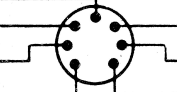

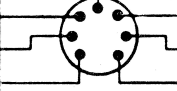





HIS MASTER'S VOICE B13C

— VOLTAGE TABLE. —

- VOLTAGES AND CURRENTS ARE WITH THE RECEIVER OPERATING ON AVERAGE MAINS VOLTAGE, AND TUNED TO A POINT OF NO RECEPTION ON THE BROADCAST BAND.
- VOLTAGE READINGS TAKEN WITH METER RESISTANCE OF 1,000 OHMS PER VOLT
- VOLTAGE AND CURRENT READINGS WITHIN $\pm 15\%$
- RESISTANCE READINGS ARE APPROXIMATE

VOLTS TO CHASSIS	CURRENT M. A	RESISTANCE TO CHASSIS	VALVE ELECTRODE	BOTTOM VIEW OF VALVE SOCKET	VALVE ELECTRODE	VOLTS TO CHASSIS	CURRENT M. A.	RESISTANCE TO CHASSIS
V 1 6 B E 6 FREQUENCY CHANGER.								
—	—	0	HEATER		—	—	—	—
6.3 A.C.	300	—	HEATER		PLATE	185	2.0	INFIN.
—	11	0.5 Ω	CATHODE		SCREEN	95	8.0	INFIN.
—	0.31	20 K Ω	OSC. GRID		CONTROL GRID	—	—	2.6 M Ω
V 2 6 B A 6 I.F. AMPLIFIER.								
—	—	0	HEATER		—	—	—	—
6.3 A.C.	300	—	HEATER		PLATE	185	3.6	INFIN.
—	—	0	SUPPRESSOR		SCREEN	95	2.0	INFIN.
—	—	2.5 M Ω	CONTROL GRID		CATHODE	1.5	5.6	250 Ω
V 3 6 A V 6 AUDIO AMPLIFIER- DEMODULATOR.								
—	—	—	HEATER		—	—	—	—
6.3 A.C.	300	—	HEATER		DIODE N° 2	0	0	0.5 M Ω
0	0.4	0	CATHODE		DIODE N° 1.	—	—	—
0	0	10 M Ω	CONTROL GRID		PLATE	70	0.4	INFIN.
* V 4 6 A Q 5 OUTPUT. (WHEN CHASSIS FITTED WITH 7 PIN SOCKET)								
—	—	—	HEATER		—	—	—	—
6.3 A.C.	300	—	HEATER		PLATE	260	35	INFIN.
7.5	37	200 Ω	CATHODE		SCREEN	185	2	INFIN.
0	0	0.5 M Ω	CONTROL GRID		CONTROL GRID	0	0	0.5 M Ω
V 5 6 X 4 RECTIFIER.								
—	—	—	HEATER		—	—	—	—
6.3 A.C.	600	—	HEATER		NO CONN.	—	—	—
—	—	—	NO CONN.		PLATE N° 2	240 A C	—	360 Ω
240 A.C.	—	360 Ω	PLATE N° 1		CATHODE	260	—	INFIN.

REMARKS:- TOTAL H.T. CURRENT 55M.A.(6AQ5 OUTPUT) - 42 M.A. (6M5 OUTPUT)

* V4 6M5 OUTPUT (WHEN CHASSIS FITTED WITH 9 PIN SOCKET)								
6.3 A.C.	710	—	HEATER		—	—	—	—
—	—	—	HEATER		NO CONN.	—	—	—
5V	26	200 Ω	CATHODE		PLATE	280	23	INFIN.
0	0	0.5 M Ω	CONTROL GRID		NO CONN.	—	—	—
185	3	INFIN.	SCREEN		NO CONN.	—	—	—

DISMANTLING

REMOVAL OF CHASSIS AND SPEAKER

- (1) Disconnect power plug from mains.
- (2) Remove knobs by pulling them straight off control spindles.
- (3) Remove three fixing screws which will enable the rear portion of the cabinet to be released.
- (4) Remove the two chassis fixing screws which will be found on the underside at the base of cabinet. The chassis

can now be withdrawn from the cabinet to the limit of the speaker connection leads, which can be unsoldered from the speaker if necessary.

- (5) The loudspeaker can now be removed by rotating the speed fixers through an angle of 90 degrees and withdrawing them from the moulded spigots on the speaker grille. To replace speed fixers, they must be pushed directly on to the spigots located in the positions they occupied before removal.

RECEIVER ALIGNMENT PROCEDURE

In any case where a component replacement has been made in either the tuned I.F. or R.F. circuits of a receiver, all circuits must be re-aligned. I.F. alignment should always precede R.F. alignment, and even if only one coil has been serviced, the whole of the re-alignment should be done in the order given. An output meter should be connected across the voice coil terminals of the speaker to indicate that the circuits are tuned to resonance. In carrying out the following operations, it is important that the input to the receiver from the signal generator should be kept low and progressively reduced as the circuits are brought into line, so that the output meter reading does not exceed about 1.0 volt.

Note: Calibration marks are provided on the bottom edge of the dial glass. Beginning at the left, these marks correspond to:

- (1) Pointer setting.
- (2) 600 Kc/s.
- (3) 980 Kc/s.
- (4) 1500 Kc/s.

I.F. ALIGNMENT

- (1) Rotate the volume control fully clockwise and fully enmesh the tuning condenser vanes. Connect the output leads of a signal generator to the grid of the 6BE6 frequency changer valve through a 0.1 condenser, or the vacant lug on top of tuning condenser.
- (2) Tune signal generator to exactly 457.5 Kc/s.
- (3) Adjust the I.F. transformer trimmer screws for maximum reading on the output meter, commencing with the second I.F. transformer and following with the first.

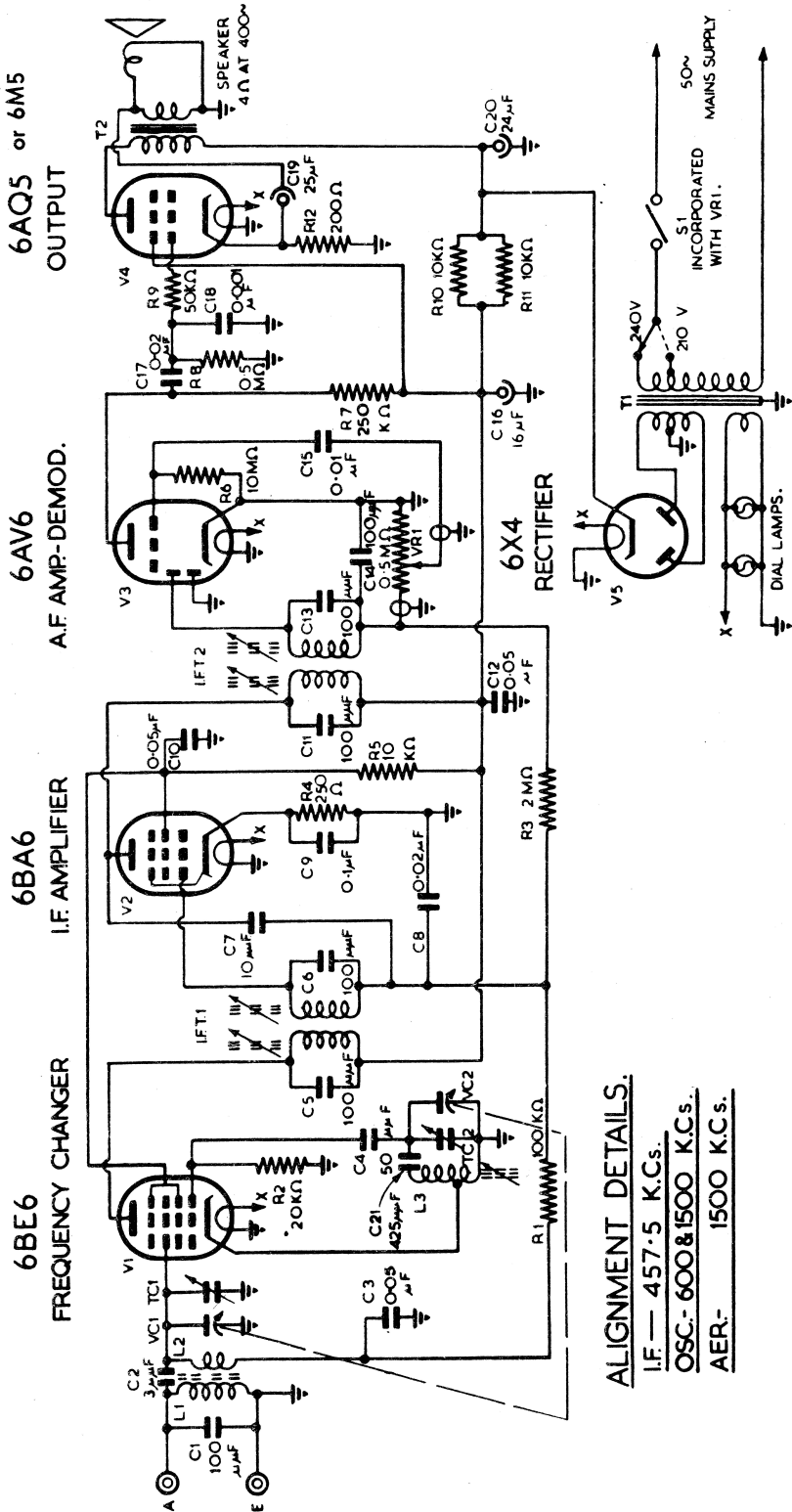
- (4) Continue this alignment on each transformer in turn until no greater output can be obtained. It is necessary to repeat this procedure twice to ensure correct alignment.

Note: If trimmer screws are screwed too far in, it may be possible to obtain a false peak, due to coupling effects between the iron cores. Start alignment of each individual transformer by first screwing its core well out, and then advancing core into the coil until resonance is obtained.

R.F. ALIGNMENT

- (1) With controls set as for I.F. alignment, connect signal generator output leads in series with a 200 mmF. condenser to the aerial and earth terminals of the receiver.
- (2) Check that, when the gang condenser is fully enmeshed, the pointer coincides with the setting line on the extreme left of the dial scale. If necessary, the pointer must be adjusted at the point where the drive cord is attached to the pointer carrier.
- (3) Tune signal generator to 600 Kc/s.
- (4) Rotate tuning knob until the pointer is exactly over the 600 Kc/s calibration mark, and adjust the padder screw for maximum response.
- (5) Tune signal generator to 1500 Kc/s.
- (6) Rotate tuning knob until the pointer coincides with the 1500 Kc/s calibration mark, and adjust the oscillator trimmer and aerial trimmer in turn for maximum response.
- (7) Repeat operations (3) to (6) inclusive for proper alignment.

HIS MASTER'S VOICE B13C



ALIGNMENT DETAILS.

I.F.— 457.5 K.C.s.

OSC.— 600 & 1500 K.C.s.

AER.— 1500 K.C.s.

NOTE: IN RECEIVERS OF THIS MODEL WHICH ARE FITTED WITH TYPE 6AQ5 OUTPUT VALVES, C18 is CONNECTED BETWEEN JUNCTION OF R9 AND GRID OF V4 AND EARTH.

HIS MASTER'S VOICE B13C

TECHNICAL SPECIFICATION

POWER SUPPLY:

200 to 250 volts, 40 to 50 c.p.s.

CONSUMPTION:

36 watts.

FREQUENCY RANGE:

540 Kc/s to 1600 Kc/s.

I.F. FREQUENCY:

457.5 Kc/s.

VALVE COMPLEMENT:

6BE6 — Frequency Changer
6BA6 — I.F. Amplifier
6AV6 — AVC.-Demod.-Audio Amp.
6AQ5 or 6M5 — Power
6X4 — Rectifier.

DIAL LAMPS:

6.3 volt, 0.15 to 0.3 amp.

LOUDSPEAKER:

Permagnetic type.
Voice coil impedance at 400 cycles =
4 ohms.

DIMENSIONS:

Packed:

Width 14½ in.
Height 12 in.
Depth 9 in.

Unpacked:

Width 12 in.
Height 8¾ in.
Depth 6¼ in.

WEIGHT:

Receiver packed 12 lbs.
Receiver only 9½ lbs.

CIRCUIT DESCRIPTION

This model incorporates a 5-valve A.C. mains-operated superheterodyne receiver for medium-wave reception.

FREQUENCY CHANGER

The aerial is coupled to the frequency changer valve by means of a high-efficiency iron dust-cored aerial transformer L1-L2.

With the frequency changer valve, used as a pentagrid converter, a self-excited oscillator circuit is employed incorporating a fixed padding capacity. Variable padding adjustment is provided by means of an iron dust bolt for tuning the oscillator coil L3.

I.F. AMPLIFIER

The frequency changer valve is transformer-coupled to a remote cut-off pentode V2. This valve is, in turn, transformer-coupled to the demodulator diode section of the duo-diode triode valve V3. Both I.F. transformers have fixed tuning capacitors, and permeability tuning is provided by means of iron dust tuning bolts.

DEMODULATOR, A.V.C. AND A.F. AMPLIFIER

Simple A.V.C. is used to obtain A.V.C. potentials for the frequency changer and I.F. amplifier.

The demodulated signal across the diode load VR1 is applied to the grid of the triode section of V3.

The audio amplifier is resistance-capacity-coupled to the grid of the beam power output valve V4.

AUDIO OUTPUT AMPLIFIER

The Beam Power Output valve V4 is transformer-coupled to the loudspeaker. Inverse feedback is provided by feeding voltage from the voice coil via C19 to the cathode of the 6AQ5 or 6M5 output valve.

H.T. SUPPLY

The power supply employs an indirectly-heated type high-vacuum valve V5 as a full wave rectifier. Unfiltered high tension voltage is fed to the power output valve plate circuit, whilst the remaining receiver circuits are supplied with H.T. through a resistance capacity filter.

MAINS VOLTAGE ADJUSTMENT

Before leaving our works, all receivers of this model are connected for operation of mains voltages of between 226 and 250. A mains voltage panel is provided inside the chassis with tags marked 210 and 240. Should it be required to operate this receiver on a lower mains voltage of between 200 and 225, the lead must be removed from the tag marked 240 and connected to the tag marked 210. Provision is made on the mains voltage panel for connection of mains transformer primary tappings to suit the appropriate mains voltage.

HIS MASTER'S VOICE B13C

RESISTORS

R1	100,00 ohms	$\frac{1}{2}$ watt $\pm 10\%$
R2	20,000 ohms	$\frac{1}{2}$ watt $\pm 10\%$
R3	2 megohms	$\frac{1}{2}$ watt $\pm 10\%$
R4	250 ohms	$\frac{1}{2}$ watt $\pm 10\%$
R5	10,000 ohms	1 watt $\pm 10\%$
R6	10 megohms	1 watt $\pm 10\%$
R7	250,000 ohms	$\frac{1}{2}$ watt $\pm 10\%$
R8	500,000 ohms	$\frac{1}{2}$ watt $\pm 10\%$
R9	50,000 ohms	$\frac{1}{2}$ watt $\pm 10\%$
R10	10,000 ohms	1 watt $\pm 10\%$
R11	10,000 ohms	1 watt $\pm 10\%$
R12	200 ohms	1 watt $\pm 10\%$

CONDENSERS

C1	100 mmF. $\pm 10\%$
C2	3 mmF. ± 1 mmF.
C3	.05 mF. $\pm 20\%$ 200V. wkg.
C4	50 mmF. $\pm 10\%$
C5	100 mmF. $\pm 5\%$

C6	100 mmF. $\pm 5\%$
C7	10 mmF. $\pm 10\%$
C8	.02 mF. $\pm 20\%$ 400V. wkg.
C9	.1 mF. $\pm 20\%$ 200V. wkg.
C10	.05 mF. $\pm 20\%$ 400V. wkg.
C11	100 mmF. $\pm 5\%$
C12	.05 mF. $\pm 20\%$ 400V. wkg.
C13	100 mmF. $\pm 5\%$
C14	100 mmF. $\pm 10\%$
C15	.01 mF. $\pm 20\%$ 600V. wkg.
C16	16 mF. 350 P.V.
C17	.02 mF. $\pm 20\%$ 600V. wkg.
C18	1,000 mmF. $\pm 10\%$
C19	25 mF. 40 P.V.
C20	24 mF. 350 P.V.
C21	425 mmF. ± 5 mmF.

MISCELLANEOUS

T1	Transformer, Mains
T2	Transformer, Output
VC1-VC2	Condenser, 2-Gang
VR1/S1	Potentiometer, $\frac{1}{2}$ meg. with 2-pole switch
L1-L2	Coil—M/W Aerial
L3-L4	Coil—M/W Oscillator
TC1	Condenser—Trimmer Aerial
TC2	Condenser—Trimmer Oscillator
IFT1	Transformer, 1st I.F.
IFT2	Transformer, 2nd I.F.
Spkr.	5" x 7" Permagnetic Elliptical Speaker
Spkr.	5" Permagnetic Speaker

GENERAL MAINTENANCE

The dial cord pulleys on this receiver are made from plastic material and, should it be necessary to apply any lubrication to the pulley bearings, it is important that only medicinal paraffin be used for this purpose. Other lubricating mediums can have a deleterious effect on the pulleys.

The surface of the plastic cabinet of this

receiver can be cleaned by sponging with warm water, to which a little soap has been added. It will be found that the original lustre can be restored by polishing the surface with tooth paste applied on a small piece of moist soft cloth.

Warning: Spirit cleaners or solvents must not be used, as these are liable to damage the surface of the cabinet.

