

TRADER'S SERVICE SHEET

241

K.B. 620

3-BAND BATTERY RECEIVER

A THREE-VALVE chassis with an R.F. amplifier is fitted in the Kolster-Brandes 620 3-band battery receiver, the short-wave range covered being 19-51 metres. At the back of the set there is a local-distant switch.

CIRCUIT DESCRIPTION

Aerial input via series resistance **R1**, local-distance switch **S1** and, on M.W. and L.W., coupling coil **L1**, to capacity-coupled band-pass filter. Primary coils **L2, L3** are tuned by **C12**; secondaries **L6, L7** by **C15**; common capacity bottom coupling by **C1**. On S.W., input is via coupling coil **L4** to single-tuned circuit **L5, C15**.

First valve (**V1, Mullard metallised VP2**) is a variable-mu R.F. pentode operating as R.F. amplifier with gain control by potentiometer **R4**, which varies G.B. applied. **R2** provides a minimum G.B. voltage.

Tuned anode coupling by **L9, L10**, tuned by **C19** via coupling condenser **C6** is employed on M.W. and L.W. bands. On S.W., coupling is by **L9** (which becomes an R.F. choke) and coupling condenser **C5** to **L8, C19** in the grid circuit of triode detector valve (**V2, Mullard metallised PM2HL**), which operates on grid leak system with **C7** and **R6**. Reaction is applied from the anode by coils **L11** (S.W.) and **L12** (M.W. and L.W.) and is controlled by **C18**. R.F. filtering by choke **L13** and by-pass condenser **C10** (M.W. and L.W. only) in anode circuit.

Parallel-fed auto-transformer coupling by **R7, C8** and **T1** via R.F. stopper **R8** between **V2** anode and pentode output

valve (**V3, Mullard PM22A**). Fixed tone correction in anode circuit by **C11**.

Provision for connection of low impedance external speaker across secondary of internal speaker transformer **T2**.

The battery circuit switches **S12, S13** and **S14** are combined in a single unit and ganged with **V1** gain control **R4**.

DISMANTLING THE SET

A detachable bottom is fitted to the cabinet, and upon removal (four counter-sunk-head wood screws) gives access to most of the components beneath the chassis.

Removing Chassis.—Should it prove necessary to remove the chassis from the cabinet, remove the tuning knob (recessed grub screw) and the other three knobs (pull off), taking care not to lose the springs from the latter. Now remove the four bolts (with lock and claw washers) holding the chassis to the bottom of the cabinet, when the chassis can be withdrawn to the extent of the speaker leads.

When replacing, do not forget to replace the felt washer between the tuning and wave-change switch knobs.

To free the chassis entirely, unsolder the speaker leads, and when replacing, connect the blue and red leads to the bottom two tags. The black lead goes to the frame of the speaker.

Removing Speaker.—To remove the speaker from the cabinet, remove the nuts and lock washers from the four bolts holding it to the sub-baffle. When replacing, see that the transformer is pointing to the bottom left-hand corner of the cabinet.

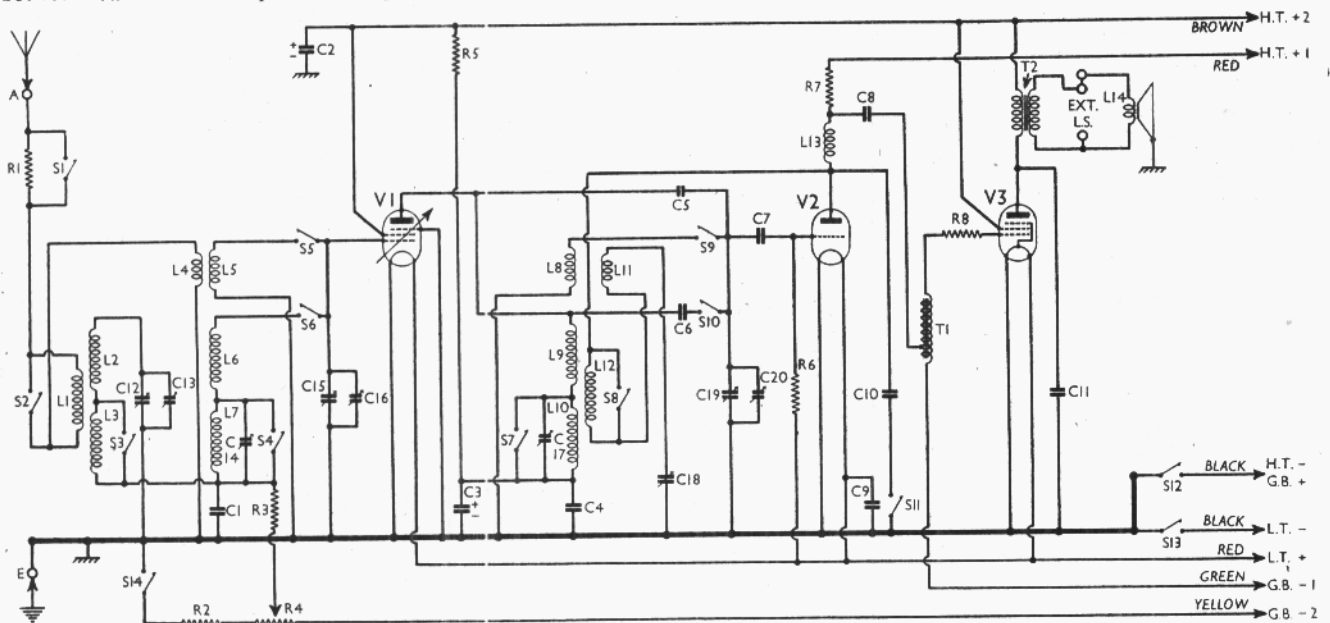
COMPONENTS AND VALUES

RESISTANCES		Values (ohms)
R1	Aerial series resistance	100,000
R2*	V1 G.B. limiting resistance	1,000
R3	V1 C.G. decoupling resistance	250,000
R4	V1 gain control	10,000
R5	V1 anode H.T. feed	5,000
R6	V2 C.G. resistance	2,000,000
R7	V2 anode load resistance	25,000
R8	V3 C.G. R.F. stopper	250,000

* Two 2,000 Ω resistances in parallel in our chassis.

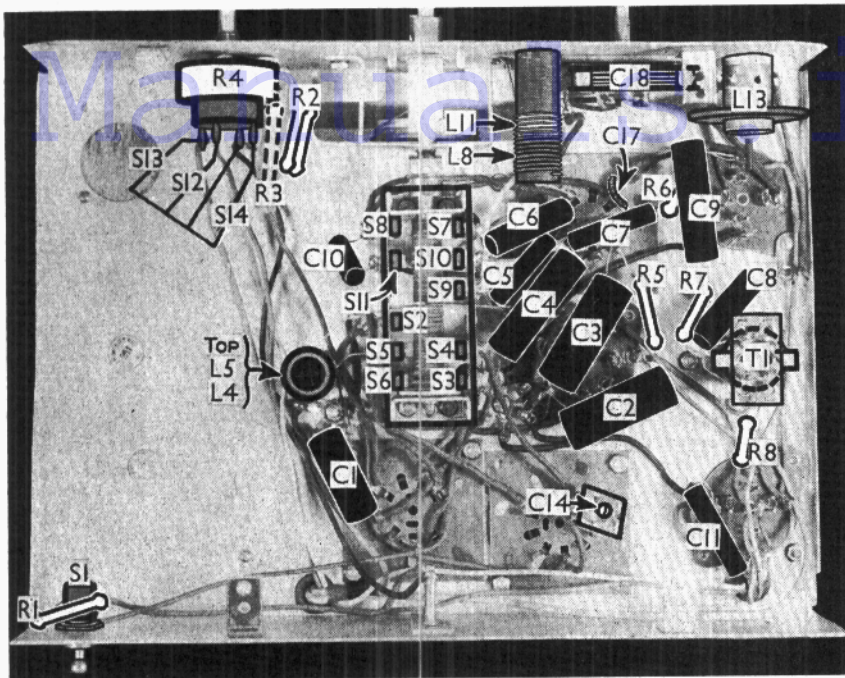
CONDENSERS		Values (μF)
C1	Band-pass bottom coupling	0.02
C2*	H.T. circuit reservoir condenser	2.0
C3*	V1 anode decoupling	2.0
C4	V1 anode R.F. by-pass	0.1
C5	V1 to V2 S.W. coupling condenser	0.00005
C6	V1 to V2 M.W. and L.W. coupling condenser	0.01
C7	V2 C.G. Condenser	0.0001
C8	A.F. coupling to T1	0.05
C9	V2 filament R.F. by-pass	0.1
C10	V2 anode R.F. by-pass (M.W. and L.W.)	0.0005
C11	V3 anode tone corrector	0.003
C12†	Band-pass primary tuning	—
C13†	Band-pass pri. M.W. trimmer	—
C14†	Band-pass sec. L.W. trimmer	—
C15†	Aerial S.W. and band-pass sec. tuning	—
C16†	Band-pass sec. M.W. trimmer	—
C17†	V1 anode circuit L.W. trimmer	Very low
C18†	Reaction control	0.0003
C19†	V1 anode circuit tuning	—
C20†	V1 anode circuit M.W. trimmer	—

* Electrolytic. † Variable. ‡ Pre-set.



Circuit diagram of the K.B.620 3-valve battery receiver.

For more information remember
www.savoy-hill.co.uk



Under-chassis view. All the switches are identified. C17 is a small condenser. R2 consists of two resistances in parallel.

OTHER COMPONENTS		Approx. Values (ohms)
L1	Aerial circuit M.W. and L.W. coupling	11.5
L2	Band-pass primary coils	4.5
L3	Band-pass secondary coils	12.0
L4	Aerial circuit S.W. coupling	0.1
L5	Aerial circuit S.W. tuning coil	0.5
L6	Band-pass primary coils	4.75
L7	Band-pass secondary coils	11.0
L8	S.W. R.F. tuning coil	0.05
L9	V1 anode M.W. tuning coil	4.75
L10	V1 anode L.W. tuning coil	13.0
L11	S.W. reaction coil	0.05
L12	M.W. and L.W. reaction coil	4.75
L13	V2 anode R.F. choke	200.0
L14	Speaker speech coil	3.6
T1	Intervalve auto-trans., total	7000.0
T2	Speaker input trans. { Pri. 870.0 Sec. 0.9	
S1	Local-distant switch	—
S2-S11	Waveband switches	—
S12	H.T. circuit switch	—
S13	L.T. circuit switch	—
S14	G.B. circuit switch	—

distant switch at the rear of the chassis, which closes when the knob is depressed, and shorts R1.

S2-S11 are the wavechange switches, ganged in a single unit beneath the chassis. All the switches are identified in our under-chassis view. The table below gives the switch positions for the three control settings, starting from fully anticlockwise. A dash indicates open, and C closed.

Switch	S.W.	M.W.	L.W.
S2	C	—	—
S3	—	C	—
S4	C	C	—
S5	C	—	—
S6	—	C	C
S7	C	C	—
S8	C	—	—
S9	C	—	—
S10	—	C	C
S11	—	C	C

S12, S13 and S14 are the battery circuit switches, of the Q.M.B. type, ganged together, and with R4.

Coils.—L1-L3; L6, L7; and L9,

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating with an H.T. battery reading 120 V on the H.T. section, on load, and with the H.T. +1 plug in the 90 V socket. The receiver was tuned to the lowest wavelength on the medium band and the volume control was at maximum, but the reaction control was at minimum. The local-distant switch was in the distant position (down). There was no signal input.

Voltages were measured on the 1,200 V scale of an Avometer, chassis being negative.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 VP2	110	1.1	120	0.3
V2 PM2HL	60	1.2	—	—
V3 PM22	118	3.0	120	0.5

GENERAL NOTES

Switches.—S1 is the Q.M.B. local-

L10, L12 are in three screened units on the chassis deck. L4, L5 and L8, L11 are in two unscreened units beneath the chassis. L5 and L8 are the thick enamelled wire windings, L4 and L11 being of cotton-covered wire. L13 is an R.F. choke, also beneath the chassis.

External Speaker.—Tags are provided on the internal speaker input transformer for the connection of a low impedance (2-40) external speaker. With the transformer below the speaker magnet, the correct tags are the second and third from the left. One side of the internal speaker speech coil is connected to the left-hand tag, and thence by a wire to the next tag. If this wire is cut, and a switch inserted between the first and second tags from the left, the internal speaker may be switched off if desired.

Resistance R2.—This consists of two 2,000 O resistors in parallel in our chassis, giving an effective resistance of 1,000 O.

Condenser C17.—This is a small trimmer formed by a spiral of wire wound over an insulated wire. It is shown as a pre-set condenser in our diagram, but is not normally adjusted.

Condenser C14.—This is shown by the makers in their preliminary information as being similar to C17, but in our chassis it is a pre-set trimmer of the usual type.

Condensers C3, C4.—C4 is shown in the maker's diagram as having a capacity of 0.2 μF. It is 0.1 μF in our chassis, and across it is the extra condenser C3.

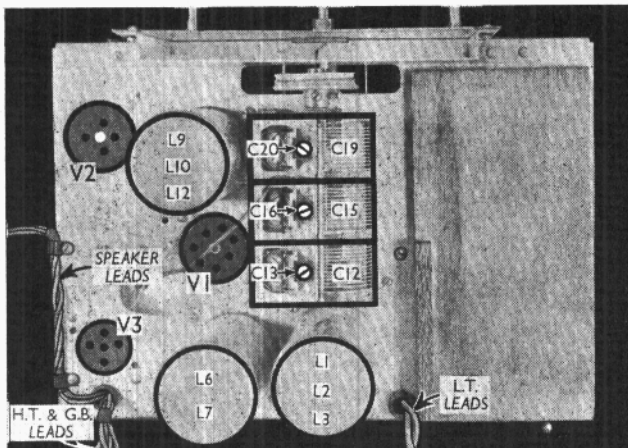
Condenser C8.—This is 0.05 μF in our chassis, not 0.02 μF.

Batteries.—L.T., Exide type OCG3 2 V cell. There is room for an Exide CZG4, which has a greater capacity. H.T. and G.B., Drydex type H1070 combined H.T. and G.B., 120 V+9 V.

Battery Leads and Voltages.—Grey lead, spade tag, L.T. negative; red lead, spade tag, L.T. positive 2 V; black lead and plug, H.T. negative, G.B. positive; red lead and plug, H.T. positive 1, +90 or 108 V (use 90 V socket as long as set will oscillate on all wavebands with it; step up to 108 V socket later); brown lead and plug, H.T. positive 2, +120 V; green lead and plug, G.B. negative 1, -4.5 V; yellow lead and plug, G.B. negative 2, -9 V.

CIRCUIT ALIGNMENT

With gang at maximum, pointer should be horizontal.



Connect signal generator to A and E sockets, and feed in a 214 m. (1,400 KC/S) signal. Switch set to M.W., and tune to 214 m. on scale (black dot), and adjust C20, C16 and C13 for maximum.

Switch set to L.W., feed in a 1,712 m. (175 KC/S) signal, tune to 1,712 m. on the scale (red dot), and adjust C14 for maximum, rocking the gang slightly.

Plan view of the chassis.