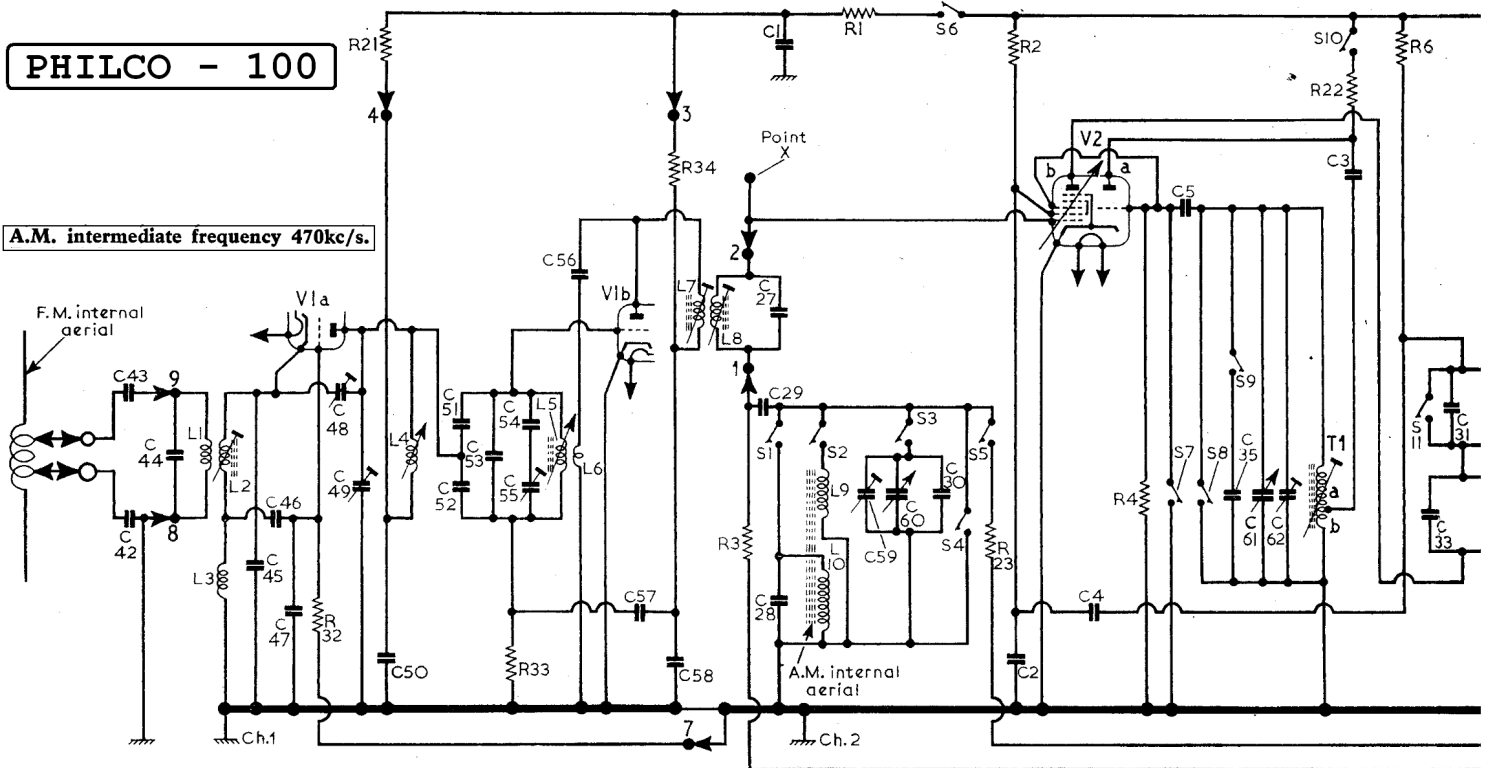
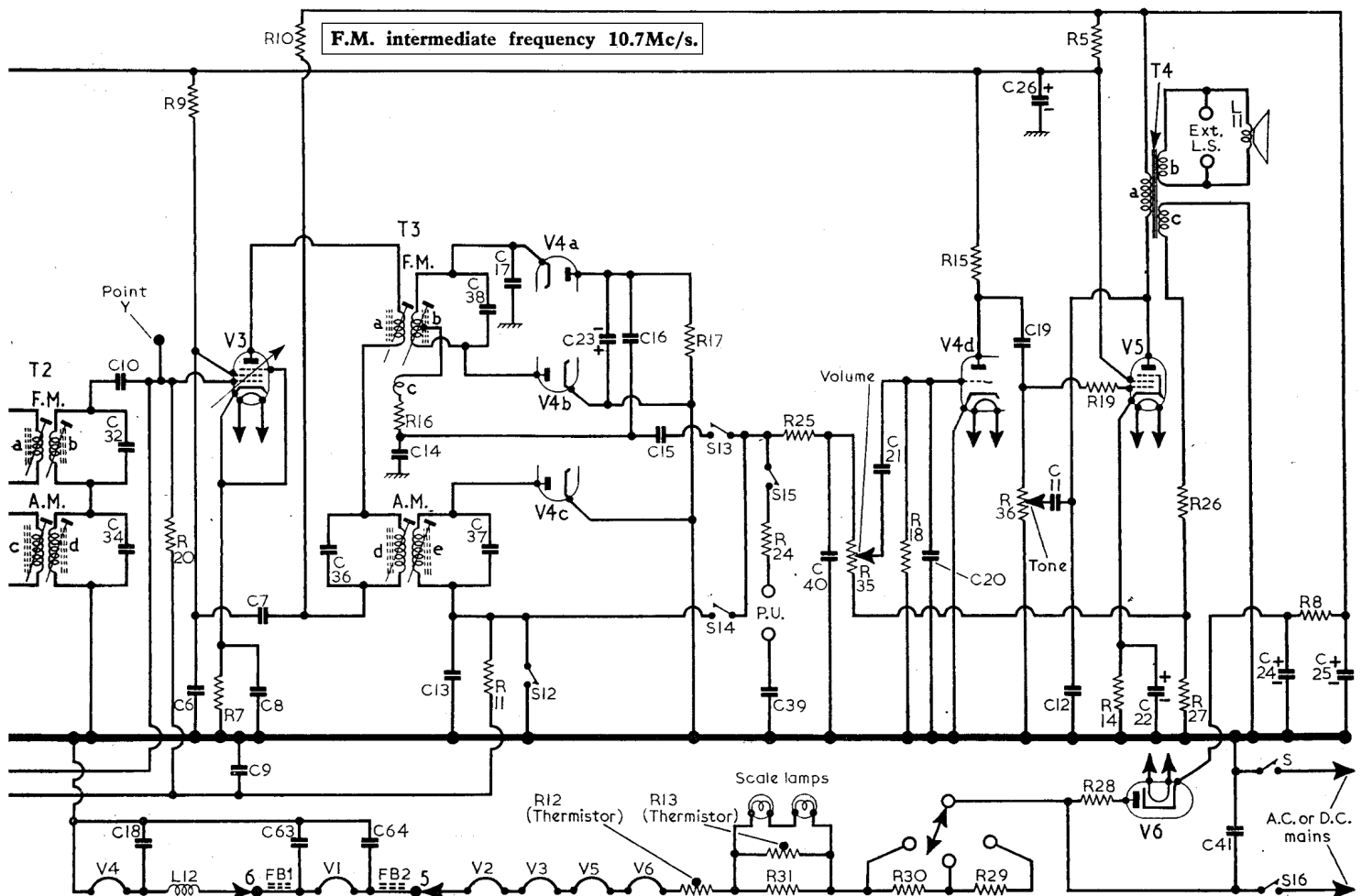


PHILCO - 100

A.M. intermediate frequency 470kc/s.



F.M. intermediate frequency 10.7Mc/s.



CIRCUIT ALIGNMENT

Equipment Required.—An A.M./F.M. signal generator with an output impedance of 75Ω, 30 per cent modulated for A.M. (for F.M. alignment the 10.7Mc/s signal is deviated by 75kc/s, the 88Mc/s and 94Mc/s signals are deviated by 25kc/s); an A.C. voltmeter for use as an output meter; a non-metallic trimming tool.

As the tuning scale remains fixed to the cabinet when the chassis is removed for alignment purposes, a dummy scale must be made up. This can be done from the scale pattern in column 6. Attach the dummy scale to the receiver scale backing plate, and set the A.M. and F.M. tuning cursors to the "set zero" marks on their appropriate tuning scales.

Allow the receiver and signal generator to warm up for at least 10 minutes before commencing the alignment procedure. Adjust the signal generator attenuator to keep the reading on the output meter below 0.5V at all times during the alignment procedure.

Resistors

R1	1kΩ	C2
R2	22kΩ	C2
R3	1MΩ	C1
R4	47kΩ	C1
R5	1kΩ	C2
R6	2.2kΩ	B1
R7	220Ω	B1
R8	250Ω	B2
R9	33kΩ	B1
R10	2.2kΩ	B1
R11	2.2MΩ	B1
R12†	—	B2
R13†	—	B2
R14	390Ω	A2
R15	220kΩ	A1
R16	82Ω	B1
R17	27kΩ	B1
R18	10MΩ	A1
R19	47kΩ	A1
R20	1MΩ	B1
R21	6.8kΩ	C2
R22	39kΩ	G4
R23	100kΩ	F4
R24	150kΩ	G4
R25	68kΩ	F3
R26	560Ω	F3
R27	47Ω	F3
R28	100Ω	F4
R29	150Ω	F4
R30	150Ω	F4
R31	2.2kΩ	B2
R32	270kΩ	D2
R33	1MΩ	H4
R34	22kΩ	H3
R35	500kΩ	F3
R36	820kΩ	F3

Capacitors

C1	0.005μF	C2
C2	3,300pF	C1
C3	0.001μF	C1
C4	0.005μF	C1
C5	75pF	C1
C6	0.005μF	B1
C7	0.005μF	B1

C8	0.01μF	B1
C9	0.01μF	C1
C10	75pF	B1
C11	140pF	B2
C12	2,200pF	B2
C13	75pF	B1
C14	330pF	B1
C15	0.01μF	B1
C16	330pF	B1
C17	4pF	B1
C18	0.001μF	A1
C19	0.01μF	A1
C20	75pF	A1
C21	0.01μF	A1
C22	25μF	A2
C23	5μF	B1
C24	40μF	B2
C25	40μF	B2
C26	32μF	B2
C27	9pF	H3
C28	135pF	C2
C29	100pF	G4
C30	2pF	C2
C31	10pF	C1
C32	10pF	C1
C33	100pF	C1
C34	100pF	C1
C35	346pF	G3
C36	200pF	B1
C37	200pF	B1
C38	50pF	B1
C39	0.01μF	G4
C40	220pF	F3
C41	0.03μF	F3
C42	0.001μF	G4
C43	0.001μF	G4
C44	40pF	H4
C45	20pF	H4
C46	0.001μF	D1
C47	10pF	H4
C48	9pF	D1
C49	3pF	D1
C50	0.001μF	H4
C51	8.2pF	H4
C52	8.2pF	H4
C53	14nF	H4

C54	9pF	H4
C55	9pF	D2
C56	21pF	H4
C57	8pF	H3
C58	75pF	H4
C59	—	C2
C60	—	C2
C61	—	C2
C62	—	C2
C63	0.001μF	H4
C64	0.001μF	H4

Coils*

L1	—	H4
L2	—	H4
L3	—	D1
L4	—	H4
L5	—	H4
L6	—	H4
L7	—	H3
L8	—	H3
L9	1.0	D2
L10	5.5	C2
L11	3.0	—
L12	—	A1

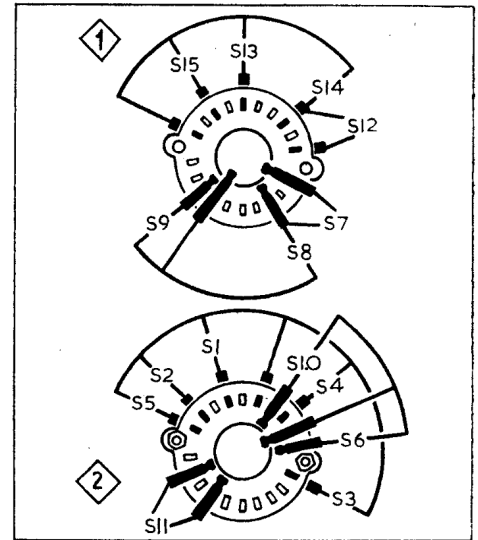
Miscellaneous*

T1 a, b	—	C1
T2 { a b c d }	—	C1
T2 { a b c d }	13.0	C1
T2 { a b c d }	13.0	C1
T3 { a b c d e }	—	B1
T3 { a b c d e }	6.5	B1
T3 { a b c d e }	5.0	B1
T4 { a b c }	200.0	A1
T4 { a b c }	—	A1
FB1, FB2§	—	H4
S1-S15	—	G3
S16, S17	—	F3

*Approximate D.C. resistance in ohm.

†Thermistor; Varite VA1010

§ Ferrite bead



Above: Diagram of the switch units as seen from the rear of an inverted chassis.

A.M. Alignment

- 1.—Switch the receiver to M.W. and tune it to 1,500kc/s. Turn the volume control to maximum and tone control fully clockwise. Connect output meter across T4 secondary winding. Connect signal generator, via a 0.05μF capacitor, across C60 (C2).
- 2.—Feed in a modulated 470kc/s signal and adjust the cores of T3e (F4), T3d (B2), T2d (C2) and T2c (G4) for maximum output.
- 3.—Tune the receiver to 580kc/s. Feed in a 580kc/s signal and adjust the core of T1 (C2) for maximum output.
- 4.—Tune the receiver to 1,500kc/s. Feed in a 1,500kc/s signal and adjust C62 (C2) for maximum output.
- 5.—Repeat operations 3 and 4.
- 6.—Switch receiver to L.W. Disconnect the earthy end of C30 (C2) and connect signal generator to the disconnected end of C30 via a 0.05μF capacitor. Tune receiver to 220kc/s. Feed in a 220kc/s signal and slide the former of L10 (C2) along the ferrite rod for maximum output.

- 7.—Switch the receiver to M.W. and tune it to 580kc/s. Feed in a 580kc/s signal and adjust the former of L9 (D2) along the ferrite rod for maximum output.
- 8.—Tune the receiver to 1,500kc/s. Feed in a 1,500kc/s signal and adjust C59 (C2) for maximum output.
- 9.—Repeat operations 7 and 8.
- 10.—Reconnect C30 and seal the formers of L9 and L10 to the ferrite rod.

F.M. Alignment

- 1.—Switch receiver to F.M. Connect output meter across T4 secondary winding. Connect F.M. signal generator, via a 0.001μF capacitor, to point Y (location reference B1) and chassis. Tune receiver to the "set zero" mark on the F.M. tuning scale.
- 2.—Feed in a 10.7Mc/s signal, deviated by 75kc/s, and adjust the core of T3a (F4) for maximum output.
- 3.—Switch signal generator to A.M. Feed in a 10.7Mc/s A.M. modulated signal and adjust T3b (B1) for minimum output.

Valve Table

Valve	Anode (V)	Screen (V)	Cath. (V)
V1a UCC85	120 ¹	—	—
V1b UCC85	180 ²	—	—
V2a UCH81	75	—	—
V2b UCH81	202	92	—
V3 UF89	172	82	—
V4 UABC80d	215	130	1.95
V5 UL84	205	106	2.05
V6 UY85	78	—	—
	74	—	—
	221	210	18.5
	215	190	17.0
	232 ³	—	248.0
	232 ³	—	242.0

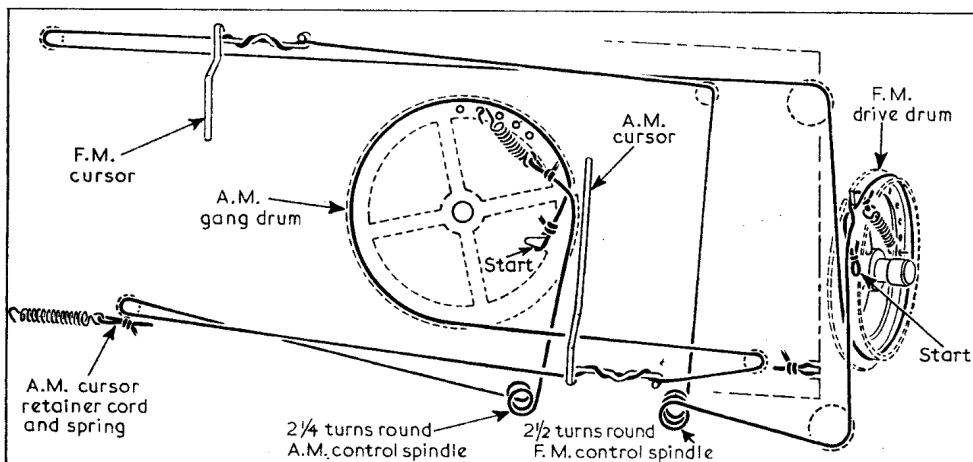
*Measured with receiver switched to A.M.

†Measured with receiver switched to F.M.

‡Measured at tag 4 on F.M. tuner unit.

§Measured at tag 3 on F.M. tuner unit.

*A.C. reading.



Left: Diagram of the tuning drive systems, drawn as seen from the front of the chassis with the A.M. gang at maximum and the F.M. tuning control turned fully anti-clockwise.