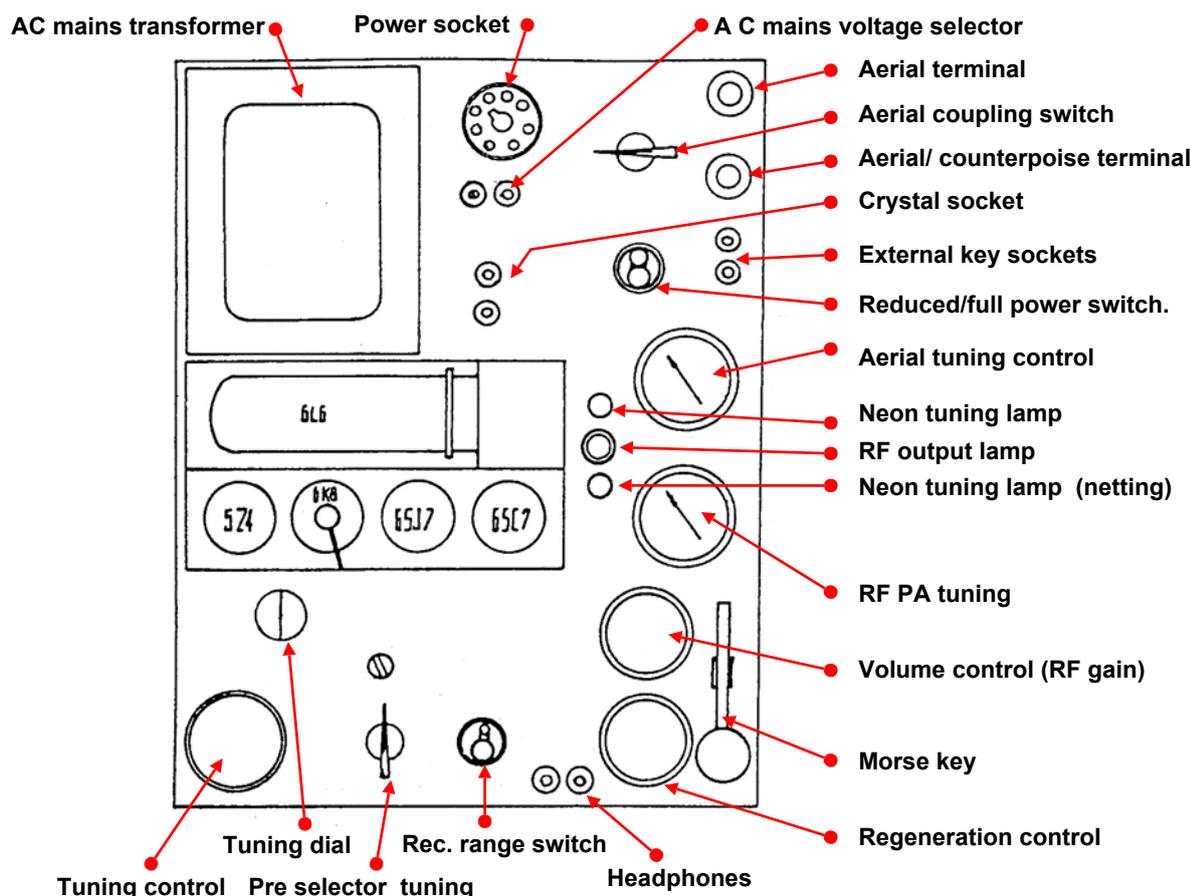


Polish A and AP Series II (AP-2 to AP-6)



At the time of compiling this chapter only a drawing of the AP-2 front panel was found in a paper written by Ing. Tadeusz Heftman. The transmitter range switch is probably missing in this drawing.

Polish AP-2
Country of origin: England

DATA SUMMARY Polish AP-2

Organisation: Polish Army in exile.

Design: Tadeusz Heftman.

Manufacturer/Workshop: Polish Military Wireless Research Unit, Stanmore, Great Britain.

Year of Introduction: Believed 1943.

Purpose: Agents, resistance groups.

Transmitter:

Frequency coverage: 3.5-8MHz/8-16MHz.

RF output: 8W.

Circuit features: Crystal oscillator/RF power amplifier.

Receiver:

Frequency coverage: 3.5-8MHz and 8-16MHz.

Circuit features: Mixer/Oscillator, IF stage, IF/Detector, AF output, based on the 1936 'Super-Gainer' design with an additional IF stage.

The IF/Detector valve could be brought into oscillation for CW reception by means of the reaction control.

AF output: High impedance headphones.

Valves: 6L6, 6K8, 6SJ7, 6SC7, 5Z4.

Power Supply: 120/220V AC mains. An 8-pt octal socket on the front panel was provided for connecting AC mains, an external DC power pack or hand generator.

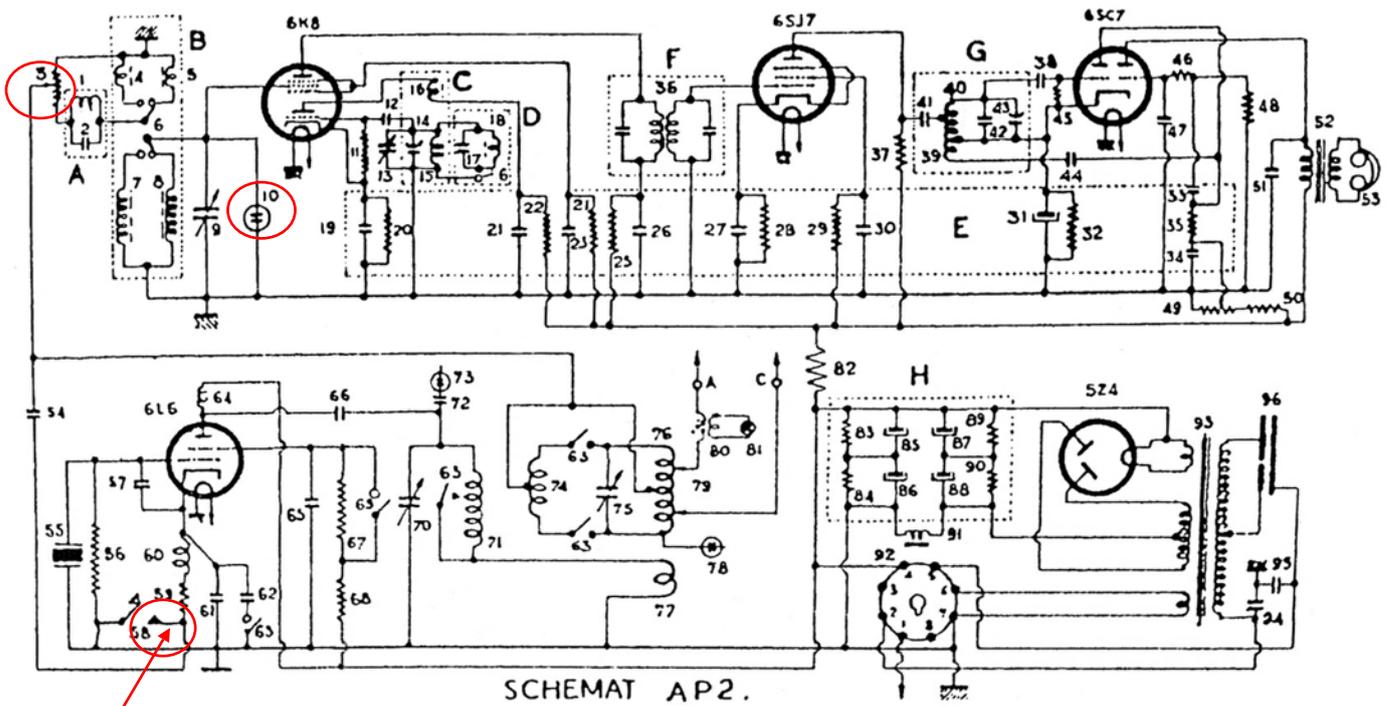
Dimensions (cm) and weight:

Height 9½ (10 with lid), length 28, width 21½; weight 5 kg.

Key features of the Polish AP-2.

Features and significant recognition items of the AP-2:

- The AP-2 was developed to provide a much wider frequency coverage (3.5-16MHz) as opposed to the A 1 (3.5-9.5 MHz).
- Five valves were located in a recessed area on the front panel.
- Break-in operation.
- No send-receive switch.
- RF gain ('Volume' control by means of a potentiometer in the receiver aerial input circuit).
- Addition of an IF amplifier valve.
- Switch for reduced power (tuning).
- A HT current meter was fitted in an early variation; in a later version the meter was covered with a round plate.
- With an extra IF valve the predecessor A 2 became easily overheated. For this reason the AP-2 was developed.
- It is believed that the A 2 and AP-2 were functionally similar and differed not much in their electrical circuit.
- Terminals for connecting an external Morse key were fitted.
- Two aerial/counterpoise (dipole) terminals.
- Only one tuning lamp projected off the front panel.
- The lower (neon) tuning lamp, in the vertical row of 3, lights when the receiver was tuned to the transmitter frequency as a course 'netting' control, allowing the receiver to be tuned on or near the transmitting frequency.



Break-in/transmit

Circuit diagram of the AP-2 (and believed also that of the A 2, with the exception of the 'netting' neon lamp 10). The plug connections of the AC mains cord and hand generator were identical to that of the A 1 and later A and AP series. Note the simple transmit break-in feature and the RF gain ('Volume') control (3) in the receiver aerial circuit. Although the symbols of the electrolytic capacitors are correctly drawn, it is believed that the choke (91) in the power supply should be located in the HT plus, between 85 and 87.

Polish AP-4 Country of origin: England



AP-4 with English inscriptions.

DATA SUMMARY Polish AP-4

Organisation: Polish Army in exile.
Design/Manufacturer/Workshop: Polish Military Wireless Research Unit, Stanmore, England.
Year of Introduction: Believed 1943.
Purpose: Agents, resistance groups.
Transmitter:
 Frequency coverage: 2-4MHz and 4-8MHz.
 RF output: 8W.
 Circuit features: Crystal oscillator/RF power amplifier.
Receiver:
 Frequency coverage: 2-4MHz and 4-8MHz.
 Circuit features: Mixer/Oscillator, IF stage, Reg. IF/Detector, AF output, based on the 1936 'Super-Gainer' design with an IF stage added.
 The IF/Detector valve could be brought into oscillation for CW reception by means of the reaction control.
 AF output: High impedance headphones.
Valves: 6L6, 6K8, 6SJ7, 6SC7, 5Z4.
Power Supply: 120/220V AC mains. An 8-pt octal socket on the front panel was provided for connecting AC mains, an external DC power pack or hand generator.
 As an alternative a 6V accumulator and three 120V HT batteries in series.
Dimensions (cm) and weight:
 Height 9½ (10 with lid), length 28, width 21½; weight 5kg.



Key features of the Polish AP-4.

Features and significant recognition items of the AP-4:

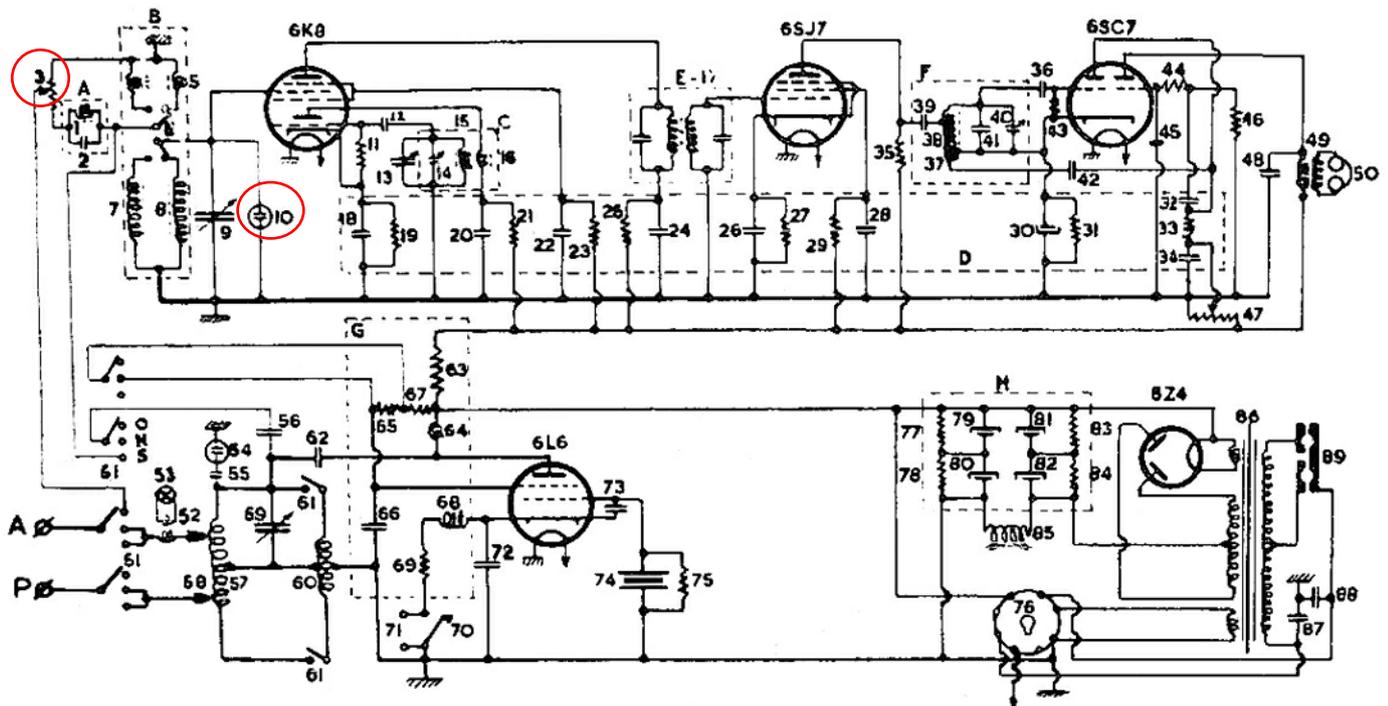
- The AP-4 was possibly developed as a replacement for the A 3 which had a tendency to overheat.
- Frequency coverage 2-8MHz in two switched ranges in both transmitter and receiver.
- Five valves were located in a recessed area on the front panel.
- RF gain ('Volume' control by means of a potentiometer in the receiver aerial input circuit).
- Addition of an IF amplifier valve.
- Switch for reduced power (for tuning) was combined with the transmit-receive-tune switch
- The electrical circuit has many similar design elements of the AP-2.
- Terminals for connecting an external Morse key were fitted.
- Two (black) aerial/counterpoise or dipole terminals.
- Only one tuning lamp projected off the front panel.
- Neon tuning lamp F (above the headphones sockets) lights when the receiver was tuned to the transmitter frequency as a course 'netting' control, allowing the receiver to be tuned on or near the transmitting frequency.

References

- With many thanks to Bogdan Skudlarek, SP3LD, Poland, for providing photographs, drawings, circuit diagrams and documents.
- Charakterystyka Techniczna, specjalnego, sprzetu radio-komunikacyjnego, opracowana przez inz. T.Heftmana, n.d.
- *Wireless for the Warrior, Volume 4, Clandestine Radio*, Louis Meulstee, Wimborne 2004, isbn 095263 36 0.
- *Radio communications during the Warsaw Rising*, Z.S. Siemaszko, The Polish Underground Movement Study Trust, London, 2004.

AP-4 with Polish inscriptions.

-- AP4 --



Circuit diagram of the AP-4. It had similarities with the AP-2, but also having details of the A 3, particularly the transmitter RF output circuit and the transmit/receive switching. The RF gain control was a potentiometer across the receiver input circuit; a separate neon lamp was fitted for course netting indication. It is believed that assembly M (the HT filter unit) was drawn upside down.



AP-5 front panel view

Polish AP-5
Country of origin: England

Key features of the Polish AP-5.

Features and significant recognition items of the AP-5:

- Frequency coverage 2-16MHz in three switched ranges in both transmitter and receiver.
- Five valves were located in a recessed area on the front panel.
- Break-in operation.
- No send-receive switch.
- Addition of an IF amplifier valve.
- RF gain control by means of a potentiometer in the screen grid of the IF amplifier valve.
- Terminals for connecting an external Morse key.
- Two (black) aerial/counterpoise or dipole terminals.
- Only one tuning lamp projected off the front panel.
- The lower (neon) tuning lamp in a vertical row of 3 lights was for RF PA tuning
- No neon lamp for 'Netting'.
- No switch for reduced power (tuning).

Bottom cover plate.

The AP-5 was from the service and maintenance point of view of interest as it had a removable bottom plate allowing to take measurements and alignments without having to take the set out of the metal box.



DATA SUMMARY Polish AP-5

Organisation: Polish Army in exile.

Design/Manufacturer/Workshop: Polish Military Wireless Research Unit, Stanmore, England.

Year of Introduction: Believed 1943.

Purpose: Agents, resistance groups.

Transmitter

Frequency coverage: 2-16MHz covered in three ranges: 2-4 / 4-8 / 8-16MHz.

Circuit features: Crystal oscillator/RF power amplifier.

Receiver

Frequency coverage: 2-16MHz covered in three ranges: 2-4 / 4-8 / 8-16MHz.

Circuit features: Mixer/Oscillator, IF stage, Reg. IF/Detector, AF output, based on the 1936 'Super-Gainer' design with IF stage added.

The IF/Detector valve could be brought into oscillation for CW reception by means of the reaction control.

AF output: High impedance headphones (4000 Ohm)

Valves: 6L6, 6K8, 6SJ7, 6SC7, 5Z4.

Power Supply: 120/220V AC mains. An 8-pt octal socket on the front panel was provided for connecting AC mains or an external DC power pack / hand generator.

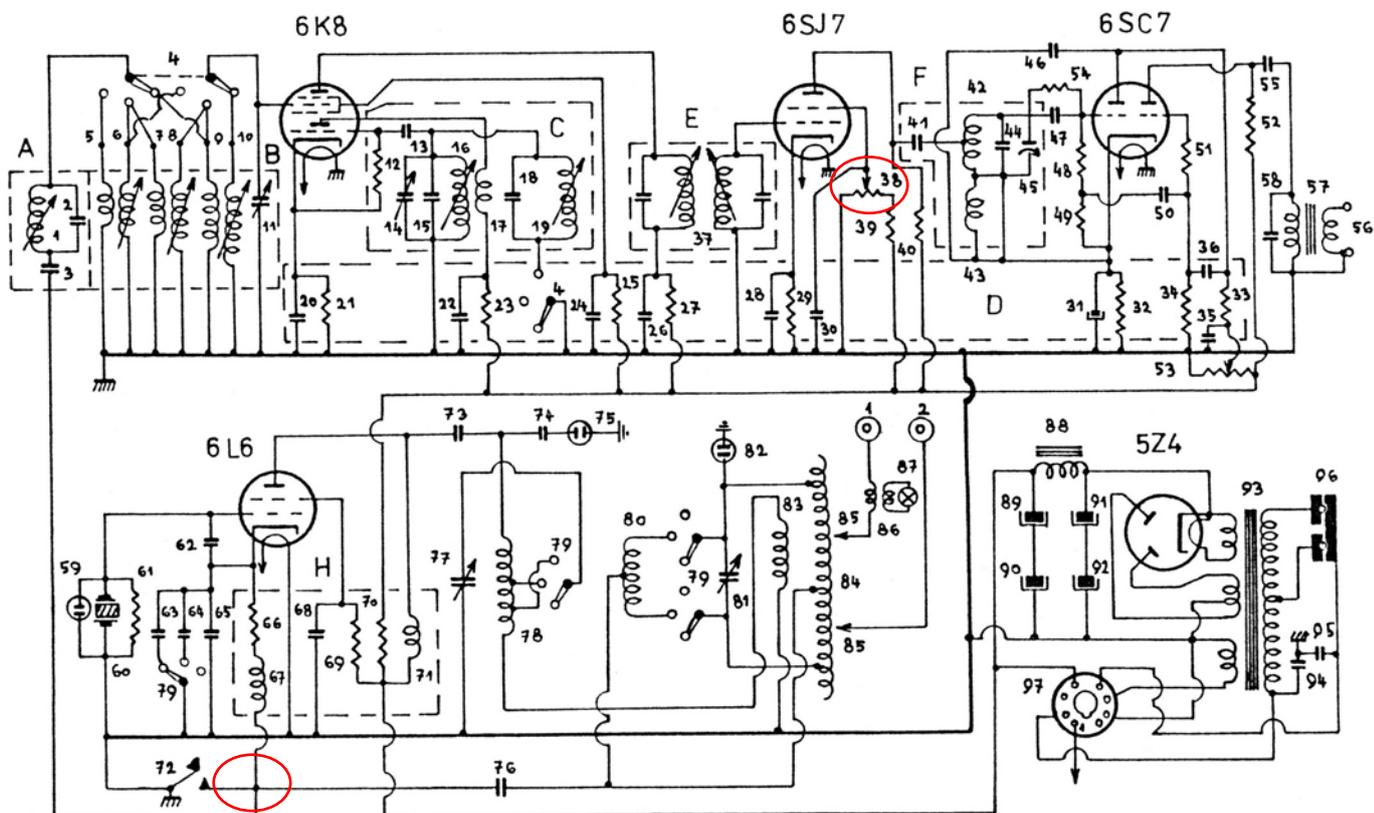
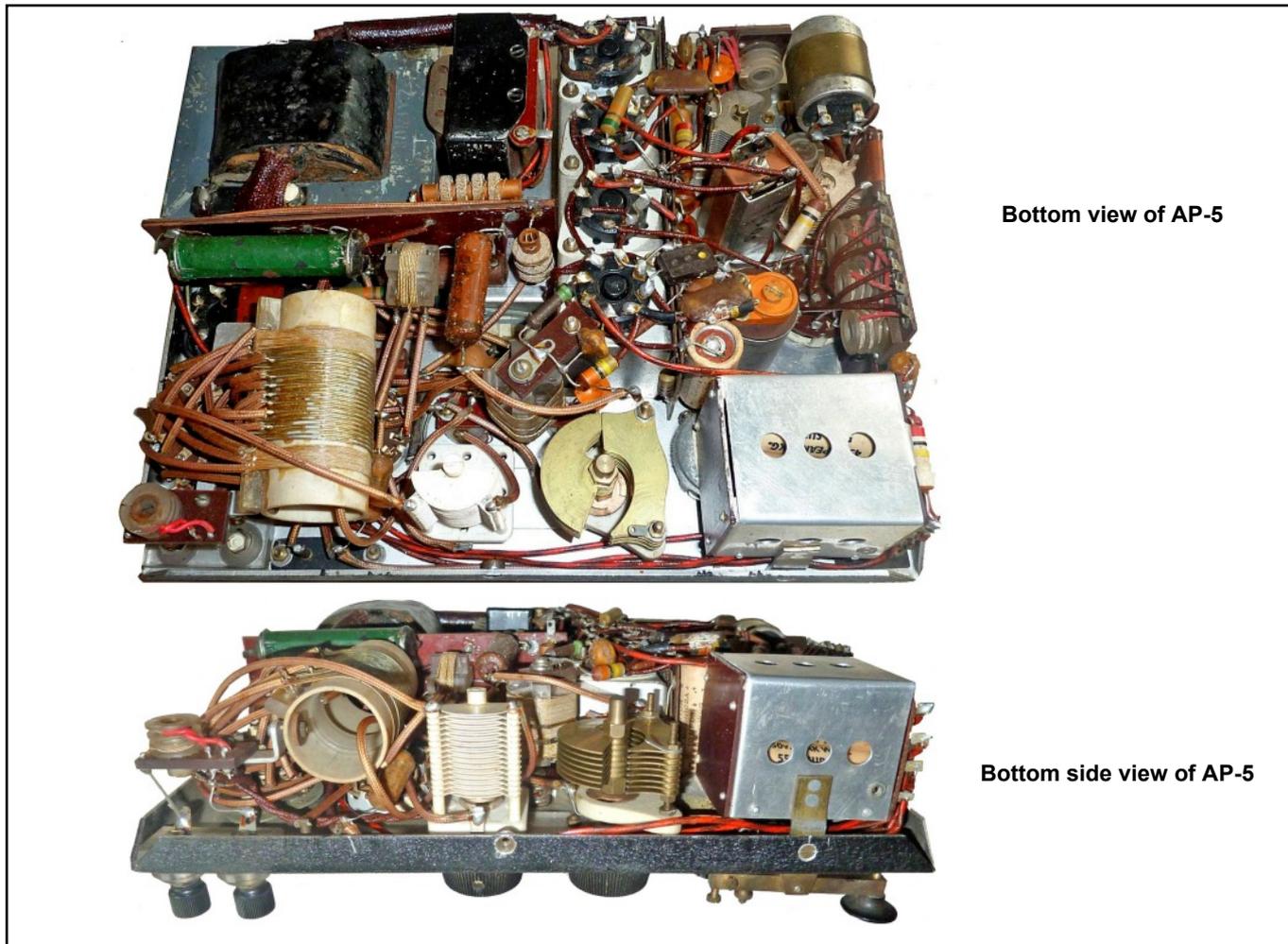
As an alternative a 6V accumulator and three 120V HT batteries in series.

Dimensions (cm) and weight:

Height 9½ (10 with lid), length 28, width 21½; weight 5kg.

AP-6

Noted was the development of the AP- 6, a lightweight version of the AP-5 which never came into full production. No further details were known.



Circuit diagram of the AP-5. Note the break-in/transmit feature and RF control in the IF stage. There appear to be missing resistors over the filter capacitors 89 to 92.

Polish A/AP Series power arrangements.

In addition to the three power arrangements below, suggested in the operating instructions was a 4th method using a 6V accumulator and three 120V dry batteries connected in series.

