

DECCA PT-B BATTERY PRESTOMATIC



A five-valve battery-operated superhet, the Decca PT-B has 6 push-button stations, button wavechange switching and covers two bands.

CIRCUIT.—Input to the signal grid of V1 is via a series aerial condenser to a set of inductively coupled medium and long-wave aerial coils. A grid blocking condenser is used and the A.V.C. potentials are applied direct to the grid and not through the coils.

On the push-button tuning range the same coils are used, but the aerial section of the gang is switched out of circuit and trimmers brought into operation. The oscillator section follows the same procedure, the gang being switched out on the push-button range. A wave-trap is provided in shunt with the aerial input.

An I.F. transformer, with extra primary to secondary coupling (C19) to afford a wider acceptance band, links the frequency changer and the pentode I.F. amplifier V2. The I.F. is 465 kc.

Another I.F. transformer of similar construction effects the coupling between V2 and the second amplifier V3. V1, V2 and V3 are A.V.C. controlled.

A third transformer has a centre-tapped secondary, the tapping being connected to the demodulating diode of V4, a double-diode. The secondary winding is also connected to the demodulating diode load R7. The rectified potentials pass via an H.F. filter and L.F. coupling condenser to the manual volume control. This feeds the grid of V5, an output pentode, through a grid stopper resistance.

The other diode of V4, fed by an inter-diode coupling condenser, provides automatic volume control.

A pentode compensator condenser is connected between the anode of V5 and chassis; C17 and R16 provide tone control.

Chassis Removal.—A false bottom is fitted, removal of which provides access to all trimmers.

Remove the back of the cabinet and the three grub-screw fixed control knobs.

Remove the two chassis-securing bolts from the base.

Unsolder the black/white wire from

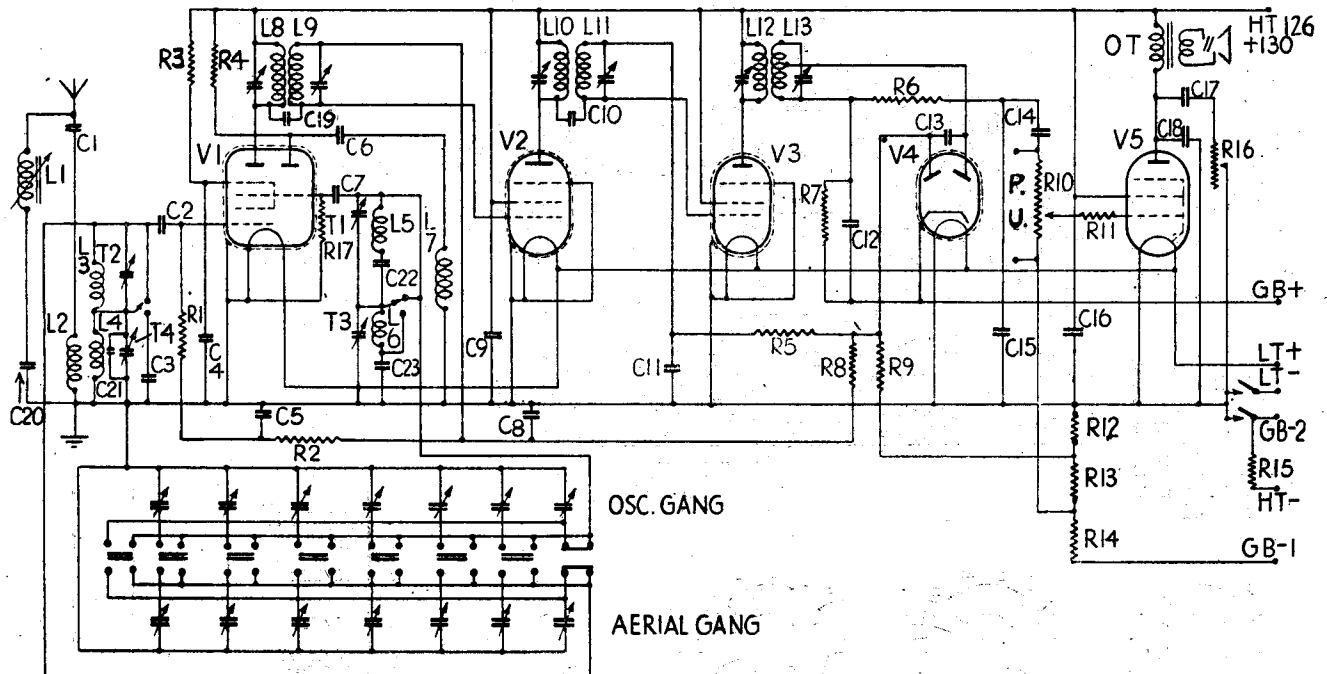
CONDENSERS

C.	Purpose.	Mfd.s.
1	Series aerial . . . . .	.0004
2	V1 grid isolating . . . . .	.0001
3	M.W. aerial tune . . . . .	.00125
4	V1 screen decoupling . . . . .	.1
5	V1 A.V.C. decoupling . . . . .	.02
6	Osc. anode coupling . . . . .	.0002
7	Osc. grid . . . . .	.00006
8	V2 A.V.C. decoupling . . . . .	.02
9	V2 screen bypass . . . . .	.1
10	I.F.T.2 coupling . . . . .	.000025
11	V3 A.V.C. decoupling . . . . .	.02
12	H.F. bypass . . . . .	.0001
13	A.V.C. coupling . . . . .	.0001
14	L.F. coupling . . . . .	.02
15	H.F. bypass . . . . .	.0001
16	H.T. reservoir	4
17	Tone control . . . . .	.01
18	Pentode compensator . . . . .	.006
19	I.F.T.1 coupling . . . . .	.000025
20	Wavetrap . . . . .	.00006
21	L.W. aerial fixed trimmer . . . . .	.00003
22	M.W. osc. fixed padder . . . . .	.001
23	L.W. osc. fixed padder . . . . .	.000541

RESISTANCES

R.	Purpose.	Ohms.
1	V1 A.V.C. feed	500,000
2	V1 A.V.C. decoupling	500,000
3	V1 screen decoupling	100,000
4	Osc. anode load	30,000
5	V3 A.V.C. decoupling	500,000
6	H.F. stopper	700,000
7	Demodulating diode load	300,000
8	V2 A.V.C. decoupling	500,000
9	A.V.C. diode load	500,000
10	Volume control	500,000
11	V5 grid stopper	15,000
12	Bias potr. (part)	300
13	Bias potr. (part)	150
14	Bias potr. (part)	150
15	H.T. series resistance	150
16	Tone control	50,000
17	Osc. grid leak	50,000

VALVE READINGS				
No signal. Volume maximum. M.W. min. cap				
V.	Type.	Electrode.	Volts.	Ma.
1	X23 Oscram	Anode	107	.8
		Screen	35	1
		Osc. anode	57	1
2	VP213 Tungaram	Anode	107	1.1
		Screen	107	.2
3	VP2B	Anode	107	1.2
		Screen	107	.3
4	2D2	Diodes	—	—
		only	—	—
5	PM22D	Anode	107	10.5
		Screen	107	1.9



A point of interest is the use of an indirectly-heated double diode. The cathode is biased 6 volts positive, the G.B.—2 lead actually being connected to the bias battery positive. The G.B. + lead goes to 6 volts down on the G.B. battery.

For more information remember

the aerial socket, the black wire from the earth socket and the twin red and blue wires from the pick-up sockets.

The chassis can then be withdrawn to the extent of the speaker leads. The leads to the speaker may be unsoldered, or, alternatively, the two extension L.S. wires unsoldered and the speaker (secured by four nuts) removed with the chassis.

Trimmer Unit Removal.—To obtain access to the underside of the chassis the Prestomatic trimmer assembly must be removed. Remove the screws from the rear of the chassis that secure the trimmer unit and unsolder the seven leads. For replacing, the colours of the wires and points to which they are connected are indicated in the drawing of the trimmer assembly unit.

Special Notes.—Sockets at the top rear of the cabinet provide connection for a pick-up. The pick-up should have a high output to obtain optimum results, as only the last valve operates as amplifier.

Sockets at the top rear of the chassis near the internal speaker are for operation of a high-impedance (20,000 ohms) extension speaker.

In our particular chassis R15 was found to have a value of 170 ohms. It will be observed, with reference to the circuit, that the cathode of the indirectly heated double-diode valve is biased 6 volts positive with respect to the earth (H.T. negative) line, and also that the A.V.C. diode load is returned to a negative source on the bias potentiometer. In this way the A.V.C. operation is delayed.

The yellow bias lead should be taken to 6 volts negative and the black lead to 9 volts negative.

For the sake of clarity, T1 and T3, the medium and long-wave oscillator trimmers, are shown directly across the oscillator coils in the circuit. Actually these trimmers are on the push-button trimmer assembly panel. The I.F. transformer coupling condensers are in their respective coil cans.

Alignment Notes

I.F. Circuits.—Connect an output meter across the primary of the speaker transformer, depress M.W. manual button and set gang at maximum capacity. Turn volume to maximum and tune to high position. Connect a service oscillator between the top grid cap of V1 and chassis.

Tune the service oscillator to 465 kc. and adjust first the trimmers of I.F.T.2 and then I.F.T.1 for maximum, reducing the input from the oscillator as the circuits come into line to keep below the A.V.C. point. The I.F. trimmers will be found under the red paper seals on the transformers.

Signal Circuits.—The receiver can be aligned without removing the chassis from the cabinet.

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WINDINGS (D.C. RESISTANCES)

L.	Ohms	Range	Where measured.
1	1.1	—	Tags.
2	14.3	—	C1 and chassis.
3	2.6	M.W.	Tags.
4	12.5	L.W.	Tags.
5	1.6	M.W.	C7 and green/yellow wire.
6	3.6	L.W.	Tags.
7	5.7	—	C6 and chassis.
8	5.7	—	Anode V1 and HT+
9	8.5	—	Top grid V2 and C8.
10	5.4	—	Anode V2 and HT+
11	5.2	—	Top grid V3 and C11.
12	6.4	—	Anode V3 and HT+
13 (part) 1	3.8	—	R6 and diode V4
O.T. prim.	650	—	Tags.

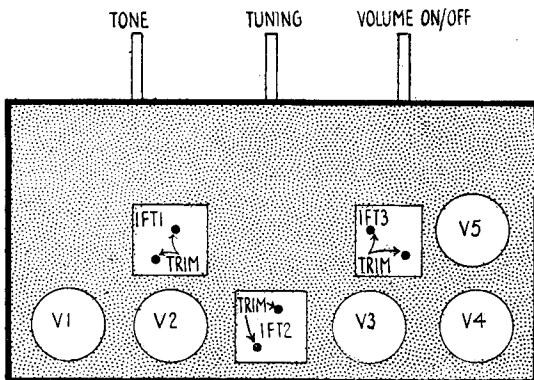
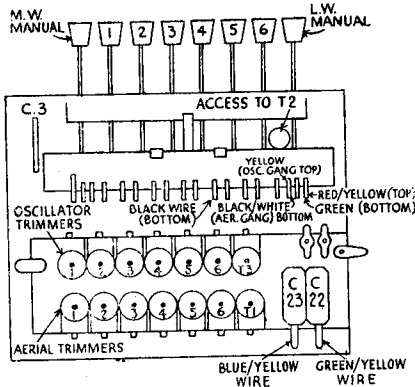
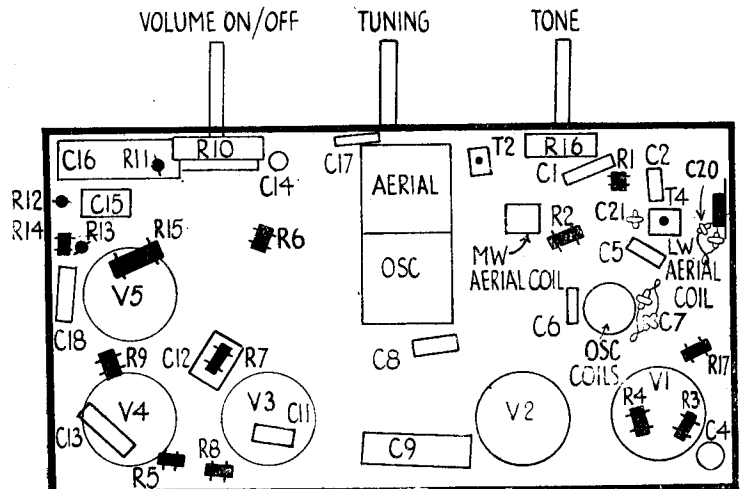


Diagram right at the top gives details and connections of the trimmer assembly. Below are the layout diagrams for (left) the top of the PT-B chassis and (right) the underside.



Decca PT-B on Test

MODEL PT/B.—For battery operation, requiring a 120-volt H.T. battery, a 9-volt bias battery and a 2-volt accumulator. Price, without batteries, 9½ gns.

DESCRIPTION.—Five-valve, two-band battery operated table superhet receiver incorporating Prestomatic tuning.

FEATURES.—“Airplane” full-vision scale, calibrated in metres and station names. Quick-travel tuning control. Other controls for combined volume and master switch, tone control and Prestomatic button panel with choice of four medium wave and two long wave stations. Buttons when pressed automatically switch receiver to correct waveband. Two end buttons on panel adjust receiver for manual tuning on M.W. or L.W. band. Sockets for high output pick-up and high-impedance speaker.

LOADING.—L.T., .7 amp.; H.T., 18 ma., no signal.

Sensitivity and Selectivity

MEDIUM WAVES (200-550 metres).—Good gain and selectivity with small local station spread and a reasonably quiet background.

LONG WAVES (900-2,000 metres).—Adequate selectivity for ordinary requirements, with gain well maintained over the waveband.

Press-button Operation

The press-button settings were accurate when the receiver was initially tested and the condensers did not drift during our tests.

Acoustic Output

Very good tone for a battery receiver, with ample volume for an ordinary room. Reasonable amount of top note radiation and pleasing middle and lower registers.

An exact replacement for C16 is available from A. H. Hunt, Ltd., Garratt Lane, Wandsworth, London, S.W. 18. Unit 2,996, it sells at 2s.

Philips Model 660A

(Continued from opposite page.)

keep the driving wire D taut. Then tighten up screw A, making sure the tuning does not alter.

Repeat with a 250-metre (1,200 kc.) signal, and if the pointer does not tally, only adjust A to the extent of half the amount of deviation, on the other side of 250 metres.

Then loosen screw B, turn the pointer spindle or shaft E until the pointer reads 250 metres, tighten screw B and check at 510 metres.

If screw A cannot be moved far enough, the drum G should be turned slightly. Remove control knobs, loosen bottom chassis-securing bolts and the two grub-screws holding the drum on the spindle, tilt the chassis slightly to the rear and then turn the drum (taking care the spindle does not move). Then refix the drum, and, before proceeding, resecure the chassis in the cabinet.

Station Key Adjustment.—Pull off the cap from the station key which has to be adjusted, pull out the tuning knob, thereby releasing all keys, and carefully tune in the desired station.

Depress the key and insert the special screwdriver. If, when the key was depressed the desired station disappeared or another station was heard in its place, turn the screwdriver to the left until the desired station is again heard and remains unaffected by further anti-clockwise rotation of the screwdriver. Now turn the screwdriver to the right until the station is slightly detuned, as shown by a decrease of the green star in the tuning indicator.

If when the key was first depressed the desired station remained unaffected, turn

the screwdriver to the right until the station is slightly detuned as shown by the tuning indicator.

Swing the wavelength pointer to "Key-board tuning" position (lowest wavelength) and make a final adjustment with the screwdriver until the desired station is accurately tuned in on the tuning indicator.

Station Key Notes.—When using the special screwdriver, care must be taken not to press against the key, otherwise the latter will be depressed beyond its normal operating position and an incorrect tuning adjustment will result.

Although each of the keys can be adjusted to any wavelength in the medium and long wavebands, it is desirable to arrange that the shortest wavelength stations are allocated to the keys in the centre.

Your Experiences . . .

YOUR experiences of tracing elusive faults and effecting difficult repairs may be of assistance to other engineers. Why not send useful tips along for publication, at the usual rates, in *Service Engineer*?

Hints are of most value if the line of reasoning which solves a problem is explained. Remember this when writing.

Letters are invited, also, on what articles should be published in *Service Engineer* and how set reviews can be improved.

Address your letter to The Editor, WIRELESS RETAILER AND BROADCASTER, 29, Bedford Street, London, W.C.2.

Decca Model PT-B

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The wavelength pointer should be vertical when the gang condenser is at maximum. Connect the service oscillator to the aerial and earth sockets via a dummy aerial. Only feed sufficient input to obtain reliable peaks.

Medium Waves.—Depress M.W. manual button, tune set and oscillator to 200 metres (1,500 kc.) and adjust T1 and then T2 for maximum response.

The padding is fixed, but check calibration at 550 metres, compensating slightly with T1 if very much out.

Long Waves.—Depress L.W. manual button, tune set and oscillator to 1,000 metres (300 kc.) and adjust T3 and then T4 for maximum.

The L.W. padding is fixed, but check calibration at 2,000 metres, compensating slightly with T3 if very much out.

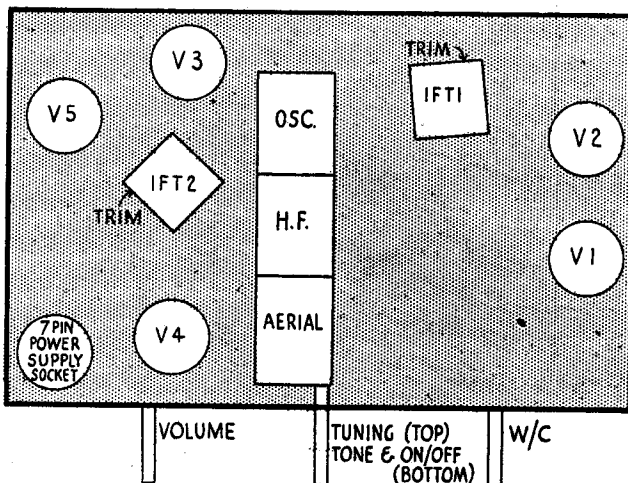
Press-button Alignment.—Remove service oscillator and output meter and connect an aerial and earth system. Place the cabinet on its side so as to obtain access to the trimmer panel through the false bottom.

A choice of four medium-wave and two long-wave stations is obtained without recourse to wavechange switches. A button, when pressed automatically sets itself to the correct waveband.

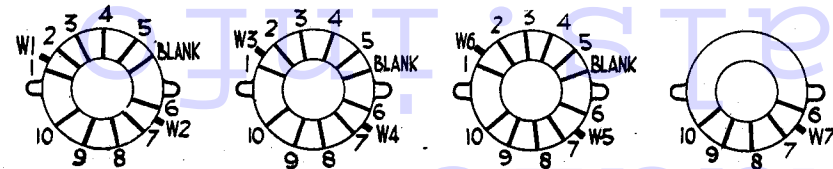
Each button should be calibrated on the actual station it is to receive. For example, press the button inscribed London Regional, adjust the corresponding oscillator trimmer (see sketch) to bring in the station, and then adjust the corresponding aerial trimmer.

Ambassador 6778 Four-band Six

Valve positions and other components are identified by this top-of-chassis layout diagram of the model 6778. Below are details of the switch banks, one to four, from left to right.



A replacement for the block containing C31 and C32 is available from A. H. Hunt Ltd. Unit list number 3859, it retails at 10s. 6d.



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signal, tune in on receiver and adjust T5 and T6 for maximum.

S.W.2 (34-96 metres).—Tune set and oscillator to 40 metres (7.5 mc.), screw T7 right up and then unscrew until the second peak from "tight" is heard. Then adjust T8 and T9 for maximum.

Check at 90 metres (3.3 mc.) to ensure that the correct peak has been selected.

S.W.1 (12-35 metres).—Tune set oscillator to 13.9 metres (21.5 mc.), screw T10 right up and then unscrew until the second peak from "tight" is heard.

Then tune set and oscillator to 20 metres (15 mc.) and adjust T11 and T12 for maximum response. Check at 31 metres to ensure that the correct peak has been selected.

VALVE READINGS

No signal. Volume maximum. M.W. min. cap 200 volt A.C. mains.

V.	Type.	Electrode.	Volts.	Ma.
(Mazda)				
1	AC/VP2	Anode ..	245	10.6
		Screen ..	245	3
2	AC/TH1	Anode ..	245	1.6
		Screen ..	75	5.8
		Osc.anode	85	5
3	AC/VP2	Anode ..	245	11
		Screen ..	245	1.8
4	AC/HL/DD	Anode ..	60	1
5	AC5/Pen.	Anode ..	235	34
		Screen ..	245	5.8
6	U4	Heater ..	380	—