RCA Miniature Tubes

Just in time for WWII

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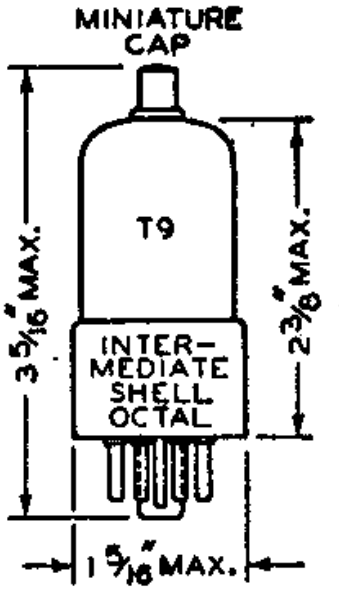
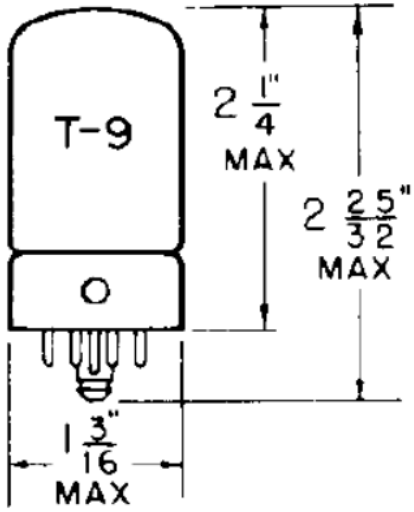
Some Predecessors

High-performance tubes for battery portable use were developed in the late 1930's and found immediate applications in military electronics.
(VT numbers are the Signal Corps designations.)



VT-124 1A5GT	Power Pentode	Octal Base
VT-125 1C5GT	Power Pentode	
VT-146 1N5GT	RF Pentode	
VT-147 1A7GT	Pentagrid Converter	
VT-148 1D8GT	Diode-Triode-Power pentode	
VT-177 1LH4	Diode-Triode	Loctal Base
VT-178 1LC6	Pentagrid Converter	
VT-179 1LN5	RF pentode	
VT-180 3LF4	Beam Power Pentode	



THE MINIATURE TUBE

RCA produced another innovation in November 1939: the miniature tube. Here the glass button stem, with molded-in pins, combined with a small bulb to give a welcome reduction in size. The initial offering comprised the 1R5 pentagrid converter, 1T4 pentode, 1S5 diode / AF pentode, and 1S4 output pentode. These formed the tube complement in RCA Victor's BP 10 "personal" radio and a host of others. The miniature format was on the scene just in time to go to war, in the BC-611, BC-74S, and MAB transceivers (among others). RCA also repackaged its 954, 955, and 956 acorn tubes in miniature form, yielding the 9001,9002, and 9003.

Tube Lore II, Ludwell Sibley, p6

The Original Miniature Tube Family

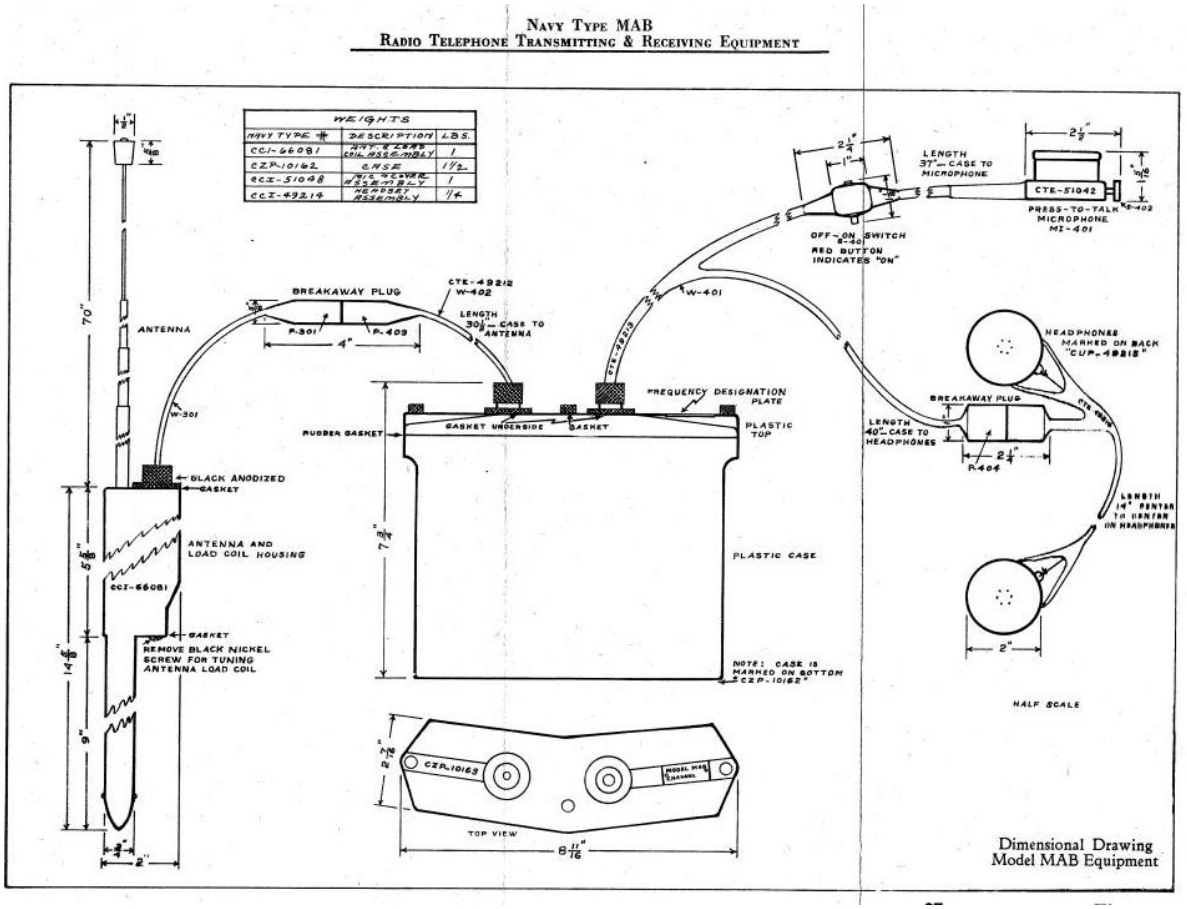
NUMBER	TYPE	FUNCTION	
1R5	Pentagrid Converter	Superhet Receiver Front End	
1T4	Remote Cutoff Pentode	IF/RF Amplifier With AVC	
1S5	Diode AF Pentode	Detector / AVC Audio Amplifier	
1S4	Output Pentode	AF/RF Power Amplifier	

RCA BP-10

- Introduced by RCA late 1940
- AM Broadcast
- Pressed it war service by the British S.O.E. during WWII
- MORE INFO

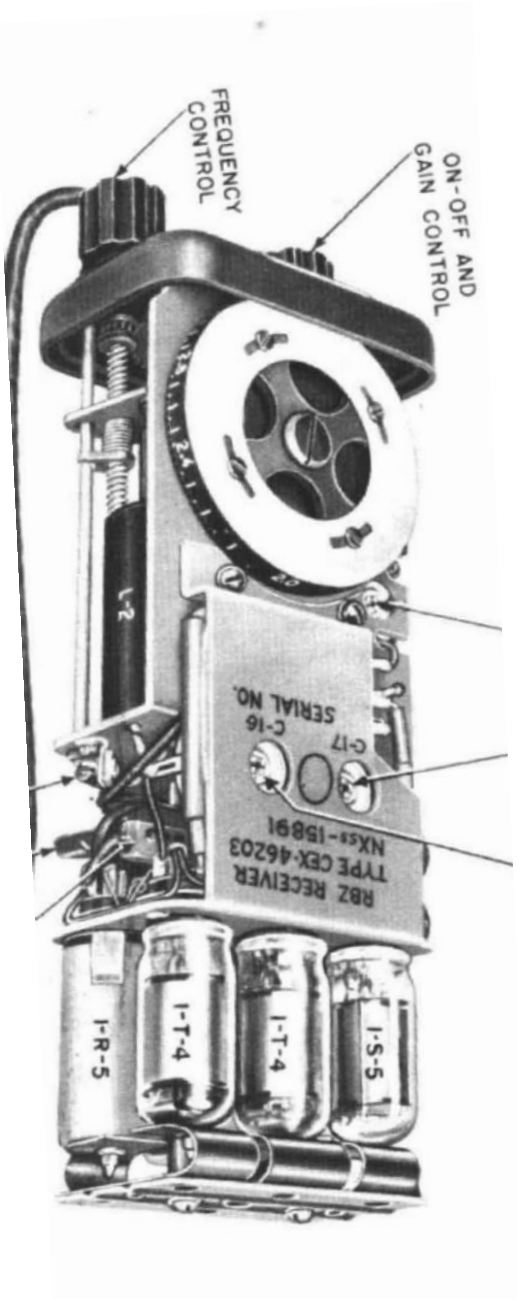
Internal view of the RCA Victor Model BP-10 with back cover removed. The 1.5V LT 'A' battery was carried on the left hand side and the 67.5V HT 'B' battery in the centre of the chassis.

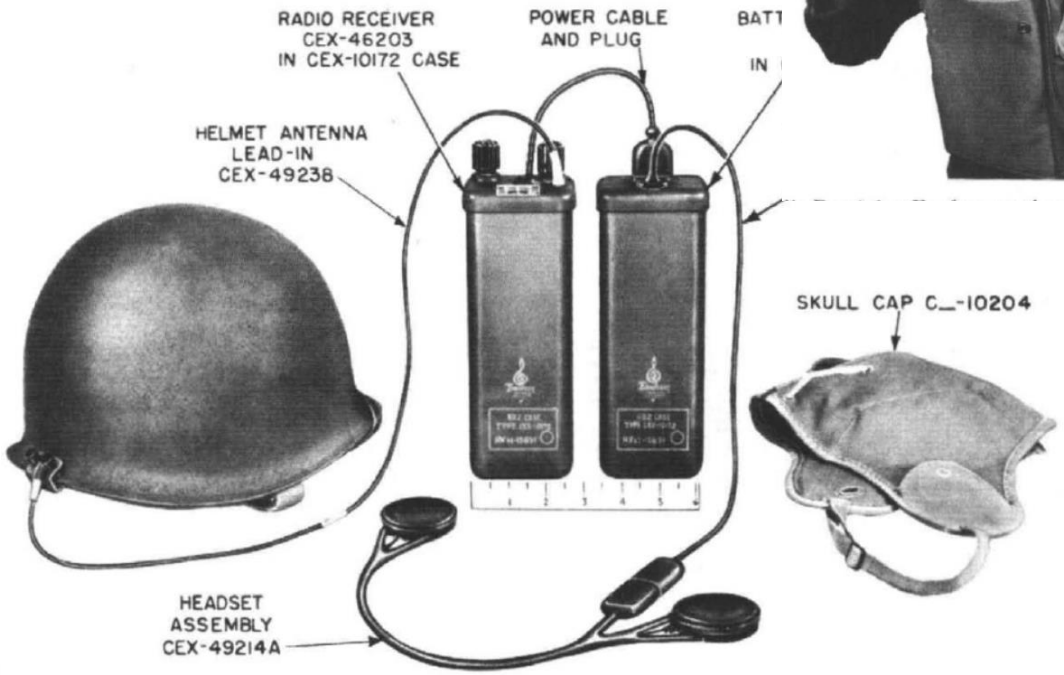
US Navy MAB
“Marine Raider” TX-RX



- **AM on one preset (crystal) frequency within range of 2.3 to 4.5 mc.**
- **MORE INFO**

US Navy RBZ

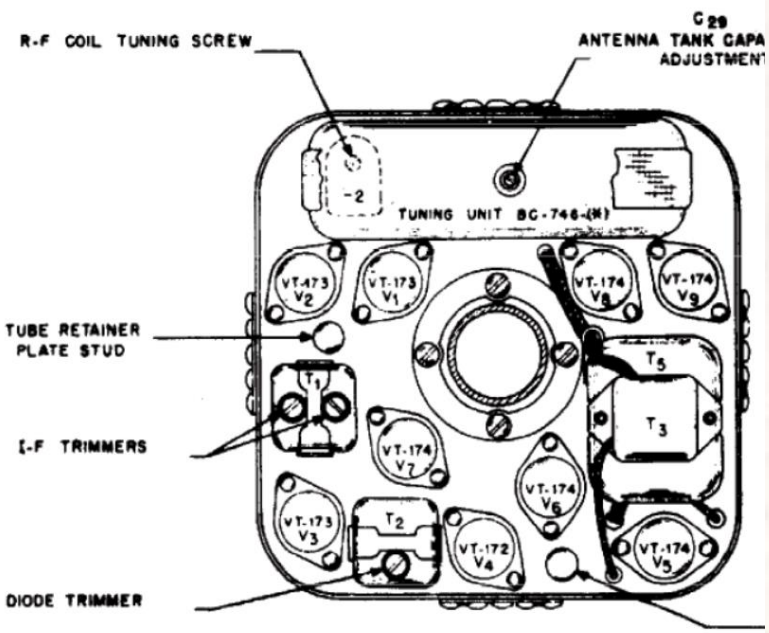




- **Radio Receiver AM only**
- **Freq. Range: 2-5.8 MHz**
- **Modified for use by French Resistance - 5-13 MHz**
- **MORE INFO**

US Army SCR-511 “Guideon Set”

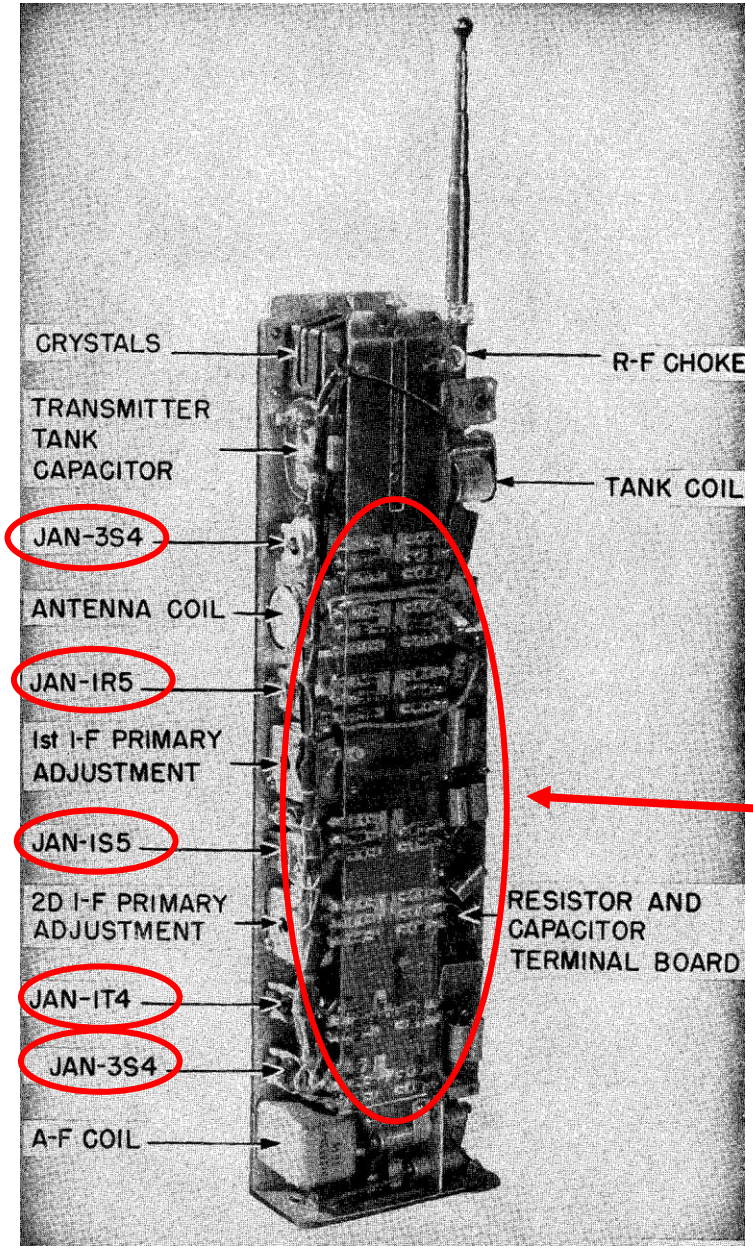
A.k.a, Horsie-Talkie



9 Miniature Tubes

Frequecy Range: 3.0 - 6.0
Modulation Type: AM
Number of Crystals: 2 in each tuning units, 13 tuning units per set authorized.
MORE INFO

BC-611 Handie-Talkie



Long slide switch changes circuit from receive to transmit.

Frequency Range: 3.5 - 6.0 mHz
Modulation Type: AM
Number of Crystals: One TX and 1 RX
Preset Frequencies One Channel

MORE INFO

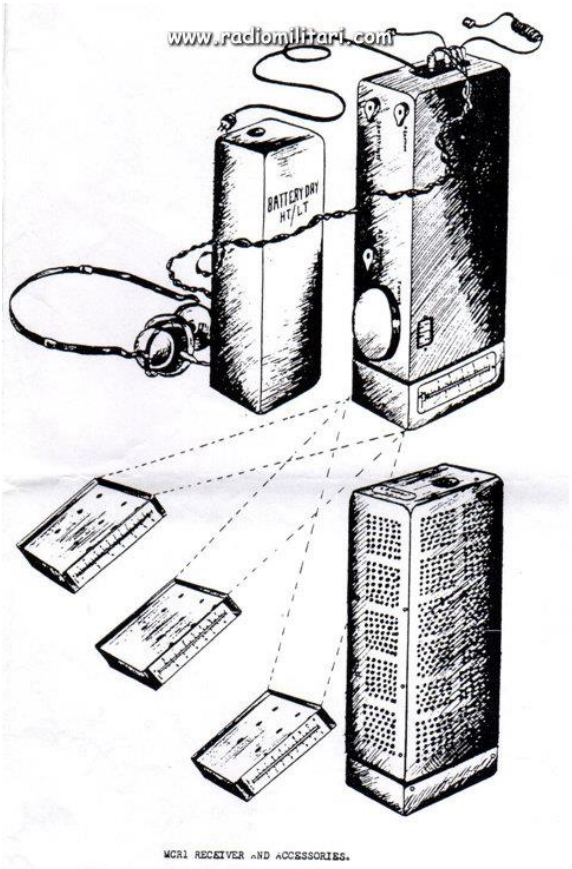
SCR-300
FM Walkie Talkie

Freq. cov.: 40.0 to 48.0 Mc
Mode: f-m voice
Distance range: 3 miles
Pwr output: 0.3 W
Tubes: 2 x 3A4
6 x 1T4
5 x 1L4
1 x 1R5
1 x 1A3
3 x 1S5

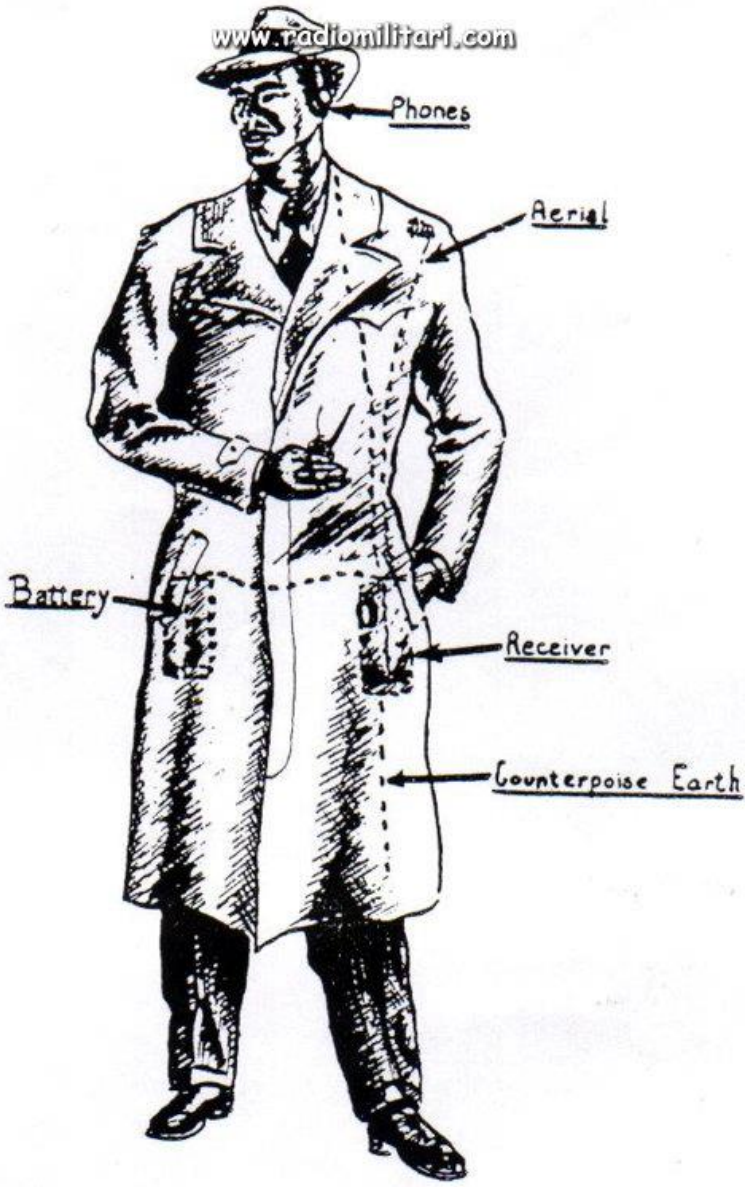
MORE INFO

British S.O.E. MCR1
“Biscuit Tin” Radio Receiver

Frequency coverage: 150KHz to15MHz
Type of receiver : superheterodyne
Signals : AM – CW
Rx Tubes : 1x 1R5 4 x 1T4
MORE INFO



MCR1 RECEIVER AND ACCESSORIES.

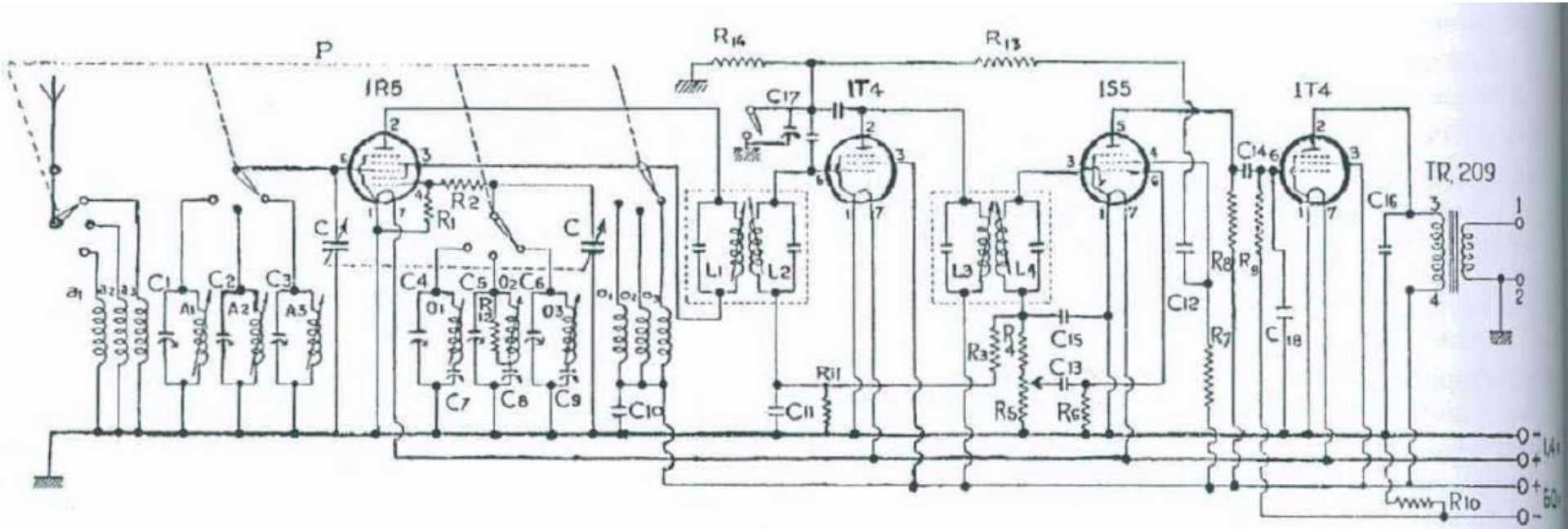


Radio Workshop of the Polish Army in Exile

OP-3 (Type 30/1)

Agent's Personal Receiver

- Constructed by the Radio Workshop of the **Polish Army in Exile** in Stanmore (UK). circa 1943. 287 built.
- Thadeusz Heftman, a Polish radio engineer who had been educated in Germany.
- Intended for receiving coded messages inserted in BBC short-wave broadcasts.
- Frequency Range - AM or CW (Morse code)
  - 200-500 meters (600 – 1500 Khz)
  - 2.2 – 5 Mhz
  - 3.5 – 12 Mhz
- 4 miniature tubes
- Battery power: 1.5 and 60 volts DC
- MORE INFO



C-C	220pF	C13, 14	0.005µF	R3, 6, 7, 9	2MΩ
C1-6	3–30pF	C15	200pF	R4,12	100kΩ
C7	600pF	C16	800pF	R5, 8	500kΩ
C8	250pF	C17	15pF	R11	1MΩ
C9	78pF	C18	100pF	R13	700Ω
C10	0.1µF	R1	50kΩ	R14	20k–100kΩ sot
C11, 12	0.01µF	R2, 10	200Ω		

Circuit diagram and list of components of receiver OP 3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Links

- https://radionerds.com/index.php/SCR-511
- https://radionerds.com/index.php/BC-611
- https://radionerds.com/index.php/MAB
- https://radionerds.com/index.php/RBZ
- https://radionerds.com/index.php/SCR-300
- https://www.cryptomuseum.com/spy/op3/index.htm
- http://www.wftw.nl/24%20OP3-G%20v1%2000.pdf
- http://www.wftw.nl/03%20RCA%20BP10%20v1%2000.pdf
- http://www.radiomilitari.com/mcr1.html
- https://www.cryptomuseum.com/spy/rbz/index.htm