





BATTERY PERSONAL RECEIVER

MODEL BP-401 SERVICE DATA

1949 No. 3

GENERAL SERVICE DIVISION RCA VICTOR COMPANY LIMITED MONTREAL, QUE.

Electrical and Mechanical Specifications

Tuning Range 540-1600 kc	Batteries Required:			
Intermediate Frequency	Type of Battery Current Approx. Life			
Tube Complement	"A"—1.5 volts Consumption (Intermittent Service)			
1. RCA 1R5 Converter	"B"—67.5 volts \ 0.25 amp. 7 to 10 hrs.			
2. RCA 1U4 I.F. Amplifier	Eveready 467 8.5 ma. 40 to 60 hrs.			
3. RCA 1U5	Power Output:			
4. RCA 3S4 Output	Undistorted 0.05 watt			
Loudspeaker	Maximum 0.10 watt			
Size and type	Dimensions (overall) $6\frac{1}{4}$ " x $4\frac{3}{8}$ " x $3\frac{3}{8}$ "			
Voice coil impedance 11¾ ohms at 1000 cycles	Weight (with batteries) $3\frac{1}{2}$ lbs.			

REPLACEMENT PARTS FOR MODEL BP-401

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

Stock No.	Description List Price		Stock No.	Description	List Price
	CHASSIS ASSEMBLY			MISCELLANEOUS ASSEMBLIES	
70445 70444 73153 73962 73901 73963 39634 74093 73960 72815	Board - terminal board (1 contact) " - " " (5 contact) Capacitor - ceramic 4 MMF. (C8) " - " 33 " (C11) " - " 51 " (C2) " - " 75 " (C14) " - " 180 " (C16) " - " 1500 " (C20) " - " .01 Mfd. (C5) " - " .002 Mfd. (C15)		73967 73966 73937 70457 74016 70425 70452 73958	Bottom - case bottom (red) " - " " (brown) Baffle - speaker baffle & grille cloth Catch - spring catch assembly Center - case center complete Clip - spring clip for tuning knob Connector - loop connectors & eyelets	4
73961 70606 71928 70615 73964	"003 " (C9) "005 " (C18) "02 " (C17) "05 " (C10) " - Electrolytic (10 Mfd.) (C19)		73959 73950 73951	Fastener - push fastener to hold loop (Red)(Pkg. 2) Hinge - lid hinge L.H. (less mtg. studs) Hinge - lid hinge R.H. (less mtg. studs.)	
73947 70443 73955	Condenser - Variable (Cl-C3-C4) Coil - Oscillator coil (Ll-L2) Loop - Antenna loop complete with connectors (Less lid)(brown)		73969 74022 72229 73936	Handle - carrying handle (Red) Handle - " " (Brown) Holder - "A" battery holder assy. Knob - tuning knob	
73956 14076 36714	Loop - Antenna loop complete with connectors (less lid)(red) Resistor 820 ohms \(\frac{1}{4} \) watt (R11) \(\frac{1}{15},000 \) " " (R2)	-	73946 73970 70708 73925	" - volume control knob Link - Handle link (Pkg. 2) Lead - "B" battery lead complete Lid - case top lid complete with lid	
14138 3252 30652 12928 30931 30992	" 68,000 " " " (R5) " 100,000 " " " (R1) " 1 Megohm " " (R9) " 3.3 " " " (R4-R10) " 4.7 " " " (R3-R7) " 10 " " " (R8)		73926 73949 73938 73944	support & hinges (less loop)(brown) Lid - case top lid complete with lid support & hinges (less loop)(red) Nameplate - "RCA" for lid Panel - chrome & mahogany panel Screw - #2-56 x 3/16" to hold lid	
70436 73945 70442	Socket - tube socket (shielded) Switch - power switch (S1) Transformer - 1st I.F. (T1-C6-C7)		73943	hinges to face panel (Pkg. 2) Screw - #4-40 x 3/16" to fasten face panel to chassis (Pkg. 3) Screw - #6 x 1/2 self tapping, to mount	
70437 73948	" - 2nd I.F. (T2-C12-C13) Volume control (R6) SPEAKER ASSEMBLY (2 x 3)		73942	battery holder (Pkg. 3) Stud - Lid support stud (face panel end)(Pkg. 2)	
	Speaker Output transformer (T3)		73952 73953	Stud - L.H. lid hinge mounting stud (Pkg. 10) Stud - R.H. lid hinge mounting stud	
	, ,		70451	(Pkg. 10) Support - lid support complete	

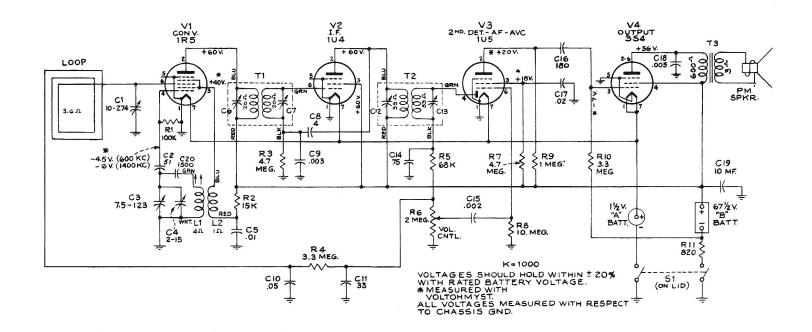


Fig. 1-Schematic Diagram

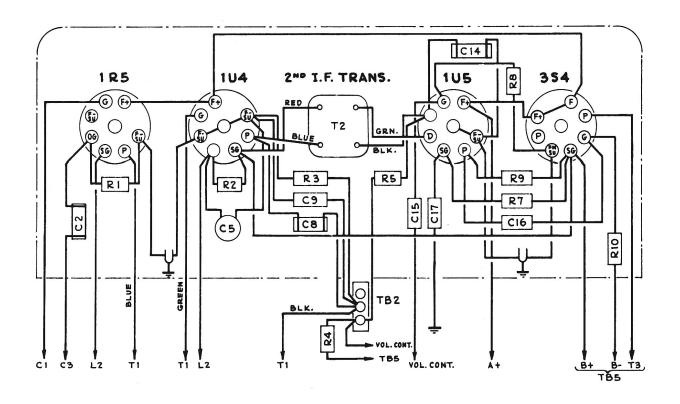


Fig. 2-Tube Shelf Wiring Diagram

Alignment Procedure

Output Meter.—Connect meter from top lug of TB5 (plate of 3S4) to ground. Turn volume control to maximum position.

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.

Alignment Shield.--It is necessary to use a shield during oscillator alignment.

Fig. 3 shows the modifications necessary to convert the center strip portion of a case into a convenient shield to be used as a substitute for the regular case center strip during oscillator alignment.

If a substitute case is not available, a shield may be improvised using a sheet of aluminum (DO NOT USE STEEL) to approximate the shielding effect of the case on the 1R5 tube, tuning condenser and oscillator coil.

Critical Lead Dress

- Dress blue, green, and black leads of second I.F. transformer as direct as possible. If excess lead exists, dress down side of socket and flat against chassis to transformer opening.
- Dress audio screen bypass capacitor (C17), underneath the chassis.
- Dress audio coupling capacitor (C15), and volume control lead, up and underneath the shelf supporting the output transformer.
- 4. Wire in the three capacitors pyramided behind the speaker with enough space at the end of the battery holder to allow holder to move when battery is replaced. Dress the ground leads of these capacitors to keep from shorting "+A" to chassis ground.
- Observe the outside foil connections on all paper capacitors, also the polarity of the electrolytic capacitor, C19.
- 6. Keep blue and red leads of output transformer above the mounting shelf.
- Dress leads to gang as far as possible from all metal parts.
- 8. Dress neutralization bypass capacitor, C9, as near metal chassis as possible.
- 9. Dress bypass C5 over bottom end of V2 (1U4), tube socket.
- Dress neutralization capacitor, C8, as near metal chassis as possible.

Alignment Chart

Order Of Alignment		TEST OSCILLATOR				Receiver	Circuit		
		Connect "HI" Side To	Connect "LO" Side To	Dummy Antenna	Frequency Setting	Dial Setting	To Adjust	Adjustment Symbol	Notes
in t	1	Connection lug of C! located on rear of gang in series with .01 mfd.							
I.F. Alignment	2	See step	Gnd.	.01	455 KC	1600 KC	I.F. Trans.	C-12, C-13	Max. Output
	3	Same	Same	Same	Same	Same	I.F. Trans.	C-6, C-7	Same
	4	Repeat step	s 2 and 3.						
R.F. Alignment	5	Antenna cou	pling loop.*		1400 KC	1400 KC (Rock gang)	Osc. †	C-4	Max. Output
	6	Sam	e			600 KC (Rock gang)	Osc. †	L-I	Max.Output
	7	Repeat step	s 5 and 6.						

^{*} Steps 5 and 6 require a coupling loop from the signal generator to feed a signal into the receiver loop located in the lid. This loop should be loosely coupled to the receiver loop antenna so as not to disturb the receiver loop inductance.

† ALIGNMENT SHIELD MUST BE USED. (See text.)

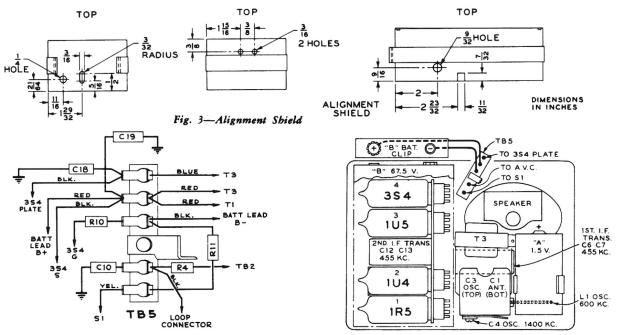


Fig. 4-Terminal Board Wiring

A rubber band should be placed around each tube for cushioning.

Fig. 5—Tube and Trimmer Locations

Replacement of Component Parts

I. To remove bottom cover:

- a. Depress locking spring clip through hole in top of case.
- b. With spring clip depressed, pull cover carefully out and up off the retaining lugs in the bottom of the case center

II. To replace batteries:

- a. Remove bottom cover.
- b. Remove, either or both, the "A" and "B" battery as may be necessary. The "B" battery snap fasteners can best be removed by inserting a screwdriver under the snap fastener strip and prying upward.

III. To remove the case center strip:

- a. Remove bottom cover.
- b. Remove one screw (A) on the inside at the handle end.
- c. Tilt case center strip and lift.

IV. To replace tubes:

- a. Remove bottom cover.
- b. Remove "B" battery.
- c. Remove case center strip.
- d. Remove and replace tubes as required.

V. To remove face panel from chassis plate:

- a. Remove dial knob (pull off).
- b. Remove bottom cover (I), batteries (II) and case center strip (III).
- c. Unsolder leads to loop connectors.
- d. Remove the four Phillips head screws (B) located at three corners and end close to 2nd I.F. transformer, which hold the chassis to face panel.
- e. The face panel may now be folded back into the case top lid.

VI. To remove speaker:

- a. Remove face panel (see item V).
- b. Unsolder voice coil leads.
- c. Remove two Phillips head screws (C) on chassis plate holding speaker.

VII. To remove output transformer:

- a. Remove speaker (see item VI).
- b. Unsolder transformer leads.
- Remove rivet (use bolt for replacement).
- d. Unsolder mounting lug.

VIII. To remove chassis subassemblies from chassis plate:

- a. Remove tubes (see item IV).
- b. Unsolder grounding strap (E) which connects tube shelf to chassis plate.
- c. Unsolder two wires which connect to speaker.
- d. Unsolder two wires attached to switch.
- e. Unsolder leads to loop connectors.
- f. Remove dial knob (pull off).
- g. Remove two screws (F) holding tube shelf to chassis
- h. Remove nut (G) between I.F. transformers.
- Remove screw (G) beneath the negative terminal of "A" battery holder, and also screw (G) adjacent to volume control below "A" battery holder.

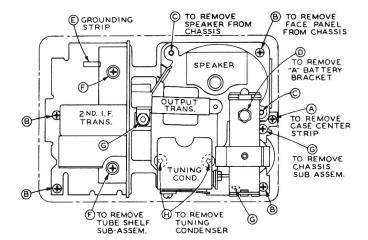


Fig. 6-Chassis Disassembly

IX. To remove volume control:

- a. Remove chassis subassembly from chassis plate (see item VIII).
- b. Unsolder the two leads to the "A" battery holder.
- c. Lift up the "A" battery holder by removing the one screw (C) in its base. This holder has a hinge action and must be lifted up and back to remove.
- d. Unsolder volume control leads.
- e. Remove volume control knob (attached to shaft with set
- f. Remove volume control assembly by bending back four

X. To remove oscillator coil:

- a. Same procedure and steps as covered in item VIII for removal of chassis subassembly plus the following.
- b. Unsolder oscillator coil leads.
- c. Remove coil by unsnapping spring mounting clips from

XI. To remove tuning condenser:

- a. Remove case center strip (III).
- b. Unsolder two leads and two ceramic capacitors (C2, C20) from tuning condenser.
- c. Remove tuning knob (pull off).
- d. Remove the two screws (H) (accessible through dial knob opening) which hold the tuning condenser to the chassis subassembly.

XII. To remove 1st I-F transformer:

- a. Remove chassis subassemblies (see item VIII).
- b. Unsolder four leads from 1st I-F transformer.
 1. Blue to screen of 1R5 tube.
 2. Green to grid of 1U4 tube.
 3. Red to B+ terminal of 5 lug terminal board TB5.
 4. Black to terminal board TB2.
- c. Unsolder and bend mounting lugs straight on the I-F transformer can.

XIII. To remove 2nd I-F transformer:

- a. Remove chassis subassemblies (see item VIII).
- b. Unsolder four leads from 2nd I-F transformer.
- Unsolder and bend mounting lugs straight on the I-F transformer can.

XIV. To remove loop assembly:

- a. Remove case center strip (see item III).
- b. Unsolder leads to loop connectors.
- c. Remove snap fasteners holding loop in cover.
- d. Carefully pry out on edge next to catch (opposite hinges).
- e. When reassembling press loop assembly into top lid on the side next to the connectors to cause the plastic projections on the loop assembly to engage in the detents in the top lid.

XV. To remove switch:

- a. Remove case center strip (III).
- b. Remove screw (I) which holds switch to chassis plate.
- c. Unsolder the two wires which connect to the switch.
- d. Unsolder switch from chassis plate.

XVI. To adjust latching of top lid:

a. The hinges are attached to the face panel with Phillips head screws (one to each hinge). The mounting holes of the hinges are sufficiently large to permit adjustment of the hinges when the mounting screws are loosened. Tighten screws after adjustment.

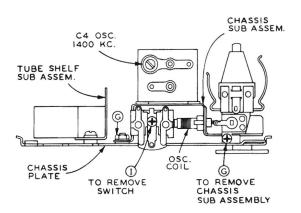


Fig. 7—Chassis Disassembly