Month

murphy service information

MURPHY 'METROPOLITAN' MODEL MB302 SERVICE INFORMATION

REFERENCE LIST FOR CIRCUIT DIAGRAM:

Abbreviations:

cer	-	ceramic	elect	-	electrolytic
p.s.m.	-	protected silver mica	v.d.c.	-	d.c. voltage rating
tub.	-	paper tubular	W	-	wattage rating
m. tub.	-	metallised paper tubular	-ve	-	negative temperature coefficient.
log.	-	logarithmic law			
i.s. tub.	-	insulated sealed paper tubular (metal case)			

PART NO.	CIRCUIT NO.	VALUE	TOLERANCE AND REMARKS	
25447	R1	27K ohm	.4W	10%
27397	R2	470K ohm	.4W	20%
24517	R3	82 ohm	.4W	10%
24933	R4	1K ohm	.4W	10%
26885	R5	1K ohm	.4W	20%
27397	R6	470K ohm	.4W	20%
25439	R7	18K ohm	1.0W	10%
25669	R8	82K ohm	.4W	10%
27653	R9	10M ohm	.4W	20%
27333	R10	220K ohm	.4W	20%
24229	R11	15 ohm	.4W	10%
27525	R12	2.2M ohm	.4W	20%
25471	R13	22K ohm	1W	10%
27525	R14	2.2M ohm	.4W	20%
27397	R15	470K ohm	.4W	20%
27525	R16	2.2M ohm	.4W	20%
27237	R17	68K ohm	.4W	20%
27333	R18	220K ohm	.4W	20%
24485	R19	68 ohm	.4W	10%
26021	R20	680K ohm	.4W	10%
27653	R21	10M ohm	.4W	20%
27269	R22	100K ohm	.4W	20%
25061	R23	2.2K ohm	.4W	10%
25125	R24	3.3K ohm	.4W	10%
27397	R25	470K ohm	.4W	20%
27205	R26	47K ohm	.4W	20%
25477	R27	27K ohm	.4W	10%
24653	R28	180 ohm	.5W	10%
25183)	R29	3.9K ohm	1.0W	10%
25183)	R30	3.9K ohm	1.0W	10%
24895)	R31	680 ohm	1.0W	10%
24895)	R32	680 ohm	1.0W	10%
24575)	R33	100 ohm	1.0W	10%
24575)	R34	100 ohm	1.0W	10%

PART NO.	CIRCUIT NO.	VALUE	TOLERANCE AND REMARKS	
27269	R35	100K ohm	.4W 20%	
27365	R36	330K ohm	.4W 20%	
26725	R37	150 ohm	.4W 20%	
66163	C1	33 pf	cer G.P.1 ± 20%	500 v.d.c.
RP1223	C2	.005 mfd	m.tub ± 25%	350 v.d.c.
52149	C3	4.7 pf	cer ± 20%	500 v.d.c.
28211	C4	77 pf	p.s.m. ± 2%	350 v.d.c.
56322	C5	4-40 pf	trimmer 'S' Ae	
56326	C6	2.5-15 pf	trimmer 'M' Ae	
41403	C7	.05 mfd	tub ± 20%	350 v.d.c.
66169	C8	100 pf	cer ± 20%	500 v.d.c.
28278	C9	47 pf	p.s.m. ± 2%	350 v.d.c.
49454	C10	.04 mfd	m.tub ± 25%	150 v.d.c.
56323	C11	5-35 pf	trimmer 'M' R.F.	
41403	C12	.05 mfd	tub ± 20%	350 v.d.c.
RP1223	C13	.005 mfd	m.tub ± 25%	350 v.d.c.
66169	C14	100 pf	cer ± 20%	500 v.d.c.
49454	C15	.04 mfd	m.tub ± 25%	150 v.d.c.
52631)	C16	150 pf	p.s.m. ± 5%	350 v.d.c.
52631)	C17	150 pf	p.s.m. ± 5%	350 v.d.c.
47039	C18	56 pf	-ve cer ± 2½%	500 v.d.c.
28343	C19	92 pf	p.s.m. ± 1%	350 v.d.c.
23607	C20	100 pf	p.s.m. ± 10%	350 v.d.c.
28249	C21	3900 pf	p.s.m. ± 5%	350 v.d.c.
RP1224	C22	450 pf	p.s.m. ± 1%	350 v.d.c.
56323	C23	5-35 pf	trimmer 'S' osc	
56325	C24	2.5-15 pf	trimmer 'M' osc	
28346	C25	100 pf	p.s.m. ± 1%	350 v.d.c.
41403	C26	.05 mfd	tub ± 20%	350 v.d.c.
28345	C27	15 pf	p.s.m. ± 5%	350 v.d.c.
28266	C28	120 pf	p.s.m. ± 1%	350 v.d.c.
49454	C29	.04 mfd	m.tub ± 25%	150 v.d.c.
52631)	C30	150 pf	p.s.m. ± 5%	350 v.d.c.
52631)	C31	150 pf	p.s.m. ± 5%	350 v.d.c.
49447	C32	.01 mfd	m.tub ± 25%	150 v.d.c.
52646)	C33	100 pf	p.s.m. ± 20%	350 v.d.c.
52646)	C34	100 pf	p.s.m. ± 20%	350 v.d.c.
56159	C35	16 mfd	elect + 50%	275 v.d.c.
			- 20% combined with C41.	
66165	C36	47 pf	cer ± 20% G.P.1.	500 v.d.c.
49456	C37	.005 mfd	m.tub ± 25%	150 v.d.c.
49455	C38	.02 mfd	m.tub ± 25%	150 v.d.c.
53066	C39	.02 mfd	i.s.tub ± 20%	350 v.d.c.
41405	C40	.25 mfd	tub ± 20%	350 v.d.c.
56159	C41	16 mfd	elect + 50%	275 v.d.c.
			- 20% combined with C35	

PART NO.	CIRCUIT NO.	VALUE	TOLERANCE AND REMARKS	
41418	C43	.005 mfd	tub ± 25%	1000 v.d.c.
56168	C44	50 mfd	elect +50%-20%	12 v.d.c.
56157	(C45	50 mfd)		
	(C46	50 mfd)	elect +50%-20%	350 v.d.c.
49454	C48	.04 mfd	m.tub ± 25%	150 v.d.c.
23607	C49	100 pf	p.s.m. ± 10%	350 v.d.c.
49454)	C50	.04 mfd	m.tub ± 25%	150 v.d.c.
49454)	C51	.04 mfd	m.tub ± 25%	150 v.d.c.
	(VC1)			
74795	(VC2)	580 pf swing	variable 3 ganged capacitor	
	(VC3)			
52832	VR1	500K ohm	log (volume control)	
52840	VR2	250K ohm	log w/s (tone control)	

PART NO.	CIRCUIT NO.	DESCRIPTION
16882	PL1, 2, 3.	Panel lamp
RA1465	L.S.	Speaker 8" round
RP1139	V1	Valve 6F19 or EF85
RP1132	V2	Valve 6C9
RP1134	V3	Valve 6F15 or EF41
RP1135	V4	Valve 6LD3 or EBC41
RP1136	V5	Valve EL41
RP1138	V6	Valve U.U.9. or EZ40
RP1142	(V7 Direct replacement	Valve EM81 (tuning indicator)
RP1148	(V7 must be used here unless socket connections are changed.	Valve EM85 (tuning indicator)
74792	SK1	P.U. Socket 2 pin (Cinch 2624)
74794	SK2	L.S. Socket 4 pin (Cinch 75/444)
RP1227	SK3	T. Record socket 3 pin (Cinch 75/443)
RP1226	SK4	T. Playback 2 pin (Cinch 76092)
74794	SK5	Ext. L.S.4 Pin (Cinch 75/444)
74790	PL/SK1	Plug - P.U.2 pin (Cinch 2724)
74793	PL/SK2	Plug - L.S. 4 pin (Cinch 2745)
RP1229	PL/SK3	Plug - Tape record 3 pin (Cinch 2735)
RP1228	PL/SK4	Plug - Tape playback 2 pin (Cinch 76/046)
74793	PL/SK5	Plug - Ext. L.S.4 Pin (Cinch 2745)
74791		Shell for plugs PL/SK1, PL/SK2, PL/SK5
RP1230		Shell for plugs PL/SK3 (Cinch 2710)
RP1028	PL5	3 pin power plug
63625	S1	Switch wave change
RA1326		Assembly of R.F. unit wired
60506	L1	11M Aerial

PART NO.	CIRCUIT NO.	DESCRIPTION
60507	L2	13M Aerial
60508	L3	16M Aerial
60509	L4	19M Aerial
60510	L5	25M Aerial
60511	L6	31M Aerial
	(L7 Pri.	'S' Aerial transformer
RW1309	(L8 Sec.	'S' Aerial transformer
	(L9 Pri.	'M' Aerial transformer
	(L10 Sec.	'M' Aerial transformer
RW1310	L11 Pri.	'M' R.F. transformer
	L12 Sec.	'M' R.F. transformer
RW1312	L13	Shunt coil
RW1311	L14	Series peaking coil
60500	(L15 Pri.)	11M osc. coil
	(L16 Sec.)	
60501	L17	13M osc. coil
60502	L18	16M osc. coil
60503	L19	19M osc. coil
60504	L20	25M osc. coil
60505	L21	31M osc. coil
	(L22 Pri.	'S' osc. coil
RW1308	(L23 Sec.	'S' osc. coil
	(L24 Pri.	'M' osc. coil
	(L25 Sec.	'M' osc. coil
67995	T1	1st I.F. transformer
67996	T2	2nd I.F. transformer
RW1080	T3	Output transformer
RW1250	T4	Mains transformer

VARIOUS OTHER COMPONENTS FOR 'MURPHY' METROPOLITAN MODEL MB302

PART NO.	DESCRIPTION
DIAL GROUP	
60518	Cursor (2 per set)
60484	Cursor carrier
RD1097	Dial scale
RP1358	Dial scale rubber channel
37569	Dial scale clip
RM1802	Dial trim (gold anodised)
2033/5	Drive cord (Nylon) 70"
19448	Drive cord tension spring
RM1055	Flywheel
RM1236	Flywheel spindle (tuning spindle)

MURPHY 'METROPOLITAN' MODEL MB302 SERVICE INFORMATION

GENERAL REMARKS

1. RECEIVER OUTPUT: Make all adjustments for maximum output with the volume control at maximum. Adjust the signal generator so that this output does not exceed .5W, or 1.2V across the loudspeaker voice coil.

2. TRIMMING TOOL: A non-metallic tool must be used for adjusting the coil cores.

3. DAMPING UNIT: While adjusting one winding of an i.f. transformer, the other winding must be damped with a 4.7K ohm resistor connected in series with a 0.01 mfd capacitor.

4. COIL CORES: These must be adjusted to a position between the middle of the winding and the outer end of the coil former. All the coils have iron dust cores excepting the 31, 25 and 19 metre oscillator coils, which have aluminium alloy cores. Of the alternative peaks possible with the 11 to 31 M Ae. coil cores, the correct peak is the one obtained with the core nearest to the middle of the winding.

5. RECEIVER OSCILLATOR FREQUENCY: On all wave bands this is above the signal frequency.

6. TUNING POINTERS: When the ganged capacitor is at maximum capacitance - not necessarily against the stop - the projection on the pointer carrier must register with 13.85 cm. and when the chassis is in the cabinet, the main pointers must register with the right-hand edges of the glass scale 'apertures'. Small adjustments to the pointer carrier position can be made through the holes for the control spindles in the cabinet, by locking the carrier with a small screwdriver and by rotating the dial drum the necessary amount from behind the cabinet with the right hand.

7. BANDSPREAD CIRCUITS: (11 to 31M Bands). The calibration of these circuits should preferable be checked against transmitting stations of known frequency as most normal signal generators are not sufficiently accurate for the purpose.

8. TAPE RECORDER OPERATION: Sockets are provided at rear of chassis for the recording of radio or gram programmes on to a tape, or the playing back of a tape recording through the receiver either with or without the radio or gram programme. The respective positions of these sockets are shown on the valve layout chart on the rear of the dial reflector, and also on the label on the cabinet back.

a. RECORDING RADIO OR GRAM: Connect a shielded lead from the tape 'radio input' to a suitable plug, and insert into the 'tape record' socket on the receiver chassis. The selected programme can now be recorded. The receiver volume control does not alter or affect the strength of the recorded signal. This should be controlled on the tape recorder.

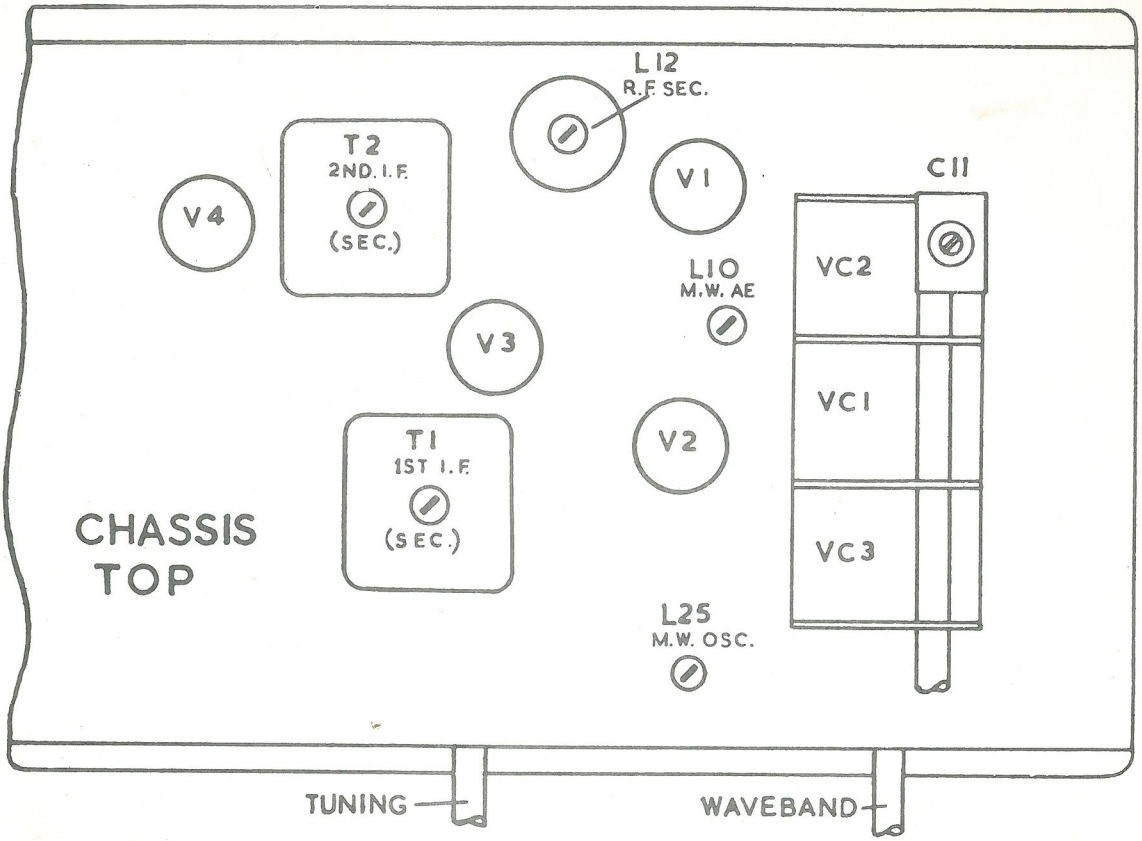
b. REPLAYING A TAPE RECORDING: Connect a shielded lead from the tape 'output' to a suitable plug, and insert into the 'tape playback' socket on the receiver chassis. If the tape 'output' socket monitors what is being recorded, it may be necessary to remove the 'radio input' plug from the recorder, so as to avoid feedback . The tape may now be played through the radio receiver, and would be normally operated on the 'gram' position of the wavechange switch, using the receiver volume control.

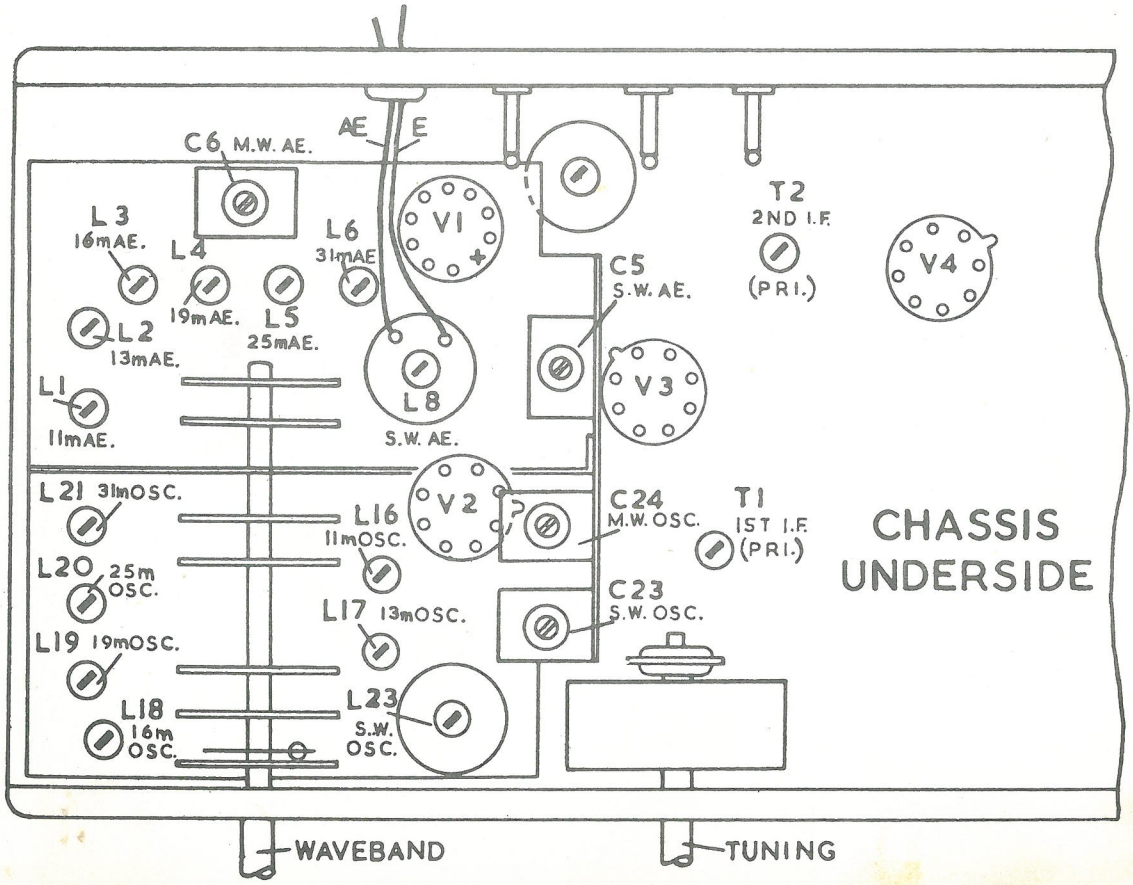
MURPHY 'METROPOLITAN' MODEL MB302 CIRCUIT ALIGNMENT TABLE

CIRCUIT	NOTES	SIG. GEN. FREQUENCY	SIG. GEN. TERMINATION	CONNECT SIG. GEN. TO:	SCALE SETTING	ADJUSTMENTS
2nd I.F.	Connect damping unit to sec. (V4 pin 5 and chassis) Connect damping unit to pri. (V3 pin 2 and chassis)	470 Kc/s 470 Kc/s	Via .01 mfd capacitor As above	V3 control grid (pin 6) As above	13.85 cm M Band 13.85 cm M Band	T2 pri (below chassis) T2 sec (top of can)
1st I.F.	Connect damping unit to sec. (V3 pin 6 and chassis) Connect damping unit to pri. (V2 pin 2 and chassis)	470 Kc/s 470 Kc/s	As above As above	V2 signal grid (pin 6) As above	13.85 cm M Band 13.85 cm M Band	T1 pri (below chassis) T1 sec (top of can)
M	Repeat these adjustments until there is no further improvement	600 Kc/s 1364 Kc/s	Via dummy Aerial As above	Aerial lead As above	11.2 cm 1.8 cm	L25 osc (above chassis) L12 RF (above chassis) L10 Ae (above chassis) C24 osc (below chassis) C11 RF (top gang cond.) C6 Ae (below chassis)
S	As above	3.75 Mc/s 7.25 Mc/s	As above As above	As above As above	10.4 cm 2.6 cm	L23 osc (below chassis) L8 Ae (below chassis) C23 osc (below chassis) C5 Ae (below chassis)
31M	Screw in osc. core to increase freq. check that the osc. freq. is above the signal freq.	9.6 Mc/s	As above	As above	5.15 cm	L21 osc (below chassis) L6 Ae (below chassis)
25M	As above	11.81 Mc/s	As above	As above	6.6 cm	L20 osc (below chassis) L5 Ae (below chassis)
19M		15.23 Mc/s	As above	As above	4.65 cm	L19 osc (below chassis) L4 Ae (below chassis)
16M	Check that osc. freq. is above the signal freq. Rock tuning control for maximum sensitivity while adjusting aerial core	17.79 Mc/s	As above	As above	6.6 cm	L18 osc (below chassis) L3 Ae (below chassis)
13M	As above	21.58 Mc/s	As above	As above	6.95 cm	L17 osc (below chassis) L2 Ae (below chassis)
11M	As above	26.09 Mc/s	As above	As above	5.05 cm	L16 osc (below chassis) L1 Ae (below chassis)

RP1429

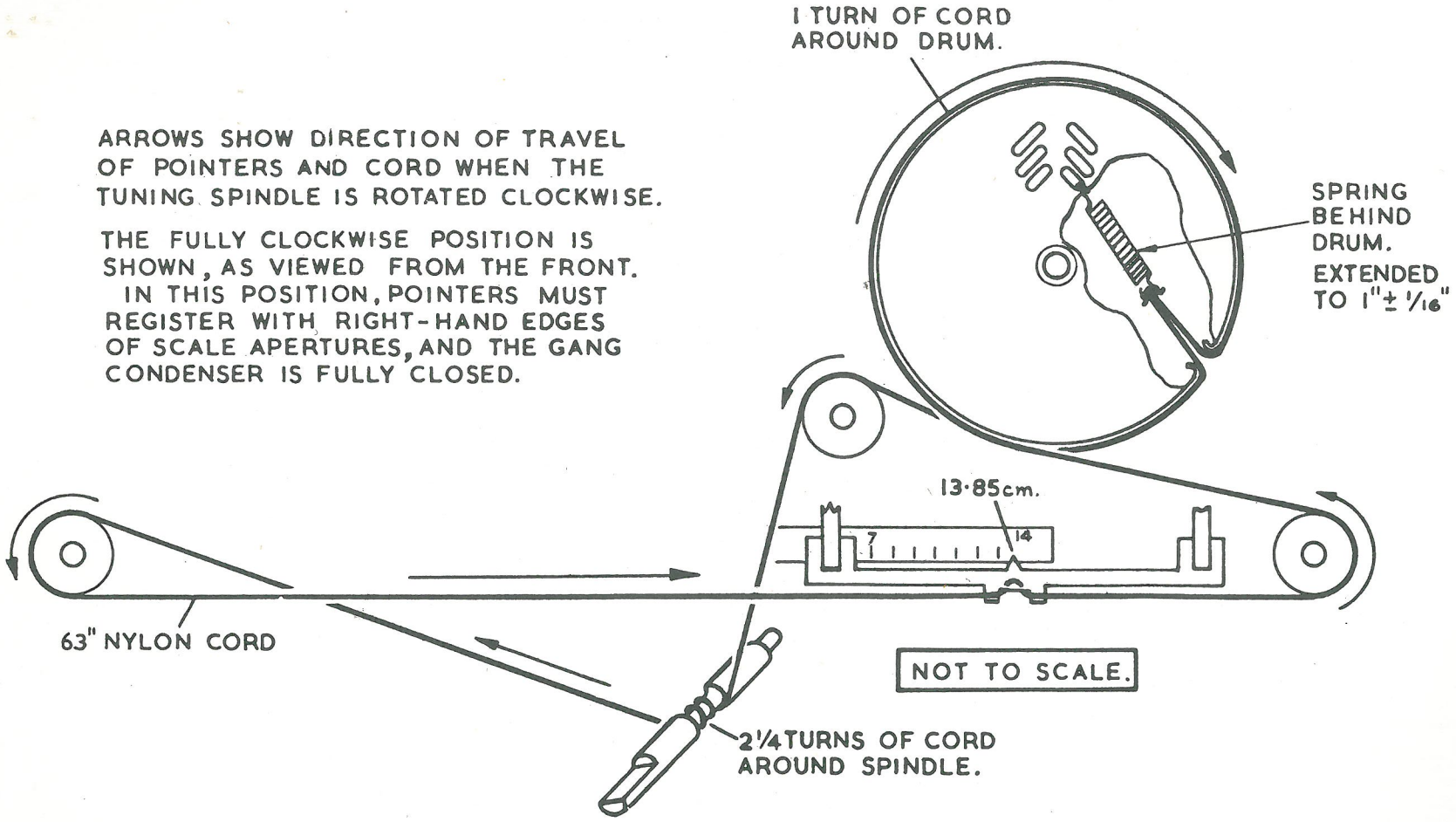
TRIMMING CHARTS - MODEL MB302



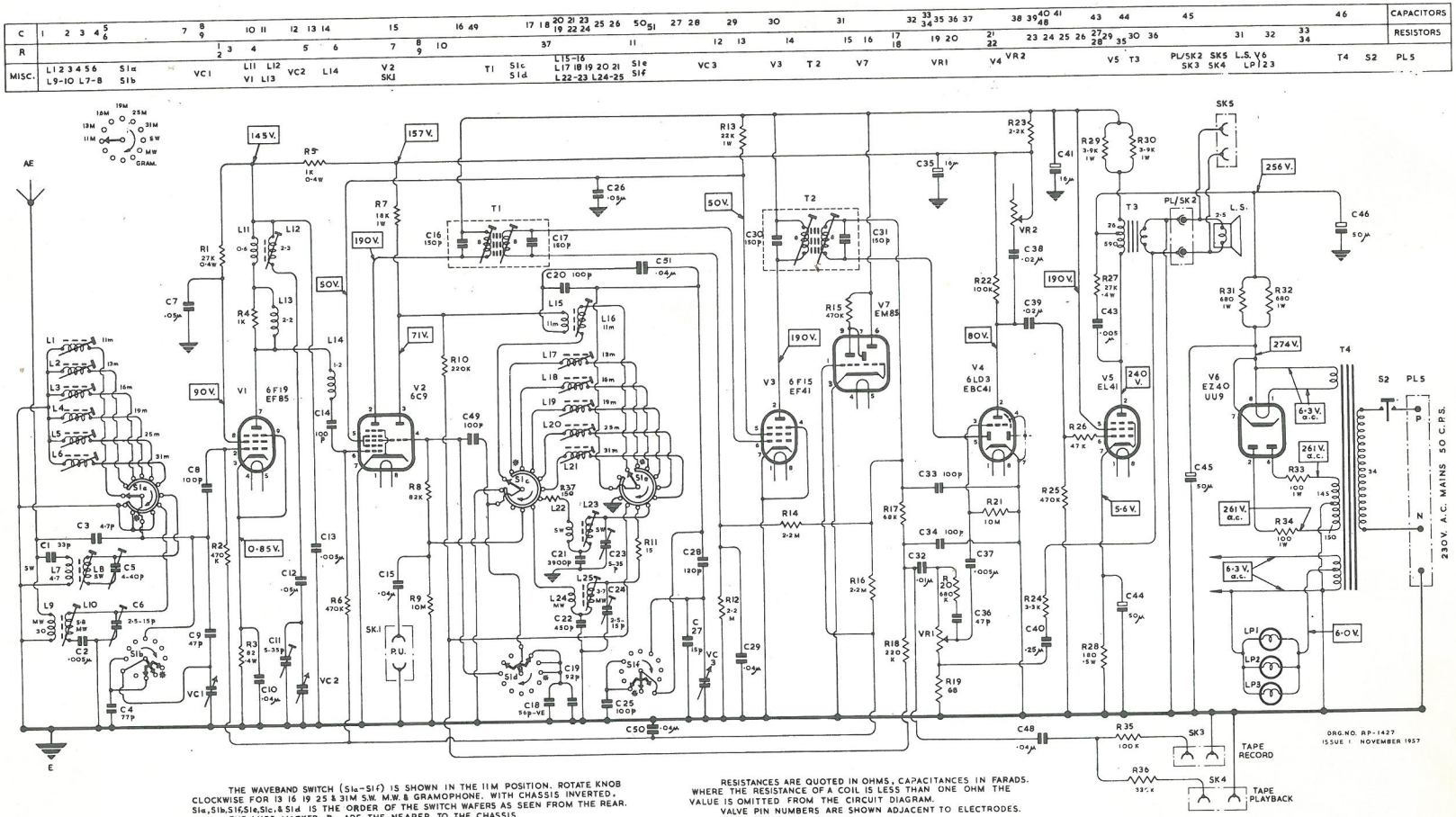


ARROWS SHOW DIRECTION OF TRAVEL OF POINTERS AND CORD WHEN THE TUNING SPINDLE IS ROTATED CLOCKWISE.

THE FULLY CLOCKWISE POSITION IS SHOWN, AS VIEWED FROM THE FRONT. IN THIS POSITION, POINTERS MUST REGISTER WITH RIGHT-HAND EDGES OF SCALE APERTURES, AND THE GANG CONDENSER IS FULLY CLOSED.



CORD DRIVE ARRANGEMENT - MODEL MB302



THE WAVEBAND SWITCH (S1a–S1f) IS SHOWN IN THE 11M POSITION. ROTATE KNOB CLOCKWISE FOR 13 16 19 25 & 31M S.W. M.W. & GRAMOPHONE. WITH CHASSIS INVERTED. S1a, S1b, S1f, S1e, S1c, & S1d IS THE ORDER OF THE SWITCH WAFERS AS SEEN FROM THE REAR. THE LUGS MARKED ⊕ ARE THE NEARER TO THE CHASSIS. CIRCUIT VOLTAGES ARE SHOWN WITHIN RECTANGLES AND WERE MEASURED UNDER NO-SIGNAL CONDITIONS WITH THE RECEIVER SWITCHED TO THE M.W. BAND, AND USING A 20Kᴀ/V. METER.

RESISTANCES ARE QUOTED IN OHMS, CAPACITANCES IN FARADS. WHERE THE RESISTANCE OF A COIL IS LESS THAN ONE OHM THE VALUE IS OMITTED FROM THE CIRCUIT DIAGRAM. VALVE PIN NUMBERS ARE SHOWN ADJACENT TO ELECTRODES.

REFER TO PARTS LIST FOR PART NUMBERS AND COMPLETE DESCRIPTIONS OF ELECTRICAL COMPONENTS. ORDER ALL REPLACEMENTS BY PART NUMBER AND LIST DESCRIPTION.

CIRCUIT DIAGRAM FOR MURPHY BANDSPREAD MANTEL RECEIVER MODEL MB302