B.R. 1520 (RESTRICTED)

HANDBOOK

FOR

RECEIVER OUTFIT Q P.

RADIO EQUIPMENT DEPARTMENT

ADMIRALTY.

MAY 1946.

R.E. 17/46.

OUTFIT QP.

CHAPTER 1.

DESCRIPTION OF OUTFIT.

Outfit QP is a complete receiving equipment for general search and intercept purposes within the band 280 to 650 Mc/s. It may also be required for R.C.M. monitoring. The receiver of the outfit may also be used in D/F Outfit RU1.

The outfit comprises the following :-

(a) Aerial Outfit ANE.

(b) Receiver P.58. A.P.53997 or A.P.53997B/C.

(c) Headphones :-

(i) High resistance phones for use with P.58 A.P.53997.
This set consists of a pair of high resistance telephones with headphone and leads A.P. 3662.

(ii) Low resistance phones for use with P.58 A.P.53997B/C.
This set consists of :-

Head Gear for Receivers A.P.4966.	(One)
Receiver, telephone (equalized) A.P.W621.	(Two)
Lead, plug single 3-point A.P. 7151.	(One)

The schematic layout of the Outfit is shown in Fig. 1 and 2B.

CHAPTER 2.

AERIAL OUTFIT ANE.

The aerial consists of a bi-conical dipole unit dimensioned to suit the P.58 receiver frequency coverage band. The connection between the aerial cones and the receiver is made by a run of twin concentric, lead covered, polythene feeder (A.P.13813) whose maximum length should not exceed 100 ft. (See Fig. 1).

The aerial outfit includes the following :-

(i) Aerial Unit Design 16, A.P.57525.

(ii) 10 ft. length of feeder. A.P.13813.

(iii) Watertight Junction Box ('13/'13) A.P. 58135.

(iv) Main Feeder Run (100ft. maximum) A.P.13813.

(v) Junction Box A.P.54432.

(vi) 6 ft. length of flexible feeder A.P. 13811.

(vii) Two in number Filter Units Design 19. A.P. 57295 (with A.P. 53997 receiver only).

1. Aerial Unit, Design 16 (A.P.57525).

This assembly comprises aerial cones, with supports, and a moulded junction piece. This moulding incorporates the stubs, for connection to the conical dipole elements, and a junction box to take feeder A.P. 13813.

The aerial will be mounted as high as possible, with its axis at 45° to the vertical, to permit of the reception of either horizontally or vertically polarised signals. The aerial cones are connected to the receiver via a screened, twin concentric feeder.

2. Feeders.

The feeder run is in three sections. Firstly, a short section, about 10 ft. long, from the aerial unit to a watertight junction box, on the mast, secondly the main feeder run, anything up to a maximum of 100 ft., from the watertight junction box to the junction box inside the office. Finally, a 6 ft. length of flexible feeder to connect the junction box in the office to the receiver.

The receiver aerial plug A.P. W6413 is connected to the free end of the 6 ft. length of flexible cable. A.P. W6413 is a 3-pin plug, the 2 pins in line are connected to the inner conductors of the cable, the third pin being connected to the cable clamp which grips the outer conducting sheath. (See Fig. 7).

NOTE :- In cases where the receiver P58 is also used in conjunction with a D/F Outfit, e.g. RU1 some system of aerial switching may be included.

CHAPTER 3.

RECEIVER P.58

"A.P. 53997, SERIAL NOS. 1-100

These employ Type 955 (CV.1059) valves in the R/F Tuning Unit and are fitted with B.T.H., I.F. Amplifier. Two high pass R/F filter units, to provide protection against transmissions below 240 Mc/s, may be fitted in the aerial feeder to this receiver (*see* Fig. 2B). The mains input socket is at the rear of the case."

A.P.53997B, SERIAL NOS. 1-100.

These employ RL18 valves (NR88) (CV1197) together with an I/F amplifier A.P.57205. They also incorporate high pass filter units in the aerial input circuit. The mains input socket with screened plug is at the rear of the case.

A.P.53997C, SERIAL NOS. 101-500.

These receivers are similar in detail to the A.P.53997B, with the addition of a 45 Mc/s I/F output, for use with a panoramic attachment, which is brought out to the left hand jack of the two lower output points, the right hand jack providing the audio phone output. This model has only one audio output point as opposed to the two, in parallel, on the A.P. 53997B.

1. Introduction.

Receiver P.58 operates on the superheterodyne principle, and is designed for pulse signal interception in the frequency range 300 - 600 Mc/s. The actual range covered is 280 - 650 Mc/s. A pre-mixer amplifying stage is incorporated, the selectivity of which results in image rejection of 25 - 30 db. The intermediate frequency amplifier has a mid-band frequency of 45 Mc/s., with a total bandwidth of 3.5 Mc/s. The internal power pack is suitable for operation from an A.C. supply of 200/250v. 50 cycles/sec.

The R/F tuning circuits are of the contactless "Butterfly" type. The tuning controls are ganged to a single knob, and the frequency coverage is obtained in one sweep of the tuning system.

The receiver is designed for use with a balanced input feeder of about 100 ohms impedance.

The receiver has a built-in pulse repetition frequency counter circuit, which gives a direct reading of p.r.f. on a meter. The same meter can be switched to monitor the crystal mixer current or to function as an output meter.

The output provisions are :-

(1) On Receivers A.P. 53997.

(a) Video socket for use with C.R.T.

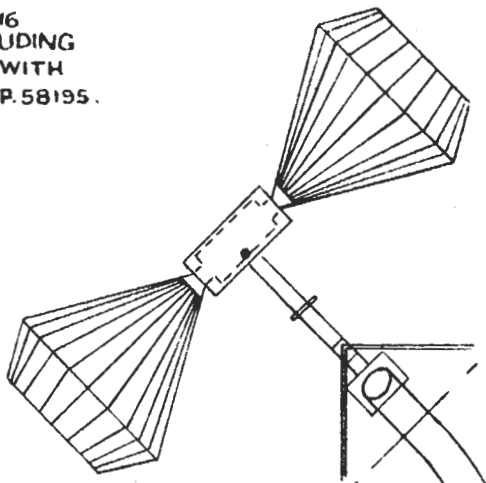
(b) One jack giving direct audio output for high resistance phones.

(c) Audio output from the trigger circuit.

OUTFIT QP.

SCHEMATIC LAYOUT.

AERIAL UNIT DESIGN 16 (PATT. No 57525) INCLUDING MOULDING DIPOLE WITH LEAD 6 INS. LONG AP. 58195.



10FT OF CABLE 13813

JUNCTION BOX 58135

CABLE 13813 (MAX LENGTH 100FT.)

AERIAL OUTFIT A.N.E.

JUNCTION BOX 54432

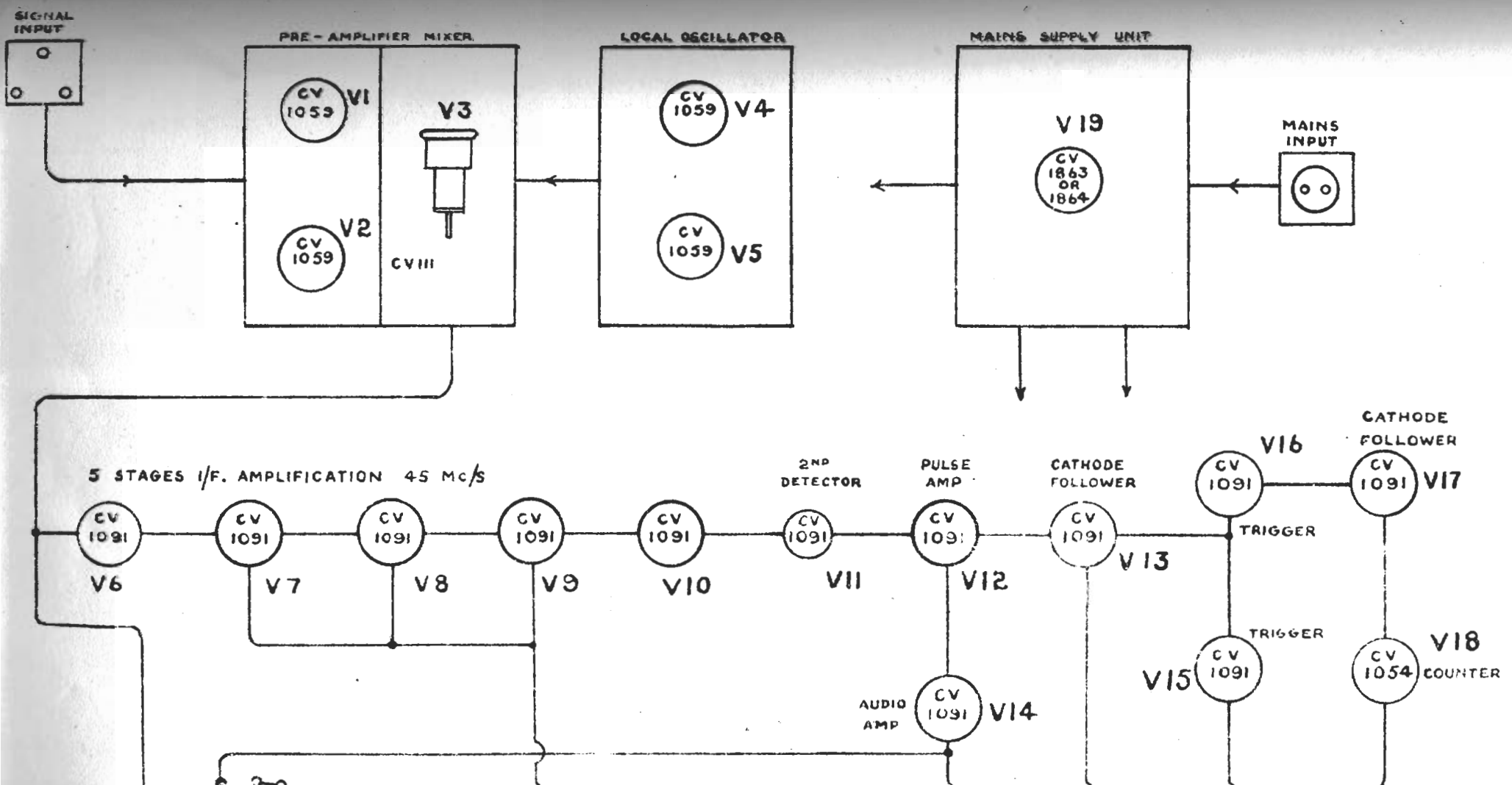
6FT OF CABLE 13811

CABLE PLUG AP. 6413 IS PART OF RECEIVER

RECEIVER P58 AP. 53997 B/C

230V 50~

LOW RESISTANCE PHONES



RECEIVER P58 AP.53997 (OUTFIT QP)
STAGE LINE UP

RECEIVER P58

AP53997

HEAD ON VIEW

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