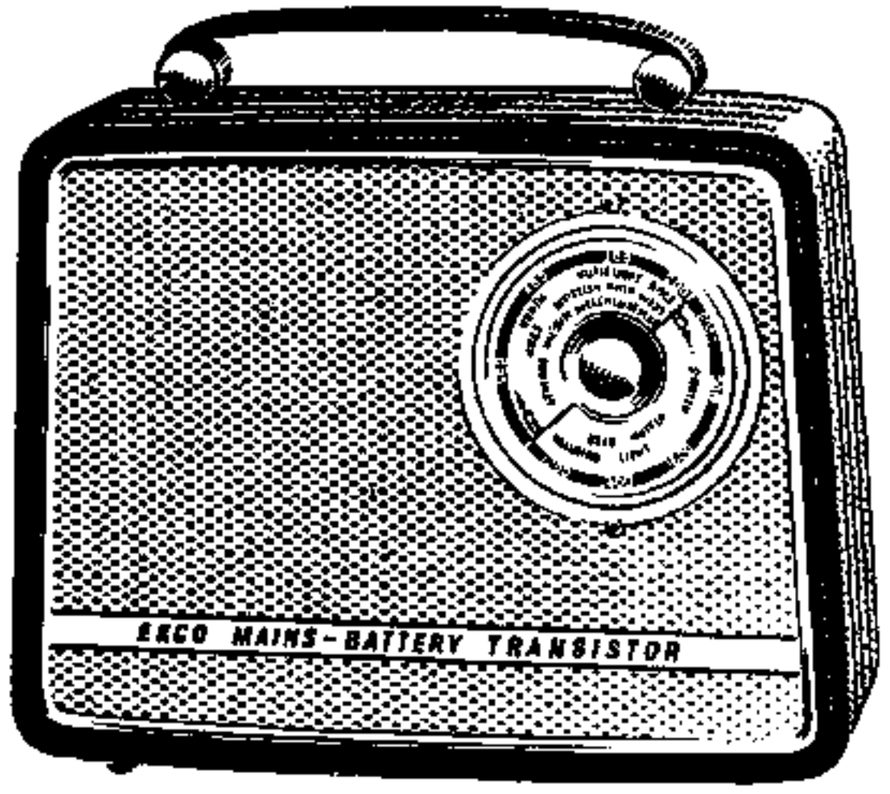
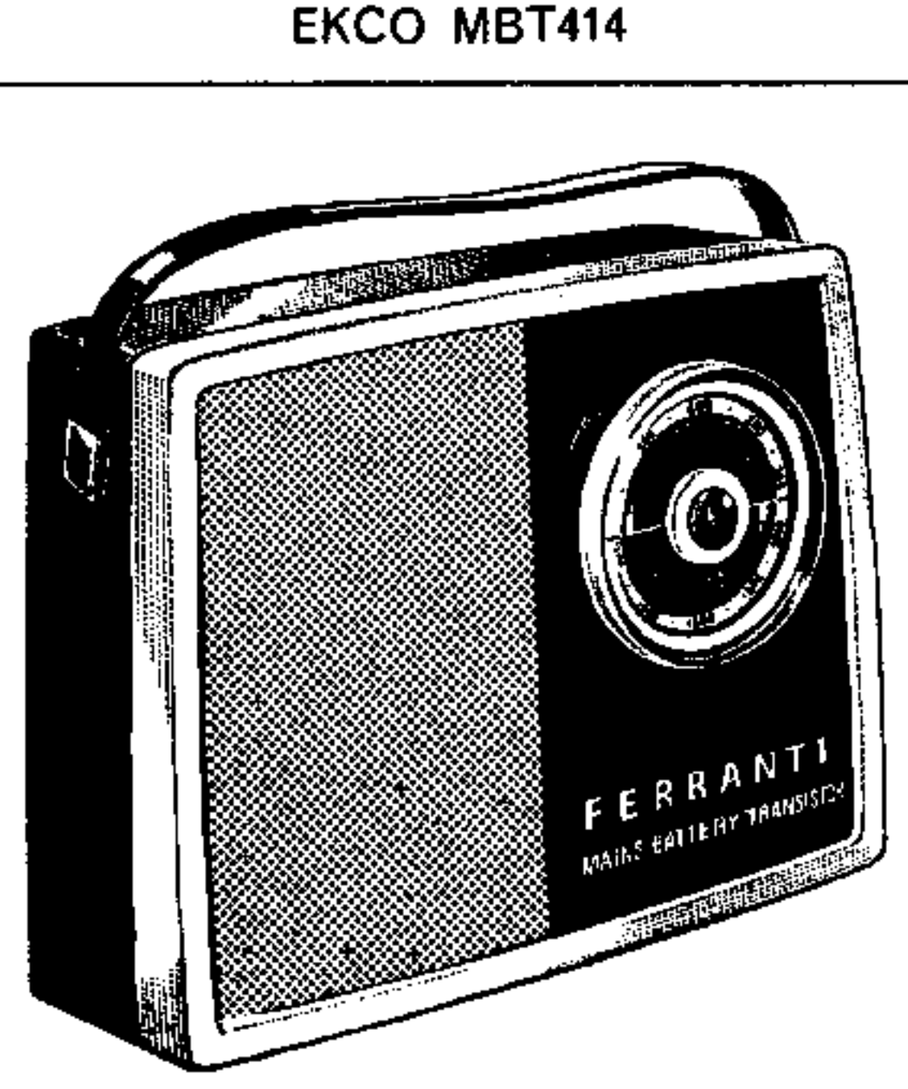
(four pages)

Service data Ekco model Ferranti model

MBT414 MBT1089



EKCO MBT414



FERRANTI MBT1089

Models MBT414 and MBT1089 are eight transistor printed circuit transportable receivers for operation from either AC mains or a 9V battery. These receivers offer free tuning on the Medium and Long wave bands. A bias stabilising circuit (P.P.C.) is employed which eliminates distortion when the battery volts are low, thus extending battery life. For connection of an external aerial, when required, a co-axial socket is provided.

Important: Careful attention must be given to the Service Notes at the end of this manual, if damage to the various components is to be avoided.

Mains Operation: When the mains lead is plugged into the socket at the rear of the case it actuates a switch which changes over from battery to mains operation.

Note: With the mains lead and plug assembly not in use it can be stowed within the case.

Mains and Battery Supply:
200-250 volts, 50 cycles AC mains.
9 volts, Ever Ready PP7, Drydex DT7, Vidor VT7 or equivalent.

Mains and Battery Consumption:

MAINS	BATTERY
230 volts: 1·25 watts	No signal: 9 to 12 mA 350 milliwatts O/P: 80 mA

Controls:
Front: Tuning
Side Lower: On-Off/Volume
Side Upper: Wavechange (slider switch)

Waveband Coverage:
MW. 1640-540 Kc/S, 183-555 metres
LW. 255-146 Kc/S, 1180-2060 metres

Intermediate Frequency: 470 Kc/s.

Loud-speaker: 5″ dia. Elac. Impedance 3 ohms at 400 c/s.

Battery Replacement: Remove back cover as described later, when the battery can then be removed. The leads have male and female connectors to avoid reversal.

Dismantling:
1. To remove back cover, pull the release tab at its base, which releases spring clips, then lower from top securing slots and remove cover. Remove the side escutcheon held by three round head screws. See Important Note.
2. Remove the Tuning knobs, held by a central special screw using fine nose pliers or tweezers.
3. Take off the felt pad and remove the screw thus exposed.
4. Remove the screw from the rear of the print panel, which holds the battery leads.
5. Lift out the panel to the extent of the LS leads.
6. To remove the mains plug switch assembly and mains unit, simply unscrew the four retaining screws at the base of the cabinet and remove.

Important Note: When replacing the escutcheon, ensure that the switch slider slot is in line with the switch arm before pressing home.

***Resistor:** A resistor (R23) with a nominal value of 8.2K ohms, is fitted across L11 when the overall gain is excessive and gives a tendency towards instability.

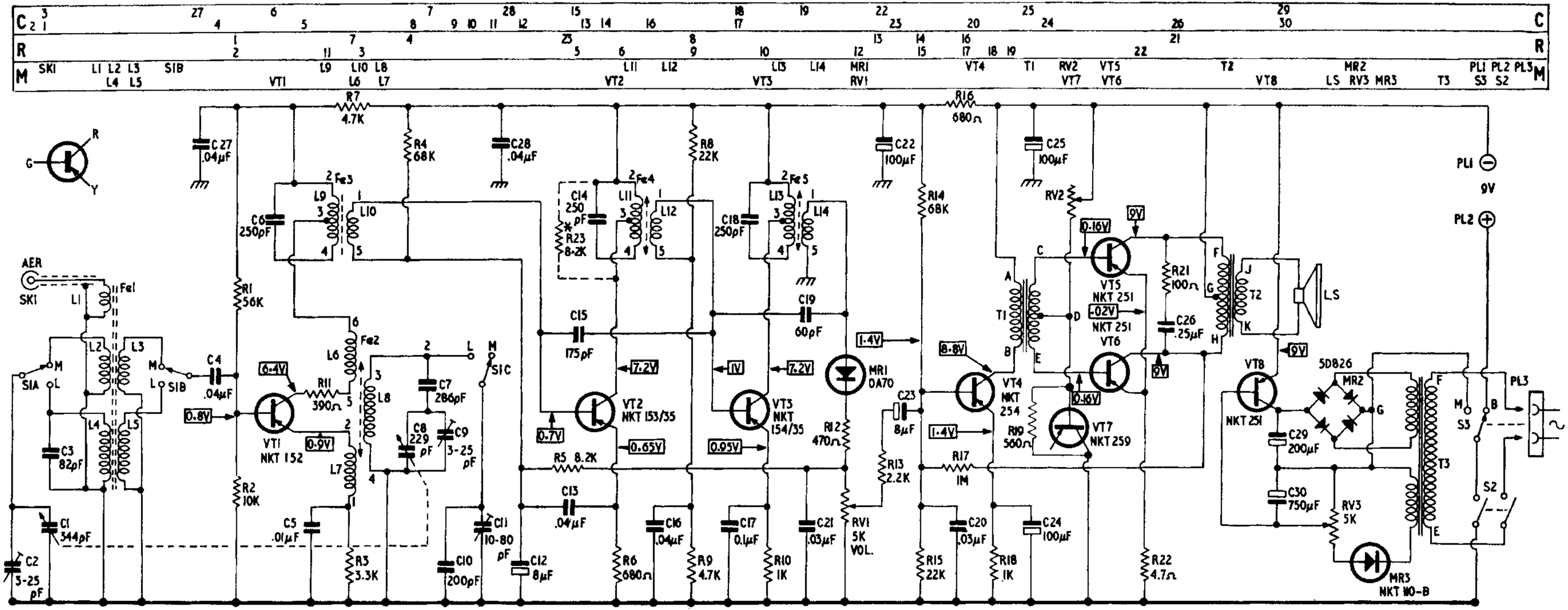
Circuit Alignment: With the tuning control at maximum (clockwise), check that the scale datum lines are co-incident with pointers. Adjust the mod. signal input level to give an audio output not exceeding 50 mW with VC at maximum.

	Apply signal as below:—	Set receiver controls to:—	Adjust in this order for max. O/P
1.	470 Kc/S across L3 via 0.1 µF capacitor	Quiet point on MW near gang max.	L13 (Fe5) L11 (Fe4) L9(Fe3)
2.	Via miniature search coil to ferrite rod at 600 Kc/S.	MW 500 metres	L8 (Fe2) L2 on rod aerial
3.	As 2, but 1546 Kc/S	MW 194 metres	C9 (Trimmer)
4.	As 2, but 1400 Kc/S	MW Tune to signal	C2 (Trimmer)
5.	Repeat 2,3,4 until tracking and calibration are correct. Seal position of L2 on ferrite rod.		
6.	As 2, but 214.3 Kc/S	LW 1400 metres	C11 (Trimmer) L4 on rod aerial
7.	Seal position of L4 on ferrite rod.		

Note: Speaker to be in position in the printed panel during alignment.

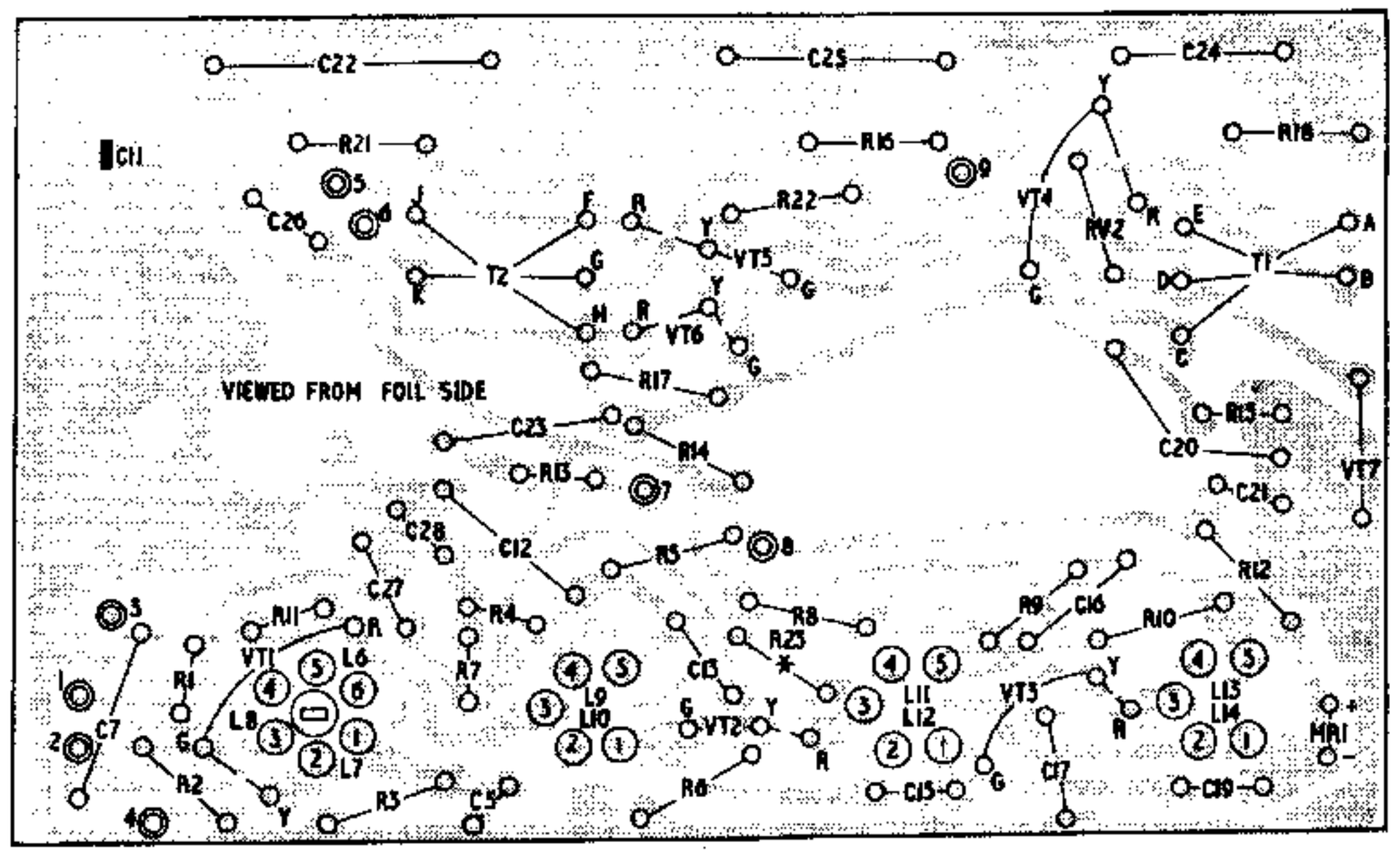
Transistor Connectors: Viewed from the underside, two of the three wires are displaced to one side of the transistor. The outermost wire of this pair is the emitter and the centre wire the base. The third wire, identified by a paint spot, is the collector.

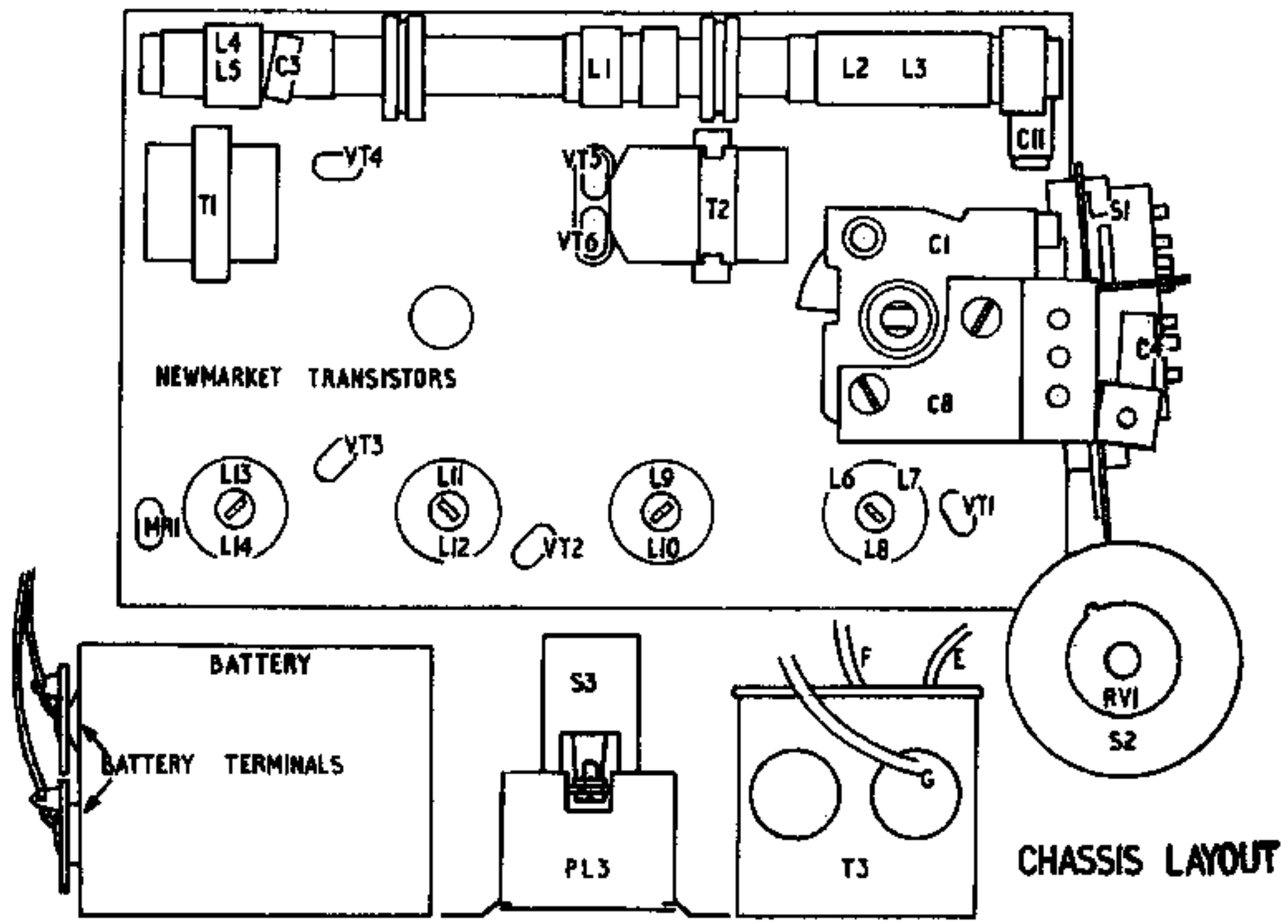
Voltage and Current Data: Receiver operating from a dry battery of 9 volts nominal and tuned to a quiet point on the MW band as near gang max. as possible.

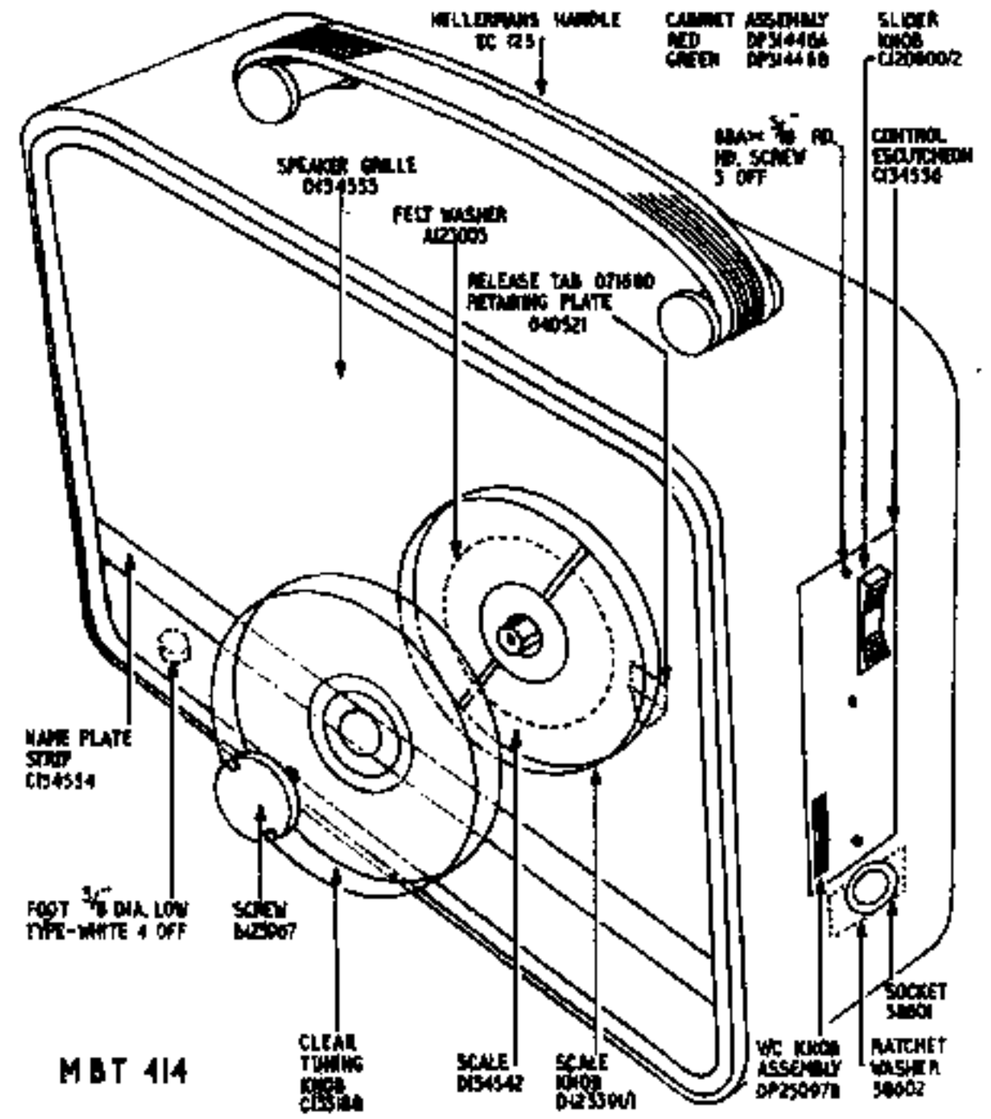


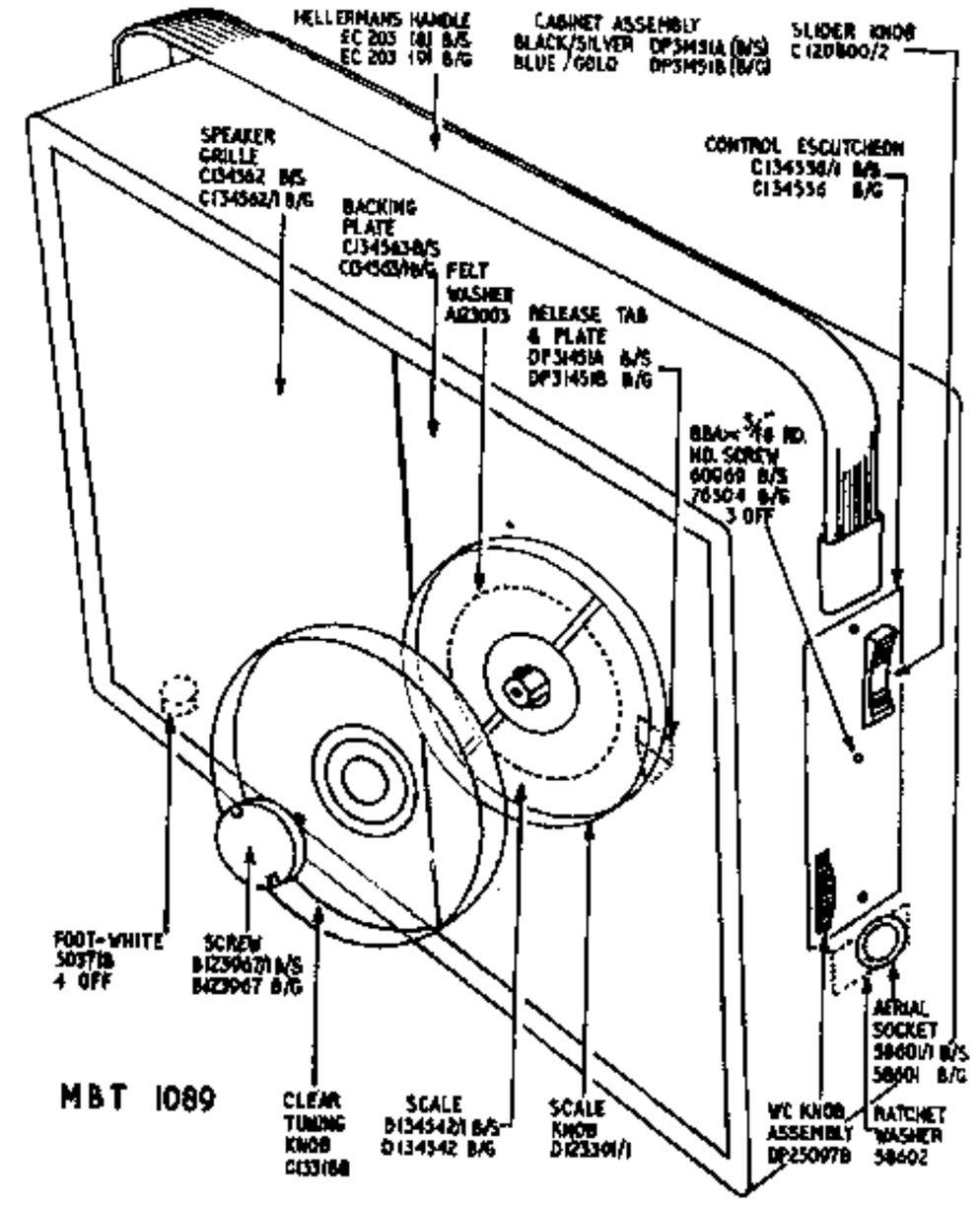
ALTERNATIVES :

VT2	NKT 153/25 –	58722	THEN	C15	WILL BE	125pF ± 2%	105711/71
VT3	NKT 154/25 –	58723	THEN	C19	WILL BE	43pF ± 2%	105711/95









Transistor	Collector		Emitter		Base
	V	mA	V	mA	V
VT1 NKT152	6.40	—	0.90	—	0.85
VT2 NKT153	7.20	—	0.65	—	0.70
VT3 NKT154	7.20	—	0.95	—	1.00
VT4 NKT254	8.80	—	1.40	—	1.40
VT5 NKT251	9.00	—	0.02	—	0.16 to 0.19
VT6 NKT251	9.00	—	0.02	—	
VT7 NKT259	—	—	—	—	
VT8 NKT251	—	—	9.0	—	—

DC Resistance of Windings:

Winding	Ohms
L2	1.4
L3	—
L4	11.2

Winding		Ohms
T1	Pri	153
	Sec	37+37
T2	Pri	3.6+3.6
	Sec	0.22

Service Notes:

1. Care must be taken when fitting the battery that the polarity is not reversed even momentarily, otherwise damage to the transistors may result.
2. While transistor leads are being soldered into position, a heat-sink, such as a pair of fine nosed pliers, should be interposed between the point of soldering and the transistor.
3. Continuity of inductances and transformers must not be checked whilst the transistors are in circuit or they may be damaged.
4. Do not use ohm metres on ranges which incorporate batteries greater than 1.5V. When mains or battery operated test instruments are used, connect them only via an isolating capacitor; a 50μF 12V type would be suitable for AF purposes and a 0.1μF 150V type for IF or RF purposes.

Ekco MBT414 Ferranti MBT1089

Spare Parts List:

Please order spare parts direct from:—

Radio & Television Services Ltd.,

P.O. Box 11, Cambridge.

'Phone: Cambridge 59101.

CAPACITORS :

Circuit Ref.	Value	±%	Volts	Type	Part No.
C1	344 pF	—	—	Gang	} D123627
C2	3—25 pF	—	—	Gang	
C3	82 pF	2	200	Lemco PSM	53947
C4,13,16,27,28	.04 µF	20	150	Dubilier 400/M16	42053/13
C5	.01 µF	20	150	Dubilier 400/M16	42053/7
C6,14,18	250 pF	2½	125	Polystyrene	121373/14
C7	286 pF	1	350	Lemco PSM	105711/52
C8	229 pF	—	—	Gang	} D123627
C9	3—25 pF	—	—	Gang	
C10	200 pF	2	350	Lemco PSM	53948
C11	10—80 pF	—	—	Trimmer	122359
C12,23	8 µF	—	3	Elect	123002/1
C15	175 pF	2	350	Lemco PSM	105711/90
C17	0.1 µF	25	150	Hunts W48	43077
C19	60 pF	2	350	Lemco PSM	105711/87
C20,21	.03 µF	20	150	Dubilier 400/M15	42053/17
C22,25	100 µF	+100—20	12	Hunts Elect.	123232
C24	100 µF	+100—20	6	Hunts Elect.	123232/1
C26	0.25 µF	25	150	Hunts W48	43077/3
C29	200 µF	—	16	C.C.L. Elect.	133289/20
C30	750 µF	—	12	Elect.	134524

RESISTORS:

Circuit Ref.	Ohms	±%	Type	Part No.
R1	56K	10	BTS ½ or Erie 7AD	96827B or 93583
R2	10K	10	BTS ½ or Erie 7AD	96818B or 93574
R3	3.3K	10	Erie 7AD	93568
R4,14	68K	10	BTS ½ or Erie 7AD	96828B or 93584
R5	8.2K	10	BTS ½ or Erie 7AD	96817B or 93573
R6,16	680	10	BTS ½ or Erie 7AD	96804B or 93560
R7,9	4.7K	10	Erie 7AD	93570
R8,15	22K	10	BTS ½ or Erie 7AD	96822B or 93578
R10,18	1K	10	BTS ½ or Erie 7AD	96806B or 93562
R11	390	10	Erie 7AD	93557
R12	470	20	BTS ½ or Erie 7AD	96802A or 93511
R13	2.2K	20	BTS ½ or Erie 7AD	96810A or 93515
R17	1M	20	BTS ½ or Erie 7AD	96841A or 93531
R19	560	10	BTS ½ or Erie 7AD	93559
R21	100	10	BTS ½ or Erie 7AD	96866B or 93507
R22	4.7	5	BTS ½ or Erie 7AD	96860C or 9392B
R23	8.2K	10	BTS ½ or Erie 7AD	96817B or 93573

TRANSISTORS:

Circuit Ref.	Function	Type	Part No.
VT1	Osc/Mixer	NKT152	58333
VT2	1st. IF	NKT153/35	58467
VT3	2nd. IF	NKT154/35	58468
VT4	Driver	NKT254	58537
VT5	Push Pull O/Put	NKT251 Matched	} 58337
VT6	Push Pull O/Put	NKT251 Pair	
VT7	Bias. Stab.	NKT259	58990
VT8	Follower	NKT251	58337

DIODES AND RECTIFIERS:

Circuit Ref.	Function	Type	Part No.
MR1	Detector & A.G.C.	Mullard OA70	A121365
MR2	Mains	Westinghouse 5D826	58916
MR3	Junction Diode	NKT110—B	58999

TRANSFORMERS, INDUCTANCES AND VARIABLE RESISTORS:

Circuit Ref.	Component	Part No.
T1	Driver T.F.	SA5983
T2	Output T.F.	SA5984
T3	Mains T.F. (200/250V)	SA8166
L1	Aerial Coupling Coil	DP30607
L2,3	MW Aerial Coil	DP30609/1
L4,5	LW Aerial Coil	DP30608
L6,7,8	Osc Coil	SA5937A
L9,10	1st IF T.F.	SA5935A
L11,12	2nd IF T.F.	SA5935A
L13,14	3rd IF T.F.	SA5935B

OTHER COMPONENTS AND ASSEMBLIES:

Circuit Ref.	Component	Part No.
Fe1	Aerial Rod	108615
Fe2	L8	122831
Fe3	L9	122831
Fe4	L11	122831
Fe5	L13	122831
S1	Wavechange Switch	106125/1
S2	On/Off (part of RV1)	107312/5
S3	Mains/Battery switch	134565
L.S.	5" Dia. Elac.	123749
SK1	Aerial Socket	58125
PL1	Press Stud	56833
PL2	Press Clip	56834
PL3	Mains Plug	DP31447

Main Service Department:

Radio & Television Services Ltd.,

Somerton Works,

Arterial Road,

Westcliff-on-Sea, Essex.

'Phone: Southend 42296.