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a sensitive Ferrite built-in aerial, loudspeaker and earpiece output facilities. Alternative colour schemes are available for both receivers.

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.

Battery: 9V Ever-Ready PP3, Exide DT3, Vidor T6003.

Controls:
 Top, Side: Volume On-Off
 Centre, End: Tuning
 Side, End: Wavechange

Transistors:

VT1 Mixer NKT.152
 VT2 1st IF Amplifier NKT.153/25
 VT3 2nd IF Amplifier NKT.154/25
 VT4 Driver NKT.258
 VT5 Push-pull output NKT.257
 VT6 " " NKT.751

Germanium Diode:

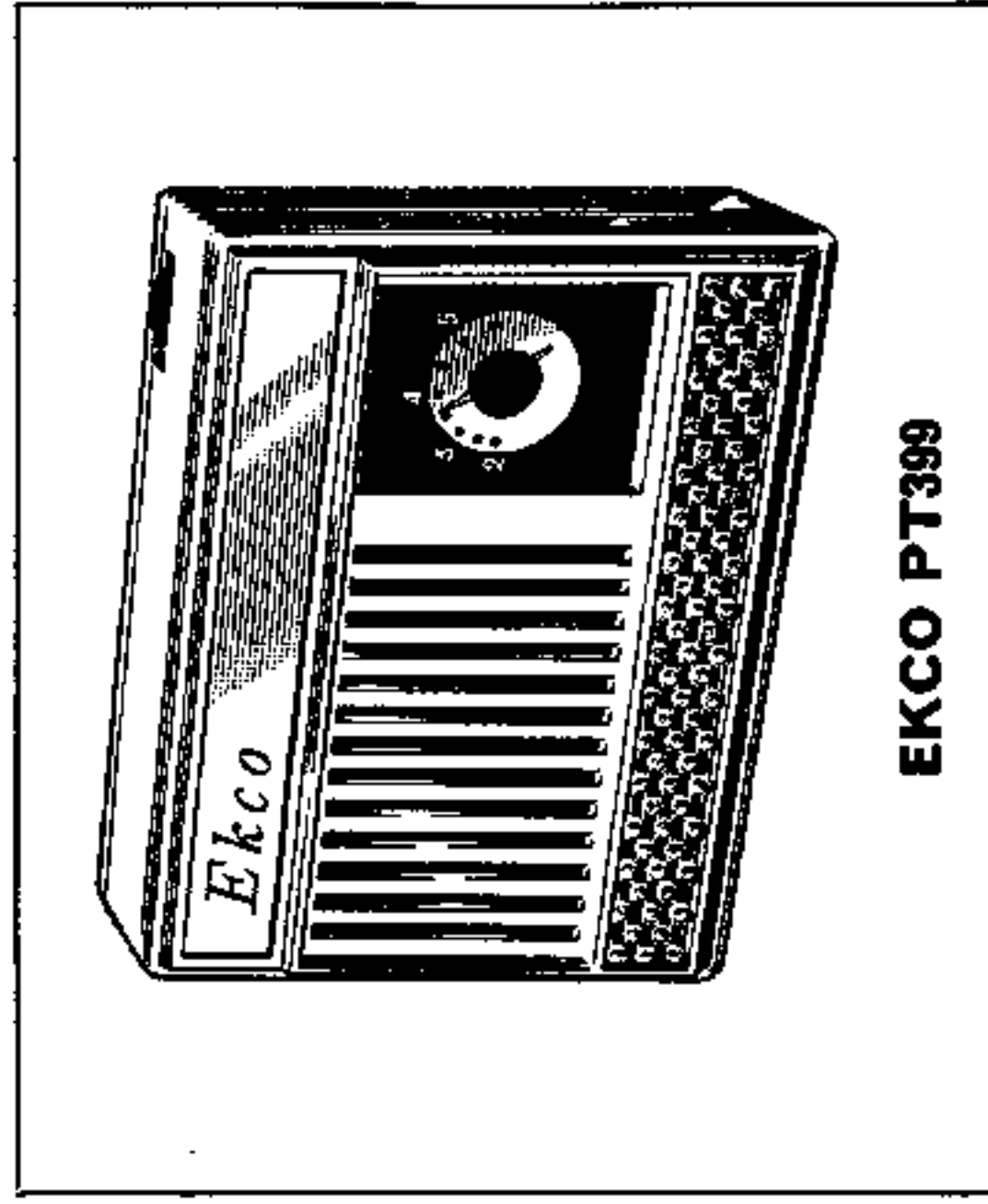
MR1 Detector and AGC Mullard OA90

Waveband Coverage:

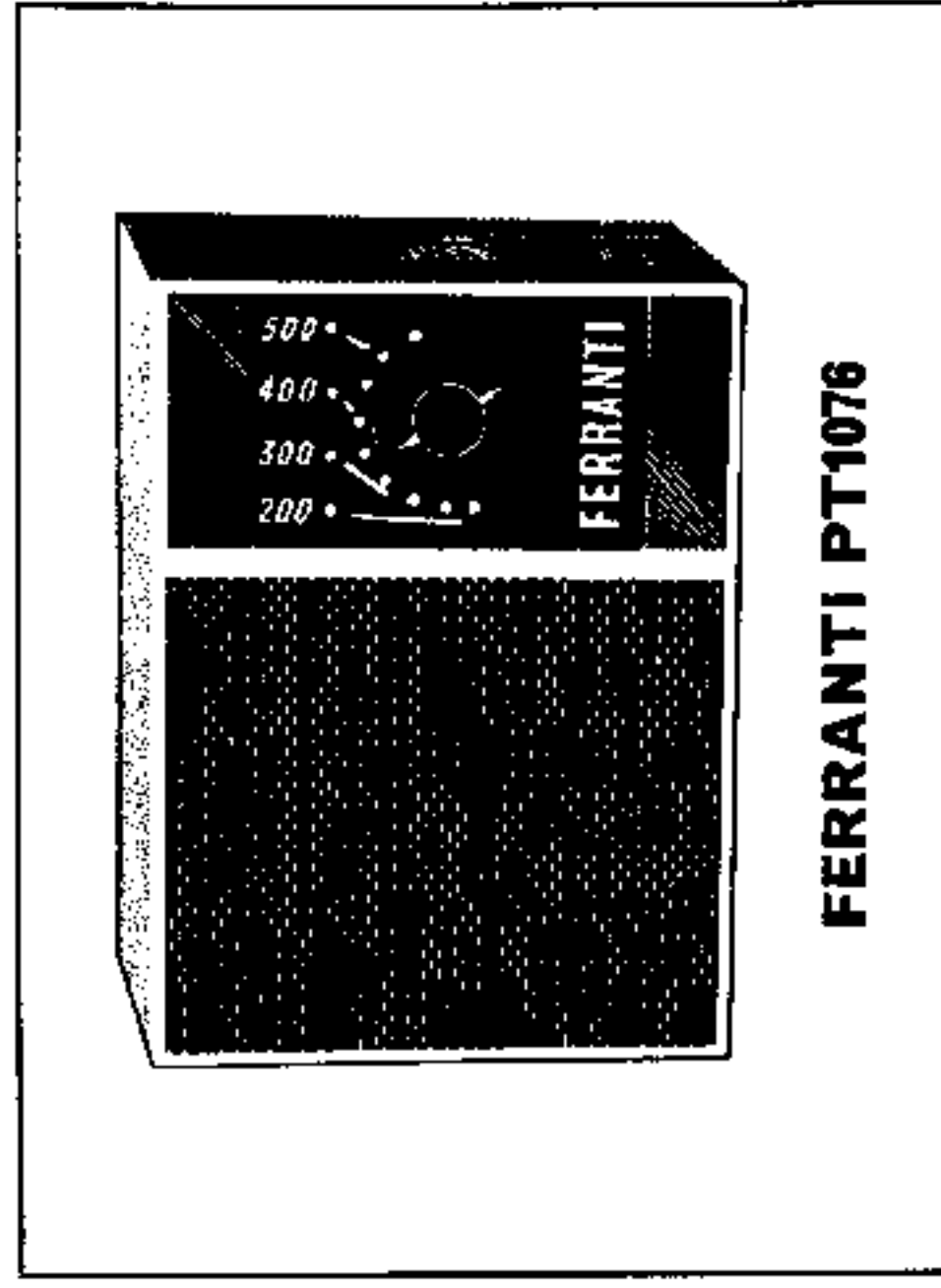
M.W.—187.5 to 550 metres.
 L.W.—Preset, usually to Light Programme.

Consumption:

No signal: 6 mA
 10 mW output 8 mA
 50 mW " 14 mA
 100 mW " 18 mA



EKCO PT399



FERRANTI PT1076

Models PT399 and PT1076 are six transistor printed circuit vest pocket portable radio receivers offering free tuning on the MW band and a pre-set LW programme. Features include

Intermediate Frequency: 470 Kc/s

Loudspeaker:

2" diameter, moving coil, high flux, PM type. Impedance 60 ohms.

Earpiece: Miniature, electro-magnetic. Impedance 8 ohms. The insertion of the earpiece jack plug mutes the loudspeaker automatically.

Battery Replacement:

Remove back cover as described below, when the battery can then be removed. The leads have male and female connections to avoid reversal.

Chassis Removal:

(1) The back cover is a close tolerance fit and is simply prised from the case; a thumb nail slot on one side being provided to facilitate this.

(2) To release the interior panel, undo its two securing screws. When lifting out the panel, ensure that the control knobs disengage from the case.

(3) To release the loudspeaker, prise up the four tag ends of the grille.

Tuning Gang Removal:

Take the receiver chassis out of its case and remove the tuning dial, which is secured by a central countersunk screw. Unscrew the cheese-head brass screw at either side of the

gang spindle and unsolder the gang earthing strip on the outer side of the gang mounting plate.

Circuit Alignment:

Apply signal:	Set receiver controls to:	Adjust in order for maximum output
1. 470 Kc/s 30% mod. between gang frame and aerial side of C8.	Volume control max. MW approx. 700 Kc/s.	Cores of T3, T2, T1.
2. 600 Kc/s 30% mod. via loop at 15 cm from centre of aerial rod.	MW 500 metres.	Core of L4. Position of L1 on rod.
3. As 2 but 1500 Kc/s.	MW 200 metres.	Trimmers C7, C3.
4. Repeat 1 & 2 for optimum tracking and seal LI.		
5. As in 2 but 200 Kc/s.		Switch to LW C5, L3. Seal L3.

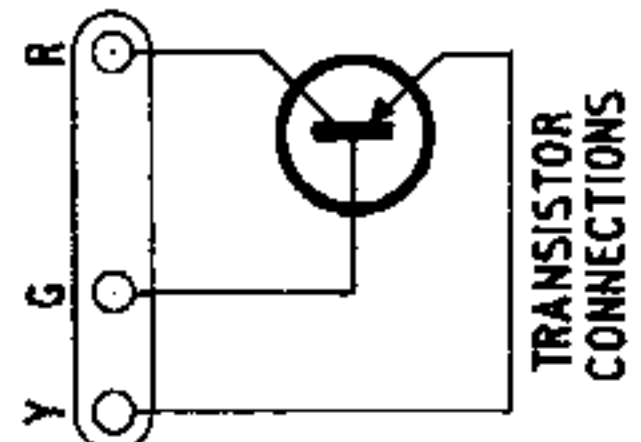
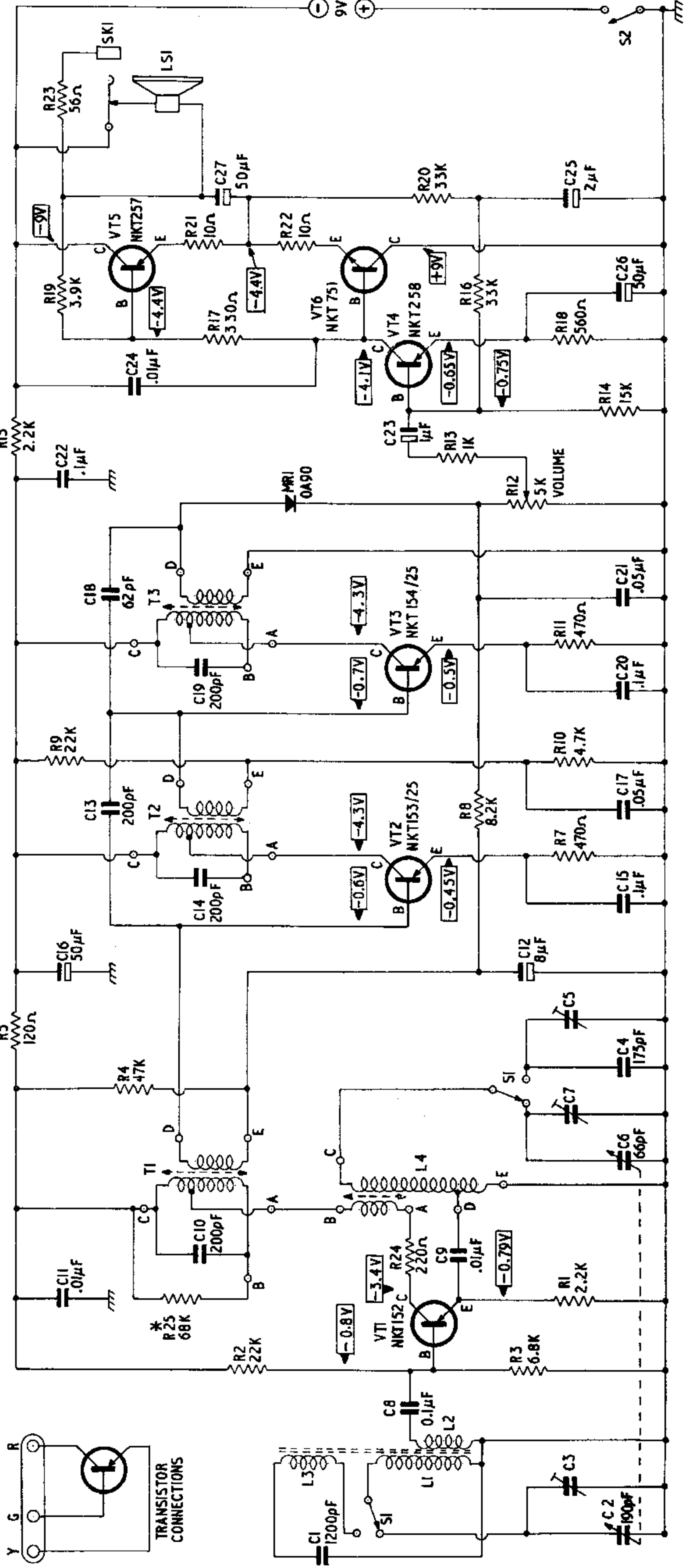
Voltage and Current Data:

All voltages are referred to the chassis and are taken with a 20,000 ohms/volt voltmeter, with no signal input on MW band. Gang fully closed.

Code	Transistor Type	Ec	Eb	Ee
VT1	NKT.152	-3.4	-0.85	-0.80
VT2	NKT.153/25	-4.3	-0.60	-0.45
VT3	NKT.154/25	-4.3	-0.7	-0.5
VT4	NKT.258	-4.1	-0.75	-0.65
VT5	NKT.257	-9	-4.4	—
VT6	NKT.751	0	-4.1	—

All measurements made with respect to earth.

C ¹	2.	3.	8.	11.	10.	11.	10.	13.	14.	16.	16.	22.	24.	27.	C							
R	2.	3.	5.	6.	7.	4.	5.	9.	10.	7.	8.	10.	12.	13.	15.	17.	19.	21.	22.	25.	26.	23.
M	SI.	L3.	L1.	L2.	VT1.	L4.	T1.	SI.	VT2.	T2.	VT3.	MRI.	VT4.	VT5.	LSI.	SK1.	VT6.	VT6.	LSI.	SK1.	VT6.	SZ.



C12 is now 5 μF. C23 is now 2 μF. C24 is now 4700 pF.

Service Notes:

(1) Great care should be taken to avoid damaging the printed panel or adjacent components with excessive heat and it is recommended that a light soldering iron (10 watts maximum) with a fine tip should be used.

Ease out the faulty component by applying heat to each connection in turn. Clean and tin replacement parts, then melt the circuit solder before insertion into the panel. To avoid running solder into adjoining circuits, use as little as possible.

Open or damaged sections of the printed circuit can be repaired by soldering a 'jumper' of ordinary wire across the connection points.

(2) Care must be taken when fitting the battery that the polarity is not reversed, even momentarily, otherwise damage to transistors may result.

(3) Transistor leads should not be bent at the point where they emerge from the seal.

(4) 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.

(5) Never disconnect or shunt a base or emitter circuit component by a low resistance, such as a milliammeter, with the receiver operating. When making current measurements first switch off the receiver then break the circuit where the reading is to be made.

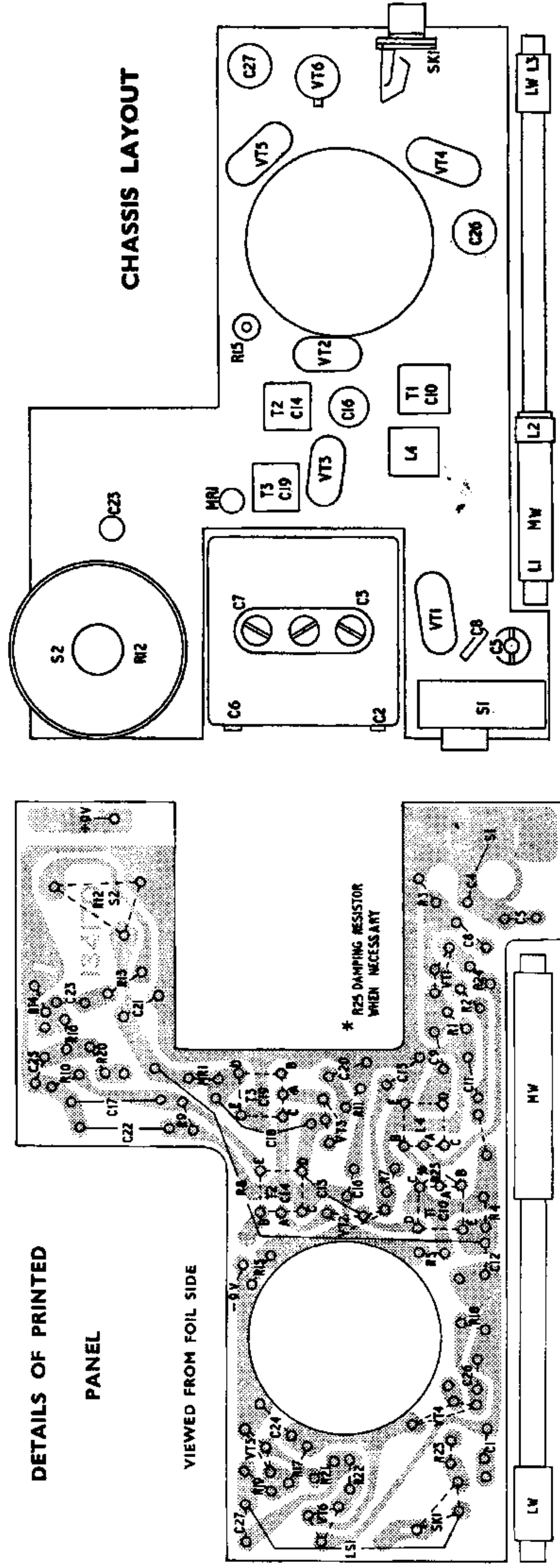
(6) Continuity of inductances and transformers must not be checked whilst the transistors are in circuit or they may be damaged.

(7) Do not use ohmmeters 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 50 μF 12V type would be suitable for AF purposes and an 0.1 μF 150V type for IF or RF purposes.

(8) Temperatures above 55°C may damage the transistors and care should therefore be

taken not to place the chassis or individual transistors near sources of heat.

Note: It is essential that all mains operated equipment, i.e. signal generators, soldering irons, etc., are properly earthed as mains leakage would seriously damage the transistors and associated components.



SPARE PARTS

Please order spare parts direct from:
Radio & Television Services Ltd.
 P.O. Box 11, Cambridge.
 Phone: Cambridge 59101

SPARE PARTS LIST

CAPACITORS:

Cir. Ref.	Value	±%	Volts	Type	Part No.
C1	1200 pF	2	—	Polystyrene	653479
C2,3,6,7	—	—	—	Variable gang	800396
C4	175 pF	1	20	Lemco Polystyrene	C134168/2
C5	—	—	—	Special Trimmer	DP31293
C8,15,20	0.1 μF	—	3	Erie Transcap	660476
C9,11	0.1 μF	—	30	Hunts GSY 712	660663
C10,14,19	200 pF	—	—	Part of IF Transformer	—
C12	5 μF	—	2½	Mullard Elect.	133289/2
C13	200 pF	5	20	Lemco Polystyrene	653485
C16,26,27	50 μF	—	6	Swindon Elect.	680289
C17,21	0.5 μF	—	3	Erie Transcap	660477
C18	62 pF	5	20	S.E.I. Polystyrene	653486
C22	0.1 μF	—	10	Plessey Ultra Kap	660197
C23,25	2 μF	—	10	Mullard Elect.	133289/1
C24	4700 pF	—	30	Hunts GSX706	—

RESISTORS:

Cir. Ref.	Ohms	±%	Type	Part No.
R1	2.2K	10	Erie 15	678207
R2,9	22K	10	Erie 15	678910
R3	6.8K	10	Erie 15	678909
R4	47K	10	Erie 15	678911
R5	120	10	Erie 15	678901
R7,11	470	10	Erie 15	678913
R8	8.2K	10	Erie 15	—
R10	4.7K	10	Erie 15	—
R12	5K	—	Semi-log	133344
R13	1K	10	Erie 15	678906
R14	15K	10	Erie 15	678914
R16,20	33K	10	Erie 15	—
R17	330	10	Erie 15	—
R18	560	10	Erie 15	—
R19	3.9K	5	Erie 15	—
R21,22	10	10	Erie 15	678900
R23	56	10	Erie 15	—
R24	220	10	Erie 15	678905
R25	68K	10	Erie 15	—

TRANSISTORS:

Cir. Ref.	Description	Part No.
VT1	NKT.152	58333
VT2	NKT.153/25	58722
VT3	NKT.154/25	58723
VT4	NKT.258	58893
VT5	NKT.257	58827
VT6	NKT.751	58894

RECTIFIERS:

MRI:	Description	Part No.
Detector	Mullard OA90	72164

TRANSFORMERS AND INDUCTANCES:

Cir. Ref.	Description	Type	Part No.
*T1	1st IF Transformer	Brayhead FP50087	077106
*T2	2nd IF Transformer	Brayhead FP50087	077106
*T3	3rd IF Transformer	Brayhead FP50147	077108
L1,L2	MW Aerial Coil	—	DP31291
L3	LW Loading Coil	—	DP31292
*L4	Osc. Coil	Brayhead FP50148	078185
* Alternatives.			
T1	1st IF Transformer	077115 (Orange)	
T2	2nd IF Transformer	077115 (White)	
T3	3rd IF Transformer	077116 (Black)	
L4	Osc. Coil	078199 (Red)	

When these I.F.s. are used: C10, C14, C19 become 180 pF capacitors, 653703 (used outside cans.)

OTHER COMPONENTS AND ASSEMBLIES:

Cir. Ref.	Component	Part No.
Fe 1	Aerial Rod	134241
S1	Wavechange Switch	083159
S2	ON/OFF (part of R12)	C133444
LS	Loudspeaker 2" Goodmans	B134388
SKI	Jack Socket	58604
	Cabinet Assembly (back)	F134230/3
	Print Panel Assembly	SA8155
	Tuning Dial Printed	B133679
	Front Panel Assy. (Ekco, moulded)	DP31102A
	LS Grille (Ekco, gold)	C133573
	LS Grille (Ekco, jewelled)	DP31101A
	LS Grille (Ferranti, silver)	C133568
	LS Grille (Ferranti, blue)	I33568/1
	Scale (Ekco, gold)	C133574
	Scale (Ekco, jewelled)	C133574
	Scale (Ferranti, silver)	C133571
	Scale (Ferranti, blue)	I33571/1
	Jewelled strip (Ekco, jewelled)	B133569
	Jewelled strip (Ferranti, silver)	B133569
	Styling Trim (Ferranti, silver)	A133570
	Styling Trim (Ferranti, blue)	A133570

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