

Models 502N, 503N

Battery Operated Radio Receiver

Specifications

Frequency Range:

530 to 1600 K.C.

I.F.:

463 K.C.

Tubes:

Type	Function
1A6	1st Detector and Oscillator
34	1st I.F. Amplifier
34	2nd I.F. Amplifier
1B5	A.V.C., 2nd Detector, 1st A.F. Amplifier
33	Power output

Power Supply:

"A" Battery: 2 volts or 3 volts

"B" Battery: 90 volts or 135 volts

A.V.C.:

On 1A6, 1st Detector and Type 34, 1st I.F.

Controls:

Left—Volume control

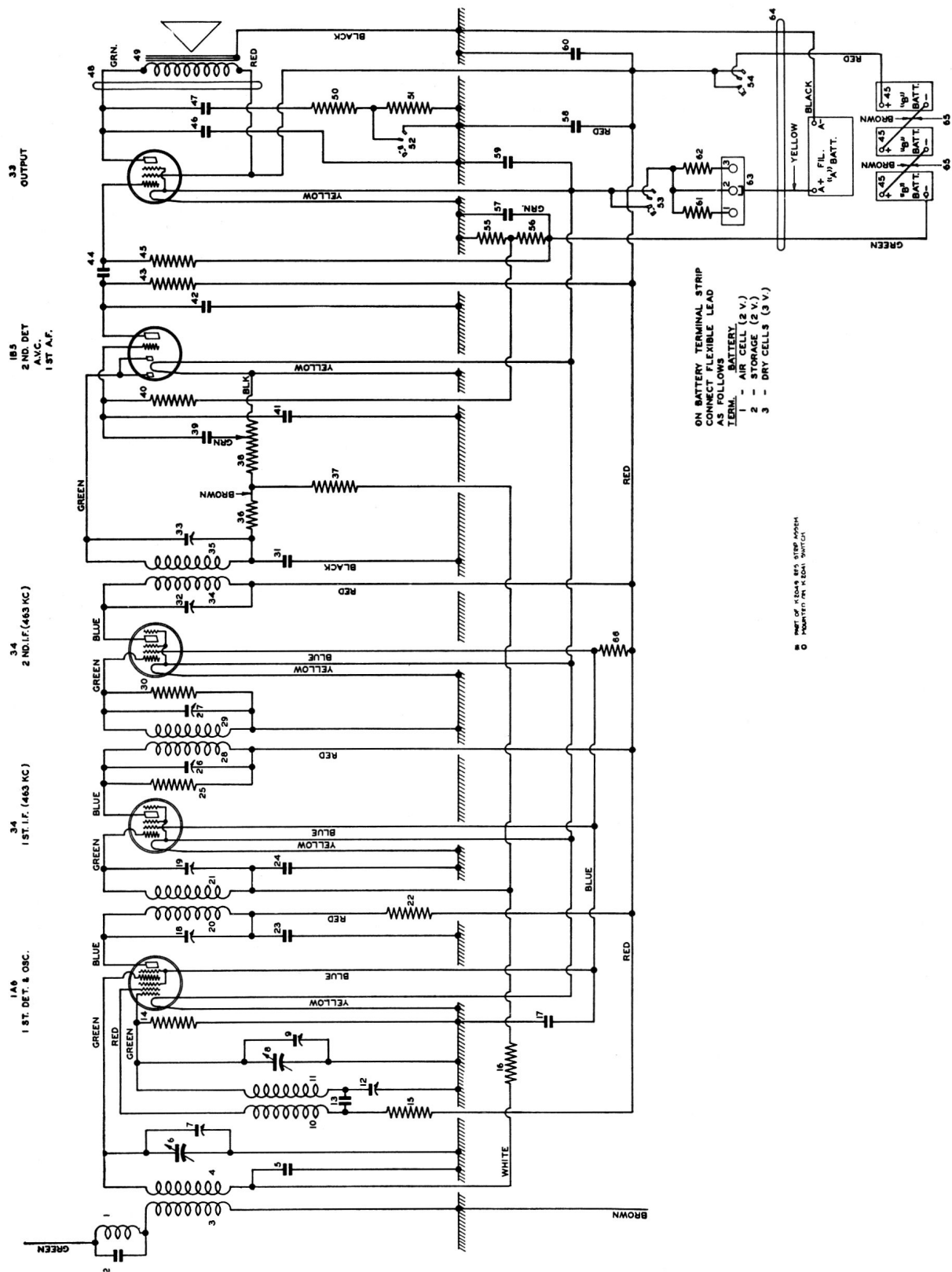
Centre—"On-Off" and tone control

Right—Tuning control

Note:

Models 502N and 503N differ in that the latter only is fitted with a tone control.

MODELS 502N—503N BATTERY OPERATED RADIO RECEIVERS



Schematic Diagram Model 502-N — 503N Battery Operated Receivers

REPLACEMENT PARTS LIST

Schematic Designation	Value and Description	Part Number
1	Antenna trap coil.....	K-2027
2	Capacitor, 1000 mmf; mica.	
3	Antenna R.F. Transformer primary.....	K-2042
4	Antenna R.F. Transformer secondary.....	
5	Capacitor, .05mf, 175 volts.	K-2227-8
6	R.F. section cap. gang, 368 mmf. max.....	
7	R.F. section trimmer cap. 3-20 mmf.....	K-1383
8	Osc. section cap. gang, 368 mmf. max.....	
9	Osc. section trimmer cap. 3-20 mmf.....	K-2043
10	Osc. anode coil.....	
11	Osc. grid coil.....	K-1567-4
12	Capacitor, variable, 200-525 mmf.....	
13	Capacitor, .05 mf, 175 volts	K-2227-8
14	Resistor, 65,000 ohms, 1/2 watt.....	
15	Resistor, 20,000 ohms, 1/2 watt.....	K-2226-8
16	Resistor, 1/10 meg, 1/2 watt	
17	Capacitor, .5 mf, 175 volts..	K-2227-11
18	Capacitor, variable, 35-130 mmf.....	
19	Capacitor, variable, 35-130 mmf.....	K-1368-4
20	1st I.F. Transf. primary....	
21	1st I.F. Transf. secondary..	K-1513-3
22	Resistor, 1000 ohms, 1/2 watt	
23	Capacitor, .05 mf, 175 volts.	K-2227-8
24	Capacitor, .02 mf, 175 volts.	
25	Resistor, 1/2 meg; 1/2 watt..	K-2226-3
26	Capacitor, variable, 30-100 mmf.....	
27	Capacitor, variable, 30 100 mmf.....	K-1600-1
28	2nd. I.F. Transf. primary..	
29	2nd I.F. Transf. secondary..	K-1668-1
30	Resistor, 350,000 ohms; 1/2 watt.....	
31	Capacitor, 100 mmf, mica..	K-1611-2
32	Capacitor, variable, 35-130 mmf.....	
33	Capacitor, variable, 35-130 mmf.....	K-1368-4
34	3rd. I.F. Transf. primary....	
35	3rd I.F. Transf. secondary..	K-1513-3
36	Resistor, 50,000 ohms, 1/2 watt.....	
37	Resistor, 1 meg; 1/2 watt...	K-2226-2
38	Volume Control, 1/2 meg; variable.....	

Schematic Designation	Value and Description	Part Number
39	Capacitor, .005 mf; 175 volts	K-2227-4
40	Resistor, 1 meg; 1/2 watt...	K-2226-2
41	Capacitor, 100 mmf, mica..	K-1611-2
42	Capacitor, 500 mmf, mica..	K-1611-6
43	Resistor, 1/10 meg; 1/2 watt	K-2226-5
44	Capacitor, .005 mf; 175 volts	K-2227-4
45	Resistor, 1 meg; 1/2 watt...	K-2226-2
46	Capacitor, .001 mf, 350 volts	K-2228-1
47	Capacitor, .02 mf, 175 volts.	K-2227-7
48	Loudspeaker Cable.....	K-1494-2
49	Loudspeaker Coil.....	K-1598
50	Resistor, 5000 ohms, 1/2 watt	K-2226-12
51	Resistor, 20,000 ohms, 1/2 watt.....	
52	Tone Control Switch.....	K-2041
53	Filament battery Switch...	
54	Plate Battery Switch.....	K-2226-40
55	Resistor, 75 ohms, 1/2 watt.	
56	Resistor, 700 ohms, 1/2 watt.	K-2226-47
57	Capacitor, D.E, 10 mf, 25 volts.....	
58	Capacitor, D.E, 4 mf, 150 volts.....	K-2044
59	Capacitor, .5 mf, 175 volts.	
60	Capacitor, .1 mf, 175 volts.	K-2227-9
61	Resistor, filament, .53 ohm.	
62	Resistor, filament, 1.5 ohms	K-1677-2
63	Battery Terminal Strip....	
64	Battery Cable.....	K-1535-2
65	Battery Connectors (2 used)	
66	Resistor, 40,000 ohms, 1/2 watt.....	K-2226-34

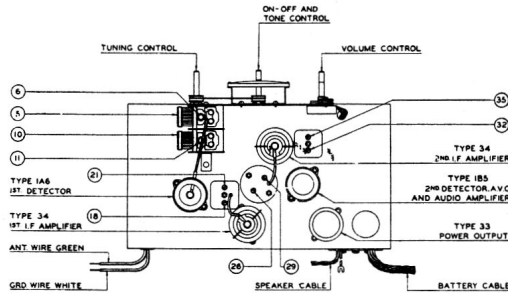
MISCELLANEOUS:—(Not included in schematic designations)

Loudspeaker, complete.....	K-1575
Sockets, four prong.....	K-1221-1
Sockets, five prong.....	K-1221-3
Sockets, six prong.....	K-1221-4
Tube shield base.....	BE-955
Contact Clips (for K-1804-1 shield).....	K-1805-3
Diaphragm for loudspeaker....	K-1409
Dial Indicator.....	K-1674-1
Dial card (scale).....	K-1666-6
Dial Gasket.....	FP-107254
Dial Cover (celluloid).....	CV-9521
Dial Cable.....	K-1694-2
Dial Pulleys.....	K-1727
Set Screw for dial pulleys (per dozen).....	K-1521-3
Machine screw for dial pulleys (per dozen).....	K-1033-1
Tube shield (for type 1B5 & 1A6 tubes).....	CV-954

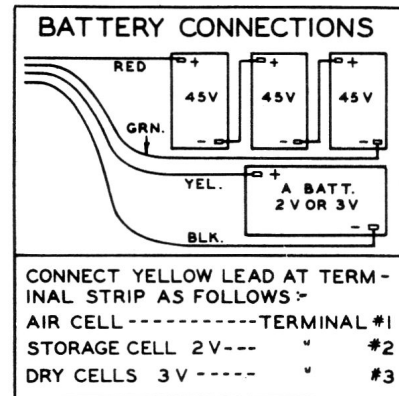
REPLACEMENT PART LIST—continued

Schematic Designation	Value and Description	Part Number
Dial Bracket Ring & Bar Assy..		K-1775
Dial Sleeve		K-1701
Tube shield (for type 34 I.F. tubes) (Includes both sections & clamping ring).....		K-1804-1
Grid Clip.....		K-1747
Felt Feet (for Model 502-N Cabinet).....		K-1117-2
Knobs for Volume & Tuning Model 502-N.....		K-1278-6

Schematic Designation	Value and Description	Part Number
Knobs for Model 503-N (all four)		K-1278-6
Knob with indicator dot for 502-N only.....		K-1278-8
Mounting screw for chassis.....		K-1033-10
Ground Terminal Lug.....		K-1036-1
Dial Indicator set screw.....		K-1667
Tuning Wrench for all models...		K-836
Replacement tube for K-836....		K-836-A
Switch Assembly for Model 503N		K-2041
Tone Control Model 503-N.....		K-1499



Chassis layout showing aligning positions.



Battery Connections.

ALIGNMENT INSTRUCTIONS

I.F. ALIGNMENT:—

- Set the signal generator to 453 K.C., and connect the output to the grid of the first detector, type 1A6, through a 0.1 mf. capacitor.
- Adjust trimmers 18, 19, 26, 27, 32 & 33 for maximum output.
- Reduce the output from the signal generator to as low a value as will give an output reading, and check the adjustments. All trimmers should peak properly.

R.F. ALIGNMENT:—

- Connect the signal generator to the antenna terminals of the set through a 100 mmf. (.0001 mf.) mica capacitor.
- Adjust the signal generator and the receiver to 1500 K.C. Adjust trimmers 7 and 8 for maximum output.
- Set generator and receiver for 600 K.C., and adjust trimmer 12, at the same time slowly rocking the tuning capacitor back and forth until the point of maximum sensitivity is found.
- Return to 1500 K.C., and check alignment.

SOCKET VOLTAGE AND CURRENT READINGS

These readings were made on a Model 502-N chassis with tone control treble, volume control maximum, and the gang capacitor closed. "B" battery voltage was 135 volts.

Tube	Fil. Volts	Plate Volts	Screen Volts	Grid Volts	Screen Current M.A.	Plate Current MA	
						Normal Bias	Bias Red. 4½ volts
1A6	2.0	119	35	0	0.7	0.65	1.22
34	2.0	121	35.0	0	0.5	1.3	1.6
34	2.0	121	35.0	0	0.5	1.6	3.2
1B5	2.0	63	—	—1.25*	—	0.4	0.72
33	2.0	117	121	—14.0†	2.0	8.6	10.8

*—Measured from junction of R45 & R46 to ground.

†—Measured from junction of B— & R 46 to ground.