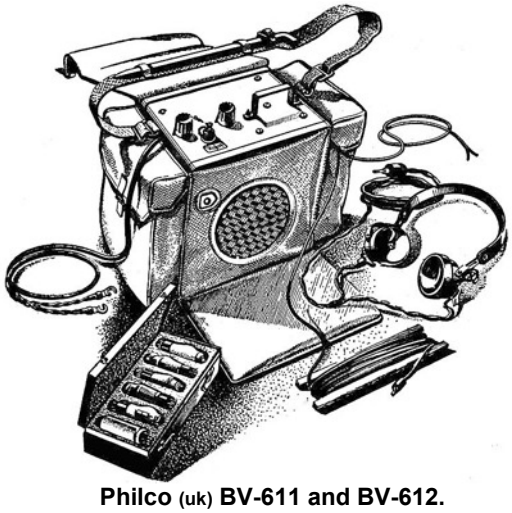
'Beetle'

Country of origin: England

Murphy Radio Ltd. B 81 receiver (1939).

Murphy Radio Ltd. B 93 receiver (1940)



Philco (uk) BV-611 and BV-612.

Four types of 'Beetle' receivers, illustrated above, are known to have been issued for the purpose of receiving Beetle long-wave wireless transmissions. It is possible that additional long-wave receivers from private sources were also utilized, particularly by the Home Guard (Appx. 1, Page 3, #4).

Acknowledgements:

With many thanks to Richard Hawkins, G6RVI, who kindly provided a document that definitively confirmed the use of commercially built wireless receivers in Beetle: the Murphy B 81 and B 93, as well as the Philco BV-611 and BV-612.

This supplement includes a follow-up to the following WftW Volume 3 entries: Army Broadcast Reception Sets #50 (Philco BV-611 and BV-612), Army Welfare Receiver BV-613 #64, as well as WftW Supplement Chapter 288.

Remarks.

Operation 'Beetle' was the codename for a little-known secret invasion alert system devised by British military planners and intelligence services. It was implemented to prepare for the possibility of a German invasion of the United Kingdom during the early years of World War II, when the threat was at its peak. The system's primary objective was to utilise wireless broadcasts—rather than land-line communications—to disseminate critical instructions in the event of a German landing around 1940–41. Operation Beetle formed part of a broader, layered defensive strategy developed in response to the looming threat of Operation Sea Lion, Germany's planned invasion of Britain.
Designed to provide early and reliable alerts, Operation Beetle was integrated into a network of coastal observation posts, military intelligence channels, and local Home Guard surveillance. Any suspected or confirmed landing would trigger an alert up the command chain. Initially, the system prioritised beach defence units, and by July 1941, its coverage was extended to include Home Guard anti-tank positions.

Domestic broadcast receivers.

The Beetle broadcasts were transmitted via regional long-wave transmitters and were intended to be received on standard domestic broadcast sets tuned to specific long-wave frequencies. This approach addressed the shortage of military wireless equipment and circumvented the slower, land-line-based signal distribution systems. This WftW chapter primarily focuses on four receiver models: two commercial units already in production by Murphy, and Philco UK specifically built two models for this purpose, based on a car radio receiver developed by Philco USA. All were powered by batteries or accumulators, thereby avoiding reliance on mains electricity during power outages.

The 'Beetle' wireless receivers.

The Philco series was particularly interesting, evolving from an American-produced 1936 car medium-wave broadcast band receiver into the BV-611 and BV-612 models. These were built in the UK at Philco London, using British valves and components, but incorporating imported key items. Eventually, in 1944, when a German invasion was no longer expected, BV-612 receivers were converted to operate on medium wave and issued as troop welfare receivers.

The 'Beetle' frequencies.

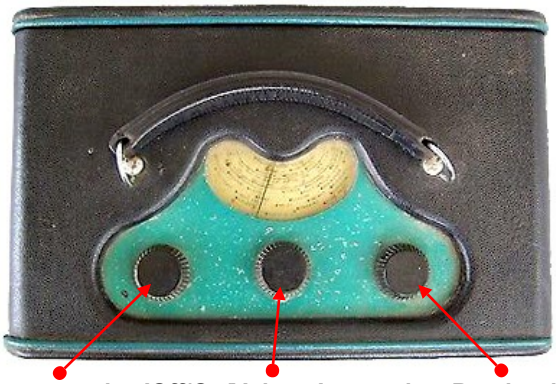
At the time this chapter was compiled, no source was found that identified the exact frequency band used by 'Beetle'. However, based on the frequency coverage limits of the receivers, it was likely between 200 and 300 kHz.
- Murphy B 81: 150–326 kHz, Murphy B 93: 150-**300** kHz.
- Philco (UK): BV-611 and BV-612: **200**-500 kHz.

References:

- Organisation of Beetle R/T Wireless Network, June 1940 to June 1942. Document Z/6028/G(I). See Appendix 1.
- Signals Information in Brief, provided by C.I.E.M.E., August 1945.
- Murphy Radio Ltd., Sales Brochure B 81.
- Murphy Radio Service Instructions, B 81 and B 93.
- WftW, Volume 3: Reception Sets , L. Meulstee, July 2001. ISBN 0-9520633-5-2.
- WftW, Volume 4, Supplement, Chap. 288, BV-613, August 2025.
- Reception Set Philco BV-611 and BV-612 (6-Volt Operation), Working Instructions, WO 987, ZA 12598, n.d.
- Reception Set Philco BV-611 and BV-612, Working Instructions (Card), WO 988, ZA 16099.
- Reception Set Philco BV-613, Working Instructions (Card), ZA 25123.WO 988,
- EMERs Tels E 740, Data Summary: Receiver, Broadcast, BV-613, Issue 1, 7 May 1945.
- Various public domain sources retrieved from the internet.

Murphy B 81.

Interior view of the Murphy B 81.



Top view of the Murphy B 81.

Remarks.

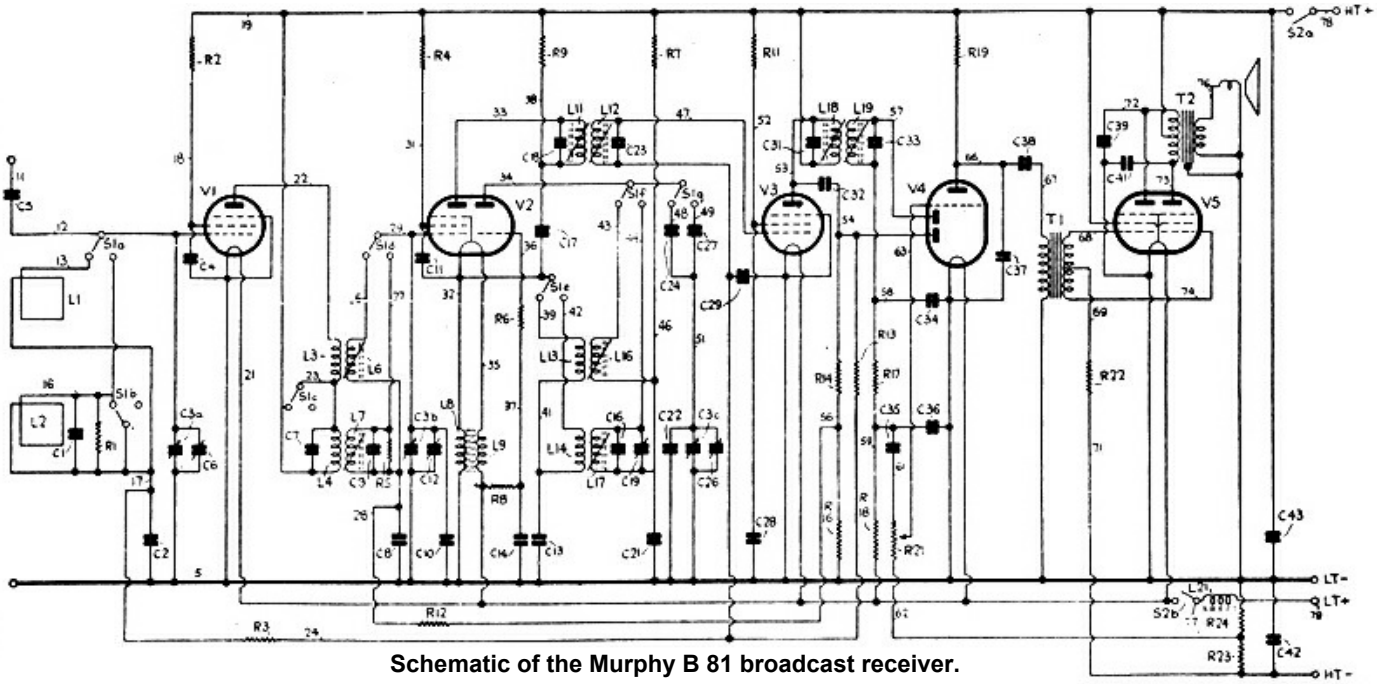
The Murphy Radio Ltd B 81 was a commercial portable broadcast receiver introduced in 1939. In 1940, it was pressed into service as an alert receiver for Operation Beetle, likely as a stopgap measure until a more suitable and robust receiver could be developed. According to one source, it was also referred to as the 'Reception Set Murphy B 81'. The receiver operated on dry HT batteries and a 2-Volt accumulator for the filaments.

Its electrical construction was notable: it used a frame aerial and required an RF amplifier stage. A push-pull audio output amplifier provided higher audio output. The main differences between the B 81 and the later B 93 included a redesigned frame aerial and a change in the on/off switch configuration. In the B 93, the switch was no longer integrated with the volume control but was instead implemented as a third position on the range switch.

DATA SUMMARY

Maker: Murphy Radio Ltd.
Purpose: Commercial portable broadcast receiver, used in 'Beetle'.
Introduced: May 1939.
Frequency coverage: 200-550m (1500-545kHz) and 920-2000m (326-150kHz).
Circuit features: Superheterodyne; RF stage, Mixer/oscillator, IF, Det/AVC/AF, Push/pull AF output. **IF**: 465kHz.
Valves: *V1/3:* **VP23** (ARP12/ZA7023) 2x, *V2:* **TP26** (ARTP2/ZA3062), *V4:* **HL23DD** (AR8/ZA7022), *V5:* **QP2** (ARP37/ZA2938).
Aerial: Frame aerial, external wire aerial and earth.
Weight : 25 lb (including batteries).
Size (in): Height 11, length 8¾ , width 14.
Power supply: 2-volt accumulator, 120V HT dry battery.
Consumption: LT 540mA. HT 10½ mA.

C1	58 pf.	C22	35 pf.	R1	100,000
C2	·05	C23	92 pf.	R2	150,000
C3a	Variable	C24	382 pf.	R3	220,000
C3b	Variable	C26	Trimmer	R4	68,000
C3c	Variable	C27	736 pf.	R5	1 MΩ
C4	·05	C28	·05	R6	1,000
C5	5 pf.	C29	·05	R7	27,000
C6	Trimmer	C31	92 pf.	R8	47,000
C7	245 pf.	C32	100 pf.	R9	4,700
C8	·05	C33	92 pf.	R11	100,000
C9	65 pf.	C34	50 pf.	R12	3·3 MΩ
C10	10 pf.	C35	·01	R13	2·2 MΩ
C11	·05	C36	50 pf.	R14	470,000
C12	Trimmer	C37	500 pf.	R16	470,000
C13	·003	C38	·05	R17	47,000
C14	500 pf.	C39	·007	R18	2·2 MΩ
C16	175 pf.	C41	·007	R19	68,000
C17	·05	C42	50	R21	2 MΩ
C18	92 pf.	C43	8	R22	150,000
C19	Trimmer			R23	820
C21	·05			R24	75



Schematic of the Murphy B 81 broadcast receiver.

Murphy B 93

Remarks.

The Murphy Radio Ltd B 93 was a commercial portable broadcast receiver introduced in 1940. It was pressed into service as an alert receiver for Operation Beetle, serving as a stopgap until a more robust receiver was developed. Also known as the "Reception Set Murphy B 93," according to one source, it operated on dry HT batteries and a 2-Volt accumulator for the filaments.

Its electrical construction was quite similar to that of the earlier B 81, featuring an inductively coupled frame aerial with an RF amplifier stage and a push-pull AF output amplifier.

DATA SUMMARY

Maker: Murphy Radio Ltd.

Purpose: Commercial portable broadcast receiver, used in 'Beetle'.

Introduced: July 1940.

Frequency coverage: 200-550m (1500-545kHz) and 1000 - 2000m (300-150kHz).

Circuit features: Superheterodyne; RF stage, Mixer/oscillator, IF, Det/AVC/AF, Push/pull AF output. **IF**: 465kHz.

Valves: *V1/3:* **VP23** (ARP12/ZA7023) 2x, *V2:* **TP26** (ARTP2/ZA3062), *V4:* **HL23DD** (AR8/ZA7022), *V5:* **QP2** (ARP37/ZA2938).

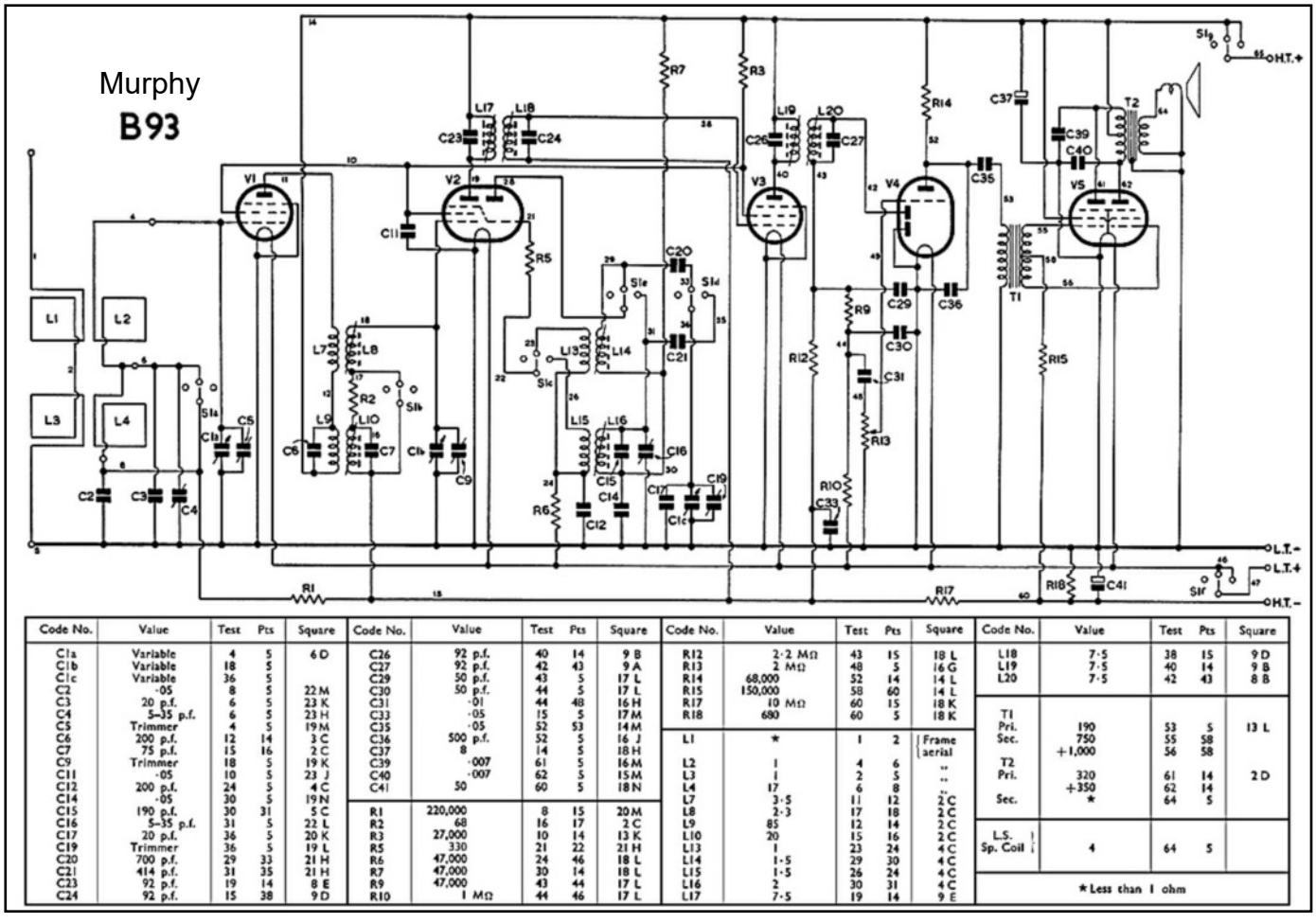
Aerial: Frame aerial or external wire and earth.

Weight : 28lb Including batteries.

Size (in): Height 13½, length 7½, width 13¾.

Power supply: 2-volt accumulator, 120V HT dry battery.

Consumption: LT 550mA, HT 10 mA.



Code No.	Value	Test	Pts	Square
C1a	Variable	4	5	6 D
C1b	Variable	18	5	
C1c	Variable	36	5	
C2	·05	8	5	22 M
C3	20 p.f.	6	5	23 K
C4	5–35 p.f.	6	5	23 H
C5	Trimmer	4	5	19 M
C6	200 p.f.	12	14	3 C
C7	75 p.f.	15	16	2 C
C9	Trimmer	18	5	19 K
C11	·05	10	5	23 J
C12	200 p.f.	24	5	4 C
C14	·05	30	5	19 N
C15	190 p.f.	30	31	5 C
C16	5–35 p.f.	31	5	22 L
C17	20 p.f.	36	5	20 K
C19	Trimmer	36	5	19 L
C20	700 p.f.	29	33	21 H
C21	414 p.f.	31	35	21 H
C23	92 p.f.	19	14	8 E
C24	92 p.f.	15	38	9 D

Code No.	Value	Test	Pts	Square
C26	92 p.f.	40	14	9 B
C27	92 p.f.	42	43	9 A
C29	50 p.f.	43	5	17 L
C30	50 p.f.	44	5	17 L
C31	·01	44	48	16 H
C33	·05	15	5	17 M
C35	·05	52	53	14 M
C36	500 p.f.	52	5	16 J
C37	8	14	5	18 H
C39	·007	61	5	16 M
C40	·007	62	5	15 M
C41	50	60	5	18 N
R1	220,000	8	15	20 M
R2	68	16	17	2 C
R3	27,000	10	14	13 K
R5	330	21	22	21 H
R6	47,000	24	46	18 L
R7	47,000	30	14	18 L
R9	47,000	43	44	17 L
R10	1 MΩ	44	46	17 L

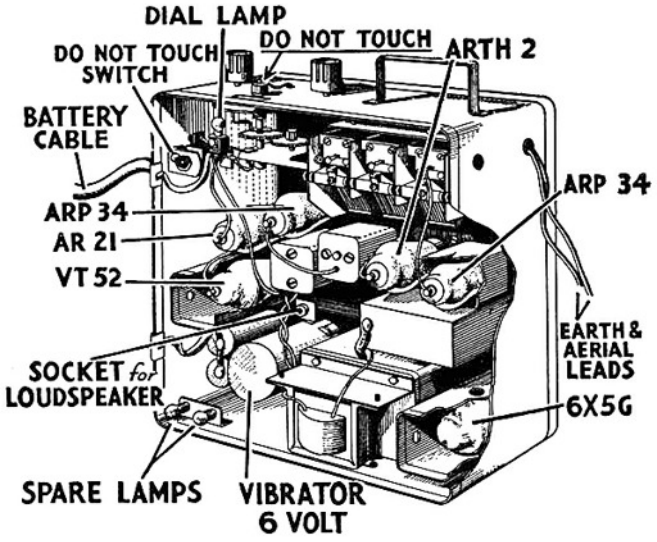
Code No.	Value	Test	Pts	Square
R12	2·2 MΩ	43	15	18 L
R13	2 MΩ	48	5	16 G
R14	68,000	52	14	14 L
R15	150,000	58	60	14 L
R17	10 MΩ	60	15	18 K
R18	680	60	5	18 K
L1	*	1	2	Frame aerial
L2	1	4	6	"
L3	1	2	5	"
L4	17	6	8	"
L7	3·5	11	12	2 C
L8	2·3	17	18	2 C
L9	85	12	14	2 C
L10	20	15	16	2 C
L13	1	23	24	4 C
L14	1·5	29	30	4 C
L15	1·5	26	24	4 C
L16	2	30	31	4 C
L17	7·5	19	14	9 E

Code No.	Value	Test	Pts	Square
L18	7·5	38	15	9 D
L19	7·5	40	14	9 B
L20	7·5	42	43	8 B
T1 Pri.	190	53	5	13 L
Sec.	750	55	58	
	+1,000	56	58	
T2 Pri.	320	61	14	2 D
	+350	62	14	
Sec.	*	64	5	
L.S. Sp. Coil	4	64	5	

*Less than 1 ohm

Schematic of the Murphy B 93.

Philco BV-611 and BV-612.



BV-612. General view (left) and internal view (right).

Remarks.

At the time when WftW Volume 3: Reception Sets, chapters BV-611 and BV-612 were prepared, no information regarding their use with the 'Beetle' was available. The 'Beetle' was likely still protected under the 60-year secrecy act. As a result, assumptions were made about its purpose, which later turned out to be partly incorrect.
There was very little difference between the BV-611 and BV-612. An interesting feature was that the polarity of the 6V input did not need to be observed—a characteristic inherited from the original 1936 design by Philco USA.

One advantage of the Philco BV-611/612 over the Murphy 'Beetle' receivers was that they did not require dry HT batteries, which were in short supply at the time.

The confirmation of their use in conjunction with Murphy receivers within the Beetle system was regarded as a significant advancement. It ultimately led to the amendment and rewriting of three chapters: WftW Volume 4 Supplement, chapters 288 V 1.01 and 358, and Volume 3 Amendment No. 1 V 1.01.

DATA SUMMARY

Organisation: Beetle.
Maker: Philco (UK), London.
Year of introduction: 1940.
Purpose: Listening set for 'Beetle'.
Frequency coverage: 200-500kHz.
Sensitivity: 5µV for 50mW output.
AF output: 50mW into a built-in 3Ω loudspeaker, and Receivers Headgear, C.L.R. Double, Mk. III.
Circuit features: Superheterodyne; RF, Mixer/osc., IF, Det/AVC/AF, AF output. **IF:** 125kHz.
Valves: V1a/b: ARP34/ZA3493 (2x), **V2**: ARTH2/ZA2895, **V3**: AR21/ZA3497, **V4**: VT52/ZA11006, 6X5G/ZA3494.
Aerial: 25ft rubber insulated Wire Electric R5 on a spool.
Power supply: 6-Volt, 45 or 70Ah accumulator.
Consumption: 4.8A.
Weight (set only): 17½ lb.
Size (in): Height 10½, length 8½, width 7¼.
V.A.O.S.: ZA11579 (BV-611) and ZA14663 (BV-612).

The Philco (GB) 'BV' series.

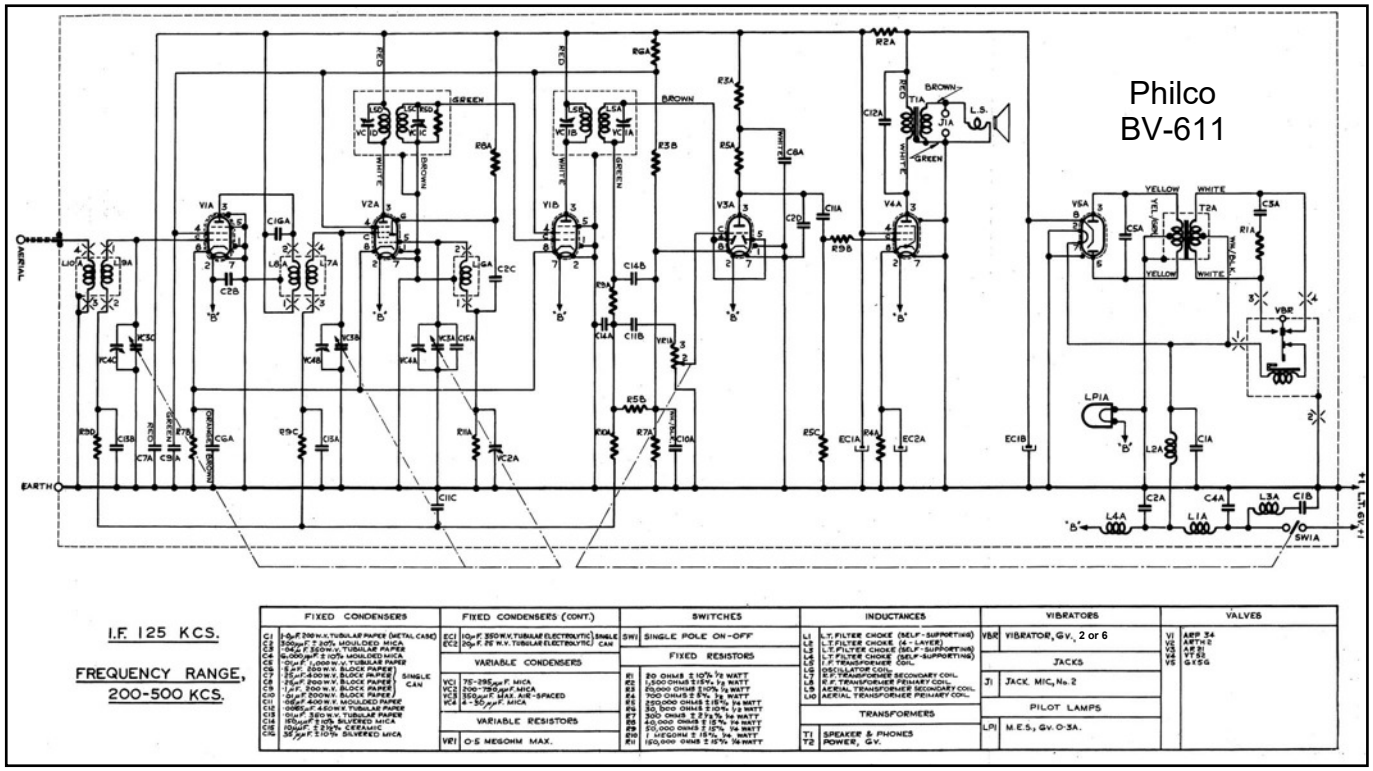
Around 1985, I was given a copy of the working instructions booklet for the Army-type BV-611 receiver, designated as a 'Listening Set.' It was surprising to find that it covered only part of the long-wave broadcast band, with an extended range up to 500 kHz. Attempts to determine its intended application yielded no results.

Operation 'Beetle'.

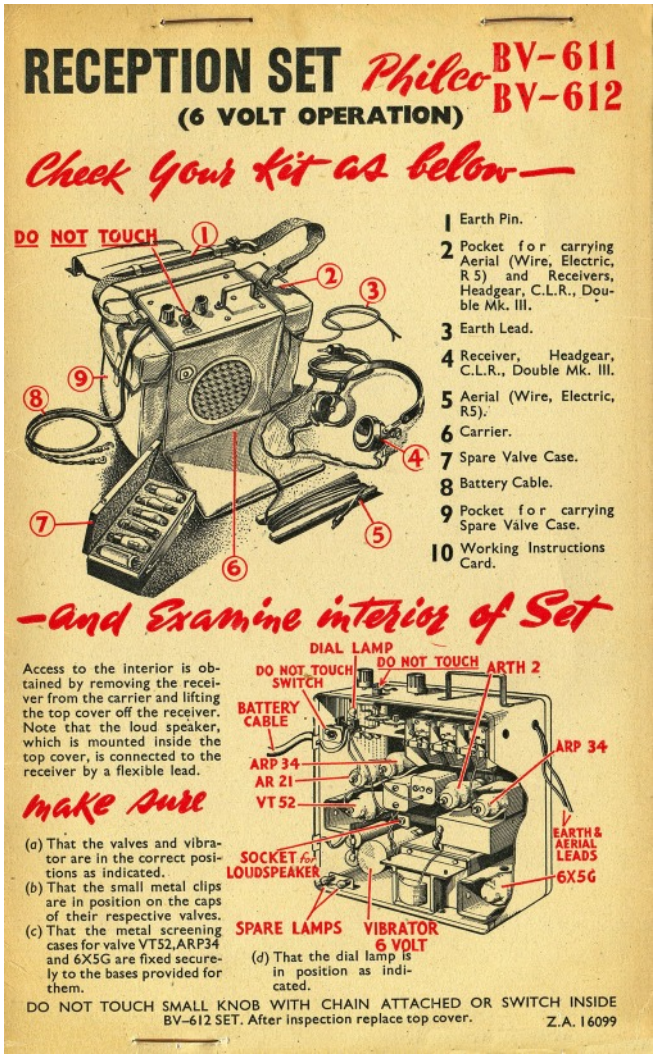
In 2011, I received a scan of a rather incomplete folder containing documents related to Operation Beetle, classified as secret. It revealed that the operation took place during the early years of the war, utilizing the long-wave band to be received on Murphy battery-operated broadcast receivers.
The subject was postponed until further information became available—many years later—when Richard Hawkins sent me a copy of Army Wireless Equipment, originally issued in 1944 for internal staff use. This document identified four types of Beetle receivers.
With reliable information finally at hand, it became clear that the Philco BV-611 and BV-612 receivers were used exclusively in the secret 'Beetle' R/T network, which operated on the long-wave band under the covert designation 'listening sets.' After many years, the mystery surrounding their use was resolved. This discovery led to the creation of this chapter and the revision of several WftW Supplement chapters.

This WftW chapter does not include details of the actual Beetle R/T network or a list of locations of the relatively low-power long-wave transmitters. A few selected pages from the incomplete document are included in Appendix 1.

Note: Due to the loss of a batch of emails, the name of the sender of the Beetle Instructions folder was regrettably lost. If he ever reads this, I kindly ask him to contact me, so his name can be added to this WftW chapter.



While comparing this circuit to that of the original donor set—the Philco (USA) Type 817—it was observed that the 6-volt input fuse was absent in the BV-611/612.

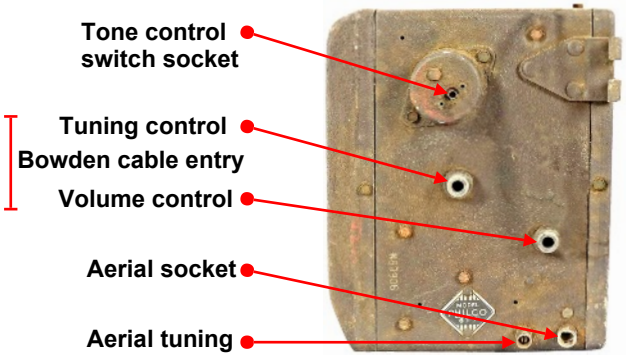


Working Instructions Card for BV-611 and BV-612.

Philco (USA) model 817.

Philco Model 817 with the cover removed, showing its internal construction. Three wires lead to the loud-speaker: chassis ground, 3-ohm speaker connection, and 6V DC for energising the speaker's field coil.

Model 817 was almost certainly the receiver from which the BV-611 and BV-612 were developed and produced by Philco's UK to meet the requirements of the British 'Beetle' receiver. Aside from the omission of the car radio remote control unit, British service-type valves and British Army-standard components—such as tuning knobs—were used. The IF valve was repositioned to accommodate the tuning dial, and the loudspeaker was replaced with a permanent magnet type.



Side panel of the Philco Model 817, showing entries for the volume and tuning controls, Bowden cables, tone control switch socket, aerial input, and aerial trimmer.

Remote Control Unit (right).

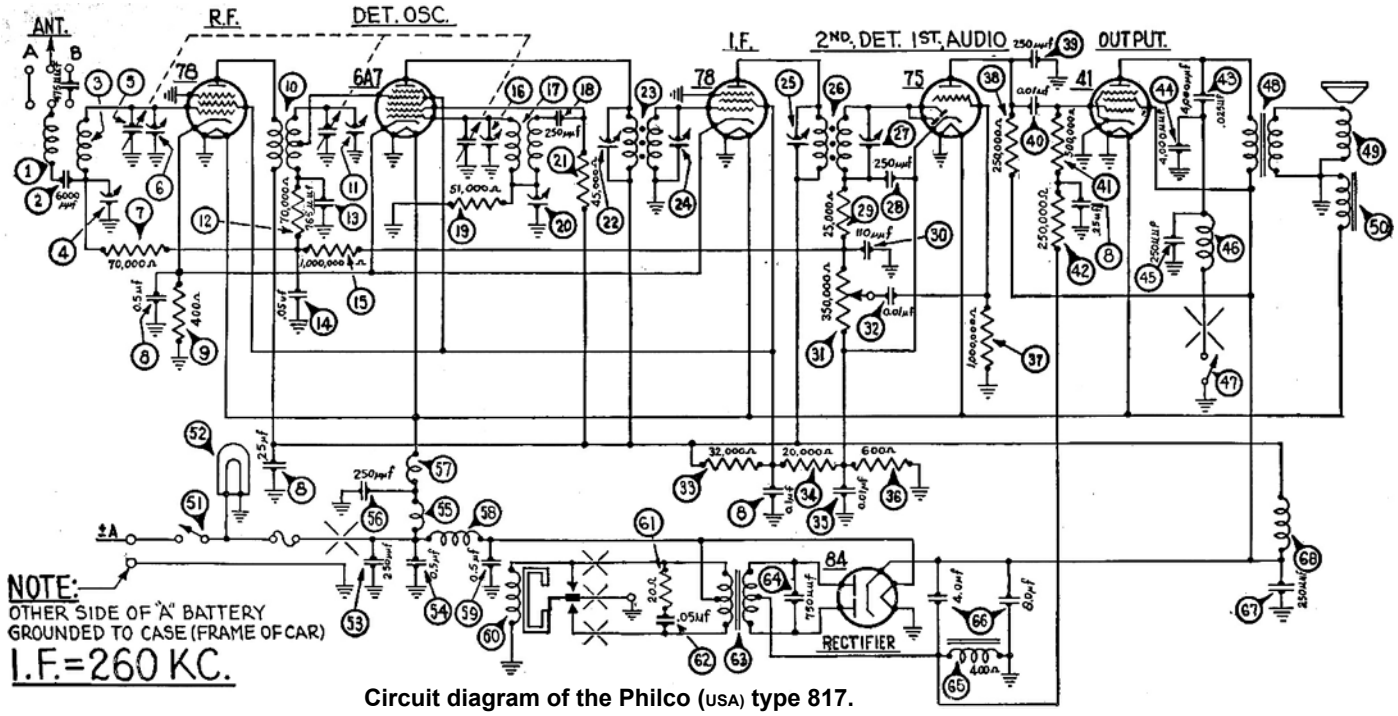
Main Unit.

Remarks

The Philco Model 817, commercially known as the Philco 'Transi-tone Model 817,' was a car radio introduced in 1936. It was a superheterodyne, single-unit receiver designed for dashboard installation and featured technology that was quite advanced for its time. The main unit—comprising a built-in loudspeaker, receiver, and power supply—was connected to a remote control unit via Bowden cables. This streamlined control unit, typically mounted on the instrument panel, included a tone control switch (47). The built-in loudspeaker was an electromagnetic dynamic type with a field excitation coil (50) powered by the 6-volt car battery.

DATA SUMMARY

Maker: Philco USA.
Year of introduction: 1936.
Purpose: Car radio receiver.
Frequency coverage: 530-1,700kHz. **IF:** 260kHz.
Circuit features: Superheterodyne; RF, Mixer/osc., IF, Det/AVC/AF, AF output. Separate tone control wire (47).
Valves: 78 2x, 6A7, 75, 41, 84.
Power supply: 6-Volt vehicle accumulator.



Circuit diagram of the Philco (USA) type 817.

Appendix 1, WftW Volume 4 Supplement, Chapter 358.

Organisation of Beetle R/T system.

(A selection of Beetle Instructions).

(8-2025)

Z/6028. A8111

SECRET.

S.C.Z/6061(C.S.O.)

To:- Signal Officer-in-Chief, Home Forces. Reptd:- G(O)

From:- C.S.O., Sn.Comd. 27 July 1940.

Subject:- "Beetle R/T.

Reference your No.HF/7609/X dated 24.7.40.

1. Station O8Y is now in operation.

2. It is realised that the provision of an R/T station to serve the northern, central and eastern parts of this Command cannot be immediate, and as a temporary measure there seems no alternative to the use of the Plymouth and Hounslow transmitters.

3. In actual operations the Hounslow transmitter may not always be available for the use of this Headquarters, and the possible delays in getting information broadcast by Hounslow might be very serious.

4. The location of a transmitter to the N.E. of Salisbury would serve the Northern and Eastern parts of the Command where the reception of CTS 6 is at present doubtful. There could be possibility of a single transmitter covering the whole Command and the proposed new transmitter near Salisbury would have to additional and not alternative to the Plymouth transmitter. The housing of the transmitter will not present any difficulty.

5. Regarding the alternative courses -

(a) Is considered unsatisfactory from an operational point of view.

(b) Would ensure good reception in all parts of the Command provided the PLYMOUTH transmitter remains where it is.

(c) This would leave the extreme West without adequate reception and the result might be worse than at present

2817

Colonel,
Chief Signal Officer,
Southern Command.

Salisbury.

T.O.O..1430

GENERAL STAFF
12 30
28 JUL 1940
HEADQUARTERS

SECRET S.C. Z/6061 (C.S.O.)

Subject:- Wireless Intelligence Network.

To:- Q (a) Reptd:- G (O)

B1414

From:- C.S.O. Sn. Comd.

Beetle R/T Transmitter

1. The broadcasting transmitter to serve these H.Q. will be ready for installation by 15 August. The site chosen is 542537 where the track from Chilhampton is crossed by power lines 11 K V of the Wessex Electricity Supply Co.

2. Accommodation Accommodation required to be provided is as follows:-

R/T Transmitter	-	12 x 14 feet.
Standby generator petrol & oil store	-	12 x 9 "
Electricians Store	-	12 x 9 "
Staff room	-	12 x 14 "

3. Personnel and Guards Operating Personnel will, for the present be lodged in Wilton. The guard is being provided by the A.M.P.C. so no living accommodation is at present required for them on the site.

4. Power Supply 3 phase supply at 440v is required for the transmitter, and phase to neutral at 230 v for lighting and heating. Total power requirement is 10 K V A made up as follows:-

Transmitter .... 5 K V A
Lighting and Heating..... 5 K W

It has been ascertained that Wessex Electricity Supply Coy., Coronation Rd., Salisbury can obtain the transformer on receipt of the necessary order, and they say delivery in seven to ten days is possible if they are given a priority order, which should please be given.

Colonel.
Chief Signal Officer.
Southern Command.

Salisbury.

10.8.40.

T.O.O..1645

GENERAL STAFF
0935
11 AUG 1940
HEADQUARTERS
SOUTHERN COMMAND

Home Guard - Inclusion in Beetle Broadcast System — SECRET

96A

5 Corps (5 copies)
8 Corps (5 copies)
S.M.Area
S.P.Area

S.C.Z/C028/G(O)

From:- Southern Command. — 1 July, 1941.

1. It has been decided that certain Home Guard units should be included in the Command Beetle System in order that information and orders may be more readily transmitted when normal methods of communication have broken down.

2. All Home Guard units who are included in the Beetle system must be issued with the signature code and it must be remembered that a wide distribution will greatly increase the danger of compromising the code.

3. It has been decided, therefore, that the use of Beetle and the issue of the signature code will not go below Home Guard Battalion Commanders, and will be restricted to those unit commanders whose role on "Action Stations" is the command of

(a) A Fortress.
(b) An Anti Tank Island.

4. No Army sets will be available but it is hoped that is may be possible to make use of privately owned sets within the Home Guard.

5. Home Guard should listen in to practice broadcasts but it is realised that the present broadcasting times may not be suitable for the Home Guard. If this is the case, it is hoped to arrange special Sunday broadcasts.

6. Corps and Areas will, therefore, examine the situation in the light of the above and will report to these Headquarters not later than 12 July what Home Guard unit H.Q's they consider should be included in the Beetle system, taking into account that some Home Guard units, although coming within the categories of para 3 above, may be able to obtain information readily from neighbouring Army Units.

/Drummond Hay, Capt GS.
for B.G.S. Southern Command.

SALISBURY.
GL.
T.O.O. 1800

Copy to: C.S.O.
G(HG) File Z/10437/G(HG)

Read

B/12707 Z/6028.

GENERAL STAFF
12 JUL 1941
HEADQUARTERS
SOUTHERN COMMAND

SUBJECT:- Beetle Murphy Receivers.

To:- G(O).

From:- C.S.O. — Z/6061(CSO).

103A

Seven Beetle Murphy Receivers are being provided shortly for use in this Command. Will you please suggest a suitable distribution.

Requests have been received from S. Mid.Area for the provision of receivers at Glos.Sub.Area and Garrison Commander, Shrivenham.

Salisbury.
12.7.41.

T.O.O. 1430
FC/HS.

F.de fal C. Chard
Brigadier, Capt R.Sig
Chief Signal Officer,
Southern Command.

SECRET

HF/7675/CSB.

Headquarters,
Eastern Command
South Eastern Command
Northern Command
Southern Command
Western Command
Scottish Command
London District.

C.S.O.
D.C.S.O.
G.S.O. II
Lines.
Wireless
Cipher
Stores
Pigeons
A.T.S.
Signalmaster
Date

Pass to "G"

BEETLE.

1. The Beetle organisation has been built up from small beginnings, in the face of many difficulties. In the event of invasion this organisation may well play a vital part in the combined efforts of the three services and it is essential that it should be well organised, well operated, and well maintained not only so that it may work well when the need arises but so that confidence in its usefulness may be created now.

2. The C.-in-C. wishes Commanders to give the Beetle organisation their personal attention and to take urgent measures to bring about an all round improvement in both the arrangements for R/T practice transmissions from the stations at Command headquarters and those for the reception of transmissions at lower formation headquarters and in units. The principal matters requiring attention are set out in the Appendix to this letter.

H C Loyd

Lt.-Gen.,
C.G.S.

G.H.Q., Home Forces.
14 July, 1941.

C.S.O.
D.C.S.O.
G.S.O. II
Lines.
Wireless
Cipher
Stores
Pigeons
A.T.S.
Signalmaster
Date

LP/MM Copy to:- Admiralty.
Air Ministry.
B.T.H.I.
B.G.S.(Ops)
B.G.S.(I)
S.O.-in-C.

113.A.

Subject:- "BEETLE"

To:- 5 Corps S.P.Area. 1180 1250
8 Corps S.Mid.Area. 1324

From:- Southern Command.

SECRET
SC.Z/6028/G(O)
20 Jun. 41.

1. The BEETLE Organisation has been built up from small beginnings, in the face of many difficulties. In the event of invasion this organisation may well play a vital part in the combined efforts of the three Services and it is essential that it should be well organised, well operated, and well maintained not only so that it may work well when the need arises, but so that confidence in its usefulness may be created now.

2. Please forward by 30 July a certificate that the formations and units to whom portable receiver sets have been issued are in possession of them now.

3. Urgent measures to effect improvement will be taken now. The portable receiver sets allotted to the formations or units will be kept in the 'G' or 'I' office of the formation or unit. Practice messages will be checked by an officer. The principal matters requiring attention are:-

(a) A careful check is to be kept on the quality of reception and that the signature number at the beginning of the broadcast is the correct one. This is the ONLY means of indicating that the broadcast is a genuine one.

(b) The BEETLE Transmitter requires constant and careful maintenance to ensure that the highest level of performance is kept up at all times. It must be impressed on all concerned that the BEETLE receiver is a piece of equipment of the highest potential importance to the H.Q. or unit, and that it must therefore be given every care to ensure that it will function when the need arises.

4. Formations and units to whom portable receiver sets have been issued will forward a weekly report to H.Q. Southern Command in accordance with Southern Command Signal Instruction No. 18 dated 4 April, 1941, as amended by amendment No. 5 forward under SC.Z/6509(CSO) dated 17 July, 1941.

SALISBURY.
BBW.
T.O.O. 1430.

J. L. Ogilvy Lt-Col
L.B.G.S., Sn. Comd.

Copy to:- M.L.O., A.C.H. PLYMOUTH.
S.M.L.O.,
No. 6 Region.
No. 7 Region.
G(HG)
G(I)
C.S.O.

SUBJECT:- "Beetle". SECRET.

To:- B.G.S.

From:- C.S.O. SC.Z/6061(CSO).

1. Object. The object of the Beetle System is to collect and disseminate information by means of a W/T network and R/T broadcasting stations.

2. Method. (a) This W/T network with control at Fighter Command, comprises the Headquarters of Commands, and the equivalents for the Navy and R.A.F.

(b) The W/T network couples up with the R/T broadcasting stations which are dispersed so as to cover nearly the whole of Gt. Britain and Northern Ireland.

3. Advantages. In the event of line communications failing, the Beetle System enables Army Commanders to get orders and information to Garrisons, Training Units, Schools and Home Guard Units who have no other wireless communications, and who would otherwise be completely cut off from any source of information.

It also enables information to be simultaneously broadcast throughout the Command without going through the normal signal channels.

Salisbury.
13 Aug 41.

T.O.O. 1319.
FKA/HS.

Brigadier,
Chief Signal Officer,
Southern Command.

15/8.

DRAFT

SUBJECT: BEETLE System. 196

To: 5 Corps. S.Mid District.
8 Corps. S.P. District.

From: Southern Command.

SECRET
S.C.Z/6028/G(O)
Jan 42.

173A

Reference this H.Q. letter, number as above, dated 30 Dec 41, and replies thereto.

1. The following anti-tank islands will be added to Appendix "A" :-

5 Corps - BASINGSTOKE.

8 Corps - AXMINSTER, HONITON, TOTNES, TIVERTON LOSTWITHIEL, WADEBRIDGE, CHARD, ILMINSTER, SHEPTON MALLET, CREWKERNE

S.P. District - MARLBOROUGH, DEVIZES, CHIPPENHAM, MALMESBURY, TROWBRIDGE.

S.Mid District - GLOUCESTER.

2. 8 Corps already have sufficient BEETLE sets to provide for their additional anti-tank islands.

3. 5 Corps will issue the following BEETLE sets, additional to those notified in para.4 of the above-quoted letter :-

S.P. District - 4 sets
S.Mid District - 1 set.

4. Security.

Take the greatest care to

As Home Guard units normally do not have as good facilities as regular units for safeguarding secret documents, Corps and Districts will ensure that adequate arrangements are made for the safe custody of BEETLE Instructions and Verification Tables, and for their destruction if there is danger of their falling into enemy hands.

SALISBURY.
T.O.O.

D.G.S.
Sn Comd.

Copy to :- G(I)
G(HG)
C.S.O.

APPENDIX.

1. R/T transmissions must be made by an officer specially selected and trained. With equipment far less powerful and specialised than that used by public broadcasting corporations it is not to be expected that satisfactory results can be obtained unless the officers have at least the clarity of enunciation of a B.B.C. announcer. This calls for careful tests and training. Particular attention is necessary to announcements at dictation speed which are almost invariably made too fast. Officer announcers should be selected, trained and tested before being allowed to make even practice transmissions over the Beetle system.

2. The use of the correct signature number at the commencement of a broadcast is the only means of indicating that the broadcast is a genuine one. In view of the ease with which the enemy could send out bogus messages purporting to come from a Beetle station the use of the correct signature number, which is taken by the announcer from the secret verification table, is of vital importance. During the past six weeks there have been eight proved instances of the use by announcers of a wrong signature number. This can only be gross carelessness on the part of the officers concerned. It is significant that not one of these errors was reported by an army formation or unit.

3. The Beetle transmitters require constant and careful maintenance to ensure that the highest level of performance is kept up at all times. Results can only be ensured by careful records of the level of reception at selected outstations. These records must be so up-to-date that any falling off in performance will be detected within twenty-four hours and corrected.

Any requests from commands for assistance in equipment or personnel to improve the transmitters and raise standards of maintenance will be given urgent consideration at G.H.Q.

4. The arrangements for reception in formations and units and the care of receivers are unsatisfactory. The receiver should be manned by an officer and should be kept either in the operations room or in the room of a selected G or I staff officer.

There is evidence that receivers are being misused. The type of receiver supplied is a commercial product which with normal care in a normal household would give satisfactory service for a year or more without any maintenance whatever other than the replacement of batteries. Yet the receivers with units and lower formations are constantly under repair. This can only be the result of unfair treatment. It must be impressed on all concerned that the Beetle receiver is a piece of equipment of the highest potential importance to the headquarters or unit and that it must therefore be given every care to ensure that it will function when the need arises.

1. The BEETLE microphone is located in the South-West tower and a telephone is installed on the table of the G.3.(0)c.

A copy of these instructions, a schedule of times for transmission and the roster of officers broadcasting is set out on the wall alongside.

2. One broadcast per day will be made by a "G" officer, who is responsible for deciding from the schedule mentioned above which time he will do it. He will then find his authenticator letter from the Verification Chart which is kept in the safe.

3. (a) The BEETLE transmitter should be called, using the telephone on the G.3.(0)c's desk and the operator must be given the name of the officer who is to broadcast and the time at which the broadcast is due to take place.

(b) The operator will ring and ask for the officer concerned 5 minutes before the broadcast is due to take place and a few seconds before this hour will say "Over to you". This is the signal for the transmission to commence and you are on the air from the moment of hearing these words.

(c) When the operator says "Over to you" use the microphone provided as follows:-

(i) Press the switch on the microphone the whole time.

(ii) Move the switch on the metal amplifier box to the down position but do NOT replace the telephone handset until the broadcast is completed.

(iii) At the end of the broadcast the switch must be returned to the "up" position.

NOTE: The handset of the telephone on the G.3.(0)c's desk must be disconnected before the broadcast starts.

4. The form of broadcast is as follows, the words actually spoken being in capitals:-

(a) Preamble.

C.T.S.9 CALLING C.T.S. 9 CALLING (time in hours and minutes) ONE NINE OH SIX HOURS (date) DATE ONE SEVEN (authenticator) VERIFICATION LETTER "B" FOR BEER "H" FOR HARRY BEGINS PRACTICE.

(b) Text of message.

About 70 words will be sufficient. All messages will be read through first slowly by phrases, repeating each phrase twice. The whole message will then be repeated at normal speed.