

## SERVICING NOTES

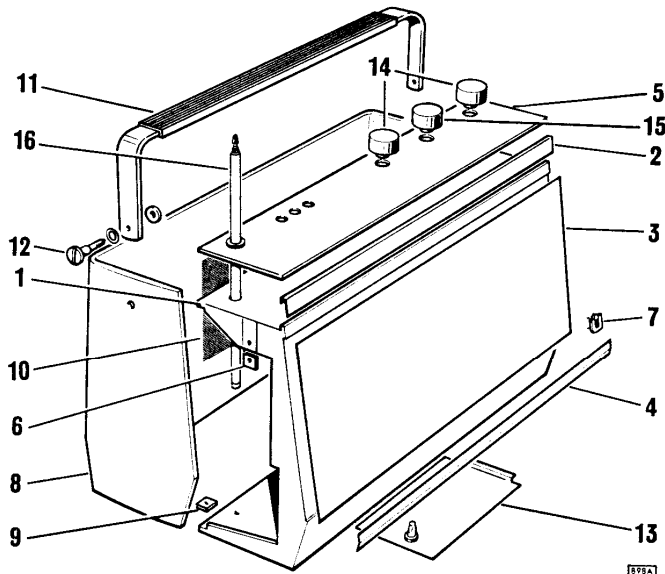
**Access for Service.** Take out and disconnect battery. Remove coin-slotted studs to release carrying handle, taking note of position of spacers and spring washers.

From top centre of the wrap-round cabinet back, take out the 6BA 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 by taking out screw in cabinet base, pull off three control knobs, 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.

## REPLACEMENT PARTS

When ordering replacement components, please quote Model number and include the description or function given with the part number.



### Cabinet Assembly

(Items apply to both models unless otherwise shown)

(1) Front (incl. 2-4, 7 & back fixing bracket)	(4175) ..	03M3-557
Spring clip—chassis fixing	(6175) ..	03M3-563
(2) Top trim	(4175) ..	03L4-169
(3) Grille	(6175) ..	03A2-307-002
Scrim	(4175) ..	03A2-307-001
(4) Bottom trim	(6175) ..	03A4-208-001
(5) Scale	(4175) ..	03A4-207-001
Twinstick	(6175) ..	03B4-238
(6) 'U' clip securing handle	(4175) ..	03A2-219
(7) Emblem	(6175) ..	03A7-790
(8) Cabinet back including items 9 & 10	(4175) ..	03A7-791
Cabinet back fixing bracket	(6175) ..	03B4-239
Screw (3 off)	(4175) ..	03L4-031
Screw (1 off)	(6175) ..	03A6-042
(9) 'U' clip securing cabinet back	(4175) ..	00A6-217-002
(10) Scrim on cabinet back	(6175) ..	03M3-555
(11) Handle	(4175) ..	03M3-561
(12) Handle stud	(6175) ..	03B1-415
Spacer (washer 03L6-068)	(4175) ..	SZ06KP08-N
(13) Battery compartment cover	(6175) ..	SB06KP10-C
Stud—battery cover	(4175) ..	03L4-167
Washer (spring clip 03L3-086)	(6175) ..	03B4-237
(14) Tuning and tone control knob	(4175) ..	03A9-058-006
(15) Off/Volume control knob	(6175) ..	03A9-058-007
Clip for items 14 & 15	(4175) ..	03B3-119
(16) Telescopic aerial	(6175) ..	03L7-037
Support bracket	(4175) ..	03B1-280-001
Screw (washer WSPB04)	(6175) ..	03B3-019
		03L6-027
		03C0-217-001
		03C0-217-017
		03L3-111
		03F0-092-001
		03B1-319
		SB04KP05

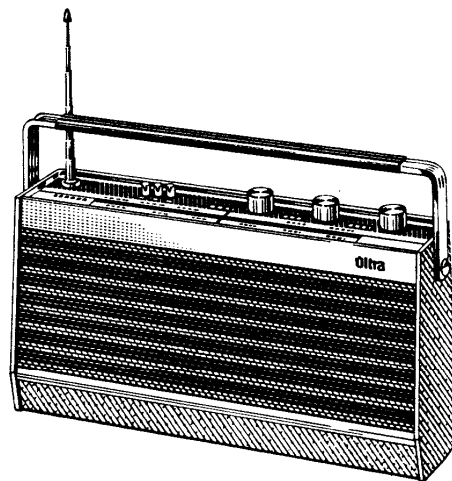
continued overleaf

# BRC service manual

Price: 74p

MARCONIPHONE **4175**

ULTRA **6175**



6175  
(4175 is similar)

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

"Marconiphone" products are made to a standard of design and quality approved by The Marconiphone Co. Ltd., registered proprietor of the name and signature trade-marks.

### BRITISH RADIO CORPORATION LIMITED

#### SERVICE DEPOTS

LONDON:  
P.O. Box No. 121, Lea Valley Trading Estate, Angel Road,  
Edmonton, London, N18 3BP. Tel. 01-807 3060  
Spares ordering only: 01-807 0791, or  
Answering Service: 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—(both models)

Chassis moulding (including pulley spindle) ...	03M3-640
Screw ('U' clip 03L4-030) ...	SZ04KP06
Screw—securing output transistor	SZ04KP07
IF screen—on printed board ...	03B1-249
4BA screw securing printed board	SY06HP04
PK screw securing printed board ...	SZ06HP04
SP washer ...	WSPB04
Ferrite rod cleat (screw SA06HH06)	03L3-084
Tuning drive support moulding assembly	03M3-095
Scale backing ...	03A7-616/002
Cursor ...	03B5-083/002
Tuning drive pulley assembly	03M3-420
Special nut ...	03L6-037
SP washer ...	WSPA06
Small pulley (3-off) ...	03C8-121
Large pulley (2-off) ...	03C8-001
Circlip ...	03L3-039
White pulley (adjacent to Volume control)...	03C8-112/001
Pulley pivot ...	03C8-119
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 ...	03F6-031

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.

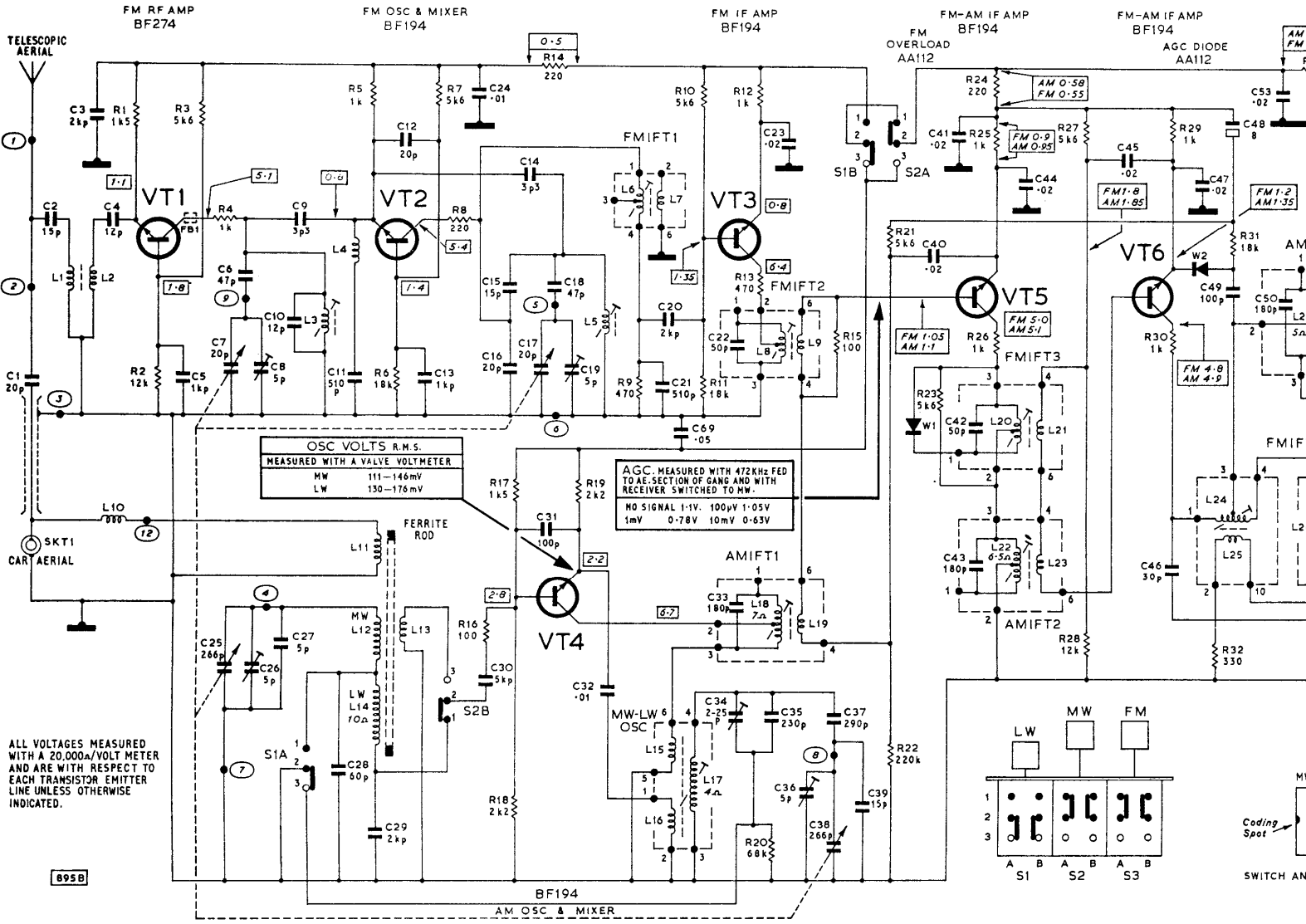
RESISTORS

REF	DESCRIPTION & PART NO.	LOC
R1	1.5k Ω, 10%, 1/4W, VT1 emitter stabilizing ...	EF4
R2	12k Ω, 10%, 1/4W, Part VT1 base bias pot. divider ...	E4
R3	5.6k Ω, 10%, 1/4W, Part VT1 base bias pot. divider ...	E4
R4	1k Ω, 10%, 1/4W, FM RF stopper ...	E4
R5	1k Ω, 10%, 1/4W, VT2 emitter stabilizing ...	F2
R6	18k Ω, 10%, 1/4W, Part VT2 base bias pot. divider ...	F3
R7	5.6k Ω, 10%, 1/4W, Part VT2 base bias pot. divider ...	F2
R8	220 Ω, 10%, 1/4W, FM RF stopper ...	EF3
R9	470 Ω, 10%, 1/4W, VT2 collector load ...	E2
R10	5.6k Ω, 10%, 1/4W, Part VT3 base bias pot. divider ...	E3
R11	18k Ω, 5%, 1/4W, Part VT3 base bias pot. divider ...	E3
R12	1k Ω, 10%, 1/4W, VT3 emitter stabilizing ...	E3
R13	470 Ω, 10%, 1/4W, AM limiting ...	E3
R14	220 Ω, 10%, 1/4W, Part FM supply line decoupling ...	E2
R15	100 Ω, 10%, 1/4W, FM IFT2 damping ...	E3
R16	100 Ω, 10%, 1/4W, AM RF stopper ...	D3
R17	1.5k Ω, 10%, 1/4W, Part VT4 base bias pot. divider ...	D3
R18	2.2k Ω, 10%, 1/4W, Part VT4 base bias pot. divider ...	DE3
R19	2.2k Ω, 10%, 1/4W, VT4 emitter stabilizing ...	DE3
R20	68k Ω, 5%, 1/4W, MW oscillator damping ...	E3
R21	5.6k Ω, 10%, 1/4W, Part VT5 base bias pot. divider ...	D4
R22	220k Ω, 10%, 1/4W, Part VT5 base bias pot. divider ...	D3,4
R23	5.6k Ω, 10%, 1/4W, FM IFT3 damping ...	E4
R24	220 Ω, 10%, 1/4W, VT5 supply line dropper ...	CD3
R25	1k Ω, 10%, 1/4W, VT5 emitter stabilizing ...	DE4
R26	1k Ω, 10%, 1/4W, VT5 AM limiting ...	E3,4
R27	5.6k Ω, 10%, 1/4W, Part VT6 base bias pot. divider ...	DE4
R28	12k Ω, 10%, 1/4W, Part VT6 base bias pot. divider ...	DE4
R29	1k Ω, 10%, 1/4W, VT6 emitter stabilizing ...	DE4
R30	1k Ω, 10%, 1/4W, AM limiting ...	D4
R31	18k Ω, 10%, 1/4W, AGC feed ...	DE4
R32	330 Ω, 10%, 1/4W, Ratio detector tertiary series ...	D4
R33	5.6k Ω, 10%, 1/4W, AM detector load ...	CD4
R34	22k Ω, 10%, 1/4W, Part AM IF filter ...	C3,4
R35	68 Ω, 10%, 1/4W, DC dropper and decoupler ...	D2
R36	5.6k Ω, 10%, 1/4W, Ratio detector load ...	C4
R37	5.6k Ω, 10%, 1/4W, Ratio detector load ...	C4
R38	1k Ω, 10%, 1/4W, Part de-emphasis ...	C4
R39	20k Ω, Log. pot., Volume control and switch S4, 03E1-077/002	B2
R40	100k Ω, 10%, 1/4W, Part VT7 base bias pot. divider ...	B3
R41	22k Ω, 10%, 1/4W, Part VT7 base bias pot. divider ...	A2,3
R42	330 Ω, 10%, 1/4W, DC dropper and decoupler ...	A2
R43	5.6k Ω, 5%, 1/4W, VT7 collector load ...	AB2
R44	680 Ω, 10%, 1/4W, VT7 emitter stabilizing ...	AB3
R45	33k Ω, 10%, 1/4W, VT8 base bias feed ...	B3
R46	68k Ω, 10%, 1/4W, Part VT8 base bias pot. divider ...	A2,3
R47	39k Ω, 5%, 1/4W, Part VT8 base bias pot. divider ...	AB3
R48	10 Ω, 10%, 1/4W, VT8 NFB current limiting ...	B2,3
R49	1.5k Ω, 5%, 1/4W, VT8 collector load ...	B3
R50	680 Ω, 10%, 1/4W, VT8 emitter stabilizing and feedback ...	BC3
R51	680 Ω, 10%, 1/4W, VT9 collector load ...	CD2
R52	330 Ω, 10%, 1/4W, Output transistors protective load ...	C2
R53	22k Ω, Log. pot., Tone control, 03E1-081/002 ...	C2

REF	DESCRIPTION & PART NO.	LOC
C1	20pF, 5%, 500V, Car aerial FM coupling ...	F4
C2	15pF, 5%, 500V, FM aerial coupling ...	F3,4
C3	2000pF, 20%, 500V, FM supply line decoupling ...	EF2
C4	12pF, 5%, 500V, VT1 signal coupling ...	EF4
C5	1000pF, 20%, 500V, VT1 base bias decoupling ...	E4
C6	47pF, 5%, 500V, FM RF amp. fixed padder ...	E3,4
C7	20pF, FM RF amp. tuning; Part tuning gang, 03E4-041 ...	F7
C8	5pF, FM RF amp. trimmer; Part tuning gang, 03E4-041 ...	FG3
C9	3.3pF, ±1pF, 500V, VT2 emitter coupling ...	F3,4
C10	12pF, 5%, 500V, FM RF amp. fixed trimmer ...	E4
C11	510pF, 10%, 500V, Part 10.7 MHz rejector ...	EF3
C12	20pF, 5%, 500V, FM oscillator phase correction ...	F2,3
C13	1000pF, 20%, 500V, VT2 base decoupling ...	F3
C14	3.3pF, ±1pF, 500V, FM oscillator emitter coupling ...	F3
C15	15pF, 5%, 500V, Part FM mixer coupling ...	EF3
C16	20pF, 5%, 500V, Part FM mixer coupling ...	E3
C17	20pF, FM oscillator tuning; Part tuning gang, 03E4-041 ...	F7
C18	47pF, 5%, 500V, FM oscillator fixed padder ...	F3
C19	5pF, FM oscillator trimmer; Part tuning gang, 03E4-041 ...	FG3
C20	2000pF, 20%, 500V, VT3 base coupling ...	E2,3
C21	510pF, 10%, 500V, VT2 collector decoupling ...	E2,3
C22	50pF, L8 tuning, Part FM IFT2 ...	E3
C23	.02μF, -20 +80%, 50V, VT3 emitter bypass ...	E3
C24	.01μF, -20 +80%, 50V, Part FM supply line decoupling ...	F4
C25	266pF, AM aerial tuning; Part tuning gang, 03E4-041 ...	F7
C26	5pF, AM aerial trimmer; Part tuning gang, 03E4-041 ...	FG4
C27	5pF, 5%, 500V, AM aerial fixed trimmer ...	F3
C28	60pF, 2 1/2%, 20V, LW aerial fixed trimmer ...	F1
C29	2000pF, 20%, 500V, LW aerial bottom end coupling ...	D3
C30	5000pF, 20%, 500V, VT4 signal coupling ...	D3
C31	100pF, 10%, 500V, VT4 stabilizing ...	DE3
C32	.01μF, -20 +80%, 50V, AM oscillator emitter coupling ...	D3
C33	180pF, L18 tuning; Part AM IFT1 ...	D3,4
C34	2-25pF, Preset, LW oscillator trimmer, 03E4-015 ...	D3
C35	230pF, 2%, 350V, LW oscillator fixed trimmer ...	DE3
C36	5pF, MW oscillator trimmer; Part tuning gang, 03E4-041 ...	FG3
C37	290pF, 2%, 350V, MW oscillator fixed padder ...	E3
C38	266pF, AM oscillator tuning; Part tuning gang, 03E4-041 ...	F7
C39	15pF, 5%, 500V, MW oscillator fixed trimmer ...	E3
C40	.02μF, -20 +80%, 50V, VT5 base bias decoupling ...	DE3
C41	.02μF, -20 +80%, 50V, VT5/6 emitter supply line decoupling ...	D4
C42	50pF, L20 tuning; Part AM IFT3 ...	E4
C43	180pF, L22 tuning; Part AM IFT2 ...	E4
C44	.02μF, -20 +80%, 50V, VT5 emitter bypass ...	E3,4
C45	.02μF, -20 +80%, 50V, VT6 base bias decoupling ...	DE4
C46	30pF, 5%, 500V, FM IFT4 primary tuning ...	D4
C47	.02μF, -20 +80%, 50V, VT6 emitter bypass ...	D4
C48	8μF, Elec., 18V, AGC decoupling, 00E0-222/13 ...	D4
C49	100pF, 10%, 500V, AGC diode signal coupling ...	D4
C50	180pF, L28 tuning; Part AM IFT3 ...	D4
C51	.01μF, 20%, 500V, Part AM IF filter ...	D4
C52	90pF, L27 tuning; Part FM IFT4 ...	CD4
C53	.02μF, -20 +80%, 50V, RF IF supply line decoupling ...	D3
C54	510pF, 10%, 500V, Part ratio detector decoupling ...	C4
C55	510pF, 10%, 500V, Part ratio detector decoupling ...	C4
C56	5000pF, 10%, 500V, Part AM IF filter ...	C4
C57	8μF, Elec., 18V, Ratio detector stabilizing, 00E0-222/13 ...	C4
C58	150μF, Elec., 9V, Supply line decoupling, 00E0-229/59 ...	CD3
C59	.01μF, -20 +80%, 50V, Part de-emphasis ...	C4
C60	0.22μF, 10%, 250V, Part FM and AM detector output coupling ...	D2,3
C61	.05μF, -20 +80%, 50V, Part tone control circuit ...	D2
C62	0.22μF, 10%, 250V, VT7 audio coupling ...	A3
C63	8μF, Elec., 18V, VT8 base bias decoupling, 00E0-222/13 ...	AB2
C64	8μF, Elec., 18V, VT7 output coupling, 00E0-222/13 ...	B3
C65	300μF, Elec., 9V, NFB and DC blocking, 00E0-229/85 ...	B2
C66	2000pF, 20%, 500V, Tone correction ...	BC3
C67	300μF, Elec., 9V, Supply decoupling, 00E0-229/85 ...	C2,3
C68	300μF, Elec., 9V, Audio output coupling, 00E0-229/64 ...	C3
C69	.05μF, -20 +80%, 50V, VT4 supply line decoupling (AM) ...	DE7

MISCELLANEOUS

REF	DESCRIPTION & PART NO.	LOC
FB1	Ferrite bead, 03E7-027 ...	F4
J1	Personal listening socket (push-on-fix 03L2-103), 03F6-037	C3
LS	Loudspeaker (10 ohms impedance), 03E3-044/003	—
S1-3	Push-button wavechange switch, 03E2-102 ...	DE2
S4	Off-On switch (with R39) ...	B2
SKT1	Car aerial socket (clip 03L2-089), 03F6-025/002 ...	C3
W1	AA112, FM overload diode ...	E4
W2	AA112, AGC diode ...	D4
W3	AA112, AM detector ...	D4
W4	AA112, Ratio detector diode ...	C4
W5	AA112, Ratio detector diode ...	C4
W6	D3, Stabilizing diode ...	C2,3



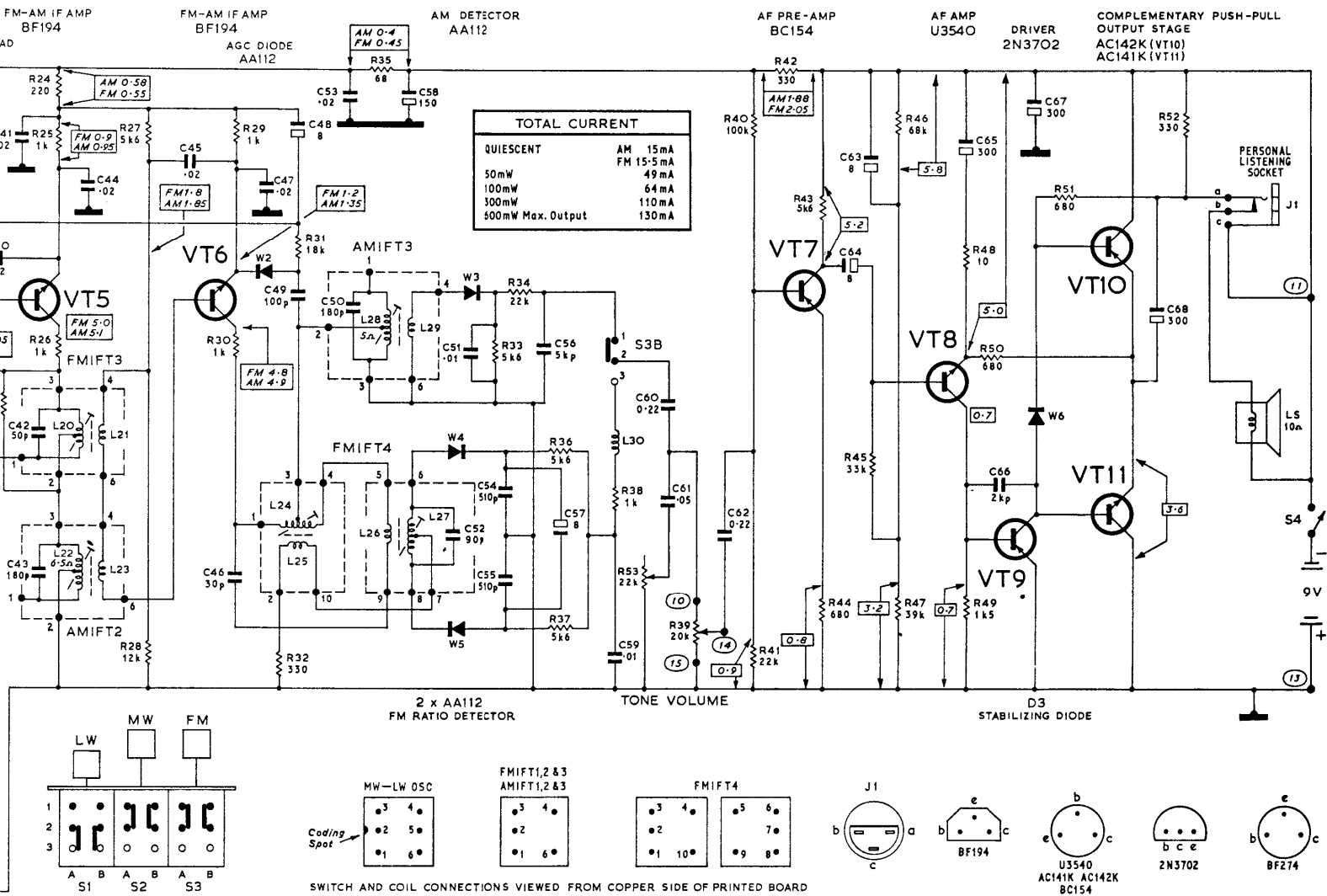
**INDUCTORS**

REF	DESCRIPTION & PART NO.	LOC
L1-2	FM aerial coupling, 03D1-149	F4
L3	FM RF tuning, 03D0-081	E4
L4	Part 10.7MHz z rejector, 03D8-002	EF2
L5	FM oscillator tuning, 03D1-192	E3
L6-7	FM IFT1, 03D0-055...	E2
L8-9	FM IFT2, 03D0-055...	FG4
L10	RF choke, 03D8-003	C7
L11	AM aerial coupling coil	EF1 D1 DE1 F1
L12	MW aerial coil	
L13	VT4 base coupling coil	
L14	LW aerial coil	
L15-17	AM oscillator coil, 03D1-070	CD3
L18-19	AM IFT1, 03D0-036	D4,5
L20-21	FM IFT3, 03D0-055...	EF4
L22-23	AM IFT2, 03D0-037	E4,5
L24-25	FM IFT4 primary, 03D0-050	D4,5
L26-27	FM IFT4 secondary, 03D0-051	C4,5
L28-29	AM IFT3, 03D0-038	B3,4
L30	RF choke, 03D8-003	C4

**CIRCUIT DIAGRAM**

All voltages were measured with a 20,000 Ω/volt meter and are with respect to the emitter 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.

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



## WIRE DIAGRAM

... with a 20,000 Ω/volt meter and are ...  
 ... line of each transistor, except where ...  
 ... figures indicate printed board tag ...  
 ... distances of inductors are shown where ...  
 ... tor types which are similar to those ...  
 ... am may be fitted during manufacture or

... to vary specifications or use alternative materials ...  
 ... desirable at any time.

## DRIVE CORD ARRANGEMENT

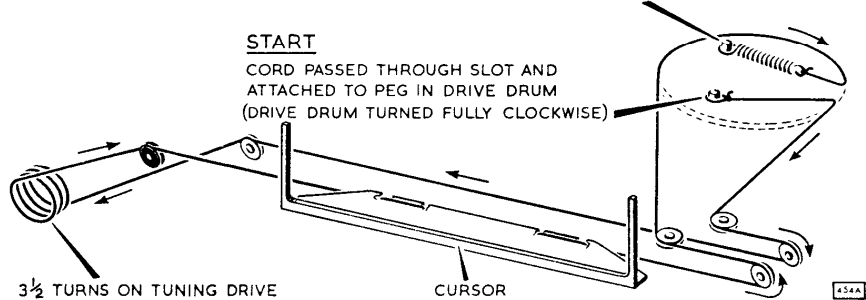
USE APPROXIMATELY 40" OF NYLON BRAIDED CORD. (ACTUAL LENGTH BETWEEN KNOTS - 35 1/4")

### FINISH

CORD PASSED THROUGH SLOT AND SPRING ATTACHED TO PEG IN DRIVE DRUM

### START

CORD PASSED THROUGH SLOT AND ATTACHED TO PEG IN DRIVE DRUM (DRIVE DRUM TURNED FULLY CLOCKWISE)



## ALIGNMENT DATA

A signal from a suitable AM-FM generator is required. Tuning indication is best obtained either with an output meter having an impedance of  $10\Omega$  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 the tuning scale.

### AM IF Circuits

Select MW and turn gang to maximum capacitance. Apply a 472 kHz modulated signal through a  $0.01\mu\text{F}$  capacitor between tag 4 and frame of tuning gang. Adjust L28, L22 and L18 in that order for maximum output.

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

### AM RF Circuits

With gang fully closed, check and if necessary, adjust cursor to coincide with zero marker pips on right-hand end of scale or appropriate notch in scale backing plate. MW must be aligned first. Medium and Long wave signals should be injected via a loop loosely coupled to the ferrite rod aerial. 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 1500 kHz	PAD marker notch or centre of 500 metres TRIM marker notch or centre of 200 metres	L17, L12* C36, C26
LW	220 kHz	LW calibration notch or centre of 1400 metres	C34, L14†

\* Adjust by sliding ring along ferrite rod

† Adjust by sliding coil former along ferrite rod

Repeat adjustments as necessary to obtain maximum output.

### FM IF Circuits

Select FM. Inject 10.7 MHz (25 kHz deviation) signal, via a  $0.01\mu\text{F}$  blocking capacitor, between tag 9 and frame of tuning gang and peak L27, L24, L20, L8 and L6 for maximum output. Switch signal generator to AM (30% modulation) and adjust L27 for minimum output (AM rejection).

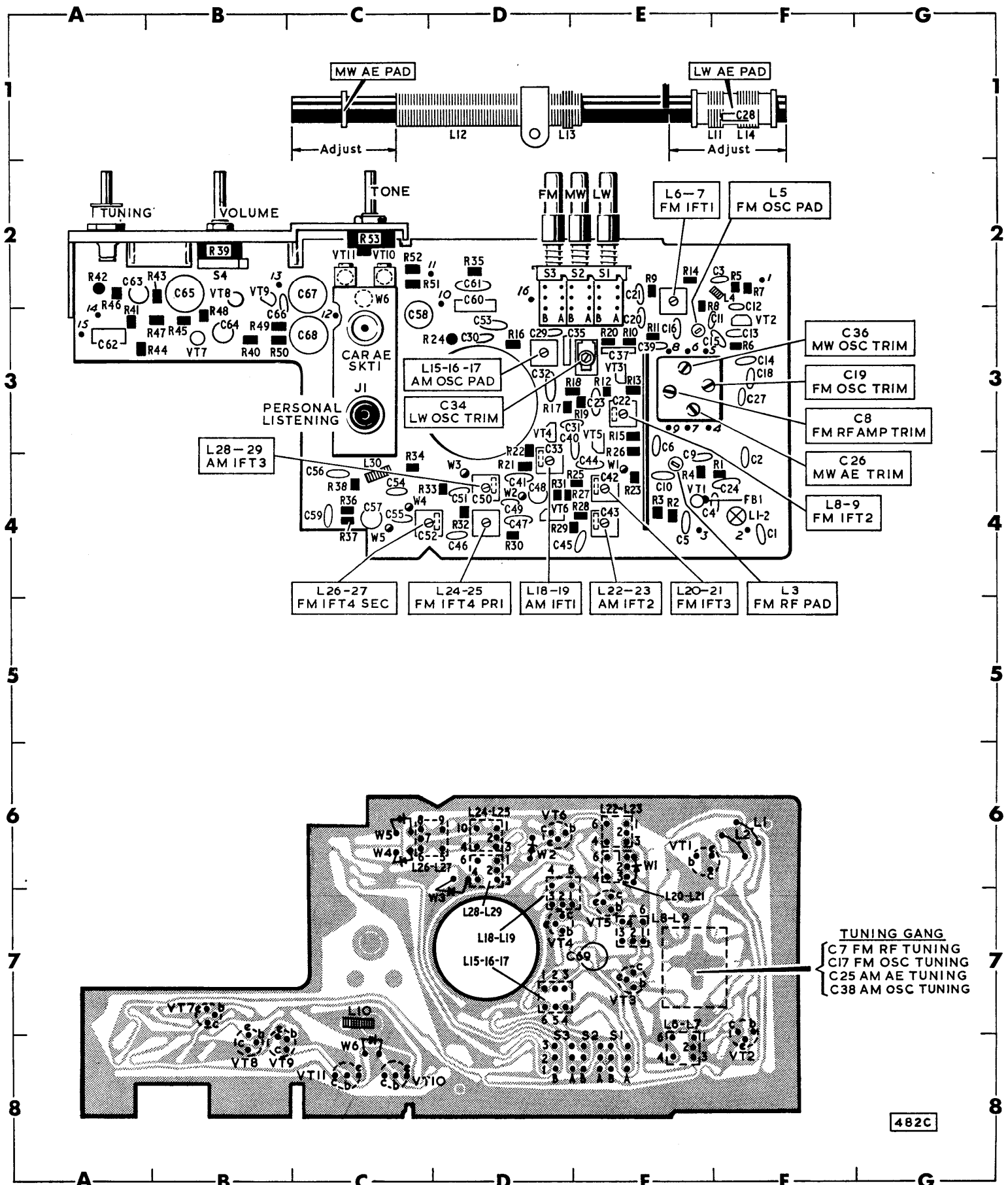
Repeat as necessary for maximum FM output and minimum AM output.

### FM RF Circuits

Inject FM RF signals into telescopic aerial lead with aerial disconnected and make adjustments for maximum output.

Range	Inject	Cursor Position	Adjust
FM	88 MHz 96 MHz	88 MHz notch or scale calibration 96 MHz notch or scale calibration	L5, L3 C19, C8

Repeat in the same order until no further improvement results.



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