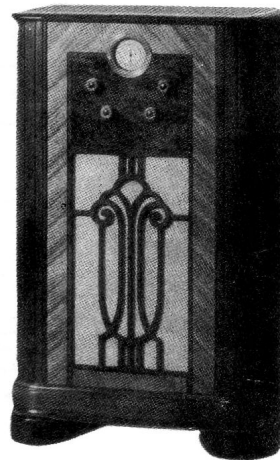
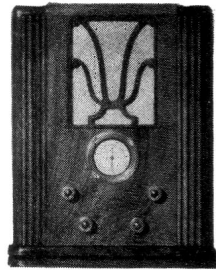


Models 502, 503

Battery Operated Radio Receivers



Specifications

Frequency Range:
540 to 1650 K.C.

I.F.:
463 K.C.

Tubes:	Type	Function
	1C6	1st Detector and Oscillator
	34	1st I.F. Amplifier
	34	2nd I.F. Amplifier
	32	2nd Detector
	33	Output

Power Supply:

"A" Supply—2 volts, 0.56 amps.
"B" Supply—135 volts, 26. M.A.
"C" Supply—15 volts, 2.2 M.A.

Controls:

From left to right—Volume control; tone control; battery switch; tuning control.

Cabinets:

502 Mantel model.
503 Console model.

The schematic diagram illustrates the internal wiring of a portable electronic device, organized into functional sections:

- Power Section (Right Side):** Features three battery terminals labeled "ON BATTERY TERMINAL - STRIP CONNECT FLEXIBLE LEAD AS FOLLOWS":
 - 1- AIR CELL BATT (2V)
 - 2- STORAGE BATT (2V)
 - 3- DRY CELLS (3V)
 The circuit includes resistors R1 through R25 and capacitors C1 through C27. A switch S1 selects between +2V and +15V inputs. A common ground connection is labeled "GRND".
- Oscillator Section (Top Left):** Labeled "IC6 1ST DET. & OSC.", it contains components L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, L15, L16, L17, L18, L19, L20, L21, L22, L23, L24, L25, L26, L27, L28, L29, L30, L31, L32, L33, L34, L35, L36, L37, L38, L39, L40, L41, L42, L43, L44, L45, L46, L47, L48, L49, L50, L51, L52, L53, L54, L55, L56, L57, L58, L59, L60, L61, L62, L63, L64, L65, L66, L67, L68, L69, L70, L71, L72, L73, L74, L75, L76, L77, L78, L79, L80, L81, L82, L83, L84, L85, L86, L87, L88, L89, L90, L91, L92, L93, L94, L95, L96, L97, L98, L99, L100.
- Detector Section (Middle Left):** Labeled "IC5 1ST I.F.", it contains components L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, L15, L16, L17, L18, L19, L20, L21, L22, L23, L24, L25, L26, L27, L28, L29, L30, L31, L32, L33, L34, L35, L36, L37, L38, L39, L40, L41, L42, L43, L44, L45, L46, L47, L48, L49, L50, L51, L52, L53, L54, L55, L56, L57, L58, L59, L60, L61, L62, L63, L64, L65, L66, L67, L68, L69, L70, L71, L72, L73, L74, L75, L76, L77, L78, L79, L80, L81, L82, L83, L84, L85, L86, L87, L88, L89, L90, L91, L92, L93, L94, L95, L96, L97, L98, L99, L100.
- Output Section (Bottom Left):** Labeled "IC4 2ND DET.", it contains components L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, L15, L16, L17, L18, L19, L20, L21, L22, L23, L24, L25, L26, L27, L28, L29, L30, L31, L32, L33, L34, L35, L36, L37, L38, L39, L40, L41, L42, L43, L44, L45, L46, L47, L48, L49, L50, L51, L52, L53, L54, L55, L56, L57, L58, L59, L60, L61, L62, L63, L64, L65, L66, L67, L68, L69, L70, L71, L72, L73, L74, L75, L76, L77, L78, L79, L80, L81, L82, L83, L84, L85, L86, L87, L88, L89, L90, L91, L92, L93, L94, L95, L96, L97, L98, L99, L100.
- Control Section (Far Left):** Includes a potentiometer P1, a switch S1, and a relay K1.

The diagram uses standard electronic symbols for resistors (R), capacitors (C), inductors (L), diodes (D), transistors (Q), integrated circuits (IC), and other components. Wires are color-coded as indicated by labels like RED, BLUE, GRN, YEL, BLK, BRN, WHI, etc.

—Schematic Diagram, Models 502-503 Battery-Operated Receivers.

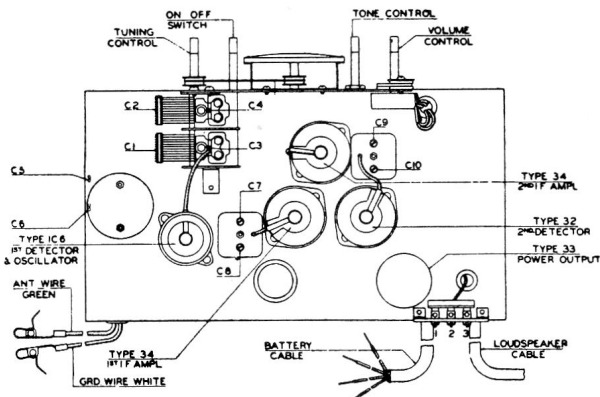
REPLACEMENT PARTS LIST

CAPACITORS:—

	Part No.
C-1 R.F. Transformer Tuning.....	K-1383
C-2 Oscillator Tuning.....	
C-3 Trimmer for R.F. Transformer Tuning.....	
C-4 Trimmer for Oscillator Tuning.....	
C-5 Trap circuit trimmer; 60-250 mmf.....	K-1567-2
C-6 Oscillator lag; 200-525 mmf.....	
C-7 1st I.F. Transformer primary trimmer; 35-130 mmf.....	K-1368-4
C-8 1st I.F. Transformer secondary trimmer; 35-130 mmf.....	
C-9 2nd I.F. Transformer primary trimmer; 35-130 mmf.....	K-1368-4
C-10 2nd I.F. Transformer secondary trimmer; 35-130 mmf.....	
C-11 Bias by-pass; .05 mf; 175 volts.....	K-2227-8
C-12 Oscillator plate blocking; .05 mf; 175 volts.....	K-2227-8
C-13 Oscillator grid blocking; 100 mmf; mica.....	K-1611-2
C-14 Plate Filter; .05 mf; 175 volts.....	K-2227-8
C-15 Screen filter; .05 mf; 175 volts.....	K-2227-8
C-16 D.C. Blocking; 100 mmf; mica.....	K-1611-2
C-17 2nd Det. By-Pass; .05 mf; 175 volts.....	K-2227-8
C-18 Screen by-pass; .25 mf; 175 volts.....	K-2227-10
C-19 Plate by-pass; 100 mmf; mica.....	K-1611-2
C-20 D.C. blocking; .005 mf; 350 volts.....	K-2228-5
C-21 Tone control; .002 mf; 350 volts.....	K-2228-2
C-22 Impedance equalising; .02 mf; 175 volts.....	K-2227-7
C-23 Divider Filter; 2 mf; 250 volts.....	K-1387
C-24 Divider Filter; 4 mf; 250 volts.....	
C-25 Filament circuit Filter; 1 mf; 10 volts.....	K-1421-11
C-26 Plate by-pass; 25 mmf; mica.....	K-1611-9
C-27 Output plate by-pass; .001 mf; 350 volts.....	K-2228-1

DIAL ASSEMBLY PARTS

Bracket and Ring Assy.....	K-1698-1
Sleeve.....	K-1701
Gasket.....	FP-107254
Pulleys.....	K-1727
Cover.....	CV-9521
Indicator.....	K-1674-1
Card for Scale.....	K-1666-2
Set Screws for Pulleys.....	K-1521-3
Screw for Indicator.....	K-1667



Chassis layout showing aligning positions.

RESISTORS:—

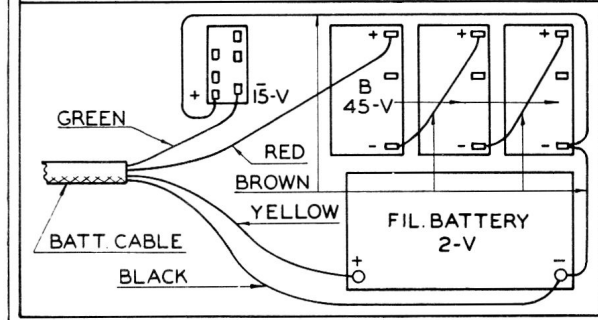
R-1 Volume control (antenna section) 10,000 ohms.....	K-1367
R-2 Volume control (bias section) 10,000 ohms.....	
R-3 Divider; 2,500 ohms; 1/2 watt.....	K-2226-13
R-4 1st Det. bias; 100,000 ohms; 1/2 watt.....	K-2226-5
R-5 Oscillator grid; 100,000 ohms; 1/2 watt.....	K-2226-5
R-6 Anti-blocking; 1 meg; 1/2 watt.....	K-2226-2
R-7 Plate filter; 1,000 ohms; 1/2 watt.....	K-2226-16
R-8 2nd I.F. Grid; 100,000 ohms; 1/2 watt.....	K-2226-5
R-9 Screen filter; 1,000 ohms; 1/2 watt.....	K-2226-16
R-10 2nd Det. screen; 1 meg; 1/2 watt.....	K-2226-2
R-11 Screen divider; 15,000 ohms; 1/2 watt.....	K-2226-9
R-12 2nd Det. plate; 1/2 meg; 1/2 watt.....	K-2226-3
R-13 Output grid; 1 meg; 1/2 watt.....	K-2226-2
R-14 Tone control; 1/2 meg; variable.....	K-1499
R-15 Impedance equalizer; 20,000 ohms; 1/2 watt.....	K-2226-8
R-16 Dry cell filament supply; 1.5 ohms.....	K-1677
R-17 Air cell filament supply; .44 ohm.....	
R-18 R.F. Filter; 50,000 ohms; 1/2 watt.....	K-2226-6
R-19 Bias battery reducing; 15,000 ohms; 1/2 watt.....	K-2226-9

COILS:—

L-1 Ant. R.F. Trans. primary.....	#107040
L-2 Trap circuit.....	
L-3 Capacity couple.....	
L-4 Ant. R.F. Trans. secondary.....	#107020
L-5 R.F. Choke.....	
L-6 Oscillator plate.....	#107033
L-7 Oscillator grid.....	
L-8 1st I.F. Transformer primary.....	RAIC-18-3
L-9 1st I.F. Transformer secondary.....	
L-10 Interstage impedance coupling.....	#107021
L-11 2nd I.F. Transformer primary.....	RAIC-18-3
L-12 2nd I.F. transformer secondary.....	
L-13 Loudspeaker magnetizing.....	K-1598

NOTE:—CONNECT YELLOW LEAD TO TERMINAL STRIP AS FOLLOWS:—

AIR CELL - - - - -	TERMINAL #1
STORAGE CELL (2-V) " "	#2
DRY CELL (3-V) - - -	" #3



Battery connections.

SOCKET VOLTAGE AND CURRENT READINGS

These readings were taken with a Weston Model 566 Analyser and a Type 1-A Adapter, using a standard production Model 502 chassis.

Tube	Position	Filament	Plate	Screen	Bias	Plate Current	
						Normal Bias	Red. Bias (4½ volts)
1C6	1st Det. & Oscillator	2.0	{ 127 (A) 127 }	70	1.4 (B)	3.5	6.5
34	1st I.F.	2.0	130	70	1.4 (B)	2.8	3.5
34	2nd I.F.	2.0	130	70	.2	2.8	3.5
32	2nd Det.	2.0	(C)	(C)	.8	.1	.2
33	Output	2.0	130	135	.2 (D)	11.5	17.0

(A) Oscillator anode.

(B) Volume Control on minimum for this reading.

(C) Correct readings impossible with analyser method due high resistance in circuit.
(Approximately 32 volts plate and 12 volts screen reading to ground.)

(D) Correct bias 14 volts: Cannot be read with analyser method.

Readings taken with Volume Control at maximum and tone control treble.

Tuning dial at 540 K.C.

Fil. tap on terminal No. 3 using dry cells.

REALIGNING DETAILS

REALIGNING DETAILS:—In realigning the Model 502 chassis proceed as follows:—

1. I.F. ADJUSTMENTS:—

- Set signal generator to 463 K.C. and connect to control grid 1st Det. tube.
- Align C-7, C-8, C-9 and C-10.
- Repeat second time for close adjustment.

2. R.F. ADJUSTMENTS:—

- Set signal generator and receiver to 600 K.C.
- Connect to receiver through 200 mmf. capacitor at antenna lead.
- Align C-6 varying tuning point on receiver slightly above and below 600 K.C. position on dial.
- Set pointer to read exactly .6 mc. on scale if this is necessary.

(e) Set signal generator and receiver to 1400 K.C. (1.4 mc.)

(f) Align C-3 and C-4.

3. TRAP CIRCUIT:—

- With signal generator still connected to antenna, set to 463 K.C.
- Tune receiver to 540 K.C. (.54 mc)
- Increase output from signal generator until reading obtained on output meter.
- Adjust trimmer C-5 until this reading is reduced to a minimum.

In the adjustments given above a good quality signal generator and an output meter should be used. Connect the output meter in series with a 1.0 mf. capacitor across the loudspeaker. Standard output is 26 volts.