PHILIPS
SERVICE NOTES

RADIO RECEIVER CMB1000

SPECIFICATIONS

Model CMB 1000 is a five tube superheterodyne receiver designed for battery operation. Two tuning ranges provide a standard broadcast and a short wave band.

PHILIPS TUBES:

Converter 1LC6, I.F. Amplifier 1LC5, Diode Detector, A.V.C. and 1st A.F. Amplifier 1LD5, Audio Power Amplifiers (two) 1LB4.

RANGE SWITCH POSITIONS & TUNING RANGES:

1st. Receiver "OFF" position.
2nd. Standard broadcast range 535 kc to 1740 kc.
3rd. Short Wave range 5.8 Mc to 18.2 Mc.

INTERMEDIATE FREQUENCY: 455 kc.

AUDIO POWER OUTPUT:

200 milliwatts undistorted.
400 milliwatts maximum.

LOUDSPEAKER:

The speaker is a permanent magnet dynamic type. Voice Coil D.C. resistance = 3.4 ohms. Impedance at 400 cycles = 3.7 ohms.

CONTROLS: (left to right - looking at front)

1. Volume Control
2. Tone Control Switch
3. Wave Range and On-Off Switch
4. Tuning Control

ANTENNA AND GROUND

For optimum results, a good outdoor antenna is necessary. A secure ground connection should be made to a cold water pipe, or to a metal rod driven into damp ground to a depth of at least 6 feet.

POWER SOURCE

A 1½ volt "A" battery and a 90 volt "B" battery or their equivalent.

BATTERY DRAIN

The "A" battery drain is 0.25 amperes and the "B" battery drain 14 milliamperes.

BATTERIES

The receiver battery cable is supplied with standard battery plugs for use with the plug-in type batteries.

The following table shows the various combinations of batteries that may be used with this recriver.

	Eveready	Burgess	General	Required
A-B Pack	748	1860	6014	1
A Standard	741	8FP1	148	1
B Standard	842 or 762	5308	3021	2

It is recommended that the "A" battery be replaced when the operating voltage drops below 0.9 volts. The "B" battery should be replaced when the 90 volt supply drops below 54 volts.

CABINET DIMENSIONS

Width	15½ inches	
Height	10 inches	
Depth	8 inches	(including knobs)

SERVICE DATA

WAVE RANGE SWITCH

The schematic diagram shows each section of this switch in a straight line form. The short stator contacts are represented as solid squares, the long contacts as solid rectangles, and the rotor contacts as bars. All sections are shown in the extreme counterclockwise (off) position of the switch. As the switch rotates clockwise, the rotor contacts move upwards through the second and third switch positions as indicated above. The exact location of each stator is shown on a front view drawing of a switch wafer on the schematic diagram.

TO REMOVE CHASSIS

1. Remove control knobs.
2. Disconnect plugs from batteries.
3. Remove antenna and ground connections from chassis.
4. Unsolder speaker leads if it is necessary to completely remove the chassis.
5. Remove the two screws securing the vertical arms to the front of the cabinet and the two screws securing the chassis, then slide the chassis out of the cabinet.

ALIGNMENT OF RECEIVER

With the variable capacitor fully closed, adjust the center of the dial pointer to the "alignment mark" on the low frequency end of the dial scale. Set the tone switch to position No. 2. Turn the volume control to the maximum (full clockwise) position.

EQUIPMENT REQUIRED

Output Indication: A high resistance A.C. voltmeter and an output transformer.

Signal Generator: A generator capable of supplying modulated signals between 450 kc and 20 Mc.

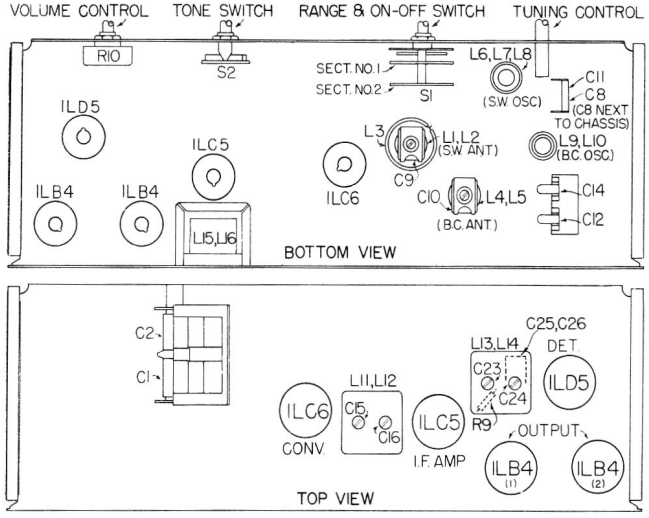
Equipment Connections and Alignment Procedure

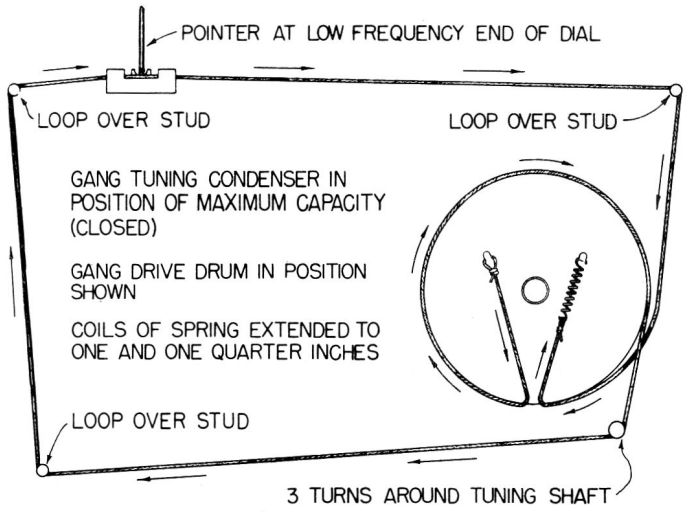
OUTPUT INDICATOR:

Connect the A.C. voltmeter across the voice coil of the speaker. During alignment, keep the output below 1/2 volt across the voice coil. If the meter is not sensitive enough, connect the secondary of an output transformer across the speaker voice coil, and connect the A.C. voltmeter across the primary. When using the latter method, the maximum output reading should be kept below 10 A.C. volts. When the output indication increases during alignment procedure, regulate the signal generator attenuator to restore the original indication.

SIGNAL GENERATOR:

Connect the output lead of the signal generator to the points indicated in the chart below, in series with the specified resistor or capacitor. Connect the return lead of the signal generator to the ground post of the receiver.





ALIGNMENT PROCEDURE

SIGNAL GENERATOR			RECEIVER			
Operation Steps	Output Connections to Receiver	Frequency	Band Switch	Tuning Capacitor	See Notes	Adjust in stated order for Maximum Output
1	To 1LC5 Control grid (Pin 6) through .05 capacitor	455 kc	Pos. 2	Min.		2nd I.F. Trimmers C24 - C23
2	To Stator of C1 through .05 uF capacitor	455 kc	Pos. 2	Min.	A	1st I.F. Trimmers C16 - C15
3	To Antenna Contact through 100 uuF capacitor*	1600 kc	Pos. 2	1600 kc		B.C. Osc. Trimmer C12 B.C. Ant. Trimmer C10
4	To Antenna Contact through 100 uuF Capacitor*	600 kc	Pos. 2	600 kc	B	B.C. Osc. Padder C14
5	To Antenna Contact through a 400 ohm Resistor*	17 Mc	Pos. 3	17 Mc	C	S.W. Osc. Trimmer C11 S.W. Ant. Trimmer C9
6	To Antenna Contact through a 400 ohm Resistor*	6 Mc	Pos. 3	6 Mc	D	S.W. Osc. Padder C8 S.W. Ant. Coil Loop L3 (adjust loop position)

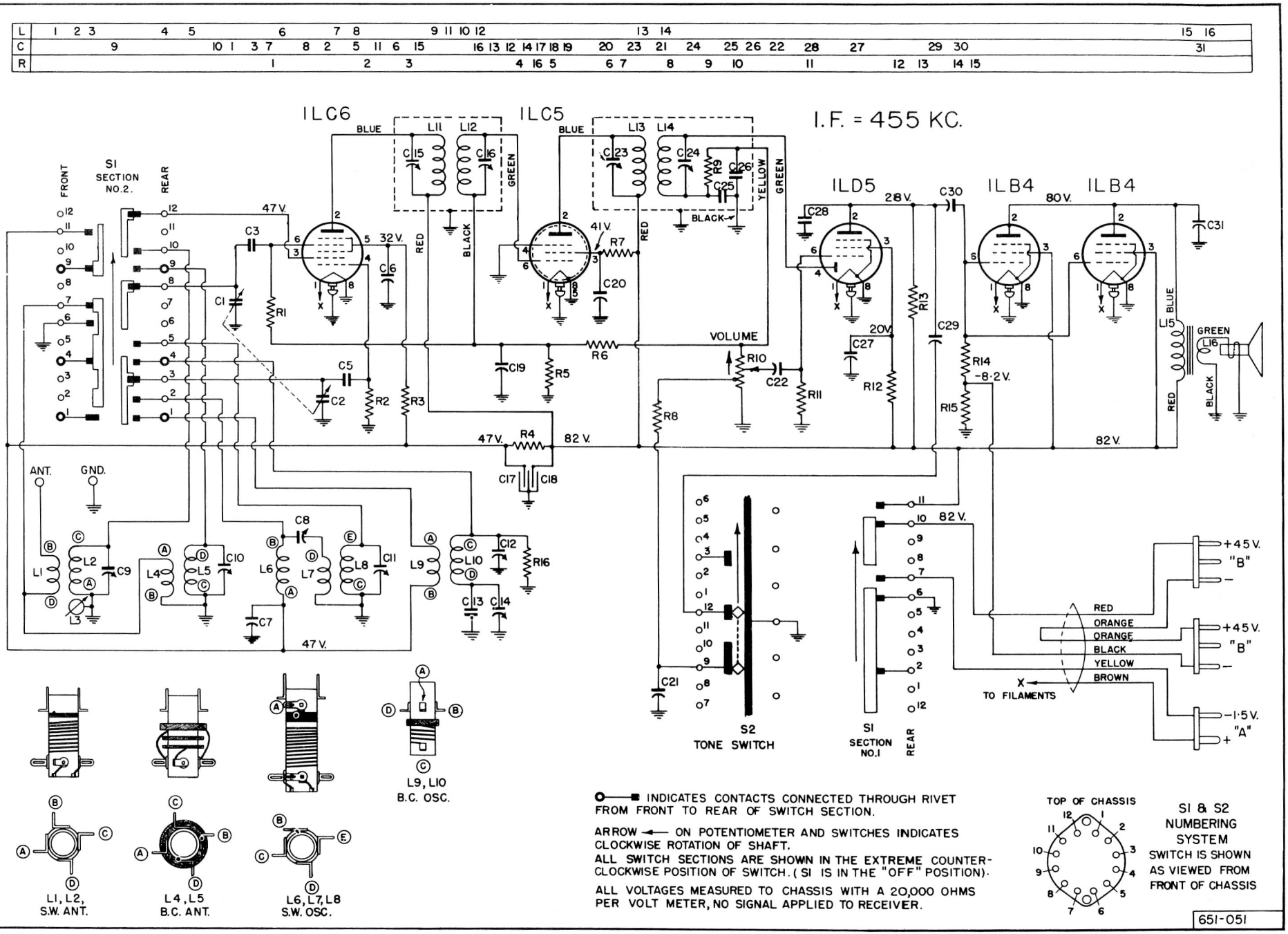
* = or a Standard dummy antenna with an additional 200 uuF condenser in series.

Note A: After completing operation No. 2, carefully readjust C24 - C23 for maximum output.

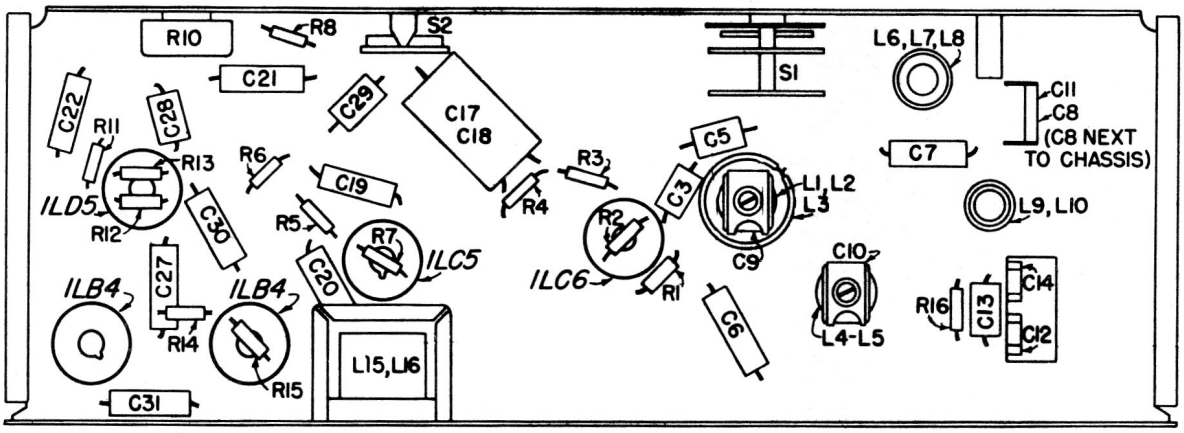
Note B: After completing operation No. 4, return to 1600 kc and repeat operation No. 3, then repeat operation No. 4.

Note C: Unscrew S.W. Oscillator Trimmer C11 approximately 2 turns from tight. Then turn adjustment clockwise until first output peak is obtained. Make adjustments using this peak.

Note D: Adjust the position of the loop with a non-metallic rod. Return to 17 Mc and rock the gang tuning capacitor slowly back and forth while readjusting the S.W. Antenna Trimmer C9 for maximum output.


L 1 2 3 4 5 6 7 8 9 11 10 12 13 14 15 16
C 9 10 1 3 7 8 2 5 11 6 15 16 13 12 14 17 18 19 20 23 21 24 25 26 22 28 27 29 30 31
R 1 2 3 4 16 5 6 7 8 9 10 11 12 13 14 15
I.F. = 455 KC.
ILC6
ILC5
ILD5
ILB4
ILB4
S1 SECTION NO.2.
FRONT
REAR
BLUE
GREEN
RED
BLACK
YELLOW
47 V.
32 V.
41 V.
28 V.
80 V.
20 V.
82 V.
-8·2 V.
VOLUME
ANT.
GND.
TONE SWITCH
S2
S1 SECTION NO.1
REAR
TO FILAMENTS
+45 V. "B"
+45 V. "B"
-1·5 V. "A"
L1, L2, S.W. ANT.
L4, L5 B.C. ANT.
L6, L7, L8 S.W. OSC.
L9, L10 B.C. OSC.
INDICATES CONTACTS CONNECTED THROUGH RIVET FROM FRONT TO REAR OF SWITCH SECTION.
ARROW ← ON POTENTIOMETER AND SWITCHES INDICATES CLOCKWISE ROTATION OF SHAFT.
ALL SWITCH SECTIONS ARE SHOWN IN THE EXTREME COUNTER-CLOCKWISE POSITION OF SWITCH. (S1 IS IN THE "OFF" POSITION).
ALL VOLTAGES MEASURED TO CHASSIS WITH A 20,000 OHMS PER VOLT METER, NO SIGNAL APPLIED TO RECEIVER.
TOP OF CHASSIS
S1 & S2 NUMBERING SYSTEM
SWITCH IS SHOWN AS VIEWED FROM FRONT OF CHASSIS
651-051

LOCATION OF PARTS



REPLACEMENT PARTS

For dependable repairs, use genuine Philips replacement parts. When ordering always give description and code number and model of receiver.

RESISTORS

Symbol	Value	Description	Code No.	List Price
R1,R13	1 Megohm	1/2 watt	501-161	.20
R2	220,000 ohms ±10%	1/2 watt	501-153	.20
R3	22,000 ohms ±10%	1/2 watt	501-141	.20
R4	15,000 ohms ±10%	1/2 watt	501-139	.20
R5	3.3 Megohms	1/2 watt	501-167	.20
R6	4.7 Megohms	1/2 watt	501-169	.20
R7	180,000 ohms ±10%	1/2 watt	501-152	.20
R8,R9	100,000 ohms	1/2 watt	501-149	.20
R10	1 Megohm	Volume Control	505-013	2.00
R11	10 Megohms	1/2 watt	501-173	.20
R12	5.6 Megohms ±10%	1/2 watt	501-170	.20
R14	2.2 Megohms	1/2 watt	501-165	.20
R15	560 ohms ±10%	1/2 watt	501-122	.20
R16	39,000 ohms	1/2 watt	501-144	.20

CAPACITORS

C1,C2	13-499 µµF	Variable 2-Gang	510-014	3.
C3	500 µµF ±10%	Mica Moulded	512-021	.
C5	30 µµF ±10%	Mica Moulded	512-005	.35
C6,C7,C20,C22	.01 µF	400V.	515-408	.30
C8	10-160 µµF	Padder	511-005	.35
C9,C10,C11,C12	3-35 µµF	Trimmer	511-004	.35
C13	330 µµF ±10%	Mica Moulded	512-042	.35
C14	20-270 µµF	Padder	511-006	.50
C15,C16	100-150 µµF	Dual Trimmer	511-002	.75
C17,C18	20 + 20 µF	150V.	516-025	1.45
C19	.02 µF	200V.	515-208	.25
C21,C27,C30,C31	.005 µF	600V.	515-602	.35
C23,C24	20-150 µµF	Dual Trimmer	511-003	.75
C25,C26	100 µµF	By-Pass Sections		
C28	30 µµF ±10%	Mica Moulded	512-005	.35
C29	400 µµF ±10%	Mica Moulded	512-009	.35

TRANSFORMERS & COILS

L1,L2	S.W. Antenna Coil	070-085	
L3	Shorted Loop	120-219	1.00
L4,L5	B.C. Antenna Coil	070-077	1.45
L6,L7,L8	S.W. Oscillator Coil	070-087	1.25
L9,L10	B.C. Oscillator Coil	070-088	1.00
L11,L12	1st I.F. Transformer	060-034	2.60
L13,L14	2nd I.F. Transformer	060-035	2.60
L15,L16	Audio Output Transformer	050-061	2.25

MISCELLANEOUS

Description	Part No.	List Price	Description	Part No.	List Price
Antenna-Ground Terminal Strip	571-006	.15	Dial Drive Cord (per foot)	395-003	.03
Battery Cable Assembly	100-202	2.00	Dial Drive Cord Spring	310-005	.05
Battery Plug, 2-Prong "A"	571-103	.10	Knob	572-027	.20
Battery Plug, 3-Prong "B"	571-104	.10	Knob with Dot	572-028	.20
Cabinet, Plastic	030-092	8.00	Range Switch	080-062	1.75
Chassis, Mounting Grommets (Rubber)	632-009	.06	Speaker 6" P.M.	041-029	7.00
Chassis, Mounting Cushion (Rubber)	325-003	.10	Speaker Baffle	303-122	.50
Dial Scale	331-064	1.50	Speaker Grille Cloth 12½ x 6½" (per yard)	627-028	
Dial Scale Mounting Bracket R.H.	300-440	.05	Tone Switch	080-056	1.45
Dial Scale Mounting Bracket L.H.	300-441	.05	Tube Socket Loctal	570-002	.18
Dial Background..	332-540	.15	Tuning Shaft	310-104	.35
Dial Pointer	110-197	.25			

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Prices subject to change without notice