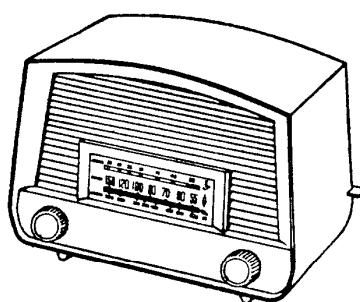


MURPHY SERVICE INSTRUCTIONS



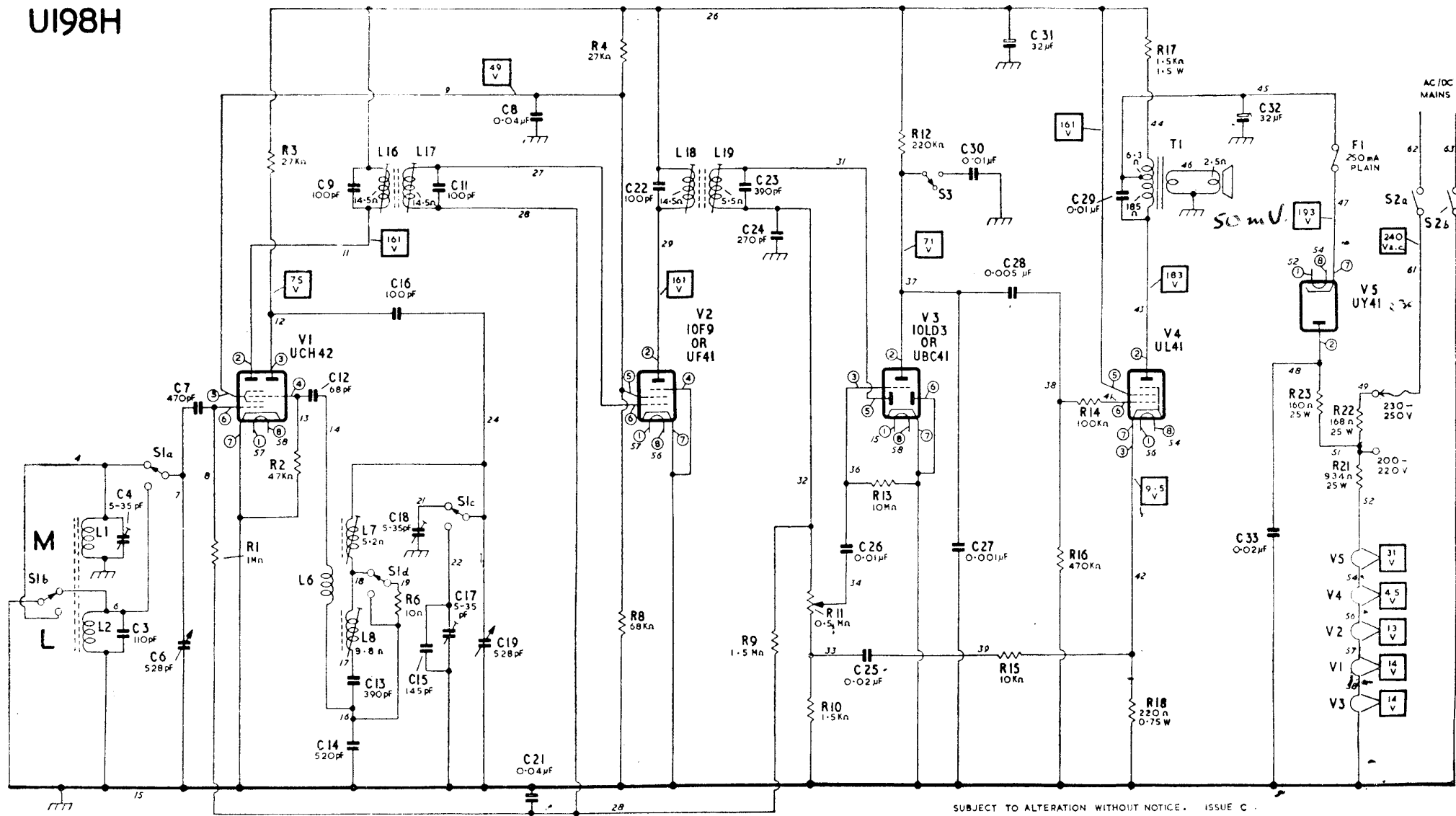
SPECIFICATION

MAINS SUPPLIES:		200-250 volts a.c., 25-100 c/s, and 200-250 volts d.c.
CONSUMPTION:		41 watts average
WAVE BANDS:	M:	186-568 metres
	L:	1000-2000 metres
INTERMEDIATE FREQUENCY:		470 Kc/s
VALVES:		UCH42, UF41 (or 10F9), UBC41 (or 10LD3), UL41, UY41
LOUDSPEAKER:	Type:	5 in. dia., permanent magnet
	Impedance:	3 ohms.
CABINET DIMENSIONS:		10 $\frac{3}{8}$ in. wide, 7 in. high, 5 $\frac{5}{16}$ in. deep
WEIGHT:		5 $\frac{1}{2}$ lb.
RELEASED:		April 1954
PRICE:		£10 2s. 6d. plus p.t.

Issued by

MURPHY RADIO LTD
WELWYN GARDEN CITY · HERTS
TELEPHONE: WELWYN GARDEN 3434

U198H



SUBJECT TO ALTERATION WITHOUT NOTICE. ISSUE C.

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.

Component terminals and connecting leads are identified by test

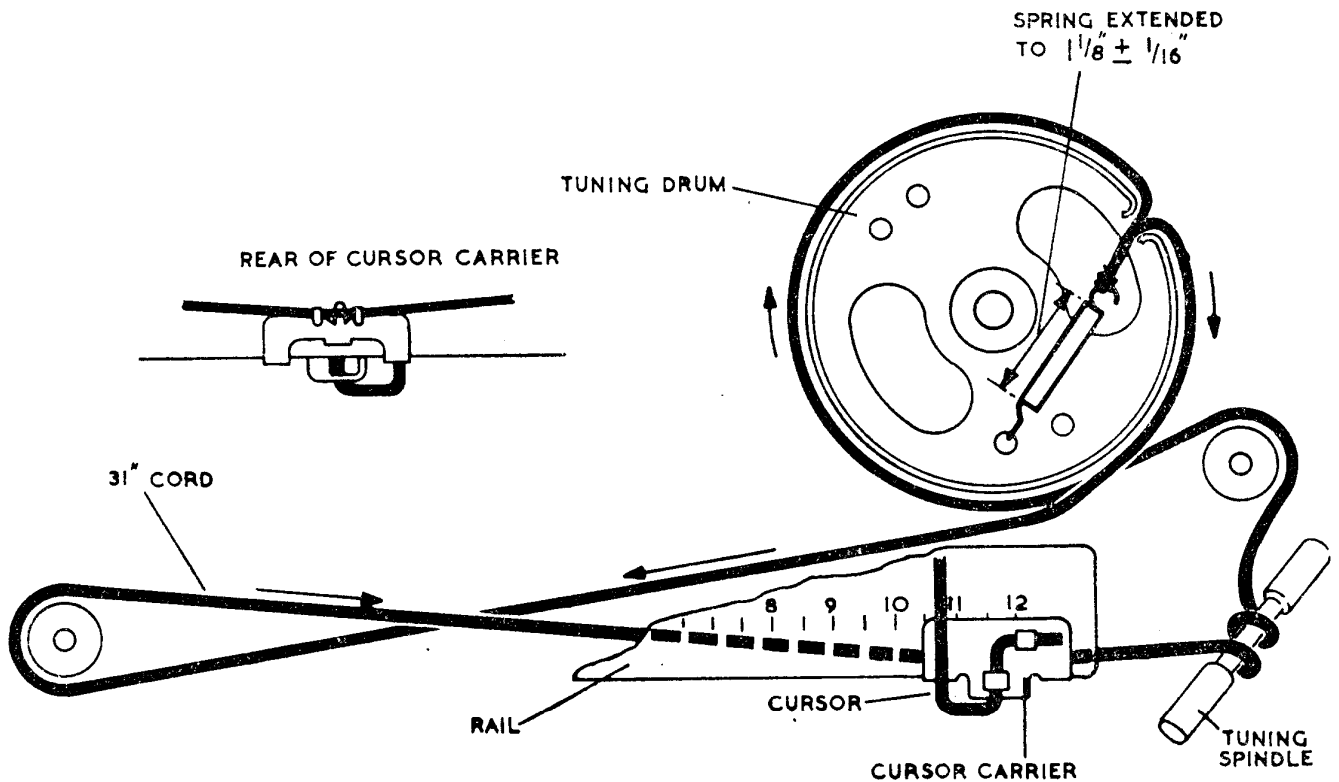
point (t.p.) numbers which correspond with those appearing on the chassis drawings.

The valve pin numbers are shown within small circles.

Tone switch. In some of the very early sets, S3 and C30 were not fitted.

THE CORD DRIVE

WITH GANGED CAPACITOR AT MAXIMUM
(NOT NECESSARILY AGAINST STOP)



198/199

WHEN THE CHASSIS IS IN THE CABINET, THE CENTRE OF THE POINTER MUST COINCIDE WITH THE RIGHT-HAND ENDS OF THE TUNING SCALES, WHEN THE TUNING CAPACITOR IS AT MAXIMUM CAPACITANCE.

PARTS LIST (Electrical Components)

ABBREVIATIONS

cer. — ceramic
p.s.m. — protected silvered mica
tub. — paper tubular
m.tub. — metallized paper tubular
elec. — electrolytic

V d.c. — d.c. voltage rating
W — wattage rating
lin. — linear law
w.w. — wire wound

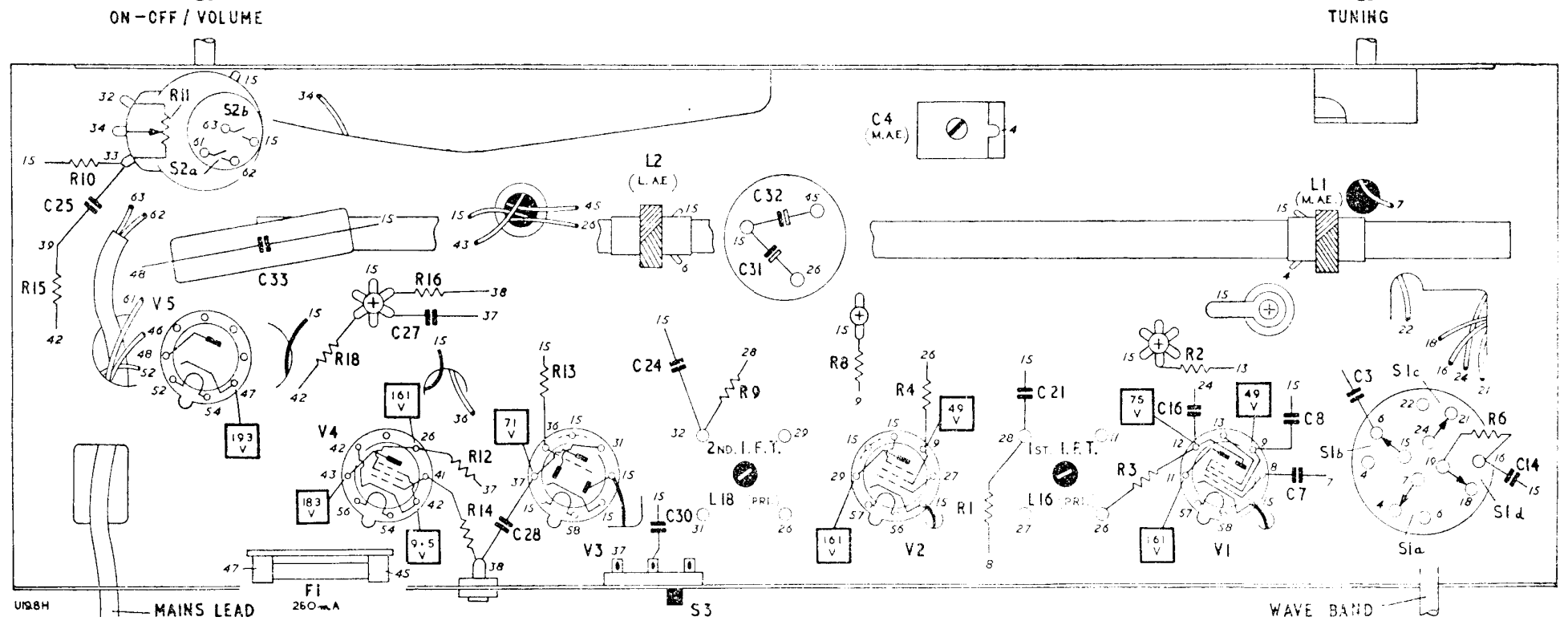
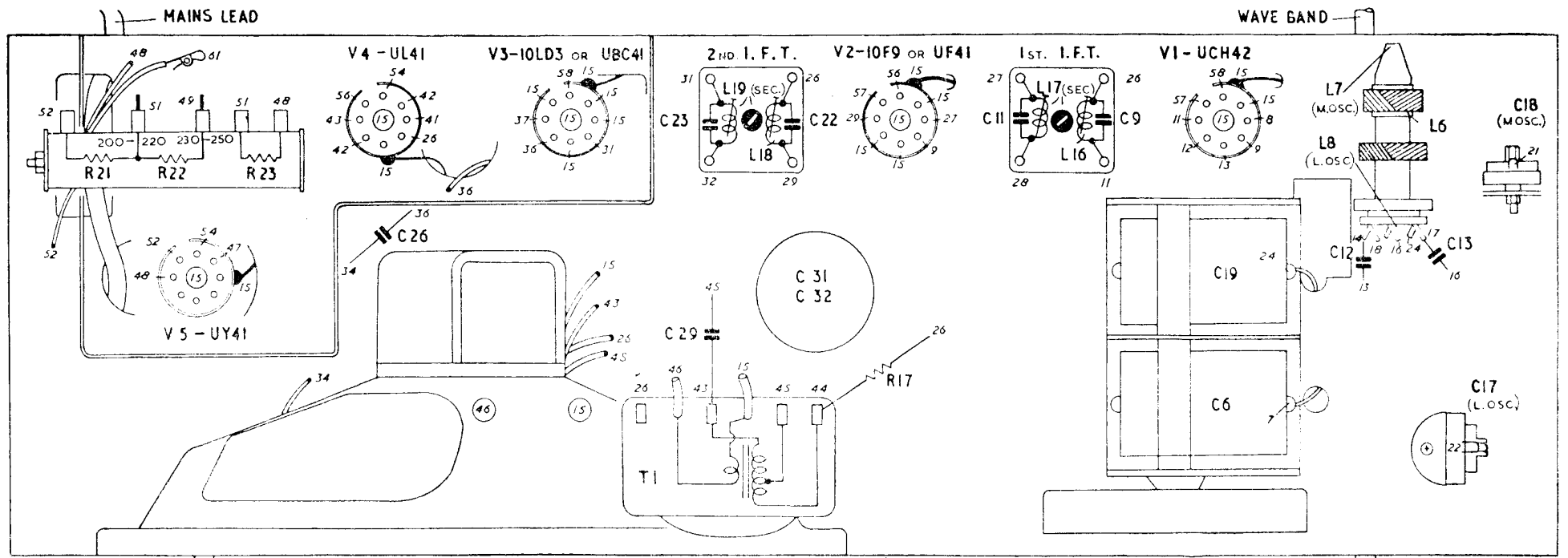
PART NO.	CIRCUIT NO.	VALUE	TOLERANCE AND REMARKS	PART NO.	CIRCUIT NO.	VALUE	TOLERANCE AND REMARKS
28363	C3	110 pF	2%, p.s.m., 350V d.c.	28311	C13	390 pF	1%, p.s.m., 350V d.c.
56322	C4	5-35 pF	Trimmer, M ae.	28288	C14	520 pF	1%, p.s.m., 350V d.c.
60763	C6	528 pF	Ganged capacitor, ae. section (with C19)	28355	C15	145 pF	2%, p.s.m., 350V d.c.
54083	C7	470 pF	20%, cer., 500V d.c.	28156	C16	100 pF	5%, p.s.m., 350V d.c.
49454	C8	0.04 μF	25%, m.tub., 150V d.c.	56322	C17	5-35 pF	Trimmer, L osc.
52630	C9	100 pF	5%, p.s.m., 350V d.c.	56323	C18	5-35 pF	Trimmer, M osc.
52630	C11	100 pF	5%, p.s.m., 350V d.c.	60763	C19	528 pF	Ganged capacitor, osc. section (with C6)
28172	C12	68 pF	5%, p.s.m., 350V d.c.	49454	C21	0.04 μF	25%, m.tub., 150V d.c.

PART NO.	CIRCUIT NO.	VALUE	TOLERANCE AND REMARKS	PART NO.	CIRCUIT NO.	VALUE	TOLERANCE AND REMARKS	
52630	C22	100 pF	5%, p.s.m., 350V d.c.	27269	R14	100 KΩ	20%, 0.6W	
52633	C23	390 pF	5%, p.s.m., 350V d.c.	27077	R15	10 KΩ	20%, 0.6W	
54080	C24	270 pF	20%, cer., 500V d.c.	27397	R16	470 KΩ	20%, 0.6W	
49455	C25	0.02 μF	25%, m.tub., 150V d.c.	25023	R17	1.5 KΩ	10%, 1.5W	
49447	C26	0.01 μF	25%, m.tub., 150V d.c.	24685	R18	220 Ω	10%, 0.75W	
49450	C27	0.001 μF	25%, m.tub., 350V d.c.	63574	R21	934 Ω	5%, 25W, w.w.	
51551	C28	0.005 μF	25%, tub., 500V d.c.		R22	168 Ω		
51554	C29	0.01 μF	25%, tub., 750V d.c.		R23	160 Ω		
49453	C30	0.01 μF	20%, m.tub., 350V l.c.	PART NO.	CIRCUIT NO.	RESISTANCE (D.C.)	REMARKS	
56160	C31	32 μF	+50% -20%, elec., 275V d.c.	63846	L1	—	M ae., tuned	
41423	C32	32 μF		20%, tub., 750V d.c.	63845	L2	—	L ae., tuned
27461	R1	1 MΩ	20%, 0.6W	62586	L6	—	M & L Coupling	
25573	R2	47 KΩ	10%, 0.6W		L7	5.2 Ω	M tuned	} osc.
25477	R3	27 KΩ	10%, 0.6W		L8	9.8 Ω	L tuned	
25477	R4	27 KΩ	10%, 0.6W	L16	14.5 Ω	Pri.	} 1st i.f.t.	
24165	R6	10 Ω	10%, 0.6W	L17	14.5 Ω	Sec.		} 2nd i.f.t.
27237	R8	68 KΩ	20%, 0.6W	L18	14.5 Ω	Pri.	} o.t.	
27493	R9	1.5 MΩ	20%, 0.6W	L19	5.5 Ω	Sec.		} o.t.
26917	R10	1.5 KΩ	20%, 0.6W	60747	T1	185+6.3 Ω	—	
52816	R11	0.5 MΩ	Volume control, lin. (with S2)					
27333	R12	220 KΩ	20%, 0.6W					
27653	R13	10 MΩ	20%, 0.6W					

PARTS LIST (Mechanical Components)

PART NO.	DESCRIPTION	REMARKS	PART NO.	DESCRIPTION	REMARKS
60485	Anchor	for mains lead	58850	Pulley (2)	for tuning drive
63550	Aerial rod		60774	Rail	for cursor
61528	Back for cabinet	with heat deflector	63627	Reflector	for tuning scale
60761	Bearing	for tuning spindle	53434	Retainer (4)	for i.f.t. cores
60742	Cabinet		63628	Scale, tuning	
52539	Can (2)	for i.f.t. transformers	61529	Screen, heat deflecting	on chassis, behind loudspeaker
42580	Circlip	for tuning spindle	103508	Screw, 4BA ½ in. (3)	for ganged capacitor mounting
34184	Clamp	for C31/C32	103504	Screw, 4BA ¼ in.	for tuning drum
15817	Clip	for mains voltage adjustment	10419	Screw, grub, 2BA ⅜ in. (3)	for control knobs
52292	Clip, retaining	for osc. coil	103904	Screw, self tapping 6Y, ½ in. (5)	for fastening cabinet back and for fastening top of loudspeaker to cabinet
14770	Collar (3)	inside ganged capacitor mounting grommets	103878	Screw, self tapping 8Y ⅜ in. (2)	for fastening chassis rear to cabinet
1871/2	Compound	for iron dust cores	60762	Spindle, tuning	for tuning drive cord
3962/1	Cord	for tuning drive	47478	Spring	threaded rod for mains resistor
46910	Core, iron dust (4)	for i.f. transformers	22547	Studding	wave-band tone
46913	Core, iron dust (2)	for L7 and L8	60779	Switch	
60771	Cursor and carrier	for tuning scale	64516	Switch, S.3	
61209	Disc, indicator	for on-off switch	51451	Valve holder (5)	B8A
60873	Drum, tuning	for ganged capacitor	58554	Washer (3)	for ganged capacitor mounting grommets
33204	Fuse (F1)	250mA, plain	14949	Washer (2)	for lower screws fastening cabinet back
62951	Fuse holder	with bracket	14983	Washer	for upper screw fastening cabinet back
56622	Grommet (3)	for ganged capacitor mounting	42035	Washer, centering	for mains resistor
61210	Knob (2)	for volume and tuning controls	34588	Washer, felt	for tuning knob
60757	Knob, lever	for wave-band switch	58567	Washer, insulating (2)	for mains resistor
63560	Insulator (2)	for aerial mounting	60820	Washer, insulating	for wave band switch
63548	Label	for cabinet back	16649	Washer, shakeproof, ⅜ in.	for volume control
51813	Loudspeaker	5 in. dia.	58572	Washer, spacing (3)	for screws fastening loudspeaker to cabinet and reflector
61213	Pad, felt	between cabinet front and on-off indicator disc	490023	Washer, spring, 4BA	for fastening mains resistor
60777	Pad, plastic, scale retaining (4)	for corners of reflector			
49506	Pin (2)	for tuning drive pulleys			

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



UR8H

CIRCUIT ALIGNMENT

1. 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.

2. Trimming tool. A non-metallic tool must be used for adjusting the coil cores.

3. Tuning pointer (cursor) setting. This must be correct before aligning the r.f. circuits, and it must be adjusted only when the ganged capacitor plates are fully meshed (i.e. at maximum capacitance).

4. Coupling coil. This is required during the alignment of the r.f.

circuits and should consist of a coil (about 20 turns) wound on a 6 in. dia. former and placed about 1 ft away from the H.F. end of the receiver, with its axis in line with the aerial rod. Connect the coil to the signal generator by means of a "straight through" lead.

5. Replacement aerial coils. Follow the procedure outlined in sections M and L of the table below, adjusting the positions of the coils in the aerial rod for maximum output at the l.f. ends of the respective bands, using the frequencies quoted. Repeat the M band aerial circuit adjustments after completing the L band aerial coil adjustment. Secure the coils to the aerial rod by applying two "dabs" of cellulose cement on either side of the coil formers.

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 μ F capacitor	V2 grid 1 (pin 6)	10.05	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	C4 (t.p. 4)	10.05	L16 (pri.) below chassis L17 (sec.) top of can DO NOT RE-ADJUST PRI. CORE
M	Repeat these adjustments until there is no further improvement	600 Kc/s (500 m.)	Coupling coil	See note "4" above	8.15	L7 (osc.) above chassis
		1364 Kc/s (220 m.)	As above	As above	1.85	C18 (osc.) above chassis C4 (ac.) below chassis
L	As above	176.5 Kc/s (1700 m.)	As above	As above	7.35	L8 (osc.) above chassis
		300 Kc/s (1000 m.)	As above	As above	1.05	C17 (osc.) above chassis

U198H & U198M RECEIVERS

SUPPLEMENTARY SERVICE INFORMATION

Introduction. This supplement covers the changes made to the U198H receiver after publication of the Service Instructions Manual, as well as the differences between the U198H and the U198M, and subsequent changes to the U198M. Full details of the changed components are given in the parts lists included with this supplement.

U198H CHANGES

1st i.f.t. This was changed to an improved transformer of similar construction (Part No. 67694).

2nd i.f.t. For economy reasons, C23 was changed to a different type (Part No. 28205) but of the same value. It was also removed from the i.f.t. can and connected instead beneath the receiver chassis between V3 pin 5 (t.p.31) and t.p.32 on the 2nd i.f.t. base. The i.f.t., less C23, became Part No. 67695.

Modulation hum. To reduce the possibility of modulation hum, C33 was changed to 0.05 μ F (Part No. 51559) and connected instead between V5 anode (pin 2, t.p.48) and V5 cathode (t.p. 47 on the fuse).

Output transformer (T1). This was changed to Part No. 69764; a similar transformer but having different impregnation.

Pulleys. The small pulleys for the tuning drive were changed to Part No. 70489; a similar type but made of zinc alloy instead of brass.

Pin. The pins for fastening the tuning drive pulleys were changed to a slightly larger type (Part No. 55695).

Volume control. When the stock of linear law controls (Part No. 52816) is exhausted, all replacements supplied will automatically be of the logarithmic law type (Part No. 68566); either type can be used with these receivers. Dealers should continue to order Part No. 52816 so that identical replacements can be fitted while stocks last.

Loudspeaker. This was changed to Part No. 65409, having a slightly different construction, but fastened to the receiver chassis in the same way. When the stock of these loudspeakers is exhausted (owing to manufacture having been discontinued) all replacements supplied will automatically be of another different type (Part No. 68161); this

is fastened to the receiver chassis by two screws only, one at the middle top edge of the scale reflector and the other at the left-hand bottom corner of the scale reflector. In addition, the heat deflector fastened to the cabinet back must be cropped or bent down at one corner to prevent it touching the tags on the output transformer. Dealers should continue to order Part No. 65409 so that identical replacements can be fitted while stocks last.

U198H/U198M DIFFERENCES

The later H versions and the earlier M versions are identical with the exception of the colour finish of the cabinet, tuning scale, cursor, and scale reflector. The most obvious differences are that the H cabinet is maroon all over with a gilt scale reflector, while the M cabinet is maroon with a white front and blue scale reflector. The label on the cabinet back is also different.

U198M CHANGES

2nd i.f.t. To prevent the possibility of i.f. feedback, C23 was re-fitted inside the i.f.t. can and was changed to Part No. 66298 of the same value. The i.f.t., containing both C22 and C23, became Part No. 72971.

Aerial circuit. To increase the receiver sensitivity, the aerial circuit was changed to that shown in Figs. 2 and 3, L1 was changed to Part No. 76599 (solenoid instead of wave wound), and L2 was changed to Part No. 76602. Neither of these coils can be used as a replacement for one of the original type, or vice versa.

Tone control. To reduce the bass response at the same time as the treble response when the Tone switch (S3) was operated, and to slightly modify the treble response, C30 was changed to 0.005 μ F (Part No. 57792), S3 was changed to a double throw switch (Part No. 76680), and the circuit was changed to that shown in Figs. 1 and 3.

Volume control. To slightly alter its action, the Volume control was changed to Part No. 68566 having a logarithmic law instead of the linear law previously used. Also, see the "Volume control" notes in the "U198H Changes" section for those receivers having a linear law control.

Loudspeaker. This was changed to Part No. 68161 (with four fixing lugs) when manufacture of Part No. 65409 (with circular fixing ring) was discontinued. It was fastened to the receiver chassis in a different way and the metal heat deflector on the cabinet back was

altered (see the "Loudspeaker" notes in the "U198H Changes" section). Dealers should continue to order Part No. 65409, where appropriate, so that identical replacements can be made in early receivers while stocks last.

PARTS LIST (Electrical Components)

ADDITIONS AND CHANGES

PART NO.	CIRCUIT NO.	VALUE	TOLERANCE AND REMARKS	PART NO.	CIRCUIT NO.	RESISTANCE (D. C.)	REMARKS
28205	C23	390PF	5%, p.s.m., 350V d.c., beneath chassis (late H and early M)	76599	L1	-	M ae. coil (late M)
66298	C23	390PF	5%, plastic film tubular, 350V d.c., in 2nd i.f.t. (late M)	76602	L2	9.5Ω	L ae. coil (late M)
57792	C30	0.005μF	25%, m. tub., 350V d.c., (late M)	67694	L16	14.5Ω	Pri. } 1st i.f.t.
51559	C33	0.05μF	20%, tub., 1000V d.c., (late H and all M)	67695	L17	14.5Ω	Sec. } (all H and M)
68566	R11	0.5MΩ	Volume control, log., with S2 (see H and M changes)	67695	L18	14.5Ω	Pri. } 2nd i.f.t., less C23 (late H and early M)
				72971	L18	14.5Ω	Sec. } 2nd i.f.t., with C22 and C23 (late M)
				69764	L19	5.5Ω	Pri. } (late M)
					T1	200+6.3Ω	Sec. } o.t. (all H & M)

PARTS LIST (Mechanical Components)

ADDITIONS AND CHANGES

PART NO.	TITLE	DESCRIPTION AND REMARKS	PART NO.	TITLE	DESCRIPTION AND REMARKS
71639	Cabinet	(all M)	55695	Pin (2)	for tuning drive pulleys (all H and M)
71642	Cursor and carrier	for tuning scale (all M)	70489	Pulley (2)	for tuning drive (all H and M)
70840	Label	for cabinet back (all M)	71640	Reflector	for tuning scale (all M)
65409	Loudspeaker	5 in. dia. (all H and early M)	62578	Scale, tuning	(all M)
68161	Loudspeaker	5 in. dia. (late M)	76680	Switch, S3	tone (late M)

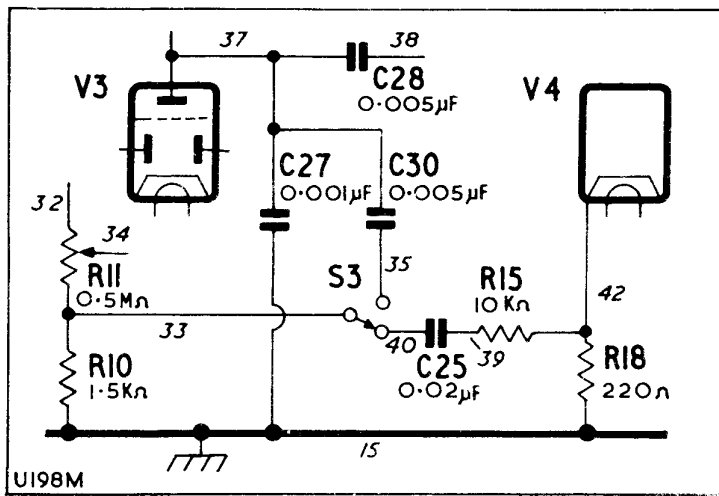


Fig.1. U198M modified tone control circuit.

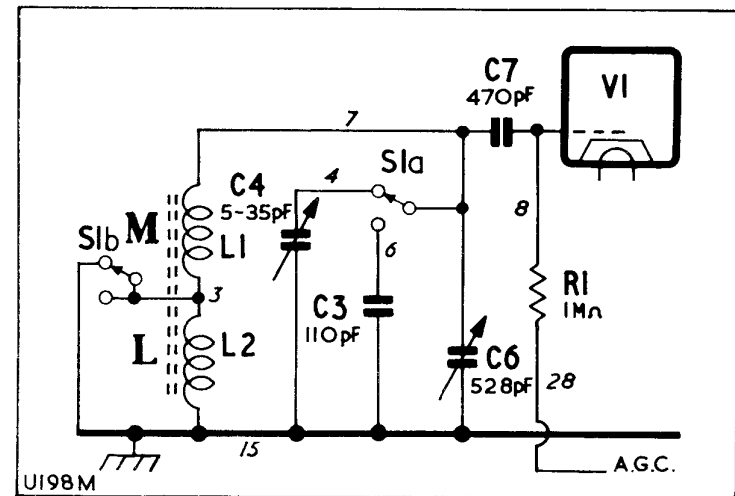


Fig.2. U198M modified aerial circuit.

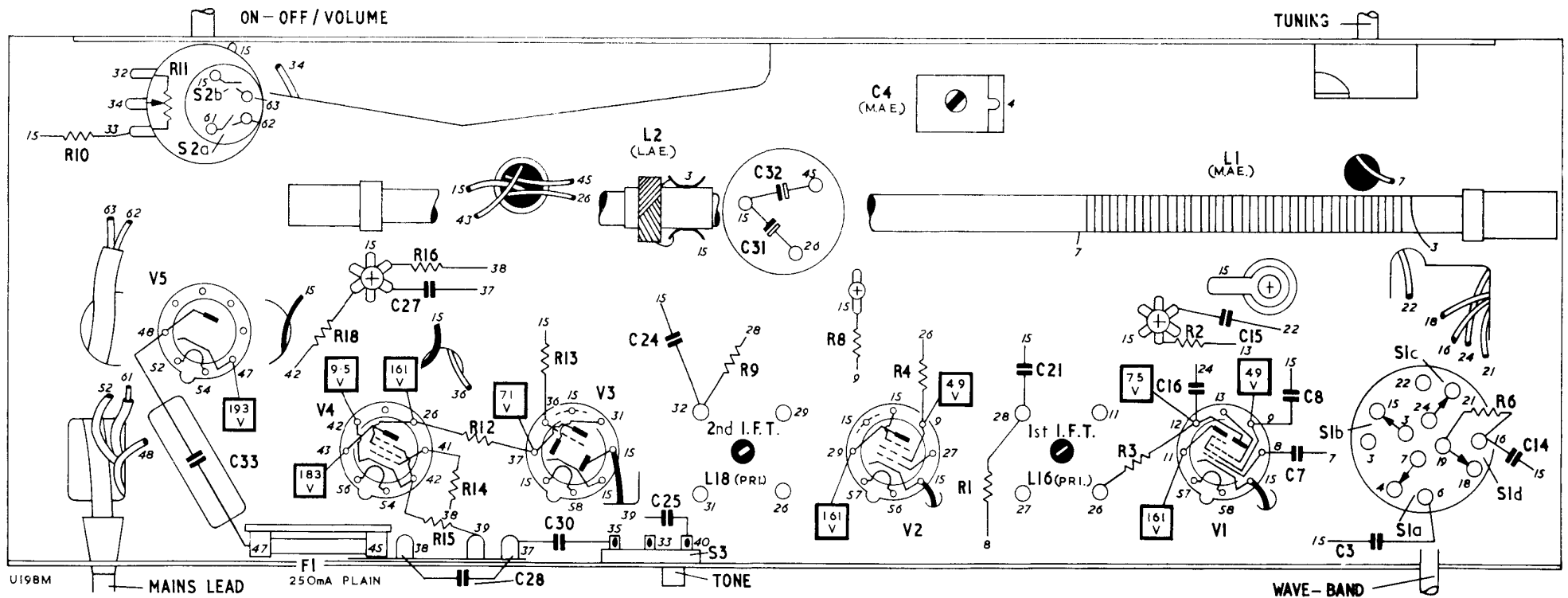


Fig.3. Chassis underside of later U198M receivers. The chassis top is as shown in the U198H Manual.

U198

INSTABILITY 1000-1500 METRES

THE symptoms in this case were that the receiver was unstable at about 1200 metres. The cause was the misplacing of the capacitor C23 in parallel with the 2nd i.f. transformer secondary. Originally this capacitor was mounted inside the i.f. can, but a larger type is used now which is mounted externally. It is essential, to avoid instability, that it should be kept well towards the back of the chassis, away from the r.f. components.

“198”

SECOND I.F.T.

A CHANGE has been made to the U198 chassis in that the 2nd i.f. transformer (Part No. 58117) is replaced by 2nd i.f. transformer (Part No. 65148) (coded Red/White).

When the new transformer is fitted the capacitor C23, 390pf (Part No. 52633) is omitted from the transformer and a 390pf capacitor (Part No. 28205) is wired externally.