

PHILIPS



INSTRUCTIONS
FOR USING

PHILIPS
MICROPHONE
PICK-UP
AMPLIFIER

TYPE 2780

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AMPLIFIER — TYPE 2780

REFERENCE NUMBERS

Type 2780 Microphone pick-up amplifier complete with one microphone connecting unit and negative grid bias battery.

Type 2782 Smoothing apparatus for use with H. T. unit.

Type 4044 Microphone connecting unit with volume control.

Type 4045 Negative grid biasing battery, 15 volts.

DESCRIPTION

In the amplifier the following Philips amplifying valves are employed: E 414, A 415, B 405, besides one or more microphone fuses for 100 milliamps, type 4384.

The Philips Amplifier No. 2780 contains a 3-stage L. F. amplifier with transformer-coupling and is intended for use in combination with a Philips 50-watt amplifier type 2761 or 2762, a 200-watt amplifier type 2730 or a 600-watt amplifier type 2770 or 2771.

This amplifier is intended solely for use as an intermediate amplifier; the output is only sufficient for headphones. It is therefore necessary that a power amplifier is also applied.

As microphone the Philips microphone type 4043 is recommended.

The amplifier offers the possibility of simultaneous connection of 3 microphones and one electrical pick-up. Ordinarily only one connecting unit is supplied. However, extra units may easily be inserted.



SOURCES OF CURRENT

A 4-volt accumulator is required for heating the filaments of the valves in the amplifier. The size of the accumulator depends upon the amount of use which is to be made of the amplifier. When the amplifier works in combination with one or more microphones, the current taken is about 1 amp. When used with an electrical pick-up alone, the filament current is only .23 amps. (see under "Change-over switch").

When the apparatus is needed for microphone amplification for 12 hours at a stretch, 12 Ah are taken from the accumulator. In this case it is necessary to use an accumulator of at least 27 Ah; during the 12 hours the amplifier is not in use the accumulator should be recharged with 1.3 amps in order to give it a full charge (30% is added to compensate losses in the accumulator). A Philips rectifier type 450 or 327 is suitable for this purpose. Probably such a lengthy operation will rarely occur; moreover, in the case of record reproduction much less filament current will be taken.

For the Philips microphone type 4043, which should preferably be operated with 6 volts, a 2-volt cell may be connected in series with the filament battery by connecting the negative pole of the 2-volt cell to the positive pole of the 4-volt battery.

As this cell supplies only approx. 30 milliamperes for the microphone current, it may be of small dimensions.

The negative grid biasing battery which is supplied with the amplifier can be clamped in the cover.

With permanent installations the use of a Philips high tension supply unit type 3002 is recommended. A smoothing apparatus type 2782 must be connected between the amplifier and the high tension supply unit.

As the anode voltage required is only 120 volts, it is possible to use an anode accumulator battery if the installation is to be transportable (see under "Fitting up"). For charging the anode battery the Philips rectifier type 1001 is recommended, whilst the Philips rectifier type 1009 can charge both anode and filament batteries.

PARTICULARS

The amplifier is provided with 2 clasps to which a strap-handle may be attached in order to facilitate transport.

The back can be opened. The lock consists of a spring catch which closes behind a pawl. The apparatus is opened by pressing this spring, which can be done by inserting one finger in the middlemost of the three holes in the lid.

A milliammeter is included in the anode circuit of the final valve for the purpose of checking whether distortion occurs. (See under "Volume control").

Every possible precaution has been taken to keep the apparatus free from parasitic noises; the first valve is a special anti-microphonic valve E 414, whilst the valves are mounted in anti-microphonic valve holders.

CONNECTING UP THE AMPLIFIER

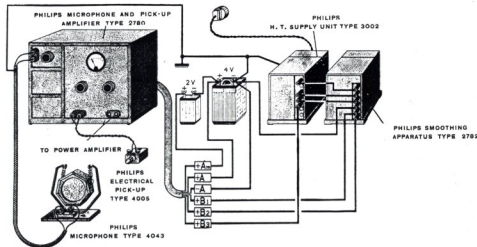


Fig. 1

If a Philips high tension supply unit type 3002 and the smoothing apparatus type 2782 are used, the connecting cable must be connected as follows:

— A	marked black,	to negative pole of the accumulator,
+ A	„ red,	„ 4 V terminal „ „ „ „
+ Am	„ green,	„ 6 V „ (+) „ „ „
+ B1	„ blue,	„ +5 of the smoothing apparatus,
+ B2	„ brown,	„ +6 „ „ „ „
+ B3	„ yellow,	„ +4 of the high tension supply unit.

Between the high tension supply unit and the smoothing apparatus the following connections have to be made:

+ 1	smoothing apparatus to —	high tension supply unit,
+ 2	„ „ „ + 2 „ „ „ „	
+ 3	„ „ „ + 3 „ „ „ „	
+ 4	„ „ „ —	accumulator.

To be earthed: — A, the earth terminal of the high tension supply unit and the covering of the lead-covered cable of the microphone system.

If, for the anode voltage, an anode accumulator battery is used, the cords marked + B1, + B2 and + B3 are led to the positive 120-volt terminal; the — terminal must be connected to the negative terminal of the 4-volt accumulator.

In the apparatus a negative grid biasing battery is clamped on to the lid by means of two springs; for the grid bias the flexible cords must be connected in the following way:

The cord marked + C to + plug hole negative grid bias battery,	} With an H.T of 120 V.
— C1 to — 4½ V plug hole negative grid bias battery,	
— C2 tot — 12 V plug hole negative grid bias battery.	

The microphone should be connected to the terminals of the connection unit (one of three small panels to the left of the appa-

ratus). The pick-up has to be connected to the left-hand terminals on the large panel (indicated by the word "Pick-up"). The right-hand holes ("amplifier") are intended for connection to the next amplifier. After the microphone there follow 3 stages of amplification; after the electrical pick-up, two.

CHANGE-OVER SWITCH

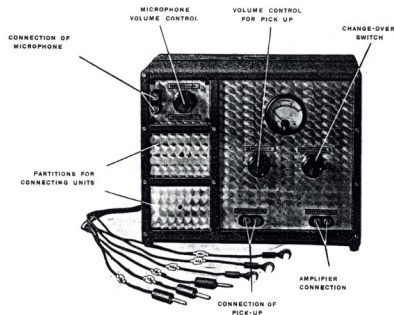


Fig. 2.

The knob on the right of the large panel (see fig. 2) operates the change-over. In the left-hand position ("Mic.") microphone(s) and pick-up are connected; in the right-hand position ("Pick-up") only record reproduction is possible, in which case the filament of the first valve is switched off. In order to put the entire apparatus out of action it is only necessary to place the switch in the middle position ("O") and to break the microphone connection(s). When a high tension supply unit is used, this must be switched off *first*.

VOLUME CONTROL

Every connecting unit is provided with a knob for controlling the volume (see fig. 2); the volume of every microphone can be separately adjusted in this way. By turning the knob to the right the volume is increased; by turning it fully to the left the microphone is put out of action. However, the microphone current is *not* interrupted. The left-hand knob on the large panel is the volume control for the electrical pick-up. The built-in milliammeter normally indicates approx. 10 milliams. In the event of overloading, the pointer commences to sway and the intensity must be decreased by means of the volume control.

The low-frequency alternating currents produced are sufficient only for reproduction at good headphone strength. If a Philips 50-watt amplifier follows the amplifier, it must be a type 2761 or 2762 (fitted with intermediate amplifier). The use of a Philips 10-watt amplifier without additional apparatus is not possible.

For record reproduction by one or two loudspeakers at an intensity suitable for use in a room, the Philips pick-up amplifier type 2779 or 2781 should be preferred.

INSERTING ADDITIONAL CONNECTING UNITS

The amplifier is supplied with one connecting unit but each of the three partitions on the left side of the apparatus offers room for one unit. An extra unit is inserted as follows: — (see fig. 3):

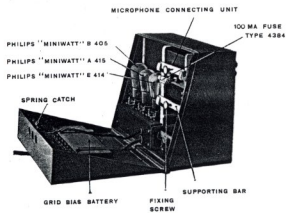


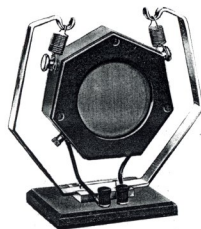
Fig. 3.

When the apparatus is opened, loosen the large middle-edged screw-head in one of the empty partitions. The small supporting bar can then be lifted out of the rabbets and the panel removed. Thereupon the unit must be slid into the partition, automatically establishing connection by means of three contact-springs which press against the contact studs of the unit. When the supporting bar and fixing screw are replaced, the new unit is ready for use.

In this way three microphones may be connected simultaneously; the volume obtained from the separate microphones is then somewhat less. Each unit contains an input transformer, which is adapted to the Philips microphone type 4043, and a volume control. At the back there is also a 100-milliamper fuse type 4384 for protection of the microphone.

FITTING UP

The amplifier can be installed anywhere, but preferably not too far from the microphone(s). The connections from micro-



PHILIPS MICROPHONE TYPE 4043 WITH
PHILIPS TABLE STANDARD TYPE 4063.

phone to amplifier should be made with lead-covered or armoured cable, the covering of which is earthed. For the connection of the

pick-up ordinary flexible cord may be used, but armoured cable is preferable.

It may happen that owing to various circumstances the power amplifiers have to be placed at a great distance from the microphone. In such cases the amplifier type 2780 must be installed near the microphone. The connection between the amplifiers, especially in such a case, requires a lead-covered or armoured cable with earthed covering.

The distance between microphone and loudspeaker(s) should be such that acoustical reaction cannot occur, as this causes howling. This can be eliminated by shifting the position of the loudspeakers or, in many instances, by slightly turning them.



PHILIPS MICROPHONE TYPE 4043 WITH
PHILIPS MICROPHONE STANDARD TYPE 4051