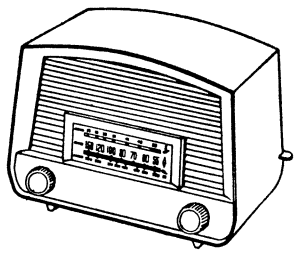
MURPHY SERVICE INSTRUCTIONS



SPECIFICATION

MAINS SUPPLIES:	TU198/220V:	190–240 volts a.c., 25–100 c/s, and 190–240 volts d.c.
	TU198/110V:	110–127 volts a.c., 25–100 c/s, and 110–127 volts d.c.
CONSUMPTION:	TU198/220V:	38 watts average
	TU198/110V:	19 watts average
WAVE BANDS:	M:	528–1615 Kc/s (568–186 m.)
	S:	4·75–17·9 Mc/s (63·1–16·75 m.)
INTERMEDIATE FREQUENCY:		470 Kc/s
VALVES:	Mullard:	UCH42, UF41 (or Ediswan-Mazda 10F9), UBC41 (or Ediswan-Mazda 10LD3), UL41, UY41
LOUDSPEAKER:	Type:	5 in. (12·7 cm.) dia., permanent magnet
	Impedance:	3 ohms
CABINET DIMENSIONS:		10⅜ in. (35 cm.) wide, 7 in. (17·8 cm.) high, 5 5/16 in. (13·5 cm.) deep
WEIGHT:		5½ lb. (2·5 Kg)

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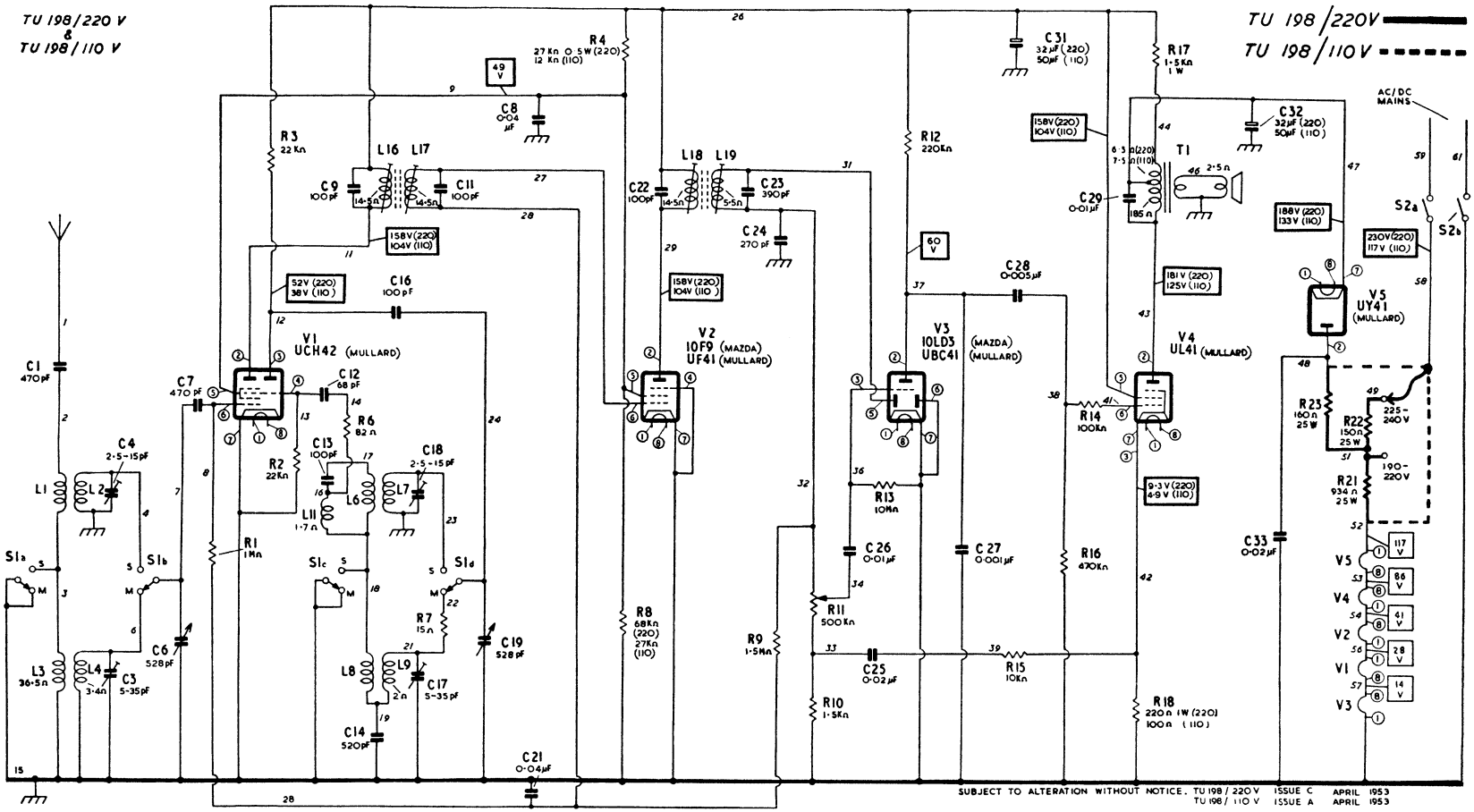


Circuit voltages are shown within rectangles and were measured with a 20,000 Ω/V meter while the receiver was switched to the M band under no-signal conditions.

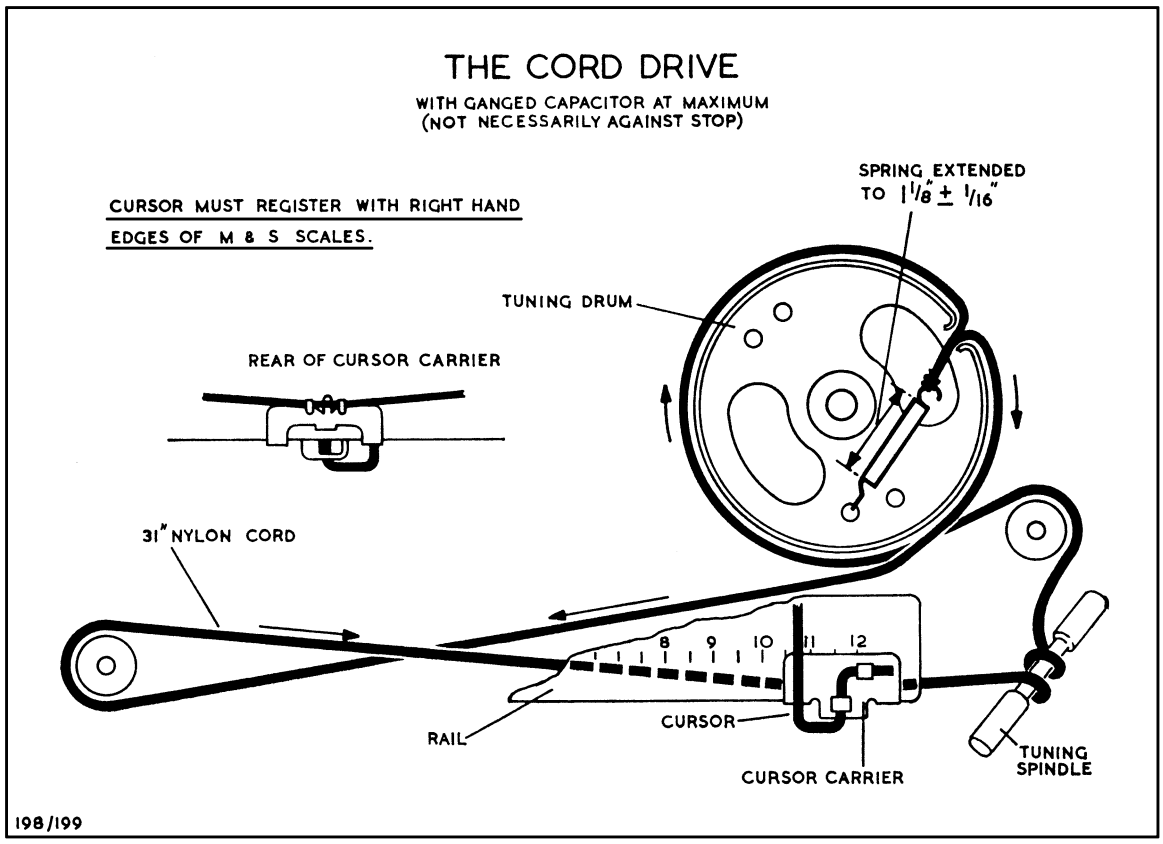
Where the resistance of a coil is less than one ohm the value is omitted.

Where a voltage or resistance reading is different in the two models, the alternative values are identified by the addition of (220) or (110) respectively. Circuit differences (these occur in the mains input section only) are identified by the use of heavy lines for the 220V version and broken lines for the 110V version.

Component terminals and connecting leads are identified by test point (t.p.) numbers which correspond with those appearing on the chassis drawings.

The valve pin numbers are shown within small circles.

L3. In later sets, the resistance is 58 Ω



PARTS LIST (Electrical Components)

ABBREVIATIONS

cer.	—	ceramic	elec.	—	electrolytic
p.s.m.	—	protected silvered mica	V d.c.	—	d.c. voltage rating
tub.	—	paper tabular	W	—	wattage rating
m.tub.	—	metallized paper tubular	lin.	—	linear law

PART NO.	CIRCUIT NO.	VALUE	TOLERANCE AND REMARKS	PART NO.	CIRCUIT NO.	VALUE	TOLERANCE AND REMARKS
60824	C1	470 pF	20%, cer., 1750V d.c., isolator type	52630	C11	100 pF	5%, p.s.m., 350V d.c.
56322	C3	5–35 pF	Trimmer, M ae.	28172	C12	68 pF	5%, p.s.m., 350V d.c.
56325	C4	2·5–15 pF	Trimmer, S ae.	28156	C13	100 pF	5%, p.s.m., 350V d.c.
60763	C6	528 pF	Ganged capacitor, ae. section (with C19)	28288	C14	520 pF	1%, p.s.m., 350V d.c.
				28156	C16	100 pF	5%, p.s.m., 350V d.c.
54083	C7	470 pF	20%, cer., 500V d.c.	56322	C17	5–35 pF	Trimmer, M osc.
49454	C8	0·04 µF	25%, m.tub., 150V d.c.	56325	C18	2·5–15 pF	Trimmer, S osc.
52630	C9	100 pF	5%, p.s.m., 350V d.c.	60763	C19	528 pF	Ganged capacitor, osc. section (with C6)

PART NO.	CIRCUIT NO.	VALUE	TOLERANCE AND REMARKS
49454	C21	0·04 μF	25%, m.tub., 150V d.c.
52630	C22	100 pF	5%, p.s.m., 350V d.c.
52633	C23	390 pF	5%, p.s.m., 350V d.c.
54080	C24	270 pF	20%, cer., 500V d.c.
49455	C25	0·02 μF	25%, m.tub., 150V d.c.
49447	C26	0·01 μF	25%, m.tub., 150V d.c.
49450	C27	0·001 μF	25%, m.tub., 350V d.c.
51551	C28	0·005 μF	25%, tub., 500V d.c.
51554	C29	0·01 μF	25%, tub., 750V d.c.
46532	C31	32 μF	+50% —20%, elec., 350V d.c. (TU198/220V)
	C32	32 μF	
56156	C31	50 μF	+50% —20%, elec., 150V d.c. (TU198/110V)
	C32	50 μF	
41423	C33	0·02 μF	20%, tub., 750V d.c.
27461	R1	1 MΩ	20%, 0·4W
25445	R2	22 KΩ	10%, 0·4W
25445	R3	22 KΩ	10%, 0·4W
25485	R4	27 KΩ	10%, 0·5W (TU198/220V)
25349	R4	12 KΩ	10%, 0·4W (TU198/110V)
24517	R6	82 Ω	10%, 0·4W
24229	R7	15 Ω	10%, 0·4W
27237	R8	68 KΩ	20%, 0·4W (TU198/220V)
25477	R8	27 KΩ	10%, 0·4W (TU198/110V)
27493	R9	1·5 MΩ	20%, 0·4W
26917	R10	1·5 KΩ	20%, 0·4W
52816	R11	0·5 MΩ	Volume control, lin. (with S2)
27333	R12	220 KΩ	20%, 0·4W
27653	R13	10 MΩ	20%, 0·4W
27269	R14	100 KΩ	20%, 0·4W
27077	R15	10 KΩ	20%, 0·4W

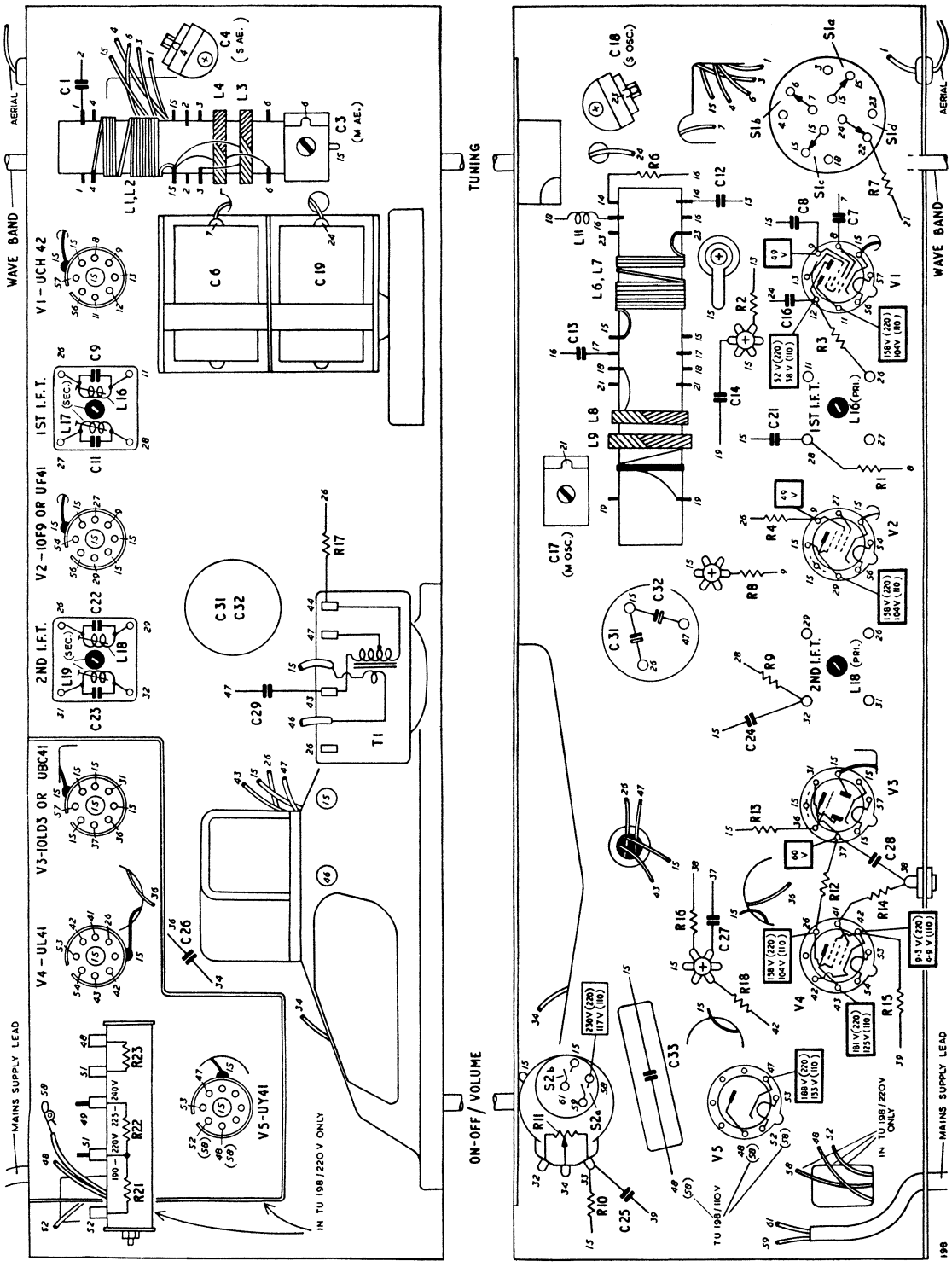
PART NO.	CIRCUIT NO.	VALUE	TOLERANCE AND REMARKS
27397	R16	470 KΩ	20%, 0·4W
25023	R17	1·5 KΩ	10%, 1W
24703	R18	220 Ω	10%, 1W (TU198/220V)
24549	R18	100 Ω	10%, 0·4W (TU198/110V)
60781	R21	934 Ω	5%, 25W (TU198/220V)
	R22	150 Ω	
	R23	160 Ω	

PART NO.	CIRCUIT NO.	RESISTANCE (D.C.)	REMARKS
60745	L1	—	Coupling, Tuned — S ae.
	L2	—	
	L3	58 Ω	Coupling, Tuned — M ae.
	L4	3·4 Ω	
60746	L6	—	Coupling, Tuned — S osc.
	L7	—	
	L8	—	Coupling, Tuned — M osc.
	L9	2·1 Ω	
61169	L11	1·7 Ω	Booster, S osc.
58116	L16	14·5 Ω	Pri. — 1st i.f.t.
	L17	14·5 Ω	Sec. — 1st i.f.t.
58117	L18	14·5 Ω	Pri. — 2nd i.f.t.
	L19	5·5 Ω	Sec. — 2nd i.f.t.
60747	T1	185 Ω	Pri. — o.t. (TU198/220V)
		6·3 Ω	Sec. — o.t. (TU198/220V)
61195	T1	185 Ω	Pri. — o.t. (TU198/110V)
		7·5 Ω	Sec. — o.t. (TU198/110V)

PARTS LIST (Mechanical Components)

PART NO.	DESCRIPTION	REMARKS
60486	Anchor	for mains lead
60518	Back for cabinet	with heat deflector (TU198/220V)
60754	Back for cabinet	less heat deflector (TU198/110V)
60761	Bearing	for tuning spindle
60742	Cabinet	
42580	Circlip	for tuning spindle
34184	Clamp	for C31/C32
15817	Clip	for mains voltage adjustment (TU198/220V)
14770	Collar (3)	inside ganged capacitor mounting grommets
1871/2	Compound	for i.f.t. cores
2033/5	Cord, Nylon	for tuning drive
46910	Core, iron dust (4)	for i.f. transformers
60771	Cursor and carrier	for tuning scale
61209	Disc, indicator	for on-off switch
60873	Drum, tuning	for ganged capacitor
56622	Grommet (3)	for ganged capacitor mounting
61210	Knob (2)	for volume and tuning controls
60757	Knob, lever	for wave band switch
60756	Label	for cabinet back (TU198/220V)
60787	Label	for cabinet back (TU198/110V)
51813	Loudspeaker	5 in. (12·7 cm.) dia.
61213	Pad, felt	between cabinet front and on-off indicator disc.
60777	Pad, plastic, scale retaining (4)	for corners of reflector
49506	Pin (2)	for tuning drive pulleys
49593	Pulley (2)	for tuning drive
60774	Rail	for cursor

PART NO.	DESCRIPTION	REMARKS
60776	Reflector	for tuning scale
53434	Retainer (4)	for i.f.t. cover
60752	Scale, tuning	
61529	Screen, heat deflecting	on chassis, behind loudspeaker (TU198/220V)
103510	Screw, 4BA $\frac{5}{8}$ in. (3)	for ganged capacitor mounting
103504	Screw, 4BA $\frac{1}{4}$ in.	for tuning drum
10419	Screw, grub, 2BA $\frac{3}{16}$ in. (3)	for control knobs
103904	Screw, self tapping 6Y, $\frac{1}{2}$ in. (3)	for fastening cabinet back
103878	Screw, self tapping, 8Y, $\frac{5}{8}$ in. (2)	for fastening chassis rear to cabinet
103903	Screw, self tapping, 6Y, $\frac{3}{8}$ in. (2)	for fastening top of loudspeaker to cabinet
60762	Spindle, tuning	
47478	Spring	for tuning drive cord
48193	Strip, clamping (4)	for ae. and osc. coils
22547	Studding	threaded rod for mains resistor mounting (TU198/220V)
60779	Switch	wave band
51451	Valve holder (5)	B8A
58554	Washer (3)	for ganged capacitor mounting grommets
14949	Washer (2)	for lower screws fastening cabinet back
14983	Washer	for upper screw fastening cabinet back
42035	Washer, centering	for mains resistor (TU198/220V)
34588	Washer, felt	for tuning knob
58567	Washer, insulating (2)	for mains resistor (TU198/220V)
16649	Washer, shakeproof, $\frac{3}{8}$ in. (2)	for volume control and wave band switch
47967	Washer, spacing	between reflector and loudspeaker
490023	Washer, spring 4BA	for fastening mains resistor (TU198/220V)



The layout of the top and the underside of the chassis.

CIRCUIT ALIGNMENT

The oscillator and aerial trimmers can be adjusted without removing the chassis from the cabinet.

Receiver output. Make all adjustments for maximum output with the volume control at maximum. Adjust the signal generator attenuator so that this output does not exceed 180 mW, or approximately 0·7V across the loudspeaker speech coil.

Trimming tool. A non-metallic tool must be used for adjusting the i.f.t. cores.

Tuning pointer (cursor) setting. This must be correct before aligning the r.f. circuits, and it must be adjusted only when the ganged capacitor is at *maximum capacitance* (not necessarily with fully closed plates).

When the chassis is outside the cabinet the left-hand edge of the cursor carrier must register with 10·5 on the carrier rail. When the chassis is in the cabinet the cursor itself must register with the right-hand edges of the M and S scales; move the scale to the right or left as required or, if necessary, move the cursor.

Receiver oscillator frequency. On both wave bands this is higher than the signal frequency.

Replacement osc. and ae. coils. The inductance of the S band tuned winding must be adjusted after fitting. Referring to the S band section of the circuit alignment table, commence at 6·7 Mc/s and, where it states "No adjustments", adjust the spacing of the end turns. Then adjust the trimmers at 15·23 Mc/s. Repeat these adjustments until there is no further improvement and finally seal the windings with wax.

CIRCUIT ALIGNMENT TABLE

CIRCUIT	NOTES	SIG. GEN. FREQUENCY	SIG. GEN. TERMINATION	CONNECT SIG. GEN. TO	RECEIVER SETTING	ADJUSTMENTS
2nd i.f.t.	Unscrew sec. core (top of can) before starting adjustments	470 Kc/s	Via 0·01 μF capacitor	V2 grid 1 (pin 6)	10·5 cm.	L18 (pri.) below chassis L19 (sec.) top of can DO NOT RE-ADJUST PRI. CORE
1st i.f.t.	As above. Switch to M band.	470 Kc/s	As above	C6 stator (t.p. 7)	10·5 cm.	L16 (pri.) below chassis L17 (sec.) top of can DO NOT RE-ADJUST PRI. CORE
M		1364 Kc/s (220 m.)	Dummy aerial	C1 aerial tag (t.p.1)	2·32 cm.	C17 (osc.) below chassis C3 (ae.) above chassis
		600 Kc/s (500 m.)	As above	As above	8·65 cm.	No adjustments
S	Set osc. trimmer to lower capacitance peak. Rock tuning control while adjusting ae. trimmer	15·23 Mc/s (19·7 m.)	As above	As above	1·85 cm.	C18 (osc.) below chassis C4 (ae.) above chassis
		6·7 Mc/s (44·8 m.)	As above	As above	7·09 cm.	No adjustments

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