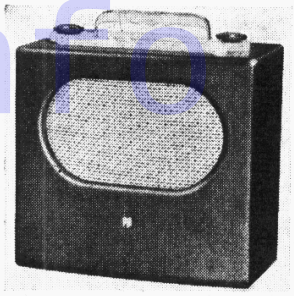
"TRADER" SERVICE SHEET

789

PYE 75B

A POST-WAR "NEW BABY Q"



THE Pye 75B post-war "New Baby Q" is an all-dry battery portable superhet employing four valves and covering the M.W. and L.W. bands. Removal of the chassis is a comparatively simple operation, involving no soldering.

Release date and original price: June 1946; £13 10s plus £2 18s 1d purchase tax.

CIRCUIT DESCRIPTION

Tuned frame aerial input **L1, C20** (M.W.), with the addition of loading coil **L2** for L.W., to heptode valve **(V1, Mullard metallized DK32)** operating as frequency changer with electron coupling.

V1 oscillator grid coils **L3** (M.W.) and **L4** (L.W.) are tuned by **C23;** parallel trimming by **C22** (M.W.) and **C6, C24** (L.W.); series tracking by fixed capacitor **C7** on both bands. Reaction coupling from anode by **L5.**

Second valve **(V2, Mullard metallized DF33)** is a variable-mu R.F. pentode operating as I.F. amplifier with tuned-primary, tuned-secondary transformer couplings **C3, L6, L7, C4** and **C9, L8, L9, C10.**

Intermediate frequency 465 kc/s.

Diode second detector is part of single diode triode valve **(V3, Mullard metallized DAC32).** Audio frequency component in rectified output is developed across load resistor **R5** and passed via A.F. coupling capacitor **C12,** manual volume control **R6** and a further coupling capacitor **C13** to C.G. of triode section. I.F. filtering by **C11** and **R3.**

D.C. potential developed across **R5** is tapped off and fed back via a decoupling circuit as G.B. to F.C. and I.F. valves, giving automatic volume control.

Resistance-capacitance coupling by **R8, C14** and **R9** between **V3** triode and pentode output valve **(V4, Mullard DL35).** Fixed tone correction by **C15.** Output voltages at **T1** secondary are stepped down by potential divider network **R10, C16** and **R11,** and those appearing across **R11** are fed in negative phase to **V3** control grid circuit. G.B. potential for **V4** is obtained from the drop along **R12** in the negative H.T. lead to chassis.

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating with a set of new batteries. 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 400 v scale of a Model 7 Avometer, chassis being the negative connection.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 DK32	84·0 (Oscillator) 84·0	0·8 1·25	42·5	0·82
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

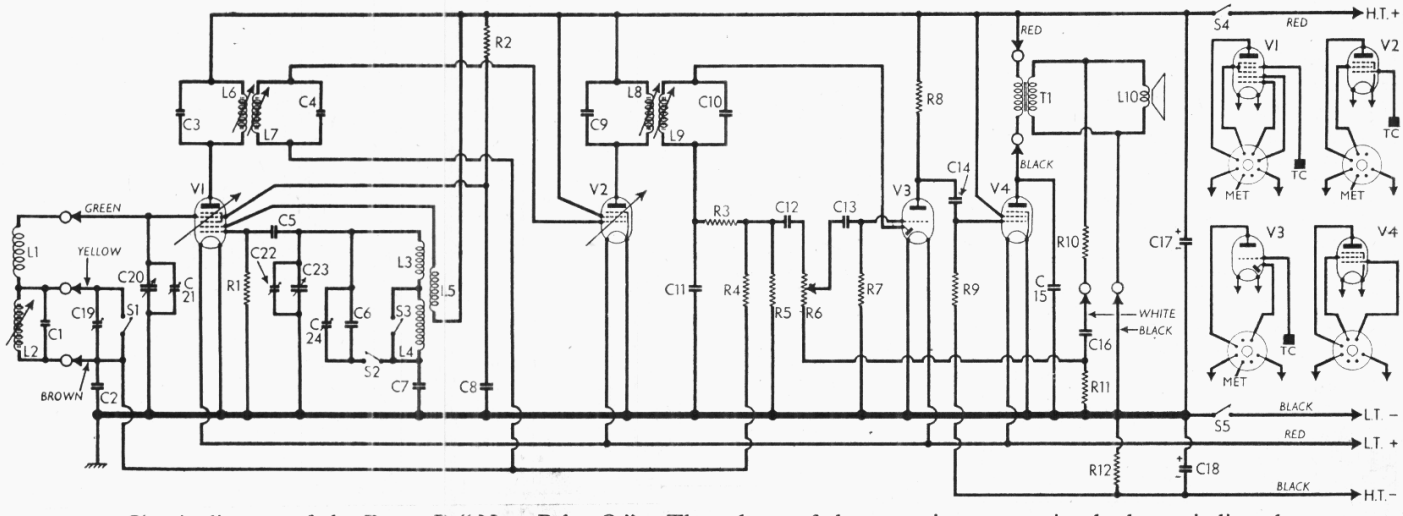
COMPONENTS AND VALUES

	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

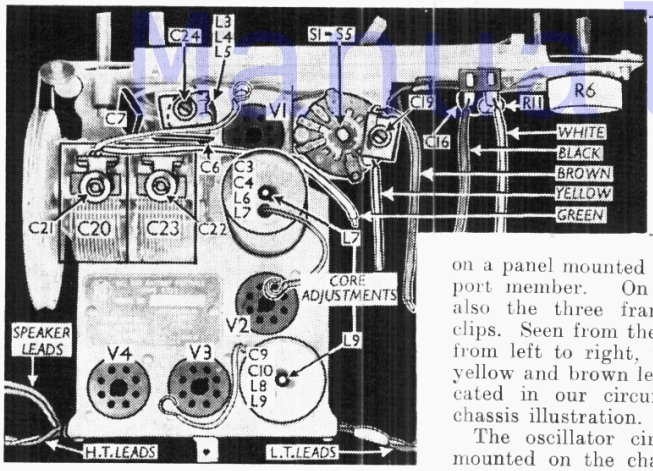
	CAPACITORS	Values (μF)
C1	Aerial L.W. fixed trimmer	0·00005
C2	A.V.C. line decoupling ...	0·05
C3	1st I.F. transformer tuning capacitors	0·00007
C4		0·00007
C5	V1 osc. C.G. capacitor ...	0·0002
C6	Osc. L.W. fixed trimmer...	0·00033
C7	Oscillator circuit tracker...	0·0005
C8	V1 S.G. decoupling ...	0·1
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 ...	—



Circuit diagram of the Pye 75B "New Baby Q". The colours of the seven interconnecting leads are indicated.



Chassis deck as seen from the rear. The two speaker leads and the five other interconnecting leads are identified. The switch unit is seen in detail below.

DISMANTLING THE SET

Removing Chassis.—Remove the two control knobs (pull off);
remove one of the threaded pins on which the carrying handle pivots, and withdraw the handle with second pin attached, taking care not to lose the washers;
from the three clips on the frame aerial panel and four on the speaker panel release the seven leads connecting them to chassis, freeing the speaker leads from their cleat on the speaker rim;
remove the round-head woodscrew holding the bottom edge of the chassis to the sub-baffle;
support the chassis with one hand, and with the other remove the two captive screws accessible through holes adjacent to the control spindle apertures in the tuning scale escutcheon, taking care not to lose the cover plate and spring on the switch lever.
When replacing, first fit the spring, then the cover plate (plated side up), on the switch lever; and when fitting the carrying handle, do not omit to replace the washers on the pivot pins, between the handle and the escutcheon moulding.
Facing the rear of the case, connect the seven leads from chassis as follows:
Frame aerial panel, numbering clips from left to right: 1, green; 2, yellow; 3, brown.
Speaker transformer panel, numbering clips from top to bottom: 1, white; 2, black; 3, no external connection; 4, black rubber; 5, red rubber.
Removing Frame Aerial.—Remove the two countersunk-head wood screws holding the frame to the bottom of the case;
raise the frame assembly into the recess above it, and ease it out bottom foremost.
When replacing, the fixing holes should be on the rear edge of the bottom member. The leads are connected as previously described.
Removing Speaker.—Remove the three nuts (with washers and spring washers) holding speaker to sub-baffle.
When replacing, the transformer goes on the right, and a lead cleat goes on the lower left-hand fixing nut.

GENERAL NOTES

Switches.—S1-S3 are the waveband switches, and **S4, S5** the battery switches, all ganged in a 3-position rotary unit mounted in the same plane as the chassis deck and operated by a lever which projects through the escutcheon on the top of the case. This unit is indicated in our rear (chassis deck) illustration, and shown in detail in the diagram in col. 2, where it is drawn as seen from the rear of the set. In the "Off" position (switch rotor fully anti-clockwise as seen from rear) all switches are open; in M.W. (centre) position, **S1, S3, S4** and **S5** close; in the L.W. position, **S2, S4** and **S5** close.

Coils.—L1 is the M.W. frame winding, and **L2** is an iron-dust cored loading coil on a panel mounted on the top frame support member. On the panel are fitted also the three frame aerial connecting clips. Seen from the rear, and numbering from left to right, these take the green, yellow and brown leads respectively, indicated in our circuit diagram and rear chassis illustration.

The oscillator circuit coils **L3-L5** are mounted on the chassis deck just above the gang, with **C24** at its free end.

Batteries and Leads.—The H.T. battery is a Pye type K4 90 V unit, in which only the two extreme negative and positive sockets are used. The L.T. unit is a large capacity 1.5 V dry battery, Pye type K8, with a 2-pin socket outlet of which the larger pin is positive. The lead colours are indicated in the diagram.

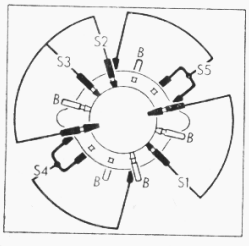


Diagram of the switch unit, drawn as seen in the rear chassis illustration above. *B* indicates a blank tag.

Interconnecting Leads.—In addition to the frame aerial leads mentioned under "Coils," there are four leads from chassis which go to clips on the speaker. The terminals for all seven leads are identified in the dismantling instructions, and the leads are indicated in our rear chassis illustration, where the five P.V.C. insulated coloured leads are identified on the right and the two rubber-covered red and black speaker leads are indicated in the left-hand bottom corner. The colours are also shown in the circuit diagram.

Tuning Drive Cord.—The makers' specification for this is first quality silk, solid plaited line, parum waxed, size 3½. The length is given as 36¾in. The method of fitting is fairly straightforward and obvious, the only point worthy of note being that the front line of cord makes one turn in the groove in the tuning control spindle as it passes it. The pointer carrier is driven by the rear cord.

CIRCUIT ALIGNMENT

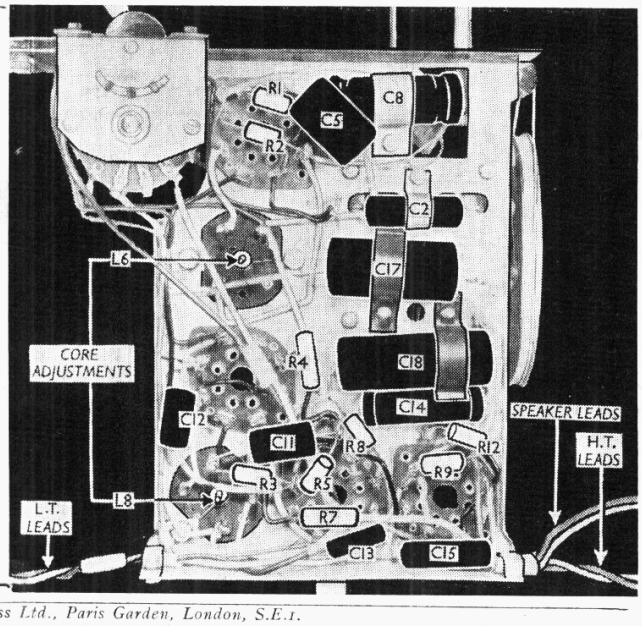
I.F. Stages.—For this operation the chassis must be removed from the cabinet. Connect signal generator leads, via a 0.1 μf capacitor, to control grid (top cap) of **V1** and chassis after removing the original top cap connector and connecting a 500,000Ω resistor between the top cap of the valve and the 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.



Front side of the chassis as seen when chassis is removed from the case. The two speaker leads are rubber covered, and are shown in the circuit diagram as red and black. Two I.F. transformer core adjustments are indicated here, and two are shown in the rear illustration above.

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