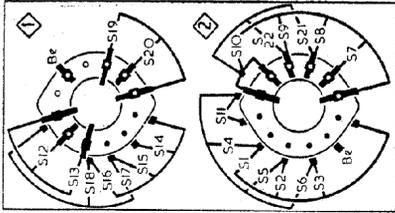
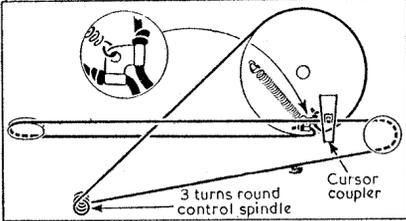


BUSH - AC31



Waveband switch table.

Switches	S.W.	M.W.	L.W.	Grm.
S1	o	o	o	o
S2	o	o	o	o
S3	o	o	o	o
S4	o	o	o	o
S5	o	o	o	o
S6	o	o	o	o
S7	o	o	o	o
S8	o	o	o	o
S9	o	o	o	o
S10	o	o	o	o
S11	o	o	o	o
S12	o	o	o	o
S13	o	o	o	o
S14	o	o	o	o
S15	o	o	o	o
S16	o	o	o	o
S17	o	o	o	o
S18	o	o	o	o
S19	o	o	o	o
S20	o	o	o	o
S21	o	o	o	o
S22	o	o	o	o



Sketch of the drive cord system. The cord clamp is shown inset.

Valves	Anode		Screen		Cath.
	V	mA	V	mA	V
V1 ECH42	230 Oscillator	2.0 }	60	3.0	—
V2 6BF8	230	5.0	60	1.5	—
V3 EL41	220	32.0	230	5.0	6.8
V4 6Z40	300†	—	—	—	*

† Each anode, A.C. * Cathode current 53mA.

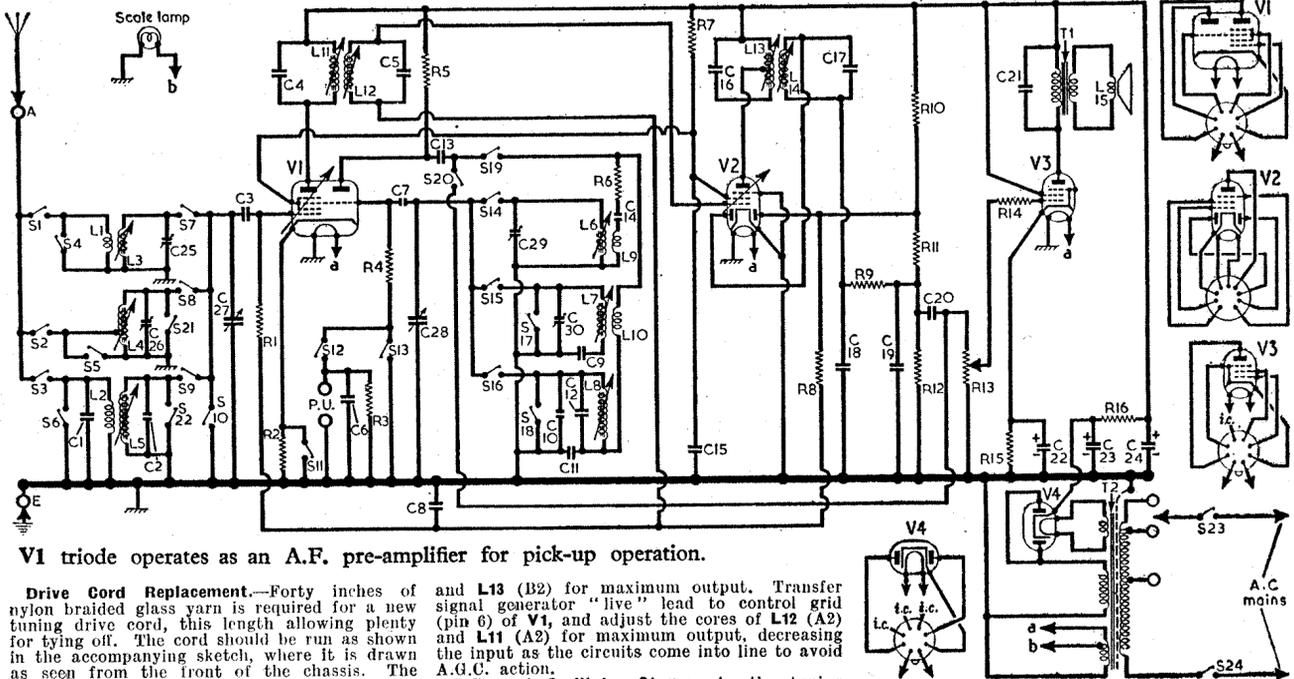
CAPACITORS		Values	Locations
C1	L.W. aerial shunt...	600pF	G4
C2	L.W. aerial trim...	85pF	G4
C3	V1 C.G. ...	100pF	F4
C4	1st I.F. trans. tuning	110pF	A2
C5		110pF	A2
C6	P.U. tone corrector	0.002μF	G4
C7	V1 osc. C.G. ...	56pF	G3
C8	A.G.C. decoupling	0.05μF	F4
C9	M.W. osc. tracker...	515pF	G3
C10	L.W. osc. trim...	33pF	G3
C11	L.W. osc. tracker...	365pF	G3
C12	L.W. osc. trim...	240pF	G3
C13	Oscillator couplers	0.001μF	F3
C14		0.05μF	G3
C15	S.G. decoupling ...	0.05μF	F4
C16	2nd I.F. trans. tuning	110pF	B2
C17		110pF	B2
C18	I.F. by-passes ...	100pF	F4
C19		100pF	B4
C20	A.F. coupling ...	0.002μF	B4
C21	Tone corrector ...	50μF	D3
C22*	V3 cath. by-pass ...	0.01μF	B3
C23*	H.T. smoothing ...	32μF	B1
C24*		32μF	B1
C25†	S.W. aerial trim...	120pF	G8
C26†	M.W. aerial trim...	40pF	G8
C27†	Aerial tuning ...	525pF	A2
C28†	Oscillator tuning ...	525pF	A1
C29†	S.W. osc. trim...	120pF	G3
C30†	M.W. osc. trim...	40pF	G3

* Electrolytic. † Variable. ‡ Pre-set.

RESISTORS		Values	Locations
R1	V1 C.G. ...	680kΩ	F4
R2	V1 G.B. ...	330Ω	G4
R3	P.U. shunt ...	680kΩ	G4
R4	V1 osc. C.G. ...	47kΩ	G3
R5	Osc. anode feed ...	10kΩ	F3
R6	Osc. stabilizer ...	100Ω	F3
R7	S.G. H.T. feed ...	39kΩ	F4
R8	A.G.C. decoupling	1.5MΩ	F4
R9	I.F. stopper ...	47kΩ	F3
R10	Part A.G.C. delay	20MΩ	F4
R11		bias pot. ...	680kΩ
R12	Diode load ...	330kΩ	F4
R13	Volume control ...	500kΩ	D3
R14	V3 C.G. stopper ...	47kΩ	E3
R15	V3 G.B. ...	180Ω	E3
R16	H.T. smoothing ...	1.5kΩ	E4

OTHER COMPONENTS		Approx. Values (ohms)	Locations
L1	Aerial coupling coils	0.5	G4
L2		50.0	G4
L3	Aerial tuning coils	—	G4
L4		7.0	G4
L5	20.0	G4	
L6	Osc. tuning coils ...	—	G3
L7		5.0	G3
L8	5.0	G3	
L9	Osc. reaction coils	0.5	G3
L10		1.0	G3
L11	1st I.F. trans. {Pri.	12.5	A2
L12		12.5	A2
L13	2nd I.F. trans. {Pri.	12.5	B2
L14		12.5	B2
L15	Speech coil	2.3	—
T1	O.P. trans. {Pri.	410.0	—
T2		45.0	—
	Mains {H.T. sec.	140.0	C2
		0.0	—
	trans. {Rect. hr.	0.4	—
		0.4	—
S1-S22	Waveband switches	—	G3
S23, S24	Mains sw., g'd R13	—	D3

Intermediate frequency 470 kc/s.



V1 triode operates as an A.F. pre-amplifier for pick-up operation.

Drive Cord Replacement.—Forty inches of nylon braided glass yarn is required for a new tuning drive cord, this length allowing plenty for tying off. The cord should be run as shown in the accompanying sketch, where it is drawn in the front of the chassis. The pointer coupler can be fitted afterwards, but its position must be adjusted as explained under "Circuit Alignment" with the chassis in the cabinet.

The cord is terminated at both ends in a small metal plate, and can be made up in advance and fitted afterwards. The makers give the exact circular length of the cord after clamping its ends in the plate as 30 1/2 in.

CIRCUIT ALIGNMENT

Remove chassis from cabinet and stand it in its normal position on the bench. All the I.F. adjustments are then accessible from the rear of the receiver, and the R.F. and oscillator adjustments from one end of it. Before commencing alignment, the receiver and the signal generator should be switched on and allowed to warm up for about ten minutes.

I.F. Stages.—Turn gang to maximum capacitance and connect output of signal generator via an 0.01μF capacitor in the "live" lead, to anode (pin 6) of V2 and chassis. Switch receiver to M.W., feed in a 470 kc/s (638.3 m) signal, and adjust the cores of L14 (location reference B2)

and L13 (B2) for maximum output. Transfer signal generator "live" lead to control grid (pin 6) of V1, and adjust the cores of L12 (A2) and L11 (A2) for maximum output, decreasing the input as the circuits come into line to avoid A.G.C. action.

R.F. and Oscillator Stages.—As the tuning scale remains fixed to the cabinet when the chassis is withdrawn, reference is made in the following alignment to the substitute tuning scale fixed to the back of the tuning drive drum. This scale has the trimming and tracking points marked on it in wavelengths, and is read off against the top sloping edge of the thick metal pointer. Check that with the gang at maximum capacitance, the pointer coincides with the datum line on the substitute scale. When the chassis is finally replaced in its cabinet, check that with the gang at maximum capacitance, the cursor coincides with the two dots at the high-wavelength ends of the S.W. and L.W. tuning scales. A dummy aerial, consisting of a 200 pF capacitor should be connected in series with the "live" signal generator lead for M.W. and L.W., and a 400 Ω non-inductive resistor for S.W. Connect output of signal generator, via dummy aerial, to A and E sockets.

L.W.—Switch receiver to L.W., tune to 1,400 m on substitute scale, feed in a 1,400 m (214 kc/s) signal and adjust the cores of L8 (G3) and L5 (G4) for maximum output. Check calibration over band.

M.W.—Switch receiver to M.W., tune to 500 m, feed in a 500 m (600 kc/s) signal and adjust the cores of L7 (G3) and L4 (G4) for maximum output. Tune receiver to 200 m, feed in a 200 m (1,500 kc/s) signal and adjust C30 (G3) and C20 (G3) for maximum output. Repeat these adjustments until no further improvement results.

S.W.—Switch receiver to S.W., tune to 30 m, feed in a 30 m (10 Mc/s) signal and adjust the cores of L6 (G3) and L3 (G4) for maximum output. Tune receiver to 15 m, feed in a 15 m (20 Mc/s) signal and adjust C29 (G3) and C25 (G3) for maximum output. Repeat these adjustments until no further improvement results.