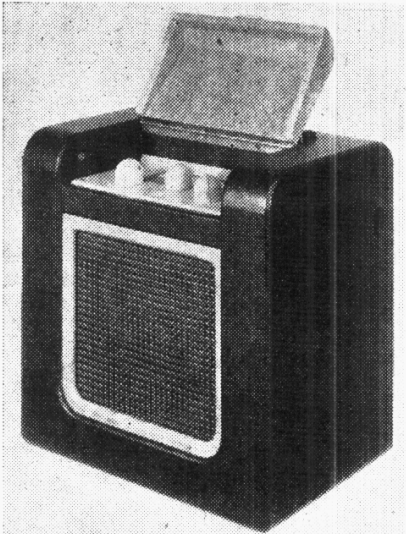


"TRADER" SERVICE SHEET

534

# PYE BABY Q SENIOR & NEW BABY Q All-Dry Battery Superhets



The Pye Baby Q Senior All-Dry portable superhet. The New Baby Q All-Dry is of similar shape, but in a single tone finish.

THE Pye Senior Baby Q is a 4-valve 2-band all-dry battery superhet, in which provision is made for the substitution of a 2V accumulator in place of the dry LT unit, which is a separate unit from the HT battery.

The New Baby Q is a simplified version of the Senior, lacking several refinements and employing a different range of valves. The differences between the two are described under "New Baby Q Modifications." This Service Sheet was prepared from a Senior model.

Release date, both models: 1940

### CIRCUIT DESCRIPTION

Tuned frame aerial input **L1** (MW) plus **L2** (LW) and **C20** precedes a heptode frequency changer (**V1**, Mullard Amerty 1A7G). Provision for connection of external aerial via **C1**, and an earth.

Oscillator grid coils **L3** (MW) and **L4** (LW) are tuned by **C21**. Parallel trimming by **C22** (MW) and **C23** (LW); tracking by specially shaped vanes of **C21**. Reaction coupling by coils **L5** and **L6**.

Second valve (**V2**, Mullard Amerty metallised 1N5G) is a variable- $\mu$  RF pentode operating as intermediate frequency amplifier with permeability-tuned transformer couplings **C4**, **L7**, **L8**, **C5** and **C9**, **L9**, **L10**, **C10**.

### Intermediate frequency 469 KC/S.

Diode second detector is part of single diode triode valve (**V3**, Mullard Amerty metallised 1H5G). Audio frequency component in rectified output is developed across load resistance **R7** and passed via **C12** and manual volume control **R8** to CG of triode section. IF filtering by **C11**, **R6** in diode circuit, and **C14** in V4 grid circuit.

Potential developed across **R6**, **R7** appears also across **R4**, **R5**, and part is tapped off at their junction and fed back as GB to FC and IF valves, giving AVC.

Resistance-capacity coupling by **R10**, **C13** and **R11** between V3 triode and pentode output valve (**V4**, Mullard Amerty 1C5G). Fixed tone correction by **C15**. Two-position tone control by **C16** and a plug and socket device. GB for V4 is obtained automatically from drop along **R12** in negative HT lead to chassis.

LT leads to 1.5V dry cell are terminated in a two-pin plug, and provision is made to insert this plug into the sockets

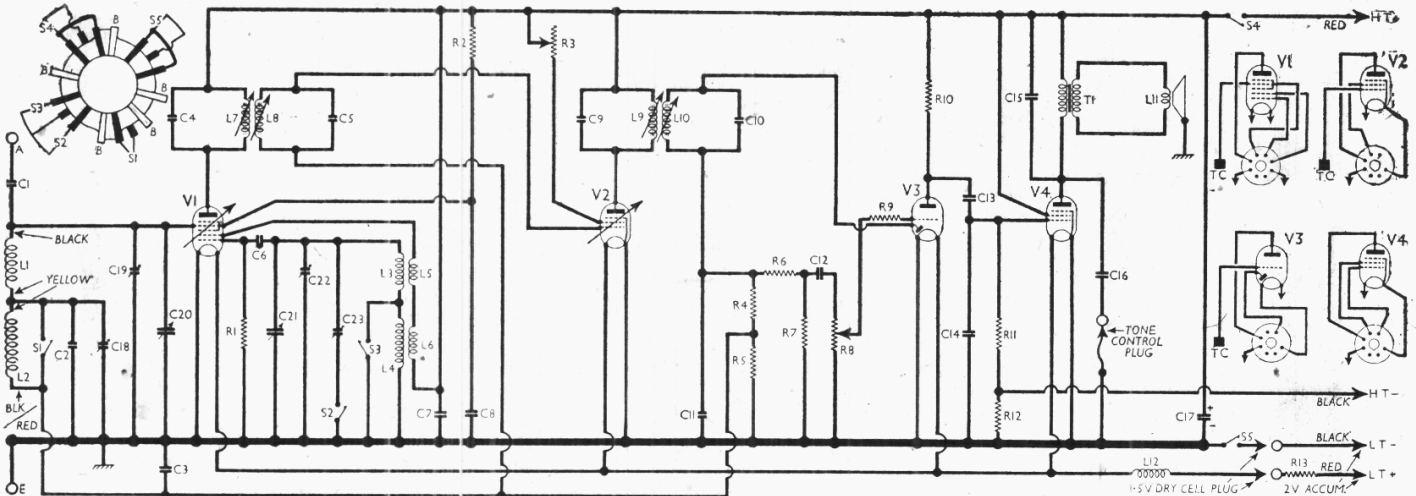
of an adaptor which incorporates a suitable resistance, and whose leads may be connected to a 2V accumulator, if that is desired, in place of the 1.5V dry cell.

### COMPONENTS AND VALUES

RESISTANCES		Values (ohms)
R1	V1 osc. CG resistance ...	260,000
R2	V1 SG HT feed ...	80,000
R3	V2 SG HT feed, total ...	5,000
R4	AVC line potential	3,500,000
R5	divider... ..	3,500,000
R6	IF stopper ... ..	100,000
R7	V3 diode load ... ..	1,100,000
R8	Manual volume control... ..	1,000,000
R9	V3 triode grid stopper ... ..	50,000
R10	V3 triode anode load ... ..	1,100,000
R11	V4 CG resistance ... ..	2,100,000
R12	V4 Auto GB resistance... ..	680
R13	Accumulator adaptor ... ..	2-4

CONDENSERS		Values ( $\mu$ F)
C1	Aerial series condenser ...	Very low
C2	LW frame fixed trimmer ...	0-000015
C3	AVC line decoupling ...	0-05
C4	1st IF transformer fixed	0-00008
C5	tuning condensers ...	0-00008
C6	V1 osc. CG condenser ...	0-0001
C7	HT circuit RF by-pass ...	0-25
C8	V1 SG decoupling ...	0-1
C9	2nd IF transformer fixed	0-00008
C10	tuning condensers ...	0-00008
C11	IF by-pass ... ..	0-00005
C12	AF coupling to V3 triode ...	0-01
C13	V3 triode to V4 coupling ...	0-01
C14	IF by-pass ... ..	0-0002
C15	Fixed tone corrector ... ..	0-001
C16	Tone control condenser ...	0-01
C17*	HT reservoir condenser ...	2-0
C18†	LW frame aerial trimmer ...	—
C19†	MW frame aerial trimmer ...	—
C20†	Frame aerial tuning ...	—
C21†	Oscillator circuit tuning ...	—
C22†	Osc. circ. MW trimmer ...	—
C23†	Osc. circ. LW trimmer ...	—

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



Circuit diagram of the Pye Baby Q Senior All-Dry portable superhet. **R13** forms part of the accumulator adaptor, which permits a 2V accumulator to be used in place of the dry LT unit. The differences in the New Baby Q All-Dry are described under "New Baby Q Modifications" overleaf.



OTHER COMPONENTS		Approx. Values (ohms)
L1	Frame aerial windings ...	1-0
L2		17-0
L3		1-4
L4	Osc. circ. MW tuning coil	0-4
L5	Osc. reaction coils, total...	3-7
L6		10-5
L7	1st IF trans. (Pri. ...)	10-5
L8		10-5
L9	2nd IF trans. (Pri. ...)	10-5
L10		10-5
L11	Speaker speech coil	2-3
L12	LT circuit choke ...	0-1
T1	Output trans. (Pri. ...)	345-0
	(Sec. ...)	0-1
S1-S3	Waveband switches	—
S4	HT circuit switch	—
S5	LT circuit switch...	—

**VALVE ANALYSIS**

Valve voltage and currents given in the table below are those measured in an average receiver, operating with new batteries, using a 1,000 ohms-per-volt meter whose negative lead was connected to chassis.

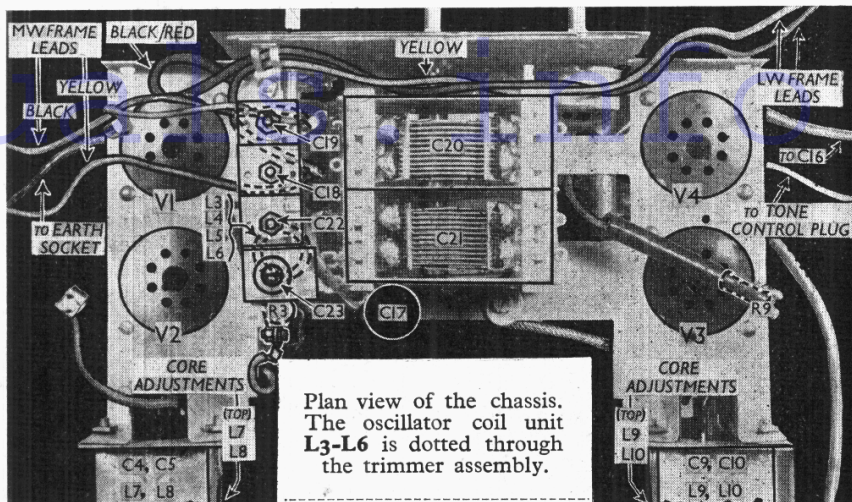
Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 1A7G	{ 82 82	{ 0-7 1-4	40	1-04
V2 1N5G	82	0-9	82	0-25
V3 1H5G	25	0-07	82	—
V4 1C5G	80	5-5	82	1-0

**DISMANTLING THE SET**

**Removing Chassis.**—Remove the three control knobs (pull-off) and withdraw the valves; remove the black fibre panel (three instrument-head wood screws); remove the bottom right-hand speaker fixing screw, releasing the earthing lead; remove the two black round-head wood screws holding the top of the chassis to the front of the cabinet, and the two long countersunk wood screws holding the bottom; unsolder from the two frame aerials, the earth socket, the tone control and the output transformer the leads connecting them to chassis.

**When replacing,** connect the long frame leads to the LW frame (right) and the short ones to the MW frame, the yellow leads going to the front tag in each case; connect the black braided lead to the earth socket, and the metal braided lead to the lower end of the tone control condenser C16. The cleat holding the accumulator adaptor leads should be held by the middle screw on the fibre panel.

**Removing Speaker.**—First remove the chassis as indicated above; unsolder from the speech coil connecting panel the two leads connecting it to the output transformer on the floor of the case;



Plan view of the chassis. The oscillator coil unit L3-L6 is dotted through the trimmer assembly.

remove the four wood screws (with washers) holding the speaker to the front of the case. When replacing, the speech coil connecting panel should be at the bottom.

**GENERAL NOTES**

**Switches.**—S1-S3 are the waveband switches, and S4, S5 the battery switches, in a single rotary unit at the front of the chassis. The unit is indicated in our under-chassis view, and shown in detail in the diagram in the top left-hand corner of the circuit diagram, where it is viewed in the direction of the arrow in the under-chassis view. S1 and S3 close in the MW position only; S2 closes in the LW position only; S4 and S5 are open only in the "off" position.

**Coils.**—The frame aerial windings L1 (MW) and L2 (LW) are fitted to the sides of the cabinet. L1 is on the left, and L2 on the right, when viewed from the rear. The connections between them and the chassis are indicated in the plan view of the chassis and the circuit diagram.

The oscillator coils L3-L6 are all mounted in a tubular unscreened unit beneath the trimmers on the chassis deck. The unit is indicated by dotted lines in our plan view.

The IF transformers L7, L8 and L9, L10 are in two screened units suspended vertically downwards when the chassis is in its case. The positions of their coil adjustments are approximately indicated in our plan view.

L12 is the LT circuit choke, mounted beneath the chassis.

**Condenser C1.**—In our chassis, this consisted of one wire wound over another at one of the tags of L1. The outer wire of the condenser is taken finally as the connecting lead to the external aerial socket. In the makers' manual, C1 is shown as a 0.000005 μF condenser beneath the chassis.

**Tone Control.**—This consists of a 0.01 μF condenser C16 and a plug and socket. The assembly

is mounted on L2 support. C16 is connected at one end to chassis by a metal braided lead, while the plug, which can be connected to a socket at the other end of C16 or to a blank socket, is connected to chassis by a thin white rubber lead.

**Resistance R3.**—This is a wire-wound resistance in the HT feed to V2 screen. It is a semi-variable type, and its total value is 5,000 Ω. It is mounted in a conveniently accessible position on the chassis deck, and by adjusting its sliding band the gain of the IF amplifier can be varied.

**Accumulator Adaptor.**—A small assembly consisting of a two-pin socket, a 2.4-ohm resistance and a pair of accumulator leads, terminated in a pair of spade tags, mounted on a paxolin panel, is fitted at the top right-hand corner inside the cabinet. If the LT battery plug is inserted in the sockets, a 2V accumulator cell can be used to operate the receiver, in place of the dry battery.

**Batteries.**—LT, Pye type K8, 1.5 V dry battery. Of its two sockets, the larger is positive. HT, Pye type K4, 90 V. The lead connections are obvious, there being only one red and one black lead and plug.

**NEW BABY Q MODIFICATIONS**

The new Baby Q is a slightly simplified version of the Senior Baby Q. Refinements in the Senior, such as tone control, provision for an accumulator, and external aerial and earth connections are absent in the New Baby Q.

R5 is missing, and R4 is connected to the other end of R6, at its junction with R7, and C15 is connected to chassis instead of HT positive. The values of many of the components are different: R1 is 110,000 Ω, R2 is 30,000 Ω; R3 is absent altogether; R6 is 20,000 Ω; R7 is 510,000 Ω; R10 is 510,000 Ω.

Of the condensers, C1 and C16 are, of course, both absent, and an additional 0.0001 μF condenser is connected between the junction of R6 and R7, and chassis, while C11 is changed to 0.0001 μF. Also, C4 and C5 are both 0.00007 μF, and C9 is 0.00006 μF.

Mullard side-contact valves are used in place of the octal-based types. They are: DK1, DF1, DAC1 and DL2. Diagrams showing the base connections of these valves are given beside the circuit diagram on Service Sheet 504 (February 1, 1941).

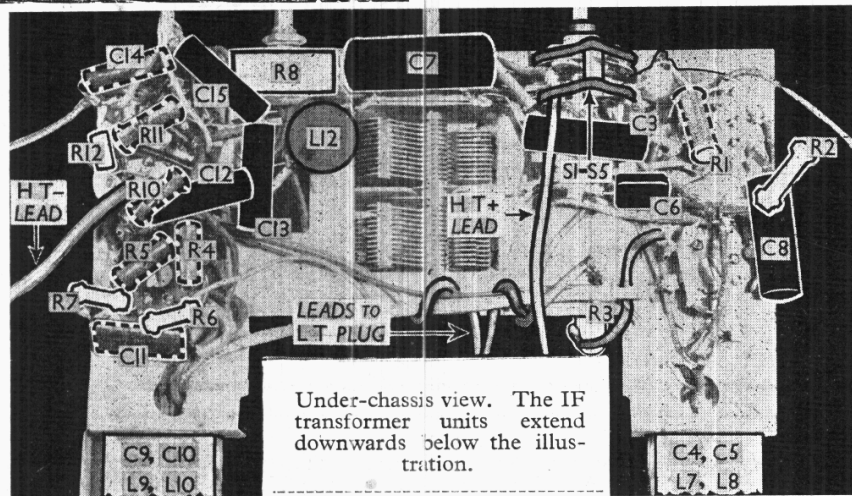
**[CIRCUIT ALIGNMENT**

**IF Stages.**—Remove existing top cap connector from V1 and connect a 500,000 Ω resistance between top cap and AVC line. Connect signal generator via a 0.1 μF condenser to V1 top cap and chassis. Feed in a 469 KC/S (639.7 m) signal, and adjust the cores of L10, L9, L8 and L7 for maximum output.

**RF and Oscillator Stages.**—With the gang at maximum, the pointer should be horizontal. Couple signal generator to receiver by means of a turn of wire wound round the carrying case.

**MW.**—Switch set to MW, tune to 210 m on scale, feed in a 210 m (1,430 KC/S) signal, and adjust C22, then C19 for maximum output. Check calibration at 520 m (577 KC/S).

**LW.**—Switch set to LW, tune to 1,300 m on scale, feed in a 1,300 m (230 KC/S) signal, and adjust C23, then C18, for maximum output. Check calibration at 1,800 m (166 KC/S).



Under-chassis view. The IF transformer units extend downwards below the illustration.