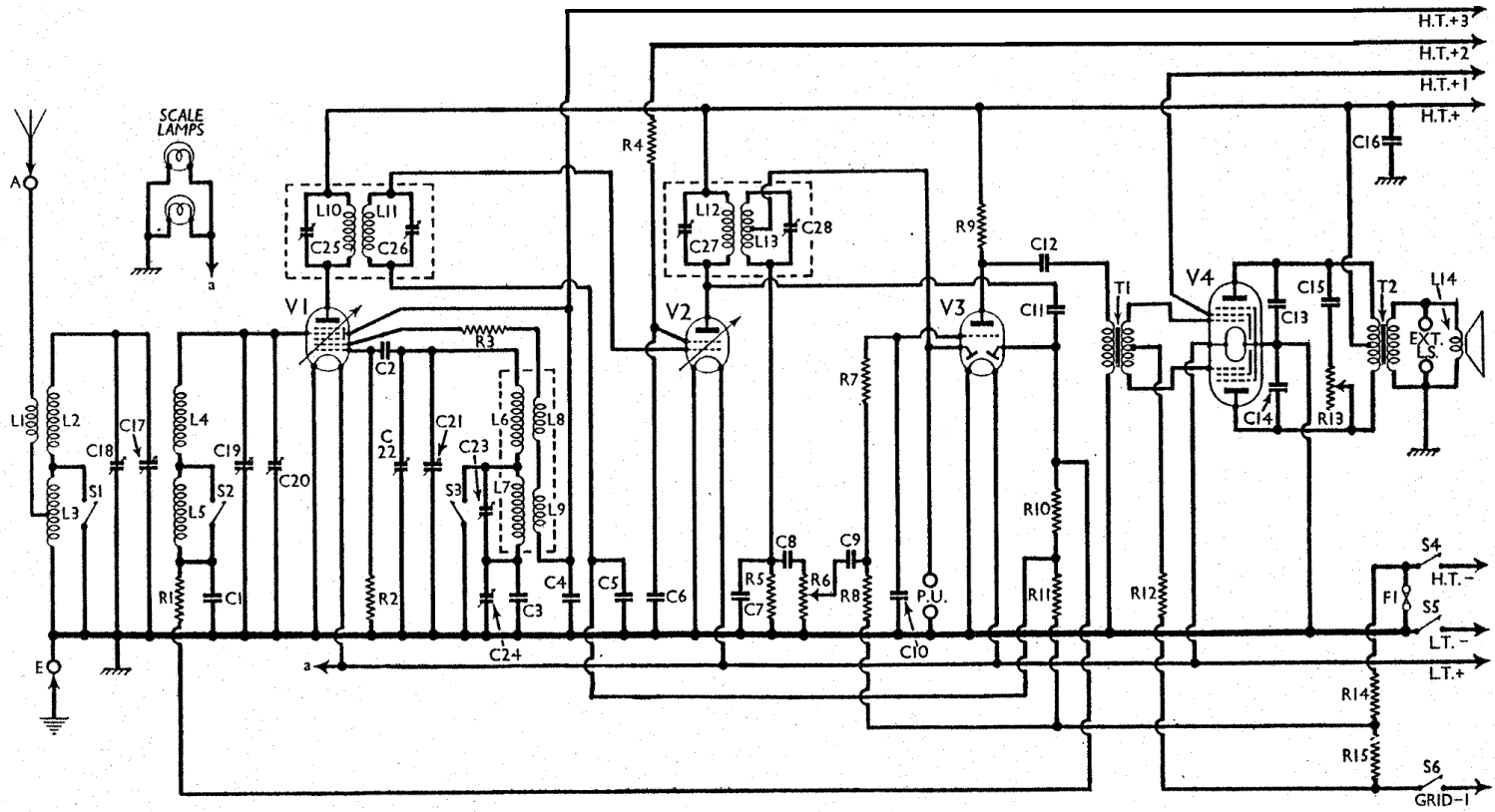
G.E.C. – SUPERHET BATTERY FOUR



Circuit diagram of the G.E.C. " Superhet Battery Four." A double-pentode Q.P.P. output stage is employed. The colour coding and voltages of the battery leads are given under " General Notes."

COMPONENTS AND VALUES

	Resistances	Values (ohms)
R1	V1 tet. cont. grid decoupling	1,000,000
R2	V1 osc. grid resistance ..	99,000
R3	V1 osc. anode series resistance	2,000
R4	V2 S.G. H.T. feed	77,000
R5	V3 signal diode load	440,000
R6	Manual volume control ..	500,000
R7	V3 grid I.F. stopper	99,000
R8	V3 grid resistance	1,000,000
R9	V3 anode load	55,000
R10	V3 A.V.C. diode load ..	330,000
R11		220,000
R12	V4 anti-parasitic resistance ..	99,000
R13	Variable tone control	50,000
R14	G.B. potential divider	150
R15		600

	Condensers	Values (μF)
C1	V1 tet. cont. grid decoupling	0·05
C2	V1 osc. grid condenser ..	0·0001
C3	Oscillator L.W. tracker, fixed	0·0005
C4	V1 S.G.'s and osc. anode decoupling	0·25
C5	V2 cont. grid decoupling ..	0·05
C6	V2 S.G. by-pass	0·1
C7	I.F. by-pass	0·0001
C8	L.F. coupling to vol. control	0·02
C9	L.F. coupling to V3 triode ..	0·02
C10	V3 grid I.F. by-pass	0·0001
C11	Coupling to V3 A.V.C. diode	0·0001
C12	L.F. coupling to T1	0·25
C13	Fixed tone correctors ..	0·001
C14		0·001
C15	Part of tone control filter ..	0·005
C16	H.T. reservoir	0·25
C17†	Band-pass primary tuning ..	—
C18‡	Band-pass primary trimmer ..	—
C19†	Band-pass secondary tuning	—
C20‡	Band-pass secondary trimmer	—
C21†	Oscillator tuning	—
C22‡	Oscillator main trimmer ..	—
C23‡	Oscillator L.W. trimmer ..	—
C24‡	Oscillator L.W. tracker ..	—
C25‡	1st I.F. trans. pri tuning ..	—
C26‡	1st I.F. trans sec. tuning ..	—
C27‡	2nd I.F. trans pri. tuning ..	—
C28‡	2nd I.F. trans sec. tuning ..	—

† Variable. ‡ Pre-set.

	Other Components		Approx. Values (ohms)
L1	Aerial coupling coil (M.W.) ..		1·6
L2	Band-pass primary coils		4·0
L3			17·0
L4	Band-pass secondary coils		3·9
L5			17·0
L6	Oscillator tuning coils		3·8
L7			11·5
L8	Oscillator reaction coils, total		4·8
L9			
L10	1st I.F. trans.	Pri. ..	82·0
L11		Sec. ..	82·0
L12	2nd I.F. trans.	Pri. ..	82·0
L13		Sec. ..	82·0
L14	Speaker speech coil		1·9
T1	Intervalve trans.	Pri. ..	632·0
		Sec. total	3,370·0
T2	Speaker input trans.	Pri. total	1,390·0
		Sec. ..	0·96
S1-S3	Waveband switches		—
S4	H.T. switch		—
S5	L.T. switch		—
S6	G.B. switch		—
F1	H.T. circuit fuse		—

VALVE ANALYSIS

Valve voltages and currents given in the table overleaf were taken with the receiver operating from new batteries, the H.T. reading 158 V and the G.B. reading 9.4 V. The volume control was at maximum and the receiver was tuned to the lowest wavelength on the M.W. band, but there was no signal input.

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

In the case of **V4,** the screen voltage depends on the letter marked on the bulb. These letters (V, W and X) correspond with similarly marked sockets on the battery. A grade V valve requires 132 V, a grade W valve needs 140 V, and a grade X valve requires 147 V. In our chassis the QP21 was a grade W valve.

Valve	Anode Volts	Anode Current (mA)	Screen Volts	Screen Current (mA)
V1 X21* ..	155	0·4	65	1·4
V2 VS24 ..	155	1·4	55	0·6
V3 HD22 ..	100	0·9	—	—
V4 QP21 ..	155†	1·1†	145‡	0·5 ‡

* Osc. anode (G2) 60 V, 2·9 mA.
† Each anode.
‡ In our chassis.

GENERAL NOTES

Switches.—The waveband and battery switches, **S1-S6,** are in a single unit, indicated in the under-chassis view, and shown in detail in a diagram, as it appears looking at the underside of the chassis, from the rear. The table below gives the switch positions for the various control settings, O indicating open, and C closed.

Switch	Off	M.W.	L.W.
S1	O	C	O
S2	O	C	O
S3	C	C	O
S4	O	C	C
S5	O	C	C
S6	O	C	C

Coils.—**L1-L5** are in two unscreened units beneath the chassis. **L1, L2** and **L4** are single layer coils on a tubular former, while **L3** and **L5** are wave-wound coils on a cylindrical wooden former.