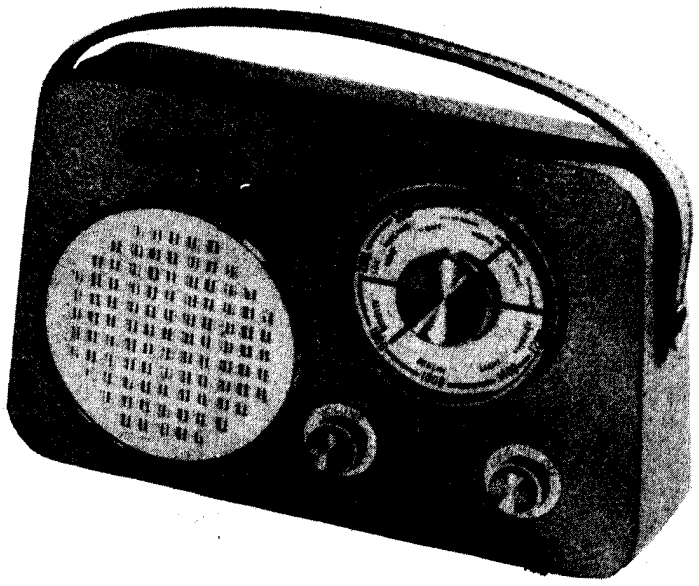
DECCA

SERVICE NOTES

TRANSISTOR RECEIVER
TP 50
incorporating
TP 50A



DECCA RADIO AND TELEVISION

branch of The Decca Record Co., Ltd.

INGATE PLACE,
QUEENSTOWN ROAD, LONDON, S.W.8.

MACaulay 6677

TP.50A

The TP.50A is the same in its main essentials as the TP.50.

Please note however that this model is

(a) fitted in a larger cabinet.

(b) utilizes Vidormax 6006 or Ever-Ready PP6 batteries.

(c) the loudspeaker is of 125 ohms. Part No. Rola M35/5727.

S P E C I F I C A T I O N

AERIALS:		Internal aerials for Medium and Long Wave-bands. Provision for external aerial.	
WAVEBANDS:		Medium 190-565 metres Long Waves 1120-1950 metres Intermediate frequency 472 Kc/s	
LOUDSPEAKER:		$3\frac{1}{2}$" round high flux density speaker - 70 ohms.	
TRANSISTORS:		OC44	Frequency Changer
		OC45	1st I.F. Amplifier
		OC45	2nd I.F. Amplifier
		OA70	Detector Diode
		OC81/D	Audio Amplifier
	(2)	OC81	Output
RECOMMENDED BATTERIES:		Two Vidormax T6004 batteries.	

GENERAL NOTES - TRANSISTOR SERVICING

1) Take great care not to scratch or chip the paint covering on glass-cased transistors. If light is admitted, the transistors will act as a photo electric device (i.e. light will modulate the transistor current) and this may produce hum etc.

2) When soldering transistor connections, it is essential to use a heat sink (preferably a reasonably sized pair of pliers). If excessive heat is transmitted to the transistors, it could easily cause serious damage and transistors should not be subjected to a temperature above 60°C. It is also important to realize that the electric soldering iron should be earthed, irons often have a very slight leak when hot and the resultant current can often damage a new transistor.

3) When replacing transistors, please note that a standard wiring coding has been used in the model TP.50 i.e.

Green.....Base

White.....Collector

Red.....Emitter

CIRCUIT DESCRIPTION.

The first stage consists of an OC44 transistor operating in a self oscillator mixing circuit. Coupling to the first I.F. amplifier TR2 is by a double tuned transformer T1. Another OC45 (TR3) is the second I.F. amplifier, the signal being passed to the detector diode (OA70) via T4.

A.G.C. is derived from the junction of R10 and C21 being applied through T1 to the base of the first I.F. amplifier (TR2). The detected signal is applied to the driver transistor TR4, the primary of the driver transformer (T5) being in the collector circuit.

No output transformer is used, the speech coil of the 70 ohm loudspeaker being the output transistor loading.

The negative feedback chain consists of C27, R17, C24, RV1 and R10. In addition to varying the signal input to TR4, RV1 also varies the degree of negative feedback applied to the base of TR4 and thus the amplification factor of the audio amplifier. In the case of a weak signal, RV1 will be in the maximum or near maximum position with little feedback applied. In the case of a strong local signal, RV1 will be adjusted to a near minimum position which will give more feedback and therefore better quality of reproduction.

MAIN PARTS LIST.

QUANTITY	DESCRIPTION	CIR. REF.	PART NO.
1	Tuning Dial		59824
1	Tuning Pointer		55991
1	Wave Change Knob		59808
1	Volume Knob		59809
1	Clip (Volume Control Knob)		52133
1	Clip (Wave Change Knob)		52133
1	Clip (Tuning Pointer)		52080
4	Polythene Studs (Base of Cabinet)		RS Fittings
1	Carrying Handle		54425
2	Handle Retaining Bell Domes		59806
1	Moulded Back Grille		55985
5	Clips for Back Grille		59847
1	Tygan Mesh Back Grille		5115/9
2	Clip Washers (Cabinet Back)		50536
2	Springs (Cabinet Back)		52138
2	Catch Plates (Cabinet Back)		52139
1	Switch Assembly		59807
1	Aerial Mounting and Aerial Socket		55799/A
1	Aerial Mounting		55999
4	Battery Brackets		50592
4	Battery Contacts		52132
1	Ganged Condenser Assembly	C1,2,3a,3b, 6,10,11,12.	58063/A
1	Trimmer Bracket		50508
1	Complete Ferrite Rod (complete with Grommets and Coils)		55642/A
1	Decca Motif		59823

CONDENSERS

CIR. REF.	VALUE	WORKING VOLTAGE	TOLERANCE	DESCRIPTION PART NO.	LOCATION
1	30pF	-	5%	Silver Mica	B4
2/11	1.5/20pf	-	-	58064	B3
3AB	-	-	-	Polar C74 50863	C3
4	-	-	-	Daly Electrolytic H5-5/2	D4
5	.05mfd.	150V.	-	W99	B4
6	3/30pf.		TRIMMER FOR C3AB		B3
7	-	-	-	-	Inside T1
8	-	-	-	-	Inside T1
9	.01mfd	150V.	-	W99	B4
10	3/30pf		TRIMMER FOR C3AB		B3
11	-	-	-	-	B3
12	200pf.	-	5%	Silver Mica	B3
13	10mfd.	12V.	-	Daly Electrolytic H5-5/2	A3
14	-	-	-	-	Inside T3
15	-	-	-	-	Inside T3
16	10mfd.	12V.	-	Daly Electrolytic H5-5/2	B3
17	-	-	-	-	Inside T4
18	10mfd.	12V.	-	Daly Electrolytic H5-5/2	B3
19	.1mfd.	150V.	-	W99	B3
20	10mfd.	12V.	-	Daly Electrolytic H5-5/2	A2
21	.1mfd.	150V.	-	W99	B3
22	.1mfd.	150V.	-	W99	B2
23	100mfd.	12V.	-	Daly Electrolytic E5-49/2	B2
24	.1mfd.	150V.	-	W99	A2
25	.003mfd.	150V.	-	W99	D1
26	100mfd.	25V.	-	Daly Electrolytic E5-49/3	C1
27	100mfd.	12V.	-	Daly Electrolytic E5-49/2	A1

RESISTORS.

CIR. REF	VALUE	WATTAGE	TOLERANCE	LOCATION
1	47K	¼W	10%	D4
2	10K	¼W	10%	C4
3				
4	3.3K	¼W	10%	B4
5	390 ∿	¼W	10%	D4
6	75K	¼W	10%	D4
7	1K	¼W	10%	B4
8	12K	¼W	10%	B3
9	1.8K	¼W	10%	B3
10	390 ∿	¼W	10%	B3
11	6.8 ∿	¼W	10%	A3
12	470 ∿	¼W	10%	B2
13	47K	¼W	10%	A2
14	18K	¼W	10%	A2
15	5.1K	¼W	10%	B1
16	1K	¼W	10%	B2
17	1K	¼W	10%	A2
18	8.2K	¼W	5%	C2
19	180 ∿	¼W	5%	C1
20	8.2K	¼W	5%	C1
21	180 ∿	¼W	5%	C2
22	4.7 ∿	¼W	± ½ ∿	C1
23	4.7 ∿	¼W	± ½ ∿	C1

TRANSISTOR ALIGNMENT INSTRUCTIONS.

Readings taken with meter across loudspeaker coil on low A.C. range.

I.F. ALIGNMENT.

Set signal generator to 472 kc/s.

Turn main tuning condenser until gang is closed.

Switch to medium waveband.

Connect signal generator across medium wave coil (L1)

Feed in modulated signal to give low output indication.

Peak top and bottom cores T1 and T3 for maximum output. Peak T4 (one core only) for maximum output.

Adjust generator level whenever necessary.

Repeat above operation.

R.F. ALIGNMENT.

Medium Wave.

Tune receiver to 460 metres.

Set signal generator to 652 kc/s.

Feed Signal into aerial socket via 2K resistor.

Adjust oscillator coil T2 for maximum output.

Adjust L1 for maximum output.

Tune receiver to 230 metres.

Re-set generator to 1300 kc/s and adjust oscillator trimmer C10 for maximum output.

Adjust aerial trimmer C6 for maximum output.

Repeat above operation.

Long Wave.

Tune receiver to 1750 metres.

Set signal generator to 170 kc/s.

Feed signal into aerial sockets via 1K resistor.

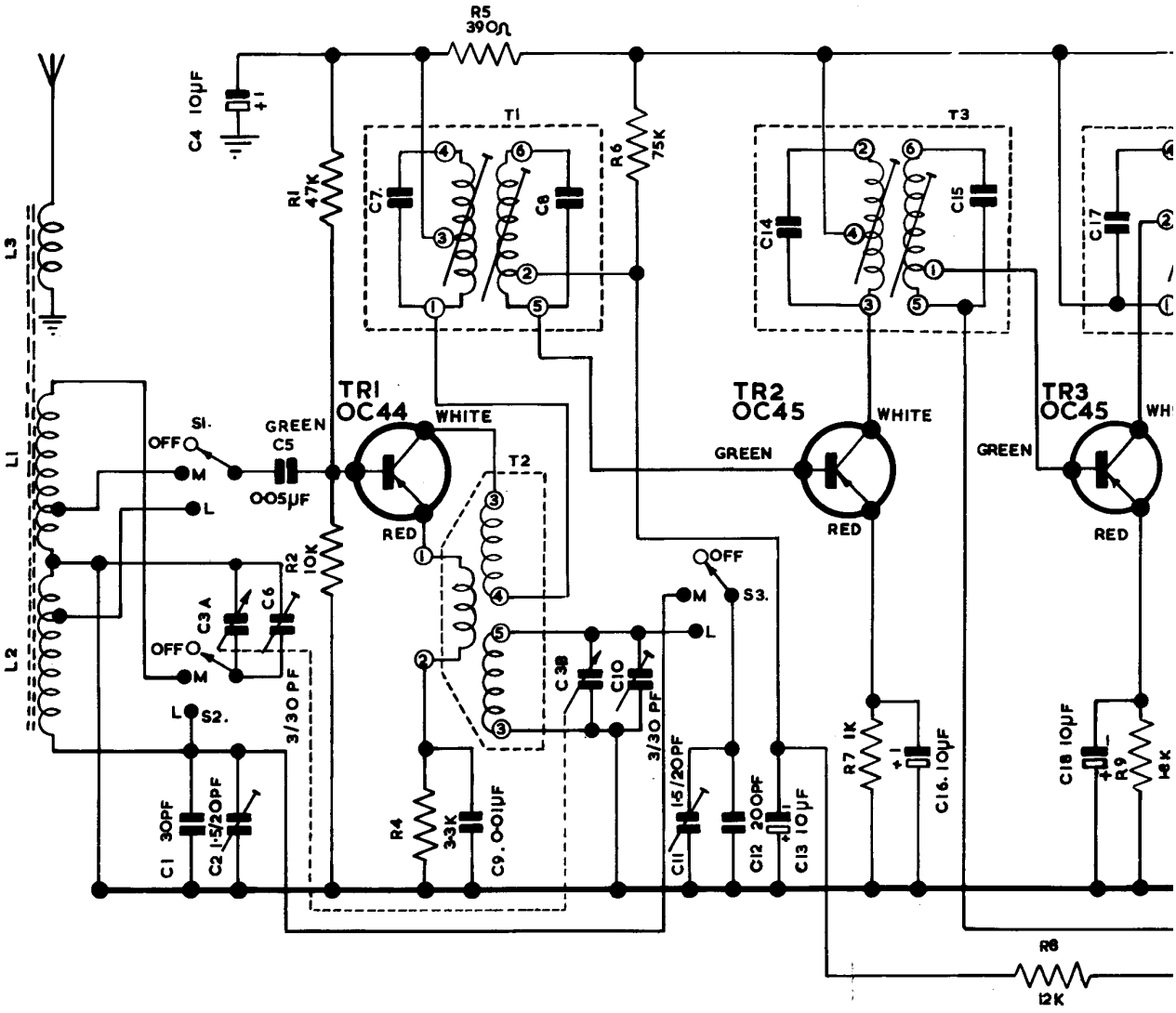
Adjust oscillator trimmer C11 for maximum output. (There may be a degree of oscillator pulling when tuning C11, care should be taken to adjust L2 and C11 for maximum signal at the correct tracking point).

Re-tune receiver to 1250 metres.

Feed in signal at 240 kc/s.

Adjust C2 for maximum output.

Repeat above operation.



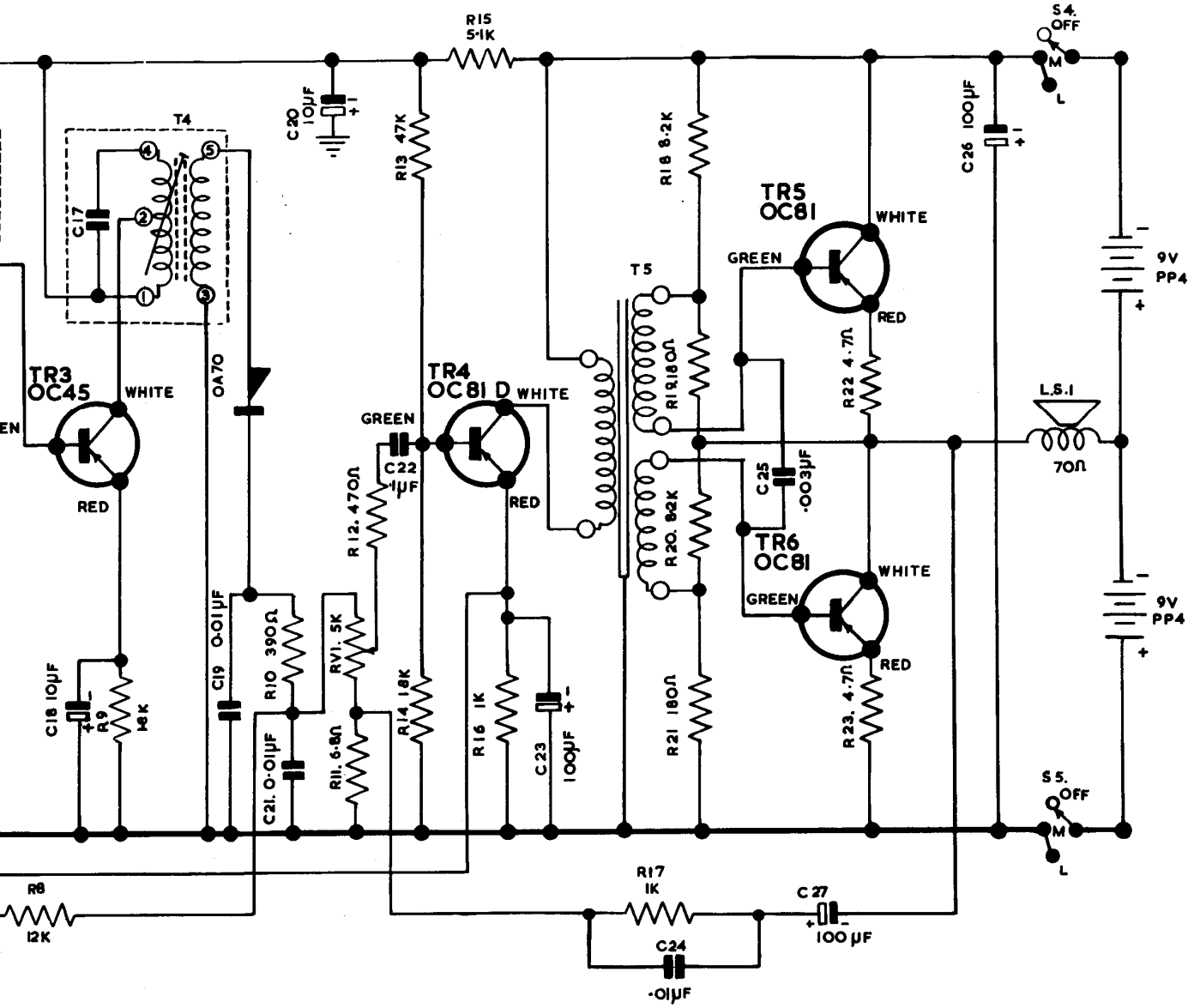
VOLTAGE READING CHART

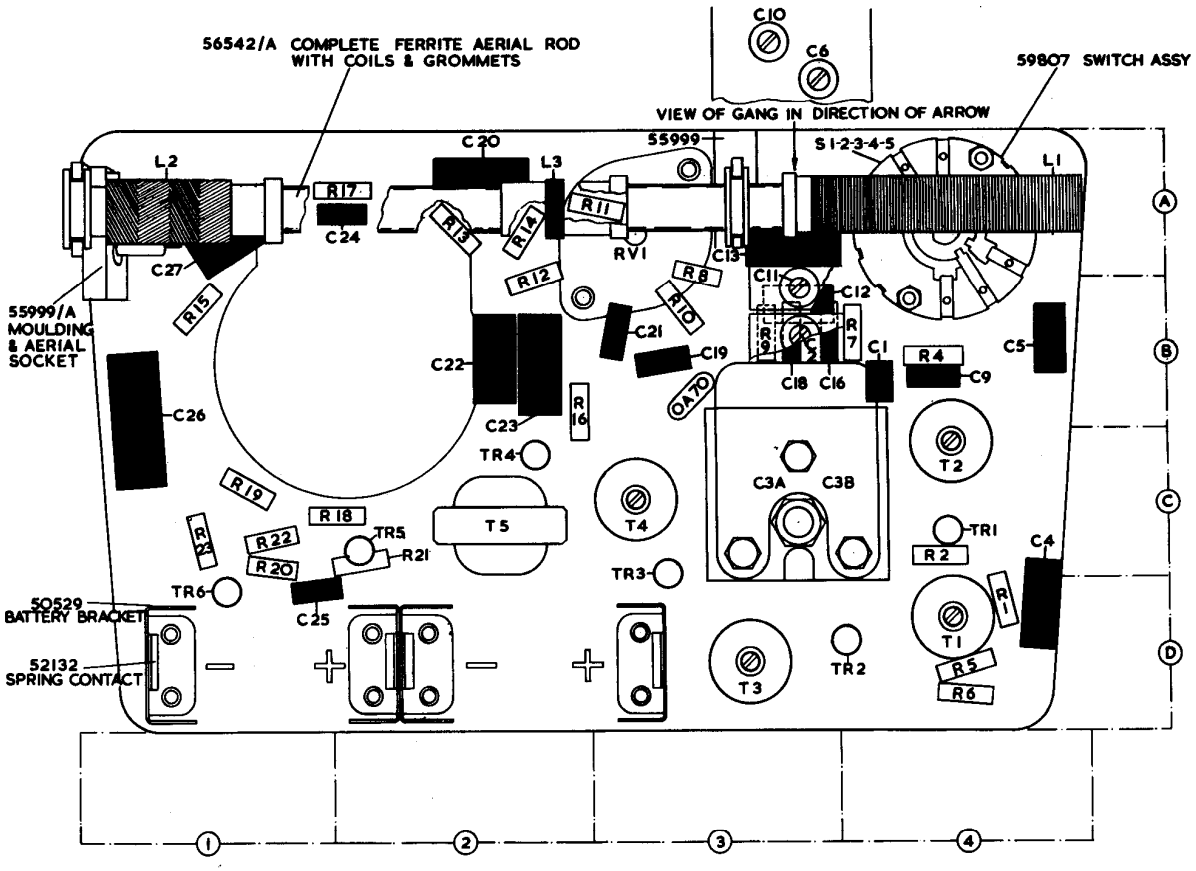
TRANSISTOR	EMITTER (Red)	COLLECTOR (White)	BASE (Green)
TR1	1.2v.	6.9v.	1.1v.
TR2	.7v.	6.8v.	.9v.
TR3	1.45v.	6.8v.	1.65v.
TR4	1.7v.	17.2v.*	1.2v.
TR5	8.6v.	17.5v.*	8.8v.
TR6	-	8.6v.	7.2v.

1. Voltage readings taken on AVO Model 8 on 10v. range. Readings marked* on 25v. range.

2. Readings taken from transistor terminal to positive earth point under zero signal conditions with volume control at minimum.

3. Total current reading 7.5 mA.


R15 5·1K
S4. OFF
M
L
C20 10µF
R13 47K
R18 8·2K
C26 100µF
T4
C17
TR5 OC81
WHITE
GREEN
RED
T5
9V PP4
TR3 OC45
WHITE
RED
OA70
TR4 OC81 D
WHITE
GREEN
RED
R22 4·7Ω
L.S.1
70Ω
C22 1µF
R12 470Ω
R19 180Ω
C25 ·003µF
R20 82K
TR6 OC81
WHITE
GREEN
RED
C19 0·01µF
R10 390Ω
RV1 5K
C18 10µF
R9 M8K
R14 18K
R16 1K
C23 100µF
R21 180Ω
R23 4·7Ω
C21 0·01µF
R11 6·8Ω
S5. OFF
M
L
R8 12K
R17 1K
C27 100 µF
C24 ·01µF


56542/A COMPLETE FERRITE AERIAL ROD WITH COILS & GROMMETS
C10
C6
59807 SWITCH ASSY
VIEW OF GANG IN DIRECTION OF ARROW
55999
S1-2-3-4-5
L1
L2
C20
L3
R17
C24
R11
R13
R14
RV1
C13
C27
R12
R8
C11
C12
R10
55999/A MOULDING & AERIAL SOCKET
R15
C21
C19
C22
C1
R4
C5
C18
C16
C9
C26
R16
C23
OA70
TR4
C3A
C3B
T2
R19
T5
T4
R18
R22
TR5
R21
TR1
C4
R20
TR6
TR3
R2
R1
C25
50529 BATTERY BRACKET
52132 SPRING CONTACT
T1
T3
TR2
R5
R6
A
B
C
D
1
2
3
4

TP.50

MODIFICATION

Issued by Technical Information Department
September 1961

MODEL TP.50

The model TP.50 has a remarkable power output for a set of its size and specification. However, for those dealers who wish to compromise between power output and battery life we can recommend the following modification to increase time of battery life.

The enclosed kit of parts comprise the following items.

(a) 2 - 2.0K resistors $\frac{1}{4}$ watt.

(b) 2 - 100 ohm resistors $\frac{1}{4}$ watt.

(c) 1 - 680 ohm resistor $\frac{1}{4}$ watt.

(d) 2 Lengths of wire.

(e) 2 Fibre Insulators.

MODIFICATION PROCEDURE

1. Remove chassis from cabinet.

2. Remove both loudspeaker leads by unsoldering them from their present positions (remembering to protect transistor lead with heat sink).

3. On the reverse side of the board, unsolder, carefully separate and bend the two spring contacts at present forming the centre position of the series arranged battery connectors.

4. Using the two pieces of wire provided, one red, one black, solder the red wire from positive connector to positive battery connector and the black from negative to negative. (See Fig. 3.)

5. Carefully protecting the transistor leads, remove the two 8.2K ohm resistors shown in the diagram and replace with the 2.0K ohm resistors provided. (R18, R20).

6. Remove 2 - 180 ohm resistors and replace with 100 ohm resistors provided. (R19-R21).

7. Remove 1K resistor and .01 condenser (R17, C24), and replace with 680 ohm resistor.

8. Remove 5.1K ohm resistor shown in the diagram and replace with 1K ohm resistor removed in operation '7'. (R15).

9. Solder loudspeaker lead to earth connection - (A., Fig. 2.)

10. Solder second loudspeaker lead, suitably shortened to junction of 680 ohm and 100mfd. (R17 and C27), situated under ferrite rod. (B., Fig. 2).

11. Prise back the spring contact on each of the two central battery connectors and insert the fibre insulators provided so as to prevent either bracket from touching the other.

DIAGRAM OF BATTERY CONNECTORS REWIRED

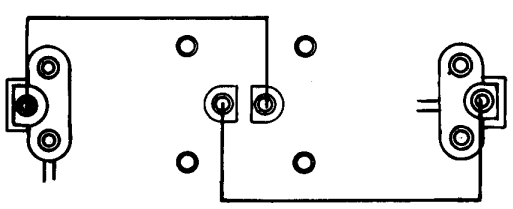
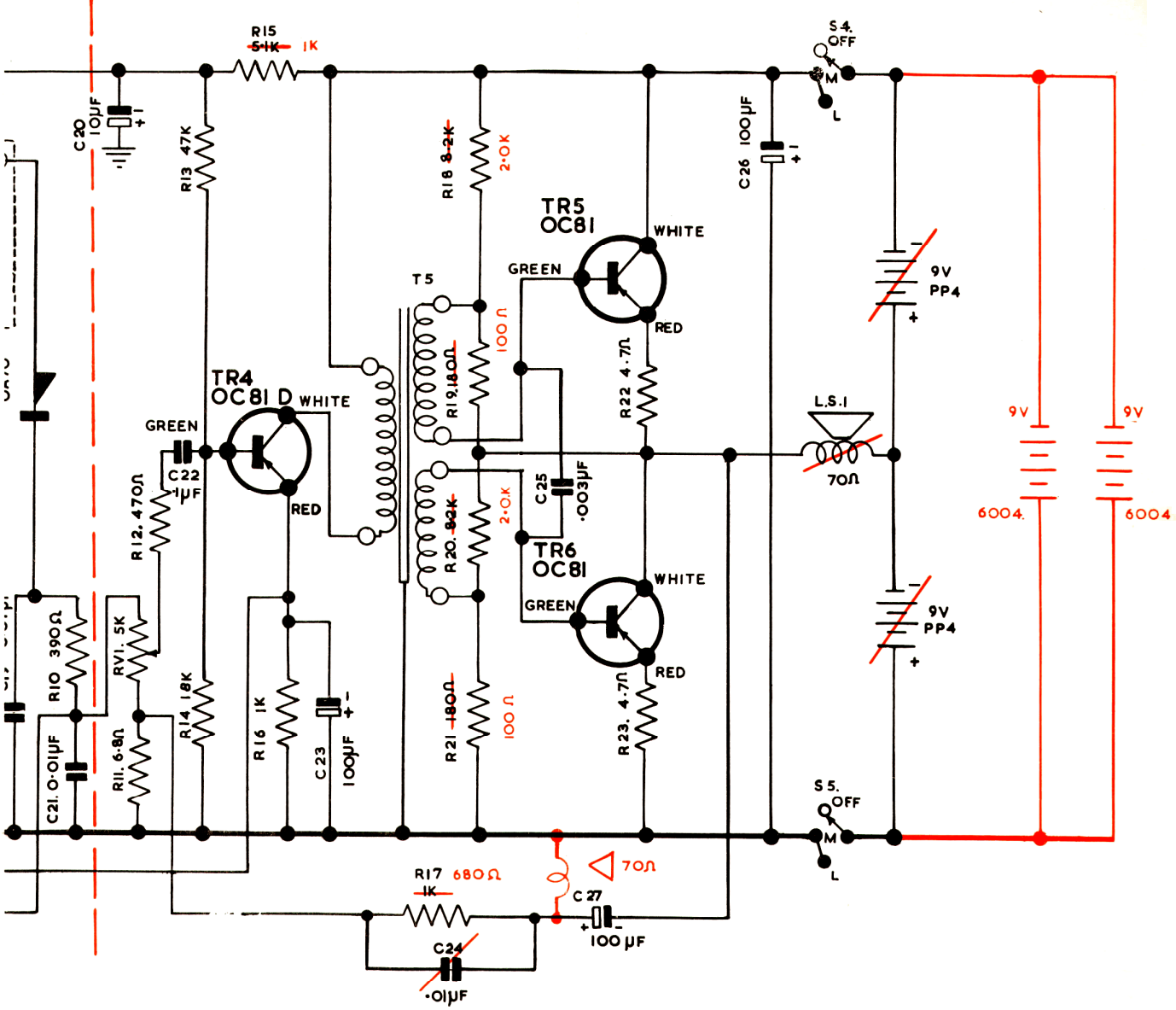


Fig. 3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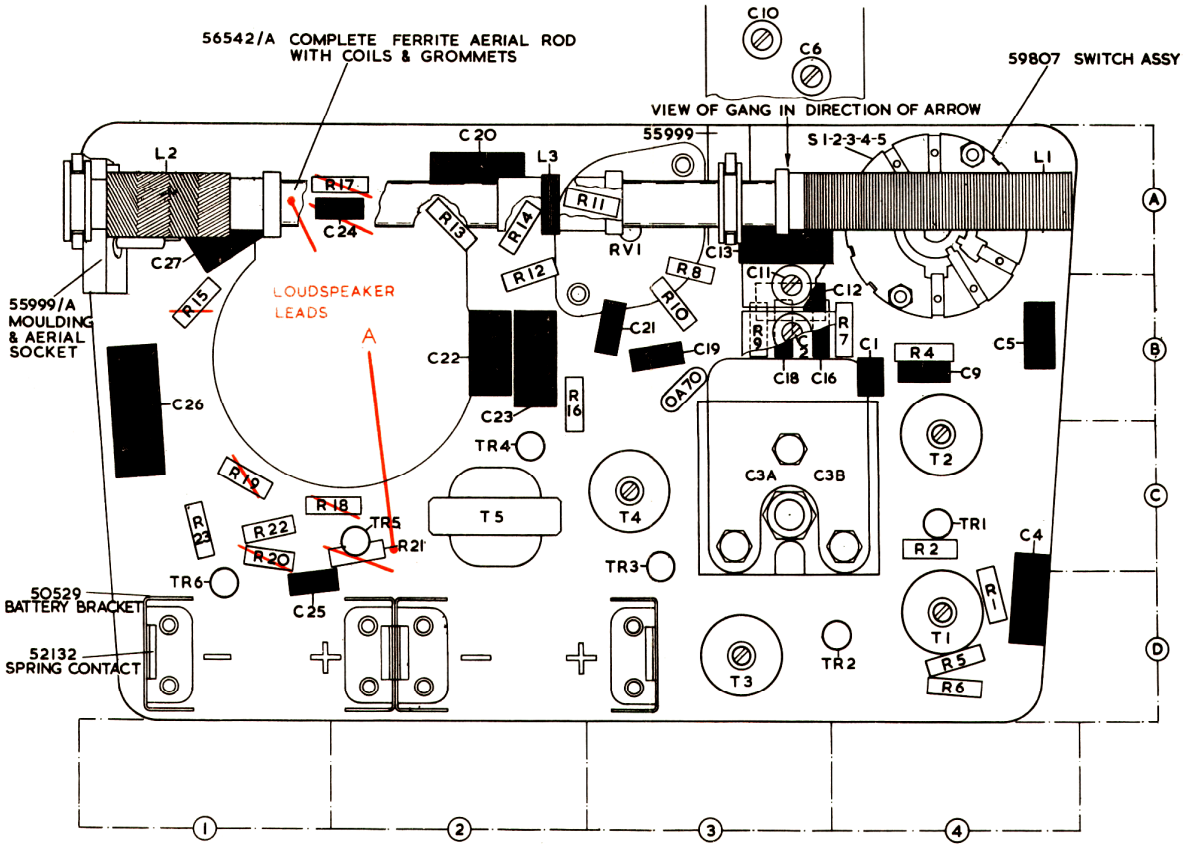
C20 10µF
R13 47K
R18 3·2K 2·0K
C26 100µF
S4. OFF M L
TR5 OC81
WHITE
GREEN
RED
T5
100Ω
R19 180Ω
R22 4·7Ω
9V PP4
TR4 OC81 D
WHITE
GREEN
RED
C22 1µF
R12 470Ω
L.S.1
70Ω
9V
6004
C25 ·003µF
R20 ·82K 2·0K
TR6 OC81
WHITE
GREEN
RED
R10 390Ω
RV1. 5K
R14 1·8K
R16 1K
C23 100µF
R11 6·8Ω
C21 0·01µF
R21 180Ω
100Ω
R23. 4·7Ω
S5. OFF M L
R17 680Ω 1K
70Ω
C27
100 µF
C24
·01µF

Fig. 1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RV1
C13
R12
R8
R10
C11
C12
C27
R15
LOUDSPEAKER LEADS
A
C21
C19
C22
C23
R16
TR4
C18
C16
C1
R4
C9
C5
55999/A MOULDING & AERIAL SOCKET
C26
R19
R18
TR5
R21
R22
R23
R20
C25
TR6
C3A
C3B
T2
T5
T4
TR1
R2
C4
TR3
50529 BATTERY BRACKET
52132 SPRING CONTACT
T1
R1
T3
TR2
R5
R6
A
B
C
D
1
2
3
4

Fig. 2