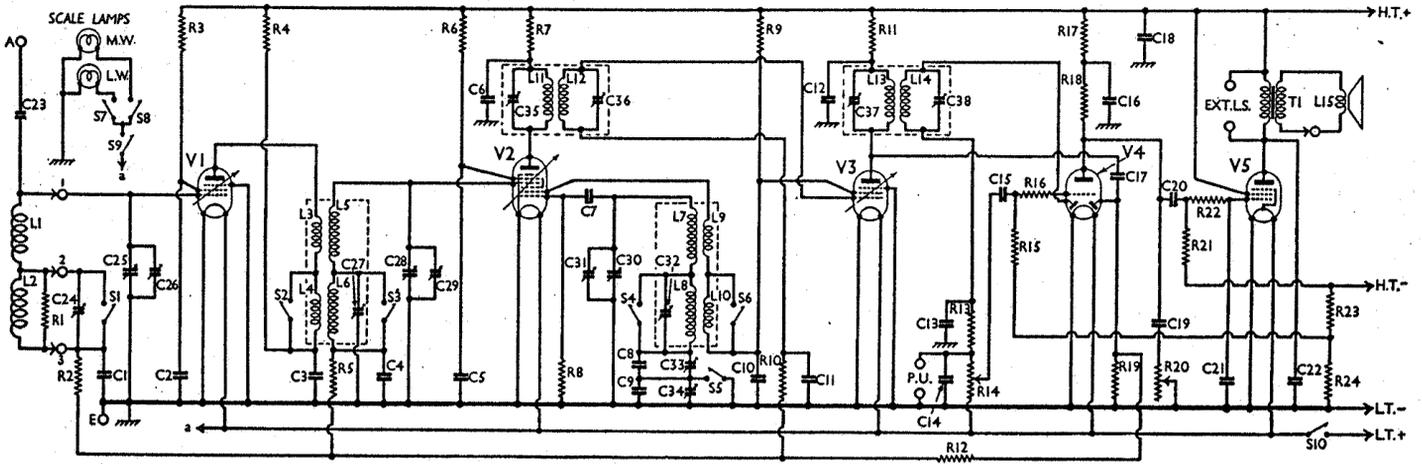


# BUSH - BP 5



Circuit diagram of the Bush BP5 transportable battery superhet. Note the scale lamp switching. L1 and L2 are the frame aerial windings. The circles indicated by the figures 1, 2 and 3 show the points of connection between the frame aerials and the chassis wiring.

## COMPONENTS AND VALUES

Resistances		Values (ohms)
R1	L.W. frame shunt .. ..	100,000
R2	V1 C.G. decoupling .. ..	1,000,000
R3	V1 S.G. H.T. feed .. ..	100,000
R4	V1 anode decoupling .. ..	10,000
R5	V2 pentode C.G. decoupling ..	1,000,000
R6	V2 S.G.'s H.T. feed .. ..	100,000
R7	V2 pent. anode decoupling ..	10,000
R8	V2 osc. C.G. resistance .. ..	70,000
R9	V2 osc. anode decoupling and V3 S.G. H.T. feed .. ..	10,000
R10	V3 C.G. decoupling .. ..	1,000,000
R11	V3 anode decoupling .. ..	10,000
R12	A.V.C. line decoupling .. ..	1,000,000
R13	I.F. stopper .. ..	50,000
R14	V4 signal diode load; vol. control .. ..	500,000
R15	V4 triode C.G. resistance .. ..	5,000,000
R16	V4 triode C.G. I.F. stopper .. ..	500,000
R17	V4 triode anode decoupling .. ..	20,000
R18	V4 triode anode load .. ..	20,000
R19	V4 A.V.C. diode load .. ..	1,000,000
R20	Variable tone control .. ..	50,000
R21	V5 C.G. resistance .. ..	500,000
R22	V5 C.G. I.F. stopper .. ..	100,000
R23	Automatic G.B. resistances	350
R24		250

Other Components		Approx. Values (ohms)	
L1	Frame aerial windings	1.3	
L2		3.8	
L3	H.F. transformer primary	3.3	
L4		8.0	
L5	H.F. transformer secondary	3.3	
L6		14.0	
L7	Oscillator grid tuning coils	4.0	
L8		8.0	
L9	Oscillator anode reaction coils	2.0	
L10		2.6	
L11	1st I.F. trans. { Pri. ..	65.0	
L12		Sec. ..	65.0
L13	2nd I.F. trans. { Pri. ..	65.0	
L14		Sec. ..	65.0
L15	Speaker speech coil .. ..	20.0	
T1	Speaker input trans. { Pri. ..	700.0	
		Sec. ..	0.25
S1-S6	Waveband switches .. ..	—	
S7-S9	Scale lamp switches .. ..	—	
S10	L.T. switch, ganged R14 ..	—	

Condensers		Values (μF)
C1	V1 C.G. decoupling .. ..	0.1
C2	V1 S.G. by-pass .. ..	0.1
C3	V1 anode decoupling .. ..	0.1
C4	V2 pentode C.G. decoupling ..	0.1
C5	V2 S.G.'s by-pass .. ..	0.1
C6	V2 pent. anode decoupling ..	0.1
C7	V2 osc. C.G. condenser .. ..	0.0005
C8	Oscillator M.W. tracker .. ..	0.002
C9	Oscillator L.W. tracker .. ..	0.0018
C10	V2 osc. anode decoupling and V3 S.G. by-pass .. ..	0.1
C11	V3 C.G. decoupling .. ..	0.1
C12	V3 anode decoupling .. ..	0.1
C13	I.F. by-passes .. ..	0.0001
C14		0.0001
C15	L.F. coupling to V4 triode ..	0.02
C16	V4 triode anode decoupling ..	0.1
C17	Coupling to V4 A.V.C. diode ..	0.0001
C18	H.T. supply reservoir .. ..	2.0
C19	Part of tone control circuit ..	0.02
C20	V4 to V5 L.F. coupling .. ..	0.03
C21	V5 C.G. I.F. by-pass .. ..	0.0003
C22	Fixed tone corrector .. ..	0.001
C23	External aerial coupling .. ..	Very low
C24†	Frame aerial L.W. trimmer .. ..	—
C25†	Frame aerial tuning .. ..	—
C26†	Frame aerial trimmer .. ..	—
C27†	H.F. trans. L.W. trimmer .. ..	—
C28†	H.F. trans. tuning .. ..	—
C29†	H.F. trans. trimmer .. ..	—
C30†	Oscillator tuning .. ..	—
C31†	Oscillator trimmer .. ..	—
C32§	Oscillator L.W. trimmer .. ..	—
C33†	Oscillator M.W. tracker .. ..	—
C34†	Oscillator L.W. tracker .. ..	—
C35†	1st I.F. trans. pri. tuning .. ..	—
C36†	1st I.F. trans. sec. tuning .. ..	—
C37†	2nd I.F. trans. pri. tuning .. ..	—
C38†	2nd I.F. trans. sec. tuning .. ..	—

† Variable. ‡ Pre-set.  
§ One pre-set and one 0.00003 μF fixed condenser in parallel.

The I.F. transformers are in two screened units on the chassis deck, and the trimmers are of the dual type, the hexagonal nuts adjusting the primary trimmers, and the central grub screws the secondaries. The L13, L14 transformer also contains the fixed condenser C17.

**Scale Lamps.**—These are two Osram M.E.S. types, rated at 2.5 V, 0.3 A. They are individually switched on the M.W. and L.W. bands, and neither of them lights until the master control S9 is closed by pushing in the volume control.

**Batteries.**—L.T., Exide celluloid-cased 2 V 30 AH cell, type CZH3. H.T., Drydex 144 V battery. Grid bias is automatic.

## VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating from a new H.T. battery reading 150 V. The volume control was at maximum and the receiver was tuned to the lowest wavelength on the medium band but there was no signal input as the frame connections were shorted together.

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

Valve	Anode Volts	Anode Current (mA)	Screen Volts	Screen Current (mA)
V1 VP2	125	1.0	80	0.4
V2 FC2*	130	0.6	55	0.8
V3 VP2	115	2.4	120	0.7
V4 TDD2A	108	0.5	—	—
V5 PM22A	138	2.8	140	0.9

\* Osc. anode (G2) 120 V, 0.8 mA.

## GENERAL NOTES

**Switches.**—S1-S8 are in a single unit beneath the chassis, seen in our under-chassis view. All the switches, except S7 (nearest the control knob) are closed on the M.W. band and open on the L.W. band. S7 is open on the M.W. band and closed on the L.W. band.

S9 is the scale lamp master switch, which closes when the volume control and battery switch knob is pushed in. S10 is the Q.M.B. L.T. battery switch, ganged with the volume control R14.

**Coils.**—L1 and L2, the frame aerials, are mounted on the inside of the hinged back of the cabinet, and are connected to the chassis by plugs and sockets which are colour-coded. The points at which the connections are made are indicated in our circuit diagram by the figures 1, 2 and 3, and the sockets seen in the plan chassis view are similarly marked.

L3-L6 and L7-L10 are in two screened units beneath the chassis. These units also contain the pre-set condensers C27 and C32, which are adjustable through holes in the vertical partition carrying the coil units. The coil screens are held in position by bayonet fittings, but that belonging to the L7-L10 unit is only removable if the volume control and battery switch assembly is first detached from the front of the chassis, where it is held by two screws. This coil unit also contains the fixed condenser C7, and another small fixed condenser (0.0003 μF) wired in parallel with the pre-set condenser C32.