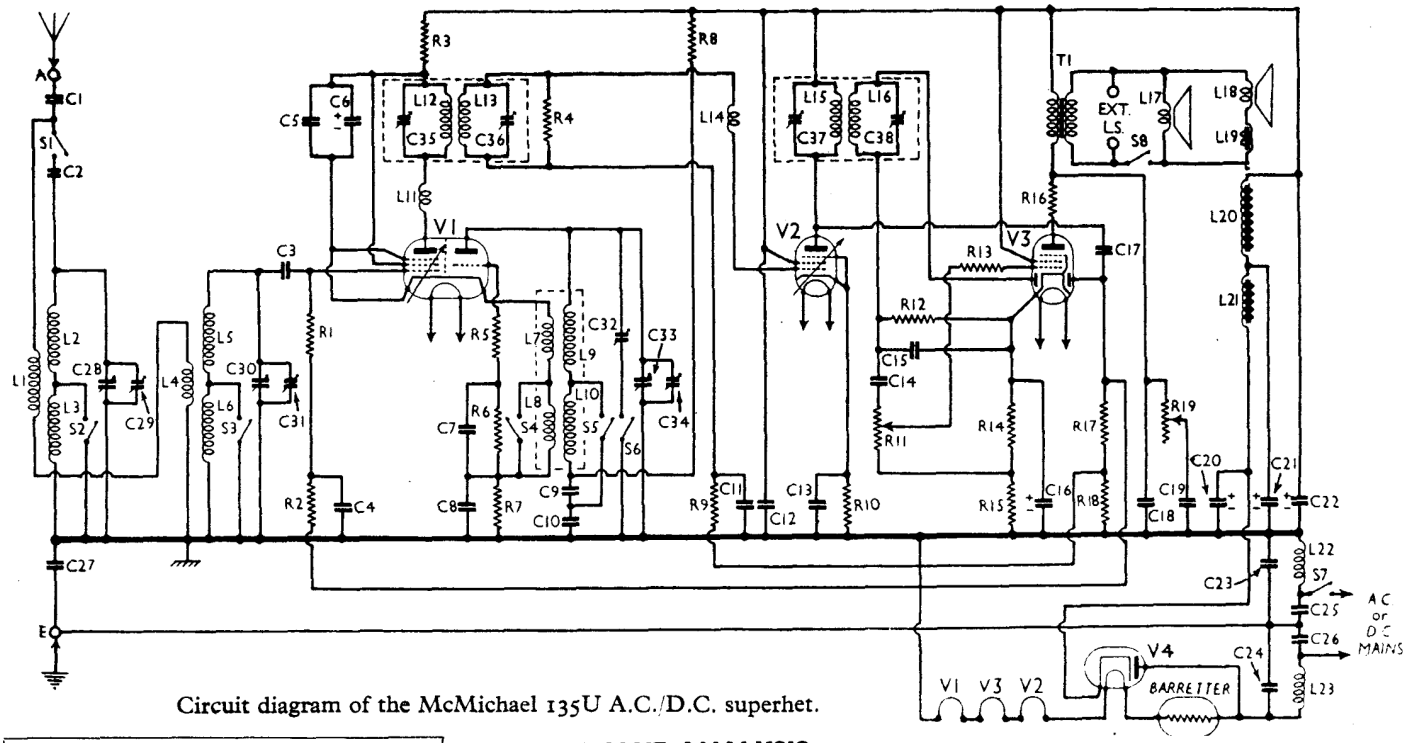
McMICHAEL - 135 U



Circuit diagram of the McMichael 135U A.C./D.C. superhet.

	RESISTANCES	Values (Ohms)
R1	V1 pentode C.G. resistance ..	1,000,000
R2	V1 pentode C.G. decoupling ..	1,000,000
R3	V1 pent. anode decoupling ..	5,000
R4	1st I.F. trans. sec. shunt ..	500,000
R5	V1 osc. harmonic suppressor ..	1,000
R6	V1 osc. C.G. resistance ..	50,000
R7	V1 fixed bias resistance ..	750
R8	V1 osc. anode decoupling ..	60,000
R9	V2 C.G. decoupling	500,000
R10	V2 fixed bias resistance ..	150
R11	Manual volume control ..	500,000
R12	V3 signal diode load	500,000
R13	V3 C.G. I.F. stopper	100,000
R14	V3 G.B. and A.V.C. delay voltage resistances ..	150
R15		500
R16	V3 pent. anode stabiliser ..	50
R17	V3 A.V.C. diode load ..	500,000
R18		500,000
R19	Variable tone control	100,000

	CONDENSERS	Values (μF)
C1	Aerial series condenser ..	0·0002
C2	Aerial M.W. coupling	0·00001
C3	V1 pentode C.G. condenser ..	0·001
C4	V1 pentode C.G. decoupling ..	0·1
C5	V1 pentode S.G. by-passes	0·1
C6*		2·0
C7	V1 osc. C.G. condenser ..	0·0002
C8	V1 cathode by-pass	0·1
C9	Oscillator L.W. tracker ..	0·001258
C10	Oscillator M.W. tracker ..	0·0023
C11	V2 C.G. decoupling	0·1
C12	V2 S.G. by-pass	0·1
C13	V2 cathode by-pass	0·1
C14	L.F. coupling to V3 ..	0·005
C15	I.F. by-pass	0·0001
C16*	V3 cathode by-pass	25·0
C17	Coupling to V3 A.V.C. diode ..	0·0001
C18	Fixed tone corrector	0·002
C19	Part variable T.C. filter ..	0·03
C20*	H.T. smoothing ..	8·0
C21*		8·0
C22*		8·0

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating on A.C. mains of 230 V. The receiver was tuned to the lowest wavelength on the medium band and the volume control was at maximum, but there was no signal input.

Valve	Anode Volts	Anode Current (mA)	Screen Volts	Screen Current (mA)
V1 TP2620*	160	4·4	160	1·3
V2 VP1321	195	8·4	195	2·6
V3 Pen. DD4020	185	31·0	195	6·2
V4 U4020 †	—	—	—	—

* Osc. anode 85V, 1·5 mA.
† Cathode to chassis, 230 V D.C.

	CONDENSERS (*Continued*)	Values (μF)
C23	Parts of mains filter circuit	0·1
C24		0·1
C25		0·1
C26		0·1
C27	Earth blocking condenser ..	0·01
C28†	Band-pass primary tuning ..	—
C29‡	Band-pass primary trimmer ..	—
C30†	Band-pass secondary tuning ..	—
C31‡	Band-pass secondary trimmer	—
C32‡	Oscillator L.W. trimmer ..	—
C33†	Oscillator tuning	—
C34‡	Oscillator main trimmer ..	—
C35‡	1st I.F. trans. pri. tuning ..	—
C36‡	1st I.F. trans. sec. tuning ..	—
C37‡	2nd I.F. trans. pri. tuning ..	—
C38‡	2nd I.F. trans. sec. tuning ..	—

* Electrolytic. † Variable. ‡ Pre-set.

GENERAL NOTES

Switches.—S1-S6 are the waveband switches, in a single unit, indicated in our front chassis view. The table below gives the switch positions for the two control settings, O indicating open, and C, closed.

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

S7 is the Q.M.B. mains switch, ganged with the volume control, **R11. S8** is the internal speakers jack switch, at the rear of the chassis, which opens when the external speaker plug is pushed fully in.

Coils.—The signal frequency coils **L1-L6** are shown in our front chassis view. They are on a tubular former, and are not screened. **L7-L10,** the oscillator coils, are in a screened unit on the chassis deck, which also carries the two screened I.F. transformers, **L12, L13** and **L15, L16.** The two S.W. chokes, **L11** and **L14** are seen in the under-chassis view, **L11** being wound over the tubular condenser **C5.**

The mains filter chokes, **L22** and **L23,** are mounted, with their associated condensers, on brackets at the left side of the chassis, and are indicated in our front chassis view.

	OTHER COMPONENTS	Approx. Values (ohms)
L1	Aerial coupling coil ..	10·5
L2	Band-pass primary coils	3·0
L3		11·5
L4	Image suppresson coil ..	0·5
L5	Band-pass secondary coils	3·0
L6		11·5
L7	Oscillator coupling coils	1·75
L8		2·0
L9	Oscillator tuning coils	4·0
L10		7·5
L11	V1 pent. anode S.W. choke ..	Very low
L12	1st I.F. trans. Pri.	43·0
L13	1st I.F. trans. Sec.	43·0
L14	V2 C.G. S.W. choke ..	Very low
L15	2nd I.F. trans. Pri.	43·0
L16	2nd I.F. trans. Sec.	43·0
L17	P.M. speaker speech coil ..	2·0
L18	Energised speaker speech coil ..	2·4
L19	Hum neutralising coil ..	0·1
L20	Speaker field coil ..	500·0
L21	H.T. smoothing choke ..	225·0
L22	Mains filter chokes ..	18·7
L23		18·7
T1	Output trans. Pri.	300·0
	Sec.	0·2
S1-S6	Waveband switches ..	—
S7	Mains switch, ganged R11	—
S8	Internal speaker switch	—