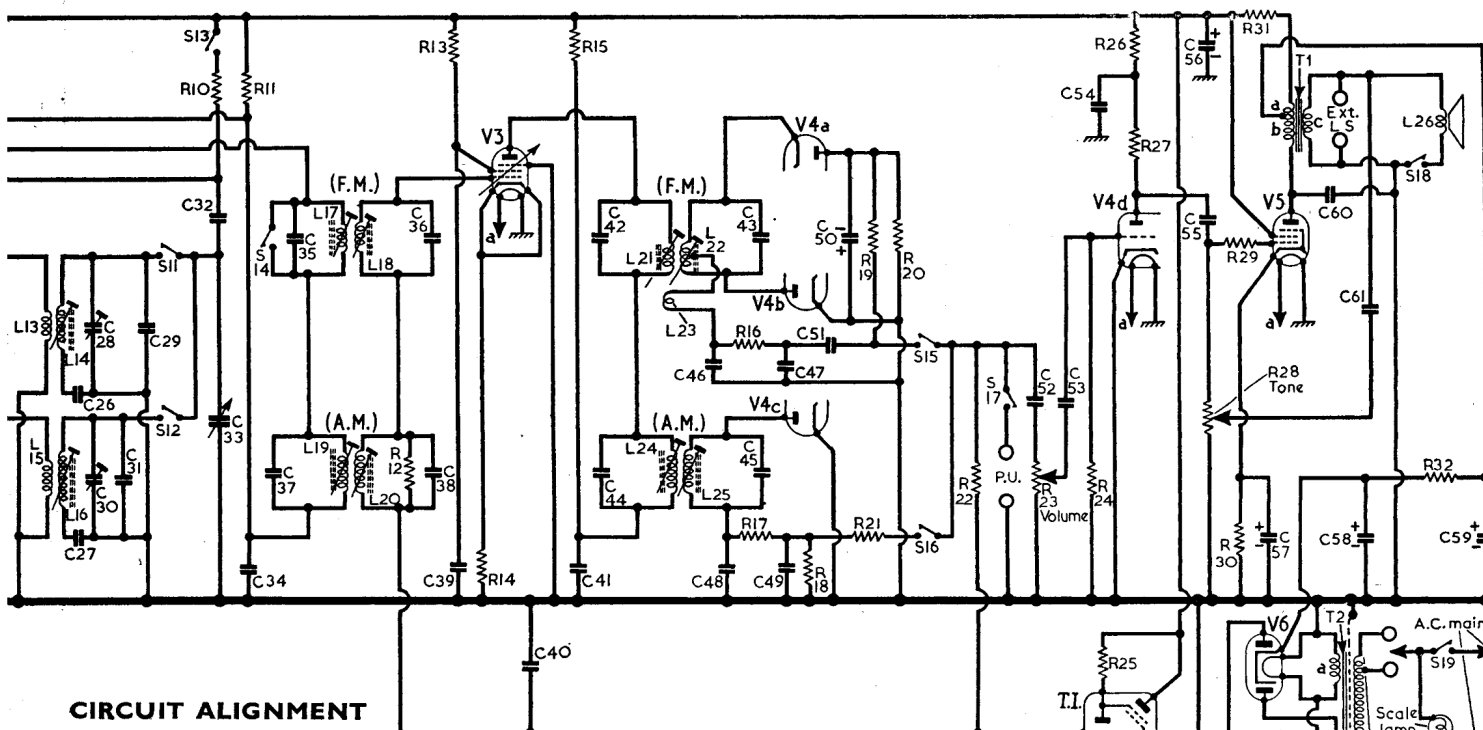
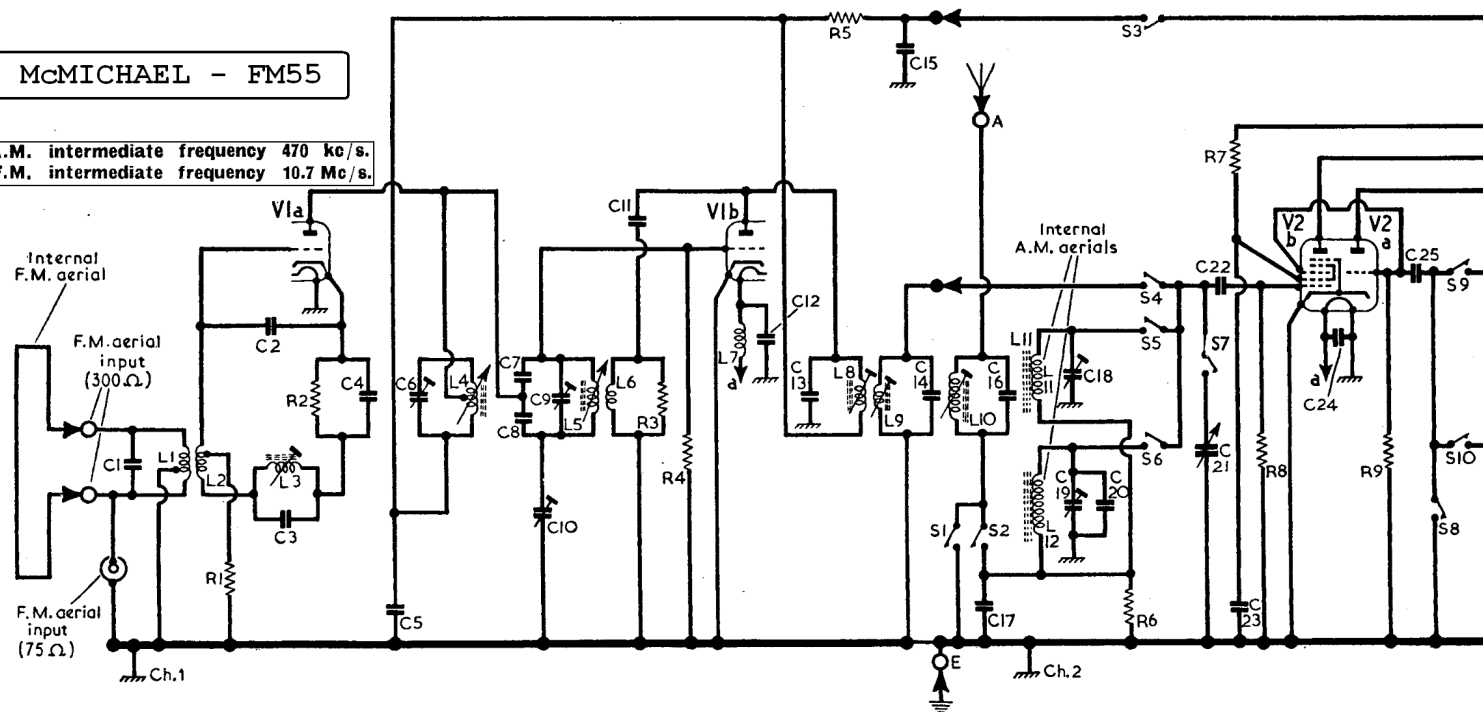


McMICHAEL - FM55

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



CIRCUIT ALIGNMENT

Equipment Required.—An A.M. signal generator covering the range of 150-1,600 kc/s, together with the F.M. intermediate frequency of 10.7 Mc/s and the F.M. tuning range of 88-95 Mc/s; a 0-10 V high-resistance D.C. voltmeter; an output meter with an internal resistance of 3 Ω; a valve voltmeter.

A.M. I.F. Stages

- 1.—Switch receiver to M.W. and turn gang to maximum capacitance. Connect output leads of signal generator to the junction of S7, C22 and to chassis. Connect output meter across T1 secondary winding in place of speaker. Check that with gang at maximum, the cursor coincides with calibration mark "D" on drive drum.
- 2.—Feed in a 470 kc/s signal and adjust the cores of L25 (location reference A1), L24 (F8), L20 (B1) and L19 (E3) for maximum output.
- 3.—Adjust the core of L10 (D3) for minimum output.

A.M. R.F. and Oscillator Stages

- 4.—Switch receiver to M.W. and tune to calibration mark "A" on drive drum. Transfer signal generator leads, via a dummy aerial, to A and E sockets.

- 6.—Tune receiver to calibration mark "B" on drive drum. Feed in a 600 kc/s signal and adjust the core of L14 (D3) for maximum output. Adjust the inductance of L11 (C1) for maximum output by sliding the coil along the ferrite rod.

- 7.—Switch receiver to L.W. and tune to calibration mark "A" on drive drum. Feed in a 333 kc/s signal and adjust C30 (D3) and C19 (D3) for maximum output.

- 8.—Tune receiver to calibration mark "C." Feed in a 150 kc/s signal and adjust the core of L16 (D3) for maximum output. Adjust the inductance of L12 (C1) for maximum output by sliding the coil along its ferrite rod.

F.M. I.F. Stages

- 9.—Connect output leads of signal generator to junction of S7, C22 and to chassis. Connect high-resistance D.C. voltmeter across R20 (positive to chassis). Switch receiver to F.M.
- 10.—Feed in an unmodulated 10.7 Mc/s signal and adjust the cores of L22 (F3), L21 (B1), L18 (E2) and L17 (B1) for maximum output.
- 11.—Adjust output of signal generator to give a 3 V reading on meter. Tune signal generator to 10.6 Mc/s and to 10.8 Mc/s and check that meter reading does not fall below 2.1 V. Repeat operation 10 if necessary.

- 12.—Connect two accurately matched 100 kΩ resistors in series across R20. Connect D.C. voltmeter to junction of these two resistors and to junction of R16, C47.

- 13.—Feed in a 10.7 Mc/s unmodulated signal and readjust the core of L22 (F3) for zero reading on meter (this will occur mid-way between a positive-going and a negative-going peak). Disconnect 100 kΩ resistors, and reconnect meter across R20.

- 14.—Transfer signal generator leads to 300 Ω F.M. aerial sockets. Short-circuit L3 and adjust the cores of L9 (C1) and L8 (C1) for maximum output on meter.

- 15.—Remove short-circuit from L3 and adjust its core for minimum output on meter.

F.M. R.F. and Oscillator Stages

- 16.—With receiver switched to F.M., tune it to highest frequency end of band. Set C6 (D2) and C9 (D2) to mid-capacitance. Connect

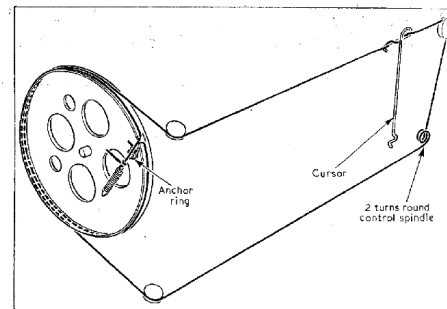
17.—Tune receiver to calibration mar drive drum. Feed in an unmodulat signal to the aerial sockets and and C9 for maximum output.

18.—Feed in a 95 Mc/s signal and on receiver. Check that this sett ponds with calibration mark "A drive drum. This can be adjusted i by moving together, or separatin C8 (D2).

19.—If calibration is still incorrect, ing procedure should be follow: receiver to calibration mark "F," 91 Mc/s signal and adjust C9 (D2) mum output. Check calibration (calibration mark E) and at 95 A bration mark A). If only the 95 M is inaccurate, repeat operation 18 the 95 Mc/s and the 88 Mc/s setti accurate, the core of L5 (C1) sho justed and operation 14 repeated.

Valve	Anode		Screen		Cath.
	V	mA	V	mA	
V1 ECC85 {a	55*	—	—	—	1.75
V2 ECH81 {b	50*	—	—	—	—
a ...	70	4.2	—	—	—
b ...	205	1.8	56	5.0	—
V3 EF85 ...	205	6.4	75	1.5	0.8
V4 EABC80	—	—	—	—	—
a ...	—	—	—	—	—
b ...	76	0.75	—	—	—
V5 EL84 ...	250	36.2	205	3.8	6.0
V6 EZ80 ...	260†	—	—	—	290‡
T.I. EM80	80§	—	—	—	—

*Receiver switched to F.M. †A.C. reading, each anode. ‡Cathode current 60 mA. §Target anode 205V.



Sketch showing the tuning drive system as seen from the front left-hand corner of the chassis with the gang at maximum capacitance.

Drive Cord Replacement.—About five feet of nylon-braided glass yarn is required for a new drive. Turn the gang to maximum capacitance. Tie off one end of the drive cord to anchor ring and secure this ring to the lug on the drive drum. Run the cord on as shown in the sketch of the drive cord system.

CAPACITORS		Values	Locations
C1	F.M. aerial shunt...	15pF	D2
C2	V1a C.G. ...	8.2pF	D2
C3	I.F. filter tune ...	47pF	D2
C4	V1a G.B. ...	0.001μF	D2
C5	H.T. decoupling ...	570pF	D2
C6	F.M. R.F. trim. ...	30pF	D2
C7	F.M. R.F. to osc. {	39pF	D2
C8	coupling ...	39pF	D2
C9	F.M. osc. trimmer {	30pF	D2
C10	F.M. osc. neut. ...	30pF	D2
C11	F.M. osc. coupling ...	18pF	D2
C12	R.F. by pass ...	2,200pF	D2
C13	1st F.M. I.F.T. {	12pF	D2
C14	tuning ...	15pF	C1
C15	H.T. decoupling ...	2,200pF	D2
C16	I.F. filter tune ...	1,500pF	D3
C17	A.M. aerial coup-ling ...	0.005μF	C1
C18	M.W. aerial trim. ...	30pF	D3
C19	L.W. aerial trim-ers ...	30pF	D3
C20	A.M. aerial tuning ...	532pF	C1
C21	V2b C.G. ...	100pF	E2
C22	V2b S.G. decoup. ...	0.005μF	E3
C23	R.F. by-pass ...	0.001μF	E2
C24	V2a C.G. ...	50pF	E3
C25	A.M. osc. trackers {	580pF	D2
C26	200pF	D3	
C27	30pF	D3	
C28	20pF	E3	
C29	30pF	D3	
C30	100pF	D3	
C31	500pF	E3	
C32	532pF	C1	
C33	0.005μF	E3	
C34	50pF	B1	
C35	50pF	B1	
C36	100pF	B1	
C37	100pF	B1	
C38	0.005μF	F3	
C39	0.05μF	E3	
C40	0.005μF	F3	
C41	10pF	B1	
C42	30pF	B1	
C43	100pF	B1	
C44	180pF	B1	
C45	300pF	F3	
C46	0.001μF	F3	
C47	100pF	F3	
C48	100pF	F3	
C49	100pF	F3	

Switch Table

Switches	F.M.	M.W.	L.W.	Gram.
S1	C	C	C	—
S2	C	C	C	—
S3	C	C	C	—
S4	C	C	C	—
S5	C	C	C	—
S6	C	C	C	—
S7	C	C	C	—
S8	C	C	C	—
S9	C	C	C	—
S10	C	C	C	—
S11	C	C	C	—
S12	C	C	C	—
S13	C	C	C	—
S14	C	C	C	—
S15	C	C	C	—
S16	C	C	C	—
S17	C	C	C	C

Diagrams of the waveband switch units as seen from the front of an inverted chassis. The units are identified by diamond-enclosed numbers 1-3 in the under-chassis illustration.

CAPACITORS—continued		Values	Locations
C50	D.C. reservoir ...	5μF	F3
C51	A.F. couplers ... {	0.05μF	F2
C52	0.05μF	F2	
C53	0.02μF	F3	
C54	H.T. decoupling ...	0.1μF	G3
C55	A.F. coupling ...	0.05μF	F2
C56	H.T. smoothing ...	32μF	A1
C57	V5 G.B. ...	50μF	G2
C58	H.T. smoothing ... {	32μF	A1
C59	16μF	A1	
C60	Tone corrector ...	0.001μF	F2
C61	Part tone control...	0.01μF	F2

RESISTORS		Values	Locations
R1	V1a C.G. ...	120Ω	D2
R2	V1a G.B. ...	220Ω	D2
R3	F.M. osc. shunt ...	2.2kΩ	D2
R4	V1b C.G. ...	1MΩ	D2
R5	H.T. decoupling ...	4.7kΩ	D2
R6	A.M. aerial shunt ...	1kΩ	C1
R7	V2b S.G. feed ...	33kΩ	E3
R8	V2b C.G. ...	1MΩ	E3
R9	V2a osc. C.G. ...	47kΩ	E3
R10	33kΩ	E2	
R11	H.T. feeds ... {	220Ω	E3
R12	A.M. I.F.T. shunt ...	150kΩ	E3
R13	V3 S.G. feed ...	82kΩ	F3
R14	V3 G.B. ...	100Ω	E3
R15	H.T. feed ...	220Ω	F3
R16	Part de-emphasis ...	47kΩ	F3
R17	A.M. I.F. stopper ...	47kΩ	F3
R18	A.M. diode load ...	1MΩ	F3
R19	T.I. feed ...	2.2MΩ	F3
R20	F.M. D.C. load ...	33kΩ	F3
R21	Tone corrector ...	1MΩ	F2
R22	T.I. feed ...	1MΩ	D2
R23	Volume control ...	1MΩ	E2
R24	V4d C.G. ...	10MΩ	G3
R25	T.I. anode load ...	470kΩ	A1
R26	H.T. feed ...	100kΩ	F3
R27	V4d anode load ...	100kΩ	G3
R28	Tone control ...	250kΩ	F2
R29	V5 C.G. stopper ...	12kΩ	F2
R30	V5 G.B. ...	150Ω	G2
R31	H.T. smoothing ... {	2kΩ	F2
R32	500Ω	G2	

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OTHER COMPONENTS		Approx. Values (ohms)	Locations
L1	F.M. aerial coupling coils ...	—	D2
L2	F.M. I.F. filter ...	—	D2
L3	F.M. R.F. tuning ...	1.0	D2
L4	F.M. osc. reaction ...	—	C1
L5	F.M. heater choke ...	—	D2
L6	1st F.M. I.F.T. {Pri. ...	1.0	C1
L7	Sec. ...	1.0	C1
L8	A.M. I.F. filter ...	4.0	D3
L9	A.M. internal ...	2.0	C1
L10	aerials ...	9.0	C1
L11	2.0	D3	
L12	3.0	D3	
L13	A.M. oscillator coils {	7.0	D3
L14	8.0	D3	
L15	2nd F.M. I.F.T. {Pri. ...	—	B1
L16	Sec. ...	—	B1
L17	1st A.M. I.F.T. {Pri. ...	14.0	B1
L18	Sec. ...	14.0	B1
L19	3rd F.M. I.F.T. {Pri. ...	—	B1
L20	Sec. ...	—	B1
L21	total ...	—	B1
L22	Tert ...	—	B1
L23	2nd A.M. I.F.T. {Pri. ...	15.0	A1
L24	Sec. ...	10.0	A1
L25	Speech coil ...	2.5	—
L26	12.0	—	
T1	O.P. trans. {a ...	270.0	B1
	b ...	—	
	c ...	—	
T2	Mains trans. {a ...	150.0	A1
	b ...	150.0	
	c ...	32.0	
	d ...	—	
S1-S17	Band switches ...	—	D2
S18	Int. speaker sw. ...	—	F3
S19	Mains sw., g'd R28	—	F2
S20	—	—	

