

**BUSH****Models AC.31, DAC.31**

**General Description :** Four-valve (including rectifier), three-waveband superheterodyne receiver. For gramophone record reproduction the triode section of V<sub>1</sub> is used as an audio amplifier. Released January 1952. Price £23 os. od. (including tax).

**Power Supplies :** *Model AC.31:* A.C. mains, 100–127, 200–250 volts, 40–100 c/s. Consumption 45 watts.

*Model DAC.31:* A.C./D.C. mains, 200–250 volts. Consumption 45 watts.

**Wavebands :** L.W. 1000–2000 m. (300–150 kc/s.); M.W. 176–575 m. (1700–520 kc/s.); S.W. 14.3–35.5 m. (21–8.5 Mc/s.).

**Intermediate Frequency :** 470 kc/s.

**Valves :** Mullard rimlock series.

*Model AC.31:* (V<sub>1</sub>) ECH<sub>42</sub>; (V<sub>2</sub>) EBF<sub>80</sub>; (V<sub>3</sub>) EL<sub>41</sub>; (V<sub>4</sub>) EZ<sub>41</sub>.

*Model DAC.31:* (V<sub>1</sub>) UCH<sub>42</sub>; (V<sub>2</sub>) UBF<sub>80</sub>; (V<sub>3</sub>) UL<sub>41</sub>; (V<sub>4</sub>) UY<sub>41</sub>.

**Scale Lamps :** A.C.31, 6.2 volts, 0.3-amp.; DAC.31, 3.5 volts 0.15-amp.

**Alignment Procedure :** *Warning*—Chassis of DAC.31 is “Live”.

A dummy aerial should be used in series with the output lead of the signal generator, and may consist of a 400-ohm non-inductive resistor for the short waveband and a fixed capacitor of 200 pF. for the long and medium wavebands. A period of at least 10 minutes should elapse after switching on before alignment is commenced. Turn the volume control to maximum and use the lowest possible signal from the generator. When the plates of the tuning capacitor are fully meshed the pointer should coincide with the datum line on the main and auxiliary scales.

**I.F.:** An isolating capacitor of 0.01  $\mu$ F. in series with the output of the signal generator will be required to ensure the A.V.C. line is not short-circuited.

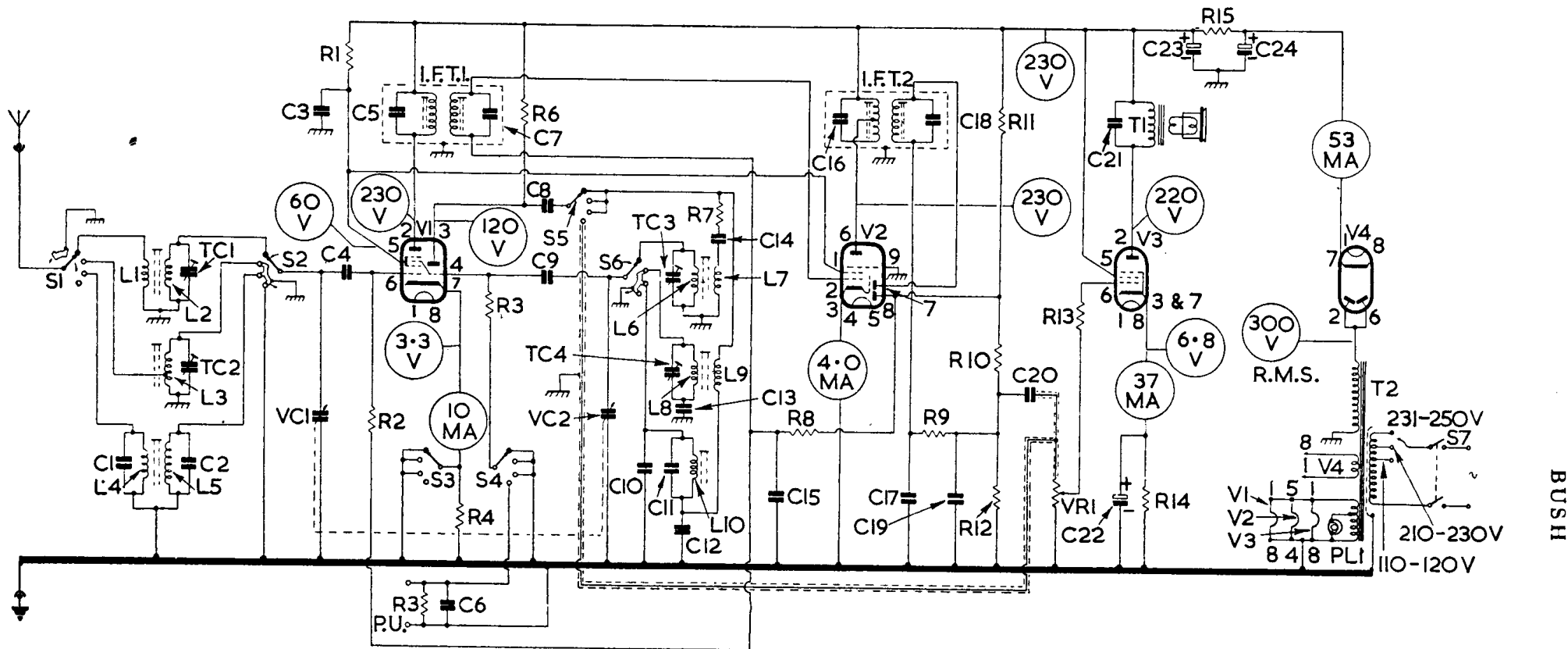
Set the tuning capacitor to maximum capacitance on medium waveband. Connect signal generator of V<sub>2</sub> anode (pin 6), and tune the secondary and primary of second I.F. transformer in that order for maximum output. Transfer the signal to V<sub>1</sub> control grid (pin 6) and tune the secondary and primary of first I.F. transformer for maximum output. Tune each circuit once only at 470 kc/s. and reduce the output of the signal generator as each circuit comes into line. The secondary winding is nearest the top of the can.

**R.F.:** When aligning the R.F. section the signal generator should be connected to the aerial socket. This is particularly important for the DAC.31, as an isolating capacitor is wired in.

**L.W.:** Adjust cores of L<sub>10</sub> and L<sub>4/5</sub> for maximum output at 1400 m. (214 kc/s.). Check calibration over whole range.

**M.W.:** Adjust cores of L<sub>8/9</sub> and L<sub>3</sub> for maximum output at 500 m. (600 kc/s.). Adjust TC<sub>4</sub> and TC<sub>2</sub> for maximum output at 200 m. (1500 kc/s.). Check calibration and repeat alignment if necessary.

**S.W.:** Adjust cores of L<sub>6/7</sub> and L<sub>1/2</sub> for maximum output at 30 m. (10 Mc/s.). Adjust TC<sub>3</sub>, TC<sub>1</sub> for maximum output at 15 m. (20 Mc/s.). Check calibration and repeat alignment if necessary. The auxiliary calibration scale is attached to the drive drum, and should be used when aligning the chassis out of the cabinet.



CIRCUIT DIAGRAM—BUSH MODEL AC.31

(For switch details and D.C. resistance of inductors see following page)

Capacitors.

C1	600 pF.
C2	85 pF.
C3	0.05
C4	100 pF.
C5	110 pF.
C6	0.002
C7	110 pF.
C8	0.001
C9	56 pF.
C10	33 pF.

C11	240 pF.
C12	365 pF.
C13	515 pF.
C14	56 pF.
C15	0.05
C16	110 pF.
C17	100 pF.
C18	110 pF.
C19	100 pF.
C20	0.002

C21	0.01
C22	50
C23	50 DAC.31
C24	32 AC.31
C25	50 DAC.31
C26	0.001
C27	0.001
C28	0.005
C29	0.01

} DAC.31

Resistors.

R1	33k	AC.31
R2	27k	DAC.31
R3	680k	
R4	330	
R5	47k	
R6	10k *	
R7	100	
R8	1.5M	
R9	47k	

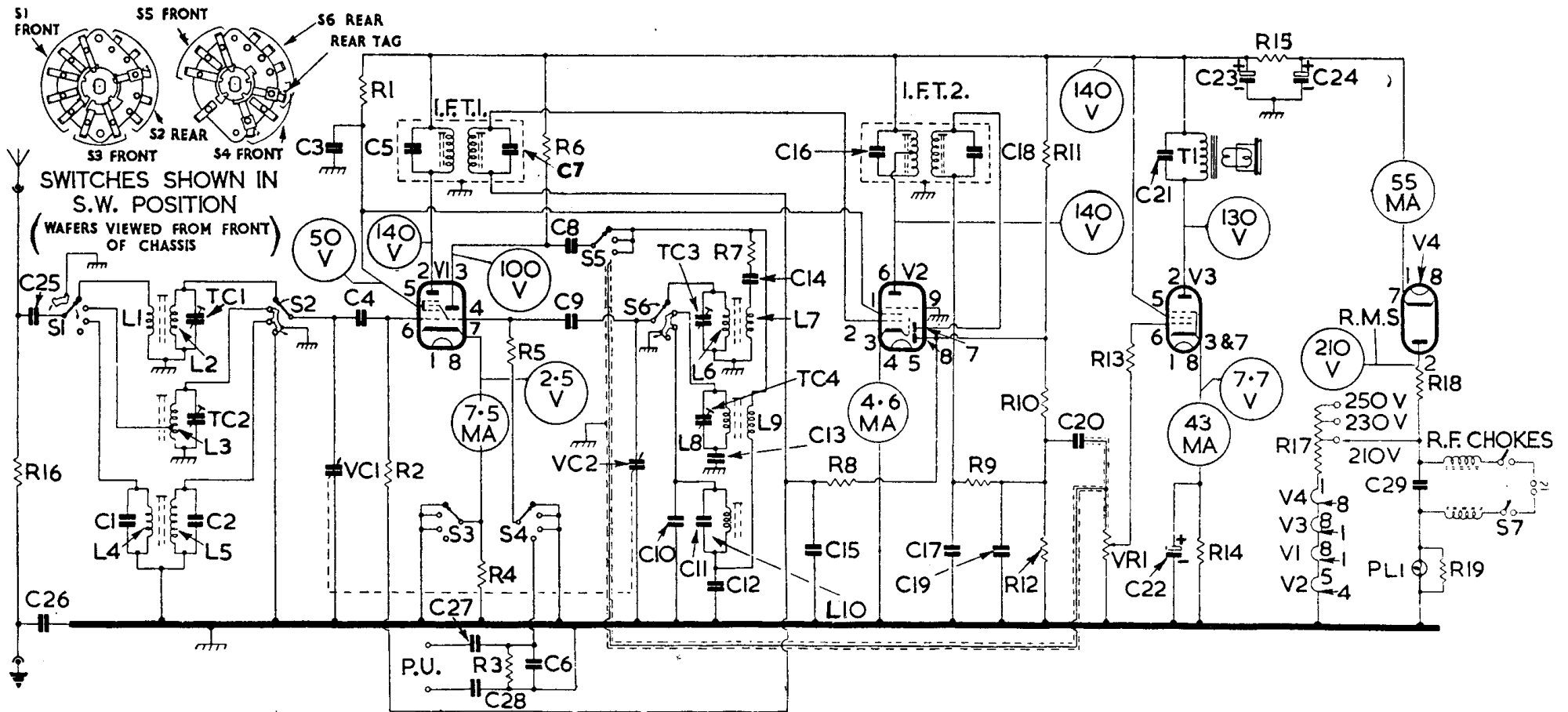
R10	680k
R11	20M
R12	330k
R13	47k
R14	180
R15	1.0k DAC.31
R16	1.5k AC.31
R17	1M
R18	200 + 200 + 1030
R19	250
R20	75

} DAC.31

VR1 500k

TC1, TC3 60-120 pF.  
TC2, TC4. 4-40 pF.  
VC1 } 2 x 528 pF.  
VC2 } Ganged

\* AC.31 only. On later receivers R6 is 22k (1 W. 10%)



CIRCUIT DIAGRAM—BUSH MODEL DAC.31  
 (Component values are given on the preceding page)

D.C. Resistances.  
 L1 0.5 ohm  
 L4 50 ohms  
 L7 0.5 ohm  
 L10 5 ohms

L2 Under 1/2 ohm  
 L5 20 ohms  
 L8 1 ohm  
 L11 3 ohms (DAC.31)

L3 7 ohms  
 L6 Under 1/2 ohm  
 L9 5 ohms  
 L12 3 ohms (DAC.31)

I.F. transformers: 12.5 ohms, each winding  
 Mains transformer AC.31 only:  
 Primary 45 ohms total  
 Secondary 140 ohms total  
 Rectifier heater 0.9 ohms  
 Valve heaters 0.4 ohms

Output transformer:  
 Primary 410 ohms  
 Secondary Under 1/2 ohm