

# BUSH - DAC90

OTHER COMPONENTS		Approx values (ohms)	Locations
L1	M.W. frame aerial	3-0	A2
L2	L.W. frame aerial	4-5	A2
L3	Oscillator tuning coils	1-6	H3
L4	Osc. reaction coupling coils	2-7	H3
L5	1st I.F. trans. {Pri. Sec.}	1-1	H3
L6	2nd I.F. trans. {Pri. Sec.}	2-2	H3
L7	1st I.F. trans. {Pri. Sec.}	5-0	A2
L8	2nd I.F. trans. {Pri. Sec.}	5-0	A2
L9	Speech coil	5-0	B2
L10	Output trans. {Pri. Sec.}	500-0	B1
L11	W/band switches	0-75	B1
T1	Mains switch, g'd.R9	—	B1
S1-S5	W/band switches	—	B1
S6	Mains switch, g'd.R9	—	C3

Valve	Anode		Screen		Cath
	V	mA	V	mA	
V1 CCH35...	105	1-1	50	1-7	0-5
V2 EF39...	75	2-7	70	0-8	1-7
V3 EH35...	60	0-7	—	—	1-7
V4 CL33...	215	25-0	105	1-8	4-0
V5 CV31...	200†	—	—	—	230-0

† A.C.

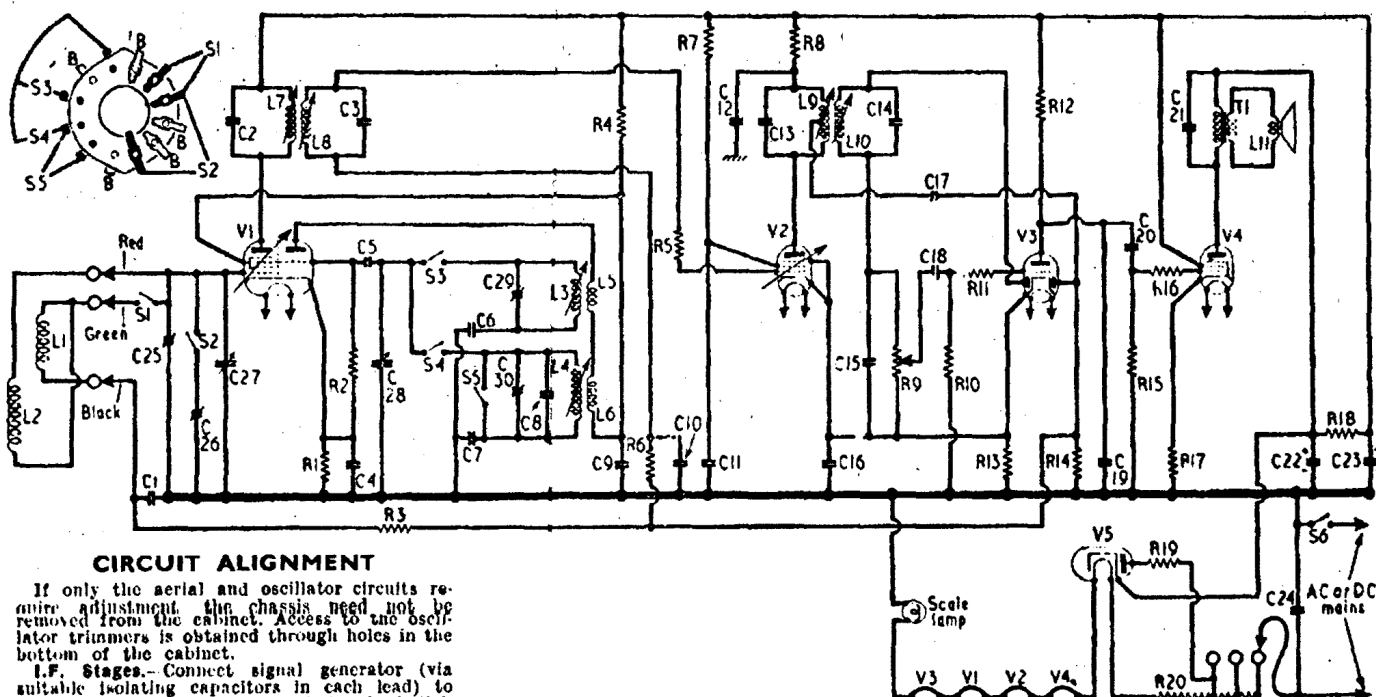
RESISTORS		Values	Locations
R1	V1 fixed G.B.	100Ω	G4
R2	V1 osc. C.G.	33kΩ	H4
R3	A.G.C. decoup.	1MΩ	R4
R4	H.T. feed resistor	15kΩ	G4
R5	Grid stopper	220Ω	A2
R6	A.G.C. decoup.	1MΩ	B4
R7	V2 S.G. H.T. feed	47kΩ	B4
R8	V2 anode decoup.	10kΩ	F4
R9	Volume control	0-5MΩ	C3
R10	V3 C.G. resistor	2-2MΩ	C3
R11	I.F. stopper	100kΩ	B2
R12	V3 anode load	68kΩ	D4
R13	V2 V3 fixed G.B.	470Ω	F4
R14	A.G.C. diode load	1MΩ	D4
R15	V4 C.G. resistor	470kΩ	D3
R16	V4 grid stopper	47kΩ	C3
R17	V4 G.B.	150Ω	C3
R18	H.T. smoothing	10kΩ	D4
R19	Surge limiter	150Ω	C4
R20	Heater ballast	800Ω†	H2

CAPACITORS		Values	Locations
C1	A.G.C. decoupling	0-05μF	G4
C2	1st I.F. transformer	110pF	A2
C3	tuning ...	110pF	A2
C4	V1 cathode by-pass	0-05μF	G3
C5	V1 osc. C.G.	50pF	G4
C6	Osc. M.W. tracker	600pF	H4
C7	Osc. L.W. tracker	300pF	H3
C8	L.W. fixed trim.	180pF	H3
C9	H.T. feed decoup.	0-05μF	G4
C10	A.G.C. decoup.	0-05μF	F4
C11	V2 S.G. decoup.	0-05μF	F4
C12	V2 anode decoup.	110pF	B2
C13	2nd I.F. transformer	110pF	B2
C14	tuning ...	110pF	B2
C15	I.F. by-pass	100pF	K4
C16	V1, V2 cath. by-pass	0-05μF	F4
C17	A.G.C. coupling	50pF	K4
C18	A.F. coupling	0-01μF	C3
C19	I.F. by-pass	0-005μF	D4
C20	A.F. coupling	0-01μF	D4
C21	Tone corrector	0-01μF	B1
C22*	H.T. smoothing	82μF	E3
C23*	Mains R.F. by-pass	16μF	F3
C24	Aerial M.W. trim.	0-1μF	C4
C25†	Aerial L.W. trim.	40pF	H4
C26†	Aerial tuning	—	A1
C27†	Oscillator tuning	—	A1
C28†	Osc. M.W. trim.	40pF	H3
C29†	Osc. L.W. trim.	40pF	H3

Intermediate frequency 465 kc/s

† tapped at 600Ω + 100Ω + 100Ω from V5 cathode

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



## CIRCUIT ALIGNMENT

If only the aerial and oscillator circuits require adjustment, the chassis need not be removed from the cabinet. Access to the oscillator trimmers is obtained through holes in the bottom of the cabinet.

**I.F. Stages.**—Connect signal generator (via suitable isolating capacitors in each lead) to control grid (top cap) of V2 and chassis. Switch set to M.W., turn gang and volume controls to maximum. Feed in a 465 kc/s (645.16 m) signal and adjust L5 (E3) and L10 (H2) for maximum output. Transfer "live" signal generator lead to control grid (top cap) of V1, feed in a 465 kc/s signal and adjust L7 (G4) and L8 (A2). Repeat all adjustments with signal generator connected to V1 control grid.

**R.F. and Oscillator Stages.**—If the receiver is to be aligned out of its cabinet, use may be made of the alignment points on the scale backing plate (these are shown in our plan view of the chassis). For early models the respective alignment dot code letter has been quoted against each relevant frequency in the instructions below. Later models have the alignment dots already calibrated in frequency along the lower edge of the backing plate. Early models were fitted with air-cored oscillator coils, while later models having iron-cored ones necessitate different alignment procedures, which are given below.

At maximum capacitance of the gang the cursor should be coincident with points A and F in the early models, or with point "Max" in the later models. It may be adjusted in position by slackening the two drive drum brass grub screws and rotating the drum on its spindle. The signal generator should be coupled to the receiver via a single loop of wire about the same size as the frame aerial, and placed 6 to 12 inches away from it. The M.W. alignment should always be carried out first as this is common to both wavebands.

**M.W. (early model).**—With the set still switched to M.W., tune to 300 m (C on scale), feed in a 300 m (1,000 kc/s) signal, and adjust C25 (H4) and C29 (H4) for maximum output. Tune to 200 m (I on scale), feed in a 200 m (1,500 kc/s) signal and check calibration. Tune to 500 m (B on scale), feed in a 500 m (600 kc/s) signal and check calibration.

**M.W. (later model).**—With the set still switched to M.W., tune to 200 m on scale, feed in a 200 m (1,500 kc/s) signal and adjust C29 (H4) for maximum output. Tune to 300 m on scale, feed in a 300 m (1,000 kc/s) signal, and adjust C25 (H4) for maximum output. Tune to 500 m on scale, feed in a 500 m (600 kc/s) signal and check calibration. If correct tracking is not obtainable within the limits of the above adjustments it may be adjusted slightly with each adjustment (A1). Otherwise, the core should not be moved.

**L.W. (both models).**—Switch set to L.W., tune to 1,500 m (J on scale), feed in a 1,500 m (200 kc/s) signal and adjust C26 (H4) and C30 (H3) for maximum output. Tune to 1,000 m (J on scale), feed in a 1,000 m (300 kc/s) signal and check for calibration. Tune to 2,000 m (Q on scale), feed in a 2,000 m (150 kc/s) signal and check calibration. L4 (A1) should not be touched unless it is essential.

**Tuning Drive Wire Replacement.**—The tuning drive system is quite simple, and its course is shown in the sketch (col. 2) which is drawn in three-quarter perspective as viewed from the same end as the gang drum, with the gang at maximum. It is helpful if the strut supporting the rear edge of the scale assembly is removed during the process.

Take off of drive wire, and clamp and solder the ends into the anchor plate to form a loop 30 in in circumference. Run the wire as shown, then fit the cursor carriage and adjust it as explained under Circuit Alignment.

Tuning drive system as seen from the drum end when the gang is at maximum.

