

PHILIPS

SERVICE DATA

and

OPERATING INSTRUCTIONS

for

AMPLIFIER 8 Watt A.C.

TYPE No. 976

electro - **ola** acoustic division



8 WATT AMPLIFIER

SPECIFICATION

OUTPUT POWER: 8 Watts at less than 5% harmonic distortion.

FREQUENCY RESPONSE: 30 - 15000 c/s within 2 dB with tone control set for flat response.

TONE CONTROL: Switch - potentiometer type - 18 dB at 50 c/s bass attenuation with switch - 14 dB treble attenuation at 15 Kc/s with potentiometer.

SIGNAL TO NOISE RATIO: (With volume controls at max.)
Microphone 55dB
Pickup 70dB } weighted.

POWER CONSUMPTION: 60 VA at full signal.

MAINS SUPPLY: 220 - 260 Volts 40 - 60 c/s.

INPUTS: Microphone 1 megohm 1.4 mV.
Pickup 500,000 ohm 100 mV.

OUTPUT IMPEDANCES: 1200, 600 and 300 (100, 70, 50 volts).

DAMPING FACTOR: 3.0

FUSE: 1 amp - auto.

VOLTAGE ANALYSIS

VALVE		ANODE		SCREEN	CATHODE	HEATER
V1 (A)	12 AX 7	1)	110 v D.C.	-	1.1 v D.C.	6.5 v A.C.
		2)	110 v D.C.	-	1.1 v D.C.	6.5 v A.C.
V2 (B)	12 AX 7	1)	60 v D.C.	-	.3 v D.C.	6.5 v A.C.
		2)	100 v D.C.	-	65 v D.C.	6.5 v A.C.
V3	6V4		275 v D.C.	-	278 v D.C.	6.45 v A.C.
V4&5	6M5		272 v D.C.	278 v D.C.	8.9 v D.C.	6.5 v A.C.

ALL MEASUREMENTS ARE MADE WITH A 1000 OHM PER VOLT METER TO CHASSIS

976 A MODEL ONLY

VALVE	ANODE	SCREEN	CATHODE	HEATER
V2 12AX7	1) 72 v D.C.	-	.7 v D.C.	6.5 v A.C.
	2) 150 v D.C.	-	55 v D.C.	6.5 v A.C.

OPERATING INSTRUCTIONS

for

8 WATT AMPLIFIERGENERAL

Before using a new Amplifier, make sure that all valves are seated firmly in their sockets, and that fuses are fitting tightly in their holders.

All amplifiers leave the factory with the power cable connected to the mains transformer for 240 volt A.C. operation. In cases where the mains voltage is not 240 volt, it is necessary to remove the baseplate of the amplifier BUT ENSURE THE AMPLIFIER IS NOT CONNECTED TO THE MAINS SUPPLY, then unsolder the lead of the power cable connected to the 220-240 volt lug and attach to the 250 - 260 volt lug.

220 - 240 V	leave as is
250 - 260 V	Solder to lug marked 250 volts 260 volts

The power point used for Amplifiers should be of the three pin earthed type, which will then earth the amplifier through the third conductor in the power lead. If an earthed power point is unavailable, a separate earthing wire should be connected to the amplifier chassis.

INPUT CONNECTORS

Before connecting any input source to this Amplifier, ensure the voltage to the plugs does not exceed the following, otherwise severe overloading will result.

Pickup	2V
Microphones	.05V

The input connectors are two-pin plugs (metal sheathed type) which are supplied with the amplifier. The pin numbers are stamped on the inside bakelite moulding of the plug.

No. 1	being Grid Return
No. 2.	being Grid

When connecting the microphone or pickup cable to the plug pins, the two inner wires must be connected to Pins No. 1 and No. 2. whilst the braid shielding is soldered directly to the outer spring on the plug.

Where a single shielded conductor is encountered, the shielding should be connected to No. 1 pin, and NOT to the spring, as this amplifier features SINGLE POINT EARTHING. If this is NOT done correctly, EXCESSIVE HUM will develop.

OUTPUT CONNECTIONS

The constant voltage output system used, eliminates mismatch distortion. This permits any number of loudspeakers to be connected provided the total impedance is not lower than 1,000 ohms when connected to the 1200 ohm tapping.

Under normal conditions speakers may be connected to the output terminals marked -

C and 1200 ohms	Total Speaker impedance	10,000 - 1,000 ohms
C and 600 ohms		1,000 - 500 ohms
C and 300 ohms		500 - 250 ohms.

Selection of wattage per speaker is calculated as under when connected between terminals C and 1200 ohms.

$\frac{1}{2}$ watt	20,000 ohms	4 watts	2,500 ohms
1 watt	10,000 ohms	8 watts	1,250 ohms
2 watts	5,000 ohms		

8 Watt Amplifier

VOLUME CONTROL

Separate controls are provided for each input channel and this allows individual adjustment and mixing. To increase the volume, turn the knobs clockwise.

TONE CONTROL

A combined base or treble control is provided.

Bass cut is obtained by turning the knob fully anti-clockwise until the switch operates.

Flat response is anti-clockwise until just prior to the switch operating.

Gradual Treble cut is obtained by turning the knob clockwise from the flat response position.

PRECAUTIONS

It is strongly recommended not to carry out repairs on amplifiers unless technically capable. Besides additional damage which may result from trying to tamper with an amplifier, it should always be borne in mind that if the top or bottom covers are removed, terminals carrying dangerous high voltages are exposed, sometimes even after the amplifier is disconnected from the mains supply.

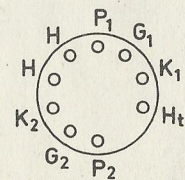
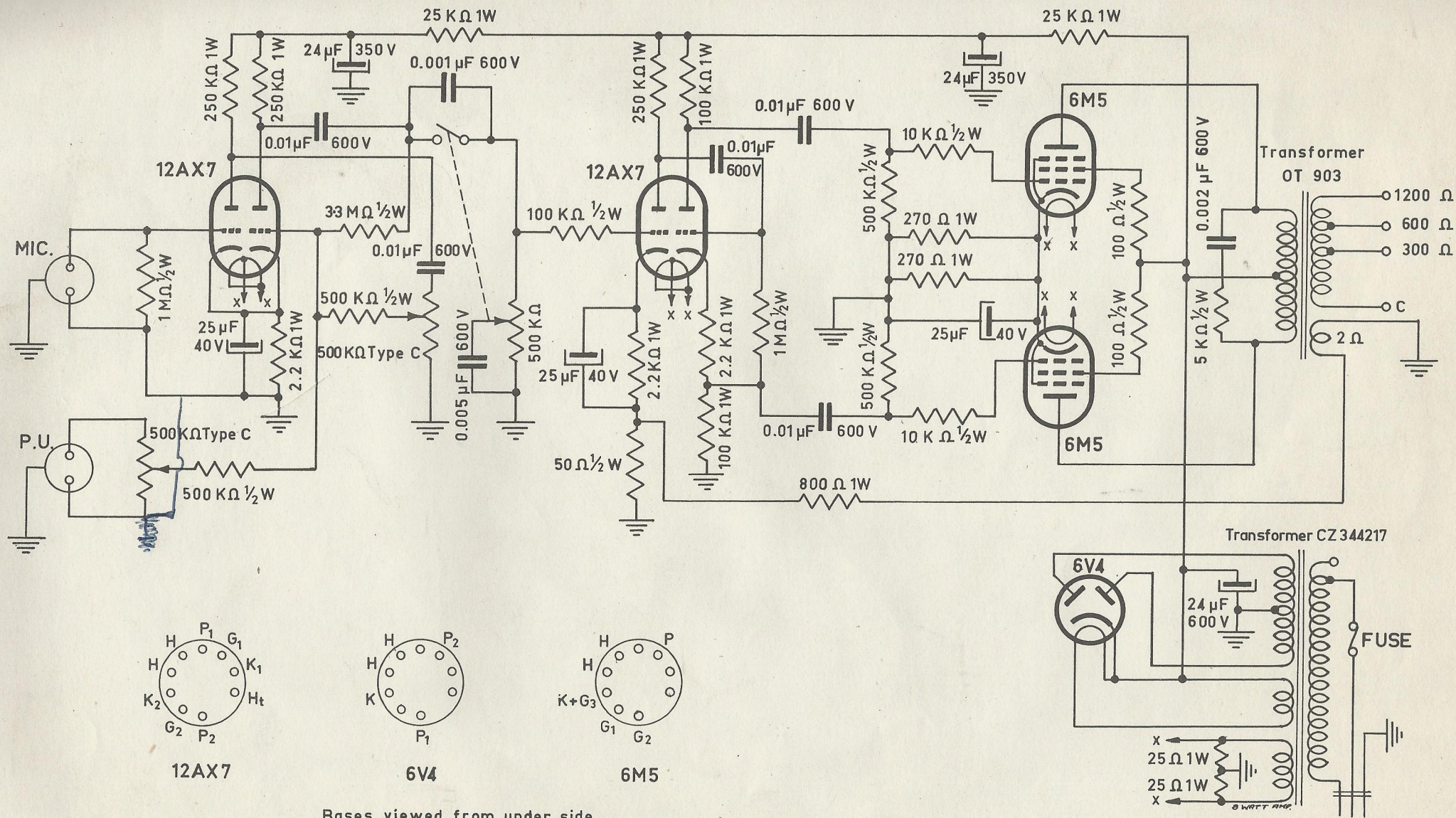
It is essential that sufficient space be allowed on all sides of the amplifier to provide efficient ventilation. Under no circumstances should anything be placed on top of the perforated cover, as this will result in overheating and subsequent damage.

NOTE:

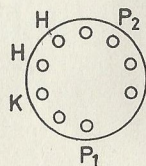
Plug numbers quoted for connections for microphone and pickup, apply to the plugs supplied with the Amplifier (Acme).

AMPLIFIER 8 WATT 230 V A.C.TEST SHEET

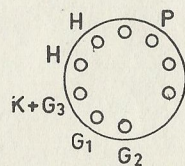
1. Plug in all valves except rectifier and switch on.
2. Connect 1200 ohm load to 1200 ohm tap.
3. Plug in rectifier and watch for H.T. shorts.
4. With tone control set for flat response, and pickup volume at minimum, connect signal of 14 MV at 1000 c/s to microphone input socket.
5. Turn up microphone volume control and check output for 100 volts at less than 5% distortion.
6. With AVOMETER on 100 volt AC range, check for 70 volts and 50 volts on the 600 and 300 ohm taps respectively.
7. Turn down microphone volume control until output is 50 volts.
8. Change generator frequency to 40 c/s. Output should now be 52 volts. Turn tone control to bass cut position. Output should now be 5 volts.
9. Change generator frequency to 10,000 c/s. With tone control at flat position output should be 53 volts. Turn tone control to full treble cut position. Output should now be 14 volts.
10. Turn down microphone volume control and turn tone control to 'flat' position. Connect 100 mV at 1000 c/s from the generator to the pickup input and ensure that it is possible to obtain 100 volts across the load resistor.
11. Disconnect generator and turn gain controls to minimum. Output should now be .2 volts.
12. Short circuit microphone input socket and turn gain controls to maximum. Output should not exceed 1 volt.
13. Tap valves and check for excessive microphony and internal short circuits.
14. With an AVOMETER the following voltages should be measured with respect to chassis; see Voltage analysis on Sheet 1.



12AX7

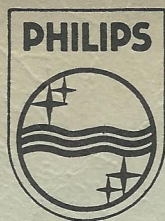


6V4



6M5

Bases viewed from under side



THIS EQUIPMENT HAS BEEN DESIGNED AND
MANUFACTURED IN AUSTRALIA

By the

electro acoustic division

of

PHILIPS ELECTRICAL INDUSTRIES PTY. LIMITED

MELBOURNE	590 Bourke Street	Phone MU6091
SYDNEY	367 Kent Street	Phone BX6486
ADELAIDE	119 Grenfell Street	Phone W 2241
BRISBANE	148 Edward Street	Phone B 2666 -7
PERTH	381 Murray Street	Phone BA3131, BA4696
HOBART	235 Collins Street	Phone B7230, B2120

FURTHER INFORMATION ON THIS EQUIPMENT CAN BE OBTAINED FROM ANY OF THE
ABOVE PHILIPS BRANCHES