

P17BX

# “His Master’s Voice”



## SERVICE MANUAL

Model P17BX

PERSONAL RECEIVER

MADE IN ENGLAND

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# MODEL P17BX

## SPECIFICATION

### *Voltage Supply.*

Batteries . H.T.—British Ever-Ready Type B101, or American Ever-Ready Type 467. 67·5 volts.  
L.T.—British Ever-Ready Type U2, or American Ever-Ready Type 950. 1·5 volts.

### *Consumption.*

H.T., 8 mA. L.T., 250 mA.

### *Wave Range.*

200–560 metres (1,500–535·6 kc/s).

### *Intermediate Frequency.*

465 kc/s.

### *Rated Output.*

80 milliwatts, maximum.

### *Valves.*

Marconi.	Approved American Types.
X17 Frequency Changer.	1R5
W17 I.F. Amplifier.	1T4
ZD17 Detector, A.V.C. and L.F. Amplifier	1S5
N17 Output.	3S4

### *Physical.*

Height	. 2½ inches (6·3 cms.)
Width	. 5 inches (12·7 cms.)
Length	. 9 inches (22·9 cms.)
Weight	. 3 lbs. 10 ozs. (1·64 kgs.)

### *Loudspeaker.*

This is a 3-inch permanent magnet moving coil loudspeaker. The speech coil has a D.C. resistance of 10 ohms.

## CIRCUIT DESCRIPTION

### *Frequency Changer.*

The frame aerial L1, is tuned by VC1 and feeds the grid of the mixer V1 (X17). The oscillator section of V1 has a tuned grid circuit (L2, VC2) which is inductively coupled by L3 to the oscillator anode. The first iron dust cored I.F. transformer (IFT1) couples this valve to the I.F. Amplifier.

### *I.F. Amplifier.*

This valve V2 (W17) amplifies at the intermediate frequency of 465 kc/s. The second I.F. transformer (IFT2) couples this valve to the detector.

### *Detector, A.V.C. and L.F. Amplifier.*

The diode of the diode pentode V3 (ZD17) is used as a detector and A.V.C. rectifier. The volume control (VR1) forms the diode load. The A.V.C. voltage is taken from the D.C. component of the speech voltage across VR1

and is applied to control the bias of the grid circuits of V1 and V2, which are decoupled by R9 and C8. Resistance and capacity coupling is used between the pentode portion of V3 (L.F. Amplifier) and the output valve.

### *Output Stage.*

The output valve V4 is biased by the voltage drop across R11 in the main H.T. negative lead and a permanent degree of pentode tone correction is effected by C15. The output from this valve is fed via the output transformer (T1) to the loudspeaker.

### *Supplies.*

The H.T. positive and L.T. negative supply leads are permanently fixed to the receiver, the receiver being switched on and off by the double poled switch S1 in the L.T. positive and the H.T. negative supply leads. This switch is operated by raising the lid of the receiver.

## DISMANTLING

### *Removal of Cover.*

1. Place the receiver face downwards with the lid closed.
2. Release the end catch at the same time lifting the case clear of the claws at the opposite end. *Care must be taken to ensure that the claws are not used as hinges or damage to the case will result.*

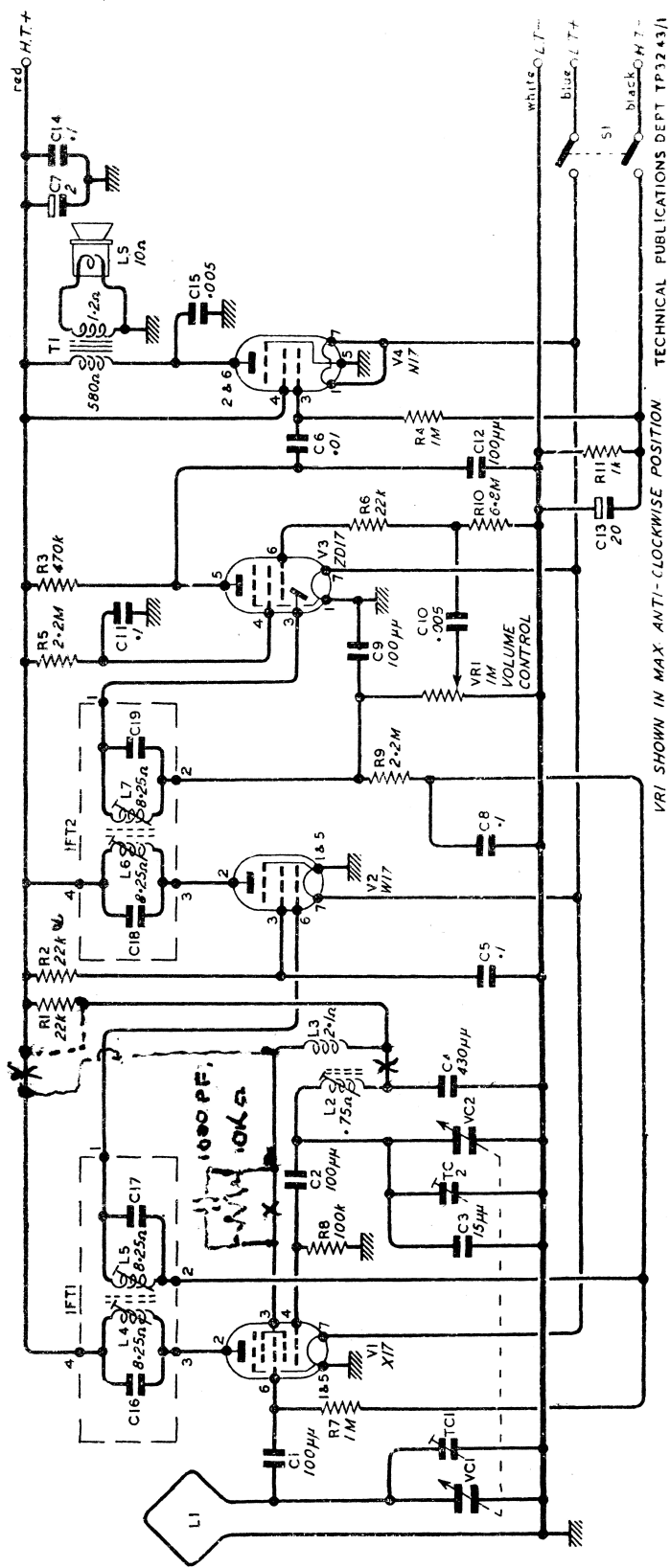
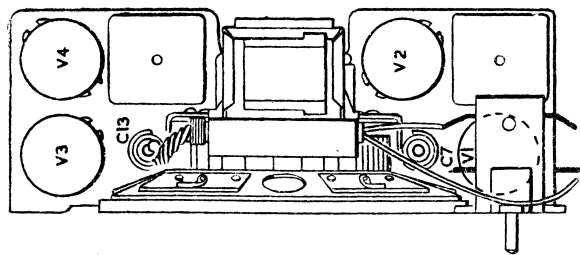
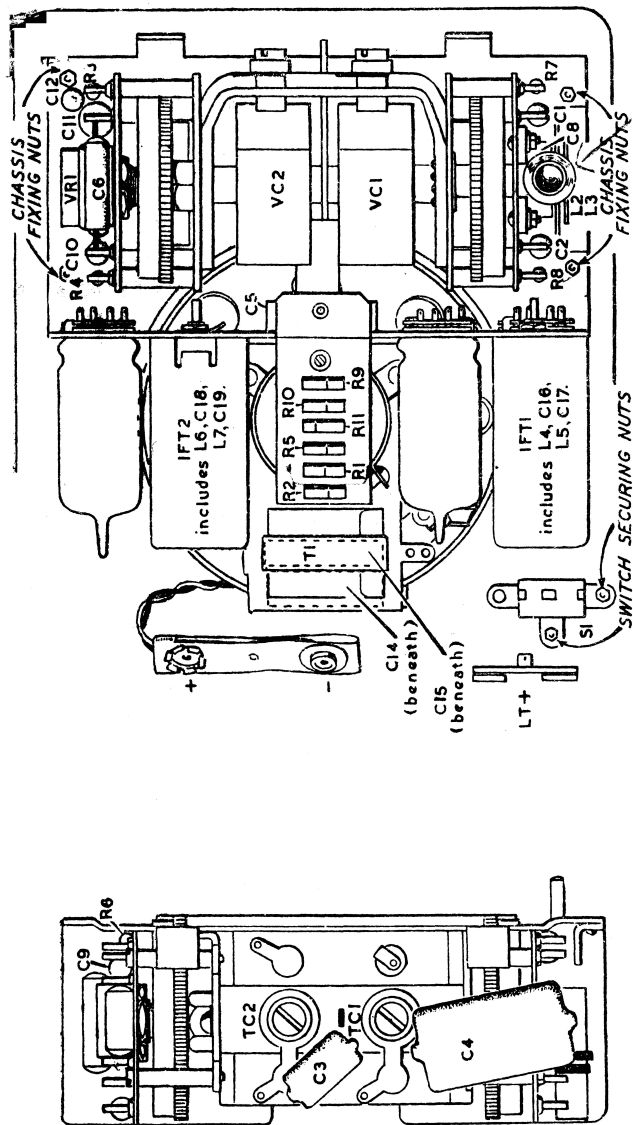
### *Removal of Radio Unit.*

1. Remove the case as described above.

2. Disconnect the batteries.

3. Remove the centre screw from the cover, dislocate the two claws at the end and lift cover away.
4. Unsolder the leads to the aerial contacts.
5. Remove the two nuts retaining the On/Off switch and the four screws retaining the chassis. (See diagram.)
6. Remove radio unit.

NOTE.—When replacing the cover ensure that it fits over the aerial contacts.



## H.F. ADJUSTMENTS

### General.

Unless it is definitely suspected that there is misalignment of the I.F. circuits, it is not recommended that the I.F. transformers be disturbed. If alignment is necessary, the iron-dust cores should be adjusted by means of the special tool (Stock No. Q/D 5025) supplied by E.M.I. Sales & Service Ltd., Dealers Service Development Division, Sheraton Works, Hayes, Middlesex.

An A.C. voltmeter (rectifier type) connected across the loudspeaker coil (Tags S0 and S1 on T1) may be used as an output meter.

In the event of component replacement in the frequency changer circuit, the alignment procedure given below should be followed.

### Intermediate Frequency.

Turn volume control to maximum and set gang condenser to minimum capacity (plate fully disengaged).

1. Inject a signal at 465 kc/s via a 0.1 mfd. condenser into the grid (pin 3) of V2. Tune L7, L6 for maximum output in that order.

2. Inject a signal at 465 kc/s, via a 0.1 mfd. condenser into the grid (pin 6) of V1. Tune L5, L4 for maximum output in that order.

### Radio Frequency.

Set the volume control to maximum. Connect a small loop aerial to the output leads of the signal generator and set up the loop at a minimum distance of two feet from the frame aerial.

Op. No.	Gang Condenser.	Tune test oscillator to m. kc/s.		Operation.
1	Set drum to 200 m.	200	1,500	Tune TC2 for maximum output.
2	Set drum to 500 m.	500	600	Adjust L2 core for maximum output.
3	—	—	—	Repeat operation 1.
4	Tune in signal	230	1,300	Tune TC1 for maximum output.

## VALVE TABLE

The following table indicates the approximate voltage and current readings obtained on each valve when the receiver is operating at maximum output. Variations of  $\pm 15\%$  may be anticipated between models.

Valve.	Anode.		Screen.		Cathode.	
	Volts to Chassis.	Current mA.	Volts to Chassis.	Current mA.	Volts to Chassis. (Pin 7)	Current mA.
VI (X17) I.F.C.	Mx. 59   Osc. 26	Mx. 0.08   Osc. 1.4	—	—	1.4	—*
V2 (W17) I.F.A.	59	1.25	35	0.5	1.4	—*
V3 (ZD17) A.F.C.	4.5	0.06	1.0	—*	1.4	—*
V4 (N17) A.F.A.	57	4.2	59	—*	1.4	—*

Total H.T. Voltage, 59 v.

Voltage across R11, 8 v.

Total H.T. current, 8 mA.

Total L.T. current, 250 mA.

\* Owing to the compactness of this receiver, it is impracticable to measure currents in the electrodes marked thus.

## SPARE PARTS LIST

A comprehensive Spare Parts List for this model will be issued at a later date and will be obtainable from E.M.I. Sales and Service Ltd., Technical Information Division, Sheraton Works, Hayes, Middlesex, England.

### CHANGE OF ADDRESS

SHERATON WORKS  
WADSWORTH ROAD  
GREENFORD MIDDXX  
TELEGRAMS AND CABLES  
EMISERVICE GREENFORD MIDDLESEX  
TELEPHONE PERIVALE 3344

Printed in England