

FERRANTI LANCASTRIA SUPERHET (Cont.)

cathode, anode, oscillator anode, osc. grid, screens. The grid terminal is at the top.

Quick Tests.—Undo the cover over the speaker to reach the terminals on the speaker transformer.

Voltagcs between these and chassis (looking from the back and from left to right) are:—

(1) Black to C19, blue to set (H.T. -), 105 v. negative.

(2) Green to set (V3 anode), 240 v. positive.

(3) Red to C18, C19 and set (H.T. + smoothed, 250 v. positive).

(1) and chassis are L.S. field, (2) and (3) are primary of output transformer.

Note that the smoothing condenser connections are: two red to (3); one black to L.S. frame and chassis; the other black to (1).

Both condensers are the same value, and if either has to be replaced it is immaterial which is connected to either point.

Removing Chassis.—Pull off the knobs, remove four screws underneath, pull off the connectors to the speaker from the panel on top of the mains transformer and lift out the chassis.

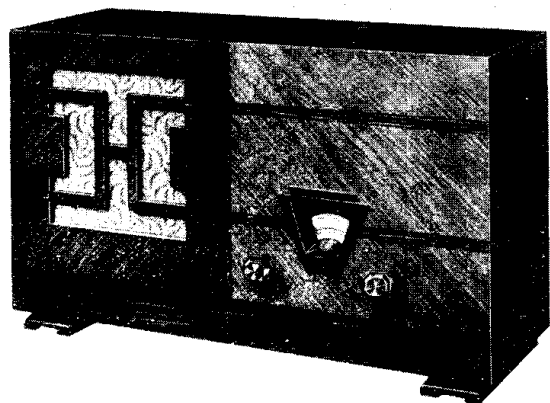
General Notes.—The operation of the tuning indicator when the set is tuned to the local station or to an oscillator is a sure indication that V1, V2, and the diode section of V3 are working.

The resistances R7, 15, 14, 11 and 8 are enclosed in metallised containers which are earthed.

The Ferranti condenser colour code is used: Brown, .002 mfd.; green, .01 mfd.; yellow, .02 and red, .05 mfd.

Replacing Chassis.—Lay chassis inside cabinet, replace holding screws and knobs and connect the L.S. leads.

MULLARD "M.B. 3" BATTERY SET



The "M.B.3" receiver, with which the Mullard Wireless Service Co., Ltd., have entered the complete set market, is a "straight" three without a reaction control.

Circuit.—The H.F. valve VP2 (V1) is preceded by a tuned secondary aerial transformer, the aerial circuit of which contains a special loading coil to maintain constant sensitivity over both wavebands.

Volume is controlled by a potentiometer (across a 9-volt G.B. section of the H.T. battery) to vary the bias on the grid, and, at the same time, to damp the aerial input. Coupling to the next valve is by tuned secondary transformer.

The detector valve SP2 (V2), an H.F. pentode, acts as a leaky grid detector with the grid leak returned to the positive L.T. The anode circuit contains an H.F. filter and is coupled to the output valve by the resistance-capacity method.

The output pentode, PM22A (V3) has H.F. stopping and stabilising resistances in

its grid circuit, and is tone-compensated by means of a resistance and condenser in series across the primary of the output transformer.

The speaker is a permanent-magnet type.

Special Notes.—The battery connections (Siemens' Full o' Power, 135 v.) are:—

- Plug + B in 135-v. H.T. socket.
- B in - H.T. + G.B. socket.
- " - C1 in - 6-v.
- " - C2 in - 9-v.

Note.—After the H.T. battery voltage has dropped the - C1 plug should be inserted into the - 4½-v. socket.

Quick Tests.—These are best carried out while making the usual valve tests and noting the strength of the "plops" produced in the speaker.

Removing Chassis.—Remove knobs (grub screws). Remove batteries and free L.S. leads from cleats. Remove four screws underneath and lift chassis out.

The L.S. leads are sufficiently long to allow the chassis to be examined without disconnection.

General Notes.—There is no reaction applied to the detector, and as the sensitivity depends on the accurate ganging of the tuned circuits, the cylindrical trimmers should not be disturbed. Adjusting these is a laboratory job.

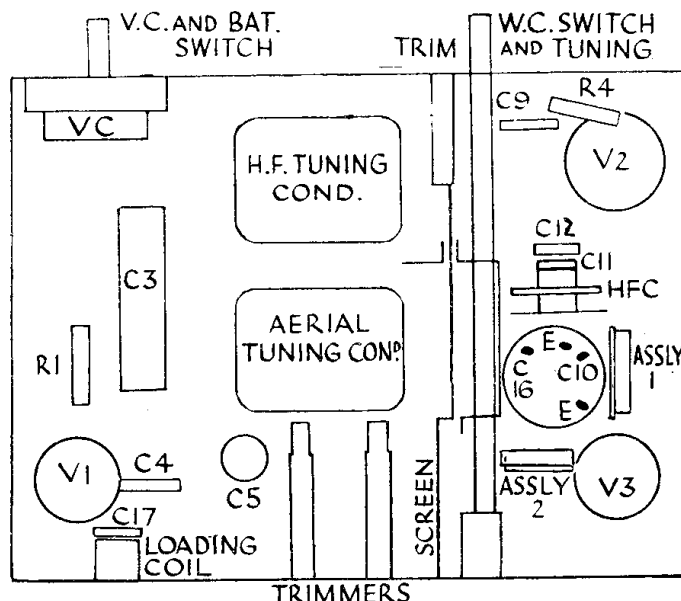
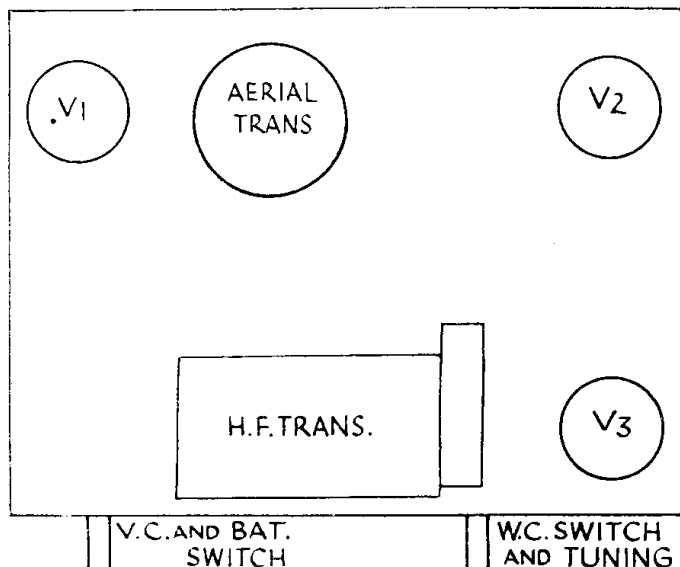
The wavechange switch is on the same spindle as the tuning knob, and the contacts are of the wiping type. The contact makers can be cleaned by using a piece of rag wrapped round a thin screwdriver. Only one set can be reached in each waveband position ("out" for L.W., "in" for M.W.).

The condenser and resistances are mounted conveniently on two small panels. Should any of these components require replacement, the identical type should be obtained from the set manufacturers.

The lay-out and construction are straightforward, and, with the help of the lay-out diagram, the components can be recognised immediately.

Replacing Chassis.—See that rubber supports are in position, lay chassis inside cabinet, replace holding screws, clip the L.S. leads and replace the knobs.

(Tables and Circuit on next page.)



Complete screening and the use of highly efficient coils are points of note in the "M.B.3." Here are the top (left) and underneath (right) layouts of the chassis. For details of assemblies see next page.

MULLARD "M.B. THREE" RECEIVER (Cont.)

CONDENSERS

C	Purpose.	Mfd.
3	V1 grid decoupling (for V.C.)	.1
4	V1 grid	.0001
5	Across G.B. battery	.1
9	V2 grid	.0001
10	V2 aux. grid	.5
11	H.F. filter in V2 anode circuit	.0005
12	"	.0002
13	I.F. coupling V2 to V3...	.0016
14	H.F. by-pass	.00005
15	Tone compensating circuit, anode V3	.002
16	Across H.T.	2

RESISTANCES

R	Purpose.	Megohms*
1	V1 grid leak	5
2	Volume control	.01
3	Stabiliser in V2 grid	100 ohms.
4	V2 grid leak	2
5	Voltage dropping to V2 aux. grid	.16
6	V2 anode coupling	.1
7	H.F. stopper and grid stabiliser	.1
8	V3 grid leak	.1
9	"	2
10	Tone compensating circuit, anode V3	.01

* Values are given in megohms as the resistances have these values stamped on them.

VALVE READINGS

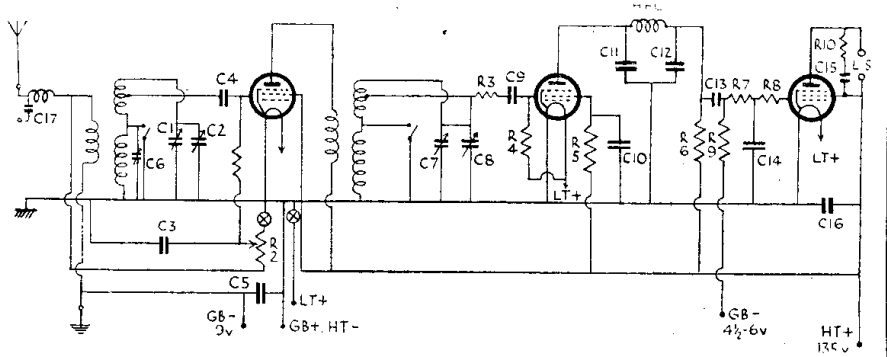
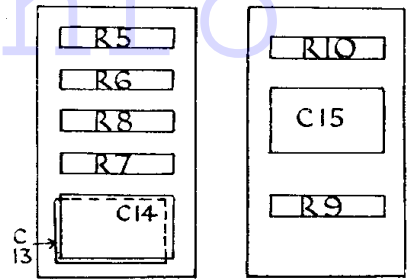
Volume Control at Maximum.

Valve.	Type.	Electrode.	Volts.	M.a.
1	VP2	anode	135	2.7
		aux. grid	135	
2	SP2	anode	30*	1
		aux. grid	65*	
3	PM22A	anode	130	3.8
		aux. grid	135	.8

* High values of resistances cause misleading voltage readings.

Top right are detail diagrams of the two assemblies mounted under the Mullard "M.B.3" chassis. Below is the circuit of the set.

ASSLY. I



"A.V.C. 5" BY G.E.C.

Circuit.—The first detector oscillator, X30 (V1), is a heptode following a band-pass aerial coupling and having a special suppressor circuit in the cathode lead.

Oscillation is obtained in the triode section by straight reaction coupling with the tuning in the grid circuit. Coupling to the I.F. valve is by band-pass I.F. transformer (frequency 125 K.C.). Bias is applied from the A.V.C. line.

The I.F. valve, W30/MK. (V2), a metalised Catkin, is also biased from the A.V.C. line and is coupled to the second detector by another band-pass I.F. transformer with a tapped secondary.

The second detector and L.F. amplifier, DH30 (V3), is a double diode triode. The I.F. signal is fed to one diode from the tapping on the I.F. T2 secondary. The L.F.

(Continued on next page.)

The "A.V.C.5," made by the General Electric Co., Ltd., is a thoroughly modern set in a horizontal type cabinet.

Heptode, H.F. pentode, double-diode-triode and output pentode valves—all 13 volt types—are employed in the "A.V.C.5." A sensitivity switch is one point of interest in the circuit given below.

