# Wireles Sender A12

## Country of origin: England

*Larkspur era # 2*

## DATA SUMMARY

**Organisation:** British Army.

**Developer:** SRDE.

**Year of first trials:** 1955.

**Purpose:** One way CW communication from a patrol to their headquarters. Secondly to set up to send a continuous signal when actuated by a trip wire device.

**Transmitter:** Crystal oscillator/power amplifier. 10W RF out.
**Frequency coverage:** Any of four spot frequencies: 3.01, 4.49, 5.015 or 5.485 MHz.

**Range:** Minimum 3 miles.

**Valve:** CV2136 (CV2213 Neon lamp).

**Aerial:** Vertical collapsible rod aerial of 4-ft or 10-ft 8-in with associated aerial loading coils, two for each frequency.

**Power Supply:** Rechargeable battery pack.

**Current consumption:** Transmit LT 7.5V at 0.45A, HT300V at 60mA. Operating time of a fully charged battery was ten minutes

**Size (in):** Height 9, length 3, width 5.

**Weight:** Transmitter including battery 5lb.
Complete station with long aerial 7lb; short aerial 6lb.

**Accessories:** Aerial, aerial loading coil, aerial connector, rod aerial, remote control cable (also used as counterpoise), battery charger, user handbook, instruction card, haversack.

## Remarks

It was in 1988, during a research session at the Royal Signals Museum, that I came across a small user handbook for a miniature HF patrol radio developed in 1955. As it was at that time far beyond my topic but still considered an interesting item, I made a photocopy for possible later use. Forgotten over the years, the photocopies were rediscovered in March 2025. After reading the documents and, although realising that the radio had never gone into production, I thought it would be a captivating topic for inclusion in the WftW Various series.

The Wireless Sender A12 (previously known as the Experimental Patrol Sender) was an experimental 'A' model of a self-contained miniature man-pack transmitter for one-way, hand-speed keyed CW communication.

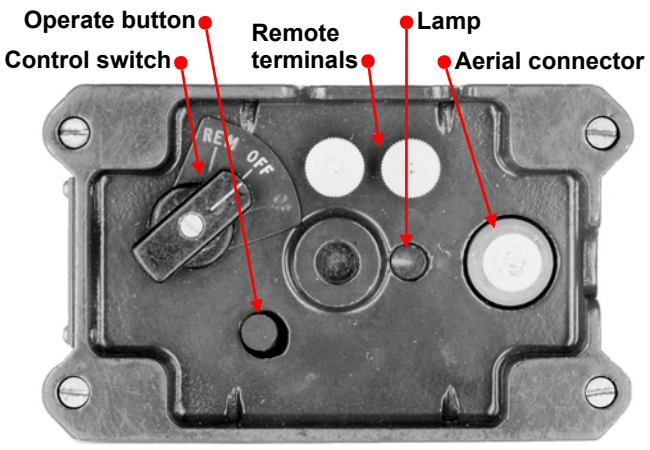
It was principally developed to provide infantry patrols operating in difficult terrain, such as jungles and similar environments, with a means of sending important information back to their base with minimal loss of time. Keying was controlled by a push button on the front panel of the set. Voice transmission was not possible.

Communication took the form of coded signalling similar to Morse, but it was not essential for an operator to understand Morse code. A system of signals was devised to cover certain exigencies, with a list of these signals fixed to the side of the set and updated as frequently as possible. It could also be configured to transmit a continuous signal when activated by a trip-wire device.

The A12 transmitter, together with its battery, was built into a waterproof container. During transit, it was carried in a canvas bag along with ancillary equipment. The transmitter operated on one of four predetermined crystal-controlled frequencies: 3.010, 4.490, 5.015, or 5.485 MHz. A short and a long collapsible aerial were provided; these were identical to those used with Wireless Set Nos. 88 and 31. Eight aerial loading coils were supplied—four for the short aerial and four for the long aerial—to match the aerial to the frequency of one of the four crystals. Before commencing operations, the appropriate crystal was fitted, and the matching loading coil and aerial were selected. The transmitter was then aligned using a trimmer to achieve maximum voltage at test points 2 and 3.

A special rechargeable battery was provided with the A12, along with an experimental charging unit powered by 12V DC. However, this unit did not accompany the set during operational use.

Although the design was promising and could have filled a gap in vital communications, the project was ultimately abandoned. It is believed that the Lightweight HF Patrol Radio X3145 (later Station Radio A16, renamed UK/PRC-316) fulfilled a similar requirement.




**Control panel view of Wireless Sender A12.**

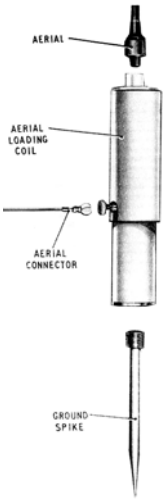
## References:

- User handbook (Trials Edition) for Wireless Sender A12, Jan. 1956, SRDE Handbook No. 916A.
- SRDE Working Instruction No. 4007A, Wireless Sender A12, Jan. 1956
- Summary of Army Wireless Sets, Part 2 - New range, revised Dec. 1954, Royal Signals Wing, School of Signals, Catterick Camp.
- Catalogue of major items of signal equipment under development, Issue No. 4, War Office (Signals 3), March 1957.

## Acknowledgements:

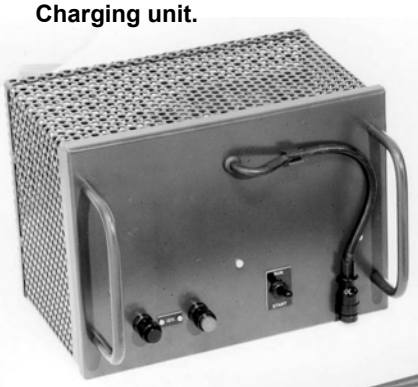
- Permission for taking photos and photocopies of the documents above, courtesy Royal Signals Museum, Blandford Forum, Dorset.

Complete equipment A12.




Aerial loading coil with ground spike and rod aerial

Charging unit.



Long aerial

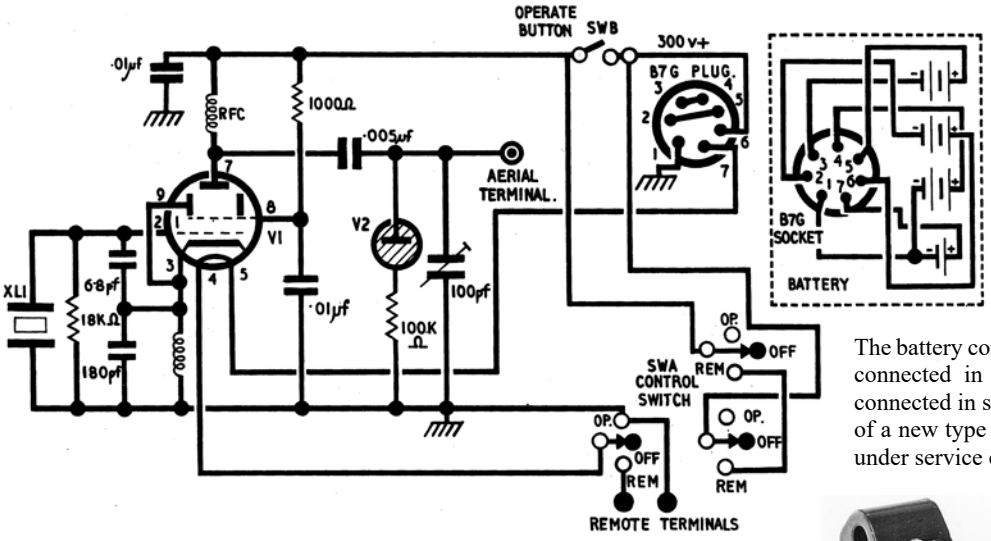
Wireless Sender A12

Short aerial

Aerial connector

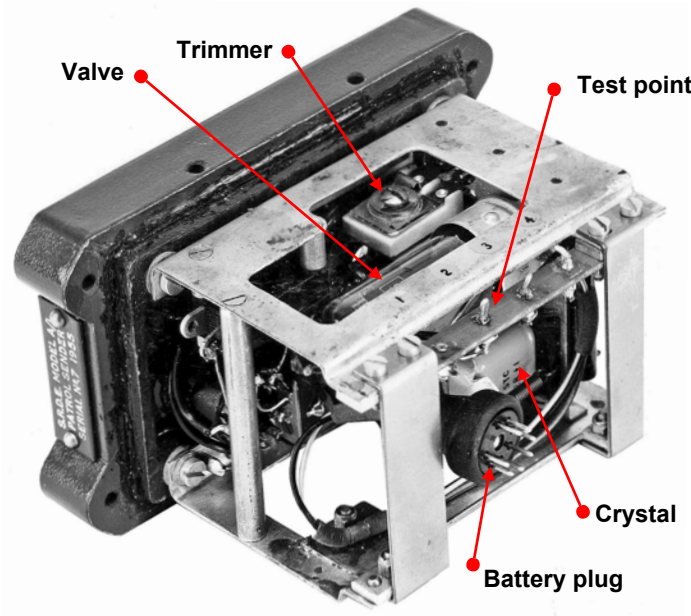
Canvas haversack

Aerial loading coil and User handbook

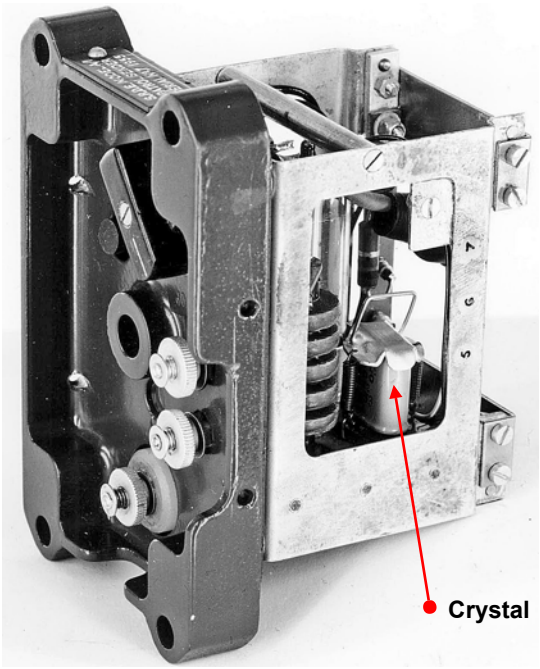



**WS A12 and rechargeable battery circuit diagram.**

The battery comprised three banks of 100V batteries, connected in series, and six 1.2V batteries, also connected in series, for the LT. These batteries were of a new type and had not yet been assessed for use under service conditions.




**Interior of WS A12 showing trimmer and test points.**




**Front panel and interior of WS A12.**

S.R.D.E. WORKING INSTRUCTION No. 4007 A.

## WIRELESS SENDER A12

OPERATING INSTRUCTIONS

See assembly diagrams on the other side of this instruction card.

Setting up

1. Unscrew the spike from the base of the aerial coil, reverse it, and screw it in, to protrude as shown in the diagram.
2. Assemble the aerial rod and insert it into the aerial coil. Attach the aerial connector to the terminal on the coil. Push the spike into firm ground, keeping the aerial upright.
3. Attach the connector to the aerial terminal on the sender. Then move the sender away from the aerial to keep the connector taut.
4. Attach an 8-yard coil of D10 twin cable to the remote terminals to make a counterpoise earth.

Operating

5. Set the control switch to OP and wait at least 15 seconds. Keep away from the aerial.
6. To send a message, press the operate button in the pre-arranged manner, and see that the lamp glows when the button is pressed.
7. After sending the message turn the switch OFF.

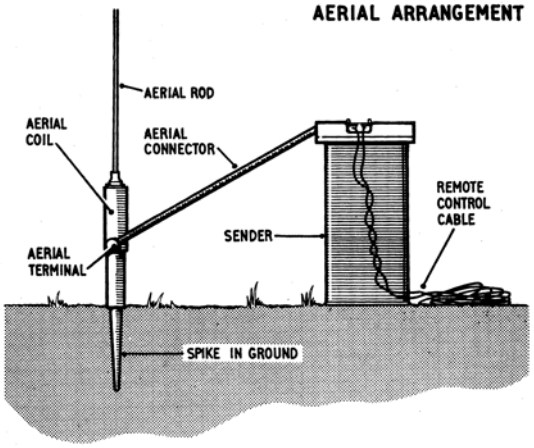
Battery life

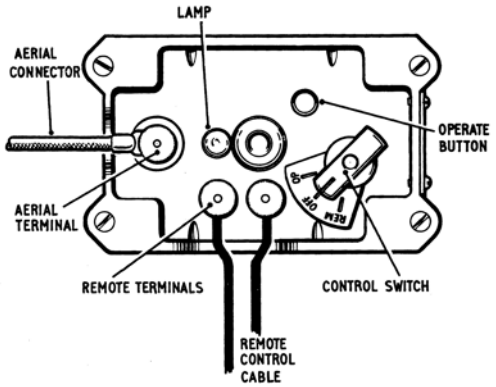
8. Loss of battery power is indicated by the lamp becoming weaker. If after this the lamp fails to glow assume that the battery is discharged. Remember the continuous life of the battery on send is approximately ten minutes.
9. When the battery requires charging, return the complete sender to workshops. The battery is rechargeable and must not be discarded.

Instructions for remote operation are not included on this card. Full description of Wireless sender A.12 is given in the handbook supplied with the sender.

RESTRICTED

AERIAL ARRANGEMENT

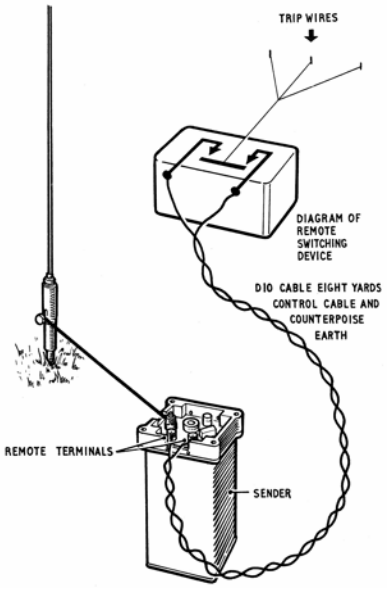



SENDER PANEL

JANUARY 1956.

**Working Instruction Card**



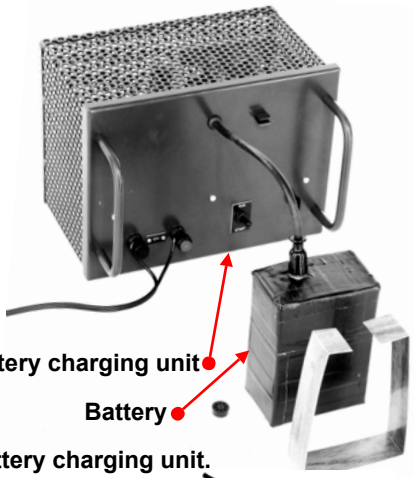

## Trip wires

Facilities were provided to connect trip wires via a remote switching device using a D10 cable, eight yards in length, to the remote terminals. This cable also functioned as a counterpoise.

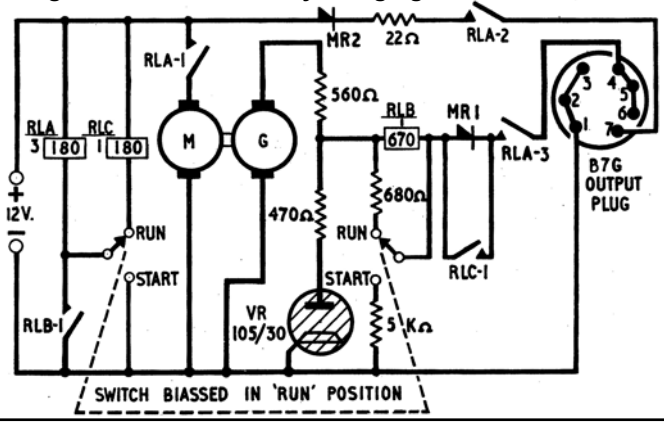
Disturbance of the trip wires caused the switching device to operate, automatically switching the transmitter on. It continued transmitting for the duration of the battery or until the remote switching device was reset.

## Battery charging.

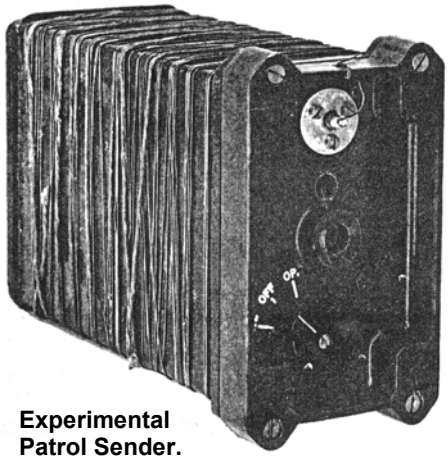
The special lightweight battery was recharged by an experimental charging unit using a 12V accumulator. For the LT section, only a reverse current diode and a resistor were used. The HT from the dynamotor was stabilised at 105V by a type VR105/30 valve, which charged the three 100V HT battery sections connected in parallel.




**Circuit diagram of the A12 battery charging unit.**



# Appendix 1: 'Experimental Patrol Sender', the development from the precursor of Wireless Sender A12, through X3145 and A16, to Clansman Station Radio UK/PRC-316.

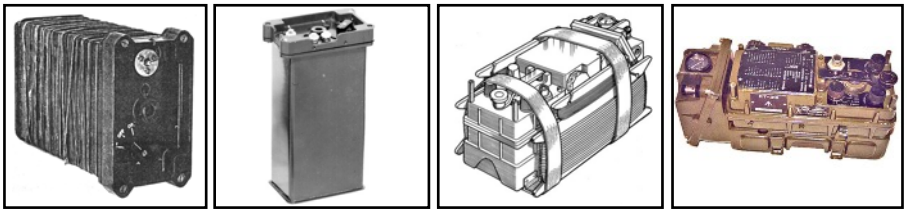


**Experimental Patrol Sender.**

The Experimental Patrol Sender, developed around 1953, was a miniature self-contained HF transmitter designed to provide one-way communication from jungle patrols to their base. The frequency was pre-determined by a plug-in crystal and preset tuning before operation was carried out at base.

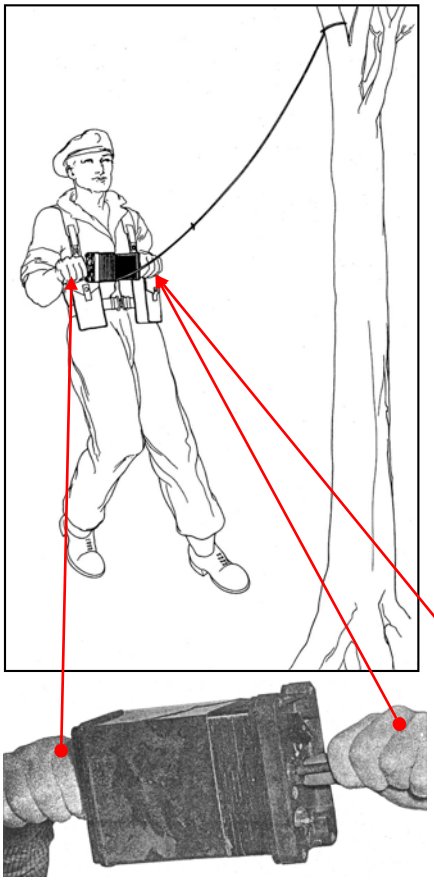
During trials in Malaya in 1954, the infantry decided that the wire aerial provided was not acceptable. The sets were modified to enable the use of rod aerials, which, as expected, had much shorter ranges than those attained with wire aerials. The modified set, designated Wireless Sender A12 in 1955, was probably trialled that year but was most likely abandoned. Renewed interest in the concept of a lightweight HF jungle set led to a new requirement in 1964. However, it was not until mid-1965 that this requirement was met by the SRDE prototype Lightweight HF Patrol Radio X3145, which underwent 'A' model trials in the Far East and the UK. This set eventually became the Station Radio A16, later renamed Clansman UK/PRC-316. It should be noted that all versions and models of the Jungle Patrol Sender concept were used only in a static role.

Main differences between the Experimental Patrol Sender and the later Wireless Sender A12.
- Minor changes were made to the Colpitts oscillator circuit diagram of the sender, particularly in the RF output circuit.
- It operated on only three fixed crystal-controlled channels: 3.8, 4.5, and 7 MHz.
- The aerial was a half-wave, cut-to-length wire, made from a single strand of 22 SWG enamelled copper wire. It was soldered to the aerial terminal of the sender and wound onto the case when carried in a canvas bag. The length was 118.5 ft for 3.8 MHz, 99.5 ft for 4.5 MHz, and 64 ft for 7 MHz.
- The rechargeable battery was essentially similar but was permanently mounted, with its connections soldered to the sender assembly. For charging, the three 100V battery sections were connected in parallel at the main switch position 'CH'.
- The length of the case was slightly shorter due to the absence of the later-fitted 7-pin plug and socket, which had separated the battery from the set, making charging easier.

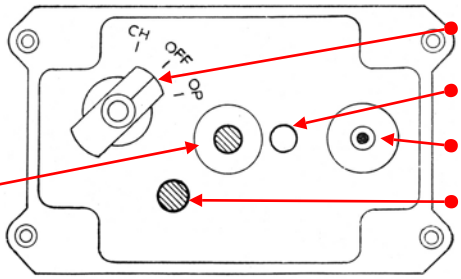


**Exp. Patrol Sender. Wireless Sender A12. Patrol Radio X3145. A16 UK/PRC-316.**

**Evolution of the Experimental Patrol Sender to the UK/PRC-316.**



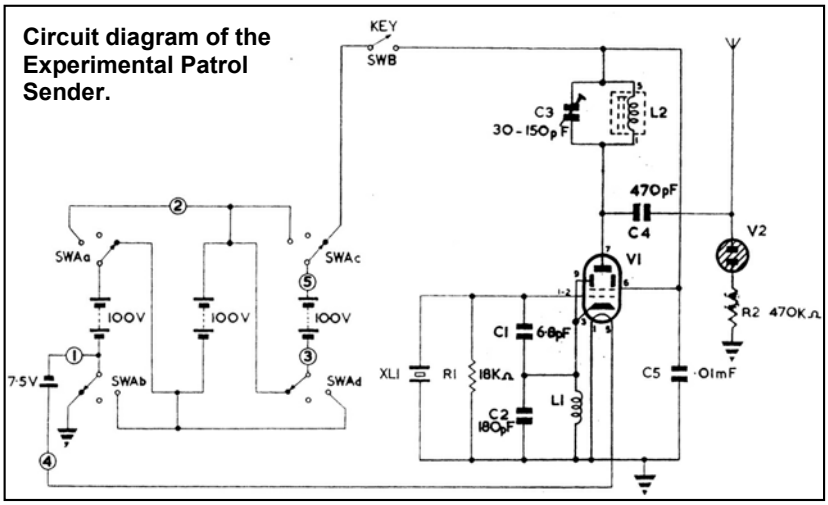
**Moulded recess for unwinding the wire aerial.**




**Front panel layout of the Experimental Patrol Sender.**

Unwinding the half-wave wire aerial.
A stick, cartridge, or any suitable object was inserted into the recess at each end of the set, and walking backwards was used to unwind the wire aerial wrapped around the set.

**Circuit diagram of the Experimental Patrol Sender.**




## References:


- User handbook (Trials Edition) for Experimental Patrol Sender, SRDE Handbook No. 840A, Nov. 1953.
- Lightweight HF Patrol Radio X3145, SRDE Handbook No. 1154A, Oct. 1965.
- Signal Officer in Chief Liaison Notes:
  - No. 42, Experimental Patrol Sender, page 25, 1955.
  - No. 56, Station Radio A16, page 20, June 1965.
  - No. 57, Jungle Patrol Set, page 12, Jan. 1966.
  - New Series No. 1, Jungle Patrol Set, June 1966.