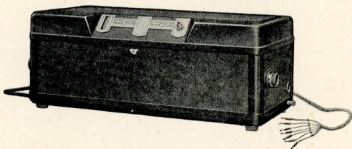


PHILIPS

RECEIVING SET

MODEL 2509



Instructions for use



ARCHIEF
DOCUMENTATIEDIENST

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voor de Historie van de Radio

INSTRUCTIONS FOR USE OF

PHILIPS

RECEIVING SET

MODEL 2509

These directions have been so compiled that the first part refers only to the **installation** of the receiving set.

Instructions for **operation** of the apparatus will be found on page 7.

Philips four-valve receiving set 2509 has been specially constructed to operate from batteries.

It should be equipped with the following Philips "Miniwatt" valves only:

- A 442 R H.F. screen-grid valve with base A 35,
- A 442 R H.F. screen-grid valve with base A 35,
- A 415 detector valve with base A 32,
- B 443 power valve (pentode) with base A 35.

Moreover, this receiver contains Philips lamp 8048 which illuminates the tuning dial as soon as the set is switched on.

Two sockets are provided for connection of a pick-up to reproduce record music through the loudspeaker.

Opening the set automatically switches it off. The lid can be locked by means of a key to prevent its being opened by unauthorised persons.

Accessories Required

It is essential to use the proper accessories to obtain the best results with this receiver. Be sure to use the best batteries; they will prove to be the cheapest.

Loudspeaker

This receiving set is specially designed for use with a moving-coil loudspeaker **without** input transformer, such as Philips loudspeaker model 2008 or 2013, which has to be connected to the set by means of the sockets "L2" on the left (see fig. 7).

It is, however, also possible to use an electro-magnetic loudspeaker, such as Philips loudspeaker model 2003, 2007, 2016 or 2017, the sockets marked "L1" being provided for its connection. A moving-coil loudspeaker, if provided with an input transformer, can also be connected "L1".



Fig. 1
Transformer connected

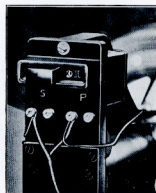


Fig. 2
Transformer disconnected

If one already possesses a Philips moving-coil loudspeaker, either 2009 or 2011, **with** input transformer, it is advisable to disconnect its transformer and to connect the loudspeaker to the sockets "L2" specially provided for the purpose.

The transformer is disconnected by placing one of the end eyelets of the connecting flexible cord, together with one of the wires leading from the cone, under either of the terminals "P", and the other eyelet and wire under one of the terminals "S" of the transformer (see figs. 1 and 2).

"A"-battery

This battery is required for supplying the filament current and should consist of a 2-cell storage battery or of **two** storage battery cells of 2 volts each connected in series*. As the filament current is very low - a special advantage of Philips "Miniwatt" valves - there is no necessity to buy a battery with an extremely large capacity.

"B"-battery

This battery is required for supplying the anode voltage (approx. 180 volts). For this purpose 4 batteries of 45 volts each connected in series* may be used. These batteries should preferably be of the large-capacity type. The anode voltage can also be obtained from a number of storage batteries connected in series* and totalling 180 volts.

"C"-battery

A "C"-battery must be used to provide the required grid bias (at least 18 volts for the power valve). As this battery furnishes no current an ordinary dry battery will be found very suitable. This battery, the voltage of which should amount for instance to $22\frac{1}{2}$ volts, must have enough tappings for derivation of exactly the required grid biases.

Voltmeter

In order to check the voltage of the various batteries the use of a reliable voltmeter is essential.

*) Connecting batteries in series is effected by connecting the positive terminal of the first battery to the negative of the second; the positive terminal of the second battery should in turn be connected to the negative of the third battery, etc. The negative of the first battery and the positive of the last battery will then constitute the negative and positive terminals to be connected to the corresponding flexibles of the receiver.

Aerial

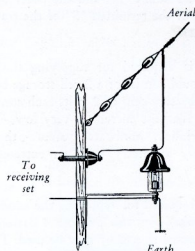


Fig. 3

Earth

Very satisfactory results are obtainable with a small outdoor aerial, but an indoor aerial may also give good results. When, however, local interferences (such as are caused for instance by an electric motor) are present, the use of an outdoor aerial may be found preferable. With an outdoor aerial the use of a Philips aerial discharger No. 4382 is strongly recommended - this will safeguard the set against heavy atmospheric discharges. This aerial discharger must be installed as indicated in fig. 3.

A very good earth is obtained by driving an earthing tube into damp soil or by burying a metal plate in a vertical position at a depth where damp soil is found. An efficient earth is also obtained by making a good contact with a clean main water-pipe or with the earth connection of a lightning arrester. Gas mains or central heating systems should not be used for this purpose. The earth connection should be as short and direct as possible.

Inserting the valves

Open the lid after the key has been turned to the right. The screening cap at the inside must then be removed; this is done by pushing aside the clamp shown in fig. 4. Carefully remove all packing and push the valves well home in their sockets.

Make sure that the screening cap is re-inserted in its correct position in order to prevent parasitic couplings. To make this possible, it has been provided with guiding pins which fit into corresponding holes. Then close the lid.

Installation

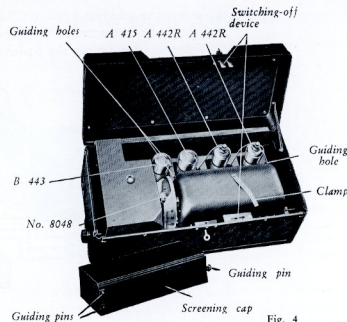


Fig. 4

Connections

Connect the earthing lead to the screw terminal and connect the aerial, by means of the plug supplied, to the socket at the right-hand side of the apparatus (see fig. 6). Then connect the loudspeaker to the sockets "L1" or "L2" at the left (see "Loudspeaker" and fig. 7). The flexible cord should be connected in the following manner:

- A to the negative terminal of the filament current supply ("A"-battery). This terminal should moreover be connected to the positive terminal of the grid bias supply ("C"-battery).
- +A to the positive terminal of the filament current supply ("A"-battery).
- B to the negative terminal of the anode voltage supply ("B"-battery).
- +B to the positive terminal of the anode voltage supply ("B"-battery).

—C₁ to the negative grid bias supply ("C"-battery). This lead should be connected to the terminal which is 1·5 volts negative against the positive terminal of this battery.

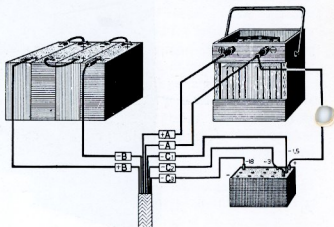


Fig. 5

—C₂ to the negative grid bias supply ("C"-battery). This lead should be connected to the terminal which is 3 volts negative against the positive terminal of this battery.

—C₃ to the negative grid bias supply ("C"-battery). This lead should be connected to the terminal which is 18 or 21 volts negative against the positive terminal of this battery. If connection is made to the "—21" socket the anode current will be lowest, thus giving the "B"-battery a longer life. The output will, however, be slightly larger if connection is made to the "—18" socket.

How to operate the set

Switching on

The set is switched on by pushing the switch downwards.

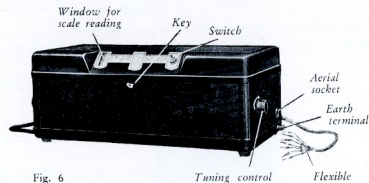


Fig. 6

Tuning

In order to tune in a station, first turn the volume control on the left as far as it will go in the direction of the arrow indicated in fig. 7, and then turn the tuning control on the right. The wavelength is increased by turning the illuminated scale to a higher position by means of this control.

The correct tuning position for a station will be found by adjusting to maximum volume by means of the tuning control.

If, whilst tuning in a station, volume is uncomfortably loud, the volume control on the left (see fig. 7) should be set to weak by turning it slightly in an anti-clockwise direction. After the set has been tuned, volume should be finally increased to the desired strength by means of the volume control.

If a powerful station is tuned in while the volume control is set to loud, an incorrect tuning adjustment with consequent distortion will probably result.

Once the scale reading for a certain station has been found, it should be recorded on the chart accompanying this booklet. Stations so recorded can be reverted to at any time by reference to the noted adjustments.

Stations which can be received

Reception is possible of all stations of sufficient power operating on wavelengths between 200 and 600 metres. Many smaller stations, however, are local transmitters whose normal operating range is comparatively small. Reception of these stations is not always reliable.

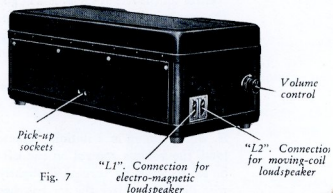
Tone filter 4006

If the tone character of certain stations is found too shrill, it can be modified by using tone filter 4006, supplied with the set.

Also for the suppression of disturbing noises tone filter 4006 will be found pre-eminently suitable.

If a tone filter is used, it must always be inserted in connection "L1", irrespective of the type of loudspeaker used.

Even when using a moving-coil loudspeaker without input transformer connected to "L2", the tone filter should be inserted in "L1".



When using an electro-magnetic loudspeaker or a moving-coil speaker with input transformer (not advisable however: see "Loudspeaker") connected to "L₁", the tone filter must be inserted between loudspeaker and receiving set. The tone filter has to be placed on the loudspeaker plug and subsequently inserted in "L₁".

Use of a pick-up

With this receiver a pick-up can be used to reproduce record music through the loudspeaker. Music obtained

in this way will be of much better quality than when reproduced by means of a phonograph with an ordinary soundbox.

Sockets for connection of a pick-up will be found at the rear of the set (fig. 7).

Turn the volume control to the fullest extent in the direction opposite to that indicated by the arrow in fig. 7.



Fig. 8

The use of Philips pick-up equipment 4040, consisting of Philips pick-up with arm and base 4065 and Philips volume control 4041 is strongly recommended. When reverting to radio reception disconnect both pick-up or volume control leads **from the receiver.**

Switching off the set

The set is switched off by pushing the switch upwards (see fig. 6).

If the set does not operate

When the foregoing instructions have been exactly carried out, the receiver should give entire satisfaction; the set has been thoroughly tested before being packed. If, after being installed, the set does not work quite satisfactorily, the following possibilities should be considered:

- 1) The batteries, especially the "C"-battery, may not have been connected exactly as indicated.
- 2) The loudspeaker may be connected to the wrong sockets.
- 3) The pick-up leads may have been left connected.
- 4) The aerial may have been earthed - perhaps by means of an aerial-earthing switch.
- 5) The batteries may be run down; - the "A"-battery should not read less than 3.6 volts and the "B"-battery should not drop below 75% of its original value, the set being switched on. The "C"-battery must be replaced as soon as any considerable voltage drop can be detected.
- 6) The receiver may have been tuned wrongly.
- 7) The valves may make poor contact; - push them well home in their sockets.

Before opening the set, it is strongly advisable to cut out the high tension and to discharge the fixed condensers incorporated in the set. This is done by disconnecting the "+B"-lead from its terminal and then switching on the filament current a few seconds by pushing down the switch (fig. 6) for a moment. Then the lid may be opened after the key has been turned to the right.

If a valve is suspected, it should be replaced by another of the same type (see "Inserting the valves", page 4).

GUARANTEE

Philips' Radio guarantee the set against any manufacturing defect.

We no longer guarantee any apparatus the seals of which have been broken or tampered with.



**WITH THIS PHILIPS RECEIVER USE A
PHILIPS LOUDSPEAKER AND PHILIPS
PICK-UP EQUIPMENT!**

