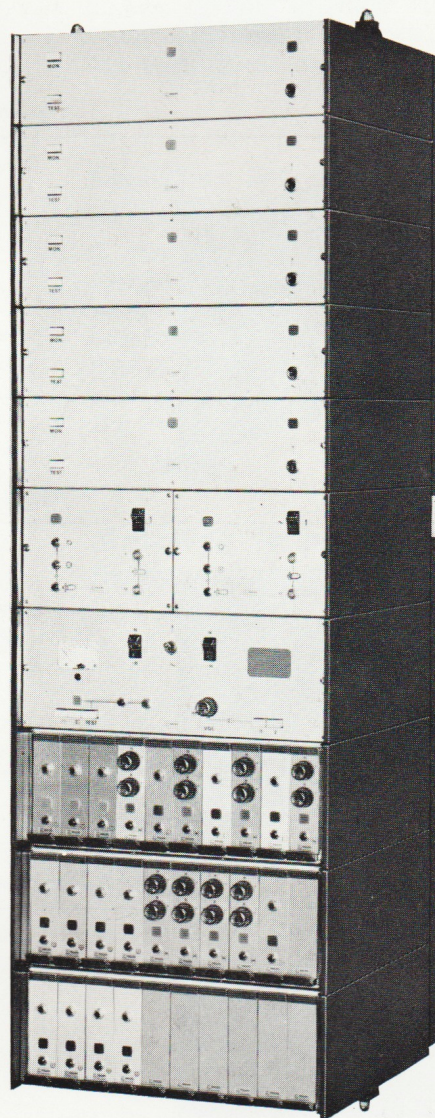


PHILIPS

Fully transistorised cinema amplifier equipment Type "OMA 4"



This equipment is suitable for the reproduction of:

- 35-mm films with optical sound track,
- 35-mm films with four magnetic sound tracks,
- three arbitrary non-sync. sound sources, e.g. gramophones, microphones or tape recorders.

Principal features

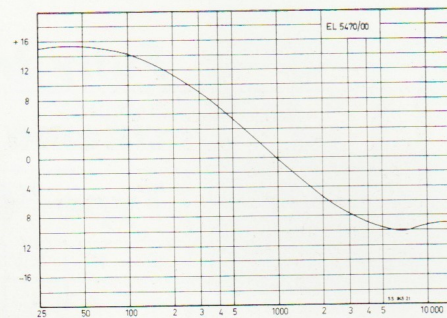
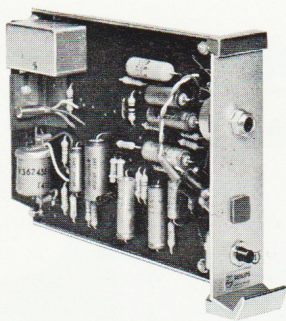
- Perfect sound reproduction.
- Maximum reliability.
- Small dimensions.
- Very easy operation.
- Minimum maintenance.
- Built-in checking devices.
- Great versatility.

- 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.

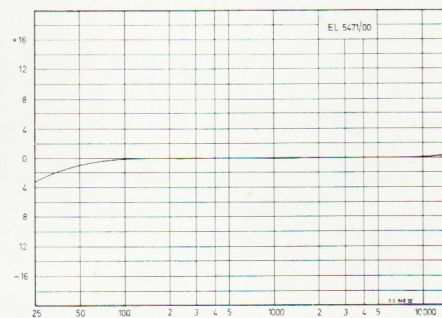
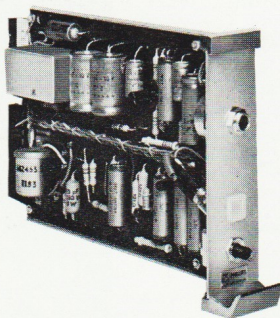
Cinema

Amplifier equipment "OMA 4"

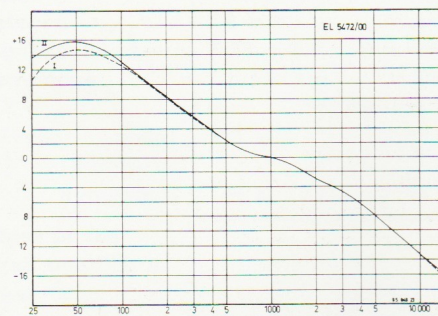
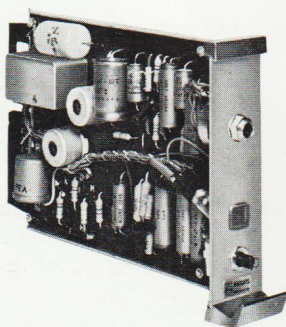




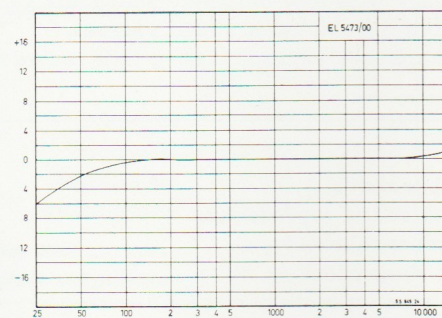
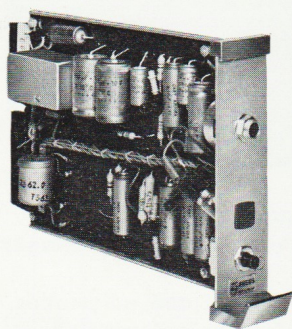
Magnetic pre-amplifier



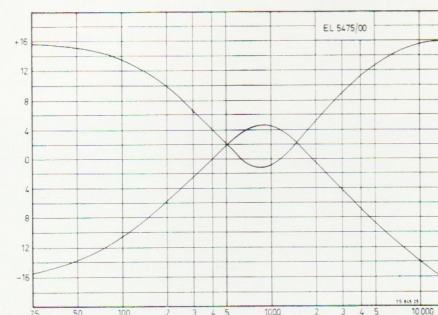
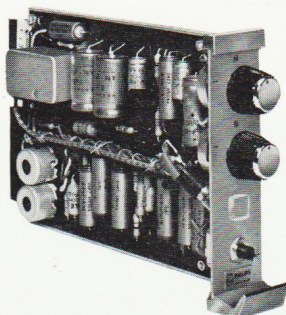
Optical pre-amplifier



Gramophone pre-amplifier



Microphone pre-amplifier



Filter unit

Perfect sound reproduction

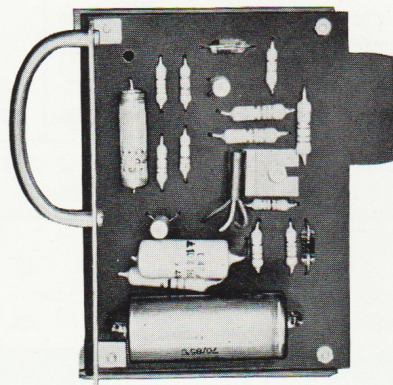
In this equipment each sound track on the film in each projector, and each non-sync. sound source, has its own pre-amplifier with adjustable gain. The sound volume of all the signals can therefore be set accurately to the same level. Moreover, each film channel and each non-sync. sound channel has its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

Moreover, the circuiting is such that optical sound tracks are always reproduced via the output amplifiers and loudspeakers of channels 1-2-3. At the full output of 40 W per channel the distortion is less than 1.5 %. The frequency response of the output amplifiers 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 and matching to the sound system on the film take 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



Flip-flop

of flip-flops. These are transistorised switching elements without moving parts.

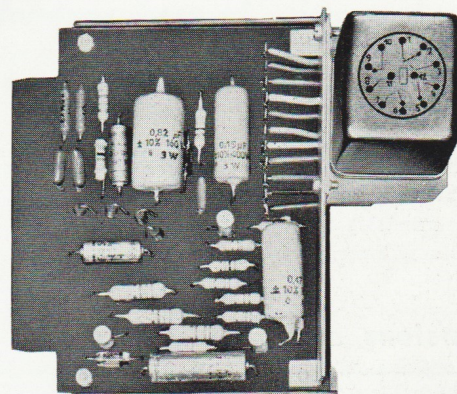
Maximum reliability

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 under-voltage it has a very long life.

Only for change-over of the exciter lamp and for the dower 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 plug-in spare 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

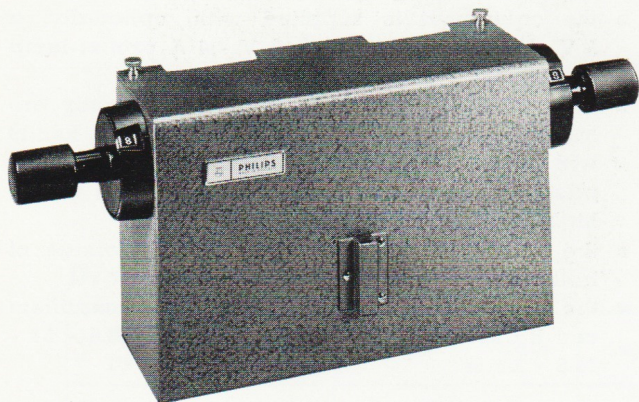
predecessors. Consequently it even fits easily into rather small projection booths. The dimensions of the different versions are indicated on the back page.

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 dowsers so that picture and sound are changed over simultaneously from one projector to the other.

A preselector switch near each projector makes it possible to choose the desired sound system (optical or magnetic) before change-over. With the Philips projectors, this switch is operated automatically by the film itself, so that the operator need not bother about it.

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

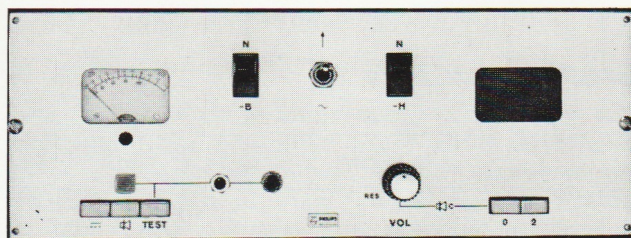
Minimum maintenance

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

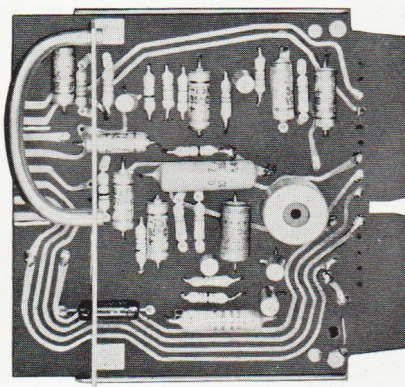
Normally the spare output amplifier is used as a monitor amplifier to which the loudspeakers near each projector (two or three) are connected. The sound volume of the monitor speakers depends on the position of the main volume control but can in addition be adjusted to the desired level by a separate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

trol on the control panel. On this panel there are also two push-buttons, "2" and "0". When button "2" is pressed, channel 2 (central loudspeaker group behind the screen) is monitored continuously. Optionally the circuiting can be arranged so that when button "2" is pressed the mixed output of the four channels is reproduced by the monitor loudspeakers. When button "0" is pressed any arbitrary channel can be monitored separately whilst, moreover, the output can be read on the dB-scale of the measuring instrument on the control panel.



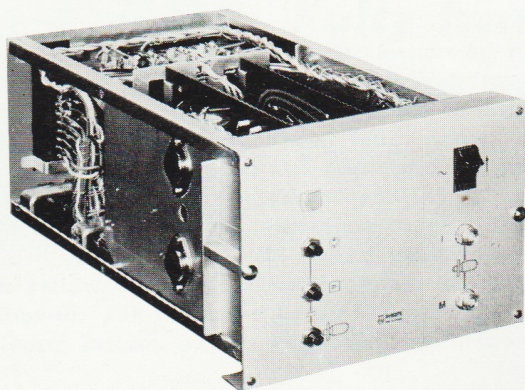
Control panel

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 $0 \text{ dB} \pm 1 \text{ dB}$, so that no mistakes are possible.



Oscillator/measuring amplifier

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.



Power-supply unit

Great versatility

The equipment always contains three optical pre-amplifiers, three relay units and eight magnetic pre-amplifiers, 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.

On request the equipment can also be supplied for optical and four-track magnetic sound with three 35-mm projectors. Moreover, it can later on easily be extended for six-channel magnetic sound.

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 95° F (35° C) and an air humidity of up to 100 %. For higher temperatures — up to 113° F (45° C) — an additional ventilating unit will be built in.

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 magnetic pre-amplifiers, which normally are suitable for Philips magnetic scanning heads with a self-inductance of 5 mH, can also be supplied with their inputs adapted to clusters with a high self-inductance;
- the equipment can supply a dowsing 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	EQUIPMENT EL 5372/.. op to 95° F (35° C) *)											
		for two projectors						for three projectors					
		/20	/21	/22	/23	/24	/25	/30	/31	/32	/33	/34	/35
EL 5470	magnetic pre-amplifier	8	8	8	8	8	8	12	12	12	12	12	12
EL 5471	optical pre-amplifier	3	3	3	3	3	3	3	3	3	3	3	3
EL 5472	gramophone pre-amplifier	1	2	—	—	1	2	1	2	—	—	1	2
EL 5473	microphone pre-amplifier	1	—	2	3	2	1	1	—	2	3	2	1
EL 5474	12-kc/s unit	1	1	1	1	1	1	1	1	1	1	1	1
EL 5475	filter unit	7	7	7	8	8	8	7	7	7	8	8	8
EL 5476	oscillator/measuring amplifier	1	1	1	1	1	1	1	1	1	1	1	1
EL 5477	output amplifier	5	5	5	5	5	5	5	5	5	5	5	5
EL 5478	power-supply unit	2	2	2	2	2	2	2	2	2	2	2	2

With all versions the main volume control EL 5463/00 is supplied.

*) For ambient temperatures up to 113° F (45° C) a ventilating unit EL 5486 is added. The type numbers are then:
EL 5372/40 to /45 and /50 to /55 instead of
EL 5372/20 to /25 and /30 to /35.

Technical data

Inputs: photocell magnetic head .. microphone pick-up: crystal magneto- dynamical	voltage	impedance	
	6 mV	20,000 Ω	
	0.35 mV	for 5 mH cluster	
	1 mV	≥ 2100 Ω	
		from 100-20,000 c/s	
	300 mV	≥ 50,000 Ω	
	30 mV	≥ 40,000 Ω	
Output of the output amplifiers: power voltages impedances	40 W		
	100 - 70 - 50 - 35 - 25 - 10 V		
	250 - 125 - 62.5 - 31 - 15.5 - 2.5 Ω		
Pre-amplifiers: optical magnetic microphone gramophone	noise level		max. dis- tortion at 1000 c/s
	average	max.	
	- 64 dB	- 60 dB	0.1 %
	- 57 dB	- 54 dB	0.2 %
	- 65 dB	- 60 dB	1 %
	- 70 dB	- 65 dB	1 %
Filter unit	- 76 dB	- 70 dB	0.25 %
Output amplifiers	- 77 dB	- 72 dB	1.25 %
Mains voltages ..	100 - 125 - 220 - 250 V		
Mains frequencies	40 to 100 c/s		

Dimensions and weights

Component	lb	kg	height	width	depth
Equipment EL 5372/..					
/20 to /25 } /30 to /35 }	273	124	48" } 1225 mm }	15" }	15 3/4" }
/40 to /45 } /50 to /55 }	295	134	54" } 1365 mm }	380 mm }	400 mm }
Volume control EL 5463/00	13	6	8 1/4" } 210 mm }	15 1/2" } 390 mm }	4" } 100 mm }

