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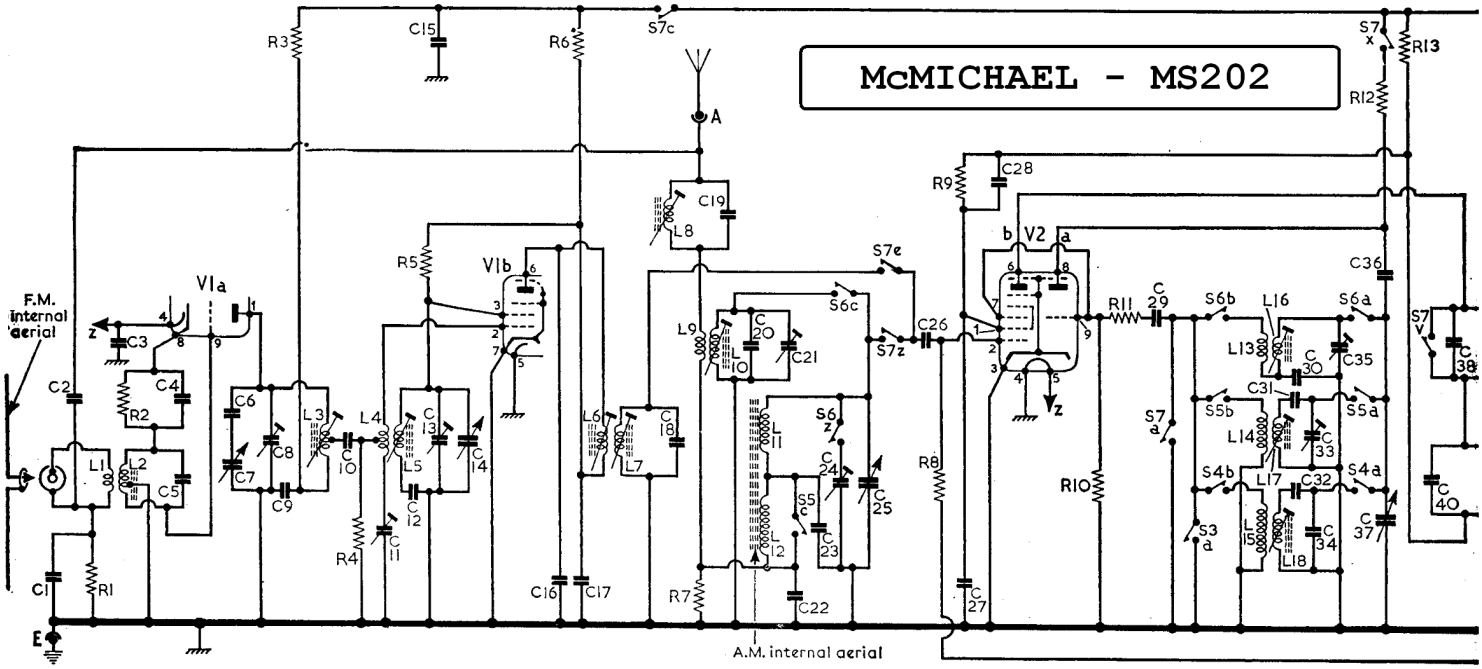
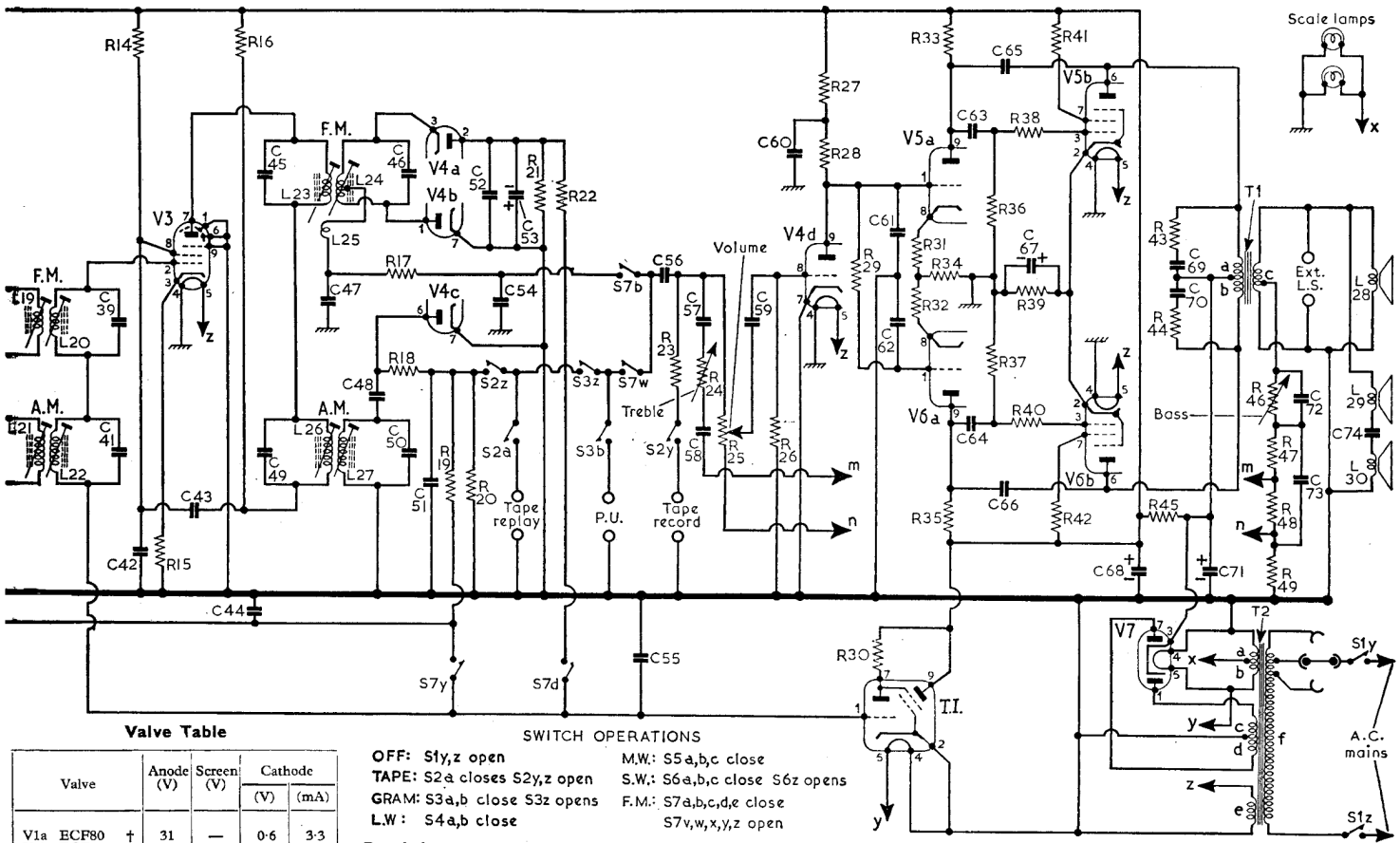




Valve Table

Valve			Anode (V)	Screen (V)	Cathode (V)	Cathode (mA)
V1a	ECF80	†	31	—	0·6	3·3
V1b	ECF80	†	160	80	—	6·2
V2a	ECH81	*	90	—	—	10·0
V2b	ECH81	*	172	60	—	10·0
		†	152	65	—	9·6
V3	EF89	*	180	72	0·7	8·5
		†	165	66	0·65	8·0
V4d	EABC80	*	76	—	—	0·65
		†	73	—	—	0·6
V5a	ECL82	*	148	—	78·0	0·4
		†	135	—	74·0	0·38
V5b	ECL82	*	230	183	13·5	35·0
		†	230	168	12·5	34·0
V6a	ECL82	*	135	—	77·0	0·38
		†	125	—	74·0	0·36
V6b	ECL82	*	230	183	13·5	35·0
		†	230	168	12·5	34·0
V7	EZ80	*	225[1]	—	240·0	92·0
		†	225[1]	—	240·0	94·0
T.I.	EM81		—	—	—	—

*Receiver switched to A.M. †Receiver switched to F.M. [1]A.C. reading.

Miscellaneous*

T1	a	240·0
	b	—
	c	—
T2	a	—
	b	—
	c	138·0
	d	142·0
	e	—
	f	41·0

*Approximate D.C. resistance in ohms. †Reversible electrolytic.

SWITCH OPERATIONS

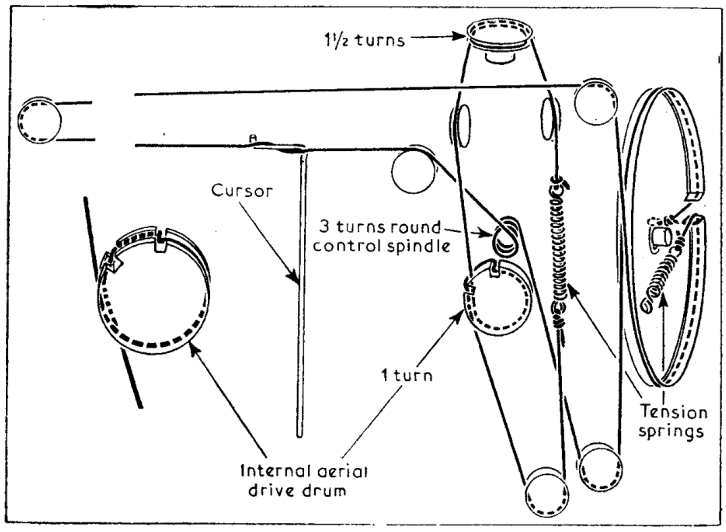
OFF: S1y,z open
TAPE: S2a closes S2y,z open
GRAM: S3a,b close S3z opens
L.W: S4a,b close
M.W.: S5a,b,c close
S.W.: S6a,b,c close S6z opens
F.M.: S7a,b,c,d,e close S7v,w,x,y,z open

Resistors

R1	1MΩ	R18	47kΩ	R35	120kΩ
R2	220Ω	R19	1MΩ	R36	1MΩ
R3	47kΩ	R20	330kΩ	R37	1MΩ
R4	1MΩ	R21	47kΩ	R38	100kΩ
R5	39kΩ	R22	1MΩ	R39	200Ω
R6	1·5kΩ	R23	470kΩ	R40	100kΩ
R7	33kΩ	R24	100kΩ	R41	330Ω
R8	1MΩ	R25	500kΩ	R42	330Ω
R9	33kΩ	R26	10MΩ	R43	4·7kΩ
R10	47kΩ	R27	68k	R44	4·7kΩ
R11	33Ω	R28	100kΩ	R45	1·8kΩ
R12	33kΩ	R29	1MΩ	R46	100kΩ
R13	1·5kΩ	R30	470kΩ	R47	12kΩ
R14	56kΩ	R31	10kΩ	R48	1kΩ
R15	68Ω	R32	10kΩ	R49	390Ω
R16	1·5kΩ	R33	100kΩ		
R17	47kΩ	R34	100kΩ		

Capacitors

C1	47pF	C25	528pF	C49	250pF
C2	200pF	C26	50pF	C50	250pF
C3	0·001μF	C27	0·005μF	C51	100pF
C4	0·001μF	C28	0·005μF	C52	0·001μF
C5	10pF	C29	50pF	C53	4μF
C6	47pF	C30	3,900pF	C54	0·001μF
C7	20pF	C31	430pF	C55	0·005μF
C8	9pF	C32	190pF	C56	0·03μF
C9	0·005μF	C33	30pF	C57	0·001μF
C10	30pF	C34	140pF	C58	0·1μF
C11	30pF	C35	30pF	C59	0·01μF
C12	56pF	C36	200pF	C60	0·25μF
C13	9pF	C37	528pF	C61	50pF
C14	20pF	C38	30pF	C62	0·1μF
C15	0·001μF	C39	30pF	C63	0·01μF
C16	10pF	C40	250pF	C64	0·01μF
C17	0·001μF	C41	250pF	C65	10pF
C18	10pF	C42	0·005μF	C66	10pF
C19	0·001μF	C43	0·005μF	C67	100μF
C20	10pF	C44	0·1μF	C68	50μF
C21	30pF	C45	10pF	C69	0·005μF
C22	·0005μF	C46	30pF	C70	0·005μF
C23	65pF	C47	300pF	C71	50μF
C24	30pF	C48	100pF	C72	0·03μF
				C73	500pF



Left : *Sketch of the tuning drive system.*

Below : *Diagram of the switch unit.*

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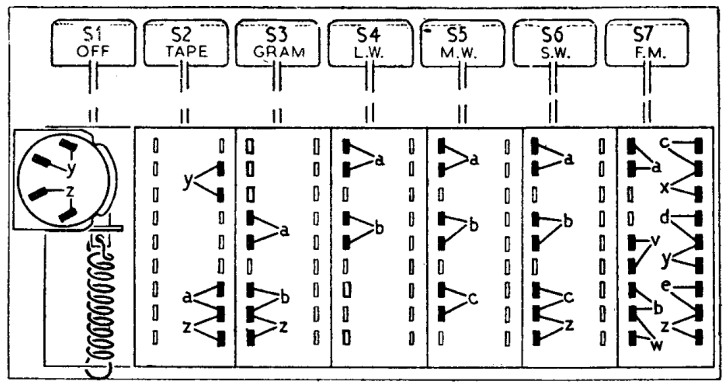

CIRCUIT ALIGNMENT

Equipment required.—A signal generator, modulated 30 per cent at 400c/s; an audio output meter (15Ω loading); a valve-voltmeter or, alternatively, a 20,000Ω/V meter for use as a D.C. output meter; two matched 100kΩ resistors connected in series; a 4.7kΩ resistor for use as a damping shunt; and a 0.1μf capacitor.

Allow the receiver and signal generator to warm up for at least five minutes before commencing the alignment procedure.

If two peaks are found when adjusting the iron-dust tuning cores, the correct one is that nearer the adjusting end of the coil former.

A.M. Alignment

1.—Disconnect the speaker leads from **T1** and connect the audio output meter to it in their place. Connect the signal generator to **V3** control grid (pin 2) via the 0.1μF capacitor. Switch the receiver to M.W. Turn the tuning and volume controls fully clockwise, tone controls fully anti-clockwise.

2.—Feed in a modulated 470kc/s signal at a level of approximately 1.5mV and adjust the cores of **L26** (C2) and **L27** (G5) for maximum output, reducing the generator output as the circuits are brought into line

3.—Transfer the generator to **V2b** control grid (pin 2). Feed in a 470kc/s signal, and adjust the cores of **L21** (B2) and **L22** (G5) for maximum output.

4.—Repeat operations 2 and 3.

5.—Connect the signal generator to the A.M. aerial socket via a dummy aerial. Feed in a 470kc/s signal at a level of approximate 2mV and adjust **L8** (B2) for *minimum* output.

6.—With the tuning gang at maximum capacitance check that the cursor coincides with the right-hand ends of the tuning scale apertures.

7.—Switch the receiver to L.W. and tune it to 1,765m. Feed in a 170kc/s signal and adjust **L18** (F4) for maximum output. Then adjust the generator output to approximately 35μV and slide the former of **L12** (A1) along the ferrite rod for maximum output. Repeat these two adjustments.

8.—Switch the receiver to M.W. and tune it to 500m. Feed in a 600kc/s signal and adjust the core of **L17** (G4) for maximum output. Then adjust the generator output to approximately 25μV and slide the former of **L11** (B1) along the ferrite rod for maximum output.

9.—Tune the receiver to 214.3m. Feed in a 1,400kc/s signal at a level of 25μV and adjust **C33** (G4) and **C24** (F4) for maximum output.

10.—Repeat operations 8 and 9 until no improvement in calibration and sensitivity can be obtained. Seal the formers of **L11** and **L12** to the ferrite rod to prevent them from moving.

11.—Switch the receiver to S.W. and tune it to 46.17m. Feed in a 6.5Mc/s signal and adjust **L16** (G4) for maximum output. Then adjust the generator output to approximately 60μV and adjust **L10** (G4) for maximum output.

12.—Tune the receiver to 20m. Feed in a 15Mc/s signal and adjust **C35** (G4) for maximum output. Adjust the generator output to 30μV and adjust **C21** (G4) for maximum output.

13.—Repeat operations 11 and 12 until no improvement in calibration and sensitivity can be obtained.

F.M. Alignment

1.—Connect the D.C. output meter across **R21** (location reference F5), positive terminal to chassis, and the signal generator to **V3** control grid (pin 2). Connect a shorting link across **C44** (location reference H4) to render the A.G.C. inoperative.

2.—Switch the receiver to F.M. and turn the tuning gang to maximum capacitance. Feed in an unmodulated signal at a level of approximately 70mV and adjust the core of **L23** (C2) for maximum output.

3.—Transfer the generator to **V3** control grid (pin 2.) Feed in a 10.7Mc/s signal at a level of approximately 3.5mV. Connect the 4.7kΩ damping resistor across **L20** and adjust **L19** (B2) for maximum output. Then connect the damping resistor across **L19** and adjust **L20** (G5) for maximum output.

4.—Repeat operations 2 and 3.

5.—Connect the two matched 100kΩ resistors in series across **R21** (location reference F5). Connect the D.C. meter between the junction of the 100kΩ resistors and the junction of **R17, C54** (location reference G4). Feed in a 10.7Mc/s signal at a level of approximately 3.5mV and adjust the core of **L24** (G5) for a zero reading on the meter. This will occur mid-way between a positive and negative going peak. When correctly adjusted the core should be approximately level with the base of the coil former.

Note: If a wobbulator and an oscilloscope are available, **L24** may be adjusted as follows:

Connect the oscilloscope Y input leads across the volume control **R25,** and the wobbulator to **V2b** control grid (pin 2). Feed in a 10.7Mc/s signal deviated by ±150kc/s, and adjust the core of **L24** (G5) for a symmetrical response curve on the oscilloscope.

6.—Reconnect the D.C. output meter as described in operation 1. Transfer the signal generator to the F.M. aerial socket. Remove the tuner screening cover.

7.—Feed in a 10.7Mc/s signal at a level of approximately 0.1V and adjust the cores of **L6** (H5) and **L7** (B2) for maximum output. Repeat these adjustments and then replace the screening cover.

8.—Tune the receiver to 88Mc/s. Feed in an 88Mc/s signal at a level of approximately 20μV and adjust the cores of **L5** (B2) and **L3** (A2) for maximum output.

9.—Tune the receiver to 98Mc/s. Feed in a 98Mc/s signal at a level of 20μV and adjust **C13** (B2) and **C8** (A2) for maximum output.

10.—Disconnect the signal generator and tune the receiver to 88Mc/s. Connect the valve voltmeter across **C7** (location reference A1) and set it to a low voltage A.C. range. Adjust **C11** (H4) for minimum reading on the meter.

11.—Reconnect the D.C. output meter across **R21,** and the signal generator to the F.M. aerial socket. Repeat operations 8 and 9.

12.—Remove the shorting link from **C44.**

Drive Cord Replacement.—About 65 inches of nylon-braided glass yarn is required for a new tuning drive cord, and about 30 inches for a new internal aerial drive cord. These should be run as indicated in the sketch of the tuning drive systems shown in cols. 1, 2, where the tuning drive is drawn as seen from the front of the chassis with the tuning gang at maximum capacitance. The aerial drive is drawn as seen with the aerial rod parallel with the length of the chassis.