

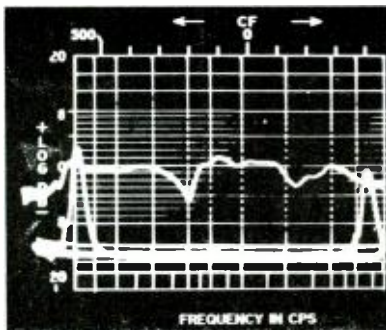
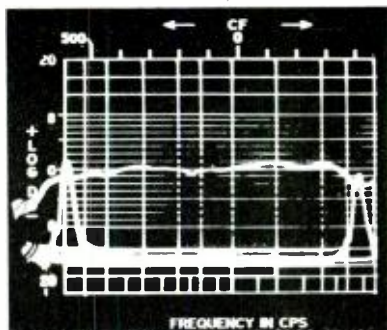


Fig. 3. (A), left. Automatic frequency-response trace, on a linear 1000-cps sweep, of a standard AR-2. Marker pips are at 350 and 1350 cps. (AR's anechoic chambers are not suitable for measurements at low frequencies.) Horizontal divisions are in 1-db steps. (B), right. Response trace of the same speaker system over the same frequency range, with the fiberglass removed from the cabinet. All other measurements are the same as in (A). Display is on a Panoramic Sonic Analyzer, model LP1a.

would form in a rectangular wooden enclosure, resonances which would create easily measurable peaks and dips in the frequency response of an otherwise smooth loudspeaker. In Fig. 3, (A) shows the acoustic frequency response trace, recorded automatically, of a standard AR-2 woofer in the range between 350 and 1350 cps. (AR's indoor measuring facilities are not adequate at lower frequencies) (B) in Fig. 3 is the response trace of the same speaker system with the fiberglass removed from the cabinet, measured in the same anechoic chamber with all conditions held constant. The response irregularities of the latter are obvious.

Enclosure Leaks

The three authors are quoted again:

"Need the cavity behind the driver be sealed absolutely air tight, resorting even to a stethoscope to determine air leaks? . . . It is seen that nowhere was the output reduced by more than 1 db with a



Fig. 4. Stethoscope check for air leaks. The speaker is being driven by a 20-cps signal.

total of 8 1/4-in. holes. . . . Therefore, a well crafted box with reasonable joinery is all that is necessary."

Here the writer must plead half-guiltily to the implied charges of over-design. The extreme care used in conserving a good acoustic seal at the AR plant, care which involves gaskets between the speaker flange and the cabinet, and stethoscope checks (see Fig. 4), is a "touch-up" rather than a basic operation. In return for a relatively inexpensive additional procedure, we receive freedom from the danger of slightly decreased low-bass output, and more important, freedom from a sort of hissing noise that would accompany low-frequency program material of high power when leaks are present.

Conclusion

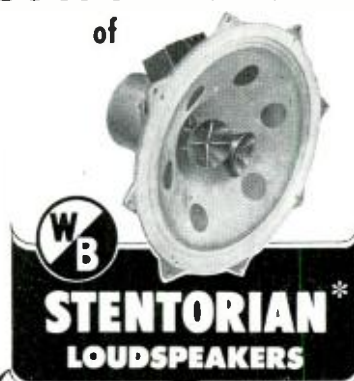
Messrs. A., K., and B. state:

"The ultra-compact cabinet has one big advantage: small size. However, no diminutive speaker system can perform *because* of its size. On almost every point of performance the small cabinet speaker is at a disadvantage. These performance problems must be solved on a compromise basis."

It should be clear by now that the authors do not have to worry about non-linearity of the air in the cabinet, and I can find no other disadvantages to the box described in their article that have to do directly with the fidelity of sound reproduction rather than with efficiency.

There is a group of old wives' tales in the audio field which are not subject to the attack of reason, but only give way to time. For example, there is the old saying, almost forgotten by now: "Triodes are always sweeter-sounding than pentodes." Another oft-repeated maxim states that bass reproduction from a small speaker enclosure is inevitably inferior to that from a large one. In my opinion, the support for this principle derives merely from its own repetition.

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