

PROFESSIONAL CYBERNETIC SOUND EQUIPMENT

SERVO-SOUND[®]
CYBERNETIC HI-FI

INTRODUCTION

This brochure describes in detail the high fidelity Servo-Sound systems available for public installations.

You will discover the inherent advantages of Servo-Sound.

You will realise that the cybernetic sound concept offers possibilities previously unattainable with traditional equipment.

Servo-Sound is different. It is gaining widespread acceptance as a new sound reproduction technique, here as well as in other countries.

In fact, Servo-Sound installations are operating in many major cities. In most cases, they have been selected after close study and comparison by music and acoustic experts.

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A FEW WORDS ABOUT THE SERVO-SOUND SYSTEM

Before Servo-Sound, true high fidelity sound reproduction was associated with costly, complex equipment and voluminous loudspeaker cabinets.

Big dimensions were essential to limit "colouration" and "sound lag" effects from conventional loudspeakers.

CYBERNETICS AT THE SERVICE OF HIGH FIDELITY

Today, thanks to Cybernetic Sound*, the old impression "*big dimensions equals better fidelity*" is no longer true. Cybernetic techniques immediately suppress all loudspeaker cabinet resonances, meaning that enclosure dimensions have no effect on the quality of reproduction.

This explains why Servo-Sound speakers have such small dimensions: 18 x 26 x 28 cm - less than 10 dm³!

The cybernetic feedback circuit is inserted between the amplifier and speaker in each acoustical cabinet. This feedback circuit does all of the following

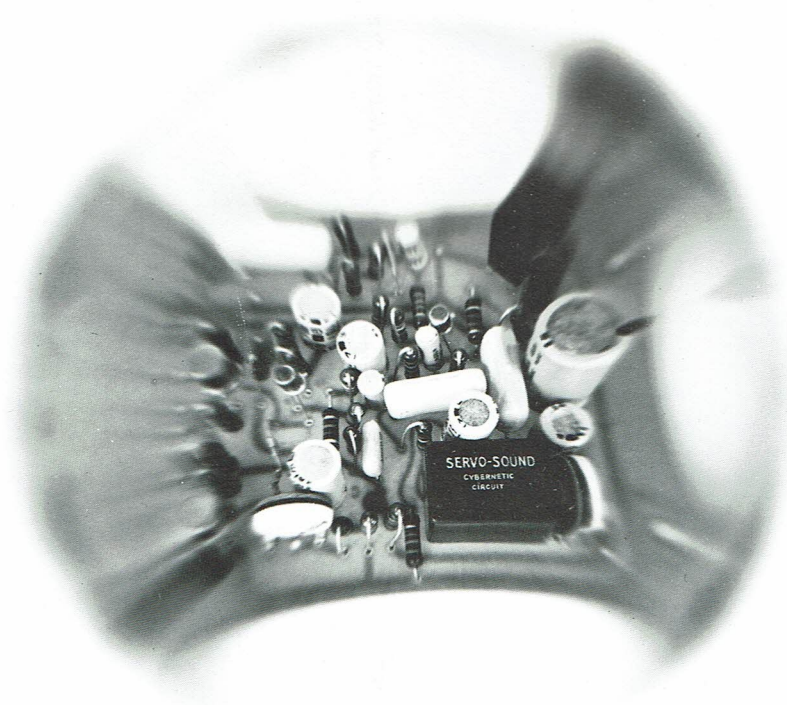
- measures the speaker diaphragm oscillation
- compares this measurement with the original electrical signal
- transforms the difference into a corrective signal
- corrects the diaphragm movement to reproduce the original signal exactly
- suppresses any undesired resonances in the loudspeaker cabinet.

This is why the cybernetic circuit ensures sound reproduction of truly remarkable quality, totally independent of speaker dimensions.

Music is as clean and pure as the original.

The ultimate in high fidelity is attained.

Bass notes are restored with depth and clarity yet without resonance and colouration.



* read on page 7 — Cybernetic and High Fidelity.

SERVO-SOUND AND PUBLIC SOUND SYSTEMS THAT MEET HI-FI STANDARDS

BEFORE SERVO-SOUND

An adequate distribution of sound can only be obtained with a certain number of traditional loudspeakers, carefully positioned in a given space. Sometimes, the large dimensions of traditional speakers make this difficult. An alternative solution is to use the compact traditional-type speakers, but these are usually of bad tonal quality and frequency response and can seldom be labelled "*high fidelity*". Another solution is to mount the bulkier loudspeakers near the ceiling but this can be annoying for the listener. Moreover, an installation with numerous, space taking speaker cabinets that are used at a fraction of their nominal power is certainly wasteful as an investment.

WITH SERVO-SOUND

Servo-Sound's characteristics make it the ideal hi-fi equipment for public sound systems - concert halls, theatres, discotheques, bars, clubs etc. - especially when a balanced distribution of the sound level for the right musical environment is required.

Servo-Sound's small electronic speakers are easily mounted in any room to give the best quality of sound. Each Servo-Sound speaker has its own built-in power amplifier which eliminates all problems of adaptation to the main central amplifier and offers the possibility of increasing the total system power (up to 1000 W).

And because of their small size, these speakers are more easily integrated into the decor of the room.

A SYSTEM SO FLEXIBLE, IT PROVIDES PRECISE POWER NEEDS FOR ANY REQUIREMENT.

In a discotheque, for example, a concentration of speakers around the dance floor combined with others placed selectively near tables and the bar gives the power where it's needed, without disturbing the people at the tables yet still providing an agreeable ambiance. This is not possible with large speakers that deafen the people near and are inaudible at any great distance away. In addition, the transparent quality of Servo-Sound creates the correct ambiance, without the feeling of tiredness provoked by the colouration and resonances of traditional loudspeakers. And, another important point, with Servo-Sound there's never the risk of being completely without sound. As each speaker contains its own amplifier, one failing does not affect the others.

SERVO-SOUND OFFERS NEW POSSIBILITIES

As Servo-Sound speakers can be placed at any distance from the central control, now there is the possibility to sonorise large and small environments like

- all rooms in a country house or mansion
- cultural centres
- motels
- boutiques and shops
- rooms that are separate or on different floors.

The small dimensions and low weight of Servo-Sound speakers also make them particularly practical for portable, high quality sound systems, travelling theatres, publicity automobiles, in fact any use where portability is an important convenience.

SERVO-SOUND COMPONENTS FOR A SOUND INSTALLATION

In addition to the central control preamplifier and preamplifier/mixer, the following equipment may be used as sound sources :

- two turntables
- two tape-recorders
- a tuner
- a microphone and/or a mixer-microphone, type M6 with capability for 6 microphones so dispersed sound sources (orchestras etc.) may be amplified or recorded.

The central control is also designed to power music lights.

It can also be used to pre-monitor programmes to reproduce.

A special attenuator box, type A 110, may also be added to reduce the power of some speakers without affecting the overall sound quality of the whole installation.

POWER FOR YOUR EXACT NEEDS

Choose the number of loudspeakers according to your requirements. The basic amplification unit comprises a preamplifier control or pre-amplifier/mixer.

30 to 1000 W with the standard Servo-Sound elements.

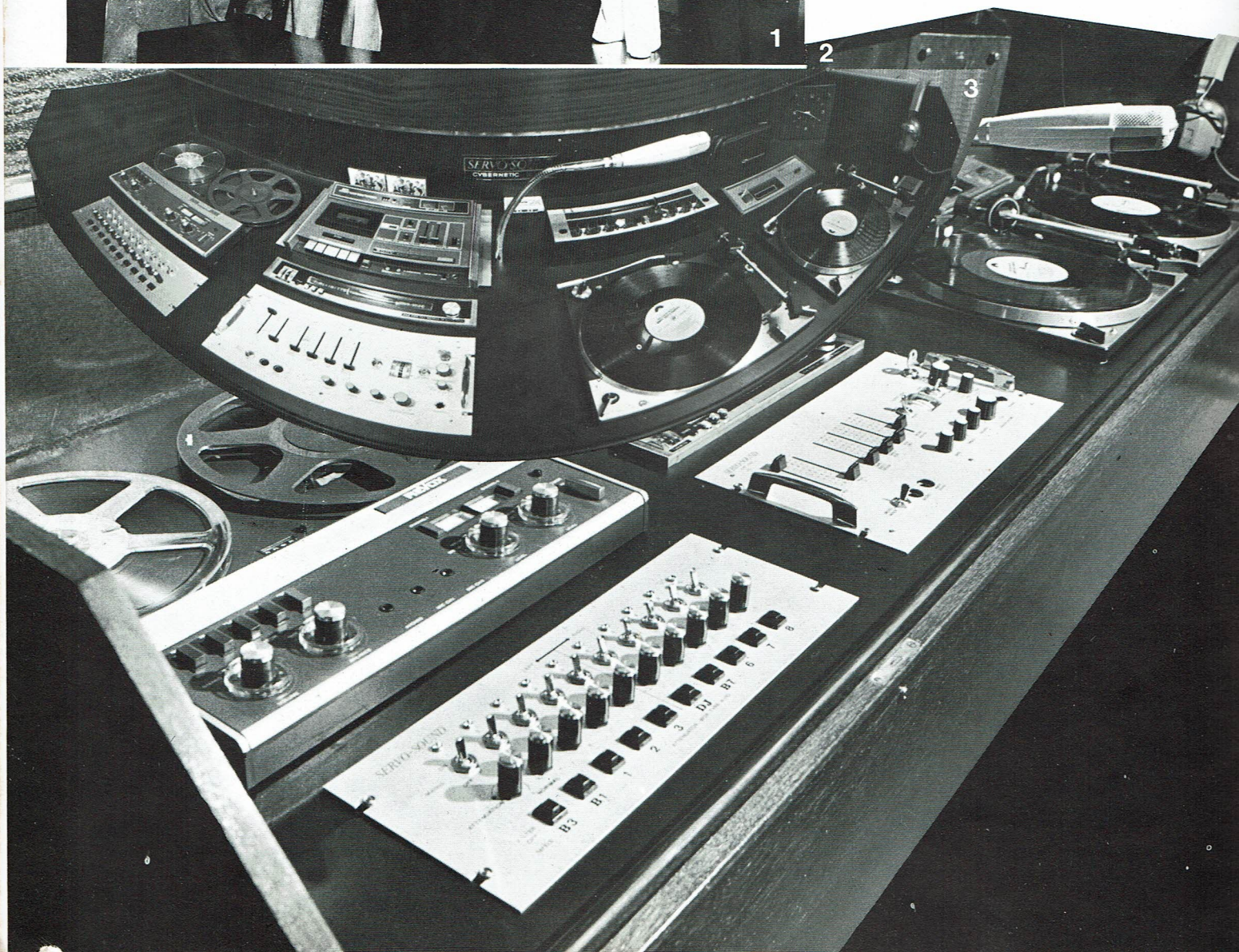


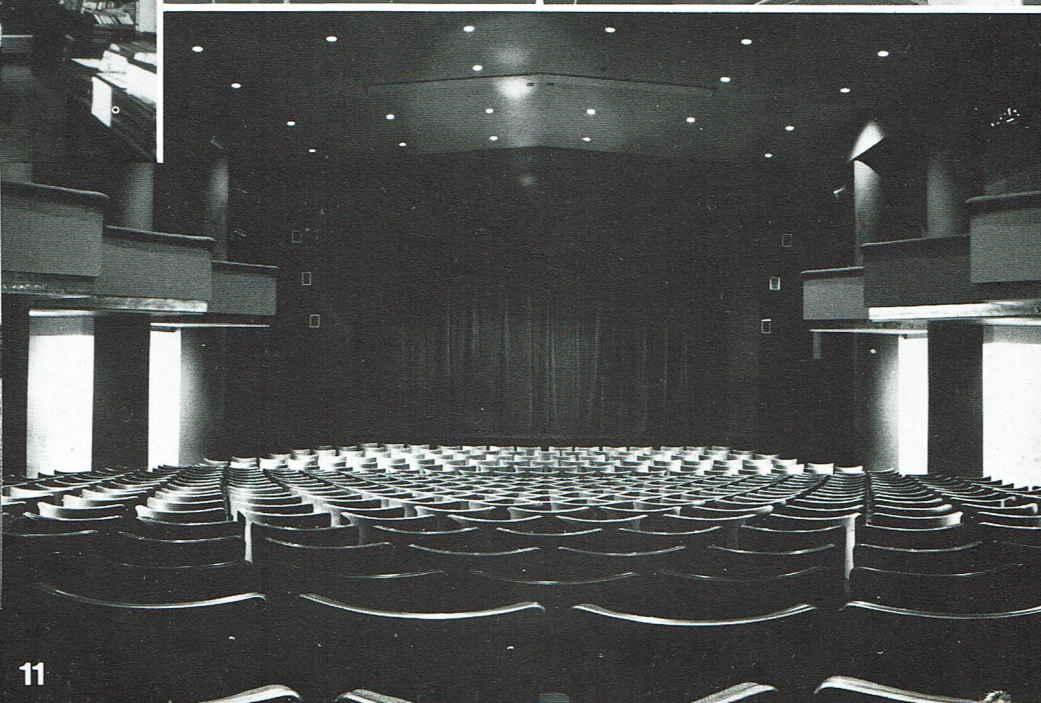
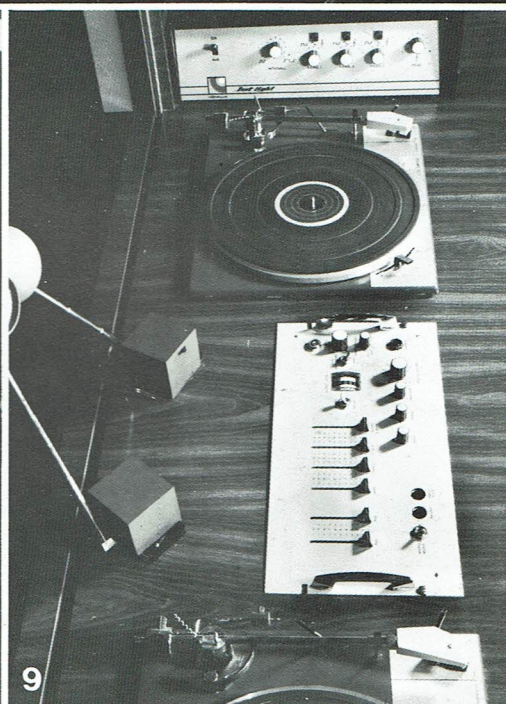
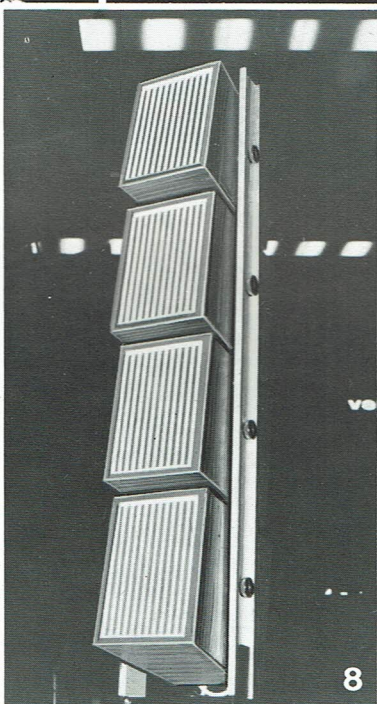
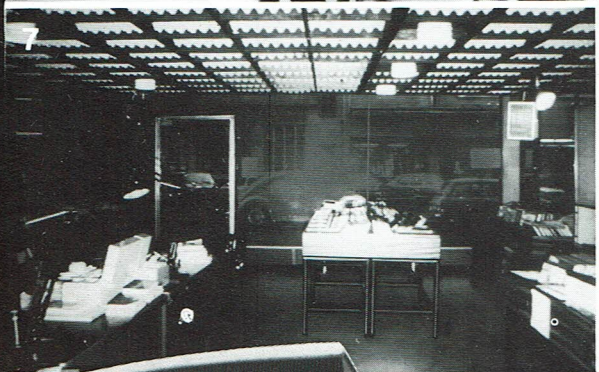
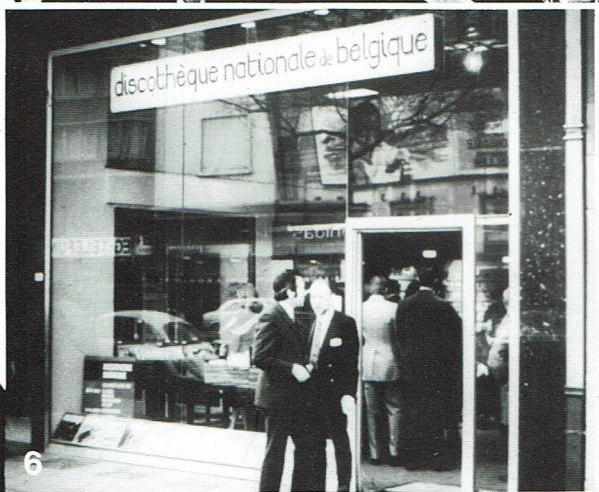
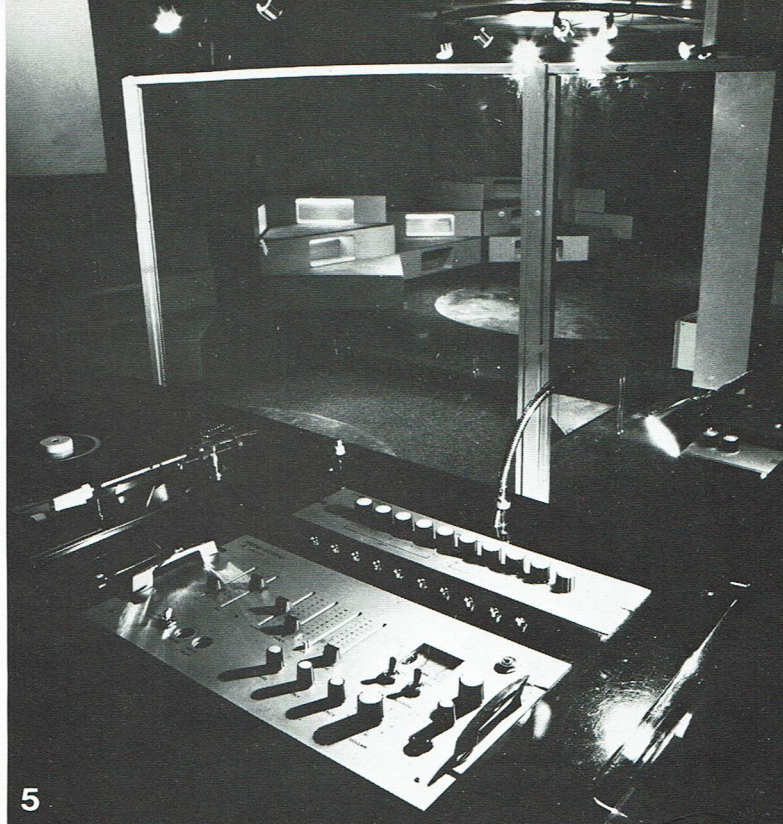
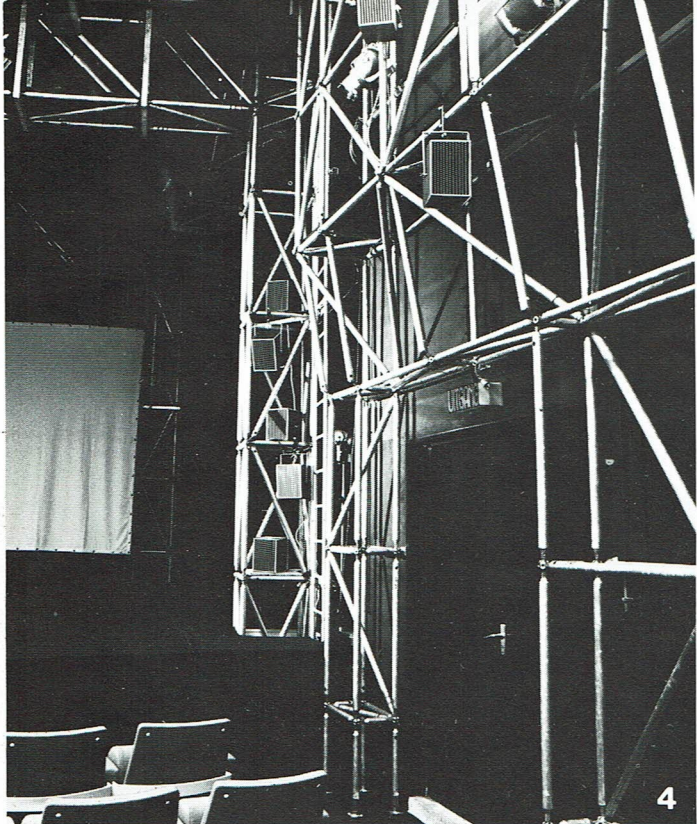
SOME EXAMPLES OF SERVO-SOUND INSTALLATIONS



1. Scotch Club Discotheque
- Le Zoute, Belgium
- 2 et 3. La Marina Restaurant
- Amsterdam, Netherlands
- 4 et 5. Romy Goldmuntz Cultural Centre,
Antwerp, Belgium
- 6 et 7. Discotheque Nationale, Brussels
and province, Belgium
8. AHOOL Zaal, Sport Centre
Amsterdam, Netherlands
9. Twenty Five Discotheque, Berlin,
Germany
10. Kent publicity bus
11. Chamber Music auditorium,
Palais des Beaux-Arts, Brussels,
Belgium

Among many other prestigious
references, we are pleased to
mention the transatlantic liner
« France »





WHAT THE PRESS SAY ABOUT SERVO-SOUND

LE FIGARO
PARIS DEUXIEME
Directeur Pierre BRIS
146 ANNEE - N° 8.637
22 Février 1972

HiFi Stereo
phonie
Musik - Musikwiedergabe
2 Februar 1972
STREICHQUARTETTE:
Tokyo - LaSalle - Alben

VIII ANNEE * N° 1343 * 17 FÉVRIER 1972
HAUT-PARLEUR
de vulgarisation RADIO
TÉLÉVISION
Nouveau catalogue Heathkit 1972

ins la politique égyptienne
ATE DEMA
APPEL DES CONSE
TIRES SOVIE

hi-fi
new
& record re

HiFi

Bancs d'essai:
Tuner Revok A.75 Mk.II
Magnetophone cassettes
National RS 275 US
Magnetophone
Record 1600
Amplifier Scott 636 S
Man Kardon CIT II
Era 666
ADC 26
Idées sur:
ques
veau profil
int choisir
r (S)
ques

HARMONIE
1972

SON MAGAZINE
LA CHAÎNE HI-FI DU MOIS AU BANC D'ESSAI!! PLATINE ERA!!
AMPLI NIVICO!! MAGNETOPHONE REVOX! ENCEINTES SONAB
ET SCIENTELEC!! TOUTES LES MULTI-DIRECTIONNELLES!! LE
SYNTHETIZER: LA SUPER MACHINE A FABRIQUER DES TUBES!

praxis
RADIO
FERNSEH
PHONO
12

FRANCE

La Revue du Son (September 1969)
"... The Servo-Sound system presents a new solution to the highly discriminating music lover" (Association Française pour le Développement de l'Enregistrement et Reproduction Sonore).

Le Haut-Parleur (May 15, 1969)
"... Listening to a musical selection demonstrates crisp-note definition, distortion-free sound and a truly remarkable lack of colouration ..."

Harmonie (December 1968)
"... The compact loudspeakers (10 l volume) give as much power as speakers fifteen or twenty times larger."

Le Figaro - Pierre de Latil (March 10, 1969)
"... The greatest development in sound reproduction since stereo ..."

GERMANY

Radio-Fernseh-Phono Praxis (November 22, 1968)
"... It's incredible that two small 10 litre speakers could be superior to larger installations ..."

Funk-Technik (October 1968)
"... The sound quality from these small speakers was astonishingly good. In particular we noted the dry vibrationless bass ..."

Hi-Fi Stereo Revue (November 1970)
"... Even at full volume, the reproduction quality remains high and undistorted, the bass crystal-clear..."

UNITED KINGDOM

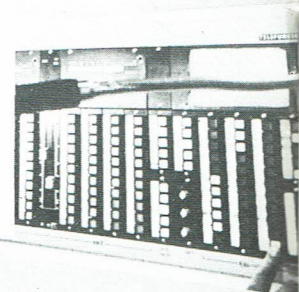
Hi-Fi News (November 1971)
"We have high quality standards but we were still very impressed. Servo-Sound represents a further step in the perfection of sound reproduction." (Studio 99, London).

AND SOME MORE REFERENCES

Leopold Stokovski (New York)
"What a marvellous sound ..."

Mikis Theodorakis
« I am absolutely delighted that I bought a Servo-Sound system. »

emps rempli
esses



CYBERNETIC AND HIGH FIDELITY

A LITTLE THEORY FOR AUDIOLOVERS

True high fidelity gives the listener the impression of being in the presence of a real orchestra and to let him forget that loudspeakers even exist. Such sound reproduction is characterized by such expressions as "neutral", "transparent" or "un-coloured": The best loudspeaker is the one which doesn't sound like a loudspeaker. Unfortunately these standards have rarely, if ever, been reached and most sets, presently on the market, give the sound a certain mechanical character, a "sound colouration" constantly reminding us the presence of loudspeakers as sound-sources. Experts describe these colourations by terms as unflattering as "booming", "boxy", "wooden", etc., and these expressions remind the listener of the effect produced when one speaks into a tube or a box. Even if the non-technical listener does not pay much attention to this defect at first, after listening for some time to coloured sound reproduction, especially at a high level, he will notice a sense of strain, which is tiring, leading to "listener fatigue".

RESONANCE DISTORTS TRUE SOUND

It has been found that the colouration of reproduced sound nearly al-

ways arises from mechanical resonances in loudspeaker and their boxes. It is more troublesome if the resonance-frequency is higher and this goes up as the box is made smaller.

FREQUENCY RESPONSE IS ONLY A PART OF HI-FI

When the quality of a set was judged by its frequency response, measured by means of a sine wave, the effects of mechanical resonance were underestimated. Indeed, they were thought simply to slightly reinforce the sound at certain frequencies, which is likely to happen only when the pitch of the note, played by the musician, happened to coincide with the frequency of the resonance concerned. Modern theories have dispelled this misunderstanding. We now know that sound-information is based almost exclusively on dynamic waveform and particularly on the attack of musical notes. Fourier's transformation theory shows that musical transients, as well as percussive sounds, have very wide ranging spectrums which are capable, at any moment of exciting resonances in the loudspeaker, even when the nominal pitch of the note is far from the frequency of the resonance concerned. That's why, during the reproduction of a musical programme there is an almost con-

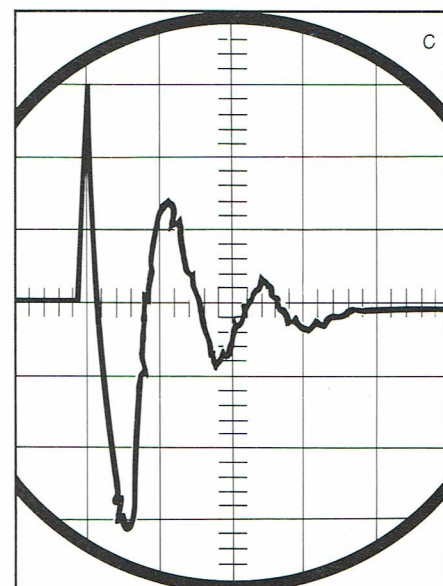
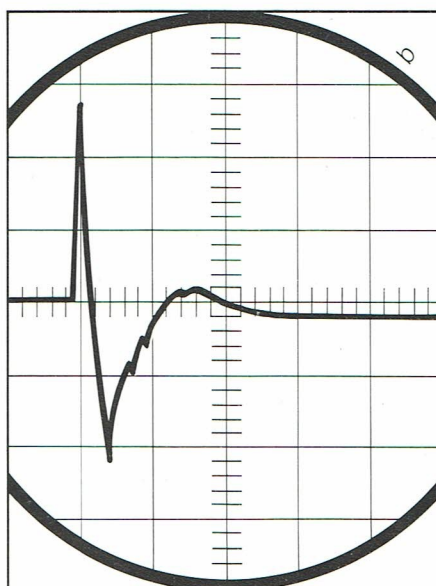
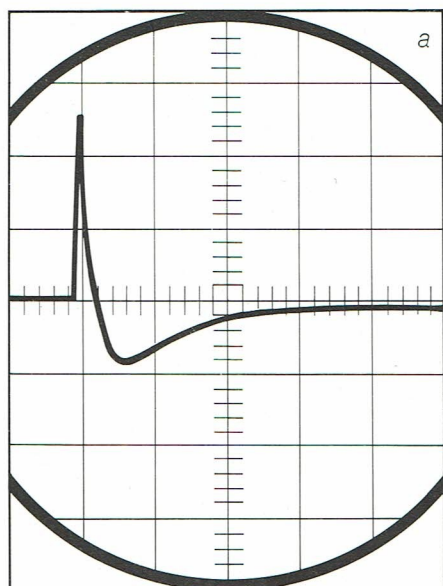
tinual excitation of resonances in loudspeakers, producing monotonous quality that, together with joining the reproduced music, produces a characteristic colouration.

SERVO-SOUND IS NATURAL SOUND

Only aperiodic design, is free from any colouration and capable of really "transparent" sound reproduction. But an aperiodic system can only be obtained by eliminating the mechanical resonances of the loudspeakers.

Until now, only, ionic loudspeakers were free from this defect. But they can only be used to a rather limited extent, and it is the moving coil loudspeaker placed in an entirely closed cabinet which remains the most practical.

The Servo-Sound "Cybernetic" circuit suppresses box resonances and makes the diaphragm faithfully reproduce the original sound-signal.



Percussive response of the Servo Sound Cabinet (b) and of a conven-

tional cabinet (c). The curve (a) represents the original sound signal. Note the aperiodic response (b) and

the ringing caused by the oscillation in a conventional cabinet (c).

SERVO-SOUND QUADRAPHONIC EQUIPMENT

SERVO-SOUND IS EMINENTLY SUITED TO QUADRAPHONIC SOUND

The full effect of true quadraphonic sound can only be experienced if there is a complete absence of colouration and distortion.

Servo-Sound, by using small self-contained speakers, ensures perfect reproduction and complete channel separation without distortion - and with Servo-Sound, the more speakers you have, the more power you have available.

Servo-Sound offers a complete quadraphonic system which is fully compatible with existing stereophonic installations.

PRACTICAL INFORMATION

THE "COUNSELLING" SERVICE FROM SERVO-SOUND

Only "sound" specialists are authorized to sell Servo-Sound equipment.

Do not hesitate to ask their advice when you are preparing a dossier. They have participated in the realisation of many projects and are ready to help you benefit from their experience in sound installations.

SERVO-SOUND GUARANTEE

Servo-Sound equipment has a one (1) year guarantee.

SERVO-SOUND AFTER-SALES SERVICE

The reliability of Servo-Sound public sound systems and installations has been demonstrated by the increasing number of establishments that are using it. However, should you need our after-sales service, you should know that our equipment will be repaired within minimum delay.

distributed by



PREAMPLIFIER SC 100 BEE

Description

The SERVO-SOUND installation is composed of a preamplifier and one or several pairs of SL 20 loudspeakers each including its own 15 W amplifier with the "Cybernetic" feedback circuit.

SERVO-SOUND is offered in several versions :

- with separate pre-amplifier SC 100 BEE
- with pre-amplifier and built-in turntable as SC 63 BTE

Characteristics

Input sensitivity and impedances :

PHONO : 47 KOhm (R.I.A.A. equalizer)

Recommended magnetic cartridge sensitivity :
1-1.5 mV/cm/sec.

H.F. Radio Filter

TAPE : 300 mV/40 KOhm

AUX. 1 : 300 mV/40 KOhm

AUX. 2 : 300 mV/40 KOhm

Power supply : 30 V 15 mA

DYN { positive 4
negative 1

Frequency response : 30 - 35,000 Hz \pm 1 dB

20 - 50,000 Hz \pm 2 dB

at the normal listening level

Entry capacity : (1000 Hz)

PHONO : 23 mV

AUX. : 600 mV (max. volume)

Signal to noise ratio : Better than 60 dB (Phono)

Harmonic distortion : $<$ 0.25 % at 1 KHz

Intermodulation distortion : $<$ 0.35 % (50 Hz, 7,000 Hz)

Gain at 1,000 Hz : PHONO : 70

AUX. : 6

Output signals :

TAPE RECORDING : 600 mV 10 K

PHONES : 1,2 V/400 Ohm

POWER REPRODUCER : 1,2 V/400 Ohm

(max. 35 power reproducers
per channel)

Separation of channels : Better than 50 dB :

the Stereo-Crossing network being disconnected.

TONE CONTROLS :

Treble : + 16 dB, - 10 dB to 10 kHz

Bass : + 15 dB, - 19 dB to 40 Hz

L.P. Filter : 8 dB/oct at 8 kHz

Normal volume control : + 8 dB 50 Hz

+ 3 dB 10 Khz

(volume control : 9 H)

Fitted with : 12 Si Transistors

Dimensions

Individual preamplifier : 42 x 8,5 x 16,5 cm

Loudspeaker : 18 x 27 x 28 cm

STEREO-CROSSING BOX TYPE SC2

The advantages of Servo-Sound enclosures have been shown the world over. The stereo-crossing device enables Servo-Sound loudspeakers to be used with conventional amplifiers or hi-fi receivers having a power of 2 x 6 to 2 x 80 Watts.

The Stereo-Crossing Box SC2 includes :

1. The patented "Stereo-Crossing" device puts the two speakers in phase at low frequencies while producing an excellent acoustical adaptation to the listening locality.
2. A level attenuator can bring the volume control on the amplifier to a comfortable level.
3. Adaptation of input impedance from 4 to 32 Ohm
4. Output impedance : 600 Ohm (for Servo-Sound loudspeakers)



DECODER TYPE DSQ1

Description

To get the best quadrasonic reproduction and compatibility, Servo-Sound has decided to use the SQ stereophonic-quadrasonic license of the COLUMBIA BROADCASTING SYSTEM (CBS), because this system of record coding and retransmission in FM can be transmitted by ordinary stereo equipment (including magnetic cartridge) or by FM stereo stations, and then can be reproduced in all its quadrasonic splendour with the help of complementary equipment! This Servo-Sound SQ Decoder whose characteristics surpass the standard performance required by CBS, gives you listening with integral quadrasonic for records such as SQ, CBS, EMI, COMMAND, ENOCH LIGHT, EV4, and many others, as well as their retransmission in FM. It also enables you to listen to your stereo programs in quadrasonic ambience, electronically creating the surroundings that quadrasonic offers, with a third sound dimension - "depth". The Servo-Sound decoder also reproduces quadrasonic recordings on tapes (Silent Quad Tape). It enables you to listen to the front channels only, if you wish, and to regulate the over-all volume of the installation. This Servo-Sound SQ Decoder exists as a compact unit Type DSQ1. It is compatible with any existing equipment. Its technique and signal to noise ratio give perfect reproduction, absolutely excluding all noise or annoying hiss, even with the most sophisticated professional equipment employed.



Characteristics

- 1) a flat frequency response of 5 Hz to 100 KHz at ± 1 dB
- 2) Total distortion rate better than 0.025 %
- 3) Frequency response from 20 Hz to 17 KHz for a dephasing of $90^\circ (\pm 10^\circ)$
- 4) A signal to noise ratio better than 80 dB on 250 mV
- 5) Input capacity of 2,5 V
- 6) Gain : 1
- 7) Input sensitivity and impedance : 250 mV on 40 Ohm
- 8) Output impedance : < 300 Ohm
- 9) Front separation : > 34 dB
- 10) Rear separation : 7,6 dB with Blend System
> 20 dB without Blend System
- 11) Fitted with : 17 transistors

Dimensions

16 x 22 x 9 cm



QUADRAPHONIC UNIT TYPE RC4-SQ

Complementary preamplifier for rear channels, fitted with remote control, separately regulating the power of the rear channels. This enables you to place yourself ideally in the sound environment featuring quadrasonic.

This preamplifier also has the SQ Decoder built in (see Servo-Sound SQ Decoder Type DSQ1).

Characteristics

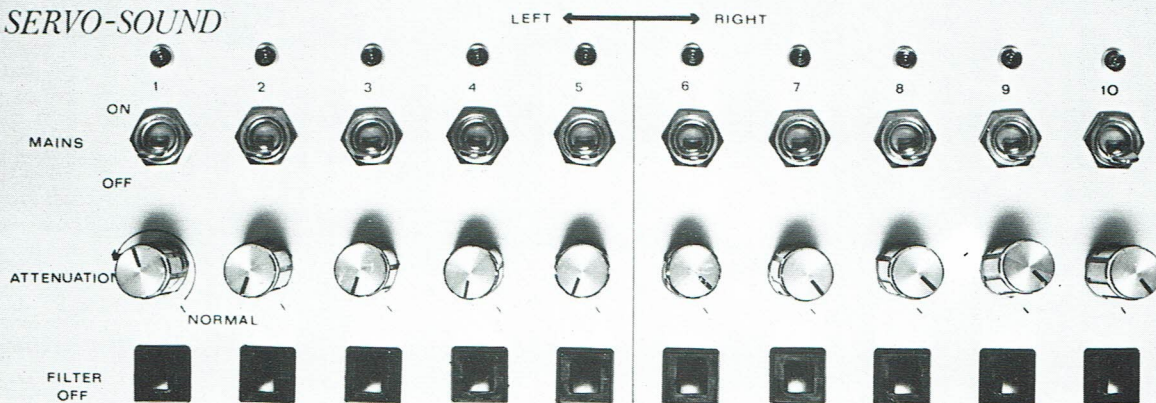
Decoder portion : see SQ Decoder Type DSQ1
Preamplifier : see preamplifier (AUX)

Dimensions

42 x 8.5 x 16.5 cm



SERVO-SOUND



ATTENUATOR BOX TYPE A 110

SERVO-SOUND ATTENUATOR BOX TYPE A 110

This piece of equipment is designed for Servo-Sound public sound installations. It offers the possibility of reducing the level of individual loudspeakers, without affecting the over-all equilibrium of sound in the whole installation. The unit is equipped with very elaborate electronic filters, that permit lowering the individual level of the loudspeakers in the medium and high frequency ranges, while maintaining the response of all loudspeakers at extremely low frequencies, which is necessary to keep the sound balance in the whole installation. According to the general placement of the sound installation, the filters mentioned above may be switched into two different positions. When all the loudspeakers are in the same room, it is necessary to utilize the full effect of the filters. However, when the loudspeakers are distributed separately, the buttons Filter-Off make the attenuators conventional volume adjustments, equipped with the usual loudness correction.

The apparatus A 110 is positioned between the preamplifier MIXER, Type 2002 and the Electronic Loudspeakers SL 60/D. It gives 10 signal outlets as 10 mains plug switches 220/115 V. It is also equipped with switches and indicator lights, that, in case of accident, allow disconnection of a defective loudspeaker, without affecting the overall distribution of the system.

Operation

1. Place all 10 Mains Switches in the ON position. The corresponding indicator lights should illuminate.
2. Turn all ATTENUATION knobs completely clockwise to the NORMAL position.
 - a) When all loudspeakers are placed in the same room, proceed as follows:
 - 3a- Leave all the FILTER OFF keys in the up position.
 - 4a- In broadcasting a normal musical program, adjust the MASTER VOLUME CONTROL on the Preamplifier-Mixer to obtain the desired maximum sound level in the room.
 - 5a- When the sound level in the surroundings of a particular loudspeaker proves to be too intense, regulate accordingly the corresponding ATTENUATION dial on the A 110 apparatus.

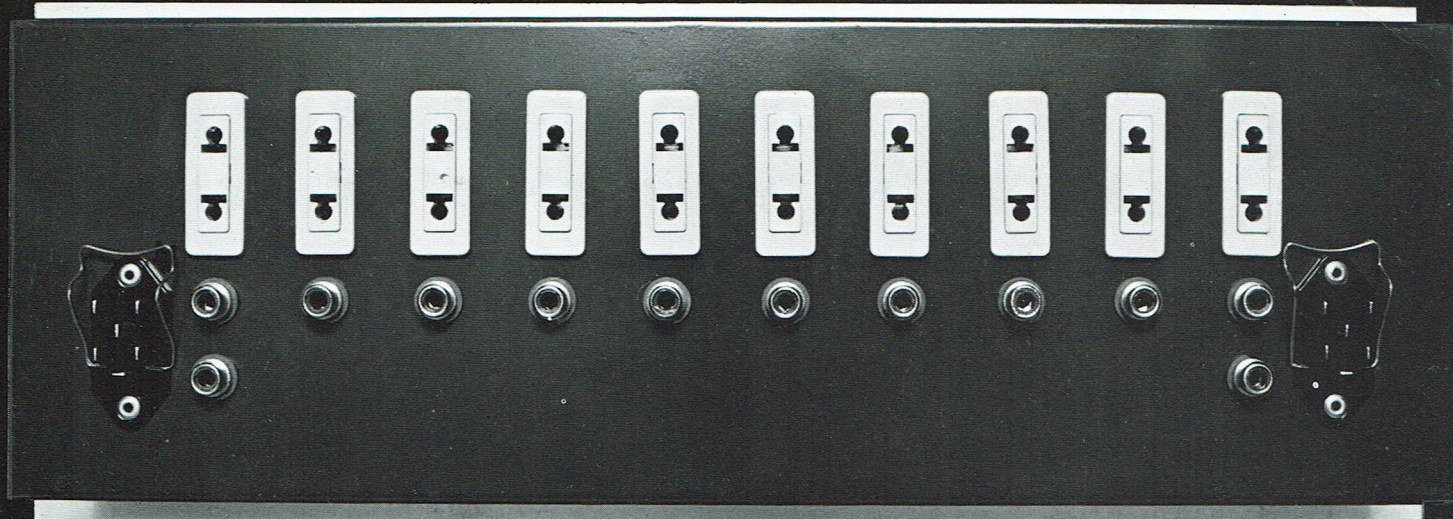
NOTE

If the general sound level in the room proves to be too loud, do not manipulate all the attenuators in the A 110 equipment, but adjust the tuning of the MASTER VOLUME CONTROL in the Preamplifier-Mixer.

- 6a- If, by accident, one of the loudspeakers becomes defective, disconnect it by putting the corresponding switch of

the A 110 apparatus, in the OFF position.

- b) When one or several loudspeakers are placed in separate areas, proceed as follows:
 - 3b- In broadcasting a normal musical program, adjust the MASTER VOLUME CONTROL on the Preamplifier-Mixer to obtain the maximum level desired in the area requiring the most power.
 - 4b- With this adjustment, when the sound level in another area proves to be too loud, push the FILTER OFF button of the corresponding attenuator and adjust the attenuator to obtain the desired level.



Installation

The apparatus A 110 is connected to the preamplifier-Mixer 2002 by two standard Servo-Sound cables, with 6-pole plug and socket.

Identify all loudspeakers or groups of loudspeakers with the help of numbers of corresponding attenuators in the A 110 unit.

Each loudspeaker is connected to the Attenuator A 110 by a screened cable terminated by a coaxial Cinch type plug and a pair of insulated wires (approved), that are connected to a male plug supplied with the Attenuator. On the loud-

speaker side the screened cable and the mains wires will end in a standard female Servo-Sound 6-pin plug (connection: 2 - signal, 8 - ground, 10 & 12 mains).

If the number of loudspeakers exceeds 10, several may be multiple connected by male outlet plugs existing in the loudspeakers, and the whole group of loudspeakers will be controlled by an attenuator in the A 110 unit.

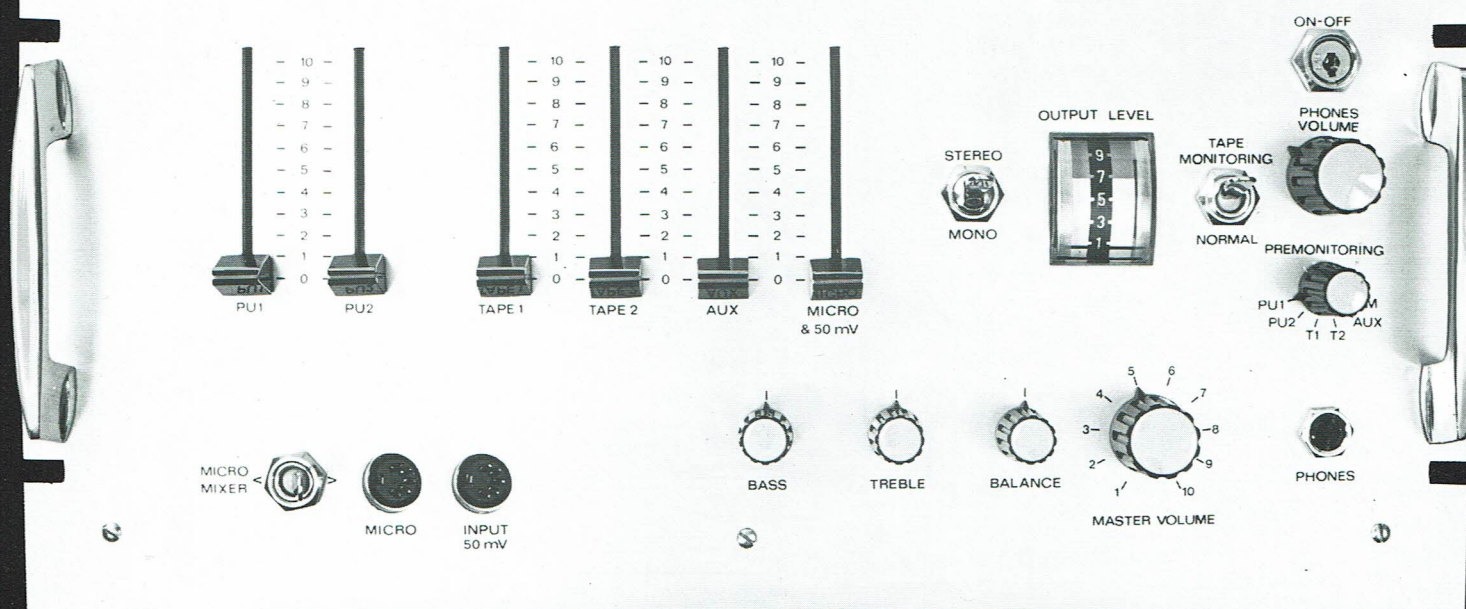
The two supplementary Cinch plugs on the back panel of A 110 should be utilized only when the Preamplifier-Mixer 2002 is replaced by the simple SC 100 Preamplifier, so that power for the SC 100 may be

supplied from the first pair of loudspeakers (No 1 and 10, pins 4 & 6) by two supplementary screened cables.

TECHNICAL CHARACTERISTICS

SIGNAL	Inputs:	2 (stereophonic) from the SERVO-SOUND Preamplifier-Mixer 2002, or from a simple SERVO-SOUND preamplifier.
	Outputs:	a) 10 attenuators with loudness correction. b) 10 special changeable filters for loudspeaker response maintenance at extremely low frequencies, with 10 push-buttons FILTER OFF.
POWER SUPPLY	Input:	Monophase 110/220 V plug
	Output:	10 connections.
	Dimensions:	40 x 15 x 7 cm (cut-out for mounting: 37 x 13 cm).

SERVO-SOUND®
CYBERNETIC HI-FI



SERVO-SOUND CONTROL DESK TYPE 2002 (Preamplifier-Mixer)

The Preamplifier-MIXER 2002 is a professional model designed for public sound installations and using SERVO-SOUND Electronic loudspeakers. It offers all the necessary functions for professional use, such as choice or composition of the program from six sources, stereo - mono connection, monitoring of the program to be broadcast, instantaneous listening during recording, visual indications of volume, etc.

The preamplifier-mixer 2002 may be complemented with the SERVO-SOUND MICRO-MIXER Type M6 which increases the number of inputs to eleven. Or by a SERVO-SOUND Attenuator Box, type A 110, enabling lowering the level of individual loudspeakers without affecting the general musical quality of the whole installation.

1. Input sources and possibilities of mixing

To broadcast a program, it is possible to choose or mix six sound sources, in stereo or mono:

- two turn-tables with magnetic pick up (inputs PHONO 1 and 2)
- two tape recorders (inputs TAPE 1 and 2)
- a Tuner (auxiliary input)
- a microphone input (MICRO)

Microphone sound can originate either directly from a low impedance microphone (in mono) or from a MICRO-MIXER

Box, Type M6, recommended for orchestral amplification. A supplementary 50 mV input, connected to the MICRO track, enables the amplification of other sources such as electric guitar, etc.

2. Output switches

- 1) Stereo output (right channel and left channel) to the SERVO-SOUND loudspeakers, each channel being able to supply the required number of these loudspeakers (up to 35 per channel) and capable of attaining a power surpassing 1000 W. In certain cases, it is recommended to connect on the output an ATTENUATOR BOX, Type A 110, enabling attenuation of one or several tracks, corresponding to a loudspeaker or a group of loudspeakers.
- 2) Stereo output to the No 1 tape recorder, for recording a program from 5 sources, as listed in Paragraph 1.
- 3) Output to headphones for stereophonic listening.
- 4) Output command switch for synchronisation of the lighting effects.

3. Possibilities for tuning

Preamplifier MIXER 2002 is provided with the following adjustments giving independent control from the six sliding mixing potentiometers

- 1) Tuning of the MASTER

VOLUME CONTROL connected to a Loudness Filter.

- 2) Adjustment of BASS, connected to an acoustical-correction device in the listening area. (N.B.)
- 3) Tuning for TREBLE frequencies.
- 4) Stereo balance.
- 5) Stereo-Mono change-over.
- 6) Pre-Monitoring Selector.
- 7) Volume adjustment for the listening headphones.
- 8) Change-over switch for the TAPE MONITORING command.

N.B. The acoustical corrector in the listening area attenuates resonances in the room which can be produced in the 80 to 200 Hz range.

4. Monitoring

The MIXER 2002 is comprised of two supplementary control devices:

- 1) PRE-MONITORING: a six-position selector enabling preliminary control with headphones of the musical programs to be broadcast as well as the program being broadcast.
- 2) MONITORING when recording. During recording on a three-head tape recorder, the recorder tape can be monitored with the TAPE MONITORING change-over switch.

5. Stereo-Crossing

The MIXER 2002 is provided

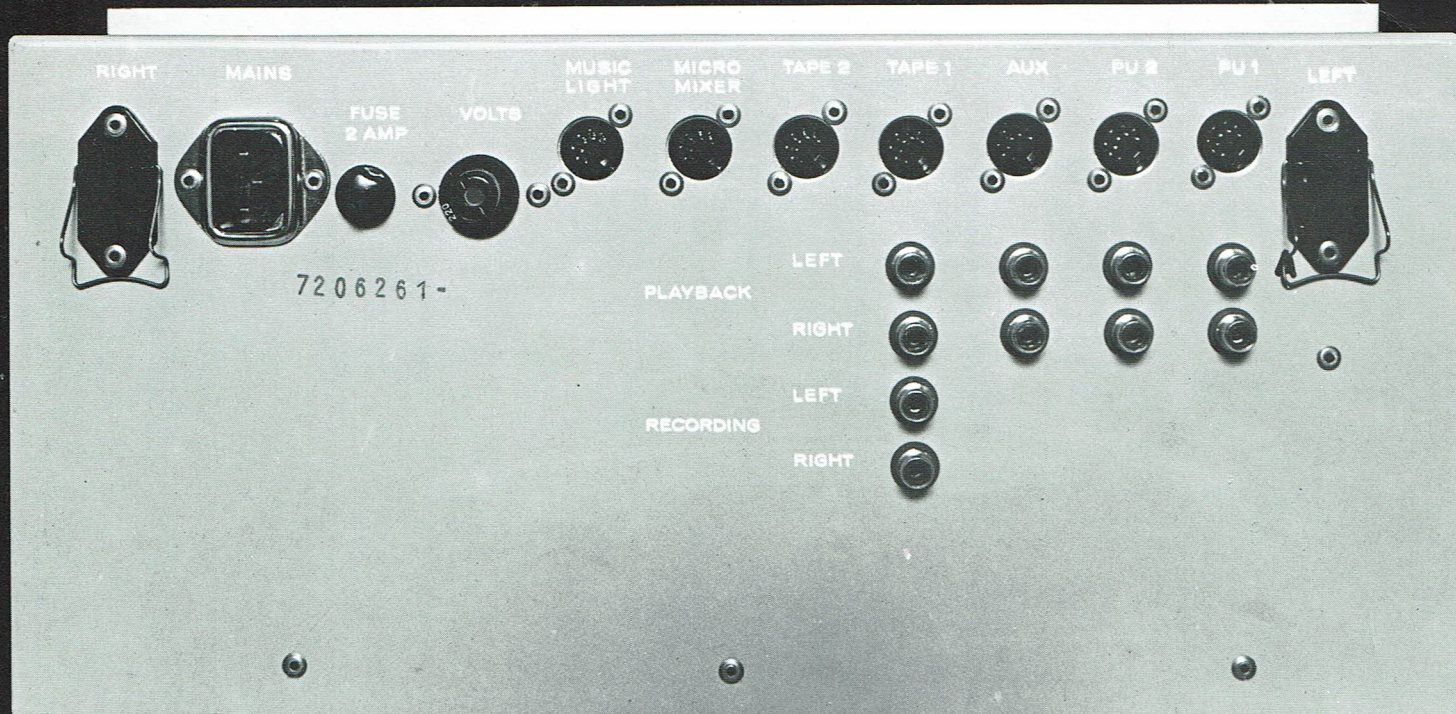
with a trellis-work filter system (patent Stereo-Crossing) which puts all the loudspeakers in phase for bass frequencies, resulting in the reduction of selective resonances in the listening area without influencing the stereophonic effect.

6. Volume indicator

Two needle indicators (one per stereophonic channel) indicate the signal level sent to the loudspeakers, with the overload marking.

7. Mains supply

The MIXER 2002 has its own 220/115 Volts power supply, as well as an ON - OFF switch which can be utilized as a main switch for the whole installation. An indicator light and safety fuse complete this.



TECHNICAL CHARACTERISTICS

Inputs:

- PHONO:** RIAA adjustments for magnetic cartridges, recommended sensitivity 0.9 to 1.4 V/cm/sec.
- TAPE:** 350 mV input impedance 47 K Ohm
- AUX.:** 350 mV input impedance 47 K Ohm
- MICRO:** Direct connection: 1 mV input impedance 47 K Ohm (in mono)
By Micro-Mixer Box: 350 mV input impedance 47 K Ohm in stereo.

Tape being played:

30 – 30,000 Hz \pm 0.8 dB

Distortion:

0.2% to 1 KHz.

Power supply voltage:

220/115 V 50 C/S

Dimensions:

40 x 20 x 12 cm.

(cut-out for mounting : 36 x 18 x 12 cm).

Tuning:

- BASS:** \pm dB to 150 Hz, \pm dB to 40 Hz. acoustical correction of the listening area.
- TREBLE:** \pm 15 dB to – 10 dB to 10 KHz

Outputs:

for SERVO-SOUND Loudspeakers:

1.4 V, impedance 400 Ohm
(max 35 loudspeakers per channel).

for tape recorder:

600 mV, minimum impedance 10 K Ohm.

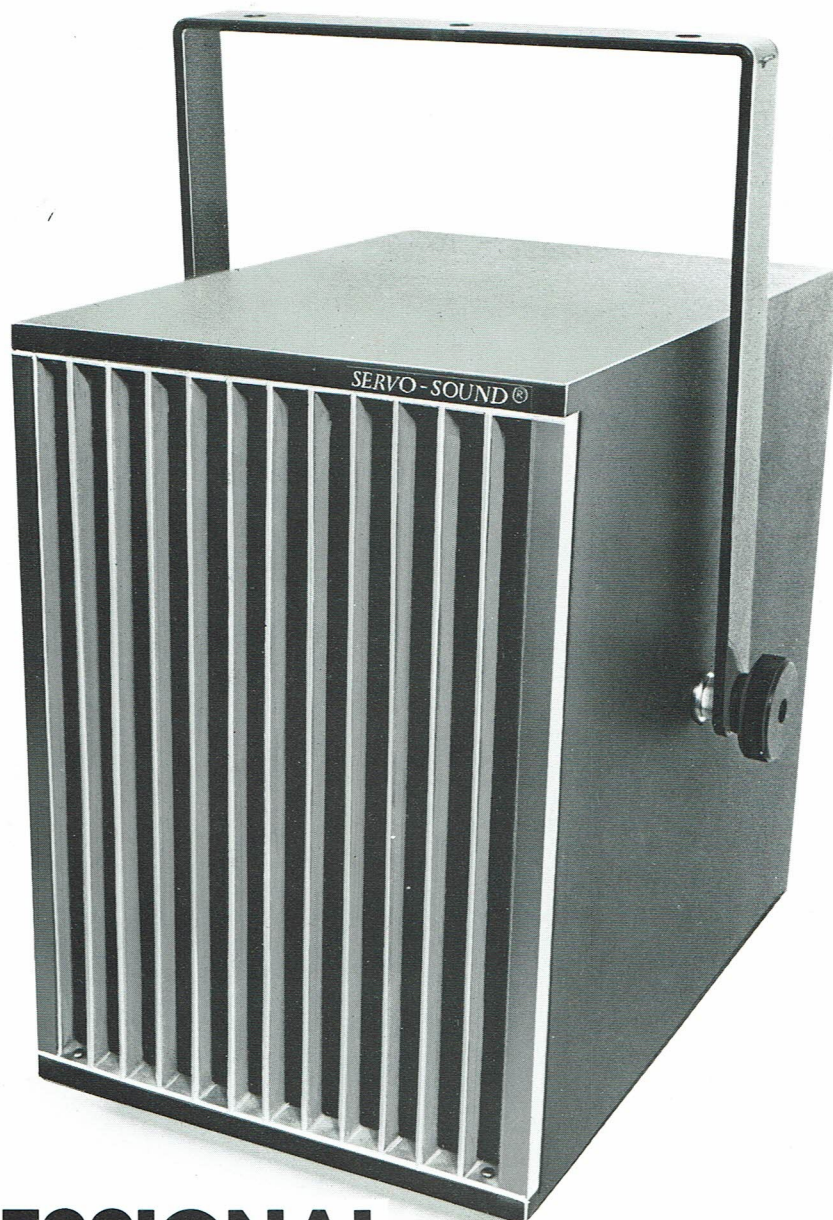
for headphones:

3 V, minimum impedance 400 Ohm.

for lighting synchronisation:

1 V, max. on 100 K Ohm.

SERVO-SOUND[®]
CYBERNETIC HI-FI



PROFESSIONAL ELECTRONIC UNITY SERVO-SOUND TYPE SL 60/D

The Type SL 60/D Unities are designed for SERVO-SOUND professional sound installations (discothèques, theatres, etc.) Their musical quality is identical to that of the SERVO-SOUND Unities Type SL 20 (see the general SERVO-SOUND prospectus) but their construction permits continued employment at an elevated sound level, with a great coefficient of safety.

This degree of reliability is obtained by:

- a) large surface of transistor coolers, permitting its usage even in an elevated surrounding temperature.
- b) loud-speaker, with removable coil, of a special

construction (registered patent).

The SL 60/D Unities are provided with means of fixation enabling their easy placement in the listening locality.

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