

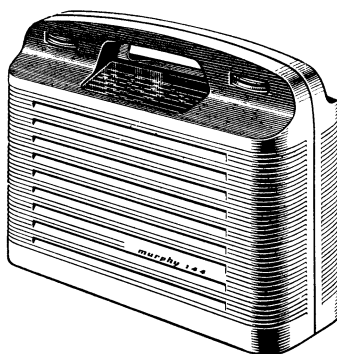
UI44

UI44

MURPHY SERVICE INSTRUCTIONS

**MURPHY RADIO LTD
WELWYN GARDEN CITY · HERTS
PHONE: WELWYN GARDEN 800**

THE UI44 RECEIVER



MAINS SUPPLIES:	200-250 volts, d.c. or 200-250 volts, a.c., 25-100 c/s.
WAVE RANGES:	Medium and long.
INTERMEDIATE FREQUENCY:	465 Kc/s.
SPEECH COIL IMPEDANCE:	3 ohms.
VALVES:	Mazda: 10C1, 10F9, 10LD11, 10P13, U404.
CABINET DIMENSIONS:	10½ in. wide, 9 in. high, 4¾ in. deep.
TOTAL WEIGHT:	8 lb.
CONSUMPTION:	40 watts.
RELEASED:	August 1949.
PRICE:	£11 10s. od., plus P.T.

CIRCUIT NOTES

The aerial circuit. The frame aerial has two windings L1 and L2, the medium wave coupling and tuned inductors respectively. For long wave reception, the frame aerial is matched to the long wave tuning inductor L4, by tapping the latter at a suitable point. L1 and L3 are the coupling inductors for use with an external aerial and earth.

The local oscillator circuit. On the medium wave band a tuned anode circuit is used with L6 as the tuned winding, L5 as the coupling winding, and C14 as the tracking capacitor. On the long wave

band a Colpitts circuit is used with L5 and L6 as the inductor, C7, C19, C18 and C15 as one half of the split capacitor, and C14 in series with C13 forming the other half as well as the tracking capacitor.

Audio response. V3 cathode is connected directly to a tapping on V4 cathode resistor. This introduces positive feedback for tone correction at the lower frequencies as determined by C27 and C34 capacitances. R12, C26 and R9 together form a potentiometer across R17 so that tone correction is increased at the lower volume control settings.

MECHANICAL NOTES

The cabinet. This consists of two individually matched halves, of almost identical appearance, held together by nuts and bolts, two at the top—nut, special (51919)—and two underneath. The back section of the cabinet may be identified by the nuts (or holes) in the base of the handle. **Replacement half-cabinets cannot be supplied.**

In the assembled receiver, a gap exists between the upper edges of the tuning scales. A metal strip (53645) with a grommet (8589) at each end, is placed immediately below this gap. When assembling the receiver, the metal strip is held in position in the front half of the cabinet, by attaching the grommets, with Bostick, to the tuning scale clamp screws.

Removing the chassis. Lay the receiver face downwards on a soft cloth, and remove the nuts and bolts that join the two halves of the cabinet. Lift off the back section, and in doing so, notice how the ends of the p.v.c. cord are held in holes formed by identical slots in the two halves of the cabinet. Slide out the metal grille, the mains tapping panel and the aerial panel and, after unsoldering the speaker leads, lift the chassis clear of the front section of the cabinet.

Refitting the chassis. With the front half of the cabinet face downwards on a soft cloth, lower the chassis into position so that the cabinet dowels fit into the grommets in the chassis, and the frame aerial lays evenly in the handle. Press the mains lead into the niche in the mains panel slot, and slide the mains and aerial panels into position. Lay the p.v.c. cord in the form of a loose semi-circle opposite the bottom of the cabinet, and place the ends of the cord in the appropriate slots. Fit the metal ventilating grille, with the flange pointing towards the chassis.

The back section of the cabinet, with its metal grille in position, may now be fitted, taking great care that the aerial is not trapped between the strengthening ribs of the handle. After bolting the two sections together, the p.v.c. cord may be stretched around the cabinet, and the control knobs checked to ensure adequate clearance at all settings.

The tuning scales. The back and front scales are not identical; they may be identified by the fact that 1000 metres occurs at the left-hand side of the front scale and at the right-hand side of the back scale. Before fitting the scales, the scale clamps may be bowed slightly to avoid rattle.

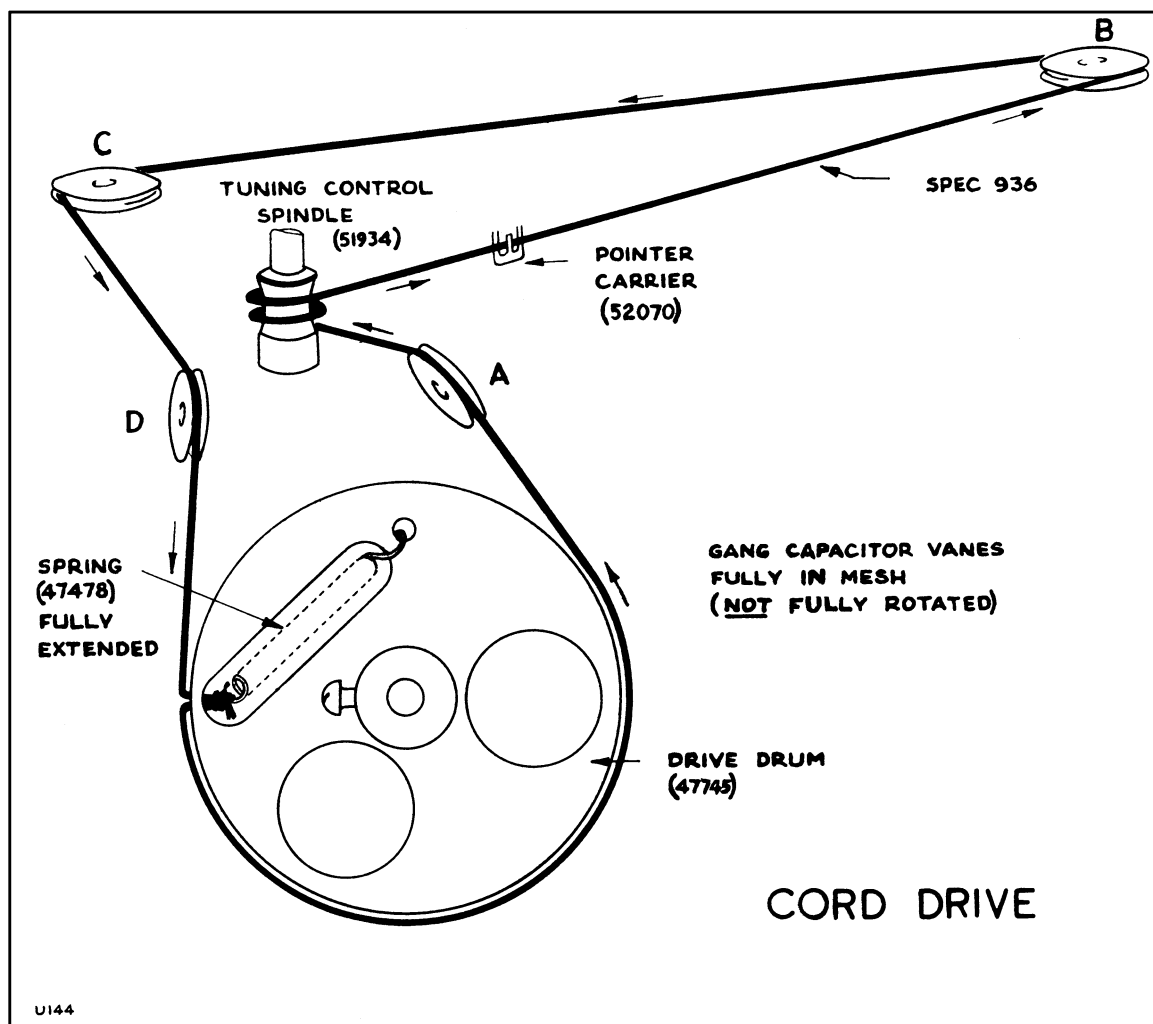


Fig. 1

The cord drive. A replacement cord should be stretched before use, and threaded as shown in Fig. 1. Starting with a 34 in. length of cord, tie one end to the spring already hooked on to the drive drum. Thread the cord anti-clockwise round the drum (as shown), over pulley A, round the tuning spindle, over the remaining pulleys and back to the drum. Next tie the cord end to the spring, ensuring that the cord and spring are under tension. Finally, with the ganged capacitor plates fully in mesh, place the chassis in the front section of the cabinet, and with the pointer beneath the "dot" under the word "Medium", hook the cord on to the pointer carrier.

The pointer guide rail should be lightly greased to reduce friction.

The wave change switch. This is indirectly operated through two spring loaded arms, and the contacts are accessible when the frame aerial has been released.

The loudspeaker. The connecting tags and the speaker chassis should not be allowed to touch the receiver chassis in an assembled receiver. If this does occur, short circuiting of the speech coil may result.

The frame aerial. This is secured at the top of each end of the chassis frame by a pair of insulating

strips (51923) and, in some earlier models, by a cord at the bottom as shown in the photographs. A long insulating strip (53501) stiffens and protects the top of the aerial, while smaller pieces (54042) provide protection and insulation at the bottom corners. Some early models had the long insulation strip at the bottom instead of at the top. The frame aerial should be spaced away from the chassis where possible, in order to minimize losses and to maintain the sensitivity of the receiver. (See Modifications.)

The control knobs. The wavechange switch knob is fastened to the switch arm by two screws; the remaining knobs are held by grub screws. Adjacent knobs have felt washers between them, and the knurled edge of each lower knob should be approximately $\frac{1}{8}$ in. above the flange of the control mounting bar.

The control mounting bar. To prevent undue losses in the frame aerial circuit caused by coupling to the chassis, the loop formed by the latter is broken by inserting four insulating washers (52050) between the control mounting bar and the chassis frame, at the volume control end. The control must not be allowed to short-circuit the gap that is formed by the insulators.

The volume control. Before the volume control can be removed, the frame aerial and the control mounting bar must be released. If, when fitting a new volume control, it makes contact with the chassis frame or the control mounting bar screws, a washer must be fitted between it and the bar to produce the necessary spacing.

The ganged capacitor. If the necessity arises this should be removed with the drive drum and the mounting bracket as one unit. The drive cord may be disconnected by un-hooking the spring from the drum. On reassembly, the shake-proof washers must be fitted in their correct positions to give good electrical contact, and the drive drum should be positioned so that its screw locates with the nick in the chassis frame when the capacitor vanes are fully in mesh.

The i.f. transformers. To examine the coils, remove the complete assembly, and then take off the screening can.

The output transformer. This is mounted on steel washers to provide spacing between the mains resistor and the connecting tags. The mounting screws are accessible after C33 is released and moved sideways.

The mains resistor. The resistor can be removed after easing the lugs on the supports. After fitting a mains resistor, the lugs on the supports should be tightened so as to grip the component firmly.

Capacitor unit CU1. A double 100pF capacitor is used in V3 detector diode filter circuit. It has the appearance of an ordinary p.s.m. capacitor, but has three lead out wires, the middle one being common.

The valve holders. These are all B8A types; V1 and V3 have rubber mountings to minimize microphony.

PLEASE USE THE PARTS LIST WHEN ORDERING

CIRCUIT ALIGNMENT

(The Alignment Table is on page 7)

The chassis of this receiver is connected directly to one side of the supply mains, and before attempting any circuit adjustments, every precaution should be taken to minimize the possibility of receiving an electric shock or damaging the instruments being used.

Because of the presence of the loudspeaker near the frame aerial, and the need for linking the tuning pointer to the gang capacitor, circuit alignment should be carried out with the chassis in the front half of the cabinet. It will be found necessary to raise one end of the chassis in order to make certain r.f. adjustments.

The coil cores must be adjusted with a thin non-metallic screw-driver, shaped to fit the core slots; a metal screw-driver is unsuitable as it will affect the inductance of the coils and may also cause damage to the cores.

Make sure that when the gang capacitor vanes are fully in mesh, the pointer is beneath the spot on the tuning scale, near the word "medium". When making this check, it should be remembered that

the capacitor rotor will turn beyond maximum capacitance.

With the volume control at maximum, make all adjustments to give maximum audio output; this output should not be allowed to exceed 0.7 volts as measured with a low reading alternating voltage indicator connected across the loudspeaker speech coil.

Before the introduction of the modification to the oscillator circuit, there was a certain amount of interaction between the long and medium wave sections of the coil. This necessitated repeating the oscillator adjustments as described in the alignment table to ensure the optimum calibration on both bands. If difficulty is experienced due to this interaction, re-start the oscillator adjustments with each oscillator coil core set at $\frac{1}{2}$ in. from the end of the former. Commence with adjustments (e) and (f) in the alignment table, and repeat these until the calibration is correct at the two wavelengths concerned. Then proceed according to the table.

MURPHY NEWS

Topical articles on service matters, as well as technical information on new models and details of receiver modifications are printed regularly in the MURPHY NEWS which is dispatched each month to all Murphy Dealers.

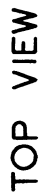


Fig. 2

CIRCUIT ALIGNMENT TABLE

Read "Circuit Alignment" before attempting any adjustments. It should be noted that in the receivers having the modified oscillator circuit, the positions of the oscillator coil windings are interchanged as compared with the arrangement in the early models shown in the diagram facing this page. L16 and L21 relate to those chassis having the modified oscillator circuit.

CIRCUIT	NOTES	SIG. GEN. FREQUENCY	SIG. GEN. TERMINATION	CONNECT SIG. GEN. TO	RECEIVER RANGE	RECEIVER SCALE SETTING	ADJUSTMENTS
2nd i.f.t.	Unscrew secondary core (top of can) to fullest extent before adjusting	465 Kc/s	Via 0.1 μ F capacitor	C5 (test point 7), 4th tag on panel	M	500 metres	(a) L9 (pri) under chassis (b) L10 (sec) top of can DO NOT READJUST
1st i.f.t.							(c) L7 (pri) under chassis (d) L8 (sec) top of can DO NOT READJUST
M.W.	Repeat these adjustments until the optimum calibration is obtained. (See Circuit Alignment)	600 Kc/s (500 m.)	Via 10pF capacitor	Aerial socket	M	500 metres	(e) M.w. osc. coil (L6 or L16)
L.W.		158 Kc/s (1900 m.)			L	1900 metres	(f) L.w. osc. coil (L5 or L21) (g) L.w. ae. coil (L4)
M.W.		1500 Kc/s (200 m.)			M	200 metres	(h) M.w. osc. trimmer (C19) (i) M.w. ae. trimmer (C8)
L.W.		300 Kc/s (1000 m.)			L	1000 metres	(j) L.w. osc. trimmer (Cr8)

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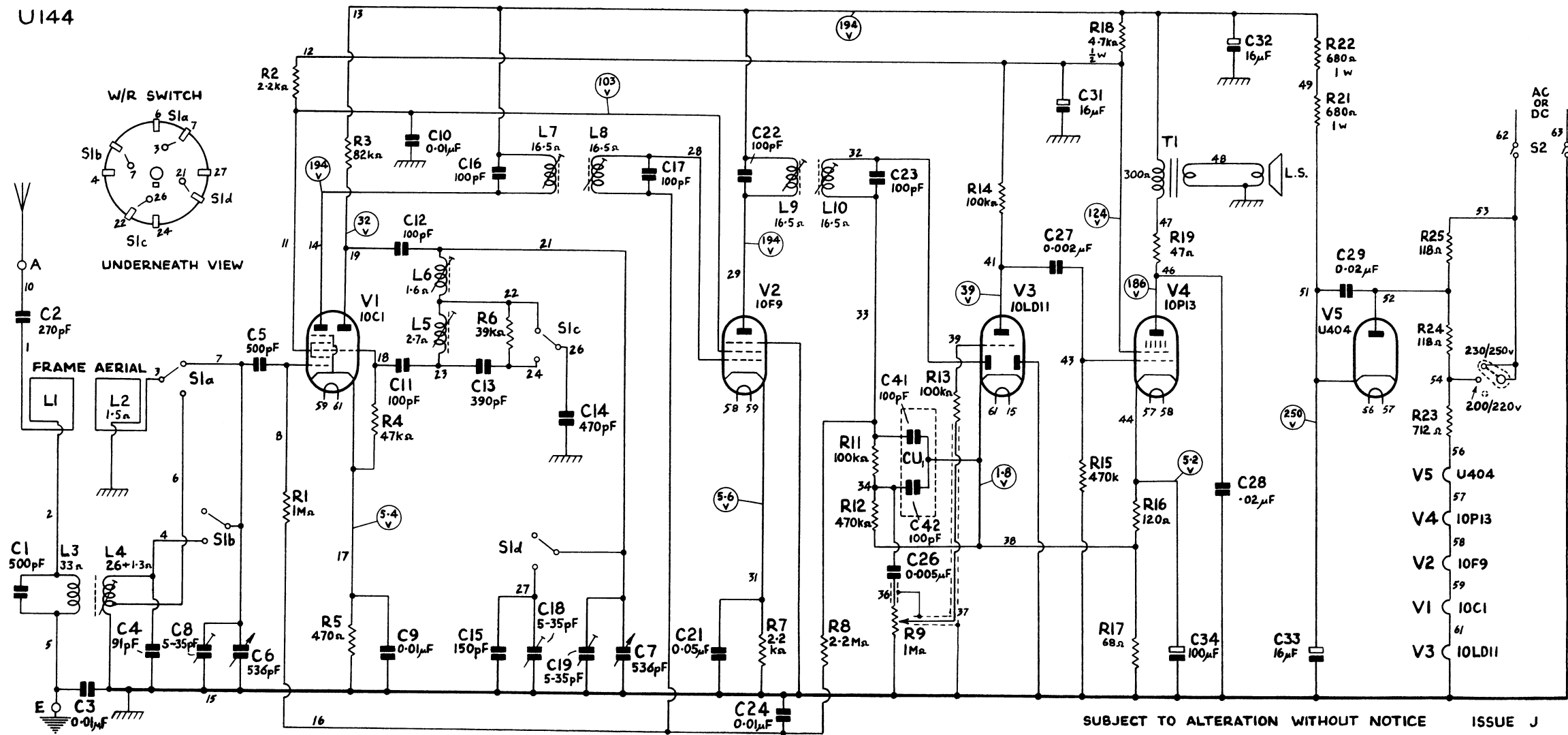
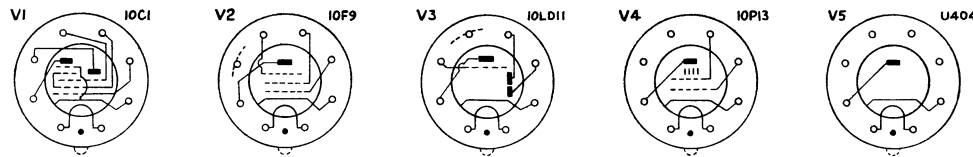


Fig. 3



A 500 ohm/volt meter was used for taking the voltage readings; the receiver was switched to the medium wave band and operating under "no signal" conditions. In those cases where the resistance of a coil is omitted, the value is less than one ohm. The wave range switch is shown in the m.w. position.

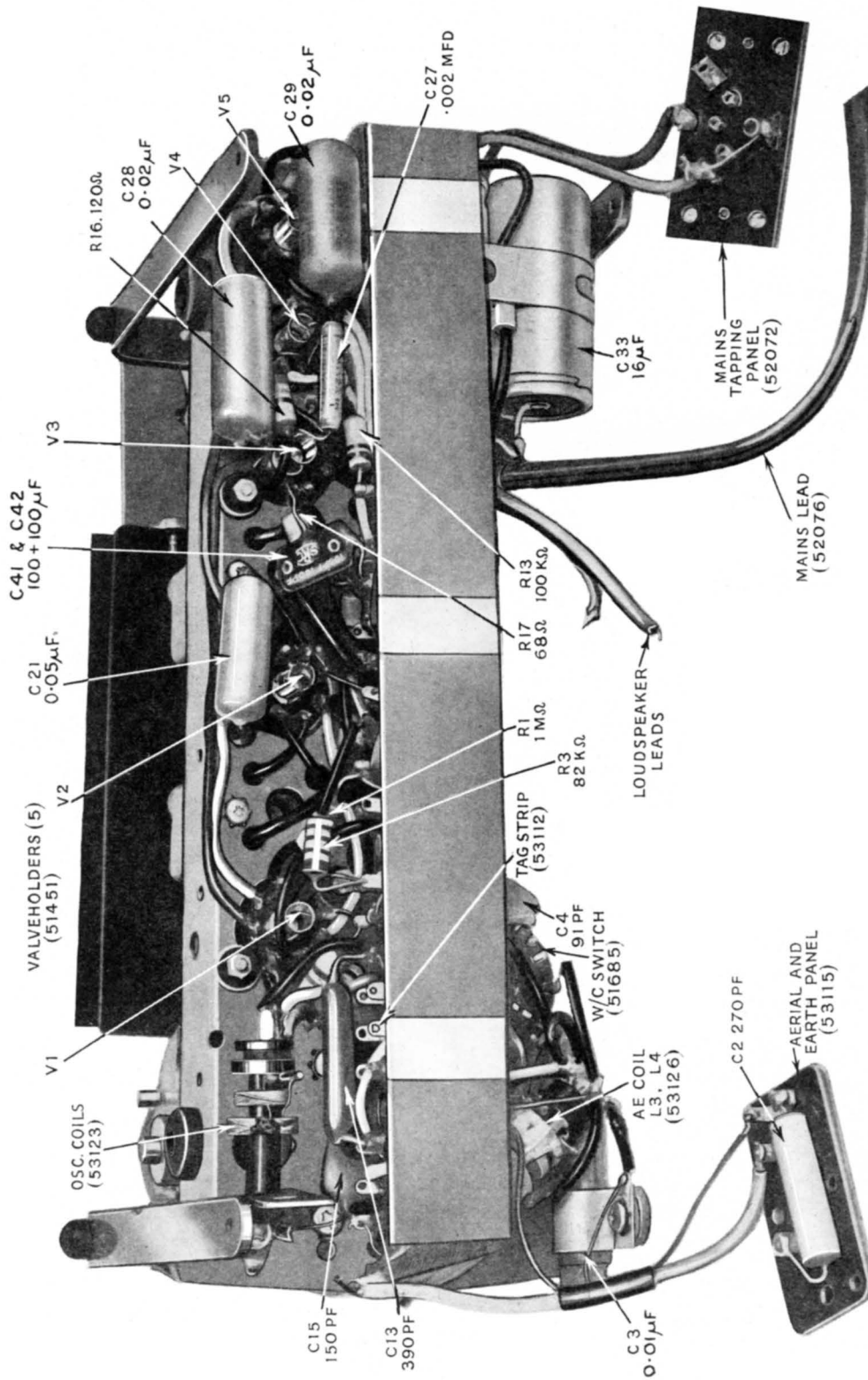
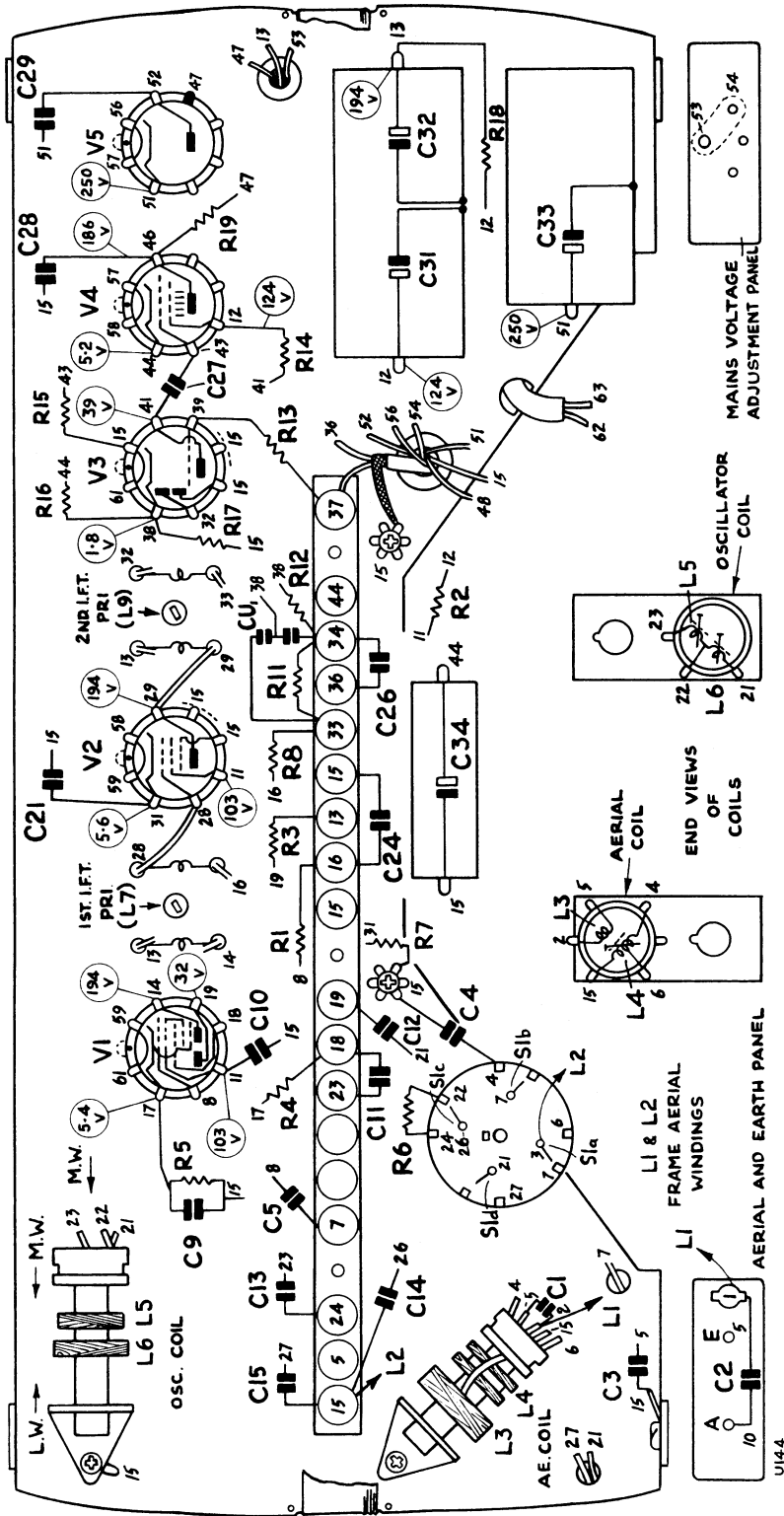


Fig. 4 Underneath view of the chassis

CAPACITORS	15 2	13 3	14 1	9 5	11, 10 4	21 24	34 3	26 6	CU, 9	27	28 31	32 33	29	C
INDUCTANCES	3A, 1	6	5	2	4	3	7	1	12	15	16	17	18	L
RESISTORS	5	4	6	7	3	8	11	2	12	13	14	15	16	R



UNDERNEATH VIEW

Fig. 5. For the voltage measurement conditions, see page 9.

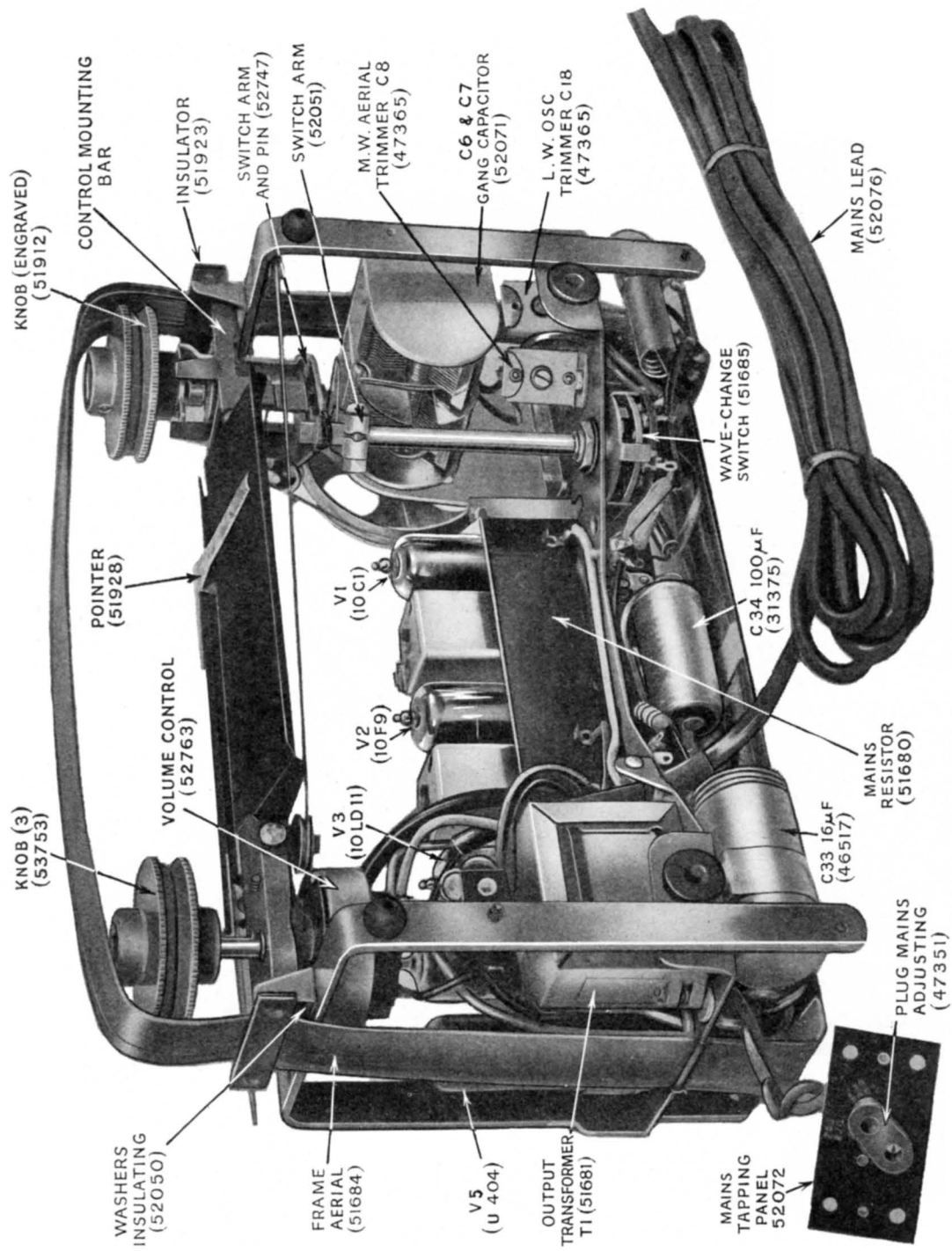


Fig. 6. Front view of the chassis. The rear view is opposite

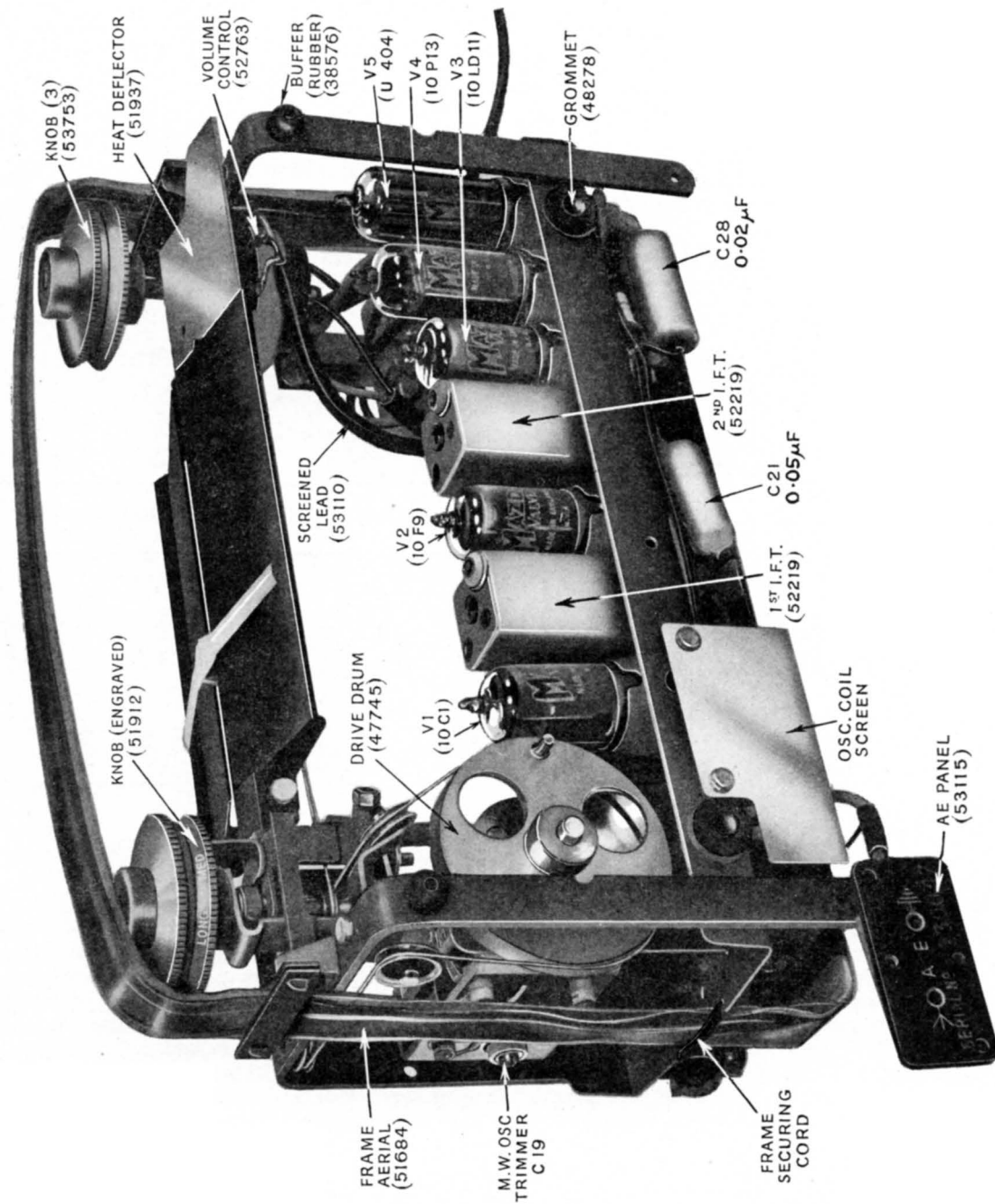


Fig. 7. Rear view of the chassis. The front view is opposite

MODIFICATIONS

The oscillator circuit. The modified circuit may be identified by the following details associated with the oscillator coil:

- Six soldering tags instead of the original three.
- A red spot on the former.
- An insulating strip between the tags and the chassis.

This modification has been made to ensure that all receivers can be tuned down below 194 metres.

The extent of the circuit change is shown in Fig. 8. The slight interaction that existed between the medium and long wave sections of the oscillator coil has been reduced to such proportions that repetition of the adjustments to the coil is unnecessary. It should be noted when making oscillator circuit adjustments, that the positions of the long and medium wave sections of the coil are reversed on the former, as compared with the original arrangement.

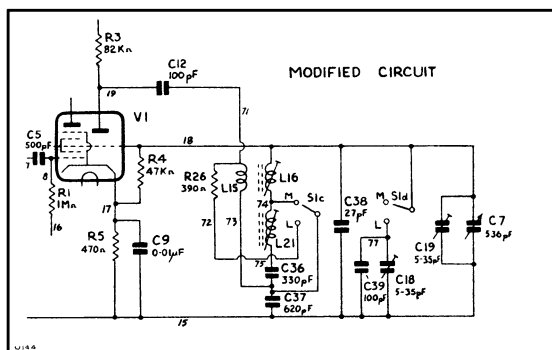


Fig. 8

In carrying out this modification, the following components should be removed.

C11, 100pF; C13, 390pF; C14, 470pF; C15, 150pF; R6, 39K Ω ; oscillator coil, L5/L6.

The new components, quoted in the table, should be fitted as shown in Fig. 9. The positioning of the components and the "dressing" of the wiring should follow the arrangement shown in the diagram as closely as possible. The insulating strip is held in position under the coil tags by Bostick or some other suitable compound.

The necessary components can be supplied as a complete kit, in which case a "Modified Oscillator Coil Kit" should be ordered from Murphy Radio Ltd, Service Department.

The loudspeaker. In early receivers, the loudspeakers were mounted with the tags uppermost. To prevent these tags from short circuiting to the tuning scale backing plate, the loudspeakers are now mounted with the tags downwards.

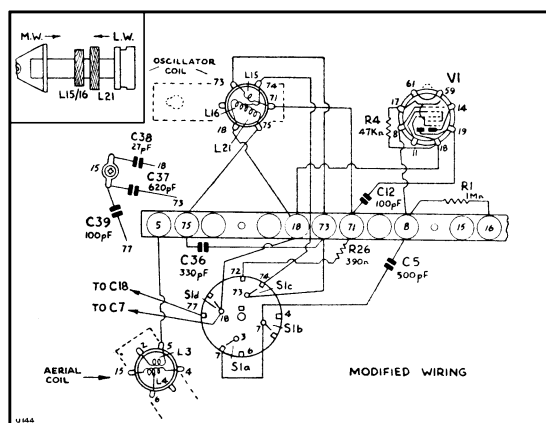


Fig. 9

PART NO.	CIRCUIT NO.	VALUE	TOLERANCE AND REMARKS
28165	C36	330pF	2% p.s.m.
28241	C37	620pF	1% p.s.m.
23673	C38	27pF	10% p.s.m.
47617	C39	100pF	5% p.s.m.
24773	R26	390 Ω	20%
54832	L15	— Ω	Modified osc. coil
	L16	5 Ω	
	L21	11 Ω	
44362	Insulator		

The o.t. leads. The leads in the vicinity of the mains resistor are now tied to the output transformer to prevent them from being damaged by heat.

The frame aerial. Some early frame aerials had long insulating strips (53501) at both the top and the bottom and were also tied with cord to the chassis ends. The cord loops have been removed and the bottom insulating strip replaced with small insulators (54042), opposite the aerial and mains tapping panels. This allows better spacing of the aerial from the chassis and hence, improved receiver sensitivity. The latest receivers have the long insulator (53501) at the top of the frame aerial and a long insulator (54893) at the bottom.

The frame aerials are now wound on Lassofibre adhesive tape instead of Ethyl-cellulose tape, which tended to open up with the heat generated in the receiver. The lead-out wires have also been strengthened.

The 2nd i.f.t. can. To prevent the mains resistor from short circuiting to the 2nd i.f.t. can, Lassofibre tape is now wrapped around the base of the can.

PARTS LIST (Electrical Components)

The following abbreviations are used in the table below: m.m., moulded mica; p.s.m., protected silvered mica; cer., ceramicon; tub., paper tubular; elec., electrolytic; v.w., voltage working; W, wattage rating; w.w., wire wound. All resistors are rated at $\frac{1}{4}$ watt, and all tubular capacitors are rated at 350 v.w., unless otherwise stated.

The d.c. resistance quoted for the coil and transformer windings is an average figure and should be taken as a general guide only; it is omitted where the value is less than one ohm.

PART NO.	CIRCUIT NO.	VALUE	TOLERANCE AND REMARKS	PART NO.	CIRCUIT NO.	VALUE	TOLERANCE AND REMARKS
27985	C1	500pF	10% m.m.	28165	C36	330pF	2% p.s.m.
52183	C2	270pF	20% cer. 750 v.w.	28241	C37	620pF	1% p.s.m.
41419	C3	0·01 μ F	20% tub. 1000 v.w.	23673	C38	27pF	10% p.s.m.
28222	C4	91pF	2% p.s.m.	47617	C39	100pF	5% p.s.m.
23966	C5	500pF	20% m.m.	52952	{ C41	100pF }	Capacitor unit CU1
52071	{ C6	536pF	Gang capacitor		{ C42	100pF }	
	C7						
47365	C8	5-35pF	Trimmer	27461	R1	1M Ω	20%
47449	C9	0·01 μ F	20% tub.	25061	R2	2·2K Ω	10%
47449	C10	0·01 μ F	20% tub.	25669	R3	82K Ω	10%
52178	C11	100pF	20% cer.	27205	R4	47K Ω	20%
52178	C12	100pF	20% cer.	24805	R5	470 Ω	10%
28205	C13	390pF	5% p.s.m.	25541	R6	39K Ω	10%
28243	C14	470pF	2% p.s.m.	25061	R7	2·2K Ω	10%
28253	C15	150pF	1% p.s.m.	27525	R8	2·2M Ω	20%
47617	C16	100pF	5% p.s.m.	52763	R9	1M Ω	V/c with switch
47617	C17	100pF	5% p.s.m.	27269	R11	100K Ω	20%
47365	C18	5-35pF	Trimmer	27397	R12	470K Ω	20%
—	C19	—	Trimmer on gang	27269	R13	100K Ω	20%
41403	C21	0·05 μ F	20% tub.	27269	R14	100K Ω	20%
47617	C22	100pF	5% p.s.m.	27397	R15	470K Ω	20%
47617	C23	100pF	5% p.s.m.	24581	R16	120 Ω	10%
47449	C24	0·01 μ F	20% tub.	24485	R17	68 Ω	10%
41409	C26	0·005 μ F	20% tub. 500 v.w.	25197	R18	4·7K Ω	10% $\frac{1}{2}$ W.
50960	C27	0·002 μ F	20% tub. metal, 500 v.w.	26629	R19	47 Ω	20%
41420	C28	0·02 μ F	20% tub. 1000 v.w.	24892	R21	680 Ω	10% 1W.
41420	C29	0·02 μ F	20% tub. 1000 v.w.	24892	R22	680 Ω	10% 1W.
46511	{ C31	16 μ F }	+50%, -20% elec.	51680	{ R23	712 Ω }	Mains resistor
	C32	16 μ F }			R24	118 Ω }	
46517	C33	16 μ F			R25	118 Ω }	
			+50%, -20% elec. 500 v.w.		R26	390 Ω	
31375	C34	100 μ F	+50%, -20% elec. 12 v.w.	24773			10%

PART NO.	CIRCUIT NO.	RESISTANCE (d.c.)	REMARKS	PART NO.	CIRCUIT NO.	RESISTANCE (d.c.)	REMARKS
51681	T1	{ —	Sec. } o.t.	52219	{ L7	16·5 Ω	1st i.f.t. pri. 1st i.f.t. sec. 2nd i.f.t. pri. 2nd i.f.t. sec.
	L1	300 Ω	Pri. }		L8	16·5 Ω	
51684	{ L2	—	Frame aerial	52219	L9	16·5 Ω	
	L3	1·5 Ω			L10	16·5 Ω	
53126	{ L4	33 Ω	L.w. aerial coil	54832	L15	—	Modified oscillator coil
	L5	26+1·3 Ω			L16	5 Ω	
53123	{ L6	2·7 Ω	Original oscillator coil		L21	11 Ω	
		1·6 Ω					

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
51927	Bracket	Coil mounting	51244	Loudspeaker	
51930	Bracket	Gang mounting	51916	Mounting bracket	For insulators 51923
52638	Bracket and pulleys	For cord drive	52076	Mains lead	
38576	Buffer, rubber (4)	Between chassis and cabinet	51919	Nut (special)	For holding the cabinet top
53825	Cabinet front	Not supplied separately	15264	Nut, speed (2)	For securing coils (r.f.)
53826	Cabinet back		53115	Panel, aerial	
52070	Carrier for pointer		46739	Panel and tag	For h.t. feed resistors
51924	Collar	For tuning spindle	52072	Panel, mains tapping	With sockets
46913	Core, iron dust (2)	For oscillator coil	51313	Plug, aerial	
46910	Core, iron dust (5)	For ae. and i.f. coils	51314	Plug, earth	
47745	Drive drum		47351	Plug, mains adjusting	
47337	Driving pulley	On tuning control spindle	51928	Pointer	
Spec. 936	Drive cord, 34 in.		52064	P.v.c. cord	For cabinet edge, less eyelets
15631	Eyelet (2)	For p.v.c. cord	51995	Scale clamp (2)	Left hand (viewed from inside)
52065	Grille (2)	For base of cabinet (less grommet)	51996	Scale clamp (2)	Right hand (viewed from inside)
48278	Grommet (4)	Chassis mounting	52061	Scale, front	
8589	Grommet (4)	For strip, metal and grille	52062	Scale, back	
51937	Heat deflector		53110	Screened lead	
44362	Insulator	For modified osc. coil	52057	Spring, anti-back-lash	On w/c switch arm
51923	Insulator (4)	Side clamps for frame aerial	43047	Spring retainer	On tuning spindle
53501	Insulator	Frame aerial (top stiffener)	47478	Spring, cord drive	
54893	Insulator	Frame aerial (bottom stiffener)	53645	Strip, metal	Between scales at top
54042	Insulator (2)	At bottom of frame aerial	52051	Switch arm	On w/c switch
51914	Insulator strap	Between tag strip and C34	52747	Switch arm and pin	To drive 52051
53753	Knob (3)	Plain	51934	Tuning spindle	
51912	Knob	Engraved for w/c switch	53112	Tag strip	With tags
52103	Label, title		34588	Washer, felt (2)	For control knobs
52104	Label, warning		52050	Washer, insulating (4)	On chassis control bar
53613	Label, "Murphy 144" (2)	On face of cabinet	51685	W/c switch	
			51451	Valve holder (5)	