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Technical
Information

C.L.
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HANDBOOK
for
AMPLIFIER LOUDSPEAKER
Type 618OR

903-1

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1 INTRODUCTION

The Amplifier Loudspeaker type 6180R is an accessory unit for use with lightweight radiotelephone equipments.

The amplifier will deliver an audio output of 300 mW into the 3 inch loudspeaker. The unit embodies an integrated circuit and is powered by a self-contained mercury cell battery, providing continuous operation for some 40 hours, (or 150 hours in the standby or quiescent condition).

The amplifier and loudspeaker are housed in a diecast aluminium case that is sealed to prevent the ingress of moisture. Access to the interior of the unit is obtained by removal of four retaining screws that secure the back plate. The battery clips into position and requires no soldering or screw terminations for the supply connections. The unit is supplied with 4 feet of screened input cable terminated by a 6-pin Thorn plug, type PTO6W-10-6P.

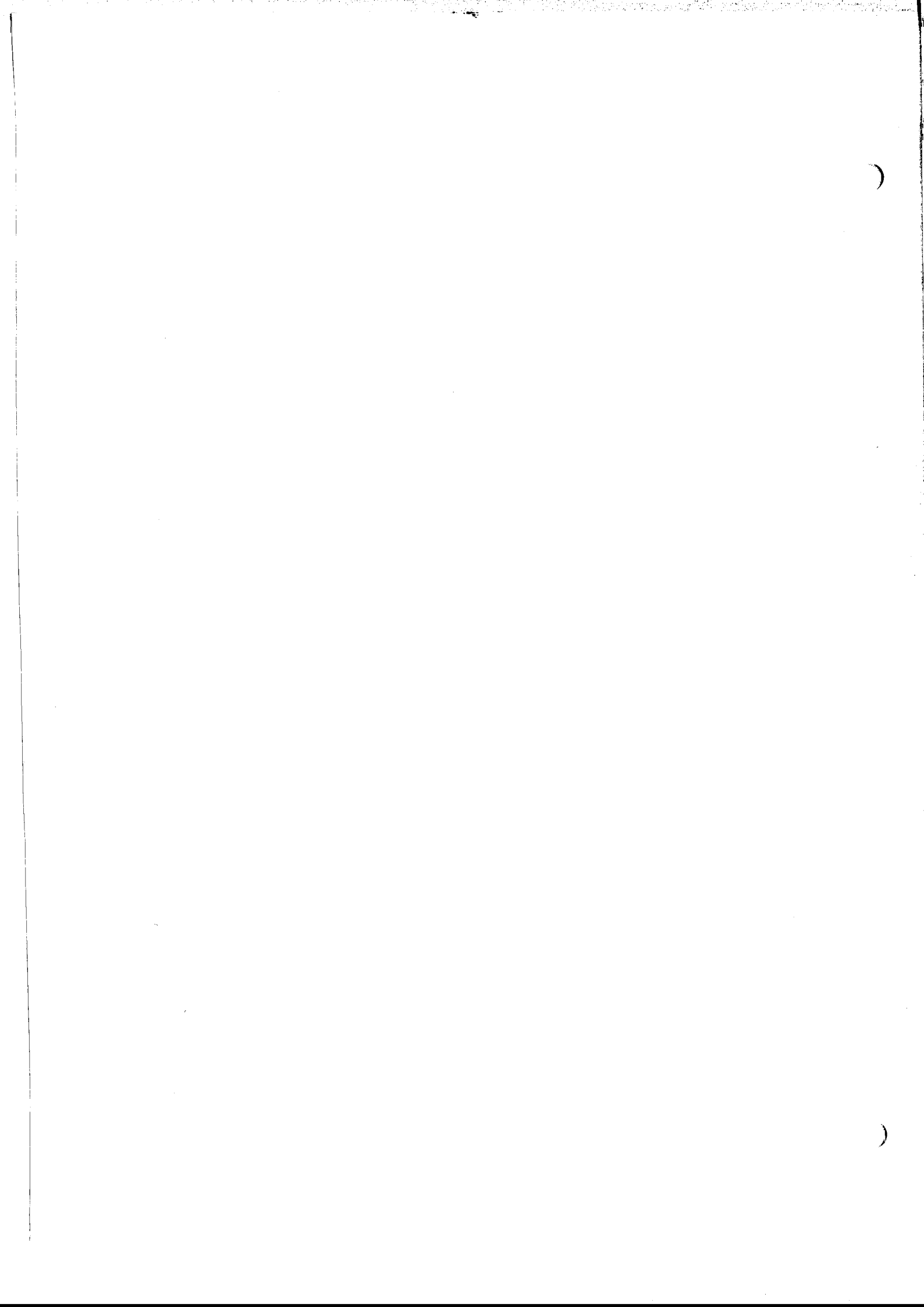
External controls are an On-Off switch and an audio Gain control.



2 SUMMARY OF DATA

Input Impedance:	5k ohm, unbalanced
Sensitivity:	0.3 watts output for not more than 80 mV input at 1,000Hz
Power Output:	0.3 watts
Frequency Response:	Within +0.5 and -3dB between 200Hz to 8,000Hz relative to 0dB at 1,000Hz
Distortion:	Not greater than 5% (at 0.3 watts output)
Operating Temperature Range:	0°C to +55°C At lower temperatures, the operating performance is reduced due to fall-off in battery efficiency
Integrated Circuit:	Mullard type TAA300
Power Supply:	8 volts, internally mounted Mallory type TR136R mercury cell battery
Standing Current:	5.0 mA (no signal)

Dimensions and Weight:	<i>Height</i>	<i>Width</i>	<i>Depth</i>	<i>Weight</i>
	5 $\frac{1}{8}$ in	5in	4 $\frac{1}{8}$ in	2 $\frac{1}{4}$ lb
	(14cm)	(13cm)	(12cm)	(1.25kg)



3 DESCRIPTION

The components of the amplifier, are mounted on a printed circuit board and the On/Off switch and Gain control are connected to the board by flying leads. The battery is pushed into spring U clips which retain it in position, whilst end terminals make spring contact for connecting the supply.

Referring to the circuit diagram CDR/6180/S at the rear of this book, the amplifier circuit employs an integrated circuit with standing current controlled by a preset resistor R5. The diode MR1 protects the circuit from polarity reversal resulting from incorrect battery positioning.

The input connecting lead passes through a waterproof gland and is terminated with a Thorn PT06W-10-6P shrouded plug.

Two key-hole slots in the back plate extensions, permit the amplifier unit to be screwed to other assemblies.

4 MAINTENANCE

GENERAL

Maintenance is reduced to a minimum by virtue of simplicity and robust construction of the unit.

Periodic cleaning with a dry lint-free cloth, coincident with a battery change, will ensure prolonged service of the amplifier.

CORRECTIVE MAINTENANCE

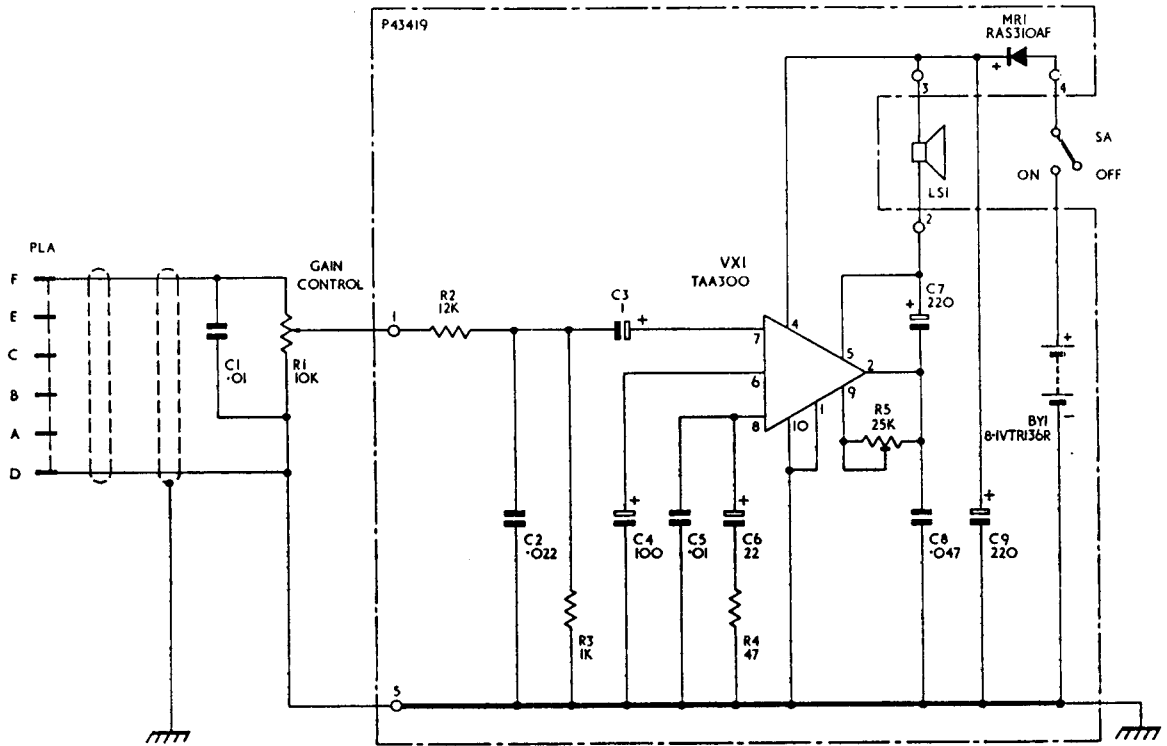
Recommended Test Equipment

Multimeter	Avometer model 8
Audio Signal Generator	Advance type J1
Valve Voltmeter	Dawes type 614
Noise and Distortion Meter	GR type 1932
Audio Power Meter	Marconi type TF893

TEST PROCEDURE (Refer to Circuit Diagram CDR6180 Sheet 1)

The following tests on a faulty amplifier will assist in locating a fault. With the amplifier disconnected and the On/Off switch SA in the OFF position, remove the back plate and carry out the following tests.

- (a) Ensure that the On/Off switch is in the OFF position and set the GAIN control R1 fully clockwise.
- (b) Check that the battery is securely clipped in position. The battery voltage should be checked using the Avometer and should read $8.1V \pm 0.2V$.
- (c) Advance the potentiometer R5 fully clockwise and with the Avometer set to the 10mA d.c. range, connect the test leads between the battery positive terminal and the anode of diode MRI.
- (d) Adjust R5 to produce a quiescent current reading of 5mA, then remove the Avometer.
- (e) If audio output power is to be measured, the loudspeaker should be disconnected and the audio power meter connected in its place.
- (f) Switch on the amplifier and connect the audio signal generator to pins D and F of the six-way Thorn plug PLA.
- (g) Set the output level from the audio generator to 80mV r.m.s. at 1 kHz. The output level developed by the amplifier should be $300mW \pm 10\%$.
- (h) Connect the noise and distortion meter across the audio power meter terminals and measure the total distortion, which should be not greater than 5%.
- (j) Disconnect the test meters and reconnect the loudspeaker. Replace the amplifier backplate.
- (k) Plug the loudspeaker unit into the associated equipment accessory connection and carry out a functional test.
- (l) Switch off the unit if not required for immediate use.



AMPLIFIER LOUDSPEAKER TYPE 6180R

5 COMPONENTS LIST

LOUDSPEAKER AMPLIFIER UNIT TYPE 6180R

Resistors

R1 10k Ω \pm 10% 1/2W Colvern CLR1206/11S (Semi Log Curve B)
R2 12k Ω \pm 2% 1/2W Electrosil TR5
R3 1k Ω \pm 2% 1/2W Electrosil TR5
R4 47 Ω \pm 2% 1/2W Electrosil TR5
R5 22k Ω \pm 20% 1/4W Plessey MP (Lin)

Capacitors

C1 0.01 μ F \pm 20% 100V Waycom MKS
C2 0.22 μ F \pm 20% 100V Waycom MKS
C3 1 μ F \pm 20% 10V Union Carbide K1J10S
C4 100 μ F \pm 20% 10V Union Carbide K100J10S
C5 0.01 μ F \pm 20% 100V Waycom MKS
C6 22 μ F \pm 20% 10V Union Carbide K22J10S
C7 220 μ F \pm 20% 10V Union Carbide K220J10S
C8 0.047 μ F \pm 20% 100V Waycom MKS
C9 220 μ F \pm 20% 10V Union Carbide K220J10S

Loudspeaker

LS1 10 Ω Richard Allan 370S TROP

Battery

BY1 8.1V Mallory TR136R

Plug

PLA Thorn PTO6W-10-6P

Switch

SA NSF 5930-99-0510551

Diode

MR1 STC RAS310AF

Integrated Circuit

VX1 Mullard TAA300

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REPLACEMENT OF BATTERY

When replacing an exhausted battery, ensure correct polarity. The battery outer casing is positive and should make contact with the indicated positive contact clip. Battery reversal will not damage the amplifier, as protection is afforded by diode MR1.

SPARES AND REPLACEMENTS

To ensure reception of the correct item and to expedite delivery when ordering spare and replacement parts please quote:—

- (i) Type number of equipment, as shown on label
- (ii) Serial number of unit
- (iii) Circuit reference, as shown on circuit diagram, and full description of item.

Additional useful information is the number of the circuit diagram or components list number and sheet number.

