

CAPACITORS		Values	Locations
C1	L.W. aerial trim. ...	210pF	G2
C2	V1 C.G. ...	500pF	G3
C3	V1 S.G. decoupling	0.04μF	F3
C4	1st I.F. trans. tun. {	100pF	A1
C5		100pF	A1
C6*	Filament by-pass ...	50μF	A1
C7	V1 osc. C.G. ...	100pF	G2
C8	Osc. tracker ...	650pF	G2
C9	L.W. osc. trim. ...	510pF	A1
C10	A.G.C. decoupling	0.004μF	F2
C11	Osc. anode decoupling	0.04μF	F2
C12	V2 neutralizer	4pF	F3
C13	2nd I.F. trans. tun. {	100pF	A1
C14		180pF	A1
C15	I.F. by-pass ...	100pF	F2
C16	A.F. coupling ...	0.01μF	F2
C17	H.T. decoupling ...	0.01μF	E2
C18	H.T. decoupling ...	0.04μF	F2
C19	V3 S.G. decoupling	0.04μF	E3
C20	A.F. coupling ...	0.001μF	E3
C21*	Filament by-pass ...	50μF	A1
C22	Tone corrector ...	0.005μF	E3
C23*	H.T. smoothing ...	50μF	B1
C24*		50μF	B1
C25	Mains R.F. by-pass	0.1μF	C1
C26†	Aerial tuning ...	520pF	A1
C27†	M.W. aerial trim. ...	30pF	G3
C28†	Oscillator tuning ...	520pF	A1
C29†	M.W. osc. trim. ...	60pF	G2
C30†	L.W. osc. trim. ...	60pF	G2

\* Electrolytic. † Variable. ‡ Pre-set.

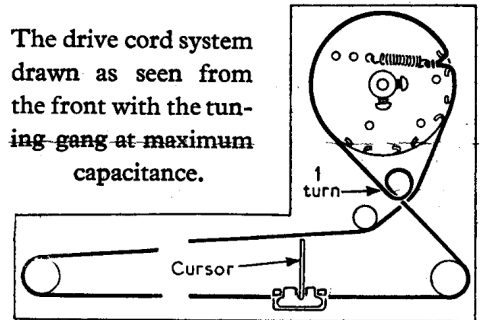
RESISTORS		Values	Locations
R1	V1 C.G. ...	1MΩ	G3
R2	V1 S.G. feed ...	180kΩ	F3
R3	V1 osc. C.G. ...	27kΩ	G3
R4	Osc. reaction shunt	4.7kΩ	F2
R5	Osc. anode feed ...	18kΩ	F2
R6	Fil. H.T. by-pass ...	1.2kΩ	G3
R7	Diode load	470kΩ	F3
R8	A.G.C. decoupling	1.5MΩ	F3
R9	I.F. stopper	27kΩ	F2
R10	V1, V2 G.B. ...	5.6MΩ	E3
R11	Volume control ...	1MΩ	D2
R12	V3 C.G. ...	10MΩ	F3
R13	V3 anode load ...	820kΩ	F2
R14	H.T. decoupling ...	10kΩ	E2
R15	V3 S.G. feed ...	4.7MΩ	F3
R16	V4 C.G. ...	1MΩ	F3
R17	V4 C.G. stopper ...	470kΩ	E3
R18	Fil. H.T. by-passes {	820Ω	E3
R19		1kΩ	E3
R20	Filament ballast ...	1,690Ω	C1
R21	H.T. smoothing ...	1,450Ω	C1
R22	Voltage adj. ...	*975Ω	C1

\* Tapped at 195Ω + 410Ω + 370Ω from MR1.

OTHER COMPONENTS		Approx. Values (ohms)	Locations
L1	Frame aerial ...	1-2	—
L2	L.W. loading coil ...	7-5	A1
L3	M.W. loading coil ...	0-8	A1
L4	Osc. tuning coil ...	1-3	F2
L5	Osc. reaction coil ...	1-1	F2
L6	1st I.F. trans. {	Pri. 0-5	A1
L7		Sec. 0-5	A1
L8	2nd I.F. trans. {	Pri. 0-5	A1
L9		Sec. 4-5	A1
L10	Speech coil	2-6	E2
T1	O.P. trans. {	Pri. 510-0	E3
	Sec. 0-5		
S1-S6	Waveband switches	—	F2
S7, S8	Power sw., g'd R11	—	D2
S9(B), S14(B)	Mains/batt. sw. ...	—	D2
MR1	SenTerCel RM2 ...	—	C1

**Drive Cord Replacement.**—Thirty-six inches of nylon braided glass yarn is required for the

The drive cord system drawn as seen from the front with the tuning-gang at maximum capacitance.

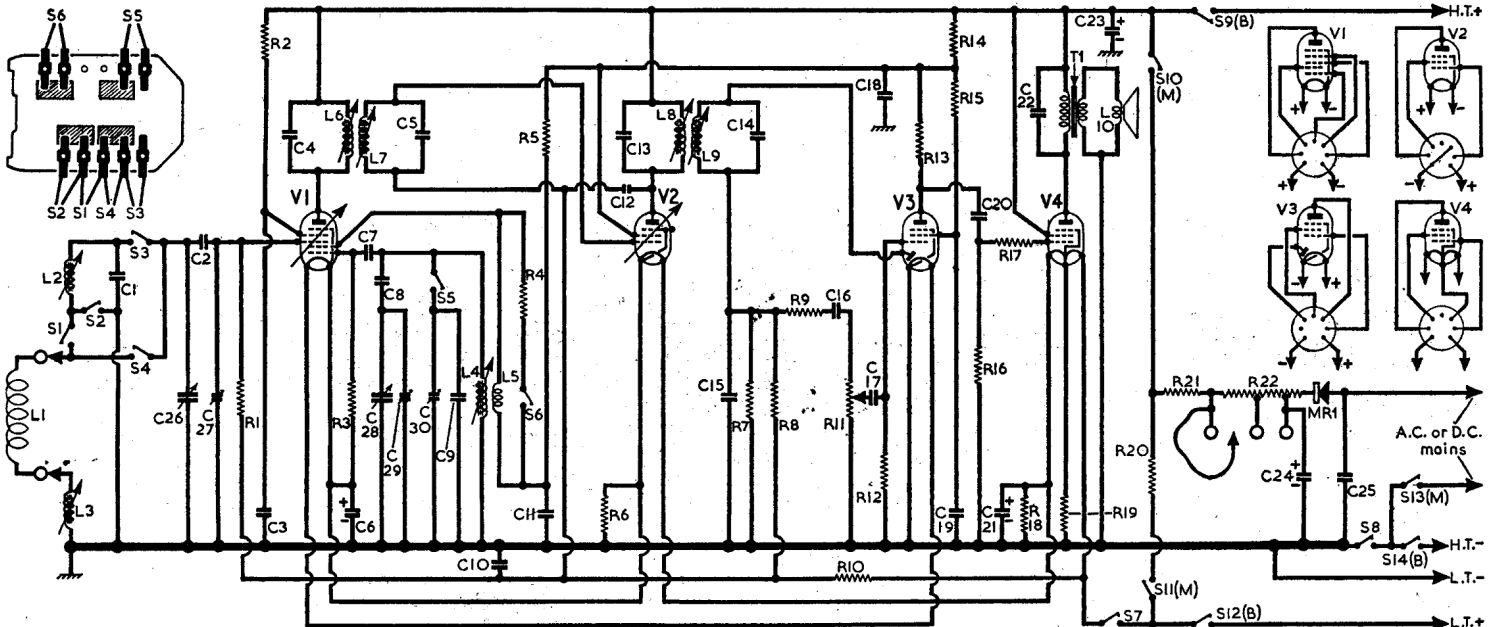


drive cord, which should be run as shown in the sketch above where the chassis is viewed from the front with the gang at maximum capacitance.

Tie one end of the cord to the spring and anchor the spring in the third from the left of the six holes above the drive drum bush. Run the cord down clockwise round the drum, pulling against the gang stop, and under the tuning spindle, laying the cord in the groove furthest from the control knob end. Carry on as indicated in sketch, finally tying off the other end of the cord to the spring.

ULTRA - R786

Intermediate frequency 471 kc/s.



Valves	Anode		Screen	
	V	mA	V	mA
V1 1C2 ...	84	0.6	62	1.4
	35	1.6		
V2 1F3 ...	84	1.6	61	0.5
V3 1FD9 ...	11	50μA	18	18μA
V4 1PH ...	81	5.5	81	1.5

## CIRCUIT ALIGNMENT

**I.F. Stages.**—Remove chassis from cabinet and stand it on the bench resting on its metal rectifier end. Position the carrying case beside it so that the frame aerial is in its normal position relative to the chassis. The signal generator output should be coupled to the receiver via a coil of wire consisting of 14 turns of 18 S.W.G. enamelled copper wound on a 1/4 in diameter former to a length along the former of 1 1/2 in. This coil should be placed about 6 in from the frame aerial. Switch receiver to

M.W. and turn gang to maximum capacitance. Feed in a 471 kc/s (637 m) signal and adjust the cores of L9 (location reference A1), L8 (G3), L7 (A1) and L6 (F3) for maximum output, reducing the input as the circuits come into line to avoid A.G.C. action. Repeat these adjustments until no further improvement results.

**R.F. and Oscillator Stages.**—With the signal generator output coupled to the receiver as for I.F. alignment, check that the cursor coincides with the vertical calibration mark at the top of the high wavelength end of the scale when the gang is at maximum capacitance. Calibration dots numbered 1 to 4 are provided at the top edge of the tuning scale and are referred to in the following alignment adjustments.

**M.W. Oscillator.**—Switch receiver to M.W., tune to calibration mark 4, feed in a 500 m (600 kc/s) signal and adjust the core of L4 (F2) for maximum output. Tune receiver to calibration mark 1, feed in a 200 m (1,500 kc/s) signal and adjust C29 (G2) for maximum output. Repeat these adjustments until no further improvement results.

**L.W.**—Switch receiver to L.W., tune to calibration mark 3, feed in a 1,429 m (210 kc/s) signal and adjust C30 (G2) and the core of L2 (A1) for maximum output. Repeat these adjustments.

**M.W. Aerial.**—Replace chassis in carrying case and close back cover. The following adjustments are accessible through holes in the base and back of the carrying case. Tune receiver to calibration mark 4, feed in a 500 m (600 kc/s) signal and adjust the core of L3 (F2) for maximum output. Tune receiver to calibration mark 1, feed in a 200 m (1,500 kc/s) signal and adjust C27 (G3) for maximum output. Repeat these adjustments until no further improvement results.