"TRADER" SERVICE SHEET

1556

EKCO PT379

A.M./F.M. Portable Radio Receiver

Appearance of the PT379.

WIRED on a printed circuit panel and housed in a wooden, plastics fabric covered cabinet the Ekco PT379 is a nine-transistor A.M./F.M. portable radio receiver which incorporates what the makers call P.P.C. (peak performance control). The operation of this circuit is fully explained in an article in the 26 May 1962 issue of the *Trader*. Integral aerial systems are provided on all wavebands; an internal ferrite slab on Medium and Long wavebands and a telescopic rod on the F.M. band. External A.M. and F.M. aerial sockets are also fitted and a third socket can be used to feed the receiver output to a tape recorder.

Waveband ranges are 182-545m (M.W.), 1,200-2,000m (L.W.) and 88-108 Mc/s (F.M.). The chassis is designed to operate from a single 9V battery and has a consumption of 40mA for 50mW output.

Release date and original price: August 1961, £17 9s 9d. Purchase tax extra.

TRANSISTOR ANALYSIS

All transistor voltages given in the table in col. 3 are negative with respect to chassis. They were measured on a 20,000Ω/V meter with the receiver tuned to a quiet spot near 450m and the volume control turned to minimum output.

(*Continued overleaf col.* 1)

Transistor Table

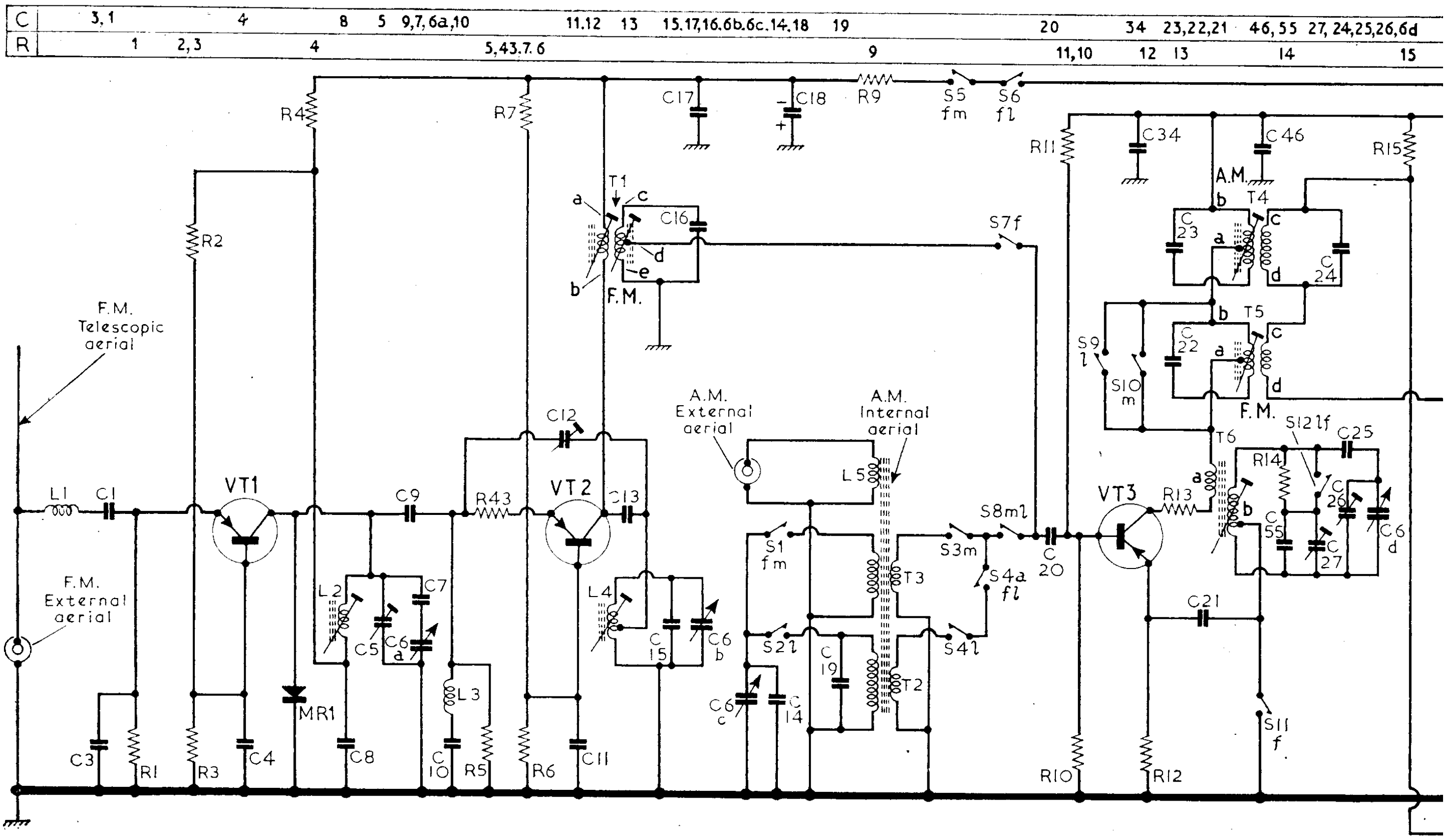
Transistor	Emitter (V)	Base (V)	Collector (V)
VT1 AF114	0·95	1·0	6·3
VT2 AF115	1·0	1·25	6·7
VT3 AF116	1·0	1·2	6·0
VT4 AF116	0·5	0·65	6·0
VT5 AF116	0·65	0·9	6·0
VT6 NKT255	1·8	2·0	4·7
BT7 NKT252	1·3	1·35	8·6
VT8 NKT251	—	0·15	9·0
VT9 NKT251	—	0·15	9·0

VT8 *and* **VT9** *are a matched pair.*

With the exception of switches, the component numbers in these tables are the same as those given in the manufacturer's manual

Resistors

R1	560Ω	J5
R2	10kΩ	J5
R3	2·7kΩ	J5
R4	180Ω	J4
R5	560Ω	H5
R6	1·5kΩ	H4
R7	6·8kΩ	H4
R8	—	§
R9	470Ω	J4
R10	1·2kΩ	H4
R11	6·8kΩ	H4



Circuit diagram of Ekco PT379. **VT3** *operates as I.F. amplifier on F.M. and as the local oscillator/mixer on A.M.* **VT10** *v*

t to Wireless &
ader, 30 June 1962

R12	1kΩ	H4
R13	220Ω	H4
R14	150kΩ[8]	H4
R15	56kΩ	G4
R16	8·2kΩ	G4
R17	220Ω	G4
R18	680Ω	G5
R19	10kΩ	G4
R20	2·7kΩ	G4
R21	220Ω	F4
R22	1kΩ	G5
R23	100Ω	F4
R24	470Ω	G4
R25	2·2kΩ	F4
R26	4·7kΩ	F4
R27	4·7kΩ	F4
R28	470Ω	F5
R29	3·9kΩ	D3
R30	120kΩ	F5
R31	47kΩ	F5
R32	8·2kΩ	F5
R33	12kΩ	F5
R34	100kΩ	G5
R35	22kΩ	F5
R36	680Ω	F5
R37	560kΩ	G5
R38	15kΩ	G5
R39	—	§
R40	150Ω	G5
R41	4·7Ω	G5
R42	220Ω	G5
R43	18Ω	A1
RV1	5kΩ	C1
RV2	5kΩ	D3

Capacitors

C1	8·2pF	J5
C2	—	§
C3	0·001μF	J5
C4	0·001μF	J5
C5	8pF	J4
C6	196pF	A2
C7	82pF	E3
C8	0·001μF	J4
C9	3pF	J5
C10	220pF	H5
C11	0·001μF	H4
C12	8pF	J4
C13	68pF	J4
C14	—	A2
C15	15pF	E3
C16	68pF	A1
C17	0·01μF	J4
C18	100μF[1]	J4
C19	60pF	D3
C20	0·01μF	H4
C21	0·01μF	H4
C22	39pF	B1
C23	250pF	B1
C24	0·001μF	G4
C25	260pF	B2
C26	—	A2
C27	30pF	E3
C28	39pF	B1
C29	250pF	B1
C30	0·001μF	G4
C31	8μF[2]	G4
C32	0·001μF	G4
C33	0·04μF	G5
C34	0·04μF	D3
C35	0·02μF[5]	G4
C36	0·04μF	F5
C37	39pF	C1
C38	250pF	C1
C39	47pF	C1
C40	0·01μF	F4
C41	0·01μF[6]	F4
C42	10μF	F4
C43	0·01μF	F4
C44	0·01μF	F4
C45	0·01μF	F4
C46	0·04μF	F5
C47	0·01μF[7]	D3
C48	8μF[3]	F5
C49	100μF[4]	F5
C50	8μF[3]	F5
C51	100μF[1]	F5
C52	100μF[4]	G5
C53	0·04μF	G5
C54	100μF[1]	H5
C55	200pF	D3
C56	0·04μF	D3

Coils

L1	—	A2
L2	—	A2
L3	—	A1
L4	—	A2
L5	—	B1
L6	—	—

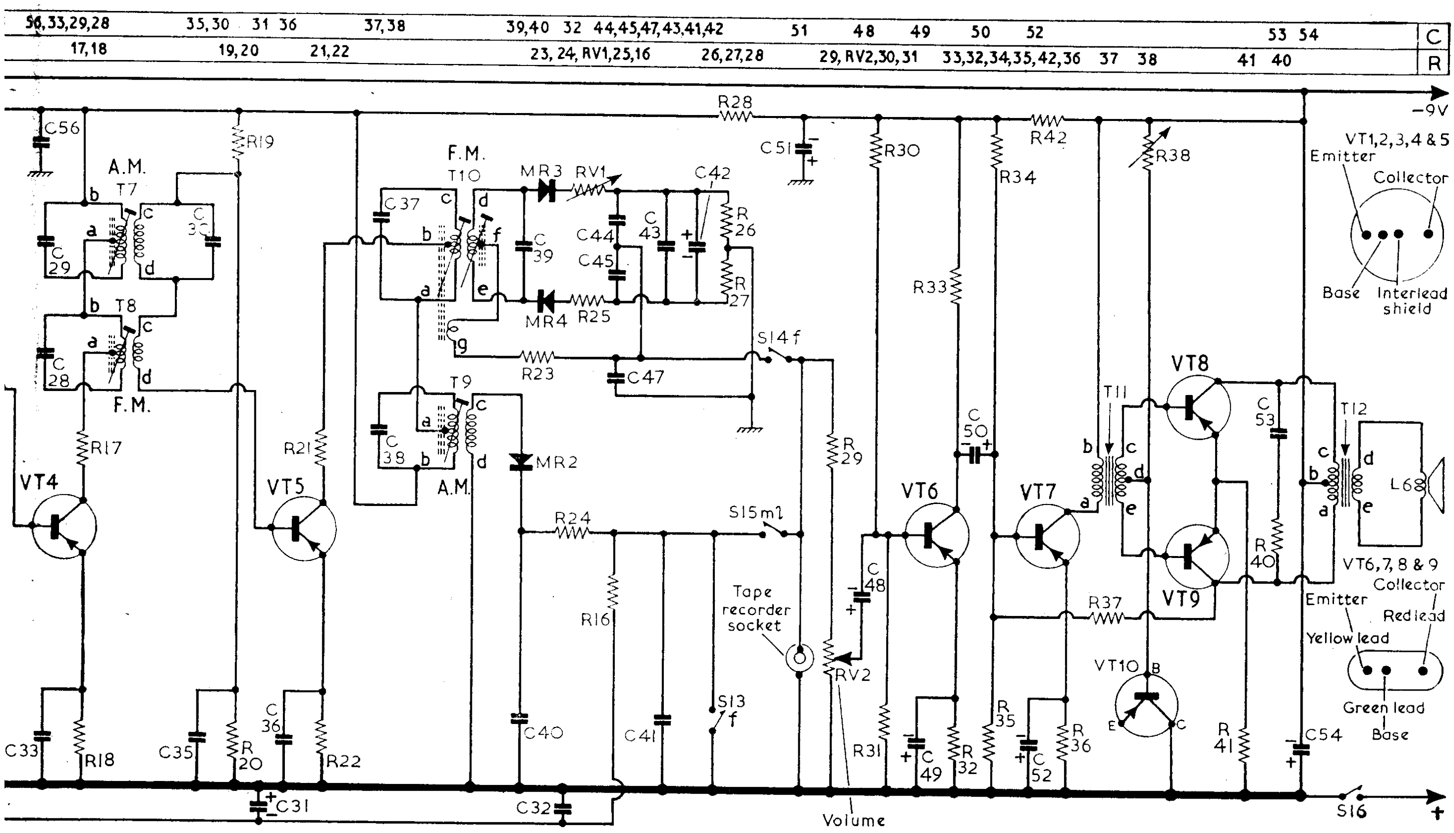
Transformers*

T1	—	A1
T2	—	C1
T3	—	A1
T4	—	B1
T5	—	B1
T6	—	B1
T7	—	B1
T8	—	B1
T9	—	C1
T10	—	C1
T11	Pri. 150·0, Sec. 80·0	B2
T12	Pri. 1·76, Sec. —	B2

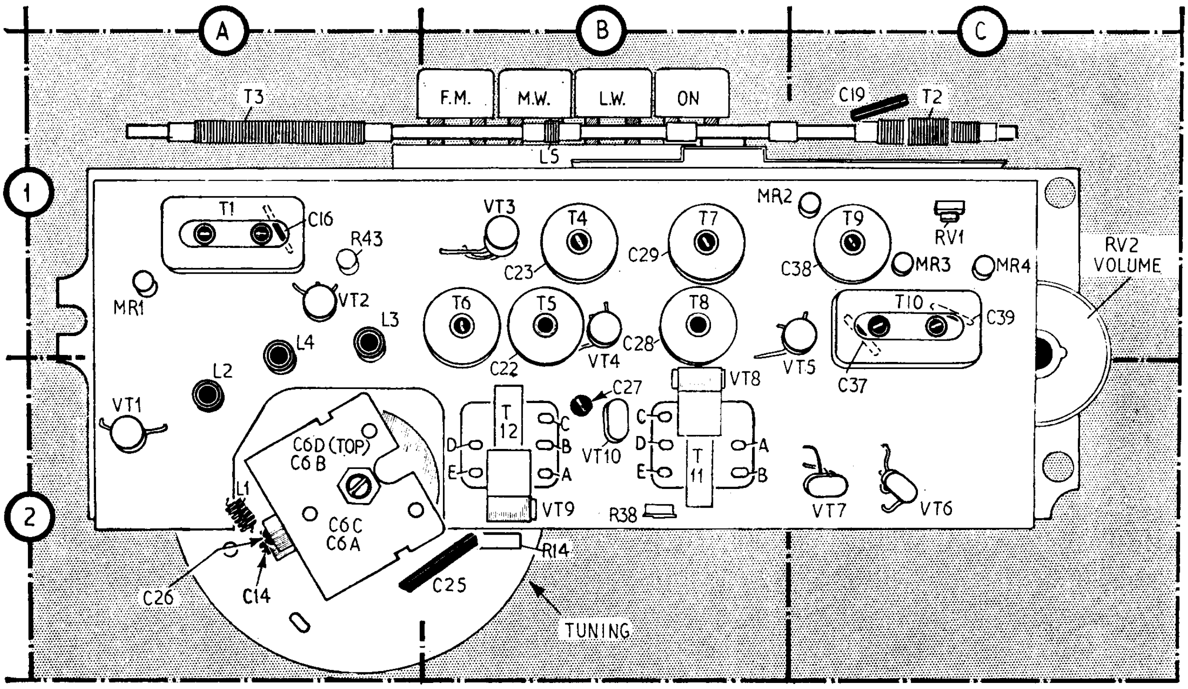
Miscellaneous

S1-S16		D3
MR1	OA79	A1
MR2	OA70	C1
MR3†	OA70	C1
MR4†	OA70	C1
VT10	NKT259	B2

*Approximate D.C. resistance in ohms.
†Matched pair.
[1]160μF in some receivers.
[2]5μF in some receivers
[3]2μF in some receivers.
[4]64μF in some receivers
[5]0·04μF in later receivers.
[6]0·04μF in later receivers.
[7]0·02μF in later receivers.
[8]82kΩ in later receivers.
§No component.



varies the output stage base bias current with temperature changes, to prevent cross-over distortion and prolong battery life.



Rear view of the chassis giving the location of alignment adjustments. Most of the components which are in fact mounted on this side of the panel have been omitted for clarity. Their circuit connections are shown in the illustration of the foil side of the panel on the opposite page

(*Continued from overleaf*)

CIRCUIT ALIGNMENT

Equipment Required.—An A.M./F.M. signal generator; an output wattmeter; a sweep generator; an oscilloscope; a non-metallic bladed type trimming tool for the I.F. cores; two 0.1μF capacitors and an R.F. coupling coil constructed by winding 20 turns of 20 S.W.G. enamelled copper wire on an air cored 4in diameter former, spaced to a length of 2⅜in. If a sweep generator and an oscilloscope are not available for visual alignment, an alternative meter alignment procedure is given which requires a 0-50μA meter and two matched 100kΩ resistors.

F.M. I.F. Alignment (Visual)

1.—Switch receiver to F.M. and tune to the L.F. end of the band. Turn the volume control to minimum output position (fully clockwise). Connect the oscilloscope across **R27** and disconnect one end of **C42** (location ref. F4).

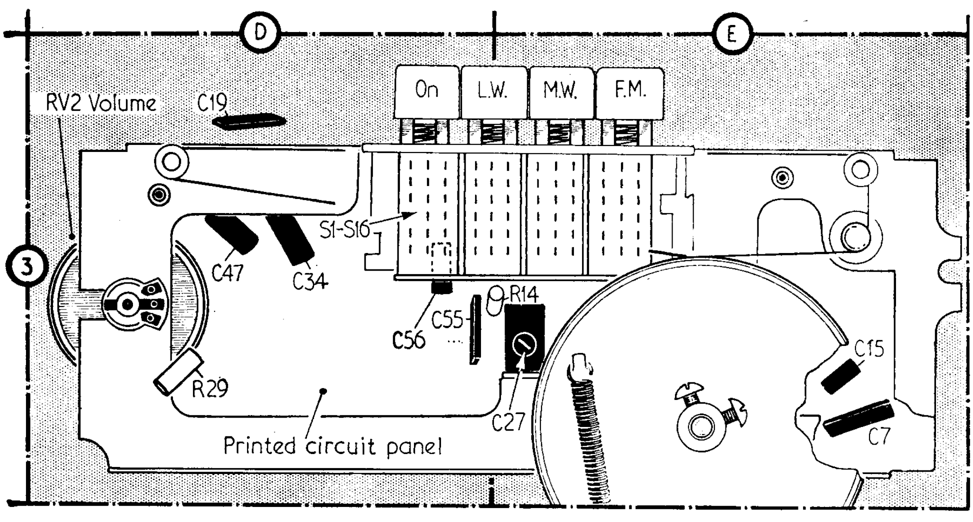
2.—Connect the sweep generator to the base of **VT5**, feed in a 10.7 Mc/s signal and adjust the primary of **T10** (C1) for peak output.

3.—Transfer the generator to the base of **VT4** and adjust the core of **T8** (B1) for peak output.

4.—Re-connect **C42,** transfer the oscilloscope to the junction of **R23** and **C47** and transfer the sweep generator to the switch side of **C20.** Feed in a 10.7 Mc/s signal and adjust **RV1** (C1) and **T10** secondary for a symmetrical "S" curve and maximum A.M. rejection.

5.—Disconnect **C42** and transfer the oscilloscope to the top of **MR4** (C1). Switch the input attenuation to −10dB and adjust **T5** for peak output. Re-adjust **T5, T8** and the primary of **T10** for maximum output, at the same time maintaining a symmetrical curve.

6.—Transfer the signal generator to **VT2** base (top of **R6**) and adjust **T1** primary and secondary cores for best response.



Front view of the chassis showing some components which are wired on the reverse (foil) side of the printed circuit panel

F.M. I.F. Alignment (Meter Method)

1.—Switch receiver to F.M. and tune to the L.F. end of the band. Turn the volume control to minimum output position. Connect the two 100kΩ resistors in series across **R26, R27** and connect the 0-50μA meter between their junction and chassis.

Note: **RV1** can only be set correctly using the visual method. If misadjustment is suspected, it should be set to the mid-position.

2.—Connect the F.M. signal generator to the base of **VT5** and adjust the primary of **T10** for maximum reading on the μA meter.

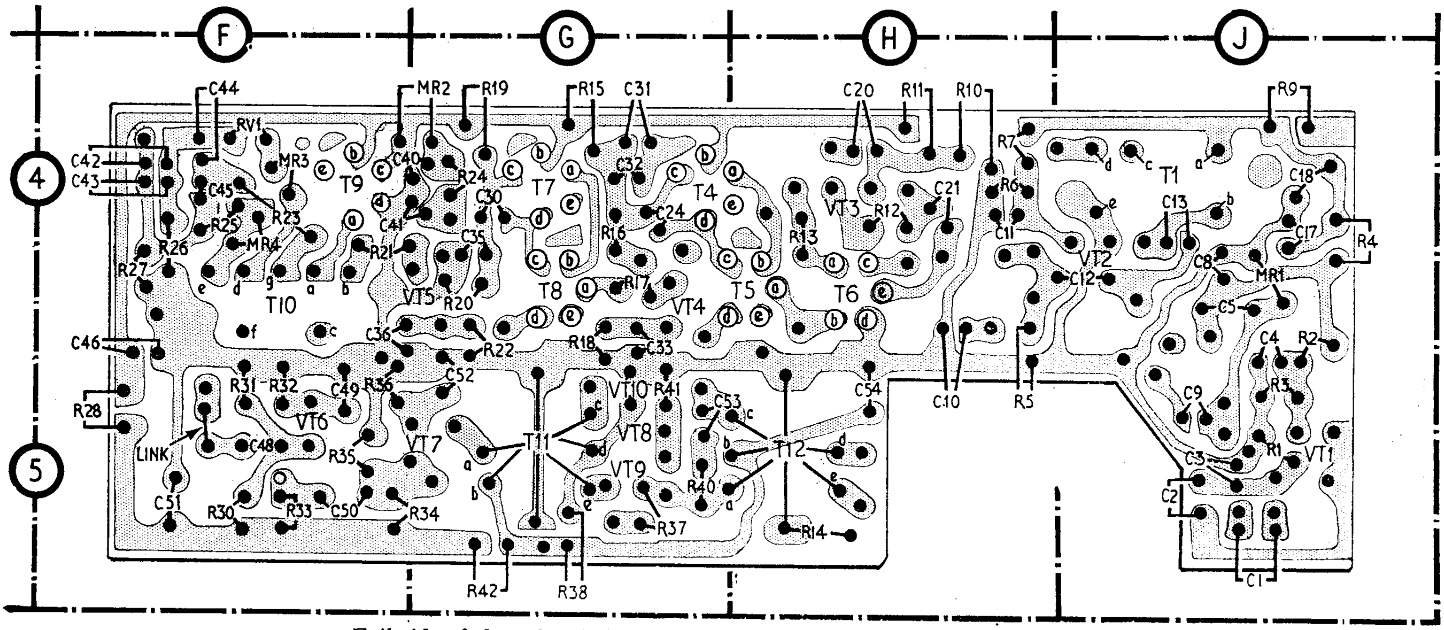
3.—Transfer the μA meter between the junction of 100kΩ resistors and the junction of **R23** and **T10** tertiary winding. Adjust **T10** secondary for *zero* reading on the meter (the reading should swing from one polarity to the other through zero).

4.—Re-connect the meter between the junction of the 100kΩ resistors and chassis. Transfer the signal generator to the base of **VT4** and adjust the core of **T8** for maximum deflection on the meter. Re-check the tuning of **T10** primary, **T8** and **T5** for peak output.

A.M. I.F. Alignment

1.—Switch to M.W. and tune receiver to a quiet spot around 460m. Turn the volume control to maximum output (fully anti-clockwise). Connect the output wattmeter with a 3 ohms dummy load in parallel, across the loudspeaker heads. If the output meter is used without a dummy load leave the speaker connected.

2.—Connect the A.M. signal generator, with a 0.1μF capacitor in each lead, across the secondary of **T3.** Feed in a 470kc/s 30% modulated signal and adjust the cores of **T4**(B1), **T7**(B1) and **T9**(C1) for maximum output, reducing the input as necessary to maintain the



Foil side of the printed circuit panel indicating component connections

output level at 50mW. Repeat until no further improvement can be obtained.

R.F. Alignment

1.—Switch receiver to F.M. and tune to the 92 Mc/s mark on tuning scale. Connect the output meter as in "A.M. I.F. Alignment" operation 1. Set the volume control for maximum output. Connect the F.M. signal generator to the external F.M. aerial socket and adjust the input for slightly less than 50mW output.

2.—Feed in a 92 Mc/s signal and adjust **L2**(A2) and **L4**(A2) for maximum output.

3.—Tune receiver to 102 Mc/s, feed in a 102 Mc/s signal and adjust **C5**(J4) for maximum output.

4.—Switch receiver to M.W. and tune to the 500m mark on scale. Transfer the signal generator leads to the coupling coil and place the coil about 15in from the centre of **T3** (M.W. aerial coil), coaxial with ferrite rod.

5.—Feed in a 600kc/s signal and adjust **T6**(B1) and **T3** for maximum output.

6.—Tune receiver to 200m, feed in a 1,500kc/s signal and adjust **C14** and **C26**(A2) for maximum output.

7.—Switch to L.W. and tune to 1,400m. Feed in a 214kc/s signal and adjust **T2** (L.W. aerial coil) and **C27**(E3) for maximum output.

The ferrite rod aerial coils are sealed on the rod in production and should not require adjustment except after replacing the rod or the coils.

GENERAL NOTES

Dismantling.—Remove tuning knob by slackening the grub screw.

Undo two coin-slotted screws in the back cover and remove cover.

Unclip battery retaining strap and slide out the battery.

Unsolder leads to the external aerial and tape recorder sockets.

Remove three slotted pillars retaining the chassis.

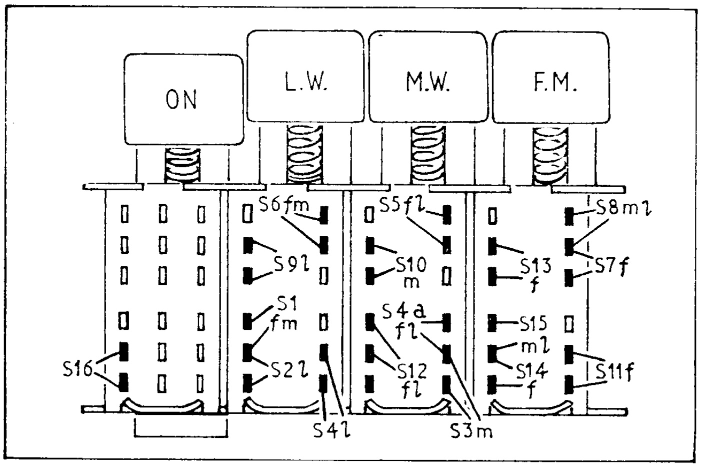
Depressing all four press-buttons to clear the case, remove chassis to the extent of speaker leads.

Drive Cord Replacement.—For a new drive cord, 32in of nylon/glass yarn is required. Remove chassis from the case and viewing from the front, turn the tuning gang to the fully meshed position. Tie the tension spring to one end of the cord and secure the knot with shellac. Attach spring on the retaining hook in drive drum and wind ½ turn clockwise round the drum then 2 turns anti-clockwise round tuning spindle. From the tuning spindle, continue round the two small pulleys as shown in the drawing below and return to the drive drum where ⅔ turn is made in a clockwise direction. Secure the free end of the cord to tension spring and seal knot with shellac.

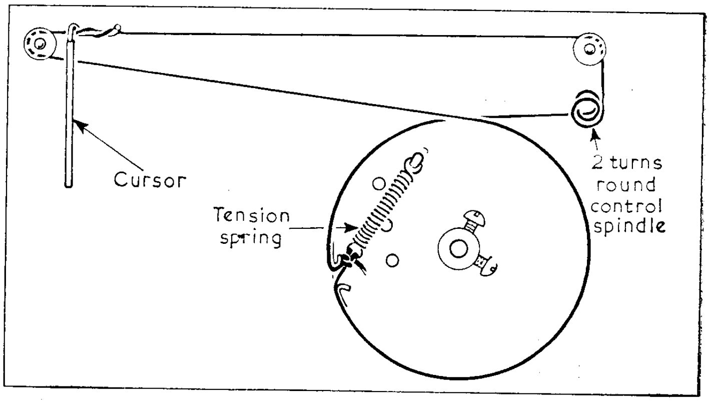
Switches.—S1-S17 are waveband and battery on/off switches which are combined in a press-button unit shown in location reference D/E3. The three wave-band positions are inter-dependent.

An illustration of the individual switch contacts is shown in col. 4. On the circuit diagram suffix letters *m*, *l*, and *f* are added to the switch numbers and these indicate the position(s) in which the switch closes, where *m* means M.W., *l* means L.W. and *f* means F.M.

Battery.—9V Ever-Ready PP7, Vidor 6007, Exide DT7 or any equivalent.



Press-button unit, with the switch contacts numbered as they appear on the circuit diagram, viewed from the front



Drive cord assembly as seen from the front with the tuning gang at maximum capacitance (fully meshed)

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