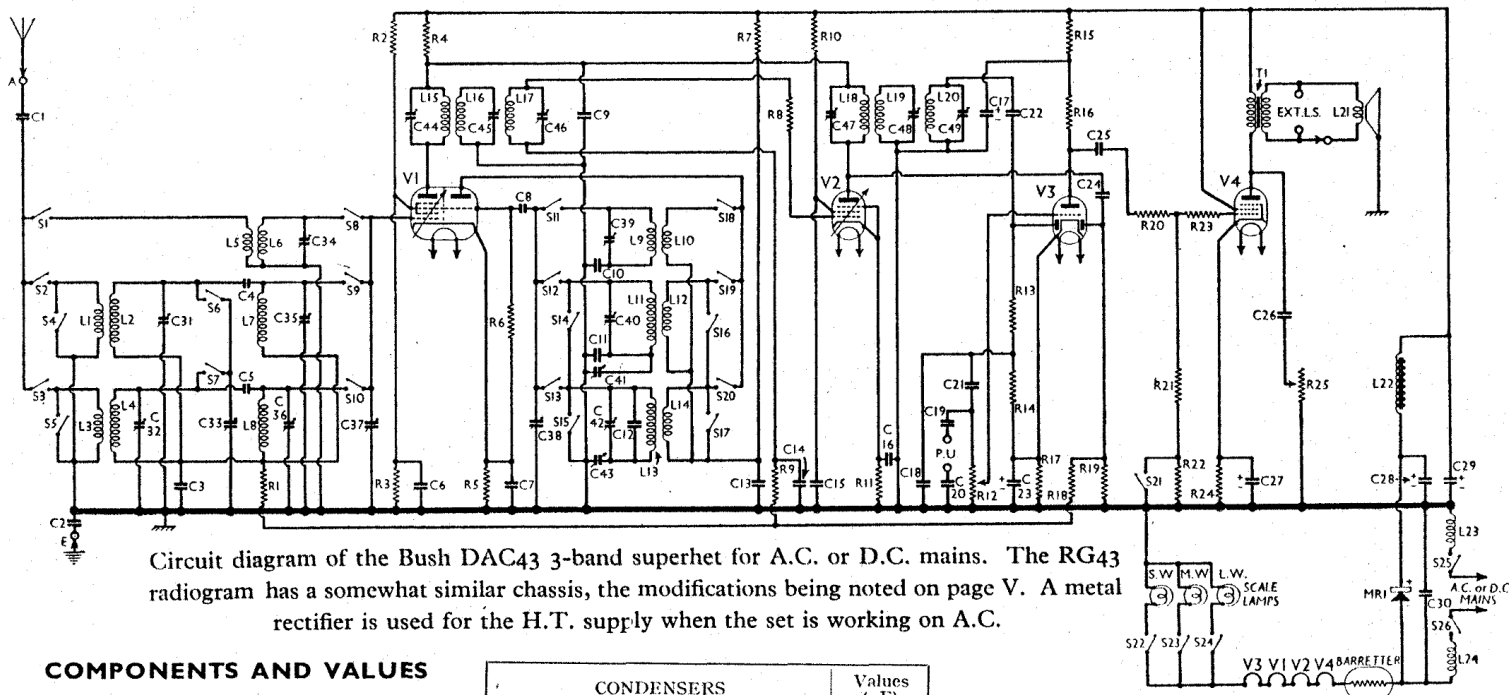


# BUSH - DAC43 & DUG 43 & RG 43



## COMPONENTS AND VALUES

RESISTANCES	Values (ohms)
R1	V1 hexode C.G. decoupling .. 1,000,000
R2	V1 hexode S.G.'s H.T. potential divider .. 20,000
R3	V1 hexode anode and V2 anode decoupling .. 5,000
R4	V1 fixed G.B. .. 100
R5	V1 osc. C.G. resistance .. 30,000
R6	V1 osc. anode decoupling .. 15,000
R7	V2 C.G. stabilising resistance .. 250
R8	V2 C.G. decoupling resistance .. 1,000,000
R9	V2 S.G. decoupling .. 50,000
R10	V2 fixed G.B. resistance .. 100
R11	Manual vol. control .. 500,000
R12	I.F. stopper .. 200,000
R13	V3 signal diode load .. 1,000,000
R14	V3 triode anode decoupling .. 10,000
R15	V3 triode anode load .. 50,000
R16	V3 G.B. resistance .. 1,000
R17	A.V.C. line decoupling .. 1,000,000
R18	V3 A.V.C. diode load .. 1,000,000
R19	V4 C.G. I.F. stopper .. 100,000
R20	V4 C.G. resistances .. 550,000
R21	V4 C.G. I.F. stopper .. 100,000
R22	V4 G.B. resistance .. 35
R23	Variable tone control .. 50,000

CONDENSERS (Continued)	Values (μF)
C44†	1st I.F. trans. pri. tuning .. 0.00015
C45†	1st I.F. trans. tert. tuning .. 0.00015
C46†	1st I.F. trans. sec. tuning .. 0.00015
C47†	2nd I.F. trans. pri. tuning .. 0.00015
C48†	2nd I.F. trans. tert. tuning .. 0.00015
C49†	2nd I.F. trans. sec. tuning .. 0.00015

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

OTHER COMPONENTS	Approx. Values (ohms)
L1	Aerial M.W. coupling coil .. 0.7
L2	Band-pass M.W. primary coil .. 2.4
L3	Aerial L.W. coupling coil .. 15.5
L4	Band-pass L.W. primary coil .. 7.4
L5	Aerial S.W. coupling coil .. 0.2
L6	Aerial S.W. tuning coil .. 0.05
L7	Band-pass M.W. secondary coil .. 2.4
L8	Band-pass L.W. secondary coil .. 7.4
L9	Osc. S.W. tuning coil .. 0.05
L10	Osc. S.W. reaction coil .. 0.2
L11	Osc. M.W. tuning coil .. 1.5
L12	Osc. M.W. reaction coil .. 1.25
L13	Osc. L.W. tuning coil .. 2.45
L14	Osc. L.W. reaction coil .. 2.0
L15	1st I.F. trans. Primary .. 7.0
L16	1st I.F. trans. Tertiary .. 7.0
L17	1st I.F. trans. Secondary .. 7.0
L18	2nd I.F. trans. Primary .. 7.0
L19	2nd I.F. trans. Tertiary .. 7.0
L20	2nd I.F. trans. Secondary .. 7.0
L21	Speaker speech coil .. 1.7
L22	H.T. smoothing choke .. 160.0
L23	Mains filter chokes .. 6.0
L24	Mains filter chokes .. 6.0
T1	Speaker input trans. { Pri. 600.0 Sec. 0.2
S1-S21	Wavechange switches ..
S22-24	Scale lamp switches ..
S25,26	Mains switches ..

CONDENSERS	Values (μF)
C1	Aerial blocking condenser .. 0.005
C2	Earth blocking condenser .. 0.005
C3	Band-pass bottom coupling .. 0.03
C4	Band-pass M.W. top coupling .. Very low
C5	Band-pass L.W. top coupling .. Very low
C6	V1 hexode S.G.'s by-pass .. 0.1
C7	V1 cathode by-pass .. 0.1
C8	V1 osc. C.G. condenser .. 0.00005
C9	V1, V2 anodes decoupling .. 0.1
C10	Osc. S.W. tracker .. 0.0043
C11	Osc. M.W. fixed tracker .. 0.0004
C12	Osc. L.W. fixed trimmer .. 0.0001
C13	V1 osc. anode decoupling .. 0.1
C14	V2 C.G. decoupling .. 0.1
C15	V2 S.G. decoupling .. 0.1
C16	V2 cathode by-pass .. 0.1
C17*	V3 triode anode decoupling .. 2.0
C18	I.F. by-pass .. 0.0001
C19	Pick-up isolating condensers .. 0.03
C20	A.F. coupling to V3 triode .. 0.005
C21	V3 signal diode coupling .. 0.0001
C22	V3 cathode by-pass .. 50.0
C23*	V3 A.V.C. diode coupling .. 0.0001
C24	V3 to V4 A.F. coupling .. 0.03
C25	Part of T.C. filter .. 0.03
C26	V4 cathode by-pass .. 50.0
C27*	H.T. smoothing .. 24.0
C28*	Mains R.F. by-pass .. 0.01
C29*	Band-pass M.W. pri. trimmer .. 0.000035
C30	Band-pass L.W. pri. trimmer .. 0.000035
C31†	Band-pass pri. tuning .. 0.000035
C32†	Aerial S.W. trimmer .. 0.000035
C33†	Band-pass M.W. sec. trimmer .. 0.000035
C34†	Band-pass L.W. sec. trimmer .. 0.000035
C35†	Band-pass sec. tuning .. 0.000035
C36†	Osc. circuit tuning .. 0.000035
C37†	Osc. S.W. trimmer .. 0.00008
C38†	Osc. M.W. trimmer .. 0.00008
C39†	Osc. L.W. trimmer .. 0.00008
C40†	Osc. L.W. tracker .. 0.0003
C41†	Osc. L.W. tracker .. 0.0003
C42†	Osc. L.W. tracker .. 0.0003
C43†	Osc. L.W. tracker .. 0.0003

## GENERAL NOTES

**Switches.**—S1-S21 and S22-S24 are the waveband and scale lamp switches, ganged in three rotary units beneath the chassis. The units are indicated in our side-chassis view, and are shown in detail in the diagrams on page V, as seen looking at the underside of the chassis from the rear. The table (p. V) gives the switch positions for the three control settings, starting from fully anti-clockwise. O indicates open, and C, closed.

**S25 and S26** are the Q.M.B. mains switches, in a single unit, mounted on the separate mains input panel, with L23, L24 and C30.

**Coils.**—The signal frequency and oscillator coils, L1-L14, are in a partitioned screened unit, with the wavechange switches and several other components.

This unit projects above and below the chassis deck. The coils are indicated in detail in our side-chassis view, the metal side plate of the unit having been removed. In all there are eight coil formers, each carrying one or two coils, and each having a trimmer mounted at its end.

The I.F. transformers, L15-L17 and L18-L20, are in two screened units on the chassis deck. Note that each contains three coils and three trimmers. The trimmers are adjustable through holes in the backs of the cans, and in our plan chassis view, they are numbered from top to bottom in each case.

**Scale Lamps.**—These are three Ever Ready M.E.S. types, rated at 6.2 V, 0.3 A. They are switched by S22-S24.

## VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating on A.C. mains of 225 V. The receiver was tuned to the lowest wavelength on the medium band and the volume control was at maximum, but there was no signal input.

Voltages were measured on the 1,200 V scale of an Avometer, chassis being negative.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 TH21C*	185	2.5	65	5.8
V2 VP13C	185	6.0	100	2.2
V3 TDD13C	90	2.2	—	—
V4 Pen 36C	215	33.0	235	4.7

\* Oscillator anode 140 V, 7.4 mA.

# BUSH - DAC43 & DUG 43 & RG 43

## BUSH DAC43 (suite)

**Radiogram Modifications.**—In the radiogram model, RG43, the chassis is basically the same, but there are certain additions and modifications.

In the first place, there are four switch positions instead of three, Gram. being fully clockwise. An additional switch unit, outside the coil assembly, is included, while switch units 1 and 2 are modified. The effect of the modifications is to switch all scale lamps "off" on Gram.; to short C37 on Gram. (thus muting radio); to close S21 on Gram. as well as on M.W. and L.W.; and to disconnect C21 and connect C19 to the top of R12 on Gram., and vice-versa on S.W., M.W. and L.W.

The switch S21 is transferred to one side of the additional switch unit, while the other side of this unit is used for the pick-up switching. There are also other minor modifications.

The isolating condenser C20 is omitted (C19 being retained) and the bottom pick-up tag goes direct to chassis. The pick-up arm and screening goes to true earth, not chassis. The motor frame also goes to true earth. R10 becomes 100,000 O (not 50,000 O).

The speaker is a Rola F10 13/P.M. T1 has a primary resistance of 750 O and a secondary of 0.5 O. L21 has a resistance of 1.6 O. In early models the speaker may be a Rola G12 P.M.

### CIRCUIT ALIGNMENT

**I.F. Stages.**—Switch set to L.W., turn gang condenser to maximum, and connect signal generator to control grid (top cap) of V1, and chassis. Feed in a 465 KC/S signal, and adjust C49, C48 C47 and C46, C45, C44 for maximum

output in each case, keeping the input low. C48 is very critical.

**H.F. and Oscillator Stages.**—Connect signal generator to A and E sockets, via a suitable dummy aerial, which may consist of an inductance of 20  $\mu$ H, a capacity of 200  $\mu$ F and a resistance of 15 O in series on M.W. and L.W., and a 400 O resistance only on S.W. See that with gang at maximum, pointer reads 550 and 2,000 m. on scale.

**S.W.**—Switch set to S.W. feed in an 18 m. signal. Set pointer to 18 m. on scale and adjust C39 for maximum output. Two peaks will be obtained, that which requires the lesser trimmer capacity being correct. Next adjust C34 for maximum output.

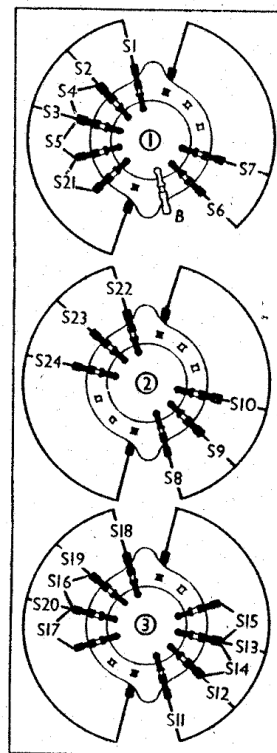
**M.W.**—Switch set to M.W., feed in a 200 m. signal, tune to 200 m. on scale, and adjust C40 for maximum output on the peak requiring the lesser trimmer

capacity. Feed in a 300 m. signal, tune to 300 m. on scale, and adjust C31 and C35 for maximum output. Feed in a 500 m. signal, tune to 500 m. on scale, and adjust C41 for maximum output. Check again on 300 m.

**L.W.**—Adopt procedure as for M.W., but adjust C42 on 1,000 m., C32 and C36 on 1,500 m. and C43 on 1,800 m. Check again on 1,500 m.

### SWITCH DIAGRAMS

Switch diagrams, looking from the rear of the underside of the chassis. The units are numbered as in the side-chassis view.



SWITCH TABLE

Switch	S.W.	M.W.	L.W.
S1	C	O	O
S2	O	C	O
S3	O	O	C
S4	C	O	O
S5	C	C	O
S6	O	C	O
S7	O	O	C
S8	C	O	O
S9	O	C	O
S10	O	O	C
S11	C	O	O
S12	O	C	O
S13	O	O	C
S14	C	O	O
S15	O	C	O
S16	C	O	O
S17	O	C	O
S18	C	O	O
S19	O	C	O
S20	O	O	C
S21	O	C	O
S22	C	O	O
S23	O	C	O
S24	O	O	C