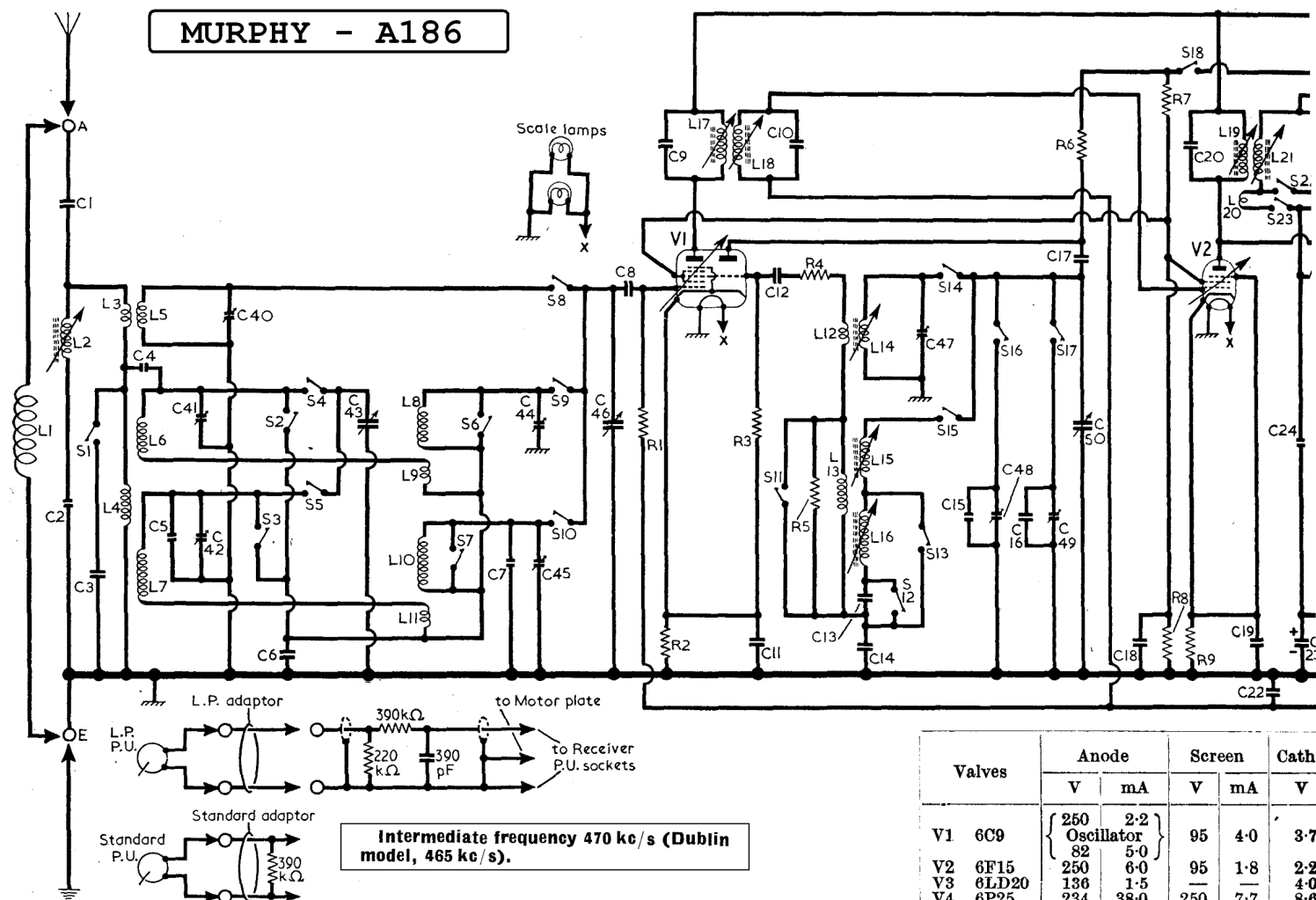
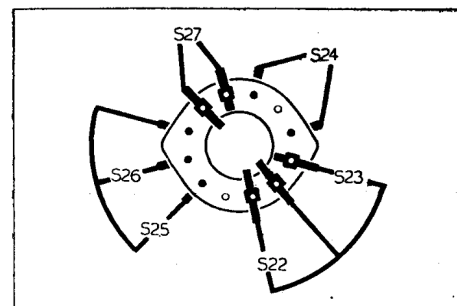


# MURPHY - A186



Valves	Anode		Screen		Cath.
	V	mA	V	mA	
V1 6C9	250	2.2	95	4.0	3.7
V2 6F15	82	5.0	95	1.8	2.2
V3 6LD20	250	6.0	—	—	4.0
V4 6P25	136	1.5	—	—	8.6
V5 U19	234	38.0	250	7.7	268.0
	253†	—	—	—	—

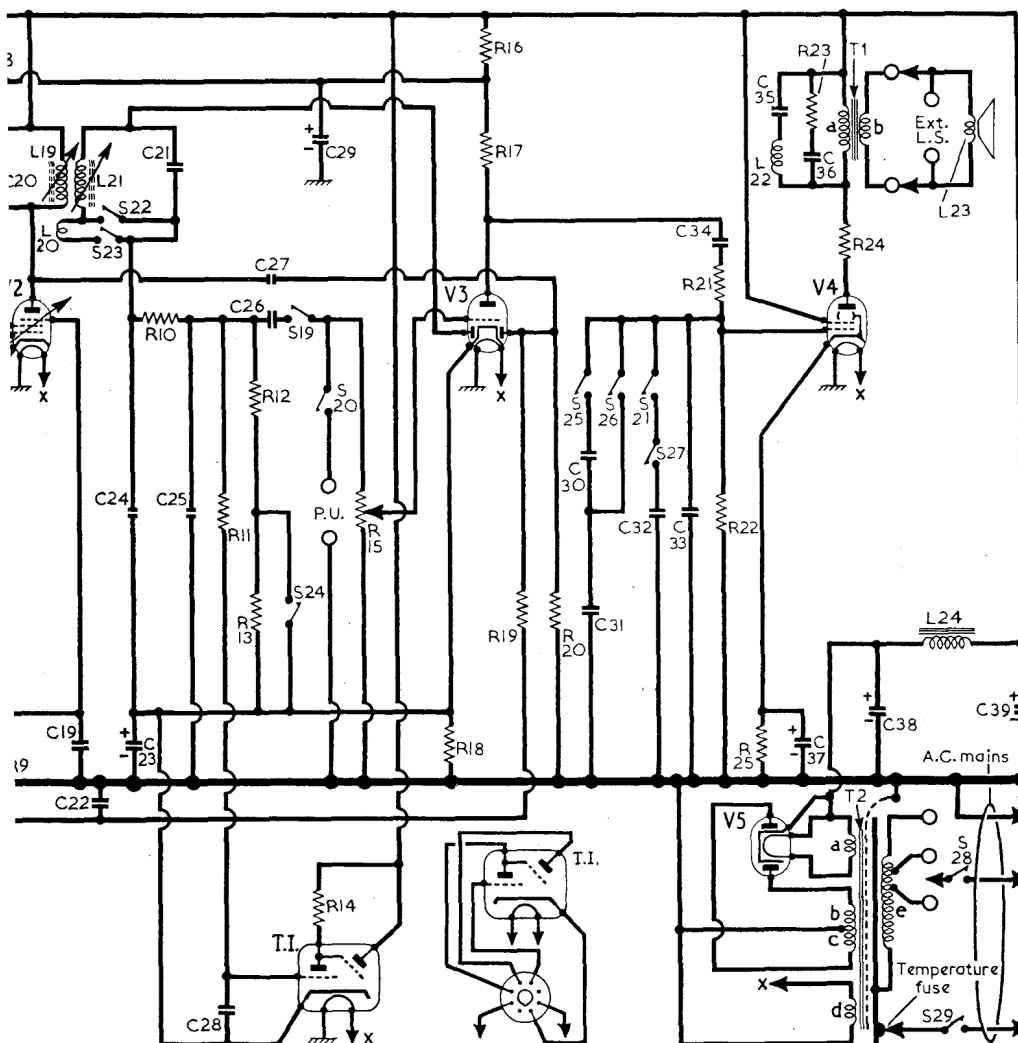
† A.C. reading, each anode.



Switches	Off	1	2	3	4
S22	—	○	○	○	—
S23	—	—	—	—	—
S24	—	—	—	—	—
S25	—	—	—	—	—
S26	—	—	—	—	—
S27	—	—	—	—	—

Waveband Switch-Table

Switches	S.W.	M.W.	L.W.	Gram.
S1	—	—	—	—
S2	—	—	—	—
S3	—	—	—	—
S4	—	—	—	—
S5	—	—	—	—
S6	—	—	—	—
S7	—	—	—	—
S8	—	—	—	—
S9	—	—	—	—
S10	—	—	—	—
S11	—	—	—	—
S12	—	—	—	—
S13	—	—	—	—
S14	—	—	—	—
S15	—	—	—	—
S16	—	—	—	—
S17	—	—	—	—
S18	—	—	—	—
S19	—	—	—	—
S20	—	—	—	—
S21	—	—	—	—



CAPACITORS		Values	Locations
C1	Aerial coupling ...	470pF	A2
C2	I.F. filter tune ...	33pF	A1
C3	S.W. aerial coup.	470pF	H3
C4	M.W. aerial coup.	5-6pF	G3
C5	L.W. aerial trim...	92pF	G3
C6	Bandpass coupling	0.02μF	G4
C7	L.W. bandpass trim.	82pF	G3
C8	V1 C.G. ....	470pF	G4
C9	1st I.F. trans. tuning	150pF	B2
C10		150pF	B2
C11	V1 cath. by-pass ...	0.04μF	G4
C12	V1 osc. C.G. ....	100pF	G4
C13	L.W. osc. tracker...	390pF	H4
C14	M.W. osc. tracker...	510pF	H4
C15	M.W. osc. trim. ...	22pF	H4
C16	L.W. osc. trim. ...	150pF	H4
C17	V1 osc. anode coup.	100pF	G4
C18	S.G. decoupling ...	0.1μF	G4
C19	V2 cath. by-pass ...	0.04μF	G3
C20	2nd I.F. trans. tuning	150pF	C2
C21		150pF	C2
C22	A.G.C. decoupling ...	0.04μF	G3
C23*	V3 cath. by-pass ...	50μF	F3
C24	I.F. by-pass ...	47pF	F4
C25		82pF	F4
C26	A.F. coupling ...	0.005μF	F4
C27	A.G.C. coupling ...	47pF	F4
C28	Tuning ind. C.G. ...	0.04μF	C1
C29*	H.T. decoupling ...	16μF	F3
C30	Parts tone control	0.0015μF	F3
C31		0.003μF	F3
C32	A.F. coupling ...	500pF	F3
C33		100pF	F4
C34	Part whistle filter...	0.01μF	F4
C35	Tone corrector ...	820pF	F1
C36	V4 cath. by-pass ...	0.02μF	C4
C37*	H.T. smoothing ...	50μF	F3
C38*		16μF	E4
C39*	S.W. aerial trim. ...	32pF	E4
C40*		35pF	H3
C41*	M.W. aerial trim. ...	35pF	H3
C42*	L.W. aerial trim. ...	35pF	H3
C43*	Aerial tuning ...	580pF§	A2
C44*	M.W. bandpass trim.	35pF	H3
C45*	L.W. bandpass trim.	35pF	G3
C46*	Bandpass tuning...	580pF§	A1
C47*	S.W. osc. trim. ...	35pF	G4
C48*	M.W. osc. trim. ...	35pF	H4
C49*	L.W. osc. trim. ...	35pF	H4
C50†	Oscillator tuning...	580pF§	A2

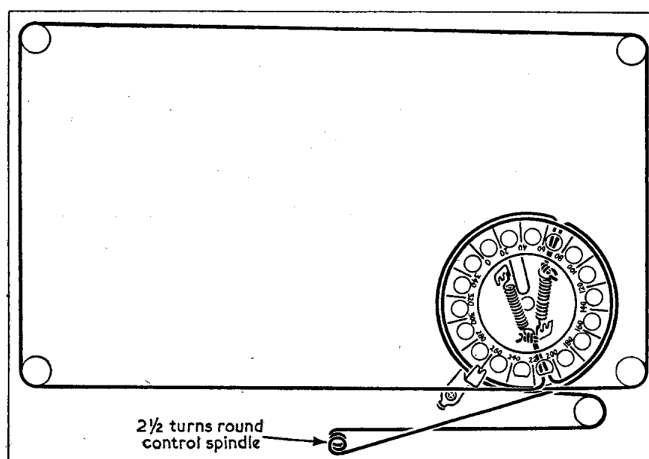
\* Electrolytic. † Variable. ‡ Pre-set.  
§ "Swing" value, min. to max.

RESISTORS		Values	Locations
R1	V1 C.G. ....	470kΩ	G4
R2	V1 G.B. ....	330Ω	G4
R3	V1 osc. C.G. ....	22kΩ	G4
R4	Osc. stabilizers	82Ω	G4
R5		330Ω	H4
R6	Osc. anode load ...	27kΩ	G4
R7	S.G. H.T. potential divider	27kΩ	G4
R8		27kΩ	G4
R9	V2 G.B. ....	330Ω	G4
R10	I.F. stopper ...	100kΩ	F4
R11	T.I. decoupling ...	2.2MΩ	F4
R12	Signal diode loads	100kΩ	F3
R13		220kΩ	F3
R14	T.I. anode load ...	1MΩ	C1
R15	Volume control ...	1MΩ	E3
R16*	H.T. decoupling ...	2.2kΩ	E4
R17	V3 anode load ...	47kΩ	F4
R18	V3 G.B. ....	1.5kΩ	F4
R19	A.G.C. decoupling ...	1MΩ	F4
R20	A.G.C. diode load ...	1MΩ	F4
R21	Tone corrector ...	100kΩ	F4
R22	V4 C.G. ....	470kΩ	F4
R23	Tone corrector ...	6.8kΩ	F4
R24	V4 anode stopper...	47Ω	F4
R25	V4 G.B. ....	180Ω	F4

\* Special type : See "Safety Device" under "General Notes" overleaf.

OTHER COMPONENTS		Approx. Values (ohms)	Locations
L1	Frame aerial ...	10-0	—
L2	I.F. rejector ...	17-0	A1
L3	Aerial coupling coils	—	B1
L4		25-0	B1
L5	Aerial tuning coils	—	B1
L6		4-0	B1
L7	M.W. and L.W. bandpass secondary coils	18-0	B1
L8		4-0	B2
L9	Oscillator coupling coils	—	B2
L10		18-0	B2
L11	Oscillator tuning coils	—	H4
L12		—	H4
L13	1st I.F. trans. {Pri. Sec.}	5-0	H4
L14		16-0	H4
L15	2nd I.F. trans. {Pri. Sec.}	6-2	B2
L16		6-2	B2
L17	9 kc/s whistle filter	6-2	C2
L18		6-2	C2
L19	Speech coil	305-0	C2
L20		2-5	C2
L21	Smoothing choke...	267-0	E4
L22	O.P. trans. {a b}	310-0	C1
L23	Mains trans. {a b c d e, total}	157-0	D2
L24		167-0	D2
T1	Waveband switches	—	H3
S1-S21	Tone switches ...	—	F3
S22-S29	Mains switches ...	—	F3

Right: Sketch of the tuning drive system as seen from the front with gang at maximum.



**Drive Cord Replacement.**—Two separate drive cords are used in this receiver, the gang drive cord and the cursor drive cord, and the makers quote the lengths required for replacement as 34in and 63in respectively. To fit a new cord, it is necessary to remove the chassis from its cabinet. Supplies of cord (part No. 2033/5) and springs (part No. 19448) can be obtained from the makers, and the cords should be stretched by hanging a weight of several pounds on them for a few hours before fitting.

It is unimportant which cord is fitted first, but the (shorter) gang drive is the inner one: that is to say, nearer to the chassis. The tension should be such that the springs are extended to about lin.

**Dublin Models.**—These chassis were constructed in Dublin and differ from the Welwyn-produced chassis in the following respects. The frame aerial L1 is not fitted. A twin core mains lead is used, the earth wire being omitted. The intermediate frequency is 465 kc/s.

## CIRCUIT ALIGNMENT

The chassis should be removed from its cabinet for the following alignment adjustments. Turn the volume control to maximum and set the tone control to position 3.

**I.F. Stages.**—When adjusting the I.F. transformers, a damping unit consisting of a 10kΩ resistor in series with an 0.01μF capacitor should be connected, via the shortest possible leads, across one winding while the core of the other is adjusted. Connect output of signal generator, via an 0.01μF capacitor in the "live" lead, to control grid (pin 6) of V1 and chassis.

Tune receiver to highest wavelength end of M.W., feed in a 470 kc/s (638.3 m) signal and adjust the cores of L21 (location reference F4), L19 (C2), L18 (G4) and L17 (B2) for maximum output. Repeat these adjustments until no further improvement results.

**R.F. and Oscillator Stages.**—As the tuning scale remains fixed in the cabinet when the chassis is withdrawn, reference is made during alignment to the substitute tuning scale embossed on the front of the metal drive drum. Readings on this scale are taken against the "V" notch in the metal cursor mounted below the drum. The substitute scale readings are given in brackets after each calibration frequency in the following instructions. Check that with the gang at maximum capacitance, the notch in the metal cursor coincides with 260 on the substitute scale. It should be noted that the gang can turn beyond its maximum capacitance setting, and it should therefore be set to maximum capacitance by inspection, or by holding a straight edge against the gang plates.

On the long and medium wavebands the aerial circuit must be damped while the grid circuit is being trimmed, and vice versa. One end of the damping unit, which consists of a 1kΩ resistor, should be connected to the junction of C6, L11, and the other end to the aerial and grid trimmers in turn as indicated above. Transfer signal generator leads, via a dummy aerial, to A and E sockets.

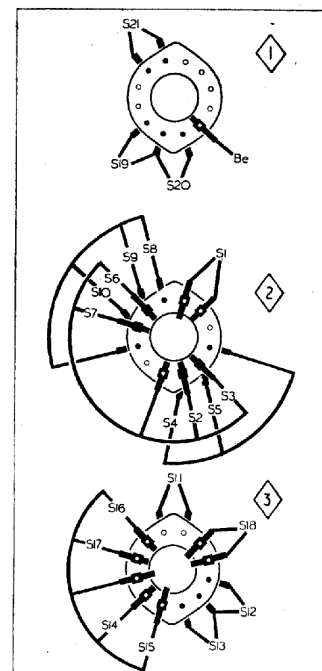
**M.W.**—Switch receiver to M.W., tune to 500 m (300 on scale), feed in a 500 m (600 kc/s) signal and adjust the core of L15 (A2) for maximum output. Tune receiver to 200 m (66.5 on scale), feed in a 200 m (1,500 kc/s) signal and adjust C48 (H4), C44 (H3) and C41 (H3) for maximum output. Repeat these adjustments until no further improvement results.

**L.W.**—Switch receiver to L.W., tune to 1,900 m (287 on scale), feed in a 1,900 m (157.8 kc/s)

signal and adjust L16 (H4) for maximum output. Tune receiver to 1,000 m (66.5 on scale), feed in a 1,000 m (300 kc/s) signal and adjust C49 (H4), C45 (G3) and C42 (H3) for maximum output. Repeat these adjustments until no further improvement results.

**S.W.**—Switch receiver to S.W., tune to 41.4 m (312 on scale), feed in a 41.4 m (7.25 Mc/s) signal and adjust the core of L14 (G4) for maximum output. Tune receiver to 18.86 m (65 on scale), feed in a 18.86 m (17.79 Mc/s) signal and adjust C47 (G4) and C40 (H3) for maximum output, rocking the gang while adjusting C40 for optimum results.

**I.F. Filter.**—The core of L2 (A1) has been accurately set at the factory and should not need readjustment. If necessary, however, the core can be moved with a non-metallic tool, and should be adjusted for maximum voltage at V1 or V2 cathode, feeding a 470 kc/s signal into the A and E sockets.



Diagrams of the waveband switch units.

Waveband Switch-Table

Switches	S.W.	M.W.	L.W.	Gram.
S1	o	—	—	—
S2	o	—	—	—
S3	o	—	—	—
S4	o	—	—	—
S5	o	—	—	—
S6	o	—	—	—
S7	o	—	—	—
S8	o	—	—	—
S9	o	—	—	—
S10	o	—	—	—
S11	o	—	—	—
S12	o	—	—	—
S13	o	—	—	—
S14	o	—	—	—
S15	o	—	—	—
S16	o	—	—	—
S17	o	—	—	—
S18	o	—	—	—
S19	o	—	—	—
S20	o	—	—	—
S21	o	—	—	—