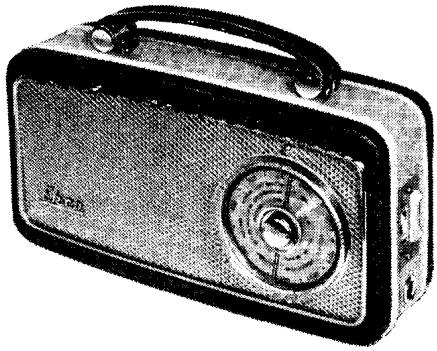
"TRADER" SERVICE SHEET

1546

EKCO PT378

Transistor Portable Radio



Appearance of the Ekco PT378

TWO slightly different chassis versions are used in the Ekco transistor portable receiver PT378. One chassis form employs a range of Newmarket transistors and the other employs a Mullard range. This involves some minor changes in component values and locations and the employment of two separate printed panels with small differences in lay-out.

Our sample receiver was one which uses Newmarket transistors and the circuit diagram has been drawn from this. Both versions of the printed panel are illustrated, however, and modifications to the circuit diagram are fully described under "Modifications" so that both types of receiver are adequately covered.

The six-transistor circuit is designed for Medium and Long wave reception using an internal ferrite rod aerial or an external aerial, via the socket provided, if required. It is powered by a single 9V battery.

Waveband ranges are 183-555m (M.W.) and 1,180-2,060m (L.W.).

Release date and original price: April, 1961, £11 18*s* 5*d*. *Purchase tax extra.*

VALVE ANALYSIS

Valve voltages given in the table below were derived from information supplied by the manufacturers. They were measured on a 20,000Ω/voltmeter with the receiver tuned to a quiet spot near 450m and the volume control set at minimum output. All voltages are negative with respect to chassis.

Transistor Table

Transistor	Emitter (V)	Base (V)	Collector (V)
VT1 NKT 152	0·90	0·85	6·4
VT2 NKT 153/35	0·65	0·70	7·2
VT3 NKT 154/35	0·95	1·0	7·2
VT4 NKT 254	1·4	1·4	8·8
VT5 NKT 251	—	0·15	9·0
VT6 NKT 251	—	0·15	9·0

CIRCUIT ALIGNMENT

Equipment Required.—A signal generator with a 30 per cent modulated output at 1,000c/s or 400c/s; an output meter or a 0-5V A.C. voltmeter; an R.F. coupling coil; two 0.1μF capacitors and a bladed type insulated trimming tool.

1.—Connect the output meter in place of the loudspeaker, or the 0-5 A.C. voltmeter across the loudspeaker speech coil. Set the volume control to maximum output.

2.—Switch receiver to M.W. and tune to a quiet spot around 450m. Insert a 0.1μF capacitor in each generator lead and connect the generator across **L3.**

3.—Feed in a 470kc/s signal and adjust the generator for an output of 50mW in the output meter (0.5V on the A.C. voltmeter). Adjust the cores of **L13** (location reference C3), **L11** (C3) and **L9** (B3) in that order for maximum output. Repeat as necessary.

4.—Disconnect the signal generator and output meter and replace the printed panel in the case. Fit the tuning knob so that with the gang fully meshed, the datum

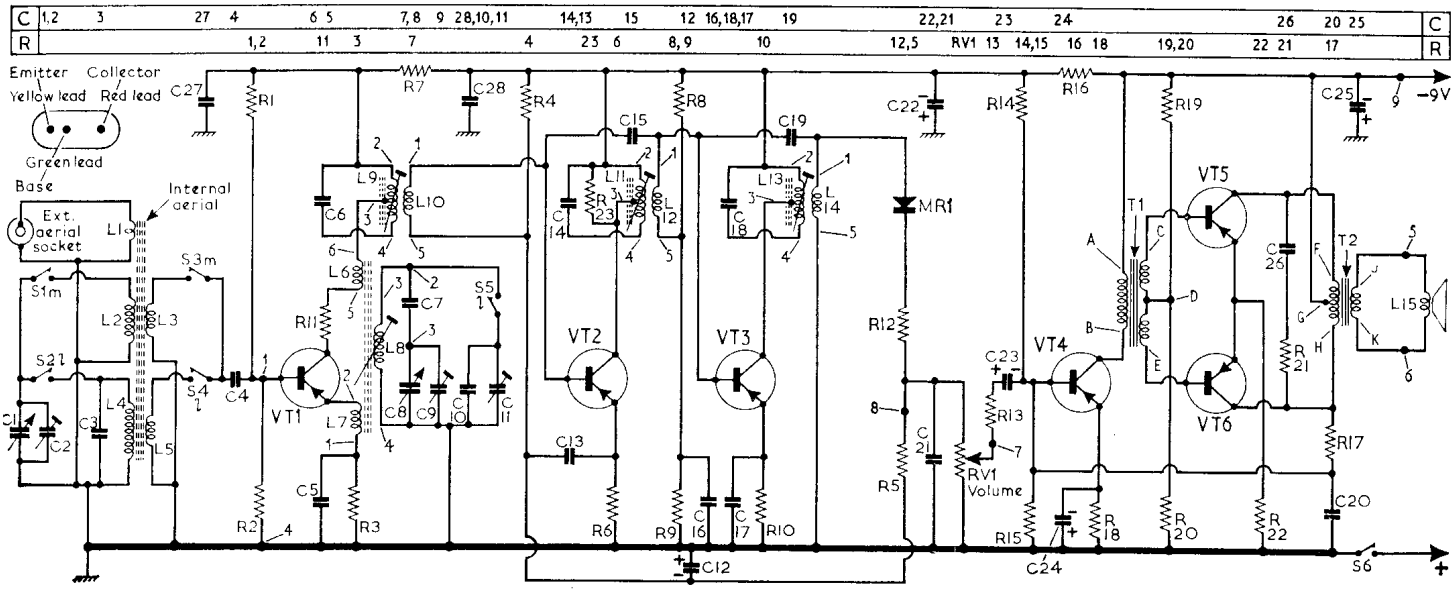
(*Continued col.* 1 *overleaf*)

Resistors		
R1	56kΩ	A3
R2	10kΩ	A3
R3‡	3·3kΩ	B3
R4	68kΩ	B3
R5	8·2kΩ	B2
R6	680Ω	B3
R7‡	4·7kΩ	B3
R8	22kΩ	B3
R9	4·7kΩ	C3
R10	1kΩ	C3
R11‡	390Ω	B3
R12	470Ω	C3
R13	2·2kΩ	B2
R14	68kΩ	B2
R15	22kΩ	C2
R16‡	680Ω	B1
R17	1MΩ	B2
R18	1kΩ	C1
R19	4·7kΩ	C2
R20‡	91Ω	C2
R21	100Ω	B1
R22	4·7Ω	B2
R23§	4·7kΩ	B3
RV1	5kΩ	A2
Capacitors		
C1	344pF	A2
C2	25pF	A2
C3	82pF	C1
C4	0·04μF	A3
C5	0·01μF	B3
C6	250pF	B3
C7	286pF	A3
C8	229pF	A2
C9	25pF	A2
C10	200pF	A1
C11	80pF	A1
C12	8μF	B2
C13	0·04μF	B3
C14	250pF	C3
C15‡	175pF	C3
C16	0·04μF	C3
C17	0·1μF	C3
C18	250pF	C3
C19‡	60pF	C3
C20‡	0·03μF	C2
C21	0·03μF	C2
C22	100μF	B1
C23	8μF	B2
C24	100μF	C1
C25	100μF	B1
C26	0·25μF	B2
C27	0·04μF	B3
C28	0·04μF	B2
Coils*		
L1	—	B1
L2	1·4	B1
L3	—	B1
L4	11·2	C1
L5	—	C1
L6	—	B3
L7	—	B3
L8	—	B3
L9	—	B3
L10	—	B3
L11	—	C3
L12	—	C3
L13	—	C3
L14	—	C3
L15	3·0	—
Transformers*		
T1 Pri	153·0	C2
T1 Sec	37·0	C2
T1 Sec	37·0	C2
T2 Pri	3·6	B2
T2 Pri	3·6	B2
T2 Sec	0·22	B2
Miscellaneous		
MR1‡	NKT155	C3
S1-S5	—	A2
S6	—	A2

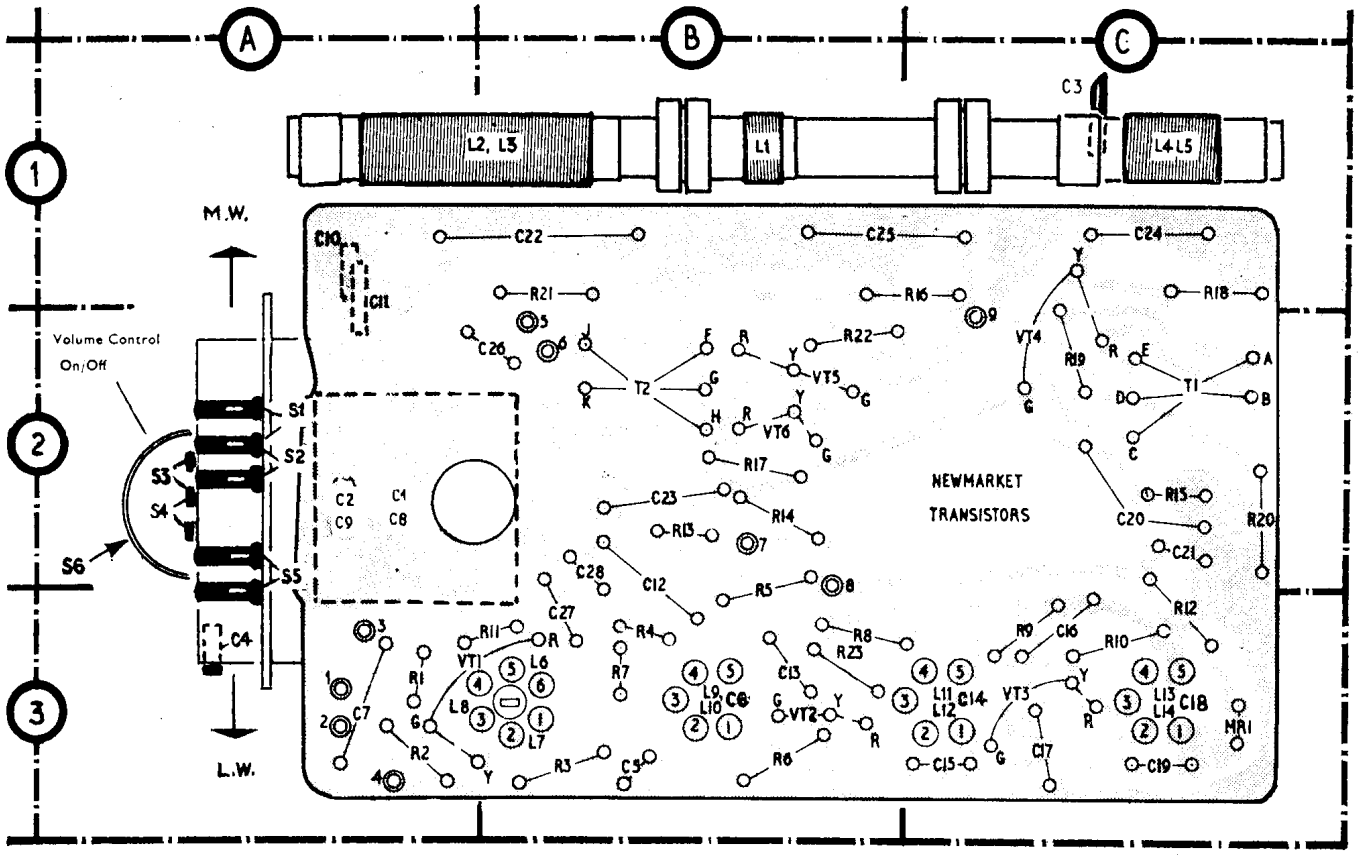
**Approximate D.C. resistance in ohms.*

§*In some receivers only.*

‡*See "Modifications."*



Circuit diagram of the "Newmarket transistor" version of the Ekco PT378. Another version uses Mullard transistors



View of the receiver looking from the rear. When dismantling the chassis from the cabinet, the tuning knobs are removed by unscrewing the special central screw with fine nose pliers or tweezers. One of the chassis securing screws is concealed by the scale knob. When replacing the side escutcheon, which is also removed for dismantling, ensure that the switch slider slot is in line with the switch arm before pressing home.

Circuit Alignment—*continued*

marks line up with the brass studs on the case.

5.—Connect the signal generator output leads to the R.F. coupling coil and place the coil at a distance of approximately 12in from the centre of ferrite rod, coaxial with the rod on the **L2** side. Connect the output meter at the panel end of the loudspeaker leads.

Note: The oscillator coil **L8** can be adjusted through the foil side of the printed panel and capacitors **C2** and **C9** through the escutcheon aperture. **C2** is the upper adjustment.

6.—Tune receiver to 500m. Feed in a 600kc/s signal and adjust **L8** (A3) and **L2** (A1) for maximum output.

7.—Tune to 200m, feed in a 1,500kc/s signal and adjust **C9** for maximum output. Tune to 214.3m, feed in 1,400kc/s signal and adjust **C2** for maximum output.

8.—Repeat operations 6 and 7 until no further improvement can be obtained.

9.—Switch receiver to L.W. and tune to 1,400m. Feed in a 214.3kc/s signal and adjust **C11** (A1) and **L4** (C1) for maximum output.

Where it is not convenient to use the coupling loop method of signal injection (the preferred method), the external aerial socket may be used although this may introduce an error at the H.F. end of the M.W. band.

BATTERY

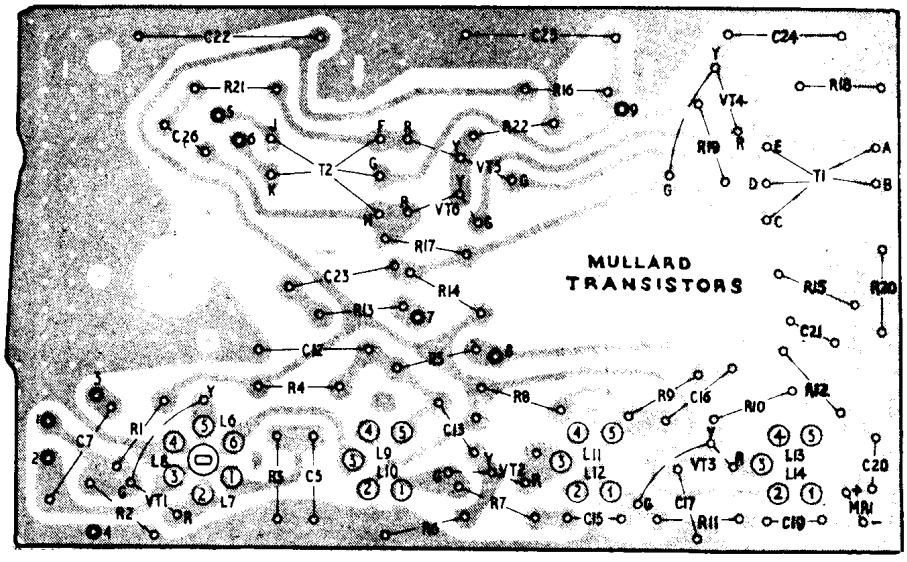
Ever-Ready PP7, Drydex DT7, Vidor T6007 or 9V equivalent.

MODIFICATIONS

Some receivers employ an alternative printed circuit panel using Mullard transistors in place of Newmarket transistors as follows: **VT1** OC44, **VT2** OC45, **VT3** OC45, **VT4** OC81D, **VT5** OC81 and **VT6** OC81. Detector diode **MR1** is a Mullard OA70.

Changes required to convert the Newmarket circuit diagram shown overleaf to the Mullard version, are given below.

R7, R11, C20, C27 and **C28** are omitted. A 1.2kΩ resistor (**R7** on the Mullard printed panel illustration) is inserted in series with **C15** between **C15** and the base of **VT2**. A 3.9kΩ resistor (**R11** on the Mullard printed panel illustration) is inserted in series with **C19** between **C19** and the base of **VT3**. A 0.3μF capacitor (**C20** on the Mullard printed panel illustration) is connected from the junction of **MR1** and **R12** to chassis. **R3** is 3.9kΩ not 3.3kΩ, **R16** is 470Ω not 680Ω, **R20** is 100Ω not 91Ω, **C15** is 56pF not 175pF and **C19** is 18pF not 60pF.



Printed circuit panel used in the alternative version which employs Mullard transistors. Circuit differences between this and the "Newmarket" panel are explained under "Modifications"

Printed in Great Britain by Cornwall Press, Ltd., Paris Garden, Stamford Street, London, S.E.1, and Published by Iliffe Electrical Publications, Ltd., Dorset House, Stamford Street, London, S.E.1.