'Walkiephone'

Series PTC122,123,124

Country of origin: UK

Remarks.

Although the 'Walkiephone' had no direct links with the original topics of the WftW website, it was considered worth including in the WftW 'Various' section. Both standard series and special versions of the earliest Pye portable VHF radiotelephone were covered.

The 'Walkiephone' was a portable VHF AM transceiver, designed to be carried on the user's chest. It was housed in a splash-proof steel case that included the batteries, attached to the body by adjustable webbing straps. Self-contained, it used a built-in microphone and a lightweight single Ardente headphone worn on one ear, with the only control being the press-to-talk button. The equipment was available in two basic variants, one with internal batteries, the other with an external battery container or pack.

Crystal control.

The receiver was a crystal-controlled superheterodyne with an RF stage. The eighth harmonic of the crystal frequency was fed to a germanium diode mixer which resulted in an IF of 10.5MHz or 10.7MHz. This was followed by a super regenerative IF detector with a quench frequency of 10-13kHz and via a low-pass filter to an AF output stage (also used as a modulator in transmit mode).

The ninth harmonic of the transmitter crystal oscillator frequency drove the RF power amplifier, which was anode-modulated by the receiver AF output amplifier. The microphone was a double-button carbon type. It is interesting to note that the receiver RF amplifier and transmitter RF output valves were subminiature types with wire ends, mounted on a 7-pin base.

DATA SUMMARY

Developer/maker: Pye Telecommunications, U.K.

Year of production: Early 1951.

Purpose: Commercial portable VHF transceiver.

Frequency coverage: 60-184MHz.

Receiver:

Circuit features: RF stage, local oscillator, diode mixer, super-regenerative detector, AF stage. AM.
IF: 10.5 or 10.7MHz Depending on version.
Sensitivity: 5-8µV for 10dB s/n ratio.
Frequency: Dependent on version. See list below.
Valves: 1AD4, 3V4, 1L4, 3V4.

Transmitter:

Circuit features: CO, freq. multiplier, RF output. AM.
Frequency: See list below.
RF output: 80-100mW, depending on series and version.
Valves: 1AD4, 1V4, 3V4

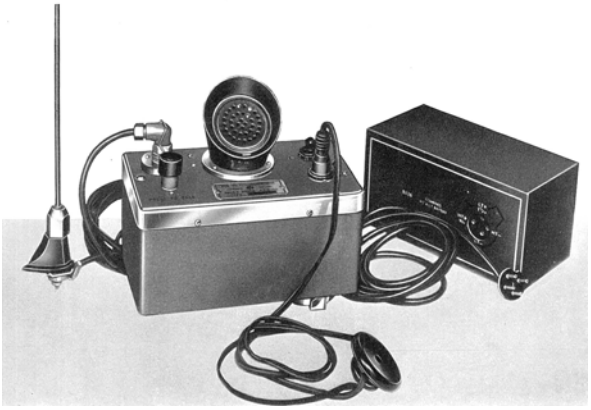
Aerial: Flexible steel tape.

Power supply: LT: 1.4V; HT: two 45 HT batteries in series.

Size (cm): Height 20.3, length 11.1, width 20.

Weight: 4.7kg complete with batteries. (Standard version).

Series	Frequency	RF out	
PTC122	60-100MHz	100mW	
PTC123	100-130MHz	80mW	* Not yet confirmed.
PTC124	130-184MHz*	Unknown	



The 'Gliderphone' was essentially a PTC123 air band series, adapted for communication from gliders and light aircraft with control towers and ground parties. The aerial base was replaced with a coaxial socket and plug which connected to an external aerial. The battery was a combined LT/HT pack, saving weight compared to the normal battery container, stowed in a convenient location.

Front panel view of a PTC123.

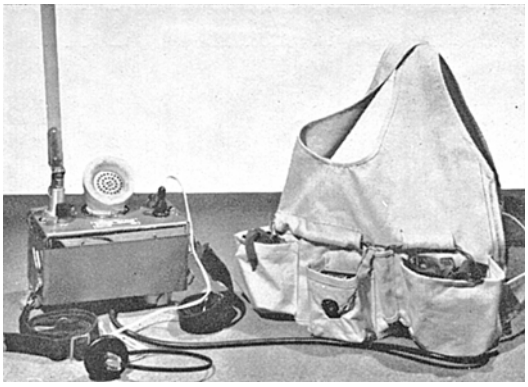
Acknowledgements:

With many thanks to Siegfried Droese, Germany, for kindly taking high-resolution photographs of a 'Walkiephone' from his collection.

References

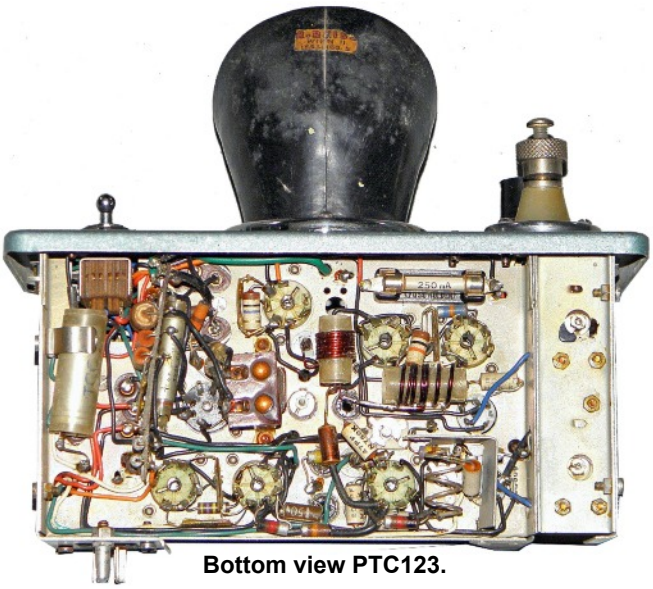
- 'Royal Signals assist in the Conquest of Everest', 'The Wire', The Corps Magazine of the Royal Signals, April 1954, pp112-113.
- 'Sir John Hunt pays tribute to the contribution made by PYE equipment to the successful climbing of Mt Everest', Pye Telecommunications New Letter June 1954, issue No. 26.
- VHF Radio-Telephone Series PTC123, 'Walkiephone', Technical Instructions, (Issue No. 1), Pye Telecommunications, n.d.
- 'Everest, 50 Years on top of the world', George Band, 2003, ISBN: 0007147481.

The British Mount Everest Expedition in 1953.

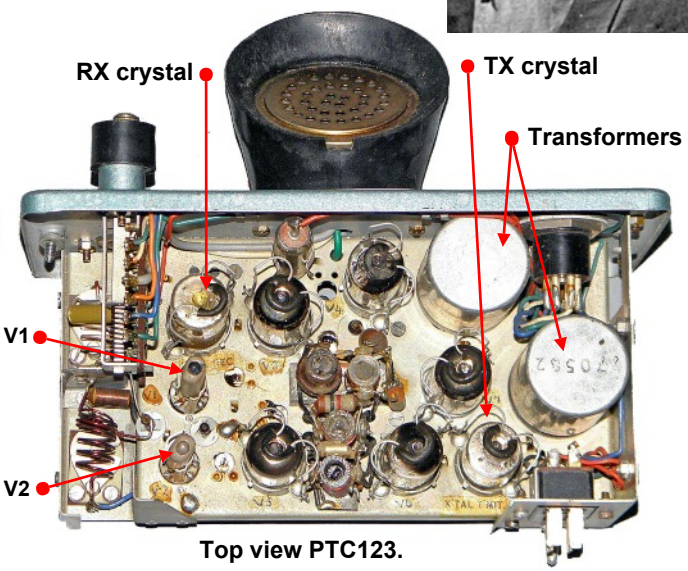


This was one of the ten specially modified PTC122 'Walkiephones' with battery waistcoat used for communication between various camps and climbers of the British Mount Everest Expedition of 1953.

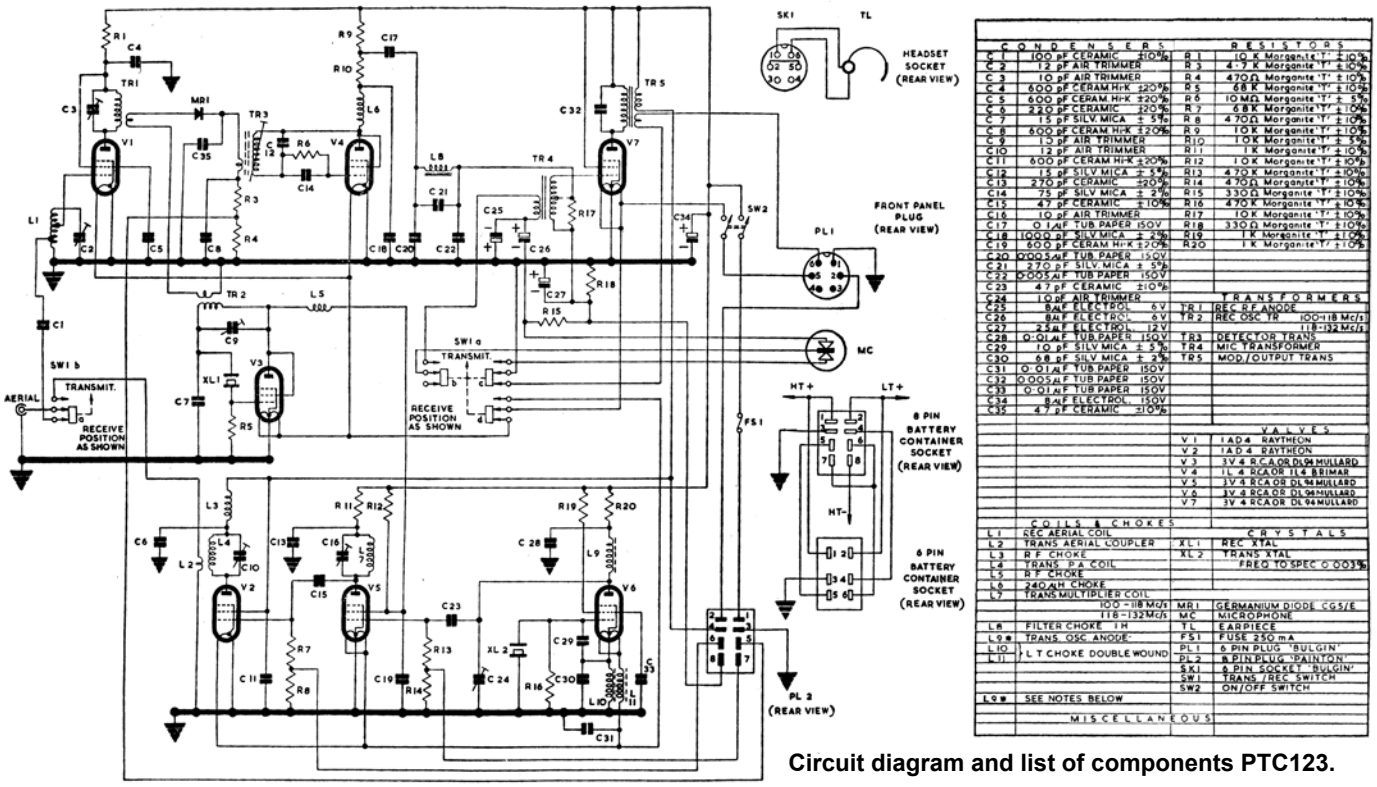
The decision to include the Pye Telecommunications 'Walkiephone' in the WftW 'Various' series came after reading a 1954 article in 'The Wire' (the magazine of the Royal Corps of Signals), which described in technical detail the Corps' participation, particularly that of John Band, in the successful conquest of the British Mount Everest Expedition in May 1953. Pye 'Walkiephones' were used for communication between the various camps. Specially for the expedition developed HT batteries and standard LT cells were carried in a waistcoat worn under the climbers' clothes to utilize body heat to maintain them at working temperature. The 'Walkiephones' operated on a crystal-controlled frequency of 72MHz. To enable climbers to communicate from camp to camp while tucked up in their sleeping bags, a rod aerial on a folding tripod was designed for erection outside the tent, with lightweight coax feeder 12 or 30ft long to plug into the 'Walkiephone'. The tripod legs could be weighted down with rocks or pieces of ice to hold the aerial steady against the wind.



Bottom view PTC123.



Top view PTC123.



CONDENSERS		RESISTORS	
C1	100 pF CERAMIC ±10%	R1	10 K Morganite 'T' ±10%
C2	12 pF AIR TRIMMER	R3	4·7 K Morganite 'T' ±10%
C3	10 pF AIR TRIMMER	R4	470 Ω Morganite 'T' ±10%
C4	600 pF CERAM HiK ±20%	R5	68 K Morganite 'T' ±10%
C5	600 pF CERAM HiK ±20%	R6	10 MΩ Morganite 'T' ± 5%
C6	220 pF CERAMIC ±20%	R7	68 K Morganite 'T' ±10%
C7	15 pF SILV MICA ± 5%	R8	4·700 Ω Morganite 'T' ±10%
C8	600 pF CERAM HiK ±20%	R9	10 K Morganite 'T' ±10%
C9	15 pF AIR TRIMMER	R10	10 K Morganite 'T' ± 5%
C10	12 pF AIR TRIMMER	R11	1 K Morganite 'T' ±10%
C11	600 pF CERAM HiK ±20%	R12	10 K Morganite 'T' ±10%
C12	15 pF SILV MICA ± 5%	R13	470 K Morganite 'T' ±10%
C13	270 pF CERAMIC ±20%	R14	470 Ω Morganite 'T' ±10%
C14	75 pF SILV MICA ± 2%	R15	330 Ω Morganite 'T' ±10%
C15	47 pF CERAMIC ±10%	R16	470 K Morganite 'T' ±10%
C16	10 pF AIR TRIMMER	R17	10 K Morganite 'T' ±10%
C17	0·1 μF TUB PAPER 150V	R18	330 Ω Morganite 'T' ±10%
C18	1000 pF SILV MICA ± 2%	R19	1 K Morganite 'T' ±10%
C19	600 pF CERAM HiK ±20%	R20	1 K Morganite 'T' ±10%
C20	0·005 μF TUB PAPER 150V		
C21	270 pF SILV MICA ± 5%		
C22	0·005 μF TUB PAPER 150V		
C23	47 pF CERAMIC ±10%		
C24	10 pF AIR TRIMMER	**TRANSFORMERS**	
C25	8 μF ELECTROL 6V	TR1	REC R.F. ANODE
C26	8 μF ELECTROL 6V	TR2	REC OSC. TR 100-118 Mc/s
C27	25 μF ELECTROL 12V		118-132 Mc/s
C28	0·01 μF TUB PAPER 150V	TR3	DETECTOR TRANS.
C29	10 pF SILV MICA ± 5%	TR4	MIC TRANSFORMER
C30	68 pF SILV MICA ± 2%	TR5	MOD / OUTPUT TRANS
C31	0·01 μF TUB PAPER 150V		
C32	0·005 μF TUB PAPER 150V		
C33	0·01 μF TUB PAPER 150V		
C34	8 μF ELECTROL 150V		
C35	47 pF CERAMIC ±10%		
		VALVES	
		V1	1 AD4 RAYTHEON
		V2	1 AD4 RAYTHEON
		V3	3V4 RCA OR DL94 MULLARD
		V4	1L4 RCA OR 1L4 BRIMAR
		V5	3V4 RCA OR DL94 MULLARD
		V6	3V4 RCA OR DL94 MULLARD
		V7	3V4 RCA OR DL94 MULLARD
COILS & CHOKES			
L1	REC AERIAL COIL	**CRYSTALS**	
L2	TRANS AERIAL COUPLER	XL1	REC XTAL
L3	R F CHOKE	XL2	TRANS XTAL
L4	TRANS P A COIL		FREQ TO SPEC 0·003%
L5	R F CHOKE		
L6	240 nH CHOKE		
L7	TRANS MULTIPLIER COIL 100 - 118 Mc/s	MR1	GERMANIUM DIODE CG5/E
	118 - 132 Mc/s	MC	MICROPHONE
L8	FILTER CHOKE 1H	TL	EARPIECE
L9*	TRANS. OSC. ANODE	FS1	FUSE 250 mA
L10	L T CHOKE DOUBLE WOUND	PL1	6 PIN PLUG 'BULGIN'
L11		PL2	8 PIN PLUG 'PAINTON'
		SK1	6 PIN SOCKET 'BULGIN'
		SW1	TRANS / REC SWITCH
		SW2	ON/OFF SWITCH
L9*	SEE NOTES BELOW		
	MISCELLANEOUS		

Circuit diagram and list of components PTC123.