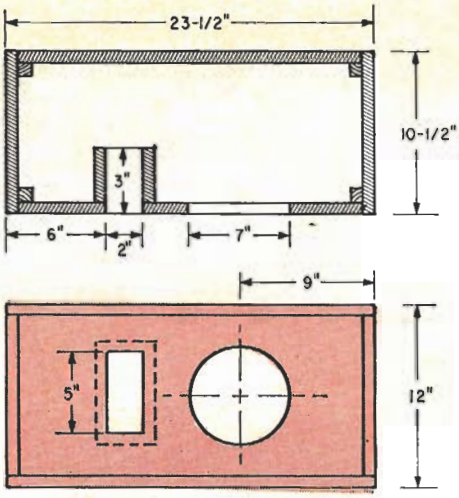
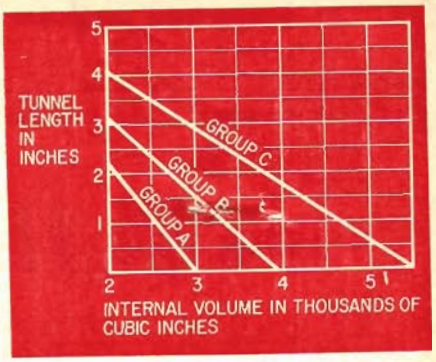


Fig. 1—A minimum - volume ported enclosure for an 8-inch "general-purpose" speaker.

Fig. 2—Tunnel (duct) length for small enclosures with 10-square-inch port opening. Lengths on chart are measured from back of baffleboard. Group A includes speakers with light cone and stiff suspension (most general-purpose types.) Group B is light cones and soft suspension (many "bargain" hi-fi speakers). Group C is speakers with heavy cones (such as woofers).



Long Ones, Short Ones, Fat Ones, Tall Ones

By GEORGE L. AUGSPURGER

ALMOST EVERYONE WHO HAS WORKED with bass-reflex speaker enclosures knows that there is a fairly narrow optimum range of sizes and shapes for them. Straying too far in the direction of a column or pipe shape, for instance, can create serious standing-wave problems and unpleasantly colored sound. Most articles warn you to that effect, but hardly any tell you whether it's at all possible to come up with a satisfactory enclosure design if you *have* to use an odd shape.

[For details on more orthodox designs, see Mr. Augspurger's "Design Your Own Speaker Enclosure" in the August 1964 issue of RADIO-ELECTRONICS.]

The very small enclosure. Although a general-purpose speaker in a small enclosure will do nicely for background music or a paging system, deep bass tones invariably sound thin. In extreme cases, there may even be a pronounced "honky" quality which is almost impossible to get rid of. Nevertheless, there are instances where this combination of speaker and enclosure is the only one that which can be used, and the assignment is to make the speaker perform as well as possible in the space available.

Fig. 1 gives dimensions for a minimum-volume ported enclosure for an 8-inch speaker. The unit gives good results, yet is compact enough to put on a shelf or behind the back seat of a Volkswagen. Its internal volume is 1.2 cubic feet, and the ducted port is worked out from the chart in Fig. 2. In very small enclosures such as this, it is usually preferable to line *all* interior surfaces except the front panel with acoustical padding.

The very thin enclosure. There is considerable demand for speaker enclosures shallow enough to be concealed behind draperies or hung on a wall. Not only is such an enclosure very limited in its internal volume, but the squashed-out shape sets up standing waves which may interfere with the normal function of the enclosure. These can be controlled by a liberal use of absorptive padding, but the ordinary utility speaker still does not work quite as well as with boxier proportions.

A recommended thin design is shown in Fig. 3. Note that the port duct is combined with the bracing of the front and back panels. The duct goes back from the front panel and then opens out sideways into the enclosure interior. Thus, the effective length of the duct is roughly equal to the figure recommended in the chart.

The very long enclosure. Often, there is sufficient volume to get good performance from a speaker, but the available space is more in the shape of a pipe than a box. Here again, judicious use of absorptive material will help. By placing speaker and port close together, with the speaker centered at one-fifth the total length of the pipe, standing-wave problems are minimized. The suggested configuration is shown in Fig. 4. A pair of these cabinets placed end to end makes a convenient installation hung on a wall to serve as a shelf, or concealed in a valance above a picture window. Or the enclosures can be set vertically, taking up very little floor space, yet getting the speakers up to a height where sound can be projected over other furniture. END

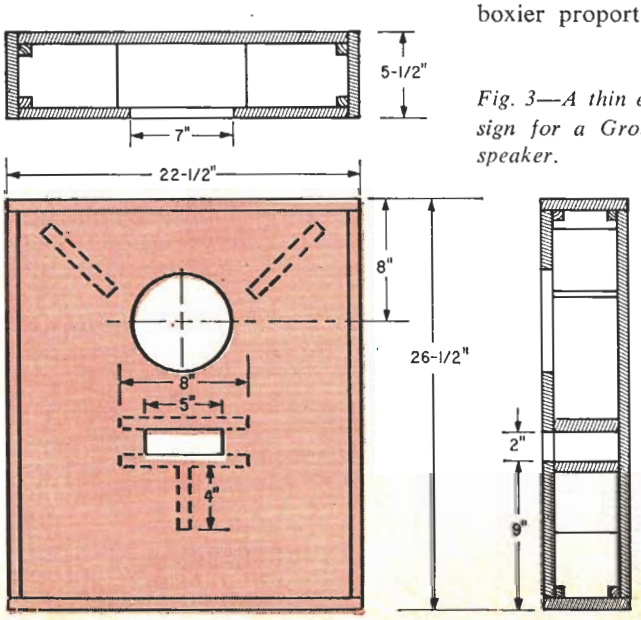


Fig. 3—A thin enclosure design for a Group B 8-inch speaker.

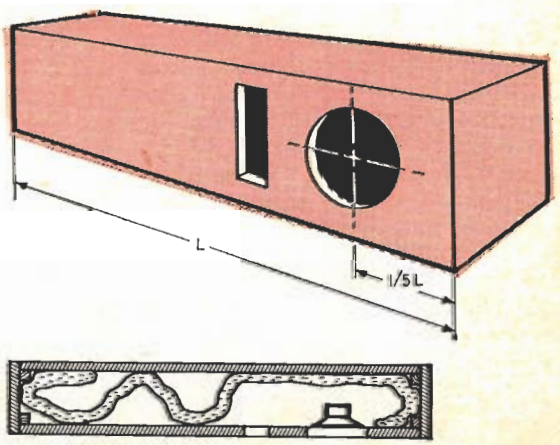


Fig. 4—A typical very-long enclosure. Absorptive material damps standing waves.