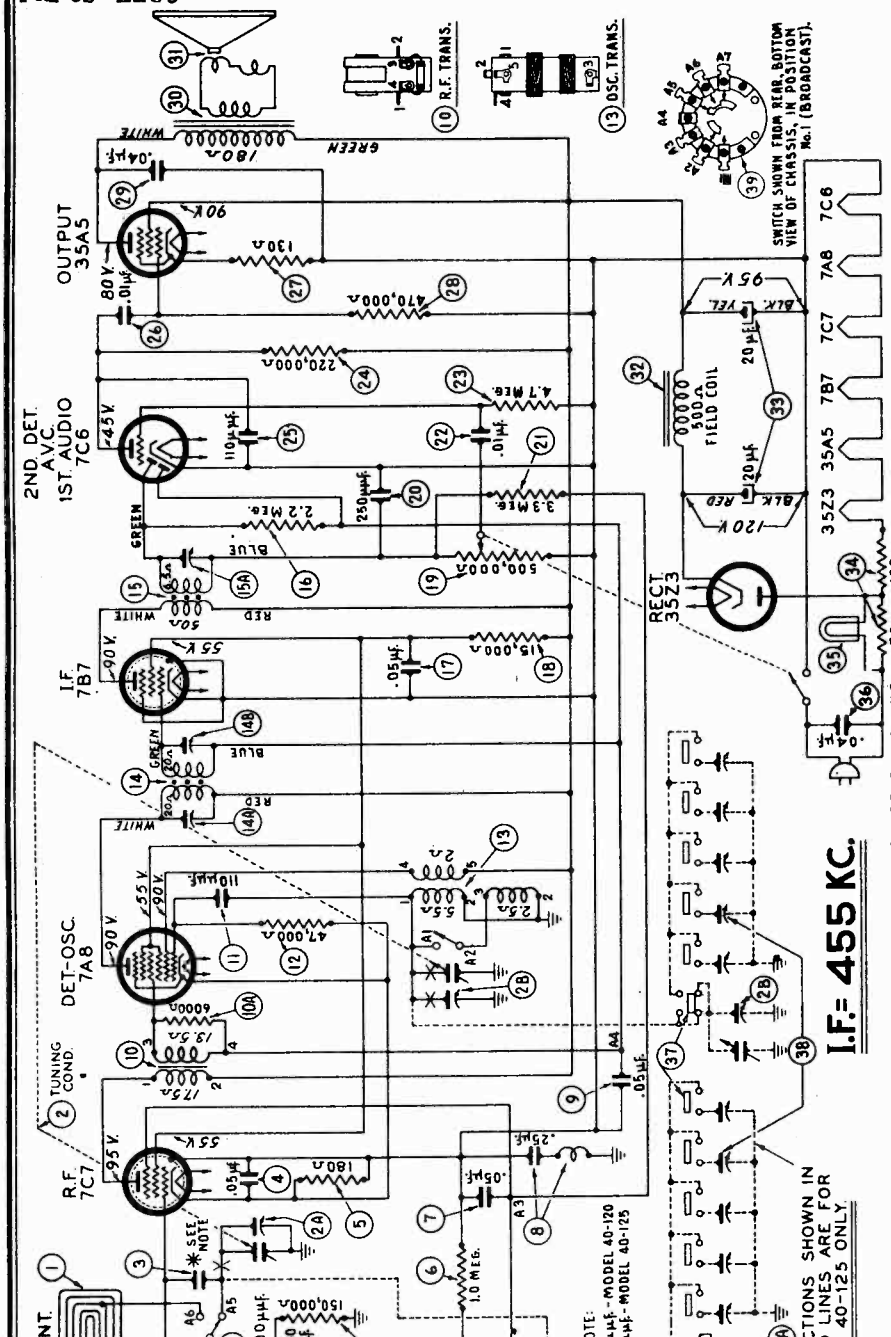


Fig. 2 SCHEMATIC DIAGRAM MODELS 40-120 & 40-125

TYPE OF CIRCUIT: FOR ALIGNMENT, SEE INDEX

Models 40-120 and 40-125 are six (6) tube super-heterodyne receivers employing the new Philco built-in super aerial system which eliminate an outside aerial, and Philco High-Efficiency Loktal tubes. In addition, other features of design are: two tuning ranges; special high gain R. F. stage; automatic volume control and a Beam power audio output stage. In general, these models are similar but differ in their tuning mechanisms and cabinets.

Model 40-120 is dial tuned and assembled in cabinet type "C".

Model 40-125 is equipped with six electric push buttons for automatically selecting stations in addition to dial tuning. Five push buttons are used for stations one of which can be used in combination with a Special type PHILCO TELEVISION receiver for reception of television sound programs. The sixth push button selects dial tuning. The procedure for adjusting and operating push button tuning will be found in the instructions supplied with each receiver. Instructions for setting up the television push button is supplied with Philco Television Receivers. This model is assembled in special type "C" cabinet.

TUNING RANGE: 540 to 1600 K. C. 1.6 to 3.3 M. C.
INTERMEDIATE FREQUENCY: 455 K. C.
POWER SUPPLY: 115 volts A. C. or D. C. current.
POWER CONSUMPTION: 28 watts.
AUDIO OUTPUT: 1 watt.
PHILCO TUBES USED:
7C7, R. F.; 7A8, oscillator and first detector; 7B7, I. F.; 7C6, second detector, first audio; 35A5, output; 35Z3, rectifier.

CABINET DIMENSIONS:	Height	Width	Depth
Model 40-120	6 9/16	1 1/8	6 1/16
Model 40-125	7 7/16	11	6 1/16

SCHE. No.	DESCRIPTION	PART No.
1	Loop Antenna Assy. (Model 40-120)	38-9889
	(Model 40-125)	38-9890
1A	Mica Cond. (500 mmfd.)	30-1114
1B	Mica Cond. (500 mmfd.)	30-1114
1C	Resistor (150,000 ohms, 1/2 watt)	33-415339
2	Tuning Cond. Assy. (Model 40-120)	31-2388
	(Model 40-125)	31-2397
3	Mica Cond. (660 mmfd., Model 40-120)	30-1136
	(800 mmfd., Model 40-125)	30-1135
4	Tubular Cond. (.05 mfd.)	30-4519
5	Resistor (180 ohms, 1/2 watt)	33-118339
6	Resistor (1.0 meg., 1/2 watt)	33-510339
7	Tubular Cond. (.05 mfd.)	30-4519
8	Tubular Cond. & Choke Assy. (.25 mfd.)	38-9851
9	Tubular Cond. (.05 mfd.)	30-4519
10	R. F. Trans. Assy.	32-3273
10A	Resistor (6000 ohms, 1/2 watt)	33-260339
11	Mica Cond. (110 mmfd.)	30-1130
12	Resistor (47,000 ohms, 1/2 watt)	33-347339
13	Oscillator Trans. (Model 40-120)	32-3255
	(Model 40-125)	32-3256
14	1st I. F. Trans. Assy.	32-3237
15	2nd I. F. Trans. Assy.	32-3238
16	Resistor (2.2 meg., 1/2 watt)	33-522339
17	Tubular Cond. (.05 mfd.)	30-4519
18	Resistor (15,000 ohms, 1/2 watt)	33-315339
19	Volume Control & On-Off Switch	33-5306
20	Mica Cond. (250 mmfd.)	30-1074
21	Resistor (3.3 meg., 1/2 watt)	33-533339
22	Tubular Cond. (.01 mfd.)	30-4479
23	Resistor (4.7 meg., 1/2 watt)	33-547339
24	Resistor (220,000 ohms, 1/2 watt)	33-422339
25	Mica Cond. (110 mmfd.)	30-1130
26	Tubular Cond. (.01 mfd.)	30-4572
27	Resistor (130 ohms, 1/2 watt)	33-113336
28	Resistor (470,000 ohms, 1/2 watt)	33-447339
29	Tubular Cond. (.04 mfd.)	30-4119
30	Output Trans. (Spkr. Part No. 36-1469-1)	32-8047
	(Spkr. Part No. 36-1469-9)	32-8044
31	Cone & Voice Coil Assy. (Spkr. Part No. 36-1469-1)	36-4115
	(Spkr. Part No. 36-1469-9)	36-4113
32	Field Coil (Replace Spkr. Part No. 36-1469)	
33	Electrolytic Cond. (20-20 mfd.)	30-2403
34	Filament Resistor	33-3375
35	Pilot Lamp	34-2068
36	Tubular Cond. (.04 mfd.)	30-4119
37	Push Button Switch (Model 40-125)	42-1512
38	Padder Strip (Model 40-125)	31-6312
39	Wave Switch	42-1508
	Cable & Plug (Power Supply)	L-3199
	Cabinet (Model 40-120)	10389A
	Clip (Coil Mtg.)	28-5002
	Dial	27-5517
	Drive Cord Assy.	31-2387
	Drive Shaft Assy.	31-2370
	Knobs (Volume-Tuning-Wave Switch)	27-4809
	Pilot Lamp Socket Assy.	38-9825
	Pointer (Dial)	27-4845
	Pointer (Knob)	56-1465
	Spring (Drive Cord Assy.)	28-8954
	Speaker Assy.	36-1469
	Sockets (Loktal)	55-0575

MISCELLANEOUS PARTS—MODEL 40-125

Cabinet	10390A
Escutcheon Plate (Pushbutton)	28-5742
Escutcheon Pins	W-1074
Knobs (Pushbutton)	27-4824
Tab (Dial)	27-5526
Tab Kit	40-6473

Schematic, Socket, Trimmers

PHILCO RADIO & TELEV. CORP.

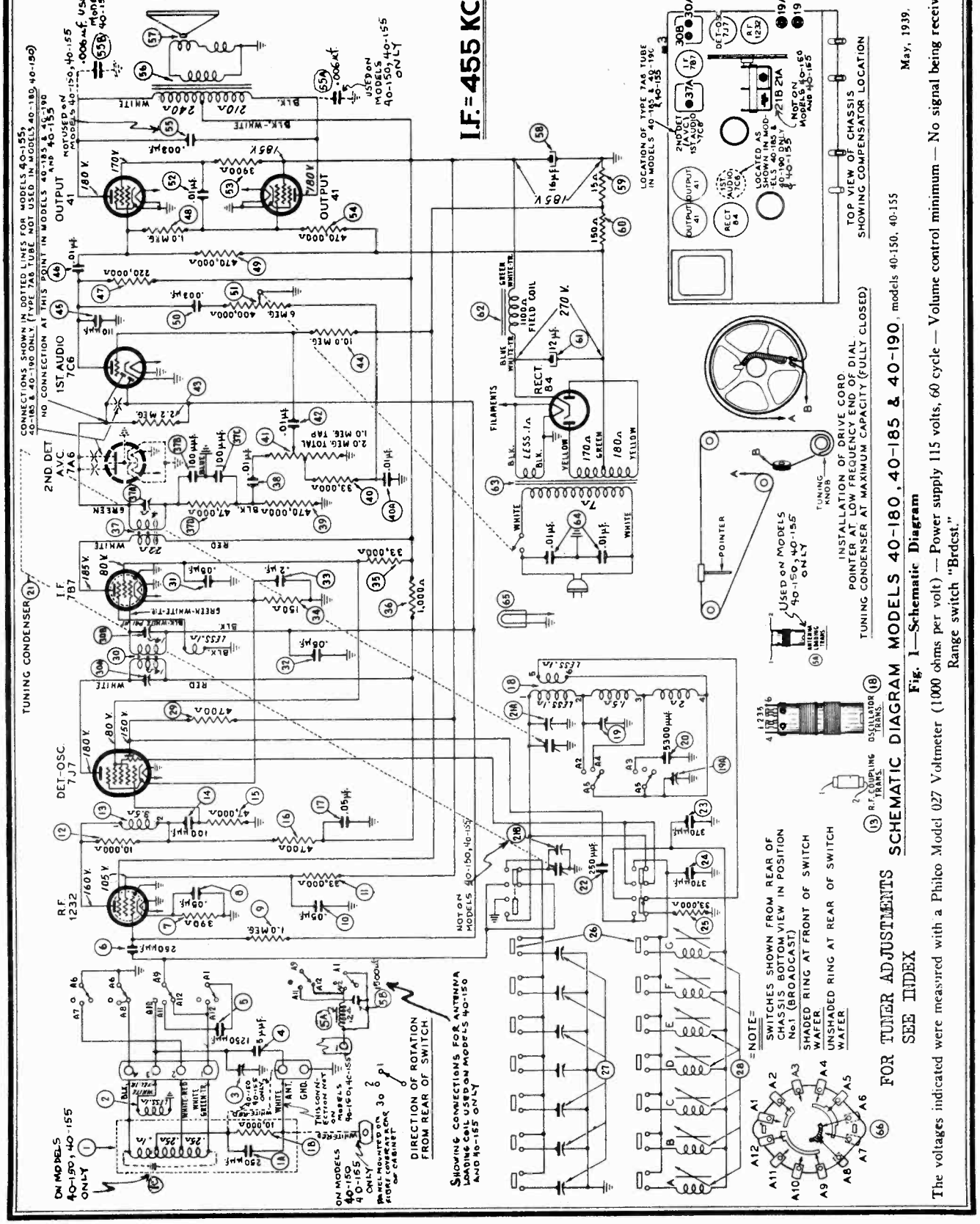
MODELS 40-150, 40-155
MODELS 40-180, 40-185
40-190

POWER SUPPLY: 115 Volts, 25 and 60 cycle AC.

POWER CONSUMPTION: 60 watts.

AUDIO OUTPUT: 2 watts.

FREQUENCY TUNING RANGES: Three.
540 to 1550 K. C.
1.5 to 3.4 K. C.
6.0 to 18 M. C.



FOR TUNER ADJUSTMENTS SEE INDEX

Fig. 1—Schematic Diagram

SCHEMATIC DIAGRAM MODELS 40-180, 40-185 & 40-190, models 40-150, 40-155

May, 1939.

The voltages indicated were measured with a Philco Model 027 Voltmeter (1000 ohms per volt) — Power supply 115 volts, 60 cycle — Volume control minimum — No signal being received — Range switch "Brdcst."

MODELS 40-150,40-155
MODELS 40-180,40-185,40-190
Alignment

PHILCO RADIO & TELEV. CORP.

TYPE OF CIRCUIT: {Models 40-150 and 40-155 / Models 40-180, 40-185 and 40-190} are Electric Push-button and dial tuned radios incorporating the new Philco Built-in Super Aerial system which eliminates an outside aerial and reduces local static interference to a minimum. The models are also designed to receive the sound of a television program tuned in by special type Philco Television Sets.

PHILCO BUILT-IN SUPER AERIAL SYSTEM—Included in the built-in super aerial system is a statically shielded loop for broadcast band reception and a short wave receiving loop. A feature of the built-in broadcast band statically shielded loop is that it may be turned to the position in which it picks up a minimum amount of interference, or if interference is not present the loop may be set in the position where best reception is obtained.

In general, these models are similar with the exception of the number of tubes used and cabinet design. Model 40-180 employs a seven tube receiver. Models 40-185 and 40-190 employ eight tube receivers assembled in different type cabinets.

Each model is equipped with eight electric tuning push buttons for automatically selecting stations. Six of the push buttons are used for broadcast stations, one for selecting dial tuning and one push button may be set up for use with a Philco wireless Record Player or the sound program tuned in by special Philco Television Sets.

Model 40-150 employs seven (7) tubes and Model 40-155, eight (8) tubes.

Aligning of Compensating Condensers
Equipment Required

(1) *Signal Generator.* In order to properly adjust this receiver an accurately calibrated signal generator such as Philco Model 077 is required. This signal generator covers a frequency range of 540 to 36,000 K. C. (2) *Indicating Device.* To obtain maximum signal strength and accurate adjustment of the padders a vacuum tube voltmeter and circuit tester such as Philco Models 027 and 028 is recommended. When using the vacuum tube voltmeter, an aligning adapter, Philco Part No. 45-2767, is necessary for connecting to the A. V. C. circuit. These testers also contain an audio output meter which may also be used as an indicating device. (3) *Aligning Tools.* Fiber handle screw driver, Philco Part No. 45-2610, and fiber wrench, Philco Part No. 7696.

Connecting Aligning Instruments

VACUUM TUBE VOLTMETER—To use the vacuum tube voltmeter as an alignment indicator make the following connections:

1. Adjusting I. F. Circuit.

Remove the 1232 R. F. tube from its socket and insert the aligning adaptor, then replace the tube in the adaptor. Connect the negative terminal of the vacuum tube voltmeter to the wire (light color) which protrudes from the side of the adaptor. Attach the positive terminal of the voltmeter to the black wire.

2. Adjusting R. F. Circuit.

To adjust the R. F. circuit, the aligning adaptor is inserted in the 7C6 A. F. tube socket. The vacuum tube voltmeter remains connected to the adaptor as given in the above paragraph.

With the voltmeter connected in this manner a very sensitive indication of the A. V. C. voltage is obtained when the padders are adjusted. If an audio output meter is used, connect it to the plate and socket terminals of the 41 output tube and adjust the output meter for the 0 to 30 A. C. scale.

After connecting the aligning indicator, adjust the compensators in the order as shown in the tabulation below. Locations of the compensators are shown on the schematic diagram, page No. 2. If the output meter pointer goes off scale when adjusting the compensators, reduce the strength of the signal from the generator.

SIGNAL GENERATOR: When adjusting the I. F. padders, the high side of the signal generator is connected through a .1 mfd. condenser to terminal No. 1 of the loop terminal panel at the rear of the chassis. The ground or low side of the signal generator is connected to the chassis of the receiver.

When aligning the R. F. padders a loop is made from a few turns of wire and connected to the signal generator output terminals; the loop is then placed two or three feet from the loop in the cabinet. Do not remove the receiver loop from the cabinet. It is necessary when adjusting the padders that the receiver be left in the cabinet.

Models 40-150, 40-155 40-180 – 185 – 190

Operations	SIGNAL GENERATOR		RECEIVER			*Remarks*
	Output Connections	*Dial Frequency*	*Dial Frequency*	*Control Settings*	*Adjust Compensators for Max. Signal*	
1	High Side to No. 1 Ter. Loop Panel	I. F. 455 K. C.	580 K. C. No Signal	Range Sw. "Brdcst." Volume "Max." Push-Button "Dial"	37A, 30, 30A	See Note A.
2	Use Loop on Generator	18 M. C.	18 M. C.	Range Sw. "SW." Volume "Max." Push-Button "Dial."	21A	Note B. Note D.
3	Use Loop on Generator	1400 K. C.	1400 K. C.	Range Sw. "Brdcst." Volume "Max."	19A, 21B	
4	Use Loop on Generator	580 K. C.	580 K. C.	Range Sw. "Brdcst." Volume "Max."	19	Roll Cond. Note C.
5	Use Loop on Generator	1400 K. C.	1400 K. C.	Range Sw. "Brdcst." Volume "Max."	19A, 21B	Roll Cond. Note C.
6	Use Loop on Generator	18 M. C.	18 M. C.	Range Sw. "SW."	3	Roll Cond. Note C.

NOTE A—A "Dummy Antenna" consisting of a .1 mfd. condenser is connected in series with the signal generator output lead (high side).

NOTE B—DIAL CALIBRATION: In order to adjust the receiver correctly the dial must be aligned to track properly with the tuning condenser. To adjust the dial, proceed as follows: With the tuning condenser closed (maximum capacity), set the dial pointer on the extreme left index line at the low frequency end of the broadcast scale. The arrangement of the drive cable in this position is shown in the schematic diagram.

NOTE C—When adjusting the low frequency compensator of Range One (Broadcast) or the antenna and R. F. compensators of the high frequency tuning ranges; the receiver Tuning Condenser must be adjusted (rolled) as follows: First tune the compensator for maximum output, then vary the tuning condenser of the receiver for maximum output. Now turn the compensator slightly to the right or left and again vary the receiver tuning condenser for maximum output. This procedure of first setting the compensator and then varying the tuning condenser is continued until there is no further gain in output reading.

NOTE D—To accurately adjust the high frequency oscillator compensator to the fundamental instead of the image signal, turn the oscillator compensator to the maximum capacity position (clockwise). From this position slowly turn the compensator counter-clockwise until a second peak is obtained on the output meter. Adjust the compensator for maximum output at this second peak.

If the above procedure is correctly performed, the image signal will be found (much weaker) by turning the receiver dial 910 K. C. below the frequency being used on any high frequency range.

Socket, Trimmers
Chassis, Parts

PHILCO RADIO & TELEV. CORP.

MODELS 40-150, 40-155
MODELS 40-180, 40-185
40-190

PHILCO TUBES USED:

MODEL 40-150, 40-180—1232, R. F.; 7J7, Converter; 7B7, I. F.; 7C6, Second Detector and First Audio; two 41, Audio Power Outputs; 84, Rectifier.

MODEL 40-155, 40-185 AND 40-190—1232, R. F.; 7J7, Converter; 7B7, I. F.; 7A6, Detector; 7C6, First Audio; two 41, Power Outputs; 84, Rectifier.

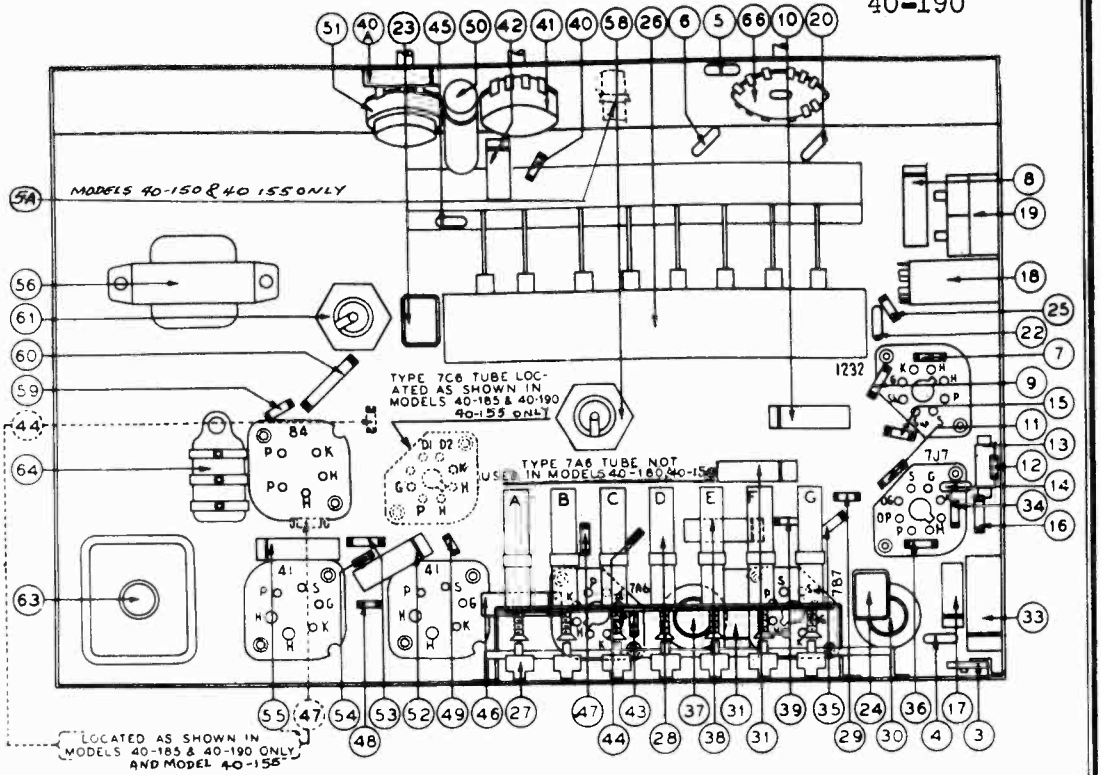


Fig. 2—Part locations underside of chassis

Replacement Parts—Models 40-180, 40-185, 40-190

Sch. No.	Description	Part No.
1	Loop Ass'y (Broadcast)	38-9880
1A	Mica Cond. (250 mmfd.)	61-0033
1B	Resistor (10,000 ohms, ½ watt)	33-310339
2	Loop Ass'y (Short Wave)	38-9884
3	Compensator	31-6308
4	Mica Cond. (5 mmfd.)	30-1097
5	Mica Cond. (1250 mmfd.)	5886
6	Mica Cond. (250 mmfd.)	61-0033
7	Resistor (390 ohms, ½ watt)	33-139339
8	Tubular Cond. (.05 mfd.)	30-4444
9	Resistor (1.0 meg., ½ watt)	33-510339
10	Tubular Cond. (.05 mfd.)	30-4123
11	Resistor (33,000 ohms, ½ watt)	33-333339
12	Resistor (10,000 ohms, ½ watt)	33-310339
13	R. F. Coupling Trans.	32-3194
14	Mica Cond. (100 mmfd.)	30-1128
15	Resistor (47,000 ohms, ½ watt)	33-347339
16	Resistor (4700 ohms, ½ watt)	33-247339
17	Tubular Cond. (.05 mfd.)	30-4123
18	Oscillator Trans.	32-3195
19	Compensator (2 Section)	31-6298
20	Mica Cond. (5300 mmfd.)	30-1134
21	Tuning Cond. Ass'y	31-2391
22	Mica Cond. (250 mmfd.)	61-0033
23	Silver Mica Cond. (370 mmfd.)	30-1110
24	Silver Mica Cond. (370 mmfd.)	30-1110
25	Resistor (33,000 ohms, ½ watt)	33-333339
26	Push Button Switch	42-1489
27	Padder Strip (Push Buttons)	31-6299
28	Coil Strip Ass'y	
28A	Coil No. 1 }	
28B	Coil No. 2 } 540-1060 K. C.	32-3042
28C	Coil No. 3 }	
28D	Coil No. 4 }	
28E	Coil No. 5 } 650-1110 K. C.	32-3042
28F	Coil No. 6 }	
28G	Coil No. 7 } 920-1600 K. C.	32-3041
29	Resistor (4700 ohms, ½ watt)	33-247339
30	1st I. F. Trans. Ass'y	32-3245
31	Tubular Cond. (.05 mfd.)	30-4123
32	Tubular Cond. (.05 mfd.)	30-4519
33	Tubular Cond. (.2 mfd.)	30-4536
34	Resistor (150 ohms, ½ watt)	33-115339
35	Resistor (33,000 ohms, ½ watt)	33-333339
36	Resistor (1000 ohms, ½ watt)	33-210339
37	2nd I. F. Trans. Ass'y	32-3246
38	Tubular Cond. (.01 mfd.)	30-4479
39	Resistor (470,000 ohms, ½ watt)	33-447339
40	Resistor (33,000 ohms, ½ watt)	33-333339
40A	Tubular Cond. (.01 mfd.)	30-4479
41	Volume Control (2.0 meg.)	33-5275
42	Tubular Cond. (.01 mfd.)	30-4479
43	Resistor (2.2 megs., ½ watt)	33-522339
44	Resistor (10.0 megs., ½ watt)	33-610339
45	Mica Cond. (110 mmfd.)	30-1130
46	Tubular Cond. (.01 mfd.)	30-4572
47	Resistor (220,000 ohms, ½ watt)	33-422339
48	Resistor (1.0 meg., ½ watt)	33-510339
49	Resistor (470,000 ohms, ½ watt)	33-447339
50	Tubular Cond. (.003 mfd.)	30-4469
51	Tone Control & On-Off Switch	33-5314
52	Tubular Cond. (.01 mfd.)	30-4572
53	Resistor (3900 ohms, ½ watt)	33-239339
54	Resistor (470,000 ohms, ½ watt)	33-447339
55	Tubular Cond. (.003 mfd.)	30-4469
56	Output Trans.	32-8053
57	Cone & Voice Coil Ass'y	
	(Spkr. Part No. 36-1479-2)	36-4089
	(Spkr. Part No. 36-1479-4)	36-4111
58	Electrolytic Cond. (16 mfd., 200 V.)	30-2406
59	Resistor (15 ohms, ½ watt)	33-015351
60	Resistor (150 ohms, 1 watt)	33-115451
61	Electrolytic Cond. (12 mfd., 350 V.)	30-2405
62	Field Coil (Replace Spkr., Part No. 36-1479)	
63	Power Trans. (115 Volts, 50 to 60 Cycle)	32-8052
64	Line Cond. (Bakelite, .01-.01 mfd.)	3903-DG
65	Pilot Lamp	34-2210
66	Wave Switch	42-1490
	Speaker	36-1479

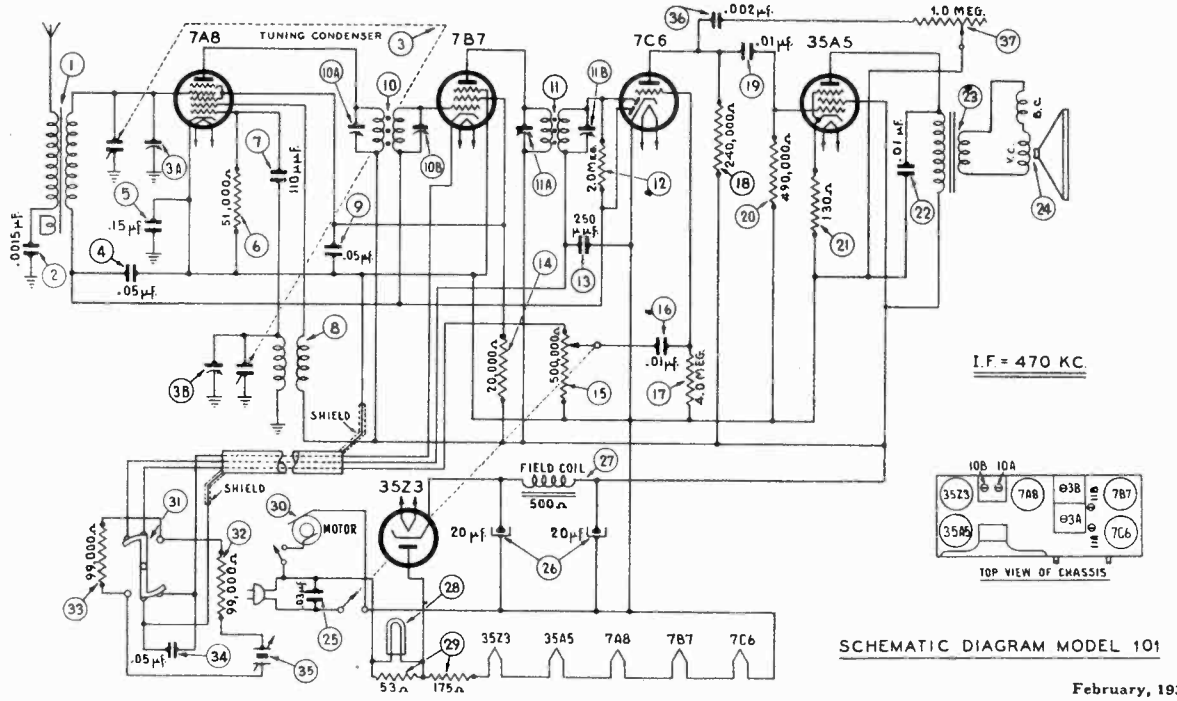
Models 40-150, 40-155

Parts listed below apply to Models 40-150, 40-155 only. For parts not found below refer to list for Models 40-180, 40-185 and 40-190 above.

Sch. No.	Description	Part No.
1	Loop Ass'y (Broadcast)	38-9894
1C	Compensator Ass'y	31-6318
4	Mica Cond. (5 mmfd.)	30-1120
5B	Mica Cond. (1500 mmfd.)	7139
5A	Ant. Loading Trans.	32-3290
8	Tubular Cond. (.05 mfd.)	30-4519
21	Tuning Cond. Ass'y	31-2401
33	Tubular Cond. (.2 mfd.)	30-4587
38	Tubular Cond. (.01 mfd.)	30-4581
40A	Tubular Cond. (.01 mfd.)	30-4581
42	Tubular Cond. (.01 mfd.)	30-4581
55B	Tubular Cond. (.006 mfd.)	30-4504
55A	Tubular Cond. (.006 mfd.)	30-4504
57	Cone and Voice Coil Ass'y (Spkr. Part No. 36-1483-2)	
62	Field Coil (Replace Spkr. Part No. 36-1483)	
63	Power Trans. (110 Volts. 60 Cycles)	32-8065
Speaker		36-1483

MODEL 101
Schematic, Socket, Trimmers
Alignment, Parts

PHILCO RADIO & TELEV. CORP.



SCHEMATIC DIAGRAM MODEL 101

February, 1939.

Model 101 is a combination Phonograph and Radio Receiver. The phonograph section is designed to play 10 or 12 inch standard records (78 R. P. M.) and includes a manually operated crystal pickup and Turntable Motor.

The radio receiver employs an A. C. or D. C. operated superheterodyne circuit covering standard broadcast and police stations. (540 to 1720 K. C.)

POWER SUPPLY: Radio, 115 volts A. C. or D. C. Phonograph, 115 volts — 60 cycles **only.**

POWER CONSUMPTION: 57 watts.

INTERMEDIATE FREQUENCY: 470 K. C.

PHILCO TUBES USED: Five tubes; 1-7A8, first detector oscillator; 1-7B7, I. F. amplifier; 1-7C6, 2nd detector; A. V. C., first audio; 1-35A5, audio output, and 1-35Z3, rectifier.

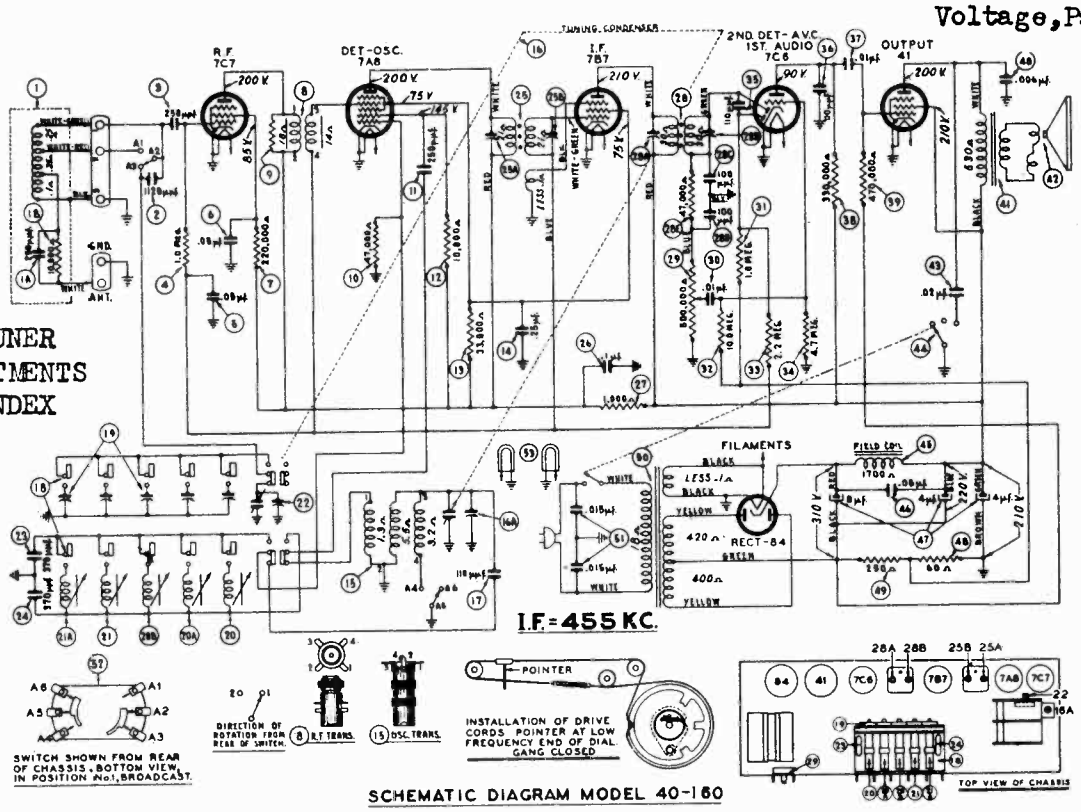
ALIGNMENT OF COMPENSATORS

Operations in Order	SIGNAL GENERATOR			RECEIVER		SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dummy Antenna Note A	Dial Setting	Dial Setting	Control Settings	Adjust Compensators	
1	Ant. Section of Gang	.004 mfd.	470 K. C.	540 K. C.	Vol. Max. Tone Treble	11A, 11B, 10A, 10B and 11B	Adjust for max. output
2	Ant.	100 mmfd.	1500 K. C.	1500 K. C.	Vol. Max. Tone Treble	3B, 3A	Adjust for max. output

Sche. No.	Description	Part No.	Sche. No.	Description	Part No.
1	Ant. Trans.	32-3151	21	Resistor (130 ohms, ½ watt)	33-113339
2	Tubular Cond. (.0015 mfd., 200 V.)	30-4555	22	Tubular Cond. (.01 mfd., 400 V.)	30-4572
3	Tuning Cond.	31-2354	23	Output Trans. (for speaker 36-1469-1)	32-8047
4	Tubular Cond. (.05 mfd., 400 V.)	30-4519		Output Trans. (for speaker 36-1469-9)	32-8044
5	Tubular Cond. (.15 mfd., 400 V.)	30-4505	24	Speaker	36-1469
6	Resistor (51,000 ohms, ½ watt)	33-351339	25	Tubular Cond. (.03 mfd., 400 V.)	30-4449
7	Mica Cond. (110 mmfd.)	30-1031	26	Electrolytic Cond. (20-20 mfd., 150 V.)	30-2382
8	Osc. Trans.	32-3152	27	Field Coil (Replace Speaker 36-1469)	
9	Tubular Cond. (.05 mfd., 400 V.)	30-4519	28	Pilot Lamp	34-2068
10	1st I. F. Trans.	32-3149	29	Line Resistor	33-3367
11	2nd I. F. Trans.	32-3150	30	Phono Motor	35-1158
12	Resistor (2.0 megohms, ½ watt)	33-520339	31	Radio Phono Switch	42-1500
13	Mica Cond. (250 mmfd.)	30-1032	32	Resistor (99,000 ohms, ½ watt)	33-399339
14	Resistor (20,000 ohms, ½ watt)	33-320339	33	Resistor (99,000 ohms, ½ watt)	33-399339
15	Volume Control (500,000 ohms)	33-5306	34	Tubular Cond. (.05 mfd., 400 V.)	30-4519
16	Tubular Cond. (.01 mfd., 200 V.)	30-4479	35	Crystal Pickup	415-1027
17	Resistor (4.0 megohms, ½ watt)	33-540339		Tone Arm and Crystal Pickup complete	35-2026
18	Resistor (240,000 ohms, ½ watt)	33-424339	36	Tubular Cond. (.002 mfd., 400 V.)	30-4579
19	Tubular Cond. (.01 mfd., 400 V.)	30-4572	37	Tone Control	33-5320
20	Resistor (490,000 ohms, ½ watt)	33-449339	38	Motor Switch	42-1498

PHILCO RADIO & TELEV. CORP.

MODEL 40-160
Schematic, Socket
Trimmers, Chassis
Voltage, Parts



SCHEMATIC DIAGRAM MODEL 40-160

May, 1939

Power Supply: 115 V., 25 and 60 Cyc. A. C.
Power Consumption: 45 watts.
Frequency Tuning Ranges: (Two) 540 to 1550 K.C. 1500 to 3350 K.C.
Intermediate Frequency: 455 K.C.
Audio Output: 2 watts.

Sch. No.	Description	Part No.
1	Loop Assy	38-9897
1A	Mica Cond. (250 mmfd.)	61-0033
1B	Resistor (10,000 ohms, ½ watt)	33-310339
2	Mica Cond. (1120 mmfd.)	30-1140
3	Mica Cond. (250 mmfd.)	61-0033
4	Resistor (1.0 meg., ½ watt)	33-510339
5	Tubular Cond. (.05 mfd.)	30-4519
6	Tubular Cond. (.05 mfd.)	30-4123
7	Resistor (220,000 ohms, ½ watt)	33-422339
8	R. F. Trans.	32-3283
9	Resistor (6800 ohms, ½ watt)	33-268339
10	Resistor (470,000 ohms, ½ watt)	33-447339
11	Mica Cond. (250 mmfd.)	61-0033
12	Resistor (10,000 ohms, ½ watt)	33-310339
13	Resistor (33,000 ohms, ½ watt)	33-333339
14	Tubular Cond. (.25 mfd.)	30-4448
15	Oscillator Trans.	32-3212
16	Tuning Cond.	31-2374
17	Mica Cond. (110 mmfd.)	30-1130
18	Push Button Switch	42-1493
19	Padder Strip and Bracket Assy.	31-6325
20	Coil No. 1—540-1000 K.C.	
20A	Coil No. 2 650-1100 K.C.	32-3042
20B	Coil No. 3 740-1300 K.C.	
21	Coil No. 4—900-1500 K.C.	
21A	Coil No. 5—1100-1600 K.C.	32-3041
22	Compensator	31-6308
23	Silver Mica Cond. (370 mmfd.)	30-1110
24	Silver Mica Cond. (370 mmfd.)	30-1110
25	1st I.F. Trans.	32-3210
26	Tubular Cond. (.1 mfd.)	30-4455
27	Resistor (1000 ohms, ½ watt)	33-210339
28	2nd I.F. Trans. Assy.	32-3211
29	Volume Control	33-5319
30	Tubular Cond. (.01 mfd.)	30-4572
31	Resistor (1.0 meg., ½ watt)	33-510339
32	Resistor (10.0 meg., ½ watt)	33-610339
33	Resistor (2.2 meg., ½ watt)	33-522339
34	Resistor (4.7 meg., ½ watt)	33-547339
35	Mica Cond. (110 mmfd.)	30-1130
36	Mica Cond. (110 mmfd.)	30-1130
37	Tubular Cond. (.01 mfd.)	30-4572
38	Resistor (330,000 ohms, ½ watt)	33-433339
39	Resistor (470,000 ohms, ½ watt)	33-447339
40	Tubular Cond. (.006 mfd.)	30-4504
41	Output Trans.	32-8056
42	Cone and Voice Coil Assy. (Spkr. Part No. 36-1480-3)	36-4086
43	Tubular Cond. (.02 mfd.)	30-4599
44	Tone Control and On-Off Switch	42-1520
45	Field Coil (Replace Spkr. Part No. 36-1480)	
46	Tubular Cond. (.05 mfd.)	30-4123
47	Electrolytic Cond. (8-4-4 mfd.)	30-2400
48	Resistor (60 ohms, ½ watt)	33-060339
49	Resistor (250 ohms, ½ watt)	33-125339
50	Power Trans.	32-8055
51	Line Cond. (.015-.015 mfd.)	3903-DG
52	Wave Switch	42-1494
53	Pilot Lamps	34-2064

MISCELLANEOUS PARTS

Description	Part No.
Bezel	27-4842
Cabinet	10398A
Cable and Plug (Power Supply)	L-3199
Clip (Coil Mtg.)	28-5002
Dial	27-5506
Drive Cord Assy. (Pointer)	31-2382
Drive Cord Assy. (Tuning Cond.)	31-2400
Escutcheon (Push Button)	27-4843
Insulating Bushing (Insulate Drive Shaft)	27-9437
Knobs (Tuning, Tone, Volume, Wave Switch)	27-4332
Knobs (Push Buttons)	27-4824
Pilot Lamp Socket Assy.	38-9908
Pointer	56-1479
Reflector (Pilot Lamp)	27-9455
Rubber Hose (Tuning Cond. Drive)	27-9432
Spring (Tuning, Drive Cord)	28-8751
Spring (Pointer, Drive Cord)	28-8953
Spring (Drive Shaft, Grounding)	28-8955
Screw (Bezel Mtg.)	W-1834
Speaker	36-1480
Socket (Type 84 Tube)	27-6035
Socket (Type 41 Tube)	27-6036
Socket (Loktal, Type 7A8 Tube)	27-6129
Socket (Loktal, Type 7C7, 7B7, 7C6 Tubes)	27-6131
Tab (Dial)	27-5528
Tab (Television)	27-9451
Tab Kit	40-6474
Tuning Shaft	56-6052
Tuning Drive Drum Assy.	38-9883
Washer ("C" Type, Tuning Shaft)	28-2043

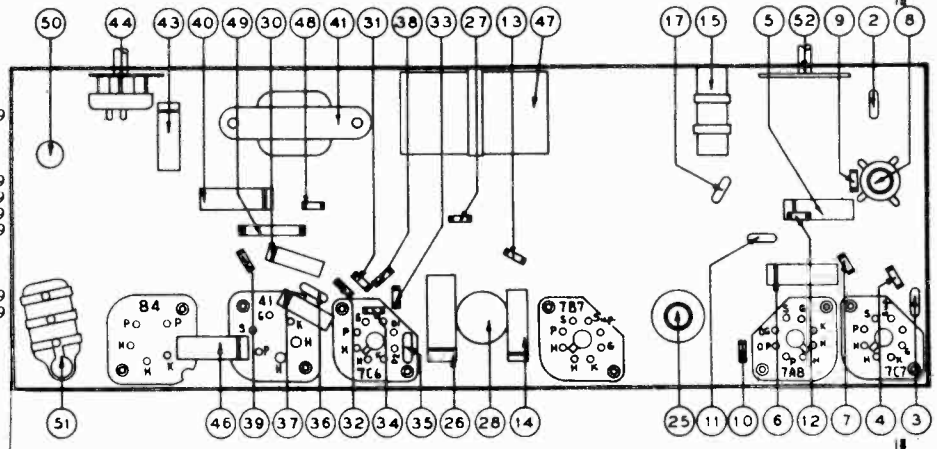


Fig. 2—Part Locations, Underside of Chassis

MODEL 108, Code 121
Socket, Trimmers, Chassis
Tuner Unit Chassis
Alignment

PHILCO RADIO & TELEV. CORP.

MODEL 40-160
Alignment

MODEL 40-160. Aligning of Compensating Condensers

Equipment Required

(1) Signal Generator. In order to properly adjust this receiver an accurately calibrated signal generator such as Philco Model 077 is required. This signal generator covers a frequency range of 540 to 36,000 K.C. (2) Indicating Device. To obtain maximum signal strength and accurate adjustment of the padders a vacuum tube voltmeter and circuit tester such as Philco Models 027 and 028 is recommended. These testers also contain an audio output meter which may be used as an indicating device. (3) Aligning Tools. Fiber handle screw driver Philco Part No. 45-2610 and when using the vacuum tube voltmeter for adjusting the set, an aligning adaptor Part No. 45-2767 is required.

Connecting Aligning Instruments

VACUUM TUBE VOLTMETER: To use the vacuum tube voltmeter as an alignment indicator make the following connections:

1. Adjusting I.F.: Remove the 7C7 R.F. tube from its socket and insert the aligning adaptor in the socket, then replace the tube in the adaptor. Connect the negative terminal of the vacuum tube voltmeter to the light colored wire which protrudes from the side of the adaptor. Attach the positive terminal of the voltmeter to the black wire.

2. Adjusting R.F. Padders: To adjust the R.F. padders, insert the aligning adaptor in the 7C6 socket and place the tube in the adaptor. The vacuum voltmeter remains connected to the adaptor as given in the Adjusting I.F. above.

With the voltmeter connected in this manner a very sensitive indication of the output voltage is obtained when the padders are adjusted. If an audio output meter is used, connect it to the plate and socket terminals of the 41 type tube and adjust the output meter for the 0 to 30 A.C. scale.

After connecting the output meter, adjust the compensators in the order as shown in the tabulation below. Locations of the compensators are shown on the schematic diagram page No. 2. If the output meter pointer goes off scale when adjusting the compensators, reduce the strength of the signal from the generator.

SIGNAL GENERATOR: When adjusting the I.F. padders, the high side of the signal generator is connected through a .1 mfd. condenser to terminal No. 1 of the loop terminal panel at the rear of the chassis. The ground or low side of the signal generator is connected to the chassis of the receiver.

When aligning the R.F. padders a loop antenna is made from a few turns of wire and connected to the signal generator output terminals; the loop is then placed two or three feet from the loop in the cabinet. Do not remove the receiver loop from the cabinet. It is necessary when adjusting the padders, that the receiver be left in the cabinet.

SIGNAL GENERATOR			RECEIVER			
Operations in Order	Output Connections to Receiver	Dial Setting	Dial Setting	Control Setting	adjust compensators	Special Instructions
1	High Side to No. 1 Ter. Loop Panel	455 K.C.	580 K.C.	Vol. Max. Range Switch "Broadcast." Dial push button "In"	28A 25A 28B 26B	See Paragraph on Signal Generator Above
2	Use Loop on Generator	1500 K.C.	1500 K.C.	Vol. Max. Range Switch "Broadcast"	16A 22	Note A

NOTE A—Dial Calibration: In order to adjust the receiver correctly the dial must be aligned to track properly with the tuning condenser. To adjust the dial, proceed as follows: With the tuning condenser closed (maximum capacity), set the dial pointer on the extreme left index line at the low frequency end of the broadcast scale. The arrangement of the drive cable in this position is shown in Schematic Diagram.

MANY OF THE PARTS IN THIS PHILCO, SUCH AS CONDENSERS AND RESISTORS, ARE HELD TO MUCH CLOSER TOLERANCE THAN STANDARD REPLACEMENT PARTS. GENUINE PHILCO REPLACEMENT PARTS MUST BE USED TO OBTAIN SATISFACTORY PERFORMANCE OF THIS MODEL.

MODEL 108, CODE 121. ALIGNMENT OF COMPENSATORS

EQUIPMENT REQUIRED:
(1) Signal Generator; Philco Model 077.
(2) Output Meter, Philco 027 Vacuum Tube Voltmeter and Circuit Tester.
(3) Philco Fiber Handle Screw Driver, Part No. 27 - 7059, and Fiber Wrench, Part No. 3164.

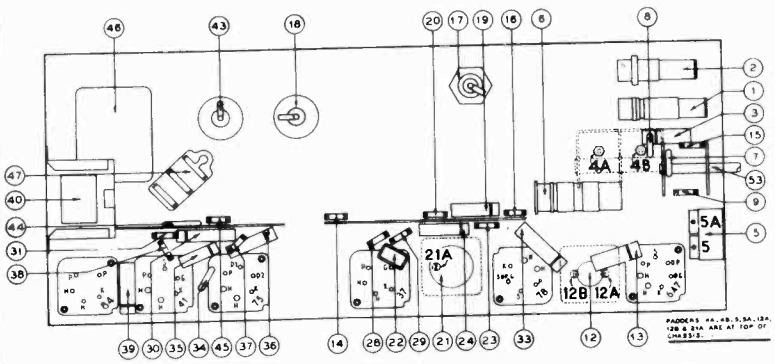
OUTPUT METER: The Philco 027 Output Meter is connected to the plate and cathode terminals of the type 41 tube. The Vacuum Tube Voltmeter can also be used in aligning the receiver by connecting the Negative terminal through a one megohm Resistor to the 6A7 grid. The Positive terminal is connected to the chassis. After connecting the Output Meter, adjust compensators in the order as given in tabulation below. Locations of the compensators are shown in Fig. 1.

Operations in Order	SIGNAL GENERATOR				RECEIVER		SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dummy Antenna Note A	Dial Setting	Dial Setting	Control Settings	Adjust Compensators in Order	
1	6A7 Grid	.1 mf.	470 K. C.	580 K. C.	*Vol. Cont. Max. Range Sw. (Brdcst)	(21A) (12B) (12A)	
2	Ant. Ter.	100 mmf.	18.0 M. C.	18.0 M. C.	Vol. Cont. Max. Range Sw. (S. W.)	(4B)	See Note B, C
3	Ant. Ter.	100 mmf.	1550 K. C.	1550 K. C.	Vol. Cont. Max. Range Sw. (Brdcst)	(5) (4A)	
4	Ant. Ter.	100 mmf.	580 K. C.	580 K. C.	Vol. Cont. Max. Range Sw. (Brdcst)	(5A)	
5	Ant. Ter.	100 mmf.	1550 K. C.	1550 K. C.	Vol. Cont. Max.	(5)	

NOTE A — The "Dummy Antenna" consists of a condenser connected in series with the signal generator output lead (high side). Use the capacity as specified in each step of the above procedure.

NOTE B — DIAL CALIBRATION: In order to adjust the receiver correctly, the dial must be aligned to track properly with the tuning condenser. To adjust the dial, proceed as follows: With the tuning condenser closed (maximum capacity), set the dial pointer on the extreme left index line at the low frequency end of the broadcast scale. The arrangement of the drive cable is shown in Service Bulletin No. 305.

NOTE C — Compensators (4A) and (4B) are located on top of the tuning condenser. Compensator (4B) is the first one from the tuning drum side.



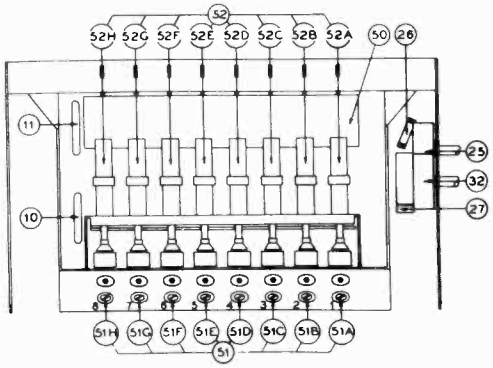


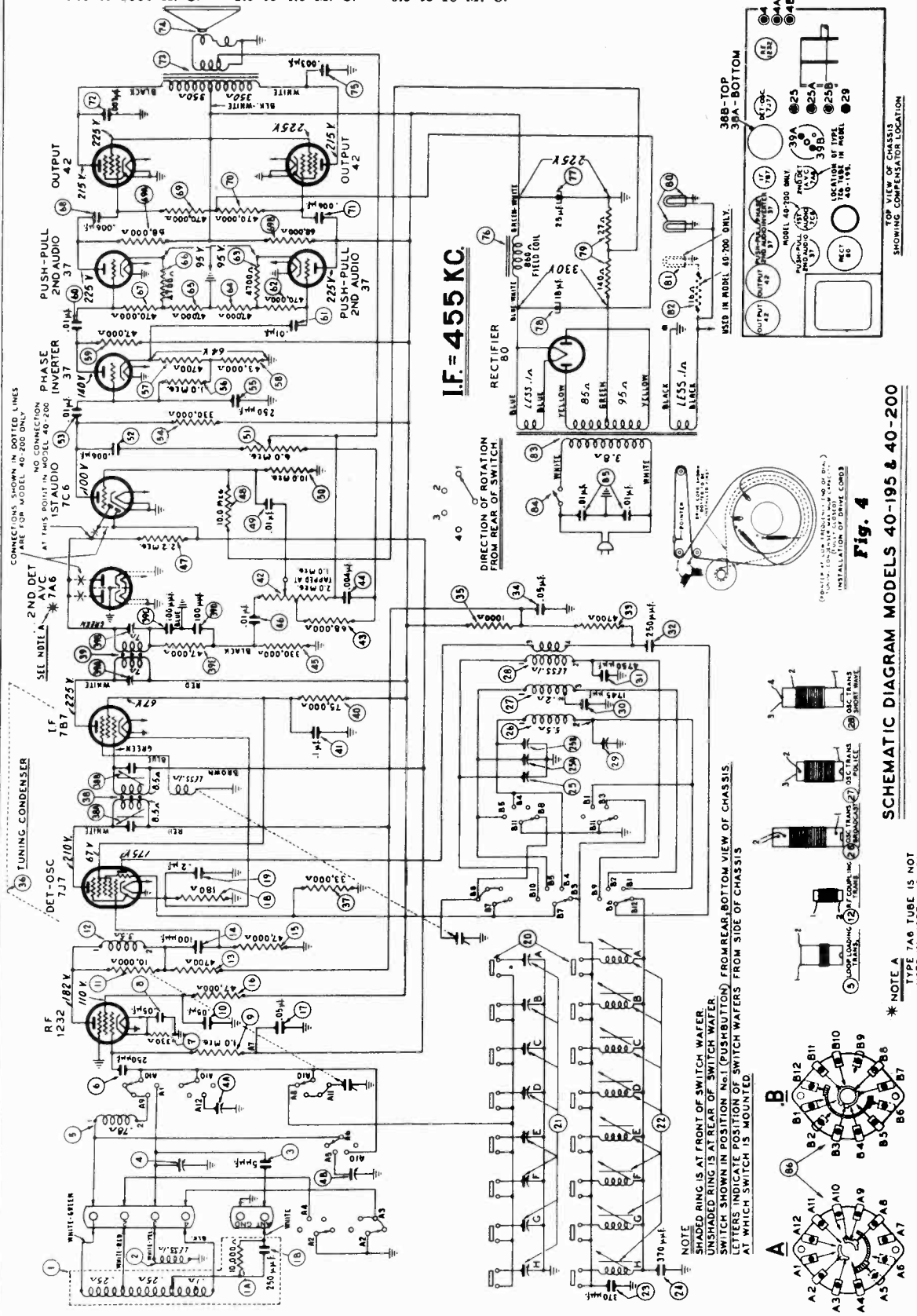
Fig. 1

PHILCO RADIO & TELEV. CORP.

MODELS 40-195, 40-200
Schematic, Voltage, Socket
Trimmers

POWER SUPPLY: 115 Volts, 25 and 60 cycle A. C.
POWER CONSUMPTION: 110 watts.
FREQUENCY TUNING RANGES: (Three)
540 to 1550 K. C. 1.5 to 4.0 M. C. 6.0 to 18 M. C.

INTERMEDIATE FREQUENCY: 455 K. C.
AUDIO OUTPUT: 5 watts.



MODELS 40-195,40-200
Chassis,Tuner Unit Chassis
Parts List

PHILCO RADIO & TELEV. CORP.

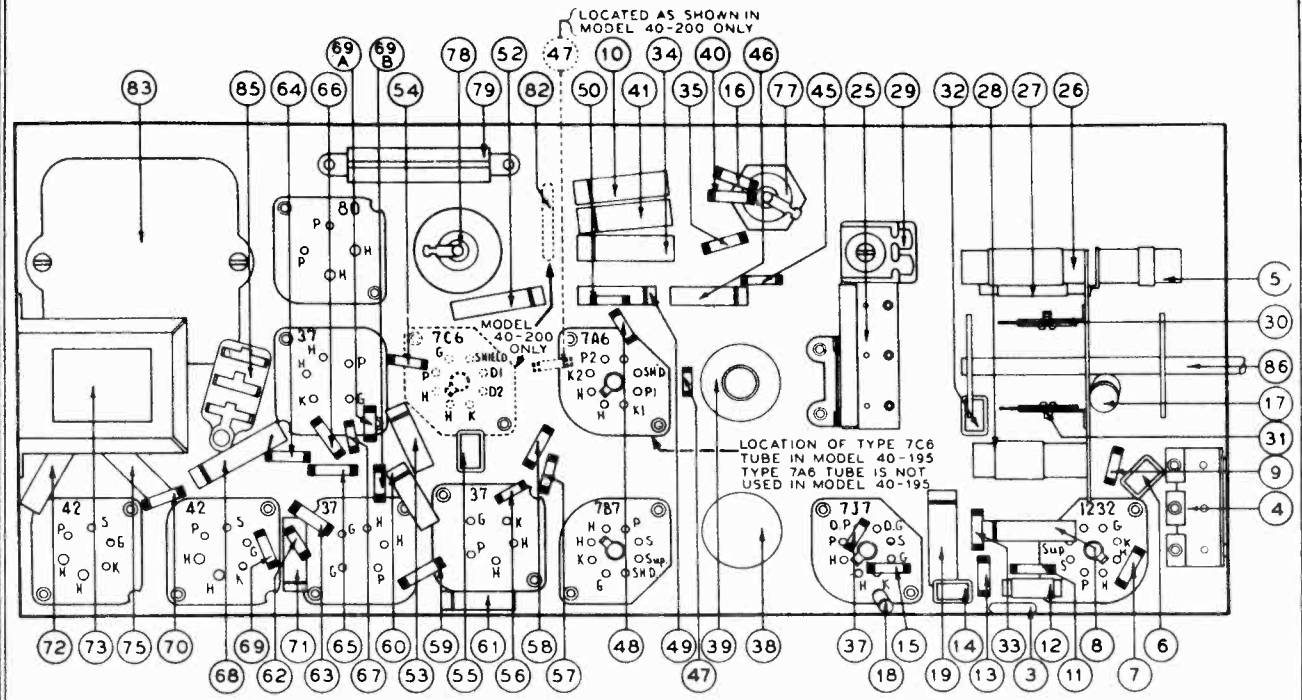


Fig. 2

Replacement Parts
Models 40-195 and 40-200

SCHE. No.	DESCRIPTION	PART No.	LIST PRICE
1	Loop Assy. (Broadcast)	38-9881	
1A	Resistor (10,000 ohms, ½ watt)	33-310339	.17
1B	Mica Cond. (250 mmfd.)	61-0033	.20
2	Loop Assy. (Short Wave)	38-9867	
3	Mica Cond. (5 mmfd.)	30-1097	.20
4	Compensator (3 section)	31-6306	
4A	Part of No. 4		
4B	Part of No. 4		
5	Loop Loading Coil	32-3252	
6	Mica Cond. (250 mmfd.)	61-0033	.20
7	Resistor (330 ohms, ½ watt)	33-133339	.17
8	Tubular Cond. (.05 mfd.)	30-4444	.15
9	Resistor (1.0 meg., ½ watt)	33-510339	.17
10	Tubular Cond. (.05 mfd.)	30-4518	.15
11	Resistor (10,000 ohms, ½ watt)	33-310339	.17
12	R. F. Coupling Coil	32-3194	
13	Resistor (4700 ohms, ½ watt)	33-247339	.17
14	Mica Cond. (100 mmfd.)	30-1128	.15
15	Resistor (47,000 ohms, ½ watt)	33-347339	.17
16	Resistor (47,000 ohms, ½ watt)	33-347339	.17
17	Tubular Cond. (.05 mfd.)	30-4519	.15
18	Resistor (180 ohms, ½ watt)	33-118339	.17
19	Tubular Cond. (.2 mfd.)	30-4587	.20
20	Push Button Switch	42-1515	
21	Compensator Strip	31-6313	
	Compensator		
21A	No. 1 (540-1030 K.C.)	Part of 31-6313	
21B	No. 2 (540-1030 K.C.)		
21C	No. 3 (540-1030 K.C.)		
21D	No. 4 (670-1160 K.C.)		
21E	No. 5 (670-1160 K.C.)		
21F	No. 6 (900-1600 K.C.)		
21G	No. 7 (900-1600 K.C.)		
21H	No. 8 (900-1600 K.C.)		
22	Coil Strip (Complete)		
22A	Coil No. 1 (540-1030 K.C.)	32-3042	.50
22B	Coil No. 2 (540-1030 K.C.)	32-3042	.50
22C	Coil No. 3 (540-1030 K.C.)	32-3042	.50
22D	Coil No. 4 (670-1160 K.C.)	32-3042	.50
22E	Coil No. 5 (670-1160 K.C.)	32-3042	.50
22F	Coil No. 6 (900-1600 K.C.)	32-3041	.50
22G	Coil No. 7 (900-1600 K.C.)	32-3041	.50
22H	Coil No. 8 (900-1600 K.C.)	32-3041	.50
23	Silvered Mica Cond. (370 mmfd.)	30-1110	.45
24	Silvered Mica Cond. (370 mmfd.)	30-1110	.45
25	Compensator (3 section)	31-6092	.60
25A	Part of No. 25		
25B	Part of No. 25		
26	Broadcast Oscillator Coil	32-3240	
27	Police Oscillator Coil	32-3052	.75
28	Short Wave Oscillator Coil	32-3242	
29	Compensator	31-6230	.40
30	Tracking Cond. (1745 mmfd.)	31-6307	
31	Tracking Cond. (4750 mmfd.)	31-6306	
32	Mica Cond. (250 mmfd.)	61-0033	.20
33	Resistor (4700 ohms, ½ watt)	33-247339	.17
34	Tubular Cond. (.05 mfd.)	30-4518	.15
35	Resistor 1000 ohms, ½ watt)	33-210339	.17
36	Tuning Cond. Assy.	31-2389	
37	Resistor (33,000 ohms, ½ watt)	33-333339	.17
38	1st I. F. Trans. Assy.	32-3243	
39	2nd I. F. Trans. Assy.	32-3250	
39A	Part of No. 39		
39B	Part of No. 39		
39C	Part of No. 39		
39D	Part of No. 39		
39E	Resistor (47,000 ohms, ½ watt) (Part of No. 39)	33-347339	.17
40	Resistor (75,000 ohms, ½ watt)	33-375339	.17
41	Tubular Cond. (.1 mfd.)	30-4455	.20
42	Volume Control (2 meg.)	33-5286	1.00
43	Resistor (68,000 ohms, ½ watt)	33-368339	.17
44	Tubular Cond. (.004 mfd.)	30-4334	.15
45	Resistor (330,000 ohms, ½ watt)	33-433339	.17
46	Tubular Cond. (.01 mfd.)	30-4872	.15
47	Resistor (2.2 meg., ½ watt)	33-522339	.17
48	Resistor (10.0 meg., ½ watt)	33-610339	.17
49	Tubular Cond. (.01 mfd.)	30-4872	.15
50	Resistor (10.0 meg., ½ watt)	33-610339	.17
51	Tone Control (6 meg.)	33-5225	
52	Tubular Cond. (.006 mfd.)	30-4465	.15
53	Tubular Cond. (.01 mfd.)	30-4872	.15
54	Resistor (330,000 ohms, ½ watt)	33-433339	.17
55	Mica Cond. (250 mmfd.)	61-0033	.20
56	Resistor (1.0 meg., ½ watt)	33-510339	.17
57	Resistor (4700 ohms, ½ watt)	33-247339	.17
58	Resistor (43,000 ohms, ½ watt)	33-343339	.17
59	Resistor (47,000 ohms, ½ watt)	33-347339	.17
60	Tubular Cond. (.01 mfd.)	30-4872	.15
61	Tubular Cond. (.01 mfd.)	30-4872	.15
62	Resistor (470,000 ohms, ½ watt)	33-447339	.17
63	Resistor (4700 ohms, ½ watt)	33-247339	.17
64	Resistor (47,000 ohms, ½ watt)	33-347339	.17
65	Resistor (47,000 ohms, ½ watt)	33-347339	.17
66	Resistor (4700 ohms, ½ watt)	33-247339	.17
67	Resistor (470,000 ohms, ½ watt)	33-447339	.17
68	Tubular Cond. (.006 mfd.)	30-4563	.15
69	Resistor (470,000 ohms, ½ watt)	33-447339	.17
70	Resistor (470,000 ohms, ½ watt)	33-447339	.17
71	Tubular Cond. (.006 mfd.)	30-4563	.15
72	Tubular Cond. (.003 mfd.)	30-4459	.20
73	Output Trans.	32-7681	1.80
74	Cone and Voice Coil Assy. (for Speaker 36-1450-2)	36-4089	2.50
	(for Speaker 36-1450-4)	36-4111	2.50
75	Tubular Cond. (.003 mfd.)	30-4469	.20
76	Field Coil (Replace Spkr. No. 36-1450)		
77	Electrolytic Con. (25 mfd., 250V.)	30-2333	1.00
78	Electrolytic Con. (16 mfd., 400V.)	30-2335	1.35
79	B. C. Resistor	33-3376	
80	Pilot Lamps	34-2064	.09
81	Pilot Lamps	34-2210	.15
82	Resistor (16 ohms, pilot lamp)	33-016431	.20
83	Power Trans. (110V, 60 cycle)	32-8059	
84	A. C. Switch	42-1517	
85	Line Con. (.01-.01 mfd., Bakelite)	3903-DG	.30
86	Wave Switch	42-1507	

Miscellaneous Parts
Model 40-200

Bezel Ass'y	40-6490	
Bearing (Drum Shaft)	56-1038	.10
Cable and Plug (Power Supply)	L-2778	.40
Cable (Speaker)	41-3430	.80

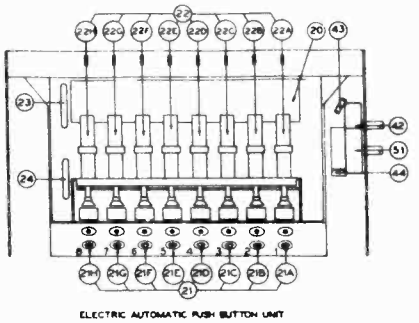


Fig. 3

SCHE. No.	DESCRIPTION	PART No.	LIST PRICE
	Coupling Assy. (Tuning Cond.)	31-2291	.35
	Dial	27-5513	
	Dial Clamp	56-1034	.05
	Dial Gasket	27-8224	.01
	Drive Cord Assy. (Pointer)	31-2316	.25
	Drive Cord Assy. (Tuning Cond.)	31-2350	.20
	Disc Control (Tuning)	27-4766	
	Disc Control (Volume)	27-4765	.30
	Disc Control (Tone)	27-4764	.30
	Disc Control (Wave Switch)	27-4797	.15
	Drum Assy. (Tuning Cond.)	38-9718	.60
	Drum Bracket & Bearing Assy.	38-9662	.10
	Pointer (Dial)	56-1033	.15
	Pilot Light Jewel	27-4777	.10
	Knobs (Push Buttons)	27-4852	
	Shaft (Control Drums)	28-8924	.05
	Spring (Drive Cord)	28-8913	.05
	Socket Assy. (Dial Lamp)	38-9694	.20
	Socket Assy. (Dial Lamp)	38-9695	.20
	Socket Assy. (Pilot Lamp)	38-9896	.40
	Socket (5 Prong, 37-Tube)	27-8038	.11
	Socket (6 Prong, 42-Tube)	27-8038	.11
	Socket (4 Prong, 80-Tube)	27-8044	.10
	Socket (Loktal, 7J7-Tube)	27-6129	
	Socket (Loktal, 7A6, 7C6, Tubes)	27-9131	
	Speaker	36-1450	9.00
	Tab Kit	40-6475	
	Phone Tab	27-9416	
	Dial Tab	27-5830	
	MOUNTING PARTS		
	Grommet (Push Button Sw. Mtg.)	27-4896	.03
	Grommet (Tuning Unit Assy. Mtg.)	3914	.02
	Grommet (Tuning Unit Assy. Mtg.)	3915	.02
	Screw (Bezel Mtg.)	W-1634	.90 Per C.
	Nut (Spkr. Mtg.)	W-124	.35 Per C.
	Screw (Loop Mtg. Rail)	W-546	.45 Per C.

Prices subject to change without notice

PHILCO RADIO & TELEV. CORP.

MODELS 40-195, 40-200
Alignment

TYPE OF CIRCUIT: Models 40-195 and 40-200 are Electric Push-Button and dial tuned radios incorporating the new Philco Built-in Super Aerial system which eliminates an outside aerial and reduces local static interference to a minimum. These models are also designed to receive the sound of a television program tuned in by special type Philco Television Sets.

PHILCO BUILT-IN SUPER AERIAL SYSTEM:

Included in the built-in aerial system is a statically shielded loop for broadcast band reception and a short wave receiving loop. The feature of the built-in broadcast band statically shielded loop is that it may be turned to the position in which it picks up a minimum amount of interference, or if interference is not present the loop may be set in the position where best reception is obtained.

In general, both radios are similar with the exception of the number of tubes used and cabinet design. Models 40-195 and 40-200 employ ten and eleven tubes respectively.

Each receiver is equipped with eight electric tuning push buttons for automatically selecting stations. Seven of the push buttons are used for broadcast stations and one push button (left hand push button preferably) may be set up for use with a Philco wireless Record Player or the sound programs tuned in by Special Philco Television sets.

PHILCO TUBES USED: Model 40-195

1232, R. F.; 7J7, Converter; 7B7, I. F.; 7C6, Second Detector, A. V. C., and First Audio; 37, Phase Inverter; two 37, Drivers; two 42, Audio Power Outputs; 80, Rectifier.

Model 40-200

1232, R. F.; 7J7, Converter; 7B7, I. F.; 7A6 Detector A. V. C.; 7C6 First Audio; 37, Phase Inverter; two 37, Audio Drivers; two 42, Power Outputs; 80, Rectifier.

CABINET DIMENSIONS:	Height	Width	Depth
Model 40-195 type "XX".....	38"	29½"	13¾"
Model 40-200 type "RX".....	36⅜"	34⅝"	14⅜"

Aligning of Compensating Condensers

Equipment Required

(1) Signal Generator. In order to properly adjust this receiver an accurately calibrated signal generator such as Philco Model 077 is required. This signal generator covers a frequency range of 540 to 36,000 K. C. (2) Indicating Device, to obtain maximum signal strength and accurate adjustment of the padders a vacuum tube voltmeter and circuit tester such as Philco Models 027 and 028 is recommended. When using the vacuum tube voltmeter, an aligning adaptor Philco part No. 45-2767 is necessary for connecting to the A. V. C. circuit. These testers also contain an audio output meter which may also be used as an indicating device. (3) Aligning Tools, fiber handle screw driver Philco part No. 45-2610 and fiber wrench Philco part No. 7696.

Connecting Aligning Instruments

VACUUM TUBE VOLTMETER — To use the vacuum tube voltmeter as an alignment indicator make the following connections:

1. ADJUSTING I. F. CIRCUIT:

Remove the 1232 R. F. tube from its socket and insert the aligning adaptor, then replace the tube in the adaptor. Connect the negative terminal of the vacuum tube voltmeter to the wire which protrudes from the side of the adaptor. Attach the positive terminal of the voltmeter to the chassis.

2. ADJUSTING R. F. CIRCUIT:

To adjust the R. F. circuit, the aligning adaptor is inserted in the 7C6 A. F. tube socket. The vacuum tube voltmeter remains connected to the adaptor as given in the above paragraph.

With the voltmeter connected in this manner a very sensitive indication of the A. V. C. voltage is obtained when the padders are adjusted. If an audio output meter is used, connect it to the plate and socket terminals of the 42 type tube and adjust the output meter for the 0 to 30 A. C. scale.

After connecting the aligning indicator, adjust the compensators in the order as shown in the tabulation below. Locations of the compensators are shown on the schematic diagram page No. 2. If the output meter pointer goes off scale when adjusting the compensators, reduce the strength of the signal from the generator.

SIGNAL GENERATOR: When adjusting the I. F. padders, the high side of the signal generator is connected through a .1 mfd. condenser to terminal No. 1 of the loop terminal panel at the rear of the chassis. The ground or low side of the signal generator is connected to the chassis of the receiver.

When aligning the R. F. padders a loop is made from a few turns of wire and connected to the signal generator output terminals; the loop is then placed two or three feet from the loop in the cabinet. Do not remove the receiving loop from the cabinet. It is necessary when adjusting the padders, that the receiver be left in the cabinet.

Operations in Order	SIGNAL GENERATOR			RECEIVER			SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dummy Antenna Note A	Dial Setting	Dial Setting	Control Setting	Adjust Compensators in Order See Fig.	
1	High Side to No. 1 Ter. Loop Panel	.1 mfd.	455 K. C.	580 K. C.	Vol. Max. Range Switch "Brdcst."	39B, 39A 38B, 38A	See Note A
2	Use Loop on Generator		1500 K. C.	1500 K. C.	Vol. Max. Range Switch "Brdcst."	29B, 4B	See Note B
3	Use Loop on Generator		580 K. C.	580 K. C.	Vol. Max. Range Switch "Brdcst."	29	Roll Tuning Condenser Note C
4	Use Loop on Generator		1500 K. C.	1500 K. C.	Vol. Max. Range Switch "Brdcst."	25B, 4B	
5	Use Loop on Generator		3.5 M. C.	3.5 M. C.	Vol. Max. Range Switch "Police"	25A, 4A	
6	Use Loop on Generator		18.0 M. C.	18.0 M. C.	Vol. Max. Range Switch "S. W."	25, 4	Check Image Signal Note D

NOTE A — A "Dummy Antenna" consisting of a .1 mfd. condenser is connected in series with the signal generator output lead (high side).

NOTE B — DIAL CALIBRATION: In order to adjust the receiver correctly the dial must be aligned to track properly with the tuning condenser. To adjust the dial, proceed as follows: With the tuning condenser closed (maximum capacity), set the dial pointer on the extreme left index line at the low frequency end of the broadcast scale. The arrangement of the drive cable in this position is shown in Fig. 4.

NOTE C — When adjusting the low frequency compensator of Range One (Broadcast) or the antenna and R. F. compensators of the high frequency tuning ranges; the receiver Tuning Condenser must be adjusted (rolled) as follows: First tune the compensator for maximum output, then vary the tuning condenser of the receiver for maximum output. Now turn the compensator slightly to the right or left and again vary the receiver tuning condenser for maximum output. This procedure of first setting the compensator and then varying the tuning condenser is continued until there is no further gain in output reading.

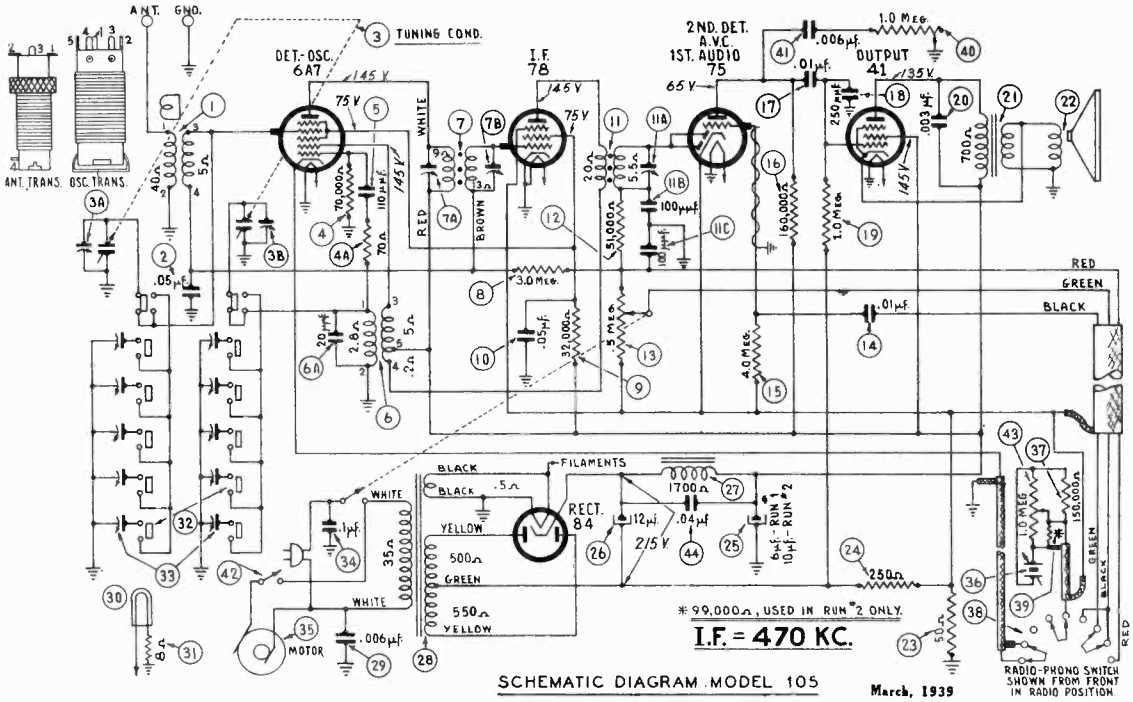
NOTE D — To accurately adjust the high frequency oscillator compensator to the fundamental instead of the image signal, turn the oscillator compensator to the maximum capacity position (clockwise). From this position slowly turn the compensator counter-clockwise until a second peak is obtained on the output meter. Adjust the compensator for maximum output at this second peak.

If the above procedure is correctly performed, the image signal will be found (much weaker) by turning the receiver dial 910 K. C. below the frequency being used on any high frequency range.

MODEL 105
Schematic, Voltage, Socket

PHILCO RADIO & TELEV. CORP.

Trimmers, Chassis, Parts
Alignment



SCHEMATIC DIAGRAM MODEL 105

March, 1939

POWER SUPPLY: 115 V., 60 cycle A. C. **POWER CONSUMPTION:** 57 watts. **AUDIO OUTPUT:** One (1) watt.

Model 105 is a combination Phonograph and Electric Automatic Tuning Radio Receiver. The phonograph is designed to play 10 or 12 inch standard records (78 R. P. M.) and consists of a semi-automatically operated crystal pickup and Turntable Motor.

The radio receiver consists of a five tube A. C. operated superheterodyne circuit, covering standard broadcast frequencies (530 to 1720 K. C.) with Automatic Volume Control and Pentode Audio Output. In addition to being manually tuned, there are six Electric Automatic Push Buttons. Five push buttons are used for selecting any one of five stations and one for changing to manual tuning. The procedure for adjusting the push buttons for reception of stations will be found in the instructions supplied with each receiver.

NOTE — DIAL CALIBRATION: With the tuning condenser in "maximum capacity" position (plates fully meshed), set the dial pointer between the two horizontal lines at the low frequency end of the scale (550 K. C.).

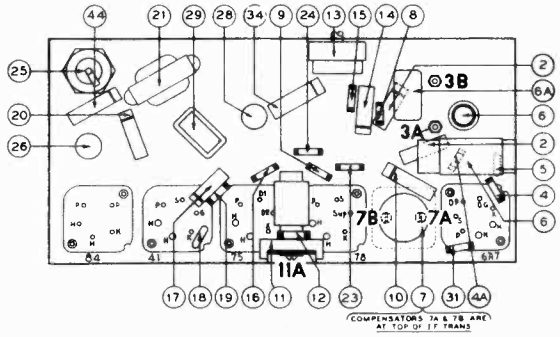


Fig. 1

PART LOCATIONS — UNDERSIDE OF CHASSIS

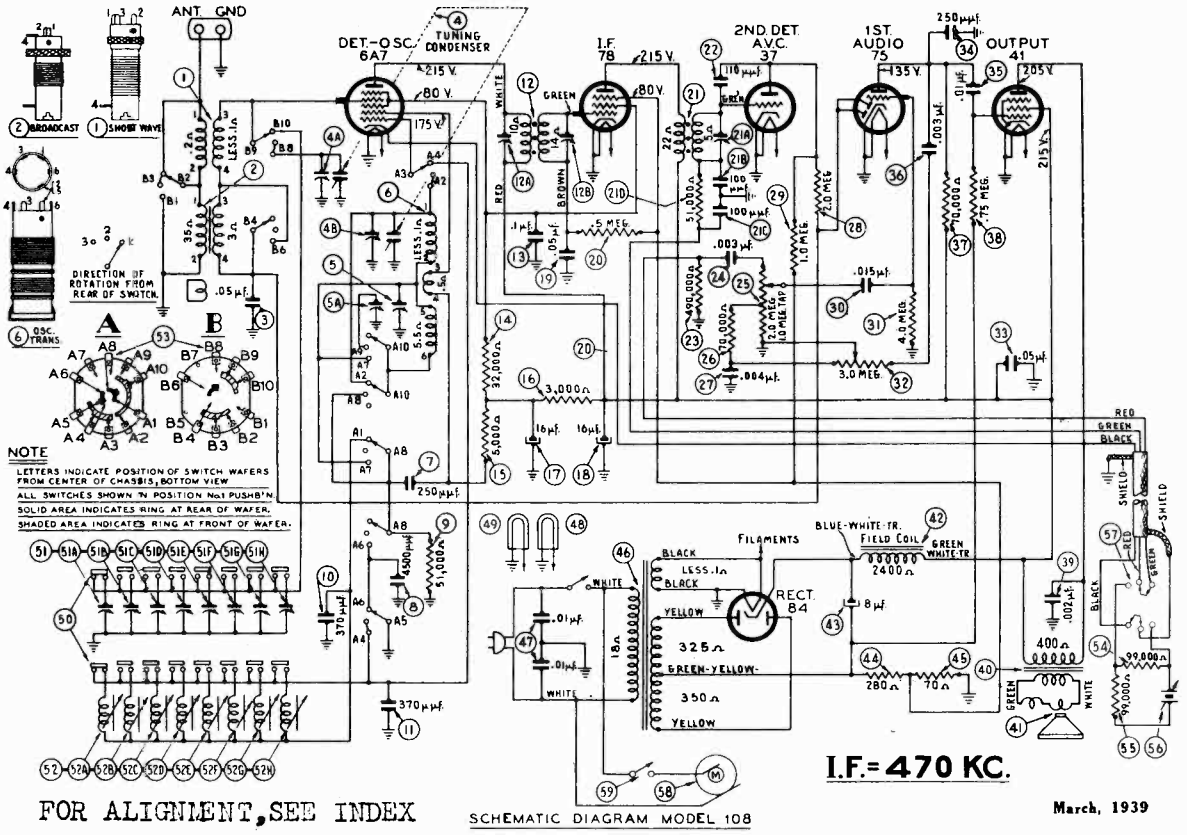
ALIGNMENT OF COMPENSATORS

Operations in Order	SIGNAL GENERATOR				RECEIVER		SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dummy Antenna Note A	Dial Setting	Dial Setting	Control Setting	Adjust Compensators in Order	
1	6A7	.1 mf.	470 K. C.	580 K. C.	Vol. Cont. Max.	11A, 7B, 7A	*Adjust for max. output
2	Ant. Lead	100 mf.	1550 K. C.	1550 K. C.	Vol. Cont. Max.	3B, 3A	Adjust for max. output. Note A, B

Sche. No.	Description	Part No.
1	Ant. Trans.	32-3039
2	Tubular Cond. (.05 mfd.)	30-4519
3	Tuning Cond.	31-2338
4	Resistor (70,000 ohms, ½ watt)	33-370339
4A	Resistor (70 ohms, ½ watt)	33-070339
5	Mica Cond. (110 mmfd.)	30-1031
6	Osc. Trans.	32-2122
6A	Mica Cond. (20 mmfd., silver cap)	30-1123
7	1st I. F. Trans. Assy.	32-3121
8	Resistor (3.0 meg., ½ watt)	33-530339
9	Resistor (32,000 ohms, ½ watt)	33-332339
10	Tubular Cond. (.05 mfd.)	30-4444
11	2nd I. F. Trans. Assy.	32-2674
12	Resistor (51,000 ohms, ½ watt)	33-351339
13	Volume Control (.5 meg.)	33-5254
14	Tubular Cond. (.01 mfd.)	30-4479
15	Resistor (4.0 meg., ½ watt)	33-540339
16	Resistor (160,000 ohms, ½ watt)	33-416339
17	Tubular Cond. (.01 mfd.)	30-4572
18	Mica Cond. (250 mmfd.)	30-1032
19	Resistor (1.0 meg., ½ watt)	33-510339
20	Tubular Cond. (.003 mfd.)	30-4582
21	Output Trans.	32-7980
22	Cone & Voice Coil Assy. { Run #1 Speaker No. 36-1440-3 / Run #2 Speaker No. 36-1473 }	36-4086 / 36-4120
23	Resistor (50 ohms, ½ watt)	33-050339
24	Resistor (250 ohms, ½ watt)	33-125339
25	Electrolytic Cond. { Run #1, 6 mfd., 450 V. / Run #2, 10 mfd., 450 V. }	30-2265 / 30-2091
26	Electrolytic Cond. (12 mfd., 300 V.)	30-2404
27	Field Coil { Replace Speaker Part No. 36-1440, Run #1 / Replace Speaker Part No. 36-1473, Run #2 }	
28	Power Trans. (115 V., 50-60 cycles)	32-7979
29	Condenser (.006 mfd., moulded)	30-4423
30	Pilot Lamp	34-2064
31	Pilot Lamp Resistor (8 ohms, ½ watt)	33-980331
32	Push Button Switch	42-1477
33	Padder Strip Assy.	31-6290
34	Tubular Cond. (.1 mfd.)	30-4122
35	Phono Motor	35-1158
36	Crystal Pickup without mtg. parts	35-2031
	Crystal Pickup complete with mtg. parts	35-2027
37	Resistor (150,000 ohms, ½ watt)	33-415339
38	Radio Phono Switch	42-1502
*39	Resistor (99,000 ohms, ½ watt) used in Run 2 only	33-399339
40	Tone Control (1.0 meg.)	33-5320
41	Tubular Cond. (.006 mfd.)	30-4591
42	Motor Switch	42-1498
43	Phono Volume Control (1.0 meg.)	33-5323
44	Tubular Cond. (.04 mfd.)	30-4119

PHILCO RADIO & TELEV. CORP.

MODEL 108, Code 121
Schematic, Voltage
Parts



FOR ALIGNMENT, SEE INDEX

SCHEMATIC DIAGRAM MODEL 108

March, 1939

ADJUSTING ELECTRIC PUSH BUTTON TUNING:- For frequency ranges of buttons see parts 51A through 51H in parts list. For adjusting procedure see INDEX.

POWER SUPPLY: 115 V., 60 cycle A. C. 69 watts.
INTERMEDIATE FREQUENCY: 470 K. C.

PHILCO TUBES USED: 6A7, First Detector Oscillator; 78, I. F. Amplifier; 37, Second Detector, A. V. C.; 75, First Audio; 41, Audio Output and 84, Rectifier.

Sche. No.	Description	Part No.
1	Ant. Trans. (S. W.)	32-3027
2	Ant. Trans. (B. C.)	32-3026
3	Tubular Cond. (.05 mf.)	30-4519
4	Tuning Cond. Assy.	31-2346
5	Dual Padder Unit	31-6255
6	Osc. Trans.	32-3028
7	Mica Cond. (250 mmf.)	30-1032
8	Mica Cond. (4500 mmf.)	30-1109
9	Resistor (51,000 ohms, ½ watt)	33-351339
10	Condenser (Silver Mica) (370 mmf.)	30-1110
11	Condenser (Silver Mica) (370 mmf.)	30-1110
12	1st I. F. Trans. Assy.	32-3018
13	Tubular Cond. (.1 mf.)	30-4455
14	Resistor (32,000 ohms, ½ watt)	33-332339
15	Resistor (5,000 ohms, ½ watt)	33-250339
16	Resistor (3,000 ohms, ½ watt)	33-230339
17	Electro. Cond. (16 mf.) 250 volts	30-2331
18	Electro. Cond. (16 mf.) 250 volts	30-2370
19	Tubular Cond. (.05 mf.)	30-4519
20	Resistor (490,000 ohms, ½ watt)	33-449339
21	2nd I. F. Trans. Assy.	32-3129
21A	Compensator Part of 21	
21B	Condenser Part of 21A	
21C	Condenser Part of 21A	
21D	Resistor (51,000 ohms, ½ watt)	33-351339
22	Mica Cond. (110 mmf.)	30-1031
23	Resistor (490,000 ohms, ½ watt)	33-449339
24	Tubular Cond. (.003 mf.)	30-4580
25	Volume Control (2 meg.)	33-5286
26	Resistor (70,000 ohms)	33-370339
27	Tubular Cond. (.004 mf.)	30-4334
28	Resistor (2.0 meg., ½ watt)	33-520339
29	Resistor (1.0 meg., ½ watt)	33-510339
30	Tubular Cond. (.015 mf.)	30-4515
31	Resistor (4.0 meg., ½ watt)	33-540339
32	Tone Control (3 meg.)	33-5287
33	Tubular Cond. (.05 mf.	30-4518
34	Mica Cond. (250 mmf.)	30-1032
35	Tubular Cond. (.01 mf.)	30-4572
36	Tubular Cond. (.003 mf.)	30-4582
37	Resistor (70,000 ohms, ½ watt)	33-370339
38	Resistor (75 meg., ½ watt)	33-475339
39	Tubular Cond. (.002 mf.)	30-4177
40	Output Trans. for Speaker Part No. 36-1438-2	32-7978
41	Cone and Voice Coil Assy. for Speaker Part No. 36-1438-2	36-4089
42	Field Coil, Replace Speaker Part No. 36-1438-2	
43	Electro. Cond. (8 mf. 400 V.)	30-2371
44	Resistor (280 ohms)	33-128431
45	Resistor (70 ohms, ½ watt)	33-070339
46	Power Trans. (115 V. 50 to 60 cycles)	32-7977
47	Bakelite Cond. (.01 mf. .01 mf.)	3903DG
48	Pilot Lamp (Dial)	34-2064
49	Pilot Lamp (Dial)	34-2064
50	Push Button Switch	42-1462
51	Compensator Assy.	31-6256
51A	Compensator No. 1 (540-1030 K. C.)	
51B	Compensator No. 2 (540-1030 K. C.)	
51C	Compensator No. 3 (670-1160 K. C.)	
51D	Compensator No. 4 (670-1160 K. C.)	
51E	Compensator No. 5 (900-1470 K. C.)	
51F	Compensator No. 6 (900-1470 K. C.)	
51G	Compensator No. 7 (1170-1600 K. C.)	
51H	Compensator No. 8 (1170-1600 K. C.)	
52	Electric Push Button Coil Assy.	32-3031
52A	Osc. Coil No. 1 (540-1030 K.C.)	32-3042
52B	Osc. Coil No. 2 (540-1030 K.C.)	32-3042
52C	Osc. Coil No. 3 (670-1160 K.C.)	32-3042
52D	Osc. Coil No. 4 (670-1160 K.C.)	32-3042
52E	Osc. Coil No. 5 (900-1470 K.C.)	32-3041
52F	Osc. Coil No. 6 (900-1470 K.C.)	32-3041
52G	Osc. Coil No. 7 (1170-1600 K.C.)	32-3041
52H	Osc. Coil No. 8 (1170-1600 K.C.)	32-3041
53	Wave Switch	42-1478
54	Resistor (99,000 ohms, ½ watt)	33-399339
55	Resistor (99,000 ohms, ½ watt)	33-399339
56	Crystal Pickup (without mtg. Parts)	35-2031
	Crystal Pickup (complete with mtg. Parts)	35-2027
57	Radio Phono Switch	42-1509
58	Phono Motor (115 volt, 60 cycle)	35-1158
59	Motor Switch	42-1498
	Bezel	56-1104
	Bracket & Bearing (Tuning Drum)	38-9662
	Cable (Power)	L-2778
	Coupling (Tuning Condenser)	31-2291
	Dial	27-5452
	Drive Cord Assy. (Tuning)	31-2315
	Drive Cord Assy. (Pointer)	31-2316
	Disc Control (Tuning)	27-4766
	Disc Control (Range Switch)	27-4767
	Disc Control (Tone)	27-4764
	Disc Control (Volume)	27-4765
	Drum & Shaft (Tuning Cond.)	38-9716
	Needle Screw	218-1047
	Nut ("T" Type Motor Mtg.)	W-1758
	Knob (Pushbutton)	27-4758
	Pointer	56-1033
	Screw (Pickup Mtg.)	W-2027
	Screw (Motor Mtg.)	W-599
	Screw (Chassis Mtg.)	W-454
	Sleeve (Motor Mtg.)	28-5274
	Spring (Drive Cord Assy.)	28-8913
	Spring (Pushbutton)	56-1238
	Socket (5 prong)	27-6035
	Socket (6 prong)	27-6036
	Socket (7 prong)	27-6099
	Speaker	36-1438-2
	Turntable	315-1007
	Washer (Rubber coupling, Turntable shaft)	315-1002
	Washer (Metal coupling, Turntable shaft)	315-1003
	Washer (Rubber, Motor Mtg., top)	3915
	Washer (Rubber, Motor Mtg., bottom)	27-4818

MODEL 936
Schematic, Socket
Trimmers, Chassis
Parts

PHILCO RADIO & TELEV. CORP.

PHILCO MODEL 936

I.F. = 470 KC

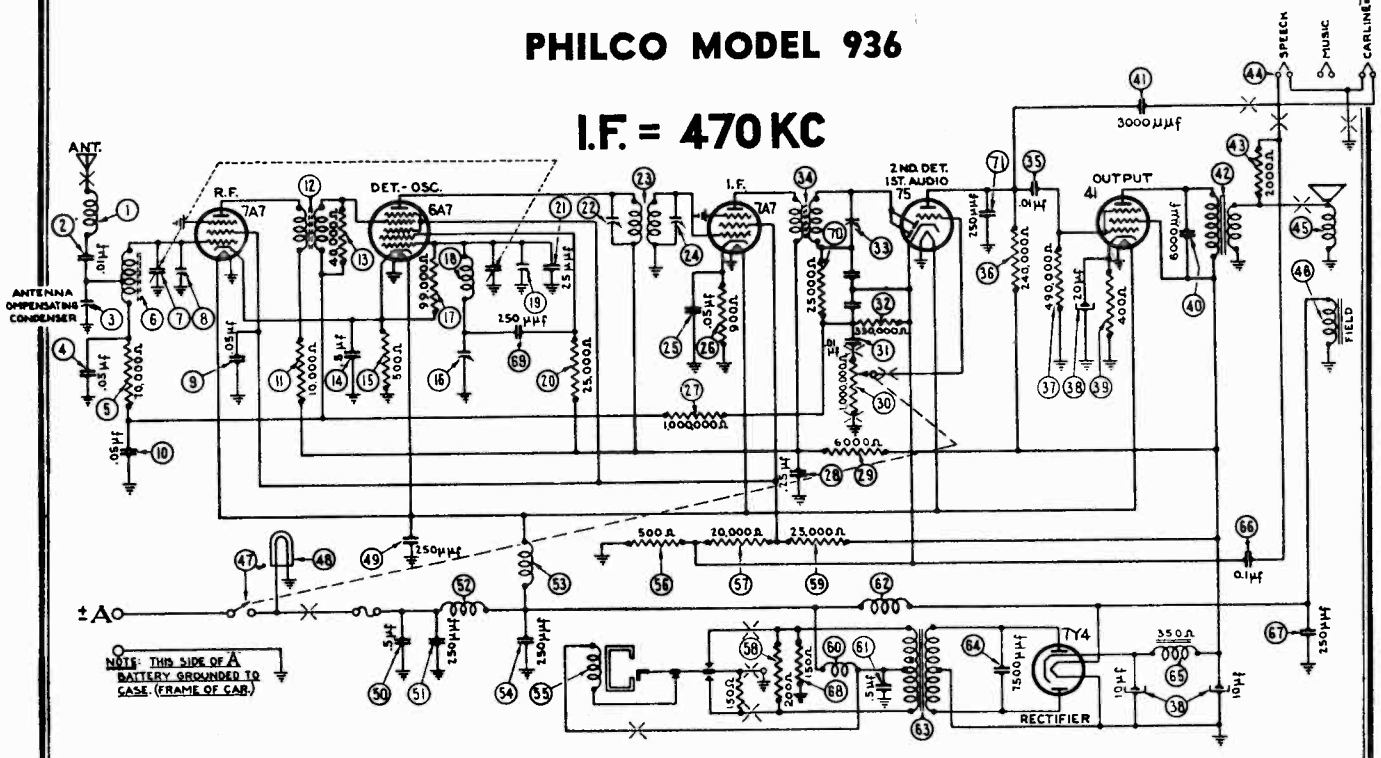


FIGURE 2

FOR ALIGNMENT, SEE INDEX

MODEL 936 PARTS LIST

No.	Description	Part No.
(1)	Antenna Choke	32-1956
(2)	Condenser (.01 mfd.)	30-4479
(3)	Antenna Compensator	31-6248
(4)	Condenser (.05 mfd.)	30-4444
(5)	Resistor (70,000 ohms)	33-370257
(6)	Antenna Transformer	65-0085
(7)	Tuning Condenser	63-0016
(8)	First Padder (on Tun. Cond.)	
(9)	Condenser (.05 mfd.)	30-4569
(10)	Condenser (.05 mfd.)	30-4444
(11)	Resistor (10,000 ohms)	33-310337
(12)	R. F. Transformer	65-0009
(13)	Resistor (40,000 ohms)	33-340237
(14)	Condenser (.5 mfd.)	30-4565
(15)	Resistor (500 ohms)	33-150438
(16)	Low Frequency Padder	31-6230
(17)	Resistor (99,000 ohms)	33-399337
(18)	Oscillator Transformer	65-0052
(19)	Second Padder (on Tun. Cond.)	
(20)	Resistor (25,000 ohms)	33-325337
(21)	Condenser (25 mmfd.)	30-1108
(22)	Padder (Pri. 1st I. F. Trans.)	
(23)	First I. F. Transformer	65-0044
(24)	Padder (Sec. 1st I. F. Trans.)	
(25)	Condenser (.05 mfd.)	30-4444
(26)	Resistor (900 ohms)	33-190438
(27)	Resistor (1,000,000 ohms)	33-510257
(28)	Condenser (.25 mfd.)	30-4448
(29)	Resistor (6,000 ohms)	33-260337
(30)	Vol. Control (1,000,000 ohms) and On-Off Switch	33-5268
(31)	Condenser (.01 mfd.)	61-0014
(32)	Resistor (330,000 ohms)	33-433337
(33)	Padder (Sec. 2nd I. F. Trans.)	
(34)	Second I. F. Transformer	65-0045
(35)	Condenser (.01 mfd.)	30-4501
(36)	Resistor (240,000 ohms)	33-424337
(37)	Resistor (490,000 ohms)	33-449337
(38)	Filter Condenser (10-10-20 mfd.)	61-0028

No.	Description	Part No.
(39)	Resistor (400 ohms)	33-140438
(40)	Condenser (6,000 ohms)	30-4024
(41)	Condenser (3,000 mmfd.)	30-4469
(42)	Output Transformer	65-0048
(43)	Resistor (2,000 ohms)	33-220447
(44)	Reception Control	412-1004
(45)	Cone and Voice Coil Kit	91-0028
(46)	Field Coil	Not Replaceable
(47)	On-Off Switch and Vol. Control (1,000,000 ohms)	33-5268
(48)	Pilot Lamp	34-2040
(49)	Condenser (250 mmfd.)	61-0033
(50)	Condenser (.5 mfd.)	30-4474
(51)	Condenser (250 mmfd.)	61-0033
(52)	"A" Choke	65-0057
(53)	Filament Choke	65-0057
(54)	Condenser (250 mmfd.)	61-0033
(55)	Vibrator	41-3398
(56)	Resistor (500 ohms)	33-150438
(57)	Resistor (20,000 ohms)	33-320337
(58)	Resistor (200 ohms)	33-120347
(59)	Resistor (25,000 ohms)	33-325437
(60)	Vibrator Choke	32-2483
(61)	Condenser (.5 mfd.)	30-4565
(62)	Choke	32-1374
(63)	Power Transformer	65-0046
(64)	Condenser (7,500 mmfd.)	30-4567
(65)	Filter Choke	32-7959
(66)	Condenser (.01 mfd.)	30-4499
(67)	Condenser (250 mmfd.)	61-0033
(68)	Resistor (150 ohms)	33-115337
(69)	Condenser (250 mmfd.)	61-0034
(70)	Resistor (25 000 ohms)	33-325344
(71)	Condenser (250 mmfd.)	30-1032
	Control Unit	85-0058
	Dial	55-0304
	Tuning and Volume Knob	27-4725
	Distributor Resistor	33-1196
	Interference Condenser	30-4007
	Control Mtg. Bracket	28-5790

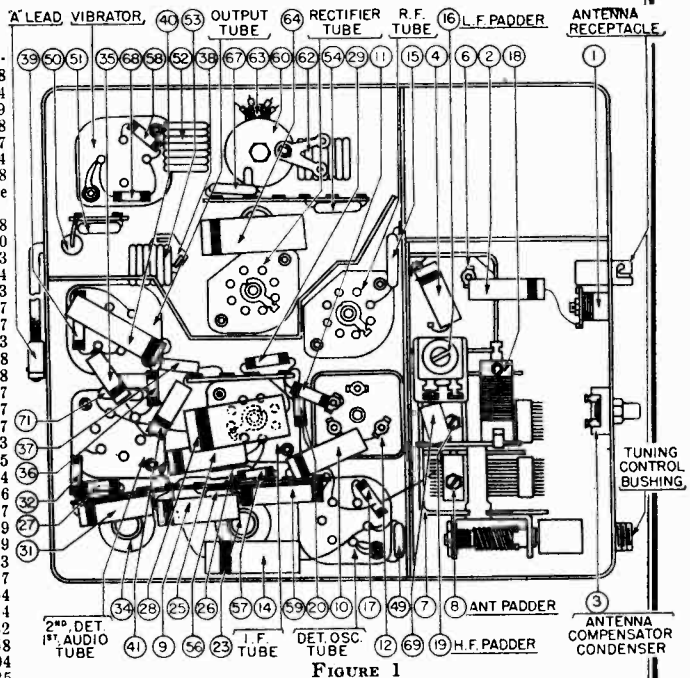


FIGURE 1

No.	Description	Part No.
	Reception Control Mtg. Bracket	28-5852
	Flexible Shaft	57-0631
	"T" Bolt	28-6161
	Nut	W518

JANUARY 5, 1939

Trimmers, Chassis Parts

PHILCO RADIO & TELEV. CORP.

MODEL 937
Schematic, Socket

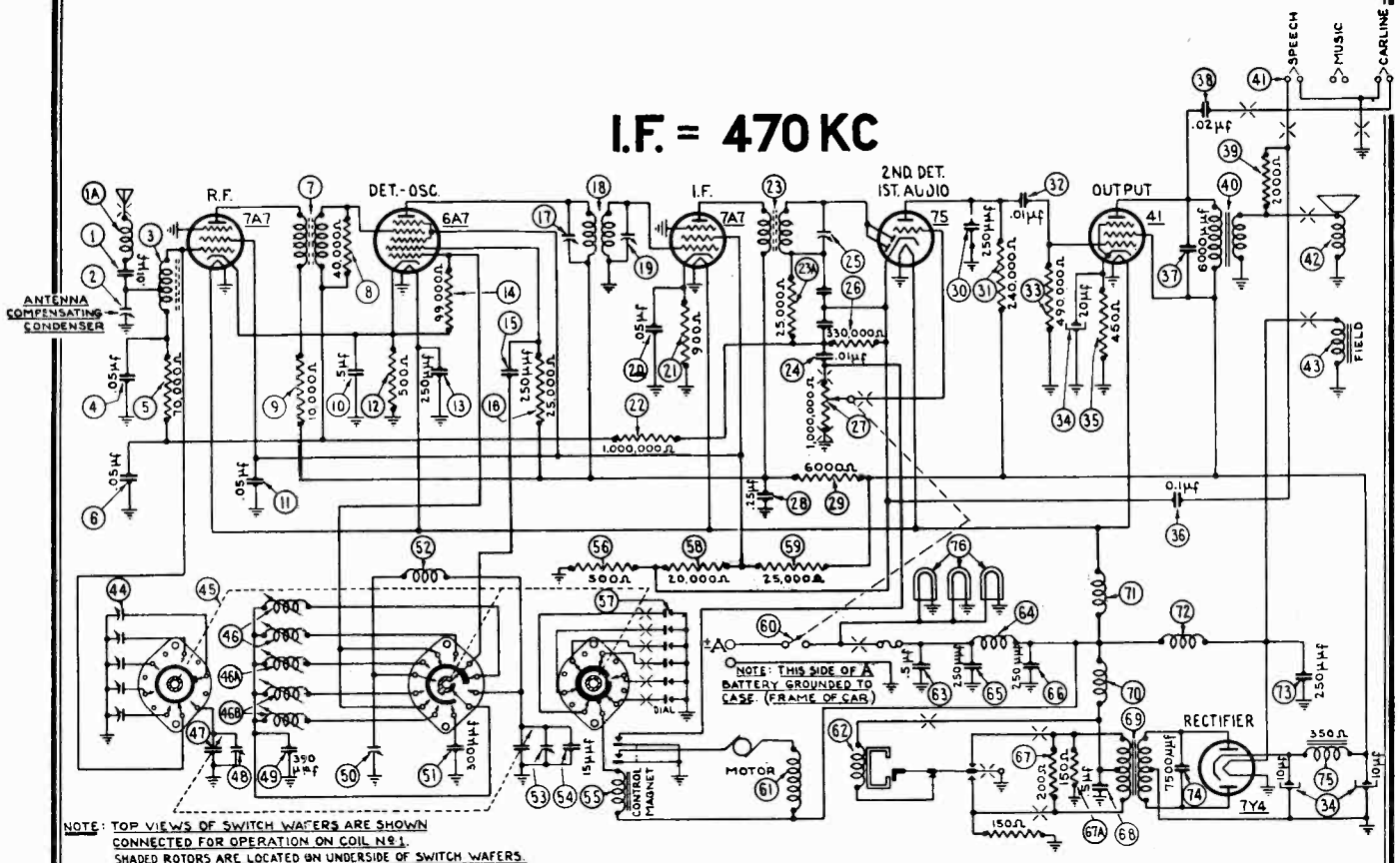


FIGURE 1

MODEL 937 PARTS LIST

No.	Description	Part No.
(1)	Condenser (.01 mfd.)	30-4479
(1a)	Antenna Choke	77-0161
(2)	Antenna Compensating Condenser	Part of (44)
(3)	Antenna Transformer	65-0085
(4)	Condenser (.05 mfd.)	30-4444
(5)	Resistor (70,000 ohms)	33-370257
(6)	Condenser (.05 mfd.)	30-4444
(7)	R. F. Transformer	65-0009
(8)	Resistor (40,000 ohms)	33-339137
(9)	Resistor (10,000 ohms)	33-310337
(10)	Condenser (.5 mfd.)	30-4565
(11)	Condenser (.05 mfd.)	30-4569
(12)	Resistor (500 ohms)	33-150438
(13)	Condenser (250 mmfd.)	61-0033
(14)	Resistor (99,000 ohms)	33-399337
(15)	Condenser (250 mmfd.)	61-0033
(16)	Resistor (25,000 ohms)	33-325337
(17)	Padder (Pri. 1st I. F. Trans.)	
(18)	First I. F. Transformer	65-0044
(19)	Padder (Sec. 1st I. F. Trans.)	
(20)	Condenser (.05 mfd.)	30-4444
(21)	Resistor (900 ohms)	33-190438
(22)	Resistor (1,000,000 ohms)	33-510257
(23)	Second I. F. Transformer	65-0045
(23a)	Resistor (25,000 ohms)	33-325337
(24)	Condenser (.01 mfd.)	61-0014
(25)	Padder (Sec. 2nd I. F. Trans.)	
(26)	Resistor (330,000 ohms)	33-433337
(27)	Vol. Control (1,000,000 ohms) and On-Off Switch	33-5268
(28)	Condenser (.25 mfd.)	30-4448
(29)	Resistor (6,000 ohms)	33-260337
(30)	Condenser (250 mmfd.)	30-1032
(31)	Resistor (240,000 ohms)	33-424337
(32)	Condenser (.01 mfd.)	30-4501
(33)	Resistor (490,000 ohms)	33-449337
(34)	Filter Condenser (10-10-20 mfd.)	61-0028
(35)	Resistor (450 ohms)	33-145337
(36)	Condenser (.1 mfd.)	30-4499
(37)	Condenser (6,000 mmfd.)	30-4024
(38)	Condenser (.02 mfd.)	30-4495
(39)	Resistor (2,000 ohms)	33-220447
(40)	Output Transformer	65-0048
(41)	Reception and Push Button Control	77-0179
(42)	Cone Kit	91-0028
(43)	Field Coil	Not Replaceable
(44)	Antenna Padder Assembly	77-0172
(45)	Wafer Switch	77-0180
(46)	Oscillator Transformer (High Freq.)	65-0088
(46a)	Oscillator Transformer (Med. Freq.)	65-0089
(46b)	Oscillator Transformer (Low Freq.)	65-0090
(47)	Tuning Condenser	63-0016
(48)	First Padder (on Tun. Cond.)	
(49)	Silver Cap Condenser (390 mmfd.)	61-0031
(50)	Low Frequency Padder	31-6230
(51)	Silver Cap Condenser (330 mmfd.)	61-0003
(52)	Oscillator Transformer	65-0052
(53)	Second Padder (on Tun. Cond.)	
(54)	Condenser (15 mmfd.)	61-0038
(55)	Motor and Relay Assembly	77-0178
(56)	Resistor (500 ohms)	33-150438
(57)	Push Button and Reception Control Assembly	77-0179
(58)	Resistor (20,000 ohms)	33-320337
(59)	Resistor (25,000 ohms)	33-325437
(60)	On-Off Switch and Volume Control (1,000,000 ohms)	33-5268
(61)	Motor	83-0001
(62)	Vibrator	41-3398
(63)	Condenser (.5 mfd.)	30-4474
(64)	"A" Choke	65-0057
(65)	Condenser (250 mmfd.)	61-0033
(66)	Condenser (250 mmfd.)	61-0033
(67)	Resistor (200 ohms)	33-120347
(67a)	Resistor (150 ohms)	33-115347
(68)	Condenser (.5 mfd.)	30-4565
(69)	Power Transformer	65-0046
(70)	Vibrator Choke	32-2483
(71)	Filament Choke	65-0057
(72)	Choke	32-1374
(73)	Condenser (250 mmfd.)	61-0033
(74)	Condenser (7,500 mmfd.)	30-4567
(75)	Filter Choke (350 ohms)	32-7959
(76)	Pilot Lamp	34-2040
	Call Letter Kit	81-0088
	Tuning Control (Manual)	85-0060
	Bracket (Automatic Control Mtg.)	57-0638
	Distributor Resistor	33-1196
	Interference Condenser	30-4007
	Dial	55-0304
	Tuning and Volume Knob	27-4689

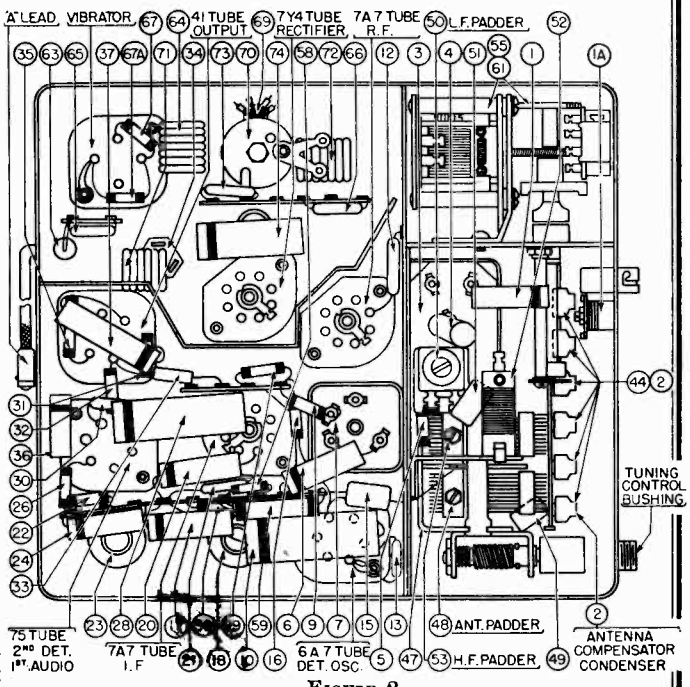


FIGURE 2

JANUARY 3, 1939

MODEL 937 — ADJUSTMENTS

All padding adjustments are carefully made at the factory and ordinarily no readjustments are necessary. However, when readjustments are required, the procedure given below must be followed in detail.

Equipment — Fully charged heavy duty storage battery or 6 volt power pack, 077 or 177 Philco Set Tester, 27-7159 Padding screw driver.

General — The output meter must be connected by means of an adapter to the plate of the type 41 output tube and to the Radio chassis.

With the Radio and signal generator set up for operation at the prescribed frequency, turn the Radio volume control on full and set the signal generator attenuator so that a half scale reading is obtained on the output meter. The signal in the speaker should be audible but not loud.

The shielding on the generator output lead must be connected to the Radio housing.

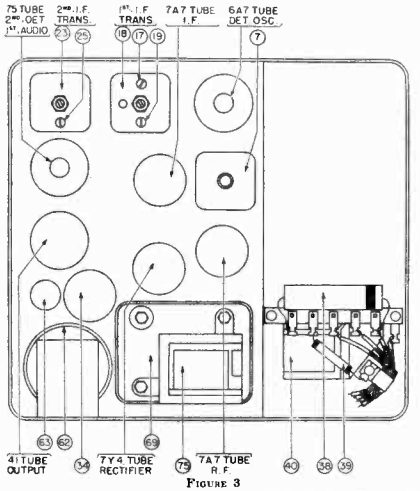


FIGURE 3

OPERATION	SIGNAL GENERATOR FREQUENCY	SIGNAL GENERATOR CONNECTION	DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
1	PRESS THE RETURN TO DIAL BUTTON UNTIL STATIONS CAN BE TUNED IN BY MANUAL TUNING. ADJUST THE ANTENNA COMPENSATOR ⑧ TWO TURNS FROM TIGHT				
2	470 K.C.	To Grid of 6A7 Tube	.1 Mfd.	Turn Tuning Condenser Plates Out of Mesh as Far as They Will Go.	㉙ ⑲ ⑰
3	1580 K.C.	To Antenna Receptacle on Radio	See Note 1	Note 2	㉘
4	1400 K.C.	To Antenna Receptacle on Radio	See Note 1	Set Tuning Condenser at 1400 K.C.	㊽ Note 4
5	580 K.C.	To Antenna Receptacle on Radio	See Note 1	Set Tuning Condenser at 580 K.C.	㊿ Note 3
6	1580 K.C.	To Antenna Receptacle on Radio	See Note 1	Note 2	㉘
7	1400 K.C.	To Antenna Receptacle on Radio	See Note 1	Set Tuning Condenser at 1400 K.C.	㊽ Note 4
8	1200 to 1400 K.C.	Note 5	Note 5	Note 5	⑧

Make all adjustments for maximum reading on the output meter.

NOTE 1 — Connect the antenna lead, Part No. 41-3191, to the antenna receptacle in the radio. Connect a 50 Mmfd. Condenser in series between the signal generator and the antenna lead.

NOTE 2 — Turn the condenser rotor plates completely out of mesh as far as they will go.

NOTE 3 — Rock the tuning condenser while adjusting the low frequency padder. Tune the condenser to the signal and adjust the padder for maximum output. Rotate the tuning condenser back and forth slightly for maximum output. Then readjust the padder for maximum output. Repeat this procedure until no further improvement is noticed.

NOTE 4 — When the antenna stage adjustment is made with the Radio installed in the car, the Radio antenna lead must be connected to the car antenna in the usual manner. Connect the signal generator output lead to a wire placed near the car antenna but not connected to it.

NOTE 5 — When installing the radio in the car, follow the installation instructions carefully. Tune in a weak broadcast signal between 1200 and 1400 Kilocycles on the control scale. Remove the plug button on the end of the radio and adjust the antenna compensator ⑧ (See Figure 2) for maximum signal.

MODEL 936 — ADJUSTMENTS

All padding adjustments are carefully made at the factory and ordinarily no readjustments are necessary. However, when readjustments are required, the procedure given below must be followed in detail.

Equipment — Fully charged heavy duty storage battery or 6 volt power pack, 077 or 177 Philco Set Tester, 27-7159 Padding screw driver.

General — The output meter must be connected by means of an adapter to the plate of the type 41 output tube and to the Radio chassis.

With the Radio and signal generator set up for operation at the prescribed frequency, turn the Radio volume control on full and set the signal generator attenuator so that a half scale reading is obtained on the output meter. The signal in the speaker should be audible but not loud.

The shielding on the generator output lead must be connected to the Radio housing.

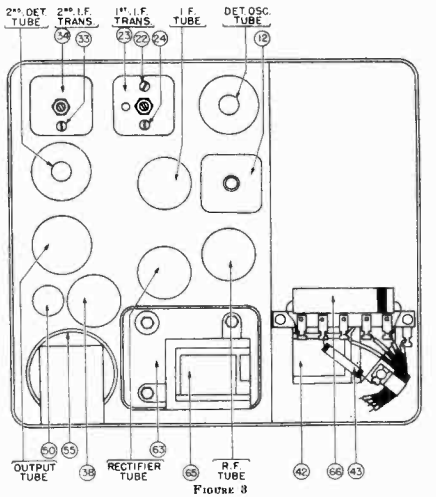


FIGURE 3

OPERATION	SIGNAL GENERATOR FREQUENCY	SIGNAL GENERATOR CONNECTION	DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
1	ADJUST THE ANTENNA COMPENSATOR ③ TWO TURNS FROM TIGHT				
2	470 K.C.	To Grid of 6A7 Tube	.1 Mfd.	Turn Tuning Condenser Plates Out of Mesh as Far as They Will Go.	㊸ ㉔ ㊾
3	1580 K.C.	To Antenna Receptacle on Radio	See Note 1	Note 2	⑲
4	1400 K.C.	To Antenna Receptacle on Radio	See Note 1	Set Tuning Condenser at 1400 K.C.	⑧ Note 4
5	580 K.C.	To Antenna Receptacle on Radio	See Note 1	Set Tuning Condenser at 580 K.C.	⑭ Note 3
6	1580 K.C.	To Antenna Receptacle on Radio	See Note 1	Note 2	⑲
7	1400 K.C.	To Antenna Receptacle on Radio	See Note 1	Set Tuning Condenser at 1400 K.C.	⑧ Note 4
8	1200 to 1400 K.C.	Note 5	Note 5	Note 5	③

Make all adjustments for maximum reading on the output meter.

NOTE 1 — Connect the antenna lead, Part No. 41-3191, to the antenna receptacle in the radio. Connect a 50 Mmfd. Condenser in series between the signal generator and the antenna lead.

NOTE 2 — Turn the condenser rotor plates completely out of mesh as far as they will go.

NOTE 3 — Rock the tuning condenser while adjusting the low frequency padder. Tune the condenser to the signal and adjust the padder for maximum output. Rotate the tuning condenser back and forth slightly for maximum output. Then readjust the padder for maximum output. Repeat this procedure until no further improvement is noticed.

NOTE 4 — When the antenna stage adjustment is made with the Radio installed in the car, the Radio antenna lead must be connected to the car antenna in the usual manner. Connect the signal generator output lead to a wire placed near the car antenna but not connected to it.

NOTE 5 — When installing the radio in the car, follow the installation instructions carefully. Tune in a weak broadcast signal between 1200 and 1400 Kilocycles on the control scale. Remove the plug button on the end of the radio and adjust the antenna compensator ③ (See Figure 2) for maximum signal.

PHILCO RADIO & TELEV. CORP.

MODEL 938K
Schematic, Chassis Parts

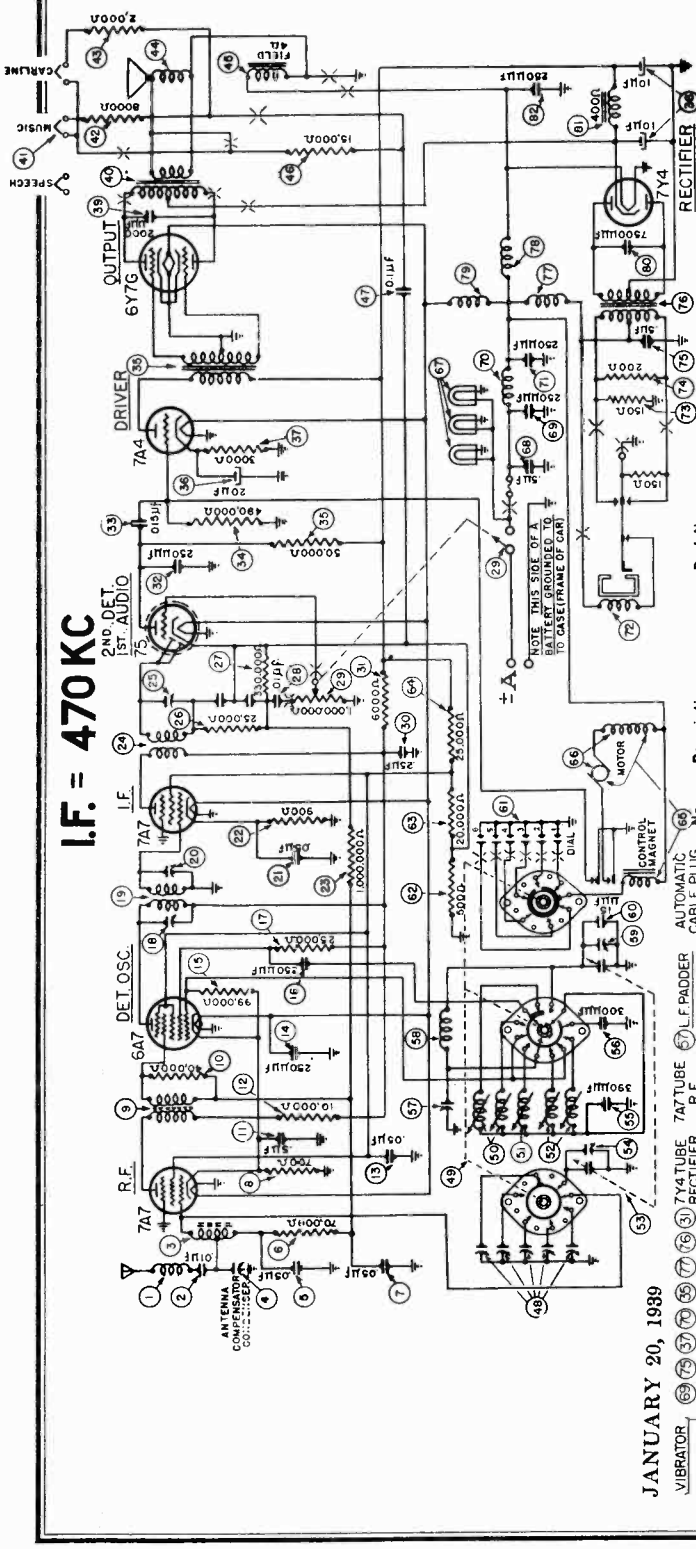


FIGURE 2

No.	Description	Part No.
①	Antenna Choke	77-0161
②	Condenser (.01 mfd.)	30-4479
③	Antenna Transformer	65-0085
④	Antenna Compensator	31-6248
⑤	Condenser (.05 mfd.)	30-4444
⑥	Resistor (70,000 ohms)	33-370257
⑦	Condenser (.05 mfd.)	30-4444
⑧	Resistor (700 ohms)	33-170438
⑨	R. F. Transformer	65-0009
⑩	Resistor (40,000 ohms)	33-340257
⑪	Condenser (.5 mfd.)	30-4565
⑫	Resistor (10,000 ohms)	33-310337
⑬	Condenser (.05 mfd.)	30-4569
⑭	Condenser (250 mmfd.)	61-0033
⑮	Resistor (99,000 ohms)	33-399337
⑯	Condenser (250 mmfd.)	61-0034
⑰	Resistor (25,000 ohms)	33-325337
⑱	Padder (Pri. 1st I. F. Trans.)	
⑲	First I. F. Transformer	65-0044
⑳	Padder (Sec. 1st I. F. Trans.)	
㉑	Condenser (.05 mfd.)	30-4444
㉒	Resistor (900 ohms)	33-190438
㉓	Resistor (1,000,000 ohms)	33-510257
㉔	Second I. F. Transformer	65-0045
㉕	Padder (Sec. 2nd I. F. Trans.)	
㉖	Resistor (25,000 ohms)	33-325257
㉗	Resistor (330,000 ohms)	33-433337
㉘	Condenser (.01 mfd.)	61-0014
㉙	Volume Control (1,000,000 ohms) and On-Off Switch	33-5268
㉚	Condenser (.25 mfd.)	30-4448
㉛	Resistor (6,000 ohms)	33-260337
㉜	Condenser (250 mmfd.)	30-1032
㉝	Condenser (.015 mfd.)	30-4515
㉞	Resistor (490,000 ohms)	33-449337
㉟	Resistor (50,000 ohms)	33-351337
㊱	Filter Condenser (10-10-20 mfd.)	61-0028
㊲	Resistor (3,000 ohms)	33-230337
㊳	Input Transformer	65-0097
㊴	Condenser (2,000 mmfd.)	30-4177
㊵	Output Transformer	65-0093
㊶	Automatic Station Selector and Reception Control	77-0204
㊷	Resistor (8,000 ohms)	33-280337
㊸	Resistor (2,000 ohms)	33-220337
㊹	Tone and Voice Coil Kit	45-2653
㊺	Field Coil Assembly	Not Replaceable
㊻	Resistor (15,000 ohms)	33-315337
㊼	Condenser (.1 mfd.)	30-4122
㊽	Antenna Padder Assembly	77-0172
㊾	Wafer Switch	77-0207
㊿	Oscillator Transformer (High Freq.)	65-0088
(51)	Oscillator Transformer (Med. Freq.)	65-0089
(52)	Oscillator Transformer (Low Freq.)	65-0090
(53)	Tuning Condenser	63-0016
(54)	First Padder (on Tun. Cond.)	
(55)	Silver Cap Condenser (390 mmfd.)	61-0031
(56)	Silver Cap Condenser (300 mmfd.)	61-0003
(57)	Low Frequency Padder	31-6230
(58)	Oscillator Transformer	65-0092
(59)	Second Padder (on Tun. Cond.)	
(60)	Condenser (.15 mmfd.)	61-0038
(61)	Station Selector Assembly	Part of (41)
(62)	Resistor (500 ohms)	33-150438
(63)	Resistor (20,000 ohms)	33-320337
(64)	Resistor (25,000 ohms)	33-325447
(65)	Motor and Relay Assembly	77-0229
(66)	Motor	83-0001
(67)	Pilot Lamp	34-2040
(68)	Condenser (.5 mfd.)	30-4474
(69)	Condenser (250 mmfd.)	61-0033
(70)	"A" Choke	65-0057
(71)	Condenser (250 mmfd.)	61-0033
(72)	Vibrator	41-3398
(73)	Resistor (150 ohms)	33-115337
(74)	Resistor (200 ohms)	33-120347
(75)	Condenser (.5 mfd.)	30-4565
(76)	Power Transformer	65-0095
(77)	Vibrator Choke	32-2537
(78)	Choke	32-1374
(79)	Filament Choke	65-0057
(80)	Condenser (7,500 mmfd.)	30-4567
(81)	Filter Choke	65-0092
(82)	Condenser (250 mmfd.)	61-0033
(83)	Resistor (150 ohms)	33-115337
	Call Letter Kit	81-0088
	Automatic Tuning Unit	77-0204
	Tuning Control (Manual)	85-0060
	(Automatic Control Mtg.)	57-0638
	Distributor Resistor	33-1196
	Interference Condenser	30-4007
	Dial	55-0304
	Tuning & Volume Knob	27-4689
	Speech Knob	27-4733
	Music Knob	27-4732
	Car Line Knob	27-4731
	Fuse	7227
	Fuse Insulator	27-7729
	"T" Bolt (Rec. Mtg.)	28-6161
	Nut (Rec. Mtg.)	W518
	Stud (Speaker Mtg.)	6122
	Nut (Speaker Mtg.)	W55A
	Call Letter Kit	81-0088

MODEL 938K
Socket, Trimmers
Alignment

PHILCO RADIO & TELEV. CORP.

Alignment MODEL 938K

All padding adjustments are carefully made at the factory and ordinarily no readjustments are necessary. However, when readjustments are required, the procedure given below must be followed in detail.

Equipment — Fully charged heavy duty storage battery or 6 volt power pack, 077 or 177 Philco Set Tester, 27-7159 Padding screw driver.

General — The output meter must be connected by means of an adapter to the plate of the type 6Y7G output tube and to the Radio chassis.

With the Radio and signal generator set up for operation at the prescribed frequency, turn the Radio volume control on full and set the signal generator attenuator so that a half scale reading is obtained on the output meter. The signal in the speaker should be audible but not loud.

The shielding on the generator output lead must be connected to the Radio housing.

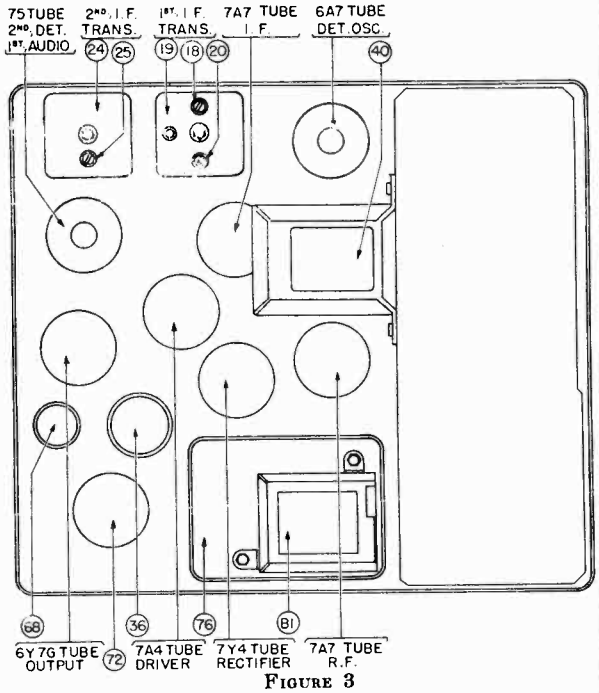


FIGURE 3

OPERATION	SIGNAL GENERATOR FREQUENCY	SIGNAL GENERATOR CONNECTION	DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
1	PRESS THE RETURN TO DIAL BUTTON UNTIL STATIONS CAN BE TUNED IN BY MANUAL TUNING. ADJUST THE ANTENNA COMPENSATOR ④ TWO TURNS FROM TIGHT.				
2	470 K.C.	To Grid of 6A7 Tube	.1 Mfd.	Turn Tuning Condenser Plates Out of Mesh as Far as They Will Go.	(25) (20) (18)
3	1580 K.C.	To Antenna Receptacle on Radio	See Note 1	Note 2	(59)
4	1400 K.C.	To Antenna Receptacle on Radio	See Note 1	Set Tuning Condenser at 1400 K.C.	(54) Note 4
5	580 K.C.	To Antenna Receptacle on Radio	See Note 1	Set Tuning Condenser at 580 K.C.	(57) Note 3
6	1580 K.C.	To Antenna Receptacle on Radio	See Note 1	Note 2	(58)
7	1400 K.C.	To Antenna Receptacle on Radio	See Note 1	Set Tuning Condenser at 1400 K.C.	(54) Note 4
8	1200 to 1400 K.C.	Note 5	Note 5	Note 5	④

Make all adjustments for maximum reading on the output meter.

1 — Connect the antenna lead, Part No. 41-3191, to the antenna receptacle in the radio. Connect a 50 Mmfd. Condenser in series between the signal generator and the antenna lead.

2 — Turn the condenser rotor plates completely out of mesh as far as they will go.

3 — Rock the tuning condenser while adjusting the low frequency padder. Tune the condenser to the signal and adjust the padder for maximum output. Rotate the tuning condenser back and forth slightly for maximum output. Then readjust the padder for maximum output. Repeat this procedure until no further improvement is noticed.

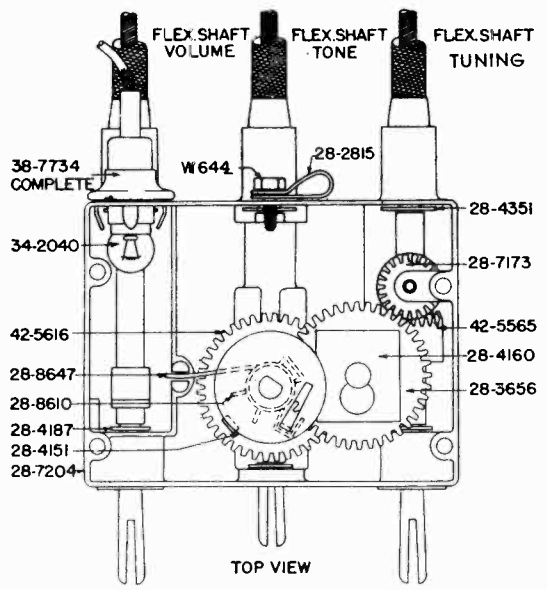
4 — When the antenna stage adjustment is made with the Radio installed in the car, the Radio antenna lead must be connected to the car antenna in the usual manner. Connect the signal generator output lead to a wire placed near the car antenna but not connected to it.

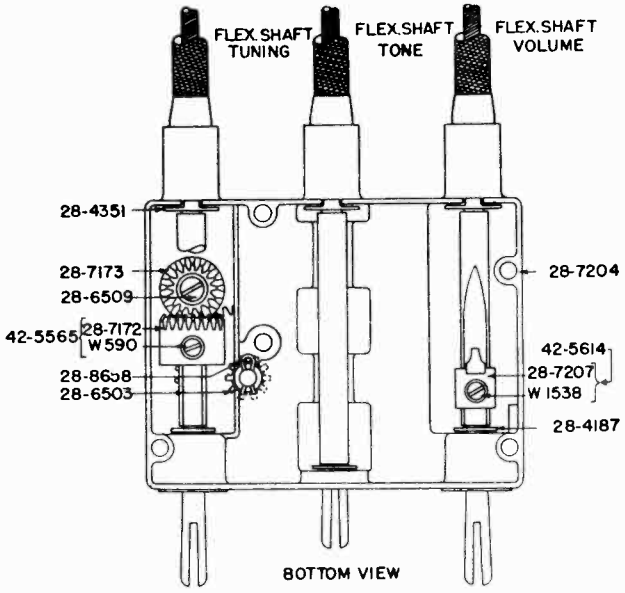
5 — When installing the radio in the car, follow the installation instructions carefully. Tune in a weak broadcast signal between 1200 and 1400 Kilocycles on the control scale. Remove the plug button on the end of the radio and adjust the antenna compensator ④ (See Figure 2) for maximum signal.

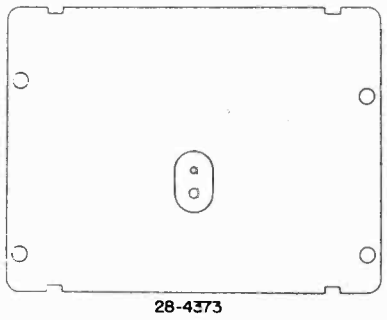
PHILCO RADIO & TELEV. CORP.

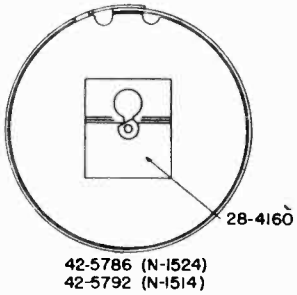
MODELS N-1514, N-1524
Nash Controls Details

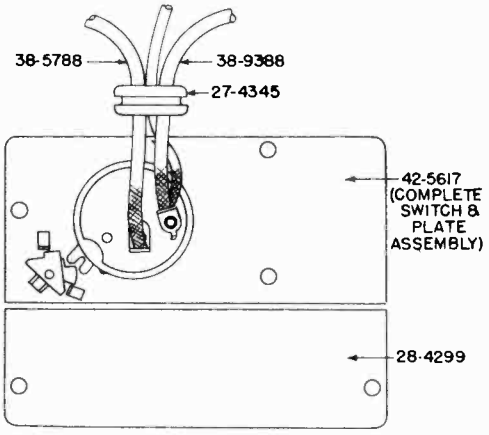
NASH CONTROLS — MODELS N-1514 — N-1524

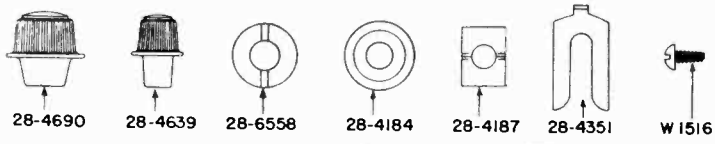












28-8813 TUNING CONTROL SHAFT (N-1524)
28-8815 TUNING CONTROL SHAFT (N-1514)
28-8814 VOLUME CONTROL SHAFT (N-1524)
28-8816 VOLUME CONTROL SHAFT (N-1514)
28-8798 TONE CONTROL SHAFT (N-1524)
28-8817 TONE CONTROL SHAFT (N-1514)

PARTS LIST AND PRICES (Prices Subject to Change Without Notice)

Part No.	Description	List Price
L-1626	Lug	$ .02
W-590	Screw ..... per 100	2.00
W-644	Screw ..... per 100	1.50
W-1516	Screw ..... per 100	1.30
W-1538	Screw ..... per 100	1.80
27-4345	Grommet	.02
27-7133	Terminal	.01
27-7242	Sleeve ..... per 100	.40
28-1269	Fuse Housing	.01
28-2650	Washer ..... per 100	.45
28-2815	Clamp	.01
28-3656	Gear	.02
28-4151	Friction Washer	.02
28-4160	Spring	.01
28-4184	Knob Base	.02
28-4187	Washer	.01

* Prices not available at this time.

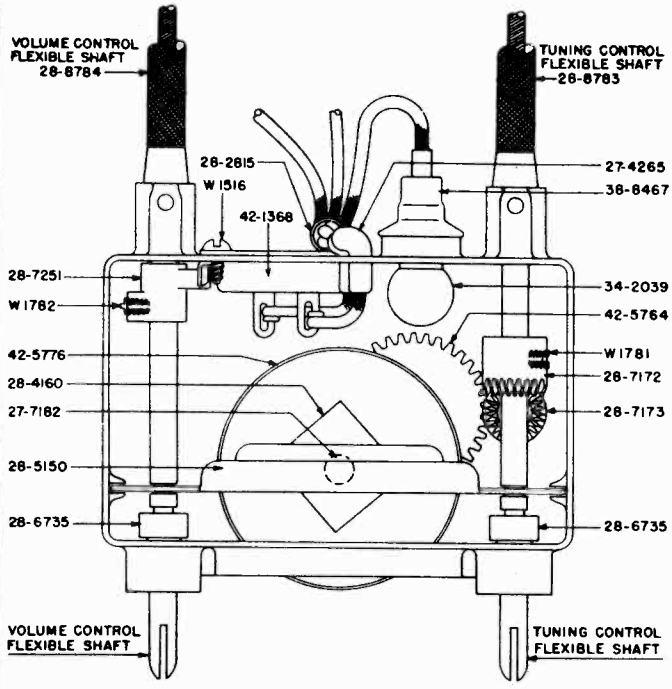
Part No.	Description	List Price
28-4299	Cover	.03
28-4351	Shaft Retainer	.01
28-4373	Cover	.10
28-4639	Tone Knob	*
28-4690	Tuning & Volume Knob	*
28-6503	Gear	.05
28-6509	Screw	.03
28-6558	Gland Nut	.25
28-7172	Miter Gear	.10
28-7173	Miter Idler Gear	.10
28-7204	Housing	.50
28-7207	Switch Arm	.05
28-8009	Spring ..... per 100	.50
28-8610	Spring	.03
28-8647	Anti-back Lash Spring	.02
28-8658	Spring	.03

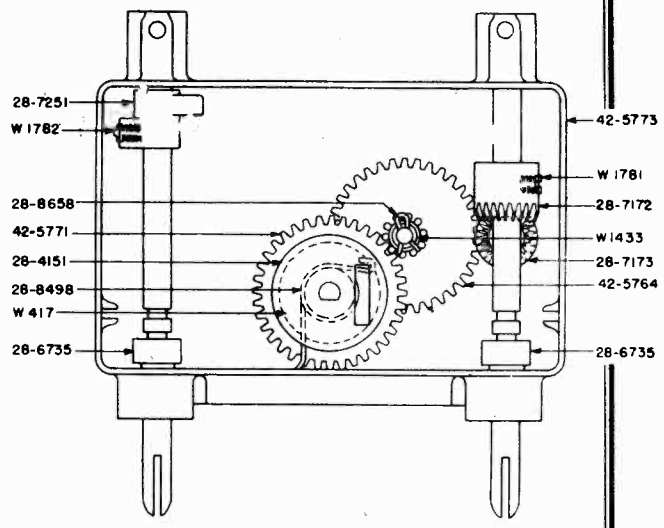
Part No.	Description	List Price
28-8798	Tone Shaft (N-1524)	1.00
28-8813	Tuning Shaft (N-1524)	1.00
28-8814	Volume Shaft (N-1524)	1.00
28-8815	Tuning Shaft (N-1514)	1.00
28-8816	Volume Shaft (N-1514)	1.00
28-8817	Tone Shaft (N-1514)	1.00
34-2040	Pilot Lamp	.09
38-5788	"A" Lead	*
38-7734	Pilot Lamp Assembly	.35
38-9388	"A" Lead	.20
42-5565	Miter Gear Assembly	.15
42-5614	Switch Arm Assembly	.15
42-5616	Drum Shaft & Gear	.10
42-5617	On-Off Switch	.40
42-5786	Dial Assembly (N-1524)	.35
42-5792	Dial Assembly (N-1514)	.40

MODEL P-1517 Packard
Controls Details

PHILCO RADIO & TELEV. CORP.

PACKARD MODEL P-1517 CONTROL UNIT

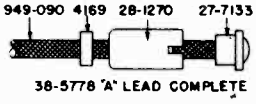




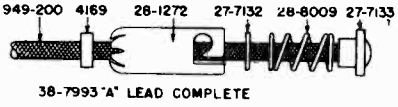

27-4688


28-7264

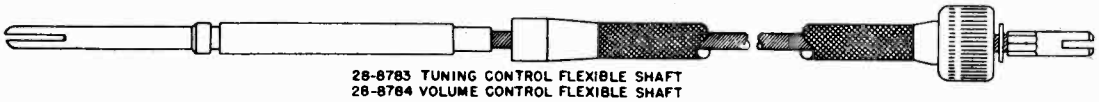

28-6773



38-5778 "A" LEAD COMPLETE



38-7993 "A" LEAD COMPLETE


28-8783 TUNING CONTROL FLEXIBLE SHAFT
28-8784 VOLUME CONTROL FLEXIBLE SHAFT

PARTS LIST AND PRICES
(Prices Subject to Change Without Notice)

PART NUMBER	DESCRIPTION	LIST PRICE
W-417	Washer ..... per 100	$.50
W-1433	Washer ..... per 100	.15
W-1516	Screw ..... per 100	1.30
W-1781	Set Screw ..... per 100	2.00
W-1782	Set Screw ..... per 100	2.50
4169	Washer ..... per 100	1.20
27-4265	Sleeve ..... per 100	1.25
27-4688	Tuning and Volume Knob	.20
27-7132	Washer ..... per 100	.40
27-7133	Ferrule	.01
28-1270	Housing	.01
28-1272	Housing ..... per 100	.85
28-2815	Clamp	.01
28-4151	Washer	.02
28-4160	Spring	.01
28-5149	Cover	.10
28-5150	Shaft Retaining Plate	.05
28-6735	Bushing	*
28-6773	Gland Nut	.15

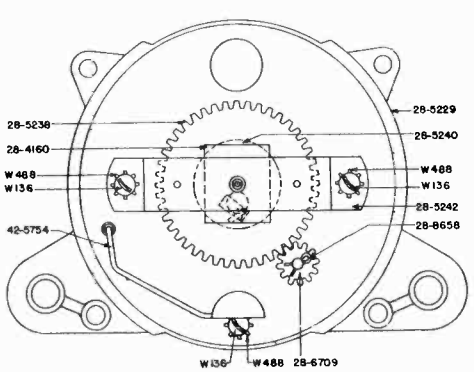
* Prices not available at this time.

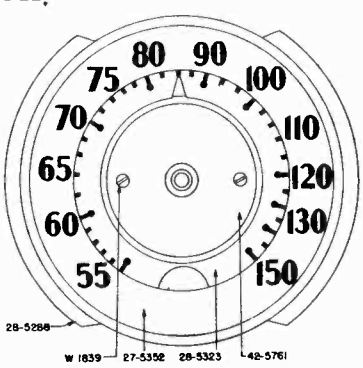
PART NUMBER	DESCRIPTION	LIST PRICE
28-7172	Miter Drive Gear	.10
28-7173	Miter Gear	.10
28-7182	Felt Washer ..... per 100	.30
28-7251	Switch Lever	.15
28-7264	Knob Base	.20
28-8009	Spring ..... per 100	.50
28-8498	Anti Back Lash Spring	.10
28-8658	Spring	.03
28-8783	Tuning Control Flex. Shaft	1.00
28-8784	Volume Control Flex. Shaft	1.00
34-2039	Pilot Lamp	.09
38-5778	"A" Lead	.10
38-7993	"A" Lead	.20
38-8467	Pilot Lamp Assembly	.30
42-1368	On-Off Switch	.35
42-5764	Intermediate Gear Assembly	.20
42-5771	Drum Shaft and Gear Assembly	.15
42-5773	Housing and Stud Assembly	.85
42-5776	Dial Assembly	.35

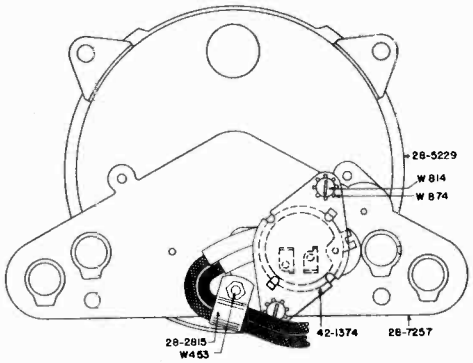
MODEL P-1535 Packard

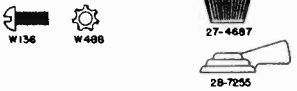
PHILCO RADIO & TELEV. CORP. Controls Details

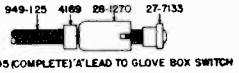
PACKARD CONTROL MODEL P-1535





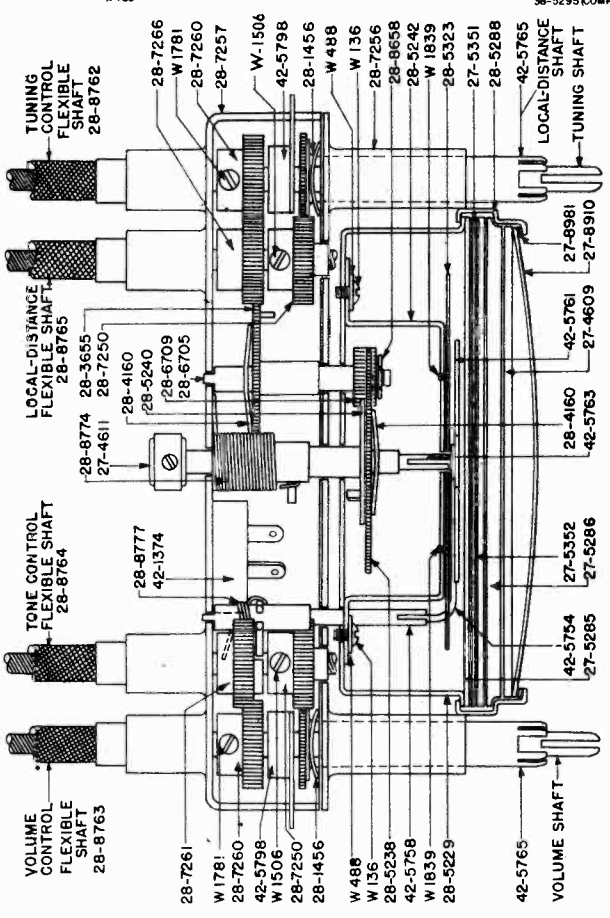






NOVEMBER 24, 1937

PACKARD MODEL P-1535 CONTROL



PARTS LIST AND PRICES

(Prices Subject to Change Without Notice)

PART NUMBER	DESCRIPTION		LIST PRICE
4169	Rubber Washers	per 100	$1.20
W-136	Screw	per 100	.80
W-488	Lockwasher	per 100	1.00
W-488	Lockwasher	per 100	.35
W-775	Button	per 100	1.10
W-814	Screw	per 100	.75
W-874	Lockwasher	per 100	.60
W-1506	Set Screw	per 100	1.80
W 1781	Set Screw	per 100	2.00
W-1839	Screw	per 100	1.85
949-125	Wire		*
949-200	Wire		*
21-4609	Gasket		.10
21-4611	Pointer Knob		*
27-4687	Tuning and Volume Knob		*
27-5285	Glass Bezelet		.50
27-5351	Gasket	per 100	2.00
27-7132	Washer		.10
27-8911	Retainer	per 100	.80
27-8910	Glass		.10
27-8981	Front Gasket		.25
28-1270	Housing		*
28-1272	Bracket	per 100	.01
28-1456	Spring Washer	per 100	.75
28-2815	Clamp	per 100	.01
28-3655	Drive Gear		*
28-4160	Pointer Spring		.01
28-5229	Dial Cover		*
28-5238	Dial Gear (large)		*

PART NUMBER	DESCRIPTION	LIST PRICE
28-5240	Washer	.50
28-5242	Bracket	.03
28-5288	Panel	1.00
28-5323	Plate	1.00
28-5705	Intermediate Gear	.10
28-8709	Dial Gear (small)	.10
28-7255	Gear	.35
28-7257	Tone and Local Distance Knob	*
28-7260	Control Shaft Cover	*
28-7357	Back Housing	*
28-7360	Gear	*
28-7388	Worm Gear	*
28-7266	Idler Gear	*
28-8008	Spring	.50
28-8658	Spring	per 100
28-8762	Tuning Shaft	1.00
28-8763	Volume Shaft	1.00
28-8764	Tone Control	1.00
28-8765	Local — Distance Shaft	*
28-8774	Anti Back-lash Spring	*
28-8777	Screw	*
38-5285	"A" Lead	.15
38-7993	"A" Lead	.20
42-1374	On-Off Switch	.35
42-5758	Switch Actuating Assembly	*
42-5798	Signal Panel Shaft	*
42-5761	Pointer Assembly	*
42-5763	Pointer Shaft Assembly	.25
42-5765	Control Sleeve Assembly	.20
42-5798	Friction Gear Assembly	.10

*Prices not available at this time.

MODEL S-1616 Studebaker
Schematic, Chassis
Parts

PHILCO RADIO & TELEV. CORP.

FOR ALIGNMENT, SEE INDEX

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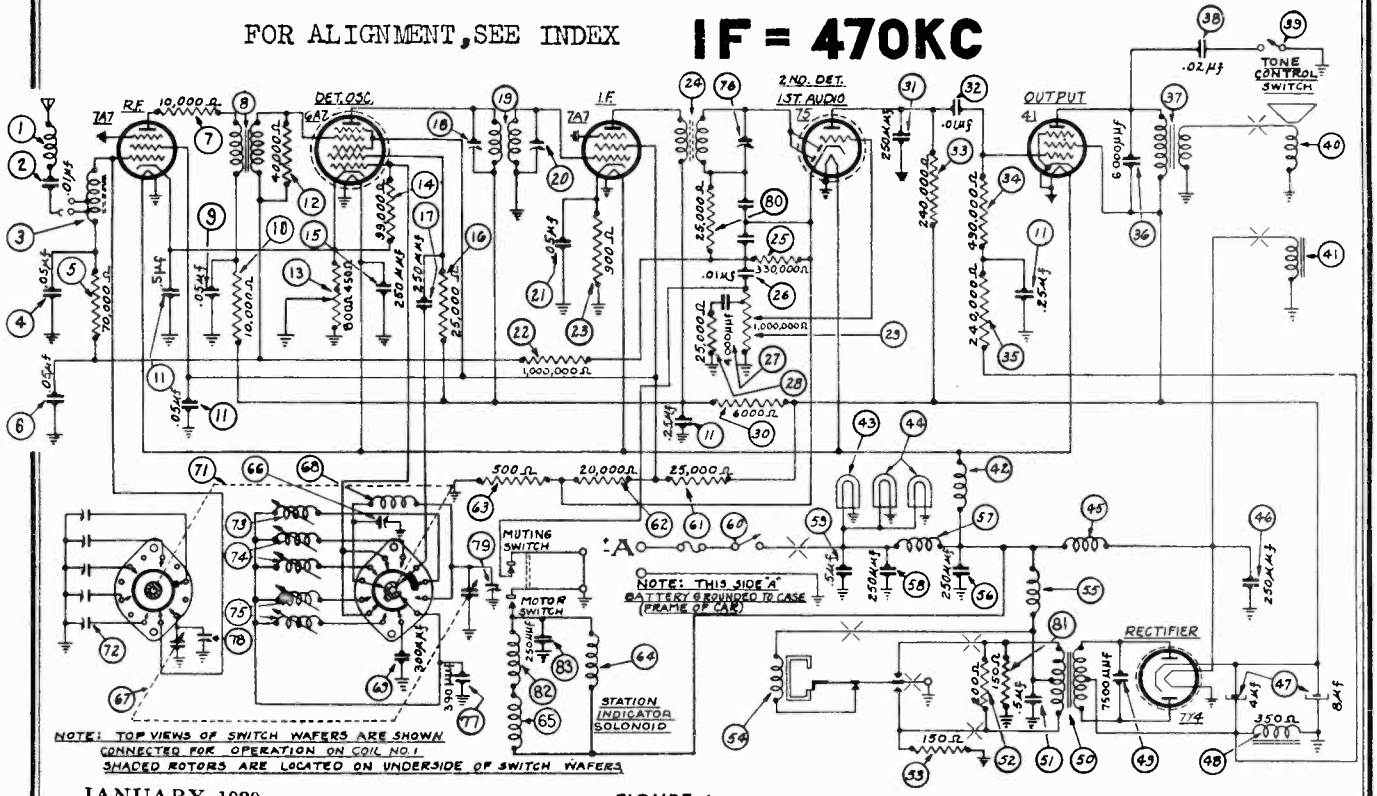


JANUARY 1939

FIGURE 1

PARTS LIST

No.	Description	Part No.
(1)	Antenna Choke	65-0062
(2)	Condenser (.01 mfd.)	61-0014
(3)	Antenna Transformer	65-0047
(4)	Condenser (.05 mfd.)	30-4444
(5)	Resistor (70,000 ohms)	33-370337
(6)	Condenser (.05 mfd.)	30-4444
(7)	Resistor (10,000 ohms)	33-310337
(8)	R. F. Transformer	65-0009
(9)	Condenser (.05 mfd.)	30-4123
(10)	Resistor (10,000 ohms)	33-310337
(11)	Condenser (.05-.25-.25-.5 mfd.)	61-0016
(12)	Resistor (40,000 ohms)	33-340137
(13)	Sensitivity Control	33-5264
(14)	Resistor (99,000 ohms)	33-399337
(15)	Condenser (250 mmfd.)	61-0033
(16)	Resistor (25,000 ohms)	33-325337
(17)	Condenser (250 mmfd.)	30-1038
(18)	Padder (Pri. 1st I. F. Trans.)	
(19)	First I. F. Transformer	65-0044
(20)	Padder (Sec. 1st I. F. Trans.)	
(21)	Condenser (.05 mfd.)	30-4444
(22)	Resistor (1,000,000 ohms)	33-510337
(23)	Resistor (900 ohms)	33-190438
(24)	Second I. F. Transformer	65-0045
(25)	Resistor (330,000 ohms)	33-433337
(26)	Condenser (.01 mfd.)	61-0014
(27)	Condenser (4,000 mmfd.)	61-0020
(28)	Resistor (25,000 ohms)	33-325337
(29)	Volume Control & Switch (1,000,000 ohms)	67-0014-1
		opt. 67-0014-2
(30)	Resistor (6,000 ohms)	33-260337
(31)	Condenser (250 mmfd.)	61-0033
(32)	Condenser (.01 mfd.)	30-4169
(33)	Resistor (240,000 ohms)	33-424337
(34)	Resistor (240,000 ohms)	33-424337
(35)	Condenser (6,000 mmfd.)	30-4024
(36)	Output Transformer	65-0048
(37)	Condenser (.02 mfd.)	30-4495
(38)	Tone Control Switch	42-1140
(39)	Cone & Voice Coil Kit	91-0047
(40)	Field Coil	Not Replaceable
(41)	Filament Choke	65-0057
(42)	Pilot Lamp	34-2040
(43)	Pilot Lamp	34-2040
(44)	Choke	32-1374
(45)	Condenser (250 mmfd.)	61-0033
(46)	Filter Condenser (4-8 mfd.)	61-0018
(47)	Filter Choke	32-7959
(48)	Condenser (7,500 mmfd.)	30-4567
(49)	Power Transformer	65-0046
(50)	Condenser (.5 mfd.)	30-4565
(51)	Resistor (200 ohms)	33-120337
(52)	Resistor (150 ohms)	In Vibrator
(53)	Vibrator	41-3398
(54)	Vibrator Choke	32-2537
(55)	Condenser (250 mmfd.)	61-0033
(56)	"A" Choke	65-0057
(57)	Condenser (250 mmfd.)	61-0033
(58)	Condenser (.5 mfd.)	30-4474
(59)	On-Off Switch and Volume Control	opt. 67-0014-1 / 67-0014-2
(60)	Resistor (25,000 ohms)	33-325437
(61)	Resistor (20,000 ohms)	33-320337
(62)	Resistor (500 ohms)	33-150438
(63)	Solenoid	77-0227
(64)	Impulse Motor	77-0259
(65)	Low Frequency Padder	31-6230
(66)	Tuning Condenser	63-0011
(67)	Oscillator Transformer	65-0058
(68)	Silver Cap Condenser (300 mmfd.)	61-0003
(69)	Selector Switch	77-0198
(70)	Antenna Padder Assembly	77-0126
(71)	Oscillator Transformer (High Freq.)	65-0049
(72)	Oscillator Transformer (Med. Freq.)	65-0050
(73)	Oscillator Transformer (Low Freq.)	65-0051
(74)	Padder (Sec. 2nd I. F. Trans.)	
(75)	Silver Cap Condenser (390 mmfd.)	61-0031
(76)	First Padder (on Tun. Cond.)	Part of Ant. Padder Assy.
(77)	Second Padder (on Tun. Cond.)	
(78)	Resistor (25,000 ohms)	33-325337
(79)	Resistor (150 ohms)	33-115337
(80)	Choke	32-1644
(81)	Condenser (250 mmfd.)	61-0033
	Dial Assembly	85-0079
	Tone Control and Automatic Drum	415-1009
	Automatic Push Button (Commander)	55-0100
	Automatic Push Button (President)	55-0172
	Tuning and Volume Knob (President)	27-4689
	Tuning and Volume Knob (Commander)	55-0102
	Flexible Shaft	57-0467

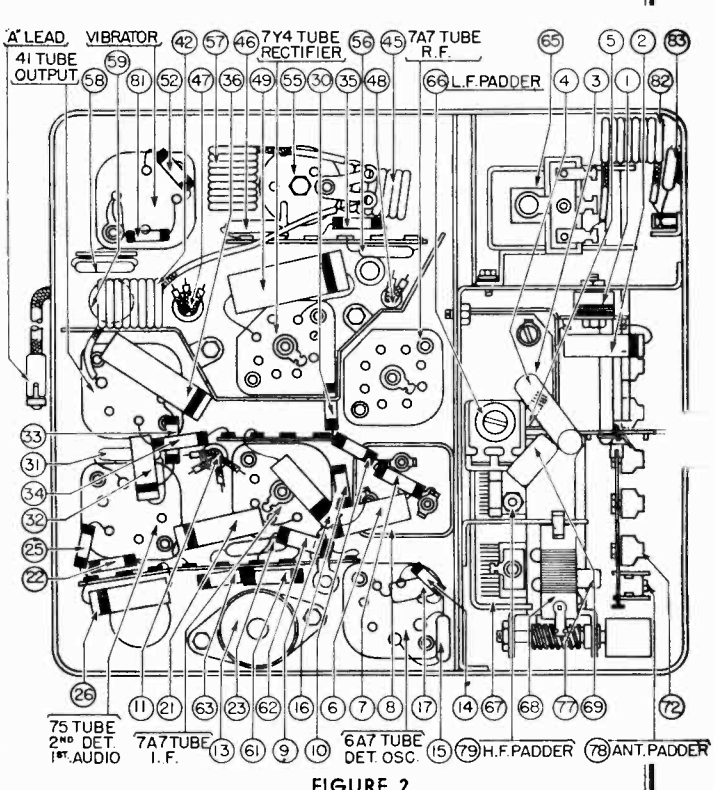
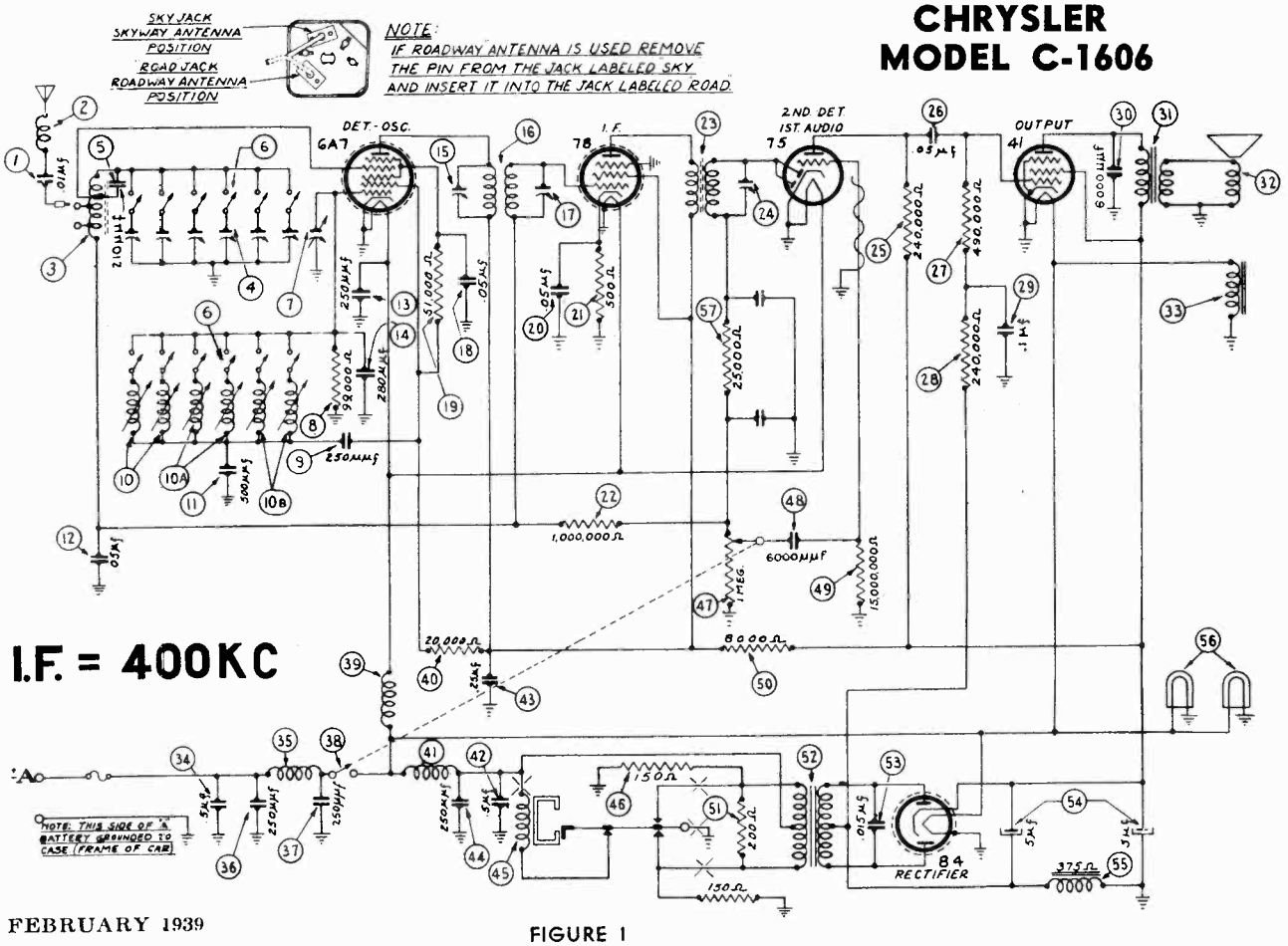


FIGURE 2

Description	Part No.
Call Letter Kit	81-0052
Condenser and Lug Assy.	30-1087
Interference Condenser	30-4007
Distributor Resistor	32-2250
"T" Bolt (Rec. Mtg.)	28-6161
Nut (Rec. Mtg.)	W518
Automatic Cable	95-0030
Tone and Volume Cable	95-0076

PHILCO RADIO & TELEV. CORP.

MODEL C-1606 Chrysler
Schematic, Chassis
Parts List



FEBRUARY 1939

FIGURE 1

MODEL C-1606 PARTS LIST

No.	Description	Part No.
1	Condenser (.01 mfd.)	61-0014
2	Antenna Choke	65-0102
3	Antenna Transformer	65-0120
4	Antenna Padder Assembly	77-0141
5	Condenser (210 mmfd.)	61-0044
6	Automatic Switch	85-0046
7	Variator	63-0019
8	Resistor (99,000 ohms)	33-399337
9	Condenser (250 mmfd.)	61-0034
10	Oscillator Transformers	65-0125
10a	Oscillator Transformers	65-0126
10b	Oscillator Transformers	65-0127
11	Condenser (500 mmfd.)	61-0027
12	Condenser (.05 mfd.)	30-4444
13	Condenser (250 mmfd.)	61-0033
14	Condenser (280 mmfd.)	61-0043
15	Padder (Pri. 1st I. F. Trans.)	
16	First I. F. Transformer	65-0118
17	Padder (Sec. 1st I. F. Trans.)	
18	Condenser (.05 mfd.)	30-4444
19	Resistor (51,000 ohms)	33-351337
20	Condenser (.05 mfd.)	30-4444
21	Resistor (500 ohms)	33-150438
22	Resistor (1,000,000 ohms)	33-510337
23	Second I. F. Transformer	65-0119
24	Padder (Sec. 2nd I. F. Trans.)	
25	Resistor (240,000 ohms)	33-424337
26	Condenser (.05 mfd.)	30-4123
27	Resistor (490,000 ohms)	33-449337
28	Resistor (240,000 ohms)	33-424437
29	Condenser (.1 mfd.)	61-0023
30	Condenser (6,000 mmfd.)	30-4504
31	Output Transformer	65-0071
32	Cone Kit	91-0043
33	Field Coil	Not Replaceable
34	Condenser (.5 mfd.)	30-4565
35	"A" Choke	32-1374
36	Condenser (250 mmfd.)	61-0033
37	Condenser (250 mmfd.)	61-0033
38	On-Off Switch and Volume Control	67-0010
39	Filament Choke	32-1604
40	Resistor (20,000 ohms)	33-320337
41	Vibrator Choke	65-0075
42	Condenser (.5 mfd.)	30-4565
43	Condenser (.25 mfd.)	30-4446
44	Condenser (250 mmfd.)	61-0033
45	Vibrator	41-3398
46	Resistor (150 ohms)	33-115337
47	Volume Control (1,000,000 ohms) and On-Off Switch	67-0010
48	Condenser (6,000 mmfd.)	30-4445
49	Resistor (15,000,000 ohms)	33-615347
50	Resistor (8,000 ohms)	33-280337
51	Resistor (200 ohms)	33-120337
52	Power Transformer	65-0072
53	Condenser (.015 mfd.)	61-0030
54	Filter Condenser (5-5 mfd.)	61-0022
55	Filter Choke	65-0073
56	Pilot Lamps	34-2064
57	Resistor (25,000 ohms)	33-325237
	Tuning and Volume Knob	55-0164
	Push Button Knob	55-0206
	Station Tab Holder	57-0227FA7
	Push Button Bezel	57-0327FA7
	Oscillator Coil Bezel	57-0508FA3
	Oscillator Coil Bezel Cover	57-0509FA7
	Fuse	45-2559
	Call Letter Kit	81-0025
	Fuel Gauge Resistor	67-0011
	Interference Condenser	30-4490
	Antenna Lead (Cowl)	95-0065
	Bracket (Set Mtg.)	57-0502FA1
	Bolt (Set Mtg.)	97-0034
	Nut (Set Mtg.)	W55
	Bolt	97-0024
	Nut	W1667

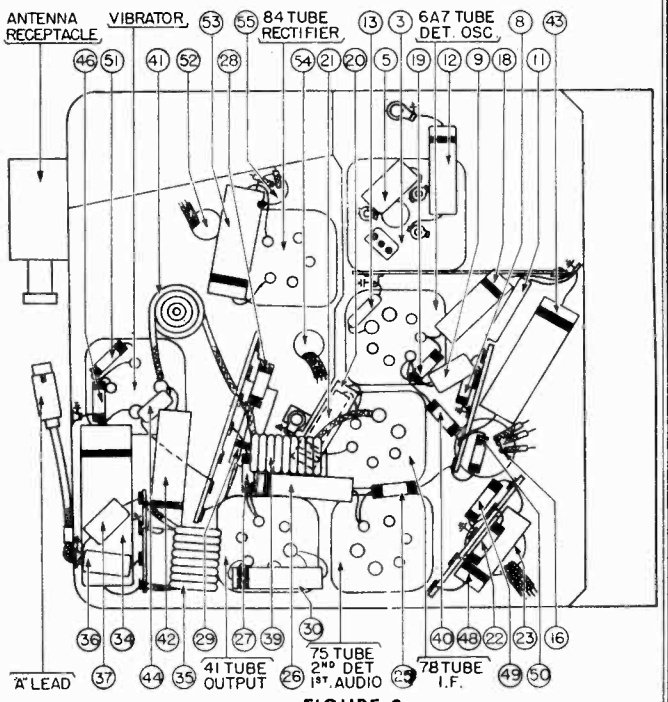


FIGURE 2

MODEL C-1606
Chrysler
Socket, Trimmers, Tuner
Alignment

PHILCO RADIO & TELEVISION CORP.

ADJUSTMENTS MODEL C-1606

All padding adjustments are carefully made at the factory and ordinarily no readjustments are necessary. However, when readjustments are required, the procedure given below must be followed in detail.

Equipment — Fully charged heavy duty storage battery or 6-volt power pack, 077A or 177 Philco Set Tester, 27-7159 Padding screw driver.

General — The output meter must be connected by means of an adapter to the plate of the type 41 output tube and to the Radio chassis.

With the Radio and signal generator set up for operation at the prescribed frequency, turn the Radio volume control on full and set the signal generator attenuator so that a half scale reading is obtained on the output meter. The signal in the speaker should be audible but not loud.

The shielding on the generator output lead must be connected to the Radio housing.

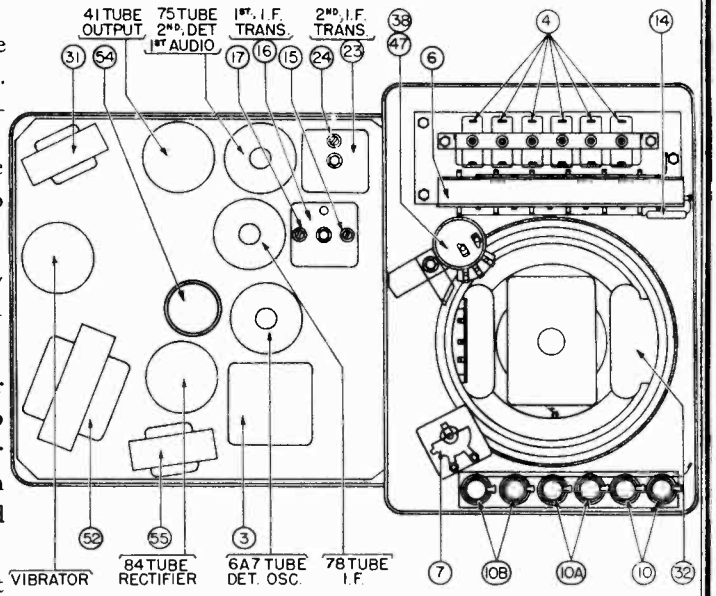


FIGURE 3

OPERATION	SIGNAL GENERATOR FREQUENCY	SIGNAL GENERATOR CONNECTION	DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
1	400 K.C.	To Grid of 6A7 Tube	.5 Mfd.	Turn Variator to the Indexed Position	(24) (17) (15)
2	950 to 1500 K.C.	To Antenna Receptacle on Radio	*25 Mmfd. See Note 1	Press Push Button No. 1 and adjust No. 1 Antenna Padder and No. 1 Oscillator Coil (Fig. 4)	Note 2 Fig. 4
3	950 to 1500 K.C.	To Antenna Receptacle on Radio	*25 Mmfd. See Note 1	Press Push Button No. 2 and adjust No. 2 Antenna Padder and No. 2 Oscillator Coil (Fig. 4)	Note 2 Fig. 4
4	750 to 1250 K.C.	To Antenna Receptacle on Radio	*25 Mmfd. See Note 1	Press Push Button No. 3 and adjust No. 3 Antenna Padder and No. 3 Oscillator Coil (Fig. 4)	Note 2 Fig. 4
5	750 to 1250 K.C.	To Antenna Receptacle on Radio	*25 Mmfd. See Note 1	Press Push Button No. 4 and adjust No. 4 Antenna Padder and No. 4 Oscillator Coil (Fig. 4)	Note 2 Fig. 4
6	550 to 950 K.C.	To Antenna Receptacle on Radio	*25 Mmfd. See Note 1	Press Push Button No. 5 and adjust No. 5 Antenna Padder and No. 5 Oscillator Coil (Fig. 4)	Note 2 Fig. 4
7	550 to 950 K.C.	To Antenna Receptacle on Radio	*25 Mmfd. See Note 1	Press Push Button No. 6 and adjust No. 6 Antenna Padder and No. 6 Oscillator Coil (Fig. 4)	Note 2 Fig. 4

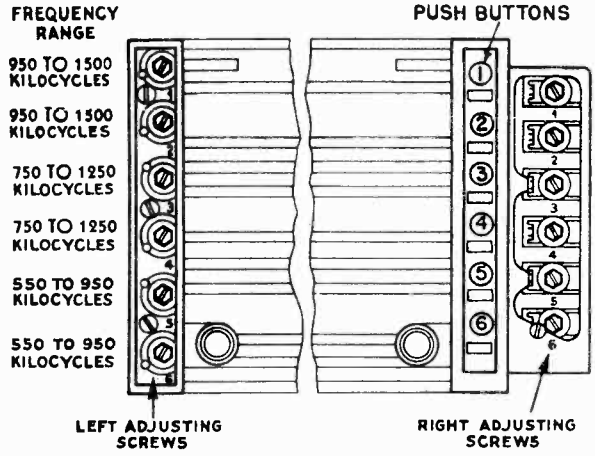


FIGURE 4

Make all adjustments for maximum reading on the output meter.

NOTE 1 — Connect the antenna lead, Part No. L-2765, to the antenna receptacle in the radio. Connect a 25 Mmfd. Condenser in series between the signal generator and the antenna lead.

Special Note: — When the cowl antenna is used follow the above procedure. Be sure the lead to the antenna transformer is plugged into the "SKY" socket of the Antenna Transformer.

*When the undercar is used, connect the antenna lead, Part No. 41-3191 to the antenna receptacle in the Radio. Connect a 250 Mmfd. condenser in series between the signal generator and the antenna lead. Be sure the lead to the antenna transformer is plugged into the "ROAD" socket of the antenna transformer.

NOTE 2 — The antenna padder screw is on the right, the oscillator coil screw is on the left (see Figure 4).

ALL ADJUSTMENTS MUST BE REPEATED.

PHILCO RADIO & TELEV. CORP.

MODEL C-1608 Chrysler
Schematic, Chassis
Parts

CHRYSLER MODEL C-1608 SINGLE UNIT DELUXE CAR RADIO

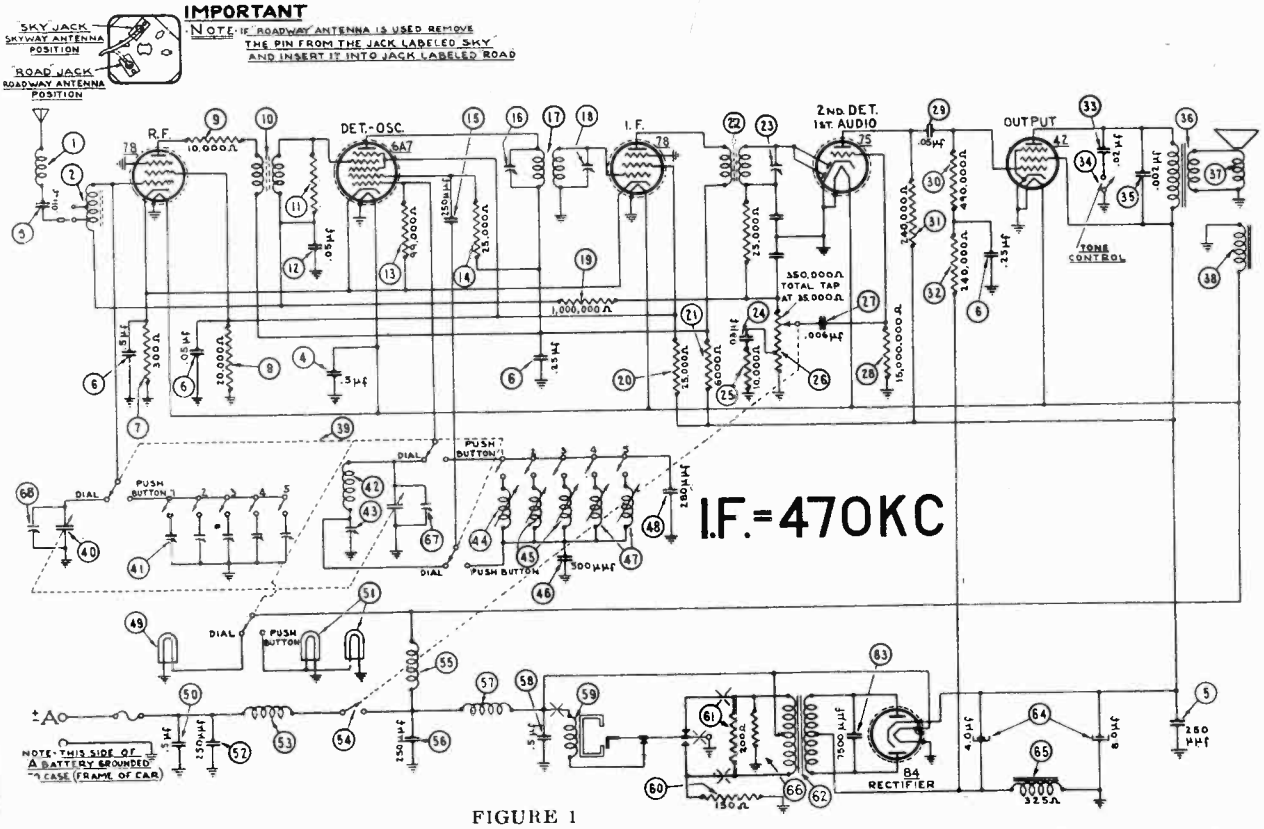


FIGURE 1

PARTS LIST

No.	Description	Part No.
①	Antenna Choke	65-0026
②	Antenna Transformer	65-0021
③	Condenser (.01 mfd.)	61-0014
④	Condenser (.5 mfd.)	30-4565
⑤	Condenser (250 mmfd.)	61-0033
⑥	Condenser — (.05-.25-.5 mfd.)	61-0008
⑦	Resistor (300 ohms)	33-130338
⑧	Resistor (20,000 ohms)	33-320337
⑨	Resistor (10,000 ohms)	33-310337
⑩	R. F. Transformer	65-0009
⑪	Resistor (39,000 ohms)	33-339137
⑫	Condenser (.05 mfd.)	30-4444
⑬	Resistor (99,000 ohms)	33-399337
⑭	Resistor (25,000 ohms)	33-325437
⑮	Condenser (250 mmfd.)	61-0034
⑯	Padder (Pri. 1st I. F. Trans.)	
⑰	First I. F. Transformer	65-0041
⑱	Padder (Sec. 1st I. F. Trans.)	
⑲	Resistor (1,000,000 ohms)	33-510337
⑳	Resistor (25,000 ohms)	33-325437
㉑	Resistor (6,000 ohms)	33-260337
㉒	Second I. F. Transformer	65-0043
㉓	Padder (Sec. 2nd I. F. Transformer)	
㉔	Condenser (.03 mfd.)	30-4449
㉕	Resistor (10,000 ohms)	33-310337
㉖	Volume Control (350,000 ohms) & On-Off Switch	67-0003
㉗	Condenser (6,000 mmfd.)	30-4467
㉘	Resistor (15,000,000 ohms)	33-615347
㉙	Condenser (.05 mfd.)	30-4518
㉚	Resistor (490,000 ohms)	33-449337
㉛	Resistor (240,000 ohms)	33-424437
㉜	Resistor (240,000 ohms)	33-424337
㉝	Condenser (.02 mfd.)	30-4419
㉞	Tone Control Switch	85-0010
㉟	Condenser (2,000 mmfd.)	30-4177
㊱	Output Transformer	65-0020
㊲	Cone & Voice Coil Kit	91-0028
㊳	Field Coil	Not Replaceable
㊴	Push Button Switch Assy.	85-0011
㊵	Tuning Condenser (manual)	63-0009
㊶	Antenna Push Button Padders	77-0091
㊷	Oscillator Transformer	65-0031
㊸	Low Freq. Padder	31-6230
㊹	Oscillator Transformer (High Freq.)	65-0038
㊺	Oscillator Transformer (Med. Freq.)	65-0039
㊻	Condenser (500 mmfd.)	61-0027
㊼	Osc. Transformer (Low Freq.)	65-0004
㊽	Condenser (280 mmfd.)	61-0010
㊾	Pilot Lamp	34-2039
㊿	Condenser (.5 mfd.)	30-4565
(51)	Pilot Lamps	34-2040
(52)	Condenser (250 mmfd.)	61-0033
(53)	"A" Choke	32-1644
(54)	Volume Control On-Off Switch	67-0003
(55)	Filament Choke	65-0037
(56)	Condenser (250 mmfd.)	61-0033
(57)	Vibrator Choke	65-0034
(58)	Condenser (.5 mfd.)	30-4465
(59)	Vibrator	41-3170
(60)	Resistor (150 ohms)	33-115337
(61)	Resistor (200 ohms)	33-120337
(62)	Power Transformer	65-0033
(63)	Buffer Condenser (7,500 mmfd.)	30-4567
(64)	Filter Condenser (4-8 mfd.)	61-0009
(65)	Filter Choke (325 ohms)	65-0035
(66)	Resistor (150 ohms)	33-115337
(67)	First Padder on Tun. Cond.	
(68)	Second Padder on Tun. Cond.	
	Receiver Housing	77-0096
	Four Prong Socket	27-6044
	Five Prong Socket	27-6035
	Six Prong Socket	27-6036
	Seven Prong Socket	27-6037
	Fuse	45-2559
	Tuning & Vol. Knob (P7-8)	55-0164
	Tuning & Vol. Knob (D11-12)	55-0170
	Tuning & Vol. Knob (C22)	55-0168
	Tuning & Vol. Knob (S6)	55-0166
	Push Button & Spring (S6)	55-0167
	Push Button & Spring (P7-8)	55-0165
	Push Button & Spring (C22)	55-0169
	Push Button & Spring (D11)	55-0171
	Distributor Resistor Assy.	38-9562
	Interference Cond.	30-4490
	Dial Scale	55-0068
	Glass	55-0332
	Pointer	77-0042

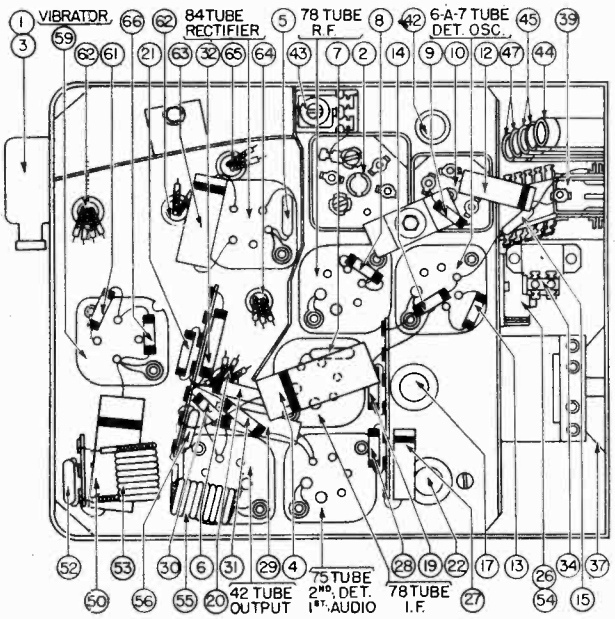


FIGURE 2

OCTOBER, 1938

MODEL C-1608

ADJUSTMENTS

All padding adjustments are carefully made at the factory and ordinarily no readjustments are necessary. However, when readjustments are required, the procedure given below must be followed in detail.

Equipment — Fully charged heavy duty storage battery or 6-volt power pack, 048A or 099 Philco Set Tester, 27-7159 Padding screw driver.

General — The output meter must be connected by means of an adapter to the plate of the type 42 output tube and to the Radio chassis.

With the Radio and signal generator set up for operation at the prescribed frequency, turn the Radio volume control on full and set the signal generator attenuator so that a half scale reading is obtained on the output meter. The signal in the speaker should be audible but not loud.

The shielding on the generator output lead must be connected to the Radio housing.

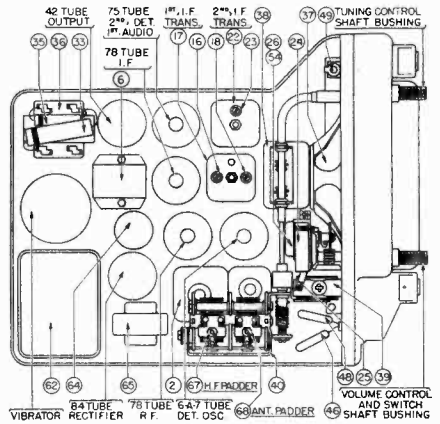


FIGURE 3

OPERATION	SIGNAL GENERATOR FREQUENCY	SIGNAL GENERATOR CONNECTION	DUMMY CAPACITY	SPECIAL INSTRUCTIONS	PADDER ADJUST
1	Press the "DIAL" button and stations can be tuned in by "DIAL" tuning.				
2	470 K.C.	To Grid of 6A7 Tube	.5 Mfd.	Turn Tuning Condenser Plates Out of Mesh as Far as They Will Go.	(23) (16) (18)
3	1580 K.C.	To Antenna Receptacle on Radio	*25 Mmfd. See Note 1	Note 2	(67)
4	1400 K.C.	To Antenna Receptacle on Radio	*25 Mmfd. See Note 1	Set Tuning Condenser at 1400 K.C.	(40) Note 4
5	580 K.C.	To Antenna Receptacle on Radio	*25 Mmfd. See Note 1	Set Tuning Condenser at 580 K.C.	(43) Note 3
6	1580 K.C.	To Antenna Receptacle on Radio	*25 Mmfd. See Note 1	Note 2	(67)
7	1400 K.C.	To Antenna Receptacle on Radio	*25 Mmfd. See Note 1	Set Tuning Condenser at 1400 K.C.	(68) Note 4

Make all adjustments for maximum reading on the output meter.

NOTE 1 — Connect the antenna lead, Part No. L-2765, to the antenna receptacle in the radio. Connect a 25 Mmfd. Condenser in series between the signal generator and the antenna lead.

Special Note: — When the cowl antenna is used follow the above procedure. Be sure the lead to the antenna transformer is plugged into the "SKY" socket of the Antenna Transformer.
*When the undercar is used, connect the antenna lead, Part No. 41-3191 to the antenna receptacle in the Radio. Connect a 250 Mmfd. condenser in series between the signal generator and the antenna lead. Be sure the lead to the antenna transformer is plugged into the "ROAD" socket of the antenna transformer.

NOTE 2 — Turn the condenser rotor plates completely out of mesh as far as they will go.

NOTE 3 — Rock the tuning condenser while adjusting the low frequency padder. Tune the condenser to the signal and adjust the padder for maximum output. Rotate the tuning condenser back and forth slightly for maximum output. Then readjust the padder for maximum output. Repeat this procedure until no further improvement is noticed.

NOTE 4 — When the antenna stage adjustment is made with the Radio installed in the car, the Radio antenna lead must be connected to the car antenna in the usual manner. Connect the signal generator output lead to a wire placed near the car antenna but not connected to it.

MODEL S-1616

MODEL S-1616

ADJUSTMENTS

All padding adjustments are carefully made at the factory and ordinarily no readjustments are necessary. However, when readjustments are required, the procedure given below must be followed in detail.

Equipment — Fully charged heavy duty storage battery or 6-volt power pack, 077A or 177 Philco Set Tester, 27-7159 Padding screw driver.

General — The output meter must be connected by means of an adapter to the plate of the type 41 output tube and to the Radio chassis.

With the Radio and signal generator set up for operation at the prescribed frequency, turn the Radio volume control on full and set the signal generator attenuator so that a half scale reading is obtained on the output meter. The signal in the speaker should be audible but not loud.

The shielding on the generator output lead must be connected to the Radio housing.

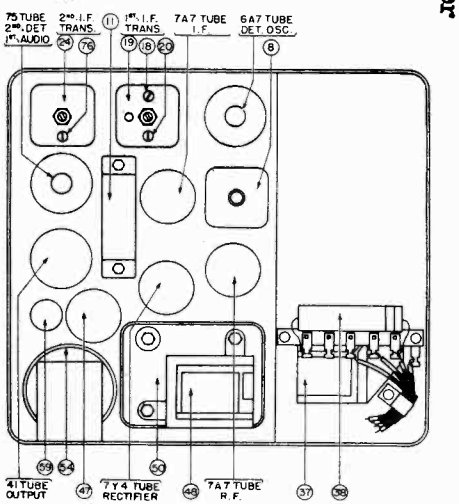


FIGURE 3

OPERATION	SIGNAL GENERATOR FREQUENCY	SIGNAL GENERATOR CONNECTION	DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
1	Press the Automatic Station Selector button until "DIAL" appears in the window and stations can be tuned in by Manual Tuning.				
2	470 K.C.	To Grid of 6A7 Tube	.1 Mfd.	Turn Tuning Condenser Plates Out of Mesh as Far as They Will Go.	(78) (80) (18)
3	1580 K.C.	To Antenna Receptacle on Radio	20 Mmfd. See Note 1	Note 2	(79)
4	1400 K.C.	To Antenna Receptacle on Radio	20 Mmfd. See Note 1	Set Tuning Condenser at 1400 K.C.	(79) Note 4
5	580 K.C.	To Antenna Receptacle on Radio	20 Mmfd. See Note 1	Set Tuning Condenser at 580 K.C.	(84) Note 3
6	1580 K.C.	To Antenna Receptacle on Radio	20 Mmfd. See Note 1	Note 2	(79)
7	1400 K.C.	To Antenna Receptacle on Radio	20 Mmfd. See Note 1	Set Tuning Condenser at 1400 K.C.	(78) Note 4

Make all adjustments for maximum reading on the output meter.

NOTE 1 — Connect the antenna lead, Part No. L-2765, to the antenna receptacle in the radio. Connect a 20 Mmfd. Condenser in series between the signal generator and the antenna lead.

NOTE 2 — Turn the condenser rotor plates completely out of mesh as far as they will go.

NOTE 3 — Rock the tuning condenser while adjusting the low frequency padder. Tune the condenser to the signal and adjust the padder for maximum output. Rotate the tuning condenser back and forth slightly for maximum output. Then readjust the padder for maximum output. Repeat this procedure until no further improvement is noticed.

NOTE 4 — When the antenna stage adjustment is made with the Radio installed in the car, the Radio antenna lead must be connected to the car antenna in the usual manner. Connect the signal generator output lead to a wire placed near the car antenna but not connected to it.

PHILCO RADIO & TELEV. CORP.

MODEL P-1617 Packard
Schematic, Chassis
Parts

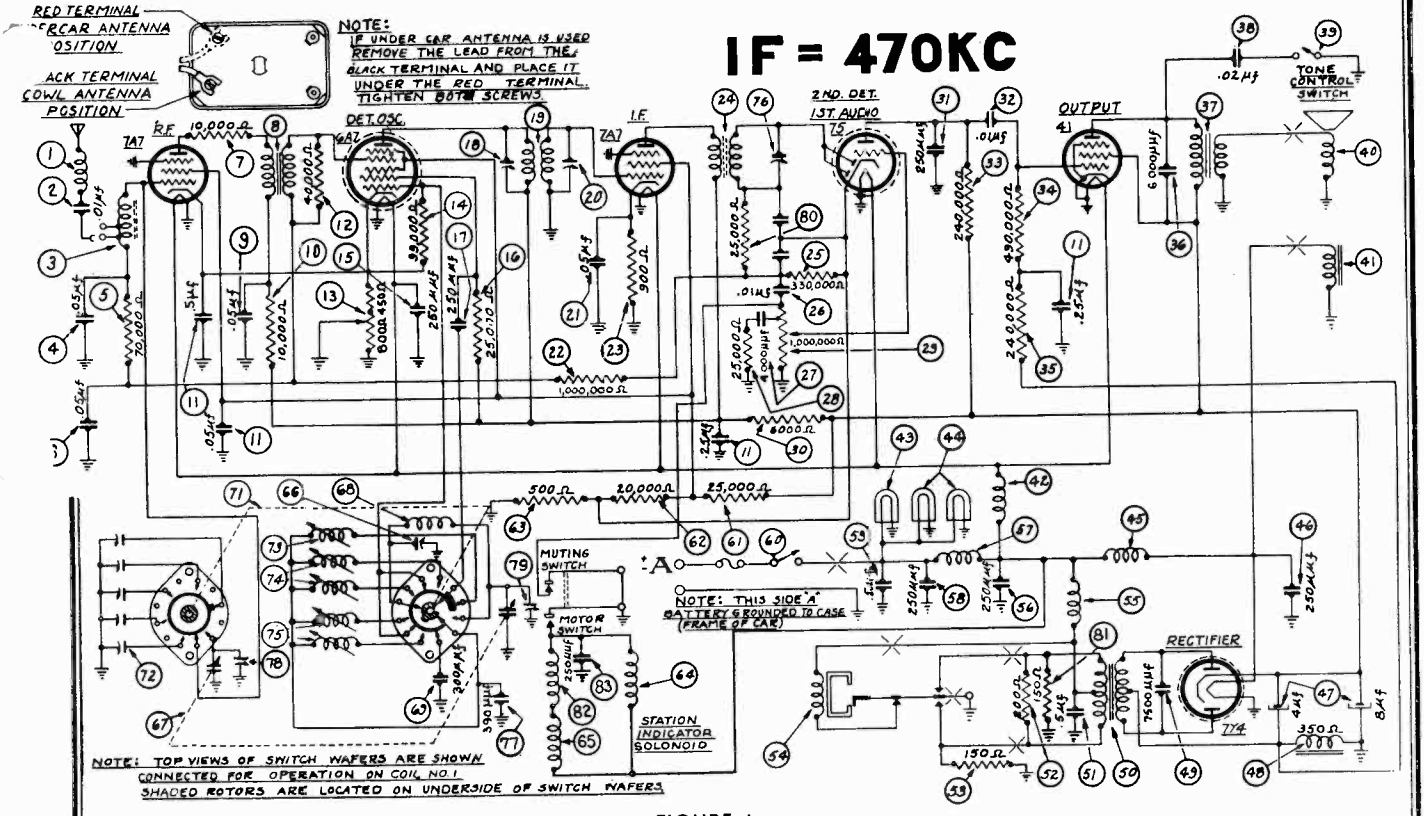


FIGURE 1

PARTS LIST

No.	Description	Part No.
1	Antenna Choke	65-0062
2	Condenser (.01 mfd.)	61-0014
3	Antenna Transformer	65-0047
4	Condenser (.05 mfd.)	30-4444
5	Resistor (70,000 ohms)	33-370337
6	Condenser (.05 mfd.)	30-4444
7	Resistor (10,000 ohms)	33-310337
8	R. F. Transformer	65-0009
9	Condenser (.05 mfd.)	30-4123
10	Resistor (10,000 ohms)	33-310337
11	Condenser (.05-.25-.25-.5 mfd.)	61-0016
12	Resistor (40,000 ohms)	33-340137
13	Sensitivity Control	33-5264
14	Resistor (99,000 ohms)	33-399337
15	Condenser (250 mmfd.)	30-1032
16	Resistor (25,000 ohms)	33-325337
17	Condenser (250 mmfd.)	30-1038
18	Padder (Pri. 1st I. F. Trans.)	
19	First I. F. Transformer	65-0044
20	Padder (Sec. 1st I. F. Trans.)	
21	Condenser (.05 mfd.)	30-4444
22	Resistor (1,000,000 ohms)	33-510337
23	Resistor (900 ohms)	33-190438
24	Second I. F. Transformer	65-0045
25	Resistor (330,000 ohms)	33-433337
26	Condenser (.01 mfd.)	61-0014
27	Condenser (4,000 mmfd.)	61-0020
28	Resistor (25,000 ohms)	33-325337
29	Volume Control (1,000,000 ohms)	67-0004-1
30	Resistor (6,000 ohms)	33-260337
31	Condenser (250 mmfd.)	30-1032
32	Condenser (.01 mfd.)	30-4169
33	Resistor (240,000 ohms)	33-424337
34	Resistor (490,000 ohms)	33-449337
35	Resistor (240,000 ohms)	33-424337
36	Condenser (6,000 mmfd.)	30-4024
37	Output Transformer	65-0048
38	Condenser (.02 mfd.)	30-4495
39	Tone Control Switch	42-1140
40	Cone & Voice Coil Kit	91-0047
41	Field Coil	Not Replaceable
42	Filament Choke	65-0057
43	Pilot Lamp	34-2040
44	Pilot Lamp	34-2040
45	Choke	32-1374
46	Condenser (250 mmfd.)	30-1032
47	Filter Condenser (4-8 mfd.)	61-0018
48	Filter Choke	32-7959
49	Condenser (7,500 mmfd.)	30-4567
50	Power Transformer	65-0046
51	Condenser (.5 mfd.)	30-4565
52	Resistor (200 ohms)	33-120337
53	Resistor (150 ohms)	In Vibrator
54	Vibrator	41-3170
55	Vibrator Choke	32-2537
56	Condenser (250 mmfd.)	30-1032
57	"A" Choke	65-0057
58	Condenser (250 mmfd.)	30-1032
59	Condenser (.5 mfd.)	30-4474
60	On-Off Switch	77-0175
61	Resistor (25,000 ohms)	33-325437
62	Resistor (20,000 ohms)	33-320337
63	Resistor (500 ohms)	33-150438
64	Solenoid	
65	Impulse Motor	77-0108
66	Low Frequency Padder	31-6230
67	Tuning Condenser	63-0011
68	Oscillator Transformer	65-0058
69	Silver Cap Condenser (300 mmfd.)	61-0003
71	Selector Switch	77-0198
72	Antenna Padder Assembly	77-0126
73	Oscillator Transformer (High Freq.)	65-0049
74	Oscillator Transformer (Med. Freq.)	65-0050
75	Oscillator Transformer (Low Freq.)	65-0051
76	Padder (Sec. 2nd I. F. Trans.)	
77	Silver Cap Condenser (390 mmfd.)	61-0031
78	First Padder (on Tun. Cond.)	Part of Ant. Padder Assy.
79	Second Padder (on Tun. Cond.)	
80	Resistor (25,000 ohms)	33-325337
81	Resistor (150 ohms)	33-115337
82	Choke	32-1644
83	Condenser (250 mmfd.)	30-1032
	Interference Condenser	30-4007
	Interference Condenser	30-4475
	Distributor Resistor	33-1196
	Push Button	55-0173
	Push Button Cover	57-0472
	Tuning & Volume Knob	27-4687

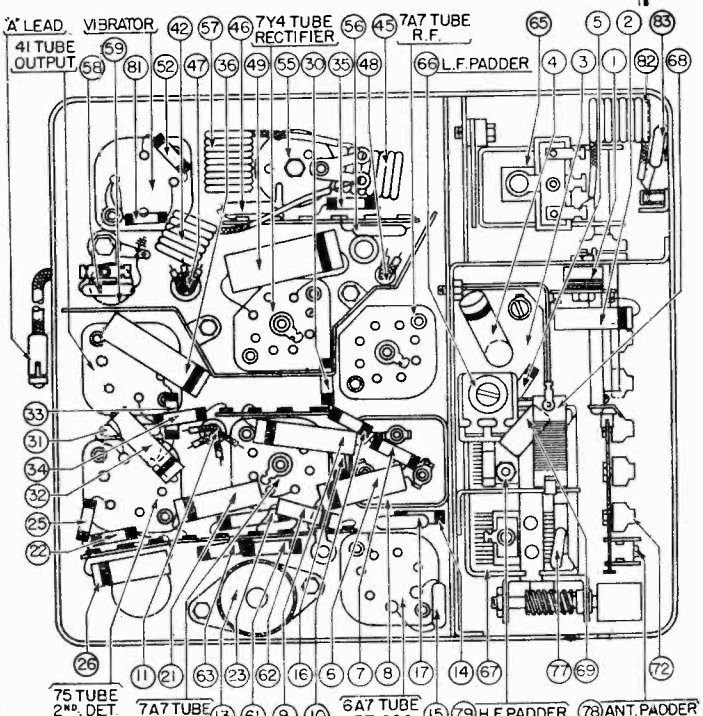


FIGURE 2

Description	Part No.
Knob Base	28-4184
Call Letter Kit	81-0045
"T" Bolt	28-6268
Nut	W518
Station Indicator	85-0047

DECEMBER, 1938

MODEL P-1617

ADJUSTMENTS

All padding adjustments are carefully made at the factory and ordinarily no readjustments are necessary However, when readjustments are required, the procedure given below must be followed in detail.

Equipment — Fully charged heavy duty storage battery or 6-volt power pack, 048A or 099 Philco Set Tester, 27-7159 Padding screw driver.

General — The output meter must be connected by means of an adapter to the plate of the type 41 output tube and to the Radio chassis.

With the Radio and signal generator set up for operation at the prescribed frequency, turn the Radio volume control on full and set the signal generator attenuator so that a half scale reading is obtained on the output meter. The signal in the speaker should be audible but not loud.

The shielding on the generator output lead must be connected to the Radio housing.

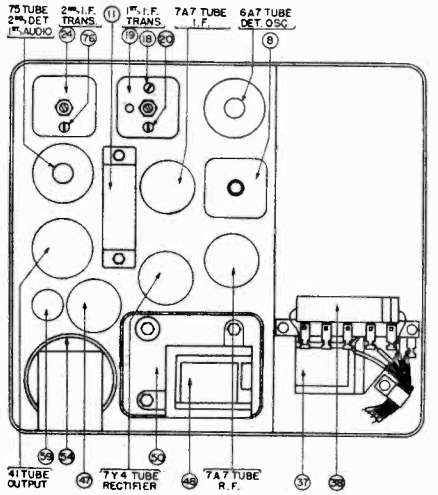


FIGURE 3

OPERATION	SIGNAL GENERATOR FREQUENCY	SIGNAL GENERATOR CONNECTION	DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
1	Press the Automatic Station Selector button until "DIAL" appears in the window and stations can be tuned in by Manual Tuning				
2	470 K.C.	To Grid of 6A7 Tube	.1 Mfd.	Turn Tuning Condenser Plates Out of Mesh as Far as They Will Go.	(79) (83) (18)
3	1580 K.C.	To Antenna Receptacle on Radio	*20 Mmfd. See Note 1	Note 2	(79)
4	1400 K.C.	To Antenna Receptacle on Radio	*20 Mmfd. See Note 1	Set Tuning Condenser at 1400 K.C.	(78) Note 4
5	580 K.C.	To Antenna Receptacle on Radio	*20 Mmfd. See Note 1	Set Tuning Condenser at 580 K.C.	(84) Note 3
6	1580 K.C.	To Antenna Receptacle on Radio	*20 Mmfd. See Note 1	Note 2	(79)
7	1400 K.C.	To Antenna Receptacle on Radio	*20 Mmfd. See Note 1	Set Tuning Condenser at 1400 K.C.	(78) Note 4

Make all adjustments for maximum reading on the output meter.

NOTE 1 — Connect the antenna lead, Part No. L-2765, to the antenna receptacle in the radio. Connect a 20 Mmfd. Condenser in series between the signal generator and the antenna lead.

Special Note: — When the cowl antenna is used follow the above procedure. Be sure the lead to the antenna transformer is connected to the black terminal of the Antenna Transformer.

*When the undercar or roof antenna is used, connect the antenna lead, Part No. 41-3191, to the antenna receptacle in the Radio. Connect a 250 Mmfd condenser in series between the signal generator and the antenna lead. Be sure the lead to the antenna transformer is connected to the red terminal of the antenna transformer.

NOTE 2 — Turn the condenser rotor plates completely out of mesh as far as they will go.

NOTE 3 — Rock the tuning condenser while adjusting the low frequency padder. Tune the condenser to the signal and adjust the padder for maximum output. Rotate the tuning condenser back and forth slightly for maximum output. Then readjust the padder for maximum output. Repeat this procedure until no further improvement is noticed.

NOTE 4 — When the antenna stage adjustment is made with the Radio installed in the car, the Radio antenna lead must be connected to the car antenna in the usual manner. Connect the signal generator output lead to a wire placed near the car antenna but not connected to it.

MODEL P-1630

ADJUSTMENTS

All padding adjustments are carefully made at the factory and ordinarily no readjustments are necessary. However, when readjustments are required, the procedure given below must be followed in detail.

Equipment — Fully charged heavy duty storage battery or 6-volt power pack, 048A or 099 Philco Set Tester, 27-7159 Padding screw driver.

General — The output meter must be connected by means of an adapter to the plate of the type 42 output tube and to the Radio chassis.

With the Radio and signal generator set up for operation at the prescribed frequency, turn the Radio volume control on full and set the signal generator attenuator so that a half scale reading is obtained on the output meter. The signal in the speaker should be audible but not loud.

The shielding on the generator output lead must be connected to the Radio housing.

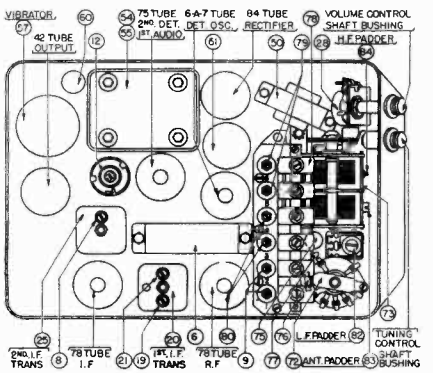


FIGURE 3

OPERATION	SIGNAL GENERATOR FREQUENCY	SIGNAL GENERATOR CONNECTION	DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
1	Press the return to dial button until stations can be tuned in by manual tuning.				
2	470 K.C.	To Grid of 6A7 Tube	.1 Mfd.	Turn Tuning Condenser Plates Out of Mesh as Far as They Will Go.	(8) (18) (21)
3	1580 K.C.	To Antenna Receptacle on Radio	* 20 Mmfd. See Note 1	Note 2	(84)
4	1400 K.C.	To Antenna Receptacle on Radio	* 20 Mmfd. See Note 1	Set Tuning Condenser at 1400 K. C.	(83) Note 4
5	580 K.C.	To Antenna Receptacle on Radio	* 20 Mmfd. See Note 1	Set Tuning Condenser at 580 K. C.	(82) Note 3
6	1580 K.C.	To Antenna Receptacle on Radio	* 20 Mmfd. See Note 1	Note 2	(84)
7	1400 K.C.	To Antenna Receptacle on Radio	* 20 Mmfd. See Note 1	Set Tuning Condenser at 1400 K. C.	(83) Note 4

Make all adjustments for maximum reading on the output meter.

NOTE 1 — Connect the antenna lead, Part No. L-2765, to the antenna receptacle in the radio. Connect a 20 Mmfd. Condenser in series between the signal generator and the antenna lead.

Special Note: — When the cowl antenna is used follow the above procedure. Be sure the lead to the antenna transformer is connected to the black terminal of the Antenna Transformer.

* When the undercar or roof antenna is used, connect the antenna lead, Part No. 41-3191 to the antenna receptacle in the Radio. Connect a 250 Mmfd. condenser in series between the signal generator and the antenna lead. Be sure the lead to the antenna transformer is connected to the red terminal of the antenna transformer.

NOTE 2 — Turn the condenser rotor plates completely out of mesh as far as they will go.

NOTE 3 — Rock the tuning condenser while adjusting the low frequency padder. Tune the condenser to the signal and adjust the padder for maximum output. Rotate the tuning condenser back and forth slightly for maximum output. Then readjust the padder for maximum output. Repeat this procedure until no further improvement is noticed.

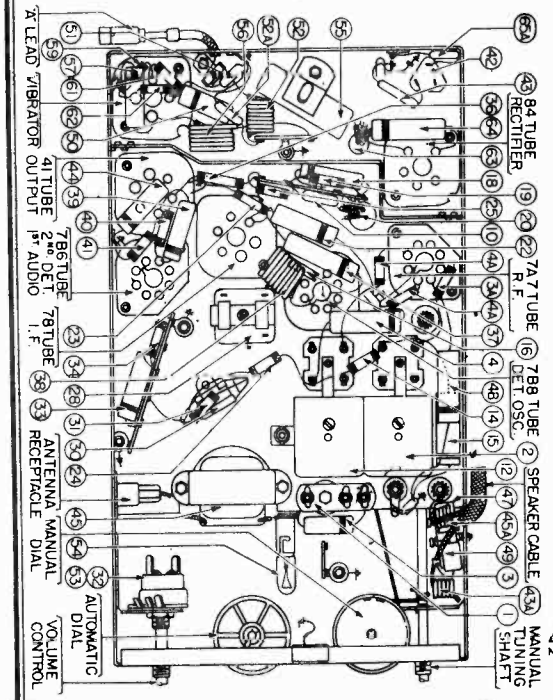
NOTE 4 — When the antenna stage adjustment is made with the Radio installed in the car, the Radio antenna lead must be connected to the car antenna in the usual manner. Connect the signal generator output lead to a wire placed near the car antenna but not connected to it.

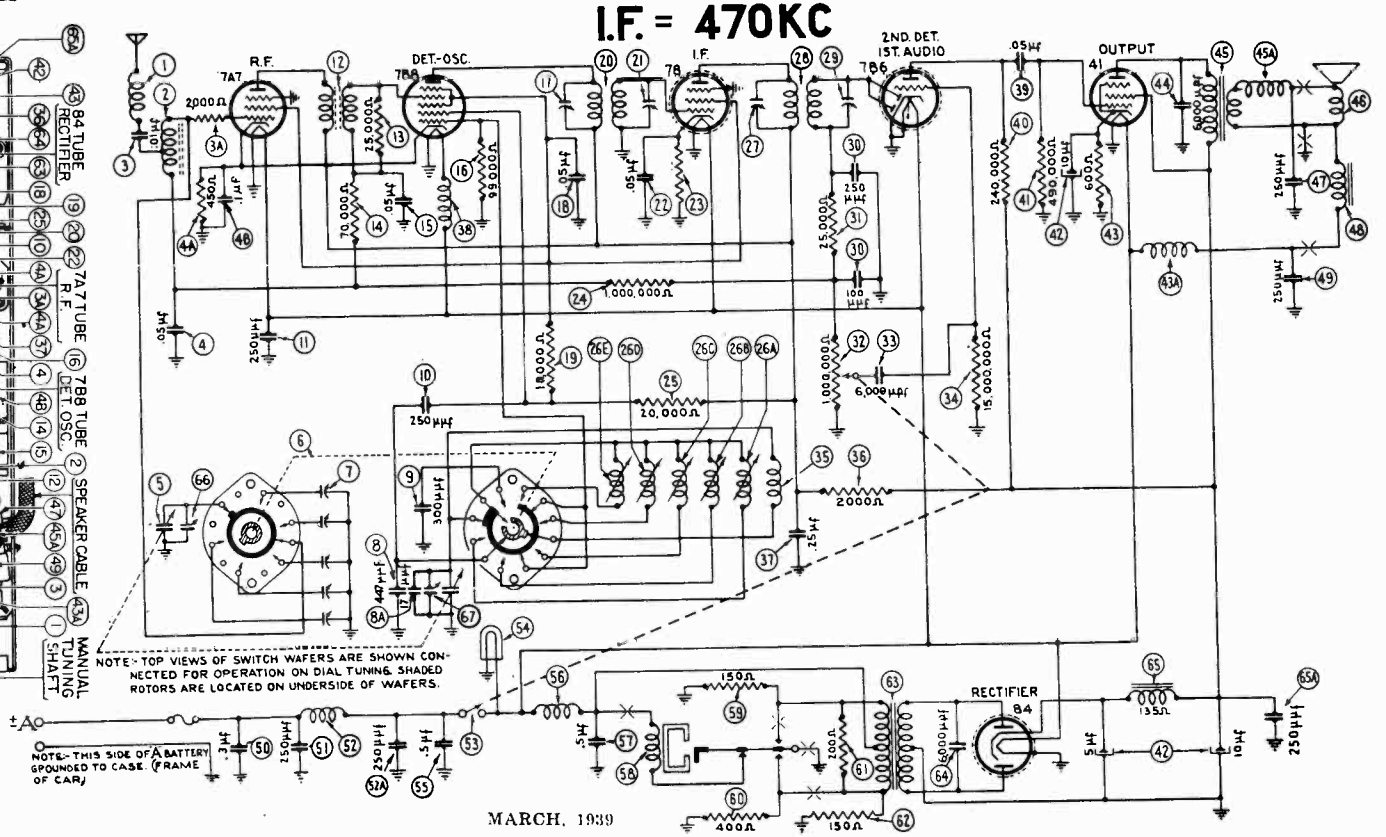
PHILCO RADIO & TELEV. CORP.

Studebaker

Schematic, Chassis Parts

FOR ALIGNMENT, SEE INDEX





STUDEBAKER MODEL S-1622

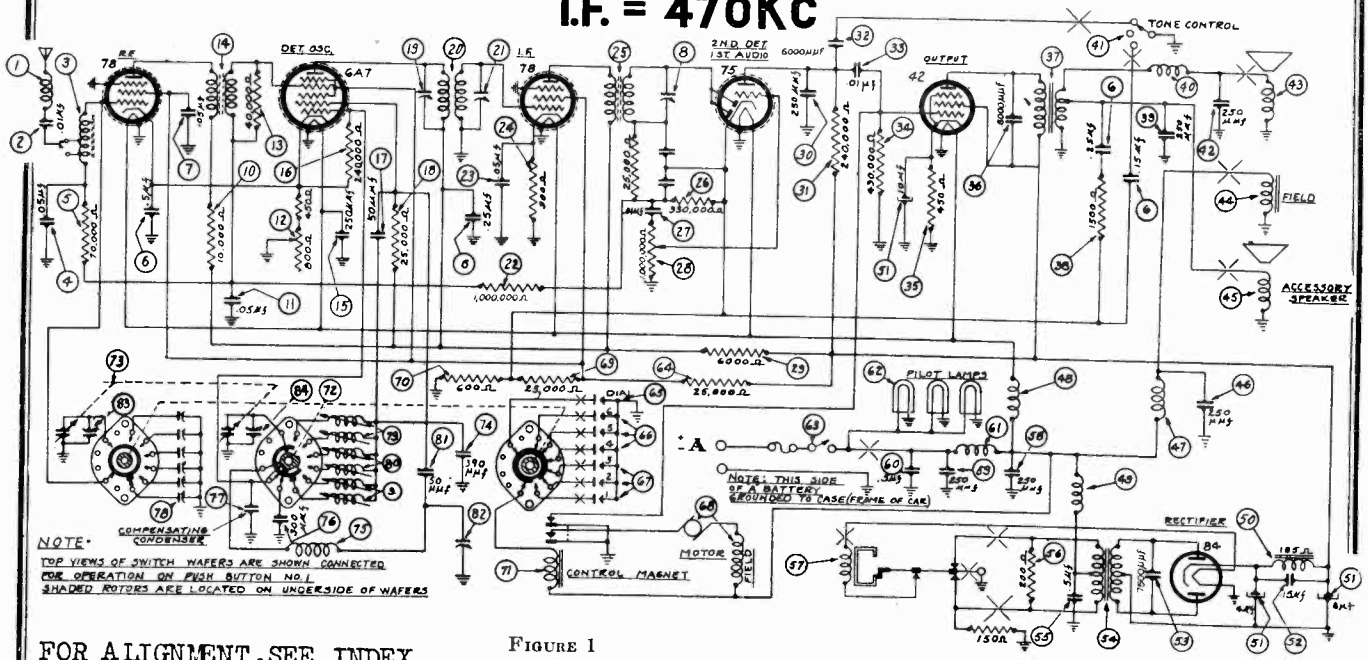
MARCH, 1939

No.	Description	Part No.
(1)	Antenna Choke	65-0102
(2)	Antenna Transformer	65-0115
(3)	Condenser (.01 mfd.)	61-0014
(3a)	Resistor (2,000 ohms)	33-220337
(4)	Condenser (.05 mfd.)	30-4444
(4a)	Resistor (450 ohms)	33-145438
(4b)	Condenser (.1 mfd.)	30-4499
(5)	Tuning Condenser	63-0028
(6)(6)(6)	Wafer Switch	412-1023
(7)	Antenna Padder Assy.	77-0262
(8)	Silver Mica Condenser (447-mmfd.)	61-0047
(8)a	Condenser (17 mmfd.)	61-0039
(8)	Silver Mica Condenser (300 mmfd.)	61-0003
(9)	Condenser (250 mmfd.)	30-1038
(10)	Condenser (250 mmfd.)	61-0033
(11)	R. F. Transformer	65-0114
(12)	Resistor (25,000 ohms)	33-325337
(13)	Resistor (70,000 ohms)	33-370337
(14)	Condenser (.05 mfd.)	30-4444
(15)	Resistor (99,000 ohms)	33-399337
(16)	Padder (Pri. 1st I. F. Trans.)	
(17)	Condenser (.05 mfd.)	30-4569
(18)	Resistor (10,000 ohms)	33-310337
(19)	First I. F. Transformer	65-0148
(20)	Padder (Sec. 1st I. F. Trans.)	
(21)	Condenser (.05 mfd.)	30-4444
(22)	Resistor (1,000 ohms)	33-210337
(23)	Resistor (1,000,000 ohms)	33-510337
(24)	Resistor (20,000 ohms)	33-320337
(24a)	Oscillator Transformer	65-0169
(24b)	Oscillator Transformer	65-0136
(24c)	Oscillator Transformer	65-0137
(24d)	Oscillator Transformer	65-0138
(24e)	Oscillator Transformer	65-0139
(27)	Padder (Pri. 2nd I. F. Trans.)	
(28)	Second I. F. Transformer	65-0149
(29)	Padder (Sec. 2nd I. F. Trans.)	
(30)	Condenser (100—250 mmfd.)	61-0049
(31)	Resistor (25,000 ohms)	33-325237
(32)	Volume Control (1,000,000 ohms) and On-Off Switch	67-0015
(33)	Condenser (6,000 mmfd.)	30-4467
(34)	Resistor (15,000 000 ohms)	33-615337
(35)	Oscillator Transformer	65-0134
(36)	Resistor (2,000 ohms)	33-220437
(37)	Condenser (.25 mfd.)	30-4446
(38)	Choke	65-0158
(39)	Condenser (.05 mfd.)	61-0053
(40)	Resistor (240,000 ohms)	33-424337
(41)	Resistor (490,000 ohms)	33-449337
(42)	Filter Condenser (5—10—10 mfd.)	61-0050
(43)	Resistor (600 ohms)	33-160338
(43a)	Choke	32-1438
(44)	Condenser (6,000 mmfd.)	30-4024
(45)	Output Transformer	65-0147
(45a)	Choke	32-1561
(46)	Cone and Voice Coil	91-0065
(47)	Condenser (250 mmfd.)	61-0033
(48)	Field Coil	Not Replaceable
(49)	Condenser (250 mmfd.)	61-0033
(50)	Condenser (.3 mfd.)	61-0056
(51)	Condenser (250 mmfd.)	61-0033
(52)	"A" Choke	32-1644
(52a)	Condenser (250 mmfd.)	61-0033
(53)	On-Off Switch and Volume Control	67-0015
(54)	Pilot Lamp	34-2064
(55)	Condenser (.5 mfd.)	30-4306
(56)	Vibrator Choke	65-0151
(57)	Condenser (.5 mfd.)	61-0054
(58)	Vibrator	41-3398
(59)	Resistor (150 ohms)	33-115337
(60)	Resistor (400 ohms)	33-140237
(61)	Resistor (200 ohms)	33-120337
(62)	Resistor (150 ohms)	33-115337
(63)	Power Transformer	65-0162
(64)	Condenser (6,000 mmfd.)	61-0052
(65)	Filter Choke	65-0150
(65a)	Condenser (250 mmfd.)	61-0033
(66)	First Padder (on Tun. Cond.)	
(67)	Second Padder (on Tun. Cond.)	
	Drive Cord	55-0413
	Dial Disc and Drive Assy.	77-0233
	Automatic Dial	55-0197
	Call Letter Kit	81-0143
	Tuning and Volume Knob	27-4689
	Push Button	56-0412
	Mounting Bracket	57-0667FA3
	Fuse	45-2559
	"A" Lead	95-0032
	Complete Speaker	73-0022
	Interference Condenser	30-4007
	Distributor Resistor	33-1196
	Fuse Gauge Resistor	77-0335
	Steering Post Mtg. Strap	77-0336
	Bolt	77-0056FA3

MODEL P-1630 Packard
Schematic, Chassis
Parts

PHILCO RADIO & TELEV. CORP.

I.F. = 470KC



FOR ALIGNMENT, SEE INDEX

FIGURE 1

PARTS LIST

No.	Description	Part No.
(1)	Antenna Choke	32-1956
(2)	Condenser (.01 mfd.)	61-0014
(3)	Antenna Transformer	65-0008
(4)	Condenser (.05 mfd.)	30-4569
(5)	Resistor (70,000 ohms)	33-370337
(6)	Condenser (.15-.25-.25-.5 mfd.)	61-0013
(7)	Condenser (.05 mfd.)	30-4123
(8)	Padder (Sec. 2nd I. F. Trans.)	
(9)	Oscillator Transformers (High Freq.)	65-0004
(10)	Resistor (10,000 ohms)	33-310337
(11)	Condenser (.05 mfd.)	30-4444
(12)	Sensitivity Control (1,250 ohms)	33-5264-4
(13)	Resistor (40,000 ohms)	33-340337
(14)	R. F. Transformers	65-0009
(15)	Condenser (250 mmfd.)	30-1032
(16)	Resistor (240,000 ohms)	33-424337
(17)	Condenser (50 mmfd.)	30-1101
(18)	Resistor (25,000 ohms)	33-325337
(19)	Padder (Pri. 1st I. F. Trans.)	
(20)	First I. F. Transformer	65-0002
(21)	Padder (Sec. 1st I. F. Trans.)	
(22)	Resistor (1,000,000 ohms)	33-510337
(23)	Condenser (.05 mfd.)	30-4569
(24)	Resistor (900 ohms)	33-190438
(25)	Second I. F. Transformer	65-0003
(26)	Resistor (330,000 ohms)	33-433337
(27)	Condenser (.01 mfd.)	30-4479
(28)	Volume Control (1,000,000 ohms)	67-0002
(29)	Resistor (6,000 ohms)	33-260337
(30)	Condenser (250 mmfd.)	30-1032
(31)	Resistor (240,000 ohms)	33-424337
(32)	Condenser (6,000 mmfd.)	30-4504
(33)	Condenser (.01 mfd.)	30-4501
(34)	Resistor (490,000 ohms)	33-449337
(35)	Resistor (450 ohms)	33-145438
(36)	Condenser (6,000 mmfd.)	30-4024
(37)	Output Transformer	65-0024
(38)	Resistor (1,500 ohms)	33-215337
(39)	Condenser (250 mmfd.)	30-1032
(40)	Choke	32-1374
(41)	Tone Control Switch	77-0026
(42)	Condenser (250 mmfd.)	30-1032
(43)	Cone & Voice Coil	91-0047
(44)	Field Coil Assembly	Not Replaceable
(45)	Accessory Speaker	36-1384
(46)	Condenser (250 mmfd.)	30-1032
(47)	Choke	32-2657
(48)	Filament Choke	32-1604
(49)	Vibrator Choke	32-2537
(50)	Filter Choke	65-0022
(51)	Filter Condenser (4-8-10 mfd.)	61-0012
(52)	Condenser (.15 mfd.)	30-4571
(53)	Condenser (7,500 mmfd.)	30-4567
(54)	Power Transformer	65-0016
(55)	Condenser (.5 mfd.)	30-4565
(56)	Resistor (200 ohms)	33-120337
(57)	Vibrator	41-3170
(58)	Condenser (250 mmfd.)	30-1032
(59)	Condenser (250 mmfd.)	30-1032
(60)	Condenser (.5 mfd.)	30-4474
(61)	"A" Choke	32-1644
(62)	Pilot Lamp	34-2040
(63)	On-Off Switch	85-0009
(64)	Resistor (25,000 ohms)	33-325437
(65)	Padder & Bracket Assembly	77-0017
(66)	Push Button Switch	77-0024
(67)	Push Button Switch	77-0024
(68)	Motor	83-0001
(69)	Resistor (25,000 ohms)	33-325337
(70)	Resistor (600 ohms)	33-160438
(71)	Motor & Relay Assembly	77-0178
(72)	Switch Mechanism Assembly	77-0034
(73)	Tuning Condenser	63-0003
(74)	Silver Cap Condenser (390 mmfd.)	61-0031
(75)	Oscillator Transformer	65-0007
(76)	Silver Cap Condenser (300 mmfd.)	61-0003
(77)	Thermel Compensating Condenser	61-0011
(78)	Antenna Padders	77-0017
(79)	Oscillator Transformer (Low Freq.)	65-0006
(80)	Oscillator Transformer (Medium Freq.)	65-0005
(81)	Condenser (50 mmfd.)	30-1101
(82)	Low Frequency Padder	31-6230
(83)	First Padder on Tun. Cond.	
(84)	Second Padder on Tun. Cond.	
	Interference Condenser	30-4007
	Interference Condenser	30-4475
	Distributor Resistor	33-1196
	Push Buttons	85-0027

No.	Description	Part No.
	Return to Dial Switch	77-0025
	Tone Control Switch	77-0026
	On-Off Switch	85-0009
	Tuning & Volume Knob	27-4687
	Knob Base	28-4184
	"T" Bolt (Rec. Mtg.)	28-6268
	Nuts (Rec. Mtg.)	W518
	Call Letter Kit	81-0018

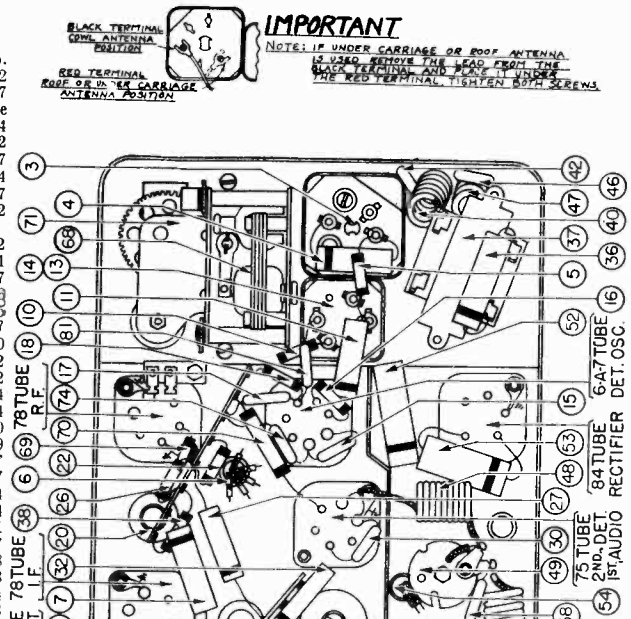


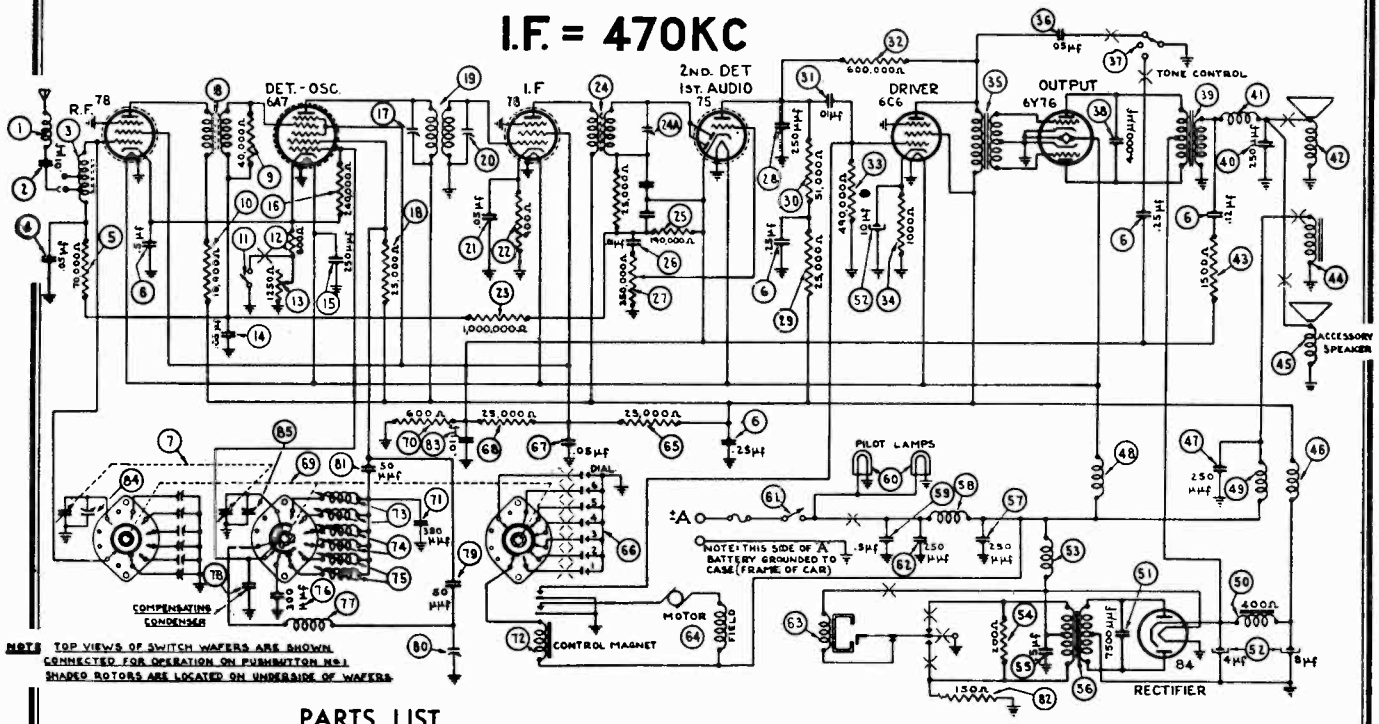
FIGURE 2

SEPTEMBER, 1938

MODEL P-1635 Packard
Schematic, Chassis
Parts

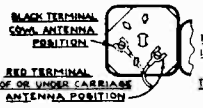
PHILCO RADIO & TELEV. CORP.

I.F. = 470KC



PARTS LIST

No.	Description	Part No.
1	Antenna Choke	32-1956
2	Condenser (.01 mfd.)	61-0014
3	Antenna Transformer	65-0008
4	Condenser (.05 mfd.)	30-4569
5	Resistor (70,000 ohms)	33-370337
6	Condenser (.12-.25-.25-.25-.5 mfd.)	61-0019
7	Tuning Condenser	63-0003
8	R. F. Transformer	65-0009
9	Resistor (40,000 ohms)	33-339137
10	Resistor (10,000 ohms)	33-310337
11	Local-Distant Switch	42-1429
12	Resistor (600 ohms)	33-160438
13	Sensitivity Control (1,250 ohms)	33-5248-4
14	Condenser (.05 mfd.)	30-4444
15	Condenser (250 mmfd.)	30-1032
16	Resistor (240,000 ohms)	33-42433(
17	Padder (Pri. 1st I. F. Trans.)	
18	Resistor (25,000 ohms)	33-325337
19	First I. F. Transformer	65-0002
20	Padder (Sec. 1st I. F. Trans.)	
21	Condenser (.05 mfd.)	30-4569
22	Resistor (900 ohms)	33-190438
23	Resistor (1,000,000 ohms)	33-510337
24	Second I. F. Transformer	65-0003
24a	Padder (Sec. 2nd I. F. Trans.)	
25	Resistor (190,000 ohms)	33-419337
26	Condenser (.01 mfd.)	30-4479
27	Volume Control (350,000 ohms)	67-0005
28	Condenser (250 mmfd.)	30-1032
29	Resistor (25,000 ohms)	33-325337
30	Resistor (51,000 ohms)	33-351337
31	Condenser (.01 mfd.)	30-4501
32	Resistor (600,000 ohms)	33-460337
33	Resistor (490,000 ohms)	33-449337
34	Resistor (1,000 ohms)	33-210337
35	Input Transformer	32-7779
36	Condenser (.05 mfd.)	30-4012
37	Tone Control Switch	42-1430
38	Condenser (4,000 mmfd.)	30-4185
39	Output Transformer	32-7778
40	Condenser (250 mmfd.)	30-1032
41	Choke	32-1604
42	Cone and Voice Coil	91-0048
43	Resistor (1,500 ohms)	33-215337
44	Field Coil	Not Replaceable
45	Accessory Speaker	73-0019
46	"B" Choke	32-1281
47	Condenser (250 mmfd.)	30-1032
48	Filament Choke	32-1604
49	Choke	32-2657
50	Filter Choke	32-7811
51	Condenser (7,500 mmfd.)	30-4567
52	Filter Condenser (4-8-10 mfd.)	61-0012
53	Vibrator Choke	32-2537
54	Resistor (200 ohms)	32-120337
55	Condenser (.5 mfd.)	30-4474
56	Power Transformer	32-7720
57	Condenser (250 mmfd.)	30-1032
58	"A" Choke	32-1644
59	Condenser (.5 mfd.)	30-4474
60	Pilot Lamp	34-2064
61	On-Off Switch	42-1374
62	Condenser (250 mmfd.)	30-1032
63	Vibrator	41-3170
64	Motor	83-0001
65	Resistor (25,000 ohms)	33-325437
66	Push Button Switch	85-0017
67	Condenser (.05 mfd.)	30-4444
68	Resistor (25,000 ohms)	33-325337
69	Rotary Switch Assembly	77-0174
70	Resistor (600 ohms)	33-160438
71	Silver Cap Condenser (390 mmfd.)	61-0031
72	Motor and Relay Assembly	77-0178
73	Oscillator Transformer (Low Freq.)	65-0006
74	Oscillator Transformer (Med. Freq.)	65-0005
75	Oscillator Transformer (High Freq.)	65-0004
76	Silver Cap Condenser (300 mmfd.)	61-0003
77	Oscillator Transformer	65-0007
78	Thermel Comp. Condenser	61-0011
79	Condenser (50 mmfd.)	30-1101
80	Low Frequency Padder	31-6230
81	Condenser (50 mmfd.)	30-1101



IMPORTANT
NOTE: IF COWL ANTENNA IS USED REMOVE THE LEAD FROM THE RED TERMINAL AND PLACE IT UNDER THE BLK. TERMINAL, TIGHTEN BOTH SCREWS.

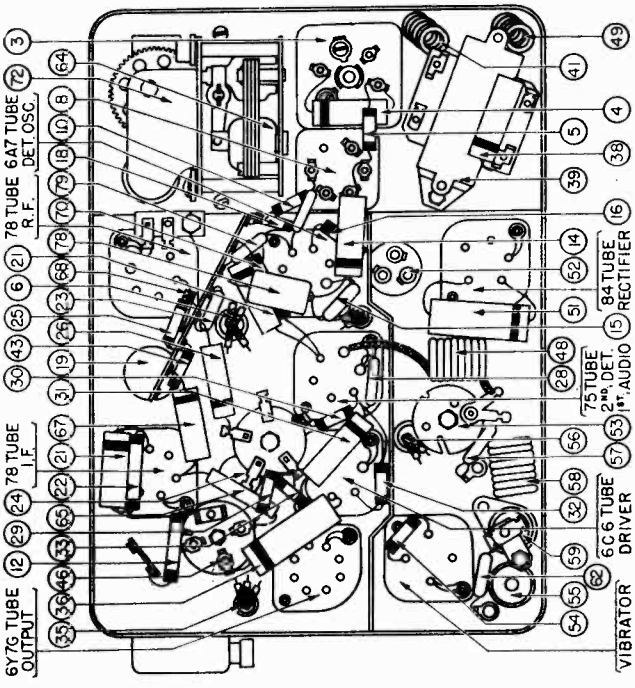


FIGURE 2

No.	Description	Part No.
83	Resistor (150 ohms)	33-115337
84	Condenser (.01 mfd.)	30-4479
84	First Padder (on Tun. Cond.)	
85	Second Padder (on Tun. Cond.)	
86	Resistor (25,000 ohms)	33-325337
87	Antenna Padder Assembly	77-0017
	Interference Condenser	30-4007
	Interference Condenser	30-4475
	Distributor Suppressor	32-2250
	Push Button	55-0021
	Return to Manual Button	55-0096

No.	Description	Part No.
	Tuning and Volume Knob	27-4687
	Return to Dial Switch	Part of 66
	Switch Knob	28-7255
	Call Letter Kit	81-0024
	"T" Bolt (Set Mtg.)	28-6161
	Nut (Set Mtg.)	W518
	Stud (Speaker Mtg.)	28-6088
	Nut (Speaker Mtg.)	W55
	Dial Face Glass	55-0014
	Pointer	57-0238

DECEMBER 20, 1938

MODEL P-1635 Packard
Socket, Trimmers
Alignment

PHILCO RADIO & TELEV. CORP.

ADJUSTMENTS

All padding adjustments are carefully made at the factory and ordinarily no readjustments are necessary. However, when readjustments are required, the procedure given below must be followed in detail.

Equipment — Fully charged heavy duty storage battery or 6-volt power pack, 077 or 177 Philco Set Tester, 27-7159 Padding screw driver.

General — The output meter must be connected by means of an adapter to the plate of the type 6Y7G output tube and to the Radio chassis.

With the Radio and signal generator set up for operation at the prescribed frequency, turn the Radio volume control on full and set the signal generator attentuator so that a half scale reading is obtained on the output meter. The signal in the speaker should be audible but not loud.

The shielding on the generator output lead must be connected to the Radio housing.

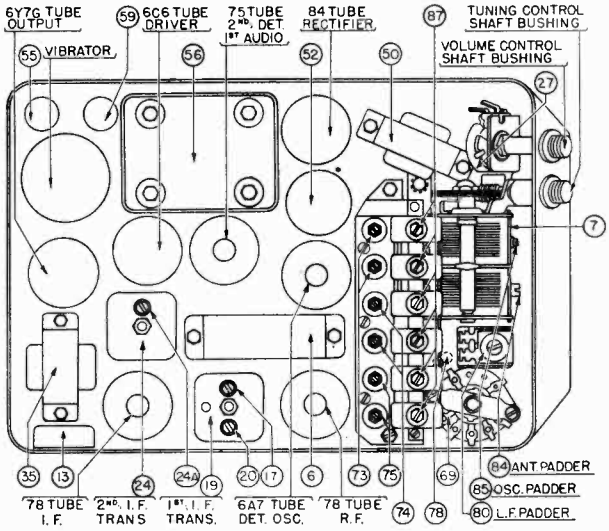


FIGURE 3

OPERATION	SIGNAL GENERATOR FREQUENCY	SIGNAL GENERATOR CONNECTION	DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
1	Press the return to dial button until stations can be tuned in by manual tuning.				
2	470 K.C.	To Grid of 6A7 Tube	.1 Mfd.	Turn Tuning Condenser Plates Out of Mesh as Far as They Will Go.	24A 20 17
3	1580 K.C.	To Antenna Receptacle on Radio	*250 Mmfd. See Note 1	Note 2	85
4	1400 K.C.	To Antenna Receptacle on Radio	*250 Mmfd. See Note 1	Set Tuning Condenser at 1400 K. C.	84 Note 4
5	580 K.C.	To Antenna Receptacle on Radio	*250 Mmfd. See Note 1	Set Tuning Condenser at 580 K. C.	80 Note 3
6	1580 K.C.	To Antenna Receptacle on Radio	*250 Mmfd. See Note 1	Note 2	85
7	1400 K.C.	To Antenna Receptacle on Radio	*250 Mmfd. See Note 1	Set Tuning Condenser at 1400 K. C.	84 Note 4

Make all adjustments for maximum reading on the output meter.

NOTE 1 — Connect the antenna lead, Part No. 41-3191, to the antenna receptacle in the radio. Connect a 250 Mmfd. Condenser in series between the signal generator and the antenna lead.

Special Note: — When the roof or undercarriage antenna is used follow the above procedure. Be sure the lead to the antenna transformer is connected to the red terminal of the Antenna Transformer.

*When the cowl antenna is used, connect the antenna lead, Part No. L-2765, to the antenna receptacle in the Radio. Connect a 20 mmfd. condenser in series with the signal generator and the antenna lead. Be sure the lead to the antenna transformer is connected to the black terminal of the antenna transformer.

NOTE 2 — Turn the condenser rotor plates completely out of mesh as far as they will go.

NOTE 3 — Rock the tuning condenser while adjusting the low frequency padder. Tune the condenser to the signal and adjust the padder for maximum output. Rotate the tuning condenser back and forth slightly for maximum output. Then readjust the padder for maximum output. Repeat this procedure until no further improvement is noticed.

NOTE 4 — When the antenna stage adjustment is made with the Radio installed in the car, the Radio antenna lead must be connected to the car antenna in the usual manner. Connect the signal generator output lead to a wire placed near the car antenna but not connected to it.

PHILCO RADIO & TELEV. CORP.

MODEL F-1640 Ford
Schematic, Chassis
Parts

I.F. PEAK 470 KC.

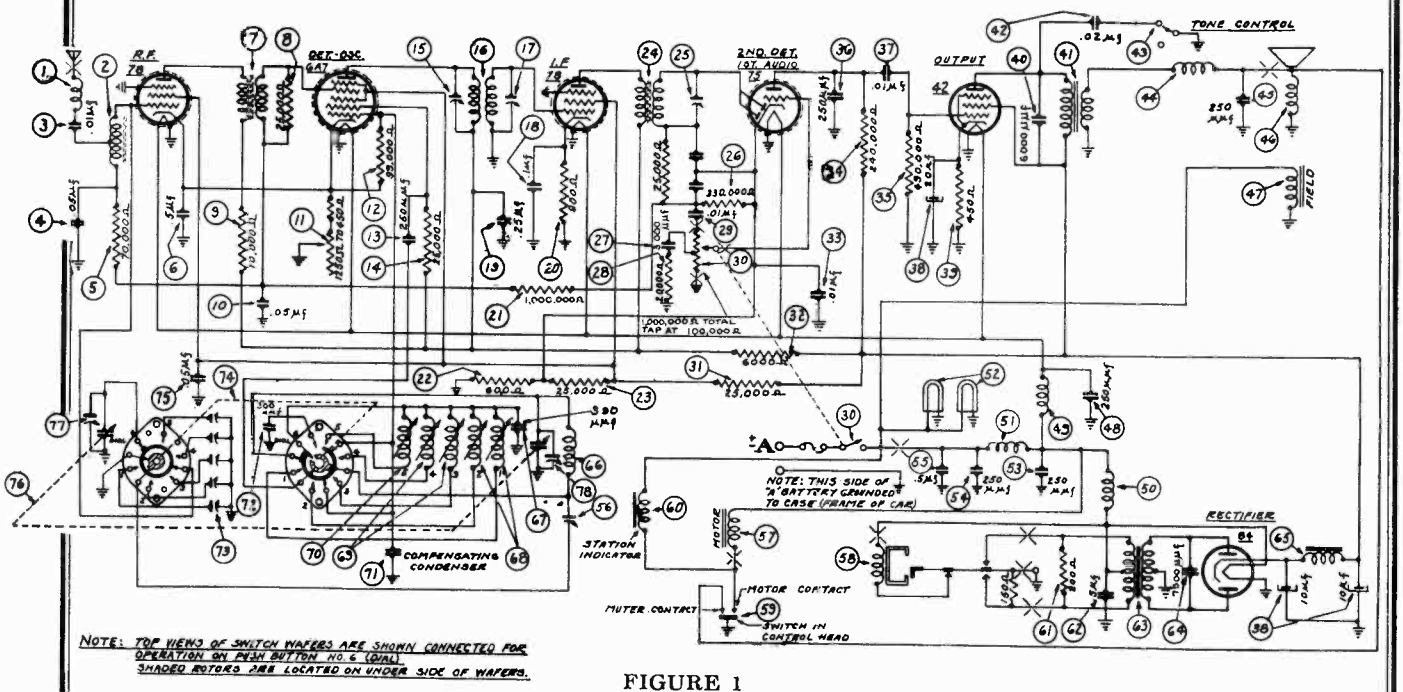


FIGURE 1

FORD MODEL F-1640 TWO UNIT DELUXE CAR RADIO

NOVEMBER, 1938

PARTS LIST

No.	Description	Part No.
(1)	Antenna Choke	32-1956
(2)	Antenna Transformer	65-0079
(3)	Condenser (.01 mfd.)	61-0014
(4)	Condenser (.05 mfd.)	30-4569
(5)	Resistor (70,000 ohms)	33-370337
(6)	Condenser (.5 mfd.)	61-0035
(7)	R. F. Transformer	65-0083
(8)	Resistor (25,000 ohms)	33-325337
(9)	Resistor (10,000 ohms)	33-310337
(10)	Condenser (.05 mfd.)	30-4444
(11)	Sensitivity Control	33-5264-4
(12)	Resistor (99,000 ohms)	33-399337
(13)	Condenser (250 mmfd.)	61-0034
(14)	Resistor (25,000 ohms)	33-325437
(15)	Padder (Pri. 1st I. F. Trans.)	
(16)	First I. F. Transformer	65-0002
(17)	Padder (Sec. 1st I. F. Trans.)	
(18)	Condenser (.1 mfd.)	30-4122
(19)	Condenser (.25 mfd.)	61-0036
(20)	Resistor (900 ohms)	33-190438
(21)	Resistor (1,000,000 ohms)	33-510437
(22)	Resistor (600 ohms)	33-160438
(23)	Resistor (25,000 ohms)	33-325437
(24)	Second I. F. Transformer	65-0003
(25)	Padder (Sec. 2nd I. F. Trans.)	
(26)	Resistor (330,000 ohms)	33-433337
(27)	Condenser (3,000 mmfd.)	30-4469
(28)	Resistor (20,000 ohms)	33-320337
(29)	Condenser (.1 mfd.)	30-4479
(30)	Volume Control (1,000,000 ohms) & On-Off Switch	67-0008
(31)	Resistor (25,000 ohms)	33-325437
(32)	Resistor (6,000 ohms)	33-260337
(33)	Condenser (.01 mfd.)	30-4479
(34)	Resistor (240,000 ohms)	33-424337
(35)	Resistor (490,000 ohms)	33-449347
(36)	Condenser (250 mmfd.)	30-1032
(37)	Condenser (.01 mfd.)	30-4501
(38)	Filter Condenser (10-10-20 mfd.)	61-0028
(39)	Resistor (450 ohms)	33-145437
(40)	Condenser (6,000 mmfd.)	30-4024
(41)	Output Transformer	65-0077
(42)	Condenser (.02 mfd.)	30-4495
(43)	Tone Control Switch	42-1406
(44)	Choke	32-1561
(45)	Condenser (250 mmfd.)	30-1032
(46)	Cone & Voice Coil	91-0042
(47)	Field Coil	Not Replaceable
(48)	Condenser (250 mmfd.)	30-1032
(49)	Filament Choke	32-1604
(50)	Vibrator Choke	32-2537
(51)	"A" Choke	32-2477
(52)	Pilot Lamp	34-2040
(53)	Condenser (250 mmfd.)	61-0033
(54)	Condenser (250 mmfd.)	61-0033
(55)	Condenser (.5 mfd.)	30-4474
(56)	Low Frequency Padder	63-0017
(57)	Impulse Motor	77-0148
(58)	Vibrator	41-3398
(59)	Automatic Control Switch	77-0171
(60)	Control Mechanism Coil	
(61)	Resistor (200 ohms)	33-120347
(62)	Condenser (.5 mfd.)	30-4565
(63)	Power Transformer	65-0016
(64)	Condenser (7,500 mmfd.)	30-4567
(65)	Filter Choke	65-0022
(66)	Oscillator Transformer	65-0052
(67)	Silver Cap Condenser (390 mmfd.)	61-0031
(68)	Oscillator Transformer (High Freq.)	65-0049
(69)	Oscillator Transformer (Med. Freq.)	65-0050
(70)	Oscillator Transformer (Low Freq.)	65-0051
(71)	Thermol Coupling Condenser	61-0011
(72)	Silver Cap Condenser (300 mmfd.)	61-0003
(73)	Antenna Padder Assy.	77-0035
(74)	Wafer Switch Assy.	77-0185
(75)	Condenser (.05 mfd.)	30-4569
(76)	Tuning Condenser	63-0015
(77)	First Padder (on Tun. Cond.)	
(78)	Second Padder (on Tun. Cond.)	
	Call Letter Kit	81-0091

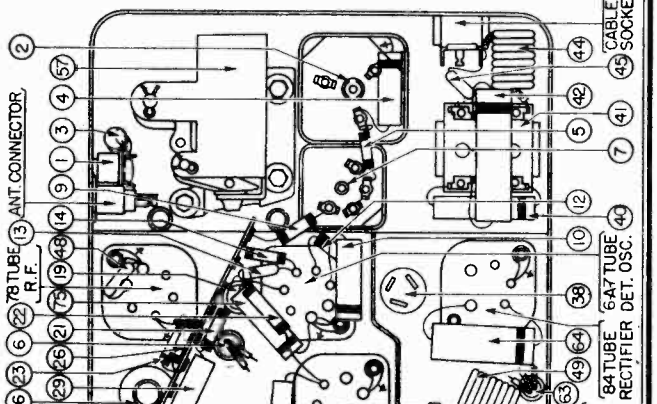


FIGURE 2

Description	Part No.
Flexible Shaft	57-0425
Dial Assembly	85-0052
Push Button Knob	55-0196
Tuning Control Knob	55-0234
Volume Control Knob	55-0235

Description	Part No.
"Tee" Bolt (Rec. Mtg.)	28-6161
Nut (Rec. Mtg.)	W518
Hook Bolt (Control Mtg.)	97-0043
Nut (Control Mtg.)	97-0048
Antenna Lead	95-0063

The letter "P" is stamped on the left end of the housing near the top cover on all Ford Philco Model F-1640 Radios.

MODEL F-1640 Ford
Socket, Trimmers
Alignment

PHILCO RADIO & TELEV. CORP.

Make all adjustments for maximum reading on the output meter.

NOTE 1 — Connect the antenna lead, Part No. 95-0063, to the antenna receptacle in the radio. Connect a 30 Mmfd. Condenser in series between the signal generator and the antenna lead.

NOTE 2 — Turn the condenser rotor plates completely out of mesh as far as they will go.

NOTE 3 — Rock the tuning condenser while adjusting the low frequency padder. Tune the condenser to the signal and adjust the padder for maximum output. Rotate the tuning condenser back and forth slightly for maximum output. Then readjust the padder for maximum output. Repeat this procedure until no further improvement is noticed.

NOTE 4 — When the antenna stage adjustment is made with the Radio installed in the car, the Radio antenna lead must be connected to the car antenna in the usual manner. Connect the signal generator output lead to a wire placed near the car antenna but not connected to it.

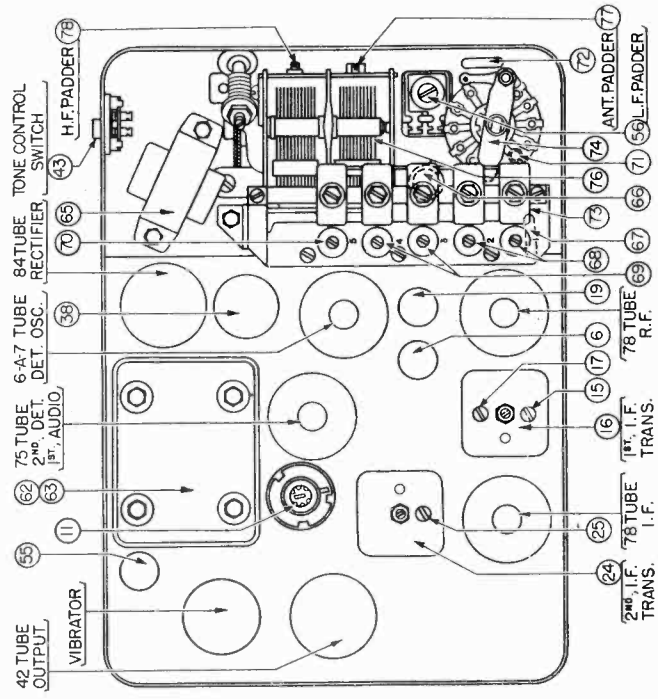


FIGURE 3

ADJUSTMENTS

All padding adjustments are carefully made at the factory and ordinarily no readjustments are necessary. However, when readjustments are required, the procedure given below must be followed in detail.

Equipment — Fully charged heavy duty storage battery or 6-volt power pack, 048A or 099 Philco Set Tester, 27-7159 Padding screw driver.

General — The output meter must be connected by means of an adapter to the plate of the type 42 output tube and to the Radio chassis.

With the Radio and signal generator set up for operation at the prescribed frequency, turn the Radio volume control on full and set the signal generator attenuator so that a half scale reading is obtained on the output meter. The signal in the speaker should be audible but not loud.

The shielding on the generator output lead must be connected to the Radio housing.

OPERATION	SIGNAL GENERATOR FREQUENCY	SIGNAL GENERATOR CONNECTION	DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
1	Press the Automatic Station Selector button until "DIAL" appears in the window and stations can be tuned in by Manual Tuning				
2	470 K.C.	To Grid of 6A7 Tube	.5 Mfd.	Turn Tuning Condenser Plates Out of Mesh as Far as They Will Go.	(25) (15) (17)
3	1580 K.C.	To Antenna Receptacle on Radio	30 Mmfd. See Note 1	Note 2	(78)
4	1400 K.C.	To Antenna Receptacle on Radio	30 Mmfd. See Note 1	Set Tuning Condenser at 1400 K.C.	(77) Note 4
5	580 K.C.	To Antenna Receptacle on Radio	30 Mmfd. See Note 1	Set Tuning Condenser at 580 K.C.	(56) Note 3
6	1580 K.C.	To Antenna Receptacle on Radio	30 Mmfd. See Note 1	Note 2	(78)
7	1400 K.C.	To Antenna Receptacle on Radio	30 Mmfd. See Note 1	Set Tuning Condenser at 1400 K.C.	(77) Note 4

PHILCO RADIO & TELEV. CORP.

MODEL L-1660
Lincoln Zephyr
Schematic, Chassis
Parts

I.F. = 470KC.

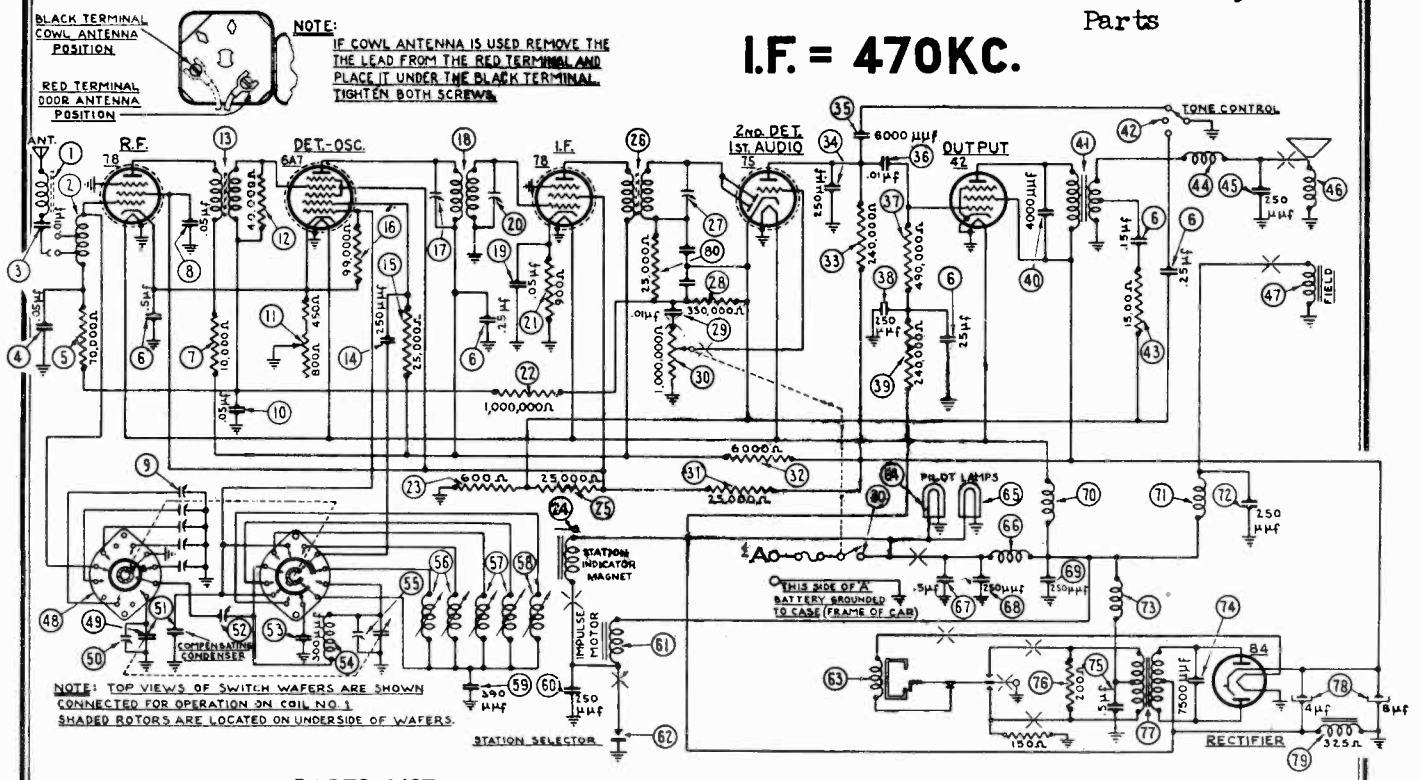
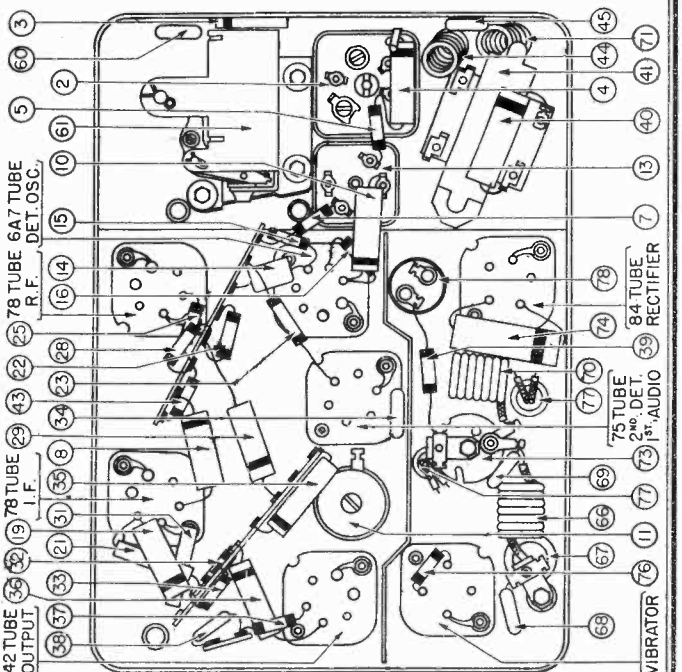


FIGURE 1

PARTS LIST

No.	Description	Part No.
①	Antenna Choke	65-0062
②	Antenna Transformer	65-0063
③	Condenser (.01 mfd.)	61-0014
④	Condenser (.05 mfd.)	30-4569
⑤	Resistor (70,000 ohms)	33-370337
⑥	Condenser (.15-.25-.25-.25-.5 mfd.)	61-0024
⑦	Resistor (10,000 ohms)	33-310337
⑧	Condenser (.05 mfd.)	30-4444
⑨	Antenna Padder Assembly	77-0035
⑩	Condenser (.05 mfd.)	30-4444
⑪	Sensitivity Control	33-5264-4
⑫	Resistor (40,000 ohms)	33-339137
⑬	R. F. Transformer	65-0009
⑭	Condenser (250 mmfd.)	30-1038
⑮	Resistor (25,000 ohms)	33-325337
⑯	Resistor (99,000 ohms)	33-399337
⑰	Padder (Pri. 1st I. F. Trans.)	
⑱	First I. F. Transformer	65-0002
⑲	Condenser (.05 mfd.)	30-4569
⑳	Padder (Sec. 1st I. F. Trans.)	
㉑	Resistor (900 ohms)	33-190438
㉒	Resistor (1,000,000 ohms)	33-510337
㉓	Resistor (600 ohms)	33-160438
㉔	Solenoid	
㉕	Resistor (25,000 ohms)	33-325337
㉖	Second I. F. Transformer	65-0003
㉗	Padder (Sec. 2nd I. F. Trans.)	
㉘	Resistor (330,000 ohms)	33-433337
㉙	Condenser (.01 mfd.)	30-4479
㉚	Volume Control (1,000,000 ohms) and On-Off Switch	67-0009
㉛	Resistor (25,000 ohms)	33-325437
㉜	Resistor (6,000 ohms)	33-260337
㉝	Resistor (240,000 ohms)	33-424337
㉞	Condenser (250 mmfd.)	30-1032
㉟	Condenser (6,000 mmfd.)	30-4504
㊱	Condenser (.01 mfd.)	30-4501
㊲	Resistor (490,000 ohms)	33-449337
㊳	Condenser (250 mmfd.)	30-1032
㊴	Resistor (240,000 ohms)	33-424337
㊵	Condenser (4,000 mmfd.)	30-4185
㊶	Dutput Transformer	65-0024
㊷	Tone Control Switch	85-0042
㊸	Resistor (1,500 ohms)	33-215337
㊹	Choke	32-1374
㊺	Condenser (250 mmfd.)	30-1032
㊻	Cone and Voice Coil Kit	91-0053
㊼	Field Coil	Not Replaceable
㊽	Wafer Switch	77-0203
㊾	Tuning Condenser	63-0012
㊿	First Padder (on Tun. Cond.)	
(51)	Thermel Compensating Cond.	61-0011
(52)	Low Frequency Padder	63-0017
(53)	Silver Cap Condenser (300 mmfd.)	61-0003
(54)	Oscillator Transformer	65-0052
(55)	Second Padder (on Tun. Cond.)	
(56)	Oscillator Trans. (High Freq.)	65-0049
(57)	Oscillator Trans. (Med. Freq.)	65-0050
(58)	Oscillator Trans. (Low Freq.)	65-0051
(59)	Silver Cap Condenser (390 mmfd.)	61-0031
(60)	Condenser (250 mmfd.)	30-1032
(61)	Impulse Motor	77-0120
(62)	Station Indicator Switch	85-0041
(63)	Vibrator	41-3170
(64)	Pilot Lamp	34-2039
(65)	Pilot Lamp	34-2040
(66)	"A" Choke	32-1644
(67)	Condenser (.5 mfd.)	30-4474
(68)	Condenser (250 mmfd.)	30-1032
(69)	Condenser (250 mmfd.)	30-1032
(70)	Filament Choke	32-1604
(71)	Choke	32-2657
(72)	Condenser (250 mmfd.)	30-1032
(73)	Vibrator Choke	32-2812
(74)	Condenser (7,500 mmfd.)	30-4567
(75)	Condenser (.5 mfd.)	30-4565
(76)	Resistor (200 ohms)	33-120387
(77)	Power Transformer	65-0016
(78)	Filter Condenser (4-8 mfd.)	30-2295
(79)	Filter Choke	32-7910
(80)	Resistor (25,000 ohms)	33-325337
	Scale Assembly	85-0040
	Tuning Control Knob	55-0179
	Volume Control Knob	55-0180
	Push Button Knob	55-0184
	Tuning Shaft	57-0491
	Call Letter Kit	81-0066
	Interference Condenser	30-4564
	Interference Condenser	30-4181
	Interference Condenser	30-4404
	Interference Condenser	30-4307
	Interference Condenser	30-4663
	"T" Bolt (Rec. Mtg.)	28-6641
	Nut (Rec. Mtg.)	57-0489
	Bolt (Spker. Mtg.)	W1721
	Nut (Spker. Mtg.)	W317
	Automatic Station Selector Drum	55-0197

FIGURE 2



DECEMBER 1, 1938

MODEL L-1660 Alignment
Socket, Trimmers

PHILCO RADIO & TELEV. CORP.

Make all adjustments for maximum reading on the output meter.

NOTE 1 — Connect the antenna lead, Part No. 41-3191, to the antenna receptacle in the radio. Connect a 800 Mmfd. Condenser in series between the signal generator and the antenna lead.

Special Note: — When the tire compartment door antenna is used follow the above procedure. Be sure the lead to the antenna transformer is connected to the red terminal of the Antenna Transformer.
*When the cowl antenna is used, connect the antenna lead, Part No. 41-3191, to the antenna receptacle in the Radio. No dummy capacity is necessary. Be sure the lead to the antenna transformer is connected to the black terminal of the antenna transformer.

NOTE 2 — Turn the condenser rotor plates completely out of mesh as far as they will go.

NOTE 3 — Rock the tuning condenser while adjusting the low frequency padder. Tune the condenser to the signal and adjust the padder for maximum output. Rotate the tuning condenser back and forth slightly for maximum output. Then readjust the padder for maximum output. Repeat this procedure until no further improvement is noticed.

NOTE 4 — When the antenna stage adjustment is made with the Radio installed in the car, the Radio antenna lead must be connected to the car antenna in the usual manner. Connect the signal generator output lead to a wire placed near the car antenna but not connected to it.

FIGURE 3

ADJUSTMENTS

All padding adjustments are carefully made at the factory and ordinarily no readjustments are necessary. However, when readjustments are required, the procedure given below must be followed in detail.

Equipment — Fully charged heavy duty shortage battery or 6-volt power pack, 048A or 099 Philco Set Tester, 27-7159 Padding screw driver.

General — The output meter must be connected by means of an adapter to the plate of the type 42 output tube and to the Radio chassis.

With the Radio and signal generator set up for operation at the prescribed frequency, turn the Radio volume control on full and set the signal generator attenuator so that a half scale reading is obtained on the output meter. The signal in the speaker should be audible but not loud.

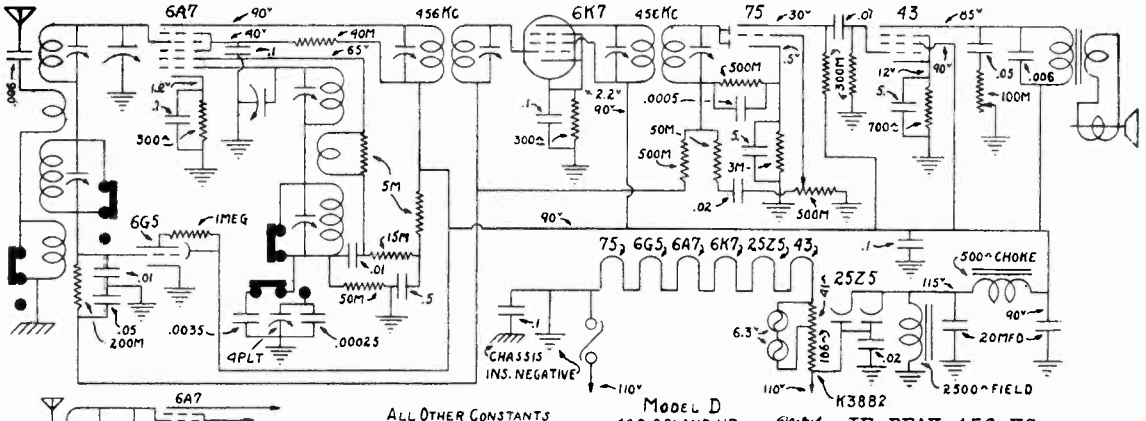
The shielding on the generator output lead must be connected to the Radio housing.

OPERATION	SIGNAL GENERATOR FREQUENCY	SIGNAL GENERATOR CONNECTION	DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
1	Press the Automatic Station Selector button until "DIAL" appears in the window and stations can be tuned in by Manual Tuning.				
2	470 K.C.	To Grid of 6A7 Tube	.1 Mfd.	Turn Tuning Condenser Plates Out of Mesh as Far as They Will Go.	(27) (29) (17)
3	1580 K.C.	To Antenna Receptacle on Radio	*800 Mmfd. See Note 1	Note 2	(55)
4	1400 K.C.	To Antenna Receptacle on Radio	*800 Mmfd. See Note 1	Set Tuning Condenser at 1400 K.C.	(50) Note 4
5	580 K.C.	To Antenna Receptacle on Radio	*800 Mmfd. See Note 1	Set Tuning Condenser at 580 K.C.	(52) Note 3
6	1580 K.C.	To Antenna Receptacle on Radio	*800 Mmfd. See Note 1	Note 2	(55)
7	1400 K.C.	To Antenna Receptacle on Radio	*800 Mmfd. See Note 1	Set Tuning Condenser at 1400 K.C.	(50) Note 4

MODEL 930
Wireless Record Player
Schematic

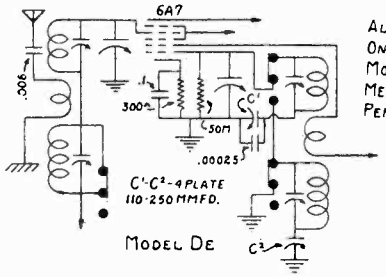
PILGRIM ELECTRIC CORP.

MODELS D, DE
MODELS GH, GHE
Schematics, Voltage



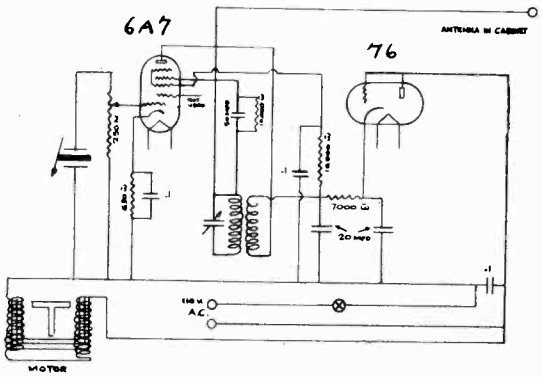
Model D
428,001 AND UP

.IF PEAK 456 KC

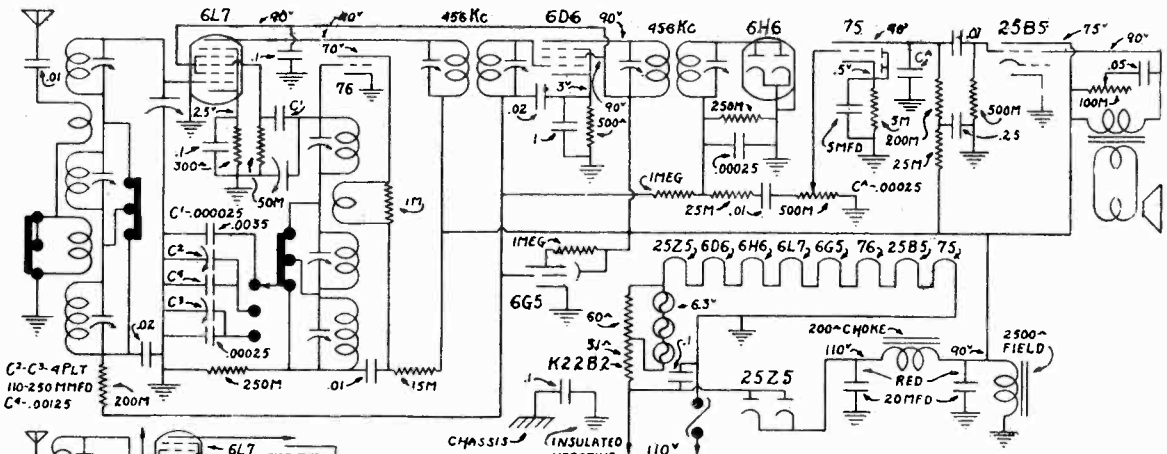


ALL OTHER CONSTANTS ON MODEL DE SAME AS MODEL D. ALL VOLTAGES MEASURED WITH 1000Ω PER VOLT METER.

Pilgrim Model 930 Electric Wireless Record Player

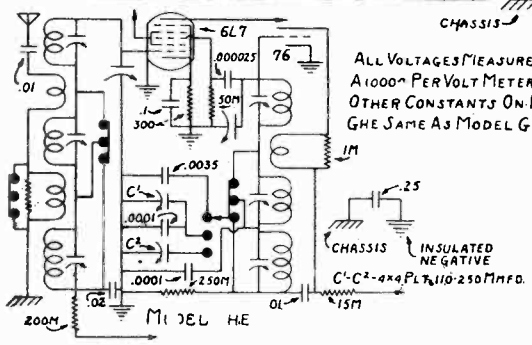


MODEL "D"



Model GH
707,001 AND UP

IF PEAK 456 KC

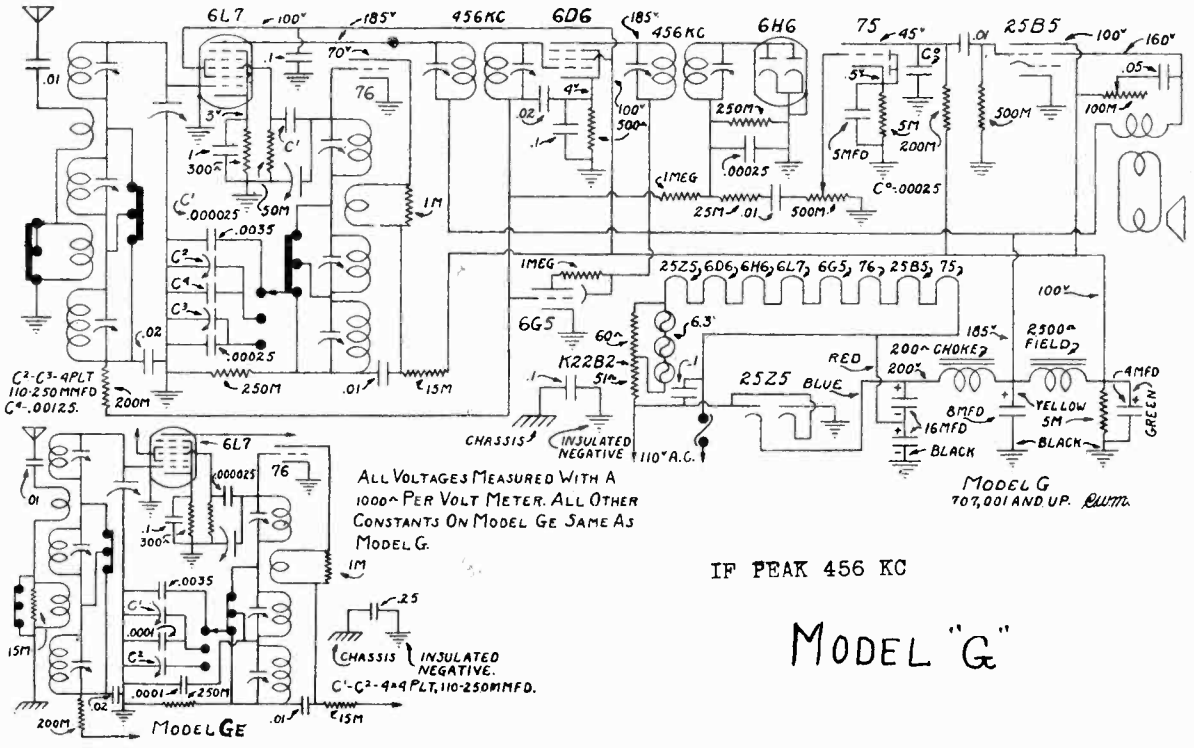


ALL VOLTAGES MEASURED WITH A 1000Ω PER VOLT METER. ALL OTHER CONSTANTS ON MODEL GHE SAME AS MODEL GH.

MODEL "GH"

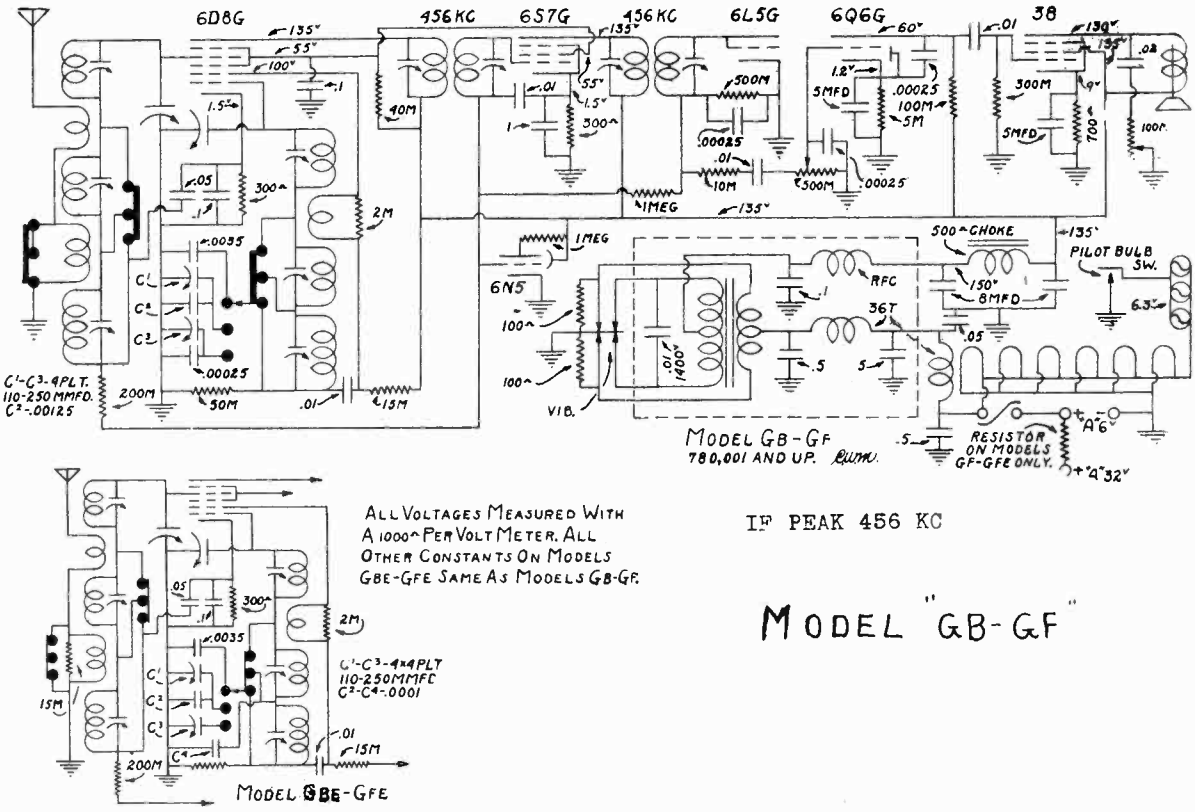
MODELS G,GE
MODELS GB,GF,GBE,GFE
Schematics,Voltage

PILGRIM ELECTRIC CORP.



IF PEAK 456 KC

MODEL "G"

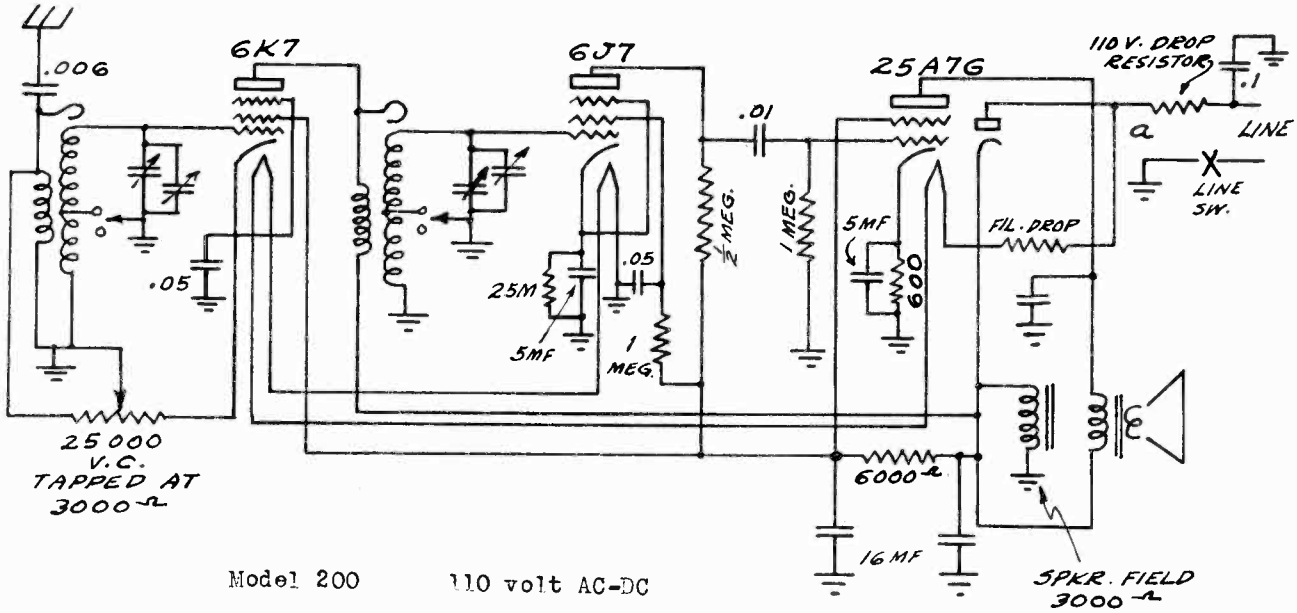


IF PEAK 456 KC

MODEL "GB-GF"

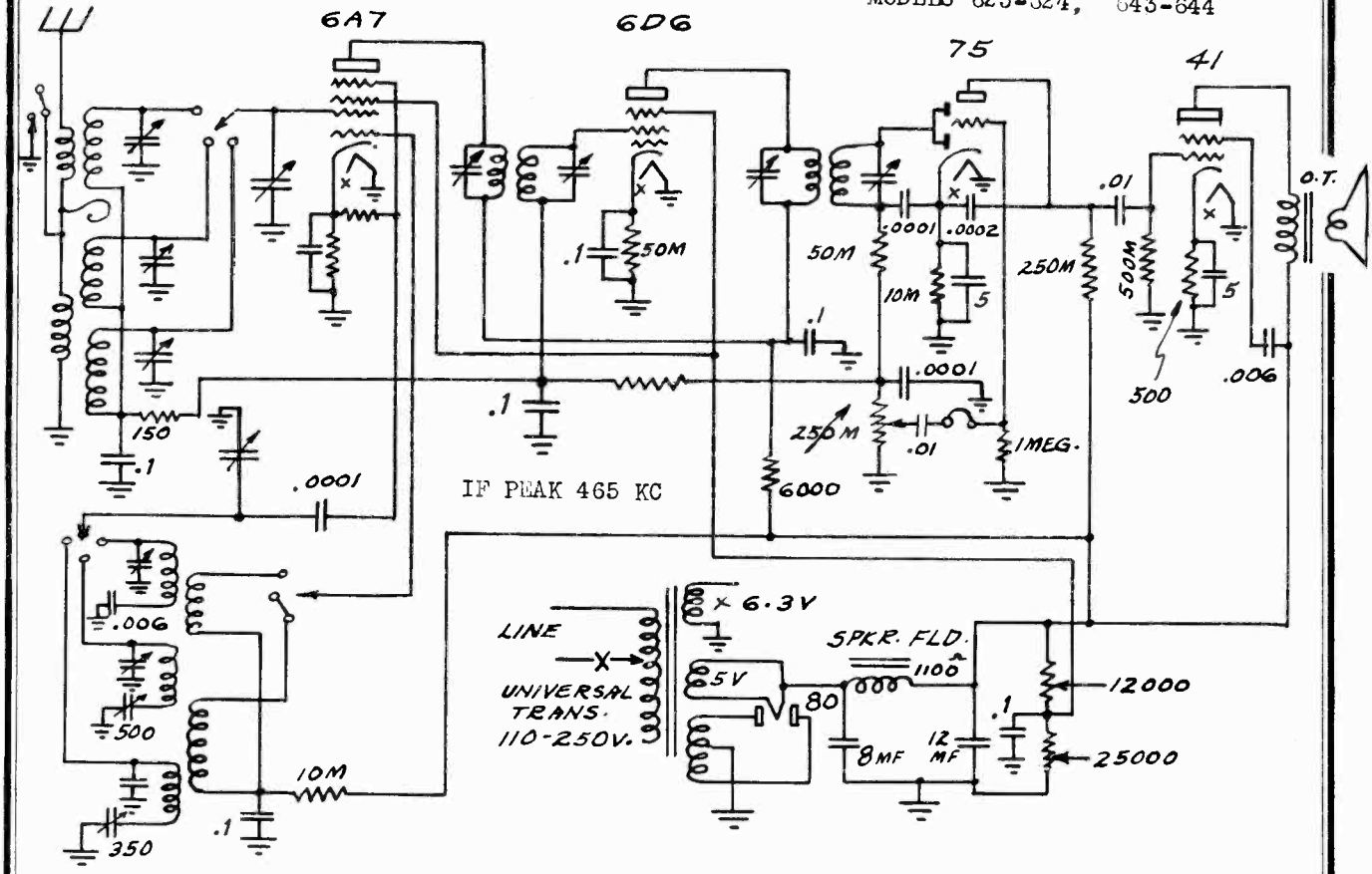
PILGRIM ELECTRIC CORP.

MODEL 200
MODELS 623,624,643,644
Schematics



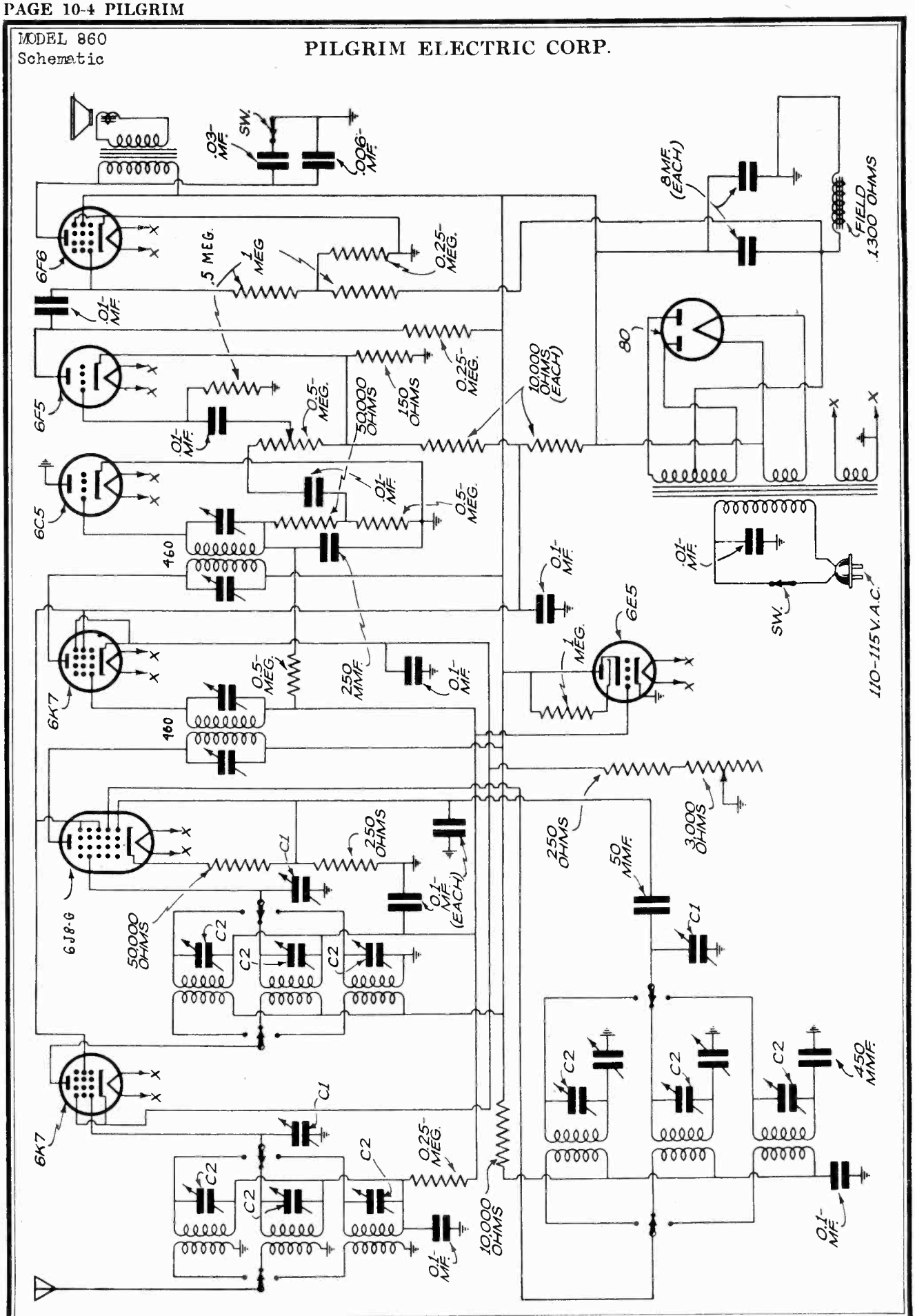
Model 200 110 volt AC-DC

MODELS 623-624, 643-644



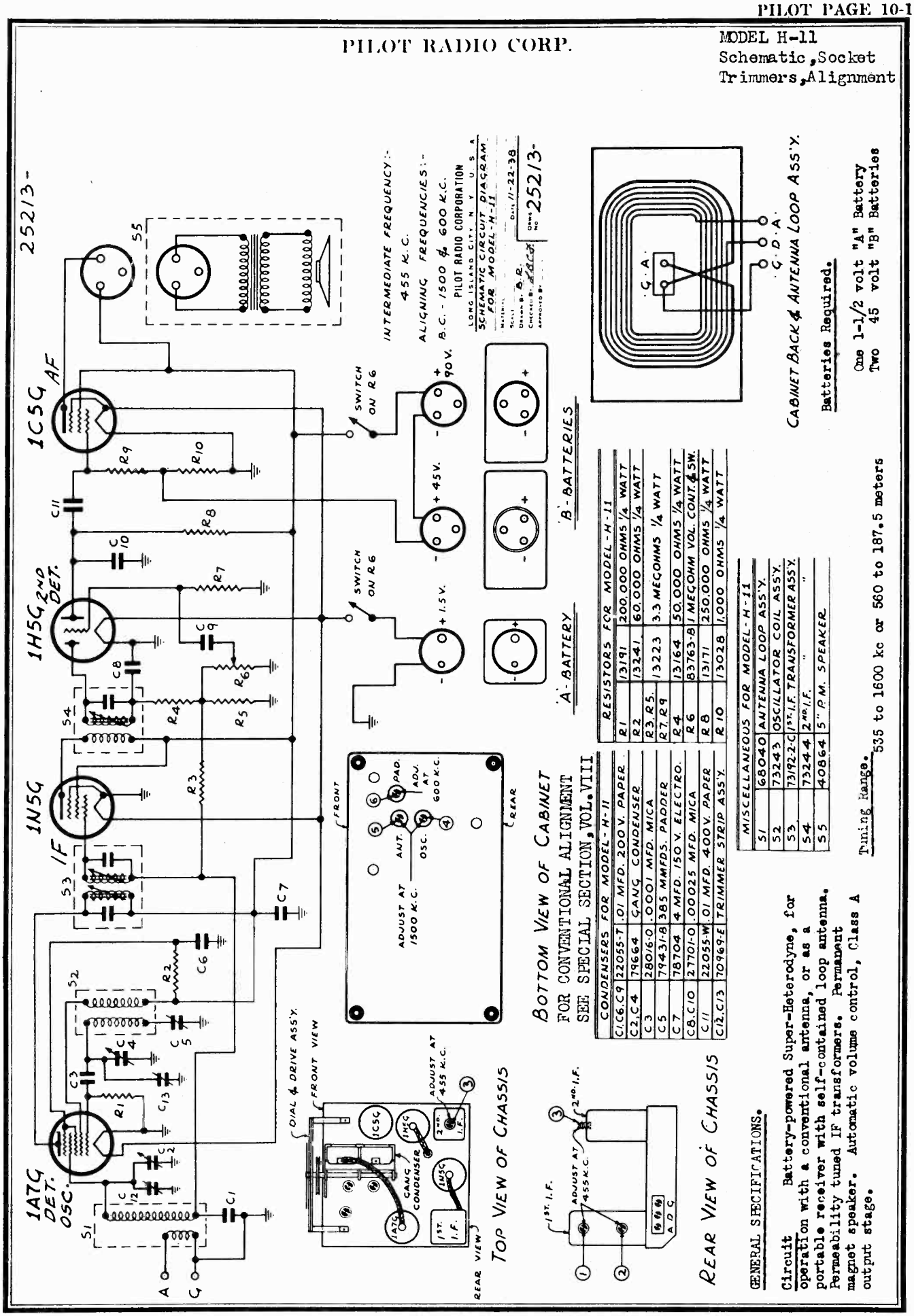
MODEL 860
Schematic

PILGRIM ELECTRIC CORP.



PILOT RADIO CORP.

MODEL H-11
Schematic, Socket
Trimmers, Alignment



CONDENSERS FOR MODEL-H-11		
C1,C6,C9	22055-T	.01 MFD. 200 V. PAPER
C2,C4	79664	GANG CONDENSER
C3	28016-0	.0001 MFD. MICA
C5	79431-B	385 MMFDS. PADDER
C7	78704	4 MFD. 150 V. ELECTRO.
C8,C10	27701-0	.00025 MFD. MICA
C11	22055-W	.01 MFD. 400 V. PAPER
C12,C13	70969-E	TRIMMER STRIP ASS'Y.

RESISTORS FOR MODEL-H-11		
R1	13191	200,000 OHMS 1/4 WATT
R2	13241	60,000 OHMS 1/4 WATT
R3, R5.	13223	3.3 MEGOHMS 1/4 WATT
R7, R9		
R4	13164	50,000 OHMS 1/4 WATT
R6	83763-B	1 MEGOHM VOL. CONT. & SW.
R8	13171	250,000 OHMS 1/4 WATT
R10	13028	1,000 OHMS 1/4 WATT

MISCELLANEOUS FOR MODEL-H-11		
S1	68040	ANTENNA LOOP ASS'Y.
S2	73243	OSCILLATOR COIL ASS'Y.
S3	73192-C	1ST I.F. TRANSFORMER ASS'Y.
S4	73244	2ND I.F. "
S5	40864	5" P.M. SPEAKER

Tuning Range. 535 to 1600 kc or 560 to 187.5 meters

Batteries Required.

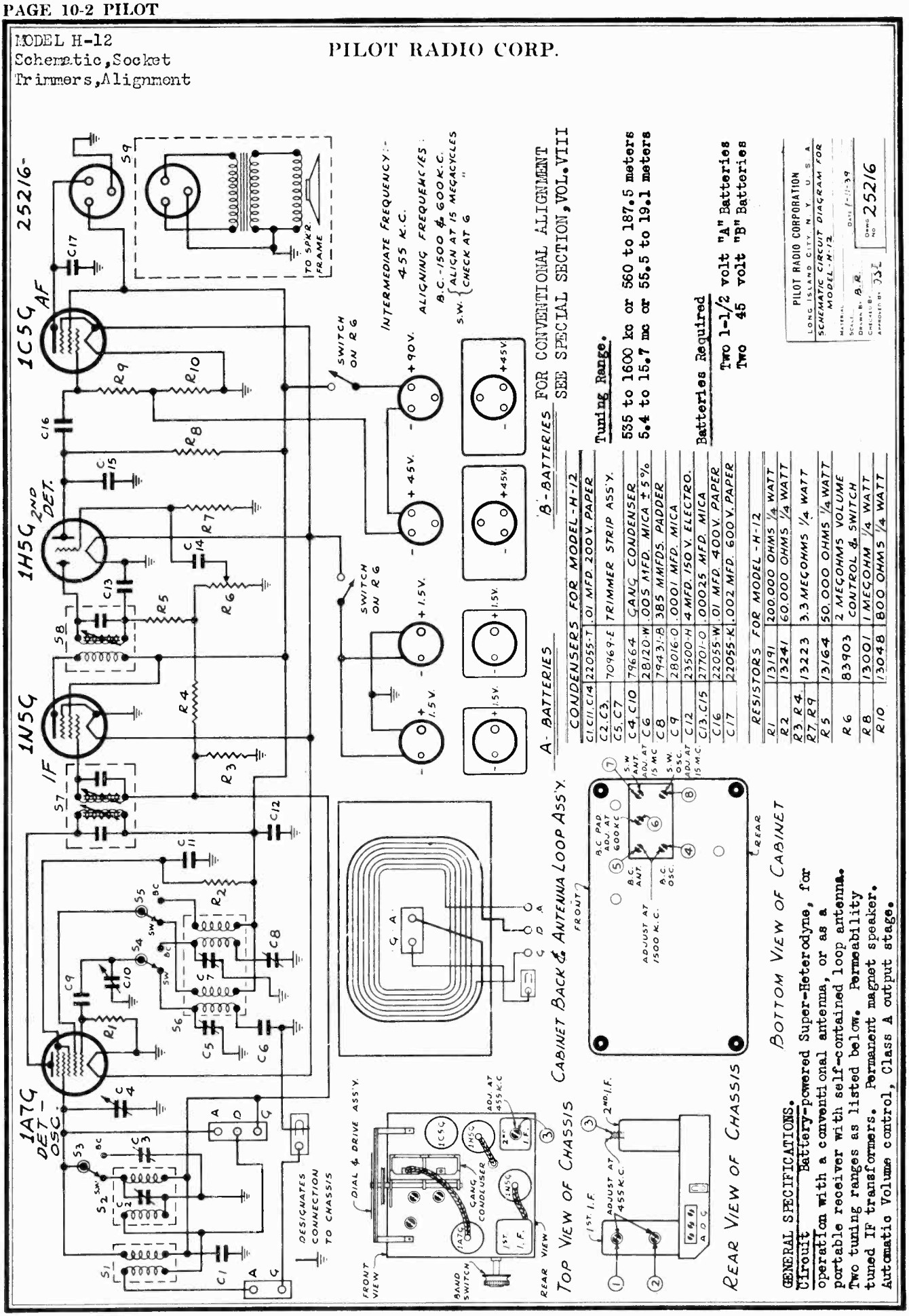
One 1-1/2 volt "A" Battery
Two 45 volt "B" Batteries

GENERAL SPECIFICATIONS.

Circuit operation. Battery-powered Super-Heterodyne, for operation with a conventional antenna, or as a portable receiver with self-contained loop antenna. Permeability tuned IF transformers. Permanent magnet speaker. Automatic volume control, Class A output stage.

MODEL H-12
Schematic, Socket
Trimmers, Alignment

PILOT RADIO CORP.



CONDENSERS FOR MODEL-H-12			
C1,C11,C14	22055-T	.01 MFD. 200 V. PAPER	
C2,C3, C5,C7	70969-E	TRIMMER STRIP ASS'Y.	
C4,C10	79664	GANG CONDENSER	
C6	28120-W	.005 MFD. MICA ±5%	
C8	79431-B	385 MMFDS. PADDER	
C9	28016-0	.0001 MFD. MICA	
C12	23500-H	4 MFD. 150 V. ELECTRO.	
C13,C15	27701-0	.00025 MFD. MICA	
C16	22055-W	.01 MFD. 400 V. PAPER	
C17	22055-K	.002 MFD. 600 V. PAPER	

RESISTORS FOR MODEL-H-12			
R1	13191	200,000 OHMS 1/4 WATT	
R2	13241	60,000 OHMS 1/4 WATT	
R3,R4	13223	3.3 MEGOHMS 1/4 WATT	
R7,R9			
R5	13164	50,000 OHMS 1/4 WATT	
R6	83903	2 MEGOHMS VOLUME CONTROL & SWITCH	
R8	13001	1 MEGOHM 1/4 WATT	
R10	13048	800 OHMS 1/4 WATT	

Tuning Range.

535 to 1600 kc or 560 to 187.5 meters
5.4 to 15.7 mc or 55.5 to 19.1 meters

Batteries Required

Two 1-1/2 volt "A" Batteries
Two 45 volt "B" Batteries

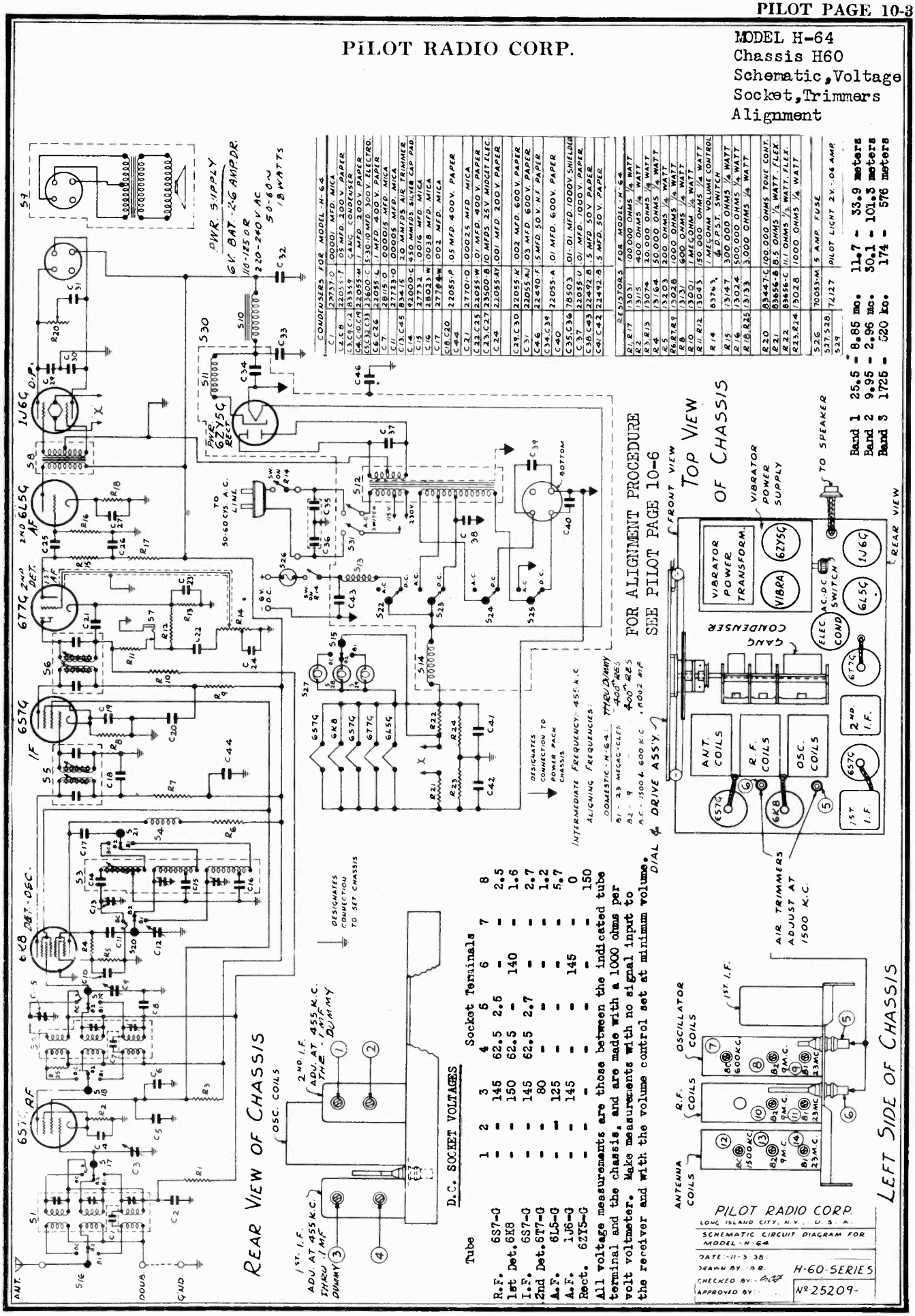
PILOT RADIO CORPORATION
LONG ISLAND CITY, N. Y. U. S. A.
SCHEMATIC CIRCUIT DIAGRAM FOR MODEL-H-12
Material:
Scale:
Drawn By: B.R. Date: 6-12-39
Checked By:
Approved By: JSL
Dwg. No. 252/6

GENERAL SPECIFICATIONS.

Circuit — Battery-powered Super-Heterodyne, for operation with a conventional antenna, or as a portable receiver with self-contained loop antenna. Two tuning ranges as listed below. Permeability tuned IF transformers. Permanent magnet speaker. Automatic Volume control, Class A output stage.

PILOT RADIO CORP.

MODEL H-64
Chassis H60
Schematic, Voltage
Socket, Trimmers
Alignment



CONDUSERS FOR MODEL H-64		
C1	27537-O	.00001 MFD. MICA
C4-C8	22055-T	.05 MFD. 200 V. PAPER
C9,C11,C12	83339	GANG CONDENSER
C10,C19	22055-M	.1 MFD. 200 V. PAPER
C13,C33	23600-C	5-30-0 MFD. 300 V. ELECTRO.
C14,C26	22055-L	.1 MFD. 400 V. PAPER
C17	28130-O	.00005 MFD. MICA
C18,C45	83415-O	20 MMFDS. AIR TRIMMER
C20	92000-C	430 MMFDS. SILVER CAP. PAD
C15	27732	.0016 MFD. MICA
C16	28023-W	.0038 MFD. MICA
C17	27704-W	.002 MFD. MICA
C18,C20	22055-P	.05 MFD. 400 V. PAPER
C21	27701-O	.00025 MFD. MICA
C22,C25	22055-W	.01 MFD. 400 V. PAPER
C23,C27	23500-B	10 MFDS. 25 V. MIDGET ELEC.
C24	22055-AY	.001 MFD. 200 V. PAPER
C28,C30	22055-K	.002 MFD. 600 V. PAPER
C31	22055-AJ	.03 MFD. 600 V. PAPER
C46	22490-T	.5 MFD. 50 V. W.F. PAPER
C34,C39	22055-A	.01 MFD. 600 V. PAPER
C40		
C35,C36	78503	.01-.01 MFD. 1000 V. SHIELDED
C37	22055-U	.01 MFD. 1000 V. PAPER
C38,C43	22492-B	.5 MFD. 50 V. PAPER
C41,C42	22492-A	.5 MFD. 50 V. PAPER

RESISTORS FOR MODEL H-64		
R1,R17	13031	100,000 OHMS 1/4 WATT
R2	13115	400 OHMS 1/4 WATT
R3,R13	13074	30,000 OHMS 1/4 WATT
R4	13164	50,000 OHMS 1/4 WATT
R5	13203	200 OHMS 1/4 WATT
R6,R7,R9	13028	1000 OHMS 1/4 WATT
R8	13131	600 OHMS 1/4 WATT
R10	13201	1 MEGOHM 1/4 WATT
R11,R12	13043	50,000 OHMS 1/4 WATT
R14	83763	1-4 P.S.T. SWITCH CONTROL
R15	13147	300,000 OHMS 1/4 WATT
R16	13024	500,000 OHMS 1/4 WATT
R18,R25	13133	3,000 OHMS 1/4 WATT
R20	83447-C	100,000 OHMS TONE CONT.
R21	83656-B	8.5 OHMS 1/2 WATT FLEX.
R22	83656-C	111 OHMS 1/2 WATT FLEX.
R23,R24	13028	1000 OHMS 1/4 WATT
S26	70053-M	5 AMP. FUSE
S27,S28	72127	PILOT LIGHT 2V. .06 AMP.
S29		

Band 1	25.5 - 8.85 mc.	11.7 - 33.9 meters
Band 2	9.95 - 2.96 mc.	30.1 - 101.3 meters
Band 3	1725 - 520 kc.	174 - 576 meters

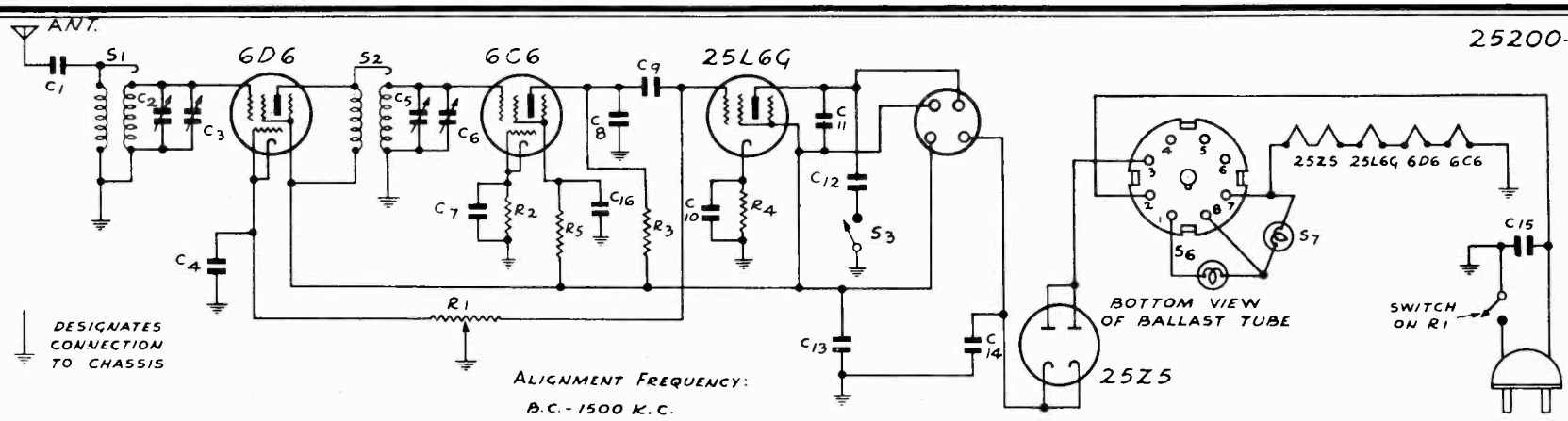
D.C. SOCKET VOLTAGES

Tube	Socket Terminals							
	1	2	3	4	5	6	7	8
R.F. 6S7-G	-	-	145	62.5	2.5	-	-	2.5
1st Det. 6K8	-	-	150	62.5	-	140	-	1.6
I.F. 6S7-G	-	-	145	62.5	2.7	-	-	2.7
2nd Det. 6T7-G	-	-	80	-	-	-	-	1.2
A.F. 6L5-G	-	-	125	-	-	-	-	5.7
A.F. 1J6-G	-	-	145	-	-	145	-	0
Rect. 6Z5-G	-	-	-	-	-	-	-	150

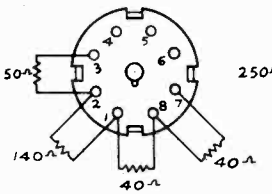
All voltage measurements are those between the indicated tube terminal and the chassis, and are made with a 1000 ohms per volt voltmeter. Make measurements with no signal input to the receiver and with the volume control set at minimum volume.

PILOT RADIO CORP.
LONG ISLAND CITY, N.Y., U.S.A.
SCHEMATIC CIRCUIT DIAGRAM FOR MODEL-H-64
DATE:-11-3-38
DRAWN BY:-P.R.
CHECKED BY:-
APPROVED BY:-
H-60-SERIES
Nº 25209-

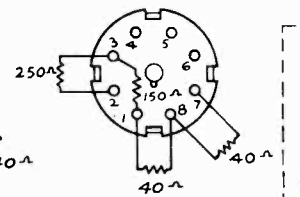
25200-2



CONDENSERS FOR MODEL-H-141		
C1	27726	200 MMFDS. MICA
C2, C5	70969-E	TRIMMER ASS'Y.
C3, C6	79664	GANG CONDENSER
C4	22055-I	.05 MFD. 200V. PAPER
C7, C10	23500-B	10 MFD. 25V. MIDGET TUB
C8	28016-0	.0001 MFD. MICA
C9	22055-W	.01 MFD. 400V. PAPER
C11	22055-AJ	.03 MFD. 600V. PAPER
C12	22055-AB	.1 MFD. 600V. PAPER
C13, C14	23500-A	16 MFD. 150V. MIDGET TUB
C15	22055-AF	.05 MFD. 1000V. PAPER
C16	22055-Z	.02 MFD. 400V. PAPER



S8



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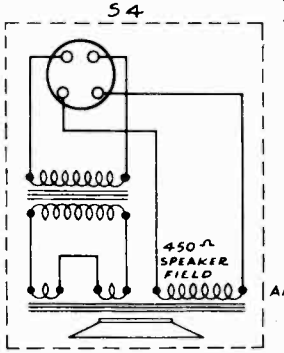
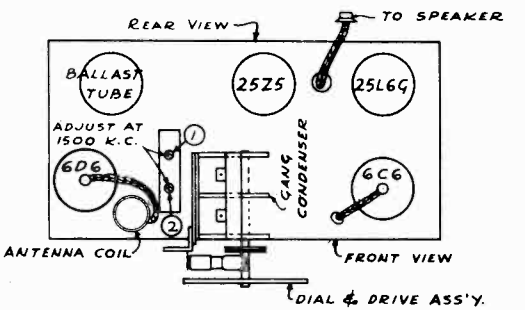




RESISTORS FOR MODEL-H-141		
R1	83625	½ MEGOHM VOL. CONT. & SW.
R2	13183	36,000 OHMS ¼ WATT
R3	13024	500,000 OHMS ¼ WATT
R4	13055	150 OHMS ½ WATT
R5	13007	2 MEGOHMS ¼ WATT

MISCELLANEOUS FOR MODEL-H-141		
S1	73214	ANTENNA COIL ASS'Y.
S2	73215	DETECTOR COIL ASS'Y.
S3	71657-B	TONE CONTROL
S4	40852	5" A.C.-D.C. SPEAKER-450Ω FIELD
S6, S7	71282	DIAL LAMP
S8	81974	BALLAST TUBE 110/125 V
S9	81975	BALLAST TUBE 220/240 V

FOR CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION, VOL. VIII

ALTERATIONS (2) ADDED C16 & R5. - C.O.# 2188 - 8-R-8-30-38. FINISH

CLASSIFICATION: MODEL-H-141

THIS PRINT SUPERSEDES ALL OTHERS PRIOR TO

DO NOT SCALE THIS PRINT

PILOT RADIO CORPORATION
LONG ISLAND CITY, N. Y. U. S. A.
SCHEMATIC CIRCUIT DIAGRAM FOR MODEL-H-141
MATERIAL
SCALE
DATE 8-22-38
DRAWN BY B.R.
CHECKED BY
APPROVED BY
DRWG NO 25200-2

D.C. SOCKET VOLTAGES

	P	SG	Cath
6D6	100	100	21*
6C6	-*	8	8
25L6-G	95	100	8
25Z5	-	-	110

The above figures are for a supply voltage of 115 volts, on 230 volt operation they will be 10% higher.

* Cannot be measured.

Panel Controls Volume control with On-Off Power Supply switch, Tuning Control, Tone Control.

Maximum Power Output 1.25 Watts with 81974 ballast tube.

1.50 watts with 81975 ballast tube.

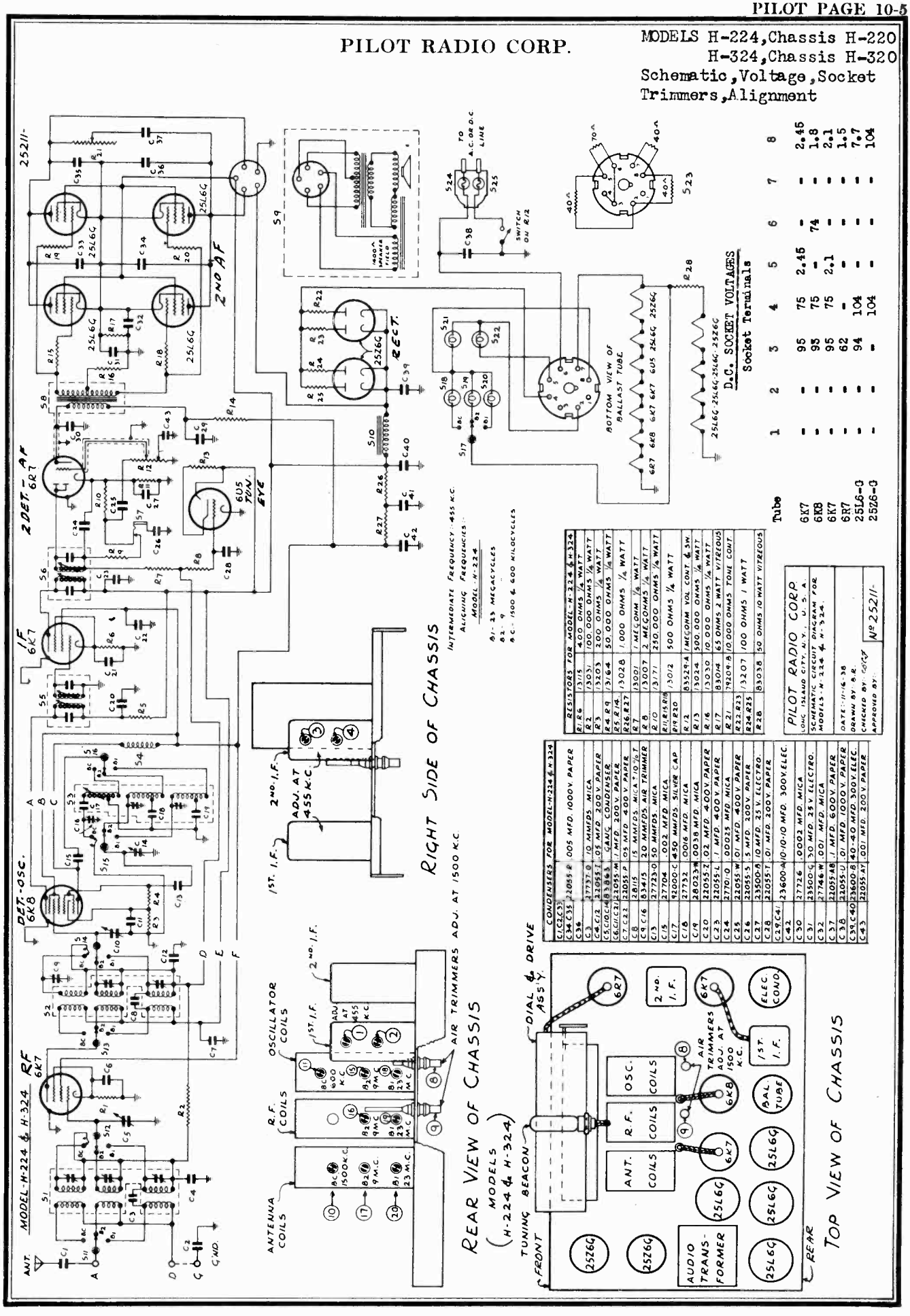
PILOTUBES Required One 6K6 RF Amplifier, one 6C6 Detector, one 25L6-G Output Tube, and one 25Z5 power supply rectifier.

Power Supply

Voltage	Watts	Ballast Tube
110-125 AC or DC	40	#81974
220-240 AC or DC	90	#81975

PILOT RADIO CORP.

MODELS H-224, Chassis H-220
H-324, Chassis H-320
Schematic, Voltage, Socket
Trimmers, Alignment



Tube	1	2	3	4	5	6	7	8
6K7	-	-	95	75	2.45	-	-	2.45
6K8	-	-	95	75	-	74	-	1.8
6K7	-	-	95	75	2.1	-	-	2.1
6R7	-	-	62	-	-	-	-	1.5
25L6-G	-	-	94	104	-	-	-	7.7
25Z6-G	-	-	-	104	-	-	-	104

CONDENSERS FOR MODEL H-224 & H-324		
C1, C2, C35	22055-R	.005 MFD. 1000 V. PAPER
C34, C36		
C3	27737-0	.10 MMFDS. MICA
C4, C13	22055-T	.01 MFD. 200 V. PAPER
C5, C10, C14	03863	GANG CONDENSER
C6, C11, C31	22055-M	.1 MFD. 200 V. PAPER
C7, C32	22055-P	.05 MFD. 400 V. PAPER
C8	28115	15 MMFDS. MICA ± 10 % T.
C9, C16	83415	20 MMFDS. AIR TRIMMER
C12	27723-0	50 MMFDS. MICA
C15	27704	.002 MFD. MICA
C17	92000-C	450 MMFDS. SILVER CAP
C18	27732	.006 MFD. MICA
C19	28023-M	.0038 MFD. MICA
C20	22055-Z	.02 MFD. 400 V. PAPER
C23	22055-L	.1 MFD. 400 V. PAPER
C24	27701-0	.00025 MFD. MICA
C25	22055-W	.01 MFD. 400 V. PAPER
C26	22055-S	.5 MFD. 200 V. PAPER
C27	23500-A	10 MFD. 25 V. ELECTRO.
C28	22055-T	.01 MFD. 200 V. PAPER
C29, C41	23600-A	10-10-10 MFD. 300 V. ELEC.
C42		
C30	27726	.0002 MFD. MICA
C31	23500-C	30 MFD. 25 V. ELECTRO.
C32	27746-W	.001 MFD. MICA
C37	21055-AB	.1 MFD. 600 V. PAPER
C38	21055-U	.01 MFD. 1000 V. PAPER
C39, C40	23600-B	40-40 MFD. 300 V. ELEC.
C43	22055-AY	.001 MFD. 200 V. PAPER

RESISTORS FOR MODEL H-224 & H-324		
R1, R6	13115	400 OHMS ½ WATT
R2	13031	100,000 OHMS ½ WATT
R3	13203	200 OHMS ½ WATT
R4, R9	13164	50,000 OHMS ½ WATT
R5, R14, R26, R27	13028	1,000 OHMS ½ WATT
R7	13001	1 MEGOHM ½ WATT
R8	13007	2 MEGOHMS ½ WATT
R10	13171	250,000 OHMS ½ WATT
R11, R15, R16, R19, R20	13012	500 OHMS ½ WATT
R12	83529-A	1 MEGOHM VOL CONT & SW.
R13	13024	500,000 OHMS ½ WATT
R16	13030	10,000 OHMS ½ WATT
R17	83014	65 OHMS 2 WATT VITREOUS
R21	79209-B	10,000 OHMS TONE CONT.
R22, R23, R24, R25	13207	100 OHMS 1 WATT
R28	83038	50 OHMS 10 WATT VITREOUS

PILOT RADIO CORP.
LONG ISLAND CITY, N.Y., U.S.A.
SCHEMATIC CIRCUIT DIAGRAM FOR MODELS H-224 & H-324.
DATE 11-16-36
DRAWN BY R.R.
CHECKED BY
APPROVED BY
No 25211-

MODELS H-224, Chassis H-220
H-324, Chassis H-320
Alignment Procedure

PILOT RADIO CORP.

PILOTUBES Required.

One 6K7	R.F. Amplifier
One 6K8	1st Detector-Oscillator
One 6K7	I.F. Amplifier
One 6R7	2nd Detector-AVC-1st Audio Amplifier
Four 25L6-G	Output Tubes
Two 25Z6-G	Power Supply Rectifiers
One 6U5	Cathode Ray Tuning Beacon

Power Supply. A.C. or D.C.

Voltage	Ballast Tubes	Watts
110-125	81973	110

Intermediate Frequency. 455 kc.

Panel Controls. Volume with On-Off switch, Tone, Band Selector Switch, Manual Tuning Control and an 8 key mechanically operated PIANO TUNING mechanism, with key locking knob. The PIANO TUNING mechanism is only on the H-320 series.

TUNING RANGES. The models H-324 and H-224 chassis have the following tuning ranges:

Band 1	8.72 - 25.5 mc.	or	11.8 - 34.4 meters
Band 2	2.96 - 9.95 mc.	or	30.2 -101.4 meters
Band 3	520 - 1725 kc.	or	174 - 577 meters

Maximum Power Output. 6 watts

SERVICE DATA

Removal of the chassis from the cabinet, when necessary is done as follows:

1. Remove the power supply cord from the supply outlet.
2. Remove the knobs and felt washers from all shafts on the front of the cabinet. These knobs, except the "locking" knob, are of the "push-on" type.
3. Remove the back of the cabinet.
4. Remove the speaker cord from the socket on the speaker.
5. Remove the four mounting screws located under the cabinet, and carefully slide the chassis out of the cabinet.

RECEIVER ALIGNMENT

Equipment Required.

1. Signal Generator. One using fundamental frequencies for all the frequencies used in the receiver is preferred.
2. Output Meter. Generally a copper-oxide rectifier meter is the most convenient.

Dummy Antennas. .1 mfd. condenser
.0002 mfd. mica condenser
400 ohm, non-inductive resistor

Alignment Connections.

The posts marked "D" and "G" on the rear of the chassis should be connected to the ground side of the signal generator.

Connect the "hot" post of the signal generator through the .1 mfd. condenser to the grid of the 6K8 detector-oscillator tube or the 6K7 I.F. Amplifier tubes when aligning the I.F. amplifier.

Connect the "hot" post of the signal generator through the 200 mmf. condenser to the post marked "A" on the rear of the chassis when aligning the Long-Wave and Broadcast Bands. Use the same connections for both short-Wave bands, but replace the 200 mmf. condenser with the 400 ohm, non-inductive resistor.

In all measurements, connect the output meter through .1 mfd 600 volt condensers, from plate to plate terminals of the 25L6-G tubes, as this is a push-pull amplifier.

Procedure.

The volume and tone controls should be turned to the extreme clockwise positions, before starting.

The location of all trimmers is shown in the accompanying figure. Always keep the output from the signal generator at the lowest value which will give a readable deflection on the output meter.

I.F. Amplifier Alignment.

Turn the Band Selector Switch to Band 3 and turn the ROTOR dial to the low frequency end.

Connect the output meter as described under "Connections" and connect the "hot" post of the signal generator to the grid of the 6K8 tube through the .1 mfd. condenser. Then proceed with the alignment as follows:

1. Adjust the signal generator frequency to 455 kilocycles, and adjust the generator output to the lowest value which will give a readable signal on the output meter.
2. Adjust the screws 1, 2, 3, and 4 (see figure), for maximum reading of the output meter. Keep reducing the output from the generator if the output meter reading increases too much.

If the output of the generator to the receiver is too great, the alignment of the receiver will not be correct, as the AVC action will become too great, and the amplifier will appear broad in tuning.

It will seldom, if ever, be found necessary to more than touch up the alignment of the I.F. amplifier. Of course, if the amplifier adjustment screws have been tampered with, it will probably be necessary to completely realign the amplifier. In this case, connect the generator to the grid of the I.F. amplifier tube, and align the last I.F. transformer. Always finish the alignment with the signal input to the 6K8 tube.

A cathode ray oscilloscope is not necessary in making the above adjustments. One may be used, however, if desired.

R.F. Alignment

Band 3 (Model H-324 and H-224)

Connect the "hot" terminal of the generator to the antenna post marked "A" through the .0002 mfd. condenser.

Set the generator frequency to 1500 kc., and the ROTOR dial to the same frequency, with the Band Selector Switch set appropriately. Adjust trimmer #8 for maximum reading of the output meter. (This trimmer is adjusted by moving the brass rod in or out, with a hooked wire, and with a twisting motion. First loosen the lock nut). Then without touching any tuning controls adjust trimmers #9 and #10 for maximum reading of the output meter.

Next, set the generator frequency to 600 kc. and accurately set the ROTOR dial to the 600 kc. mark. Then adjust trimmer #11 for maximum reading of the output meter. Do not move the tuning control while making this adjustment. Finally return and repeat the 1500 kc. adjustments and then tighten the lock nut on trimmers #8 and #9.

Band 2 (Model H-324 & H-224 Short-Wave)

Remove the .0002 mfd. dummy antenna used in aligning the lower frequency bands and substitute the 400 ohm resistor.

Before aligning this band refer to the paragraph headed "Image Frequency".

Set the generator, and the ROTOR dial to 9 mc. Adjust trimmer #15 for maximum reading of the output meter. Be careful you do not tune in at the Image Frequency.

Then adjust trimmers #16 and #17 for maximum reading of the output meter, while slightly "rocking" the gang condenser. Readjust trimmer #15 if necessary to correct the calibration.

Band 1 (Model H-324 & H-224 Short-Wave)

Connections and dummy antenna are the same as on Band 1 above.

Before aligning this band, refer to the paragraph headed "Image Frequency".

Set the generator frequency to 23 mc. and the ROTOR dial to 23 mc. Adjust trimmer #18 to 23 mc. for maximum reading of the output meter. Be careful that the receiver is not adjusted to the Image Frequency. Then adjust trimmers #19 and #20 while "rocking" the gang condenser, for maximum reading of the output meter. Reset trimmer #18 so that calibration is correct if necessary.

Image Frequency

All bands in these two models must be aligned with the oscillator frequency higher than the signal frequency. There can be no error in doing this on the Long-Wave and Broadcast Bands. However, on the higher frequency bands it is possible to incorrectly adjust the alignment in this respect, and end up with the receiver aligned on what should be the Image Frequency.

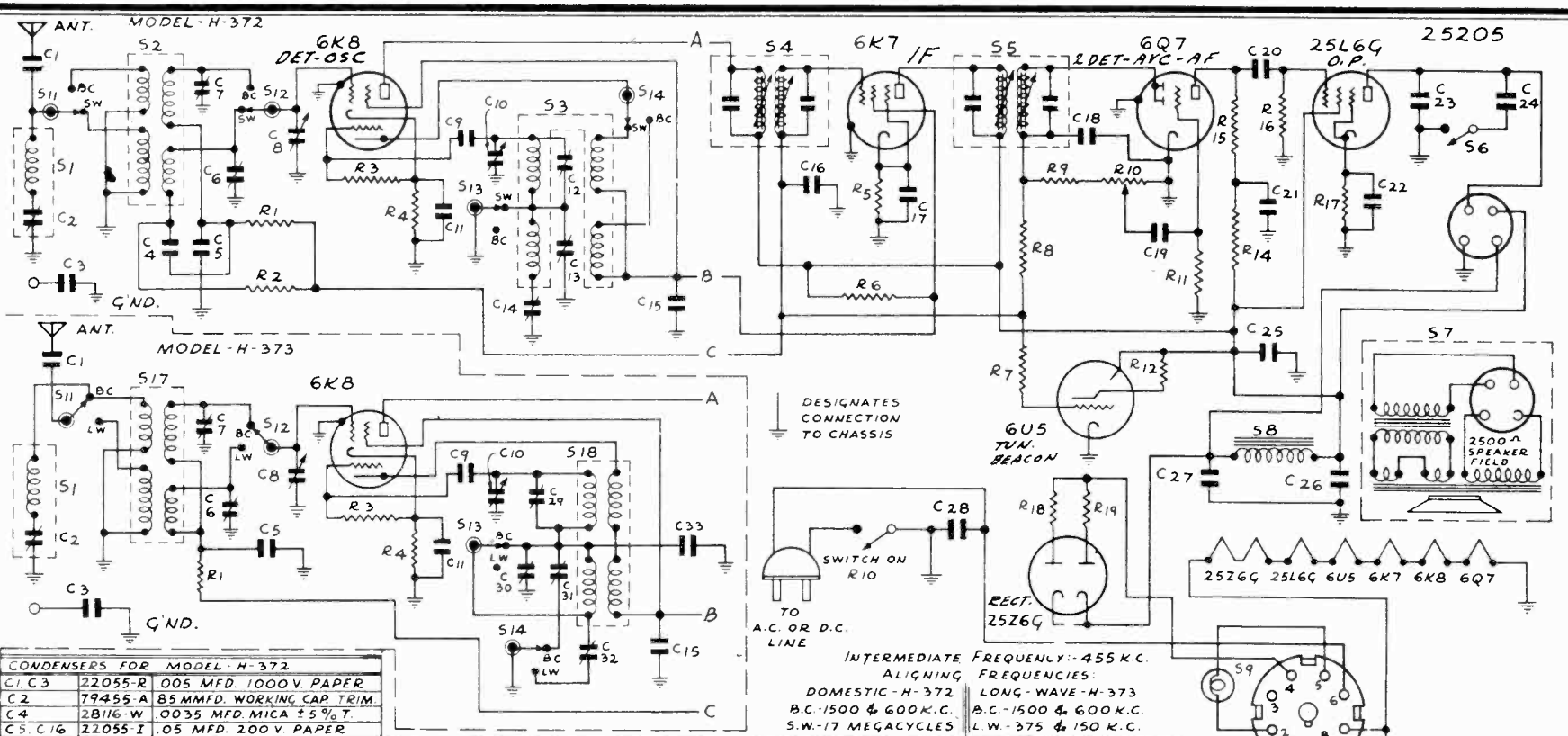
The chances of doing this may be eliminated by adjusting the generator to the correct aligning frequency, and with sufficient output from the generator to pick up two signals with the receiver, seperated by twice the Intermediate Frequency, set the ROTOR dial to that one which comes in at the higher frequency marking on the ROTOR dial.

Miscellaneous Service Notes.

If a howling noise (sometimes referred to as Microphonic Howl) is heard, it is very probably because the four rod screws under the cabinet have not been removed, along with the two narrow metal strips between the chassis and the bottom of the cabinet. These strips and screws are only intended as additional bracing during shipment, and must be removed before the receiver is put in operation.

The howl can also be caused by a defective tube, or when some part of the receiver which is rigidly fastened to the chass rubs against the cabinet. The remedy is obvious.

PILOT RADIO CORP. MODELS H-372, H-373, Chassis H370 Schematic



CONDENSERS FOR MODEL-H-372		
C1, C3	22055-R	.005 MFD. 1000 V. PAPER
C2	79455-A	85 MMFD. WORKING, CAP TRIM.
C4	28116-W	.0035 MFD. MICA ± 5% T.
C5, C16	22055-I	.05 MFD. 200 V. PAPER
C6, C7	70969-J	TRIMMER ASS'Y.
C8, C10	79664-B	GANG CONDENSER
C9	27723-0	50 MMFD. MICA
C11, C17	22055-M	.1 MFD. 200 V. PAPER
C12, C13	70969-J	TRIMMER ASS'Y.
C14	79431-B	300-500 MMFDS. PADDER
C15	22055-P	.05 MFD. 400 V. PAPER
C18	27701-0	250 MMFD. MICA
C19, C20	22055-W	.01 MFD. 400 V. PAPER
C21, C25	22055-L	.1 MFD. 400 V. PAPER
C22	22481	10 MFD. 25 V. ELECTRO.
C23	22055-A	.01 MFD. 600 V. PAPER
C24	22055-C	.05 MFD. 600 V. PAPER
C26, C27	23500-E	30 MFD. 300 V. SMALL TUB.
C28	22055-U	.01 MFD. 1000 V. PAPER

CONDENSERS FOR MODEL-H-373 SAME AS FOR MODEL-H-372 EXCEPT FOLLOWING:		
C4, C12, C13, C14		NOT USED
C29, C30	70969-E	TRIMMER ASS'Y.
C31	72355-C	250-500 MMFDS. PADDER
C32		30-150 MMFDS. PADDER
C33	28101-0	.00005 MFD. MICA

RESISTORS FOR MODEL-H-372		
R1, R2, R14	13031	100,000 OHMS 1/4 WATT
R3, R9	13164	50,000 OHMS 1/4 WATT
R4	13203	200 OHMS 1/4 WATT
R5	13115	400 OHMS 1/4 WATT
R6	13086	2000 OHMS 1/2 WATT
R7	13007	2 MEGOHMS 1/4 WATT
R8	13001	1 MEGOHM 1/4 WATT
R10	79540	250,000 OHMS VOL. CONT. & SW.
R11	13237	15 MEGOHMS 1/2 WATT
R12, R16	13024	500,000 OHMS 1/4 WATT
R15	13171	250,000 OHMS 1/4 WATT
R17	13235	150 OHMS 1 WATT
R18, R19	13207	100 OHMS 1 WATT

RESISTORS FOR MODEL-H-373 SAME AS FOR MODEL-H-372, EXCEPT FOLLOWING:		
R2		NOT USED

MISCELLANEOUS FOR MODEL-H-372		
S1	73119	WAVE TRAP ASS'Y.
S2	73240	ANTENNA COIL ASS'Y.
S3	73228	OSCILLATOR COIL ASS'Y.
S4	73192-C	1ST I.F. TRANSFORMER ASS'Y.
S5	73193	2ND I.F. " "
S6	72049	TONE CONTROL SWITCH
S7	40853	6" AC-DC SPEAKER-2500Λ FIELD
S8	79029-A	FILTER CHOKE
S9, S10	71282	DIAL LAMP
S11-TO-S14	79454	BAND SWITCH
S15	81971	BALLAST TUBE 110/125 V.
S16	81972	BALLAST TUBE 220/240 V.

MISCELLANEOUS FOR MODEL-H-373 SAME AS FOR MODEL-H-372 EXCEPT FOLLOWING:		
S2, S3		NOT USED
S17	73241	ANTENNA COIL ASS'Y.
S18	73226	OSCILLATOR COIL ASS'Y.

SCHEMATIC CIRCUIT DIAGRAM FOR MODEL-H-372 & MODEL-H-373

Scale —
Drawn By: B.R.
Checked By: [illegible]
Approved By: [illegible]
Date 9-21-38
Drwg No 25205

MODELS H-372, H-373
Chassis H-370

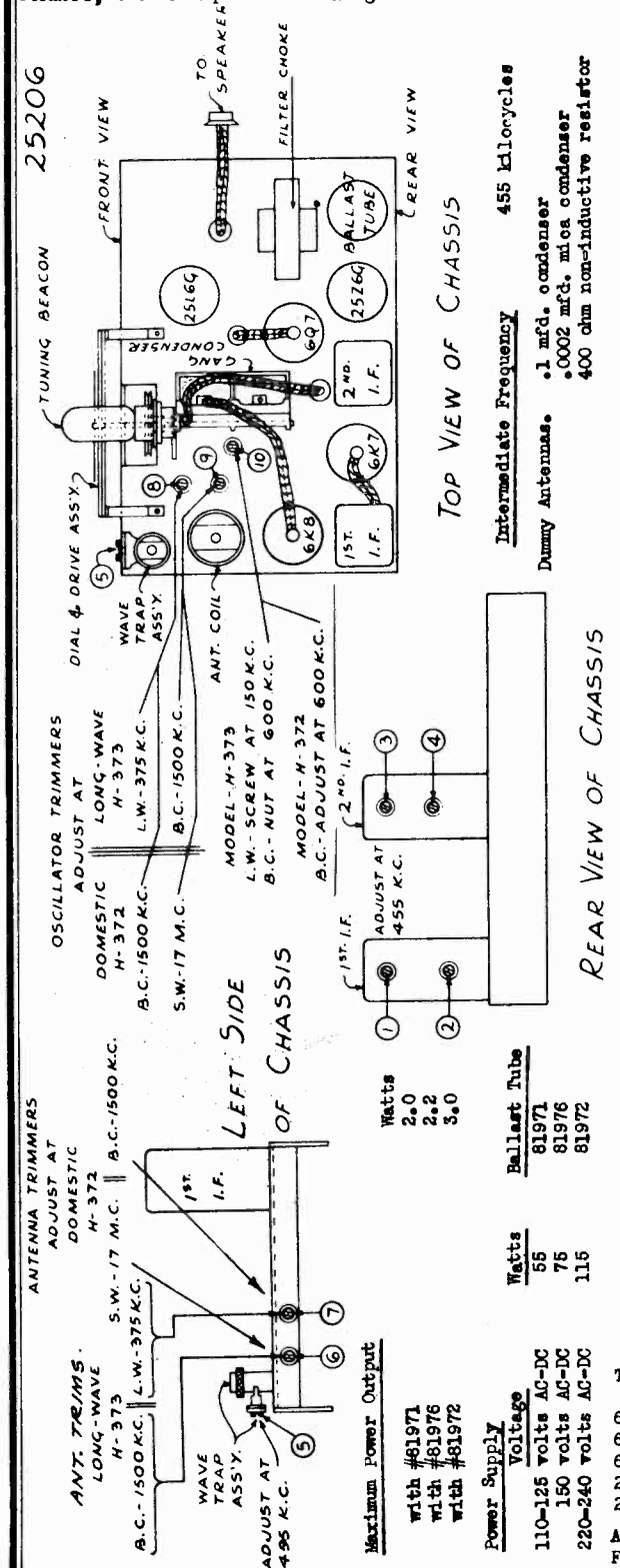
PILOT RADIO CORP.

Voltage, Socket, Trimmers
Alignment

IF Amplifier Alignment

1. Adjust the signal generator frequency to 455 kilocycles, and adjust the generator output to the lowest value which will give a readable signal on the output meter.

2. Adjust the trimmer screws 1, 2, 3, and 4, (see figure) for maximum reading of the output meter. Keep reducing the generator output as the output meter reading increases. When the reading of the output meter cannot be increased by adjusting the four screws of the IF transformers, the IF amplifier is aligned.



Intermediate Frequency 455 kilocycles
Dummy Antennas. .1 mfd. condenser
.0002 mfd. mica condenser
400 ohm non-inductive resistor

Watts	Ballast Tube
2.0	81971
2.2	81976
3.0	81972

Watts	Power Supply Voltage
55	110-125 volts AC-DC
75	150 volts AC-DC
115	220-240 volts AC-DC

Maximum Power Output
with #81971
with #81976
with #81972

R.F. Alignment

Long Wave Band (Model H-373)

Connect the "hot" terminal of the generator to the blue antenna wire through the .0002 mfd. condenser.

Set the generator frequency to 375 kilocycles and with the Band Selector Switch set to the Long Wave Band, turn the pointer of the receiver to 375 kilocycles. Adjust trimmer #8 for maximum reading of the output meter. Do likewise with trimmer #7. Then set the generator frequency to 150 kilocycles and the receiver dial pointer to approximately the same frequency. Adjust the screw of trimmer #10 for maximum reading of the output meter, while "rocking" the gang condenser carefully back and forth. Then go back and repeat the 375 kilocycle alignment.

Broadcast, or Medium Wave, Band (Models H-373 and H-372)

Connections are the same for the alignment of this band as they are for the Long Wave Band.

Set the generator frequency to 1500 kilocycles, and the receiver dial pointer to the same frequency, with the Band Selector Switch set appropriately. Adjust trimmer #9 of Model H-373, or trimmer #8 of Model H-372 for maximum reading of the output meter. Also adjust trimmer #6 of Model H-373, or trimmer #7 of Model H-372 for maximum reading of the output meter. Next, set the generator frequency to 600 kilocycles. Then with the receiver dial pointer set at approximately the same frequency, adjust trimmer #10 for maximum reading of the output meter while carefully "rocking" the gang condenser. Finally, return and repeat the 1500 kilocycle adjustment.

Short Wave Band (Model H-372)

When aligning this band connect the "hot" terminal of the signal generator to the blue antenna wire of the receiver through the 400 ohm resistor.

Before aligning this band, refer to the paragraph headed "Image Frequency".

Set the generator frequency to 17 mc., and also tune the receiver to this frequency, as marked on the dial.

Carefully adjust trimmer #9 for maximum reading of the output meter. Be careful you do not adjust to the "Image Frequency".

Then adjust trimmer #6 for maximum output meter reading, while slightly "rocking" the gang condenser.

Readjust trimmer #9, if necessary, to keep the calibration correct.

Image Frequency

The Short Wave Band in model H-372 must be aligned with the oscillator frequency lower than the signal frequency. On the high frequency band, it is possible to incorrectly adjust the alignment in this respect, and end up with the receiver aligned on what should be the Image Frequency.

The chances of doing this may be eliminated by adjusting the generator to the correct aligning frequency, and with sufficient output from the generator to pick up two signals with the receiver, separated by twice the Intermediate Frequency, turn the tuning knob so that the dial pointer points to that one which comes in at the lower frequency marking on the dial.

Wave Trap Alignment

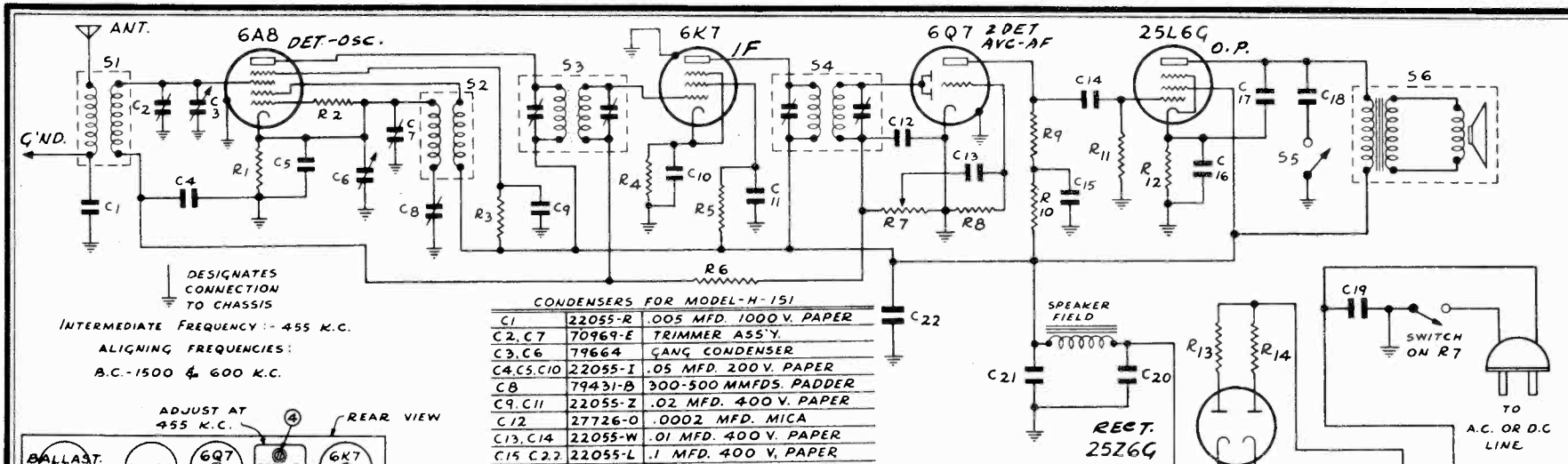
With the Band Selector Switch set on the Broadcast or Medium Wave position, connect the generator to the blue antenna wire, with the .0002 mfd. condenser. Set the generator frequency to 455 kilocycles and adjust trimmer #5 for minimum reading of the output meter. There must always be sufficient output from the Signal Generator to have a reading on the output meter to make this adjustment.

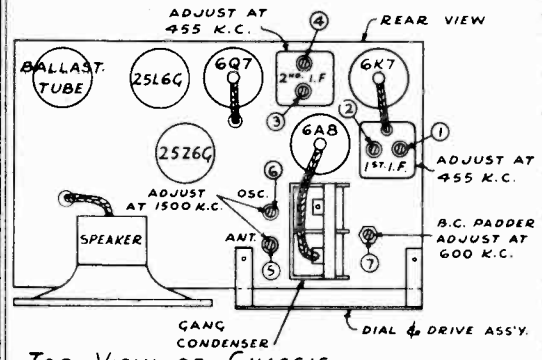
Tube	Socket Terminals 1	2	3	4	5	D.C. SOCKET VOLTAGES 6	7	8
6K8	-	-	102(130)	85(110)	-	85(110)	-	2.(2.6)
6K7	-	-	102(130)	85(110)	1.7(2.5)	-	-	1.7(2.5)
6Q7	-	-	45(53)	-	-	-	-	-
25L6-G	-	-	96(125)	102(130)	-	-	-	6.5(8.8)
25Z6-G	-	-	-	110(145)	-	-	-	110(145)

Above figures in parenthesis are for Ballast tube #81972.
Figures not in parenthesis are for ballast tube #81971.

PILOT RADIO CORP.

MODELS TH-150, H-151
Chassis H-150
Schematic, Voltage
Socket, Trimmers
Alignment





TOP VIEW OF CHASSIS

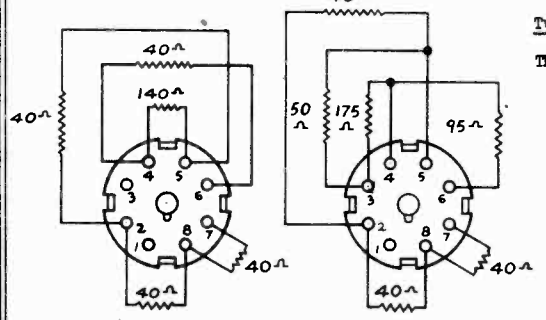
S6	40860	5" A.C.-D.C. SPEAKER-450^ FIELD
S7, S8	71282	DIAL LAMP
S9	81971	BALLAST TUBE 110/125 V.
S10	81972	BALLAST TUBE 220/240 V.
S11	81976	BALLAST TUBE 150 V.

CONDENSERS FOR MODEL-H-151

C1	22055-R	.005 MFD. 1000 V. PAPER
C2, C7	70969-E	TRIMMER ASS'Y.
C3, C6	79664	GANG CONDENSER
C4, C5, C10	22055-I	.05 MFD. 200 V. PAPER
C8	79431-B	300-500 MMFDS. PADDER
C9, C11	22055-Z	.02 MFD. 400 V. PAPER
C12	27726-0	.0002 MFD. MICA
C13, C14	22055-W	.01 MFD. 400 V. PAPER
C15, C22	22055-L	.1 MFD. 400 V. PAPER
C16	23500-B	10 MFD. 25 V. ETCH FOIL ELECT.
C17	22055-A	.01 MFD. 600 V. PAPER
C18	22055-AB	.1 MFD. 600 V. PAPER
C19	22055-C	.05 MFD. 600 V. PAPER
C20	23500-F	16 MFD. 300 V. ETCH FOIL ELECT.
C21	23500-E	30 MFD. 300 V. ETCH FOIL ELECT.

RESISTORS FOR MODEL-H-151

R1, R4	13115	400 OHMS 1/4 WATT
R2	13164	50,000 OHMS 1/4 WATT
R3	13186	25,000 OHMS 1/4 WATT
R5	13074	20,000 OHMS 1/4 WATT
R6	13001	1 MEGOHM 1/4 WATT
R7	79429	500,000 OHMS VOL. CONT. & SW.
R8	13237	15 MEGOHMS 1/2 WATT
R9	13171	250,000 OHMS 1/4 WATT
R10	13031	100,000 OHMS 1/4 WATT
R11	13024	500,000 OHMS 1/4 WATT
R12	13240	150 OHMS 1 WATT ±10% T
R13 & 14	13207	100 OHMS 1 WATT
R15	83656	20 OHMS 2 WATT FLEXIBLE



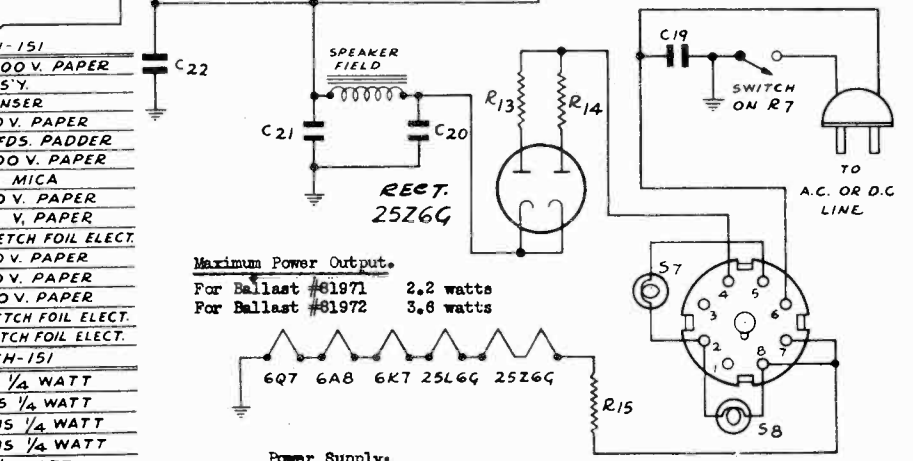
Tuning Range.

The Model H-151 Chassis has the following tuning range:

530 to 1720 kc or 566 to 174 meters

FOR CONVENTIONAL ALIGNMENT SEE SPECIAL SECTION, VOL. VIII

PILOT RADIO CORPORATION
LONG ISLAND CITY, N. Y. U. S. A.
SCHEMATIC CIRCUIT DIAGRAM
FOR MODEL-H-151
MATERIAL
SCALE
DRAWN BY B.R.
CHECKED BY
APPROVED BY
DATE 10-12-38
DRWG. NO. 25208



Maximum Power Output.

For Ballast #81971 2.2 watts
For Ballast #81972 3.6 watts

Power Supply.

Voltage	Ballast Tube Number	Watts
110 to 125 volts	#81971	45
150 volts	81976	60
220 to 240 volts	81972	100

D.C. SOCKET VOLTAGES

All voltages are those between the indicated tube terminal and the chassis, and are made with a 1000 ohm per volt voltmeter. Make measurements with no signal input to the receiver and with the volume control set at minimum volume.

Make sure that the AC or DC supply voltage is correct for the Ballast tube being used at the time of measurement.

Socket Terminals

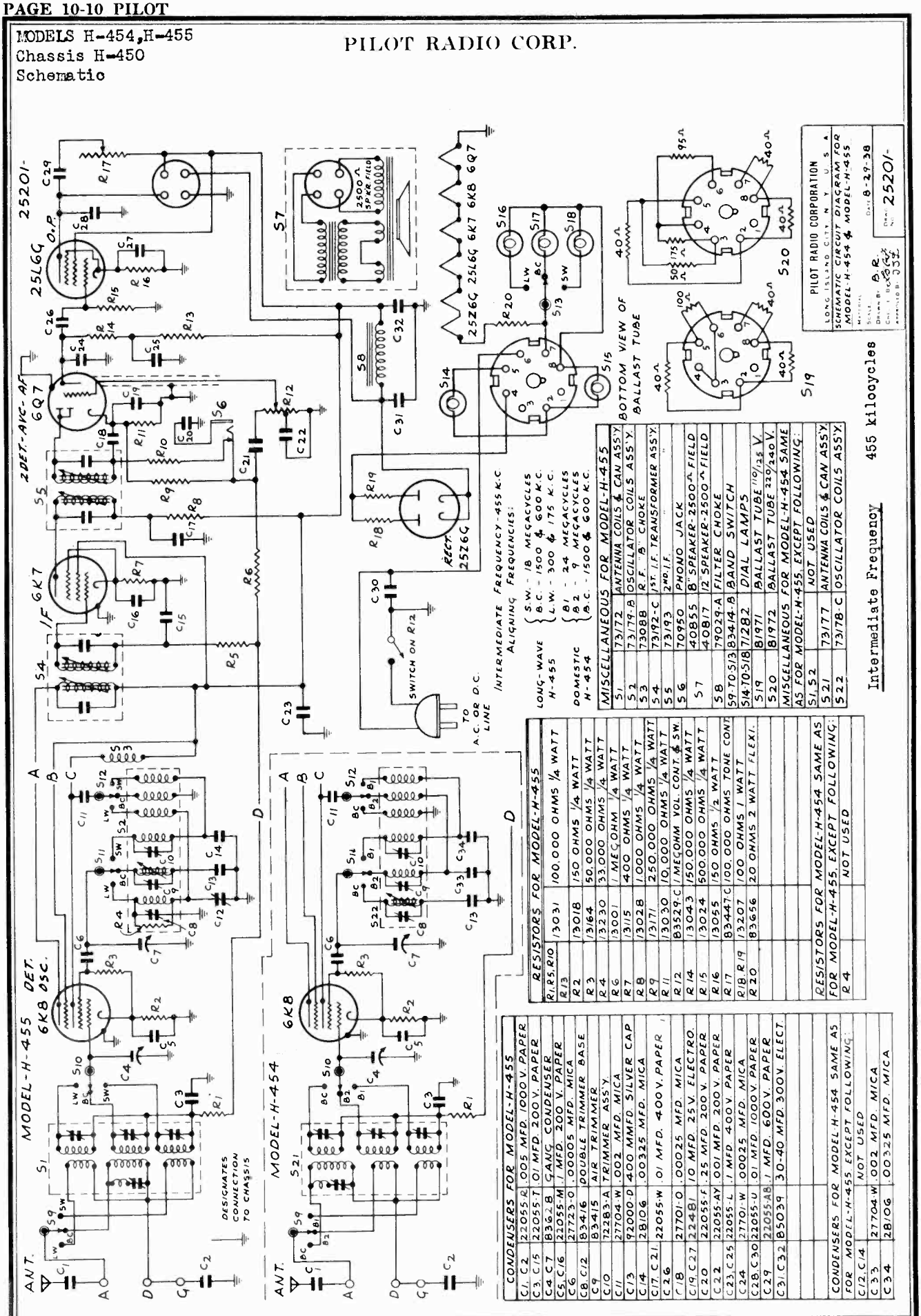
Tube	1	2	3	4	5	6	7	8
6A8	-	-	95(145)	52(87)	-	95(145)	-	1.7(2.6)
6K7	-	-	95(145)	65(110)	2.(3.1)	-	-	2(3.1)
6Q7	-	-	-	-	-	-	-	-
25L6-G	-	-	90(135)	95(145)	-	-	-	5.7(9.0)

Figures in parenthesis are for ballast tube #81971

Figures not in parenthesis are for ballast tube #81972

MODELS H-454, H-455
Chassis H-450
Schematic

PILOT RADIO CORP.



CONDENSERS FOR MODEL-H-455		
C1, C2	22055-R	.005 MFD. 1000 V. PAPER
C3, C15	22055-T	.01 MFD. 200 V. PAPER
C4, C7	83628	GANG CONDENSER
C5, C16	22055-M	.1 MFD. 200 V. PAPER
C6, C12	83416	DOUBLE TRIMMER BASE
C9	83415	AIR TRIMMER
C10	72283-A	TRIMMER ASS'Y.
C11	27704-W	.002 MFD. MICA
C13	92000-D	400 MMFD. SILVER CAP
C14	28106	.00325 MFD. MICA
C17, C21	22055-W	.01 MFD. 400 V. PAPER
C26		
C18	27701-O	.00025 MFD. MICA
C19, C27	22481	10 MFD. 25 V. ELECTRO.
C20	22055-F	.25 MFD. 200 V. PAPER
C22	22055-AY	.001 MFD. 200 V. PAPER
C23, C25	22055-L	.1 MFD. 400 V. PAPER
C24	27701-W	.00025 MFD. MICA
C28, C30	22055-U	.01 MFD. 1000 V. PAPER
C29	22055-AB	.1 MFD. 600 V. PAPER
C31, C32	85039	30-40 MFD. 300 V. ELECT.
CONDENSERS FOR MODEL H-454 SAME AS FOR MODEL-H-455 EXCEPT FOLLOWING:		
C12, C14		NOT USED
C33	27704-W	.002 MFD. MICA
C34	28106	.00325 MFD. MICA

RESISTORS FOR MODEL-H-455		
R1, R5, R10	13031	100,000 OHMS 1/4 WATT
R13		
R2	13018	150 OHMS 1/4 WATT
R3	13164	50,000 OHMS 1/4 WATT
R4	13230	33,000 OHMS 1/4 WATT
R6	13001	1 MEGOHM 1/4 WATT
R7	13115	400 OHMS 1/4 WATT
R8	13028	1000 OHMS 1/4 WATT
R9	13171	250,000 OHMS 1/4 WATT
R11	13030	10,000 OHMS 1/4 WATT
R12	83529-C	1 MEGOHM VOL. CONT. & SW.
R14	13043	150,000 OHMS 1/4 WATT
R15	13024	600,000 OHMS 1/4 WATT
R16	13055	150 OHMS 1/2 WATT
R17	83447-C	100,000 OHMS TONE CONT
R18, R19	13207	100 OHMS 1 WATT
R20	83656	20 OHMS 2 WATT FLEXI.
RESISTORS FOR MODEL-H-454 SAME AS FOR MODEL-H-455, EXCEPT FOLLOWING:		
R4		NOT USED

MISCELLANEOUS FOR MODEL-H-455		
S1	73172	ANTENNA COILS & CAN ASS'Y.
S2	73179-B	OSCILLATOR COILS ASS'Y.
S3	73088	R.F. "B" CHOKE
S4	73192-C	1ST. I.F. TRANSFORMER ASS'Y.
S5	73193	2ND I.F. "
S6	70950	PHONO JACK
S7	40855	8" SPEAKER-2500Δ FIELD
	40817	12" SPEAKER-2500Δ FIELD
S8	79029-A	FILTER CHOKE
S9-S10-S13	83414-B	BAND SWITCH
S14-S15-S18	71282	DIAL LAMPS
S19	81971	BALLAST TUBE 110/125 V.
S20	81972	BALLAST TUBE 220/240 V.
MISCELLANEOUS FOR MODEL-H-454 SAME AS FOR MODEL-H-455 EXCEPT FOLLOWING:		
S1, S2		NOT USED
S21	73177	ANTENNA COILS & CAN ASS'Y.
S22	73178-C	OSCILLATOR COILS ASS'Y.

PILOT RADIO CORP.

MODELS H-454, H-455
Chassis H-450
Socket, Trimmers
Voltage

Circuit Super-Heterodyne, with Class A output stage. Three tuning ranges as listed below. Permeability tuned IF transformers. Tone compensated volume control. Continuously variable tone control, Automatic Volume Control.

Maximum power Output

2.0 watts with 81971 ballast tube
3.4 watts with 81972 ballast tube

Power Supply

Voltage	Watts	Ballast Tube
110 to 125 volts AC-DC	50	81971
220 to 240 volts AC-DC	115	81972

D.C. SOCKET VOLTAGES

All voltages are those between the indicated tube terminal and the chassis, and are made with a 1000 ohm per volt voltmeter. Make measurements with no signal input to the receiver and with the volume control set at minimum volume.

Make sure that the AC or DC supply voltage is correct for the ballast tube being used at the time of measurement.

Numbers in parentheses indicate use of ballast tube 81972.

Socket Terminals

Tube	1	2	3	4	5	6	7	8
6K8	--	--	95(125)	95(125)	--	95(125)	--	2.3(3)
6K7	--	--	88(115)	95(125)	--	3(4)	--	3(4)
6Q7	--	--	60 (80)	--	--	--	--	1.(1.)
25L6-G	--	--	91(119)	95(125)	--	--	--	6(8.2)
25Z6-G	--	--	--	110(140)	--	--	--	110(140)

Tuning Ranges The model H 454 Chassis has the following tuning ranges:

Band 1	24.8 to 8.3 mc	or	12.09 to 36.12 meters
Band 2	9.7 to 2.9 mc	or	30.9 to 103 meters
Band 3	1725 to 530 kc	or	174 to 566 meters

The model H 455 Chassis has the following tuning ranges:

Band 1	18.8 to 5.35 mc	or	15.9 to 56.04 meters
Band 2	1725 to 530 kc	or	174 to 566 meters
Band 3	375 to 145 kc	or	800 to 2069 meters

MODELS H-454,H-455
Chassis H-450

PILOT RADIO CORP.

Alignment Procedure

IF Amplifier Alignment Turn the Band Selector Switch to Band 3 and turn the receiver dial pointer to the low frequency end.

Connect the output meter as described under "Connections", and connect the "hot" post of the signal generator to the grid of the 6K8 tube through the .1 mfd condenser. Then proceed with the alignment as follows:-

1. Adjust the signal generator frequency to 455 kilocycles, and adjust the generator output to the lowest value which will give a readable signal on the output meter.

2. Adjust the screws 1, 2, 3, and 4 (see figure), for maximum reading of the output meter. Keep reducing the output from the generator if the output meter reading increases too much.

If the output of the generator to the receiver is too great, the alignment of the receiver will not be correct, as the AVC action will become too great, and the amplifier will appear broad in tuning.

It will seldom, if ever, be found necessary to more than touch up the alignment of the IF amplifier. Of course, if the amplifier adjustment screws have been tampered with, it will probably be necessary to completely realign the amplifier. In this case, connect the generator to the grid of the IF amplifier tube, and align the last IF transformer. Always finish the alignment with the signal input to the 6K8 tube.

A cathode ray oscilloscope is not necessary in making the above adjustments. One may be used, however, if desired.

Wave Trap Alignment With the Band Selector Switch set on the Broadcast Band, replace the .1 mfd dummy antenna with the .0002 mfd dummy antenna. Set the generator frequency at 455 kc and tune trimmer #11 for minimum reading of the output meter. There must be sufficient output from the signal generator to always have a reading on the output meter; do not allow the meter to go to zero and call that the correct adjustment point.

R.F. Alignment

Band 3 (Model 455 Long-Wave) Connect the "hot" terminal of the generator to the blue wire and clip through the .0002 mfd condenser.

Set the generator frequency to 300 kc and with the Band Selector Switch set to Band 3, turn the receiver dial pointer to 300 kc. Adjust trimmer #5 for maximum reading of the output meter. Do likewise with trimmer #13. Then set the generator frequency to 175 kc and the receiver dial pointer to approximately the same. Adjust trimmer #6 for maximum reading of the output meter, while "rocking" the gang condenser carefully back and forth. Then go back and repeat the 300 kc alignment.

Band 2 (Model 455) Band 3 (Model 454) (Standard Broadcast)

Connections are the same for the alignment of this band as they are for the long-wave band.

Set the generator frequency to 1500 kc., and the receiver dial pointer to the same frequency, with the band selector switch set appropriately. Adjust trimmer #7 for maximum reading of the output meter. (This trimmer is adjusted by moving the brass rod in or out, with a hooked wire, and with a twisting motion. First loosen the lock nut). Then without touching any tuning controls adjust trimmer #12 for maximum reading of the output meter.

Next, set the generator frequency to 600 kc., and accurately set the receiver dial pointer to the 600 kc mark. Then adjust trimmer #15 for maximum reading of the output meter. Do not move the tuning control while making this adjustment. Finally return and repeat the 1500 kc adjustments and then tighten the lock nut on trimmer #7.

Band 1 (Model 455 Short-Wave)

Remove the .0002 mfd dummy antenna used in aligning the lower frequency bands and substitute the 400 ohm resistor.

Before aligning this band refer to the paragraph headed "Image Frequency".

Set the generator frequency to 18 mc and also set the receiver dial pointer to this frequency. Carefully adjust trimmer #8 for maximum reading of the output meter; be careful you do not tune in at the Image Frequency.

Then adjust trimmer #14 for maximum output meter reading, while slightly "rocking" the gang condenser. Readjust trimmer #8 if necessary to keep the calibration correct. These are the only adjustments on this band.

Band 2 (Model 454 - Short-Wave)

Connections and dummy antenna same as on Band 1 above.

Before aligning this band refer to the paragraph headed, "Image Frequency".

Set the generator and the receiver dial pointer to 9 mc. Adjust trimmer #9 for maximum reading of the output meter; be careful you do not tune in at the Image Frequency.

Then adjust trimmer #13 for maximum reading of the output meter while slightly "rocking" the gang condenser. Readjust trimmer #9 if necessary to correct the calibration.

Band 1 Alignment (Model 454 Short-Wave)

Connections and dummy antenna are the same as on Band 2 of model 554.

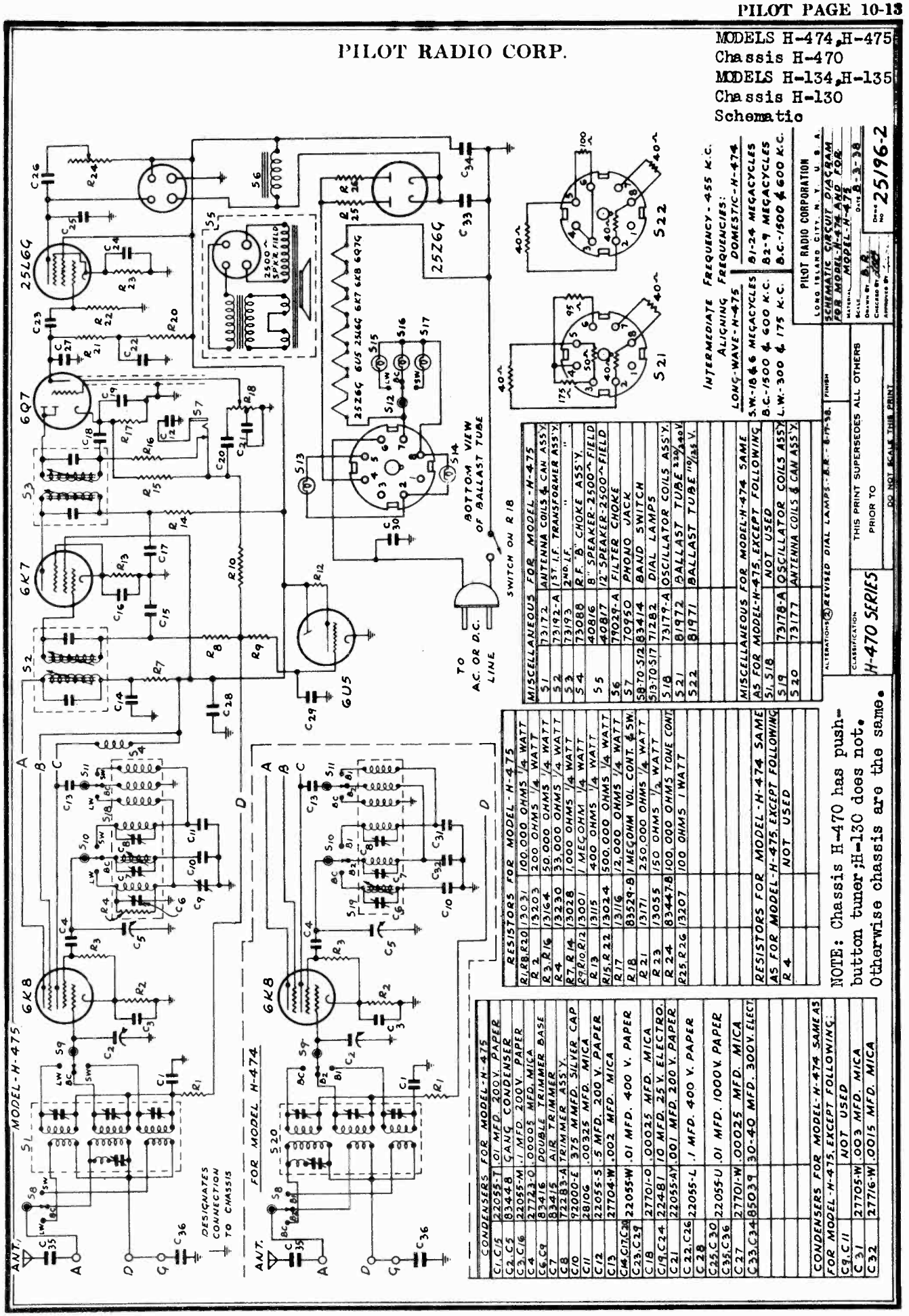
Before aligning this band, refer to the paragraph headed "Image Frequency".

Set the generator frequency to 24 mc and the receiver dial pointer to 24 mc. Adjust trimmer #10 to 24 mc for maximum reading of the output meter. Be careful that the receiver is not adjusted to the Image Frequency. Then adjust trimmer #14 while "rocking" the gang condenser, for maximum reading of the output meter. Reset trimmer #10 so that calibration is correct if necessary.

IMAGE FREQUENCY

All bands in these two models must be aligned with the oscillator frequency higher than the signal frequency. There can be no error in doing this on the long-wave and Broadcast Bands. However, on the higher frequency bands it is possible to incorrectly adjust the alignment in this respect, and end up with the receiver aligned on what should be the image frequency.

The chances of doing this may be eliminated by adjusting the generator to the correct aligning frequency, and with sufficient output from the generator to pick up two signals with the receiver, separated by twice the intermediate frequency, set the receiver dial pointer to that one which comes in at the higher frequency marking on the receiver dial pointer.



CONDENSERS FOR MODEL-H-475		
C1, C15	22055-T	.01 MFD. 200 V. PAPER
C2, C5	83448	GANG CONDENSER
C3, C16	22055-M	.1 MFD. 200 V. PAPER
C4	27723-0	.00005 MFD. MICA
C6, C9	83416	DOUBLE TRIMMER BASE
C7	83415	AIR TRIMMER
C8	T2283-A	TRIMMER ASS'Y.
C10	92000-E	375 MMFD. SILVER CAP
C11	28106	.00325 MFD. MICA
C12	22055-S	.5 MFD. 200 V. PAPER
C13	27704-W	.002 MFD. MICA
C14, C17, C28	22055-W	.01 MFD. 400 V. PAPER
C23, C29		
C18	27701-0	.00025 MFD. MICA
C19, C24	22481	10 MFD. 25 V. ELECTRO.
C21	22055-AY	.001 MFD. 200 V. PAPER
C22, C26	22055-L	.1 MFD. 400 V. PAPER
C25, C30	22055-U	.01 MFD. 1000 V. PAPER
C35, C36		
C27	27701-W	.00025 MFD. MICA
C33, C34	85039	30-40 MFD. 300 V. ELECT.
CONDENSERS FOR MODEL-H-474 SAME AS FOR MODEL-H-475, EXCEPT FOLLOWING:		
C9, C11		NOT USED
C31	27705-W	.003 MFD. MICA
C32	27716-W	.0015 MFD. MICA

RESISTORS FOR MODEL-H-475		
R1, R8, R20	13031	100,000 OHMS 1/4 WATT
R2	13203	200 OHMS 1/4 WATT
R3, R16	13164	50,000 OHMS 1/4 WATT
R4	13230	33,000 OHMS 1/4 WATT
R7, R14	13028	1,000 OHMS 1/4 WATT
R9, R10, R12	13001	1 MEGOHM 1/4 WATT
R13	13115	400 OHMS 1/4 WATT
R15, R22	13024	500,000 OHMS 1/4 WATT
R17	13116	12,000 OHMS 1/4 WATT
R18	83529-B	1 MEGOHM VOL. CONT. & SW.
R21	13171	250,000 OHMS 1/4 WATT
R23	13055	150 OHMS 1/2 WATT
R24	83447-B	100,000 OHMS TONE CONT.
R25, R26	13207	100 OHMS 1 WATT
RESISTORS FOR MODEL-H-474 SAME AS FOR MODEL-H-475, EXCEPT FOLLOWING:		
R4		NOT USED

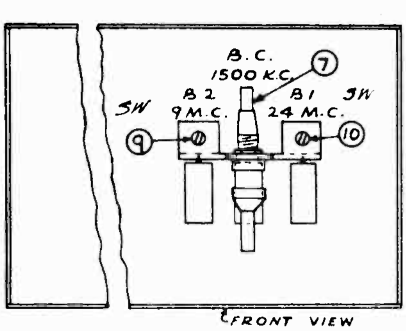
MISCELLANEOUS FOR MODEL-H-475		
S1	73172	ANTENNA COILS & CAN ASS'Y.
S2	73192-A	1ST I.F. TRANSFORMER ASS'Y.
S3	73193	2ND I.F. " "
S4	73088	R.F. & CHOKE ASS'Y.
S5	40816	8" SPEAKER-2500^ FIELD
	40817	12" SPEAKER-2500^ FIELD
S6	79029-A	FILTER CHOKE
S7	70950	PHONO JACK
S8-TO-S12	83414	BAND SWITCH
S13-TO-S17	71282	DIAL LAMPS
S18	73179-A	OSCILLATOR COILS ASS'Y.
S21	81972	BALLAST TUBE 330 V.
S22	81971	BALLAST TUBE 115 V.
MISCELLANEOUS FOR MODEL-H-474 SAME AS FOR MODEL-H-475, EXCEPT FOLLOWING:		
S1, S18		NOT USED
S19	73178-A	OSCILLATOR COILS ASS'Y.
S20	73177	ANTENNA COILS & CAN ASS'Y.

ALTERATIONS	REVISED DIAL LAMPS - B.R. - 8-19-38.	FINISH
CLASSIFICATION		

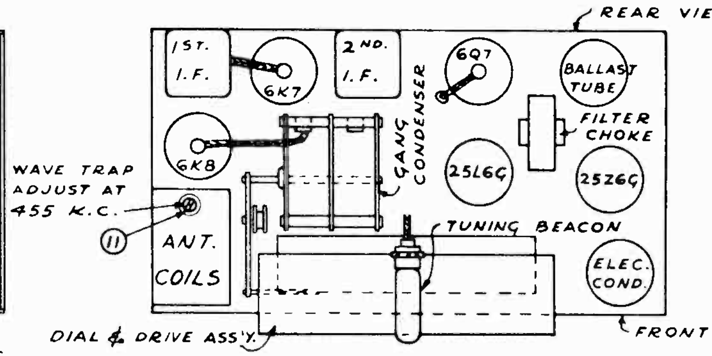
MODELS H-474, H-475
Chassis H-470
MODELS H-134, H-135
Chassis H-130

PILOT RADIO CORP.

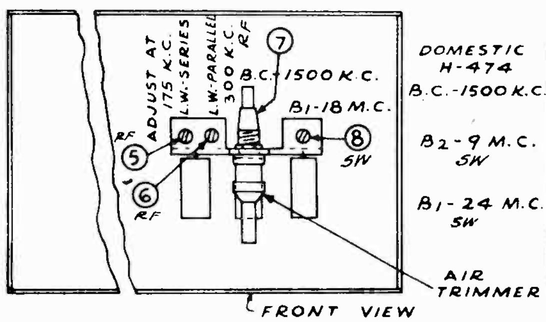
Voltage, Socket
Trimmers, Alignment



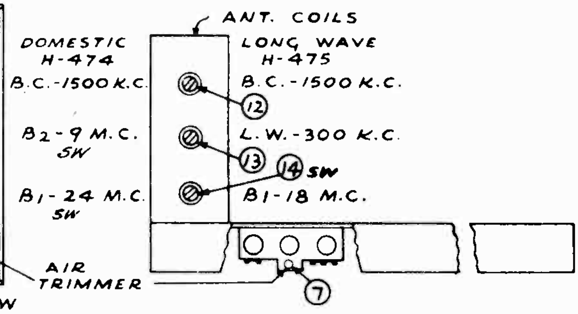
BOTTOM VIEW OF CHASSIS
DOMESTIC-H-474



TOP VIEW OF CHASSIS

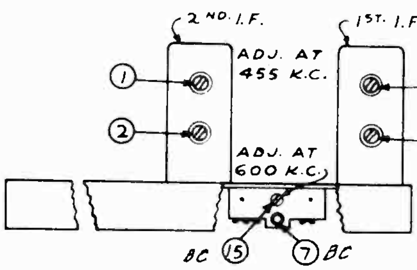


BOTTOM VIEW OF CHASSIS
LONG WAVE - H-475



FRONT VIEW OF CHASSIS

Circuit Super-Heterodyne, with Class A output stage. Three tuning ranges as listed below. Permeability tuned IF transformers. Tone compensated volume control. Continuously variable tone control. Automatic Volume Control and Cathode Ray Tuning Beacon.



REAR VIEW OF CHASSIS

D.C. SOCKET VOLTAGES

All voltages are those between the indicated tube terminal and the chassis, and are made with a 1000 ohms per volt voltmeter. Make measurements with no signal input to the receiver and with the volume control set at minimum volume.

Make sure that the A.C. supply voltage is correct for the ballast tube being used at the time of measurement.

Figures in parenthesis are for ballast tube #81972, other figures are for ballast tube #81971.

Socket Terminals

Tube	1	2	3	4	5	6	7	8
6K8	-	-	95(125)	95(125)	-	95(125)	-	2.3(3)
6K7	-	-	88(115)	95(125)	-	3(4)	-	3(4)
6Q7	-	-	60(80)	-	-	-	-	1.(1.)
25L6-G	-	-	91(119)	95(125)	-	-	-	6(8.2)
25Z6-G	-	-	-	110(140)	-	-	-	110(140)

Maximum Power Output

With #81971 Ballast Tube 2.0 watts
With #81972 Ballast Tube 3.4 watts

Power Supply A.C. or D.C.

Voltage	Ballast Tube	Watts
110-125	#81971	50
220-240	#81972	115

PILOT RADIO CORPORATION
LONG ISLAND CITY N. Y. U. S. A.
TRIMMER LAYOUT
DRAWN BY B.R. DATE 8-5-38.
DWG. No. 25197

Intermediate Frequency 455 kc.

Tuning Ranges The model H-474 chassis has the following tuning ranges:

Band 1	24.8	to	8.3 mc	or	12.09	to	36.1 meters
Band 2	9.7	to	2.9 mc	or	30.9	to	103.4 meters
Band 3	1725	to	530 kc	or	174	to	566 meters

The model H-475 chassis has the following tuning ranges:

Band 1	18.8	to	5.35 mc	or	15.95	to	56.04 meters
Band 2	1725	to	530 kc	or	174	to	566 meters
Band 3	375	to	145 kc	or	800	to	2068 meters

PILOTUBES Required

One 6K8 1st detector-oscillator
One 6K7 IF amplifier
One 6Q7 2nd detector-AVC-1st audio ampl
One 25L6-G Output tube
One 25Z6-G Power supply rectifier
One 6U5 Cathode ray tuning beacon

MODELS H-134, H-135
Chassis H-130
Alignment Procedure

PILOT RADIO CORP.

MODELS H-474, H-475
Chassis H-470

Alignment Connections

Connect the Black and Yellow wires together and to the ground post of the signal generator.

Connect the "hot" post of the generator through the correct dummy antenna or condenser to the appropriate point as noted hereafter. In all the measurements to follow, the output meter should be connected to the plate and screen grid terminals of the 25L6-G through .1 mfd. condensers in any convenient manner.

IF Amplifier Alignment — Turn the Band Selector Switch to Band 3 and turn the ROTOR dial to the low frequency end. Connect the output meter as described under "Connections", and connect the "hot" post of the signal generator to the grid of the 6K8 tube through the .1 mfd. condenser. Then proceed with the alignment as follows:-

1. Adjust the Signal Generator frequency to 455 kilocycles, and adjust the generator output to the lowest value which will give a readable signal on the output meter.

2. Adjust the screws 1, 2, 3, and 4, (see figure) for maximum reading of the output meter. Keep reducing the output from the generator if the output meter reading increases too much.

If the output of the generator to the receiver is too great, the alignment of the receiver will not be correct, as the AVC action will become too great, and the amplifier will appear broad in tuning.

It will seldom, if ever, be found necessary to more than touch up the alignment of the IF amplifier. Of course, if the amplifier adjustment screws have been tampered with, it will probably be necessary to completely realign the amplifier. In this case, connect the generator to the grid of the IF amplifier tube, and align the last IF transformer. Always finish the alignment with the signal input to the 6K8 tube.

A cathode ray oscilloscope is not necessary in making the above adjustments. One may be used, however, if desired.

Wave Trap Alignment — With the Band Selector Switch set on the Broadcast Band, replace the .1 mfd. dummy antenna with the .0002 mfd. dummy antenna. Set the generator frequency at 455 kc. and tune trimmer #11 for minimum reading of the output meter. There must be sufficient output from the signal generator to always have a reading on the output meter. Do not allow the meter to go to zero and call that the correct adjustment point.

R.F. Alignment

Band 3 (Model H-475 - Long-Wave) — Connect the "hot" terminal of the generator to the blue wire and clip through the .0002 mfd. condenser.

Set the generator frequency to 300 kc., and with the Band Selector Switch set to Band 3, turn the ROTOR dial to 300 kc. Adjust trimmer #6 for maximum reading of the output meter. Do likewise with trimmer #13. Then set the generator frequency to 175 kc., and the ROTOR dial to approximately the same. Adjust trimmer #5 for maximum reading of the output meter, while "rocking" the gang condenser carefully back and forth. Then go back and repeat the 300 kc. alignment.

Band 2 (Model H-475) Band 3 (Model H-474) (Standard Broadcast)

Connections are the same for the alignment of this band as they are for the Long-Wave Band.

Set the generator frequency to 1500 kc., and the ROTOR dial to the same frequency, with the Band Selector Switch set appropriately. Adjust trimmer #7 for maximum reading of the output meter. (This trimmer is adjusted by moving the brass rod in or out, with a hooked wire, and with a twisting motion. First loosen the lock nut). Then without touching any tuning controls adjust trimmer #12 for maximum reading of the output meter.

Next, set the generator frequency to 600 kc. and accurately set the ROTOR dial to the 600 kc. mark. Then adjust trimmer #15 for maximum reading of the output meter. Do not move the tuning control while making this adjustment. Finally, return and repeat the 1500 kc. adjustments and then tighten the lock nut on trimmer #7.

Band 1 (Model H-475 - Short-Wave)

Remove the .0002 mfd. dummy antenna used in aligning the lower frequency bands and substitute the 400 ohm resistor.

Before aligning this band refer to the paragraph headed "Image Frequency".

Set the generator frequency to 18 mc. and also set the ROTOR dial to this frequency. Carefully adjust trimmer #8 for maximum reading of the output meter. Be careful you do not tune in at the Image Frequency.

Then adjust trimmer #14 for maximum output meter reading, while slightly "rocking" the gang condenser. Readjust trimmer #8 if necessary to keep the calibration correct. These are the only adjustments on this band.

Band 2 (Model H-474 - Short-Wave)

Connections and dummy antenna same as on Band 1 above.

Before aligning this band refer to the paragraph headed "Image Frequency".

Set the generator and the ROTOR dial to 9 mc. Adjust trimmer #9 for maximum reading of the output meter. Be careful you do not tune in at the Image Frequency.

Then adjust trimmer #13 for maximum output meter reading, while slightly "rocking" the gang condenser. Readjust trimmer #9 if necessary to correct the calibration.

Band 1 (Model H-474 - Short-Wave)

Connections and dummy antenna are the same as on Band 1 above.

Before aligning this band, refer to the paragraph headed "Image Frequency".

Set the generator frequency to 24 mc. and the ROTOR dial to 24 mc. Adjust trimmer #10 to 24 mc. for maximum reading of the output meter. Be careful that the receiver is not adjusted to the Image Frequency. Then adjust trimmer #14, while "rocking" the gang condenser for maximum reading of the output meter. Reset trimmer #10 so that calibration is correct if necessary.

Image Frequency

All bands in these two models must be aligned with the oscillator frequency higher than the signal frequency. There can be no error in doing this on the Long-Wave and Broadcast Bands. However, on the higher frequency bands it is possible to incorrectly adjust the alignment in this respect, and end up with the receiver aligned on what should be the Image Frequency.

The chances of doing this may be eliminated by adjusting the generator to the correct aligning frequency, and with sufficient output from the generator, to pick up two signals with the receiver, separated by twice the Intermediate Frequency, set the ROTOR dial to that one which comes in at the higher frequency marking on the ROTOR dial.

Miscellaneous Service Notes

If a howling noise (sometimes referred to as Microphonic howl) is heard, it is very probably because the four red screws under the cabinet have not been removed along with the two narrow metal strips between the chassis and the bottom of the cabinet. These strips and screws are only intended as additional bracing during shipment and must be removed before the receiver is put in operation.

The howl can also be caused by a defective tube, or when some part of the receiver which is rigidly fastened to the chassis rubs against the cabinet. The remedy is obvious.

In replacing or resetting the ROTOR dial, always set the gang condenser at maximum capacity.

To reset the dial, loosen the set screws in the ROTOR dial pinion gear. Then, adjust the dial so that the low frequency end of the calibration line, at the base of the arrow tip, is directly under the indicator wire. Then, tighten the pinion gear set screws.

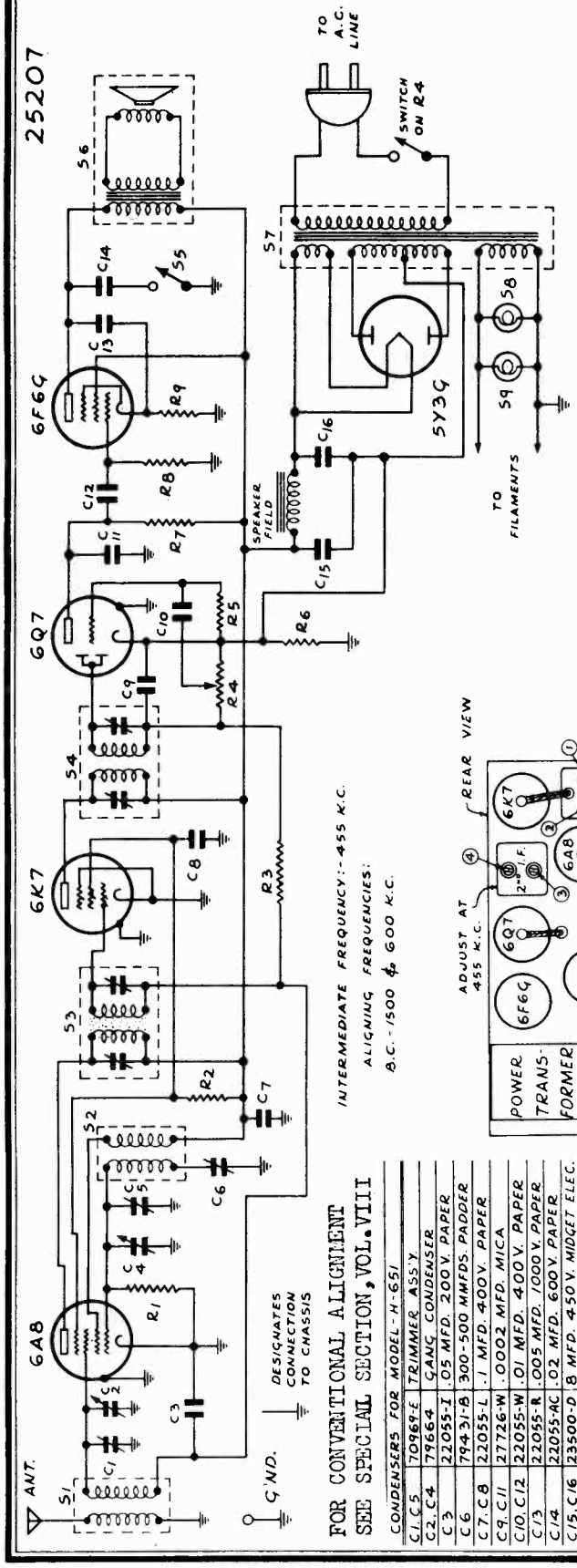
If it should be necessary to remove the ROTOR dial, first remove the top plate which carries the Tuning Beacon Clamp. Next, remove the bearing plates which hold the dial shaft in place, and lift out the whole dial assembly.

In replacing the dial, be sure to compress the "back lash" springs in the double gear approximately 1/16 of an inch.

Never loosen the set screws which connect the link motion to the gang condenser. If this should be done, the calibration of the receiver will be affected.

MODELS TH-650, H-651
Chassis H-650
Schematic, Voltage, Socket
Trimmers, Alignment

PILOT RADIO CORP.



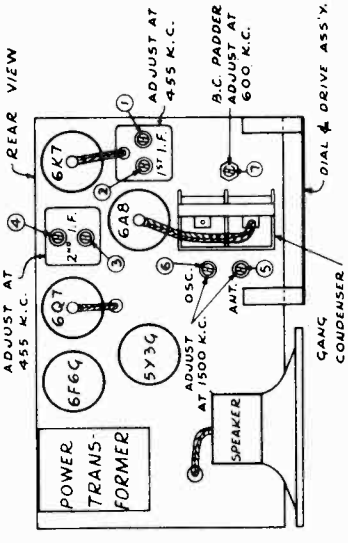
FOR CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION, VOL. VIII

CONDENSERS FOR MODEL - H-651		
C1.C5	70969-E	TRIMMER ASS'Y.
C2.C4	79664	GANG CONDENSER
C3	22055-I	.05 MFD. 200 V. PAPER
C6	79431-B	300-500 MMFDS. PADDER
C7.C8	22055-L	.1 MFD. 400 V. PAPER
C9.C11	27726-W	.0002 MFD. MICA
C10.C12	22055-W	.01 MFD. 400 V. PAPER
C13	22055-R	.005 MFD. 1000 V. PAPER
C14	22055-AC	.02 MFD. 600 V. PAPER
C15.C16	23500-D	8 MFD. 450 V. MIDGET ELEC.

RESISTORS FOR MODEL - H-651		
R1	13164	50,000 OHMS 1/4 WATT
R2	13068	30,000 OHMS 1/2 WATT
R3.R5	13001	1 MEGOHM 1/4 WATT
R4	79429	500,000 OHMS VOL. CONT. & SW
R6	13080	50 OHMS 1/4 WATT
R7	13171	250,000 OHMS 1/4 WATT
R8	13024	500,000 OHMS 1/4 WATT
R9	13238	400 OHMS 1/2 WATT

MISCELLANEOUS FOR MODEL - H-651		
S1	73115-B	ANTENNA COIL ASS'Y.
S2	73200	OSCILLATOR COIL ASS'Y.
S3	73108-B	1ST I.F. TRANSFORMER ASS'Y
S4	73103	2ND I.F. "
S5	71657	TONE CONTROL
S6	40854	5" A.C. SPEAKER 2000 Ω FIELD
S7	79428-R	PWR. TRANSFOR. 117 V.-60 CY.
	79428-AB	" " " 220 V.-60 CY.
	79428-EA	" " " 115-230 V.-60 CY.
	79428-L	" " " 150 V.-60 CY.
S8.S9	78889	DIAL LAMP

Make sure that the A.C. supply voltage is correct for the transformer tap being used at the time of measurement.



TOP VIEW OF CHASSIS

D.C. SOCKET VOLTAGES

All voltages are those between the indicated tube terminal and the chassis, and are made with a 1000 ohm per volt voltmeter. Make measurements with no signal input to the receiver and with the volume control set at minimum volume.

Tube	Socket Terminals							
	1	2	3	4	5	6	7	8
6A8	-	-	185	70	-	185	-	-
6K7	-	-	185	70	-	-	-	-
6Q7	-	-	-	-	-	-	-2	-
6F6-G	-	-	170	185	-	-	11.5	-
5Y3-G	-	-	-	-	-	-	270	-

Maximum Power Output 2 watts

Tuning Range

The Model H-651 Chassis has the following tuning range:

530 to 1720 kc or 566 to 174 meters

Power Supply Voltage	Frequency	Watts
110 to 125 volts	60	50
150 volts	60	50
220 to 240 volts	60	50
110 to 125 or 220 to 240 volts	60	50

TUBES Required

One 6A8	1st detector-oscillator
One 6K7	IF amplifier
One 6Q7	2nd detector-AVC-1st audio amplifier
One 6F6-G	output tube
One 5Y3-G	power supply rectifier

Total 5 tubes

GENERAL SPECIFICATIONS.

Circuit Super-Heterodyne, with Class A output stage. Tuning range as listed below. Continuously variable tone control and automatic volume control.

PILOT RADIO CORPORATION
LONG ISLAND CITY, N. Y. U. S. A.
SCHEMATIC CIRCUIT DIAGRAM
FOR MODEL H-651
Material
Scale
Drawn B. R. Date 10-7-38
Checked
Approved
Dwg. No. 25207

PILOT RADIO CORP.

MODELS H-484, H-485
Chassis H-480
MODELS H-384, H-385
Chassis H-380
Schematic, Voltage

CONDENSERS FOR MODEL H-484		
C1	27737-0	10 MMFDS. MICA
C4, C7	22055-1	.05 MFD. 200 V. PAPER
C5, C14	83542	3 GANG CONDENSER
C6, C8, C9, C16	22055-M	.1 MFD. 200 V. PAPER + 10%
C13	28115	15 MMFDS. MICA + 10%
C17, C18	22055-P	.05 MFD. 400 V. PAPER
C19, C3	83415	30 MMFDS. AIR TRIMMER
C11	27704	.002 MFD. MICA
C12	27723-0	50 MMFDS. MICA
C15, C23	22055-2	.02 MFD. 400 V. PAPER
C18, C22	22055-L	.1 MFD. 400 V. PAPER
C19	27726	.0002 MFD. MICA
C20	22055-W	.01 MFD. 400 V. PAPER
C21	22055-AT	.001 MFD. 200 V. PAPER
C27	22055-AB	.1 MFD. 600 V. PAPER
C24, C25	22481	10 MFD. 25 V. ELECTRO.
C26	22055-A	.01 MFD. 600 V. PAPER
C28	22055-S	.5 MFD. 200 V. PAPER
C29, C30	85042	30-30 MFD. 300 V. ELECT.
C31	22055-U	.01 MFD. 1000 V. PAPER
C32, C33	22055-R	.005 MFD. 1000 V. PAPER
C34	91000-C	450 MMFD. SILVER CAP.
C35	27732	.0016 MFD. MICA
C36	28023-W	.0038 MFD. MICA
C42	22055-T	.01 MFD. 200 V. PAPER

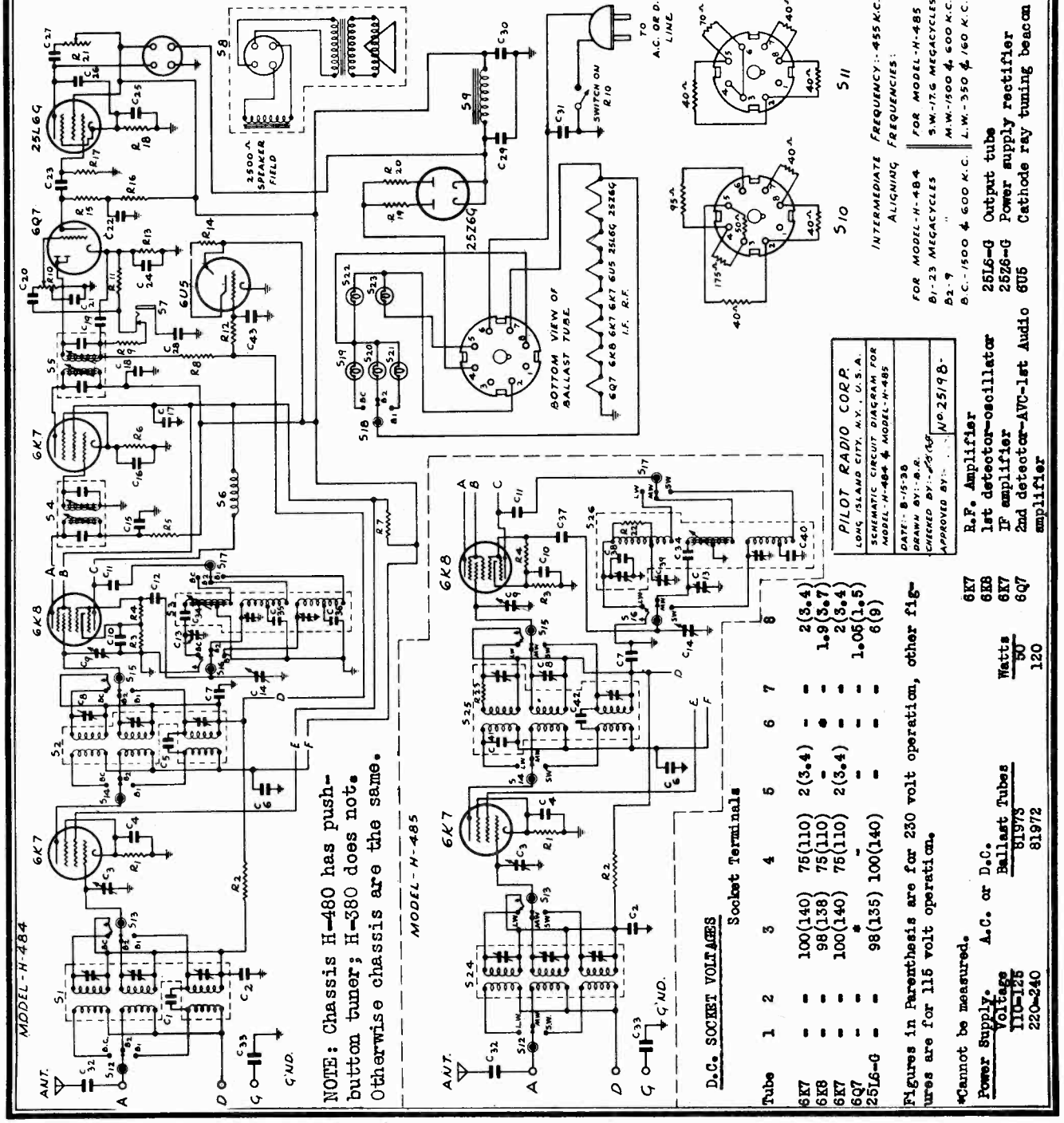
CONDENSERS FOR MODEL H-485 SAME AS FOR MODEL H-484 EXCEPT FOLLOWING:		
C1, C5, C12	NOT USED	
C37	30016-0	10-0 MMFDS. MICA
C38	27736	35 MMFDS. MICA
C39	83542-A	130 MMFDS. PADDER
C40	28108	.00325 MFD. MICA
C41	27701-0	.00025 MFD. MICA
C42	27737-0	10 MMFDS. MICA

RESISTORS FOR MODEL H-484		
R1, R6	13115	400 OHMS 1/4 WATT
R2, R16	13031	100,000 OHMS 1/4 WATT
R3	13003	300 OHMS 1/4 WATT
R4, R9	13164	50,000 OHMS 1/4 WATT
R5	13028	1,000 OHMS 1/4 WATT
R7	13086	2,000 OHMS 1/4 WATT
R8	13001	1 MEGOHM 1/4 WATT
R10	83524-A	1 MEGOHM VOL. CONT. & SW
R11	13171	250,000 OHMS 1/4 WATT
R12	13007	2 MEGOHMS 1/4 WATT
R13	13030	10,000 OHMS 1/4 WATT
R14, R17	13024	500,000 OHMS 1/4 WATT
R15	13043	150,000 OHMS 1/4 WATT
R18, R20	13235	150 OHMS 1 WATT ±5%
R19, R20	13207	100 OHMS 1 WATT
R21	83447-A	100,000 OHMS TONE CONT

RESISTORS FOR MODEL H-485 SAME AS FOR MODEL H-484 EXCEPT FOLLOWING:		
R22	13148	30,000 OHMS 1/4 WATT
R23	13039	350 OHMS 1/4 WATT

MISCELLANEOUS FOR MODEL H-484		
S1	73205	ANTENNA COILS & CAM ASS'Y.
S2	73207	R.F. " "
S3	73209	OSCILLATOR " "
S4	73192-B	I.F. TRANSFORMER ASS'Y.
S5	73193	2nd I.F. " "
S6	73088	R.F. "B" CHOKE ASS'Y.
S7	70950	PHONO JACK
S8	40816	8" SPEAKER 2500Ω FIELD
	40817	12" SPEAKER 2500Ω FIELD
S9	9029-A	FILTER CHOKE
S10	81972	BALLAST TUBE 115 V.
S11	81973	BALLAST TUBE 115 V.
S12 TO S18	83438	BAND SWITCH
S19 TO S23	71282	PILOT LIGHTS

MISCELLANEOUS FOR MODEL H-485 SAME AS FOR MODEL H-484 EXCEPT FOLLOWING:		
S1, S3, S3	NOT USED	
S24	73204	ANTENNA COILS & CAM ASS'Y.
S25	73206	R.F. " "
S26	73208	OSCILLATOR " "



D.C. SOCKET VOLTAGES

Socket Terminals

Tube	1	2	3	4	5	6	7	8
6K7	-	-	100(140)	75(110)	2(3.4)	-	-	2(3.4)
6K8	-	-	98(138)	75(110)	-	-	-	1.9(3.7)
6K7	-	-	100(140)	75(110)	2(3.4)	-	-	2(3.4)
6Q7	-	-	*	-	-	-	-	1.05(1.5)
25L6-G	-	-	98(135)	100(140)	-	-	-	6(9)

Figures in Parenthesis are for 230 volt operation, other figures are for 115 volt operation.

*Cannot be measured.

Power Supply Voltage	A.C. or D.C.	Ballast Tubes	Watts
110-125	A.C.	81973	50
220-240	A.C.	81972	120

6K7	R.F. Amplifier
6K8	1st detector-oscillator
6K7	IF amplifier
6Q7	2nd detector-AVC-1st Audio amplifier
25L6-G	Output tube
25Z6-G	Power supply rectifier
6U5	Cathode ray tuning beacon

MODELS H-484, H-485
Chassis H-480
MODELS H-384, H-385
Chassis H-380

PILOT RADIO CORP.

Socket, Trimmers
Alignment

IF Amplifier Alignment. Turn the Band Selector Switch to Band 3 and turn the ROTOR dial to the low frequency end.

Connect the output meter as described under "Connections", and connect the "hot" post of the signal generator to the grid of the 6K8 tube through the .1 mfd. condenser. Then proceed with the alignment as follows:

1. Adjust the signal generator frequency to 455 kilocycles, and adjust the generator output to the lowest value which will give a readable signal on the output meter.

2. Adjust the screws 1, 2, 3, and 4 (see figure), for maximum reading of the output meter. Keep reducing the output from the generator if the output meter reading increases too much.

R.F. ALIGNMENT

Band 3 (Model H-485, Long-Wave) Connect the "hot" terminal of the generator to the blue wire and clip through the .0002 mfd. condenser.

Set the generator frequency to 300 kc., and with the Band Selector Switch set to band 3, turn the ROTOR dial to 300 kc. Adjust trimmer #5 for maximum reading of the output meter. Do likewise with trimmer #6 and #7. Then set the generator frequency to 160 kc. and the ROTOR dial to approximately the same. Adjust trimmer #21 for maximum reading of the output meter, while "rocking" the gang condenser carefully back and forth. Then go back and repeat the 300 kc. alignment.

Band 2 (Model H-485) Band 3 (Model H-484) (Standard Broadcast)

Connections are the same for the alignment of this band as they are for the Long-Wave Band.

Set the generator frequency to 1500 kc., and the ROTOR dial to the same frequency, with the Band Selector Switch set appropriately. Adjust trimmer #8 for maximum reading of the output meter. (This trimmer is adjusted by moving the brass rod in or out, with a hooked wire, and with a twisting motion. First loosen the lock nut). Then without touching any tuning controls adjust trimmers #9 and #10 for maximum reading of the output meter.

Next, set the generator frequency to 600 kc. and accurately set the ROTOR dial to the 600 kc. mark. Then adjust trimmer #11 for maximum reading of the output meter. Do not move the tuning control while making this adjustment. Finally return and repeat the 1500 kc. adjustments and then tighten the lock nut on trimmers #8 and #9.

Band 1 (Model H-485 Short-Wave)

Remove the .0002 mfd. dummy antenna used in aligning the lower frequency bands and substitute the 400 ohm resistor.

Before aligning this band refer to the paragraph headed "Image Frequency" (SEE MODEL H-151)

Set the generator frequency to 17.5 kc. and also set the ROTOR dial to this frequency. Carefully adjust trimmer #12 for maximum reading of the output meter. Be careful you do not tune in at the image frequency.

Then adjust trimmers #13 and #14 for maximum output meter reading, while slightly "rocking" the gang condenser. Readjust trimmer #12 if necessary to keep the calibration correct. These are the only adjustments on this band.

Band 2 (Model H-484 Short-Wave)

Connections and dummy antenna same as on Band 1 above.

Before aligning this band refer to the paragraph headed "Image Frequency".

Set the generator, and the ROTOR Dial to 9 mc. Adjust trimmer #15 for maximum reading of the output meter. Be careful you do not tune in at the Image Frequency.

Then adjust trimmers #16 and #17 for maximum reading of the output meter, while slightly "rocking" the gang condenser. Readjust trimmer #15 if necessary to correct the calibration.

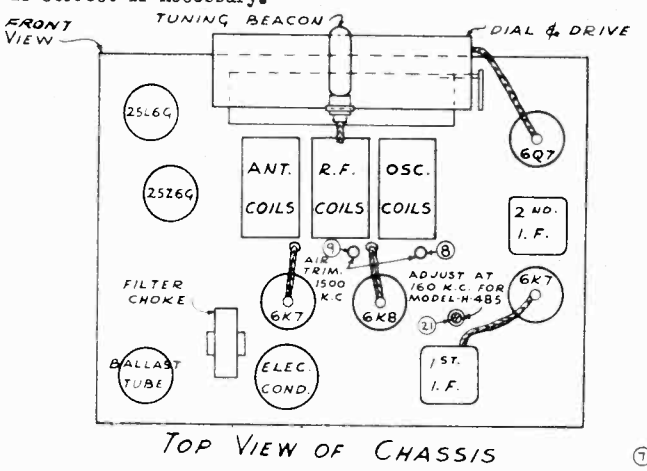
Band 1 (Model H-484 Short-Wave)

Connections and dummy antenna are the same as on Band 1 above

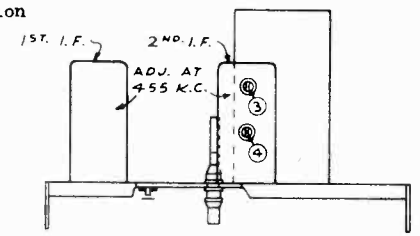
Before aligning this band, refer to the paragraph headed "Image Frequency".

Set the generator frequency to 23 mc. and the ROTOR dial to 23 mc. Adjust trimmer #18 to 23 mc. for maximum reading of the output meter. Be careful that the receiver is not adjusted to the Image Frequency. Then adjust trimmers #19 and #20 while "rocking" the gang condenser, for maximum reading of the output meter. Reset trimmer #18 so that calibration is correct if necessary.

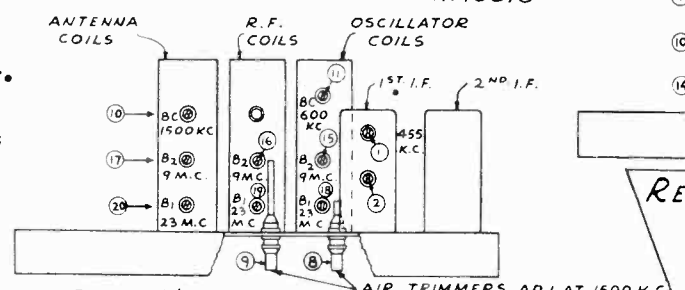
PILOT RADIO CORPORATION
LONG ISLAND CITY N. Y. U. S. A.
TRIMMER LAYOUT
MATERIAL
SCALE
DRAWN BY B.R. DATE 8-17-38
CHECKED BY
APPROVED BY
DRWG NO 25199



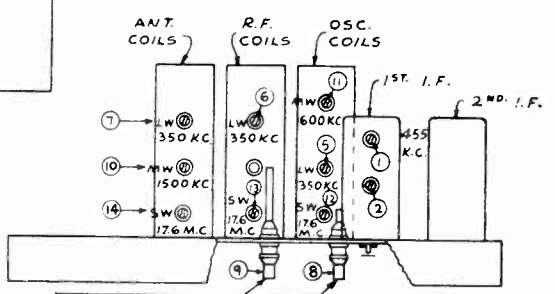
TOP VIEW OF CHASSIS



RIGHT SIDE OF CHASSIS



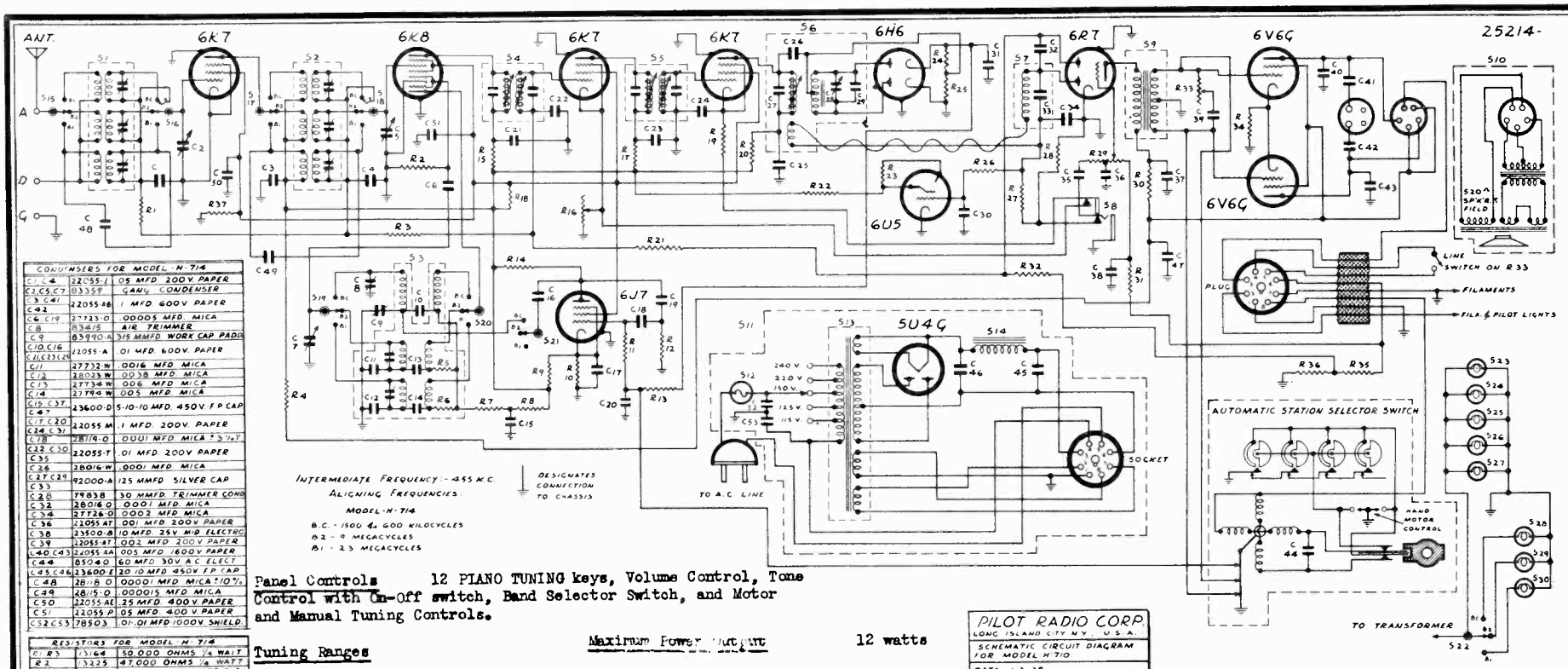
REAR VIEW OF CHASSIS (MODEL-H-484)



REAR VIEW OF CHASSIS (MODEL-H-485)

PILOT RADIO CORP.

MODEL H-710 Schematic Voltage



CONDENSERS FOR MODEL-H-714		
C1-C4	22055-J	.05 MFD. 200V. PAPER
C3,C5,C7	83337	GANG CONDENSER
C3 C41	22055 AB	.1 MFD. 600V PAPER
C42		
C6 C19	27723-0	.00005 MFD. MICA
C8	83615	AIR TRIMMER
C9	83990-A	318 MMFD. WORK CAP PADD
C10,C16	22055-A	.01 MFD. 600V. PAPER
C11,C23,C29		
C11	27732-W	.0016 MFD. MICA
C12	28023-W	.0038 MFD. MICA
C13	27734-W	.006 MFD. MICA
C14	27790-W	.005 MFD. MICA
C15, C37	23600-D	5-10-10 MFD. 450V. F.P. CAP
C47		
C17,C20	22055 M	.1 MFD. 200V. PAPER
C24, C31		
C18	28174-0	.0001 MFD. MICA ± 5 %
C22, C30	22055-T	.01 MFD. 200V PAPER
C35		
C26	28016-W	.0001 MFD. MICA
C27 C29	92000-A	125 MMFD. SILVER CAP.
C33		
C28	19838	30 MMFD. TRIMMER COND
C32	28016-0	.0001 MFD. MICA
C34	27726-0	.0002 MFD. MICA
C36	22055 AT	.001 MFD. 200V PAPER
C38	23500-A	10 MFD. 25V. MID ELECTRO
C39	22055-BT	.002 MFD. 200 V. PAPER
C40 C43	22055 AA	.005 MFD. 1600V PAPER
C44	85040	60 MFD. 30V A.C. ELECT
C45 C46	23600-E	20-10 MFD. 450V F.P. CAP
C48	28118-0	.00001 MFD. MICA ± 10%
C49	28115-0	.000015 MFD. MICA
C50	22055 AE	.25 MFD. 400 V. PAPER
C51	22055-P	.05 MFD. 400 V PAPER
C52 C53	78503	.01-.01 MFD. 1000V. SHIELD

RESISTORS FOR MODEL-H-714		
R1 R3	13164	50,000 OHMS ½ WATT
R2	13235	47,000 OHMS ½ WATT
R4	83656-D	500 OHMS 2 WATT FLEX.
R5 R6,R7	13030	10,000 OHMS ½ WATT
R8	13092	30 000 OHMS 1 WATT
R9	13236	20,000 OHMS 2 WATT
R10,R12	13227	6.0 OHMS ½ WATT
R11,R26	13217	470 000 OHMS ½ WATT ± 10%
R13	13223	3.3 MEGOHMS ½ WATT
R14	13232	15,000 OHMS ½ WATT
R15 R17 R20	13028	1000 OHMS ½ WATT
R16	83870	1500 OHMS SENSITIV CONT
R19	13243	1500 OHMS ½ WATT ± 10%
R21,R23 R32	13001	1 MEGOHM ½ WATT
R22	13200	75,000 OHMS ½ WATT
R24,R25	13231	410 000 OHMS ½ WATT ± 5%
R27	13031	100,000 OHMS ½ WATT
R28	13181	200,000 OHMS ½ WATT
R29	83364	1 MEGOHM VOL. CONT.
R30	13013	10,000 OHMS ½ WATT
R31	13171	250,000 OHMS ½ WATT
R33	83871	750 000 OHMS TONE CONTROL & SWITCH
R34	83656-E	190 OHMS 2 WATT FLEX.
R35	13242	40 OHMS 1 WATT ± 10%
R36	13188	23 OHMS 1 WATT
R37	13053	10,000 OHMS 1 WATT
R18	83656-F	8,000 OHMS 4 WATT FLEX.

MISCELLANEOUS FOR MODEL-H-714		
S1	73245	ANTENNA COIL & CAN ASS'Y
S2	73247	DETECTOR
S3	73249	OSCILLATOR
S4, S5	73166	1ST & 2ND I.F. TRANSFOR ASS'Y
S6	73167	DISCRIMINATOR TRANSFOR ASS'Y
S7	73168	AUDIO DET. AVC COUP COIL ASS'Y
S8	83873	PHONO JACK
S9	83877	PUSH-PULL INPUT TRANSFORMER ASS'Y
S10	40865	10" SPEAKER 520^ FIELD
	40866	12" SPEAKER 520^ FIELD
S11	83859	POWER SUPPLY ASS'Y
S12	70053	3 AMP FUSE
S13	83890	PWR TRANSFO 50-60CY 117-V
	83891	PWR TRANSFO 50-60CY UNIV
S14	83880	FILTER CHOKE 100^ 30
S15 TO S22	83866	BAND SWITCH
S23 TO S30	78881	DIAL LIGHTS

Panel Controls 12 PIANO TUNING keys, Volume Control, Tone Control with On-Off switch, Band Selector Switch, and Motor and Manual Tuning Controls.

Tuning Ranges

Band 1	25.3 - 8.92	mc	or	11.85 - 33.65 meters
Band 2	9.88 - 2.97	mc	or	30.3 - 100.8 meters
Band 3	1730 - 526	kc	or	173.4 - 570.3 meters

Maximum Power Output 12 watts

PILOT RADIO CORP.
LONG ISLAND CITY N.Y. U.S.A.
SCHEMATIC CIRCUIT DIAGRAM FOR MODEL H 710
DATE 1-3-39
DRAWN BY R.R.
CHECKED BY G.J.
APPROVED BY
H-710 SERIES
Nº 25214-

D.C. SOCKET VOLTAGES

Tubes	Socket Terminals 1	2	3	4	5	6	7	8
6K7 RF	-	-	240	92	0	-	-	0
6K8	-	-	232	92	0	-	-	0
6J7	-	-	225	92	4.5	-	-	4.5
6K7 IF	-	-	230	92	0	-	-	0
6K7 IF	-	-	232	92	5	-	-	5
6H6	-	-	0	0	0	-	-	0
6R7	-	-	200	-	-	-	-	0
6V6-G	-	-	252	260	0	-	-	15
5U4-G	-	345	-	-	-	-	-	345

Power Supply

Voltage	Frequency	Watts
117.5	60 cycles	90
115, 125, 150, 220, 240*	60 cycles	90

Universal Transformer

* (Not supplied in the United States).

6K7	R.F. Amplifier
6K8	1st Detector-Oscillator
6J7	Oscillator Frequency Control
6K7	IF Amplifiers
6H6	Discriminator
6R7	2nd Detector-AVC-1st Audio Amplifier
6V6-G	Output Tubes
5U4-G	Power Supply Rectifier
6U5	Cathode Ray Tuning Beacon

Circuit Super-Heterodyne, with push-pull output stage, and with Automatic Frequency Control of the oscillator on the Standard Broadcast Band. An R.F. stage is used on all bands. Iron Core, Permeability Tuned IF and Discriminator Transformers, which use, in addition, Silver-Mica Condensers.

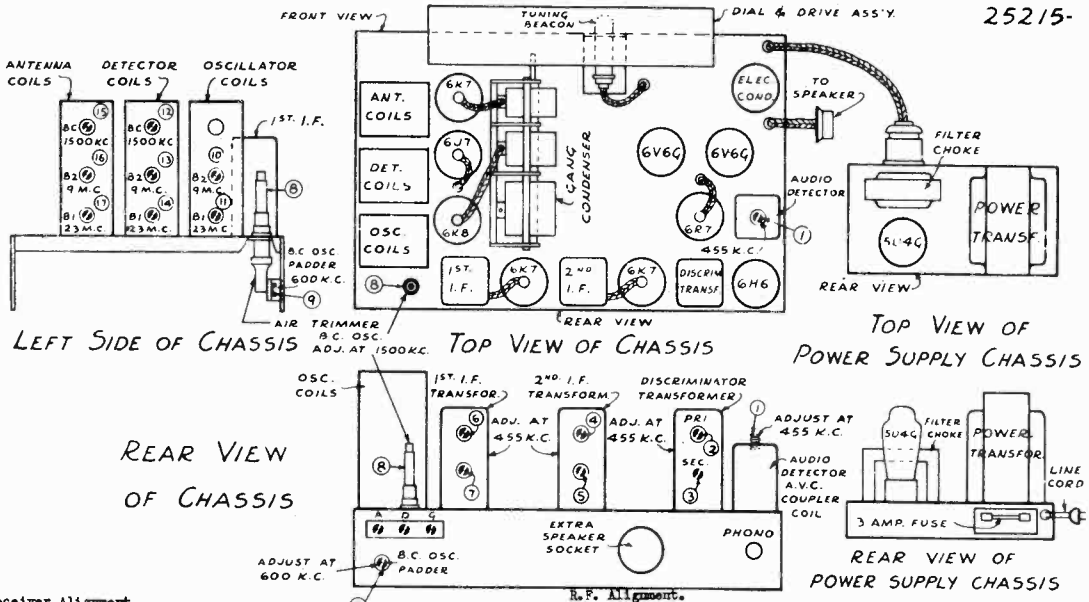
Other features of the Receiver are:-

Continuously variable Tone Control, Tone Compensated Volume Control, Visible Indicators on all controls, Motor operated PILOT TUNING on the Broadcast Band. Manual Tuning is instantly available without extra switching. Motor Tuning, without the keys is also available on all bands. These receivers are supplied with a fuse in the power supply circuit, and a jack is provided for plugging in a high impedance phonograph pick-up. There is also provision for an external speaker.

MODEL H-710
Socket, Trimmers
Alignment

PILOT RADIO CORP.

25215-



Receiver Alignment

1. Signal Generator. One using fundamental frequencies for all the frequencies used in the receiver is preferred.

2. Output meter. Generally a copper-oxide rectifier meter is the most convenient.

3. Dummy Antennas. .1 mfd. condenser
.0002 mfd. mica condenser
400 ohm non-inductive resistor

IF Amplifier Alignment.

Turn the Band Selector Switch to Band 3 and turn the ROTOR dial to the low frequency end.

Connect the output meter as described under "Connections", and connect the "hot" post of the generator to the grid of the 6K8 tube through the .1 mfd. condenser. See that none of the PIANO KEYS is down. Then proceed with the alignment as follows:-

1. Adjust the Signal Generator frequency to 455 kilocycles, and adjust the generator output to the lowest value which will give a readable signal on the output meter.

2. Adjust the screws 1, 2, 4, 5, 6, and 7, (see figure) for maximum reading of the output meter. Keep reducing the output from the generator if the output meter reading increases too much.

If the output of the generator to the receiver is too great, the alignment of the receiver will not be correct, as the AVC action will become too great, and the amplifier will appear broad in tuning.

It will seldom, if ever, be found necessary to more than touch up the alignment of the IF amplifier. Of course, if the amplifier adjustment screws have been tampered with, it will probably be necessary to completely realign the amplifier. In this case, connect the generator to the grid of the last IF amplifier tube, and then to the first IF amplifier tube, while aligning the transformers following these tubes. Always finish the alignment with the signal input to the 6K8 tube and, with this connection, readjust all screws in the IF amplifier, except the discriminator trimmer #3.

A cathode ray oscilloscope is not necessary in making the above adjustments. One may be used, however, if desired.

If the receiver is placed in a noisy location when the above adjustments are being made, it may be convenient to reduce the sensitivity of the amplifier by means of the sensitivity control.

Discriminator Alignment

CAUTION: The discriminator compensator #3 has been accurately adjusted during manufacture. It will probably never need adjustment, even when tubes are replaced, and for these reasons should never be touched unless there is no doubt about its being out of adjustment, in which case, the following procedure should be followed carefully. The adjustment is quite critical and cannot be done correctly in a hasty manner.

1. Set compensator (3) at the minimum position. This is the setting when the screw slot is vertical and when the red half of the adjusting screw is at the left.

2. Tune the IF amplifier to 455 kc as described under "IF Amplifier Alignment".

3. With the signal generator connected to the grid of the 6K8 tube and with the output of the generator at a low value, note the reading of the output meter. Then very carefully turn compensator (3) until the output meter reading reaches a minimum value. That is the correct setting of this compensator.

It will be necessary to use a screw driver made from some insulating material in making this adjustment. If a metal tool is used, the adjustment will not be correct.

If the adjustment is not correctly made, the oscillator control tube will not function properly. It may even detune the oscillator instead of tuning it.

R.F. Alignment.

Band 3 (Standard Broadcast)

Connect the "hot" terminal of the generator to the post marked "A" on the rear of the chassis through the .0002 mfd. condenser.

Set the generator frequency to 1500 kc., and the ROTOR dial to the same frequency, with the Band Selector Switch set to Band 3. Adjust trimmer #8 for maximum reading of the output meter. (This trimmer is adjusted by drawing the brass rod up or pushing it down with a hooked wire, and with a twisting motion. First loosen the lock nut). Then, without touching the tuning controls, adjust trimmer #12 and trimmer #15 for maximum reading of the output meter.

Next, set the generator frequency to 600 kc., and the ROTOR dial to approximately the same. Adjust trimmer #9 for maximum output reading while "rocking" the gang condenser. Then go back and repeat the 1500 kc. adjustment, and tightsn the lock nut on trimmer #8.

Band 2 (Short-Wave) Remove the .0002 mfd. dummy antenna used in aligning Band 3 and substitute the 400 ohm resistor.

Before aligning this band refer to the paragraph headed "Image Frequency".

Set the generator frequency to 9,000 kc. (9 mc.) and also set the ROTOR dial to this frequency. Carefully adjust the oscillator trimmer #10 for maximum reading of the output meter. Be very careful that this trimmer is not set on the Image Frequency.

After the oscillator is set, trimmers #13 and #16 are adjusted for greatest reading of the output meter, resetting trimmer #10 if necessary to keep the calibration correct.

The adjustments on this band are more critical than the similar ones on the lower frequency bands and must be more carefully made.

The above adjustments, at the high frequency end of the band, are the only ones to be made on this band.

Band 1 (Short-Wave) Connections and dummy antenna are the same as on Band 2.

Set the generator, and the ROTOR dial to 25 mc. Adjust trimmer #11 for maximum reading of the output meter, when the lower frequency peak of the two which can be located coincides with the 25 mc. calibration point on the dial. Then adjust trimmers #14 and #17 while "rocking" the gang condenser, until the maximum reading is obtained on the output meter, resetting trimmer #11 if necessary to keep the calibration correct.

These are the only adjustments on this band.

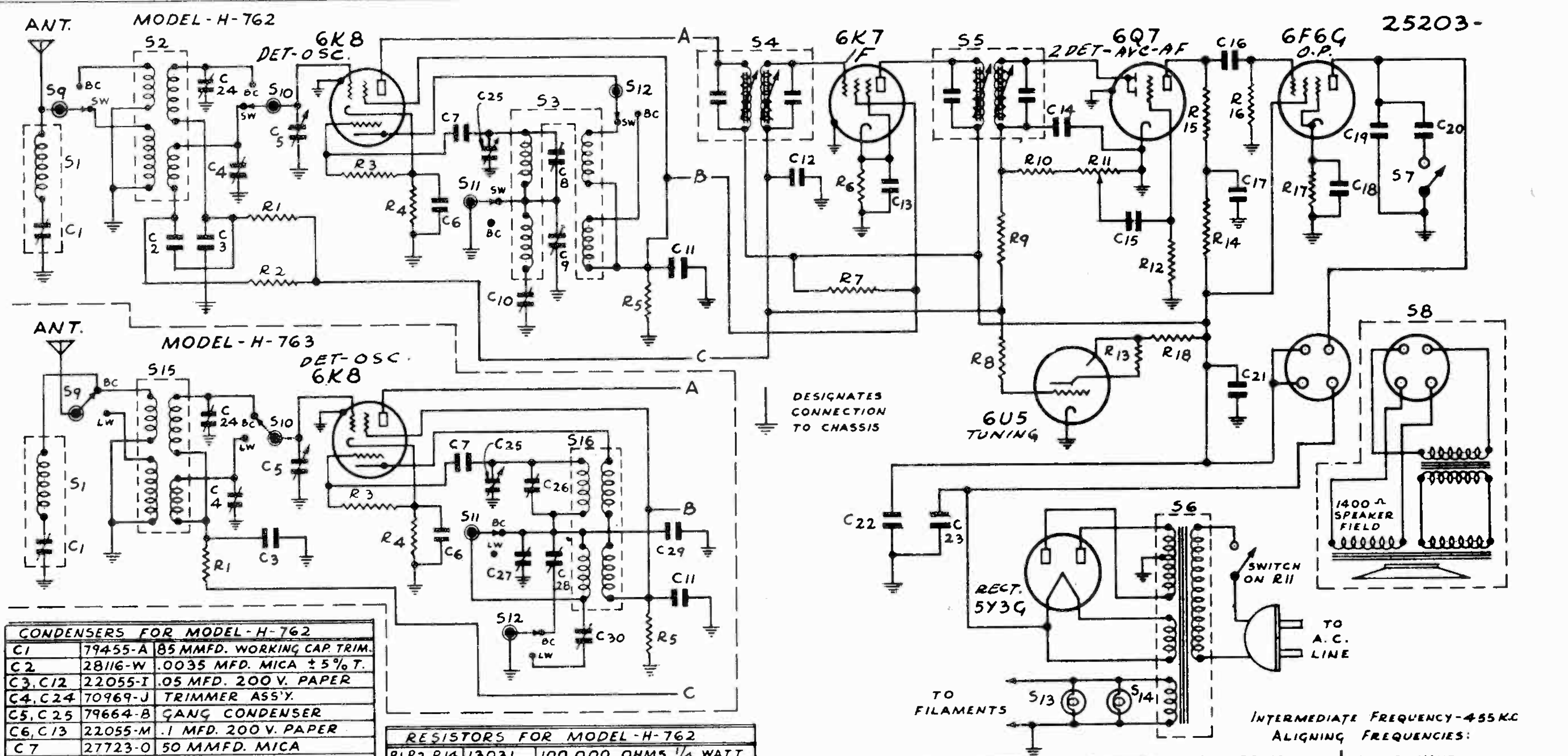
Image Frequency

All bands in this receiver, except Band 1 must be aligned with the oscillator frequency higher than the signal frequency. There can be no error in doing this on Band 3. However, on the two high frequency bands it is possible to incorrectly adjust the alignment in this respect, and end up with the receiver aligned on what should be the Image Frequency.

The chances of doing this may be eliminated by adjusting the generator to the correct aligning frequency, and with sufficient output from the generator to pick up two signals with the receiver, separated by twice the Intermediate Frequency, set the dial on Band 2 to that one which comes in at the higher frequency marking on the ROTOR dial. That is, on Band 2 the two frequencies which will be picked up when the generator is set at 9 mc., will be at 9 mc. and at 8 mc. on the ROTOR dial. Adjust the oscillator trimmer so that the 9 mc. frequency one coincides with 9 mc. on the dial. Exactly the reverse is true on Band 1.

PILOT RADIO CORP.

MODELS H-762, H-763
Chassis H-760
Schematic



INTERMEDIATE FREQUENCY - 455 K.C.
ALIGNING FREQUENCIES:

DOMESTIC H-762	LONG-WAVE H-763
B.C.-1500 & 600 K.C.	B.C.-1500 & 600 K.C.
S.W.-17 MEGACYCLES	L.W.-375 & 150 K.C.

CONDENSERS FOR MODEL-H-762		
C1	79455-A	85 MMFD. WORKING CAP. TRIM.
C2	28116-W	.0035 MFD. MICA ± 5% T.
C3, C12	22055-I	.05 MFD. 200 V. PAPER
C4, C24	70969-J	TRIMMER ASS'Y.
C5, C25	79664-B	GANG CONDENSER
C6, C13	22055-M	.1 MFD. 200 V. PAPER
C7	27723-O	50 MMFD. MICA
C8, C9	70969-J	TRIMMER ASS'Y.
C10	79431-B	300-500 MMFDS. PADDER
C11	22055-P	.05 MFD. 400 V. PAPER
C14	27726-O	.0002 MFD. MICA
C15	22055-AU	.005 MFD. 400 V. PAPER
C16	22055-AC	.02 MFD. 600 V. PAPER
C17, C21	22055-AB	.1 MFD. 600 V. PAPER
C18	22481	10 MFD. 25 V. ELECTRO.
C19	22055-R	.005 MFD. 1000 V. PAPER
C20	22055-AD	.02 MFD. 1000 V. PAPER
C22	23500-C	16 MFD. 450 V. ELECTRO.
C23	23500-D	8 MFD. 450 V. ELECTRO.

CONDENSERS FOR MODEL-H-763 SAME AS FOR MODEL-H-762, EXCEPT FOLLOWING:		
C2, C8		NOT USED
C9, C10		NOT USED
C26, C27	70969-E	TRIMMER ASS'Y.
C28	72355-C	250-500 MMFDS. PADDER
C30	72355-C	30-150 MMFDS. PADDER
C29	28101-O	.000015 MFD. MICA

RESISTORS FOR MODEL-H-762		
R1, R2, R14	13031	100,000 OHMS 1/4 WATT
R3, R5, R10	13164	50,000 OHMS 1/4 WATT
R4	13003	300 OHMS 1/4 WATT
R6	13115	400 OHMS 1/4 WATT
R7	13239	12,000 OHMS 2 WATT
R8	13007	2 MEGOHMS 1/4 WATT
R9	13001	1 MEGOHM 1/4 WATT
R11	79429	1/2 MEGOHM VOL. CONT. & SW.
R12	13237	15 MEGOHMS 1/2 WATT
R13, R16	13024	500,000 OHMS 1/4 WATT
R15	13171	250,000 OHMS 1/4 WATT
R17	13108	410 OHMS 1 WATT
R18	13074	20,000 OHMS 1/4 WATT

RESISTORS FOR MODEL-H-763 SAME AS FOR MODEL-H-762, EXCEPT FOLLOWING:		
R2		NOT USED

MISCELLANEOUS FOR MODEL-H-762		
S1	73119	WAVE TRAP ASS'Y.
S2	73224	ANTENNA COIL ASS'Y.
S3	73228	OSCILLATOR COIL ASS'Y.
S4	73192-C	1ST. I.F. TRANSFORMER ASS'Y.
S5	73193	2ND. I.F. "
S6	83412-R	P'WR. TRANSFORMER-117V.-50-60 CY.
	83412-AB	" " 230V.-50-60 CY.
	83412-FB	" " 115-230V.-50-60 CY.
	83412-L	" " 150V.-50-60 CY.
	83697	" " UNIVE.-50-60 CY.
S7	72049	TONE CONTROL SWITCH
S8	40851	6" A.C. SPEAKER-1400 Ω FIELD
S9 TO S12	79454	BAND SWITCH
S13, S14	78889	DIAL LAMP

MISCELLANEOUS FOR MODEL-H-763 SAME AS FOR MODEL-H-762, EXCEPT FOLLOWING:		
S2, S3		NOT USED
S15	73225	ANTENNA COIL ASS'Y.
S16	73226	OSCILLATOR COIL ASS'Y.

SCHEMATIC CIRCUIT DIAGRAM FOR MODEL-H-762 & MODEL-H-763
MATERIAL
SCALE
DATE 9-9-38
DRAWN BY B.R.
CHECKED BY G.J.
APPROVED BY J.S.L.
DRWG. No. 25203

Power Supply Voltage	Watts	Frequency
110-125 volts AC	60	60
150 volts AC	60	60
220-240 volts AC	60	60
110-125 or 220-240 Volts AC	60	60
Universal primary (115,125,150,220,240)	60	60

Maximum Power Output 4.7 watts

Intermediate Frequency 455 kilocycles

MODELS H-762,H-763
Chassis H-760

PILOT RADIO CORP.

Voltage,Socket,Trimmers Alignment

D.C. SOCKET VOLTAGES

Tube	Socket Terminals 1	2	3	4	5	6	7	8
6K8	-	-	240	95	-	95	-	2.8
6K7	-	-	240	95	3.3	-	-	3.3
6Q7	-	-	*105	-	-	-	-	1.4
6F6-G	-	-	225	245	-	-	-	16.
5Y3-G	-	-	-	-	-	-	340	340
6U5	Voltages at the prongs of this tube cannot be measured, however, if the tube is removed from the socket, the voltages on the various terminals may be measured. As all these measured voltages would be measured through a high resistance, except the Cathode which is grounded, none of them are noted here.							

* Not true value, but as measured with voltmeter.

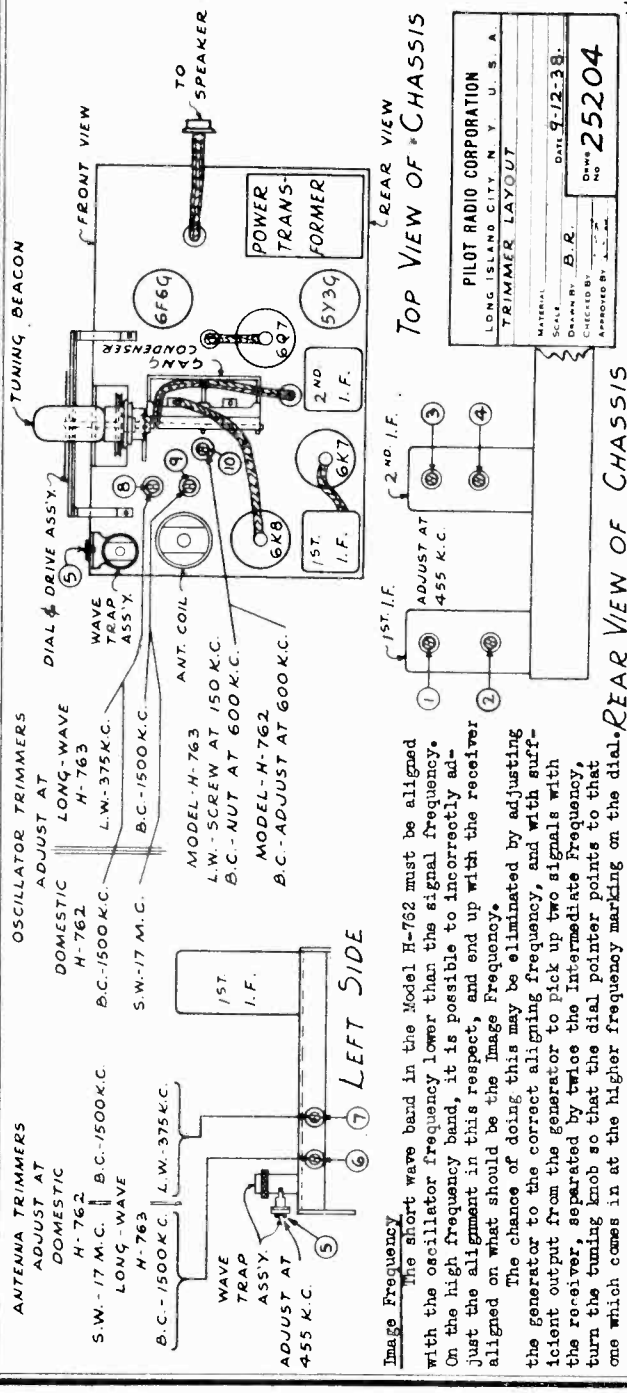


Image Frequency

The short wave band in the Model H-762 must be aligned with the oscillator frequency lower than the signal frequency. On the high frequency band, it is possible to incorrectly adjust the alignment in this respect, and end up with the receiver aligned on what should be the Image Frequency.

The chance of doing this may be eliminated by adjusting the generator to the correct aligning frequency, and with sufficient output from the generator to pick up two signals with the receiver, separated by twice the Intermediate Frequency, turn the tuning knob so that the dial pointer points to that one which comes in at the higher frequency marking on the dial.

IF Amplifier Alignment

Turn the Band Selector Switch to the Broadcast, or Medium Wave Band, and tune the gang condenser to the low frequency end of the dial. That is the condenser plates completely enmeshed.

Connect the output meter as described under "Connections" and connect the "hot" post of the signal generator to the grid of the 6K8 tube through the .1 mfd condenser. Then proceed with the alignment as follows:

1. Adjust the signal generator frequency to 455 kilocycles, and adjust the generator output to the lowest value which will give a readable signal on the output meter.

2. Adjust the trimmer screws 1, 2, 3, and 4, (see Figure for maximum reading of the output meter. Keep reducing the generator output as the output meter reading increases. When the reading of the output meter cannot be increased by adjusting the four screws of the IF transformers, the IF amplifier is aligned.

If the output of the generator is too great, while aligning the receivers, the alignment will be incorrect. It is very important that this be kept in mind.

It will seldom, if ever, be found necessary to more than touch up the alignment of the IF amplifier. Of course, if the amplifier adjustment screws have been tampered with, it will probably be necessary to completely realign the amplifier. In this case, connect the generator to the grid of the IF amplifier tube, and then align the last IF amplifier transformer. Always finish the alignment of the IF amplifier with the signal input to the grid of the 6K8 tube.

A cathode ray oscilloscope is not necessary in making the above adjustments. One may be used, however, if desired.

Wave Trap Alignment

With the Band Selector Switch set on the Broadcast, or Medium Wave, position connect the generator to the blue antenna wire with the .0002 mfd. condenser. Set the generator frequency to 455 kilocycles and adjust trimmer #5 for minimum reading of the output meter. There must always be sufficient output from the signal generator to have a reading on the output meter to make this adjustment.

R.F. ALIGNMENT

Long Wave Band (Model H-763). Connect the "hot" terminal of the generator to the blue antenna wire through the .0002 mfd. condenser.

Set the generator frequency to 375 kilocycles and with the Band Selector Switch set to the Long Wave Band turn the pointer of the receiver to 375 kilocycles. Adjust trimmer #8 for maximum reading of the output meter. Do likewise with trimmer #7. Then set the generator frequency to 150 kilocycles and the receiver dial pointer to approximately the same frequency. Adjust the screw of trimmer #10 for maximum reading of the output meter, while "rocking" the gang condenser carefully back and forth. Then go back and repeat the 375 kilocycle alignment.

Broadcast, or Medium Wave, Band (Models H-763 & H-762) Connections are the same for the alignment of this band as they are for the Long Wave Band.

Set the generator frequency to 1500 kilocycles, and the receiver dial pointer to the same frequency, with the Band Selector Switch set appropriately. Adjust trimmer #9 of Model H-763, or trimmer #8 of Model H-762 for maximum reading of the output meter. Also adjust trimmer #6 of Model H-763, or trimmer #7 of Model H-762 for maximum reading of the output meter. Next, set the generator frequency to 600 kilocycles. Then with the receiver dial pointer set at approximately the same frequency, adjust trimmer #10 for maximum reading of the output meter while carefully "rocking" the gang condenser. Finally return and repeat the 1500 kilocycle adjustment.

Short Wave Band (Model H-762)

When aligning this band connect the "hot" terminal of the signal generator to the blue antenna wire of the receiver through the 400 ohm resistor.

Before aligning this band, refer to the paragraph headed "Image Frequency".

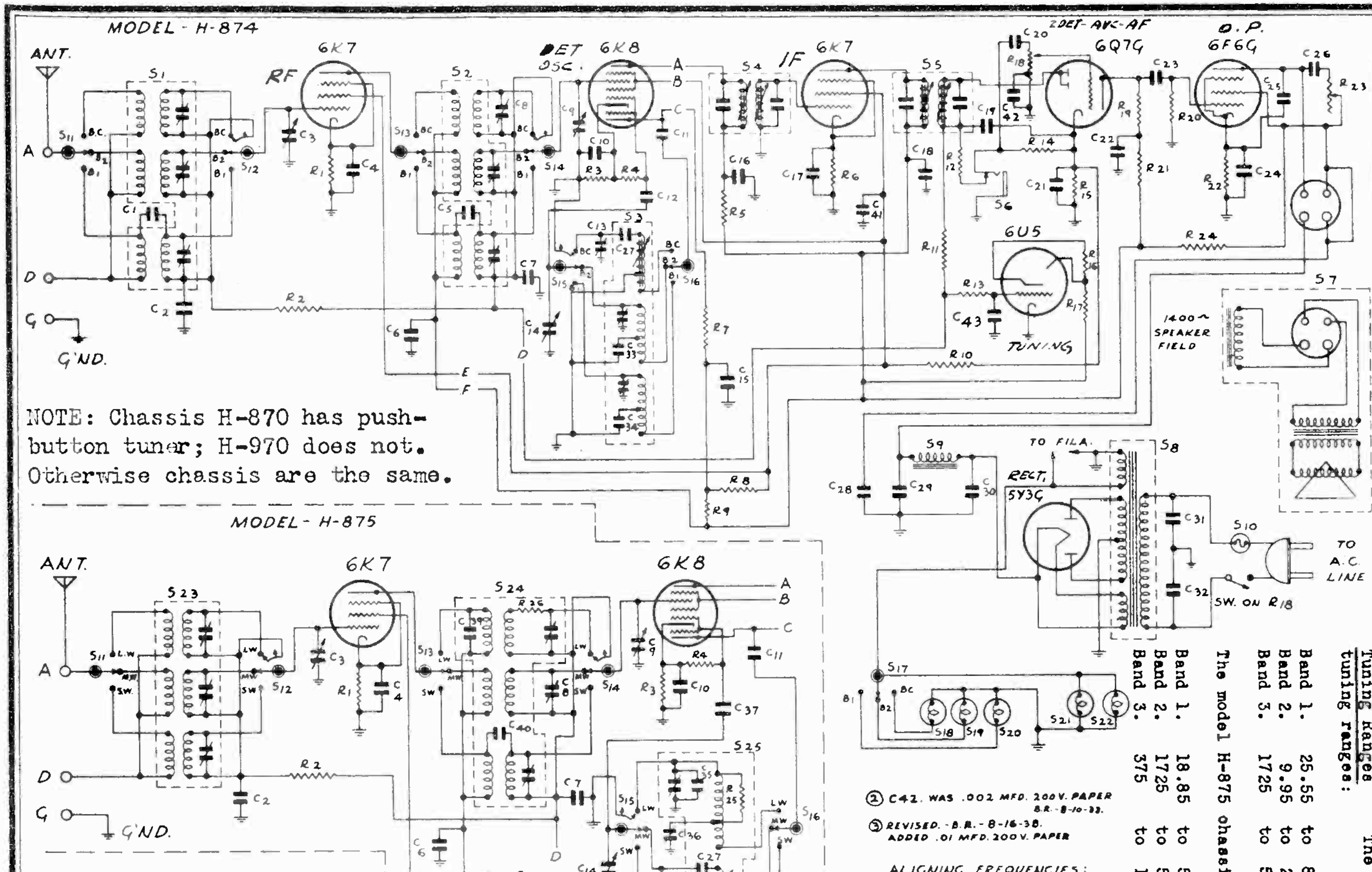
Set the generator frequency to 17 mc., and also the receiver to this frequency, as marked on the dial. Carefully adjust trimmer #9 for maximum reading of the output meter. Be careful you do not adjust to the Image Frequency.

Then adjust trimmer #6 for maximum output meter reading, while slightly "rocking" the gang condenser.

Adjust trimmer #9, if necessary, to keep the calibration correct.

MODELS H-874, H-875
Chassis H-870
MODELS H-974, H-975
Chassis H-970
Schematic, Voltage

PILOT RADIO CORP.



NOTE: Chassis H-870 has push-button tuner; H-970 does not. Otherwise chassis are the same.

CONDENSERS FOR MODEL H-874		
C1	27737-0	10 MMFDS. MICA
C2, C7	22055-I	.05 MFD. 200 V. PAPER
C3, C9, C14	83542	3 GANG CONDENSER
C4, C10, C17	22055-M	.1 MFD. 200 V. PAPER
C5	28115	15 MMFDS. MICA
C6, C18, C26	22055-C	.05 MFD 600 V. PAPER
C8, C13	83415	20 MMFDS. AIR TRIMMER
C11	27704	.002 MMFDS. MICA
C12	27723-0	50 MMFDS. MICA
C15, C28	85038	4-8 MFD. 450 V. ELECTRO.
C16, C23	22055-AC	.02 MFD. - 600V PAPER
C19	27726	.0002 MFD. MICA
C20	22055-W	.01 MFD. 400 V. PAPER
C21, C24	22481	10 MFD. 25 V. ELECTRO.
C22	22055-AB	.1 MFD. 600 V. PAPER
C25	22055-R	.005 MFD. 1000 V. PAPER
C27	92000-C	450 MMFD. SILVER CAP
C29, C30	71045-A	8-8 MFD. 475 V. ELECTRO.
C31, C32	78503	.01-.01 - 1000 V. PAPER
C33	27732	.0016 MFD. MICA
C34	28023-W	.0038 MFD MICA
C41	22055-P	.05 MFD. 400 V. PAPER
C42	22055-AY	.001 MFD. 200 V. PAPER
C43	22055-T	.01 MFD. 200 V. PAPER

CONDENSERS FOR MODEL H-875 SAME AS FOR MODEL H-874 EXCEPT FOLLOWING		
C1, C5, C12		NOT USED
C35	27736	25 MMFDS. MICA
C36	83394-B	150 MMFDS. - PADDER
C38	28106	.00325 MFD. MICA
C39	27701-0	.00025 MFD. MICA
C40	27737-0	10 MMFDS. MICA
C37	28016-0	100 MMFDS. MICA

RESISTORS FOR MODEL - H-874		
R1, R6, R15	13115	400 OHMS 1/4 WATT
R2, R21	13031	100,000 OHMS 1/4 WATT
R3	13003	300 OHMS 1/4 WATT
R4, R12	13164	50,000 OHMS 1/4 WATT
R5	13028	1,000 OHMS 1/4 WATT
R7	13117	15,000 OHMS 1/4 WATT
R8	13234	6,000 OHMS 1 WATT
R9	13233	6,000 OHMS 2 WATT
R10	13068	30,000 OHMS 1/2 WATT
R11, R16	13001	1 MEGOHM 1/4 WATT
R13	13007	2 MEGOHMS 1/4 WATT
R14	13147	300,000 OHMS 1/4 WATT
R17	13199	22,000 OHMS 1/4 WATT
R18	83529-A	1 MEGOHM VOL. CONT. & SW.
R19	13171	250,000 OHMS 1/4 WATT
R20	13024	500,000 OHMS 1/4 WATT
R22, R24	13108	410 OHMS 1 WATT
R23	83447-A	100,000 OHMS TONE CONT.

RESISTORS FOR MODEL H-875 SAME AS FOR MODEL H-874 EXCEPT FOLLOWING		
R25	13148	30,000 OHMS 1/4 WATT
R26	13029	250 OHMS 1/4 WATT

MISCELLANEOUS FOR MODEL H-874		
S1	73205	ANTENNA COILS & CAN ASS'Y.
S2	73207	INTERSTAGE " " "
S3	73209	OSCILLATOR " " "
S4	73192-B	1ST. I.F. TRANSFORMER ASS'Y.
S5	73193	2ND. I.F. " "
S6	70950	PHONO JACK
S7	40849	8" A.C.-SPEAKER-1400~ FIELD
	40784	12" A.C.-SPEAKER-1400~ FIELD
S8	83605	P'W'R. TRANSF. UNIV.
	83606-R	P'W'R. TRANSF.-117V.-60 CY.
	83607-AB	P'W'R. TRANSF.-230V.-25 CY.
S9	79029-B	FILTER CHOKE
S10	70053-[illegible]	1 1/4 AMP. FUSE
S11 TO S17	83438	BAND SWITCH
S18 TO S22	78889	PILOT LIGHTS

MISCELLANEOUS FOR MODEL H-875 SAME AS FOR MODEL H-874 EXCEPT FOLLOWING		
S1, S2, S3		NOT USED
S23	73204	ANTENNA COILS & CAN ASS'Y.
S24	73206	INTERSTAGE " " "
S25	73208	OSCILLATOR " " "

Tuning Ranges

The model H-874 chassis has the following tuning ranges:

Band 1.	25.55	to 8.86 mc	or	11.75	to	33.8	meters
Band 2.	9.95	to 2.96 mc	or	30.13	to	101.3	meters
Band 3.	1725	to 520 kc.	or	174	to	576	meters

The model H-875 chassis has the following tuning ranges:

Band 1.	18.85	to 5.5 mc	or	15.9	to	54.5	meters
Band 2.	1725	to 520 kc	or	174	to	576	meters
Band 3.	375	to 140 kc	or	800	to	2142	meters

② C42. WAS .002 MFD. 200 V. PAPER B.R. - 8-10-38.
③ REVISED. - B.R. - 8-16-38. ADDED .01 MFD. 200 V. PAPER

ALIGNING FREQUENCIES:

FOR MODEL - H-874
B1 - 23 MEGACYCLES
B2 - 9
B.C. - 1500 & 600 K.C.

FOR MODEL H-875
S.W. - 17.6 MEGACYCLES
M.W. - 1500 & 600 K.C.
L.W. - 350 & 160 K.C.

INTERMEDIATE FREQUENCY :- 455 K.C.

Maximum Power Output 5.8 watts

Power Supply

Voltage	Frequency	Watts
117.5	50-60	65
115, 125, 150, 220, 240*	50-60	65

* Universal primary Power Transformer

SOCKET TERMINALS

Tube	1	2	3	4	5	6	7	8
6K7	-	-	250	95	3.18	-	-	3.18
6K8	-	-	247	95	5*	82	-	3.2
6K7	-	-	248	95	2.83	-	-	2.8
6Q7	-	-	97*	-	-	-	-	2.8
6F6-G	-	-	240	260	-	-	-	17.0
5Y3-G	-	395	-	-	-	-	-	395

* measurement made on 1000 volt scale.

SCHEMATIC CIRCUIT DIAGRAM FOR MODEL - H-874 & MODEL - H-875	
DATE :- 7-5-38 DRAWN BY :- B.R. CHECKED BY :- G. JACOBS APPROVED BY :- D.S.C.	No 25192-3

H-870-SERIES

MODELS H-874,H-875
Chassis H-870

PILOT RADIO CORP.

MODELS H-974,H-975
Chassis H-970
Alignment Procedure

PILOT RECEIVERS OF THE H-870 SERIES

SERVICE DATA

Removal of the chassis from the cabinet, when necessary, is done as follows:-

1. Remove the power supply cord from the supply outlet.
2. Remove the knobs and felt washers from all shafts on the front of the cabinet. These knobs, except the "locking" knob, are of the "push-on" type.
3. Remove the speaker cord from the socket on the speaker.
4. Remove the four mounting screws located under the cabinet, and carefully slide the chassis out of the cabinet.

Receiver Alignment — Equipment Required.

1. Signal Generator. One using fundamental frequencies for all the frequencies used in the receiver is preferred.
2. Output Meter. Generally a copper-oxide rectifier meter is the most convenient.
3. Dummy Antennas. .1 mfd. condenser
   .0002 mfd. mica condenser
   400 ohm, non-inductive resistor

Alignment Connections

The posts marked D and G on the rear of the chassis should be connected to the ground side of the signal generator.

Connect the "hot" post of the signal generator through the .1 mfd condenser to the grid of the 6K8 detector-oscillator tube or the 6K7 I.F. amplifier tubes when aligning the I.F. amplifier.

Connect the "hot" post of the signal generator through the 200 mmf condenser to the post marked A on the rear of the chassis when aligning the Long-Weve and Broadcast Bands. Use the same connections for both short-wave bands, but replace the 200 mmf condenser with the 400 ohm non-inductive resistor.

In all measurements connect the output meter, through .1 mfd 600 volt condensers, to the plate and screen terminals of the 6F6-G tube.

Procedure The volume and tone controls should all be turned to the extreme clockwise positions, before starting.

The location of all trimmers is shown in the accompanying figure. Always keep the output from the signal generator at the lowest value which will give a readable deflection on the output meter.

I.F. Amplifier Alignment Turn the Band Selector Switch to Band 3 and turn the ROTOR-DIAL to the low frequency end.

Connect the output meter as described under "Connections" and connect the "hot" post of the signal generator to the grid of the 6K8 tube through the .1 mfd condenser. Then proceed with the alignment as follows:-

1. Adjust the signal generator frequency to 455 kilocycles, and adjust the generator output to the lowest value which will give a readable signal on the output meter.
2. Adjust the screws 1, 2, 3, and 4 (see figure), for maximum reading of the output meter. Keep reducing the output from the generator if the output meter reading increases too much.

If the output of the generator to the receiver is too great, the alignment of the receiver will not be correct, as the AVC action will become too great, and the amplifier will appear broad in tuning.

It will seldom, if ever, be found necessary to more than touch up the alignment of the I.F. amplifier. Of course, if the amplifier adjustment screws have been tampered with, it will probably be necessary to completely realign the amplifier. In this case, connect the generator to the grid of the I.F. amplifier tube, and align the last I.F. transformer. Always finish the alignment with the signal input to the 6K8 tube.

A cathode ray oscilloscope is not necessary in making the above adjustments. One may be used, however, if desired.

R.F. ALIGNMENT

Band 3. (model 875, Long-Wave) Connect the "hot" terminal of the generator to the blue wire and clip, through the .0002 mfd condenser.

Set the generator frequency to 350 kc., and with the Band Selector Switch set to Band 3 turn the ROTOR-DIAL to 350 kc. Adjust trimmer #5 for maximum reading of the output meter. Do likewise with trimmer #6 and #7. Then set the generator frequency to 160 kc and the ROTOR-DIAL to approximately the same. Adjust trimmer #21 for maximum reading of the output meter, while "rocking" the gang condenser carefully back and forth. Then go back and repeat the 350 kc. alignment.

Band 2. (Model 875) Band 3. (Model 874) (Standard Broadcast)

Connections are the same for the alignment of this band as they are for the Long-Wave Band.

Set the generator frequency to 1500 kc., and the ROTOR-DIAL to the same frequency, with the Band Selector Switch set appropriately. Adjust trimmer #8 for maximum reading of the output meter. (This trimmer is adjusted by moving the brass rod in or out, with a hooked wire, and with a twisting motion. First loosen the lock nut.) Then without touching any tuning controls adjust trimmers #9 and #10 for maximum reading of the output meter.

Next, set the generator frequency to 600 kc. and set the ROTOR-DIAL to the 600 kc. mark. Then adjust trimmer #11 for maximum reading of the output meter, while "rocking" the gang condenser. Finally return and repeat the 1500 kc. adjustments and then tighten the lock nut on trimmers #8 and #9.

Band 1. (Model 875 Short-Wave)

Remove the .0002 mfd dummy antenna used in aligning the lower frequency bands and substitute the 400 ohm resistor.

Before aligning this band refer to the paragraph head "Image Frequency".

Set the generator frequency to 17.6 mc and also set the ROTOR-DIAL to this frequency. Carefully adjust trimmer #12 for maximum reading of the output meter. Be careful you do not tune in at the image frequency.

Then adjust trimmers #13 and #14 for maximum output meter reading, while slightly "rocking" the gang condenser. Readjust trimmer #12 if necessary to keep the calibration correct. These are the only adjustments on this band.

Band 2. (Model 874 Short-Wave)

Connections and dummy antenna same as on Band 1 above.

Before aligning this band refer to the paragraph headed "Image Frequency".

Set the generator, and the ROTOR-DIAL to 9 mc. Adjust trimmer #15 for maximum reading of the output meter. Be careful you do not tune in at the Image Frequency.

Then adjust trimmers #16 and #17 for maximum reading of the output meter, while slightly "rocking" the gang condenser. Readjust trimmer #15 if necessary to correct the calibration.

Band 1. Alignment (Model 874 Short-Wave)

Connections and dummy antenna are the same as on Band 2 of Model 874.

Before aligning this band, refer to the paragraph headed "Image Frequency".

Set the generator frequency to 23 mc and the ROTOR-DIAL to 23 mc. Adjust trimmer #18 to 23 mc for maximum reading of the output meter. Be careful that the receiver is not adjusted to the Image Frequency. Then adjust trimmers #19 and #20 while "rocking" the gang condenser, for maximum reading of the output meter. Reset trimmer #18 so that calibration is correct if necessary.

Image Frequency

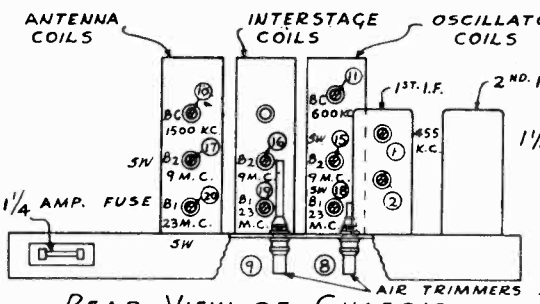
All bands in these two models must be aligned with the oscillator frequency higher than the signal frequency. There can be no error in doing this on the Long-Wave and Broadcast Bands. However, on the higher frequency bands it is possible to incorrectly adjust the alignment in this respect and end up with the receiver aligned on what should be the Image Frequency.

The chances of doing this may be eliminated by adjusting the generator to the correct aligning frequency, and with sufficient output from the generator to pick up two signals with the receiver, separated by twice the Intermediate Frequency, set the ROTOR-DIAL to that one which comes in at the higher frequency marking on the ROTOR-DIAL.

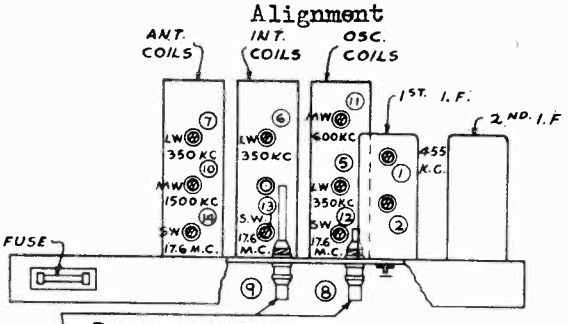
MODELS H-874, H-875
Chassis H-870
MODELS H-974, H-975
Chassis H-970
Socket, Trimmers

PILOT RADIO CORP.

MODEL T-1252
Schematic, Socket, Trimmers
Alignment



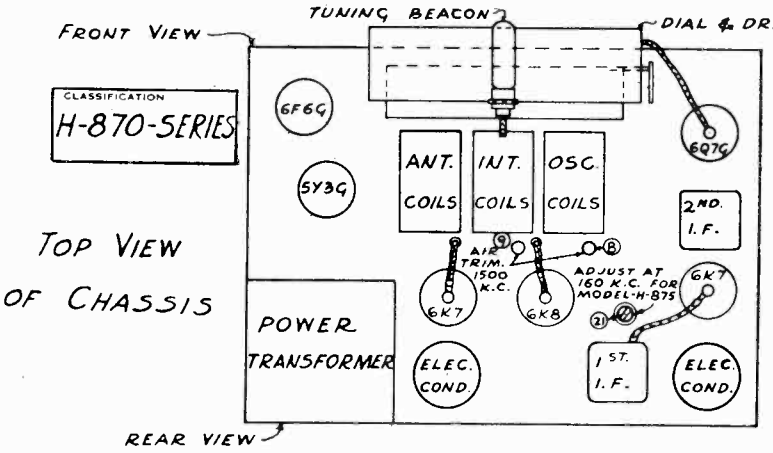
REAR VIEW OF CHASSIS
(MODEL-H-874)



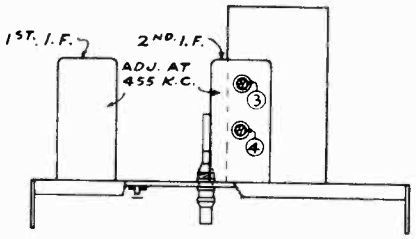
REAR VIEW OF CHASSIS
(MODEL-H-875)

TRIMMER LAYOUT
MATERIAL
SCALE
DRAWN BY B.R.
CHECKED BY G.J.
APPROVED BY
DATE 7-5-38
DRWG NO 25193

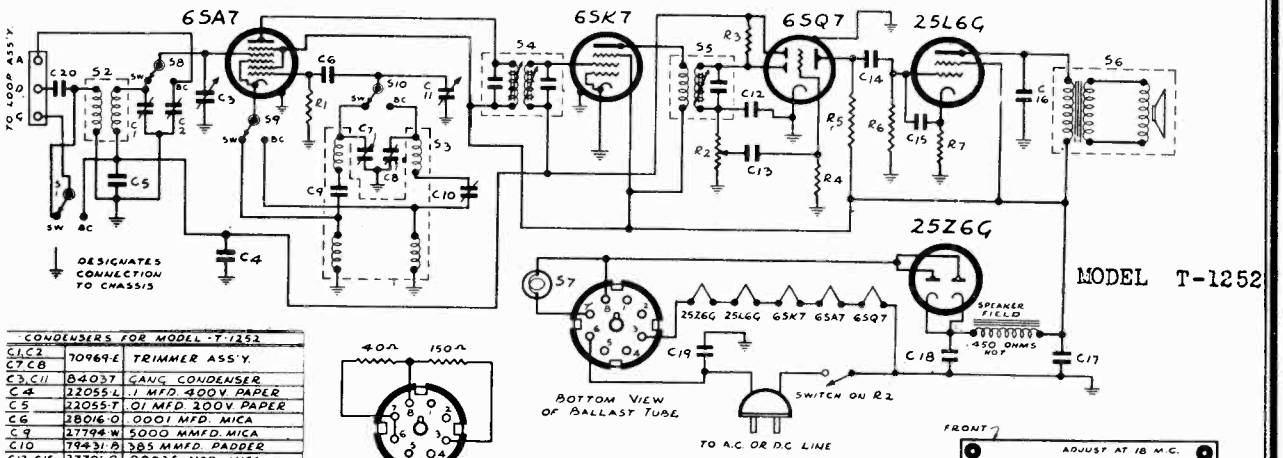
CLASSIFICATION
H-870-SERIES



TOP VIEW OF CHASSIS



RIGHT SIDE OF CHASSIS

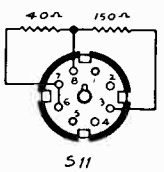


MODEL T-1252

CONDENSERS FOR MODEL-T-1252		
C1,C2	70969-E	TRIMMER ASS'Y.
C7,C8		
C3,C11	84037	GANG CONDENSER
C4	22055-L	1 MFD 400V PAPER
C5	22055-T	01 MFD 200V PAPER
C6	28016-0	0001 MFD. MICA
C9	27794-W	5000 MMFD. MICA
C10	79431-A	385 MMFD. PADDER
C12,C13	27701-0	00025 MFD. MICA
C14	22055-AU	005 MFD 400V PAPER
C14,C16	22055-W	01 MFD 400 V PAPER
C17,C18	23500-E	30 MFD 300V MIDGET ELEC
C19	22055-AC	02 MFD 600V PAPER
C20	22055-W	01 MFD 400V PAPER

MISCELLANEOUS FOR MODEL-T-1252		
S1	84060	BAND SWITCH
S2	73263	S.W. ANTENNA COIL ASS'Y.
S3	73262	B.C. & S.W. OSCILLATOR COIL ASS'Y.
S4	73192-D	1ST I.F. TRANSFORMER ASS'Y.
S5	73267	2ND I.F. "
S6	40869	5" SPEAKER
S7	71282	PILOT LIGHT
S8,S9,S10	84060	BAND SWITCH
S11	81985	BALLAST TUBE 110/125V

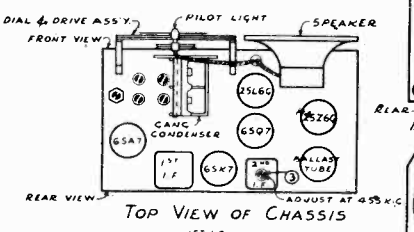
RESISTORS FOR MODEL-T-1252		
R1	13074	20,000 OHMS ¼ WATT
R2	79429-B	500000 OHMS VOL CONT & SW
R3,R4	13007	2 MEGOHMS ¼ WATT
R5	13147	300,000 OHMS ½ WATT
R6	13024	500,000 OHMS ¼ WATT
R7	13018	150 OHMS ¼ WATT



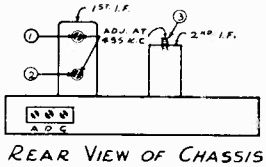
PILOT RADIO CORPORATION
LONG ISLAND CITY, N.Y.U.S.A.
SCHEMATIC CIRCUIT DIAGRAM FOR MODEL-T-1252
DWG. NO. 25219-

CONVENTIONAL ALIGNMENT SEE INDEX

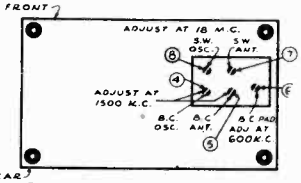
INTERMEDIATE FREQUENCY: 455 K.C.
ALIGNING FREQUENCIES:
B.C. - 1500 & 600 KILOCYCLES.
S.W. - {ALIGN AT 18 MEGACYCLES. CHECK AT 6



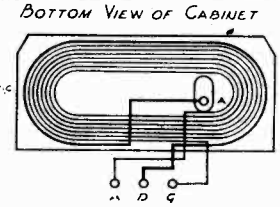
TOP VIEW OF CHASSIS



REAR VIEW OF CHASSIS



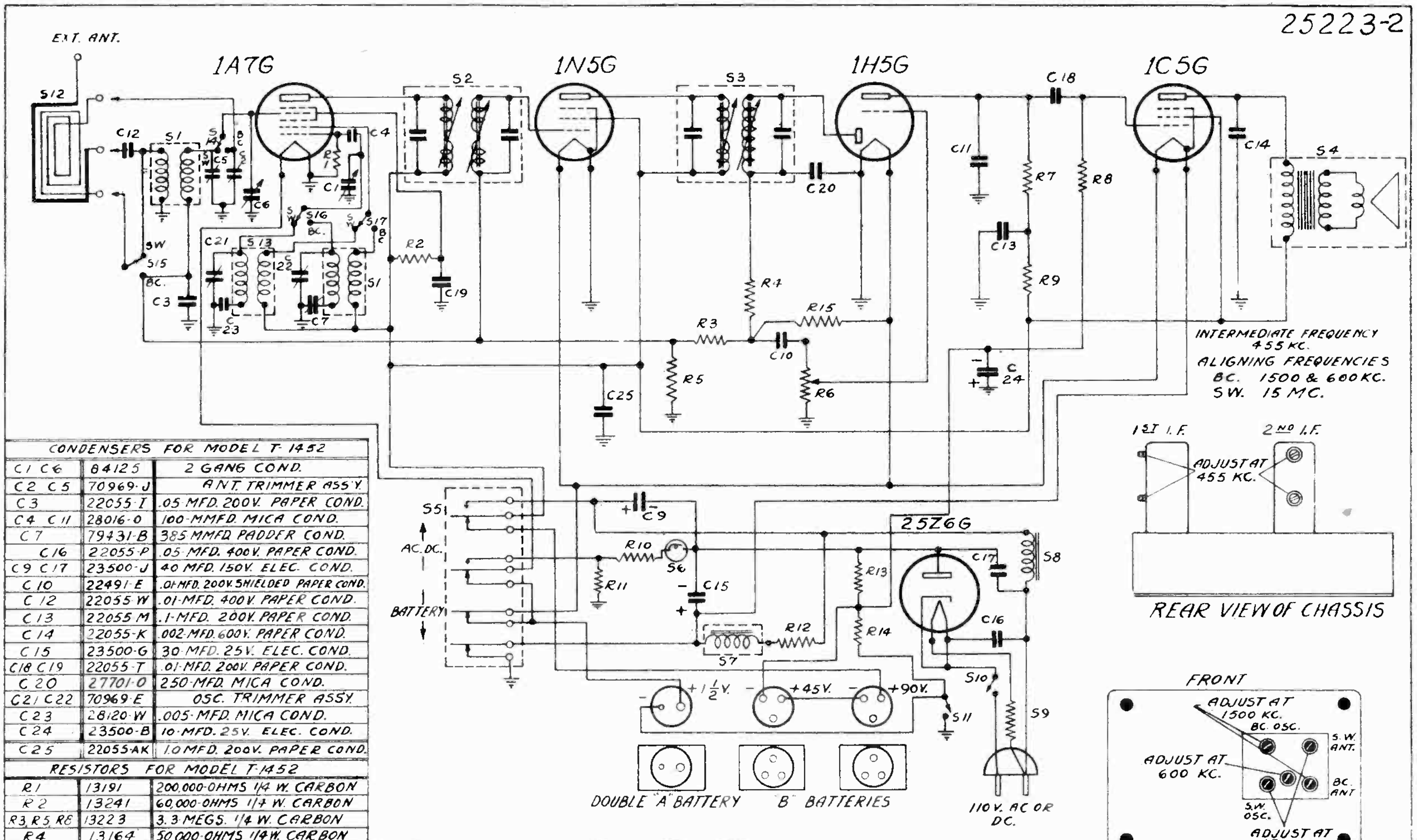
BOTTOM VIEW OF CABINET



CABINET BACK & ANTENNA LOOP ASS'Y.

MODEL T-1452
Schematic, Trimmers
Alignment, Changes

PILOT RADIO CORP.



CONDENSERS FOR MODEL T-1452		
C1 C6	84125	2 GANG COND.
C2 C5	70969-J	ANT. TRIMMER ASS'Y.
C3	22055-I	.05 MFD. 200V. PAPER COND.
C4 C11	28016-0	100-MMFD. MICA COND.
C7	79431-B	385 MMFD. PADDER COND.
C16	22055-P	.05 MFD. 400V. PAPER COND.
C9 C17	23500-J	40 MFD. 150V. ELEC. COND.
C10	22491-E	.01-MFD. 200V. SHIELDED PAPER COND.
C12	22055-W	.01-MFD. 400V. PAPER COND.
C13	22055-M	.1-MFD. 200V. PAPER COND.
C14	22055-K	.002-MFD. 600V. PAPER COND.
C15	23500-G	30-MFD. 25V. ELEC. COND.
C18 C19	22055-T	.01-MFD. 200V. PAPER COND.
C20	27701-0	250-MFD. MICA COND.
C21 C22	70969-E	OSC. TRIMMER ASS'Y.
C23	28120-W	.005-MFD. MICA COND.
C24	23500-B	10-MFD. 25V. ELEC. COND.
C25	22055-AK	1.0 MFD. 200V. PAPER COND.

RESISTORS FOR MODEL T-1452		
R1	13191	200,000-OHMS 1/4 W. CARBON
R2	13241	60,000-OHMS 1/4 W. CARBON
R3, R5, R8	13223	3.3 MEGS. 1/4 W. CARBON
R4	13164	50,000-OHMS 1/4 W. CARBON
R6	84105	2-MEGS. VOL. CONT. & SWITCH
R7	13001	1-MEG 1/4 W. CARBON
R9	13031	100,000-OHMS 1/4 W. CARBON
R10	83656-J	50-OHMS 1W. FLEXIBLE
R11	83656-G	25-OHMS .5W. FLEXIBLE
R12	84116	700-OHMS 8W. W.W. IRON CLAD
R13	13019	2000-OHMS 1/4 W. CARBON
R14	13246	1200-OHMS 1/4 W. CARBON
R15	13007	2-MEGS. 1/4 W. CARBON

MISCELLANEOUS FOR MODEL T-1452		
S1	73273	S.W. ANT. & BC. OSC. COIL ASS'Y
S2	73277	1ST. I.F. TRANS. ASS'Y.
S3	73274	2ND. I.F. TRANS. ASS'Y.
S4	40872	5" P.M. SPEAKER
S5 S7	84110	RELAY
S6	72151	DIAL LIGHT .15 AMPS.
S8	84115	CHOKE 5HS. 200Ω 100 MA.
S9	84106	LINE CORD 310 OHMS
S10 S11		SWITCHES ON VOL. CONT.
S12	73264	ANT. LOOP ASS'Y.
S13	73272	SW. OSC. COIL ASS'Y.
S14, 15, 16, 17	84060-B	BAND SWITCH

ALTERATIONS & DATE

② REMOVED C8 .05-400V COND. ADDED C24 C25 REVISED WIRING. C.O. 2658 E.F. 6-2-39

PILOT RADIO CORPORATION
LONG ISLAND CITY N. Y. U. S. A.
SCHEMATIC WIRING DIAGRAM

CLASSIFICATION T-1452

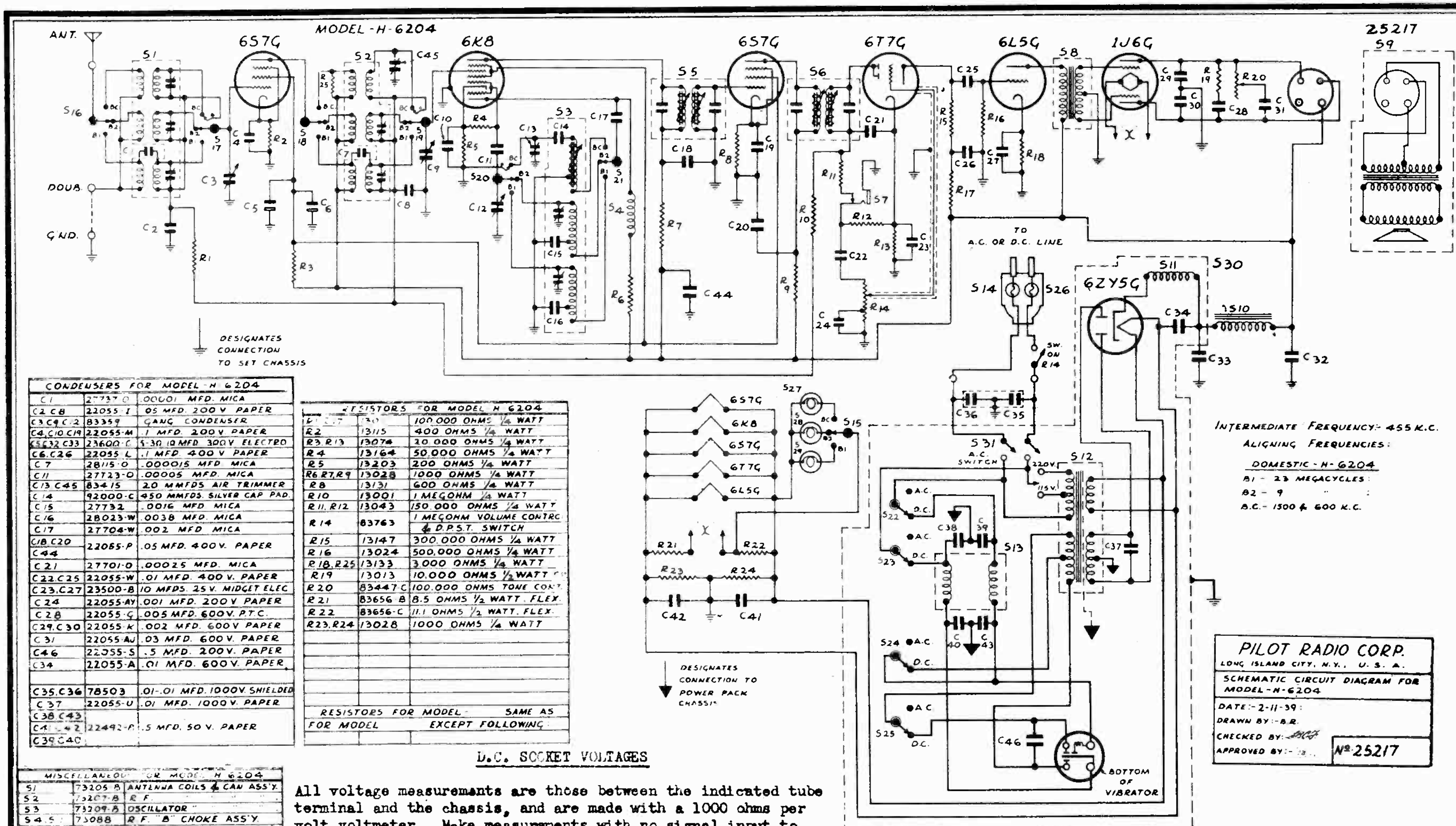
THIS PRINT SUPERSEDES ALL OTHERS PRIOR TO

DO NOT SCALE THIS PRINT

DATE 5-24-39
DRAWN BY E.F.
DWG. NO. 25223-2

MODEL H-6204
Chassis H-6200
Schematic, Voltage

PILOT RADIO CORP.



CONDENSERS FOR MODEL H 6204		
C1	27737 O	.00001 MFD. MICA
C2 C8	22055 I	.05 MFD. 200 V PAPER
C3 C9 C12	83359	GANG CONDENSER
C4, C10 C19	22055-M	.1 MFD. 200 V PAPER
C5 C32 C33	23600-C	5-30 10 MFD 300 V ELECTRO
C6, C26	22055 L	.1 MFD. 400 V PAPER
C7	28115-O	.000015 MFD MICA
C11	27723-O	.00005 MFD. MICA
C13 C45	83415	20 MMFDS AIR TRIMMER
C14	92000-C	450 MMFDS. SILVER CAP PAD.
C15	27732	.0016 MFD MICA
C16	28023-W	.0038 MFD. MICA
C17	27704-W	.002 MFD MICA
C18 C20 C44	22065-P	.05 MFD. 400 V. PAPER
C21	27701-O	.00025 MFD. MICA
C22, C25	22055-W	.01 MFD. 400 V. PAPER
C23, C27	23500-B	10 MFDS. 25 V. MIDGET ELEC
C24	22055-AY	.001 MFD. 200 V PAPER
C28	22055-G	.005 MFD. 600 V. P.T.C.
C29, C30	22055-K	.002 MFD. 600 V PAPER
C31	22055-AJ	.03 MFD. 600 V. PAPER
C46	22055-S	.5 MFD. 200 V. PAPER
C34	22055-A	.01 MFD. 600 V. PAPER
C35, C36	78503	.01-.01 MFD. 1000 V. SHIELDED
C37	22055-U	.01 MFD. 1000 V. PAPER
C38 C43 C41 C42 C39 C40	22492-R	.5 MFD. 50 V. PAPER

RESISTORS FOR MODEL H 6204		
R1 R17	130[illegible]	100,000 OHMS ¼ WATT
R2	13115	400 OHMS ¼ WATT
R3, R13	13074	30,000 OHMS ¼ WATT
R4	13164	50,000 OHMS ¼ WATT
R5	13203	200 OHMS ¼ WATT
R6, R7, R9	13028	1000 OHMS ¼ WATT
R8	13131	600 OHMS ¼ WATT
R10	13001	1 MEGOHM ¼ WATT
R11, R12	13043	150,000 OHMS ¼ WATT
R14	83763	1 MEGOHM VOLUME CONTROL & D.P.S.T. SWITCH
R15	13147	300,000 OHMS ¼ WATT
R16	13024	500,000 OHMS ¼ WATT
R18, R25	13133	3,000 OHMS ¼ WATT
R19	13013	10,000 OHMS ½ WATT
R20	83447-C	100,000 OHMS TONE CONT.
R21	83656 B	8.5 OHMS ½ WATT. FLEX.
R22	83656-C	11.1 OHMS ½ WATT. FLEX.
R23, R24	13028	1000 OHMS ¼ WATT
RESISTORS FOR MODEL- SAME AS FOR MODEL EXCEPT FOLLOWING:		

MISCELLANEOUS FOR MODEL H 6204		
S1	73205 B	ANTENNA COILS & CAN ASS'Y.
S2	73207-B	R. F. "
S3	73209-B	OSCILLATOR "
S4, S5	73088	R. F. "B" CHOKE ASS'Y.
S5	73192-2C	1ST I.F. TRANSFORMER ASSY
S6	73193	2ND I.F. "
S7	70950	PHONO JACK
S8	83748	CLASS B INPUT TRANSFORMER
S9	40859	8" P.M. SPEAKER
S10	79029 A	FILTER CHOKE
S12	84026	VIBRATOR PWR. TRANSFORM.
S13	83744	R.F. "A" CHOKE
S15, S16, S17 S18, S19, S20 S21	83759	BAND SWITCH
S22, S23 S24, S25	83745	A.C.-D.C. SWITCH
S26 S14	70053 C	1 AMP. FUSE
S27, S28, S29	72127	PILOT LIGHT 2 V. .06 AMP.
S30	84021	VIBRATOR PWR. SUPPLY ASS'Y
S31	83745	A.C. LINE SWITCH ON A.C.-D.C. SWIT.
MISCELLANEOUS FOR MODEL- SAME AS FOR MODEL- EXCEPT FOLLOWING:		

D.C. SOCKET VOLTAGES

All voltage measurements are those between the indicated tube terminal and the chassis, and are made with a 1000 ohms per volt voltmeter. Make measurements with no signal input to the receiver and with the volume control set at minimum volume.

	Tube	Socket Terminals 1	2	3	4	5	6	7	8
R.F.	6S7-G	-	-	145	62.5	2.5	-	-	2.5
1st Det.	6K8	-	-	150	62.5	-	140	-	1.6
I.F.	6S7-G	-	-	145	62.5	2.7	-	-	2.7
2nd Det.	6T7-G	-	-	80	-	-	-	-	1.2
A.F.	6L5-G	-	-	125	-	-	-	-	5.7
A.F.	1J6-G	-	-	145	-	-	145	-	0
Rect.	6Z Y5-G	-	-	-	-	-	-	-	150

The above voltages apply with either the nominal Battery Supply or with the AC supply.

Tuning Ranges

The model H-6204 chassis has the following ranges:

Band 1	25.5 - 8.85 mc.	11.7 - 33.9 meters
Band 2	9.95 - 2.96 mc.	30.1 - 101.3 meters
Band 3	1725 - 520 kc.	174 - 576 meters

Maximum Power Output 2 watts

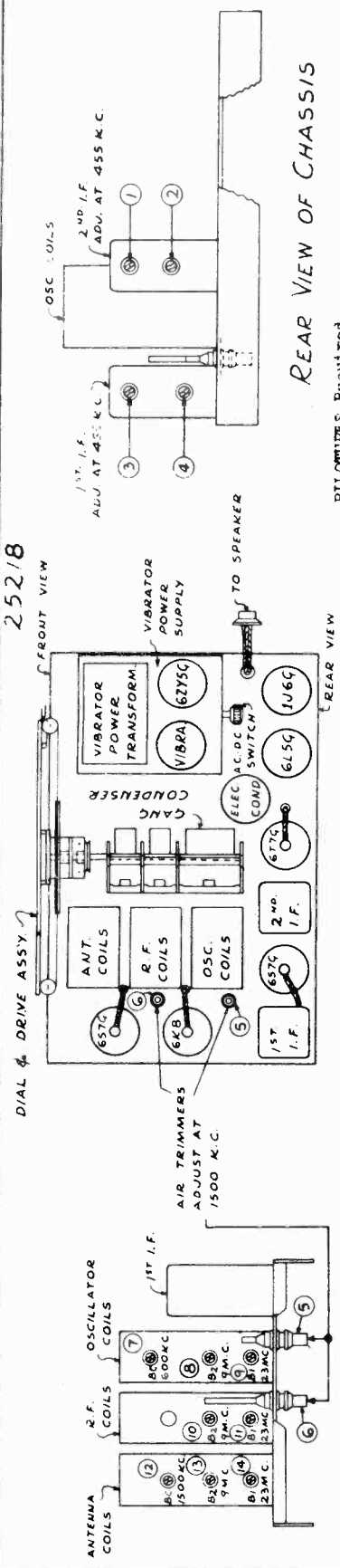
POWER SUPPLY

32 volt Storage Battery .5 amperes drain
110-125 or 220-240 volts AC 50-60 cycles 18 Watts

Intermediate Frequency 455 kc

MODEL H-6204
Chassis H-6200
Socket, Trimmers
Alignment

PILOT RADIO CORP.



PILOTTUBES Required		
One	6S7-G	R.F. Amplifier
One	6K8	1st detector-oscillator
One	6S7-G	I.F. Amplifier
One	6T7-G	2nd Detector
One	6L5-G	A.F. Amplifier
One	1J6-G	Output Tube
One	6Y5-G	Power Supply Rectifier

Miscellaneous Service Notes

If a howling noise (sometimes referred to as Microphonic howl) is heard, it is probably because the four red screws under the cabinet and the two narrow metal strips between the chassis and the bottom of the cabinet, have not been removed. These strips and screws are only intended as additional bracing during shipment and must be removed before the receiver is put in operation.

The howl can also be caused by a defective tube, or when some part of the receiver which is rigidly fastened to the chassis rubs against the cabinet.

If the vibrator noise becomes loud or objectional, it is probably because the battery connections are not clean, or because the battery is old and its internal resistance is high, or because the vibrator is wearing out.

I.F. Alignment

Turn the Band Selector Switch to the Broadcast Band and tune the receiver to the low frequency end of the Band.

Connect the output meter as described under "Connections", and connect the "hot" post of the signal generator to the grid of the 6K8 tube through the .1 mfd. condenser. Then proceed with the alignment as follows:-

1. Adjust the signal generator to 455 kilocycles, and adjust the generator output to the lowest value which will give a readable signal on the output meter.

2. Adjust the trimmer screws #1, 2, 3 and 4 (see figure), for maximum reading of the output meter. Keep reducing the output from the generator if the output meter reading increases too much.

If the output of the generator to the receiver is too great, the alignment of the receiver will not be correct, as the AVC action will become too great, and the amplifier will appear broad in tuning.

It will seldom, if ever, be found necessary to more than touch up the alignment of the I.F. Amplifier. Of course, if the amplifier adjustment screws have been tampered with, it will probably be necessary to completely realign the amplifier. In this case, connect the generator to the grid of the 6S7-G I.F. tube, and align the last I.F. transformer. Always finish the alignment with the signal input to the 6K8 tube.

A cathode ray oscilloscope is not necessary in making the above adjustments. One may be used, however, if desired.

R.F. ALIGNMENT

Standard Broadcast Band

Connect the "hot" terminal of the generator to the post marked "A" on the rear of the chassis, through the .0002 mfd. condenser.

Set the generator frequency to 1500 kc., and the dial pointer of the receiver to the same frequency with the Band Selector Switch set appropriately. Adjust trimmer #5 for maximum reading of the output meter. Loosen the lock nut and adjust trimmer by moving the brass rod in or out with a hooked wire, and with a twisting motion. Then without touching the tuning controls adjust trimmers #6 and #12 for maximum reading of the output meter.

Next, set the generator frequency to 600 kc., and move the receiver pointer to the same frequency. Adjust trimmer screw #7 for maximum reading of the output meter, while "rocking" the gang condenser. Finally, repeat the 1500 kc. adjustments, and tighten the lock nuts on trimmers #5 and #6.

Band #2

Remove the .0002 mfd. dummy antenna used in aligning the Broadcast Band and substitute the 400 ohm non-inductive resistor in its place.

Before aligning this band refer to the paragraph headed "Image Frequency".

Set the generator frequency to 9 mc. and the receiver dial pointer to the same frequency with the Band Selector Switch set appriately. Adjust trimmer #8 for maximum reading of the output meter. Be careful you do not tune in at the Image Frequency.

Then adjust trimmer #10 for maximum output meter reading, while slightly "rocking" the gang condenser. Readjust trimmer #8 if necessary to correct the calibration, and finally adjust trimmer #13 for maximum output meter reading.

Band #1

The connections and Dummy Antenna are the same as used in aligning Band #2.

Before aligning this band, refer to the paragraph headed "Image Frequency".

Set the generator frequency to 23 mc. and the receiver dial pointer to the same frequency. Adjust trimmer #9 for maximum reading of the output meter. Be careful you do not tune in at the Image Frequency. Then adjust trimmer #11, while "rocking" the gang condenser, for maximum reading of the output meter. Readjust trimmer #9, if necessary, to correct the calibration, and then adjust trimmer #14 for maximum reading of the output meter.

Image Frequency

All bands in this receiver must be aligned with the oscillator frequency higher than the signal frequency. There can be no error in doing this on the Broadcast Band. However, on the higher frequency bands it is possible to incorrectly adjust the alignment in this respect and end up with the receiver aligned on what should be the Image Frequency.

The chances of doing this may be eliminated by adjusting the generator to the correct aligning frequency. With sufficient output from the generator to pick up two signals with the receiver, separated by twice the Intermediate Frequency, set the receiver dial pointer to that one which comes in at the higher frequency marking on the receiver dial calibration.

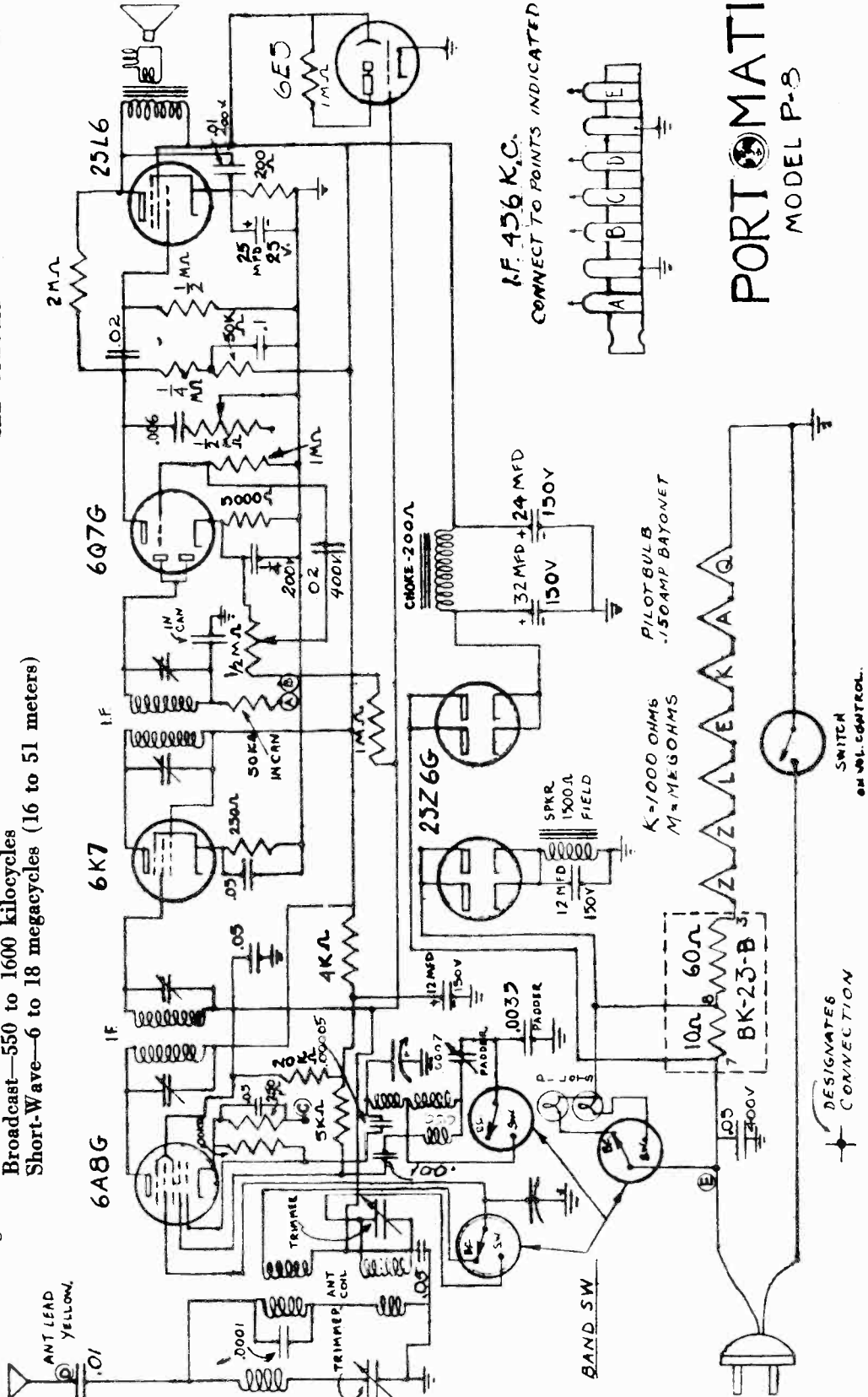
PORT-O-MATIC CORP.

MODELS 18A,18C,18R
80F,80A,80C,210F,
210C,210R,212F,212C
212R.Chassis P-8
Schematic,Alignment

CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION VOL. VIII.

The receiver is designed to operate over the following two tuning ranges:

Broadcast—550 to 1600 kilocycles
Short-Wave—6 to 18 megacycles (16 to 51 meters)



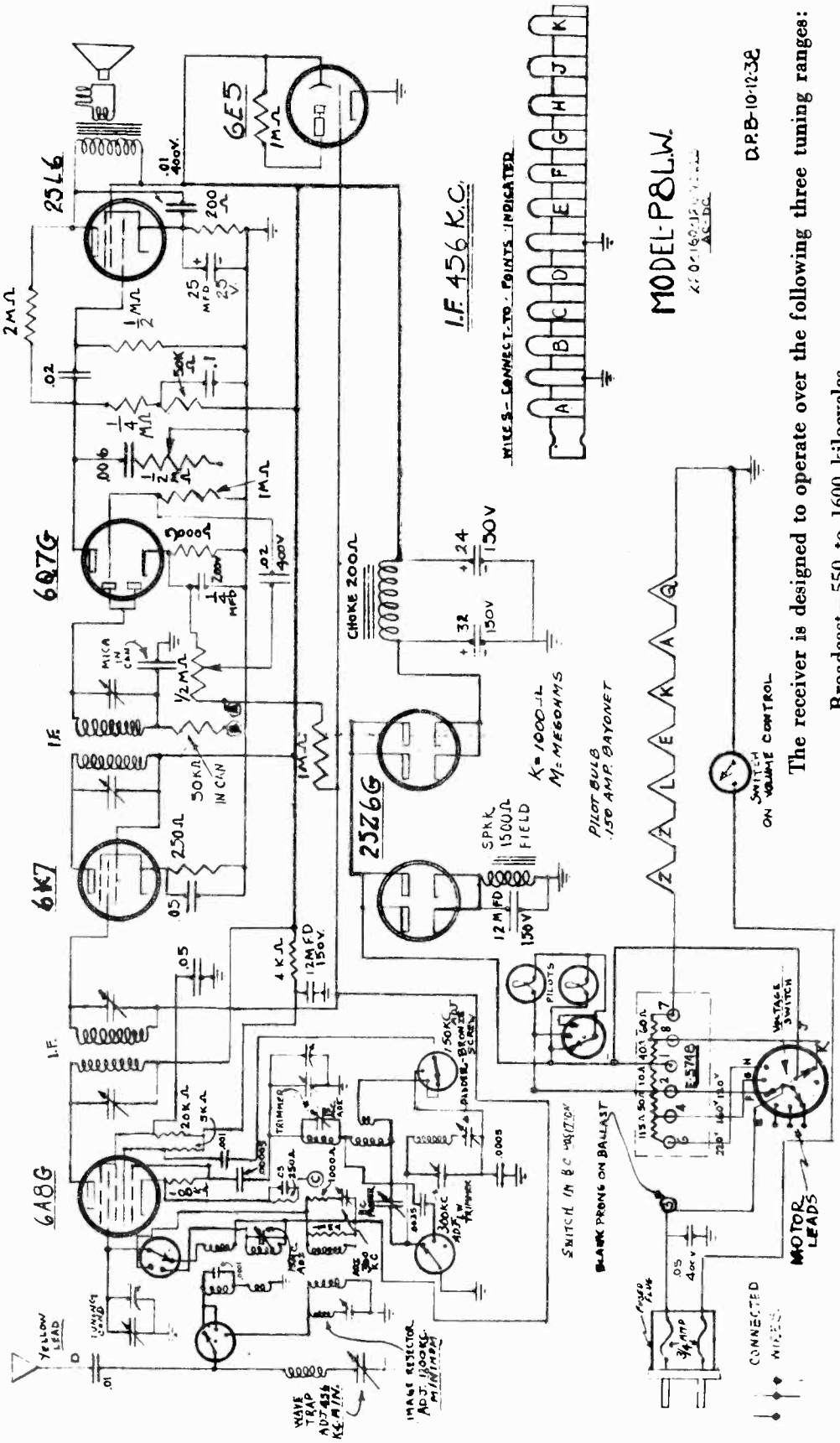
STANDARD MODEL
100-125 Volts
AC or DC Current
40-60 Cycles
65 Watts

EUROPEAN MODEL—A special switch is provided on the motor-plate located underneath the pick-up arm, and is marked "110-220." With this switch in 220 Volt position, the PORT-O-MATIC will operate safely on voltages from 200 to 250. To avoid damage, if switch is accidentally placed in wrong position, this particular model is equipped with a fused plug at the end of the electric cord. Should these fuses blow, replace same with no higher than ¾ to 1 amp. standard automobile cartridge fuses.

DPB 9-29-38

MODELS 25A, 25C, 25R,
250F, 250C, 250R
Chassis P8LW
Schematic, Alignment

PORT-O-MATIC CORP.



This portable radio will operate on any current or principal voltage throughout the world. By setting the knob, in the back of the radio, it can be used on AC or DC at 120, 160, or 240 volts.

The receiver is designed to operate over the following three tuning ranges:

Broadcast—550 to 1600 kilocycles
Short-Wave—6 to 18 megacycles (16 to 51 meters)
Long-Wave—800-2000 Meters

CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME VIII.

IMPORTANT:—To avoid damage if switch is accidentally placed in wrong position, this particular model is equipped with a fused plug at the end of the electric cord. Should these fuses blow, replace with no higher than ¾ to 1 amp. standard automobile cartridge fuses.

RCA MFG. CO., INC.

MODELS TRK-5, Chassis Nos. KC-3A, RC-429, RS-89A
TT-5, Chassis KC-3
Schematic

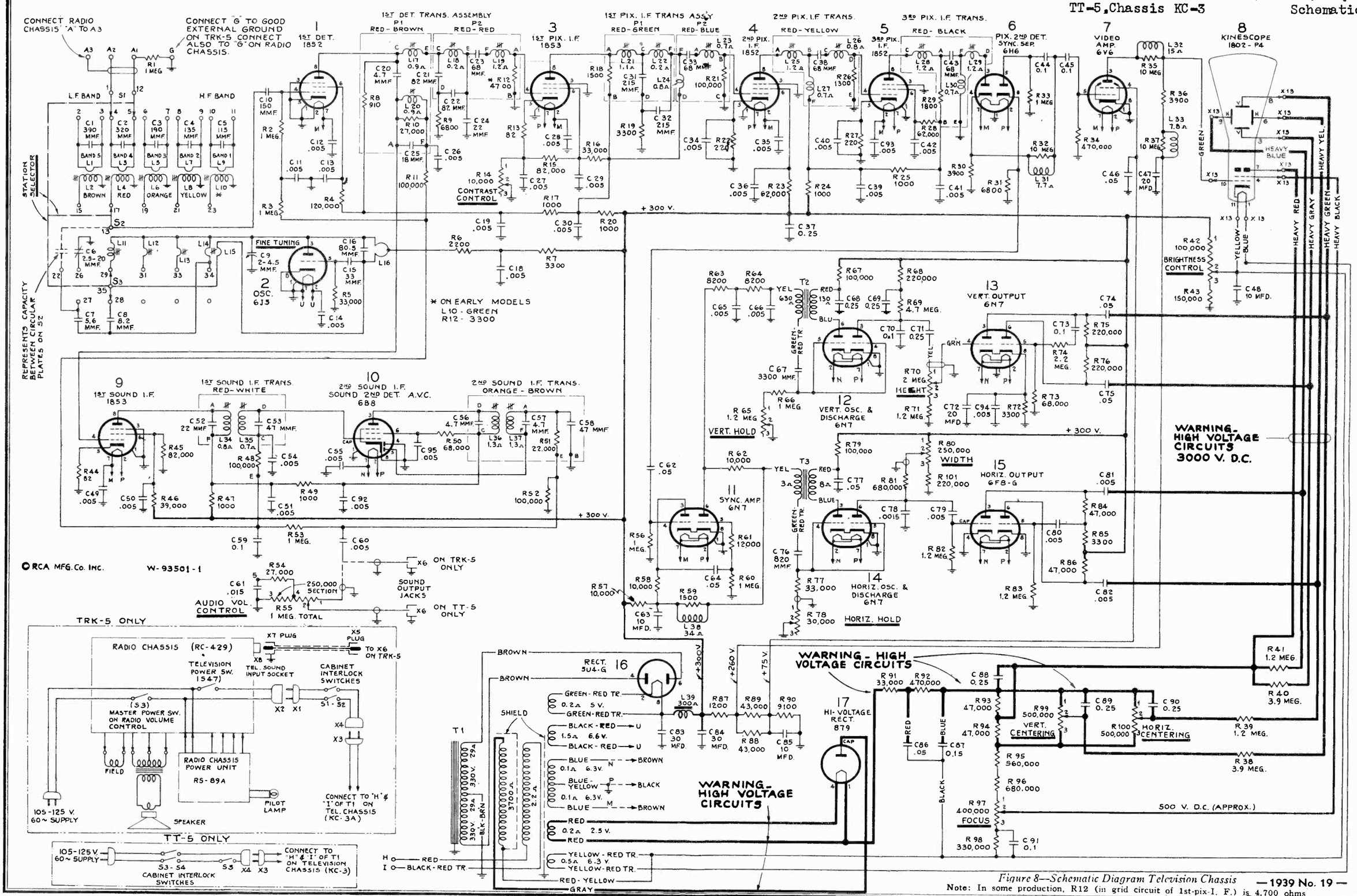


Figure 8—Schematic Diagram Television Chassis

Note: In some production, R12 (in grid circuit of 1st-pix-I. F.) is 4,700 ohms

MODELS TRK-5, Chassis KC-3A
TT-5,
Ch. KC-3
Chassis
Wiring,
Data

RCA MFG. CO., INC.

Power Supply Rating	Model TRK-5	Model TT-5
105-125 Volts, 60 Cycles	275 watts (total)	190 watts

REAR VIEW OF CONTROLS

TUNING UNIT SHOWN ON SUPPLEMENTARY DRAWING

TELEVISION CHANNELS
(Selector Switch Positions).

1..... 84 to 90 mc.
2..... 78 to 84 mc.
3..... 66 to 72 mc.
4..... 50 to 56 mc.
5..... 44 to 50 mc

WIRE COLOR CODE

R = RED
G = GREEN
Y = YELLOW
BL = BLUE
BR = BROWN
BK = BLACK
H = HEAVY
TR = TRACER

THESE LEADS CONNECT TO THE BLACK-RED TR., AND RED TRANSFORMER LEADS ON THE TRK-5.

Over-all Band Width (approx.)	2.5 mc.
Scanning	Interlaced, 441 Line
Horizontal (Line) Scanning Frequency (Sawtooth Wave)	13,230 cps.
Vertical (Field) Scanning Frequency (Sawtooth Wave)	60 cps.
Frame Frequency	30 cps.
Picture Size (approximate mask dimensions)	3⅜ x 4⅜ in.
Chassis Base Dimensions	13 x 18 in. Max.; height 9 in.

Figure 9—Wiring Diagram Television Chassis

W-93503-0

Operation Model TRK-5

The power-volume control on the broadcast radio receiver turns on the power for the complete receiver. Pushing the button marked "Television" on the push button panel turns on the Television receiver, if the above power control is "On." The volume control of the broadcast receiver also controls the Television sound volume level.

Station Selector and Fine Tuning.—The outer ring "O" section of the central dual control knob on the Television panel selects the station from which it is desired to receive television transmission.

Five television channels are covered as follows:

(1) 84 to 90 M.C.
(2) 78 to 84 M.C.
(3) 66 to 72 M.C.
(4) 50 to 56 M.C.
(5) 44 to 50 M.C.

Set the station selector to the number corresponding to the frequency of the station from which it is desired to receive Television Broadcasts.

The inner section "I" of this knob is used for fine tuning and may eliminate moving ripples or distortion if due to interfering radio signals. A slight inward pressure must be exerted on the knob while turning.

Before the Television portion of the receiver is turned "ON" it is advisable to turn the Brightness and Contrast controls completely counter-clockwise to reduce the illumination of the spot which appears on the Kinescope before the sweep circuits have started functioning.

Contrast and Brightness Controls.—The inner "I" section of the "Contrast"-"Brightness" controls is the "Contrast" control and varies the black and white tones of the picture being received. Too little contrast makes the picture all half-tones or grays. Turning clockwise increases contrast from grays, to black and white. See Test Patterns Figs. 2, 4, and 5, Page 10-21

The outer ring "O" is the Brightness Control and affects the average illumination of the picture. Turning clockwise increases the brightness. See test pattern Figs. 2, 4, 5.

Hold Controls.—The dual knobs on the Television panel marked "Horizontal" and "Vertical" Hold, control the picture stability. The inner section designated by a "I" is the Horizontal Hold Control and when being set should be turned slowly to the point at which the picture "locks in" horizontally. See test pattern Fig. 6, Page 10-21

The outer ring section designated by "O" is the Vertical Hold Control and when being set should be turned to the point where the picture "locks in" vertically. Pattern Fig. 7.

These two controls on this dual knob should not ordinarily require readjustment after good picture reception has once been obtained. An accasional resetting may be necessary due to changing to a different station, and to the gradual ageing of the tubes.

Focus Control.—This control is located on the rear of the Video chassis, and controls the electron beam focus of the Kinescope. Ordinarily, after once being focused the Kinescope should not require re-focusing for a considerable length of time. See test pattern Fig. 3.

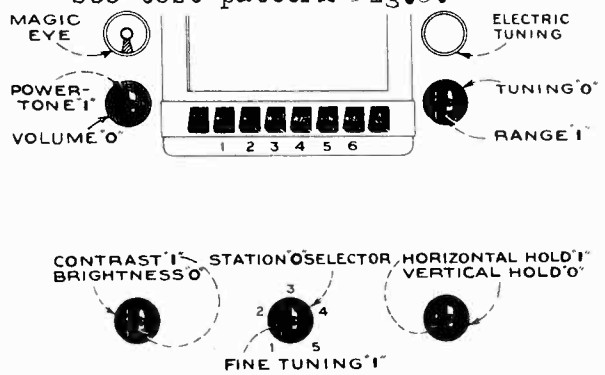


Figure 1—Control Panel Model TRK-5

Operation Model TT-5

The operation of Model TT-5 is the same as that for the Model TRK-5 except that there is a separate "ON-OFF" switch, and a separate sound volume control because the broadcast radio receiver is not included in this model. When Model TT-5 is connected to a broadcast receiver for the Television sound reproduction, the broadcast receiver volume control should be turned to maximum and the Television sound volume controlled with the control on the Television Receiver.

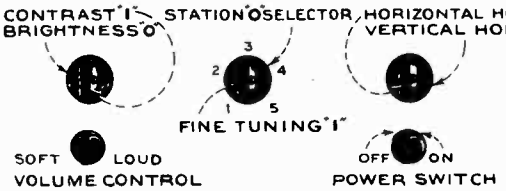


Figure 2—Control Panel Model TT-5

SERVICE DATA

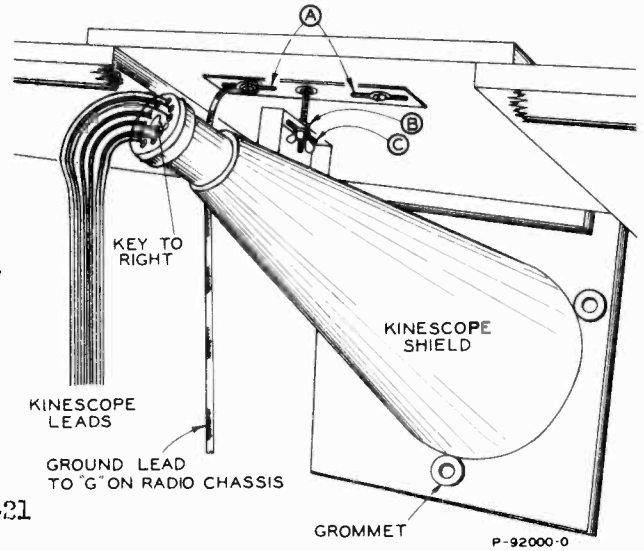


Figure 3—Kinescope Installation

Kinescope Installation Models TRK-5, TT-5: Refer to figure 3.

1. Remove back cover from cabinet.
2. Remove Kinescope mounting shield from shipping carton.
3. Using gloves and goggles remove Kinescope from shipping carton and place in the cone-shaped mounting shield.
4. Guide the Kinescope and mounting shield carefully into the cabinet, placing the Kinescope firmly up against the mask and viewing window. Fasten the mounting shield firmly in place with the thumb screw provided, so that it holds the Kinescope firmly against the mask. If the Kinescope does not line up properly with the mask, loosen the screws "A" and nut "B" and adjust in the direction desired.
5. After the receiver is operating, the Kinescope may be rotated to properly square up the picture with the mask.

CAUTION: When rotating tube the power should be turned "OFF."

Adjustments.—There are a series of screwdriver slot adjustments at the rear of the Video chassis used to obtain the proper picture size and centering. These adjustments are explained fully in the receiver operating instructions, and also in the booklet: **Practical Television by RCA.**

When the receiver is moved from one location to another, some readjustment of these controls may be necessary.

MODELS TRK-5, TT-5
Antenna, Transmission Line Data, Voltage

RCA MFG. CO., INC.

Antenna Installation:

In most cases, the antenna should not be installed permanently on the apartment or residence roof until the quality of the picture reception has been observed on a Television Receiver. A temporary transmission line can be run between receiver and the antenna allowing sufficient slack to permit moving the antenna. Then, with a telephone system connecting an observer at the receiver and an assistant on the roof to find an antenna location, the antenna can be positioned to give the most satisfactory results on the received signal. A shift of only a few feet in antenna position or direction may effect a tremendous difference in picture reception. Whenever possible, the antenna location should be chosen or erected so the antenna is not only broadside to the transmitter but removed as far as possible from highways, hospitals and doctors' offices, and similar sources of interference. Auto ignition and diathermy apparatus may cause noise interference which spoils the picture.

In mounting any antenna, care must be taken to keep the antenna rods or pickup wires proper at least 1/4 wave length (at least 6 feet) away from other antennas, metal roofs and gutters or metal objects.

Under certain extremely unusual conditions, it may be possible to rotate or position the antenna so it receives the cleanest picture over a reflected path. If such is the case, the antenna should be so positioned. However, such a position may give variable results as the nature of reflecting surfaces may vary with weather conditions, as a wet surface has been known to have different reflecting characteristics than a dry surface.

In short, a television receiving antenna and its installation must conform to much higher standards than an antenna for reception of International Short Wave and Standard Broadcast signals because:

(1) Intervening obstacles have a pronounced shielding effect on the ultra-high frequency waves producing low intensity signals. Severe trouble with multi-path transmissions may be experienced, especially in congested city areas.

(2) The picture signal is comprised of a very wide band or range of frequencies, all of which must be received with good efficiency.

(3) It must be continually remembered that the discernment of the eye is much more critical than that of the ear.

The Transmission Line

RCA Victor has made available two types of exterior transmission lines. One is a special low loss weather-proofed line having the correct surge impedance to match the RCA Victor Television antennas and the RCA Victor Television receivers. It is carried as Stock No. 9882 in 1,000 foot rolls. The second type is a standard weather-proofed line also having the correct surge impedance for proper antenna and receiver matching. It is carried as Stock No. 12430 in 90 ft. rolls, Stock No. 12429 in 40 ft. rolls and is available in 1,000 ft. spools as Stock No. 9881. Use of improper lines may result in excessive loss or may lead to line reflections, resulting in multiple images or "ghosts," thus marring the reception.

For transmission line runs up to 200 feet, and where the signal strength on the antenna is relatively high, the Stock No. 12430, or Stock No. 12429 transmission line may be used. For all other applications the Stock No. 9882 transmission line is recommended.

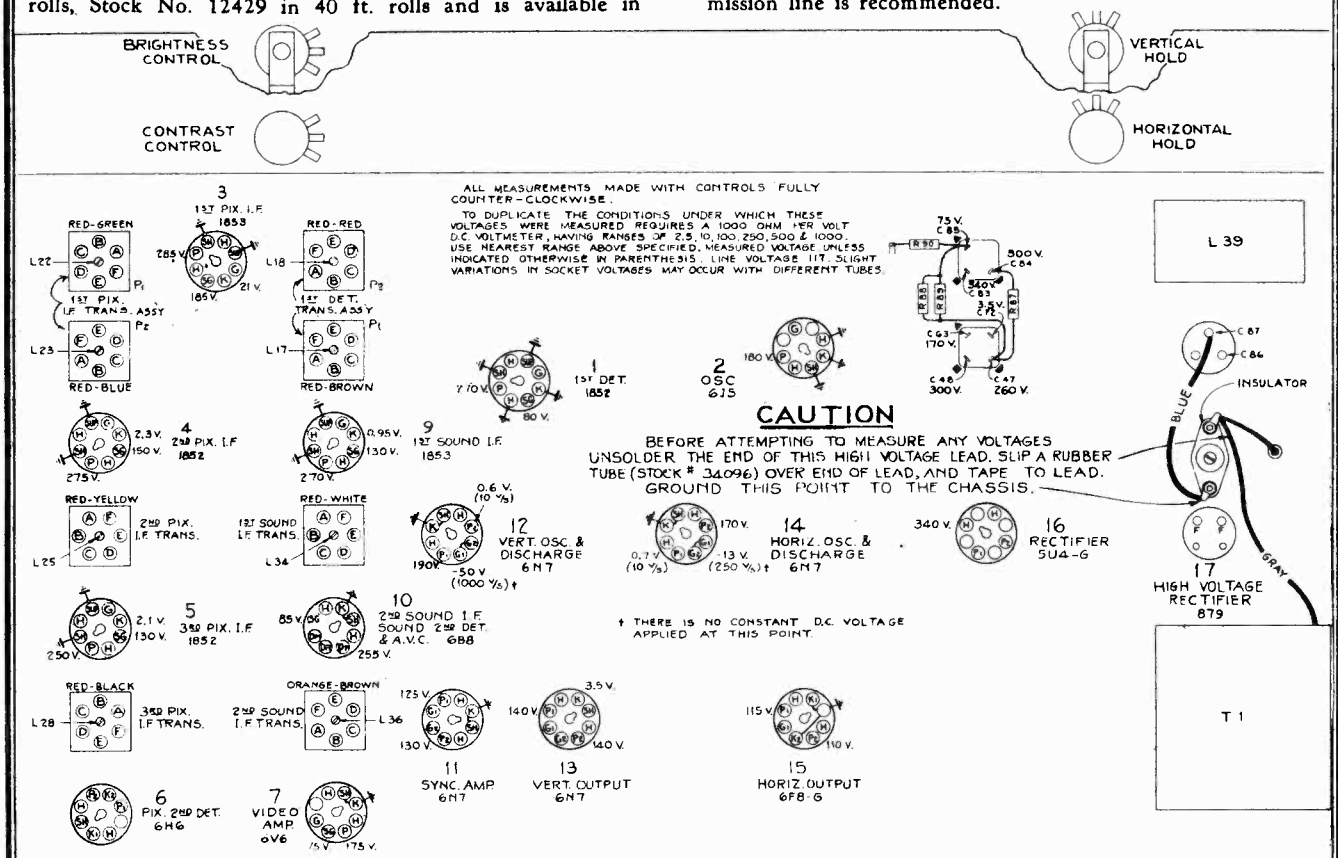


Figure 7—Voltage Diagram Television Chassis

Rear View, TRK-5

RCA MFG. CO., INC.

MODELS TRK-5, TT-5
Chassis KC-3A, KC-3
Socket, Voltage Data
Trimmers, Antenna

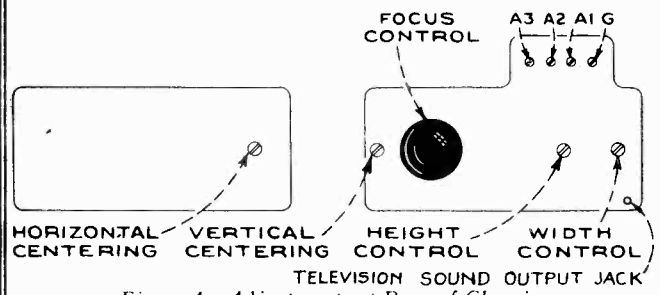


Figure 4—Adjustments at Rear of Chassis

Video Chassis KC-3 (TT-5) KC-3A (TRK-5)

No attempt should ever be made to measure the high (2,000 volts) voltage, because of the dangers and difficulties involved. If at any time it becomes necessary to service the high voltage circuit, the suspected parts should be replaced by parts known to be in good operating condition.

Always replace the red can over the 879 high voltage rectifier.

The most dangerous portion of the receiver is the plate (top cap) lead for the 879 high voltage rectifier. Always be **very** careful when working near or with this lead.

When working on the high voltage supply portion of this chassis, the following precautions should be observed:

1. Remove power supply cord from the power supply socket.
2. Use only one hand at a time.
3. Connect a shorting lead between ground (firstly) and to the high voltage side.
4. Whenever working with the oil-filled high voltage filter capacitors, keep a constant short across the capacitor, as these capacitors do not completely lose their charge after being discharged a single or several subsequent times.
5. Only one person at a time should work on the unit to prevent any misunderstanding which may result in an accident.

When any changes are made on the Video portion of the chassis, the locations of leads and parts should be returned as closely as possible to their original positions.

Service Hints:

1. In some cases the horizontal sweep oscillator circuit will radiate energy to nearby broadcast receiving antennas and lead-ins, causing interference with standard broadcast receivers. It has been found that this trouble has been cleared up in some cases by use of an RCA "Magic Wave" antenna for the broadcast receiver receiving the interference.
2. If the picture "tears out" when the receiver is jarred it may be due to microphonic 1852, 1853, or 6J5 tubes.
3. The 6J5 oscillator tube should be removed without rocking it in its socket to loosen it, as the motion may cause the 80.5 mmf capacitor C16 to break off.
4. The coils or straps in the h.f. oscillator circuits **should not be touched or moved** or the alignment of the receiver will be disturbed.
5. The two Video coupling capacitors C44, 45, should be kept clear of chassis.
6. In some cases the metal Kinescope mounting shield may become magnetized by the earth's or some nearby magnetic field, and thus distort the picture on the screen towards the magnetized portion of the shield. The shield can be demagnetized by passing it slowly through a solenoid which is energized by an a-c current.

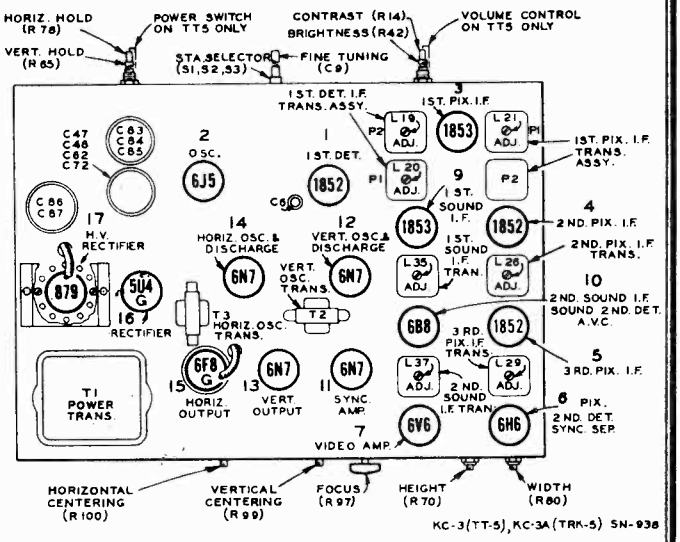


Figure 5—Top View Television Chassis

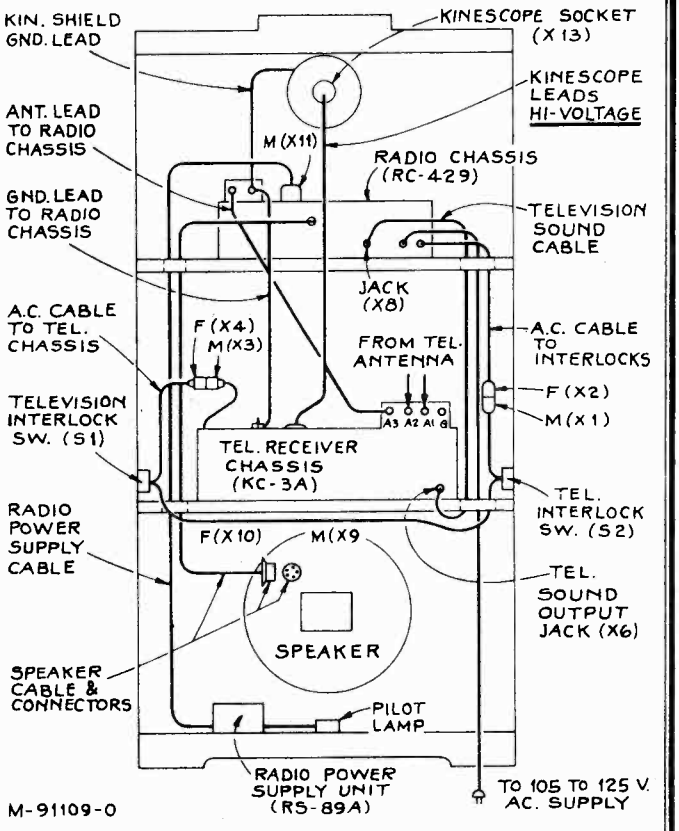


Figure 6—Rear View Model TRK-5

Antenna

The finest television receiver built may be said to be only as good as the antenna design and installation. It is therefore important to use a correctly designed antenna, and use care in its installation.

The RCA Double Dipole Antenna, Stock No. 9871, is recommended for use with these receivers. Both this antenna and the "V" antenna described below are especially designed for a sufficient broad frequency response to cover the contemplated television spectrum with good efficiency and are therefore superior to a single Dipole type antenna.

When greater signal pickup, or where a shielding effect from noise pickup or image reflections are desired, a reflector assembly Stock No. 9872 may be added to the Stock No. 9871 Antenna to obtain an improved signal-to-noise ratio.

The RCA Double "V" Wire type Television Antenna is alternative type of antenna designed for television sight and sound reception. Two points of support are necessary. It serves adequately in suburban areas but may not be sufficiently flexible and efficient for congested city areas where bad reflections and interference are encountered.

MODEL TRK-5
Receiver Chassis RC-429
Specifications, Dial Data

RCA MFG. CO., INC.

MODELS 98T, 98K2
Dial Calibration

Electrical Specifications

FREQUENCY RANGES

Standard Broadcast ("A" band)	540-1720 kc
Medium Wave ("B" band)	2.3-7.0 mc
Short Wave ("C" band)	7.0-22 mc
Intermediate Frequency	455 kc

TUBE COMPLEMENT

(1) RCA-6A8-G	1st-Det., and Osc.
(2) RCA-6K7	I-F Amplifier
(3) RCA-6Q7	2nd-Det., A.V.C., 1st Audio
(4) RCA-6J5	Phase Inverter
(5) RCA-6K6-G	Power Output
(6) RCA-6K6-G	Power Output
(7) RCA-6U5	"Magic Eye"
(8) RCA-5Y3-G (in SPU RS-89A)	Full-Wave Rectifier

Dial Lamps	Mazda No. 44, 6.3 volts, .25 amp.
Power Supply Rating	105-125 volts, 60 cycles, 75 watts

POWER OUTPUT

Undistorted	5 watts
Maximum	5.5 watts

LOUDSPEAKER (RL-70H-5)

Type	12-inch electrodynamic
Voice-Coil impedance	2.2 ohms at 400 cycles

ELECTRIC TUNING RANGES

Two stations between approximately	550-950 kc
Two stations between approximately	690-1,225 kc
Two stations between approximately	890-1,500 kc

Mechanical Specifications

RC-429 CHASSIS BASE DIMENSIONS:

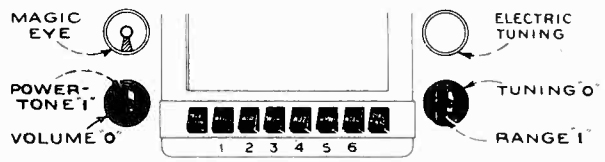
Height	2-½ inches
Width	13 inches
Depth	6-½ inches
Over-all Chassis Height	6-½ inches
Tuning Drive Ratio	12 to 1

General Description

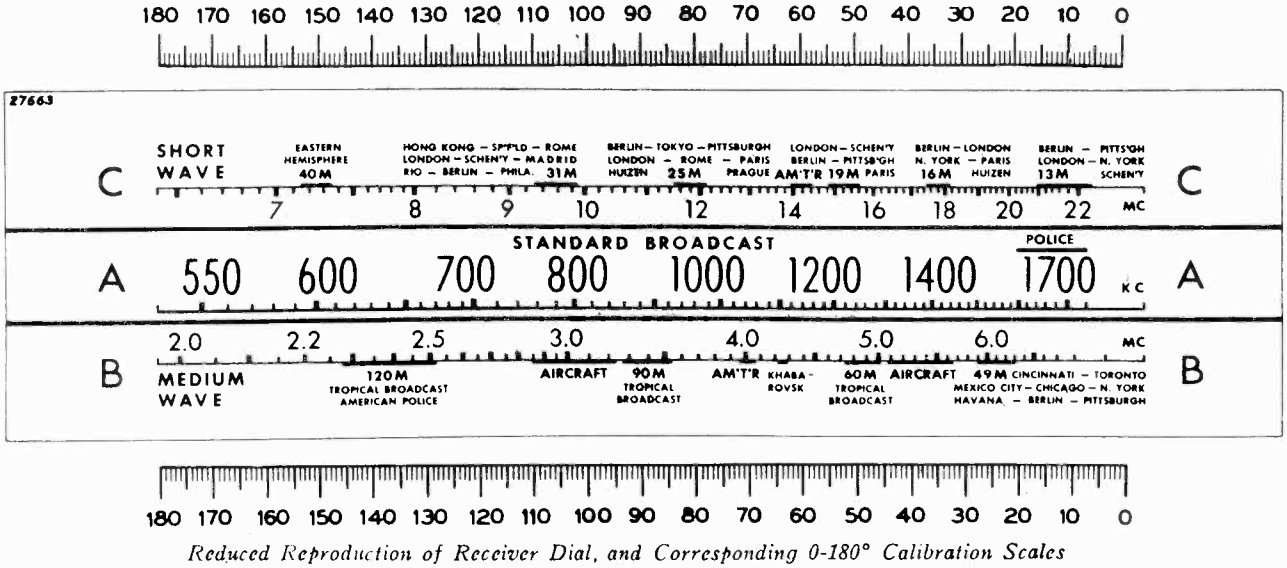
Radio receiver chassis No. RC-429 is used in RCA Victor Television console Model TRK-5.

The audio output of the television chassis is connected to the audio input of the RC-429 chassis by means of jack X-8 and the left-hand push-button switch (S44, S45, S46).

A separate plug-in power supply unit, RS-89A, is used to supply heater and plate voltage to the RC-427 chassis. Service data and diagrams for the power unit are contained in the following pages.



Location of Controls (Radio)

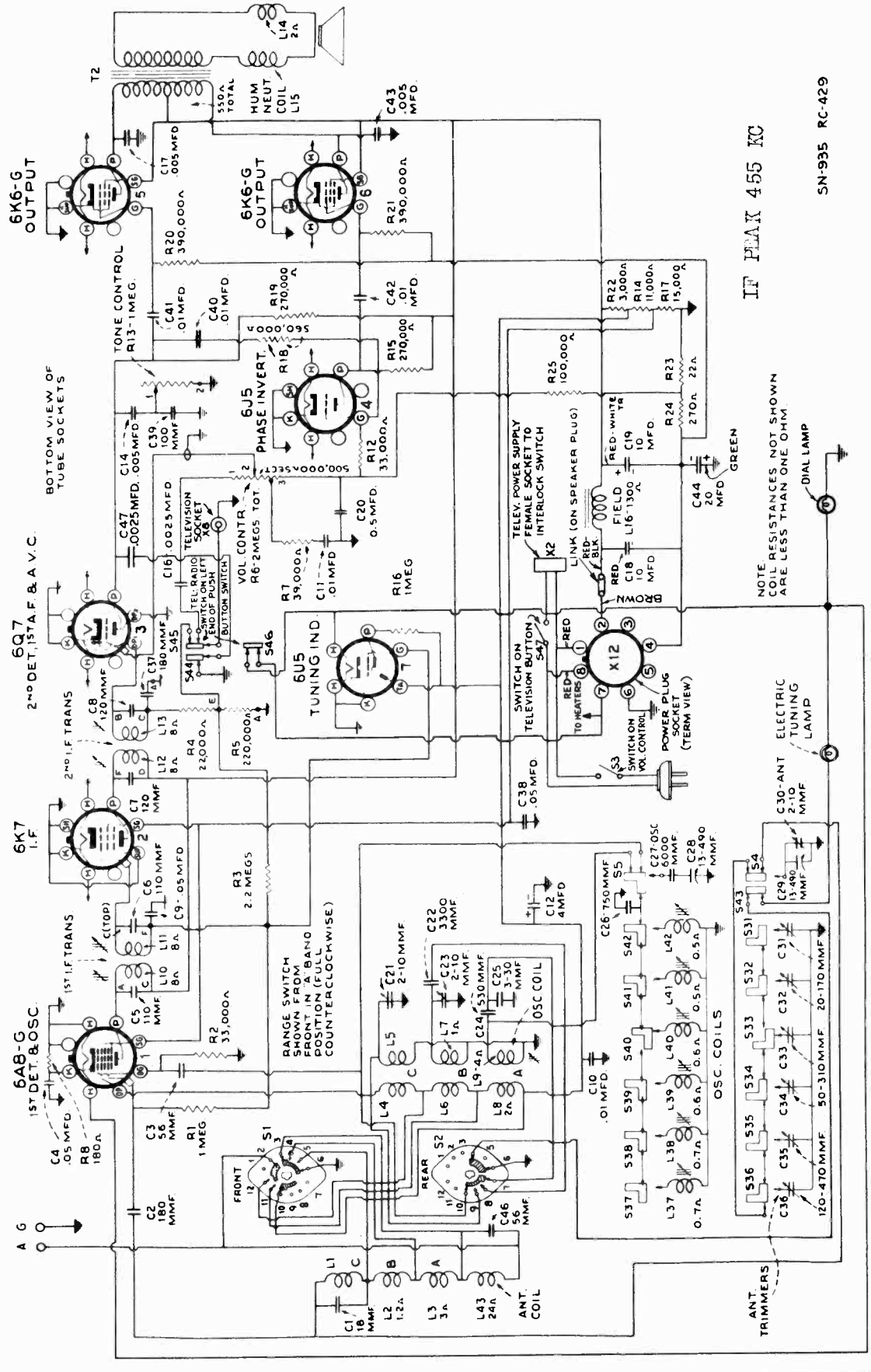


Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Calibration Scales

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example, 28° on the calibration scale corresponds to 1,500 kc on "A" band. Read instructions under "Alignment Procedure."

RCA MFG. CO., INC.

MODEL TRK-5, Chassis RC-429
Schematic, Lead Dress



Schematic Circuit Diagram, Chassis No. RC-429

Precautionary Lead Dress:

1. Electric tuning lamp leads to S43 must be dressed in front of the range switch.
2. Dress leads away from antenna coil.
3. Leads across back of chassis must be dressed away from television jack (X8).
4. C26 (750 mmfd.) on push-button switch assembly must be dressed carefully to prevent shorts.

MODEL TRK-5, Chassis RC-429
Socket, Trimmers, Tuner
Alignment

RCA MFG. CO., INC.

Alignment Procedure
(RADIO CHASSIS)

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

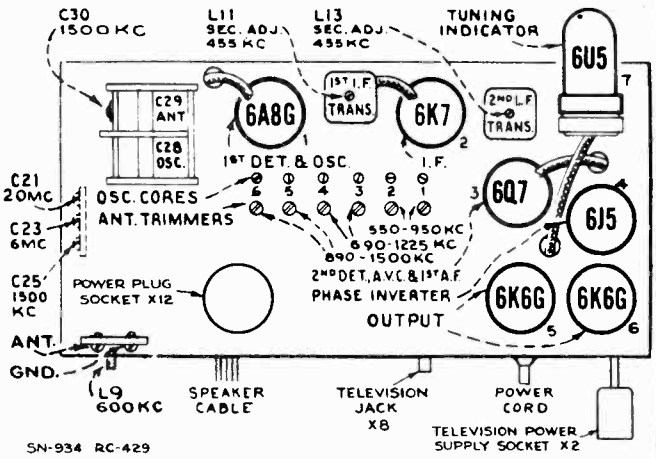
Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver ground terminal (G), and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial if fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The distance from the front of the chassis to the drum must not exceed 3/8-inch. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.



Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

Step	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	"A" band, Quiet Point between 550-750 kc	L12 and L13 (2nd I-F Trans.)
2	6A8-G 1st-Det. grid cap, in series with .01 mfd.			L10 and L11 (1st I-F Trans.)
3	Antenna terminal, in series with 200 mmfd.	600 kc	600 kc 150.5°	L9 (osc.)
4		1,500 kc	1,500 kc 28°	C25 (osc.) C30 (ant.)
5	Repeat steps 3 and 4.			
6	Antenna terminal, in series with 300 ohms	6 mc	6 mc 26.5°	C23 (osc.)*
7		20 mc	20 mc 22°	C21 (osc.)*
8	Follow "Adjustments for Electric Tuning."			

* Use **minimum** capacity peak if two peaks can be obtained, and check for image by tuning radio approximately 910 kc lower.
Note: The oscillator tracks above the signal on all bands.

Adjustments for Electric Tuning

These models have eight push buttons. The left-hand button is a Television switch. The right-hand button connects the gang condenser for manual tuning. The other six buttons are for electric tuning of six different stations in the standard-broadcast range. The station buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

The procedure is as follows:

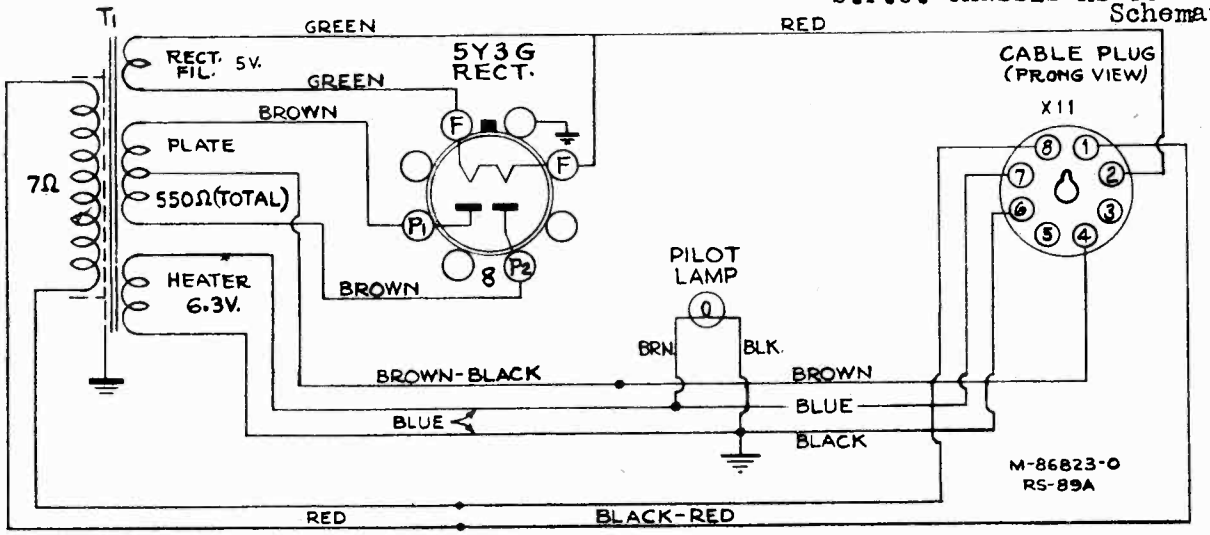
1. Make a list of the desired six stations, arranged in order from low to high frequencies.
2. Push in the dial-tuning button, and manually tune in the first station on the list.
3. Push in station button No. 1 (second from left) and adjust No. 1 oscillator core (L37) to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until station is received.
4. Adjust No. 1 antenna trimmer (C36) for maximum output on this station.

Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.

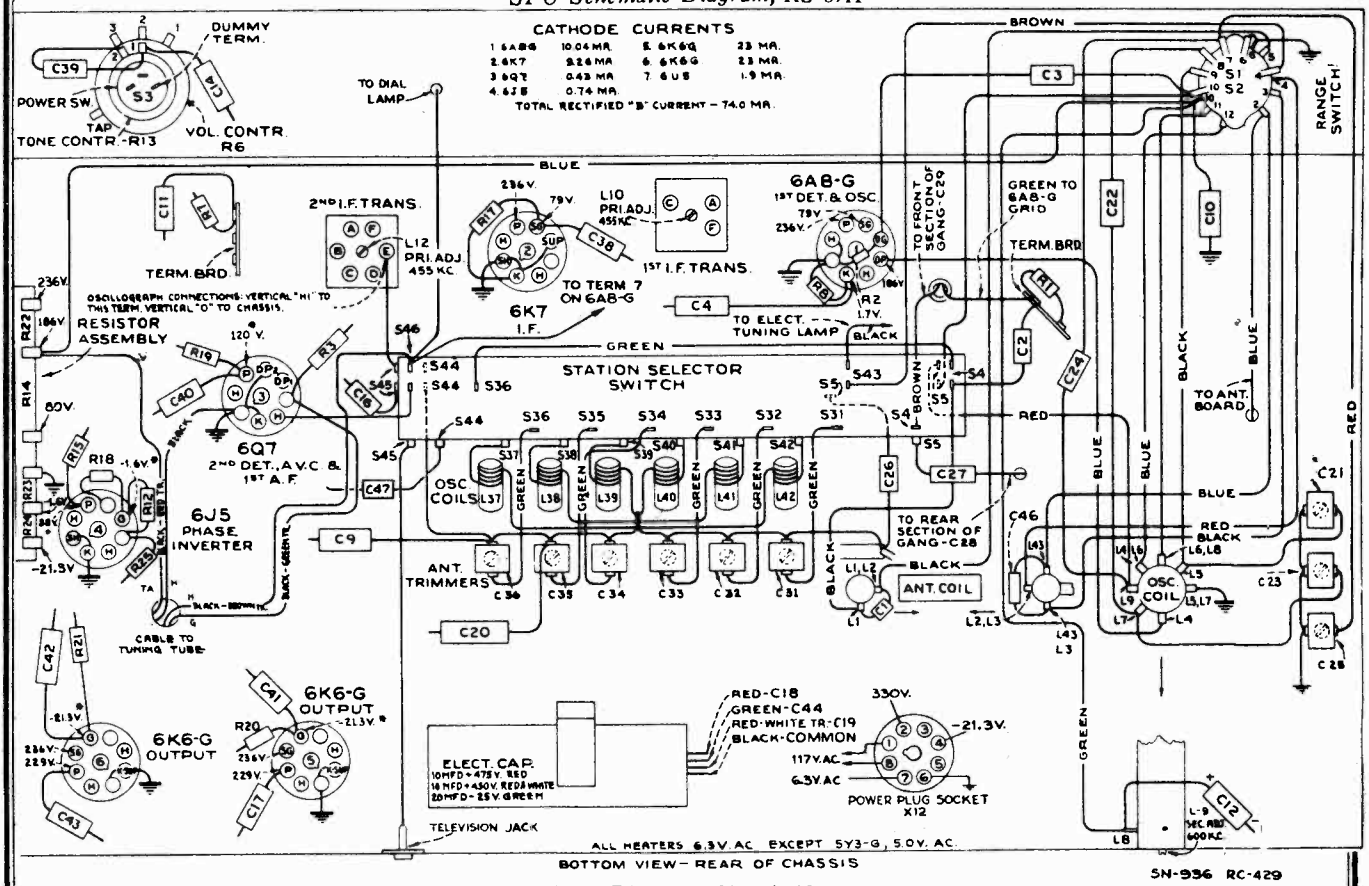
5. Adjust for each of the remaining five stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers. Use the "Magic Eye" to ensure sharp peaking.

RCA MFG. CO., INC.

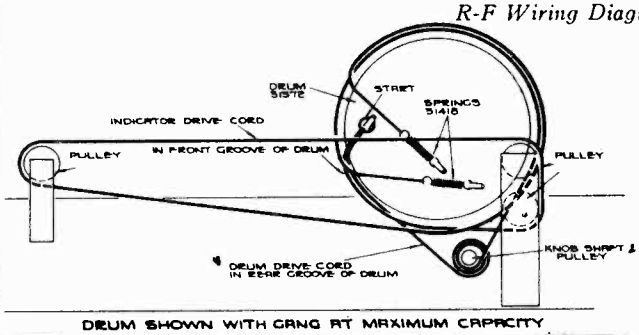
MODEL TRK-5, Chassis RC-429
R-F Chassis Wiring, Voltage
S.P.U. Chassis RS-89A
Schematic



SPU Schematic Diagram, RS-89A



R-F Wiring Diagram, Chassis No. RC-429



Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

***NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

At Left—Dial Mechanism

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	Unit List Price
	TELEVISION CHASSIS ASSEMBLIES	
	TRK-5—KC-3A	
	TT-5—KC-3	
33387	Adjuster—Magnetite core and stud in tube for high frequency oscillator circuit adjustment. (Used with L11, L12, L14, L15)	.55
33835	Adjuster—Magnetite core and stud in tube for high frequency oscillator circuit adjustment. (Used with L13)	.55
31253	Board—Antenna ground terminal board	.25
12884	Capacitor—Plunger type air-trimmer—2½ to 20 mmfd. (Model TRK-5 only) (C6)	.60
12714	Capacitor—Plunger type air-trimmer—2½ to 12 mmfd. (C6) (Model TT-5 only)	.50
33097	Capacitor—4.7 mmfd. 500 volts (neg. temp. coeff.) (C20, C56, C57)	.35
33478	Capacitor—5.6 mmfd., 500 volts (neg. temp. coeff.) (C7)	.40
33476	Capacitor—8.2 mmfd., 500 volts (neg. temp. coeff.) (C8)	.40
33100	Capacitor—18 mmfd., 500 volts (neg. temp. coeff.) (C25)	.40
33101	Capacitor—22 mmfd., 500 volts (neg. temp. coeff.) (C24, C52)	.40
33111	Capacitor—33 mmfd., 500 volts (neg. temp. coeff.) (C15)	.35
33102	Capacitor—47 mmfd., 500 volts (neg. temp. coeff.) (C53, C58)	.45
33103	Capacitor—68 mmfd., 500 volts (neg. temp. coeff.) (C23, C33, C38, C43)	.35
33177	Capacitor—80.5 mmfd., 500 volts (neg. temp. coeff.) (C16)	.45
33104	Capacitor—82 mmfd., 500 volts (neg. temp. coeff.) (C21, C22)	.45
33106	Capacitor—115 mmfd. (C5)	.30
33107	Capacitor—125 mmfd., (C4)	.30
12725	Capacitor—150 mmfd., (C10)	.35
33108	Capacitor—190 mmfd., (C3)	.30
33105	Capacitor—215 mmfd., 500 volts (neg. temp. coeff.) (C31, C32)	.45
33109	Capacitor—220 mmfd. (C2)	.30
33110	Capacitor—390 mmfd. (C1)	.30
12536	Capacitor—820 mmfd., 400 volts (C76)	.45
4881	Capacitor—3,300 mmfd., 400 volts (C67)	.60
33806	Capacitor—.0015 mfd., 1,500 volts (C78)	.25
33584	Capacitor—.005 mfd., 1,200 volts (C11, C12, C13, C14, C18, C19, C26, C27, C28, C29, C30, C34, C35, C36, C39, C40, C41, C42, C49, C50, C51, C54, C55, C60, C65, C66, C79, C80, C92, C93, C94, C95)	.25
33340	Capacitor—.005 mfd., 3,000 volts (C81, C82)	.50
11315	Capacitor—.015 mfd., 400 volts (C61) (Model TT-5 only)	.20
32787	Capacitor—.05 mfd., 400 volts (C46, C64)	.20
4886	Capacitor—.05 mfd., 400 volts (C62, C77)	.20
33341	Capacitor—.05 mfd., 3,000 volts (C74, C75)	.50
32786	Capacitor—.1 mfd., 300 volts (C45, C44)	.25
4839	Capacitor—1 mfd., 400 volts (C59, C91, C70, C73)	.30
33020	Capacitor—15 mfd., 2,500 volts (C87) .05 mfd., 3,000 volts (C86)	2.65
30965	Capacitor—25 mfd., 200 volts (C68, C71)	.30
12484	Capacitor—25 mfd., 350 volts (C37, C69, C88, C89, C90)	.30
33195	Capacitor—10 mfd., 450 volts; 10 mfd., 450 volts; 20 mfd., 450 volts; 20 mfd., 25 volts (C63, C48, C47, C72)	2.20
33190	Capacitor—30 mfd., 450 volts; 30 mfd., 450 volts; 10 mfd., 150 volts (C83, C84, C85)	2.50
33120	Choke—Filter choke (L39)	
33243	Coil—High frequency oscillator coil with core and stud (L11)	.65
33234	Coil—1¼-turn antenna coil, core, stud and capacitor assembly (C5, L9, L10) (green)	1.10
33233	Coil—2-turn antenna coil core, stud and capacitor assembly (C4, L7, L8) (yellow)	1.10
33232	Coil—3-turn antenna coil, core, stud and capacitor assembly (C3, L5, L6) (orange)	1.15
33231	Coil—5½-turn antenna coil, core, stud and capacitor assembly (C2, L3, L4) (red)	1.20
33230	Coil—7½-turn antenna coil, core, stud and capacitor assembly (C1, L1, L2) (brown)	1.25
33538	Coil—Peaking coil and 10 meg. ½ watt resistor assembly (L33, R37)	.55
33539	Coil—Peaking coil and 10 meg. resistor assembly (L31, R32)	.55
33540	Coil—Peaking coil and 10 meg. ½ watt resistor assembly (L32, R35)	.55
33541	Coil—Peaking coil and 1,500 ohm, ½ watt resistor assembly (L38, R59)	.55
33228	Condenser—Adjustable oscillator tuning condenser mounted on band switch (C9)	2.10
33385	Connector—Insulated plate connector and lead (Use with 879 Rectifier Tube)	.35
33280	Control—Audio volume control—1 meg. (Model TT-5 only) (R55)	1.50
33274	Control—Dual contrast and brightness control 10,000 ohm and 100,000 ohm (R14, R42)	2.00
33275	Control—Dual horizontal and vertical holding control—30,000 ohm and 1.2 meg. (R78, R65)	2.00
33278	Control—250,000 ohm "Width" control (R80)	1.00
33276	Control—400,000 ohm "focus" control (R97)	1.00
33277	Control—500,000 ohm "Vert. cent."—"Hor. cent." control (R99, R100)	1.00
33279	Control—2 megohm "Height" control (R70)	1.00
33015	Insulator—Stand-off porcelain insulator—less hardware	.30
4449	Knob—"Focus" control knob	.15
33225	Nut—Speed nut for use with high frequency coil assemblies (Pkg. of 10)	.01
14278	Receptacle—Television sound output receptacle (X6)	.25
14074	Resistor—82 ohms, ½ watt (R13, R44)	.20
14561	Resistor—220 ohms, ½ watt (R27, R22)	.20
11352	Resistor—910 ohms, ½ watt (R8)	.20
14720	Resistor—1,000 ohms, ½ watt (R17, R25, R49)	.20
30152	Resistor—1,000 ohms, 1 watt (R20, R24, R47)	.22
33318	Resistor—1,200 ohms, 2 watts (R87)	.25
11351	Resistor—1,300 ohms, ½ watt (R26)	.20
14499	Resistor—1,500 ohms, ½ watt (R18)	.20
12194	Resistor—1,800 ohms, ½ watt (R29)	.20
13486	Resistor—2,200 ohms, 1 watt (R6)	.22
13031	Resistor—3,300 ohms, 1/10 watt (R12 in early production)	.15
12312	Resistor—3,300 ohms, ½ watt (R19, R7)	.20
30150	Resistor—3,300 ohms, 1 watt (R7)	.22
12955	Resistor—3,900 ohms, ½ watt (R30)	.20
33568	Resistor—3,900 ohms, 2 watts (R36)	.25
11650	Resistor—4,700 ohms, 1/10 watt (R12 in later production)	.15
12265	Resistor—6,800 ohms, ½ watt (R31, R9)	.20
14075	Resistor—8,200 ohms, ½ watt (R63, R64)	.20
3155	Resistor—9,100 ohms, 1 watt (R90)	.22
3078	Resistor—10,000 ohms, ½ watt (R58, R62)	.20
8043	Resistor—10,000 ohms, 2 watts (R67)	.25
30128	Resistor—12,000 ohms, ½ watt (R61)	.20
14284	Resistor—22,000 ohms, 1/10 watt (R51)	.15
14390	Resistor—27,000 ohms, 1/10 watt (R10)	.15
12738	Resistor—27,000 ohms, ½ watt (R54) (Model TT-5 only)	.20
12454	Resistor—33,000 ohms, ½ watt (R5, R77)	.20
33639	Resistor—33,000 ohms, 1 watt (R91)	.20
30683	Resistor—33,000 ohms, 1 watt (R16)	.22
30434	Resistor—39,000 ohms, 1 watt (R46)	.22
33182	Resistor—43,000 ohms, 2 watts (R88, R89)	.25
12412	Resistor—47,000 ohms, ½ watt (R93, R94)	.20
30485	Resistor—47,000 ohms, 1 watt (R84, R86)	.22
33567	Resistor—62,000 ohms, ½ watt (R28, R23)	.20
13715	Resistor—68,000 ohms, ½ watt (R73)	.20
30679	Resistor—68,000 ohms, 1 watt (R50)	.22
8064	Resistor—82,000 ohms, ½ watt (R15, R45)	.20
11281	Resistor—100,000 ohms, 1/10 watt (R21)	.15
14560	Resistor—100,000 ohms, ½ watt (R11, R48, R52, R67, R79)	.20
30180	Resistor—120,000 ohms, ½ watt (R4)	.20
30493	Resistor—150,000 ohms, ½ watt (R43)	.20
12264	Resistor—220,000 ohms, ½ watt (R68, R75, R76, R101)	.20
33501	Resistor—330,000 ohms, 1 watt (R98)	.20
12285	Resistor—470,000 ohms, ½ watt (R34)	.20
33502	Resistor—470,000 ohms, 1 watt (R92)	.20
33593	Resistor—560,000 ohms, 1 watt (R95)	.22
12413	Resistor—680,000 ohms, ½ watt (R81)	.20
33598	Resistor—680,000 ohms, 1 watt (R96)	.22
13730	Resistor—1 meg. ½ watt (R1, R2, R3, R33, R53, R60, R58, R66)	.20
30208	Resistor—1.2 meg. ½ watt (R39, R82, R83, R71)	.20
12679	Resistor—2.2 meg. ½ watt (R74)	.20
13167	Resistor—3.9 meg. ½ watt (R38, R40)	.20
30931	Resistor—4.7 meg. ½ watt (R69)	.20
33229	Roller—Rubber friction roller for use on band switch for adjustment of oscillator trimmer	.10
3682	Shield—Tube shield for "Hor. out." tube	.22
33211	Socket—4-prong rectifier tube socket	1.00
31251	Socket—Octal base wafer type tube socket	.25
33001	Socket—11-prong magnal Kinescope socket (X13)	1.20
18008	Socket—6J5 oscillator tube socket	.25
33226	Switch—Band switch complete—less tuning condenser and friction roller	4.60
33281	Switch—Rotary type power switch (S5) (Model TT-5 only)	.65
33519	Transformer—"1st Det. P1" I-F transformer (R8, C20, L17, L20, R10, C25) (red and brown)	2.70
33520	Transformer—"1st Det. P2" I-F transformer (L18, C21, C22, C23, L19, R12) (red and red)	2.70
33523	Transformer—"1st pix P1" I-F transformer (L21, L22, R18, C31) (red and green)	2.20
33524	Transformer—"1st pix P2" I-F transformer (L23, L24, C33, R21) (red and blue)	2.00
33526	Transformer—"1st Sound" I-F transformer (L34, L35, C52, C53) (red and white)	2.50
33522	Transformer—"2nd Picture" I-F transformer (L25, L26, L27, C38, R26) (red and yellow)	2.00
33527	Transformer—"2nd Sound" I-F transformer (L36, L37, C56, C57, R51) (brown and orange)	2.40
33525	Transformer—"3rd Picture" I-F transformer (L28, L29, L30, C43, P29) (red and black)	2.00
32899	Transformer—Horizontal oscillation transformer (T3)	1.75
33390	Transformer—Plate and filament power transformer (T1)	13.50
32898	Transformer—Vertical oscillation transformer (T2)	1.75
	3 BAND RADIO RECEIVER	
	No. RC-429 Used with Model TRK-5	
14517	Board—Antenna—Ground terminal board	.25
30752	Bracket—"Magic Eye" bracket	.25
30766	Cap—Rubber cap for "Magic Eye"	.15
32486	Capacitor—Antenna coil trimmer capacitor bank (C31, C32, C33, C34, C35, C36)	1.40
31400	Capacitor—Triple adjustable trimmer, two sections, 2-10 mmfd., one section 3-30 mmfd. (C21, C23, C25)	.50
12722	Capacitor—18 mmfd. (C1)	.35
12723	Capacitor—56 mmfd. (C3, C46)	.35
12720	Capacitor—100 mmfd. (C39)	.35
14262	Capacitor—130 mmfd. (C5, C6)	.30
12404	Capacitor—120 mmfd. (C7, C8)	.30
14712	Capacitor—180 mmfd. (C37)	.30
30232	Capacitor—200 mmfd. (C2)	.35
32492	Capacitor—530 mmfd. (C24)	.40
31435	Capacitor—750 mmfd. (C26)	.40
4881	Capacitor—3,300 mmfd. (C22)	.60
31405	Capacitor—6,000 mmfd. (C27)	.75
5107	Capacitor—.0025 mfd., 700 volt (C16, C47)	.20
4838	Capacitor—.005 mfd., 1,000 volt (C14, C17, C43)	.25
14393	Capacitor—.01 mfd., 300 volt (C11)	.30
30882	Capacitor—.05 mfd., 200 volt (C4, C9, C38)	.20
4858	Capacitor—.01 mfd., 500 volt (C10, C40, C41, C42)	.25
30867	Capacitor—0.5 mfd., 200 volt (C20)	.30
32145	Capacitor—4 mfd., 450 volt (C12)	.70
32142	Capacitor—10-10-20 mfd. (C18, C19, C44)	1.90
31382	Clip—Push button coil and core mounting clip	.04
32493	Coil—Antenna coil assembly A, B, and C band (L1, L2, L3, L43)	1.35
31385	Coil—Push button oscillator coil, "A" band (L37, L38) (550-950KC)	.30
32487	Coil—Push button oscillator coil, "A" band (L39, L40) (690-1225KC)	.35
31383	Coil—Push button oscillator coil, "A" band (L41, L42) (890-1,500KC)	.30
31951	Coil—Oscillator coil assembly for A, B, and C bands (L4, L5, L6, L7, L8, L9)	1.40
31369	Condenser—2 gang variable tuning condenser (C28, C29, C30)	2.65
33497	Control—Dual volume and tone control and switch (R6, R13, S3)	3.00
32634	Cord—Drive cord with clamping clips	.10
12800	Core—Adjustable core and stud for oscillator coil	.35
31372	Drum—Variable condenser drive cord drum and calibration dial	.65
11891	Lamp—6.3 volt dial lamp (Mazda No. 44)	.17
32670	Plate—Dial plate assembly	.75
12493	Plug—Female speaker cable plug (X10)	.30
32552	Pointer—Dial pointer	.20
31373	Pulley—Pointer drive cord pulley	.08
14278	Receptacle—Television sound input socket (X8)	.25
32143	Resistor—Voltage divider comprising one 11,000 ohm, one 5,000 ohm, one 22 ohm and one 270 ohm section (R14, R22, R23, R24)	.90
30545	Resistor—180 ohms, ½ watt (R8)	.20
5114	Resistor—15,000 ohms, 1 watt (R17)	.22
14284	Resistor—22,000 ohms, 1/10 watt (R4)	.15
12454	Resistor—33,000 ohms, ½ watt (R2, R12)	.20
12266	Resistor—39,000 ohms, ½ watt (R7)	.20
14560	Resistor—100,000 ohms, ½ watt (R25)	.20
11398	Resistor—220,000 ohms, 1/10 watt (R5)	.15
12199	Resistor—270,000 ohms, ½ watt (R15, R19)	.20
13479	Resistor—390,000 ohms, ½ watt (R20, R21)	.20
12486	Resistor—560,000 ohms, ½ watt (R18)	.20
12013	Resistor—1 meg., 1/10 watt (R16)	.15
13730	Resistor—1 meg., ½ watt (R1)	.20
12679	Resistor—2.2 meg., ½ watt (R3)	.20
14343	Retainer—Retainer for stock No. 33500 tuning shaft	.03
14887	Retainer—Retainer spring for stock No. 31373 pulley	.01
33500	Shaft—Tuning shaft	.30
12581	Shield—I-F transformer shield top	.25
31319	Socket—8 prong socket for power supply plug (X12)	.25
31639	Socket—Dial lamp socket, one wire non-insulated	.25
31364	Socket—Dial lamp socket, two wire insulated	.20
13871	Socket—Magic eye socket	.45
31251	Socket—Octal type tube socket	.25
31418	Spring—Indicator or drive cord tension spring	.05
33496	Switch—Range switch (S1, S2)	1.15
33498	Switch—Station selector push button switch (S31, S32, S33, S34, S35, S36, S37, S38, S39, S40, S41, S42, S43, S4, S5, S44, S45, S46)	3.10
33499	Switch—Television power switch and cover (S47)	.45
14376	Transformer—1st I. F. transformer complete (L10, L11, C5, C6)	2.45
14283	Transformer—2nd I. F. transformer complete (L12, L13, C7, C8, C37, R4, R5)	3.80
	POWER SUPPLY UNIT	
	RS—89—A	
	USED WITH RC—429	
33606	Plug—8 prong plug for power supply cable (X11)	.45
31251	Socket—Octal base tube socket	.25
33224	Transformer—Power transformer (T1)	5.25
	SPEAKER ASSEMBLIES	
	TRK-5	
	RL-70—H-5	
31825	Cap—Speaker cone dust cap	.05
11469	Coil—Hum bucking coil (L15)	.30
12012	Coil—Speaker field coil (L16)	2.90
31275	Cone—Speaker cone and voice coil (L14)	1.75
31539	Plug—5 prong male speaker plug with link (X9)	.25
32146	Speaker—Speaker complete	12.10
14534	Transformer—Output transformer (T2)	2.10
	MISCELLANEOUS ASSEMBLIES	
	MODEL TRK-5	
	MODEL TT-5	
31397	Button—Station selector push button (Model TRK-5 only)	.15
33597	Cap—Pilot lamp "bull's eye" (Model TRK-5 only)	.20
33480	Cable—38-inch shielded cable with two male plugs. Used between Radio and television chassis (Model TRK-5 only) (X5, X7)	1.30
33479	Cable—61-inch audio connection cable with two male connectors (Model TT-5 only) (X5, X7)	1.60
33363	Connector—2 prong female plug for interlock cable (X2)	.45
4573	Connector—2 prong female connector used on television power cable (X4)	.30
31458	Cover—Package of eight protective push button covers	.08
32673	Dial—3-band glass dial scale	.60
33481	Escutcheon—Dial escutcheon and scale (Model TRK-5 only)	3.60
33518	Glass—Safety protective glass for kinescope	2.90
33506	Knob—Band switch knob (Model TRK-5 only)	.25
33471	Knob—"Brightness", "Vert. hold" or "volume" knob	.25
33470	Knob—"Contrast", "Hor. hold", "Fine tuning" or "Tone control" knob	.20
33469	Knob—"Off-on" control knob (Model TT-5 only)	.20
33505	Knob—Radio tuning knob (Model TRK-5 only)	.30
33472	Knob—"Station selector" control knob (white dot)	.25
33468	Knob—"Volume" control knob	.15
11891	Lamp—6.3 volt, Pilot indicator lamp (Mazda No. 44)	.17
31458	Marker—"Dial tuning" marker tab (Model TRK-5 only)	.01
33598	Marker—"Television marker tab (Model TRK-5 only)	.01
31589	Marker—Complete set of station call letter markers (TRK-5 only)	.35
33225	Nut—"Speed nut" for high frequency coil assembly (Pkg. of 10)	.01
4577	Plug—2 prong male connector used on television power cable (X3)	.45
33244	Plug—2 prong male connector used on interlock cable (X1)	.45
12493	Plug—5 prong female speaker connector plug (Model TRK-5 only)	.30
11210	Screw—1x20x1 in. chassis mounting screw, washer and lock washer (5 req'd)	.05
4569	Screw—1x20x1¼ chassis mounting screw, washer and lock washer (6 req'd)	.06
14270	Spring—Knob spring for stock No. 33468, 33471, 33472 and 33469 knobs	.05
30330	Spring—Knob spring for stock No. 33470 knob	.02
4982	Spring—Knob spring for stock No. 33505 knob	.05
33384	Switch—Interlock switch and cover (S1, S2, TRK-5, S3 S4, TT-5)	.55

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

RCA MFG. CO., INC.

MODELS TRK-9, Video Chassis KC-4A, SPU Chassis KK-7A
TRK-12, Video Chassis KC-4, SPU Chassis KK-7
Schematic, Voltage

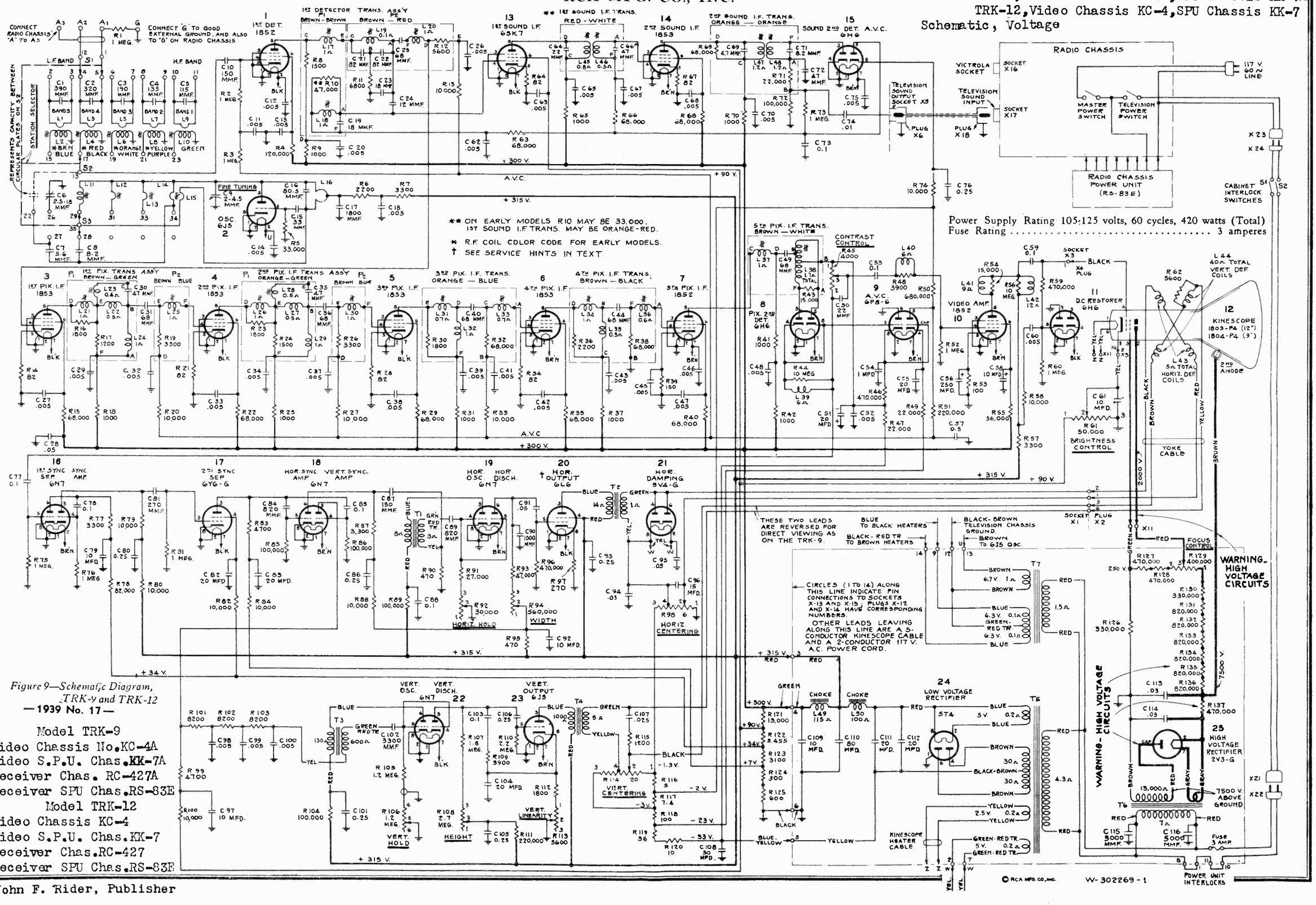


Figure 9—Schematic Diagram, TRK-9 and TRK-12

—1939 No. 17—

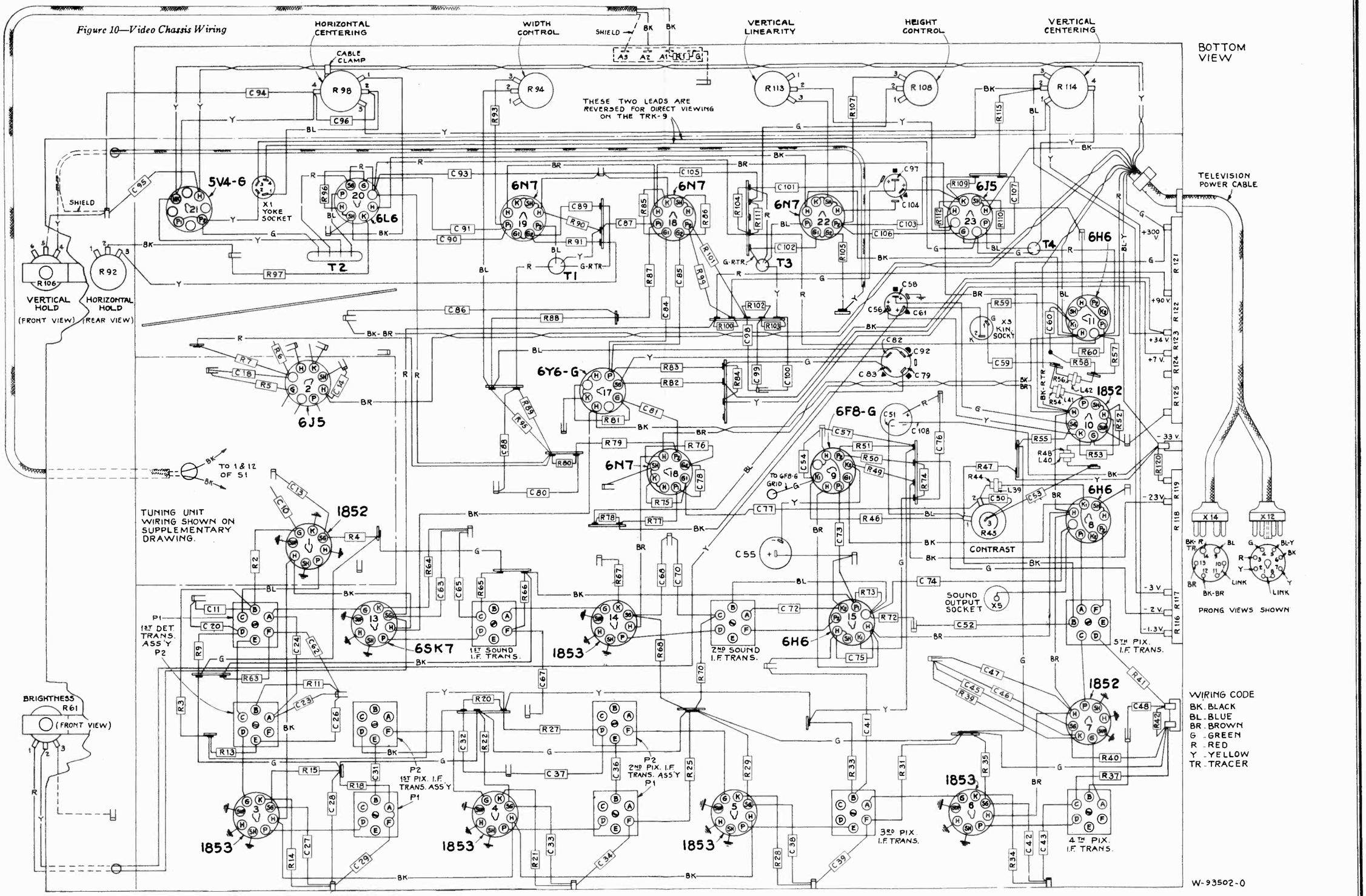
Model TRK-9
Video Chassis No. KC-4A
Video S.P.U. Chas. KK-7A
Receiver Chas. RC-427A
Receiver SPU Chas. RS-83E

Model TRK-12
Video Chassis KC-4
Video S.P.U. Chas. KK-7
Receiver Chas. RC-427
Receiver SPU Chas. RS-83E

MODELS TRK-9, TRK-12
Video Chassis Wiring

RCA MFG. CO., INC.

Figure 10—Video Chassis Wiring



RCA MFG. CO., INC.

MODEL TRK-12
Assembly, Operating Controls
Specifications

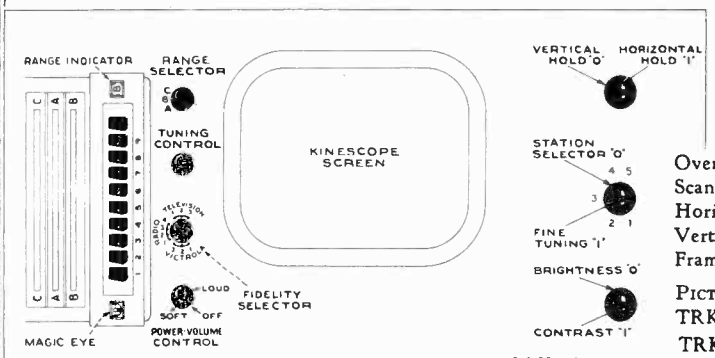


Figure 2—Operating Controls, TRK-12

Television Channels (Selector Switch Positions)

1	84 to 90 mc.
2	78 to 84 mc.
3	66 to 72 mc.
4	50 to 56 mc.
5	44 to 50 mc.

Over-all Video Band Width ..... 4 mc.
Scanning ..... Interlaced, 441 Line
Horizontal (Line) Scanning Frequency (Sawtooth Wave) . 13,230 cps
Vertical (Field) Scanning Frequency (Sawtooth Wave) .... 60 cps
Frame Frequency (Picture Repetition Rate) ..... 30 cps

Picture Size (Approx. Mask Dimensions)

TRK-9	5½ x 7¼ in.
TRK-12	7⅜ x 9¾ in.

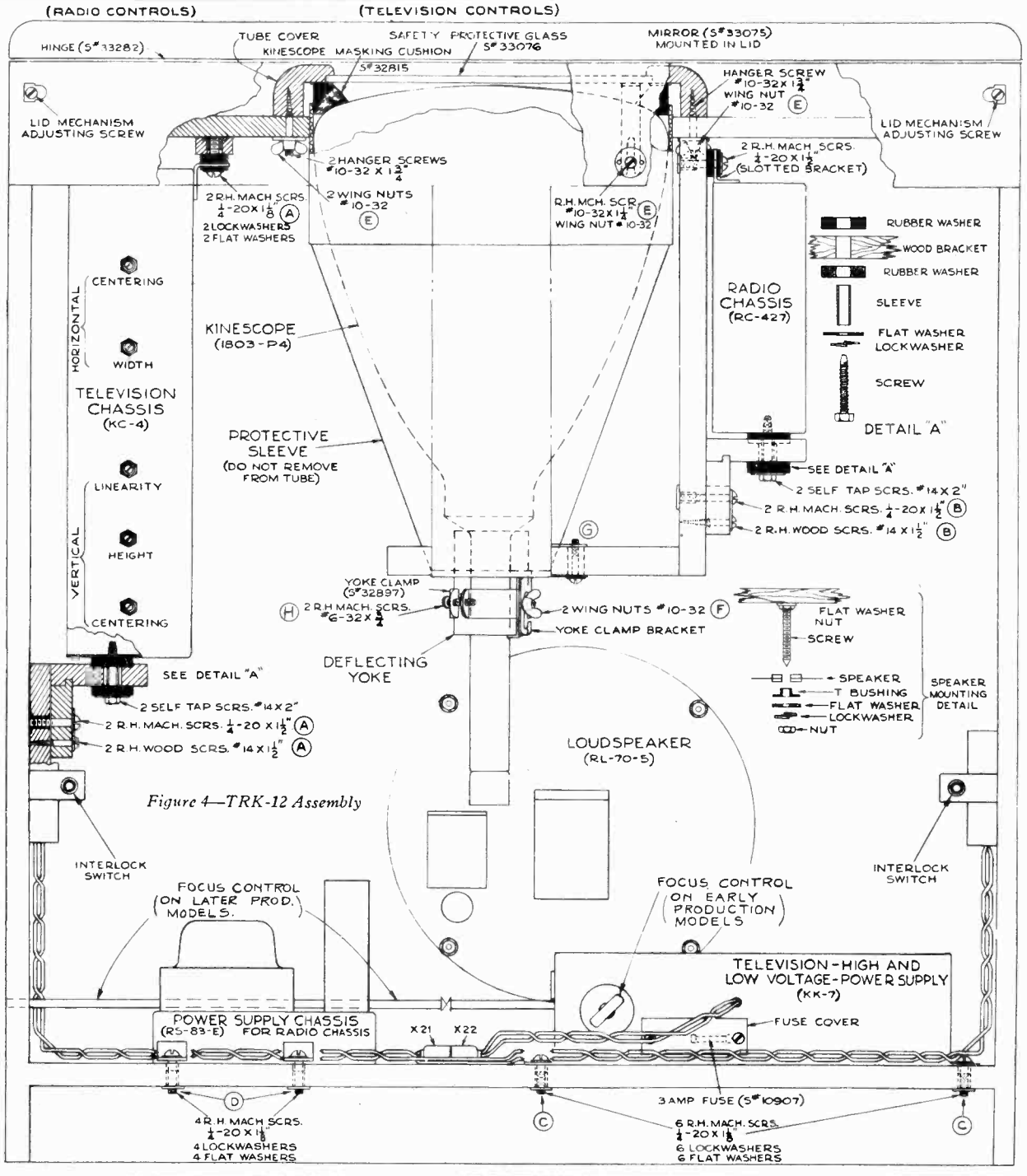


Figure 4—TRK-12 Assembly

MODELS TRK-9, TRK-12
Cabinet Wiring
Socket

RCA MFG. CO., INC.

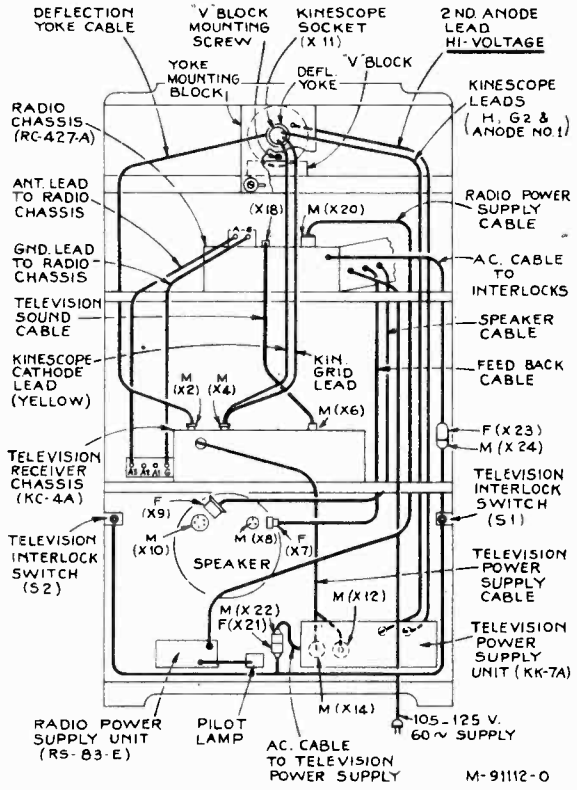


Figure 3—Cabinet Wiring—Model TRK-9

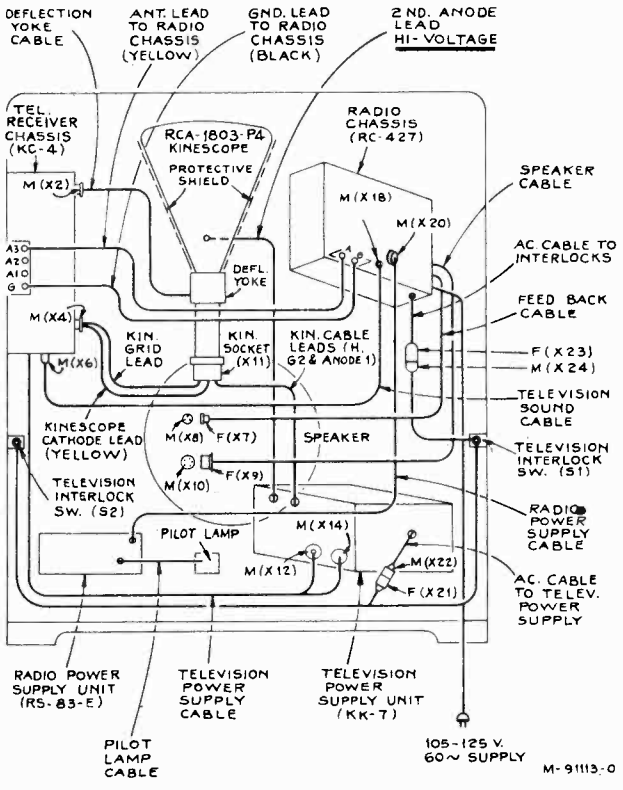
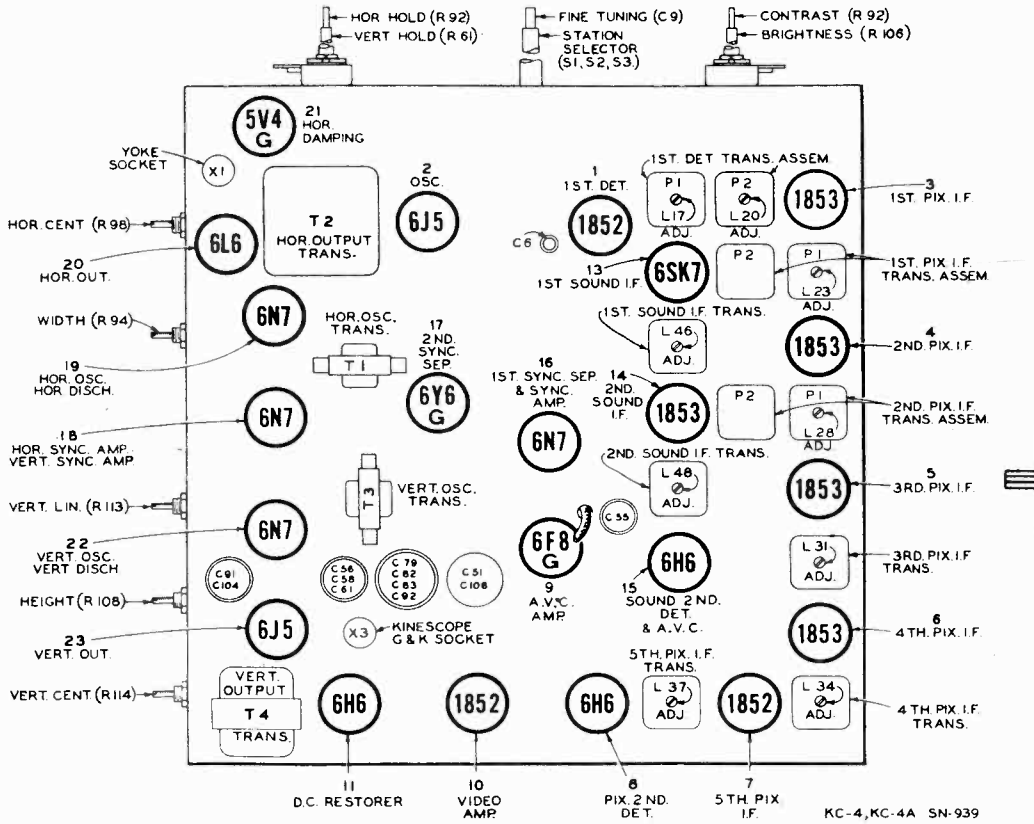
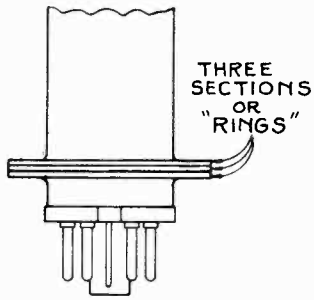


Figure 3a—Cabinet Wiring—Model TRK-12



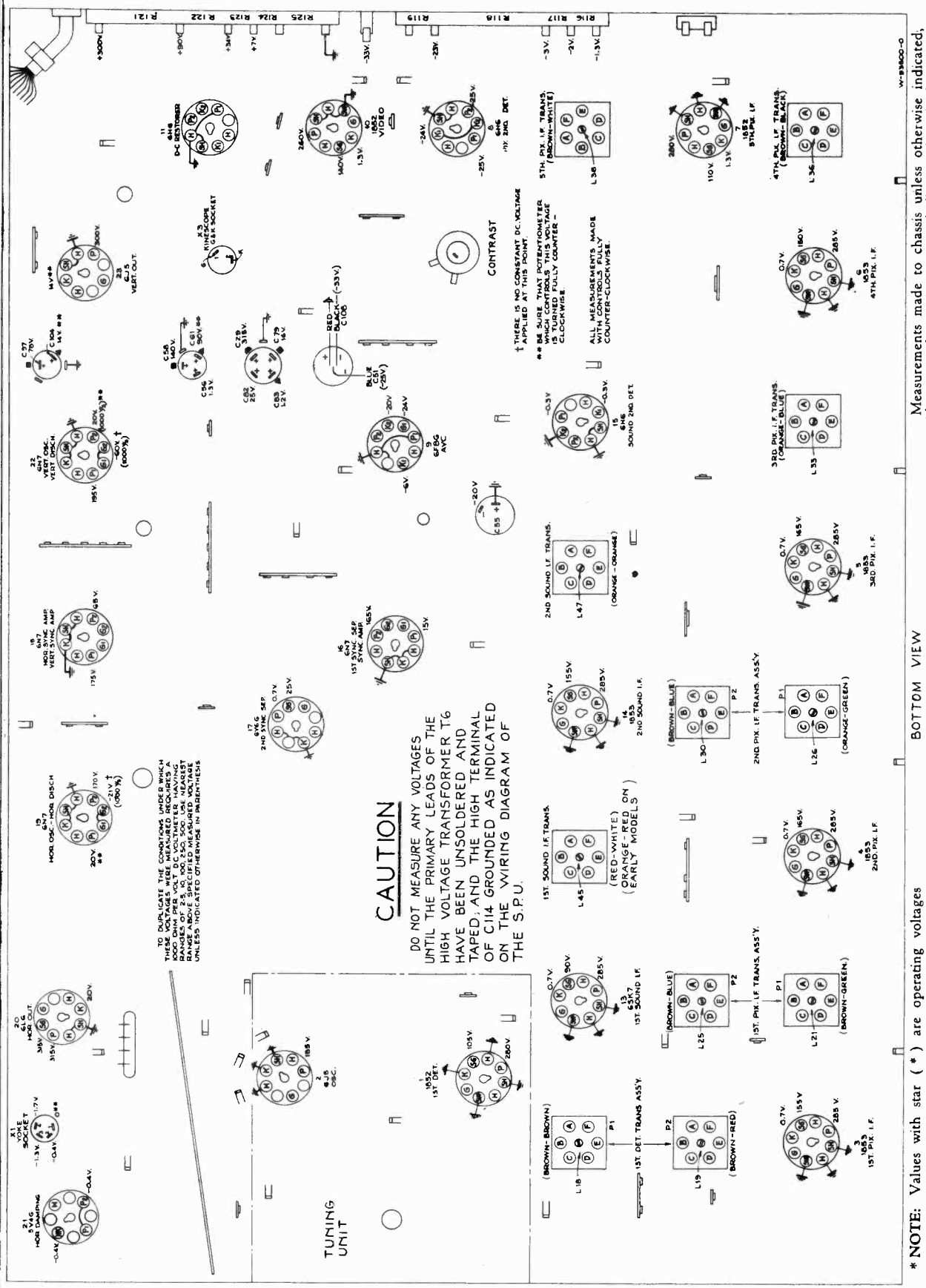
At Left—Figure 5
Top View Video Chassis



(Above) Figure 6
Recommended Type 6L6 Identification

RCA MFG. CO., INC.

MODELS TRK-9, TRK-12
Video Voltage



Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and all controls and adjustments full counter-clockwise. Values should hold within ±20% with 117-volt a-c supply.

Figure 8—Voltage Diagram

* **NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

MODELS TRK-9, TRK-12
SPU Chassis KK-7, KK-7A
Chassis Wiring

RCA MFG. CO., INC.

Socket Power Units KK7, KK7A

No attempt should ever be made to measure the high (7,500 volts) voltage because of the difficulties and dangers involved. If, at any time it becomes necessary to service the SPU, the suspected parts should be replaced by parts known to be in good operating condition.

These precautions should be observed when any work on the SPU is being done:

1. Remove power supply cord from the power supply socket.
2. Use only one hand at a time. It is advisable to keep the other hand in one's pocket.
3. Connect a shorting lead between ground (first) and the high voltage side of C114.
4. Whenever working with the oil-filled capacitors, keep a constant short across the capacitor, as these capacitors do not completely lose their charge after being discharged a single or several subsequent times.
5. Only one person at a time should work on the unit to prevent any misunderstanding which may result in an accident.

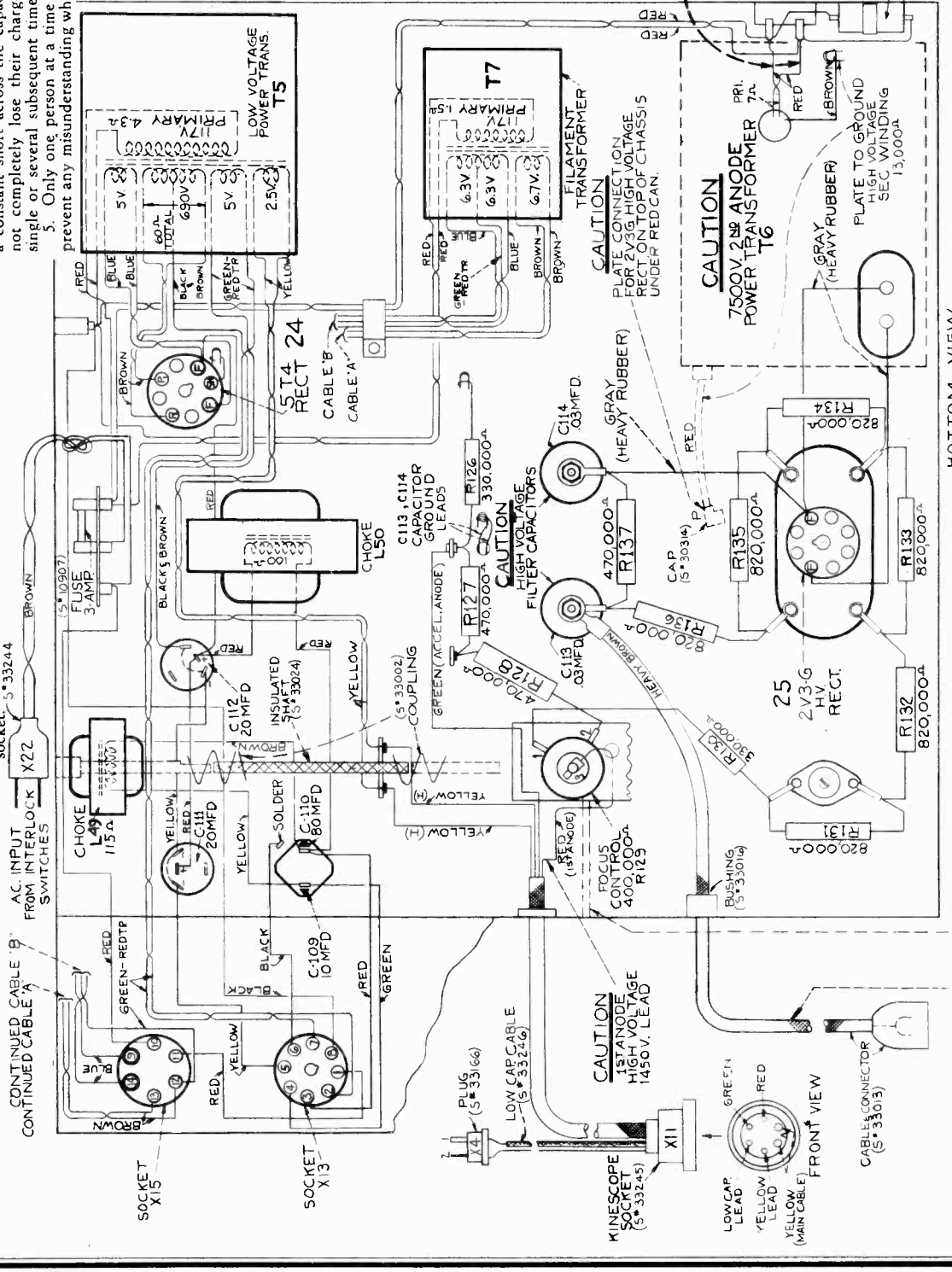


Figure 11—SPU Wiring

RCA MFG. CO., INC.

MODELS TRK-5,TT-5
MODELS TRK-9,TRK-12
Test Patterns

Figure 2—CORRECT PICTURE

Figure 3—INCORRECT FOCUS
To correct—*Adjust Focusing Control for sharpest image*

Figure 4—TOO MUCH CONTRAST
To correct—*Turn Contrast Control counterclockwise and Brightness Control clockwise*

Figure 5—TOO LITTLE CONTRAST
To correct—*Turn Contrast Control clockwise and Brightness Control counterclockwise*

Figure 6—INCORRECT HORIZONTAL HOLD
To correct—*Adjust Horizontal Hold Control until picture "locks in"*

Figure 7—INCORRECT VERTICAL HOLD
To correct—*Adjust Vertical Hold Control until picture "locks in"*

Figure 8—INCORRECT HORIZONTAL CENTERING
To correct—*Adjust Horizontal Centering Control (screwdriver adjustment) to center picture horizontally*

Figure 9—INCORRECT VERTICAL CENTERING
To correct—*Adjust Vertical Centering Control (screwdriver adjustment) to center picture vertically*

Figure 10—INCORRECT WIDTH
To correct—*Adjust Width Control (screwdriver adjustment) for correct width of picture*

Figure 11—INCORRECT HEIGHT
To correct—*Adjust Height Control (screwdriver adjustment) for correct height of picture*

Figure 12—INCORRECT VERTICAL LINEARITY—(Circles flattened at bottom)
To correct—*Turn Vertical Linearity Control counterclockwise and Height Control clockwise (screwdriver adjustments)*

Figure 13—INCORRECT VERTICAL LINEARITY—(Circles flattened at top)
To correct—*Turn Vertical Linearity Control clockwise and Height Control counterclockwise (screwdriver adjustments)*

MODELS TRK-9, TRK-12

The **RCA** Model TRK 12 Television and All Wave Sound Receiver is designed for operation on the present Television Broadcast Bands between 44 and 90 megacycles to reproduce both picture and sound transmissions, and to receive Radio Broadcasts on the three standard major radio bands between 550 and 22,000 kilocycles.

Antenna

A television receiving antenna and its installation must conform to much higher standards than an antenna for reception of international Short Wave and Standard Broadcast signals because:

(1) At the short wave lengths employed, intervening obstacles have a pronounced shielding effect, causing low intensity signals, and often severe trouble with multi-path transmissions; these produce blurring and multi-images.

(2) The picture signal is comprised of a very wide band or range of frequencies, all of which must be received with good efficiency.

Only an RCA Television Antenna which has been designed for the particular instrument should be used with the TRK 12 to insure best results. Three types are available.

1. The Double "V" Type, Stock No. 9870.
2. The Double Dipole, Stock No. 9871.
3. The Double Dipole, Stock No. 9871, with Reflector, Stock No. 9872.

Under favorable conditions, good pictures may be obtained with the Double "V" Wire Type. In areas of weak signals or where interference or double images mar the picture a Double Dipole or Double Dipole and Reflector become necessary.

Full instructions accompany all RCA Television antennas and these instructions must be followed implicitly.

The two leads from the antenna transmission line are for connection to the terminals A1 and A2 showing at the back of the cabinet of the television receiver. *Terminal G must be connected to a good ground such as a cold water pipe.* Terminals A3 and G are connected to the Radio chassis and the circuit is designed so that the Television Antenna is also used for Standard Broadcast and Short-Wave Radio Reception.

An RCA Radio Antenna such as the RCA Magic Wave or RCA Spider-web may be installed. The connection from "A" on the terminal board on the radio chassis to "A3" on the terminal board on the Television chassis must then be removed and the leads from the radio antenna connected to the radio chassis in accordance with the instructions accompanying the antenna. The connection from "G" on the Radio chassis to "G" on the Television chassis must not be removed.

A good ground connection from the termind "G" on the antenna terminal board to a cold water pipe or equivalent "good ground" is absolutely necessary to avoid possible danger from electric shock.

TELEVISION

The picture is formed on the Kinescope screen under the lid and is reflected in the mirror on the lid. The lid when opened must be set at the correct angle for best viewing of the picture. Once your TRK 12 is installed and giving good reception, the controls on the panel under the lid are all that are necessary for satisfactory pictures and sound. If the instrument is moved to another location in the home, the screwdriver-operated controls in the back, and also the Kinescope yoke, may have to be reset.

The ground connection to the antenna terminal board must always be reconnected.

Controls

There are three dual control knobs for Television to the right of the screen, and four single control knobs in the Radio section to the left. Two of these single control knobs are all purpose controls and are used on Television, Radio and Phonograph reproductions. See Figure 1.

Power-Volume Control.—The knob nearest the front of the cabinet on the left hand side turns on the power to the receiver when rotated clockwise from its extreme "Off" position. Rotating it further increases sound volume for Television, Radio, or Phonograph (when an attachment is used).

Fidelity-Selector.—The second knob from the front in the Radio section selects the type of entertainment i.e. "Victrola," "Radio" or "Television."

Turned to the position marked "Victrola" it provides for operation of a Victrola Attachment such as the RCA R-100 or R-93-C. There are three variations of tone possible:

(1) Fully counterclockwise modifies tone, reducing surface noise on old recordings and emphasizing low tones.

(2) The middle Victrola point minimizes bass response, thus emphasizing higher tones.

(3) The next point in a clockwise direction sets the instrument for full tone phonograph reproduction.

The position, marked "Radio," sets the instrument for Radio reception and provides four variations of radio tone control. Turning clockwise these are:

(1) Reduction of static and circuit hiss, and emphasis on low tones.

(2) Speech point with a modification of low tones.

(3) Full tone reception for normal reproductions.

(4) High Fidelity reception for special musical programs giving all the tone values possible.

The position marked "Television" sets the instrument for Television reception. The first and second points, give modified tones as for the "Victrola" position, points (1) and (2), and the third point (3) gives full tone reception.

Horizontal and Vertical Hold Controls.—The dual knob at the back of the panel on the right controls the picture stability. The inner section designated by a "I" is the Horizontal Hold Control and when being set should be turned slowly to the point at which the picture "locks in" horizontally. Figure 6 shows the effect of incorrect setting of the control.

The outer ring section designated by "O" is the Vertical Hold Control and when being set should be turned to the point where the picture "locks in" vertically. See Figure 7.

These two controls on this dual knob should not ordinarily require readjustment after good picture reception has once been obtained. An occasional resetting will be necessary due to changing to a different station, and to the gradual ageing of the tubes.

Station Selector and Fine Tuning.—The outer ring "O" section of the central dual control knob on the right hand side of the panel selects the station from which it is desired to receive television transmissions. The range covers five television channels:

(1) 84 to 90 M.C.
(2) 78 to 84 M.C.
(3) 66 to 72 M.C.
(4) 50 to 56 M.C.
(5) 44 to 50 M.C.

The inner "I" section of this knob is used to obtain best picture reception by elimination of distortion resulting from interfering radio signals. These interfering signals show as a moving ripple in the picture. Adjustment of this knob will often eliminate the interference. A slight downward pressure must be exerted on the knob while turning.

Contrast and Brightness Controls.—The inner "I" Contrast section of the dual knob near the front of the cabinet on the right regulates the sensitivity of the receiver, varying the black and white tones of the picture being received. Too much contrast gives blurred details and a lack of half-tones, while too little contrast makes it all half-tones or grays. Turning clockwise increases contrast from grays, to black and white. See Figures 2, 4 and 5.

The outer ring "O" is the Brightness Control and affects the average illumination of the picture. Turning clockwise increases the brightness. See Figures 2, 4 and 5.

Focusing Control.—This control is a knob located on the back of the cabinet near the bottom and is used for adjustment of the picture focus. This adjustment affects the sharpness (detail observable) of the picture and must be carefully made when the receiver is first placed in operation. It may be checked occasionally to insure continuous best focusing. See Figure 3.

Pilot Light.—A little jewel pilot light at the bottom of the front of the cabinet tells when current is on.

Other Controls.—There are five other controls on the television chassis. All of these will be permanently adjusted at the time the TRK 12 is installed, but may require occasional resetting. These controls are accessible from the back of the cabinet. See Figure 15. They are adjustable by means of a screwdriver through a vertical row of holes in the left side of the back of the cabinet towards the top.

Receiving the Picture

To obtain picture reception, open the lid of the cabinet and:

1. Turn the Fidelity-Selector Control on the radio panel to "Television," fully clockwise.

2. Turn Power-Volume Control on radio panel clockwise and advance about half way.

3. Set the Station Selector on the Television panel to the desired television station 1-2-3-4- or 5.

4. Turn the Contrast Control fully counterclockwise and then turn Brightness Control slowly until illumination of the screen almost disappears. Advance the Contrast Control until the picture appears at its best as viewed in the mirror on the lid. The Contrast Control turned too far clockwise causes blurring. Make final adjustment for best picture by adjusting both the Contrast and Brightness Controls.

The illustrations shown in Figures 2, 4 and 5 give an idea of the effect of the Brightness and Contrast Controls. Incorrect setting has effects somewhat similar to under and over exposure on photographic prints.

5. If the picture is not steady, the "Hold" controls will require slight readjustment. If the picture is moving sideways the Horizontal Hold (inner "I" section of the knob) requires readjustment. If the picture is moving up or down or is off position, then the outer ring "O" of the knob, Vertical Hold Control, requires readjustment. See Figures 6 and 7.

6. Adjust the Volume Control and the Tone Control (Fidelity-Selector knob) for best sound reception.

7. If an interfering ripple is observed in the picture, adjustment of the Fine Tuning knob may reduce or eliminate the distortion.

8. If the picture appears out of focus, carefully turning the Focusing Control knob on the back of the cabinet will remedy the condition.

As long as the Television Receiver is not moved in any way, only an occasional setting of the other controls will be required.

A spot in the center and also a slight discoloration of the television screen may gradually appear as the Kinescope ages. This is normal and in no way affects good picture reproduction.

Television Fixed Controls

1. **Horizontal Centering.**—This is a screwdriver adjustment at the top of the row. It serves to center the picture horizontally on the Kinescope screen and is made at the time of installation of the receiver. It may require resetting, due primarily to the earth's magnetic field, if the receiver location is changed, the cabinet turned around, or the Kinescope replaced. Figure 8 shows the effect of incorrect setting of this control.

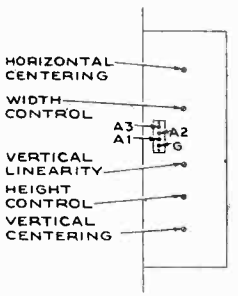


Figure 15—Fixed Television Controls

2. **Width.**—The next screwdriver control determines the width of the picture and is adjusted when the receiver is installed. Further adjustment may occasionally be necessary in order to compensate for the gradual reduction in horizontal deflection with tube life. See Figure 10.

3. **Vertical Linearity.**—The third control is operated in conjunction with the Height Control, No. 4, to give the correct vertical proportions to the picture. It may require readjustment due to changing of the Height Control and due to the gradual ageing of the tubes. See Figures 12 and 13. If the picture fills the frame but is crowded near the top, turn Vertical Linearity Control clockwise and Height Control counterclockwise. If crowded towards the bottom, turn these two controls in the reverse directions.

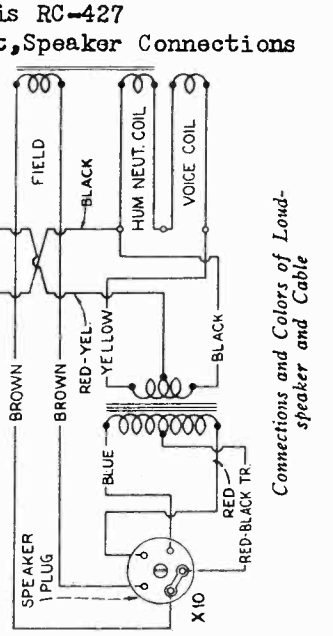
4. **Height.**—The fourth control determines the height of the picture and is adjusted in conjunction with Vertical Linearity when the receiver is installed. Further adjustment will occasionally be necessary in order to compensate for the gradual reduction in vertical deflection with tube life. See Figure 11.

5. **Vertical Centering.**—The screwdriver adjustment at the bottom of the row serves to center the picture vertically on the Kinescope screen and is made at the time of installation. It will require resetting whenever the receiver location is changed, the cabinet turned around, or the Kinescope replaced. See Figure 9.

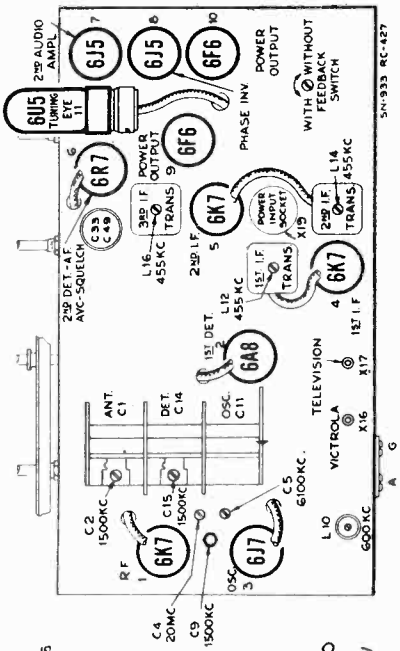
MODEL TRK-9
Operating Controls
Chassis RC-427A
Loud Speaker Connections
MODEL TRK-12
Chassis RC-427
Socket, Speaker Connections

RCA MFG. CO., INC.

MODELS TRK-5, TT-5
MODELS TRK-9, TRK-12
Video Band Switch Wiring
MODELS TRK-9, TRK-12
SPU Chassis RS-83E Schematic



Connections and Colors of Loud-speaker and Cable



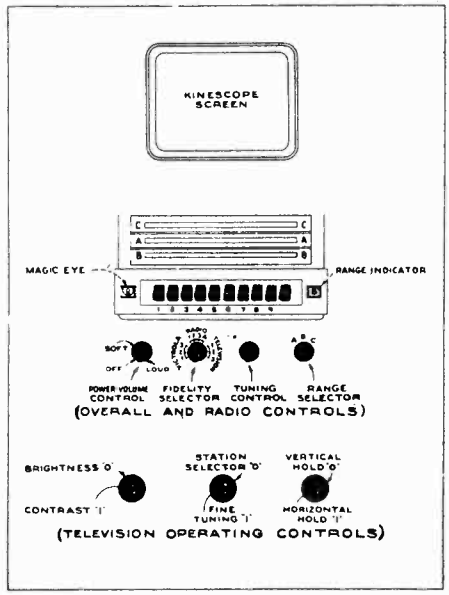


Figure 1—Operating Controls, TRK-9

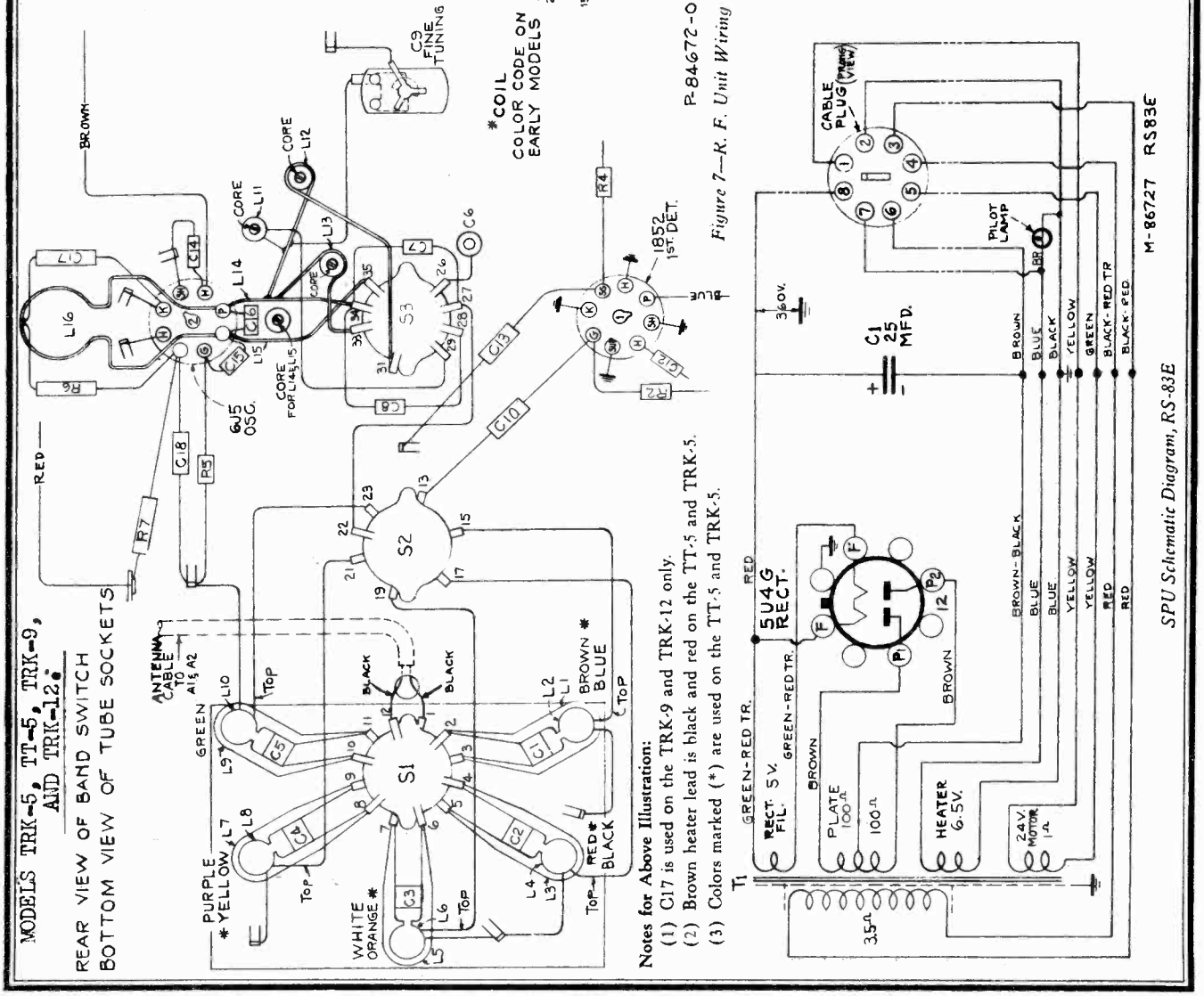


Figure 7—R. F. Unit Wiring

SPU Schematic Diagram, RS-83E

Notes for Above Illustration:
(1) C17 is used on the TRK-9 and TRK-12 only.
(2) Brown heater lead is black and red on the TT-5 and TRK-5.
(3) Colors marked (*) are used on the TT-5 and TRK-5.

REPLACEMENT PARTS

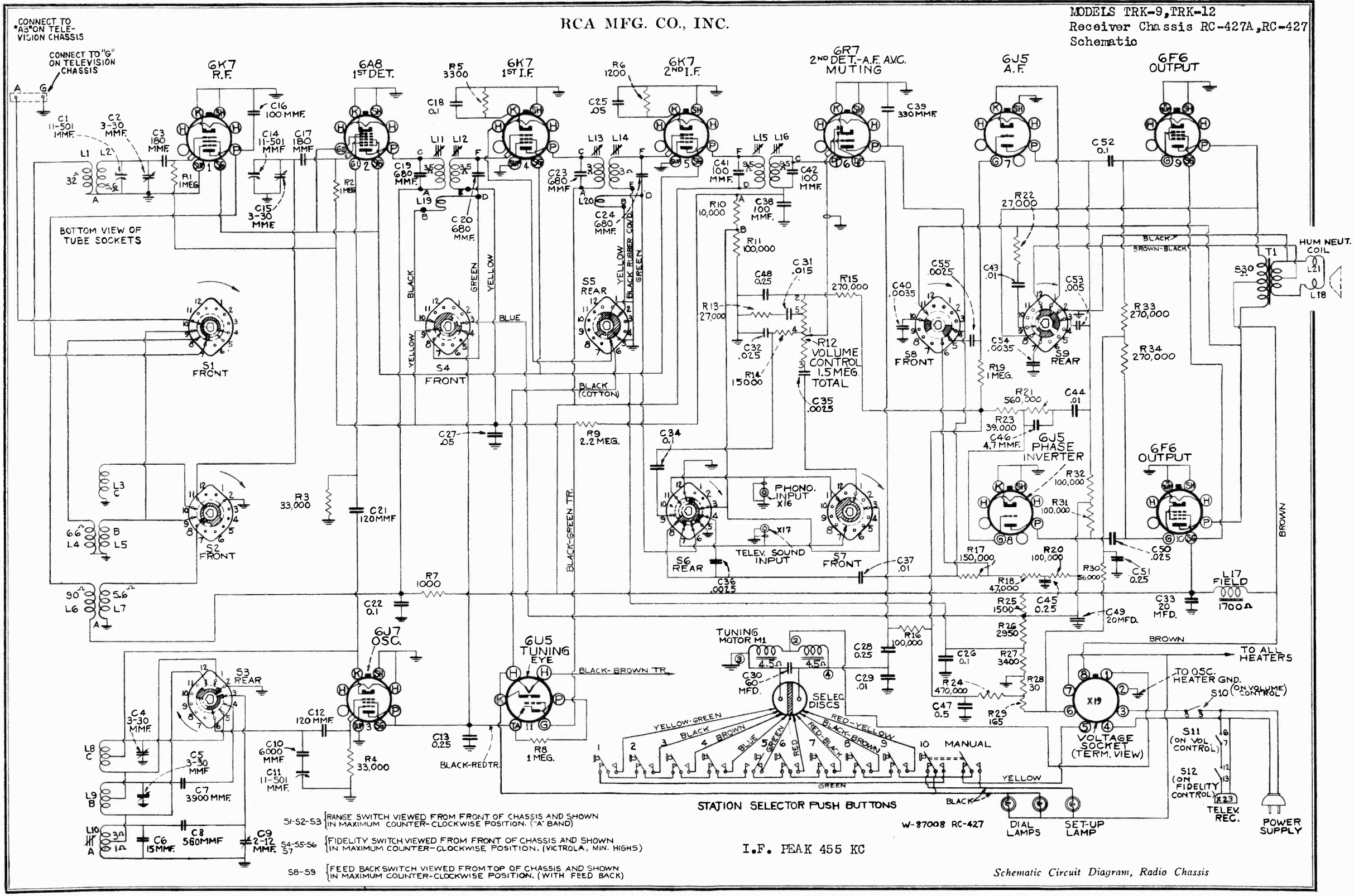
STOCK No.	DESCRIPTION	Unit List Price
	TELEVISION CHASSIS ASSEMBLIES KC-4 in TRK-12 KC-4A in TRK-9	
33387	Adjuster—Magnetite core and stud in tube for high frequency oscillator circuit adjustment (Used with L11, L12, L14, L15)	.55
33835	Adjuster—Magnetite core and stud in tube, for high frequency oscillator circuit adjustment (Used with L13)	.60
31253	Board—4 terminal antenna-ground terminal board	.25
12884	Capacitor—Adjustable plunger type air trimmer (C6)	.60
33097	Capacitor—4.7 mmfd., (neg. temp. coeff.) (C69)	.35
33478	Capacitor—5.6 mmfd., 500 volts (C7)	.40
33476	Capacitor—8.2 mmfd., 500 volts (C8)	.40
33381	Capacitor—8.2 mmfd. (neg. temp. coeff.) (C71)	.40
33380	Capacitor—12 mmfd., 500 volts (C24)	.40
33100	Capacitor—18 mmfd., 500 volts (neg. temp. coeff.) (C19, C23)	.40
14021	Capacitor—22 mmfd. (C50)	.35
33101	Capacitor—22 mmfd. (neg. temp. coeff.) (C64)	.40
33111	Capacitor—33 mmfd., 500 volts (C15)	.35
33102	Capacitor—47 mmfd. (neg. temp. coeff.) (C30, C35, C66)	.45
33103	Capacitor—68 mmfd., 500 volts (C31, C36, C25, C40, C44, C49) (neg. temp. coeff)	.35
33477	Capacitor—80.5 mmfd., 500 volts (C16)	.45
33104	Capacitor—82 mmfd. (neg. temp. coeff.) (C21, C22)	.45
33106	Capacitor—115 mmfd. (C5)	.30
33107	Capacitor—135 mmfd. (C4)	.30
12725	Capacitor—150 mmfd., 400 volts (C10, C87)	.35
33108	Capacitor—190 mmfd. (C3)	.30
12488	Capacitor—270 mmfd. (C81)	.35
33109	Capacitor—320 mmfd. (C2)	.30
33110	Capacitor—390 mmfd. (C1)	.30
32788	Capacitor—820 mmfd., 400 volts (C84, C89)	.40
12635	Capacitor—1000 mmfd., 400 volts (C90)	.50
13580	Capacitor—1800 mmfd., 400 volts (C17)	.50
4881	Capacitor—3300 mmfd., 400 volts (C102)	.30
33584	Capacitor—.005 mfd., 1200 volts (C11, C12, C13, C14, C18, C20, C26, C27, C29, C32, C33, C34, C37, C38, C39, C41, C42, C43, C45, C46, C47, C48, C52, C60, C62, C63, C85, C87, C68, C70, C75, C98, C99, C100)	.25
4937	Capacitor—.01 mfd., 1000 volts (C74)	.25
4870	Capacitor—.025 mfd., 400 volts (C107)	.20
30882	Capacitor—.05 mfd., 200 volts (C94, C95)	.20
32787	Capacitor—.05 mfd., 400 volts (C28)	.20
4886	Capacitor—.05 mfd., 400 volts (C91)	.20
4839	Capacitor—0.1 mfd., 400 volts (C73, C53, C77, C78, C85, C59, C88, C103)	.30
12484	Capacitor—0.25 mfd., 350 volts (C86, C93, C101, C106, C80, C76, C105)	.30
12741	Capacitor—.5 mfd. (C57)	.30
32015	Capacitor—1.0 mfd., 150 volts (C54)	.60
33158	Capacitor—10 mfd., 150 volts, 20 mfd., 25 volts, (C97, C104)	1.00
33159	Capacitor—10 mfd., 350 volts, 10 mfd., 150 volts, 250 mfd., 15 volts (C58, C61, C56)	1.60
33160	Capacitor—10 mfd., 350 volts, 10 mfd., 150 volts, 20 mfd., 25 volts, 20 mfd., 25 volts (C92, C79, C82, C83)	1.60
32045	Capacitor—15 mfd. (C96)	.70
33475	Capacitor—20 mfd., 25 volts (C56)	.75
33161	Capacitor—20-50 mfd., 35 volts (C51, C108)	1.45
33243	Coil—Oscillator coil with core and stud (L11)	.65
33234	Coil—1-½ turn antenna coil, core, stud and capacitor assembly (C5, L9, L10) (green)	1.10
33647	Coil—2 turn antenna coil, core, stud and capacitor assembly (C4, L7, L8) (yellow or purple)	1.10
33646	Coil—3 turn antenna coil, core, stud and capacitor assembly (C3, L5, L6) (orange or white)	1.10
33645	Coil—5-½ turn antenna coil, core, stud and capacitor assembly (C2, C3, L4) (red or black)	1.10
33644	Coil—7-½ turn antenna coil, core, stud and capacitor assembly (C1, L1, L2) (brown or blue)	1.10
33535	Coil—Peaking coil and 10 megohm resistor assembly (L39, R44)	.55
33534	Coil—Peaking coil and 3900 ohm resistor assembly (L40, R48)	.55
33536	Coil—Peaking coil and 15,000 ohm resistor assembly (L41, R54)	.55
33537	Coil—Peaking coil and 10 megohm resistor assembly (L42, R56)	.55
33228	Condenser—Oscillator "Fine tuning" condenser, located on range switch (C9)	2.10
33164	Control—Dual 1.2 meg. and 30,000 ohms "Vertical hold" and "Horizontal hold" controls (R106, R92)	2.00
33206	Control—6 ohm tapped "Horizontal centering" control (R98)	1.50
33210	Control—20 ohm tapped "Vertical centering" control (R114)	1.50
33162	Control—4000 ohm, "Contrast" control (R45)	1.00
33209	Control—5600 ohm, "Vertical linearity" control (R113)	1.00
33163	Control—50,000 ohms "Brightness" control (R61)	1.00
33207	Control—580,000 ohm "Width" control (R94)	1.00
33208	Control—2.7 meg. "Height" control (R108)	1.00
33002	Coupling—Flexible Bronze coupling, located on control shaft end of "contrast" control	.10
33383	Coupling—Flexible Bronze coupling located on panel shaft end of "contrast" control	.10
4574	Plug—6-prong male plug for Television chassis power supply cable (X14)	.48
16836	Plug—8-prong male plug for Television chassis power supply cable (X12)	.25
32723	Resistor—10 ohms, 1 watt (R120)	.22
33325	Resistor—Voltage divider comprising a 36-100-7.4 and 5 ohm section (R119, R118 R117, R116)	.80
14074	Resistor—82 ohms, ½ watt (R64, R67, R14, R21, R28, R34)	.20
14439	Resistor—100 ohms, ½ watt (R53)	.20
13428	Resistor—150 ohms, ½ watt (R39)	.20
13219	Resistor—270 ohms, 2 watts (R97)	.25
30499	Resistor—470 ohms, ½ watt (R90, R95)	.20
33328	Resistor—Voltage divider comprising a 500-300-3100-5455 and 13,000 ohm section (R125, R124, R123, R122, R121)	1.20
14720	Resistor—1000 ohms, ½ watt (R9, R65, R70, R18, R41, R25, R31, R37, R42)	.20
14993	Resistor—1200 ohms, 1/10 watt (R17)	.15
12267	Resistor—1200 ohms, ½ watt (R115)	.20
14499	Resistor—1500 ohms, ½ watt (R8, R24)	.20
31920	Resistor—1800 ohms, 1/10 watt (R16, R23, R30)	.15
12194	Resistor—1800 ohms, 1 watt (R112)	.20
11863	Resistor—2200 ohms, 1/10 watt (R38)	.15
13486	Resistor—2200 ohms, 1 watt (R6)	.22
13031	Resistor—3300 ohms, 1/10 watt (R19, R26)	.15
12312	Resistor—3300 ohms, ½ watt (R77, R87)	.20
30150	Resistor—3300 ohms, 1 watt (R7, R57)	.22
12955	Resistor—3900 ohms, ½ watt (R109)	.20
30146	Resistor—4700 ohms, ½ watt (R83, R99)	.20
31789	Resistor—5600 ohms, 1/10 watt (R12)	.15
12265	Resistor—6800 ohms, ½ watt (R11)	.20
14075	Resistor—8200 ohms, ½ watt (R101, R102, R103)	.20
14559	Resistor—10,000 ohms, ½ watt (R20, R27, R33, R13, R58, R82, R84, R88, R100, R74)	.20
13097	Resistor—10,000 ohms, 1 watt (R79, R80)	.22
13594	Resistor—15,000 ohms, 1/10 watt (R43)	.15
14281	Resistor—22,000 ohms, 1/10 watt (R71)	.15
13998	Resistor—22,000 ohms, ½ watt (R47, R49)	.20
12738	Resistor—27,000 ohms, ½ watt (R91)	.20
11300	Resistor—33,000 ohms, 1/10 watt (R10) (early production only)	.15
12454	Resistor—33,000 ohms, ½ watt (R5)	.20
12412	Resistor—47,000 ohms, ½ watt (R93) (R10—Late production only)	.20
30650	Resistor—56,000 ohms, ½ watt (R55)	.20
12010	Resistor—68,000 ohms, 1/10 watt (R32, R38, R69)	.15
13715	Resistor—68,000 ohms, ½ watt (R63, R66)	.20
14138	Resistor—68,000 ohms, ½ watt (R15, R22, R29, R35, R40, R66)	.20
14023	Resistor—82,000 ohms, ½ watt (R78)	.20
14560	Resistor—100,000 ohms, ½ watt (R72, R85, R86, R89, R104)	.20
30180	Resistor—120,000 ohms, ½ watt (R4)	.20
12264	Resistor—220,000 ohms, ½ watt (R51, R111)	.20
12285	Resistor—470,000 ohms, ½ watt (R46, R59, R98)	.20
12413	Resistor—680,000 ohms, ½ watt (R60)	.20
13730	Resistor—1 meg., ½ watt (R1, R2, R76, R75, R73, R52, R60, R81)	.20
2546	Resistor—1 meg., 1 watt (R3)	.22
30208	Resistor—2 meg. ½ watt (R105)	.20
5028	Resistor—1.8 meg. ½ watt (R107)	.20
12679	Resistor—2.2 meg., ½ watt (R110)	.20
33229	Roller—Rubber friction roller for oscillator condenser drive. Part of range switch assembly	.10
33165	Socket—2-prong female socket for Video output to Kinescope (X3)	.25
33011	Socket—4-contact female socket for Kinescope deflecting yoke (X1)	.25
31251	Socket—8-contact octal type socket	.25
18007	Socket—Ceramic octal socket for 6L8 "Hor. out" and 6J5 "Osc."	.65
14278	Socket—Television audio output pin socket (X5)	.25
33227	Switch—Range switch with shield plate and mounting studs—less coils, condenser and friction roller (S1, S2, S3)	4.65

STOCK No.	DESCRIPTION	Unit List Price
33330	Transformer—"1st det. P1" I-F transformer (L17, L18) (br. and br.)	2.60
33331	Transformer—"1st det. P2" I-F transformer (L19, L20) (Brown and red)	2.80
33334	Transformer—"1st pix P1" I-F transformer (L21, L22, L23, L24) (Brown and green)	2.50
33335	Transformer—"1st pix P2" (L25) or "2nd pix P2" (L30) I-F transformer (brown and blue)	1.65
33338	Transformer—"1st sound" I-F transformer (L45, L46) (orange and red) (Used in early production)	2.40
33526	Transformer—"1st sound" I-F transformer (L45, L46) (red and white) (Used in late production)	2.50
33516	Transformer—"2nd pix P1" I-F transformer (L26, L27, L28, L29) (orange and orange)	2.60
33339	Transformer—"2nd sound" I-F transformer (L47, L48) (orange and orange)	2.60
33333	Transformer—"3rd pix" I-F transformer (L31, L32, L33) (orange and blue)	2.40
33336	Transformer—"4th pix" I-F transformer (L34, L35, L36) (Brown and black)	2.00
33337	Transformer—"5th pix" I-F transformer (L37, L38) (brown and white)	1.80
32899	Transformer—Horizontal oscillation transformer (T1)	1.75
9862	Transformer—Horizontal output transformer (T2)	17.50
32900	Transformer—Vertical output transformer (T4)	5.50
32898	Transformer—Vertical oscillation transformer (T3)	1.75
	3-BAND RADIO RECEIVER CHASSIS RC-427 IN TRK-12 RC-427A IN TRK-9	
31863	Board—Antenna-ground terminal board	.20
32232	Body—Station setting contact body and spring	.15
32090	Bracket—Rotor mounting bracket	.40
31282	Bracket—Magic Eye mounting bracket and clip	.22
32635	Cable—Indicator pointer drive cable—60-in. length	.24
30766	Cap—"Magic Eye" cap	.15
11392	Capacitor—4.7 mmfd. (C46)	.35
31353	Capacitor—15 mmfd. (C8)	.40
31270	Capacitor—100 mmfd. (C41, C42)	.35
12720	Capacitor—100 mmfd. (C38, C16)	.35
12724	Capacitor—120 mmfd. (C12, C21)	.35
13003	Capacitor—180 mmfd. (C3, C17)	.35
12952	Capacitor—330 mmfd. (C39)	.35
31433	Capacitor—560 mmfd. (C8)	.35
31552	Capacitor—680 mmfd. (C19, C20, C23, C24)	.40
32197	Capacitor—3900 mmfd., 500 volts (C7)	.55
31405	Capacitor—5100 mmfd., 500 volts (C10)	.75
5107	Capacitor—.0025 mfd., 700 volts (C35, C36, C55)	.20
30303	Capacitor—.0035 mfd., 700 volts (C40, C54)	.40
33584	Capacitor—.005 mfd., 1200 volts (C53)	.25
4937	Capacitor—.01 mfd., 1000 volts (C37, C44, C43, C29)	.25
11315	Capacitor—.015 mfd., 400 volts (C31)	.20
4870	Capacitor—.025 mfd., 400 volts (C32, C50)	.20
32787	Capacitor—.05 mfd., 400 volts (C27, C25)	.20
4839	Capacitor—0.1 mfd., 400 volts (C22, C18, C26, C34, C52)	.30
12484	Capacitor—.25 mfd., 350 volts (C13, C28, C48, C45, C51)	.30
12741	Capacitor—0.5 mfd., 150 volts (C47)	.30
18530	Capacitor—20-20 mfd., 350 volts (C33, C49)	3.00
32088	Capacitor—Motor capacitor 60 mfd., 40 volts (C30)	.90
31263	Coil—"A" Band antenna coil (L1, L2)	.95
31265	Coil—"A" Band detector coil (L6, L7)	1.20
31296	Coil—"A" Band oscillator coil (L10)	1.05
31980	Coil—"B" and "C" Band antenna coil (L3, L4, L5)	.80
31783	Coil—"B" and "C" band oscillator coil (L8, L9)	1.05
31234	Condenser—3-gang variable condenser (C1, C11, C14, C2, C15)	6.45
12714	Condenser—Air trimmer condenser (C9)	.50
31292	Condenser—Double section trimmer capacitor 3-30 mmfd., each section (C4, C5)	.40
31971	Contact—Push button switch contacts comprising 11 contacts riveted on insulating strip	.65
31972	Contact—Push button switch contacts—comprising 14 contacts riveted on insulating strip	1.25
31231	Contact—Station setting contact tip	.06
33446	Control—"Power-volume control"—1-½ meg. (R12, S10, S11)	2.00
32634	Cord—Band indicator and variable condenser drive cord	.10
31269	Core—Core and stud for 1st, 2nd, or 3rd I-F transformer	.15
32093	Damper—Flywheel for rear end of motor shaft	.25
32096	Disc—Friction disc and pinion gear	.35
32091	Drive—Friction drive gear assembly	1.50
31273	Drum—Variable condenser drive drum	.70
31239	Gear—Knob shaft drive gear and hub	.65
31532	Indicator—Band indicating strip (Model TRK-12 only)	.15
31304	Indicator—Band indicating strip (Model TRK-9 only)	.15
31480	Lamp—6.3 volt electric tuning set-up lamp Mazda No. 47	.20
11891	Lamp—6.3 volt dial lamp Mazda No. 44	.17
31969	Lockplate—Push button switch lockplate comprising 10 contact locks in 1 strip	.75
32095	Motor—Electric tuning drive motor complete (M1)	5.25
31228	Plate—Station selector contact plate—less plungers	.45
31227	Plate—Station selector mounting plate—mounts on rear of variable condenser	.50
12493	Plug—Female connector for speaker cable (X9)	.30
31271	Pulley—Drive pulley fastens on station selector knob shaft	.25
31280	Pulley—Indicator pointer drive cord pulley	.10
31272	Pulley—Range switch pulley	.20
14720	Resistor—1000 ohms, ½ watt (R7)	.20
12267	Resistor—1200 ohms, ½ watt (R6)	.20
12312	Resistor—3300 ohms, ½ watt (R5)	.20
14559	Resistor—10,000 ohms, ½ watt (R10)	.20
12695	Resistor—15,000 ohms, ½ watt (R14)	.20
12738	Resistor—27,000 ohms, ½ watt (R13)	.20
13477	Resistor—27,000 ohms, 1 watt (R22)	.22
12454	Resistor—33,000 ohms, ½ watt (R3, R4)	.20
12266	Resistor—39,000 ohms, ½ watt (R23)	.20
12412	Resistor—47,000 ohms, ½ watt (R18)	.20
12286	Resistor—56,000 ohms, ½ watt (R30)	.20
14560	Resistor—100,000 ohms, ½ watt (R11, R16, R20, R32, R31)	.20
14020	Resistor—150,000 ohms, ½ watt (R17)	.20
12199	Resistor—270,000 ohms, ½ watt (R15, R33, R36)	.20
18020	Resistor—470,000 ohms, 1 watt (R24)	.22
12486	Resistor—560,000 ohms, ½ watt (R21)	.20
12013	Resistor—1 meg., 1/10 watt (R8)	.15
13730	Resistor—1 meg., ½ watt (R1, R2, R19)	.20
12679	Resistor—2.2 meg., ½ watt (R9)	.20
31548	Resistor—Voltage divider consisting of one 1500, one 2950, one 3400, one 30 and one 3185 ohm section (R25, R26, R27, R28, R29)	.90
14887	Retainer—Drive cord pulley retainer	.01
32086	Roller—Rubber friction roller for front end of motor shaft	.10
31233	Rotor—Station selector rotor disc—mounts on rear of variable condenser shaft	1.16
5042	Screw—No. 8-32 set screw for drive pulley	.03
14350	Screw—No. 8-32 square head set screw for rotor disc stock No. 31233	.03
31681	Shaft—Dial drive knob shaft	.80
31354	Socket—Dial or electric tuning set-up lamp socket	.20
13871	Socket—"Magic Eye" socket	.45
31251	Socket—Octal type Radiotron or power supply socket	.25
14278	Socket—Pin socket for phono or television input with mounting plates (X16) (X17)	.25
31279	Spring—Band indicator tension spring	.03
13638	Spring—Indicator drive cord tension spring	.08
31970	Spring—Push button switch lock bar spring	.05
31232	Spring—Station setting tip spring	.01
12007	Spring—Stud retaining spring for I-F adjuster	.02
31418	Spring—Variable condenser drive cord tension spring	.05
33448	Switch—Feed-back switch (S8, S9)	1.40
33447	Switch—H. F. tone control phono-radio-Television and power switch (S4, S5, S6, S7, S12)	2.65
31979	Switch—Range switch (S1, S2, S3)	1.55
31968	Switch—Station selector push button switch complete	3.95
31565	Transformer—1st I-F transformer complete (L11, L12, C19, C20, L19)	2.40
31551	Transformer—2nd I-F transformer complete (L13 L14, C23, C24, L20)	2.40
31549	Transformer—3rd I-F transformer complete (L15, L16, C41, C42)	2.10
32231	Washers—Comprising one metal washer, two fibre washers and one solder lug or retainer for station setting body	.03
32094	Washers—Assorted washers for mounting damper on motor shaft	.10
	POWER SUPPLY UNIT (TELEVISION AUDIO RECEIVER) (RS-83E)	
14631	Capacitor—25 mfd. filter capacitor (C1)	1.55
33606	Plug—8-contact male plug for power supply cable (X20)	.45
31251	Socket—5U4G Radiotron socket	.25
33445	Transformer—110 V. 60 cycle power transformer (T1)	10.30

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

RCA MFG. CO., INC.

MODELS TRK-9, TRK-12
Receiver Chassis RC-427A, RC-427
Schematic



Schematic Circuit Diagram, Radio Chassis

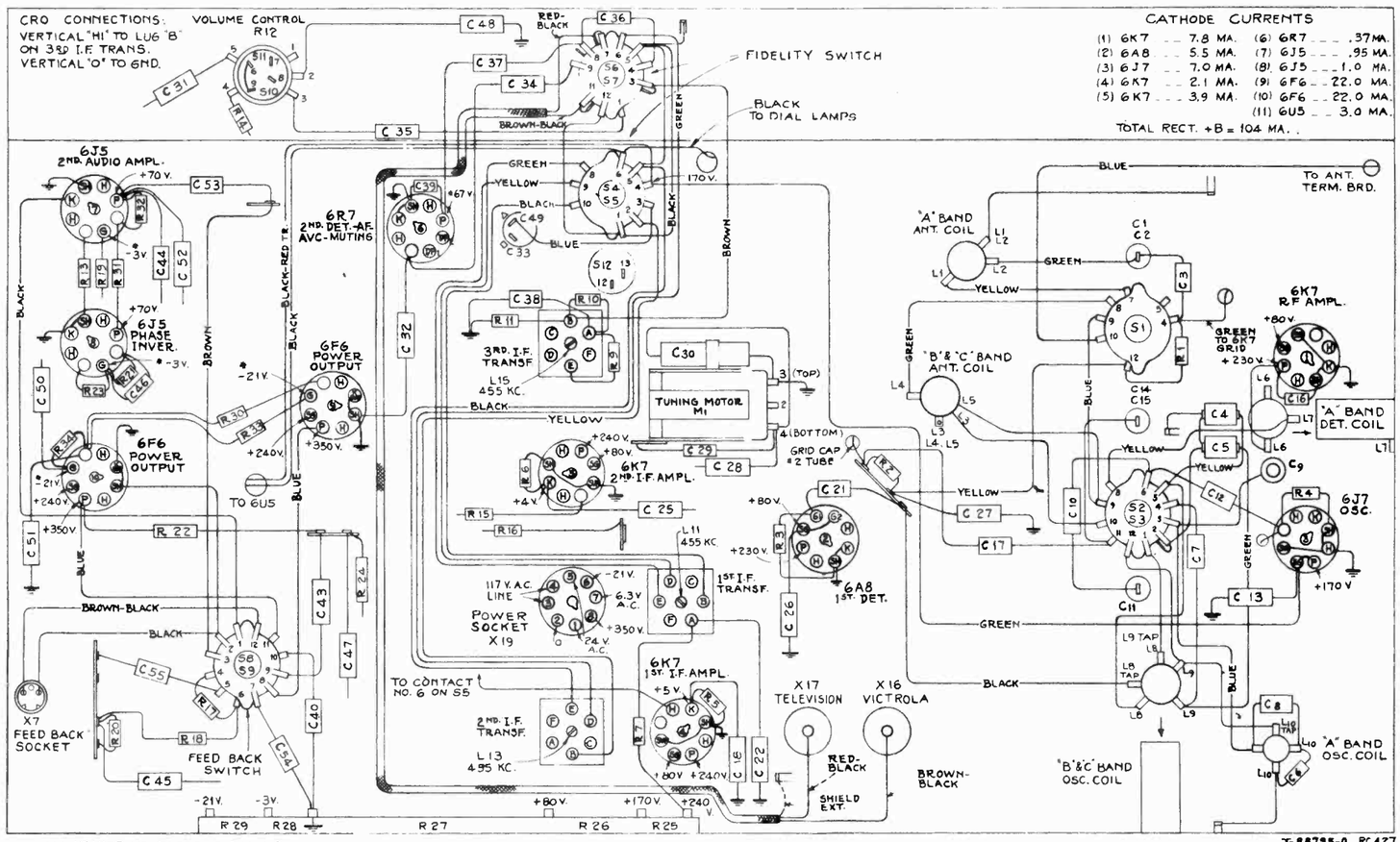
Dial Lamps..... { Two Mazda No. 44, 6.3 volts, .25 amp. / One Mazda No. 47, 6.3 volts, .15 amp.
(The Mazda No. 47 is the electric tuning set-up lamp, located at center of dial.)

Power Supply Rating..... 105-125 volts, 60 cycles, 120 watts

POWER OUTPUT
Undistorted..... 10 watts
Maximum..... 12 watts

LOUDSPEAKER (RL-70F-5)
Type..... 12-inch electrodynamic
Voice-Coil Impedance..... 2.2 ohms at 400 cycles

FREQUENCY RANGES
Standard Broadcast ("A" band)..... 540-1,720 kc
Medium Wave ("B" band)..... 2.3-7.0 mc
Short Wave ("C" band)..... 7.0-22 mc



ALL HEATER VOLTAGES 6.3 V. A.C.

BOTTOM VIEW - REAR OF CHASSIS

*NOTE: Values with star (*) are operating voltages in circuits with high series-resistance, and when measured will read lower depending on the voltmeter loading.

R-F Wiring Diagram and Socket Voltages (Radio Chassis)

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point, volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

Alignment Procedure

(RADIO CHASSIS)

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the rear of the indicator-drive-cord drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The "O" mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

To determine the corresponding frequency **for any setting** of the calibration scales, refer to the accompanying drawing which shows the dial with O-180° calibration scales drawn at top and bottom.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "O" mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator approximately 1/16-inch above end dots at low-frequency ends of bands with gang condenser fully meshed. See that pointer does not rub background screen or dial face. The indicator has a spring clip for attachment to the cable.

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Set tuning gang to—	Adjust the following—	To obtain—
1	Turn fidelity switch to No. 3 radio (sharp).				
2	6K7 2nd I-F grid cap, in series with .01 mfd.	455 kc	Quiet point on "B" band	L15, L16 (3rd I-F Trans.)	Coincidental images on cathode-ray oscillograph, or max. output on output meter.
3	6K7 1st I-F grid cap, in series with .01 mfd.			L13, L14 (2nd I-F Trans.)	
4	6A8 1st Det. grid cap, in series with .01 mfd.			L11, L12 (1st I-F Trans.)	
5	Turn fidelity switch to No. 4 radio (broad). The curve on CRO should broaden out to a double peak and reduce gain nearly 50%.				
6	Turn fidelity switch to No. 3 radio for the following adjustments. Back out the "B" and "C" oscillator trimmers, C5 and C4. Preset "A" band oscillator trimmer, C9, approximately an inch out.				
7	Antenna terminal, in series with 100 mmf.	600 kc	600 kc (31°) "A" band	L10 (osc.)	Max. Output
8		1,500 kc	1,500 kc (151°) "A" band	C9 (osc.) C2 (ant.) C15 (det.)	Max. Output
9		600 kc	600 kc "A" band	L10 (osc.)	Rock in for Max. Output
10	Repeat step No. 8.				
11	Antenna terminal, in series with 300 ohms	6,100 kc	6,100 kc (140°) "B" band	C5 (osc.)	Max. Output *
12		20 mc	20 mc (146°) "C" band	C4 (osc.)	Rock in for Max. Output *
	Follow "Adjustments for Electric Tuning."				

* Use minimum capacitance peak if two peaks can be obtained.
Note: The oscillator tracks 455 kc above the signal on all bands.

Radio receiver chassis No. RC-427 is used in RCA Victor Television Console Models TRK-9 and TRK-12.

The audio output of the television chassis is connected to the audio input of the radio chassis by means of jack X-17 and section S7 of the fidelity switch. The functions of this switch are tabulated on the following page.

A separate plug-in power unit, RS-83E, is used to supply heater and plate voltages to the radio chassis. Service data and diagram for this power unit are shown below.

Victrola Attachment

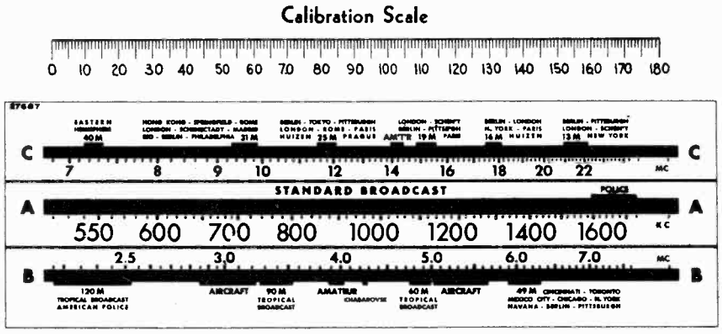
A jack (X-16) is located near the antenna terminal board for convenience in plugging in a Victrola Attachment. The cable from the Victrola Attachment should be terminated in a Stock No. 31048 plug to fit the jack.

Fidelity Switch (S4, S5, S6, S7)

Switch Position	For	I-F Amp.	Audio Amp.	110-V. Supply for Tele. Chassis *	Magic Eye	Osc. and Eye +B Supply	Dial Lamps **
No. 1 (Counter-clockwise)	Victrola	—	Min. Highs	Off	—	Off	On
No. 2	Victrola	—	Max. Highs Reduced Lows	Off	—	Off	On
No. 3	Victrola	—	Full Range	Off	—	Off	On
No. 1	Radio	Sharp	Min. Highs Max. Lows	Off	On	On	On
No. 2	Radio	Sharp	Max. Highs Reduced Lows	Off	On	On	On
No. 3	Radio	Sharp	Max. Highs Full Lows	Off	On	On	On
No. 4	Radio	Broad	Full Range	Off	On	On	On
No. 1	Television	—	Min. Highs	On	Off	Off	Off
No. 2	Television	—	Med. Highs Reduced Lows	On	Off	Off	Off
No. 3	Television	—	Full Range	On	Off	Off	Off

* Controlled by switch (S12) on rear of fidelity switch.
** The 1st-I.F. heater is opened on positions 8, 9, and 10.

Calibration Scale



Tuning Dial, and Corresponding 0-180° Calibration Scale

The corresponding dial setting for any reading of the calibration scale can be determined by drawing a line straight up from this point; for example, 151° on the calibration scale corresponds to a dial reading of 1,500 kc on "A" band. Read instructions under "Alignment Procedure."

Feedback Switch (S8 and S9)

Counter-clockwise position (with feedback)	Clockwise position (without feedback)
1. Provides inversed feedback by connecting part of secondary of output transformer in cathode of 6J6 2nd-audio tube.	1. Removes reversed feedback and grounds cathode of 2nd-audio tube.
2. Disconnects compensating network (R22, C43, C54, C40) from plate circuit of output tubes.	2. Connects compensating network (R22, C43, C54, C40) to plate circuit of output tubes.
3. Connects grid of 2nd audio to high side of 1st A-F plate resistor R17, for maximum input.	3. Connects grid of 2nd audio to low side of 1st A-F plate resistor R17, for reduced input.
4. Connects capacitor C53 (.005) from plate of 2nd audio to chassis.	4. Disconnects C53 from plate of 2nd audio.

Precautionary Lead Dress

(1) All A-C leads should be twisted together and dressed away from parts in chassis to prevent hum pickup.

(2) Keep pilot light leads away from 6R7 grid.

(3) Yellow, green, and black leads from fidelity switch to 1st i-f transformer must be twisted together and dressed away from chassis.

(4) Yellow, green, and black leads from fidelity switch to 2nd i-f transformer must be twisted together and dressed away from chassis.

RCA MFG. CO., INC.

MODELS TRK-9, TRK-12
Electric Tuning Data

Electric Tuning Mechanism

When a station button is pushed in, it completes the 24-volt circuit through the corresponding station-setting contact and one-half of the brass selector disc, which is connected to one side of the motor field coil. This energizes the motor, and the rotor is pulled forward, engaging with the gear train that drives the tuning condenser and selector disc. The condenser and disc rotate until the insulation line comes under the particular station-setting contact, and the motor circuit is broken.

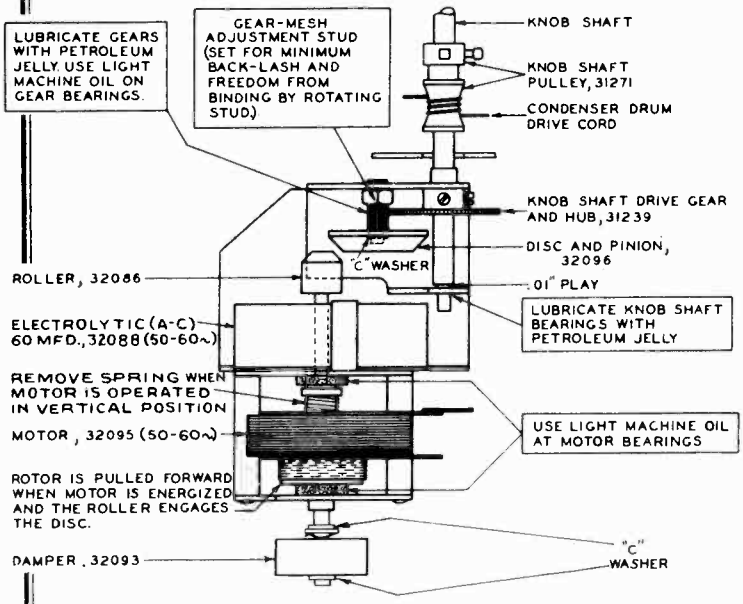
When the electric tuning mechanism is in action, the motor-supply voltage is fed into a diode rectifier circuit which applies a high bias to the first-audio amplifier. This prevents audio amplification and makes the set quiet or "mute" while the mechanism is operating.

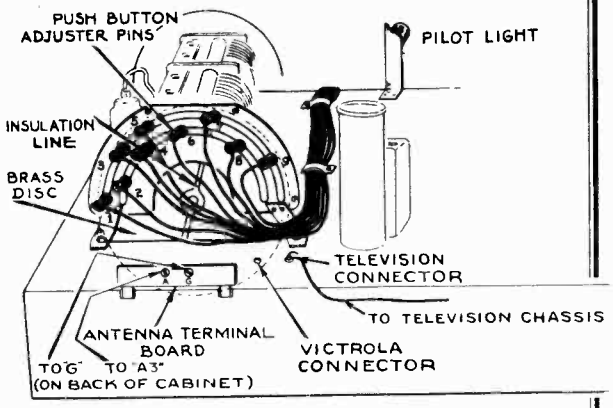
The brass selector disc is fastened to the rear shaft of the tuning condenser by means of two set-screws. When the condenser is at maximum (plates fully meshed) the insulation line should be horizontal, with the operating-end at the left (viewed from rear). The brass is beveled at this end.

The selector disc should be set so that the contact-tip plungers in the station-setting contacts project not more than 1/16-in. from the body of the contacts.

LUBRICATION

Motor bearings and **gear bearings;** use light machine oil.
Gear faces; use "Pure Oil No. 611" or petroleum jelly.
Dial-indicator pulleys and **rails;** use "Castordag" or petroleum jelly.
Selector disc; apply ***thin*** film of petroleum jelly.



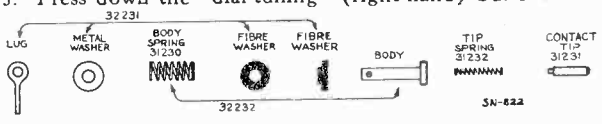


Station Button	Color of Lead To Station-Setting Contact	Station Button	Color of Lead To Station-Setting Contact
No. 1	Yellow-green	No. 6	Red
No. 2	Black	No. 7	Red-black
No. 3	Brown	No. 8	Brown-black
No. 4	Blue	No. 9	Red-yellow
No. 5	Green		

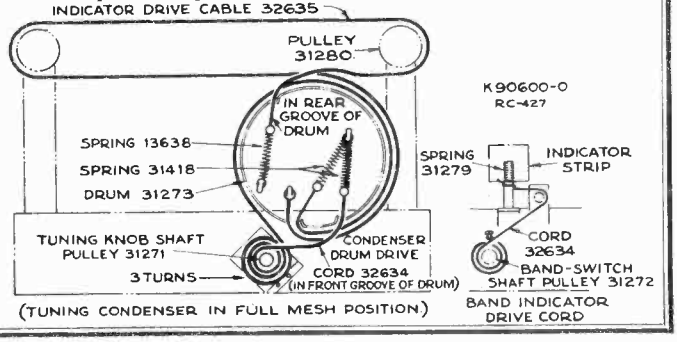
Adjustments for Electric Tuning

With power turned off, disconnect the antenna transmission line and ground connection, turn fidelity control to radio (3rd radio position—6th position from full counter-clockwise). Remove the back from the cabinet and reconnect the antenna transmission line and ground connection. The two interlock switches on the side panels should not be touched and care should be taken not to press on them when making the push-button set-up. Then turn on power, set range selector to "A," allow a few moments warm-up period and proceed as follows:

1. Make a list of the desired nine stations, arranged in order from low to high frequencies.
2. Turn on power-volume control, turn range selector to "A" band, and allow a few minutes for warming up.
3. Press down the "dial-tuning" (right-hand) button.
4. Manually tune in the first station on the list, using the "Magic Eye" for accurate tuning.
5. Hold down the "dial-tuning" button and press down station button No. 1 (left-hand). Both buttons will stay down. Move station adjuster contact pin No. 1 to the insulating line on the disc at rear of gang. When the pin is correctly centered on the insulating line, the central dial lamp will go out completely.
6. Press down any other button in order to release the dial-tuning button and station button No. 1. Tune to some other section on the dial, and then press down station button No. 1 again; the electric tuning mechanism will function to tune in the first station, and the central dial lamp will stay on.
7. Repeat this process for the remaining stations.



Components of Station Setting Contact



At Right—Dial Mechanism

MODELS TRK-9, TRK-12
Kinescope Data
Parts List

RCA MFG. CO., INC.

Precautions in Handling Kinescopes

The Kinescope bulb encloses a high vacuum and, due to its large surface area, is subjected to considerable air pressure. For these reasons, Kinescopes must be handled with more care than ordinary receiving tubes.

The large end of the Kinescope bulb — particularly that part at the rim of the viewing surface — must not be struck, scratched or subjected to more than moderate pressure at any time. If the tube sticks, or fails to slip into its socket or deflecting yoke smoothly, investigate and remove the cause of trouble. Do not force the tube.

All RCA Kinescopes are shipped in special cartons and should always be left in the cartons until ready for installation in the receiver. Keep the carton for future use.

The RCA-1803-P4 (12-inch) Kinescope is equipped with a protective lid and shield. Do not at any time remove the close-fitting cone-shaped section of the protective shield from the Kinescope. This section should be installed with the tube in the cabinet and is designed to protect the user while handling the glass bulb.

REPLACEMENT PARTS (Continued)

STOCK No.	DESCRIPTION	Unit List Price
	7,500 VOLT TELEVISION POWER UNIT	
	TRK-12—KK-7	
	TRK-9—KK-7A	
33016	Bushing—Porcelain bushing and spring	.25
33288	Cable—Insulated connector complete with cable for Kinescope (2nd anode)	2.10
33995	Capacitor—.005-.005 mfd., 1,000 v. (C115, C116)	xx
32901	Capacitor—0.03 mfd., 7,500 volt (C113, C114)	3.25
32400	Capacitor—20 mfd., 450 volt (C111, C112)	1.05
33023	Capacitor—80-10-mfd., 400 volt (C110, C109)	2.80
14854	Choke—Filter choke (L49)	1.80
32940	Choke—Filter choke (L50)	3.75
30314	Clip—Plate connector for 2V3G Radiotron	.03
33037	Control—Focus control, 400,000 ohms (R129) (Used in 1st production)	1.00
33971	Control—Focus control, 400,000 ohms (R129) (Used in 2nd production)	1.00
33002	Coupling—Flexible bronze coupling	.10
10907	Fuse—3 ampere, 250 volt	.08
33015	Insulator—Stand-off insulator only—less hardware	.30
32937	Knob—Focus control knob	.20
33244	Plug—2-prong male connector for A.C. power cord (X22)	.45
33166	Plug—Two prong male plug for Kinescope grid-cathode cable (X4)	.20
33501	Resistor—330,000 ohms, 1W (1,000V.) (R126, R130)	.20
33502	Resistor—470,000 ohms, 1W (1,000V.) (R127, R128, R137)	.20
33554	Resistor—820,000 ohms, 1W (1,000V.) (R131, R132, R133, R134, R135, R136)	.20
33024	Shaft—Bakelite shaft for focus control	.50
18007	Socket—Ceramic octal base socket and retaining ring for high voltage rectifier	.65
33245	Socket—Kinescope socket, less cable (X11)	.35
31251	Socket—Octal base 5T4 rectifier, or television power supply socket (X13)	.25
12143	Socket—6-prong television power supply socket (X15)	.50
32909	Support—Rectifier socket, plate, and stand-off insulator assembly	2.00
32939	Transformer—Filament power transformer (T7)	5.65
9861	Transformer—High voltage power transformer (T6)	22.50
32938	Transformer—Low voltage power transformer (T5)	10.00
	SPEAKER ASSEMBLY	
	RL-70F-5	
31825	Cap—Cone center dust cap	.05
11469	Coil—Hum neutralizing coil (L21)	.30
11234	Coil—Speaker field coil (L17)	3.85
31275	Cone—Speaker cone assembly (L18)	1.75
31567	Plug—3-prong male feed back cable plug (X8)	.15
31539	Plug—5-prong speaker plug (X10)	.25
31556	Speaker—Speaker complete (RL-70F-5)	13.45
31557	Transformer—Speaker output transformer (T1)	3.20
	MISCELLANEOUS ASSEMBLIES	
	TRK-12	
	TRK-9	
31358	Button—Station selector push button	.15
33676	Cable—17½-inch shielded audio lead with plugs (X6, X18) (Model TRK-9 only)	.85
33480	Cable—38-inch shielded audio lead with plugs (Model TRK-12 only) (X6, X18)	1.30
33246	Cable—Low capacity Kinescope grid cable (Model TRK-12 only)	1.25
33605	Cable—Low capacity Kinescope grid cable (Model TRK-9 only)	1.35
33597	Cap—Blue pilot lamp "Bulls Eye"	.20
32897	Clamp—Deflecting yoke clamp assembly	.65
4573	Connector—2-prong female connector for power supply circuit (X23)	.30
33363	Connector—2-prong female connector, used on interlock cable (X21)	.45
33002	Coupling—Flexible bronze coupling (Used in 2nd production receivers)	.10
31456	Cover—Eight protective covers for push button markers	.08
32815	Cushion—Kinescope masking cushion (Model TRK-12 only)	2.30
33019	Cushion—Kinescope masking cushion (Model TRK-9 only)	1.90
33643	Cushion—Television chassis mounting cushion with screw, spacer and washer (sufficient for one chassis)	.40
33442	Dial—Three-band glass dial scale	1.25
33329	Escutcheon—Dial escutcheon less buttons, button shaft and dial scale	2.60
32083	Frame—Dial frame with screen less pointer, carriage and rod	1.20
10907	Fuse—3 ampere line fuse	.08
33074	Glass—6⅞ by 8¾ inch safety protective glass (Model TRK-9 only)	2.40
33076	Glass—8¾ by 11½ inch safety protective glass (Model TRK-12 only)	3.90
33282	Hinge—Piano type lid hinge and screws	2.50
33468	Knob—Radio tuning, volume or range selector knob	.15
33470	Knob—Television "Contrast," "Hor. hold" or "Fine Tuning" knob	.20
33471	Knob—Television "Brightness" or "Vert. hold" knob	.25
33472	Knob—Television "Station selector" knob	.25
33469	Knob—"Victrola—Radio—Television—Fidelity selection" knob	.20
11891	Lamp—6.3 V. pilot lamp, Mazda No. 44	.17
31589	Marker—Complete set of call letter markers	.35
31458	Marker—"Dial Tuning" push button marker	.01
31457	Marker—"Victrola" push button marker	.01
33075	Mirror—20½ by 14¾ in. viewing mirror	9.00
33225	Nut—Speed nut for mounting high frequency coil assemblies	.01
4577	Plug—2-prong male plug for power supply circuit (X24)	.45
33244	Plug—2-prong male plug, used on interlock cable (X22)	.45
33166	Plug—2-prong male plug for Kinescope grid-cathode cable (X4)	.20
32816	Plug—4-prong male plug for deflecting yoke cable (X2)	.20
12493	Plug—5-prong female speaker cable plug (X9)	.30
4574	Plug—6-prong male plug for Television chassis power supply cable (X14)	.48
16836	Plug—8-prong male plug for Television chassis power supply cable (X12)	.25
31542	Pointer—Station selector pointer with carriage	.35
31287	Rod—Dial frame pointer slide rod	.15
32083	Screen—Dial frame difusing screen with rivets	1.20
4560	Screw—¼20 by 1¼ in. long, machine screw, washer and lockwasher for chassis mounting (12 required)	.06
33517	Sleeve—Bell mouth sleeve for screw-driver adjustments (Model TRK-9 only)	.05
14270	Spring—Knob spring for stock Nos. 33468, 33471, 33472, 33469 knobs	.05
30330	Spring—Knob spring for stock Nos. 33470, knob	.03
33362	Switch—Interlock switch with leads	1.80
31522	Support—Left hand lid support	2.25
31478	Support—Right hand lid support	2.20
9857	Yoke—Deflecting yoke complete with cable and 4-prong plug (L43, L44, R62)	17.50

XX—Price upon application to your RCA Parts Distributor

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Schematic, Transformer Data
Lead Dress, Specifications

RCA MFG. CO., INC.

MODELS 5Q5A, 5Q5B, 5Q5C, 5Q5D,
5Q5E, 5Q55, 5Q56, Chassis RC-396
MODEL 6Q7, Chassis RC-414A

Frequency Ranges

"Standard Broadcast" (A)	540-1,720 kc (555-174 m)
"Medium Wave" (B)	2.3-7.0 mc (130-42.8 m)
"Short Wave" (C)	7.0-22.0 mc (42.8-13.6 m)
Intermediate Frequency	455 kc

RCA Tube Complement

(1) RCA-6SA7	First Detector—Oscillator
(2) RCA-6K7	Intermediate Amplifier
(3) RCA-6SQ7	Second-Detector, A.V.C., and A-F Amplifier
(4) RCA-6F6-G	Power Output
(5) RCA-5Y3-G	Full-Wave Rectifier
(6) RCA-6U5 (Model 6Q7)	"Magic Eye"
Pilot Lamp (1)	Mazda 44, 6.3 volts, 0.25 amp.

Power Output Rating

Undistorted	1.5 watts
Maximum	3.3 watts

Loudspeaker

Type (5Q5, 5Q55, 5Q56) RL-78-2	5-inch Electrodynamic
(6Q7) RL-79-2	6-inch Electrodynamic
Voice-Coil Impedance	3.4 ohms at 400 cycles

Power Supply Ratings

Rating A	105-125 volts, 50-60 cycles, 70 watts
Rating B	105-125 volts, 25-60 cycles, 70 watts
Rating C	105-125/200-250 volts, 50-60 cycles, 70 watts

Cabinet Dimensions

	Models 5Q5, 5Q55 5Q56	Model 6Q7
Height	9⅝ inches	12-5/16 inches
Width	13½ inches	14½ inches
Depth	8¼ inches	8½ inches
Weight (net)	18½ pounds	16½ pounds

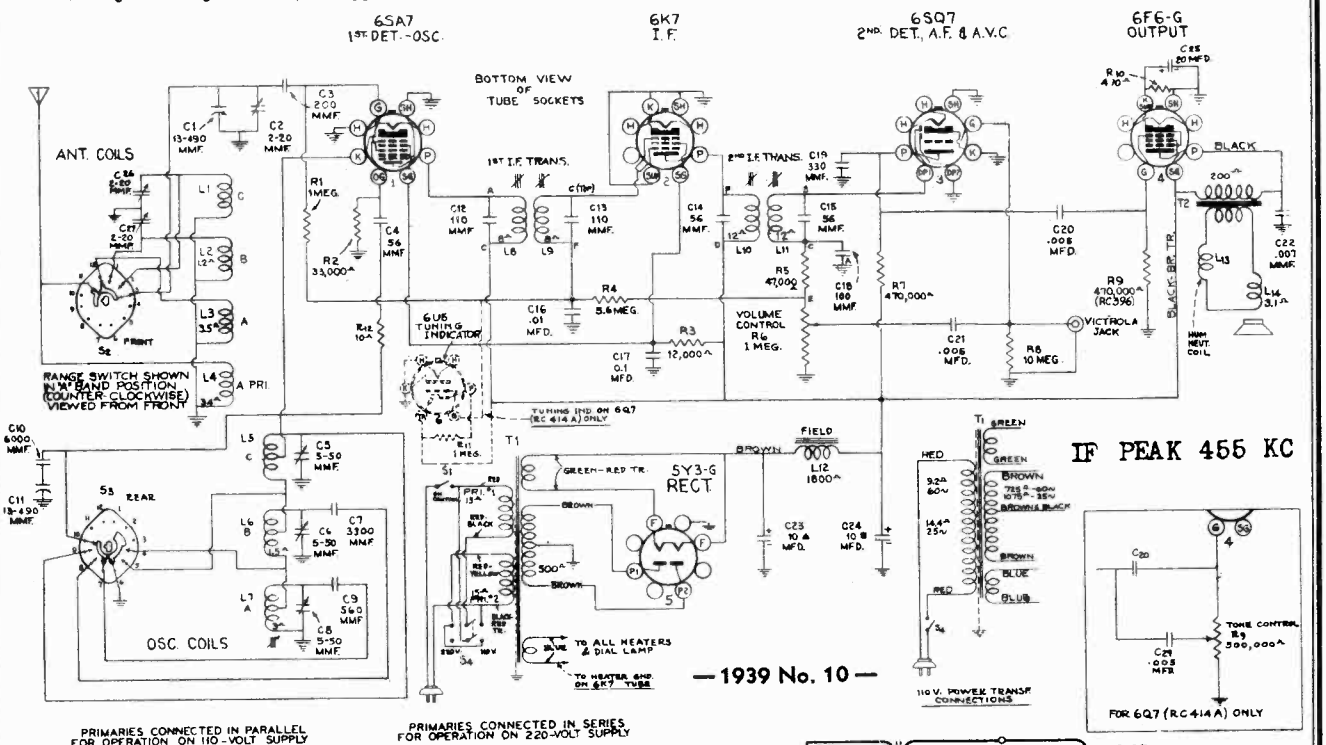
Chassis Base Dimensions	12 in. wide, 5¼ in. deep, 2¾ in. high
Overall Chassis Height	7 inches
Tuning Drive Ratio	18 to 1

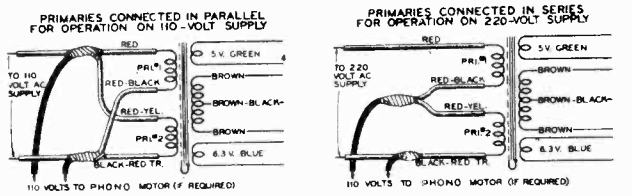
General Description

Models 5Q5, 5Q55, 5Q56 and 6Q7 are three-band table type superheterodyne receivers. They are designed to cover the standard broadcast range of 540 to 1,720 kilocycles, and the short-wave range from 2.3 to 22 megacycles.

Models 5Q5 and 6Q7 are Export Types.

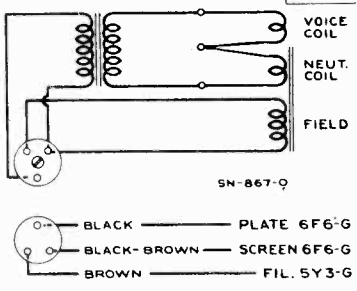
Features of design include: Magnetite-core I-F transformers; magnetite-core "A" band oscillator coil; automatic volume control; continuously-variable high-frequency tone control on Model 6Q7; edge-lighted straight-line dial; band indicator in dial; jack for Victrola Attachment; and dust-proof electrodynamic loudspeaker.





D-C Resistance		
	Primary No. 1	13 ohms
	Primary No. 2	15 ohms
	H. V. Secondary (Total)	500 ohms

Connections of Universal Power Transformer Primary for 220 and 110 Volts



Connections and Colors of Speaker and Cable

Miscellaneous Service Data

Precautionary Lead Dress

1. Lead from 2nd I.F. (E) to volume control should be kept close to chassis.
2. R.F. coil leads should be kept short and away from coil.
3. Leads to 6,000 mmf. (C10) should be as short as possible and condenser dressed away from chassis, bearing against 10 ohm (R12) resistor.

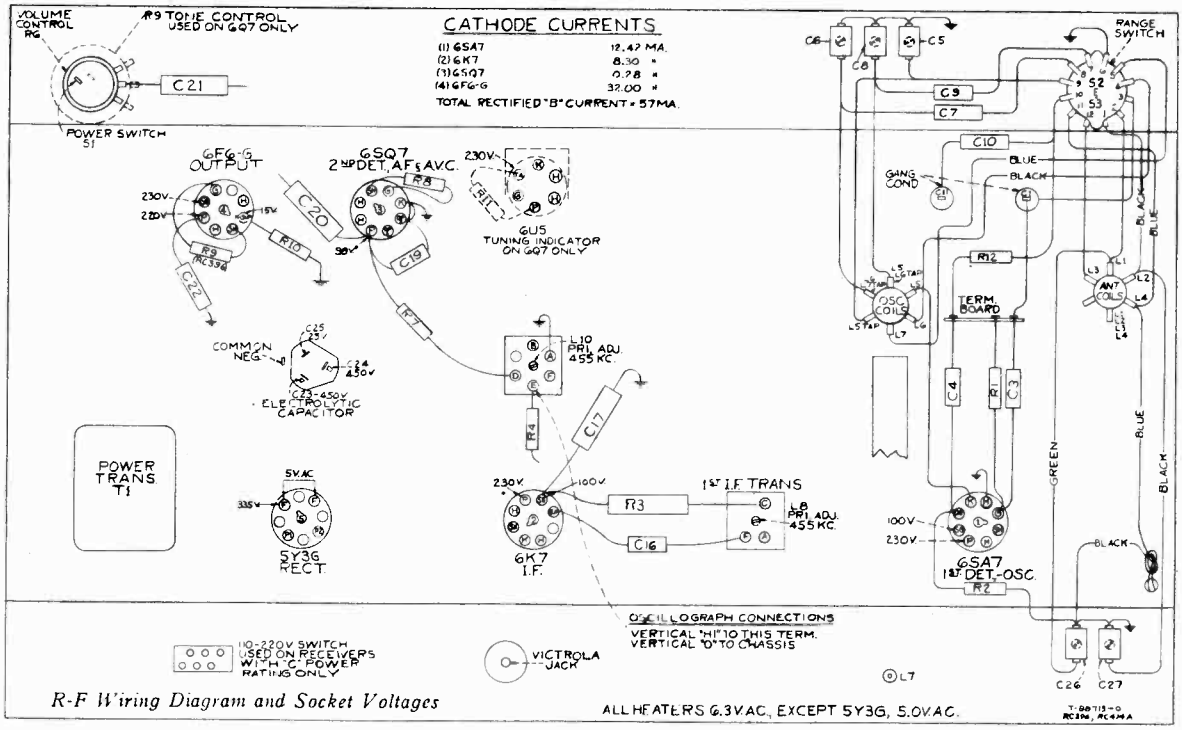
Victrola Attachment.—A jack is provided on the rear of chassis for connection to a Victrola Attachment. The cable from the attachment should be terminated in a Stock No. 31048 plug to fit the jack.

Loudspeaker.—To center the loudspeaker voice coil, first remove the front dust cover, then loosen the screws holding the spider assembly. Insert three narrow feelers into the air gap, and tighten the spider screws. Remove the feelers and fasten a dust cover in place with loudspeaker cement.

MODELS 5Q5A, 5Q5B, 5Q5C, 5Q5D, 5Q5E
5Q55, 5Q56, Chassis RC-396
MODEL 6Q7, Chassis RC-414A

RCA MFG. CO., INC.

Socket, Trimmers, Voltage
Drive Cord Data, Scale



R-F Wiring Diagram and Socket Voltages

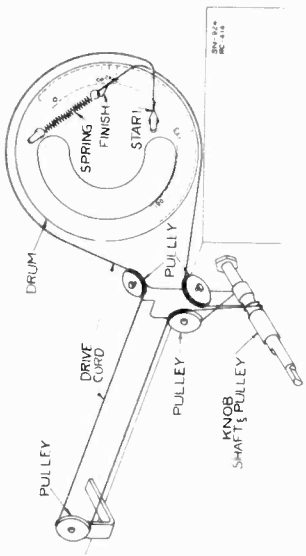
ALL HEATERS 6.3 VAC, EXCEPT 5Y3G, 5.0 VAC.

T-88715-G RC396, RC414A

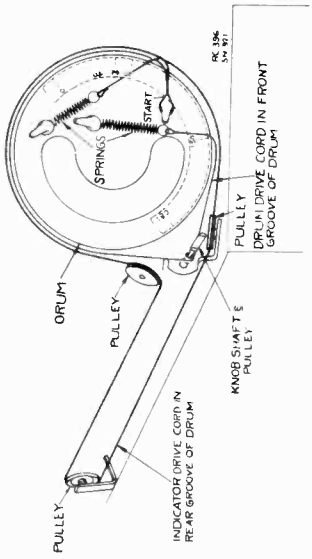
BOTTOM VIEW - REAR OF CHASSIS

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within ± 20% with 117-volt a-c supply.

*NOTE: Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.



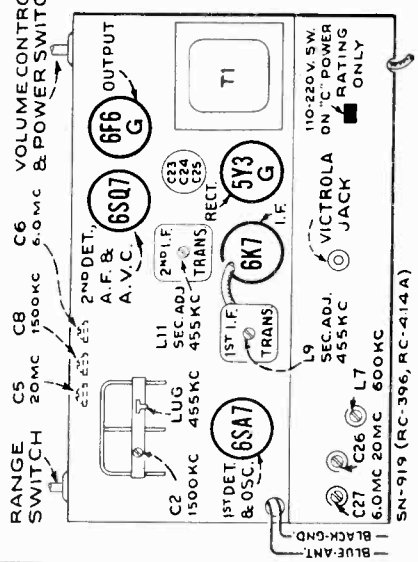
Arrangement of Drive Cord for Tuning Condenser and Dial Indicator (Model 6Q7) Drum Shown with Gang at Maximum Capacity



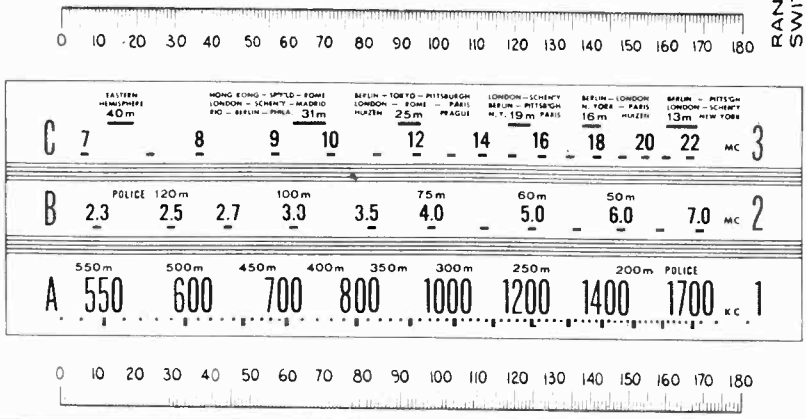
Arrangement of Drive Cords for Tuning Condenser and Dial Indicator (Models 5Q5, 5Q55 and 5Q56) Drum Shown with Gang at Maximum Capacity

Models	Description
5Q5A	*Brown Plastic Cabinet*
5Q5B	*Black Plastic Cabinet*
5Q5C	*Ivory Plastic Cabinet*
5Q5D	*Maroon Plastic Cabinet*
5Q5E	*Black Plastic Cabinet with Metal Grille*
5Q55	*Mottled Brown Plastic Cabinet*
5Q56	*Ivory Finish Plastic Cabinet*

Model 6Q7
Striped Walnut Wood Cabinet



Tube and Trimmer Locations



Calibration Scale

Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Calibration Scales

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example: 33° on the calibration scale corresponds to approximately 7.9 mc on "C" band, and 600 kc on "A" band, etc. Read instructions under "Alignment Procedure."

STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES	
32832	Bracket—Drive bracket, pulleys, and tuning knob shaft complete (Models 5Q5, 5Q55 and 5Q56)	1.20
32635	Cable—Pointer drive cable (Models 5Q5, 5Q55 and 5Q56)	.24
12581	Cap—First I.F. transformer shield cap	.25
12723	Capacitor—56 mmfd. (C4)	.35
30949	Capacitor—56 mmfd. (C14, C15)	.25
14262	Capacitor—109 mmfd. (C12, C13)	.30
32238	Capacitor—110 mmfd. (C18)	.30
12694	Capacitor—220 mmfd. (C3)	.35
12952	Capacitor—330 mmfd. (C19)	.35
12537	Capacitor—560 mmfd. (C9)	.35
31403	Capacitor—3,300 mmfd. (C7)	.60
31405	Capacitor—6,000 mmfd. (C10)	.75
32830	Capacitor—Trimmer capacitor bank, 2 sections 2-20 mmfd. (C26, C27)	.40
32829	Capacitor—Trimmer capacitor bank, 3 sections 5-50 mmfd. (C5, C6, C8)	.55
4838	Capacitor—.005 mfd. (C20, C21, C29)	.25
5148	Capacitor—.007 mfd. (C22)	.20
14393	Capacitor—.01 mfd. (C16)	.30
4839	Capacitor—0.1 mfd. (C17)	.30
32240	Capacitor—Electrolytic, 2 sections 10 mfd., 1 section 20 mfd. (C23, C24, C25)	1.45
32821	Coil—Antenna coil A, B, C, bands (L1, L2, L3, L4)	1.35
32824	Coil—Oscillator coil—A, B, C bands (L5, L6, L7)	1.00
32817	Condenser—2-gang variable condenser (C1, C2, C11)	2.60
32634	Cord—Drive cord	.10
32713	Core—Core and stud for oscillator coil adjustment	.35
32835	Drum—Drive cord drum	.55
11891	Lamp—Dial lamp	.17
32953	Plate—Dial back plate and pointer—less dial scale (Model 6Q7)	1.60
5119	Plug—3-contact female for speaker cable	.25
32834	Pulley—Drive cord pulley and mounting bracket (1 pulley)	.25
32951	Pulley—Drive cord pulleys and mounting bracket (3 pulleys) (Model 6Q7)	.45
13988	Resistor—10 ohms, ½ watt (R12)	.20
30681	Resistor—470 ohms, 1 watt (R10)	.22
12013	Resistor—1 meg., 1/10 watt (R11) (Model 6Q7)	.15
31389	Resistor—12,000 ohms, 3½ watt (R3)	.50
12454	Resistor—33,000 ohms, ½ watt (R2)	.20
5132	Resistor—47,000 ohms, 1/10 watt (R5)	.15
12285	Resistor—470,000 ohms, ½ watt (R7, R9)	.20
13730	Resistor—1 meg., ½ watt (R1)	.20
11668	Resistor—5.6 meg., ½ watt (R4)	.20
13601	Resistor—10 meg., ½ watt (R8)	.20
14343	Retainer—Retaining ring for holding tuning knob shaft (Model 6Q7)	.03
14887	Retainer—Tuning knob shaft retainer (Models 5Q5, 5Q55 and 5Q56)	.01
32848	Screw—No. 8-32 square head set screw for drum	.03
32833	Shaft—Tuning knob shaft, eyelet and retainer (Models 5Q5, 5Q55 and 5Q56)	.30
32932	Shaft—Tuning knob shaft (Model 6Q7)	.30
31365	Socket—Dial lamp insulated socket	.30
31251	Socket—Octal base tube socket	.25
32950	Socket—Magic Eye socket and bracket (Model 6Q7)	.50
14278	Socket—Phonograph socket	.25
31418	Spring—Drive cord or pointer cable tension spring	.05
32819	Switch—Range switch (Models 5Q5, 5Q55 and 5Q56) (S2, S3)	1.00
32929	Switch—Range switch (Model 6Q7) (S2, S3)	1.10
32827	Switch—Voltage change switch—110-220 volts (S4)	.35
14376	Transformer—First i.f. transformer (L8, L9, C12, C13)	2.45
32825	Transformer—Second i.f. transformer (L10, L11, C14, C15, C18, R5)	2.50
32910	Transformer—Power transformer—105-120 volts, 25-60 cycles (T1)	6.20
32911	Transformer—Power transformer—105-120 volts, 50-60 cycles (T1)	4.10
32852	Transformer—Power transformer—105-120 and 200-240 volts, 50-60 cycles (T1)	4.50
32818	Volume control and switch (R6, S1) (Models 5Q5 and 5Q55)	1.50
32928	Volume control, tone control and power switch (R6, R9, S1) (Model 6Q7)	2.50
	SPEAKER ASSEMBLIES Models 5Q5, 5Q55 and 5Q56 (RL-78-2)	
32907	Cap—Cone center dust cap	.02
32903	Coil—Speaker field coil (L12)	1.25
32906	Coil—Speaker hum neutralizing coil (L13)	.25
32904	Cone—Speaker cone, voice coil, center suspension, and dust cap (L14)	1.20
5118	Plug—3-contact male for speaker	.25
32902	Speaker—Complete	4.00
32905	Transformer—Output transformer (T2)	1.35
	SPEAKER ASSEMBLIES Model 6Q7 (RL-79-2)	
32907	Cap—Speaker cone center dust cap	.02
32903	Coil—Speaker field coil (L12)	1.25
32906	Coil—Speaker hum neutralizing coil (L13)	.25
32934	Cone—Speaker cone and voice coil (L14) (Model 6Q7)	1.65
5118	Plug—3-prong male for speaker	.25
32933	Speaker—Complete	5.50
32905	Transformer—Output transformer (T2)	1.35
	MISCELLANEOUS ASSEMBLIES	
32845	Bracket—Dial mounting bracket and lamp bracket assembly—less pointer and pointer slide rods (Models 5Q5, 5Q55 and 5Q56)	.85
32837	Dial—Dial scale	.65
32843	Knob—Black range switch knob (Models 5Q5 and 5Q55)	.15
33085	Knob—Black tuning knob (Models 5Q5 and 5Q55)	.25
32841	Knob—Black volume control knob (Models 5Q5 and 5Q55)	.15
32839	Knob—Brown tuning knob (Models 5Q5 and 5Q55)	.25
33087	Knob—Ivory range switch knob (Models 5Q5 and 5Q55)	.15
33091	Knob—Ivory tuning knob (Models 5Q5 and 5Q55)	.25
33086	Knob—Ivory volume control knob (Models 5Q5 and 5Q55)	.15
33563	Knob—Maroon range switch knob (Models 5Q5 and 5Q55)	.15
33093	Knob—Maroon tuning knob (Models 5Q5 and 5Q55)	.25
33562	Knob—Maroon volume control (Models 5Q5 and 5Q55	.15
32847	Pointer—Dial pointer, carriage and clip	.35
32846	Rod—Pointer slide rod	.25
4393	Screw—No. 8-32 x 5/16 headless set screw for knob, Stock Nos. 32840, 32842, 32844, 33088, 33089, 33090, 33092 and 33094	.03
32937	Knob—Range switch knob (small) (Model 6Q7)	.20
33029	Knob—Tone control and switch knob (small) (Model 6Q7)	.15
32935	Knob—Tuning knob (large) (Model 6Q7)	.25
32936	Knob—Volume control knob (large) (Model 6Q7)	.25
4982	Spring—Retaining spring for knob, Stock No. 32935 (Model 6Q7)	.05
30330	Spring—Retaining spring for knob, Stock No. 33029 (Model 6Q7)	.03
14270	Spring—Retaining spring for knob, Stock Nos. 32839, 32841, 32843, 33085, 33086, 33087, 33091 and 33093	.05

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment. — If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the ground terminal, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the rear of the drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 45 degree mark on the drum scale (see "Drum Drive and Indicator Cord Assembly" drawings) must be in a horizontal position when the plates are fully meshed. The distance from the edge of the chassis to the drum must not exceed ¼-inch. The drum is held to the shaft by means of a set screw, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "0" mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	"A" Band quiet point between 550-750 kc	L10 and L11 (2nd I.F. trans.)
2	Tuning condenser stator (osc.) in series with .01 mfd. **	455 kc		L8 and L9 (1st I.F. trans.)
3	Antenna lead (blue) in series with 200 mmfd.	600 kc	600 kc (33°) "A" Band	L7†
4		1,500 kc	1,500 kc (152.4°) "A" Band	C2 (ant.) C8 (osc.)
5	Repeat steps 3 and 4			
6	Antenna lead (blue) in series with 400 ohms	20 mc	20 mc (155.4°) "C" Band	C5 (osc.) * C26 (ant.)
7		6 mc	6 mc (149°) "B" Band	C6 (osc.) * C27 (ant.)
8	Antenna lead (blue) in series with 200 mmf.	1,500 kc	1,500 kc (152.4°) "A" Band	C8 (osc.)

* Use minimum capacity peak if two peaks can be obtained.
† Rock gang condenser slightly while adjusting L7.
** Make test-oscillator connection to lug on tuning condenser stator (oscillator section) in series with .01 mfd. condenser.
Note.—Oscillator tracks 455 kc above signal on all bands.

MODELS 5X5I, 5X5W
Chassis RC-406
Alignment, Parts

RCA MFG. CO., INC.

Model 5X5 Series (Chassis No. RC-406)

Five-Tube, Single-Band, AC-DC Multiplex Superheterodyne Receiver

Model PLF-10

Power Line Filter Coupling Unit

General Description

The following features are incorporated in the design of the Little Nipper Multiplex 5X5 Series Receiver:

First, it is a "standard broadcast" receiver. Second, it will operate any other radio in the home by "remote control" without the use of connecting wires. Third, records may be reproduced through the Little Nipper when used with Victrola Attachment. Fourth, the Model 5X5 (when used with Victrola Attachment) will reproduce records through any other radio in the home without the use of connecting wires.

When using the 5X5 as a remote control, the Model PLF-10 Power Line Filter Coupling Unit should be used in conjunction with the receiver to be controlled. The filter is connected between the power line receptacle and the receiver being controlled, as shown in accompanying drawing.

Alignment Procedure

Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible.

The Remote Control Oscillator in the 5X5 is set at the factory to approximately 540 kc. The frequency may be varied between 540 and 800 kc to suit local conditions by adjusting the trimmer condenser C7.

Power-Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

If the electric supply circuit is a three-wire system, it may be necessary to connect a ½ mfd 700-volt capacitor between the two outside lines of the three-wire system.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	Tuning condenser stator (osc.) in series with .01 mfd.	455 kc	Quiet point at 1,600 kc end of dial	C1, C2, C3, C4 (1st and 2nd I-F transformers)
2	Antenna term. of ant. trans. in series with 100 mmfd.	1,720 kc	Full clockwise (out of mesh)	C5 (oscillator)
3		1,500 kc	Resonance on 1,500 kc signal	C6 (antenna)

Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES	
13057	Capacitor—60 mmfd.	.35
12488	Capacitor—250 mmfd.	.35
12952	Capacitor—300 mmfd.	.35
30433	Capacitor—400 mmfd.	.35
4838	Capacitor—.005 mfd.	.25
4937	Capacitor—.01 mfd.	.25
4870	Capacitor—.025 mfd.	.20
4839	Capacitor—0.1 mfd.	.30
12484	Capacitor—0.25 mfd.	.30
33321	Capacitor—Electrolytic, 2 sections 30 mfd. each	1.00
32572	Coil—Antenna coil	.60
33320	Coil—Duplex oscillator coil	.90
32962	Coil—Oscillator coil	.60
33323	Condenser—Trimmer 20-150 mmfd.	.35
32968	Condenser—2-gang variable tuning	2.25
32634	Cord—Drive cord	.10
32946	Drum—Condenser drive drum	.35
31480	Lamp—Dial lamp—Mazda No. 47	.20
12409	Lead—Antenna lead	.45
33322	Resistor—5 ohms, 5 watts	.20
14671	Resistor—33 ohms, ½ watt	.20
13428	Resistor—150 ohms, ½ watt	.20
13998	Resistor—22,000 ohms, ½ watt	.20
12454	Resistor—33,000 ohms, ½ watt	.20
12412	Resistor—47,000 ohms, ½ watt	.20
12264	Resistor—220,000 ohms, ½ watt	.20
12285	Resistor—470,000 ohms, ½ watt	.20
12679	Resistor—2.2 meg., ½ watt	.20
13601	Resistor—10 meg., ½ watt	.20
32945	Shaft—Tuning knob shaft and bushing	.20
32969	Socket—Dial lamp socket	.25
14278	Socket—Phonograph socket	.25
32537	Socket—Tube socket	.20
30585	Spring—Drive cord spring	.06
33324	Switch—Phonograph switch	.50
33319	Transformer—First i-f transformer	1.40
33057	Transformer—Second i-f transformer	1.25
32578	Volume control and power switch	1.50
	POWER LINE FILTER PLF-10	
13057	Capacitor—60 mmfd.	.35
12484	Capacitor—0.25 mfd.	.30
33492	Coil—Choke coil	.50
33493	Receptacle—Power receptacle	.40
33491	Switch	.35
	SPEAKER ASSEMBLIES (39105—2)	
32963	Speaker complete	3.95
32964	Transformer—Output transformer	1.25
	MISCELLANEOUS ASSEMBLIES	
X-639	Cabinet—Ivory finish—Model 5X5I (net)	2.20
X-638	Cabinet—Walnut finish—Model 5X5W (net)	1.35
32942	Dial—Glass dial scale	.30
33317	Fastener—Push fastener to hold cabinet back	.02
33308	Knob—Black tuning knob—Model 5X5I	.15
32447	Knob—Ivory knob—Model 5X5W	.15
32943	Nut—Speed nut to hold dial	.01
31646	Spring—Knob retaining spring	.02

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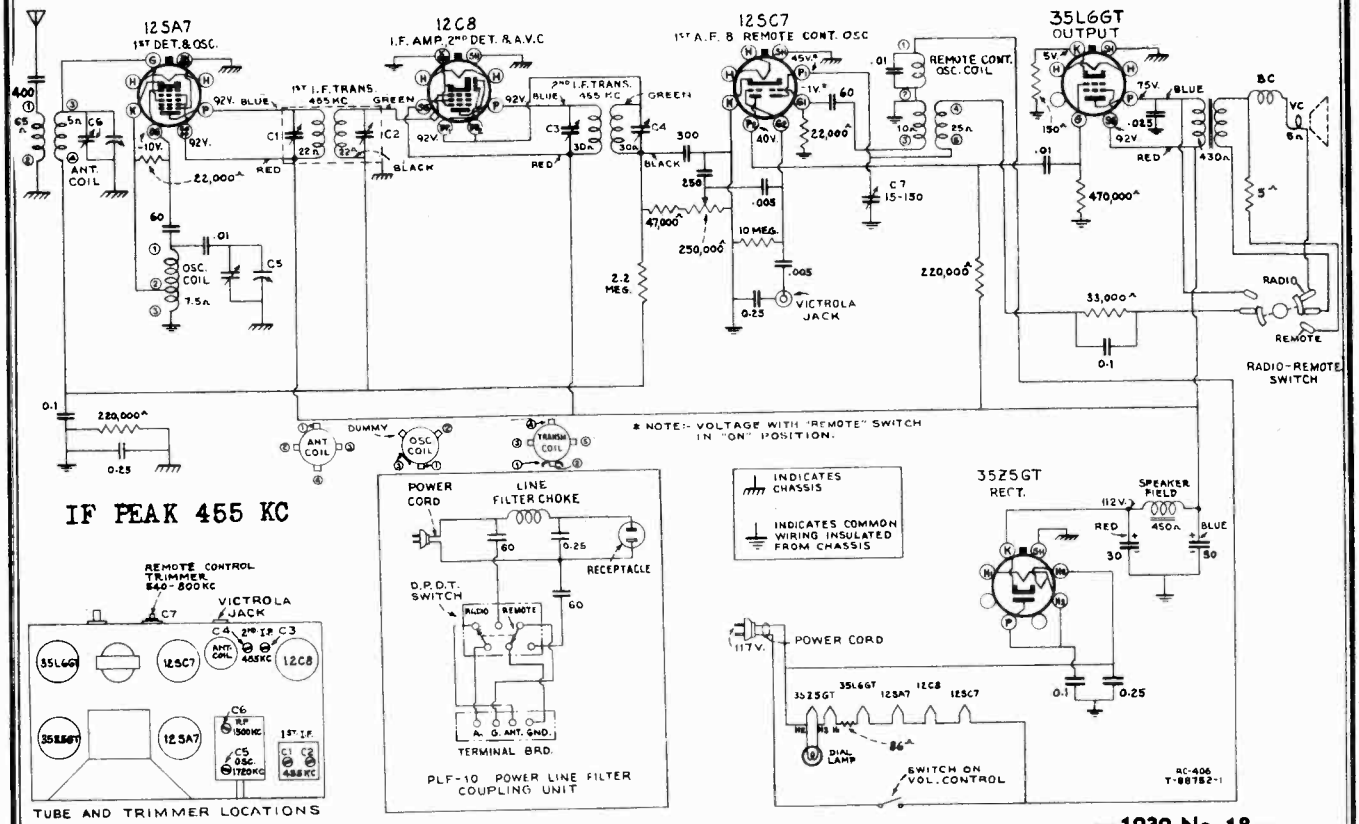
Socket, Trimmers

RCA MFG. CO., INC.

MODELS 5X5I, 5X5W
Chassis RC-406
MODEL PLF-10 Coupling Unit
Schematics, Tuner, Voltage



—1939 No. 18—

Electrical and Mechanical Specifications

Frequency Range

Receiver	540-1,720 kc
Remote Control Oscillator	540-800 kc

Tube Complement

(1) RCA-12SA7	1st-Detector-Oscillator
(2) RCA-12C8	I-F Amp., 2nd-Det., and A.V.C.
(3) RCA-12SC7	1st A-F and Remote Control Osc.
(4) RCA-35L6GT	Power Output
(5) RCA-35Z5GT	Half-Wave Rectifier
Dial Lamp (1)	Mazda 47, 6.3 Volts, .15 amp.
Intermediate Frequency	455 kc

Power Supply Ratings

A-C Rating	100-125 volts, 50-60 cycles, 30 watts
D-C Rating	100-125 volts, direct current, 30 watts

Power Output (125 volt, 60 cycle supply)

Undistorted	1.5 watts
Maximum	2.0 watts

Loudspeaker

Type	4 inch Electrodynamic
Cabinet Dimensions (inches)	Height 5¼, Width 8¾, Depth 4½
Weight (net)	5¼ pounds

Model 5X5W *Walnut Finish*
Model 5X5I *Ivory Finish*

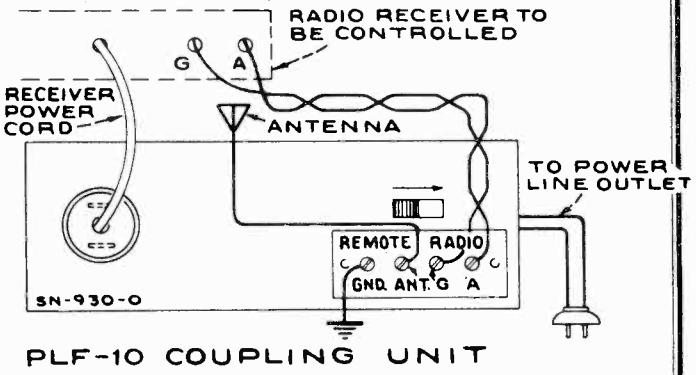
Set-up Procedure for Remote Control

1. Install the 5X5 and tune in any desired station.
2. Turn the control switch on the back of the 5X5 to its clockwise position marked "Remote." The 5X5 becomes silent.

   The 5X5 now becomes a small relay station for signalling to the controlled receiver via the power line wiring.
3. Next tune the main receiver to the exact frequency of transmission of the 5X5, usually 540 kc. Tune carefully to this frequency, setting the volume control as high as permissible with regard to hum and noise conditions. The station to which the 5X5 was tuned will be heard. If the receiver is equipped with tuning indicator (Magic Eye) the correct point will most easily be obtained by observing the indicator.
4. Now any station tuned in on the 5X5 dial will be heard on the controlled receiver. The volume will also be controlled with the 5X5 volume control.
5. If it is desired to operate the controlled receiver on its own controls it is only necessary to set the switch on the Power Line Filter Coupling Unit to its position marked "Radio."
6. In the event that, with the 5X5 being used as a remote control, other receivers in the home are in use, trouble may be experienced due to noise and hum. To avoid this, connect a Power Line Filter Coupling Unit, RCA Victor PLF-10, to each of these other receivers, as shown in accompanying drawing.

Precautionary Lead Dress

1. Dress 1st I-F plate and grid leads against chassis and away from each other. Dress plate lead from 12C8 close to chassis.
2. Dress A.V.C. condenser (0.1) close to chassis and tight to 0.25 mmfd. condenser.



PLF-10 COUPLING UNIT

Antenna.—The set is equipped with length of antenna wire. Do not connect the antenna to ground. If an outdoor antenna is used, it should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

Victrola Attachment.—A jack is provided on the rear of chassis for connecting a Victrola Attachment into the audio-amplifying circuit. The cable from the Victrola Attachment should be terminated in a Stock No. 31048 plug to fit the jack.

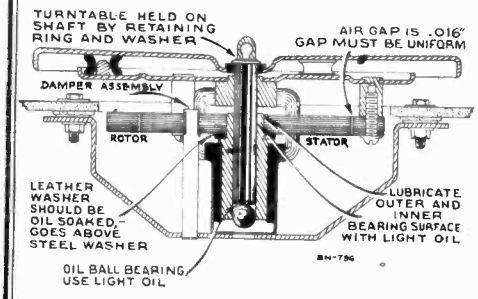
First Edition
Printed in U. S. A.

MODELS U8M,U8W
Chassis RC-404A
Motor Assembly,Parts

RCA MFG. CO., INC.

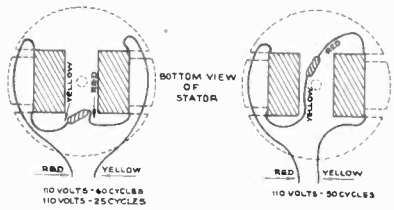
RCA Victor MODEL U-8 (Chassis No. RC-404A)

Five-Tube, Single-Band, A-C, Superheterodyne Victrola



Cross Section of Motor Assembly

Model U-8W
Walnut Finish
Model U-8M
Blonde Mahogany Finish



Motor Coil Assembly and Connections

Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES	
12488	Capacitor—250 mmfd.	.35
12952	Capacitor—300 mmfd.	.35
4838	Capacitor—.005 mfd.	.25
4937	Capacitor—.01 mfd.	.25
33736	Coil—Antenna coil	.75
32962	Coil—Oscillator coil	.60
13057	Condenser—60 mmfd.	.35
30433	Condenser—400 mmfd.	.35
30303	Condenser—.0035 mfd.	.40
33584	Condenser—.005 mfd.	.25
4870	Condenser—.025 mfd.	.20
4839	Condenser—0.1 mfd.	.30
12536	Condenser—820 mfd.	.45
32576	Condenser—Electrolytic, one section 20 mfd., one section 12 mfd.	.90
32968	Condenser—2-gang variable tuning	2.25
32634	Cord—Drive cord	.10
33289	Dial—Glass dial scale	.40
33297	Drive—Dial drive mechanism—comprising drive drum, cord, shaft, dial color plate, back plate and pulleys assembled	.85
33006	Feet—Rubber feet	.03
33295	Indicator—Dial pointer	.25
32571	Knob—Tan knob (tuning or volume)	.15
11765	Lamp—Dial lamp—Mazda 51	.15
31193	Lead—Antenna lead	.50
33292	Plate—Dial color plate	.25
33294	Pulley—Drive cord pulley	.02
33558	Resistor—86 ohms	.15
13428	Resistor—150 ohms, ½ watt	.20
30538	Resistor—330 ohms, ½ watt	.20
13998	Resistor—22,000 ohms, ½ watt	.20
12266	Resistor—39,000 ohms, ½ watt	.20
12412	Resistor—47,000 ohms, ½ watt	.20
12264	Resistor—220,000 ohms, ½ watt	.20
12285	Resistor—470,000 ohms, ½ watt	.20
12679	Resistor—2.2 meg., ½ watt	.20
13601	Resistor—10 meg., ½ watt	.20
33464	Shaft—Tuning knob shaft and bearing	.25
32969	Socket—Dial lamp socket	.25
32537	Socket—Tube socket	.20
32803	Spring—Dial knob spring	.01
31615	Spring—Drive cord tension spring	.02
33296	Spring—Drive drum retaining spring	.06
32667	Spring—Knob or drive drum retaining spring	.02
32966	Transformer—First i-f transformer	1.25
32967	Transformer—Second i-f transformer	1.05
33465	Transformer—Output transformer	1.35
33504	Volume control and power switch	1.50
	PICKUP AND ARM ASSEMBLIES	
33121	Arm—Pickup arm complete—less crystal cartridge	1.75
33592	Base—Pickup arm base and pivot arm	.70
33122	Crystal—Pickup crystal cartridge and needle screw	4.35
33123	Damper—Viscoloid damper for pickup armature	.15
33529	Screw—Pickup needle screw	.15

STOCK No.	DESCRIPTION	Unit List Price
	MOTOR ASSEMBLIES	
31045	Base—Motor support, damper, and bearing cup assembly	.60
31046	Bearing—Rotor bearing	.70
33353	Cap—Turntable spindle cap (rubber)	.10
33357	Coil—Motor field coil—105-120 volts, 25 cycle	.60
31918	Coil—Motor field coil—105-120 volts, 50 cycle	.70
31917	Coil—Motor field coil—105-120 volts, 60 cycle	.70
31040	Cushion—One set rubber cushion for turntable mounting	.25
31047	Cushion—Rubber cushion for rotor bearing	.15
33941	Frame—Motor frame and spindle—60 cycle	
33641	Lamination—Rotor lamination—60 cycle	1.30
33358	Lamination—Stator laminations—25 cycle	1.30
33354	Lamination—Stator laminations—less coil 50 cycle	1.00
33355	Motor—105-120 volts, 25 cycle	11.75
33351	Motor—105-120 volts, 50 cycle	7.65
33940	Motor—105-120 volt, 60 cycle	7.30
32075	Ring—Lead ring for turntable—25 cycle	1.85
33041	Ring—Retaining ring and washer for spindle cap	.06
33356	Rotor—Rotor frame, laminations, and spindle shaft assembled—25 cycle	2.55
33352	Rotor—Rotor frame, laminations, and spindle shaft assembled—50 cycle	2.45
31036	Rotor—Turntable and rotor lamination for 60 cycle operation	4.55
31042	Stator—Stator assembly comprising coils and laminations for 60 cycle operation	2.50
32076	Turntable—Finished turntable plate only—25 cycle	1.40
31039	Turntable—Finished turntable plate only—50 cycle	.95
4083	Washer—Leather Washer	.02
33348	Washers—Leather and metal washers for stator bearing	.10
14231	Washer—Metal spacing washer	.02
32074	Weight—One upper and one lower weight for stator—25 cycle (2 each required)	.65
	SPEAKER ASSEMBLIES (RL—78—4)	
32907	Cap—Cone dust cap	.02
33809	Coil—Speaker field coil	1.10
32904	Cone—Speaker cone and voice coil	1.20
33466	Speaker complete (no output transformer)	4.25
	MISCELLANEOUS ASSEMBLIES	
33467	Control—Tone control and Radio-Record switch	1.35
33289	Dial—Glass dial scale	.40
30863	Knob—Tone control knob	.15
32895	Knob—Tuning or volume control knob	.15
33530	Mounting—Pickup arm rubber cushion, washer and nut	.10
30870	Plug—2-prong plug for motor leads	.35
32610	Rest—Pickup arm rest	.10

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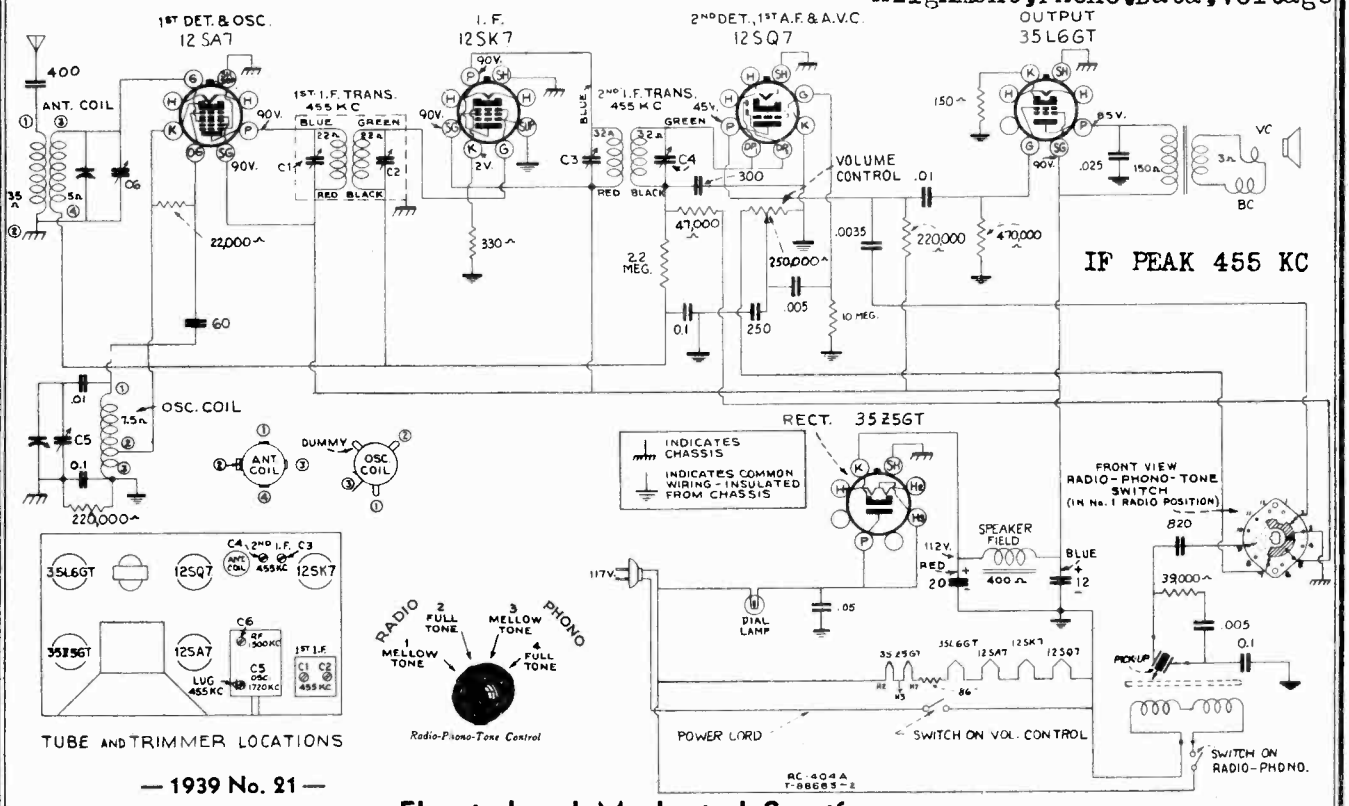
First Edition

Printed in U. S. A.

RCA MFG. CO., INC.

MODELS U8M,U8W
Chassis RC-404A
Schematic,Socket,Trimmers
Alignment,Phono,Data,Voltage



— 1939 No. 21 —

Electrical and Mechanical Specifications

FREQUENCY RANGE	540-1,720 kc
INTERMEDIATE FREQUENCY	455 kc
TUBE COMPLEMENT	
(1) RCA-12SA7	1st-Detector-Oscillator
(2) RCA-12SK7	I-F Amplifier
(3) RCA-12SQ7	2nd-Detector, 1st A-F, and A.V.C.
(4) RCA-35L6GT	Power Output
(5) RCA-35Z5GT	Half-Wave Rectifier
Dial Lamp (1)	Mazda 51, 7.5 volts, 0.2 amp.
POWER SUPPLY RATINGS	
A-5	105-125 volts, 50 cycles, 40 watts
A-6	105-125 volts, 60 cycles, 40 watts
POWER OUTPUT (125 volt, 60 cycle supply)	
Undistorted	.75 watts
Maximum	1.3 watts
LOUDSPEAKER	
Type	5-inch Electrodynamic
Voice-Coil Impedance	3.4 ohms at 400 cycles
PHONOGRAPH	Synchronous (manual starting)
Records	10-inch and 12-inch, 78 r.p.m.
Pickup	Crystal, 100,000 ohms at 1,000 c.p.s.
Average Output of Pickup	1½ volts at 1,000 c.p.s. across ½ meg. load
Cabinet Dimensions (inches)	Height 6 9/16, Width 14⅞, Depth 8¾
Weight (net)	11½ pounds

Alignment Procedure

Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible.

Antenna.—The set is equipped with length of antenna wire. Do not connect the antenna to ground. If an outdoor antenna is used, it should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

Precautionary Lead Dress

1. Dress 1st I-F plate and grid leads against chassis and away from each other. Dress plate lead from 12SK7 close to chassis.
2. Dress electrolytic capacitor against chassis apron.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	Tuning condenser stator (osc.) in series with .01 mfd.	455 kc	Quiet point at 1,600 kc end of dial	C1, C2, C3, C4 (1st and 2nd I-F transformers)
2	Antenna term. of ant. trans. in series with 100 mmfd.	1,720 kc	Full clockwise (out of mesh)	C5 (oscillator)
3		1,500 kc	Resonance on 1,500 kc signal	C6 (antenna)

Power Supply.—Although this model employs an ac-dc chassis, it is not suitable for use on dc, as this would damage the motor.

Phonograph Service Data

The motor is started by turning the radio-phono tone control to either 3rd or 4th position clockwise and giving the turntable a clockwise spin with the hand. Smooth starting and running will be insured by keeping the bearings well cleaned and oiled.

Hum and Vibration.—A small amount of hum when starting, decreasing to a negligible amount when running, is normal. If excessive vibration occurs it may be due to:

1. Insufficient lubrication, or any failure that will cause binding.
2. Leather washer not oiled. (Check to make certain that the leather washer is above the steel washer.)
3. Motor not properly supported from motor board.
4. Burrs on poles of rotor or stator. Remove with fine emery cloth.
5. The damper spring must fit without binding or chattering in the slot in the stator. The stator must be free to deflect in either direction between the limits of the damper spring. The damper spring must exert approximately equal force in restoring the stator to its mid-position when the stator is deflected manually in each direction.

Removing Rotor.—The rotor and turntable assembly simply rests on the ball bearing at bottom of vertical bearing. Remove by lifting up.

Rotor Adjustment.—Loosen the three screws that hold the rotor to the turntable, insert three 16-mil shims at equal distances around the gap between the rotor and stator, and then carefully tighten the three screws. The top of rotor must be flush with top of stator; add additional steel washers beneath the stator if necessary.

Lubrication.—Oiling points are indicated in the diagram.

MODELS 9SX-1 to 9SX-8 incl.
Little Nipper
MODELS 9TX-1 to 9TX-5 incl.
Little Nipper-2nd
Parts Lists

RCA MFG. CO., INC.

"Little Nipper" Models 9SX-1, -2, -3, -4, -5, -6, -7, and -8

Five-Tube, Two-Band, AC-DC Superheterodyne Receivers

9SX-1, -2, -3, -4, -5, -6, -7, -8

Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	Unit List Price	STOCK No.	DESCRIPTION	Unit List Price
31193	Antenna—35 ft. antenna wire—wound on reel	.50	32444	Knob—Station selector knob—Black	.25
X-569	Cabinet—Walnut and Ivory cabinet (9SX-2)	3.50 net	32445	Knob—Station selector knob—Maroon	.25
X-572	Cabinet—Blue and Onyx cabinet (9SX-6)	3.50 net	32446	Knob—Volume control or range switch knob—Walnut	.15
X-575	Cabinet—Onyx cabinet (9SX-7)	3.50 net			
X-570	Cabinet—Walnut cabinet (9SX-1)	3.50 net	32447	Knob—Volume control or range switch knob—Ivory	.15
X-573	Cabinet—Ivory cabinet (9SX-3)	3.50 net			
X-576	Cabinet—Marble cabinet (9SX-8)	3.50 net	32448	Knob—Volume control or range switch knob—Red	.15
X-571	Cabinet—Red and Ivory cabinet (9SX-4)	3.50 net			
X-574	Cabinet—Black and Marble cabinet (9SX-5)	3.50 net	32449	Knob—Volume control or range switch knob—Blue	.15
32392	Capacitor—.0005 mfd.	.20			
32396	Capacitor—.0005 mfd. mica capacitor	.30	32450	Knob—Volume control or range switch knob—Black	.15
32393	Capacitor—.001 mfd.	.20			
4858	Capacitor—.01 mfd.	.25	32451	Knob—Volume control or range switch knob—Maroon	.15
31796	Capacitor—.02 mfd.	.20			
4886	Capacitor—.05 mfd.	.20	4340	Lamp—Dial lamp—Mazda 40	.17
4839	Capacitor—0.1 mfd.	.30	30540	Resistor—100 ohms, 1/3 watt	.20
32386	Capacitor—10-20 mfd., Electrolytic	1.35	32397	Resistor—120 ohms, 1/2 watt, Flexohm	.20
32394	Capacitor—Trimmer capacitor 1,500 K.C. adjustment (C4)	.20	30880	Resistor—150 ohms, 1/3 watt	.20
			30492	Resistor—20,000 ohms, 1/3 watt	.20
32395	Capacitor—Trimmer capacitor 1,720 K.C. adjustment (C3)	.20	3594	Resistor—50,000 ohms, 1/3 watt	.20
			30493	Resistor—150,000 ohms, 1/3 watt	.20
32387	Coil—Antenna coil (T1)	1.05	3048	Resistor—500,000 ohms, 1/3 watt	.20
32388	Coil—Oscillator coil (T2)	1.05	30652	Resistor—1 megohm, 1/3 watt	.20
32389	Coil—Short wave antenna coil (T3)	.85	32398	Screw—No. 6-32 fibre screw—back cover mounting	.08
32379	Condenser—2-gang variable tuning condenser	2.35			
32384	Cord—Resistance power cord	.95	32390	Socket—8-prong moulded Octal tube socket	.25
32399	Dial—Indicator dial scale	.35	32380	Speaker—Dynamic loudspeaker	2.90
32440	Knob—Station selector knob—Walnut	.25	32381	Transformer—Output transformer (T6)	1.00
32441	Knob—Station selector knob—Ivory	.25	32382	Transformer—First i.f. transformer (T4)	1.80
32442	Knob—Station selector knob—Red	.25	32383	Transformer—Second i.f. transformer (T5)	1.80
32443	Knob—Station selector knob—Blue	.25	32385	Volume Control and Switch	1.50

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"Little Nipper-2nd" Models 9TX-1, -2, -3, -4, and -5

Five-Tube, Single-Band, AC-DC Superheterodyne Receivers

9TX-1, -2, -3, -4, -5

Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	Unit List Price	STOCK No.	DESCRIPTION	Unit List Price
X-587	Cabinet for 9TX1 (Walnut finish)	1.35 net	32570	Knob—Maroon volume control knob for 9TX4	.15
X-588	Cabinet for 9TX2 (Ivory finish)	2.20 net			
X-589	Cabinet for 9TX3 (Wood, Mahogany finish)	2.80 net	32571	Knob—Tan volume control knob for 9TX1 and 9TX3	.15
X-590	Cabinet for 9TX4 (Arizona Cream Onyx finish)	4.50 net	31480	Lamp—Dial lamp—Mazda 47	.20
X-591	Cabinet for 9TX5 (Brazilian Green Onyx finish)	4.50 net	12409	Lead—Antenna lead	.45
			14439	Resistor—100 ohms, ½ watt	.20
32572	Coil—Antenna coil	.60	32535	Resistor—120 ohms, wire wound	.20
32573	Coil—Oscillator coil	.50	12412	Resistor—47,000 ohms, ½ watt	.20
13057	Condenser—60 mmfd.	.35	12264	Resistor—220,000 ohms, ½ watt	.20
12488	Condenser—250 mmfd.	.35	12285	Resistor—470,000 ohms, ½ watt	.20
12952	Condenser—300 mmfd.	.35	12679	Resistor—2.2 meg., ½ watt	.20
30433	Condenser—400 mmfd.	.35	13601	Resistor—10 meg., ½ watt	.20
4858	Condenser—.01 mfd.	.25	31199	Shield—Dial lamp shield — Models 9TX1, 9TX2, 9TX4, and 9TX5	.04
4870	Condenser—.025 mfd.	.20			
4886	Condenser—.05 mfd.	.20	32537	Socket—Tube socket	.20
4839	Condenser—0.1 mfd.	.30	32575	Speaker—Complete with transformer	4.00
32576	Condenser—Electrolytic, one section 20 mfd., one section 12 mfd.	.90	32574	Transformer—First i.f. transformer	1.20
			32581	Transformer—Output transformer	1.25
32579	Condenser—Variable tuning condenser	2.25	32534	Transformer—Second i.f. transformer	.90
32577	Cord—Resistance power cord	.95	32578	Volume Control and Power Switch—Models 9TX1, 9TX2, and 9TX3	1.50
32566	Dial—Ivory dial for 9TX2 and 9TX5	.45			
32567	Dial—Maroon dial for 9TX4	.45	32580	Volume Control and Power Switch—Models 9TX4 and 9TX5	1.50
32568	Dial—Tan dial for 9TX1 and 9TX3	.55			
32569	Knob—Ivory volume control knob for 9TX2 and 9TX5	.20			

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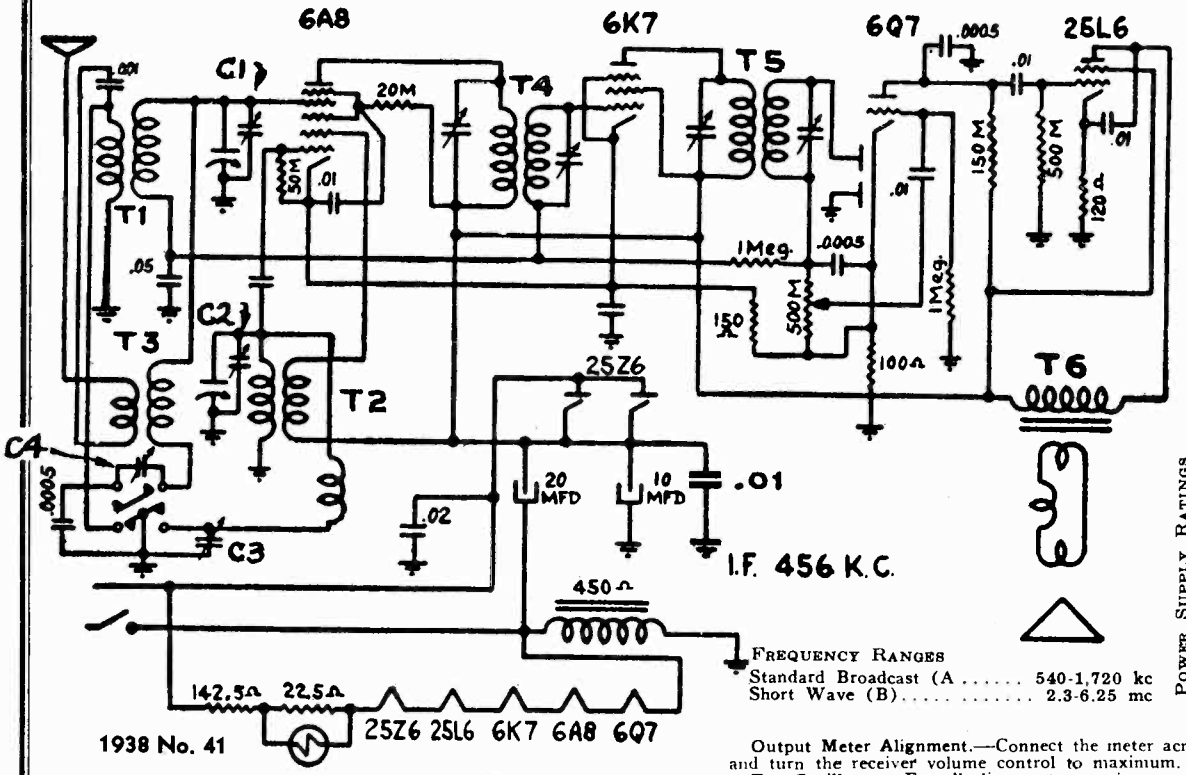
Schematic, Alignment, Socket Trimmers, Notes

RCA MFG. CO., INC.

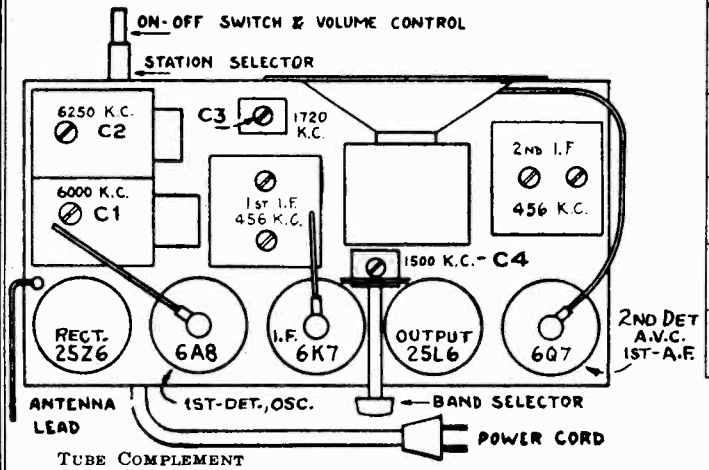
MODELS 9SX-1 to 9SX-8 incl.
Little Nipper



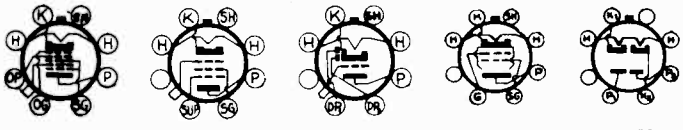
Power Supply Ratings
A-C Rating ..... 105-125 volts, 50-60 cycles, 50 watts
D-C Rating ..... 105-125 volts, direct current, 50 watts
Power Output (125 volt, 60 cycle supply)*
Undistorted ..... 1.5 watt
Maximum ..... 2.0 watts
Loudspeaker
Type ..... 4-inch Electrodynamic

Frequency Ranges
Standard Broadcast (A ..... 540-1,720 kc
Short Wave (B) ..... 2.3-6.25 mc

Model 9SX-1, Molded cabinet, walnut finish, ivory knobs.
Model 9SX-2, Molded cabinet, walnut body, ivory front, walnut knobs.
Model 9SX-3, Molded cabinet, ivory finish, red knobs.
Model 9SX-4, Molded cabinet, red body, ivory front, red knobs.
Model 9SX-5, Molded cabinet, black body, marble front, jet knobs.
Model 9SX-6, Molded cabinet, blue body, onyx front, blue knobs.
Model 9SX-7, Molded cabinet, onyx finish, maroon knobs.
Model 9SX-8, Molded cabinet, marble finish, jet knobs.



Tube Complement
(1) RCA-6A8 ..... 1st-Detector—Oscillator
(2) RCA-6K7 ..... I-F Amplifier
(3) RCA-6Q7 ..... 2nd-Det., 1st A-F, and A.V.C.
(4) RCA-25L6 ..... Power Output
(5) RCA-25Z6 ..... Half-Wave Rectifier
Dial Lamp (1) ..... Mazda 40, 6.3 volts, .15 amp.



6A8 6K7 6Q7 25L6 25Z6

Bottom view of tube sockets

Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis through .01 mfd., and keep the output as low as possible to avoid a-v-c action.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	6K7 I-F grid cap, in series with .01 mfd.	456 kc	Quiet point between 1,650-1,720 kc, with range switch at broadcast position (counter-clockwise from rear).	Two trimmers on 2nd I-F trans.
2	6A8 1st-Det. grid cap, in series with .01 mfd.	456 kc		Two trimmers on 1st I-F trans.
3	Antenna Term. on antenna trans., in series with 400 ohms.	6,250 kc	Max. clockwise (out of mesh) "B" band	C2 (osc. gang trimmer)*
4		6,000 kc	Resonance on 6,000 kc signal	C1 (ant. gang trimmer)**
5	Antenna Term. on antenna trans., in series with 90 mmf.	1,720 kc	Max. clockwise (out of mesh)	C3
6		1,500 kc	Resonance on 1,500 kc signal.	C4

* Use minimum capacity peak if two peaks can be obtained.

** After this adjustment, check for image by leaving test oscillator at 6,000 kc, and shifting receiver dial to 5,088 kc, where a weaker signal should be received.

	Height	Width	Depth
Cabinet Dimensions	4¾ inches	8 inches	4½ inches
Weight	7 pounds (shipping)		

Power-Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce bum.

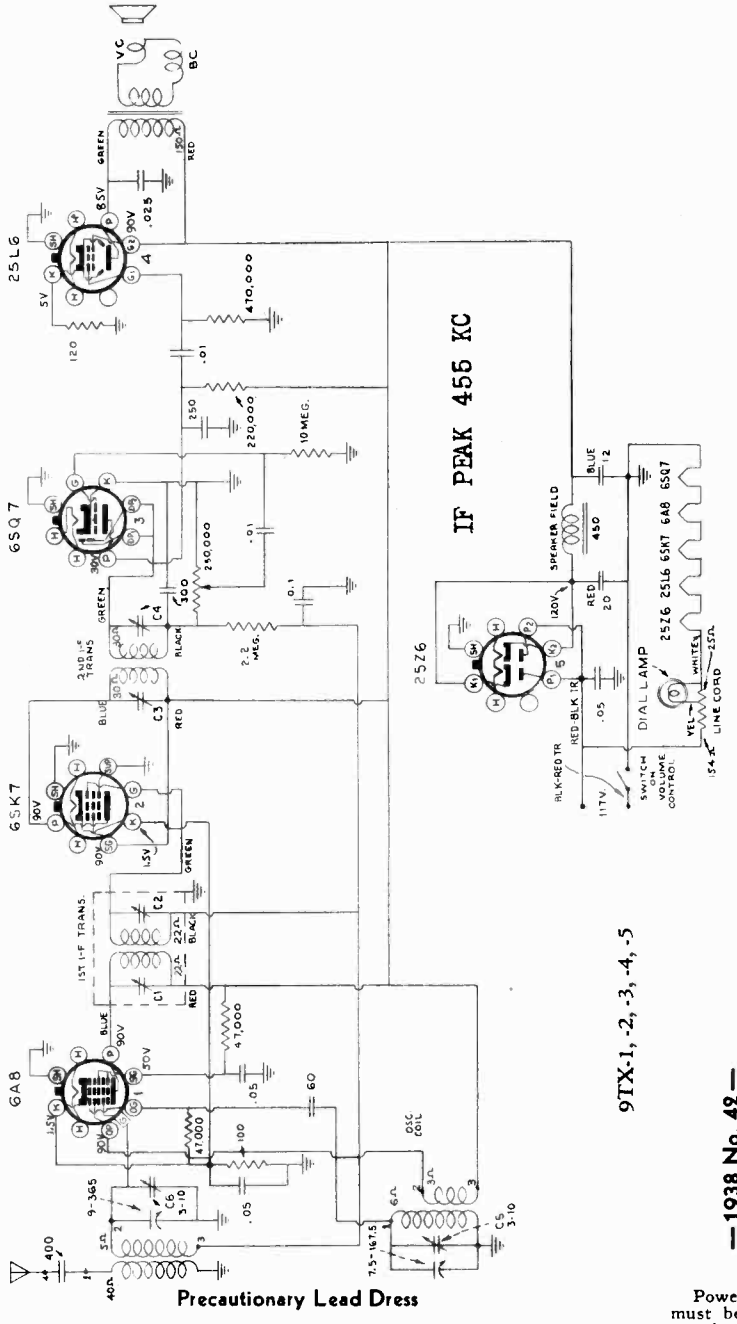
Resistor in Power Cord.—The power cord contains a resistor which becomes warm during operation.

Antenna.—The set is equipped with length of antenna wire. Do not connect the antenna to ground. If an outdoor antenna is used, it should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

MODELS 9TX-1 to 9TX-5 incl.
Little Nipper-2nd

RCA MFG. CO., INC.

Schematic, Voltage, Socket Trimmers, Alignment



Precautionary Lead Dress

1. Dress 1st I-F plate and grid leads against chassis and away from each other. Dress plate lead from 6SK7 close to chassis.
2. Dress electrolytic capacitor against rear apron.
3. Keep leads away from adjusting screws to allow easy access.
4. Dress output plate lead along front apron and away from 6A8.
5. Dress parts at ends of chassis to clear cabinet bosses.

9TX-1, -2, -3, -4, -5

—1938 No. 42—

Model 9TX-1, Molded cabinet, walnut finish, mottled tan dial and knob.

Model 9TX-2, Molded cabinet, ivory finish, ivory dial and knob.

Model 9TX-3, Two-tone wood cabinet, piano finish, mottled tan dial and knob.

Model 9TX-4, Molded Arizona cream onyx cabinet, maroon dial and knob.

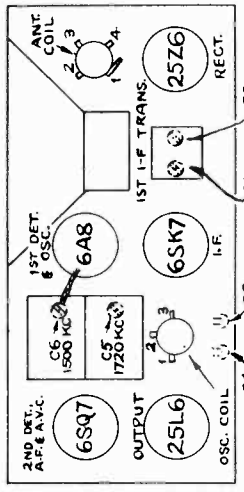
Model 9TX-5, Molded green onyx cabinet, ivory dial and knob.

Alignment Procedure

Test-Oscillator.—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	6A8 1st-Det. grid cap, in series with .01 mfd.	455 kc	Quiet point at 1,600 kc end of dial	C1, C2, C3, C4 (1st and 2nd I-F transformers).
2	Antenna term. of ant. trans. in series with 100 mmfd.	1,720 kc	Full clockwise (out of mesh)	C5 (oscillator)
3		1,500 kc	Resonance on 1,500 kc signal.	C6 (antenna)

Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.



Power-Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

Resistor in Power Cord.—The power cord contains a resistor which becomes warm during operation.

Antenna.—The set is equipped with length of antenna wire. Do not connect the antenna to ground. If an outdoor antenna is used, it should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

Electrical and Mechanical Specifications

FREQUENCY RANGE ..... 530-1,720 kc

TUBE COMPLEMENT

(1) RCA-6A8 ..... 1st-Detector—Oscillator
(2) RCA-6SK7 ..... I-F Amplifier
(3) RCA-6SQ7 ..... 2nd-Det., 1st A-F, and A.V.C.
(4) RCA-25L6 ..... Power Output
(5) RCA-25Z6 ..... Half-Wave Rectifier
Dial Lamp (1) ..... Mazda 47, 6.3 volts, .15 amp.

POWER SUPPLY RATINGS

A-C Rating ..... 105-125 volts, 50-60 cycles, 50 watts
D-C Rating ..... 105-125 volts, direct current, 50 watts

INTERMEDIATE FREQUENCY ..... 455 kc

POWER OUTPUT (125 volt, 60 cycle supply)

Undistorted ..... 1.5 watts
Maximum ..... 2.0 watts

LOUDSPEAKER

Type ..... 4-inch Electrodynamic

	Height	Width	Depth
Cabinet Dimensions 9TX-1, -2	5 inches	8½ inches	4¾ inches
Cabinet Dimensions 9TX-3	5¾ inches	8⅞ inches	4¾ inches
Cabinet Dimensions 9TX-4, -5	5½ inches	8½ inches	4½ inches

Weight ..... 7 pounds (shipping)

Schematic, Voltage, Socket Trimmers, Alignment, Data

RCA MFG. CO., INC.

MODELS 9TX-21, 9TX-22
Chassis RC-403
MODEL 9TX-23
Chassis RC-403A

Electrical and Mechanical Specifications

FREQUENCY RANGE ..... 530-1,720 kc

TUBE COMPLEMENT

(1) RCA-6A8 ..... 1st-Detector—Oscillator
(2) RCA-6SK7 ..... I-F Amplifier
(3) RCA-6SQ7 ..... 2nd-Det., 1st A-F, and A.V.C.
(4) RCA-25L6 ..... Power Output
(5) RCA-25Z6 ..... Half-Wave Rectifier
Dial Lamp (1) ..... Mazda 47, 6.3 volts, .15 amp.

POWER SUPPLY RATINGS

A-C Rating ..... 105-125 volts, 50-60 cycles, 50 watts
D-C Rating ..... 105-125 volts, direct current, 50 watts

Power-Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

Resistor in Power Cord.—The power cord contains a resistor which becomes warm during operation.

INTERMEDIATE FREQUENCY ..... 455 kc

POWER OUTPUT (125 volt, 60 cycle supply)

Undistorted ..... 1.5 watts
Maximum ..... 2.0 watts

LOUDSPEAKER

Type ..... 4-inch Electrodynamic

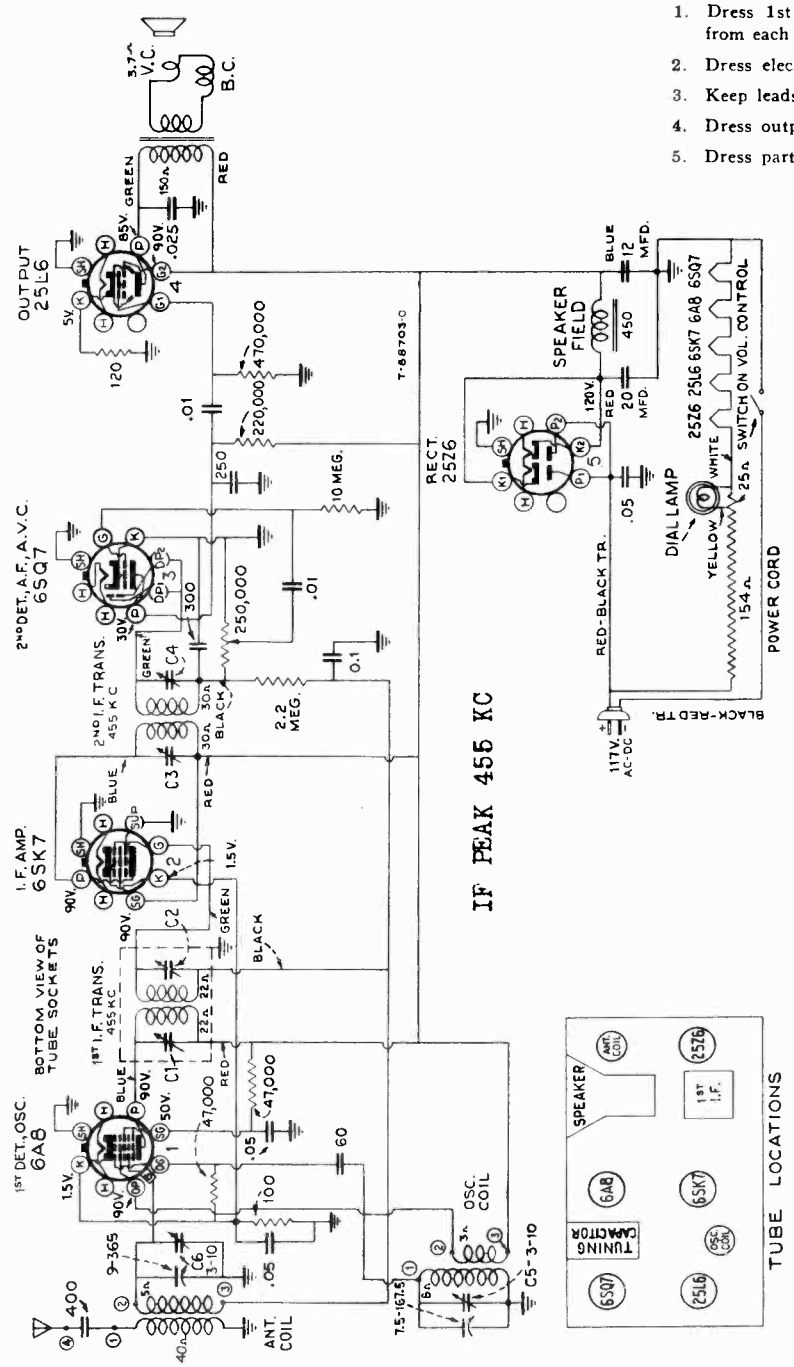
Cabinet Dimensions, 5¼ in. high, 8½ in. wide, 4¼ in. deep.

Weight (approx.) ..... 7 pounds (shipping)

Antenna.—The set is equipped with length of antenna wire. Do not connect the antenna to ground. If an outdoor antenna is used, it should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

Precautionary Lead Dress

1. Dress 1st I-F plate and grid leads against chassis and away from each other. Dress plate lead from 6SK7 close to chassis.
2. Dress electrolytic capacitor against rear apron.
3. Keep leads away from adjusting screws to allow easy access.
4. Dress output plate lead along front apron and away from 6A8.
5. Dress parts at ends of chassis to clear cabinet bosses.

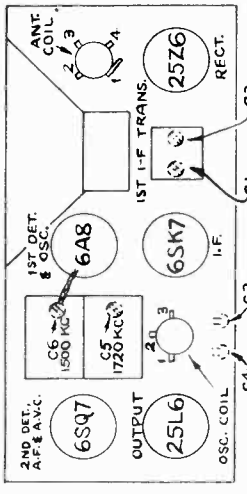


Alignment Procedure

Test-Oscillator.—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible. The antenna should be rolled up and kept at least one foot from chassis during alignment.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	6A8 1st-Det. grid cap, in series with .01 mfd.	455 kc	Quiet point at 1,600 kc end of dial	C1, C2, C3, C4 (1st and 2nd I-F transformers)
2	Antenna term. of ant. trans. in series with 100 mmfd.	1,720 kc	Full clockwise (out of mesh)	C5 (oscillator)
3		1,500 kc	Resonance on 1,500 kc signal.	C6 (antenna)

Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.



Trimmer Locations

MODELS 9TX-21, 9TX-22
Chassis RC-403
MODEL 9TX-23, Chas. RC-403A
MODEL 9TX-31, Chas. RC-405

RCA MFG. CO., INC.

MODEL 9TX-32, Chas. RC405A
MODEL 9TX-33, Chas. RC405B
Parts Lists

Models 9TX-21, -22, and -23

Chassis No. RC-403 RC-403 RC-403A

Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	Unit List Price	STOCK No.	DESCRIPTION	Unit List Price
X-638	Cabinet for 9TX21 (Walnut Finish).....(net)	1.35	32943	Nut—Speed nut to fasten dial—Models 9TX21 and 9TX22	.01
X-639	Cabinet for 9TX22 (Ivory Finish).....(net)	2.20	33292	Plate—Dial color plate—Model 9TX23	.25
X-640	Cabinet for 9TX23 (Wood-Walnut Finish).(net)	3.25	33294	Pulley—Drive cord pulley—Model 9TX23	.02
32572	Coil—Antenna coil	.60	14439	Resistor—100 ohms, ½ watt	.20
32573	Coil—Oscillator coil	.50	32535	Resistor—120 ohms, wire wound	.20
13057	Condenser—60 mmfd.	.35	12412	Resistor—47,000 ohms, ½ watt	.20
12488	Condenser—250 mmfd.	.35	12264	Resistor—220,000 ohms, ½ watt	.20
12952	Condenser—300 mmfd.	.35	12285	Resistor—470,000 ohms, ½ watt	.20
30433	Condenser—400 mmfd.	.35	12679	Resistor—2.2 meg., ½ watt	.20
4858	Condenser—.01 mfd.	.25	13601	Resistor—10 meg., ½ watt	.20
4870	Condenser—.025 mfd.	.20	32945	Shaft—Tuning knob shaft—Models 9TX21 and 9TX22	.20
4886	Condenser—.05 mfd.	.20	33293	Shaft—Tuning knob shaft and bushing—Model 9TX23	.30
4839	Condenser—0.1 mfd.	.30	33290	Socket—Dial lamp socket	.15
32576	Condenser—Electrolytic, one section 20 mfd., one section 12 mfd.	.90	32537	Socket—Tube socket	.20
32944	Condenser—2-gang variable tuning	2.20	32575	Speaker—Complete with transformer	4.00
32634	Cord—Drive cord	.10	32803	Spring—Dial knob spring	.01
32577	Cord—Resistance power cord	.95	32947	Spring—Drive cord tension spring—Models 9TX21 and 9TX22	.05
32942	Dial—Glass dial scale—Models 9TX21, 9TX22	.30	31615	Spring—Drive cord tension spring—Model 9TX23	.02
33289	Dial—Glass dial scale—Model 9TX23	.40	33296	Spring—Drive drum retaining spring—Model 9TX23	.06
33297	Drive—Dial drive mechanism comprising drive drum, cord, shaft, dial color plate, back plate and pulleys assembled—Model 9TX23	.85	32667	Spring—Knob or drive drum retaining spring	.02
32946	Drum—Variable condenser drive drum and indicator disc—Models 9TX21 and 9TX22	.35	32574	Transformer—First i. f., transformer	1.20
33006	Feet—Rubber feet for 9TX23	.03	32581	Transformer—Output transformer	1.25
33295	Indicator—Dial pointer—Model 9TX23	.25	32534	Transformer—Second i. f. transformer	.90
32447	Knob—Ivory knob (tuning or volume) Model 9TX22	.15	32578	Volume Control and power switch—Models 9TX21 and 9TX22	1.50
32571	Knob—Tan knob (tuning or volume) Models 9TX21 and 9TX23	.15	33291	Volume Control and switch—Model 9TX23	1.50
31480	Lamp—Dial lamp—Mazda 47	.20			
12409	Lead—Antenna lead	.45			

MODELS 9TX-31, 9TX-32, 9TX-33

Chassis No. RC-405, RC-405A, RC-405B

Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	Unit List Price	STOCK No.	DESCRIPTION	Unit List Price
X-638	Cabinet for 9TX31 (Walnut Finish).....(net)	1.35	33297	Drive—Dial drive mechanism—comprising drive drum, cord, shaft, dial color plate, back plate and pulleys assembled (Model 9TX33)	.85
X-639	Cabinet for 9TX32 (Ivory Finish).....(net)	2.20	32946	Drum—Variable condenser drive drum and indicator disc (Models 9TX31 and 9TX32)	.35
X-640	Cabinet for 9TX33 (Wood—Walnut Finish)...(net)	3.25	33006	Feet—Rubber feet for 9TX33	.03
12488	Capacitor—250 mmfd.	.35	33295	Indicator—Dial pointer (Model 9TX33)	.25
12952	Capacitor—300 mmfd.	.35	32447	Knob—Ivory knob (tuning or volume) (Model 9TX32)	.15
4838	Capacitor—.005 mfd.	.25	32571	Knob—Tan knob (tuning or volume) (Models 9TX31 and 9TX33)	.15
4937	Capacitor—.01 mfd.	.25	31480	Lamp—Dial lamp—Mazda 47	.20
12484	Capacitor—0.25 mfd.	.30	12409	Lead—Antenna lead	.45
32572	Coil—Antenna coil	.60	32943	Nut—Speed nut to fasten dial (Models 9TX31 and 9TX32)	.01
32962	Coil—Oscillator coil	.60	33292	Plate—Dial color plate (Model 9TX33)	.25
13057	Condenser—60 mmfd.	.35	33294	Pulley—Drive cord pulley (Model 9TX33)	.02
30433	Condenser—400 mmfd.	.35	32970	Resistor—Dial lamp resistor—24 ohms	.15
4870	Condenser—.025 mfd.	.20	32971	Resistor—Series dropping resistor—42 ohms	.15
4839	Condenser—0.1 mfd.	.30	13428	Resistor—150 ohms, ½ watt	.20
32576	Condenser—Electrolytic, one section 20 mfd., one section 12 mfd.	.90	30538	Resistor—330 ohms, ½ watt	.20
32968	Condenser—2-gang variable tuning	2.25	32803	Spring—Dial knob spring	.01
32634	Cord—Drive cord	.10	32947	Spring—Drive cord tension spring (Models 9TX31 and 9TX32)	.05
32942	Dial—Glass dial scale (Models 9TX31, 9TX32)	.30	31615	Spring—Drive cord tension spring (Model 9TX33)	.02
33289	Dial—Glass dial scale (Model 9TX33)	.40	33296	Spring—Drive drum retaining spring (Model 9TX33)	.06
13998	Resistor—22,000 ohms, ½ watt	.20	32667	Spring—Knob or drive drum retaining spring	.02
12412	Resistor—47,000 ohms, ½ watt	.20	32966	Transformer—First i-f transformer	1.25
12264	Resistor—220,000 ohms, ½ watt	.20	32967	Transformer—Second i-f transformer	1.05
12285	Resistor—470,000 ohms, ½ watt	.20	32964	Transformer—Output transformer	1.25
12679	Resistor—2.2 meg., ½ watt	.20	32578	Volume Control and power switch (Models 9TX31 and 9TX32)	1.50
13601	Resistor—10 meg., ½ watt	.20	32545	Volume Control and switch (Model 9TX33)	1.50
32945	Shaft—Tuning knob shaft (Models 9TX31 and 9TX32)	.20			
33293	Shaft—Tuning knob shaft and bushing (Model 9TX33)	.30			
32969	Socket—Dial lamp socket	.25			
14278	Socket—Phonograph socket	.25			
32537	Socket—Tube socket	.20			
32963	Speaker—Complete with transformer	3.95			

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

RCA MFG. CO., INC.

MODELS 9TX-31, Chas. RC-405
9TX-32, Chas. RC-405A, 9TX-33
Chas. RC-405B
Schematic, Voltage, Socket
Trimmers, Alignment, Data

Electrical and Mechanical Specifications

FREQUENCY RANGE ..... 530-1,720 kc

TUBE COMPLEMENT
(1) RCA-12SA7 ..... 1st-Detector—Oscillator
(2) RCA-12SK7 ..... I-F Amplifier
(3) RCA-12SQ7 ..... 2nd-Detector, 1st A-F, and A.V.C.
(4) RCA-35L6GT ..... Power Output
(5) RCA-35Z4GT ..... Half-Wave Rectifier

Dial Lamp (1) ..... Mazda 47, 6.3 volts, .15 amp.

POWER SUPPLY RATINGS
A-C Rating ..... 105-125 volts, 50-60 cycles, 30 watts
D-C Rating ..... 105-125 volts, direct current, 30 watts

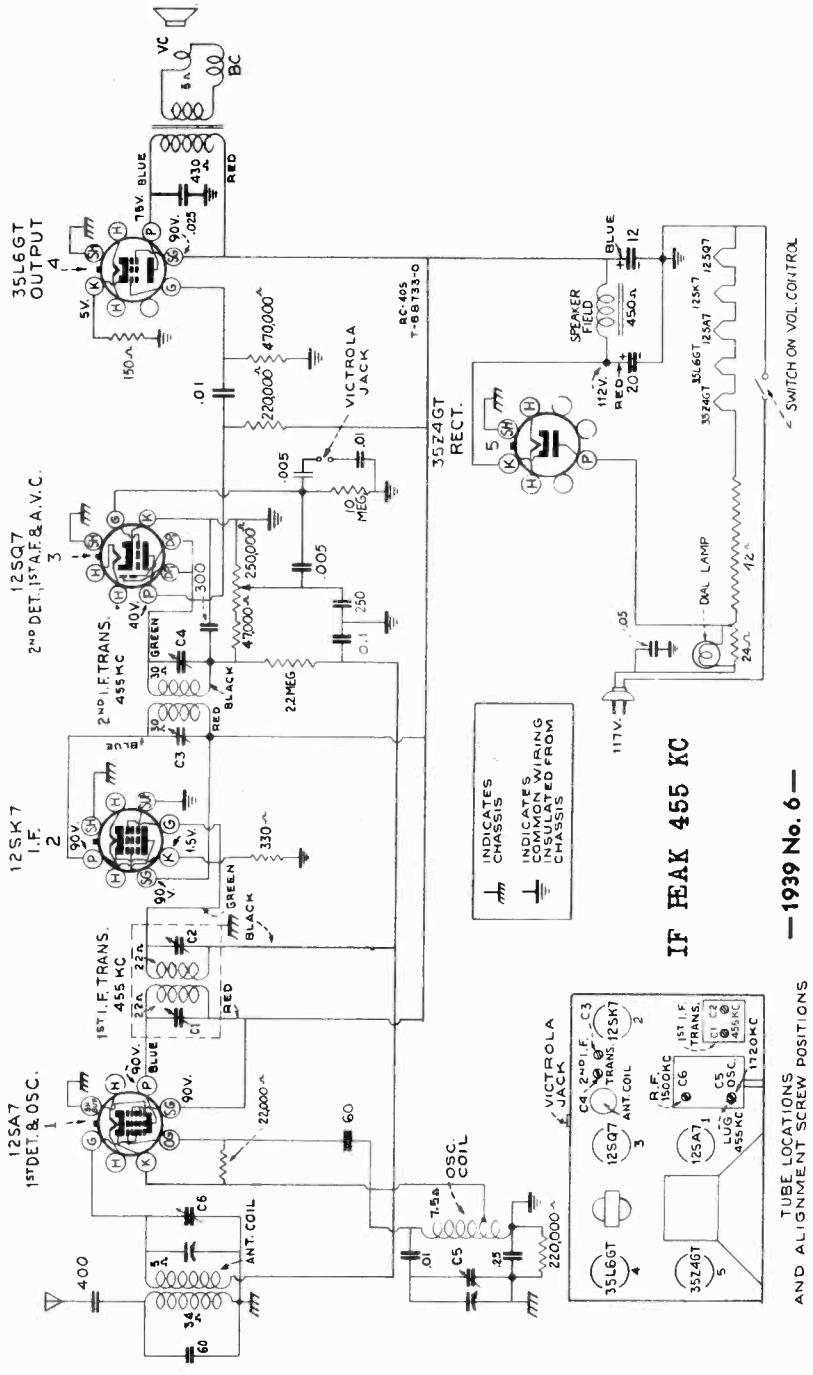
INTERMEDIATE FREQUENCY ..... 455 kc

POWER OUTPUT (125 volt, 60 cycle supply)
Undistorted ..... 1.5 watts
Maximum ..... 2.0 watts

LOUDSPEAKER
Type ..... 4-inch Electrodynamic

		Height	Width	Depth
Cabinet Dimensions	9TX-31..	5⅛ inches	8⅜ inches	4½ inches
	9TX-32..	5⅛ inches	8⅜ inches	4½ inches
	9TX-33..	6½ inches	9¾ inches	4¾ inches

Weight (net) ..... 9TX-31, 32.. 4¾ pounds; 9TX-33.. 5½ pounds



IF PEAK 455 KC

—1939 No. 6—

Alignment Procedure

Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	Tuning condenser stator (osc.) in series with .01 mfd.	455 kc	Quiet point at 1,600 kc end of dial	C1, C2, C3, C4 (1st and 2nd I-F transformers)
2	Antenna term. of ant. trans. in series with 100 mmfd.	1,720 kc	Full clockwise (out of mesh)	C5 (oscillator)
3		1,500 kc	Resonance on 1,500 kc signal	C6 (antenna)

Precautionary Lead Dress

1. Dress 1st I-F plate and grid leads against chassis and away from each other. Dress plate lead from 12SK7 close to chassis.
2. Dress electrolytic capacitor against rear apron.

Power-Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

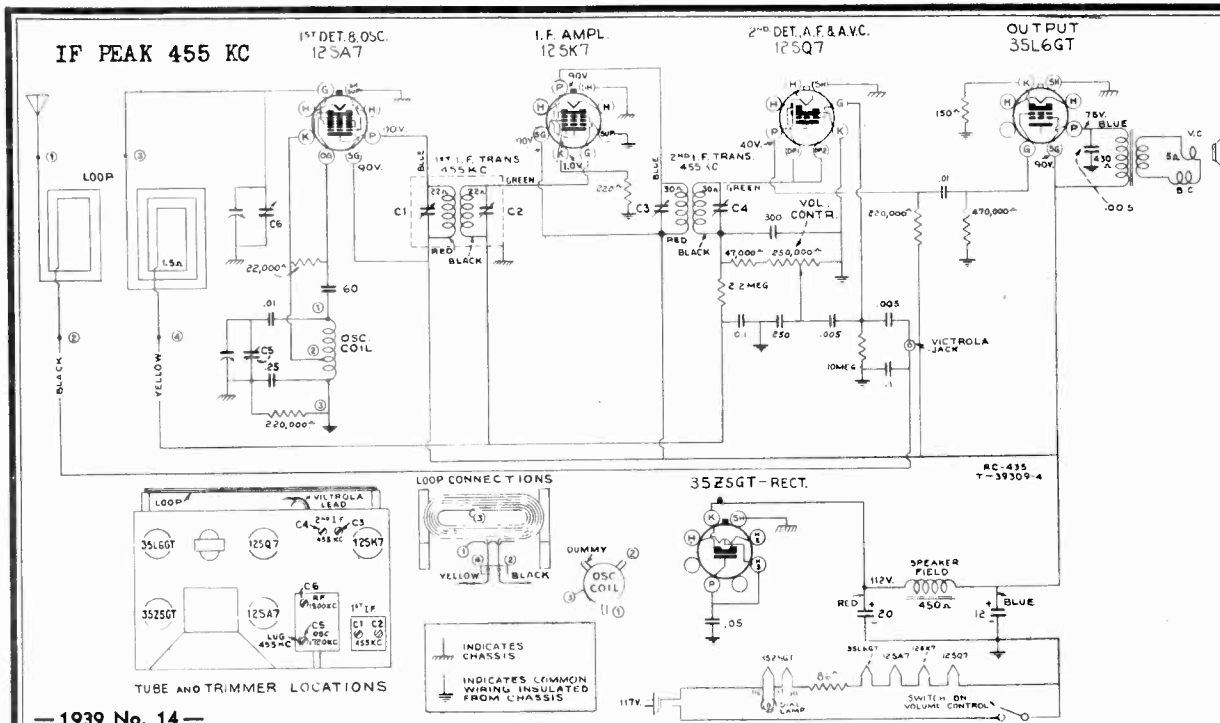
Antenna.—The set is equipped with length of antenna wire. Do not connect the antenna to ground. If an outdoor antenna is used, it should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

Victrola Attachment.—A jack is provided on the rear of chassis for connecting a Victrola Attachment into the audio-amplifying circuit. The cable from the Victrola Attachment should be terminated in a Stock No. 31048 plug to fit the jack.

Model 9TX-31
Walnut Finish, Tan Knobs

Model 9TX-32
Ivory Finish, Ivory Knobs

Model 9TX-33
Heart Walnut, Ornamental Sides
Tan Knobs



— 1939 No. 14 —

Features of design include: New Type, single-ended tubes (12SA7, 12SK7, and 12SQ7); edge-lighted dial; dust-proof electrodynamic loudspeaker; "Magic Voice"; "Magic Loop"; Television-Victrola Jack; and Beam Power Output.

Model 9TX-50 — *Light Mahogany Cabinet*

Model 9TX-50M — *Regular Mahogany Cabinet*

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES (RC—435)	
32968	Capacitor—2 gang variable tuning	2.25
13057	Capacitor—60 mmfd.	.35
12488	Capacitor—250 mmfd.	.35
12952	Capacitor—300 mmfd.	.35
4838	Capacitor—.005 mfd.	.25
32787	Capacitor—.05 mfd.	.20
4839	Capacitor—.1 mfd.	.30
12484	Capacitor—.25 mfd.	.30
32576	Capacitor—Electrolytic 20-12 mfd.	.90
32962	Coil—Oscillator coil	.60
32634	Cord—Drive cord	.10
33662	Drum—Drive cord and indicator drum	.25
33295	Indicator—Dial pointer	.25
31480	Lamp—Pilot Lamp	.20
33663	Loop—Antenna loop	1.20
33294	Pulley—Drive cord pulley	.02
33558	Resistor—86 ohms	.15
13428	Resistor—150 ohms, ½ watt	.20
14561	Resistor—220 ohms, ½ watt	.20
13998	Resistor—22,000 ohms, ½ watt	.20
12738	Resistor—27,000 ohms, ½ watt	.20
12264	Resistor—220,000 ohms, ½ watt	.20
12285	Resistor—470,000 ohms, ½ watt	.20
12679	Resistor—2.2 meg. ½ watt	.20
13601	Resistor—10 meg. ½ watt	.20
33293	Shaft—Tuning knob shaft and bushing	.30
33567	Socket—Dial Light	.30
32537	Socket—Tube Socket	.20
31615	Spring—Drive cord tension spring	.02
33296	Spring—Drum retaining spring	.06
32966	Transformer—I. F. Input	1.25
32967	Transformer—I. F. Output	1.25
33291	Volume Control	1.50
	SPEAKER ASSEMBLIES	
33740	Speaker—Complete	4.00
33741	Transformer—Output	1.15
	MISCELLANEOUS ASSEMBLIES	
33289	Dial—Dial Scale	.40
33006	Foot—Rubber foot for cabinet	.03
32571	Knob—Tuning or volume control knob	.15
33742	Socket—Phonograph input socket	.20

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible.

Pre-Setting Dial.—With gang condenser in full mesh, the pointer should be adjusted so that top edge of pointer just touches rivet in dial plate.

Antenna.—The set is equipped with a built-in loop antenna. If an outdoor antenna is used, it may be connected to the "ANT" terminal on rear of cabinet. It should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

Power-Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

Victrola Attachment.—A jack is provided on the rear of cabinet for connecting a Victrola Attachment into the audio-amplifying circuit. The cable from the Victrola Attachment should be terminated in a Stock No. 31048 plug to fit the jack.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	Tuning condenser stator (osc.) in series with .01 mfd.	455 kc	Quiet point at 1,600 kc end of dial	C1, C2, C3, C4 (1st and 2nd I-F transformers)
2	Antenna term. of ant. loop in series with 100 mmfd.	1,720 kc	Full clockwise (out of mesh)	C5 (oscillator)
3		1,500 kc	Resonance on 1,500 kc signal	C6 (antenna)

Precautionary Lead Dress

1. Dress 2nd I-F green lead close to chassis and under other parts.
2. Dress lead from gang condenser to grid of 12SA7 close to chassis and away from 12SQ7 socket.
3. Dress blue 1st I-F lead under volume control close to chassis.
4. Dress blue 2nd I-F lead close to chassis and behind 12SK7 socket.

Electrical and Mechanical Specifications

FREQUENCY RANGE ..... 540-1,720 kc
Intermediate Frequency ..... 455 kc

TUBE COMPLEMENT
(1) RCA-12SA7 ..... 1st-Detector-Oscillator
(2) RCA-12SK7 ..... I-F Amplifier
(3) RCA-12SQ7 ..... 2nd-Detector, 1st A-F and A.V.C.
(4) RCA-35L6GT ..... Power Output
(5) RCA-35Z5GT ..... Half-Wave Rectifier

Dial Lamp (1) ..... Mazda 47, 6.3 volts, .15 amp.

POWER SUPPLY RATINGS
A-C Rating ..... 105-125 volts, 50-60 cycles, 30 watts
D-C Rating ..... 105-125 volts, direct current, 30 watts

POWER OUTPUT (125 volt, 60 cycle supply)
Undistorted ..... 1.5 watts
Maximum ..... 2.0 watts

LOUDSPEAKER
Type ..... 4-inch Electrodynamic
Cabinet Dimensions (inches) .. Height 7¼, Width 11¼, Depth 6¼
Weight (Net) ..... 6½ pounds

Schematic Changes
Parts

RCA MFG. CO., INC.

MODEL D22-1A

Model D22-1A

Service Data for Model D22-1 are directly applicable to these instruments except as follows:

(1) The schematic circuit diagram for Model D22-1A is shown by figure 5.

(2) The metal rectifier socket wiring for tube No. 14 is shown by figure 2.

(3) Figure 3 shows the Pickup details.

(4) The phonograph motor is of the capacitor type. Light machine oil should be used to lubricate the motor bearings. The motor is wired in this instrument as follows: One power-supply lead connects to one terminal of switch S201. The other terminal of S201 connects to one terminal of the brake switch S202. The other terminal of S202 connects to the yellow motor lead. The green motor lead connects to one lead of the motor capacitor. The red motor lead connects to the other capacitor lead and also to the remaining power-supply lead.

(5) The Radiotron socket voltages (figure 4 herein) apply to all Models D22-1 or D22-1A and should be used in place of figure 4 of the D22-1 Service Data.

(6) The resistor assembly R44 and R45 is mounted on the front chassis apron instead of the rear chassis apron.

(7) Change price on Stock No. 11879 Transformer from $3.50 to $8.15.

(8) Change price on Stock No. 11541 Arm from $0.82 to $8.15.

(9) Change price on Stock No. 11480 Microphone from $7.05 to $7.50.

(10) Refer to Substitute and Additional Replacement Parts contained herein for other parts changes.

SEE RIDER'S VOL. VI FOR OTHER DATA

Stock No.	Model D22-1A (use replacement parts from D22-1 except as listed below)	List Price
13405	Armature—Pickup armature	.95
4870	Capacitor—.025 mfd. (C47)	.20
11195	Socket—Five-contact Rectifier Radiotron socket for tube No. 14	.15
11887	Transformer—Power transformer—105-125 volts—25-50 cycles	6.95
11880	Transformer—Power transformer—105-125 volts—50-60 cycles—(T1)	5.80
12051	Capacitor—2-mfd. complete with 2-contact male connector for use with motor Stock Nos. 9650 or 9651—(C217)	4.18
13101	Capacitor—4-mfd. complete with 2-contact male connector for use with motor Stock No. 9735—(C217)	5.05
4674	Connector—2-contact male connector for capacitor Stock No. 12051 or 13101	.25
9735	Motor—105-125 volts—25 cycles—(M1)	49.50
9651	Motor—105-125 volts—50 cycles—(M1)	35.35
9650	Motor—105-125 volts—60 cycles—(M1)	35.35
12050	Suspension Spring—Motor mounting spring, washer, and stud assembly—comprising six springs, six cup washers, three spring washers and three studs	.60
11997	Capacitor—75 mmfd.—(C216)	.14
12352	Filter—Microphone and pickup input filter pack—(L307, C218, R223)	1.85

Stock Nos. 4858 (C47), 11273, 4794 (tube 14), 8062, 8061, 9479, 9478, 9477, and 4562, are not used in Model D22-1A.

The prices quoted above are subject to change without notice.

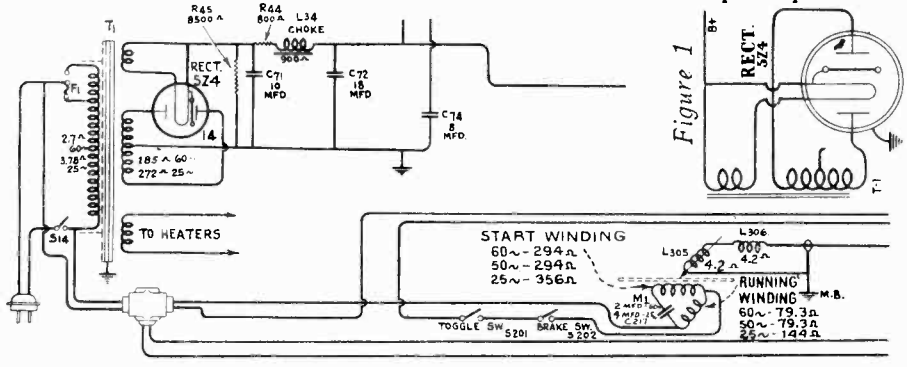


Figure 5—
Schematic Circuit Diagram
(Model D22-1A)

Figure 1

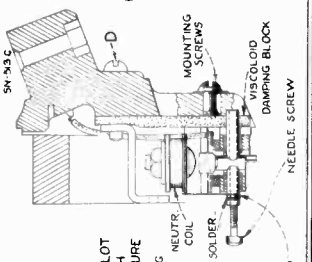


Figure 3—
Pickup Details (D-22-1A)

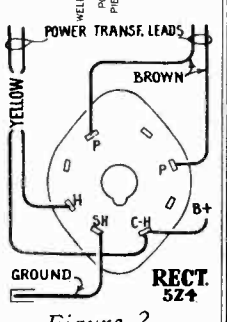
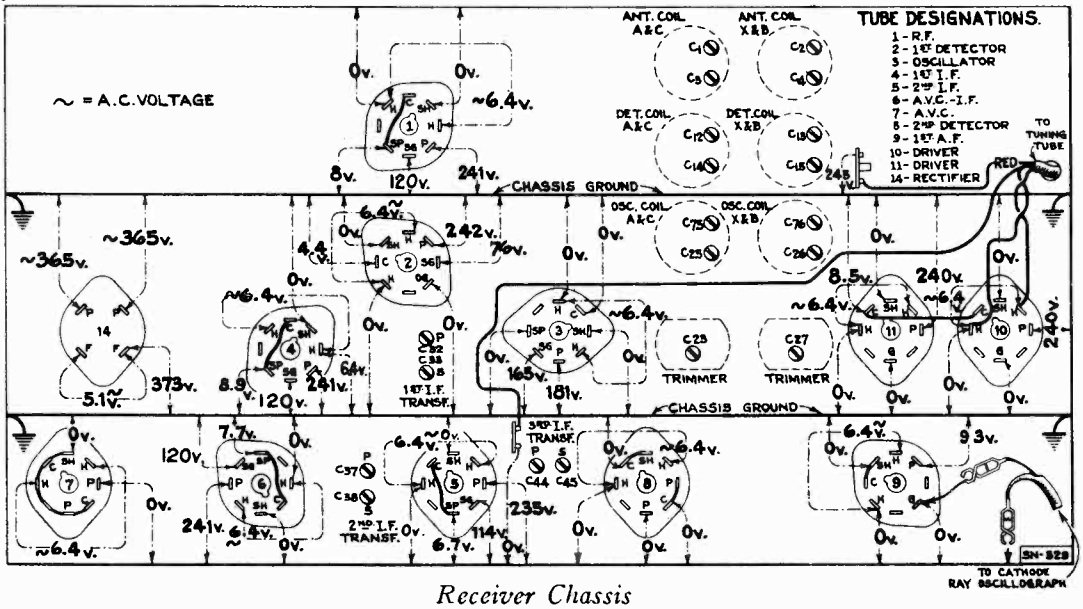


Figure 2

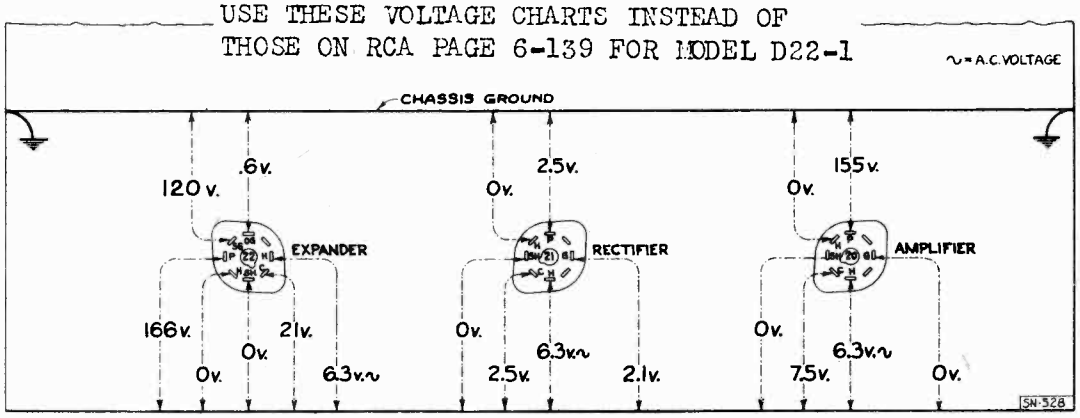
MODEL D22-1
Corrected Voltage
MODEL D22-1A
Voltage

RCA MFG. CO., INC.

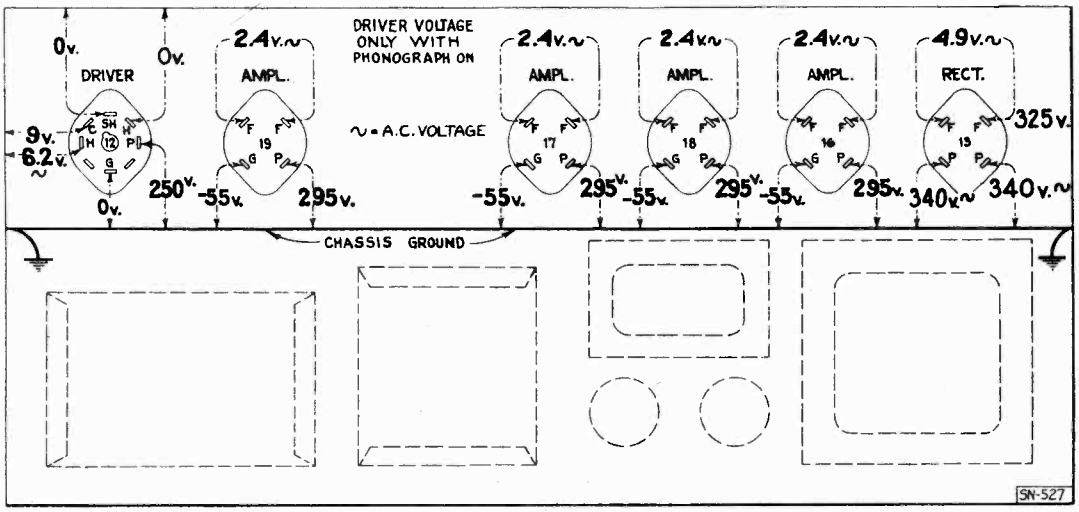


Receiver Chassis

USE THESE VOLTAGE CHARTS INSTEAD OF THOSE ON RCA PAGE 6-139 FOR MODEL D22-1



Dynamic Amplifier



Power Amplifier

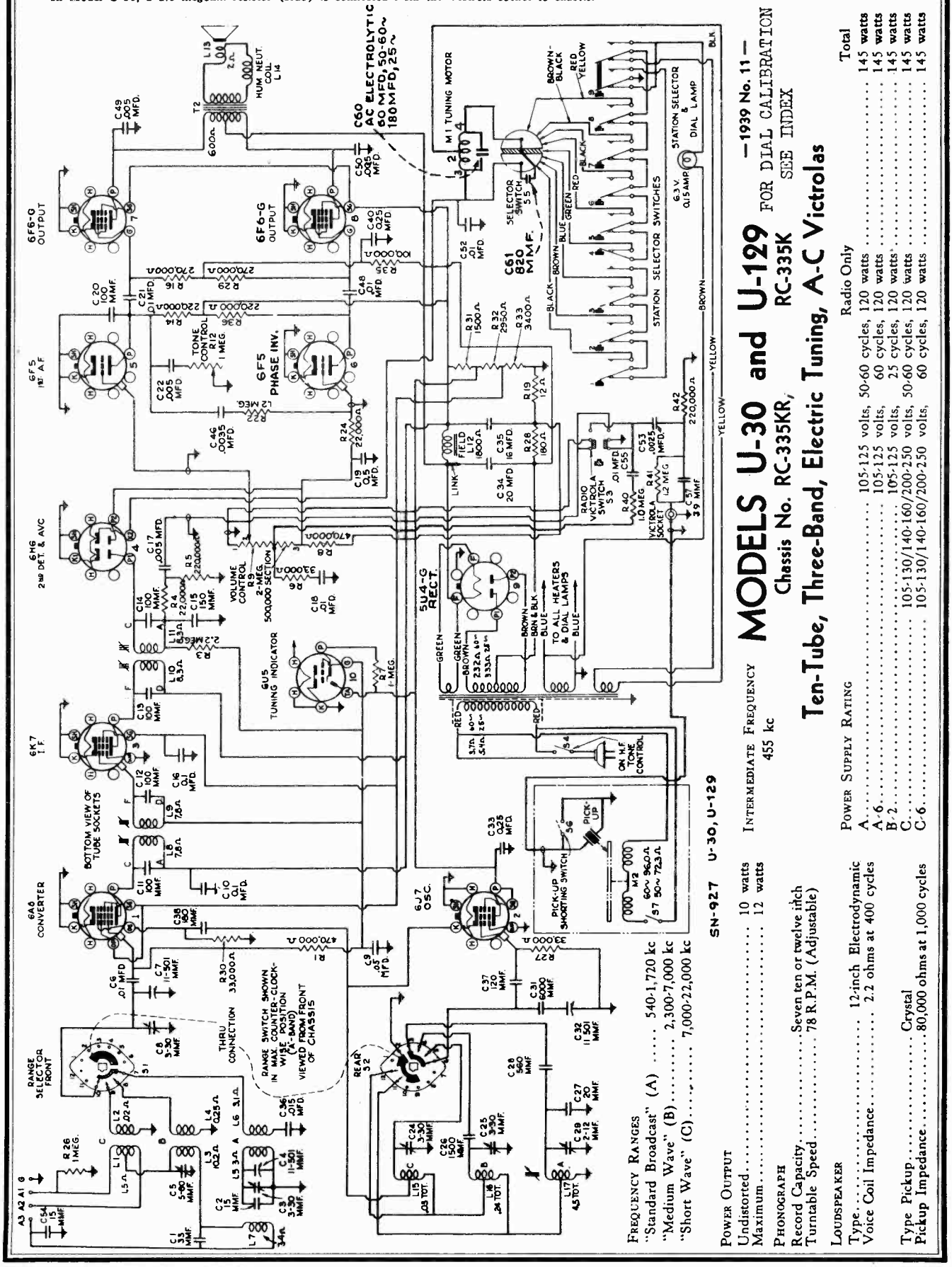
Figure 4—Radiotron Socket Voltages (D22-1 and D22-1A)
Measured at 115 volts, 60-cycle supply—No signal being received

RCA MFG. CO., INC.

MODELS U-30, Chas. RC-335KR
U-129, Chas. RC-335K
Schematic, Data

Schematic Circuit Diagram

In Model U-30, a 1.0 megohm resistor (R43) is connected from the Victrola socket to chassis.



MODELS U-30 and U-129

Chassis No. RC-335KR, RC-335K

Ten-Tube, Three-Band, Electric Tuning, A-C Victrolas

— 1939 No. 11 —

FOR DIAL CALIBRATION SEE INDEX

INTERMEDIATE FREQUENCY
455 kc

POWER SUPPLY RATING

	Radio Only	Total
A	105-125 volts, 50-60 cycles, 120 watts	145 watts
A-6	105-125 volts, 60 cycles, 120 watts	145 watts
B-2	105-125 volts, 25 cycles, 120 watts	145 watts
C	105-130/140-160/200-250 volts, 50-60 cycles, 120 watts	145 watts
C-6	105-130/140-160/200-250 volts, 60 cycles, 120 watts	145 watts

POWER OUTPUT
Undistorted ..... 10 watts
Maximum ..... 12 watts

PHONOGRAPH
Record Capacity ..... Seven ten or twelve inch
Turntable Speed ..... 78 R.P.M. (Adjustable)

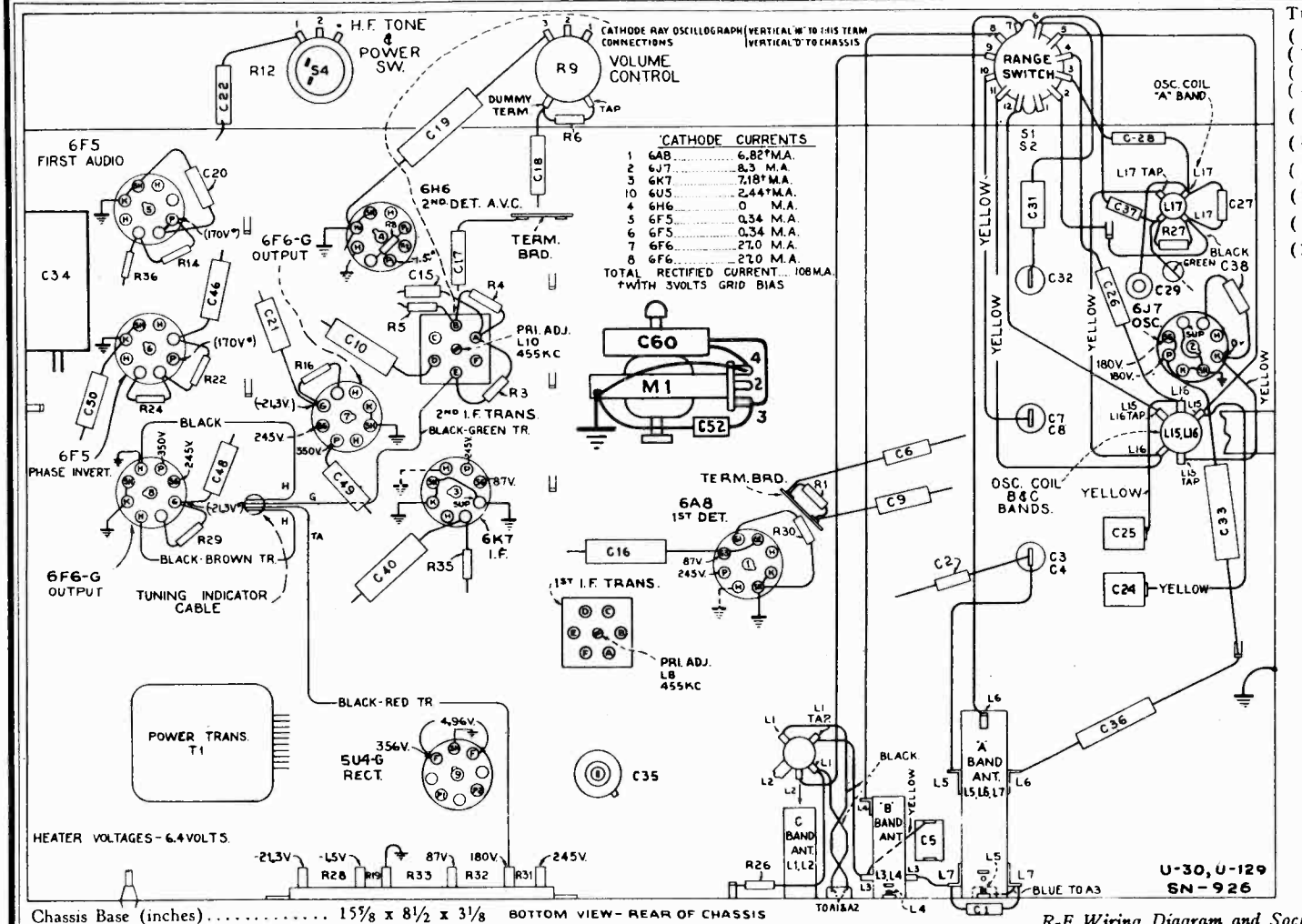
LOUDSPEAKER
Type ..... 12-inch Electrodynamic
Voice Coil Impedance ..... 2.2 ohms at 400 cycles

Type Pickup ..... Crystal
Pickup Impedance ..... 80,000 ohms at 1,000 cycles

FREQUENCY RANGES
"Standard Broadcast" (A) ..... 540-1,720 kc
"Medium Wave" (B) ..... 2,300-7,000 kc
"Short Wave" (C) ..... 7,000-22,000 kc

RCA MFG. CO., INC.

MODELS U-30, Chas. RC-335K
U-129, Chas. RC-335K
Voltage, Chassis Wiring
Transformer, Notes



'CATHODE CURRENTS

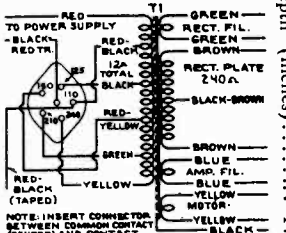
1	6A8	6.82† M.A.
2	6J7	8.3 M.A.
3	6K7	7.18† M.A.
10	6U5	2.44† M.A.
4	6H6	0 M.A.
5	6F5	0.34 M.A.
6	6F5	0.34 M.A.
7	6F6	27.0 M.A.
8	6F6	27.0 M.A.

TOTAL RECTIFIED CURRENT... 108 M.A.
†WITH 3 VOLTS GRID BIAS

TUBE COMPLEMENT

(1) RCA-6A8..... First Det.
(2) RCA-6J7..... Oscillator
(3) RCA-6K7..... I-F Amp.
(4) RCA-6H6.. 2nd Det. and A.V.C.
(5) RCA-6F5..... First Audio
(6) RCA-6F5..... Phase Inverter
(7) RCA-6F6-G..... Power Output
(8) RCA-6F6-G..... Power Output
(9) RCA-5U4-G..... Rectifier
(10) RCA-6U5..... "Magic Eye"

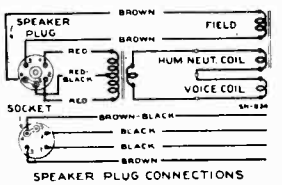
	U-30	U-129
Height (inches).....	34	35
Width (inches).....	36¼	33¼
Depth (inches).....	17⅛	17



UNIVERSAL TRANS. CONNECTIONS

Above — Universal Power Transformer Connections.

	U-30	U-129
Weight (Net lbs.).....	101	.....
Weight (Shipping lbs.).....	141	.....



SPEAKER PLUG CONNECTIONS

Above — Connections and Colors of Loudspeaker and Cable.

	U-30	U-129
	.....	104
	.....	134

Chassis Base (inches)..... 15⅝ x 8½ x 3⅛
Maximum chassis height (inches)..... 8¼

General Description

These receivers employ a ten-tube, three-band, "Magic Brain" superheterodyne circuit. Features of design include: "Electric Tuning" for eight broadcast stations; a link-coupled antenna circuit; magnetite-core i-f transformers and "A"-band oscillator coil; full automatic volume control; "Magic Eye" tuning tube; improved 12-inch dust-proof electro-dynamic loudspeaker; aurally compensated audio volume control; continuously variable high-frequency tone control; provision for armchair control attachment; illuminated band indicator; noise-reducing antenna adjustment on "A" band; temperature-stabilized capacitors; phase inverter audio amplifier; and push-pull power output stage.

The phonograph has a self-starting motor, crystal pickup, and may be set to play ten-inch and twelve-inch records singly, or automatically. In the automatic position, seven twelve-inch; eight ten-inch; or a mixed group of seven, ten- and twelve-inch records, may be played in succession. The output of the pickup is "shorted" out when the pickup is on the pickup rest.

R-F Wiring Diagram and Socket Voltages

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point, volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

***NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance, and when measured will read lower depending on the voltmeter loading.

ALIGNMENT PROCEDURE

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the rear of the indicator-drive-cord drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

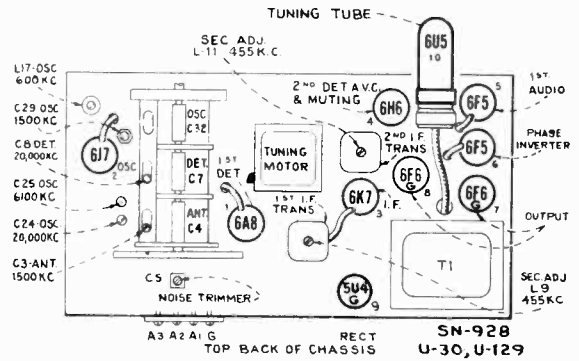
As the first step in r-f alignment, check the position of the drum. The "0" mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "0" mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

Service Data

Loudspeaker.—Centering of the loudspeaker is made in the usual manner with three narrow celluloid or paper feelers after first removing the front dust cover. A dust cover should be cemented in place upon completion of adjustment.



Precautionary Lead Dress. — (1) The lead from the left pilot light should be kept behind the bulb and toward the "Magic Eye," to keep it away from the 6F5 grid cap, (2) leads from mica trimmers to coil should be kept away from the coil and other parts, (3) leads on oscillator coil which are an extended part of the coil winding should be as short as possible, (4) "C" band series capacitor C31 must have leads as short as possible, (5) all leads from antenna board to antenna coils should be dressed toward back apron, (6) the one lead of the line cord and the primary lead of the power transformer which run to the power switch should be twisted together, (7) shielding on leads to Victrola switch should be kept away from the switch terminals and jack.

Steps	Connect the high side of test-oscillator to —	Tune test-oscillator to —	Range Selector	Set tuning gang to—	Adjust the following for max. peak output
No. 1	6K7 I-F grid cap in series with .01 mfd.	455 kc	"A"	Quiet point between 550-750 kc	L10, L11 (2nd I-F Transformer)
No. 2	6A8 Det. grid cap in series with .01 mfd.	455 kc	"A"		L8, L9 (1st I-F Transformer)
No. 3	A2. Connect A1 to chassis.	20 mc	"C"	20 mc (147.5°)	C24 (osc.)* C8 (det.)†
No. 4	A2, in series with 100 mmfd. Connect A3 to chassis.	6,100 kc	"B"	6,100 kc (145.5°)	C25 (osc.)**
No. 5	A2, in series with 100 mmfd. Connect A3 to chassis.	1,500 kc	"A"	1,500 kc (151.5°)	C29 (osc.) C3 (ant.)
No. 6	A2, in series with 100 mmfd. Connect A3 to chassis.	600 kc	"A"	600 kc (29.5°)	L17 (osc.)
No. 7	A2, in series with 100 mmfd. Connect A3 to chassis.	1,500 kc	"A"	1,500 kc (151.5°)	C29 (osc.)

* Use **minimum** capacity peak if two peaks can be obtained. Check to determine that the correct peak has been used by turning to 141.5° (19,090 kc), at which point a weaker signal should be received.

** Use **minimum** capacity peak if two peaks can be obtained. Check to determine that the correct peak has been used by turning to 124° (5,190 kc), at which point a weaker signal should be received.

† Rock gang condenser and use maximum capacity peak if two peaks can be obtained with C8.

ADJUSTMENTS FOR ELECTRIC TUNING

1. Make a list of the desired eight stations, arranged in order from low to high frequencies.
2. Turn range selector to "A" band, turn power on, and allow a few minutes for warming up.
3. Press down the "dial-tuning" (right-hand) button.
4. Manually tune in the first station on the list, using the "Magic Eye" for accurate tuning.
5. Hold down the "dial-tuning" button, and press down station button No. 1 (second from left). Both buttons will stay down. Move adjusting pin No. 1 to the insulating line on the disc at rear of gang. When the pin is correctly centered on the insulating line, the central dial lamp will go out.
6. Press down any other button in order to release the dial-tuning button and station button No. 1. Then press down station button No. 1 again. The electric tuning mechanism will function to tune in the station, and the central dial lamp will stay on.
7. Repeat this process for the remaining stations.

Antenna Connections

RCA Victor Master Antenna Kit.—Connect the twisted-pair transmission line to terminals A1 and A2 on the terminal board at rear of chassis. Connect the counter-poise to A3. Terminal G may be connected to ground, but this connection is not necessary for correct operation.

Noise-Reducing Adjustment.—After the RCA Victor Master Antenna Kit is connected to the receiver, tune the receiver to a point near 900 kc where no station is heard. Turn volume control clockwise until noise is heard. If no noise of a regular character is audible, start any brush-type motor-driven appliance, such as a vacuum cleaner, electric razor, refrigerator, etc., but do not bring it too near the receiver. This will generate noise as a continuous crackling, or buzz. Adjust C5, which is mounted behind the antenna terminal board, to a point where this noise is reduced to a minimum.

Adjustment of the noise reducing trimmer C5 should be made in the customer's home, with the RCA Victor Master Antenna connected to the receiver.

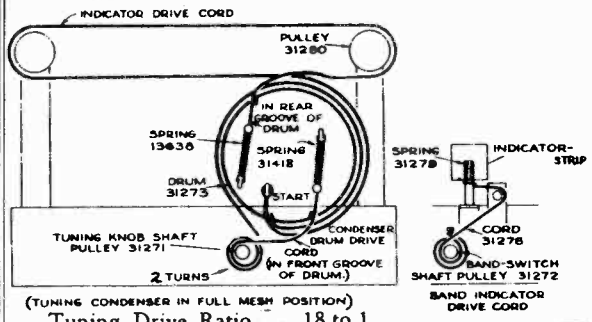
This adjustment is effective only when the RCA Victor Master Antenna is used. For all other types of antenna, the noise-adjustment trimmer C5 should be screwed all the way down.

Other Antennas.—Use terminals A1 and A3 on the receiver terminal board as antenna and ground connecting points respectively. Terminal A3 may be connected to terminal G, unless this causes interference, in which case this connection should be omitted.

MODELS U-30, Chas. RC-335KR
U-129, Chas. RC-335K

RCA MFG. CO., INC.

Tuning Mechanism, Data
Armchair Cont. Unit Data

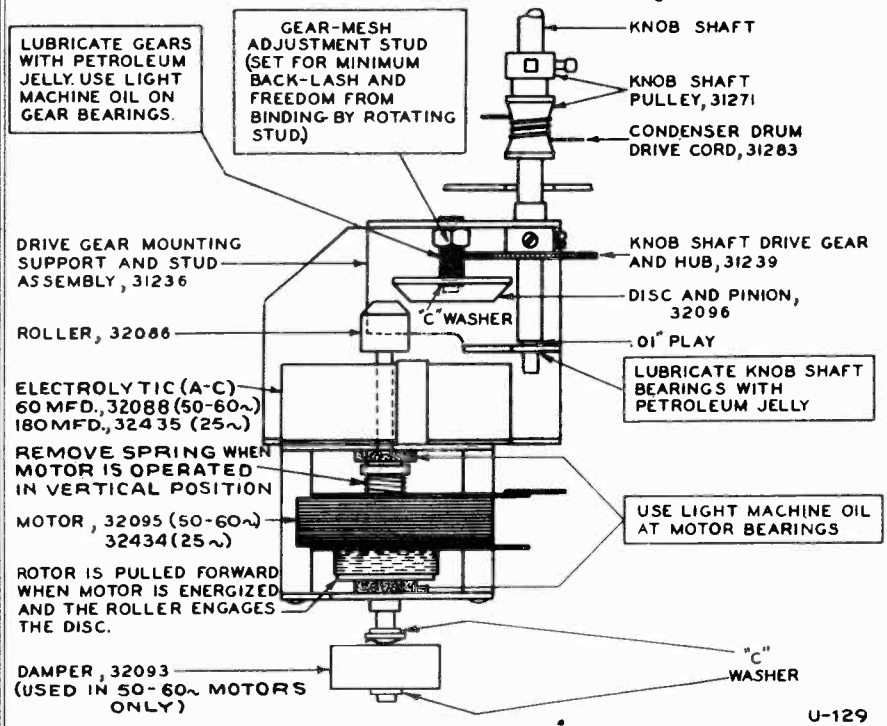


Tuning Drive Ratio . . . 18 to 1

Component Parts of Station Setting Contact

At left—Dial Mechanism

Electric Tuning Mechanism



When a station button is pushed in, it completes the 24-volt circuit through the corresponding station-setting contact and one-half of the brass selector disc, which is connected to one side of the motor field coil. This energizes the motor, and the rotor is pulled forward, engaging with the gear train that drives the tuning condenser and selector disc. The condenser and disc rotate until the insulation line comes under the particular station-setting contact, and the motor circuit is broken.

When the electric tuning mechanism is in action, the motor-supply voltage is fed into a diode rectifier circuit which applies a high bias to the first-audio amplifier. This prevents audio amplification and makes the set quiet or "mute" while the mechanism is operating.

The brass selector disc is fastened to the rear shaft of the tuning condenser by means of two set-screws. When the condenser is at maximum (plates fully meshed) the insulation line should be horizontal, with the operating-end at the left (viewed from rear). The operating-end has dark insulating material and the brass is beveled at this end.

The selector disc should be set so that the contact-tip plungers in the station-setting contacts project not more than 1/16-in. from the body of the contacts.

Lubrication

Motor bearings and gear bearings; use light machine oil.

Gear faces; use "Pure Oil No. 611" or petroleum jelly.

Dial-indicator pulleys and rails; use "Castordag" or petroleum jelly.

Selector disc; apply ***thin*** film of petroleum jelly.

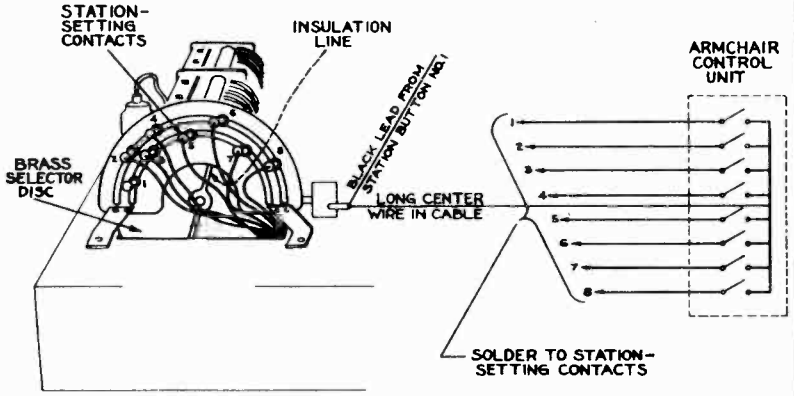
Armchair Control Unit

U-129
SN-923

Station-Setting Contacts and Selector Disc

This illustration shows connections for a G8A Armchair Control Unit. This unit is not supplied with the receiver but may be added as an accessory.

Station Button	Color of Lead To Station-Setting Contact
No. 1	Black
No. 2	Brown
No. 3	Blue
No. 4	Green
No. 5	Red
No. 6	Red-black
No. 7	Brown-black
No. 8	Red-yellow



When a Model G8A Armchair Control is connected to the receiver it duplicates the action of the push-buttons on the front panel when No. 1 button is pressed down. The black lead from push-button No. 1 is unsoldered from No. 1 station-setting contact and soldered to a terminal board which is to be mounted on the frame of selector mechanism. If desired one of the other seven station buttons on the set may be used in place of No. 1 button.

This arrangement allows the use of only seven of the eight buttons when tuning in stations at the set, but allows the use of the entire eight buttons on the Armchair Control. In operating the G8A Armchair Control the push-button must be held down until the station has been tuned in. Care must be taken not to hold two of the station-buttons down at one time as both windings of the motor may be engaged instantaneously causing the motor to be inoperative and overheated.

Automatic Record Changer

GENERAL INFORMATION

Before servicing the automatic record changer, inspect the assembly to see that all levers, parts, gears, springs, etc. are in good order and are correctly assembled.

A bind or jam in the mechanism can usually be relieved by rotating the turntable in the reverse direction.

The changer can be conveniently rotated through its change cycle by pushing the index lever to "Reject" and revolving the turntable by hand. Six turntable revolutions are required for one change cycle.

The turntable, spindle, and pinion gear are assembled by means of a 3/32 inch straight pin. This pin may be removed by gently driving with a standard pin punch.

If the record changer or cabinet is not perfectly level, normal operation is likely to be affected.

The 10 and 12 inch records must be absolutely flat for smooth operation when using a mixture of the two sizes.

A shorting switch, located in the pickup head, operates due to pressure when the pickup is placed on the pickup rest.

ADJUSTMENTS

A. Main Lever.—This lever is basically important in that it interlinks the various individual mechanisms which control needle landing, tripping, record separation, etc. One adjustment is provided for the main lever. Rotate the turntable until the changer is out-of-cycle; and adjust rubber bumper bracket (A) so that the roller clears the nose of the cam plate by 1/16 inch.

B. Friction Clutch.—The motion of the tone arm toward the center of the record is transmitted to the trip pawl "22" by the trip lever "7" through a friction clutch "5." If the motion of the pickup is abruptly accelerated or becomes irregular due to swinging in the eccentric groove, the trip finger "7" moves the trip pawl "22" into engagement with the pawl on the main gear, and the change cycle is started. Proper adjustment of the friction clutch "5" occurs when movement of the tone arm causes positive movement of the trip pawl "22" without tendency of the clutch to slip. The friction should be just enough to prevent slippage, and is adjustable by means of screw "B." If adjustment is too tight, the needle will repeat grooves; if too loose, tripping will not occur at the end of the record.

C. Pickup Lift Cable Screw.—During the record change cycle, lever "16" is actuated by the main lever "15" so as to raise the tone arm clear of the record by means of the pickup lift cable. To adjust pickup for proper elevation, stop the changer "in-cycle" at the point where pickup is raised to the maximum height above turntable plate, and has not moved outward; at this point adjust locknuts "C" to obtain 1 inch spacing between needle point and turntable top surface.

D. & E. Needle Landing on Record. — The relation of coupling between the tone arm vertical shaft and lever "20" determines the landing position of the needle on a 10 inch record. Position of eccentric stud "E" governs the landing of the needle on a 12 inch record; this, however, is dependent on the proper 10 inch adjustment.

To adjust for needle landing, place 10 inch record on turntable; push index lever to reject position and return to the 10 inch position; see that pickup locating lever "17" is tilted fully toward turntable; rotate mechanism through cycle until needle is just ready to land on the record; then see that pin "V" on lever "14" is in contact with "Step T" on lever "17." The correct point of landing is 4-11/16 inches from the nearest side of the turntable spindle; loosen the two screws "D" and adjust horizontal position of tone arm to proper dimension, being careful not to disturb levers "14" and "17". Leave approximately 1/32 inch end play between hub of lever "20" and pickup base bearing, and tighten the blunt nose screw "D"; run mechanism through several cycles as a check, then tighten cone pointed screw "D".

After adjusting for needle landing on a 10 inch record, place 12 inch record on turntable; push index lever to reject and return to 12 inch position; rotate mechanism through cycle until needle is just ready to land on the record; the correct point of landing is 5-11/16 inches from nearest side of spindle. If the landing is incorrect, turn stud "E" until the eccentric end adjusts lever "14" to give correct needle landing. The eccentric end of the stud must always be toward the rear of the motor board, otherwise incorrect landing may occur with 10 inch records.

F. & G. Record Separating Knife. — The upper plate (knife) "25" on each of the record posts serves to separate the lower record from the stack and to support the remaining records during the change cycle. It is essential that the spacing between the knife and the rotating record shelf "27" be accurately maintained. The spacing for the 10 inch record is nominally .058 inch, and for the 12 inch record is .075 inch.

To adjust, rotate the knife to the point of minimum vertical separation from the record shelf and turn screw and locknut "F" to give .055—.061 inch separation. Screw "G" must not be depressed during this adjustment. After setting screw "F" adjust screw "G" so that when its tip is depressed flush with top of record shelf, the vertical spacing between the knife, in its lowest rotational position, and the shelf, is .072—.078 inch.

H. Record Support Shelf.—The record shelf revolves during the change cycle to allow the lower record to drop onto the turntable. Both posts are rotated simultaneously by a gear and rack coupled to the main lever "15," and it is necessary that adjustments be such that the record is released from both shelves at the same instant. To adjust, place a 12 inch record on the turntable, rotate mechanism into cycle to the point where tone arm is at maximum distance outward from turntable; lift record upward until it is in contact with both separating knives, then loosen screws "H" and shift record shelves so that the curved inner edges of the shelves are uniformly spaced at least 1/16 inch from record edge. Tighten the blunt nose screw "H," run mechanism through cycle several times to check action, then tighten cone pointed screw "H".

If record shelves or knives are bent, or not perfectly horizontal, improper operation and jamming of mechanism will occur.

J. Tone Arm Rest Support (not shown).—When the changer is out-of-cycle, the front lower edge of the pickup head should be 5/16 inch above surface of motor board. This may be adjusted by bending the tone arm support bracket, which is associated with the tone arm mounting base, in the required direction.

K. Trip Pawl Stop Pin.—The position of the trip pawl stop pin "K" in relation to the main lever "15" governs the point at which the roller enters the cam. By bending the pin support either toward or away from trip pawl bearing stud, the roller can be made to enter the cam later or earlier, respectively. This adjustment should be made so that the roller definitely clears the cam outer guide as well as the nose of the cam plate.

Lubrication.—Petrolatum or petroleum jelly should be applied to cam, main gear, spindle pinion gear, and gears of record posts.

Light machine oil should be used in the tone arm vertical bearing, record post bearings, and all other bearings of various levers on underside of motor board.

The felt washer between the turntable and spindle bearing should be soaked in light engine oil whenever the turntable is removed, or as required for proper operation.

Do not allow oil or grease to come in contact with, rubber mounting of tone arm base, rubber bumper, or flexible coupling of drive motor.

MISCELLANEOUS SERVICE HINTS

Incorrect adjustment of a particular mechanism of the changer is generally exhibited in a specific mode of improper operation. The following relations between effects on operation and the usual mis-adjustments will enable ready adjustment in most cases.

1. For any irregularity of operation, the adjustment of the main lever "15" should be checked first as in "A".
2. Needle does not land properly on both 10 and 12 inch records—Make complete adjustments "D" and "E".
3. Needle does not land properly on 12 inch record but correct on 10 inch—Effect adjustment "E".
4. Failure to trip at end of record—Increase clutch "5" friction by means of screw "B". Also, see that levers "7" and "12" are free to move without touching each other.
5. Pickup strikes lower record of stack or drags across top record on turntable—Adjust lift cable per adjustment "C".
6. Needle does not track after landing—Friction clutch "5" adjustment "B" may be too tight; bind in tone arm vertical bearing; levers "7" and "12" fouled; or pickup output cable twisted.
7. Cycle commences before record is complete—Record is defective, or adjustment "B" of friction clutch "5" is too tight.
8. Wow in record reproduction—Record is defective; flexible coupling between motor and changer mechanism not correctly assembled; or instrument is not being operated at normal room temperature (65° F).
9. Record knives strike edge of records—Records warped; record edges are rough; or knife adjustments "F" and "G" are incorrect.
10. Record not released properly—Adjust record shelf assemblies in respect to shaft by means of adjustment "H".
11. Needle lands in 10 inch position on 12 inch record or misses record when playing both types mixed—Increase tension of pickup locating lever spring "34".

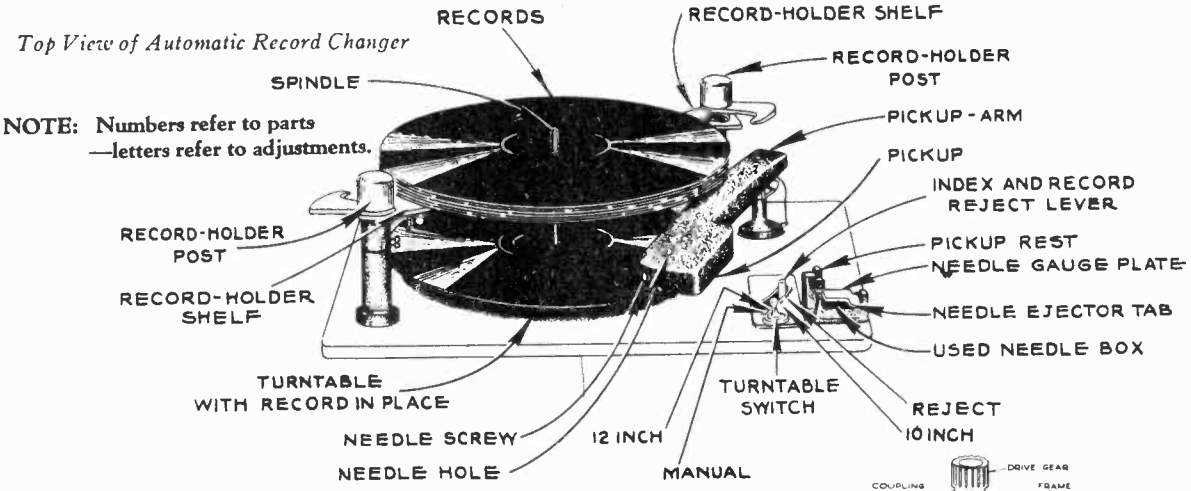
MODELS U-30,U-129
MODEL U-125

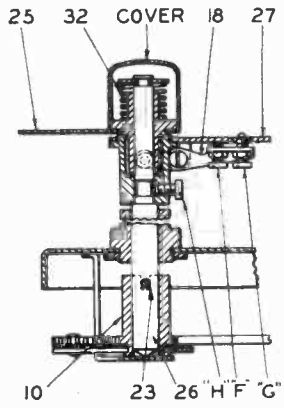
RCA MFG. CO., INC.

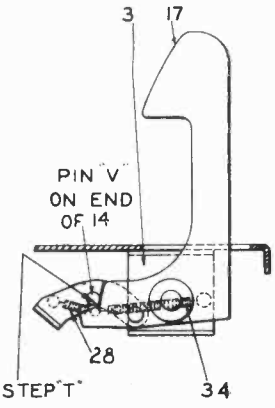
Record Changer
Assembly,Details

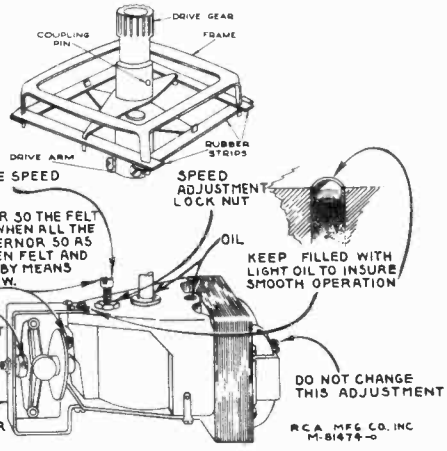
Top View of Automatic Record Changer

NOTE: Numbers refer to parts —letters refer to adjustments.



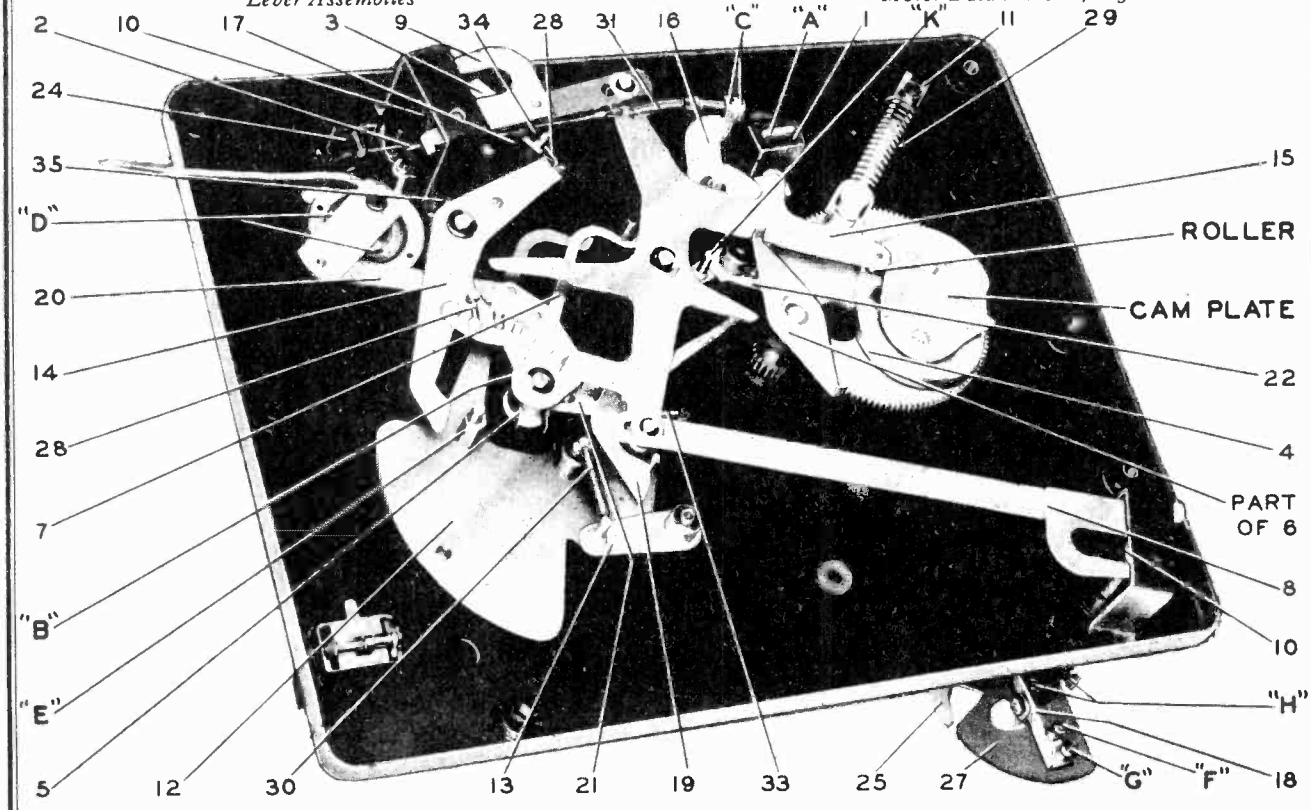






Details of Record Shelf Posts, and Locating Lever Assemblies

Motor Data and Coupling



Bottom View of Automatic Record Changer

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES (RC-335K and RC-335KR)	
31531	Board—Antenna and ground terminal board	.25
32232	Body—Comprising one plunger body and one body spring	.15
31276	Bracket—Band indicator mounting bracket complete—less indicator strip, cord, and tension spring	.40
31282	Bracket—Magic Eye mounting bracket and holder	.22
39090	Bracket—Motor mounting bracket and studs	.40
12714	Capacitor—Adjustable trimmer, 2-12 mmfd. (C29)	1.50
31292	Capacitor—Dual adjustable trimmer, 3-30 mmfd. each section (C24, C25)	.40
31252	Capacitor—Adjustable trimmer, 5-80 mmfd. (C5)	.25
12896	Capacitor—15 mmfd. (C2, C54)	.35
12948	Capacitor—33 mmfd. (C1)	.35
31432	Capacitor—20 mmfd. (C27)	.40
13545	Capacitor—39 mmfd. (C57)	.35
12720	Capacitor—100 mmfd. (C20)	.35
31270	Capacitor—100 mmfd. (C11, C12, C13, C14)	.35
12724	Capacitor—120 mmfd. (C37, C38)	.35
12725	Capacitor—150 mmfd. (C15)	.35
31433	Capacitor—560 mmfd. (C28)	.35
31033	Capacitor—1,500 mmfd. (C26)	.35
31405	Capacitor—6,000 mmfd. (C31)	.75
5107	Capacitor—.0025 mfd. (C53)	.20
30303	Capacitor—.0035 mfd. (C46)	.40
4858	Capacitor—.005 mfd. (C17, C22, C49, C50)	.25
4858	Capacitor—.01 mfd. (C21, C48)	.25
14383	Capacitor—.01 mfd. (C6, C18, C39, C52)	.30
11315	Capacitor—.015 mfd. (C36)	.20
30882	Capacitor—.05 mfd. (C9)	.20
4839	Capacitor—0.1 mfd. (C10, C16)	.30
12484	Capacitor—0.25 mfd. (C33)	.30
30965	Capacitor—0.25 mfd. (C40)	.30
30867	Capacitor—0.5 mfd. (C19)	.30
31496	Capacitor—16 mfd. (C35)	1.25
31495	Capacitor—20 mfd. (C34)	1.75
32088	Capacitor—60 mfd., a-c electrolytic, 40 V. (50-60 cycle only)	.90
32435	Capacitor—180 mfd., a-c electrolytic, 40 V. (25 cycle only)	.90
31293	Coil—"A" band antenna coil (L5, L6, L7)	1.30
31296	Coil—"A" band oscillator coil (L17)	1.05
31294	Coil—"B" band antenna coil (L3, L4)	.80
31295	Coil—"B" and "C" band oscillator coil (L15, L16)	.85
31297	Coil—"C" band antenna coil (L1, L2)	.90
31290	Condenser—3-gang variable condenser (C3, C4, C7, C8, C32)	6.50
31231	Contact—Contact tip for station-setting contact	.06
31345	Contact—Push button switch contacts—comprising 10 contacts riveted on insulating strip	.70
31344	Contact—Push button switch contacts—comprising 13 contacts rivered on insulating strip	1.20
31278	Cord—Band indicator drive cord	.12
32835	Cord—Indicator pointer drive cord	.24
32834	Cord—Variable condenser drum drive cord	.10
31269	Core—Adjustable core and stud for I-f transformers	.15
31260	Core—Adjustable core and stud for "A" band oscillator coil	.35
32093	Damper — Flywheel damper — less mounting washers for rear end of tuning motor shaft (50-60 cycle motors only)	.25
32096	Disc—Friction disc and pinion gear	.35
32091	Drive—Drive gear assembly—comprising friction disc and pinion gear, drive gear, and knob shaft, assembled on gear-mounting bracket	1.60
31273	Drum—Indicator drive cord drum	.80
31239	Gear—Knob shaft drive gear and hub	.65
31545	Gear—Variable condenser intermediate drive gear and pinion gear—25 cycle models only	.40
31532	Indicator—Band indicator strip	.15
11881	Lamp—Dial, pilot, or compartment lamp, 6.3 V, 0.25 amp.	.17
31480	Lamp—Electric tuning adjustment indicator lamp, 6.3 V, 0.15 amp.	.20
31346	Lock—Push button switch lock plate—comprising 10 contact locks in one strip	.80
32095	Motor—Electric tuning motor, 60 mfd. capacitor, friction roller, and damper, assembled (50-60 cycle only)	5.25
32434	Motor—Electric tuning motor, 180 mfd. capacitor, and friction roller (25 cycle only)	6.50
31228	Plate—Selector contact plate—less contacts	.45
31227	Plate—Selector mounting plate—mounts on rear of variable condenser	.50
30868	Plug—2-contact female plug for phono. motor cable	.35
12493	Plug—6-contact female plug for speaker cable	.30
32232	Plunger—Station setting contact tip	.15
31280	Pulley—Indicator pointer drive cord pulley	.10
31271	Pulley—Motor pulley	.25
31272	Pulley—Range switch pulley	.20
31250	Resistor—Voltage divider—comprising one 1,500 ohm, one 2,950 ohm, one 3,400 ohm, one 12 ohm, and one 150 ohm sections (R19, R28, R31, R32, R33)	.90
14284	Resistor—22,000 ohms, 1/10 watt (R24)	.15
13998	Resistor—22,000 ohms, ½ watt (R4)	.20
11300	Resistor—33,000 ohms, 1/10 watt (R27, R30)	.15
12454	Resistor—33,000 ohms, ½ watt (R6)	.20
14560	Resistor—100,000 ohms, ½ watt (R35)	.20
12264	Resistor—220,000 ohms, ½ watt (R5, R36)	.20
11308	Resistor—220,000 ohms, 1/10 watt (R14)	.15
11453	Resistor—270,000 ohms, 1/10 watt (R16, R29)	.15
11452	Resistor—470,000 ohms, 1/10 watt (R1)	.15
12285	Resistor—470,000 ohms, ½ watt (R8)	.20
12013	Resistor—1 meg., 1/10 watt (R7, R26, R40)	.15
13730	Resistor—1 meg., ½ watt (R43) (U-30 only)	.20
30208	Resistor—1.2 meg., ½ watt (R41)	.20
5131	Resistor—2.2 meg., 1/10 watt (R3)	.15
14887	Retainer—Indicator pointer drive cord pulley retainer	.01
32086	Roller—Rubber friction roller for front end of motor (attach to motor shaft with shellac)	.10
31233	Rotor—Selector rotor disc—mounts on rear of variable condenser shaft	1.16
4119	Screw—No. 8-32 headless set screw for gear, Stock No. 31239	.02
14350	Screw—No. 8-32 square head set screw for selector rotor disc	.03
4869	Screw—No. 8-32 square head set screw for pulley, Stock Nos. 31271 and 31272, and drum, Stock No. 31273	.03
31681	Shaft—Dial drive knob shaft	.20
31384	Socket—Dial lamp socket	.20
13871	Socket—Magic Eye socket	.45
31347	Socket—Pickup socket and bracket	.30
31251	Socket—Tube socket	.25
31365	Socket—Tuning indicator lamp insulated socket	.30
31279	Spring—Band indicator tension spring	.03
31232	Spring—Contact tip spring for station-setting contact	.01
13638	Spring—Indicator pointer drive cord tension spring	.08
31418	Spring—Variable condenser drive cord tension spring	.05
12007	Spring—Retaining spring for core, Stock No. 31269	.02
31230	Spring—Station-setting contact body spring	.01
31262	Spring—Tension spring for core, Stock No. 31260	.01
31970	Spring—Tension spring for push button switch latch bar	.06
31236	Support—Variable condenser drive gear mounting support and studs assembly	.65
31360	Switch—Pickup switch for mounting on push button switch assembly (S3)	.35
31291	Switch—Range switch (S1, S2)	.95
31312	Switch—Station selector push button switch and bracket complete	4.25
31248	Tone Control — H.f. tone control and power switch (R12, S4)	1.50
31267	Transformer—First i-f transformer (L8, L9, C11, C12)	2.20
31268	Transformer—Second i-f transformer (L10, L11, C13, C14)	2.05
31308	Transformer—Power transformer, 105/130-140/160-200/250 volts, 50-60 cycle (T1)	13.85
31226	Transformer—Power transformer, 110 volts, 50-60 cycle (T1)	13.00
31225	Transformer—Power transformer, 110 volts, 50-60 cycle (T1)	8.50
31249	Volume Control (R9)	1.50
32231	Washer—Comprising 1 metal washer, 2 fibre washers, and 1 solder lug or retainer for station selector plunger	.03
32094	Washers—One set of washers for mounting damper on 50-60 cycle motors only—comprising 2 "C" washers, 1 spring washer, and 1 flat washer	.10
	OPERATING MECHANISM	
31134	Bracket—Pickup locating lever mounting bracket (3)	.30
31144	Cam—Cam and gear assembly (4) (U-129)	2.80
32878	Cam—Cam and gear assembly (4) (U-30)	2.80
6808	Clutch—Trip lever friction clutch assembly (5)	.35
31146	Coupling—Motor coupling complete with turntable drive gear, rubber strips, motor coupling, and drive arm (6)	1.80
31129	Cover—Cap for top of record post	.45
31116	Finger—Trip lever friction finger assembly (7)	.45
31119	Gear—Long arm and rack gear for front left-hand record post (8)	.60
31120	Gear—Short arm and rack gear for rear right-hand record post (9)	.65
31121	Gear—Record post gear (10)	.90
31123	Guide—Main lever spring guide (11)	.40

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STOCK No.	DESCRIPTION	Unit List Price
31114	Lever—Index lever assembly (12)	.75
31137	Lever—Index lever tension spring lever (13)	.30
31138	Lever—Locating lever and pawl assembly (14)	.70
31113	Lever—Main lever assembly (15)	1.35
31140	Lever—Pickup lift cable lever and spring assembly (16)	.55
31135	Lever—Pickup locating lever assembly (17)	.85
31130	Lever—Record separator elevating lever complete with adjustment screws (18)	.80
31132	Lever—Trip detaining lever (19)	.30
31115	Lever—Trip lever assembly (20)	1.85
31131	Lever—Trip regulator lever (21)	.25
31133	Pawl—Trip pawl assembly (22)	.80
31124	Pin—Record post drive pin (23)	.04
14207	Roller—Pickup lift cable roller and bracket assembly (24)	.55
31118	Screw—Cone pointed set screw for trip lever hub or record post shelf	.06
4563	Screw—Pickup lift cable screw and nuts	.04
14195	Screw—Set screw for flexible coupling	.05
31117	Screw—Special screw to adjust friction clutch tension	.03
31126	Separator—Record separator knife (25)	.75
31122	Shaft—Record separator post shaft (26)	.40
31125	Shelf—Record post shelf assembly (27)	1.25
31141	Spindle—Turntable spindle shaft	1.40
3876	Spring—Cam pawl tension spring on main gear (12 turns, .190-in. O.D., 43/64-in. lg.)	.04
14190	Spring—Pickup locating lever short spring or locating lever pawl tension spring (28) (16 turns, .160-in. O.D., 19/32-in. lg.)	.08
32882	Spring—Main lever tension spring (29) (18 turns, .6-in. O.D., 3-in. lg.)	.05
31136	Spring—Index lever tension spring (30) (25 turns, .190-in. O.D., 15/16-in. lg.)	.05
3666	Spring—Pickup lift cable tension spring (31) (20 turns, .195-in. O.D., 1-in. lg.)	.04
31127	Spring—Record separator pressure spring (32) (8 turns, ½-in. O.D., ½-in. lg.)	.02
14191	Spring—Trip detaining lever tension spring (33) (15 turns, .190-in. O.D., ¾-in. lg.)	.04
31875	Spring—Pickup locating lever tension spring (34) (14 turns, .220-in. O.D., 27/32-in. lg.)	.04
32436	Spring—Locating lever tension spring (35) (16 turns, .183-in. O.D., 21/32-in. lg.)	.05
31147	Strip—Complete set of rubber strips for flexible coupling	.40
31139	Turntable Assembly—less spindle	3.35
31128	Washers—"C" washer for top of record post	.04
31143	Washers—Turntable thrust washers (1 steel, 1 bronze, 1 felt)	.15
	PICKUP AND ARM ASSEMBLIES	
33096	Arm—Pickup arm, less crystal and cable (viscoloid-damped type for U-30 and 2nd-production U-129)	2.60
31162	Cable—Pickup arm lift cable and clips	.15
33119	Cable—Shielded cable and plug	.60
31156	Crystal—Pickup crystal cartridge and needle screw	4.25
33114	Damper—Viscoloid damper for armature (U-30 and 2nd-production U-129)	.15
31159	Pickup and arm complete (without viscoloid damper—for 1st-production U-129)	7.45
31160	Screw—Pickup needle screw	.12
31161	Shaft—Pickup pivot arm and shaft assembly	.45
	MOTORBOARD ASSEMBLIES	
31149	Base—Tone arm mounting base	.35
32927	Board—Record changer base complete with all welded and riveted posts and bearings (U-30 only)	6.30
31152	Board—Record changer base complete with all welded and riveted posts and bearings—less all operating parts (U-129 only)	7.90
14208	Bumper—Main lever rubber bumper (1)	.08
9848	Cup—Used needle cup, set, and lid complete	.75
31148	Escutcheon—Index escutcheon (U-129 only)	.40
32877	Escutcheon—Index escutcheon (U-30 only)	.40
31151	Guide—Pickup lift cable guide (coil spring, 80T 2-in. large) (2)	.10
31150	Mounting—Pickup arm base rubber mounting complete	.45
31155	Spring—Needle cup lid tension spring	.04
	MOTOR ASSEMBLIES (U-129 only)	
31617	Bracket—Governor end bearing bracket	.30
31626	Coil—Field coil and laminations for 25 cycle motor	9.30
31619	Coil—Field coil and laminations for 50-60 cycle motor	7.80
31618	Coil—Field coil and laminations for 60 cycle motor	5.50
31624	Governor—Motor governor for 25-cycle motor	3.05
11703	Governor—Motor governor for 50-60 cycle motor	3.05
31623	Governor—Motor governor for 60-cycle motor	2.80
31448	Motor—105-125 volts, 25 cycle (M1)	23.70
31163	Motor—105-125 volts, 50-60 cycles (M1)	20.50
31157	Motor—105-125 volts, 60 cycles (M1)	17.75
30870	Plug—2-contact male plug for motor power cable	.35
31447	Screw—Complete set of motor mounting screws, washers, and spacers—for 25 cycle models only	.40
31158	Screw—Complete set of motor mounting screws, washers, and spacers—for 50-60 cycle models only	.25
31616	Screw—Rotor bearing thrust screw	.25
31620	Screw—Speed regulator screw with nut	.20
31636	Spindle—Spindle and gear for 25 cycle motor	1.90
31634	Spindle—Spindle and gear for 50-60 cycle and 60 cycle motors	1.70
32913	Spring—Governor spring and ball for 25 cycle motor	.25
32914	Spring—Governor spring and ball for 50-60 cycle motor	.30
32912	Spring—Governor spring and ball for 60 cycle motor	.25
14208	Switch—Motor toggle switch (S7)	.90
31622	Washer—Metal and felt washers for lower spindle bearing	.10
	MOTOR ASSEMBLIES (U-30 only)	
31618	Field—Coils and laminations, 105-125 volts, 60 cycle	5.50
31619	Field—Coils and laminations, 105-125 volts, 50-60 cycle	7.80
31626	Field—Coils and laminations, 105-125 volts, 25 cycle	9.30
31623	Governor—60 cycle	2.80
11703	Governor—50-60 cycle	3.05
31624	Governor—25 cycle	3.05
31448	Motor—105-125 volts, 25 cycle (M1)	23.70
31163	Motor—105-125 volts, 50-60 cycle (M1)	20.50
31157	Motor—105-125 volts, 60 cycle (M1)	17.75
30870	Plug—2-contact male plug for motor power cable	.35
31447	Screw—Complete set of motor mounting screws, washers, and spacers—for 25-cycle models only	.40
31158	Screw—Complete set of motor mounting screws, washers, and spacers—for 50-60 cycle models only	.25
31634	Shaft—Turntable shaft and gear—60, and 50-60 cycle	1.70
31636	Shaft—Turntable shaft and gear—25 cycle	1.90
32875	Switch—Motor toggle switch	.30
32912	Weight—Governor weight and spring—60 cycle	.25
32914	Weight—Governor weight and spring — 50-60 cycle	.30
32913	Weight—Governor weight and spring—25 cycle	.25
	SPEAKER ASSEMBLIES (RL-70H-4)	
13866	Cap—Dust cap for cone center	.03
11234	Coil—Field coil (L12)	3.85
11469	Coil—Neutralizing coil (L14)	.50
31275	Cone—Speaker cone and voice coil (L13)	1.75
31539	Plug—6-contact male plug for speaker	.25
31538	Speaker complete	10.65
14534	Transformer—Output transformer (T2)	3.85
14357	Washer—Spring washer to hold field coil securely	.06
	MISCELLANEOUS ASSEMBLIES	
31358	Button—Station selector push button	.15
13103	Cap—Pilot lamp cap	.15
31456	Cover—8 protective covers for push button markers	.08
31540	Cushion—Chassis mounting cushion and screw assemblies—sufficient for one chassis	.50
31541	Cushion—Motor plate mounting cushion and clamp assembly—sufficient for one instrument	.50
31451	Dial—Station selector dial scale and crystal	.95
31361	Escutcheon—Tuning dial escutcheon, less dial and push buttons	2.20
30698	Hinge—Cabinet lid hinge	.95
31542	Indicator—Station selector indicator pointer and carriage	.35
31355	Knob—Station selector, volume control, tone control, or range switch knob	.12
31478	Lid Support—Cabinet lid support	2.20
31589	Marker—Station call letter push button markers	.35
31457	Marker—"Victrola" push button marker	.01
31458	Marker—"Dial Tuning" push button marker	.01
32083	Screen—Dial color screen	1.20
14270	Spring—Retaining spring for knob, Stock No. 31355	.05
31470	Suspension—Motorboard suspension spring, screw, and lockwasher, 4 required	.10

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RCA MFG. CO., INC.

MODEL BT40, Chassis RC-408
Schematic, Voltage, Socket
Trimmers, Alignment, Parts

RCA MFG. CO., INC.

Alignment Procedure

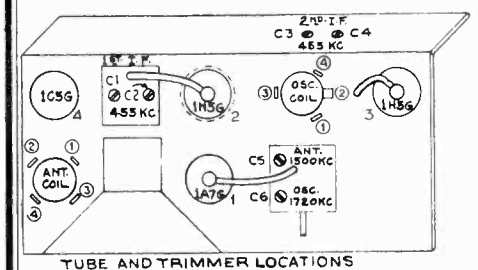
Output Meter Alignment.—If this method is used connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

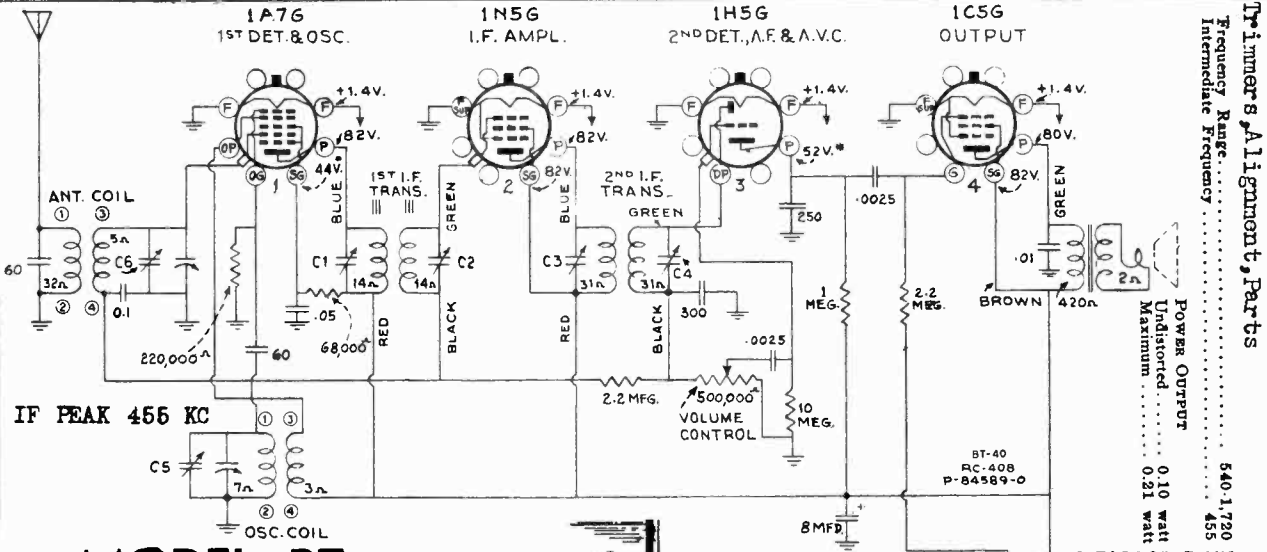
For additional details, refer to booklet "RCA Victor Receiver Alignment."

Pre-setting Dial.—With gang condenser in full mesh, the pointer should be horizontal.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	1A7G 1st-Det. grid cap, in series with .01 mfd.	455 kc	Quiet point at 1,600 kc end of dial	C1, C2, C3, C4 (1st and 2nd I-F transformers)
2	Antenna lead (blue) in series with 100 mmfd.	1,720 kc	Full clockwise (out of mesh)	C5 (oscillator)
3		1,500 kc	Resonance on 1,500 kc signal	C6 (antenna)



TUBE AND TRIMMER LOCATIONS



Frequency Range ..... 540-1,720 kc
Intermediate Frequency ..... 455 kc

Power Output
Undistorted ..... 0.10 watt
Maximum ..... 0.21 watt

MODEL BT-40

Chassis No. RC-408

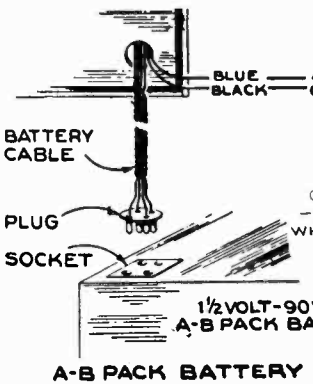
RCA Tube Complement

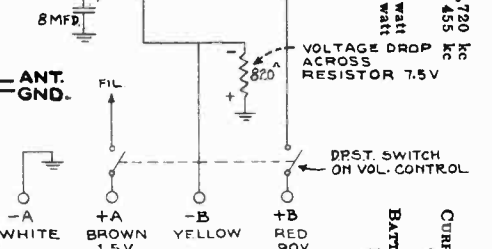
(1) RCA-1A7-G ..... 1st-Det.—Osc.
(2) RCA-1N5-G ..... I-F Amplifier
(3) RCA-1H5-G ..... 2nd-Det., A-F, and A.V.C.
(4) RCA-1C5-G ..... Output

Loudspeaker

Type ..... 4-inch permanent-magnet dynamic
Voice-coil Impedance ..... 2 ohms at 400 cycles

	Height	Width	Depth
Cabinet Dimensions (inches)	6½	9½	4-11/16
Chassis Base Dimensions (inches)	1½	8½	3½
Over-all Chassis Height			5½ inches
Weight—Shipping weight			6½ pounds
Net weight			4½ pounds
Tuning Drive Ratio			11 to 1





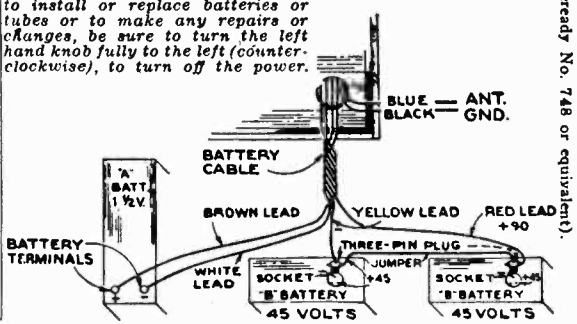
Current Consumption
"A," 0.24 ampere—"B," 9.0 milliamperes.

Batteries Required
1 "A"—"B" Pack (Eveready No. 748 or equivalent).

—1939 No. 8—

The RCA Victor Model BT-40 is a table type battery operated radio receiver. It is designed for operation on a combination 1½-volt—90-volt A-B Pack Battery.

CAUTION. — Before attempting to install or replace batteries or tubes or to make any repairs or changes, be sure to turn the left hand knob fully to the left (counter-clockwise), to turn off the power.



Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	Unit List Price	STOCK No.	DESCRIPTION	Unit List Price
11591	Button—Plug button for chassis	.10	14076	Resistor—820 ohms, ½ watt	.20
13057	Capacitor—60 mmfd.	.35	13715	Resistor—68,000 ohms, ½ watt	.20
12488	Capacitor—250 mmfd.	.35	12264	Resistor—220,000 ohms, ½ watt	.20
12952	Capacitor—300 mmfd.	.35	13730	Resistor—1 meg., ½ watt	.20
5107	Capacitor—.0025 mfd.	.20	12679	Resistor—2.2 meg., ½ watt	.20
4937	Capacitor—.01 mfd.	.25	13601	Resistor—10 meg., ½ watt	.20
32787	Capacitor—.05 mfd.	.20	33061	Shaft—Tuning knob drive shaft	.20
4839	Capacitor—0.1 mfd.	.30	32595	Shield—Tube shield—less cap	.15
32187	Capacitor—Electrolytic, 8 mfd.	.65	32537	Socket—Tube socket	.20
32572	Coil—Antenna coil	.60	33058	Speaker complete	4.00
33055	Coil—Oscillator coil	.70	30585	Spring—Drive cord tension spring	.06
33060	Condenser—2-gang tuning	2.25	32667	Spring—Retaining spring for knobs or drive drum	.02
32634	Cord—Drive cord	.10	33056	Transformer—First i-f transformer	1.40
33310	Dial—Glass dial scale	.30	33057	Transformer—Second i-f transformer	1.25
32946	Drum—Variable condenser drive drum	.35	33062	Transformer—Output transformer	1.30
32671	Knob—Tan volume or tuning knob	.15	33059	Volume control and switch	1.50
30550	Plug—4-prong male plug for battery cable	.20			

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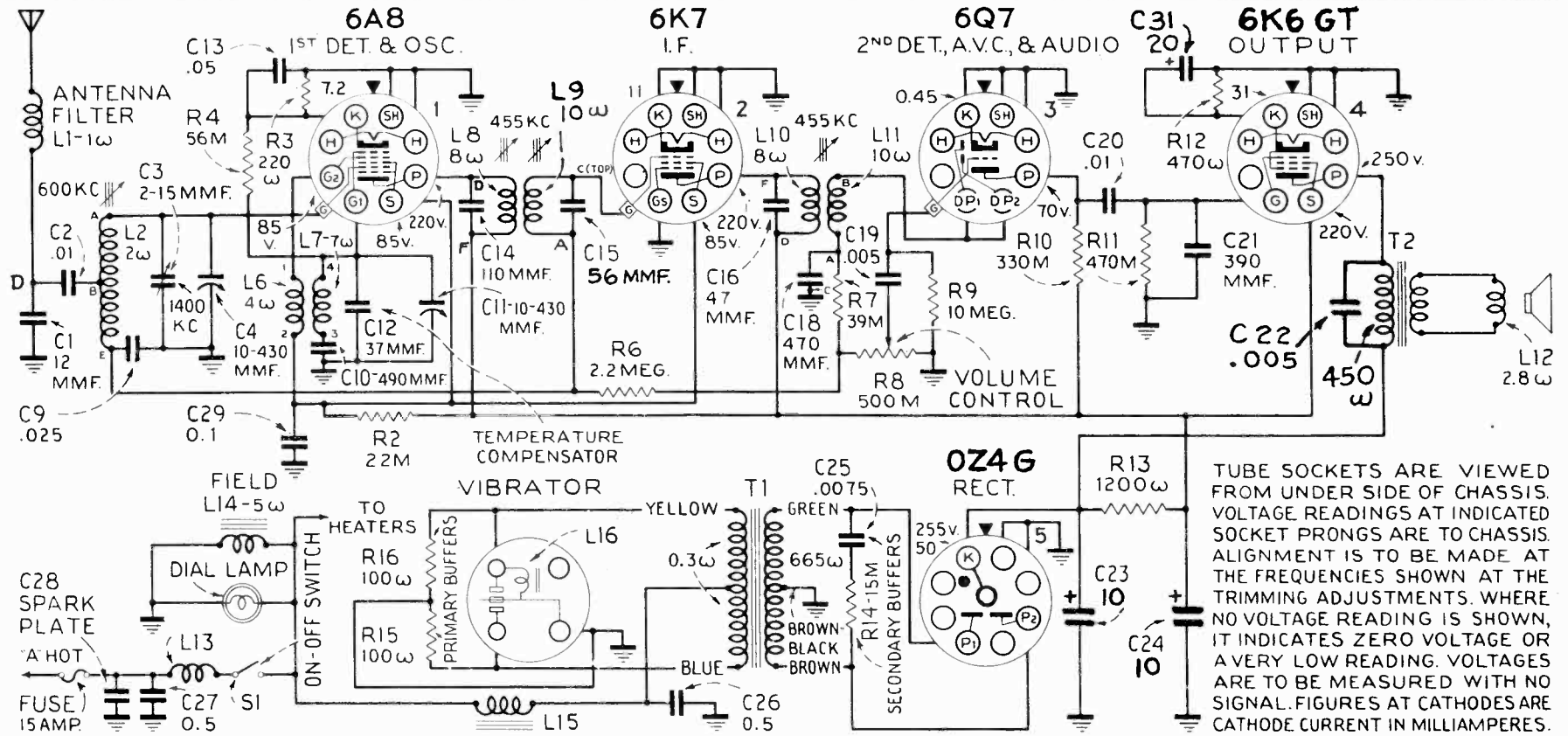


TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS. ALIGNMENT IS TO BE MADE AT THE FREQUENCIES SHOWN AT THE TRIMMING ADJUSTMENTS. WHERE NO VOLTAGE READING IS SHOWN, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING. VOLTAGES ARE TO BE MEASURED WITH NO SIGNAL. FIGURES AT CATHODES ARE CATHODE CURRENT IN MILLIAMPERES.

M = 1000 OHMS

IF PEAK 455 KC

Schematic Circuit Diagram

— 1939 No. 22 —

General Description

Model M50 is a five-tube superheterodyne receiver with loudspeaker and radio chassis in the same case. It is equipped with five push buttons, for tuning your five favorite broadcast stations, as well as the standard method of dial tuning. Adjustments for push button tuning are explained under the heading "Push Button Tuning Mechanism." The receiver is designed to be mounted under the dash panel. The operating controls are integral with the radio and speaker case.

Loudspeaker.—The loudspeaker voice coil should be centered in the usual manner with three narrow paper feelers, after first removing the front dust cover. The dust cover should be cemented back in place with ambroid cement after adjustment has been completed.

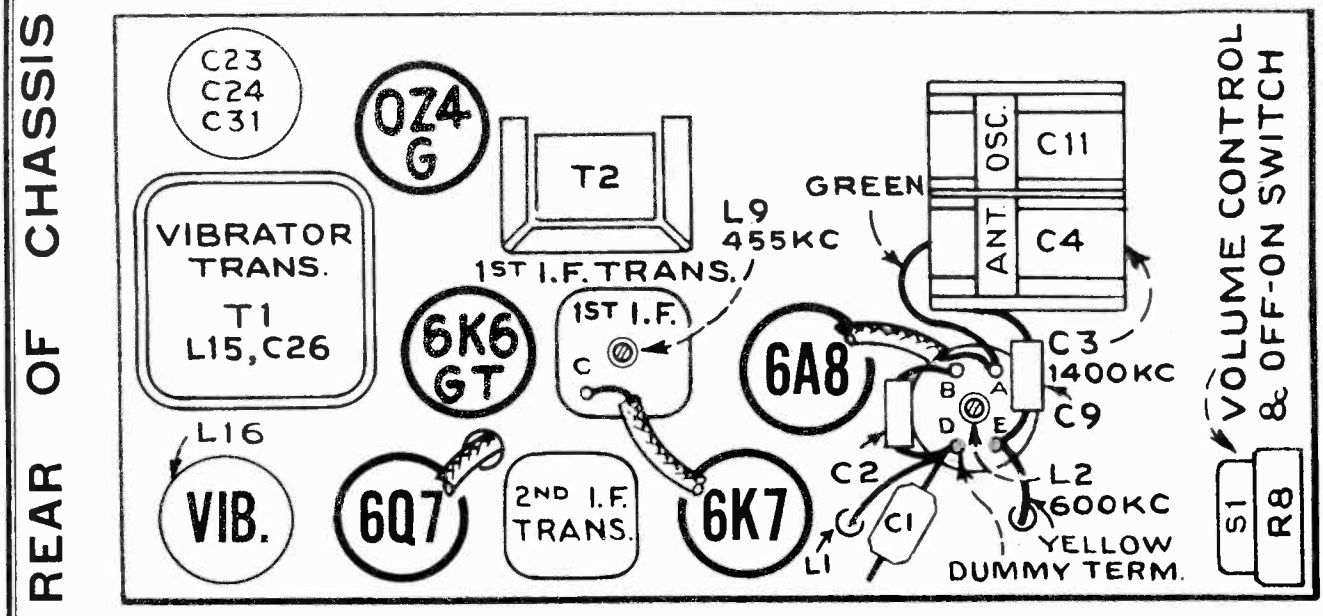
Electrical Specifications

Frequency Range	550-1,550 kc
Power Output	
Type	Pentode
Undistorted	2 watts
Maximum	3.5 watts
Dial Lamp	6-8 volts, 0.2 amp., Mazda 51
Alignment Frequencies	
I-F	455 kc
Ant.	600 and 1,400 kc
Oscl.	No Adjustment
Loudspeaker	
Type	Electrodynamic
Size	5 inches
V.C. Impedance	3.2 ohms at 400 cycles
Field Coil Resistance	5 ohms
Power Supply	
"A"	6.3 volt Auto Storage Battery
"B"	Non-Synchronous Vibrator
Current Drain	6.0 amps.
Chassis Features	
No. I-F Stages	One
Completely Shielded Ant. Filter	
Magnetite-core Adjusted Antenna and I-F Transformers	
Ignition-Noise-Suppression Filters	
Antenna Compensator Trimmer	
Illuminated Dial	

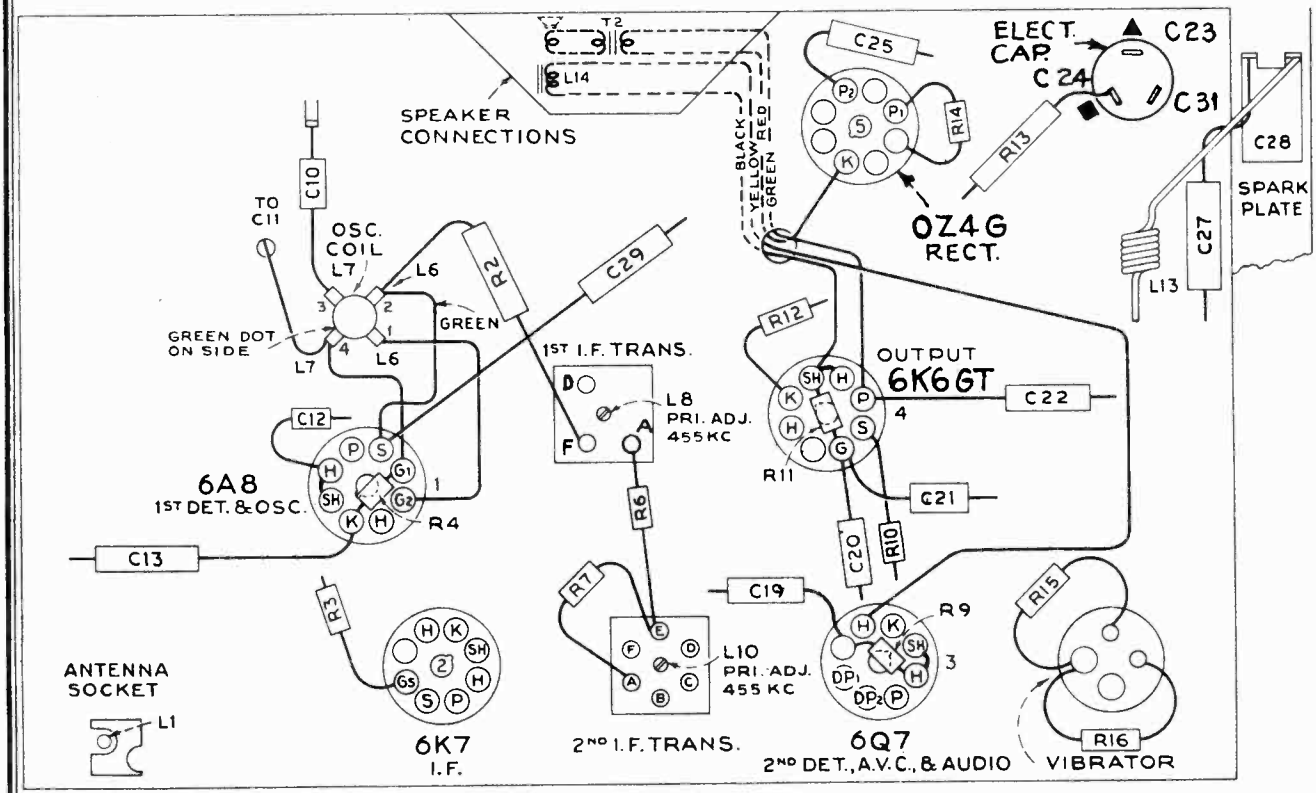
MODEL M50, Chassis RC-357J — RCA MFG. CO., INC.
Chassis Wiring, Socket
Trimmers

TUBES AND FUNCTIONS

(1) RCA-6A8 ..... First Detector—Oscillator
(2) RCA-6K7 ..... I-F Amplifier
(3) RCA-6Q7 ..... Second Det., A-F Amp. and A.V.C.
(4) RCA-6K6GT ..... Output
(5) RCA-OZ4G ..... Rectifier



Location of Parts and Alignment Adjustments on Top of Chassis



Location of Parts and Alignment Adjustments on Bottom of Chassis

RCA MFG. CO., INC.

MODEL M50, Chassis RC-357J
MODEL M60, Chassis RC-357K
Alignment

PRELIMINARY:

Output meter connections ..... Across speaker voice coil
Output meter readings to indicate 1 watt ..... 1.8 volts
Generator ground lead connections ..... To chassis
Generator modulation ..... 30%, 400 cycles
Position of Volume Control ..... Fully clockwise
Chassis must be in its case with front end removed, when aligning R-F circuit.

MODEL M50 — Chassis No. RC 357J

Position of Dial Pointer	Generator Frequency	Dummy Antenna	Generator Connection	Adjustment Symbol	Circuit Adjusted
No Signal 550-750 kc	455 kc	.001 mfd.	6K7 Grid	L-10	2nd I.F. Trans.
No Signal 550-750 kc	455 kc	.001 mfd.	6A8 Grid	L-8, L-9	1st I.F. Trans.
1,400 kc	1,400 kc	.0001 mfd. †	Ant. Lead	C-3	Ant.
600 kc	600 kc	.0001 mfd. †	Ant. Lead	L-2	Ant.
1,400 kc	1,400 kc	.0001 mfd. †	Ant. Lead	C-3 *	Ant.

NOTE: No oscillator alignment adjustments are required in this receiver.

† Make the generator connection to the receiver thru a shielded lead-in having not more than 50 mmf. (.00005) capacity with a male connector attached for connection to antenna socket. If C-2 has been changed, as outlined under "Antenna Circuit," for reason of a high capacity antenna, the Dummy Antenna should be the same value as the antenna itself.

* Re-adjust C-3 after installation as outlined under "Antenna Circuit"

Each step of the alignment should be repeated in its original order for greater accuracy. Always keep the output from the generator at its lowest possible value, to prevent the A.V.C. action of the receiver from interfering with accurate alignment.

Alignment adjustment locations are shown on the top and bottom parts location views of chassis.

Only the dummy antenna indicated in the chart for any particular frequency should be used. Grid cap leads should remain in place during alignment.

Oscillator circuit alignment is not required in this receiver at either end of the band; the oscillator coil is pre-adjusted for inductance in the factory.

Since the oscillator coil is unshielded, the case has some effect on its inductance. Therefore alignment must be done either with the chassis in the case or with a steel plate (covering the bottom of chassis), substituting for the case.

MODEL M60 — Chassis No. RC 357K

Position of Dial Pointer	Generator Frequency	Dummy Antenna	Generator Connection	Adjustment Symbol	Circuit Adjusted
No Signal 550-750 kc	455 kc	.001 mfd.	6K7 I.F. Grid	L-10, L-11	2nd I.F. Trans.
No Signal 550-750 kc	455 kc	.001 mfd.	6A8 Grid	L-8, L-9	1st I.F. Trans.
Rock Through 600 kc	600 kc	.0001 mfd.†	Ant. Lead	L-7	Osc.
1,400 kc **	1,400 kc	.0001 mfd.†	Ant. Lead	C-5	Det.
1,400 kc **	1,400 kc	.0001 mfd.†	Ant. Lead	C-3	Ant.
Rock Through 600 kc	600 kc	.0001 mfd.†	Ant. Lead	L-7	Osc.
1,400 kc **	1,400 kc	.0001 mfd.†	Ant. Lead	C-5	Det.
1,400 kc **	1,400 kc	.0001 mfd.†	Ant. Lead	C-3*	Ant.

† Make the generator connection to the receiver through a shielded lead-in having not more than 50 mmf. (.00005) capacity with a male connector attached for connection to antenna socket. If a capacitor has been added in series with the lead from antenna filter L-1 to the antenna coil, as outlined under "Antenna Circuit," for reason of a high capacity antenna, the Dummy Antenna should be the same value as the antenna itself.

* Re-adjust C-3 after installation as outlined under "Antenna Circuit".

Each step of the alignment should be repeated in its original order for greater accuracy. Always keep the output from the generator at its lowest possible value, to prevent the A.V.C. action of the receiver from interfering with accurate alignment.

Alignment adjustment locations are shown on the top and bottom parts location views of chassis.

Only the dummy antenna indicated in the chart for any particular frequency should be used. Grid cap leads should remain in place during alignment.

** OSCILLATOR CIRCUIT

A magnetite core is used to provide temperature stability. The conventional high frequency trimmer has been replaced with a fixed temperature-compensating capacitor (C-12) which determines the high frequency range. Since the inductance of L-7 is adjustable, the conventional series trimmer has been replaced with a fixed capacitor (C-10). C-10 is a special capacitor having zero temperature coefficient to provide for oscillator stability in the low frequency range. Aligning the receiver for 600 kc is accomplished by adjusting L-7 to the antenna and det. circuits (gang condenser must be rocked while making this adjustment). The 1,400 kc alignment is accomplished by adjusting the antenna and the det. trimmers (C-3 and C-5) to the oscillator.

MODEL M50,Chas.RC-357J
MODEL M60,Chas.RC-357K
Antenna Data,
Tuner Data

RCA MFG. CO., INC.

Antenna Circuit

M50

The antenna circuit is designed to work with a low capacity antenna having a total capacity including the shielded lead-in not to exceed 150 mmf. If larger antennas, such as screened top or a double under the running-board having a total capacity of 200 to 550 mmf. is to be used, it will be necessary to reduce the value of the antenna coupling capacitor C-2 from .01 to approximately 200 mmf. (.0002). For even larger antennas such as insulated steel tops, a correspondingly smaller value of C-2 (approximately 125 to 150 mmf.) should be used keeping in mind to use the largest value possible with which the antenna circuit can be aligned.

M60

The antenna circuit is designed to work with an antenna having a total capacity including the shielded lead-in not to exceed 150 mmf. If an antenna having a larger capacity is to be used, it will be necessary to add a capacitor in series with the lead from antenna filter L-1 to the antenna coil terminal ("A"). Where a "Double Under the Running Board" type of antenna is to be used having a capacity of approximately 200 mmf. the capacitor added should be approximately 300 mmf. The insulated running board type having an approximate capacity of 550 mmf. will require a capacitor of approximately 200 mmf. Cars using an insulated steel top of approximately 3,500 mmf. will require a series capacitor of 150 mmf.

M50 M60

After installation, and with antenna connected, tune in a weak station near 1,400 kc and adjust compensator trimmer (C-3) for maximum signal output. This trimmer is accessible by prying off the nameplate between the control knobs.

Antenna Filter

A filter is included in the antenna circuit. Being completely shielded, it prevents radiating ignition interference within the set. It also reduces the possibility of picking up vibrator interference. The filter unit is mounted inside a steel shell which in turn is welded to the chassis. The shielded antenna lead-in makes contact with the filter unit within the steel shell and is held in place by a bayonet type connector.

Push Button Tuning Mechanism

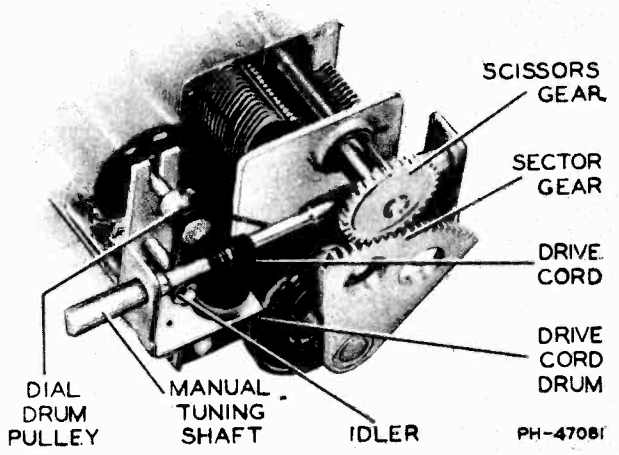
The push button tuning mechanism used in this receiver is of the mechanical type, wherein the movement of the button actually turns the tuning condenser to any pre-determined setting. The movement is actuated thru a Push-Arm, Cam, Rocker Plate and Sector Gear, which meshes with a Scissors Gear directly fastened to the tuning condenser shaft. The scissors gear prevents backlash between the sector gear and the tuning condenser. Since the sector gear is mounted directly on the rocker plate shaft, the position of the rocker plate will accurately determine the position of the tuning condenser.

Setting Up Stations

The push buttons should be adjusted for five favorite stations after the receiver is installed and operating.

Any standard broadcast stations may be chosen. The preferable arrangement is to adjust for stations in the order of frequency, from low to high. Proceed as follows:

1. Loosen the push buttons one-half turn.
2. Using the tuning control, accurately tune in the first station.



Tuning Mechanism

3. With station accurately tuned in, press the first push button fully in and then gently release so as not to jar mechanism.
4. Tighten the push button securely with fingers. Do not force with pliers.
5. Proceed in same manner to adjust the other four push buttons.

Adjustments

The mechanism should be adjusted so that when using either manual or push-button tuning, it operates positively and without backlash or bind. The following hints will be found helpful in adjusting the mechanism properly.

1. With the gang condenser in full mesh, the sector gear should have the two end teeth fully meshed in the scissor gear.
2. The position of the sector gear on the rocker-plate shaft should be adjusted so that there is clearance between the rocker-plates and the frame of the push-button mechanism at both extremities of gang rotation. Thus correct adjustment prevents the rotation of the gang being limited by the rocker plates touching the frame.
3. The drive cord should have 8½ turns around the tuning shaft as shown in the illustration. Three degrees of adjustment of the tension on the drive cord may be obtained by use of the three positions for connecting the drive-cord-tension spring to the drive-cord drum on the condenser shaft as shown.
4. The push-arms, rocker-plate shaft, and pulleys should be lubricated with light grease (sparingly). Care should be taken to keep the lubricant off the drive cord.

Manual Tuning

A manual tuning knob is provided so that additional stations may be tuned in as desired. The manual tuning shaft is connected thru a cord drive to a drum on the rocker plate shaft. This same cord drives the dial drum by passing over a pulley on the drum shaft. A sketch shows the complete cord drive assembly and the correct number of turns which the cord should be wrapped around the drive shaft and dial drum pulley. Stops are provided on the dial drum so that dial scale adjustment is made by tuning the set to the extreme ends of the band.

Parts List, Drive Data — RCA MFG. CO., INC. — MODEL M50, Chas. RC-357J; MODEL M60, Chas. RC-357K

STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES	
	MODEL M-50 (RC-357J)	
13002	Capacitor—12 mmfd. (C1)	.35
31728	Capacitor—37 mmfd. (C12)	.35
12405	Capacitor—47 mmfd. (C16)	.30
12629	Capacitor—56 mmfd. (C15)	.35
14262	Capacitor—109 mmfd. (C14)	.30
13894	Capacitor—390 mmfd. (C21)	.35
30673	Capacitor—470 mmfd. (C18)	.25
34250	Capacitor—490 mmfd. (C10)	.40
33584	Capacitor—.005 mfd. (C19, C22)	.25
30626	Capacitor—.0075 mfd. (C25)	.30
4937	Capacitor—.01 mfd. (C2, C20)	.25
4870	Capacitor—.025 mfd. (C9)	.20
30882	Capacitor—.05 mfd. (C13)	.20
4839	Capacitor—0.1 mfd. (C29)	.30
12741	Capacitor—0.5 mfd. (C27)	.30
32240	Capacitor—Electrolytic, 2 sections 10 mfd., and 1 section 20 mfd. (C23, C24, C31)	1.45
31596	Clip—Spring clip to hold oscillator coil	.02
31977	Coil—Antenna filter (L1)	.45
31594	Coil—Oscillator coil (L6, L7)	.75
31595	Coil—Oscillator coil (L6, L7)	1.35
11765	Lamp—Dial lamp	.15
30641	Lead—"A" lead	.30
30540	Resistor—100 ohms, ½ watt (R15, R16)	.20
14561	Resistor—220 ohms, ½ watt (R3)	.20
30499	Resistor—470 ohms, ½ watt (R12)	.20
6134	Resistor—1,200 ohms, 1 watt (R13)	.22
12695	Resistor—15,000 ohms, ½ watt (R14)	.20
13669	Resistor—22,000 ohms, 2 watts (R2)	.25
12266	Resistor—39,000 ohms ½ watt (R7)	.20
12286	Resistor—56,000 ohms, ½ watt (R4)	.20
14983	Resistor—330,000 ohms, ½ watt (R10)	.20
12285	Resistor—470,000 ohms, ½ watt (R11)	.20
12679	Resistor—2.2 meg., ½ watt (R6)	.20
13601	Resistor—10 meg., ½ watt (R9)	.20
3584	Ring—R.F. coil retaining ring	.03
31639	Socket—Dial lamp socket	.25
31319	Socket—Tube socket	.25
13686	Socket—Vibrator socket	.20
14261	Transformer—First i-f transformer (L8, L9, C14, C15)	2.05
30672	Transformer—Second i-f transformer (L10, L11, C16, C18)	2.10
31597	Transformer—Vibrator power transformer (T1, L15, C26)	4.85
13688	Vibrator—Plug-in vibrator complete (L16)	3.35
31637	Volume control and power switch (R8, S1)	1.50
	CHASSIS ASSEMBLIES	
	MODEL M-60 (RC-357K)	
13002	Capacitor—12 mmfd. (C1)	.35
31729	Capacitor—43.5 mmfd., temp. comp. (C12)	.35
30904	Capacitor—100 mmfd. (C14, C15, C16, C17)	.25
13894	Capacitor—390 mmfd. (C21)	.35
14497	Capacitor—680 mmfd. (C30)	.40
33584	Capacitor—.005 mfd. (C19, C22)	.25
30626	Capacitor—.0075 mfd. (C25)	.30
14393	Capacitor—.01 mfd. (C2)	.30
4937	Capacitor—.01 mfd. (C20)	.25
32787	Capacitor—.05 mfd. (C8, C9)	.20
30882	Capacitor—.05 mfd. (C13)	.20
4839	Capacitor—0.1 mfd. (C29)	.30
12741	Capacitor—0.5 mfd. (C27)	.30
33803	Capacitor—Electrolytic, 2 sections 10 mfd. each (C23, C24)	1.05
32363	Capacitor—470 mfd. (C10, C18)	.30
31596	Clip—Spring clip to hold oscillator coil	.02
33664	Coil—Antenna coil (L2, L3)	1.35
31977	Coil—Antenna filter (L1)	.45
31595	Coil—Oscillator coil (L6, L7)	1.35
31600	Coil—R.F. coil—less shield (L4, L5)	1.15
11765	Lamp—Dial lamp	.15
30641	Lead—"A" lead	.30
30540	Resistor—100 ohms, ½ watt (R15, R16)	.20
13428	Resistor—150 ohms, ½ watt (R3)	.20
30499	Resistor—470 ohms, ½ watt (R12)	.20
6134	Resistor—1,200 ohms, 1 watt (R13)	.22
12695	Resistor—15,000 ohms, ½ watt (R14)	.20
13998	Resistor—22,000 ohms, ½ watt (R2)	.20
13477	Resistor—27,000 ohms, 1 watt (R5)	.22
12454	Resistor—33,000 ohms, ½ watt (R7)	.20
12286	Resistor—56,000 ohms, ½ watt (R4)	.20
14983	Resistor—330,000 ohms, ½ watt (R10)	.20
12285	Resistor—470,000 ohms, ½ watt (R1, R11)	.20
12201	Resistor—1.5 meg., ½ watt (R8)	.20
13601	Resistor—10 meg., ½ watt (R9)	.20
3584	Ring—R.F. coil retaining ring	.03
31639	Socket—Dial lamp socket	.25
31319	Socket—Tube socket	.25
13686	Socket—Vibrator socket	.20
30902	Transformer—First i-f transformer (L8, L9, C14, C15)	1.90
31593	Transformer—Second i-f transformer (L10, L11, C16, C17)	1.95
31597	Transformer—Vibrator power transformer (T1, L15, C26)	4.85
13688	Vibrator—Plug-in vibrator complete (L16)	3.35
31638	Volume control and power switch (R8, S1)	1.50
	MODELS M-50, M-60 SPEAKER ASSEMBLIES	
	(Speaker 84391-1)	
30782	Cone—Speaker cone and voice coil (L12)	1.20
30781	Speaker—Complete	4.40
30783	Transformer—Output transformer (T2)	1.45
	(Speaker 84391-3)	
31771	Cone—Speaker cone and voice coil (L12)	1.25
31770	Speaker—Complete	4.00
31772	Transformer—Output transformer (T2)	1.20
	MODEL M-60.	
	TUNING UNIT ASSEMBLIES	
33667	Button—Push button	.20
31605	Condenser—3-gang variable (C3, C4, C5, C6, C7, C11)	3.60
	MODEL M-50	
33666	Button—Push button	.15
31766	Coil—Antenna coil—less shield (L2)	1.05
31604	Condenser—2-gang variable (C3, C4, C11)	2.55
	MODELS M-50, M-60	
31614	Cord—Variable condenser drive cord	.10
31725	Drum—Indicator drum assembly	.40
31610	Drum—Variable condenser drive cord drum	.40
31612	Gear—Variable condenser drive gear sector—fastens on cam shaft	.60
33665	Mechanism—Comprising 5 push arms, cams, cam plate, and mounting bracket assembled—less variable condenser	7.00
31606	Pulley—Indicator drum pulley	.20
31607	Pulley—Pulley for indicator drum bracket	.10
13471	Ring—Retaining ring for antenna coil	.03
4389	Screw—No. 6-32 x 3/16-in. set screw for pulley, Stock No. 31606	.03
31613	Screw—No. 8-32 x ¼-in. set screw for gear, Stock No. 31612	.02
31611	Screw—No. 8-32 x ¼-in. set screw for drum, Stock No. 31610	.02
31609	Shaft—Station selector knob shaft	.20
31615	Spring—Variable condenser drive cord tension spring	.02
30585	Spring—Push button arm tension spring	.06
2917	Washer—"C" washer to hold knob shaft	.03
31608	Washer—"C" washer to hold pulley, Stock No. 31607	.01
	MISCELLANEOUS ASSEMBLIES	
4289	Body—Fuse holder body for ammeter lead	.03
5025	Capacitor—Generator capacitor	.45
33668	Case—Receiver case only	5.30
4291	Clip—Spring clip for amateur lead	.06
31456	Covers—8-protective celluloid covers for call letter markers	.08
33670	Dial—Dial scale and holder	.60
4286	Ferrule—Bushing and ferrule for fuse holder	.03
5023	Fuse—15 amp.	.08
4290	Insulator—Insulating sleeve for fuse holder	.02
7766	Lead—Ammeter lead complete with clip and fuse holder	.40
31589	Markers—One set call letter markers for push buttons	.35
33669	Mounting—Complete set mounting brackets, strap, washers, screws, bolts, and nuts	.85
31660	Plate—Name plate	.40
31646	Spring—Retaining spring for knobs	.02
4284	Spring—Spring for fuse holder	.03
5024	Suppressor—Distributor suppressor	.40
4285	Washer—Insulating washer for fuse holder	.02

First Edition

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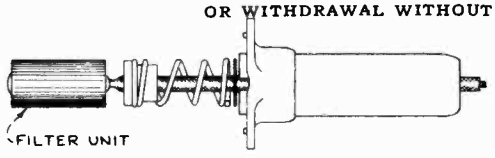
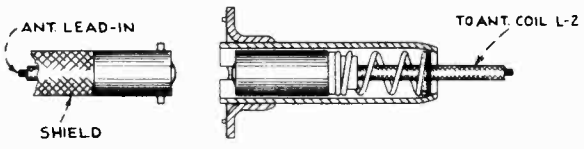
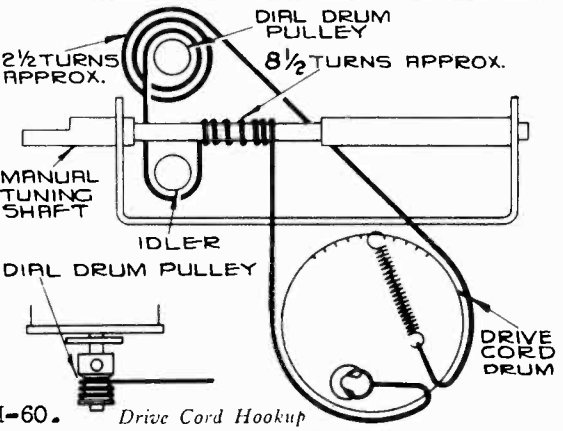




Antenna Filter

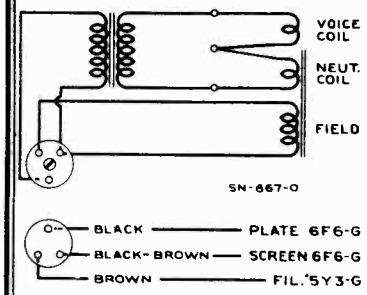


Drive Cord Hookup

MODELS M-50, M-60.

MODEL U50, Chas. RC-414C

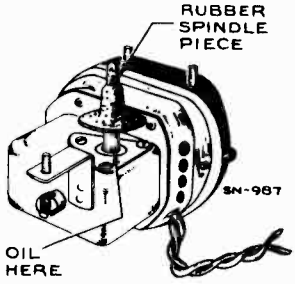
Speaker Connections



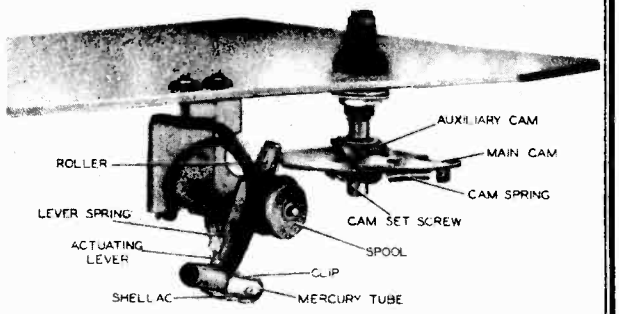
Connections and Colors of Speaker and Cable

RCA MFG. CO., INC.

Switch Mechanism, Parts



Phonograph Motor



Switch Mechanism
(Shown with pickup in rest position)

Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES (RC—414—C)	
32834	Bracket—Drive bracket and 1 pulley assembled	.25
33411	Bracket—Drive bracket and 3 pulleys assembled	.65
12581	Cap—Top shield cap for i-f transformer	.25
32830	Capacitor—2-gang trimmer, 2-20 mmfd. each section (C26, C27)	.40
32829	Capacitor—3-gang trimmer, 5-60 mmfd. each section (C5, C6, C8)	.55
12723	Capacitor—56 mmfd. (C4)	.35
30949	Capacitor—56 mmfd. (C14, C15)	.25
14262	Capacitor—109 mmfd. (C12, C13)	.30
32238	Capacitor—110 mmfd. (C18)	.30
30232	Capacitor—220 mmfd. (C3)	.35
12952	Capacitor—330 mmfd. (C19)	.35
13894	Capacitor—390 mmfd. (C33)	.35
12537	Capacitor—560 mmfd. (C9, C34)	.35
31403	Capacitor—3300 mmfd. (C7)	.60
31405	Capacitor—6000 mmfd. (C10)	.75
33584	Capacitor—.005 mfd. (C30)	.25
4838	Capacitor—.005 mfd. (C20, C21, C29)	.25
14393	Capacitor—.01 mfd. (C16)	.30
11315	Capacitor—.015 mfd. (C31, C32)	.20
4870	Capacitor—.025 mfd. (C22)	.20
4839	Capacitor—0.1 mfd. (C17)	.30
32240	Capacitor—Electrolytic, 2 sections 10 mfd., 400 V., and one section 20 mfd., 25 V. (C23, C24, C25)	1.45
32821	Coil—Antenna coil (L1, L2, L3, L4)	1.35
32824	Coil—Oscillator coil (L5, L6, L7)	1.00
32817	Condenser—2-gang variable tuning (C1, C2, C11)	2.60
33409	Control—Volume control, tone control, and power switch (R6, R9, S1)	3.00
32713	Core—Adjustable core and stud for oscillator coil	.35
32835	Drum—Drive cord drum with set screw	.55
11891	Lamp—Dial lamp—Mazda No. 44	.17
30868	Plug—2-contact female motor cable plug	.35
5119	Plug—3-contact female speaker cable plug	.25
13988	Resistor—10 ohms, ½ watt (R12)	.20
30681	Resistor—470 ohms, 1 watt (R10)	.22
3078	Resistor—10,000 ohms, ½ watt (R13)	.20
31389	Resistor—12,000 ohms, 3½ watts (R3)	.50
13998	Resistor—22,000 ohms, ½ watt (R15)	.20
12454	Resistor—33,000 ohms, ½ watt (R2)	.20
12266	Resistor—39,000 ohms, ½ watt (R14)	.20
5132	Resistor—47,000 ohms, 1/10 watt (R5)	.15
12285	Resistor—470,000 ohms, ½ watt (R7)	.20
13730	Resistor—1 meg., ½ watt (R1)	.20
11668	Resistor—5.6 meg., ½ watt (R4)	.20
13601	Resistor—10 meg., ½ watt (R8)	.20
14343	Retainer—Retaining ring to hold tuning knob shaft	.03
32848	Screw—No. 8-32 square head set screw for drum	.03
33412	Shaft—Tuning knob shaft	.20
31365	Socket—Dial lamp socket (insulated)	.30
31251	Socket—Octal base tube socket	.25
31418	Spring—Drive cord tension spring	.05
33413	Switch—Radio-Record switch (S4)	.75
33410	Switch—Range switch (S2, S3)	1.00
14376	Transformer—First i-f transformer (L8, L9, C12, C13)	2.45
32825	Transformer—Second i-f transformer (L10, L11, C14, C15, C18, R5)	2.50
33112	Transformer—Power transformer 105-125 volts, 50-60 cycle (T1)	4.30
	PICKUP AND ARM ASSEMBLIES	
33216	Arm—Pickup arm—less crystal, needle screw, and cable	2.20
33218	Base—Pickup arm mounting base and pivot shaft	1.00
33217	Crystal—Pickup crystal cartridge and needle screw	3.75
33114	Damper—Viscoloid damper for pickup armature	.15
31160	Screw—Pickup needle screw	.12
	MOTOR ASSEMBLIES	
32650	Field—Motor field coils and laminations, 110 volts, 50 cycle	5.10
32336	Field—Motor field coils and laminations, 110 volts, 60 cycle	5.10
33220	Motor—105-125 volts, 50 cycles—less mounting plate (M1)	11.25
33219	Motor—105-125 volts, 60 cycles—less mounting plate (M1)	10.75
33361	Shaft—Turntable spindle shaft and gear—50 cycle	1.40
33360	Shaft—Turntable spindle shaft and gear—60 cycle	1.40
	AUTOMATIC SWITCH ASSEMBLIES	
33221	Cam—Cam assembly comprising main and auxiliary cams, hub, and set screws	.65
32864	Lever—Actuating lever with roller and mercury tube clip	.45
14195	Screw—No. 10-32 x 5/16 cone pointed set screw for cam hub	.05
32869	Screw—No. 10-32 x 5/16 set screw for cam hub	.01
32868	Spring—Actuating lever tension spring	.05
32867	Spring—Cam tension spring	.05
32865	Support—Switch support and terminal board	.40
32866	Switch—Mercury tube with leads (S5)	1.75
31608	Washer—"C" washer for actuating lever shaft	.01
	SPEAKER ASSEMBLIES (84604-1)	
33406	Cone—Speaker cone and voice coil (L14)	2.10
5118	Plug—3-contact male for speaker	.25
33222	Speaker complete	6.65
33407	Transformer—Output transformer (T2)	2.00
	MISCELLANEOUS ASSEMBLIES	
10290	Cap—Ventilating cap	.25
31464	Damper—Damper plate and rubber sleeve for spindle	.30
32837	Dial—Dial scale (glass)	.65
33415	Escutcheon—Dial scale escutcheon	.80
11771	Foot—Cabinet foot	.02
33416	Frame—Dial frame, support, color plate, and mounting brackets—less pointer and carriage, and dial scale	1.40
32633	Handle—Carrying handle	.90
13085	Hinge—Cabinet lid hinge	.22
11865	Holder—Needle cord holder	.30
33417	Indicator—Dial scale pointer and carriage	.35
33468	Knob—Radio-Record switch knob	.15
33506	Knob—Range switch knob (small)	.25
33470	Knob—Tone control and switch knob (small dual)	.20
33505	Knob—Tuning knob (large)	.30
33471	Knob—Volume control knob (large dual)	.25
33223	Mounting—Complete set motor mounting screws, washers, and spacers	.30
31054	Mounting—Pickup arm mounting cushion, washers, and nut	.15
30870	Plug—2-contact male for motor leads	.35
31048	Plug—2-contact male plug for phono. cable	.15
32846	Rod—Indicator slide rod	.25
33418	Spring—Indicator tension spring	.02
30330	Spring—Retaining spring for tone control knob	.03
4982	Spring—Retaining spring for tuning knob	.05
14270	Spring—Retaining spring for volume control, range switch, or radio-record switch knob	.05
33364	Support—Cabinet lid support (LH)	.50
33673	Support—Pickup arm support	.25
33414	Turntable	1.55

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

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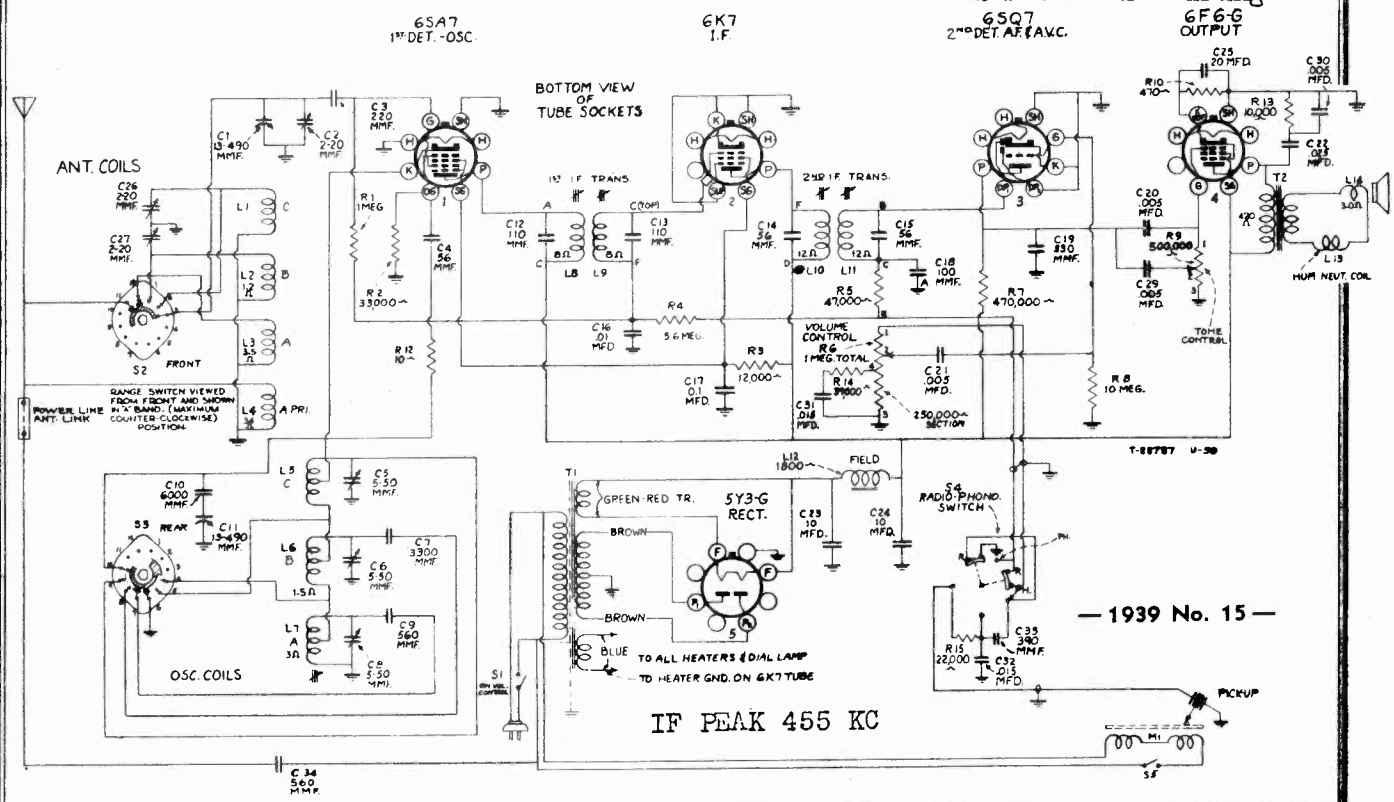
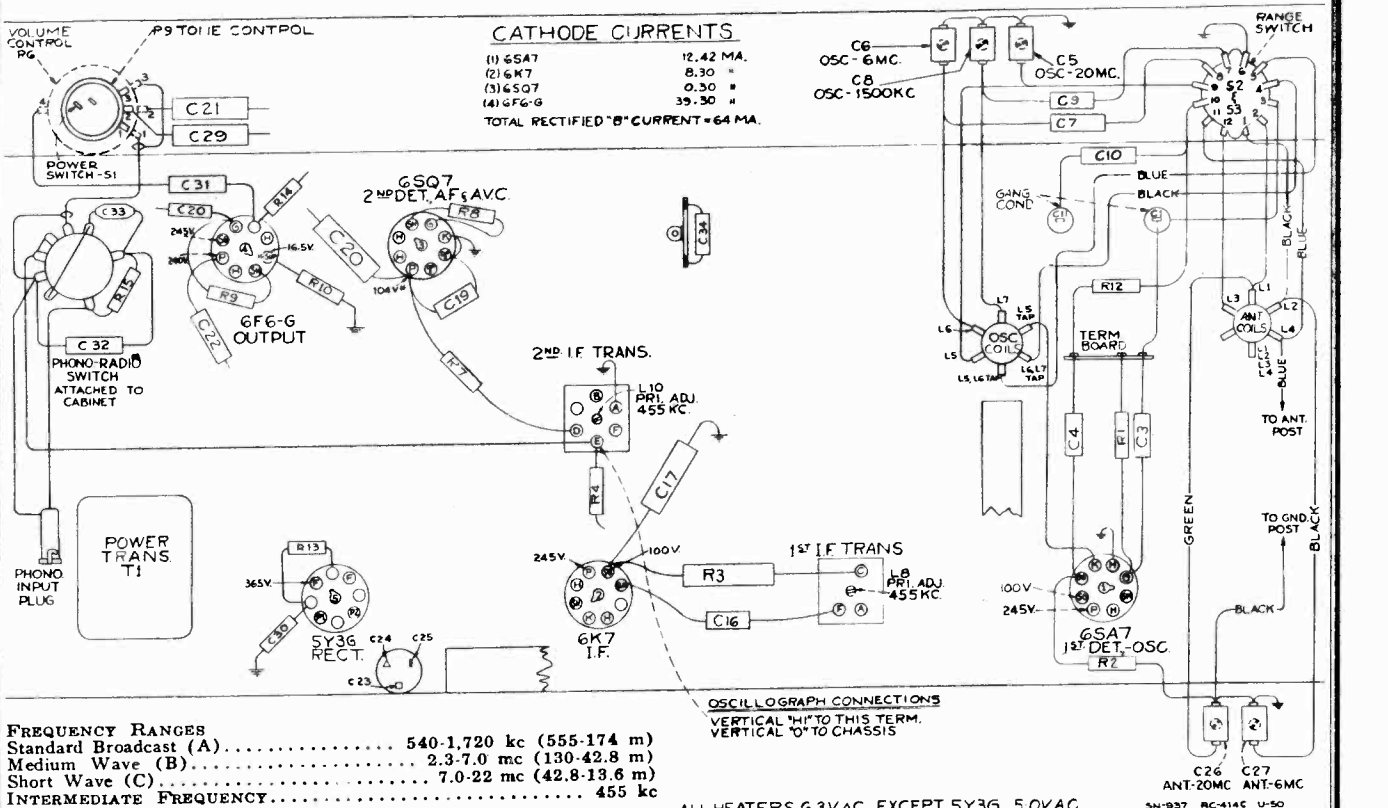
MODEL U50, Chas. RC-414C
Schematic, Voltage
R-F Chassis Wiring





Frequency Ranges

Standard Broadcast (A)	540-1,720 kc (555-174 m)
Medium Wave (B)	2.3-7.0 mc (130-42.8 m)
Short Wave (C)	7.0-22 mc (42.8-13.6 m)
Intermediate Frequency	455 kc

BOTTOM VIEW - REAR OF CHASSIS

First Edition

R-F Wiring Diagram and Socket Voltages

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within ± 20% with 117-volt a-c supply.

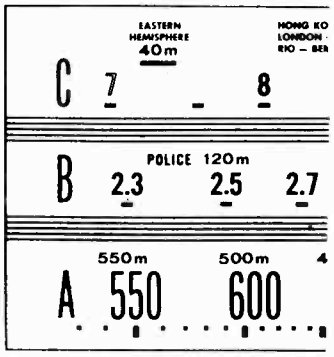
***NOTE**: Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

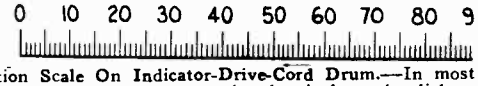
MODEL U50, Chas. RC-414C
Socket, Trimmers, Dial Data
Alignment, Phono. Data

RCA MFG. CO., INC.

Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Calibration Scales

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example: 33° on the calibration scale corresponds to approximately 7.9 mc on "C" band, and 600 kc on "A" band, etc. Read instructions under "Alignment Procedure."





Calibration Scale On Indicator-Drive-Cord Drum.—In most cases it will not be necessary to remove the chassis from the dial scale for alignment, allowing the dial scale to be used for calibration. However, if alignment is made with the receiver chassis removed, the calibration scale attached to the rear of the drum which is mounted on the front shaft of the gang condenser must be used. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 135° mark on the drum scale must be vertical, and directly under the center of the gang-condenser shaft when the plates are fully meshed. The drum is held in place by one set-screw, which must be securely tightened when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the 0° mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

Tube Complement

(1) RCA-6SA7..... First Detector-Oscillator
(2) RCA-6K7..... I-F Amplifier
(3) RCA-6SQ7..... Second Det., A.V.C., and A-F Amplifier
(4) RCA-6F6-G..... Power Output
(5) RCA-5Y3-G..... Rectifier

Pilot Lamp (1).....
Mazda No. 44, 6.3 volts, 0.25 amp.

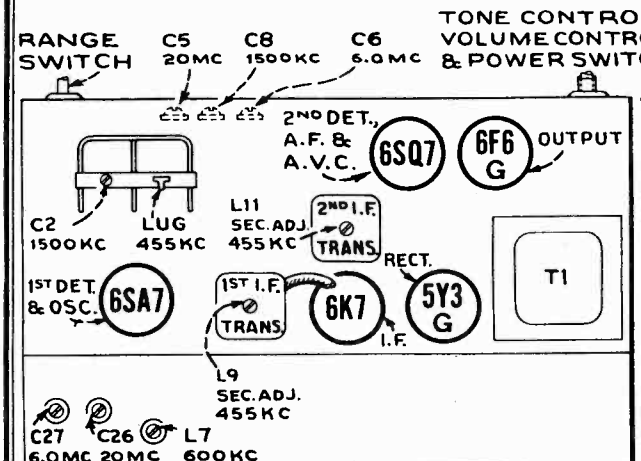
Power Output Rating
Undistorted..... 2.0 watts
Maximum..... 3.6 watts

Power Supply Ratings
Rating A.. 105-125 volts, 50-60 cycles, 105 watts

Loudspeaker (84604-1)
Type..... 8-inch electrodynamic
Voice Coil Impedance.. 3.3 ohms at 400 cycles

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	"A" Band quiet point between 550-750 kc	L10 and L11 (2nd I.F. trans.)
2	Tuning condenser stator (osc.) in series with .01 mfd. **	455 kc		L8 and L9 (1st I.F. trans.)
3	Antenna lead in series with 200 mmfd.	600 kc	600 kc (33°) "A" Band	L7†
4		1,500 kc	1,500 kc (152.4°) "A" Band	C2 (ant.) C8 (osc.)
5	Repeat steps 3 and 4			
6	Antenna lead in series with 400 ohms	20 mc	20 mc (155.4°) "C" Band	C5 (osc.) * C26 (ant.)
7		6 mc	6 mc (149°) "B" Band	C6 (osc.) * C27 (ant.)
8	Antenna lead in series with 200 mmf.	1,500 kc	1,500 kc (152.4°) "A" Band	C8 (osc.)

* Use minimum capacity peak if two peaks can be obtained
† Rock gang condenser slightly while adjusting L7.
** Make test-oscillator connection to lug on tuning condenser stator (oscillator section) in series with .01 mfd. condenser.
Note.—Oscillator tracks 455 kc above signal on all bands.



SN-981 (RC-414C)

Phonograph Mechanism:

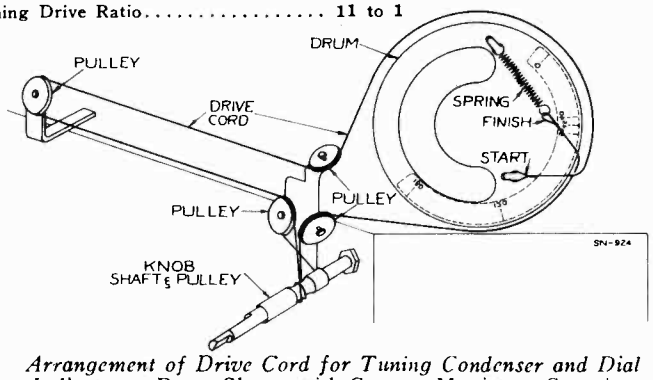
The phonograph motor is a self-starting, constant-speed induction type. It should be lubricated every six months by applying a few drops of light machine oil to the spindle bearing and oil hole.

The motor spindle is tapered, and a conical rubber piece fits snugly on the spindle. The hole in the turntable bushing is tapered to fit the rubber. This provides an excellent self-centering floating mounting.

A metal washer is placed on the spindle under the rubber piece. The washer has ears on the under side which fit over a pin that projects through the spindle.

The motor switch is automatic for both starting and stopping, and when properly adjusted, will turn the motor on as the pickup is moved from the pickup rest toward the turntable. The switch should be adjusted so that it will snap into the "off" position when the pickup needle is 1¾ inches from the center line of the spindle

Tuning Drive Ratio..... 11 to 1



Arrangement of Drive Cord for Tuning Condenser and Dial Indicator. Drum Shown with Gang at Maximum Capacity

shaft. The motor may be shut off at any time by placing the pickup on the pickup rest.

Power-Line Antenna:

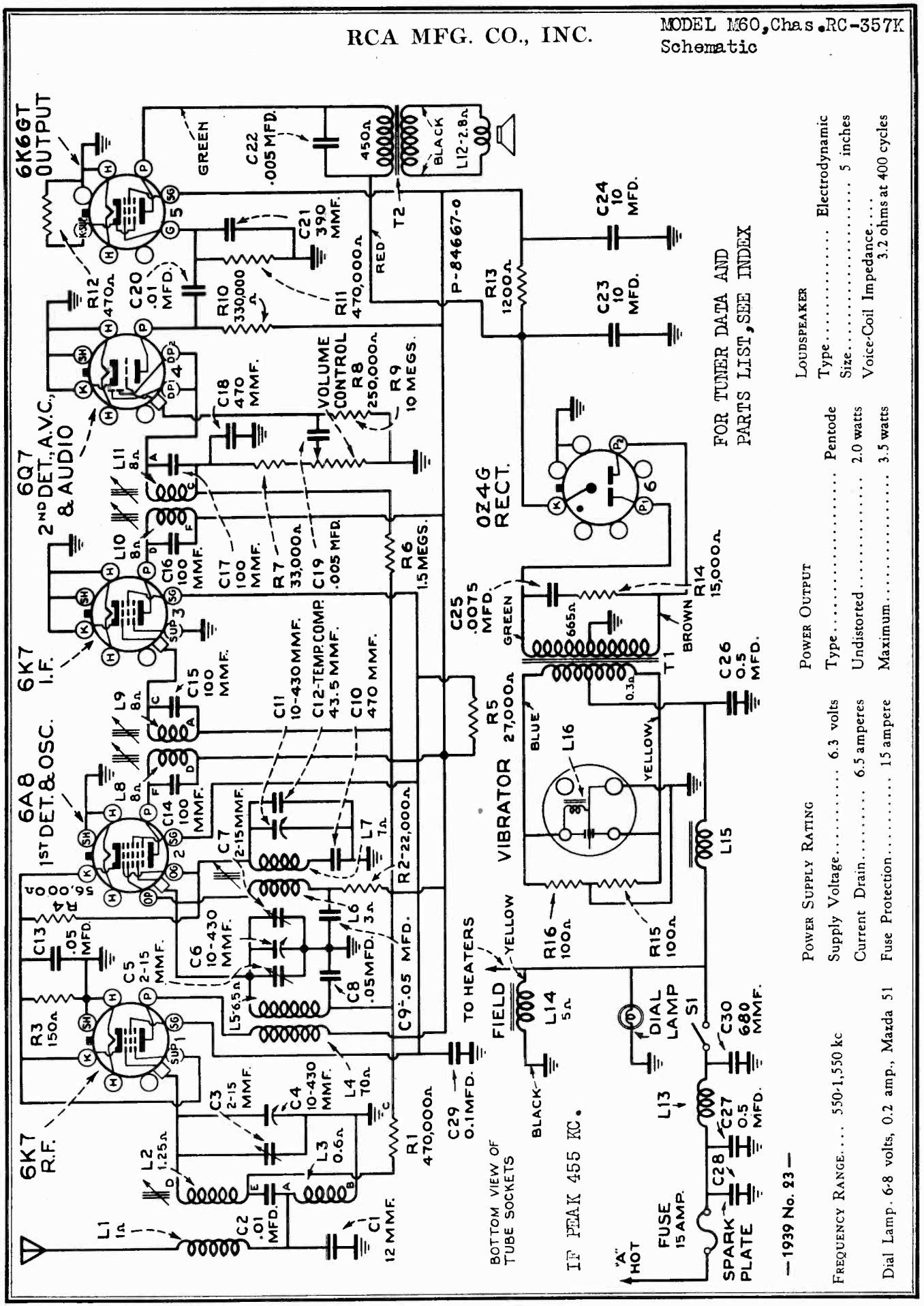
At the back of the motorboard is a terminal board for antenna and ground connections. When it is desired to use the power line antenna, a jumper should be placed across the two outside binding-posts, thus connecting the antenna input of the receiver through a capacitor to the power line. The center binding-post is for the ground connection. When an external antenna is used, it should be connected to the post marked "ANT"

Precautionary Lead Dress:

1. Lead from 2nd I-F transformer to volume control should be kept close to the chassis and dressed against front apron.
2. C-10 should be dressed away from the antenna section of the variable condenser (C-1).

RCA MFG. CO., INC.

MODEL M60, Chas. RC-357K
Schematic



— 1939 No. 23 —

Frequency Range	550-1,550 kc
Dial Lamp	6-8 volts, 0.2 amp., Mazda 51

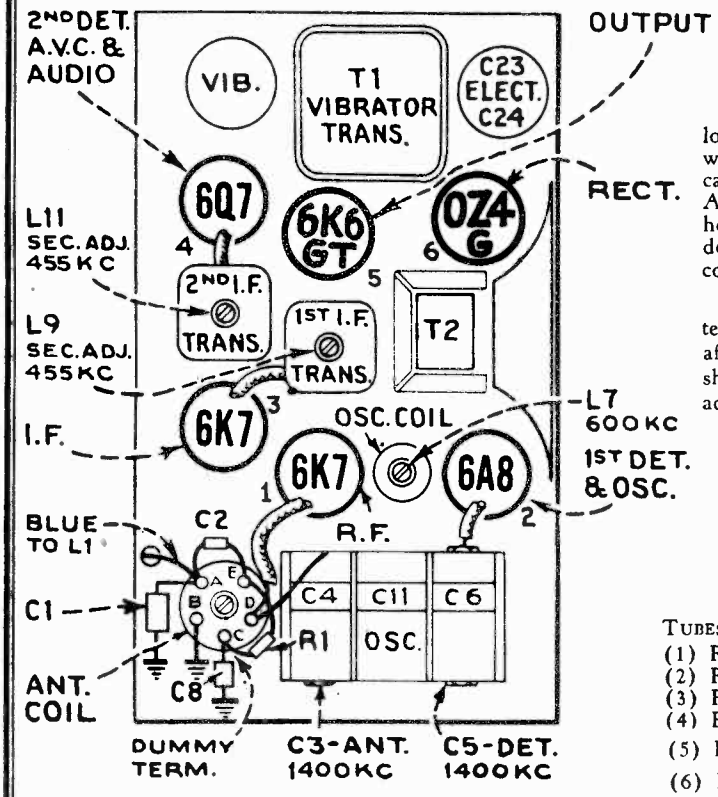
Power Supply Rating	
Supply Voltage	6.3 volts
Current Drain	6.5 amperes
Fuse Protection	15 ampere

Power Output	
Type	Pentode
Undistorted	2.0 watts
Maximum	3.5 watts

Loudspeaker	
Type	Electrodynamic
Size	5 inches
Voice-Coil Impedance	3.2 ohms at 400 cycles

MODEL M60, Chas. RC-357K
Chassis Wiring, Socket
Trimmers
Voltage

RCA MFG. CO., INC.



Top View of Chassis

General Description

Model M60 is a six-tube superheterodyne receiver with loudspeaker and radio chassis in the same case. It is equipped with five push buttons, for tuning your five favorite broadcast stations, as well as the standard method of dial tuning. Adjustments for push button tuning are explained under the heading "Push Button Tuning Mechanism." The receiver is designed to be mounted under the dash panel. The operating controls are integral with the radio and speaker case.

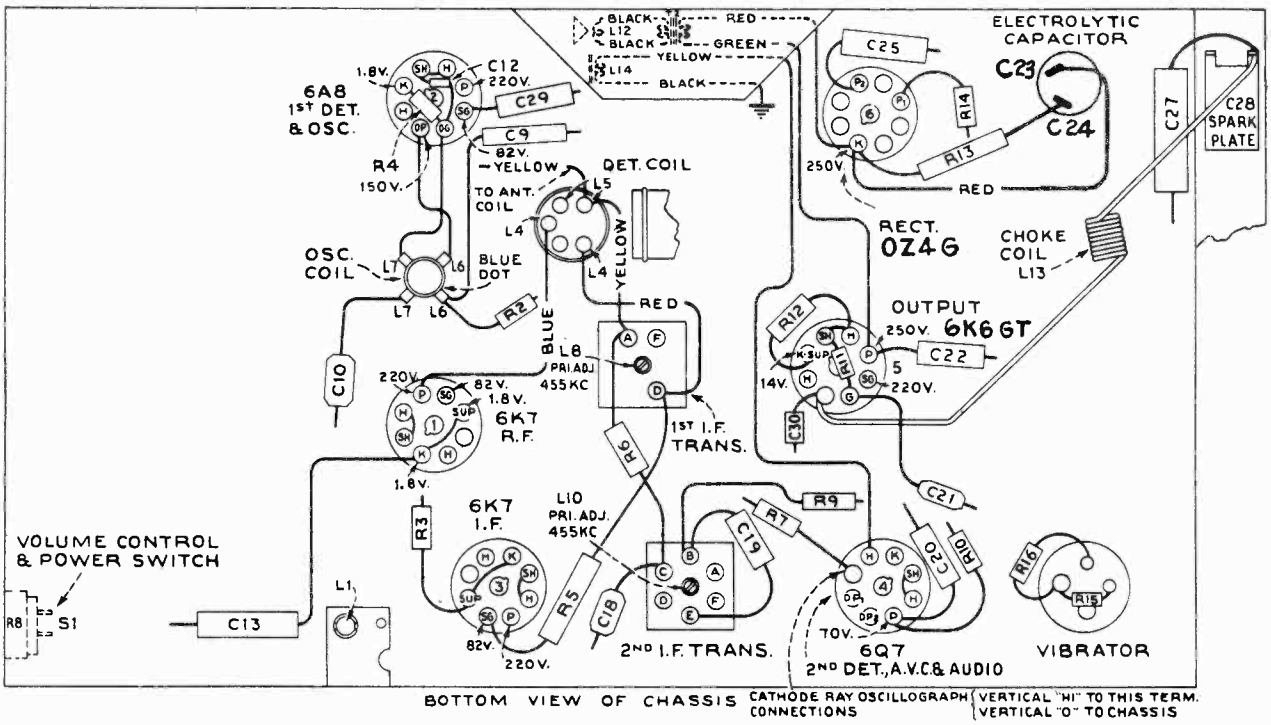
Loudspeaker.—The loudspeaker voice coil should be centered in the usual manner with three narrow paper feelers, after first removing the front dust cover. The dust cover should be cemented back in place with ambroid cement after adjustment has been completed.

ALIGNMENT FREQUENCIES

I-F	455 kc
Antenna	1,400 kc
R-F	1,400 kc
Oscillator	600 kc

TUBES AND FUNCTIONS

(1) RCA-6K7 ..... R-F Amplifier
(2) RCA-6A8 ..... First Detector—Oscillator
(3) RCA-6K7 ..... I-F Amplifier
(4) RCA-6Q7 .. Second Detector, A-F Amplifier and A.V.C.
(5) RCA-6K6GT ..... Output
(6) RCA-0Z4G ..... Rectifier



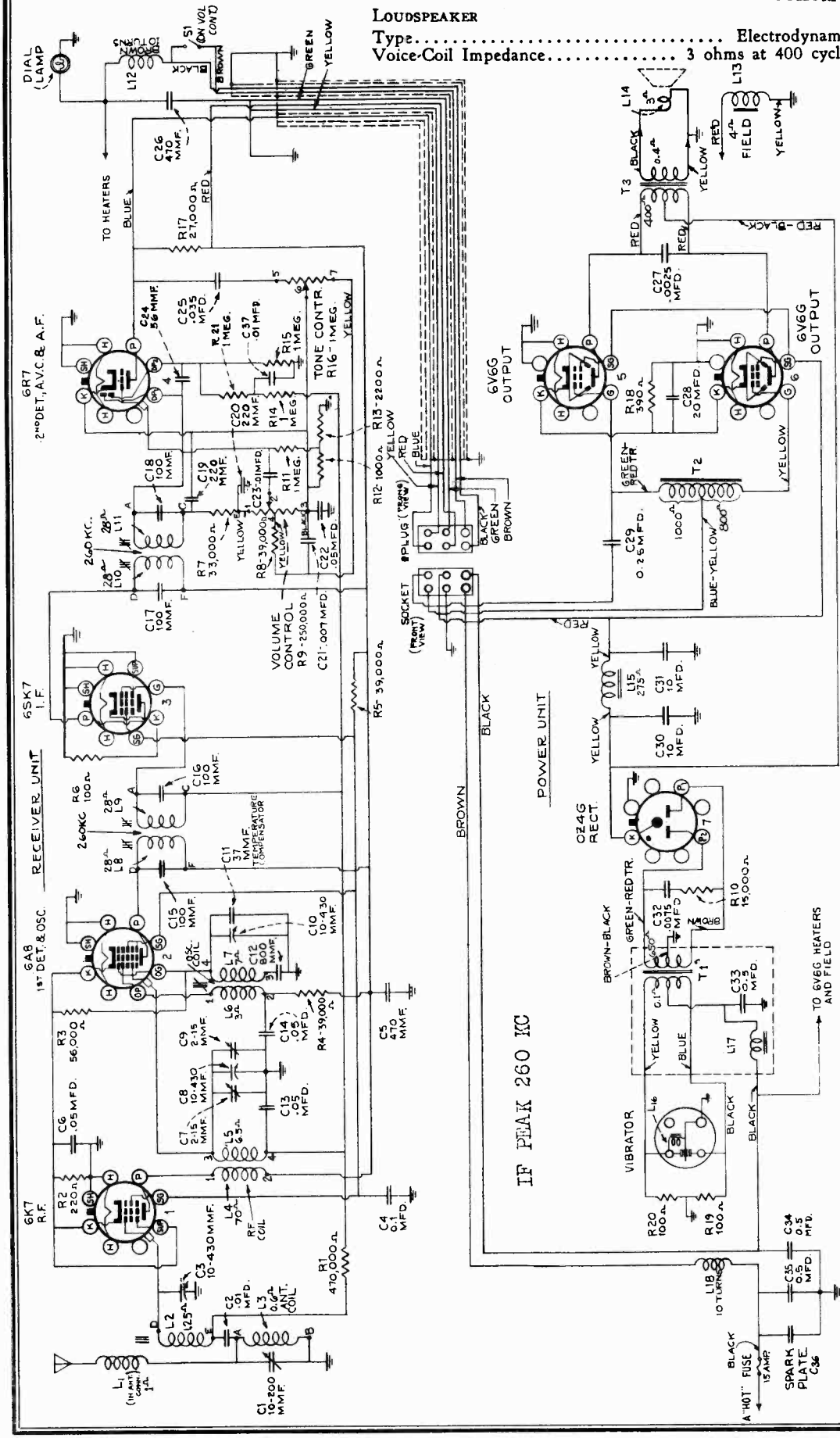
Bottom View of Parts and Socket Voltages

(Measured at 6.3 volts battery supply—Volume control minimum—No signal input—)

To duplicate the conditions under which the above voltages were measured requires a 1,000-ohm-per-volt d-c meter having ranges of 10, 50, 250, and 500 volts. Use the nearest range above the indicated voltage value. Each value should hold within ± 20% when the receiver is normally operative at its rated battery voltage.

RCA MFG. CO., INC.

MODEL M70, Chas. RC-394
Schematic



Model M-70 consists of a 7-tube, superheterodyne automobile receiver and an eight-inch electrodynamic loudspeaker built in two separately housed components. A small tuning unit for mounting under the instrument panel contains four tubes, while the cylindrical loudspeaker housing for firewall mounting contains three tubes. Design features include an R-F amplifier stage; antenna filter and antenna trimmers; magnetite core antenna, oscillator and I-F transformers; delayed automatic volume control; combined high- and low-frequency tone control; compensated volume control; true tone fidelity; five push button tuning; full-vision, edge-lighted glass dial; illuminated station call letters and a push-pull beam power output stage.

Automobile Receiver
—1939 No. 12—

MODEL M-70

Chassis No. RC-394

Power Supply Rating

Supply Voltage ..... 6.3 volts
Current Drain ..... 8.7 amperes
Fuse Protection ..... 15 ampere

Pilot Lamp...Mazda No. 51, 6-8 volts, 0.2 ampere

Tuning Range .... 550 to 1,550 kc
Intermediate Frequency... 260 kc

Power Output Ratings

Maximum..... 8 watts
Undistorted ..... 6 watts

MODEL M70, Chas. RC-394
Voltage, Chassis Wiring
Tuner Data

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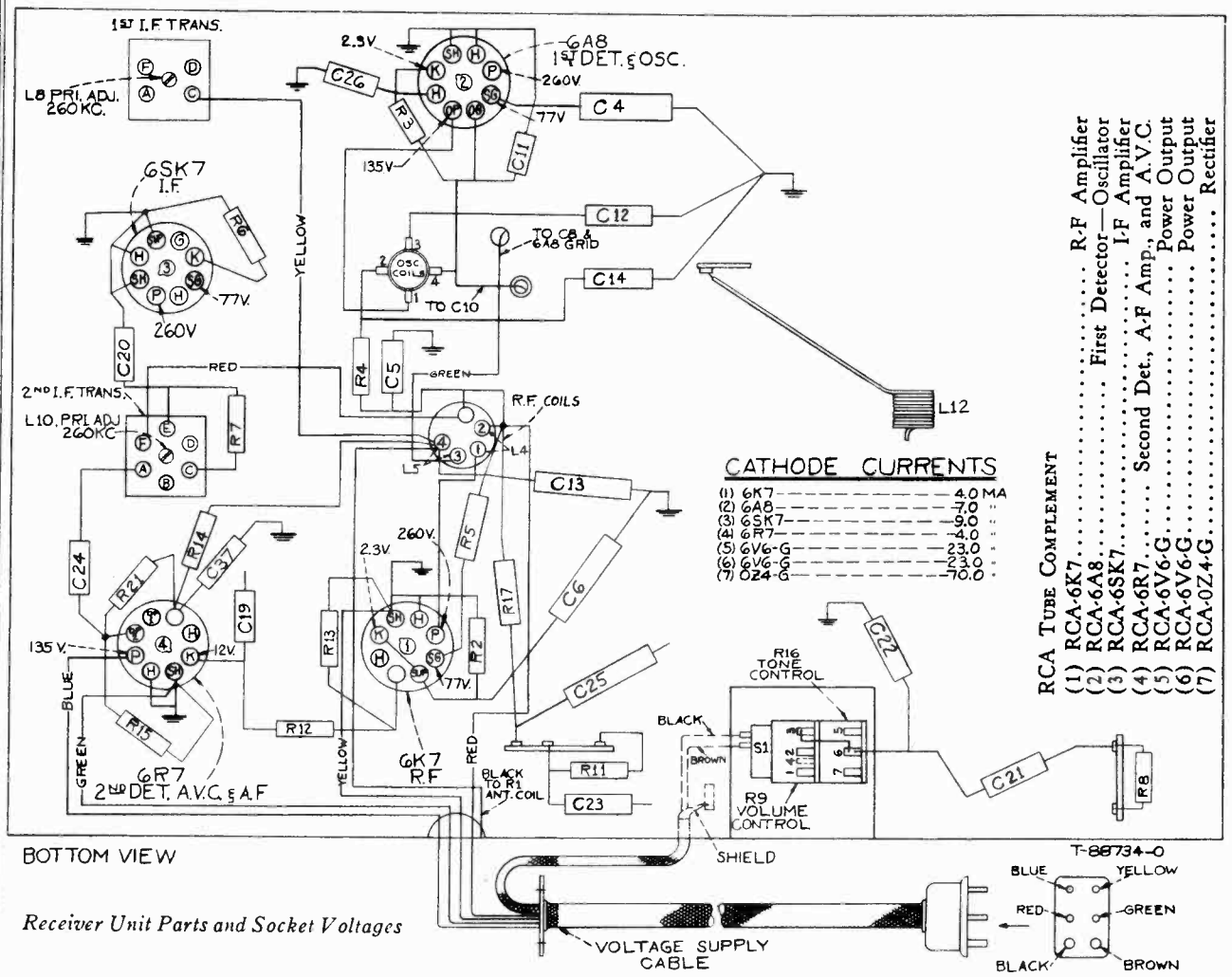


CATHODE CURRENTS

(1) 6K7	4.0 MA
(2) 6A8	7.0
(3) 6SK7	9.0
(4) 6R7	4.0
(5) 6V6-G	23.0
(6) 6V6-G	23.0
(7) 0Z4-G	70.0

RCA TUBE COMPLEMENT

(1) RCA-6K7..... R-F Amplifier
(2) RCA-6A8..... First Detector—Oscillator
(3) RCA-6SK7..... I-F Amplifier
(4) RCA-6R7..... Second Det., A-F Amp., and A.V.C.
(5) RCA-6V6-G..... Power Output
(6) RCA-6V6-G..... Power Output
(7) RCA-0Z4-G..... Rectifier

Receiver Unit Parts and Socket Voltages

RECEIVER CASE DIMENSIONS..... Height, 2½ inches; Width, 5⅞ inches; Depth, 9¼ inches

SPEAKER CASE DIMENSIONS..... Diameter, 9½ inches; Depth, 5 inches

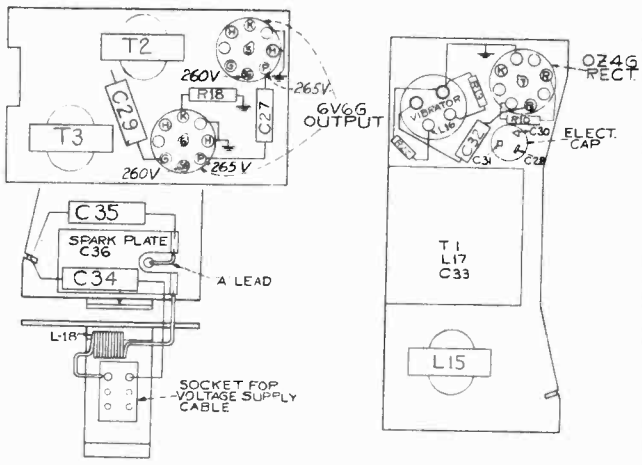
OPERATING CONTROLS.....(Left)—(Plastic Knob) Power-Volume; (Wing Knob) Tone; (Center)—Five Station Push Buttons; (Right)—Manual Tuning; Ratio 7½ - 1.

WEIGHT..... Net, 20 pounds; Shipping, 22 pounds

Adjustment of Push-Button Mechanism

The mechanism should be adjusted so that when using either manual or push-button tuning, it operates positively and without backlash or bind. The following hints will be found helpful in adjusting the mechanism properly.

1. With the gang condenser in full mesh, the sector gear should have the two end teeth fully meshed in the scissor gear, as shown in the illustration.
2. The position of the sector gear on the rocker-plate shaft should be adjusted so that there is clearance between the rocker-plates and the frame of the push-button mechanism at both extremities of gang rotation. Thus correct adjustment prevents the rotation of the gang being limited by the rocker plates touching the frame.
3. The drive cord should have 6½ turns around the tuning shaft as shown in the illustration. Three degrees of adjustment of the tension on the drive cord may be obtained by use of the three positions for connecting the drive-cord-tension spring to the drive-cord drum on the condenser shaft as shown.
4. The push-arms, rocker-plate shaft, and pulleys should be lubricated with light grease (sparingly). Care should be taken to keep the lubricant off of the drive cord.



Power Unit Parts and Socket Voltages

Alignment Procedure

Test Oscillator.—For all alignment operations, connect the low side of the test oscillator to the receiver chassis, and keep the output signal as low as possible to avoid a-v-c action.

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are as follows: Vertical "H1" to terminal "C" on 2nd I-F transformer; vertical "0" to chassis.

Output Meter. — Connect the output meter across the speaker voice-coil and turn the receiver volume control to maximum (fully clockwise) and tone control to middle of range.

Dial Calibration.—Rotate the gang condenser to its full-mesh (maximum-capacity) position and then adjust dial scale so that the pointer is aligned to the last calibration mark at the low-frequency end of the scale.

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6SK7 I-F grid (No. 4 pin) in series with .01 mfd.	260 kc	No Signal 550-750 kc	L10 and L11 (2nd I-F Trans.)
2	6A8 Det. grid cap in series with .01 mfd.	260 kc		L8 and L9 (1st I-F Trans.)
3†	* Ant. connector in series with 60 mmfd.	600 kc	600 kc	L7 (osc.)
4†	* Ant. connector in series with 60 mmfd.	1,400 kc	1,400 kc signal	C7 (det.) C1 (ant.)
5†	* Ant. connector in series with 60 mmfd.	600 kc	600 kc (rock)	L7 (osc.)
6†	* Ant. connector in series with 60 mmfd.	1,400 kc	1,400 kc signal	C7 (det.) C1 (ant.)**

* **Note 1.**—This 60 mmfd. capacitor must be inserted at the antenna connector of the receiver. The lead from the test oscillator to the 60 mmfd capacitor may be shielded if desired, but no shielding should be used between capacitor and antenna connector.

† **Note 2.**—These adjustments should be made with unit enclosed in its shielded case, through holes provided for adjustment purposes.

** **Note 3.**—Final adjustment of C1 must be made after the receiver has been installed and the antenna connected. See "Antenna Circuit."

Antenna Circuit

It is very important that these instructions be followed when installing the M-70 receiver.

The antenna circuit is designed to work with an antenna having a total capacity including the shielded lead-in not to exceed 150 mmf. If an antenna having a larger capacity is to be used, it will be necessary to add a capacitor in series with the lead from the antenna filter L-1 to the antenna coil terminal ("A"). Where a "Double Under the Running Board" type of antenna is to be used having a capacity of approximately 200 mmf., the capacitor added should be approximately 500 mmf. The insulated running board type having an approximate capacity of 550 mmf. will require a capacitor of approximately 150 mmf. Cars using an insulated steel top of approximately 3,500 mmf will require a series capacitor of 150 mmf.

After installation and with antenna connected, tune in a weak station near 1,400 kc and adjust compensator trimmer C-1 for maximum signal output. This trimmer is accessible by removing plug button near antenna jack on top of receiver. If a maximum (peak) signal output cannot be obtained in the range of the antenna trimmer, the effective capacity should be checked and compensated for by varying series capacity as described above.

Loudspeaker

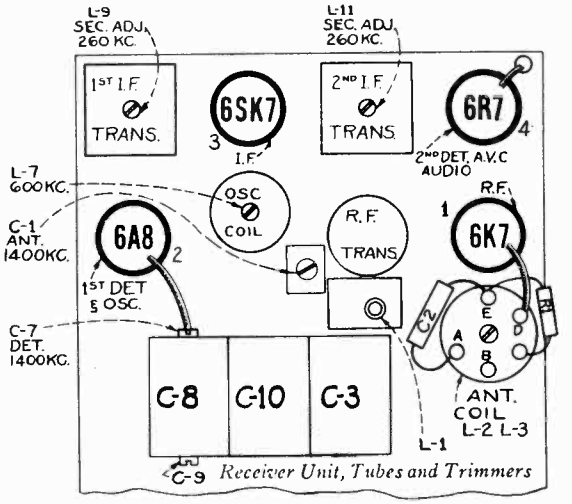
The loudspeaker cone may be centered in the usual manner with three celluloid or paper feelers after gently cutting away the front dust cover. A new cover should be cemented in place upon completion of the adjustment.

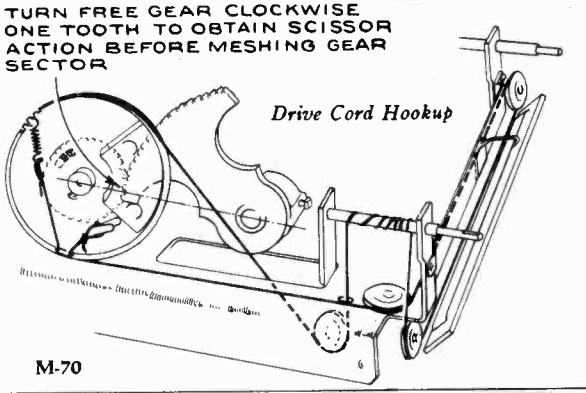
Push Button Adjustment

The push buttons should be adjusted for five favorite stations after the receiver is installed and operating.

Any standard broadcast stations may be chosen. The preferable arrangement is to adjust for stations in the order of frequency, from low to high. Proceed as follows:

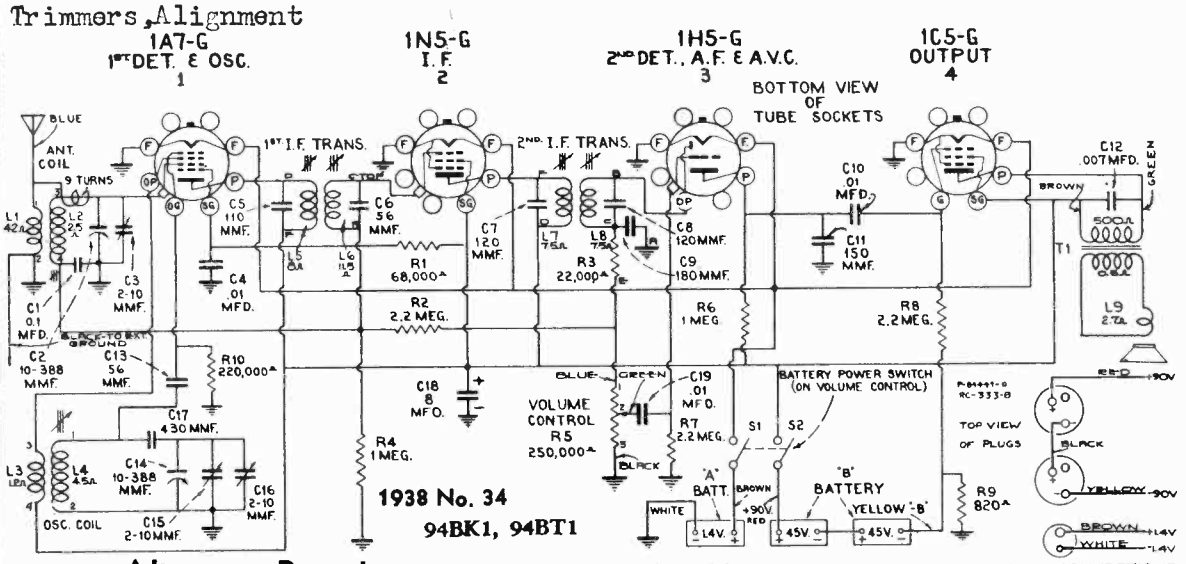
1. Loosen the push buttons one-half turn.
2. Using the tuning control, accurately tune in the first station.
3. With station accurately tuned in, press the first push button fully in and then gently release so as not to jar mechanism.
4. Tighten the push button securely with fingers. Do not force with pliers.
5. Proceed in same manner to adjust the other four push buttons.





MODELS 94BK1, 94BT1
Chassis RC-333B
Schematic, Voltage, Socket
Trimmers, Alignment

RCA MFG. CO., INC.



Alignment Procedure

Cathode-ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

Pre-setting Dial.—With gang condenser in full mesh, the pointer should be horizontal.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
No. 1	1N5-G I-F grid cap, in series with 0.01 mfd.	455 kc	Quiet point between 550-750 kc	L7 and L8 (2nd I-F transformer)
No. 2	1A7-G 1st-det. grid cap, in series with 0.01 mfd.	455 kc		L5 and L6 (1st I-F transformer)
No. 3	Antenna lead, in series with 200 mmfd.	600 kc	600 kc	L4 (oscillator) L2 (antenna)
No. 4	Antenna lead, in series with 200 mmfd.	1,500 kc	1,500 kc	C15† (oscillator) C3 (antenna)

† Trimmer C16 on gang condenser should be unscrewed one complete turn from tight, before adjusting C15.

Precautionary Lead Dress

1. Red lead from second i-f transformer to screen terminal of 1N5-G must be dressed close to and along edge of chassis.
2. Twisted green wire from antenna coil to gang must be 9 turns and kept clear of rotor.
3. Blue and green leads to volume control must be dressed close to chassis and between gang and front apron.

Electrical and Mechanical Specifications

POWER OUTPUT

Undistorted	0.115 watt
Maximum	0.280 watt

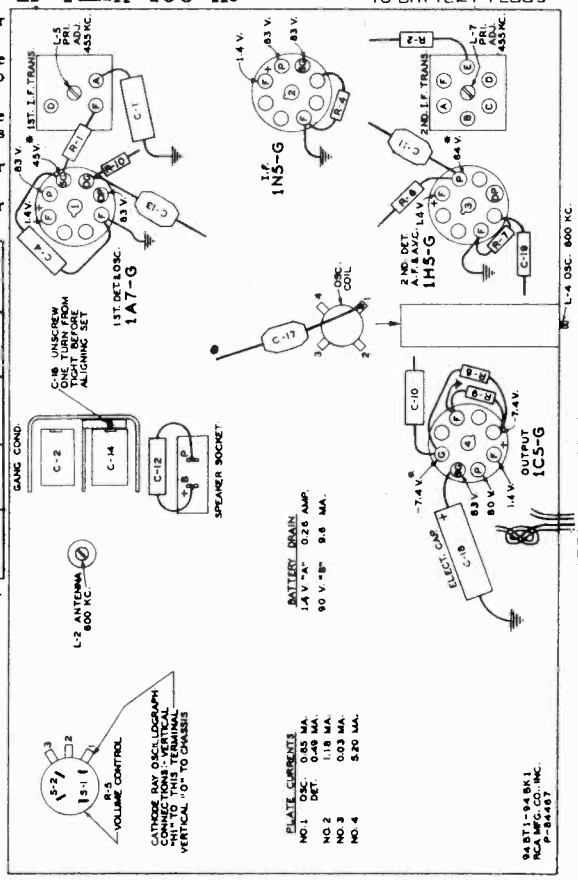
LOUDSPEAKER

Type	Permanent Magnet Dynamic
Diameter	94BK1, 6 inches; 94BT1, 5 inches
Voice Coil Impedance	3 ohms at 400 cycles

	Height	Width	Depth
Cabinet Dimensions (94BT1)	12⅜ in.	10⅜ in.	6⅜ in.
Cabinet Dimensions (94BK1)	37¼ in.	22 in.	10¼ in.
Chassis Base Dimensions	2 in.	9⅜ in.	5⅜ in.
Over-all Chassis Height			6 in.

Weight (94BT1)	7⅜ lbs. net; 10½ lbs. shipping
Weight (94BK1)	26½ lbs. net; 39½ lbs. shipping
Operating Controls	(1) Power Switch—Volume; (2) Tuning
Tuning Drive Ratio	8 to 1
Frequency Range	540 to 1,720 kc
RF Alignment Frequencies	600 kc (osc., ant.), 1,500 kc (osc., ant.)
Intermediate Frequency	455 kc

IF PEAK 455 KC

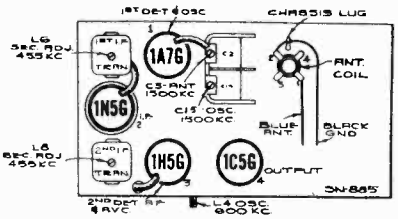


* **NOTE:** Values with star (*) are operating voltages in circuits with high series resistance. The actual measured value will be lower, depending on the voltmeter loading.

Measurements made to chassis unless otherwise indicated, with set tuned to a quiet point and the volume control at minimum. Values should hold within approximately ± 20% with rated battery voltage.

Socket Voltages, and Location of Parts

FOR PARTS LIST, SEE INDEX



Tube and Trimmer Locations

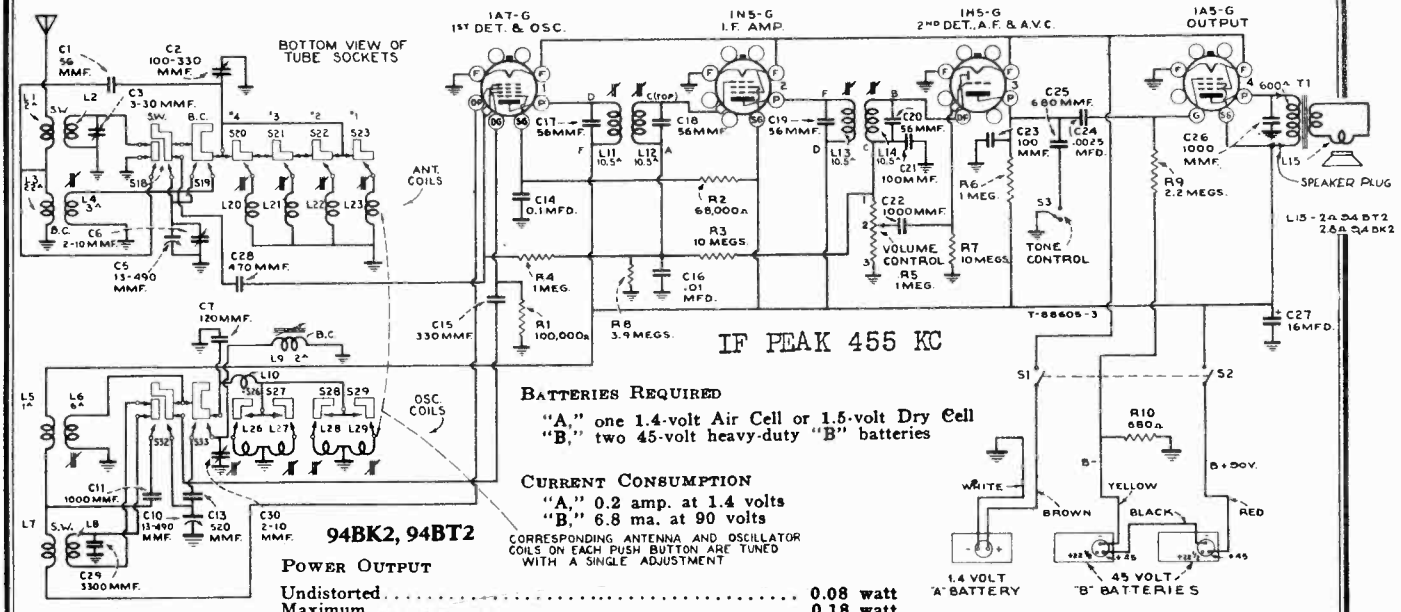
CURRENT CONSUMPTION
"A" at 1.4 volts, 0.26 amp.
"B" at 90 volts, 9.8 ma.

BATTERIES REQUIRED
"A," one 1.4-volt Air Cell or 1.5-volt Dry Cell.
"B," two 45-volt heavy duty "B" batteries.

Schematic, Voltage
Chassis Wiring

RCA MFG. CO., INC.

MODELS 94BK2, 94BT2
Chassis RC-390



Batteries Required

"A," one 1.4-volt Air Cell or 1.5-volt Dry Cell
"B," two 45-volt heavy-duty "B" batteries

Current Consumption

"A," 0.2 amp. at 1.4 volts
"B," 6.8 ma. at 90 volts

Power Output

Undistorted	0.08 watt
Maximum	0.18 watt

—1938 No. 39—

	Model 94BK2	Model 94BT2
Height	37¼ inches	10⅝ inches
Width	22 inches	20-13/16 inches
Depth	10 inches	9¾ inches
Net Weight	40½ pounds	15½ pounds
Shipping Weight	53½ pounds	19 pounds
Chassis Base Dimensions	8 inches x 11⅛ inches	x 5 inches
Over-all Height of Chassis		7⅝ inches
Tuning Drive Ratio		12 to 1

The 94BK2 is a console model; the 94BT2 a table model. Each of these receivers is a low-drain, battery-operated superheterodyne. The design features include gang-tuned push button coils for single control electric tuning adjustments; magnetite-core i-f transformers and "A" band r-f coils; automatic volume control; and permanent magnet dynamic speaker. Push button electric tuning is provided for four favorite broadcast stations; two additional push-buttons provide dial tuning for "Standard-broadcast" and "Short-wave" bands.

Loudspeaker

Type	Permanent Magnet Dynamic
Diameter	94BK2, 8 inches; 94BT2, 6 inches
Voice Coil Impedance (at 400 cycles)	94BK2, 3 ohms; 94BT2, 2.2 ohms

Frequency Ranges

Standard Broadcast ("A" Band)	540—1,720 kc
Short Wave ("C" Band)	5.8—15.4 mc
Four Electric Tuning Positions	550—1,500 kc

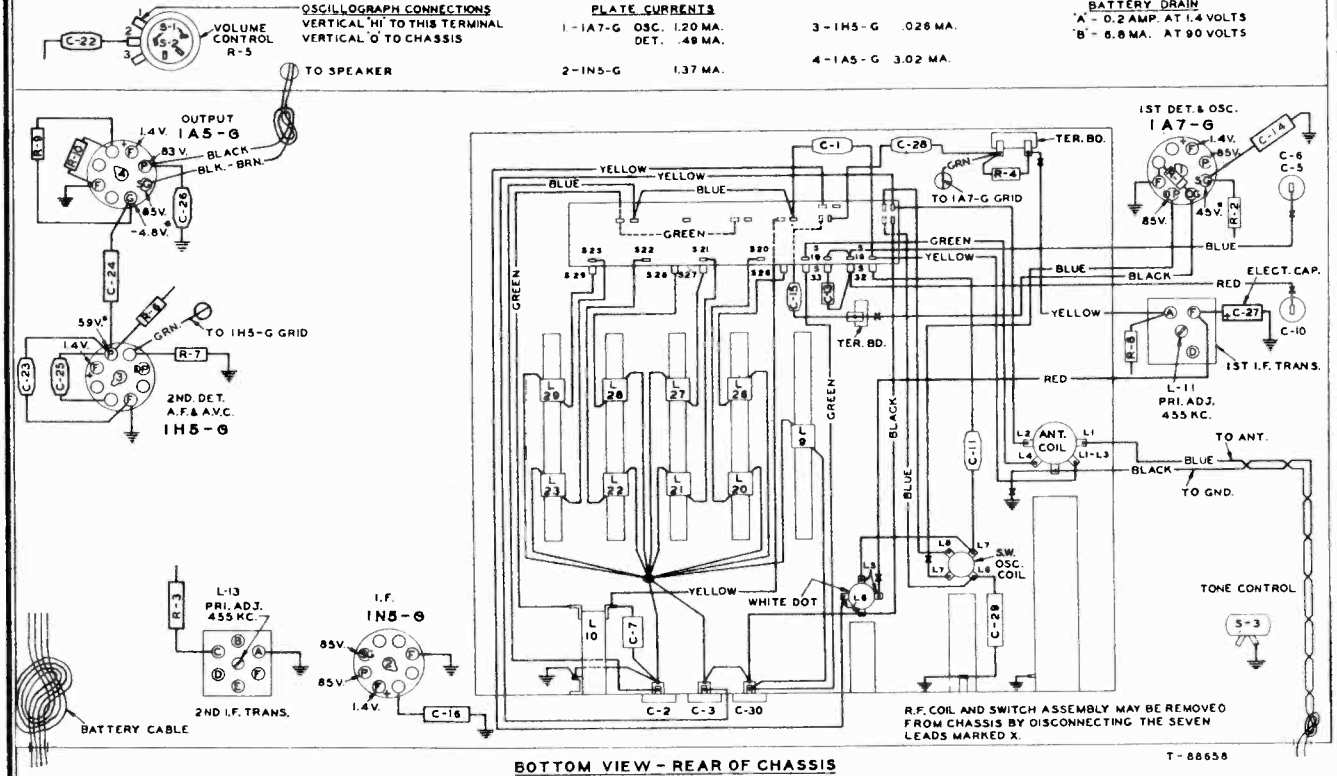
One station between approximately 550— 950 kc (Button No. 1)
One station between approximately 610—1,090 kc (Button No. 2)
One station between approximately 750—1,370 kc (Button No. 3)
One station between approximately 845—1,500 kc (Button No. 4)

Intermediate Frequency ..... 455 kc

OSCILLOGRAPH CONNECTIONS
VERTICAL 'HI' TO THIS TERMINAL
VERTICAL 'O' TO CHASSIS

PLATE CURRENTS
1 - 1A7-G OSC. 1.20 MA.
DET. .49 MA.
2 - 1N5-G 1.37 MA.
3 - 1H5-G .026 MA.
4 - 1A5-G 3.02 MA.

BATTERY DRAIN
'A' - 0.2 AMP. AT 1.4 VOLTS
'B' - 6.8 MA. AT 90 VOLTS



BOTTOM VIEW - REAR OF CHASSIS

*NOTE: Values with star (*) are operating voltages in circuits with high series resistance. The actual measured value will be lower, depending on the voltmeter loading.

Measurements made to chassis unless otherwise indicated, with set tuned to a quiet point and the volume control at minimum. Values should hold within approximately ± 20% with rated battery voltage.

MODELS 94BK2, 94BT2
Chassis RC-390
Socket, Trimmers, Alignment
Drive Cord Data, Lead Dress

RCA MFG. CO., INC.

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown on the chassis drawing.

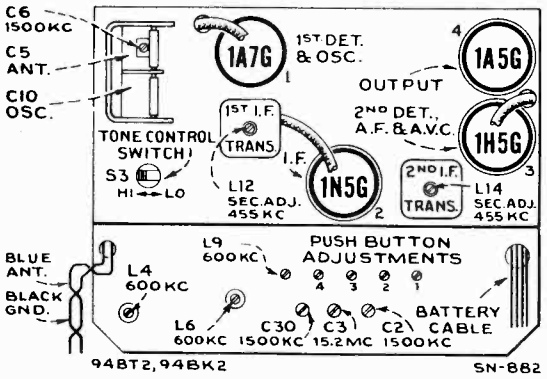
Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test Oscillator.—For all alignment operations, connect the low side of the test oscillator to the chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Marks.—The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks corresponding to dial readings of 600 kc, 1,500 kc, and 15.2 mc have been stamped in the plate on the front of the chassis as shown in the accompanying drawing. These marks are used for reference during alignment.

Dial Indicator Adjustment.—With the gang condenser in full mesh, the indicator should point to the extreme left (low frequency) mark on the dial scale.

For additional details, refer to booklet "RCA Victor Receiver Alignment".



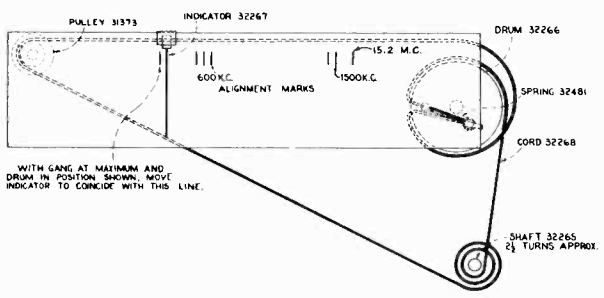
Tube and Trimmer Locations

Steps	Connect the High Side of Test Oscillator to:	Tune Test Oscillator to:	Push Button	Turn Radio Dial to:	Adjust for Maximum Peak Output:
1	1N5-G I-F grid cap in series with .01 mfd.	455 kc	B.C. (5)	No Signal between 550—750 kc.	L13 and L14 (2nd I-F Trans.)
2	1A7-G Det. grid cap in series with .01 mfd.	455 kc	B.C. (5)		L11 and L12 (1st I-F Trans.)
3	Antenna Lead (blue) in series with 200 mmfd.	1,500 kc	No. 4		L20-L26 (No.4 Push Button Adj.) C2 (ant.)
4	Antenna Lead (blue) in series with 200 mmfd.	600 kc	No. 1		L23-L29 *(No. 1 Push Button Adj.) L6 (osc.)
5	Antenna Lead (blue) in series with 200 mmfd.	1,500 kc	No. 4		L20-L26 (No. 4 Push Button Adj.) C2 (ant.)
6	Antenna Lead (blue) in series with 200 mmfd.	600 kc	No. 1		L23-L29 *(No. 1 Push Button Adj.) L6 (osc.)
7	Antenna Lead (blue) in series with 200 mmfd.	1,500 kc	B.C. (5)	1,500 kc Cal. Mark	C30 (osc.) C6 (ant.)
8	Antenna Lead (blue) in series with 200 mmfd.	600 kc	B.C. (5)	600 kc Cal. Mark	L9 (osc.) L4 (ant.)
9	Antenna Lead (blue) in series with 200 mmfd.	1,500 kc	B.C. (5)	1,500 kc Cal. Mark	C30 (osc.) C6 (ant.)
10	Antenna Lead (blue) in series with 300 ohms	15.2 mc	S.W. (6)	Signal Near 15.2 mc Cal. Mark†	**C3 (ant.)
11	Follow the "Adjustments for Electric Tuning."				

* Adjust L23—L29 (No. 1 push button adjustment) and L6 at the same time, rocking in for maximum signal.

** Use maximum capacity peak if two peaks can be obtained, rock in for maximum signal. A weaker signal (image) should be received about one-quarter inch to the left on the dial plate.

† If two signals are received, set the dial to the higher frequency (right hand) position.



Dial Drive Hookup and Alignment Marks

Note: The oscillator tracks 455 kc above the signal on all bands. After the receiver has been installed and the antenna connected, it is sometimes advisable to make a slight change in the adjustment of the antenna trimmer, C2. In most cases it is desirable to make this adjustment while receiving a station on No. 4 push button. However, if a station received on one of the other buttons is especially weak, it may be advisable to make the adjustment while receiving the weak station on this button.

Precautionary Lead Dress

1. Green lead to first detector grid cap should be pulled out of the chassis as far as possible, and dressed away from the tube envelope.

2. Blue lead from push button switch to gang condenser must be dressed over the top of the switch.

3. Leads to push button coils must be dressed close to the coils.

4. Red and blue leads to gang condenser must be dressed away from chassis.

5. Blue antenna lead must be dressed in the end of the chassis away from gang leads and coil windings.

94BK2, 94BT2

RCA MFG. CO., INC.

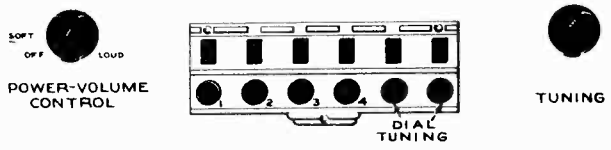
MODELS 94BK2, 94BT2
Chassis RC-390
Tuner Data, Parts

Adjustments for Electric Tuning

These models have six push buttons. The right-hand button connects the receiver for dial tuning on the "Short-wave" band, the next button connects for dial tuning on the "Standard-broadcast" band, and the other four buttons are for electric tuning of four different stations in the standard-broadcast band. Each station button connects separate oscillator and antenna coils which are tandem-tuned by ganged magnetite cores, and may be adjusted for the desired stations. Use a small screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments. Use a regular antenna for the preliminary adjustments.

The procedure is as follows:

1. Make a list of the four desired stations, arranged in order from low to high frequencies.
2. Push in the broadcast dial-tuning button (second from right), and manually tune in the first station on the list.
3. Push in station button No. 1 (left-hand) and adjust No. 1 push button adjustment to receive this station. Turn the adjusting screw all the way in, to lowest frequency, and then unscrew slowly until the station is received.
4. Adjust for each of the remaining three stations in the same manner. (Clockwise adjustment of the screw tunes the circuits to lower frequencies.)
5. After installation, and with antenna properly connected, readjust C2 as outlined in Note under "Alignment Procedure."



Location of Controls

Miscellaneous Service Data

To center the loudspeaker voice coil, first remove the front dust cover, then loosen the screws holding the spider assembly. Insert three narrow feelers into the air gap, and tighten the spider screws. Remove the feelers and fasten a dust cover in place with loudspeaker cement.

The push button switch and coil assembly may be removed from the chassis by removing two screws from the front apron, one from the rear apron, removing the 1A7-G grid connector from the grid cap, and disconnecting the seven leads indicated on the Wiring Diagram.

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	Unit List Price
	RECEIVER ASSEMBLIES	
32259	Capacitor—3-section variable trimmer capacitor 2-10, 3-30, 100-330 mmfd. (C30, C3, C2)	.65
30949	Capacitor—56 mmfd. (C17, C18, C19, C20)	.25
12723	Capacitor—56 mmfd. (C1)	.35
30904	Capacitor—100 mmfd. (C21)	.25
12720	Capacitor—100 mmfd. (C23)	.35
12724	Capacitor—120 mmfd. (C7)	.35
12952	Capacitor—330 mmfd. (C15)	.35
30433	Capacitor—470 mmfd. (C28)	.35
32269	Capacitor—520 mmfd. (C13)	.40
14498	Capacitor—680 mmfd. (C25)	.45
12635	Capacitor—1,000 mmfd. (C11, C22, C26)	.50
4881	Capacitor—3,300 mmfd. (C29)	.60
5107	Capacitor—.0025 mfd. (C24)	.20
14393	Capacitor—.01 mfd. (C16)	.30
4839	Capacitor—0.1 mfd. (C14)	.30
31323	Capacitor—16 mfd. (C7)	.65
32254	Coil—Broadcast oscillator coil (L9)	.95
32258	Coil—Antenna coil (L1, L2, L3, L4)	1.20
32260	Coil—Short wave oscillator coil (L7, L8)	.70
32256	Coil—Push button osc. series coil (L10)	.60
32250	Coil—Push button ant. and oscillator coil (L23, L29)	1.15
32251	Coil—Push button ant. and oscillator coil (L22, L28)	1.10
32252	Coil—Push button ant. and oscillator coil (L21, L27)	1.10
32253	Coil—Push button ant. and oscillator coil (L20, L26)	1.10
32257	Coil—Push button osc. shunt coil (L5, L6)	.65
32249	Condenser—2-gang variable condenser (C5, C6, C10)	2.70
32268	Cord—Drive cord	.30
12800	Core—Variable core and stud for antenna coil No. 32258	.35
32266	Drum—Variable condenser drive drum	.45
32267	Indicator—Dial scale pointer	.25
32208	Plug—2-prong male for battery cable	.20
5119	Plug—3-contact female for speaker cable	.25
12827	Plug—3-prong male for battery cable	.20
31373	Pulley—Drive cord pullley	.08
14887	Retainer—Tuning knob shaft retainer or drive cord pulley retaining washer	.01
12262	Resistor—680 ohms, ½ watt (R10)	.20
13715	Resistor—68,000 ohms, ½ watt (R2)	.20
14560	Resistor—100,000 ohms, ½ watt (R1)	.20
13730	Resistor—1 meg., ½ watt (R4, R6)	.20
12679	Resistor—2.2 meg., ½ watt (R9)	.20
13167	Resistor—3.9 meg., ½ watt (R8)	.20
13601	Resistor—10 meg., ½ watt (R3, R7)	.20
4669	Screw—No. 8-32 square head set screw from drum	.03
32261	Screw—Push button oscillator coil adjustment screw and mounting nut	.03
32265	Shaft—Tuning knob shaft	.25
32149	Shield—Tube shield	.20
31251	Socket—Tube socket	.25
32481	Spring—Drive cord tension spring	.05
12007	Spring—Retaining spring for oscillator coil adjustment screw	.02
32255	Switch—Push button switch (S18, S19, S20, S21, S22, S23, S26, S27, S28, S29, S32, S33)	2.95
30953	Switch—Tone control switch (S3)	.45
32263	Transformer—First I-F transformer (L11, L12, C17, C18)	2.30
32264	Transformer—Second I-F transformer (L13, L14, C19, C20, C21)	2.50
32262	Volume control and power switch (R5, S1, S2)	1.50
	SPEAKER ASSEMBLIES (84307-2) Model 94BT2	
32271	Cone—Speaker cone and voice coil (L15)	1.70
5118	Plug—3-contact male for speaker	.25
32270	Speaker complete	6.00
32272	Transformer—Output transformer (T1)	1.65
	SPEAKER ASSEMBLIES (84477-1) Model 94BK2	
32274	Cone—Speaker cone and voice coil (L15)	1.80
5118	Plug—3-contact male for speaker	.25
32273	Speaker complete	7.00
32272	Transformer—Output transformer (T1)	1.65
	MISCELLANEOUS ASSEMBLIES	
32279	Button—Push button	.06
31935	Clip—Spring clip to hold dial scale	.10
32276	Dial—Dial scale (glass)	.60
32277	Escutcheon—Dial scale escutcheon and crystal	1.10
32278	Escutcheon—Push button escutcheon	.70
31355	Knob—Station selector or volume control knob	.12
32281	Marker—"Broadcast" marker tab	.02
32067	Marker—Push button call letter markers	.35
32280	Marker—"Short Wave" marker tab	.02
14267	Screw—Chassis mounting screw and washer (4 required), Model 94BT2	.04
30467	Screw—Chassis mounting screw and washer (4 required), Model 94BK2	.05
14270	Spring—Retaining spring for knob	.05

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE. 94BK2, 94BT2

MODELS 94BP61, 94BP62, 94BP64, 94BP66
94BP80, 94BP81, Chassis RC-407 — RCA MFG. CO., INC.

Schematic, Voltage, Alignment
Socket, Trimmers, Batt. Data, Parts

STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES (RC-407)	
13057	Capacitor—60 mmfd.	.35
12488	Capacitor—250 mmfd.	.35
12952	Capacitor—300 mmfd.	.35
5107	Capacitor—.0025 mfd.	.20
4838	Capacitor—.005 mfd.	.25
32787	Capacitor—.05 mfd.	.20
4839	Capacitor—0.1 mfd.	.30
33303	Capacitor—Electrolytic, 8 mfd.	.50
33055	Coil—Oscillator coil	.70
33060	Condenser—2-gang variable tuning	2.25
32634	Cord—Drive cord	.10
32946	Drum—Drive cord drum	.35
33300	Loop—Complete antenna loop	1.80
32208	Plug—2-contact plug for battery cable	.20
32641	Plug—3-contact male plug for battery cable	.10
14076	Resistor—820 ohms, ½ watt	.20
13715	Resistor—68,000 ohms, ½ watt	.20
12264	Resistor—220,000 ohms, ½ watt	.20
13730	Resistor—1 meg., ½ watt	.20
12679	Resistor—2.2 meg., ½ watt	.20
13601	Resistor—10 meg., ½ watt	.20
33305	Shaft—Tuning knob shaft and bushing	.25
32595	Shield—Tube shield—less cap	.15
32537	Socket—Tube socket	.20
30585	Spring—Drive cord spring	.06
33296	Spring—Drive drum retaining spring	.06
33301	Transformer—First i-f transformer	1.20
33302	Transformer—Second i-f transformer	1.40
33304	Volume control and switch	1.50
	SPEAKER ASSEMBLIES (39128-1)	
33058	Speaker complete	4.00
33062	Transformer—Output transformer	1.30
	MISCELLANEOUS ASSEMBLIES	
33310	Dial—Glass dial scale	.30
33311	Escutcheon—Dial scale escutcheon	.45
33006	Feet—Cabinet feet	.03
33376	Handle—Carrying handle—Models 94BP61 94BP62, 94BP64	.55
33377	Handle—Carrying handle—Model 94BP66	.55
33306	Knob—Black tuning knob—Model 94BP66	.15
33308	Knob—Black volume control knob—Model 94BP66	.25
32571	Knob—Tan tuning knob—Models 94BP61, 94BP64, 94BP80	.15
33309	Knob—Tan volume control knob—Models 94BP61, 94BP64, 95BP80	.25
32895	Knob—Walnut tuning knob—Models 94BP62, 94BP81	.15
33307	Knob—Walnut volume control knob—Models 94BP62, 94BP81	.25
33312	Nut—Speed nut to mount dial	.02
31646	Spring—Knob retaining spring	.02

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

Frequency Range ..... 550-1,720 kc
Intermediate Frequency ..... 455 kc

BATTERIES REQUIRED

"A," one 1.5 volt dry plug-type "A," 2⅜-in. x 2⅜-in. x 4-in. (Eveready No. 742 or equivalent)
"B," two 45 volt dry plug-type "B," 2⅜-in. x 4-in. x 5¼-in. (Eveready No. 762 or equivalent)

CURRENT CONSUMPTION

"A," 0.24 ampere—"B," 9.0 milliamperes

POWER OUTPUT

Undistorted ..... 0.10 watt
Maximum ..... 0.21 watt

LOUDSPEAKER

Type ..... 4-inch permanent-magnet dynamic
Voice-coil Impedance ..... 2 ohms at 400 cycles

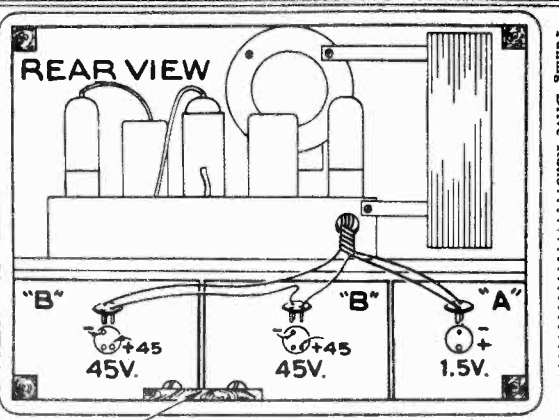
Alignment Procedure

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-oscillator.—For all alignment operations, keep the output as low as possible to avoid a-v-c action.

Pre-setting Dial.—With gang condenser in full mesh, the pointer should be horizontal.

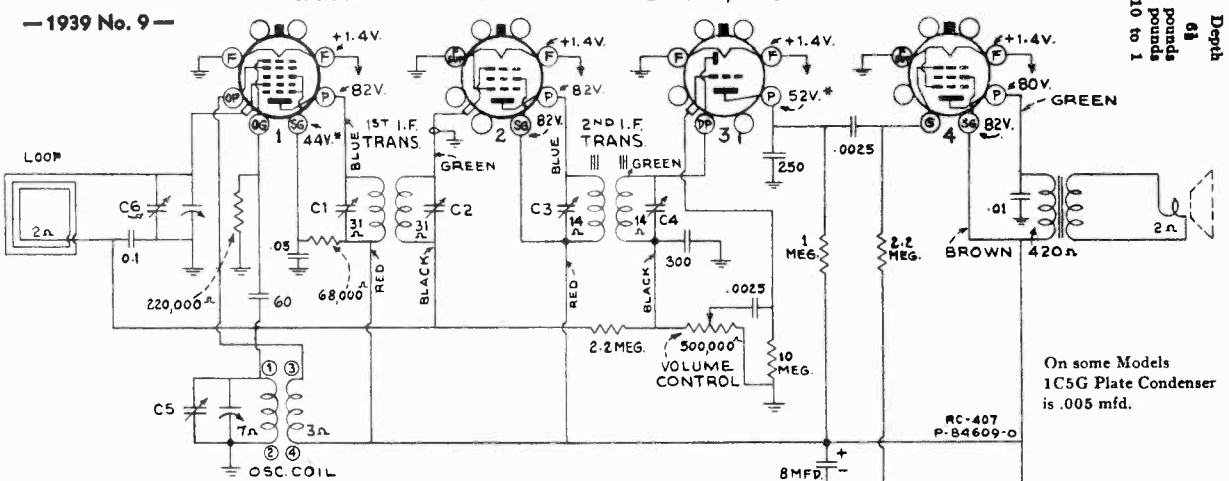
Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	1A7G 1st-Det. grid cap, in series with .01 mfd.	455 kc	Quiet point at 1,600 kc end of dial	C1, C2, C3, C4 (1st and 2nd I-F transformers)
2	Antenna coil loop by means of one turn of wire placed near loop	1,720 kc	Full clockwise (out of mesh)	C5 (oscillator)
3		1,500 kc	Resonance on 1,500 kc signal	C6 (antenna)

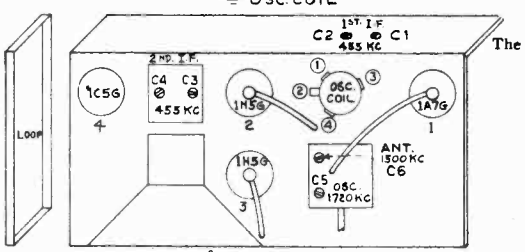


REMOVE THIS BLOCK-PLACE BATTERIES IN CABINET AS INDICATED

	Height	Width	Depth
Cabinet Dimensions (inches)	9¾	12¾	6¾

Weight—(Net) less batteries ..... 6 pounds
With batteries ..... 13½ pounds
Tuning Drive Ratio ..... 10 to 1





TUBE LOCATION & TRIMMER ADJ. POSITIONS

The following models comprise the 94BP1 Series—all contain the No. RC-407 chassis.

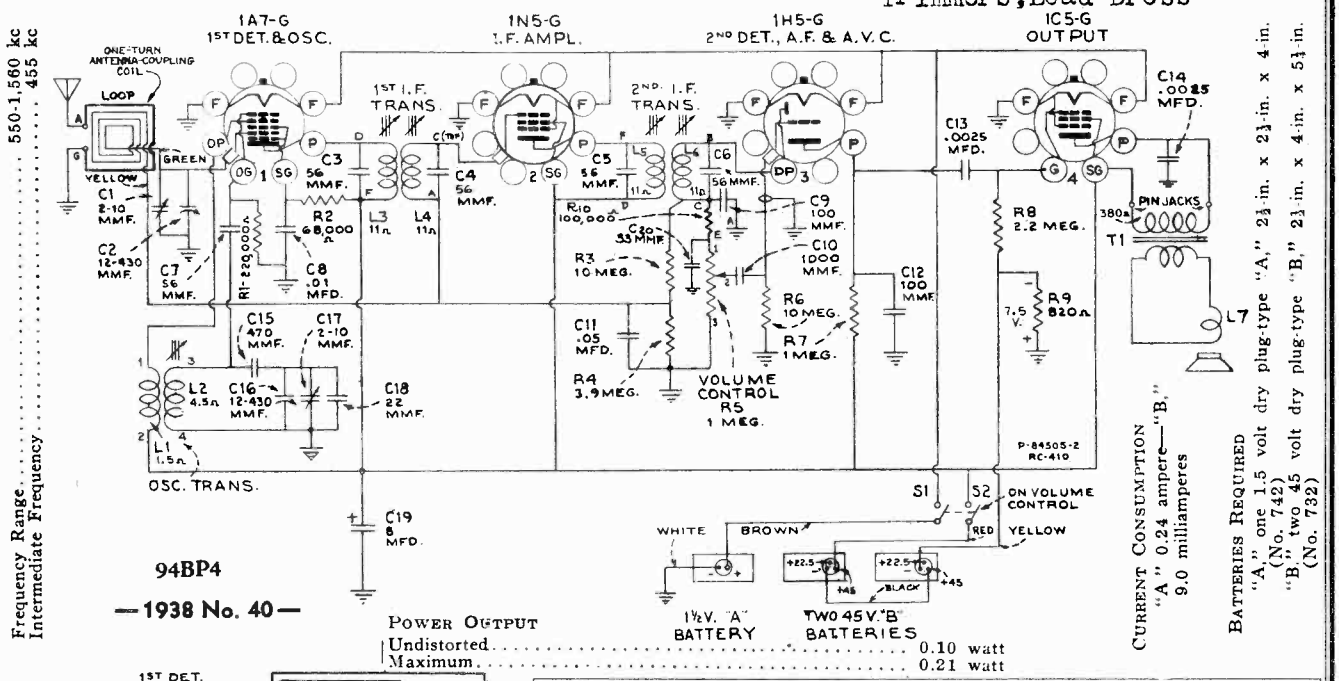
94BP61 Dark Brown
94BP62 Tan
94BP64 Light Brown
94BP66 Gray
94BP80 Brown Leather
94BP81 Black Leather

Note: Values with star (*) are operating voltages. Values not starred are actual measured voltages.

Measurements are made to chassis unless otherwise indicated, with set tuned to quiet point. Values should hold within approximately ± 20% with rated battery voltage.

RCA MFG. CO., INC.

MODEL 94BP4, Chassis RC-410
Schematic, Voltage, Alignment
Chassis Wiring, Socket
Trimmers, Lead Dress



94BP4

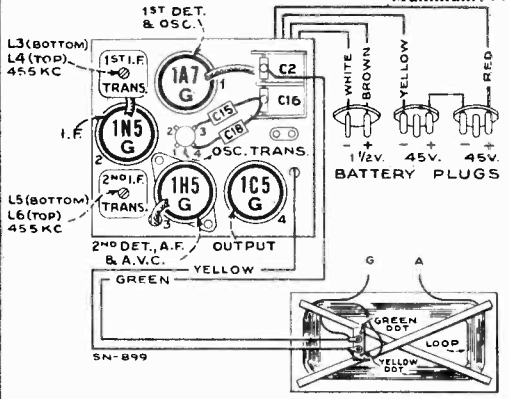
—1938 No. 40—

Frequency Range ..... 550-1,560 kc
Intermediate Frequency ..... 455 kc

POWER OUTPUT
Undistorted ..... 0.10 watt
Maximum ..... 0.21 watt

CURRENT CONSUMPTION
"A" 0.24 ampere—"B" 9.0 milliamperes

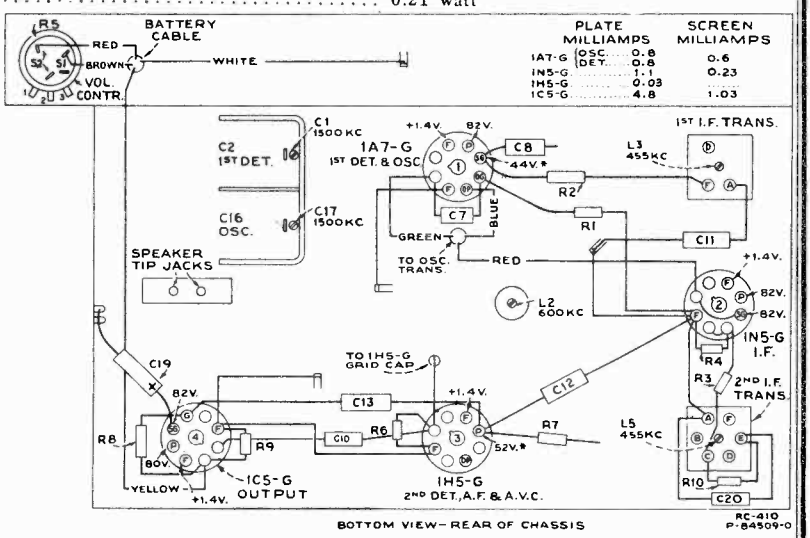
BATTERIES REQUIRED
"A," one 1.5 volt dry plug-type "A," 2¼ in. x 2¼ in. x 4 in. (No. 742)
"B," two 45 volt dry plug-type "B," 2¼ in. x 4 in. x 5¼ in. (No. 732)



Tube Location

Note: Values with star (*) are operating voltages. Values not starred are actual measured voltages.

Measurements are made to chassis unless otherwise indicated, with set tuned to quiet point. Values should hold within approximately ± 20% with rated battery voltage.



R-F Wiring Diagram and Socket Voltages

Alignment Procedure

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-oscillator.—For all alignment operations, keep the output as low as possible to avoid a-v-c action.

Pre-setting Dial.—With gang condenser in full mesh, the pointer should be horizontal.

Precautionary Lead Dress.—

1. Dress speaker leads down to chassis.
2. The green lead from the loop to the antenna section of the gang should be dressed between the output and detector tube shields and pulled toward the far corner of the loop by means of the rubber band.
3. The spiral shield on the 1st-A.F. grid lead should be brought as close as possible to the grid cap.
4. Leads to the high side and tap of the volume control should be dressed down to the chassis and away from the output tube plate lead.

Antenna.—An antenna and ground may be connected to "A" and "G" at bottom of cabinet. If total length of antenna and lead-in is more than 150 feet, connect a 300 mmf capacitor in series with lead-in.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	1N5-G grid cap, in series with .001 mfd.	455 kc	Quiet point between 550-750 kc	L5 and L6 (2nd I-F transformer)
2	1A7-G grid cap, in series with .001 mfd.	455 kc		L3 and L4 (1st I-F transformer)
3	Assemble chassis and batteries in correct position in cabinet, and fasten rear cover (loop) in place while making the following adjustments, which are accessible through holes in the bottom of the cabinet.			
4	Antenna terminal, in series with 200 mfd. Connect low side of test-osc. to "G" term.	1500 kc	1500 kc*	C17 (osc.) C1 (ant.)
5		600 kc	600 kc*	L2 (osc.) Rock in
6	Repeat steps 4 and 5.			

* Use bottom of "1" in "150" for 1500 kc calibration point, and use center of "0" in "60" for 600 kc calibration point.

MODELS 94BK1, 94BT1
Chassis RC-333B

RCA MFG. CO., INC.

MODEL 94BP4, Chassis RC-410
Parts List

Model 94BP4

Specifications and Replacement Parts

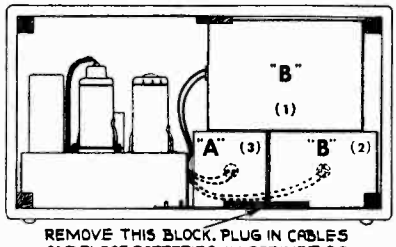
LOUDSPEAKER

Type ..... 5-inch permanent-magnet dynamic
Voice-coil Impedance ..... 2.2 ohms at 400 cycles

	Height	Width	Depth
Cabinet Dimensions (inches)	7¾	14	8½
Chassis Base Dimensions (inches)	2	7½	5½

Over-all Chassis Height ..... 6½ inches
Weight—Shipping weight, less batteries ..... 12½ pounds
Net weight, with batteries ..... 16 pounds
Tuning Drive Ratio ..... 8 to 1

Battery Arrangement



REMOVE THIS BLOCK. PLUG IN CABLES AND PLACE BATTERIES IN CABINET AS SHOWN, IN THE ORDER INDICATED. REPLACE CLAMPING BLOCK.

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES (RC-410)	
32592	Bracket—Dial bracket	.15
12607	Cap—Shield cap for first i.f. transformer	.20
12581	Cap—Shield cap for second i.f. transformer	.25
32598	Cap—Shield cap for 1H5G	.06
32596	Cap—Tube shield cap	.06
14021	Capacitor—22 mmfd. (C18)	.35
12948	Capacitor—33 mmfd. (C20)	.35
30949	Capacitor—56 mmfd. (C3, C4, C5, C6)	.25
12723	Capacitor—56 mmfd. (C7)	.35
30904	Capacitor—100 mmfd. (C9)	.25
12720	Capacitor—100 mmfd. (C12)	.35
30433	Capacitor—470 mmfd. (C15)	.35
12635	Capacitor—1,000 mmfd. (C10)	.50
5107	Capacitor—.0025 mfd. (C13, C14)	.20
14393	Capacitor—.01 mfd. (C8)	.30
4886	Capacitor—.05 mfd. (C11)	.20
32187	Capacitor—8 mfd., 150 volts (C19)	.65
32148	Coil—Oscillator coil (L1, L2)	.90
32591	Condenser—2-gang variable (C1, C2, C16, C17)	2.50
32634	Cord—Condenser and pointer drive cord	.10
32593	Dial—Dial scale	.55
30701	Drum—Drive cord drum	.40
32605	Indicator—Dial indicator pointer	.30
32208	Plug—2-contact male for "A" leads	.20
32641	Plug—3-contact male for "B" leads	.10
14076	Resistor—820 ohms, ½ watt (R9)	.20
13715	Resistor—68,000 ohms, ½ watt (R2)	.20
14560	Resistor—100,000 ohms, ½ watt (R10)	.20
12264	Resistor—220,000 ohms, ½ watt (R1)	.20
13730	Resistor—1 meg., ½ watt (R7)	.20
12679	Resistor—2.2 meg., ½ watt (R8)	.20
13167	Resistor—3.9 meg., ½ watt (R4)	.20
13601	Resistor—10 meg., ½ watt (R3, R6)	.20
14887	Retainer—Tuning knob shaft retainer	.01
4669	Screw No. 8-32 x ¾ set screw for drum, Stock No. 30701	.03
32609	Shaft—Dial pointer shaft and pulley	.15
32597	Shaft—Tuning knob shaft	.15
32595	Shield—Tube shield—less cap	.15
31251	Socket—Tube socket	4.10
30956	Socket—2-contact female	.30
14191	Spring—Condenser drive cord spring	.04
30631	Spring—Pointer drive cord spring	.03
32263	Transformer—First i.f. transformer (L3, L4, C3, C4)	2.30
32264	Transformer—Second i.f. transformer (L5, L6, C5, C6, C9)	2.50
32594	Volume control and switch (R5, S1, S2)	1.50
	MISCELLANEOUS ASSEMBLIES	
32602	Bezel—Dial bezel and crystal	1.20
32163	Cone—Speaker cone and voice coil (L7)	2.20
32600	Escutcheon—Knob escutcheon	.35
32603	Grille—Speaker grille and screen	.20
32633	Handle—Carrying handle	.90
11610	Knob—Volume control or tuning knob	.30
32604	Loop—Antenna loop complete	3.10
32601	Retainer—Knob escutcheon retainer	.05
32162	Speaker complete	5.30
11349	Spring—Knob retaining spring	.05
32164	Transformer—Output transformer (T1)	1.15

94BK1, 94BT1 **Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

STOCK No.	DESCRIPTION	Unit List Price
	RECEIVER ASSEMBLIES	
12629	Capacitor—56 mmfd. (C6)	.35
12723	Capacitor—56 mmfd. (C13)	.35
14262	Capacitor—110 mmfd. (C5)	.30
12404	Capacitor—120 mmfd. (C7, C8)	.30
12725	Capacitor—150 mmfd. (C11)	.35
14712	Capacitor—180 mmfd. (C9)	.30
30433	Capacitor—430 mmfd. (C17)	.35
5148	Capacitor—.007 mfd. (C12)	.20
14393	Capacitor—.01 mfd. (C4, C10, C19)	.30
4839	Capacitor—0.1 mfd. (C1)	.30
32187	Capacitor—8 mfd. (C18)	.65
32150	Coil—Antenna coil (L1, L2)	1.15
32148	Coil—Oscillator coil (L3, L4)	.90
32147	Condenser—2-gang variable tuning condenser (C2, C3, C14, C15, C16)	2.40
30877	Cord—Drive cord	.20
30905	Core—Adjustable core for I.F. transformers	.35
32186	Dial—Dial scale, plate, and brackets assembled	.55
30701	Drum—Tuning condenser drive cord drum with set screw	.40
14635	Indicator—Station selector indicator pointer	.20
32208	Plug—2-prong male plug for battery cable	.20
12827	Plug—3-prong male plug for battery cable	.20
14076	Resistor—820 ohms, ½ watt (R9)	.20
14284	Resistor—22,000 ohms, 1/10 watt (R3)	.15
13715	Resistor—68,000 ohms, ½ watt (R1)	.20
12264	Resistor—220,000 ohms, ½ watt (R10)	.20
13730	Resistor—1 meg., ½ watt (R4, R6)	.20
12679	Resistor—2.2 meg., ½ watt (R2, R7, R8)	.20
14887	Retainer—Retainer for knob shaft	.01
30952	Shaft—Station selector knob shaft	.25
32149	Shield—Tube shield	.20
11196	Socket—Tube socket	.25
30956	Socket—Speaker socket	.30
14191	Spring—Drive cord tension spring	.04
14261	Transformer—First I.F. (L5, L6, C5, C6)	2.05
14308	Transformer—Second I.F. (L7, L8, C7, C8, C9, R3)	2.90
30947	Volume control and on-off switch (R5, S1, S2)	1.50
	SPEAKER ASSEMBLIES Model 94BT1 (Speaker 84226-3)	
32163	Cone—Speaker cone and voice coil (L9)	2.20
32162	Speaker—Complete	5.30
32164	Transformer—Output transformer (T1)	1.15
	SPEAKER ASSEMBLIES Model 94BK1 (Speaker 84145-2)	
30973	Cone—Speaker cone and voice coil (L9)	2.25
30972	Speaker—Complete	6.30
30974	Transformer—Output transformer (T1)	1.90
	MISCELLANEOUS ASSEMBLIES	
30975	Crystal—Station selector celluloid crystal	.45
31355	Knob—Tuning or volume control knob	.12
30308	Screw—Chassis mounting screw and washer—(94BT1 only) 4 required	.07
30467	Screw—Chassis mounting screw and washer—(94BK1 only) 4 required	.05
14270	Spring—Retaining spring for knob	.05

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

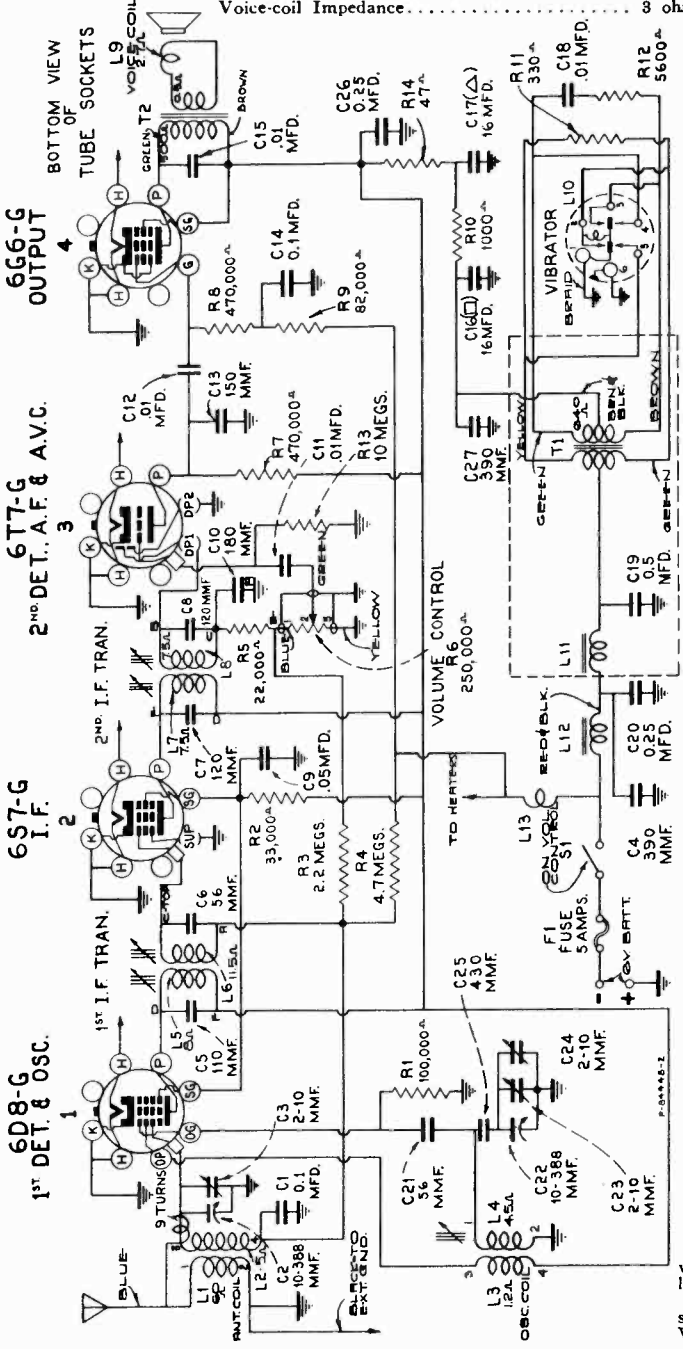
RCA MFG. CO., INC.

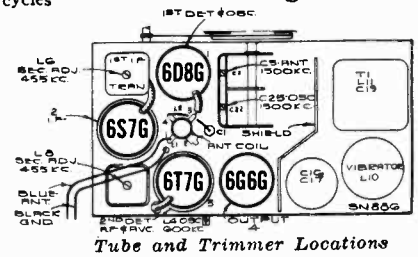
MODEL 94BT61, Chassis RC-333C
Schematic, Voltage, Alignment
Socket, Trimmers,
Chassis Wiring

—1938 No. 35—

LOUDSPEAKER

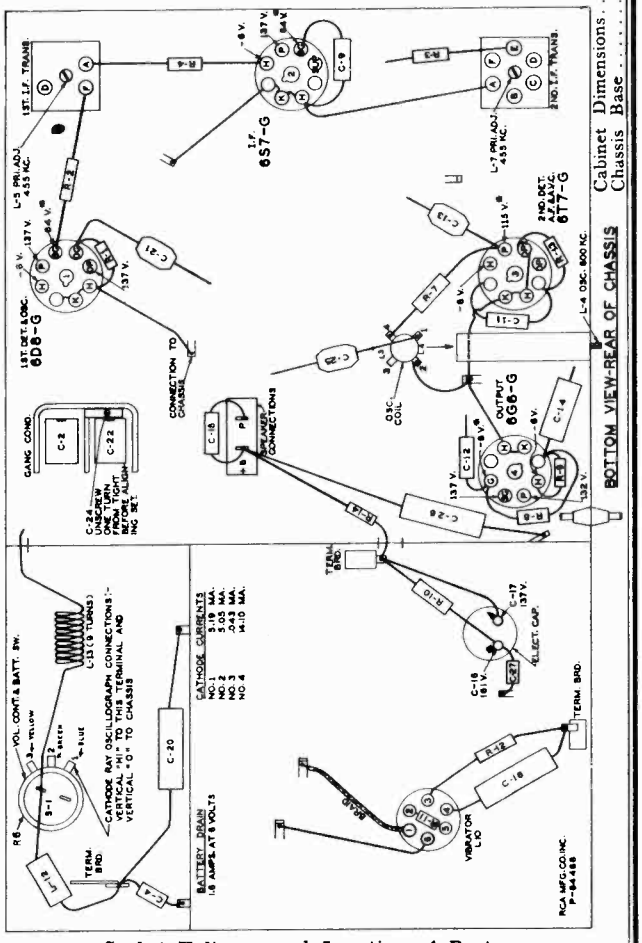
Type ..... 5-inch Permanent Magnet Dynamic
Voice-coil Impedance ..... 3 ohms at 400 cycles





Tube and Trimmer Locations

	Height	Width	Depth
Cabinet Dimensions	12⅜ in.	10⅜ in.	6½ in.
Chassis Base	2 in.	9¾ in.	5⅜ in.



Socket Voltages and Location of Parts

* NOTE: Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

Measurements made to chassis unless otherwise indicated, with the set tuned to a quiet point and the volume control at minimum. Values should hold within approximately ± 20% with 6 volts "A."

Frequency Range ..... 540 to 1,720 kc
R-F Alignment Frequencies .... 600 kc (osc.), 1,500 kc (osc., ant.)
Intermediate Frequency ..... 455 kc

Cathode-ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

Pre-setting Dial.—With gang condenser in full mesh, the pointer should be horizontal.

BATTERY REQUIRED — CURRENT CONSUMPTION
6-volt Storage "A" Battery. — At 6 volts, 1.6 amperes.

POWER OUTPUT (6 volts "A")
Undistorted ..... 0.45 watt
Maximum ..... 0.8 watt

Alignment Procedure

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
No. 1	6S7-G I-F grid cap, in series with .01 mfd.	455 kc	Quiet point between 550-750 kc	L7 and L8 (2nd I-F transformer)
No. 2	6D8-G 1st-det. grid cap, in series with .01 mfd.	455 kc		L5 and L6 (1st I-F transformer)
No. 3	Antenna lead, in series with 200 mmfd.	600 kc	600 kc	L4 (oscillator)
No. 4	Antenna lead, in series with 200 mmfd.	1,500 kc	1,500 kc	C23† (oscillator) C3 (antenna)

† Adjust C24 on gang condenser to one complete turn from tight before adjusting C23.

MODEL 94BT61, Chas. RC-333C
Lead Dress, Parts

RCA MFG. CO., INC.

MODELS 96BK6, 96BT6
Chassis RC-392
Socket, Trimmers
Alignment Procedure

MODELS 96BK6 and 96BT6

Chassis No. RC-392 Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown on the chassis drawing.

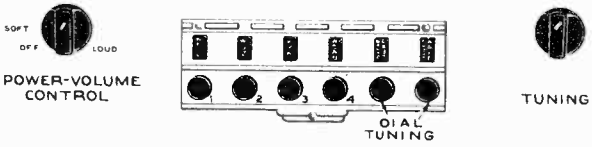
Output Meter Alignment.—If this method is used, connect the output meter across the voice coil, and turn the receiver volume control to maximum.

Test Oscillator.—For all alignment operations, connect the low side of the test oscillator to the receiver chassis, and keep the oscillator output as low as possible to avoid a-v-c action.

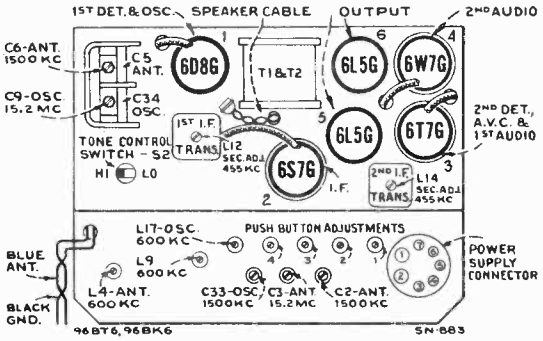
Calibration Marks.—The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks corresponding to dial readings of 600 kc, 1,500 kc, and 15.2 mc have been stamped in the plate on the front of the chassis as shown in the accompanying drawing. These marks are used for reference during alignment.

Dial Indicator Adjustment.—With the gang condenser in full mesh, the indicator should point to the extreme left (low frequency) mark on the dial scale.

For additional details, refer to booklet "RCA Victor Receiver Alignment."



Location of Controls



Tube and Trimmer Locations

Miscellaneous Service Data

To center the loudspeaker voice coil, first remove the front dust cover, then loosen the screws holding the spider assembly. Insert three narrow feelers into the air gap, and tighten the spider screws. Remove the feelers and fasten a dust cover in place with loudspeaker cement.

The push button switch and coil assembly may be removed from the chassis by removing two screws from the front apron, one from the rear apron, removing the 6D8-G grid connector from the grid cap, and disconnecting the seven leads indicated on the Wiring Diagram.

MODEL 94BT61 Chassis No. RC-333-C

Precautionary Lead Dress

1. Capacitors C20 and C26 must be grounded with as short a lead as possible. C4 and C27 are soldered direct (no leads).

2. The "A" supply choke (L13) must be dressed clear of chassis. The H.V. secondary leads (brown and green), C18, and R12 must be dressed clear of the chassis and away from other leads.

3. The H.V. secondary mid-tap (brown-black) lead, and the brown lead from L13 to 6G6-G filament must be dressed close to the chassis and away from other parts.

4. The lead from the antenna coil (L1 and L2) to the gang must be 9 turns and kept clear of the rotor.

5. The I-F plate lead (blue) must be dressed close along edge of chassis.

6. R10 must be wired with body as close to terminal board as possible.

Battery Charger Connections.—The positive side of the 6-volt "A" circuit is connected to the receiver chassis, and the chassis is normally grounded. If the charger has a ground on the negative side, the ground should be removed, or changed to the positive. Do not change the length of the leads from the receiver to the battery.

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	Unit List Price
	RECEIVER ASSEMBLIES	
30959	Cable—Battery cable complete	1.35
30967	Cable—Shielded volume control cable	.45
12581	Cap—Second I.F. transformer shield cap	.25
12629	Capacitor—56 mmfd. (C6)	.35
12723	Capacitor—56 mmfd. (C21)	.35
14262	Capacitor—110 mmfd. (C5)	.30
12404	Capacitor—120 mmfd. (C7, C8)	.30
12725	Capacitor—150 mmfd. (C13)	.35
14712	Capacitor—180 mmfd. (C10)	.30
13894	Capacitor—390 mmfd. (C4, C27)	.35
30433	Capacitor—430 mmfd. (C25)	.35
14393	Capacitor—.01 mfd. (C11, C12, C15)	.30
4937	Capacitor—.01 mfd. (C18)	.25
30882	Capacitor—.05 mfd. (C9)	.20
30899	Capacitor—0.1 mfd. (C1, C14)	.30
30965	Capacitor—0.25 mfd. (C20, C26)	.30
32152	Capacitor—Comprising 2 sections each 15 mfd. (C16, C17)	1.05
30968	Coil—"A" filter choke coil (L12)	.55
30950	Coil—Antenna coil (L1, L2)	1.10
32148	Coil—Oscillator coil (L3, L4)	.90
32147	Condenser—2-gang variable tuning condenser (C2, C3, C22, C23, C24)	2.40
30877	Cord—Drive cord	.20
30905	Core—Adjustable core for I.F. transformers	.35
14289	Clips—Battery clips—1 marked "+" and 1 unmarked	.30
32186	Dial—Dial scale, plate, and brackets assembled	.55
30701	Drum—Tuning condenser drive cord drum with set screw	.40
5140	Fuse—Battery cable fuse (F1)	.10
14635	Indicator—Station selector indicator pointer	.20
12848	Resistor—47 ohms, ½ watt (R14)	.20
8063	Resistor—330 ohms, ½ watt (R11)	.20
30152	Resistor—1,000 ohms, 1 watt (R10)	.22
30734	Resistor—5,600 ohms, ½ watt (R12)	.20
14284	Resistor—22,000 ohms, 1/10 watt (R5)	.15
12454	Resistor—33,000 ohms, ½ watt (R2)	.20
14023	Resistor—82,000 ohms, ½ watt (R9)	.20
14560	Resistor—100,000 ohms, ½ watt (R1)	.20
12285	Resistor—470,000 ohms, ½ watt (R7, R8)	.20
12679	Resistor—2.2 meg., ½ watt (R3)	.20
30271	Resistor—4.7 meg., ½ watt (R4)	.20
13601	Resistor—10 meg., ½ watt (R13)	.20
14887	Retainer—Retainer for knob shaft	.01
30952	Shaft—Station selector knob shaft	.25
3682	Shield—Tube shield	.22
31251	Socket—Tube socket	.25
30956	Socket—Speaker socket	.30
14312	Socket—Vibrator socket	.25
14191	Spring—Drive cord tension spring	.04
14261	Transformer—First I.F. transformer (L5, L6, C5, C6)	2.05
14308	Transformer—Second I.F. transformer (L7, L8, C7, C8, C10, R5)	2.90
32151	Transformer—Vibrator transformer (T1, L11 C19)	4.10
14309	Vibrator—Plug in vibrator (L10)	4.25
30958	Volume control and on-off switch (R6, S1)	1.50
	SPEAKER ASSEMBLIES (Speaker 84226-3)	
32163	Cone—Speaker cone and voice coil (L9)	2.20
32162	Speaker complete	5.30
32164	Transformer—Output transformer (T2)	1.15
	MISCELLANEOUS ASSEMBLIES	
30975	Crystal—Station selector celluloid crystal	.45
31355	Knob—Tuning or volume control knob	.12
30308	Screw—Chassis mounting screw and washer—4 required	.07
14270	Spring—Retaining spring for knob, Stock No. 31355	.05

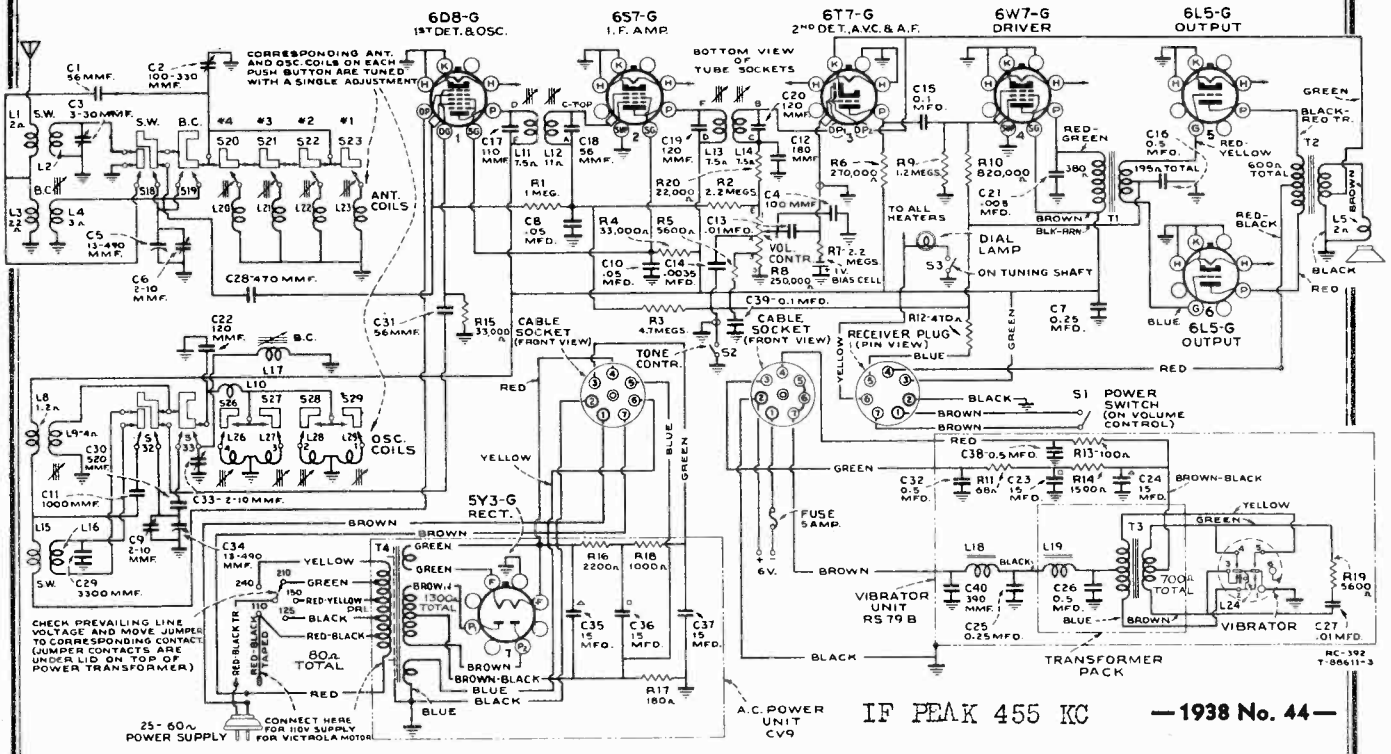
Over-all Chassis Height ..... 6¾ in.
Weight ..... 11¼ lbs. net, 14 lbs. shipping

Operating Controls ..... (1) Power Switch—Volume; (2) Tuning
Tuning Drive Ratio ..... 8 to 1

Schematic, Tuner Data

RCA MFG. CO., INC.

MODELS 96BK6, 96BT6
Chassis RC-392
MODEL CV-9 A-C S.P.U.



Schematic Circuit Diagram for Models 96BK6, 96BT6 and CV-9 A-C Power Unit

Frequency Ranges

Standard Broadcast ("A" Band)	540—1,720 kc
Short Wave ("C" Band)	5.8—18 mc
Four Electric Tuning Positions	550—1,500 kc
One station between approximately 550— 950 kc (Button No. 1)	
One station between approximately 610—1,090 kc (Button No. 2)	
One station between approximately 750—1,370 kc (Button No. 3)	
One station between approximately 845—1,500 kc (Button No. 4)	
Intermediate Frequency	455 kc

Power Supply Ratings

With CV-9 a-c power supply unit:
100-130/140-160/195-250 volts, 25-60 cycles, 45 watts

With RS-79B d-c power supply unit:
6.3 volts; total current drain 1.85 amps.

Power Output

	Undistorted	Maximum
With a-c power unit	2.2 watts	3.5 watts
With d-c power unit	1.7 watts	2.2 watts

Loudspeaker

Type	Permanent Magnet Dynamic
Voice Coil Impedance	2.2 ohms at 400 cycles
Diameter	96BK6, 8 inches; 96BT6, 6 inches

	Model 96BT6	Model 96BK6
Height	10⅝ inches	39½ inches
Width	20¼ inches	26 inches
Depth	9⅜ inches	12⅜ inches
Net Weight	17½ pounds	21 pounds
Shipping Weight	46 pounds	61 pounds
Chassis Base Dimensions	3 inches x 11½ inches x 5 inches	
Over-all Height of Chassis	7¾ inches	
Tuning Drive Ratio	12 to 1	

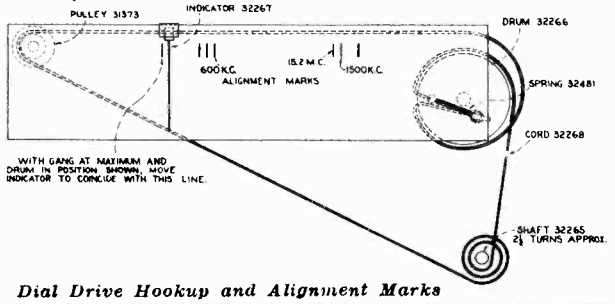
The 96BK6 is a console model, the 96BT6 a table model. Each of these receivers is a super-sensitive, six-tube superheterodyne.

Adjustment for Electric Tuning

These models have six push buttons. The right-hand button connects the receiver for dial tuning on the "Short-wave" band, the next button connects for dial tuning on the "Standard-broadcast" band, and the other four buttons are for electric tuning of four different stations in the standard-broadcast band. Each station button connects separate oscillator and antenna coils which are tuned by ganged magnetite cores, and may be adjusted for the desired stations. Use a small screw-driver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments. Use the regular antenna for all adjustments.

The procedure is as follows:

1. Make a list of the four desired stations, arranged in order from low to high frequencies.
2. Push in the broadcast dial-tuning button (second from right), and manually tune in the first station on the list.
3. Push in station button No. 1 (left-hand) and adjust No. 1 push button adjustment to receive this station. Turn the adjusting screw all the way in, to lowest frequency, and then unscrew slowly until the station is received.
4. Adjust for each of the remaining three stations in the same manner. (Clockwise adjustment of the screw tunes the circuits to lower frequencies.)
5. After installation, and with antenna properly connected, readjust C2 as outlined in note under "Alignment Procedure."



Dial Drive Hookup and Alignment Marks

Power Supply Units

The receiver chassis has a seven-prong male plug for connection to the power-supply unit. Both a-c and d-c power supply units are available, as listed under "Power Supply Ratings." The receivers are shipped with a d-c power unit for use with a 6-volt supply. If an a-c unit is desired, it must be purchased separately as Model CV-9.

If no receiver chassis is available the a-c unit (CV-9) may be tested for proper operation by connecting a 6,500-ohm, 10-watt resistor between terminals 2 and 4 on the cable socket, and shorting terminals 1 and 7. With one voltmeter prod on terminal 2 (ground) the following readings should be obtained: terminal 3, + 200 volts d.c.; terminal 4, + 200 volts d.c.; terminal 5, —5.9 volts d.c.; terminal 6, 6.5 volts a.c. Values should be within ± 20% with rated supply voltage.

Precautionary Lead Dress.—

1. Blue lead from push button switch to gang condenser must be dressed over the top of the switch.
2. Leads to push button coils must be dressed close to the coils.
3. Red and blue leads to gang condenser must be dressed away from chassis.
4. Blue antenna lead must be dressed in the end of the chassis away from gang leads and coil windings.
5. Bias cell must be installed with carbon disc connected to chassis.
6. Leads from power switch to connector plug must be dressed away from other leads.
7. Parts under push button coils must be dressed down away from them.
8. Green lead to first detector grid cap should be pulled out of the chassis as far as possible, and dressed away from the tube envelope.

MODELS 96BK6, 96BT6
Chassis RC-392

RCA MFG. CO., INC.

Alignment, Voltage
Chassis Wiring

Steps	Connect the High Side of Test Oscillator to:	Tune Test Oscillator To:	Press Push Button:	Turn Radio Dial to:	Adjust for Maximum Peak Output:
1	6S7-G I-F grid cap in series with .01 mfd.	455 kc	B.C. (No. 5)	No Station Point between 550—750 kc.	L13 and L14 (2nd I-F Trans.)
2	6D8-G Det. grid cap in series with .01 mfd.	455 kc	B.C. (No. 5)		L11 and L12 (1st I-F Trans.)
3	Antenna Lead (blue) in series with 200 mmfd.	1,500 kc	No. 4		L20-L26 (No. 4 Push Button Adj.) C2 (ant.)
4	Antenna Lead (blue) in series with 200 mmfd.	600 kc	No. 1		L23-L29 * (No. 1 Push Button Adj.) L9 (osc.)
5	Repeat steps 3 and 4 until maximum signal is obtained.				
6	Unscrew C9 (osc.) to minimum capacity.				
7	Antenna Lead (blue) in series with 200 mmfd.	600 kc	B.C. (No. 5)	600 kc Calibration Mark	L17 (osc.) ** L4 (ant.)
8	Antenna Lead (blue) in series with 200 mmfd.	1,500 kc	B.C. (No. 5)	1,500 kc Calibration Mark	C33 (osc.) C6 (ant.)
9	Repeat steps 7 and 8 until maximum signal is obtained.				
10	Antenna Lead (blue) in series with 300 ohms	15.2 mc	S.W. (No. 6)	15.2 mc Calibration Mark	C9 (osc.) † C3 (ant.) ††
11	Antenna Lead (blue) in series with 200 mmfd.	1,500 kc	B.C. (No. 5)	1,500 kc Calibration Mark	C33 (osc.)
12	Follow the "Adjustments for Electric Tuning."				

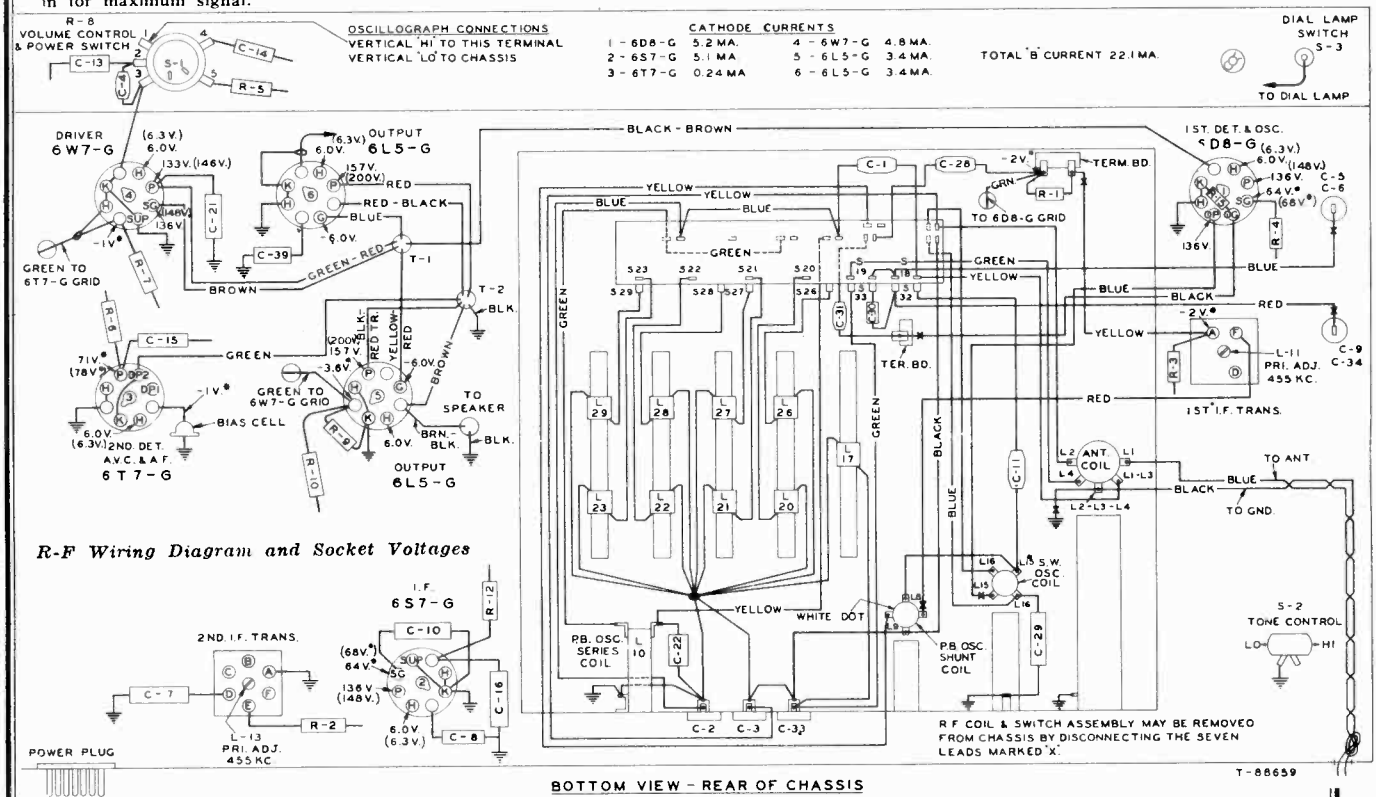
* Adjust L23-L29 (No. 1 push button adjustment) and L9 at the same time, rocking in for maximum signal.

** Turn L17 adjusting screw all the way out, then turn in slowly until a peak is reached. If two peaks can be obtained the lower inductance setting (screw out) should be used.

† Use minimum capacity peak if two peaks can be obtained. A weaker signal (image) should be received about one quarter inch to the left on the dial plate.

†† Use maximum capacity peak if two peaks can be obtained, rock in for maximum signal.

Note: The oscillator tracks 455 kc above the signal on all bands. After the receiver has been installed and the antenna connected, it is advisable to make a slight change in the adjustment of the antenna trimmer, C2. In most cases it is desirable to make this adjustment while receiving a station on No. 4 push button. However, if a station received on one of the other buttons is especially weak, it may be advisable to make the adjustment while receiving the weak station on that particular button.



Measurements made to chassis unless otherwise indicated, with set tuned to a quiet point and the volume control at minimum. Values should hold within approximately ± 20% with rated supply voltage.

* Note: Values with star (*) are operating voltages in circuits with high series resistance. The actual measured values will be lower, depending on the voltmeter loading.

Bracketed voltages ( ) refer to operation with CV-9 a-c power unit.

RCA MFG. CO., INC.

MODELS 96BK6, 96BT6
MODELS 96E2, 96K5, 96K6, 96T7, 97K2, 97T2
Parts Lists

Models 96E2 96K5 96K6 96T7 97K2 97T2

STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES	
14517	Board—Antenna ground terminal board	.25
30752	Bracket—Magic Eye bracket and holder—Models 97T2 and 97K2	.25
32670	Bracket—Dial color plate and lamp brackets	.75
32684	Cable—Indicator drive cable	.20
30766	Cap—Magic Eye cap	.15
12110	Cap—Tube shield cap	.14
31400	Capacitor—Triple adjustable trimmer two sections 2-10 mmfd., one section 3-30 mmfd. (C21, C23, C25)	.50
12722	Capacitor—18 mmfd. (C1)	.35
32486	Capacitor—Antenna trimmer capacitor bank. (C31, C32, C33, C34, C35, C36)	1.40
12948	Capacitor—33 mmfd. (C3)	.35
12720	Capacitor—100 mmfd. (C42)	.35
14262	Capacitor—109 mmfd. (C5, C6)	.30
12724	Capacitor—120 mmfd. (C12)	.35
12404	Capacitor—120 mmfd. (C7, C8)	.30
14712	Capacitor—180 mmfd. (C37)	.30
30433	Capacitor—470 mmfd. (C2)	.35
32492	Capacitor—530 mmfd. (C24)	.40
31435	Capacitor—750 mmfd. (C26)	.40
31403	Capacitor—3300 mmfd. (C22)	.60
31405	Capacitor—6000 mmfd. (C27)	.75
5107	Capacitor—.0025 mfd. (C13)	.20
4838	Capacitor—.005 mfd. (C14, C17)	.25
14393	Capacitor—.01 mfd. (C10)	.30
4839	Capacitor—0.1 mfd. (C38, C39)	.30
11315	Capacitor—.015 mfd. (C11)	.20
4886	Capacitor—.05 mfd. (C9)	.20
32485	Capacitor—Comprising two 10 mfd., one 20 mfd., and one 5 mfd. sections (C16, C18, C19, C41)	1.75
31382	Clip—Oscillator coil and core mounting clip	.04
32493	Coil—Antenna coil—A, B, and C bands (L1, L2, L5, L43)	1.35
31951	Coil—Oscillator coil—A, B, and C bands (L4, L6, L6, L7, L8, L9)	1.40
31383	Coil—Oscillator coil—A band (L41, L42)	.30
32487	Coil—Oscillator coil—A band (L39, L40)	.35
31385	Coil—Oscillator coil—A band (L37, L38)	.30
31369	Condenser—2-gang variable tuning condenser (C28, C29, C30)	2.65
32668	Control—Volume control, tone control, and on-off switch (R6, R13, S3)	3.00
32634	Cord—Indicator pointer and variable condenser drum drive cord	.10
30905	Core—Adjustable core and stud for i-f transformer	.35
31386	Core—Adjustable core and stud for oscillator coil Stock Nos. 31383 and 31385	.15
12800	Core—Adjustable core and stud for oscillator coil Stock No. 32487	.35
31372	Drum—Variable condenser drive cord drum and calibrator dial	.65
32552	Indicator—Dial pointer and clip	.20
11891	Lamp—Dial or Electric Tuning indicator lamp	.17
5040	Plug—4-contact female plug for speaker cable	.30
31373	Pulley—Indicator drive cord pulley	.08
14671	Resistor—33 ohms, ½ watt (R11)	.20
31388	Resistor—390 ohms, 1 watt (R12)	.22
31389	Resistor—12,000 ohms, wire wound, 5 watts (R14)	.50
30151	Resistor—18,000 ohms, 1 watt (R17)	.22
14284	Resistor—22,000 ohms, 1/10 watt (R4)	.15
12738	Resistor—27,000 ohms, ½ watt (R7)	.20
12454	Resistor—33,000 ohms, ½ watt (R2)	.20
14560	Resistor—100,000 ohms, ½ watt (R10)	.20
11398	Resistor—220,000 ohms, 1/10 watt (R5)	.15
12199	Resistor—270,000 ohms, ½ watt (R8)	.20
12285	Resistor—470,000 ohms, ½ watt (R8)	.20
12013	Resistor—1 meg., 1/10 watt (R16) Models 97T2 and 97K2	.15
15730	Resistor—1 meg., ½ watt (R1)	.20
12679	Resistor—2.2 meg., ½ watt (R3)	.20
14343	Retainer—Retaining spring for station selector knob shaft	.03
14887	Retainer—Drive cord pulley retainer	.01
4669	Screw—No. 8-32 square head set screw for drum Stock No. 31372	.03
32671	Shaft—Station selector knob shaft and pulley	.35
31199	Shield—Electric tuning lamp shield	.04
31364	Socket—Dial lamp socket	.20
31365	Socket—"Electric Tuning" indicator lamp insulated socket Model 97T2 and 97K2	.30
13871	Socket—Magic Eye socket (Models 97T2 and 97K2)	.45
31251	Socket—Octal base tube socket	.25
14278	Socket—Pickup socket	.25
31418	Spring—Indicator, or drum drive cord tension spring	.05
32669	Switch—Range switch (S1, S2)	1.10
31370	Switch—Station selector push-button switch (S4, S5, S31, S32, S33, S34, S35, S36, S37, S38, S39, S40, S41, S42, S43, S44, S45)	3.85
30902	Transformer—First i-f transformer (L10, L11, C8, C9)	1.90
14283	Transformer—Second i-f transformer (L12, L13, C7, C8, C37, R4, R5)	3.80
31445	Transformer—Power transformer 100-120 volts, 25-60 cycle (T1)	7.80
31380	Transformer—Power transformer 100-120 volts, 50-60 cycle (T1)	4.75
31446	Transformer—Power transformer 100-130, 140-160, 200-250 volts, 50-60 cycle (T1)	8.05
	SPEAKER ASSEMBLIES (84308-4) Model 96T7	
32918	Cone and Voice Coil assembly complete with metal housing	2.40
32919	Field Coil Complete	1.80
32920	Output Transformer	1.45
31302	Plug—4-contact male for speaker	.25
	SPEAKER ASSEMBLIES (84308-1) Models 96T7 and 97T2	
31443	Cone—Speaker cone and voice coil (L14)	1.40
31442	Speaker—Complete	4.00
31444	Transformer—Output transformer (T2)	1.95
	SPEAKER ASSEMBLIES (RL-79-1) Model 97T2	
32907	Cap—Cone center dust cap	.02
32906	Coil—Hum neutralizing coil	.25
33077	Coil—Speaker field coil	1.20
32934	Cone—Cone and voice coil assembly	1.85
31302	Plug—4-prong male speaker plug	.25
33078	Speaker—Speaker complete	5.40
32905	Transformer—Output transformer (T2)	1.35
	SPEAKER ASSEMBLIES (RL-63H-3) Model 96E2	
31825	Cap—Speaker cone center dust cap	.05
11469	Coil—Hum neutralizing coil (L17)	.30
12012	Coil—Speaker field coil (L18)	2.90
31310	Cone—Speaker cone and voice coil (L16)	1.75
31302	Plug—4-contact male plug for speaker	.25
31824	Speaker complete	10.45
14355	Transformer—Output transformer (T2)	2.00
	SPEAKER ASSEMBLIES (RL-70H-1) Models 96K5 and 97K2	
31825	Cap—Dust cap for cone center	.05
12012	Coil—Field coil (L16)	2.90
11469	Coil—Hum neutralizing coil (L15)	.30
31275	Cone—Speaker cone and voice coil (L14)	1.75
31302	Plug—4-contact male plug	.25
31592	Speaker—Speaker complete	9.35
14358	Screw—Screw, washer, and lockwasher to hold core in yoke	.04
14356	Transformer—Output transformer (T2)	2.00
14357	Washer—Spring washer to hold field coil	.05
	MISCELLANEOUS ASSEMBLIES	
31397	Button—Push button	.15
31456	Cover—8-protective covers for push button markers	.08
32675	Dial—Dial scale and crystal (glass)	.60
32672	Escutcheon—Dial escutcheon and dial—less buttons—Models 96K5, 96E2, and 96T7	3.40
32674	Escutcheon—Dial escutcheon and dial—less buttons—Models 97K2 and 97T2	3.85
31355	Knob—Range switch knob	.12
14359	Knob—Station selector knob	.20
31391	Knob—Tone control knob	.15
30773	Knob—Volume control knob	.15
31589	Marker—1 set station call letter markers	.35
31458	Marker—"Dial Tuning" push button marker	.01
31457	Marker—"Victrola" push button marker	.01
11210	Screw—Chassis mounting screws, washers and lockwashers. Models 96K5, 97K2 and 96E2 (3 required)	.05
31390	Screw—Chassis mounting screws, washers and lockwashers Models 96T7 and 97T2. (Sufficient for one chassis)	.10
4982	Spring—Retaining spring for knob Stock No. 14359	.05
14270	Spring—Retaining spring for knob Stock Nos. 30773 and 31355	.05
30330	Spring—Retaining spring for knob Stock No. 31391	.03

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

96BK6, 96BT6

STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES	
32259	Capacitor—3-section trimmer bank 2-10, 3-30, 100-330 mmfd. (C33, C3, C2)	.65
12629	Capacitor—56 mmfd. (C18)	.35
12723	Capacitor—56 mmfd. (C1, C31)	.35
30406	Capacitor—100 mmfd. (C4)	.35
14262	Capacitor—110 mmfd. (C17)	.30
12404	Capacitor—120 mmfd. (C19, C20)	.30
32370	Capacitor—120 mmfd. (C22)	.50
14712	Capacitor—180 mmfd. (C12)	.30
30433	Capacitor—470 mmfd. (C28)	.35
32269	Capacitor—520 mmfd. (C30)	.40
12635	Capacitor—1,000 mmfd. (C11)	.50
4881	Capacitor—3,300 mmfd. (C29)	.60
30303	Capacitor—.0035 mfd. (C14)	.40
4838	Capacitor—.005 mfd. (C21)	.25
14393	Capacitor—.01 mfd. (C13)	.30
4886	Capacitor—.05 mfd. (C8, C10)	.20
4839	Capacitor—.1 mfd. (C15, C39)	.30
30965	Capacitor—.25 mfd. (C7)	.30
12741	Capacitor—.5 mfd. (C16)	.30
31581	Cell—1 volt bias cell	.25
32257	Coil—Push button osc. shunt coil (L8, L9)	.65
32254	Coil—Broadcast oscillator coil (L17)	.95
32258	Coil—Antenna coil (L1, L2, L3, L4)	1.20
32368	Coil—"C" band oscillator coil (L15, L16)	.70
32256	Coil—Push button osc. series coil	.60
32253	Coil—Push button antenna and oscillator coil (L20, L28)	1.10
32252	Coil—Push button antenna and oscillator coil (L21, L27)	1.10
32251	Coil—Push button antenna and oscillator coil (L22, L26)	1.10
32250	Coil—Push button antenna and oscillator coil (L23, L29)	1.15
32365	Condenser—2-gang variable condenser (C5, C6, C9, C34)	2.70
32369	Contact—Dial lamp spring contact (S3)	.10
12006	Core—Variable core and stud for I.F. transformers	.15
12800	Core—Variable core and stud for antenna coil	.35
32268	Cord—Drive cord	.30
32266	Drum—Variable condenser drive drum	.45
31580	Holder—Bias cell holder	.15
32287	Indicator—Dial scale pointer	.25
31480	Lamp—Dial lamp	.20
14404	Plug—7-prong plug—mates with socket on supply cable	.35
31373	Pulley—Drive cord pulley	.08
30548	Resistor—470 ohms, ½ watt (R12)	.20
13714	Resistor—5,600 ohms, ½ watt (R5)	.20
14284	Resistor—22,000 ohms, 1/10 watt (R20)	.15
12454	Resistor—33,000 ohms, ½ watt (R4, R15)	.20
12199	Resistor—270,000 ohms, ½ watt (R6)	.20
30983	Resistor—820,000 ohms, ½ watt (R10)	.20
13730	Resistor—1 meg., ½ watt (R1)	.20
30208	Resistor—1.2 meg., ½ watt (R9)	.20
12679	Resistor—2.2 meg., ½ watt (R2, R7)	.20
30271	Resistor—4.7 meg., ½ watt (R3)	.20
14887	Retainer—Drive cord pulley retaining washer	.01
32261	Screw—Push button oscillator coil adjustment screw and mounting nut	.03
3993	Screw—No. 6-32 x ¼ square head set screw for switch collar	.05
4669	Screw—No. 8-32 square head set screw from drive drum	.03
32265	Shaft—Tuning knob shaft and retainer	.25
3682	Shield—Detector tube shield	.22
3850	Shield—Oscillator tube shield	.28
31365	Socket—Dial lamp socket	.30
5119	Socket—3-contact speaker cable socket	.25
31251	Socket—8-contact tube socket	.25
32481	Spring—Drive cord tension spring	.05
32255	Switch—Push button switch (S18, S19, S20, S21, S22, S23, S26, S27, S28, S29, S32, S33)	2.95
30953	Switch—Tone control switch (S2)	.45
32368	Transformer—Driver and output transformer pack (T1, T2)	5.25
14261	Transformer—First I.F. transformer (L11, L12, C17, C18)	2.05
14308	Transformer—Second I.F. transformer (L13, L14, C12, C19, C20, R20)	2.90
32367	Volume Control and Power Switch (R8, S1)	2.00
	SPEAKER ASSEMBLIES Model 96BT6 (Speaker 84307-3)	
32326	Cone—Speaker cone and voice coil	1.75
5118	Plug—3-prong male plug	.25
32325	Speaker—Complete	8.00
	SPEAKER ASSEMBLIES Model 96BK6 (Speaker 84477-2)	
32328	Cone—Speaker cone and voice coil	1.90
5118	Plug—3-prong male plug	.25
32327	Speaker—Complete	6.95
	VIBRATOR POWER UNIT ASSEMBLIES (RS-79B)	
13894	Capacitor—390 mmfd. (C40)	.35
4937	Capacitor—.01 mfd. (C27)	.25
12484	Capacitor—.25 mfd. (C25)	.30
30867	Capacitor—0.5 mfd. (C32, C38)	.30
32152	Capacitor—Capacitor - 15-15 mfd. Electrolytic (C23, C24)	1.05
14289	Clip—Battery clip for cable	.30
31794	Coil—Choke coil (L18)	.65
6516	Connector—Fuse connector	.20
5140	Fuse—5 ampere	.10
14281	Resistor—68 ohms, ½ watt (R11)	.20
14439	Resistor—100 ohms, ½ watt (R13)	.20
3153	Resistor—1,500 ohms, 1 watt (R14)	.22
30734	Resistor—5,600 ohms, ½ watt (R19)	.20
4786	Socket—6-prong socket for plug-in vibrator unit	.25
14409	Socket—7-contact female socket for vibrator cable	.45
32371	Transformer—Vibrator transformer (T3, L19, C26)	4.25
14309	Vibrator—(L24)	4.25
	A. C. POWER UNIT ASSEMBLIES Model CV-9	
32223	Capacitor—15 mfd. (C37)	1.00
32222	Capacitor—2-sections 15 mfd. each (C35, C36)	1.30
14409	Plug—7-contact female plug for power out cable	.45
30545	Resistor—180 ohms, ½ watt (R17)	.20
4687	Resistor—1,000 ohms, ½ watt (R18)	.20
13486	Resistor—2,200 ohms, ½ watt (R16)	.22
31251	Socket—Tube socket	.25
32221	Transformer—Power transformer 100-130, 140-160, 195-250 volts, 25-60 cycles (T4)	7.95
	MISCELLANEOUS ASSEMBLIES	
32279	Button—Station selector push button	.06
31935	Clip—Spring clips to hold dial	.10
32272	Dial—Station selector dial scale	.65
32277	Escutcheon—Dial bezel and crystal	1.10
32278	Escutcheon—Push button bezel	.70
31713	Knob—Tuning knob	.20
31355	Knob—Volume control knob	.12
32281	Marker—Push button marker for broadcast band	.02
32280	Marker—Push button marker for short wave band	.02
32067	Marker—One set station call letter markers	.35
12993	Screw—Set screw for knob, Stock No. 31713	.02
14267	Screw—Chassis mounting screw assembly—Model 96BT6 only	.04
30467	Screw—Chassis mounting screw assembly—Model 96BK6 only	.05
14270	Spring—Spring for knob, Stock No. 31355	.05

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE

MODELS 96E2,96K5,96K6,96T7
Chas.RC-351L;97K2,97T2
Chassis RC-351K

RCA MFG. CO., INC.

Alignment,Socket,Trimmers
Tuner Adjustments

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

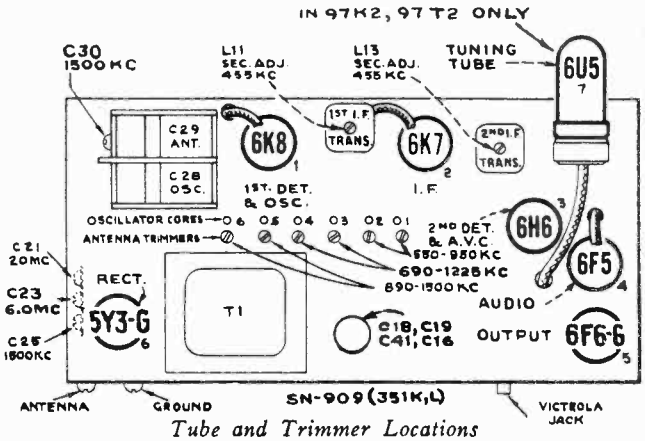
Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum. — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The distance from the front of the chassis to the drum must not exceed 3/8-inch. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.



Tube and Trimmer Locations

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the left-hand end mark, and gang condenser fully meshed.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

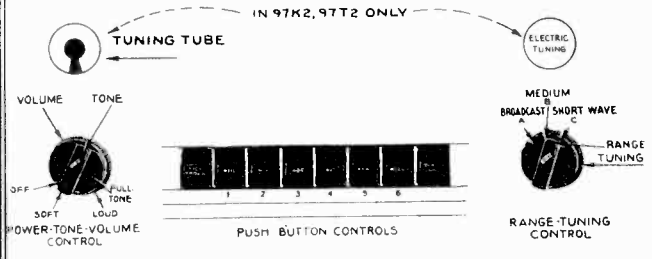
Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	"A" band, Quiet Point between 550-750 kc	L12 and L13 (2nd I-F Trans.)
2	6K8 det. grid cap, in series with .01 mfd.	455 kc		L10 and L11 (1st I-F Trans.)
3	Antenna Terminal, in series with 200 mmf.	600 kc	600 kc (150.5°) "A" band	L9
4		1,500 kc	1,500 kc (28°) "A" band	C25 (osc.) C30 (ant.)
5	Repeat steps 3 and 4.			
6	Antenna Terminal, in series with 400 ohms	6 mc	6 mc (26.5°) "B" band	C23 (osc.)*
7		20 mc	20 mc (22°) "C" band	C21 (osc.)*
8	Follow "Adjustments for Electric Tuning."			

* Use **minimum** capacity peak if two peaks can be obtained, and rock gang condenser slightly while adjusting C23 and C21.

Note.—Oscillator tracks 455 kc above signal on all bands.

ADJUSTMENTS FOR ELECTRIC TUNING

These models have eight push buttons. The left-hand button is a Victrola switch. The right-hand button connects the gang condenser for manual tuning. The other six buttons are for electric tuning of six different stations in the standard broadcast range. The station buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.



Location of Controls

The left-hand push button is a Victrola-Attachment switch. The right-hand push button is for dial tuning.

The procedure is as follows:

1. Make a list of the desired six stations, arranged in order from low to high frequencies.
2. Push in the dial-tuning button, and manually tune in the first station on the list.
3. Push in station button No. 1 (second from left) and adjust No. 1 oscillator core (L37) to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until station is received.
4. Adjust No. 1 antenna trimmer (C36) for maximum output on this station.

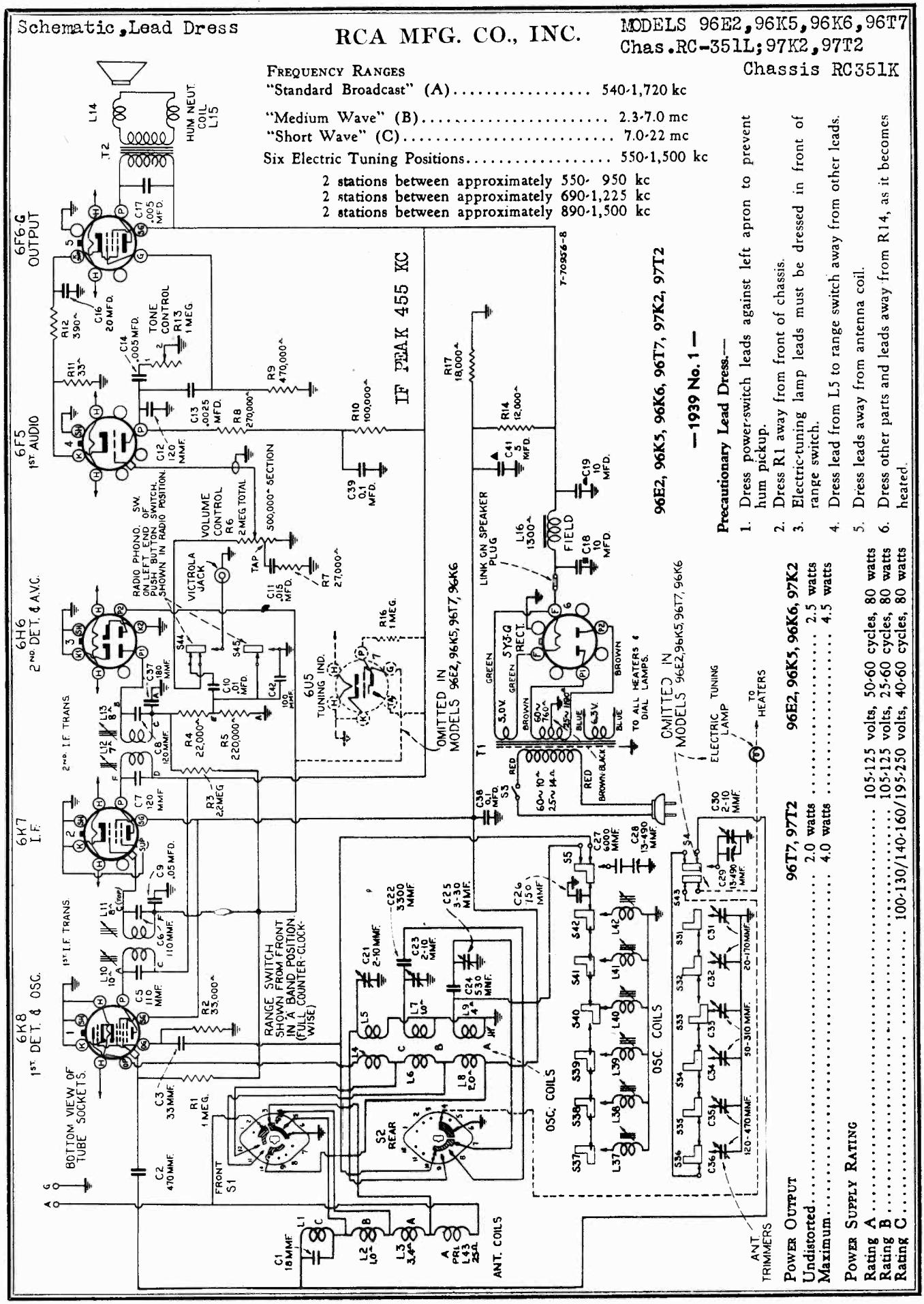
Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.

5. Adjust for each of the remaining five stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers.

Schematic, Lead Dress

RCA MFG. CO., INC.

MODELS 96E2, 96K5, 96K6, 96T7
Chas. RC-351L; 97K2, 97T2
Chassis RC351K



Power Supply Rating

	96T7, 97T2	96E2, 96K5, 96K6, 97K2
Power Output		
Undistorted	2.0 watts	2.5 watts
Maximum	4.0 watts	4.5 watts
Rating A	105-125 volts, 50-60 cycles, 80 watts	
Rating B	105-125 volts, 25-60 cycles, 80 watts	
Rating C	100-130/140-160/195-250 volts, 40-60 cycles, 80 watts	

MODELS 96E2, 96K5, 96K6, 96T7
Chassis RC-351L

RCA MFG. CO., INC.

97K2, 97T2, Chas. RC351K
R-F Chassis Wiring, Data

LOUDSPEAKER

Type ..... Electrodynamic
Voice-coil impedance 84308-1, 84308-4, RL63H-3, RL70H-1.. 2.2 ohms, RL79-1..... 3.4 ohms..... at 400 cycles
Pilot Lamps (1 on Models 96K5, 96K6, 96E2, 96T7) (2 on Models 97K2, 97T2)..... Mazda No. 47, 6.3 volts, .15 amp.

Loudspeaker.—Centering of the loudspeaker voice coil is accomplished in the usual manner with three narrow celluloid or paper feelers after first removing the front dust cover. A dust cover should be cemented in place with ambroid upon completion of adjustment.

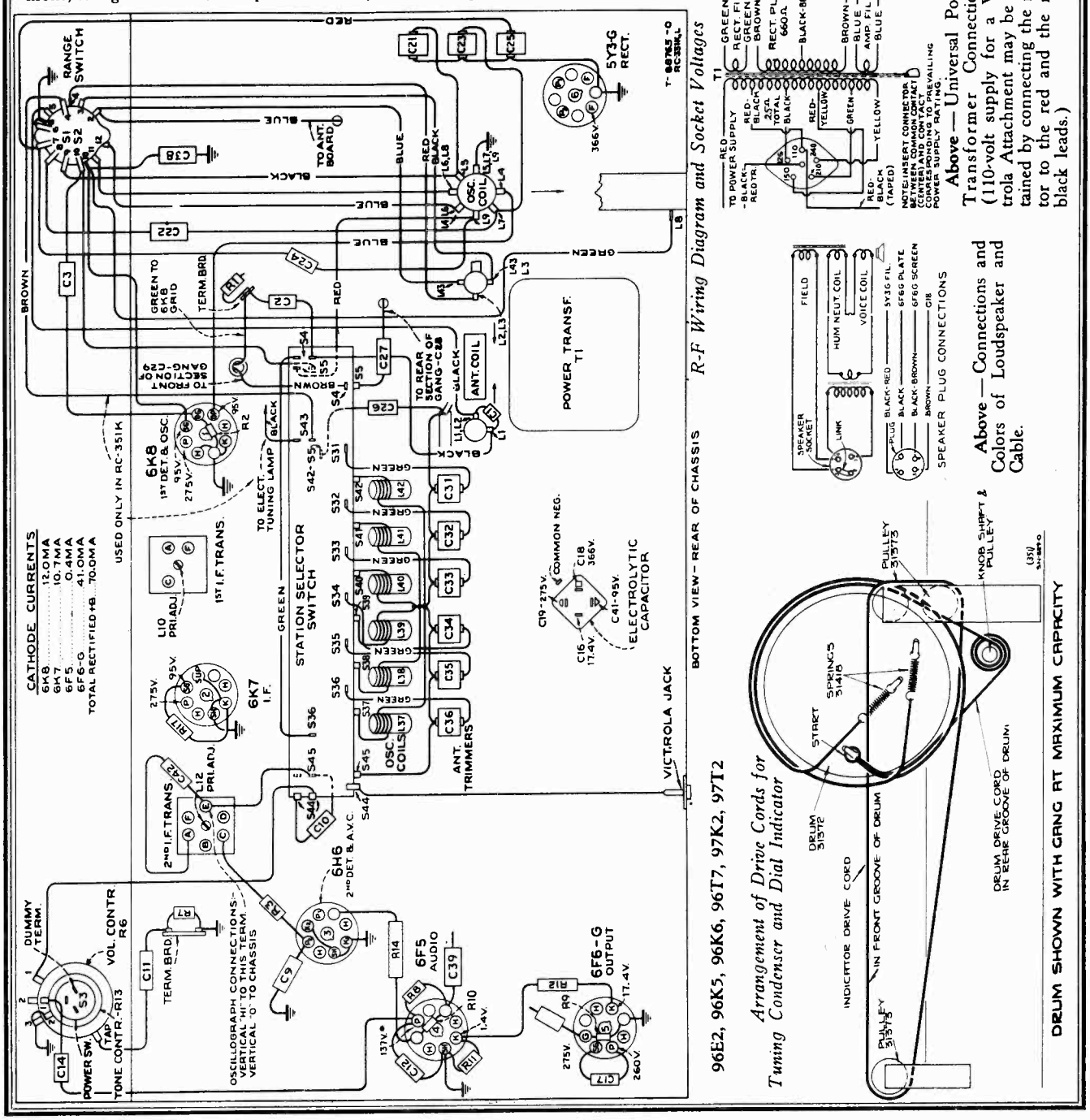
The seven-tube models have a "Magic Eye" tuning tube and illuminated indicator to show when the set is being operated on electric tuning. All models have electric tuning for six stations in the standard broadcast range.

Features of design include: Magnetite-core electric-tuning coils; magnetite-core "A" band oscillator coil; magnetite-core i-f transformers; temperature-compensated capacitor in the oscillator circuit; aural-compensated volume control; high-frequency tone control; jack and switch for Victrola attachment; straight-line dial; dust-proof electrodynamic loudspeaker.

Victrola Attachment.—A jack is provided on the rear of the chassis for connection to a Victrola Attachment. The cable from the Victrola Attachment should be terminated in a Stock No. 31048 plug to fit the jack.

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within ±20% with 117-volt a-c supply.

***NOTE:** Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.



Schematic, Voltage
R-F Chassis Wiring

RCA MFG. CO., INC.

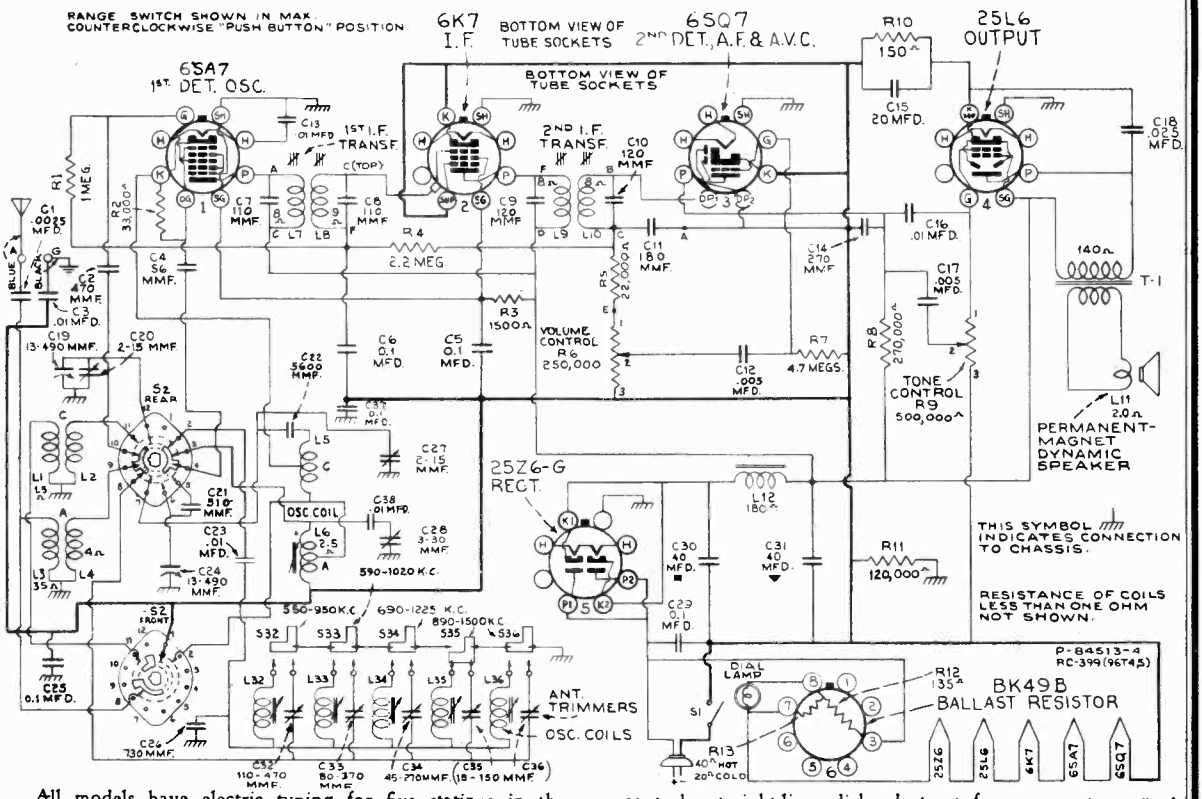
MODELS 96T4, 96T5, Chas. RC-399
96T6, Chassis RC-399A

A-C Rating ..... 105-125 volts, 25-60 cycles, 60 watts
D-C Rating ..... 105-125 volts, direct current, 60 watts
Power Output Rating
Undistorted ..... 1.5 watts
Maximum ..... 2.5 watts

Frequency Ranges
"Standard Broadcast" (A) ..... 540-1,720 kc
"Short Wave" (C) ..... 5.8-18.0 mc
Intermediate Frequency ..... 455 kc

Pilot Lamp ..... Mazda 47, 6.3 volts, 0.15 amp.

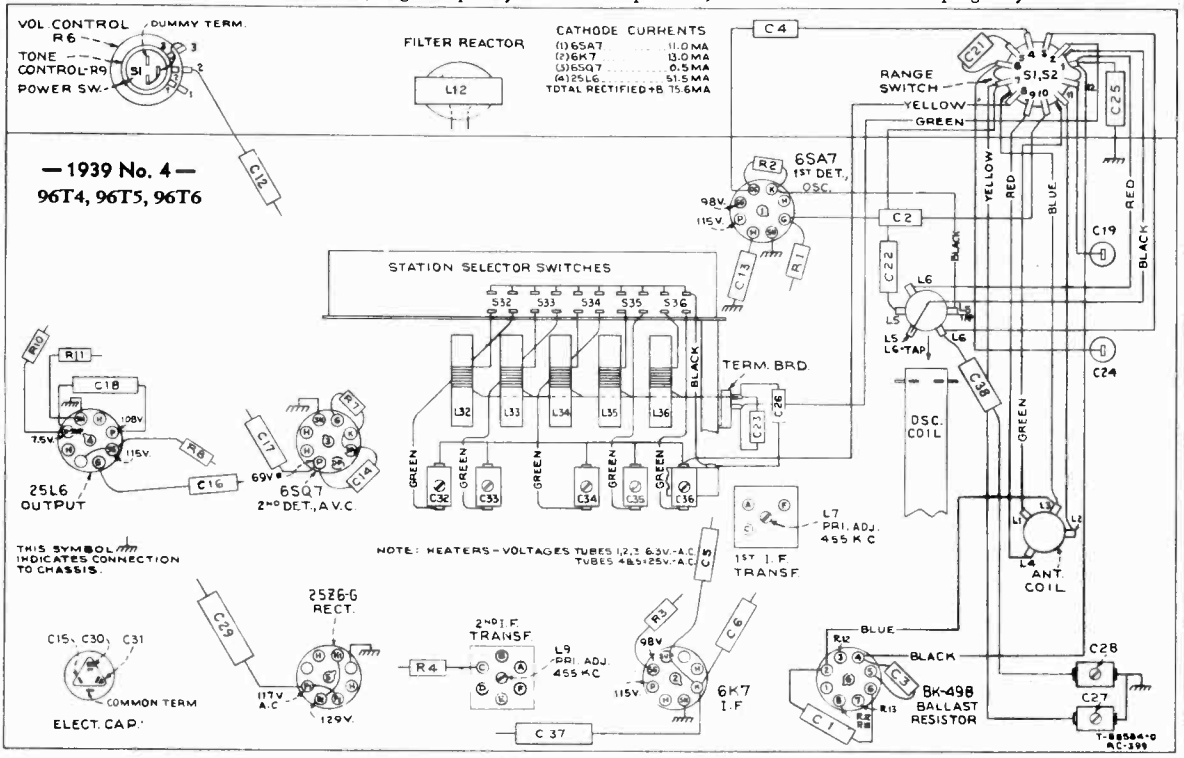
Loudspeaker
Type ..... Permanent Magnet Dynamic
Diameter ..... 96T4, 5: 5 inch—96T6: 6 inch
V.C. Impedance ..... 2 ohms at 400 cycles



All models have electric tuning for five stations in the standard broadcast range.

Features of design include: Magnetite-core electric-tuning coils; magnetite-core i-f transformers; temperature-compensated capacitor in the oscillator circuit; high-frequency tone control; straight-line dial; dust-proof permanent magnet dynamic loudspeaker.

Power Supply Polarity.—On d-c operation, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the position of the plug. On a-c operation, a similar reversal of the plug may reduce hum.



R-F Wiring Diagram and Socket Voltages

Measurements made to low-side of volume control unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within ±20% with 117 volt a-c supply.

* Note: Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

MODELS 96T4,96T5,Chassis RC-399
96T6,Chassis RC-399A
Alignment,Socket,Trimmers
Tuner,Lead Dress,Drive Data

RCA MFG. CO., INC.

Mechanical Specifications

Models	96T4	96T5	96T6
Height (inches)	9½	9½	11¼
Width (inches)	12	12	15⅝
Depth (inches)	6⅛	6⅛	6 15/16
Net Weight (pounds)	11	11	14
Shipping Weight (pounds)	13	13	17

Chassis Base Dimensions ..... 11 3/16-in. wide, 5-in. deep, 2⅞-in. high
Over-all Chassis Height ..... 8 inches
Tuning Drive Ratio ..... 8 to 1

Alignment Procedure

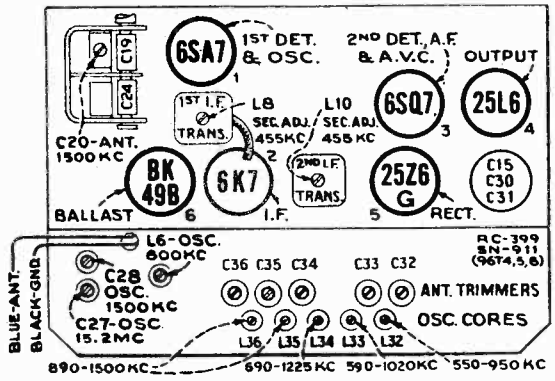
Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the black lead and keep the output as low as possible to avoid a-v-c action.

Calibration Marks.—The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks corresponding to dial readings of 600 kc, 1,500 kc, and 15.2 mc. have been stamped in the plate on the front of the chassis as shown in the accompanying drawing. These marks are used for reference during alignment.

Dial Indicator Adjustment.—With the gang condenser in full mesh, the indicator should point to the extreme left mark on the dial scale.

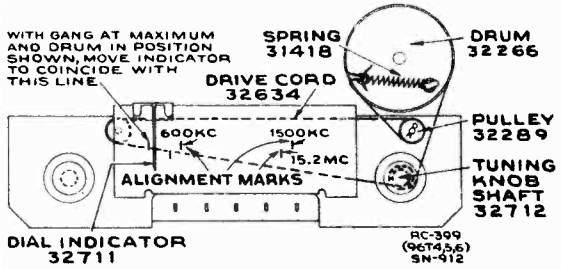
For additional details, refer to booklet "RCA Victor Receiver Alignment."



Tube and Trimmer Locations

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	"A" band, Quiet Point between 550-750 kc	L9 and L10 (2nd I-F Trans.)
2	Tuning condenser Stator (osc.) in series with .01 mfd.	455 kc		L7 and L8 (1st I-F Trans.)
3	Antenna Lead (Blue), in series with 200 mmf.	1,500 kc	1,500 kc (Cal. Mark) "A" Band	C28 (osc.) C20 (ant.)
4	Antenna Lead (Blue), in series with 200 mmf.	600 kc	600 kc (Cal. Mark) "A" Band	L6 (osc.)
5	Repeat steps 3 and 4.			
6	Antenna Lead (Blue), in series with 400 ohms	15.2 mc	15.2 mc (Cal. Mark) "C" Band	C27 (osc.)*
7	Follow "Adjustments for Electric Tuning."			

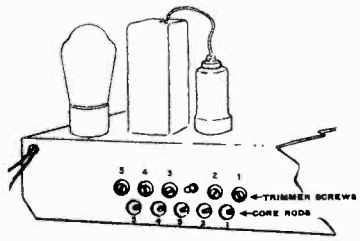
* Rock gang slightly while peaking C27, and use minimum capacity peak if two peaks can be obtained on C27.
Note.—Oscillator tracks 455 kc above signal on both bands.



DIAL DRIVE HOOKUP AND ALIGNMENT MARKS

Dial-Indicator and Drive Mechanism

Refer to "Alignment Procedure" for explanation of the "calibration marks" shown in this drawing.



Push-Button Adjustments

No. 1—Approximately 550-950 kc.
No. 2—Approximately 590-1,020 kc.
No. 3—Approximately 690-1,225 kc.
Nos. 4, 5—Approximately 890-1,500 kc.

Removing Push-Button Assembly.—The push-button assembly is held to the chassis by two nuts on the front apron and may be quickly and easily swung out for convenient access to the sockets and other parts. No unsoldering is required, as flexible leads are used for all connections from the chassis to the assembly.

Miscellaneous Service Data

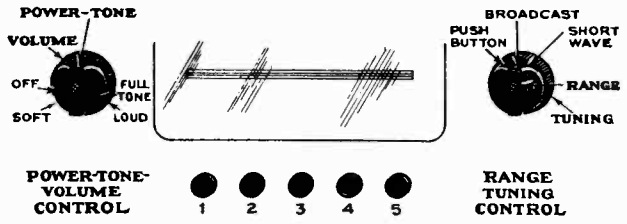
Precautionary Lead Dress.—

1. Volume control lead from 2nd I.F. transformer (E) should be dressed down on chassis.
2. A.C. leads to ballast tube should be dressed away from volume control lead on 2nd I.F. transformer.
3. Coupling condensers C2 and C4 should be dressed away from chassis.

MODELS 96T4, 96T5, Chas. RC-399
96T6, Chassis RC-399A
Tuner Adjustments, Parts

RCA MFG. CO., INC.

96T4, 96T5, 96T6



Location of Controls

Adjustments for Electric Tuning

These models have five push buttons for electric tuning of five different stations in the standard-broadcast range. The station buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments. Use a regular antenna for the preliminary adjustments.

The procedure is as follows:

1. Make a list of the five desired stations, arranged in order from low to high frequencies.
2. Turn Range Control Knob to "Broadcast" position and tune in station No. 1 (560 kc in example) by Manual Dial Tuning, for reference.
3. Push in station-button No. 1 and turn Range Selector to "PB" position. Adjust No. 1 oscillator core (L32) to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until the station is received.
4. Adjust No. 1 antenna trimmer (C32) for maximum output on this station.
5. Adjust for each of the remaining four stations in the same manner.

(Clockwise adjustment of oscillator cores and antenna trimmers tunes the circuits to lower frequencies.)

6. Make a final careful adjustment of the oscillator cores and antenna trimmers, using one or two feet of wire as an antenna to ensure sharp peaking.

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES (RC399—Models 96T4 and 96T5) (RC399A—Model 96T6)	
32544	Ballast—Ballast resistor tube — type BK49B (R12, R13)	.80
31379	Capacitor—Dual trimmer, comprising one 3-30 mmfd. and one 2-10 mmfd. sections (C27, C28)	.40
12723	Capacitor—56 mmfd. (C4)	.35
14262	Capacitor—109 mmfd. (C7, C8)	.30
12404	Capacitor—120 mmfd. (C9, C10)	.30
14712	Capacitor—180 mmfd. (C11)	.30
12488	Capacitor—270 mmfd. (C14)	.35
30433	Capacitor—470 mmfd. (C2)	.35
12537	Capacitor—560 mmfd. (C21)	.35
32714	Capacitor—730 mmfd. (C26)	.45
13895	Capacitor—5,600 mmfd. (C22)	.70
5107	Capacitor—.0025 mfd., 700 volts (C1)	.20
4838	Capacitor—.005 mfd., 1,000 volts (C12, C17)	.25
14393	Capacitor—.01 mfd., 300 volts (C3, C13, C16, C23, C38)	.30
4870	Capacitor—.025 mfd., 400 volts (C18)	.20
4839	Capacitor—0.1 mfd., 400 volts (C5, C6, C25, C29, C37)	.30
32708	Capacitor—Electrolytic, comprising two 40 mfd., and one 20 mfd. sections (C15, C30, C31)	1.35
32705	Capacitor—Push button trimmer capacitor bank (C32, C33, C34, C35, C36)	1.20
31382	Clip—Push button coil mounting clip	.04
32706	Coil—Antenna coil (L1, L2, L3, L4)	1.25
32707	Coil—Oscillator coil (L5, L6)	.95
31385	Coil—Push button oscillator coil — less core 550-950 KC. (L32)	.30
32704	Coil—Push button oscillator coil — less core 590-1,020 KC. (L33)	.35
32340	Coil—Push button oscillator coil — less core 690-1,225 KC. (L34)	.35
31383	Coil—Push button oscillator coil — less core 890-1,500 KC. (L35, L36)	.30
32249	Condenser—2-gang variable (C19, C20, C24)	2.70
31413	Control — Volume control, tone control, and power switch (R6, R9, S1)	3.00
32634	Cord—Drive cord	.10
31386	Core—Core and stud for coil, Stock Nos. 31383, 31385, and 32704	.15
30846	Core—Core and stud for coil, Stock No. 32340	.30
32713	Core—Core and stud for oscillator coil, Stock No. 32707	.35
32266	Drum—Condenser drive cord drum	.45
32711	Indicator—Dial indicator pointer	.20
31480	Lamp—Dial lamp socket	.20
32710	Plate—Dial color plate and pointer track	.30
5119	Plug—3-contact female for speaker cable	.25
32289	Pulley—Indicator drive cord pulley	.10
32709	Reactor—Filter reactor (L12)	1.40
30880	Resistor—150 ohms, ½ watt (R10)	.20
14499	Resistor—1,500 ohms, ½ watt (R3)	.20
14284	Resistor—22,000 ohms, 1/10 watt (R5)	.15
12454	Resistor—33,000 ohms, ½ watt (R2)	.20
13734	Resistor—120,000 ohms, ½ watt (R11)	.20
12199	Resistor—270,000 ohms, ½ watt (R8)	.20
13730	Resistor—1 meg., ½ watt (R1)	.20
12679	Resistor—2.2 meg., ½ watt (R4)	.20
30271	Resistor—4.7 meg., ½ watt (R7)	.20
32544	Resistor—Ballast resistor tube—type BK49B (R12, R13)	.80
30340	Retainer—Pulley retaining clip	.02
14343	Retainer—Tuning knob shaft retaining ring	.03
4669	Screw—No. 8-32 x ¼ square head set screw for drum	.03
32712	Shaft—Tuning knob shaft and pulley	.20
31365	Socket—Dial lamp socket	.30
31251	Socket—Octal base tube socket	.25
31418	Spring—Drive cord tension spring	.05
32703	Switch—Push button switch (S32, S33, S34, S35, S36)	2.25
32702	Switch—Range switch (S2)	1.15
14376	Transformer—First i.f. transformer (L7, L8, C7, C8)	2.45
14308	Transformer—Second i.f. transformer (L9, L10, C9, C10, C11, R5)	2.90
32544	Tube—Ballast resistor tube — type BK49B (R12, R13)	.80
	SPEAKER ASSEMBLIES (84226-4) Models 96T4 and 96T5	
32716	Cone—Speaker cone and voice coil in housing (L11)	1.80
32715	Speaker—Complete	6.70
32717	Transformer—Output transformer (T1)	1.40
	SPEAKER ASSEMBLIES (84307-4) Model 96T6	
32719	Cone—Speaker cone and voice coil in housing (L11)	2.00
5118	Plug—3-contact male plug for speaker	.25
32718	Speaker—Speaker complete	6.00
32720	Transformer—Output transformer (T1)	1.45
	MISCELLANEOUS ASSEMBLIES	
31428	Button—Push button and spring	.06
31487	Clip—Spring clip to hold dial scale	.12
31095	Cover—One set protective covers for call letter markers	.10
32722	Dial—Glass dial scale	.45
31667	Escutcheon—Dial escutcheon (no crystal)	.55
31355	Knob—Range switch knob	.12
31391	Knob—Tone control knob	.15
14359	Knob—Tuning knob	.20
30773	Knob—Volume control knob	.15
30991	Markers—One set station call letter markers	.40
32721	Spring—Push button spring	.02
14270	Spring—Retaining spring for range switch or volume control knob	.05
30330	Spring—Retaining spring for tone control knob	.03
4982	Spring—Retaining spring for tuning knob	.05

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

MODELS 96X1 to 96X4, Chas. RC-400 RCA MFG. CO., INC.
96X11 to 96X14, Chas. RC-400A
MODEL U-104, Chassis RC-345H
Parts Lists

MODELS 96X-1, -2, -3, -4 and -11, -12, -13, -14

Chassis No. RC-400 and RC-400A

Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES	
32999	Back—Cardboard back for cabinet	.10
32544	Ballast—Ballast resistor type BK49B	.80
32530	Button—Ivory push button for 96X11, 96X12 and 96X14	.15
32528	Button—Walnut push button for 96X13	.15
X-580	Cabinet for 96X1 (net)	3.10
X-581	Cabinet for 96X2 (net)	3.10
X-582	Cabinet for 96X3 (net)	3.35
X-583	Cabinet for 96X4 (net)	5.60
X-644	Cabinet for 96X11 (net)	2.90
X-585	Cabinet for 96X12 (net)	2.90
X-645	Cabinet for 96X13 (net)	3.00
X-646	Cabinet for 96X14 (net)	5.20
32531	Coil—Antenna coil	.75
32532	Coil—Oscillator coil	1.00
31379	Condenser—Trimmer, one 3-30 mmfd. and one 2-10 mmfd. sections (C5, C7)	.40
14079	Condenser—6.8 mmfd	.35
13057	Condenser—60 mmfd	.35
12488	Condenser—250 mmfd	.35
31399	Condenser—4,700 mmfd	.65
31480	Lamp—Dial lamp	.20
31589	Marker—1 set push button call letter markers	.35
32810	Mechanism—Push button tuning mechanism comprising push arms, cam plate, frame, and mounting bracket assembled—Models 96X11, 96X12, 96X13, 96X14	5.40
32538	Pulley—Condenser drive pulley and gear—Models 96X11, 96X12, 96X13 and 96X14	.65
32541	Pulley—Condenser drive pulley—Models 96X1, 96X2, 96X3, 96X4	.35
31606	Pulley—Indicator drum pulley	.20
32544	Resistor—Ballast resistor type BK49B	.80
14439	Resistor—100 ohms, ½ watt	.20
32535	Resistor—120 ohms, wire wound	.20
14499	Resistor—1,500 ohms, ½ watt	.20
12454	Resistor—33,000 ohms, ½ watt	.20
12412	Resistor—47,000 ohms, ½ watt	.20
12264	Resistor—220,000 ohms, ½ watt	.20
12285	Resistor—470,000 ohms, ½ watt	.20
12679	Resistor—2.2 meg., ½ watt	.20
13601	Resistor—10 meg., ½ watt	.20
4858	Condenser—.01 mfd	.25
5196	Condenser—.035 mfd	.20
4886	Condenser—.05 mfd	.20
4839	Condenser—0.1 mfd	.30
32548	Condenser—Electrolytic, one 12 mfd. and one 20 mfd. sections	.65
32536	Condenser—Variable tuning condenser	2.40
31456	Cover—1 set protective covers for push button markers	.08
32539	Cord—Condenser drive cord	.10
32540	Cord—Dial drive cord	.10
32526	Dial—Black dial scale for 96X2 and 96X12	.35
32527	Dial—Ivory dial scale for 96X4 and 96X14	.35
32525	Dial—Walnut dial scale for 96X1, 96X3, 96X11 and 96X13	.35
32290	Gear—Sector gear fastens on cam shaft of tuning mechanism—Models 96X11, 96X12, 96X13, 96X14	.50
32542	Indicator—Dial indicator drum	.50
32522	Knob—Ivory knob for 96X1, 96X2, 96X4, 96X11, 96X12, 96X14	.15
32520	Knob—Tan knob for 96X3 and 96X13	.15
31482	Screw—No. 8-32 set screw for condenser drive pulley or sector gear	.03
32510	Screw—Push button cam locking screw—Models 96X11, 96X12, 96X13, 96X14	.10
32547	Shaft—Tuning knob shaft	.15
32543	Socket—Dial lamp socket and bracket	.20
32537	Socket—Tube socket	.20
31615	Spring—Drive cord tension spring	.02
30585	Spring—Push button lever spring—Models 96X11, 96X12, 96X13, 96X14	.06
31646	Spring—Retaining spring for knobs	.02
32546	Switch—Band change switch	.65
32533	Transformer—First i.f. transformer	1.00
32534	Transformer—Second i.f. transformer	.90
32545	Volume control and power switch	1.50
	SPEAKER ASSEMBLIES (84202-3)	
31202	Cone—Speaker cone and voice coil	1.30
31201	Speaker complete	3.95
31203	Transformer—Output transformer	1.00

MODEL U-104 Chassis No. RC-345H

STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES (RC-345H)	
31198	Ballast—Ballast resistor tube (R7, R8)	.80
4287	Body—Connector body for dial lamp connector	.02
30883	Capacitor—300 mmfd. (C9)	.35
12635	Capacitor—1,100 mmfd. (C19)	.50
4838	Capacitor—.005 mfd., 1,000 V. (C18)	.25
4858	Capacitor—.01 mfd., 500 V. (C17)	.25
14393	Capacitor—.01 mfd., 300 V. (C1, C8, C10)	.30
11315	Capacitor—.015 mfd., 400 V. (C11)	.20
30938	Capacitor—.025 mfd. (C15)	.20
30899	Capacitor—0.1 mfd., 200 V. (C4)	.30
4839	Capacitor—0.1 mfd., 400 V. (C12)	.30
12484	Capacitor—0.25 mfd., 350 V. (C20, C16)	.30
31323	Capacitor—16 mfd., 150 V. (C13, C14)	.65
30875	Coil—Antenna coil (L1, L2)	1.10
30876	Coil—R.F. coil (L3, L4)	1.10
31195	Condenser—2-gang variable tuning condenser (C2, C3, C5, C6)	2.50
14086	Cord—Power cord	.65
32634	Cord—Variable condenser drive cord	.10
31200	Dial—Station selector dial scale and plate assembly	.40
4286	Ferrule—Ferrule for dial lamp connector	.03
4340	Lamp—Pilot lamp	.17
31193	Lead—Antenna lead	.50
30868	Plug—2-contact female motor cable plug	.35
31196	Pointer—Station selector indicator pointer	.25
31198	Resistor—Ballast resistor tube (R7, R8)	.80
30880	Resistor—150 ohms, ½ watt (R6)	.20
13734	Resistor—120,000 ohms, ½ watt (R10)	.20
12285	Resistor—470,000 ohms, ½ watt (R4)	.20
13730	Resistor—1 megohm, ½ watt (R5)	.20
12679	Resistor—2.2 megohms, ½ watt (R3)	.20
13601	Resistor—10 megohms, ½ watt (R9)	.20
31197	Shaft—Indicator pointer shaft and pulley	.10
31251	Socket—8-contact tube socket	.25
14171	Socket—Lamp socket assembly	.40
4284	Spring—Spring for dial lamp connector	.03
31096	Switch—Phono. switch (S2)	1.20
31198	Tube—Ballast resistor tube (R7, R8)	.80
32209	Volume Control—(Phono.) (R11)	1.00
31966	Volume Control—Volume control power switch (R1, S1)	1.50
4285	Washer—Insulating washer for dial lamp connector	.02
	PICKUP AND ARM ASSEMBLIES	
32226	Base—Pickup arm pivot shaft and base assembly	.65
4286	Bushing—Bushing and ferrule insert for connector cap	.03
4288	Cap—Pickup cable connector cap	.03
31050	Crystal—Pickup crystal and needle screw	3.75
32227	Pickup arm and crystal complete—less mounting, Stock No. 31054	6.70
12539	Screw—Pickup needle screw	.15
	MOTOR ASSEMBLIES	
9841	Motor—110-volt, 60-cycle—complete with mounting (M1)	6.50
31034	Motor—110-volt, 50-cycle—less mounting (M1)	8.90
31037	Rotor—Turntable and rotor lamination assembly—complete for 50-cycle operation	4.55
31036	Rotor—Turntable and rotor lamination assembly—complete for 60-cycle operation	4.55
31043	Stator—Stator assembly—complete with coils and laminations for 50-cycle operation	2.50
31042	Stator—Stator assembly—comprising coils and laminations for 60-cycle operation	2.50
	SPEAKER ASSEMBLIES (84202-3)	
31202	Cone—Speaker cone (L5)	1.30
31201	Speaker—Speaker complete	3.95
31203	Transformer—Output transformer (T1)	1.00
	MISCELLANEOUS ASSEMBLIES	
31205	Crystal—Station selector dial crystal	.20
30863	Knob—Station selector or power switch knob	.15
31054	Mounting—Pickup arm rubber mounting, washer, and nut	.15
30870	Plug—2-contact male plug for motor leads	.35
14267	Screw—Chassis mounting screw	.04
31053	Screw—Motor mounting screw assembly complete	.30

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

Schematic, Voltage, Socket Trimmers, Alignment, Data

RCA MFG. CO., INC.

MODELS 96X1 to 96X4 inc.
Chassis RC-400
96X11 to 96X14 inc.
Chassis RC-400A

Without Push-Button Tuning

96X-1	96X-2	96X-3	96X-4
Walnut Finish	Black Finish	Walnut and Ivory Finish	Ivory Finish

With Push-Button Tuning

96X-11	96X-12	96X-13	96X-14
Walnut Finish	Black Finish	Walnut and Ivory Finish	Walnut Finish

Electrical and Mechanical Specifications

FREQUENCY RANGES

"Standard Broadcast" (A) (left) ..... 540-1,720 kc
"Short Wave" (C) (right) ..... 5,800-18,000 kc

TUBE COMPLEMENT

(1) RCA-6K8 ..... 1st.-Detector—Oscillator
(2) RCA-6SK7 ..... I-F Amplifier
(3) RCA-6SQ7 ..... 2nd-Det., 1st A-F, and A.V.C.
(4) RCA-25L6 ..... Power Output
(5) RCA-25Z6G ..... Half-Wave Rectifier
(6) RCA-BK-49B ..... Ballast
Pilot Lamp ..... Mazda No. 47, 6.3 volts, 0.15 amp.

POWER SUPPLY RATINGS

A-C Rating ..... 105-125 volts, 50-60 cycle, 50 watts
D-C Rating ..... 105-125 volts, direct current, 50 watts

INTERMEDIATE FREQUENCY ..... 455 kc

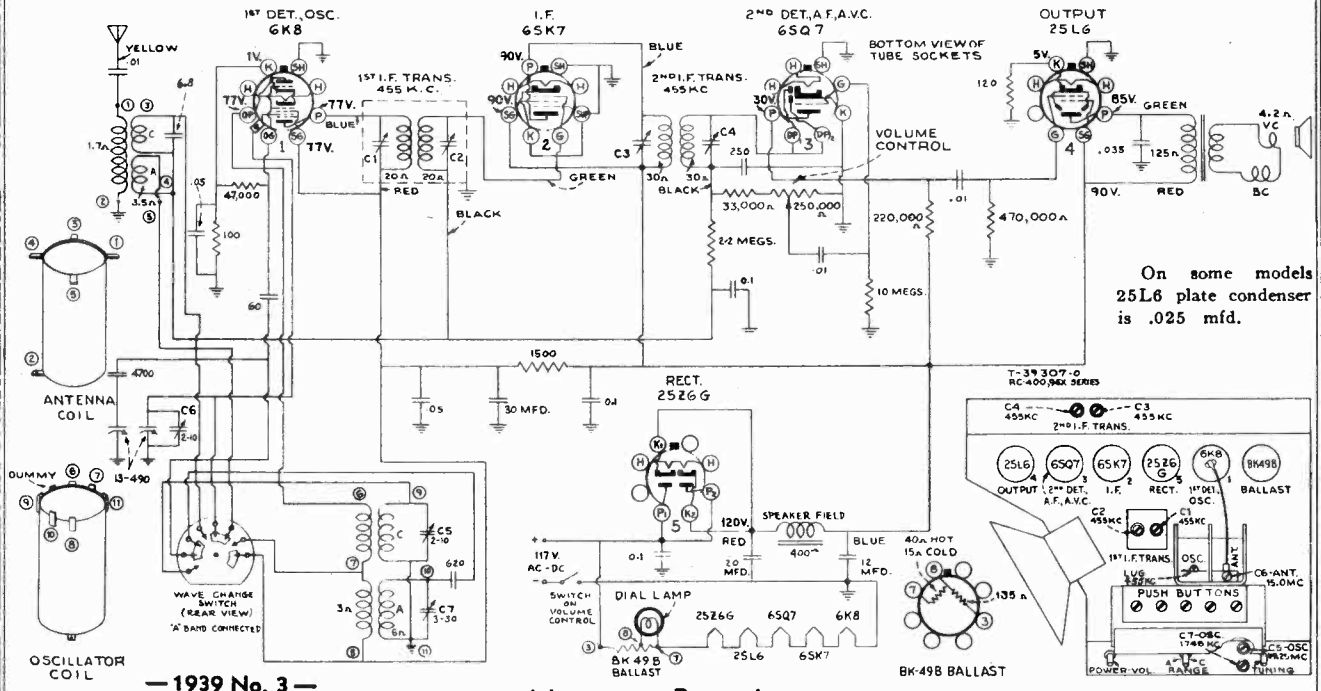
POWER OUTPUT (125 volts, 60 cycle supply)

Undistorted 1.5 watts—Maximum ..... 2.0 watts

LOUDSPEAKER Type 84202-3 ..... 5-inch Electrodynamic

Cabinet Dimensions ....H. 7¼ inches W. 11¼ inches D. 7⅜ inches
Weights (net) 96X1, 2, 3, 4—8½ lbs. .. 96X11, 12, 13, 14—9¼ lbs.
Tuning Drive Ratio ..... 8 to 1

25 Cycle Operation.—For 25 cycle operation change filter condensers to 40-40 mfd.



On some models 25L6 plate condenser is .025 mfd.

—1939 No. 3—

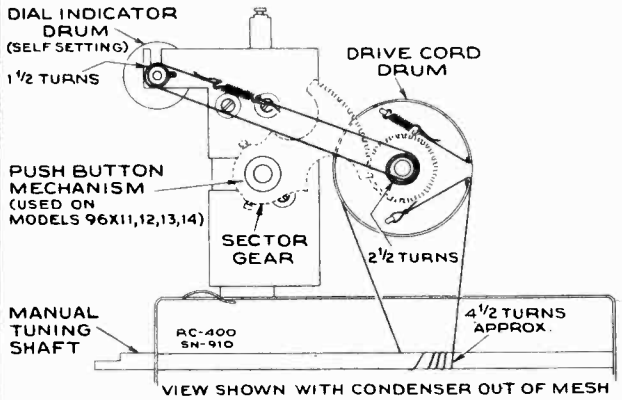
Alignment Procedure

Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible.

Dial Setting.—To set dial indicator drum, turn tuning condensers fully clockwise and then counter-clockwise.

Push-button Adjustments.—Remove bakelite button and loosen screw two turns with a screwdriver or coin. Tune in the desired station by means of the right-hand control knob. Press push lever down as far as it will go and tighten screw. Release lever and put on push-button.



DRIVE CORD HOOKUP

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	Tuning condenser stator (osc.) in series with .01 mfd.†	455 kc	Quiet point between 550-750 kc	C1, C2, C3, C4 (1st and 2nd I-F transformer)
2	Antenna lead (yellow) in series with 400 ohms	19.25 mc	Full clockwise (out of mesh) "C" band	C5* (osc.)
3	Same as step 2	15.0 mc	15.0 mc Test oscillator signal	C6** (ant.) See Note No. 1
4	Antenna lead in series with 200 mmf condenser	1,745 kc	Full clockwise (out of mesh) "A" band	C7 (osc.)

* Use minimum capacity peak if two peaks can be obtained.
** Rock gang slightly and check to determine that C5 has been adjusted to the correct peak by tuning to approximately 14.09 mc, where a weaker signal should be received.
† Make test oscillator connection to lug on tuning condenser stator (oscillator section) in series with .01 mfd. condenser.

Note No. 1.—Accurately tune receiver to the 15.0 mc test oscillator signal. This signal will appear twice (14.09 and 15.0 mc) as dial is turned. Use the higher frequency setting of the tuning condensers (gang furthest out of mesh).

Note No. 2.—Oscillator tracks 455 kc above signal on all bands.

MODEL 97K, Chassis RC-351F
RC-351F "M", RC-351F "R"
Specifications, Calibration Scale

RCA MFG. CO., INC.

MODEL 97K

CHASSIS No. RC-351F, RC-351F "M", RC-351F "R"
Electrical Specifications

FREQUENCY RANGES
"Standard Broadcast" (A) ..... 540-1,720 kc
"Short Wave" (C) ..... 5.8-18.0 mc
Six Electric Tuning Positions ..... 550 to 1,500 kc
Two stations between approximately 550-950 kc
Two stations between approximately 680-1,180 kc (RC-351F)
Two stations between approximately 690-1,225 kc (RC-351F "M," RC-351F "R")
Two stations between approximately 890-1,500 kc

Intermediate Frequency ..... 455 kc

RCA TUBE COMPLEMENT
(1) RCA-6K8 ..... First Detector-Oscillator
(2) RCA-6K7 ..... Intermediate-Frequency Amplifier
(3) RCA-6H6 ..... Second Detector and A.V.C.
(4) RCA-6F5 ..... Audio Voltage Amplifier
(5) RCA-6F6-G ..... Audio Power Output
(6) RCA-5Y3-G ..... Full-Wave Rectifier
(7) RCA-6U5 ..... Tuning Indicator

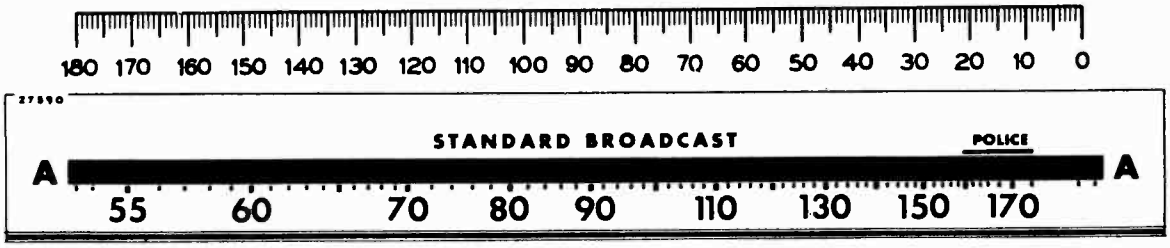
Pilot Lamps (2) ..... Mazda No. 47, 6.3 volts, 0.15 amp.

POWER SUPPLY RATINGS
Rating A ..... 105-125 volts, 50-60 cycles, 80 watts
Rating B ..... 105-125 volts, 25-60 cycles, 80 watts
Rating C ..... 100-130/140-160/195-250 volts, 40-60 cycles, 80 watts

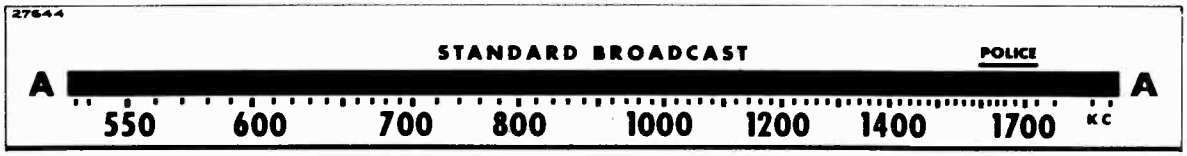
POWER OUTPUT
Undistorted ..... 2.5 watts
Maximum ..... 4.5 watts

LOUDSPEAKER
Type ..... 12-inch, electrodynamic
Voice Coil Impedance at 400 cycles ..... 2.2 ohms

Calibration Scale, RC-351F and RC-351F "M"



The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the lower calibration to the same point on the upper calibration scale. For example, 28° on the calibration scale corresponds to 1,500 kc on "A" band in RC-351F and RC-351F "M."



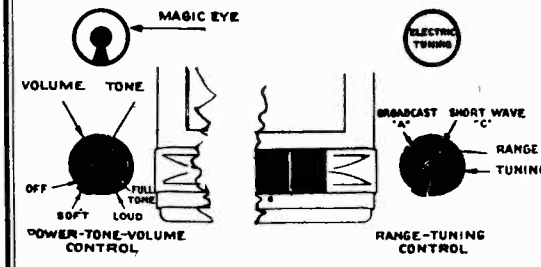
In RC-351F "R," 27.4° corresponds to 1,500 kc, and 15° corresponds to 18 mc.

General Description

This receiver employs a two-band superheterodyne circuit which is operated either manually or by electric tuning on standard broadcast, and includes foreign short-wave, aircraft, police, and amateur stations on the short-wave band.

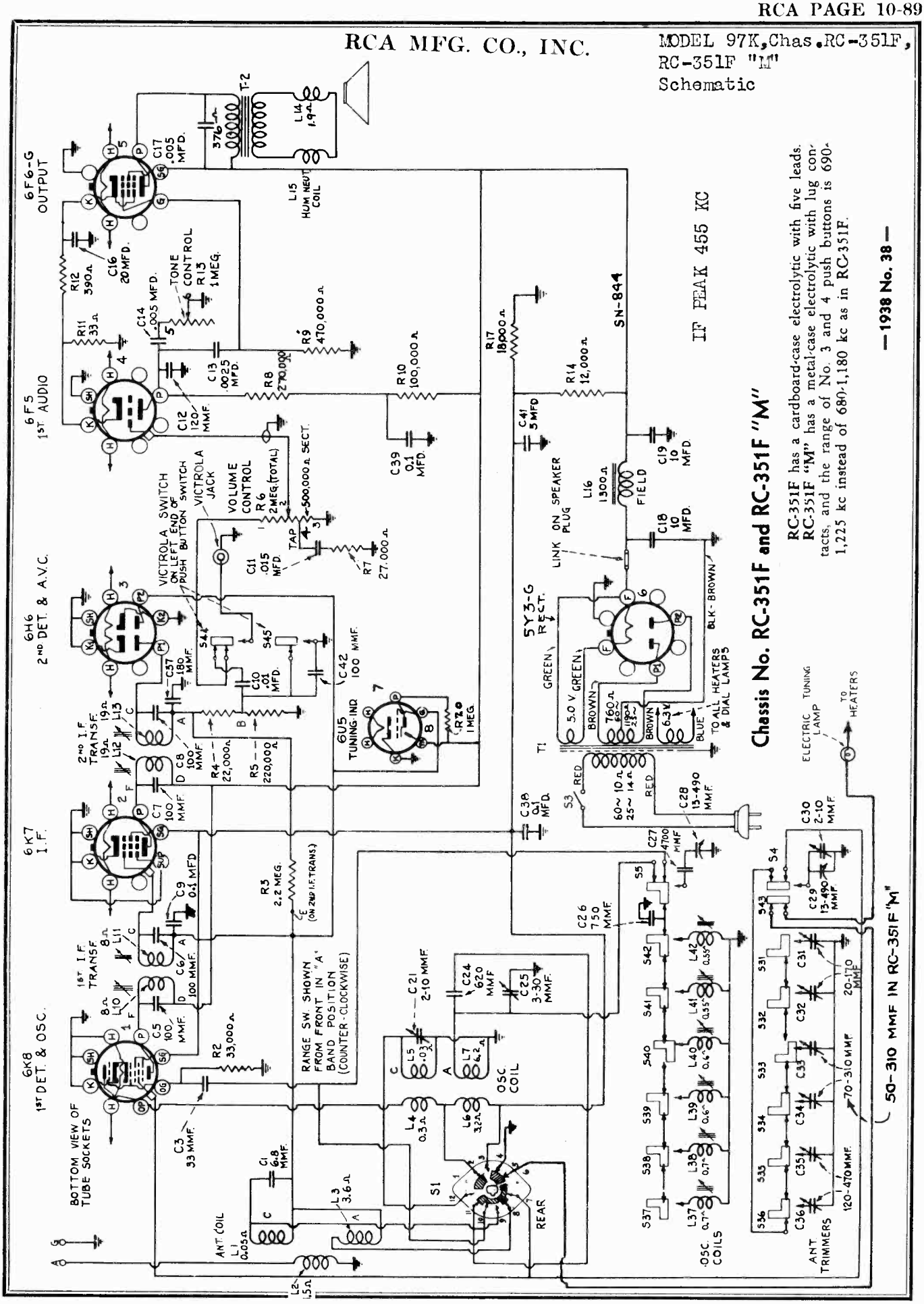
There are three different productions of Model 97K, conveniently identified by rear chassis stamping as RC-351F, RC-351F "M," and RC-351F "R."

Features of design include magnetite-core adjusted i-f transformers and "Electric Tuning" oscillator coils; jack and switch for Victrola attachment; aural-compensated volume control; continuously variable tone-control; automatic volume control; dust-proof electrodynamic speaker; and straight-line dial.



Precautionary Lead Dress.—(1) Dress 110-volt leads away from audio wiring. (2) All leads in vicinity of antenna and oscillator coils must be dressed away from the coils. (3) Electric Tuning lamp leads from push-button switch must be dressed against front apron. (4) Keep speaker leads away from Victrola jack. (5) Lead from C19 in electrolytic (RC-351F "R") must be dressed around left-end of push-button switch, and against chassis base. (6) The leads across back of chassis in RC-351F must be dressed under the electrolytic capacitor to prevent approaching the Victrola jack.

Victrola Attachment.—A jack is provided on the rear of chassis for connection to a Victrola Attachment. The cable from the attachment should be terminated in a Stock No. 31048 plug to fit the jack.



MODEL 97K, Chas. RC-351F,
RC-351F "M"
Voltage, Chassis Wiring
Transformer, Speaker Data

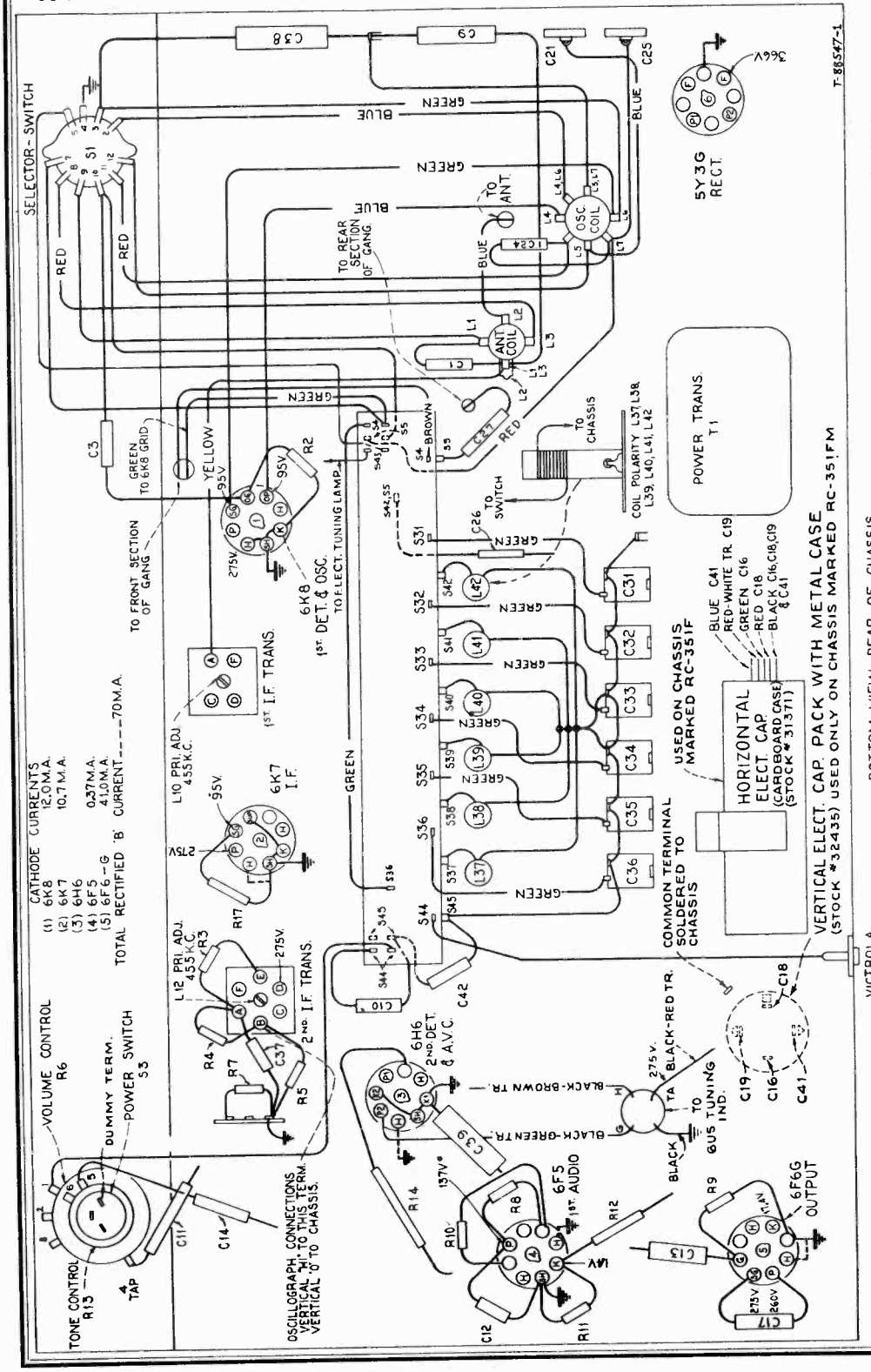
RCA MFG. CO., INC.

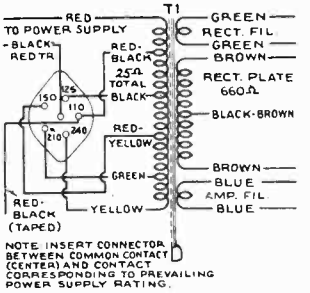
Chassis No. RC-351F and RC-351F "M"

R-F Wiring Diagram and Socket Voltages

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within ±20% with 117-volt a-c supply.

* **NOTE:** Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltage will be lower, depending on the voltmeter loading.

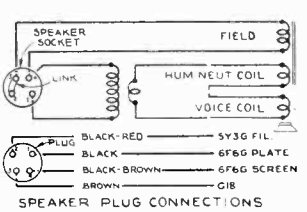




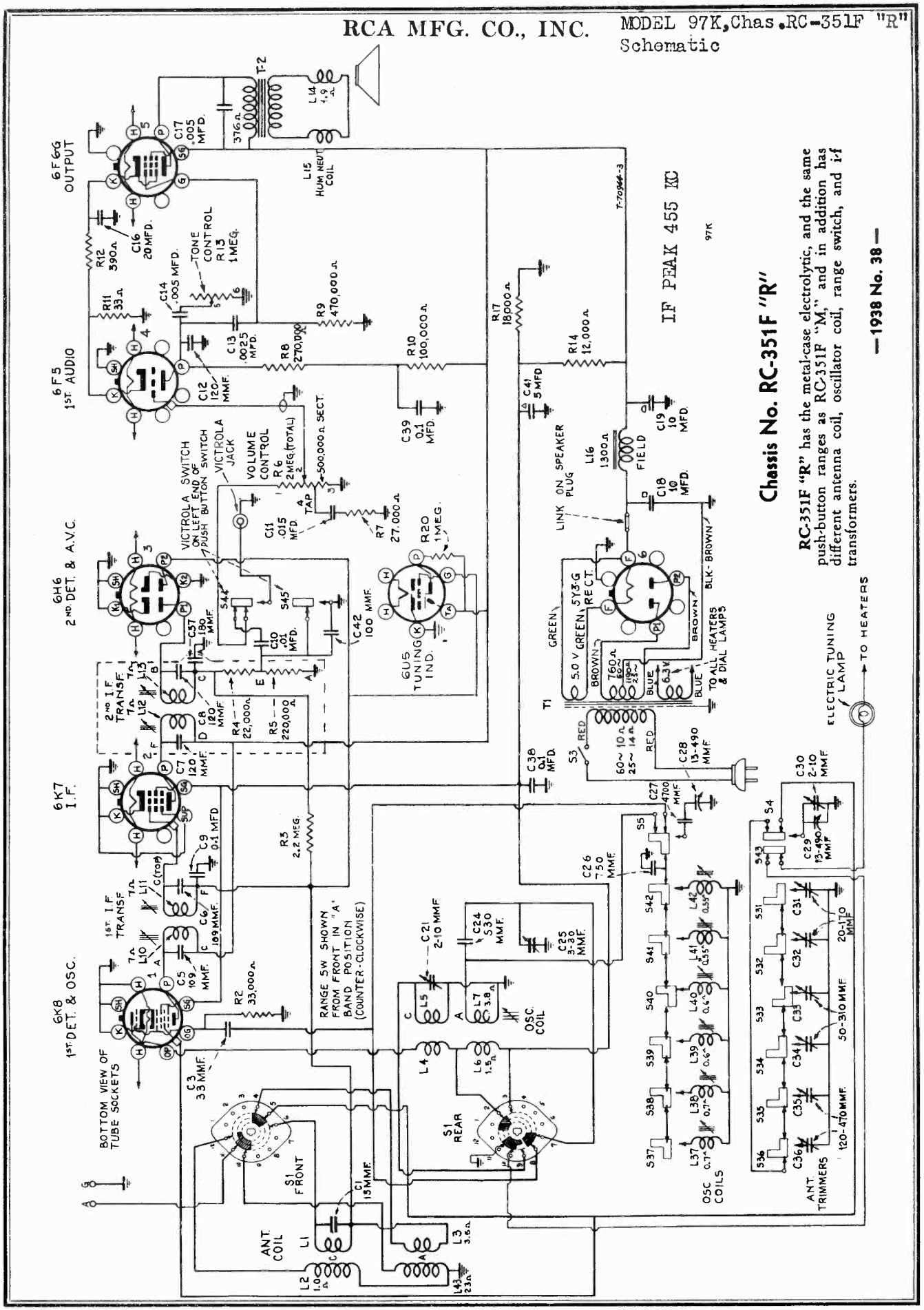
Above.—Universal Power Transformer Connections. 110-volt supply for a Victrola Attachment may be obtained by connecting the motor to the red and the red-black leads.

Mechanical Specifications

Height (inches)	41
Width (inches)	27 3/8
Depth (inches)	14 1/2
Net Weight (pounds)	54 1/2
Shipping Weight (pounds)	69
Chassis Base Dimensions	13 inches x 6 1/2 inches x 2 1/2 inches
Overall Chassis Height	6 inches
Tuning Drive Ratio	12:1



Above.—Connections and Colors of Loudspeaker and Cable.



MODEL 97K, Chas. RC-351F "R"
Voltage, Chassis Wiring
Transformer, Speaker Data

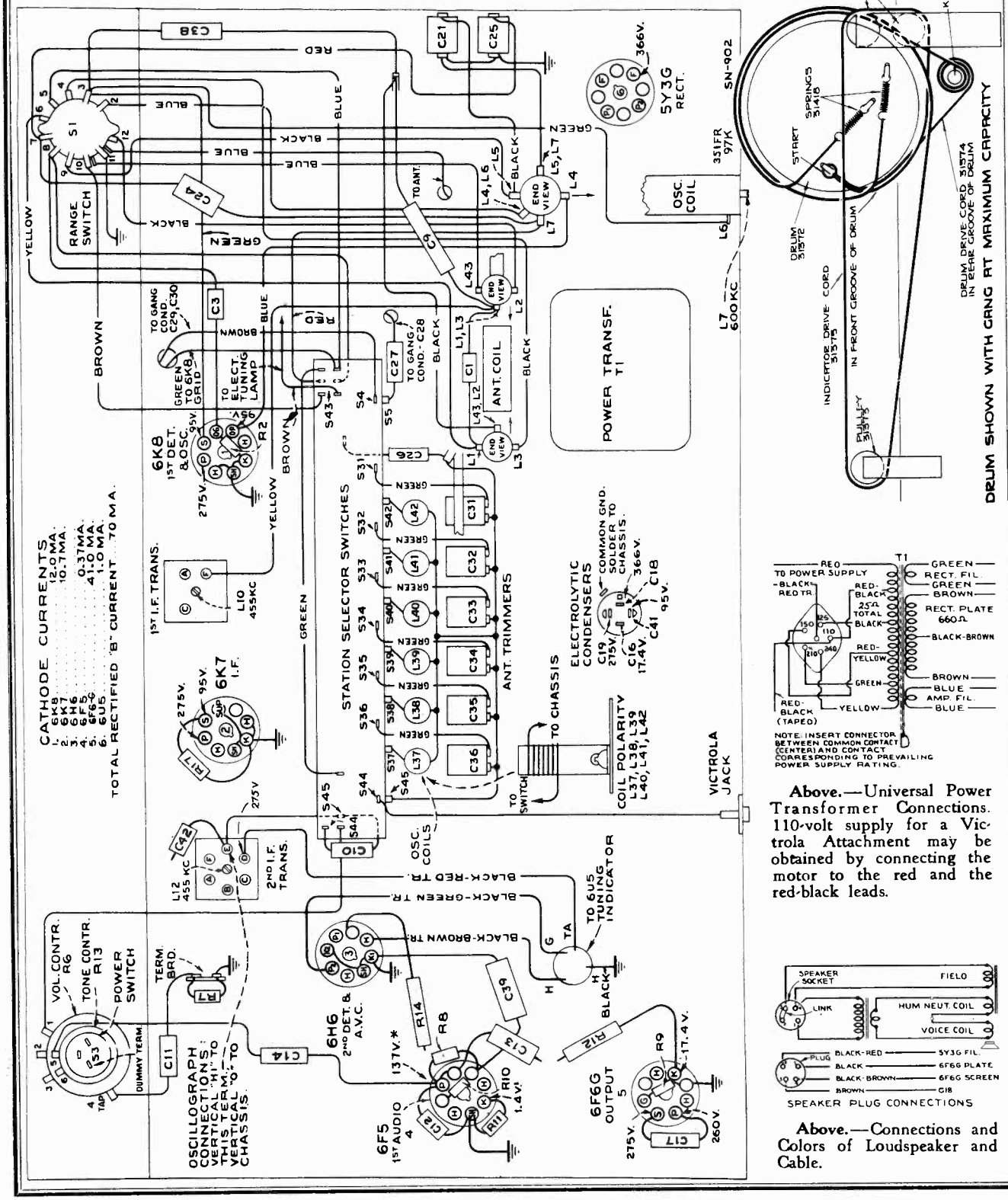
RCA MFG. CO., INC.

Chassis No. RC-351F "R"

R-F Wiring Diagram and Socket Voltages

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within ±20% with 117-volt a-c supply.

* NOTE: Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltage will be lower, depending on the voltmeter loading.



Above.—Universal Power Transformer Connections. 110-volt supply for a Victrola Attachment may be obtained by connecting the motor to the red and the red-black leads.

Above.—Connections and Colors of Loudspeaker and Cable.

RCA MFG. CO., INC.

MODEL 97K, Chassis RC-351F, RC-351F "M", RC-351F "R"
Alignment, Socket, Trimmers

ALIGNMENT PROCEDURE

Tuner Adjustments

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

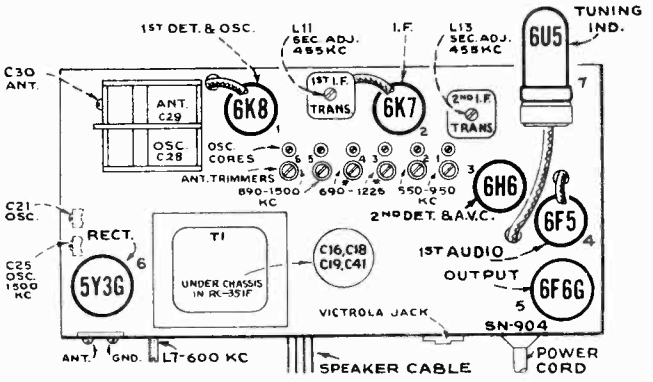
Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum. — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The distance from the front of the chassis to the drum must not exceed 3/8-inch. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.



* In RC-351F, push buttons 3 and 4 cover 680-1,180 kc.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

RC-351F and RC-351F "M"

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	"A" band, Quiet Point between 550-750 kc	L12 and L13 (2nd I-F Trans.)
2	6K8 det. grid cap, in series with .01 mfd.	455 kc		L10 and L11 (1st I-F Trans.)
3	Antenna Terminal, in series with 400 ohms	15.2 mc	15.2 mc (33.5°) "C" band	C21* (osc.) C30** (ant.)
4	Antenna Terminal, in series with 200 mmf.	1,500 kc	1,500 kc (28°) "A" band	C25 (osc.)
5	Follow "Adjustments for Electric Tuning."			

* Use minimum capacity peak if two peaks can be obtained.
** Rock gang slightly while adjusting C30. Check to determine that C21 has been adjusted to the correct peak by tuning to approximately 40.5° (14.29 mc), where a weaker signal should be received.
Note.—Oscillator tracks 455 kc above signal on both bands.

RC-351F "R"

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	"A" band, Quiet Point between 550-750 kc	L12 and L13 (2nd I-F Trans.)
2	6K8 det. grid cap, in series with .01 mfd.	455 kc		L10 and L11 (1st I-F Trans.)
3	Antenna Terminal in series with 200 mmf.	1,500 kc	1,500 kc (27.4°) "A" band	C25 (osc.) C30 (ant.)
4	Antenna Terminal, in series with 200 mmf.	600 kc	600 kc (148°) "A" band	L7 (osc.)
5	Repeat steps 3 and 4.			
6	Antenna Terminal, in series with 400 ohms	18 mc	18 mc (15°) "C" band	C21 (osc.)*
7	Follow "Adjustments for Electric Tuning."			

* Rock gang slightly while peaking C21, and use minimum capacity peak if two peaks can be obtained on C21.
Note.—Oscillator tracks 455 kc above signal on both bands.

ADJUSTMENTS FOR ELECTRIC TUNING

These models have eight push buttons. The left-hand button is a Victrola switch. The right-hand button connects the gang condenser for manual tuning. The other six buttons are for electric tuning of six different stations in the standard broadcast range. The station buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

The procedure is as follows:

1. Make a list of the desired six stations, arranged in order from low to high frequencies.
2. Use one or two feet of wire as an antenna to ensure sharp peaking.
3. Push in the dial-tuning button, and manually tune in the first station on the list.
4. Push in station button No. 1 (second from left) and adjust No. 1 oscillator core (L37) to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until station is received.
5. Adjust No. 1 antenna trimmer (C36) for maximum output on this station.

   Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.
6. Adjust for each of the remaining five stations in the same manner.
7. Make a final readjustment of the magnetite-cores.

MODEL 97K, Chassis RC-351F,
RC-351F "M", RC-351F "R"

RCA MFG. CO., INC.

Parts List

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES (RC-351F, RC-351F "M," and RC-351F "R")	
30752	Bracket—Magic Eye mounting bracket	.25
14517	Board—Antenna—ground terminal board	.25
12110	Cap—Tube shield cap	.14
31379	Capacitor—Dual trimmer 2-10 mmfd. and 3-30 mmfd. (C21, C25)	.40
14079	Capacitor—6.8 mmfd. (C1) use in RC-351F and RC-351F "M" only	.35
12896	Capacitor—15 mmfd. (C1) used in RC-351F "R" only	.35
31387	Capacitor—Antenna coil trimmer capacitor bank, (C31, C32, C33, C34, C35, and C36) used in RC-351F only	1.30
32486	Capacitor—Antenna coil trimmer capacitor bank, (C31, C32, C33, C34, C35, and C36) used in RC-351F "M" and RC-351F "R" only	1.40
12948	Capacitor—33 mmfd. (C3)	.35
12720	Capacitor—100 mmfd. (C42)	.35
30904	Capacitor—100 mmfd. (C5, C6, C7, C8) used in RC-351F and RC-351F "M" only	.25
14262	Capacitor—109 mmfd. (C5 and C6) used in RC-351F "R" only	.30
12404	Capacitor—120 mmfd. (C7 and C8) used in RC-351F "R" only	.30
12724	Capacitor—120 mmfd. (C12)	.35
13003	Capacitor—180 mmfd. (C37) mounted under chassis in RC-351F and RC-351F "M" only	.35
14712	Capacitor—180 mmfd. (C37) mounted in 2nd I-F transformer in RC-351F "R" only	.30
32492	Capacitor—530 mmfd. (C24) in RC-351F "R" only	.40
31381	Capacitor—620 mmfd. (C24) in RC-351F and RC-351F "M" only	.45
31435	Capacitor—750 mmfd. (C26)	.40
31399	Capacitor—4,700 mmfd. (C27)	.65
5107	Capacitor—.0025 mfd. (C13)	.20
4838	Capacitor—.005 mfd. (C14, C17)	.25
14393	Capacitor—.01 mfd. (C10)	.30
11315	Capacitor—.015 mfd. (C11)	.20
4839	Capacitor—0.1 mfd. (C9, C38, C39)	.30
31371	Capacitor—Comprising two 10 mfd., one 20 mfd., and one 5 mfd. sections (C16, C18, C19, C41) (cardboard case type, mounted horizontally and used in RC-351F only)	2.25
32485	Capacitor—Comprising two 10 mfd., one 20 mfd., and one 5 mfd. sections (C16, C18, C19, C41) (metal case type, mounted vertically and used in RC-351F "R" and RC-351F "M" only)	1.75
31382	Clip—Oscillator coil and core mounting clip	.04
31378	Coil—Antenna coil, "A" and "C" bands (L1, L2, L3) mounted vertically and used in RC-351F and RC-351F "M" only	1.10
32488	Coil—Antenna coil, "A" and "C" bands (L1, L2, L3, L43) mounted horizontally and used in RC-351F "R" only	1.40
31377	Coil—Oscillator coil, "A" and "C" bands (L4, L5, L6, L7) mounted vertically (no magnetite core) and used in RC-351F and RC-351F "M" only	1.70
32489	Coil—Oscillator coil, "A" and "C" bands (L4, L5, L6, L7) mounted horizontally (with magnetite core) and used in RC-351F "R" only	.90
31383	Coil—Push-button oscillator coil (L41, L42)	.30
31384	Coil—Push-button oscillator coil (L39, L40) used in RC-351F only	.30
32487	Coil—Push-button oscillator coil (L39, L40) used in RC-351F "M" and "R"	.35
31385	Coil—Push-button oscillator coil (L37, L38)	.30
31369	Condenser—2-gang variable tuning condenser (C28, C29, C30)	2.65
31366	Control—Volume control, tone control, and on-off switch (R6, R13, S3)	3.00
31375	Cord—Indicator pointer drive cord	.30
31374	Cord—Variable condenser drum drive cord	.15
30905	Core—Adjustable core and stud for i-f transformer	.35
31386	Core—Adjustable core and stud for oscillator coils Stock Nos. 31383, 31384, 31385, 32487	.15
12800	Core—Adjustable core and stud for oscillator coil Stock No. 32489	.35
31372	Drum—Variable condenser drive cord drum and calibrator dial	.65
31480	Lamp—Dial lamp	.20
5040	Plug—4-contact female plug for speaker cable	.30
31373	Pulley—Drive cord pulley	.08
14671	Resistor—33 ohms, ½ watt (R11)	.20
31388	Resistor—390 ohms, 1 watt (R12)	.22
31389	Resistor—12,000 ohms, wire-wound, 5 watts (R14)	.50
30151	Resistor—18,000 ohms, 1 watt (R17)	.22
14284	Resistor—22,000 ohms, 1/10 watt (R4)	.15
12738	Resistor—27,000 ohms, ½ watt (R7)	.20
12454	Resistor—33,000 ohms, ½ watt (R2)	.20
14560	Resistor—100,000 ohms, ½ watt (R10)	.20
11398	Resistor—220,000 ohms, 1/10 watt (R5) used in RC-351F "R"	.15
12264	Resistor—220,000 ohms, ½ watt (R5) used in RC-351F and RC-351F "M"	.20
12199	Resistor—270,000 ohms, ½ watt (R8)	.20
12285	Resistor—470,000 ohms, ½ watt (R9)	.20
12013	Resistor—1 meg., 1/10 watt (R20)	.15
12679	Resistor—2.2 meg., ½ watt (R3)	.20
14343	Retainer—Retaining spring for station selector knob shaft	.03
14887	Retainer—Drive cord pulley retainer	.01
4669	Screw—No. 8-32 square head set screw for drum Stock No. 31372	.03
31368	Shaft—Station selector knob shaft and pulley	.30
31418	Spring—Indicator, or drum drive cord tension spring	.05
31364	Socket—Dial lamp socket	.20
31365	Socket—Electric tuning indicator lamp socket (insulated)	.30
13871	Socket—Magic Eye socket	.45
14278	Socket—Pickup socket	.25
31251	Socket—Tube socket	.25
31367	Switch—Range switch (S1) used in RC-351F and RC-351F "M" only	1.05
32490	Switch—Range switch (S1) used in RC-351F "R" only	1.10
32498	Switch—Station selector push-button switch (S4, S5, S31, S32, S33, S34, S35, S36, S37, S38, S39, S40, S41, S42, S43, S44, S45)	3.85
30902	Transformer—1st I-F transformer (L10, L11, C5, C6) used in RC-351F and RC-351F "M" only	1.90
14376	Transformer—1st I-F transformer (L10, L11, C5, C6) used in RC-351F "R" only	2.45
30903	Transformer—2nd I-F transformer (L12, L13, C7, C8) used in RC-351F and RC-351F "M" only	1.80
14283	Transformer—2nd I-F transformer (L12, L13, C7, C8, C37, R4, R5) used in RC-351F "R" only	3.80
31445	Transformer—Power transformer 100-120 volts, 25-60 cycle (T1)	7.80
31380	Transformer—Power transformer 100-120 volts, 50-60 cycle (T1)	6.35
31446	Transformer—Power transformer 100-130/140-160/195-250 volts, 50-60 cycle (T1)	8.05
	SPEAKER ASSEMBLIES (RL-70-F3)	
13866	Cap—Dust cap for cone center	.03
12012	Coil—Field coil (L12)	2.90
11469	Coil—Hum neutralizing coil (L14)	.30
31275	Cone—Speaker cone and voice coil (L13)	1.75
31302	Plug—4-contact male plug	.25
31300	Speaker—Speaker complete	10.95
14358	Screw—Screw, washer, and lockwasher to hold core in yoke	.04
31301	Transformer—Output transformer (T2)	1.70
14357	Washer—Spring washer to hold field coil	.06
	MISCELLANEOUS ASSEMBLIES	
12038	Band—Rubber band for "Magic Eye"	.02
31397	Button—Station selector push button	.15
31456	Cover—8 protective covers for push button markers	.08
31396	Dial—Dial scale (glass) used in RC-351F and RC-351F "M" only	.95
32356	Dial—Dial scale (glass) used in RC-351F "R" only	.70
31395	Escutcheon—Station selector escutcheon—less dial scale and push buttons	1.15
31407	Escutcheon—"Magic Eye" or "Electric Tuning" indicator escutcheon	.25
31392	Indicator—Station selector indicator pointer	.30
31355	Knob—Range switch knob	.12
14359	Knob—Station selector knob	.20
31391	Knob—Tone control knob	.15
30778	Knob—Volume control knob	.15
31589	Marker—Station call letter markers for push buttons	.35
31458	Marker—"Dial Tuning" marker for push button	.01
31457	Marker—"Victrola" marker for push button	.01
31393	Screen—Station selector dial color screen and light diffuser	.40
4982	Spring—Retaining spring for knob Stock No. 14359	.05
14270	Spring—Retaining spring for knob Stock Nos. 31355 and 30773	.05
30330	Spring—Retaining spring for knob Stock No. 31391	.03
31394	Stop—Indicator pointer slide stop	.08

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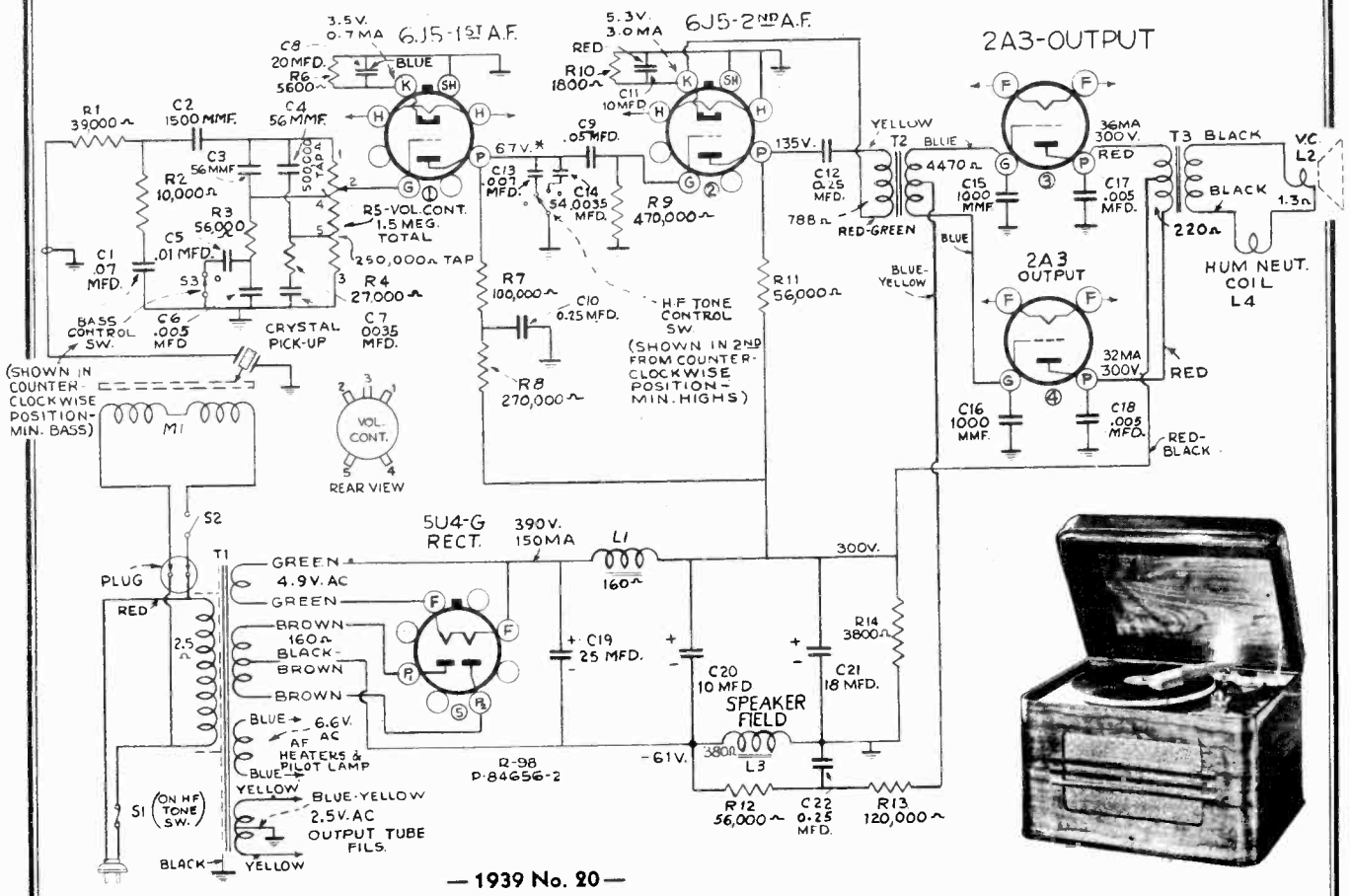
RCA MFG. CO., INC.

MODEL R-98, Chassis RS-77
Schematic, Voltage, Socket
Speaker Connections



— 1939 No. 20 —

* NOTE: Values with star are operating voltages in circuits with high series-resistance, and when measured will read lower depending on the voltmeter loading.

Measurements made to chassis unless otherwise indicated, volume control at minimum. Values should hold within approximately ± 20% with 117-volt a-c supply.

RCA Tube Complement

(1)	RCA-6J5	1st Audio Amplifier
(2)	RCA-6J5	2nd Audio Amplifier
(3)	RCA-2A3	Power Output
(4)	RCA-2A3	Power Output
(5)	RCA-5U4-G	Rectifier

Power Supply Rating

A	105-125 volts, 50-60 cycles, 175 watts
A-6	105-125 volts, 60 cycles, 175 watts

Power Output

Undistorted	12 watts
Maximum	13.5 watts

Loudspeaker

Type	Eight-Inch Electrodynamic
Voice Coil Impedance	1.3 ohms at 400 cycles

Motor Board

Motor	Self-starting Induction
Turntable Speed	78 r.p.m. (adjustable)

Pickup

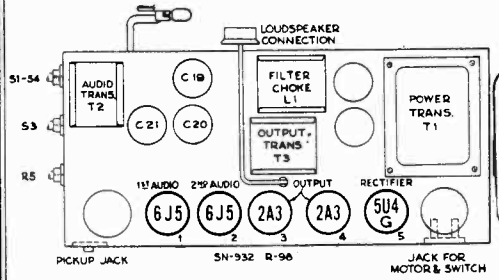
Type	Crystal
Impedance	100,000 ohms at 1,000 cycles

Cabinet Dimension	Height 14¼ inches	Width	19¾ inches	Depth	14 inches
Chassis Base Dimensions	Height 2¾ inches	Width	16¼ inches	Depth	7¾ inches
Weight (Shipping)	54 pounds		Weight (Net)		47½ pounds

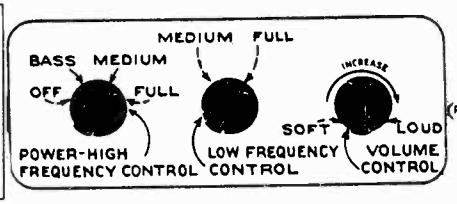
General Description and Service Data

The model R-98 Victrola consists of a crystal pickup, a five tube audio amplifier, a eight inch dust-proof electrodynamic speaker, and a motor turntable mechanism all combined in a hinged-top, table type walnut veneer cabinet. This instrument will reproduce records up to 12-inches in size.

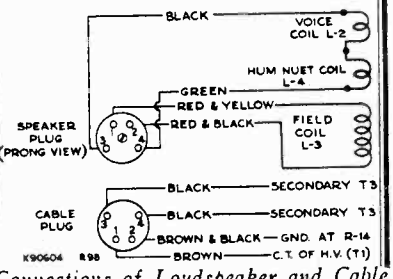
The crystal pickup unit is securely sealed in a metal casing, for protection against extreme changes in atmospheric conditions. If failure occurs, a new replacement crystal unit should be installed.



Top View, Showing Location of Parts



Location of Controls



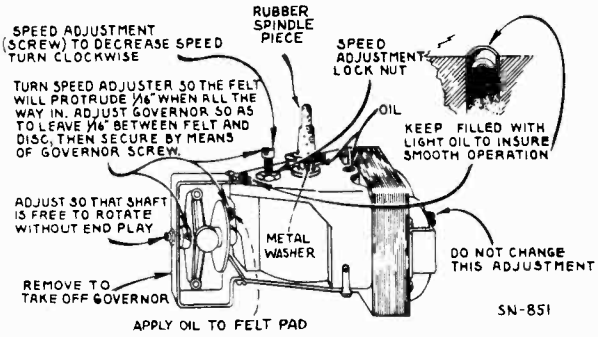
Connections of Loudspeaker and Cable

MODEL R-98, Chassis RS-77
Motor Data, Switch Assembly
Parts List

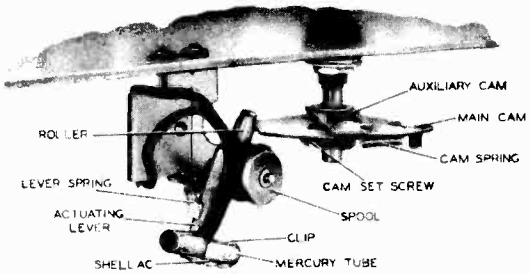
RCA MFG. CO., INC.

RCA Victor MODEL R-98 (Chassis No. RS-77)

Five-Tube, A-C, Electric Victrola (Phono. only)



Motor Lubrication and Adjustments



Mercury Switch Assembly
(Shown with pickup in rest position)

Adjust main cam so that switch trips into the "off" position when needle is 1¾ inches from the center line of motor spindle.

Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	Unit List Price
	AMPLIFIER ASSEMBLIES	
12723	Capacitor—56 mmfd. (C3, C4)	.35
12635	Capacitor—1,000 mmfd. (C15, C16)	.50
31033	Capacitor—1,500 mmfd. (C2)	.35
30303	Capacitor—.0035 mfd. (C7, C14)	.40
4838	Capacitor—.005 mfd. (C6, C17, C18)	.25
5148	Capacitor—.007 mfd. (C13)	.20
4937	Capacitor—.01 mfd. (C5)	.25
32787	Capacitor—.05 mfd. (C9)	.20
14626	Capacitor—.07 mfd. (C1)	.25
12484	Capacitor—0.25 mfd. (C10, C12, C22)	.30
11203	Capacitor—Electrolytic, 10 mfd (C20)	1.15
14273	Capacitor—Electrolytic, one 10 mfd., and one 20 mfd. sections (C8, C11)	1.10
11496	Capacitor—Electrolytic, 18 mfd. (C21)	1.35
14531	Capacitor—Electrolytic, 25 mfd. (C19)	1.55
33396	Control—H.F. tone control and switch (S1, S4)	1.00
33397	Control—L.F. tone control (S3)	.45
5040	Plug—Speaker cable plug	.30
12466	Reactor—Filter reactor (L1)	4.20
12194	Resistor—1,800 ohms, ½ watt (R10)	.20
33482	Resistor—voltage divider, 3,800 ohms (R14)	.75
13714	Resistor—5,600 ohms, ½ watt (R6)	.20
14559	Resistor—10,000 ohms, ½ watt (R2)	.20
12738	Resistor—27,000 ohms, ½ watt (R4)	.20
12266	Resistor—39,000 ohms, ½ watt (R1)	.20
12286	Resistor—56,000 ohms, ½ watt (R12) (R3)	.20
17440	Resistor—56,000 ohms, 1 watt (R11)	.22
14560	Resistor—100,000 ohms, ½ watt (R7)	.20
13734	Resistor—120,000 ohms, ½ watt (R13)	.20
12199	Resistor—270,000 ohms, ½ watt (R8)	.20
12285	Resistor—470,000 ohms, ½ watt (R9)	.20
4794	Socket—Tube socket—4-prong	.25
32537	Socket—Tube socket—8-prong	.20
14275	Socket—2 contact female for motor power	.25
14274	Socket—2 contact female for pickup input	.25
13964	Transformer—Driver transformer (T2)	3.70
33405	Transformer—Output transformer (T3)	3.85
14271	Transformer—Power transformer, 105-120 volts, 50-60 cycles	7.95
33398	Volume Control (R5)	1.50
	PICKUP AND ARM ASSEMBLIES	
33399	Arm—Pickup arm less crystal cartridge, cable, and base and pivot arm	1.60
33400	Base—Pickup arm base and pivot shaft	1.00
32885	Cable—Pickup arm cable and plug	.25
31156	Crystal—Pickup crystal cartridge and screw	4.25
31160	Screw—Pickup needle screw	.12
	MOTOR ASSEMBLIES	
31617	Bracket—Governor end bearing bracket less bearing screw for 50 and 50-60 cycle motors	.30
31619	Coil—Field coils and laminations for 50-60 cycle motor	7.80
31618	Coil—Field coils and laminations for 60 cycle motor	5.50
11703	Governor—Governor complete for 50-60 cycle motor	3.05
31623	Governor—Governor complete for 60 cycle motor	2.80
31462	Motor—105-125 volts, 50-60 cycle	20.20
31461	Motor—105-125 volts, 60 cycle	17.35
31616	Screw—Rotor bearing screw and nut for 60 and 50-60 cycle motor	.25
31620	Screw—Speed regulator screw and nut for 60 and 50-60 cycle motor	.20
31621	Shaft—Turntable spindle and gear for 60 and 50-60 cycle motor	1.90
31622	Washer—one felt and one metal thrust washer for turntable spindle	.10
32914	Weight—Governor weight and spring for 50-60 cycle motor	.30
32912	Weight—Governor weight and spring for 60 cycle motor	.25
	AUTOMATIC SWITCH ASSEMBLIES	
32863	Cam—Cam assembly comprising main and auxiliary cams, hub, and set screws	.65
32864	Lever—Actuating lever with roller and mercury tube clip	.45
14195	Screw—No. 10-32 x 5/16 cone pointer set screw for cam hub	.05
32869	Screw—No. 10-32 x 5/16 set screw for cam hub	.01
32868	Spring—Actuating lever tension spring	.05
32867	Spring—Cam tension spring	.05
32865	Support—Switch support and terminal board	.40
32866	Switch—Mercury tube with leads (S2)	1.75
31608	Washer—"C" washer for actuating lever shaft	.01
	SPEAKER ASSEMBLIES (84613-1)	
33648	Cone—Cone assembled with voice coil, center suspension and rim gasket	1.75
5039	Plug—4-prong male connector for reproducer	.30
33490	Speaker complete (No Output Transformer)	5.50
	MISCELLANEOUS ASSEMBLIES	
13103	Cap—Pilot lamp bullseye	.15
33403	Cup—New needle cup	.30
9848	Cup—Used needle cup and pickup arm support	.75
31464	Damper—Turntable damper sleeve and plate	.30
11771	Foot—Cabinet foot	.02
13085	Hinge—Cabinet lid hinge	.22
31355	Knob—Volume control, or tone control knob	.12
33402	Mounting—Motor mounting screws, washers, and spacers	.40
14805	Plug—Plug for motor leads	.20
31155	Spring—Coil spring for used needle cup lid	.04
14270	Spring—Retaining spring for knobs	.05
31164	Support—Cabinet lid support	.45
33401	Turntable	2.30

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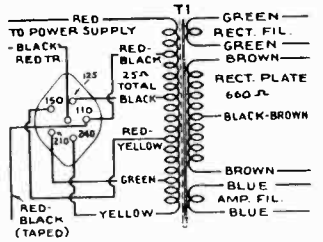
First Edition

Printed in U. S. A.

RCA MFG. CO., INC.

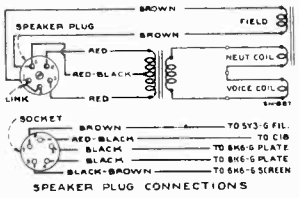
MODELS 98T, 98K2, Chas. RC-386A
Schematic, Socket, Trimmers
Transformer, Speaker, Data



NOTE: INSERT CONNECTOR BETWEEN COMMON CONTACT (CENTER) AND CONTACT CORRESPONDING TO PREVAILING POWER SUPPLY RATING.

UNIVERSAL TRANS. CONNECTIONS

Above—Universal Power Transformer Connections. (110-volt supply for a Victrola Attachment may be obtained by connecting the motor to the red and the red-black leads.)

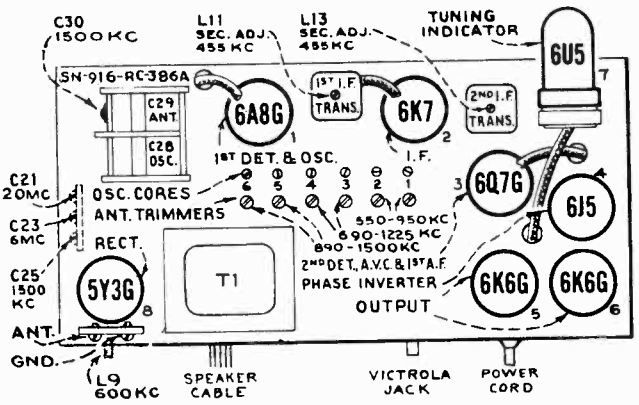


SPEAKER PLUG CONNECTIONS

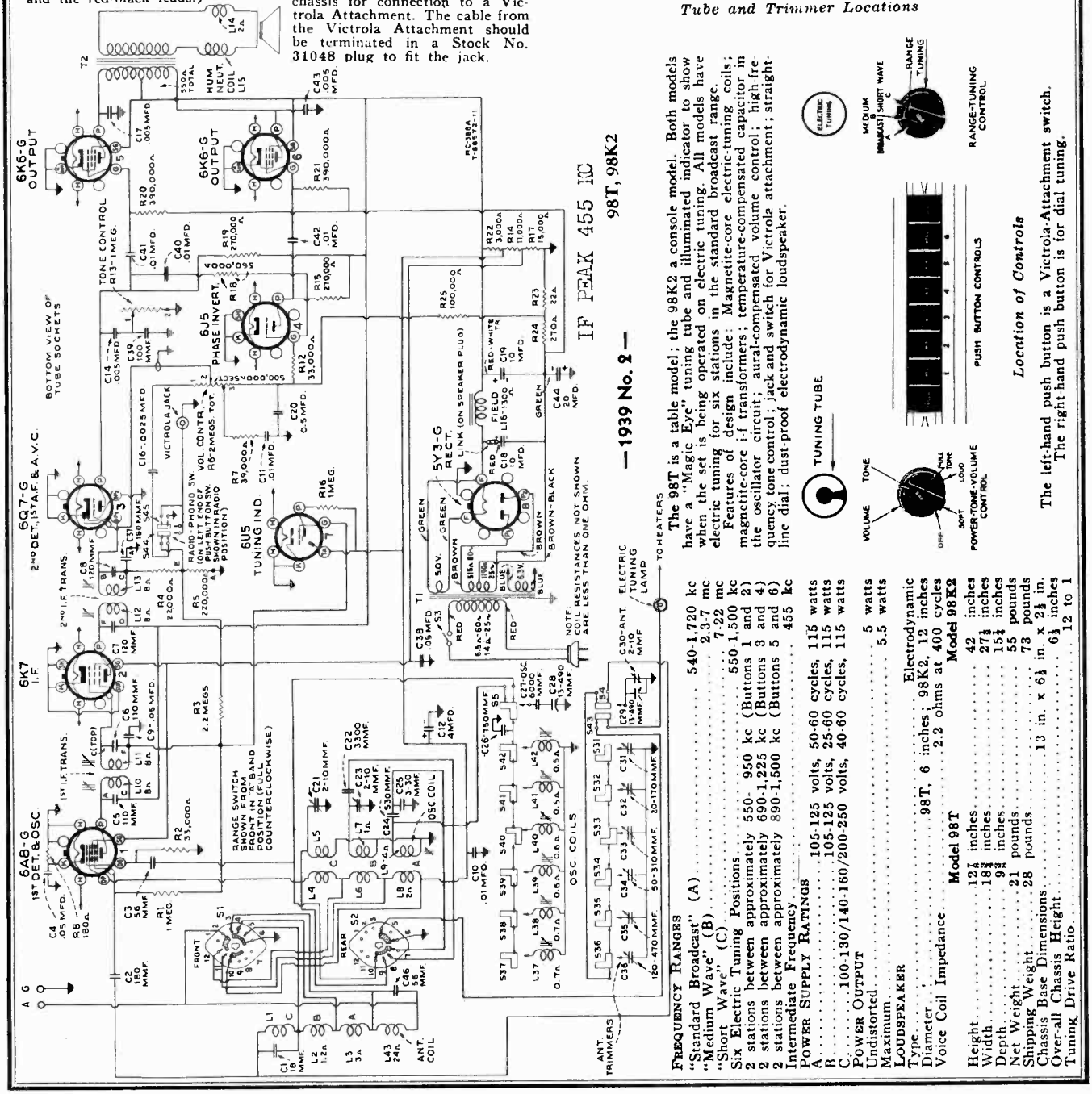
Connections and Colors of Loudspeaker and Cable

Loudspeaker.—The loudspeaker cone may be centered in the usual manner with three celluloid or paper feelers after gently cutting away the front dust cover. A new cover should be cemented in place upon completion of the adjustment.

Victrola Attachment.—A jack is provided on the rear of the chassis for connection to a Victrola Attachment. The cable from the Victrola Attachment should be terminated in a Stock No. 31048 plug to fit the jack.



Tube and Trimmer Locations



The 98T is a table model; the 98K2 a console model. Both models have a "Magic Eye" tuning tube and illuminated indicator to show when the set is being operated on electric tuning. All models have electric tuning for six stations in the standard broadcast range.

Features of design include: Magnetite-core electric-tuning coils; magnetite-core i-f transformers; temperature-compensated capacitor in the oscillator circuit; aural-compensated volume control; high-frequency tone control; jack and switch for Victrola attachment; straight-line dial; dust-proof electrodynamic loudspeaker.

Location of Controls

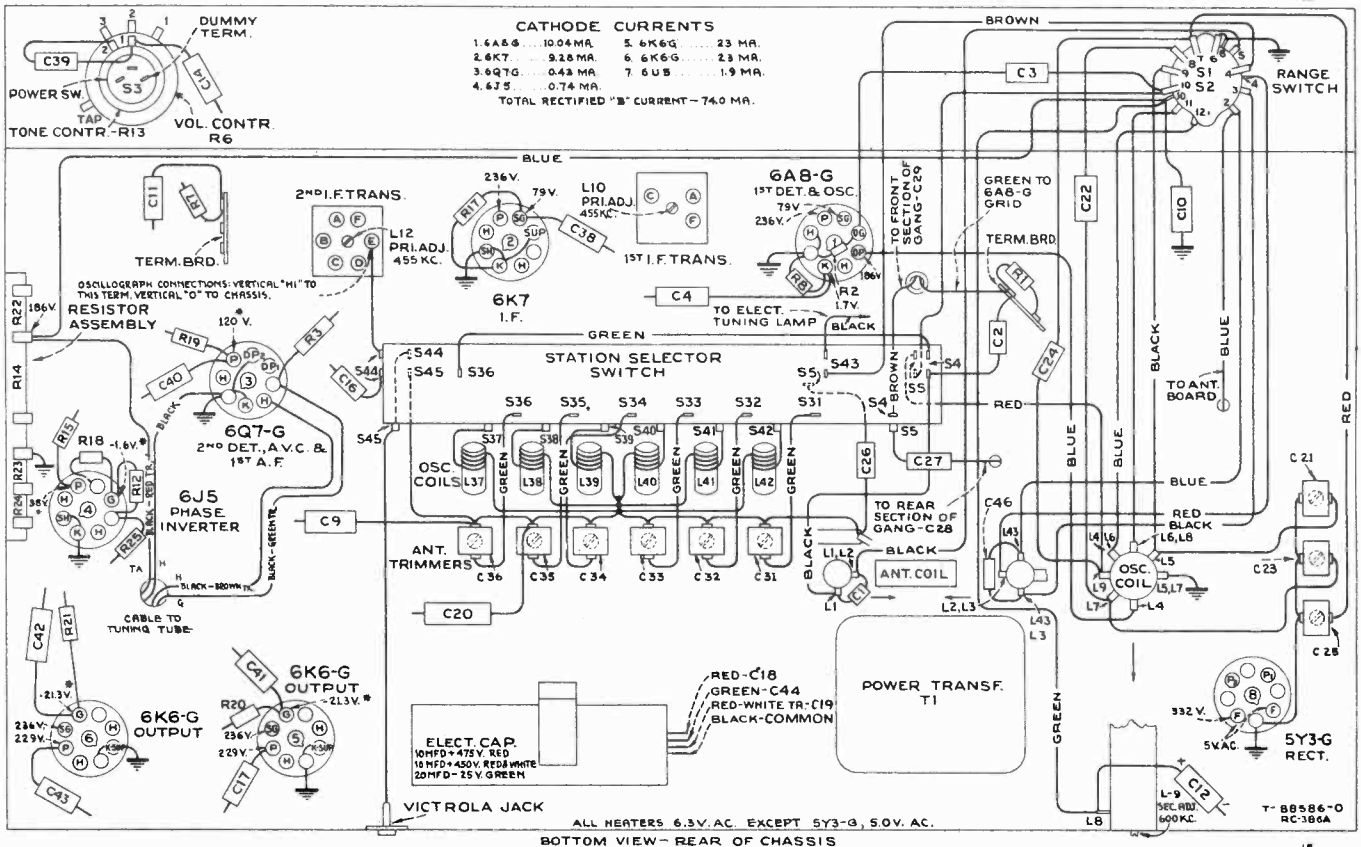
The left-hand push button is a Victrola-Attachment switch. The right-hand push button is for dial tuning.

FREQUENCY RANGES	
"Standard Broadcast" (A)	540-1,720 kc
"Medium Wave" (B)	2.3-7 mc
"Short Wave" (C)	7-22 mc
Six Electric Tuning Positions	550-1,500 kc
2 stations between approximately 550-950 kc (Buttons 1 and 2)	
2 stations between approximately 690-1,225 kc (Buttons 3 and 4)	
2 stations between approximately 890-1,500 kc (Buttons 5 and 6)	
Intermediate Frequency	455 kc
POWER SUPPLY RATINGS	
A	105-125 volts, 50-60 cycles, 115 watts
B	105-125 volts, 25-60 cycles, 115 watts
C	100-130/140-160/200-250 volts, 40-60 cycles, 115 watts
POWER OUTPUT	
Undistorted	5 watts
Maximum	5.5 watts
LOUDSPEAKER	
Type	Electrodynamic
Diameter	98T, 6 inches; 98K2, 12 inches
Voice Coil Impedance	2.2 ohms at 400 cycles

	Model 98T	Model 98K2
Height	12¼ inches	42 inches
Width	18½ inches	27½ inches
Depth	9¾ inches	15¾ inches
Net Weight	21 pounds	55 pounds
Shipping Weight	28 pounds	73 pounds
Chassis Base Dimensions	13 in. x 6½ in. x 2½ in.	
Over-all Chassis Height	6¾ inches	
Tuning Drive Ratio	12 to 1	

MODELS 98T, 98K2, Chas. RC-386A
Voltage, Chassis Wiring
Alignment, Drive Data

RCA MFG. CO., INC.



BOTTOM VIEW — REAR OF CHASSIS

R-F Wiring Diagram and Socket Voltages

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within ± 20% with 117-volt a-c supply.

***NOTE:** Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

Alignment Procedure

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The distance from the front of the chassis to the drum must not exceed ⅛-inch. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

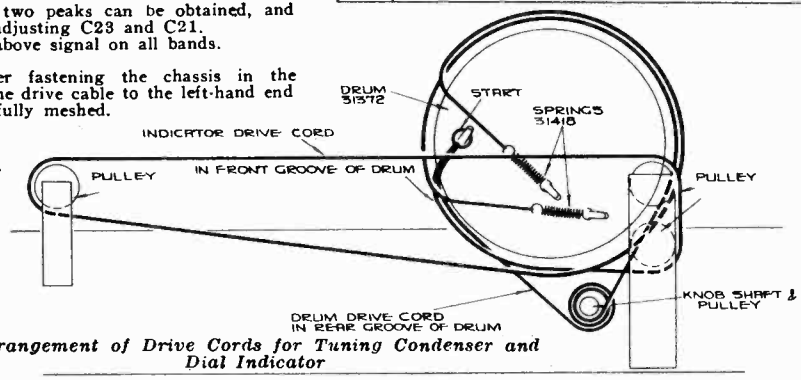
*Use minimum capacity peak if two peaks can be obtained, and rock gang condenser slightly while adjusting C23 and C21.

Note.—Oscillator tracks 455 kc above signal on all bands.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, move the dial indicator on the drive cable to the left-hand end mark on dial, with gang condenser fully meshed.

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio-dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	"A" band, Quiet Point between 550-750 kc	L12 and L13 (2nd I-F Transformer)
2	6A8G det. grid cap, in series with .01 mfd.	455 kc		L10 and L11 (1st I-F Transformer)
3	Antenna Terminal, in series with 200 mmf.	600 kc	600 kc (150.5°) "A" band	L9
4		1,500 kc	1,500 kc (28°) "A" band	C25 (osc.) C30 (ant.)
5	Repeat steps 3 and 4.			
6	Antenna Terminal, in series with 400 ohms.	6 mc	6 mc (26.5°) "B" band	C23 (osc.)*
7		20 mc	20 mc (22°) "C" band	C21 (osc.)*
8	Follow "Adjustments for Electric Tuning."			

FOR DIAL CALIBRATION SEE INDEX



Arrangement of Drive Cords for Tuning Condenser and Dial Indicator

DRUM SHOWN WITH GANG AT MAXIMUM CAPACITY

Adjustments for Electric Tuning

These models have eight push buttons. The left-hand button is a Victrola switch. The right-hand button connects the gang condenser for manual tuning. The other six buttons are for electric tuning of six different stations in the standard-broadcast range. The station buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

The procedure is as follows:

1. Make a list of the desired six stations, arranged in order from low to high frequencies.
2. Push in the dial-tuning button, and manually tune in the first station on the list.
3. Push in station button No. 1 (second from left) and adjust No. 1 oscillator core (L37) to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until station is received.
4. Adjust No. 1 antenna trimmer (C36) for maximum output on this station.

Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.

5. Adjust for each of the remaining five stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers.

Precautionary Lead Dress.—

1. Dress red leads from power transformer to power switch (S3), in corner of chassis and away from volume control terminals.
2. Dress brown lead from push-button switch to gang over end of switch, and away from C27 and bus between S5 and range switch.
3. Leads to C27 must be as short as possible.
4. Blue lead from range switch to oscillator coil must be as short as possible and dressed away from other leads. All leads should be dressed away from antenna coil.
5. Leads across back of chassis must be dressed under electrolytic away from Victrola jack.
6. Parts and leads should be dressed away from R22-R14 as it becomes heated.
7. Leads from oscillator coil to trimmers must be dressed away from coil.
8. Green lead from S4 to range switch must be clear of other leads and away from front edge of chassis.

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES (RC-386-A)	
30752	Bracket—Magic eye bracket and clip	.25
14517	Board—"Antenna"—"Gnd" terminal board	.25
30766	Cap—Rubber cap for magic eye	.15
32142	Capacitor—Dry electrolytic capacitor comprising two 10 and one 20 mfd. sections (C18, C19, C44)	1.90
31400	Capacitor—Mica trimmer capacitor comprising two sections of 2-10 mmfd. and one section of 3-30 mmfd. (C21, C23, C25)	.50
32486	Capacitor—Trimmer capacitor bank for push button switch (C31, C32, C33, C34, C35, C36)	1.40
12722	Capacitor—18 mmfd. (C1)	.35
12723	Capacitor—56 mmfd. (C3, C46)	.35
30406	Capacitor—100 mmfd. (C39)	.35
14262	Capacitor—109 mmfd. (C5, C6)	.30
12404	Capacitor—120 mmfd. (C7, C8)	.30
14712	Capacitor—180 mmfd. (C37)	.30
30232	Capacitor—180 mmfd. (C2)	.35
32492	Capacitor—530 mmfd. (C24)	.40
31435	Capacitor—750 mmfd. (C26)	.40
4881	Capacitor—3300 mmfd. (C22)	.60
31405	Capacitor—6000 mmfd. (C27)	.75
5107	Capacitor—.0025 mfd., 700 volts (C16)	.20
4838	Capacitor—.005 mfd., 1000 volts (C14, C17, C43)	.25
4858	Capacitor—.01 mfd., 500 volts (C10, C40 C41, C42)	.25
14393	Capacitor—.01 mfd., 300 volts (C11)	.30
30882	Capacitor—.05 mfd., 200 volts (C4, C9, C38)	.20
30867	Capacitor—.5 mfd., 200 volts (C20)	.30
32145	Capacitor—4 mfd. (C12)	.70
31382	Clip—Coil and core mounting clip for push button switch	.04
32493	Coil—Antenna coil (L1, L2, L3, L43)	1.35
31951	Coil—Oscillator coil (L4, L5, L7, L9)	1.40
31385	Coil—Push button oscillator coil 550 to 950 kc. (L37, L38)	.30
32487	Coil—Push button oscillator coil 690 to 1225 kc. (L39, L40)	.35
31383	Coil—Push button oscillator coil 890 to 1500 kc. (L41, L42)	.30
31369	Condenser—2-gang variable tuning condenser (C28, C29, C30)	2.65
32668	Control—Volume control, tone control and power switch (R6, R13, S3)	3.00
32634	Cord—Variable condenser drive or pointer indicator cord	.10
12800	Core and Stud for oscillator coil Stock No. 31951	.35
31372	Drum—Variable condenser drive cord drum	.65
32552	Indicator—Indicator pointer assembly	.20
11891	Lamp—Dial or electric tuning indicator lamp	.17
32670	Plate—Dial color plate (Metal)	.75
31373	Pulley—Pointer drive cord pulley (¼ in. dia.)	.08
30545	Resistor—180 ohms, ½ watt (R8)	.20
5114	Resistor—15,000 ohms, 1 watt (R17)	.22
14284	Resistor—22,000 ohms, 1/10 watt (R4)	.15
12454	Resistor—33,000 ohms, ½ watt (R2, R12)	.20
12266	Resistor—39,000 ohms, ½ watt (R7)	.20
14560	Resistor—100,000 ohms, ½ watt (R25)	.20
11398	Resistor—220,000 ohms, 1/10 watt (R5)	.15
12199	Resistor—270,000 ohms, ½ watt (R15, R19)	.20
13479	Resistor—390,000 ohms, ½ watt (R20, R21)	.20
12486	Resistor—560,000 ohms, ½ watt (R18)	.20
13730	Resistor—1 meg., ½ watt (R1)	.20
12013	Resistor—1 meg., 1/10 watt (R16)	.15
12679	Resistor—2.2 meg., ½ watt (R3)	.20
32143	Resistor—Voltage divider tapped at 22 ohm, 270 ohm, 3000 ohm, 11,000 ohm. (R14, R22, R23, R24)	.90
14887	Retainer—Retainer for pointer indicator drive cord pulley	.01
14343	Retainer—Retaining ring for tuning knob shaft	.03
4669	Screw—No. 8-32 set screw for variable condenser drive cord drum	.03
32671	Shaft—Tuning drive shaft and pulley	.35
31199	Shield—Dial lamp shield	.04
3682	Shield—Tube shield	.22
31364	Socket—Dial lamp socket	.20
31365	Socket—Insulated socket for electric tuning indicator lamp	.30
13871	Socket—Magic eye socket	.45
31251	Socket—Octal base tube socket	.25
14278	Socket—Phonograph input socket	.25
12493	Socket—Speaker cable socket	.30
31418	Spring—Coil tension spring for variable condenser or pointer drive cord	.05
32498	Switch—Push button selector switch (S4, S5, S37, S38, S39, S40, S41, S42, S43, S36, S35, S34, S33, S32, S31, S44, S45)	3.85
32669	Switch—Range switch (S1, S2)	1.10
14376	Transformer—First i.f. transformer (L10, L11, C5, C6)	2.45
14283	Transformer—Second i.f. transformer (L12, L13, C7, C8, C37, R4, R5)	3.80
31445	Transformer—Power transformer, 110 volt, 25/60 cycle (T1)	7.80
32144	Transformer—Power transformer, 110 volt, 50/60 cycle (T1)	4.75
31446	Transformer—Power transformer, 110-125-150-210-240 volts 40/60 cycle (T1)	8.05
	SPEAKER ASSEMBLIES (RL-70H-5) MODEL 98K2	
13866	Cap—Dust cap for cone center	.03
12012	Coil—Field coil (L16)	2.90
11469	Coil—Neutralizing coil (L15)	.30
31275	Cone—Speaker cone and voice coil (114)	1.75
31539	Plug—5-contact male plug for speaker	.25
32146	Speaker complete	12.10
14534	Transformer—Output transformer (T2)	3.85
14357	Washer—Spring washer to hold field coil securely	.06
	SPEAKER ASSEMBLIES (84308-3) MODEL 98T	
32689	Coil—Speaker field coil (L16)	3.35
32688	Cone—Cone and voice coil mounted and centered on housing (L14)	1.85
31539	Plug—5-contact plug or speaker	.25
32687	Speaker—Speaker complete	5.80
32690	Transformer—Output transformer (T2)	1.45
	MISCELLANEOUS ASSEMBLIES	
31397	Button—Station selector push button	.15
31456	Covers—8 Protective covers for push button markers	.08
32673	Dial—Station selector glass dial	.60
32674	Escutcheon—Station selector escutcheon — less push buttons	3.85
31355	Knob—Range switch knob	.12
31391	Knob—Tone control knob	.15
14359	Knob—Tuning knob	.20
30773	Knob—Volume control knob	.15
31458	Marker—"Dial Tuning" push button marker	.01
31457	Marker—"Record Player" push button marker	.01
31589	Marker—Station markers	.35
30330	Spring for tone control knob	.03
4982	Spring for tuning knob	.05
14270	Spring for volume control or range switch knob	.05

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE. 98T, 98K2

MODEL R-100
Victrola Attachment
Motor Data, Tone Compensation
Parts List

RCA MFG. CO., INC.

RCA Victor Model R-100 Victrola Attachment

Motor Data

Smooth starting and running will be insured by keeping the bearings well cleaned and oiled.

Hum and Vibration—A small amount of hum when starting, decreasing to a negligible amount when running, is normal. If excessive vibration occurs, it may be due to:

1. Insufficient lubrication, or any failure that will cause binding.
2. Leather washer not oiled. (Check to make sure that the leather and steel washers are arranged in proper sequence, as shown in the drawings.)
3. Motor not properly fastened in cabinet.
4. Burrs on poles of motor or stator.
5. Slight eccentricity of rotor or spindle.
6. Loose laminations of the stator.
7. Improper horizontal alignment of the rotor and stator (pertaining only to the type motor shown in Figure 1). Correct horizontal alignment is as shown in the motor assembly drawing. The position of the stator is raised or lowered by adding or removing washers below the leather washer. In the type motor shown in Figure 2, no adjustment is necessary because correct horizontal alignment is provided by the design of the motor.

The damper spring must fit without binding or chattering, in the slot in the stator. The stator must be free to deflect in either direction between the limits of the damper spring. Any binding in the washers or stator bearing which prevents the movement of the stator may cause speed variations in the motor. The damper spring must exert equal force in restoring the stator to its mid-position when the stator is deflected manually in either direction.

Tone Compensation

Because of the widely varying frequency characteristics of various types of audio amplifiers with which the R-100 may be used, it may be desirable in some cases to make refinements in the pickup circuit of the R-100 to compensate for the characteristics of the amplifier. The following circuits show means of making such refinements.

In Figure 3, R1 controls the low-frequency response; larger values of R1 give increased lows. For maximum low-frequency response, remove R1. R2 controls pickup output, smaller values of R2 giving increased output. C1 controls high-frequency response; to increase highs, increase C1.

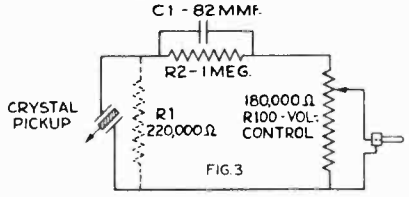


FIG. 3

Where a decrease in high-frequency response may be desired (for example, as an aid in reducing "needle scratch" on worn records), the circuit in Figure 4 is applicable. In this circuit, C2 acts as loading on the pickup and is also a controlling factor on the high-frequency response. Smaller values of C2 give more pickup output and also more highs. R3 gives a sharper high-frequency reduction; increasing R3 decreases highs.

The suggested values shown in Figures 3 and 4 should serve as a basis from which slight alterations may be made to suit individual cases.

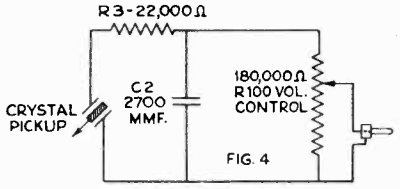


FIG. 4

Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	Unit List Price
	PICKUP AND ARM ASSEMBLIES	
33121	Arm—Pickup arm complete—less crystal cartridge	1.75
33124	Base—Pickup arm base and pivot shaft	.80
33122	Crystal—Pickup crystal cartridge and needle screw	4.35
33123	Damper—Viscoloid damper for pickup armature	.15
33529	Screw—Pickup needle screw	.15
	MOTOR ASSEMBLIES (see figure 1)	
31045	Base—Motor support, damper, and bearing cup assembly	.60
31046	Bearing—Rotor bearing—50 and 25 cycle	.70
33353	Cap—Turntable spindle cap (rubber)	.10
33357	Coil—Motor field coil—105-120 volts, 25 cycle	.60
31918	Coil—Motor field coil—105-120 volts, 50 cycle	.70
31917	Coil—Motor field coil, 105-120 V., 60 cycle	.70
31040	Cushion—One seat rubber cushion for turntable mounting	.25
31047	Cushion—Rubber cushion for rotor bearing	.15
33941	Frame—Rotor frame and spindle—60 cycle	
33641	Lamination—Rotor lamination—60 cycle	1.30
33358	Lamination—Stator laminations—25 cycle	1.30
33354	Lamination—Stator laminations—less coil 50 cycle	1.00
33355	Motor—105-120 volts, 25 cycle	11.75
33351	Motor—105-120 volts, 50 cycle	7.65
33940	Motor—105-120 V., 60 cycle	
32075	Ring—Lead ring for turntable—25 cycle	1.85
33041	Ring—Retaining ring and washer for spindle cap	.06
33356	Rotor—Rotor frame, laminations, and spindle shaft assembled—25 cycle	2.55
33352	Rotor—Rotor frame, laminations, and spindle shaft assembled—50 cycle	2.45
31036	Rotor—Turntable and rotor lamination for 60 cycle operation	4.55
31042	Stator—Stator assembly comprising coils and laminations for 60 cycle operation	2.50
32076	Turntable—Finished turntable plate only—25 cycle	1.40
31039	Turntable—Finished turntable plate only—50 cycle	.95
4083	Washer—Leather washer	.02
33348	Washers—Leather and metal washers for stator bearing	.10
14231	Washer—Metal spacing washer	.02
32074	Weight—One upper and one lower weight for stator—25 cycle (2 each required)	.65
	MOTOR ASSEMBLIES (see figure 2)	
33345	Cap—Turntable spindle cap (rubber) 60 cycle	.15
33346	Coil—Motor field coil—105-120 volts, 60 cycle	.65
31040	Cushion—One set rubber cushion for turntable mounting	.25
33350	Frame—Motor support frame and bearing cup	.45
33349	Hanger—Rubber hanger for mounting motor	.10
33347	Lamination—Stator laminations and bearing—less field coils—60 cycle	1.05
33343	Motor—105-120 volts, 60 cycle	6.95
33041	Ring—Retaining ring and washer for spindle cap	.06
33344	Rotor—Rotor frame, laminations, and spindle shaft assembled—60 cycle	2.45
31039	Turntable—Finished turntable plate only—60 cycle	.95
33348	Washers—Leather and metal washers for stator bearing	.10
	MISCELLANEOUS ASSEMBLIES	
31051	Foot—Cabinet foot	.04
3961	Knob—Volume control and switch knob	.10
32500	Mounting—Pickup arm mounting comprising one rubber cushion, 1 washer, and 1 snap ring	.15
31048	Plug—2-contact male plugs for output cable	.15
33359	Volume control and switch R1, S1	1.50

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Printed in U. S. A.

First Edition

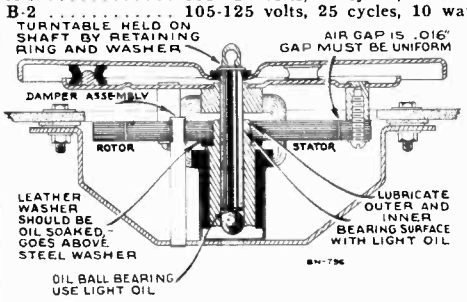
Motor, Pick-up Details
Receiver Connections

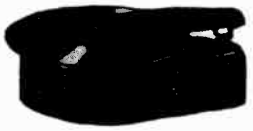
RCA MFG. CO., INC.

MODEL R-100
Victrola Attachment

Electrical and Mechanical Specifications

MOTOR
78 r.p.m. ..... Synchronous (Manual Starting)
POWER SUPPLY RATINGS
A-6 ..... 105-125 volts, 60 cycles, 10 watts
A-5 ..... 105-125 volts, 50 cycles, 10 watts
B-2 ..... 105-125 volts, 25 cycles, 10 watts





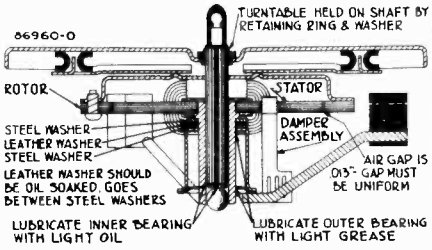
At Left—Fig. 1

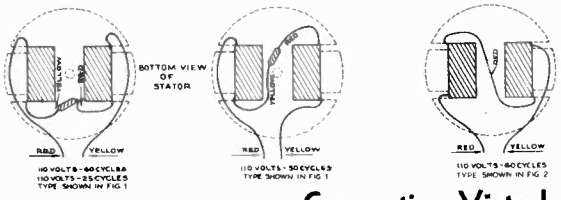
At Right—Fig. 2

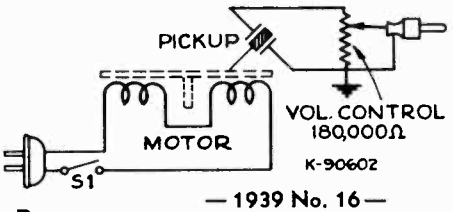
Lower Left—Motor Coil Connections

Lower Right—R-100 Schematic Diagram

CRYSTAL PICKUP
Impedance ..... 100,000 ohms at 1,000 cycles
Average Output Voltage .... 1½ Volts at 1000 cycles across 250,000 ohms load
Cabinet Dimensions ..... 5¼ x 8¼ x 12 inches
Weight ..... 5½ lbs. (net), 7 lbs (shipping)







— 1939 No. 16 —

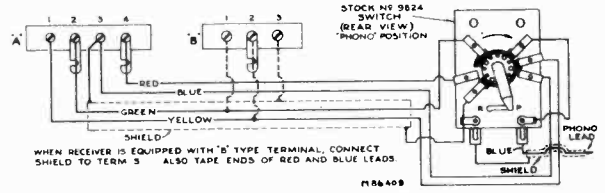
Connecting Victrola Attachment to Radio Receivers

Methods of connecting the Victrola Attachment to various types of audio systems are given in the accompanying text and illustrations. Also included are the model numbers of the various RCA receivers to which the particular method applies. The data given requires that an RCA Stock No. 9824 Radio-Phono switch be used for switching from radio to phonograph, as desired. For ease in connecting the "phono" lead to the Stock No. 9824 switch, the male plug on the end of the lead should be removed by unsoldering or by cutting it off.

1939 RCA RADIOS OF THE "90" SERIES:

Plug male connector on the end of the "phono" lead into the female connector on the receiver chassis. Push or turn the "Phono" switch to "Phono" position, and operate the Victrola Attachment according to instructions.

RADIO RECEIVERS HAVING "PHONO" TERMINAL BOARDS.



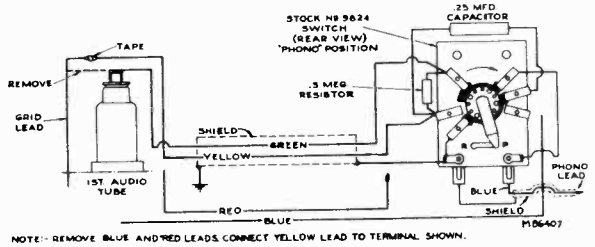
RCA Radio Receivers to which the above illustration applies: 5T1, 5T4, 5T5, 5T6, 5T7, 5T8, 6T5, 8T2, 8T11, 8K11, 85T5, 86E, 86K, 86T, 86T1, 86T4, 86K7, 86T44, 87K, 87T, 87K1, 87K2, 87T2, 88K, 810K, 810K1, 810T, 810T4, 811K, 812K, 813K, 816K, 811T.

For following Receivers, Yellow lead should go on Terminal No. 1, Green lead on Terminal No. 2: 6K2, 6T2, 6K3, 6T10, 7T1, 7K1, 85T8, 86T3, 87T1, 86T2, 86T6, 6K10.

Insulate shield of switch wires from chassis, on following RCA Receivers: 5T, 6T, 6K, 6K1, 7T, 7K, 7X, 8T, 8K, 86X4, 87EY, 87X, 87Y, 8T10, 7X1, 8K1.

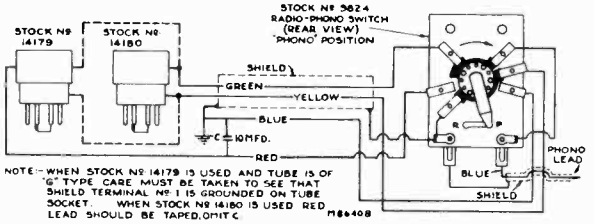
Receivers having a Four Terminal Board: 9K, 9T, 9K1, 9K2, 9K3, 9K10, 10T, 10K, 10K1, 13K, 15K. Reverse Red and Blue leads to Terminal Board of C9-6, T9-9, T8-16, C8-17.

RADIO RECEIVERS WHOSE FIRST AUDIO TUBE IS OF THE GRID CAP TYPE, AND FIXED BIAS FOR TUBE IS OBTAINED THROUGH GRID LEAD.



In general, the Victrola Attachment must be used with radio receivers having at least two stages of high-gain audio amplification. The output of the Victrola Attachment should be connected to the input of the first audio tube, and at the same time the output of radio receiver portion of the chassis should be shorted or opened, to prevent radio signals being heard while the Victrola Attachment is in operation.

RADIO RECEIVERS USING 6C5 OR 6J5, 6C5G OR 6J5G, TUBE FOR FIRST AUDIO AMPLIFIER.



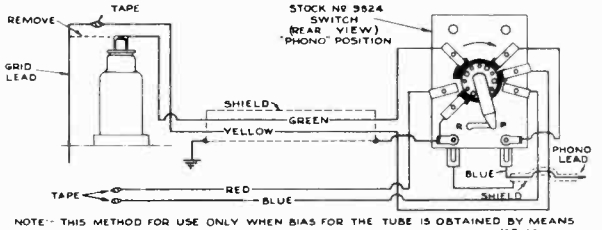
Stock No. 14179 Adaptor opens grid circuit, and inserts 2,700 ohm resistor in cathode of 6C5 or 6J5 tubes, for bias on Phono reproduction.

Stock No. 14180 Adaptor opens grid circuit of 6C5 or 6J5 tube.

Stock No. 14180 Adaptor necessary for RCA: C11-1, C13-2, T10-1, C11-3, C13-3.

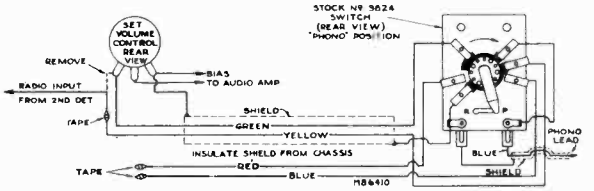
Stock No. 14179 Adaptor necessary for RCA: C15-3, C15-4.

RADIO RECEIVERS WHOSE FIRST AUDIO AMPLIFIER TUBE IS OF THE GRID CAP TYPE.



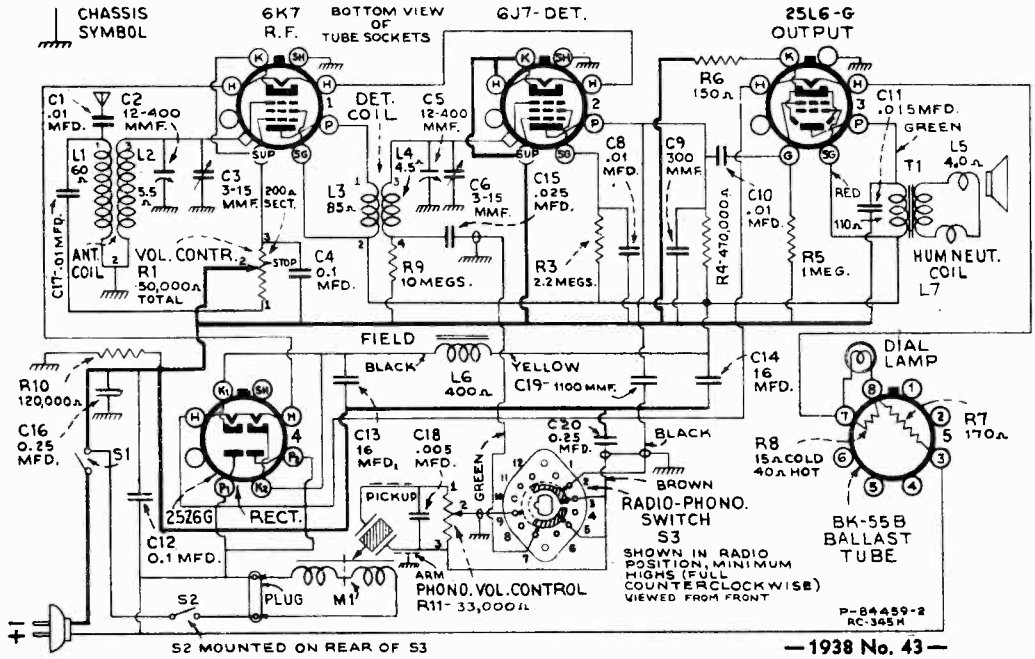
RCA Receivers for which above method applies: 125, 128, 128E, 224E, 225, 226, T6-1, C6-2, T6-9, T7-5, C7-6, T7-12, C7-14, T8-14, C8-15, T8-18, C8-19, C8-20, C9-4, T9-10.

RADIO RECEIVERS WHERE THE VOLUME CONTROL IS IN THE AUDIO INPUT CIRCUIT.



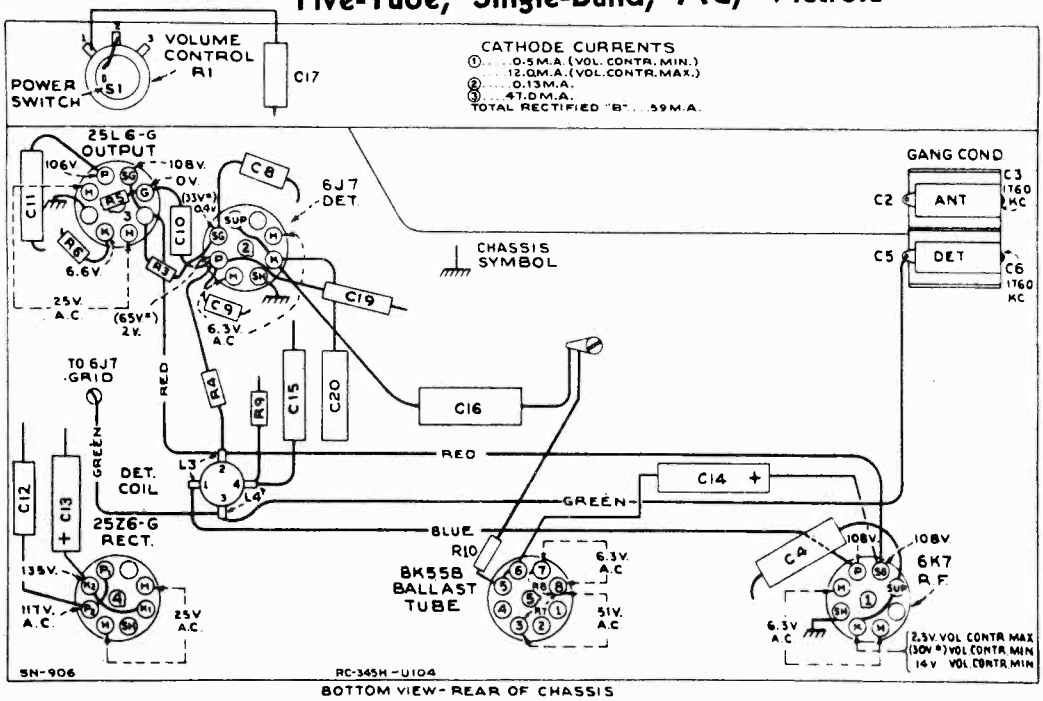
MODEL U-104
Chassis RC-345H
Schematic, Voltage
Chassis Wiring
Alignment Procedure

RCA MFG. CO., INC.



—1938 No. 43—

Five-Tube, Single-Band, AC, Victrola U-104



BOTTOM VIEW-REAR OF CHASSIS

Alignment Procedure

Reel up the antenna wire, and connect the high side of test-oscillator through an 80-mmfd. capacitor to the antenna terminal on the antenna transformer. Connect low side of oscillator to receiver chassis through a 0.1-mfd. capacitor. Turn gang condenser to minimum (full out), tune oscillator to 1,760 kc, connect an output meter across the voice coil, and turn volume control to maximum.

Keep antenna roll and lead clear of chassis during alignment.

Adjust the two trimmers (C3 and C6) on side of gang condenser for maximum output, using lowest possible output from test-oscillator.

Turn pointer, while holding tuning knob, so that the pointer is horizontal and pointing to low-frequency end when the gang condenser is at maximum. Check pointer adjustment on a station.

R-F Wiring Diagram and Socket Voltages
Measurements made to common negative line, unless otherwise specified

* **Note:** Values with star (*) are **operating** voltages. Values not starred are actual **measured** voltages.

Measurements made with set tuned to quiet point, volume control at minimum, using 1,000-ohm-per-volt meter, having ranges of 10, 50, 250, and 500 volts. (Use nearest range above the specified measured voltage.)

Values should hold within approximately ± 20% for 117 volt 60 cycle supply.

Frequency Range ..... 540-1,720 kc
Alignment Frequency ..... 1,760 kc (ant., det.)

POWER OUTPUT (125-volt, 60-cycle supply)
Undistorted ..... 1.0 watt
Maximum ..... 1.5 watts

LOUDSPEAKER
Type ..... 5-inch Electrodynamic
Voice-Coil Impedance ..... 5 ohms at 400 cycles

PHONOGRAPH ..... Synchronous (manual starting)

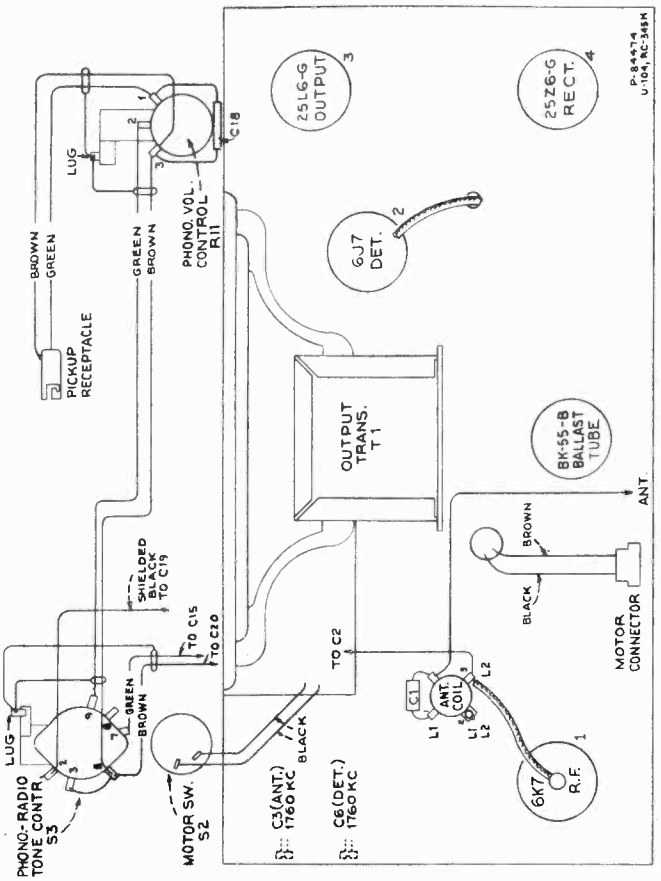
Records ..... 10-inch and 12-inch, 78 r.p.m.
Pickup ..... Crystal, 100,000 ohms at 1,000 c.p.s.
Average Output of Pickup ..... 1½ volts at 1,000 c.p.s. across ¼-meg. load

Dial Lamp ..... Mazda No. 40, 6.3 volts, .15 amp.

POWER SUPPLY RATINGS
A-5 ..... 105-125 volts, 50 cycles, 60 watts
A-6 ..... 105-125 volts, 60 cycles, 60 watts

RCA MFG. CO., INC.

MODEL U-104
Chassis RC-345H
Chassis Wiring, Lead Dress
Pick-up, Phono. Data

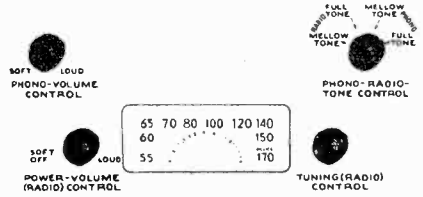


Precautionary Lead Dress

1. Dress power cord and line bypass C12 away from detector coil.
2. Plate lead from 6K7 to detector coil must be dressed close to chassis and run through center of chassis.
3. Green lead from detector coil to gang must be dressed clear of other leads.
4. Green lead from antenna coil to C17 must be dressed against front apron.
5. Dress all heater leads close to base.
6. Yellow lead from cathode 6K7 to volume control must be dressed against chassis, under gang condenser and against front apron.

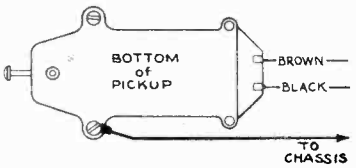
Power Supply.—Although this model employs an ac-dc chassis, it is not suitable for use on dc, as this would damage the motor.

Antenna.—The set is equipped with a 25-foot antenna. Do not connect the antenna to ground. If an outdoor antenna is used, it should not be longer than 100 feet, including lead-in. If it is longer, connect a 100- to 200-mmfd. capacitor in series with the lead-in.



PHONOGRAPH SERVICE DATA

U-104



Pickup Connections

The motor is started by turning the phono-radio tone control to either 3rd or 4th position clockwise and giving the turntable a clockwise spin with the hand. Smooth starting and running will be insured by keeping the bearings well cleaned and oiled.

Hum and Vibration.—A small amount of hum when starting, decreasing to a negligible amount when running, is normal. If excessive vibration occurs it may be due to:

1. Insufficient lubrication, or any failure that will cause binding.
2. Leather washer not oiled. (Check to make certain that the leather washer is above the steel washer.)
3. Motor not properly supported from motor board.
4. Burrs on poles of rotor or stator. Remove with fine emery cloth.

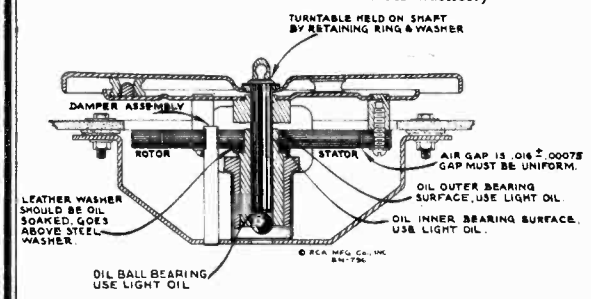
5. The damper spring must fit without binding or chattering in the slot in the stator. The stator must be free to deflect in either direction between the limits of the damper spring. The damper spring must exert approximately equal force in restoring the stator to its mid-position when the stator is deflected manually in each direction.

Removing Rotor. — The rotor and turntable assembly simply rests on the ball bearing at bottom of vertical bearing. Remove by lifting up.

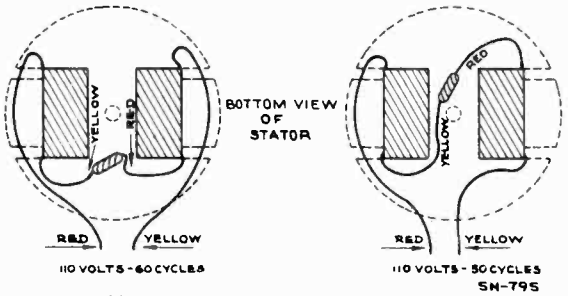
Rotor Adjustment.—Loosen the three screws that hold the rotor to the turntable, insert three 16-mil shims at equal distances around the gap between the rotor and stator, and then carefully tighten the three screws. The top of rotor must be flush with top of stator; add additional steel washers beneath the stator if necessary.

Lubrication.—Oiling points are indicated in the diagram.

On Phonograph Operation, turn the radio volume control to minimum, and tune to a quiet point on the dial.



Cross Section of Motor Assembly
This drawing shows the lubrication points



Motor Coil Assembly and Connections
D-C resistance of each coil (for 110 volts, 50 and 60 cycles) is approximately 82 ohms

	Height	Width	Depth
Cabinet Dimensions (inches)	9	12¼	9⅝
Chassis Base (inches)	2½	9	5¼

Overall Chassis Height (inches) 6
Weight ..... 16 lbs. (shipping)
Tuning Drive Ratio ..... 1 to 1

MODEL U-115
Chassis RC-348E

RCA MFG. CO., INC.

Parts List

STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES (RC-348E)	
32136	Cable—Shielded cable and female plug for phonograph input	$0.35
12723	Capacitor—56 mmfd. (C4)	.35
30904	Capacitor—100 mmfd. (C7, C8, C9, C10)	.25
12725	Capacitor—150 mmfd. (C35)	.35
13003	Capacitor—180 mmfd. (C12)	.35
12488	Capacitor—270 mmfd. (C32)	.35
31435	Capacitor—750 mmfd. (C25)	.40
4838	Capacitor—.005 mfd. (C15, C26, C30)	.25
14393	Capacitor—.01 mfd. (C13, C14)	.30
4870	Capacitor—.025 mfd. (C34)	.20
4886	Capacitor—.05 mfd. (C11)	.20
30899	Capacitor—0.1 mfd. (C1, C31)	.30
31424	Capacitor—Comprising 2 sections 8 mfd. each (C16, C17) (This type has leads)	1.65
32342	Capacitor—Comprising 2 sections 10 mfd. each (C16, C17) (This type has terminals)	1.20
31382	Clip—Oscillator coil and core mounting clip	.04
32338	Coil—Antenna coil (L1, L2)	.85
31098	Coil—Oscillator coil (L3, L4)	.85
31422	Condenser—2-gang variable tuning condenser (C2, C3, C5, C6, C33)	2.70
32355	Control—Volume control, tone control and power switch	3.00
30877	Cord—Indicator drive cord	.20
30905	Core—Adjustable core and stud for i-f transformers	.35
31386	Core—Adjustable core and stud for oscillator coils	.15
31421	Drum—Variable condenser drive cord drum	.45
31420	Indicator—Station selector indicator pointer	.10
11891	Lamp—Dial lamp	.17
31419	Plate—Dial color plate	.12
30868	Plug—2-contact female plug for motor power leads	.35
31373	Pulley—Indicator drive cord pulley	.08
31425	Resistor—Voltage divider—comprising one 22-ohm, one 18,000-ohm, one 8,200-ohm and one 3,900-ohm sections (R3, R11, R12, R15)	.90
31388	Resistor—390 ohms, 1 watt (R9)	.22
14559	Resistor—10,000 ohms, ½ watt (R17)	.20
12738	Resistor—27,000 ohms, ½ watt (R10)	.20
12286	Resistor—56,000 ohms, ½ watt (R2)	.20
3252	Resistor—100,000 ohms, ½ watt (R19)	.20
13734	Resistor—120,000 ohms, ½ watt (R16)	.20
12199	Resistor—270,000 ohms, ½ watt (R7)	.20
30963	Resistor—820,000 ohms, ½ watt (R18)	.20
12679	Resistor—2.2 meg., ½ watt (R4)	.20
13601	Resistor—10 meg., ½ watt (R6)	.20
14887	Retainer—Pulley retainer	.01
14350	Screw—No. 8-32 square-head set screw for drum, Stock No. 31421	.03
31364	Socket—Dial lamp socket	.20
31251	Socket—Tube socket	.25
31418	Spring—Indicator drive cord tension spring	.05
31414	Switch—Push button station selector switch (S12, S13, S14, S15, S16, S17, S20, S21, S22, S23, S24, S25)	3.05
30902	Transformer—First i-f transformer (L5, L6, C7, C8)	1.90
30903	Transformer—Second i-f transformer (L7, L8, C9, C10)	1.80
31574	Transformer—Power transformer, 100-120 volts, 25-60 cycle (T1)	9.20
31380	Transformer—Power transformer, 100-120 volts, 50-60 cycle (T1)	6.35
31575	Transformer—Power transformer, 100-120 and 200-240 volts, 50-60 cycle (T1)	8.35
	MOTOR ASSEMBLIES * (Motor No. 84430)	
32176	Bearing—Rotor thrust bearing screw and nut	.25
32175	Field—Motor field coils and laminations	4.95
32135	Motor—105-125 volts, 60 cycle	12.60
32177	Shaft—Turntable spindle shaft and fibre gear (Motor No. 84484-2, 3, or 4)	1.55
32336	Field—Motor field coils and laminations, 110 volts, 60 cycle (For Motor 84484-2)	5.10
32650	Field—Motor field coils and laminations, 110 volts, 50 cycle (For Motor 84484-3)	5.10
32652	Field—Motor field coils and laminations, 110 volts, 25 cycle (For Motor 84484-4)	6.90
32558	Motor—105-125 volts, 60 cycle (84484-2)	10.50
32637	Motor—105-125 volts, 50 cycle (84484-3)	11.20
32638	Motor—105-125 volts, 25 cycle (84484-4)	12.80
32337	Shaft—Turntable spindle shaft and fibre gear—60 cycle (For Motor 84484-2)	1.40
32651	Shaft—Turntable spindle shaft and fibre gear—50 cycle	1.30
32653	Shaft—Turntable spindle shaft and fibre gear—25 cycle	1.30
	PICKUP AND ARM ASSEMBLIES	
31212	Base—Pickup arm pivot shaft, trip lever, and mounting base assembly	.95
32138	Cable—Shielded cable and male plug for pick-up arm	.20
31050	Crystal—Pickup crystal and needle screw	3.75
32137	Pickup and arm complete	7.00
12539	Screw—Pickup needle screw	.15
	SPEAKER ASSEMBLIES	
31443	Cone—Speaker cone and voice coil (L9)—for Speaker No. 84327-1	1.40
31663	Speaker complete (No. 84327-1)	4.95
31477	Transformer—Output transformer (T2) (For Speaker No. 84327-1)	1.00
32586	Cone—Speaker cone and voice coil for Speaker No. 84327-3	2.40
32587	Coil—Speaker field coil for Speaker No. 84327-3	2.45
32588	Transformer—Output transformer for Speaker No. 84327-3	1.45
	MISCELLANEOUS ASSEMBLIES	
14803	Brake—Automatic brake complete	2.95
31428	Button—Station selector switch push button	.06
31487	Clip—Spring clip to hold dial	.12
31464	Damper—One rubber cap for motor spindle, and one metal damper plate	.30
31429	Dial—Station selector glass dial	.40
31095	Disc—10 protective discs for call letter markers	.10
31667	Escutcheon—Tuning dial escutcheon	.55
32140	Hinge—Cabinet lid hinge	.25
31355	Knob—Station selector or radio-record switch knob (small)	.12
31391	Knob—Tone control and power switch knob (small)	.15
30773	Knob—Volume control or station selector knob (large)	.15
30991	Markers—Push button call letter markers	.40
31054	Mounting—Pickup arm rubber mounting, washers, and nut	.15
32139	Mounting—Motor mounting spacers, washers, and screw—sufficient for one motor	.25
30870	Plug—2-contact male plug for motor leads	.35
14270	Spring—Retaining spring for knob, Stock Nos. 30773 and 31355	.05
30330	Spring—Retaining spring for knob, Stock No. 31391	.03
30100	Springs—Tension springs for automatic brake—one long and one short	.08
32141	Support—Cabinet lid support	.40
14804	Switch—Automatic brake switch (S26)	.60
12647	Switch—Radio-Record switch (S27)	.75
31463	Turntable	1.50

* Motor No. 84430 is type that mounts from below motorboard. Motor No. 84484 is type that mounts from top of motorboard through a cutout.

TRIMMER CAPACITOR BANK AND ELECTRIC-TUNING OSCILLATOR COILS

(Refer to Electrical Specifications for frequency ranges)

DESCRIPTION	Chassis Stamped RC-348E		Chassis Stamped RC-348E "MOD"		Chassis Stamped RC-348E "M"	
	Stock No.	Unit List Price	Stock No.	Unit List Price	Stock No.	Unit List Price
Capacitor—Trimmer capacitor bank (C20, 21, 22, 23, and 24)	31416	$1.20	32066	$1.30	32339	$1.20
Coil—Oscillator coil (L12)	31415	.30	31415	.30	31415	.30
Coil—Oscillator coil (L13)	31384	.30	31415	.30	31415	.30
Coil—Oscillator coil (L14)	31384	.30	31384	.30	32340	.35
Coil—Oscillator coil (L15)	31383	.30	31383	.30	31383	.30
Coil—Oscillator coil (L16)	31383	.30	31383	.30	31383	.30

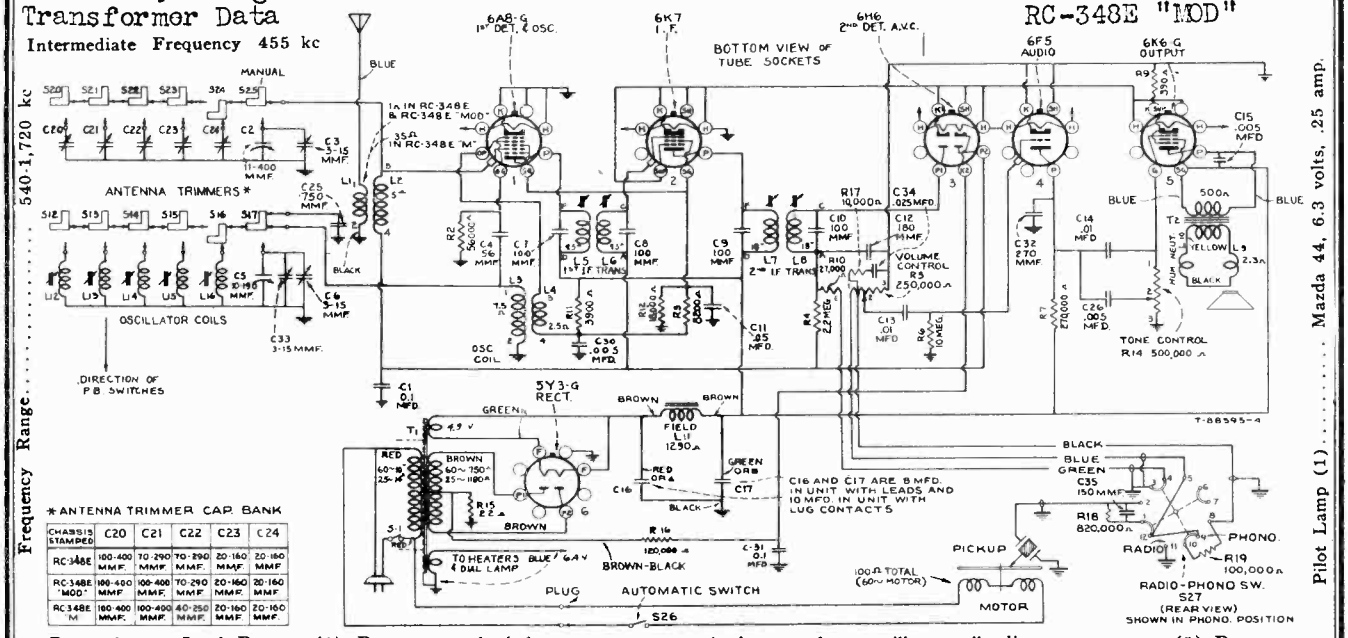
ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

Schematic, Chassis Wiring, Trimmers, Voltage Socket Transformer Data

RCA MFG. CO., INC.

MODEL U-115
Chassis RC-348E, RC-348E "M"
RC-348E "MOD"

Intermediate Frequency 455 kc



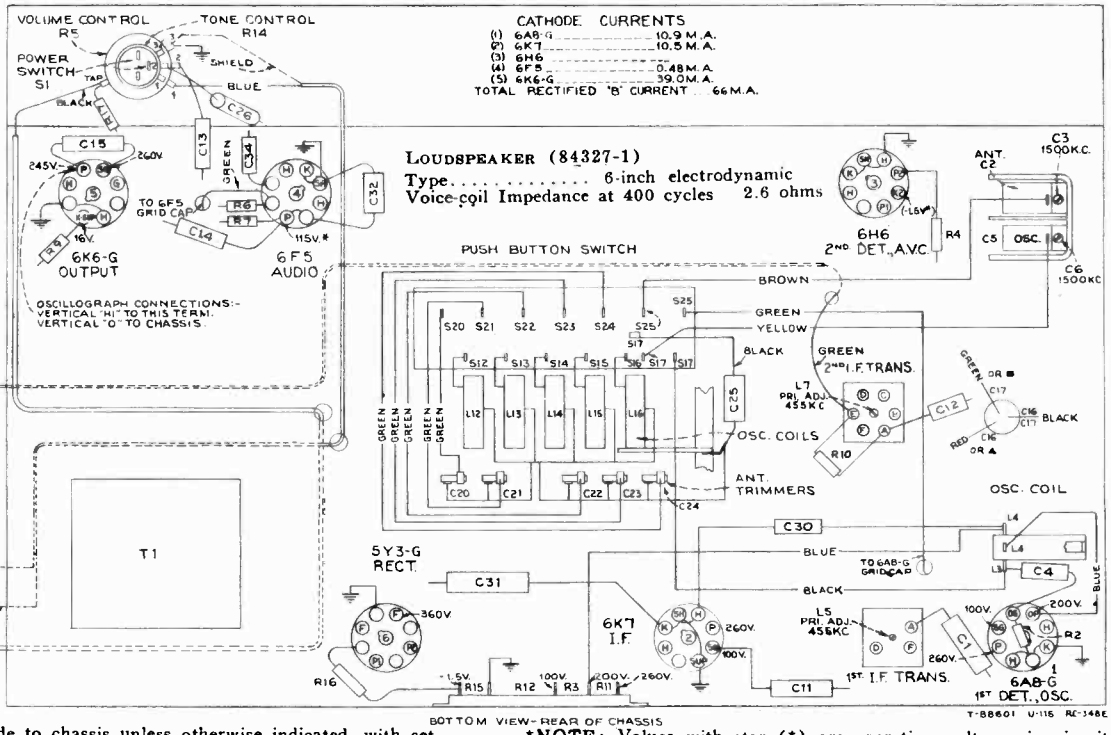
*ANTENNA TRIMMER CAP. BANK

CHASSIS STAMPED	C20	C21	C22	C23	C24
RC-348E	100-400 MMF.	70-290 MMF.	70-290 MMF.	20-160 MMF.	20-160 MMF.
RC-348E "MOD."	100-400 MMF.	100-400 MMF.	70-290 MMF.	20-160 MMF.	20-160 MMF.
RC-348E "M"	100-400 MMF.	100-400 MMF.	40-250 MMF.	20-160 MMF.	20-160 MMF.

Precautionary Lead Dress.—(1) Dress green lead from antenna coil to switch away from the chassis and gang. (2) Dress lead from 2nd I.F. transformer to volume control away from other leads. (3) Ground bus from 6H6 socket must be close to chassis. (4) Dress leads away from oscillator coil adjustment screws. (5) Dress power transformer primary leads toward left-hand end of chassis. (6) Dress plate lead to output transformer close to chassis.

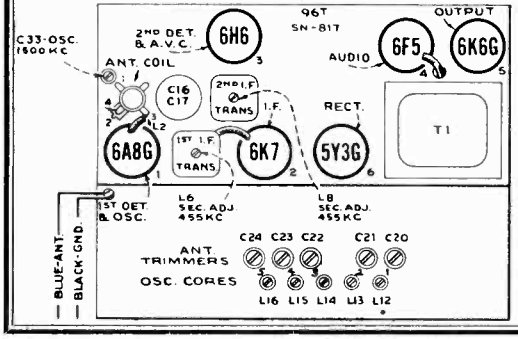
U-115

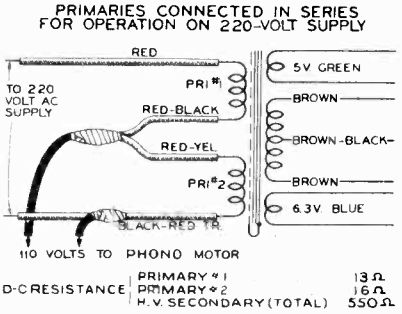
—1938 No. 46—

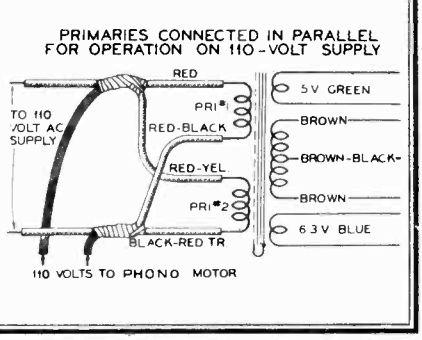


Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within approximately ± 20% with 117-volt a-c supply.

***NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. The actual measured voltages will be lower, depending on the voltmeter loading.



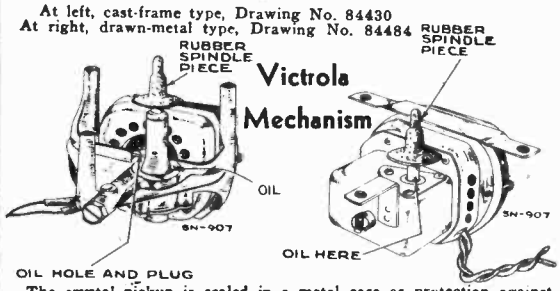




MODEL U-115 — RCA MFG. CO., INC. — Alignment, Phono. Data
Chassis RC-348E, RC-348E "M", RC-348E "MOD" — Tuner Adjustments

Motors Used in Model U-115

At left, cast-frame type, Drawing No. 84430
At right, drawn-metal type, Drawing No. 84484



The crystal pickup is sealed in a metal case as protection against extreme changes of climate. If failure occurs, do not attempt to repair the unit, but install a new crystal unit.

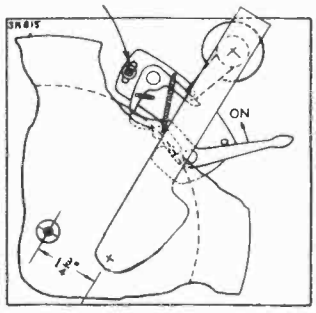
The phonograph motor is a self-starting constant-speed induction type. Two styles of motor are employed: One style (drawing No. 84430) has a cast frame and mounts from below the motorboard. The other style (drawing No. 84484) has a drawn metal case, and mounts from top of motorboard through a cutout. The two types are shown in the accompanying illustrations.

Motor Lubrication.—Apply a few drops of light machine oil to the spindle bearing and oil hole every six months.

The motor spindle is tapered, and a conical rubber piece fits snugly on the spindle. The hole in the turntable bushing is tapered to fit the rubber. This provides an excellent self-centering floating mounting.

A metal washer is placed on the spindle under the rubber piece. The washer has ears on the under side which fit over a pin that projects through the spindle.

The automatic stop should be adjusted so that the lever will snap to the "off" position when the pickup needle is 1¾ inches from the center line of the spindle.



ADJUST SWITCH TO TRIP WHEN NEEDLE IS ON 1-3/4" RADIUS FROM ℄ OF MOTOR SPINDLE

POWER SUPPLY RATINGS

A-6	105-125 volts, 60 cycles, 100 watts
A-5	105-125 volts, 50 cycles, 100 watts
B-2	105-125 volts, 25 cycles, 100 watts
C-6	105-125, 200-250 volts, 60 cycles, 100 watts
C-5	105-125, 200-250 volts, 50 cycles, 100 watts

POWER-TONE-VOLUME CONTROL * — 1 2 3 4 5 — TUNING CONTROL

PUSH BUTTON RANGES:	RC-348E	RC-348E "MOD"	RC-348E "M"
Button No. 1 (left)	550-980 kc	550-980 kc	550-980 kc
Button No. 2	650-1,080 kc	550-980 kc	550-980 kc
Button No. 3	650-1,080 kc	650-1,080 kc	690-1,225 kc
Button No. 4	850-1,500 kc	850-1,500 kc	850-1,500 kc
Button No. 5	850-1,500 kc	850-1,500 kc	850-1,500 kc

Calibration Marks. — The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks corresponding to dial readings of 600 kc and 1,500 kc have been stamped in the plate on the front of the chassis, as shown in the accompanying drawing. These marks are used for reference during alignment.

Drum and Dial Indicator Adjustment.—As the first step in r-f alignment, check the position of the drum on the front shaft of the gang condenser. With the gang at maximum (full mesh) the drum set-screw should be pointing directly down as shown in the drawing. With the drum in this position, and the gang at maximum, move the dial indicator along the drive cord to coincide with the left-hand line as shown. The indicator is held to the drive cord by means of spring clips.

After completion of alignment, and after the chassis has been fastened in the cabinet, turn the gang to maximum and note whether the dial indicator is at the left-hand end mark on the dial; if it is not, loosen the drum set-screw (which is accessible through a slot in the bottom of the cabinet), turn the drum slightly so that the indicator is at this mark, and then tighten the set-screw.

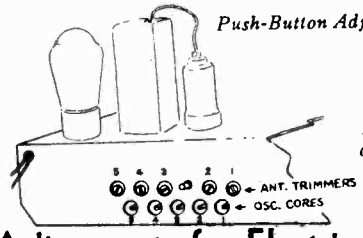
After completion of alignment, seal the i-f core-adjustment screws with household cement.

For additional details, refer to booklet, "RCA Victor Receiver Alignment."

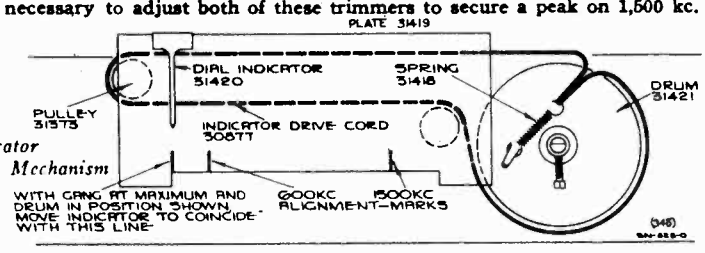
Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	Quiet point between 550-750 kc	L7 and L8 (2nd I-F Trans.)
2	6A8-G grid cap, in series with .01 mfd.	455 kc		L5 and L6 (1st I-F Trans.)
3	Antenna lead (blue) in series with 200 mmf.	1,500 kc	1,500 kc calibration mark.	C8 (osc.)* C3 (ant.)
4	Follow "Adjustments for Electric Tuning."			

*** The oscillator section of the gang condenser has two trimmers, one on top, accessible through a hole in the chassis, and the other on bottom. It may be necessary to adjust both of these trimmers to secure a peak on 1,500 kc.**

Push-Button Adjustments



Dial-Indicator and Drive Mechanism



Adjustments for Electric Tuning

DRUM SHOWN WITH GANG AT MAXIMUM CAPACITY

These models have six push buttons. The right-hand button connects the gang condenser for dial tuning. The other five buttons are for electric tuning of five different stations in the standard-broadcast range. The station buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments. Use a regular antenna for the preliminary adjustments.

The procedure is as follows:

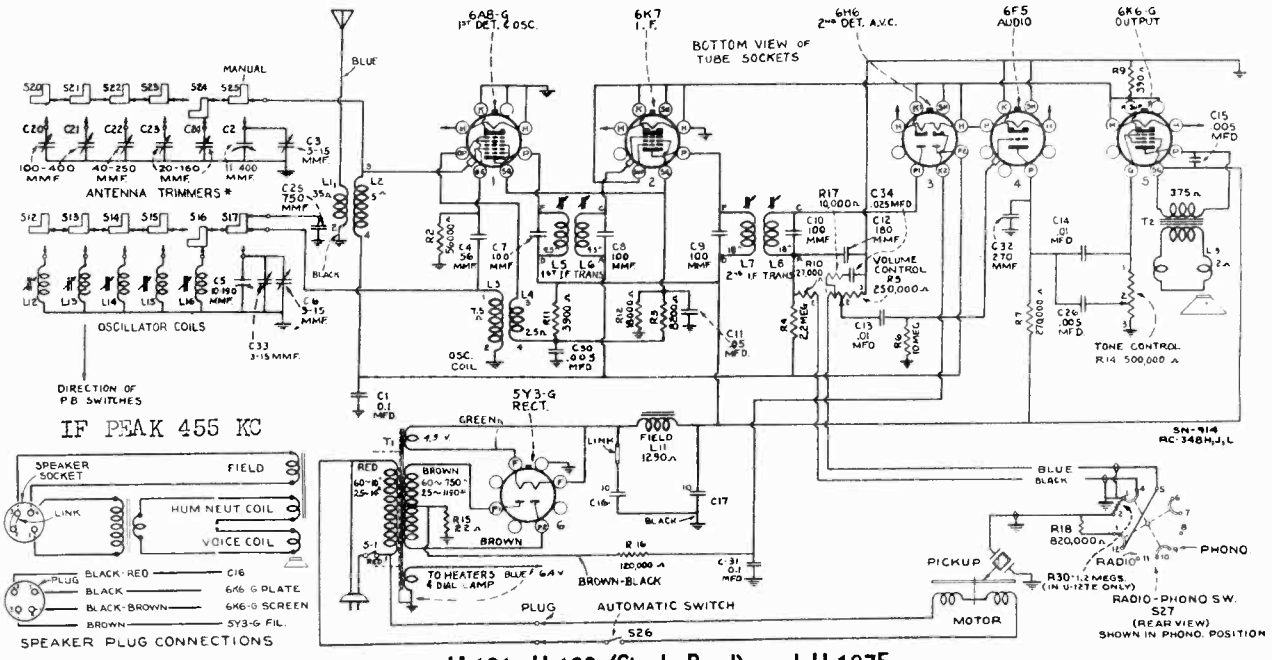
1. Make a list of the five desired stations, arranged in order from low to high frequencies.
2. Push in the dial-tuning (right-hand) button, and manually tune in the first station on the list.
3. Push in station-button No. 1 (left-hand) and adjust No. 1 oscillator core (L12) to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until the station is received.
4. Adjust No. 1 antenna trimmer (C20) for maximum output on this station.
5. Adjust for each of the remaining four stations in the same manner.

(Clockwise adjustment of oscillator cores and antenna trimmers tunes the circuits to lower frequencies.)

6. Make a final careful adjustment of the oscillator cores using one or two feet of wire as an antenna.

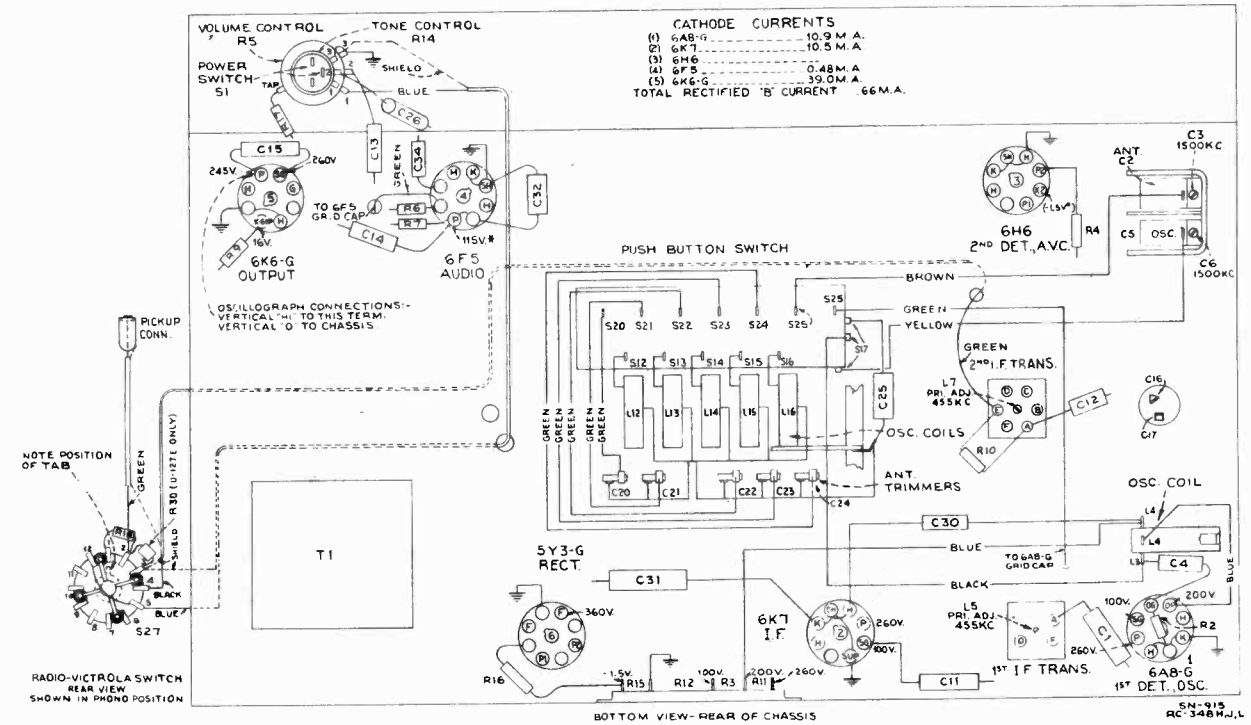
RCA MFG. CO., INC.

MODELS U-121,Ch.RC-348J
U-123 (Single Band) Ch.RC-348H
U-127E,Chassis RC-348L
Schematic,Chassis Wiring
Voltage



U-121, U-123 (Single-Band), and U-127E

Precautionary Lead Dress.—(1) Dress green lead from antenna coil to switch away from the chassis and gang. (2) Ground bus from 6H6 socket must be close to chassis. (3) Dress leads away from oscillator coil adjustment screws. (4) Dress power transformer primary leads toward left-hand end of chassis. (5) Dress plate lead from output tube close to chassis.



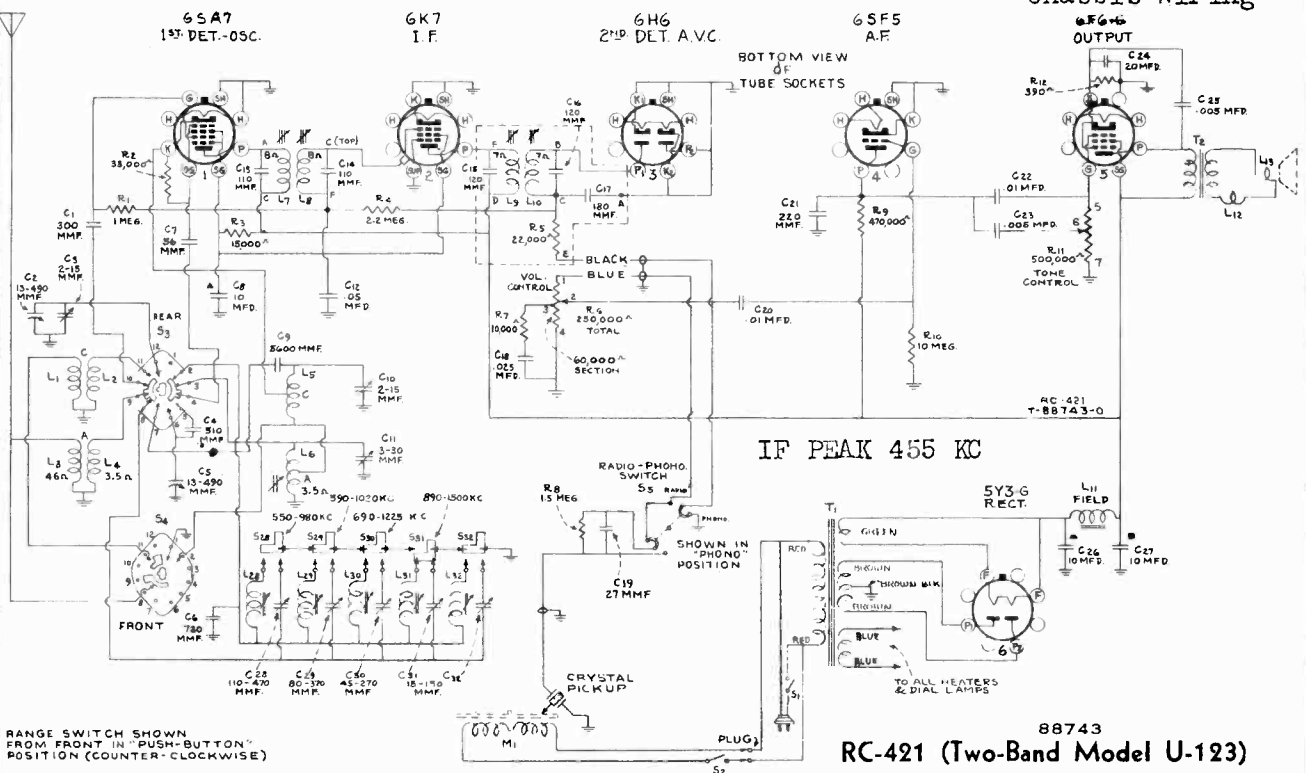
Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within approximately ± 20% with 117-volt a-c supply.

*NOTE: Values with star (*) are operating voltages in circuits with high series-resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

MODEL U-123(2 Bands)
Chassis RC-421

RCA MFG. CO., INC.

Schematic, Voltage
Chassis Wiring



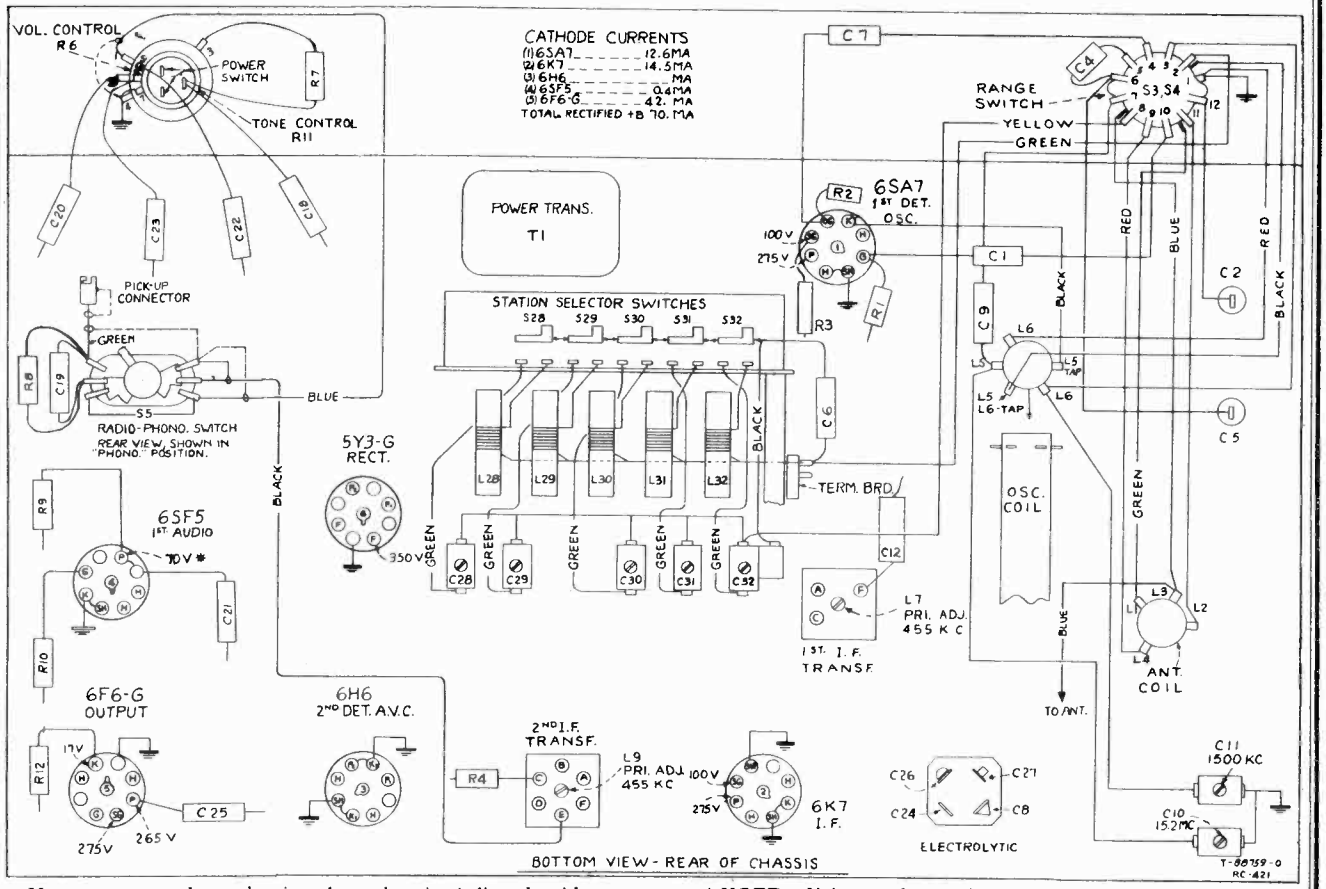
RANGE SWITCH SHOWN FROM FRONT IN "PUSH-BUTTON" POSITION (COUNTER-CLOCKWISE)

88743

RC-421 (Two-Band Model U-123)

Note the following additional d-c resistances: Voice-coil, 2 ohms; primary of output transformer, 375 ohms; 60-cycle power transformer, primary 9 ohms, secondary 735 ohms.

Precautionary Lead Dress.—Dress the oscillator grid condenser (C7) away from chassis. Leads along back of chassis must be dressed in corner of chassis and away from contact "E" of 2nd i-f transformer. Keep a-c leads against end of chassis. Dial drum must be 5/32-inch from front apron.



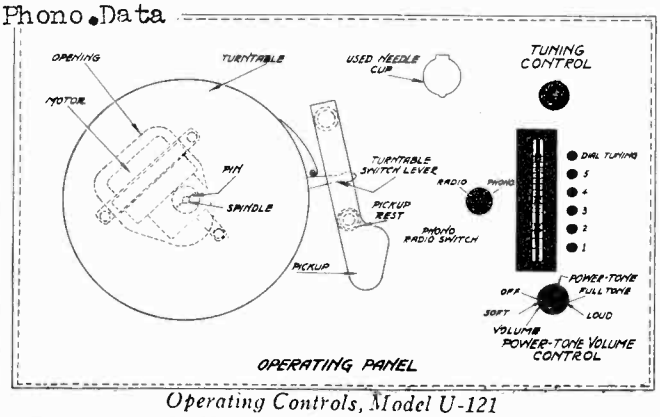
Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within approximately ± 20% with 117-volt a-c supply.

* **NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

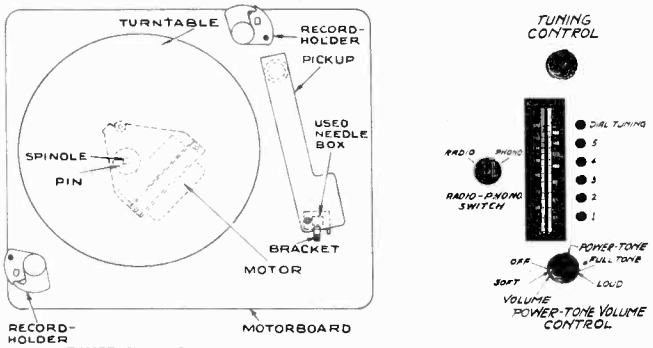
U-127E, Chassis RC-348L
Alignment, Socket, Trimmers
Phono. Data

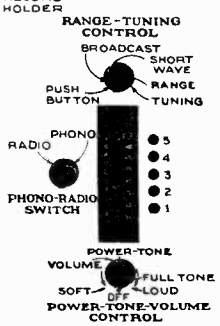
RCA MFG. CO., INC.

MODELS U-121, Ch. RC-348J
U-123, Ch. RC-348H, RC-421



Operating Controls, Model U-121

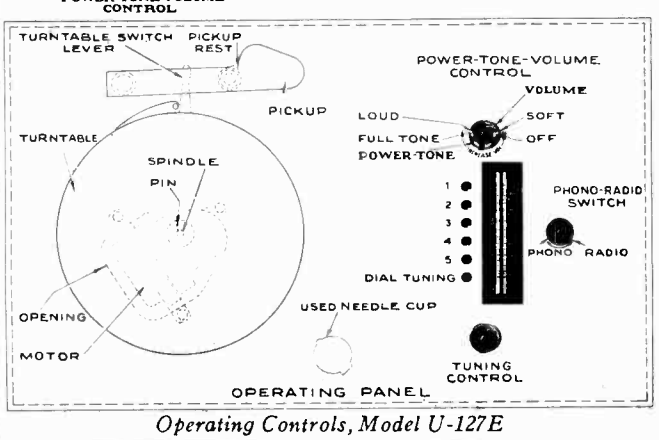




Operating Controls, Model U-123

Above—Radio controls for single-band U-123 (RC-348H).

At left—Radio controls for double-band U-123 (RC-421).



Operating Controls, Model U-127E

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing. Turn the receiver volume control to maximum.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Marks.—The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks corresponding to dial readings of 600 kc and 1,500 kc have been stamped in the plate on the front of the chassis, as shown in the accompanying drawing. These marks are used for reference during alignment.

Drum and Dial Indicator Adjustment.—As the first step in r-f alignment, check the position of the drum on the front shaft of the gang condenser. With the gang at maximum (full mesh) the drum set-screw should be pointing directly down (RC-348 series) and up for RC-421. With the drum in this position, and the gang at maximum, move the dial indicator along the drive cord to coincide with the left-hand line as shown. The indicator is held to the drive cord by means of spring clips.

After completion of alignment, and after the chassis has been fastened in the cabinet, turn the gang to maximum and note whether the dial indicator is at the left-hand end mark on the dial; if it is not, move the pointer the required distance along the cord.

RC-348J, RC-348H, and RC-348L

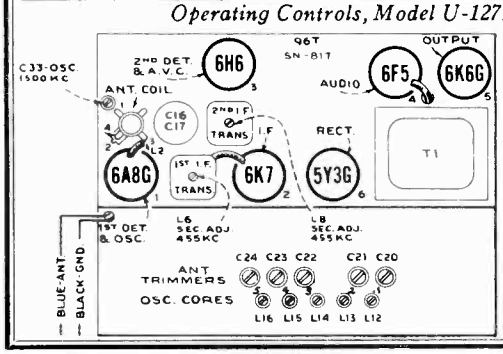
Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	Quiet point between 550-750 kc	L7 and L8 (2nd I-F Trans.)
2	6A8-G grid cap, in series with .01 mfd.	455 kc		L5 and L6 (1st I-F Trans.)
3	Antenna lead (blue) in series with 200 mmf.	1,500 kc	1,500 kc calibration mark	C6 (osc.)* C3 (ant.)
4	Follow "Adjustments for Electric Tuning."			

* The oscillator section of the gang condenser has two trimmers, one on top, accessible through a hole in the chassis, and the other on bottom. It may be necessary to adjust both of these trimmers to secure a peak on 1,500 kc.

RC-421 (Two-band Model U-123)

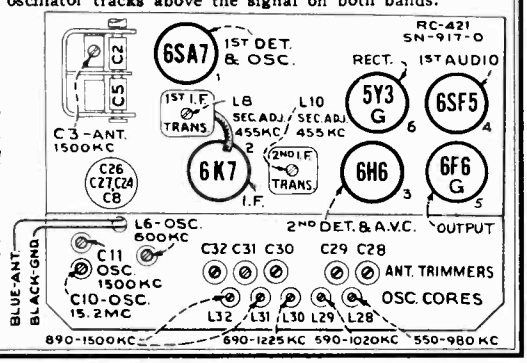
Steps	Connect the high side of test.-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	Quiet point between 550-750 kc	L9 and L10 (2nd I-F trans.)
2	Stator of ant. section of gang	455 kc		L7 and L8 (1st I-F trans.)
3	Antenna lead, in series with 200 mmf.	600 kc	600 kc calibration mark	L6 (osc.)
4		1,500 kc	1,500 kc calibration mark	C11 (osc.) C3 (ant.)
5	Repeat steps 3 and 4.			
6	Antenna lead, in series with 400 ohms	15.2 mc	15.2 mc calibration mark	C10 (osc.)*
7	Follow "Adjustments for Electric Tuning."			

* Rock gang for maximum output while adjusting C10.
Note.—The oscillator tracks above the signal on both bands.



At left—Tube and trimmer location for single-band chassis, RC-348J, RC-348H, and RC-348L.

At right—Tube and trimmer location for double-band chassis RC-421.



MODELS U-121,Ch.RC-348J
U-123,Ch.RC-348H,RC-421
U-127E,Chassis RC-348L

RCA MFG. CO., INC.
Automatic Record Changer

Automatic Record Changer
Adjustments,Notes

Before servicing the automatic record changer, inspect the assembly to see that all levers, parts, gears, springs, etc. are in good order and are correctly assembled.

A bind or jam in the mechanism can usually be relieved by rotating the turntable in the reverse direction.

The changer can be conveniently rotated through its change cycle by pushing the index lever to "Reject" and revolving the turntable by hand. Six turntable revolutions are required for one change cycle.

If the record changer or cabinet is not perfectly level, normal operation is likely to be affected.

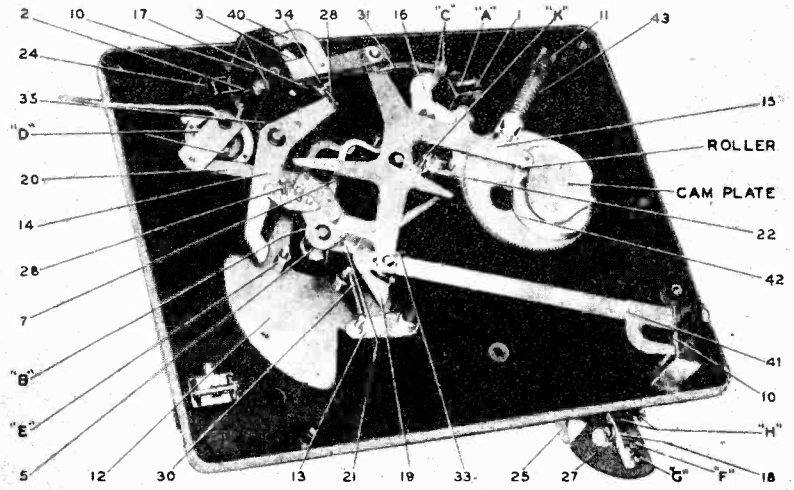
The 10 and 12 inch records must be absolutely flat for smooth operation when using a mixture of the two sizes.

A shorting switch, located in the pickup head, operates due to pressure when the pickup is placed on the pickup rest.

ADJUSTMENTS

A. Main Lever.—This lever is basically important in that it interlinks the various individual mechanisms which control needle landing, tripping, record separation, etc. One adjustment is provided for the main lever. Rotate the turntable until the changer is out-of-cycle; and adjust rubber bumper bracket (A) so that the roller clears the nose of the cam plate by 1/16 inch.

B. Friction Clutch.—The motion of the tone arm toward the center of the record is transmitted to the trip pawl "22" by the trip lever "7" through a friction clutch "5." If the motion of the pickup is abruptly accelerated or becomes irregular due to swinging in the eccentric groove, the trip finger "7" moves the trip pawl "22" into engagement with the pawl on the main gear, and the change cycle is started. Proper adjustment of the friction clutch "5" occurs when movement of the tone arm causes positive movement of the trip pawl "22" without tendency of the clutch to slip. The friction should be just enough to prevent slippage, and is adjustable by means of screw "B." If adjustment is too tight, the needle will repeat grooves; if too loose, tripping will not occur at the end of the record.



NOTE: Numbers refer to parts—letters refer to adjustments

C. Pickup Lift Cable Screw.—During the record change cycle, lever "16" is actuated by the main lever "15" so as to raise the tone arm clear of the record by means of the pickup lift cable. To adjust pickup for proper elevation, stop the changer "in-cycle" at the point where pickup is raised to the maximum height above turntable plate, and has not moved outward; at this point adjust locknuts "C" to obtain 1 inch spacing between needle point and turntable top surface.

D. & E. Needle Landing on Record.—The relation of coupling between the tone arm vertical shaft and lever "20" determines the landing position of the needle on a 10 inch record. Position of eccentric stud "E" governs the landing of the needle on a 12 inch record; this, however, is dependent on the proper 10 inch adjustment.

To adjust for needle landing, place 10 inch record on turntable; push index lever to reject position and return to the 10 inch position; see that pickup locating lever "17" is tilted fully toward turntable; rotate mechanism through cycle until needle is just ready to land on the record; then see that pin "V" on lever "14" is in contact with "Step T" on lever "17." The correct point of landing is 4-11/16 inches from the nearest side of the turntable spindle; loosen the two screws "D" and adjust horizontal position of tone arm to proper dimension, being careful not to disturb levers "14" and "17." Leave approximately 1/32 inch end play between hub of lever "20" and pickup base bearing, and tighten the blunt nose screw "D"; run mechanism through several cycles as a check, then tighten cone pointed screw "D."

After adjusting for needle landing on a 10 inch record, place 12 inch record on turntable; push index lever to reject and return to 12 inch position; rotate mechanism through cycle until needle is just ready to land on the record; the correct point of landing is 5-11/16 inches from nearest side of spindle. If the landing is incorrect, turn stud "E" until the eccentric end adjusts lever "14" to give correct needle landing. The eccentric end of the stud must always be toward the rear of the motor board, otherwise incorrect landing may occur with 10 inch records.

F. & G. Record Separating Knife.—The upper plate (knife) "25" on each of the record posts serves to separate the lower record from the stack and to support the remaining records during the change cycle. It is essential that the spacing between the knife and the rotating record shelf "27" be accurately maintained. The spacing for the 10 inch record is nominally .058 inch, and for the 12 inch record is .075 inch.

To adjust, rotate the knife to the point of minimum vertical separation from the record shelf and turn screw and locknut "F" to give .055—.061 inch separation. Screw "G" must not be depressed during this adjustment. After setting screw "F" adjust screw "G" so that when its tip is depressed flush with top of record shelf, the vertical spacing between the knife, in its lowest rotational position, and the shelf, is .072—.078 inch.

H. Record Support Shelf.—The record shelf revolves during the change cycle to allow the lower record to drop onto the turntable. Both posts are rotated simultaneously by a gear and rack coupled to the main lever "15," and it is necessary that adjustment be such that the record is released from both shelves at the same instant. To adjust, place a 12 inch record on the turntable, rotate mechanism into cycle to the point where tone arm is at maximum distance outward from turntable; lift record upward until it is in contact with both separating knives, then loosen screws "H" and shift record shelves so that the curved inner edges of the shelves are uniformly spaced at least 1/16 inch from record edge. Tighten the blunt nose screw "H," run mechanism through cycle several times to check action, then tighten cone pointed screw "H."

If record shelves or knives are bent, or not perfectly horizontal, improper operation and jamming of mechanism will occur.

J. Tone Arm Rest Support (not shown).—When the changer is out-of-cycle, the front lower edge of the pickup head should be 5/16 inch above surface of motor board. This may be adjusted by bending the tone arm support bracket, which is associated with the tone arm mounting base, in the required direction.

K. Trip Pawl Stop Pin.—The position of the trip pawl stop pin "K" in relation to the main lever "15" governs the point at which the roller enters the cam. By bending the pin support either toward or away from trip pawl bearing stud, the roller can be made to enter the cam later or earlier, respectively. This adjustment should be made so that the roller definitely clears the cam outer guide as well as the nose of the cam plate.

Lubrication.—Petrolatum or petroleum jelly should be applied to cam, main gear, spindle pinion gear, and gears of record posts.

Light machine oil should be used in the tone arm vertical bearing, record post bearings, and all other bearings of various levers on underside of motor board.

Apply a few drops of light machine oil to the motor spindle bearing and oil hole adjacent to the spindle bearing. The oil hole has a screw plug.

Do not allow oil or grease to come in contact with, rubber mounting of tone arm base, rubber bumper, or rubber spindle cap.

MISCELLANEOUS SERVICE HINTS

Incorrect adjustment of a particular mechanism of the changer is generally exhibited in a specific mode of improper operation. The following relations between effects on operation and the usual misadjustments will enable ready adjustment in most cases.

1. For any irregularity of operation, the adjustment of the main lever "15" should be checked first as in "A."
2. Needle does not land properly on both 10 and 12 inch records —Make complete adjustments "D" and "E."
3. Needle does not land properly on 12 inch record but correct on 10 inch—Effect adjustment "E."
4. Failure to trip at end of record—Increase clutch "5" friction by means of screw "B." Also, see that levers "7" and "12" are free to move without touching each other.
5. Pickup strikes lower record of stack or drags across top record on turntable—Adjust lift cable per adjustment "C."
6. Needle does not track after landing—Friction clutch "5" adjustment "B" may be too tight; bind in tone arm vertical bearing; levers "7" and "12" fouled; or pickup output cable twisted.
7. Cycle commences before record is complete—Record is defective, or adjustment "B" of friction clutch "5" is too tight.
8. Wow in record reproduction—Record is defective; or instrument is not being operated at normal room temperature (65° F).
9. Record knives strike edge of records—Records warped; record edges are rough; or knife adjustments "F" and "G" are incorrect.
10. Record not released properly—Adjust record shelf assemblies in respect to shaft by means of adjustment "H."
11. Needle lands in 10 inch position on 12 inch record or misses record when playing both types mixed—Increase tension of pickup locating lever spring "34."

Specifications, Tuner Data
Record Changer Details

RCA MFG. CO., INC.

MODELS U-121, Ch. RC-348J
U-123, Ch. 348H, RC-421
U-127E, Ch. RC-348L

Electrical and Mechanical Specifications

Frequency Range ..... 540-1,720 kc
RC-421 also has a short-wave band of ..... 5.8-18.0 mc

Push Button Ranges (RC-348J, 348H, and 348L)
Two stations between approximately 550- 980 kc
One station between approximately 690-1,225 kc
Two stations between approximately 850-1,500 kc

Push Button Ranges (RC-421)
One station between approximately 550- 980 kc
One station between approximately 590-1,020 kc
One station between approximately 690-1,225 kc
Two stations between approximately 890-1,500 kc

Tube Complement
(1) RCA-6A8-G (6SA7 in RC-421) ..... First-Detector, Oscillator
(2) RCA-6K7 ..... Intermediate-Frequency Amp.
(3) RCA-6H6 ..... Second-Detector, A.V.C.
(4) RCA-6F5 (6SF5 in RC-421) ..... Audio Voltage Amplifier
(5) RCA-6K6-G (6F6-G in RC-421) ..... Power Output
(6) RCA-5Y3-G ..... Full-Wave Rectifier

Power Output (RC-348J, 348H, and 348L)
Undistorted ..... 2 watts, Maximum ..... 4 watts

Power Output (RC-421)
Undistorted ..... 2.5 watts, Maximum ..... 4.5 watts

Power Supply Ratings
A-6 ..... 105-125 volts, 60 cycles, 100 watts total
A-5 ..... 105-125 volts, 50 cycles, 100 watts total
B-2 ..... 105-125 volts, 25 cycles, 100 watts total
C-6 ..... 105-125/210-250 volts, 60 cycles, 100 watts total
C-5 ..... 105-125/210-250 volts, 50 cycles, 100 watts total

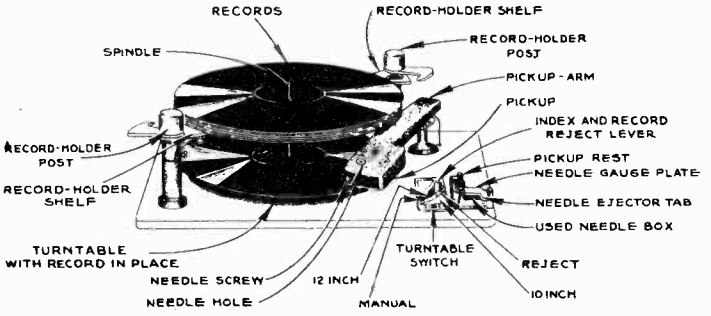
	U-121	U-123 (RC-348H)	U-123 (RC-421)	U-127E
Loudspeaker (electrodynamic)	RL-70F-3	RL-70F-3	RL-70H-6	RL-63H-5
Diameter	12-inch	12-inch	12-inch	8-inch
Voice-Coil Impedance at 400 cycles	2.2 ohms	2.2 ohms	2.2 ohms	2.2 ohms

Cabinet Dimensions:	U-121	U-123	U-127E
Height (inches)	34	34	25⅝
Width (inches)	25⅝	30⅜	29
Depth (inches)	16⅝	17	16⅝
Weight (net) pounds	55	74	52
Weight (shipping) pounds	73	94	71

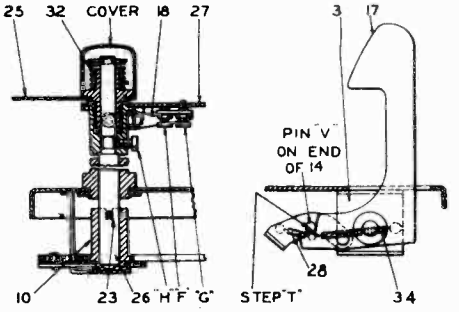
Chassis Base Dimensions ..... 3 inches x 11¼ inches x 5 inches
Over-all Chassis Height ..... 6½ inches
Tuning Drive Ratio ..... 6 to 1

Radio features include: Magnetite-core electric-tuning oscillator coils and magnetite-core i-f transformers; automatic volume control; automatic bass compensation; continuously-variable high-frequency tone control; temperature-stabilized capacitors in oscillator circuit; electro-dynamic loudspeaker; straight-line dial and electric tuning for five stations in the broadcast range.

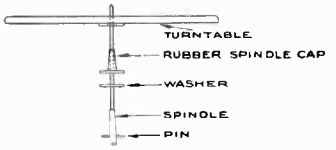
Models U-121 and U-127E have a non-automatic Victrola mechanism, with crystal pickup, automatic stop, and self-starting constant-speed motor.
Model U-123 has an automatic Victrola mechanism which permits playing seven 12-inch or eight 10-inch records in succession. It has a crystal pickup and constant-speed self-starting motor.



Top View of Automatic Record Changer



Details of Record Shelf Posts, and Locating Lever Assemblies



Turntable Assembly (All Models)

The crystal pickup is sealed in a metal case as protection against extreme changes of climate. If failure occurs, do not attempt to repair the unit, but install a new crystal unit.

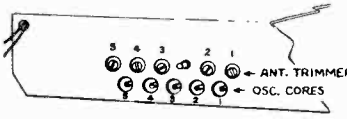
The phonograph motor is a self-starting constant-speed induction type.

Motor Lubrication (Models U-121 and U-127E).—Apply a few drops of light machine oil to the spindle bearing and oil hole every six months. The oil hole is located in the motor casting, adjacent to the spindle bearing, and has a screw plug.

The automatic stop (Models U-121 and U-127E) should be adjusted so that the lever will snap to the "off" position when the pickup needle is 1⅞ inches from the center line of the spindle.

Adjustments for Electric Tuning

Push-Button Ranges in RC-348J, 348H, and 348L (Single-Band Receivers)
No. 1 and 2 ... Approximately 550- 980 kc
No. 3 ..... Approximately 690-1,225 kc
No. 4 and 5 ... Approximately 850-1,500 kc



Push-Button Ranges in RC-421 (Two-Band Model U-123)
No. 1 ..... Approximately 550- 980 kc
No. 2 ..... Approximately 590-1,020 kc
No. 3 ..... Approximately 690-1,225 kc
Nos. 4, 5 ..... Approximately 890-1,500 kc

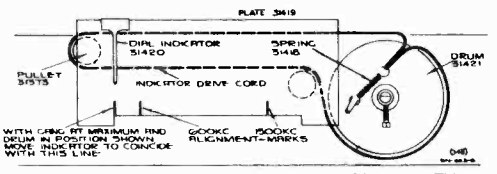
These models have six push buttons. The right-hand button connects the gang condenser for dial tuning. The other five buttons are for electric tuning of five different stations in the standard-broadcast range. The station buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments. Use a regular antenna for the preliminary adjustments.

The procedure is as follows:

1. Make a list of the five desired stations, arranged in order from low to high frequencies.
2. Push in the dial-tuning button, and manually tune in the first station on the list.
3. Push in station-button No. 1 and adjust No. 1 oscillator core to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until the station is received.
4. Adjust No. 1 antenna trimmer for maximum output on this station.
5. Adjust for each of the remaining four stations in the same manner.

(Clockwise adjustment of oscillator cores and antenna trimmers tunes the circuits to lower frequencies.)

6. Make a final careful adjustment of the oscillator cores using one or two feet of wire as an antenna.

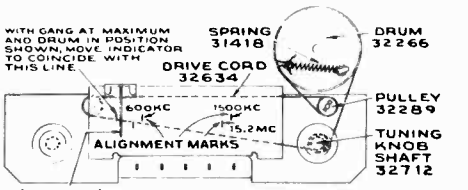


DRUM SHOWN WITH GANG AT MAXIMUM CAPACITY

Dial Mechanism

RC-348J, 348H, and 348L

RC-421



MODELS U-121, Ch. RC-348J
U-123, Ch. RC-348H

RCA MFG. CO., INC.

U-127E, Ch. RC-348L
Parts List

Replacement Parts Models U-121, U-123 (Single-Band), and U-127E

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES (U121-RC348J) (U123-RC348H, Single-Band) (U127E-RC348L)	
32339	Capacitor—Capacitor bank for push button switch assembly (C20, C21, C22, C23, C24)	1.20
12723	Capacitor—56 mmfd. (C4)	.35
30904	Capacitor—100 mmfd. (C7, C8, C9, C10)	.25
13003	Capacitor—180 mmfd. (C12)	.35
12488	Capacitor—270 mmfd. (C32)	.35
31435	Capacitor—750 mmfd. (C25)	.40
4838	Capacitor—.005 mfd., 1,000 volts (C15, C26, C30)	.25
14393	Capacitor—.01 mfd. (C13, C14)	.30
4870	Capacitor—.025 mfd., 400 volts (C34)	.20
30882	Capacitor—.05 mfd., 200 volts (C11)	.20
30899	Capacitor—0.1 mfd., 200 volts (C1, C31)	.30
32342	Capacitor—10-10 mfd. electrolytic capacitor (C16, C17)	1.20
31382	Clip—Coil and core clip for push button oscillator coils	.04
32338	Coil—Antenna coil (L1, L2)	.85
31098	Coil—Oscillator coil (L3, L4)	.85
31415	Coil—Push button oscillator coil, 550 to 980 KC. (L12, L13)	.30
32340	Coil—Push button oscillator coil, 690 to 1,225 KC. (L14)	.35
31383	Coil—Push button oscillator coil, 850 to 1,500 KC. (L15, L16)	.30
31422	Condenser—2-gang variable tuning condenser (C2, C3, C5, C6, C33)	2.70
32355	Control—Volume and tone control and power switch (R5, R14, S1)	3.00
32634	Cord—Drive cord	.10
31386	Core—Core and stud assembly for push button oscillator coils	.15
31421	Drum—Tuning drive drum and hub	.45
11891	Lamp—Dial lamp	.17
32136	Lead—Phonograph input shielded lead and connector (U-121 and U-123)	.35
32908	Lead—Phonograph input shielded lead and socket (U-127E only)	.40
31419	Plate—Dial color plate	.12
30868	Plug—2-contact female for motor leads	.35
31420	Pointer—Dial indicator pointer	.10
31373	Pulley—Tuning indicator drive pulley	.08
31388	Resistor—390 ohms, 1 watt (R9)	.22
14559	Resistor—10,000 ohms, ½ watt (R17)	.20
12738	Resistor—27,000 ohms, ½ watt (R10)	.20
12286	Resistor—56,000 ohms, ½ watt (R2)	.20
13734	Resistor—120,000 ohms, ½ watt (R16)	.20
12199	Resistor—270,000 ohms, ½ watt (R7)	.20
30963	Resistor—820,000 ohms, ½ watt (R18)	.20
30208	Resistor—1.2 meg., ½ watt (R30) (U127E only)	.20
12679	Resistor—2.2 meg., ½ watt (R4)	.20
13601	Resistor—10 meg., ½ watt (R6)	.20
31425	Resistor—Voltage divider resistor tapped at 22 ohms, 18,000 ohms, 8,200 ohms, and 3,900 ohms (R15, R12, R3, R11)	.90
14887	Retainer—Indicator drive pulley retainer	.01
31482	Screw—No. 8 square head set screw for drive drum	.03
5040	Socket—4-contact socket for speaker cable	.30
31364	Socket—Dial lamp socket	.20
31251	Socket—Octal base tube socket	.25
31418	Spring—Drive cord tension spring	.05
31414	Switch—Selector switch for push button switch assembly (S20, S21, S22, S23, S24, S25, S12, S13, S14, S15, S16, S17)	3.05
30902	Transformer—First i.f. transformer (L5, L6, C7, C8)	1.90
30903	Transformer—Second i.f. transformer (L7, L8, C9, C10)	1.80
31445	Transformer—Power transformer, 110 volts, 25-60 cycle (T1)	7.80
31380	Transformer—Power transformer, 110 volts, 50-60 cycle (T1)	4.75
31575	Transformer—Power transformer, 110-220 volts, 50-60 cycle (T1)	8.35
	PICKUP AND ARM ASSEMBLIES Model U-121 and U-127E	
31212	Base—Pickup arm pivot shaft, trip lever, and mounting base assembly	.95
32138	Cable—Shielded cable and male plug for pickup arm	.20
31050	Crystal—Pickup crystal and needle screw	3.75
32137	Pickup and arm complete	7.00
12539	Screw—Pickup needle screw	.15
	PICKUP AND ARM ASSEMBLIES Model U-123 (Single-Band)	
31162	Cable—Pickup arm lift cable and clips	.15
32885	Cable—Pickup arm output cable	.25
31156	Crystal—Pickup crystal cartridge and needle screw	4.25
32884	Pickup and arm complete	7.45
31160	Screw—Pickup needle screw	.12
31161	Shaft—Pickup pivot arm and shaft assembly	.45
	MOTOR ASSEMBLIES Model U-121 and U-127E	
31464	Damper—Comprising 1 rubber spindle sleeve and 1 metal damper plate	.30
32652	Field—Motor coils and laminations, 105-120 volts, 25-cycle	6.90
32650	Field—Motor coils and laminations, 105-120 volts, 50-cycle	5.10
32336	Field—Motor coils and laminations, 105-120 volts, 60-cycle	5.10
32638	Motor—105-120 volts, 25-cycle	12.80
32637	Motor—105-120 volts, 50-cycle	11.20
32558	Motor—105-120 volts, 60-cycle	10.50
30870	Plug—2-contact male for motor leads	.35
32653	Shaft—Turntable shaft and gear for 25-cycle motor	1.30
32651	Shaft—Turntable shaft and gear for 50-cycle motor	1.30
32337	Shaft—Turntable shaft and gear for 60-cycle motor	1.40
	MOTOR ASSEMBLIES Model U-123	
32956	Coil—Field coil and laminations for 25-cycle motor	7.15
32955	Coil—Field coil and laminations for 50-cycle motor	5.90
32954	Coil—Field coil and laminations for 60-cycle motor	5.35
32960	Gear—Motor spindle gear and pin	.75
32873	Motor—Motor complete, 25-cycle, 110 volts AC.	15.95
32872	Motor—Motor complete, 50-cycle, 110 volts AC.	13.75
32871	Motor—Motor complete, 60-cycle, 110 volts, AC.	13.25
30870	Plug—2-prong male plug—used on motor leads.	.35
32959	Spindle—Turntable spindle complete with metal pinion and fibre gear for 25-cycle motor	2.90
32958	Spindle—Turntable spindle complete with metal pinion and fibre gear for 50-cycle motor	2.90
32957	Spindle—Turntable spindle complete with metal pinion and fibre gear for 60-cycle motor	2.90
32875	Switch—Motor control switch	.30
	MOTORBOARD ASSEMBLIES Model U-121 and U-127E	
14803	Brake—Automatic brake and switch	2.95
31464	Damper—Comprising one rubber spindle sleeve, and one metal damper plate	.30
30870	Plug—2-contact male for motor leads	.35
32610	Rest—Rubber rest for pickup arm	.10
30100	Springs—One set of springs for automatic brake	.08
32743	Switch—Radio-Record switch (S27)	.95
14804	Switch—Switch only for automatic brake (S26)	.60
31463	Turntable—Record turntable	1.50
	MOTORBOARD ASSEMBLIES Model U-123	
31149	Base—Tone arm mounting base	.35
32876	Board—Motorboard complete with all riveted and welded posts and brackets — less operating mechanisms	6.50
14209	Bumper—Main lever rubber bumper (1)	.08
9848	Cup—Used needle cup, rest, and lid complete	.75
32877	Escutcheon—Index escutcheon	.40
31151	Guide—Pickup lift cable guide (coil spring, 80T 2-in. large) (2)	.10
31150	Mounting—Pickup arm base rubber mounting complete	.45
31155	Spring—Needle cup lid tension spring	.04
	OPERATING MECHANISM Model U-123	
31134	Bracket — Pickup locating lever mounting bracket (3)	.30
32878	Cam—Cam and drive gear (42)	2.80
6808	Clutch—Trip lever friction clutch assembly (5)	.35
31129	Cover—Cap for top of record post	.45
32883	Damper—Motor spindle rubber drive sleeve and metal damper plate	.30
31116	Finger—Trip lever friction finger assembly (7)	.45
32879	Gear—Rack gear for front left-hand record post (41)	.60
32880	Gear—Rack gear for rear right-hand record post (40)	.55
31121	Gear—Record post gear (10)	.90
31123	Guide—Main lever spring guide (11)	.40
31114	Lever—Index lever assembly (12)	.75
31137	Lever—Index lever tension spring lever (13)	.30
31138	Lever—Locating lever and pawl assembly (14)	.70
31113	Lever—Main lever assembly (15)	1.35

RCA MFG. CO., INC.

MODELS U-121, Ch. RC-348J
U-123, Ch. RC-348H, RC-421
U-127E, Ch. RC-348L

Parts List

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

Replacement Parts (cont'd) Models U-121, U-123 (Single-Band), and U-127E

STOCK No.	DESCRIPTION	Unit List Price
31140	Lever—Pickup lift cable lever and spring assembly (16)	.55
31135	Lever—Pickup locating lever assembly (17)	.85
31130	Lever—Record separator elevating lever complete with adjustment screws (18)	.80
31132	Lever—Trip detaining lever (19)	.30
31115	Lever—Trip lever assembly (20)	1.85
31131	Lever—Trip regulator lever (21)	.25
31133	Pawl—Trip pawl assembly (22)	.80
31124	Pin—Record post drive pin (23)	.04
14207	Roller—Pickup lift cable roller and bracket assembly (24)	.55
31118	Screw—Cone pointed set screw for trip lever hub or record post shelf	.06
4563	Screw—Pickup lift cable screw and nuts	.04
31117	Screw—Special screw to adjust friction clutch tension (B)	.03
31126	Separator—Record separator knife (25)	.75
31122	Shaft—Record separator post shaft (26)	.40
31125	Shelf—Record post shelf assembly (27)	1.25
3676	Spring—Cam pawl tension spring on main gear (12 turns, .190-in. O.D., 4-3/64-in. lg.)	.04
32882	Spring—Main lever tension spring (43) (18 turns, .6-in. O.D., 3-in. lg.)	.05
14190	Spring—Pickup locating lever short spring or locating lever pawl tension spring (28) (16 turns, .100-in. O.D., 19/32-in. lg.)	.08
31136	Spring—Index lever tension spring (30) (25 turns, .190-in. O.D., 15/16-in. lg.)	.05
3666	Spring—Pickup lift cable tension spring (31) (20 turns, .195-in. O.D., 1-in. lg.)	.04
31127	Spring—Record separator pressure spring (32) (8 turns, 5/8-in. O.D., 3/4-in. lg.)	.02
14191	Spring—Trip detaining lever tension spring (33) (15 turns, .190-in. O.D., 3/4-in. lg.)	.04
31875	Spring—Pickup locating lever tension spring (34) (14 turns, .220-in. O.D., 27/32-in. lg.)	.04
32436	Spring—Locating lever tension spring (35) (16 turns, .182-in. O.D., 21/32-in. lg.)	.05
32881	Turntable complete	2.00
31128	Washer—"C" washer for top of record post	.04
	SPEAKER ASSEMBLIES (RL-70F3) Models U-121 and U-123 (Single-Band)	
13866	Cap—Dust cap for cone center	.03
12012	Coil—Field coil (L16)	2.90
11469	Coil—Hum neutralizing coil (L15)	.30
31275	Cone—Speaker cone and voice coil (L14)	1.75
31302	Plug—4-contact male plug	.25
31300	Speaker—Speaker complete	10.95
14358	Screw—Screw, washer, and lockwasher to hold core in yoke	.04
31301	Transformer—Output transformer (T2)	1.70
14357	Washer—Spring washer to hold field coil	.06
	SPEAKER ASSEMBLIES (RL-63H5) Model U-127E	
14356	Board—3-contact speaker terminal board	.15
13366	Cap—Cone center dust cap	.25
12012	Coil—Field coil	2.90
11469	Coil—Hum neutralizing coil	.30
31310	Cone—Speaker cone and voice coil	1.75
31302	Plug—4-contact male plug for speaker	.25
14358	Screw—Screw, washer, and lockwasher to hold core in yoke	.04
31453	Speaker complete	10.25
14355	Transformer—Output transformer	2.00
14357	Washer—Spring washer to hold field coil	.06
	MISCELLANEOUS ASSEMBLIES	
32798	Button—Push button	.10
13103	Cap—Pilot lamp cap (bullseye) (For Model U-123 only)	.15
31487	Clip—Spring clip to mount dial scale	.12
31095	Cover—One set protective discs for call letter markers	.10
32742	Dial—Glass dial scale (For Models U-121 and U-123)	.45
31429	Dial—Glass dial scale (For Model U-127E only)	.40
31103	Hinge—Cabinet lid hinge (For Model U-127E only)	.50
32562	Holder—Needle card holder (For Model U-121 only)	.35
31391	Knob—Tone control knob	.15
31355	Knob—Dummy or radio-record switch knob	.12
30773	Knob—Volume control or tuning knob	.15
30991	Marker—One set station call letter markers	.40
31054	Mounting—Pickup arm rubber mounting, washers, and nuts (For Model U-121 and U-127E only)	.15
32870	Screen—Phonograph compartment lamp screen (For Model U-123 only)	1.00
31470	Spring—Motorboard mounting springs, bolts, and washers (For Model U-123 only) (4 required)	.10
32721	Spring—Retaining spring for push button	.02
30330	Spring—Retaining spring for tone control knob	.03
14270	Spring—Retaining spring for tuning, volume control, or switch knob	.05
11831	Support—Cabinet lid support (For Model U-121 only)	1.85
31478	Support—Cabinet lid support (For Model U-123 only)	2.20
30946	Support—Cabinet lid support (For Model U-127E only)	.60
32743	Switch—Radio-Record switch (For Model U-123 only)	.95
31667	Escutcheon—Dial scale escutcheon	.55
32799	Escutcheon—Push button escutcheon	.50
30698	Hinge—Cabinet lid hinge (For Models U-121 and U-123)	.95

Replacement Parts Model U-123 (Two-Band)

STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES (RC-421) Model U-123 (Two Band)	
32136	Cable—Phono. input cable and socket	.35
31379	Capacitor—Dual trimmer—comprising one 3-30 mmfd. and one 2-10 mmfd. sections (C10, C11)	.40
13605	Capacitor—27 mmfd. (C19)	.35
12723	Capacitor—56 mmfd. (C7)	.35
14262	Capacitor—109 mmfd. (C13, C14)	.30
12404	Capacitor—120 mmfd. (C15, C16)	.30
14712	Capacitor—180 mmfd. (C17)	.30
30232	Capacitor—220 mmfd. (C21)	.35
12952	Capacitor—300 mmfd. (C1)	.35
30608	Capacitor—510 mmfd. (C4)	.35
32714	Capacitor—730 mmfd. (C6)	.45
13895	Capacitor—5,600 mmfd. (C9)	.70
4838	Capacitor—.005 mfd. (C23, C25)	.25
4937	Capacitor—.01 mfd. (C20, C22)	.25
4870	Capacitor—.025 mfd. (C18)	.20
32787	Capacitor—.05 mfd. (C12)	.20
33014	Capacitor—Electrolytic — comprising three 10 mfd. and one 20 mfd. sections (C8, C24, C26, C27)	1.90
32705	Capacitor—Push button trimmer capacitor bank (C28, C29, C30, C31, C32)	1.20
31382	Clip—Push button coil mounting clip	.04
32706	Coil—Antenna coil (L1, L2, L3, L4)	1.25
32707	Coil—Oscillator coil (L5, L6)	.95
31385	Coil—Push button oscillator coil — less core, 550-950 kc (L28)	.30
32704	Coil—Push button oscillator coil — less core, 590-1,020 kc (L29)	.35
32340	Coil—Push button oscillator coil — less core, 690-1,225 kc (L30)	.35
31383	Coil—Push button oscillator coil — less core, 890-1,500 kc (L31, L32)	.30
32249	Condenser—2-gang variable (C2, C3, C5)	2.70
32355	Control—Volume control, tone control, and power switch (R6, R11, S1)	3.00
32634	Cord—Drive cord	.10
31386	Core—Core and stud for coil, Stock Nos. 31383, 31385, and 32704	.15
30846	Core—Core and stud for coil, Stock No. 32340	.30
32713	Core—Core and stud for oscillator coil, Stock No. 32707	.35
32266	Drum—Condenser drive cord drum	.45
32711	Indicator—Dial indicator pointer	.20
31480	Lamp—Dial lamp socket	.20
32710	Plate—Dial color plate and pointer track	.30
5119	Plug—3-contact female for speaker cable	.25
30868	Plug—Motor cable plug	.35
32289	Pulley—Indicator drive cord pulley	.10
12261	Resistor—390 ohms, 1 watt (R12)	.20
14559	Resistor—10,000 ohms, ½ watt (R7)	.20
33489	Resistor—15,000 ohms, 2.5 watt (R3)	.55
14284	Resistor—22,000 ohms, 1/10 watt (R5)	.15
12454	Resistor—33,000 ohms, ½ watt (R2)	.20
12285	Resistor—470,000 ohms, ½ watt (R9)	.20
13730	Resistor—1 meg., ½ watt (R1)	.20
12201	Resistor—1.5 meg., ½ watt (R8)	.20
12679	Resistor—2.2 meg., ½ watt (R4)	.20
13601	Resistor—10 meg., ½ watt (R10)	.20
30340	Retainer—Pulley retaining clip	.02
14343	Retainer—Tuning knob shaft retaining ring	.03
4669	Screw—No. 8-32 x ¼ square head set screw for drum	.03
32712	Shaft—Tuning knob shaft and pulley	.20
31319	Socket—Octal base tube socket	.25
31418	Spring—Drive cord tension spring	.05
32703	Switch—Push button switch (S28, S29, S30, S31, S32)	2.25
33113	Switch—Radio record switch (S5)	.65
32702	Switch—Range switch (S3, S4)	1.15
14376	Transformer—First i.f. transformer (L7, L8, C13, C14)	2.45
14308	Transformer—Second i.f. transformer (L9, L10, C15, C16, C17, R5)	2.90
33112	Transformer—Power transformer—105-125 volts, 50-60 cycle (T1)	4.30
	PICKUP AND ARM ASSEMBLIES	
33096	Arm—Pickup arm complete — less crystal cartridge, needle screw, and cable	2.60
31162	Cable—Pickup arm lift cable and clips	.15
32885	Cable—Output cable and plug	.25
31156	Crystal—Pickup crystal cartridge and needle screw	4.25
33114	Damper—Viscoloid damper for crystal armature	.15
31160	Screw—Pickup needle screw	.12
31161	Shaft—Pickup pivot arm and shaft assembly	.45
	SPEAKER ASSEMBLIES (RL-70H6) Model U-123 (Two Band)	
31825	Cap—Dust cap for cone center	.05
11469	Coil—Hum neutralizing coil (L12)	.30
33116	Coil—Speaker field coil (L11)	2.10
31275	Cone—Speaker cone and voice coil (L13)	1.75
5118	Plug—3-prong male for speaker	.25
33115	Speaker—Speaker complete	10.55
14358	Screw—Screw, washer, and lockwasher to hold core in yoke	.04
31301	Transformer—Output transformer (T2)	1.70
14357	Washer—Spring washer to hold field coil	.06
32798	Button—Push button	.10
13103	Cap—Pilot lamp cap (bullseye)	.15
31487	Clip—Spring clip to mount dial scale	.12
31095	Cover—One set protective discs for call letter markers	.10
33117	Dial—Glass dial scale	.50
31667	Escutcheon—Dial scale escutcheon	.55
33118	Escutcheon—Push button escutcheon	.50
30698	Hinge—Cabinet lid hinge	.95
31391	Knob—Tone control knob	.15
31355	Knob—Tuning or radio-record switch knob	.12
14359	Knob—Radio-record switch knob	.20
30773	Knob—Volume control knob	.15
30991	Marker—One set station call letter markers	.40
32870	Screen—Phonograph compartment lamp screen	1.00
31470	Spring—Motorboard mounting springs, bolts, and washers (4 required)	.10
32721	Spring—Retaining spring for push button	.02
30330	Spring—Retaining spring for tone control knob	.03
14270	Spring—Retaining spring for tuning, volume control, or switch knob	.05
4982	Spring—Retaining spring for radio-record switch knob	.05
31478	Support—Cabinet lid support	2.20

MISCELLANEOUS ASSEMBLIES

MOTOR ASSEMBLIES, MOTORBOARD ASSEMBLIES, and OPERATING MECHANISM

Model U-123 (Two Band)
Same as in Single-Band U-123

MODEL U-125,Ch.RC-386
Alignment,Tuner Data

RCA MFG. CO., INC.

ALIGNMENT PROCEDURE

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum. — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The distance from the front of the chassis to the drum must not exceed 3/8-inch. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	"A" band, Quiet Point between 550-750 kc	L12 and L13 (2nd I-F Trans.)
2	6A8-G det. grid cap, in series with .01 mfd.	455 kc		L10 and L11 (1st I-F Trans.)
3	Antenna Terminal, in series with 300 ohms	20 mc	20 mc (23°) "C" band	C21* (osc.) C30** (ant.)
4	Antenna Terminal, in series with 300 ohms	6 mc	6 mc (33°) "B" band	C23 (osc.)†
5	Antenna Terminal, in series with 200 mmf.	1,500 kc	1,500 kc (28½°) "A" band	C25 (osc.)
6	Follow "Adjustments for Electric Tuning"			

* Use **minimum** capacity peak if two peaks can be obtained.

** Rock gang slightly and use **maximum** capacity peak if two peaks can be obtained with C30. Check to determine that C21 has been adjusted to the correct peak by tuning to approximately 28° (19.09 mc), where a weaker signal (image) should be received.

† Use **minimum** capacity peak if two peaks can be obtained. Check to determine that C23 has been adjusted to the correct peak by tuning to approximately 51° (5.09 mc), at which point a weaker signal (image) should be received.

Note.—Oscillator tracks 455 kc above signal on all bands.

ADJUSTMENTS FOR ELECTRIC TUNING

This model has eight push-buttons. The front button is the Victrola switch. The rear button connects the gang condenser for manual tuning. The other six buttons are for electric tuning of six different stations in the standard-broadcast range. The station buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

Use one or two feet of wire as an antenna to ensure sharp peaking.

The procedure is as follows:

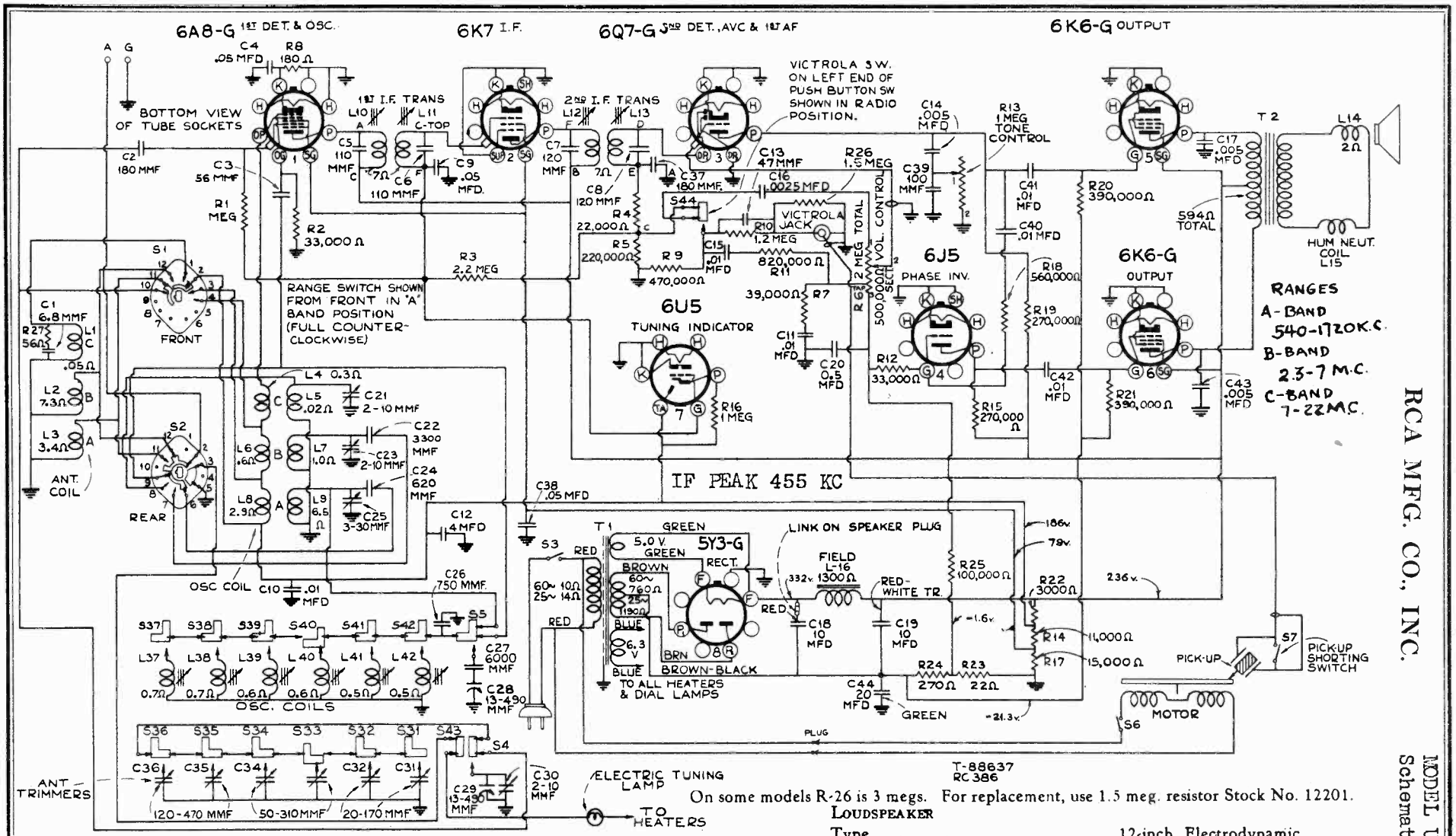
1. Make a list of the desired six stations, arranged in order from low to high frequencies.
2. Push in the dial-tuning button, and manually tune in the first station on the list.
3. Push in station button No. 1 (second from front) and adjust No. 1 oscillator core (L37) to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until station is received.
4. Adjust No. 1 antenna trimmer (C36) for maximum output on this station.

Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.

5. Adjust for each of the remaining five stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers.

Precautionary Lead Dress.—

1. Dress red leads from power transformer to power switch (S3), in corner of chassis and away from volume control terminals.
2. Dress brown lead from push-button switch to gang over end of switch, and away from C27 and bus between S5 and range switch.
3. Leads to C27 must be as short as possible.
4. Blue lead from range switch to oscillator coil must be as short as possible and dressed away from other leads. All leads should be dressed away from antenna coil.
5. Leads across back of chassis must be dressed under electrolytic away from Victrola jack.
6. Parts and leads should be dressed away from R22-R14 as it becomes heated.
7. Leads from oscillator coil to trimmers must be dressed away from coil.
8. Green lead from S4 to range switch must be clear of other leads and away from front edge of chassis.



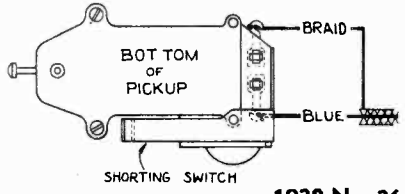
On some models R-26 is 3 megs. For replacement, use 1.5 meg. resistor Stock No. 12201.

Pilot Lamps (4).....1 Mazda 44, 6.3 volts, 0.25 amp.; 3 Mazda 47, 6.3 volts, 0.15 amp.

POWER OUTPUT

Undistorted..... 5 watts
Maximum..... 5.5 watts

Six Electric Tuning Positions.....550-1,500 kc
2 stations between approximately 550- 950 kc (Buttons 1 and 2)
2 stations between approximately 680-1,180 kc (Buttons 3 and 4)
2 stations between approximately 890-1,500 kc (Buttons 5 and 6)



1938 No. 36

LOUDSPEAKER

Type..... 12-inch Electrodynamic
Voice Coil Impedance..... 2.2 ohms at 400 cycles

PICKUP

Type..... Crystal
Impedance..... 100,000 ohms at 1,000 cycles
Average Output..... 1.5 volts at 1,000 cycles across 500,000 ohm load

PHONOGRAPH

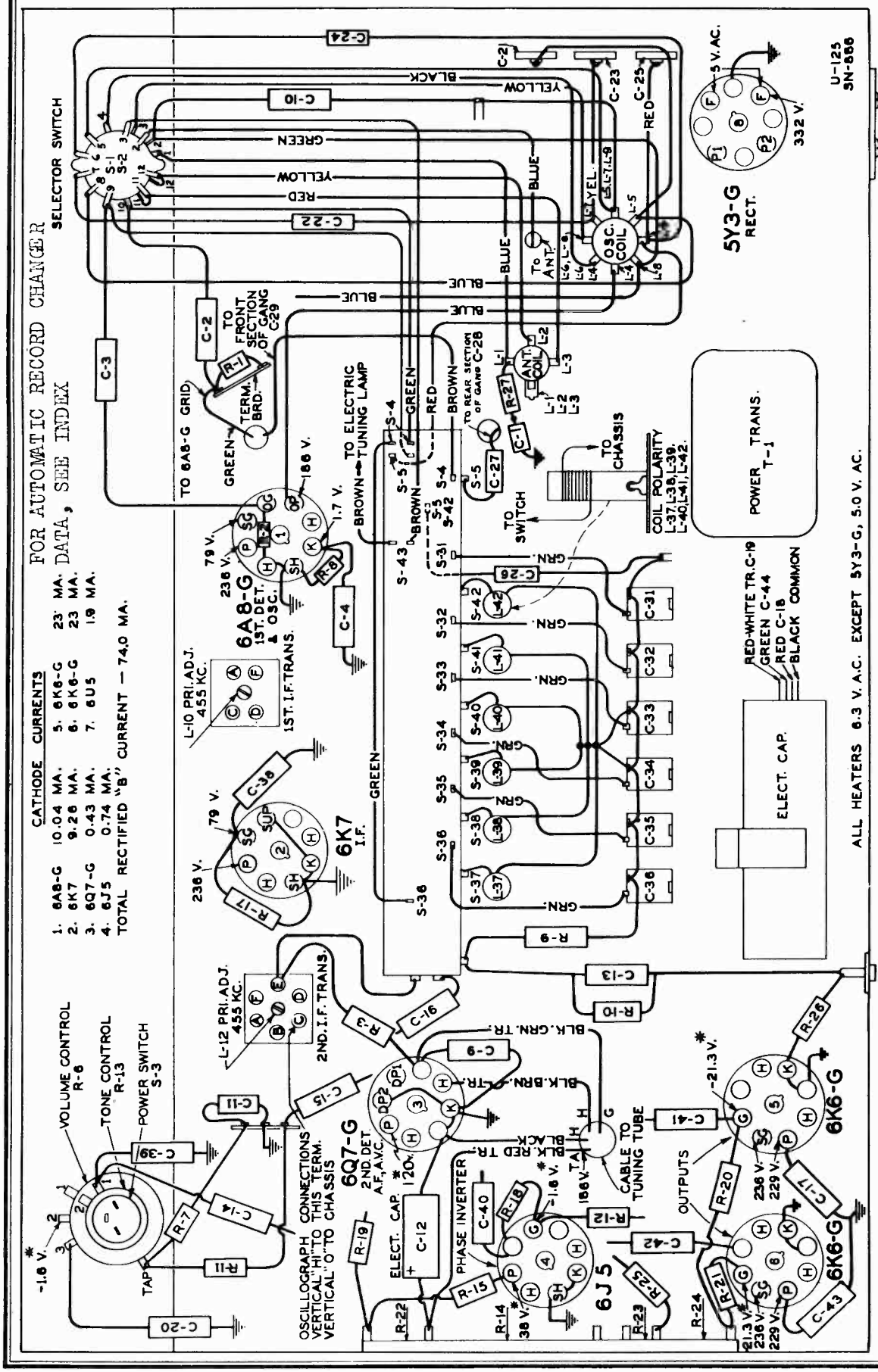
Type..... Automatic
Record Capacity..... Eight 10-inch or seven 12-inch
Turntable Speed..... 78 r.p.m., adjustable

RCA MFG. CO., INC.

MODEL U-125, Ch. RC-386
Schematic, Voltage

MODEL U-125, Ch. RC-386
Chassis Wiring, Voltage

RCA MFG. CO., INC.



* NOTE.—Values with star (*) are operating voltages in circuits with high series-resistance, and when measured will read lower, depending on the voltmeter loading.

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point, volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

R-F Wiring Diagram and Socket Voltages

RCA MFG. CO., INC.

MODEL U-125, Ch. RC-386
Parts List

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

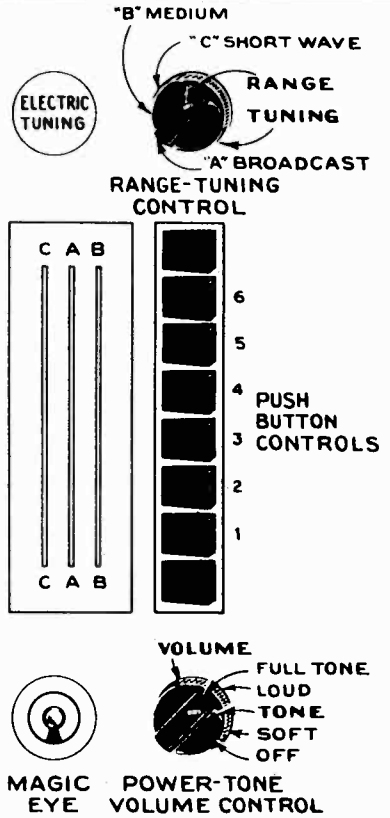
STOCK No.	DESCRIPTION	Unit List Price
	RECEIVER ASSEMBLIES	
14517	Board—Antenna ground terminal board	.25
30752	Bracket—Magic Eye mounting bracket	.25
31400	Capacitor—Triple adjustable trimmer two sections 2-10 mmfd., one section 3-30 mmfd. (C21, C23, C25)	.50
14079	Capacitor—6.8 mmfd. (C1)	.35
31387	Capacitor—Antenna coil trimmer capacitor bank 20-470 mmfd. (C31, C32, C33, C34, C35, C36)	1.30
13141	Capacitor—47 mmfd. (C13)	.35
12723	Capacitor—56 mmfd. (C3)	.35
12720	Capacitor—100 mmfd. (C39)	.35
14262	Capacitor—110 mmfd. (C5, C6)	.30
12404	Capacitor—120 mmfd. (C7, C8)	.30
13003	Capacitor—180 mmfd. (C2)	.35
14712	Capacitor—180 mmfd. (C37)	.30
31381	Capacitor—620 mmfd. (C24)	.45
31435	Capacitor—750 mmfd. (C26)	.40
4881	Capacitor—3,300 mmfd. (C22)	.60
31405	Capacitor—6,000 mmfd. (C27)	.75
5107	Capacitor—.0025 mfd. (C16)	.20
4838	Capacitor—.005 mfd. (C14, C17, C43)	.25
4858	Capacitor—.01 mfd. (C10, C40, C41, C42)	.25
14393	Capacitor—.01 mfd. (C11, C15)	.30
30882	Capacitor—.05 mfd. (C4, C9, C38)	.20
30867	Capacitor—0.5 mfd. (C20)	.30
32145	Capacitor—4 mfd. (C12)	.70
32142	Capacitor—Comprising two 10 mfd., one 20 mfd. sections (C18, C19, C44)	1.90
31382	Clip—Oscillator coil and core mounting clip	.04
31402	Coil—Antenna coil—A, B, and C bands (L1, L2, L3)	1.15
31401	Coil—Oscillator coil—A, B, and C bands (L4, L5, L6, L7, L8, L9)	2.00
31383	Coil—Oscillator coil—A band (L41, L42)	.30
31384	Coil—Oscillator coil—A band (L39, L40)	.30
31385	Coil—Oscillator coil—A band (L37, L38)	.30
31369	Condenser—2-gang variable tuning condenser (C28, C29, C30)	2.65
31366	Control—Volume control, tone control, and on-off switch (R6, R13, S3)	3.00
31375	Cord—Indicator pointer drive cord	.30
31374	Cord—Variable condenser drum drive cord	.15
30905	Core—Adjustable core and stud for i-f transformer	.35
31386	Core—Adjustable core and stud for oscillator coil, Stock Nos. 31383, 31384, and 31385	.15
31372	Drum—Variable condenser drive cord drum and calibration dial	.65
11891	Lamp—Phono. compartment lamp	.17
31480	Lamp—Dial and "Electric Tuning" lamp	.20
30868	Plug—2-contact female plug for motor cable	.35
5040	Plug—4-contact female plug for speaker cable	.30
31373	Pulley—Drive cord pulley	.08
32143	Resistor—Voltage divider comprising one 11,000-ohm, one 3,000-ohm, one 22-ohm, and one 270-ohm sections (R14, R22, R23, R24)	.90
13220	Resistor—56 ohms, ½-watt (R27)	.20
30545	Resistor—180 ohms, ½-watt (R8)	.20
5114	Resistor—15,000 ohms, 1-watt (R17)	.22
14284	Resistor—22,000 ohms, 1/10-watt (R4)	.15
12454	Resistor—33,000 ohms, ½-watt (R2, R12)	.20
12266	Resistor—39,000 ohms, ½-watt (R7)	.20
14560	Resistor—100,000 ohms, ½-watt (R25)	.20
11398	Resistor—220,000 ohms, 1/10-watt (R5)	.15
12199	Resistor—270,000 ohms, ½-watt (R15, R19)	.20
13479	Resistor—390,000 ohms, ½-watt (R20, R21)	.20
12285	Resistor—470,000 ohms, ½-watt (R9)	.20
12486	Resistor—560,000 ohms, ½-watt (R18)	.20
30963	Resistor—820,000 ohms, ½-watt (R11)	.20
12013	Resistor—1 meg., 1/10-watt (R16)	.15
13730	Resistor—1 meg., ½-watt (R1)	.20
30208	Resistor—1.2 meg., ½-watt (R10)	.20
12201	Resistor—1.5 meg., ½-watt (R26)	.20
12679	Resistor—2.2 meg., ½-watt (R3)	.20
14343	Retainer—Retaining spring for station selector knob shaft	.03
14887	Retainer—Drive cord pulley retainer	.01
4669	Screw—No. 8-32 square head set screw for drum, Stock No. 31372	.03
31368	Shaft—Station selector knob shaft and pulley	.30
3682	Shield—Tube shield	.22
30868	Socket—2-contact female socket for motor power cable	.35
12493	Socket—5-contact female socket for speaker cable	.30
13871	Socket—Magic Eye socket	.45
14278	Socket—Pickup input socket	.25
31251	Socket—Tube socket	.25
31418	Spring—Indicator or drum drive cord tension spring	.05
31398	Switch—Range switch (S1, S2)	1.25
31370	Switch—Station selector push-button switch (S4, S5, S31, S32, S33, S34, S35, S36, S37, S38, S39, S40, S41, S42, S43, S44)	3.85
14376	Transformer—First i-f transformer (L10, L11, C5, C6)	2.45
14283	Transformer—Second i-f transformer (L12, L13, C7, C8, C37, R4, R5)	3.80
31445	Transformer—Power transformer 105-125 volts, 25-60 cycles (T1)	7.80
31446	Transformer—Power transformer 100-130/140-160/200-250 volts, 50-60 cycles (T1)	8.05
32144	Transformer—Power transformer 105-125 volts, 50-60 cycles (T1)	4.75
	SPEAKER ASSEMBLIES (RL-70H-5)	
13866	Cap—Dust cap for cone center	.03
12012	Coil—Field coil (L16)	2.90
11469	Coil—Neutralizing coil (L15)	.30
31275	Cone—Speaker cone and voice coil (L14)	1.75
31539	Plug—5-contact male plug for speaker	.25
32146	Speaker complete	12.10
14534	Transformer—Output transformer (T2)	3.85
14357	Washer—Spring washer to hold field coil securely	.06
	MOTORBOARD ASSEMBLIES	
31149	Base—Tone arm mounting base	.35
31152	Board—Record changer base complete with all welded and riveted posts and bearings—less all operating parts	7.90
14209	Bumper—Main lever rubber bumper (1)	.08
9848	Cup—Used needle cup, rest, and lid complete	.75
31148	Escutcheon—Index escutcheon	.40
31151	Guide—Pickup lift cable guide (Coil spring, 80T 2-in. large) (2)	.10
31150	Mounting—Pickup arm base rubber mounting complete	.45
31155	Spring—Needle cup lid tension spring	.04
	OPERATING MECHANISM	
31134	Bracket—Pickup locating lever mounting bracket (3)	.30
31144	Cam—Cam and gear assembly (4)	2.80
6808	Clutch—Trip lever friction clutch assembly (5)	.35
31146	Coupling—Motor coupling complete with turntable drive gear, rubber strips, motor coupling, and drive arm (6)	1.80
31129	Cover—Cap for top of record post	.45
31116	Finger—Trip lever fric ton finger assembly (7)	.45
31119	Gear—Long arm and rack gear for front left-hand record post (8)	.60
31120	Gear—Short arm and rack gear for rear right-hand record post (9)	.55
31121	Gear—Record post gear (10)	.90
31123	Guide—Main lever spring guide (11)	.40
31114	Lever—Index lever assembly (12)	.75
31137	Lever—Index lever tension spring lever (13)	.30
31138	Lever—Locating lever and pawl assembly (14)	.70
31113	Lever—Main lever assembly (15)	1.35
31140	Lever—Pickup lift cable lever and spring assembly (16)	.55
31135	Lever—Pickup locating lever assembly (17)	.85
31130	Lever—Record separator elevating lever complete with adjustment screws (18)	.80
31132	Lever—Trip detaining lever (19)	.30
31115	Lever—Trip lever assembly (20)	1.85
31131	Lever—Trip regulator lever (21)	.25
31133	Pawl—Trip pawl assembly (22)	.80
31124	Pin—Record post drive pin (23)	.04
14207	Roller—Pickup lift cable roller and bracket assembly (24)	.55
31118	Screw—Cone pointed set screw for trip lever hub or record post shelf	.06
4563	Screw—Pickup lift cable screw and nuts	.04
14195	Screw—Set screw for flexible coupling	.05
31117	Screw—Special screw to adjust friction clutch tension	.03
31126	Separator—Record separator knife (25)	.75
31122	Shaft—Record separator post shaft (26)	.40
31125	Shelf—Record post shelf assembly (27)	1.25
31141	Spindle—Turntable spindle shaft and spring	1.40
3676	Spring—Cam pawl tension spring on main gear (12 turns, .190-in. O.D., 43/64-in. lg.)	.04
14190	Spring—Pickup locating lever short spring or locating lever pawl tension spring (28) (16 turns, .180-in. O.D., 19/32-in. lg.)	.08
31145	Spring—Main lever tension spring (29) (18 turns, 9/16-in. O.D., 3-in. lg.)	.05
31136	Spring—Index lever tension spring (30) (25 turns, .190-in. O.D., 15/16-in. lg.)	.05
3666	Spring—Pickup lift cable tension spring (31) (20 turns, .195-in. O.D., 1-in. lg.)	.04
31127	Spring—Record separator pressure spring (32) (8 turns, ⅜-in. O.D., ½-in. lg.)	.02
14191	Spring—Trip detaining lever tension spring (33) (15 turns, .190-in. O.D., ¾-in. lg.)	.04
31875	Spring—Pickup locating lever tension spring (34) (14 turns, .220-in. O.D., 27/32-in. lg.)	.04

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE

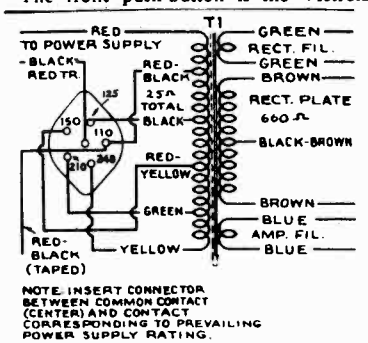
REPLACEMENT PARTS (Continued)

STOCK No.	DESCRIPTION	Unit List Price
32436	Spring—Locating lever tension spring (35) (16 turns, .182-in. O.D., 21/32-in. lg.)	.05
31142	Spring—Turntable spindle spring	.03
31147	Strip—Complete set of rubber strips for flexible coupling	.40
31139	Turntable Assembly—less spindle	3.35
31128	Washers—"C" washer for top of record post	.04
31143	Washers—Turntable thrust washers (1 steel, 1 bronze, 1 felt)	.15
	MOTOR ASSEMBLIES	
11703	Governor—Motor speed governor (M1)	3.05
31148	Motor—105-125 volts, 25 cycles (M1)	23.70
31163	Motor—105-125 volts, 50-60 cycles (M1)	20.50
31157	Motor—105-125 volts, 60 cycles (M1)	17.75
30870	Plug—2-contact male plug for motor power cable	.35
31447	Screw—Complete set of motor mounting screws, washers, and spacers—for 25 cycle models only	.40
31158	Screw—Complete set of motor mounting screws, washers, and spacers—for 50-60 cycle models only	.25
14206	Switch—Motor toggle switch (S6)	.90
	PICKUP AND ARM ASSEMBLIES	
31162	Cable—Pickup arm lift cable and clips	.15
31156	Crystal—Pickup crystal cartridge and needle screw	4.25
31159	Pickup and arm complete	7.45
31160	Screw—Pickup needle screw	.12
31161	Shaft—Pickup pivot arm and shaft assembly	.45
	MISCELLANEOUS ASSEMBLIES	
12038	Band—Rubber band for Magic Eye	.02
31397	Button—Station selector push-button	.15
13103	Cap—Pilot light jewel	.15
31456	Cover—8-protective covers for push-button markers	.08
31541	Cushion—Motor plate mounting cushions and clamps sufficient for one instrument	.50
31591	Dial—Station selector dial scale	.75
31407	Escutcheon—Magic Eye or Electric Tuning indicator escutcheon	.60
31395	Escutcheon—Tuning dial escutcheon only, less push-buttons and dial scale	1.15
30698	Hinge—Cabinet lid hinge	.95
31543	Indicator—Electric Tuning indicator disc	.25
31392	Indicator—Indicator pointer, carriage, and clip	.30
31355	Knob—Range switch knob	.12
14359	Knob—Station selector knob	.20
31391	Knob—Tone control knob	.15
30773	Knob—Volume control knob	.15
31460	Marker—"Dial Tuning" marker for push-button	.04
31459	Marker—"Victrola" marker for push-button	.04
31590	Markers—Station call letter markers	.40
31393	Screen—Dial color screen	.40
31760	Screen—Phono. compartment lamp screen	.20
11210	Screw—Chassis mounting screws, washers, and lockwashers	.05
31470	Springs—Motorboard suspension top spring, bottom spring, screw, and lockwasher (4 reqd.)	.10
4982	Spring—Retaining spring for knob Stock No. 14359	.05
14270	Spring—Retaining spring for knob Stock Nos. 30773 and 31355	.05
30330	Spring—Retaining spring for knob Stock No. 31391	.03
31478	Support—Cabinet lid support	2.20

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE



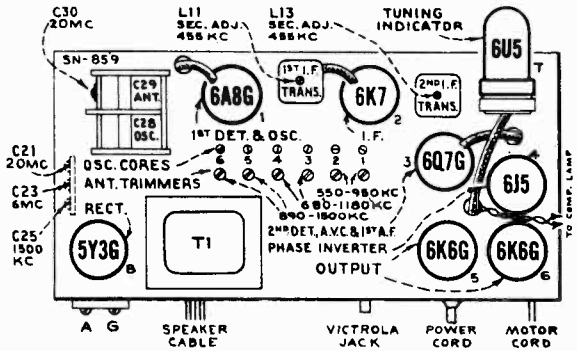
The rear push-button is for dial tuning
The front push-button is the Victrola switch



NOTE: INSERT CONNECTOR BETWEEN COMMON CONTACT (CENTER) AND CONTACT CORRESPONDING TO PREVAILING POWER SUPPLY RATING.

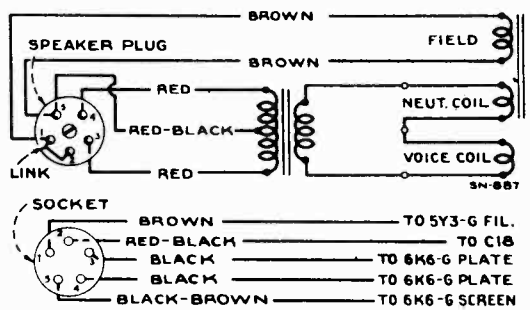
UNIVERSAL TRANS. CONNECTIONS

(110-volt supply for the Victrola motor is obtained by connecting the motor to the red and the red-black leads.)

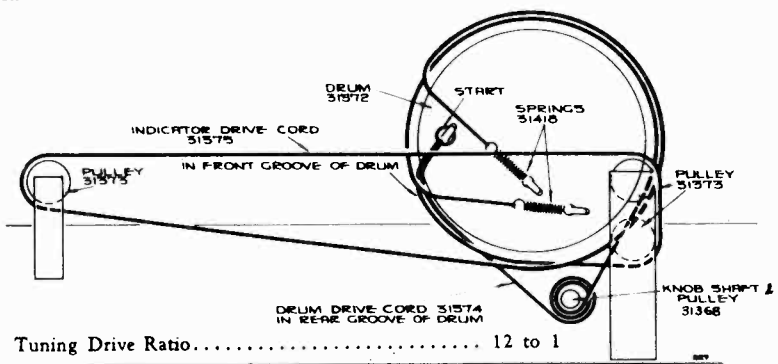


POWER SUPPLY RATINGS

A-6	105-125 volts,	60 cycles,	115 watts
A	105-125 volts,	50-60 cycles,	115 watts
B-2	105-125 volts,	25 cycles,	115 watts
C-6	.100-130/140-160/200-250 volts,	60 cycles,	115 watts
C	.100-130/140-160/200-250 volts,	50-60 cycles,	115 watts



SPEAKER PLUG CONNECTIONS
Connections and Colors of Loudspeaker and Cable



Tuning Drive Ratio..... 12 to 1

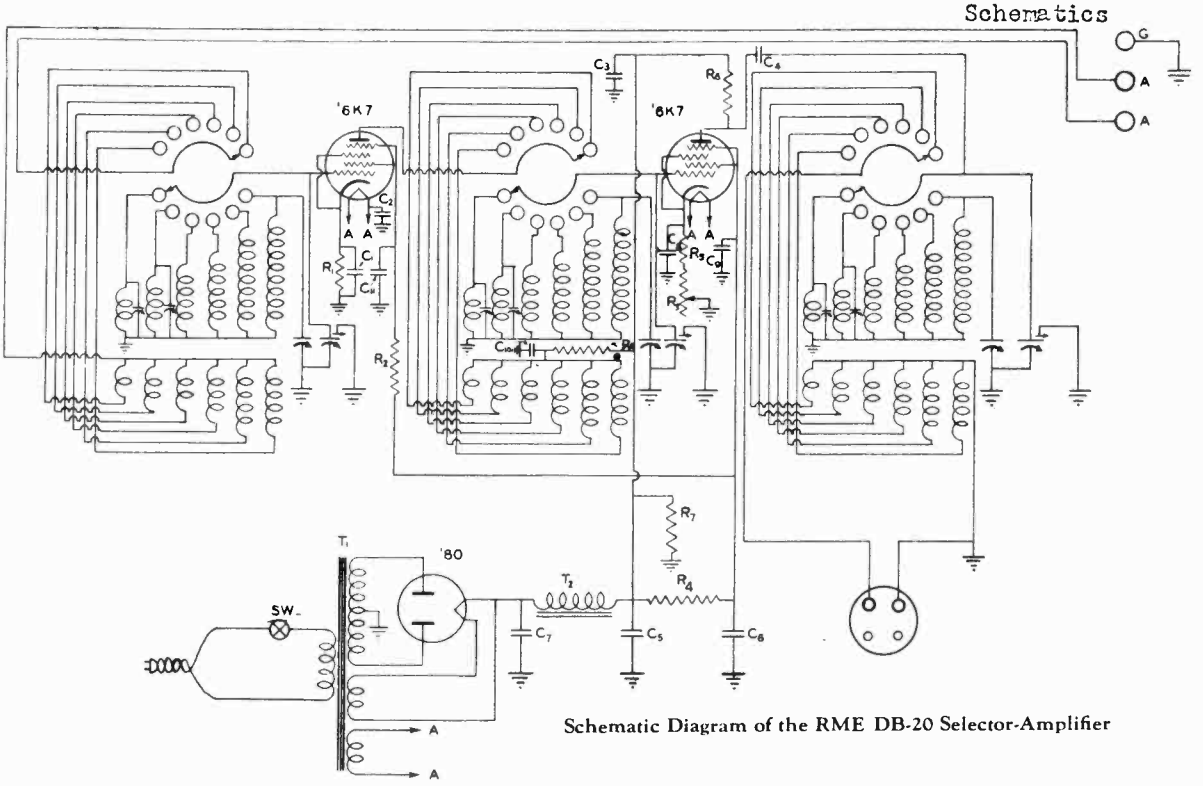
DRUM SHOWN WITH GANG AT MAXIMUM CAPACITY
Arrangement of Drive Cords for Tuning Condenser and Dial Indicator

RCA MFG. CO., INC.

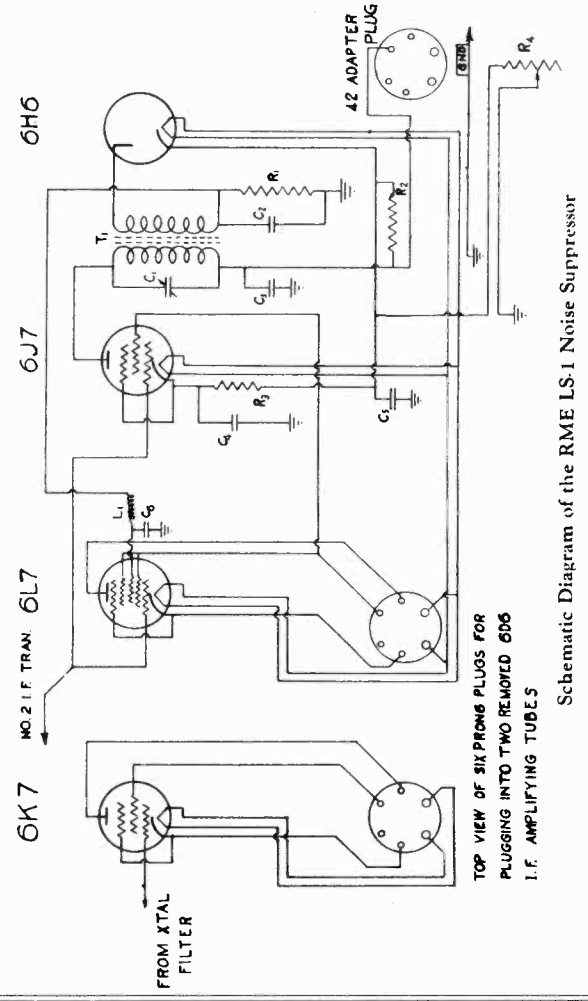
MODEL RME DB-20
Amplifier Schematic

RADIO MFG. ENGINEERS, INC.

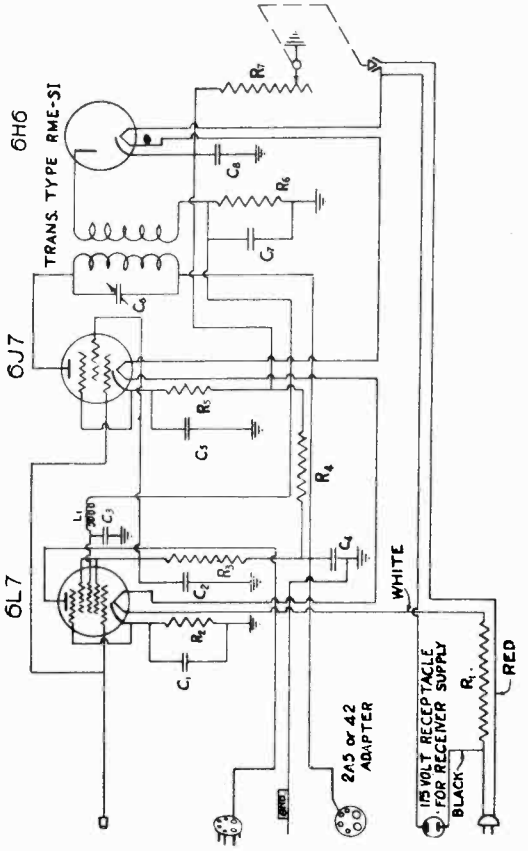
MODEL RME LS-1
MODEL RME LS-2
Noise Suppressors
Schematics



Schematic Diagram of the RME DB-20 Selector-Amplifier



Schematic Diagram of the RME LS-1 Noise Suppressor



Schematic Diagram of the RME LS-2 Noise Suppressor

MODEL RME 69
Socket, Trimmers
Controls

RADIO MFG. ENGINEERS, INC.

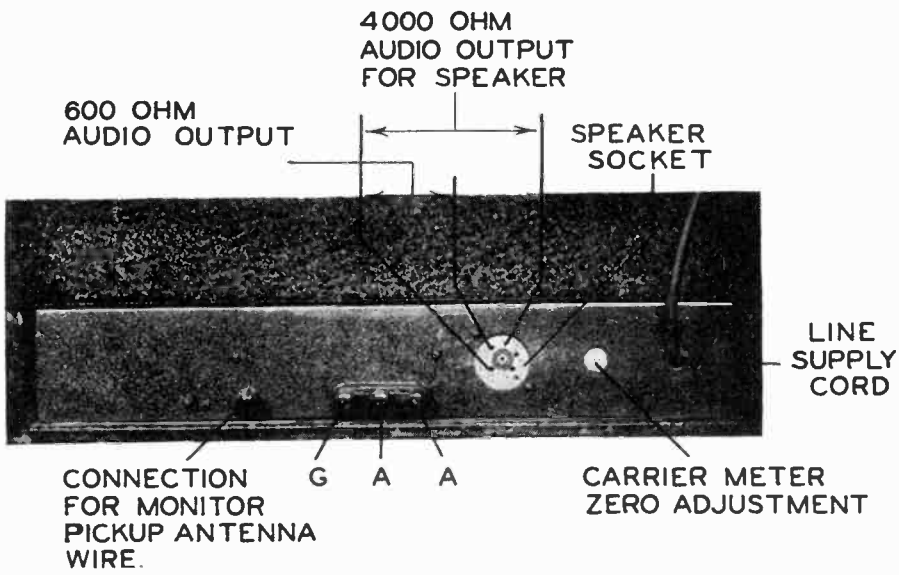


FIG. 3

FOR SCHEMATIC SEE VOLUME VII.

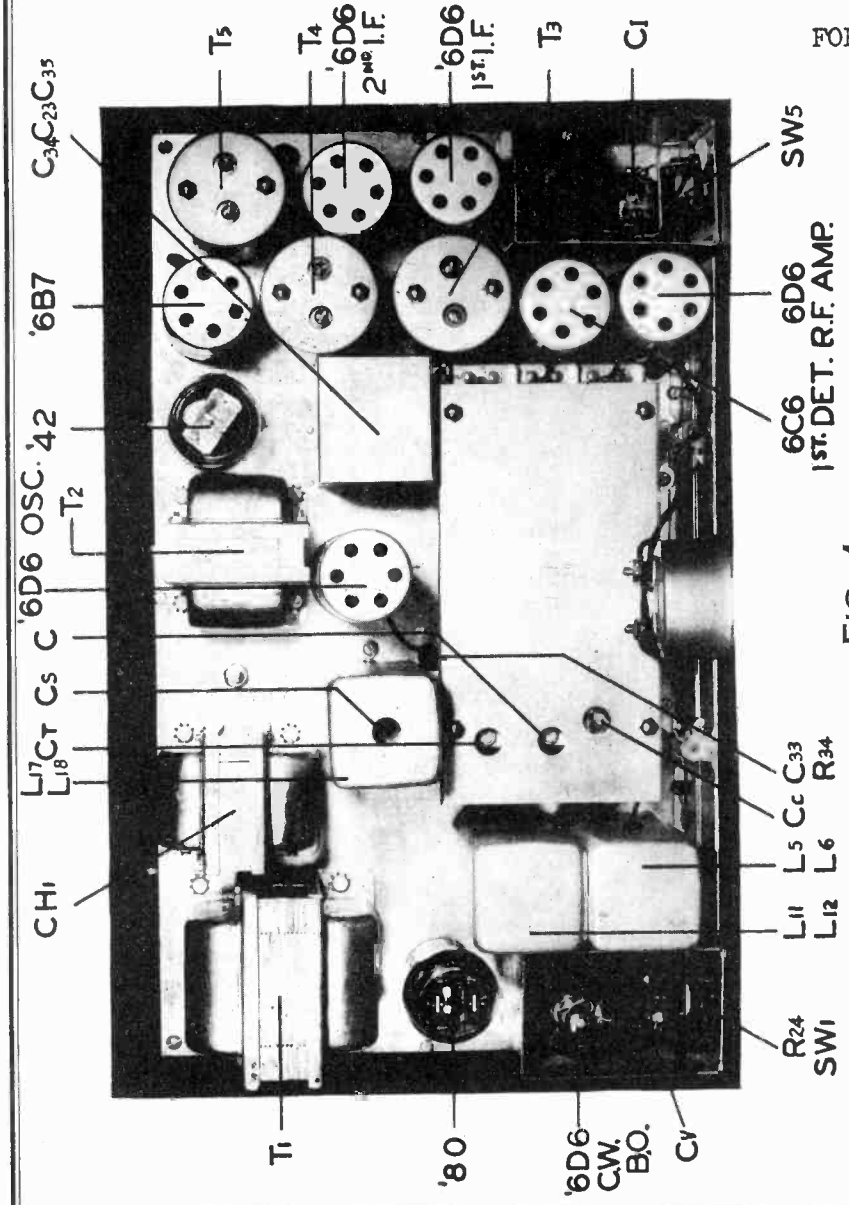


FIG. 4

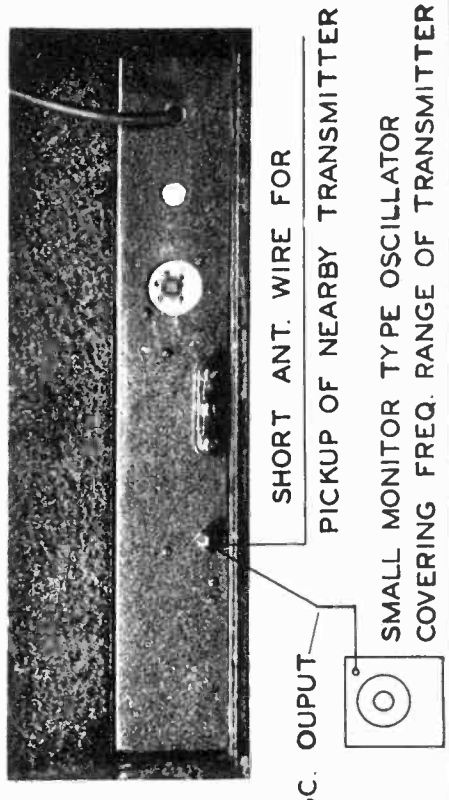


FIG. 6

RADIO MFG. ENGINEERS, INC.

MODEL RME 69
Chassis, Trimmers
Panel View

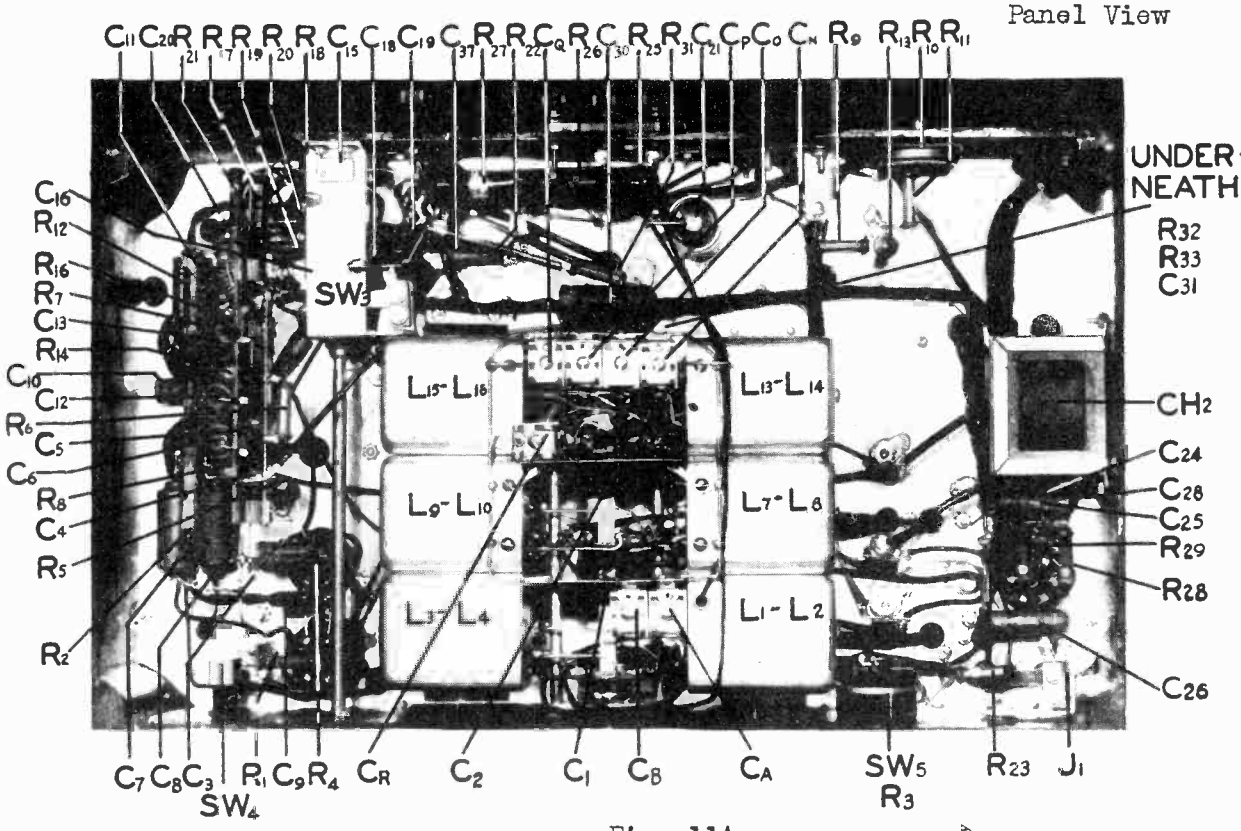


Fig. 11A

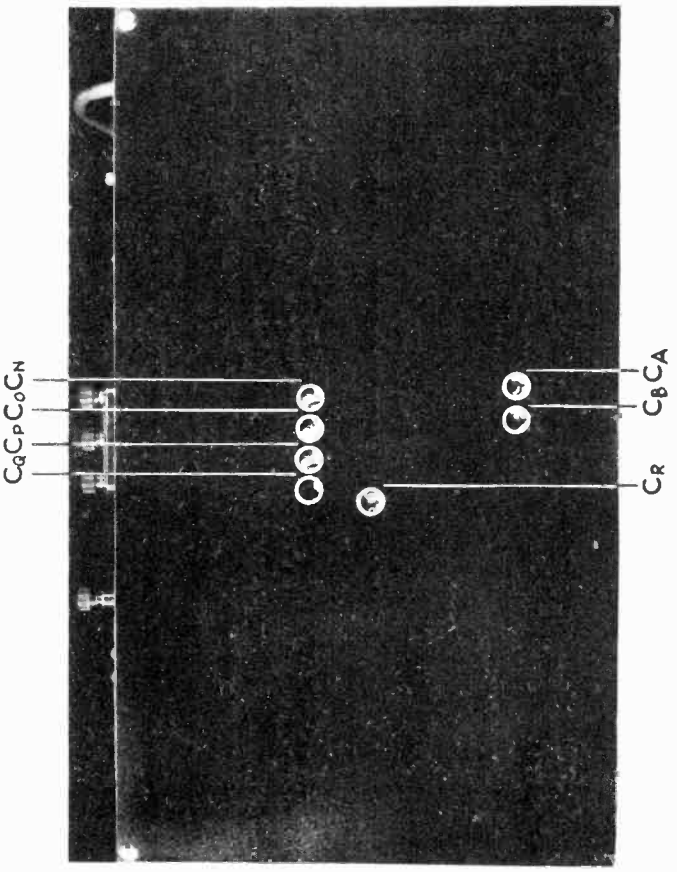


Fig. 11B

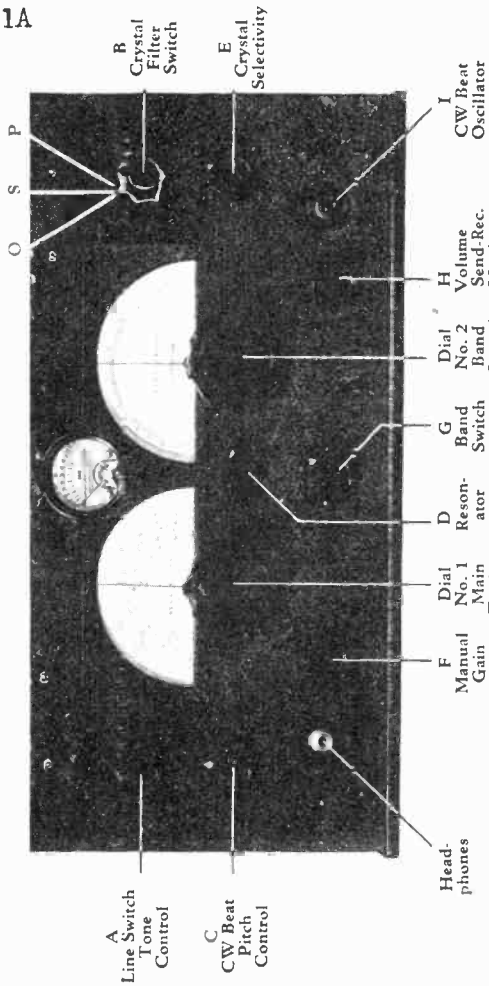


Fig. 2A. Front Panel Layout of the Standard RME-69, AC Model.

SERVICE NOTES FOR THE
RME-69 RECEIVER

ALIGNMENT

One of the first evidences of misalignment in a receiver is low over-all gain of the receiver. In the RME-69 Receiver this is evidenced by low meter readings on signals which were formerly capable of producing higher meter readings. Due to the tremendous gain available in the audio system of the RME-69 Receiver, a misalignment due to loss of gain may not be noticed if the condition of the receiver is judged by audio output, since it may be possible to turn the volume control to the maximum output position and still obtain high values of audio output. Misalignment, however, does not affect the circuits of the audio amplifier and has solely to do with the intermediate frequency amplifier and, to some extent, the radio frequency amplifiers. Principal among the contributions to low gain is the part which the intermediate frequency amplifier plays in providing over-all sensitivity and selectivity of a satisfactory order.

Misalignment of the radio frequency section (principally that part of the section which is made up of the high frequency oscillator) is the control of the receiver calibration. This also is susceptible to certain outside influences which can cause variations to such a degree that the stated calibration of the receiver is changed to other values. However, this effect is not a common effect and usually the calibration of the receiver, unless tampered with by inexperienced hands, will remain very close to its stated value indefinitely.

This loss of gain when occurring in the radio frequency section of the receiver is usually due to the fact that the oscillator has been grossly misaligned so that it is apparent in the frequency calibration of the receiver. In other words, it might well be said that a loss of sensitivity in the receiver occurring simultaneously with a wide-spread condition of off calibration might indicate the fact that the loss of gain is caused by misalignment of the radio frequency section of the receivor.

On the other hand, if the gain of the receiver is low, but the calibration is correct, it might be said without hesitation that the most probable cause for the low gain is the misalignment of the intermediate frequency amplifiers relative to the trimming condensers of the intermediate frequency amplifier transformers.

It is for the purpose of realignment of these intermediate frequency transformers that the following test procedure is outlined. IMPORTANT NOTE. It is essential that the 465 KC intermediate signal which is used for realignment of the intermediate frequency amplifier is not set according to any arbitrary calibration on the test oscillator itself since it has been found that commercial test oscillators for service work vary considerably, at least to an extent which will not permit proper alignment of a communication type receiver in which is installed a quartz filter. It is therefore better if no test oscillator is had, since a broadcast station of constant signal strength will furnish adequate test signal for alignment of the intermediate frequency amplifier, using the quartz filter for establishing the proper IF frequency as indicated in the following procedure.

The meter on the RME-69 receiver affords an excellent method of indicating the peak alignment of each of the transformers. The location of the three intermediate frequency amplifier transformers, T-3, T-4, and T-5 is given on Figure 4 of the illustrated sheet attached. The two padding condensers located in each of these transformers and accessible through apertures in the top of the shields can also be seen.

OUTLINE OF PROCEDURE FOR CORRECT ALIGNMENT OF THE INTERMEDIATE FREQUENCY AMPLIFIER TRANSFORMERS OF THE RME-69 RECEIVER.

The intermediate frequency amplifiers in the RME-69 Receiver are designed for a frequency of 465 KC. Since these receivers are always supplied with a quartz crystal filter, it is essential that the intermediate frequency amplifier transformers be accurately aligned with the crystal frequency. Crystals are supplied in frequencies slightly at variance from the above stated value of intermediate frequency by an amount not greater than one kilocycle plus or minus 465 KC. Rather therefore than align the intermediate frequency amplifier stages of the RME-69 to a set frequency of 465, it is essential that the alignment be done in conjunction with the quartz filter so that alignment of the intermediate frequency amplifier is achieved at the frequency of the filter. This is done as follows and when the process as herein outlined is followed accurately, maximum results will be obtained. The use of any other process of a general type will produce inferior results.

The first step in the alignment procedure is to tune in a broadcast station, preferrably in the low frequency portion of the broadcast band. The signal should be one of medium signal strength so that the R meter indicates a signal level of R9 or slightly less. If no station of this amplitude is available but a stronger station is available, a reduction in the efficiency of the antenna by the connection of a short wire to the antenna post may help to bring the signal strength as indicated down to R9. Usually between 550 and 800 KC in most any territory a station can be received at most any time for this test and adjustment.

When the station has been chosen, let us assume that its frequency is 700 KC, the next step is to slightly detune the main tuning control so that the frequency reads approximately 715 or 720 KC. This of course will tune the station out. It does not necessarily have to be the frequency mentioned or the exact frequency of detune, but the general procedure is to tune the main tuning control slightly higher than the chosen station so that it may be brought back to resonance by decreasing the scale reading of the band-spread control. This is done merely to provide vernier tuning.

With the station chosen and resonated on the band-spread scale, the crystal filter is switched to the series position which is the middle position of the three available. The band-spread scale is then adjusted with respect to the signal so

that a maximum meter reading is obtained. This procedure is one which requires patience and accuracy of adjustment since the receiver is ultra sharp with the crystal filter in and there will be one definitely sharp peak indicating crystal resonance. The receiver should be tuned to this peak and left on it during all adjustments to be made regarding the intermediate frequency amplifier.

When this peak has been tuned to and the meter is at maximum reading, a small standard intermediate frequency trimmer tool of the insulated screw-driver type should be used. Then the control "E", Figure 2A, should be set so that the condenser it adjusts is set at 50% mesh. Then, without particular attention to a course of procedure in tuning, any transformer may be adjusted at any particular time, the important factor being that they all be adjusted so that the R meter is brought to and left at a maximum meter reading. Usually this adjustment will not require very much turning of the adjustment screws. A good procedure to follow is to start with the No. 1 transformer and align in sequence No. 2 and No. 3. All adjustments should be made as before mentioned so that the meter reading is maximum.

It is advisable from time to time to make sure that the signal is still adjusted to peak resonance of the crystal by slightly varying the adjustment of the band-spread control. When this procedure has been completed as outlined and all transformers have been adjusted and left at maximum meter reading, the intermediate frequency amplifier of the receiver is in peak adjustment and the crystal aligned with it for maximum effectiveness in filter action.

RME-69 RECEIVER INTERMEDIATE FREQUENCY AMPLIFIER ALIGNMENT WITH SILENCER INSTALLED

The general procedure for alignment of the intermediate frequency amplifier as described above also applies to receivers in which the LS-1 silencer has been installed. Preliminary adjustment as above described should be made with the silencer threshold control set at maximum clockwise position, of rotation. When the intermediate frequency transformers have been aligned as outlined, the silencer transformer may be peaked by turning the band switch to No. 6 band on the receiver and tuning in and resonating the frequency band around 30 megacycles so that the receiver is sensitive at that point. Then under conditions of automobile ignition interference the silencer control should be set to maximum counter-clockwise rotation position and the small screw accessible through the hole in the noise rectifier transformer located on the silencer auxiliary chassis should be adjusted for a minimum response, of the interference noise. This insures accurate alignment of the noise amplifying system with that of the intermediate frequency, a condition which must necessarily exist for efficient silencer action.

After the intermediate frequency amplifier has been aligned as per the instructions under the article concerning intermediate frequency transformer alignment, a check of the phasing of the crystal filter should be made. Tune in a broadcast station, preferrably on the low frequency end of Band 1. Then tune the main tuning control slightly to the high frequency side of it, say 10 KC or more higher in frequency than the selected station.

Then resonate the station again by means of the band-spread control. Next set the crystal switch to the series position as indicated on Figure 2A by the position "S" on control "B". Now vary the band-spread control as may be required to produce peak reading of the signal on the R meter by resonating with the crystal resonance peak.

With this setting achieved, vary the dial Number 1 slightly higher and slightly lower by five kilocycles as can be approximated by the calibration of the dial (one half division each way since one division is representative of 10 kilocycles) and notice the drop in the R meter reading. The drop so achieved by varying the setting of Dial 1 five kilocycles above and below the selected signal should be productive of an R meter drop of 40 db. or greater. In other words, if the signal when resonated produces an R meter reading of 60 db. on the R meter scale, setting the dial Number 1 five kilocycles higher in frequency than the frequency of the signal being used should make the R meter fall to 20 db. or less. Similarly, setting the dial Number 1 five kilocycles lower in frequency than the station being used, the R meter should again fall from 60 db. on the scale to 20 db. or less. Should it fail to do this, the phasing condenser (C-1, figure 4) should be adjusted and a test made as just described by five kilocycle above and below adjustment of Dial 1 until the proper variation in the R meter is achieved.

It will be found that the condenser C-1 will usually run at a very low value of capacity, very close to its minimum capacity adjustment. Therefore only slight turning of this condenser will be productive of changes which materially affect the attenuation of the crystal filter. It is usually found that this condenser is not required to be adjusted since it holds its setting very well over long periods of time. The procedure just outlined gives the proper method for checking the phasing and adjusting when necessary.

ALIGNMENT OF RADIO FREQUENCY SECTION OF THE RME-69 RECEIVER

Alignment of the radio frequency section of the receiver will affect principally the calibration of the receiver. Within certain limits this of course will also affect the sensitivity. A small variation in frequency (up to 2%) will not materially reduce the sensitivity of the receiver although they of course will show up as variations in the calibration as indicated by the required setting of the main tuning dial indicator. Correction for any variation in calibration can be made by following the suggestions outlined below.

Band 1 includes the frequencies between 550 and 1500 KC. For band one there are two frequency adjustments for adjusting the indicator to proper calibration. One of these, C_s, is adjusted as indicated on Figure 4 through the top of the shield can just in the rear of the main tuning condenser assembly. Just in front of this aperture and on the main tuning condenser assembly is C_t which is used to adjust the

frequency for the high frequency end of Band 1. The procedure is this: Put the main tuning indicator to a position so that the main tuning condensers are fully meshed. The pointer of the main tuning control should then be set at maximum left end of scale so that the pointer falls just below the line above the numbers indicating the various channels. In this respect it will partially cover the top half of the numerals indicating the different tuning bands on this scale. In other words, the line which borders the semi-circular scale at the extreme counter-clockwise position should rest on the top edge of the pointer as it is turned to maximum counter-clockwise rotation and the condenser plates are at full mesh.

The next step is to choose a station or a signal of accurately known frequency, around 700 KC, and set the main indicator to the frequency of the signal which is going to be used for the test. For example: There is a station available with fairly good signal strength or a test oscillator is available which can ACCURATELY be set at 700 KC. If the receiver indicator on the main tuning dial is set at 700, and the receiver is considerably out of calibration of course the signal will not be received. However, leave the indicator at the correct frequency of the signal being used for the test and set the band-spread control to a reading of 180 on the dial at which position it has no material effect on the tuning circuits of the receiver and permits the calibration of the main tuning dial to indicate accurately the frequency of setting.

Then by means of condenser C_s (Figure 4) accessible through the trimming hole in the oscillator shield can for Band 1, adjust until the signal is brought in with the pointer set at the proper frequency. Then choose a signal at about 1200 or 1300 kilocycles, and set the main tuning dial indicator to the correct frequency for that signal and bring the signal in on that setting with trimmer C_t. It will then be necessary to return to the former frequency setting of 700 KC to make sure that the variation of C_t has not made some slight change in the setting for the lower frequency calibration point and it may be necessary to readjust C_s slightly again. Then in order to make certain of the accuracy of both settings return to the frequency chosen between 1200 and 1300 KC and if necessary, slightly readjust C_t again. After several checks on each frequency, it will be found that the calibration can be made satisfactorily.

Calibrations on the higher frequency bands are controlled for Bands 2, 3, 4, 5, and 6 by the trimmers C_r, C_q, C_p, C_o, C_n, (Figure 11-B) respectively. High side beat is used on all frequencies in the RME-69 Receiver which means that all of the condensers C_r, C_q, C_p, C_o, C_n, must be set to the lowest capacity setting which will provide a beat and the proper calibration for the frequencies in the respective bands. Calibration frequencies used are as follows:

Band 2: 2 megacycles and 3 megacycles.
Band 3: 4 megacycles, 5 megacycles, 6 megacycles.
Band 4: 7 megacycles, 9 megacycles, 11 megacycles, 13 megacycles.
Band 5: 14 megacycles, 15 megacycles, 17 megacycles.
Band 6: 30 megacycles.

After the calibration has been made accurately on all of the frequencies, or if the receiver has been found to be accurately set insofar as its calibration is concerned on all frequencies, the trimmers C_b and C_a have a distinct effect upon the RF grid circuits for bands 5 and 6 respectively. They are adjusted as follows: With a steady incoming signal on between 14 and 15 megacycles and the most effective setting of the control "D" for signal in that region, and with the antenna connected, the condenser C_b is adjusted for maximum meter reading. With these same conditions existing on 30 megacycles, with the band switch set on band 6 and the antenna connected, C_a is adjusted for maximum response on a given steady signal. All other trimming and adjusting is done manually by means of control "D", Figure 2-A, and is a variable RF amplifier and detector grid padder which can be critically adjusted for peak resonance at any frequency it is desired to tune to.

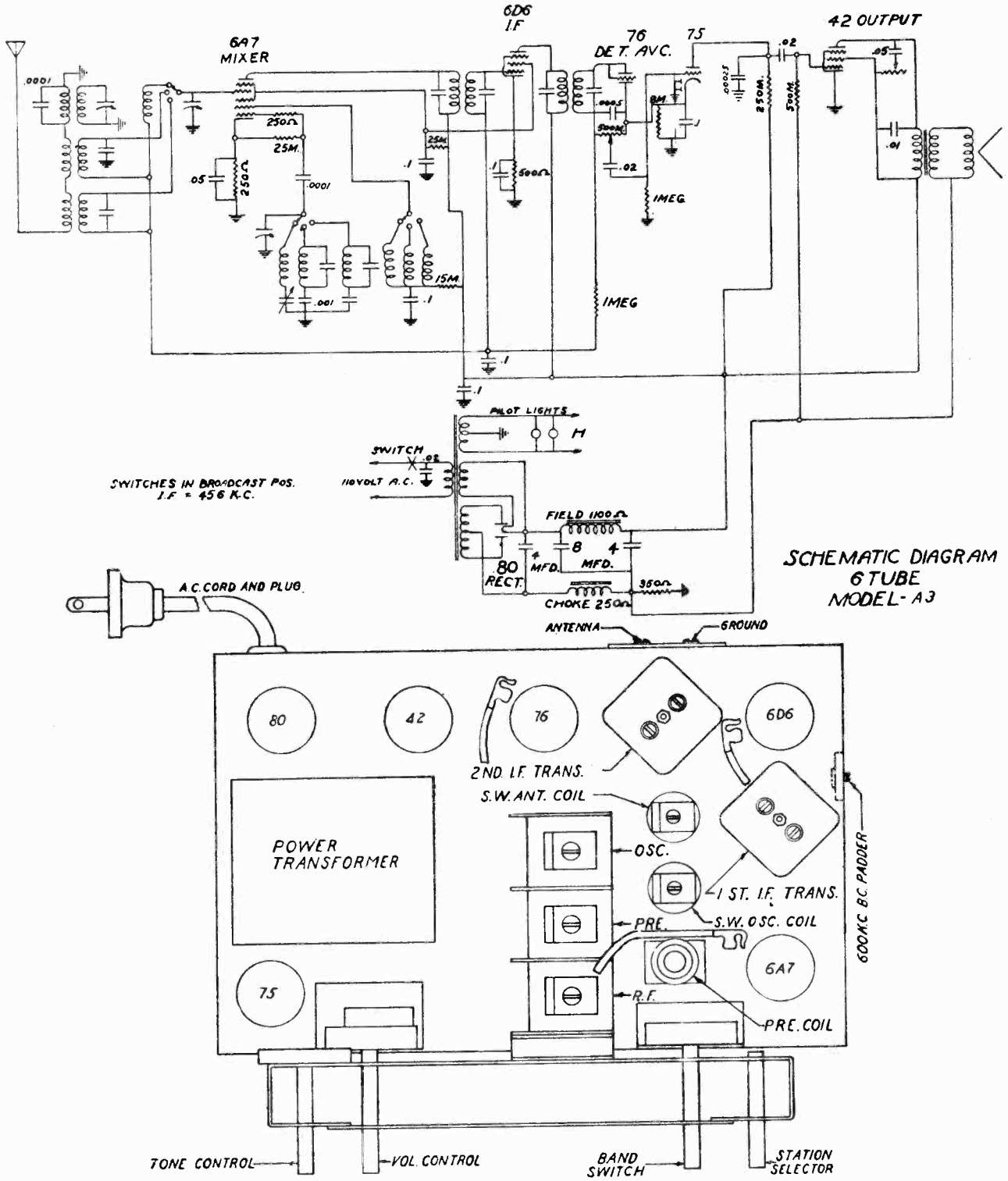
It is of importance to note the setting of the condenser C_c (Figure 4). This is the antenna coupling condenser used when the receiver is set to Band 1. It as well as condenser "C" (Figure 4) should be set to practically its minimum capacity in order to provide constant alignment and proper coupling to the antenna when using Band 1. Excessive capacity in the condenser C_c will cause misalignment of the RF amplifier and hence promiscuous beating of harmonically related broadcast frequencies to the effect that a number of whistling tones will be received on the high frequency end of the broadcast band. Excessive capacity on C will somewhat contribute to the same result but will, more than that, reduce the sensitivity on the broadcast band. When the receiver leaves the factory, they are set at a very small capacity and should not be set at any other capacity or material reduction in the efficiency of operation will be produced.

Whenever the receiver is gone over for alignment, it is well to remove the dust cover from the condenser assembly and inspect the permanence of position of the rotor plates of the ganged condenser controlled by the knob "D". This is located between the two main variable condensers and is located underneath the dust cover which is removable by unscrewing the four acorn nuts holding it down on the condenser assembly. Some times the rotors become loosened-and misplaced angularly with respect to each other. They should always be adjusted so that the rotors are at full mesh at the same time. Any slight angular displacement of one rotor with respect to the other will materially reduce the sensitivity of the receiver and destroy the preselection, thereby reducing the image frequency rejection and also the sensitivity, especially on the high frequency bands.

The padders C_b and C_a (Figure 11-B) materially contribute to the image signal rejection on the bands 5 and 6. Special care should therefore be taken in the adjustment of these condensers when the receiver is aligned.

RADIO PRODUCTS CORP.

MODEL A3
Schematic, Socket
Trimmers, Alignment



SCHEMATIC DIAGRAM
6 TUBE
MODEL - A3

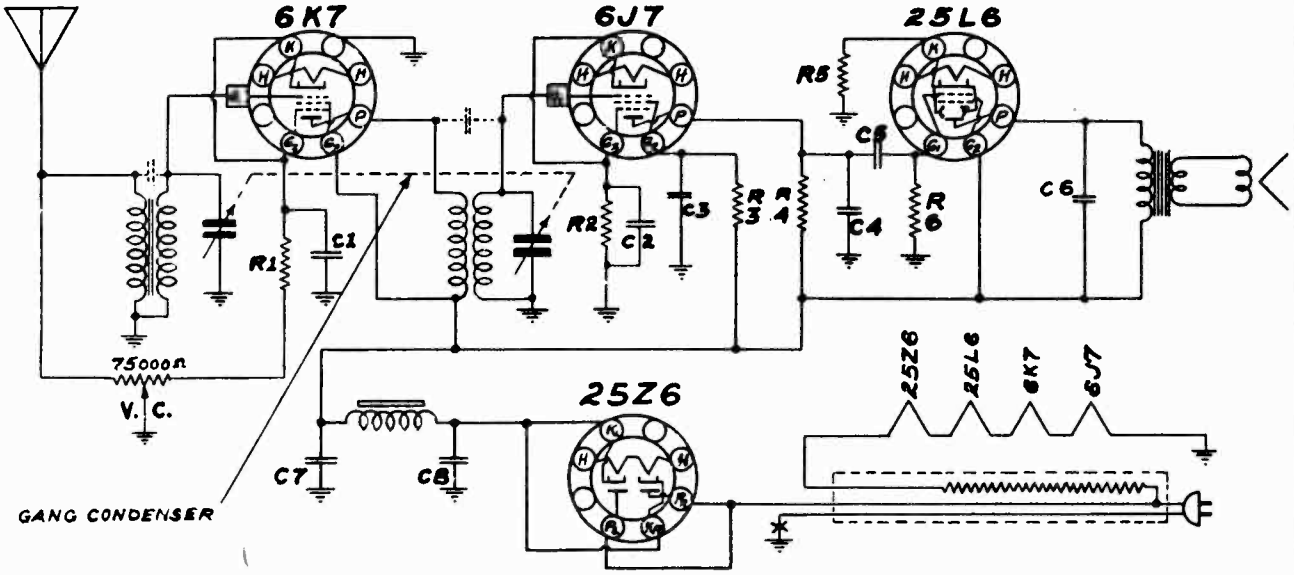
CONVENTIONAL ALIGNMENT - SEE SPECIAL SECTION VOLUME VIII.

FREQUENCY RANGES AND ALIGNMENT FREQUENCIES;-

BROADCAST - 540 to 1700 KC - Adjust the OSC, RF and ANT. to maximum peak of 1400 KC, then pad the oscillator circuit at 600 KC while rocking gang condenser.
SHORT WAVE - 5800 to 15200 KC - Adjust the OSC and ANT. trimmers to maximum peak of 14000 KC. No padding required.
POLICE - 1700 to 5000 KC - Adjust the ANT. coil trimmer to a maximum peak of 4000 KC. No other adjustments are required.

MODEL 4H
Schematic, Socket
Trimmers, Alignment

RADIO PRODUCTS CORP.



CAPACITORS

No	MFD.	TYPE	No	MFD.	TYPE
C1	.1	200V.	C5	.01	400V.
C2	.25	200V.	C6	.02	400V.
C3	.1	200V.	C7	10.0 }	ELECT.
C4	.00025	MICA	C8	30.0 }	

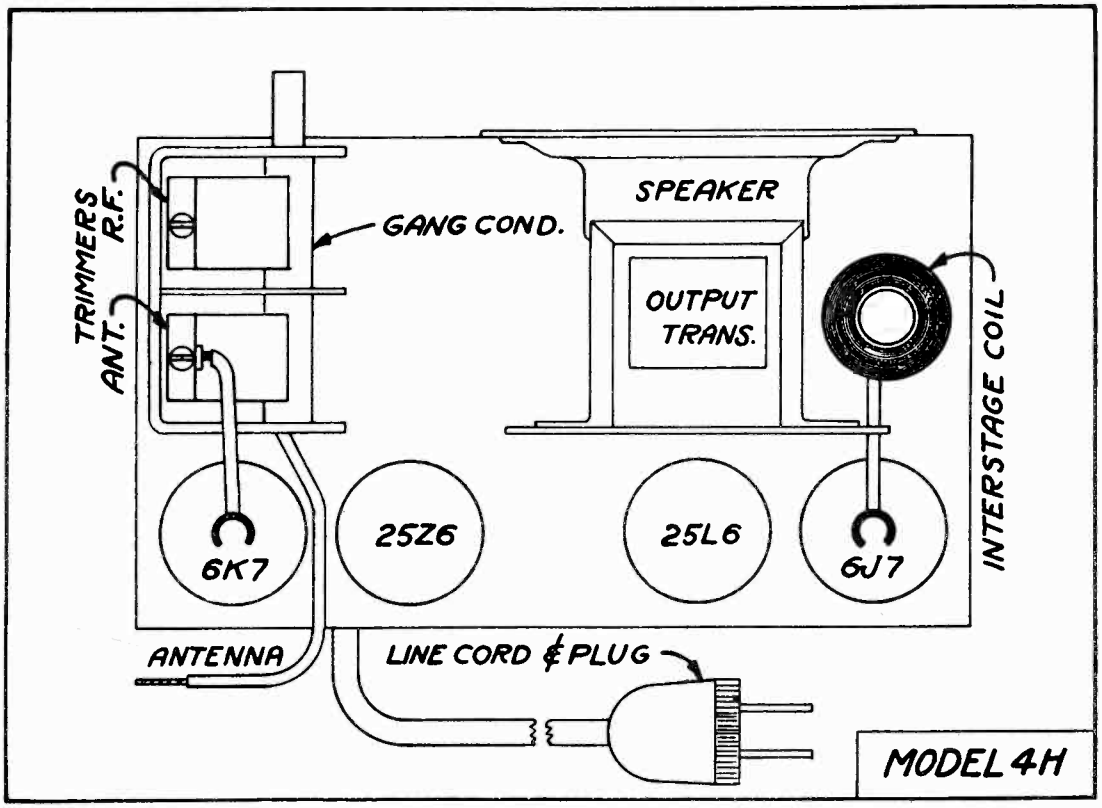
RESISTORS

No	OHMS	WATTS	No	OHMS	WATTS
R1	250	1/4	R4	500,000	1/4
R2	25,000	1/4	R5	110	1/2
R3	2,000,000	1/4	R6	500,000	1/4

RESISTANCE OF LINE CORD 173 OHMS

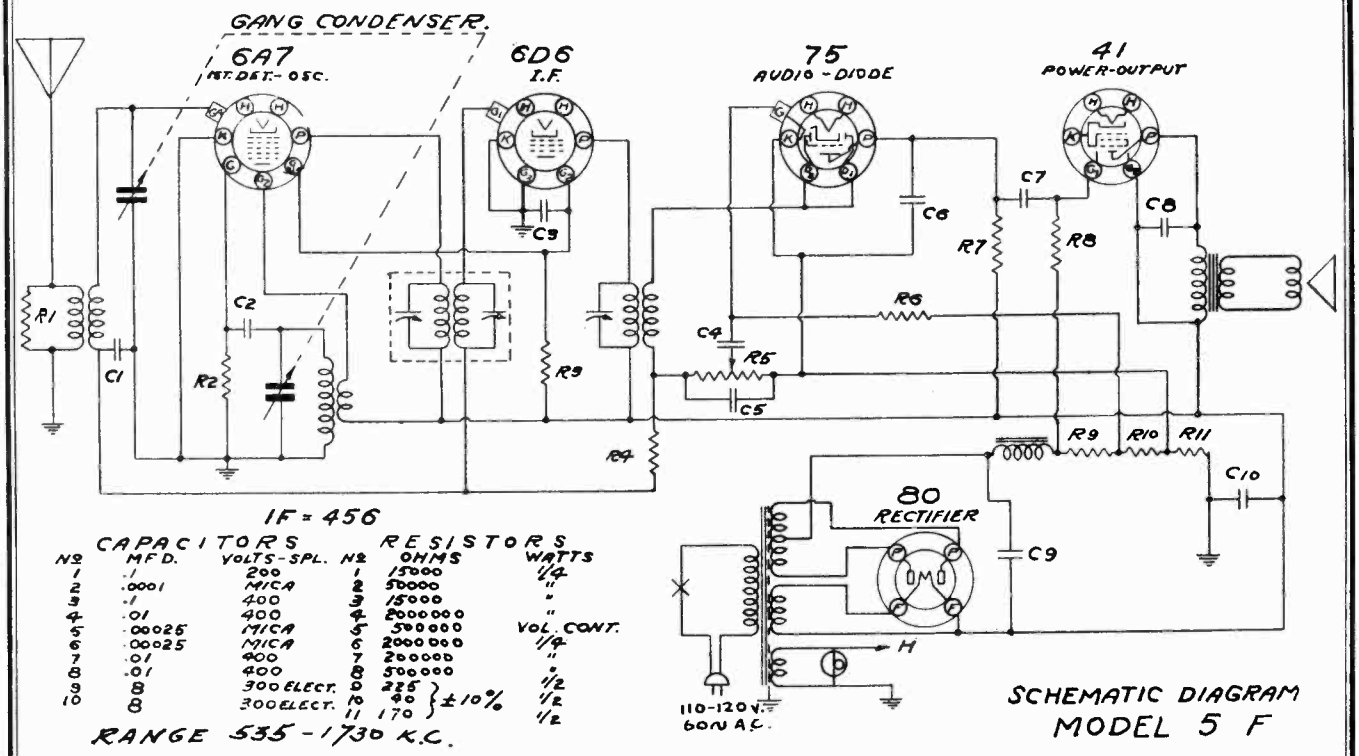
SCHEMATIC DIAGRAM
MODEL 4H

4 TUBE T.R.F. RECEIVER, RANGE 535-1730 KILOCYCLES.
POWER SUPPLY: AC(60 CYCLE) OR DC, 105-125 VOLTS.
CAUTION: DO NOT USE A GROUND ON THIS RECEIVER.
ALIGN AT 1400 KC THROUGH 100 MMF. CONDENSER.



RADIO PRODUCTS CORP.

MODEL 5F
Schematic
Alignment
MODEL 5G
Schematic



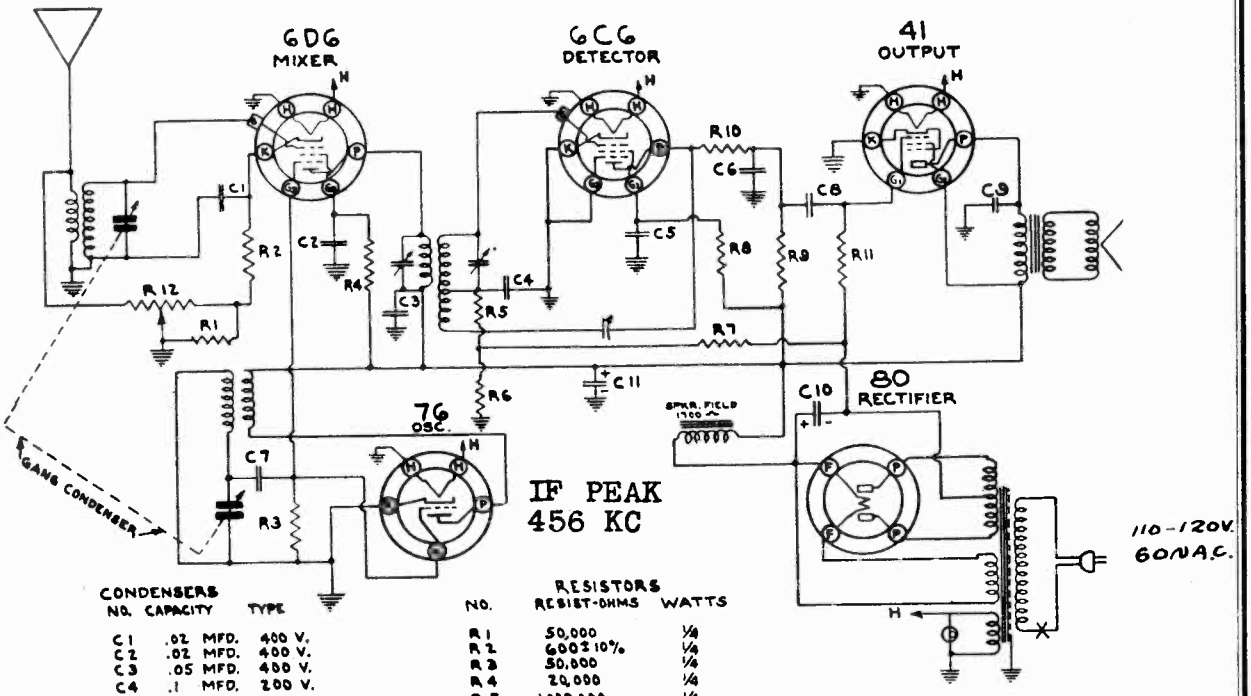
IF = 456

CAPACITORS				RESISTORS		
Nº	MFD.	VOLTS-SPL.	Nº	OHMS	WATTS	
1	.1	200	1	15000	1/4	
2	.0001	MICA	2	50000	"	
3	.1	400	3	15000	"	
4	.01	400	4	2000000	"	
5	.00025	MICA	5	500000	VOL. CONT.	
6	.00025	MICA	6	2000000	1/4	
7	.01	400	7	200000	"	
8	.01	400	8	500000	"	
9	8	300 ELECT.	9	225 ±10%	1/2	
10	8	300 ELECT.	10	90 ±10%	1/2	
			11	170 ±10%	1/2	

RANGE 535 - 1730 K.C.

SCHEMATIC DIAGRAM
MODEL 5 F

FOR ALIGNMENT OF MODEL 5F, SEE THAT FOR MODEL 4A, PAGE 9-1

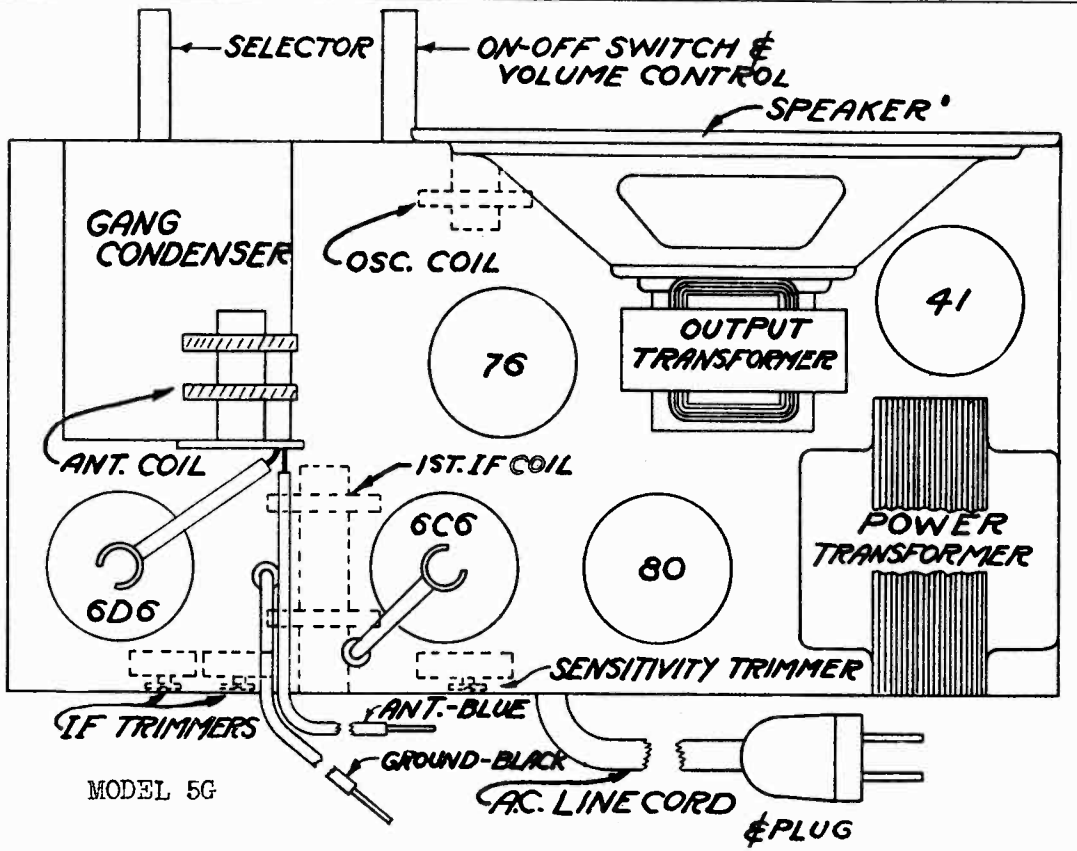


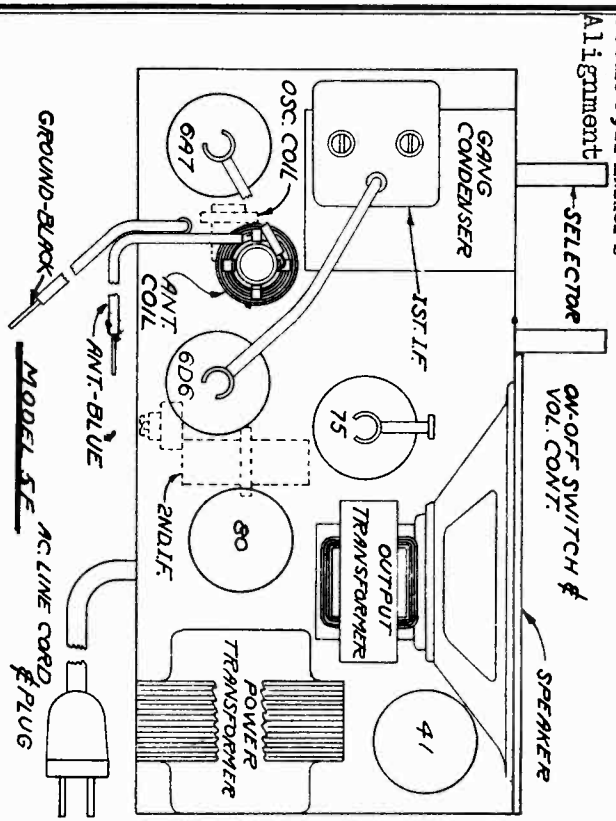
IF PEAK
456 KC

CONDENSERS			
NO.	CAPACITY	TYPE	
C1	.02 MFD.	400 V.	
C2	.02 MFD.	400 V.	
C3	.05 MFD.	400 V.	
C4	.1 MFD.	200 V.	
C5	.01 MFD.	400 V.	
C6	.0005 MFD.	MICA	
C7	.0001 MFD.	MICA	
C8	.01 MFD.	400 V.	
C9	.002 MFD.	400 V.	
C10	8.0 MFD.	300 V. ELECTROLYTIC	
C11	8.0 MFD.	300 V. ELECTROLYTIC	

RESISTORS			
NO.	RESIST-OHMS	WATTS	
R1	50,000	1/4	
R2	600 ±10%	1/4	
R3	50,000	1/4	
R4	20,000	1/4	
R5	1,000,000	1/4	
R6	50 ±10%	1/4	
R7	300 ±10%	1/4	
R8	2,000,000	1/4	
R9	500,000	1/4	
R10	5,000	1/4	
R11	500,000	1/4	
R12	50,000	VOL. CONTROL	

SCHEMATIC DIAGRAM
MODEL 5 G





ALIGNMENT DATA AND SERVICING

Connect the signal generator through a .1 mfd. condenser to the grid of the 6D6 tube. Connect an output meter across the voice coil of the speaker. Set the generator to 456 K.C. and align the I.F. transformer for maximum reading on the output meter. Set the sensitivity control about ¼ turn counter-clockwise from the point where the whistles start and re-align the I.F.

Feed the generator through a 100 mmf. condenser to the antenna lead of the receiver. Set the generator to 1400 K.C. Turn the dial of the radio to 1400 K.C. Align the oscillator and antenna trimmers on the gang condenser for maximum output on the meter.

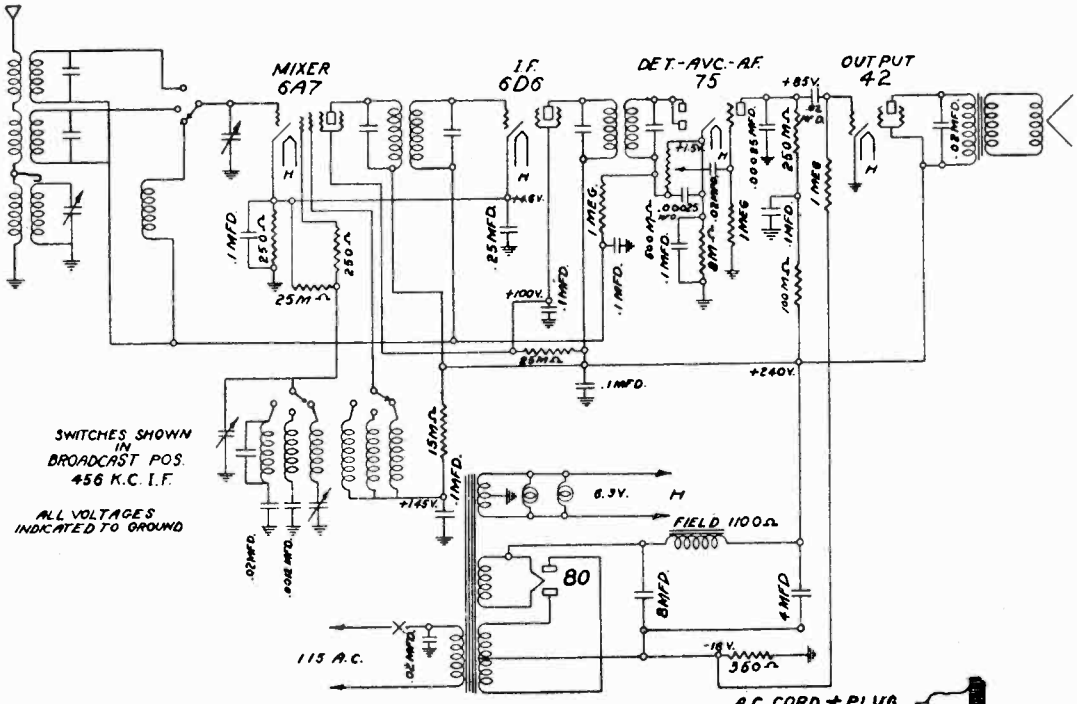
ADJUSTMENT OF SENSITIVITY CONTROL

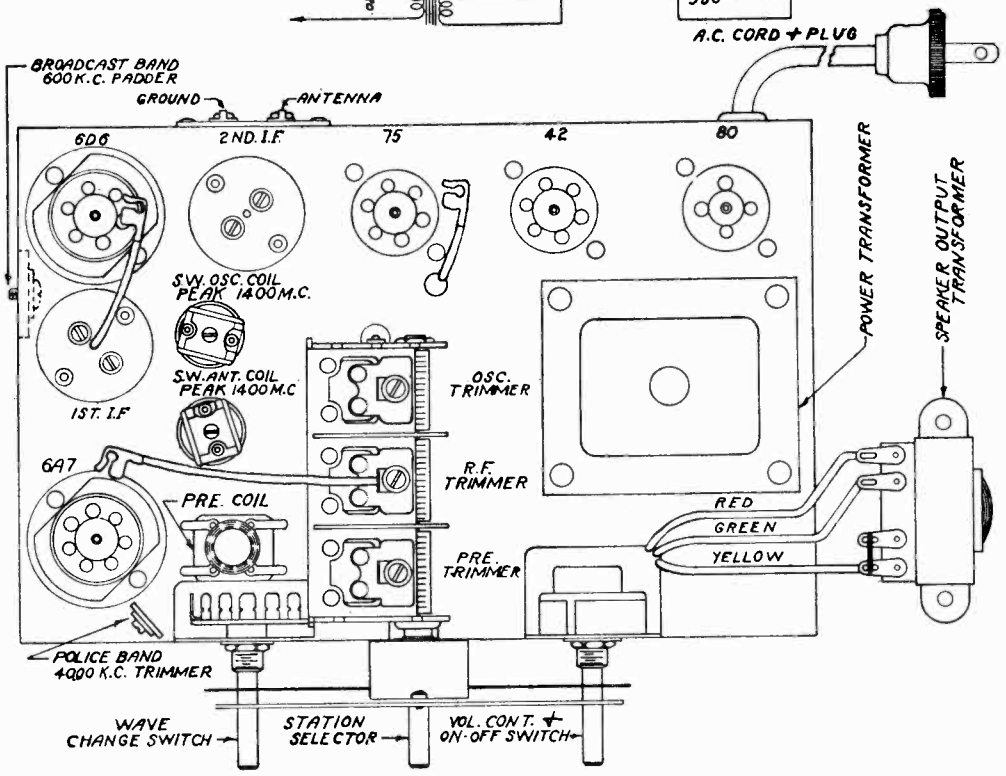
The sensitivity control is accessible from the rear of the cabinet, (see layout) and takes the form of a trimmer condenser, which may be adjusted with a small screw driver or knife blade. This control is adjusted at the factory to give normal sensitivity for a set of this type; and in most locations there will be no need for re-adjustment. However, in rural areas where signal strength is low, the gain of the receiver can be increased by three or four times by turning the trimmer in the following manner:

1. Tune in a station.
2. Increase sensitivity by turning trimmer in a clockwise direction until the station signal is distorted by a whistle.
3. Turn trimmer slowly counter-clockwise until whistle ceases. This is the point of maximum sensitivity.
4. Tune in several stations. If some of these signals still whistle, the sensitivity must be again retarded slightly.

RADIO PRODUCTS CORP.

MODEL X8
Schematic, Voltage, Socket
Trimmers, Alignment





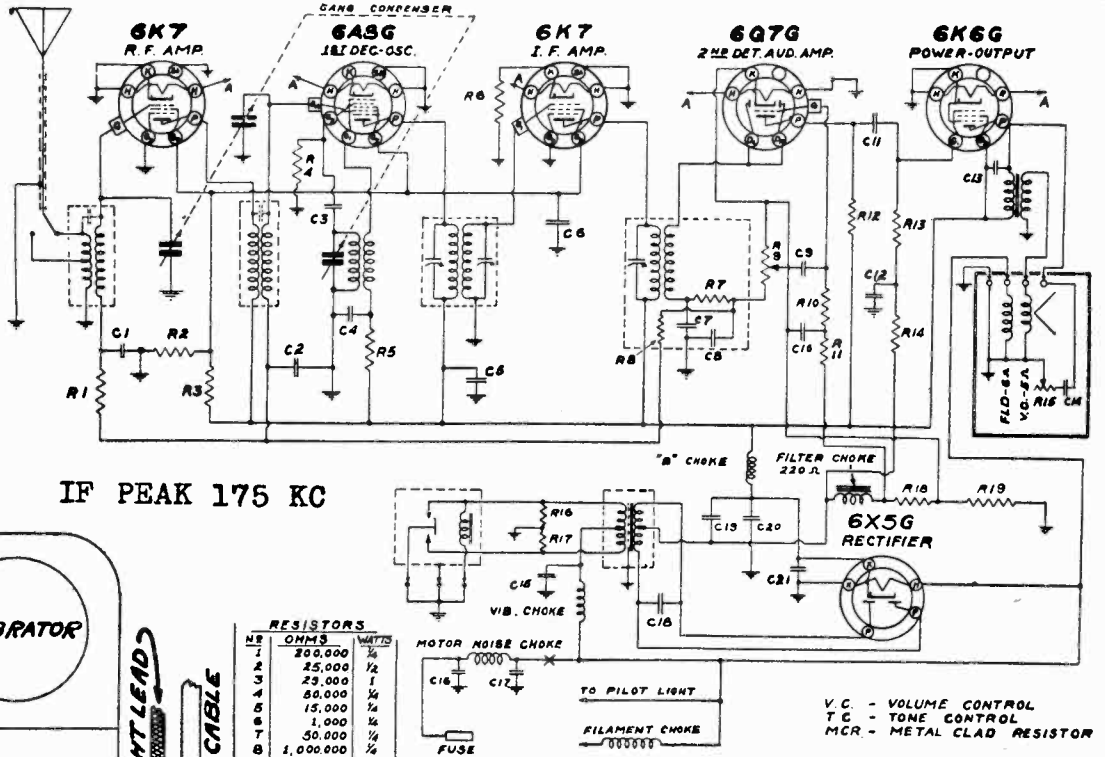
CONVENTIONAL ALIGNMENT - SEE THE SPECIAL SECTION VOL. VIII

FREQUENCY RANGES - BROADCAST - 540 to 1700 KC - Adjust the OSC, RF and ANT trimmers to a maximum peak of 1400 KC, then pad the Oscillator circuit at 600 KC while rocking gang condenser.

SHORTWAVE - 5800 to 15200 KC - Adjust the OSC and ANT trimmers to a maximum peak of 14000 KC. No padding required.

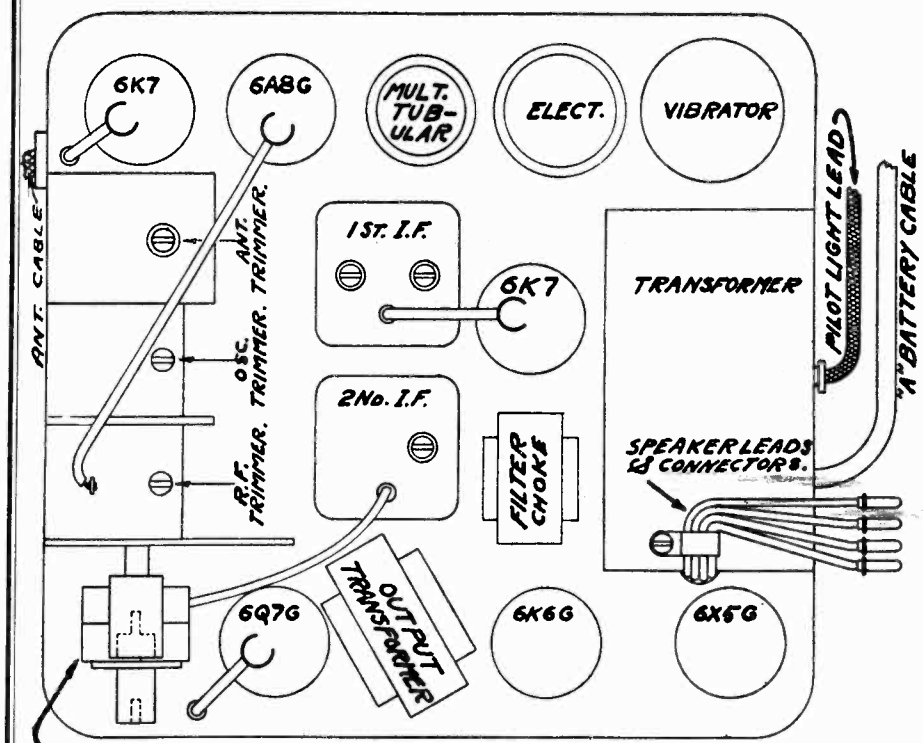
POLICE - 1700 to 5000 KC - Adjust the ANT coil trimmer to a maximum peak of 4000 KC. No other adjustments required.

R.F. ALIGNMENT. Adjust the test oscillator to 1550 K.C. and connect the output to the antenna through a .00005 mfd. mica condenser to give the equivalent of a low capacity average auto antenna. When this adjustment is made, the signal must be introduced into the receiver through the shielded lead supplied with the receiver. The plug should be inserted to conform with the "Low Capacity" position. (See Figure 1). Set the gang condenser to minimum and adjust the ascillator trimmer to peak. (Center section of gang condenser). The next step is to set the test oscillator and receiver to 1400 K.C. and adjust the front and rear trimmers of the gang condenser to peak. The rear section of the gang condenser tunes the antenna amplifier stage (6K7 tube), and the front condenser section tunes the detector grid coil of the 6A8G tube.



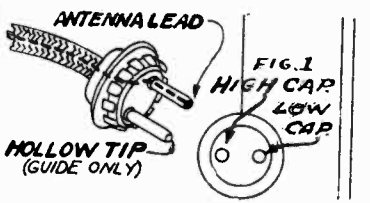
IF PEAK 175 KC

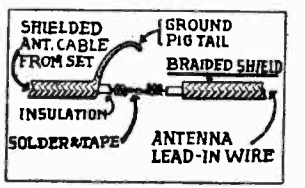
SCHEMATIC DIAGRAM
MODEL 69



NO	OHMS	WATTS
1	200,000	¼
2	25,000	½
3	23,000	1
4	50,000	¼
5	15,000	¼
6	1,000	¼
7	50,000	½
8	1,000,000	¼
9	500,000	V.C.
10	2,000,000	¼
11	500,000	¼
12	200,000	½
13	500,000	¼
14	100,000	¼
15	100,000	T.C.
16	50	1
17	50	1
18	30	MCR
19	50	MCR

NO	CAP-MFD	WKG V
1	.05	200
2	.05	200
3	.0001	MICA
4	.1	400
5	.1	400
6	1	200
7	.00025	MICA
8	.00025	MICA
9	.01	400
10	.1	200
11	.01	400
12	.25	200
13	.005	600
14	.05	400
15	.5	50
16	.002	MICA
17	.002	MICA
18	.0075	1600
19	6.0 (ELECT)	350
20	8.0 (ELECT)	350
21	.01	400

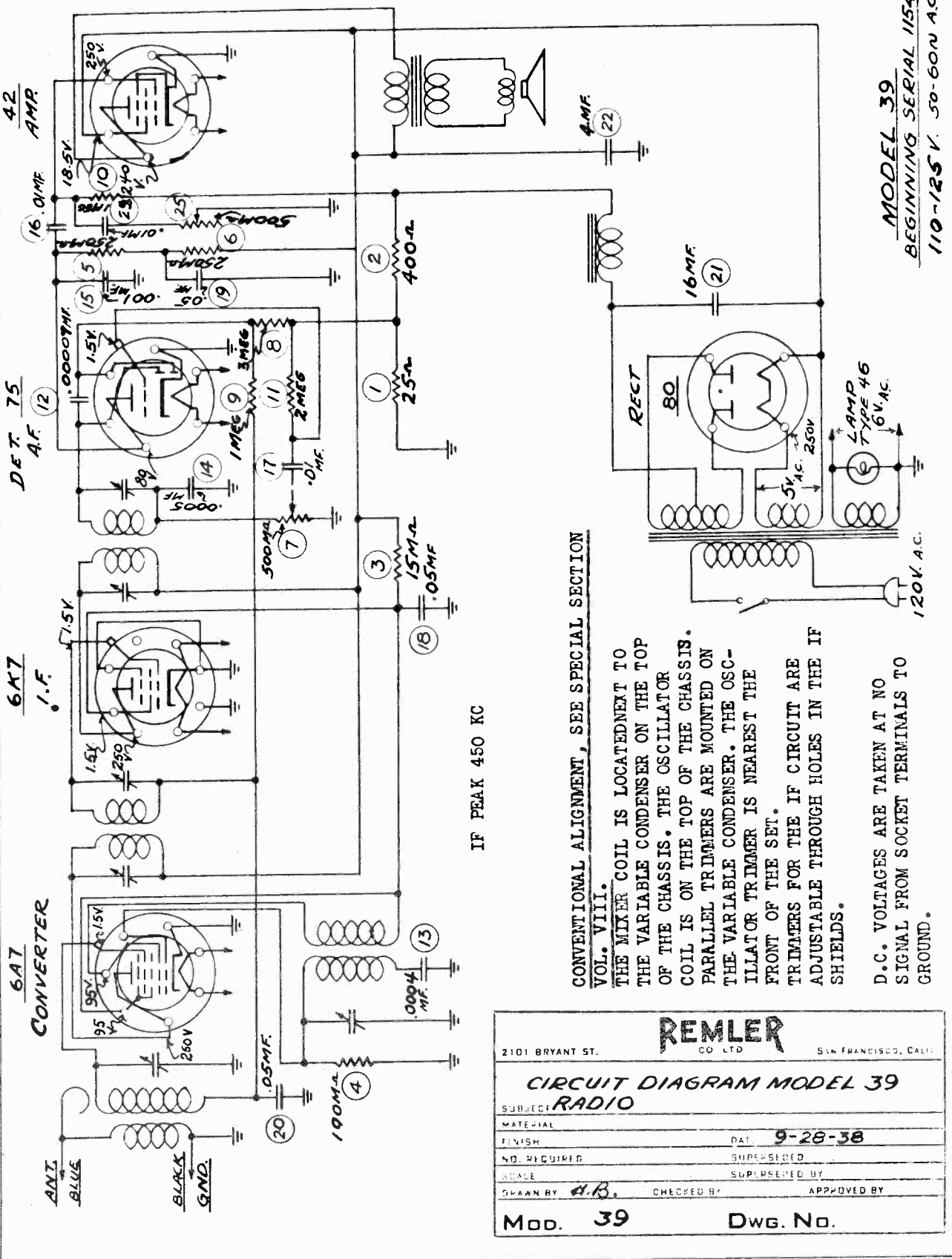




I.F. ALIGNMENT. Adjust the test oscillator to 175 K.C. and connect the output to the grid of the first detector tube, 6A8G, through a .1 mfd. condenser. The ground on the test oscillator can be connected to the chassis ground. Align the trimmers of the first and second I.F. transformers to peak or maximum reading on the output meter.

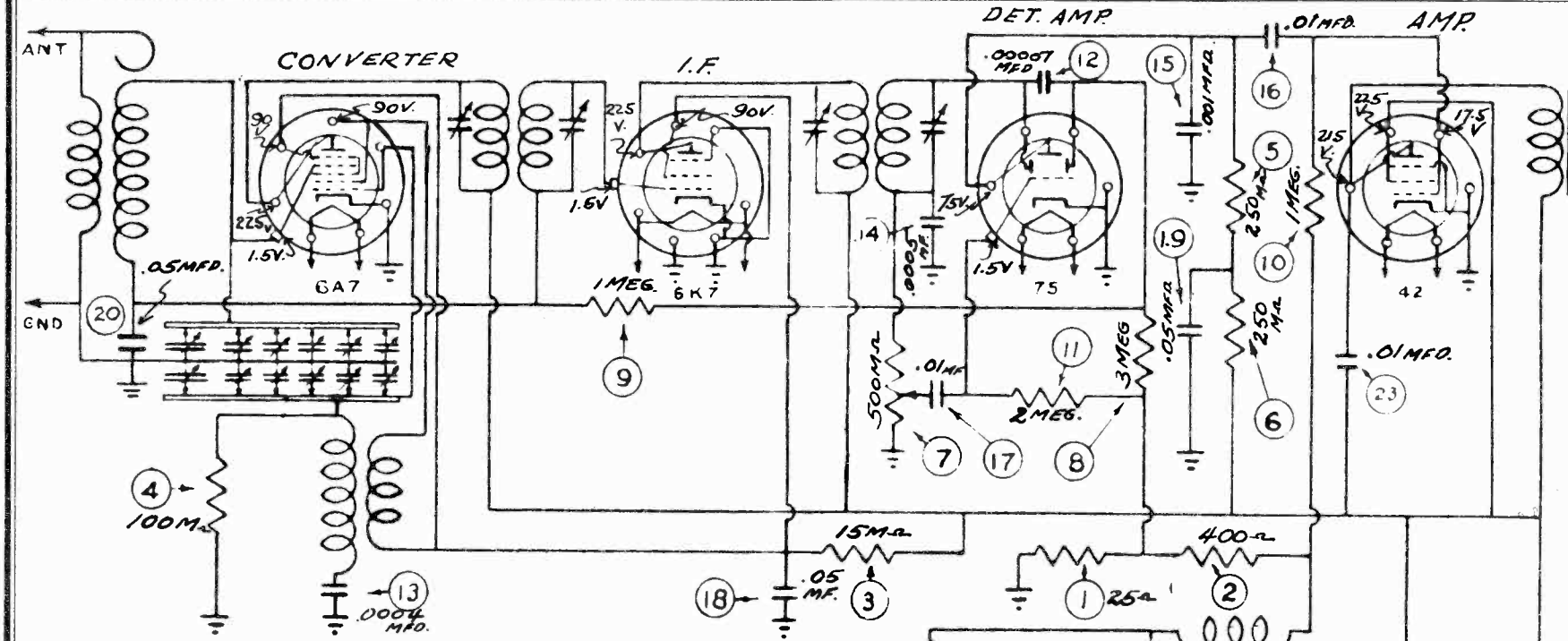
REMLER COMPANY, LTD.

MODEL 39, Above Ser. 115439
Schematic, Voltage
Alignment



MODEL 55, Above Ser. 114626
Schematic, Voltage, Alignment

REMLER COMPANY, LTD.



IF PEAK 450 KC

CONVENTIONAL ALIGNMENT, SEE SPECIAL SECTION VOL. VIII
THE MIXER COIL IS LOCATED NEXT TO THE VARIABLE CONDENSER ON THE TOP OF THE CHASSIS. THE OSCILLATOR COIL IS ON THE INSIDE OF THE CHASSIS. PARALLEL TRIMMER CONDENSERS ARE MOUNTED ON THE VARIABLE CONDENSER. THE OSCILLATOR TRIMMER IS NEAREST THE FRONT OF THE SET.
TRIMMERS FOR THE I.F. CIRCUIT ARE LOCATED ON THE BACK OF THE CHASSIS.
PUSH BUTTONS: TRIMMERS FOR THE PUSH BUTTON CIRCUITS ARE ACCESSIBLE THROUGH A SLOT IN THE BOTTOM OF THE CABINET, THESE TRIMMERS HAVE THE FOLLOWING APPROXIMATE TUNING RANGES:-#1 GROUP, 520-850 KC;#2 GROUP, 520-850 KC;#3 GROUP, 620-1075 KC; #4 GROUP 680-1075 KC; #5 GROUP 975-1500 KC.

VOLTAGE READINGS TAKEN FROM SOCKET TERMINALS TO GROUND WITH NO SIGNAL.

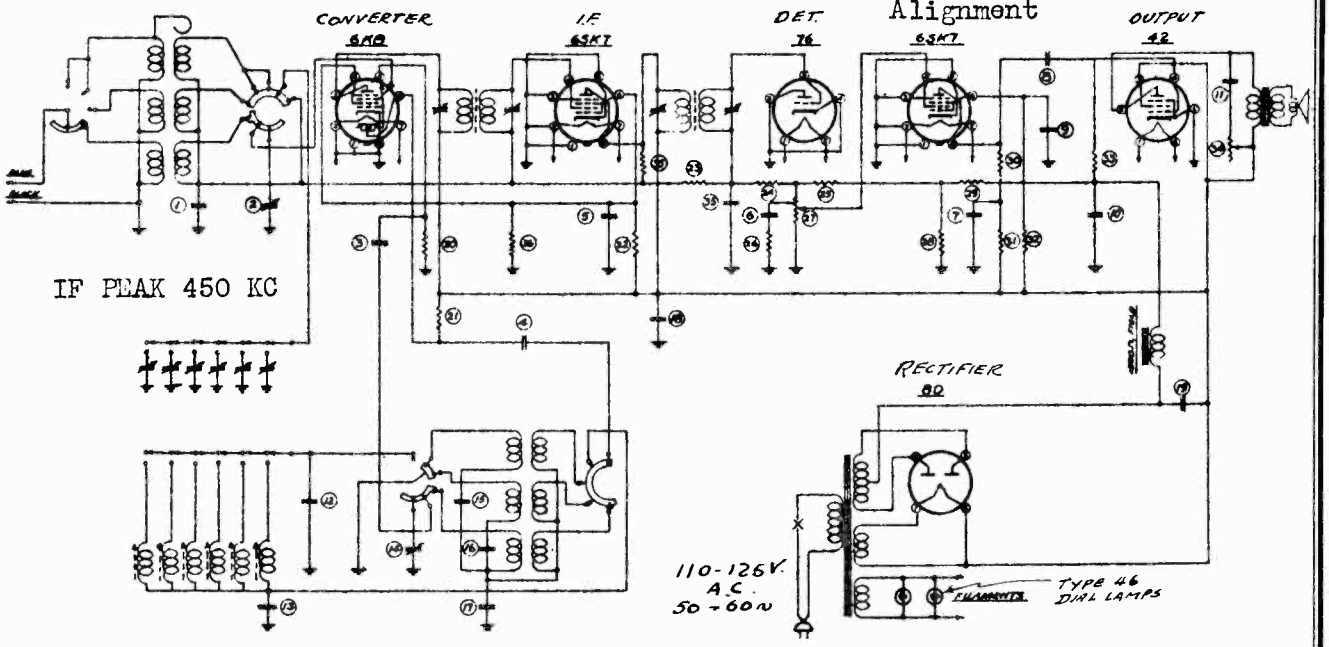
REMLER
2101 BRYANT ST. CO. LTD. SAN FRANCISCO, CALIF.

MODEL 55
Beginning Serial No. 114626
110-125 50-60 N A.C.

MODEL 73

REMLER COMPANY, LTD.

Schematic, Voltage, Tuner Alignment



NO.	DESCRIPTION	NO.	DESCRIPTION	NO.	DESCRIPTION	NO.	DESCRIPTION
1	.05 MFD. COND. 600 V.	11	.05 MFD. COND. 600 V.	20	25,000 Ω 10 W. RESISTOR	30	250M. Ω 10 W. RESISTOR
2	400 MMFD. MIC. COND.	12	680 MMFD. COND.	21	30,000 Ω 1/2 W. RESISTOR	31	250M. Ω 1/2 W. RESISTOR
3	.25 MFD COND.	13	1000 MMFD. COND.	22	15,000 Ω 1 W. RESISTOR	32	3 MEG. 1/2 W. RESISTOR
4	1000 MMFD. COND.	14	400 MMFD. MIC. COND.	23	1 MEG. 1/2 W. RESISTOR	33	1 MEG. 1/2 W. RESISTOR
5	.05 MFD COND. 600 V.	15	400 M MFD. COND.	24	50,000 Ω 10 W. RESISTOR	34	.25 M. Ω POTENTIOMETER
6	.01 MFD. COND. 600 V.	16	1000 MMFD. COND.	25	1 MEG. 1/2 W. RESISTOR	35	500 M. Ω 1/2 W. RESISTOR
7	.05 MFD. COND. 600 V.	17	2600 MMFD. COND.	26	500 Ω 1/2 W. RESISTOR	36	50,000 Ω 1W. RESISTOR
8	.02 MFD COND. 600 V.	18	.1 MFD. COND.	27	100 M. Ω POTENTIOMETER		
9	.1 MFD. COND. 600 V.	19	.15 MFD. COND.	28	20 Ω 1/2 W. RESISTOR		
10	.15 MFD. COND. 25 V.	20	.0005 MFD COND.	29	400 Ω 1W. RESISTOR		

REMLER
CIRCUIT DIAGRAM MODEL 73
Mod. 73 Dwg. No.

SETTING UP PUSH BUTTONS:-

The push button set up may be changed as follows:

The selection of stations should be arranged with the location of the lowest frequency station on the extreme left button. A resonance indicator or output meter will aid in making the adjustments. With the band switch on "BC", tune in the desired station with the selector, depress the button and turn the band switch to "A". Now with a screwdriver adjust the trimmer on the top of the chassis nearest the back and adjacent to the speaker. When the desired station is tuned in adjust the trimmer nearest the front panel for maximum volume. Now turn the band switch to "BC" to check the adjustment. Proceed with the next lower frequency station for the next set of trimmers with the band switch on "A".

CONVENTIONAL ALIGNMENT, SEE SPECIAL SECTION VOL.VIII.

The mixer coil is located on the right side of the variable condenser and the oscillator coil on the left side. Trimmers for oscillator and mixer coils are adjustable through holes in the coil supports.

The broadcast trimmers are at the top, the medium wave in the middle and the short wave nearest the bottom of the support.

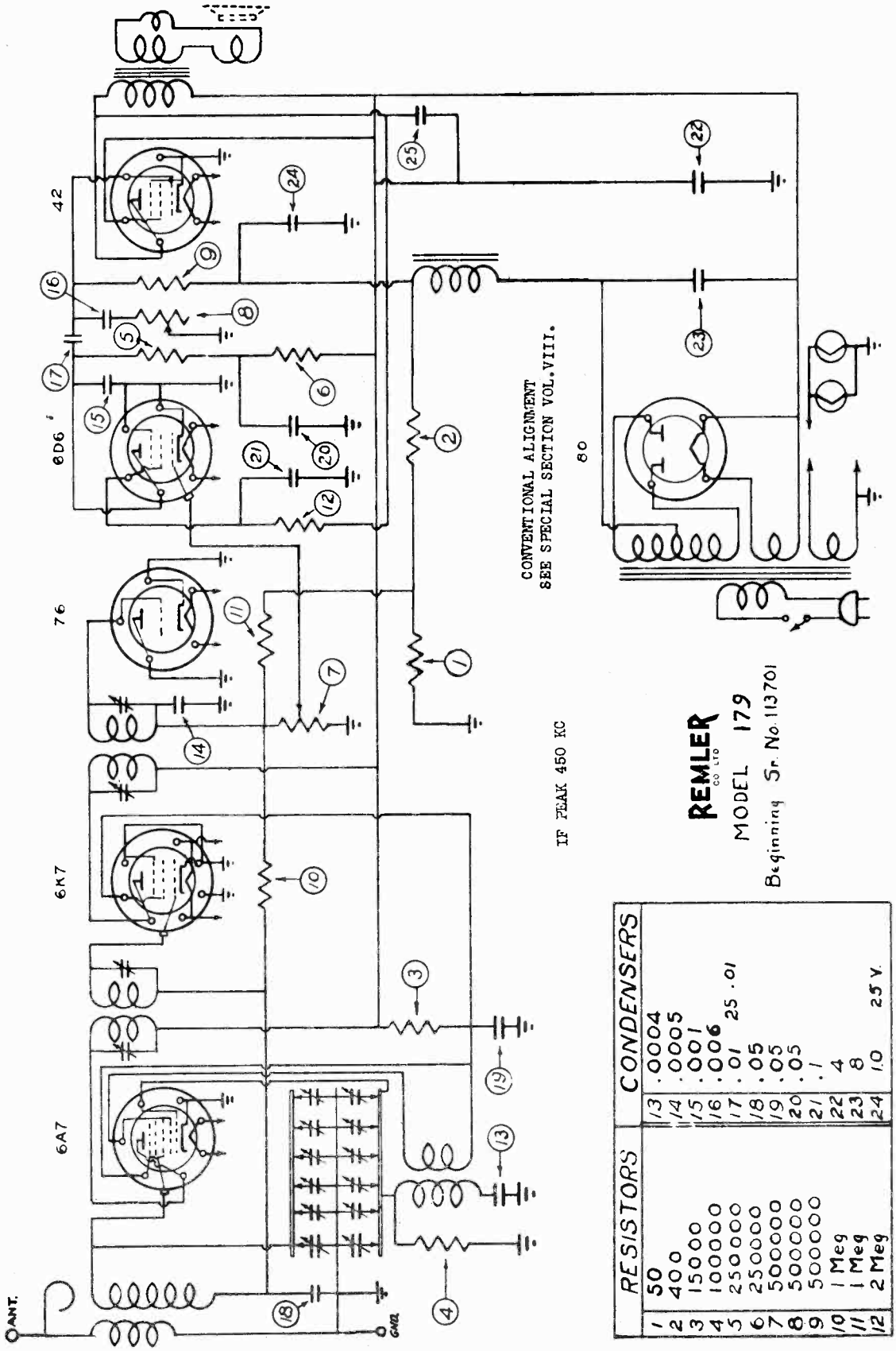
Trimmers for the I.F. transformers are accessible through openings in the top of the I.F. transformer shields.

VOLTAGE READINGS A.C. voltages:- Line 120 volts; Heaters-6volts; Rectifier filament-5 volts.

D.C. voltages (Taken with no signal from ground to points indicated) 80 Rectifier filament--250 volts; 42 plate--235 volts; 42 Screen--250 volts; 42 bias--20 volts; 6SK7----audio plate 60,---audio screen 10, I.F. plate 250,---I.F. screen 100,---and I.F. bias 2.5 volts; 6K8-----plate 250,---oscillator plate 90,---screen 100, and bias supply 2.5 volts.

MODEL 179
Above Ser.113701
Schematic, Alignment

REMLER COMPANY, LTD.



RESISTORS	
1	50
2	400
3	150000
4	1000000
5	250000
6	250000
7	500000
8	500000
9	500000
10	1 Meg
11	1 Meg
12	2 Meg

CONDENSERS		
13	.0004	
14	.0005	
15	.001	
16	.006	25 .01
17	.01	
18	.05	
19	.05	
20	.05	
21	.1	
22	4	
23	8	25 V.
24	10	