SERVICING NOTES

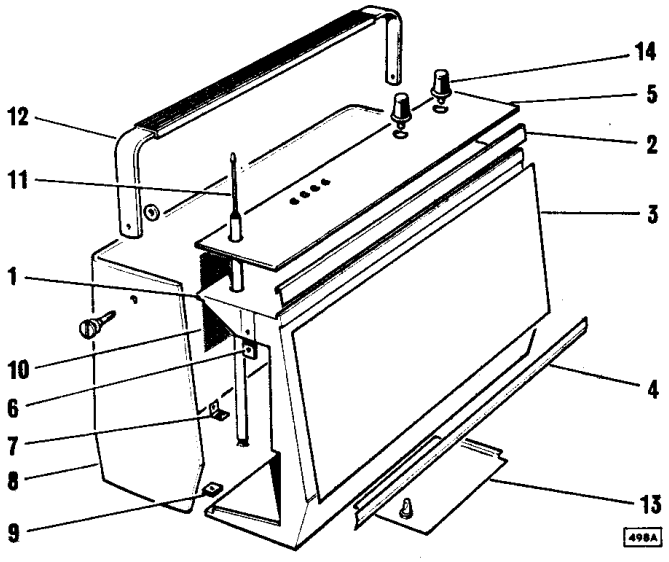
Access for Service. Take out and disconnect battery. Remove coin-slotted studs to release carrying handle, taking note of position of spacers and spring washers.

From top centre of the wrap-round cabinet back, take out the 4BA countersunk screw and also take out three countersunk screws from bottom of cabinet. The cabinet back can now be separated from the chassis and cabinet front to reveal the component side of the printed board.

For access to the copper side and the drive cord assembly, withdraw the telescopic aerial after removing screw securing it to bottom of cabinet, pull off volume and tuning knobs, unsolder the telescopic aerial lead and remove two screws from lower edge of printed board; also remove three 4BA screws, two from top left-hand side of printed board and tuning drive assembly, and one from top right-hand side of printed board to release printed board and tuning drive assembly from cabinet.

Loudspeaker. If the loudspeaker requires replacement, lever up one claw of each fixing clip to loosen and use new clips to secure the replacement loudspeaker.

REPLACEMENT PARTS



Cabinet Assembly

(Items apply to both models unless shown separately.)

(1)	Cabinet front assembly (including items 2-7)	(4167)	03M3-105
		(6167)	03M3-092
	Foam pad		3P9-024
(2)	Top trim	(4167)	3A2-216/001
		(6167)	3A2-216/002
(3)	Grille	(4167)	03A4-161
		(6167)	03A4-175
(4)	Front trim		03A2-219
(5)	Scale	(4167)	03A7-575
		(6167)	03A7-571
	Twinstick		03B4-239
(6)	'U' clip securing handle		03L4-031
(7)	Clip securing printed board		03L4-169
(8)	Cabinet back assembly (including items 9-10)	(4167)	03M3-104
		(6167)	03M3-090
	Screw (3 off)		SZ06KP08/N
	Screw		SB06KP09/C
(9)	'U' clip securing cabinet back		03L4-167
(10)	Scrim on cabinet back		03B4-237
(11)	Telescopic aerial (screw SB4KP04)		03F0-092/002
(12)	Handle	(4167)	03A9-058/002
		(6167)	03A9-058/004
	Stud		03B3-119
	Spacer		03L7-037
	Washer		03L6-068
(13)	Battery compartment cover	(4167)	03B1-280/003
		(6167)	03B1-280/001
	Stud (rubber washer 0326-027)		03B3-019
(14)	Off/Volume or Tuning knob		03C0-222
	Clip		03L3-111

continued

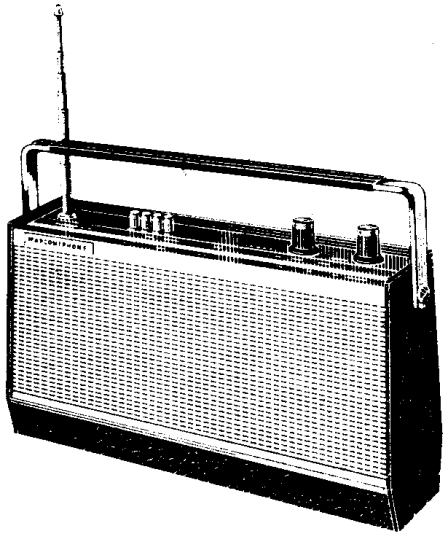
BRC service manual

Price: One Shilling and Sixpence

MARCONIPHONE **4167**

ULTRA **6167**

(Sch. A & B)



4167
(6167 is similar)

Both models are electrically identical and provide reception in the Long, Medium and Short wavebands. Each receiver is powered by a 9V battery, Type PP9 or equivalents. Personal listening and car aerial sockets are fitted.

BRITISH RADIO CORPORATION LIMITED

SERVICE DEPOTS

LONDON:
P.O. Box No. 121, Lea Valley Trading Estate, Angel Road,
Edmonton, London, N.18. *Tel. 01-807 3060*
Spare Parts Tel. 01-807 0791; Ansafone Spares Tel. 01-807 6332

MANCHESTER:
Thorn House, Derby Street, Cheetham,
Manchester 8. *Tel. 061-832 2499*

GLASGOW:
155 Shieldhall Road, Glasgow, S.W.1.
Tel. 041-882 4512

THORN

British Radio Corporation Ltd. is a member of the Thorn Group

Chassis Assembly

Printed board assembly		00V6-259
4BA screw securing printed board		SY06HP04
PK screw securing printed board		SZ06HP04
SP Washer		WSPB04
Ferrite rod cleat		3L3-084
'U' clip		03L4-167
Screw		SA06HH06
Tuning drive support moulding assembly		03M3-095
Scale backing	(4167)	03A7-578/002
	(6167)	03A7-578/001
Cursor	(4167)	03B5-083/002
	(6167)	03B5-083/003
Tuning drive pulley assembly		03M4-096
Special nut		03L6-037
SP washer		WSPA06
Small pulley (black)		03C8-112
Large pulley		03C8-121
Circlip		03L3-039
Drive drum		03F5-031
Screw		03L6-110/002
Screw securing tuning gang		03L6-110/001
Push-button		03C0-226
Drive cord tension spring		00B5-068
J1/SKT1 bracket		03B1-282
Battery connector		3F6-031

COMPONENT DETAILS

When ordering replacement capacitors and resistors for which no part number is given, please quote Model number and component details as stated below.

References in the location column refer to the illustration on back page.

CAPACITORS

REF	DESCRIPTION & PART NO.	LOC
C1	15pF, 5%, 500V, Telescopic SW aerial coupling	F3
C2	266pF, Aerial tuning; Part tuning gang, 03E4-036	F4
C3	5pF, Preset, MW aerial trimmer; Part tuning gang, 03E4-036	G4
C4	5pF, Preset, SW aerial trimmer; Part tuning gang, 03E4-036	G3
C5	60pF, 2½%, 20V, LW aerial fixed trimmer	F1
C6	2000pF, 20%, 500V, LW aerial bottom end coupling	E3
C7	5000pF, 20%, 500V, VT1 signal coupling	D3
C8	100pF, 10%, 500V, VT1 stabilizing	E3
C9	·01μF, —20 +80%, 50V, MW/LW (and part SW) oscillator emitter coupling	D3
C10	5000pF, 20%, 500V, Part SW oscillator emitter coupling	E2
C11	180pF, L7 tuning; Part IFT1	D3,4
C12	5pF, ±¼pF, 500V, SW oscillator fixed trimmer	E3,4
C13	5pF, Preset, SW oscillator trimmer; Part tuning gang, 03E4-036	G3
C14	2000pF, 2½%, 120V, SW oscillator fixed padder	E3
C15	230pF, 2%, 350V, LW oscillator fixed trimmer	D3
C16	2-25pF, Preset, LW oscillator trimmer, 03E4-015	D3
C17	290pF, 2%, 350V, MW oscillator fixed padder	E3
C18	9pF, 5%, 500V, MW oscillator fixed trimmer	E3
C19	5pF, Preset, MW oscillator trimmer; Part tuning gang, 03E4-036	G2
C20	266pF, Oscillator tuning; Part tuning gang, 03E4-036	F4
C21	·01μF, —20 +80%, 50V, VT1 supply line RF decoupling	E3
C22	·02μF, —20 +80%, 50V, VT2/3 supply line RF decoupling	CD4
C23	8μF, Elec., 18V, AGC decoupling, 00E0-222/13	D4
C24	·02μF, —20 +80%, 50V, VT2 base bias decoupling	DE4
C25	·02μF, —20 +80%, 50V, VT2 emitter stabilizing	E3,4
C26	180pF, L14 tuning, Part IFT2	E4
C27	·02μF, —20 +80%, 50V, VT3 base bias decoupling	E4
C28	·02μF, —20 +80%, 50V, VT3 emitter stabilizing	D4
C29	100pF, 10%, 500V, AGC signal coupling	D4
C30	180pF, L16 tuning, Part IFT3	D4
C31	·01μF, —20 +80%, 50V, Part IF filter	D4
C32*	5000pF, 20%, 500V, Part IF filter	C4
C33	·05μF, —20 +80%, 50V, Part tone control	D2
C34	0·22μF, 10%, 250V, Detector output coupling	D2,3
C35	0·22μF, 20%, 250V, VT4 audio coupling	A3
C36	150μF, Elec., 9V, VT1-3 supply line decoupling, 00E0-229/59	CD3
C37	8μF, Elec., 18V, VT5 signal coupling, 00E0-222/13	B3
C38	8μF, Elec., 18V, VT5 base bias decoupling, 00E0-222/13	AB2
C39†	300μF, Elec., 10V, NFB and DC blocking, 00E0-229/64	B2
C40	2000pF, 20%, 500V, Tone correction	B2,3
C41†	300μF, Elec., 9V, Battery decoupling, 00E0-229/59	C2
C42	300μF, Elec., 9V, Audio output coupling, 00E0-229/59	C3

** In Schedule A models C32 is ·01μF.*
† In some models C35 is 8μF, and C39 and C41 are 150μF.

INDUCTORS

REF	DESCRIPTION & PART NO.	LOC
L1	MW aerial coil	D1
L2	LW aerial coil	F1
L3	VT1 base coupling — Ferrite rod aerial, 03F0-085	DE1
L4	Car aerial coupling	EF1
L5-6	SW aerial coil assembly, 03D1-186	G2
L7-8	IFT1, 03D0-036	D4
L9-10	SW oscillator coil assembly, 03D1-071	E3
L11-13	MW-LW oscillator coil assembly, 03D1-070	D3
L14-15	IFT2, 03D0-037	E4
L16-17	IFT3, 03D0-038	C4

RESISTORS

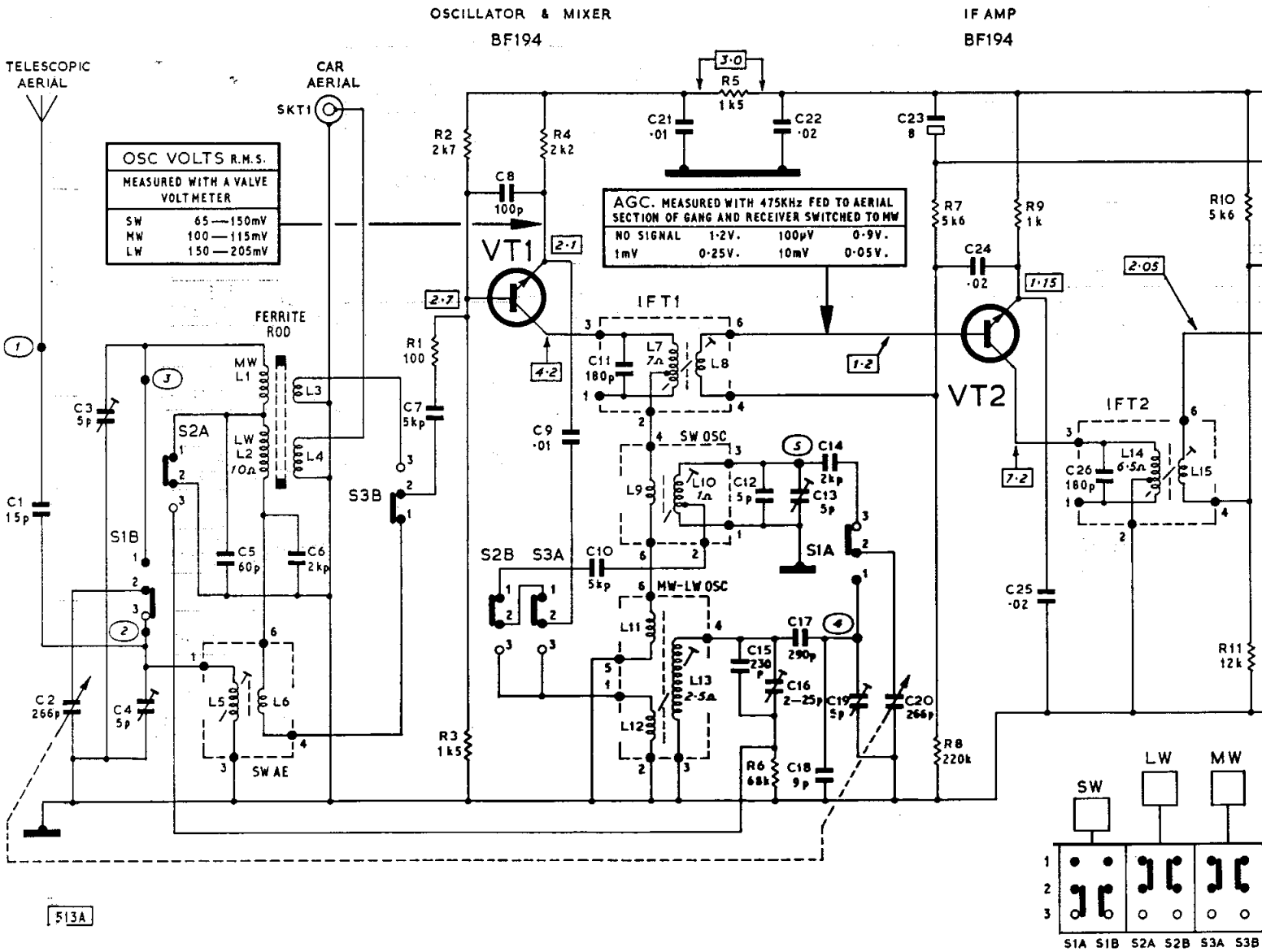
REF	DESCRIPTION & PART NO.	LOC
R1	100 Ω, 10%, ¼W, RF stopper	D3
R2	2·7k Ω, 10%, ¼W, Part VT1 base bias pot. divider	D3
R3	1·5k Ω, 10%, ¼W, Part VT1 base bias pot. divider	E3
R4	2·2k Ω, 10%, ¼W, VT1 emitter stabilizing	E3
R5	1·5k Ω, 10%, ¼W, VT1 supply dropper and decoupler	DE3
R6	68k Ω, 5%, ¼W, MW oscillator damping	E3
R7	5·6k Ω, 10%, ¼W, Part VT2 base bias pot. divider	D4
R8	220k Ω, 10%, ¼W, Part VT2 base bias pot. divider	D3,4
R9	1k Ω, 10%, ¼W, VT2 emitter stabilizing	E4
R10	5·6k Ω, 10%, ¼W, Part VT3 base bias pot. divider	D4
R11	12k Ω, 10%, ¼W, Part VT3 base bias pot. divider	D4
R12	1k Ω, 10%, ¼W, VT3 emitter stabilizing	DE4
R13	18k Ω, 10%, ¼W, AGC feed	D4
R14	5·6k Ω, 10%, ¼W, W2 load	CD4
R15*	22k Ω, 10%, ¼W, Part IF filter	C4
R16	4·7k Ω, Log. pot., Volume control, 03E1-077/001	B2
R17	100k Ω, 10%, ¼W, Part VT4 base bias pot. divider	B3
R18	22k Ω, 10%, ¼W, Part VT4 base bias pot. divider	A2,3
R19	330 Ω, 10%, ¼W, DC dropper and decoupler	A2
R20	5·6k Ω, 10%, ¼W, VT4 collector load	AB2
R21	680 Ω, 10%, ¼W, VT4 emitter stabilizing	AB3
R22	33k Ω, 10%, ¼W, VT5 base bias feed	B3
R23	68k Ω, 10%, ¼W, Part VT5 base bias pot. divider	A2
R24	39k Ω, 5%, ¼W, Part VT5 base bias pot. divider	B2,3
R25	10 Ω, 10%, ¼W, NFB current limiting	B2,3
R26	1·5k Ω, 10%, ¼W, VT5 collector load	B3
R27	680 Ω, 10%, ¼W, VT6 collector load	C2
R28	680 Ω, 10%, ¼W, VT5 emitter stabilizing	BC3
R29	330 Ω, 10%, ¼W, Output transistors protective load	C2

** In Schedule A models R15 is 5·6k Ω.*

MISCELLANEOUS

REF	DESCRIPTION & PART NO.	LOC
J1	Personal listening socket, 03F6-037	C3
LS	Loudspeaker, 10 ohms, 03E3-044/003	—
S1-4	Push-button wavechange and tone switch, 03E2-080	DE2
S5	Off-On switch (with R16)	B2
SKT1	Car aerial socket, 03F6-025/002	C2,3
W1	0A90, AGC diode, 00V4-610	D4
W2	0A90, Detector diode, 00V4-610	D4
W3	D3, Stabilizing diode, (Part output pack LP42—00V1-216)	C2,3

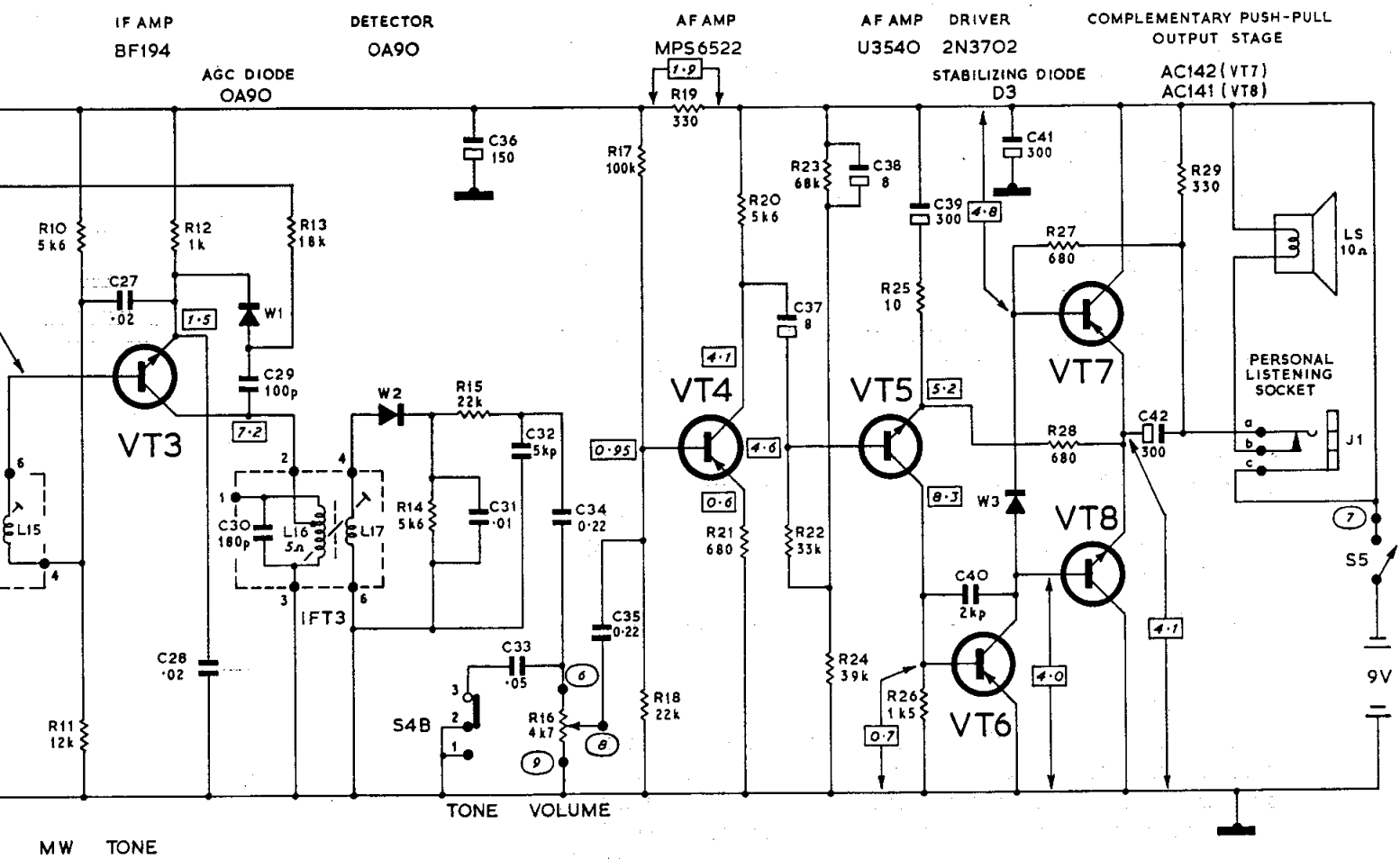
The manufacturers reserve the right to vary specifications or use alternative materials as may be deemed necessary or desirable at any time.

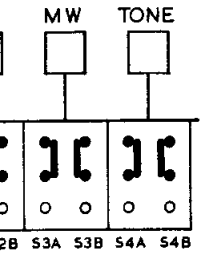


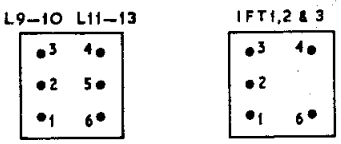
CIRCUIT DIAGRAM (Sch. B)

In Schedule A receivers R15 is 5.6kΩ and C32 is .01μF. All voltages were measured with a 20,000 Ω/volt meter and are with respect to the emitter supply line of each transistor, except where otherwise shown. Ringed figures indicate printed board tag connection points. DC resistances of inductors are shown where these exceed 1Ω. Transistor types which are similar to those shown in the circuit diagram may be fitted during manufacture or supplied as replacements.

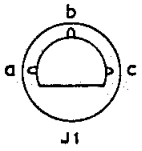
In some receivers C35 is 8μF; C39 and C41 are 150μF.







SWITCH AND COIL CONNECTIONS ARE VIEWED FROM COPPER SIDE OF PRINTED BOARD



TOTAL CURRENT	
QUIESCENT	16mA
50mW	46mA
100mW	59mA
300mW	91mA
MAXIMUM OUTPUT	130mA

GRID REFERENCES FOR TRANSISTORS & TAGS

(shown on back page)

TRANSISTORS		TAGS	
VT1	D3	1	F2
VT2	E3, 4	2	E3
VT3	D4	3	EF3
VT4	B3	4	E3
VT5	B2	5	E3
VT6	B2	6	D2,3
VT7	C2	7	CD2
VT8	C2	8	A2, 3
		9	A3

a 20,000
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ALIGNMENT DATA

A signal from a suitable AM generator is required. Tuning indication is best obtained either with an output meter having an impedance of 10Ω and connected in place of the loudspeaker, or a Model 8 Avometer, set to the 10V AC range, connected in parallel with the loudspeaker.

Throughout alignment the signal input level to the receiver should be adjusted to maintain the audio output at approximately 50mW with the volume control set at maximum in order to avoid alignment error due to AGC action.

Appropriate alignment markers are provided by notches in the scale backing plate but as these are not annotated they should be identified by comparison with readings on the tuning scale.

IF Circuits

Select MW and turn gang to maximum capacitance. Apply a 475 kHz modulated signal through a 0.1 μF capacitor between tag 3 and frame of tuning gang. Adjust L16/17, L14/15 and L7/8 in that order for maximum output.

Repeat in the same order until no further improvement is obtainable.

RF Circuits

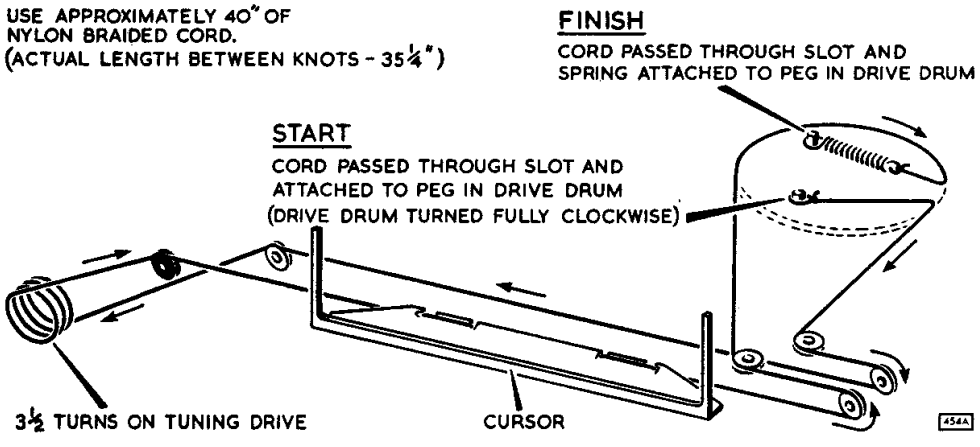
With gang fully closed, check and if necessary, adjust cursor to coincide with zero marker notch on left-hand end of calibration strip or dot on left-hand end of tuning scale. MW must be aligned first. Medium and Long wave signals should be injected via a loop loosely coupled to the ferrite rod aerial. Inject Short wave signals via a 15-20pF capacitor into the telescopic aerial lead with the telescopic aerial disconnected. Set signal generator and cursor as indicated in the table and make all adjustments for maximum output.

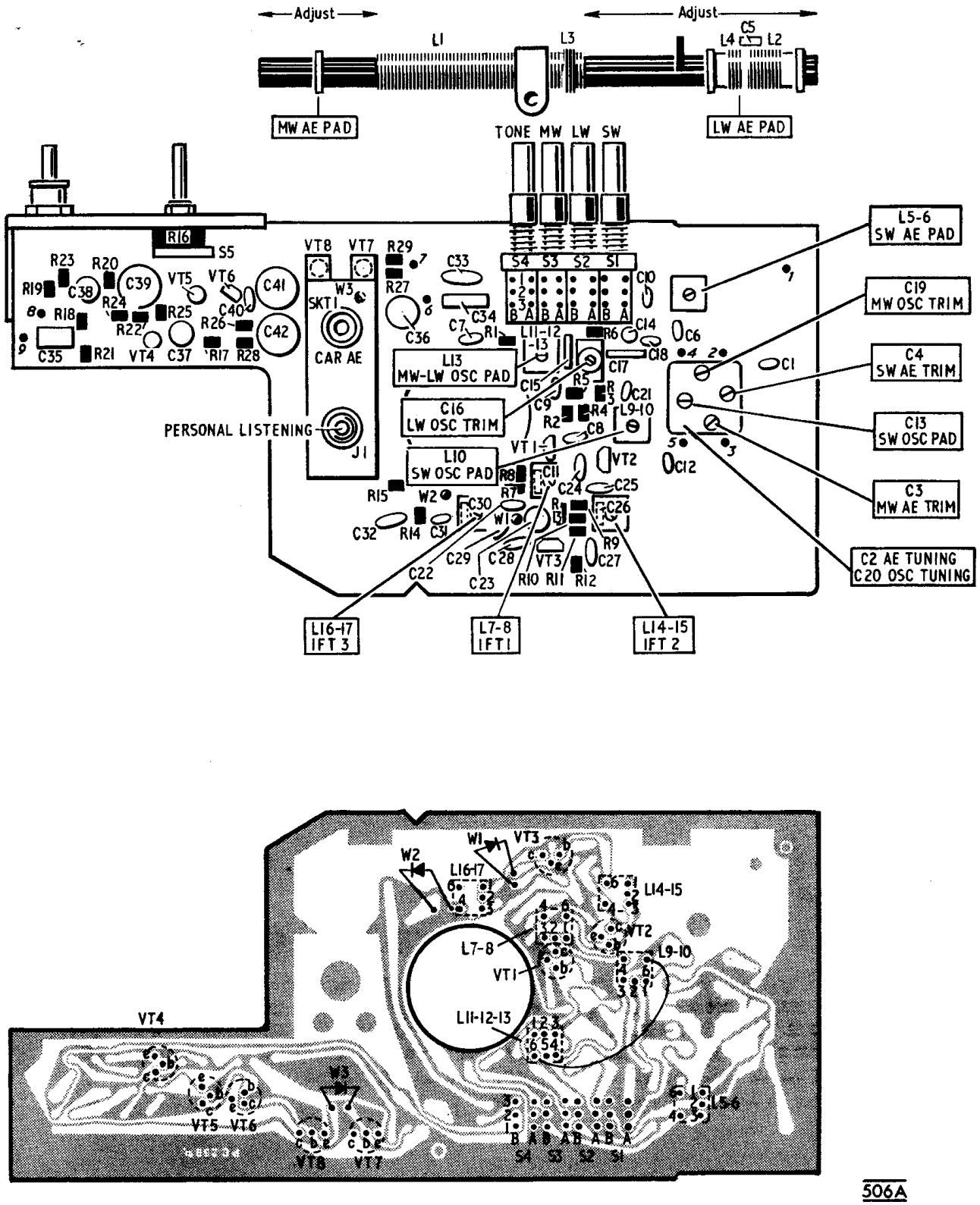
Range	Inject	Cursor Position	Adjust
MW	600 kHz	PAD marker notch or centre of 500 metres	L13, L1*
	1500 kHz	TRIM marker notch or centre of 200 metres	C19, C3
LW	220 kHz	LW calibration notch or centre of 1400 metres	C16, L2†
SW	6·7 MHz	MW PAD marker notch	L10, L5
	15·8 MHz	SW TRIM marker notch or centre of '00' in 1200	C13, C4

** Adjust by sliding ring along ferrite rod*
†Adjust by sliding coil former along ferrite rod

Repeat adjustments as necessary to obtain maximum output.

DRIVE CORD ARRANGEMENT





Component and copper sides of printed board showing alignment adjustments and base connections of coils, diodes and transistors.