

THE AI88C RADIO RECEIVER

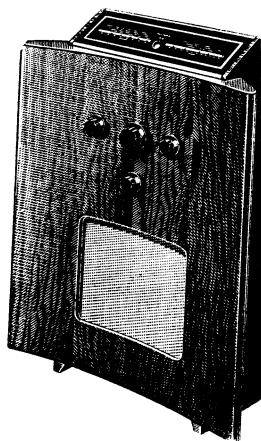
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SPECIFICATION



MAINS SUPPLY:	200–250 volts a.c., 50–100 c/s
CONSUMPTION:	67 watts
WAVE BANDS:	Medium: 184–577 metres Long: 967–2053 metres
INTERMEDIATE FREQUENCY:	470 Kc/s
VALVES:	Mazda: 6C9, two 6F15, 6LD20, 6M1, two 6P25, UU6
SCALE LAMPS:	Two 6.5 volts, 0.3 amp., m.e.s.
LOUDSPEAKER:	Type: 10 in. dia., permanent magnet Impedance: 3 ohms
CABINET DIMENSIONS:	34½ in. high, 27 in. wide, 9¼ in. deep
WEIGHT:	43 lb.
RELEASED:	May 1951
PRICE:	£35 6s. 2d. plus p.t.

CIRCUIT ALIGNMENT

Receiver output. Make all adjustments for maximum output, unless otherwise stated, with the volume control at maximum and the tone/selectivity switch set to position 3. Adjust the signal generator attenuator so that this output does not exceed 0.5W, or 1.2V across the loudspeaker speech coil.

Trimming tool. A non-metallic tool must be used for adjusting the iron dust cores.

Drum and pointer settings. Before aligning the r.f. circuits, make sure that 260° on the drive drum registers with the "V" on the indicator when the ganged capacitor plates are just fully meshed (not necessarily against the stop). After fitting the chassis into the cabinet, check that half the width

of the pointer is visible at the right-hand end of the M band scale when the ganged capacitor plates are just fully meshed (i.e. at maximum capacitance). **Receiver oscillator frequency.** This is higher than the signal frequency on all wave bands.

Damping units. During i.f. and r.f. alignment, the following damping units must be used to secure the correct band-pass characteristics.

"A": A 10 KΩ resistor in series with a 0.01μF capacitor (for i.f. circuits).

"B": A 1 KΩ resistor (for r.f. circuits).

The i.f. rejector (L1). The core has been set at the factory and should not normally require re-adjustment.

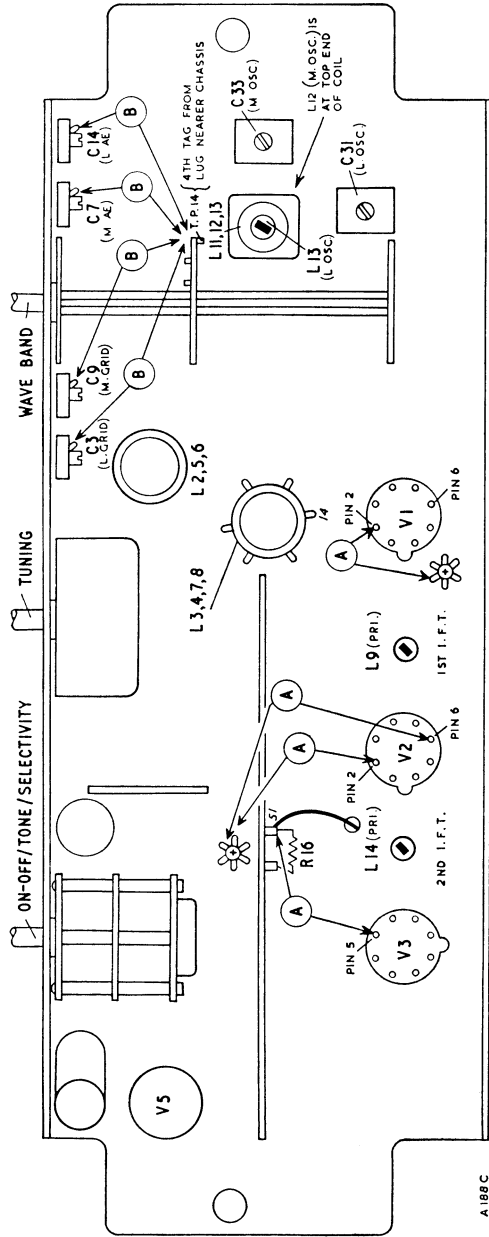


Fig. 1. The trimmer positions.

CIRCUIT ALIGNMENT TABLE

CIRCUIT	NOTES	SIG. GEN. FREQUENCY	SIG. GEN. TERMINATION	CONNECT SIG. GEN. TO	DRUM SETTING	ADJUSTMENTS
2nd i.f.t.	Connect damping unit "A" across pri. (V2 pin 2 to chassis). Switch to M band. Connect damping unit "A" across sec. (V3 pin 5 to R16, t.p. 51). Switch to M band.	470 Kc/s	Via 0.01 μ F capacitor	V1 signal grid (pin 6)	260°	L15 (sec.) top of can
		470 Kc/s	As above	As above	260°	L14 (pri.) below chassis
1st i.f.t.	Connect damping unit "A" across pri. (V1 pin 2 to chassis). Switch to M band. Connect damping unit "A" across sec. (V2 pin 6 to chassis). Switch to M band.	470 Kc/s	As above	As above	260°	L10 (sec.) top of can
		470 Kc/s	As above	As above	260°	L9 (pri.) below chassis
I.f. rejector	Adjust for maximum shadow in "Magic Eye".	470 Kc/s	Dummy aerial	Aerial socket	260°	L1 above chassis
M	Connect damping unit "B" across L5 (C7 to t.p. 14 on switch) while adjusting C9, and across L3 (C9 to t.p. 14 on switch) while adjusting C7. Repeat osc. adjustments.	600 Kc/s (500 m.)	As above	As above	300°	L12 (osc.) above chassis
		1500 Kc/s (200 m.)	As above	As above	66.5°	C33 (osc.) below chassis C9 (grid) below chassis C7 (ac.) below chassis
L	Connect damping unit "B" across L6 (C14 to t.p. 14 on switch) while adjusting C3, and across L8 (C3 to t.p. 14 on switch) while adjusting C14. Repeat osc. adjustments.	157.8 Kc/s (1900 m.)	As above	As above	286°	L13 (osc.) below chassis
		300 Kc/s (1000 m.)	As above	As above	66.5°	C31 (osc.) below chassis C3 (grid) below chassis C14 (ac.) below chassis

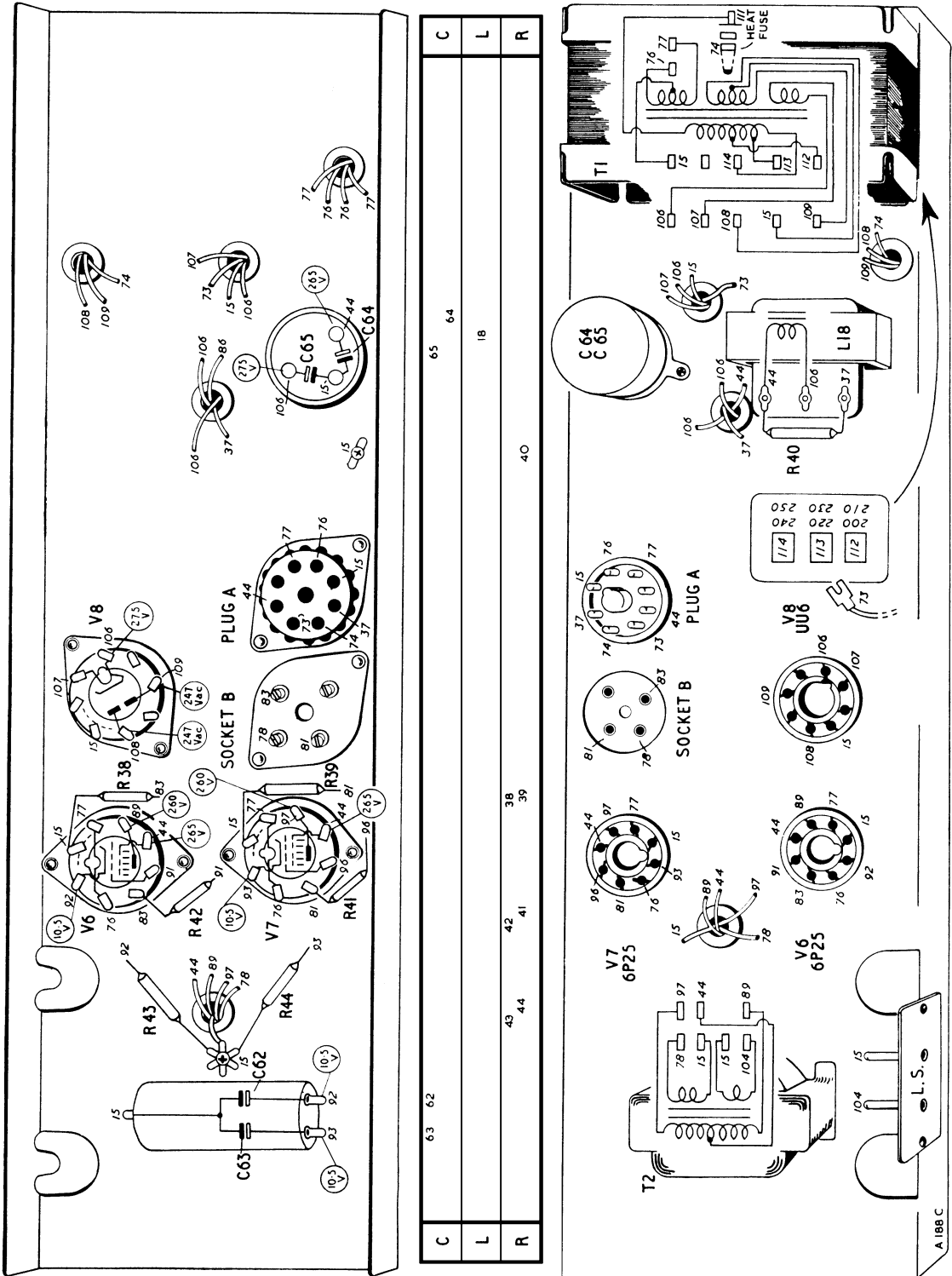


Fig. 2. The top and underside of the power unit.

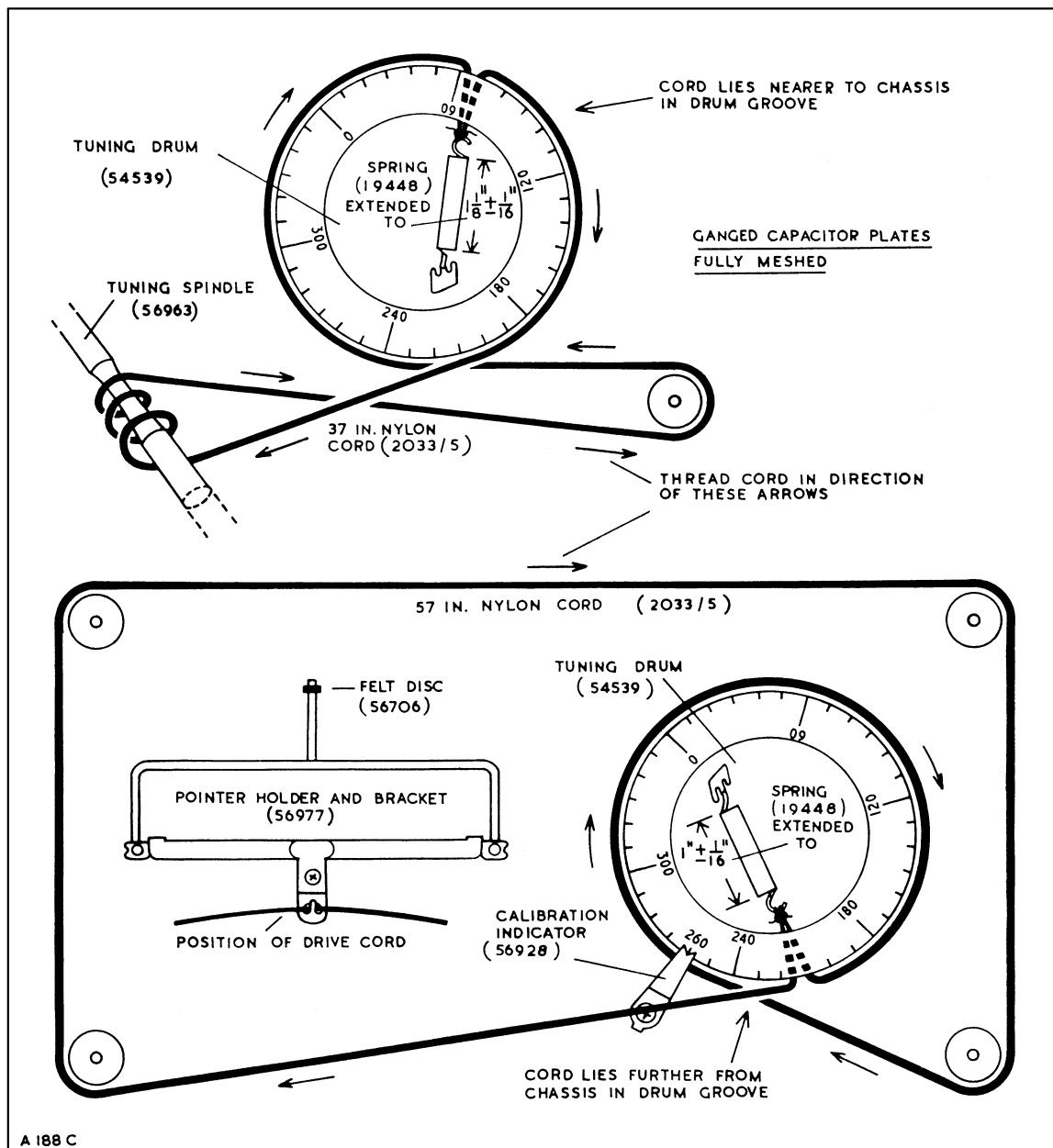
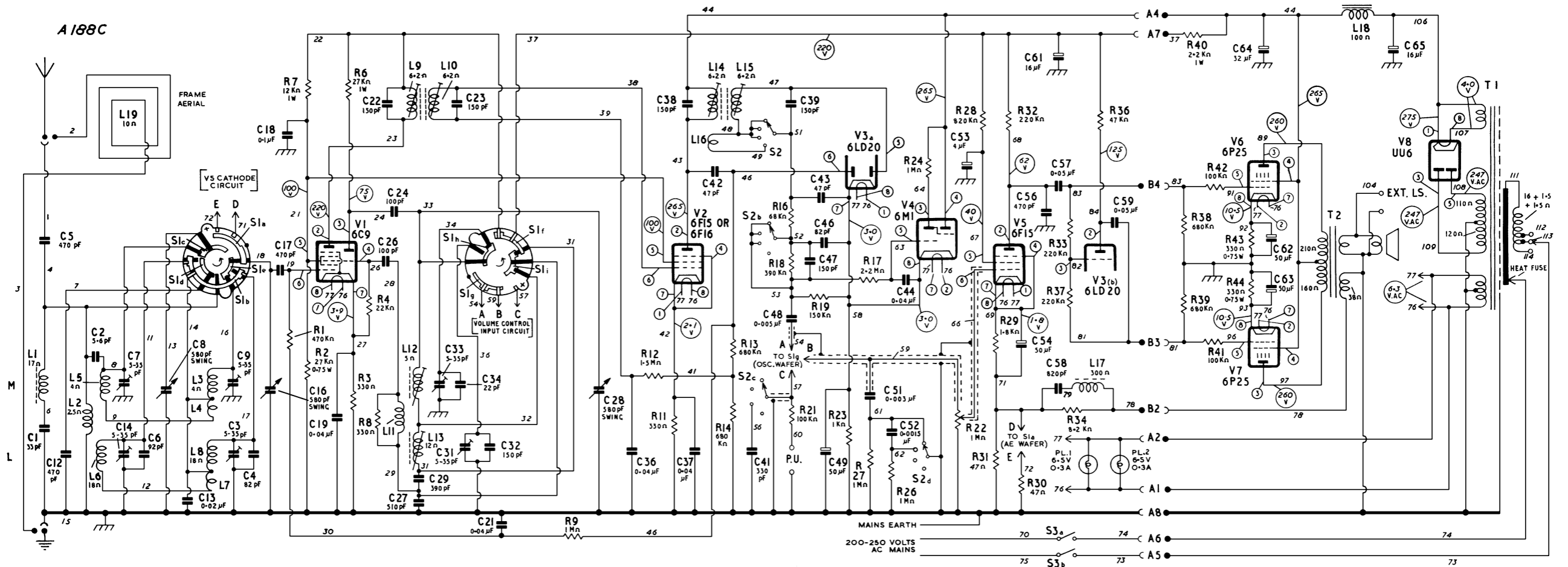


Fig. 3. The cord drives.



SUBJECT TO ALTERATION WITHOUT NOTICE ISSUE F.

The switch wafers are drawn as seen from the rear of the receiver and the lugs marked with a cross are the nearer to the chassis. The black contacts and inner rotors are on the hidden sides of the wafers. Blank positions and anchoring tags are shown by a spot.

The wave-band switch (S1a-S1i) is shown in position M; rotate anti-clockwise for L and G.

The tone/selectivity switch (S2a-S2d) is shown in position 1; rotate anti-clockwise for positions 2, 3, and 4.

Circuit voltages are shown within large circles and were measured with a 20KΩ/V meter while the receiver was switched to the M band under no signal conditions.

The valve pin numbers are shown within small circles.

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

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

Fig. 4.

C	1	16	61	53	39	56	C
	5	8	23	22	38	38	
L	1	2, 5, 6	3, 4, 7, 8	10	9	15	L
						16	
R						14	R
						28	
MISC.						34	MISC.
			V1	V2	V3	V5	

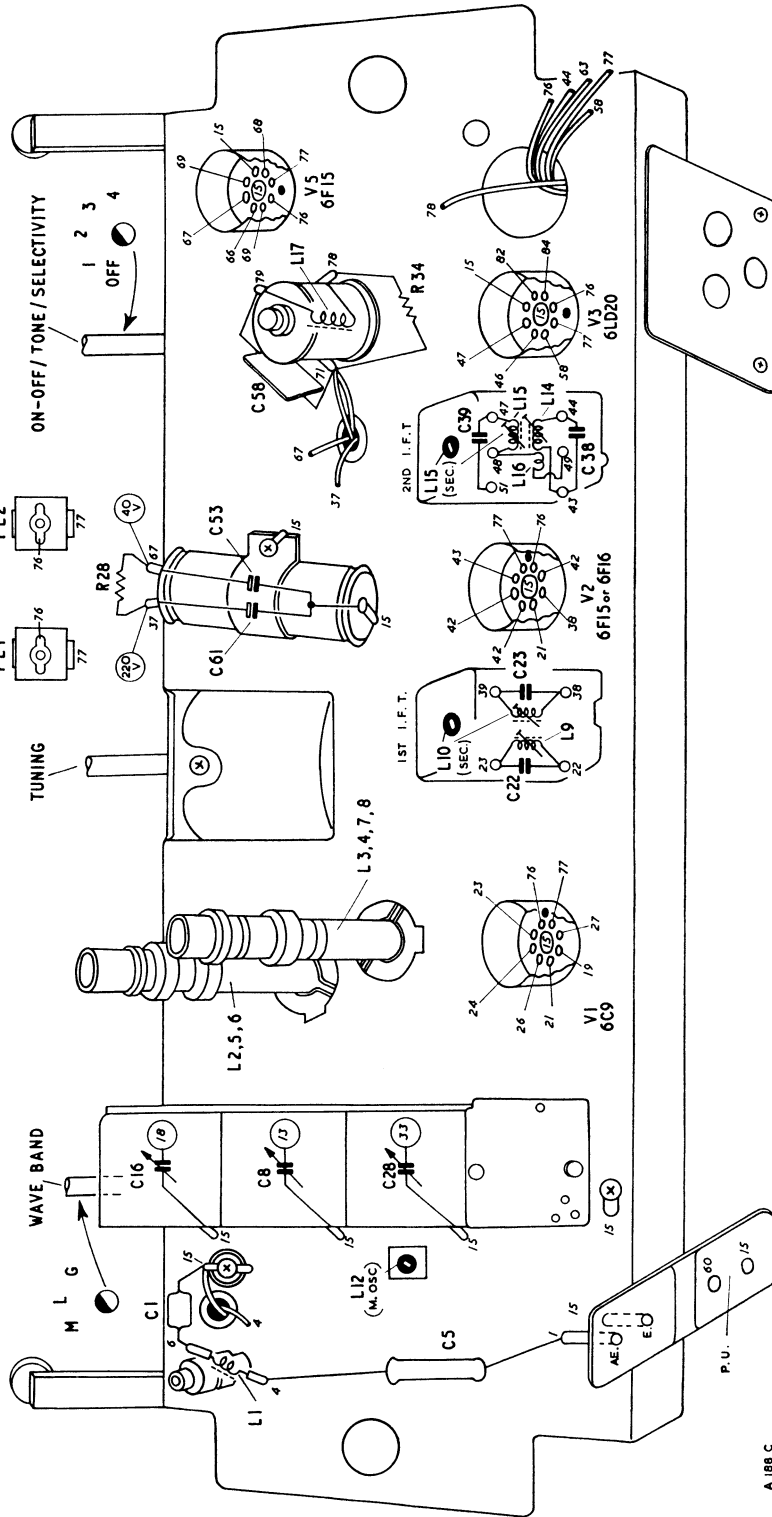


Fig. 5. The top of the receiver chassis.

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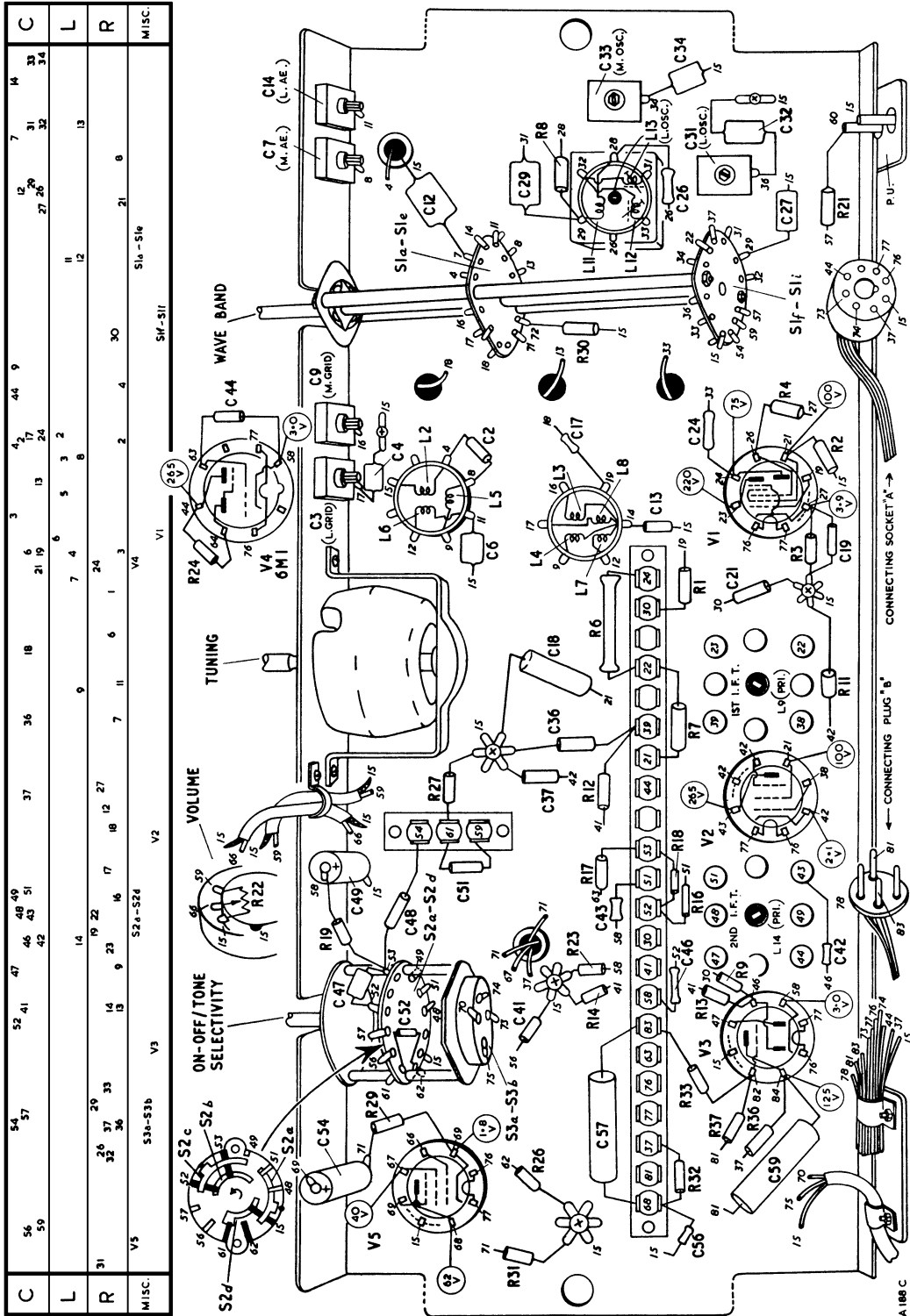


Fig. 6. The underside of the receiver chassis.

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SAFETY PRECAUTION

The cabinet back. Some receivers have the window on the cabinet back held in place by metal rivets. To avoid the possibility of the left-hand rivet becoming "live" by contact with one of the ter-

minals of the mains tapping panel, a small insulator is glued over this rivet. On later models, four plastic rivets are fitted.

PARTS LIST (Electrical Components)

All resistors are rated at 0.6 watt *unless otherwise stated*. The d.c. resistance quoted for the coil and transformer windings is an average figure and should be used as a general guide only; it is omitted where the value is less than one ohm.

cer. — ceramic
 p.s.m. — protected silvered mica
 tub. — paper tubular
 i.s.tub. — insulated sealed paper tubular (metal case)
 m.tub. — metallized paper tubular

elec. — electrolytic
 i.elec. — insulated electrolytic
 V d.c. — d.c. voltage rating
 W — wattage rating
 log. — logarithmic law

PART NO.	CIRCUIT NO.	VALUE	TOLERANCE AND REMARKS	PART NO.	CIRCUIT NO.	VALUE	TOLERANCES AND REMARKS
28299	C1	33 pF	2%, p.s.m., 350V d.c.	23603	C34	22 pF	10%, p.s.m., 350V d.c.
52151	C2	5.6 pF	20%, cer., 350V d.c.	49454	C36	0.04 μF	25%, m.tub., 150V d.c.
37480	C3	5-35 pF	Trimmer, L grid	49454	C37	0.04 μF	25%, m.tub., 150V d.c.
23662	C4	82 pF	10%, p.s.m., 350V d.c.	52631	C38	150 pF	5%, p.s.m., 350V d.c.
54078	C5	470 pF	20%, cer., 350V d.c.	52631	C39	150 pF	5%, p.s.m., 350V d.c.
28178	C6	92 pF	5%, p.s.m., 350V d.c.	49460	C41	330 pF	10%, m.tub., 600V d.c.
37480	C7	5-35 pF	Trimmer, M ae.	54066	C42	47 pF	20%, cer., 350V d.c.
56519	C8	580 pF	Ganged capacitor, ae. swing section	54066	C43	47 pF	20%, cer., 350V d.c.
37480	C9	5-35 pF	Trimmer, M grid	49454	C44	0.04 μF	25%, m.tub., 150V d.c.
28243	C12	470 pF	2%, p.s.m., 350V d.c.	54069	C46	82 pF	20%, cer., 350V d.c.
49458	C13	0.02 μF	10%, m.tub., 150V d.c.	23622	C47	150 pF	10%, p.s.m., 350V d.c.
37480	C14	5-35 pF	Trimmer, L ae.	49456	C48	0.005 μF	25%, m.tub., 150V d.c.
56519	C16	580 pF	Ganged capacitor, grid swing section	31315	C49	50 μF	+100% -20%, elec., 12V d.c.
54083	C17	470 pF	20%, cer., 350V d.c.	49449	C51	0.003 μF	10%, m.tub., 350V d.c.
41404	C18	0.1 μF	20%, tub., 350V d.c.	49451	C52	0.0015 μF	10%, m.tub., 350V d.c.
49454	C19	0.04 μF	25%, m.tub., 150V d.c.	46543	C53	4 μF	+50% -20%, elec., 350V d.c., with C61
49454	C21	0.04 μF	25%, m.tub., 150V d.c.	31316	C54	50 μF	+100% -20%, i.elec., 12V d.c.
52631	C22	150 pF	5%, p.s.m., 350V d.c.	54083	C56	470 pF	20%, cer., 350V d.c.
52631	C23	150 pF	5%, p.s.m., 350V d.c.	53068	C57	0.05 μF	20%, i.s.tub., 500V d.c.
54070	C24	100 pF	20%, cer., 350V d.c.	28274	C58	820 pF	2%, p.s.m., 350V d.c.
54070	C26	100 pF	20%, cer., 350V d.c.	53068	C59	0.05 μF	20%, i.s.tub., 500V d.c.
28312	C27	510 pF	1%, p.s.m., 350V d.c.	46543	C61	16 μF	+50% -20%, elec., 350V d.c., with C53
56519	C28	580 pF	Ganged capacitor, osc. swing section	46531	C62	50 μF	+50% -20%, elec., 25V d.c.
28311	C29	390 pF	1%, p.s.m., 350 V d.c.	46536	C63	50 μF	+50% -20%, elec., 350V d.c.
37480	C31	5-35 pF	Trimmer, L osc.		C64	32 μF	
23622	C32	150 pF	10%, p.s.m., 350V d.c.		C65	16 μF	
37480	C33	5-35 pF	Trimmer, M osc.				

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PART NO.	CIRCUIT NO.	VALUE	TOLERANCE AND REMARKS	PART NO.	CIRCUIT NO.	VALUE	TOLERANCE AND REMARKS
27397	R1	470 K Ω	20%	27269	R41	100 K Ω	20%
25485	R2	27 K Ω	10%, 0.75W	27269	R42	100 K Ω	20%
24741	R3	330 Ω	10%	24749	R43	330 Ω	10%, 0.75W
27141	R4	22 K Ω	20%	24749	R44	330 Ω	10%, 0.75W
25501	R6	27 K Ω	10%, 1W				
25373	R7	12 K Ω	10%, 1W				
24741	R8	330 Ω	10%				
27461	R9	1 M Ω	20%				
24741	RI1	330 Ω	10%				
27493	RI2	1.5 M Ω	20%				
27429	RI3	680 K Ω	20%				
27429	RI4	680 K Ω	20%				
27237	RI6	68 K Ω	20%				
27525	RI7	2.2 M Ω	20%				
25925	RI8	390 K Ω	10%				
27301	RI9	150 K Ω	20%				
25701	R21	100 K Ω	10%				
52792	R22	1 M Ω	Volume control, log.				
24933	R23	1 K Ω	10%				
27461	R24	1 M Ω	20%				
27461	R26	1 M Ω	20%				
27461	R27	1 M Ω	20%				
26053	R28	820 K Ω	10%				
25029	R29	1.8 K Ω	10%				
24421	R30	47 Ω	10%				
24421	R31	47 Ω	10%				
25829	R32	220 K Ω	10%				
29144	R33	220 K Ω	5%				
25285	R34	8.2 K Ω	10%				
25573	R36	47 K Ω	10%				
29144	R37	220 K Ω	5%				
27429	R38	680 K Ω	20%				
27429	R39	680 K Ω	20%				
25086	R40	2.2 K Ω	10%, 1W				
PART NO.	CIRCUIT NO.	RESISTANCE (D.C.)	REMARKS	PART NO.	CIRCUIT NO.	RESISTANCE (D.C.)	REMARKS
				55856	L1	17 Ω	I.f. rejector
				56527	L2	25 Ω	M/L ae., with L5, L6
				56522	L3	4 Ω	M grid coil } with L7, M grid coup. } L8
					L4	—	
				56527	L5	4 Ω	M ae. } with L2 L ae. } with L2
					L6	18 Ω	
				56522	L7	—	L grid coup. } with L grid. } L3/L4
					L8	18 Ω	
				55879	L9	6.2 Ω	Pri. } 1st i.f.t. Sec. } 1st i.f.t.
					L10	6.2 Ω	
				56524	L11	—	M/L osc. coup. M osc. L osc.
					L12	5 Ω	
					L13	12 Ω	
				54536	L14	6.2 Ω	Pri. } 2nd i.f.t. Sec. } 2nd i.f.t.
					L15	6.2 Ω	
					L16	—	Coup. }
				54534	L17	300 Ω	Whistle filter
				56578	L18	100 Ω	Smoothing choke
					L19	10 Ω	Frame aerial
						19 Ω	Pri. total
				56528	T1	110+120 Ω	H.t. sec. } m.t.
						—	Heater sec. }
						—	Rect. htr. sec. }
				52270	T2	160+210 Ω	Pri. }
						38 Ω	F.b. sec. } o.t.
						—	L.s. sec. }

PARTS LIST (Mechanical Components)

This list contains only those parts which are not included in the Electrical Parts List; items such as self-tapping screws, bolts, and nuts, etc., may be obtained from Murphy Radio Ltd, Service Department. Where more than one item is used per receiver, the quantity is given in brackets after the description.

PART NO.	DESCRIPTION	REMARKS	PART NO.	DESCRIPTION	REMARKS
56986	Back	complete with frame aerial	56747	Bracket, transit	near ganged capacitor
56758	Bearing	for tuning spindle	56610	Bracket, transit R.H.	near whistle filter
56607	Bolt, $\frac{3}{16}$ in., BSF (2)	for chassis fixing			
56618	Bracket	for flywheel	56966	Cabinet	
56978	Bracket, L.H. (near ganged capacitor)	for tuning scale mounting	56799	Can, screening	for oscillator coils
56979	Bracket, R.H. (near V5)	for tuning scale mounting	56973	Channel, top	for tuning scale
57016	Bracket, and pulleys (2)	for cord drive	56974	Channel, bottom	for tuning scale
56621	Bracket, rear	for mounting ganged capacitor	54520	Clip, retaining	for L17
			32240	Clamp	for mains lead
			56609	Clamp (2)	for chassis fixing
			43009	Clamp	for C64/C65
			56624	Clamp (2)	for aerial and grid coils
			56984	Clamp, with bracket	for tuning indicator

PART NO.	DESCRIPTION	REMARKS	PART NO.	DESCRIPTION	REMARKS
2033/5 56608	Cord, Nylon Cushion (2)	for cord drives for chassis mounting	57377	Plug, earthing (2)	for screen (57028) and frame ac.
54539 56706	Drum, tuning Disc, felt	for pointer	45974 49301 52264 56977	Plug, l.s. (2) Plug, 4 pin Plug, 8 pin Pointer holder and bracket	for interconnecting leads for interconnecting leads complete
15633	Eyelet (6)	for V ₁ , V ₃ , V ₅ mount- ing (inside grommets)	49593	Pulley (5)	for cord drives
56926 56620	Flywheel Foot, front	for ganged capacitor	56985	Reflector	
56968 56622	Grille Grommet (3)	for loudspeaker for ganged capacitor mounting	56972 57028 56935 384962 57898	Scale, tuning Screen Screen, and plate Screw, 2BA (8) Screw, oBA (4)	for cabinet back for volume control for back fixing for power unit chassis fixing
54954 42844	Grommet Grommet (6)	for tuning indicator for V ₁ , V ₃ , V ₅ , mount- ing	19642 19645 49300 52265 14755	Screw, grub (3) Screw, grub Socket, 4 pin Socket, 8 pin Spacer (2)	for small control knobs for large control knob for interconnecting leads for interconnecting leads inside ganged capacitor front mounting grom- mets
42848	Grommet	for tuning spindle			
56453	Holder (2)	for scale lamps			
56928 32250	Indicator, calibration Insulator	for tuning drum for mains lead clamp	56963 19448 46906 56532 56531	Spindle, tuning Spring (2) Strap, fixing Switch Switch	for cord drives for i.f. rejector On/off/tone/selectivity Wave-band
56933 57060 55589 56969	Knob Knob Knob Knob	On/off/tone/selectivity Tuning Volume Wave-band	40134 40135	Tag (3) Terminal, spade	for mains tapping panel for mains adjustment
16882 55673	Lamp, scale (2) Loudspeaker, 10 in.	6.5V, 0.3A, m.e.s.	51451	Valve holder, B8A (4)	
260910 15264	Nut, $\frac{1}{8}$ in. BSF (2) Nut, Speedfix	for chassis fixing for fixing osc. coil former	56384 5687	Valve holder, B.O. Valve holder, I.O. (3)	
55622 56623 56629 56628 37974 37975	Panel, with tags Pillar, mounting Pin (4) Pin, lower Plug, aerial (2) Plug, earth	mains tapping for ganged capacitor for pulley (49593) for pulley (49593) one with frame ac.	47954 491626 34592	Washer (8) Washer (2) Washer, felt (4)	for back fixing for chassis fixing for control knobs

BINDING CASES

A binder, to hold this and fourteen other Service Instructions manuals in book form, is available from Murphy Radio Ltd, Service Department.

The cost, at the date of publication of this manual, is 8s. od. net.