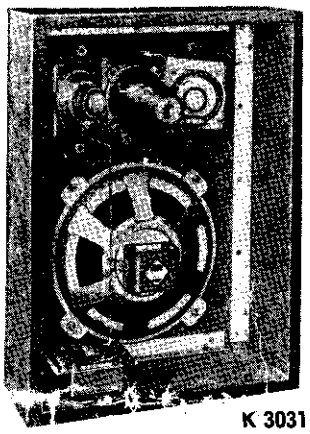
ISOPHON
Lautsprecher

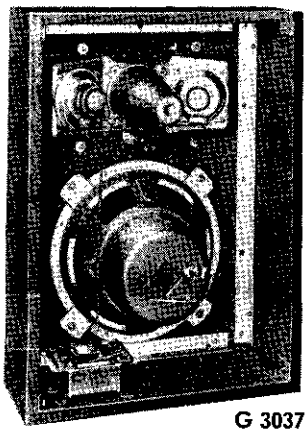
EINBAU- UND BETRIEBSANLEITUNG


K 3031

FÜR DIE HIGH FIDELITY-KOMBINATIONEN »Druckstrahler«

K 3031 UND G 3037

INSTRUCTIONS FOR INSTALLATION AND OPERATION


G 3037

OF HIGH-FIDELITY »Druckstrahler« COMBINATIONS

K 3031 AND G 3037

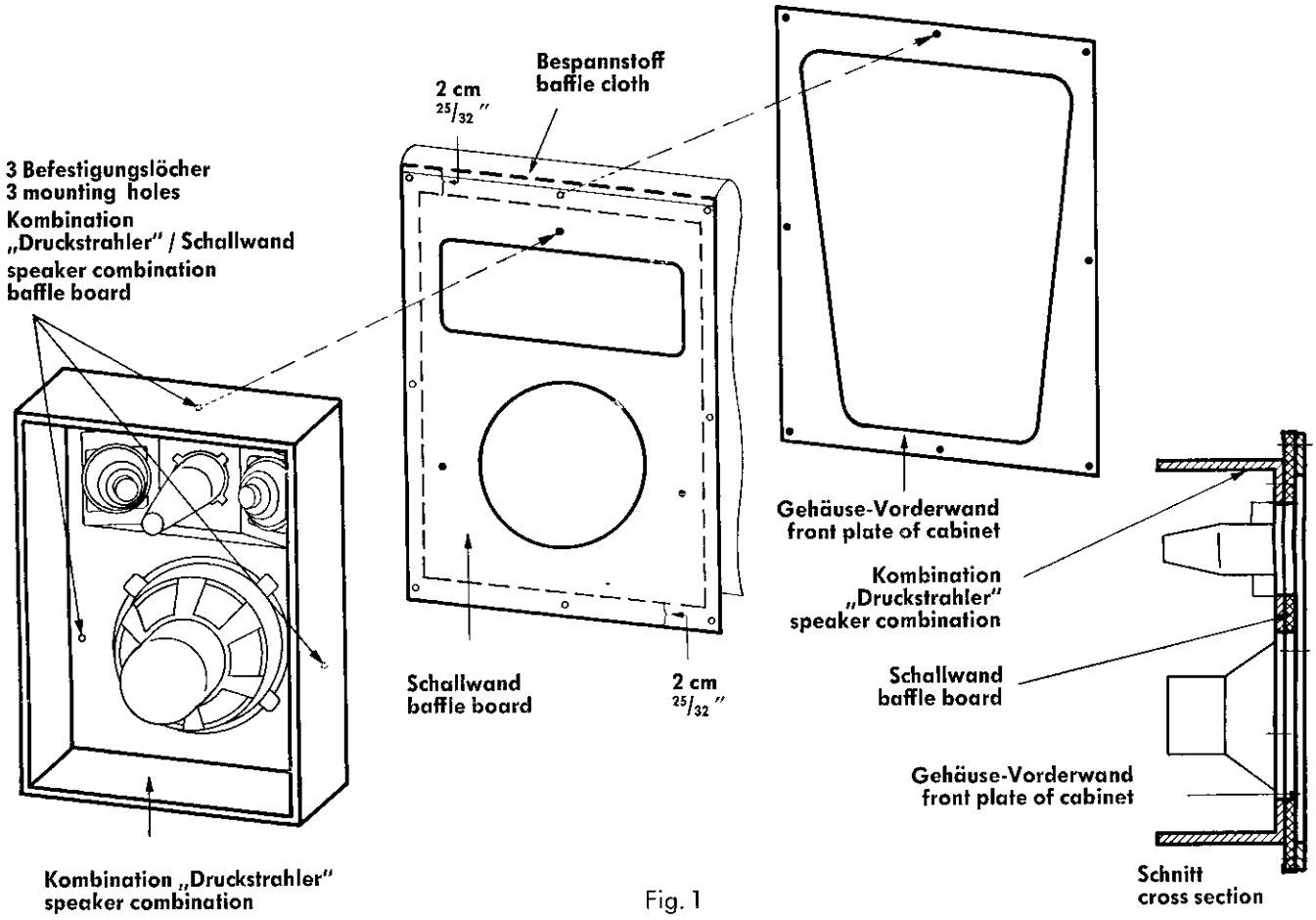


Fig. 1

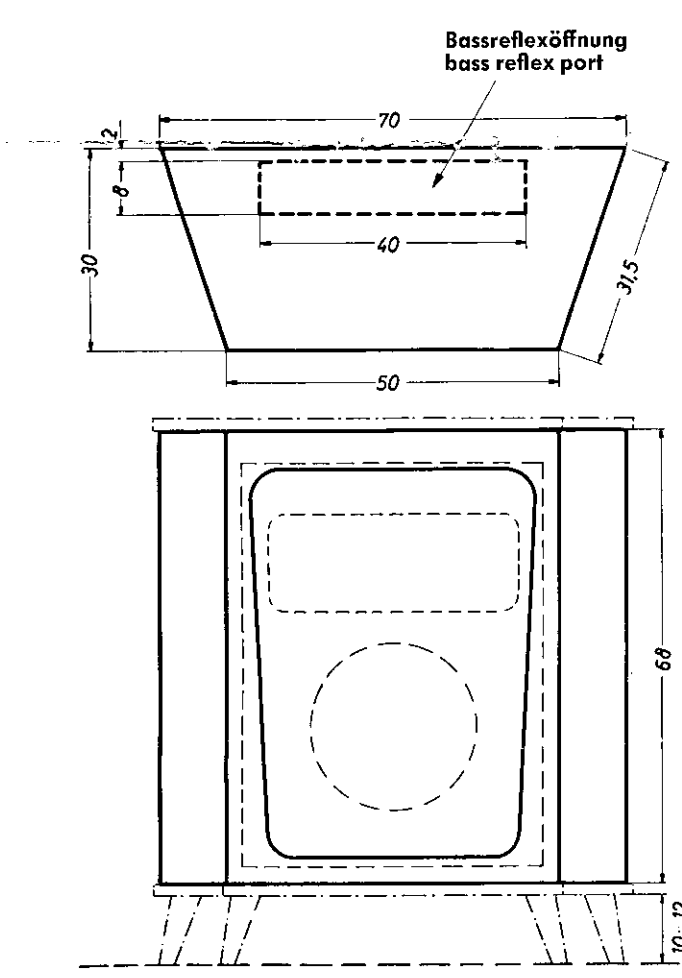


Fig. 2

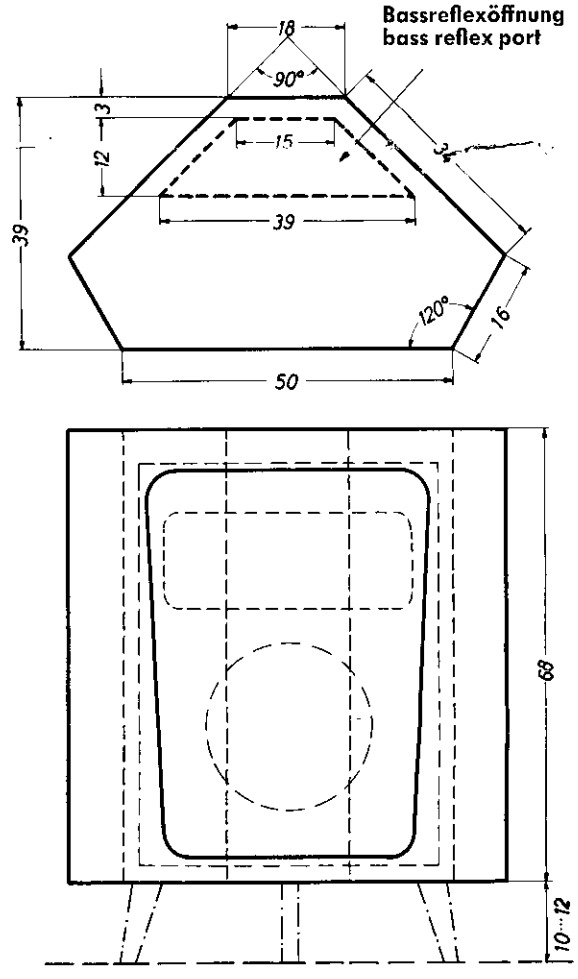


Fig. 3

1 Anpassungswert matching impedance	2 Verstärker, Radio etc. anschließen an Klemmen connect amplifier, radio set etc. to the following terminals	3 außerdem z. verbinden m. beilieg. Verbinder sind die Klemmen connect also the following terminals by use of the respective connectors
7000 – 9000 Ω und/and Gegentakt 8000 Ω push-pull	1 und/and 10 (Gegent. Mitte an 5/6) (B+ -voltage to)	3 mit/to 4 5 mit/to 6 7 mit/to 8
3000 – 4000 Ω und/and Gegentakt 3500 Ω push-pull	1 und/and 10 (Gegent. Mitte an 3/8) (B+ -voltage to)	3 mit/to 8
850 Ω 12 Watt/Watts bei 100 Volt over Volts	1 und/and 3	1 mit/to 8 3 mit/to 10
200 Ω	2 und/and 3	2 mit/to 4 | 3 mit/to 5 4 mit/to 6 | 5 mit/to 7 6 mit/to 8 | 7 mit/to 9
10 – 15 Ω	12 und/and 14	keine/none
4 – 6 Ω	12 und/and 13	keine/none

Achtung!
Außer den in Spalte 3 bei den einzelnen Anpassungswerten angegebenen Brücken dürfen keine weiteren bestehen.

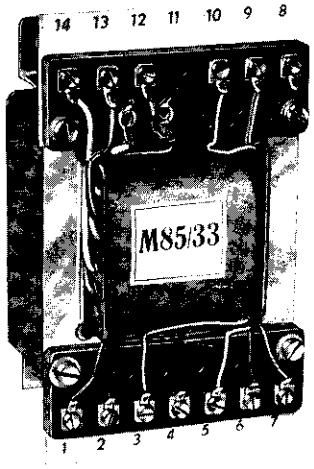


Fig. 4

Attention!
There should not exist any further connection, except those specified in column 3.

We welcome you as a new member in the circle of ISOPHON high-fidelity friends. With your purchase of ISOPHON high-fidelity equipment you have distinguished yourself as a discriminating listener satisfied with only the ultimate in true sound reproduction. In the following we wish to assist you in the installation and operation of your ISOPHON "Druckstrahler" combination.

We wish you many enjoyable listening hours.

Yours truly,
ISOPHON-WERKE
G. m. b. H.

We have designed this high-fidelity "Druckstrahler" combination with the utmost care in order to help you enjoy an acoustical reproduction as close to the natural performance as is possible today. In order to obtain complete satisfaction from your "Druckstrahler" combination, it must be:

1. installed in the **properly balanced enclosure,**
2. operated with a **good amplifier,**
3. electrically **matched correctly,**
4. placed **in accordance** with the **acoustical conditions** of the listening room.

1. The Enclosure

For a good reproduction of low frequencies it is essential to minimize rear-to-front cancellation of the energy coming from the loudspeaker. This could be achieved with a completely closed box with no other openings than the one in which the loudspeaker itself is mounted. However, there is one important effect which makes this device unsatisfactory especially when the closed box takes on the small proportions necessary to make it suitable for placement in the usual living room. The relatively small and unrelieved volume of space that encloses the back of the loudspeaker becomes an acoustic restraint upon the loudspeaker. The small volume of air captured by the enclosure has no way of escaping and acts as an acoustic spring upon the loudspeaker. In order to overcome this the enclosure would have to be of considerably larger size not at all suitable for a living room.

An open baffle would also serve its purpose by elongating the path from front to rear of the speaker, thereby giving the sound a chance to develop into some sort of wave motion before being pulled in around the back. Since low frequencies are long wave lengths, it follows that the longer the baffle length the lower will be the minimum frequency that the loudspeaker can radiate before destructive rear-to-front cancellation takes place. For adequate bass response a path length of approximately twelve feet would be required, resulting in a baffle of approximately 12 × 12 feet. Smaller baffles will not allow adequate radiation of low frequencies and, due to lack of damping, undesired cone resonances of the woofer will be more and more outstanding the smaller the baffle is made. A certain degree of damping is essential since otherwise excessive amplitudes of the speaker cone will result in distortions. No such problems are encountered in the medium and high frequency ranges since conditions of radiation are far more favourable. Your "Druckstrahler" combination offers the advantage that the "Druckstrahler" system radiates the medium and high frequencies completely independently of acoustical conditions inside the enclosure since the

system is completely enclosed and therefore forms an unit completely separated from the main enclosure.
An enclosure which meets both the requirements of high-fidelity response and suitable physical size for a living room is the bass reflex enclosure, while a completely enclosed box structure or large open baffle structure will completely prevent the use of the sound from the rear of the speaker. The bass reflex enclosure provides a vent in the closed box so that sound from the rear of the speaker may be given a chance to emerge from its container and do useful work. The bass reflex enclosure is a compromise between a closed and an open baffle.
The following construction manual based on accurate calculations and many practical tests is especially developed for the "Druckstrahler" combinations K 3031 and G 3037. All measurements, including port-sizes, meet the requirements of our woofers and must therefore be followed as closely as possible (see Fig. 7 and 8, page 8). Figures 2 and 3 on page 2 show the interior dimensions (in cm) of extensively tested enclosures suitable for the installation of your "Druckstrahler" combination.
Materials: The enclosure should be made of ½ inch to 1 inch plywood or similar material. Back covers are not shown and these should be made of ½ inch to 1 inch soft acoustic material or plywood with a layer of kimsul padding or similar material. This will considerably reduce vibration and undesired resonances.
With veneer and trimmings the enclosure can be finished to your personal taste. Special grill cloths must be used in order to prevent damping of sound propagation.
Hints for the assembly of the enclosure: A template is provided for the construction of the sound board with all cut-outs for the speakers properly marked. The template is the same size as your "Druckstrahler" combination and should be glued on to the sound board ending $^{25}/_{32}$" above the lower end of the sound board. The sound board itself should be made the same size as the front part of the cabinet (see Fig. 1 on page 2).
The sound board is essential for the proper fastening of both the grill cloth and of the "Druckstrahler" combination. The grill cloth should first be glued to one of the short edges of the sound board and the glue used should not be too thin. As soon as the glue has dried, the opposite edge should be treated in the same way and the grill cloth should be pulled over this edge as tightly as possible. While the glue is in the process of drying small corrections can be made. A little later the grill cloth can also be glued over the long edges of the sound board. Only the edges and not the sound board itself should be covered with glue.
The sound board with its grill cloth should now be screwed to the inside of the enclosure, for which purpose six to eight short, but strong, wood screws should be used. The "Druckstrahler" combination follows and this should be screwed to the sound board with three additional screws. One hole on each side and one hole on top of the unit are provided for this purpose. All parts must properly be fastened in order to avoid rattling.
The feet chosen for the cabinet should be at least four inches high in order to make the bass reflex port on the bottom of the cabinet effective.

2. Amplifiers and Radio Sets

Almost any type of amplifier with five to fifteen watts (maximal power capacity twenty-five watts) output can be used. Since your "Druckstrahler" combination is equipped with a universal impedance transformer, the unit can be operated with almost any type of equipment such as high-fidelity or PA amplifier, radio, TV or tape recorder.

3. Matching

On page 6 of this instruction for installation and operation you will find a table showing all necessary data for correct matching of your speaker combination.

4. Placement of Enclosure

The corner enclosure is of advantage since a room corner always considerably improves bass response. It is important, however, that no furniture is placed immediately in front of the speakers in order to assure a proper distribution of the sound of the woofer as well as of the wide angle extension speaker unit which radiates sound over an angle of 110 degrees. This must be observed especially in those cases where it is intended not to use cabinets as described above but to install the "Druckstrahler" combination on other places. Figures 5 and 6 on page 8 illustrate further installation suggestions.
Figure 5 shows a corner enclosure with the "Druckstrahler" combination installed as close as possible to the ear level of the listeners. In very high rooms such an enclosure can be made complete closed like the enclosure mentioned before. In order to avoid undesired resonances of the close in air column kimsul padding or other acoustical material should be used inside the enclosure. In rooms with low ceilings such a corner enclosure can also be installed as a bass reflex enclosure with a port opening either close to the ceiling or close to the floor.
Figure 6 shows the installation of the "Druckstrahler" combination in the wall of the room. For such installation a damping path filled with kimsul padding or other acoustical material must be provided at the rear of the loudspeaker. Such damping path should have a volume of at least five cubic feet.
Another possibility would be the installation of the "Druckstrahler" combination inside a partition or between two rooms. Although it might be tempting to use such a device for supplying both rooms with sound at the same time, we very much wish to advise against this. On the one hand, air pressure due to the sudden opening or closing of a door might harm the cone of the woofer, while, on the other hand, the medium and high frequency systems will only radiate in frontal direction and thus only supply one room.
With regard to the acoustics of your listening room, it should be noted that too many carpets, drapes and other sound absorbing materials might overdo absorption and such a room will be just as unsuitable for high-fidelity reproduction as a room which is too bare and therefore acoustically too live.
You can supplement your high-fidelity equipment by installing additional table or wall loudspeakers, such as our types ISODYN and W 55 or the less expensive types ISONOR and ISONETTA. With such additional speakers properly placed, surprising effects of threedimensional sound can be obtained.
Place your hi-fi enclosure about six to ten feet from your favourite easy chair and enjoy from there the

high-fidelity quality of ISOPHON.

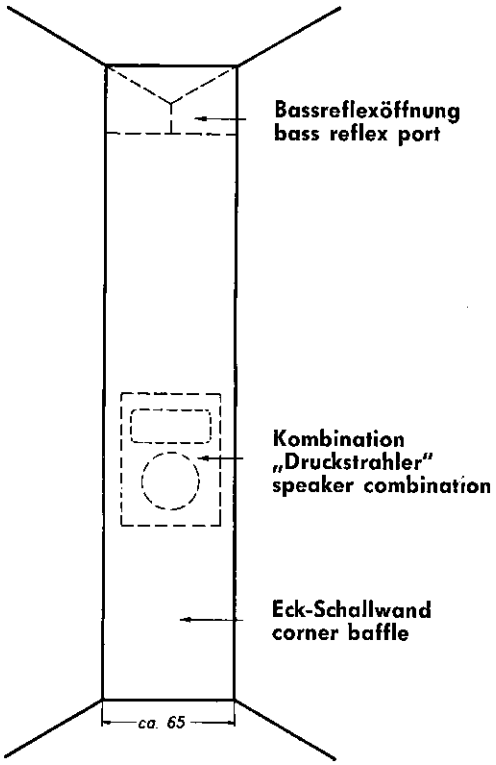


Fig. 5

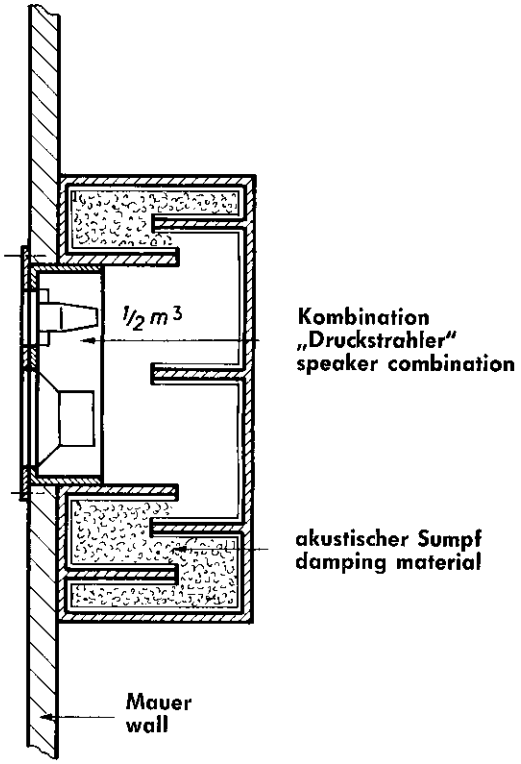


Fig. 6

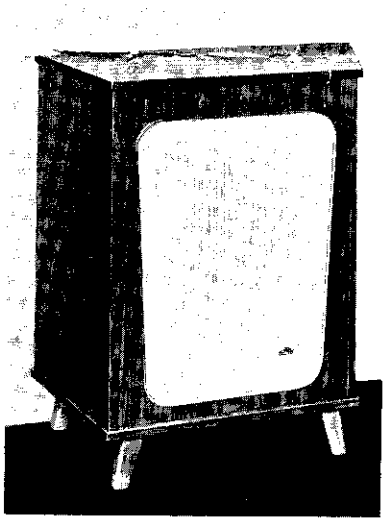


Fig. 7

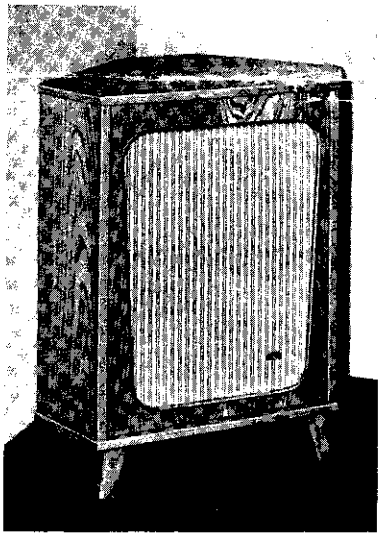


Fig. 8

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