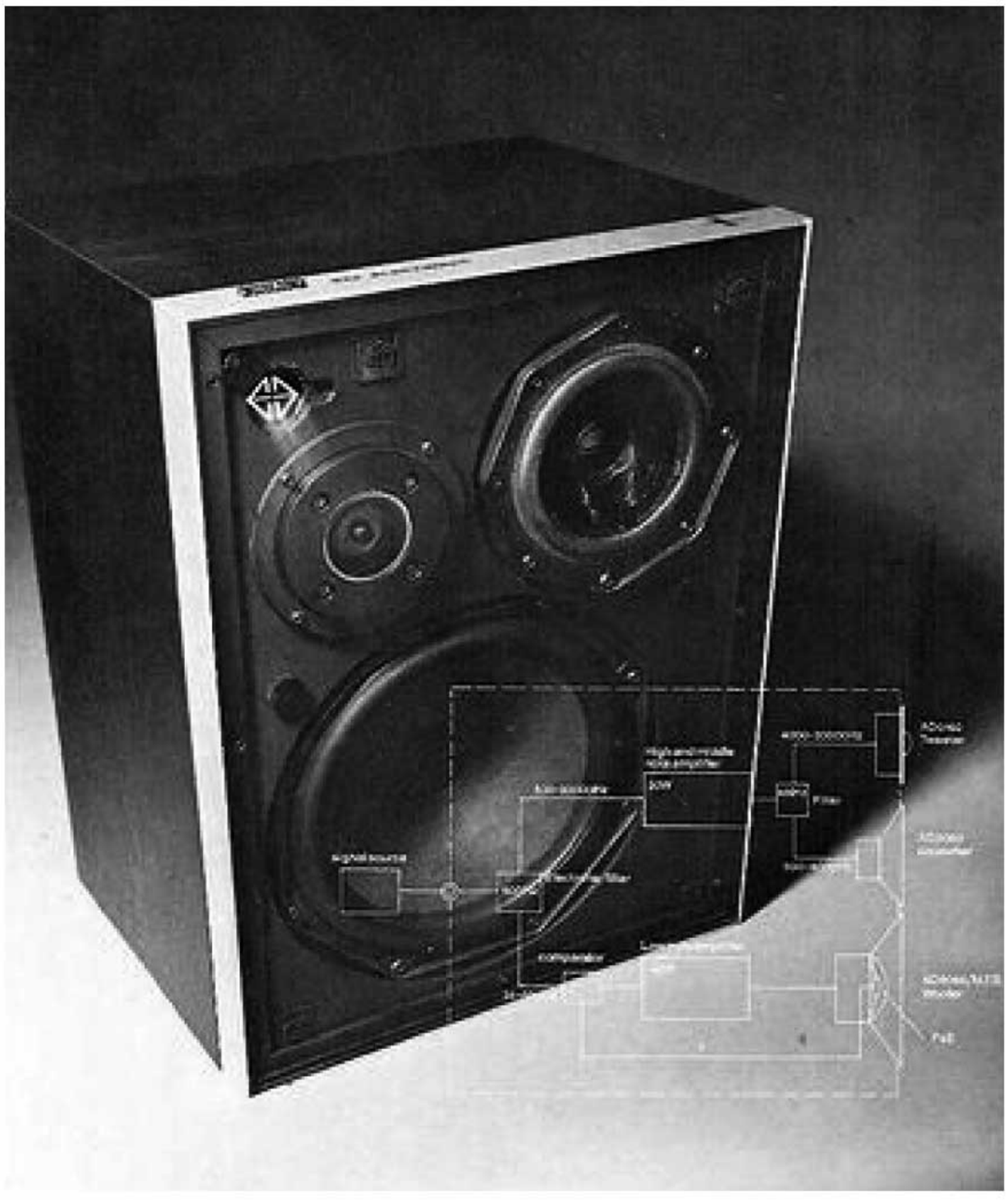
PHILIPS

PHILIPS 22RH532



22RH532

MOTIONAL FEEDBACK SYSTEM

Introduction (fig. 1 + 7)

The RH532 Electronic MFB is an electronic three-way loudspeaker enclosure employing the Philips motional feedback (MFB) system.
This box, having a volume of 15 litres, incorporates three special ludspeakers, an eletronic regulator and control system and two power amplifiers with a total output of 10 Watts (sine wave): a 40 Watts amplifier for the low notes loudspeaker with MFB and a 20 Watts amplifier for the middle and high notes loudspeakers.
Incorporated in the cone centre of the low notes loudspeaker is a piezoelectric element (PXE) which monitors the cone accleration and converts it into an electrical voltage. This voltage is proportional to the cone acceleration and is fed into a comparator circuit where it is accurately compared with the original signal supplied to the loudspeaker by the amplifier.
Cone movement does not always accurately correspond to the electrical signal applied to the voice coil. This is due mainly to lack of uniformity of the magnetic field coupling with the coil during large cone excursions and resonances of the cone and of the air enclosed by the loudspeaker box. These effects are particularly apparent in the low frequency region and result in distorted bass reproduction.
The voltage difference, detected by the comparator, is fed back to the loudspeaker via the amplifier as a correction signal, thus the loudspeaker is forced to reproduce the original signal.
Not only is the previously unavoidable bass distortion corrected but, in addition, extremely low frequencies, which in a conventional system would not be reproduced in such a small box (acoustic volume 9 litres), are attained with their correct proportional intensity.
A precise, active and passive cross-over filter ensures an extremely smooth and linear playback characteristic.
The specification of this MFB enclosure far surpasses the DIN 45 500 standard.

Accessoires (fig. 2)

The following accessories are supplied with the enclosure:
1. One mains cable (A), length 10 m.
2. One two-signal cable (B), length 10 m. It carries both the left and right channel signal from the amplifier to the MFB enclosure or between two MFB enclosures.
3. Adapter (D). For matching a two-channel signal cable to a power amplifier with DIN loudspeaker sockets.
4. Adaptor (C). For matching a two-channel signal cable to a pre-amplifier with phono output sockets.

A. Preparation

A1. Adjusting to local mains voltage (fig. 3 + 4)

For its electronic section, the MFB enclosure incorporates a power supply unit which must be connected by cable (A) to the mains power line. Before making this connection, check that the voltage adaptor switch is set to correspond with the mains supply voltage. If the voltage indicated in window (8) is different from that of your supply, turn the switch (7) with a screw driver.
Important: Never operate this switch with the loudspeaker enclosure connected to the mains!
Note (UK only): Connection to the mains may be made via a switchable plug. The wires in the mains lead are coloured as follows:
Brown-live, Blue-neutral.
If the colours do not correspond to the markings on the plug, proceed as follows: connect the brown lead to the live (L) or red pin, connect the blue lead to the neutral (N) or black pin. If a fused plug is used a 3 amp fuse should be fitted.

A2. Controls, connection sockets etc. (fig. 4 + 5)

(1) Input sensitivity switch:
"PRE-AMPLIFIER 1 V": for pre-amplifiers.
"POWER AMPLIFIER 7.5 V": for power amplifiers.
The RH532 produces a high output power.
"POWER AMPLIFIER 19 V": for power amplifiers. The RH532 produces an output power comparable with that of a conventional loudspeaker enclosure.
(2) Selector switch for left or right channel
(3) Signal input: left and right channel
(4) Signal output: left and right channel
(5) Mains input
(6) Mains output (except UK model /15)
(7) Mains voltage selector switch
(8) Mains voltage indicator
(9) Mains switch
The MFB enclosure incorporates an additional automatic on-off switch, which switches on the box within 1 second an input signal reaches the box.
The box switches to standby approx. 2 minutes after interruption of the input signal.
(10) Power indicator
If a signal is supplied to the input and the MFB enclosure is switched on by the automatic switch, this indicator lights up.

A3. Connecting principle of the enclosures (fig. 6)

Whatever the type of stereo amplifier or stereo pre-amplifier being used, in principle the connection of the enclosures is always as shown in fig. 6.
By means of one two-channel cable (B) connection is made between the amplifier and signal input socket (3) of one of the enclosures. If necessary, one of the adaptors (C) or (D) can be used.
Thereafter signal output socket (4) of this enclosure is connected to signal input socket (3) of the second enclosure by means of the other two-channel cable (B).
For increasing the total power, it is possible to interconnect several enclosures to each channel in this way.
With quadrofonic reproduction this way of connecting also applies to the second pair of boxes.

A4. Position of the various switches (fig. 4)

Sensitivity switch (1):

Position "PRE-AMPLIFIER 1 V" if using a pre-amplifier
Position "POWER AMPLIFIER 7.5 V" if using a power amplifier
Position "POWER AMPLIFIER 19 V" if using a power amplifier to which both RH532 enclosures and conventional enclosures are connected simultaneously, e.g. during amphonic or quadrophonic reproductions, using two RH532 enclosures in front and two conventional enclosures at the rear.

LEFT-RIGHT switch (2):

On the enclosure, connected to the left channel, this switch must be set in position "LEFT" (not depressed).
On the enclosure, connected to the right channel, this switch must be set in position "RIGHT" (depressed).
Important: Take special care that the connections for left and right on the control set are not interchanged!

Mains switch (9):

To put the set into use, mains switch (9) has to be depressed.
Do not operate this switch before making sure all adjustments and connections are made in the right way.

A5. Connection of mains cables (A) (fig. 6)

Additional to the mains input socket (5) each enclosure has also been provided with a mains output socket (6) to which another MFB enclosure can be connected.
For reasons of safety, however, not more than two enclosures should be interconnected in this way. The boxes can also be separately connected to the mains.
Remark: This facility is not available on the /15 version.

A6. Placement of the enclosures

To bring out the excellent sound quality of your MFB enclosures, the specific, acoustic characteristics of the room in which the enclosures are to be placed must be taken into account.
These acoustic characteristics are determined by the shape of the room, the placement of furniture, curtains, carpet and upholstery. In general it is advisable to take the following rules into account:

- The distance between the enclosures themselves should be approx. the same as that between the listener and the enclosures. Should asymmetrical placement of the enclosures prove unavoidable, the acoustical symmetry can, within limits, be improved by adjusting the balance control.
- Placing the enclosures on the floor or in corners has the effect that bass reproduction is strongly reinforced. Dependent on the acoustic characteristics of the room this can be experienced either as a pleasant or as an annoying effect. In this last case reproduction can be improved by placing the enclosures on a higher level (ear level) or away from the corners.
- Preferably do not place the enclosures behind furniture or curtains, because that affects strongly reproduction of the high notes.

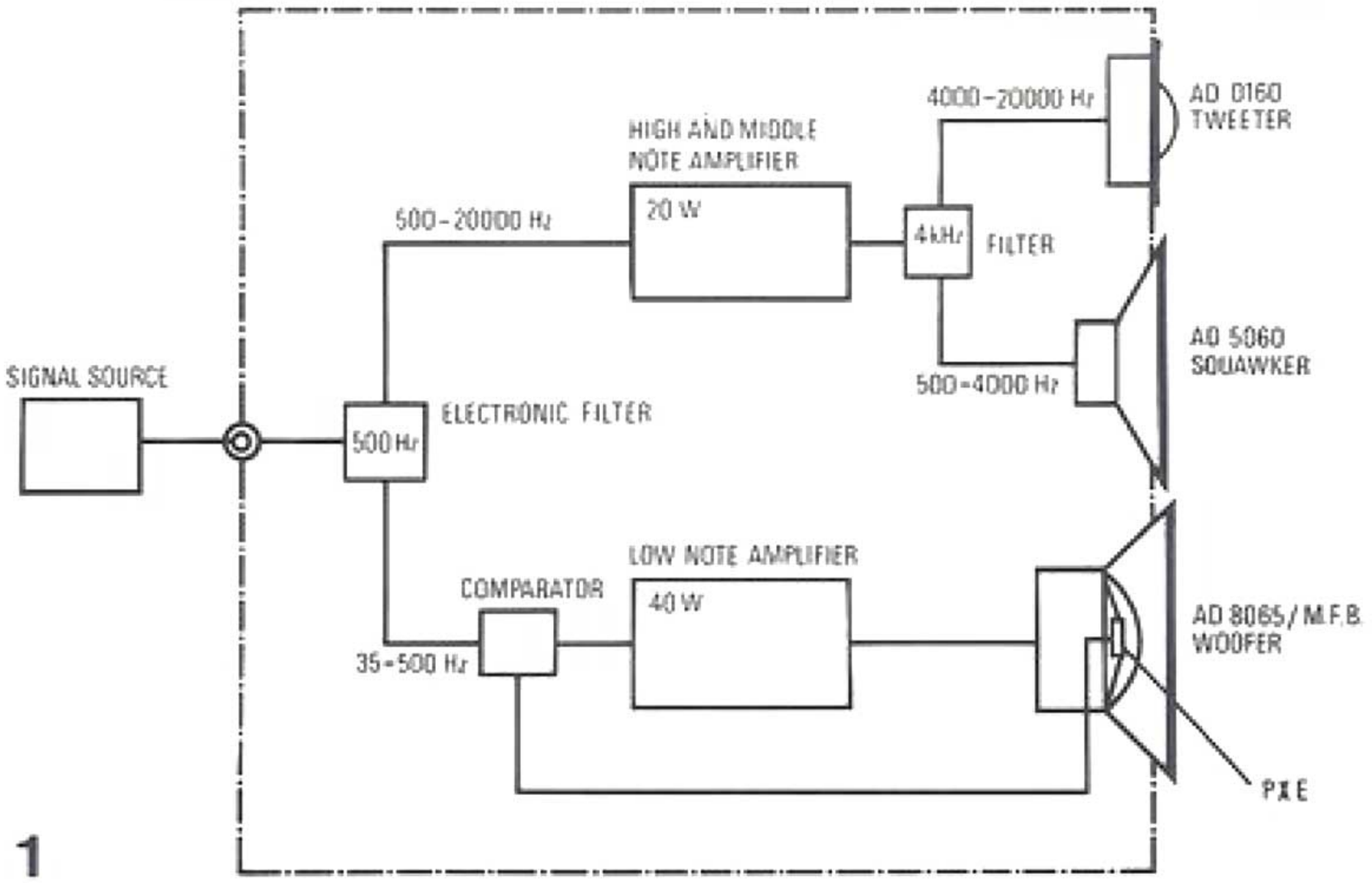
B. Operation

Once the MFB enclosures have been connected according to the instructions the mains plug can be inserted into the wall socket. By means of mains switch (9) the mains supply to the enclosure is switched on. An automatic switch is activated by the incoming signal from the control set; switch-on time is approx. 1 second. In that case the indicator (10) lights up.
When the signal is interrupted the enclosure will be switched to standby automatically after approx. 2 minutes.
It is recommended to switch off the mains supply, by depressing mains switch (9) or the switch at the wall socket during a prolonged absence, for example holidays, journeys etc.

Technical data

Frequency response (fig. 7)	:	30 - 20000 Hz (according to DIN 45 500)
Loudspeaker systems	:	AD 0160 T 8 dome tweeter 1" AD 5060 Sq 8 squawker 5" AD 8065 W 4 woofer 8"
Cross-over filters	:	Active cross-over at 500 Hz Passive cross-over at 3.5 kHz
Amplifiers:		
Bass		Output power 40 W (sinus) distortion < 0.1% (at 30 W) <1 % (at 40 W) Power bandwidth: 100 Hz-50 kHz Frequency range: 500 Hz-60 kHz
Automatic electronic on-off switch	:	Mains switch: modulation relay controlled Rise time: < 1 sec at > 1,5 mV input signal Fall-off time: > 2 minutes
Power indicator	:	lamp for on-off switch
Sockets	:	Signal input DIN 5-pole 180° Signal output DIN 5-pole 180° Mains input Mains output (except U.K. /15 version)
Input sensitivity (switchable)	:	Pre-amplifier 1 V at 3000 Ohm Power amplifier 7,5 V at 25 Ohm Power amplifier 19 V at 25 Ohm
General:		
Components	:	Transistors 24 FET 1 Diodes 8 Zener diodes 5 Indicator lamp 1 Rectifiers 3
Power supply	:	110, 127, 220 and 240 V AC
Consumption	:	150 W max.
Dimensions	:	378 x 283 x 212 mm (15"x11¼"x8⅜")
Weight	:	12 kilogrammes (26 lbs)

Subject to modification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500 Hz
ELECTRONIC FILTER
500 - 20000 Hz
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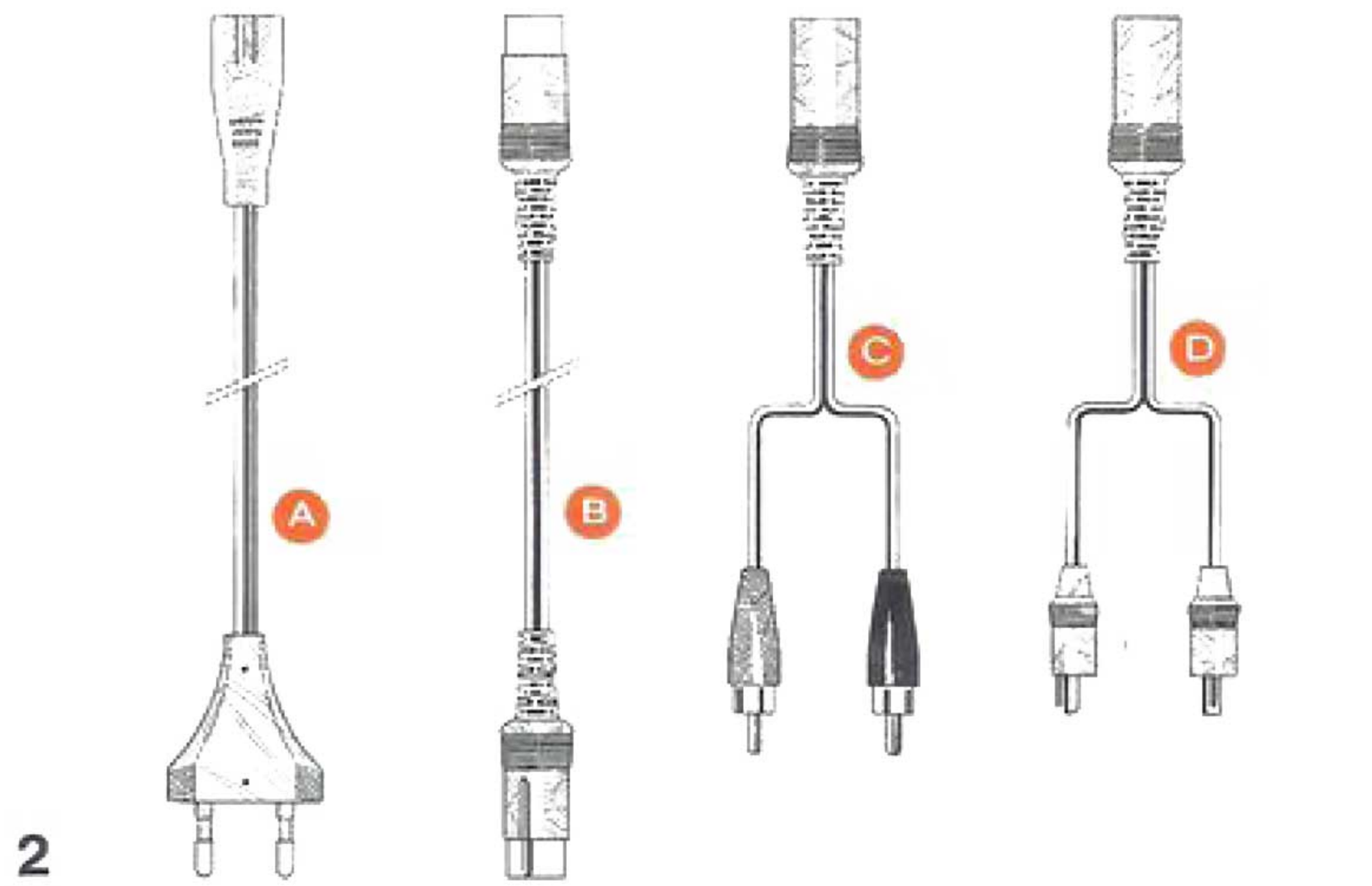
20 W
4000 - 20000 Hz
4kHz
FILTER
AD 0160 TWEETER
500 - 4000 Hz
AD 5060 SQUAWKER
35 - 500 Hz
COMPARATOR
LOW NOTE AMPLIFIER
40 W
AD 8065/ M.F.B. WOOFER
P.H.E

1


A
B
C
D

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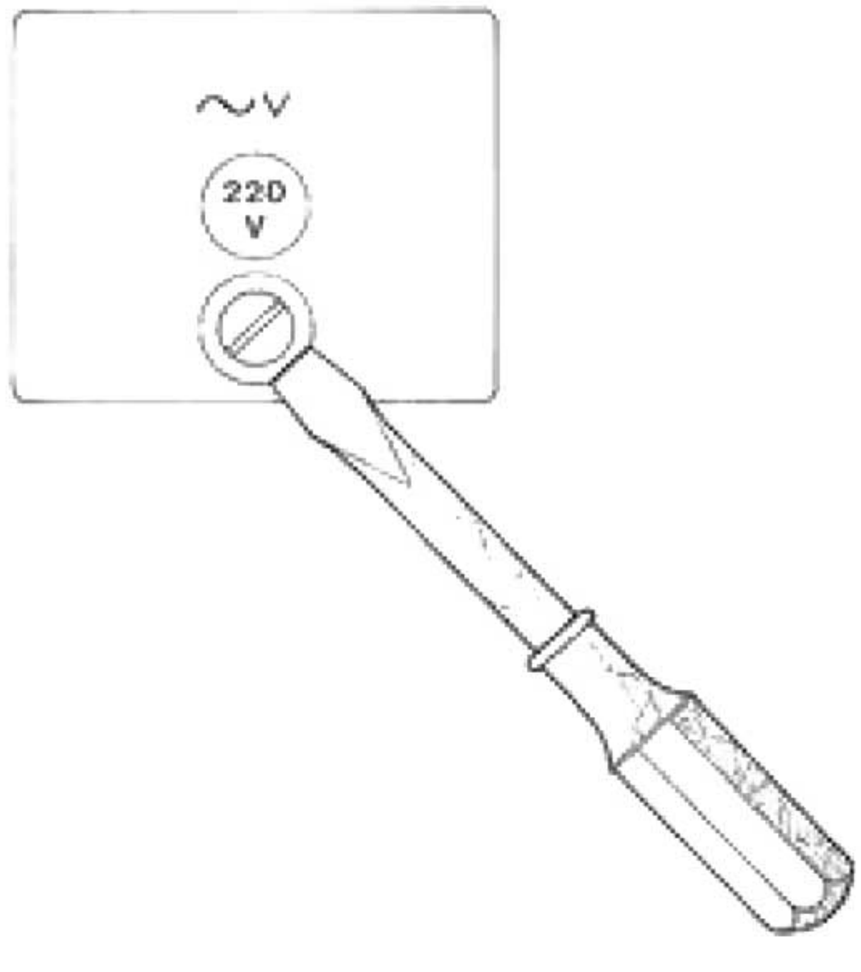
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220 V

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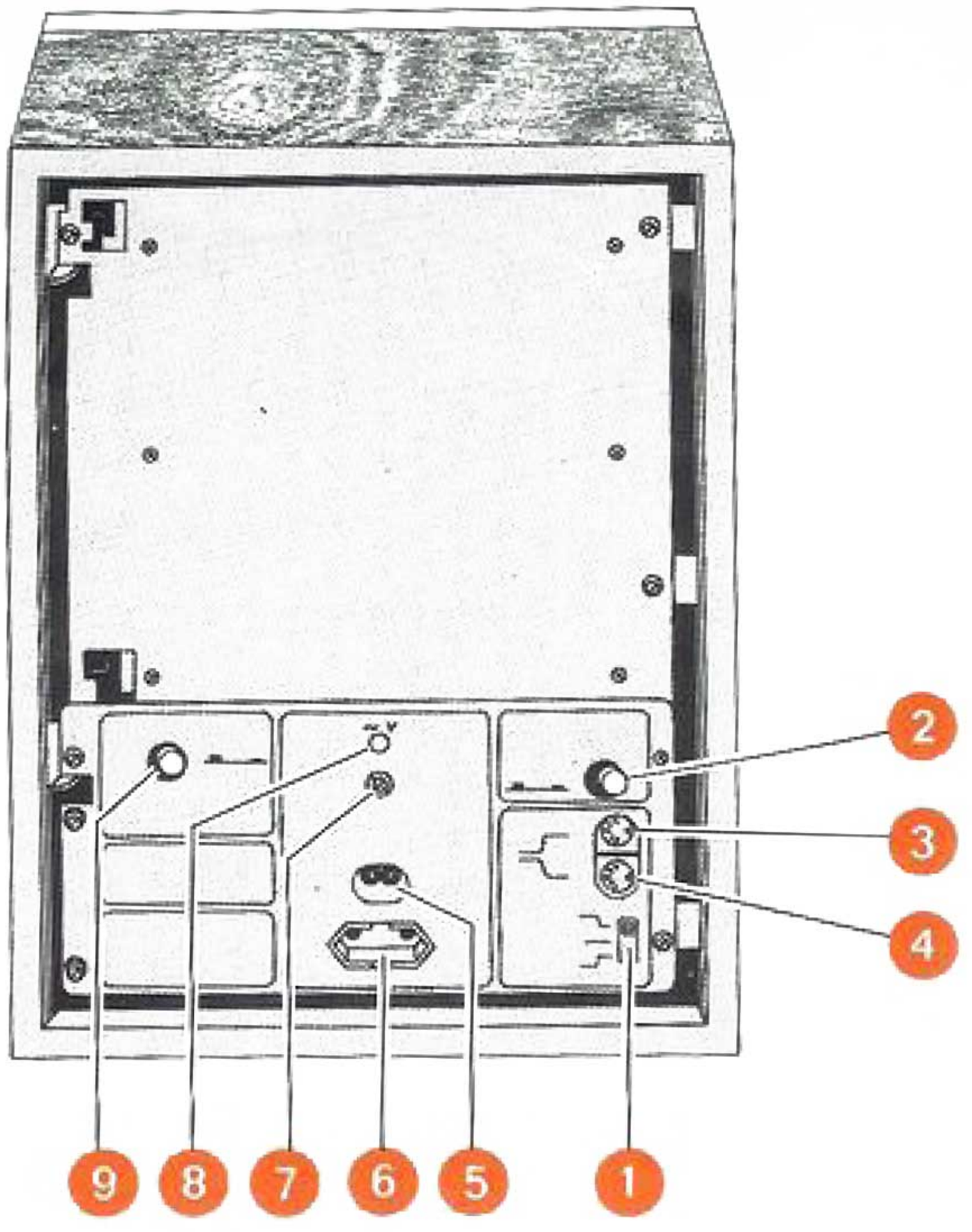

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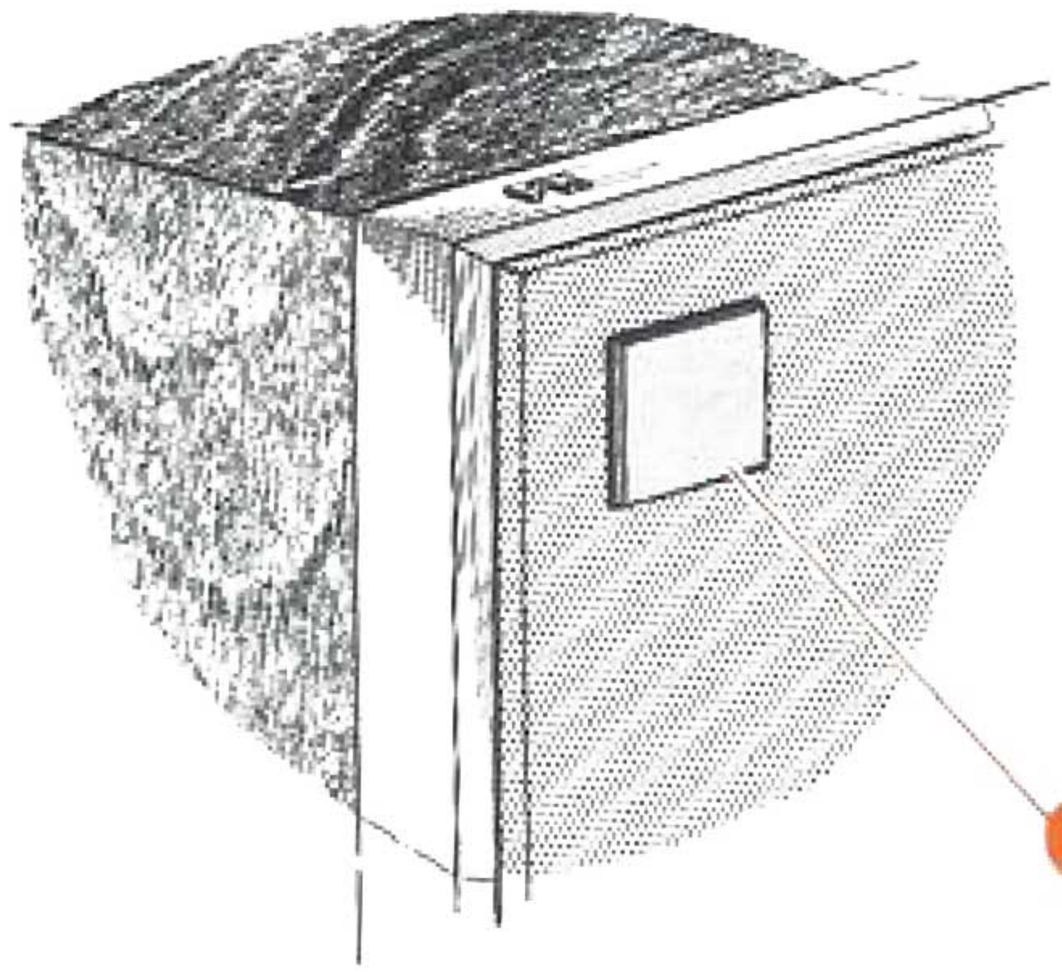

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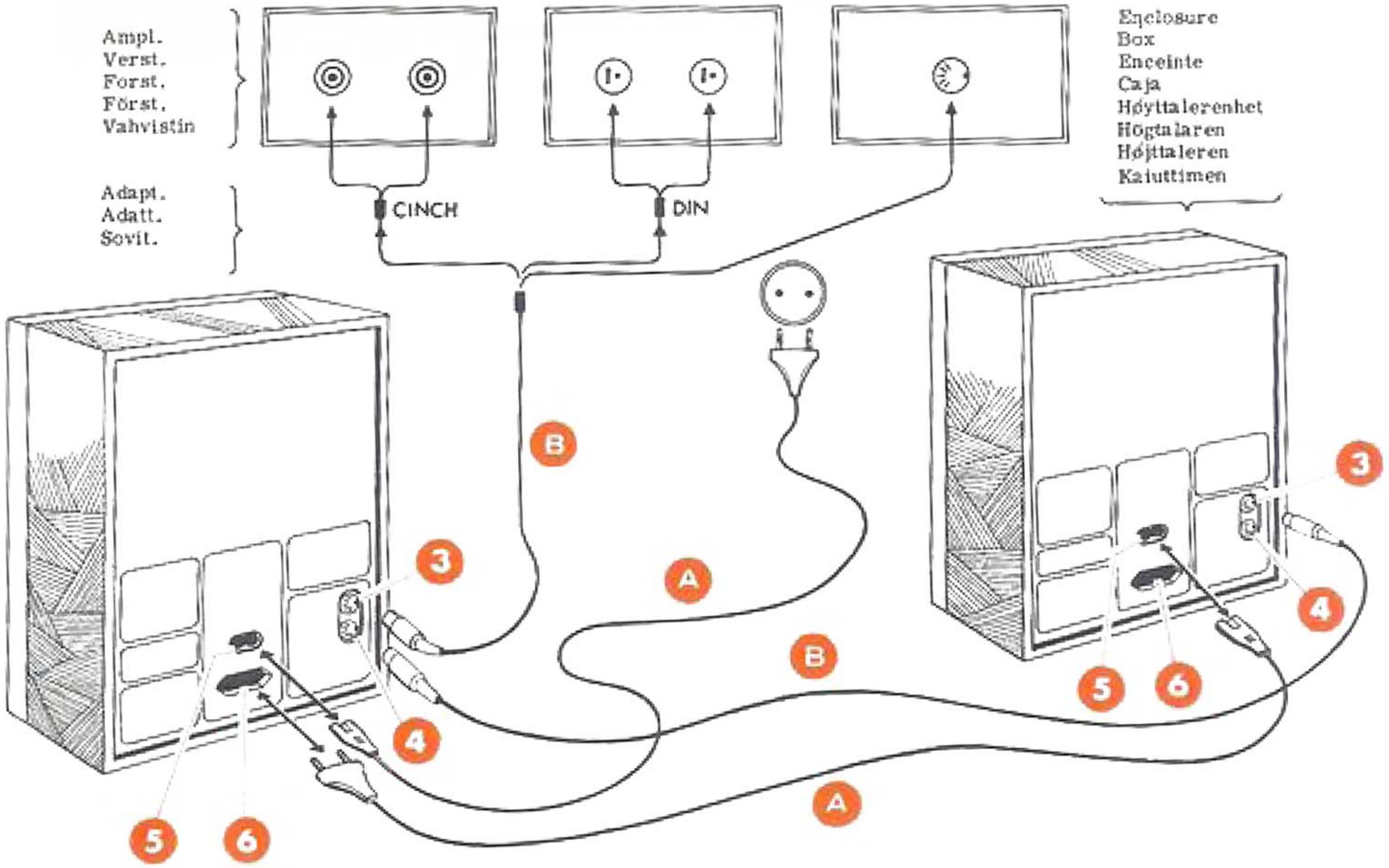
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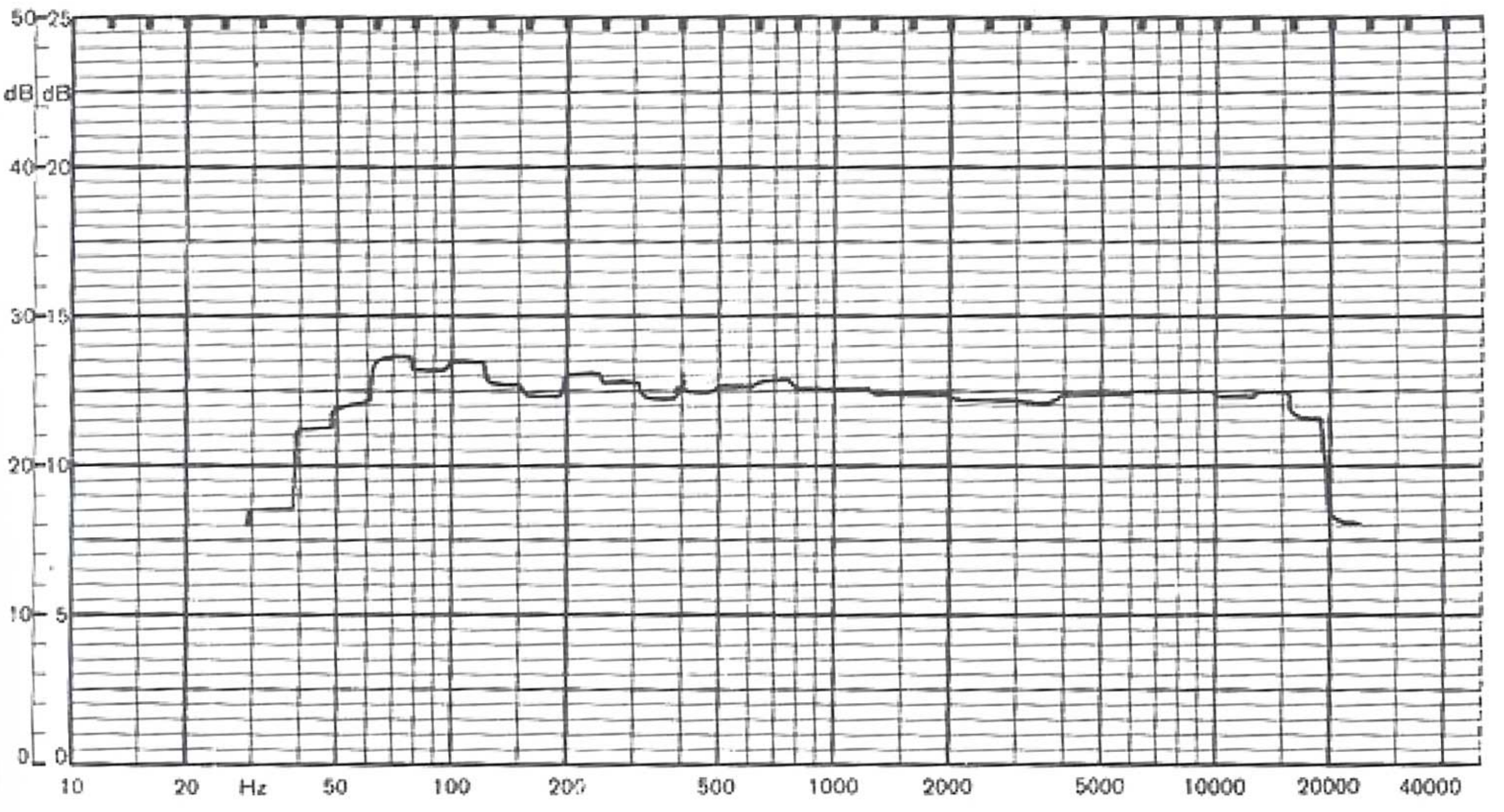
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