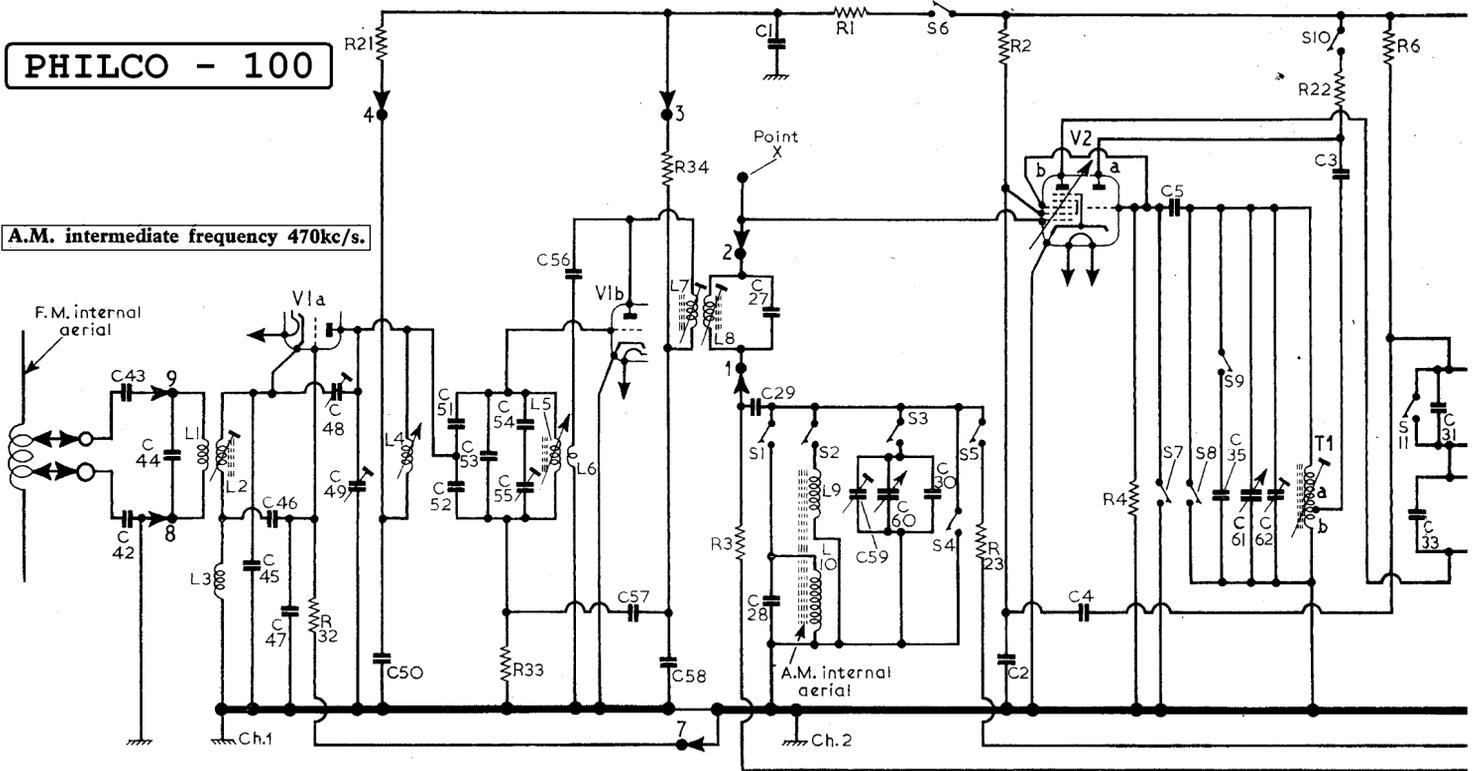
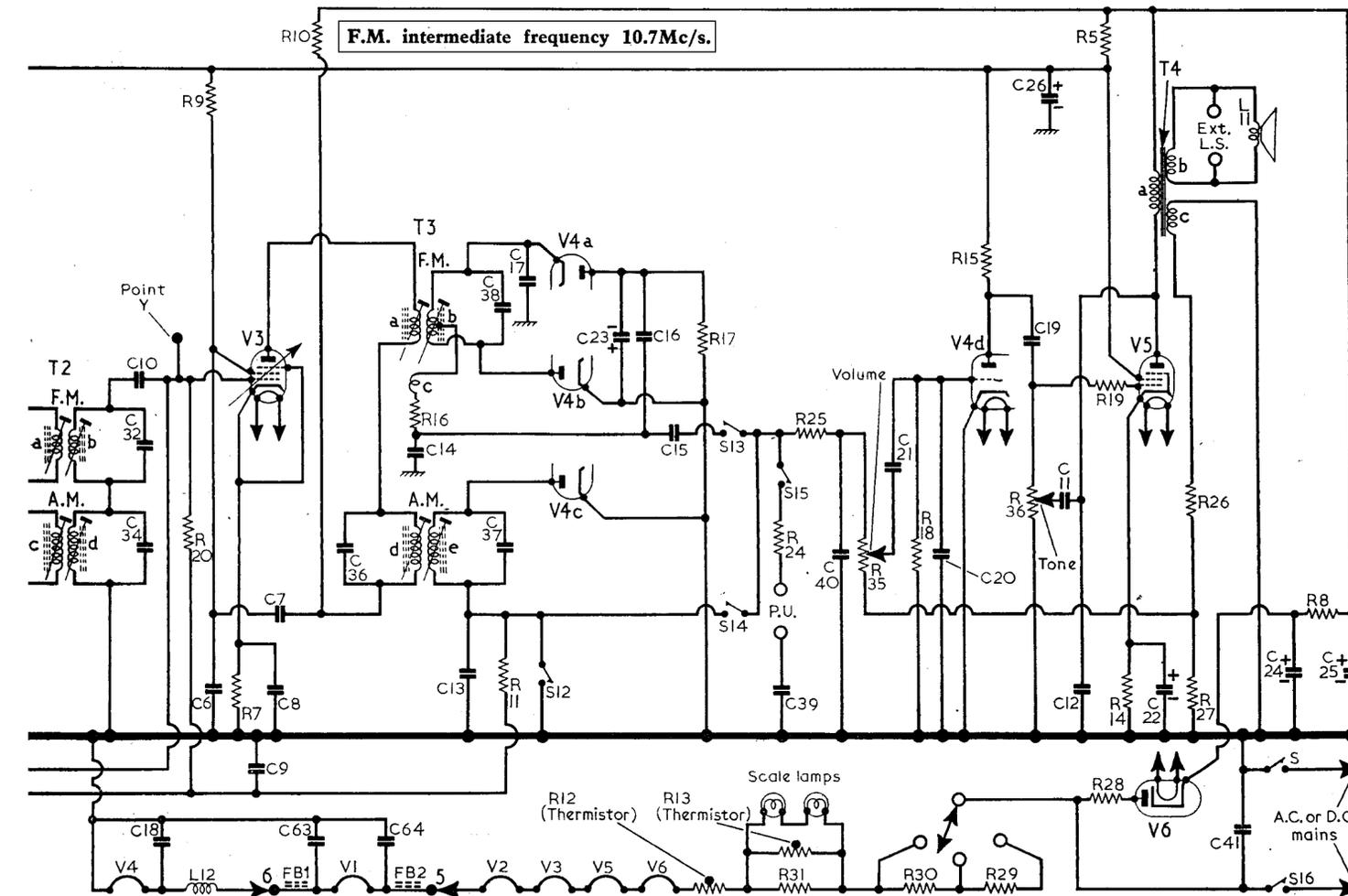


PHILCO - 100

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.

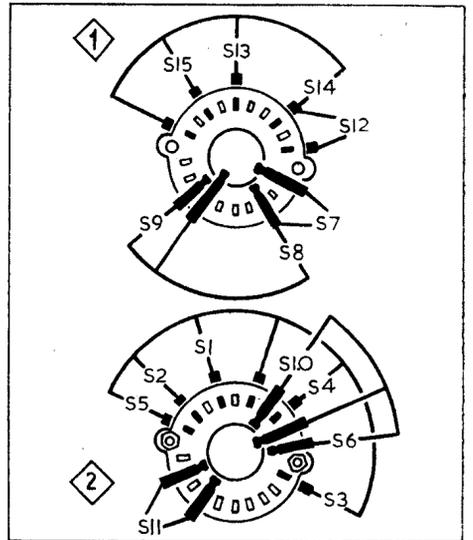
Allow the receiver and signal generator to warm up for at least 10 minutes before commencing the alignment procedure. Adjust the signal generator attenuator to keep the reading on the output meter below 0.5V at all times during the alignment procedure.

Resistors									
R1	1kΩ	C2	C8	0.01μF	B1	C54	9pF	H4	
R2	22kΩ	C2	C9	0.01μF	C1	C55	9pF	D2	
R3	1MΩ	C1	C10	75pF	B1	C56	21pF	H4	
R4	47kΩ	C1	C11	140pF	B2	C57	8pF	H3	
R5	1kΩ	C2	C12	2,200pF	B2	C58	75pF	H4	
R6	2.2kΩ	B1	C13	75pF	B1	C59	—	C2	
R7	220Ω	B1	C14	330pF	B1	C60	—	C2	
R8	250Ω	B2	C15	0.01μF	B1	C61	—	C2	
R9	33kΩ	B1	C16	330pF	B1	C62	—	C2	
R10	2.2kΩ	B1	C17	4pF	B1	C63	0.001μF	H4	
R11	2.2MΩ	B1	C18	0.001μF	A1	C64	0.001μF	H4	
R12†	—	B2	C19	0.01μF	A1				
R13†	—	B2	C20	75pF	A1				
R14	390Ω	A2	C21	0.01μF	A1				
R15	220kΩ	A1	C22	25μF	A2				
R16	82Ω	B1	C23	5μF	B1				
R17	27kΩ	B1	C24	40μF	B2				
R18	10MΩ	A1	C25	40μF	B2				
R19	47kΩ	A1	C26	32μF	B2				
R20	1MΩ	B1	C27	9pF	H3				
R21	6.8kΩ	C2	C28	135pF	C2				
R22	39kΩ	G4	C29	100pF	G4				
R23	100kΩ	F4	C30	2pF	C2				
R24	150kΩ	G4	C31	10pF	C1				
R25	68kΩ	F3	C32	10pF	C1				
R26	560Ω	F3	C33	100pF	C1				
R27	47Ω	F3	C34	100pF	C1				
R28	100Ω	F4	C35	346pF	G3				
R29	150Ω	F4	C36	200pF	B1				
R30	150Ω	F4	C37	200pF	B1				
R31	2.2kΩ	B2	C38	50pF	B1				
R32	270kΩ	D2	C39	0.01μF	G4				
R33	1MΩ	H4	C40	220pF	F3				
R34	22kΩ	H3	C41	0.03μF	F3				
R35	500kΩ	F3	C42	0.001μF	G4				
R36	820kΩ	F3	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				

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	

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



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

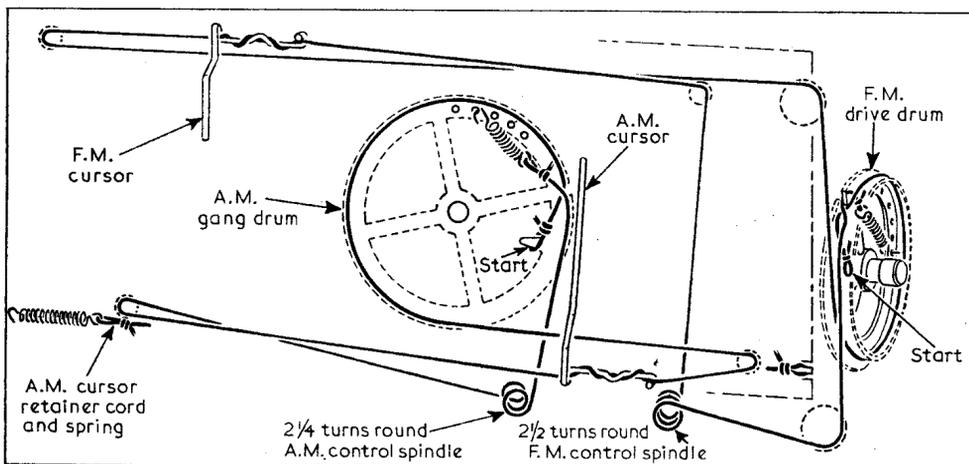
- 1.—Switch receiver to F.M. Connect output meter across T4 secondary winding. Connect F.M. signal generator, via a 0.001μF capacitor, to point Y (location reference B1) and chassis. Tune receiver to the "set zero" mark on the F.M. tuning scale.
- 2.—Feed in a 10.7Mc/s signal, deviated by 75kc/s, and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

- 4.—Repeat operations 2 and 3.
- 5.—Transfer signal generator to point X (location reference C1) and chassis and switch to F.M. Feed in a 10.7Mc/s signal, deviated by 75kc/s, and adjust the cores of T2a (G4) and T2b (B1) for maximum output.
- 6.—Wind a 3-turn coil of wire round V1 valve envelope, and connect F.M. signal generator output between the coil and chassis. Feed in a 10.7Mc/s signal, deviated by 75kc/s, and adjust the cores of L7 (D2) and L8 (H3) for maximum output.
- 7.—Connect F.M. signal generator to aerial sockets. Tune the receiver to 88Mc/s. Feed in an 88Mc/s signal, deviated by 25kc/s, and adjust C55 (D2) for maximum output.
- 8.—Tune receiver to 94Mc/s. Feed in a 94Mc/s signal, deviated by 25kc/s, and adjust C49 (D1) for maximum output.
- 9.—Disconnect R21 (C2). Tune receiver to 94Mc/s. Feed in a strong 94Mc/s signal and adjust C48 (D1) for minimum output.
- 10.—Repeat operations 8 and 9.
- 11.—Reconnect R21 and tune receiver to 94Mc/s. Feed in a 94Mc/s signal, deviated by 25kc/s, and adjust L2 (D1) for maximum output.

Valve Table

Valve	Anode (V)	Screen (V)	Cath. (V)
V1a UCC85	120 [†]	—	—
V1b UCC85	180 [†]	—	—
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 [‡]	—	248.0
	232 [‡]	—	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.