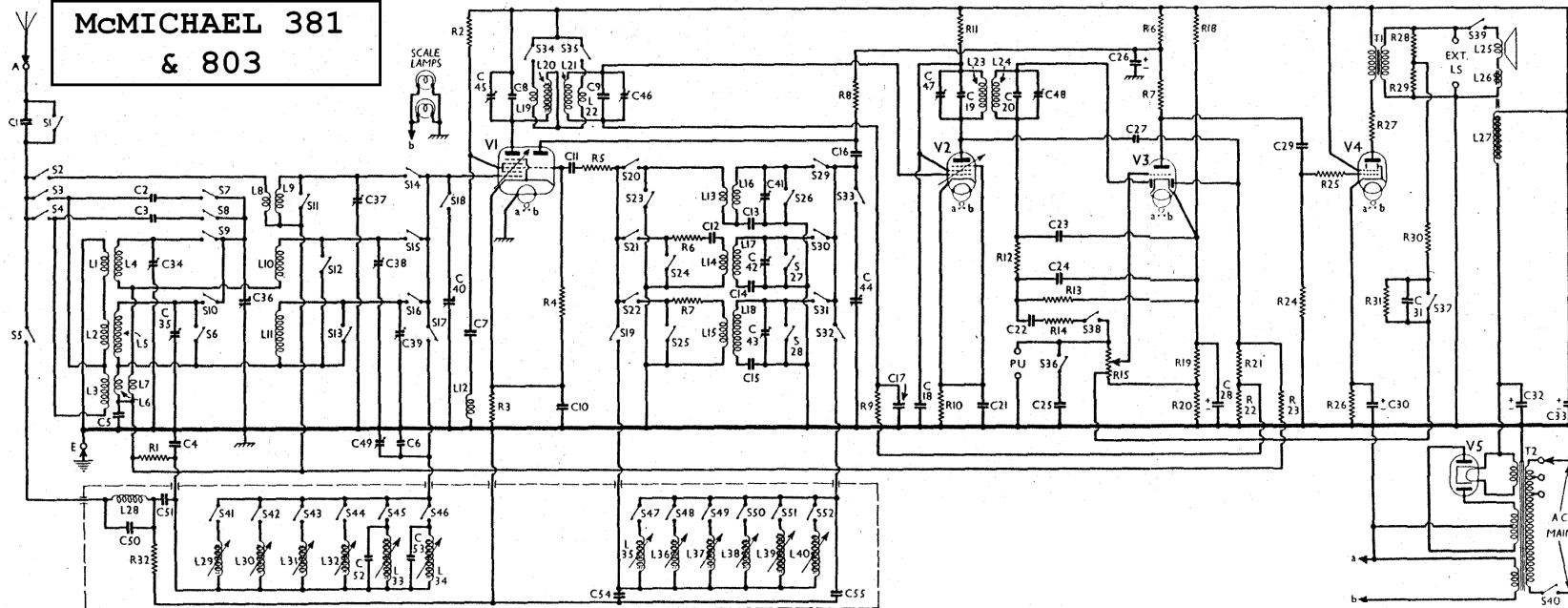


McMICHAEL 381 & 803



COMPONENTS AND VALUES

RESISTANCES	Values (ohms)
R1 Part of auto aerial coupling	2,000
R2 V1 SG HT feed resistance	40,000
R3 V1 fixed GB resistance	250
R4 V1 osc. CG resistance	50,000
R5 V1 osc. CG stabiliser	150
R6 MW reaction damping	2,500
R7 LW reaction damping	5,500
R8 V1 osc. anode HT feed	40,000
R9 V2 CG decoupling	500,000
R10 V2 fixed GB resistance	200
R11 V2 anode HT feed	2,000
R12 IF stopper	50,000
R13 V3 signal diode load	200,000
R14 IF stopper	500,000
R15 Manual volume control	500,000*
R16 V1 osc. and V3 triode anodes decoupling	5,000
R17 V3 triode anode load	30,000
R18 V3 triode GB and AVC delay	60,000
R19 potential divider	500
R20	1,000
R21 V3 AVC diode load resistances	500,000
R22	500,000
R23 AVC line decoupling	500,000
R24 V4 CG resistance	500,000
R25 V4 CG stopper	50,000
R26 V4 GB resistance	180
R27 V4 anode stopper	50
R28 Negative feed-back potential divider	500
R29	300
R30 Negative feed-back coupling	5,500
R31 resistances	200,000
R32 Auto aerial input shunt	10,000

* Tapped at 4,000 Ω from "earthy" end.

CONDENSERS

CONDENSERS		Values (μF)
C1	Aerial series condenser	0.0002
C2	Aerial MW and LW coupling	0.000007
C3	condensers	0.000012
C4	Part aerial coupling on auto.	0.002
C5	Part of band-pass coupling	0.28
C6	Auto aerial circuit trimmer	0.000075
C7	V1 SG decoupling	0.1
C8	1st IF transformer fixed trim-	0.00005
C9	mers	0.000135
C10	V1 cathode by-pass	0.1
C11	V1 osc. CG resistance	0.0001
C12	Osc. MW reaction series	0.0001
C13	Osc. circuit SW tracker	0.0035
C14	Osc. circuit MW tracker	0.000519
C15	Osc. circuit LW tracker	0.000164
C16	V1 osc. anode coupling	0.0001
C17	V2 CG decoupling	0.1
C18	V2 anode and SG decoupling	0.1
C19	2nd IF transformer fixed trim-	0.00005
C20	mers	0.00005
C21	V2 cathode by-pass	0.1
C22	AF coupling to V3 triode	0.005
C23	IF by-pass condensers	0.0001
C24		0.0001
C25	Tone control condenser	0.001
C26*	V1 osc. and V3 triode anodes decoupling	8.0
C27	Coupling to V3 AVC diode.	0.0001
C28*	V3 cathode by-pass	50.0
C29	V3 triode to V4 AF coupling	0.01
C30*	V4 cathode by-pass	100.0
C31	Part neg. feed-back coupling	0.06
C32*	HT smoothing condensers	8.0
C33*		16.0
C34	Band-pass pri. MW trimmer	—
C35	Band-pass pri. LW trimmer	—
C36	Band-pass pri. tuning	—
C37	Aerial circuit SW trimmer	—
C38	Band-pass sec. MW trimmer	—
C39	Band-pass sec. LW trimmer	—
C40†	SW aerial and band-pass secondary tuning	—
C41	Osc. circuit SW trimmer	—
C42	Osc. circuit MW trimmer	—
C43	Osc. circuit LW trimmer	—
C44	Oscillator circuit tuning	—
C45†	1st IF trans. pri. tuning	—
C46†	1st IF trans. sec. tuning	—
C47†	2nd IF trans. pri. tuning	—
C48†	2nd IF trans. sec. tuning	—
C49†	Auto aerial circuit tuning	—
C50	Part auto aerial filter	0.0007
C51	Part auto aerial coupling	0.02
C52	Auto aerial circuit LW fixed	0.000015
C53	trimmers	0.000015
C54	Auto oscillator circuit fixed	0.000714
C55	tuning condensers	0.000212

* Electrolytic. † Variable. ‡ Pre-set.
§ Two 0.1 μF in parallel.

OTHER COMPONENTS

OTHER COMPONENTS		Approx. Values (ohms)
L1	Aerial MW and LW coupling	3.7
L2	coils	13.0
L3	Image filter coil	60.0
L4	Band-pass primary coils	1.9
L5		21.0
L6	Band-pass coupling coils	0.1
L7		1.9
L8	Aerial SW coupling coil	0.3
L9	Aerial SW tuning coil	Very low
L10	Band-pass secondary coils	1.9
L11		21.0
L12	V1 SG stabilising choke	Very low
L13	Oscillator SW reaction coil	0.3
L14	Oscillator MW reaction coil	3.5
L15	Oscillator LW reaction coil	4.6
L16	Osc. circuit SW tuning coil	0.1
L17	Osc. circuit MW tuning coil	2.3
L18	Osc. circuit LW tuning coil	9.0
L19	Variable selectivity coil	0.5
L20		5.5
L21	1st IF trans. { Pri.	2.7
L22	{ Sec.	1.0
L23	Variable selectivity coil	1.0
L24	2nd IF trans. { Pri.	14.0
L25	{ Sec.	14.0
L26	Speaker speech coil	2.3
L27	Hum neutralising coil	0.15
L28	Speaker field coil	900.0
L29	Auto aerial filter coil	2.0
L30		2.8
L31		3.2
L32	Aerial circuit automatic	3.2
L33	tuning coils	10.0
L34		40.0
L35		50.0
L36		3.5
L37		4.2
L38	Oscillator circuit automatic	4.2
L39	tuning coils	8.3
L40		14.0
T1		14.0
	Speaker input { Pri.	290.0
	trans. { Sec.	0.25
T2	Mains Heater sec.	21.0
	trans. Rect. heat. sec.	0.05
	{ HT sec., total	0.1
St-S33	Waveband and auto/manual change switches	250.0
S34-37	Tone control switches	—
S38	Radio muting switch	—
S39	Speaker muting switch	—
S40	Mains switch, gauged R15	—
S41-46	Aerial auto selector switches	—
S47-52	Oscillator auto selector switches	—

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating on mains of 225 V, using the 220 V tapping on the mains transformer. The receiver was tuned to the lowest wavelength on the MW band and the volume control was at maximum, but there was no signal input.

Voltages were measured on the 400 V scale of a model 7 Universal Avometer, chassis being negative.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 AC/THr	250	2.4	80	4.0
V2 AC/VP2	60	4.0	—	—
V3 HL41DD	222	11.0	222	2.8
V4 AC5/Pen	140	2.8	—	—
V5 U4	236	42.0	250	6.3
	300†	—	—	—

† Each anode, AC.

S34-S37 Switch Unit

Switch	Fidelity	Normal	Bass	Foreign
S34	—	—	—	—
S35	—	—	—	—
S36	—	—	—	—
S37	—	—	—	—

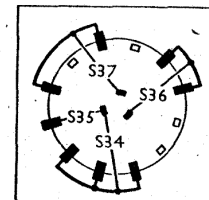


Diagram of the selectivity and tone switch unit.

CIRCUIT ALIGNMENT

IF Stages.—Connect signal generator to control grid (top cap) of V1 and chassis, and feed in a 465 KC/S signal. Adjust C45, C46, C47 and C48 in turn for maximum output. Re-check these settings.

RF and Oscillator Stages.—The first procedure is to set the glass scale correctly in alignment with the metal backing plate. This is done by noticing that the two red rings at the side of the wave-change indicator and tone control indicator are coincident with the holes in the metal backing plate. This is important. Do not adjust the scale by paying any attention to the wave-change and tone control indicator lettering, but only to the two holes mentioned above.

Next, turn the variable condenser to mechanical maximum and see that the bottom edges of the three pointers are in line with the marks at the extreme bottom of the wavelength scale.

Connect signal generator, via a suitable dummy aerial, to the A and E socket.

SW.—Switch set to SW, tune to a point mid-way between the top of the SW calibration mark (19 m) and the centre of the 20 m mark. Feed in a 19.5 m (15.3 MC/S) signal, and adjust C41, then C37, for maximum output.

MW.—Switch set to MW, and tune to 214 m on scale. Feed in a 214 m (1,400 KC/S) signal, and adjust C42, then C38 and C34, for maximum output.

LW.—Switch set to LW, and tune to 1,100 m on scale. Feed in a 1,100 m (272.5 KC/S) signal, and adjust C43, then C39 and C35, for maximum output.

Press-Button Alignment.—Before the press-buttons are adjusted to the various wavelengths it is essential that C49 is adjusted correctly.

The first procedure is to screw the adjustments on all auto-coils in a clockwise direction as far as possible so that all coils are now tuned to minimum wavelength.

Feed a signal of 1,400 KC/S (214 m) into the A and E sockets. Push in the button on the extreme right, that is the one covering the highest frequency or lowest wavelength, and adjust C49 for maximum signal strength to 1,400 KC/S, the switch on the receiver being adjusted to the selector (auto) position.

Having carried out this one adjustment on the aerial trimmer condenser, the press-buttons can be adjusted in the usual way, rotating the adjusting screws for the required signal.