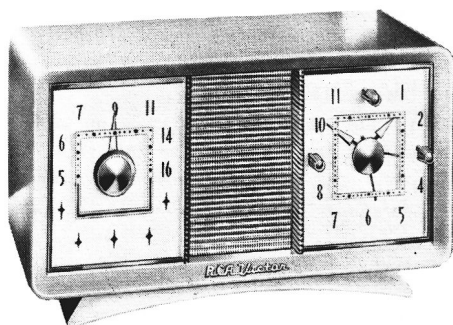




# RCA VICTOR



C528

AC-CLOCK RADIO RECEIVER

MODEL C528

SERVICE DATA

—1955 No. 14—

GENERAL SERVICE DEPARTMENT  
RCA VICTOR COMPANY, LTD  
MONTREAL, CANADA

## ELECTRICAL AND MECHANICAL SPECIFICATIONS

### FREQUENCY RANGES

Standard Broadcast ("A" Band) ..... 540-1,600 kc.

INTERMEDIATE FREQUENCY ..... 455 kc.

### TUBE COMPLEMENT

- (1) RCA-12BE6 ..... 1st Detector-Oscillator
- (2) RCA-12BA6 ..... IF Amplifier
- (3) RCA-12AV6 2nd Detector, A.V.C. and A-F Amplifier
- (4) RCA-50C5 ..... Output
- (5) RCA-35W4 ..... Rectifier

NOTE:—Do not operate on DC supply.

### POWER SUPPLY RATINGS

105-125 volts ..... 30 watts

### POWER OUTPUT RATING

Undistorted ..... 1.0 watt

Maximum ..... 1.5 watts

### LOUDSPEAKER

Type ..... 4-inch Permanent-Magnet Dynamic

Voice Coil Impedance ..... 3.2 ohms at 400 cycles

Tuning Drive Ratio ..... Direct Drive

## Operating Instructions

This instrument contains an electric clock mechanism which may be used to automatically actuate the self-contained A.C. radio. The radio may also be operated independently of the timer mechanism.

### CLOCK

Plug instrument into 115V A.C. outlet. The clock will begin to operate immediately. Set to correct time by turning the "Time Set" knob located at the right hand side of the clock face.

### RADIO

1. Turn "Radio" knob on clock from "OFF" to "ON" position. Adjust volume and tuning knobs as required after a

30 second warm-up. When operation of radio is no longer required, turn clock "Radio" knob to "OFF" position.

2. To have radio turned on automatically, set "Radio" knob to the "AUTO" position. Set "ALARM SET" knob to desired time. Set tuning and volume to the desired station and operating volume.

3. To start appliance automatically, set "RADIO" knob to "AUTO" position. Then set "ALARM SET" knob to the desired time.

NOTE: Radio or Appliance must be turned off manually.

## GENERAL INFORMATION

The printed circuit technique provides many practical advantages over conventional point to point wiring methods. Since it permits absolute uniformity, consistent high quality is inherent. Further circuit arrangements are now possible which with conventional wiring methods, were formally impossible. A reduction in the number of required components and simplification of servicing and alignment procedures, are additional features made possible by the use of printed circuits.

### TOOLS REQUIRED FOR SERVICING

1. Pencil type soldering iron with a small tip (35 watts or less)
2. Long-nose pliers.
3. Wire cutter.
4. Small stiff wire brush (for solder removal).
5. 60-40 low temperature rosin core solder.
6. Tinned jumper wires.
7. Metal pick (soldering aid).

WARNING:—Application of excessive heat when replacing components may damage the "printed" circuit.

### SERVICING THE PRINTED CIRCUIT

The individual components that make up the printed circuit board should be replaced independently, when necessary. When removing and replacing components, every possible precaution should be taken to prevent damage to the connecting strips. In some cases, a magnifying glass will assist in locating very small breaks in the wiring. Soldering should also be made with care to prevent excess solder from causing shorts. When taking voltages, resistance, and continuity measurements of coils, from the wiring side of the board, a needle point probe should be used since the varnish coating must be "broken through" to make contact.

The tube pin numbers must be counted in a counter-clockwise direction since the sockets on the board are mounted upright on the wiring side of the board. The clockwise direction is the usual practice when the socket is viewed from the bottom.

The absence of a lug hole in the board at the key position, when viewing the wiring side indicates the location of the socket key when the socket is mounted on the

## GENERAL INFORMATION (CONT'D)

component side of the board.

**AVOID DAMAGE TO COPPER FOIL**

If one of the connecting copper strips on the printed circuit board is cracked or broken it may be repaired easily. A short length of tinned copper wire should be placed across the break. The joint is then soldered by flowing solder over the break and the length of wire. Care should be taken to prevent solder from shorting one connecting strip to another and the use of excessive heat in making the solder connections. Excessive solder may cause a short or an intermittent trouble to occur later, which may be difficult to locate.

**AVOID DAMAGE TO PRINTED CIRCUIT BOARD**

Excessive pressure to the printed circuit board or components applied during the removal or installation may cause the board to crack or break. The printed circuit board itself is sturdy in construction as well as mounting but without the proper care; it may be damaged.

**AVOID OVERHEATING**

Excessive heat that is applied through the use of a solder iron for longer periods than is necessary or by using a higher wattage iron than is recommended, may cause the bond between the board and the copper foil to separate. This will necessitate the replacement or repair of the foil connection. A soldering iron of 35 watts or less should be used to avoid overheating.

**REPLACEMENT OF I-F TRANSFORMERS**

In order to remove an I-F transformer, apply only enough heat to the terminals and can supports to melt the solder so that the terminals may be pushed away from the connecting strip.

When installing the I-F transformer can, the terminals and can support should be positioned to contact the connecting strips, then solder at these points.

**REPAIR AND/OR REPLACEMENT OF TUBE SOCKETS**

Intermittent conditions of the tube socket pin contacts can usually be repaired by bending the contacts so they

grasp the tube pin better. This can be accomplished through the use of a small metal pick or pointed tool that may be inserted between the socket hole and the socket contact.

The tube socket may be of a miniature type with an additional grounding lug extending to the tubular center shield (center connection) at the bottom of the socket.

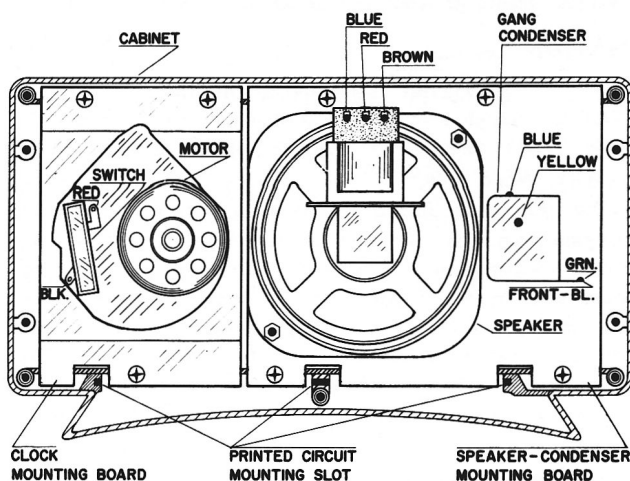
In order to remove the tube socket, apply heat to the socket terminals and, using a pointed tool or knife blade, pry the terminal up from the connecting strip. At this point, unsolder and pry up the center pin ground connection. (DO NOT REMOVE THE TUBE SHIELD GROUNDING STRIP).

A new tube socket may present difficulties in inserting the tube lugs through the holes in the board due to the very close tolerance. Do not attempt to apply too much pressure to the socket terminals while forcing them through the holes in the board or the board will break. Enlarge the holes slightly, if necessary, with a pen knife to the point that the socket terminals can be inserted without any excessive pressure.

To install a new socket, bend the socket terminal and center pin ground and position the socket so that the terminals and ground contact the proper connection strip, and then solder in place.

**REPLACING COMPONENTS**

These parts can be removed by applying heat to the point on the connecting strip where the leads come through the board and lifting out the part. If the leads of the component are bent over, the component may be removed by applying the soldering iron to the soldered joints and "wiggle" the component up until the leads clear the hole. If the heat is removed just before the lead clears the hole in the board, the hole will be free from solder, facilitating replacement. The new part can then be inserted into the holes in the connecting strip. Keep the leads as short as possible, bend the leads over  $\frac{1}{8}$ " and solder in place . . . If a thin film of solder remains over the hole through the board after removing the component, pierce the film with the lead from the replacement component after heating the solder film with the soldering iron.



Chassis Layout (Back View)

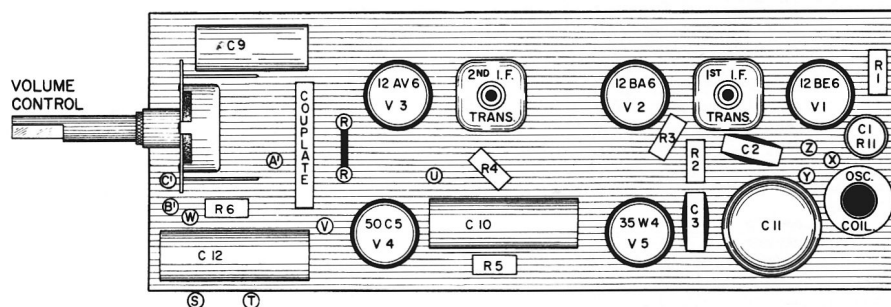
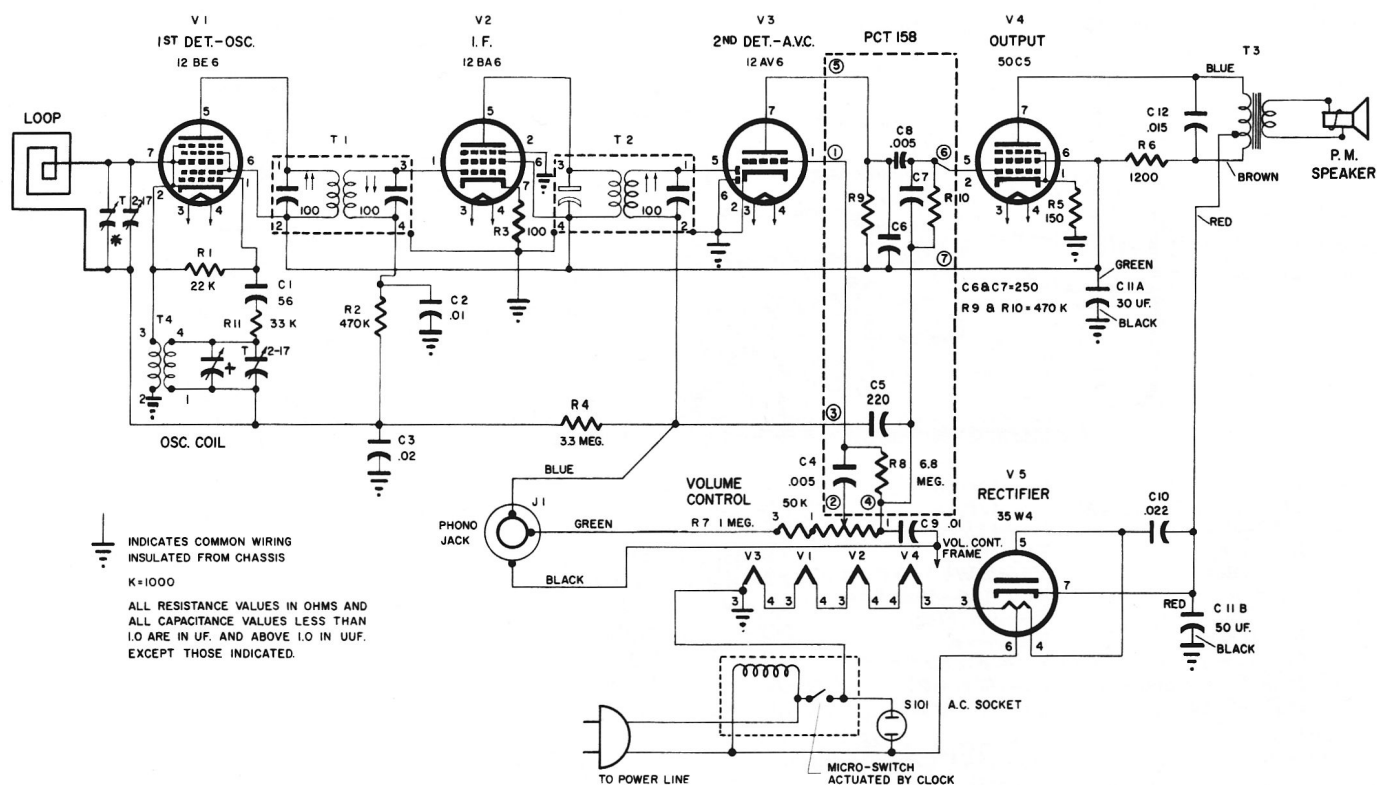
**CLOCK MECHANISM SERVICE**

All clock mechanisms which are defective or require general repair, should be sent to the Service Depots listed with the following information:

"If the clock is within the warranty period, the dealer is to state the date of purchase by the customer, and the letter or purchase order should be marked "In Warranty"."

**SERVICE DEPOTS**

For Service Depot nearest your district, please refer to Radio Service Letter Issue No. 5017.



Chassis Layout (Top View)

## ALIGNMENT PROCEDURE

Before aligning the receiver, set the gang condenser for maximum capacity and then set the dial knob opposite 56 on left hand end of the dial.

When only a portion of the circuit is to be aligned select the required portion and perform all the remaining steps.

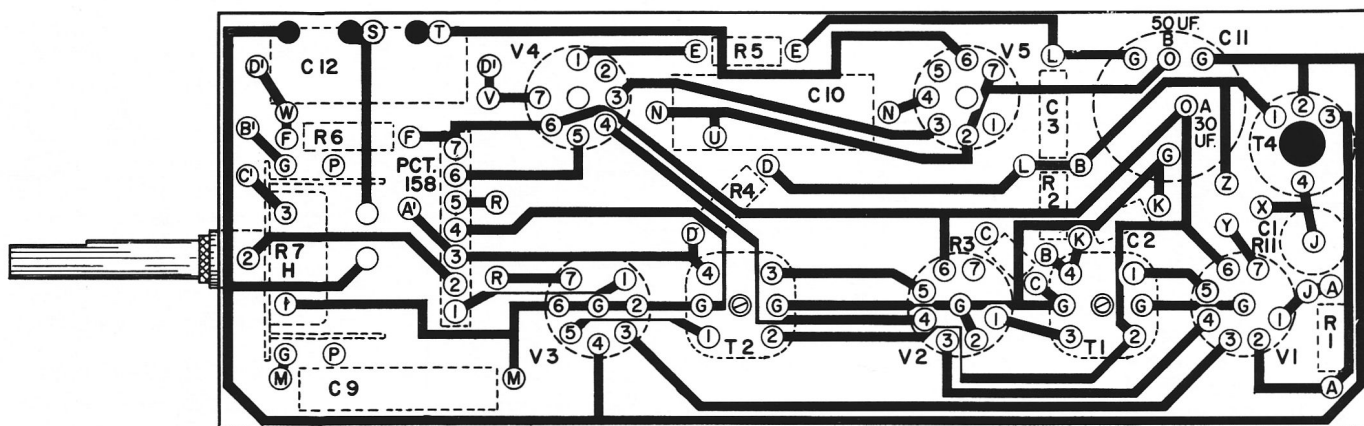
In order to obtain best results, it is advisable to align the 455 KC I.F.'s with the help of a cathode ray oscilloscope. The

scope should be connected across the volume control. If this equipment is not available, use the method outlined below in the alignment chart.

NOTE: If the test-oscillator is ac/dc operated, it may be necessary to use an isolation transformer (117 v./117 v. for the receiver during alignment.)

## Alignment Chart

TEST OSCILLATOR					RECEIVER				
Order of Alignment	Connect "HI" Side To	Connect "LO" Side To	Dummy Antenna	Frequency Setting	Range Selector	Receiver Dial-Setting	Circuit To Adjust	Adjustment Symbols	Notes
I.F. ALIGNMENT	1 12BA6 Pin #1	Gnd.	.1 Mfd	455 KC		"HI" End	2nd I.F. Trans.	Top cores	Max.Out.
	2 12BE6 Pin #7	Same	Same	Same	Same	Same	1st I.F. Trans.	Top cores	Same
S.B. ALIGNMENT	3 Radiate signal			1600 KC		1600 KC	Osc.	*	Same
	4 Same			1500 KC		1500 KC	Osc.	+	Same
	5 Repeat Steps 3 & 4.								



- |                       |                  |                    |                  |                  |
|-----------------------|------------------|--------------------|------------------|------------------|
| T4—Osc. Coil          | V1—12BE6         | C6—250 UUF.        | FF—R6 — 1200     | OO—C11 —         |
| ST—Power Supply (AC)  | V2—12BA6         | C7—250 UUF.        | G—Ground         | A—30UF           |
| XYZ—Gang Cond         | V3—12AV6         | C8—.005 UF.        | H—R7 — 1 Meg.    | B—50UF           |
| X—Green               | V4—50C5          | T1—1st I.F. Trans. | JJ—C18 R11       | P—Tie Points     |
| Y—Yellow              | V5—35W4          | T2—2nd I.F. Trans. | C18 — 56 UUF     | QQ—S1            |
| Z—Blue                | PCT 158—Couplate | AA—R1 — 22K        | —R11 — 33K       | RR—Jumper        |
| E1—Blue               | R8—6.8 Meg.      | BB—R2 — 470K       | KK—C2 — .01 UF   | UVM—Sprkr. Trans |
| F1—Black              | R9—470K          | CC—R3 — 100        | LL—C3 — .02 UF   | U—Red            |
| G1—Green              | R10—470K         | DD—R4 — 3.3 Meg.   | MM—C9 — .01 UF   | V—Blue           |
| A, B, C,—Phono Socket | C4—.005 UF.      | EE—R5 — 150        | NN—C10 — .022 UF | W—Brown          |
| D,D.—C-12             | C5—220 UUF.      |                    |                  |                  |

## REPLACEMENT PARTS LIST FOR C528

**Insist on Genuine Factory Tested Parts, which are readily identified and may be purchased from Authorized Dealers.**

SYMBOL #	STOCK #	DESCRIPTION	SYMBOL #	STOCK #	DESCRIPTION
C-1	S-4523	Capacitor - 56 mmf. /33 ohms		S-20636	Cabinet - Blue Cabinet
C-2		Capacitor - .01 mfd. 500 V		S-20658	Cabinet - Brown Cabinet
C-3		Capacitor - .02 mfd. 200 V		S-20640	Cabinet - Burgundy Cabinet
C-4		Capacitor - .005 mfd. - in couplate		S-20639	Cabinet - Green Cabinet
		PCT158		S-20641	Cabinet - Ivory Cabinet
C-5		Capacitor - 220 mfd. - in couplate		S-20637	Cabinet - Red Cabinet
		PCT158		S-20642	Cabinet - White Cabinet
C-6		Capacitor		S-20638	Cabinet - Yellow Cabinet
C-7		Capacitor		S-6858	Cord - Power cord
C-8		Capacitor - .005 mfd. -in PCT158			
C-9	'S-20391	Capacitor - .01 mfd. - 500 V	'S-20651	Dial - Clock Dial	
C-10	73562	Capacitor - .022 mfd. - 400 V	'S-20652	Dial - Radio Dial	
C-11	a&b 'S-20502	Capacitor - electrolytic - 50 -30 mfd. 150 V			
C-12		Capacitor - .015 mfd. - 400 V	'S-20702	Frame - Cabinet frame	
	'S-20500	Capacitor - Variable Capacitor	'S-20655	Grill - Speaker Grill	
PCT158	S-20560	Couplate - PCT 158			
	S-20666	Board - Printed Circuit Board	S-20198	Knob Assembly - Crystal knobs for clock (all cabinets except white.)	
R-1		Resistor - 22,000 ohms 1/2 w	S-20015	Knob Assembly - Black knobs for clock (K. White only.)	
R-2		Resistor -270,000 ohms 1/2 w	S-20618	Knob Assembly - Tuning	
R-3		Resistor - 100 ohms 1/2 w	S-20493	Knob Assembly - Volume Control - Blue	
R-4		Resistor - 3.3 megohms 1/2 w	S-20492	Knob Assembly - Volume Control - Brown	
R-5		Resistor - 150 ohms 1/2 w	S-20497	Knob Assembly - Volume Control - Burgundy	
R-6		Resistor - 1,200 ohms 1 w	S-20496	Knob Assembly - Volume Control - Green	
R-7	'S-20617	Control - Volume Control - 1 megohm	S-20498	Knob Assembly - Volume Control - Ivory	
R-8		Resistor - 6.8 megohm	S-20494	Knob Assembly - Volume Control - Red	
R-9		Resistor - 470 K ohms. in couplate PCS 158	S-20499	Knob Assembly - Volume Control - White	
R-10		Resistor - 470 K ohms. in couplate PCS 158	S-20495	Knob Assembly - Volume Control - Yellow	
R-11	S-4523	Capacitor - 33 ohms, 56 mmf.	S-5661	Monogram RCA Victor	
T-1	S-20504	Transformer - 1st I. F. Transformer	S-20656	Pointer - Station Selector Pointer	
T-2	S-20505	Transformer - 2nd I. F. Transformer			
T-3	S-20631	Transformer - Audio Output Transformer	S-20632	Timer - Clock timer - 60 cy - (all cabinets except white)	
T-4	S-20506	Transformer - Oscillator Coil	S-20633	Timer - Clock timer - 25 cy - (all cabinets except white)	
		<b>SPEAKER ASSEMBLY</b>	S-20634	Timer - Clock timer - 60 cy - (on white cabinet only.)	
	'S-20491	Speaker - 4" P.M. complete with cone and voice coil.	S-20635	Timer - Clock timer - 25 cy - (on white cabinet only.)	
		<b>MISCELLANEOUS ASSEMBLY</b>			
	'S-20650	Assembly - Back Cover Assembly			

**Only items listed under stock numbers are available as Replacement Parts.**

**All parts subject to change or withdrawal without notice.**