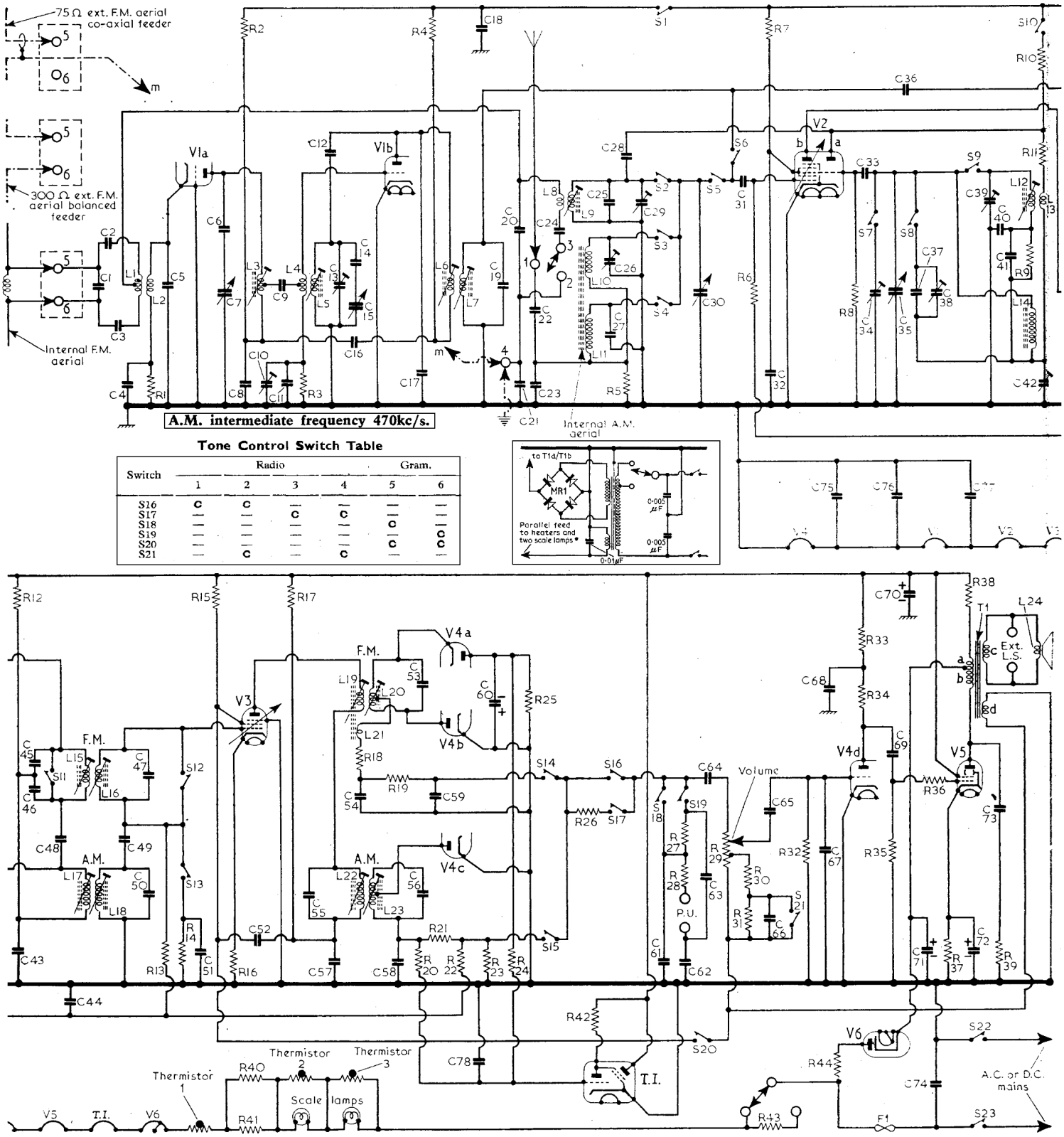


Tone Control Switch Table

Switch	Radio				Gram.	
	1	2	3	4	5	6
S16	C	C	—	—	—	—
S17	—	—	C	C	—	—
S18	—	—	—	—	C	—
S19	—	—	—	—	—	C
S20	—	—	—	—	C	C
S21	—	C	—	C	—	—

CIRCUIT ALIGNMENT

Equipment required.—An accurately calibrated signal generator covering the range 100kc/s-100Mc/s, modulated 30 per cent at 400c/s; an A.C. voltmeter for use as an audio frequency output meter; a 20,000 Ω/V meter for use as D.C. output meter; an H.F. valve-voltmeter or, alternatively, an H.F. detector probe for use in conjunction with the 20,000 Ω/V meter; three capacitors: 2pF, 200pF and 0.05μF; a 400Ω resistor; and 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 from the scale pattern shown at the foot of this page.

Allow the receiver and signal generator to warm up for at least 10 minutes before commencing the alignment procedure.

A.M. Alignment

1.—Before removing the chassis from the cabinet, check that with the gang at maximum capacitance the cursor coincides with the dots at the extreme right-hand edges of the tuning scale apertures, at the same time ensuring that the gang drive arm is accurately set at its stop.

2.—Remove chassis from cabinet and turn gang to maximum capacitance. Attach dummy scale to the tuning scale backing plate so that the zero line coincides with the cursor.

3.—Connect audio output meter to external speaker sockets. Connect signal generator, via the 0·05μF capacitor, to **C30** (D2).

4.—Switch receiver to M.W. and tune it to 1,500kc/s; turn volume control to maximum. Feed in a modulated 470kc/s signal and adjust the cores of **L23** (B2), **L22** (F4), **L18** (C2) and **L17** (G4), in that order, for maximum output.

5.—Transfer signal generator, via the 200pF capacitor, to socket **1** on the aerial panel. Tune receiver to 580kc/s. Feed in a modulated 580kc/s signal and adjust **C42** (C1) for maximum output while rocking the tuning gang.

6.—Tune receiver to 1,500kc/s. Feed in a modulated 1,500kc/s signal and adjust **C34** (C1) and **C26** (C1) for maximum output.

7.—Repeat operations 5 and 6 until no improvement in calibration and sensitivity can be obtained.

8.—Switch receiver to L.W. and tune it to 220kc/s. Feed in a modulated 220kc/s signal and adjust **C38** (C1) for maximum output.

9.—Transfer signal generator, via the 400Ω resistor, to socket **4** or **6** on the aerial panel. Switch receiver to S.W. and tune it to 6Mc/s. Feed in a modulated 6Mc/s signal and adjust the cores of **L12** (C2) and **L9** (C1) for maximum output. If two peaks are obtained when adjusting **L12**, tune to the first peak obtained from the adjusting end of the coil.

10.—Tune receiver to 17Mc/s. Feed in a modulated 17Mc/s signal and adjust **C39** (C2) and **C29** (C2) for maximum output. If two peaks are obtained when adjusting **C39**, tune to the peak giving the lower capacitance setting.

11.—Repeat operations 9 and 10 until no improvement in calibration and sensitivity can be obtained.

PHILCO - A3658U

PHILCO - A3658U

Resistors

R1	150Ω	D1
R2	2·2kΩ	H4
R3	1MΩ	H4
R4	10kΩ	H4
R5	10kΩ	C1
R6	1MΩ	F4
R7	27kΩ	G4
R8	47kΩ	G4
R9	4·7kΩ	G4
R10	22kΩ	G4
R11	270Ω	G4
R12	2·2kΩ	G4
R13	1·5MΩ	F3
R14	1MΩ	G3
R15	27kΩ	E4
R16	33Ω	F4
R17	2·2kΩ	F4
R18	220Ω	F3
R19	22kΩ	F3
R20	3·3MΩ	F4
R21	47kΩ	F3
R22	2·2MΩ	F3
R23	470kΩ	F3
R24	10MΩ	F4
R25	27kΩ	F4
R26	150kΩ	E4
R27	150kΩ	E4
R28	150kΩ	E4
R29	2MΩ	E3
R30	39kΩ	E4
R31	150kΩ	E4
R32	10MΩ	E3
R33	100kΩ	E4
R34	220kΩ	E3
R35	470kΩ	E4
R36	47kΩ	E4
R37	270Ω	E4
R38	820Ω	A1
R39	4·7kΩ	F4
R40	544Ω	B1
R41	2·7kΩ	F4
R42	1MΩ	D1
R43	170Ω	F4
R44	170Ω	F4

Capacitors

C1	18pF	D1
C2	0·001μF	D1
C3	0·001μF	D1
C4	0·001μF	D1
C5	10pF	H4
C6	40pF	H4
C7	—	D2
C8	560pF	H4
C9	120pF	H4
C10	—	H4
C11	5pF	H4
C12	12pF	H4
C13	—	G4
C14	56pF	H4
C15	—	C2
C16	0·004μF	H4
C17	10pF	H4
C18	0·004μF	H4
C19	15pF	C1
C20	15pF	D1
C21	1,800pF	D1
C22	0·001μF	D1
C23	2,600pF	D1
C24	0·001μF	D1
C25	12pF	G4
C26	—	C1
C27	135pF	D1
C28	1pF	G4
C29	—	C1
C30	—	D2
C31	100pF	G4
C32	0·01μF	G4
C33	100pF	G4
C34	—	C1
C35	—	D2
C36	1·8pF	G4
C37	320pF	G4
C38	—	C1
C39	—	C2
C40	5,180pF	G4
C41	310pF	G4
C42	—	C1
C43	0·002μF	G4
C44	0·05μF	F4
C45	680pF	G3
C46	12pF	G3
C47	15pF	C2
C48	120pF	G4
C49	33pF	G3
C50	100pF	C2
C51	100pF	G3
C52	0·01μF	F3
C53	47pF	B2
C54	330pF	F3
C55	100pF	B2
C56	120pF	B2
C57	0·004μF	F3
C58	330pF	F4
C59	0·002μF	F3
C60	5μF	F3
C61	0·001μF	E4
C62	0·05μF	E4
C63	0·001μF	E4
C64	0·01μF	E4
C65	0·01μF	E3
C66	0·005μF	E4
C67	100pF	E3
C68	0·1μF	E3
C69	0·01μF	E3
C70	50μF	C2
C71	50μF	C2
C72	25μF	E4
C73	0·005μF	F4
C74	0·05μF	A2
C75	0·01μF	F4
C76	0·001μF	H4
C77	0·001μF	H4
C78	0·05μF	F4

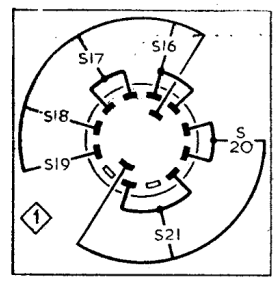
Coils*

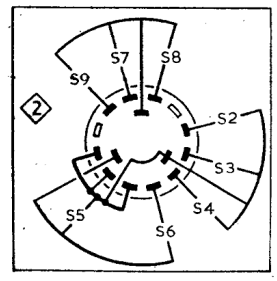
L1	—	D1
L2	—	D1
L3	—	H4
L4	—	G4
L5	—	G4
L6	—	C1
L7	—	C1
L8	—	G4
L9	—	G4
L10	—	C1
L11	5·0	D1
L12	—	G4
L13	—	G4
L14	—	G4
L15	—	C2
L16	—	C2
L17	7·5	C2
L18	7·5	C2
L19	—	B2
L20	—	B2
L21	—	B2
L22	7·5	B2
L23	7·5	B2
L24	3·0	—

Other Components*

T1	a	7·5	A1
	b	450·0	
	c	—	
	d	—	
F1	500mA		B2
Thermistor 1	CZ2		F4
Thermistor 2	CZ3		C2
Thermistor 3	CZ3		B2
S1, S10-S15	—		G3
S2-S9	—		G4
S16-S21	—		E4
S22,S23	—		E3

**Approximate D.C. resistance in ohms.*





Left: *Diagrams of the tone control and waveband switch units. The associated switch tables in cols. 3 and 4 give the switch operations for the various control settings, starting with each control fully anti-clockwise.*

Right: *Underside view of the chassis.*

A3658U

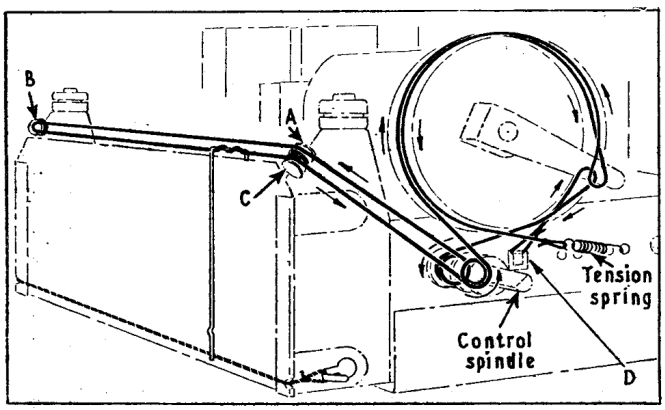
Valve		Anode (V)	Screen (V)	Cath. (V)
V1a 12AT7	*	—	—	—
	†	182	—	—
V1b 12AT7	*	—	—	—
	†	155	—	—
V2a 12AH8	*	61	—	—
	†	—	—	—
V2b 12AH8	*	210	74	—
	†	187	74	—
V3 6BJ6	*	188	117	—
	†	174	100	—
V4d HABC80	*	66	—	—
	†	66	—	—
V5 19AQ5	*	224	214	10·6
	†	217	200	10·0
V6 35W4	*	—	—	237·0
	†	—	—	232·0
T.I. 1629	*	30	—	—
	†	30	—	—

**Measured with receiver switched to A.M.*
†Measured with receiver switched to F.M.

A3658

Valve		Anode (V)	Screen (V)	Cath. (V)
V1a 12AT7	*	—	—	—
	†	205	—	—
V1b 12AT7	*	—	—	—
	†	130	—	—
V2a 12AH8	*	80	—	—
	†	—	—	—
V2b 12AH8	*	223	85	—
	†	213	85	—
V3 6BJ6	*	215	110	—
	†	208	95	—
V4d EABC80	*	75	—	—
	†	75	—	—
V5 6BW6	*	243	235	11·6
	†	243	225	10·6
T.I. 6E5GT	*	40	—	—
	†	40	—	—

**Measured with receiver switched to A.M.*
†Measured with receiver switched to F.M.



Sketch of the tuning drive system, drawn as seen when viewing an upright chassis, with tuning gang set to maximum capacitance.

F.M. Alignment

1.—Transfer signal generator, via the 0.05μF capacitor, to **V3** control grid (pin 1). Connect 20,000Ω/V D.C. output meter across **C60** (F3), positive lead to chassis, and set it to its 10V D.C. range. Throughout the following operations adjust the signal generator output to maintain a 2-3V reading across **C60.**

2.—Switch receiver to F.M. and tune it to 88Mc/s. Feed in an unmodulated 10.7Mc/s signal and adjust the cores of **L20** (F3) and **L19** (B2) for maximum reading on the D.C. output meter.

3.—Feed in a modulated 10.7Mc/s signal and readjust **L20** for *minimum* reading on the audio output meter. The correct setting for **L20** is such that when the signal generator is detuned each side of 10.7Mc/s, the reading on the audio output meter *increases.*

4.—Repeat operations 2 and 3.

5.—Transfer signal generator to the junction of **C19** and **C36** (G4). Feed in an unmodulated 10.7Mc/s signal and adjust the cores of **L16** (C2) and **L15** (G3) for maximum reading on the D.C. output meter. The correct settings for **L15** and **L16** are such that a constant reading is maintained on the D.C. output meter when the signal generator is detuned by ±75kc/s each side of the 10.7Mc/s.

6.—Transfer signal generator, via the 2pF capacitor, to the junction of **C6** and **C7** (D2). Tune receiver to avoid spurious oscillations at approximately 88Mc/s. Feed in an unmodulated 10.7Mc/s signal and adjust the cores of **L7** (C1) and **L6** (G4) for maximum reading on the D.C. output meter. The correct settings for **L6** and **L7** are such that the reading on the D.C. output meter falls off as the signal generator is detuned each side of 10.7Mc/s.

7.—Transfer signal generator to socket **4** or **6** on the aerial panel and tune receiver to 88Mc/s. Feed in an unmodulated 88Mc/s signal and adjust the core of **L5** (C2) for maximum reading on the D.C. output meter.

8.—Tune receiver to 100Mc/s. Feed in an unmodulated 100Mc/s signal and adjust **C13** (C2) for maximum reading on D.C. output meter.

9.—Disconnect signal generator. Connect H.F. valve-voltmeter probe to **C7** (D2) through the hole in the top ceramic insulator. Tune receiver for maximum reading on valve-voltmeter, then adjust **C10** (C2) for *minimum* reading on valve-voltmeter.

10.—Repeat operations 7 and 8.

11.—Remove valve-voltmeter and reconnect signal generator to socket **4** or **6** on the aerial panel. Tune receiver to 92Mc/s. Feed in an unmodulated 92Mc/s signal and adjust **L3** (D2) for maximum reading on D.C. output meter.

MODEL A3658

The differences between the model A3658 receiver and the A3658U, from which this *Service Sheet* was prepared, are as follows:

A double-wound mains transformer and a full-wave bridge rectifier **MR1** (Westinghouse 4RA1-2-8-2) are employed, as shown in a separate section of circuit diagram in col. 4 overleaf.

V4 is a EABC80; **V5** is a 6BW6; and tuning indicator **T.I.** is a 6E5GT.

C2, C3, C5, C21, C24, C62 and **R28** are omitted. **R10** is 39Ω; **R11** is 220Ω; **R9** is 6.8kΩ; and **R15** is 39kΩ.

The two scale lamps are rated at **6.5V, 0.3A,** and have M.E.S. bases.

Switches.—S2-S9 are the waveband switches, ganged in a single rotary unit and shown in the under-chassis view in location reference G4, where it is identified by the number **2** in a diamond surround.