

MURPHY SERVICE INSTRUCTIONS

Issued by

**MURPHY RADIO LTD
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THE BUI83 RECEIVER

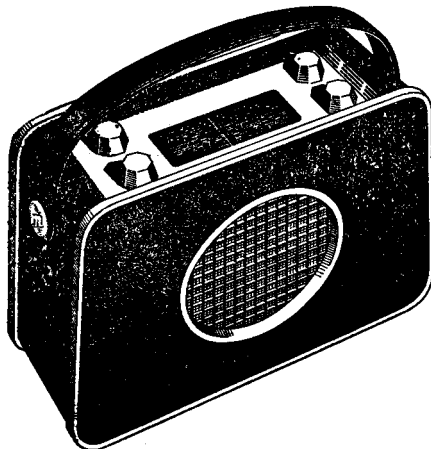
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SPECIFICATION



MAINS SUPPLIES:		200-250 volts d.c., or 200-250 volts a.c., 25-100 c/s.
BATTERY SUPPLY:	H.t.	90 volts
	L.t.	7.5 volts
CONSUMPTION:	Battery:	H.t.; 8mA, quiescent L.t.; 55mA
	Mains:	20 watts, average
WAVE BANDS:	Medium:	187-540 metres
	Long:	1000-2000 metres
INTERMEDIATE FREQUENCY:		470 Kc/s
VALVES:	Mazda:	1C2, 1F3, 1FD9, 1P11
LOUDSPEAKER:	Type:	Permanent magnet, 5 in. dia.
	Impedance:	3 ohms
CABINET DIMENSIONS:		11 in. high, 13½ in. wide, 4½ in. deep
WEIGHT:		9 lb. with batteries 7½ lb. without batteries
RELEASED:		August 1952
PRICE:		£13 13s. 6d. plus P.T.

ELECTRICAL NOTES

General note. The circuit of this receiver has been designed to permit operation from either “battery” or “mains” supplies, special attention being paid to h.t. current economy, high sensitivity, and adequate safety precautions.

The aerial circuits. On medium waves, the frame aerial (L2) forms part of the aerial tuned circuit with C6 and C7. If an external aerial is used on medium waves it is coupled to the frame aerial via L1, which is wound alongside L2. L3 provides a fine adjustment of the circuit inductance.

On long waves, the signal derived from the frame aerial is tapped into the junction of L6 and L7, which, together with L5, form an auto-transformer. The signal derived from an external aerial is, in this case, induced in L7 via L4.

The bias circuits. The grid bias of the valves used in the receiver is calculated as the voltage between the signal grid and the centre point of the filament in each case. Since the centre points of the filaments are at different potentials with respect to chassis, only the grid of V3 is taken directly to chassis. The grids of the remaining valves are given a certain positive voltage with respect to chassis depending on the position of each valve in the heater chain.

In the case of V3 the correct bias is obtained by the flow of grid current through a 10 M Ω resistor, on the grid leak principle.

The heater circuits. Each heater has a resistor in parallel with it. The purpose of this arrangement is to remove the possibility of the electrolytic smoothing capacitors being damaged if a filament should become open circuited. The resistors have the further use of ensuring that the voltages across the filaments are more nearly equal than would otherwise be the case. Since anode current also flows in the filament chain, it will be noticed that the shunt resistors decrease in value as the total current increases, i.e. towards the negative end of the chain.

It will be seen from the circuit diagram on page 8, that two different voltages are quoted at the high

potential end of the filament chain. These two different values are necessary to comply with the valve maker’s ratings which are lower for mains operation.

The power supplies. *L.t. supply.* To simplify switching and the change-over from “battery” to “mains”, the valve filaments are connected in series. The l.t. supply on “mains” is obtained by tapping a part of the rectified h.t. voltage and dropping the unwanted voltage across a 3·74 K Ω resistor.

H.t. supply. The “mains” supply voltage is rectified by a half-wave metal rectifier and reduced to the required value by dropping resistors which can be adjusted to the correct value for the local supply by a simple plug and socket arrangement. To avoid the presence of r.f. voltages on the h.t. line, modulated at the frequency of the supply mains, a 0·05 μ F capacitor is connected across the metal rectifier.

H.t. economy. To reduce h.t. current consumption, in the interests of battery life, a special circuit is incorporated which varies the bias on the output stage in accordance with the amplitude of the signal at the grid of that valve, when using batteries only. This automatically reduces the h.t. current taken by the output valve when the receiver is operated at low volume, but allows it to increase towards normal when the volume is increased. The voltage drop across R33 provides the bias—which is higher than normal—on V4 grid and this bias is partially cancelled out by another voltage, which is developed by rectifying a portion of the receiver output. R24 and C33 form a filter circuit to prevent feedback.

Safety precautions. A 250 mA fuse is fitted on the chassis side of the mains input, and provision is made for opening the mains input circuit when the bottom of the cabinet is removed. This is effected by a shorting plug and socket arrangement. The socket is live but so shielded that there is no danger of a shock from the mains while working with the cabinet bottom removed. For further details of working with the cabinet bottom removed, see Mechanical Notes on page 4.

MECHANICAL NOTES

General note. This receiver is so designed that the chassis assembly can be removed from the cabinet complete with loudspeaker, tuning scale and knobs. The set can be operated out of the cabinet, provided that the safety socket on the mains tapping panel is short circuited to complete the circuit for mains operation.

Removing the cabinet bottom. With the receiver on its back (loudspeaker fret uppermost), turn the bottom fixing screw a quarter of a turn anti-clockwise and pull the left-hand end of the cabinet bottom outwards. Free the bottom by sliding it to the left.

Removing the chassis assembly. The chassis assembly is fixed to the cabinet by means of two screws which are near the voltage tapping panel and aerial panel respectively. Once these screws have been removed the cabinet can be lifted away, leaving the chassis assembly as a complete unit.

Operating the receiver outside the cabinet. With the chassis assembly out of the cabinet, it may be operated from batteries merely by making the appropriate connections. In order to operate the receiver from mains supplies, the safety plug and socket must first be connected together. This is best done by having a spare safety **plug** (59484), which can be used in lieu of the one attached to the cabinet bottom. The chassis can, of course, be stood on the cabinet bottom, but this will make that side of the assembly inaccessible for servicing.

Refitting the chassis assembly. Slide the chassis assembly up into the cabinet as far as it will go and replace the two chassis fixing screws.

Refitting the cabinet bottom. With the receiver lying on its back (loudspeaker uppermost), the two strips of metal protruding from one end of the cabinet bottom should be engaged in the slots near the bottom of the cabinet at the right hand side. The bottom should then be pushed up against the cabinet until the safety plug is fully engaged in its socket. The bottom is secured by turning the fixing screw a quarter-turn clockwise.

Access to components. Access to the wiring side of the chassis can be had by removing the top **panel** (60083) and the **reflector** (59499). To do this, take out the four corner fixing screws (see Modifications on page 5)—which also hold the heat dissipation **grilles** (59327)—and loosen the control knob screws. The panel, together with the control knobs and the tuning scale, can then be lifted away, revealing the reflector which has the pointer guide rail and an arbitrary calibration scale on it. After setting the pointer near the centre of the scale, the reflector can be freed by removing one screw at each end.

Access to the valves can be had through the hole in the frame aerial board. If attention is necessary to components within the main assembly, the loudspeaker baffle board should be removed.

Removing the tuning scale. The tuning **scale** (59177) is held in place on the top panel, by four rubber **channels** (48506) and secured by metal lugs.

To remove the tuning scale, the four metal lugs which bear on the four rubber channels must be prised up slightly. It will now be possible to slide out the old scale and slide in a new one in its place. Before pressing back the metal lugs to secure the scale, replace the top panel and, with the left-hand side of the pointer against 12 on the arbitrary calibration scale, move the tuning scale till the right-hand ends of the four horizontal lines lie over the centre of the pointer. The scale may now be finally clamped in place by means of the metal lugs.

Battery replacement. Two batteries are required, a 7.5 volt high capacity dry battery to supply the low tension current, and a 90 volt dry battery to supply the high tension current. The following makes and types of batteries are recommended.

Low Tension (l.t.)	{	Ever Ready: "Alldry" No. 38
		Drydex: H.1187
		Siemens: 1535
High Tension (h.t.)	{	Ever Ready: B126
		Drydex: "Drymax" 526
		Siemens: "Siemax" S.126

To fit or replace the batteries, the bottom of the cabinet should be removed as described previously. There are four rubber bands on the cabinet bottom; the h.t. battery is fixed under the left-hand pair with its outlet sockets to the left, while the l.t. battery is fixed under the right-hand pair with its outlet sockets to the front.

Connection is made to the l.t. battery by a three-pin **plug** (59181) and to the h.t. battery by a smaller

three-pin **plug** (59182). The disposition of the pins is different in each case so that the batteries cannot be connected incorrectly.

When not in use, the mains lead should be wrapped around the batteries, starting from the free (plug) end so that the plug is held under the succeeding turns of lead. The last few inches of slack should be trapped between the batteries.

MODIFICATIONS

The ganged capacitor. Early sets have the ganged capacitor so placed that the medium wave trimmers, C7 and C18, are towards the side of the cabinet. With these sets it will not be possible to trim C7 with the chassis in the cabinet. The recommended method of trimming C7 is given in Circuit Alignment on page 7.

C43. A few early sets have a 0.01 μ F capacitor, C43, between one side of the sound output transformer secondary and chassis. This was found unnecessary on later sets and removed.

C44. In later sets C44 is directly across the metal rectifier (MR1) between test points 72 and 73. This

was done because it was found that in some localities modulation hum might appear with the capacitor in its previous position.

Alternative valve types. V4 may be either Mazda type 1P11 or Mullard type DL94, which are interchangeable in this position.

The heat dissipation grille. It was found that there was a tendency for this grille to bend and fracture when the screws were tightened. To avoid this, a 4BA plain **washer** (491315) is now fitted under each screw head. These washers should be fitted where applicable.

CHASSIS IDENTIFICATION

To avoid any ambiguity, the wiring side of the chassis, which is uppermost in the receiver, is called the top of the chassis. The valve side of the chassis is the underside.

C	L	R	MISC
22 21	4,5,6,7.		
		12	
16 12	14	4	
8	11	1	V1
13		2	
37		3 9	
14 24	8		
28 23		11	V2
		7	
		6	
29 38	16	16	
		17 8 19	V3
		18	
		13 14	V4
31 34 32		21 22	
		33	
39		23	M.R.2
33		24 32	
C	L	R	MISC

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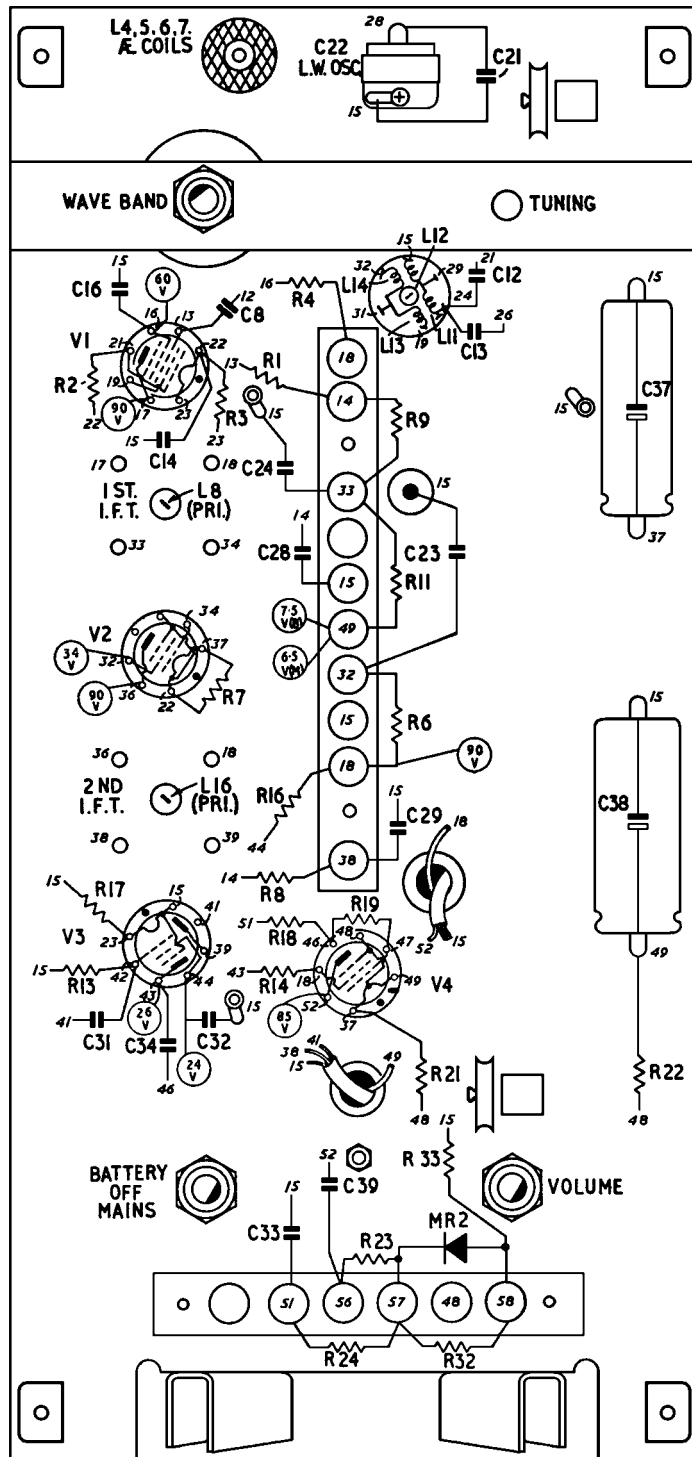


Fig. 1. The layout of the top of the chassis.

CIRCUIT ALIGNMENT

(The Circuit Alignment Table is on page 10)

General note. In order to align either the i.f. transformers or the r.f. and oscillator circuits, the chassis assembly must first be removed from the cabinet as described in Mechanical Notes on page 4 and the top panel removed.

I.f. alignment. After removing the top panel, the reflector must also be removed. This is held by two fixing screws and it must also be disengaged from the pointer carrier.

R.f. alignment. Before starting any adjustments, replace the reflector and refit the pointer and carrier. Check that, with the ganged capacitor plates fully meshed, the left-hand side of the pointer (as seen from the speaker side of the set) lines up with 12 on the calibration scale. All adjustments are made with the chassis assembly out of the cabinet, with the exception of the medium wave aerial trimmer which is described in the next paragraph.

Adjusting the M.W. aerial trimmer. The proximity of the side of the cabinet to the frame aerial affects the tuning of the latter. It is essential, therefore, that C7 is adjusted, either when the chassis assembly is in the cabinet or under similar conditions. In later models, C7 is accessible with the chassis assembly in the cabinet (see Modifications on page 5). In early models, however, the chassis assembly must be out of the cabinet in order to adjust C7, and the following procedure adopted.

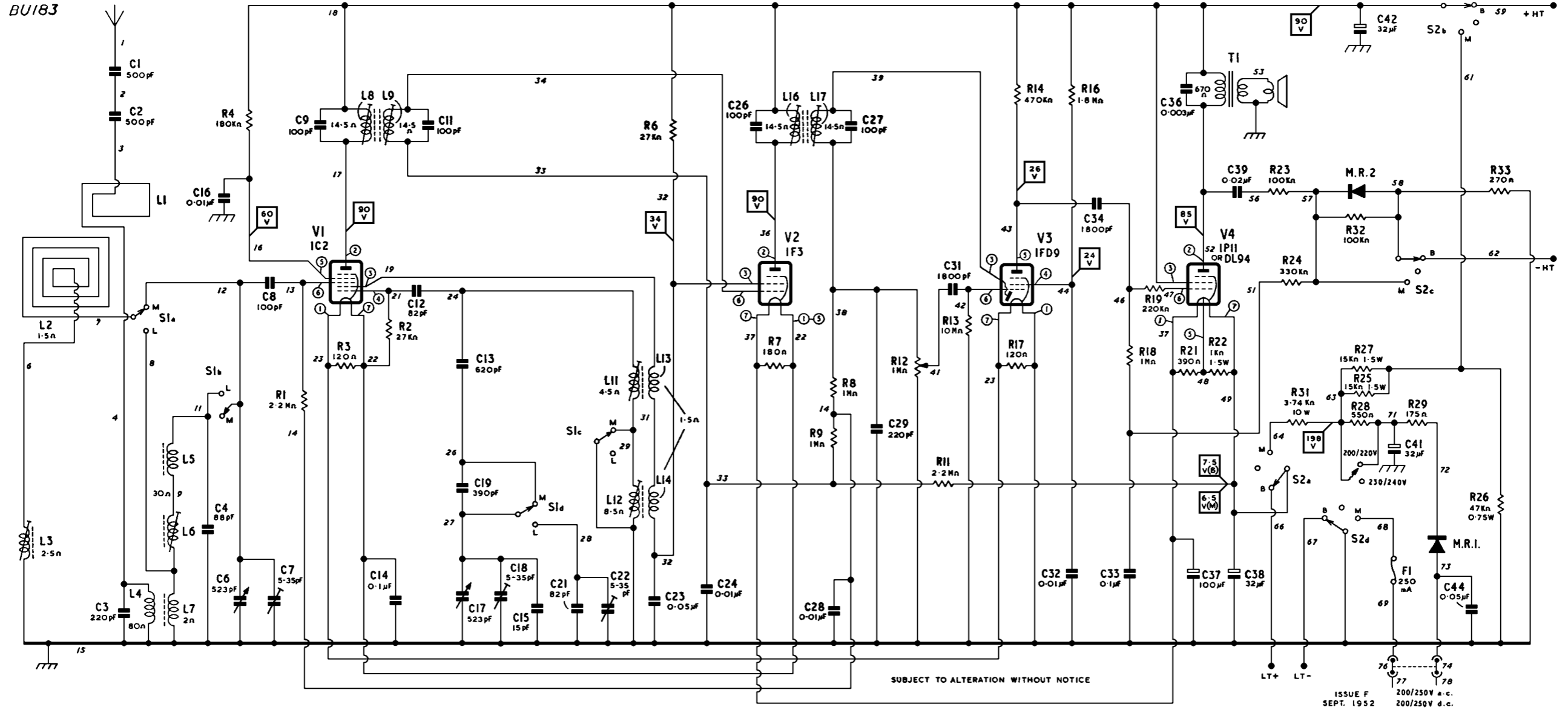
Lay the cabinet on its side with the loudspeaker opening downwards, and arrange some flat strips of any available insulating material, just under $\frac{1}{4}$ in. in depth, on the cabinet. Lay the chassis assembly on top of these strips so that the frame aerial is spaced from the cabinet by about $\frac{1}{4}$ in.

Trim C7 and, if necessary, repeat the medium wave adjustments as given in the Circuit Alignment Table.

Output readings. With the volume control at maximum, make all adjustments to give maximum audio output; this output should not be allowed to exceed 0.4 volt as measured with a low reading alternating voltage meter connected across the loudspeaker speech coil.

Trimming tools. The coil cores must be adjusted with a thin non-metallic trimming tool, shaped to fit the core slots. A metal screwdriver is unsuitable as it will affect the inductance of the coils and may also cause damage to the cores. A trimming tool (Part No. 57299) which is suitable for adjusting the i.f. transformer cores and the larger r.f. cores is available from Murphy Radio Ltd, Service Department, upon request.

The smaller cores require the use of a non-metallic trimming tool $\frac{1}{8}$ in. in diameter or less. A suitable tool can be made from a $\frac{1}{8}$ in. diameter plastic knitting needle (size 9).



S1 is shown in the medium wave position. Valve pin numbers are shown in the small circles.
S2 is shown in the "Battery" position.

All voltages were taken under "no signal" conditions on the "M" band using a 20,000 Ω/Volt meter.

Fig. 2.

CIRCUIT ALIGNMENT TABLE

Read "Circuit Alignment" on page 7 before proceeding.

CIRCUIT	NOTES	SIG. GEN. FREQUENCY	SIG. GEN. TERMINATION	CONNECT SIG. GEN. TO	CALIBRATION SCALE SETTING	ADJUSTMENTS
2nd i.f.t.	Unscrew secondary core (under chassis) to fullest extent before adjusting	470 Kc/s	Via 0.1 μ F capacitor	Ganged capacitor (t.p.12)	I2	L16 (pri.) top of chassis L17 (sec.) under chassis DO NOT RE-ADJUST L16
1st i.f.t.	As above	470 Kc/s	As above	As above	I2	L8 (pri.) top of chassis L9 (sec.) under chassis DO NOT RE-ADJUST L8
M.W.	Repeat these adjustments until the optimum gain and calibration are obtained (see Circuit Alignment)	600 Kc/s (500 m.)	Dummy aerial	Aerial socket	10.1 (500 m.)	M.w. osc. coil (L11) Frame ac. loading coil (L3)
		1500 Kc/s (200 m.)	As above	As above	2.4 (200 m.)	M.w. osc. trimmer (C18) M.w. ac. trimmer (C7)
L.W.	As above	157.9 Kc/s (1900 m.)	As above	As above	10.1 (1900 m.)	L.w. osc. coil (L12) L.w. ac. coil (L6)
		300 Kc/s (1000 m.)	As above	As above	2.35 (1000 m.)	L.w. osc. trimmer (C22), top of chassis

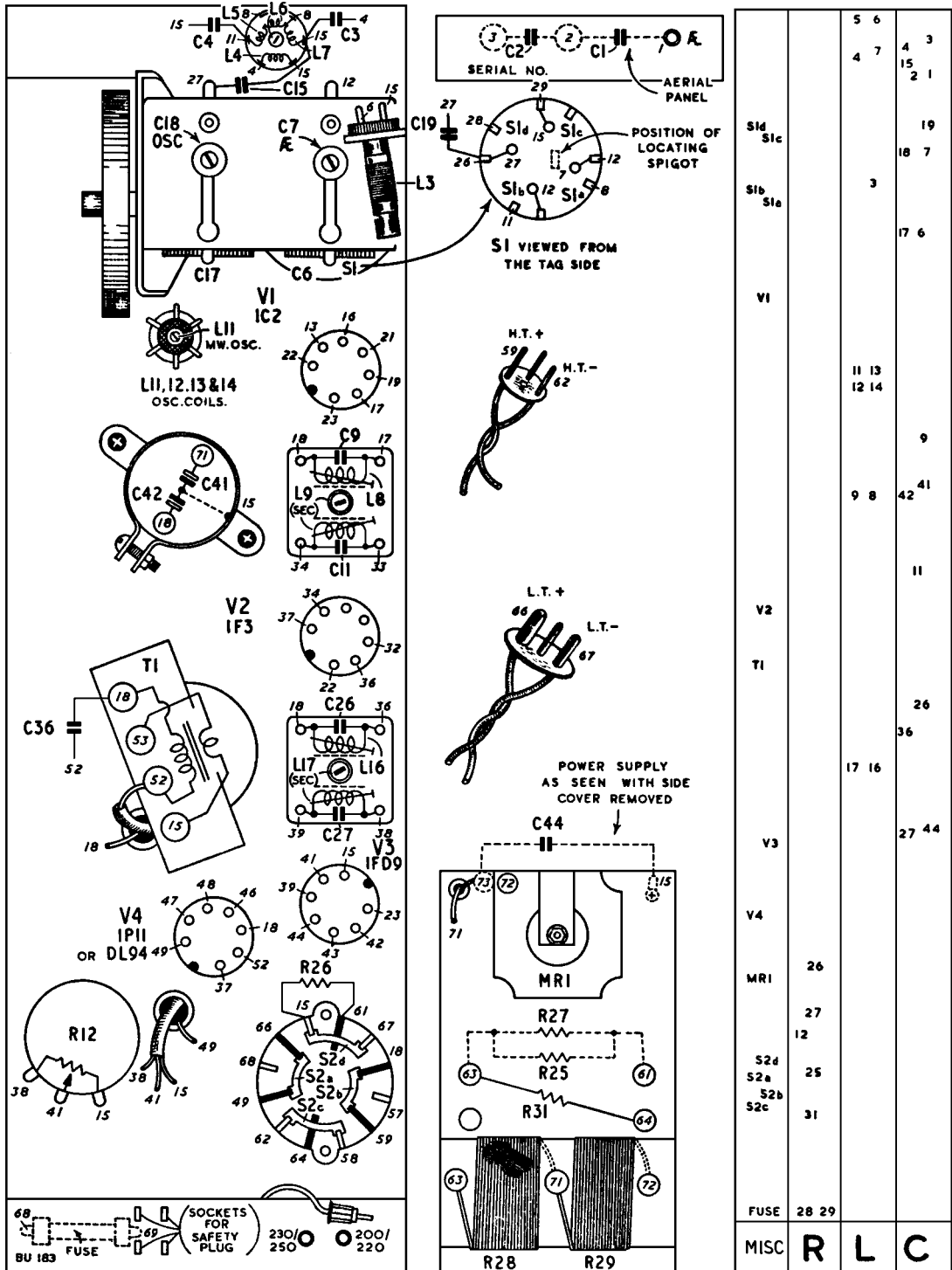


Fig. 3. The layout of the underside of the chassis.

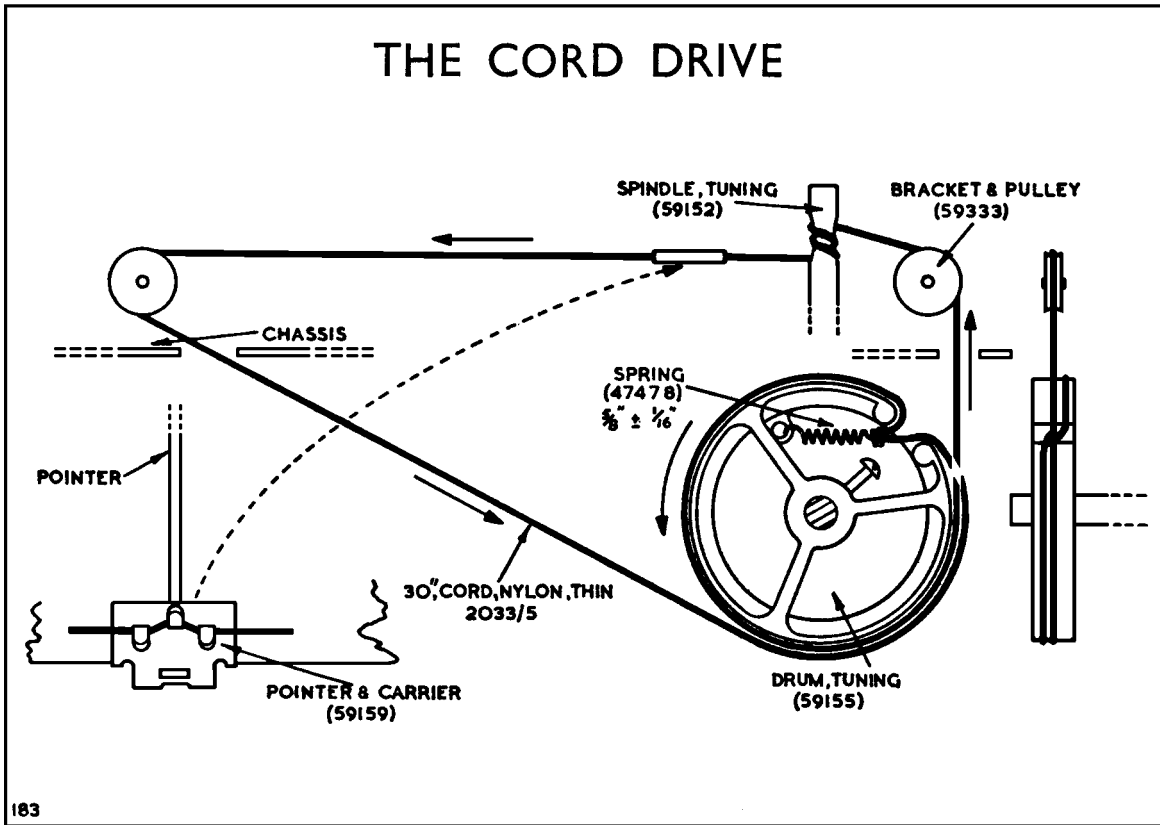


Fig. 4. The cord drive.

The cord must lie around the drum as shown in the right-hand diagram.

General note. To gain access to the cord drive, remove the chassis assembly from the cabinet, and then the top panel and the reflector as described in Mechanical Notes on page 4. Then remove the loudspeaker baffle board complete with the loudspeaker. This board is held in place by seven self-tapping screws.

Replacement cords should be stretched before use and, for maximum cord life, the spring should be extended to $\frac{5}{8}$ in. \pm $\frac{1}{16}$ in. The arrangement of the drive cord is illustrated in Fig. 4.

Fitting the drive cord. With the spring (47478) hooked on the tuning drum (59155), tie a 30 in. length of thin Nylon cord (2033/5) to the free end. Thread the cord in the direction of the arrows

as illustrated in Fig. 4, passing it once anti-clockwise around the drive drum and on to the nearer pulley; thence to the spindle, twice round the spindle, to the other pulley and back to the drive drum. Take half a turn round the drum, passing the free end of the cord through the loop in the spring to which the other end is tied. Pull the cord tight, extending the spring to $\frac{5}{8}$ in. \pm $\frac{1}{16}$ in.; tie the cord securely. Operate the drive a few times through its full range and check that the spring extension is still within the limits specified.

Cut off any surplus cord and refit the pointer assembly, ensuring that, with the ganged capacitor plates fully meshed, the left-hand side of the pointer coincides with 12 on the calibration scale.

PARTS LISTS (Electrical Components)

All resistors are rated at 0.6 watt and all capacitors are rated at 350 volts d.c., *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. The coils are supplied without cans or cores, unless otherwise stated.

The following abbreviations are used in the table below:

cer.	—	ceramic	m.tub.	—	metallized paper tubular
p.s.m.	—	protected silvered mica	w.w.	—	wire wound
tub.	—	paper tubular	v.w.	—	voltage working
i.s. tub.	—	insulated sealed paper tubular (metal case)	elec.	—	electrolytic
			W	—	wattage rating

PART NO.	CIRCUIT NO.	VALUE	TOLERANCE AND REMARKS	PART NO.	CIRCUIT NO.	VALUE	TOLERANCE AND REMARKS
57773	C1	500 pF	25%, m.tub., 300 v.w.a.c.	49455	C39	0.02 μF	25%, m.tub., 150 v.w.
57773	C2	500 pF	25%, m.tub., 300 v.w.a.c.	56142	C41	32 μF	} +50% -20%, elec., 275 v.w.
54074	C3	220 pF	20%, cer., 500 v.w.		C42	32 μF	
28333	C4	88 pF	2%, p.s.m.		C44	0.05 μF	
	C6	523 pF	Ganged capacitor, ae.	41424			
52302	C7	5-35 pF	section	27525	R1	2.2 MΩ	20%
			M.w. ae. trimmer	25477	R2	27 KΩ	10%
54070	C8	100 pF	20%, cer., 500 v.w.	24581	R3	120 Ω	10%
52630	C9	100 pF	5%, p.s.m.	25797	R4	180 KΩ	10%
52630	C11	100 pF	5%, p.s.m.	25477	R6	27 KΩ	10%
54069	C12	82 pF	20%, cer., 500 v.w.	24645	R7	180 Ω	10%
28241	C13	620 pF	1%, p.s.m.	27461	R8	1 MΩ	20%
41404	C14	0.1 μF	20%, tub.	27461	R9	1 MΩ	20%
23602	C15	15 pF	10%, p.s.m.	27525	R11	2.2 MΩ	20%
49453	C16	0.01 μF	25%, m.tub.	52802	R12	1 MΩ	Volume control
	C17	523 pF	Ganged capacitor, osc.	27653	R13	10 MΩ	20%
52302	C18	5-35 pF	section	27397	R14	470 KΩ	20%
			M.w. osc. trimmer	26181	R16	1.8 MΩ	10%
28311	C19	390 pF	1%, p.s.m.	24581	R17	120 Ω	10%
28179	C21	82 pF	5%, p.s.m.	27461	R18	1 MΩ	20%
47365	C22	5-35 pF	L.w. osc. trimmer	27333	R19	220 KΩ	20%
41403	C23	0.05 μF	20%, tub.	24773	R21	390 Ω	10%
49447	C24	0.01 μF	25%, m.tub., 150 v.w.	26908	R22	1 KΩ	20%, 1.5 W
52630	C26	100 pF	5%, p.s.m.	27269	R23	100 KΩ	20%
52630	C27	100 pF	5%, p.s.m.	27365	R24	330 KΩ	20%
49447	C28	0.01 μF	25%, m.tub., 150 v.w.	25404	R25	15 KΩ	10%, 1.5 W
57779	C29	220 pF	25%, m.tub.	27213	R26	47 KΩ	20%, 0.75 W
54090	C31	1800 pF	20%, cer., 500 v.w.	25404	R27	15 KΩ	10%, 1.5 W
49453	C32	0.01 μF	25%, m.tub.	59184	R28	550 Ω	} 5%, w.w., mains resistor
41404	C33	0.1 μF	20%, tub.		R29	175 Ω	
54090	C34	1800 pF	20%, cer., 500 v.w.	51075	R31	3740 Ω	5%, 10 W, w.w.
51542	C36	0.003 μF	25%, tub.	27269	R32	100 KΩ	20%
56151	C37	100 μF	+100% -20%, elec., 25 v.w.	24709	R33	270 Ω	10%
56150	C38	32 μF	+100% -20%, elec., 150 v.w.				

PART NO.	CIRCUIT NO.	RESISTANCE (D.C.)	REMARKS	PART NO.	CIRCUIT NO.	RESISTANCE (D.C.)	REMARKS
59192	{ L1	—	Frame ae. coupling	59189	{ L11	4.5 Ω	M.w. osc.
59193	L2	1.5 Ω	Frame ae.		L12	8.5 Ω	L.w. osc.
	L3	2.5 Ω	Frame ae. loading coil		{ L13	1.5 Ω	M.w. osc.
59190	L4	80 Ω	Ae. coupling, l.w.	L14	L.w. osc.		
	L5	30 Ω	L.w. ae.	{ L16	14.5 Ω	} 2nd i.f.t.	
	L6			L17	14.5 Ω		
L7	2 Ω	} 1st i.f.t.		56308	Tr	{ 670 Ω	Pri. } o.t.
L8	14.5 Ω		{ —		Sec. }		
52219	L9	14.5 Ω					

PARTS LISTS (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
59160	Baffle board	less fret and loud-speaker	59155	Drum, tuning	for cord drive
51453	Base for can	for B7G valve holder	15633	Eyelet (2)	for V3 mounting
59149	Bracket	for ganged capacitor	59556	Frame aerial	complete with mains tapping and aerial panels
59333	Bracket and pulley (2)	for cord drive			
52416	Bracket, mounting	for frame loading coil, L3	59328	Fret	for loudspeaker
59151	Bracket, mounting	for wave band switch	33204	Fuse, 250 mA.	plain cartridge
59503	Cabinet, blue	for B7G valve holder for retaining tuning scale	59327	Grille (2)	for heat dissipation
59198	Cabinet, brown		42844	Grommet (2)	for V3 mounting
51452	Can		59909	Handle, blue	for cabinet (59503)
48506	Channel, rubber (4)		59908	Handle, brown	for cabinet (59198)
42580	Circlip	for tuning spindle (59152)	59179	Knob	for tuning and volume
52292	Clip, retaining (3)	for l.w. ae. coil and osc. coil and frame ae. loading coil	59180	Knob	for wave band and battery-off-mains switches
2033/5	Cord, Nylon	for cord drive, 30 in.	59210	Label	battery replacement
59165	Cover	for metal rectifier compartment			

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PART NO.	DESCRIPTION	REMARKS	PART NO.	DESCRIPTION	REMARKS
55913	Loudspeaker		59207	Retainer (4)	rubber band for batteries
59156	Nut, square	for tuning drum	59177	Scale, tuning	
60125	Panel, mains tapping	with fuse holder	59355	Screw (2)	for chassis fixing
60083	Panel, top	with insulators, less scale	59152	Spindle, tuning	
59153	Pillar, supporting (4)	for top panel	47478	Spring	for cord drive
51313	Plug	for mains tapping	59200	Stud (2)	for cabinet handle
59182	Plug, 3-pin	for h.t. battery	59154	Support, pillar	for reflector
59181	Plug, 3-pin	for l.t. battery	59186	Switch	battery-off-mains
59484	Plug, safety		59185	Switch	wave band
59159	Pointer and carrier		56217	Valve holder (4)	B7G
55226	Rectifier	M.R.1	48195	Washer, spring	for tuning spindle
58528	Rectifier	M.R.2—S.T.C. M1	491315	Washer, 4 BA	(59152)
59499	Reflector	with pointer rail, complete			for heat grille

BUI83, BUI83A, & BUI83M

SUPPLEMENTARY SERVICE INSTRUCTIONS

To be used in conjunction with the **BUI83 Service Instructions Manual**.

The Supplementary Service Instructions sheet issued previously and covering the BUI83 and BUI83A only should now be destroyed.

Introduction. The BUI83A and BUI83M receivers are modified versions of the original BUI83 receiver; the BUI83 was succeeded by the BUI83A, which has in turn been succeeded by the BUI83M. All of the differences between these receivers are given in the following notes, but it should be observed that the later versions of each particular model incorporated many of the modifi-

cations to be found in the succeeding models, e.g. the BUI83 receivers manufactured after the publication of the Service Instructions Manual, included many of the modifications to be found in the BUI83A. Additions to the Electrical and Mechanical Parts Lists covering these modifications are given in the table following the notes.

BUI83 Later Sets, BUI83A, and BUI83M

Bracket and pulley. The brackets supporting the cord drive pulleys were identical. They have now been changed in order to prevent the cord overlapping on the tuning spindle. The bracket near the tuning spindle is now longer than the one near the volume control.

Drum, tuning. This has been changed from plastic to metal and the **nut, square** (59156) is no longer required.

Plugs for batteries. The l.t. battery plug has been changed from a three-pin type to a two-pin type by omitting the unused third pin. In addition, the l.t. and h.t. plugs have been fitted with cord loops to facilitate their withdrawal from the batteries. Part numbers are unaltered.

Rectifier. The h.t. metal rectifier has been changed to reduce the temperature rise within the receiver.

To fit the later rectifier, the mounting holes must be enlarged to take the 2 BA studding, and the large ventilation hole in the Paxolin insulator must be

enlarged by $\frac{1}{8}$ in. along each of the long sides in order to accommodate the increased dimensions of the fins.

Trimmer (C22). A different type is now being used as quoted in the parts list following these notes.

Resistor (R11). This has been changed to $2.7M\Omega$ to prevent loss of gain in the receiver when using a resistor which has a value only just within the lower tolerance limit.

Resistor (R3). This has been changed to 270Ω to improve the operation of the receiver at low mains voltages. This resistor is changed again when the Filament Current control is fitted, see "BUI83M only" section.

Resistor (R31). This has been replaced by two 1870Ω resistors in series (R30 and R31) to provide a higher total power rating. In the circuit diagram (page 9) the extra resistor (R30) is connected between the end of R31 and tag M (t.p. 64) on the switch (S2a). In the chassis underside drawing

(page 11), R30 is connected between the right-hand end of R31 and the tag which was blank near the left-hand end of R31; test point 64 now applies to the new tag and not to the junction of the resistors. R31 is changed again when the Filament Current control is fitted, see "BU183M only" section.

Stiffener. To reduce breakages, metal stiffeners have been fitted to the ventilating grilles at the upper corners of the receiver.

L.t. battery. Space has been provided for a larger l.t. battery and the recommended types are as follows:

Ever Ready:	"All Dry" No. 43
Drydex:	H.1191
Siemens:	1540

This battery must be fixed under the retainers with its outlet sockets at the top.

To accommodate the larger l.t. battery, L3 has been moved from below and mounted at one side of the ganged capacitor. C41/C42 has been changed to a type having a shorter can, and the battery retainers as well as the cabinet base have been changed (as the base is a part of the cabinet, this has caused the part number of the whole cabinet to be changed). Because of the change to C41/C42, the chassis connections of C23 and C38 are now taken to the tag beside C37. The label quoting replacement battery types has also been changed.

Label, name-plate (BU183A). The label on the underside of the cabinet base has been changed to one marked "BU183A" and is suitable for those BU183A sets with only two mains taps. (See "BU183A later sets and BU183M" section.)

BU183A Intermediate and Later Sets Only

Resistor (R34). To provide compensation for ageing of the metal rectifier (MR1), and to prevent possible overrunning of the valve filaments when the rectifier is new, an 82Ω series resistor has been connected between t.p. 72 on MR1 and t.p. 72 on R29. This resistor must be short circuited, or brought into circuit, as required, in order to keep

the voltage across C38 within the limits of 6.2V to 6.9V when the receiver is operating from 240V a.c. mains; make sure that the mains tap has been correctly set to suit the supply. This resistor is deleted when the Filament Current control is fitted. (See "BU183M only" section.)

BU183A Later Sets and BU183M

Mains tapping points. To compensate more closely for changes in valve filament current when the receiver is connected to alternative mains supply voltages, the mains tapping points have been increased from two to five. Referring to the circuit diagram on page 9, the resistor R28 and the two position mains adjustor have been replaced by four new resistors and a five position mains adjustor. The new arrangement of the mains tapping panel is as shown at the top of Fig. 5 in this Supplementary Instruction sheet.

Also, a two pin mains tapping plug is now required and the cabinet base has been altered to accommodate it (as the base is a part of the cabinet, the part number of the whole cabinet has been

changed).

A kit of parts with full fitting instructions for this modification is available from Murphy Radio Ltd, Service Department, but the change should not be made by dealers unless experience suggests that it is desirable for a particular receiver.

Label, name-plate. The label on the underside of the cabinet base has been changed as follows:

BU183A. To suit the BU183A receivers with five mains taps.

BU183M. To a label marked "BU183M".

Tuning drive cord. The cord has been changed from Nylon to Braided Line (hemp) as small lumps tended to form on the Nylon cord after it had been in use for some time.

BU183M Only

Filament circuit current control. To provide improved control and balance of the valve filament current the following changes have been made:

A 750Ω variable resistor (Filament Current control, R28) is connected in series with R31 (see Fig. 5), and R31 itself is reduced from 1870Ω (BU183A) to 1310Ω.

The mains resistor R29 is increased from 175Ω to 310Ω, and R34 (BU183A) is deleted.

V1 filament resistor (R3) is changed from 270Ω (BU183A) to 150Ω.

V2 filament resistor (R7) is changed from 180Ω to 150Ω.

V4 filament resistor (R21) is changed from 390Ω to 270Ω.

The Filament Current control (R28) is adjusted in the factory to give the correct filament current and its setting should not be altered unless there is good reason. In a series filament circuit of this type the current is largely independent of valve tolerances but it is affected by the tolerances of the mains rectifier (MR1). Therefore, if MR1 is replaced, R28 must be reset to give a filament line current of 58mA; use a good quality meter which is known to be accurate to within 1mA and connect it in series with the heater line between V1 and V3 at V1 pin 1. If the possible meter error is 2mA or more, then R28 is better left alone.

Capacitors C3, C8, C12, and the loudspeaker. These components are now of slightly

different types and have different part numbers. Their fitting is unaltered.

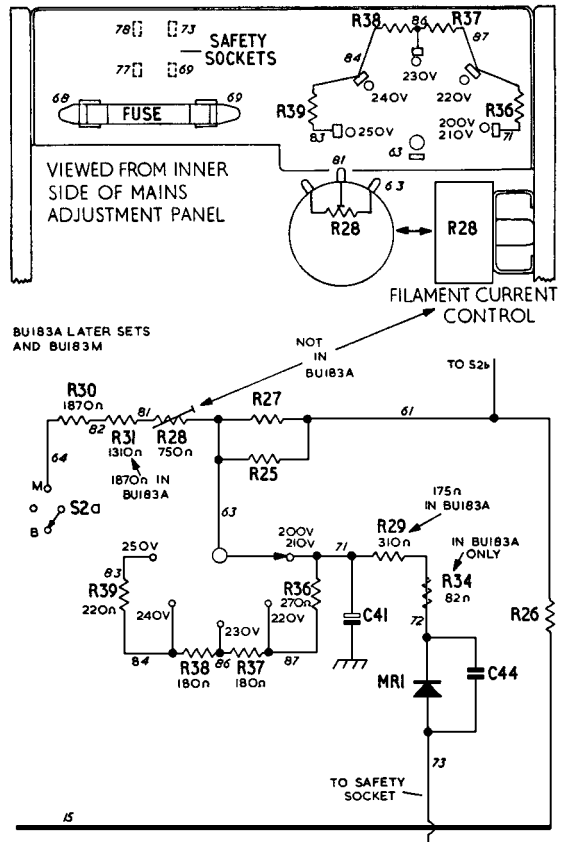


Fig. 5. This diagram applies to the later BU183A models, as well as to the BU183M.

Corrections and Additions to BU183 Service Instructions

Electrical Parts List

1. C29 should be rated at 600 v.w.
2. C36 should be rated at 750 v.w.

Mechanical Parts List

1. Both cabinets should be quoted as being "with base, but less handle and studs".
2. Frame aerial (Part No. 59556) should be deleted.
3. Opposite "Handle blue" and "Handle brown", the

number against the word cabinet should be deleted. The handles are suitable for use with the earlier and the later cabinets.

4. Opposite "Panel, mains tapping", the part number should be 59544 and the remarks should be "with safety socket".
5. Add "59545: Fuseholder: with cover for safety socket".
6. Add "59209: Label, name-plate: on cabinet base".
7. Add "59543: Panel, aerial: with sockets and tags".

PARTS LIST (Electrical Components)

PART NO.	CIRCUIT NO.	VALUE	TOLERANCE AND REMARKS	PART NO.	CIRCUIT NO.	VALUE	TOLERANCE AND REMARKS
66173	C3	220 pF	20%, cer., 500V d.c. (BU183M)	24709	R21	270 Ω	10%, 0.6W (BU183M)
66169	C8	100 pF	20%, cer., 500V d.c. (BU183M)	63781	R28	750 Ω	2.5W, w.w., Filament Current control (BU183M)
66168	C12	82 pF	20%, cer., 500V d.c. (BU183M)	71680	R29	310 Ω	5%, w.w. (BU183M)
56324	C22	5-35 pF	L.W. osc. trimmer (BU183M)	51084	R30	1870 Ω	5%, 7W, w.w.
56160	{ C41 C42	{ 32 μF 32 μF }	+50% -20%, elec., 275V d.c.	51084	R31	1870 Ω	5%, 7W, w.w. (BU183 later sets, and BU183A)
24709	R3	270 Ω	10%, 0.6W (BU183 later sets and BU183A)	69004	R31	1310 Ω	5%, w.w. (BU183M)
24613	R3	150 Ω	10%, 0.6W (BU183M)	24543	R34	82 Ω	10%, 1.5W (BU183A intermediate sets)
24613	R7	150 Ω	10%, 0.6W (BU183M)	24717	R36	270 Ω	10%, 0.75W (BU183A later sets,
26245	RII	2.7 MΩ	10%, 0.6W	24645	R37	180 Ω	10%, 0.6W)
				24645	R38	180 Ω	10%, 0.6W and
				24677	R39	220 Ω	10%, 0.6W BU183M)

PARTS LIST (Mechanical Components)

PART NO.	DESCRIPTION	REMARKS	PART NO.	DESCRIPTION	REMARKS
71612	Bracket, mounting	for Filament Current control (R28, BU183M)	63573	Label, name-plate	on cabinet base (early BU183A with two mains taps)
59333	Bracket and pulley	near volume control	69114	Label, name-plate	on cabinet base (later BU183A with five mains taps)
60036	Bracket and pulley	near tuning spindle	65408	Loudspeaker	(BU183M)
69116	Cabinet, blue	with base, but less handle and studs (BU183A and BU183M)	69423	Panel, mains tapping	with safety socket and five mains taps (BU183A later sets, and BU183M)
69115	Cabinet, brown		with base, but less handle and studs (later BU183 with large l.t. battery, and early BU183A with two mains taps)	47351	Plug, 2 pin
63562	Cabinet, blue	for tuning drive, 30 in. (BU183A later sets, and BU183M)	55232	Rectifier (M.R.1)	Westinghouse 14B986
63561	Cabinet, brown		52322	Retainer (2)	rubber bands for l.t. battery
3962/1	Cord, braided line		63569	Retainer (2)	rubber bands for h.t. battery
48189	Drum, tuning	for cord drive	63570	Retainer (2)	
63571	Label	battery replacement on cabinet base (BU183M)	63572	Stiffener (2)	for grille
71682	Label, name-plate				