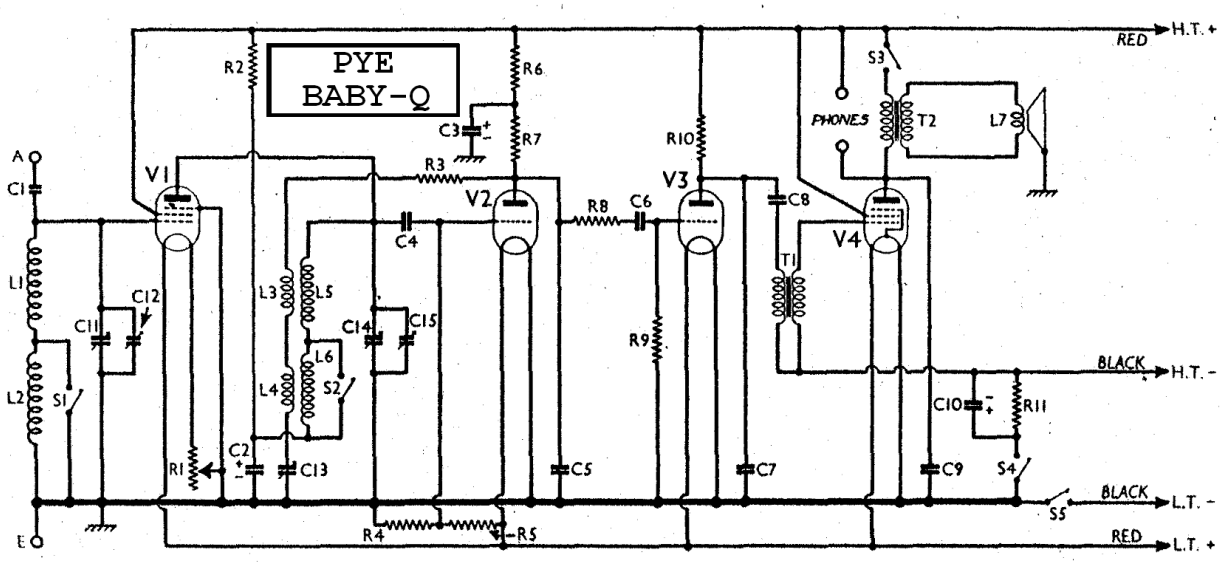


Circuit diagram of the Pye Baby Q battery portable. **R1** and **C13** are ganged together to form a combined gain and reaction control.

COMPONENTS AND VALUES

	RESISTANCES	Values (ohms)
R1	V1 (filament) gain control, ganged C13	15
R2	V1 anode H.T. feed	10,000
R3	Reaction circuit stabiliser	100
R4	V2 grid leak resistances	2,100,000
R5		2,100,000
R6	V2 anode decoupling	30,000
R7	V2 anode load	30,000
R8	R.F. stopper	110,000
R9	V3 C.G. resistance	1,100,000
R10	V3 anode load	50,000
R11	V4 auto-G.B. resistance	300

	CONDENSERS	Values (μF)
C1	External aerial series condenser	0·000005
C2*	V1 anode decoupling	2·0
C3*	V2 anode decoupling	2·0
C4	V2 C.G. condenser	0·0001
C5	V2 anode R.F. by-pass	0·0002
C6	V3 C.G. condenser	0·01
C7	Fixed tone corrector	0·003
C8	A.F. coupling	0·1
C9	Fixed tone corrector	0·003
C10*	V4 auto-G.B. by-pass	20·0
C11†	Frame aerial tuning	—
C12‡	Frame aerial M.W. trimmer	—
C13†	Reaction control, ganged R1	—
C14†	V1 anode circuit tuning	—
C15‡	V1 anode circuit M.W. trimmer	—

* Electrolytic. † Variable. ‡ Pre-set.

	OTHER COMPONENTS		Approx. Values (ohms)
L1	Frame aerial windings		1·72
L2			23·3
L3	Reaction coils, total		8·75
L4			
L5	V1 anode circuit tuning coils		3·8
L6			11·7
L7	Speaker speech coil		3·0
T1	Intervalve trans.	Pri.	460·0
		Sec.	1,620·0
T2	Speaker input trans.	Pri.	1,000·0
		Sec.	0·5
S1, S2	Waveband switches		—
S3	Internal speaker switch		—
S4	H.T. circuit switch		—
S5	L.T. circuit switch		—

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating with a new H.T. battery reading 93 V, on load The receiver was tuned to the lowest wavelength on the medium band, but there was no signal input as the frame aerial connections were shorted.

The combined gain and reaction control was set so that the slider of the gain control was just at the clockwise end of the resistance winding, but the vanes of the reaction condenser were not in mesh. This position is easily determined by feel.

Voltages were measured on the 400 V scale of a model 7 Universal Avometer, chassis being negative.

If **V4** should become unstable, as in our case, when measurements are being made of its anode current, it can be stabilised by connecting a non-inductive condenser of about 0·1 μF from that electrode to chassis.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 K50M	70	1·3	90	0·4
V2 K30K	42	0·6	—	—
V3 K30K	50	0·6	—	—
V4 K70B	88	3·7	90	0·6

GENERAL NOTES

Switches.—**S1** and **S2** are the waveband switches, and **S4, S5** the battery circuit switches, ganged together in a single rotary unit, mounted on the front member of the chassis. This is indicated in our plan chassis view, and the switches are shown in detail in the diagram on this page, which is drawn looking from the rear of the top of the chassis.

The table below gives the switch positions for the three control settings, starting from fully anti-clockwise. A dash indicates open, and **C** closed.

Switch	Off	M.W.	L.W.
S1	C	C	—
S2	—	C	—
S4	—	C	C
S5	—	C	C

S3 is the internal speaker jack switch, incorporated in one of the "phone" sockets, which opens when headphone or external speaker plugs are fully inserted into the 'phone sockets. These, incidentally, are situated on a panel at the right-hand side of the cabinet. **S3**, therefore, is not shown in our chassis illustrations.

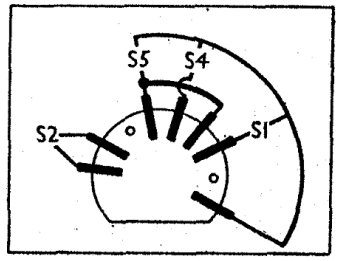


Diagram of the switch unit

Coils.—**L1** and **L2** are the frame aerial windings, brought out to three screw terminals on a small panel inside the cabinet. **L3-L6** are in a screened unit mounted above the gang condenser by means of a plate screwed to the rear frame member of the gang.

Headphones.—Two sockets are provided at the right-hand side of the cabinet for a pair of high resistance (8,000 O) headphones, or an extension speaker. By pushing the plugs fully home, **S3** opens and mutes the internal speaker.

Condenser C1.—This is a very small condenser, formed of one enamelled wire spirally wound over another. It is situated inside the cabinet between the external aerial socket and the screw terminal forming the top connection of **L1.**

Resistance R1.—This is combined with the reaction control **C13.** For the first half of the travel of the slider, **R1** decreases in value. When the minimum value of **R1** is reached, the slider passes over a thick copper track, and reaction is then applied by the increasing capacity of **C13** during the remainder of the travel of the control.

CIRCUIT ALIGNMENT

Scale Adjustment.—With the chassis in the cabinet, rotate the tuning control clockwise until pointer is at high wavelength end of scale. Push the flat end of a pencil or rod against the condenser vanes and rock the gang until it can be felt that the rotor vanes are fully in mesh with those of the stator. The pointer should now be located at the mark at the top end of the L.W. scale. If not, adjust it by removing the control knob and inserting a fine screwdriver between the escutcheon plate and the tuning spindle. The pointer is fitted with a friction collar to the spindle.

R.F. Circuits.—All adjustments should be made with the chassis in the cabinet and the volume control midway between minimum and maximum positions.

Connect signal generator via a dummy, aerial to the external **A** and **E** sockets and feed in a 210 m. (1,425 KC/S) signal. Switch set to M.W., tune to 210 m. on scale, and adjust **C15** and **C12** for maximum output.

Check calibration at 550, 900 and 1,900 m.

PYE - 75B
NEW BABY Q

CIRCUIT ALIGNMENT

I.F. Stages.—For this operation the chassis must be removed from the cabinet. Connect signal generator leads, via a 0.1 μf capacitor, to control grid (top cap) of **V1** and chassis after removing the original top cap connector and connecting a 500,000Ω resistor between the top cap of the valve and the A.V.C. line. A convenient point on the A.V.C. line is the brown frame aerial lead.

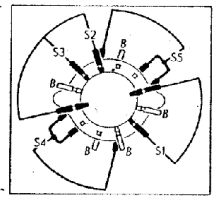
Switch set to M.W., turn the volume control to maximum, and tune to 560 m on scale. Feed in a 465 kc/s (645.16 m) signal and adjust the cores of the two I.F. transformers, progressively reducing the input signal to avoid A.V.C. action. The primary adjustments are made beneath the chassis deck, and the secondary adjustments are carried out from the tops of the cans. After adjusting the cores in turn for maximum output, remove the 500,000Ω resistor and replace **V1** top cap connector.

R.F. and Oscillator Stages.—For these operations the chassis and batteries must be in their normal positions in the carrying case. The signal generator leads should be secured firmly on the bench, close to the receiver. With the gang at maximum the pointer should coincide with the dots at the upper ends of the two scales. It may be adjusted by turning the drive drum on the gang spindle after loosening the two fixing screws.

M.W.—Switch set to M.W., tune to 200 m on scale, feed in a 200 m (1,500 kc/s) signal and adjust **C22** (right) on gang, then **C21** (left) for maximum output. Tune to 500 m on scale, feed in a 500 m (600 kc/s) signal, and check calibration.

L.W.—Switch set to L.W., tune to 1,200 m on scale, feed in a 1,200 m (250 kc/s) signal and adjust **C24** (above gang) and **C19** (on waveband switch) for maximum output. Tune to 1,800 m on scale, feed in a 1,800 m (166.7 kc/s) signal, and check calibration.

Diagram of the switch unit, drawn as seen in the rear chassis illustration above. *B* indicates a blank tag.



VALVE ANALYSIS

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 DK32	84·0	0·8	42·5	0·82
	Oscillator			
	84·0	1·25		
V2 DF33	84·0	1·1	84·0	0·25
V3 DAC32	22·0	0·08	—	—
V4 DL35	79·5	5·0	84·0	1·3

	RESISTORS	Values (ohms)
R1	V1 osc. C.G. resistor ...	150,000
R2	V1 S.G. H.T. feed ...	47,000
R3	I.F. stopper	47,000
R4	A.V.C. line decoupling ...	4,700,000
R5	V3 signal diode load ...	470,000
R6	Manual volume control ...	1,000,000
R7	V3 triode C.G. resistor ...	4,700,000
R8	V3 triode anode load ...	470,000
R9	V4 C.G. resistor	1,000,000
R10	Feed-back coupling potential divider	10,000
R11		4,700
R12	V4 G.B. resistor	680

	CAPACITORS	Values (μF)
C1	Aerial L.W. fixed trimmer	0·00005
C2	A.V.C. line decoupling ...	0·05
C3	1st I.F. transformer tuning capacitors	0·00007
C4		0·00007
C5	V1 osc. C.G. capacitor ...	0·0002
C6	Osc. L.W. fixed trimmer...	0·00033
C7	Oscillator circuit tracker...	0·0005
C8	V1 S.G. decoupling ...	0·1
C9	2nd I.F. transformer tuning capacitors	0·00014
C10		0·00014
C11	I.F. by-pass capacitor ...	0·0001
C12	A.F. couplings to V3 triode control grid	0·01
C13		0·002
C14	A.F. coupling to V4 ...	0·01
C15	Fixed tone corrector ...	0·005
C16	Neg. feed-back coupling...	0·1
C17*	H.T. reservoir capacitor...	8·0
C18*	V4 G.B. by-pass	50·0
C19‡	Aerial L.W. trimmer ...	0·00005
C20†	Frame aerial tuning ...	0·000532
C21‡	Aerial M.W. trimmer ...	—
C22‡	Osc. circuit M.W. trimmer	—
C23†	Oscillator circuit tuning...	0·000532
C24‡	Osc. circuit L.W. trimmer	0·00005

* Electrolytic. † Variable. ‡ Pre-set.

	OTHER COMPONENTS	Approx. Values (ohms)
L1	Frame aerial winding ...	1·0
L2	Aerial L.W. "loading" coil	9·0
L3	Osc. M.W. tuning coil ...	1·5
L4	Osc. L.W. tuning coil ...	2·0
L5	Oscillator reaction coil ...	8·5
L6	1st I.F. trans. Pri. ...	9·4
L7	1st I.F. trans. Sec. ...	9·4
L8	2nd I.F. trans. Pri. ...	6·7
L9	2nd I.F. trans. Sec. ...	6·7
L10	Speaker speech coil ...	2·75
T1	Speaker input trans. Pri. ...	870·0
	Sec. ...	0·25
S1–3	Waveband switches ...	—
S4	H.T. circuit switch ...	—
S5	L.T. circuit switch ...	—

Intermediate frequency 465 kc/s.