

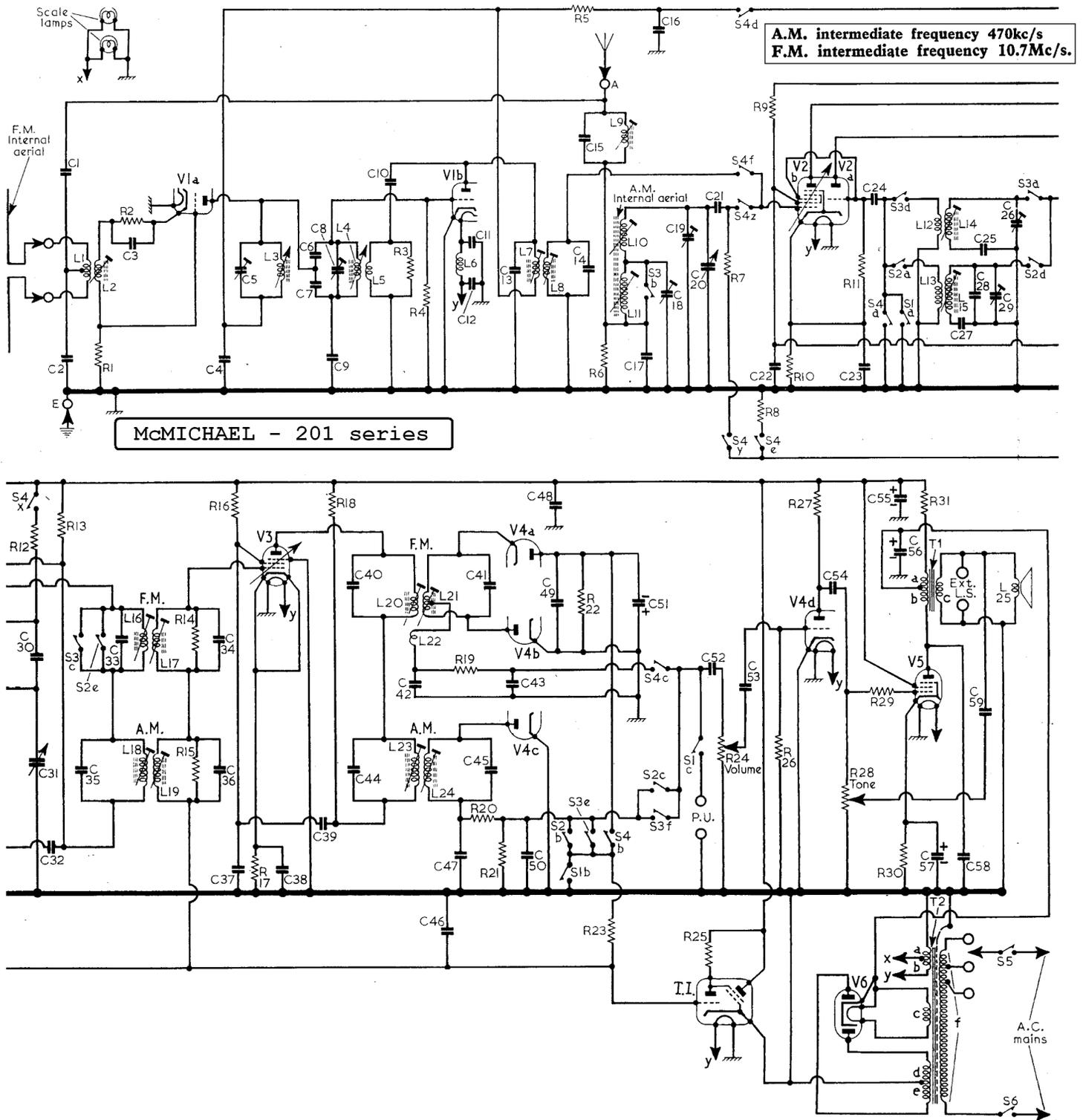
Capacitors				Resistors				Other Components*			
C1	500pF	H4	C34	30pF	B2	R7	1MΩ	G5	L8	—	B1
C2	20pF	H4	C35	250pF	B2	R8	1MΩ	G3	L9	2.5	H4
C3	0.001μF	H4	C36	250pF	B2	R9	33kΩ	G4	L10	1.75	A2
C4	600pF	H4	C37	0.005μF	G4	R10	150Ω	G4	L11	9.0	B2
C5†	8pF	H4	C38	50pF	G4	R11	47kΩ	G4	L12	2.0	H3
C6	35pF	H4	C39	0.005μF	F4	R12	33kΩ	G3	L13	6.0	F3
C7	35pF	H4	C40	10pF	C2	R13	2.2kΩ	G4	L14	2.5	H3
C8†	30pF	H4	C41	30pF	C2	R14	15kΩ	G4	L15	7.0	F3
C9	10pF	H3	C42	300pF	G4	R15	220kΩ	G4	L16	—	B2
C10	18pF	H4	C43	0.001μF	F3	R16	56kΩ	G4	L17	—	B2
C11	0.001μF	H4	C44	250pF	C2	R17	56Ω	G4	L18	6.75	B2
C12	0.001μF	H4	C45	250pF	C2	R18	1.5kΩ	G4	L19	6.75	B2
C13	10pF	H4	C46	0.1μF	G4	R19	47kΩ	F4	L20	—	C2
C14	20pF	B2	C47	100pF	F4	R20	47kΩ	F4	L21	—	C2
C15	1.500μF	H4	C48	0.001μF	F4	R21	1MΩ	F3	L22	—	C2
C16	0.005μF	H3	C49	0.001μF	F4	R22	47kΩ	F4	L23	6.75	C2
C17	0.005μF	A1	C50	200pF	F3	R23	1MΩ	G3	L24	6.75	C2
C18†	40pF	G3	C51†	5μF	F4	R24	1MΩ	D1	L25	—	C1
C19†	40pF	G3	C52	0.01μF	F3	R25	470kΩ	D1			
C20	—	A1	C53	0.01μF	D1	R26	10MΩ	F4			
C21	50pF	G3	C54	0.01μF	F4	R27	330kΩ	F3			
C22	0.005μF	G4	C55†	50μF	E4	R28	250kΩ	D1			
C23	0.02μF	G4	C56†	50μF	E4	R29	15kΩ	E4			
C24	50pF	G3	C57†	50μF	E4	R30	120Ω	F4			
C25	486pF	H3	C58	0.001μF	F4	R31	2.2kΩ	C1			
C26†	40pF	G3	C59	0.005μF	C1						
C27	180pF	F3									
C28	80pF	F3									
C29†	40pF	F3									
C30	200pF	G3									
C31	—	B1									
C32	0.005μF	G4									
C33	30pF	B2									

\* Approx. D.C. resistance in ohms.

† Electrolytic

‡ Pre-set.

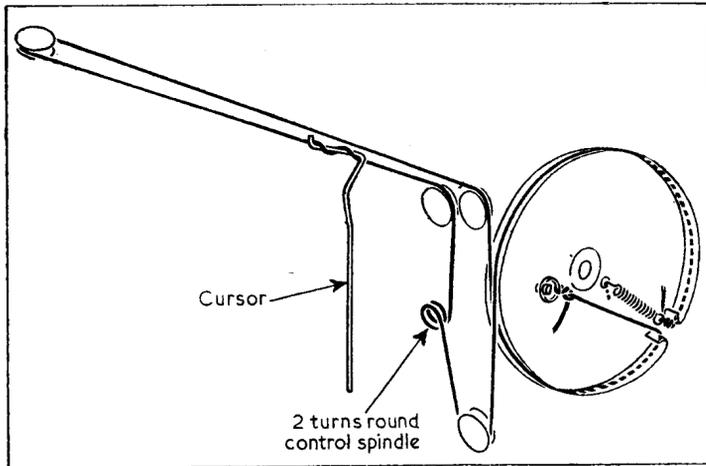
|| Dual unit with concentric controls.



A.M. intermediate frequency 470kc/s  
F.M. intermediate frequency 10.7Mc/s.

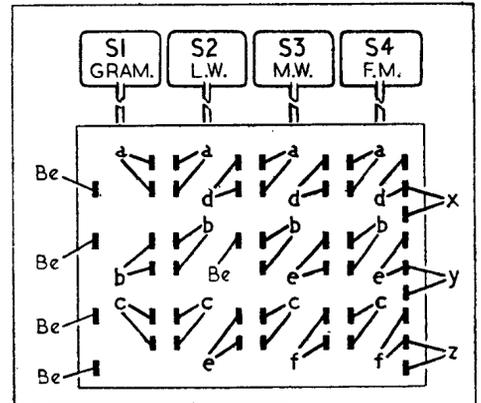
McMICHAEL - 201 series

A.C. mains



Sketch showing the drive cord arrangement, seen on the left, is a three-quarter front view with the gang at maximum capacitance.

On the right is a diagram of the press-button wave band switch unit, as seen from the rear of an inverted chassis.



## CIRCUIT ALIGNMENT

**Equipment required.**—An accurately calibrated signal generator covering the A.M. alignment frequencies of 150-1,600kc/s modulated 30 per cent at 400c/s, and the F.M. alignment frequencies of 10.7Mc/s and 88-98Mc/s. A sound output meter, a D.C. valve voltmeter or a 20,000 $\Omega$ /V meter, two matched 100K $\Omega$  resistors, and a non-metallic trimming tool.

**General.**—Allow receiver and signal generator to warm up for 10-15 minutes prior to alignment. L10 (A2) and L11 (B2) are ferrite rod tuned and should be adjusted for maximum output by sliding the formers along the ferrite rod and securing them to the former after alignment to prevent them from moving. Check that the scale cursor coincides with the datum mark at the high wavelength end of the scale when the gang is at maximum capacitance.

### A.M. I.F. Stages

1.—Turn volume and tone controls to the fully clockwise position. Switch to M.W. and adjust gang to mid-position. Connect sound output meter to external speaker sockets.

2.—Connect output of signal generator via a 0.1 $\mu$ F capacitor to the control grid (pin 2) of V2 and chassis. Feed in a 470kc/s modulated signal and adjust L24 (F4), L23 (C2), L19 (G4), L18 (B2) for maximum output. Repeat adjustments for optimum results.

### A.M. R.F. Stages

3.—Connect signal generator via a dummy aerial to the aerial and earth sockets. Switch receiver to M.W. with the gang in mid-position. Feed in a 470kc/s signal and adjust L9 (B2) for minimum output.

4.—Tune receiver to 500M, feed in a 600kc/s signal and adjust L14 (B1) and L10 (A2) for maximum output.

5.—Tune receiver to 190m, and feed in a 1,580kc/s signal. Adjust C26 (G3) and C19 (G3) for maximum output.

6.—Repeat operations 4 and 5 until no improvement can be obtained.

7.—Switch receiver to L.W. and tune it to 2,000m. Feed in a 150kc/s signal and adjust L15 (C1) and L11 (B2) for maximum output.

8.—Tune receiver to 900m. Feed in a 333kc/s signal and adjust C29 (F3) and C18 (G3) for maximum output.

9.—Repeat operations 7 and 8 until no improvement can be obtained.

## F.M. I.F. Stages

1.—Switch receiver to F.M. and turn gang to maximum. Connect D.C. valve voltmeter or 20,000 $\Omega$ /V meter across C51 (F4), with the meter positive lead connected to chassis. Connect signal generator output to the control grid (pin 2) of V2b, and feed in an unmodulated 10.7Mc/s signal. Adjust signal generator output for a 3V reading on the valve voltmeter. Adjust L16 (B2), L17 (G4) and L20 (C2) for maximum output on the valve voltmeter, reducing the signal generator output to maintain a 3V reading on the valve voltmeter. Repeat adjustments for optimum output.

2.—Check bandwidth by swinging signal generator frequency each side of 10.7Mc/s until output falls by 3dB (from 3V to 2.1V). The bandwidth covered by this means should not be less than  $\pm 150$ kc/s. (300kc/s total).

3.—Connect the two matched 100k $\Omega$  resistors in series across R22 (F4). Connect valve voltmeter between junction of the two 100k $\Omega$  resistors and junction of R19 and C43 (F4).

4.—Feed in an unmodulated 10.7Mc/s signal to the control grid (pin 2) of V2, and unscrew the core of L21 (F4). Starting with the core well out, screw in the core until a maximum positive or negative peak is obtained. Continue to screw the core in through a zero and then on to a peak in the opposite direction. The correct tuning point is the zero position between the two peaks. A centre-zero meter is of assistance in this adjustment.

5.—Reconnect valve voltmeter across C51 (F4). Transfer signal generator output to the F.M. aerial socket. Feed in a 10.7Mc/s unmodulated signal and adjust L7 (B2) and L8 (H4) for maximum output. Repeat adjustments until no improvement can be obtained.

6.—Tune the receiver to 88Mc/s, feed in a 88Mc/s unmodulated signal. Adjust L4 (A2) and L3 (A2) for maximum output.

7.—Tune the receiver to 93Mc/s, feed in a 93Mc/s unmodulated signal and adjust C8 (H4) and C5 (H4) for maximum output.

8.—Check calibration. Feed in a 98Mc/s signal and tune it in on the receiver. If the cursor is to the left of the 98Mc/s calibration mark, the core of L4 (A2) should be screwed in. Conversely, if the cursor is to the right of the cali-

Valve	Anode (V)	Screen (V)	Cath. (V)
V1a ECC85	135	—	2.25
V1b ECC85	125 <sup>†</sup>	—	—
V2a ECH81	88 <sup>*</sup>	—	1.45
V2b ECH81	192	75	1.45
	170	69	1.1
V3 EF85	193	67	0.7
	175	59	0.65
V4d EABC80	78	—	—
	68	—	—
V5 EL84	245	210	5.4
	245	190	4.8

\*Measured with receiver switched to A.M.

†Measured with receiver switched to F.M.

<sup>†</sup>105V when not oscillating.

<sup>\*</sup>42V when not oscillating.

McMICHAEL - 201 series