

DECCA

SERVICE

NOTES

TRANSISTOR RECEIVER

TP 44 incorporating TP 60

TP 44

incorporating

TP 60

DECCA RADIO AND TELEVISION

branch of The Decca Record Co., Ltd.

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

MACaulay 6677

MODEL TP.60.

The model TP.60 in its main essentials is identical to the model TP.44. However, please note the following changes.

1. In some models STC transistors are used -
which are as follows :-

R.F. Pack TK1000C comprising :

Mixer	Yellow coding
1st I.F. Amplifier	Orange coding
2nd I.F. Amplifier	Blue coding

Audio Pack TK1002C comprising :

Audio Driver	Green coding
Audio Output	Black coding
Audio Output	Black coding

2. With reference to the circuit diagram, in this manual, the TP.60 has C15-12 pF and R6 2.7K.
3. The TP.60 loudspeaker is still 25 ohm 5" round, but the Plessey Part Number is different for re-ordering purposes, i.e. 130056/292506.

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

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AERIALS Internal aerials for Medium and Long Wavebands - co-axial socket for connection of external aerial.

WAVEBANDS: Medium 190-555 metres
Long Waves 1140-2000 metres
Intermediate frequency 472 Kc/s

CONTROLS: Volume, Combined waveband selector and On/Off switch, tuning.

LOUDSPEAKERS: 5" round high flux density speaker - 25 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

BATTERIES: 2 Ever Ready PPl batteries - 6 volt.

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°F. 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.44 i.e.

Green.....Base

White.....Collector

Red.....Emmitter

CIRCUIT DESCRIPTION.

The first stage consists of an OC44 transistor operating in a self oscillator mixing circuit. Coupling to the first I.F. amplifier (OC45) 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.

The A.G.C. is taken from the junction of R11 and C24 being applied through T1 to the base of the first I.F. amplifier (TR2). The detected signal is applied to the driver transistor (OC81D), the primary of the driver transformer (T5) being in the collector circuit.

Equal and opposite voltages are applied to the base of the push pull output transistors TR5 and TR6. A 25ohm loudspeaker is used, obviating the need for a push pull output transformer.

Please note that the audio negative feedback chain consists of C29, R18/C38, RV1 and R11. The degree of feedback applied to the base of TR2 thus decreases when RV1 approaches the minimum end of resistance and conversely increases as the volume control is moved to maximum.

NOTE: On some models C.30 (shown dotted in the circuit diagram) has been added in the base circuits of the output stage. This condenser of either 500 pf. or 1000 pf. has been added to neutralize phase shift effects of T5 when necessary.

MAIN PARTS LIST.

QUANTITY	CIR. REF.	DESCRIPTION	PART NO.
1	T1	1st I.F. Transformer	56531
1	T2	Oscillator Transformer Coil pack	56530
1	T3	2nd I.F. transformer	56532
1	T4	3rd I.F. transformer	56533
1	T5	Driver transformer	56529
1	C1A C1B	Main tuning condenser	58058
1	RV1	5K linear potentiometer	59750
1	S1A/B/C/D/E	Main switch assembly	59751
1	L1/2	Aerial rod assembly	56536
2		Control knob	59753
2		Tuning knob	55872
1	LS/1	25 ohm 5" loudspeaker	CP74005/9
1		Dial	55883

CONDENSERS.

CIR. REF.	VALUE	WORKING VOLTAGE	TOLERANCE	PART NO.	LOCATION.
1	500pf.	-	-	58058	B1
2/4	3/30pf.	-	-	58060	A2
3	30pf.	-	$\pm 5\%$	-	A3
4	See C2	-	-	-	A3
5	10mfd.	6v.	-	-	A1
6					
7		-	-	-	Inside T1
8	.05mfd.	150v.	-	Hunts W99	A1
9	.01mfd.	150v.	-	Hunts W99	B1
10		-	-	-	Inside T1
11/12	3/30pf.	-	-	58060	A2
12	See C11	-	-	-	A2
13	220pf.	-	$\pm 5\%$	LEM1510E	A2
14	10mfd.	6v.	-	-	B1
15	4pf.	-	$\pm \frac{1}{2}\text{pf.}$	LEM1106R	C1
16		-	-	-	Inside T3
17		-	-	-	Inside T3
18	10mfd.	6v.	-	-	C1
19	.05mfd.	150v.	-	Hunts W99	C1
20		-	-	-	Inside T4
21	20pf.	-	$\pm 2\%$	LEM1106R	C2
22	10mfd.	6v.	-	-	C1
23	.01mfd.	150v.	-	Hunts W99	C2
24	.01mfd	150v.	-	Hunts W99	C2
25	100mfd	12v.	-	Daly F549-2	A4
26	.25mfd.	150v.	-	Hunts A301	A4
27	100mfd.	6v.	-	-	B4
28	.01mfd.	400v.	-	Hunts W99	A4
29	100mfd.	6v.	-	Hunts W99	A4

RESISTORS.

<u>CIR. REF.</u>	<u>VALUE</u>	<u>WATTAGE</u>	<u>TOLERANCE</u>	<u>LOCATION</u>
1	47K	$\frac{1}{4}$ W	10%	A1
2	10K	$\frac{1}{4}$ W	10%	A1
3	390 Ω	$\frac{1}{4}$ W	10%	B1
4	3.3K	$\frac{1}{4}$ W	10%	B1
5	75K	$\frac{1}{4}$ W	10%	B1
6	6.8K	$\frac{1}{4}$ W	10%	C1
7	1K	$\frac{1}{4}$ W	10%	C1
8	12K	$\frac{1}{4}$ W	10%	B1
9	3.3K	$\frac{1}{4}$ W	10%	C2
10	1.8K	$\frac{1}{4}$ W	10%	C1
11	390 Ω	$\frac{1}{4}$ W	10%	C2
12	6.8 Ω	$\frac{1}{4}$ W	10%	A4
13	470 Ω	$\frac{1}{4}$ W	10%	A4
14	1.8K	$\frac{1}{4}$ W	10%	B4
15	56K	$\frac{1}{4}$ W	10%	A4
16	18K	$\frac{1}{4}$ W	10%	B4
17	470 Ω	$\frac{1}{4}$ W	5%	A4
18	330 Ω	$\frac{1}{4}$ W	10%	A4
19	2.2K	$\frac{1}{4}$ W	10%	B4
20	68 Ω	$\frac{1}{4}$ W	5%	B4
21	2.2K	$\frac{1}{4}$ W	10%	B4
22	68 Ω	$\frac{1}{4}$ W	5%	B4
23	2.2 Ω	$\frac{1}{4}$ W	5%	B4
24	2.2 Ω	$\frac{1}{4}$ W	5%	B4

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 sockets via 1K 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 C11 for maximum output.

Adjust aerial trimmer C2 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.

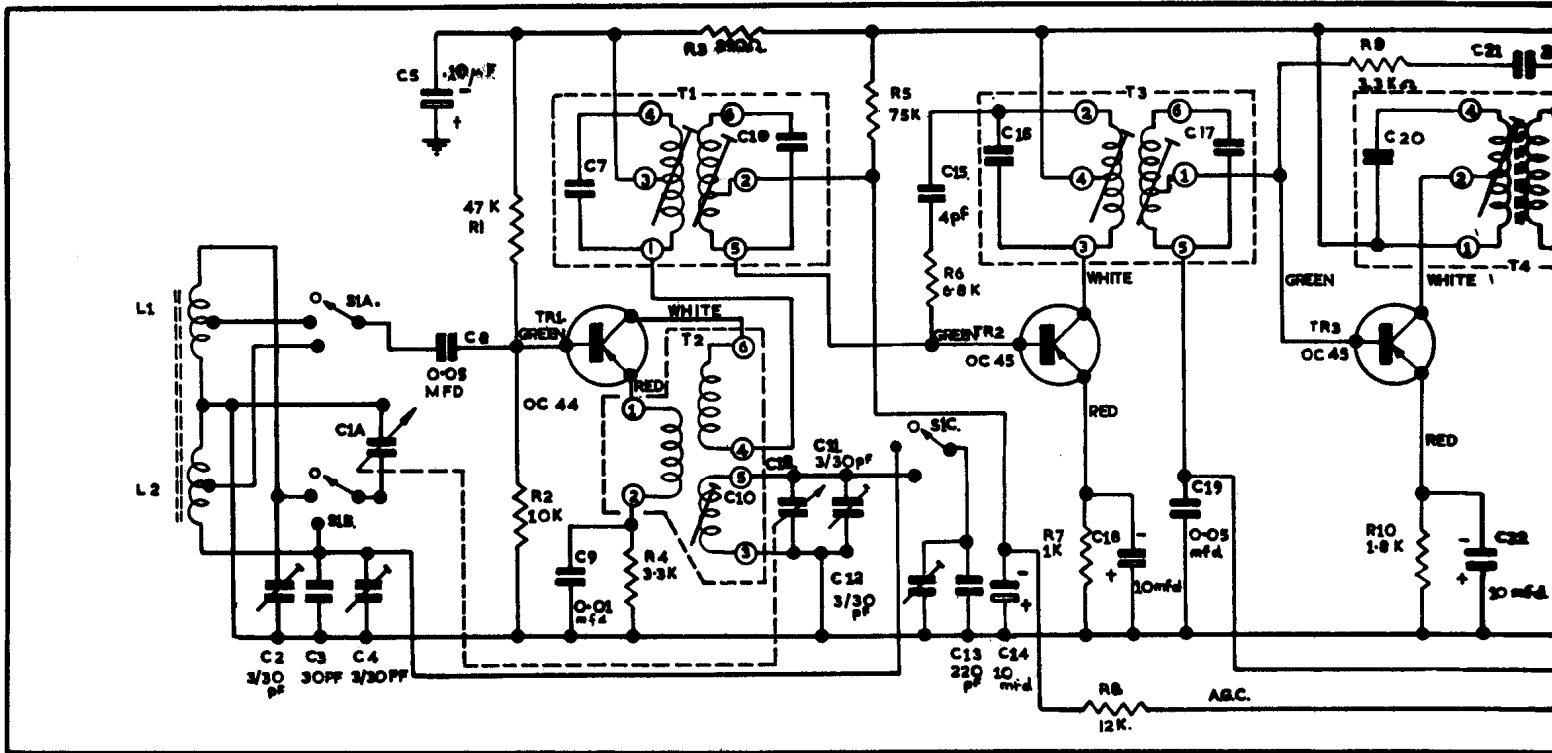
Adjust oscillator trimmer C12 for maximum output. (There may be a degree of oscillator pulling when tuning C12, care should be taken to adjust L2 and C12 for maximum signal at the correct tracking point).

Re-tune receiver to 1250 metres.

Feed in signal at 240 kc/s.

Adjust C4 for maximum output.

Repeat above operation.



VOLTAGE READING CHART.

TRANSISTOR

EMITTER

COLLECTOR

TR1	1.4v.	8.0v.
TR2	.8v.	8.2v.
TR3	1.2v.	8.6v.
TR4	1.5v.	*11.5v.
TR5	6.1v.	*12.3v.
TR6	-	6.1v.

1. Voltage readings taken on AVO Model 8 on 10v. range. Readings marked* on 25v. range
2. Readings taken from electrode to chassis under zero signal conditions with volume control at minimum.
3. Current reading under above conditions—each battery reads 12 m.a. if lead is broken and AVO inserted.

