R.C.A. Victor Co., Inc.

Model: 85T1	Chassis:	Year: Pre October 1937
Power:	Circuit:	IF:
Tubes:		
Bands:		

Resources
Riders Volume 9 - CHANGES 9-6
Riders Volume 8 - RCA 8-112
Riders Volume 8 - RCA 8-113
Riders Volume 8 - RCA 8-114

RCA 85K

This is a console model employing a chassis similar to Model 85T1, the service data for which will be found on *pages 8-112 to 8-114 in Rider's Volume VIII*. These service data apply to Model 85K with the following exceptions.

The loud speaker used is No. 84091-1 and its cable connects to the chassis as follows: Brown lead (L13) to positive (center) terminal of C24; Brown-black lead (L13-T2) to "SG" terminal of the 42 output tube; Black lead (T2) to "P" terminal of the same tube. The resistance values for this speaker are: field coil (L13), 1300 ohms; voice coil (L11), 2.4 ohms; hum neutralizing coil (L12), 0.16 ohm; output transformer (T2) primary, 520 ohms and the secondary, 0.37 ohm. The voice coil impedance is 2.6 ohms at 400 cycles.

The following corrections should be made in the service data and they apply to all models 85T1 and 85K:

The resistance of the antenna coil, L2, should be changed from 0.07 ohm to 1.3 ohms in the large schematic at the top of *page 8-113* and in the small diagram marked "Ant. Coil Connections" on the same page.

In the small schematic marked "Record Player Connections" a shield extension should be shown on the cable and connected to the chassis.

In the voltage diagram on *page 8-114* the voltage from the negative terminal of C24 to chassis should be designated as –17 volts. The voltage from the negative terminal of C10 should be 0 volts instead of –17. The value of C8 has been changed from 450 mmf to 470 mmf. Make this change on both diagrams on *page 8-113*.

Different power transformers (T1) are used in Model 85K. Stock No. 30607 is rated at 105-125/200-250 volts, 50-60 cycles and Stock No. 30571 is rated at 105-125 volts, 25-60 cycles. The complete speaker has a stock number 14613 and the output transformer (T2), 14615.

RCA 6K10, 6T10, 8T10, 9K10

These receivers are similar to models 6K2, 6T2, 8T, and 9K2 respectively, except for cabinet design. The servicing data, as published on the following pages in *Rider's Volume VII*, applies to these new model numbers: 6T10 and 6K10, *page* 7-41; 8T10, *page* 7-56; and 9K10, *page* 7-99.

Bosch 10 (Essex)

It has been brought to our attention that several errors appeared in the schematic of this receiver, which appeared on *page 3-6 of Rider's Volume III and on page 2490 of the Rider Combination Manual*. Please make the following corrections on the schematics on the above-mentioned pages.

The cathode of the 27 second detector should be grounded.

A connection should be indicated at the junction of the leads from R7 and R8. In others words, both of these resistors should be connected to the grid of the 27 A.V.C. tube.

A connection should be indicated at the point where the lead from R5 (in the plate circuit of the 58 first i-f tube) and the lead from the primary of the input pushpull transformer intersects the lead from the junction of R2 and R12 to the primary of the second i-f transformer.

The midpoint of the resistor R18, which is across the power transformer secondary supplying the heaters, should be grounded.

A connection should be indicated at the intersection of the leads from the screens of the 51 first detector and the first i-f tube, a 58.

RCA 6K1, 7X1, 8K1

Model 6K1 is similar to Model 6K (for schematic see *page 7-37 in Rider's Volume VII*) except for the following changes: A 5W4 rectifier is used instead of the 5Z4; R-15 in the heater circuit is omitted; a three-point tone control is used instead of the variable control, R-14; and different power transformers are used.

The tone control is connected as follows: Looking at the control (Part No. 13681) from the rear and starting from counter-clockwise lug, lug No. 1 goes to a 0.017-mf condenser, C-30 (Part No. 11451); the other side of this condenser connects to the chassis. Lug No. 2 goes to the junction of C-20 (0.01 mf) and R-9 (27,000 ohms). The third lug is not used. Lug No. 4 connects directly to the plate contact of the 6F6 output tube.

The d-c resistance of the power transformers are: Part No. 12644 (105-125 volts, 50-60 cycles) primary, 8.6 ohms and secondary 745 ohms; Part No. 12645 (105-125 volts, 25-60 cycles) primary 12.9 ohms and secondary, 1120 ohms; Part No. 12646 (100-130/140-160/195-250 volts, 40-60 cycles) primary, 24.5 ohms and secondary 760 ohms. The voltages for the 5W4 rectifier are: Plate to plate, 692 volts and plate to chassis ground, 346 volts. Other voltages remain the same.

The service data found on *pages 7-37 to 7-40 in Rider's Volume VII* are applicable to Model 6K1.

Model 7X1 is identical to Model 7X (see *page 8-33 in Rider's Volume VIII*) except for cabinet design. Model 8K1 is the same as Model 8K (see *page 7-56 in Rider's Volume VII*) except for cabinet design.

RCA 5M, 6M, 6M2

On the first production of these receivers (*below* serial number 200,000), two types of variable condensers are used. These differ only in the method of mounting the drive gear. Stock Nos. 12221 and 12222 gears are used only with the tuning condenser *not* having a tapped shaft. The gears used with a tapped shaft have the following numbers: 13145 and 13146.

The following parts are in addition to those listed for the above models, which will be found on *pages* 7-13 *and* 7-28 *of Rider's Volume VII*:

13147—Pinion gear and slotted shaft assembly and 13152—on-off operating switch. These are for the control box assemblies.

13006—Tuning and volume control flexible shaft sleeve.

11984—3-contact male connector for reproducer cable, No. 12525.

The second production run of these models (*above* serial number 200,000) used a tuning drive mechanism with a tuning drive ratio of 16 to 1. The following parts are applicable to these receivers:

13371—3-gang variable tuning condenser.

13372—Tuning condenser shaft drive gear for above.

13373—Tuning condenser worm gear and mounting bracket for above.

13414—Control box complete, less flexible shafts.

Wells-Gardner 5 Tube AC-DC Models

Due to variations in 6J7 tube characteristics, distortion may be encountered at medium or low volume levels. This can be remedied by changing the .5 megohm 2nd detector screen series resistor (R5) to a .7 megohm resistor. This same result, of course, can be obtained by placing an additional .2 megohm resistor in series with the .5 megohm resistor.

Later production models have the .7 megohm resistor.

RCA D 22-1

The 800-8500-ohm resistor, No. 44-45, in the filter circuit of the 5Z3 rectifier, Tube No. 14, has been changed from its original location at the rear of the chassis to the front apron of the chassis near the power transformer. See the chassis wiring diagram on *page 6-137 of Rider's Volume VI*. The electrical connections remain the same.

Chevrolet 601574

The schematic for receivers having serial numbers under 0374000 appears on *United Motor page 6-33 in Rider's Volume VI*. Receivers having serial numbers above 0374000 have the following changes incorporated in the chassis:

Resistor No. 44 in the screen circuit of the 6F7 has been changed from 30,000 to 25,000 ohms.

Condenser No. 29 has been changed from 867 mmf to 950 mmf.

Condensers No. 18C (0.05 mf) and No. 28 (750 mmf) have been eliminated.

Resistor No. 42 in the diode circuit of the 6B7 has been changed from 150,000 to 250,000 ohms.

The volume control, No. 54, has been changed from 0.5 megohm to 1.5 megohms.

The lower end of the primary winding of the second i-f transformer, No. 9, now has a 1000-ohm resistor, No. 48, connected between it and the +B lead. This is located perpendicular to and immediately above resistor No. 42. See the top view of the parts layout on *United Motor page 6-34 in Rider's Volume VI*.

The output tube has been changed from a 41 type to a 42.

Wells-Gardner 6C1

The "B" issue of this series of auto-radio receivers has several changes incorporated in it and its data differ from those shown on *pages 8-17 to 8-19 in Rider's Volume VIII*. This issue can be identified by the issue letter which is stamped on the top of the chassis base and on the tube layout label on the chassis case cover. Specify this letter if parts be ordered.

The gang condenser used in the new issue does not have the cut-plate oscillator section. The new part number for the gang condenser is 14A77. A padding condenser (600 kc) was added in series with the oscillator section of this gang condenser and the oscillator coil. The padder is a part of the 2nd i-f trimmer unit and is mounted in the coil can. In other words, the 30-100 mmf condenser, C-14, and the new 900-1300-mmf condenser are mounted in the same can and have a part number 17A79.

The capacity C-15 shown within a dotted circle on the schematic in the 2nd i-f coil assembly, has been changed to an actual part and has a part number 47X57.

The following parts have been changed in the late issue and below will be found the new parts numbers:

T1 Antenna Transformer and Can Assembly 9A859
T2 R-f Transformer and Can Assembly 9A860
T3 Oscillator Coil and Can Assembly 9A862
T5 2nd I-F Transformer and Can Assembly 9A858

The 2000-mmf molded condenser in the plate circuit of the 41 output tube has been changed, to a 0.002-mf, 1000-volt tubular condenser, Part No. 46X-219. A 15-ampere fuse is now used instead of one rated at 20 amperes. The 25-inch volume or tuning control flexible drive shaft has been changed, the Part No. now being 18A49. The changes in this last paragraph apply to all issues of the 6C1 receivers, not just the "B" issue like those above.

RCA 85T1, 91, U-103

The 450-mmf condenser, C-1, which is connected to the oscillator grid circuit, has been changed to 470 mmf. It is not ordinarily required to replace this in the field, except where trouble might be experienced during re-alignment of the oscillator circuit; in which case tracking will be facilitated if the original unit is replaced with the 470-mmf type, Stock No. 30396. The schematic of model 85T1 will be found on *page 8-113* and that of the other two models on *page 8-[illegible] both being in Rider's Volume VIII*.

United Motors 980393 8-O-P

Please add this note to the data on *United Motors page 8-31 in Rider's Volume VIII*. If the receiver does not oscillate at all or oscillates on one end of the dial only, try a new 36 as an oscillator. If this does not cure the trouble, check resistor R-1-A (the 4200-ohm resistor in the cathode circuit of the 36 detector-oscillator) and condensers C-3 (735 mmf) and C-10 (0.002 mf). As the capacities of these condensers are rather critical, they should be tested by replacement. If these tests do not locate the trouble, it will be necessary to replace the oscillator coil.

Zenith 762

Although several minor changes in the circuit of this automobile receiver were made during production, the schematic on *page 4-3 of Rider's Volume IV*, will coincide with most of these sets that have been marketed.

During a portion of the production, the suppressor grids were removed from the cathodes and tied to the grid returns thereby placing the A.V.C. voltage on the suppressor grids. Also a change was made in the first i-f stage, a 6J7 being used instead of a 6D6. This was to eliminate the tendency towards howling.

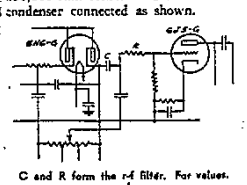
Zenith 668

Please make a note on *Zenith page 6-1 of Rider's Volume VI* that the chassis of this set and that of Model 666 are the same except for some mechanical parts changes. An 8-inch dynamic speaker (Part No. 49-114) is used instead of the 6-inch speaker in the Model 666. The output transformer is not included in the 8-inch speaker assembly, and its part number is 95-285. A speaker cable (Part No. 52-69) is used in the Model 668 that is not used in the Model 666. The part number of the complete speaker assembly is 98-65.

Zenith 15-Tube Receivers

In some of these receivers distortion has developed when using the set at low volume. This has been found due to some r.f. getting through to the a-f system.

The correction is an r-f filter in the a-f grid circuit as shown in the accompanying schematic. This consists of a 150,000-ohm resistor and a 0.0005-mf condenser connected as shown.



C and R form the r-f filter. For values, see above

Microphonism or a-f tube noise can be corrected by interchanging the 6J5 1st a-f tube or by replacing it with a 6C5G. The latter appears to give slightly less hum and has lower microphonic characteristics.

MODEL 85T1
Notes,Parts

RCA MFG. CO., INC.

General Description

This receiver employs a superheterodyne circuit, the arrangement of which is shown on figure 2. Its design includes magnetite-core adjusted i-f transformers; automatic volume control; resistance-coupled audio system; and a 5-inch, electrodynamic loudspeaker.

RADIOTRON COMPLEMENT

(1) RCA-6A7 ..... First Detector—Oscillator
(2) RCA-6D6 ..... Intermediate Amplifier
(3) RCA-75 ..... Second Det., A-F Amp. and A.V.C.
(4) RCA-41 ..... Audio Power Amplifier
(5) RCA-80 ..... Full-Wave Rectifier

Service Data

The various diagrams of this booklet contain such information as will be needed to isolate causes for defective operation if such develops. The ratings of the resistors, capacitors, coils, etc., are indicated adjacent to the symbols signifying these parts on the diagrams. Identification titles such as R1, L1, C1, etc., provide reference between the illustrations and Replacement Parts List. The coils, transformer windings, and reactors are rated in terms of d-c resistance to permit continuity checks.

Precautionary Lead Dress—(1) Dress power line leads to the on-off switch away from grid connection terminal on volume control to reduce hum pickup. (2) Keep leads of capacitor C3 as short as possible. (3) Bus lead from range selector (ter. 6) to oscillator coil tap L6L8 should be maintained 3½ inches long for proper alignment. (4) Capacitor C25 should be dressed free of adjacent parts to maintain correct alignment at high-frequency end of "A" band. (5) Bus lead from range selector (ter. 3) to antenna coil L1 should be maintained 2¼ inches long for proper alignment. (6) The RCA-6A7 grid-cap lead (50-ohm resistor R18) to top of tuning capacitor C2 should be dressed properly to prevent shorts and should be maintained flexible to prevent acoustic howl.

Phonograph Attachment—See Schematic Circuit Diagram, figure 2.

Loudspeaker—Centering of the loudspeaker voice coil is made in the usual manner with three narrow paper feelers.

REPLACEMENT PARTS

Insist on genuine factory tested parts which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION
	RECEIVER ASSEMBLIES
14634	Belt—Variable condenser drive belt
14632	Bracket—Dial mounting bracket
5237	Bushing—Variable condenser rubber mounting bushing
12118	Cap—Grid contact cap
12896	Capacitor—15 Mmfd. (C25)
12405	Capacitor—47 Mmfd. (C14)
14262	Capacitor—110 Mmfd. (C11, C12)
12724	Capacitor—120 Mmfd. (C7)
12406	Capacitor—180 Mmfd. (C16)
12812	Capacitor—450 Mmfd. (C8)
14724	Capacitor—560 Mmfd. (C17)
30245	Capacitor—.0045 Mfd. (C3)
4858	Capacitor—.01 Mfd. (C20, C22)
13138	Capacitor—.01 Mfd. (C9, C18)
4839	Capacitor—0.1 Mfd. (C4, C13, C19, C21)
12484	Capacitor—0.25 Mfd. (C15)
11203	Capacitor—10 Mfd. (C24)
5212	Capacitor—16 Mfd. (C23)
14377	Capacitor—16 Mfd. (C10)
14646	Coil—Antenna coil (L1, L2, L3)
14647	Coil—Oscillator coil (L6, L7, L8)
14633	Condenser—2-gang variable tuning condenser (C1, C2, C5, C6)
14648	Core—Adjustable core and stud for oscillator coil
12006	Core—Adjustable core and stud for I. F. transformer
14631	Dial—Station selector dial
14651	Drive—Variable condenser vernier drive and pinion gear
14635	Indicator—Station selector indicator pointer
5226	Lamp—Dial lamp
14636	Pulley—Idler pulley—less spring
14639	Pulley—Variable condenser drive pulley—located on condenser shaft
14660	Resistor—18 Ohms—Insulated, ½ watt (R14)
14653	Resistor—50 Ohms—Flexible type, 1/10 watt (R18)
13819	Resistor—270 Ohms—Wire wound, 1.1 watt (R15)
5175	Resistor—5,600 Ohms—Carbon type, ½ watt (R12)
14659	Resistor—6,800 Ohms—Carbon type, ½ watt (R3)
11305	Resistor—22,000 Ohms—Carbon type, ½ watt (R16)
5033	Resistor—33,000 Ohms—Carbon type, 1 watt (R4)
13735	Resistor—33,000 Ohms—Carbon type, ½ watt (R2)
11646	Resistor—47,000 Ohms—Carbon type, ½ watt (R9)
11323	Resistor—270,000 Ohms—Carbon type, ½ watt (R7, R8)
13733	Resistor—330,000 Ohms—Carbon type, ½ watt (R1)
13479	Resistor—390,000 Ohms—Carbon type, ½ watt (R10)
5035	Resistor—560,000 Ohms—Carbon type, ½ watt (R6)
12679	Resistor—2.2 Megohm—Insulated, ½ watt (R11)
14661	Resistor—6.8 Megohm—Insulated, ½ watt (R13)
5129	Ring—Radiotron shield ring
4389	Screw—No. 6—32 x 3/16 headless set screw for pulley, Stock No. 14639
14638	Shaft—Station selector knob shaft and pulley
12008	Shield—First I. F. transformer shield
12408	Shield—Second I. F. transformer shield
11265	Shield—Radiotron shield
14658	Socket—Dial lamp socket
4794	Socket—4-contact 80 Radiotron socket
4786	Socket—6-contact 6D6, 42 or 75 Radiotron socket
4787	Socket—7-contact 6A7 Radiotron socket
14637	Spring—Idler pulley tension spring
12007	Spring—Retaining spring for core, Stock Nos. 12006 and 14648
14640	Switch—Range switch (S2, S3)
14376	Transformer—First I. F. transformer (L4, L5, C11, C12)
14642	Transformer—Second I. F. transformer (L9, L10, C14, C16)
14655	Transformer—Power transformer, 105-125 volts, 50-60 cycle (T1)
14656	Transformer—Power transformer, 105-125 volts, 25-60 cycle (T1)
14657	Transformer—Power Transformer, 100-125/200-250 volts, 50-60 cycle (T1)
14645	Volume Control and power switch (R5, S1)
	REPRODUCER ASSEMBLIES
14679	Cone—Reproducer cone (L11) for speaker marked 84010-3
14941	Cone—Reproducer cone (L11) for speaker marked 84010-1
14678	Reproducer complete marked 84010-3
14680	Transformer — Output transformer (T2) for speaker marked 84010-3
14942	Transformer — Output transformer (T2) for speaker marked 84010-1
	MISCELLANEOUS ASSEMBLIES
14654	Escutcheon—Station selector escutcheon and crystal
12673	Knob—Station selector, volume control or range switch knob
14267	Screw—Chassis mounting screw and washer
4119	Screw—No. 8—32 x ¼ headless set screw for knob, Stock No. 12673

RCA MFG. CO., INC.

MODEL 85T1
Schematic
Chassis Wiring

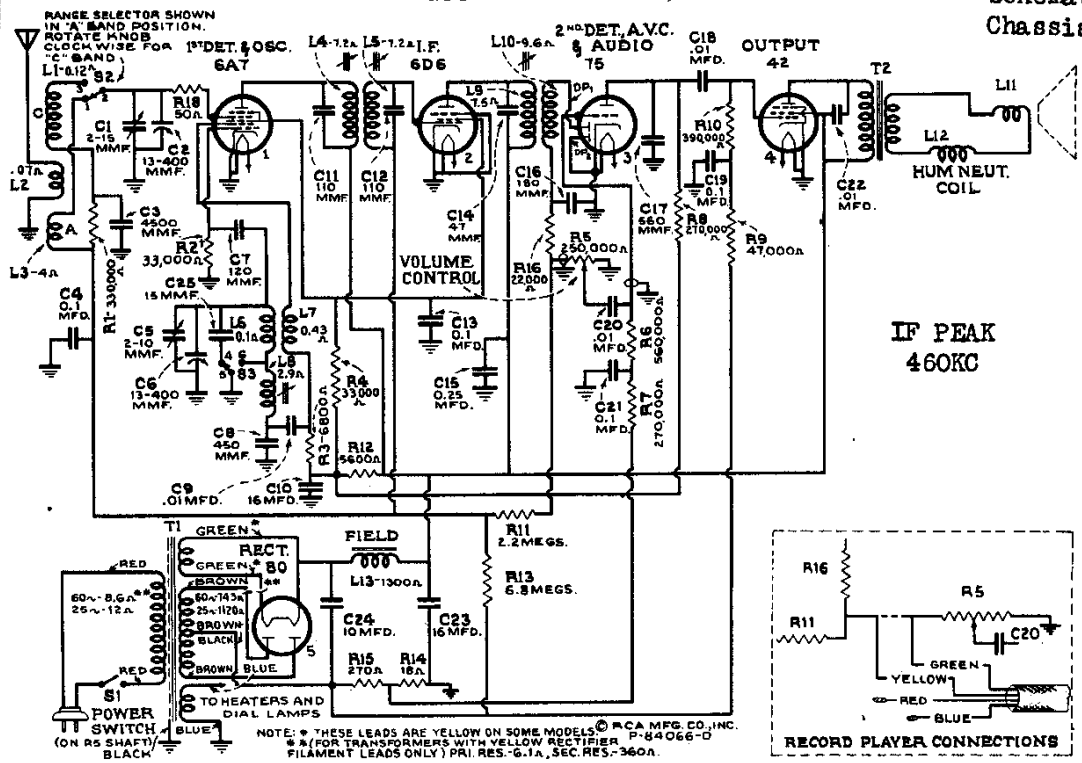
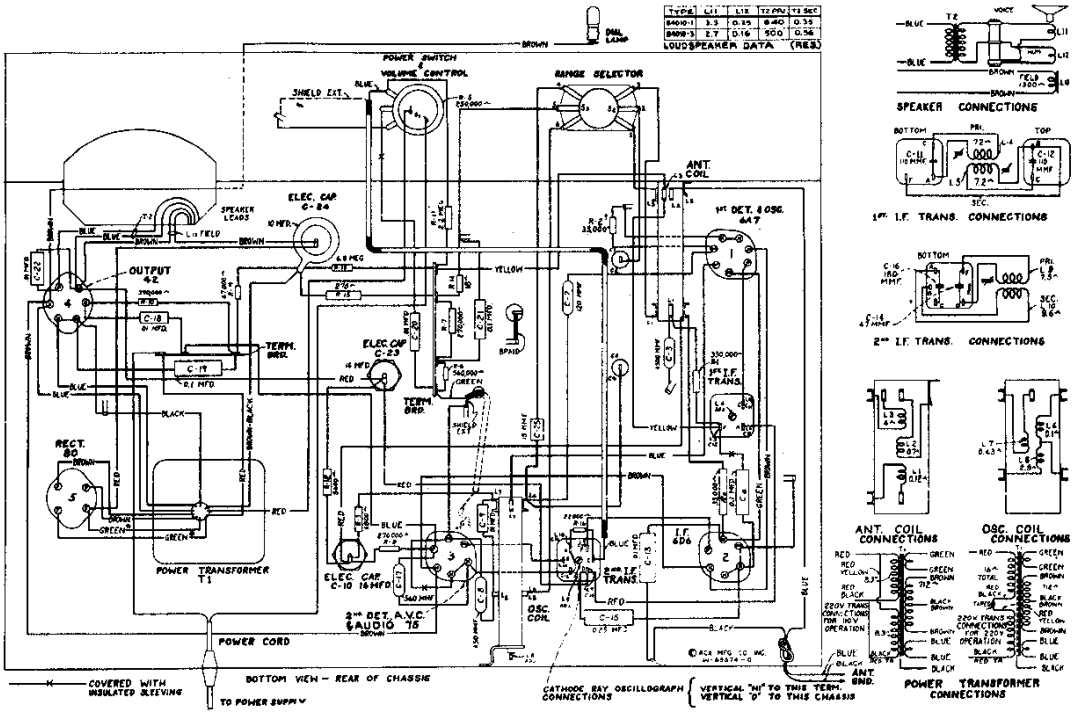


Figure 2—Schematic Circuit Diagram

† Resistor R2 is 56,000 ohms in some instruments. Replace with Stock No. 13735.



Power Output Rating
Undistorted ..... 1.0 watts
Maximum ..... 2.5 watts

Loudspeaker
Type ..... Electrodynamic
Voice Coil Impedance { (84011-3) 3.1– / (84011-6) 2.7– } ohms at 400 cycles
Pilot Lamp (1) ..... Mazda No. 46, 6.3 volts, 0.25 ampere

Power Supply Ratings
Rating A .. .. 105-125 volts, 50-60 cycles, 55 watts
Rating B .. .. 105-125 volts, 25-60 cycles, 60 watts
Rating C .. 100-125/200-250 volts, 50-60 cycles, 55 watts

Frequency Ranges
"Broadcast" (A) ..... 540-1,720 kc
"Short Wave" (C) ..... 5,800-18,000 kc
Intermediate Frequency ..... 460 kc

R-F Alignment Frequencies
"Broadcast" (A) ..... 600 kc (osc.)
"Short Wave" (C) ..... 15,000 kc (osc., ant.)

MODEL 85T1
Alignment, Socket
Trimmers, Voltage

RCA MFG. CO., INC.

Alignment Procedure

Calibrate the tuning dial by adjusting dial pointer to the center horizontal line with the gang tuning-condenser plates in full-mesh position. This is a screw-driver adjustment.

Perform alignment in proper order, tabulated below, starting with No. 1 and following all operations across, then No. 2, etc. Adjustment locations are shown on figures 1 and 4.

Cathode-ray alignment is preferable; the connections to the chassis are shown on figure 3. If an output indicator is used, connect it across the loudspeaker voice-coil and advance the receiver volume control to full-volume position.

Connect the "low" output-terminal of the test oscillator to the receiver chassis for all alignment operations. Regulate the output of the test oscillator so that minimum signal is applied to the receiver to obtain an observable output indication. This will avoid a-v-c action.

The term "Dummy antenna" means the device which must be connected between the "high" test-oscillator output and the point of connection to the receiver in order to obtain ideal alignment. "No signal, 550-750 kc" means that the receiver should be tuned to a point between 550 and 750 kc where no signal or interference is received from a station or local (heterodyne) oscillator.

For further details on alignment, refer to booklet "RCA Victor Receiver Alignment."

Order of Alignment	Test Oscillator			Range-Selector	Receiver Dial Setting	Circuit to Adjust	Adjustment Symbols	Adjust to Obtain
	Connection to Receiver	Dummy Antenna	Frequency Setting					
1	6D6 I-F Grid Cap	.001 Mfd.	460 kc	"A" Left	No Signal 550-750 kc	2nd I-F Trans.	L9	Max. (peak)
2	6A7 Det. Grid Cap	.001 Mfd.	460 kc	"A" Left	No Signal 550-750 kc	1st I-F Trans.	L4 and L5	Max. (peak)
3	Ant. Lead (blue)	300 Ohms	15,000 kc	"C" Right	15,000 kc	"C" Osc.	C5	Max. (peak)†
4	Ant. Lead (blue)	300 Ohms	15,000 kc	"C" Right	Rock Through 15,000 kc	"C" Ant.	C1	Max. (peak)*‡
5	Ant. Lead (blue)	200 Mmfd.	600 kc	"A" Left	600 kc	"A" Osc.	L8	Max. (peak)

† Use maximum capacity peak if two peaks can be obtained.
* Use minimum capacity peak if two peaks can be obtained.
‡ After this adjustment, check for image signal by shifting receiver dial to 15,920 kc.

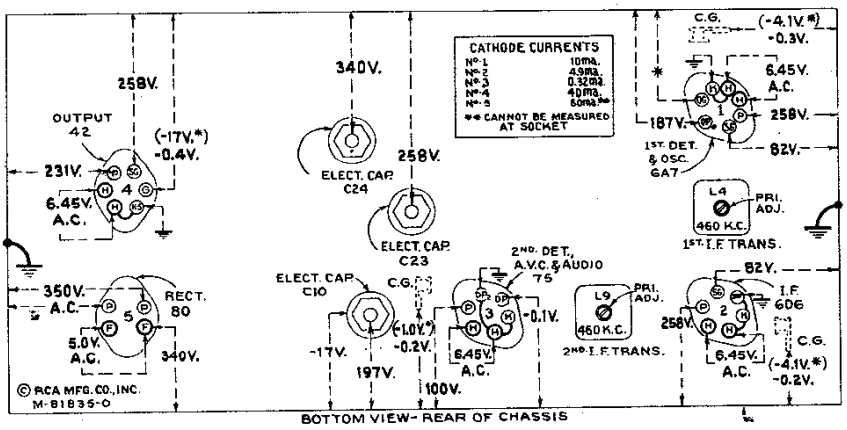


Figure 4—Radiotron Socket Voltages, Coil, and Trimmer Locations
Measured at 115 volts, 60-cycle supply—Tuned to approximately 1,000 kc ("Broadcast")—No signal being received—Volume control minimum

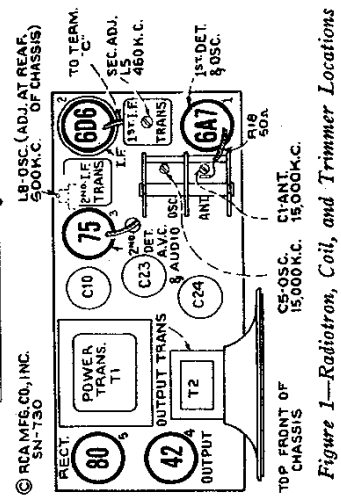


Figure 1—Radiotron, Coil, and Trimmer Locations

Note: Two voltage values are shown for some readings. The value shown in parentheses with asterisk (*) indicates operating conditions without voltmeter loading. The other value (generally lower) is the actual measured voltage and differs from the value shown in parentheses because of the additional loading of the voltmeter through the high series circuit resistance.

Voltage values as specified should hold within ±20% when the receiver is normally operative at its rated line voltage. To duplicate the conditions under which the 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 specified measured voltage. A-c voltages were measured with a corresponding a-c meter.