PHILIPS

Fully transistorised cinema amplifier equipment Type "O3"

This equipment is suitable for the reproduction of:

- 35-mm films with optical sound track, on two or three projectors,
- three arbitrary non-sync. sound sources, e.g. a gramophone, a microphone and a tape recorder.

Principal features

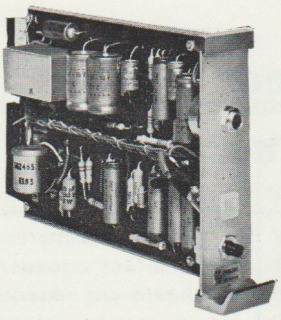
- Perfect sound reproduction.
- Maximum reliability.
- Small dimensions.
- Very easy operation.
- Minimum maintenance.
- Built-in checking devices.
- Great versatility.
- Suitable for:
  - all conventional mains voltages and frequencies,
  - remote control and automation,
  - use under tropical conditions.
- Easily adaptable to projectors and loudspeakers of other makes.

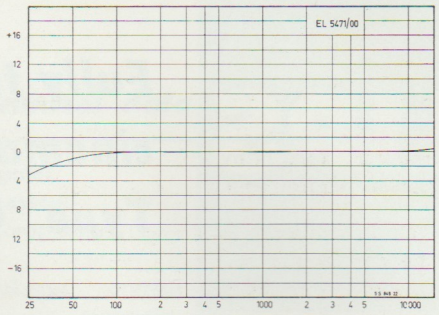
Cinema

Amplifier equipment "O3"

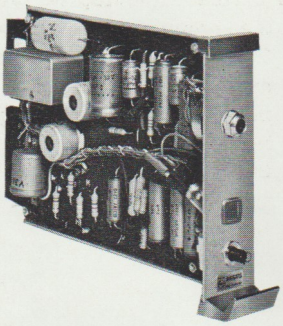
PHILIPS

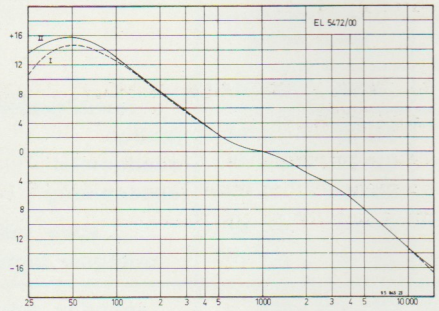
Cat. A-III-20-E



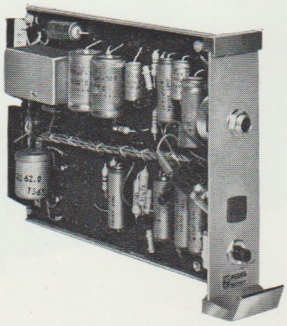


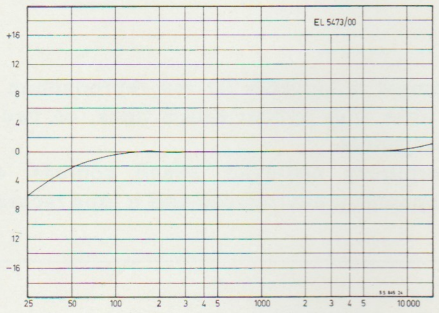
Optical pre-amplifier



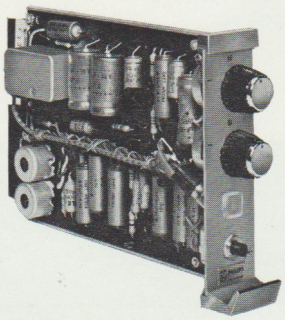


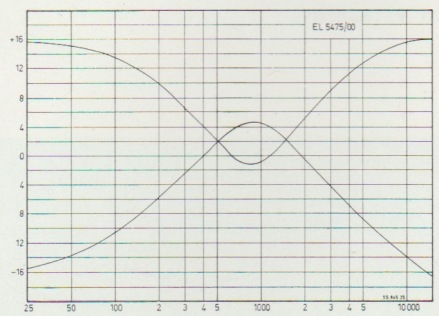
Gramophone pre-amplifier





Microphone pre-amplifier





Filter unit

Perfect sound reproduction

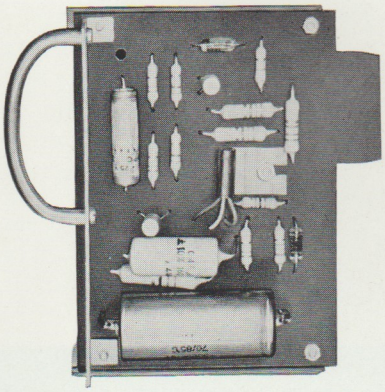
In this equipment each soundhead and each non-sync. sound source has its own pre-amplifier with adjustable gain. The sound volume of all the signals can therefore be set accurately to the same level. Moreover, each channel has its own filter unit. Consequently, the frequency responses of all the channels can be adjusted independently of each other so as to provide the best possible adaptation to the prevailing acoustics of the auditorium.

At the full output of 40 W the distortion is less than 1.5 %. The frequency response of the output amplifier is flat from 40 to 12,000 c/s. The hum-and-noise level is very low.

The supply voltages for the photocell, the exciter lamp, the pre-amplifiers and the filter units are stabilised, which makes the sound reproduction independent of mains-voltage fluctuations.

Change-over from one projector to the other takes place behind the pre-amplifiers at a level of 80 mV, 5000 Ω and without the use of relays in the signal leads. In this equipment all the switching operations in signal leads are effected with the aid of LDRs (light-dependent resistors), which assures click-free operation.

An LDR unit consists of a cadmium sulphide cell and a 6-V lamp. When the cell is not illuminated, its resistance is very high; when the cell is illuminated, it drops to a low value. Cells of this kind are inserted in series with the outputs of all the pre-amplifier and filter units. A signal is allowed to pass by the switching on of the LDR lamps of all the units in its path, which is effected by means of flip-flops. These are transistorised switching elements without moving parts.



Flip-flop

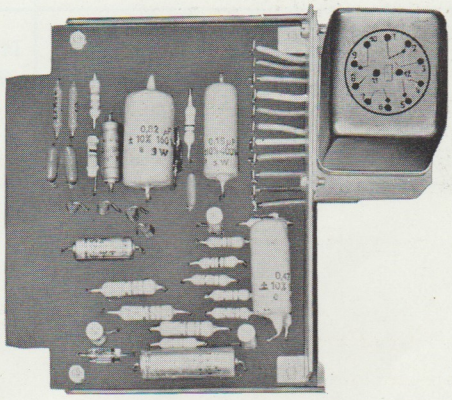
Maximum reliability

With this equipment utmost reliability — so important for cinemas — is achieved by means of:

- LDRs instead of relays,
- transistors instead of valves,
- printed circuits instead of the conventional wiring,
- plug-in units (100 % reserve).

The LDRs, unlike relays, contain no moving components nor soiling contacts. The 6-V LDR lamp operates at a voltage of 5 V; because of this undervoltage it has a very long life.

Only for change-over of the exciter lamp and for the dowser supply is one relay per projector used. A complete equipment therefore contains three relays at the most. These are housed in air-tight boxes; after a life test, during which they were operated 250,000 times, they did not show any measurable wear.



Relay unit

Transistors contain no components subject to deterioration, such as the filament of a valve, and hence their life is many times longer.

The use of printed wiring excludes short-circuits, such as may occur in normal wiring because of a worn insulation. Moreover the soldering spots are much more reliable.

Each equipment comprises spare plug-in units for the pre-amplifier, the output-amplifier, the filter, the supply, the relay and the flip-flop units.

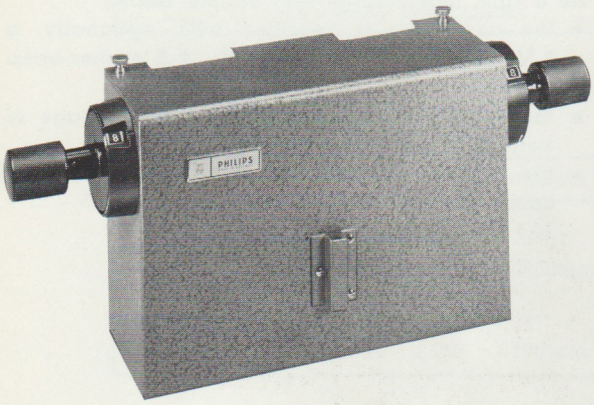
Small dimensions

Because of the use of transistors and of printed wiring, this equipment is much smaller than its predecessors. Consequently it fits easily even into rather small projection booths. The dimensions are indicated on the back page.

Very easy operation

Near each sound source there is a push-button. Simply pressing it will open the path for the relevant sound signal and simultaneously block the paths of the other signals. The push-buttons near the projectors serve at the same time for opening the relevant dowser so that picture and sound are changed over simultaneously from one projector to the other.

The equipment is switched on by means of the master mains switch and the volume is adjusted with the aid of the main volume control.



Main volume control

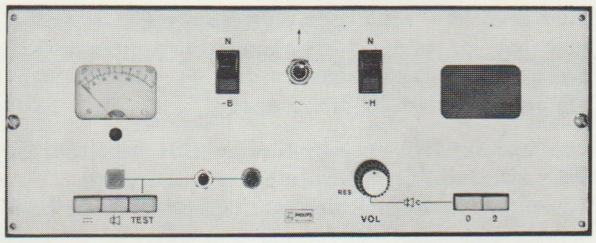
Minimum maintenance

As this equipment contains only three relays (one being a spare) and no valves, maintenance involves nothing more than keeping it dust-free.

Built-in checking devices

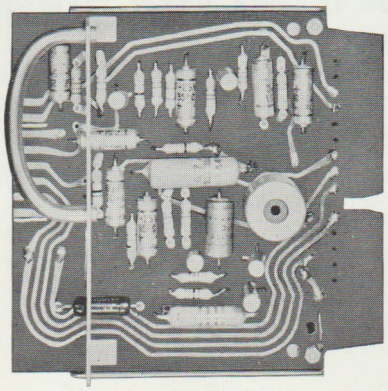
Normally the spare output amplifier is used as a monitor amplifier to which the loudspeakers near each projector (two or three) are connected. The sound volume of the monitor speakers depends on the position of the main volume control but can in addition be adjusted to the desired level by a separate control on the control panel.

Behind the control panel there is an oscillator/measuring amplifier, also constructed as a plug-in unit. All the pre-amplifiers, filter units and output amplifiers are provided with a test button. When that is pressed the oscillator supplies a 1000 c/s signal to the input of the relevant unit and the output of the latter is connected to the measuring instrument via the measuring amplifier. The reading on the meter must always be 0 dB ± 1 dB, so that no mistakes are possible.



Control panel

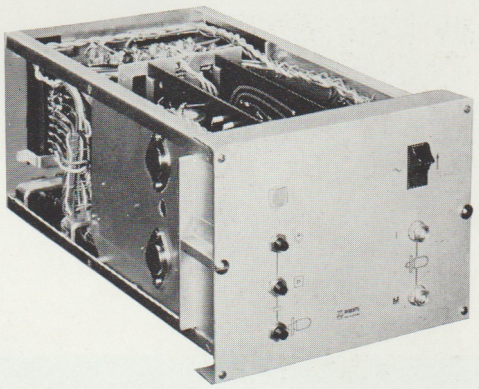
On the measuring instrument can also be read the photocell voltage, the exciter-lamp current and the supply voltages for the pre-amplifiers after the relevant test button on the power-supply unit has been pressed.



Oscillator/measuring amplifier

Great versatility

The equipment always contains three optical pre-amplifiers and three relay units, so that with normal outfits comprising two projectors there is always a spare optical pre-amplifier and a spare relay unit. A further advantage is that an additional 35-mm or 16-mm projector for optical sound can be connected without modification of the equipment.



Power-supply unit

Moreover, the equipment can easily be extended later on for four or six-channel magnetic sound reproduction. The control panel is already completely equipped for this purpose.

The microphone pre-amplifier is also suitable for the connection of a tape recorder or a gong.
The gramophone pre-amplifier can be used for both crystal and magnetodynamic pick-ups.

Mains voltages and frequencies

The equipment is suitable for a.c. mains with a rated voltage of 110 - 125 - 220 - 250 V and with a frequency of 40 to 100 c/s, i.e. for practically all existing mains.

Suitable for use under tropical conditions

The equipment is suitable for indoor use at an ambient temperature of up to 113° F (45° C) and an air humidity of up to 100 %.

Facilities for remote control and automation

A great advantage of the flip-flops is that any desired number of remote controls or contacts of an automatic programme selector can readily be connected to them, in parallel with the push-buttons of the relevant sound sources. The connecting cables need not be screened; any two-core cable can be used.

Matching to projectors and loudspeakers of other makes

As a rule, matching is very simple since:

- the equipment is supplied with, optionally, a 5 V - 4 A or 6 V - 5 A or 9 V - 4 A exciter-lamp supply;
- the equipment can supply a dowser voltage of both 90 V d.c. and 6 V a.c.;
- the output impedance of the output amplifiers can be set as required to 250 - 125 - 62.5 - 31 - 15.5 - 2.5 Ω.

Survey of the various versions

TYPE	UNIT	EL 5370/.. /30	/32	/33	/34
EL 5471	optical pre-amplifier	3	3	3	3
EL 5472	gramophone pre-amplifier	1	—	—	1
EL 5473	microphone pre-amplifier	1	2	3	2
EL 5475	filter unit	3	3	4	4
EL 5476	oscillator/measuring amplifier	1	1	1	1
EL 5477	output amplifier	2	2	2	2
EL 5478	power-supply unit	2	2	2	2

With all versions the main volume control EL 5462/00 is supplied.

Dimensions and weights

Component	Height x width x depth	Weight
Amplifier assembly EL 5370/30 to /34	25" x 15" x 15½" 630 x 380 x 395 mm	145 lb 66 kg
Main volume control EL 5462/00	8¼" x 15¼" x 4" 270 x 390 x 100 mm	13 lb 6 kg

Technical data

	voltage	impedance
Inputs:		
photocell	6 mV	20,000 Ω
microphone	1 mV	⩾ 2100 Ω from 100-20,000 c/s
pick-up: crystal	300 mV	⩾ 50,000 Ω
magneto-dynamical	30 mV	⩾ 40,000 Ω
Output of the output amplifier:		
power	40 W	
voltages	100 - 70 - 50 - 35 - 25 - 10 V	
impedances	250 - 125 - 62.5 - 31 - 15.5 - 2.5 Ω	

	noise level		max. distortion at
	average	max.	1000 c/s
Pre-amplifiers:			
optical	- 64 dB	- 60 dB	0.1 %
microphone	- 65 dB	- 60 dB	1 %
gramophone	- 70 dB	- 65 dB	1 %
Filter units	- 76 dB	- 70 dB	0.25 %
Output amplifier	- 77 dB	- 72 dB	1.25 %

Mains voltages ..	100 - 125 - 220 - 250 V
Mains frequencies	40 to 100 c/s

Data subject to change without notice

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