



RADIO CORPORATION PTY. LTD. BULLETIN KQ-1.
DIVISION OF ELECTRONIC INDUSTRIES LTD. File:-Receivers
126-130 GRANT STREET, SOUTH MELBOURNE, S.C.A. Portable.
Date: 25/8/47.
Page 1.

TECHNICAL BULLETIN

SUBJECT-

Model "KQ"

Personal Portable

4 Tube Superheterodyne Receiver

For operation from:

1.5 Volts "A" Battery--(Two 1.5 Volt Torch Cells in parallel)

and

67.5 Volts "B" Battery.

This Bulletin Contains:

1. Technical Specifications.
2. General Description.
3. Alignment Procedure.
4. Circuit Diagram.
5. Voltage Table.
6. Component Parts List.
7. Coil and IF. Transformer Connections.
8. Instructions for Removing and Refitting Batteries.

SUBJECT-Technical Specifications-Model "KQ".Tube Complement:

Type 1R5 Converter.
Type 1T4 IF. Amplifier.
Type 1S5 Diode Detector, AVC. and 1st Audio.
Type 3S4 Pentode Power Output Amplifier.

Intermediate Frequency: 455 Kc.

Tuning Range: 540 - 1610 Kc.

Operating Voltages: "A" Voltage 1.5 volts.
"B" Voltage 67.5 volts.

Battery Consumption: "A" Battery 250 Milliamps.
"B" Battery 8 Milliamps (no signal).

Power Output: 250 Milliwatts maximum.
100 Milliwatts undistorted.

General Description:

The Model "KQ" is a 4 tube superheterodyne broadcast receiver designed as a midget (personal) portable. The sensitivity of the receiver is 80 microvolts for an output of 2 milliwatts with a load impedance of 5000 ohms.

The receiver chassis is housed in a crackle lacquer or a leatherette finished metal case with a plastic lid. The metal case is built in three sections for simplicity in assembly and convenience for servicing. The total weight of the receiver including the batteries is approximately 4½ lbs.

No external connections are necessary as the receiver operates from dry batteries fitted inside the carrying case. The "A" battery consists of two standard size 1.5 volt torch cells wired in parallel and the "B" battery is a 67.5 volt layer built type with press stud connections.

The receiver case lid automatically switches the receiver "on" when opened and "off" when closed. This function is accomplished by a spring return switch wired in the battery circuit.

Signal pick-up is from a high "Q" loop antenna wound with nylon covered litz wire and is assembled into the plastic lid. Connection to the receiver is made by spring loaded flexible leads. The tubes used are the new series single ended miniature type. The tube filaments all operate from 1.4 volts including the output tube, the dual filaments of which are wired in parallel.



RADIO CORPORATION PTY. LTD.

DIVISION OF ELECTRONIC INDUSTRIES LTD.

126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

TECHNICAL BULLETIN

BULLETIN KQ-1.

File:-Receivers

Portable.

Date: 25/8/47.

Page 3.

SUBJECT-Technical Specifications-Model "KQ".

General Description (continued):

The circuit consists of tuned aerial and oscillator stages with a type 1R5 tube as converter followed by an IF. amplifier stage using a 1T4 tube. A type 1S5 tube is used for diode detection, AVC. and 1st audio which is resistance capacity coupled to a type 3S4 power output amplifier tube.

The AVC. system employs the full D.C. voltage available from the diode circuit which when filtered by the resistive capacitive filter network is used to control the grids of the IF. and converter tubes.

The plate and screen current for the converter tube is supplied through the oscillator coil primary to maintain the magnitude and constancy of oscillator transconductance.

Bias for the output tube is obtained from the negative voltage developed across the oscillator grid leak. A grid stopper (circuit No. 26) is included in the oscillator grid circuit to provide a more even oscillator voltage over the tuning range.

"B" Battery economy has been achieved by slightly over biasing the output tube and by operating the screen of the 1T4 IF. tube at lower than the rated voltage.

SUBJECT-Alignment Instructions-Model "KQ".

Equipment:

Signal Generator.
Output Meter.
Alignment Tool: Part No. M125.
Dummy Antennae: .01MFD. Mica Capacitor.
200MMFD. Mica Capacitor.

Alignment Conditions:

Load Impedance - 5000 Ohms.
Output Level - 2 Milliwatts.
Volume Control - Maximum Volume (fully clockwise).
"A" Battery - 1.5 Volts.
"B" Battery - 67.5 Volts.

Alignment:

The receiver case is built in three sections--(1) the case lid and front plate assembly, (2) The body section, and (3) the back section. The alignment trimmers are all accessible after removing the back of the case and the body section from around the chassis. Two screws under the end of the "B" Battery and one screw near the condenser gang hold the body section to the chassis. Do not remove the lid and front plate assembly from the chassis, this section is fastened to the chassis by two screws, one at each end of the front plate.

The receiver loop aerial trimmer (on the condenser gang) and the oscillator trimmer are aligned with the lid fully open and the loop aerial fully assembled to the case lid.

Dial Setting:

Fully mesh the gang plates and then set the dial so that the small white spot above figure "10" on the dial is directly beneath the point of the pointer in the escutcheon aperture.

The dial reading is a push on type which is held in position on the gang shaft by the spring tension of the split moulded section.



RADIO CORPORATION PTY. LTD.

DIVISION OF ELECTRONIC INDUSTRIES LTD.

126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

TECHNICAL BULLETIN

BULLETIN KQ-1.

File:--Receivers
Portable.

Date: 25/8/47.

Page 5.

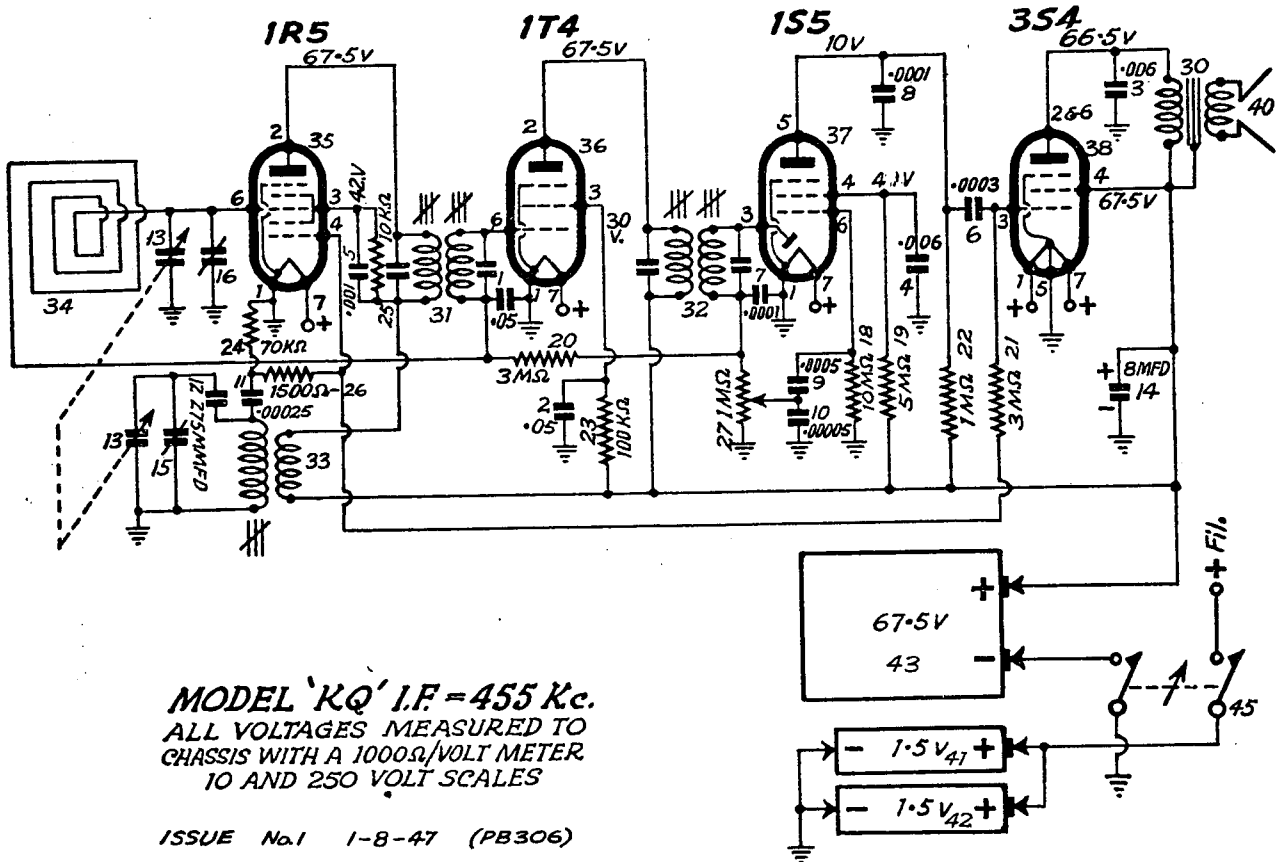
SUBJECT--Alignment Instructions--Model "KQ".

Intermediate Frequency: 455 Kc.

Opera- tion	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To control grid of 1T4 tube (Pin No. 6)	455 Kc.	.01MFD Mica capacitor in series with generator	Turn cond. gang plates full out. Peak 2nd IF. Trans- former primary and secondary for max. output.
2.	To control grid of 1R5 tube (Pin No. 6)	455 Kc.	.01MFD. mica capacitor in series with generator	Turn cond. gang plates full out. Peak 1st IF. Trans- former primary and secondary for max. output.
3.	To AVC. lead of loop aerial (outside turn)	600 Kc.	200MMFD. mica capacitor in series with generator	Turn cond. gang and dial to tune 600 Kc. Adjust oscill- ator coil inductance trimmer (iron core) for max. output. Rock the gang to and fro through the signal while adjusting.
4.	To AVC. lead of loop aerial	1500 Kc.	200MMFD. mica capacitor in series with generator	Turn gang and dial pointer to 1500 Kc. (1500 Kc. is indicated on the dial read- ing by a small white spot situated between figures 1 and 2). Adjust oscillator trimmer to log 1500 Kc. to the point of the escutcheon pointer and peak loop aerial trimmer for max. output.
5.	Repeat operations Nos. 3 and 4.			

Tuning range after alignment 540-1610 Kc.

SUBJECT-Schematic Circuit Diagram-Model "KQ".





RADIO CORPORATION PTY. LTD.

DIVISION OF ELECTRONIC INDUSTRIES LTD.

126-130 GRANT STREET, SOUTH MELBOURNE, S.C.A.

TECHNICAL BULLETIN

BULLETIN KQ-1.

File:—Receivers
Portable.

Date: 25/8/47.

Page 7.

SUBJECT—Voltage Table—Model "KQ".

Equipment:

D.C. Voltmeter: 1000 ohm per volt meter with
0-10 and 0-250 volt scales.

D.C. Ammeter: 0-10 and 0-250 milliamp scales.

Conditions of Test:

Set tuned to 1,000 Kc., no signal, volume control full on.
"A" battery 1.5V. "B" battery 67.5V. All voltages measured
from tube socket contacts to chassis.

Tube	Fil.	Plate	Screen	Grid
1R5	1.4V.	67.5V.	42V.	—
1T4	1.4V.	67.5V.	30V.	—
1S5	1.4V.	10V.	4V.	—
3S4	1.4V.	66.5V.	67.5V.	-7.5V.*

* Derived from oscillator grid.

"A" Battery drain 250 Milliamps.

"B" Battery drain 8 Milliamps (no signal).

SUBJECT--Component Parts List--Model "KQ".

Circuit No.	Part Name	Tol. ±	Rating	Part No.
1.	.05MFD. Paper Condenser	20%	200V.DCW	PC102
2.	.05MFD. Paper Condenser	20%	200V.DCW	PC102
3.	.006MFD. Paper Condenser	20%	600V.DCW	PC217
4.	.006MFD. Paper Condenser	20%	600V.DCW	PC217
5.	.001MFD. Mica Condenser	10%	1000VT.	PC108
6.	.0003MFD. Mica Condenser	10%	1000VT.	PC212
7.	.0001MFD. Mica Condenser	10%	1000VT.	PC110
8.	.0001MFD. Mica Condenser	10%	1000VT.	PC110
9.	.0005MFD. Mica Condenser	10%	1000VT.	PC144
10.	.00005MFD. Mica Condenser	10%	1000VT.	PC141
11.	.00025MFD. Mica Condenser	10%	1000VT.	PC126
12.	.275MMFD. Silvered Mica Condenser	2½%	1000VT.	PC719
13.	2 gang Variable Condenser			PC676
14.	8MFD. E'lytic Condenser	20%	525VP.	PC262
15.	0-30MMFD. Wire Wound Trimmer			PC663
16.	Loop Aerial Trimmer (part of 2.gang cond.)			
17.				
18.	10 Megohm Carbon Resistor	10%	1 Watt	PR236
19.	5 Megohm Carbon Resistor	10%	1 Watt	PR355
20.	3 Megohm Carbon Resistor	10%	½ Watt	PR282
21.	3 Megohm Carbon Resistor	10%	½ Watt	PR282
22.	1 Megohm Carbon Resistor	10%	½ Watt	PR246
23.	100,000 ohm Carbon Resistor	10%	½ Watt	PR103
24.	70,000 ohm Carbon Resistor	5%	½ Watt	PR630
25.	10,000 ohm Carbon Resistor	10%	½ Watt	PR164
26.	1500 ohm Carbon Resistor	10%	½ Watt	PR244
27.	1 Megohm Carbon Potentiometer			PR197
28.				
29.				
30.	Transformer Input, 5000 ohms Imped.			PT820
31.	Transformer, 1st IF.			PT800
32.	Transformer, 2nd IF.			PT800
33.	Coil, Oscillator			PT776
34.	Loop Aerial (loop only)			{ Brown PT832-2 Black PT832-3
35.	Tube type 1R5			
36.	Tube type 1T4			
37.	Tube type 1S5			
38.	Tube type 3S4			
39.				
40.	Speaker 3" Permag.			K118
41.	"A" Battery, 1.5 Volt Torch Cell			PM466
42.	"A" Battery, 1.5 Volt Torch Cell			PM466
43.	"A" Battery, 67.5 Volt			M101
44.				
45.	ON/OFF Switch Assembly			A104/634



RADIO CORPORATION PTY. LTD.

DIVISION OF ELECTRONIC INDUSTRIES LTD.

126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

TECHNICAL BULLETIN

BULLETIN KQ-1.
 File:-Receivers
 Portable.
 Date: 25/8/47.
 Page 9.

SUBJECT-Component Parts List-Model "KQ".

Spacer (hex.) Sub Chassis and Input Trans. mounting	91/552-1
Bakelite Strip-Speaker Transformer Mounting	9/639
"A" Battery Clip Assy.	A105/639
"A" Battery Contact-positive	12/639
"A" Battery Contact Insulator	11/639
Valve Spring-Socket Mounting	32/635
Contact Strip (3 lug) (2)	A136/30C
Terminal Strip (2 lug)	A103/509
Terminal Strip (5 lug)	A141/30C
Tension Spring-Loop Leads	39/634
Battery Packer	7/634
Screw-Mounts Chassis to front panel	40/634
Aerial Lead Strainer	41/634
Dial-Tuning	11/634
Spring Insert for Knobs	86/71
"B" Battery Connector Press Stud (-)	245/250
"B" Battery Connector Press Stud (+)	246/250
Handle Bracket	36/634
Valve Sockets-(4)	A104/58
Lid Clip	17/634
Hinge Assembly	A107/634
Hinge Assembly Rivet	64/265-2
Speaker Grille (.plated)	A103/634

CABINET COMBINATIONS

Colour	Knob Part No.	Loop Assy. Part No.	Loop Cover Part No.	Case Base Part No.	Case Assy. Part No.	Case Lid Assy. Part No.	Leatherette Type No.
--------	---------------	---------------------	---------------------	--------------------	---------------------	-------------------------	----------------------

Brown	52/634-2	PT832-2	5/634-3	6/634-2	A106/634-2	A109/634-2	GM311
Black	52/634-3	PT832-3	5/634-2	6/634-3	A106/634-3	A109/634-3	GM307
Cream	52/634-1	PT832-1	5/634-1	6/634-1	A106/634-1	A109/634-1	GM309

Colour	Shoulder Strap Assy.	Case Lid Part No.	Lead Insulators Type No.	Handle Strap Assy. Part No.	Speaker Silk Type No.
--------	----------------------	-------------------	--------------------------	-----------------------------	-----------------------

Brown	A111/634-2	18/634-2	42/634-2	A108/634-3	GX 355
Black	A111/634-3	18/634-3	42/634-3	A108/634-2	GX 355
Cream	A111/634-1	18/634-1	42/634-1	A108/634-1	GX 355

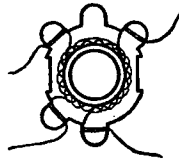
SUBJECT-Coil and IF. Transformer Connections-Model "KQ".

Inside turn - Grid

Outside turn - AVC.

Loop Aerial

Junction of
 Circuit Nos.
 11 and 12



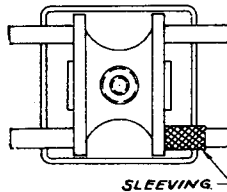
Junction of
 Circuit Nos.
 5, 25 and 31

B+

Chassis

Osc. Coil

Grid



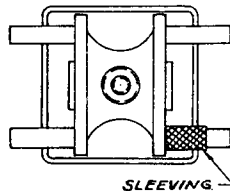
Plate

Grid return

Junction of
 Circuit Nos.
 5, 25 and 33

1st IF. Trans.

Diode



Plate

Diode Return

B+

2nd IF. Trans.



RADIO CORPORATION PTY. LTD.

DIVISION OF ELECTRONIC INDUSTRIES LTD.

126-130 GRANT STREET, SOUTH MELBOURNE, S.C.A.

TECHNICAL BULLETIN

BULLETIN KQ-1.

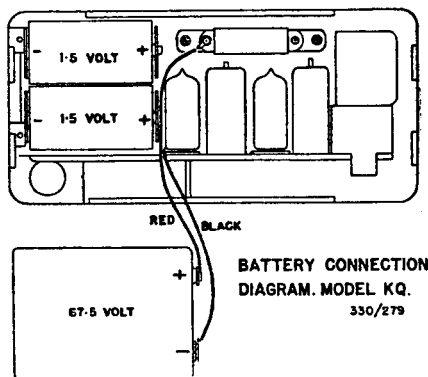
File:-Receivers
Portable.

Date: 25/8/47.

Page 11.

SUBJECT-Removing and Refitting Batteries-Model "KQ".

1. Switch the receiver "off" by fully closing the lid.
2. Lay the receiver down on the front of the lid so that the carrying strap is towards the right hand.
3. Remove the back of the case by pressing the right thumb gently against the end of the case just above the centre of the carrying strap. At the same time with the left hand pull the strap end of the back of the case upwards.
4. Tilt the case so that the "B" battery slides out, then disconnect the red and black leads by prizing off the press stud clips attached to the battery.
5. To remove the "A" battery cells pull the tape wound round the cells or remove with the fingers.



6. Refit the new batteries in the exact reverse procedure adopted for removing the old batteries making sure that the "A" cells are firmly pressed home, the press studs are properly fastened to the "B" battery (red lead to positive "+", black lead to negative "-") and that the back of the receiver case is correctly clamped on.



RADIO CORPORATION PTY. LTD.

DIVISION OF ELECTRONIC INDUSTRIES LTD.

126-130 GRANT STREET, SOUTH MELBOURNE, S.C.A.

TECHNICAL BULLETIN

BULLETIN KQ-2.

File: Receivers
Portable.

Date: 1/12/47.

Page 1.

SUBJECT- Circuit Component Changes - Model "KQ".

1. The 0-30 MMFD wire wound oscillator trimmer, Circuit No. 15, has been replaced with a single plate (Part No. 55/634) mounted against the gang frame. The distance between this plate and the gang frame provides sufficient capacity variation for oscillator adjustment.

2. The .0005 MFD. mica condenser, circuit No. 9, has been changed to a .006 MFD. paper condenser, (Part No. PC217) to eliminate a low frequency bubbling noise at various settings of the volume control.

3. On approximately the first 3,000 Model "KQ" receivers it is necessary as detailed in Bulletin KQ-1 to remove the back and body section of the case from around the chassis to align the oscillator and loop aerial trimmers.

Alignment of these trimmers on future production of this model may be made by removing only the back of the case. The positions of the trimmers have been altered and are now accessible from the back of the chassis.

- (a) A corner of the chassis has been bent so that the oscillator coil is mounted on an angle.
- (b) A 7,000 ohm 1 watt resistor (Part No. PR247) is wired across the oscillator coil primary.
- (c) The loop aerial trimmer on the gang is replaced with a 1.5-18 MMFD. trimmer, (Part No. PC737) mounted alongside the oscillator coil.